Dell Networking W-Series ArubaOS 6.5.x Command-Line Interface

Reference Guide

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Revision History

The following table provides the revision history of this document.

Table 1: *Revision History*

Revision	Change Description
Revision 01	Initial release.

The Dell Networking W-Series ArubaOS 6.5.x command-line interface (CLI) allows you to configure and manage Dell controllers. The CLI is accessible from a local console connected to the serial port on the controllers or through a Telnet or Secure Shell (SSH) session from a remote management console or workstation.

Telnet access is disabled by default. To enable Telnet access, enter the **telnet** CLI command from a serial connection or an SSH session, or in the WebUI navigate to the **Configuration > Management > General** page.

What's New in ArubaOS 6.5.x

This section lists the commands introduced, modified, or deprecated in ArubaOS 6.5.x.

Commands in ArubaOS 6.5.0.0

New Commands

The following new commands are introduced in ArubaOS 6.5.0.0:

Command	Description
ap consolidated-provision info	This command stores the consolidated AP-provisioned information of all APs connected to a controller in the *ap_provision_info.txt* file.
block-redirect-url	This command redirects the user session to an external splash page when it encounters a webcc deny policy.
crypto-local isakmp allow-via-subnet-routes	This command allows the controller to accept the subnets published by VIA-clients. By default, this feature is disabled.
ip reputation	This command blocks connectivity to IP addresses classified as malicious.
ip probe health-check	This command configures WAN health-check ping-probes for measuring WAN availability and latency on branch controller uplinks.
ntp standalone	This command enables or disables controller to act as NTP server.
show ap consolidated-provision info	This command displays the consolidated AP-provisioned information for an access point connected to the controller.
show ip-reputation	This command displays the IP Reputation status of various services.
show ip health-check	Display the health-check status of the uplink interfaces of a branch-office controller.

Command	Description
show ucc dns-ip-learning	This command displays the carrier's evolved Packet Data Gateway (ePDG) IP address learned by the controller. This command is specific for Wi-Fi calling clients.
show voice facetime	This command displays the user configured pattern that is matched against the User-Agent field of the SIP messages to determine if the session is a Facetime session.
show voice wificalling	This command displays the Wi-Fi Calling ALG configuration on the controller.
show web-proxy	This command displays information about the port and server configured for the web-proxy.
ssh	This command initiate an SSH session from the controller to a remote host.
telnet	This command initiate a telnet session from the controller to a remote host.
voice facetime	This command configures a pattern present in the user-agent field of the SIP signaling message header to determine if the media session is a Facetime session.
voice wificalling	This command configures Wi-Fi Calling on the controller.
web-proxy server	This command configures the web-proxy server related information.

Modified Commands

The following commands are modified in ArubaOS 6.5.0.0:

Command	Description
aaa authentication via connection-profile	The **ocsp-responder enable** subcommand is introduced.
aaa profile	The **username-from-dhcp-opt12** parameter is introduced.
ap regulatory-domain-profile	The **valid-11a-160mhz-channel-group** parameter is introduced.
ap system-profile	The following new parameters are introduced: • **ap-console-password** • **ap-console-protection** • **console-log-lvl** • **disable-tftp-image-upgrade** • **secondary-master**

Command	Description
ap wired-port-profile	The **portfast** and **portfast-trunk** parameters are introduced.
clear	The **port-security-error gigabitethernet <slot>/<module>/<port>** parameter is introduced. This clears the port-security error from a gigabit Ethernet IEEE 802.3 interface.
copy	The **flash:** parameter is introduced to copy files from an FTP server.
web-server profile	The **excludes security headers** is introduced to exclude security headers from HTTP response.
firewall	The **ip-classification** parameter is introduced.
interface fastethernet | gigabitethernet	The **switchport port-security maximum** command is modified to include **level** and **interval** sub-parameters. For **level**, the default value is logging.
ip access-list ip-geolocation	The **ip-geolocation** parameter is introduced.
ip radius	The **nas-vlan <nas-vlan>** parameter is introduced, which allows you to configure a RADIUS NAS IP for a branch controller with a VLAN ID.
ip probe default	The **jitter** parameter is introduced.
mgmt-user	The **console-block** parameter is introduced.
mgmt-user	The **name** parameter is introduced.
rf arm-profile	The following parameters are introduced. • **160MHz-support** • **interfering-ap-weight** • **dynamic-bw** • **dynamic-bw-beacon-failed-thresh** • **dynamic-bw-cca-ibss-thresh** • **dynamic-bw-cca-intf-thresh** • **dynamic-bw-clear-time** • **dynamic-bw-wait-time**
rf dot11a-radio-profile	The upper limit for the **beacon-period** parameter is set to 2000 milliseconds.
rf dot11g-radio-profile	The upper limit for the **beacon-period** parameter is set to 2000 milliseconds.

Command	Description
show ap arm history	The **Result** column is introduced to the output of this command to indicate the status of the requested change in channel or EIRP by ARM.
show ap debug port status	The **Portfast** parameter is introduced.
show ap port status	The **Portfast** parameter is introduced.
show ap regulatory-domain-profile	The **Valid 802.11a 160MHz channel group** parameter is introduced.
show ap system-profile	The following parameters are introduced as part of the output of this command: • **Secondary Master IP/FQDN** • **Disable RAP Tftp Image Upgrade** • **AP Console Protection** • **AP Console Password**
show crypto-local isakmp	The **allow-via-subnet-routes** parameter is introduced.
show datapath	The following IP Classification related parameters are introduced: • **ip-geolocation [counters]** • **ip-reputation [counters|rtc]** • **session ip-classification**
show ip access-list	The **global-geolocation-acl** is introduced.
show firewall	The **IP classification** parameter is introduced.
show rf arm-profile	The following parameters are introduced as part of the output of this command: • **160MHz-support** • **Interfering AP Weight** • **Dynamic Bandwidth Switch** • **Dynamic Bandwidth Switch Wait Time (sec)** • **Dynamic Bandwidth Switch Triggering Indicator CCA ibss Threshold (%)** • **Dynamic Bandwidth Switch Triggering Indicator Beacon Failed Threshold** • **Dynamic Bandwidth Switch Triggering Indicator CCA intf Threshold (%)** • **Dynamic Bandwidth Switch Clear Time (min)**

Command	Description
show snmp trap-list	The following parameters are introduced as part of the output of this command: • **wlsxAPDown** • **wlsxAPUp**
show ucc call-info cdrs	The **WiFi-Calling** application parameter is introduced.
show ucc client-info	The **WiFi-Calling** application parameter is introduced.
show ucc statistics	The **WiFi-Calling** application parameter is introduced.
show web-server	The **Exclude Security Headers from HTTP Response** parameter is introduced.
show wlan voip-cac-profile	The **Allow Idle VOIP Client** parameter is introduced.
web-server profile	The **exclude-http-security** parameter is introduced.
wlan virtual-ap	The **cellular-handoff-assist** parameter is introduced. This setting can now be applied to individual virtual APs via the wlan virtual-ap profile, and can help a dual-mode, 3G/4G-capable Wi-Fi device such as an iPhone, iPad, or Android client at the edge of Wi-Fi network coverage switch from Wi-Fi to an alternate 3G/4G radio that provides better network access.
wlan voip-cac-profile	The **allow-idle-voip-client** parameter is introduced.

Deprecated Commands

The following commands are deprecated in ArubaOS 6.5.0.0:

Command	Description
ap system-profile	The **shell-passwd** parameter is deprecated.
show ap system-profile	The **Shell Password** parameter is deprecated from the output of this command.

About this Guide

This guide describes the Dell Networking W-Series ArubaOS 6.5.x command syntax. The commands in this guide are listed alphabetically.

The following information is provided for each command:

- Command Syntax—The complete syntax of the command.
- Description—A brief description of the command.
- Syntax—A description of the command parameters, including license requirements for specific parameters if needed. The applicable ranges and default values, if any, are also included.

- Usage Guidelines—Information to help you use the command, including: prerequisites, prohibitions, and related commands.
- Example—An example of how to use the command.
- Command History—The version of ArubaOS in which the command was first introduced. Modifications and changes to the command are also noted.
- Command Information—This table describes any licensing requirements, command modes and platforms for which this command is applicable. For more information about available licenses, see the Licenses chapter of the *Dell Networking W-Series ArubaOS 6.5.x User Guide*.

Connecting to the Controller

This section describes how to connect to the controller to use the CLI.

Serial Port Connection

The serial port is located on the front panel of the controller. Connect a terminal or PC/workstation running a terminal emulation program to the serial port on the controller to use the CLI. Configure your terminal or terminal emulation program to use the following communication settings.

Baud Rate	Data Bits	Parity	Stop Bits	Flow Control
9600	8	None	1	None

The Dell W-7200 Series controller supports baud rates between 9600 and 115200.

Telnet or SSH Connection

Telnet or SSH access requires that you configure an IP address and a default gateway on the controller and connect the controller to your network. This is typically performed when you run the Initial Setup on the controller, as described in the *Dell Networking W-Series ArubaOS 6.5.x Quick Start Guide*. In certain deployments, you can also configure a loopback address for the controller; see interface loopback on page 458 for more information.

Configuration changes on Master Controllers

Some commands can only be issued when connected to a master controller. If you make a configuration change on a master controller, all connected local controllers will subsequently update their configurations as well. You can manually synchronize all of the controllers at any time by saving the configuration on the master controller.

CLI Access

When you connect to the controller using the CLI, the system displays its host name followed by the login prompt. Log in using the admin user account and the password you entered during the Initial Setup on the controller (the password displays as asterisks). For example:

```
(host)
User: admin
Password: *****
```

When you are logged in, the *user* mode CLI prompt displays. For example:

```
(host) >
```

User mode provides only limited access for basic operational testing such as running **ping** and **traceroute**.

Certain management functions are available in enable (also called "privileged") mode. To move from user mode to enable mode requires you to enter an additional password that you entered during the Initial Setup (the password displays as asterisks). For example:

```
(host) > enable
Password: ******
```

When you are in enable mode, the > prompt changes to a pound sign (#):

```
(host) #
```

Configuration commands are available in *config* mode. Move from enable mode to config mode by entering **configure terminal** at the # prompt:

```
(host) # configure terminal
Enter Configuration commands, one per line. End with CNTL/Z
```

When you are in basic config mode, (config) appears before the # prompt:

```
(host) (config) #
```

There are several other sub- command modes that allow users to configure individual interfaces, subinterfaces, loopback addresses, GRE tunnels and cellular profiles. For details on the prompts and the available commands for each of these modes, see Appendix A: Command Modes on page 2389.

Command Help

You can use the question mark (**?**) to view various types of command help.

When typed at the beginning of a line, the question mark lists all the commands available in your current mode or sub-mode. A brief explanation follows each command. For example:

```
(host) > ?

enable            Turn on Privileged commands
logout            Exit this session. Any unsaved changes are lost.
ping              Send ICMP echo packets to a specified IP address.
traceroute        Trace route to specified IP address.
```

When typed at the end of a possible command or abbreviation, the question mark lists the commands that match (if any). For example:

```
(host) > c?

clear                   Clear configuration
clock                   Configure the system clock
configure               Configuration Commands
copy                    Copy Files
```

If more than one item is shown, type more of the keyword characters to distinguish your choice. However, if only one item is listed, the keyword or abbreviation is valid and you can press tab or the spacebar to advance to the next keyword.

When typed in place of a parameter, the question mark lists the available options. For example:

```
(host) # write ?
erase                   Erase and start from scratch
file                    Write to a file in the file system
memory                  Write to memory
terminal                Write to terminal
<cr>
```

The <cr> indicates that the command can be entered without additional parameters. Any other parameters are optional.

Command Completion

To make command input easier, you can usually abbreviate each key word in the command. You need type only enough of each keyword to distinguish it from similar commands. For example:

```
(host) # configure terminal
```

could also be entered as:

```
(host) # con t
```

Three characters (**con**) represent the shortest abbreviation allowed for **configure**. Typing only **c** or **co** would not work because there are other commands (like **copy**) which also begin with those letters. The configure command is the only one that begins with **con**.

As you type, you can press the spacebar or tab to move to the next keyword. The system then attempts to expand the abbreviation for you. If there is only one command keyword that matches the abbreviation, it is filled in for you automatically. If the abbreviation is too vague (too few characters), the cursor does not advance and you must type more characters or use the help feature to list the matching commands.

Deleting Configuration Settings

Use the **no** command to delete or negate previously-entered configurations or parameters.

- To view a list of no commands, type **no** at the enable or config prompt followed by the question mark. For example:

  ```
  (host) (config) # no?
  ```

- To delete a configuration, use the **no** form of a configuration command. For example, the following command removes a configured user role:

  ```
  (host) (config) # no user-role <name>
  ```

- To negate a specific configured parameter, use the **no** parameter within the command. For example, the following commands delete the DSCP priority map for a priority map configuration:

  ```
  (host) (config) # priority-map <name>
  (host) (config-priority-map) # no dscp priority high
  ```

Saving Configuration Changes

Each Dell controller contains two different types of configuration images.

- The *running-config* holds the current controller configuration, including all pending changes which have yet to be saved. To view the running-config, use the following command:

  ```
  (host) # show running-config
  ```

- The *startup config* holds the configuration which will be used the next time the controller is rebooted. It contains all the options last saved using the **write memory** command. To view the startup-config, use the following command:

  ```
  (host) # show startup-config
  ```

When you make configuration changes via the CLI, those changes affect the current running configuration only. If the changes are not saved, they will be lost after the controller reboots. To save your configuration changes so they are retained in the startup configuration after the controller reboots, use the following command in enable mode:

```
(host) # write memory
Saving Configuration...
Saved Configuration
```

Both the startup and running configurations can also be saved to a file or sent to a TFTP server for backup or transfer to another system.

Commands That Reset the Controller or AP

If you use the CLI to modify a currently provisioned and running radio profile, those changes take place immediately; you do not reboot the controller or the AP for the changes to affect the current running configuration. Certain commands, however, automatically force the controller or AP to reboot. You may want to consider current network loads and conditions before issuing these commands, as they may cause a momentary disruption in service as the unit resets. Note also that changing the **lms-ip** parameter in an AP system profile associated with an AP group will cause all APs in that AP group to reboot.

Table 2: *Reset Commands*

Commands that Reset an AP	Commands that Reset a Controller
• ap-regroup • ap-rename • apboot • provision-ap • ap wired-ap-profile <profile> forward-mode {bridge|split-tunnel|tunnel} • wlan virtual-ap <profile-name> {aaa-profile <profile-name> |forward-mode {tunnel|bridge|split-tunnel|decrypt-tunnel} |ssid-profile <profile-name>|vlan <vlan>...} • ap system-profile <profile> {bootstrap-threshold <number> |lms-ip <ipaddr> |} • wlan ssid-profile <profile-name> {battery-boost|deny-bcast|essid|opmode|strict-svp |wepkey1 <key> |wepkey2 <key>|wepkey3 <key>|wepkey4 <key>|weptxkey <index> |wmm |wmm-be-dscp <best-effort>|wmm-bk-dscp <background>|wmm-ts-min-inact-int <milliseconds>|wmm-vi-dscp <video>|wmm-vo-dscp <voice>|wpa-hexkey <psk> |wpa-passphrase <string> } • wlan dotllk <profile-name> {bcn-measurement-mode|dot11k-enable|force-dissasoc	• reload

Typographic Conventions

The following conventions are used throughout this manual to emphasize important concepts:

Table 3: *Text Conventions*

Type Style	Description
Italics	This style is used to emphasize important terms and to mark the titles of books.
Boldface	This style is used to emphasize command names and parameter options when mentioned in the text.
`Commands`	This fixed-width font depicts command syntax and examples of commands and command output.
`<angle brackets>`	In the command syntax, text within angle brackets represents items that you should replace with information appropriate to your specific situation. For example: ping <ipaddr> In this example, you would type “ping” at the system prompt exactly as shown, followed by the IP address of the system to which ICMP echo packets are to be sent. Do not type the angle brackets.
`[square brackets]`	In the command syntax, items enclosed in brackets are optional. Do not type the brackets.
`{Item_A|Item_B}`	In the command examples, single items within curled braces and separated by a vertical bar represent the available choices. Enter only one choice. Do not type the braces or bars.
`{ap-name <ap-name>}|{ipaddr <ip-addr>}`	Two items within curled braces indicate that both parameters must be entered together. If two or more sets of curled braces are separated by a vertical bar, like in the example to the left, enter only one choice Do not type the braces or bars.

Command Line Editing

The system records your most recently entered commands. You can review the history of your actions, or reissue a recent command easily, without having to retype it.

To view items in the command history, use the *up* arrow key to move back through the list and the *down* arrow key to move forward. To reissue a specific command, press **Enter** when the command appears in the command history. You can even use the command line editing feature to make changes to the command prior to entering it. The command line editing feature allows you to make corrections or changes to a command without retyping. Table 1 lists the editing controls. To use key shortcuts, press and hold the **Ctrl** button while you press a letter key.

Table 4: *Line Editing Keys*

Key	Effect	Description
Ctrl A	Home	Move the cursor to the beginning of the line.
Ctrl B or the left arrow	Back	Move the cursor one character left.
Ctrl D	Delete Right	Delete the character to the right of the cursor.
Ctrl E	End	Move the cursor to the end of the line.
Ctrl F or the right arrow	Forward	Move the cursor one character right.
Ctrl K	Delete Right	Delete all characters to the right of the cursor.
Ctrl N or the down arrow	Next	Display the next command in the command history.
Ctrl P or up arrow	Previous	Display the previous command in the command history.
Ctrl T	Transpose	Swap the character to the left of the cursor with the character to the right of the cursor.
Ctrl U	Clear	Clear the line.
Ctrl W	Delete Word	Delete the characters from the cursor up to and including the first space encountered.
Ctrl X	Delete Left	Delete all characters to the left of the cursor.

Specifying Addresses and Identifiers in Commands

This section describes addresses and other identifiers that you can reference in CLI commands.

Table 5: *Addresses and Identifiers*

Address/Identifier	Description
IP address	For any command that requires entry of an IP address to specify a network entity, use IPv4 network address format in the conventional dotted decimal notation (for example, 10.4.1.258).
Netmask address	For subnet addresses, specify a netmask in dotted decimal notation (for example, 255.255.255.0).
Media Access Control (MAC) address	For any command that requires entry of a device's hardware address, use the hexadecimal format (for example, 00:05:4e:50:14:aa).
Service Set Identifier (SSID)	A unique character string (sometimes referred to as a network name), consisting of no more than 32 characters. The SSID is case-sensitive (for example, WLAN-01).
Basic Service Set Identifier (BSSID)	This entry is the unique hard-wireless MAC address of the AP. A unique BSSID applies to each frequency— 802.11a and 802.11g—used from the AP. Use the same format as for a MAC address.
Extended Service Set Identifier (ESSID)	Typically the unique logical name of a wireless network. If the ESSID includes spaces, you must enclose the name in quotation marks.
Fast Ethernet or Gigabit Ethernet interface	Any command that references a Fast Ethernet or Gigabit Ethernet interface requires that you specify the corresponding port on the controller in the format <slot>/<module>/<port>. Use the **show port status** command to obtain the interface information currently available from a controller.

Contacting Dell

Table 6: *Contact Information*

Web Site Support	
Main Website	**dell.com**
Contact Information	**dell.com/contactdell**
Support Website	**dell.com/support**
Documentation Website	**dell.com/support/manuals**

aaa auth-survivability

```
aaa auth-survivability
   cache-lifetime
   enable
   server-cert
```

Description

This command configures Authentication Survivability on a controller.

Syntax

Parameter	Description	Default
`cache-lifetime <hrs>`	This parameter specifies the lifetime in hours for the cached access credential in the local Survival Server. When the specified cache-lifetime expires, the cached access credential is deleted from the controller. The valid range is from 1 to 72 hours.	24 hours
`enable`	This parameter controls whether to use the Survival Server when no other servers in the server group are in-service. This parameter also controls whether to store the user access credential in the Survival Server when it is authenticated by an external RADIUS or LDAP server in the server group. Authentication Survivability is enabled or disabled on each controller. **NOTE:** Authentication survivability will not activate if the Authentication Server Dead Time is configured as 0	Disabled
`server-cert`	This parameter allows you to view the name of the server certificate used by the local Survival Server. The local Survival Server is provided with a default server certificate from AOS. The customer server certificate must be imported into the controller first, and then you can assign the server certificate to the local Survival Server. **NOTE:** In the deployment environment, it is recommended that you switch to a customer server certificate.	—

Usage Guidelines

Use this command to configure authentication survivability on a standalone, local, or master controller.

To configure authentication survivability on a branch controller, you must use the Smart Config WebUI. On the branch controller, navigate to **Configuration** > **BRANCH** > **Smart Config**.

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
W-7000 Series	Base operating system	Enable or Config mode on controllers

aaa authentication captive-portal

```
aaa authentication captive-portal <profile>
   apple-cna-bypass
   auth-protocol mschapv2|pap|chap
   black-list <black-list>
   clone <source-profile>
   default-guest-role <role>
   default-role <role>
   enable-welcome-page
   guest-logon
   ip-addr-in-redirection <ipaddr>
   login-page <url>
   logon-wait {cpu-threshold <percent>}|{maximum-delay <seconds>}|{minimum-delay <seconds>}
   logout-popup-window
   max-authentication-failures <number>
   no ...
   protocol-http
   redirect-pause <seconds>
   redirect-url <url>
   server-group <group-name>
   show-acceptable-use-policy
   show-fqdn
   single-session
   switchip-in-redirection-url <ipaddr>
   url-hash-key <key>
   user-idle-timeout
   user-logon
   user-vlan-in-redirection-url <vlan>
   welcome-page <url>
   white-list <white-list>
```

Description

This command configures a Captive Portal authentication profile.

Syntax

Parameter	Description	Range	Default
`apple-cna-bypass`	Enable this knob to bypass Apple CNA on iOS devices such as iPad, iPhone, and iPod. You need to perform Captive Portal authentication from browser.	—	
`<profile>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	—	“default”
`authentication-protocol mschapv2|pap|chap`	This parameter specifies the type of authentication required by this profile, PAP is the default authentication type.	mschapv2 pap chap	pap

Parameter	Description	Range	Default
`black-list`	Name of an existing black list on an IPv4 or IPv6 network destination. The black list contains websites (unauthenticated) that a guest cannot access. Specify a netdestination host or subnet to add that netdestination to the captive portal blacklist. If you have not yet defined a netdestination, use the CLI command netdestination to define a destination host or subnet before you add it to the blacklist.	—	—
`clone`	Name of an existing Captive Portal profile from which parameter values are copied.	—	—
`default-guest-role`	Role assigned to guest.	—	guest
`default-role <role>`	Role assigned to the Captive Portal user when that user logs in. When both user and guest logons are enabled, the default role applies to the user logon; users logging in using the guest interface are assigned the guest role.	—	guest
`enable-welcome-page`	Displays the configured welcome page before the user is redirected to their original URL. If this option is disabled, redirection to the web URL happens immediately after the user logs in.	enabled/ disabled	enabled
`guest-logon`	Enables Captive Portal logon without authentication.	enabled/ disabled	disabled
`ipaddr-in-redirection-url <ipaddr>`	Sends the controller's interface IP address in the redirection URL when external captive portal servers are used. An external captive portal server can determine the controller from which a request originated by parsing the 'switchip' variable in the URL. This parameter requires the Public Access license.	—	—
`login-page <url>`	URL of the page that appears for the user logon. This can be set to any URL.	—	/auth/index. html

Parameter	Description	Range	Default
`logon-wait`	Configure parameters for the logon wait interval.	1-100	60%
`cpu-threshold <percent>`	CPU utilization percentage above which the logon wait interval is applied when presenting the user with the logon page.	1-100	60%
`maximum-delay <seconds>`	Maximum time, in seconds, the user will have to wait for the logon page to pop up if the CPU load is high. This works in conjunction with the Logon wait CPU utilization threshold parameter.	1-10	10 seconds
`minimum-delay <seconds>`	Minimum time, in seconds, the user will have to wait for the logon page to pop up if the CPU load is high. This works in conjunction with the Logon wait CPU utilization threshold parameter.	1-10	5 seconds
`logout-popup-window`	Enables a pop-up window with the Logout link that allows the user to log out. If this option is disabled, the user remains logged in until the user timeout period has elapsed or the station reloads.	enabled/ disabled	enabled
`max-authentication-failures <number>`	Maximum number of authentication failures before the user is blacklisted.	0-10	0
`no`	Negates any configured parameter.	—	—
`protocol-http`	Use HTTP protocol on redirection to the Captive Portal page. If you use this option, modify the captive portal policy to allow HTTP traffic.	enabled/ disabled	disabled (HTTPS is used)
`redirect-pause <secs>`	Time, in seconds, that the system remains in the initial welcome page before redirecting the user to the final web URL. If set to 0, the welcome page displays until the user clicks on the indicated link.	1-60	10 seconds
`redirect-url <url>`	URL to which an authenticated user will be directed. This parameter must be an absolute URL that begins with either **http://** or **https://**.	—	—

Parameter	Description	Range	Default
`server-group <group-name>`	Name of the group of servers used to authenticate Captive Portal users. See aaa server-group on page 107.	—	—
`show-fqdn`	Allows the user to see and select the fully-qualified domain name (FQDN) on the login page. The FQDNs shown are specified when configuring individual servers for the server group used with captive portal authentication.	enabled disabled	disabled
`show-acceptable-use-policy`	Show the acceptable use policy page before the login page.	enabled disabled	disabled
`single-session`	Allows only one active user session at a time.	—	disabled
`switchip-in-redirection-url`	Sends the controller's IP address in the redirection URL when external captive portal servers are used. An external captive portal server can determine the controller from which a request originated by parsing the 'switchip' variable in the URL.	enabled disabled	disabled
`url-hash-key <key>`	Issue this command to hash the redirection URL using the specified key.	—	disabled
`user-idle-timeout`	The user idle timeout for this profile. Specify the idle timeout value for the client in seconds. Valid range is 30-15300 in multiples of 30 seconds. Enabling this option overrides the global settings configured in the AAA timers. If this is disabled, the global settings are used.	—	disabled
`user-logon`	Enables Captive Portal with authentication of user credentials.	enabled disabled	enabled
`user-vlan-in-redirection-url <ipaddr>`	Add the user VLAN in the redirection URL. This parameter requires the Public Access license.	enabled disabled	disabled
`user-vlan-redirection-url`	Sends the user's VLAN ID in the redirection URL when external captive portal servers are used.	—	—

Parameter	Description	Range	Default
`welcome-page <url>`	URL of the page that appears after logon and before redirection to the web URL. This can be set to any URL.	—	/auth/welcome .html
`white-list <white-list>`	Name of an existing white list on an IPv4 or IPv6 network destination. The white list contains authenticated websites that a guest can access. If you have not yet defined a netdestination, use the CLI command netdestination to define a destination host or subnet before you add it to the whitelist.	—	—

Usage Guidelines

You can configure the Captive Portal authentication profile in the base operating system or with the Next Generation Policy Enforcement Firewall (PEFNG) license installed. When you configure the profile in the base operating system, the name of the profile must be entered for the initial role in the AAA profile. Also, when you configure the profile in the base operating system, you cannot define the default-role.

Example

The following example configures a Captive Portal authentication profile that authenticates users against the controller's internal database. Users who are successfully authenticated are assigned the auth-guest role.

To create the auth-guest user role shown in this example, the PEFNG license must be installed in the controller.

```
aaa authentication captive-portal guestnet
   default-role auth-guest
   user-logon
   no guest-logon
   server-group internal
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.0	The **max-authentication-failures** parameter no longer requires a license.
ArubaOS 6.1	The **sygate-on-demand**, **black-list** and **white-list** parameters were added.
ArubaOS 6.2	the **auth-protocol** parameter was added, and the **user-chap** parameter was deprecated.
ArubaOS 6.3	The **user-idle-timeout** parameter was introduced.
ArubaOS 6.4	The **url-hash-key** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Config mode on master controllers

aaa authentication dot1x

```
aaa authentication dot1x {<profile>|countermeasures}
   ca-cert <certificate>
   cert-cn-lookup
   clear
   clone <profile>
   delete-keycache
   eapol-logoff
   enforce-suite-b-128
   enforce-suite-b-192
   framed-mtu <mtu>
   heldstate-bypass-counter <number>
   ignore-eap-id-match
   ignore-eapolstart-afterauthentication
   machine-authentication blacklist-on-failure|{cache-timeout <hours>}|enable|
     {machine-default-role <role>}|{user-default-role <role>}
   max-authentication-failures <number>
   max-requests <number>
   multicast-keyrotation
   no ...
   opp-key-caching
   reauth-max <number>
   reauth-server-termination-action
   reauthentication
   server {server-retry <number>|server-retry-period <seconds>}
   server-cert <certificate>
   termination {eap-type <type>}|enable|enable-token-caching|{inner-eap-type (eap-  gtc|eap-
   mschapv2)}|{token-caching-period <hours>}
   timer {idrequest_period <seconds>}|{keycache-tmout <kc-tmout>}|{mkey-rotation-period
   <seconds>}|{quiet-period   <seconds>}|{reauth-period <seconds>}|{ukey-rotation-period
   <seconds>}|{wpa-  groupkey-delay <seconds>}|{wpa-key-period <milliseconds>}|wpa2-key-delay
   <milliseconds>
   tls-guest-access
   tls-guest-role <role>
   unicast-keyrotation
   use-session-key
   use-static-key
   validate-pmkid
   voice-aware
   wep-key-retries <number>
   wep-key-size {40|128}
   wpa-fast-handover
   wpa-key-retries <number>
   xSec-mtu <mtu>
```

Description

This command configures the 802.1X authentication profile.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	—	“default”
`clear`	Clear the Cached PMK, Role and VLAN entries. This command is available in enable mode only.	—	—
`countermeasures`	Scans for message integrity code (MIC) failures in traffic received from clients. If there are more than 2 MIC failures within 60 seconds, the AP is shut down for 60 seconds. This option is intended to slow down an attacker who is making a large number of forgery attempts in a short time.	—	disabled
`ca-cert <certificate>`	CA certificate for client authentication. The CA certificate needs to be loaded in the controller.	—	—
`cert-cn-lookup`	If you use client certificates for user authentication, enable this option to verify that the certificate's common name exists in the server. This parameter is disabled by default.	—	—
`delete-keycache`	Delete the key cache entry when the user entry is deleted.	—	disabled
`eapol-logoff`	Enables handling of EAPOL-LOGOFF messages.	—	disabled
`enforce-suite-b-128`	Configure Suite-B 128 bit or more security level authentication enforcement		disabled
`enforce-suite-b-192`	Configure Suite-B 192 bit or more security level authentication enforcement		disabled

Parameter	Description	Range	Default
framed-mtu <MTU>	Sets the framed MTU attribute sent to the authentication server.	500-1500	1100
heldstate-bypass-counter <number>	(This parameter is applicable when 802.1X authentication is terminated on the controller, also known as AAA FastConnect.) Number of consecutive authentication failures which, when reached, causes the controller to not respond to authentication requests from a client while the controller is in a held state after the authentication failure. Until this number is reached, the controller responds to authentication requests from the client even while the controller is in its held state.	0-3	0
ignore-eap-id-match	Ignore EAP ID during negotiation.	—	disabled
ignore-eapol start-afterauthentication	Ignores EAPOL-START messages after authentication.	—	disabled
machine-authentication	(For Windows environments only) These parameters set machine authentication: **NOTE**: This parameter requires the PEFNG license.		
blacklist-on-failure	Blacklists the client if machine authentication fails.	—	disabled
cache-timeout <hours>	The timeout, in hours, for machine authentication.	1-1000	24 hours (1 day)
enable	Select this option to enforce machine authentication before user authentication. If selected, either the machine-default-role or the user-default-role is assigned to the user, depending on which authentication is successful.	—	disabled

Parameter	Description	Range	Default
machine-default-role <role>	Default role assigned to the user after completing only machine authentication.	—	guest
user-default-role <role>	Default role assigned to the user after 802.1X authentication.	—	guest
max-authentication-failures <number>	Number of times a user can try to login with wrong credentials after which the user is blacklisted as a security threat. Set to 0 to disable blacklisting, otherwise enter a non-zero integer to blacklist the user after the specified number of failures.	0-5	0 (disabled)
max-requests <number>	Maximum number of times ID requests are sent to the client.	1-10	5
multicast-key rotation	Enables multicast key rotation	—	disabled
no	Negates any configured parameter.	—	—
opp-key-caching	Enables a cached pairwise master key (PMK) derived with a client and an associated AP to be used when the client roams to a new AP. This allows clients faster roaming without a full 802.1X authentication. **NOTE**: Make sure that the wireless client (the 802.1X supplicant) supports this feature. If the client does not support this feature, the client will attempt to renegotiate the key whenever it roams to a new AP. As a result, the key cached on the controller can be out of sync with the key used by the client.	—	enabled
reauth-max <number>	Maximum number of reauthentication attempts.	1-10	3
reauth-server-termination-action	Specifies the termination-action attribute from the server.		

Parameter	Description	Range	Default
reauthentication	Select this option to force the client to do a 802.1X reauthentication after the expiration of the default timer for reauthentication. (The default value of the timer is 24 hours.) If the user fails to reauthenticate with valid credentials, the state of the user is cleared. If derivation rules are used to classify 802.1X-authenticated users, then the reauthentication timer per role overrides this setting.	—	disabled
reload-cert	Reload Certificate for 802.1X termination. This command is available in enable mode only.	—	—
server	Sets options for sending authentication requests to the authentication server group.		
server-retry <number>	Maximum number of authentication requests that are sent to server group.	0-3	3
server-retry-period <seconds>	Server group retry interval, in seconds.	5-65535	5 seconds
server-cert <certificate>	Server certificate used by the controller to authenticate itself to the client.	—	—
termination	Sets options for terminating 802.1X authentication on the controller.		
eap-type <type>	The Extensible Authentication Protocol (EAP) method, either EAP-PEAP or EAP-TLS.	eap-peap/ eap-tls	eap-peap
enable	Enables 802.1X termination on the controller.	—	disabled

Parameter	Description	Range	Default
`enable-token -caching`	If you select EAP-GTC as the inner EAP method, you can enable the controller to cache the username and password of each authenticated user. The controller continues to reauthenticate users with the remote authentication server, however, if the authentication server is not available, the controller will inspect its cached credentials to reauthenticate users.	—	disabled
`inner-eap-type eap-gtc|eap-mschapv2`	When EAP-PEAP is the EAP method, one of the following inner EAP types is used: **EAP-Generic Token Card (GTC)**: Described in RFC 2284, this EAP method permits the transfer of unencrypted usernames and passwords from client to server. The main uses for EAP-GTC are one-time token cards such as SecureID and the use of LDAP or RADIUS as the user authentication server. You can also enable caching of user credentials on the controller as a backup to an external authentication server. **EAP-Microsoft Challenge Authentication Protocol version 2 (MS-CHAPv2)**: Described in RFC 2759, this EAP method is widely supported by Microsoft clients.	eap-gtc/eap-mschapv2	eap-mschapv2
`token-caching-period <hours>`	If you select EAP-GTC as the inner EAP method, you can specify the timeout period, in hours, for the cached information.	(any)	24 hours
`timer`	Sets timer options for 802.1X authentication:		
`idrequest-period <seconds>`	Interval, in seconds, between identity request retries.	1-65535	5 seconds

Parameter	Description	Range	Default
keycache-tmout	Set the per BSSID PMKSA cache interval. Cache is deleted within 2 hours of the interval.	1-2000 (hours)	8 hours
mkey-rotation-period <seconds>	Interval, in seconds, between multicast key rotation.	60-864000	1800 seconds
quiet-period <seconds>	Interval, in seconds, following failed authentication.	1-65535	30 seconds
reauth-period <seconds>	Interval, in seconds, between reauthentication attempts, or specify **server** to use the server-provided reauthentication period.	60-864000	86400 seconds (1 day)
ukey-rotation-period <seconds>	Interval, in seconds, between unicast key rotation.	60-864000	900 seconds
wpa-groupkey -delay <milliseconds>	Interval, in milliseconds, between unicast and multicast key exchanges.	0-2000	0 ms (no delay)
wpa-key-period <milliseconds>	Interval, in milliseconds, between each WPA key exchange.	1000-5000	1000 ms
wpa2-key-delay <milliseconds>	Set the delay between EAP-Success and unicast key exchange.	1-2000	0 ms (no delay)
tls-guest-access	Enables guest access for EAP-TLS users with valid certificates.	—	disabled
tls-guest-role <role>	User role assigned to EAP-TLS guest. **NOTE**: This parameter requires the PEFNG license.	—	guest
unicast-keyrotation	Enables unicast key rotation.	—	disabled
use-session-key	Use RADIUS session key as the unicast WEP key.	—	disabled
use-static-key	Use static key as the unicast/multicast WEP key.	—	disabled

Parameter	Description	Range	Default
validate-pmkid	This parameter instructs the controller to check the pairwise master key (PMK) ID sent by the client. When this option is enabled, the client must send a PMKID in the associate or reassociate frame to indicate that it supports OKC or PMK caching; otherwise, full 802.1X authentication takes place. (This feature is optional, since most clients that support OKC and PMK caching do not send the PMKID in their association request.)	—	disabled
voice-aware	Enables rekey and reauthentication for VoWLAN clients. **NOTE**: The Next Generation Policy Enforced Firewall license must be installed.	—	enabled
wep-key-retries <number>	Number of times WPA/WPA2 key messages are retried.	1-5	3
wep-key-size	Dynamic WEP key size, either 40 or 128 bits.	40 or 128	128 bits
wpa-fast-handover	Enables WPA-fast-handover. This is only applicable for phones that support WPA and fast handover.	—	disabled
wpa-key-retries	Set the number of times WPA/WPA2 Key Messages are retried. The supported range is 1-10 retries, and the default value is 3.	1-10	3
xSec-mtu <mtu>	Sets the size of the MTU for xSec.	1024-1500	1300 bytes

Usage Guidelines

The 802.1X authentication profile allows you to enable and configure machine authentication and 802.1X termination on the controller (also called “AAA FastConnect”).

In the AAA profile, specify the 802.1X authentication profile, the default role for authenticated users, and the server group for the authentication.

Examples

The following example enables authentication of the user's client device before user authentication. If machine authentication fails but user authentication succeeds, the user is assigned the restricted "guest" role:

```
aaa authentication dot1x dot1x
   machine-authentication enable
   machine-authentication machine-default-role computer
   machine-authentication user-default-role guest
```

The following example configures an 802.1X profile that terminates authentication on the controller, where the user authentication is performed with the controller's internal database or to a "backend" non-802.1X server:

```
aaa authentication dot1x dot1x
   termination enable
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **cert-cn-lookup**, **enforce-suite-b-128** and **enforce-suite-b-192** parameters were introduced.
ArubaOS 6.3.1.2	The **delete-keycache** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system. The voice-aware parameter requires the PEFNG license	Config mode on master controllers

aaa authentication mac

```
aaa authentication mac <profile>
   case upper|lower
   clone <profile>
   delimiter {colon|dash|none}
   max-authentication-failures <number>
   no ...
   reauthentication
   timer reauth period {<ra-period>|server}
```

Description

This command configures the MAC authentication profile.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	—	"default"
`case`	The case (upper or lower) used in the MAC string sent in the authentication request. If there is no delimiter configured, the MAC address in lower case is sent in the format xxxxxxxxxxxx, while the MAC address in upper case is sent in the format XXXXXXXXXXXX.	upper lower	lower
`clone <profile>`	Name of an existing MAC profile from which parameter values are copied.	—	—
`delimiter`	Delimiter (colon, dash, or none) used in the MAC string.	colon dash none	none
`max-authentication-failures <number>`	Number of times a client can fail to authenticate before it is blacklisted. A value of 0 disables blacklisting.	0-10	0 (disabled)
`no`	Negates any configured parameter.	—	—
`reauthentication`	Use this parameter to enable or disable reauthentication.		Disabled
`timer reauth period <ra-period>|server`	**<ra-period>** specifies the period between reauthentication attempts in seconds. The **server** parameter specifies the server-provided reauthentication interval.	60-864000 seconds	86400 seconds (1 day)

Usage Guidelines

MAC authentication profile configures authentication of devices based on their physical MAC address. MAC-based authentication is often used to authenticate and allow network access through certain devices while

denying access to all other devices. Users may be required to authenticate themselves using other methods, depending upon the network privileges.

Example

The following example configures a MAC authentication profile to blacklist client devices that fail to authenticate.

```
aaa authentication mac mac-blacklist
   max-authentication-failures 3
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3.1.8	The max-authentication-failures parameter was allowed in the base operating system. In earlier versions of ArubaOS, the max-authentication-failures parameter required the Wireless Intrusion Protection license
ArubaOS 6.3	The reauthentication and timer reauth period parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication mgmt

```
aaa authentication mgmt
   default-role {guest-provisioning|location-api-mgmt|network-operations|no-access|read-
   only|root}
   enable
   no ...
   server-group <group>
```

Description

This command configures authentication for administrative users.

Syntax

Parameter	Description	Range	Default
`default-role`	Select a predefined management role to assign to authenticated administrative users:	—	default
`default`	Default superuser role	–	–
`guest-provisioning`	Guest provisioning role	–	–
`location-api-mgmt`	Location API role	–	–
`network-operations`	Network operations role	–	–
`no-access`	No commands are accessible for this role	–	–
`read-only`	Read-only role	–	–
`enable`	Enables authentication for administrative users.	enabled| disabled	disabled
`mchapv2`	Enable MSCHAPv2	enabled| disabled	disabled
`no`	Negates any configured parameter.	—	—
`server-group <group>`	Name of the group of servers used to authenticate administrative users. See aaa server-group on page 107.	—	default

Usage Guidelines

If you enable authentication with this command, users configured with the **mgmt-user** command must be authenticated using the specified server-group.

You can configure the management authentication profile in the base operating system or with the PEFNG license installed.

Example

The following example configures a management authentication profile that authenticates users against the controller's internal database. Users who are successfully authenticated are assigned the read-only role.

```
aaa authentication mgmt
   default-role read-only
   server-group internal
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.2	The network-operations role was introduced.
ArubaOS 3.3	The location-api-mgmt role was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication-server internal

```
aaa authentication-server internal use-local-switch
```

Description

This command specifies that the internal database on a local controller be used for authenticating clients.

Usage Guidelines

By default, the internal database in the master controller is used for authentication. This command directs authentication to the internal database on the local controller where you run the command.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

aaa authentication-server ldap

```
aaa authentication-server ldap <server>
   admin-dn <name>
   admin-passwd <string>
   allow-cleartext
   authport <port>
   base-dn <name>
   clone <server>
   enable
   filter <filter>
   host <ipaddr>
   key-attribute <string>
   max-connection <number>
   no ...
   preferred-conn-type ldap-s|start-tls|clear-text
   timeout <seconds>
```

Description

This command configures an LDAP server.

Starting with ArubaOS 6.4, a maximum of 128 LDAP servers can be configured on the controller.

Syntax

Parameter	Description	Range	Default
`<server>`	Name that identifies the server.	—	—
`admin-dn <name>`	Distinguished name for the admin user who has read/search privileges across all of the entries in the LDAP database (the user does not need write privileges but should be able to search the database and read attributes of other users in the database).	—	—
`admin-passwd <string>`	Password for the admin user.	—	—
`allow-cleartext`	Allows clear-text (unencrypted) communication with the LDAP server.	enabled|disabled	disabled
`authport <port>`	Port number used for authentication. Port 636 will be attempted for LDAP over SSL, while port 389 will be attempted for SSL over LDAP, Start TLS operation and clear text.	1-65535	389
`base-dn <name>`	Distinguished Name of the node which contains the entire user database to use.	—	—

Parameter	Description	Range	Default
`clone <server>`	Name of an existing LDAP server configuration from which parameter values are copied.	—	—
`enable`	Enables the LDAP server.	—	
`filter <filter>`	Filter that should be applied to search of the user in the LDAP database. The default filter string is (objectclass=*).	—	(objectclass=*)
`host <ip-addr>`	IP address of the LDAP server, in dotted-decimal format.	—	—
`key-attribute <string>`	Attribute that should be used as a key in search for the LDAP server. For Active Directory, the value is sAMAccountName.	—	sAMAccountName
`max-connection`	Maximum number of simultaneous non-admin connections to an LDAP server.	–	–
`no`	Negates any configured parameter.	—	—
`preferred-conn-type`	Preferred connection type. The default order of connection type is: 1. ldap-s 2. start-tls 3. clear-text The controller will first try to contact the LDAP server using the preferred connection type, and will only attempt to use a lower-priority connection type if the first attempt is not successful. **NOTE:** You enable the **allow-cleartext** option before you select **clear-text** as the preferred connection type. If you set clear-text as the preferred connection type but do not allow clear-text, the controller will only use ldap-s or start-tls to contact the LDAP server.	ldap-s start-tls clear-text	ldap-s
`timeout <seconds>`	Timeout period of a LDAP request, in seconds.	1-30	20 seconds

Usage Guidelines

You configure a server before you can add it to one or more server groups. You create a server group for a specific type of authentication (see aaa server-group on page 107).

Example

The following command configures and enables an LDAP server:

```
aaa authentication-server ldap ldap1
```

```
host 10.1.1.243
base-dn cn=Users,dc=1m,dc=corp,dc=com
admin-dn cn=corp,cn=Users,dc=1m,dc=corp,dc=com
admin-passwd abc10
key-attribute sAMAccountName
filter (objectclass=*)
enable
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication-server radius

```
aaa authentication-server radius <rad_server_name>
   acctport <port>
   authport <port>
   called-station-id type
           {ap-group | ap-macaddr | ap-name | ipaddr | macaddr | vlan-id}
           [delimiter {colon | dash | none}] [include-ssid {enable |disable}]
   clone <server>
   cppm username <username> password <password>
   enable
   enable-ipv6
   enable-radsec
   host <ipaddr>|<FQDN>
   key <psk>
   mac-delimiter [colon | dash | none | oui-nic]
   mac-lowercase
   nas-identifier <string>
   nas-ip <ipaddr>
   nas-ip6 <ipv6-adrress>
   no
   radsec-client-cert-name <name>
   radsec-port <radsec-port>
   radsec-trusted-cacert-name <radsec-trusted-ca>
   radsec-trusted-servercert-name <name>
   retransmit <number>
   service-type-framed-user
   source-interface vlan <vlan> ip6addr <ipv6addr>
   timeout <seconds>
   use-ip-for-calling-station
   use-md5
```

Description

This command configures a RADIUS server.

Starting with ArubaOS 6.4, a maximum of 128 RADIUS servers can be configured on the controller.

Syntax

Parameter	Description	Range	Default
`<rad_server_name>`	Name that identifies the server.	—	—
`acctport <port>`	Accounting port on the server.	1-65535	1813
`authport <port>`	Authentication port on the server	1-65535	1812
`called-station-id type {ap-group | ap-macaddr | ap-name | ipaddr | macaddr | vlan-id}`	Configure this parameter to be sent with the RADIUS attribute Called Station ID for authentication and accounting requests.	–	macaddr

Parameter	Description	Range	Default
	The **called-station-id** parameter can be configured to include AP group, AP MAC address, AP name, controller IP, controller MAC address, or user vlan. The default value is controller MAC address.		
`clone <server>`	Name of an existing RADIUS server configuration from which parameter values are copied.	—	—
`cppm username <username> password <password>`	Configure the CPPM username and password. The controller authenticating to CPPM is enhanced to use configurable username and password instead of support password. The support password is vulnerable to attacks as the server certificate presented by CPPM server is not validated.	—	—
`enable`	Enables the RADIUS server.	—	—
`enable-ipv6`	Enables the RADIUS server in IPv6 mode.	—	—
`enable-radsec`	Enables RadSec for RADIUS data transport over TCP and TLS.	—	—
`host`	Identify the RADIUS server either by its IP address or fully qualified domain name.	—	—
`<ipaddr>`	IPv4 or IPv6 address of the RADIUS server.	—	—
`<FQDN>`	Fully qualified domain name (FQDN) of the RADIUS server. The maximum supported length is 63 characters.	—	—
`key <psk>`	Shared secret between the controller and the authentication server. The maximum length is 128 characters.	—	—

Parameter	Description	Range	Default
`mac-delimiter [colon | dash | none | oui-nic]`	Send MAC address with user-defined delimiter.	–	none
`mac-lowercase`	Send MAC addresses as lowercase.	—	—
`nas-identifier <string>`	Network Access Server (NAS) identifier to use in RADIUS packets.	—	—
`nas-ip <ip-addr>`	The NAS IP address to be sent in RADIUS packets from that server. If you define a local NAS IP setting using this command and also define a global NAS IP using the command **ip radius nas-ip <ip-addr>**, the global NAS IP address takes precedence.	—	—
`nas-ip6 <ipv6-address>`	NAS IPv6 address to send in RADIUS packets. You can configure a "global" NAS IPv6 address that the controller uses for communications with all RADIUS servers. If you do not configure a server-specific NAS IPv6, the global NAS IPv6 is used. To set the global NAS IPv6, enter the **ipv6 radius nas-ip6 <ipv6-address>** command.		
`no`	Negates any configured parameter.	—	—
`radsec-client-cert <radsec-client-cert>`	Configures a RadSec client certificate on the RADIUS server to identify and authenticate clients.	—	—
`radsec-port <radsec-port>`	Designates a RadSec port for RADIUS data transport.	1-65535	2083
`radsec-trusted-cacert-name <radsec-trusted-ca>`	Designates a Certificate Authority to sign RadSec certificates.	—	—
`radsec-trusted-servercert-name <radsec-trusted-ca>`	Designates a trusted RadSec server certificate.	—	—
`retransmit <number>`	Maximum number of retries sent to the server by the controller before the server is marked as down.	0-3	3

Parameter	Description	Range	Default
`service-type-framed-user`	Send the service-type as FRAMED-USER instead of LOGIN-USER. This option is disabled by default	–	disabled
`source-interface vlan <vlan> ip6addr <ipv6addr>`	This option associates a VLAN interface with the RADIUS server to allow the server-specific source interface to override the global configuration. • If you associate a Source Interface (by entering a VLAN number) with a configured server, then the source IP address of the packet will be that interface's IP address. • If you do not associate the Source Interface with a configured server (leave the field blank), then the IP address of the global Source Interface will be used. • If you want to configure an IPv6 address for the Source Interface, specify the IPv6 address for the **ip6addr** parameter.	—	—
`timeout <seconds>`	Maximum time, in seconds, that the controller waits before timing out the request and resending it.	1-30	5 seconds
`use-ip-for-calling-station`	Use an IP address instead of a MAC address for calling station IDs. This option is disabled by default.	—	disabled
`use-md5`	Use MD5 hash of cleartext password.	—	disabled

Usage Guidelines

You configure a server before you can add it to one or more server groups. You create a server group for a specific type of authentication (see aaa server-group on page 107).

Example

The following command configures and enables a RADIUS server:

```
aaa authentication-server radius radius1
   host 10.1.1.244
   key qwERtyuIOp
   enable
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.0	RADIUS server can be identified by its qualified domain name (FQDN).
ArubaOS 6.1	The **source-interface** parameter was added.
ArubaOS 6.3	• The **mac-delimiter** parameter was introduced. • The **enable-ipv6** and **nas-ip6** parameters were introduced. An IPv6 host address can be specified for the host parameter. • The **ipv6** addr parameter was added.
ArubaOS 6.4	The **called-station-id** parameter was introduced.
ArubaOS 6.4.2.5	The **cppm** parameter was introduced.
ArubaOS 6.4.3.0	• The **enable-radsec parameter** was introduced. • The **radsec-client-cert**, **radsec-port**, and **radsec-trusted-ca** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication-server tacacs

```
aaa authentication-server tacacs <server>
   clone <server>
   enable
   host <host>
   key <psk>
   no ...
   retransmit <number>
   session-authorization
   tcp-port <port>
   timeout <seconds>
```

Description

This command configures a TACACS+ server.

Starting with ArubaOS 6.4, a maximum of 128 TACACS servers can be configured on the controller.

Syntax

Parameter	Description	Range	Default
`<server>`	Name that identifies the server.	—	—
`clone <server>`	Name of an existing TACACS server configuration from which parameter values are copied.	—	—
`enable`	Enables the TACACS server.	—	
`host <host>`	IPv4 or IPv6 address of the TACACS server.	—	—
`key`	Shared secret to authenticate communication between the TACACS+ client and server.	—	—
`no`	Negates any configured parameter.	—	—
`retransmit <number>`	Maximum number of times a request is retried.	0-3	3
`session-authorization`	Enables TACACS+ authorization.Session-authorization turns on the optional authorization session for admin users.	—	disabled
`tcp-port <port>`	TCP port used by the server.	1-65535	49
`timeout <timeout>`	Timeout period of a TACACS request, in seconds.	1-30	20 seconds

Usage Guidelines

You configure a server before you can add it to one or more server groups. You create a server group for a specific type of authentication (see aaa server-group on page 107).

Example

The following command configures, enables a TACACS+ server and enables session authorization:

```
aaa authentication-server tacacs tacacs1
   clone default
   host 10.1.1.245
   key qwERtyuIOp
   enable
   session-authorization
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.0	session-authorization parameter was introduced.
ArubaOS 6.3	IPv6 support was added for TACACS server. You can now specify an IPv6 host address for the **host** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication-server windows

```
aaa authentication-server windows <windows_server_name>
   clone <source>
   domain <domain>
   enable
   host <ipaddr>
   no
```

Description

This command configures a windows server for stateful-NTLM authentication.

Syntax

Parameter	Description
`<windows_server_name>`	Name of the windows server. You will use this name when you add the windows server to a server group.
`clone <source>`	Name of a Windows Server from which you want to make a copy.
`domain <domain>`	The Windows domain for the authentication server.
`enable`	Enables the Windows server.
`host <ipaddr>`	IP address of the Windows server.
`no`	Delete command.

Usage Guidelines

You must define a Windows server before you can add it to one or more server groups. You create a server group for a specific type of authentication (see aaa server-group on page 107). Windows servers are used for stateful-NTLM authentication.

Example

The following command configures and enables a windows server:

```
aaa authentication-server windows IAS_1
   host 10.1.1.245
   enable
```

Command History

This command was available in ArubaOS 3.4.1

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication stateful-dot1x

```
aaa authentication stateful-dot1x
   default-role <role>
   enable
   no ...
   server-group <group>
   timeout <seconds>
```

Description

This command configures 802.1X authentication for clients on non-Dell APs.

Syntax

Parameter	Description	Range	Default
`default-role <role>`	Role assigned to the 802.1X user upon login. **NOTE**: The PEFNG license must be installed.	—	guest
`enable`	Enables 802.1X authentication for clients on non-Dell APs. Use **no enable** to disable stateful 8021.X authentication.	—	enabled
`no`	Negates any configured parameter.	—	—
`server-group <group>`	Name of the group of RADIUS servers used to authenticate the 802.1X users. See aaa server-group on page 107.	—	—
`timeout <seconds>`	Timeout period, in seconds.	1-20	10 seconds

Usage Guidelines

This command configures 802.1X authentication for clients on non-Dell APs. The controller maintains user session state information for these clients.

Example

The following command assigns the employee user role to clients who successfully authenticate with the server group corp-rad:

```
aaa authentication stateful-dot1x
   default-role employee
   server-group corp-rad
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication stateful-dot1x clear

```
aaa authentication stateful-dot1x clear
```

Description

This command clears automatically-created control path entries for 802.1X users on non-Dell APs.

Syntax

No parameters.

Usage Guidelines

Run this command after changing the configuration of a RADIUS server in the server group configured with the **aaa authentication stateful-dot1x** command. This causes entries for the users to be created in the control path with the updated configuration information.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa authentication stateful-kerberos

```
aaa authentication stateful-kerberos <profile-name>
   clone
   default-role <role>
   enable
   server-group <server-group>
   timeout <timeout>
```

Description

This command configures stateful Kerberos authentication.

Syntax

Parameter	Description	Range	Default
`clone`	Create a copy of an existing stateful Kerberos profile	—	—
`default-role`	Select an existing role to assign to authenticated users.	—	guest
`server-group <server-group>`	Name of a server group.	—	default
`timeout <timeout>`	Amount of time, in seconds, before the request times out.	1-20 seconds	10 seconds

Example

```
(host)(config) # aaa authentication stateful-kerberos default
   default-role guest
   timeout 10
   server-group internal
```

Command History

Command introduced in ArubaOS 3.4.3

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication stateful-ntlm

```
aaa authentication stateful-ntlm <profile-name>
   clone
   default-role <role>
   enable
   server-group <server-group>
   timeout <timeout>
```

Description

This command configures stateful NT LAN Manager (NTLM) authentication.

Syntax

Parameter	Description	Range	Default
`clone`	Create a copy of an existing stateful NTLM profile	—	—
`default-role`	Select an existing role to assign to authenticated users.	—	guest
`no`	Negates any configured parameter.	—	—
`server-group <server-group>`	Name of a server group.	—	default
`timeout <timeout>`	Amount of time, in seconds, before the request times out.	1-20 seconds	10 seconds

Usage Guidelines

NT LAN Manager (NTLM) is a suite of Microsoft authentication and session security protocols. You can use a stateful NTLM authentication profile to configure a controller to monitor the NTLM authentication messages between clients and an authentication server. The controller can then use the information in the Server Message Block (SMB) headers to determine the client's username and IP address, the server IP address and the client's current authentication status. If the client successfully authenticates via an NTLM authentication server, the controller can recognize that the client has been authenticated and assign that client a specified user role. When the user logs off or shuts down the client machine, the user will remain in the authenticated role until the user's authentication is aged out.

The Stateful NTLM Authentication profile requires that you specify a server group which includes the servers performing NTLM authentication, and a default role to be assigned to authenticated users. For details on defining a windows server used for NTLM authentication, see aaa authentication-server windows.

Example

The following example configures a stateful NTLM authentication profile that authenticates clients via the server group "Windows1." Users who are successfully authenticated are assigned the "guest2" role.

```
aaa authentication stateful-ntlm
   default-role guest2
   server-group Windows1
```

Command History

Command introduced in ArubaOS 3.4.1

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication via auth-profile

```
aaa authentication via auth-profile <profile>
   auth-protocol {mschapv2|pap}
   cert-cn-lookup
    clone <source>
   default-role <default-role>
   desc <description>
   max-authentication-failures <max-authentication-failures>
   no
   pan-integration
   radius-accounting <server_group_name>
   rfc-3576-server <rfc-server>
   server-group <server-group>
```

Description

This command configures the VIA authentication profile.

Syntax

Parameter	Description	Default
`auth-protocol {mschapv2|pap}`	Authentication protocol support for VIA authentication; MSCHAPv2 or PAP	PAP
`cert-cn-lookup`	Check certificate common name against AAA server.	Enabled
clone <source>	Name of an existing profile from which configuration values are copied.	-
`default-role <default-role>`	Name of the default VIA authentication profile.	-
`desc <description>`	Description of this profile for reference.	-

Parameter	Description	Default
max-authentication-failures <max-authentication-failures>	Number of times VIA will prompt user to login due to incorrect credentials. After the maximum authenticati on attempts failures VIA will exit.	3
pan-integration	Requires IP mapping at Palo Alto Network.	-
radius-accounting <server_group_name>	Server group for RADIUS accounting.	-
rfc-3576-server <rfc-server>	Configures the RFC 3576 server.	-
server-group <server-group>	Server group against which the user is authenticate d.	-

Usage Guidelines

Use this command to create VIA authentication profiles and associate user roles to the authentication profile.

Example

```
(host) (config) #aaa authentication via auth-profile default
(host) (VIA Authentication Profile "default") #auth-protocol mschapv2
(host) (VIA Authentication Profile "default") #default-role example-via-role
(host) (VIA Authentication Profile "default") #desc "Default VIA Authentication Profile"
(host) (VIA Authentication Profile "default") #server-group "via-server-group"
```

Command History

Version	Description
ArubaOS 5.0	Command introduced.
ArubaOS 6.3	The **auth-protocol** parameter was added.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

aaa authentication via connection-profile

```
aaa authentication via connection-profile <profile>
   admin-logoff-script
   admin-logon-script
   allow-user-disconnect
   allow-whitelist-traffic
   auth_domain_suffix
   auth-profile <auth-profile>
   auth_doman_suffix
   auto-launch-supplicant
   auto-login
   auto-upgrade
   banner-message-reappear-timeout <mins>
   client-logging
   client-netmask <client-netmask>
   client-wlan-profile <client-wlan-profile> position <position>
   clone
   controllers-load-balance
   csec-gateway-url <URL>
   csec-http-ports <comma separated port numbers>
   dns-suffix-list <dns-suffix-list>
   domain-pre-connect
   enable-csec
   enable-fips
   enable-supplicant
   ext-download-url <ext-download-url>
   ike-policy <ike-policy>
   ikev2-policy
   ikev2-proto
   ikev2auth
   ipsec-cryptomap map <map> number <number>
   ipsecv2-cryptomap
   lockdown-all-settings
   max-reconnect-attempts <max-reconnect-attempts>
   minimized
   max-timeout <value>
   minimized
   no
   ocsp-reponder {enable|fallback <accept>}
   save-passwords
   server
   split-tunneling
   suiteb-crypto
   support-email
   tunnel
   user-idle-timeout
   validate-server-cert
   whitelist
   windows-credentials
```

Description

This command configures the VIA connection profile.

Syntax

Parameter	Description	Default
admin-logoff-script	Enables VIA logoff script.	Disabled
admin-logon-script	Enables VIA logon script.	Disabled
allow-user-disconnect	Enable or disable users to disconnect their VIA sessions.	Enabled
allow-whitelist-traffic	If enabled, this feature will block network access until the VIA VPN connection is established.	Disabled
auth_domain_suffix	Enables a domain suffix on VIA Authentication, so client credentials are sent as *domainname\username* instead of just *username*.	–
auto-launch-supplicant	Allows you to connect automatically to a configured WLAN network.	Disabled
auth-profile <auth-profile>	This is the list of VIA authentication profiles that will be displayed to users in the VIA client.	–
admin-logoff-script	Specify the name of the script that must be executed when the VIA connection is disconnected. The script must reside on the user / client system.	–
admin-logon-script	Specify the name of the script that must be executed when the VIA connection is established. The script must reside on the user / client system.	–
auto-login	Enable or disable VIA client to auto login and establish a secure connection to the controller.	Enabled

Parameter	Description	Default
auto-upgrade	Enable or disable VIA client to automatically upgrade when an updated version of the client is available on the controller.	Enabled
banner-message-reappear-timeout	Timeout value, in minutes, after which the user session will end and the VIA Login banner message reappears.	1440 minutes
client-logging	Enable or disable VIA client to auto login and establish a secure connection to the controller.	Enabled
client-netmask <client-netmask>	The network mask that has to be set on the client after the VPN connection is established.	255.255.255.255
client-wlan-profile <client-wlan-profile>	A list of VIA client WLAN profiles that needs to be pushed to the client machines that use Windows Zero Config (WZC) to configure or manage their wireless networks.	–
position <position>		–
clone	Create a copy of connection profile from an another VIA connection profile.	–
controllers-load-balance	Enable this option to allow the VIA client to failover to the next available selected randomly from the list as configured in the VIA Servers option. If disabled, VIA will failover to the next in the sequence of ordered list of VIA Servers.	Disabled

Parameter	Description	Default
server	• *Address*: This is the public IP address or the DNS hostname of the VIA controller. Users will connect to remote server using this IP address or the hostname. • Internal IP Address: This is the IP address of any of the VLAN interface IP addresses belongs to this controller. • Description: This is a human-readable description of the controller.	–
addr <addr>		–
internal-ip <internal-ip>		–
desc <description>		–
csec-gateway-url	Specify the content security service providers URL here. You must provide a fully qualified domain name.	–
csec-http-ports	Specify the ports (separated by comma) that will be monitored by the content security service provider. Do not add space before or after the comma.	–
domain-preconnect	Enable this option to allow users with lost or expired passwords to establish a VIA connection to corporate network. This option authenticates the user's device and establishes a VIA connection that allows users to reset credentials and continue with corporate access.	Enabled
dns-suffix-list <dns-suffix-list>	The DNS suffix list (comma separated) that has be set on the client once the VPN connection is established.	None
enable-csec	Use this option to enable the content security service.	–

Parameter	Description	Default
enable-fips	Enable the VIA (Federal Information Processing Standard) FIPS module so VIA checks for FIPS compliance during startup.	Disabled
enable-supplicant	If enabled, VIA starts in bSec mode using L2 suite-b cryptography. This option is disabled by default.	Disabled
ext-download-url <ext-download-url>	End users will use this URL to download VIA on their computers.	–
ike-policy <ike-policy>	List of IKE policies that the VIA Client has to use to connect to the controller.	–
ikev2-policy	List of IKE V2 policies that the VIA Client has to use to connect to the controller	–
ikev2-proto	Enable this to use IKEv2 protocol to establish VIA sessions.	Disabled
ikev2auth	Use this option to set the IKEv2 authentication method. By default user certificate is used for authentication. The other supported methods are EAP-MSCHAPv2, EAP-TLS. The EAP authentication is done on an external RADIUS server.	User Certificates
ipsec-cryptomap	List of IPsec crypto maps that the VIA client uses to connect to the controller. These IPsec Crypto Maps are configured in the CLI using the `crypto-local ipsec-map <ipsec-map-name>` command.	–
map <map>		–
number <number>		–
ipsecv2-cryptomap	List of IPSec V2 crypto maps that the VIA client uses to connect to the controller.	–
lockdown-all-settings	Allows you to lockdown all	Disabled.

Parameter	Description	Default
	user configured settings.	
`max-reconnect-attempts <max-reconnect-attempts>`	The maximum number of re-connection attempts by the VIA client due to authentication failures.	3
`max-timeout value <value>`	The maximum time (minutes) allowed before the VIA session is disconnected.	1440 min
`minimized`	Use this option to keep the VIA client on a Microsoft WIndows operating system minimized to system tray.	–
`ocsp-responder {enable|fallback <accept>}`	enable: Enable OCSP certificate verification fallback: Assign what action to take when OCSP certificate verification fails; Cert accept for EAP/IKE	
`save-passwords`	Enable or disable users to save passwords entered in VIA.	Enabled
`server`	Configure VIA servers.	
`split-tunneling`	Enable or disable split tunneling. • If enabled, all traffic to the VIA tunneled networks will go through the controller and the rest is just bridged directly on the client. • If disabled, all traffic will flow through the controller.	off
`suiteb-crypto`	Use this option to enable Suite-B cryptography. See RFC 4869 for more information about Suite-B cryptography.	Disabled

Parameter	Description	Default
support-email	The support e-mail address to which VIA users will send client logs.	None
tunnel address <address>	A list of network destination (IP address and netmask) that the VIA client will tunnel through the controller. All other network destinations will be reachable directly by the VIA client. Enter tunneled IP address and its netmask.	–
address <address>		–
netmask <netmask>		–
user-idle-timeout	The user idle timeout for this profile. Specify the idle timeout value for the client in seconds. Valid range is 30-15300 in multiples of 30 seconds. Enabling this option overrides the global settings configured in the AAA timers. If this is disabled, the global settings are used.	disabled
validate-server-cert	Enable or disable VIA from validating the server certificate presented by the controller.	Enabled
whitelist addr	Specify a hostname or IP address and network mask to define a whitelist of users allowed to access the net-workif the allow-whitelist-traffic option is enabled	–
addr <addr>	Host name of IP address of a client	–
netmask <netmask>	Netmask, in dotted decimal format	–
description <description>	(Optional) description of the client	–
windows-credentials	Enable or disable the use of the Windows credentials to login to VIA. If enabled, the SSO (Single Sign-on) feature can be utilized by remote users to connect to internal resources.	Enabled

Usage Guidelines

Issue this command to create a VIA connection profile. A VIA connection profile contains settings required by VIA to establish a secure connection to the controller. You can configure multiple VIA connection profiles. A VIA connection profile is always associated to a user role and all users belonging to that role will use the configured settings. If you do not assign a VIA connection profile to a user role, the default connection profile is used.

Example

The following example shows a simple VIA connection profile:

```
(host) (config) #aaa authentication via connection-profile "via"
(host) (VIA Connection Profile "via") #server addr 202.100.10.100 internal-ip 10.11.12.13 desc
"VIA Primary" position 0
(host) (VIA Connection Profile "via") #auth-profile "default" position 0
(host) (VIA Connection Profile "via") #tunnel address 10.0.0.0 netmask 255.255.255.0
(host) (VIA Connection Profile "via") #split-tunneling
(host) (VIA Connection Profile "via") #windows-credentials
(host) (VIA Connection Profile "via") #client-netmask 255.0.0.0
(host) (VIA Connection Profile "via") #dns-suffix-list mycorp.com
(host) (VIA Connection Profile "via") #dns-suffix-list example.com
(host) (VIA Connection Profile "via") #support-email via-support@example.com
```

Command History

Release	Modification
ArubaOS 5.0	Command introduced
ArubaOS 6.1	The following commands were introduced: • admin-logon-script • admin-logoff-script • ikev2-policy • ikev2-proto • ikev2-auth • ipsecv2-crypto • minimized • suiteb-crypto
ArubaOS 6.1.3.2	The **auth_domain_suffix** parameter was introduced.

Release	Modification
ArubaOS 6.2	The following commands were introduced: • allow-whitelist-traffic • banner-message-reappear-timeout • controllers-load-balancing • enable-fips • enable-supplicant • whitelist
ArubaOS 6.3	The **user-idle-timeout** parameter was introduced.
ArubaOS 6.5	The **ocsp-responder enable** sub-command was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

aaa authentication via global-config

```
aaa authentication via global-config
   no
   ssl-fallback-enable
```

Description

The global config option allows to you to enable SSL fallback mode. If the SSL fallback mode is enabled the VIA client will use SSL to create a secure connection.

Syntax

Parameter	Description	Default
`no`	Disable SSL fallback option	–
`ssl-fallback-enable`	Use this option to enable an SSL fallback connection.	Disabled

Example

```
(host) (config) #aaa authentication via global-config
```

Command History

Command introduced in 5.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

aaa authentication via web-auth

```
aaa authentication via web-auth default
   auth-profile <auth-profile> position <position>
   clone <source>
   no
```

Description

A VIA web authentication profile contains an ordered list of VIA authentication profiles. The web authentication profile is used by end users to login to the VIA download page (*https://<server-IP-address>/via*) for downloading the VIA client. Only one VIA web authentication profile is available. If more than one VIA authentication profile is configured, users can view this list and select one during the client login.

Syntax

Parameter	Description	Default
`auth-profile <auth-profile>`	The name of the VIA authentication profile	—
`position <position>`	The position of the profile to specify the order of selection.	—
`clone <source>`	Duplicate an existing authentication profile.	—

Example

```
(host) (config) #aaa authentication via web-auth default
(host) (VIA Web Authentication "default") #auth-profile default position 0
```

Command History

Command introduced in 5.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

aaa authentication vpn

```
aaa authentication vpn <profile-name>
   cert-cn-lookup
   clone <source>
   default-role <guest>
   export-route
   max-authentication-failures <number>
   no ...
   pan-integration
   radius-accounting
   server-group <group>
   user-idle-timeout
```

Description

This command configures VPN authentication settings.

Syntax

Parameter	Description	Default
`<profile-name>`	There are three VPN profiles: **default**, **default-rap** or **default-cap**. This allows users to use different AAA servers for VPN, RAP and CAP clients. **NOTE:** The **default** and **default-rap** profiles are configurable. The **default-cap** profile is not configurable and is predefined with the default settings.	—
`cert-cn-lookup`	If you use client certificates for user authentication, enable this option to verify that the certificate's common name exists in the server. This parameter is enabled by default in the default-cap and default-rap VPN profiles, and disabled by default on all other VPN profiles.	—
`clone <source>`	Copies data from another VPN authentication profile. Source is the profile name from which the data is copied.	—
`default-role <role>`	Role assigned to the VPN user upon login. **NOTE:** This parameter requires the Policy Enforcement Firewall for VPN Users (PEFV) license.	guest
`export-route`	Exports a VPN IP address as a route to the external world. See the show ip ospf command to view the link-state advertisement (LSA) types that are generated.	enabled

Parameter	Description	Default
`max-authentication-failures <number>`	Maximum number of authentication failures before the user is blacklisted. The supported range is 1-10 failures. A value of 0 disables blacklisting. **NOTE**: This parameter requires the RFProtect license.	0 (disabled)
`no`	Negates any configured parameter.	—
`pan-integration`	Require IP mapping at Palo Alto Networks firewalls.	disabled
`radius-accounting <`	Configure server group for RADIUS accounting	–
`server-group <group>`	Name of the group of servers used to authenticate VPN users. See aaa server-group on page 107.	internal
`user-idle-timeout`	The user idle timeout for this profile. Specify the idle timeout value for the client in seconds. Valid range is 30-15300 in multiples of 30 seconds. Enabling this option overrides the global settings configured in the AAA timers. If this is disabled, the global settings are used.	—

Usage Guidelines

This command configures VPN authentication settings for VPN, RAP and CAP clients.Use the **vpdn group** command to configure Layer-2 Tunneling Protocol and Internet Protocol Security (L2TP/IPsec) or a Point-to-Point Tunneling Protocol (PPTP) VPN connection. (See vpdn group l2tp on page 2227.)

Example

The following command configures VPN authentication settings for the default-rap profile:

```
aaa authentication vpn default-rap
   default-role guest
   clone default
   max-authentication-failures 0
   server-group vpn-server-group
```

The following message appears when a user tries to configure the non-configurable default-cap profile:

```
(host) (config) #aaa authentication vpn default-cap
Predefined VPN Authentication Profile "default-cap" is not editable
```

The following example describes the steps to use the CLI to configure a VPN for Cisco Smart Card Clients using certificate authentication and IKEv1, where the client is authenticated against user entries added to the internal database:

```
(host)(config) #aaa authentication vpn default
   server-group internal

(host)(config) #no crypto-local isakmp xauth
```

```
(host)(config) #vpdn group l2tp
  enable
  client dns 101.1.1.245

(host)(config) #ip local pool sc-clients 10.1.1.1 10.1.1.250

(host)(config) #crypto-local isakmp server-certificate MyServerCert
(host)(config) #crypto-local isakmp ca-certificate TrustedCA

(host)(config) #crypto isakmp policy 1
  authentication rsa-sig
```

The following command configures client entries in the internal database in enable mode:

```
(host)(config) #local-userdb add username <name> password <password>
```

The following example configures a VPN for XAuth IKEv1 clients in config mode using a username and password:

```
(host)(config) #aaa authentication vpn default
  server-group internal

crypto-local isakmp xauth

(host)(config) #vpdn group l2tp
  enable
  client dns 101.1.1.245

(host)(config) #ip local pool pw-clients 10.1.1.1 10.1.1.250

(host)(config) #crypto isakmp key 0987654 address 0.0.0.0 netmask 0.0.00

(host)(config) #crypto isakmp policy 1
  authentication pre-share
```

Enter the following command in enable mode to configure client entries in the internal database:

```
(host)(config) #local-userdb add username <name> password <password>
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 5.0	The **default-cap** and **default-rap** profiles were introduced.
ArubaOS 6.1	The **cert-cn-lookup** parameter was introduced.
ArubaOS 6.3	The **user-idle-timeout** parameter was introduced.
ArubaOS 6.3.1	The **export-route** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters. The **default-role** parameter requires the Policy Enforcement Firewall for VPN Users (PEFV) license.	Config mode on master controllers

aaa authentication wired

```
aaa authentication wired
   no ...
   profile <aaa-profile>
```

Description

This command configures authentication for a client device that is directly connected to a port on the controller.

Syntax

Parameter	Description
`no`	Negates any configured parameter.
`profile <aaa-profile>`	Name of the AAA profile that applies to wired authentication. This profile must be configured for a Layer-2 authentication, either 802.1X or MAC. See aaa profile on page 96.

Usage Guidelines

This command references an AAA profile that is configured for MAC or 802.1X authentication. The port on the controller to which the device is connected must be configured as untrusted.

Example

The following commands configure an AAA profile for dot1x authentication and a wired profile that references the AAA profile:

```
aaa profile sec-wired
   dot1x-default-role employee
   dot1x-server-group sec-svrs
aaa authentication wired
   profile sec-wired
```

Related Commands

Command	Description
`vlan`	Assign an AAA profile to an individual VLAN to enable role-based access for wired clients connected to an untrusted VLAN or port on the controller.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa authentication wispr

```
aaa authentication wispr
   agent string
   clone
   default-role <role>
   logon-wait {cpu-threshold <cpu-threshold>}|{maximum-delay <maximum-delay>}|{minimum-delay
   <minimum-delay>}
   no ...
   max-authentication-failures
   server-group <server-group>
   wispr-location-id-ac <wispr-location-id-ac>
   wispr-location-id-cc <wispr-location-id-cc>
   wispr-location-id-isocc <wispr-location-id-isocc>
   wispr-location-id-network <wispr-location-id-network>
   wispr-location-name-location <wispr-location-name-location>
   wispr-location-name-operator-name <wispr-location-name-operator>
```

Description

This command configures WISPr authentication with an ISP's WISPr RADIUS server.

Syntax

Parameter	Description
`agent string`	User Agent String to be registered for use in WISPR Profile. Max User Agent String len: 32 characters.Max number of User Agent string: 32.
`clone`	Copy data from another WISPr Authentication Profile.
`default-role`	Default role assigned to users that complete WISPr authentication.
`logon-wait`	Configure the CPU utilization threshold that will trigger logon wait maximum and minimum times
`CPU-threshold <cpu-threshold>`	Percentage of CPU utilization at which the maximum and minimum login wait times are enforced. Range: 1-100%.Default: 60%.
`max-authentication-failures`	Maximum auth failures before user is blacklisted. Range: 0-10. Default: 0.

Parameter	Description
maximum-delay <maximum-delay>	If the controller's CPU utilization has surpassed the **CPU-threshold** value, the **maximum-delay** parameter defines the minimum number of seconds a user will have to wait to retry a login attempt. Range: 1-10 seconds. Default: 10 seconds.
minimum-delay <minimum-delay>	If the controller's CPU utilization has surpassed the **CPU-threshold** value, the **minimum-delay** parameter defines the minimum number of seconds a user will have to wait to retry a login attempt. Range: 1-10 seconds. Default: 5 seconds.
wispr-location-id-ac <wispr-location-id-ac>	The E.164 Area Code in the WISPr Location ID.
wispr-location-id-cc <wispr-location-id-cc>	The 1-3 digit E.164 Country Code in the WISPr Location ID.
wispr-location-id-isocc <wispr-location-id-isocc>	The ISO Country Code in the WISPr Location ID.
wispr-location-id-network <wispr-location-id-network>	The SSID/network name in the WISPr Location ID.
wispr-location-name-location <wispr-location-name-location>	A name identifying the hotspot location. If no name is defined, the default ap-name is used.
wispr-location-name-operator-name <wispr-location-name-operator>	A name identifying the hotspot operator.

Usage Guidelines

WISPr authentication allows a "smart client" to remain authenticated on the network when they roam between Wireless Internet Service Providers, even if the wireless hotspot uses an ISP for which the client may not have an account.

If you are hotstpot operator using WISPr authentication, and a client that has an account with your ISP attempts to access the Internet at your hotspot, then your ISP's WISPr AAA server authenticates that client directly, and allows the client access on the network. If, however, the client only has an account with a *partner* ISP, then your ISP's WISPr AAA server will forward that client's credentials to the partner ISP's WISPr AAA server for authentication. Once the client has been authenticated on the partner ISP, it will be authenticated on your hotspot's own ISP, as per their service agreements. Once your ISP sends an authentication message to the controller, the controller assigns the default WISPr user role to that client.

ArubaOS supports the following smart clients, which enable client authentication and roaming between hotspots by embedding iPass Generic Interface Specification (GIS) *redirect*, *proxy*, *authentication* and *logoff* messages within HTLM messages to the controller.

- iPass
- Bongo
- Trustive
- weRoam
- AT&T

A WISPr authentication profile includes parameters to define RADIUS attributes, the default role for authenticated WISPr users, maximum numbers of authenticated failures and logon wait times. The WISPr-Location-ID sent from the controller to the WISPr RADIUS server will be the concatenation of the ISO Country Code, E.164 Country Code, E.164 Area Code and SSID/Zone parameters configured in this profile.

The parameters to define WISPr RADIUS attributes are specific to the RADIUS server your ISP uses for WISPr authentication; contact your ISP to determine these values. You can find a list of ISO and ITU country and area codes at the ISO and ITU websites www.iso.org and http://www.itu.int.

A Boingo smart client uses a NAS identifier in the format <CarrierID>_<VenueID> for location identification. To support Boingo clients, you must also configure the **NAS identifier** parameter in the Radius server profile for the WISPr server

Example

The following commands configure an WISPr authentication profile:

```
aaa authentication wispr
   default-role authuser
   max-authentication-failures 5
   server-group wispr1
   wispr-location-id-ac 408
   wispr-location-id-cc 1
   wispr-location-id-isocc us
   wispr-location-id-network <wispr-location-id-network>
   wispr-location-name-location <wispr-location-name-location>
   wispr-location-name-operator-name <wispr-location-name-location>
```

Command History

This command was available in ArubaOS 3.4.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

aaa bandwidth-contract

```
aaa bandwidth-contract <name> {kbits <kbits>|mbits <mbits>}
```

Description

This command configures a bandwidth contract.

Syntax

Parameter	Description	Range
`<name>`	Name that identifies this bandwidth contract.	—
`kbits <bits>`	Limit the traffic rate for this bandwidth contract to a specified number of kilobits per second.	256-2000000
`mbits <bits>`	Limit the traffic rate for this bandwidth contract to a specified number of megabits per second.	1-2000

Usage Guidelines

You can apply a configured bandwidth contract to a user role or to a VLAN. When you apply a bandwidth contract to a user role (see user-role on page 2201), you specify whether the contract applies to upstream traffic (from the client to the controller) or downstream traffic (from the controller to the client). You can also specify whether the contract applies to all users in a specified user role or per-user in a user role.

When you apply a bandwidth contract to a VLAN (see interface vlan on page 475), the contract limits multicast traffic and does not affect other data. This is useful because an AP can only send multicast traffic at the rate of the slowest associated client. Thus excessive multicast traffic will fill the buffers of the AP, causing frame loss and poor voice quality. Generally, every system should have a bandwidth contract of 1 Mbps or even 700 Kbps and it should be applied to all VLANs with which users are associated, especially those VLANs that pass through the upstream router. The exception are VLANs that are used for high speed multicasts, where the SSID is configured without low data rates.

Example

The following commands configure a set of bandwidth contracts, then apply those contracts to all upstream and downstream traffic *except* for the echo, icmp, iperf, icmp6, and synflood applications, and the web, streaming, peer-to-peer, unified-communication, and tunneling application categories.

```
(host) (config) #aaa bandwidth-contract up-256k-1 kbits 256
(host) (config) #aaa bandwidth-contract up-512k-1 kbits 512
(host) (config) #aaa bandwidth-contract up-1m-1 mbits 1
(host) (config) #aaa bandwidth-contract up-5m-1 mbits 5
(host) (config) #aaa bandwidth-contract up-10m-1 mbits 10
(host) (config) #aaa bandwidth-contract up-20m-1 mbits 20
(host) (config) #aaa bandwidth-contract up-50m-1 mbits 50
(host) (config) #aaa bandwidth-contract up-100m-1 mbits 100
(host) (config) #aaa bandwidth-contract up-500m-1 mbits 500
(host) (config) #aaa bandwidth-contract up-1000m-1 mbits 1000
(host) (config) #aaa bandwidth-contract dw-256k-1 kbits 256
(host) (config) #aaa bandwidth-contract dw-512k-1 kbits 512
(host) (config) #aaa bandwidth-contract dw-1m-1 mbits 1
(host) (config) #aaa bandwidth-contract dw-5m-1 mbits 5
```

```
(host) (config) #aaa bandwidth-contract dw-10m-1 mbits 10
(host) (config) #aaa bandwidth-contract dw-20m-1 mbits 20
(host) (config) #aaa bandwidth-contract dw-50m-1 mbits 50
(host) (config) #aaa bandwidth-contract dw-100m-1 mbits 100
(host) (config) #aaa bandwidth-contract dw-500m-1 mbits 500
(host) (config) #aaa bandwidth-contract dw-1000m-1 mbits 1000
(host) (config) #interface gigabitethernet 0/0/1
(host) (config-if) #bandwidth-contract up-100m-1 upstream
(host) (config-if) #bandwidth-contract dw-500m-1 downstream
(host) (config-if) #bandwidth-contract app echo up-256k-1 upstream
(host) (config-if) #bandwidth-contract app echo dw-256k-1 downstream
(host) (config-if) #bandwidth-contract app icmp up-256k-1 upstream
(host) (config-if) #bandwidth-contract app icmp dw-256k-1 downstream
(host) (config-if) #bandwidth-contract app echo up-512k-1 upstream
(host) (config-if) #bandwidth-contract app echo dw-512k-1 downstream
(host) (config-if) #bandwidth-contract app iperf up-1m-1 upstream
(host) (config-if) #bandwidth-contract app iperf dw-5m-1 downstream
(host) (config-if) #bandwidth-contract appcategory web up-10m-1 upstream
(host) (config-if) #bandwidth-contract appcategory web dw-20m-1 downstream
(host) (config-if) #bandwidth-contract appcategory streaming up-1m-1 upstream
(host) (config-if) #bandwidth-contract appcategory streaming dw-5m-1 downstream
(host) (config-if) #bandwidth-contract appcategory peer-to-peer up-1m-1 upstream
(host) (config-if) #bandwidth-contract appcategory peer-to-peer dw-1m-1 downstream
(host) (config-if) #bandwidth-contract exclude app icmp6
(host) (config-if) #bandwidth-contract exclude app synflood
(host) (config-if) #bandwidth-contract exclude appcategory unified-communication
(host) (config-if) #bandwidth-contract exclude appcategory tunneling
```

Related Commands

Command	Description	Mode
interface fastethernet | gigabitethernet	Apply a bandwidth contract to downstream or upstream traffic on a specified interface	Config Mode
show aaa bandwidth-contracts	Use this command to view contracts to limit traffic for a user or VLAN.	Enable mode

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa derivation-rules

```
aaa derivation-rules user <name>
   no ...
   set {aaa-profile|role|vlan} condition <rule-type> <attribute> <value> set-value
   {<role>|<vlan>} [description <rule description>][position <number>]
```

Description

This command configures rules which assigns a AAA profile, user role or VLAN to a client based upon the client's association with an AP.

A user role cannot be assigned by an AAA derivation rule unless the controller has an installed PEFNG license.

Syntax

Parameter	Description
`<name>`	Name that identifies this set of user derivation rules.
`no`	Negates a configured rule.
`set {role|vlan}`	Specify whether the action of the rule is to set the role or the VLAN.
`condition`	Condition that should be checked to derive role/VLAN
`<rule-type>`	For a rule that sets an AAA profile, use the **user-vlan** rule type. For a role or VLAN user derivation rule, select one of the following rules: • **bssid**: BSSID of access point. • **dhcp-option**: Use DHCP signature matching to assign a role or VLAN. • **dhcp-option-77**: Enable DHCP packet processing. • **encryption-type**: Encryption method used by station. • **essid**: ESSID of access point. • **location**: user location (ap name). • **macaddr**: MAC address of user. **NOTE:** If you use the **dhcp-option** rule type, best practices are to enable the **enforce-dhcp option in the AAA profile referenced by AP group's Virtual AP profile.**
`<attribute><value>`	Specify one of the following conditions: • **contains**: Check if attribute *contains* the string in the <value> parameter. • **ends-with**: Check if attribute *ends with* the string in the <value> parameter. • **equals**: Check if attribute *equals* the string in the <value> parameter. • **not-equals**: Check if attribute *is not equal* to the string in the <value> parameter.

Parameter	Description
	• **starts-with**: Check if attribute *starts with* the string in the <value> parameter.
`set-value <role>|<vlan>`	Specify the user role or VLAN ID to be assigned to the client if the above condition is met.
`description`	Describes the user derivation rule. This parameter is optional and has a 128 character maximum.
`position`	Position of this rule relative to other rules that are configured.

Usage Guidelines

The user role can be derived from attributes from the client's association with an AP. User-derivation rules are executed *before* the client is authenticated.

You configure the user role to be derived by specifying condition rules; when a condition is met, the specified user role is assigned to the client. You can specify more than one condition rule; the order of rules is important as the first matching condition is applied. You can also add a description of the rule.

The table below describes the conditions for which you can specify a user role or VLAN.

Rule Type	Condition	Value
bssid: Assign client to a role or VLAN based upon the BSSID of AP to which client is associating.	One of the following: • contains • ends with • equals • does not equal • starts with	MAC address (xx:xx:xx:xx:xx:xx)
dhcp-option: Assign client to a role or VLAN based upon the DHCP signature ID.	One of the following: • equals • starts with	DHCP signature ID. Note: This string is *not* case sensitive.
dhcp-option-77: Assign client to a role or VLAN based upon the user class identifier returned by DHCP server.	equals	string
encryption-type: Assign client to a role or VLAN based upon the encryption type used by the client.	One of the following: • equals • does not equal	• Open (no encryption) • WPA/WPA2 AES • WPA-TKIP (static or dynamic) • Dynamic WEP • WPA/WPA2 AES PSK • Static WEP

Rule Type	Condition	Value
		• xSec
essid: Assign client to a role or VLAN based upon the ESSID to which the client is associated	One of the following: • contains • ends with • equals • does not equal • starts with • value of (does not take *string*; attribute value is used as role)	string
location: Assign client to a role or VLAN based upon the ESSID to which the client is associated	One of the following: • equals • does not equal	string
macaddr: MAC address of the client	One of the following: • contains • ends with • equals • does not equal • starts with	MAC address (xx:xx:xx:xx:xx:xx)

The device identification feature allows you to assign a user role or VLAN to a specific device type by identifying a DHCP option and signature for that device. If you create a user rule with the **DHCP-Option** rule type, the first two characters in the **Value** field must represent the hexadecimal value of the DHCP option that this rule should match, while the rest of the characters in the **Value** field indicate the DHCP signature the rule should match. To create a rule that matches DHCP option 12 (host name), the first two characters of the in the **Value** field must be the hexadecimal value of 12, which is 0C. To create a rule that matches DHCP option 55, the first two characters in the **Value** field must be the hexadecimal value of 55, which is 37.

The following table describes some of the DHCP options that are useful for assigning a user role or VLAN.

DHCP Option	Description	Hexidecimal Equivalent
12	Host name	0C
55	Parameter Request List	37
60	Vendor Class Identifier	3C
81	Client FQDN	51

To identify DHCP strings used by an individual device, access the command-line interface in config mode and issue the following command to include DHCP option values for DHCP-DISCOVER and DHCP-REQUEST frames in the controller's log files:

```
logging level debugging network process dhcpd
```

Now, connect the device you want to identify to the network, and issue the CLI command **show log network**. The sample below is an example of the output that may be generated by this command.

Be aware that each device type may not have a unique DHCP fingerprint signature. For example, devices from different manufacturers may use vendor class identifiers that begin with similar strings. If you create a DHCP-Option rule that uses the starts-with condition instead of the equals condition, the rule may assign a role or VLAN to more than one device type.

```
(host) (config) #show log network all | include DISCOVER
Feb 26 02:50:34 :202534:  <DBUG> |dhcpdwrap| |dhcp| Datapath vlan1: DISCOVER 00:19:d2:01:0b:84
Options 74:01 3d:010019d2010b84 0c:736861626172657368612d39393730 3c:4d53465420352e30
37:010f03062c2e2f1f21f92b
Feb 26 02:50:42 :202534:  <DBUG> |dhcpdwrap| |dhcp| Datapath vlan1: DISCOVER 00:19:d2:01:0b:84
Options 74:01 3d:010019d2010b84 0c:736861626172657368612d39393730 3c:4d53465420352e30
37:010f03062c2e2f1f21f92b
Feb 26 02:50:42 :202534:  <DBUG> |dhcpdwrap| |dhcp| Datapath vlan1: DISCOVER 00:19:d2:01:0b:84
Options 74:01 3d:010019d2010b84 0c:736861626172657368612d39393730 3c:4d53465420352e30
37:010f03062c2e2f1f21f92b
Feb 26 02:53:03 :202534:  <DBUG> |dhcpdwrap| |dhcp| Datapath vlan10: DISCOVER
00:26:c6:52:6b:7c Options 74:01 3d:010026c6526b7c 0c:41525542412d46416c73653232
3c:4d53465420352e30 37:010f03062c2e2f1f21f92b 2b:dc00
...

(host) (config) #show log network all| include REQUEST
Feb 26 02:53:04 :202536:  <DBUG> |dhcpdwrap| |dhcp| Datapath vlan10: REQUEST 00:26:c6:52:6b:7c
reqIP=10.10.10.254 Options 3d:010026c6526b7c 36:0a0a0a02 0c:41525542412d46416c73653232
51:00000041525542412d46416c736532322e73757279612e636f6d 3c:4d53465420352e30
37:010f03062c2e2f1f21f92b 2b:dc0100
Feb 26 02:53:04 :202536:  <DBUG> |dhcpdwrap| |dhcp| Datapath vlan10: REQUEST 00:26:c6:52:6b:7c
reqIP=10.10.10.254 Options 3d:010026c6526b7c 36:0a0a0a02 0c:41525542412d46416c73653232
51:00000041525542412d46416c736532322e73757279612e636f6d 3c:4d53465420352e30
37:010f03062c2e2f1f21f92b 2b:dc0100
Feb 26 02:56:02 :202536:  <DBUG> |dhcpdwrap| |dhcp| Datapath vlan10: REQUEST 00:26:c6:52:6b:7c
reqIP=10.10.10.254 Options 3d:010026c6526b7c 0c:41525542412d46416c73653232
51:00000041525542412d46416c736532322e73757279612e636f6d 3c:4d53465420352e30
37:010f03062c2e2f1f21f92b 2b:dc0100
```

Examples

The following command sets the client's user role to "guest" if the client associates to the "Guest" ESSID. The rule description indicates that is was created for special customers.

```
aaa derivation-rules user derive1
   set role condition essid equals Guest set-value guest description
   createdforspecialcustomers
```

The example rule shown below sets a user role for clients whose host name (DHCP option 12) has a value of 6C6170746F70, which is the hexadecimal equivalent of the ASCII string "laptop". The first two digits in the Value field are thehexadecimal value of 12 (which is 0C), followed by the specific signature to be matched

```
aaa derivation-rules user device-role
   set role condition dhcp-option equals 0C6C6170746F70 set-value laptop_role
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.0	Description parameter was introduced.
ArubaOS 6.1	**DHCP-Option** rule type was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system. The PEFNG license must be installed for a user role to be assigned.	Config mode on master controllers

aaa dns-query-interval

```
aaa dns-query-interval <minutes>
```

Description

Configure how often the controller should generate a DNS request to cache the IP address for a RADIUS server identified via its fully qualified domain name (FQDN).

Syntax

Parameter	Description
`<minutes>`	Specify, in minutes, the interval between DNS requests sent from the controller to the DNS server. By default, DNS requests are sent every 15 minutes. Range: 1-1440 minutes

Usage Guidelines

If you define a RADIUS server using the FQDN of the server rather than its IP address, the controller will periodically generate a DNS request and cache the IP address returned in the DNS response. Issue this command to configure the frequency of these requests.

Example

This command configures a DNS query interval of 30 minutes.

```
(host) # aaa dns-query-interval 30
```

Related Commands

To view the current DNS query interval, issue the command show aaa dns-query-interval.

Command History

This command was available in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on local and master controllers

aaa inservice

```
aaa inservice <server-group> <server>
```

Description

This command designates an “out of service” authentication server to be “in service”.

Syntax

Parameter	Description
`<server-group>`	Server group to which this server is assigned.
`<server>`	Name of the configured authentication server.

Usage Guidelines

By default, the controller marks an unresponsive authentication server as “out of service” for a period of 10 minutes (you can set a different time limit with the **aaa timers dead-time** command). The **aaa inservice** command is useful when you become aware that an “out of service” authentication server is again available before the dead-time period has elapsed. You can use the **aaa test-server** command to test the availability and response of a configured authentication server.

Example

The following command sets an authentication server to be in service:

```
aaa inservice corp-rad rad1
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa ipv6 user add

```
aaa ipv6 user add <ipv6addr>
   authentication-method {dot1x|stateful-dot1x}
   mac <macaddr>
   name <username>
   profile <aaa-profile>
   role <role>
```

Description

This command manually assigns a user role or other values to a specified IPv6 client.

Syntax

Parameter	Description
`<ipv6addr>`	IPv6 address of the user to be added.
`authentication-method`	Authentication method for the client.
`dot1x`	802.1X authentication.
`stateful-dot1x`	Stateful 802.1X authentication.
`mac <macaddr>`	MAC address of the client.
`name <username>`	Name of the client.
`profile <aaa-profile>`	AAA profile for the client.
`role <role>`	User role for the client.

Usage Guidelines

This command should only be used for troubleshooting issues with a specific IPv6 client. This command allows you to manually assign a client to a role. For example, you can create a role “debugging” that includes a policy to mirror session packets to a specified destination for further examination, then use this command to assign the “debugging” role to a specific client. Use the **aaa ipv6 user delete** command to remove the client or device from the role.

Note that issuing this command does not affect ongoing sessions that the client may already have. For example, if a client is in the “employee” role when you assign them to the “debugging” role, the client continues any sessions allowed with the “employee” role. Use the **aaa ipv6 user clear-sessions** command to clear ongoing sessions.

Example

The following commands create a role that logs HTTPS traffic, then assign the role to a specific IPv6 client:

```
ip access-list session ipv6-log-https
   any any svc-https permit log
user-role ipv6-web-debug
```

```
session-acl ipv6-log-https
```

In enable mode:

```
aaa ipv6 user add 2002:d81f:f9f0:1000:e409:9331:1d27:ef44 role ipv6-web-debug
```

Command History

This command was available in ArubaOS 3.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa ipv6 user clear-sessions

```
aaa ipv6 user clear-sessions <ipaddr>
```

Description

This command clears ongoing sessions for the specified IPv6 client.

Syntax

Parameter	Description
`<ipaddr>`	IPv6 address of the client.

Usage Guidelines

This command clears any ongoing sessions that the client already had before being assigned a role with the **aaa ipv6 user add** command.

Example

The following command clears ongoing sessions for an IPv6 client:

```
aaa user clear-sessions 2002:d81f:f9f0:1000:e409:9331:1d27:ef44
```

Command History

This command was available in ArubaOS 3.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa ipv6 user delete

```
aaa ipv6 user delete {<ipaddr>|all|mac <macaddr>|name <username>|role <role>}
```

Description

This command deletes IPv6 clients, users, or roles.

Syntax

Parameter	Description
`<ipv6addr>`	IPv6 address of the client to be deleted.
`all`	Deletes all connected IPv6 clients.
`mac`	MAC address of the IPv6 client to be deleted.
`name`	Name of the IPv6 client to be deleted.
`role`	Role of the IPv6 client to be deleted.

Usage Guidelines

This command allows you to manually delete clients, users, or roles. For example, if you used to the **aaa ipv6 user add** command to assign a user role to an IPv6 client, you can use this command to remove the role assignment.

Example

The following command a role:

```
aaa ipv6 user delete role web-debug
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa ipv6 user logout

```
aaa ipv6 user logout <ipaddr>
```

Description

This command logs out an IPv6 client.

Syntax

Parameter	Description
`<ipv6addr>`	IPv6 address of the client to be logged out.

Usage Guidelines

This command logs out an authenticated IPv6 client. The client must reauthenticate.

Example

The following command logs out an IPv6 client:

```
aaa user logout 2002:d81f:f9f0:1000:e409:9331:1d27:ef44
```

Command History

This command was available in ArubaOS 3.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa log

```
[no] aaa log
```

Description

Enable per-user log files for AAA events.

Syntax

No parameters

Usage Guidelines

By default, logging is always enabled. Issue the **no aaa log** command to disable per-user logging and reenable it again using the command **aaa log**. Controllers support 1KB of log files per user for up to 32,000 users.

Example

The example below enables per-user AAA log files.

```
(host)(config) #aaa log
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

aaa password-policy mgmt

```
aaa password-policy mgmt
   enable
   no
   password-lock-out
   password-lock-out-time
   password-max-character-repeat.
   password-min-digit
   password-min-length
   password-min-lowercase-characters
   password-min-special-character
   password-min-special-character
   password-min-uppercase-characters
   password-not-username
```

Description

Define a policy for creating management user passwords.

Syntax

Parameter	Description
enable	enable the password management policy
password-lock-out	The number of failed attempts within a 3 minute window that causes the user to be locked out for the period of time specified by the password-lock-out-time parameter. Range: 0-10 attempts. By default, the password lockout feature is disabled, and the default value of this parameter is 0 attempts.
password-lock-out-time	The number of minutes a user who has exceeded the maximum number of failed password attempts is locked out of the network. After this period has passed, the lockout is cleared without administrator intervention. Range: 1 min to 1440 min (24 hrs). Default: 3. **NOTE:** When a management user gets locked out, that event is logged in the controller log file. The management user lockout warning message can have any one of the following warning IDs. • 125060 = Password policy locked out a management user created via the **mgmt-user** command in the serial console CLI. • 125061 = Password policy locked out a management user created via the WebUI or the **mgmt-user** command in the Telnet/SSH CLI. • 133109 = Password policy locked out a management user created via the **local-userdb** command in the CLI.
password-max-character-repeat	The maximum number of consecutive repeating characters allowed in a management user password. Range: 0-10 characters. By default, there is no limitation on the numbers of character that can repeat within a password, and the parameter has a default value of 0 characters.

Parameter	Description
password-min-digit	The minimum number of numeric digits required in a management user password. Range: 0-10 digits. By default, there is no requirement for numerical digits in a password, and the parameter has a default value of 0.
password-min-length	The minimum number of characters required for a management user password Range: 6-64 characters. Default: 6.
password-min-lowercase-characters	The minimum number of lowercase characters required in a management user password. Range: 0-10 characters. By default, there is no requirement for lowercase letters in a password, and the parameter has a default value of 0.
password-min-special-characters	The minimum number of special characters (!, @, #, $, %, ^, &, *, <, >, {, }, [,], :, ., comma, |, +, ~, `) in password. Range: 0-10 special characters. Default: 0 (minimum number of special character required is disabled by default, The following (')', '(' ;, -, space, =, /, ?) are dis-allowed).
password-min-special-character	The minimum number of special characters required in a management user password. Range: 0-10 characters. By default, there is no requirement for special characters in a password, and the parameter has a default value of 0. See Usage Guidelines below for a list of allowed and disallowed special characters
password-min-uppercase-characters	The minimum number of uppercase characters required in a management user password. Range: 0-10 characters. By default, there is no requirement for uppercase letters in a password, and the parameter has a default value of 0.
password-not-username	Password cannot be the management users' current username or the username spelled backwards.

Usage Guidelines

By default, the password for a management user has no requirements other than a minimum length of 6 alphanumeric or special characters.You do not need to configure a different management user password policy unless your company enforces a best practices password policy for management users with root access to network equipment.

The table below lists the special characters allowed and not allowed in any management

Example

The following command sets a management password policy that requires the password to have a minimum of nine characters, including one numerical digit and one special character:

```
aaa password-policy mgmt
   enable
   password-min-digit 1
   password-min-length 9
   password-min-special-characters 1
```

Related Commands

Command	Description	Mode
show aaa password-policy mgmt	Use show aaa password-policy mgmt to show the current management password policy	Enable mode

Command History

This command was available in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa profile

```
aaa profile <profile>
   authentication-dot1x <dot1x-profile>
   authentication-mac <mac-profile>
   clone <profile>
   devtype-classification
   dot1x-default-role <role>
   dot1x-server-group <group>
   download-role
   enforce-dhcp
   initial-role <role>
   l2-auth-fail-through
   mac-default-role <role>
   mac-server-group <group>
   max-ip ipv4 wireless <max_ipv4_users>
   multiple-server-accounting
   no ...
   open ssid radius accounting
   pan-integration
   radius-accounting <group>
   radius-interim-accounting
   rfc-3576-server <ipaddr>
   sip-authentication-role <role>
   user-derivation-rules <profile>
   user-idle-timeout
   username-from-dhcp-opt12
   wired-to-wireless-roam
   xml-api-server <ipaddr>
```

Description

This command configures the authentication for a WLAN.

Syntax

Parameter	Description	Default
`<profile>`	Name that identifies this instance of the profile. The name must be 1-63 characters.	"default"
`authentication-dot1x <dot1x-profile>`	Name of the 802.1X authentication profile associated with the WLAN. See aaa authentication dot1x on page 25.	—
`authentication-mac <mac-profile>`	Name of the MAC authentication profile associated with the WLAN. See aaa authentication mac on page 34.	—
`clone <profile>`	Name of an existing AAA profile configuration from which parameter values are copied.	—

Parameter	Description	Default
devtype-classification	The device identification feature can automatically identify different client device types and operating systems by parsing the User-Agent strings in a client's HTTP packets. When the devtype-classification parameter is enabled, the output of the **show user** and **show user-table** commands shows each client's device type, if that client device can be identified.	enabled
dot1x-default-role <role>	Configured role assigned to the client after 802.1X authentication. If derivation rules are present, the role assigned to the client through these rules take precedence over the default role. **NOTE**: This parameter requires the PEFNG license.	guest
dot1x-server-group <group>	Name of the server group used for 802.1X authentication. See aaa server-group on page 107.	—
enforce-dhcp	When you enable this option, clients must complete a DHCP exchange to obtain an IP address. Best practices are to enable this option, when you use the aaa derivation-rules command to create a rule with the DHCP-Option rule type. This parameter is disabled by default.	disabled
download-role	Enables role download from ClearPass Policy Manager (CPPM) if not defined.	disabled
initial-role <role>	Role for unauthenticated users.	logon
l2-auth-fail-through	To select different authentication method if one fails	disabled
mac-default-role <role>	Configured role assigned to the user when the device is MAC authenticated. If derivation rules are present, the role assigned to the client through these rules take precedence over the default role. **NOTE:** This parameter requires the PEFNG license.	guest
mac-server-group group	Name of the server group used for MAC authentication. See aaa server-group on page 107.	—
max-ip ipv4 wireless <max_ipv4_users>	Control the number of IPv4 addresses that can be associated to single wireless user.	2

Parameter	Description	Default
	Range: 1-32 **WARNING:** Increasing the max-ip limit may prevent the system from scaling to maximum users on all master/local controllers. For more information, refer to Usage Guidelines for max-ip ipv4 wireless on page 100.	
`multiple-server-accounting`	If enabled, the controller sends RADIUS accounting to all servers in RADIUS accounting server group.	disabled
`no`	Negates any configured parameter.	—
`open ssid radius accounting`	Initiates RADIUS accounting as soon as the user associates to an Open SSID without any authentication. **NOTE:** Do not enable this parameter for wired users. If enabled, the controller sends RADIUS accounting packets for unauthenticated wired users.	disabled
`pan-integration`	The profile requires mapping at a Palo Alto Networks (PAN) firewall	disabled
`radius-accounting <group>`	Name of the server group used for RADIUS accounting. See aaa server-group on page 107.	—
`radius-interim-accounting`	By default, the RADIUS accounting feature sends only start and stop messages to the RADIUS accounting server. Issue the interim-radius-accounting command to allow the controller to send Interim-Update messages with current user statistics to the server at regular intervals.	disabled
`rfc-3576-server <ip-addr>`	IP address of a RADIUS server that can send user disconnect, session timeout and change-of-authorization messages, as described in RFC 3576, “Dynamic Authorization Extensions to Remote Dial In User Service (RADIUS)”. See aaa rfc-3576-server on page 105. **NOTE**: This parameter requires the PEFNG license.	—
`sip-authentication-role <role>`	Configured role assigned to a session initiation protocol (SIP) client upon registration. **NOTE**: This parameter requires the PEFNG license.	guest

Parameter	Description	Default
`user-derivation-rules <profile>`	User attribute profile from which the user role or VLAN is derived.	—
`user-idle-timeout`	The user idle timeout for this profile. Specify the idle timeout value for the client in seconds. Valid range is 30-15300 in multiples of 30 seconds. A value of 0 deletes the user immediately after disassociation from the wireless network. Enabling this option overrides the global settings configured in the AAA timers. If this is disabled, the global settings are used.	disabled
`username-from-dhcp-opt12`	Use user name from DHCP option 12 for non-802.1x authentication.	disabled
`wired-to-wireless-roam`	Keeps user authenticated when roaming from the wired side of the network.	enabled
`xml-api-server <ip-addr>`	IP address of a configured XML API server. See aaa xml-api on page 126. **NOTE**: This parameter requires the PEFNG license.	—

Usage Guidelines

The AAA profile defines the user role for unauthenticated users, the default user role for MAC or 802.1X authentication, and user derivation rules. The AAA profile contains the authentication profile and authentication server group.

There are predefined AAA profiles available, default-dot1x, default-mac-auth, and default-open. These profiles have the parameter values shown in the following table.

Parameter	default-dot1x	default-mac-auth	default-open
`authentication-dot1x`	default	N/A	N/A
`authentication-mac`	N/A	default	N/A
`dot1x-default-role`	authenticated	guest	guest
`dot1x-server-group`	N/A	N/A	N/A
`initial-role`	logon	logon	logon
`mac-default-role`	guest	authenticated	guest

Parameter	default-dot1x	default-mac-auth	default-open
mac-server-group	default	default	default
radius-accounting	N/A	N/A	N/A
rfc-3576-server	N/A	N/A	N/A
user-derivation-rules	N/A	N/A	N/A
wired-to-wireless roam	enabled	enabled	enabled

Usage Guidelines for max-ip ipv4 wireless

Changing the **max-ip ipv4 wireless** parameter from the default value is recommended for special deployments. If your WLAN has multiple device IP associated to single MAC address, you can increase the this value from the default value of 2.

The default value is 2 IPv4 users per wireless user. Total number of IPv4 users created can be a maximum of two times the license. If you configure 32 max-ip IPv4 users , total number of IPv4 users is 32 times the license. This can prevent the controller from scaling to the maximum limit of IP users. Total number of IPv4 users should be scaled down to offset this issue.

Increasing the value of the **max-ip ipv4 wireless** parameter may increase the look-up time due to an increase in the creation and deletion of IPv4 users on the controller. In a deployment where there is Captive Portal and 802.1X authentication implemented, increasing the number of IPv4 users can further deplete performance.

Example

The following command configures an AAA profile that assigns the “employee” role to clients after they are authenticated using the 802.1X server group “radiusnet”.

```
aaa profile corpnet
   dot1x-default-role employee
   dot1x-server-group radiusnet
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 3.4.1	License requirements changed in ArubaOS 3.4.1, so the **sip-authentication-role** parameter required the Policy Enforcement Firewall license instead of the Voice Services Module license required in earlier versions.
ArubaOS 6.1	The **radius-interim-accounting**, **devtype-classification** and **enforce-dhcp** parameters were introduced.
ArubaOS 6.3	The **user-idle-timeout** parameter was introduced.

Version	Description
ArubaOS 6.4	The **multiple-server-accounting** and **download-role** parameters were introduced.
ArubaOS 6.4.3.0	The **max-ip** and **open ssid radius accounting** parameters were introduced.
ArubaOS 6.5.0.0	The **username-from-dhcp-opt12** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Config mode on master controllers

aaa query-user

```
aaa query-user <ldap-server-name> <user-name>
```

Description

Troubleshoot an LDAP authentication failure by verifying that the user exists in the ldap server database.

Syntax

Parameter	Description
`<ldap-server-name>`	Name of an LDAP server.
`<user-name>`	Name of a user whose LDAP record you want to view.

Usage Guidelines

If the Admin-DN binds successfully but the wireless user fails to authenticate, issue this command to troubleshoot whether the problem is with the wireless network, the controller, or the ldap server. The **aaa query-user <ldap_server_name> <username>** command to makes the controller send a search query to find the user. If that search fails in spite of the user being in the LDAP database, it is most probable that the base DN where the search was started was not correct. In such case, it is advisable to make the base DN at the root of the ldap tree.

Example

The example below shows part of the output for an LDAP record for the username JDOE.

```
(host) #aaa query-user eng JDOE
objectClass: top
objectClass: person
objectClass: organizationalPerson
objectClass: user
cn: John Doe
sn: Doe
userCertificate: 0\202\005\2240\202\004|\240\003\002\001\002\002\012H\011\333K
userCertificate: 0\202\005\2240\202\004|\240\003\002\001\002\002\012]\350\346F
userCertificate: 0\202\005\2240\202\004|\240\003\002\001\002\002\012\023\001\017\240
userCertificate: 0\202\005\2240\202\004|\240\003\002\001\002\002\012\031\224/\030
userCertificate: 0\202\005~0\202\004f\240\003\002\001\002\002\012\031\223\246\022
userCertificate: 0\202\005\2240\202\004|\240\003\002\001\002\002\012\037\177\374\305
givenName: JDE
distinguishedName: CN=John Doe,CN=Users,DC=eng,DC=net
instanceType: 4
whenCreated: 20060516232817.0Z
whenChanged: 20081216223053.0Z
displayName: John Doe
uSNCreated: 24599
memberOf: CN=Cert_Admins,CN=Users,DC=eng,DC=net
memberOf: CN=ATAC,CN=Users,DC=eng,DC=net
uSNChanged: 377560
department: eng
name: John Doe
...
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa radius-attributes

```
aaa radius-attributes add <attribute> <attribute-id> {date|integer|ipaddr|string} [vendor
<name> <vendor-id>]
```

Description

This command configures RADIUS attributes for use with server derivation rules.

Syntax

Parameter	Description
`add <attribute> <attribute-id>`	Adds the specified attribute name (alphanumeric string), associated attribute ID (integer), and type (date, integer, IP address, or string).
`date`	Adds a date attribute.
`integer`	Adds a `integer` attribute.
`ipaddr`	Adds a IP address attribute.
`string`	Adds a string attribute.
`vendor`	(Optional) Display attributes for a specific vendor name and vendor ID.

Usage Guidelines

Add RADIUS attributes for use in server derivation rules. Use the **show aaa radius-attributes** command to display a list of the current RADIUS attributes recognized by the controller. To add a RADIUS attribute to the list, use the **aaa radius-attributes** command.

Example

The following command adds the VSA "Dell-User-Role":

```
aaa radius-attributes add Dell-User-Role 1 string vendor Dells 14823
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa rfc-3576-server

```
aaa rfc-3576-server <ipaddr>
   clone <source>
   key <psk>
   no ...
```

Description

This command configures a RADIUS server that can send user disconnect, session timeout, and change-of-authorization (CoA) messages, as described in RFC 3576, “Dynamic Authorization Extensions to Remote Dial In User Service (RADIUS)”.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the server.
`clone <source>`	Name of an existing RFC 3576 server configuration from which parameter values are copied.
`key <psk>`	Shared secret to authenticate communication between the RADIUS client and server.
`no`	Negates any configured parameter.

Usage Guidelines

The disconnect, session timeout and change-of-authorization messages sent from the server to the controller contains information to identify the user for which the message is sent. The controller supports the following attributes for identifying the users who authenticate with a RFC 3576 server:

- user-name: Name of the user to be authenticated
- framed-ip-address: User’s IP address
- calling-station-id: Phone number of a station that originated a call
- accounting-session-id: Unique accounting ID for the user session.

If the authentication server sends both supported and unsupported attributes to the controller, the unknown or unsupported attributes will be ignored. If no matching user is found the controller will send a 503: Session Not Found error message back to the RFC 3576 server.

Example

The following command configures an RFC 3576 server:

```
aaa rfc-3576-server 10.1.1.245
   clone default
   key P@$$w0rD;
```

Related Commands

Command	Description
aaa profilerfc-3576-server <ip-addr>	Associate an RFC-3576 server to a AAA profile.
show aaa state user	View information for a user whose session timeout is altered by a RFC 3576 server.

Command History

Version	Description
ArubaOS 3.0	Command introduced
ArubaOS 6.3	Introduced support for session timeout messages from the RFC 3576 server.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa server-group

```
aaa server-group <group>
   allow-fail-through
   auth-server <name> [match-authstring contains|equals|starts-with <string>] [match-    fqdn
   <string>] [position <number>] [trim-fqdn]
   clone <group>
   load-balance
   no ...
   set role|vlan condition <attribute> contains|ends-with|equals|not-equals|starts-with
      <string> set-value <set-value-str> [position <number>]
```

Description

This command allows you to add a configured authentication server to an ordered list in a server group, and configure server rules to derive a user role, VLAN ID or VLAN name from attributes returned by the server during authentication.

Syntax

Parameter	Description	Default
`<group>`	Name that identifies the server group. The name must be 32 characters or less.	—
`allow-fail-through`	When this option is configured, an authentication failure with the first server in the group causes the controller to attempt authentication with the next server in the list. The controller attempts authentication with each server in the ordered list until either there is a successful authentication or the list of servers in the group is exhausted.	disabled
`auth-server <name>`	Name of a configured authentication server.	—
`match-authstring`	This option associates the authentication server with a match rule that the controller can compare with the user/client information in the authentication request. With this option, the user/client information in the authentication request can be in any of the following formats: <domain>\<user> <user>@<domain> host/<pc-name>.<domain> An authentication request is sent to the server only if there is a match between the specified match rule and the user/client information.You can configure multiple match rules for an authentication server.	—
`contains`	**contains**: The rule matches if the user/client information contains the specified string.	–

Parameter	Description	Default
equals	The rule matches if the user/client information exactly matches the specified string.	–
starts-with	The rule matches if the user/client information starts with the specified string.	–
match-fqdn <string>	This option associates the authentication server with a specified domain. An authentication request is sent to the server only if there is an exact match between the specified domain and the <domain> portion of the user information sent in the authentication request. With this option, the user information must be in one of the following formats: <domain>\<user> <user>@<domain>	—
position <number>	Position of the server in the server list. 1 is the top.	(last)
trim-fqdn	This option causes the user information in an authentication request to be edited before the request is sent to the server. Specifically, this option: removes the <domain>\ portion for user information in the <domain>\<user> format removes the @<domain> portion for user information in the <user>@<domain> format	—
clone	Name of an existing server group from which parameter values are copied.	—
load-balance	Enables load-balancing functionality.	–
no	Negates any configured parameter.	—
set role|vlan	Assigns the client a user role, VLAN ID or VLAN name based on attributes returned for the client by the authentication server. Rules are ordered: the first rule that matches the configured condition is applied. VLAN IDs and VLAN names cannot be listed together.	—
condition	Attribute returned by the authentication server.	—
contains	The rule is applied if and only if the attribute value contains the specified string.	—
ends-with	The rule is applied if and only if the attribute value ends with the specified string.	—

Parameter	Description	Default
`equals`	The rule is applied if and only if the attribute value equals the specified string.	—
`not-equals`	The rule is applied if and only if the attribute value is not equal to the specified string.	—
`starts-with`	The rule is applied if and only if the attribute value begins with the specified string.	—
`set-value`	User role or VLAN applied to the client when the rule is matched.	—
`value-of`	Sets the user role or VLAN to the value of the attribute returned. The user role or VLAN ID returned as the value of the attribute must already be configured on the controller when the rule is applied.	—

Usage Guidelines

You create a server group for a specific type of authentication or for accounting. The list of servers in a server group is an ordered list, which means that the first server in the group is always used unless it is unavailable (in which case, the next server in the list is used). You can configure servers of different types in a server group, for example, you can include the internal database as a backup to a RADIUS server. You can add the same server to multiple server groups. There is a predefined server group “internal” that contains the internal database.

Example

The following command configures a server group “corp-servers” with a RADIUS server as the main authentication server and the internal database as the backup. The command also sets the client’s user role to the value of the returned “Class” attribute.

```
aaa server-group corp-servers
   auth-server radius1 position 1
   auth-server internal position 2
   set role condition Class value-of
   load-balance
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.4	The **load-balance** parameter was added.

.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa tacacs-accounting

```
aaa tacacs-accounting server-group <group>
   command {action|all|configuration|show}
   mode {enable|disable}
```

Description

This command configures reporting of commands issued on the controller to a TACACS+ server group.

Syntax

Parameter	Description	Range	Default
`server-group <group>`	The TACACS server group to which the reporting is sent.	—	—
`command`	The types of commands that are reported to the TACACS server group.	—	—
`action`	Reports action commands only.	—	—
`all`	Reports all commands.	—	—
`configuration`	Reports configuration commands only	—	—
`show`	Reports show commands only	—	—
`mode`	Enables accounting for the server group.	enable/ disable	disable d

Usage Guidelines

You must have previously configured the TACACS+ server and server group (see aaa authentication-server tacacs on page 47 and aaa server-group on page 107).

Example

The following command enables accounting and reporting of configuration commands to the server-group “tacacs1”:

```
aaa tacacs-accounting server-group tacacs1 mode enable command configuration
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa test-server

```
aaa test-server {mschapv2|pap} <server> <username> <passwd>
```

Description

This command tests a configured authentication server.

Syntax

Parameter	Description
`mschapv2`	Use MSCHAPv2 authentication protocol.
`pap`	Use PAP authentication protocol.
`<server>`	Name of the configured authentication server.
`<username>`	Username to use to test the authentication server.
`<passwd>`	Password to use to test the authentication server.

Usage Guidelines

This command allows you to check a configured RADIUS authentication server or the internal database. You can use this command to check for an “out of service” RADIUS server.

Example

The following commands adds a user in the internal database and verifies the configuration:

```
local-userdb add kgreen lkjHGfds
aaa test-server pap internal kgreen lkjHGfds

Authentication successful
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa timers

```
aaa timers
   dead-time <minutes>
   idle-timeout <time> [seconds]
   logon-lifetime <0-255>
   stats-timeout <time> [seconds]
```

Description

This command configures the timers that you can apply to clients and servers.

Syntax

Parameter	Description	Range	Default
`dead-time <minutes>`	Maximum period, in minutes, that the controller considers an unresponsive authentication server to be “out of service”. This timer is only applicable if there are two or more authentication servers configured on the controller. If there is only one authentication server configured, the server is never considered out of service and all requests are sent to the server. If one or more backup servers are configured and a server is unresponsive, it is marked as out of service for the dead time; subsequent requests are sent to the next server on the priority list for the duration of the dead time. If the server is responsive after the dead time has elapsed, it can take over servicing requests from a lower-priority server; if the server continues to be unresponsive, it is marked as down for the dead time.	0-50	10 minutes
`idle-timeout <1-15300>`	Maximum number of minutes after which a client is considered idle if there is no user traffic from the client. The timeout period is reset if there is a user traffic. If there is no IP traffic in the timeout period or there is no 802.11 traffic as indicated in the station ageout time that is set in the wlan ssid profile, the client is aged out. Once the timeout period has expired, the user is removed immediately and no ping request is sent. If the **seconds** parameter is not specified, the value defaults to minutes.	1 to 255 minutes (30 to 15300 seconds)	5 minutes (300 seconds)
`logon-lifetime`	Maximum time, in minutes, that unauthenticated clients are allowed to remain logged on.	0-255	5 minutes

Parameter	Description	Range	Default
`stats-timeout`	User Interim stats timeout value. If the **seconds**sparameter is not specified, the value defaults to minutes.	5-10 minutes (300 to 600 second s)	10 minutes (600 seconds)

Usage Guidelines

These parameters can be left at their default values for most implementations.

Example

The following command changes the idle time to 10 minutes:

```
aaa timers idle-timeout 10
```

Related Commands

```
(host) (config) #show aaa timers
(host) (config) #show datapath user table
```

Command History

Version	Description
ArubaOS 3.0	Command introduced
ArubaOS 3.4	Idle timeout values and defaults changed

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa trusted-ap

```
aaa trusted-ap <macaddr>
```

Description

This command configures a trusted non-Dell AP.

Syntax

Parameter	Description
`<macaddr>`	MAC address of the AP

Usage Guidelines

This command configures a non-Dell AP as a trusted AP.

Example

The following command configures a trusted non-Dell AP:

```
aaa trusted-ap 00:40:96:4d:07:6e
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa user add

```
aaa user add <ipaddr> [<nusers>] [authentication-method {dot1x|mac|stateful-dot1x|vpn|
 web}] [mac-addr <macaddr>] [name <username>] [profile <aaa_profile>] [role <role>]
```

Description

This command manually assigns a user role or other values to a specified client or device.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the user to be added.
`<nusers>`	Number of users to create starting with <ipaddr>.
`authentication-method`	Authentication method for the user.
`dot1x`	802.1X authentication.
`mac-addr`	MAC authentication.
`stateful-dot1x`	Stateful 802.1X authentication.
`vpn`	VPN authentication.
`web`	Captive portal authentication.
`mac <macaddr>`	MAC address of the user.
`name <username>`	Name for the user.
`profile <aaa_profile>`	AAA profile for the user.
`role <role>`	Role for the user.

Usage Guidelines

This command should only be used for troubleshooting issues with a specific client or device. This command allows you to manually assign a client or device to a role. For example, you can create a role “debugging” that includes a policy to mirror session packets to a specified destination for further examination, then use this command to assign the “debugging” role to a specific client. Use the **aaa user delete** command to remove the client or device from the role.

Note that issuing this command does not affect ongoing sessions that the client may already have. For example, if a client is in the “employee” role when you assign them to the “debugging” role, the client continues any sessions allowed with the “employee” role. Use the **aaa user clear-sessions** command to clear ongoing sessions.

Example

The following commands create a role that logs HTTPS traffic, then assign the role to a specific client:

```
ip access-list session log-https
   any any svc-https permit log
user-role web-debug
   session-acl log-https
```

In enable mode:

```
aaa user add 10.1.1.236 role web-debug
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa user clear-sessions

```
aaa user clear-sessions <ipaddr>
```

Description

This command clears ongoing sessions for the specified client.

Syntax

Parameter	Description
`<ip-addr>`	IP address of the user.

Usage Guidelines

This command clears any ongoing sessions that the client already had before being assigned a role with the **aaa user add** command.

Example

The following command clears ongoing sessions for a client:

```
aaa user clear-sessions 10.1.1.236
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa user delete

```
aaa user delete {<ipaddr>|all|mac <macaddr>|name <username>|role <role>}
```

Description

This command deletes clients, users, or roles.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the client to be deleted.
`all`	Deletes all connected clients.
`mac`	MAC address of the client to be deleted.
`name`	Name of the client to be deleted.
`role`	Role of the client to be deleted.

Usage Guidelines

This command allows you to manually delete clients, users, or roles. For example, if you used to the **aaa user add** command to assign a user role to a client, you can use this command to remove the role assignment.

Example

The following command a role:

```
aaa user delete role web-debug
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa user fast-age

```
aaa user fast-age
```

Description

This command enables fast aging of user table entries.

Syntax

No parameters.

Usage Guidelines

When this feature is enabled, if a device comes up on the network with a different IP address, the device's old IP address is immediately deleted. If the user fast-age feature is not configured, the controller retains up to two IPv4 and two IPv6 addresses per device , and these IPs are aged out only when the device becomes inactive.

Command History

This command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa user logout

```
aaa user logout <ipaddr>
```

Description

This command logs out a client.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the client to be logged out.

Usage Guidelines

This command logs out an authenticated client. The client must reauthenticate.

Example

The following command logs out a client:

```
aaa user logout 10.1.1.236
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa user monitor

```
aaa user monitor <ipaddr>|off
```

Description

This command checks to see whether an authenticated user's attributes differ from those in the SOS.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the user whose attributes are being checked.
`off`	Disable aaa user monitoring

Usage Guidelines

This command installs a timer that polls the SOS every 60 seconds and checks the following:

- L3 ACLs
- Upstream bandwidth contract
- Downstream bandwidth contract

Example

The following command checks user SOS attributes:

```
aaa user monitor 10.1.1.236
```

Command History

This command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa user purge-log

```
aaa user purge-log
```

Description

This clear aaa user log files

Syntax

No parameters

Usage Guidelines

Per-user log files for AAA events can be used for troubleshooting issues with a specific client or device. This command clears log information for deleted users.

Example

```
aaa user purge log
```

Command History

This command was available in ArubaOS 6.3

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

aaa user stats-poll

```
aaa user stats-poll <secs>
```

Description

This command enables user statistics polling. If enabled, ArubaOS will poll user data verify that user information in the controller datapath is in synchronization with the data in the controller's authentication module.

Syntax

Parameter	Description
`<secs>`	This command enables user statistics polling, and defines the time interval between polls. The supported range is 60-600 seconds.

Example

The following command enables user statistics polling with an interval of 10 minutes:

```
aaa user stats-poll 600
```

Command History

This command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

aaa xml-api

```
aaa xml-api server <ipaddr>
   clone <server>
   default-authentication-role <role>
   key <key>
   no ...
```

Description

This command configures an external XML API server.

Syntax

Parameter	Description
`server`	IP address of the external XML API server.
`clone`	Name of an existing XML API server configuration from which parameter values are copied.
`key`	Preshared key to authenticate communication between the controller and the XML API server.
`default-authentication-role <role>`	Name of the role to be assigned to users after completing XML server authorization.
`no`	Negates any configured parameter.

Usage Guidelines

XML API is used for authentication and subscriber management from external agents. This command configures an external XML API server. For example, an XML API server can send a blacklist request for a client to the controller. The server configured with this command is referenced in the AAA profile for the WLAN (see aaa profile on page 96). Contact your Dell representative for more information about using the XML API.

Example

The following configures an XML API server:

```
aaa xml-api server 10.210.1.245
   key qwerTYuiOP
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	PEFNG license	Config mode on master controllers

activate

```
activate sync|{whitelist download}
```

Description

This command synchronizes a branch controller whitelist or remote AP whitelist on the controller with the Activate whitelist database.

Syntax

Parameter	Description
`sync`	Execute the activate sync command to immediately synchronize the list of branch controllers on the Activate server with the branch controller whitelist on the master controller. By default, this list is synchronized every hour.
`whitelist download`	Issue this command to enable the synchronization the list of branch controllers on the Activate server with the branch controller whitelist on the master controller.

Usage Guidelines

Use this command to synchronize the controller's remote AP whitelist or branch controller whitelist with the cloud-based Activate service. The controller and the Activate server must have layer-3 connectivity to communicate.

Example

The following example synchronizes the Activate whitelist with the remote AP whitelist on the controller:

```
(host)(config)# activate whitelist download
```

Related Commands

Parameter	Description
activate-service-whitelist	This command configures the profile that allows the controller to synchronize its remote AP whitelist from the cloud-based Activate service.

Command History

Release	Modification
ArubaOS 6.4	Command introduced.
ArubaOS 6.4.3.0	The **sync** parameter is introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

activate-service-whitelist

```
activate-service-whitelist
   add-only
   interval <days>
   no ...
   password <password
   username <username>
   whitelist-enable
```

Description

This command configures the profile that allows the controller to integrate with the Dell Activate cloud-based services to track, provision and update your remote APs.

Syntax

Parameter	Description
`add-only`	Allow only addition or modification of entries to the Activate remote AP whitelist database. This parameter is enabled by default. If this setting is disabled, the activate-whitelist-download command can both add and remove entries from the Activate database.
`interval <days>`	Number of days between the automatic synchronization of the controller remote AP whitelist entries with the Activate whitelist. The supported range is 1-7 days, and the default value is 1 day.
`no`	Removes or disables an existing parameter.
`password <password>`	Activate user password
`username <username>`	Activate username
`whitelist-enable`	Issue this command to enable secure AP whitelist synchronization with the Activate service. This feature is disabled by default.

Usage Guidelines

Use this command to configure the credentials to synchronize the remote AP whitelist with an Activate server. The controller and the Activate server must have layer-3 connectivity to communicate.

Example

The following example enables the Activate whitelist service on the controller:

```
(host)(config)# activate-service-whitelist
(host)(activate-service-whitelist) #username user2 password pA$$w0rd whitelist-enable
```

Related Commands

Parameter	Description
activate	This command synchronizes the remote AP whitelist on the controller from the cloud-based Activate service.

Command History

This command was introduced in ArubaOS 6.3

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

add ap arm client-match unsupported

```
add ap arm client-match unsupported <mac-addr>
```

Description

This command marks a station as unsupported by the Client Match feature.

Syntax

Parameter	Description
`<mac-addr>`	MAC address of the station to be ignored by Client Match.

Usage Guidelines

This is an internal command used to diagnose and debug client match issues, and should be used only under the supervision of customer support.

Command History

This command was available in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode

adp

```
adp discovery {disable|enable} igmp-join {disable|enable} igmp-vlan <vlan>
```

Description

This command configures the Aruba Discovery Protocol (ADP).

Syntax

Parameter	Description	Range	Default
`discovery`	Enables or disables ADP on the controller.	enabled/ disabled	enabled
`igmp-join`	Enables or disables sending of Internet Group Management Protocol (IGMP) join requests from the controllers.	enabled/ disabled	enabled
`igmp-vlan`	VLAN to which IGMP reports are sent.	—	0 (default route VLAN used)

Usage Guidelines

Dell APs send out periodic multicast and broadcast queries to locate the master controller. If the APs are in the same broadcast domain as the master controller and ADP is enabled on the controller, the controller automatically responds to the APs' queries with its IP address. If the APs are not in the same broadcast domain as the master controller, you need to enable multicast on the network. You also need to make sure that all routers are configured to listen for IGMP join requests from the controller and can route the multicast packets. Use the **show adp config** command to verify that ADP and IGMP join options are enabled on the controller.

Example

The following example enables ADP and the sending of IGMP join requests on the controller:

```
adp discovery enable igmp-join enable
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

airgroup

```
airgroup
   server-refresh <mac>
   test-server <name> <macaddr>
   active-domain <STRING>
   active-wireless-discovery {disable|enable}
   cppm-server {aaa {no|rfc-3576-server <rfc3576_server>|rfc3576_udp_port <rfc3576_udp_
   port>|server-dead-time <server-dead-time>|server-group <server-group>}|enforce-
   registration|query-interval <1..24>}
   disable
   dlna {disable|enable}
   domain <STRING>
   enable
   global-credits <query packets> <response packets>
   ipv6
   location-discovery {disable|enable}
   mdns {disable|enable}
   policy <mac> {grouplist {STRING|add|remove}|location{ap-fqln|ap-group|ap-name}|no
   {grouplist|location {ap-fqln|ap-group|ap-name}|rolelist|userlist}|rolelist
   {STRING|add|remove}|userlist {STRING|add|remove}}
   service <STRING> {disable|enable}
   static <mdns-record>
   vlan <NUMBER>
```

Description

This command configures AirGroup global settings, domain, and active-domain parameters.

Syntax

Parameter	Description	Range	Default
`server-refresh <mac>`	Sends refresh packet to refresh the cache for a AirGroup server. <mac> is the MAC address of the AirGroup server.	—	—
`test-server` `<name> <macaddr>`	Tests the AirGroup RADIUS server. <name> is the name of the RADIUS server and <macaddr> is the MAC address of the RADIUS server.	—	—
`active-domain <STRING>`	Configures an AirGroup active-domain for an AirGroup cluster. **NOTE:** This parameter is available only in Config mode.	—	—
`active-wireless-discovery` `{disable|enable}`	Disables/Enables wireless discovery. If wireless discovery is enabled, controller actively sends refresh requests to discover wireless servers.	—	disable

Parameter	Description	Range	Default
	If wireless discovery is disabled, the controller sends refresh requests to wired AirGroup servers only. This parameter is available on the master controller only. The master controller pushes this AirGroup configuration to all the applicable local controllers. **NOTE:** This parameter is available only in Config mode.		
`cppm-server {aaa {no|rfc-3576-server <rfc3576_server->|rfc3576_udp_port <rfc3576_udp_port>|server-dead-time <server-dead-time>|server-group <server-group>}|enforce-registration|query-interval <1..24>}`	Configures the following settings in the AirGroup AAA profile: **no**: Delete command. **rfc-3576-server <rfc3576_server>**: Configure RFC 3576 server IP address. **rfc3576_udp_port <rfc3576_udp_port>**: Configure the UDP port number. **server-dead-time<server-dead-time>**: Server dead time in minutes. To disable the server dead time, set the value to 0. **server-group<server-group>**: Name of the server group. This parameter is available on the master controller only. The master controller pushes this AirGroup configuration to all the applicable local controllers. **enforce-registration**: Forces the AirGroup servers to register with CPPM. This parameter is available on the master controller only. The master controller pushes this AirGroup configuration to all the applicable local controllers. **query-interval <1..24>**: Configures the CPPM query interval, in hours, with the controller. This parameter is available on the master controller only. The master controller pushes this AirGroup configuration to all the applicable local controllers. **NOTE:** This parameter is available only in Config mode.	—	**server-dead-time**: 10

Parameter	Description	Range	Default
		query-interval : 1 — 24 hours	
`disable`	Disables AirGroup on the controller. **NOTE:** This parameter is available only in Config mode.	—	—
`dlna {disable|enable}`	Disables/Enables AirGroup DLNA support on the controller. **NOTE:** This parameter is available only in Config mode.	—	disable
`domain <STRING>`	Configures the AirGroup domain. This parameter is available on the master controller only. The master controller pushes this AirGroup configuration to all the applicable local controllers. **NOTE:** This parameter is available only in Config mode.	—	—
`enable`	Enables AirGroup on the controller. **NOTE:** This parameter is available only in Config mode.	—	—
`global-credits <query packets> <response packets>`	Configures the controller to restrict the excess mDNS query and response packets generated in an AirGroup network, by assigning tokens. The controller processes these mDNS packets based on the token value. The controller rejects the packets beyond the token limit. The token renews every 15 seconds. The renewal time is not a configurable parameter. **NOTE:** This parameter is available only in Config mode.	15 — 15000	150
`ipv6`	Disables/Enables IPv6 support for AirGroup. **NOTE:** This parameter is available only in Config mode.	—	disable

Parameter	Description	Range	Default
`location-discovery {disable|enable}`	Disables/Enables location discovery. If enabled, an AirGroup user can see shared devices based on the proximity of the user. This parameter is available on the master controller only. The master controller pushes this AirGroup configuration to all the applicable local controllers. **NOTE:** This parameter is available only in Config mode.	—	enable
`mdns {disable|enable}`	Disables/Enables AirGroup mDNS support on the controller. **NOTE:** This parameter is available only in Config mode.	—	disable
`policy <mac> {grouplist {STRING|add|remove} |location{ap-fqln|ap-group|ap-name}|no {grouplist|location {ap-fqln|ap-group|ap-name} |rolelist|userlist} |rolelist {STRING|add|remove} |userlist {STRING|add|remove}}`	Configures the following policy for an AirGroup server: **grouplist {STRING|add|remove}**: Configures shared group-name for the AirGroup server. **location{ap-fqln|ap-group|ap-name}**: Configures shared location for the AirGroup server. **no {grouplist|location {ap-fqln|ap-group|ap-name} |rolelist|userlist}**: Delete command. **rolelist {STRING|add|remove}**: Configures shared role-name for the AirGroup server. **userlist {STRING|add|remove}**: Configures shared user-name for the AirGroup server. **<mac>**: MAC address of AirGroup server. **NOTE:** This parameter is available only in Config mode.	—	—
`service <STRING> {disable|enable}`	Disables/Enables an AirGroup service on the controller. <STRING> is the name of the AirGroup service. **NOTE:** This parameter is available only in Config mode.	—	Services enabled by default: • AirPlay • AirPrint • DIAL

Parameter	Description	Range	Default
			Services disabled by default: • iTunes • RemoteMgmt • Sharing • Chat • googlecast • allowall • DLNA Media • DLNA Print
`static <mdns-record>`	Configures static mDNS record. For more information, see airgroup static mdns-record on page 142 **NOTE:** This parameter is available only in Config mode.	—	—
`vlan <NUMBER> {allow|disallow}`	Configures allowed/disallowed VLAN ID. **NOTE:** This parameter is available only in Config mode.	1 — 4049	—

Usage Guidelines

Starting with ArubaOS 6.4, AirGroup is disabled by default. For the remaining global parameters, see the command syntax.

Example

Access the controller's command-line interface and use the following command to enable the AirGroup **Global Setting**:

```
(host) #airgroup server-refresh <mac>
(host) #airgroup test-server <name> <macaddr>
(host) (config) #airgroup enable
(host) (config) #airgroup dlna enable
(host) (config) #airgroup mdns enable
(host) (config) #airgroup cppm-server enforce-registration
(host) (config) #airgroup query-interval 10
(host) (config) #airgroup location-discovery enable
(host) (config) #airgroup active-wireless-discovery enable
```

Use the following command to enable the allowall service:

```
(host) (config) #airgroup service allowall enable
```

Use the following command to enable AirGroup access to devices in a specific VLAN:

```
(host) (config) #airgroup vlan 5 disallow
```

Related Commands

Command	Description
show airgroup	This command displays AirGroup global settings, domain, active-domain, and more AirGroup configuration information on the controller.

Command History

Release	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.4	The **static <mdns-record>** parameter was introduced.
ArubaOS 6.4.1.0	• The **Chromecast** service was renamed to **DIAL**. • The **googlecast** service was introduced.
ArubaOS 6.4.3.0	The **policy** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	The following commands are available only in Enable mode: • **(config) # airgroup server-refresh <mac> MAC-address** • **(config) # airgroup test-server <name> <mac> MAC-address** Configuration mode on master and local controllers **NOTE:** Few configuration parameters are available on the master controller only. For more information, see Syntax table description.

airgroupservice

```
airgroupservice <STRING>
  autoassociate {apfqln|apgroup|apname}
   description <STRING>
   disallow-role <STRING>
   disallow-vlan <1..4094>
   id <STRING>
   no
```

Description

This command defines an AirGroup service on the master controller. The master controller pushes this AirGroup configuration to all the applicable local controllers.

Syntax

Parameter	Description	Range	Default
`airgroupservice <STRING>`	Name of the AirGroup service.	—	—
`autoassociate {apfqln |apgroup|apname}`	Auto associates AirGroup server to service	—	—
`description <STRING>`	Description of the AirGroup service.	—	—
`disallow-role <STRING>`	User Role restricted from accessing the service.	—	—
`disallow-vlan <1..4094>`	User VLAN restricted from accessing the service.	1 — 4094	—
`id`	An AirGroup service ID is the name of a Bonjour service offered by a Bonjour-enabled device or application. Bonjour defines service ID strings using the following format: **_<servicename>._<protocol>.local** Example: `_airplay._tcp.local` The service ID string is case sensitive and should be entered without any modification, with the exception of the **.local** portion of the service ID which is optional.	—	—
`no`	Use this command to delete or negate previously-entered configurations or parameters.	—	—

Example

The following example configures the **iPhoto** service with access to the **_dpap._tcp** service ID to share photos across MacBooks:

```
(host) (config) #airgroupservice iPhoto
(host) (config-airgroupservice) #description "Share Photos"
(host) (config-airgroupservice) #id _dpap._tcp
```

Related Commands

Command	Description
show airgroupservice	This command displays the service details of all AirGroup services in the controller.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.4.3.0	The **autoassociate** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Configuration mode on master controllers

airgroup static mdns-record

```
airgroup static mdns-record
   ptr <mac_addr> <mdns_id> <domain_name> [server_ipaddr]
   srv <port> <priority> <weight> <host_name>
   a <ipv4addr>
   aaaa <ipv6addr>
   txt <text>
   no…
```

Description

This command configures group static mDNS records.

Syntax

Parameter	Description	Range	Default
`ptr`	Specifies the PTR (Pointer) record that is used for DNS-Service Discovery	—	—
`Mac_addr`	MAC address of the server.	—	—
`mdns_id <STRING>`	Specifies the AirGroup mDNS service ID, that is the name of a Bonjour service offered by a Bonjour-enabled device or application. Bonjour defines mDNS service ID strings using the following format: **_<sevicename>._ protocol.local** **Example:** _airplay._tcp.local	String can include the following characters: 0-9, a-z, A-Z, and '-'	—
`Domain_name <STRING>`	Specify the name of the domain.	1 to 128 characters	—
`Server_ipaddr <STRING>`	IP address of the server.	—	—
`srv`	Specifies the SRV (Service) record that is used for mapping a DNS domain name to a specified list of DNS host servers.	—	—
`port`	Port value of the static mDNS record.	0 to 65535	—
`priority`	Priority of the static mDNS record.	0 to 65535	—
`weight`	Weight of the static mDNS record.	0 to 65535	—
`host_name <STRING>`	Host name of the mDNS static record.	1 to 63 characters.	—

Parameter	Description	Range	Default
a	Specifies the A (Address) record that is used for mapping a Domain Name System (DNS) domain name to an IP address that is used by a host.	—	—
ipv4addr	IPv4 address of the server.	—	—
aaaa	Specifies the AAAA (IPv6 address) record. This is used for mapping host names to an IP address of the host.	—	—
ipv6addr	IPv6 address of the server.	—	—
text	Specifies the TEXT record for human-readable text in a DNS record.	1-255 characters.	—
server_ipaddr	Specifies the IP address of the AirGroup server.	—	—
no	Negates any configured parameter.	—	—

Usage Guidelines

The Administrator can create the static records using the following methods:

- Group mDNS static records
- Individual mDNS static records

After creating a PTR record, the controller enters into the AirGroup record configuration mode, allowing you to add SRV, A, AAAA, and TXT records. After creating a PTR, SRV, TXT, A, and AAAA static record, use the **show airgroup cache entries** command to view and verify the records created. You can view only the static records in the output of the **show airgroup cache entries static** command.

Example

Group mDNS Static Records

You can create a group of mDNS records for a device. This section describes how to create static records of a server as a group using the CLI.

Creating a PTR Record

Use the following command to create a PTR record:

```
(config) # airgroup static mdns-record ptr <mac_addr> <mdns_id> <domain_name> [server_ipaddr]
(config-airgroup-record) #
```

After creating a PTR record, controller displays the **(config-airgroup-record) #** prompt and you can create SRV, A, AAAA, and TXT records under this prompt.

NOTE

After creating a PTR, SRV, TXT, A, and AAAA static record, you can use the **show airgroup cache entries** command to view and verify the records created. You can view only the static records in the output of the **show airgroup cache entries static** command.

The following example creates a PTR record:

```
(host) (config) #airgroup static mdns-record ptr 9c:20:7b:cd:ec:41 "_airplay._tcp" "Apple TV (
9)._airplay._tcp.local" 10.15.121.240
```

The following example shows the PTR record was created:

```
(host) (config-airgroup-record) #show airgroup cache entries
Cache Entries
-------------
Name Type Class TTL Origin Expiry Last Update
---- ---- ----- --- ------ ------ -----------
_airplay._tcp.local PTR IN 4500 10.15.121.240 static N/A
Num Cache Entries:1
```

Creating an SRV Record

Use the following command to create an SRV record:

```
(config-airgroup-record) # srv <port> <priority> <weight> <host_name>
```

The following example creates an SRV record:

```
(host) (config-airgroup-record) #srv 7000 0 0 Apple-TV-mbabu-9.local
```

The following example shows the SRV record was created:

```
(host) (config-airgroup-record) #show airgroup cache entries
Cache Entries
-------------
Name Type Class TTL Origin Expiry
---- ---- ----- --- ------ ------
_airplay._tcp.local PTR IN 4500 10.15.121.240 static
Apple TV (9)._airplay._tcp.local SRV/NBSTAT IN 120 10.15.121.240 static
Num Cache Entries:2
```

Creating an A Record

Use the following command to create an A record:

```
(config-airgroup-record) #a <ipv4addr>
```

NOTE

You can create/delete an A record if a corresponding SRV record is available.

The following example creates an A record:

```
(host) (config-airgroup-record) #a 10.15.121.240
```

The following example shows the A record was created:

```
(host) (config-airgroup-record) #show airgroup cache entries
Cache Entries
-------------
Name Type Class TTL Origin Expiry Last Update
---- ---- ----- --- ------ ------ -----------
_airplay._tcp.local PTR IN 4500 10.15.121.240 static N/A
Apple TV (9)._airplay._tcp.local SRV/NBSTAT IN 120 10.15.121.240 static N/A
Apple-TV-mbabu-9.local A IN 120 10.15.121.240 static N/A
Num Cache Entries:3
```

Creating an AAAA Record

Use the following command to create an AAAA record:

```
(config-airgroup-record) #aaaa <ipv6addr>
```

You can create/delete an AAAA record if a corresponding SRV record is available.

The following example creates an AAAA record:

```
(host) (config-airgroup-record) #aaaa fe80::9e20:7bff:fecd:ec41
```

The following example shows the AAAA record was created:

```
(host) (config-airgroup-record) #show airgroup cache entries static
Cache Entries
-------------
Name Type Data Origin
---- ---- ---- ------
_airplay._tcp.local PTR Apple\032TV\032\0409\041._airplay._tcp.local 10.15.121.240
Apple TV (9)._airplay._tcp.local SRV/NBSTAT Apple-TV-mbabu-9.local port:7000 10.15.121.240
Apple-TV-mbabu-9.local A 10.15.121.240 10.15.121.240
Apple-TV-mbabu-9.local AAAA fe80::9e20:7bff:fecd:ec41 10.15.121.240
Num Cache Entries:4
```

Creating a Text Record

Use the following command to create a text record:

```
(config-airgroup-record) #txt <text>
```

The following example creates a text record:

```
(host) (config-airgroup-record) #txt "deviceid=9C:20:7B:CD:EC:41"
```

The following example shows the text record was created:

```
(host) (config-airgroup-record) #show airgroup cache entries static
Cache Entries
-------------
Name Type Data Origin
---- ---- ---- ------
_airplay._tcp.local PTR Apple\032TV\032\0409\041._airplay._tcp.local 10.15.121.240
Apple TV (9)._airplay._tcp.local SRV/NBSTAT Apple-TV-mbabu-9.local port:7000 10.15.121.240
Apple-TV-mbabu-9.local A 10.15.121.240 10.15.121.240
Apple-TV-mbabu-9.local AAAA fe80::9e20:7bff:fecd:ec41 10.15.121.240
Apple TV (9)._airplay._tcp.local TXT deviceid=9C:20:7B:CD:EC:41 10.15.121.240
Num Cache Entries:5
```

Individual Static mDNS Records

You can create individual static records independently for each record type.

Creating an Individual SRV Record

Use the following command to configure an individual SRV record:

```
airgroup static mdns-record srv <mac_addr> <domain_name> <port> <priority> <weight> <host_
name> [ server_ipaddr]
```

The following example creates an SRV record:

```
(host) (config) #airgroup static mdns-record srv 9c:20:7b:cd:ec:41 "9C207BCDEC41@Apple TV mbab
u._raop._tcp.local" 5000 0 0 Apple-TV-mbabu-4.local 10.15.121.240
```

The following example shows the SRV record created:

```
(host) (config) #show airgroup cache entries
Cache Entries
```

```
-------------
Name Type Class TTL Origin Expiry Last Update
---- ---- ----- --- ------ ------ -----------
_airplay._tcp.local PTR IN 4500 10.15.121.240 static N/A
9C207BCDEC41@Apple TV mbabu._raop._tcp.local SRV/NBSTAT IN 120 10.15.121.240 static N/A
Num Cache Entries:2
```

Creating an Individual Text Record

Use the following command to configure an individual TEXT record:

```
airgroup static mdns-record txt <mac_addr> <domain_name> <text> [server_ipaddr]
```

The following example creates a TEXT record:

```
(host) (config) #airgroup static mdns-record txt 9c:20:7b:cd:ec:41 "Apple TV mbabu (4)._airpla
y._tcp.local" "features=0x5a7ffff7" 10.15.121.240
```

The following example shows the TEXT record was created:

```
Cache Entries
-------------
Name Type Class TTL Origin Expiry Last Update
---- ---- ----- --- ------ ------ -----------
_airplay._tcp.local PTR IN 4500 10.15.121.240 static N/A
9C207BCDEC41@Apple TV mbabu._raop._tcp.local SRV/NBSTAT IN 120 10.15.121.240 static N/A
Apple TV mbabu (4)._airplay._tcp.local TXT IN 4500 10.15.121.240 static N/A
Num Cache Entries:3
```

Creating an Individual A Record

Use the following command to configure an individual A record:

```
airgroup static mdns-record a <mac_addr> <host_name> <ipv4addr> [server_ipaddr]
```

The following example creates an A record:

```
(host) (config) #airgroup static mdns-record a 9c:20:7b:cd:ec:41 Apple-TV-mbabu-4.local
10.15.121.240
```

The following example shows the A record was created:

```
Cache Entries
-------------
Name Type Class TTL Origin Expiry Last Update
---- ---- ----- --- ------ ------ -----------
_airplay._tcp.local PTR IN 4500 10.15.121.240 static N/A
9C207BCDEC41@Apple TV mbabu._raop._tcp.local SRV/NBSTAT IN 120 10.15.121.240 static N/A
Apple TV mbabu (4)._airplay._tcp.local TXT IN 4500 10.15.121.240 static N/A
Apple-TV-mbabu-4.local A IN 120 10.15.121.240 static N/A
Num Cache Entries:4
```

Creating an Individual AAAA Record

Use the following command to configure an individual AAAA record:

```
airgroup static mdns-record aaaa <mac_addr> < host_name> <ipv6addr> [server_ipaddr]
```

The following example creates an individual AAAA record:

```
(host) (config) #airgroup static mdns-record aaaa 9c:20:7b:cd:ec:41 Apple-TV-mbabu-4.local fe8
0::9e20:7bff:fecd:ec41
```

The following example shows the AAAA record created:

```
Cache Entries
-------------
Name Type Class TTL Origin Expiry Last Update
---- ---- ----- --- ------ ------ -----------
_airplay._tcp.local PTR IN 4500 10.15.121.240 static N/A
9C207BCDEC41@Apple TV mbabu._raop._tcp.local SRV/NBSTAT IN 120 10.15.121.240 static N/A
```

```
Apple TV mbabu (4)._airplay._tcp.local TXT IN 4500 10.15.121.240 static N/A
Apple-TV-mbabu-4.local A IN 120 10.15.121.240 static N/A
Apple-TV-mbabu-4.local AAAA IN 120 10.15.121.240 static N/A
Num Cache Entries:5
```

You can delete the mDNS records by appending `no` at the beginning of the command. Ensure that the **[server_ipaddr]** parameter is not added while deleting mDNS records.

Command History

Release	Modification
ArubaOS 6.4	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode

am

```
am scan <ipaddr> <channel> [bssid <bssid>]
am test <ipaddr> {suspect-rap bssid <bssid> match-type <match-type> match-method
<method>|wired-mac {add|remove {bssid <bssid>|enet-mac <enet-mac>} mac <mac>}
```

Description

These commands enable channel scanning or testing for the specified air monitor.

Syntax

Parameter	Description	Range
`scan`	IP address of the air monitor to be scanned.	—
`<channel>`	Channel to which the scanning is tuned. Set to 0 to enable scanning of all channels.	—
`bssid`	BSSID of the air monitor.	—
`test`	IP address of the air monitor to be tested.	—
`suspect-rap`	Tests suspect-rap feature.	—
`match-type`	Match type.	eth-wm | ap-wm | eth-gw-wm
`match-method`	Match method.	equal | plus-one | minus-one
`wired-mac`	Tests the rogue AP classification feature. Specifies the Wired MAC table.	—
`enet-mac`	Specifies the Ethernet MAC table.	—
`mac`	Specifies the MAC entry to add/remove from either the Wired MAC table or the Ethernet MAC table.	—

Usage Guidelines

These commands are intended to be used with an AP that is configured as an air monitor. You should not use the **am test** command unless instructed to do so by a Dell representative.

Example

The following command sets the air monitor to scan all channels:

```
(host) (config) #am scan 10.1.1.244 0
```

Command History:

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3.1	Support for the **wired-mac** and **associated** parameters was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

amon msg-buffer-size

```
amon msg-buffer-size <msg-buffer-size>
```

Description

This command modifies the size of AMON packets on the controller.

Syntax

Parameter	Description	Range	Default
`<msg-buffer-size>`	This command modifies the size of AMON packets on the controller.	1280-40960 bytes	1400 bytes

Example

The following command caps the AMON message size at 1500 bytes:

```
(host)(config) #amon msg-buffer-size 1500
```

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ap authorization-profile

```
ap authorization-profile <profile>
   authorization-group <profile>
```

Description

This command defines a temporary configuration profile for remote APs that are not yet authorized on the network.

Syntax

Parameter	Description	Range	Default
`authorization-profile <profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`authorization-group <profile>`	Name of a configuration profile to be assigned to the group unauthorized remote APs.	—	“NoAuthApGroup”

Usage Guidelines

The AP authorization-profile specifies which configuration should be assigned to a remote AP that has been provisioned but not yet authenticated at the remote site. By default, these yet-unauthorized APs are put into the temporary AP group **authorization-group** and assigned the predefined profile **NoAuthApGroup**. This configuration allows a user to connect to an unauthorized remote AP via a wired port then enter a corporate username and password. Once a valid user has authorized the remote AP, the AP will be permanently marked as authorized on the network and will will then download the configuration assigned to that AP by it's permanent AP group.

Example

The following command creates a new authorization profile with a non-default configuration for unauthorized remote APs:

```
ap authorization-profile default2
   authorization-group NoAuthApGroup2
```

Command History

Release	Modification
ArubaOS 5.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master or local controllers

ap consolidated-provision info

```
ap consolidated-provision
   info
```

Description

This command generates the consolidated provision details of all APs.

Syntax

Parameter	Description
`info`	Get consolidated provision information for all APs and store it in the *ap_provision_info.txt* file.

Usage Guidelines

This command is executed from the controller CLI to get the consolidated provisioning details of all APs. This feature is especially useful while upgrading from ArubaOS 6.x to ArubaOS 8.0. The consolidated provisioning details of all APs are stored in the *ap_provision_info.txt* file.

Examples

The output of the command is stored in the *ap_provision_info.txt* file and contains the consolidated provisioning details of all APs connected to the controller.

```
(host) #ap consolidated-provision info
Command Completed Successfully, Please retrieve results in ap_provision_info.txt file
```

Related Commands

Command	Description
show ap consolidated-provision info	This command helps you get the consolidated provision details of a specific access point connected to a controller.

Command History

Release	Modification
ArubaOS 6.5	This command is introduced.

Command Information

Platforms	Licensing	Mode
All platforms	Base operating system	Enable mode on the master controller

ap-crash-transfer

```
ap-crash-transfer
```

Description

This command allows AP coredump files to be transferred he controller flash memory if no dumpserver is configured.

Syntax

No Parameters

Usage Guidelines

The command **ap system-profile <profile> dump-server <server>** specifies a server to receive a core dump generated when an AP process crashes. If no dump server is configured, issue the **ap-crash-transfer** command to save dump files to the controller flash memory.

If you define a dump server and issue the ap-crash-server command, the dump server configuration takes precedence, and coredump files are sent to the dump server.

Example

```
(host)(config) #ap-crash-transfer
```

Related Commands

Command	Description
show ap-crash-transfer	This command shows if AP coredump files can be transferred he controller flash memory if no dumpserver is configured.

Command History

Release	Modification
ArubaOS 6.4	This command is introduced.

Command Information

Platforms	Licensing	Mode
All platforms	Base operating system	Config mode on master and local controllers.

ap debug advanced-stats

```
ap debug advanced-stats {ap-name <ap-name>}|{ ip-addr <ip-addr>}|{ ip6-addr <ip-addr>}
{net80211}|{radio 1|0}  enable|disable
```

Description

Issue this command under the supervision of Dell technical support to enable the collection and display of advanced AP debugging information.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the AP for which you want to record advanced debugging information.
`ip-addr <ip-addr>`	IP address of the AP for which you want to record advanced debugging information.
`ip6-addr <ip6-addr>`	IPv6 address of the AP for which you want to record advanced debug-ging information.
`net80211`	Include this parameter to enable or disable the collection of advanced statistics for transmitted and received frames, and information about packets per second statistics for different frame types.
`radio 1|0`	Include this parameter to enable or disable the collection of advanced radio driver statistics for the specified radio.
`enable`	Enable the collection of advanced radio troubleshooting statistics.
`disable`	Disable the collection of advanced radio troubleshooting statistics.

Usage Guidelines

The additional information collected when advanced net80211 or radio statistics are enabled on an AP appears in the output of the show ap debug radio-stats command.

Command History

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

ap debug client-trace start

```
ap debug client-trace start
   {ap-name <ap-name>}|{ip-addr <ip>}|{ip6-addr <ip6>} mac <client-mac>
   [length-range <max>|[length-range <min>}
```

Description

Use this command to trace management packets from a client MAC address.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IPv4 address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.
mac <client-mac>	MAC address of the client..
length-range <max>	data packet max length.
length-range <min>	data packet min length.

Usage Guidelines

This command should only be used under the guidance of Dell technical support.

.

Related Commands

Command	Description
ap debug client-trace stop	Use this command to stop tracing management packets from a client MAC address.

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

ap debug client-trace stop

```
ap debug client-trace stop
   {ap-name <ap-name>}|{ip-addr <ip>}|{ip6-addr <ip6>} mac <client-mac>
```

Description

Use this command to stop tracing management packets from a client MAC address.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IPv4 address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.
mac <client-mac>	MAC address of the client..

Usage Guidelines

This command should only be used under the guidance of Dell technical support.

Related Commands

Command	Description
ap debug client-trace start	Use this command to trace management packets from a client MAC address.
show ap debug client-trace	Use this command to show counts of different types of management data frames traced from a client MAC address

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

ap debug dot 11r remove-key

```
ap debug dot 11r remove-key <sta-mac>
   [ap-name <ap-name> | ip-addr <ip-addr>]
```

Description

This command removes the r1 key from an AP.

Syntax

Parameter	Description
`<sta-mac>`	MAC address of the client.
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IP address of the AP.

Usage Guidelines

Use this command to remove an r1 key from an AP when the AP does not have a cached r1 key during Fast BSS Transition roaming.

Examples

You can use the following command to remove an r1 key from an AP when the AP does not have a cached r1 key during Fast BSS Transition roaming.

```
(host) #ap debug dot11r remove-key <sta-mac> ap-name <ap-name> | ip-addr <ip-addr>
(host) #ap debug dot11r remove-key 00:50:43:21:01:b8 ap-name MAcage-105-GL
```

Execute the following command to check if the r1 key is removed from the AP:

```
(host) #show ap debug dot11r state ap-name MAcage-105-GL
Stored R1 Keys
--------------
Station MAC  Mobility Domain ID  Validity Duration  R1 Key
-----------  ------------------  -----------------  ------
```

Related Commands

To check if the r1 key is removed from an AP, use the **show ap debug dot11r state** command:

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

ap debug radio-event-log

```
ap debug radio-event log [start|stop] [ap-name <name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>]
radio <0|1> size <size-of-log> events [all|ani|rcfind|rcupdate|rx|size|text|tx] [hex
<hexformat>]
```

Description

Start and stops packet log capture of radio events for debugging purposes, and sends a log file of the events to a dump server when logging stops.

Syntax

Parameter	Description
`start`	Start Wi-Fi packet log capture
`stop`	Stop Wi-Fi packet log capture and send a log file of the events to a dump server.
`ap-name <ap-name>`	Name of the AP for which you want to capture packet log events.
`ip-addr <ip-addr>`	IPv4 address of the AP for which you want to capture packet log events.
`ip6-addr <ip6-addr>`	IPv6 address of the for which you want to capture packet log events.
`radio 1|0`	Include this parameter to start or stop packet log capture for the specified radio.
`size <size-of-log>`	Specify the maximum radio log size, in bytes. The supported range is 1024-10485760 bytes (1KB-10MB), and the default log size is 3145728 bytes (3MB).
`events`	Specify the type of radio events you want to capture in the log file. • all: Capture all of the following types of radio events. • ani Adaptive Noise Immunity control events • rcfind: Transmission (Tx) control event • rcupdate: Transmission (Tx) rate update event • rx: Received (Rx) status register event • text: Text record event • tx: Transmission (Tx) control and Tx status register event
`hex <hexformat)`	(Optional) Specify the radio event type in hexadecimal format • 0x10: Adaptive Noise Immunity control events • 0x4: Transmission (Tx) control event • 0x8: Transmission (Tx) rate update event • 0x2: Received (Rx) status register event • 0X20: Text record event • 0x1: Transmission (Tx) control and Tx status register event
`hex`	Specify the radio event type in hex format.

Parameter	Description
	• all: Capture all of the following types of radio events. • ani Adaptive Noise Immunity control events • rcfind: Transmission (Tx) control event • rcupdate Transmission (Tx) rate update event in radio • rx: Received (Rx) status register event in radio • tx: Transmission (Tx) control and Tx status register event in radio

Example

The following commands starts and stops a Wi-Fi radio event log:

```
(host)(config)#ap debug radio-event-log start ap-name 6c:f3:7f:c6:71:90 radio 0 events all
(host)(config)#ap debug radio-event-log stop ap-name 6c:f3:7f:c6:71:90 radio 0
```

Related Commands

show ap debug radio-event-log status

Command History

Release	Modification
ArubaOS 6.2	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Enable mode on master controllers

ap debug radio-registers dump

```
ap debug radio-registers dump [ap-name <name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>] [filename
<filename> {all|interrupt|qcu |radio}]
```

Description

This command allows you to collect all or specific radio register information into a separate file.

Syntax

Parameter	Description
`ap-name`	Name of Access Point
`ip-addr`	Collect radio register information for this specific AP radio.
`ip6-addr`	Collect radio register information for the AP assigned to this ipv6 address.
`filename`	Name of file where information is collected.
`all`	All registers interrupted.
`interrupt`	Interrupt related registers.
`qcu`	Collect QCU information.
`radio`	Radio ID (0 or 1)

Usage Guidelines

This command collects specified radio-register information for debugging purposes, dumps the registers into a local file, and will automatically transfer the file to the dump-server that is configured in 'ap-system-profile.'

Example

The following command collects all radio registers from **myap1** into a file called **myradioregfile**.:

```
#ap debug radio-registers dump ap-name myap1 filename myradioregfile all
```

Command History

Introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
802.11n-capable APs	Base operating system	Enable mode on master controllers

ap enet-link-profile

```
ap enet-link-profile <profile>
   clone <profile>
   dot3az
   duplex {auto|full|half}
   no ...
   speed {10|100|1000|auto}
```

Description

This command configures an AP Ethernet link profile.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`clone`	Name of an existing Ethernet Link profile from which parameter values are copied.	—	—
`dot3az`	Enable support for the 803.az Energy Efficient Ethernet (EEE) standard, which allows the APs to consume less power during periods of low data activity. Only W-AP130 Series APs support this feature. If this feature is enabled for an APs group, any APs in the group that do not support 803.az will ignore this setting.		disabled
`duplex`	The duplex mode of the Ethernet interface, either full, half, or auto-negotiated.	full/half/auto	auto
`no`	Negates any configured parameter.	—	—
`speed`	The speed of the Ethernet interface, either 10 Mbps, 100 Mbps, 1000 Mbps (1 Gbps), or auto-negotiated.	10/100/1000/auto	auto

Usage Guidelines

This command configures the duplex and speed of the Ethernet port on the AP. The configurable speed is dependent on the port type.

Example

The following command configures the Ethernet link profile for full-duplex and 100 Mbps:

```
ap enet-link-profile enet
   duplex full
   speed 100
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3	Support for 1000 Mbps (1 Gbps) Ethernet port speed was introduced.
ArubaOS 6.2	Support for the dot3az parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master controllers

ap flush-r1-on-new-r0

```
ap·flush-r1-on-new-r0 {enable|disable}
```

Description

Use this command to enable or disable flushing of R1 keys, when R0 is updated for d-tunnel or bridge mode.

Syntax

Parameter	Description
`enable`	Enable flushing of R1 keys.
`disable`	Disable flushing of R1 keys.

Example

The following example enables flushing of R1 keys.

```
(host) (config) #ap flush-r1-on-new-r0 enable
```

The following command displays the status of flushing of R1 keys.

```
(host) (config) #show flush-r1-on-new-r0
Fast Roaming flush-r1-on-new-r0:enable
```

Command History

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Enable mode or Config mode.

ap image-preload

```
ap image-preload
   activate all-aps|specific-aps
   add {ap-group <ap-group> | ap-name <ap-name>}
   cancel
   clear-all
   delete {ap-group <ap-group> | ap-name <ap-name>}
   [partition <part-num>]
   [max-downloads <max-downloads>]
```

Description

Configure APs to preload a new software image from a controllerbefore the controller starts actively running the new image.

Syntax

Parameter	Description
`activate`	Issue the ap image-preload activate command to activate this feature, allowing APs in the preload list to start downloading their new image from the controller.
`all-aps`	All APs will be allowed to pre download the image.
`specific-aps`	Only APs in the preload list will be allowed to preload the image.
`add`	Add individual APs or AP groups to the list of APs allowed to preload the image.
`ap-group <group>`	Add a group of APs to the preload list.
`ap-name <name>`	Add an individual AP to the preload list.
`cancel`	Cancel the AP preload and clear the preload list. Any APs downloading a new image at the time this command is issued will continue to download the file.
`clear-all`	Clear all APs from the preload list.
`delete`	Delete an individual AP or AP group from the preload list. **NOTE:** This command may be issued before or after preloading is activated. If it is executed after preloading has already been activated, any APs downloading a new image at the time this command is issued will continue to download the file. APs that are still waiting to preload will be removed from the preload list.
`ap-group <group>`	Remove the specified group of APs from the preload list

Parameter	Description
ap-name <name>	Remove an individual AP from the preload list
partition <partition-num>	Specify the partition from which the APs should download their images. By default, the APs will preload images from the controller's default boot partition.
max-downloads <max-downloads>	Specify the maximum number of APs that can simultaneously download their image from the controller. The default value is ten APs.

Usage Guidelines

The AP image preload feature minimizes the downtime required for a controller upgrade by allowing the APs to download the new images before the controller actually starts running the new version.

This feature allows you to select the maximum number of APs that are allowed to preload the new software image at any one time, thereby reducing the possibility that the controller may get overloaded or that network traffic may be impacted by all APs on the controller attempting to download a new image at once.

APs can continue normal operation while they are downloading their new software version. When the download completes, the AP sends a message to the controller, informing it that the AP has either successfully downloaded the new software version, or that the preload has failed for some reason. If the download fails, the AP will retry the download after a brief waiting period.

You can allow every AP on a controller to preload a new software version, or also create a custom list of AP groups or individual APs that can use this feature. If a new AP associates to the controller while the AP image download feature is active, the controller will check that AP's name and group to see if it appears in the preload list. If an AP is on the list, (and does not already have the specified image in its Flash memory) that AP will start preloading its image.

Once a software version has been downloaded by an AP, another version cannot be downloaded until the AP reboots.

Example

The following command enables the image preload feature and adds the APs in the AP groups corp1 and corp2 to the preload list.

```
ap image-preload activate specific-aps
   add ap-group corp1
   add ap-group corp2
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Enable mode on master controllers

ap-lacp-striping-ip

```
ap-lacp-striping-ip
   aplacp-enable
   no
   striping-ip <ip-addr> lms <ip-addr>
```

Description

Define an AP LACP LMS map information profile that maps a GRE striping IP address to an existing LMS-IP address.

Syntax

Parameter	Description
`aplacp-enable`	Issue this command to enable LACP IP striping. This feature is disabled by default
`no ...`	Issue this command to negate any setting or return a configured parameter it to its default value.
`striping-ip <ip>`	Specify an IPv4 address for the 802.11g radio of the controller to allow LACP-enabled switches to send traffic for the two controller radios on different links. Recommended value for this parameter is **lms <ip-addr>**+1. **NOTE:** In ArubaOS 6.3.1.0 - 6.4.1.0, LACP striping is configured using the **ap system profile<profile> gre-striping-ip** command.
`lms <ip-addr>`	The LMS IP address to which a GRE striping IP address is associated.

Usage Guidelines

The **AP LACP LMS map information** profile is a local profile that maps a LMS IP address (defined in the AP system profile) to a GRE striping IP address. If a W-AP220 Series or W-AP270 Series access point fails over to a standby or backup controller, the AP LACP LMS map information profile on the new controller defines the IP address that the AP uses to terminate 802.11.g radio tunnels on the new controller.This feature allows W-AP220 Series, W-AP270 Series, and W-AP320 Series access points to continue to support link aggregation to a backup controller in the event of a controller failure even if the backup controller is in a different L3 network.

In ArubaOS 6.4.1 and previous releases, the GRE striping IP address was defined in the global AP system profile, which did not allow APs to maintain GRE striping tunnels if the AP failed over to a backup controller in a different L3 network.

If your topology includes a backup controller you must define GRE striping IP settings in the active and the backup controller.

Example

The following example enables this feature and maps a GRE striping IP address to the LMS-IP address 192.0.2.0:

```
(host) (config) # ap-lacp-striping-ip
(host) (AP LACP LMS map information)#aplacp-enable
(host) (AP LACP LMS map information)#striping-ip 192.0.2.2 lms 192.0.2.1
```

Related Commands

The following show commands display information about the settings defined in the AP LACP LMS map information profile:

- show ap-lacp-striping-ip: displays all settings defined in AP LACP LMS map information profile.
- show ap database: the output of this command displays an **s** flag to indicate that the AP is enabled with a striping IP address.
- show ap debug lacp: the output of this command displays the AP's striping IP address, as defined in the AP LACP LMS map information profile.

Command History

Release	Modification
ArubaOS 6.4.2.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

ap lldp med-network-policy-profile

```
ap lldp med-network-policy-profile <profile>
   application-type guest-voice|guest-voice-signaling|softphone-voice|streaming-video|video-
   conferencing|video-signaling|voice|voice-signaling
   clone <profile>
   dscp <dscp>
   l2-priority <l2-priority>
   no ...
   tagged
   vlan <vlan>
```

Description

Define an LLDP MED network policy profile that defines DSCP values and L2 priority levels for a voice or video application.

Syntax

Parameter	Description	Range
`application-type`	Specify the type of application that this profile manages.	-
`guest-voice`	Use this application type if the AP services a separate voice network for guest users and visitors.	-
`guest-voice-signaling`	Use this application type if the AP is part of a network that requires a different policy for guest voice signaling than for guest voice media. Do not use this application type if both the same network policies apply to both guest voice and guest voice signaling traffic.	-
`softphone-voice`	Use this application type if the AP supports voice services using softphone software applications on devices such as PCs or laptops.	-
`streaming-video`	Use this application type if the AP supports broadcast or multicast video or other streaming video services that require specific network policy treatment. This application type is not recommended for video applications that rely on TCP with buffering.	-
`video-conferencing`	Use this application type of the AP supports video conferencing equipment that provides real-time, interactive video/audio services.	-

Parameter	Description	Range
video-signaling	Use this application type if the AP is part of a network that requires a different policy for video signaling than for the video media. Do not use this application type if both the same network policies apply to both video and video signaling traffic.	-
voice	Use this application type if the AP services IP telephones and other appliances that support interactive voice services. **NOTE:** This is the default application type.	-
voice-signaling	Use this application type if the AP is part of a network that requires a different policy for voice signaling than for the voice media. Do not use this application type if both the same network policies apply to both voice and voice signaling traffic.	-
clone <profile>	Make a copy of an existing profile by specifying that profile name.	-
dscp	Select a Differentiated Services Code Point (DSCP) priority value for the specified application type by specifying a value from 0-63, where 0 is the lowest priority level and 63 is the highest priority.	0-63 Default is 0
l2-priority <L2-priority>	Select a 802.1p priority level for the specified application type, by specifying a value from 0-7, where 0 is the lowest priority level and 7 is the highest priority.	0-7 Default is 0
no ...	Issue this command to negate any setting or return a configured parameter it to its default value.	-
tagged	Specifies if the policy applies to a to a VLAN that is tagged with a VLAN ID or untagged. The default value is untagged. **NOTE:** When an LLDP-MED network policy is defined for use with an untagged VLAN, then the L2 priority field is ignored and only the DSCP value is used.	Default is untagged
vlan <vlan>	Specify a VLAN by VLAN ID (0-4094) or VLAN name.	Default is 0

Usage Guidelines

LLDP-MED (media endpoint devices) is an extension to LLDP that supports interoperability between VoIP devices and other networking clients. LLDP-MED network policy discovery lets end-points and network devices advertise their VLAN IDs (e.g. voice VLAN), priority levels, and DSCP values. ArubaOS supports a maximum of eight LLDP -MED Network Policy profiles.

Creating an LLDP MED network policy profile does not apply the configuration to any AP or AP interface or interface group. To apply the LLDP-MED network policy profile, you must associate it to an LLDP profile, then apply that LLDP profile to an AP wired port profile.

Example

The following commands create a LLDP MED network policy profile for streaming video applications and marks streaming video as high-priority traffic.

```
(host) (config) ap lldp med-network-policy-profile vid-stream
(host) (AP LLDP-MED Network Policy Profile "vid-stream") dscp 48
(host) (AP LLDP-MED Network Policy Profile "vid-stream")l2-priority 6
(host) (AP LLDP-MED Network Policy Profile "vid-stream")tagged
(host) (AP LLDP-MED Network Policy Profile "vid-stream")vlan 10
(host) (AP LLDP-MED Network Policy Profile "vid-stream")!
```

Next, the LLDP MED network policy profile is assigned to an LLDP profile, and the LLDP profile is associated with an AP wired-port profile.

```
(host) (config) ap lldp profile video1
(host) (AP LLDP Profile "video1")lldp-med-network-policy-profile vid-stream
(host) (AP LLDP Profile "video1")!
(host) (config)ap wired-port-profile corp2
(host) (AP wired port profile "corp2")lldp-profile video1
```

Command History

This command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master controllers

ap lldp profile

```
ap lldp profile <profile>
   clone <profile>
   dot1-tlvs port-vlan|vlan-name
   dot3-tlvs link-aggregation|mac|mfs|power
   lldp-med-network-policy-profile <profile>
   lldp-med-tlvs capabilities|inventory|network-policy
   no ...
   optional-tlvs capabilities|management-address|port-description|system-description|system-
   name
   receive
   transmit
   transmit-hold <transmit-hold>
   transmit-interval <transmit-interval>
```

Description

Define an LLDP profile that specifies the type-length-value (TLV) elements to be sent in LLDP PDUs.

Syntax

Parameter	Description
`clone <profile>`	Make a copy of an existing LLDP profile.
`dot1-tlvs`	Specify which of the following 802.1 TLVs the AP will send in LLDP PDUs. By default, the AP will send all 802.1 TLVs.
`port-vlan`	Transmit the LLDP 802.1 port VLAN TLV. If the native VLAN is configured on the port, the port-vlan TLV will send that value, otherwise it will send a value of “0”.
`vlan-name`	Transmit the LLDP 802.1 VLAN name TLV. The AP sends a value of "Unknown" for VLAN 0, or "VLAN <number>" for non-zero VLAN numbers.
`dot3-tlvs`	Specify which of the following 802.3 TLVs the AP will send in LLDP PDUs. By default, the AP will send all 802.3 TLVs.
`link-aggregation`	Transmit the 802.3 link aggregation TLV to indicate that link aggregation is not supported.
`mac`	Transmit the 802.3 MAC/PHY Configuration/Status TLV to indicate the AP interface’s duplex and bit rate capacity and current duplex and bit rate settings.
`mfs`	Transmit the 802.3 Maximum Frame Size (MFS) TLV to show the AP’s maximum frame size capability.

Parameter	Description
power	Transmit the 802.3 Power Via media dependent interface (MDI) TLV to show the power support capabilities of the AP interface. **NOTE:** This parameter is supported by the W-IAP3WNP and W-AP130 Series only.
lldp-med-network-policy-profile <profile>	Specify the LLDP MED Network Policy profile to be associated with this LLDP profile.
lldp-med-tlvs	Specify which of the following LLDP-MED TLVs the AP will send in LLDP PDUs. The AP will not send any LLDP-MED TLVs by default.
capabilities	Transmit the LLDP-MED capabilities TLV. The AP will automatically send this TLV if any of the other LLDP-MED TLVs are enabled.
inventory	Transmit the LLDP-MED inventory TLV. **NOTE:** An AP can't send this TLV unless it also sends the LLDP-MED capabilities TLV.
network-policy	Transmit the LLDP-MED network-policy TLV. **NOTE:** An AP can't send this TLV unless it also sends the LLDP-MED capabilities TLV.
optional-tlvs	Specify which of the following optional TLVs the AP will send in LLDP PDUs.
capabilities	Transmit the system capabilities TLV to indicate which capabilities are supported by the AP.
management-address	Transmit a TLV that indicates the AP's management IP address, in either IPv4 or IPV6 format.
port-description	Transmit a TLV that gives a description of the AP's wired port in an alphanumeric format.
system-description	Transmit a TLV that describes the AP's model number and software version
system-name	Transmit a TLV that sends the AP name or wired MAC address.
receive	Issue this command to enable LLDP PDU reception. This parameter is enabled by default.
transmit	Issue this command to enable LLDP PDU transmission. This parameter is enabled by default.

Parameter	Description
`transmit-hold <transmit-hold>`	Enter a value from 1-100. This value is multiplied by the transmit interval to determine the number of seconds to cache learned LLDP information before that information is cleared. If the transmit-hold value is at the default value of 4, and the transmit interval is at its default value of 30 seconds, then learned LLDP information will be cached for 4 x 30 seconds, or 120 seconds.
`transmit-interval <transmit-interval>`	The interval between LLDP TLV transmission seconds. The supported range is 1-3600 seconds and the default value is 30 seconds.

Usage Guidelines

Link Layer Discovery Protocol (LLDP), is a Layer-2 protocol that allows network devices to advertise their identity and capabilities on a LAN. Wired interfaces on Dell APs support LLDP by periodically transmitting LLDP Protocol Data Units (PDUs) comprised of type-length-value (TLV) elements. Use this command to specify which TLVs should be sent by the AP interface associated with the LLDP profile.

Example

The following command configures an LLDP profile allows the AP interface to send the port-vlan and vlan-name TLVs.

```
ap lldp profile 8021TLVs
   dot1-tlvs port-vlan
   dot1-tlvs vlan-name
```

Command History

This command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master controllers

ap mesh-cluster-profile

```
ap mesh-cluster-profile <profile>
   clone <profile>
   cluster <name>
   no ...
   opmode [opensystem | wpa2-psk-aes]
   rf-band {a | g}
   wpa-hexkey <wpa-hexkey>
   wpa-passphrase <wpa-passphrase>
```

Description

This command configures a mesh cluster profile used by mesh nodes.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—	"default"
`clone`	Name of an existing mesh cluster profile from which parameter values are copied.	—	—
`cluster`	Indicates the mesh cluster name. The name can have a maximum of 32 characters, and is used as the MSSID for the mesh cluster. When you first create a new mesh cluster profile, the profile uses the default cluster name "Dell-mesh". Use the **cluster** parameter to define a new, unique MSSID before you assign APs or AP groups to the mesh cluster profile. **NOTE:** If you want a mesh cluster to use WPA2-PSK-AES encryption, *do not use spaces in the mesh cluster name*, as this may cause errors in mesh points associated with that mesh cluster. To view existing mesh cluster profiles, use the CLI command show ap mesh-cluster-profile.	—	"Dell-mesh"
`no`	Negates any configured parameter.	—	—
`opmode`	Configures one of the following types of data encryption. • **opensystem**—No authentication or encryption. • **wpa2-psk-aes**—WPA2 with AES encryption using a pershared key. Best practices are to select wpa2-psk-aes and use the **wpa-passphrase** parameter to select a passphrase. Keep the passphrase in a safe place.	opensystem wpa2-psk-aes	opensystem

Parameter	Description	Range	Default
rf-band	Configures the RF band in which multiband mesh nodes should operate: a = 5 GHz g = 2.4 GHz Best practices are to use 802.11a radios for mesh deployments.	a g	a
wpa-hexkey	Configures a WPA pre-shared key.	—	—
wpa-passphrase	Sets the WPA password that generates the PSK.	—	—

Usage Guidelines

Mesh cluster profiles are specific to mesh nodes (APs configured for mesh) and provide the framework of the mesh network. You must define and configure the mesh cluster profile before configuring an AP to operate as a mesh node.

You can configure multiple mesh cluster profiles to be used within a mesh cluster. You must configure different priority levels for each mesh cluster profile. See ap-group or ap-name for more information about priorities.

Cluster profiles, including the "default" profile, are not applied until you provision your APs for mesh.

Example

The following command configures a mesh cluster profile named "cluster1" for the mesh cluster "headquarters:"

```
ap mesh-cluster-profile cluster1
   cluster headquarters
```

Related Commands

To view a complete list of mesh cluster profiles and their status, use the following command:

```
show ap mesh-cluster-profile
```

To view the settings of a specific mesh cluster profile, use the following command:

```
show ap mesh-cluster-profile <name>
```

Command History

This command was introduced in ArubaOS 3.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master controllers

ap mesh-ht-ssid-profile

```
ap mesh-ht-ssid-profile <profile-name>
   40MHz-enableba-amsdu-enable
   80MHz-enable
   clone <source>
   high-throughput-enable
   ldpc
   legacy-stations
   max-rx-a-mpdu-size
   max-tx-a-mpdu-size
   max-tx-a-msdu-count-be
   max-tx-a-msdu-count-bg
   max-tx-a-msdu-count-vi
   max-tx-a-msdu-count-vo
   max-vht-mpdu-size
   min-mpdu-start-spacing
   mpdu-agg
   no
   short-guard-intvl-20Mhz
   short-guard-intvl-40Mhz
   short-guard-intvl-80Mhz
   stbc-rx-streams
   stbc-tx-streams
   supported-mcs-set
   temporal-diversity
```

Description

This command configures a mesh high-throughput SSID profile used by mesh nodes.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Enter the name of an existing mesh high-throughput SSID profile to modify that profile, or enter a new name or create a new mesh high-throughput profile. The mesh high-throughput profile can have a maximum of 32 characters. To view existing high-throughput SSID radio profiles, use the command **show ap mesh-radio-profile**.		default
`40MHz-enable`	Enable or disable the use of 40 MHz channels. This parameter is enabled by default.		enabled
`80MHz-enable`	Enable or disable the use of 80 MHz channels.		enabled
`ba-amsdu-enable`	Enable/Disable Receive AMSDU in BA negotiation.		enabled

Parameter	Description	Range	Default
`clone <source>`	Copy configuration information from a source profile into the currently selected profile		
`high-throughput-enable`	Enable or disable high-throughput (802.11n) features on this SSID. This parameter is enabled by default.		enabled
`ldpc`	If enabled, the AP will advertise Low-density Parity Check (LDPC) support. LDPC improves data transmission over radio channels with high levels of background noise.		enabled
`legacy-stations`	Allow or disallow associations from legacy (non-HT) stations. By default, this parameter is enabled (legacy stations are allowed).		enabled
`max-rx-a-mpdu-size`	Maximum size of a received aggregate MPDU, in bytes.	8191, 16383, 32767, 65535	
`max-tx-a-mpdu-size`	Maximum size of a transmitted aggregate MPDU, in bytes.	1576 - 65535	
`max-tx-a-msdu-count-be`	Maximum number of MSDUs in a TX A-MSDU on best-effort AC. TX-AMSDU disabled if 0.	0 - 15	2
`max-tx-a-msdu-count-bg`	Maximum number of MSDUs in a TX A-MSDU on background. TX-AMSDU disabled if 0.	0 - 15	2
`max-tx-a-msdu-count-vi`	Maximum number of MSDUs in a TX A-MSDU on video AC. TX-AMSDU disabled if 0.	0 - 15	2
`max-tx-a-msdu-count-vo`	Maximum number of MSDUs in a TX A-MSDU on voice AC. TX-AMSDU disabled if 0.	0 - 15	0
`max-vht-mpdu-size`	Maximum size of a VHT MPDU.	3895, 7991, 11454	11454

Parameter	Description	Range	Default
`min-mpdu-start-spacing`	Minimum time between the start of adjacent MPDUs within an aggregate MPDU, in microseconds.	0 (No restriction on MDPU start spacing), .25 µsec, .5 µsec, 1 µsec, 2 µsec, 4 µsec	0 µsec
`mpdu-agg`	Enable or disable MAC protocol data unit (MPDU) aggregation. High-throughput mesh APs are able to send aggregated MAC protocol data units (MDPUs), which allow an AP to receive a single block acknowledgment instead of multiple ACK signals. This option, which is enabled by default, reduces network traffic overhead by effectively eliminating the need to initiate a new transfer for every MPDU.		enabled
`short-guard-intvl-20Mhz`	Enable or disable use of short (400ns) guard interval for W-AP130 Series APs in 20 MHz mode. A guard interval is a period of time between transmissions that allows reflections from the previous data transmission to settle before an AP transmits data again. An AP identifies any signal content received inside this interval as unwanted inter-symbol interference, and rejects that data. The 802.11n standard specifies two guard intervals: 400ns (short) and 800ns (long). Enabling a short guard interval can decrease network overhead by reducing unnecessary idle time on each AP. Some outdoor deployments, may, however require a longer guard interval. If the short guard interval does not allow enough time for reflections to settle in your mesh deployment, inter-symbol interference values may increase and degrade throughput. This parameter is enabled by default.		enabled
`short-guard-intvl-40Mhz`	Enable or disable use of short (400ns) guard interval in 40 MHz mode. A guard interval is a period of time between transmissions that allows reflections from the previous data transmission to settle before an AP transmits data again. An AP identifies any signal content received inside this interval as unwanted inter-symbol interference, and rejects that data.		enabled

Parameter	Description	Range	Default
	The 802.11n standard specifies two guard intervals: 400ns (short) and 800ns (long). Enabling a short guard interval can decrease network overhead by reducing unnecessary idle time on each AP. Some outdoor deployments, may, however require a longer guard interval. If the short guard interval does not allow enough time for reflections to settle in your mesh deployment, inter-symbol interference values may increase and degrade throughput. This parameter is enabled by default.		
`short-guard-intvl-80Mhz`	Enable or disable use of short (400ns) guard interval in 80 MHz mode. A guard interval is a period of time between transmissions that allows reflections from the previous data transmission to settle before an AP transmits data again. An AP identifies any signal content received inside this interval as unwanted inter-symbol interference, and rejects that data. The 802.11n standard specifies two guard intervals: 400ns (short) and 800ns (long). Enabling a short guard interval can decrease network overhead by reducing unnecessary idle time on each AP. Some outdoor deployments, may, however require a longer guard interval. If the short guard interval does not allow enough time for reflections to settle in your mesh deployment, inter-symbol interference values may increase and degrade throughput. This parameter is enabled by default.		enabled
`stbc-rx-streams`	Controls the maximum number of spatial streams usable for STBC reception. 0 disables STBC reception, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on the W-AP130 Series, W-AP175 and W-AP105 only. The configured value will be adjusted based on AP capabilities.)	0-1	1
`stbc-tx-streams`	Controls the maximum number of spatial streams usable for STBC transmission. 0 disables STBC transmission, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on W-AP175, W-AP130 Series and W-AP105 only. The configured value will be adjusted based on AP capabilities.)	0-1	1

Parameter	Description	Range	Default
supported-mcs-set	A list of Modulation Coding Scheme (MCS) values or ranges of values to be supported on this SSID. The MCS you choose determines the channel width (20MHz vs. 40MHz) and the number of spatial streams used by the mesh node. The default value is 1-15; the complete set of supported values. To specify a smaller range of values, enter a hyphen between the lower and upper values. To specify a series of different values, separate each value with a comma. Examples: 2-10 1,3,6,9,12 Range: 0-15.	1-15	1-15
temporal-diversity	Shows if temporal diversity has been enabled or disabled. When this feature is enabled and the client is not responding to 802.11 packets, the AP will launch two hardware retries; if the hardware retries are not successful then it attempts software retries.		disabled

Guidelines

The mesh high-throughput profile defines settings unique to 802.11n-capable, high-throughput APs. If none of the APs in your mesh deployment are 802.11n-capable APs, you do not need to configure a high-throughput SSID profile.

If you modify a currently provisioned and running high-throughput SSID profile, your changes take effect immediately. You do not reboot the controller or the AP.

Example

The following command configures a mesh high-throughput SSID profile named “HT1” and sets some non-default settings for MAC protocol data unit (MPDU) aggregation:

```
(host) (config) #ap mesh-ht-ssid-profile HT1
  max-rx-a-mpdu-size 32767
  max-tx-a-mpdu-size 32767
  min-mpdu-start-spacing .25
```

Related Commands

To view a complete list of mesh high-throughput SSID profiles and their status, use the following command:

```
(host) (config) #show ap mesh-ht-ssid-profile
```

To view the settings of a specific mesh radio profile, use the following command:

```
(host) (config) #show ap mesh-ht-ssid-profile <name>
```

Command History

Version	Description
ArubaOS 3.4	Command introduced
ArubaOS 6.1	The **short-guard-intvl-20Mhz**, **ldpc**, **stbc-rx-streams** and **stbc-rx-streams** parameters were introduced.
ArubaOS 6.3	The following parameters were introduced. • txbf-comp-steering • txbf-delayed-feedback • txbf-explicit-enable • txbf-immediate-feedback • txbf-noncomp-steering • txbf-sounding-interval
ArubaOS 6.4.3	The following parameters were introduced. • 80MHz-enable • max-tx-a-msdu-count-be • max-tx-a-msdu-count-bg • max-tx-a-msdu-count-vi • max-tx-a-msdu-count-vo • max-vht-mpdu-size • short-guard-intvl-80Mhz • vht-enable • vht-supported-mcs-map • vht-txbf-explicit-enable • vht-txbf-sounding-interval

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ap mesh-radio-profile

```
ap mesh-radio-profile <profile>
   a-tx rates [6|9|12|18|24|36|48|54]
   allowed-vlans <vlan-list>
   children <children>
   clone <profile>
   eapol-rate-opt
   g-tx rates [1|2|5|6|9|11|12|18|24|36|48|54]
   heartbeat-threshold <count>
   hop-count <hop-count>
   link-threshold <count>
   max-retries <max-retries>
   mesh-ht-ssid-profile
   mesh-mcast-opt
   mesh-survivability
   metric-algorithm {best-link-rssi|distributed-tree-rssi}
   mpv <vlan-id>
   no ...
   reselection-mode {reselect-anytime|reselect-never|startup-subthreshold|
      subthreshold-only}
   rts-threshold <rts-threshold>
```

Description

This command configures a mesh radio profile used by mesh nodes.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`allowed-vlans`	Specify a list of VLAN IDs that can be used by a mesh link on APs associated with this mesh radio profile		
`<vlan-list>`	A comma-separated list of VLAN IDs. You can also specify a range of VLAN IDs using a dash (for example, 1–4095)		
`a-tx rates`	Indicates the transmit rates for the 802.11a radio. The AP attempts to use the highest transmission rate to establish a mesh link. If a rate is unavailable, the AP goes through the list and uses the next highest rate.	6, 9, 12, 18, 24, 36, 48, 54 Mbps	6, 9, 12, 18, 24, 36, 48, 54 Mbps
`children`	Indicates the maximum number of children a mesh node can accept.	1-64	64

Parameter	Description	Range	Default
`clone`	Name of an existing mesh radio profile from which parameter values are copied.		
`eapol-rate-opt`	Use a more conservative rate for more reliable delivery of EAPOL frames.	enabled disabled	disabled
`g-tx rates`	Indicates the transmit rates for the 802.11b/g radio. The AP attempts to use the highest transmission rate to establish a mesh link. If a rate is unavailable, the AP goes through the list and uses the next highest rate.	1, 2, 5, 6, 9, 11, 12, 18, 24, 36, 48, 54	1, 2, 5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps
`heartbeat-threshold`	Indicates the maximum number of heartbeat messages that can be lost between neighboring mesh nodes.	1-255	10
`hop-count`	Indicates the maximum hop count from the mesh portal.	1-32	8
`link-threshold`	Indicates the minimal RSSI value. If the RSSI value is below this threshold, the link may be considered a sub-threshold link. A sub-threshold link is a link whose average RSSI value falls below the configured threshold. If this occurs, the mesh node may try to find a better link on the same channel and cluster (only neighbors on the same channel are considered). The supported threshold is hardware dependent, with a practical range of 10-90.	hardware dependent	12
`mesh-ht-ssid-profile`	High-throughput SSID Profile for the mesh feature.		default
`max-retries`	Maximum number of times a mesh node can re-send a packet.	0-15	4 times
`mesh-mcast-opt`	Enables or disables scanning of all active stations currently associated to a mesh point to select the lowest transmission rate based on the slowest connected mesh child. When enabled, this setting dynamically adjusts the multicast rate to that of the slowest connected mesh child. Multicast frames are not sent if there are no mesh children.		enabled

Parameter	Description	Range	Default
	Best practices are to use the default value.		
`mesh-survivability`	Allow mesh points and portals to become active even if the controller cannot be reached by bridging LAN traffic. This is a beta feature that is disabled by default; it should not be enabled unless you are instructed to do so by Dell technical suppport.	—	distributed-tree-rssi
`metric-algorithm`	Specifies the algorithm used by a mesh node to select its parent. Best practices are to use the default value distributed-tree-rssi.	—	distributed-tree-rssi
`best-link-rssi`	Selects the parent with the strongest RSSI, regardless of the number of children a potential parent has.	—	—
`distributed-tree-rssi`	Selects the parent based on link-RSSI and node cost based on the number of children. This option evenly distributes the mesh points over high quality uplinks. Low quality uplinks are selected as a last resort.	—	—
`mpv`	This parameter is experimental and reserved for future use.	0-4094	0 (disabled)
`no`	Negates any configured parameter.	—	—
`reselection-mode`	Specifies the method used to find a better mesh link. Best practices are to use the default value startup-subthreshold.	(see below)	startup-sub threshold
`reselect-anytime`	Mesh points using the **reselect-anytime** reselection mode perform a single topology readjustment scan within 9 minutes of startup and 4 minutes after a link is formed. If no better parent is found, the mesh point returns to its original parent. This initial scan evaluates more distant mesh points before closer mesh points, and incurs a dropout of 5-8 seconds for each mesh point.	—	—

Parameter	Description	Range	Default
	After the initial startup scan is completed, connected mesh nodes evaluate mesh links every 30 seconds. If a mesh node finds a better uplink, the mesh node connects to the new parent to create an improved path to the mesh portal.		
`reselect-never`	Connected mesh nodes do not evaluate other mesh links to create an improved path to the mesh portal.	—	—
`startup-subthreshold`	Mesh points using the **startup-subthreshold** reselection mode perform a single topology readjustment scan within 9 minutes of startup and 4 minutes after a link is formed. If no better parent is found, the mesh point returns to its original parent. This initial startup scan evaluates more distant mesh points before closer mesh points, and incurs a dropout of 5-8 seconds for each mesh point. After that time, each mesh node evaluates alternative links if the existing uplink falls below the configured threshold level (the link becomes a sub-threshold link). Best practices are to use the default **startup-subthreshold** value. Starting with ArubaOS 3.4.1, if a mesh point using the **startup-subthreshold** mode reselects a more distant parent because its original, closer parent falls below the acceptable threshold, then as long as that mesh point is connected to that more distant parent, it will seek to reselect a parent at the earlier distance (or less) with good link quality. For example, if a mesh point disconnects from a mesh parent 2 hops away and subsequently reconnects to a mesh parent 3 hops away, then the mesh point will continue to seek a connection to a mesh parent with both an acceptable link quality and a distance of two hops or less, even if the more distant parent also has an acceptable link quality.	—	—
`subthreshold-only`	Connected mesh nodes evaluate alternative links only if the existing uplink becomes a sub-threshold link. **NOTE:** Starting with ArubaOS 3.4.1, if a mesh point using the **subthreshold-only** mode reselects a more distant parent because its original, closer parent falls below the acceptable threshold, then as long as that mesh point is connected to that more distant parent, it will seek to	—	—

Parameter	Description	Range	Default
	reselect a parent at the earlier distance (or less) with good link quality. For example, if a mesh point disconnects from a mesh parent 2 hops away and subsequently reconnects to a mesh parent 3 hops away, then the mesh point will continue to seek a connection to a mesh parent with both an acceptable link quality and a distance of two hops or less, even if the more distant parent also has an acceptable link quality.		
`rts-threshold`	Defines the packet size sent by mesh nodes. Mesh nodes transmitting frames larger than this threshold must issue request to send (RTS) and wait for other mesh nodes to respond with clear to send (CTS) to begin transmission. This helps prevent mid-air collisions.	256-2,346	2,333 bytes

Usage Guidelines

Mesh radio profiles are specific to mesh nodes (APs configured for mesh) and determine the radio frequency/channel used by mesh nodes to establish mesh links and the path to the mesh portal. You can configure multiple radio profiles; however, you select and deploy only one radio profile per mesh cluster.

Radio profiles, including the “default” profile, are not active until you provision your APs for mesh. If you modify a currently provisioned and running radio profile, your changes take place immediately. You do not reboot the controller or the AP.

Example

The following command creates a mesh radio profile named “radio2” and associates a mesh high-throughput profile named meshHT1:

```
(host) (config) #ap mesh-radio-profile radio2
  mesh-ht-ssid-profile meshHT1
```

Related Commands

To view a complete list of mesh radio profiles and their status, use the following command:

```
(host) (config) #show ap mesh-radio-profile
```

To view the settings of a specific mesh radio profile, use the following command:

```
(host) (config) #show ap mesh-radio-profile <name>
```

Command History

Release	Modification
ArubaOS 3.2	Command introduced.
ArubaOS 3.2.0.x, 3.3.1.x	The **tx-powe**r default increased from 14 to 30 dBm.
ArubaOS 3.3	The **heartbeat-threshold** default increased from 5 to 10 heartbeat messages.
ArubaOS 3.3.2	The **mesh-mcast-opt** parameter was introduced.
ArubaOS 3.4	The **mesh-ht-ssid-profile** parameter was introduced The **11a-portal-channel**, **11g-portal-channe**l, **beacon-period** and **tx-power** parameters were deprecated. These settings can now be configured via the **rf dot11a-radio-profile and rf dot11g-radio-profile** commands.
ArubaOS 6.1	The **eapol-rate-opt** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ap provisioning-profile

```
ap provisioning-profile <profile>
   ap-poe-power-optimization {disabled | enabled}
   apdot1x-passwd
   apdot1x-username
   cellular_nw_preference 3g-only|4g-only|advanced|auto
   clone
   link-priority-cellular
   link-priority-ethernet
   master clear|{set <masterstr>}
   no
   pppoe-passwd
   pppoe-service-name
   pppoe-user
   remote-ap
   reprovision
   uplink-vlan <uplink-vlan>
   usb-dev
   usb-dial
   usb-init
   usb-modeswitch -v <default_vendor> -p <default_product> -V <target_vendor> -P <target_
   product> -M <message_content>
   usb-passwd
   usb-power-mode auto| enable|disable
   usb-tty
   usb-tty-control
   usb-type
   usb-user
```

Description

This command defines a provisioning profile for an AP or group of APs.

Syntax

Parameter	Description	Default	Range
`ap-poe-power-optimization`	Enabling optimization minimizes the POE draw of the AP. Enabling optimization may disable some parts of the AP. Disabling ensures all features are enabled. • **enabled**: AP operates in normal mode. • **disabled**: USB and Ethernet port (eth1) are shut down on AP.	disabled	—
`apdot1x-passwd`	Password of the AP to authenticate to 802.1X using PEAP	—	—
`apdot1x-username`	Username of the AP to authenticate to 802.1X using PEAP	—	—
`cellular_nw_preference g-only|4g-only| advanced|auto`	The cellular network preference setting allows you to select how the modem should operate. • auto (default): In this mode, modem firmware will	auto	—

Parameter	Description	Default	Range
	control the cellular network service selection; so the cellular network service failover and fallback is not interrupted by the remote AP (RAP). • 3g_only: Locks the modem to operate only in 3G. • 4g_only: Locks the modem to operate only in 4G. advanced: The RAP controls the cellular network service selection based on an Received Signal Strength Indication (RSSI) threshold-based approach. Initially the modem is set to the default auto mode. This allows the modem firmware to select the available network. The RAP determines the RSSI value for the available network type (for example 4G), checks whether the RSSI is within required range, and if so, connects to that network. If the RSSI for the modem's selected network is not within the required range, the RAP will then check the RSSI limit of an alternate network (for example, 3G), and reconnect to that alternate network. The RAP will repeat the above steps each time it tries to connect using a 4G multimode modem in this mode. The RAP determines the RSSI value for the available network type (for example 4G), checks whether the RSSI is within required range, and if so, connects to that network.. If the RSSI for the modem's selected network is not within the required range, the RAP will then check the RSSI limit of an alternate network (for example, 3G), and reconnect to that alternate network. The RAP will repeat the above steps each time it tries to connect using a 4G multimode modem in this mode.		
`clone <source>`	Clone an existing ap provisioning profile	—	—
`link-priority-cellular <link-priority-cellular>`	Set the priority of the cellular uplink. By default, the cellular uplink is a lower priority than the wired uplink; making the wired link the primary link and the cellular link the secondary or backup link. Configuring the cellular link with a higher priority than your wired link priority will set your cellular link as the primary controller link.	0-255	0
`link-priority-ethernet <link-priority-ethernet>`	Set the priority of the wired uplink. Each uplink type has an associated priority; wired ports having the highest priority by default.	0-255	0
`master`	Change the FQDN or IP address for the master controller.	—	—
`set <masterstr>`	Specify the or IP address or FQDN for the master controller.	—	—
`clear`	Clear the definition for the master controller in this profile.	—	—

Parameter	Description	Default	Range
no	Negates any configured parameter.	—	—
pppoe-passwd	Point-to-Point Protocol over Ethernet (PPPoE) password for the AP.	—	—
pppoe-service-name	PPPoE service name for the AP.	—	—
pppoe-user	PPPoE username for the AP.	—	—
remote-ap	Specifies that the profile is to be associated with a remote AP using certificates.	—	—
reprovision	Provisions one or more APs with the values in the provisioning profile.	—	—
reset-bootinfo	Restores factory default provisioning parameters to the specified AP. **NOTE:** This parameter can only be used on the master controller.	—	—
uplink-vlan <uplink-vlan>	If you configure an uplink VLAN on an AP connected to a port in trunk mode, the AP sends and receives frames tagged with this VLAN on its Ethernet uplink. By default, an AP has an uplink vlan of 0, which disables this feature. **NOTE:** If an AP is provisioned with an uplink VLAN, it must be connected to a trunk mode port or the AP's frames will be dropped.	0 (disabled) to 4095	0
usb-dev	The USB device identifier.	—	—
usb-dial	The dial string for the USB modem. This parameter only needs to be specified if the default string is not correct.	—	—
usb-init	The initialization string for the USB modem. This parameter only needs to be specified if the default string is not correct.	—	—
usb-modeswitch -v <default_vendor> -p <default_product> -V <target_vendor> -P <target_product> -M <message_content>	USB cellular devices on remote APs typically register as modems, but may occasionally register as a mass-storage device. If a remote AP cannot recognize its USB cellular modem, use the usb-modeswitch command to specify the parameters for the hardware model of the USB cellular data-card. **NOTE:** You must enclose the entire modeswitch parameter string in quotation marks.	—	—

Parameter	Description	Default	Range
`usb-passwd`	A PPP password, if provided by the cellular service provider	—	—
`usb-power-mode auto|enable|disable`	Set the USB power mode to control the power to the USB port.	—	—
`usb-tty`	The TTY device path for the USB modem. This parameter only needs to be specified if the default path is not correct.	—	—
`usb-tty-control`	The TTY device control path for the USB modem. This parameter only needs to be specified if the default path is not correct.	—	—
`usb-type`	Specify the USB driver type. • **acm**: Use ACM driver • **airprime**: Use Airprime driver • **beceem-wimax**: Use Beceem driver for 4G-WiMAX • **ether**: Use CDC Ether driver for direct IP 4G device • **hso**: Use HSO driver for newer Option • **none**: Disable 3G or 2G network on USB • **option**: Use Option driver • **pantech-3g**: Same as "pantech-uml290" - to support upgrade • **pantech-uml290**: Use Pantech USB driver for UML290 device • **ptumlusbnet**: Use Pantech USB driver for 4G device • **rndis**: Use a RNDIS driver for a 4G device • **sierra-evdo**: Use EVDO Sierra Wireless driver • **sierra-gsm**: Use GSM Sierra Wireless driver • **sierrausbnet**:Use SIERRA Direct IP driver for 4G device • **storage**: Use USB flash as storage device for storing RAP certificates	—	none
`usb-user`	The PPP username provided by the cellular service provider	—	—

Usage Guidelines

The AP provisioning profile allows you to define a set of provisioning parameters to an AP group. These settings can be saved or assigned to an AP group via the command **ap-group <group> provisioning-profile <profile>**.

In order to enable cellular uplink for a remote AP (RAP), the RAP must have the device driver for the USB data card and the correct configuration parameters. ArubaOS includes device drivers for the most common

hardware types, but you can use the **usb** commands in this profile to configure a RAP to recognize and use an unknown USB modem type.

Related Commands

Command	Description
provision-ap	Change provisioning parameters for an individual AP. This command does not save the provisioning parameters settings in a reusable profile.

Example

The following commands create a provisioning profile named **profile_branch**, in which the cellular link is the primary uplink because it has a higher priority than the Ethernet link:

```
(host) (config) #ap provision-profile profile_branch
   link-priority-cellular 2
   link-priority-ethernet 1
   usb-type acm
   usb-modeswitch "-v 0x106c -p 0x3b06 -V 0x106c -P 0x3717 -M
   5534243b82e238c24000000800008ff020000000000000000000000000000000"
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4	Introduced support for the following parameters: • usb-dev • usb-dial • usb-init • usb-passwd • usb-tty • usb-type • usb-user • link-priority-cellular • link-priority-ethernet
ArubaOS 6.0	The **uplink-vlan** parameter was introduced.
ArubaOS 6.1	The following new parameters were introduced for provisioning APs for 802.1X authentication: • **apdot1x-passwd** • **apdot1x-username** The following new parameters were introduced for provisioning Remote APs using USB modems: • **usb-modeswitch**

Release	Modification
	• **4g-usb-type**
ArubaOS 6.2.1.0	the **cellular_nw_preference** parameter was introduced for provisioning multi-mode modems, and the **4g-usb-type** parameter was deprecated. Specify a 2/3G or 4G modem type using the **usb-type** parameter.
ArubaOS 6.3	The **sierrausbnet** and **storage** usb-type parameters were introduced.
ArubaOS 6.3.1	The **rndis** parameter was introduced.
ArubaOS 6.3.1.10	The **ap-power-mode** parameter was introduced.
ArubaOS 6.3.1.11	The **ap-power-mode** parameter was renamed to **ap-poe-power-optimization**.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ap packet-capture

```
ap packet-capture
   clear <ap-name|ip-addr|ip6-addr>] <pcap-id> radio <0|1>
   close-port <port>
   interactive <ap-name|ip-addr|ip6-addr> <filter-spec> <target-ip> <target-port> radio <0|1>
channel <channel>
   open-port <port>
   pause <ap-name|ip-addr|ip6-addr> <pcap-id> radio <0|1>
   raw-start [<ap-name|ip-addr|ip6-addr>] <target-ip> <target-port> <format> radio <0|1>
channel <channel> maxlen <maxlen>
   resume [<ap-name|ip-addr|ip6-addr>] <pcap-id> radio <0|1>
   stop <ap-name|ip-addr|ip6-addr>  <pcap-id> radio <0|1>
   wired-start <ap-name|ip-addr|ip6-addr> <target-ip> <target-port>
   wired-stop <ap-name|ip-addr|ip6-addr> <target-ip> <target-port>
```

Description

These commands manage WiFi packet capture (PCAP) on Dell APs. The WiFi packets are encapsulated in a UDP header and sent to a client running a packet analyzer like Wildpacket's Airopeek, Omnipeek, or Wireshark.

Syntax

Parameter	Description
`clear`	Clears the packet capture session.
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IP address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.
`<pcap-id>`	ID of the PCAP session.
`radio <0-1>`	ID of the radio sending the packets
`close-port <port>`	(CPSEC CAPs and RAPs only) Close or disallow access to this UDP port on the AP for packet capture purposes.
`interactive`	Start an interactive packet capture session between an AP and a client running a packet analyzer.
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IP address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.
`<filter-spec>`	Packet Capture filter specification. See **Usage Guidelines** for details.

Parameter	Description
<target-ip>	IP address of the client running the packet analyzer.
<target-port>	UDP port number on the client station where the captured packets are sent.
radio <0-1>	ID of the radio sending the packets
channel <channel>	(Optional/Applicable only in Air Monitor mode) Number of a radio channel to tune into to capture packets.
open-port <port>	(CPSEC CAPs and RAPs only) Enable or allow access to this UDP port on the AP for packet capture purposes.
pause	Pause a packet capture session.
ap-name <ap-name>	Name of the AP.
ip-addr <ip-addr>	IP address of the AP.
ip6-addr <ip6-addr>	IPv6 address of the AP.
<pcap-id>	ID of the PCAP session.
radio <0-1>	ID of the radio sending the packets
raw-start	Stream packets from the driver to a client running the packet analyzer.
ap-name <ap-name>	Name of the AP.
ip-addr <ip-addr>	IP address of the AP.
ip6-addr <ip6-addr>	IPv6 address of the AP.
<target-ip>	IP address of the client running the packet analyzer.
<target-port>	UDP port number on the client station where the captured packets are sent.
radio <0-1>	ID of the radio sending the packets
channel <channel>	(Optional/Applicable only in Air Monitor mode) Number of a radio channel to tune into to capture packets.
maxlen <maxlen>	(Optional) Limit the length of 802.11 frames to include in the capture to a specified maximum.
resume	Resume a packet capture session.

Parameter	Description
ap-name <ap-name>	Name of the AP.
ip-addr <ip-addr>	IP address of the AP.
ip6-addr <ip6-addr>	IPv6 address of the AP.
<pcap-id>	ID of the PCAP session.
radio <0-1>	ID of the radio sending the packets
stop	Stop a packet capture session.
ap-name <ap-name>	Name of the AP.
ip-addr <ip-addr>	IP address of the AP.
ip6-addr <ip6-addr>	IPv6 address of the AP.
<pcap-id>	ID of the PCAP session.
radio <0-1>	ID of the radio sending the packets
wired-start	Start a wired ethernet packet stream to an external viewer.
ap-name <ap-name>	Name of the AP.
ip-addr <ip-addr>	IP address of the AP.
ip6-addr <ip6-addr>	IPv6 address of the AP.
<target-ip>	IP address of the client running the packet analyzer.
<target-port>	UDP port number on the client station where the captured packets are sent.
wired-stop	Halt a wired ethernet packet stream currently being sent to an external viewer.
ap-name <ap-name>	Name of the AP.
ip-addr <ip-addr>	IP address of the AP.
ip6-addr <ip6-addr>	IPv6 address of the AP.
<target-ip>	IP address of the client running the packet analyzer.
<target-port>	UDP port number on the client station where the captured packets are sent.

Usage Guidelines

These commands direct an AP to send WiFi packet captures to a client packet analyzer utility such as Airmagnet, Wireshark and so on, on a remote client.

Before using these commands, you need to start the packet analyzer utility on the client and open a capture window for the port from which you are capturing packets. The packet analyzer cannot be used to control the flow or type of packets sent from APs.

The packet analyzer processes all packets. However, you can apply display filters on the capture window to control the number and type of packets being displayed. In the capture window, the time stamp displayed corresponds to the time that the packet is received by the client and is not synchronized with the time on the AP.

Filter specification (used in ap packet-capture interactive) supports the following:

- type (beacon/rts/cts/data/ack/ctrl/mgmt/all)
- sta (mac address)
- bss (mac address)
- da (mac address)
- sa (mac address)
- dir (tods, fromds)
- retry (1, 0)
- frag (1, 0)
- wep (1, 0)

Filter spec examples:

(type eq beacon) or ((sta eq 000000010203) and (dir eq tods))

(type == data) && ((sta = 000000010203) || (sta == 000000010203))

(type != beacon)

(wep nq 1)

(type eq all)

Examples

The following command starts a raw packet capture session for the AP **ly115** on radio **0**, and sends the packets to the client at **10.64.102.4** on port **5000**.

```
(host) (config) #ap packet-capture raw-start ap-name ly115 10.64.102.4  5000 0 radio 0
Packet capture has started for pcap-id:1
```

The following commands start an interactive packet capture session for the AP **ap1**.

```
#ap packet-capture open-port 5555

#ap packet-capture interactive ap-name ap1 "type eq all" 192.168.0.3 5555 radio 0
```

The output of the command in the example below displays packet capture session statistics for the AP **ap1**. In this example, the output has been divided into multiple sections to better fit on the pages of this document. In the actual command-line interface, it will appear in a single, long table.

```
#show ap packet-capture status ap-name ap1

Packet Capture Sessions at ap1, IP 10.3.44.167

-----------------------------------------------

pcap-id  filter       type         intf               channel max-pkts
-------  ------       ----         ----               ------- --------
1        type eq all  interactive  6c:f3:7f:ba:65:70  153     0


max-pkt-size  num-pkts  status       url target       Radio ID
------------  --------  ------       ------           ------
65536         3759      in-progress  192.168.0.3/5555 0
```

Related Commands

To view the status of outstanding packet capture (pcap) sessions, use show ap packet capture.

Command History

Version	Change
ArubaOS 3.0	Command Introduced
ArubaOS 3.4	The **maxlen** parameter was introduced, and the **pcap start** command deprecated.
ArubaOS 6.2	Name changed from pcap to ap packet capture.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Works in Access Point, Air Monitor, and Spectrum Monitor modes on all AP models in enable mode.

ap process restart

```
ap process restart
   {ap-name <ap-name>}|{ip-addr <ip>}|{ip6-addr <ip6>}
```

Description

Use this command to restart the AP process of a particular AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IPv4 address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.

Usage Guidelines

This command should only be used under the guidance of Dell technical support.

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms.	Base operating system	Enable mode on master or local controllers

ap regulatory activate

```
ap regulatory activate <filename>
```

Description

This command activates the specified Regulatory-Cert.

Syntax

None.

Parameter	Description	Default
`<filename>`	Name of the Regulatory-Cert to be activated.	—

Usage Guidelines

Use this command to activate a new Regulatory-Cert to your configuration.

Related Commands

To view the current Regulatory-Cert, use the **show ap regulatory** command.

To view the supported channels, use the **show ap allowed-channels country-code** command.

Command History

Release	Modification
ArubaOS 6.4.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on controllers

ap regulatory-domain-profile

```
ap regulatory-domain-profile <profile>
   clone <profile>
   country-code <code>
   no ...
   valid-11a-160mhz-channel-group <valid-11a-160mhz-channel-group>
   valid-11a-40mhz-channel-pair <valid-11a-40mhz-channel-pair>
   valid-11a-80mhz-channel-group <valid-11a-80mhz-channel-group>
   valid-11a-channel <num>
   valid-11g-40mhz-channel-pair <valid-11g-40mhz-channel-pair>
   valid-11g-channel <num>
```

Description

This command configures an AP regulatory domain profile.

Syntax

Parameter	Description	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—
`clone`	Name of an existing regulatory domain profile from which parameter values are copied.	—
`country-code`	Code that represents the country in which the APs will operate. The country code determines the 802.11 wireless transmission spectrum. Improper country code assignment can disrupt wireless transmissions. Most countries impose penalties and sanctions for operators of wireless networks with devices set to improper country codes.	country code configured on the master controller during initial setup
`no`	Negates any configured parameter.	—
`valid-11a-160mhz-channel-group`	This parameter defines which 160 MHz channels on the “a” band are available for assignment by ARM and for controller to randomly assign if the user has not specified a channel. The channel numbers 36-64 correspond to channel center frequency.	—
`valid-11a-40mhz-channel-pair`	Specify a channel pair valid for 40 MHz operation in the 802.11a frequency band for the specified regulatory domain. The two channels must be separated by a dash. Example: 36-40 44-48	country code determines supported channel pairs

Parameter	Description	Default
	52-56	**Note:** Changing the country code causes the valid channel lists to be reset to the defaults for the country.
`valid-11a-80mhz-channel-group`	This parameter defines which 80 MHz channels on the “a” band are available for assignment by ARM and for controller to randomly assign if the user has not specified a channel. The channel numbers below correspond to channel center frequency.	—
`valid-11a-channel`	Enter a single 802.11a channel number for 20 MHz operation within the specified regulatory domain.	country code determines supported channels **Note:** Changing the country code causes the valid channel lists to be reset to the defaults for the country.
`valid-11g-40mhz-channel-pair`	Specify a channel pair valid for 40 MHz operation in the 802.11g frequency band for the specified regulatory domain. The two channels must be separated by a dash. Example: 1-5 2-6 7-11	country code determines supported channel pairs **Note:** Changing the country code causes the valid channel lists to be reset to the defaults for the country.
`valid-11g-channel`	Enter a single 802.11g channel number for 20 MHz operation within the specified regulatory domain.	country code determines supported channels **Note:** Changing the country code causes the valid channel lists to be reset to the defaults for the country.

Usage Guidelines

This profile configures the country code and valid channels for operation of APs. The list of valid channels only affects the channels that may be selected by ARM or by the controller when no channel is configured. Channels that are specifically configured in the AP radio settings profile (see rf dot11a-radio-profile or rf dot11g-radio-profile) must be valid for the country and the AP model.

A controller shipped to certain countries, such as the U.S. and Israel, cannot terminate APs with regulatory domain profiles that specify different country codes from the controller. For example, if a controller is designated for the U.S., then only a regulatory domain profile with the "US" country code is valid; setting APs to a regulatory domain profile with a different country code will result in the radios not coming up. For controllers in other countries, you can mix regulatory domain profiles on the same controller; for example, one controller can support APs in Japan, Taiwan, China, and Singapore.

In order for an AP to boot correctly, the country code configured in the AP regulatory domain profile must match the country code of the LMS. If none of the channels supported by the AP have received regulatory approval by the country whose country code you selected, the AP will revert to Air Monitor mode.

Examples

The following command configures the regulatory domain profile for APs in Japan:

```
(host) (config) #ap regulatory-domain-profile rd1
   country-code JP
```

The following command configures a regulatory domain profile for APs in the United States and specifies that the channel pair of 36 and 40, is allowed for 40 MHz mode of operation on the 5 GHz frequency band:

```
(host) (config) #ap regulatory-domain-profile usa1
   country-code US
   valid-11a-40mhz-channel-pair 36-40
```

The following command configures a regulatory domain profile for APs in the United States and specifies that the channel pair of 5 and 1, is allowed for 40 MHz mode of operation on the 2.4 GHz frequency band:

```
(host) (config) #ap regulatory-domain-profile usa1
   country-code US
   valid-11g-40mhz-channel-pair 1-5
```

Related Commands

To view the supported channels, use the **show ap allowed-channels** command.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.3	Support for the IEEE 802.11n standard, including channel pairs for 40 MHz mode of operation, was introduced.
ArubaOS 5.0	The **valid-11a-40mhz-channel-pair** and **valid-11g-40mhz-channel-pair** parameters no longer support the + and - parameters that allowed you to define a primary and backup channel within the channel pair.
ArubaOS 6.3	The **valid-11a-80mhz-channel-group** parameter was introduced.
ArubaOS 6.5	The **valid-11a-160mhz-channel-group** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ap regulatory reset

```
ap regulatory reset
```

Description

This command returns the controller to the factory default Regulatory-Cert.

Syntax

None.

Usage Guidelines

Use this command to return the controller to the .factory default regulatory information.

Related Commands

To view the current Regulatory-Cert, use the **show ap regulatory** command.

To view the supported channels, use the **show ap allowed-channels country-code** command.

Command History

Release	Modification
ArubaOS 6.4.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on controllers

ap spectrum clear-webui-view-settings

```
ap spectrum clear-webui-view-settings
```

Description

Clear a saved spectrum dashboard view.

Syntax

no parameters

Usage Guidelines

Saved spectrum view preferences may not be backwards compatible with the spectrum analysis dashboard in earlier versions of ArubaOS. If you downgrade to an earlier version of ArubaOS and your client is unable to load a saved spectrum view in the spectrum dashboard, access the CLI in enable mode and issue this command to delete the saved spectrum views and display default view settings in the spectrum dashboard.

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	RF Protect license	Enable mode on master or local controllers

ap spectrum local-override

```
no
override ap-name <ap-name>
spectrum-band 2ghz|5ghz
```

Description

Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.

Syntax

Parameter	Description	Range	Default
`override ap-name <ap-name>`	name of an AP whose radio should be converted to a spectrum monitor radio	—	—
`spectrum band`	Spectrum band or portion of the band to be monitored by the spectrum monitor radio	**2GHz** (channels 1-14) **5GHz**(channels 36-64, 100-140 and 149-165).	**2Ghz**

Usage Guidelines

There are two ways to change an AP that supports the spectrum monitor feature into a spectrum monitor. You can assign that AP to a 802.11a and 802.11g radio profile that is already set to spectrum mode, or you can temporarily change the AP into a spectrum monitor using a local spectrum override profile. When you use a local spectrum override profile to override an AP's mode setting, that AP will begin to operate as a spectrum monitor, but will remain associated with its previous 802.11a and 802.11g radio profiles. If you change any parameter (other than the overridden mode parameter) in the spectrum monitor's 802.11a or 802.11 radio profiles, the spectrum monitor will immediately update with the change. When you remove the local spectrum override, the spectrum monitor will revert back to its previous mode, and remain assigned to the same 802.11a and 802.11 radio profiles as before.

For a list of APs that can be converted into a spectrum monitor or hybrid AP, refer to the Spectrum Analysis chapter of the Dell Networking W-Series ArubaOS 6.5.x User Guide.

Related Commands

Command	Description	Mode
show ap spectrum local-override	This command shows a list of AP radios currently converted to spectrum monitors via the spectrum local-override list	Config mode on master or local controllers

Command History

Release	Modification
ArubaOS 6.0	Command introduced
ArubaOS 6.2	The spectrum-band parameter supports a 5ghz value, allowing an AP to monitor the entire 5 Ghz radio band. Previous versions of ArubaOS supported 5ghz-lower, 5ghz-middle and 5ghz-upper settings.

Command Information

Platforms	Licensing	Command Mode
All platforms	RF Protect license	Config mode on master controllers

ap system-profile

```
ap system-profile <profile>
   aeroscout-rtls-server ip-or-dns <ipaddr-or-dns> port <port> include-unassoc-sta
   {disable|enable}
   am-scan-rf-band [a|all|g]
   ap-arp-attack-protection
   ap-console-password <ap-console-password>
   ap-console-protection
   ap-usb-power-override
   bkup-band all|a|g
   bkup-lms-ip <ipaddr>
   bkup-lms-ipv6 <ipaddr>
   bkup-mode static|dynamic|off
   bkup-passwords <bkup-passwords>
   ble-op-mode {Beaconing | Disabled | DynamicConsole | PersistentConsole}
   ble-token <string>
   ble-u   rl <url>
   lms-ping-interval
   bootstrap-threshold <number>
   clone <profile>
   console-enable

   disable-tftp-image-upgrade
   dns-domain <domain>
   double-encrypt
   dump-server <server>
   gre-striping-ip
   heartbeat-dscp <number>
   heartbeat-in <secs>
   led-mode normal|off
   lms-hold-down-period <seconds>
   lms-ip <ipaddr>
   lms-ipv6 <ipaddr>
   lms-preemption
   maintenance-mode
   max-request-retries <number>
   mcast-aggr
   mcast-aggr-allowed-vlan <vlan-list>
   mtu <bytes>
   native-vlan-id <vlan>
   no ...
   number_ipsec_retries
   rap-bw-total
   rap-bw-resv-1
   rap-bw-resv-2
   rap-bw-resv-3
   rap-dhcp-default-router <ipaddr>
   rap-dhcp-dns-server <ipaddr>
   rap-dhcp-lease <days>
   rap-dhcp-pool-end <ipaddr>
   rap-dhcp-pool-netmask <netmask>
   rap-dhcp-pool-start <ipaddr>
   rap-dhcp-server-id <ipaddr>
   rap-dhcp-server-vlan <vlan>
   rap-gre-mtu
   rap-local-network-access
   request-retry-interval <seconds>
   rf-band <band>
```

```
rtls-server ip-or-dns <ipaddr-ordns> port <port> key <key> station-message-frequency
<seconds> include-unassoc-sta
secondary-master <ip/fqdn>
session-acl <acl>
spanning-tree
syscontact <name>
telnet
```

Description

This command configures an AP system profile.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—	"default"
`aeroscout-rtls-server`	Enables the AP to send RFID tag information to an AeroScout real-time asset location (RTLS) server. RTLS station reporting includes information for APs and the clients that the AP has detected. If you include the **include-unassoc-sta** parameter, the station reports will also include information about clients not associated to any AP. By default, unassociated clients are not included in station reports.	—	—
`am-scan-rf-band`	Scanning band for multiple RF radios	a, g, all	all
`a`	Set the scanning band to 802.11a only	—	all
`g`	Set the scanning band to 802.11g only	—	all
`all`	Set the scanning band to apply to all bands	—	all
`ap-arp-attack-protection`	Drop ARP packets coming from wired or wireless clients with AP gateway IP address. In other words, disallow ARP attack from un-trusted ports.	—	enabled

Parameter	Description	Range	Default
`ap-console-password <ap-console-protection>`	Set the AP console password on the controller. If the user does not set any password, the controller generates a default random password which can be viewed by executing the **encrypt disable** command followed by the **show ap system-profile <profile-name>** command.	6-32 characters	default random password
`ap-console-protection`	Enable the AP console password.	—	enabled
`ap-usb-power-override`	Enabling override enables the USB port of the AP with POE AT power.	—	disabled
`ip-or-dns`	IP address or the DNS of the AeroScout server to which location reports are sent.	—	—
`port`	Port number on the AeroScout server to which location reports are sent.	—	—
`bkup-band a|all|g`	Band on which the controller broadcasts the backup ESSID.	802.11a, all bands, or 802.11g	all
`bkup-lms-ip`	In multi-controller networks, specifies the IP address of a *backup* to the IP address specified with the lms-ip parameter.	—	—
`bkup-lms-ipv6`	In multi-controller ipv6 networks, specifies the IPv6 address of a *backup* to the IPv6 address specified with the lms-ipv6 parameter.	—	—
`bkup-mode dynamic|off|static`	This parameter allows AP console access using a backup ESSID, allowing users to access an AP console after the AP has disconnected from the controller. When the AP advertises a backup ESSID in either static or dynamic mode, a user is able to access and debug the AP remotely through a virtual AP.	dynamic, off, or static	off

Parameter	Description	Range	Default
	Select **dynamic** or **static** to enable this feature and select the mode by which the controller broadcasts the backup ESSID. This feature is disabled by default.		
`bkup-passwords <bkup-pass-words>`	Set a WPA passphrase to generate PSK for backup Virtual AP.	–	–

`ble-op-mode`
`Beaconing`
`Disabled`
`DynamicConsole`
`PersistentConsole`
	Determines how the built-in Bluetooth Low Energy (BLE) chip in the AP functions. BLE chip can be in one of the following four modes:
	• **Beaconing**: The AP's built-in BLE chip functions as an iBeacon combined with beacon management functionality.
	• **Disabled**: The AP's built-in BLE chip is turned off. This is the default setting.
	• **DynamicConsole**: The AP's built-in chip functions as a regular iBeacon combined with beacon management functionality. However, when the link to the controller is lost, the built-in chip temporarily enables access to the AP console over BLE. This state of the BLE device may be rolled back to any of the other modes if the AP receives a different configuration setting for the **ble-op-mode** parameter from the new LMS.
	• **PersistentConsole**: The AP's built-in chip provides access to the AP console over BLE using a mobile application. This functionality is the superset of the **Beaconing** mode.
	NOTE: BLE is disabled on ArubaOS FIPS build.
		—	disabled

Parameter	Description	Range	Default
`ble-token`	The Bluetooth Low Energy (BLE) endpoint authorization token is a text string of 1-255 characters used by the BLE to authorize to and securely communicate with the Beacon Management Console. This token is unique for each deployment.	—	—
`ble-url`	URL of the Meridian server to which the BLE sends monitoring data.	—	—
`bootstrap-threshold`	Number of consecutive missed heartbeats on a GRE tunnel (heartbeats are sent once per second on each tunnel) before an AP rebootstraps. On the controller, the GRE tunnel timeout is 1.5 x bootstrap-threshold; the tunnel is torn down after this number of seconds of inactivity on the tunnel.	1-65535	8
`clone`	Name of an existing AP system profile from which parameter values are copied.	—	—
`console-enable`	Enable console port on the AP.	—	enabled
`console-log-lvl`	Enable the level of driver log prints sent to the AP console.	• alerts • critical • debugging • emergencies • errors • informational • notifications • warnings	emergencies
`disable-tftp-image-upgrade`	Disable TFTP image upgrade for RAP.	—	disabled

Parameter	Description	Range	Default
dns-domain	Name of domain that is resolved by corporate DNS servers. Use this parameter when configuring split tunnel.	—	—
double-encrypt	This parameter applies only to remote APs. Use double encryption for traffic to and from a wireless client that is connected to a tunneled SSID. When enabled, all traffic is re-encrypted in the IPsec tunnel. When disabled, the wireless frame is only encapsulated inside the IPsec tunnel. All other types of data traffic between the controller and the AP (wired traffic and traffic from a split-tunneled SSID) are always encrypted in the IPsec tunnel.	—	disabled
dump-server	(For debugging purposes.) Specifies the server to receive a core dump generated when an AP process crashes.	—	—
gre-striping-ip	Specify an IPv4 address for the 802.11g radio of the controller to allow LACP enabled switches to send traffic for the two controller radios on different links. Recommended value for this parameter is <LMS-IP_ addr>+1. **NOTE:** This parameter is deprecated in ArubaOS 6.4.2.0.	—	—
heartbeat-dscp	Define the DSCP value of AP heartbeats. Use this feature to prioritize AP heartbeats and prevent the AP from losing connectivity with the controller over high-latency or low-bandwidth WAN connections.	0-63	0

Parameter	Description	Range	Default
`heartbeat-in <secs>`	Set the interval between heartbeat messages between a remote or campus AP and its associated controller. An increase in the heartbeat interval increases the time it will take for an AP to detect the loss in connectivity to the controller, but can reduce internet bandwidth consumed by a remote AP.	1-60 secs	1 sec
`led-mode`	The operating mode for the AP LEDs. This option is available on all 802.11n indoor AP platforms.	—	normal
`normal`	Display LEDs in normal mode.	—	—
`off`	Turn off all LEDs.	—	—
`lms-hold-down-period`	Time, in seconds, that the primary LMS must be available before an AP returns to that LMS after failover.	1-3600	600 seconds
`lms-ip`	In multi-controller networks, this parameter specifies the IP address of the local management switch (LMS)—the Dellcontroller—which is responsible for terminating user traffic from the APs, and processing and forwarding the traffic to the wired network. This can be the IP address of the local or master controller. When using redundant controllers as the LMS, set this parameter to be the VRRP IP address to ensure that APs always have an active IP address with which to terminate sessions. **NOTE:** If the LMS-IP is blank, the access point will remain on the controller that it finds using methods like DNS or DHCP. If an IP address is configured for the LMS IP parameter, the AP will be immediately redirected to the controller at that address.	—	—

Parameter	Description	Range	Default
`lms-ipv6`	In multi-controller ipv6 networks, specifies the IPv6 address of the local management switch (LMS)—the controller—which is responsible for terminating user traffic from the APs, and processing and forwarding the traffic to the wired network. This can be the IP address of the local or master controller. When using redundant controllers as the LMS, set this parameter to be the VRRP IP address to ensure that APs always have an active IP address with which to terminate sessions.	—	—
`lms-ping-interval`	Specifies the interval at which application level ping needs to be sent to primary controller to check the reachability. Applicable only for RAP. **NOTE:** If this parameter is changed, UDP session timeout on an intermediate router which performs NATing should be set accordingly. The preferred timeout value is (lms-ping-interval + 30sec).	10-60 seconds	20 seconds
`lms-preemption`	Automatically reverts to the primary LMS IP address when it becomes available.	—	disabled
`maintenance-mode`	Enable or disable AP maintenance mode. This setting is useful when deploying, maintaining, or upgrading the network. If enabled, APs stop flooding unnecessary traps and syslog messages to network management systems or network operations centers when deploying, maintaining, or upgrading the network. The controller still generates debug syslog messages if debug logging is enabled.		disabled

Parameter	Description	Range	Default
max-request-retries	Maximum number of times to retry AP-generated requests, including keepalive messages. After the maximum number of retries, the AP either tries the IP address specified by the bkup-lms-ip (if configured) or reboots.	1-65535	10
mcast-aggr	Enable multicast aggregation at AP.	—	disabled
mcast-aggr-allowed-vlan <vlan-list>	Enable list of VLANs where AP multicast aggregation is allowed.	—	disabled
mtu	MTU, in bytes, on the wired link for the AP.	1024-1578	—
native-vlan-id	Native VLAN for bridge mode virtual APs (frames on the native VLAN are not tagged with 802.1q tags).	—	1
no	Negates any configured parameter.	—	—
number-ipsec-retries	The number of times the AP will attempt to recreate an IPsec tunnel with the master controller before the AP will reboot. A value of 0 disables the reboot.	1-1000	85
rap-bw-total	This is the total reserved uplink bandwidth (in Kilobits per second).	—	—
rap-bw-resv-1	Session ACLs with uplink bandwidth reservation in kilobits per second. You can specify up to three session ACLs to reserve uplink bandwidth. The sum of the three uplink bandwidths should not exceed the **rap-bw-total** value.	—	—
rap-bw-resv-2			
rap-bw-resv-3			
rap-dhcp-default-router	IP address for the default DHCP router.	—	192.168.11.1
rap-dhcp-dns-server	IP address of the DNS server.	—	192.168.11.1

Parameter	Description	Range	Default
rap-dhcp-lease	The amount of days that the assigned IP address is valid for the client. Specify the lease in <days>. 0 indicates the IP address is always valid; the lease does not expire.	0-30	0
rap-dhcp-pool-end	Configures a DHCP pool for remote APs. This is the last IP address of the DHCP pool.	—	192.168.11.254
rap-dhcp-pool-netmask	Configures a DHCP pool for remote APs. This is the netmask used for the DHCP pool.	—	255.255.255.0
rap-dhcp-pool-start	Configures a DHCP pool for remote APs. This is the first IP address of the DHCP pool.	—	192.168.11.2
rap-dhcp-server-id	IP address used as the DHCP server identifier.	—	192.168.11.1
rap-dhcp-server-vlan	VLAN ID of the remote AP DHCP server used if the controller is unavailable. This VLAN enables the DHCP server on the AP (also known as the remote AP DHCP server VLAN). If you enter the native VLAN ID, the DHCP server is unavailable.	—	—
rap-gre-mtu	Configures the maximum size of the GRE packets exchanged between a RAP and the controller.	1024-1578 bytes	1200 bytes
rap-local-network-access	Enable or disable local network access across VLANs in a Remote-AP.	—	disabled
request-retry-interval	Interval, in seconds, between the first and second retries of AP-generated requests. If the configured interval is less than 30 seconds, the interval for subsequent retries is increased up to 30 seconds.	1-65535	10 seconds

Parameter	Description	Range	Default
rf-band	For APs that support both a and b/g RF bands, RF band in which the AP should operate: • g = 2.4 GHz • a = 5 GHz	a/g	g
rtls-server	Enables the AP to send RFID tag information to an RTLS server.	—	—
ip-or-dns	IP address or the DNS of the RTLS server to which location reports are sent.	—	—
port	Port number on the server to which location reports are sent.	—	—
key	Shared secret key.	—	—
station-message-frequency	Indicates how often packets are sent to the server.	1-3600	30 seconds
include-unassoc-sta	RTLS station reporting includes information for APs and the clients that the AP has detected. If you include the **include-unassoc-sta** parameter, the station reports will also include information about clients not associated to any AP. By default, unassociated clients are not included in station reports.	—	disabled
secondary-master	The secondary master controller is configured to be used when a RAP is not able to reach the primary master controller.	—	—
session-acl	Session ACL configured with the ip access-list session command. **NOTE:** This parameter requires the PEFNG license.	—	—
spanning-tree	Enables the spanning-tree protocol.	—	disabled

Parameter	Description	Range	Default
`syscontact`	SNMP system contact information.	—	—
`telnet`	Enable or disable telnet to the AP.	—	disabled

Usage Guidelines

The AP system profile configures AP administrative operations, such as logging levels.

Example

For deployments running ArubaOS 6.3.1.x-6.4.1.x, execute the following commands to configure the LACP parameters (LMS IP and the GRE striping IP) on an AP system profile.

```
(host) (config) #ap system-profile LACP
(host) (AP system profile "LACP") #lms-ip 192.0.2.1
(host) (AP system profile "LACP") #gre-striping-ip 192.0.2.2
```

For deployments running ArubaOS 6.4.2.x and later, execute the following commands to configure LACP and AP LACP LMS map information settings.

```
(host) (config) #ap system-profile LACP
(host) (AP system profile "LACP") #lms-ip 192.0.2.1
(host) (AP system profile "LACP") #exit
(host) (config) #ap-lacp-striping-ip
(host) (AP LACP LMS map information) #striping-ip 192.0.2.2 lms 192.0.2.1
(host) (AP LACP LMS map information) #aplacp-enable
```

For more information on configuring LACP support, including important pre-deployment considerations and troubleshooting information, refer to the ArubaOS User Guide.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.2	Support for additional RTLS servers and remote AP enhancements was introduced.
ArubaOS 3.3.2	The following parameters were introduced: • **Maintenance-mode** parameter was introduced. • Multiple remote AP DHCP server enhancements were introduced. • Support for RFprotect server and backup server configuration was introduced. The **mms-rtls-server** parameter was deprecated.
ArubaOS 5.0	The **master-ip**, **rfprotect-server-ip** and **rfprotect-bkup-server** parameters were deprecated.

Release	Modification
ArubaOS 6.0	Added support for the option to set the RF scanning band (am-scan-rf-band). The **keepalive-interval** parameter was deprecated.
ArubaOS 6.2	The default number of IPsec retries defined by **number_ipsec_retries** was reduced from 360 to 85.
ArubaOS 6.2.1.3	The **root-ap** parameter was deprecated. This parameter identifies the root AP in a hierarchy of Remote APs.
ArubaOS 6.3	The following parameters were introduced: • The **aeroscout-rtls-server include-unassoc-sta** parameter was introduced. • The **spanning-tree** and **heartbeat-in** parameters were introduced. • The **rtls-serverip** and **aeroscout-rtls-server ip** parameters were modified to **rtls-server ip-or-dns** and **aeroscout-rtls-server ip-or-dns**.
ArubaOS 6.3.1	The **gre-striping-ip** parameter was introduced.
ArubaOS 6.4.2.0	The **gre-striping-ip** parameter was deprecated. GRE striping IP settings are defined using the ap-lacp-striping-ip command. The **system-message-frequency** parameter now accepts a value in the range of 1-3600 seconds.
ArubaOS 6.4.3.0	The following new parameters were introduced: • **ap-arp-attack-protection** • **mcast-aggr** • **mcast-aggr-allowed-vlan** • **ap-usb-power-override** • **shell-passwd** • **bkup-band** • **bkup-mode** • **bkup-password** • **ble-token** • **ble-url**

Release	Modification
ArubaOS 6.4.3.3	The **ble-op-mode** parameter was introduced.
ArubaOS 6.4.4.0	The **shell-passwd** parameter was enabled by default.
ArubaOS 6.5	The following new parameters were introduced: • **ap-console-password** • **ap-console-protection** • **console-log-lvl** • **disable-tftp-image-upgrade** • **secondary-master** The **shell-passwd** parameter was deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Config mode on master controllers

ap wipe out flash

```
ap wipe out flash
   ap-name <ap-name>
   ip-addr <ip-addr>
```

Description

Overwrite the entire AP compact flash, destroying its contents (including the current image file).

Syntax

Parameter	Description	Range	Default
`ap-name`	Wipe out the flash of the AP with the specified name.	—	—
`ip-addr`	Wipe out the flash of the AP with the specified IP address.	—	—

Usage Guidelines

Use this command only under the supervision of Dell technical support. If you delete the current image in the AP's flash memory, the AP will not function until you reload another image.

Command History

This command was introduced in ArubaOS 3.3.2.

Command Information

Platforms	Licensing	Command Mode
All platforms running ArubaOS 3.3.2.x-FIPS or later.	Base operating system	Config mode on master controllers

ap wired-ap-profile

```
ap wired-ap-profile <profile>
   broadcast
   clone <profile>
   forward-mode {bridge|split-tunnel|tunnel}
   no ...
   switchport access vlan <vlan> | {mode access|trunk} |trunk {allowed vlan <list>|
   add <list> | except <list> | remove <list>}| native vlan <vlan>
   trusted
   wired-ap-enable
```

Description

This command configures a wired AP profile.

Syntax

Parameter	Description
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.
`broadcast`	Forward broadcast traffic to this tunnel.
`clone`	Name of an existing wired AP profile from which parameter values are copied.
`forward-mode`	This parameter controls whether data is tunneled to the controller using generic routing encapsulation (GRE), bridged into the local Ethernet LAN (for remote APs), or a combination thereof depending on the destination (corporate traffic goes to the controller, and Internet access remains local). All forwarding modes support band steering, TSPEC/TCLAS enforcement, 802.11k and station blacklisting.
`tunnel`	In this default forwarding mode, the AP handles all 802.11 association requests and responses, but sends all 802.11 data packets, action frames and EAPOL frames over a GRE tunnel to the controller for processing. The controller removes or adds the GRE headers, decrypts or encrypts 802.11 frames and applies firewall rules to the user traffic as usual.
`bridge`	802.11 frames are bridged into the local Ethernet LAN. When a remote AP or campus AP is in bridge mode, the AP handles all 802.11 association requests and responses, encryption/decryption processes, and firewall enforcement. The 802.11e and 802.11k action frames are also processed by the AP, which then sends out responses as needed. An AP in bridge mode supports only the 802.1X authentication type. **NOTE:** Virtual APs in bridge mode using static WEP should use key slots 2-4 on the controller. Key slot 1 should only be used with Virtual APs in tunnel mode.
`split-tunnel`	802.11 frames are either tunneled or bridged, depending on the destination (corporate traffic goes to the controller, and Internet access remains local). An AP in split-tunnel mode supports only the 802.1X authentication type.

Parameter	Description
	An AP in split-tunnel forwarding mode handles all 802.11 association requests and responses, encryption/decryption, and firewall enforcement. The 802.11e and 802.11k action frames are also processed by the AP, which then sends out responses as needed. **NOTE:** Virtual APs in split-tunnel mode using static WEP should use key slots 2-4 on the controller. Key slot 1 should only be used with Virtual APs in tunnel mode.
`no`	Negates any configured parameter.
`switchport`	Configures the switching mode characteristics for the port.
`access`	The VLAN to which the port belongs. The default is VLAN 1.
`mode`	The mode for the port, either access or trunk mode. The default is access mode.
`trunk allowed`	Allows multiple VLANs on the port interface. You must define this parameter using VLAN IDs or VLAN names VLAN IDs and VLAN names cannot be listed together.
`trunk native`	The native VLAN for the port (frames on the native VLAN are not tagged with 802.1q tags).
`trusted`	Sets port as either trusted or untrusted. The default setting is untrusted.
`wired-ap-enable`	Enables the wired AP. The wired AP is disabled by default.

Usage Guidelines

This command is only applicable to Dell APs that support a second Ethernet port. The wired AP profile configures the second Ethernet port (enet1) on the AP.

For mesh deployments, this command is applicable to all Dell APs configured as mesh nodes. If you are using mesh to join multiple Ethernet LANs, configure and enable bridging on the mesh point Ethernet port.

Mesh nodes only support bridge mode and tunnel mode on their wired ports (enet0 or enet1). Split tunnel mode is not supported.

Use the bridge mode to configure bridging on the mesh point Ethernet port. Use tunnel mode to configure secure jack operation on the mesh node Ethernet port.

When configuring the Ethernet ports on APs with multiple Ethernet ports, note the following requirements:

- If configured as a mesh portal, connect enet0 to the controller to obtain an IP address. The wired AP profile controls enet1.Only enet1 supports secure jack operation.
- If configured as a mesh point, the same wired AP profile will control both enet0 and enet1.

Example

The following command configures the enet1 port on a multi-port AP as a trunk port:

```
(host) (config) #ap wired-ap-profile wiredap1
  switchport mode trunk
  switchport trunk allowed 4,5
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.2	The **split-tunnel** forwarding mode was introduced.
ArubaOS 6.0	Wired ports on campus APs support bridge forwarding mode.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Config mode on master controllers

ap wired-port-profile

```
ap wired-port-profile <profile>
   aaa-profile <profile>
   authentication-timeout <seconds>
   bridge-role
   clone
   enet-link-profile <profile>
   lldp-profile <profile>
   no
   portfast
   portfast-trunk
   rap-backup
   shutdown
   spanning-tree
   wired-ap-profile <profile>
```

Description

This command configures a wired port profile.

Syntax

Parameter	Description
`aaa-profile <profile>`	Name of a AAA profile to be used by devices connecting to the AP's wired port.
`authentication-timeout`	Authentication timeout value, in seconds, for devices connecting the AP's wired port. The supported range is 1-65535 seconds, and the default value is 20 seconds.
`bridge-role`	Name of the bridge role. This is the role that is assigned to a user if split-tunnel authentication fails.
`clone <profile>`	Create a new AP wired port profile based upon the values of an existing profile.
`enet-link-profile <profile>`	Specify an Ethernet link profile to be used by devices associated with this wired port profile. The Ethernet link profile defines the duplex value and speed to be used by the port.
`lldp-profile <profile>`	Specify an LLDP profile to be used by devices associated with this wired port profile. The LLDP profile specifies the type-length-value (TLV) elements to be sent in LLDP PDUs.
`no`	Negates any defined parameter.
`portfast`	Enables portfast. This parameter reduces the time taken for wired clients connected to an AP to detect the link and before they can send data traffic.

Parameter	Description
portfast-trunk	Enables portfast on trunk.
rap-backup	Use the **rap-backup** parameter to use the wired port on a Remote AP for local connectivity and troubleshooting when the AP cannot reach the controller. If the AP is not connected to the controller, no firewall policies will be applied when this option is enabled. (The AAA profile will be applied when the AP is connected to controller).
shutdown	Disable the wired AP port.
spanning-tree	Enables the spanning-tree protocol.
wired-ap-profile <profile>	Name of a wired AP profile to be used by devices connecting the AP's wired port. The wired AP profile defines the forwarding mode and switchport values used by the port.

Usage Guidelines

This command is only applicable to APs with Ethernet ports. Issue this command to enable or disable the wired port, define an AAA profile for wired port devices, and associate the port with an ethernet link profile that defines its speed and duplex values.

Example

The following command defines a AAA profile for wired port devices:

```
(host) (config) #ap wired-port-profile wiredport1
  aaa-profile default-open
  authentication-timeout 30
  wired-ap-profile wiredap1
```

Command History

Release	Modification
ArubaOS 6.0	Command introduced
ArubaOS 6.3	The **spanning-tree** parameter was added.
ArubaOS 6.5	The **portfast** and **portfast-trunk** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Config mode on master controllers

apboot

```
apboot {all [global|local]|ap-group <group> [global|local]|ap-name <name>|ip-addr
<ipaddr>|wired-mac <macaddr>}
```

Description

This command reboots the specified APs.

Syntax

Parameter	Description	Default
`all`	Reboot all APs.	all
`global`	Reboot APs on all controllers.	global
`local`	Reboot only APs registered on this controller. This is the default.	local
`ap-group`	Reboot APs in a specified group.	ap-group
`global`	Reboot APs on all controllers.	global
`local`	Reboot only APs registered on this controller. This is the default.	local
`ap-name`	Reboot the AP with the specified name.	ap-name
`ip-addr`	Reboot the AP at the specified IP address.	ip-addr
`wired-mac`	Reboot the AP at the specified MAC address.	wired-mac

Usage Guidelines

You should not normally need to use this command as APs automatically reboot when you reprovision them. Use this command only when directed to do so by your Dell representative.

Example

The following command reboots a specific AP:

```
(host)(config)# apboot ap-name Building3-Lobby
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

apconnect

```
apconnect {ap-name <name>|bssid <bssid>|ip-addr <ipaddr>} parent-bssid <bssid>
```

Description

This command instructs a mesh point to disconnect from its current parent and connect to a new parent.

Syntax

Parameter	Description
`ap-name <name>`	Specify the name of the mesh point to be connected to a new parent.
`bssid <bssid>`	Specific the BSSID of the mesh point to be connected to a new parent.
`ip-addr <ipaddr>`	Specific the IP address of the mesh point to be connected to a new parent.
`parent-bssid <bssid>`	BSSID of the parent to which the mesh point should connect.

Usage Guidelines

To maintain a mesh topology created using the **apconnect** command, Dell suggests setting the mesh reselection-mode to **reselect-never**, otherwise the normal mesh reselection mechanisms could break up the selected topology.

Example

The following command connects the mesh point "meshpoint1" to a new parent with the specified BSSID.

```
(host) (config) #apconnect ap-name meshpoint1 parent-bssid 00:12:6d:03:1c:f1
```

Related Commands

Command	Description	Mode
ap mesh-radio-profilereselection-modereselect-never	Use this command to prevent the AP from reselecting a new parent.	Enable or Config mode

Command History

This command was introduced in ArubaOS 3.4.1

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

apdisconnect

```
apdisconnect {ap-name <name>|bssid <bssid>|ip-addr <ipaddr>}
```

Description

This command disconnects a mesh point from its parent.

Syntax

Parameter	Description
`ap-name`	Specifies the name of the parent AP.
`bssid`	Specifies the BSSID of the parent AP.
`ip-addr`	Specifies the IP address of the parent AP.

Usage Guidelines

Each mesh point learns about the mesh portal from its parent (a mesh node that is part of the path to the mesh portal). This command directs a mesh point to disassociate from its parent. The mesh point will attempt to associate with another neighboring mesh node, if available. The old parent is not eligible for re-association for 60 seconds after disconnection.

Example

The following command disconnects a specific mesh point from its parent:

```
(host) (config) #apdisconnect ap-name meshpoint1
```

Related Commands

Command	Description	Mode
apconnect	This command connects a mesh point to a new specified parent.	Enable or Config mode

Command History

This command was introduced in ArubaOS 3.2

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

apflash [deprecated]

```
apflash all|{ap-group <group>}|{ap-name <name>}|{ip-addr <ipaddr>}|{wired-mac <macaddr>}
global|local [backup-partition] [server <ipaddr>]
```

Description

This command reflashes the specified AP. Starting with ArubaOS 6.1, this command can only be run by Dell Technical Support or users in support mode.

Command History

Version	Description
ArubaOS 3.0	Command introduced
ArubaOS 6.0	The **global** and **local** parameters were introduced.
ArubaOS 6.1	Command deprecated

ap-group

```
ap-group <group>
   ap-system-profile <profile>
   authorization-profile <profile>
   clone <profile>
   dot11a-radio-profile <profile>
   dot11a-traffic-mgmt-profile <profile>
   dot11g-radio-profile <profile>
   dot11g-traffic-mgmt-profile <profile>
   enet0-port-profile <profile>
   enet1-port-profile <profile>
   enet2-port-profile <profile>
   enet3-port-profile <profile>
   enet4-port-profile <profile>
   event-thresholds-profile <profile>
   ids-profile <profile>
   mesh-cluster-profile <profile> priority <priority>
   mesh-radio-profile <profile>
   no ...
   regulatory-domain-profile <profile>
   rf-optimization-profile <profile>
   virtual-ap <profile>
   voip-cac-profile <profile>
```

Description

This command configures an AP group.

Syntax

Parameter	Description	Range	Default
`<group>`	Name that identifies the AP group. The name must be 1-63 characters. NOTE: You cannot use quotes (“) in the AP group name.	—	“default”
`ap-system-profile`	Configures AP administrative operations, such as logging levels. See ap system-profile on page 210.	—	“default”
`authorization-profile`	Restrictive group for unauthorized AP.	–	–
`clone`	Name of an existing AP group from which profile names are copied.	—	—
`dot11a-radio-profile`	Configures 802.11a radio settings and load balancing for the AP group; contains the ARM profile. See rf dot11a-radio-profile on page 733.	—	“default”

Parameter	Description	Range	Default
`dot11a-traffic-mgmt-profile`	Configures bandwidth allocation. See wlan traffic-management-profile on page 2352.	—	—
`dot11g-radio-profile`	Configures 802.11g radio settings and load balancing for the AP group; contains the ARM profile. See rf dot11a-radio-profile on page 733.	—	“default”
`dot11g-traffic-mgmt-profile`	Configures bandwidth allocation. See wlan traffic-management-profile on page 2352.	—	—
`enet0-port-profile`	Configures the duplex and speed of the Ethernet interface 0 on the AP. For information on how these profiles are defined, see ap wired-port-profile on page 228.	—	“default”
`enet1-port-profile`	Configures the duplex and speed of the Ethernet interface 1 on the AP. For information on how these profiles are defined, see ap wired-port-profile on page 228.	—	“default”
`enet2-port-profile`	Configures the duplex and speed of an Ethernet interface 2 on the AP. These profiles are defined using the command ap wired-port-profile on page 228.	—	“default”
`enet3-port-profile`	Configures the duplex and speed of an Ethernet interface 3 on the AP. These profiles are defined using the command ap wired-port-profile on page 228.	—	“default”
`enet4-port-profile`	Configures the duplex and speed of an Ethernet 4 interface on the AP. For information on how these profiles are defined, see ap wired-port-profile on page 228.	—	“default”
`event-thresholds-profile`	Configures Received Signal Strength Indication (RSSI) metrics. See rf event-thresholds-profile on page 758.	—	“default”
`ids-profile`	Configures Dell’s Intrusion Detection System (IDS). See ids profile on page 424.	—	“default”

Parameter	Description	Range	Default
`mesh-cluster-profile`	Configures the mesh cluster profile for mesh nodes that are members of the AP group. There is a “default” mesh cluster profile; however, it is not applied until you provision the mesh node. See ap mesh-cluster-profile on page 175.	—	“default”
`priority`	Configures the priority of the mesh cluster profile. If more than two mesh cluster profiles are configured, mesh points use this number to identify primary and backup profile(s). The lower the number, the higher the priority.	1-16	1
`mesh-radio-profile`	Configures the 802.11g and 802.11a radio settings for mesh nodes that are members of the AP group. See ap mesh-ht-ssid-profile on page 177. Commands to configure mesh for outdoor APs require the Outdoor Mesh license.	—	“default”
`no`	Negates any configured parameter.	—	—
`regulatory-domain-profile`	Configures the country code and valid channels. See ap regulatory-domain-profile on page 202.	—	“default”
`rf-optimization-profile`	Configure coverage hole and interference detection. See rf optimization-profile on page 764.	—	“default”
`virtual-ap`	One or more profiles, each of which configures a specified WLAN. See wlan virtual-ap on page 2358.	—	“default”
`voip-cac-profile`	Configures voice over IP (VoIP) call admission control (CAC) options. See wlan voip-cac-profile on page 2372. This parameter requires the PEFNG license.	—	“default”

Usage Guidelines

AP groups are at the top of the configuration hierarchy. An AP group collects virtual AP definitions and configuration profiles, which are applied to APs in the group.

Example

The following command configures a virtual AP profile to the “default” AP group:

```
(host)(config) #ap-group default
  virtual-ap corpnet
```

Related Commands

View AP group settings using the command show ap-group.

Command History:

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.2	Support for the mesh parameters was introduced
ArubaOS 3.4.1	The **voip-cac-profile** parameter required the PEF license.
ArubaOS 5.0	The **voip-cac-profile** parameter requires the PEFV license.
ArubaOS 6.0	The **enet-port-profile** parameters parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Config mode on master controllers

ap-leds

```
ap-leds
   {all | ap-group <ap-group> | ap-name <ap-name> | ip-addr <ip address> | wired-mac <mac
   address>} {global blink|normal}|{local blink|normal}
```

Description

This command allows you to set the behavior of an AP's LEDs.

Syntax

Parameter	Description
`all`	Controls the LED behavior for all APs
`ap-group <ap-group>`	Controls the LED behavior for APs in the specified group
`ap-name <ap-name>`	Controls the LED behavior for the AP with the specified name
`ip-addr <ip-addr>`	Controls the LED behavior for the AP with the specified IP address
`wired-mac <mac-addr>`	Controls the LED behavior for the AP with the specified MAC address
`global`	Selects all APs on all controllers
`local`	Selects all APs registered on this controller
`blink`	Causes the LEDs to blink for identification
`normal`	Restores the LEDs to their normal behavior

Usage Guidelines

Use the **ap-leds** command to make the LEDs on a defined set of APs either blink or display in the currently configured LED operating mode. Note that if the LED operating mode defined in the AP's system profile is set to "off", then the **normal** parameter in the **ap-leds** command will disable the LEDs. If the LED operating mode in the AP system profile is set to "normal" then the **normal** parameter in this command will allow the LEDs light as usual.

Example

The following command causes all local APs to blink their LEDs for identification purposes:

```
ap-leds all local blink
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master or local controllers

ap-move

```
ap-move
   all
   ap-group <ap-group>
   ap-name <ap-name>
```

Description

When HA is enabled, use this command to move an AP or group of APs to their standby controller.

Syntax

Parameter	Description
`all`	Move all APs.
`ap-group <ap-group>`	Move all APs belonging to the specified AP group.
`ap-name <ap-name>`	Move the specified AP.

Usage Guidelines

When HA is enabled on a pair of controllers, this command should be used when it is necessary to move a single AP, all APs in an ap-group, or all APs to switchover to their standby controller without an actual failure of the active controller. For example, this allows the network admin to manually move one or more APs to their standby controller and perform a planned upgrade or maintenance on the active controller.

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms.	Base operating system	Enable mode on master or local controllers

ap-name

```
ap-name <name>
   ap-system-profile <profile>
   authorization-profile <profile>
   clone <profile>
   dot11a-radio-profile <profile>
   dot11a-traffic-mgmt-profile <profile>
   dot11g-radio-profile <profile>
   dot11g-traffic-mgmt-profile <profile>
   enet0-profile <profile>
   enet1-profile <profile>
   event-thresholds-profile <profile>
   exclude-mesh-cluster-profile-ap <profile>
   exclude-virtual-ap <profile>
   ids-profile <profile>
   mesh-cluster-profile <profile> priority <priority>
   mesh-radio-profile <profile>
   no ...
   regulatory-domain-profile <profile>
   rf-optimization-profile <profile>
   snmp-profile <profile>
   virtual-ap <profile>
   voip-cac-profile <profile>
```

Description

This command configures a specific AP.

Syntax

Parameter	Description	Default
`<name>`	Name that identifies the AP. By default, an AP's name can either be the AP's Ethernet MAC address, or if the AP has been previously provisioned with an earlier version of ArubaOS, a name in the format <building>.<floor>.<location>. The name must be 1-63 characters. NOTE: You cannot use quotes (") in the AP name.	—
`ap-system-profile`	Configures AP administrative operations, such as logging levels. See ap system-profile on page 210.	"default"
`authorization-profile`	Restrictive group for unauthorized AP.	–
`clone`	Name of an existing AP name from which profile names are copied.	—
`dot11a-radio-profile`	Configures 802.11a radio settings for the AP group; contains the ARM profile. See rf dot11a-radio-profile on page 733.	"default"

Parameter	Description	Default
`dot11a-traffic-mgmt-profile`	Configures bandwidth allocation. See wlan traffic-management-profile on page 2352.	—
`dot11g-radio-profile`	Configures 802.11g radio settings for the AP group; contains the ARM profile. See rf dot11a-radio-profile on page 733.	“default”
`dot11g-traffic-mgmt-profile`	Configures bandwidth allocation. See wlan traffic-management-profile on page 2352.	—
`enet0-profile`	Configures the duplex and speed of the Ethernet 0 interface on the AP. See ap enet-link-profile on page 162.	“default”
`enet1-profile`	Configures the duplex and speed of the Ethernet 1 interface on the AP. See ap enet-link-profile on page 162.	“default”
`event-thresholds-profile`	Configures Received Signal Strength Indication (RSSI) metrics. See rf event-thresholds-profile on page 758.	“default”
`exclude-mesh-cluster-profile-ap`	Excludes the specified mesh cluster profile from this AP. The Secure Enterprise Mesh license must be installed.	—
`exclude-virtual-ap`	Excludes the specified virtual AP profiles from this AP.	
`ids-profile`	Configures Dell’s Intrusion Detection System (IDS). See ids profile on page 424.	“default”
`mesh-cluster-profile`	Configures the mesh cluster profile for the AP (mesh node). There is a “default” mesh cluster profile; however, it is not applied until you provision the mesh node. See ap mesh-cluster-profile on page 175. The Secure Enterprise Mesh license must be installed.	“default”
`priority`	Configures the priority of the mesh cluster profile. If more than two mesh cluster profiles are configured, mesh points use this number to identify primary and backup profile(s). The supported range of values is 1-16. The lower the number, the higher the priority.	1

Parameter	Description	Default
`mesh-radio-profile`	Configures the 802.11g and 802.11a radio settings for the AP (mesh node). See ap mesh-ht-ssid-profile on page 177. The Secure Enterprise Mesh license must be installed.	"default"
`no`	Negates any configured parameter.	—
`regulatory-domain-profile`	Configures the country code and valid channels. See ap regulatory-domain-profile on page 202.	"default"
`rf-optimization -profile`	Configures load balancing and coverage hole and interference detection. See rf optimization-profile on page 764.	"default"
`snmp-profile`	Configures SNMP-related parameters.	"default"
`virtual-ap`	One or more profiles, each of which configures a specified WLAN. See wlan virtual-ap on page 2358.	"default"
`voip-cac-profile`	Configures voice over IP (VoIP) call admission control (CAC) options. See wlan voip-cac-profile on page 2372. This parameter requires the PEFNG license.	"default"

Usage Guidelines

Profiles that are applied to an AP group can be overridden on a per-AP name basis, and virtual APs can be added or excluded on a per-AP name basis. If a particular profile is overridden for an AP, all parameters from the overriding profile are used. There is no merging of individual parameters between the AP and the AP group to which the AP belongs.

Example

The following command excludes a virtual AP profile from a specific AP:

```
(host) (config) #ap-name 00:0b:86:c0:cf:d8
  exclude-virtual-ap corpnet
```

Related Commands

View AP settings using the command show ap-name.

Command History:

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.2	Support for mesh parameters was introduced.
ArubaOS 3.4	License requirements changed in ArubaOS 3.4.1, so the **voip-cac-profile** parameter required the PEF license instead of the Voice Services Module license required in earlier versions.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ap-regroup

```
ap-regroup {ap-name <name>|serial-num <num>|service-tag <service-tag>|wired-mac <macaddr>}
<group>
```

Description

This command moves a specified AP into a group.

Syntax

Parameter	Description	Default
`ap-name`	Name of the AP.	—
`serial-num`	Serial number of the AP.	—
`service-tag`	Service tag of the AP.	–
`wired-mac`	MAC address of the AP.	—
`<group>`	Name that identifies the AP group. The name must be 1-63 characters.	“default”

Usage Guidelines

All APs discovered by the controller are assigned to the “default” AP group. An AP can belong to only one AP group at a time. You can move an AP to an AP group that you created with the **ap-group** command.

This command automatically reboots the AP.

Example

The following command moves an AP to the ‘corpnet’ group:

```
(host)(config) #ap-regroup wired-mac 00:0f:1e:11:00:00 corpnet
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.4.2.0	The **service-tag** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

ap-rename

```
ap-rename {ap-name <name>|serial-num <num>|service-tag <service-tag>|wired-mac <macaddr>}
<new-name>
```

Description

This command changes the name of an AP to the specified new name.

Syntax

Parameter	Description
`ap-name`	Current name of the AP.
`serial-num`	Serial number of the AP.
`service-tag`	Service tag of the AP.
`wired-mac`	MAC address of the AP.
`<new-name>`	New name for the AP. The name must be 1-63 characters. **NOTE:** You cannot use quotes (“) in the AP name.

Usage Guidelines

An AP name must be unique within your network.

This command automatically reboots the AP.

Example

The following command renames an AP:

```
(host) (config) #ap-rename wired-mac 00:0f:1e:11:00:00 building3-lobby
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.4.2.0	The **service-tag** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

app skype4b traffic-control

```
app skype4b traffic-control <profile-name>
   clone <source>
   no ...
   prioritize-desktop-sharing
   prioritize-file-transfer
   prioritize-video
   prioritize-voice
```

Description

This command creates a traffic control profile that allows the controller to recognize and prioritize a specific type of Skype for Business (Skype4b) traffic in order to apply QoS through the Skype Application Layer Gateway (ALG).

Syntax

Parameter	Description
`clone`	Copy configuration from another traffic control prioritization profile.
`no ...`	Include this parameter to disable the Skype4b ALG for the specified traffic type.
`prioritize-desktop-sharing`	Issue this command to enable or disable prioritization of desktop-sharing traffic by the Skype4b ALG.
`prioritize-file-transfer`	Issue this command to enable or disable prioritization of file-transfer traffic by the Skype4b ALG.
`prioritize-video`	Issue this command to enable or disable prioritization of video traffic by the Skype4b ALG.
`prioritize-voice`	Issue this command to enable or disable prioritization of voice traffic by the Skype4b ALG.

Example

All Skype traffic types are recognized and prioritized by default. The following commands disables Skype4b ALG prioritization for desktop sharing traffic.

```
(host) (config) #app skype traffic-control default
(host) (Traffic Control Prioritization Profile "default") #no prioritize-desktop-sharing
```

Related Commands

Command	Description
show ucc configuration	Issue this command with the **traffic-control skype4b** parameter to display the Skype4b traffic control profile configuration in the controller.
show app skype4b traffic-control	This command displays the types of Skype for Business (Skype4b) traffic prioritized through the Skype4b Application Layer Gateway (ALG) QoS.
show profile-list app	Displays the list of Skype4b traffic control profiles.

Command History

Version	Description
ArubaOS 6.4.4.0	Command introduced. **NOTE:** This command replaces the deprecated command **app lync traffic-control**.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master or local controllers

arm move-sta

```
arm move-sta <client-mac> <newbssid>
```

Description

This command moves a client station to another BSSID.

Syntax

Parameter	Description
`<mac>`	MAC address of the client to be moved to another BSSID
`<newbssid>`	BSSID of the AP to which the client should associate.

Usage Guidelines

Issue this command to manually move a client to a different BSSID

Example

The following command moves a client with the MAC address **00:0B:86:01:7A:C0** to the BSSID **00:1C:B3:09:85:15**.

```
(host) (config) #arm move-sta 00:0B:86:01:7A:C0 00:1C:B3:09:85:15
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

arp

```
arp <ipaddr> <macaddr>
```

Description

This command adds a static Address Resolution Protocol (ARP) entry.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the device to be added.
`<macaddr>`	Hardware address of the device to be added, in the format xx:xx:xx:xx:xx:xx.

Usage Guidelines

If the IP address does not belong to a valid IP subnetwork, the ARP entry is not added. If the IP interface that defines the subnetwork for the static ARP entry is deleted, you will be unable to use the arp command to overwrite the entry's current values; use the no arp command to negate the entry and then enter a new arp command.

Example

The following command configures an ARP entry:

```
(host) (config) #arp 10.152.23.237 00:0B:86:01:7A:C0
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

audit-trail

```
audit-trail [all]
```

Description

This command enables an audit trail.

Syntax

Parameter	Description
`all`	Enables audit trail for all commands, including enable mode commands. The **audit-trail** command without this option enables audit trail for all commands in configuration mode.

Usage Guidelines

By default, audit trail is enabled for all commands in configuration mode. Use the **show audit-trail** command to display the content of the audit trail.

Example

The following command enables an audit trail:

```
(host) (config) #audit-trail
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

backup

```
backup {flash|pcmcia}
```

Description

This command backs up compressed critical files in flash.

Syntax

Parameter	Description
`flash`	Backs up flash directories to flashbackup.tar.gz file.
`pcmcia`	Backs up flash images to external PCMCIA flash card. This option can only be executed on controllers that have a PCMCIA slot.

Usage Guidelines

Use the **restore flash** command to untar and uncompress the flashbackup.tar.gz file.

Example

The following command backs up flash directories to the flashbackup.tar.gz file:

```
(host)(config) #backup flash
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config modes on master controllers

banner motd

```
banner motd <delimiter> <textString>
```

Description

This command defines a text banner to be displayed at the login prompt when a user accesses the controller.

Syntax

Parameter	Description	Range
`<delimiter>`	Indicates the beginning and end of the banner text.	—
`<textString>`	The text you want displayed.	up to 1023 characters

Usage Guidelines

The banner you define is displayed at the login prompt to the controller. The banner is specific to the controller on which you configure it. The WebUI displays the configured banner at its login prompt, but you cannot use the WebUI to configure the banner.

The delimiter is a single character that indicates the beginning and the end of the text string in the banner. Select a delimiter that is not used in the text string you define, because the controller ends the banner when it sees the delimiter character repeated.

There are two ways of configuring the banner message:

- Enter a space between the delimiter and the beginning of the text string. The text can include any character except a quotation mark (“). Use quotation marks to enclose your text if you are including spaces (spaces are not recognized unless your text string is enclosed in quotation marks; without quotation marks, the text is truncated at the first space). You can also use the delimiter character within quotation marks.
- Press the **Enter** key after the delimiter to be placed into a mode where you can simply enter the banner text in lines of up to 255 characters, including spaces. Quotation marks are ignored.

Example

The following example configures a banner by enclosing the text within quotation marks:

```
(host)(config) #banner motd * “Welcome to my controller. This controller is in the production
network, so please do not save configuration changes. Zach Jennings is awesome. Maintenance
will be performed at 7:30 PM, so please log off before 7:00 PM.”*
```

The following example configures a banner by pressing the **Enter** key after the delimiter:

```
(host)(config) #banner motd *
Enter TEXT message [maximum of 1023 characters].
Each line in the banner message should not exceed 255 characters.
End with the character '*'.

Welcome to my controller. This controller is in the production network, so please do not save
configuration changes. Zach Jennings is awesome. Maintenance will be performed at 7:30 PM, so
please log off before 7:00 PM.*
```

The banner display is as follows:

```
Welcome to my controller. This controller is in the production network, so please do not save
configuration changes. Zach Jennings is awesome. Maintenance will be performed at 7:30 PM, so
please log off before 7:00 PM.
```

Command History

This command was introduced in ArubaOS 1.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

block-redirect-url

```
block-redirect-url <URL>
```

Description

This command redirects the user session to an external splash page when it encounters a webcc deny policy.

Syntax

Parameter	Description	Range	Default
<URL>	The URL to which a session is redirected when denied. Only absolute URL, prefixed with http or https is allowed.	—	—

Example

The following command redirects the user session to the URL specified:

```
(host) [mynode] (config) #block-redirect-url https://www.arubanetworks.com
```

Command History

Version	Modification
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master and local controllers.

boot

```
boot
   cf-test [fast | read-only | read-write]
   config-file <filename>
   remote-node [all|ip-address <A.B.C.D]
   system partition [0 | 1]
   verbose
```

Description

Configure the boot options for the controller.

Syntax

Parameter	Description
`cf-test`	Sets the type of compact flash test to run when booting the controller.
`fast`	Performs a fast test, which does not include media testing.
`read-only`	Performs a read-only media test.
`read-write`	Performs a read-write media test.
`config-file`	Sets the configuration file to use when booting the controller.
`<filename>`	Specifies the name of the configuration file from which to boot the controller.
`remote-node`	Reloads a branch controller.
`all`	Reloads all branch controllers on the network.
`ip address <A.B.C.D>`	Reloads the branch controller with the specified IP address.
`system 0 | 1`	Enter the keyword **system** followed by the partition number (0 or 1) that you want the controller to use during the next boot (login) of the controller. **NOTE:** A controller reload is required before the new boot partition takes effect.
`verbose`	Prints extra debugging information at boot.

Usage Guidelines

Use the following options to control the boot behavior of the controller:

- `cf-test`—Test the flash during boot.
- `config-file`—Set the configuration file to use during boot.
- `system`—Specify the system partition to use during the controller's next boot (login).

- `verbose`—Print extra debugging information during boot. The information is sent to the screen at boot time. Printing the extra debugging information is disabled using the `no boot verbose` command.

Example

The following command uses the configuration file january-config.cfg the next time the controller boots:

```
boot config-file january-config.cfg
```

The following command uses system partition 1 the next time the controller boots:

```
boot system partition 1
```

Command History

	Modification
ArubaOS 1.0	Introduced for the first time.
ArubaOS 6.0	The **remote-node** parameter was introduced.
ArubaOS 6.2	The **remote-node** parameter was deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

cellular profile

```
cellular profile <profile_name>
   dialer <group>
   driver acm|hso|option|sierra|ptumlusbnet
   import <address>
   modeswitch {eject <params>}|rezero
   no
   priority <1-255>
   serial <sernum>
   tty <ttyport>
   user <login> password <password>
   vendor <vend_id> product <prod_id>
```

Description

Create new profiles to support new USB modems or to customize USB characteristics.

Syntax

Parameter	Description
`cellular profile <profile_name>`	Enter the keywords **cellular profile** followed by your profile name. This command changes the configuration mode and the command line prompt changes to: host (config-cellular <profile_name>)#
`dialer <group>`	Enter the keyword **dialer** followed by a group name to specify the dialing parameters for the carrier. The parameters tend to be common between service providers on the same type of network (CDMA vs. GSM) as displayed in the show dialer group command.
`driver acm|hso|option|sierra|ptumlusbnet`	Enter the keyword **driver** followed by one of the driver options: • **acm**: Linux ACM driver. • **hso**: Option High Speed driver. • **option**: Option USB data card driver (default). • **sierra**: Sierra Wireless driver. • **ptumlusbnet**: Pantech UML290 driver.
`import <address>`	Enter the keyword **import** followed by the USB device address as displayed in the show usb command. Import retrieves the vendor/product serial numbers from the USB device list and populates them into the profile.
`modeswitch {eject <params>}|rezero`	Enter the keyword **modeswitch** followed by either: • **eject** followed by the CDROM device. • **rezero**: Send SCSI CDROM rezero command.

Parameter	Description
	Certain cellular devices must be modeswitched before the modem switches to data mode.
`no`	Enter the keyword **no** to negate the command and revert back to the defaults.
`priority <1-255>`	Enter the keyword **priority** to override the default cellular priority (100). Range: 1 to 255. Default: 100
`serial <sernum>`	Enter the keyword **serial** followed by the USB device serial number
`tty <ttyport>`	Enter the keyword **tty** followed by the Modem TTY port (i.e. ttyUSB0, ttyACM0)
`user <login> password <password>`	Enter the keyword **user** followed by your login, and then enter the keyword **password** followed by your password to establish user name authentication.
`vendor <vend_id> product <prod_id> in hex`	Enter the keyword **vendor** followed by the vendor ID in hexadecimal (see show usb on page 1964) and then enter the keyword **product** followed by the product ID listed in the show usb command.

Usage Guidelines

The cellular modems are plug-and-play and support most native USB modems. Cellular modems are activated only if it is the uplink with the highest priority (see show uplink on page 1962). However, new profiles can be created using this command to support new data cards or to customize card characteristics.

Command History

Introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

cfgm

```
cfgm {set config-chunk <kbytes>|set heartbeat <seconds>|set maximum-updates <number>|snapshot-timer <minutes>|sync-command-blocks <number>|sync-typecomplete|sync-type snapshot}
```

Description

This command configures the configuration module on the master controller.

Syntax

Parameter	Description	Range	Default
`set config-chunk`	Maximum packet size, in Kilobytes, that is sent every second to the local controller whenever the master controller sends a configuration to the local. If the connection between the master and local is slow or uneven, you can lower the size to reduce the amount of data that needs to be retransmitted. If the connection is very fast and stable, you can increase the size to make the transmission more efficient.	1-100	10 Kbytes
`set heartbeat`	Interval, in seconds, at which heartbeats are sent. You can increase the interval to reduce traffic load.	10-300	10 seconds
`set maximum-updates`	Maximum number of local controllers that can be updated at the same time with configuration changes. You can decrease this value if you have a busy network. You can increase this value to improve configuration synchronization.	2-25	5
`snapshot-timer`	Interval, in minutes, that the local controller waits for a configuration download from the master upon bootup or startup before loading the last snapshot configuration.	5-60	5 minutes
`sync-command-blocks`	To configure the number of command-list blocks. Each block contains a list of global configuration commands for each write-mem operation.	3-10	5
`sync-type complete`	The master sends full configuration file to the local.	—	—
`sync-type snapshot`	The master sends only the incremental configuration to the local. **NOTE:** By default, this configuration is enabled.	—	Enable

Usage Guidelines

By default, configuration updates on the controller are disabled to prevent any alterations to the controller configuration.

Example

The following command sets the maximum packet size as 20 KB per second whenever the master controller sends a configuration to the local :

```
(host) (config) #cfgm set config-chunk 20
```

Command History

This command was introduced in ArubaOS 3.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

clear

```
clear
   aaa
   acl
   airgroup {cli-policy {all}|global-credits {statistics}|server|statistics|user}
   ap
   arm
   arp
   counters
   crypto
   datapath
   dot1x
   fault
   gab-db
   ip
   ipc
   ipv6
   lldp
   loginsession
   master-local-entry
   master-local-session
   port
   port-security-error gigabitethernet <slot>/<module>/<port>
   provisioning-ap-list
   provisioning-params
   rap-wml
   update-counter
   upgrade-images
   voice
   vpdn
   web-cc cache <MD5-1> <MD5-2>
   web-cc stats
   wms
```

Description

This command clears various user-configured values from your running configuration.

Syntax

Parameter	Description
`aaa`	Clear all values associated with authentication profile.
`authentication-server`	Provide authentication server details to clear values specific to an authentication server or all authentication server. Parameters: • **all** — Clear all server statistics. • **internal** — Clear Internal server statistics. • **ldap** - Clear LDAP server statistics. • **radius** — Clear RADIUS server statistics. • **tacacs** — Clear TACACS server statistics.

Parameter	Description
`device-id-cache`	Clear all device ID cache. Parameters: • **all** — Clear all entries in the device ID cache. • **mac** — Clear entries in the device ID cache for MAC address.
`load-balance`	Clear load balance statistics. Parameters: • **statistics** — Clear load balance statistics.
`multiple-server-accounting`	Clear multiple server accounting statistics. Parameters: • **statistics** — Clear multiple server accounting statistics.
`state`	Clear internal status of authentication modules. Parameters: • **configuration** — Clear all configured objects. • **debug-statistics** — Clear debug statistics. • **messages** — Clear authentication messages that were sent and received.
`acl`	Clear ACL statistics.
`hits`	Clear ACL hit statistics
`airgroup`	Clear airgroup statistics and user entries from the user table.
`cli-policy all`	Clears AirGroup policies except CPPM policies.
`global-credits statistics`	Clears credits assigned to mDNS packets.
`server`	Clears AirGroup servers.
`statistics`	• **blocked-queries** — Clears the statistics of service IDs which were queried but not available in the AirGroup service table. • **blocked-service-id** — Clears the statistics for the list of blocked services. • **cppm-entries** — Clears the statistics that are displayed for **show airgroup cppm entries** command. • **internal-state** — Clears internal state statistics of mDNS module. • **multi-controller**— Clears the statistics maintained for

Parameter	Description
	multi-controller message exchanges. • **query** — Clears statistics maintained in the user and server table. • **service** — Clears statistics maintained in the AirGroup service table.
user	• **Mac Address** - Clears the AirGroup server Mac addresses. • **dlna** - Clears the AirGroup DLNA users. • **mdns** - Clears the AirGroup mDNS users. • **all** - Removes the current AirGroup user entries from the user table.
ap	Clear all AP related information.
arm bandwidth-management	Clears AP bandwidth management table counters. An AP can be specified by ap-name, BSSID, IPv4 address, or IPv6 address.
arm client-match	**summary** — Clears the client match summary information **unsupported** — Clears the MAC address of an unsteerable client or clients.
crash-info	Clears AP crash information. An AP can be specified by ap-name, IPv4 address, or IPv6 address.
debug	• **bss-dmo-stats**— Clears DMO debug statistics from a specific BSSID of an AP. • **client-stats**— Clears statistics from a client. • **dot11r {efficiency-stat}**— Clears 802.11r related stats. • **lacp**— Clears transmitted and received packet counters displayed in the **show ap debug lacp** command. • **lldp**— Clears Link Layer Discovery Protocol. • **radio-stats**— Clears aggregate radio debug statistics of an AP.
mesh	Clear all mesh commands.
port	Toggle the link on the specified port.
remote flash-config	Clears the flash configuration from a specified AP. An AP can be specified by ap-name, BSSID, IPv4 address, or IPv6 address.
arm	Clear the following types of ARM client match information

Parameter	Description
	• client-match-summary • client-match-unsteerable
arp	Clear all ARP table information. You can either clear all information or enter the IP address of the ARP entry to clear a specific value.
counters	Clear all interface configuration values.
fastethernet	Clears configuration related to fastethernet ports.
gigabitethernet	Clears configuration related to fastethernet ports.
port-channel <id>	Clears statistics related to a port-channel.
tunnel	Clears all tunnel configuration values on interface ports.
vrrp [ipv6]	Clears all VRRP configuration values on interface ports. Include the ipv6 parameter to clear IPv6 counters.
crypto	Clears the specified crypto information.
dp	Clears crypto latest DP packets.
ipsec sa	Clears crypto ipsec state security associations.
isakmp sa	Clears crypto isakmp state security associations.
stats	Clears crypto statistics.
datapath	Clears all configuration values and statistics for the following datapath modules. • **application {counters}** • **bridge {counters}** • **bwm {counters}** • **crypto {counters}** • **debug {performance}** • **dma {counters}** • **eap {counters}** • **frame {counters}** • **hardware {counters|statistics}** • **ip-fragment-table {ipv4|ipv6}** • **ip-reassembly {counters}**

Parameter	Description
	• **maintenance {counters}** • **message-queue {counters}** • **mobility {stats}** • **network {ingress}** • **papi {counters}** • **route {counters}** • **route-cache {A.B.C.D|counters}** • **session {counters}** • **ssl {counters}** • **station {counters}** • **tcp {counters}** • **tunnel {counters}** • **user {counters}** • **web-cc {counters}** • **wifi-reassembly {counters}** • **wmm {counters}**
`dot1x`	Clears all 802.1X specific counters and supplicant statistics. Use the following parameters: • **counters** • **supplicant-info**
`fault`	Clears all SNMP fault configuration.
`gap-db`	Clears global AP database. This command is often used to clear all stale AP records. Use the following parameters: • **ap-name** • **lms** • **wired-mac**
`ip`	Clears all IP information from DHCP bindings, IGMP groups and IP mobility configuration. Use the following parameters: • **dhcp** • **igmp {group|proxy-mobility-group|stats-counters}** • **mobile {host|multicast-vlan-table|traffic|trail}** • **probe {stats (all)|probe_ip (src_intf}**
`ipc`	Clears all inter process communication statistics. • **statistics {app-ap|app-id|app-name}**

Parameter	Description
ipv6	Clears all IPv6 session statistics, multicast listener discovery (MLD) group and member information, MLD statistics, counters, and DHCPv6 binding information. Use the following parameters: • **datapath {session}** • **dhcp {binding}** • **mld {group|proxy-mobility-group|stats-counters}** • **neighbor**
lldp	Clears lldp information on all the interfaces. Use the following parameters: • **neighbors {interface gigabitethernet slot/module/port} | {interface fastethernet slot/module/port** • **statistics {interface gigabitethernet slot/module/port} | {interface fastethernet slot/module/port**
loginsession	Clears loginsession information for a specific login session, as identified by the session id.
master-local-entry	Clears managed node information from the master controller LMS list. Specify the IP address of the local controller to be removed from master controller active LMS list.
master-local-session	Clear and reset master local TCP connection. Specify the IP address of either the master or local controller.
port	Clear all port statistics that includes link-event counters or all counters. Use the following parameters: • **link-event** • **stats**
port-security-error gigabitethernet <slot/module/port>	Clears port-security error from a gigabit Ethernet IEEE 802.3 interface.
provisioning-ap-list	Clear AP entries from the provisioning list.
provisioning-params	Clear provisioning parameters and reset them to the default configuration values.
rap-wml	Clear wired MAC lookup cache for a DB server.
update-counter	Clear all update counter statistics.

Parameter	Description
`upgrade-images`	Clear all upgrade images used by the centralized licensing feature.
`voice`	Clear all voice state information. Use the following parameters: • **call-counters** • **call-status** • **statisticscac** | **tspec-enforcement**
`vpdn`	Clear all VPDN configuration for L2TP and PPTP tunnel. Use the following parameters: • **tunnel l2tp id <l2tp-tunnel-id>** • **tunnel pptp id <pptp-tunnel-id>**
`web-cc cache <MD5-1> <MD5-2>`	Clear web content category URLs from the datapath cache by specifying the two MD5 values of the URL to be removed from the cache. To view all entries in the datapath, and the MD5 values for each entry, issue the command **show datapath web-cc**.
`web-cc stats`	Clear all web content classification statistics. To view current statistics information, issue the command **show web-cc stats**.
`wms`	Clear all WLAN management commands. Use the following parameters: • **ap—clear** — All AP related commands. Specify the BSSID of the AP. • **client**— Clear all wired client related commands. Specify the MAC address of the client. • **probe** — Clear all probe information. Specify the BSSID of the probe.

Usage Guidelines

The clear command clears the specified parameters of their current values.

Example

The following command clears all aaa counters for all authentication servers:

```
(host) (config) #clear aaa authentication-server all
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The following MLD parameters are added to the **ipv6** option: • **mld group** • **mld stats-counters**
ArubaOS 6.3	• The **device-id-cache**, **load-balance**, **multiple-server-accounting** parameters were introduced under aaa parameter. • The **airgroup** parameter was introduced. • The **dhcp binding** parameter under ipv6 was introduced. • The **proxy-mobilty-group** parameter under mld was introduced. • The **ip-fragment-table** parameter under datapath was introduced.
ArubaOS 6.4	• The **lldp** parameter was introduced. • The **Server** and **User** options were introduced under the **clear airgroup** command.
ArubaOS 6.4.2.0	• The **web-cc cache** and **web-cc stats** parameters were introduced. • The **datapath web-cc** parameter was introduced.
ArubaOS 6.4.3.0	• The **clear counter tunnel** interface limit was changed from 2147483647 to 16777215. • The **global-credits statistics** parameter was introduced. • The **port-channel** sub-parameter was introduced under the **counters** parameter.
ArubaOS 6.4.4.0	• The **lacp** parameter under debug was introduced.
ArubaOS 6.5	The **port-security-error** parameter is introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config modes on the master controller

clear aaa auth-survivability-cache

```
clear aaa auth-survivability-cache
```

Description

This command allows you to clear the data that is currently in the local Survival Server cache.

Usage Guidelines

The **clear...cache** parameter has two sub-parameters:

- **all**: Clears all entries in the Authentication Survivability Cache.
- **station**: Clears the entry in the Authentication Survivability Cache for a particular station. Specify the station with its MAC address in *A:B:C:D:E:F* format.

Example

To clear the Auth-Survivability cache:

```
(host)#clear aaa auth-survivability-cache <all> | <station MAC_address>
```

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
W-7000 Series	Base operating system	Config mode on master or local controllers

clear wms wired-mac

```
clear wms wired-mac [ all | gw-mac <mac> | monitored-ap-wm <mac> | prop-eth-mac <mac> | reg-ap-oui <mac> | system-gw-mac <mac>| system-wired-mac <mac> | wireless-device <mac>]
```

Description

Clear *learned* and *collected* Wired MAC information. Optionally, enter the MAC address, in nn:nn:nn:nn:nn:nn format, of the AP that has seen the Wired Mac.

Syntax

	Description
`all`	Clear all the learned and collected wired Mac information.
`gw-mac <mac>`	Clear the gateway wired Mac information collected from the APs.
`monitored-ap-wm <mac>`	Clear monitored AP wired Mac information collected fom the APs.
`prop-eth-mac <mac>`	Clear the wired Mac information collected from the APs.
`reg-ap-oui <mac>`	Clear the registered AP OUI information collected from the APs.
`system-gw-mac <mac>`	Clear system gateway Mac information learned at the controller.
`system-wired-mac <mac>`	Clear system wired Mac information learned at the controller.
`wireless-device <mac>]`	Clear routers or potential wireless devices information.

Revision History

Release	Modification
ArubaOS 6.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

clock append

```
clock append
```

Description

This command enables the timestamp feature, adding a date and time to the output of **show** commands.

Syntax

No parameters.

Usage Guidelines

When you enable the timestamp feature, the command-line interface includes a timestamp in the output of each show command indicating when the show command was issued. Note that the output of **show clock** and **show log** do not include timestamps, even when this feature is enabled. You can disable timestamps using the command **no clock append**.

Example

The following example enables the timestamp feature.

```
(host)(config) #clock append
```

Command History

This command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode

clock set

```
clock set <year><month><day><time>
```

Description

This command sets the date and time.

Syntax

Parameter	Description	Range
`year`	Sets the year. Requires all 4 digits.	Numeric
`month`	Sets the month. Requires the first three letters of the month.	Alphabetic
`day`	Sets the day.	1-31
`time`	Sets the time. Specify hours, minutes, and seconds separated by spaces.	Numeric

Usage Guidelines

You can configure the year, month, day, and time. You must configure all four parameters.

Specify the time using a 24-hour clock. You must specify the seconds.

Example

The following example configures the clock to January 1st of 2007, at 1:03:52 AM.

```
(host)(config) #clock set 2007 jan 1 1 3 52
```

Command History

This command was introduced in ArubaOS 1.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

clock summer-time recurring

```
clock summer-time <WORD> [recurring]
   <1-4> <start day> <start month> <hh:mm>
   first <start day> <start month> <hh:mm>
   last <start day> <start month> <hh:mm>
   <1-4> <end day> <end month> <hh:mm>
   first <end day> <end month> <hh:mm>
   last <end day> <end month> <hh:mm>
   [<-23 - 23>]
```

Description

Set the software clock to begin and end daylight savings time on a recurring basis.

Syntax

Parameter	Description	Range
WORD	Enter the abbreviation for your time zone. For example, PDT for Pacific Daylight Time.	3-5 characters
1-4	Enter the week number to start/end daylight savings time. For example, enter 2 to start daylight savings time on the second week of the month.	1-4
first	Enter the keyword **first** to have the time change begin or end on the first week of the month.	—
last	Enter the keyword **last** to have the time change begin or end on the last week of the month.	—
start day	Enter the weekday when the time change begins or ends.	Sunday-Saturday
start month	Enter the month when the time change begins or ends.	January-December
hh:mm	Enter the time, in hours and minutes, that the time change begins or ends.	24 hours
-23 - 23	Hours offset from the Universal Time Clock (UTC).	-23 - 23

Usage Guidelines

This command subtracts exactly 1 hour from the configured time.

The WORD can be any alphanumeric string, but cannot start with a colon (:). A WORD longer than five characters is not accepted. If you enter a WORD containing punctuation, the command is accepted, but the timezone is set to UTC.

You can configure the time to change on a recurring basis. To do so, set the week, day, month, and time when the change takes effect (daylight savings time starts). You must also set the week, day, month, and time when the time changes back (daylight savings time ends).

The `start day` requires the first three letters of the day. The `start month` requires the first three letters of the month.

You also have the option to set the number of hours by which to offset the clock from UTC. This has the same effect as the clock timezone command.

Example

The following example sets daylight savings time to occur starting at 2:00 AM on Sunday in the second week of March, and ending at 2:00 AM on Sunday in the first week of November. The example also sets the name of the time zone to PST with an offset of UTC - 8 hours.

```
clock summer-time PST recurring 2 Sun Mar 2:00 first Sun Nov 3:00 -8
```

Command History

This command was introduced in ArubaOS 1.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

clock timezone

```
clock timezone <name> <-23 to 23>
```

Description

This command sets the time zone on the controller.

Syntax

Parameter	Description	Range
`<name>`	Name of the time zone.	3-5 characters
`-23 to 23`	Hours offset from UTC.	-23 to 23

Usage Guidelines

The **name** parameter can be any alphanumeric string, but cannot start with a colon (:). A time zone name longer than five characters is not accepted. If you enter a time zone name containing punctuation, the command is accepted, but the time zone is set to UTC.

Example

The following example configures the timezone to PST with an offset of UTC - 8 hours.

```
clock timezone PST -8
```

Command History

This command was introduced in ArubaOS 1.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

cluster-member-custom-cert

```
cluster-member-custom-cert member-mac <mac> ca-cert <ca> server-cert <cert>
   suite-b <gcm-128 | gcm-256>]
```

Description

This command sets the controller as a control plane security cluster root, and specifies a custom user-installed certificate for authenticating cluster members.

Syntax

Parameter	Description
`member-mac <ca>`	MAC address of the cluster member
`ca-cert <ca>`	Name of the CA certificate uploaded via the WebUI
`ca-cert <ca>`	Name of the CA certificate uploaded via the WebUI
`server-cert <cert>`	Name of the server certificate uploaded via the WebUI.
`suite-b`	To use Suite-B encryption in the secure communication between the cluster root and cluster member, specify one of the following Suite-B algorithms • **gcm-128**: Encryption using 128-bit AES-GCM • **gcm-256**: Encryption using 256-but AES-GCM

Usage Guidelines

If your network includes multiple master controllers each with their own hierarchy of APs and local controllers, you can allow APs from one hierarchy to failover to any other hierarchy by defining a cluster of master controllers. Each cluster will have one master controller as its cluster root, and all other master controllers as cluster members.

To define a controller as a cluster root, issue one of the following commands on that controller:

- cluster-member-custom-cert: Define the controller as a cluster root, and select a user-installed certificate to authenticate that cluster member.
- cluster-member-factory-cert: Define the controller as a cluster root, and select a factory-installed certificate to authenticate that cluster member.
- cluster-member-ip : Define the controller as a cluster root, and set the IPsec key to authenticate that cluster member.

For information on installing certificates on your controller, refer to the *Management Utilities* chapter of the *Dell Networking W-Series ArubaOS User Guide*.

Example

The following example selects a customer installed certificate for cluster member authentication.

```
(host)(config) # cluster-member-custom-cert member-mac 00:1E:37:CB:D4:52 ca-cert cacert1
server-cert servercert1
```

Related Commands

Parameter	Description	Mode
control-plane-security	Configure the control plane security profile.	Config mode
show cluster-config	Show the multi-master cluster configuration for the control plane security feature.	Enable mode
show cluster-switches	Issue this command on a master controller using control plane security in a multi-master environment to show other the other controllers to which it is connected.	Enable mode

Command History.

Introduced in ArubaOS 6.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on cluster root controllers

cluster-member-factory-cert

```
cluster-member-factory-cert member-mac <mac>
```

Description

This command sets the controller as a control plane security cluster root, and specifies a custom user-installed certificate for authenticating cluster members.

Syntax

Parameter	Description
`<mac>`	MAC address of the user-installed certificate on the cluster member

Usage Guidelines

If your network includes multiple master controllers each with their own hierarchy of APs and local controllers, you can allow APs from one hierarchy to failover to any other hierarchy by defining a cluster of master controllers. Each cluster will have one master controller as its cluster root, and all other master controllers as cluster members.

To define a controller as a cluster root, issue one of the following commands on that controller:

- cluster-member-custom-cert: Define the controller as a cluster root, and select a user-installed certificate to authenticate that cluster member.
- cluster-member-factory-cert: Define the controller as a cluster root, and select a factory-installed certificate to authenticate that cluster member.
- cluster-member-ip : Define the controller as a cluster root, and set the IPsec key to authenticate that cluster member.

For information on installing certificates on your controller, refer to the *Management Utilities* chapter of the *Dell Networking W-Series ArubaOS User Guide*.

Example

The following command sets the controller on which you issue command as a root controller, and adds the controller**172.21.18.18** as a cluster member with the IPsec key **ipseckey1**:

```
(host) (config) #cluster-member-factory-cert member-mac 00:1E:37:CB:D4:52
```

Related Commands

Parameter	Description	Mode
control-plane-security	Configure the control plane security profile.	Config mode
show cluster-config	Show the multi-master cluster configuration for the control plane security feature.	Enable mode

Parameter	Description	Mode
show cluster-switches	Issue this command on a master controller using control plane security in a multi-master environment to show other the other controllers to which it is connected.	Enable mode

Command History

Introduced in ArubaOS 6.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on cluster root controllers

cluster-member-ip

```
cluster-member-ip <ip-address>
   ipsec <key>
```

Description

This command sets the controller as a control plane security cluster root, and specifies the IPsec key for a cluster member.

Syntax

Parameter	Description
`<ip-address>`	Switch IP address of a control plane security cluster member. You can also use the IP address 0.0.0.0 to set a single IPsec key for all cluster members.
`ipsec <key>`	Configure the value of the IPsec key for secure communication between the cluster root and the specified cluster member. The key must be between 6-64 characters.

Usage Guidelines

If your network includes multiple master controllers each with their own hierarchy of APs and local controllers, you can allow APs from one hierarchy to failover to any other hierarchy by defining a cluster of master controllers. Each cluster will have one master controller as its cluster root, and all other master controllers as cluster members.

The master controller operating as the cluster root will use the control plane security feature to create a self-signed certificate, then certify it's own local controllers and APs. Next, the cluster root will send the certificate to each cluster member, which in turn certifies their own local controllers and APs. Since all controllers and APs in the cluster get their certificates from the cluster root, they will all have the same trust anchor, and the APs can switch to any other controller in the cluster and still remain connected to the secure network.

Issue the cluster-member-ip command on the controller you want to define as the cluster root to set the IPsec key for secure communication between the cluster root and each cluster member. Use the IP address **0.0.0.0** in this command to set a single IPsec key for all member controllers, or repeat this command as desired to define a different IPsec key for each cluster member.

Once the cluster root has defined an IPsec key for all cluster members, you must access each of the member controllers and issue the command cluster-root-ip to define the IPsec key for communication to the cluster root.

Example

The following command sets the controller on which you issue command as a root controller, and adds the controller**172.21.18.18** as a cluster member with the IPsec key **ipseckey1**:

```
(host) (config) #cluster-member-ip 172.21.18.18 ipsec ipseckey1
```

Related Commands

Parameter	Description	Mode
control-plane-security	Configure the control plane security profile.	Config mode
show cluster-config	Show the multi-master cluster configuration for the control plane security feature.	Enable mode
show cluster-switches	Issue this command on a master controller using control plane security in a multi-master environment to show other the other controllers to which it is connected.	Enable mode

Command History

Introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on cluster root controllers

cluster-root-ip

```
cluster-root-ip <ip-address>
   ipsec <key>
   ipsec-custom-cert root-mac1 <mac1> [root-mac2 <mac2>] ca-cert <ca> server-cert <cert>
   [suite-b <gcm-128 | gcm-256>]
   ipsec-factory-cert root-mac-1 <mac> [root-mac-1 <mac>]
```

Description

This command sets the controller as a control plane security cluster member, and defines the IPsec key or certificate for secure communication between the cluster member and the controller's cluster root.

Syntax

Parameter	Description
`<ip-address>`	The IP address of control plane security cluster root controller. To set a single IPsec key for all member controllers in the cluster use the IP address **0.0.0.0**.
`ipsec <key>`	Set the value of the IPsec pre-shared key for communication with the cluster root. This parameter must be have the same value as the IPsec key defined for the cluster member via the cluster-member-ip command.
`ipsec-factory-cert`	Use a factory-installed certificate for secure communication between the cluster root and the specified cluster member by specifying the MAC address of the certificate.
`root-mac-1 <mac>`	Specify MAC address of the cluster root.
`root-mac-2 <mac>`	Specify MAC address of the redundant cluster Root.
`ipsec-custom-cert`	Use a custom user-installed certificate for secure communication between the cluster root and the specified cluster member.
`root-mac-1 <mac>`	Specify the MAC address of the cluster-root's certificate.
`root-mac-2 <mac>`	(Optional) If your network has multiple master controllers, use this parameter to specify he MAC address of the redundant cluster-root's certificate.
`ca-cert <ca>`	Name of the CA certificate uploaded via the WebUI
`server-cert <cert>`	Name of the server certificate uploaded via the WebUI.
`suite-b`	To use Suite-B encryption in the secure communication between the cluster root and cluster member, specify one of the following Suite-B algorithms • **gcm-128**: Encryption using 128-bit AES-GCM • **gcm-256**: Encryption using 256-but AES-GCM

Usage Guidelines

If your network includes multiple master controllers each with their own hierarchy of APs and local controllers, you can allow APs from one hierarchy to failover to any other hierarchy by defining a cluster of master controllers. Each cluster will have one master controller as its cluster root, and all other master controllers as cluster members.

The master controller operating as the cluster root will use the control plane security feature to create a self-signed certificate, then certify it's own local controllers and APs. Next, the cluster root will send the certificate to each cluster member, which in turn certifies their own local controllers and APs. Since all controllers and APs in the cluster get their certificates from the cluster root, they will all have the same trust anchor, and the APs can switch to any other controller in the cluster and still remain connected to the secure network. Issue the cluster-member-ip command on the controller you want to define as the cluster root to select the certificate or define the IPsec key for secure communication between the cluster root and each cluster member.

Once the cluster root has defined an IPsec key or certificate for all cluster members, you must access each of the member controllers and issue the command cluster-root-ip to define the IPsec key or certificate for communication to the cluster root.

For information on installing certificates on your controller, refer to the *Management Utilities* chapter of the *Dell Networking W-Series ArubaOS User Guide*.

Example

The following command defines the IPsec key for communication between the cluster member and the root controller**172.21.45.22**:

```
(host) (config) #cluster-root-ip 172.21.45.22 ipsec ipseckey1
```

Related Commands

Parameter	Description	Mode
control-plane-security	Configure the control plane security profile.	Config mode
show cluster-config	Show the multi-master cluster configuration for the control plane security feature.	Enable mode
show cluster-switches	Issue this command on a master controller using control plane security in a multi-master environment to show other the other controllers to which it is connected.	Enable mode

Command History

Release	Modification
ArubaOS 5.0	Command introduced.
ArubaOS 6.1	The **ipsec-factory-cert** and **ipsec-custom-cert** parameters were introduced to allow certificate-based authentication of cluster members.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on cluster member controllers

configure terminal

```
configure terminal
```

Description

This command allows you to enter configuration commands.

Syntax

No parameters.

Usage Guidelines

Upon entering this command, the enable mode prompt changes to:

```
(host) (config) #
To return to enable mode, enter Ctrl-Z or exit.
```

Example

The following command allows you to enter configuration commands:

```
(host) # configure terminal
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

control-plane-security

```
control-plane-security
   auto-cert-allow-all
   auto-cert-allowed-addrs <ipaddress-start> <ipaddress-end>
   auto-cert-prov
   cpsec-enable
   no ...
```

Description

Configure the control plane security profile by identifying APs to receive security certificates.

Syntax

Parameter	Description
`auto-cert-allow-all`	When you issue the **control-plane-security auto-cert-allow-all** command, the controller will send a certificate to all associated APs when auto certificate provisioning is enabled. When disabled, the controller sends certificates only to APs whose IP addresses are in the ranges specified by **auto-cert-allowed-addrs**.
`auto-cert-allowed-addrs <ipaddress-start> <ipaddress-end>`	Use this command to define a specific range of AP IP addresses. The controller will send certificates to the APs in this IP range when auto certificate provisioning is enabled. Identify a range by entering the starting IP address and the ending IP address in the range, separated by a single space. You can repeat this command as many times as necessary to define multiple IP ranges.
`auto-cert-prov`	Issue this command to enable automatic certificate provisioning. When this feature is enabled, the controller will attempt to send certificates to associated APs. To disable this feature, use the command **no auto-cert-prov**. Automatic certificate provisioning is disabled by default

Parameter	Description
cpsec-enable	Issue this command to enable control plane security. To disable this feature, use the command **no cpsec-enable**. Control plane security is enabled by default.

Usage Guidelines

Controllers enabled with control plane security will only send certificates to APs that you have identified as valid APs on the network. If you are confident that all campus APs currently on your network are valid APs, you can configure automatic certificate provisioning to send certificates from the controller to each campus AP, or to all campus APs within a specific range of IP addresses. If you want closer control over each AP that gets certified, you can manually add individual campus APs to the secure network by adding each AP's information to a campus AP whitelist.

Example

The following command defines a range of IP addresses that should receive certificates from the controller, and enables the control plane security feature:

```
(host)(config) # control-plane-security
  auto-cert-allowed-addrs 10.21.18.10 10.21.10.90
  cpsec-enable
```

Related Commands

Command	Description	Mode
show control-plane-security	Show the current configuration of the control plane security profile.	Config mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

controller-ip

```
controller-ip [loopback|vlan <VLAN ID>]
   no ...
```

Description

This command sets the controller IP to the loopback interface address or a specific VLAN interface address.

Syntax

Parameter	Description	Default
`loopback`	Sets the controller IP to the loopback interface.	disabled
`vlan`	Set the controller IP to a VLAN interface.	—
`VLAN ID`	Specifies the VLAN interface ID.	—

Usage Guidelines

This command allows you to set the controller IP to the loopback interface address or a specific VLAN interface address. If the controller IP command is not configured then the controller IP defaults to the loopback interface address. If the loopback interface address is not configured then the first configured VLAN interface address is selected. Generally, VLAN 1 is the factory default setting and thus becomes the controller IP address.

Example

The following command sets the controller IP address to VLAN interface 6.

```
(host) (config) #controller-ip vlan 6
```

Related Commands

```
(host) (config) #show controller-ip
```

Command History

This command was introduced in ArubaOS 3.4

Command Information

Platform	License	Command Mode
Available on all platforms	Base operating system	Config mode on master controllers

controller-ipv6

```
controller-ipv6 [loopback|{vlan <VLAN ID>}]
   no ...
```

Description

This command sets the default IPv6 address of the controller to the IPv6 loopback interface address or a specific VLAN interface address.

Syntax

Parameter	Description	Default
`loopback`	Sets the controller IP to the loopback interface.	disabled
`vlan`	Set the controller IP to a VLAN interface.	—
`VLAN ID`	Specifies the VLAN interface ID.	—

Usage Guidelines

This command allows you to set the default IPv6 address of the controller to the IPv6 loopback interface address or a specific IPv6 VLAN interface address. If the controller IPv6 command is not configured then the controller IP defaults to the loopback interface address. If the loopback interface address is not configured then the first configured VLAN interface address is selected. Generally, VLAN 1 is the factory default setting and thus becomes the controller IP address.

Example

The following command sets the controller IP address to VLAN interface 6.

```
(host) (config) #controller-ipv6 vlan 6
```

Related Commands

```
(host) (config) #show controller-ipv6
```

Command History

This command is introduced in ArubaOS 6.1.

Command Information

Platform	License	Command Mode
Available on all platforms	Base operating system	Config mode on master controllers

copy

```
copy
   flash: <srcfilename> {flash: <destfilename> | scp: <scphost> <username> <destfilename>
   tftp: <tftphost> <destfilename> | usb: partition {0|1} <destfilename>}
   ftp: <ftphost> <user> <filename> {flash: <destfilename> | system: partition [0|1]}
   running-config {flash: <filename> | ftp: <ftphost> <user> <filename> [<remote-dir>] |
   startup-config | tftp: <tftphost> <filename>}
   scp: <scphost> <username> <filename> {flash: <destfilename>| system: partition [0|1]}|
   startup-config {flash: <filename> | tftp: <tftphost> <filename>} |
   system: partition {<srcpartition> 0|1} [<destpartition> 0 | 1] |
   tftp: <tftphost> <filename> {flash: <destfilename> | system: partition [0|1]}
   usb: partition <partition-number> <filename> flash:  <destfilename>
```

Description

This command copies files to and from the controller.

Syntax

Parameter	Description
`flash:`	Copy the contents of the controller's flash file system, the system image, to a specified destination.
`<srcfilename>`	Full name of the flash file to be copied.
`flash:`	Copy the file to the flash file system.
`<destfilename>`	Specify the new name of the copied file.
`tftp:`	Copy the file to a TFTP server.
`<tftphost>`	Specify the IP address or hostname of the TFTP server.
`usb:`	Copy the file to an attached USB storage device.
`partition`	Specify the partition on the USB device.
`ftp:`	Copy a file from the FTP server. **NOTE:** Using this parameter, a password is required to access the FTP server. The password is masked, and must be entered in a separate line.
`<ftphost>`	Specify the IP address or hostname of the FTP server.
`<user>`	User account name required to access the FTP server.
`<filename>`	Full name of the file to be copied.
`flash: <destfilename>`	Copy to the flash file system.

Parameter	Description
system: partition [0|1]	Specify the system partition to save the file.
running-config	Copy the active, running configuration to a specified destination.
flash:	Copy the configuration to the flash file system.
<filename>	Specify the new name of the copied configuration file.
ftp:	Using FTP, copy the configuration to an FTP server. **NOTE:** Using this parameter, a password is required to access the FTP server. The password is masked, and must be entered in a separate line.
<ftphost>	Specify the IP address of the FTP server.
<user>	User account name required to access the FTP server.
<remote-dir>	Specify a remote directory, if needed.
startup-config	Copy the active, running configuration to the start-up configuration.
tftp:	Using TFTP, copy the configuration to a TFTP server
<tftphost>	Specify the IP address or hostname of the TFTP server.
scp:	Copy an ArubaOS image file or file from the flash file system using the Secure Copy protocol. The SCP server or remote host must support SSH version 2 protocol.
<scphost>	Specify the IP address of the SCP server or remote host.
<username>	User account name required to access the SCP server or remote host.
<filename>	Specify the absolute path of the filename to be copied.
flash:	Copy the file to the flash file system.
<destfilename>	Specify the new name of the copied file.
system:	Copy the file to the system partition.
startup-config	Copy the startup configuration to a specified flash file or to a TFTP server.
flash:	Copy the file to the flash file system.

Parameter	Description
<filename>	Specify the new name of the copied startup configuration file.
tftp:	Using TFTP, copy the startup configuration to a TFTP server
<tftphost>	Specify the IP address or hostname of the TFTP server.
system:	Copy the specified system partition
<srcpartition>	Disk partition from which to copy the system data, as either 0 or 1.
<destpartition>	Disk partition to copy the system data to, as either 0 or 1.
tftp:	Copy a file from the specified TFTP server to either the controller or another destination. This command is typically used when performing a system restoration, or to pull a specified file name into the wms database.
<tftphost>	Specify the IP address or hostname of the TFTP server.
<filename>	Full name of the file to be copied.
flash:	Copy the file to the flash file system
<destfilename>	Specify the new name of the copied file.
system	Copy the file to the system partition.
usb:	Copy a file from an attached USB device to the flash file system.
partition	Specify the partition on the USB device.
<filename>	Full name of the file to be copied.
flash:	Copy the file to the flash file system
<destfilename>	Specify the new name of the copied file.

Passwords Secured During FTP Copy

Password are masked when using FTP to copy a file to a remote system. In previous releases, the password was entered in clear text at the end of the copy command. Starting with ArubaOS 6.4.0.0, the password is masked, and must be entered in a separate line. If you use scripts to copy files from controllers, scripts used on controllers running previous releases of ArubaOS must be modified to support this new password behavior.

Old syntax:

```
(host) #copy running-config ftp: <ftphost> <user> <password> <filename>
```

New syntax:

```
(host) #copy running-config ftp:  <ftphost> <user> <filename>
Password: <password>
```

In the following example, the password is entered on the second line, and is displayed in masked text.

```
(host)  #copy running-config ftp: 192.168.1.2 adminuser runconfig
Password: ********
```

Usage Guidelines

Use this command to save back-up copies of the configuration file to an FTP or TFTP server, or to load a saved file from an FTP or TFTP server.

Three partitions reside on the file system flash. Totalling 256MB, the three partitions provide space to hold the system image files (in partitions 1 and 2 which are 45MB each) and user files (in partition 3, which is 165MB). System software runs on the system partitions; the database, DHCP, startup configuration, and logs are positioned on the user partition.

To restore a database, copy the database from the network server and import the database.

To restore a configuration file, copy the file from network server to the controller's flash system then copy the file from the flash system to the system configuration. This ensures that you do not accidentally overwrite your system startup configuration file.

Unlike the controller's flash, the USB device has more than two partitions; not just 0 and 1. When copying a file from a USB device, you must know which partition the target file is on. Use the **show storage** command to identify the location of the file to identify the correct USB partition.

Example

The following commands copy the configuration file named engineering from the TFTP server to the controller's flash file system and then uses that file as the startup configuration. This example assumes the startup configuration file is named default.cfg:

```
(host) (config) #copy tftp: 192.0.2.0 engineering flash: default.bak
copy flash: default.bak flash: default.cfg
```

Command History

Version	Description
ArubaOS 1.0	Introduced for the first time.
ArubaOS 6.2	The **usb** parameter was introduced.
ArubaOS 6.5	The **flash:** parameter was introduced to copy files from an FTP server.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config modes on master controllers

cp-bandwidth-contract

```
cp-bandwidth-contract <name> {pps <1..64000>}
```

Description

This command configures a bandwidth contract traffic rate which can then be associated with a whitelist session ACL.

Syntax

Parameter	Description	Range	Default
`<name>`	Name of a bandwidth contract.	—	—
`pps`	Set a bandwidth rate in packets/seconds.	1–64000	—

Example

The following example configures a bandwidth contract named “cp-rate” with a rate of 100 pps.

```
(host)(config) #cp-bandwidth-contract cp-rate pps 100
```

Related Commands

Command	Description
show cp-bwcontracts	Display a list of Control Processor (CP) bandwidth contracts for whitelist ACLs.
firewall cp	This command creates a new whitelist ACL and can associate a bandwidth contract with that ACL.

Command History

Version	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.4.3.0	The unit of bandwidth contract traffic rate changed from Mbps or Kbps to pps. The range for pps is 1–64000.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license.	Config mode on master controllers

crypto-local ipsec sa-cleanup

```
crypto-local ipsec sa-cleanup
```

Description

Issue this command to clean IPsec security associations (SAs).

Syntax

No parameters

Usage Guidelines

Use this command to remove old IPsec security associations if remote APs on your network still use an old SA after upgrading to a newer version of ArubaOS.

Command History

This command was introduced in ArubaOS 6.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

crypto dynamic-map

```
crypto dynamic-map <name> <priority>
   disable
   no ...
   set pfs {group1|group2|group14|group19|group20}
   set security-association lifetime kilobytes <kilobytes>
   set security-association lifetime seconds <seconds>
   set transform-set <name1> [<name2>] [<name3>] [<name4>]
   version v1|v2
```

Description

This command configures a new or existing dynamic map.

Syntax

Parameter	Description	Range	Default
<name>	Name of the map.	—	—
<priority>	Priority of the map.	1-10000	10000
no	Negates a configured parameter.	—	—
disable	Disables the dynamic map.	–	–
enable [bypass|secret]	Enables the dynamic map using the bypass or secret. Bypass prompts for the enable mode login and password. Secret prompts for the enable password.	–	–
set pfs	Enables Perfect Forward Secrecy (PFS) mode. Use one of the following: • **group1**: 768-bit Diffie Hellman prime modulus group. • **group2**: 1024-bit Diffie Hellman • **group14**: 2048-bit Diffie Hellman. • **group19**: 256-bit random Diffie Hellman ECP modulus group. • **group20**: 384-bit random Diffie Hellman ECP modulus group.	—	group1
set security-association lifetime	Configures the lifetime for the security association (SA) in seconds or kilobytes.	–	–
seconds <seconds>	Lifetime for the SA in seconds.	300-86400	7200

Parameter	Description	Range	Default
`kilobytes <kilobytes>`	Lifetime for the SA in kilobytes.	1000 - 1000000000	–
`set transform-set`	Name of the transform set for this dynamic map. You can specify up to four transform sets. You configure transform sets with the crypto ipsec transform-set command.	—	default-transform
`version`	Specify the version of IKE protocol the controller uses to set up a security association (SA) in the IPsec protocol suite • **v1**:IKEv1 • **v2**: IKEv2	—	v1

Usage Guidelines

Dynamic maps enable IPsec SA negotiations from dynamically addressed IPsec peers. Once you have defined a dynamic map, you can optionally associate that map with the default global map using the command **crypto map global-map**.

Example

The following command configures a dynamic map:

```
(host) (config)# crypto dynamic-map dmap1 100
set pfs group2
set security-association lifetime seconds 300
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The **version** parameter was introduced. The **pfs** parameter was modified to support the **group19** and **group20** PFS group values.
ArubaOS 6.3	The **set security-association lifetime kilobytes**and Diffie-Hellman **set pfs group 14** parameters were added.
ArubaOS 6.4	The **disable/enable** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	The **group19** and **group20** PFS options requires the Advanced Cryptography (ACR) license. All other parameters are available in the base operating system.	Config mode on master controllers

crypto ipsec

```
crypto ipsec
   mtu <max-mtu>
   transform-set <transform-set-mtu> esp-3des|esp-aes128|esp-aes128-gcm|esp-aes192|esp-
   aes256|esp-aes256-gcm|esp-des esp-md5-hmac|esp-null-hmac|esp-sha-hmac}
```

Description

This command configures IPsec parameters.

Syntax

Parameter	Description
`mtu <max-mtu>`	Configure the IPsec Maximum Transmission Unit (MTU) size. The supported range is 1024 to 1500 and the default is 1500.
`transform-set <transform-set-mtu>`	Create or modify a transform set.
`esp-3des`	Use ESP with 168-bit 3DES encryption.
`esp-aes128`	Use ESP with 128-bit AES encryption.
`esp-aes128-gcm`	Use ESP with 128-bit AES-GCM encryption.
`esp-aes192`	Use ESP with 192-bit AES encryption.
`esp-aes256`	Use ESP with 256-bit AES encryption.
`esp-aes256-gcm`	Use ESP with 256-bit AES-GCM encryption.
`esp-des`	Use ESP with 56-bit DES encryption.
`esp-md5-hmac`	Use ESP with the MD5 (HMAC variant) authentication algorithm
`esp-null-hmac`	Use ESP with no authentication. This option is not recommended.
`esp-sha-hmac`	Use ESP with the SHA (HMAC variant) authentication algorithm.

Usage Guidelines

Define the Maximum Transmission Unit (MTU) size allowed for network transmissions using IPsec security, and create or edit transform sets that define a specific encryption and authentication type.

Example

The following command configures 3DES encryption and MD5 authentication for a transform set named **set2**:

```
(host) (config)# crypto ipsec transform-set set2 esp-3des esp-md5-hmac
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **esp-aes128-gcm** and **esp-aes256-gcm** transform-set parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	The **esp-aes128-gcm** and **esp-aes56-gcm** transform-set parameters require the Advanced Cryptography (ACR) license. All other parameters are available in the base OS.	Config mode on master controllers

crypto isakmp

```
crypto isakmp
   address <peer-address> netmask <mask>}
   disable
   eap-passthrough eap-mschapv2|eap-peap|eap-tls
   enable
   groupname <name>
   key <keystring> address <peer-address> netmask <mask>
   udpencap-behind-natdevice enable|disable
   packet-dump
```

Description

This command configures Internet Key Exchange (IKE) parameters for the Internet Security Association and Key Management Protocol (ISAKMP).

Syntax

Parameter	Description
`address`	Configure the IP address for the group key.
`<peer-address>`	IP address for the group key, in dotted-decimal format.
`netmask`	Configure the IP netmask for the group key.
`<mask>`	Subnet mask for the group key.
`disable`	Disable IKE processing.
`eap-passthrough`	Select one of the following authentication types for IKEv2 user authentication using EAP. • eap-mschapv2 • eap-peap • eap-tls
`enable`	Enable IKE processing.
`groupname`	Configure the IKE Aggressive group name. Aggressive-mode IKE is a 3-packet IKE exchange that does not provide identity-protection, but is faster, because fewer messages are exchanged.
`<name>`	Name of the IKE aggressive group.
`key`	Configure the IKE preshared key.
`<keystring>`	Configure the value of the IKE PRE-SHARED key. The key must be between 6-64 characters long.

Parameter	Description
address	Configure the IP address for the group key.
<peer-address>	An IP for the group key, in dotted-decimal format.
netmask	Configure the netmask for the group key IP address.
<mask>	A subnet mask, in dotted-decimal format
udpencap-behind-natdevice	Configure NAT-T if controller is behind NAT device. (For Windows VPN Dialer only)
enable	Enable Nat-T. This is the recommended setting if the controller is behind a NAT device.
disable	Disable Nat-T.
packet-dump	Issue this command in enable mode to troubleshoot an IPsec tunnel establishment by looking at the packet exchanges between the controller and the remote AP or the other IPsec peer. The packet dump output is saved to a file named ike.pcap. **NOTE:** This is a testing feature only, and should not be enabled on a production network. To disable this feature, use the command **no crypto isakmp packet-dump.**

Usage Guidelines

Use this command to configure the IKE pre-shared key, set the EAP authentication method for IKEv2 clients using EAP user authentication, and enable source NAT if the IP addresses of clients need to be translated to access the network.

Example

The following command configures an ISAKMP peer IP address and subnet mask. After configuring an ISAKMP address and netmask, you will be prompted to enter the IKE preshared key.

```
(host)(config) #crypto isakmp address 10.3.14.21 netmask 255.255.255.0
Key:*******Re-Type Key:*******
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **eap-passthrough** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

crypto isakmp block-aruba-ca

```
crypto-local isakmp block-aruba-ca
   enable
   disable
```

Description

This command configures the controller to accept or reject Dell certified clients.

Syntax

Parameter	Description
`enable`	Accept Dell certified client certificates.
`disable`	Reject Dell certified client certificates and use custom certificates instead.

Example

This command configures a CA certificate:

```
crypto-local isakmp block-aruba-ca enable
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

crypto isakmp policy

```
crypto isakmp policy
   authentication pre-share|rsa-sig|ecdsa-256|ecdsa-384
   disable|enable [bypass|secret]
   encryption 3DES|AES128|AES192|AES256|DES
   group 1|2|14|19|20
   hash md5|sha|sha1-96|sha2-256-128|sha2-384-192
   prf PRF-HMAC-MD5|PRF-HMAC-SHA1|PRF-HMAC-SHA256|PRF-HMAC-SHA384
   lifetime <seconds>
   no disable
   version v1|v2
```

Description

This command configures Internet Key Exchange (IKE) policy parameters for the Internet Security Association and Key Management Protocol (ISAKMP).

Syntax

Parameter	Description
`policy`	Configure an IKE policy
`<priority>`	Specify a number from 1 to 10,000 to define a priority level for the policy. The higher the number, the higher the priority level.
`authentication`	Configure the IKE authentication method.
`pre-share`	Use Pre Shared Keys for IKE authentication. This is the default authentication type.
`rsa-sig`	Use RSA Signatures for IKE authentication.
`ecdsa-256`	Use ECDSA-256 signatures for IKE authentication.
`ecdsa-384`	Use ECDSA-384 signatures for IKE authentication.
`disable`	Disables the IKE policy.
`enable [bypass|secret]`	Enables the IKE policy using the bypass or secret. Bypass prompts for the enable mode login and password. Secret prompts for the enable password.
`encryption`	Configure the IKE encryption algorithm.
`3DES`	Use 168-bit 3DES-CBC encryption algorithm. This is the default encryption value.
`AES128`	Use 128-bit AES-CBC encryption algorithm.

Parameter	Description
AES192	Use 192-bit AES-CBC encryption algorithm.
AES256	Use 256-bit AES-CBC encryption algorithm.
DES	Use 56-bit DES-CBC encryption algorithm.
group	Configure the IKE Diffie Hellman group.
1	Use the 768-bit Diffie Hellman prime modulus group. This is the default group setting.
2	Use the 1024-bit Diffie Hellman prime modulus group.
14	Use the 2048-bit Diffie Hellman DDH prime modulus group.
19	Use the 256-bit random Diffie Hellman ECP modulus group.
20	Use the 384-bit random Diffie Hellman ECP modulus group
hash	
md5	Use MD5 as the hash algorithm.
sha	Use SHA-1 as the hash algorithm. This is the default policy algorithm.
SHA1-96	Use SHA1-96 as the hash algorithm.
SHA2-256-128	Use SHA2-256-128 as the hash algorithm.
SHA2-384-192	Use SHA2-384-192 as the hash algorithm.
prf	Set one of the following pseudo-random function (PRF) values for an IKEv2 policy: • PRF-HMAC-MD5 (default) • PRF-HMAC-SHA1 • PRF-HMAC-SHA256 • PRF-HMAC-SHA384
lifetime <seconds>	Specify the lifetime of the IKE security association (SA), from 300 - 86400 seconds.
no	Disables the policy.
version	Specify the version of IKE protocol for the IKE policy

Parameter	Description
	• **v1**: IKEv1 • **v2**: IKEv2

Usage Guidelines

To define settings for a ISAKMP policy, issue the command **crypto isakmp policy <priority>** then press **Enter**. The CLI will enter config-isakmp mode, which allows you to configure the policy values.

Example

The following command configures an ISAKMP peer IP address and subnet mask.. After configuring an ISAKMP address and netmask, you will be prompted to enter the IKE preshared key.

```
(host)(config) #crypto isakmp policy1
(host)(config-isakmp) #auth rsa-sig
Key:*******Re-Type Key:*******
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The following parameters were introduced. • authentication ecdsa-256 • authentication ecdsa-384 • hash sha1-96 • hash sha2-256-128 • hash sha2-384-192 • prf
ArubaOS 6.3	The **Diffie-Hellman group 14** parameter was introduced.
ArubaOS 6.4	The **disable/enable** and **no** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	The following settings require the Advanced Cryptogram (ACR) license: • hash algorithm: **SHA-256-128**, **SHA-384-192** • Diffie-Hellman (DH) Groups: **19** and **20** • Pseudo-Random Function (PRF): **PRF-HMAC-SHA256**, **PRF-HMAC-SHA384** • Authentication: **ecdsa-256** and **ecdsa-384** All other parameters are supported in the base OS.	Config mode on master controllers

crypto-local ipsec-map

```
crypto-local ipsec-map <map> <priority>
   disable
   dst-net <ipaddr> <mask>
   factory-cert-auth
   force-natt
   ip access-group <access-group> in
   ip-compression disable|enable
   no ...
   local-fqdn <local_id_fqdn>
   peer-cert-dn <peer-dn>
   peer-fqdn any-fqdn|{peer-fqdn <peer-id-fqdn>}
   peer-ip <ipaddr>
   pre-connect {disable|enable}
   set ca-certificate <cacert-name>
   set ike1-policy <policy-v1-number>
   set ikev2-policy <policy-v2-number>
   set pfs {group1|group2|group14|group19|group20}
   set security-association lifetime kilobytes <kilobytes>
   set security-association lifetime seconds <seconds>
   set server-certificate <cert-name>
   set transform-set <name1> [<name2>] [<name3>] [<name4>]
   src-net <ipaddr> <mask>
   trusted {disable|enable}
   version v1|v2
   vlan <vlan>
```

Description

This command configures IPsec mapping for site-to-site VPNs.

Syntax

Parameter	Description	Range	Default
`<map>`	Name of the IPsec map.	—	—
`<priority>`	Priority of the entry.	1-9998	—
`dst-net`	IP address and netmask for the destination network.	—	—
`disable`	Issue this command to disable an existing IPsec map. New maps are enabled by default.	—	—
`force-natt`	Include this parameter to always enforce UDP 4500 for IKE and IPsec. This option is disabled by default.	—	—

Parameter	Description	Range	Default
`ip access-group <access-group> in`	Attach a route access control list (ACL) to the IPsec map for a site-to-site VPN. When you associate a routing ACL to inbound traffic on a controller terminating a site-to-site VPN, that ACL can forward traffic as normal, route traffic to a nexthop router on a nexthop list, or redirect traffic over an L3 GRE tunnel or tunnel group. For more information on creating a routing ACL, see ip access-list route.	—	—
`ip-compression disable|enable`	Enable compression for traffic in an IKEv2 site-to-site tunnel between a master and local W-7000 Series controller. Compression is disabled by default.	—	—
`no`	Negates a configured parameter.	—	—
`local-fqdn <local_id_fqdn>`	If the local controller has a dynamic IP address, you must specify the fully qualified domain name (FQDN) of the controller to configure it as a initiator of IKE aggressive-mode.	—	—
`peer-cert-dn <peer-dn>`	If you are using IKEv2 to establish a site-to-site VPN to a statically addressed remote peer, identify the peer device by entering its certificate subject name in the Peer Certificate Subject Name field	—	—
`peer-ip <ipaddr>`	If you are using IKEv1 to establish a site-to-site VPN to a statically addressed remote peer, identify the peer device by enteringIP address of the peer gateway. **NOTE:** If you are configuring an IPsec map for a static-ip controller with a dynamically addressed remote peer, you must leave the peer gateway set to its default value of 0.0.0.0.	—	—
`peer-fqdn`	For site-to-site VPNs with dynamically addressed peers, specify a fully qualified domain name (FQDN) for the controller.	any-fqdn fqdn-id	any-fqdn
`any-fqdn`	If the controller is defined as a dynamically addressed responder, you can select **any-fqdn** to make the controller a responder for all VPN peers,	—	—
`fqdn-id <peer-id-fqdn>`	Specify the FQDN of a peer to make the controller a responder for one specific initiator only.	—	—

Parameter	Description	Range	Default
`pre-connect`	Enables or disables pre-connection.	enable/ disable	disabled
`set ike1-policy <policy-v1-number>`	Select an IKEv1 policy for the ipsec-map. Predefined policies are described in the table below.	—	—
`set ikev2-policy <policy-v2-number>`	Select IKEv2 policy for the ipsec-map. Predefined policies are described in the table below.	—	—
`set ca-certificate <cacert-name>`	User-defined name of a trusted CA certificate installed in the controller. Use the **show crypto-local pki TrustedCA** command to display the CA certificates that have been imported into the controller.	—	—
`set pfs`	If you enable Perfect Forward Secrecy (PFS) mode, new session keys are not derived from previously used session keys. Therefore, if a key is compromised, that compromised key will not affect any previous session keys. To enable this feature, specify one of the following Perfect Forward Secrecy modes: • **group1** : 768-bit Diffie Hellman prime modulus group. • **group2**: 1024-bit Diffie Hellman prime modulus group. • **group14**: 2048-bit Diffie Hellman prime modulus group. • **group19**: 256-bit random Diffie Hellman ECP modulus group. (For IKEv2 only) • **group20**: 384-bit random Diffie Hellman ECP modulus group. (For IKEv2 only)	group1 group2 group14 group19 group20	disabled
`set security-association lifetime`	Configures the lifetime for the security association (SA).		
`set seconds <seconds>`	In seconds	300-86400	7200 seconds
`kilobytes <kilobytes>`	In kilobytes	1000 - 1000000000	–
`set server-certificate <cert-name>`	User-defined name of a server certificate installed in the controller. Use the **show crypto-local pki ServerCert** command to display the server certificates that have been imported into the controller.	—	—

Parameter	Description	Range	Default
`set transform-set <name1>`	Name of the transform set for this IPsec map. One transform set name is required, but you can specify up to four transform sets. Configure transform sets with the **crypto ipsec transform-set** command.	—	default-transform
`src-net <ipaddr> <mask>`	IP address and netmask for the source network.	—	—
`trusted`	Enables or disables a trusted tunnel.	enable/ disable	disabled
`version v1|v2`	Select the IKE version for the IPsec map. • **v1**: IKEv1 • **v2**: IKEv2		v1
`vlan <vlan>`	VLAN ID. Enter 0 for the loopback.	1-4094	—

Usage Guidelines

You can use controllers instead of VPN concentrators to connect sites at different physical locations.

You can configure separate CA and server certificates for each site-to-site VPN. You can also configure the same CA and server certificates for site-to-site VPN and client VPN. Use the **show crypto-local ipsec-map** command to display the certificates associated with all configured site-to-site VPN maps; use the **tag <map>** option to display certificates associated with a specific site-to-site VPN map.

ArubaOS supports site-to-site VPNs with two statically addressed controllers, or with one static and one dynamically addressed controller. By default, site-to-site VPN uses IKE Main-mode with Pre-Shared-Keys to authenticate the IKE SA. This method uses the IP address of the peer, and therefore will not work for dynamically addressed peers.

To support site-site VPN with dynamically addressed devices, you must enable IKE Aggressive-Mode with Authentication based on a Pre-Shared-Key. A controller with a dynamic IP address must be configured to be the initiator of IKE Aggressive-mode for Site-Site VPN, while the controller with a static IP address must be configured as the responder of IKE Aggressive-mode.

IKEv2 site-to-site VPNs between master and local W-7000 Series controllers support traffic compression between those devices. When this hardware-based compression feature is enabled, the quality of unencrypted traffic (such as Skype4b or Voice traffic) is not compromised by increased latency or decreased throughput.

In a branch controllerenvironment, where an IPsec map defines the connections between the local branch controllers and a master controller, the global ACL **master-boc-traffic** is applied to all IPsec maps between the master and the branch controllers. If any branch controller requires a different ACL, issue the command **routing-policy-map branch<mac-addr> access-list <acl>** on that branch controller to associate a different ACL to the L3 GRE tunnel between that one branch controller and its master. This local setting will override the global settings defined in the master-boc-traffic ACL.

Understanding Default IKE policies

ArubaOS includes the following default IKE policies. These policies are predefined and cannot be edited.

Table 7: *Default IKE Policy Settings*

Policy Name	Policy Number	IKE Version	Encryption Algorithm	Hash Algorithm	Authentica-tion Method	PRF Method	Diffie-Hellman Group
Default protection suite	10001	IKEv1	3DES-168	SHA 160	Pre-Shared Key	N/A	2 (1024 bit)
Default RAP Certificate protection suite	10002	IKEv1	AES -256	SHA 160	RSA Signature	N/A	2 (1024 bit)
Default RAP PSK protection suite	10003		AES -256	SHA 160	Pre-Shared Key	N/A	2 (1024 bit)
Default RAP IKEv2 RSA protection suite	1004	IKEv2	AES -256	SSHA160	RSA Signature	hmac-sha1	2 (1024 bit)
Default Cluster PSK protection suite	10005	IKEv1	AES -256	SHA160	Pre-Shared Key	Pre-Shared Key	2 (1024 bit)
Default IKEv2 RSA protection suite	1006	IKEv2	AES - 128	SHA 96	RSA Signature	hmac-sha1	2 (1024 bit)
Default IKEv2 PSK protection suite	10007	IKEv2	AES - 128	SHA 96	Pre-shared key	hmac-sha1	2 (1024 bit)
Default Suite-B 128bit ECDSA protection suite	10008	IKEv2	AES - 128	SHA 256-128	ECDSA-256 Signature	hmac-sha2-256	Random ECP Group (256 bit)

Policy Name	Policy Number	IKE Version	Encryption Algorithm	Hash Algorithm	Authentica-tion Method	PRF Method	Diffie-Hellman Group
Default Suite-B 256 bit ECDSA protection suite	10009	IKEv2	AES -256	SHA 384-192	ECDSA-384 Signature	hmac-sha2-384	Random ECP Group (384 bit)
Default Suite-B 128bit IKEv1 ECDSA protection suite	10010	IKEv1	AES-GCM-128	SHA 256-128	ECDSA-256 Signature	hmac-sha2-256	Random ECP Group (256 bit)
Default Suite-B 256-bit IKEv1 ECDSA protection suite	10011	IKEv1	AES-GCM-256	SHA 256-128	ECDSA-256 Signature	hmac-sha2-256	Random ECP Group (256 bit)

When using a default IKE (V1 or V2) policy for an IPsec map, the priority number should be the same as the policy number.

Examples

The following commands configures site-to-site VPN between two controllers:

```
(host) (config) #crypto-local ipsec-map sf-chi-vpn 100
   src-net 101.1.1.0 255.255.255.0
   dst-net 100.1.1.0 255.255.255.0
   peer-ip 172.16.0.254
   vlan 1
   trusted

(host) (config) #crypto-local ipsec-map chi-sf-vpn 100
   src-net 100.1.1.0 255.255.255.0
   dst-net 101.1.1.0 255.255.255.0
   peer-ip 172.16.100.254
   vlan 1
   trusted
```

For a dynamically addressed controller that initiates IKE Aggressive-mode for Site-Site VPN:

```
(host) (config)crypto-local ipsec-map <name> <priority>
   src-net <ipaddr> <mask>
   dst-net <ipaddr> <mask>
   peer-ip <ipaddr>
   local-fqdn <local_id_fqdn>
   vlan <id>
   pre-connect enable|disable
   trusted enable
```

For the Pre-shared-key:

```
crypto-local isakmp key <key> address <ipaddr> netmask <mask>
```

For a static IP controller that responds to IKE Aggressive-mode for Site-Site VPN:

```
(host) (config)crypto-local ipsec-map <name2> <priority>
  src-net <ipaddr> <mask>
  dst-net <ipaddr> <mask>
  peer-ip 0.0.0.0
  peer-fqdn fqdn-id <peer_id_fqdn>
  vlan <id>
  trusted enable
```

For the Pre-shared-key:

```
crypto-local isakmp key <key> fqdn <fqdn-id>
```

For a static IP controller that responds to IKE Aggressive-mode for Site-Site VPN with One PSK for All FQDNs:

```
(host) (config)crypto-local ipsec-map <name2> <priority>
  src-net <ipaddr> <mask>
  peer-ip 0.0.0.0
  peer-fqdn any-fqdn
  vlan <id>
  trusted enable
```

For the Pre-shared-key for All FQDNs:

```
crypto-local isakmp key <key> fqdn-any
```

Related Commands

	Modification
crypto_local isakmp disable-ipcomp	Globally disable IP compression on all site-to-site VPNs between master and local controllersby disabling compression from that master controller.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **peer-cert-dn** and **peer-fqdn** parameters were introduced. The **set pfs** command introduced the **group19** and **group20** parameters.
ArubaOS 6.3	The **set security-association lifetime kilobytes**and Diffie-Hellman **set pfs group 14** parameters were added.
ArubaOS 6.4.4.0	The **ip access-group** and **ip-compression** parameters are introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	The **group19** and **group20** PFS options requires the Advanced Cryptography (ACR) license. All other parameters are available in the base operating system.	Config mode on master controllers

crypto-local isakmp allow-via-subnet-routes

```
crypto-local isakmp allow-via-subnet-routes
```

Description

This command enables the controller to accept the subnets published by VIA clients.

Syntax

Parameter	Description
`allow-via-subnet-routes`	Allows the controller to accept VIA-published subnets.

Usage Guidelines

By default, this feature is disabled, which means that the controller will ignore the subnets published by VIA. Enable this feature using the **crypto-local isakmp allow-via-subnet-routes** command. To disable the feature, execute the **no crypto-local isakmp allow-via-subnet-routes** command.

Example

Execute this command to allow the controller to accept VIA-published subnets:

```
(host)(config) #crypto-local isakmp allow-via-subnet-routes
```

Related Commands

Command	Description	Mode
`show crypto-local isakmp allow-via-subnet-routes`	Use this command to know if the controller is configured to accept subnet routes from VIA clients.	Config mode

Command History

Release	Modification
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

crypto-local isakmp ca-certificate

```
crypto-local isakmp ca-certificate <cacert-name>
```

Description

This command assigns the Certificate Authority (CA) certificate used to authenticate VPN clients.

Syntax

Parameter	Description
`ca-certificate`	User-defined name of a trusted CA certificate installed in the controller. Use the **show crypto-local pki TrustedCA** command to display the CA certificates that have been imported into the controller.

Usage Guidelines

You can assign multiple CA certificates. Use the **show crypto-local isakmp ca-certificate** command to view the CA certificates associated with VPN clients.

Example

This command configures a CA certificate:

```
crypto-local isakmp ca-certificate TrustedCA1
```

Command History

This command was introduced in ArubaOS 3.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

crypto-local isakmp certificate-group

```
crypto-local isakmp certificate-group server-certificate <server_certificate> ca-certificate
<ca_cert-name>
```

Description

The command configures an IKE Certificate Group for VPN Clients.

Syntax

Parameter	Description	Range	Default
`server-certificate <server-certificate>`	The IKE server certificate name for VPN clients.	1-64 characters	—
`ca-certificate <ca-cert-name>`	The IKE CA Certificate for this server certificate.	1-64 characters	—

Usage Guidelines

This feature allows you to create a certificate group so you can access multiple types of certificates on the same controller.

Example

This command configures a certificate group that consists of server certificate named newtest with the CA certificate TrustedCA.

```
crypto-local isakmp certificate-group server-certificate newtest ca-certificate TrustedCA
```

Command History

This command was introduced in ArubaOS 6.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

crypto-local isakmp disable-aggressive-mode

```
crypto-local isakmp disable-aggressive-mode
```

Description

The command disables the IKEv1 aggressive mode.

Syntax

No parameters.

Usage Guidelines

The master-local communication by default uses IPsec aggressive mode when a PSK is used for authentication between controllers. You need to convert master-local communication to certificate-based IPsec authentication before disabling aggressive mode.

Disabling Aggressive Mode will impact other sessions which use aggressive mode such as Master-local IKE session with PSK.

Example

```
crypto-local isakmp disable-aggressive-mode
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

crypto_local isakmp disable-ipcomp

```
crypto-local isakmp disable-ipcomp
```

Description

This command disables IP compression on the master controller.

Syntax

No parameters.

Usage Guidelines

When this hardware-based compression feature is enabled, the quality of unencrypted traffic (such as Skype4b or Voice traffic) is not compromised by increased latency or decreased throughput.

Use this command to globally disable IP compression on a master controller in a master/local topology.To disable IP compression on a branch controller, use the Smart Config WebUI. On the branch controller, navigate to **Configuration** > **BRANCH** > **Smart Config**.

Example

```
(boc_host) (config) #crypto-local isakmp disable-ipcomp
```

Related Commands

Version	Modification
crypto-local ipsec-map	Locally disable IP compression on an individual site-to-site VPN by disabling compression on a specific IPsec map.

Command History

Version	Modification
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

crypto-local isakmp dpd

```
crypto-local isakmp dpd idle-timeout <seconds> retry-timeout <seconds>  retry-attempts
<number>
```

Description

This command configures IKE Dead Peer Detection (DPD) on the local controller.

Syntax

Parameter	Description	Range	Default
`idle-timeout`	Idle timeout, in seconds.	10-3600	22 seconds
`retry-timeout`	Retry interval, in seconds.	2-60	2 seconds
`retry-attempts`	Number of retry attempts.	3-10	3

Usage Guidelines

DPD is enabled by default on the controller for site-to-site VPN.

Example

This command configures DPD parameters:

```
crypto-local isakmp dpd idle-timeout 60 retry-timeout 3 retry-attempts 5
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

crypto-local isakmp key

```
crypto-local isakmp key <key> {address <peer-ipaddr> netmask <mask>}|{fqdn <ike-id-fqdn>}
|fqdn-any
```

Description

This command configures the IKE preshared key on the local controller for site-to-site VPN.

Syntax

Parameter	Description
`key <key>`	IKE preshared key value, between 6-64 characters. To configure a pre-shared key that contains non-alphanumeric characters, surround the key with quotation marks. For example: **crypto-local isakmp key "key with spaces" fqdn-any**.
`address <peer-ipaddr>`	IP address for the preshared key.
`netmask <mask>`	Netmask for the preshared key.
`fqdn <ike-id-fqdn>`	Configure the PSK for the specified FQDN.
`fqdn-any`	Configure the PSK for any FQDN.

Usage Guidelines

This command configures the IKE preshared key.

Example

The following command configures an IKE preshared key for site-to-site VPN:

```
crypto-local isakmp key R8nD0mK3y address 172.16.100.1 netmask 255.255.255.255
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.4	The **fqdn** and **fqdn-any** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

crypto-local isakmp permit-invalid-cert

```
crypto-local isakmp permit-invalid-cert
```

Description

This command allows invalid or expired certificates to be used for site-to-site VPN.

Syntax

No parameters.

Usage Guidelines

This command allows invalid or expired certificates to be used for site-to-site VPN.

Command History

This command was introduced in ArubaOS 3.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

crypto-local isakmp sa-cleanup

```
crypto-local isakmp sal-cleanup
```

Description

This command enables the cleanup of IKE SAs.

Syntax

No parameters.

Usage Guidelines

This command removes expired ISAKMP SAs from the controller.

Command History

This command was introduced in ArubaOS 6.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

crypto-local isakmp server-certificate

```
crypto-local isakmp server-certificate <cert-name>
```

Description

This command assigns the server certificate used to authenticate the controller for VPN clients using IKEv1 or IKEv2

Syntax

Parameter	Description
`server-certificate`	User-defined name of a server certificate installed in the controller. Use the **show crypto-local pki ServerCert** command to display the server certificates that have been imported into the controller.

Usage Guidelines

This certificate is only for VPN clients and not for site-to-site VPN clients. You can assign separate server certificate for use with VPN clients using IKEv1 and clients using IKEv2. Use the **show crypto-local isakmp server-certificate** command to view the server certificate associated with VPN clients. You must import and configure server certificates separately on master and local controllers.

There is a default server certificate installed in the controller, however this certificate does not guarantee security for production networks. Best practices is to replace the default certificate with a custom certificate issued for your site or domain by a trusted CA. You can use the WebUI to generate a Certificate Signing Request (CSR) to submit to a CA and then import the signed certificate received from the CA into the controller. For more information, see "Managing Certificates" in the *Dell Networking W-Series ArubaOS User Guide*.

Example

This command configures a server certificate:

```
crypto-local isakmp server-certificate MyServerCert
```

Command History

This command was introduced in ArubaOS 3.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

crypto-local isakmp xauth

```
crypto-local isakmp xauth
```

Description

This command enables IKE XAuth for VPN clients.

Syntax

No parameters.

Usage Guidelines

The **no crypto-local isakmp xauth** command disables IKE XAuth for VPN clients. This command only applies to VPN clients that use certificates for IKE authentication. If you disable XAuth, then a VPN client that uses certificates will not be authenticated using username/password. You must disable XAuth for Cisco VPN clients using CAC Smart Cards.

Example

This command disables IKE XAuth for Cisco VPN clients using CAC Smart Cards:

```
no crypto-local isakmp xauth
```

Command History

This command was introduced in ArubaOS 3.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

crypto-local pki

```
crypto-local pki
   CRL <name> <filename>
   IntermediateCA <name> <filename>
   OCSPResponderCert <certname> <filename>
   OCSPSignerCert <certname> <filename>
   PublicCert <name> <filename>
   ServerCert <name> <filename>
   TrustedCA <name> <filename>
   global-oscp-signer-cert
   rcp <name>
```

Issue this command to configure a local certificate, OCSP signer or responder certificate and Certificate Revocation List (CRL). You can also list revocation checkpoints and enable the responder service.

Syntax

Parameter	Description
`CRL`	Specifies a Certificate Revocation list. Validation of the CRL is done when it imported through the WebUI (requires the CA to have been already present). CRLs can only be imported through the WebUI.
`<name>`	Name of the CRL.
`<filename>`	Original imported filename of the CRL.
`IntermediateCA`	Configures an intermediate CA certificate
`<name>`	Name of the intermediate CA certificate.
`<filename>`	Original imported filename of the CRL.
`OCSPResponderCert`	Configures a OCSP responder certificate.
`<certname>`	Name of responder certificate.
`<filename>`	Original imported filename of the responder certificate.
`OCSPSignerCert`	Configures a OCSP signer certificate.
`<certname>`	Name of the signer certificate.
`<filename>`	Original imported filename of the signer certificate.
`PublicCert`	Public key of a certificate. This allows an application to identify an exact certificate.
`<certname>`	Name of the signer certificate.

Parameter	Description
<filename>	Original imported filename of the signer certificate.
ServerCert	Server certificate. This certificate must contain both a public and a private key (the public and private keys must match). You can import a server certificate in either PKCS12 or x509 PEM format; the certificate is stored in x509 PEM DES encrypted format on the controller.
<certname>	Name of the signer certificate.
<filename>	Original imported filename of the signer certificate.
TrustedCA	Trusted CA certificate. This can be either a root CA or intermediate CA. Dell encourages (but does not require) an intermediate CA's signing CA to be the controller itself.
<certname>	Name of the signer certificate.
<filename>	Original imported filename of the signer certificate.
global-ocsp-signer-cert	Specifies the global OCSP signer certificate to use when signing OCSP responses if there is no check point specific OSCP signer certificate present. If the ocsp-signer-cert is not specified, OCSP responses are signed using the global OCSP signer certificate. If this is not present, than an error message is sent out to clients. **NOTE:** The OCSP signer certificate (if configured) takes precedence over the global OCSP signer certificate as this is check point specific.
rcp <name>	Specifies the revocation check point. A revocation checkpoint is automatically created when a TrustedCA or IntermediateCA certificate is imported on the controller.
service-ocsp-responder	This is a global knob that turns the OCSP responder on or off. The default is off (disabled). To enable this option a CRL must be configured for this revocation checkpoint as this is the source of revocation information in the OCSP responses.

Usage Guidelines

This command lets you configure the controller to perform real-time certificate revocation checks using the Online Certificate Status Protocol (OCSP) or traditional certificate validation using the Certificate Revocation List (CRL) client. Refer to the *Certificate Revocation* chapter in the *Dell Networking W-Series ArubaOS 6.5.x User Guide* for more information on how to configure this feature using both the WebUI and CLI.

Example

This example configures the controller as an OCSP responder.

The revocation check point is specified as CAroot. (The revocation check point CAroot was automatically created when the CAroot certificate was previously uploaded to this controller.) The OCSP signer certificate is RootCA-Ocsp_signer. The CRL file is Security1-WIN-05PRGNGEKAO-CA-unrevoked.crl The OCSP responder is enabled.

```
crypto-local pki service-ocsp-responder
```

```
crypto-local pki rcp CARoot
   ocsp-signer-cert RootCA-Ocsp_signer
   crl-location file Security1-WIN-05PRGNGEKAO-CA-unrevoked.crl
  enable-ocsp-responder
```

Related Commands

Command	Description	Mode
crypto-local pki rcp	Specifies the certificates that are used to sign OCSP responses for this revocation check point	Config mode
show crypto-local pki	This command shows local certificate, OCSP signer or responder certificate and CRL data and statistics.	Config mode

Command History

Version	Modification
ArubaOS 3.2	Command introduced.
ArubaOS 6.1	The following parameters were introduced: • CRL • Intermediate CA • OCSPResponderCert • OCSPSignerCert • global-ocsp-signer-cert • rcp • service-ocsp-responder

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

crypto-local pki rcp

```
crypto-local pki rcp
   <name> [crl-location <file>]|[enable-ocsp-responder]|[ocsp-responder-cert <ocsp-responder-
   cert>]|[ocsp-signer-cert <ocsp-signer-cert>]|
   [ocsp-url <ocsp-url>]|[revocation-check [None|<method1>|<method2>]]
```

Description

Use this command to specify the certificates used to sign OCSP for the revocation check point.

Syntax

Parameter	Description
`rcp`	Specifies the revocation check point. A revocation checkpoint is automatically created when a TrustedCA or IntermediateCA certificate is imported on the controller.
`crl-location <file>`	Location of the CRL that is used for the rcp. The specified CRL filename must be previously imported onto the controller before using this option.
`enable-ocsp-responder`	Enables the OCSP Responder for this revocation checkpoint. The default is disabled.
`ocsp-responder-cert <ocsp-responder-cert>`	Specifies the certificate that is used to verify OCSP responses. The certificate name has to be one of the certificates shown as output when the CLI command `show crypto-local pki ocsprespondercert` is used.
`ocsp-signer-cert <ocsp-signer-cert>`	Specifies the certificate that is used to sign OCSP responses for this revocation check point. The OCSP signer certificate must be previously imported on to the controller (using the WebUI). The OCSP signer cert can be the same trusted CA as the check point, a designated OCSP signer certificate issued by the same CA as the check point or some other local trusted authority. If the ocsp-signer-cert is not specified, OCSP responses are signed using the global OCSP signer certificate. If that is not present, than an error message is sent out to clients. **NOTE:** The OCSP signer certificate (if configured) takes precedence over the global OCSP signer certificate as this is check point specific.

Parameter	Description
`ocsp-url <ocsp-url>`	Configures the OCSP Server URL. The URL has to be in the form of http://my.responder.com/path. This parameter can contain only one responder URL at time.
`revocation-check None <method1> <method2>`	Configures the revocation check methods used for this rcp. Options include: • None (default)- No revocation checks are performed for certificates being verified against this trusted CA. • CRL- CRL is used for the revocation check method. • OCSP- OCSP is used for the revocation check method. You can configure one fallback method.

Usage Guidelines

This command lets you configure the check methods that are used for this revocation check point.. You can configure the controller to perform real-time certificate revocation checks using the Online Certificate Status Protocol (OCSP) or traditional certificate validation using the Certificate Revocation List (CRL) client. Refer to the *Certificate Revocation* chapter in the *Dell Networking W-Series ArubaOS 6.5.x User Guide* for more information on how to configure this feature using both the WebUI and CLI.

Example

This example configures an OCSP client with the revocation check method as OCSP with CRL configured as the back up method.

The OCSP responder certificate is configured as RootCA-Ocsp_responder. The corresponding OCSP responder service is available at http://10.4.46.202/ocsp. The revocation check method is OCSP with CRL configured as the back up method.

```
crypto-local pki rcp CARoot
  ocsp-responder-cert RootCA-Ocsp_responder
  ocsp-url http://10.4.46.202/ocsp
  crl-location file Security1-WIN-05PRGNGEKAO-CA-unrevoked.crl
  revocation-check ocsp crl
```

Related Commands

Command	Description	Mode
crypto-local pki	This command configures a local certificate, OCSP signer or responder certificate and Certificate Revocation List (CRL). You can also list revocation checkpoints and enable the responder service.	Config mode
show crypto-local pki	This command shows local certificate, OCSP signer or responder certificate and CRL data and statistics.	Config mode

Command History

Version	Modification
ArubaOS 3.2	Command introduced.
ArubaOS 6.1	The following parameters were introduced: • CRL • Intermediate CA • OCSPResponderCert • OCSPSignerCert • global-ocsp-signer-cert • rcp • service-ocsp-responder

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

crypto map global-map

```
crypto map global-map <map-number> ipsec-isakmp {dynamic <dynamic-map-name>}|{ipsec <ipsec-map-name>}
```

Description

This command configures the default global map.

Syntax

Parameter	Description
`<map-number>`	
`dynamic`	Use a dynamic map.
`<dynamic-map-name>}`	Name of the dynamic map.
`ipsec`	Use a IPsec map.
`<ipsec-map-name>`	Name of an IPsec map.

Usage Guidelines

This command identifies the dynamic or ipsec map used as the default global map. If you have not yet defined a dynamic or ipsec map, issue the command **crypto map global-map or crypto-local ipsec-map to define map parameters.**

Example

The following command configures the global map with the dynamic map named *dynamic_map_2*.

```
(host)(config) #crypto map global-map 2 ipsec-isakmp dynamic dynamic_map_2
```

Command History

This command was introduced in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

crypto

```
crypto pki
   csr {rsa key_len <key_val> |{ec curve-name <key_val>} common_name <common_val> country
   <country_val> state_or_province <state> city <city_val> organization <organization_val>
   unit <unit_val> email <email_val>

   expirycheck
```

Description

Generate a certificate signing request (CSR) for the captive portal feature.

Syntax

Parameter	Description
`rsa key_len <key_val>`	Generate a certificate signing request with a Rivest, Shamir and Adleman (RSA) key with one of the following supported RSA key lengths: • 1024 • 2048 • 4096
`ec curve-name <key_val>`	Generate a certificate signing request with an elliptic-curve (EC) key, with one of the following EC types: • secp256r1 • secp384r1
`common_name <common_val>`	Specify a common name, e.g., www.yourcompany.com.
`country <country_val>`	Specify a country name, e.g., US or CA.
`state_or_province <state>`	Specify the name of a state or province.
`city <city_val>`	Specify the name of a city.
`organization <organization_val>`	Specify the name of an organization unit, e.g., sales.
`unit <unit_val>`	Specify a unit value, e.g. EMEA.
`email <email_val>`	Specify an email address, in the format name@mycompany.com.
`expirycheck`	Run an expiry check on all certificates on the controller.

Usage Guidelines

Use this command in enable mode to generate a CSR for the Captive Portal feature or to see all controller certificates are expiring.

Display the CSR output by entering the command **show crypto pki csr**.

Example

The following command configures a CSR for a user with the email address *jdoe@example.com*.

```
(host)(config) #crypto pki csr key 1024 common_name www.example.lcom country US state_or_
province ca city Sunnyvale organization engineering unit pubs email jdoe@example.com
```

Command History

Release	Modification
ArubaOS 3.1	Command introduced.
ArubaOS 6.1	The **ec curve-name** parameter was introduced to support certificate signing requests using an elliptic-curve (EC) key

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

crypto pki-import

```
crypto pki-import {der|pem|pfx|pkcs12|pkcs7}
{CRL|IntermediateCA|OCSPResponderCert|OCSPSignerCert|PublicCert|ServerCert|TrustedCA} <name>
```

Description

Import certificates for the captive portal feature.

Syntax

Parameter	Description
`der`	Import the following certificates in DER format.
`CRL <name>`	Import a CRL.
`IntermediateCA <name>`	Import an intermediate CA certificate.
`OCSPResponderCert <name>`	Import an OCSP Responder certificate.
`OCSPSignerCert <name>`	Import an OCSP Signer certificate.
`PublicCert <name>`	Import a public certificate.
`ServerCert <name>`	Import a server certificate.
`TrustedCA <name>`	Import a trusted CA certificate.
`pem`	Import a certificate in x509 PEM format. See certificate types under the **der** parameter.
`pfx`	Import a certificate in PFX format. See certificate types under the **der** parameter.
`pkcs12`	Import a certificate in PKCS12 format.See certificate types under the **der**parameter.
`pkcs7`	Import a certificate in PKCS7 format. See certificate types under the **der** parameter.

Usage Guidelines

Use this command in enable mode to install a CSR for the Captive Portal feature.

Example

The following command installs a server certificate in DER format.

```
(host)(config) #crypto pki-import der ServerCert cert_20
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **CRL**, **IntermediateCA**, **OCSPResponderCert**, **OCSPSignerCert** parameters were added.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

database synchronize

```
database synchronize period <minutes>|captive-portal-custom
```

Description

This command manually synchronizes the database between a pair of redundant master controllers

Syntax

Parameter	Description
`captive-portal custom`	Includes custom captive portal files..
`period`	Configures the interval for automatic database synchronization.
`<minutes>`	Interval in minutes. Range is 1 — 25200 minutes.

Usage Guidelines

This command takes effect immediately. If a peer is not configured, the controller displays an error message.

Use the **database synchronize period** command in config mode to configure the interval for automatic database synchronization. Use the **database synchronize rf-plan-data** command to include RF plan data when synchronizing in standby mode.

Example

The following commands cause the database on the active master controller to synchronize with the standby in 25 minute intervals. The synchronization includes RF plan data.

```
(host) (config) #database synchronize period 25
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.3	The **captive-portal-custom** parameter was introduced. The **rf-plan-data** parameter was deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config modes on master controllers

delete

```
delete {filename <filename>|ssh-host-addr <ipaddr>|ssh-known-hosts}
```

Description

This command deletes a file or RSA signature entry from flash.

Syntax

Parameter	Description
`filename`	Name of the file to be deleted.
`ssh-host-addr`	Deletes the entry stored in flash for the RSA host signature created when you run the **copy scp** command.
`ssh-known -hosts`	Deletes all entries stored in flash for the RSA host signatures created when you run the **copy scp** command.

Usage Guidelines

To prevent running out of flash file space, you should delete files that you no longer need.

The **copy scp** command creates RSA signatures whenever it connects to a new host. These host signatures are stored in the flash file system.

Example

The following command deletes a file:

```
(host) #delete filename december-config-backup.cfg
```

The following command deletes an RSA signature entry from flash:

```
(host) #delete ssh-host-addr 10.100.102.101
```

The following command deletes all RSA signature entries from flash:

```
(host) #delete ssh-known-hosts
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

destination

```
destination <STRING> <A.B.C.D> [invert]
```

Description

This command configures the destination name and address.

Syntax

Parameter	Description	Range
`STRING`	Destination name.	Alphanumeric
`A.B.C.D`	Destination IP address or subnet.	—
`invert`	Specifies all destinations except this one.	—

Usage Guidelines

You can configure the name and IP address of the destination. You can optionally configure the subnet, or invert the selection.

Example

The following example configures a destination called “Home” with an IP address of 10.10.10.10.

```
(host) (config) #destination Home 10.10.10.10
```

Command History

Release	Modification
ArubaOS 1.0	Command introduced
ArubaOS 3.0	Replaced with **netdestination** command.

Command Information

Availability	License	Command Mode
Can be used only on the master controller.	Requires the PEF NG license	Config mode on master controllers

dialer group

```
dialer group <name>
dial-string <string>
init-string <string>
no  ...
```

Description

Configure a dialer group with dialing parameters for a USB modem.

Syntax

Parameter	Description
`dial-string`	The dial string column specifies the number to dial.
`init-string`	The init string can contain carrier-specific dialing options for the USB modem. You can often find these settings in online forums or from your ISP.

Usage Guidelines

Use this command to configure dial settings for a USB modem connected to a controller.

Example

```
(host) (config) dialer group gsm_us
   init-string AT+CGDCONT=1,"IP","ISP.CINGULAR"
```

Command History

Introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

dir

```
dir
```

Description

This command displays a list of files stored in the flash file system.

Syntax

No parameters.

Usage Guidelines

Use this command to view the system files associated with the controller.

Output from this command includes the following:

- The first column contains ten place holders that display the file permissions.
  - First place holder: Displays – for a file or `d` for directory.
  - Next three place holders: Display file owner permissions: `r` for read access, `w` for write access permissions, `x` for executable.
  - Following three place holders: Display member permissions: `r` for read access or `x` for executable.
  - Last three place holders: Display non-member permissions: `r` for read access or `x` for executable.
- The second column displays the number of links the file has to other files or directories.
- The third column displays the file owner.
- The fourth column displays group/member information.
- The remaining columns display the file size, date and time the file was either created or last modified, and the file name.

Example

The following command displays the files currently residing on the system flash:

```
(host) #dir
```

The following is sample output from this command:

```
-rw-r--r--    1 root     root         9338 Nov 20 10:33 class_ap.csv
-rw-r--r--    1 root     root         1457 Nov 20 10:33 class_sta.csv
-rw-r--r--    1 root     root        16182 Nov 14 09:39 config-backup.cfg
-rw-r--r--    1 root     root        14174 Nov  9  2005 default-backup-11-8-05.cfg
-rw-r--r--    1 root     root        16283 Nov  9 12:25 default.cfg
-rw-r--r--    1 root     root        22927 Oct 25 12:21 default.cfg.2006-10-25_20-21-38
-rw-r--r--    2 root     root        19869 Nov  9 12:20 default.cfg.2006-11-09_12-20-22
```

Command History

Introduced in ArubaOS 1.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable and Config modes on local or master controllers

disable-whitelist-sync

```
disable-whitelist-sync
```

Description

This command disables whitelist synchronization with local or Cloud Services Controller on the master controller. Whitelist database synchronization is enabled by default.

Syntax

No parameters.

Usage Guidelines

By default, the whitelist database synchronization is enabled between the master and local or cloud services controller. Once the whitelist database entries are synchronized across all controllers, issue the **disable-whitelist-sync** command on the master controller to disable the synchronization. Configuring this parameter reduces the number of database queries on the master controller.

Enable this parameter to synchronize the whitelist database with all local or Cloud Services controllers. Once synchronized, issue the **disable-whitelist-sync** command to disable the synchronization. Enabling this parameter may increase the number of database queries on the master controller. Use this command when the number of APs and local or Cloud Services controllers is high in the network.

Enabling the whitelist database synchronization may increase the **mysqldb** process CPU utilization on the master controller if there is a large number of whitelist entries and local or cloud services controllers terminating on the master.

Example

The following command disables whitelist synchronization.

```
(host) (config) #disable-whitelist-sync
Whitelist sync has been disabled
```

The following command re-enables whitelist synchronization if it was manually disabled.

```
(host) (config) #no disable-whitelist-sync
Whitelist sync has been enabled
```

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controller.

dot1x

```
high-watermark <1-32000>
stm-throttling percent <throttling%>
no  ...
```

Use this command only under the supervision of Dell support.

Description

Use this command under the guidance of Dell support to configure the maximum and minimum thresholds of the table that contains 802.1X sessions being processed.

Syntax

Parameter	Description
`high-watermark`	The maximum entries in the Active table. When the number of entries in the Active Table reaches the High WaterMark value, new requests are queued on the Pending Table
`stm-throttling`	Use this command to enable STM throttling when the total entries in Pending Table are greater than (stm-throttling perceng) * (high watermark).

Command History

Introduced in ArubaOS 6.3.1.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

dpi

```
dpi
   custom-app <name> <http/s uri host> <http/s uri path>
   global-bandwidth-contract {app <name>[downstream |upstream][kbits|mbits <value>}|
   {appcategory <name>[downstream |upstream][kbits|mbits <value>}
```

Description

This command configures Deep-Packet Inspection and the global bandwidth contract for an application or application category for the AppRF feature.

Syntax

Parameter	Description
`custom-app`	The application or application category.
`<name>`	Name of the application or application category.
`<http/s uri host>`	HTTP or HTTPS URI host of the application or application category.
`<http/s uri path>`	HTTP or HTTPS URI path of the application or application category.
`global-bandwidth-contract`	Configures the global bandwidth contract for an application or application category.
`app <name>`	Name of the application. For a complete list of supported applications, issue the command **show dpi application all**.
`appcategory <name>`	Name of the application category. For a complete list of supported application categories, issue the command **show dpi application category all**.
`downstream`	Bandwidth contract to downstream traffic.
`upstream`	Bandwidth contract to upstream traffic.
`kbits <value>`	Specify bandwidth in kbits per second. Range: 256-2000000.
`mbits <value>`	Specify bandwidth in mbits per second. Range: 1-2000.

Usage Guidelines

You can configure bandwidth contracts to limit application and application categories on an application or global level.

Example

To configure global bandwidth contracts:

```
(host)(config) #dpi global-bandwidth-contract[app|appcategory]
<name>[downstream|upstream][kbits|mbits]<256..2000000>
```

To show global bandwidth contract configuration output:

```
(host) #show dpi global-bandwidth-contract all
(host) #show dpi global-bandwidth-contract app name
(host) #show dpi global-bandwidth-contract appcategory name
```

Command History

Introduced in ArubaOS 6.4

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on local or master controllers

dynamic-ip

```
dynamic-ip restart
```

Description

This command restarts the PPPoE or DHCP process.

Syntax

No parameters.

Usage Guidelines

This command can be used to renegotiate DHCP or PPPoE parameters. This can cause new addresses to be assigned on a VLAN where the DHCP or PPPoE client is configured.

Command History

This command was introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers

eject usb

```
eject usb:
```

Description

Use this command to eject a USB device from your controller.

Usage Guidelines

Use this command to safely remove an external USB device,

Example

```
(host) #eject usb:
```

Command History

Command introduced in ArubaOS 6.2

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	User mode on master or local controllers in enable mode.

enable

```
enable
```

Description

This user mode command switches the controller into enable mode. The enable mode allows you to access privileged commands.

Usage Guidelines

To enter enable mode, you are prompted for the password configured during the controller's initial setup. Passwords display as asterisks (*) when you enter them.

To change the password, use the config mode enable secret command. If you lose or forget the enable mode password, resetting the default admin user password also resets the enable mode password to "enable". See the *Dell Networking W-Series ArubaOS User Guide* for more information about resetting the admin and enable mode passwords.

When you are in enable mode, the CLI prompt ends with the hash (#) character.

Example

The following example allows you to enter enable mode on the controller.

```
(host) >enable
Password: ******
(host) #
```

Command History

Command introduced in ArubaOS 1.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	User mode on master or local controllers

enable bypass

```
enable bypass
   no enable bypass
```

Description

This config mode command allows you to bypass the enable password prompt and go directly to the privileged command mode.

Usage Guidelines

Use this command when you want to access the privileged mode directly after logging in to the controller and not be prompted to enter an enable mode password.

To restore the enable mode password prompt, use the config mode command. `no enable bypass`.

Example

The following example allows bypass the enable mode password prompt.

```
(host) #configure terminal
Enter Configuration commands, one per line. End with CNTL/Z

(host) (config) #enable bypass
(host) (config) #
```

Command History

Version	Modification
ArubaOS 6.0	Command introduced

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master or local controllers

enable secret

`enable secret`

Description

This config mode command allows you to change the password for enable mode.

Usage Guidelines

Use this command to change the password for enable mode. To reset the password to the factory default of "enable", use the `no enable` command.

The password must not contain a space and special characters.

Example

The following example allows you to change the password for enable mode.

```
(host) #configure terminal
Enter Configuration commands, one per line. End with CNTL/Z

(host) (config) #enable secret
Password:******
Re-Type password: ******
(host) (config) #
```

Command History

Version	Modification
ArubaOS 1.0	Command introduced
ArubaOS 3.3.2	Updated with restriction of the secret phase

Command Informatio

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master or local controllers

encrypt

```
encrypt {disable|enable}
```

Description

This command allows passwords and keys to be displayed in plain text or encrypted.

Syntax

Parameter	Description	Default
disable	Passwords and keys are displayed in plain text	—
enable	Passwords and keys are displayed encrypted	enabled

Usage Guidelines

Certain commands, such as **`show crypto isakmp key`**, display configured key information. Use the **`encrypt`** command to display the key information in plain text or encrypted.

Example

The following command allows passwords and keys to be displayed in plain text:

```
(host) #encrypt disable
```

Command History

Introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master or local controllers

esi group

```
esi group <name> [no]|[ping <attributes>]|[server <server>]
```

Description

This command configures an ESI group.

Syntax

Parameter	Description
`no`	Negates any configured parameter.
`ping`	Specify the name of a set of ping checking attributes defined via the command esi ping. Only one set is allowed.
`server`	Specify the name of a server to be added or removed from the ESI group. You define ESI servers via the command esi server.

Usage Guidelines

Use the `show esi group` command to show ESI group information.

Example

The following command sets up the ESI group named “fortinet.”

```
(host) (config) #esi group fortinet
  ping default
  server forti_1
```

Command History

Introduced in ArubaOS 2.5

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode on master or local controllers

esi parser domain

```
esi parser domain <name>
        [no] |
        [peer <peer-ip>] |
        [server <ipaddr>]
```

Description

This command configures an ESI syslog parser domain.

Syntax

Parameter	Description
`no`	Negates any configured parameter
`peer`	(Optional.) Specify the IP address of an another controller in this domain. These controllers are notified when the user cannot be found locally. This command is needed only when multiple controllers share a single ESI server
`server`	Specify the IP address of the ESI server to which the controller listens.

Usage Guidelines

The ESI parser is a generic syslog parser on the controller that accepts syslog messages from external third-party appliances such as anti-virus gateways, content filters, and intrusion detection systems. It processes syslog messages according to user-defined rules and takes configurable actions on the corresponding system users.

ESI servers (see esi server on page 368) are configured into domains to which ESI syslog parser rules (see esi parser rule on page 362) are applied.

Use the **`show esi parser domains`** command to show ESI parser domain information.

Example

The following commands configure a virus syslog parser domain named “fortinet” which contains the ESI server “forti_1” with the trusted IP address configured using the command esi server.

```
(host) (config) #esi parser domain fortinet
server 10.168.172.3
```

Command History

Introduced in ArubaOS 3.1.

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode on master or local controllers

esi parser rule

```
esi parser rule <rule_name>
        [condition <expression>] |
        [domain <name>] |
        [enable]
        [match {ipaddr <expression> | mac <expression> | user <expression> }] |
        [no] |
        [position <position>] |
        [set {blacklist | role <role>} |
        [test {msg <msg> | file <filename>}]
```

Description

This command creates or changes an ESI syslog parser rule.

Syntax

Parameter	Description	Range	Default
`condition`	Specifies the REGEX (regular expression) pattern that uniquely identifies the syslog.	—	—
`domain`	(Optional.) Specify the ESI syslog parser domain to which this rule applies. If not specified, the rule matches with all configured ESI servers.	—	—
`enables`	Enables this rule. **Note**: The condition, user match, and set action parameters must be configured before the rule can be enabled.	—	Not enabled
`match`	Specifies the user identifier to match, where `ipaddr`, `mac`, and `user` take a REGEX pattern that uniquely identifies the user.	—	—
`no`	Negates any configured parameter.	—	—
`position`	Specifies the rule's priority position.	1–32; 1 highest	—
`set`	Specifies the action to take: blacklist the user or change the user role. **Note**: The role entity should be configured before it is accepted by the ESI rule.	—	—
`test`	Test the regular expression output configured in the `esi parser rules` command. You can test the expressions against a specified syslog message, or test the expression against a sequence of syslog messages contained in a file.	—	—

Usage Guidelines

The user creates an ESI rule by using characters and special operators to specify a pattern that uniquely identifies a syslog message. This "condition" defines the type of message and the ESI domain to which this message pertains. The rule contains three major fields:

- Condition: The pattern that uniquely identifies the syslog message type.
- User: The username identifier. It can be in the form of a name, MAC address, or IP address.
- Action: The action to take when a rule match occurs.

Once a condition match occurs, no further rule-matching will be made. For the matching rule, only one action can be defined.

For more details on the character-matching operators, repetition operators, and expression anchors used to defined the search or match target, refer to the *External Services Interface*chapter in the *Dell Networking W-Series ArubaOS 6.5.x User Guide* .

Use the **`show esi parser rules`** command to show ESI parser rule information. Use the **`show esi parser stats`** command to show ESI parser rule statistical information

Examples

The following command sets up the Fortigate virus rule named "forti_rule." This rule parses the virus detection syslog scanning for a condition match on the log_id value (log_id=) and a match on the IP address (src=).

```
(host) (config) #esi parser rule forti_rule
        condition "log_id=[0-9]{10}[ ]"
        match ipaddr "src=(.*)[ ]"
        set blacklist
        domain fortinet
        enable
```

In this example, the corresponding ESI expression is:

```
< Sep 26 18:30:02 log_id=0100030101 type=virus subtype=infected src=1.2.3.4 >
```

The following example of the test command tests a rule against a specified single syslog message.

```
test msg "26 18:30:02 log_id=0100030101 type=virus subtype=infected src=1.2.3.4"

< 26 18:30:02 log_id=0100030101 type=virus subtype=infected src=1.2.3.4 >
=====
Condition:     Matched with rule "forti_rule"
User:          ipaddr = 1.2.3.4
=====
```

The following example of the test command tests a rule against a file named test.log, which contains several syslog messages.

```
test file test.log

 < Sep 26 18:30:02 log_id=0100030101 type=virus subtype=infected src=1.2.3.4 >
==========
Condition:      Matched with rule "forti_rule"
User:           ipaddr = 1.2.3.4
==========

 < Oct 18 10:43:40  cli[627]: PAPI_Send: To: 7f000001:8372 Type:0x4 Timed out. >
==========
Condition:      No matching rule condition found
==========
```

```
 < Oct 18 10:05:32  mobileip[499]: <500300> <DBUG> |mobileip|  Station 00:40:96:a6:a1:a4,
10.0.100.103: DHCP FSM received event: RECEIVE_BOOTP_REPLY current: PROXY_DHCP_NO_PROXY,
next: PROXY_DHCP_NO_PROXY >
==========
Condition:      No matching rule condition found
==========
```

Command History

Introduced in ArubaOS 3.1

Command Information

Platform	License	Command Mode
Available on all platforms.	Requires the PEFNG license	Config mode on master and local controllers

esi parser rule-test

```
esi parser rule-test
        [file <filename>] |
        [msg <msg>]
```

Description

This command allows you to test all of the enabled parser rules.

Syntax

Parameter	Description
`file`	Tests against a specified file containing more than one syslog message.
`msg`	Tests against a syslog message, where <msg> is the message text.

Usage Guidelines

You can test the enabled parser rules against a syslog message input, or run the expression through a file system composed of syslog messages. The command shows the match result as well as the user name parsed for each message.

Example

The following command tests against a specified single syslog message.

```
(host) (config) #esi parser rule-test msg "26 18:30:02 log_
id=0100030101 type=virus subtype=infected src=1.2.3.4"

< 26 18:30:02 log_id=0100030101 type=virus subtype=infected src=1.2.3.4 >
=====
Condition:     Matched with rule "forti_rule"
User:          ipaddr = 1.2.3.4
=====
```

The following command tests against a file named test.log, which contains several syslog messages.

```
esi parser rule-test file test.log

 < Sep 26 18:30:02 log_id=0100030101 type=virus subtype=infected src=1.2.3.4 >
==========
Condition:      Matched with rule "forti_rule"
User:           ipaddr = 1.2.3.4
==========

 < Oct 18 10:43:40  cli[627]: PAPI_Send: To: 7f000001:8372 Type:0x4 Timed out. >
==========
Condition:      No matching rule condition found
==========

 < Oct 18 10:05:32  mobileip[499]: <500300> <DBUG> |mobileip|  Station 00:40:96:a6:a1:a4,
10.0.100.103: DHCP FSM received event: RECEIVE_BOOTP_REPLY current: PROXY_DHCP_NO_PROXY,
next: PROXY_DHCP_NO_PROXY >
==========
Condition:      No matching rule condition found
```

==========

Command History

Introduced in ArubaOS 3.1

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode on master and local controllers

esi ping

```
esi ping <ping-name>
        [frequency <seconds>] |
        [no] |
        [retry-count <count>] |
        [timeout <seconds>] |
```

Description

This command specifies the ESI ping health check configuration.

Syntax

Parameter	Description	Range	Default
`frequency`	Specifies the ping frequency in seconds.	1–65536	
`no`	Negates any configured parameter	—	—
`retry-count`	Specifies the ping retry count	1–65536	2
`timeout`	Specifies the ping timeout in seconds.	1–65536	2

Usage Guidelines

Use the show esi ping command to show ESI ping information.

Example

The following command specifies the ping health check attributes.

```
(host) (config) #esi ping default
        frequency 5
        retry-count 2
        timeout 2
```

Command History

Introduced in ArubaOS 2.5

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode on master and local controllers

esi server

```
esi server <name>
   [dport <tcp-udp-port>] |
   [mode {bridge | nat | route}] |
   [no] |
   [trusted-ip-addr <ip-addr> [health-check]] |
   [trusted-port  <slot>/<module>/<port>] |
   [untrusted-ip-port <ip-addr> [health-check]] |
   [untrusted-port  <slot>/<module>/<port>]
```

Description

This command configures an ESI server.

Syntax

Parameter	Description
dport	Specifies the NAT destination TCP/UDP port.
mode	Specifies the ESI server mode of operation: bridge, nat, or route
no	Negates any configured parameter.
trusted-ip-addr	Specifies the server IP address on the trusted network. As an option, you can also enable a health check on the specified address
trusted-port	Specifies the port connected to the trusted side of the ESI server; <slot>/<module>/<port> format.
untrusted-ip-addr	Specifies the server IP address on the untrusted network. As an option, you can also enable a health check on the specified address
untrusted-port	Specifies the port connected to the untrusted side of the ESI server.

Usage Guidelines

Use the **`show esi server`** command to show ESI server information.

Example

The following command specifies the ESI server attributes.

```
(host) (config) #esi server forti_1
        mode route
        trusted-ip-addr 10.168.172.3
        untrusted-ip-addr 10.168.171.3
```

Command History

Introduced in ArubaOS 2.5.

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode on master and local controllers

exit

```
exit
```

Description

This command exits the current CLI mode.

Syntax

No parameters.

Usage Guidelines

Upon entering this command in a configuration sub-mode, you are returned to the configuration mode. Upon entering this command in configuration mode, you are returned to the enable mode. Upon entering this command in enable mode, you are returned to the user mode. Upon entering this command in user mode, you are returned to the user login.

Example

The following sequence of **`exit`** commands return the user from the interface configuration sub-mode to the user login:

```
(host) (config-if) #exit
(host) (config) #exit
(host) #exit
(host) >exit
User:
```

Command History

Introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Available in the following command modes: • User • Enable • Config • Config sub-modes

export

```
export gap-db <filename>
```

Description

This command exports the global AP database to the specified file.

Syntax

Parameter	Description
`<filename>`	Name of the file to which the global AP database is exported.

Usage Guidelines

This command is intended for system troubleshooting. You should run this command only when directed to do so by a Dell support representative.

The global AP database resides on a master controller and contains information about known APs on all controllers in the system. You can view the contents of the global AP database with the **`show ap database`** command.

Example

The following command exports the global AP database to a file:

```
(host) #export gap-db global-ap-db
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers.

file syncing profile

```
file syncing profile
   file-syncing-enable
   no
   sync-time
```

Description

This command allows the user to configure the file syncing profile.

Syntax

Parameter	Description	Range	Default
`file-syncing-enable`	Enables file syncing on the controller.	–	enabled
`no`	Negates any configured parameter.	–	–
`sync-time`	Configures the time, in minutes, between file syncs.	30 - 180	30 minutes

Usage Guidelines

This command enables or disables the file syncing. Additionally, the time between syncs can be configured as part of the file syncing profile.

Example

The following example shows how to enable the file syncing.

```
(host) (config) #file syncing profile
(host) (File syncing profile) #file-syncing-enable
```

Command History

This command was introduced in ArubaOS 6.4.1.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers.

fips

```
fips [disable|enable]
```

This command applies only to the FIPS version of ArubaOS.

Description

This command enables and disables the FIPS mode of operation.

Syntax

Parameter	Description
`enable`	Enables the FIPS mode of operation.
`disable`	Disables the FIPS mode of operation.

Usage Guidelines

This command enables or disables the FIPS mode of operation. You can view the FIPS mode of operation status using the **show fips** command.

Example

The following example shows how to enable the FIPS mode of operation.

```
(host) #fips enable
```

Command History

This command was introduced in ArubaOS-FIPS 2.4.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers.

firewall

```
firewall
   allow-stun
   allow-tri-session
   amsdu
   attack-rate
           arp <1-16384> {blacklist|drop}
           cp <1-16384>
           grat-arp <1-16384> {blacklist|drop}
           ping <1-16384>
           session <1-16384>
           tcp-syn <1-16384>

   bwcontracts-subnet-broadcast
   cp
   cp-bandwidth-contract
   deny-inter-user-bridging
   deny-inter-user-traffic
   deny-source-routing
   disable-ftp-server
   disable-stateful-h323
   disable-stateful-sccp-processing
   disable-stateful-sip-processing
   disable-stateful-sips-processing
   disable-stateful-ua-processing
   disable-stateful-vocera-processing
   dpi
   drop-ip-fragments
   enable-bridging
   enable-per-packet-logging
   enforce-tcp-handshake
   enforce-tcp-sequence
   gre-call-id-processing
   ip-classification
   imm-fb
   jumbo
   local-valid-users
   log-icmp-error
   optimize-dad-frames
   prevent-dhcp-exhaustion
   prohibit-arp-spoofing
   prohibit-ip-spoofing
   prohibit-rst-replay
   public-access
   session-idle-timeout <seconds>
   session-mirror-destination
   session-mirror-ipsec
   session-tunnel-fib
   session-voip-timeout
   shape-mcast
   stall-crash
   voip-wmm-content-enforcement
   web-cc
   web-cc-cache-miss-drop
```

Description

This command configures firewall options on the controller.

Syntax

Parameter	Description	Range	Default
`allow-stun`	Allows ICE-STUN based firewall traversal.	—	enabled
`allow-tri-session`	Allows three-way session when performing destination NAT. This option should be enabled when the controller is not the default gateway for wireless clients and the default gateway is behind the controller. This option is typically used for captive portal configuration.	—	disabled
`amsdu`	Aggregated Medium Access Control Service Data Units (AMSDU) packets are dropped if this option is enabled.	–	disabled

`attack-rate`
`arp <1-16384> {blacklist|drop}`
`cp <1-16384>`
`grat-arp <1-16384> {blacklist|drop}`
`ping <1-16384>`
`session <1-16384>`
`tcp-syn <1-16384>`
	Sets rates which, if exceeded, can indicate a denial of service attack.
	• **arp**: Monitor/police ARP attack (non Gratuitous ARP).
	• **cp**: Monitor/police Control Processor (CP) attack.
	• **grat-arp**: Monitor/police Gratuitous ARP attack.
	• **ping**: Monitor ping attack.
	• **session**: Monitor IP session attack.
	• **tcp-syn**: Monitor TCP SYN attack.
	NOTE: <1-16384> denotes the number of arp, cp, grat-arp, ping, session, or tcp-syn requests per 30 seconds.
		1-16384	—

`bwcontracts-subnet-broadcast`	Applies bw contracts to local subnet broadcast traffic.	—	—
`cp`	See firewall cp on page 383		
`cp-bandwidth-contract`	See firewall cp-bandwidth-contract on page 386		

Parameter	Description	Range	Default
deny-inter-user-bridging	Prevents the forwarding of Layer2 traffic between wired or wireless users. You can configure user role policies that prevent Layer3 traffic between users or networks but this does not block Layer2 traffic. This option can be used to prevent traffic, such as Appletalk or IPX from being forwarded. If enabled, traffic (all non-IP traffic) to untrusted port or tunnel is also blocked.	—	disabled
deny-inter-user-traffic	Denies downstream traffic between users in a wireless network (untrusted users) by disallowing layer2 and layer3 traffic. This parameter does not depend on the **deny-inter-user-bridging** parameter being enabled or disabled.	—	disabled
deny-source-routing	Disallows forwarding of IP frames with source routing with the source routing options set.	–	disabled
disable-ftp-server	Disables the FTP server on the controller. Enabling this option prevents FTP transfers. Enabling this option could cause APs to not boot up. You should not enable this option unless instructed to do so by a Dell representative.	—	disabled
disable-stateful-h323-processing	Disables stateful H.323 processing.	—	disabled
disable-stateful-sccp-processing	Disables SCCP processing.	—	disabled
disable-stateful-sip-processing	Disables monitoring of exchanges between a voice over IP or voice over WLAN device and a SIP server. This option should be enabled only when there is no VoIP or VoWLAN traffic on the network.	—	disabled

Parameter	Description	Range	Default
disable-stateful-sips-processing	Configure the controller to read SIP signaling messages sent by Skype4b clients on port 5061.	—	enabled
disable-stateful-ua-processing	Disables stateful UA processing.	—	disabled
disable-stateful-vocera-processing	Disables stateful VOCERA processing.	—	disabled
dpi	Enables Deep-Packet Inspection (DPI)	—	disabled
drop-ip-fragments	When enabled, all IP fragments are dropped. You should not enable this option unless instructed to do so by a Dell representative.	—	disabled
enable-bridging	Enables bridging when the controller is in factory default.	—	disabled
enable-per-packet-logging	Enables logging of every packet if logging is enabled for the corresponding session rule. Normally, one event is logged per session. If you enable this option, each packet in the session is logged. You should not enable this option unless instructed to do so by a Dell representative, as doing so may create unnecessary overhead on the controller.	—	disabled
enforce-tcp-handshake	Prevents data from passing between two clients until the three-way TCP handshake has been performed. This option should be disabled when you have mobile clients on the network as enabling this option will cause mobility to fail. You can enable this option if there are no mobile clients on the network.	—	disabled
enforce-tcp-sequence	Enforces the TCP sequence numbers for all packets.	—	disabled

Parameter	Description	Range	Default
gre-call-id-processing	Creates a unique state for each PPTP tunnel. Do not enable this option unless instructed to do so by a technical support representative.	—	disabled
imm-fb	Immediately free buffers on W-7200 Series controller. Do not enable this option unless instructed to do so by a technical support representative.	—	disabled
ip-classification	Enables IP (reputation/geolocation) classification.	—	disabled
jumbo	Enables jumbo frames processing.	—	disabled
local-valid-users	Adds only IP addresses, which belong to a local subnet, to the user-table.	—	disabled
log-icmp-error	Logs received ICMP errors. You should not enable this option unless instructed to do so by a Dell representative.	—	disabled
optimize-dad-frames	Reduce flooding of IPv4 Gratuitous ARPs/IPv6 Duplicate Address Detection (DAD) frames onto wireless clients.	—	enabled
prevent-dhcp-exhaustion	Enable check for DHCP client hardware address against the packet source MAC address. This command checks the frame's source-MAC against the DHCPv4 client hardware address and drops the packet if it does not match. Enabling this feature prevents a client from submitting multiple DHCP requests with different hardware addresses, thereby preventing DHCP pool depletion.	—	disabled
prohibit-arp-spoofing	Detects and prohibits arp spoofing. When this option is enabled, possible arp spoofing attacks are logged and an SNMP trap is sent.	—	disabled

Parameter	Description	Range	Default
`prohibit-ip-spoofing`	Detects IP spoofing (where an intruder sends messages using the IP address of a trusted client). When this option is enabled, source and destination IP and MAC addresses are checked; possible IP spoofing attacks are logged and an SNMP trap is sent.	—	enabled in IPv4 disabled in IPv6
`prohibit-rst-replay`	Closes a TCP connection in both directions if a TCP RST is received from either direction. You should not enable this option unless instructed to do so by a Dell representative.	—	disabled
`session-idle-timeout`	Time, in seconds, that a non-TCP session can be idle before it is removed from the session table. You should not modify this option unless instructed to do so by a Dell representative.	16-259	15 seconds
`session-mirror-destination`	This parameter is deprecated. Use the packet-capture command.	–	—
`session-mirror-ipsec`	This parameter is deprecated. Use the packet-capture command.	—	—
`session-tunnel-fib`	Enable session tunnel-based forwarding. **NOTE:** Best practices is to enable this parameter only during maintenance window or off-peak production hours.	–	disabled
`session-voip-timeout`	Idle session timeout, in seconds, for sessions that are marked as voice sessions. If no voice packet exchange occurs over a voice session for the specified time, the voice session is removed.	16-300	300 seconds
`shape-mcast`	Enables multicast optimization and provides excellent streaming quality regardless of the amount of VLANs or IP IGMP groups that are used.	—	disabled

Parameter	Description	Range	Default
`stall-crash`	Triggers datapath crash on stall detection. Applies to the to W-7200 Series controllers only.	—	enabled
`voip-wmm-voip-content-enforcement`	If traffic to or from the user is inconsistent with the associated QoS policy for voice, the traffic is reclassified to best effort and data path counters incremented. This parameter requires the PEFNG license.	—	disabled
`web-cc`	Enables web content classification for all HTTP traffic. Once enabled, ArubaOS enforces ACLs and bandwidth policies associated with web content categories or reputation levels. **NOTE:** On enabling web-cc, the web-cc feature usage information will be sent to Dell at every 7 days interval.	—	disabled
`web-cc-cache-miss-drop`	Issue this command to allow the controller to drop any packets that do not match any web content category or reputation levels in the controller's internal web content cache.	—	disabled

Usage Guidelines

This command configures global firewall options on the controller.

Example

The following command disallows forwarding of non-IP frames between users:

```
firewall deny-inter-user-bridging
```

Related Commands

Release	Modification
`show firewall`	Display a list of global firewall policies.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.2	The **wmm-voip-content-enforcement** parameter was introduced.
ArubaOS 3.3	The **session-mirror-destination** parameter was modified.
ArubaOS 3.3.2	The **local-valid-users** parameter was added.
ArubaOS 3.4	The **voip-proxy-arp** parameter was renamed to broadcast-filter-arp and it does not require a Voice license. The **prohibit-arp-spoofing** parameter was added. The **deny-inter-user-traffic** parameter was added.
ArubaOS 6.0	The **shape-mcast** parameter was added.
ArubaOS 6.1	The parameter **amsdu** was added.
ArubaOS 6.2	The parameter **clear-sessions-role-update** was deprecated.
ArubaOS 6.2.1	• The **broadcast-filter arp** parameter was deprecated. • The **imm-fb** parameter was introduced.
ArubaOS 6.3	The following parameters were added: • **jumbo** • **disable-stateful-sips-processing** • **deny-source-routing** The parameters **session-mirror-destination** and **session-mirror-ipsec** have been deprecated. They were replaced by the **destination** and **datapath ipsec** parameters, respectively, of the packet-capture command.
ArubaOS 6.4	The following parameters were added: • **allow-stun** • **dpi** • **stall-crash**
ArubaOS 6.4.1.0	The following sub-parameters were added: • **arp** • **grat-arp**

Release	Modification
ArubaOS 6.4.2.0	The **web-cc** and **web-cc-cache-miss-drop** parameters were added.
ArubaOS 6.4.2.5	The **optimize-dad-frames** parameter was introduced.
ArubaOS 6.5	The **ip-classification** parameter was added.

Command Information

Platform	License	Command Mode
Available on all platforms	Base operating system except the **voip-wmm-voip-content-enforcement** parameter which requires the PEFNG license.	Config mode on master controllers

firewall cp

```
firewall cp
   ipv4|ipv6 deny|permit <ip-addr><ip-mask>|any|{host <ip-addr>} proto{<ip-protocol-number>
   ports <start port number><end port number>}|ftp|http|https|icmp|snmp|ssh|telnet|tftp
   [bandwidth-contract <name>]

   no...
```

Description

This command creates whitelist session ACLs. Whitelist ACLs consist of rules that explicitly permit or deny session traffic from being forwarded or not to the controller. This prohibits traffic from being automatically forwarded to the controller if it was not specifically denied in a blacklist.The maximum number of entries allowed in the whitelist is 64.

Syntax

Parameter	Description	Range	Default
`ipv4|ipv6`	Specifies ipv4 or ipv6.	—	—
`deny|permit <ip-addr><ip-mask>`	Specifies the entry to reject (deny) on the session ACL whitelist. Specifies an entry that is allowed (permit) on the session ACL whitelist.	—	—
`any`	Specifies any IPv4 or IPv6 source address.	—	—
`host <ip-addr>`	Indicates a specific IPv4 or IPv6 source address.	—	—
`proto`	Protocol that the session traffic is using.	—	—
`IP protocol number`	Specifies the IP protocol number that is permitted or denied.	1-255	—
`start port`	Specifies the starting port, in the port range, on which session traffic is running.	1-65535	—
`end port`	Specifies the last port, in the port range, on which session traffic is running.	1-65535	—
`ftp`	Specifies the File Transfer Protocol.	—	—
`http`	Specifies the Hypertext Trasfer Protocol.	—	—
`https`	Specifies the Secure HTTP Protocol.	—	—
`icmp`	Specifies the Internet Control Message Protocol.	—	—

Parameter	Description	Range	Default
snmp	Specifies the Simple Network Management Protocol.	—	—
ssh	Specifies the Secure Shell.	—	—
telnet	Specifies the Telnet protocol.	—	—
tftp	Specifies the Trivial File Transfer Protocol.	—	—
bandwidth-contract <name>	Specify the name of a bandwidth contract defined via the cp-bandwidth-contract command.	—	—

Usage Guidelines

This command turns the session ACL from a blacklist to a whitelist. A rule must exist that explicitly permits the session before it is forwarded to the controller and the last rule in the list denies everything else.

Example

The following command creates a whitelist ACL that allows on with the source address as 10.10.10.10 and the source mask as 2.2.2.2. The protocol is FTP and the bandwidth contract name is mycontract.

```
(host) (config-fw-cp) #ipv4 permit 10.10.10.10 2.2.2.2 proto ftp bandwidth-contract name mycontract
```

The following command creates a a whitelist ACL entry that denies traffic using protocol 2 on port 5000 from being forwarded to the controller:

(host) (config-fw-cp) #deny proto 6 ports 5000 6000

Related Commands

Command	Description	Mode
show firewall-cp	Show Control Processor (CP) whitelist ACL info.	Enable or Config modes
cp-bandwidth-contract	This command configures a bandwidth contract traffic rate which can then be associated with a whitelist session ACL.	Enable or Config modes

Command History

	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.2	The **permit <ip-addr><ip-mask>** parameter was added. The **deny <ip-addr>** parameter was added. The **any** parameter was added. The **host** parameter was added. The **ftp**, **http**, **https**, **icmp**, **snmp**, **ssh**, **telnet** and **tftp** parameters were added.
ArubaOS 6.3	The **ipv4** and **ipv6** parameters were added.

Command Information

Platform	License	Command Mode
Available on all platforms	Base operating system, except for noted parameters	Config mode on master controllers

firewall cp-bandwidth-contract

```
firewall cp-bandwidth-contract {auth|route|sessmirr|trusted-mcast|trusted-ucast
|untrusted-mcast|untrusted-ucast} <Rate>
```

Description

This command configures bandwidth contract traffic rate limits, in packets per second, to prevent denial of service attacks.

Syntax

Parameter	Description	Range	Default
`auth`	Specifies the traffic rate limit that is forwarded to the authentication process.	1-65535 pps	976 pps
`route`	Specifies the traffic rate limit that needs ARP requests.	1-65535 pps	976 pps
`sessmirr`	Specifies the session mirrored traffic forwarded to the controller.	1-65535 pps	976 pps
`trusted-mcast`	Specifies the trusted multicast traffic rate limit.	1-65535 pps	1953 pps
`trusted-ucast`	Specifies the trusted unicast traffic rate limit.	1-65535 pps	65535 pps
`untrusted-mcast`	Specifies the untrusted multicast traffic rate limit.	1-65535 pps	1953 pps
`untrusted-ucast`	Specifies the untrusted unicast traffic rate limit.	1-65535 pps	9765 pps

Usage Guidelines

This command configures firewall bandwidth contract options on the controller.

Example

The following command disallows forwarding of non-IP frames between users:

```
(host) (config) #firewall deny-inter-user-bridging
```

Related Commands

```
(host) (config) #show firewall
```

Command History

Introduced in ArubaOS 3.4

Command Information

Platform	License	Command Mode
Available on all platforms	This command requires the PEFNG license	Config mode on master controllers

firewall-visibility

```
firewall-visibility
   no ...
```

Description

Enables or disables policy enforcement firewall visibility feature.

Syntax

No parameters.

Usage Guideline

When you enable this feature, the **Firewall Monitoring** page on the **Dashboard** tab of the WebUI displays the summary of all sessions in the controller aggregated by users, devices, destinations, applications, WLANs, and roles.

Example

The following command enables firewall visibility.

```
(host)(config) #firewall-visibility
```

Related Commands

Command	Description	Mode
show firewall-visibility	Displays the policy enforcement firewall visibility process state and status information	Config or Enable mode

Command History

This command is introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master or local controller

gateway health-check disable

```
gateway health-check disable
```

Description

Disable the gateway health check.

Usage Guidelines

The gateway health check feature can only be enabled by Dell Technical Support. This command disables the gateway health check, and should only be issued under the guidance of the support staff.

Related Commands

Command	Description	Mode
show gateway health-check	Display the current status of the gateway health-check feature	This command is available in Config and Enable mode on master and local controllers

```
(host) (config) #show gateway health-check
```

History

Introduced in ArubaOS 3.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers.

guest-access-email

```
guest-access-email
   smtp-port
   smtp-server
   no...
```

Description

This command configures the SMTP server which is used to send guest email. Guest email is generated when a guest user account is created or when the Guest Provisioning user sends guest user account email a later time.

Syntax

Parameter	Description	Range	Default
`smtp-port`	Identifies the SMTP port through which the guest-access email is sent.	—	—
`<Port number>`	The SMTP port number.	1–65535	25
`smtp-server`	The SMTP server to which the controller sends the guest-access email.	—	—
`<IP-Address>`	The SMTP server's IP address.	—	—
`no`	Deletes the command configuration	—	—

Usage Guidelines

As part of the guest provisioning feature, the **guest-access-email** command allows you to set up the SMTP port and server that process guest provisioning email. This email process sends email to either the guest or the sponsor whenever a guest user account is created or when the Guest Provisioning user manually sends email from the Guest Provisioning page.

Example

The following command creates a guest-access email profile and sends guest user email through SMTP server IP address 1.1.1.1 on port 25.

```
(host) (config) #guest-access-email
(host) (Guest-access Email Profile) #
(host) (Guest-access Email Profile) #smtp-port 25
(host) (Guest-access Email Profile) #smtp-server 1.1.1.1
```

Related Commands

```
(host) #show guest-access-email
(host) #local-userdb-guest add
(host) #local-userdb-guest modify
(host) #show local-userdb-guest
```

Command History

	Modification
ArubaOS 3.4	Introduced for the first time.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master controllers.

ha

```
ha
group-membership <profile>
group-profile <profile>]
   clone <profile-name>
   controller <controller> role active|dual|standby
   controller-v6 <ipv6> role active|dual|standby
   heartbeat
   heartbeat-interval <heartbeat-interval>
   heartbeat-threshold <heartbeat-threshold>
   no
   over-subscription
   pre-shared-key <key>
   preemption
   state-sync
```

Description

This command configures the High Availability:Fast Failover feature by assigning controllers to a high-availability group, and defining the deployment role for each controller.

Parameter	Description
`group-membership`	Displays the high availability group in which the controller is a member.
`group-profile <profile>`	Create a new high availability group, or define settings for an existing group
`clone`	Name of an existing high availability profile from which parameter values are copied.
`controller <controller-ip>`	IPv4 address of a controller that should be added to the specified high availability group.
`role`	Assign one of the following roles to each controller in the high availability group. • **Active**: Controller is active and is serving APs. • **Dual**: Controller serves some APs and acts as a standby controller for other APs. • **Standby**: Controller does not serve APs, as only acts as a standby in case of failover.
`controller-v6 <controller-ipv6>`	IPv6 address of a controller that should be added to the specified high availability group.
`role`	Assign one of the following roles to each controller in the high availability group. • **Active**: Controller is active and is serving APs. • **Dual**: Controller serves some APs and acts as a standby controller for other APs. • **Standby**: Controller does not serve APs, as only acts as a standby in case of failover.

Parameter	Description
`heartbeat`	The high availability inter-controller heartbeat feature allows for faster AP failover from an active controller to a standby controller, especially in situations where the active controller reboots or loses connectivity to the network.
`heartbeat-interval <heartbeat-interval>`	Enter a heartbeat interval in the **Heartbeat Interval** field to define how often inter-controller heartbeats are sent. Range: 100-1000 ms; Default:100ms
`heartbeat-threshold <heartbeat-threshold>`	Enter a heartbeat threshold in the **Heartbeat Threshold** field to define the number of heartbeats that must be missed before the APs are forced to fail over to the standby controller. Range: 3-10 heartbeats; Default: 5 heartbeats
`no`	Negates or removes any configured parameter.
`over-subscription`	The standby controller oversubscription feature allows a standby controller to support connections to standby APs beyond the controller's original rated AP capacity. Starting with ArubaOS 6.4.0.0, a W-7200 Series controller acting as a standby controller can oversubscribe to standby APs by up to four times that controller's rated AP capacity, as long as the tunnels consumed the standby APs do not exceed the maximum tunnel capacity for that standby controller.
`pre-shared-key <key>`	Define a pre-shared key to be used with the state synchronization feature.
`preemption`	If you include this optional parameter to enable preemption, an AP that has failed over to a standby controller attempts to connect back to its original active controller once that controller is reachable again. When you enable this setting, the AP will wait for the time specified by the **lms-hold-down-period** parameter in the ap system-profile profile before the standby AP attempts to switch back to original controller.
`state-sync`	State synchronization improves failover performance by synchronizing PMK and Key cache values from the active controller to the standby controller, allowing clients to authenticate on the standby controller without repeating the complete 802.1X authentication process. **NOTE:** To use the state synchronization feature, configure a pre-shared key with the pre-shared-key parameter.

Usage Guidelines

The High Availability:Fast Failover feature supports redundancy models with an active controller pair, or an active/standby deployment model with one backup controller supporting one or more active controllers. Each of these clusters of active and backup controllers comprises a high-availability group. Note that all active and backup controllers within a single high-availability group must be deployed in a single master-local topology. The High Availability: Fast Failover features works across Layer-3 networks, so there is no need for a direct Layer-2 connection between controllers in a high-availability group.

By default, an AP's active controller is the controller to which the AP first connects when it comes up. Other dual mode or standby mode controllers in the same High Availability group become potential standby

controllers for that AP. This feature does not require that the active controller act the configuration master for the local standby controller . A master controller in a master-local deployment can act as an active or a standby controller .

When the AP first connects to its active controller, that controller sends the AP the IP address of a standby controller, and the AP attempts to connect to the standby controller. If an AP that is part of a cluster with multiple backup controllers fails to connect to the first standby controller, the active controller will select a new standby controller for that AP, and the AP will attempt to connect to that standby controller. APs using control plane security establish an IPsec tunnel to their standby controllers. APs that are not configured to use control plane security send clear, unencrypted information to the standby controller.

An AP will failover to its backup controller if it fails to contact its active controller through regular heartbeats and keepalive messages, or if the user manually triggers a failover using the WebUI or CLI.

A controller using this feature can have one of three high availability roles – **active**, **standby** or **dual**. An active controller serves APs, but cannot act as a failover standby controller for any AP except the ones that it serves as active. A standby controller acts as a failover backup controller, but cannot be configured as the primary controller for any AP. A dual controller can support both roles, and acts as the active controller for one set of APs, and also acts as a standby controller for another set of APs.

Examples

The following commands configures a high availability group, and assigns controllers and roles to each controller in the group.

```
(host) (config) #ha group-profile new
(host) (HA group information "new") #controller 192.0.2.2 role active
(host) (HA group information "new") #controller 192.0.2.3 role active
(host) (HA group information "new") #controller 192.0.2.4 role standby
(host) (HA group information "new") #preemption
```

Command History

Version	Description
ArubaOS 6.3	Command introduced
ArubaOS 6.4	The following parameters were introduced • **heartbeat** • **heartbeat-interval** • **heartbeat-threshold** • **over-subscription** • **pre-shared-key** • **state-sync**

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master and local controllers.

halt

```
halt
```

Description

This command halts all processes on the controller.

Syntax

No parameters.

Usage Guidelines

This command gracefully stops all processes on the controller. You should issue this command before rebooting or shutting down to avoid interrupting processes.

Command History

Introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Enable mode on master and local controllers.

help

```
help
```

Description

This command displays help for the CLI.

Syntax

No parameters.

Usage Guidelines

This command displays keyboard editing commands that allow you to make corrections or changes to the command without retyping.

You can also enter the question mark (?) to get various types of command help:

- When typed at the beginning of a line, the question mark lists all commands available in the current mode.
- When typed at the end of a command or abbreviation, the question mark lists possible commands that match.
- When typed in place of a parameter, the question mark lists available options.

Example

The following command displays help:

```
(host) #help
```

Command History

Available in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Available in the following command modes: • User • Enable • Config

hostname

```
hostname <hostname>
```

Description

This command changes the hostname of the controller.

Syntax

Parameter	Description	Range	Default
`hostname`	The hostname of the controller	1-63	See below

Usage Guidelines

The hostname is used as the default prompt. You can use any alphanumeric character, punctuation, or symbol character. To use spaces, plus symbols (+), question marks (?), or asterisks (*), enclose the text in quotes.

Example

The following example configures the controller hostname to “Controller 1”.

```
hostname “Controller 1”
```

Command History

Introduced in ArubaOS 1.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master and local controllers

iap del branch-key

```
iap del branch-key <brkey>
```

Description

This command removes a branch from the controller based on the branch key.

Syntax

Parameter	Description
`branch-key <brkey>`	Key for the branch, which is unique to each branch.

Example

```
(host) (config) #iap del branch-key b3c65c4d013836cf190566ca1afdf87c95350cffb1c782e463
```

Related Commands

Command	Description
show iap table	This command displays the branch details connected to the controller.

Command History

Release	Modification
ArubaOS 6.2	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Configuration mode on master and local controller

iap trusted-branch-db

```
iap trusted-branch-db
   add {mac-address <mac-address>}
   allow-all
   del {mac-address <mac-address>}
   del-all
```

Description

This command is used to configure an IAP-VPN branch as trusted.

Syntax

Parameter	Description
`add`	Configure an IAP trusted branch entry.
mac-address <mac-address>	MAC-address of an AP.
`allow-all`	Configure all branches as trusted.
`del`	Delete an IAP trusted branch entry.
mac-address <mac-address>	MAC-address of AP.
`del-all`	Delete all trusted branch entries.

Example

The following command configures a specific IAP-VPN branch as trusted:

```
(host) (config) #iap trusted-branch-db add mac-address 01:01:0e:3e:4c:33
```

The following is the output of the above command:

```
Trusted branch added
```

This following command configures all IAP-VPN branches as trusted:

```
(host) (config) #iap trusted-branch-db allow-all
```

The following is the output of the above command:

```
All IAP+VPN branches are trusted
```

Related Commands

Command	Description
show iap detailed-table	This command displays the IAP trusted branch table

Command History

Release	Modification
ArubaOS 6.4	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Enable or Configuration mode on master and local controller

ids ap-classification-rule change

```
id-classification-rule <rule-name>
   check-min-discovered-aps
   classify-to-type [neighbor | suspected-rogue]
   clone
   conf-level-incr
   discovered-ap-cnt <discovered-ap-cnt>
   match-ssids
   no
   snr-max <value>
   snr-min <value>
   ssid <ssid>
```

Description

Configure the AP classification rule profile.

Syntax

Parameter	Description	Range	Default
`<rule-name>`	Enter the AP classification rule profile name.	—	—
`check-min-discovered-aps`	Have the rule check for the minimum number of APs	true false	true
`classify-to-type [neighbor | suspected-rogue]`	Specify if the type the AP will be classified, neighbor or suspected-rogue, if the rule is matched.	—	suspected-rogue
`clone`	Copy data from another AP classification rule profile	—	—
`conf-level-incr`	Increase the confidence level (in percentage) when the rule matches	0-100	5
`discovered-ap-cnt <discovered-ap-cnt>`	Enter the keyword discovered-ap-cnt followed by the number of APs to be discovered.	0-100	0
`match-ssids`	Match SSIDs; match or do not match	true false	false
`no`	Negates any configured parameter	—	—
`snr-max <value>`	Use the maximum SNR value	0-100	0
`snr-min <value>`	Use the minimum SNR value	0-100	0

Parameter	Description	Range	Default
`ssid <ssid>`	Enter the keyword **ssid** followed by the SSID string to be matched or excluded	—	—

Usage Guidelines

AP classification rule configuration is performed only on a master controller. If AMP is enabled via the mobility-manager command, then processing of the AP classification rules is disabled on the master controller. A rule is identified by its ASCII character string name (32 characters maximum). The AP classification rules have one of the following specifications:

- SSID of the AP
- SNR of the AP
- Discovered-AP-Count or the number of APs that can see the AP

Once you have created an AP classification rule, but must ienable it by adding it to the IDS AP Matching Rules profile:

```
ids ap-rule-matching
   rule-name <name>
```

SSID specification

Each rule can have up to 6 SSID parameters. If one or more SSIDs are specified in a rule, an option of whether to match any of the SSIDs, or to not match all of the SSIDs can be specified. The default is to check for a match operation.

SNR specification

Each rule can have only one specification of the SNR. A minimum and/or maximum can be specified in each rule and the specification is in SNR (db).

Discovered-AP-Count specification

Each rule can have only one specification of the Discovered-AP-Count. Each rule can specify a minimum or maximum of the Discovered-AP-count. The minimum or maximum operation must be specified if the Discovered-AP-count is specified. The default setting is to check for the minimum discovered-AP-count.

Example

The following example configures the AP Configuration Rule Profile named “rule1”, then enables the rule by adding it to the IDS AP Matching Rules profile.

```
(host) (config) #ids ap-classification-rule rule1
(host) (IDS AP Classification Rule Profile "rule1") #check-min-discovered-aps
(host) (IDS AP Classification Rule Profile "rule1") #classify-to-type neighbor
(host) (IDS AP Classification Rule Profile "rule1") !
(host) (config) #ap-rule-matching rule-name rule1
```

Command History

Release	Modification
ArubaOS 6.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

ids ap-rule-matching

```
no
rule-name
```

Description

Configure the IDS active AP rules profile by enabling an AP classification rule.

Syntax

Parameter	Description
`no`	Negates any configured parameter
`rule-name`	Name of the IDS AP classification rule

Usage Guidelines

This command activates an active AP rule created by the ids ap-classification-rule change command. You must create the rule before you can activate it.

Example

```
(host) (IDS Active AP Rules Profile) #rule-name rule2
```

Command History

Release	Modification
ArubaOS 6.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

ids dos-profile

```
ids dos-profile <profile>
   ap-flood-inc-time <seconds>
   ap-flood-quiet-time <seconds>
   ap-flood-threshold <number>
   assoc-rate-thresholds <number>
   auth-rate-thresholds <number>
   block-ack-dos-quiet-time
   chopchop-quiet-time
   client-ht-40mhz-intol-quiet-time <seconds>
   client-flood-inc-time
   client-flood-quiet-time
   client-flood-threshold
   client-ht-40mhz-intolerance
   clone <profile>
   cts-rate-quiet-time
   cts-rate-threshold
   cts-rate-time-interval
   deauth-rate-thresholds <number>
   detect-ap-flood
   detect-block-ack-dos
   detect-chopchop-attack
   detect-client-flood
   detect-cts-rate-anomaly
   detect-disconnect-station
   detect-eap-rate-anomaly
   detect-fata-jack-attack
   detect-ht-40mhz-intolerance
   detect-invalid-address
   detect-malformed-association-request
   detect-malformed-auth-frame
   detect-malformed-htie
   detect-malformed-large-duration
   detect-omerta-attack
   detect-overflow-eapol-key
   detect-overflow-ie
   detect-power-save-dos-attack
   detect-rate-anomalies
   detect-rts-rate-anomaly
   detect-tkip-replay-attack
   disassoc-rate-thresholds <number>
   disconnect-deauth-disassoc-threshold
   disconnect-sta-assoc-resp-threshold
   disconnect-sta-quiet-time <seconds>
   eap-rate-quiet-time <seconds>
   eap-rate-threshold <number>
   eap-rate-time-interval <seconds>
   fata-jack-quiet-time
   invalid-address-combination-quiet-time
   malformed-association-request-quiet-time
   malformed-auth-frame-quiet-time
   malformed-htie-quiet-time
   malformed-large-duration-quiet-time
   no ...
   omerta-quiet-time
   omerta-threshold
   overflow-eapol-key-quiet-time
   overflow-ie-quiet-time
   power-save-dos-min-frames
```

```
power-save-dos-quiet-time
power-save-dos-threshold
probe-request-rate-thresholds <number>
probe-response-rate-thresholds <number>
rts-rate-quiet-time
rts-rate-threshold
rts-rate-time-interval
spoofed-deauth-blacklist
tkip-replay-quiet-time
```

Description

This command configures traffic anomalies for denial of service (DoS) attacks.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	—	“default”
`ap-flood-inc-time`	Time, in seconds, during which a configured number of fake AP beacons must be received to trigger an alarm.	0-36000	3600 seconds
`ap-flood-quiet-time`	After an alarm has been triggered by a fake AP flood, the time, in seconds, that must elapse before an identical alarm may be triggered.	60-360000	900 seconds
`ap-flood-threshold`	Number of fake AP beacons that must be received within the flood increase time to trigger an alarm.	0-100,000	50
`assoc-rate-thresholds`	Rate threshold for associate request frames.	—	—
`auth-rate-thresholds`	Rate threshold for authenticate frames.	—	—
`block-ack-dos-quiet-time`	Time to wait, in seconds, after detecting an attempt to reset the receive window using a forged block ACK add.	60-360000 seconds	900 seconds
`chopchop-quiet-time`	Time to wait, in seconds, after detecting a ChopChop attack after which the check can be resumed.	60-360000 seconds	900 seconds

Parameter	Description	Range	Default
client-ht-40mhz-intol-quiet-time <seconds>	Controls the quiet time (when to stop reporting intolerant STAs if they have not been detected), in seconds, for detection of 802.11n 40 MHz intolerance setting.	60-360000 seconds	900 seconds
client-flood-inc-time	Number of consecutive seconds over which the client count is more than the threshold.	0-36000 seconds	3 seconds
client-flood-quiet-time	Time to wait, in seconds, after detecting a client flood before continuing the check.	60-360000 seconds	900 seconds
client-flood-threshold	Threshold for the number of spurious clients in the system.	0-100000	150
clone	Copy data from another IDS Denial Of Service Profile.	—	—
cts-rate-quiet-time	Time to wait, in seconds, after detecting a CTS rate anomaly after which the check can be resumed.	60-360000 seconds	900 seconds
cts-rate-threshold	Number of CTS control packets over the time interval that constitutes an anomaly.	0-100000	5000
cts-rate-time-interval	Time interval, in seconds, over which the packet count should be checked.	1-120 seconds	5 seconds
deauth-rate-thresholds	Rate threshold for deauthenticate frames.	—	—
detect-ap-flood	Enables detection of flooding with fake AP beacons to confuse legitimate users and to increase the amount of processing needed on client operating systems.	true false	false
detect-block-ack-dos	Enable/disable detection of attempts to reset traffic receive windows using forged Block ACK Add messages.	true false	true

Parameter	Description	Range	Default
detect-chopchop-attack	Enable/disable detection of ChopChop attack.	true false	false
detect-client-flood	Enable/disable detection of client flood attack.	true false	disable
detect-cts-rate-anomaly	Enable/disable detection of CTS rate anomaly.	true false	disable
detect-disconnect-station	In a station disconnection attack, an attacker spoofs the MAC address of either an active client or an active AP. The attacker then sends deauthenticate frames to the target device, causing it to lose its active association. Use this command to enable the detection of disconnect station attack.	true false	enable
detect-eap-rate-anomaly	Enables Extensible Authentication Protocol (EAP) handshake analysis to detect an abnormal number of authentication procedures on a channel and generate an alarm when this condition is detected.	true false	false
detect-fata-jack-attack	Enable/disable detection of FATA-Jack attack	true false	enable
detect-ht-40mhz-intolerance	Enables or disables detection of 802.11n 40 MHz intolerance setting, which controls whether stations and APs advertising 40 MHz intolerance will be reported.	true false	false
detect-invalid-address	Enable/disable detection of invalid address combinations	true false	false
detect-malformed-association-request	Enable/disable detection of malformed association requests.	true false	disable
detect-malformed-auth-frame	Enable/disable detection of malformed authentication frames	true false	disable

Parameter	Description	Range	Default
detect-malformed-htie	Enable/disable detection of malformed HT IE	true false	false
detect-malformed-large-duration	Enable/disable detection of unusually large durations in frames	true false	true
detect-omerta-attack	Enable/disable detection of Omerta attack	true false	enable
detect-overflow-eapol-key	Enable/disable detection of overflow EAPOL key requests	true false	disable
detect-overflow-ie	Enable/disable detection of overflow Information Elements (IE)	true false	disable
detect-power-save-dos-attack	Enable/disable detection of Power Save DoS attack	true false	enable
detect-rate-anomalies	Enable/disable detection of rate anomalies	true false	disable
detect-rts-rate-anomaly	Enable/disable detection of RTS rate anomaly	true false	disable
detect-tkip-replay-attack	Enable/disable detection of TKIP replay attack	true false	disable
disassoc-rate-thresholds	Rate threshold for disassociate frames.	—	—
disconnect-deauth-disassoc-threshold	Rate thresholds for Disassociate frames	1-50	8
disconnect-sta-assoc-resp-threshold	The number of successful Association Response or Reassociation response frames seen in an interval of 10 seconds that should trigger this event.	1-30	5

Parameter	Description	Range	Default
disconnect-sta-quiet-time	After a station disconnection attack is detected, the time, in seconds, that must elapse before another identical alarm can be generated.	60-360000seconds	900 seconds
eap-rate-quiet-time	After an EAP rate anomaly alarm has been triggered, the time, in seconds, that must elapse before another identical alarm may be triggered.	60-360000	900 seconds
eap-rate-threshold	Number of EAP handshakes that must be received within the EAP rate time interval to trigger an alarm.	0-100000	60
eap-rate-time-interval	Time, in seconds, during which the configured number of EAP handshakes must be received to trigger an alarm.	1-120 seconds	3 seconds
fata-jack-quiet-time	Time to wait, in seconds, after detecting a FATA-Jack attack after which the check can be resumed.	60-360000 seconds	900 seconds
invalid-address-combination-quiet-time	Time to wait, in seconds, after detecting an invalid address combination after which the check can be resumed.	60-360000 seconds	900 seconds
malformed-association-request-quiet-time	Time to wait, in seconds, after detecting a malformed association request after which the check can be resumed.	60-360000 seconds	900 seconds
malformed-auth-frame-quiet-time	Time to wait, in seconds, after detecting a malformed authentication frame after which the check can be resumed.	60-360000 seconds	900 seconds
malformed-htie-quiet-time	Time to wait, in seconds, after detecting a malformed HT IE after which the check can be resumed.	60-360000 seconds	900 seconds

Parameter	Description	Range	Default
malformed-large-duration-quiet-time	Time to wait, in seconds, after detecting a large duration for a frame after which the check can be resumed.	60-360000 seconds	900 seconds
no	Negates any configured parameter.	—	—
omerta-quiet-time	Time to wait, in seconds, after detecting an Omerta attack after which the check can be resumed.	60-360000 seconds	900 seconds
omerta-threshold	The Disassociation packets received by a station as a percentage of the number of data packets sent, in an interval of 10 seconds.	1-100	10%
overflow-eapol-key-quiet-time	Time to wait, in seconds, after detecting a overflow EAPOL key request after which the check can be resumed.	60-360000 seconds	900 seconds
overflow-ie-quiet-time	Time to wait, in seconds, after detecting a overflow IE after which the check can be resumed.	60-360000 seconds	900 seconds
power-save-dos-min-frames	The minimum number of Power Management OFF packets that are required to be seen from a station, in intervals of 10 second, in order for the Power Save DoS check to be done.	1-1000	120
power-save-dos-quiet-time	Time to wait, in seconds, after detecting a Power Save DoS attack after which the check can be resumed.	60-360000 seconds	900 seconds
power-save-dos-threshold	The Power Management ON packets sent by a station as a percentage of the Power Management OFF packets sent, in intervals of 10 second, which will trigger this event.	1- 100 %	80%

Parameter	Description	Range	Default
probe-request-rate-thresholds	Rate threshold for probe request frames.	—	—
probe-response-rate-thresholds	Rate threshold for probe response frames.	—	—
rts-rate-quiet-time	Time to wait, in seconds, after detecting an RTS rate anomaly after which the check can be resumed.	60-360000 seconds	900 seconds
rts-rate-threshold	Number of RTS control packets over the time interval that constitutes an anomaly.	0-100000	5000
rts-rate-time-interval	Time interval, in seconds, over which the packet count should be checked.	1-120 seconds	5 seconds
spoofed-deauth-blacklist	Enables detection of a deauth attack initiated against a client associated to an AP. When such an attack is detected, the client is quarantined from the network to prevent a man-in-the-middle attack from being successful.	true false	false
tkip-replay-quiet-time	Time to wait, in seconds, after detecting a TKIP replay attack after which the check can be resumed.	60-360000 seconds	900 seconds

Usage Guidelines

DoS attacks are designed to prevent or inhibit legitimate clients from accessing the network. This includes blocking network access completely, degrading network service, and increasing processing load on clients and network equipment.

Example

The following command enables a detection in the DoS profile named “floor2”:

```
(host) (config) #ids dos-profile floor2
(host) (IDS Denial Of Service Profile "floor2") detect-ap-flood
```

Command History

Release	Modification
ArubaOS 3.0	Command Introduced.
ArubaOS 3.3	Updated with support for high-throughput IEEE 802.11n standard.
ArubaOS 3.4	detect-disconnect-sta and disconnect-sta-quiet-time parameters deprecated.
ArubaOS 6.0	Deprecated predefined profiles and added numerous DoS profile options

ArubaOS 6.1	Added the following parameter in support of Detection of the Meiners Power Save DoS attack, including event notification to the user.
	`detect-power-save-dos-attack`
	`power-save-dos-min-frames`
	`power-save-dos-quiet-time`
	`power-save-dos-threshold`

Deprecated Predefined Profiles

Deprecated DOS profile:

- ids-dos-disabled
- ids-dos-low-setting
- ids-dos-medium-setting
- ids-dos-high-setting

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

ids general-profile

```
ids general-profile <profile-name>
   adhoc-ap-inactivity-timeout
   adhoc-ap-max-unseen-timeout
   ap-inactivity-timeout <seconds>
   ap-max-unseen-timeout
   clone <profile>
   frame-types-for-rssi [all | ba | ctrl | dhigh | dlow | dnull | mgmt | pr]
   ids-events [logs-and-traps | logs-only | none | traps-only]
   max-monitored-stations <max-monitored-stations>
   max-unassociated-stations <max-unassociated-stations>
   min-pot-ap-beacon-rate <percent>
   min-pot-ap-monitor-time <seconds>
   mobility-manager-rtls
   mon-stats-update-interval
   no ...
   packet-snr-threshold <packet-snr-threshold>
   send-adhoc-info-to-controller
   signature-quiet-time <seconds>
   sta-inactivity-timeout <seconds>
   unclass-ap-update
   unclass-device-update-interval
   unclass-sta-update
   wired-containment
   wired-containment-ap-adj-mac
   wired-containment-susp-l3-rogue
   wireless-containment [deauth-only | none | tarpit-all-sta | tarpit-non-valid-sta]
   wired-containment-ap-adj-mac
   wireless-containment-debug
```

Description

Configure an IDS general profile.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	—	“default”
`adhoc-ap-inactivity-timeout`	Ad hoc (IBSS) AP inactivity timeout in number of scans.	5-36000 seconds	5 seconds
`adhoc-ap-max-unseen-timeout`	Ageout time in seconds since ad hoc (IBSS) AP was last seen.	5-36000 seconds	5 seconds

Parameter	Description	Range	Default
`ap-inactivity-timeout`	Time, in seconds, after which an AP is aged out.	5-36000 seconds	5 seconds
`ap-max-unseen-timeout`	Ageout time, in seconds, since AP was last seen.	5-36000 seconds	600 seconds
`clone`	Name of an existing IDS general profile from which parameter values are copied.	—	—

`frame-types-for-rssi`
`all`
`ba`
`ctrl`
`dhigh`
`dlow`
`dnull`
`mgmt`
`pr`
	Select frame types to be used in AM RSSI calculation.
	Frame types:
	all—All types of frames. This frame type overrides any other frame types.
	ba—Block ACK frame types.
	ctrl—All control frames except ACK.
	dhigh—Data frames more than 36 Mbps except null data frames.
	dlow—Data frames less than 36 Mbps except null data frames.
	dnull—Null data frames.
	mgmt—All management frames except probe request.
	pr—Probe request frames.
	NOTE: Configure this parameter under the supervision of Dell Technical Support.
		—	ba, ctrl, dlow, dnull, mgmt, pr

`ids-events`
`logs-and-traps`
`logs-only`
`none`
`traps-only]`
	Enable or disable IDS event generation from the AP. Event generation from the AP can be enabled for syslogs, traps, or both. This does not affect generation of IDS correlated events on the switch.	—	logs-and-traps

`max-monitored-stations`	Maximum number of monitored stations. **NOTE:** This parameter is currently available on the W-AP220 Series access points only. **NOTE:** Configure this parameter under the supervision of Dell Technical Support.	1024-4096	1024

Parameter	Description	Range	Default
max-unassociated-stations	Maximum number of unassociated stations. **NOTE:** This parameter is currently available on W-AP220 Series access points only. **NOTE:** Configure this parameter under the supervision of Dell Technical Support.	256-4096	256
min-pot-ap-beacon-rate	Minimum beacon rate acceptable from a potential AP, in percentage of the advertised beacon interval.	0-100	25%
min-pot-ap-monitor-time	Minimum time, in seconds, a potential AP has to be up before it is classified as a real AP.	2-36000	2 seconds
mobility-manager-rtls	Enable/disable RTLS communication with the configured mobility-manager	enabled disabled	disabled
mon-stats-update-interval	Time interval, in seconds, for AP to update the switch with stats for monitored devices. Minimum is 60.	60-360000 seconds	60 seconds
no	Negates any configured parameter.	—	—
packet-snr-threshold	Set the packet Signal to Noise Ratio (SNR) threshold. All packets with SNR below this threshold is dropped from IDS and ARM processing. No packets are dropped if the threshold is set to 0. **NOTE:** Configure this parameter under the supervision of Dell Technical Support.	0-90 dB	0
send-adhoc-info-to-controller	Enable or disable sending adhoc information to the controller from the AP.	enable disable	disable
signature-quiet-time	After a signature match is detected, the time to wait, in seconds, to resume checking.	60-360000 seconds	900 seconds

Parameter	Description	Range	Default
sta-inactivity-timeout	Time, in seconds, after which a station is aged out.	30-360000 seconds	60 seconds
sta-max-unseen-timeout	Ageout time, in seconds, since station was last seen. Minimum is 5.	5-36000 seconds	5 seconds
unclass_ap_update	Enables or disables classification updates for monitored APs. If this option is enabled, there is a decrease in the delay with which the devices are classified.	-	Disabled
unclass_device_update_interval	The time interval for the AP to send the WMS a list of unclassified APs and clients.	30-36000 seconds	60 seconds
unclass_sta_update	Enables or disables classification updates for monitored clients. If this option is enabled, there is a decrease in the delay with which the devices are classified.	-	Disabled
wired-containment	Enable containment from the wired side.	true false	false
wired-containment-ap-adj-mac	Enable/disable wired containment of MACs offset by one from APs BSSID.	true false	false
wired-containment-susp-l3-rogue	The basic wired containment feature enabled using the wired-containment command contains layer-3 APs whose wired interface MAC addresses are either the same as (or one character off from) their BSSIDs. This feature can also identify and contain an AP with a preset wired MAC address that is completely different from the AP's BSSID if the MAC address that the AP provides to wireless clients as the 'gateway MAC' is offset by one character from its wired MAC address. **NOTE:** This feature requires that the following wired-containment parameter in the ids general-profile is also enabled, and that the confidence level of the suspected rogue exceeds the level configured by the suspect-rogue-	true	false

Parameter	Description	Range	Default
	containment and suspect-rogue-conf-level parameters in the ids unauthorized-device-profile.		
wireless-containment deauth-only none tarpit-all-sta tarpit-non-valid-sta	Enable wireless containment including Tarpit Shielding. Tarpit shielding works by steering a client to a tarpit so that the client associates with it instead of the AP that is being contained. **deauth-only**—Containment using deauthentication only. **none**—Disable wireless containment. **tarpit-all-sta**—Wireless containment by tarpit of all stations. **tarpit-non-valid-sta**—Wireless containment by tarpit of non-valid clients.	—	deauth-only
wireless-containment-debug	Enable/disable debug of containment from the wireless side. **Note**: Enabling this debug option will cause containment to *not* function properly.	true false	false

Usage Guidelines

This command configures general IDS profile attributes.

Example

The following command enables containment in the general IDS profile:

```
(host) (config) #ids general-profile floor7
(host) (IDS General Profile "floor7") #wired-containment
(host) (IDS General Profile "floor7") #wireless-containment tarpit-all-sta
(host) (IDS General Profile "floor7") #wireless-containment-debug
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 5.0	Introduced the mobility-manager-rtls parameter.
ArubaOS 6.0	Deprecated predefined profiles and added numerous General profile options

Version	Description
ArubaOS 6.3	Introduced the **wired-containment-susp-l3-rogue** parameter.
ArubaOS 6.4.2.3	The following parameters were introduced: • **packet-snr-threshold** • **frame-types-for-rssi** • **max-monitored-stations** • **max-unassociated-stations**
ArubaOS 6.4.4.0	The following parameters were introduced: • **unclass_ap_update** • **unclass_device_update_interval** • **unclass_sta_update**

Deprecated Predefined Profiles

Deprecated General profiles:

- ids-general-disabled
- ids-general-high-setting

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the RFprotect license.	Config mode on master controllers

Warning Message for Containment Features

The feature for enabling wireless containment under the **IDS Unauthorized Device** profile and **IDS Impersonation** profile may be in violation of certain Federal Communications Commission (FCC) regulatory statutes. To address this, a warning message will be issued each time the command is enabled through the CLI. The warning message will appear after the command is executed.

ids impersonation-profile

```
ids impersonation-profile <name>
   ap-spoofing-quiet-time
   beacon-diff-threshold <percent>
   beacon-inc-wait-time <seconds>
   beacon-wrong-channel-quiet-time
   clone <profile>
   detect-ap-impersonation
   detect-ap-spoofing
   detect-beacon-wrong-channel
   detect-hotspotter
   hotspotter-quiet-time
   no ...
   protect-ap-impersonation
```

Description

This command configures anomalies for impersonation attacks.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	—	“default”
`ap-spoofing-quiet-tim`	Time to wait in seconds after detecting AP Spoofing after which the check can be resumed. Minimum is wait time is 60.		60 seconds
`beacon-diff-threshold`	Percentage increase in beacon rates that triggers an AP impersonation event.	0-100	50%
`beacon-inc-wait-time`	Time, in seconds, after the beacon difference threshold is crossed before an AP impersonation event is generated.	—	3 seconds
`beacon-wrong-channel-quiet-time`	Time to wait, in seconds, after detecting a beacon with the wrong channel after which the check can be resumed.	60-360000 seconds	900 seconds
`clone`	Name of an existing IDS impersonation profile from which parameter values are copied.	—	—

Parameter	Description	Range	Default
detect-ap-impersonation	Enables detection of AP impersonation. In AP impersonation attacks, the attacker sets up an AP that assumes the BSSID and ESSID of a valid AP. AP impersonation attacks can be done for man-in-the-middle attacks, a rogue AP attempting to bypass detection, or a honeypot attack.	—	true
detect-ap-spoofing	Enable/disable AP Spoofing detection	—	enable
detect-beacon-wrong-channel	Enable/disable detection of beacons advertising the incorrect channel	—	disable
detect-hotspotter	Enable/disable detection of the Hotspotter attack to lure away valid clients.	—	disable
hotspotter-quiet-time	Time to wait in seconds after detecting an attempt to Use the Hotspotter tool against clients.	60-360000 seconds	900 seconds
no	Negates any configured parameter.	—	—
protect-ap-impersonation	When AP impersonation is detected, both the legitimate and impersonating AP are disabled using a denial of service attack.	—	false

Usage Guidelines

A successful man-in-the-middle attack will insert an attacker into the data path between the client and the AP. In such a position, the attacker can delete, add, or modify data, provided he has access to the encryption keys. Such an attack also enables other attacks that can learn a client's authentication credentials. Man-in-the-middle attacks often rely on a number of different vulnerabilities.

Example

The following command enables detections in the impersonation profile:

```
(host) (config) #ids impersonation-profile floor1
(host) (IDS Impersonation Profile "floor1") #detect-beacon-wrong-channel
(host) (IDS Impersonation Profile "floor1") #detect-ap-impersonation
```

Command History

Version	Modification
ArubaOS 3.0	Command Introduced
ArubaOS 3.4	detect-sequence-anomaly, sequence-diff, sequence-quiet-time, sequence-time-tolerance parameters deprecated.
ArubaOS 6.0	Deprecated predefined profiles and added numerous Impersonation profile options

Deprecated Predefined Profiles

IDS Impersonation profile:

- ids-impersonation-disabled
- ids-impersonation-high-setting

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

ids management-profile

```
event-correlation
   [logs-and-traps | logs-only | none | traps-only]
event-correlation-quiet-time <value>
```

Description

Mange the event correlation.

Syntax

Parameter	Description	Range	Default

`event-correlation`
`logs-and-traps`
`logs-only`
`none`
`traps-only`
	Correlation mode for IDS event traps and syslogs (logs). Event correlation can be enabled with generation of correlated logs, traps, or both. To disable correlation, enter the keyword **none**.		logs-and-traps

`event-correlation-quiet-time` `<value>`	Time to wait, in seconds, after generating a correlated event after which the event could be raised again. This only applies to events that are repeatedly raised by an AP.	30-360000 seconds	900 seconds

Usage Guidelines

Manage the events correlation for IDS event traps and syslogs (logs).

Example

```
(host) (config) #ids management-profile
(host) (IDS Management Profile) #event-correlation-quiet-time 30
(host) (IDS Management Profile) #event-correlation logs-and-traps
```

Command History

Release	Modification
ArubaOS 6.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

ids profile

```
ids profile <name>
   clone <profile>
   dos-profile <profile>
   general-profile <profile>
   impersonation-profile <profile>
   no ...
   signature-matching-profile <profile>
   unauthorized-device-profile <profile>
```

Description

This command defines a set of IDS profiles.

Syntax

Parameter	Description	Default
`<profile>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	"default"
`clone`	Name of an existing IDS profile from which parameter values are copied.	—
`dos-profile`	Name of a IDS denial of service profile to be applied to the AP group/name. See ids dos-profile on page 405.	"default"
`general-profile`	Name of an IDS general profile to be applied to the AP group/name. See ids general-profile on page 414.	"default"
`impersonation-profile`	Name of an IDS impersonation profile to be applied to the AP group/name. See ids impersonation-profile on page 420.	"default"
`no`	Negates any configured parameter.	—
`signature-matching-profile`	Name of an IDS signature matching profile to be applied to the AP group/name. See ids signature-matching-profile on page 428	"default"
`unauthorized-device-profile`	Name of an IDS unauthorized device profile to be applied to the AP group/name. See ids unauthorized-device-profile on page 433.	"default"

Usage Guidelines

This command defines a set of IDS profiles that you can then apply to an AP group (with the **ap-group** command) or to a specific AP (with the **ap-name** command).

Example

The following command defines a set of IDS profiles:

```
(host) (config) #ids profile floor2
(host) (IDS Profile "floor2") #dos-profile dos1
   general-profile general1
   impersonation-profile mitm1
   signature-matching-profile sig1
   unauthorized-device-profile unauth1
```

Command History

Version	Modification
ArubaOS 3.0	Command Introduced
ArubaOS 6.0	Deprecated predefined profiles

Deprecated Predefined Profile

Deprecated Profile for levels: disabled, high, medium, and low

- ids-disabled
- ids-high-setting
- ids-medium-setting
- ids-low-setting

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers.

ids rate-thresholds-profile

```
ids rate-thresholds-profile <name>
   channel-inc-time <seconds>
   channel-quiet-time <seconds>
   channel-threshold
   clone <profile>
   no ...
   node-quiet-time <seconds>
   node-threshold <number>
   node-time-interval <seconds>
```

Description

This command configures thresholds that are assigned to the different frame types for rate anomaly checking.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	—	“default”
`channel-inc-time`	Time, in seconds, in which the threshold must be exceeded in order to trigger an alarm.	0 - 360000 seconds	15 seconds
`channel-quiet-time`	After a channel rate anomaly alarm has been triggered, the time that must elapse before another identical alarm may be triggered. This option prevents excessive messages in the log file.	60-360000	900 seconds
`channel-threshold`	Number of a specific type of frame that must be exceeded within a specific interval in an entire channel to trigger an alarm.	any	300
`clone`	Name of an existing IDS rate thresholds profile from which parameter values are copied.	—	—
`no`	Negates any configured parameter.	—	—
`node-quiet-time`	After a node rate anomaly alarm has been triggered, the time, in seconds, that must elapse before another identical alarm may be triggered. This option prevents excessive messages in the log file.	60-360000	900 seconds
`node-threshold`	Number of a specific type of frame that must be exceeded within a specific interval for a particular client MAC address to trigger an alarm.	0 - 100000 frames	200
`node-time-interval`	Time, in seconds, in which the threshold must be exceeded in order to trigger an alarm.	1-120	15 seconds

Usage Guidelines

A profile of this type is attached to each of the following 802.11 frame types in the IDS denial of service profile:

- Association frames
- Disassociation frames
- Deauthentication frames
- Probe Request frames
- Probe Response frames
- Authentication frames

Example

The following command configures frame thresholds:

```
(host) (config) #ids rate-thresholds-profile Lobby
(host) (IDS Rate Thresholds Profile "Lobby") #channel-threshold 250
```

Command History

Version	Modification
ArubaOS 3.0	Command Introduced
ArubaOS 6.0	Deprecated predefined profiles

Deprecated Predefined Profiles

Deprecated the predefined profile with probe-request-response-threshold.

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

ids signature-matching-profile

```
ids signature-matching-profile <name>
   clone <profile>
   no ...
   signature <profile>
```

Description

This command contains defined signature profiles.

Syntax

Parameter	Description	Default
`<profile>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	“default”
`clone`	Name of an existing IDS signature matching profile from which parameter values are copied.	—
`no`	Negates any configured parameter.	—
`signature`	Name of a signature profile. See ids signature-profile on page 430.	—

Usage Guidelines

You can include one or more predefined signature profiles or a user-defined signature profile in a signature matching profile.

Example

The following command configures a signature matching profile:

```
(host) (config) IDS signature matching LobbyEast
(host) (IDS Signature Matching Profile "LobbyEast") #signature Null-Probe-Response
```

Command History

Version	Modification
ArubaOS 3.0	Command Introduced
ArubaOS 6.0	Deprecated predefined profiles

Deprecated Predefined Profiles

Deprecated Signature Matching profile:

- factory-default-signatures

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

ids signature-profile

```
ids signature-profile <name>
   bssid <macaddr>
   clone <profile>
   dst-mac <macaddr>
   frame-type {assoc|auth|beacon|control|data|deauth|disassoc|mgmt|probe-request|probe-
   response
   no ...
   payload <pattern> [offset <number>]
   seq-num <number>
   src-mac <macaddr>
```

Description

This command configures signatures for wireless intrusion detection.

Syntax

Parameter	Description	Default
<profile>	Name that identifies an instance of the profile. The name must be 1-63 characters.	"default"
bssid	BSSID field in the 802.11 frame header.	—
clone	Name of an existing IDS signature profile from which parameter values are copied.	—
dst-mac	Destination MAC address in the 802.11 frame header.	—
frame-type	Type of 802.11 frame. For each type of frame, further parameters can be specified to filter and detect only the required frames.	—
assoc	Association frame type	
auth	Authentication frame type	
beacon	Beacon frame type	
control	All control frames	
data	All data frames	
deauth	Deauthentication frame type	
disassoc	Disassociation frame type	
mgmt	Management frame type	

Parameter	Description	Default
probe-request	Frame type is probe request	
probe-response	Frame type is probe response	
ssid	For beacon, probe-request, and probe-response frame types, specify the SSID as either a string or hex pattern.	—
ssid-length	For beacon, probe-request, and probe-response frame types, specify the length, in bytes, of the SSID. Maximum length is 32 bytes.	—
no	Negates any configured parameter.	—
payload <pattern>	Pattern at a fixed offset in the payload of an 802.11 frame. Specify the pattern to be matched as a string or hex pattern. Maximum length is 32 bytes.	—
offset	When a payload pattern is configured, specify the offset in the payload where the pattern is expected to be found in the frame.	—
seq-num	Sequence number of the frame.	—
src-mac	Source MAC address in the 802.11 frame header.	—
valid-ap	Matches a valid AP SSID	–

Example

The following command configures a signature profile:

```
(host) (config) #ids signature-profile floor4
(host) (IDS Signature Profile "floor4") #frame-type assoc
(host) (IDS Signature Profile "floor4") #src-mac 00:00:00:00:00:00
```

Usage Guidelines

The following describes the configuration for the predefined signature profiles:

Signature Profile	Parameter	Value
AirJack	frame-type	beacon ssid = AirJack
ASLEAP	frame-type	beacon ssid = asleap
Deauth-Broadcast	frame-type	deauth
	dst-mac	ff:ff:ff:ff:ff:ff

Signature Profile	Parameter	Value
Netstumbler Generic	payload	offset=3 pattern=0x00601d
	payload	offset=6 pattern=0x0001
Netstumbler Version 3.3.0x	payload	offset=3 pattern=0x00601d
	payload	offset=12 pattern=0x000102
Null-Probe-Response	frame-type	probe-response ssid length = 0

Command History

Version	Modification
ArubaOS 3.0	Command Introduced

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

ids unauthorized-device-profile

```
ids unauthorized-device-profile <name>
   adhoc-using-valid-ssid-quiet-time <seconds>
   allow-well-known-mac [hsrp|iana|local-mac|vmware|vmware1|vmware2|vmware3]
   cfg-valid-11a-channel <channel>
   cfg-valid-11g-channel <channel>
   classification
   clone <profile>
   detect-adhoc-network
   detect-adhoc-using-valid-ssid
   detect-bad-wep
   detect-ht-greenfield
   detect-invalid-mac-oui
   detect-misconfigured-ap
   detect-sta-assoc-to-rogue
   detect-unencrypted-valid-client
   detect-valid-client-misassociation
   detect-valid-ssid-misuse
   detect-windows-bridge
   detect-wireless-bridge
   detect-wireless-hosted-network
   mac-oui-quiet-time <seconds>
   no ...
   oui-classification
   overlay-classification
   privacy
   prop-wm-classification
   protect-adhoc-enhanced
   protect-adhoc-network
   protect-high-throughput
   protect-ht-40mhz
   protect-misconfigured-ap
   protect-ssid
   protect-valid-sta x
   protect-windows-bridge
   protect-wireless-hosted-network
   require-wpa
   rogue-containment
   suspect-rogue-conf-level <level>
   suspect-rogue-containment
   unencrypted-valid-client-quiet-time
   valid-and-protected-ssid <ssid>
   valid-oui <oui>
   valid-wired-mac <macaddr>
   wireless-bridge-quiet-time <seconds>
   wireless-hosted-network-quiet-time
```

Description

This command configures detection of unauthorized devices, as well as rogue AP detection and containment.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name that identifies an instance of the profile. The name must be 1-63 characters.	—	“default”
`adhoc-using-valid-ssid-quiet-time`	Time to wait, in seconds, after detecting an adhoc network using a valid SSID, after which the check can be resumed.	60-360000	900 seconds
`allow-well-known-mac`	Allows devices with known MAC addresses to classify rogues APs. Depending on your network, configure one or more of the following options for classifying rogue APs: • hsrp—Routers configured for HSRP, a Cisco-proprietary redundancy protocol, with the HSRP MAC OUI 00:00:0c. • iana—Routers using the IANA MAC OUI 00:00:5e. • local-mac—Devices with locally administered MAC addresses starting with 02. • vmware—Devices with any of the following VMWare OUIs: 00:0c:29, 00:05:69, or 00:50:56 • vmware1—Devices with VMWare OUI 00:0c:29. • vmware2—Devices with VMWare OUI 00:05:69. • vmware3—Devices with VMWare OUI 00:50:56. If you modify an existing configuration, the new configuration overrides the original configuration. For example, if you configure `allow-well-known-mac hsrp` and then configure `allow-well-known-mac iana`, the original configuration is lost. To add more options to the original configuration, include all of the required options, for example: `allow-well-known-mac hsrp iana`. Use caution when configuring this command. If the neighboring network uses similar routers, those APs might be classified as rogues. If containment is enabled, clients attempting to associate to an AP classified as a rogue are disconnected through a denial of service attack.	—	—

Parameter	Description	Range	Default
	To clear the well known MACs in the system, use the following commands: • `clear wms wired-mac`:This clears all of the learned wired MAC information on the controller. • `reload`: This reboots the controller.		
`cfg-valid-11a-channel`	List of valid 802.11a channels that third-party APs are allowed to use.	34-165	N/A
`cfg-valid-11g-channel`	List of valid 802.11b/g channels that third-party APs are allowed to use.	1-14	N/A
`classification`	Enable/disable rogue AP classification. A rogue AP is one that is unauthorized and plugged into the wired side of the network. Any other AP seen in the RF environment that is not part of the valid enterprise network is considered to be interfering — it has the potential to cause RF interference but it is not connected to the wired network and thus does not represent a direct threat.	—	true
`clone`	Name of an existing IDS rate thresholds profile from which parameter values are copied.	—	—
`detect-adhoc-network`	Enable detection of adhoc networks.	—	false
`detect-adhoc-using-valid-ssid`	Enable/disable detection of adhoc networks using valid/protected SSIDs	—	enable
`detect-bad-wep`	Enables detection of WEP initialization vectors that are known to be weak and/or repeating. A primary means of cracking WEP keys is to capture 802.11 frames over an extended period of time and search for implementations that are still used by many legacy devices.	—	false
`detect-ht-greenfield`	Enables or disables detection of high-throughput devices advertising greenfield preamble capability.	—	false

Parameter	Description	Range	Default
detect-invalid-mac-oui	Enables checking of the first three bytes of a MAC address, known as the organizationally unique identifier (OUI), assigned by the IEEE to known manufacturers. Often clients using a spoofed MAC address do not use a valid OUI and instead use a randomly generated MAC address. Enabling MAC OUI checking causes an alarm to be triggered if an unrecognized MAC address is in use.	—	false
detect-misconfigured-ap	Enables detection of misconfigured APs. An AP is classified as misconfigured if it is classified as valid and does not meet any of the following configurable parameters: - valid channels - encryption type - list of valid AP MAC OUIs - valid SSID list	—	false
detect-sta-assoc-to-rogue	Enable/disable detection of station association to rogue AP.		enable
detect-unencrypted-valid-client	Enable/disable detection of unencrypted valid clients.	—	enable
detect-valid-client-misassociation	Enable/disable detection of misassociation between a valid client and an unsafe AP. This setting can detect the following misassociation types: • MisassociationToRogueAP • MisassociationToExternalAP • MisassociationToHoneypotAP • MisassociationToAdhocAP • MisassociationToHostedAP	—	enable
detect-valid-ssid-misuse	Enable/disable detection of Interfering or Neighbor APs using valid/protected SSIDs.	—	disable
detect-windows-bridge	Enables detection of Windows station bridging.	—	true
detect-wireless-bridge	Enables detection of wireless bridging.	—	false
detect-wireless-hosted-network	If enabled, this feature can detect the presence of a wireless hosted network.	—	enable

Parameter	Description	Range	Default
	When a wireless hosted network is detected this feature sends a “Wireless Hosted Network” warning level security log message and the *wlsxWirelessHostedNetworkDetected* SNMP trap. If there are clients associated to the hosted network, this feature will send a “Client Associated To Hosted Network” warning level security log message and the *wlsxClientAssociatedToHostedNetworkDetected* SNMP trap.		
`mac-oui-quiet-time`	Time, in seconds, that must elapse after an invalid MAC OUI alarm has been triggered before another identical alarm may be triggered.	60-360000 seconds	900 seconds
`no`	Negates any configured parameter.	—	—
`oui-classification`	Enable/disable OUI based rogue AP classification	—	enable
`overlay-classification`	Enable/disable overlay rogue AP classification	—	enable
`privacy`	Enables encryption as a valid AP configuration.	—	false
`prop-wm-classification`	Enable/disable rogue AP classification through propagated wired MACs	—	true
`protect-adhoc-enhanced`	Enables advanced protection from open/WEP adhoc networks. When enhanced adhoc containment is carried out, a new repeatable event, syslog and SNMP trap will be generated for each containment event.	—	false
`protect-adhoc-network`	Enables protection from adhoc neworks using WPA/WPA2 security. When adhoc networks are detected, they are disabled using a denial of service attack.	—	false
`protect-high-throughput`	Enables or disables protection of high-throughput (802.11n) devices.	—	false

Parameter	Description	Range	Default
protect-ht-40mhz	Enables or disables protection of high-throughput (802.11n) devices operating in 40 MHz mode.	—	false
protect-misconfigured-ap	Enables protection of misconfigured APs.	—	false
protect-ssid	Enables use of SSID by valid APs only.	—	false
protect-valid-sta	When enabled (true), does not allow valid stations to connect to a non-valid AP.	—	false
protect-windows-bridge	Enable/disable protection of a windows station bridging	—	disabled
protect-wireless-hosted-network	When you enable the wireless hosted network protection feature, the controller enforces containment on a wireless hosted network by launching a denial of service attack to disrupt associations between a Windows 7 software-enabled Access Point (softAP) and a client, and disrupt associations between the client that is hosting the softAP and any access point to which the host connects. When a wireless hosted network triggers this feature, wireless hosted network protection sends the Wireless Hosted Network Containment and Host of Wireless Network Containment warning level security log messages, and the *wlsxWirelessHostedNetworkContainment* and *wlsxHostOfWirelessNetworkContainment* SNMP traps. **NOTE:** The existing generic containment SNMP traps and log messages will also be sent when Wireless Hosted Network Containment or Host of Wireless Network Containment is enforced.	—	disabled
require-wpa	When enabled (true), any valid AP that is not using WPA encryption is flagged as misconfigured.	—	false
rogue-containment	Rogue APs can be detected (see classification) but are not automatically disabled. This option automatically shuts down rogue APs. When this option is enabled (true), clients attempting to associate to an AP classified as a rogue are disconnected through a denial of service attack.	—	false

Parameter	Description	Range	Default
suspect-rogue-conf-level	Confidence level of suspected Rogue AP to trigger containment. When an AP is classified as a suspected rogue AP, it is assigned a 50% confidence level. If multiple APs trigger the same events that classify the AP as a suspected rogue, the confidence level increases by 5% up to 95%. In combination with suspected rogue containment, this option configures the threshold by which containment should occur. Suspected rogue containment occurs only when the configured confidence level is met.	50-100%	60%
suspect-rogue-containment	Suspected rogue APs are treated as interfering APs, thereby the controller attempts to reclassify them as rogue APs. Suspected rogue APs are not automatically contained. In combination with the configured confidence level (see suspect-rogue-conf-level), this option contains the suspected rogue APs.	—	false
unencrypted-valid-client-quiet-time	Time to wait, in seconds, after detecting an unencrypted valid client after which the check can be resumed.	60-360000 seconds	900 seconds
valid-and-protected-ssid	List of valid and protected SSIDs.	—	—
valid-oui	List of valid MAC OUIs.	—	—
valid-wired-mac	List of MAC addresses of wired devices in the network, typically gateways or servers.	—	—
wireless-bridge-quiet-time	Time, in seconds, that must elapse after a wireless bridge alarm has been triggered before another identical alarm may be triggered.	60-360000 seconds	900 seconds
wireless-hosted-network-quiet-time	The wireless hosted network detection feature sends a log message and trap when a wireless hosted network is detected. The quiet time defined by this parameter sets the amount of time, in seconds, that must elapse after a wireless hosted network log message or trap has been triggered before an identical log message or trap can be sent again.	60-360000 seconds	900 seconds

Usage Guidelines

Unauthorized device detection includes the ability to detect and disable rogue APs and other devices that can potentially disrupt network operations.

Example

The following command copies the settings from the ids-unauthorized-device-disabled profile and then enables detection and protection from adhoc networks:

```
(host) (config) #ids unauthorized-device-profile floor7
(host) (IDS Unauthorized Device Profile "floor7") #unauth1
(host) (IDS Unauthorized Device Profile "floor7") #clone ids-unauthorized-device-disable
(host) (IDS Unauthorized Device Profile "floor7") #detect-adhoc-network
(host) (IDS Unauthorized Device Profile "floor7") #protect-adhoc-network
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3	Update with support for the high-throughput IEEE 802.11n standard. Also, introduced allow-well-known-mac, suspect-rogue-conf-level, and suspect-rogue-containment parameters.
ArubaOS 6.0	Deprecated predefined profiles
ArubaOS 6.1	Added the **detect-valid-ssid-misuse** parameter to internally generate a list of valid SSIDs to use in addition to the user configured list of Valid and Protected SSIDs.
ArubaOS 6.3	Added the following parameters • protect-adhoc-enhanced • detect-wireless-hosted-network • wireless-hosted-network-quiet-time • protect-wireless-hosted-network

Deprecated Predefined Profiles

IDS Unauthorized Device profile:

- ids-unauthorized-device-disabled
- ids-unauthorized-device-medium-setting
- ids-unauthorized-device-high-setting

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

ids wms-general-profile

```
wms general
   adhoc-ap-ageout-interval <adhoc-ap-ageout-interval>
   ap-ageout-interval <ap-ageout-interval>
   collect-stats
   learn-ap
   learn-system-wired-macs
   no
   persistent-neighbor
   persistent-valid-sta
   poll-interval <poll-interval>
   poll-retries <poll-retries>
   propagate-wired-macs
   sta-ageout-interval <sta-ageout-interval>
   stat-update
```

Description

This command configures the WLAN management system (WMS).

Syntax

Parameter	Description	Range	Default
`adhoc-ap-ageout-interval <adhoc-ap-ageout-interval>`	Time, in minutes, that an adhoc (IBSS) AP remains unseen before it is deleted (ageout) from the database.	0 and 2147483647 minutes	5 minutes
`ap-ageout-interval <ap-ageout-interval>`	Time, in minutes, that an AP remains unseen by any probes before it is deleted from the database.	0 and 21474836 47 minutes	30 minutes
`collect-stats`	Enables collection of statistics (up to 25,000 entries) on the master controller for monitored APs and clients.	—	disabled
`learn-ap`	Enables “learning” of non-Dell APs.	—	disabled
`learn-system-wired-macs`	Enable or disable “learning” of wired MACs at the controller.	—	disabled
`no`	Negates any configured parameter.	–	–
`persistent-neighbor`	Do not age out known AP neighbors.	–	disabled
`persistent-valid-sta`	Do not age out valid stations.	–	disabled

Parameter	Description	Range	Default
`poll-interval <poll-interval>`	Interval, in milliseconds, for communication between the controller and Dell AMs. The controller contacts the AM at this interval to download AP to station associations, update policy configuration changes, and download AP and station statistics.	(any)	60000 milliseconds (1 minute)
`poll-retries <poll-retries>`	Maximum number of failed polling attempts before the polled AM is considered to be down.	(any)	2
`propagate-wired-macs`	Enables the propagation of the gateway wired MAC information.	—	enabled
`sta-ageout-interval <sta-ageout-interval>`	Time, in minutes, that a client remains unseen by any probes before it is deleted from the database.	0 and 21474836 47 minutes	30 minutes
`stat-update`	Enables statistics updating in the database.	–	enabled

Usage Guidelines

By default, non-Dell APs that are connected on the same wired networks as Dell APs are classified as “rogue” APs. Enabling AP learning classifies non-Dell APs as “valid” APs. Typically, you would want to enable AP learning in environments with large numbers of existing non-Dell APs and leave AP learning enabled until all APs in the network have been detected and classified as valid. Then, disable AP learning and reclassify any unknown APs as interfering.

VLAN Trunking

In deployments where Dell APs are not placed on every VLAN and where it is *not* possible to trunk all VLANs to a Dell AP, enable the parameter **learned-system-wired-mac**. When this is enabled, ArubaOS is able to classify rogues on all the VLANs that belong to the Dell controller, as long as Dell APs can *see* the rogues in the air. If there are VLANs in the network residing on a third party controller and if those VLANs are trunked to a port on the Dell controller, enabling this feature will allow detection of rogues on those VLANs as well.

Master/Local

When **learned-system-wired-mac** is enabled in a master/local deployment, the learning of Wired and Gateway MACs will happen at each local controller. For topologies with local controllers in geographical locations, the local controller collects the Wired and Gateway MAC info and passes it to the APs that are connected to it. Even though the locals do the collection of Wired and Gateway MACs, the master is still be responsible for classification.

Example

The following command enables AP learning:

```
(host)(IDS WMS General Profile) #learn-ap
```

To disable AP learning:

```
(host)(IDS WMS General Profile) #no learn-ap
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	Added parameter **`learned-system-wired-mac`**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ids wms-local system-profile

```
ids wms-locals-profile <profile>
   max-rbtree-entries <number>
   max-system-wm <number>
   max-threshold <number>
   system-wm-update-interval <number>]
```

Description

This command sets the local configuration parameters to control the size of the Wired MAC table and APs and Stations.

Syntax

Parameter	Description
`max-rbtree-entries`	Set the max threshold for the total number of AP and Station RBTree entries.
`max-system-wm`	Set the max number of system wired MAC table entries learned at the controller. Range: 1-2000 Default: 1000
`max-threshold`	Set the max threshold for the total number of APs and Stations.
`system-wm-update-interval`	Set the interval, in minutes, for repopulating the system wired MAC table at the controller. Range: 1 to 30 minutes Default: 8 minutes

Usage Guidelines

The **wms-local system** command is used for configuring commands that are local, not global. This means in a master-local system, the configuration parameter is modifiable at each individual controller, and the setting on one controller does not affect the setting on other controllers.

Increasing the max threshold limit will cause an increase in usage in the memory by WMS. In general, each entry will consume about 500 bytes of memory. If the setting is bumped up by 2000, then it will cause an increase in WMS memory usage by 1MB.

Example

The following commands first set the interval time for repopulating the MAC table to 10 minutes and then sets the maximimum number of APs and stations to 500.

```
(host) (config) #ids wms-locals-profile system system-wm-update-interval 10
(host) (config)# ids wms-locals-profile system max-threshold 500
```

Command History

Release	Modification
ArubaOS 3.	Introduced
ArubaOS 6.1	Local configuration parameters to control the size of the Wired MAC table `max-system-wm and system-wm-update-interval`
ArubaOS 6.1.3	The **wms-local** command was renamed to **ids wms-local-system-profile.**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ifmap

```
ifmap cppm
   enable
   no
   server host <host>
   port <port>
   username<username>
   passwd <password>
```

Description

This command is used in conjunction with ClearPass Policy Manager. It sends HTTP User Agent Strings and mDNS broadcast information to ClearPass so that it can make more accurate decisions about what types of devices are connecting to the network.

Syntax

Parameter	Description	Default
`enable`	Enables the IFMAP protocol.	–
`server`	Configures the CPPM IF-MAP server.	—
`host <host>`	IP address/hostname of the CPPM IF-MAP server.	—
`port <port>`	Port number for the CPPM IF-MAP server. The range is 1-65535.	443
`username<username>`	Username for the user who performs actions on the CPPM IF-MAP server. The name must be between 1-255 bytes in length.	–
`passwd <password>`	Password of the user who performs actions on the CPPM IF-MAP server. The password must be between 6-100 bytes in length.	–

Example

This example configures IFMAP and enables it.

```
(host) (config) #ifmap
(host) (config) #ifmap cppm
(host) (CPPM IF-MAP Profile) #server host <host>
(host) (CPPM IF-MAP Profile) #port <port>
(host) (CPPM IF-MAP Profile) #passwd <psswd>
(host) (CPPM IF-MAP Profile) #enable
```

Usage Guidelines

Use this command in conjunction with ClearPass Policy Manager.

Related Commands

Command	Description	Mode
show ifmap	This command is used in conjunction with ClearPass Policy Manager. It sends HTTP User Agent Strings and mDNS broadcast information to ClearPass so that it can make more accurate decisions about what types of devices are connecting to the network	Config mode

Command History

Version	Modification
ArubaOS 6.3	Command Introduced

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

Interface cellular

```
interface cellular ip access-group <name> session
```

Description

This command allows you to specify an ingress or egress ACL to the cellular interface of an EVDO modem.

Syntax

Parameter	Description
`<name>`	Enter the name or number of the access group you want to apply to the EVDO modem.

Example

```
(host) (config-cell)#ip access-group 3 session
```

Related Command

Command	Description
show interface cellular access-group	List the Access groups configured on the cellular interface

Command History

Release	Modification
ArubaOS 5.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Configuration Mode (config-cell)

interface fastethernet | gigabitethernet

```
interface {fastethernet|gigabitethernet}  <slot>/<module>/<port>
   bandwidth-contract <name>|{{app <app-name>|appcategory <app-category-name>} <bw-contract-
   name>} upstream|downstream [exclude]
   description <string>
   duplex {auto|full|half}
   ip access-group <name> {in|out|session {vlan <vlanId>}}
   jumbo
   lacp {group|port-priority|timeout}
   lldp {fast-transmit-counter <1-8>|fast-transmit-interval <1-3600>|med|receive
   |transmit|transmit-hold <1-100>|transmit-interval <1-3600> }600>
   no ...
   port monitor {fastethernet|gigabitethernet} <slot>/<module>/<port>
   priority-map <name>
   shutdown
   spanning-tree {[bpduguard]|[cost <value>]|[point-to-point]|[port-priority <value>]|
   [portfast] [vlan]}
   speed {10|100|auto}
   switchport {access vlan <vlan>|mode {access|trunk}|port-security maximum <num> level
   <level> [interval <seconds>]
    trunk {allowed vlan {<vlans>|add <vlans>|all|except <vlans>|remove <vlans>}|native vlan
   <vlan>}}
   trusted {vlan <word>}
   tunneled-node-port
   xsec {point-to-point <macaddr> <key> allowed vlan <vlans> [<mtu>]|vlan <vlan>}
```

Description

This command configures a FastEthernet or GigabitEthernet interface on the controller.

Syntax

Parameter	Description	Range	Default
`<slot>/<module>/<port>`	The slot, module and port numbers assigned to the network interface embedded in the controller.	—	—
`bandwidth-contract`	Apply a bandwidth contract to all upstream of downstream traffic, or to traffic for a specified application or application category	—	—

Parameter	Description	Range	Default
`<name>`	Name of a bandwidth contract configured with the **aaa bandwidth-contract** command. If you specify a bandwidth contract name *before* you specify an application or application category, the bandwidth contract is applied to all downstream or upstream traffic.		
`app <name>`	Name of the application to which the bandwidth contract is applied. For a complete list of supported applications, issue the command **show dpi application all**.	—	—
`appcategory <name>`	Name of the application category to which the bandwidth contract is applied. For a complete list of supported applications, issue the command **show dpi application category all**.	—	—
`downstream`	Apply the bandwidth contract to downstream traffic.	—	—
`upstream`	Apply the bandwidth contract to upstream traffic.	—	—
`exclude <app>|<appcategory>`	Use this parameter to exclude application or application category traffic from a bandwdth contract.		
`description`	String that describes this interface.	—	—
`duplex`	Transmission mode on the interface: full or half-duplex or auto to automatically adjust transmission.	auto/full/half	auto
`ip access-group`	Applies the specified access control list (ACL) to the interface. Use the **ip access-list** command to configure an ACL. **NOTE**: This parameter requires the PEFNG license.	—	—

Parameter	Description	Range	Default
in	Applies ACL to interface's inbound traffic.	—	—
out	Applies ACL to interface's outbound traffic.	—	—
session	Applies session ACL to interface and optionally to a selected VLAN associated with this port.	—	—
jumbo	Enables or disables jumbo frame MTU configured via firewall on a port.	—	disabled
lacp	Configures an LACP functionality on an interface.	—	—
group <id> mode [active|passive]	Sets a number for the link aggregation group and the LACP mode on the interface. Active—Enables LACP unconditionally Passive—Enables LACP only when an LACP device is detected	0—7	—
port-priority	Sets the LACP priority value on the interface	1—65535	—
timeout [long|short]	Sets the LACP timeout to long or short value on the interface. long—timeout set to long value, that is 90 secs. short—timeout set to short value, that is 3 secs.	—	—
lldp	Configures an LLDP functionality on an interface.	—	—
fast-transmit-counter <1-8>	Set the number of the LLDP data units sent each time fast LLDP data unit transmission is triggered	1-8	4
fast-transmit-interval <1-3600>	Set the LLDP fast transmission interval in seconds.	1-3600	1

Parameter	Description	Range	Default
med	Enables the LLDP MED protocol.	—	disabled
receive	Enables processing of LLDP PDU received.	—	disabled
transmit	Enables LLDP PDU transmit.	—	disabled
transmit-hold <1-100>	Set the transmit hold multiplier.	1-100	4
transmit-interval <1-3600>	Sets the transmit interval in seconds.	1-3600	30
no	Negates any configured parameter.	—	—
port monitor	Monitors another interface on the controller.	—	—
priority-map	Applies a priority map to the interface. Use the **priority-map** command to configure a priority map which allows you to map ToS and CoS values into high priority traffic queues.	—	—
shutdown	Causes a hard shutdown of the interface.	—	—
spanning-tree	Enables Rapid spanning tree or Per-VLAN spanning tree.	—	enabled
bpduguard	Enables bpduguard on the edge ports.	—	disabled
cost	Administrative cost associated with the spanning tree.	1-65535	19 (Fast Ethernet) 4 (Gigabit Ethernet)
point-to-point	Set interface as point to point.	—	disabled

Parameter	Description	Range	Default
port-priority	Spanning tree priority of the interface. A lower setting brings the port closer to root port position (favorable for forwarding traffic) than does a higher setting. This is useful if ports may contend for root position if they are connected to an identical bridge.	0-255	128
portfast	Enables forwarding of traffic from the interface.	—	disabled
vlan	Configure the vlan instance.	1-4094	disabled
speed	Sets the interface speed: 10 Mbps, 100 Mbps, or auto configuration.	10|100|auto	auto
switchport	Sets switching mode parameters for the interface.	—	—
access vlan	Sets the interface as an access port for the specified VLAN. The interface carries traffic only for the specified VLAN.	—	1
mode	Sets the mode of the interface to access or trunk mode only.	access|trunk	access
port-security	Sets the port security parameters.	—	—
maximum <num>	Sets the Maximum number of MAC addresses.	1—16,384	—
level <level>	Sets the value for level of security while handling the packet. drop—drops the packet when the set maximum limit is crossed. logging—drops the packet when the maximum limit is crossed and logs a message. shutdown—drops the packet, logs a message, and shuts down the port.	—	logging

Parameter	Description	Range	Default
`interval <seconds>`	Sets the autorecovery interval time in seconds to clear off the port error.	1–65,535	—
`trunk`	Sets the interface as a trunk port for the specified VLANs. A trunk port carries traffic for multiple VLANs using 802.1q tagging to mark frames for specific VLANs. You can include all VLANs configured on the controller, or add or remove specified VLANs. Specify **native** to identify the native VLAN for the trunk mode interface. Frames on the native VLAN are not 802.1q tagged.	—	—
`trusted`	Set this interface and range of VLANs to be trusted. VLANs not included in the trusted range of VLANs will be, by default, untrusted. Trusted ports and VLANs are typically connected to internal controlled networks, while untrusted ports connect to third-party APs, public areas, or other networks to which access controls should be applied. When Dell APs are attached directly to the controller, set the port to be trusted.	—	enabled
`vlan <word>`	Sets the supplied range of VLANs as trusted. All remaining become untrusted automatically. For example, If you set a VLAN range as: vlan 1-10, 100-300, 301, 305-400, 501-4094 Then all VLANs in this range are trusted and all others become untrusted by default. You can also use the **no trusted vlan** command to explicitly make an individual VLAN untrusted. The no trusted vlan command is additive and adds given vlans to the existing untrusted vlan set.	1-4094	—

Parameter	Description	Range	Default
	However, if you execute the **trusted vlan** <**word**> command, it overrides any earlier untrusted VLANs or a range of untrusted VLANs and creates a new set of trusted VLANs. **NOTE:** A port supports a user VLAN range from 1-4094. If you want to set all VLANs (1-4094) on a port as untrusted then mark the port itself as untrusted. By default the port and all its associated VLANs are trusted.		
`tunneled-node-port`	Enable or disable tunneled node capability on the port.	—	Disabled
`xsec`	Enables and configures the Extreme Security (xSec) protocol. **NOTE**: You must purchase and install the xSec software module license in the controller.	—	—
`point-to-point`	MAC address of the controller that is the xSec tunnel termination point, and the 16-byte shared key used to authenticate the controllers to each other. The key must be the same on both controllers.	—	—
`allowed vlan`	VLANs that are allowed on the xSec tunnel.	—	—
`mtu`	(Optional) MTU size for the xSec tunnel.	—	—
`vlan`	xSec VLAN ID. For controller-to-controller communications, both controllers must belong to the same VLAN.	1-4094	—

Usage Guidelines

Use this command to configure settings for the controller interface, including duplex, LLDP and switchport settings. You can execute the **show port status** command to obtain information about the interfaces currently available on the controller. This command also displays the port-security error, if any.

Interface Bandwidth Contracts

W-7000 Series controllers have the ability to classify and identify applications on the network. If a W-7000 Series controller is configured as a branch controller, you can create bandwidth contracts to limit traffic for individual applications (or categories of applications) either sent from or received by a selected interface. There are two basic models for using this feature.

- **Limiting lower-priority traffic**: If there is a lower-priority application or application type that you want to limit, apply a bandwidth contract just to that application, and allow all other application traffic to pass without any limits.
- **Protecting higher-priority traffic**: If you want to guarantee bandwidth for a company-critical application or application group, you can add that application to an exception list, then apply a bandwidth contract to all remaining traffic.

You can apply bandwidth contracts using one or both of these models. Each interface supports up to 64 bandwidth contracts.

Interface contract Precedence

An interface bandwidth contract is applied to downstream traffic before a user-role bandwidth contract is applied, and for upstream traffic, the user-role bandwidth contract is applied before the interface bandwidth contract. For all traffic using compression and encryption, bandwidth contracts are applied after that traffic is compressed and encrypted. If you apply more than one bandwidth contract to any specific category type, then the bandwidth contracts are applied in the following order.

1. A contract that explicitly excludes an application
2. A contract that explicitly excludes an application category
3. A contract that applies to a specific application
4. A contract that applies to a specific application category
5. A generic bandwidth contract, not specific to any application or application category

Example

The following commands configure an interface as a trunk port for a set of VLANs:

```
(host) (config) # interface fastethernet 1/2
(host) (config-range)# switchport mode trunk
(host) (config-range)# switchport trunk native vlan 10
(host) (config-range)# switchport trunk allowed vlan 1,10,100
```

The following commands configure trunk port 1/2 with test-acl session for VLAN 2:

```
(host) (config) # interface range fastethernet 1/2
(host) (config-range)# switchport mode trunk
(host) (config-range)# ip access-group
(host) (config-range) # ip access-group test session vlan 2
```

The following commands configure a interface bandwidth contract for a high-priority application:

```
(host) (config) # interface gigabitethernet 1/1
(host) (config) # bw-contract protectskype4b exclude app alg-skype4b-voice downstream
```

Related Commands

```
(host) #show interface {fastethernet|gigabitethernet} <slot>/<module>/<port>
(host) #show datapath port vlan-table <slot>/<module>/<port>
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4	The **trusted VLAN** and i**p access-group session vlan** parameters were introduced.
ArubaOS 3.4.1	The **trusted vlan <word>** parameter was added.
ArubaOS 6.1	The parameter `muxport` was changed to `tunneled-node-port`
ArubaOS 6.3	The **jumbo** parameter was added to enable or disable jumbo frame MTU configured via firewall on port.
ArubaOS 6.4	The **lldp** parameter was added.
ArubaOS 6.4.3.0	The **bw-contract** parameter was introduced. The **bpduguard**, **point-to-point**, and **vlan** parameters were introduced as part of **spanning-tree**.
ArubaOS 6.5	The **level** and **interval** subparameters are introduced as part of the **switchport port-security maximum** command.

Command Information

Platforms	Licensing	Command Mode
All platforms, except for the interface bandwidth contract feature, which is limited to W-7000 Series controllers only.	This command is available in the base operating system. The **ip access-group** parameter requires the PEFNG license. The **xsec** parameter requires the xSec license.	Config mode on master and local controllers

interface loopback

```
interface loopback
   ip address <ipaddr>
   ipv6 address <ipv6-prefix>
   no ...
```

Description

This command configures the loopback address on the controller.

Syntax

Parameter	Description
`ip address`	Host IP address in dotted-decimal format. This address should be routable from all external networks.
`ipv6 address`	Host IPv6 address that is routable from all external networks.
`no`	Negates any configured parameter.

Usage Guidelines

If configured, the loopback address is used as the controller's IP address. If you do not configure a loopback address for the controller, the IP address assigned to VLAN 1 is used as the controller's IP address. After you configure or modify a loopback address, you need to reboot the controller.

Example

The following command configures a loopback address:

```
(host) (config) #interface loopback
   ip address 10.2.22.220
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The parameter `ipv6 address` was added.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command is available in the base operating system	Config mode on master and local controllers

interface port-channel

```
interface port-channel <id>
   add {fastethernet|gigabitethernet}  <slot>/<module>/<port>
   del {fastethernet|gigabitethernet}  <slot>/<module>/<port>
   description <LINE>
   ip access-group <acl> {in|out|session {vlan <vlanId>}}
   jumbo
   no ...
   shutdown
   spanning-tree [portfast]
   switchport {access vlan <vlan>|mode {access|trunk}|
    trunk {allowed vlan {<vlans>|add <vlans>|all|except <vlans>|remove <vlans>|
    native vlan <vlan>}
   trusted {vlan <word>}
   xsec {point-to-point <macaddr> <key> allowed vlan <vlans> [<mtu>]|vlan <vlan>}
```

Description

This command configures an Ethernet port channel.

Syntax

Parameter	Description	Range	Default
`port-channel`	ID number for this port channel.	0-7	—
`add`	Adds the specified FastEthernet or GigabitEthernet interface to the port channel. You cannot specify both FastEthernet and GigabitEthernet interfaces for the same port channel.	—	—
`del`	Deletes the specified FastEthernet or GigabitEthernet interface to the port channel.	—	—
`description <LINE>`	A character string describing this port-channel.	up to 60 characters	—
`ip access-group`	Applies the specified access control list (ACL) to the interface. Use the **ip access-list** command to configure an ACL. **NOTE:** This command requires the PEFNG license.	—	—
`in`	Applies ACL to interface's inbound traffic.	—	—
`out`	Applies ACL to interface's outbound traffic.	—	—
`session`	Applies session ACL to interface and optionally to a selected VLAN associated with this port.	—	—
`jumbo`	Enable or disables jumbo frame MTU configured via		Disabled

Parameter	Description	Range	Default
	firewall on a port channel.		
no	Negates any configured parameter.	—	—
shutdown	Causes a hard shutdown of the interface.	—	—
spanning-tree	Enables spanning tree.	—	—
portfast	Enables forwarding of traffic from the interface.	—	—
switchport	Sets switching mode parameters for the interface.	—	—
access vlan	Sets the interface as an access port for the specified VLAN. The interface carries traffic only for the specified VLAN.	—	—
mode	Sets the mode of the interface to access or trunk mode only.	—	—
trunk	Sets the interface as a trunk port for the specified VLANs. A trunk port carries traffic for multiple VLANs using 802.1q tagging to mark frames for specific VLANs. You can include all VLANs configured on the controller, or add or remove specified VLANs.	—	—
native	Specifies the native VLAN for the trunk mode interface. Frames on the native VLAN are not 802.1q tagged.	—	—
trusted	Set this interface and range of VLANs to be trusted. VLANs not included in the trusted range of VLANs will be, by default, untrusted. Trusted ports and VLANs are typically connected to internal controlled networks, while untrusted ports connect to third-party APs, public areas, or other networks to which access controls should be applied. When Dell APs are attached directly to the controller, set the port to be trusted.	—	disabled
vlan <word>	Sets the supplied range of VLANs as trusted. All remaining become untrusted automatically. For example, if you set a VLAN range as: vlan 1-10, 100-300, 301, 305-400, 501-4094 Then all VLANs in this range are trusted and all others become untrusted by default. You can also use the **no trusted vlan** command to explicitly make an individual VLAN untrusted. The no trusted vlan command is additive and adds given vlans to the existing untrusted vlan set.	1-4094	—

Parameter	Description	Range	Default
	However, if you execute the **trusted vlan** <**word**>command, it overrides any earlier untrusted VLANs or a range of untrusted VLANs and creates a new set of trusted VLANs. **NOTE:** A port supports a user VLAN range from 1-4094. If you want to set all VLANs (1-4094) on a port as untrusted then mark the port itself as untrusted. By default the port and all its associated VLANs are trusted.		
`xsec`	Enables and configures the Extreme Security (xSec) protocol. **NOTE**: You must purchase and install the xSec software module license in the controller.	—	—
`point-to-point`	MAC address of the controller that is the xSec tunnel termination point, and the 16-byte shared key used to authenticate the controllers to each other. The key must be the same on both controllers.	—	—
`allowed vlan`	VLANs that are allowed on the xSec tunnel.	—	—
`mtu`	(Optional) MTU size for the xSec tunnel.	—	—
`vlan`	xSec VLAN ID. For controller-to-controller communications, both controllers must belong to the same VLAN.	1-4094	—

Usage Guidelines

A port channel allows you to aggregate ports on a controller. You can configure a maximum of 8 port channels per supported controller with a maximum of 8 interfaces per port channel.

Note the following when setting up a port channel between a controller and a Cisco switch (such as a Catalyst 6500 Series Switch):

- There must be no negotiation of the link parameters.
- The port-channel mode on the Cisco switch must be “on”.

Example

The following command configures a port channel:

```
(host) (config) #interface port channel 7
  add fastethernet 1/1
  add fastethernet 1/2
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4	The **trusted VLAN** and i**p access-group session vlan** parameters were introduced.
ArubaOS 3.4.1	The **trusted vlan <word>** parameter was added.
ArubaOS 6.3	The **jumbo** parameter was added.
ArubaOS 6.4.3.0	The **description** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All plaforms	This command is available in the base operating system. The **ipaccess-group** parameter requires the PEFNG license. The **xsec** parameter requires the xSec license.	Config mode on master and local controllers

interface-profile voip-profile

```
interface-profile voip-profile <profile-name>
   clone <source>
   no{...}
   voip-dot1p <priority>
   voip-dscp <value>
   voip-mode [auto-discover | static]
   voip-vlan <VLAN-ID>
```

Description

This command creates a VoIP profile that can be applied to any interface or an interface group.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of the VoIP profile.	1-32 characters; cannot begin with a numeric character	—
`voip-dot1p <priority>`	Specifies the dot1p priority.	—	—
`voip-dscp <value>`	Specifies the DSCP value for the voice VLAN	—	—
`voip-mode [auto-discover | static]`	Specifies the mode of VoIP operation. • auto-discover - Operates VoIP on auto discovery mode. • static - Operates VoIP on static mode.	—	static
`voip-vlan <vlan id>`	Specifies the Voice VLAN ID.	–	–

Usage Guidelines

Use this command to create VoIP VLANs for VoIP phones. Creating a VoIP profile does not apply the configuration to any interface or interface group. To apply the VoIP profile, use the `interface gigabitethernet` and `interface-group` commands.

Example

The following command configures a VoIP profile:

```
interface-profile voip-profile VoIP_PHONES
voip-dot1p 100
voip-dscp 125
voip-mode auto-discover
voip-vlan 126
```

Command History

This command was introduced in ArubaOS

Release	Modification
ArubaOS 6.2	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

interface range

```
interface range {fastethernet|gigabitethernet}  <slot/module/port>-<port>
   duplex {auto|full|half}
   ip access-group <acl> {in|out|session {vlan <vlanId>}}
   no ...
   poe [cisco]
   shutdown
   spanning-tree [cost <value>] [port-priority <value>] [portfast]
   speed {10|100|auto}
   switchport {access vlan <vlan>|mode {access|trunk}|
    trunk {allowed vlan {<vlans>|add <vlans>|all|except <vlans>|remove <vlans>}|
    native vlan <vlan>}}
   trusted {vlan <word>}
```

Description

This command configures a range of FastEthernet or GigabitEthernet interfaces on the controller.

Syntax

Parameter	Description	Range	Default
range	Range of Ethernet ports in the format <slot>/<module>/<port>-<port>.	—	—
duplex	Transmission mode on the interface: full- or half-duplex or auto to automatically adjust transmission.	auto/full/half	auto
ip access-group	Applies the specified access control list (ACL) to the interface. Use the ip access-list command to configure an ACL.	—	—
in	Applies ACL to interface's inbound traffic.	—	—
out	Applies ACL to interface's outbound traffic.	—	—
session	Applies session ACL to interface and optionally to a selected VLAN associated with this port.	—	—
no	Negates any configured parameter.	—	—
poe	Enables Power-over-Ethernet (PoE) on the interface.	—	—
cisco	Enables Cisco-style PoE on the interface.	—	—
shutdown	Causes a hard shutdown of the interface.	—	—
spanning-tree	Enables spanning tree.	—	—

Parameter	Description	Range	Default
cost	Administrative cost associated with the spanning tree.	1-65535	—
port-priority	Spanning tree priority of the interface. A lower setting brings the port closer to root port position (favorable for forwarding traffic) than does a higher setting. This is useful if ports may contend for root position if they are connected to an identical bridge.	0-255	
portfast	Enables forwarding of traffic from the interface.	—	—
speed	Sets the interface speed: 10 Mbps, 100 Mbps, or auto configuration.	10|100|auto	auto
switchport	Sets switching mode parameters for the interface.	—	—
access vlan	Sets the interface as an access port for the specified VLAN. The interface carries traffic only for the specified VLAN.	—	—
mode	Sets the mode of the interface to access or trunk mode only.	—	—
trunk	Sets the interface as a trunk port for the specified VLANs. A trunk port carries traffic for multiple VLANs using 802.1q tagging to mark frames for specific VLANs. You can include all VLANs configured on the controller, or add or remove specified VLANs. Specify **native** to identify the native VLAN for the trunk mode interface. Frames on the native VLAN are not 802.1q tagged.	—	—
trusted	Set this interface and range of VLANs to be trusted. VLANs not included in the trusted range of VLANs will be, by default, untrusted. Trusted ports and VLANs are typically connected to internal controlled networks, while untrusted ports connect to third-party APs, public areas, or other networks to which access controls should be applied. When Dell APs are attached directly to the controller, set the port to be trusted.	—	enabled
vlan <word>	Sets the supplied range of VLANs as trusted. All remaining become untrusted automatically. For example, If you set a VLAN range as: vlan 1-10, 100-300, 301, 305-400, 501-4094	1-4094	—

Parameter	Description	Range	Default
	Then all VLANs in this range are trusted and all others become untrusted by default. You can also use the **no trusted vlan** command to explicitly make an individual VLAN untrusted. The no trusted vlan command is additive and adds given vlans to the existing untrusted vlan set. However, if you execute the **trusted vlan** <**word**> command, it overrides any earlier untrusted VLANs or a range of untrusted VLANs and creates a new set of trusted VLANs. **NOTE:** A port supports a user VLAN range from 1-4094. If you want to set all VLANs (1-4094) on a port as untrusted then mark the port itself as untrusted. By default the port and all its associated VLANs are trusted.		

Usage Guidelines

Use the show port status command to obtain information about the interfaces available on the controller.

Example

The following command configures a range of interface as a trunk port for a set of VLANs:

```
interface range fastethernet 1/12-15
   switchport mode trunk
   switchport trunk native vlan 10
   switchport trunk allowed vlan 1,10,100
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4	The **trusted VLAN** and i**p access-group session vlan** parameters were introduced.
ArubaOS 3.4.1	The **trusted vlan <word>** parameter was added.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

interface tunnel

```
interface tunnel <number>
   description <string>
   inter-tunnel-flooding
   ip access group <acl-name> in
   ip address {<ipaddr> <netmask>} | internal
   ip ospf {area <area-id>}|{authentication message-digest}|{cost <value>}|{dead-interval
   <value>}|{hello-interval <value>}|{message-digest-key <id>}|{priority <value>}|{retransmit-
   interval <value>}|{transmit-delay <value>}
   ipv6 address X:X:X:X::X
   mtu <mtu>
   no ...
   shutdown
   trusted
   tunnel
      destination <ip-addr>| remote-node-master-ip|{ipv6 <ipv6-addr>}
      keepalive {<interval> <retries>}|<cisco>
      mode gre {<num>|ip|ipv6
      source <ip-addr>|controller-ip|loopback|{vlan <vlan-id>}|{ ipv6 <ipv6-addr>|loopback|
      controller-ip|{vlan <vlan id>}}
      vlan <vlan id>
```

Description

This command configures a Layer-2 or Layer-3 GRE tunnel between a controller and another GRE-capable device.

Syntax

Parameter	Description	Range	Default
`tunnel <number>`	Tunnel Identification number. The tunnel ID used here does not have to match the tunnel ID used in the other controller.	1-16777215	—
`description`	String that describes this tunnel.	—	—
`inter-tunnel-flooding`	Enables inter-tunnel flooding.	—	Enabled
`ip access-group <access-group> in`	Attach a route access control list (ACL) to a L3 GRE tunnel interface. When you associate a routing ACL to inbound traffic on a controller terminating a L3 GRE tunnel, that ACL can forward traffic as normal, route traffic to a nexthop router on a nexthop list, or redirect traffic over an L3 GRE tunnel or tunnel group. For more information on creating a routing ACL, see ip access-list route.	—	—
`ip`	IP address of the Layer 3 tunnel. This represents the entrance to the tunnel. **NOTE:** This address should be a unique, non-	—	—

Parameter	Description	Range	Default
	routable IP address. Enter the following values: • address: The interface IP address of the Layer-3 tunnel. • <ipaddr>: An IPv4 address. **NOTE:** The IP address should not be part of any subnet in your network, nor does it have to be routable in your network. It is used as a gateway for routing your private subnets (i.e., non-routable VLANs) within the GRE tunnel. • internal: IP address allocated from the Remote-Node pool. • <ipmask>: IP address allocated from the Remote-Node pool. • ospf: OSPF interface command.		
`ipv6`	IPv6 address of the Layer-3 GRE tunnel. **NOTE:** This IP address can be configured only for a Layer-3 GRE tunnel (refer to the "*mode gre*" parameter below for details).	-	-
`mode gre`	This parameter a) specifies the tunnel encapsulation method as **GRE** and b) allows you to specify whether it is a Layer-2 or Layer-3 GRE tunnel. • **<16-bit protocol number>**: The 16-bit protocol number uniquely identifies a GRE tunnel. The number format is numeric. The controllers at both endpoints of the tunnel must be configured with the same protocol number. The protocol number does not necessarily have to match the protocol number of the encapsulated frame. The controller encapsulates the entire frame, including the Layer-2 header. • **ip**: Specifies an IPv4 Layer-3 GRE tunnel. The protocol number is set to **0x0800** and is not configurable. Traffic is redirected into the tunnel using a static route or a session ACL policy. The controller encapsulates the Layer-3 packet only. • **ipv6**: Specifies an IPv6 Layer-3 GRE tunnel. The protocol number is set to **0x86DD** and is not configurable. Traffic is redirected into the tunnel using a static route or a session ACL policy. The controller encapsulates the Layer-3 packet only.		
`mtu`	MTU size for the interface.	1024 - 9216	Enabled IPv4: 1100

Parameter	Description	Range	Default
			IPv6: 1500
no	Negates any configured parameter.	—	—
shutdown	Causes a hard shutdown of the interface.	—	—
trusted	• **When Trusted is enabled**: Any device can send any traffic through the GRE tunnel without having to be authenticated. • **When Trusted is disabled**: Any device that is a source of traffic and is sent through the tunnel must be authenticated to be able to send the traffic. If the device is not authenticated, traffic from that device will be subject to the restrictions of the Initial Role specified in the Wired Access AAA Profile. This is the default. For related information, see aaa authentication wired.	—	Disabled
tunnel	Configures tunneling. The default is an IPv4 Layer-3 GRE tunnel.	—	mode gre ip
destination	The destination IP address for the GRE tunnel endpoint. • <ip-addr> IPv4 address for the GRE tunnel's endpoint. • ipv6 <ipv6-addr> IPv6 address for the GRE tunnel's endpoint. • <remote-node-destination-ip> This option provides branch controller support for the case in which the branch controller receives all its configuration data from the master controller. In the remote-node profile on the master, you can specify the tunnel's destination as **remote-node-master-ip**. When this configuration is applied on the branch controller, the tunnel destination is replaced with the branch controller's specified master IP address.	—	—
keepalive	Enables sending of periodic keepalive frames on the tunnel to determine the tunnel status (up or down). You can optionally set the interval at which keepalive frames are sent, and the number of times the frames are resent before a tunnel is considered to be down.	—	Disabled

Parameter	Description	Range	Default
`<interval>`	Number of seconds at which keepalive frames are sent.	1-86400	10 seconds
`<retries>`	Number of consecutive times that the keepalives fail before the tunnel is considered to be down.	0-1024	3
`<cisco>`	The <**cisco**> option enables keepalive interoperability for Layer-3 tunnels between controllers and Cisco network devices. Dell sets the keepalive packet's GRE protocol field to 0x801; however, Cisco sets the GRE protocol field to 0. When this option is enabled, the Dell controller automatically sets the GRE protocol value to 0.		Disabled

`source`	The local endpoint of the tunnel on the controller. This can be one of the following:
	• <A.B.C.D>: Specify an IPv4 address.
	• controller-ip: IPv4 address of the controller.
	• loopback: Loopback interface configured on the controller.
	• vlan <vlanid>: Specify the VLAN interface ID.
	• ipv6: Specify one of the following IPv6 options:
	  ▪ <X:X:X:X::X>: Specify the IPv6 address.
	  ▪ controller-ip: IPv4 address of the controller.
	  ▪ loopback: IPv6 loopback interface configured on the controller.
	  ▪ vlan <vlan id>: Specify the VLAN interface ID.
		—	—

`vlan`	Specifies the VLANs to be included in this tunnel. • <vlan id> Specify the VLAN interface ID. **NOTE:** You can configure a VLAN only if the tunnel mode is set to Layer-2 `(mode gre` *<16-bit protocol number>*). If the tunnel mode is not set to Layer-2 mode, the system displays an error message: *Tunnel is an IP [v6] GRE Tunnel. Change the mode before adding this*.	—	—

Usage Guidelines

You can configure a Layer-2 or Layer-3 GRE tunnel between a Dell controller and another GRE-capable device. The default is an IPv4 Layer-3 GRE tunnel (**tunnel mode gre ip**).

NOTE

In Layer-3 GRE tunnels, IPv6 encapsulated in IPv4 and IPv4 encapsulated in IPv6 are not supported. The only Layer-3 GRE modes supported are IPv4 encapsulated in IPv4 and IPv6 encapsulated in IPv6.

You can direct traffic into the tunnel using a static route (by specifying the tunnel as the next hop for a static route) or a session-based access control list (ACL).

Configuration Examples

Layer-2 GRE Tunnel

The following CLI command configures a Layer-2 GRE tunnel:

The following are the required configurations to create the Layer-2 GRE tunnel between controllers named Controller-1 and Controller-2:

Controller-1 Configuration

```
(Controller-1) (config) # interface tunnel 101
   description "IPv4 Layer-2 GRE 101"
   tunnel mode gre 1
   tunnel source vlan 10
   tunnel destination 20.20.20.249
   tunnel keepalive
   trusted
   tunnel vlan 101
```

Controller-2 Configuration

```
(Controller-2) (config) # interface tunnel 101
   description "IPv4 Layer-2 GRE 101"
   tunnel mode gre 1
   tunnel source vlan 20
   tunnel destination 10.10.10.249
   tunnel keepalive
   trusted
   tunnel vlan 101
```

IPv4 Layer-3 GRE Tunnel

The following CLI command examples configure a Layer-3 GRE tunnel for IPv4 between two controllers.

The following are the required configurations to create the IPv4 Layer-3 GRE tunnel between controllers named Controller-1 and Controller-2:

Controller-1 Configuration

```
(Controller-1) (config) # interface tunnel 202
   description "IPv4 L3 GRE 101"
   tunnel mode gre ip
   ip address 1.1.1.1 255.255.255.255
   tunnel source vlan 10
   tunnel destination 20.20.20.249
   trusted
```

Controller-2 Configuration

```
(Controller-2) (config) # interface tunnel 202
   description "IPv4 L3 GRE 202"
   tunnel mode gre ip
   ip address 1.1.1.2 255.255.255.255
   tunnel source vlan 20
   tunnel destination 10.10.10.249
   trusted
```

IPv6 Layer-3 GRE Tunnel

The following CLI command examples configure a Layer-3 GRE tunnel for IPv6 between two controllers.

The following are the required configurations to create the IPv6 Layer-3 GRE tunnel between controllers named Controller-1 and Controller-2:

Controller-1 Configuration

```
(Controller-1) (config) # interface tunnel 106
   description "IPv6 Layer-3 GRE 106"
   tunnel mode gre ipv6
   ip address 2001:1:2:1::1
   tunnel source vlan 10
   tunnel destination 2001:1:2:2020::1
   trusted
```

Controller-2 Configuration

```
(Controller-2) (config) # interface tunnel 206
   description "IPv6 Layer-3 GRE 206"
   tunnel mode gre ipv6
   ip address 2001:1:2:1::2
   tunnel source vlan 20
   tunnel destination 2001:1:2:1010::1
   trusted
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.2	The **keepalive** parameter is introduced.
ArubaOS 6.4	The **checksum** parameter is deprecated. Tunnel destination **ipv6**, tunnel mode **gre ipv6**, tunnel source **ipv6**, parameters were introduced.
ArubaOS 6.4.3.0	• The tunnel interface limit is changed from 2147483647 to 16777215. • Introduced the **<remote-node-master-ip>** option to the **tunnel destination** parameter. • Introduced the **<cisco>** option to the **tunnel keepalive** parameter.
ArubaOS 6.4.4.0	The **ip access-group** parameter is introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

interface vlan

```
interface vlan <vlan>
   bandwidth-contract <name>
   bcmc-optimization
   description <string>
   ip {access-group <name> in}|{address <ipaddr>|dhcp-client client-id<cid>|internal|pppoe}
   |helper-address <address>|igmp [proxy][snooping]|local-proxy-arp|nat[inside]|{ospf
   {area|authentication|cost|dead-interval|hello-interval|message-digest-
   key|priority|retransmit-interval|transmit-delay}| pppoe-max-segment-size <mss>| pppoe-
   password <password>|pppoe-service-name <service-name>|pppoe-username <username>|routing}
   ipv6 {address <ipv6-address> link-local | [<ipv6-prefix>/<prefix-length> | eui-64]}| {dhcp
   server <pool name>}| {mld snooping | proxy {fastethernet | gigabitethernet | port-channel}
    <slot>/<module>/<port> } | nd {ra [dns | enable | hop-limit | interval | life-time |
   managed-config-flag | mtu | other-config-flag | preference | prefix] | reachable-time
   <value> | retransmit-time <value>}}
   mtu <number>
   multimode-auth {lease-time}
   no ...
   operstate {up}
   option-82 {ap-name essid}|{mac [essid]}
   shutdown
   suppress-arp
```

Description

This command configures a VLAN interface.

Syntax

Parameter	Description	Range	Default
`vlan`	VLAN ID number.	1-4094	—
`bandwidth-contract <name>`	Name of the bandwidth contract to be applied to this VLAN interface. When applied to a VLAN, the contract limits both broadcast and multicast traffic. Use the **aaa bandwidth-contract** command to configure a bandwidth contract.	—	—
`bcmc-optimization`	Enables broadcast and multicast traffic optimization to prevent flooding of broadcast and multicast traffic on VLANs. If this feature is enabled on uplink ports, any controller-generated Layer-2 packets will be dropped.	—	disabled
`description`	String that describes this interface.	—	802.1q VLAN
`ip`	Configures IPv4 for this interface.		
`access-group <name> in`	Assigns an access list to inbound traffic on the interface, where <name> is the name of an access list.		

Parameter	Description	Range	Default
address	Configures the IP address for this interface, which can be one of the following: <ipaddr> <netmask> • dhcp-client: use DHCP to obtain the IP address • internal: IP address allocated from the branch group config. • pppoe: use PPPoE to obtain the IP address	—	—
helper-address	IP address of the DHCP server for relaying DHCP requests for this interface. If the DHCP server is on the same subnetwork as this VLAN interface, you do not need to configure this parameter.	—	—
igmp	Enables IGMP and/or IGMP snooping on this interface.	—	—
local-proxy-arp	Enables local proxy ARP.	—	—
nat inside	Enables source network address translation (NAT) for all traffic routed from this VLAN. **CAUTION:** All ports on the controller are assigned to VLAN 1 by default. Do not enable the **nat inside** option for VLAN 1, as this will prevent IPsec connectivity between the controller and its IPsec peers.	—	—
ospf	Define an OSPF area. See ip ospf on page 527 for complete details on this command.	—	—
pppoe-max-segment-site	Configures the TCP maximum segment size in bytes.	128	—
pppoe-password	Configures the PAP password on the PPPoE Access Concentrator for the switch.	1–80	—
pppoe-service-name	Configures the PPPoE service name.	1–80	—
pppoe-username	Configures the PAP username on the PPPoE Access Concentrator for the switch.	1–80	—
routing	Enables layer-3 forwarding on the VLAN interface. To disable layer-3 forwarding, you must configure the IP address for the interface and specify **no ip routing**.	—	(enabled)
ipv6	Configures IPv6 for this interface.	—	—

Parameter	Description	Range	Default
`address`	Configures the link local address or the global unicast address for this interface.	—	—
`dhcp`	Configures dynamic host configuration protocol for IPv6. **server** - Configures the DHCPv6 pool for the vlan.	—	—
`mld`	Enables Multicast Listener Discovery (MLD) on this interface. **snooping**— Configures the MLD snooping on this interface. **proxy**—Configures MLD proxy on the following interfaces. • fastethernet • gigabitethernet • port-channel	—	—
`nd {ra | reachable-time |retransmit-time}`	Configures the IPv6 neighbor discovery options. • **ra**—configures the following router advertizement options: • **dns**—Configures IPv6 recursive DNS server • **enable**—Enables IPv6 RA • **hop-limit**—Configures RA hop-limit • **interval**—Configures RA interval • **life-time**—Configures RA lifetime • **managed-config-flag**—Enables hosts to use DHCP server for stateful address autoconfiguration • **mtu**—Configures maximum transmission unit for RA • **other-config-flag**—Enables hosts to use DHCP server for other non-address stateful autoconfiguration • **preference**—Configures a router preference • **prefix**—Configures IPv6 RA prefix • **reachable-time**—configures neighbor discovery reachable time • **retransmit-time**—configures neighbor discovery retransmit time	—	—

Parameter	Description	Range	Default
`no`	Negates any configured parameter.	—	—
`mtu`	MTU setting for the VLAN.	1024-1500	—
`multimode-auth`	MultiMode Authentication Support on VLAN	—	—
`operstate up`	Set the state of the interface to be up.	—	—
`option-82 {ap-name [essid] |mac [essid]}`	Allows a DHCP relay agent to insert circuit specific information into a request that is being forwarded to a DHCP server. The controller, when acting as a DHCP relay agent, needs to be able to insert information about the AP and SSID through which a client is connecting into the DHCP request. Many service providers use this mechanism to make access control decisions. You can include: • AP name or AP name and ESSID. • MAC address or MAC address and ESSID.	—	—
`shutdown`	Causes a hard shutdown of the interface.	—	—
`suppress-arp`	Prevents flooding of ARP broadcasts on all the untrusted interfaces.	—	—

Usage Guidelines

All ports on the controller are assigned to VLAN 1 by default. Use the **interface fastethernet | gigabitethernet** command to assign a port to a configured VLAN. Use the **show interface vlan** and **show user** commands to view DHCP option-82 related output.

Example

The following command configures a VLAN interface:

```
(host) (config) #interface vlan 16
  ip address 10.26.1.1 255.255.255.0
  ip helper-address 10.4.1.22
```

Related Commands

Command	Description
ip access-list route	This command configures an access control list (ACL) for policy-based routing (PBR).
ip nexthop-list	Use this command to define a next-hop list for a routing policy
routing-policy-map	This command associates a routing access control list (ACL) with a user role.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3	The **ipv6** parameters were introduced.
ArubaOS 3.4	The **igmp snooping** parameter was deprecated. For information on configuring IGMP snooping, see interface vlan ip igmp proxy on page 483.
ArubaOS 6.0	The **pppoe-max-segment-site**, **pppoe-password**, **pppoe-service-name** and **pppoe-password** parameters were introduced.
ArubaOS 6.1	The **option-82** parameter was introduced.
ArubaOS 6.2	The **nd** parameter for configuring neighbor discovery and router advertizement options was introduced.
ArubaOS 6.3	The **proxy** parameter was introduced to enable MLD proxy in a VLAN.
ArubaOS 6.4	The **dhcp** parameter for configuring dynamic host configuration protocol for IPv6 was introduced.
ArubaOS 6.4.3.0	The **access-group <name>** parameter was introduced to associate the interface with an ACL. For the **option-82** parameter, the **ap-name [essid]** sub-parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

interface vlan ipv6

```
interface vlan <vlan ID>
   ipv6 {address <ipv6-address> link-local | [<ipv6-prefix>/<prefix-length> | eui-64]
   ipv6 dhcp server <pool-name>
   ipv6 mld [snooping]
   ipv6 nd {ra [dns | enable | hop-limit | interval | life-time | managed-config-flag | mtu |
   other-config-flag | preference | prefix] | reachable-time <value> | retransmit-time
   <value>}}
```

Description

This command configures the IPv6 link local address or the global unicast address, and the IPv6 router advertisement parameters for this interface.

Syntax

Parameter	Description	Range	Default
`<ipv6 address> link-local`	Configures the specified IPv6 address as the link local address for this interface.	—	—
`<ipv6-prefix>/<prefix-length>`	Specify the IPv6 prefix/prefix-length to configure the global unicast address for this interface.	—	—
`eui-64`	Specify this optional parameter to configure the global unicast address in Extended Universal Identifier 64 bit format (EUI-64) for this interface.	—	—
`ipv6 dhcp server <pool-name>`	Specify the DHCPv6 server pool name for this VLAN. The configured DHCPv6 pool sub-net must match the interface prefix for DHCPv6 Server to be active.	—	—
`ipv6 nd`	Configures the IPv6 neighbor discovery options for router advertizement functionality.	—	—
`ra`	Configures the following router advertisement options: • **dns**—Configures IPv6 recursive DNS server. • **enable**—Enables IPv6 RA. • **hop-limit**—Configures RA hop-limit. • **interval**—Configures RA interval. • **life-time**—Configures RA lifetime. • **managed-config-flag**—Enables hosts to use DHCP server for stateful address autoconfiguration	—	—

Parameter	Description	Range	Default
	• **mtu**—Configures maximum transmission unit for RA. • **other-config-flag**—Enables hosts to use DHCP server for other non-address stateful autoconfiguration. • **preference**—Configures a router preference. • **prefix**—Configures IPv6 RA prefix.		
`reachable-time <value>`	Configures the neighbor discovery reachable time in msec.	0 - 3,600,000	0
`retransmit-time <value>`	Configures the neighbor discovery retransmit time in msec.	0 - 3,600,000	

Usage Guidelines

You can use this command to configure the IPv6 link local address and the global unicast address for this interface.

Example

The following example configures the link local address for the VLAN 1.

```
(host) (conf)# interface vlan 1
   (config-subif)#ipv6 address fe80::b:8600:50d:7700 link-local
```

The following example configures the global unicast address in EUI-64 format for the VLAN 1.

```
(host) (conf)# interface vlan 1
   (config-subif)#ipv6 address 2001:DB8:0:3::/64 eui-64
```

Command History

Release	Modification
ArubaOS 6.1	This command was introduced.
ArubaOS 6.2	The **nd** parameter for configuring neighbor discovery and router advertisement options was introduced.
ArubaOS 6.3	The **dhcp server <pool-name>** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

interface vlan ip igmp proxy

```
interface vlan <vlan>
   ip igmp snooping|{proxy fastethernet|gigabitethernet <slot>/<module>/<port> }
```

Description

This command enables IGMP and/or IGMP snooping on this interface, or configures a VLAN interface for uninterrupted streaming of multicast traffic.

Syntax

Parameter	Description
`snooping`	Enable IGMP snooping. The IGMP protocol enables an router to discover the presence of multicast listeners on directly-attached links. Enable IGMP snooping to limit the sending of multicast frames to only those nodes that need to receive them.
`proxy`	Enable IGMP on this interface.
`fastethernet`	Enable IGMP proxy on the FastEthernet (IEEE 802.3) interface.
`gigabitethernet`	Enable IGMP proxy on the GigabitEthernet (IEEE 802.3) interface.
`<slot>/<module>/<port>`	Any command that references a Fast Ethernet or Gigabit Ethernet interface requires that you specify the corresponding port on the controller in the format <slot>/<module>/<port>.

Usage Guidelines

The newer IGMP proxy feature and the older IGMP snooping feature cannot be enabled at the same time, as both features add membership information to multicast group table. For most multicast deployments, you should enable the IGMP Proxy feature on all VLAN interfaces to manage all the multicast membership requirements on the controller. If IGMP snooping is configured on some of the interfaces, there is a greater chance that multicast information transfers may be interrupted.

Example

The following example configures IGMP proxy for vlan 2. IGMP reports from the controller would be sent to the upstream router on fastethernet port 1/3.

```
(host) (conf)# interface vlan 2
   (conf-subif)# ip igmp proxy fastethernet 1/3
```

Related Commands

This release of ArubaOS supports version 1 of the Multicast Listener Discovery (MLD) protocol (MLDv1). MLDv1, defined in RFC 2710, is derived from version 2 of the IPv4 Internet Group Management Protocol (IGMPv2)

Issue the command **interface vlan <vlan> ipv6 mld** to enable the MLD protocol and allow an IPv6 router to discover the presence of multicast listeners on directly-attached links. Use the CLI command **interface vlan**

<vlan> ipv6 mld snooping, and the IPv6 router will send multicast frames to only those nodes that need to receive them.

Command History

This command was introduced in ArubaOS 3.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ip access-list eth

```
ip access-list eth {<number>|<name>}
   deny {<ethtype> [<bits>]|any} [mirror] [position}
   no ...
   permit {<ethtype> [<bits>]|any} [mirror][position]
```

Description

This command configures an Ethertype access control list (ACL).

Syntax

Parameter	Description	Range
`eth`	Enter a name, or a number in the specified range.	200-299
`deny`	Reject the specified packets, which can be one of the following: • Ethertype in decimal or hexadecimal (0-65535) and optional wildcard (0-65535) • any: match any Ethertype Optionally, you can configure the mirror parameter, which mirrors packets to a datapath or remote destination, or set the position of the ACL. The default position is last, a position of 1 puts the ACL at the top of the list.	—
`no`	Negates any configured parameter.	—
`permit`	Allow the specified packets, which can be one of the following: • Ethertype in decimal or hexadecimal (0-65535) and optional wildcard (0-65535) • any: match any Ethertype Optionally, you can configure the mirror parameter, which mirrors packets to a datapath or remote destination, or set the position of the ACL. The default position is last, a position of 1 puts the ACL at the top of the list.	—

Usage Guidelines

The Ethertype field in an Ethernet frame indicates the protocol being transported in the frame. This type of ACL filters on the Ethertype field in the Ethernet frame header, and is useful when filtering non-IP traffic on a physical port. This ACL can be used to permit IP frames while blocking other non-IP protocols such as IPX or Appletalk.

If you configure the mirror option, define the destination to which mirrored packets are sent in the firewall policy. For more information, see firewall on page 374.

Example

The following command configures an Ethertype ACL:

```
(host) (config) #ip access-list eth 200
   deny 809b
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3	The **mirror** parameter was introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license.	Config mode on master controllers

ip access-list extended

```
ip access-list extended {<number>|<name>}
   deny <protocol> <source> <dest>
   ipv6
   no ...
   permit <protocol> <source> <dest>
```

Description

This command configures an extended access control list (ACL). To configure IPv6 specific rules, use the `ipv6` keyword for each rule.

Syntax

Parameter	Description	Range
`extended`	Enter a name, or a number in the specified range.	100-199, 2000-2699
`ipv6`	Use the ipv6 keyword to add IPv6 specific rules.	–
`deny`	Reject the specified packets.	–
`<protocol>`	Protocol, which can be one of the following: • Protocol number between 0-255 • any: any protocol • icmp: Internet Control Message Protocol • igmp: Internet Gateway Message Protocol • tcp: Transmission Control Protocol • udp: User Datagram Protocol	—
`<source>`	Source, which can be one of the following: • Source address (IPv4 or IPv6) and wildcard • any: any source • host: specify a single host IP address	—
`<dest>`	Destination, which can be one of the following: • Destination address (IPv4 or IPv6) and wildcard • any: any destination • host: specify a single host IP address	—
`no`	Negates any configured parameter.	—
`permit`	Allow the specified packets.	

Parameter	Description	Range
<protocol>	Protocol, which can be one of the following: • Protocol number between 0-255 • any: any protocol • icmp: Internet Control Message Protocol • igmp: Internet Gateway Message Protocol • tcp: Transmission Control Protocol • udp: User Datagram Protocol	—
<source>	Source, which can be one of the following: Source address (IPv4 or IPv6) and wildcard any: any source host: specify a single host IP address	—
<dest>	Destination, which can be one of the following: Destination address (IPv4 or IPv6) and wildcard any: any destination host: specify a single host IP address	—

Usage Guidelines

Extended ACLs are supported for compatibility with router software from other vendors. This ACL permits or denies traffic based on the source or destination IP address or IP protocol.

Example

The following command configures an extended ACL:

```
(host) (config) #ip access-list extended 100
  deny any host 1.1.21.245 any
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode on master and local controllers

ip access-list ip-geolocation

```
ip access-list geolocation <accname>
   deny <from> <to>
   no <deny> <permit>
   permit <from> <to>
```

Description

This command configures a geolocation access list.

Syntax

Parameter	Description	Range
deny	Reject the specified packets.	–
<from>	Specify the source of the packets. Valid values are: • anonymous_proxy - Match packets from/to anonymous proxy • any - Match any location • country - Match packets from/to country • region - Match packets from/to region	—
<to>	Specify the destination of the packets. Valid values are: • anonymous_proxy - Match packets from/to anonymous proxy • any - Match any location • country - Match packets from/to country • region - Match packets from/to region	—
no	Deletes the packet.	
<deny>	Specify the packets to be rejected.	—
<permit>	Specify the packets to be permitted.	—
permit	Forward the specified packet.	
<from>	Specify the source of the packets. Valid values are: • anonymous_proxy - Match packets from/to anonymous proxy • any - Match any location • country - Match packets from/to country • region - Match packets from/to region	—
<to>	Specify the destination of the packets. Valid values are: • anonymous_proxy - Match packets from/to anonymous proxy	—

Parameter	Description	Range
	• any - Match any location • country - Match packets from/to country • region - Match packets from/to region	

Example

The following command denies packets from China :

```
(host) (config-global-geolocation-acl)#deny from country china
```

Command History

This command was available in ArubaOS 6.5.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers.

ip access-list mac

```
ip access-list mac {<number>|<name>}
   deny {<macaddr>[<wildcard>]|any|host <macaddr>} [mirror]
   no ...
   permit {<macaddr>[<wildcard>]|any|host <macaddr>} [mirror]
```

Description

This command configures a MAC access control list (ACL).

Syntax

Parameter	Description	Range
`mac`	Configures a MAC access list. Enter a name, or a number in the specified range.	700-799, 1200-1299
`deny`	Reject the specified packets, which can be the following: MAC address and optional wildcard any: any packets host: specify a MAC address Optionally, you can configure the mirror parameter, which mirrors packets to a datapath or remote destination.	—
`no`	Negates any configured parameter.	—
`permit`	Allow the specified packets, which can be the following: MAC address and optional wildcard any: any packets host: specify a MAC address Optionally, you can configure the mirror parameter, which mirrors packets to a datapath or remote destination.	—

Usage Guidelines

MAC ACLs allow filtering of non-IP traffic. This ACL filters on a specific source MAC address or range of MAC addresses.

If you configure the mirror option, define the destination to which mirrored packets are sent in the firewall policy. For more information, see firewall on page 374.

Example

The following command configures a MAC ACL:

```
(host) (config) #ip access-list mac 700
   deny 11:11:11:00:00:00
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3	The **mirror** parameter was introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode

ip access-list route

```
ip access-list route <name>
   <source> <dest> <service> <action> forward|route {ipsec-map <ipsec-map-name>}|{next-hop-
   list <next-hop-list-name>}|{tunnel <tunnel-id>}|{tunnel-group <tunnelgroupname>} [position
   <position>]
```

Description

This command configures an access control list (ACL) for policy-based routing (PBR).

Syntax

Parameter	Description
<source>	The traffic source, which can be one of the following: • **alias<name>**: specify the network resource (use the **netdestination** command to configure aliases; use the **show netdestination** command to see configured aliases) • **any**: match any traffic • **host <ip-addr>**: specify a single host IP address • **localip**: specify the local IP address to match traffic • **network <ip-addr> <netmask>**: specify the IP address and netmask • **user**: represents the IP address of the user
<dest>	The traffic destination, which can be one of the following: • **alias<name>**: specify the network resource (use the **netdestination** command to configure aliases; use the **show netdestination** command to see configured aliases) • **any**: match any traffic • **host <ip-addr>**: specify a single host IP address • **localip**: specify the local IP address to match traffic • **network <ip-addr> <netmask>**: specify the IP address and netmask • **user**: represents the IP address of the user
<service>	Network service to which the ACL is applied. The service can be one of the following: • **<0-255>**: IP protocol number (0-255) • **<string>**: name of a network service (use the show netservice command to see configured services) • **any**: match any traffic • **app<string>**: application name. (For a complete list of supported applications, issue the command **show dpi application all**.) • **appcategory <string>**: application category name. (For a complete list of supported applications, issue the command **show dpi application all**.) • **tcp <0-65535>:** specify the TCP destination port number (0-65535) • **tcp source<0-65535>**: TCP source port number

Parameter	Description
	• **udp <0-65535>:** UDP destination port number (0-65535) • **udp source<0-65535>**: UDP source port number
<action>	Action if rule is applied, which can be one of the following: • **forward**: Explicitly define an ACL with a forward action to skip policy-based routing for traffic which would otherwise match another policy-based routing rule. • **route ipsec-map <ipsec-map-name>**: Redirected over a VPN tunnel by specifying the ipsec-map name. For more information on IPsec maps, see crypto-local ipsec-map. • **route next-hop-list <next-hop-list-name>**: Packets can be routed to a nexthop router on a nexthop list by specifying the nexthop list name. For more information on nexthop lists, see ip nexthop-list. • **route tunnel <tunnel-id>**: Packets can be redirected over an L3 GRE tunnel. • **route tunnel-group <tunnelgroupname>**: Packets can be redirected over an L3 GRE tunnel group. For more information on tunnel groups, see tunnel-group. • **[position <position>]**: (Optional) Specify the position of the forwarding or routing rule. (1 is first, default is last)

Usage Guidelines

Policy-based routing is an optional feature that allows allows packets to be routed based on access control lists (ACLs) configured by the administrator. By default, when a controller receives a packet for routing, it looks up the destination IP in the routing table and forwards the packet to the nexthop router. If policy-based routing is configured, the nexthop device can be chosen based on a defined access control list.

In a typical deployment scenario with multiple uplinks, the default route only uses one of the uplink next-hops for forwarding packets. If a nexthop becomes unreachable, the packets will not reach their destination. If your deployment uses policy-based routing based on a nexthop list, any of the uplink nexthops could be used for forwarding traffic. This requires a valid ARP entry (Route-cache) in the system for all the policy-based routing nexthops.

Example

The following command configures a routing access list using an IPsec map.

```
(host)(config)# ip access-list route pbr1
   any any udp 100 route ipsec-map VPN1
```

Related Commands

Command	Description
routing-policy-map	This command associates a routing access control list (ACL) with a user role.
interface vlan ip access-group	This command associates a routing access control list (ACL) with a specific VLAN.
ip nexthop-list	Use this command to define a next-hop list for a routing policy

Command History

Release	Modification
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platform	License	Command Mode
All platforms	Requires the PEFNG license	Config mode

ip access-list session

```
ip access-list session <accname>
   <source> <dest> <service> <action> [<extended action>]
   ipv6 <source> <dest> <service> <action> [<extended action>]
   no ...
```

Description

This command configures an access control list (ACL) session. To create IPv6 specific rules, use the `ipv6` keyword.

Syntax

Parameter	Description
`<accname>`	Name of an access control list session.
`ipv6`	Use the ipv6 keyword to create IPv6 specific rules.
`<source>`	The traffic source, which can be one of the following: **alias**: specify the network resource (use the **netdestination** command to configure aliases; use the **show netdestination** command to see configured aliases) **any**: match any traffic **host**: specify a single host IP address **localip**: specify the local IP address to match traffic **network**: specify the IP address and netmask **user**: represents the IP address of the user
`<dest>`	The traffic destination, which can be one of the following: **alias**: specify the network resource (use the **netdestination** command to configure aliases; use the **show netdestination** command to see configured aliases) **any**: match any traffic **host**: specify a single host IP address **localip**: specify the local IP address to match traffic **network**: specify the IP address and netmask **user**: represents the IP address of the user
`<service>`	Network service, which can be one of the following: **IP protocol number** (0-255) **name of a network service** (use the show netservice command to see configured services) **any**: match any traffic **app**: application name. (For a complete list of supported applications, issue the command **show dpi application all**.)

Parameter	Description
	appcategory: application category name. (For a complete list of supported applications, issue the command **show dpi application all**.) **tcp destination port number**: specify the TCP port number (0-65535) **tcp source**: TCP/UDP source port number **udp**: specify the UDP port number (0-65535) **web-cc-category:** name of an a web content category. For the full list of available web content categories, issue the command **show web-cc categories**. **web-cc-reputation**: any of the predefined web content reputation levels. • high-risk • low-risk • moderate-risk • suspicious • trustworthy
<action>	Action if rule is applied, which can be one of the following: **deny**: Reject packets. Applicable to both IPv4 and IPv6. **dst-nat**: Performs destination NAT on packets. Forward packets from source network to destination; re-mark them with destination IP of the target network. This action functions in tunnel/decrypt-tunnel forwarding mode. User should configure the NAT pool in the controller. **dual-nat**: Performs both source and destination NAT on packets. Source IP and destination IP is changed as per the NAT pool configured. This action functions in tunnel/decrypt-tunnel forwarding mode. User should configure the NAT pool in the controller. **permit:** Forward packets. Applicable to both IPv4 and IPv6. **redirect**: Specify the location to which packets are redirected. The following are applicable only to IPv4: • Datapath destination ID (**0-65535**). • **esi-group**: Specify the ESI server group configured with the esi group command. • **tunnel**: Specify the ID of the tunnel configured with the interface tunnel command. **webcc-reputation**: Assign one of the predefined web content reputation levels to the packets. The following are applicable only to IPv6: • **tunnel**: Specify the ID of the tunnel configured with the interface tunnel command. • **tunnel-group**: Specify the tunnel-group configured with the interface tunnel command. **route:** Specify the next hop to which packets are routed, which can be one of the following: • **dst-nat:** Destination IP changes to the IP configured from the NAT pool. This action functions in bridge/split-tunnel forwarding mode. User should configure the NAT pool in the controller. • **src-nat:**Source IP changes to RAP's external IP. This action functions in bridge/split-

Parameter	Description
	tunnel forwarding mode and uses implied NAT pool. **src-nat**: Performs source NAT on packets. Source IP changes to the outgoing interface IP address (implied NAT pool) or from the pool configured (manual NAT pool). This action functions in tunnel/decrypt-tunnel forwarding mode.
`<extended action>`	Optional action if rule is applied, which can be one of the following: **blacklist**: blacklist user if ACL gets applied. **classify-media:** Monitors user UDP packets to classify them as media and tag accordingly. **NOTE:** *Use this parameter only for voice and video signaling and control sessions as it causes deep packet inspection of all UDP packets from/to users.* **disab le-scanning**: pause ARM scanning while traffic is present. Note that you must enable "VoIP Aware Scanning" in the ARM profile for this feature to work. **dot1p-priority**: specify 802.1p priority (0-7) **log**: generate a log message **mirror**: mirror all session packets to datapath or remote destination If you configure the mirror option, define the destination to which mirrored packets are sent in the firewall policy. For more information, see firewall on page 374. **next-hop-list:** Route packet to the next hop in the list. **position**: specify the position of the rule (1 is first, default is last) **queue**: assign flow to priority queue (high/low) **send-deny-response**: if <action> is deny, send an ICMP notification to the source **time-range**: specify time range for this rule (configured with time-range command) **tos**: specify ToS value (0-63)
`no`	Negates any configured parameter.

Usage Guidelines

Session ACLs define traffic and firewall policies on the controller. You can configure multiple rules for each policy, with rules evaluated from top (1 is first) to bottom. The first match terminates further evaluation. Generally, you should order more specific rules at the top of the list and place less specific rules at the bottom of the list. The ACL ends with an implicit deny all. To configure IPv6 rules, use the `ipv6` keyword followed by the regular ACL keywords.

Example

The following CLI configuration shows how pre-classification and post-classification occurs during enforcement.

Each application has an implicit set of ports that are used for communication. In phase 1, if an application ACE entry is hit, the traffic matching this application's implicit port is allowed (as governed by the application ACE). The DPI engine can monitor the exchange on these ports and determine the application. Once the application is determined, phase 2 occurs when an evaluation is done to determine the final outcome for the session.

The following CLI configuration example is a user role with both the global and role session ACLs:

```
ip access-list session global-sacl
ip access-list session apprf-employee-sacl
```

```
ip access-list session control
   any any app gmail-chat permit
   any any app youtube permit
   any any any deny
```

This example shows a DPI rule along with a L3/L4 rule with forwarding action in the same ACL.

```
ip access-list session AppRules
   any any app Facebook permit tos 45
   any any app YouTube deny
   any any appcategory peer-to-peer deny
   any any tcp 23 permit
   network 40.1.0.0/16 any tcp 80 permit tos 60
   network 20.1.0.0/16 any tcp 80 src-nat
!
ip access-list session NetRules
   network 80.0.0.0/24 any tcp 80 deny
   network 60.0.0.0/24 any tcp 80 dual-nat pool <pool1>
   network 10.0.0.0/24 any tcp 80 dst-nat
!
user-role Role1
   session-acl AppRules
   session-acl NetRules
!
```

The following command configures a session ACL with IPv4 and IPv6 address:

```
(host) (config)#ip access-list session common
(host) (config-sess-common)#host 10.12.13.14 any any permit
(host) (config-sess-common)#ipv6 host 11:12:11:11::2 any any permit
```

The following example displays information for an ACL called mylist:

```
(host) (config) #show ip access-list mylist
ip access-list session mylist
mylist
---------
Priority  Source  Destination  Service  Application  Action  TimeRange  Log  Expired  Queue
TOS  8021P  Blacklist  Mirror  DisScan  ClassifyMedia  IPv4/6  Contract
--------  ------  -----------  -------  -----------  ------  ---------  ---  -------  -----  -
--  -----  ---------  ------  -------  -------------  ------  --------
1         any     any                  app gmail    deny                              Low
                                                    4
```

The following example shows how this local-override netdestination alias is used in the controller:

```
(config) #ip access-list  session store-override
(config-sess-store-override)#any alias store any permit
(config-sess-store-override)#alias store any any deny
(config-sess-store-override)#!
(config) #show ip interface brief
   Interface                  IP Address / IP Netmask        Admin   Protocol
   vlan 1                  172.72.10.254 / 255.255.255.0     up      up
   vlan 55                    55.55.55.1 / 255.255.255.0     up      up
   loopback                   unassigned / unassigned        up      up
(config) #show acl acl-table | include store-override 81   session     744   2  3  store-
override     0
(config) #show acl ace-table acl  81
   744: any 55.55.55.36 255.255.255.255  0  0-0  0-0  f80001:permit
   745: 55.55.55.36 255.255.255.255 any  0  0-0  0-0  f80000:deny
   746: any any  0  0-0  0-0  f180000:deny
```

Command History

Release	Modification
ArubaOS 3.0	This command was introduced.
ArubaOS 6.3	The **any tcp source** parameter was introduced.
ArubaOS 6.4	The **redirect** parameter was introduced under action. The **app**, and **appcategory** parameters were introduced under service.
ArubaOS 6.4.2.0	The **web-cc-category** and **web-cc-reputation** parameters were introduced, allowing users to define an ACL for a web content category or web content reputation type.
ArubaOS 6.4.4	The **local-override** alias was introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode on master controllers

ip access-list standard

```
ip access-list standard {<number>|<name>}
   deny {<ipaddr> <wildcard>|any|host <ipaddr>}
   no ...
   permit {<ipaddr> <wildcard>|any|host <ipaddr>}
```

Description

This command configures a standard access control list (ACL).

Syntax

Parameter	Description	Range
`standard`	Enter a name, or a number in the specified range.	1-99, 1300-1399
`ipv6`	Use the ipv6 keyword to create IPv6 specific standard rules.	
`deny`	Reject the specified packets, which can be the following: IP address and optional wildcard any: any packets host: specify a host IP address	—
`no`	Negates any configured parameter.	—
`permit`	Allow the specified packets, which can be the following: IP address and optional wildcard any: any packets host: specify a host IP address	—

Usage Guidelines

Standard ACLs are supported for compatibility with router software from other vendors. This ACL permits or denies traffic based on the source address of the packet.

Example

The following command configures a standard ACL:

```
(host) (config) #ip access-list standard 1
   permit host 10.1.1.244
```

Command History

Introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode on master controllers

ip cp-redirect-address

```
ip cp-redirect-address <ipaddr> | disable
```

Description

This command configures a redirect address for captive portal.

Syntax

Parameter	Description
`<ipaddr>`	Host address with a 32-bit netmask. This address should be routable from all external networks.
`disable`	Disables automatic DNS resolution for captive portal.

Usage Guidelines

This command redirects wireless clients that are on different VLANs (from the controller's IP address) to the captive portal on the controller.

If you have the Next Generation Policy Enforcement Firewall (PEFNG) license installed in the controller, modify the captive portal session ACL to permit HTTP/S traffic to the destination **cp-redirect-address <ipaddr>** instead of **mswitch**. If you do not have the PEFNG license installed in the controller, the implicit captive-portal-profile ACL is automatically modified when you issue this command.

Example

The following command configures a captive portal redirect address:

```
(host) (config) #ip cp-redirect-address
```

Command History

Introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip default-gateway

```
ip default-gateway <ipaddr>|{import cell|dhcp|pppoe}|{ipsec <name>} <cost>
```

Description

This command configures the default gateway for the controller.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the default gateway.
`import`	Use a gateway IP address obtained through the cell interface, DHCP or PPPoE. The default gateway is imported into the routing table and removed when the uplink is no longer active.
`cell`	Use a gateway IP address obtained through the cell interface.
`dhcp`	Use a gateway IP address obtained DHCP.
`pppoe`	Use a gateway IP address obtained through PPPoE.
`ipsec <name>`	Define a static route using an ipsec map.
`<cost>`	Distance metric for this route.

Usage Guidelines

You can use this command to set the default gateway to the IP address of the interface on the upstream router or switch to which you connect the controller. If you define more than one dynamic gateway type, you must also define a cost for the route to each gateway. The controller will first attempt to obtain a gateway IP address using the option with the lowest cost. If the controller is unable to obtain a gateway IP address, it will then attempt to obtain a gateway IP address using the option with the next-lowest path cost.

Example

The following command configures the default gateway for the controller:

```
(host) (config) #ip default-gateway 10.1.1.1
```

Command History

Introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip dhcp excluded-address

```
ip dhcp excluded-address <low-ipaddr> [<high-ipaddr>]
```

Description

This command configures an excluded address range for the DHCP server on the controller.

Syntax

Parameter	Description
`<low-ipaddr>`	Low end of range of IP addresses. For example, you can enter the IP address of the controller so that this address is not assigned.
`<high-ipaddr>`	High end of the range of IP addresses.

Usage Guidelines

Use this command to specifically exclude certain addresses from being assigned by the DHCP server. Ensure that the statically assigned IP addresses are excluded.

Example

The following command configures an excluded address range:

```
ip dhcp excluded-address 192.168.1.1 192.168.1.255
```

Command History

Introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in base operating system	Config mode on master controllers

ip dhcp pool

```
ip dhcp pool <name>
   default-router <ipaddr> ...
   dns-server {<ipaddr> ... |import}
   domain-name <name>
   lease <days> <hours> <minutes>
   netbios-name-server {<ipaddr> ... |import}
   network <ipaddr> {<netmask>|<prefix>}
   no ...
   option <code> ip <ipaddr>
   pooltype ipupsell|private|public
   vendor-class-identifier
```

Description

This command configures a DHCP pool on the controller.

Syntax

Parameter	Description
`default-router`	IP address of the default router for the DHCP client. The client should be on the same subnetwork as the default router. You can specify up to eight IP addresses.
`dns-server`	IP address of the DNS server, which can be one of the following:
`<address>`	IP address of the DNS server. You can specify up to eight IP addresses.
`import`	Use the DNS server address obtained through PPPoE or DHCP.
`domain-name`	Domain name to which the client belongs.
`lease`	The amount of time that the assigned IP address is valid for the client. Specify the lease in <days> <hours> <minutes>.
`netbios-name-server`	IP address of the NetBIOS Windows Internet Naming Service (WINS) server, which can be one of the following:
`<address>`	IP address of the WINS server. You can specify up to eight IP addresses.
`import`	Use the NetBIOS name server address obtained through PPPoE or DHCP.
`network`	Range of addresses that the DHCP server may assign to clients, in the form of <ipaddr> and <netmask> or <ipaddr> and <prefix> (/n).
`no`	Negates any configured parameter.
`option`	Client-specific option code and IP address. See RFC 2132, “DHCP Options and BOOTP Vendor Extensions”.

Parameter	Description
`pooltype`	Configure one of the following DHCP Pool types • ipupsell: Configure the DHCP pool as an IP upsell pool • private: Configure the DHCP pool as private • public: Configure the DHCP pool as public
`vendor-class-identifier`	Send the ArubaAP vendor ID to clients.

Usage Guidelines

A DHCP pool should be created for each IP subnetwork for which DHCP services should be provided. DHCP pools are not specifically tied to VLANs, as the DHCP server exists on every VLAN. When the controller receives a DHCP request from a client, it examines the origin of the request to determine if it should respond. If the IP address of the VLAN matches a configured DHCP pool, the controller answers the request.

Example

The following command configures a DHCP pool:

```
(host) (config) #ip dhcp pool floor1
  default-router 10.26.1.1
  dns-server 192.168.1.10
  domain-name floor1.test.com
  lease 0 8 0
  network 10.26.1.0 255.255.255.0
```

Command History

Introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip domain lookup

```
ip domain lookup
```

Description

This command enables Domain Name System (DNS) hostname to address translation.

Syntax

There are no parameters for this command.

Usage Guidelines

This command is enabled by default. Use the **no** form of this command to disable.

Example

The following command enables DNS hostname translation:

```
(host)(config) #ip domain lookup
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip domain-name

```
ip domain-name <name>
```

Description

This command configures the default domain name.

Syntax

Parameter	Description
`domain-name`	Name used to complete unqualified host names. Do not specify the leading dot (.).

Usage Guidelines

The controller uses the default domain name to complete hostnames that do not contain domain names. You must have at least one domain name server configured on the controller (see ip name-server on page 523).

Example

The following command configures the default domain name:

```
(host) (config) #ip domain-name yourdomain.com
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip igmp

```
ip igmp
   last-member-query-count <number>
   last-member-query-interval <seconds>
   max-members-per-group <val>
   query-interval <seconds>
   query-response-interval <.1 seconds>
   quick-client-convergence
   robustness-variable <2-10>
   ssm-range
   startup-query-count <number>
   startup-query-interval <seconds>
   version-1-router-present-timeout <seconds>
```

Description

This command configures Internet Group Management Protocol (IGMP) timers and counters.

Syntax

Parameter	Description	Range	Default
`last-member-query-count`	Number of group-specific queries that the controller sends before assuming that there are no local group members.	1-65535	2
`last-member-query-interval`	Maximum time, in seconds, that can elapse between group-specific query messages.	1-65535 seconds	10 seconds
`max-members-per-group`	Configure maximum members per group.	1-65535	300
`query-interval`	Interval, in seconds, at which the controller sends host-query messages to the multicast group address 224.0.0.1 to solicit group membership information.	1-65535 seconds	125 seconds
`query-response-interval`	Maximum time, in 1/10th seconds, that can elapse between when the controller sends a host-query message and when it receives a response. This must be less than the query-interval.	1-65535 seconds	100 (10 seconds)
`quick-client-convergence`	Trigger IGMP reports from client during roaming.	—	—
`robustness-variable`	Increase this value to allow for expected packet loss on a subnetwork.	2-10	2
`ssm-range`	Configure the start IP address and mask	–	–

Parameter	Description	Range	Default
	IP address for ssm-range.		
`startup-query-count`	Number of queries that the controller sends out on startup, separated by startup-query-interval. The default is the robustness-variable value.	1-65535	2
`startup-query-interval`	Interval, in seconds, at which the controller sends general queries on startup.	1-65535 seconds	1/4 of the query interval
`version-1-router-present-timeout`	Timeout, in seconds, if a version 1 IGM router is detected.	1-65535 seconds	400 seconds

Usage Guidelines

IGMP is used to establish and manage IP multicast group membership. See RFC 3376, “Internet Group Management Protocol, version 3” for more information.

Example

The following command configures IGMP:

```
(host) (config) #ip igmp
  query-interval 130
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	Added parameters: `max-members-per-group` and `quick-client-convergence`
ArubaOS 6.4	The **ssm-range** parameter is introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip local

```
ip local pool <name> <start-ipaddr> [<end-ipaddr>]
```

Description

This command configures a local IP pool for Layer-2 Tunnel Protocol (L2TP).

Syntax

Parameter	Description
`pool`	Name for the address pool.
`<start-ipaddr>`	Starting IP address for the pool.
`<end-ipaddr>`	(Optional) Ending IP address for the pool.

Usage Guidelines

VPN clients can be assigned IP addresses from the L2TP pool.

Example

The following command configures an L2TP pool:

```
(host) (config) #ip local pool 10.1.1.1 10.1.1.99
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip mobile active-domain

```
ip mobile active-domain <name>
```

Description

This command configures the mobility domain that is active on the controller.

Syntax

Parameter	Description
`active-domain`	Name of the mobility domain.

Usage Guidelines

All controllers are initially part of the “default” mobility domain. If you use the “default” mobility domain, you do not need to specify this domain as the active domain on the controller. However, once you assign a controller to a user-defined domain, the “default” mobility domain is no longer an active domain on the controller.

Example

The following command assigns the controller to a user-defined mobility domain:

```
(host) (config) #ip mobile active-domain campus1
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip mobile domain

```
ip mobile domain <name>
   description <descr>
   hat <home-agent> description <dscr>
   no
```

Description

This command configures the mobility domain on the controller.

Syntax

Parameter	Description
<name>	Name of the mobility domain.
description <descr>	Description of the mobility domain. The description can be a maximum of 30 characters (including spaces).
hat	Configures a home agent table (HAT) entry.
<home-agent>	The IP address of the home agent controller that requires mobility service.
description <dscr>	Description of the Home Agent Table (HAT) entry. The description can be a maximum of 30 characters (including spaces).
no	Negates any configured parameter.

Usage Guidelines

You configure the HAT on a master controller; the mobility domain information is pushed to all local controllers that are managed by the same master.

HAT entries map subnetworks or VLANs and the home agents. The home agent is typically the controller's IP address. The home agent's IP address must be routable; that is, all controllers that belong to the same mobility domain must be able to reach the home agent's IP address.

The maximum number of mobility datapath tunnels supported is 32. A maximum of 32 hat entries can be configured if the hat entries are not VRRP IP addresses. If VRRP IP addresses are configured in the hat table the maximum number of hat entires supportd is less than 32 as for each VRRP entry in HAT more than two datapath tunnels are considered.

The controller looks up information in the HAT to obtain the IP address of the home agent for a mobile client. Because there can be multiple home agents on a subnetwork, the HAT can contain more than one entry for the same subnetwork.

Example

The following command configures HAT entries:

```
(host) (mobility-domain) #ip mobile domain east_building
(host) (mobility-domain) #hat 192.0.2.1 description "East building entries"
(host) (mobility-domain) #show ip mobile domain east_building
```

```
Mobility Domains:, 1 domain(s)
------------------------------
Domain name east_building
   Home Agent Table
 Home Agent      Description
 --------------- -------------------------
   192.0.2.1       East building entries
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.0	A new parameter, **description** is added for providing more information about a HAT entry.
ArubaOS 6.3	Under the **hat <home-agent>** command, following parameters are deprecated: • **<netmask>** • **<VLAN-ID>** • **<home-agent>** • **description <dscr>** The above command is replaced by the **hat <home-agent> description <dscr>** command.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip mobile foreign-agent

```
ip mobile foreign-agent {lifetime <seconds> | max-visitors <number> |
registrations {interval <msecs> | retransmits <number>}}
```

Description

This command configures the foreign agent for IP mobility.

Syntax

Parameter	Description	Range	Default
`lifetime`	Requested lifetime, in seconds, as per RFC 3344, “IP Mobility Support for IPv4”.	10-65534	180 seconds
`max-visitors`	Maximum number of active visitors.	0-5000	5000
`registrations`	Frequency at which re-registration messages are sent to the home agent:		
`interval`	Retransmission interval, in milliseconds	100-10000	1000 milliseconds
`retransmits`	Maximum number of times the foreign agent attempts mobile IP registration message exchanges before giving up.	0-5	3

Usage Guidelines

A foreign agent is the controller which handles all mobile IP communication with a home agent on behalf of a roaming client.

Example

The following command configures the foreign agent:

```
(host) (config) #ip mobile foreign-agent registration interval 10000
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip mobile home-agent

```
ip mobile home-agent {max-bindings <number>|replay <seconds>}
```

Description

This command configures the home agent for IP mobility.

Syntax

Parameter	Description	Range	Default
`max-bindings`	Maximum number of mobile IP bindings. This option is an additional limitation to control the maximum number of roaming users. When the limit is reached, registration requests from the foreign agent fail which causes a mobile client to set a new session on the visited controller, which will become its home controller.	0-5000	5000
`replay`	Time difference, in seconds, for timestamp-based replay protection, as described by RFC 3344, “IP Mobility Support for IPv4”. 0 disables replay.	0-300	7 seconds

Usage Guidelines

A home agent for a mobile client is the controller where the client first appears when it joins the mobility domain. The home agent is the single point of contact for the client when it roams.

Example

The following command configures the home agent:

```
(host) (config) #ip mobile home-agent replay 100
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip mobile packet-trace

```
ip mobile packet-trace <mac-address>
```

Description

This command enables packet tracing for the given mac address.

Use this command with caution. It replaces the existing users with user entries from the imported file.

Syntax

Platform	License
<mac-address>	The MAC address of the host

Usage Guidelines

Executing this command enables packet tracing for the given mac address. This is used for troubleshooting purposes only.

Example

The following command enables packet tracing for the host:

```
(host) (config) #ip mobile packet-trace 00:40:96:a6:a1:a4
```

Command History

This command was available in ArubaOS 3.4.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ip mobile proxy

```
ip mobile proxy auth-sta-roam-only |event-threshold <number>|log-trail | no-service-timeout
<seconds> | on-association | refresh-stale-ip
stale-timeout <seconds>  | trail-length <number> |trail-timeout <seconds>
```

Description

This command configures the proxy mobile IP module in a mobility-enabled controller.

Syntax

Parameter	Description	Range	Default
`auth-sta-roam-only`	Allows a client to roam only if has been authenticated. If a client has not been authenticated, no mobility service is offered if it roams to a different VLAN or controller.	—	enabled
`event-threshold`	Maximum number of mobility events (events that can trigger mobility) handled per second. Mobility events above this threshold are ignored. This helps to control frequent mobility state changes when the client bounces back and forth on APs before settling down.	1-65535	25
`log-trail`	Enables logging at the notification level for mobile client moves.	—	enabled
`no-service-timeout`	Time, in seconds, after which mobility service expires. If nothing has changed from the previous state, the client is given another bridge entry but it will have limited connectivity.	30-60000	180 seconds
`on-association`	Enabling this option triggers mobility on station association. Mobility move detection is performed when the client associates with the controller and not when the client sends packets. Mobility on association can speed up roaming and improve connectivity for devices that can trigger mobility if they do not send many uplink packets. Downside is security; an association is all it takes to trigger mobility. This option is applicable only if layer-2 security is enforced. It is recommended to retain the default settings as this option causes more load in the system due to exchange of extra messages between controllers in the mobility domain.	—	disabled
`refresh-stale-ip`	Mobility forces station to renew its stale IP (assuming its DHCP) by deauthorizing the station.		

Parameter	Description	Range	Default
`stale-timeout`	Number of seconds the mobility state is retained after the loss of connectivity. This allows authentication state and mobility information to be preserved on the home agent controller. The default is 60 seconds but can be safely increased. Note that in many case a station state is deleted without waiting for the stale timeout; user delete from management, foreign agent to foreign agent handoff, etc. (This is different from the no-service-timeout; no-service-timeout occurs up front while the stale-timeout begins when mobility service is provided but the connection is disrupted for some reason.)	30-3600	60 seconds
`stand-alone-AP`	Enables support for third party or standalone APs. When this is enabled, broadcast packets are not used to trigger mobility and packets from untrusted interfaces are accepted. If mobility is enabled, you must also enable standalone AP for the client to connect to the controller's untrusted port. If the controller learns wired users via the following methods, enable standalone AP: • Third party AP connected to the controller through the untrusted port. • Clients connected to ENET1 on APs with two ethernet ports. • Wired user connected directly to the controller's untrusted port.	—	disabled
`trail-length`	Specifies the maximum number of entries (client moves) stored in the user mobility trail.	1-100	30
`trail-timeout`	Specifies the maximum interval, in seconds, an inactive mobility trail is held.	120-86400	3600 seconds

Usage Guidelines

The *proxy mobile IP module* in a mobility-enabled controller detects when a mobile client has moved to a foreign network and determines the home agent for a roaming client. The proxy mobile IP module performs the following functions:

- Derives the address of the home agent for a mobile client from the HAT using the mobile client's IP address. If there is more than one possible home agent for a mobile client in the HAT, the proxy mobile IP module uses a discovery mechanism to find the current home agent for the client.
- Detects when a mobile client has moved. Client moves are detected based on ingress port and VLAN changes and mobility is triggered accordingly. For faster roaming convergence between AP(s) on the same controller, it is recommended that you keep the "on-association" option enabled. This helps trigger mobility as soon as 802.11 association packets are received from the mobile client.

Example

The following command enables the packet trace for the given MAC address:

```
ip mobile packet-trace 00:40:96:a6:a1:a4
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.2	The `re-home` parameter was deprecated as the re-homing functionality is no longer available.
ArubaOS 6.3	The **block-dhcp-release**, **dhcp aggressive-transaction**, **dhcp ignore-options**, **dhcp max-requests <0-50>**, **dhcp transaction-hold <1-100>**, **dhcp transaction- timout <10-600>**, **stand-alone-AP** parameters are deprecated.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master controllers

ip mobile revocation

```
ip mobile revocation {interval <msec>|retransmits <number>
```

Description

This command configures the frequency at which registration revocation messages are sent.

Syntax

Parameter	Description	Range	Default
`interval`	Retransmission interval, in milliseconds.	100-10000 ms	1000 ms
`retransmits`	Maximum number of times the home agent or foreign agent attempts mobile IP registration/revocation message exchanges before giving up.	0-5	3

Usage Guidelines

A home agent or foreign agent can send a registration revocation message, which revokes registration service for the mobile client. For example, when a mobile client roams from one foreign agent to another, the home agent can send a registration revocation message to the first foreign agent so that the foreign agent can free any resources held for the client.

Example

The following command configures registration revocation messages:

```
(host) (config) #ip mobile revocation interval 2000
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master controllers

ip name-server

```
ip name-server <ipaddr>
```

Description

This command configures servers for name and address resolution.

Syntax

Parameter	Description
`<ip-addr>`	IP address of the server.

Usage Guidelines

You can configure up to six servers using separate commands. Specify one or more servers when you configure a default domain name (see ip domain-name on page 509).

Example

The following command configures a name server:

```
ip name-server 10.1.1.245
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master controllers

ip nat

```
ip nat pool <name> <start-ipaddr> <end-ipaddr> [<dest-ipaddr>]
```

Description

This command configures a pool of IP addresses for network address translation (NAT).

Syntax

Parameter	Description
`pool`	Name of the NAT pool.
`<start-ipaddr>`	IP address that defines the beginning of the range of source NAT addresses in the pool.
`<end-ipaddr>`	IP address that defines the end of the range of source NAT addresses in the pool.
`<dest-ipaddr>`	Destination NAT IP address.

Usage Guidelines

This command configures a NAT pool which you can reference in a session ACL rule (see ip access-list session on page 496).

Example

The following command configures a NAT pool:

```
(host) (config) #ip nat pool 2net 2.1.1.1 2.1.1.125
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	This command requires the PEFNG license.	Config mode on master and local controllers

ip nexthop-list

```
ip nexthop-list <string>
   ip {<ip-adddr>}|{dhcp vlan <id>} priority <0-255>
   ipsec-map <name>
   preemptive-failover
```

Description

Define a nexthop list for policy-based routing.

Syntax

Parameter	Description
`<name>`	Name of the nexthop list
`ip <ip-addr>`	IP address of the nexthop device
`ip dhcp vlan <id>`	VLAN ID of the VLAN used by the nexthop device. If the VLAN gets an IP address using DHCP, and the default gateway is determined by the VLAN interface, the gateway IP is used as the nexthop IP address.
`ipsec-map <map_name>`	Packets can be redirected over a VPN tunnel by specifying the ipsec-map name.
`preemptive-failover`	This column indicates whether preemptive failover is enabled or disabled. If preemption is enabled and a higher priority nexthop becomes reachable again, packets are again forwarded to the higher priority nexthop.

Usage Guidelines

A nexthop IP is the IP address of a adjacent router or device with layer-2 connectivity to the controller. If the controller uses policy-based routing to forwards packets to a nexthop device and that device becomes unreachable, the packets matching the policy will not reach their destination. The Nexthop list provides redundancy for the nexthop devices by forwarding the traffic to a backup nexthop device in case of failures. If active nexthop device on the list becomes unreachable, traffic matching a policy-based routing ACL is forwarded using the highest-priority active nexthop on the list.

A maximum of 4 nexthops can be added to a nexthoplist. Each nexthop can be assigned a priority, which decides the order of selection of the nexthop. If a higher priority nexthop goes down, the next higher priority nexthop which is active is chosen for forwarding. If all the nexthops are configured with same priority, the order is determined based on the order in which they are configured. If all the nexthops are down, traffic is passed regular destination based forwarding.

In a typical deployment scenario with multiple uplinks, the default route only uses one of the uplink next-hops for forwarding packets. If a nexthop becomes unreachable, the packets will not reach their destination. If your deployment uses policy-based routing based on a nexthop list, any of the uplink nexthops could be used for forwarding traffic. This requires a valid ARP entry (route-cache) in the system for all the policy-based routing nexthops.

In a branch controller deployment, the site uplinks can obtain their IP addresses and default gateway using DHCP. In such deployments, the nexthop-list configuration can use the VLAN IDs of uplink VLANs. If the VLAN gets an IP address using DHCP, and the default gateway is determined by the VLAN interface, the gateway IP is

used as the nexthop IP address. Branch deployments may also require policy-based redirection of traffic to different VPN tunnels. The nexthop list allows you to select an IPsec map to redirect traffic through IPsec tunnels.

Example

The following command configures a list of next hops.

```
(host)(config)# ip nexthop-list list1
(host)(config-nexthop-list)#ip 10.1.1.41 priority 1
(host)(config-nexthop-list)#ip 172.21.18.170 priority 2
(host)(config-nexthop-list)#ip 192.18.140.20 priority 3
```

Related Commands

Command	Description
show ip nexthop-list	Display nexthop list settings for policy-based routing.

Command History

Release	Modification
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platform	License	Command Mode
All platforms	Available in the base operating system.	Config mode on master, local, and branch controllers.

ip ospf

```
ip ospf area|{authentication message-digest | cost <cost> | dead-interval <seconds> | hello-interval <seconds> | message-digest-key <keyid> <passwd> | priority <number> | retransmit-interval <seconds> |transmit-delay <seconds>
```

Description

Configure OSPF on the VLAN interface.

Syntax

Parameter	Description	Range	Default
`area`	Enable OSPF on a specific interface by entering the IP address of the router that will use OSPF.		
`authentication message-digest`	Set the OSPF authentication mode to message digest.		disabled
`cost <cost>`	Set the cost associated with the OSPF traffic on an interface.	1 to 65535	1
`dead-interval <seconds>`	Set the elapse interval (seconds) since the last hello-packet was received from the router. After the interval elapses, the neighboring routers declare the router dead.	1 to 65535 seconds	40
`hello-interval <seconds>`	Set the elapse interval (seconds) between hello packets sent on the interface.	1 to 65535 seconds	10
`message-digest-key <keyid> <passwd>`	Enable OSPF MD5 authentication and set the key identification and a character string password.	<keyid> = 1 to 256	No default
`priority <number>`	Set the priority number of the interface to determine the DR.	0 to 255	1
`retransmit-interval <seconds>`	Set the retransmission time between link state advertisements for adjacencies belonging to the interface. **NOTE:** Set the time interval long enough to prevent unnecessary retransmissions.	1 to 65535 seconds	5

Parameter	Description	Range	Default
`transmit-delay <seconds>`	Set the elapse time before retransmitting link state update packets on the interface.	1 to 65535 seconds	1

Usage Guidelines

When configuring OSPF over multiple vendors, use this command to ensure that all routers use the same cost. Otherwise, OSPF may route improperly.

Related Commands

Command	Description
show ip ospf	View the OSPF configuration

Command History

Release	Modification
ArubaOS 3.4	Command introduced

Command Information

Platforms	Licensing	Command Mode
All Platforms	Base operating system	Configuration Interface Mode (config-subif)

ip probe default

```
ip probe default
   burst-size <size>
   frequency <frequency>
   mode ping
   no
   retries <count>
```

Description

This command configures IP probes for the policy-based routing using a next-hop list.

Syntax

Parameter	Description
burst-size <size>	Number of probes to be sent during the probe frequency interval defined by the **frequency** parameter of this profile. **Range**: 1-16, **Default** 5
frequency <frequency>	Probe interval, in seconds. The WAN health-check feature sends the number of probes defined by the **burst-size** parameter during each frequency interval defined by this **frequency** parameter. **Range**: 10-65535, **Default** 10
mode ping|udp	Enable this feature by issuing the **mode** command and choosing the type of probe packets to be sent, **ping** or **udp**.
no	Remove or negate any configured parameter
retries <count>	Number of times the controller attempts to resend a probe. **Range**: 1-255, **Default** 5

Usage Guidelines

Policy-based routing is an optional feature that allows packets to be routed based on access control lists (ACLs) configured by the administrator. In a typical deployment scenario with multiple uplinks, the default route only uses one of the uplink next-hop devices for forwarding packets. If a next-hop device becomes unreachable, the packets will not reach their destination. If your deployment uses policy-based routing based on a nexthop list, any of the uplink next-hop devices can be used for forwarding traffic.

Examples

The following commands enable this feature, and reduce the default probe frequency interval and probe burst size.

```
ip probe default
   burst-size 3
   frequency 5
   mode ping
```

Command History

Release	Modification
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master and local controllers

ip probe health-check

```
ip probe health-check
   burst-size <size>
   frequency <frequency>
   mode ping|udp
   jitter
   no
   retries <count>
```

Description

This command configures WAN health-check ping-probes for measuring WAN availability and latency on branch controller uplinks.

Syntax

Parameter	Description
burst-size <size>	Number of probes to be sent during the probe frequency interval defined by the **frequency** parameter of this profile. **Range**: 1-16, **Default** 5
frequency <frequency>	Probe interval, in seconds. The WAN health-check feature sends the number of probes defined by the **burst-size** parameter during each frequency interval defined by this **frequency** parameter. **Range**: 10-65535, **Default** 10
jitter	Jitter is a variation in the delay of received packets, which can be worsened by network congestion, improper queueing and configuration errors. The WAN health-check feature measures jitter on the connection to the remote host by sending and measuring packets at fixed intervals. Jitter measurements are only available if the health-check feature is set to send UDP packets.
mode ping|udp	Enable this feature by issuing the **mode** command and choosing the type of probe packets to be sent, **ping** or **udp**.
no	Remove or negate any configured parameter
retries <count>	Number of times the controller attempts to resend a probe. **Range**: 1-255, **Default** 5

Usage Guidelines

The health-check feature uses ping-probes to check reachability and latency from the branch controller to datacenter though each of the branch controller's WAN uplinks. Latency is calculated based on the delay of ping responses.

Examples

The following commands enable this feature, and reduce the default probe frequency interval and probe burst size.

```
ip probe health-check
   burst-size 3
   frequency 5
   mode ping
```

Related Commands

Command	Description
ip probe default	This command configures IP probes for policy-based routing using a next-hop list.

Command History

Release	Modification
ArubaOS 6.5	The **jitter** parameter is introduced,
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master and local controllers

ip radius

```
ip radius {nas-ip <ipaddr>|{nas-vlan <nas-vlan>}
rfc-3576-server udp-port <port>
source-interface {loopback|vlan <vlan>}
```

Description

This command configures global parameters for configured RADIUS servers.

Syntax

Parameter	Description	Range	Default
`nas-ip`	A global NAS IP address to send in RADIUS packets This can be specified by an IP address or a VLAN ID	—	—
`<ip-addr>`	This IP address supersedes the server-specific NAS IP configured with the **aaa authentication-server radius** command.	—	—
`nas-vlan <nas-vlan>`	Configure a RADIUS NAS IP for a branch controller with a VLAN ID. If the NAS IP VLAN is not configured for branch controllers, the controller IP defined in the RADIUS server configuration address is used as the NAS IP.	—	—
`rfc-3576-server`	Configures the UDP port to receive requests from a RADIUS server that can send user disconnect and change-of-authorization messages, as described in RFC 3576, “Dynamic Authorization Extensions to Remote Dial In User Service (RADIUS)”. See the **aaa rfc-3576-server** command to configure the server. **NOTE:** This parameter can only be used on the master controller.	—	—
`udp-port`	UDP port to receive server requests.	0-65535	3799
`source-interface`	Interface for all outgoing RADIUS packets. The IP address of the specified interface is included in the IP header of RADIUS packets. The interface can be one of the following:	—	—
`loopback`	The loopback interface.	—	—
`vlan`	The specified VLAN.	—	—

Usage Guidelines

This command configures global RADIUS server parameters. If the **aaa authentication-server radius** command configures a server-specific NAS IP, the server-specific IP address is used instead.

Example

The following command configures a global NAS IP address sent in RADIUS packets:

```
(host) (config) #ip radius nas-ip 192.168.1.245
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	The **ip radius rfc-3576-server udp-port** command requires the PEFNG license. Other commands are available in the base operating system.	Config mode on master and local controllers

ids rap-wml-server-profile

```
ids rap-wml-server-profile <server-name>
ageout <period>
cache{disable|enable
clone
db-name <name>
ip-addr<ipaddr>
password <password>
type mssql|mysql
user <name>
```

Description

Use this command to specify the name and attributes of a MySQL or an MSSQL server.

Syntax

Parameter	Description	Default
ageout	(Optional) Specifies the cache ageout period, in seconds.	0
cache	(Optional) Enables the cache, or disables the cache.	Disabled
clone	Copies configuration settings from an existing profile.	
db-name	(Optional) Specifies the name of the MySQL or MSSQL database.	—
ip-addr	(Optional) Specifies the IP address of the named MSSQL server.	0.0.0.0
no	Negates any configured parameter.	—
password	(Optional) Specifies the password required for database login.	—
type	(Optional) Specifies the server type.	—
user	(Optional) Specifies the user name required for database login.	—

Usage Guidelines

Use the **show rap-wml cache** command to show the cache of all lookups for a database server. Use the **show rap-wml servers** command to show the database server state. Use the **show rap-wml wired-mac** command to show wired MAC discovered on traffic through the AP.

Example

```
(host) (config) #ids rap-wml-server-profile mysqlserver type mysql ip-addr 10.4.11.10 db-name
automatedtestdatabase user sa password sa
ids rap-wml-table-profile mysqlserver table-name mactest_undelimited timestamp-
column time lookup-time 600
```

```
ids rap-wml-table-profile table-name mysqlserver mactest_delimited mac-delimiter : timestamp-
column time lookup-time 600
```

This example configures an MSSQL server and sets up associated rap-wml table attributes for that server.

```
(host) (config) # ids rap-wml-server-profile mssqlserver type mssql ip-addr
10.4.11.11 db-name automatedtestdatabase user sa password sa
ids rap-wml-table-profile mssqlserver table-name mactest_undelimited timestamp-
column time lookup-time 600
ids rap-wml-table-profile mssqlserver table-name mactest_delimited mac-delimiter : timestamp-
column time lookup-time 600
```

Command History

Release	Modification
ArubaOS 2.0	Command introduced
ArubaOS 6.1	This command was renamed from **rap-wml** to **ids rap-wml-server-profile**.

Command Information

Platforms	Licensing	Command Mode
All platforms	Requires the RF Protect license.	Config mode on master controllers

ids rap-wml-table-profile

```
ids rap-wml-table-profile <profile>
clone <profile>
column-name <column-name>
lookup-time <lookup-time>
mac-delimiter <char>
no ...
<table-name>
timestamp-column <timestamp-column-name>
```

Description

Use this command to specify the name and attributes of the database table to be used for lookup.

Syntax

Parameter	Description	Default
`<profile>`	Name of an ids rap-wml-table profile	–
`clone`	Makes a copy of an existing profile	–
`column-name`	Specifies the database column name with the MAC address.	—
`lookup-time`	Specifies how far back—in seconds—to look for the MAC address. Use 0 seconds to lookup everything.	0
`mac-delimiter`	Specifies the optional delimiter character for the MAC address in the database.	No delimiter
`no`	Negates the rap-wml table for the named server.	—
`table-name`	Specifies the database table name.	—
`timestamp-column <timestamp-column-name>`	Specify the database column name with the timestamp last seen.	—

Usage Guidelines

Use the **ids rap-wml-server-profile <servername>** command to configure a MySQL or an MSSQL server, then use the **ids rap-wml-table-profile** command to configure the associated database table for the server.

Example

This example configures a MySQL server and sets up associated rap-wml table attributes for that server.

```
(host) (config) #ids rap-wml-server-profile mysqlserver type mysql ip-addr 10.4.11.10 db-name
automatedtestdatabase user sa password sa
ids rap-wml-table-profile mysqlserver table-name mactest_undelimited timestamp-
column time lookup-time 600
```

```
ids rap-wml-table-profile table-name mysqlserver mactest_delimited mac-delimiter : timestamp-
column time lookup-time 600
```

This example configures an MSSQL server and sets up associated rap-wml table attributes for that server.

```
(host) (config) # ids rap-wml-server-profile mssqlserver type mssql ip-addr
10.4.11.11 db-name automatedtestdatabase user sa password sa
ids rap-wml-table-profile mssqlserver table-name mactest_undelimited timestamp-
column time lookup-time 600
ids rap-wml-table-profile mssqlserver table-name mactest_delimited mac-delimiter : timestamp-
column time lookup-time 600
```

Command History

Release	Modification
ArubaOS 2.0	Command introduced
ArubaOS 6.1	This command was renamed from **rap-wml** to **ids rap-wml-table-profile**.

Command Information

Platforms	Licensing	Command Mode
All platforms	Requires the RF Protect license.	Config mode on master controllers

ip reputation

```
ip reputation {deny}
   inbound
   outbound
```

Description

This command blocks connectivity to IP addresses classified as malicious.

Syntax

Parameter	Description	Range	Default
`deny`	Deny connections matching malicious IP.	—	—
`inbound`	Deny connections originated from outside the network.	—	—
`outbound`	Deny connections originated from the controller.	—	—

Example

The following command blocks connections that originate from the controller:

```
(host) (config) #ip-reputation deny outbound
```

Command History

This command was introduced in ArubaOS 6.5.

ip route

```
ip route <destip> <destmask> {<nexthop> [<cost>]|ipsec <name>|null 0}
```

Description

This command configures a static route on the controller.

Syntax

Parameter	Description
`<destip>`	Enter the destination IP address in dotted decimal format (A.B.C.D).
`<destmask>`	Enter the destination netmask in dotted decimal format (A.B.C.D).
`<nexthop> [<cost>]`	Enter the forwarding router address in dotted decimal format (A.B.C.D). Optionally, enter the distance metric (cost) for this route. The cost prioritizes routing to the destination. The lower the cost, the higher the priority.
`ipsec <name>`	Enter the keyword **ipsec** followed by the ipsec map name to use a static ipsec route map.
`null 0`	Enter the key word **null 0** to designate a null interface.

Usage Guidelines

This command configures a static route on the controller other than the default gateway. Use the **ip default-gateway** command to set the default gateway to the IP address of the interface on the upstream router or switch to which you connect the controller.

Example

The following command configures a static route:

```
(host) (config) #ip route 172.16.0.0 255.255.0.0 10.1.1.1
```

Related Commands

Command	Description
ip nexthop-list	Configure nexthop list settings for policy-based routing.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4.3.0	The **<nexthop> [<cost>]** parameters was introduced, which supports routing using a next-hop list.

Command Information

Platform	License	Command Mode
All platforms	Base Operating System	Config mode on master and local controllers

ipv6 cp-redirect-address

```
ipv6 cp-redirect-address <ip6addr> | disable
```

Description

This command configures a redirect address for captive portal.

Syntax

Parameter	Description
`<ip6addr>`	This address should be routable from all external networks.
`disable`	Disables automatic DNS resolution for captive portal.

Usage Guidelines

This command redirects wireless clients that are on different VLANs (from the controller's IP address) to the captive portal on the controller.

If you have the Next Generation Policy Enforcement Firewall (PEFNG) license installed in the controller, modify the captive portal session ACL to permit HTTP/S traffic to the destination **cp-redirect-address <ip6addr>** instead of **mswitch**. If you do not have the PEFNG license installed in the controller, the implicit captive-portal-profile ACL is automatically modified when you issue this command.

Example

The following command configures a captive portal redirect address:

```
(host) (config) #ipv6 cp-redirect-address
```

Command History

Introduced in ArubaOS 6.1

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ipv6 default-gateway

```
ipv6 default-gateway <ipv6-address> <cost>
```

Description

This command configures an IPv6 default gateway.

Syntax

Parameter	Description
`<ipv6-address>`	Specify the IPv6 address of the default gateway.
`cost`	Specify the distance metric to select the routing protocol that determines the way to learn the route.

Usage Guidelines

This command configures an IPv6 default gateway.

Example

The following command configures an IPv6 default gateway:

```
(host) (config) #ipv6 default-gateway 2cce:205:160:100::fe 1
```

Command History

Introduced in ArubaOS 6.1

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ipv6 dhcp excluded-address

```
ipv6 dhcp excluded-address <low-address> [<high-address>]
```

Description

This command configures an excluded IPv6 address range for the DHCPv6 server on the controller.

Syntax

Parameter	Description
`<low-ipaddr>`	Low end of range of IPv6 addresses. For example, you can enter an IPv6 address that should not be assigned.
`<high-ipaddr>`	High end of the range of IPv6 addresses.

Usage Guidelines

Use this command to specifically exclude certain IPv6 addresses from being assigned by the DHCPv6 server. Ensure that the statically assigned IPv6 addresses are excluded.

Example

The following command configures an excluded IPv6 address range:

```
(host) (config-dhcpv6)#ipv6 dhcp excluded-address 2002:570:20::2 2002:570:20::25
```

Command History

Introduced in ArubaOS 6.2

Command Information

Platform	License	Command Mode
Available on all platforms	Available in base operating system	Config mode on master controllers

ipv6 dhcp pool

```
ipv6 dhcp pool <pool-name>
   dns-server <ipv6-address>
   domain-name <domain>
   lease <days> <hours> <minutes> <seconds>
   network <network prefix>
   no ...
   option <code> {ip <ipv6-addr> | text <string>}
   preference <1-255>
```

Description

This command configures a DHCPv6 pool on the controller.

Syntax

Parameter	Description
`dns-server`	IPv6 address of the DNS server.
`domain-name`	Domain name to which the client belongs.
`lease`	The amount of time that the assigned IPv6 address is valid for the client. Specify the lease in <days> <hours> <minutes> <seconds>. The default value is 12 hours.
`network`	The DHCPv6 network prefix.
`no`	Negates any configured parameter.
`option`	Client-specific option code and IPv6 address or text. See RFC 3315, “Dynamic Host Configuration Protocol for IPv6 (DHCPv6)”.
`preference`	The DHCPv6 server preference.

Usage Guidelines

A DHCPv6 pool should be created for each IPv6 subnetwork for which DHCPv6 services should be provided. DHCPv6 pools are not specifically tied to VLANs, as the DHCPv6 server exists on every VLAN. When the controller receives a DHCPv6 request from a client, it examines the origin of the request to determine if it should respond. If the IPv6 address of the VLAN matches a configured DHCPv6 pool, the controller answers the request.

Example

The following command configures a DHCPv6 pool:

```
(host) (config) #ipv6 dhcp pool DHCPv6
   dns-server 2001:470:20::2
   domain-name test.org
   lease 0 12 0 0
   network 2001:470:20::/64
   option 24 text “Domain Search List”
   preference 25
```

Command History

Introduced in ArubaOS 6.3.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ipv6 enable

```
ipv6 enable
```

Description

This command enables IPv6 packet processing globally. This option is disabled by default.

Syntax

No parameters.

Usage Guidelines

This command enables IPv6 packet processing globally.

Command History

This command was introduced in ArubaOS 6.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ipv6 firewall

```
ipv6 firewall
   attack-rate {ping <number>|session <number>|tcp-syn <number>}
   deny-inter-user-bridging |
   drop-ip-fragments |
   enable-per-packet-logging |
   enforce-tcp-handshake |
   prohibit-ip-spoofing |
   prohibit-rst-replay |
   session-idle-timeout <seconds> |
   session-mirror-destination {ip-address <ipaddr>}|{port <slot/module/port>}
```

Description

This command configures firewall options on the controller for IPv6 traffic.

Syntax

Parameter	Description	Range	Default
`attack-rate`	Sets rates which, if exceeded, can indicate a denial of service attack.		
`ping`	Number of ICMP pings per 30 seconds, which if exceeded, can indicate a denial of service attack. Recommended value is 120.	1-16384	—
`session`	Number of TCP or UDP connection requests per 30 seconds, which if exceeded, can indicate a denial of service attack. Recommended value is 960.	1-16384	—
`tcp-syn`	Number of TCP SYN messages per 30 seconds, which if exceeded, can indicate a denial of service attack. Recommended value is 960.	1-16384	—
`deny-inter-user-bridging`	Prevents the forwarding of Layer-2 traffic between wired or wireless users. You can configure user role policies that prevent Layer-3 traffic between users or networks but this does not block Layer-2 traffic. This option can be used to prevent Appletalk or IPX traffic from being forwarded.	—	disabled
`drop-ip-fragments`	When enabled, all IP fragments are dropped. You should not enable this option unless instructed to do so by a Dell representative.	—	disabled

Parameter	Description	Range	Default
`enable-per-packet-logging`	Enables logging of every packet if logging is enabled for the corresponding session rule. Normally, one event is logged per session. If you enable this option, each packet in the session is logged. You should not enable this option unless instructed to do so by a Dell representative, as doing so may create unnecessary overhead on the controller.	—	disabled
`enforce-tcp-handshake`	Prevents data from passing between two clients until the three-way TCP handshake has been performed. This option should be disabled when you have mobile clients on the network as enabling this option will cause mobility to fail. You can enable this option if there are no mobile clients on the network.	—	disabled
`prohibit-ip-spoofing`	Detects IP spoofing (where an intruder sends messages using the IP address of a trusted client). When this option is enabled, IP and MAC addresses are checked; possible IP spoofing attacks are logged and an SNMP trap is sent.	—	disabled
`prohibit-rst-replay`	Closes a TCP connection in both directions if a TCP RST is received from either direction. You should not enable this option unless instructed to do so by a Dell representative.	—	disabled
`session-idle-timeout`	Time, in seconds, that a non-TCP session can be idle before it is removed from the session table. You should not modify this option unless instructed to do so by a Dell representative.	16-259	15 seconds
`ip-address <ipaddr>`	Send mirrored session packets to the specified IP address		
`port <slot/module/port>`	Send mirrored session packets to the specified controller port.		

Usage Guidelines

This command configures global firewall options on the controller for IPv6 traffic.

Example

The following command disallows forwarding of non-IP frames between IPv6 clients:

```
(host) (config) #ipv6 firewall deny-inter-user-bridging
```

Command History

Version	Description
ArubaOS 3.3	Command introduced
ArubaOS 6.1	The ipv6 firewall enable command was deprecated. Use the command ipv6 enable to enable/disable ipv6 packet/firewall processing on the controller.
ArubaOS 6.3	The **session-mirror-destination** parameter has been deprecated.
ArubaOS 6.4.1	The valid range for the following parameters was changed to <1-16384>: • **ping** • **session** • **tcp-syn**

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system, except for noted parameters	Config mode on master controllers

ipv6 neighbor

```
ipv6 neighbor <ipv6addr> vlan <vlan#> <mac>
```

Description

This command configures an IPv6 static neighbor on a VLAN interface.

Syntax

Parameter	Description
`<ipv6addr>`	Specify the IPv6 address of the neighbor entry.
`vlan <vlan#>`	Specify the VLAN ID.
`<mac>`	Specify the 48-bit hardware address of the neighbor entry.

Usage Guidelines

You can configure an IPv6 static neighbor on a VLAN interface.

Example

The following command configures an IPv6 static neighbor on VLAN 1:

```
(host) (config) #ipv6 neighbor 2cce:205:160:100::fe vlan 1 00:0b:86:61:13:28
```

Command History

Introduced in ArubaOS 6.1

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ipv6 mld

```
ipv6 mld
   query-interval
   query-response-interval
   robustness-variable
   ssm-range
```

Description

This command configures the IPv6 MLD (Multi-listener discovery) parameters.

Syntax

Parameter	Description
`query-interval`	Specify the time interval in seconds (1-65535) between general queries sent by the querier. The default value is 125 seconds. By varying this value, you can tune the number of MLD messages on the link; larger values cause MLD queries to be sent less often.
`query-response-interval`	Specify the maximum response delay in deciseconds (1/10 seconds) that can be inserted into the periodic general queries. The default value is 100 deciseconds. By varying this value, you can tune the burstiness of MLD messages on the link; larger values make the traffic less bursty, as node responses are spread out over a larger interval. **NOTE:** The number of seconds represented by this value must be less than the query interval.
`robustness-variable`	Specify a value between 2 to 10. The default value is 2. The robustness variable allows you to tune for the expected packet loss on a link. If a link is expected to be lossy, you can increase this value. **NOTE:** You must not configure the robustness variable as 0 or 1.
`ssm-range`	Specify the source specific multicast IPv6 range. This variable allows you to configure a valid multicast IPv6 address range for which SSM semantics needs to be applied.The default IPv6 SSM address range is FF3X::4000:1 - FF3X::FFFF:FFFF.

Usage Guidelines

You can modify the default values of the MLD parameters for IPv6 MLD snooping. You must enable IPv6 MLD snooping for these values to take effect. For more information on enabling IPv6 MLD snooping, see interface vlan on page 475.

Example

The following command configures the query interval of 200 seconds for IPv6 MLD snooping:

```
(host) (config) #ipv6 mld
(host) (config-mld) # query-interval 200
```

Command History

Release	Modification
ArubaOS 6.1	Command introduced
ArubaOS 6.4	The **ssm-range** parameter was introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

ipv6 proxy-ra

```
ipv6 proxy-ra
   interval
```

Description

This command configures an interval for proxy Router Advertisement.

Syntax

Parameter	Description
`interval`	Configures proxy Router Advertisement Interval (180-1800 sec). This overrides interface Router Advertisement interval value if its value is lesser.

Usage Guidelines

This command configures interval for proxy Router Advertisement.

Example

The following command configures a global NAS IPv6 address sent in RADIUS packets:

```
(host) (config) #ipv6 proxy-ra interval 200
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master and local controllers

ipv6 radius

```
ipv6 radius {nas-ip6 <ipv6-addr>|source-interface {loopback|vlan <vlan> <ip6addr>}
```

Description

This command configures global parameters for configured IPv6 RADIUS servers.

Syntax

Parameter	Description
`nas-ip6`	A global NAS IPv6 address to send in RADIUS packets. This configuration supercedes the server-specific NAS IPv6 configured with the **aaa authentication-server radius** command.
`source-interface`	Interface for all outgoing RADIUS packets. The IPv6 address of the specified interface is included in the IP header of RADIUS packets. The interface can be one of the following:
`loopback`	The loopback interface.
`vlan`	The specified VLAN.

Usage Guidelines

This command configures global IPv6 RADIUS server parameters. If the `aaa authentication-server radius` command configures a server-specific NAS IPv6 address, the server-specific IPv6 address is used instead.

Example

The following command configures a global NAS IPv6 address sent in RADIUS packets:

```
(host) (config) #ipv6 radius nas-ip6 2001:470:20::2
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master and local controllers

ipv6 route

```
ipv6 route {ipv6-prefix/prefix-length}|ipv6-next-hop|null|vlan[vlanid]|link-local-next-hop}
|cost
```

Description

This command configures static IPv6 routes on the controller.

Syntax

Parameter	Description
<ipv6-prefix/prefix-length>	Specify the IPv6 address and the prefix length of the destination.
<ipv6-next-hop>	Specify the next-hop IPv6 address or null 0 to terminate or discard the packets. Listed below are the following options: • X:X:X:X::X-IPv6 address of next-hop. The address should only be a Global IPv6 address. • null-Null interface • vlan-Vlan for link local for next-hop • <vlanid>-Vlan-id for link local next-hop • X:X:X:X::X-IPv6 link local address of next-hop
<cost>	Specify the distance metric to select the routing protocol that determines the way to learn the route.

Usage Guidelines

You can configure static IPv6 routes on the controller.

Example

The following command configures a static IPv6 route on the controller:

```
(host) (config) #ipv6 route 2cce:205:160:100::/<64> 2001:205:160:100::ff 1
(host) (config) #ipv6 route 2000:eab::/64 vlan 1 fe80::1a:1e00:a00:9f0
```

Command History

Release	Modification
ArubaOS 6.1	This command was introduced.
ArubaOS 6.4	The **vlan** parameter was introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

kernel coredump

```
[no] kernel coredump
```

Use this command under the supervision of Dell Global Technical Support.

Description

This command enables the controller to capture the snapshot of the working memory of the control plane when the control plane has terminated abnormally.

An additional flash memory available check is imposed on core dump. If less than 100 MB of space is left on the flash, the extra core dump chunks get discarded.

Syntax

Parameter	Description	Range	Default
`coredump`	Enable kernel core dump on the controller.	—	Disabled

Usage Guidelines

After issuing this command, you may run the **write memory** command to save the configuration. This will enable the kernel core dumps across reboots.

Example

The following example enables kernel core dump on the controller:

```
(host) (config) #kernel coredump
```

Use the following command to save the configuration change using the CLI:

```
(host) (config) #write memory
```

Use the following command to view the kernel core dump status using the CLI:

```
(host) (config) #show running-config | include kernel
Building Configuration...
kernel coredump
```

Command History

Version	Description
ArubaOS 6.4.2.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

lacp group

```
lacp group <group_number> mode {active | passive}
```

Description

Enable Link Aggregation Control Protocol (LACP) and configure LACP on the interface.

Parameter	Description
`<group_number>`	Enter the link aggregation group (LAG) number. Range: 0-7
`mode {active | passive}`	Enter the keyword **mode** followed by either the keyword **active** or **passive**. • Active mode—the interface is in active negotiating state. LACP runs on any link that is configured to be in the active state. The port in an active mode also automatically initiates negotiations with other ports by initiating LACP packets. • Passive mode—the interface is *not* in an active negotiating state. LACP runs on any link that is configured in a passive state. The port in a passive mode responds to negotiations requests from other ports that are in an active state. Ports in passive state respond to LACP packets.

Usage Guidelines

LACP is disabled by default; this command enables LACP. If the group number assigned contains static port members, the command is rejected.

Related Command

Command	Description
show lacp	View the LACP configuration status
show lacp sys-id	View the LACP system ID information
show interface port-channel	View information on a specified port channel interface

Command History

Release	Modification
ArubaOS 3.4.1	Command introduced

Command Information

Platform	Licensing	Command Mode
All Platforms	Base operating system	Configuration Interface Mode (config-if) for Master and Local controllers

lacp port-priority

```
lacp port-priority <priority_value>
```

Description

Configure the LACP port priority.

Syntax

Parameter	Description
`<priority value>`	Enter the port-priority value. The higher the value number the lower the priority. Range: 1 to 65535 Default: 255

Usage Guidelines

Set the port priority for LACP.

Related Commands

Command	Description
lacp group	Enable LACP and configure on the interface
show lacp	View the LACP configuration status
show lacp sys-id	View the LACP system ID information
show interface port-channel	View information on a specified port channel interface

Command History

Release	Modification
ArubaOS 3.4.1	Command introduced

Command Information

Platform	Licensing	Command Mode
All Platforms	Base operating system	Configuration Interface Mode (config-if) for Master and Local controllers

lacp system-priority

```
lacp system-priority <priority_value>
```

Description

Configure the LACP system priority.

Syntax

Parameter	Description
`<priority_value>`	Enter the system priority value. The higher the value number the lower the priority. Range: 1 to 65535 Default: 32768

Usage Guidelines

Set the LACP system priority.

Related Commands

Command	Description
lacp group	Enable LACP and configure on the interface
show lacp	View the LACP configuration status
show lacp sys-id	View the LACP system ID information
show interface port-channel	View information on a specified port channel interface

Command History

Release	Modification
ArubaOS 3.4.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All Platforms	Base operating system	Configuration Mode (config) for Master and Local controllers

lacp timeout

```
lacp timeout {long | short}
```

Description

Configure the timeout period for the LACP session.

Syntax

Parameter	Description
`long`	Enter the keyword **long** to set the LACP session to 90 seconds. This is the default.
`short`	Enter the keyword **short** to set the LACP session to 3 seconds.

Usage Guidelines

The timeout value is the amount of time that a port-channel interface waits for a LACPDU (Link Aggregation Control Protocol data unit) from the remote system before terminating the LACP session. The default time out value is 90 seconds (long).

Related Commands

Command	Description
lacp group	Enable LACP and configure on the interface
show lacp	View the LACP configuration status
show lacp sys-id	View the LACP system ID information
show interface port-channel	View information on a specified port channel interface

Command History

Release	Modification
ArubaOS 3.4.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All Platforms	Base operating system	Configuration Interface Mode (config-if) for Master and Local controllers

lcd-menu

```
lcd-menu
   [no] disable menu [maintenance [factory-default| media-eject| qui-quick-setup | media-eject
   | system-halt | system-reboot | upgrade-image [parition0 | partition1]| upload-config]]
```

Description

This command allows you to enable or disable the LCD menu either completely or for specific operations.

Syntax

Parameter	Description	Default
`lcd-menu`	Enters the LCD menu configuration mode.	
`no`	Delete the specified LCD menu option.	
`disable`	Disables (or enables) the complete LCD menu.	
`maintenance`	Disables (or enables) the maintenance LCD menu.	Enabled
`factory-default`	Disables (or enables) the return to factory default option in the LCD menu.	Enabled
`media-eject`	Disables (or enables) the media eject option in the LCD menu.	Enabled
`system-halt`	Disables (or enables) the system halt option in the LCD menu.	Enabled
`system-reboot`	Disables (or enables) the system reboot in the LCD menu.	Enabled
`upgrade-image`	Disables (or enables) the upgrade image option in the LCD menu.	Enabled
`partition 0` `partition 1`	Disables (or enables) image upgrade on the specified partition (0 or 1).	Enabled
`upload-config`	Disables (or enables) the upload config option in the LCD menu.	Enabled

Usage Guidelines

You can use this command to disable executing the maintenance operations using the LCD menu. You can use the no form of these commands to enable the specific LCD menu. For example, the following commands enable system halt and system reboot options:

```
(host) (config) #lcd-menu
(host) (lcd-menu) #no disable menu maintenance system-halt
(host) (lcd-menu) #no disable menu maintenance system-reboot
```

You can use the following show command to display the current LCD settings:

```
(host)#show lcd-menu
lcd-menu
--------
Menu                                          Value
----                                          -----
menu maintenance upgrade-image partition0     enabled
menu maintenance upgrade-image partition1     enabled
menu maintenance system-reboot reboot-stack   enabled
menu maintenance system-reboot reboot-local   enabled
```

```
menu maintenance system-halt halt-stack      enabled
menu maintenance system-halt halt-local      enabled
menu maintenance upgrade-image               enabled
menu maintenance upload-config               enabled
menu maintenance factory-default             enabled
menu maintenance media-eject                 enabled
menu maintenance system-reboot               enabled
menu maintenance system-halt                 enabled
menu maintenance gui-quick-setup             enabled
menu maintenance                             enabled
menu                                         enabled
```

Example

The following example disables the LCD menu completely:

```
(host) #configure terminal
(host) (config) #lcd-menu
(host) (lcd-menu) #disable menu
```

The following example disables executing the specified maintenance operation using the LCD menu:

```
(host) #configure terminal
(host) (config) #lcd-menu
(host) (lcd-menu) #disable menu maintenance ?
factory-default          Disable factory default menu
gui-quick-setup          Disable quick setup menu on LCD
media-eject              Disable media eject menu on LCD
system-halt              Disable system halt menu on LCD
system-reboot            Disable system reboot menu on LCD
upgrade-image            Disable image upgrade menu on LCD
upload-config            Disable config upload menu on LCD
(host) (lcd-menu) #disable menu maintenance upgrade-image ?
partition0               Disable image upgrade on partition 0
partition1               Disable image upgrade on partition 1
```

Command History

Introduced in ArubaOS 6.2

Command Information

Platform	License	Command Mode
W-7200 Series controller only.	Available in the base operating system	Config mode on master controllers

license

```
license
   add <key>
   del <key>
   export <filename>
   import <filename>
   profile centralized-licensing-enable
   report <filename>}
   server-ip  <ip-addr>
   server-redundancy {license-vrrp <id>}|[peer-ip-address <ip-addr>}
```

Description

This command allows you to install, delete, and manage software licenses on the controller.

Syntax

Parameter	Description
`add`	Installs the software license key in the controller. The key is normally sent to you via email. This parameter is available in enable mode.
`del`	Removes the software license key from the controller. The key is normally sent to you via email. This parameter is available in enable mode.
`export`	Exports the license database on the controller to the specified file in flash. This parameter is available in enable mode.
`import`	Replaces the license database on the controller with the specified file in flash. The system serial numbers referenced in the imported file must match the numbers on the controller. This parameter is available in enable mode.
`profile centralized-licens-ing-enable`	This command enables the centralized licensing feature, and is available in config mode. Centralized licensing simplifies licensing management by distributing licenses installed on one controller to other controllers on the network. One controller acts as a centralized license database for all other controllers connected to it, allowing all controllers to share a pool of unused licenses. The primary and backup licensing server can share single set of licenses, eliminating the need for a redundant license set on the backup server. Local licensing client controllers maintain information sent from the licensing server even if licensing client controller and licensing server controller can no longer communicate
`report`	Saves a license report to the specified file in flash. This parameter is available in enable mode.

Parameter	Description
`server-ip <ip-addr>`	Enter the IP address of the licensing server. This command is available in config mode.
`server-redundancy`	Use this command to specify configure server redundancy for the centralized licensing feature. This command is available in config mode.
`license-vrrp <id>`	Use this command to specify a VRRP instance to be used for the centralized licensing feature. This command is available in config mode. By default, the master controller in a master-local topology is the primary licensing server. If this master controller already has a redundant standby master, that redundant master will automatically act the backup licensing server with no additional configuration. If your primary licensing server does not yet have a redundant standby controller and you want to use a backup server with the centralized licensing feature, you must identify a second controller you want to designate as the backup licensing server, and define a virtual router on the primary licensing server. For details, see vrrp.
`peer-ip-address <ip-addr>`	Enter the IP address of the backup licensing server. This command is available in config mode.

Usage Guidelines

Obtain a Dell software license certificate from your Dell sales representative or authorized reseller. Use the certificate ID and the system serial number to obtain a software license key which you install in the controller. Starting with ArubaOS 6.3, you no longer need to reboot a controller after adding or deleting a license.

Users that are not very familiar with this procedure may wish to use the License Management page in the WebUI to install and manage licenses on the controller.

Centralized licensing simplifies licensing management by distributing licenses installed on one controller to other controllers on the network. One controller acts as a centralized license database for all other controllers connected to it, allowing all controllers to share a pool of unused licenses. The primary and backup licensing server can share single set of licenses, eliminating the need for a redundant license set on the backup server. Local licensing client controllers maintain information sent from the licensing server even if licensing client controller and licensing server controller can no longer communicate.

You can use the centralized licensing feature in a master-local topology with a redundant backup master, or in a multi-master network where all the masters are connected to a single W-AirWave server. In the master-local topology, the master controller acts as the primary licensing server, and the redundant backup master acts as the backup licensing server. In a multi-master network, one controller must be designated as a primary server and a second controller configured as a backup licensing server.

Centralized licensing can distribute the following license types:

- AP
- PEFNG
- RF PRotect
- xSec
- ACR
- WebCC

Centralized licensing allows the primary and backup licensing server controllers share a single set of licenses. If you do not enable this feature, the master and backup master controller each require separate, identical license sets. The two controllers acting as primary and backup license servers must use the same version of ArubaOS, and must be connected on the same broadcast domain using the Virtual Router Redundancy Protocol (VRRP). Other client controllers on the network connect to the licensing server using the VRRP virtual IP address configured for that set of redundant servers. By default, the primary licensing server uses the configured virtual IP address. However, if the controller acting as the primary licensing server becomes unavailable, the secondary licensing server will take ownership of the virtual IP address, allowing licensing clients to retain seamless connectivity to a licensing server.

When you enable centralized licensing, information about the licenses already installed on the individual client controllers are sent to the licensing server, where they are added into the server's licensing table. The information in this table is then shared with all client controllers as a pool of available licenses. When a client controller uses a license in the available pool, it communicates this change to the licensing server master controller, which updates the table before synchronizing it with the other clients.

Client controllers do not share information about factory-installed or built-in licenses to the licensing server. A controller using the centralized licensing feature will use its built-in licenses before it consumes available licenses from the license pool. As a result, when a client controller sends the licensing server information about the licenses that client is using, it only reports licenses taken from the licensing pool, and disregards any built-in licenses used. For example, if a controller has a built-in 16-AP license and twenty connected APs, it will disregard the built-in licenses being used, and will report to the licensing server that it is using only four AP licenses from the license pool.

When centralized licensing is first enabled on the licensing server, its licensing table only contains information about the licenses installed on that server. When the clients contact the server, the licensing server adds the client licenses to the licensing table, then it sends the clients back information about the total available licenses for each license type. In the following example, the licenses installed on two client controllers are imported into the license table on the license server. The licensing server then shares the total number of available licenses with other controllers on the network.

For complete information on the centralized licensing feature, refer to the *Dell Networking W-Series ArubaOS User Guide*.

Examples

The following command adds a license key on the controller:

```
(host) #license add WO+5w8-phkUYH-1mvUqh-NZ5GbQZ-kOxwew-KZ-a5CNow
Limits updated.
Please reload the switch to enable the new functionality.
```

Next, issue the **reload** command to reboot the controller and enable the license.

Access the command-line interface of the licensing server, and issue the following commands in config mode:

```
(host) (config) #license profile
(host) (License provisioning profile) #centralized-licensing-enable
```

If the licensing server already has a dedicated redundant standby controller, that standby controller will automatically become the backup license server. If the primary licensing server in your deployment does not have a redundant master controllerbut you want to define a backup server for the licensing feature, issue the following commands on the licensing server.

```
(host) (License provisioning profile) #License server-redundancy
(host) (License provisioning profile) #License-vrrp <vrId>
(host) (License provisioning profile) #Peer-ip-address <ip>
```

If you are deploying centralized licensing on a cluster of master controllers, access the command-line interface of a licensing client controller, and issue the following commands in config mode:

```
(host) (config) #license profile
(host) (License provisioning profile) #centralized-licensing-enable
(host) (License provisioning profile) # license server-ip <ip>
```

Command History

Version	Description
ArubaOS 3.0	Command introduced
ArubaOS 6.3	The following commands were introduced to support the centralized licensing feature: • profile centralized-licensing-enable • server-ip <ip-addr> • server-redundancy {license-vrrp <id>}|[peer-ip-address <ip-addr>}

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable or config mode on master and local controllers

local-custom-cert

```
local-custom-cert local-mac <lmac> ca-cert <ca> server-cert <cert>

   suite-b <gcm-128 | gcm-256>
```

Description

This command configures the user-installed certificate for secure communication between a local controller and a master controller.

Syntax

Parameter	Description
`<lmac>`	MAC address of the local controller's user-installed certificate.
`ca-cert <ca>`	User-defined name of a trusted CA certificate installed on the local controller. Use the **show crypto-local pki TrustedCA** command to display the CA certificates that have been imported into the controller.
`server-cert <cert>`	User-defined name of a server certificate installed on the local controller. Use the show **crypto-local pki ServerCert** command to display the server certificates that have been imported into the controller.
`suite-b`	If you configure your master controllers to use IKEv2 and custom-installed certificates, you can optionally use Suite-B cryptographic algorithms for IPsec encryption. Specify one of the following options: • **gcm-128** Use 128-bit AES-GCM Suite-B encryption • **gcm-256** Use 256-bit AES-GCM Suite-B encryption

Usage Guidelines

Use this command on a master controller to configure the custom certificate for communication with a local controller. On the local controller, use the **masterip** command to configure the IP address and certificates for the master controller. If your master and local controllers use certificates for authentication, the IPsec tunnel will be created using IKEv2.

Example

The following command configures the local controller with a user-installed certificate:

```
(host) (config) #local-custom-cert local-mac 00:16:CF:AF:3E:E1 ca-cert cacert1 server-cert
servercert1
```

Related Commands

Command	Description	Mode
show local-cert-mac	Display the IP, MAC address and certificate configuration of local controllers in a master-local configuration	Config mode on master controllers.

Command History

Introduced in ArubaOS 6.1

Command Information

Platform	License	Command Mode
Available on all platforms	The **suite-b gcm-128** and **suite-b gcm-256** encryption options for IPsec custom certificates requires the Advanced Cryptography (ACR) license. All other parameters are available in the base operating system	Config mode on master controllers

local-factory-cert

```
local-factory-cert local-mac <lmac>
```

Description

This command configures the factory-installed certificate for secure communication between a local controller and a master controller.

Syntax

Parameter	Description
`<lmac>`	MAC address of the local controller's factory-installed certificate.

Usage Guidelines

Use this command on a master controller to configure the factory certificate for communication with a local controller. On the local controller, use the **masterip** command to configure the IP address and certificates for the master controller. If your master and local controllers use certificates for authentication, the IPsec tunnel will be created using IKEv2.

Example

The following command configures the local controller with a factory-installed certificate:

```
(host) (config) #local-factory-cert local-mac 00:16:CF:AF:3E:E1
```

Related Commands

Command	Description	Mode
show local-cert-mac	Display the IP, MAC address and certificate configuration of local controllers in a master-local configuration	Config mode on master controllers.

Command History

Introduced in ArubaOS 6.1

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

localip

```
localip <ipaddr>
   ipsec <key>
```

Description

This command configures the IP address and preshared key for the local controller on a master controller.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the local controller. Use the 0.0.0.0 address to configure a global preshared key for all inter-controller communications.
`ipsec <key>`	To establish the master-local IPsec tunnel using IKEv1, enter a preshared key between 6-64 characters.

Usage Guidelines

Use this command on a master controller to configure the IP address and preshared key or certificates for communication with a local controller. On the local controller, use the **masterip** command to configure the IP address and preshared key for the master controller.

If your master and local controllers use a pre-shared key for authentication, they will create the IPsec tunnel using IKEv1.

Example

The following command configures the local controller with a pre-shared key:

```
(host) (config) #localip 0.0.0.0 ipsec gw1234xyz
```

Command History

Command introduced in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

local-userdb add

```
local-userdb add {generate-username|username <name>} {generate-password|password <passwd>}
[comment <g_comments>][email <email>] [expiry {duration <minutes>|time <hh/mm/yyy> <hh:mm>}]
[guest-company <g_company>][guest-fullname <g_fullname>][guest-phone <g-phone>][mode disable]
[opt-field-1 <opt1>][opt-field-2 <opt2>][opt-field-3 <opt3>][opt-field-4 <opt4>][[remote-ip
<ip-addr>][role <role>][sponsor-dept <sp_dept>][sponsor-mail <sp_email>][sponsor-fullname <sp_
fullname>][sponsor-name <sp_name>]
[start-time <mm/dd/yyyy> <hh.mm>]
```

Description

This command creates a user account entry in the controller's internal database.

Syntax

Parameter	Description	Range	Default
`generate-username`	Automatically generate and add a username.	—	—
`username`	Add the specified username.	1 – 64 characters	—
`generate-password`	Automatically generate a password for the username.	—	—
`password`	Add the specified password for the username.	6 – 128 characters	—
`comments`	Comments added to the user account.	—	—
`email`	Email address for the user account.	—	—
`expiry`	Expiration for the user account. If this is not set, the account does not expire.	—	no expiration
`duration`	Duration, in minutes, for the user account.	1-2147483647	—
`time`	Date and time, in mm/dd/yyy and hh:mm format, that the user account expires.	—	—
`guest-company`	Name of the guest's company. **NOTE:** A guest is the person who needs guest access to the company's Dell wireless network.		
`guest-fullname`	The guest's full name.		
`guest-phone`	The guest's phone number.		

Parameter	Description	Range	Default
mode	Enables or disables the user account,	—	Disable
opt-field-1	This category can be used for some other purpose. For example, the optional category fields can be used for another person, such as a “Supervisor.” You can enter username, full name, department and Email information into the optional fields.	—	—
opt-field-2	Same as opt-field-1.	—	—
opt-field-3	Same as opt-field-1.	—	—
opt-field-4	Same as opt-field-1.	—	—
remote-ip	IP address assigned to the remote peer.		
role	Role for the user. This role takes effect when the internal database is specified in a server group profile with a server derivation rule. If there is no server derivation rule configured, then the user is assigned the default role for the authentication method.	—	guest
sponsor-dept	The guest sponsor’s department name **NOTE:** A sponsor is the guest's primary contact for the visit.	—	—
sponsor-email	The sponsor’s email address.	—	—
sponsor-fullname	The sponsor’s full name.	—	—
sponsor-name	The sponsor’s name.	—	—
start-time	Date and time, in mm/dd/yyy and hh:mm format, the guest account begins.	—	—

Usage Guidelines

When you specify the internal database as an authentication server, client information is checked against the user accounts in the internal database. You can modify an existing user account in the internal database with the **local-userdb modify** command, or delete an account with the **local-userdb del** command.

By default, the internal database in the master controller is used for authentication. Issue the **aaa authentication-server internal use-local-switch** command to use the internal database in a local controller; you then need to add user accounts to the internal database in the local controller.

Example

The following command adds a user account in the internal database with an automatically-generated username and password:

```
(host) #local-userdb add generate-username generate-password expiry duration 480
```

The following information is displayed when you enter the command:

```
GuestConnect
Username: guest4157
Password: cDFD1675
Expiration: 480 minutes
```

Related Commands

Command	Description	Mode
show local-userdb	Use this command to show the parameters displayed in the output of this command.	Enable and Config modes
show local-userdb-guest	Use this command to show the parameters displayed in the output of the local-userdb-guest add command.	Enable and Config modes
mgmt-user	Use the **webui-cacert <certificate name>** command if you want an external authentication server to derive the management user role. This is helpful if there are a large number of users who need to be authenticated. Use the **mgmt-user webui-cacert <certificate_name>serial <number> <username> <role>** command if you want the authentication process to use previously configured certificate name and serial number to derive the user role.	Config mode

Command History

	Modification
ArubaOS 3.0	Introduced for the first time.
ArubaOS 3.4	The **guest, sponsor and optional field** parameters were added.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system. The **role** parameter requires the PEFNG license.	Enable mode on master controllers.

local-userdb-ap del

```
local-userdb-ap del mac-address <mac-addr> [all]
```

Description

This command deletes a Remote AP entry from the obsolete Remote AP database.

Syntax

Parameter	Description
`mac-address <mac-addr>`	MAC address of the remote AP to be removed from the Remote AP database.
`all`	Remove all entries from the whitelist.

Usage Guidelines

When you upgrade from ArubaOS 5.0-6.1 to ArubaOS 6.2 or later, the remote AP whitelist table will automatically move from the legacy remote AP whitelist to the newer remote AP whitelist. Issue the **local-userdb-ap del** command to delete any AP entries that did not properly move to the new table during the upgrade procedure. Entries in the newer remote AP whitelist can be removed using the command whitelist-db rap del.

Example

The example below deletes a Remote AP from the obsolete Remote AP whitelist.

```
(host)(config) #local-userdb-ap del mac-addr 00:0b:86:c3:58:38
```

Related CommandsRelated Commands

Command	Description
lacp group	Enable LACP and configure on the interface
show lacp	View the LACP configuration status
show lacp sys-id	View the LACP system ID information
show interface port-channel	View information on a specified port channel interface

Command	Description
show local-userdb-ap	Display the obsolete Remote AP whitelist.
whitelist-db rap del	Delete a remote AP from the current remote AP whitelist table.

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.3	The **all** parameter was added to delete all entries from the obsolete remote AP database

local-userdb-branch

```
local-userdb-branch add|del|modify mac-address <mac-address> remote-node-profile
<remote-node-profile> <hostname>
```

Description

This command adds a branch controller to the branch controller whitelist. You can also delete the whitelist entry using this command.

Syntax

Parameter	Description	Range
`mac-address <mac-address>`	MAC address of the branch controller in colon-separated six-octet format.	—
`branch-config-group <branch-config-group>`	The branch config group to be assigned to that branch controller	1 – 64 characters
`<hostname>`	host name of the master controller	–

Usage Guidelines

A master controller can only assign a configuration profile to a branch controller in its branch controller whitelist. To assign a different configuration to an unprovisioned branch controller, you must delete the whitelist entry and create a new branch controller whitelist entry with the correct branch group configuration. A branch group configuration has to be validated before it is configured and pushed to a branch controller.

If your network includes multiple master controllers under a single master controller the output of this command shows all branch and master controllers on the network. By default, this command displays all entries in the whitelist. To display only part of the branch controller whitelist, include the **start <offset>** parameters to start displaying the branch controller whitelist at the specified entry value. You can also include the optional **mac-address <mac-addr>** parameters to display values for a single branch controller entry.

Example

Adding an RN to the Whitelist

To add an RN to the RN whitelist, access the command-line interface of the RNC, enter enable mode, then issue the command

```
local-userdb-branch add mac-address <mac-address> branch-config-group <branch-config-group>
```

where **<mac-address>** is the MAC address of the branch controller in colon-separated six-octet format, and **<branch-config-group>** is the name of the branch config group you want to assign to that branch controller.

Example:

```
(branch-master) #local-userdb-branch add mac-address 00:16:CF:AF:3E:E1 branch-config-group
Location_1
```

Note that you cannot change the profile assigned to the branch controller in the whitelist entry. To assign a different branch config group to an unprovisioned branch controller, you must delete the whitelist entry and create a new whitelist entry with the correct branch config group.

Removing an RN from the Whitelist

When you remove an entry for an active RN from the RN whitelist on the RNC, that RN no longer receives configuration or license updates from the RNC, but continues to operate as previously configured. As the license server is the RNC, any operation related to the licensing does not work after it is detached. If you remove an individual RN entry from the RN whitelist before that RN is connected to the network, that RN is not automatically provisioned as a RN, and remains inactive on the network until manually provisioned.

To remove an RN from the RN whitelist, access the command-line interface of the RNC, access enable mode, then enter the command

```
local-userdb-branch del mac-address <mac-address>
```

where **<mac-address>** is the MAC address of the RN, in colon-separated six-octet format.

Example:

```
(branch-master)(config) #local-userdb-branch del mac-address 00:16:CF:AF:3E:E1
```

Related Commands

Command	Description	Mode
show branch	Shows branch controller, DHCP instances, license usage and running configuration information.	Enable and Config mode
show branch-dhcp-pool	Shows branch controller DHCP pool configuration information.	Enable and Config mode
show branch-config-group	Shows branch config group status information.	Enable and Config mode
show local-userdb-branch	The output of this command lists the MAC address and assigned branch config group for of each branch controller associated with that master controller.	Enable and Config mode

Command History

	Modification
ArubaOS 6.0	Command introduced
ArubaOS 6.2	Command deprecated
ArubaOS 6.4.3.0	Command reinstated

Command Information

Platform	License	Command Mode
Available on W-7010, W-7005, W-7024, and W-7030 controllers	Available in the base operating system.	Enable mode on master controllers.

local-userdb del

```
local-userdb {del username <name>|del-all}
```

Description

This command deletes entries in the controller's internal database.

Syntax

Parameter	Description
`del username`	Deletes the user account for the specified username.
`del-all`	Deletes all entries in the internal database.

Usage Guidelines

User account entries created with expirations are automatically deleted from the internal database at the specified expiration. Use this command to delete an entry before its expiration or to delete an entry that was created without an expiration.

Example

The following command deletes a specific user account entry:

```
(host)#local-userdb del username guest4157
```

Command History

Introduced in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers.

local-userdb export

```
local-userdb export <filename>
```

Description

This command exports the internal database to a file.

Use this command with caution. It replaces the existing users with user entries from the imported file.

Syntax

Parameter	Description
`export`	Saves the internal database to the specified file in flash.

Usage Guidelines

After using this command, you can use the **copy** command to transfer the file from flash to another location.

Example

The following command saves the internal database to a file:

```
(host)#local-userdb export jan-userdb
```

Command History

Introduced in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers.

local-userdb fix-database

```
local-userdb fix-database
```

Description

This command deletes and reinitializes the internal database.

Syntax

No parameters.

Usage Guidelines

Before using this command, you can save the internal database with the **local-userdb export** command.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers.

local-userdb-guest add

```
local-userdb-guest add {generate-username|username <name>} {generate-password|password
<passwd>} [comment <g_comments>][email <email>] [expiry {duration <minutes>|time <hh/mm/yyy>
<hh:mm>}] [guest-company <g_company>][guest-fullname <g_fullname>][guest-phone <g-phone>][mode
disable][opt-field-1 <opt1>][opt-field-2 <opt2>][opt-field-3 <opt3>][opt-field-4 <opt4>]
[sponsor-dept <sp_dept>][sponsor-mail <sp_email>][sponsor-fullname <sp_fullname>][sponsor-name
<sp_name>]
[start-time <mm/dd/yyyy> <hh.mm>]
```

Description

This command creates a guest user in a local user database.

Syntax

Parameter	Description	Range	Default
`generate-username`	Automatically generate and add a guest username.	—	—
`username`	Add the specified guest username.	1 – 64 characters	—
`generate-password`	Automatically generate a password for the username.	—	—
`password`	Add the specified password for the username.	6 – 128 characters	—
`comments`	Comments added to the guest user account.	—	—
`email`	Email address for the guest user account.	—	—
`expiry`	Expiration for the user account. If this is not set, the account does not expire.	—	no expiration
`duration`	Duration, in minutes, for the user account.	1-2147483647	—
`time`	Date and time, in mm/dd/yyy and hh:mm format, that the user account expires.	—	—
`guest-company`	Name of the guest's company. **NOTE:** A guest is the person who needs guest access to the company's Dell wireless network.		
`guest-fullname`	The guest's full name.		

Parameter	Description	Range	Default
guest-phone	The guest's phone number.		
mode	Enables or disables the user account,	—	Disable
opt-field-1	This category can be used for some other purpose. For example, the optional category fields can be used for another person, such as a "Supervisor." You can enter username, full name, department and Email information into the optional fields.	—	—
opt-field-2	Same as opt-field-1.	—	—
opt-field-3	Same as opt-field-1.	—	—
opt-field-4	Same as opt-field-1.	—	—
sponsor-dept	The guest sponsor's department name. **NOTE:** A sponsor is the guest's primary contact for the visit.	—	—
sponsor-email	The sponsor's email address.	—	—
sponsor-fullname	The sponsor's full name.	—	—
sponsor-name	The sponsor's name.	—	—
start-time	Date and time, in mm/dd/yyy and hh:mm format, the guest account begins.	—	—

Usage Guidelines

When you specify the internal database as an authentication server, client information is checked against the user accounts in the internal database. You can modify an existing user account in the internal database with the **local-userdb-guest modify** command, or delete an account with the **local-userdb-guest del** command.

By default, the internal database in the master controller is used for authentication. Issue the **aaa authentication-server internal use-local-switch** command to use the internal database in a local controller; you then need to add user accounts to the internal database in the local controller.

Example

The following command adds a guest user in the internal database with an automatically-generated username and password:

```
(host) #local-userdb-guest add generate-username generate-password expiry none
```

The following information is displayed when you enter the command:

```
GuestConnect
Username: guest-5433352
Password: mBgJ6764
Expiration: none
```

Related Commands

Command	Description	Mode
show local-userdb-guest	Show the parameter configured using the `local-userdb-guest` command.	Enable and Config modes
show local-userdb	Show the parameters configured using the `local-userdb` command.	Enable and Config modes

Command History

Introduced in ArubaOS 3.4.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system. The **role** parameter requires the PEFNG license.	Enable and config modes on master controllers.

local-userdb-guest del

```
local-userdb-guest {del username <name>|del-all}
```

Description

This command deletes entries in the controller's internal database.

Syntax

Parameter	Description
`del username`	Deletes the user account for the specified username.
`del-all`	Deletes all entries in the internal database.

Usage Guidelines

User account entries created with expirations are automatically deleted from the internal database at the specified expiration. Use this command to delete an entry before its expiration or to delete an entry that was created without an expiration.

Example

The following command deletes a specific user account entry:

```
(host) #local-userdb-guest del username guest4157
```

Command History

Introduced in ArubaOS 3.4.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable and config modes on master controllers.

local-userdb-guest modify

```
local-userd-guest modify username <name> [comments <g_comments>][email <email>] [expiry
{duration <minutes>|time <hh/mm/yyy> <hh:mm>}] [guest-company <g_company>][guest-fullname <g_
fullname>][guest-phone <g-phone>][mode disable][opt-field-1 <opt1>][opt-field-2 <opt2>][opt-
field-3 <opt3>][opt-field-4 <opt4>][password <passwd][sponsor-dept <sp_dept>][sponsor-mail
<sp_email>][sponsor-fullname <sp_fullname>][sponsor-name <sp_name>][start-time <mm/dd/yyyy>
<hh.mm>]
```

Description

This command modifies an existing guest user entry in the controller's internal database.

Syntax

Parameter	Description	Range	Default
`username`	Name of the existing user account entry.	1 – 64 characters	—
`comments`	Comments added to the user account.	—	—
`email`	Email address for the use account.	—	—
`expiry`	Expiration for the user account. If this is not set, the account does not expire.	—	no expiration
`duration`	Duration, in minutes, for the user account.	1-2147483647	—
`time`	Date and time, in mm/dd/yyy and hh:mm format, that the user account expires.	—	—
`guest-company`	Name of the guest's company. **NOTE:** A guest is the person who needs guest access to the company's Dell wireless network.		
`guest-fullname`	The guest's full name.		
`guest-phone`	The guest's phone number.		
`mode`	Enables or disables the user account,	—	Disable
`opt-field-1`	This category can be used for some other purpose. For example, the optional category fields can be used for another person, such as a "Supervisor." You can enter username, full name, department and Email information into the optional fields.	—	—

Parameter	Description	Range	Default
`opt-field-2`	Same as `opt-field-1`.	—	—
`opt-field-3`	Same as `opt-field-1`.	—	—
`opt-field-4`	Same as `opt-field-1`.	—	—
`password`	User's password	1– 6 characters	—
`sponsor-dept`	The guest sponsor's department name **NOTE:** A sponsor is the guest's primary contact for the visit.	—	—
`sponsor-email`	The sponsor's email address.	—	—
`sponsor-fullname`	The sponsor's full name.	—	—
`sponsor-name`	The sponsor's name.	—	—
`start-time`	Date and time, in mm/dd/yyy and hh:mm format, the guest account begins.	—	—

Usage Guidelines

Use the **show local-userdb-guest** command to view the current user account entries in the internal database.

Example

The following command disables a guest user account in the internal database:

```
(host)local-userdb-guest modify username guest4157 mode disable
```

Command History

Introduced in ArubaOS 3.4.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable and config modes on master controllers.

local-userdb-guest send-email

```
local-userdb-guest send-email <username> [to-guest][to-sponsor]
```

Description

This command causes the controller to send email to the guest and/or sponsor any time a guest user is created.

Syntax

Parameter	Description	Range	Default
`<username>`	Name of the guest	1 – 64 characters	—
`to-guest`	Allows you to send email to the guest user's address.	—	—
`to-sponsor`	Allows you to send email to the sponsor's email address.	—	—

Usage Guidelines

This command allows the guest provisioning user or network administrator to causes the controller to send email to the guest and/or sponsor any time a guest user is created.

Example

The following command causes the controller to send an email to the sponsor alerting them that the guest user "Laura" was just created.

```
(host)# local-userdb-guest send-email Laura to-sponsor
```

Command History

Introduced in ArubaOS 3.4.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers

local-userdb import

```
local-userdb import <filename>
```

Description

This command replaces the internal database with the specified file from flash.

Syntax

Parameter	Description
`import`	Replaces the internal database with the specified file.

Usage Guidelines

This command replaces the contents of the internal database with the contents in the specified file. The file must be a valid internal database file saved with the **`local-userdb export`** command.

Example

The following command imports the specified file into the internal database:

```
(host)#local-userdb import jan-userdb
```

Command History

Introduced in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers.

local-userdb maximum-expiration

```
local-userdb maximum-expiration <minutes>
```

Description

This command configures the maximum time, in minutes, that a guest account in the internal database can remain valid.

Syntax

Parameter	Description	Range
`maximum-expiration`	Maximum time, in minutes, that a guest account in the internal database can remain valid.	1-2147483647

Usage Guidelines

The user in the guest-provisioning role cannot create guest accounts that expire beyond the configured maximum time. This command is not available to the user in the guest-provisioning role.

Example

The following command sets the maximum time for guest accounts in the internal database to 8 hours (480 minutes):

```
(host)(config)#local-userdb maximum-expiration 480
```

Command History

Introduced in ArubaOS 3.0.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Configuration mode on master controllers.

local-userdb modify

```
local-userdb modify username <name> [comments <g_comments>][email <email>] [expiry {duration
<minutes>|time <hh/mm/yyy> <hh:mm>}] [guest-company <g_company>][guest-fullname <g_fullname>]
[guest-phone <g-phone>][mode disable][opt-field-1 <opt1>][opt-field-2 <opt2>][opt-field-3
<opt3>][opt-field-4 <opt4>][remote-ip <ip-addr>][role <role>][sponsor-dept <sp_dept>][sponsor-
mail <sp_email>][sponsor-fullname <sp_fullname>][sponsor-name <sp_name>][start-time
<mm/dd/yyyy> <hh.mm>]
```

Description

This command modifies an existing user account entry in the controller's internal database.

Syntax

Parameter	Description	Range	Default
`username`	Name of the existing user account entry.	1 – 64 characters	—
`comments`	Comments added to the user account.	—	—
`email`	Email address for the use account.	—	—
`expiry`	Expiration for the user account. If this is not set, the account does not expire.	—	no expiration
`duration`	Duration, in minutes, for the user account.	1-2147483647	—
`time`	Date and time, in mm/dd/yyy and hh:mm format, that the user account expires.	—	—
`guest-company`	Name of the guest's company. **NOTE:** A guest is the person who needs guest access to the company's Dell wireless network.		
`guest-fullname`	The guest's full name.		
`guest-phone`	The guest's phone number.		
`mode`	Enables or disables the user account,	—	Disable
`opt-field-1`	This category can be used for some other purpose. For example, the optional category fields can be used for another person, such as a "Supervisor." You can enter username, full name, department and Email information into the optional fields.	—	—

Parameter	Description	Range	Default
opt-field-2	Same as opt-field-1.	—	—
opt-field-3	Same as opt-field-1.	—	—
opt-field-4	Same as opt-field-1.	—	—
remote-ip	IP address assigned to the remote peer.		
role	Role for the user. This parameter requires the PEFNG license.	—	guest
sponsor-dept	The guest sponsor's department name **NOTE:** A sponsor is the guest's primary contact for the visit.	—	—
sponsor-email	The sponsor's email address.	—	—
sponsor-fullname	The sponsor's full name.	—	—
sponsor-name	The sponsor's name.	—	—
start-time	Date and time, in mm/dd/yyy and hh:mm format, the guest account begins.	—	—

Usage Guidelines

Use the **show local-userdb** command to view the current user account entries in the internal database.

Example

The following command disables an existing user account in the internal database:

```
(host)# local-userdb modify username guest4157 mode disable
```

Command History

	Modification
ArubaOS 3.0	Introduced for the first time.
ArubaOS 3.4	The guest, sponsor and optional parameters were added.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers.

local-userdb-branch

```
local-userdb-branch add|del|modify mac-address <mac-address> remote-node-profile
<remote-node-profile> <hostname>
```

Description

This command adds a branch controller to the branch controller whitelist. You can also delete the whitelist entry using this command.

Syntax

Parameter	Description	Range
`mac-address <mac-address>`	MAC address of the branch controller in colon-separated six-octet format.	—
`branch-config-group <branch-config-group>`	The branch config group to be assigned to that branch controller	1 – 64 characters
`<hostname>`	host name of the master controller	–

Usage Guidelines

A master controller can only assign a configuration profile to a branch controller in its branch controller whitelist. To assign a different configuration to an unprovisioned branch controller, you must delete the whitelist entry and create a new branch controller whitelist entry with the correct branch group configuration. A branch group configuration has to be validated before it is configured and pushed to a branch controller.

If your network includes multiple master controllers under a single master controller the output of this command shows all branch and master controllers on the network. By default, this command displays all entries in the whitelist. To display only part of the branch controller whitelist, include the **start <offset>** parameters to start displaying the branch controller whitelist at the specified entry value. You can also include the optional **mac-address <mac-addr>** parameters to display values for a single branch controller entry.

Example

Adding an RN to the Whitelist

To add an RN to the RN whitelist, access the command-line interface of the RNC, enter enable mode, then issue the command

```
local-userdb-branch add mac-address <mac-address> branch-config-group <branch-config-group>
```

where **<mac-address>** is the MAC address of the branch controller in colon-separated six-octet format, and **<branch-config-group>** is the name of the branch config group you want to assign to that branch controller.

Example:

```
(branch-master) #local-userdb-branch add mac-address 00:16:CF:AF:3E:E1 branch-config-group
Location_1
```

Note that you cannot change the profile assigned to the branch controller in the whitelist entry. To assign a different branch config group to an unprovisioned branch controller, you must delete the whitelist entry and create a new whitelist entry with the correct branch config group.

Removing an RN from the Whitelist

When you remove an entry for an active RN from the RN whitelist on the RNC, that RN no longer receives configuration or license updates from the RNC, but continues to operate as previously configured. As the license server is the RNC, any operation related to the licensing does not work after it is detached. If you remove an individual RN entry from the RN whitelist before that RN is connected to the network, that RN is not automatically provisioned as a RN, and remains inactive on the network until manually provisioned.

To remove an RN from the RN whitelist, access the command-line interface of the RNC, access enable mode, then enter the command

```
local-userdb-branch del mac-address <mac-address>
```

where **<mac-address>** is the MAC address of the RN, in colon-separated six-octet format.

Example:

```
(branch-master)(config) #local-userdb-branch del mac-address 00:16:CF:AF:3E:E1
```

Related Commands

Command	Description	Mode
show branch	Shows branch controller, DHCP instances, license usage and running configuration information.	Enable and Config mode
show branch-dhcp-pool	Shows branch controller DHCP pool configuration information.	Enable and Config mode
show branch-config-group	Shows branch config group status information.	Enable and Config mode
show local-userdb-branch	The output of this command lists the MAC address and assigned branch config group for of each branch controller associated with that master controller.	Enable and Config mode

Command History

	Modification
ArubaOS 6.0	Command introduced
ArubaOS 6.2	Command deprecated
ArubaOS 6.4.3.0	Command reinstated

Command Information

Platform	License	Command Mode
Available on W-7010, W-7005, W-7024, and W-7030 controllers	Available in the base operating system.	Enable mode on master controllers.

local-userdb send-to-guest

```
local-userdb send-to-guest
```

Description

This command automatically sends email to the guest when the guest user is created.

Syntax

No parameters.

Usage Guidelines

A guest is the person who needs guest access to the company's Dell wireless network. Email is sent directly to the guest after the guest user is created. When configuring the guest provisioning feature, the guest user is generally created by Guest Provisioning user. This is the person who is responsible for signing in guests at your company.

Example

```
(host)(config) #local-userdb send-to-guest
```

Command History

Introduced in ArubaOS 3.4.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Configuration mode on master controllers.

local-userdb send-to-sponsor

```
local-userdb send-to-sponsor
```

Description

This command automatically sends email to the guest's sponsor when the guest user is created.

Syntax

No parameters.

Usage Guidelines

The sponsor is the guest's primary contact. Email is sent directly to the guest's sponsor after the guest user is created. When configuring the guest provisioning feature, the sponsor is generally created by the Guest Provisioning user. This is the person who responsible for signing in guests at your company.

Example

```
(host)(config)#local-userdb send-to-sponsor
```

Command History

Introduced in ArubaOS 3.4.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Configuration mode on master controllers.

location

```
location <string>
```

Description

This command configures the location of the controller.

Syntax

Parameter	Description
`location`	A text string that specifies the system location.

Usage Guidelines

Use this command to indicate the location of the controller. You can use a combination of numbers, letters, characters, and spaces to create the name. To include a space in the name, use quotation marks to enclose the text string.

To change the existing name, enter the command with a different string. To unconfigure the location, enter "" at the prompt.

Example

The following command configures the location:

```
(host) (config) #location "Building 10, second floor, room 21E"
```

Command History

Introduced in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

location-server-feed

```
enable
disable
```

Description

This command allows sends RSSI information from APs to a location management server.

Syntax

Parameter	Description
`enable`	Enable the feed that sends RSSI information to a location management server. This feature is disabled by default.
`disable`	Disable the feed that sends RSSI information to a location management server. This feature is disabled by default.

Usage Guidelines

This command allows APs to send RSSI information to a location management server, which can use that information to compute the location of stations seen in the network.

Example

The following command configures the location:

```
(host) (config) #location-server-feed enable
```

Command History

Introduced in ArubaOS 6.3

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

logging

```
logging [ipaddr|ipv6addr|facility|level]
```

Description

Use this command to specify the IP address of the remote logging server, facility, severity, and the type.

Syntax

Parameter	Description	Range	Default
`ipaddr`	To set the remote logging server IPv4 address.		A.B.C.D
`ipv6addr`	To set the remote logging server IPv6 address.		X:X:X:X::X
`facility`	To set the remote logging server facility.	local 0 to local7	—
`level`	To set the logging level upto which the messages are logged.		

Usage Guidelines

The local use facilities (local0, local1, local2, local3, local4, local5, local6, and local7) are not reserved for specific message-generating sources, and can be used for sending syslog messages. Use the show logging command to verify that the device sends logging messages.

Example

The following command adds the remote logging server with the IP address 10.1.2.3 with a user log type using local4.

```
(host) (config) #logging 1.1.1.1 user facility local4
```

Command History

Introduced in ArubaOS 6.0

severity|type

Command History

This command was introduced in ArubaOS 3.0

Release	Modification
ArubaOS 6.0	Command introduced.
ArubaOS 6.3	The **severity** and **type** parameters were deprecated. The **ipv6addr** parameter was introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

logging facility

```
logging facility <facility>
```

Description

Use this command to set the facility to use when logging to the remote syslog server.

Syntax

Parameter	Description	Range
`<facility>`	The facility to use when logging to a remote syslog server.	local0 to local7

Usage Guidelines

The local use facilities (local0, local1, local2, local3, local4, local5, local6, and local7) are not reserved for specific message-generating sources, and can be used for sending syslog messages.

Example

The following command sets the facility to `local4`.

```
(host) (config) #logging facility local4
```

Command History

Introduced in ArubaOS 2.5

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master controllers

logging level

```
logging level <level> <category> [process <process>] [subcat <subcategory>]
```

Description

Use this command to set the categories or subcategories and the severity levels of messages that are logged.

Syntax

Parameter	Description
`<level>`	The message severity level, which can be one of the following (in order of severity level):
`emergencies`	(0) Panic conditions that occur when the system becomes unstable.
`alerts`	(1) Any condition requiring immediate attention and correction.
`critical`	(2) Any critical conditions, such as hard drive errors.
`errors`	(3) Error conditions.
`warnings`	(4) Warning messages.
`notifications`	(5) Significant events of a non-critical and normal nature.
`informational`	(6) Messages of general interest to system users.
`debugging`	(7) Messages containing information for debugging purposes.
`<category>`	Message category, which can be one of the following:
`ap-debug`	AP troubleshooting messages. You must specify a debug value.
`network`	Network messages.
`arm-user-debug`	ARM user troubleshooting messages. You must specify a MAC address.
`security`	Security messages.
`system`	System messages.
`user`	User messages.
`user-debug`	User troubleshooting messages. You must specify a MAC address.

Parameter	Description
wireless	Wireless messages.
process	Controller process, which can be one of the following:
aaa	AAA logging
activate	Integration and communication with an Activate server
approc	AP processes
armd	ARM processes
authmgr	User authentication
certmgr	Certificate manager
cfgm	Configuration Manager
cpsec	Control plane security
crypto	VPN (IKE/IPsec)
cts	Transport service
dbsync	Database synchronization
dds	logging for DDS processes
dhcpd	DHCP packets
esi	External Services Interface
extifmgr	External Interface Manager
fpapps	Layer 2 and 3 control
fw_visibility	Firewall visibility processes
gsmmgr	GSM manager
ha_mgr	High availability manager
httpd	Apache
hwmon	Hardware monitoring
iapmgr	Instant AP manager process

Parameter	Description
ipstm	Instant station manager process
l2tp	L2TP
licensemgr	License manager
localdb	Local database
mdns	Multicast DNS proxy
mobileip	Mobile IP
OSPF	OSPF logging
packetfilter	Packet filtering of messaging and control frames
pim	Protocol Independent Multicast
pppoed	PPPoE
pptp	PPTP
processes	Run-time processes
profmgr	Profile Manager
publisher	Publish subscribe service
ravd	Router Advertisement daemon
rfm	RF Troubleshooting Manager
snmp	SNMP
spectrum	Spectrum analysis processes
stm	Station management
syslogdwrap	Syslogd wrap
traffic	Traffic
ucm	UCM processes
wms	Wireless management (master controller only)

Parameter	Description
`subcat`	Message subcategory, which depends upon the message category specified. The following lists the subcategories available for each message category: • ap-debug: all • network: all, dhcp, mobility, packet-dump • security: aaa, all, dot1x, firewall, ike, mobility, packet-trace, vpn, webserver • system: all, configuration, messages, snmp, webserver, amon • user: all, captive-portal, dot1x, radius, voice, vpn • user-debug: all, configuration • wireless: all

Usage Guidelines

There are eight logging severity levels, each with its associated types of messages. Each level also includes the levels below it. For example, if you set the logging level to informational (6), all messages from level 0 through level 5 (from emergencies through notifications) are also logged. The warnings severity level is set by default for all message categories.

Only the **logging level warnings security subcat ids** and **logging level warnings security subcat ids-ap** subcategories are enabled by default. Other subcategories are not generated by default even their severity is **warning** or higher. Issue the **logging level** command to enable all other message subcategories.

Example

The following command logs critical system messages.

```
logging level critical system
```

Command History

Version	Description
ArubaOS 2.5	Command introduced
ArubaOS 6.3	• A new subcategory **amon** is added in the logging level command to account for AMON related logging messages. • A new process **mdns** is added to view mDNS debug messages.
ArubaOS 6.4	A new process category **ha_mgr** is added to manage high availability processes.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master and local controllers

loginsession

```
loginsession timeout <minutes>
```

Description

This command configures the time management session (via Telnet or SSH) remains active without user activity.

Syntax

Parameter	Description	Range	Default
`timeout`	Number of seconds or minutes that a management session remains active without any user activity.	5-60 minutes or 1-3600 seconds, 0 to disable	15 minutes

Usage Guidelines

The management user must re-login to the controller after a Telnet or SSH session times out. If you set the timeout value to 0, sessions do not time out. The TCP session timeout for wireless and wired user sessions through the controller is 15 minutes; this timeout for user sessions is not configurable.

Example:

The following command configures management sessions on the controller to not time out:

```
(host) (config) #loginsession timeout 0
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Requires the PEFNG license	Config mode on master controllers

logout

```
logout
```

Description

This command exits the current CLI session.

Syntax

No parameters.

Usage Guidelines

Use this command to leave the current CLI session and return to the user login.

Example

The following command exits the CLI session:

```
(host) >logout
User:
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	User mode on local or master controllers

mac-address-table

```
mac-address-table static <macaddr> {fastethernet|gigabitethernet} <slot>/<module>/<port> vlan
<vlan>
```

Description

This command adds a static entry to the MAC address table.

Syntax

Parameter	Description	Range
`<macaddr>`	Media Access Control (MAC) address, in the format xx:xx:xx:xx:xx:xx.	—
`<slot>/<module>/<port>`	Any command that references a Fast Ethernet or Gigabit Ethernet interface requires that you specify the corresponding port on the controller in the format <slot>/<module>/<port>.	—
`vlan`	ID number of the VLAN.	1-4094

Usage Guidelines

The MAC address table is used to forward traffic between ports on the controller. The table includes addresses learned by the controller. This command allows you to manually enter static addresses that are bound to specific ports and VLANs.

Example

The following command configures a MAC address table entry:

```
(host) (config) #mac-address-table static 00:0b:86:f0:05:60 fastethernet 1/12 vlan 22
```

Command History

Available in ArubaOS 3.0

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Config mode on master and local controllers

master-redundancy master-vrrp

```
master-redundancy master-vrrp <id>
```

Description

This command associates a VRRP instance with master controller redundancy.

Syntax

Parameter	Description	Range
<id>	The virtual router ID for the VRRP instance configured with the **vrrp** command.	1-255

Usage Guidelines

To maintain a highly redundant network, you can use a controller as a standby for the master controller. The underlying protocol used is VRRP which you configure using the **vrrp** command.

Example

The following command configures VRRP for the initially preferred master controller:

```
(host) (config) #vrrp 22
   vlan 22
   ip address 10.200.22.254
   priority 110
   preempt
   description Preferred-Master
   tracking master-up-time 30 add 20
   no shutdown
master-redundancy
   master-vrrp 22
   peer-ip-address 192.168.2.1 ipsec qwerTY012
```

The following shows the corresponding VRRP configuration for the peer controller.

```
(host) (config) #vrrp 22
   vlan 22
   ip address 10.200.22.254
   priority 100
   preempt
   description Backup-Master
   tracking master-up-time 30 add 20
   no shutdown
master-redundancy
   master-vrrp 22
peer-ip-address 192.168.22.1 ipsec qwerTY012
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

masterip

```
masterip <ipaddr>
   ipsec <key> [interface uplink|{vlan <id>}] [fqdn <fqdn>]
   ipsec-custom-cert master-mac1 <mac1> [master-mac2 <mac2>] ca-cert <ca> server-cert <cert>
   [interface uplink|{vlan <id>}] [fqdn <fqdn>] [suite-b gcm-128|gcm-256]
   ipsec-factory-cert master-mac1 <mac1> [master-mac2 <mac2>] [interface uplink|{vlan <id>}]
   [fqdn <fqdn>]
```

Description

This command configures the IP address and preshared key or certificate for the master controller on a local controller.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the master controller.
`ipsec <key>`	To establish the master-local IPsec tunnel using IKEv1, enter a preshared key between 6-64 characters.
`ipsec-custom-cert`	Use a custom-installed certificate on the master controller to establish a master-local IPsec tunnel using IKEv2.
`master-mac1 <mac1>`	The MAC address of the certificate on the Master.
`master-mac2 <mac2>`	(Optional) the MAC address of the certificate on the backup master controller.
`ca-cert <ca>`	User-defined name of a trusted CA certificate installed on the master controller. Use the **show crypto-local pki TrustedCA** command to display the CA certificates that have been imported into the controller.
`server-cert <cert>`	User-defined name of a server certificate installed on the master controller. Use the show **crypto-local pki ServerCert** command to display the server certificates that have been imported into the controller.
`interface`	Specify the uplink or VLAN interface on the master controller to initiate IKE.
`uplink`	Use the master controller's current active uplink to initiate IKE.
`vlan <id>`	Specify a VLAN interface on the master controller to initiate IKE. If you do not specify a VLAN, the controller IP will be used.

Parameter	Description
`fqdn <fqdn>`	Identify a dynamically addressed local controller by entering the Fully Qualified Domain Name (FQDN) of the controller.
`suite-b`	If you configure your master and local controllers to use IKEv2 and custom-installed certificates, you can optionally use Suite-B cryptographic algorithms for IPsec encryption. Specify one of the following options: • **gcm-128** Use 128-bit AES-GCM Suite-B encryption • **gcm-256** Use 256-bit AES-GCM Suite-B encryption
`ipsec-factory-cert`	Use the factory-installed certificate on the master controller to establish a master-local IPsec tunnel using IKEv2.
`master-mac1 <mac1>`	The MAC address of the certificate on the Master.
`master-mac2 <mac2>`	(Optional) the MAC address of the certificate on the backup master controller.
`interface`	Specify the uplink or VLAN interface on the master controller to initiate IKE.
`uplink`	Use the master controller's current active uplink to initiate IKE.
`vlan <id>`	Specify a VLAN interface on the master controller to initiate IKE. If you do not specify a VLAN, the controller IP will be used.
`fqdn <fqdn>`	Identify a dynamically addressed local controller by entering the Fully Qualified Domain Name (FQDN) of the controller.

Usage Guidelines

Use this command on a local controller to configure the IP address and preshared key or certificate for secure communication with the master controller. On the master controller, use the **localip** command to configure the IP address and preshared key or certificate for a local controller.

Changing the IP address of the master on a local controller requires a reboot of the local controller

If your master and local controllers use a pre-shared key for authentication, they will create the IPsec tunnel using IKEv1. If your master and local controllers use certificates for authentication, the IPsec tunnel will be created using IKEv2.

Example

The following command configures the master controller with a pre-shared key:

```
(host) [mynode] (config) #masterip 10.1.1.250 ipsec gw1234567
```

Command History

Release	Modification
ArubaOS 8.0	Command introduced.

Command Information

Platform	License	Command Mode
AI platforms	The **suite-b gcm-128** and **suite-b gcm-256** encryption options for IPsec custom certificates requires the Advanced Cryptography (ACR) license. All other parameters are available in the base operating system.	Available in Config mode on local controllers

master-redundancy peer-ip

```
master-redundancy peer-ip <ipaddr>
   ipsec <key>
   ipsec-custom-cert master-mac <mac> ca-cert <ca> server-cert <cert> [suite-b gcm-128|gcm-
   256]
   ipsec-factory-cert master-mac <mac>
```

Description

This command configures the IP address and preshared key or certificate for a redundant master controller on another master controller.

Syntax

Parameter	Description
`<ipaddr>`	IP address of the redundant controller. Use the 0.0.0.0 address to configure a global preshared key for all inter-controller communications.
`ipsec <key>`	To establish the master-master IPsec tunnel using IKEv1, enter a preshared key between 6-64 characters.
`ipsec-custom-cert`	Use a custom-installed certificate on the controller to establish the master-master IPsec tunnel using IKEv2
`master-mac <mac>`	The MAC address of the certificate on the redundant master controller.
`ca-cert <ca>`	User-defined name of a trusted CA certificate installed on the redundant master controller. Use the **show crypto-local pki TrustedCA** command to display the CA certificates that have been imported into the controller.
`server-cert <cert>`	User-defined name of a server certificate installed on on the redundant master controller. Use the show **crypto-local pki ServerCert** command to display the server certificates that have been imported into the controller.
`suite-b`	If you configure your master controllers to use IKEv2 and custom-installed certificates, you can optionally use Suite-B cryptographic algorithms for IPsec encryption. Specify one of the following options: • **gcm-128** Use 128-bit AES-GCM Suite-B encryption • **gcm-256** Use 256-bit AES-GCM Suite-B encryption
`ipsec-factory-cert`	Use the factory-installed certificate on the master controller to establish a master-local IPsec tunnel using IKEv2.
`master-mac <mac>`	The MAC address of the certificate on the redundant master controller.

Usage Guidelines

Use this command on a master controller to configure the IP address and preshared key or certificates for communication with a redundant master controller.

If your master controllers use a pre-shared key for authentication, they will create the IPsec tunnel using IKEv1. If your master and local controllers use certificates for authentication, the IPsec tunnel will be created using IKEv2.

Example

The following command configures the local controller on a master controller:

```
(host) (config) #peer-ip 10.4.62.5 ipsec-custom-cert master-mac 00:02:2D:11:55:4D ca-cert
cacert1 server-cert server1
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **ipsec-factory-cert** and **ipsec-custom-cert** parameters were introduced to allow certificate-based authentication of master and local controllers.

Command Information

Platform	License	Command Mode
Available on all platforms	The **suite-b gcm-128** and **suite-b gcm-256** encryption options for IPsec custom certificates requires the Advanced Cryptography (ACR) license. All other parameters are available in the base operating system	Config mode on master controllers

mgmt-server profile

```
mgmt-server profile <profile-name>
   airgroupinfo-enable
   clone
   inline-ap-stats
   inline-auth-stats
   inline-dhcp-stats
   inline-dns-stats
   location-enable
   misc-enable
   monitored-info-del-enable
   monitored-info-enable
   monitored-info-snapshot
   monitored-stats-enable
   no
   sessions-enable
   stats-enable
   tag-enable
   uccmonitoring-enable
   wids-event-info-enable
```

Description

Configure a management server profile on the controller for an W-AirWave management server or for an Analytics Location Engine (ALE) that should receive Advanced Monitoring (AMON) protocol messages filtered based on the profile settings. The default profiles provided for the AMP server (default-amp) and ALE (default-ale) are editable using this command.

Syntax

Parameter	Description
`<profile-name>`	Associate the controller to an W-AirWave management server by entering the IP address of the W-AirWaveserver.
`clone`	Use this command to copy from another configuration profile.
`airgroup-enable`	If enabled, the messages related to the AirGroup feature will be sent to the management server.
`inline-ap-stats-disable`	Disables inline monitoring stats from the AP, By default, this statistic is enabled.
`inline-auth-disable`	Disables inline monitoring stats related to authentication. By default, this statistic is enabled.
`inline-dhcp-disable`	Disables inline monitoring stats of DHCP. By default, this statistic is enabled.
`inline-dns-disable`	Disables inline monitoring stats of DNS. By default, this statistic is enabled.

Parameter	Description
location-enable	If enabled, Station RSSI/AP Neighbor messages will be sent to the management server.
misc-enable	If enabled, the AP system statistics, specifications, and station steer information will be sent to the management server.
monitored-info-enable	If enabled, the monitored AP or station information will be sent to the management server.
monitored-stats-enable	If enabled, the monitored AP or station statistics will be sent to the management server.
no	Disables the specified message filter.
sessions-enable	If enabled, the firewall DNA, application, and aggregate session messages will be sent to the management server.
stats-enable	If enabled, the statistics for Radio, virtual APs, and clients will be sent to the management server.
tag-enable	If enabled, tag messages will be sent to the management server.
uccmonitoring-enable	If enabled, the messages about the unified communications manager will be sent to the management server.
voiceinfo-enable	If enabled, the voice call records will be sent to the management server.

Usage Guidelines

Use this command to create a new management server profile on the controller or to edit the default profiles.

If you delete a management server profile that is applied to a destination server, you must re-apply a different profile to the server or re-create the same profile for the message filtering process to continue.

Example

The following command configures a management server profile:

```
(host) (config) #mgmt-server profile AMP-profile
(host) (Mgmt Config profile "AMP-profile") #location-enable
(host) (Mgmt Config profile "AMP-profile") #voiceinfo-enable
```

Command History

	Modification
ArubaOS 6.3.1	Command introduced.
ArubaOS 6.4	The **uccmonitoring-enable** and **airgroup-enable** parameters were introduced.
ArubaOS 6.5	The **inline-ap-stats-disable**, **inline-auth-disable**, **inline-dhcp-disable**, and **inline-dns-disable** parameters are added.

Command Information

Platforms	Licensing	Command Mode
All platforms		Config mode on master controllers

mgmt-server type

```
mgmt-server type
   ale primary-server <ip-addr> profile <profile-name>
   amp primary-server <ip-addr> profile <profile-name>
```

Description

Register a management server with the controller by specifying the IP address of an W-AirWave management server or Analytics and Location Engine that should receive messages from the controller using the Advanced Monitoring (AMON) protocol. You must also specify the management configuration profile in which the AMON message filtering settings can be done.

Syntax

Parameter	Description
`ale primary-server <ip-addr> profile <profile>`	Associate the controller to analytics and location engine by entering the IP address of the location server and the management configuration profile.
`amp primary-server <ip-addr> profile <profile>`	Associate the controller to an W-AirWave management server by entering the IP address of the W-AirWaveserver and the management configuration profile.

Example

The following command defines a primary W-AirWaveManagement server.

```
(host) (config) #mgmt-server type amp primary-server 192.168.6.2 profile default-amp
```

Command History

	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.1	The **secondary-server** parameter was deprecated.
ArubaOS 6.3	The **xc** parameter was introduced.
ArubaOS 6.3.1	The **xc** parameter was changed to **ale** and a new **profile** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms		Config mode on master controllers

mgmt-user

```
mgmt-user
   <username> <role> <password>
   console-block
   localauth-disable
   ssh-pubkey client-cert <certificate> <username> <role> [<rcp>]
   webui-cacert <certificate_name> [serial <number> <username> <role>]
```

Description

This command configures an administrative user.

Syntax

Parameter	Description	Default
`<username>`	Name of the user. You can create a maximum of 10 management users. **NOTE:** If you configure a root management user, you can use special characters except for double-byte characters.	—
`<role>`	Role assigned to the user. Predefined roles include: • guest-provisioning: Allows the user to create guest accounts on a special WebUI page. • location-api-mgmt: Permits access to location API information. You can log into the CLI; however, you cannot use any CLI commands. • network-operations: Permits access to Monitoring, Reports, and Events pages in the WebUI. You can log into the CLI; however, you can only use a subset of CLI commands to monitor the controller. • read-only: Permits access to CLI show commands or WebUI monitoring pages only. • root: Permits access to all management functions on the controller.	—
`<password>`	**NOTE:** You are prompted for the <password> for this user after you type in <role> and press Enter. The password must have a minimum of six characters. You can use special characters in the management user password. The restrictions are as follows: • You cannot use double-byte characters • You cannot use the question mark (?) • You cannot use white space <space >	—

Parameter	Description	Default
`console-block`	Enables or disables the console login. The purpose of this command is to introduce an ability to lock down all console ports, for example, micro USB, mini USB on the controller to enable high level security. This also ensures that no SSH access is allowed at the remote branch office. The SSH is only allowed from the headquarters via the IPsec tunnel.	Disabled
`localauth-disable`	Disables authentication of management users based on the results returned by the authentication server. To cancel this setting, use the no form of the command: **no mgmt-user localauth-disable** To verify if authentication of local management user accounts is enabled or disabled, use the following command: **show mgmt-user local-authentication-mode**	Enabled
`ssh-pubkey`	Configures certificate authentication of administrative users using the CLI through SSH.	—
`client-cert`	Name of the X.509 client certificate for authenticating administrative users using SSH.	—
`<username>`	Name of the user.	—
`<role>`	Role assigned to the authenticated user.	—
`<rcp>`	Revocation Checkpoint for the ssh user's client certificate. The rcp checks the revocation status of the SSH user's client certificate before permitting access.	—
`webui-cacert`	The client certificate for authenticating administrative users using the WebUI.	—
`<certificate_name>`	The CA certificate. If configured, certificate authentication and authorization are automatically completed using an authentication server.	—
`serial`	Serial number of the client certificate.	—
`<username>`	Name of the user.	—
`<role>`	Role assigned to the authenticated user.	—

Usage Guidelines

You can configure client certificate authentication of WebUI or SSH management users (by default, only username/password is used). To configure certificate authentication for the WebUI or SSH, use the web-server mgmt-auth certificate or ssh mgmt-auth public-key commands, respectively.

Use **webui-cacert <certificate name>** command if you want an external authentication server to derive the management user role. This is helpful if there are a large number of users who need to be authenticated.

Or, use the **mgmt-user webui-cacert <certificate_name> serial <number> <username> <role>** if you want the authentication process to use previously configured certificate name and serial number to derive the user role.

Use the **mgmt-user webui-cacert <certificate_name> serial <number> <username> <role> <rcp>**command if you want to configure an optional RCP for an ssh-pubkey user.

Example

See the web-server and ssh command descriptions for examples of certificate and public key authentication. The following command configures a management user and role:

```
(host) (config) #mgmt-user zach_jennings root
Password: *****
Re-Type password: *****
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.1	The **ssh-pubkey** and **webui-cacert** parameters were introduced.
ArubaOS 3.2	The **network-operations** role was introduced.
ArubaOS 3.3	The **location-api-mgmt** role and **localauth-disable** parameters were introduced.
ArubaOS 3.4	The **webui-cacert <certificate name>** parameter had additional functionality introduced.
ArubaOS 6.3	The **<rcp>** parameter was introduced.
ArubaOS 6.5	The **console-block** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

mobility-manager

```
mobility-manager <ipaddr> user <username> <password> [interval <secs>]
[retrycount <number>] [udp-port <port>] [rtls <rtls-udp-port>] trap-version {1|2c|3}
```

Description

This command allows the controller to communicate with a server.

Syntax

Parameter	Description	Range	Default
`<ipaddr>`	IP address of the server.	—	—
`user`	Name and SNMP password for the server user.	—	—
`interval`	Round-trip time, in seconds, to trap server.	1-65535	60 seconds
`retrycount`	Number of retries to the server before giving up.	1-65535	3
`udp-port`	UDP port number for trap server.	0-65535	162
`rtls`	UDP port number on which RSSI location data should be received from APs.	0-65535	8000
`trap-version`	Allows the you to specify the SNMP trap version by the remote trap receiver.	1, 2c, or 3	3

Usage Guidelines

This command needs to be configured before the controller can communicate with the server. This command performs three tasks:

- Configures the IP address of the server. In previous ArubaOS releases, this was done with the mobility-server command.
- Creates an SNMP version 3 user profile with the configured <username> and <password>. This allows SNMP SETs from the server to be received by the controller. The authentication protocol is Secure Hash Algorithm (SHA) and Data Encryption Standard (DES) is used for encryption. If <username> and <password> match an existing SNMP v3 user profile, the existing one is used. Otherwise, a new profile is created.

  This username and password must be used when adding this controller to the server in the Dashboard.
- Allows SNMP traps and notifications to be sent to the server IP address, by adding this server as a trap receiver.
- Optionally enables the server to function as a Real Time Location System (RTLS) server to receive location information via APs from RTLS tags or other devices.

Use the show mobility-manager command to check the current status of the configured servers.

Example

The following command configures the IP address and SNMP user profile for the server:

```
(host) (config)# mobility-manager 10.2.1.245 user mms-user my-password.
```

Command History

This command was introduced in ArubaOS 3.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

netdestination

```
netdestination <name>
   description <description6>
   host <ipaddr> [position <number>] {vlan <vlanID> | offset <offset No>}
   invert
   name <host_name>
   network <ipaddr> <netmask> [position <number>]
   no ...
   range <start-ipaddr> <end-ipaddr> [position <number>]
```

Description

This command configures an alias for an IPv4 network host, subnetwork, or range of addresses.

Syntax

Parameter	Description
`<name>`	Name for this host or domain. Maximum length is 63 characters.
`description`	Description about the this destination up to 128 characters long.
`host`	Configures a single IPv4 host and its position in the list. It also provides a sub command, **vlan – offset** to allow local net destination override.
`invert`	Specifies that the inverse of the network addresses configured are used. For example, if a network of 172.16.0.0 255.255.0.0 is configured, this parameter specifies that the alias matches everything except this subnetwork.
`name`	Use the **name** parameter to specify a domain or host name inside the netdestination object. Wildcards are supported through the asterisk (*) symbol, with the limitations described in the examples below. • A wildcard '*' is allowed only once and only in the beginning of the host or domain name. (For instance, ***.example.com** is allowed, but **example*.com** and ***example*.com** are not allowed.) • If the wildcard is applied to the host, the netdestination matches all hosts ending with that specific domain. (The name ***.example.com** matches all hosts ending with the domain **.example.com**, such as **demo.example.com**.) • If the wildcard is applied to the domain, the netdestination matches all hosts ending with that domain string. (The name ***example.com** matches all domains ending with **example.com**, such as **myexample.com** and **domainexample.com**.)
`network`	An IPv4 subnetwork consisting of an IP address and netmask.
`no`	Negates any configured parameter.
`range`	A range of IPv4 addresses consisting of sequential addresses between a lower and an upper value. The maximum number of addresses in the range is 16. If larger ranges are needed, convert the range into a subnetwork and use the **network** parameter.

Usage

Aliases can simplify configuration of session ACLs, as you can use an alias when specifying the traffic source and/or destination it in multiple session ACLs. Once you configure an alias, you can use it to manage network and host destinations from a central configuration point, because all policies that reference the alias will be updated automatically when you change the alias.

When using the **invert** option, use caution when defining multiple aliases, as entries are processed one at a time. As an example, consider a netdestination configured with the following two network hosts:

```
netdestination dest1 invert
network 1.0.0.0 255.0.0.0
network 2.0.0.0 255.0.0.0
```

A frame from http://1.0.0.1 would match the first alias entry, (which allows everything except for 1.0.0.0/8) so the frame would be rejected. However, it would then be compared against the second alias, which allows everything except for 2.0.0.0/8, and the frame would be permitted.

Example

The following command configures an alias for an internal network:

```
(host) (config) #netdestination Internal
   network 10.1.0.0 255.255.0.0
```

Example

The following command overrides the local network destination:

```
(host) (config) #netdestination store
   (config-dest) #host vlan 55 offset 36
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	Host functionality now only supports IPv4 subnets.
ArubaOS 6.2	Name parameter has maximum character length.
ArubaOS 6.4.4	Host functionality now supports vlan - offset sub command.

Command Information

Platforms	Licensing	Command Mode
All platforms	Requires the Policy Enforcement Firewall license.	Config mode on master controllers

netdestination6

```
netdestination6 <string>
   description <description6>
   host <ipaddr> [position <number>]
   invert
   name <host_name>
   network <ipaddr> <netmask> [position <number>]
   no ...
   range <start-ipaddr> <end-ipaddr> [position <number>]
```

Description

This command configures an alias for an IPv6 network host, subnetwork, or range of addresses.

Syntax

Parameter	Description
`<string>`	Name of the IPv6 destination host or subnetwork up to 63 characters long.
`description`	Description about the IPv6 netdestination up to 128 characters long.
`host`	Configures a single IPv6 host and position in the list.
`invert`	Specifies that the inverse of the network addresses configured are used. For example, if a network of fe80:0:0:0:0:0:ac10:0/128 is configured, this parameter specifies that the alias matches everything except this subnetwork.
`name`	Use the **name** parameter to specify a domain or host name inside the netdestination6 object. Wildcards are supported through the asterisk (*) symbol, with the limitations described in the examples below. • A wildcard '*' is allowed only once and only in the beginning of the host or domain name. (For instance, ***.example.com** is allowed, but **example*.com** and ***example*.com** are not allowed.) • If the wildcard is applied to the host, the netdestination matches all hosts ending with that specific domain. (The name ***.example.com** matches all hosts ending with the domain **.example.com**, such as **demo.example.com**.) • If the wildcard is applied to the domain, the netdestination matches all hosts ending with that domain string. (The name ***example.com** matches all domains ending with **example.com**, such as **myexample.com** and **domainexample.com**.)
`network`	An IPv6 subnetwork consisting of an IP address and netmask.
`no`	Negates any configured parameter.
`range`	A range of IPv6 addresses consisting of sequential addresses between a lower and an upper value. The maximum number of addresses in the range is 16. If larger ranges are needed, convert the range into a subnetwork and use the **network** parameter.

Usage Guidelines

Aliases can simplify configuration of session ACLs, as you can use an alias when specifying the traffic source and/or destination. Once you configure an alias, you can use it in multiple session ACLs.

Example

The following command configures an alias for an internal network:

```
(host) (config) #netdestination6 internal
   network 2016:2015:2014:2013::100/128
```

Command History

Release	Modification
ArubaOS 6.1	Command introduced
ArubaOS 6.3	A new field, description has been introduced to provide a description about the netdestination up to 128 characters long.
ArubaOS 6.3	Maximum length allowed for netdestination6 <name> is now 63 characters.
ArubaOS 6.5	A new field, name has been introduced to specify a domain or host name inside the netdestination6 object.

Command Information

Platforms	Licensing	Command Mode
All platforms	Requires the Policy Enforcement Firewall license.	Config mode on master controllers

netexthdr

```
netexthdr <alias-name>
   eh <eh-type> deny | permit
```

Description

This command allows you to edit the packet filter options in the extension header (EH).

Syntax

Parameter	Description	Default
`<alias-name>`	Specify the EH alias name.	default
`eh <eh-type>`	Specify one of the following EH types: • **<0-255>**: Matches the IPv6 next header type • **authentication**: Matches the IPv6 authentication header • **dest-option**: Matches the IPv6 destination-option header • **esp**: Matches the IPv6 encapsulation security payload header • **fragment**: Matches the IPv6 fragment header • **hop-by-hop**: Matches the IPv6 hop-by-hop header • **mobility**: Matches the IPv6 mobility header • **routing**: Matches the IPv6 routing header	—
`deny`	Denies the IPv6 packets matching the specified extended header type.	—
`permit`	Permits the IPv6 packets matching the specified extended header type. **NOTE:** By default, all the EH types are supported in the default EH.	—

Usage Guidelines

ArubaOS firewall is enhanced to process the IPv6 extension header (EH) to enable IPv6 packet filtering. You can filter the incoming IPv6 packets based on the EH type. You can edit the packet filter options in the default EH, using this command. By default, the default EH alias permits all EH types.

Example

The following command denies the IPv6 packets matching the specified extended header type in the default EH:

```
(host) (config) #netexthdr default
(host) (config-exthdr) #eh authentication deny
```

Related Commands

```
(host) #show netexthdr <alias-name>
```

Command History

Release	Modification
ArubaOS 6.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master controllers

netservice

```
netservice <name> <protocol>|tcp|udp {list <port>,<port>}|{<port> [<port>]}
[ALG <service>]
```

Description

This command configures an alias for network protocols.

Syntax

Parameter	Description	Range
`netservice`	Name for this alias.	—
`<protocol>`	IP protocol number.	0-255
`tcp`	Configure an alias for a TCP protocol	
`udp`	Configure an alias for a UDP protocol	
`list <port>,<port>`	Specify a list of non-contiguous port numbers, by entering up to six port numbers, separated by commas.	0-65535
`<port> [<port>]`	TCP or UDP port number. You can specify a single port number, or define a port range by specifying both the lower and upper port numbers.	0-65535
`ALG`	Application-level gateway (ALG) for this alias.	—
`<service>`	Specify one of the following service types: • **dhcp**: Service is DHCP • **dns**: Service is DNS • **ftp**: Service is FTP • **h323**: Service is H323 • **noe**: Service is Alcatel NOE • **rtsp**: Service is RTSP • **sccp**: Service is SCCP • **sip**: Service is SIP • **sips**: Service is Secure SIP • **svp**: Service is SVP • **tftp**: Service is TFTP • **vocera**: Service is VOCERA	

Usage Guidelines

Aliases can simplify configuration of session ACLs, as you can use an alias when specifying the network service. Once you configure an alias, you can use it in multiple session ACLs.

Example

The following command configures an alias for a network service:

```
(host) (config) #netservice HTTP tcp 80
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.0	The **list** parameter for defining non-contiguous ports was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ntp authenticate

```
ntp authenticate
```

Description

This command enables or disables NTP authentication.

Syntax

No parameters.

Usage Guidelines

Network Time Protocol (NTP) authentication enables the controller to authenticate the NTP server before synchronizing local time with server. This helps identify secure servers from fradulent servers. This command has to be enabled for NTP authentication to work.

Example

The following command configures an NTP server:

```
(host) (config) #ntp authenticate
```

Command History

Release	Modification
ArubaOS 6.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ntp authentication-key

```
ntp authentication-key <key-id> md5 <keyvalue>
```

Description

This command configures a key identifier and secret key and adds them into the database. NTP authentication works with a symmetric key configured by user. The key is shared by the client (Dell controller) and an external NTP server.

Syntax

Parameter	Description	Default
`<key-id>`	The key identifier is a string that is shared by the client (Dell controller) and an external NTP server. This value is added into the database.	—
`md5 <keyvalue>`	The key value is a secret string, which along with the key identifier, is used for authentication. This is added into the database.	—

Usage Guidelines

NTP authentication works with a symmetric key configured by user. The key is shared by the client (Dell controller) and an external NTP server. This command adds both the key identifier and secret string into the database.

Example

The following command configures the NTP authentication key. The key identifier is 12345 and the shared secret is 67890. Both key identifier and shared secret:

```
(host) (config) #ntp authentication-key 12345 md5 67890
```

Command History

Release	Modification
ArubaOS 6.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ntp server

```
#ntp server {<IPv4/IPv6 Address>|[iburst] [key]}
```

Description

This command configures a Network Time Protocol (NTP) server.

Syntax

Parameter	Description	Default
`IPv4/IPv6 Address`	IPv4/IPv6 Address of the Peer.	—
`iburst`	(Optional) This parameter causes the controller to send up to ten queries within the first minute to the NTP server. This option is considered “aggressive” by some public NTP servers.	disabled
`key <key-id>`	This is the key identifier used to authenticate the NTP server. This needs to match the key identifier configured in the **ntp authentication-key** command.	—

Usage Guidelines

You can configure the controller to set its system clock using NTP by specifying one or more NTP servers.

Example

The following command configures an NTP server using the iburst optional parameter and using a key identifier “123456.”

```
(host) (config) #ntp server 10.1.1.245 iburst key 12345
```

Command History

Release	Modification
ArubaOS 1.0	Command introduced
ArubaOS 3.0	The **iburst** parameter was introduced
ArubaOS 6.1	The **key** parameter was introduced
ArubaOS 6.4	The **IPv6** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ntp standalone

```
ntp standalone vlan-range <value of vlan range>
```

Description

This command enables/disables controller to act as NTP server.

Syntax

Parameter	Description	Default
`<value of vlan range>`	String representing vlan range (for example, 1,2,6-7). Maximum VLANS supported is 16.	—

Usage Guidelines

NTP standalone feature enables a controller to act as an NTP server so that the devices that do not have access to internet can synchronize their clocks.

Example

The following command enables the controller to act as an NTP server.

```
(host) (config) #ntp standalone vlan-range 1
```

Command History

Release	Modification
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master controllers.

ntp trusted-key

```
ntp trusted-key <keyid>
```

Description

This command configures an additional subset of trusted keys which can be used for NTP authentication.

Syntax

Parameter	Description	Default
`<keyid>`	An additional trusted string that can be used for authentication	—

Usage Guidelines

You can configure additional subset of keys which are trusted and can be used for NTP authentication.

Example

The following command configures an additional trusted key(84956) which can be used for NTP authentication.

```
(host) (config) #ntp trusted-key 84956
```

Command History

Release	Modification
ArubaOS 6.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

packet-capture

```
packet-capture
   controlpath [interprocess {all |  <ports>}] [other] [sysmsg {all | <opcodes>] [tcp
   {all | <ports>}] [udp {all | <ports>]]
   copy-to-flash {controlpath-pcap | datapath-pcap}
   datapath {ipsec <peer-ip>} [wifi-client <mac-address> {decrypted | encrypted | all}]
   destination [interface <slot>/<module>/<port>] [ip-address <ip-address>] [local-filesystem]
   no
   reset-pcap {controlpath-pcap | datapath-pcap}
```

Description

Use this command to enable or disable packet capturing and set packet capturing options for a single packet capture session.

Syntax

Parameter	Description	Default
`controlpath`	Enables controlpath packet capture. Captured packets are stored in /var/log/oslog/filter.pcap. **NOTE:** Only capture to local-filesystem is supported for controlpath capture.	Disabled
`interprocess`	Enables or disables interprocess packet capturing. . Specify up to ten comma-separated ports to capture; use **all** to sniff all ports. All CLI ports, which are TCP, are always skipped.	Disabled
`other`	Enable or disable all other types of packets.	Disabled
`sysmsg`	Enable or disable internal messaging packets. Specify up to ten comma-separated opcodes to capture; use `all` to sniff all opcodes. All CLI ports, which are TCP, are always skipped.	Disabled
`tcp`	Enable or disable TCP packet capturing. Specify up to ten comma-separated ports to capture; use `all` to sniff all TCP ports. All CLI ports, which are TCP, are always skipped.	Disabled
`udp`	Enable or disable UDP packet capturing. Specify up to ten comma-separated ports to capture; use `all` to sniff all UDP ports. All CLI ports, which are TCP, are always skipped.	Disabled
`copy-to-flash`	Copies captured packets to the flash.	–
`controlpath-pcap`	Copies controlpath captures. They are saved as **controlpath-pcap.tar.gz**.	–

Parameter	Description	Default
datapath-pcap	Copies datapath captures. They are saved as **datapath-pcap.tar.gz**.	–
datapath	Enables datapath packet capture. Captured packets are stored in /var/log/oslog/datapath.pcap or mirrored out of the controller.	Disabled
ipsec <peer-ip>	Enable or disable IPSec packet capturing. Enter the IPSec peer IP address to specify a given peer. NOTE: Capture to local-filesystem is not supported with this option.	Disabled
wifi-client <mac-address> {decrypted | encrypted | all}	Enable or disable packet capturing from a wifi client. Specify the client device by entering the device's MAC address. Additionally, you can specify what type of traffic captured: decrypted, encrypted, or all.	Disabled
destination	Configures the capture destination.	–
interface <slot>/<module>/<port>	Sends packet captures to a specific interface on the controller.	–
ip-address <ip-address>	Sends packet captures to a specific IP address.	–
local-filesystem	Stores captured packets on the controller in pcap files.	–
no	Negates any configured parameter.	
reset-pcap	Deletes old pcap files and restarts the active capture.	–
controlpath-pcap	Deletes old controlpath pcap files and restarts the active controlpath capture.	–
datapath-pcap	Deletes old datapath pcap files and restarts the active datapath capture.	–

Usage Guidelines

The packet-capture command can perform two types of packet capture: controlpath and datapath. Controlpath only captures packet destined for the controller. Datapath captures packets that are being forwarded by the controller, such as packets from a wifi client.

Packets can be retrieved through the **tar logs** command; look for the filter.pcap or datapath.pcap file. This command activates packet capture options on the current session. They are not saved and applied across all reboots.

If you do want to enable a packet capture session without setting values that can be saved and used for another session, use the command packet-capture. The related command packet-capture-defaults lets you define a set of packet capture options and save them in the configuration file. These setting will be automatically enabled when the controller boots up. Any settings defined using the command packet-capture will override packet-capture-defaults.

Example

The following command enables packet capturing for debugging a wireless WEP station doing VPN. This example uses the following parameters and values:

- Station up/down: sysmsg opcode 30
- WEP key plumbing: sysmsg opcode 29
- DHCP: sysmsg opcode 90
- IKE: UDP port 500 and 4500
- Layer 2 Tunneling Protocol (L2TP): UDP port 1701

```
(host) #packet-capture sysmsg 30,29,90
(host) #packet-capture udp 500,4500,1701,1812,1645
```

Command History

This command was introduced in ArubaOS 2.3.

Release	Modification
ArubaOS 2.3	Command introduced
ArubaOS 6.3	The following parameters were added: • controlpath • copy-to-flash • datapath ipsec and datapath wifi-client • destination • reset-pcap • no parameter has replaced disable The following parameters were moved under the controlpath parameter: • interprocess • other • sysmsg • tcp • udp

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master and local controllers

packet-capture-defaults

```
packet-capture
   controlpath [interprocess {all |  <ports>}] [other] [sysmsg {all | <opcodes>] [tcp
   {all | <ports>}] [udp {all | <ports>]]
   datapath {ipsec <peer-ip>} [wifi-client <mac-address> {decrypted | encrypted | all}]
   destination [interface <slot>/<module>/<port>] [ip-address <ip-address>] [local-filesystem]
   no
```

Description

Use this command to enable or disable packet capturing and define a set of default packet capturing options on the control path for debugging purposes.

Syntax

Parameter	Description	Default
`controlpath`	Enables controlpath packet capture. Captured packets are stored in /var/log/oslog/filter.pcap. NOTE: Only capture to local-filesystem is supported for controlpath capture.	Disabled
`interprocess`	Enables or disables interprocess packet capturing. . Specify up to ten comma-separated ports to capture; use **all** to sniff all ports. All CLI ports, which are TCP, are always skipped.	Disabled
`other`	Enable or disable all other types of packets.	Disabled
`sysmsg`	Enable or disable internal messaging packets. Specify up to ten comma-separated opcodes to capture; use `all` to sniff all opcodes. All CLI ports, which are TCP, are always skipped.	Disabled
`tcp`	Enable or disable TCP packet capturing. Specify up to ten comma-separated ports to capture; use `all` to sniff all TCP ports. All CLI ports, which are TCP, are always skipped.	Disabled
`udp`	Enable or disable UDP packet capturing. Specify up to ten comma-separated ports to capture; use `all` to sniff all UDP ports. All CLI ports, which are TCP, are always skipped.	Disabled
`datapath`	Enables datapath packet capture. Captured packets are stored in /var/log/oslog/datapath.pcap or mirrored out of the controller.	Disabled
`ipsec <peer-ip>`	Enable or disable IPSec packet capturing. Enter the IPSec peer IP address to specify a given peer. NOTE: Capture to local-filesystem is not supported with this option.	Disabled

Parameter	Description	Default
`wifi-client <mac-address> {decrypted | encrypted | all}`	Enable or disable packet capturing from a wifi client. Specify the client device by entering the device's MAC address. Additionally, you can specify what type of traffic captured: decrypted, encrypted, or all.	Disabled
`destination`	Configures the capture destination.	–
`interface <slot>/<module>/<port>`	Sends packet captures to a specific interface on the controller.	–
`ip-address <ip-address>`	Sends packet captures to a specific IP address.	–
`local-filesystem`	Stores captured packets on the controller in pcap files.	–
`no`	Negates any configured parameter.	

Usage Guidelines

This command applies to control path packets; not datapath packets. Packets can be retrieved through the **tar log** command; look for the filter.pcap file. This command activates packet capture options on the current switch. They are not saved and applied across switches.

Example

The following command sets the default packet capture values to debug a wireless WEP station doing VPN. Once these default settings are defined, you can use the packet-capture command to enable packet capturing with these values. This example uses the following parameters and values:

- Station up/down: sysmsg opcode 30
- WEP key plumbing: sysmsg opcode 29
- DHCP: sysmsg opcode 90
- IKE: UDP port 500 and 4500
- Layer 2 Tunneling Protocol (L2TP): UDP port 1701

```
packet-capture-defaults sysmsg 30,29,90 udp 500,4500,1701,1812,1645
```

Use the show packet-capture command to show the current action and the default values.

```
(host) show packet-capture

Current Active Packet Capture Actions(current switch)
=====================================================
Packet filtering TCP with 2 port(s) enabled:
  2
  1
Packet filtering UDP with 1 port(s) enabled:
  1
Packet filtering for internal messaging opcodes disabled.
Packet filtering for all other packets disabled.


Packet Capture Defaults(across switches and reboots if saved)
=============================================================
Packet filtering TCP with 2 port(s) enabled:
```

```
  2
  1
Packet filtering UDP with 1 port(s) enabled:
  1
```

Command History

This command was introduced in ArubaOS 2.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

page

```
page <length>
```

Description

This command sets the number of lines of text the terminal will display when paging is enabled.

Syntax

Parameter	Description	Range
`length`	Specifies the number of lines of text displayed.	24 - 100

Usage Guidelines

Use this command in conjunction with the **paging** command to specify the number of lines of text to display. For more information on the pause mechanism that stops the command output from printing continuously to the terminal, see paging on page 650.

If you need to adjust the screen size, use your terminal application to do so.

Example

The following command sets 80 as the number of lines of text displayed:

```
(host) (config) #page 80
```

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config and Enable mode on master controllers

paging

```
paging
```

Description

This command stops the command output from printing continuously to the terminal.

Syntax

No parameters

Usage Guidelines

By default, paging is enabled.

With paging enabled, there is a pause mechanism that stops the command output from printing continuously to the terminal. If paging is disabled, the output prints continuously to the terminal. To disable paging, use the **no paging** command. You must be in enable mode to disable paging.

The paging setting is active on a per-user session. For example, if you disable paging from the CLI, it only affects that session. For new or existing sessions, paging is enabled by default.

You can also configure the number of lines of text displayed when paging is enabled. For more information, refer to the command page on page 649.

If you need to adjust the screen size, use your terminal application to do so.

Example

The following command enables paging:

```
(host) (config) #paging
```

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config and Enable mode on master controllers

pan active-profile

```
pan active-profile
   profile <profile name>
```

Description

This command makes a Palo Alto Network (PAN) profile active from a set of profiles.

Syntax

Parameter	Description
`profile <profile name>`	The name of the PAN profile to be activated.

Usage Guidelines

This command makes a PAN profile active from a set of profiles, if any. Only one PAN profile can be active at a time.

```
(host) (config) #pan active-profile
(host) (Palo Alto Networks Active Profile) #profile default
```

Command History

	Modification
ArubaOS 6.4	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

pan profile

```
pan profile <profile-name>
   clone
   firewall host <host> port <port> username <username> passwd <password>
   no
```

Description

This command configures a Palo Alto Networks (PAN) profile to allow a controller to communicate with a PAN firewall.

Syntax

Parameter	Description
`clone`	Name of an existing PAN profile configuration from which parameter values are copied.
`firewall`	Configures the information for the associated PAN firewall.
`host <host>`	IP address or hostname of the PAN firewall.
`port <port>`	Port number of the PAN firewall.
`username <username>`	The username of the PAN firewall.
`passwd <password>`	The password of the PAN firewall.
`no`	Negates any configured parameter.

Usage Guidelines

This command is used to configure the PAN firewall that the controller will be communicating with. The username and password must match the name of the admin account configured on the PAN firewall.

```
(host) (config) #pan profile default
(host) (Palo Alto Networks Servers Profile "default") #firewall host 192.0.2.1 port 5642
username axde passwd ZAQ!2wsx
```

Command History

	Modification
ArubaOS 6.4	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

panic

```
panic {clear | info {file <filename> <symbolfile>|nvram <symbolfile>} | list {file
<filename>|nvram} | save <filename>}
```

Description

This command manages information created during a system crash.

Syntax

Parameter	Description
`clear`	Removes panic information from non-volatile random access memory (NVRAM).
`info`	Displays the content of specified panic files.
`list`	Lists panic information in the specified file in flash or in NVRAM.
`save`	Saves panic information from NVRAM into the specified file in flash.

Usage Guidelines

To troubleshoot system crashes, use the **panic save** command to save information from NVRAM into the specified file, then use the **panic clear** command to clear the information from NVRAM.

Example

The following command lists panic information in NVRAM:

```
(host) #panic list nvram
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

pan-options

```
pan-options
   portal <IP-address>|<FQDN> cert <cert-name>
   no
```

Description

This command configures options to integrate a branch controller with a Palo Alto Networks (PAN) firewall.

Syntax

Parameter	Description
<IP-address>	The IP address of the portal
<FQDN>	The fully qualified domain name (FQDN) of the portal
<cert-name>	Specify the name of the self-signed or external certification authority (CA) certificate to establish an SSL connection to the portal.

Usage Guidelines

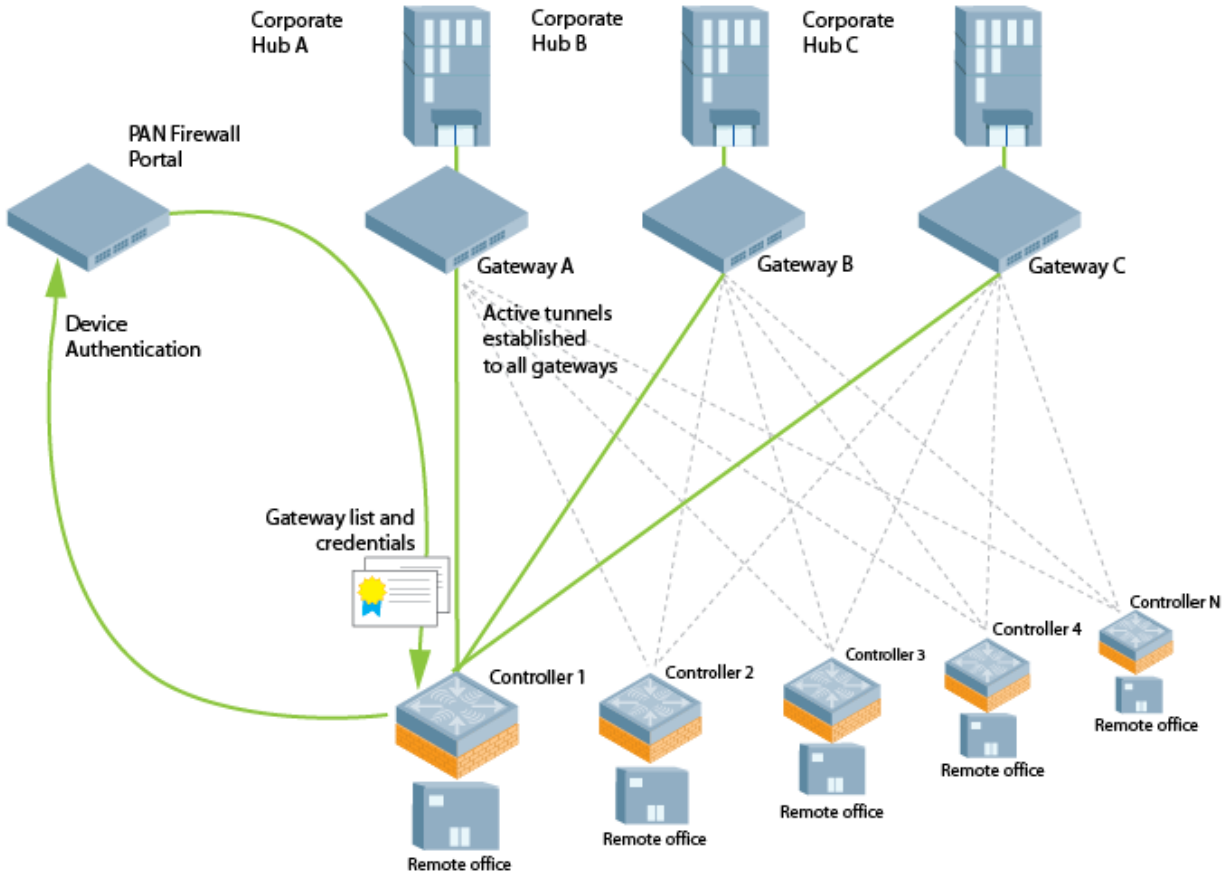
Issue this command on controllers configured as branch controllers to securely redirect internet inbound traffic from the controller into the PAN firewall. Although this configuration setting can be used on standalone or local controllers, this feature can only be used on controllers in these types of deployments when used in conjunction with the controller uplink VLAN manager feature. The uplink VLAN manager is enabled by default on branch controller uplinks. Master or local (non-branch) controllers using the PAN portal feature must enable the uplink VLAN manager using the uplink command in the controller command-line interface.

Integration Workflow

The following steps describes the work flow to integrate a branch controller with a Palo Alto Networks LSVPN firewall.

1. The Palo Alto portal is configured with the MAC address of the branch controller(s) at each remote office site. This allows the branch controller to authenticate to the portal.
2. Once the branch controller is authenticated, the Palo Alto portal sends the branch controller a list of firewall gateways and priority levels.
3. The branch controller uses the gateway list and credentials from the portal to contact all gateways. Each gateway then sends the branch controller information that allows the controller to automatically generate and populate the ip nexthop list **pan-gp-ipsec-map-list**, and sends the branch controller the information that allows the branch controller to create an IPsec tunnel to that gateway.
4. Once the controller has established a functional IPsec tunnel to the first gateway that comes up, it begins routing traffic to that gateway, even if the controller has not yet contacted all gateways. Other gatweays are added based upon the preemption policy in the nexthop list.

Figure 1 *Branch-office Controller and PAN Firewall Integration*



Configuration Prerequisites

The Palo Alto Networks Large-Scale VPN (LSVPN) framework can integrate with a branch-office controller by establishing an IPsec tunnels between the firewall and the controller. Integrating a Palo Alto Networks firewall with a W-7000 Series controller requires that all user traffic is routed, so it can be managed by a policy-based routing access control list. If PAN gateways are deployed across multiple datacenters, PAN devices must have a public IP or be behind a single NAT device so that reverse traffic comes back to the correct PAN gateway.

The following certificate requirements must be fulfilled before the cloud services controller can integrate with the Palo Alto Networks Large-Scale VPN (LSVPN) framework:

- The CA certificate used by the firewall portal must be installed on the master controller, so that it can be pushed down to the branch controllers.
- On the gateway devices, the **accept published routes** option must be enabled, and the devices must install the server certificates derived from the management portal root CA.

In deployments with multiple PAN firewalls, the PAN management portal needs to be configured with a list of gateways and the priorities for each gateway. Even if the PAN management portal uses serial number registration with preregistered serial numbers or MAC addresses, best practices is to configure LDAP, Radius, Kerberos or Local Database authentication as well. This allows a controller to authenticate to the portal even if the portal does not recognize the controller's MAC address.

Examples

```
(host) (config)# pan-options
(host) (Configure Palo Alto Network options)# portal 192.0.2.3 cert MyServerCert
```

Next, create a policy-based routing access control list (ACL) and apply that ACL to all the roles that need redirection. Best practices is to define a default rule at the end of the policy-based routing ACL that redirects all non-corporate traffic to the PAN firewalls in the predefined next-hop list.

If you use the predefined nexthop list **pan-gp-ipsec-map-list** in your policy-based routing ACL, multiple branch controllers can use the same ACL configuration.

```
(host) (config)# ip access-list route my_PBR_policy
(host) (config-route-my_PBR_policy)# any network 192.0.2.0 255.255.255.0 any forward
(host) (config-route-my_PBR_policy)# any any any route nexthop-list pan-gp-ipsec-map-list
```

Related Commands

	Modification
ip nexthop-list	Define a nexthop list for policy-based routing.
pan active-profile	This command selects an active Palo Alto Network (PAN) profile from a set of profiles.
pan profile	This command configures a Palo Alto Networks (PAN) profile to allow a controller to communicate with a PAN firewall.
show pan-gp	This command displays Palo Alto Networks portal or gateway settings on a branch or local controller.
show pan-options	This command displays configured options to integrate a branch with a Palo Alto Networks (PAN) firewall.
uplink	Manage and configure the uplink network connection.

Command History

	Modification
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

papi-security

```
papi-security {enhanced-security|key <key>}
no
```

Description

The papi-security command enforces advanced security options and provides an enhanced level of security. It allows to enable or disable the PAPI Enhanced Security configuration and to configure a new security key if required.

Syntax

Parameter	Description	Range	Default
`Enhanced-security`	Enables PAPI Enhanced Security	Enable/Disable	Disable
`Key <key>`	Secret key that is used to authenticate messages between systems	10–64 characters	—
`no`	Disables the earlier configuration	—	—

Usage Guidelines

This command allows you to use advanced options that regulate PAPI communication between controllers and W-AirWave. When enhanced security is enabled, PAPI messages are authenticated at the receiving device and are denied if validation failed. One of the ways PAPI messages are authenticated is through a shared secret key. The papi-security command lets you configure a key on the master controller which then distributes it to local controllers. If no key is configured, then the controller uses the default key.

All master controllers and W-AirWave should have the same PAPI Enhanced Security configuration. Mismatch in secret key will affect centralized licensing and W-AirWave.

Examples

To enable the PAPI Enhanced Security mode, execute the following command:

```
(host) (config) #papi-security
(host) (PAPI Security Profile) #enhanced-security
```

To configure a new PAPI Enhanced Security key for controllers andW-AirWave, execute the following command:

```
(host) (PAPI Security Profile) #key 1234567890
```

Related Commands

Command	Description
show papi-security	Shows the status of the PAPI Enhanced Security configuration of thecontroller.
show ipc statistics app-id	Show the PAPI statistics for messages transmitted, received,

Command	Description
show ipc statistics app-name	signed, validated, denied, and more based on application ID or the application name.

Command History

Release	Modification
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

perf-test

```
perf-test
   server start|stop controller|{ap [ap-name <name>}|{ip-addr <ip>}|{ip6-addr <ip6>} [tcp|udp]
   client start|stop controller|{ap [ap-name <name>}|{ip-addr <ip>}|{ip6-addr <ip6>}<host-ip>
   tcp|udp
   duration <duration>
   parallel <parallel>
   window
   bandwidth <value>
   port open|close
```

Description

Use this command under the guidance of Dell technical support to launch or halt an Iperf throughput test between the controller and the AP.

Syntax

Parameter	Description
server	Run Iperf tests in server mode.
`start|stop`	Start or stop the iperf test. Tests run in server mode must be manually stopped using the command perf-test server stop.
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IPv4 address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.
`TCP`	Run Iperf tests using the TCP protocol.
`UDP`	Run Iperf tests using the UDP protocol.
client	Run Iperf tests in client mode by specifying the IPV4 or IPv6 address of the host. Tests run in client mode automatically stop when they are complete, although they can also be manually stopped using the **perf-test client stop** command.
`host <ip>|<ipv6>`	
`start|stop`	Start or stop the iperf test. Tests run in server mode must be manually stopped using the command perf-test server stop.
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IPv4 address of the AP.

Parameter	Description
`ip6-addr <ip6-addr>`	IPv6 address of the AP.
`TCP`	Run Iperf tests using the TCP protocol.
`UDP`	Run Iperf tests using the UDP protocol.
`bandwidth <value>`	Rate at which the Iperf test data should be sent, in bits/sec. The default value is 1 Mbit/sec. This parameter supports the suffixes **K** (to represent Kbits/sec) and **M** (to represent Mbits/sec.)
`duration`	Number of seconds for which the test runs. The supported range is 10-120 seconds, and the default value is 10 seconds.
`parallel`	Number of parallel clients threads to run.
`window`	TCP window size. This parameter supports the suffixes **K** (to represent Kbit-s/sec) and **M** (to represent Mbits/sec.)
port open|close	Use this command under the guidance of Dell technical support to open port 5001 to allow Iperf throughput tests between the controller and the AP.

Usage Guidelines

The report generated by an Iperf throughput test can be viewed by issuing the command .

Related Commands

Command	Description
show perf-test reports	Use this command under the guidance of Delltechnical support to view the results of an Iperf throughput test launched from the controller.

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

pcap (deprecated)

```
pcap {raw-start <ipaddr> <target-ipaddr> <target-port> <format> [bssid <bssid>] [channel
<number>] [maxlen <maxlen>]}|{interactive <am-ip> <filter> <target-ipaddr> <target-port>
[bssid <bssid>][channel <number>]}|{clear|pause|resume|stop <am-ip> <id> [bssid <bssid>]}
```

Description

These commands manage packet capture (PCAP) on Dell air monitors.

Syntax

Parameter	Description
`raw-start`	Stream raw packets to an external viewer.
`<ipaddr>`	IP address of the air monitor collecting packets.
`<target-ipaddr>`	IP address of the client station running Wildpacket's AiroPeek monitoring application.
`<target-port>`	UDP port number on the client station where the captured packets are sent.
`<format>`	Specify a number to indicate one of the following formats for captured packets: • **0** : pcap • **1** : peek • **2** : airmagnet • **3** : pcap+radio header • **4** : ppi
`bssid`	(Optional) BSSID of the Air Monitor interface for the PCAP session.
`<bssid>`	BSSID of the Air Monitor Interface, which is usually its MAC address.
`channel`	(Optional) Number of a radio channel to tune into to capture packets
`maxlen`	(Optional) Limit the length of 802.11 frames to include in the capture to a specified maximum.
`<maxlen>`	(Optional) Maximum number of packets to be captured.
`interactive`	Start an interactive packet capture session.
`<am-ip>`	IP address of the air monitor collecting packets.
`<filter-spec>`	Packet Capture filter specification.

Parameter	Description
<target-ipaddr>	
<target-port>	
bssid	(Optional) Specify the BSSID of the Air Monitor interface for the PCAP session.
<bssid>	BSSID of the Air Monitor Interface, which is usually its MAC address.
channel	(Optional) Number of a radio channel to tune into to capture packets
clear	Clears the packet capture session.
pause	Pause a packet capture session.
resume	Resume a packet capture session.
start	Start a new packet capture session.
stop	Stop a packet capture session.
<am-ip>	IP address of the air monitor collecting packets.
<id>	ID of the PCAP session.
bssid	(Optional) Specify the BSSID of the Air Monitor interface for the PCAP session.
<bssid>	BSSID of the Air Monitor Interface, which is usually its MAC address.

Usage Guidelines

These commands direct a Dell air monitor to send packet captures to the Wildpacket's AiroPeek monitoring application on a remote client. The AiroPeek application listens for packets sent by the air monitor.

The following pcap commands are available:

Command	Description
clear	Clears the packet capture session.
pause	Pause a packet capture session.
resume	Resume a packet capture session.
start	Start a new packet capture session.
stop	Stop a packet capture session.

Before using these commands, you need to start the AiroPeek application on the client and open a capture window for the air monitor. The AiroPeek application cannot be used to control the flow or type of packets sent from Dell air monitors.

The AiroPeek application processes all packets, however, you can apply display filters on the capture window to control the number and type of packets being displayed. In the capture window, the time stamp displayed corresponds to the time that the packet is received by the client and is not synchronized with the time on the Dell air monitor.

Example

The following command starts a raw packet capture session for the air monitor at 10.100.100.1 and sends the packets to the client at 192.168.22.44 on port 604 with pcap format:

```
(host) (config) #pcap raw-start 10.100.100.1 192.168.22.44 604 0
```

Command History

Version	Change
ArubaOS 3.0	Command Introduced
ArubaOS 3.4	The **maxlen** parameter was introduced, and the **pcap start** command deprecated.
ArubaOS 6.2	Functionality with 2 new parameters, now subsumed by the ap packet capture command.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

phonehome

```
phonehome
   https <from_addr>
```

Description

This command configures the PhoneHome auto reporting feature.

Syntax

Parameter	Description
`https <from_addr>`	Configure controllers running ArubaOS 6.4 send PhoneHome reports to an Activate server using HTTPS. Earlier versions of ArubaOS allow the PhoneHome feature to send reports to an SMTP server only. The <from-addr> email address is used to properly identify the user sending the report.

Command History

Version	Description
ArubaOS 6.0	Command Introduced
ArubaOS 6.4	The **https** parameter was introduced to allow the controller to send reports to Dell support through Activate.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	The **phonehome now** command must be issued in enable mode. All other PhoneHome commands require config mode.

ping

```
ping <ipaddress> | ipv6 {<global-address> | interface vlan <vlanid> <linklocal-address>}
   count
   df-flag
   packet-size
   source
```

Description

This command sends five ICMP echo packets to the specified ip address. You can also ping the specified IPv6 address.

Syntax

Parameter	Description	Default	Range
`<ipaddress>`	Destination IP Address	–	–
`ipv6` • <global-address> • interface vlan <vlanid> <linklocal-address>	Specify this parameter to ping an IPv6 address. • Specify the IPv6 global address. • Specify the IPv6 link local address of a specific VLAN interface.	–	–
`count`	The number of ping packets sent to the target IP address.	5	1 - 100
`df-flag`	Sets the Don't Fragment flag.	–	–
`packet-size`	The size, in bytes, of a ping datagram	100 bytes	10 - 2000
`source`	Sets the source interface for a ping datagram. The source can be a valid **VLAN ID** or a **Management Interface**.	–	–

Usage Guidelines

You can send five ICMP echo packets to a specified IP address. The controller times out after two seconds. You can also ping the specified IPv6 address.

Examples

The following example pings 10.10.10.5.

```
(host) #ping 10.10.10.5
```

The sample controller output is:

```
Press 'q' to abort.
Sending 5, 100-byte ICMP Echos to 10.10.10.5, timeout is 2 seconds:!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0.408/0.5434/1.073 ms
```

The following example pings the specified IPv6 global address:

```
(host) #ping ipv6 2005:d81f:f9f0:1001::14
```

The sample controller output is:

```
Press 'q' to abort.
Sending 5, 100-byte ICMPv6 Echos to 2005:d81f:f9f0:1001::14, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0.309/0.3726/0.463 ms
```

Command History

Release	Modification
ArubaOS 1.0	Command introduced
ArubaOS 6.1	Introduced **ipv6** parameter to provide support for IPv6.
ArubaOS 6.3	Introduced the following parameters: • count • df-flag • packet-size • source

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	User, Enable, and Config modes on master controllers

pkt-trace

```
pkt-trace acl <acl-name> {enable|disable} [trace {cptrace|pktrace} [trace-mask <tmask>]]]
```

Description

Enable packet tracing in the datapath. Use this feature only under the supervision of Dell technical support.

Syntax

Parameter	Description
`<acl-name>`	Enable packet tracing for the specified access-control list.
`enable`	Enable packet tracing for the ACL.
`disable`	Disable packet tracing for the ACL.
`cptrace`	Send packet trace data into the Control Processor.
`pktrace`	Write packet trace data in the packet.
`tracemask <tmask>`	Specify the trace mask. This value will be provided by Dell technical support.

Example

The following example enables packet tracing for the traffic matching the acl **stateful-dot1x**.

```
(host) #pkt-trace acl stateful-dot1x enable trace cptrace trace-mask <val>
```

Command History

This command was introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

pkt-trace-global

```
pkt-trace-global {enable|disable} [trace-mask <tmask>]
```

Description

Enable global packet tracing in the datapath. Use this feature only under the supervision of Dell technical support.

Syntax

Parameter	Description
`<acl-name>`	Enable packet tracing for the specified access-control list.
`enable`	Enable global packet tracing for the ACL.
`disable`	Disable global packet tracing for the ACL.
`tracemask <tmask>`	Specify a trace mask. Use this feature only under the supervision of Dell technical support.

Example

The following command enables the global packet tracing for all traffic.

```
(host) (config) #pkt-trace-global enable
```

Command History

This command was introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

pptp ip local pool

```
pptp ip local pool <pool> <ipaddr> [<end-ipaddr>]
```

Description

This command configures an IP address pool for VPN users using Point-to-Point Tunneling Protocol (PPTP).

Syntax

Parameter	Description
`<pool>`	User-defined name for the address pool.
`<ipaddr>`	Starting IP address for the pool.
`<end-ipaddr>`	Ending IP address for the pool.

Usage Guidelines

If VPN is used as an access method, you specify the pool from which the user's IP address is assigned when the user negotiates a PPTP session. Use the **show vpdn pptp local** command to see the used and free addresses in the pool.

PPTP is an alternative to IPsec that is supported by various hardware platforms. PPTP is considered to be less secure than IPsec but also requires less configuration. You configure PPTP with the **vpdn** command.

Example

The following command configures an IP address pool for PPTP VPN users:

```
(host) (config) #pptp ip local pool pptp-pool1 172.16.18.1 172.16.18.24
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

priority-map

```
priority-map <name>
   dot1p <priority> high
   dscp <priority> high
   no ...
```

Description

This command configures the Type of Service (ToS) and Class of Service (CoS) values used to map traffic into high priority queues.

Syntax

Parameter	Description	Range
`<name>`	User-defined name of the priority map.	—
`dot1p`	IEEE 802.1p priority value, or a range of values separated by a dash (-).	0-7
`dscp`	Differentiated Services Code Point (DSCP) priority value, or a range of values separated by a dash (-).	0-63
`no`	Negates any configured parameter.	—

Usage Guidelines

This command allows you to prioritize inbound traffic that is already tagged with 802.1p and/or IP ToS in hardware queues. You apply configured priority maps to ports on the controller (using the **interface fastethernet** or **interface gigbitethernet** command). This causes the controller to inspect inbound traffic on the port; when a matching QoS tag is found, the packet or flow is mapped to the specified queue.

Example

The following commands configure a priority map and apply it to a port:

```
(host) (config) #priority-map pri1
   dscp 4-20 high
   dscp 60 high
   dot1p 4-7 high
interface gigabitethernet 1/24
   priority-map pri1
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

process monitor

```
process monitor log|restart|
```

Description

The process monitor validates the integrity of processes every 120 seconds. If a process does not respond during three consecutive 120-second timeout intervals, that process is flagged as nonresponsive and the process monitor will create a log message, restart the process or reboot the controller

Syntax

Parameter	Description
`log`	The process monitor creates a log message when a process fails to responding properly. This is the default behavior for the process monitor
`restart`	This parameter enables strict behavior for runtime processes. When you enable this option, the process monitor will restart processes that fail to responding properly.

Usage Guidelines

The CLI command **process monitor log** enables logging for process monitoring. By default, whenever a process does not update a required file or send a heartbeat pulse within the required time limit, the process monitor records a critical log message, but does not restart any process. If you want the configure watchdog to restart a process once it fails to respond, use the CLI **command process monitor restart**.

Example

The following changes the default process monitor behavior, so the process monitor restarts nonresponsive processes.

```
(host) #process monitor restart
```

Related Commands

The show **process monitor statistics** command displays the current status of all the processes running under the process monitor watchdog. A partial example of the output of this command is shown below:

```
host) (config) #show process monitor statistics

   Process Monitor Statistics
   --------------------------
   Name                          State            Restarts  Timeout Value  Timeout
                                                                 Chances
   ----                          -----            --------  -------------  ---------------
   /mswitch/bin/arci-cli-helper  PROCESS_RUNNING  0         120            3
   /mswitch/bin/fpcli            PROCESS_RUNNING  0         120            3
   /mswitch/bin/packet_filter    PROCESS_RUNNING  0         120            3
   /mswitch/bin/certmgr          PROCESS_RUNNING  0         120            3
   /mswitch/bin/dbstart          PROCESS_RUNNING  0         120            3
   /mswitch/bin/cryptoPOST       PROCESS_RUNNING  0         120            3
   /mswitch/bin/sbConsoled       PROCESS_RUNNING  0         120            3
   /mswitch/bin/pubsub           PROCESS_RUNNING  0         120            3
   /mswitch/bin/cfgm             PROCESS_RUNNING  0         120            3
```

```
/mswitch/bin/syslogdwrap        PROCESS_RUNNING  0          120            3
/mswitch/bin/aaa                PROCESS_RUNNING  0          120            3
/mswitch/bin/fpapps             PROCESS_RUNNING  0          120            3
/mswitch/bin/pim                PROCESS_RUNNING  0          120            3
/mswitch/bin/lic
```

Command History

Release	Modification
ArubaOS 3.4	Command introduced
ArubaOS 3.4	The **process restart** command was deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

prompt

```
prompt <prompt>
```

Description

This command changes the prompt text.

Syntax

Parameter	Description	Range	Default
`prompt`	The prompt text displayed by the controller.	1–64	<hostname>

Usage Guidelines

You can use any alphanumeric character, punctuation, or symbol character. To use spaces, plus symbols (+), question marks (?), or asterisks (*), enclose the text in quotes.

You cannot alter the parentheses that surround the prompt text, or the greater-than (>) or hash (#) symbols that indicate user or enable CLI mode.

Example

The following example changes the prompt text to “It’s a new day!”.

```
(host) (config) #prompt "It's a new day!"
(It's a new day!) (config) #
```

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

provision-ap

```
provision-ap
   a-ant-bearing <bearing>
   a-ant-gain <gain>
   a-ant-tilt-angle <angle>
   a-antenna {1|2|both}
   altitude <altitude>
   ap-group <group>
   ap-name <name>
   apdot1x-passwd <string>
   apdot1x-username <name>
   cellular_nw_preference 3g-only|4g-only|advanced|auto
   copy-provisioning-params {ap-name <name> | ip-addr <ipaddr>}
   dns-server-ip <ipaddr>
   dns-server-ip6 <ipv6 address>
   domain-name <name>
   external-antenna
   fqln <name>
   g-ant-bearing <bearing>
   g-ant-gain <gain>
   g-ant-tilt-angle <angle>
   g-antenna {1|2|both}
   gateway <ipaddr>
   gateway6 <ipv6-address>
   ikepsk <key>
   installation default|indoor|outdoor
   ip6addr <ipv6-address>
   ip6prefix <ipv6-prefix>
   ipaddr <ipaddr>
   latitude <location>
   link-priority-cellular
   link-priority-ethernet
   longitude <location>
   master {<name>|<ipaddr>}
   mesh-role {mesh-point|mesh-portal|none|remote-mesh-portal}
   mesh-sae {sae-disable|sae-enable}
   netmask <netmask>
   no ...
   pap-passwd <string>
   pap-user <name>
   pkcs12-passphrase <string>
   pppoe-chap-secret<key>
   pppoe-passwd <string>
   pppoe-service-name <name>
   pppoe-user <name>
   read-bootinfo {ap-name <name>|ip-addr <ipaddr>|wired-mac <macaddr>}
   reprovision {all|ap-name <name>|ip-addr <ipaddr>|ip6-addr <ip6-addr>|serial-num
   <string>|service-tag <service-tag>|wired-mac <macaddr>}
   reset-bootinfo {ap-name <name>|ip-addr <ipaddr>|wired-mac <macaddr>}
   server-ip <ipaddr>
   sch-mode-radio-0
   sch-mode-radio-1
   server-name <name>
   set-ikepsk-by-addr <ip-addr>
   syslocation <string>
   uplink-vlan <uplink-vlan>
   usb-dev <usb-dev>
   usb-dial <usb-dial>
   usb-init <usb-init>
```

```
usb-passwd <usb-passwd>
usb-power-mode auto|enable|disable
usb-tty <usb-tty>
usb-tty-control <usb-tty-control>
usb-type <usb-type>
usb-user <usb-user>
```

Description

This command provisions or reprovisions an AP.

Syntax

Parameter	Description	Range
ant-bearing	Determines the horizontal coverage distance of the 802.11a (5GHz) antenna from True North. From a planning perspective, the horizontal coverage pattern does not consider the elevation or vertical antenna pattern. **NOTE:** This parameter is supported on outdoor APs only. If you use this parameter to configure an indoor AP, an error message is displayed.	0-360 Decimal Degrees
ant-gain	Antenna gain for 802.11a (5GHz) antenna.	—

Parameter	Description	Range
a-antt-tilt-angle	Directs the angle of the 802.11a (5GHz) antenna for optimum coverage. Use a - (negative) value for downtilt and a + (positive) value for uptilt. **NOTE:** This parameter is supported on outdoor APs only. If you use this parameter to configure an indoor AP, an error message is displayed.	-90 to +90 Decimal Degrees
a-antenna	Antenna use for 5 GHz (802.11a) frequency band. • 1: Use antenna 1 • 2: Use antenna 2 • both: Use both antennas (default)	1, 2, both (default)

Parameter	Description	Range
altitude	Altitude, in meters, of the AP. **NOTE:** This parameter is supported on outdoor APs only. If you use this parameter to configure an indoor AP, an error message is displayed.	—
ap-group	Name of the AP group to which the AP belongs.	—
ap-name	Name of the AP to be provisioned.	—
apdot1x-passwd	Password of the AP to authenticate to 802.1X using PEAP.	—

Parameter	Description	Range
apdot1x-username	Username of the AP to authenticate to 802.1X using PEAP.	—

Parameter	Description	Range
cellular_nw_preference 3g-only | 4g-only | advanced | auto	This setting allows you to select how the modem should operate. • **auto** (default): In this mode, the modem firmware will control the cellular network service selection; so the cellular network service failover and fallback is not interrupted by the remote AP (RAP). • **3g_only**: Locks the modem to operate only in 3G. • **4g_only**: Locks the modem to operate only in 4G. • **advanced**: The RAP controls the cellular network service selection based on the Received Signal Strength Indication (RSSI) threshold-based approach. Initially the modem is set to the default auto mode. This allows the modem firmware to select the available network. The RAP determines the RSSI value for the available network type (for example 4G), checks whether the RSSI is within required range, and if so, connects to that network. If the RSSI for the modem's selected network is not within the required range, the RAP will then check the RSSI limit of an alternate network (for example, 3G), and reconnect to that alternate network. The RAP will repeat the above steps each time it tries to connect using a 4G multimode modem in this mode.	—

Parameter	Description	Range
copy-provisioning-params	Initializes the provisioning-params workspace with the current provisioning parameters of the specified AP, The provisioning parameters of the AP must have previously been retrieved with the **read-bootinfo** option. **NOTE:** This parameter can only be used on the master controller.	—
dns-server-ip	IP address of the DNS server for the AP.	—

Parameter	Description	Range
dns-server-ip6	IPv6 address of the DNS server for the AP.	—
domain-name	Domain name for the AP.	—
external-antenna	Use an external antenna with the AP.	—
fqln	Fully-qualified location name (FQLN) for the AP, in the format <APname.floor.building.campus>.	—

Parameter	Description	Range
g-ant-bearing	Determines the horizontal coverage distance of the 802.11g (2.4GHz) antenna from True North. From a planning perspective, the horizontal coverage pattern does not consider the elevation or vertical antenna pattern. **NOTE:** This parameter is supported on outdoor APs only. If you use this parameter to configure an indoor AP, an error message is displayed.	0-360 decimal degrees
g-ant-gain	Antenna gain for 802.11g (2.4GHz) antenna.	—

Parameter	Description	Range
g-ant-tilt-angle	Directs the angle of the 802.11g (2.4GHz) antenna for optimum coverage. Use a - (negative) value for downtilt and a + (positive) value for uptilt. **NOTE:** This parameter is supported on outdoor APs only. If you use this parameter to configure an indoor AP, an error message is displayed.	-90 to +90 Decimal Degrees
g-antenna	Antenna use for 2.4 GHz (802.11g) frequency band. • 1: Use antenna 1 • 2: Use antenna 2 • both: Use both antennas	1, 2, both
gateway	IP address of the default gateway for the AP.	—

Parameter	Description	Range
gateway6	IPv6 address of the default gateway for the AP.	—
ikepsk	IKE preshared key for the AP.	—
installation	Specify the type of installation (indoor or outdoor). The default parameter automatically selects an installation mode based upon the AP model type.	default indoor outdoor
ip6addr	Static IPv6 address of the AP.	—

Parameter	Description	Range
ip6prefix	The prefix of static IPv6 address of the AP.	—
ipaddr	Static IP address for the AP.	—
latitude	Latitude coordinates of the AP. Use the format: Degrees, Minutes, Seconds (DMS). For example: 37 22 00 N	—

Parameter	Description	Range
link-priority-cellular <link-priority-cellular>	Set the priority of the cellular uplink. By default, the cellular uplink is a lower priority than the wired uplink; making the wired link the primary link and the cellular link the secondary or backup link. Configuring the cellular link with a higher priority than your wired link priority will set your cellular link as the primary controller link.	—

Parameter	Description	Range
link-priority-ethernet <link-priority-ethernet>	Set the priority of the wired uplink. Each uplink type has an associated priority; wired ports having the highest priority by default.	—

Parameter	Description	Range
longitude	Longitude coordinates of the AP. Use the DMS format. For example: 122 02 00 W	—
master	Name or IP address of the master controller.	—
mesh-role	Configure the AP to operate as a mesh node. You assign one of three roles: **mesh portal**, **mesh point** or **remote mesh point**. If you select “none,” the AP operates as a thin AP.	—
mesh-sae	Enable or disable Simultaneous Authentication of Equals (SAE) on a mesh network. This option offers enhanced security over the default wpa2-psk-aes mesh security setting, and provides secure, attack-resistant authentication using a pre-shared key. SAE supports simultaneous initiation of a key exchange, allowing either party to initiate an exchange or both parties to initiate a key exchange simultaneously To use the SAE feature, you must enable this parameter on all mesh nodes (points and portals) in the network, to prevent mesh link connectivity issues. **NOTE:** This is a Beta feature only. This parameter should be kept “disabled” for this release.	—
netmask	Netmask for the IP address.	—
no	Negates any configured parameter.	—

Parameter	Description	Range
pap-passwd	Password Authentication Protocol (PAP) password for the AP. You can use special characters in the PAP password. Following are the restrictions: • You cannot use double-byte characters • You cannot use a tilde (~) • You cannot use a tick (') • If you use quotes (single or double), you must use the backslash (\) before and after the password	—
pap-user	PAP username for the AP.	—
pkcs12-passphrase	Passphrase in PKCS12 format.	—

Parameter	Description	Range
pppoe-chap-secret	PPPoE CHAP secret key for the AP.	—
pppoe-passwd	Point-to-Point Protocol over Ethernet (PPPoE) password for the AP.	—
pppoe-service-name	PPPoE service name for the AP.	—

Parameter	Description	Range
pppoe-user	PPPoE username for the AP.	—
read-bootinfo	Retrieves current provisioning parameters of the specified AP. **NOTE:** This parameter can only be used on the master controller.	—
reprovision	Provisions one or more APs with the values in the provisioning-params workspace. To use **reprovision**, you must use **read-bootinfo** to retrieve the current values of the APs into the provisioning-ap-list. **NOTE:** This parameter can only be used on the master controller.	—

Parameter	Description	Range
reset-bootinfo	Restores factory default provisioning parameters to the specified AP. **NOTE:** This parameter can only be used on the master controller.	—
sch-mode-radio-0	If you are provisioning an 802.11n-capable AP, you can issue the sch-mode-radio-0 command to enable single-chain mode for the selected radio. AP radios in single-chain mode will transmit and receive data using only legacy rates and single-stream HT rates up to MCS 7. This setting is disabled by default.	
sch-mode-radio-1	If you are provisioning an 802.11n-capable AP, you can issue the sch-mode-radio-1 command to enable single-chain mode for the selected radio. AP radios in single-chain mode will transmit and receive data using only legacy rates and single-stream HT rates up to MCS 7. This setting is disabled by default.	

Parameter	Description	Range
server-ip	IP address of the controller from which the AP boots.	
server-name	DNS name of the controller from which the AP boots.	
set-ikepsk-by-addr	Set a IKE preshared key to correspond to a specific IP address.	

Parameter	Description	Range
syslocation	User-defined description of the location of the AP.	
uplink-vlan <uplink-vlan>	If you configure an uplink VLAN on an AP connected to a port in trunk mode, the AP sends and receives frames tagged with this VLAN on its Ethernet uplink. By default, an AP has an uplink vlan of 0, which disables this feature. **NOTE:** If an AP is provisioned with an uplink VLAN, it *must be connected to a trunk mode port* or the AP's frames will be dropped.	
usb-dev	The USB device identifier, if the device is not already supported.	

Parameter	Description	Range
usb-dial	The dial string for the USB modem. This parameter only needs to be specified if the default string is not correct.	

Parameter	Description	Range
	USB cellular devices on remote APs typically register as modems, but may occasionally register as a mass-storage device. If a remote AP cannot recognize its USB cellular modem, use the **usb-modeswitch** command to specify the parameters for the hardware model of the USB cellular data-card. **NOTE:** You must enclose the entire modeswitch parameter string in quotation marks.	

Parameter	Description	Range
usb-init	The initialization string for the USB modem. This string configures the Access Point Name (APN) setting of the USB modem. For the USB modem to understand this string, the value entered should adhere to the following formats: • Prefix double-quotes with a backslash character. See example below: **"AT+CGDCONT=1,\"IP\",\"vendor\""** • Use single-quote instead of double-quotes. AP translates single-quote into double-quotes. See example below: **"AT+CGDCONT=1,'IP','vendor'"** • Do not use double-quotes as a string begin-end pair. This is supported by AP. See example below: **AT+CGDCONT=1,'IP','vendor'** This parameter only needs to be specified if the default string is incorrect.	
usb-passswd	A PPP password, if provided by the cellular service provider	

Parameter	Description	Range
usb-power-mode auto | enable | disable	Set the USB power mode to control the power to the USB port.	
usb-tty	The TTY device path for the USB modem. This parameter only needs to be specified if the default path is not correct.	

Parameter	Description	Range
usb-tty-control	The TTY device control path for the USB modem. This parameter only needs to be specified if the default path is not correct.	
usb-type	Specify the USB driver type. • **acm**: Use ACM driver • **airprime**: Use Airprime driver • **beceem-wimax**: Use Beceem driver for 4G-WiMAX • **ether**: Use CDC Ether driver for direct IP 4G device • **hso**: Use HSO driver for newer Option • **none**: Disable 3G or 2G network on USB • **option**: Use Option driver • **pantech-3g**: Same as "pantech-uml290" - to support upgrade • **pantech-uml290**: Use Pantech USB driver for UML290 device • **ptumlusbnet**: Use Pantech USB driver for 4G device • **rndis**: Use a RNDIS driver for a 4G device • **sierra-evdo**: Use EVDO Sierra Wireless driver • **sierra-gsm**: Use GSM Sierra Wireless driver • **sierrausbnet**:Use SIERRA Direct IP driver for 4G device • **storage**: Use USB flash as storage device for storing RAP certificates	
usb-user	The PPP username provided by the cellular service provider	

Usage Guidelines

You do not need to provision APs before installing and using them.

The exceptions are outdoor APs, which have antenna gains that you must provision before they can be used, and APs configured for mesh. You must provision the AP before you install it as a mesh node in a mesh deployment.

Users less familiar with this process may prefer to use the **Provisioning** page in the WebUI to provision an AP.

Provisioned or reprovisioned values do not take effect until the AP is rebooted. APs reboot automatically after they are successfully reprovisioned.

In order to enable cellular uplink for a remote AP (RAP), the RAP must have the device driver for the USB data card and the correct configuration parameters. ArubaOS includes device drivers for the most common hardware types, but you can use the **usb** commands in this profile to configure a RAP to recognize and use an unknown USB modem type.

Provisioning a Single AP

To provision a single AP:

1. Use the **read-bootinfo** option to read the current information from the deployed AP you wish to reprovision.
2. Use the **show provisioning-ap-list** command to see the AP to be provisioned.
3. Use the **copy-provisioning-params** option to copy the AP's parameter values to the provisioning-params workspace.
4. Use the provision-ap options to set new values. Use the **show provisioning-params** command to display parameters and values in the provisioning-params workspace. Use the **clear provisioning-params** command to reset the workspace to default values.
5. Use the **reprovision** option to provision the AP with the values in provisioning-params workspace. The AP automatically reboots.

Provisioning Multiple APs at a Time

You can change parameter values for multiple APs at a time, however, note the following:

- You cannot provision the following AP-specific options on multiple APs:
  - ap-name
  - ipaddr
  - pap-user
  - pap-passwd
  - ikepsk

  If any of these options are already provisioned on the AP, their values are retained when the AP is reprovisioned.
- The values of the server-name, a-ant-gain, or g-ant-gain options are retained if they are not reprovisioned.
- All other values in the provisioning-params workspace are copied to the APs.

To provision multiple APs at the same time:

1. Use the **read-bootinfo** to read the current information from each deployed AP that you wish to provision.

NOTE

The AP parameter values are written to the provisioning-ap-list. To reprovision multiple APs, the APs must be present in the provisioning-ap-list. Use the **show provisioning-ap-list** command to see the APs that will be provisioned. Use the **clear provisioning-ap-list** command to clear the provisioning-ap-list.

2. Use the **copy-provisioning-params** option to copy an AP's parameter values to the provisioning-params workspace.
3. Use the provision-ap options to set new values. Use the **show provisioning-params** command to display parameters and values in the provisioning-params workspace. Use the **clear provisioning-params** command to reset the workspace to default values.
4. Use the **reprovisionall** option to provision the APs in the provisioning-ap-list with the values in provisioning-params workspace. All APs in the provisioning-ap-list automatically reboot.

The following are useful commands when provisioning one or more APs:

- **show|clear provisioning-ap-list** displays or clears the APs that will be provisioned.
- **show|clear provisioning-params** displays or resets values in the provisioning-params workspace.
- **show ap provisioning** shows the provisioning parameters an AP is currently using.

Example

The following commands change the IP address of the master controller on the AP:

```
(host) (config) #provision-ap
  read-bootinfo ap-name lab103
  show provisioning-ap-list
  copy-provisioning-params ap-name lab103
  master 10.100.102.210
  reprovision ap-name lab103
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.2	Introduced support for the mesh parameters, additional antenna parameters, and AP location parameters.
ArubaOS 3.4	Introduced support for the following parameters: • installation • mesh-sae • set-ikepsk-by-addr • usb-dev • usb-dial • usb-init • usb-passwd • usb-tty • usb-type • usb-user

Release	Modification
	• link-priority-cellular • link-priority-ethernet
ArubaOS 5.0	The mesh-sae parameter no longer has the **sae-default** option. Use the **sae-disable** option to return this parameter to its default disabled setting.
ArubaOS 6.0	The **uplink-vlan** parameter was introduced.
ArubaOS 6.1	The following new parameters were introduced for provisioning IPv6 APs: • dns-server-ip6 • ip6addr • ip6prefix • gateway6
ArubaOS 6.2	The following new parameters provision APs in single-chain mode: • sch-mode-radio-0 • sch-mode-radio-1 The following new parameters provision APs for 802.1X authentication: • apdot1x-passwd • apdot1x-username The following new parameters provision Remote APs using USB modems: • usb-modeswitch • 4g-usb-type
ArubaOS 6.2.1.0	The **cellular_nw_preference** parameter was introduced for provisioning multi-mode modems, and the **4g-usb-type** parameter was deprecated. Specify a 2/3G or 4G modem type using the **usb-type** parameter.
ArubaOS 6.3	The **sierrausbnet** and **storage** usb-type parameters were introduced.
ArubaOS 6.3.1	the **rndis** usb-type parameter was introduced.
ArubaOS 6.4.2.0	The **service-tag** parameter was introduced under **reprovision** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms, except for the parameters noted in the Syntax table.	Base operating system, except for the parameters noted in the Syntax table.	Config mode on master controllers

reload

```
reload
```

Description

This command performs a reboot of the controller.

Syntax

No parameters.

Usage Guidelines

Use this command to reboot the controller if required after making configuration changes or under the guidance of Dell Networks customer support. The **reload** command powers down the controller, making it unavailable for configuration. After the controller reboots, you can access it via a local console connected to the serial port, or through an SSH, Telnet, or WebUI session. If you need to troubleshoot the controller during a reboot, use a local console connection.

After you use the **reload** command, the controller prompts you for confirmation of this action. If you have not saved your configuration, the controller returns the following message:

```
Do you want to save the configuration (y/n):
```

- Enter **y** to save the configuration.
- Enter **n** to not save the configuration.
- Press [Enter] to exit the command without saving changes or rebooting the controller.

If your configuration has already been saved, the controller returns the following message:

```
Do you really want to reset the system(y/n):
```

- Enter **y** to reboot the controller.
- Enter **n** to cancel this action.

The command will timeout if you do not enter y or n.

Example

The following command assumes you have already saved your configuration and you must reboot the controller:

```
(host) (config) #reload
```

The controller returns the following messages:

```
Do you really want to reset the system(y/n): y
System will now restart!
...
Restarting system.
```

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config modes on master controllers

rename

```
rename <filename> <newfilename>
```

Description

This command renames an existing system file.

Syntax

Parameter	Description
`filename`	An alphanumeric string that specifies the current name of the file on the system.
`newfilename`	An alphanumeric string that specifies the new name of the file on the system.

Usage Guidelines

Use this command to rename an existing system file on the controller. You can use a combination of numbers, letters, and punctuation (periods, underscores, and dashes) to rename a file. The new name takes affect immediately.

Make sure the renamed file uses the same file extension as the original file. If you change the file extension, the file may be unrecognized by the system. For example, if you have an existing file named `upgrade.log`, the new file must include the `.log` file extension.

You cannot rename the active configuration currently selected to boot the controller. If you attempt to rename the active configuration file, the controller returns the following message:

```
Cannot rename active configuration file
```

To view a list of system files, and for more information about the directory contents, see dir on page 348.

Example

The following command changes the file named **test_configuration** to **deployed_configuration**:

```
(host) (config) #rename test_configuration deployed_configuration
```

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Eanble and Config modes on master controllers

restore

```
restore flash
```

Description

This command restores flash directories backed up to the flashbackup.tar.gz file.

Syntax

Parameter	Description
`flash`	Restores flash directories from the flashbackup.tar.gz file.

Usage Guidelines

Use the **backup flash** command to tar and compress flash directories to the flashbackup.tar.gz file.

Example

The following command restores flash directories from the flashbackup.tar.gz file:

```
(host) #restore flash
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

rf am-scan-profile

```
<profile-name>
   clone <profile>
   dwell-time-active-channel
   dwell-time-other-reg-domain-channel
   dwell-time-rare-channel
   dwell-time-reg-domain-channel
   no
   scan-mode
```

Description

Configure an Air Monitor (AM) scanning profile.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile.	1-63 characters	—
`clone <profile>`	Copy data from another AM scanning profile	—	—
`dwell-time-active-channel`	Dwell time (in ms) for channels where there is wireless activity.	100-32768 ms	500 ms
`dwell-time-other-reg-domain-channel`	Dwell time (in ms) for channels not in the APs regulatory domain.	100-32768 ms	250 ms
`dwell-time-rare-channel`	Dwell time (in ms) for rare channels.	100-32768 ms	100 ms
`dwell-time-reg-domain-channel`	Dwell time (in ms) for AP's Regulatory domain channels	100-32768 ms	250 ms
`no`	Delete the command	—	—
`scan-mode`	Set the scanning mode for the radio.	—	—
`all-reg-domain`	Scan channels in all regulatory domain	—	—
`rare`	Scan *all* channels (all regulatory domains and rare channels)	—	—
`reg-domain`	Scan channels in the APs regulatory domain	—	—

Usage Guidelines

Channels are categorized into the following types:

- **Active Channel:** This qualifier indicates that wireless activity (for example, a probe request) is detected on this channel by the presence of an AP or other 802.11 activity.
- **All Regulatory Domain Channels:** A valid non-overlapping channel that is in the regulatory domain of at least one country.
- **Rare Channels:** Channels that fall into a frequency range outside of the regulatory domain; 2484 MHz and 4900MHz-4995MHz (J-channels), and 5000-5100Mhz.
- **Regulatory Domain Channels:** A channel that belongs to the regulatory domain of the country in which the AP is deployed. The set of channels that belong to this group is a subset of the channels in all-reg-domain channel group.

Command History

Release	Modification
ArubaOS 6.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All Platforms	RFProtect	Configuration Mode (config)

rft

```
rft test profile antenna-connectivity ap-name <name> [dest-mac <macaddr> [phy {a|g}| radio
{0|1}]]

rft test profile link-quality {ap-name <name> dest-mac <macaddr> [phy {a|g}|
 radio {0|1}] | bssid <bssid> dest-mac <macaddr> | ip-addr <ipaddr>
 dest-mac <macaddr> [phy {a|g}|radio {0|1}]}

rft test profile raw {ap-name <name> dest-mac <macaddr> [phy {a|g}|radio {0|1}] | bssid
<bssid> dest-mac <macaddr> | ip-addr <ipaddr> dest-mac <macaddr> [phy {a|g}|radio {0|1}]}
```

Description

This command is used for RF troubleshooting.

Syntax

Parameter	Description	Range
`ap-name`	Name of the AP that performs the test.	—
`dest-mac`	MAC address of the client to be tested.	—
`phy`	802.11 type, either a or g.	a | g
`radio`	Radio ID, either 0 or 1.	0 | 1
`bssid`	BSSID of the AP that performs the test.	—
`ip-addr`	IP address of the AP that performs the test.	

Usage Guidelines

This command can run predefined test profiles for antenna connectivity, link quality, or raw testing. You should only run these commands when directed to do so by a Dell support representative.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

rf arm-rf-domain-profile

```
rf arm-rf-domain profile
   arm-rf-domain-key <arm-rf-domain-key>
```

Description

This profile holds a non-editable key defined by the master controller, and used to sign over-the air (OTA) ARM updates exchanged between APs.

Syntax

Parameter	Description
<arm-rf-domain-key>	Non-editable key value

Command History

Release	Modification
ArubaOS 6.2	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

rf arm-profile

```
rf arm-profile <profile>
   160MHz-support {Auto|contiguous-only|non-contiguous-only|none}
   40MHz-allowed-bands {All|None|a-only|g-only}
   80MHz support
   acceptable-coverage-index <number>
   active-scan (not intended for use)
   aggressive-scan
   assignment {disable|maintain|multi-band|single-band}
   backoff-time <seconds>
   cellular-handoff-assist
   channel-quality-aware-arm
   channel-quality-threshold <channel-quality-threshold>
   channel-quality-wait-time <seconds>
   client-aware
   client-match
   clone <profile>
   cm-band-a-min-signal <cm-band-a-min-signal>
   cm-band-g-max-signal <cm-band-g-max-signal>
   cm-dot11v
   cm-lb-client-thresh <#-of-clients>
   cm-lb-signal-delta <cm-lb-signal-delta>
   cm-lb-snr-thresh <dB>
   cm-lb-thresh <%-of-clients>
   cm-max-steer-fails <#-of-fails>
   cm-mu-client-thresh <count>
   cm-mu-snr-thresh <value>
   cm-report-interval
   cm-stale-age <secs>
   cm-steer-backoff
   cm-steer-timeout <secs>
   cm-sticky-check-interval <secs>
   cm-sticky-min-signal <-dB>
   cm-sticky-snr <dB>
   cm-sticky-snr-delta
   cm-unst-ageout
   cm-unst-ageout-intvl days <days> hours <hours>
   dynamic-bw
   dynamic-bw-beacon-failed-thresh
   dynamic-bw-cca-ibss-thresh
   dynamic-bw-cca-intf-thresh
   dynamic-bw-clear-time
   dynamic-bw-wait-time
   error-rate-threshold <percent>
   error-rate-wait-time <seconds>
   free-channel-index <number>
   interfering-ap-weight <number>
   ideal-coverage-index <number>
   load-aware-scan-threshold
   max-tx-power <dBm>
   min-scan-time <# of scans>
   min-tx-power <dBm>
   mode-aware
   multi-band-scan
   no ...
   ota-updates
   ps-aware-scan
   rogue-ap-aware
   scan mode {all-reg-domain|reg-domain}
```

```
scan-interval
scanning
video-aware-scan
voip-aware-scan
```

Description

This command configures the Adaptive Radio Management (ARM) profile.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`160MHz-support`	Allows ARM to determine the channel bandwidth on the 160 MHz frequency.	—	none
`auto`	Assigns 160 MHz channel bandwidth. The selection of channel bandwidth is automatic; this can either be contiguous or non-contiguous.	—	—
`contiguous-only`	Assigns contiguous 160 MHz channel bandwidth.	—	—
`non-contiguous-only`	Assigns non-contiguous 160 MHz channel bandwidth.	—	—
`none`	Do not assign 160 MHz channel bandwidth. This is the default value.	—	—
`40MHz-allowed-bands`	Allows ARM to determine if 40 MHz mode of operation is allowed on the 5 GHz or 2.4 GHz frequency band only, on both frequency bands, or on neither frequency band.	All/None/ a-only/g-only	a-only
`All`	Allows 40 MHz channels on both the 5 GHZ (802.11a) and 2.4 GHZ (802.11b/g) frequency bands.	—	—
`None`	Disallows use of 40 MHz channels.	—	—

Parameter	Description	Range	Default
a-only	Allows use of 40 MHz channels on the 5 GHZ (802.11a) frequency band only.	—	—
g-only	Allows use of 40 MHz channels on the 2.4 GHZ (802.11b/g) frequency band only.	—	—
80MHz-support	If enabled, 80 MHz channels can be used in the 5 GHz frequency band on APs that support 802.11ac.	—	enabled
acceptable-coverage-index	The minimal coverage that the AP should try to achieve on its channel. The denser the AP deployment, the lower this value should be. This setting applies to multi-band implementations only.	1-6	4
active-scan	When active-scan is enabled, an AP initiates active scanning via probe request. This option elicits more information from nearby APs, but also creates additional management traffic on the network. This feature is disabled by default, and should *not be enabled* except under the direct supervision of Dell Technical Support. Default: disabled	—	disabled
aggressive-scan	When this feature is enabled, an AP radio with no clients will scan channels every second.	—	enabled
assignment	Activates one of four ARM channel/power assignment modes.	—	single-band (new installations only)
disable	Disables ARM channel/power assignments.	—	—

Parameter	Description	Range	Default
maintain	Maintains existing channel assignments.	—	—
multi-band	Computes ARM assignments for both 5 GHZ (802.11a) and 2.4 GHZ (802.11b/g) frequency bands.	—	—
single-band	Computes ARM assignments for a single band.	—	—
backoff-time	Time, in seconds, an AP backs off after requesting a new channel or power.	120-3600	240 sec
cellular-handoff -assist	When both the client match and cellular handoff assist features are enabled, the cellular handoff assist feature can help a dual-mode, 3G/4G-capable Wi-Fi device such as an iPhone, iPad, or Android client at the edge of Wi-Fi network coverage switch from Wi-Fi to an alternate 3G/4G radio that provides better network access. This feature is disabled by default, and is recommended only for Wi-Fi hotspot deployments.	—	disabled
channel-quality -aware-arm	Enable this feature to base ARM changes upon an internally calculated channel quality metric. When this feature is disabled, ARM initiates channel changes based on thresholds defined in this profile, and chooses the channel based on the calculated interference index value. Default: Disabled	—	disabled
channel-quality -threshold	Channel quality percentage below which ARM initiates a channel change.	0-100	70
channel-quality -wait-time	If channel quality is below the specified channel quality threshold for this wait time period, ARM initiates a channel change.	1-3600	120

Parameter	Description	Range	Default
`client-aware`	If the Client Aware option is enabled, the AP does not change channels if there is active client traffic on that AP. If Client Aware is disabled, the AP may change to a more optimal channel, but this change may also disrupt current client traffic.	—	enabled
`client match`	The client match feature helps optimize network resources by balancing clients across channels, regardless of whether the AP or the controller is responding to the wireless client's probe requests. If enabled, the controller compares whether or not an AP has more clients than its neighboring APs on other channels. If an AP's client load is at or over a predetermined threshold as compared to its immediate neighbors, or if a neighboring Dell AP on another channel does not have any clients, load balancing will be enabled on that AP. This feature is enabled by default	—	enabled
`clone`	Name of an existing ARM profile from which parameter values are copied.	—	—
`cm-band-a-min-signal <cm-band-a-min-signal>`	Minimum signal level required for the targeted A band radio in a Client Match band steer move (-dBm).	—	75
`cm-band-g-max-signal <cm-band-g-max-signal>`	Maximum signal level of the G band radio that can trigger a Client Match band steer move (-dBm)	—	45
`cm-dot11v`	Client Match steers using 802.11v BSS Transition Management.	—	enabled

Parameter	Description	Range	Default
`cm-lb-client-thresh <#-of-clients>`	If an AP radio has fewer clients than the client match load balancing threshold defined by this parameter, the AP will not participate in load balancing.	0-100 clients	30
`cm-lb-signal -delta`	Client match will not move a client to a new radio if the signal strength of the target AP is this dB value lower than the radio to which the client is currently associated. This parameter works differently than the **cm-lb-snr-thresh** value, which imposes a definite value on the target AP's signal-to-noise radio. the **cm-lb-signal-delta** parameter imposes a relative constraint based upon the signal strength of the radio to which the client is currently associated.	0-20 dB	5 dB
`cm-lb-snr-thresh <dB>`	Clients must detect a SNR from an underutilized AP radio at or above this threshold before the client match feature considers load balancing a client to that radio.	0-100 dB	25
`cm-lb-thresh <%-of-clients>`	When the client match feature is enabled, clients may be steered from a highly utilized channel on an AP to a channel with fewer clients. If a channel on an AP radio has this percentage fewer clients than another channel supported by the client, the client match feature may move clients from the busier channel to the channel with fewer clients.	0-100 %	20

Parameter	Description	Range	Default
`cm-max-steer-fails <#-of-fails>`	The controller keeps track of the number of times the client match feature failed to steer a client to a different radio, and the reason that each steer attempt was triggered. If the client match feature attempts to steer a client to a new radio multiple consecutive times for the same reason but client steering fails each time, the controller notifies the AP to mark the client as unsteerable for that specific trigger. This parameter defines the maximum allowed number of client match steering fails with the same trigger before the client is marked as unsteerable for that trigger.	0-100 failures	5
`cm-mu-client-thresh <count>`	Total number of clients that can be associated to a radio, in which the radio can still be considered for multi-user (MU) steering.	—	15
`cm-mu-snr-thresh <value>`	Minimum SNR value of a client on the target radio, in which the radio can still be considered for multi-user (MU) steering.	> 25	30
`cm-report-interval <secs>`	This interval defines how often an AP sends an updated client probe report to the controller. Each client probe report contains a list of MAC addresses for clients that have been active in the last two minutes, and the AP radio SNR values seen by those clients.	0-255 secs	30

Parameter	Description	Range	Default
`cm-stale-age <secs>`	The controller maintains client match data for up to clients showing the detected SNR values for up to 16 candidate APs per client. This table is periodically updated as APs send client probe reports to the controller. This parameter defines the amount of time that the controller should retain client match data from each client probe report. Different controller types support varying numbers of clients. • W-7005: 1024 client • W-7010: 2048 clients • W-7030: 4096 clients • W-7240: 32000 clients • W-7220: 24000 clients • W-7210: 16000 clients	0- 65535 seconds	900 secs
`cm-steer-backoff`	Client Match attempts only one Apple iOS steer every backoff interval (in seconds).	—	300 secs
`cm-steer-timeout`	When a client is steered from one AP to a more desirable AP, the steer timeout feature helps facilitate the move by defining the amount of time that any APs to which the client should NOT associate will not respond to the AP.	0-255 secs	
`cm-sticky-check -interval <secs>`	Frequency at which the AP checks for client's received SNR values. If the SNR value drops below the threshold defined by the **cm-sticky-snr** parameter for three consecutive check intervals, that client may be moved to an different AP.	0-255 secs	3 secs

Parameter	Description	Range	Default
`cm-sticky-min -signal <-dB>`	A client triggered to move to a different AP may consider an AP radio a better match if the client detects that the signal from the candidate AP radio is at or higher than the minimum signal level defined by this parameter and the candidate radio has a higher signal strength than the radio to which the client is currently associated. (The required improvement in signal strength can be defined using the **cm-sticky-snr-delta** command.)	0-255 (-dB)	65
`cm-sticky-snr <dB>`	If the client's received signal strength indicator (RSSI) is above this signal-to-noise ratio (SNR) threshold, that client will be allowed to stay associated to its current AP. If the client's received signal strength is below this threshold, it may be moved to a different AP.	0-255 dB	18
`cm-sticky-snr-delta`	A client triggered to move to a different AP may consider an AP radio a better match if the client detects that the signal from the AP radio is stronger than its current radio by the dB level defined by the **cm-sticky-snr-thresh** parameter, and the candidate radio also has a minimum signal level defined by the **cm-sticky-min-signal** parameter.	0-100 dB	10
`cm-unst-ageout`	When client match and the client match unsteerable client ageout feature are enabled, the controller periodically sends APs that are not a desired AP match for a client in a list of unsteerable clients. These lists contain a list of MAC addresses for up to 128 clients that should not be steered to that AP.	—	—

Parameter	Description	Range	Default
	The following controller types support a aggregate maximum of unsteerable clients for all APs associated to that controller. • W-7005: 256 unsteerable clients • W-7010: 512 unsteerable clients • W-7030: 1024 unsteerable clients • W-7240: 8000 unsteerable clients • W-7220: 6000 unsteerable clients • W-7210: 4000 unsteerable clients		
`cm-unst-ageout-interval days <days> hours <hours>`	The client entries in an unsteerable client list remain in effect for the interval defined by this parameter before they age out.	—	2 days
`dynamic-bw`	ARM dynamic 80MHz/40MHz bandwidth switch when 80MHz assignment is enabled.	–	disabled
`dynamic-bw-beacon-failed-thresh`	Dynamic Bandwidth Switch beacon failed indicator is true if beacon failed num is no less than this threshold during the wait time window.	1-500	30
`dynamic-bw-cca-ibss-thresh`	Dynamic Bandwidth Switch wait time window starts when load aware scan rejects increases and CCA ibss is below the threshold.	1-100	10
`dynamic-bw-cca-intf-thresh`	Dynamic Bandwidth Switch CCA intf indicator is true if CCA intf is no less than this threshold during the wait time window.	1-100	30

Parameter	Description	Range	Default
dynamic-bw-clear-time	Dynamic Bandwidth Switch back to 80MHz channel after the clear time in mins if currently there is no high volume of traffic.	1-300 seconds	30
dynamic-bw-wait-time	Minimum time in seconds dynamic bandwidth switch indicators have to be true to trigger a 80MHz to 40MHz bandwidth change.	1-300 seconds	30
error-rate-threshold	The percentage of errors in the channel that triggers a channel change. Recommended value is 50%. A value of 0% disables this feature.	0-100	default-a: 70% default-g: 70%
error-rate-wait-time	Time, in seconds, that the error rate has to be at least the error rate threshold to trigger a channel change. Supported range is 1-2,147,483,647 Recommended Values: 1-100	–	default-a: 90 sec default-g: 90 sec
free-channel-index	The difference in the interference index between the new channel and current channel must exceed this value for the AP to move to a new channel. The higher this value, the lower the chance an AP will move to the new channel. Recommended value is 25.	10-40	default-a: 40 default-g: 25
ideal-coverage-index	The coverage that the AP should try to achieve on its channel. The denser the AP deployment, the lower this value should be. Recommended value is 10.	2-20	default-a: 6 default-g: 6
interfering-ap-weight <number>	Weight of interfering APs in interference index calculation. When the weight is 0, ARM ignores all the interfering APs (uncontrollable APs). When the weight is 100%, interfering AP has the same weight as valid AP.	0-100	25

Parameter	Description	Range	Default
`load-aware-scan -threshold`	Load aware ARM preserves network resources during periods of high traffic by temporarily halting ARM scanning if the load for the AP gets too high. The Load Aware Scan Threshold is the traffic throughput level an AP must reach before it stops scanning. The supported range for this setting is 0-20000000 bytes/second. (Specify 0 to disable this feature.)	—	1250000 bytes/seconds
`max-tx-power`	Maximum effective isotropic radiated power (EIRP) from 3 to 33 dBm in 3 dBm increments. You may also specify a special value of 127 dBm for regulatory maximum to disable power adjustments for environments such as outdoor mesh links. This value takes into account both radio transmit power and antenna gain. Higher power level settings may be constrained by local regulatory requirements and AP capabilities.	3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 127	In 6.4.4.0 and later releases: • default-a: 18 dBm • default-g: 9 dBm In earlier 6.4.x releases: • default: 127dBm
`min-scan-time`	Minimum number of times a channel must be scanned before it is considered for assignment. The supported range for this setting is 0-2,147,483,647 scans. Best practices are to configure a Minimum Scan Time between 1-20 scans. Default: 8 scans	1-2,147,483,647 Recommended Values: 1-20	8 scans
`min-tx-power`	Minimum effective isotropic radiated power (EIRP) from 3 to 33 dBm in 3 dBm increments. You may also specify a special value of 127 dBm for regulatory minimum. This value takes into account both radio transmit power and antenna gain.	3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 127	In 6.4.4.0 and later releases: • default-a: 12 dBm • default-g: 6 dBm In earlier 6.4.x releases:

Parameter	Description	Range	Default
	Higher power level settings may be constrained by local regulatory requirements and AP capabilities.		• default: 9 dBm
`mode-aware`	If enabled, ARM will turn APs into Air Monitors (AMs) if it detects higher coverage levels than necessary. This helps avoid higher levels of interference on the WLAN. Although this setting is disabled by default, you may want to enable this feature if your APs are deployed in close proximity (e.g. less than 60 feet apart).	—	disabled
`multi-band-scan`	When enabled, single-radio APs try to scan across bands for rogue AP detection.	—	enabled
`no`	Negates any configured parameter.	—	—
`ota-updates`	The **ota-updates** option allows an AP to get information about its RF environment from its neighbors, even the AP cannot scan. If this feature is enabled, when an AP on the network scans a foreign (non-home) channel, it sends other APs an Over-the-Air (OTA) update in an 802.11 management frame that contains information about the scanning AP's home channel, the current transmission EIRP value of its home channel, and one-hop neighbors seen by that AP. Default: enabled	—	enabled
`ps-aware-scan`	When enabled, the AP will not scan if Power Save is active.	—	disabled
`rogue-ap-aware`	When enabled, the AP will try to contain off-channel rogue APs.	—	disabled

Parameter	Description	Range	Default
`scan-interval`	If scanning is enabled, the scan interval defines how often the AP will leave its current channel to scan other channels in the band. Off-channel scanning can impact client performance. Typically, the shorter the scan interval, the higher the impact on performance. If you are deploying a large number of new APs on the network, you may want to lower the Scan Interval to help those APs find their optimal settings more quickly. Raise the Scan Interval back to its default setting after the APs are functioning as desired. **Recommended Values**: 0-30 seconds	0-2,147,483,647 seconds	10 seconds
`scan-mode`	Select the scan mode for the AP: • **all-reg-domain**: The AP scans channels within all regulatory domains. This is the default setting. • **reg-domain**:Limit the AP scans to just the regulatory domain for that AP.	—	all-reg-domain
`scanning`	The Scanning checkbox enables or disables AP scanning across multiple channels. Disabling this option also disables the following scanning features: • Multi Band Scan • Rogue AP Aware • Voip Aware Scan • Power Save Scan Do not disable Scanning unless you want to disable ARM and manually configure AP channel and transmission power.	—	enabled

Parameter	Description	Range	Default
`video-aware-scan`	As long as there is at least one video frame every 100 mSec the AP will reject an ARM scanning request. Note that for each radio interface, video frames must be defined in one of two ways: • Classify the frame as video traffic via a session ACL. • Enable WMM on the WLAN's SSID profile and define a specific DSCP value as a video stream. Next, create a session ACL to tag the video traffic with the that DSCP value.	—	enabled
`voip-aware-scan`	Dell's VoIP Call Admission Control (CAC) prevents any single AP from becoming congested with voice calls. When you enable CAC, you should also enable **voip-aware-scan** parameter in the ARM profile, so the AP will not attempt to scan a different channel if one of its clients has an active VoIP call. This option requires that **scanning** is also enabled.	—	disabled

Usage Guidelines

Adaptive Radio Management (ARM) is a radio frequency (RF) resource allocation algorithm that allows each AP to determine the optimum channel selection and transmit power setting to minimize interference and maximize coverage and throughput. This command configures an ARM profile that you apply to a radio profile for the 5 GHz or 2.4 GHz frequency band (see rf dot11a-radio-profile on page 733 or rf dot11g-radio-profile on page 744).

Default Profiles

ArubaOS includes two default ARM profiles, **default-a** for 5 Ghz radios, and **default-g** for 2.4 GHz radios. Previous 6.4.x releases support a single **default** ARM profile applicable to both radio bands.

When you upgrade to ArubaOS 6.4.4.0 or later from a pre-6.4.4.0 release, any changes made to the **default** ARM profile will be applied to the new **default-a** and **default-g** profiles. If the **default** profile was *not* modified, that profile will be removed after the upgrade, when the **default-a** and **default-g** profiles are created. Note that any user-created profiles will not be modified during the upgrade, and will retain all their existing values.

Channel Quality

Hybrid APs and Spectrum Monitors determine channel quality by measuring channel noise, non-Wi-Fi (interferer) utilization and duty-cycles, and certain types of Wi-Fi retries. Regular APs using the ARM feature

derive channel quality values by measuring the noise floor for that channel.

Client Match

the ARM client match feature continually monitors a client's RF neighborhood to provide ongoing client bandsteering and load balancing, and enhanced AP reassignment for roaming mobile clients. This feature is recommended over the legacy bandsteering and spectrum load balancing features, which, unlike client match, do not trigger AP changes for clients already associated to an AP.

Legacy 802.11a/b/g devices do not support the client match feature. When client match is enabled on 802.11n-capable devices, the client match feature overrides any settings configured for the legacy bandsteering, station handoff assist or load balancing features. 802.11ac-capable devices do not support the legacy bandsteering, station hand off or load balancing settings, so these APs must be managed on using client match.

When this feature is enabled on an AP, that AP is responsible for measuring the RF health of its associated clients. The AP receives and collects information about clients in its neighborhood, and periodically sends this information to the controller. The controller aggregates information it receives from all APs using client match, and maintains information for all associated clients in a database. The controller shares this database with the APs (for their associated clients) and the APs use the information to compute the client-based RF neighborhood and determine which APs should be considered candidate APs for each client. When the controller receives a client steer request from an AP, the controller identifies the optimal AP candidate and manages the client's relocation to the desired radio. This is an improvement from previous releases, where the ARM feature was managed exclusively by APs, the without the larger perspective of the client's RF neighborhood.

The following client/AP mismatch conditions are managed by the client match feature:

- **Load Balancing**: Client match balances clients across APs on different channels, based upon the client load on the APs and the SNR levels the client detects from an underutilized AP. If an AP radio can support additional clients, the AP will participate in client match load balancing and clients can be directed to that AP radio, subject to predefined SNR thresholds.
- **Sticky Clients**: The client match feature also helps mobile clients that tend to stay associated to an AP despite low signal levels. APs using client match continually monitor the client's RSSI as it roams between APs, and move the client to an AP when a better radio match can be found. This prevents mobile clients from remaining associated to an APs with less than ideal RSSI, which can cause poor connectivity and reduce performance for other clients associated with that AP.
- **Band Steering/Band Balancing**: APs using the client match feature monitor the RSSI for clients that advertise a dual-band capability. If a client is currently associated to a 2.4 GHz radio and the AP detects that the client has a good RSSI from the 5 Ghz radio, the controller will attempt to steer the client to the 5 Ghz radio, as long as the 5 Ghz RSSI is not significantly worse than the 2.4 GHz RSSI, and the AP retains a suitable distribution of clients on each of its radios.

ARM Scanning

The default ARM scanning interval is determined by the **scan-interval** parameter in the ARM profile. If the AP does not have any associated clients (or if most of its clients are inactive) the ARM feature will dynamically readjust this default scan interval, allowing the AP obtain better information about its RF neighborhood by scanning non-home channels more frequently. Starting with ArubaOS 6.2, if an AP attempts to scan a non-home channel but is unsuccessful, the AP will make additional attempts to rescan that channel before skipping it and continuing on to other channels.

Using Adaptive Radio Management (ARM) in a Mesh Network

When a mesh portal operates on a mesh network, the mesh portal determines the channel used by the mesh feature. When a mesh point locates an upstream mesh portal, it will scan the regulatory domain channels list to

determine the channel assigned to it, for a mesh point always uses the channel selected by its mesh portal. However, if a mesh portal uses an ARM profile enabled with a single-band or multi-band channel/power assignment and the scanning feature, the mesh portal will scan the configured channel lists and the ARM algorithm will assign the proper channel to the mesh portal.

If you are using ARM in your network, is important to note that mesh points, unlike mesh portals, do not scan channels. This means that once a mesh point has selected a mesh portal or an upstream mesh point, it will tune to this channel, form the link, and will not scan again unless the mesh link gets broken. This provides good mesh link stability, but may adversely affect system throughput in networks with mesh portals and mesh points. When ARM assigns optimal channels to mesh portals, those portals use different channels, and once the mesh network has formed and all the mesh points have selected a portal (or upstream mesh point), those mesh points will not be able to detect other portals on other channels that could offer better throughput. This type of suboptimal mesh network may form if, for example, two or three mesh points select the same mesh portal after booting, form the mesh network, and leave a nearby mesh portal without any mesh points. Again, this will not affect mesh functionality, but may affect total system throughput.

Example

The following command configures VoIP-aware scanning for the arm-profile named “voice-arm:”

```
(config) (host) #rf arm-profile voice-arm
   voip-aware-scan
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.3.	Support for the high-throughput IEEE 802.11n standard was introduced.
ArubaOS 3.3.2	Support for the **wait-time** parameter was removed.
ArubaOS 3.4.1	The **voip-aware-scan** parameter no longer requires a license, and is available in the base OS.
ArubaOS 6.1	The **ps-aware-scan** parameter is now disabled by default.
ArubaOS 6.3	The **noise-wait-time**, and **noise-threshold** parameters were deprecated, and the following parameters were introduced. • 80MHz support • aggressive-scanning • client-match • channel-quality-aware • channel-quality-threshold • channel-quality-wait-time • cm-lb-client-thresh • cm-lb-snr-thresh • cm-lb-thresh

Release	Modification
	• cm-max-steer-fails • cm-report-interval • cm-stale-age • cm-sticky-check-interval • cm-sticky-min-signal • cm-sticky-snr • cm-sticky-snr-delta • cm-update-interval • cm-unst-ageout-interval
ArubaOS 6.3.1.0	The **cellular-handoff-assist** parameter was introduced.
ArubaOS 6.4	The **cm-lb-signal-delta** parameter was introduced.
ArubaOS 6.4.1.0	The default values for the following parameters were changed: • **cm-band-g-max-signal** (from N/A to 45) • **cm-sticky-snr** (from 25 to 18) • **cm-sticky-min-signal** (from 70 to 65) • **cm-lb-client-thresh** (from 10 to 30)
ArubaOS 6.4.2.3	The **cm-dot11v** parameter was introduced.
ArubaOS 6.4.4.0	The **cm-mu-snr-thresh** and **cm-mu-client-thresh** parameters were introduced. Introduced support for the **default-a** and **default-g** ARM profiles. The following parameters in the default-a and default-g profiles changed from the previous default profile. • **arm-max-tx-power** • **arm-min-tx-power** • **arm-error-rate-threshold** • **arm-error-rate-wait-time**
ArubaOS 6.5	The following parameters were introduced: • **160MHz-support** • **interfering-ap-weight** • **dynamic-bw** • **dynamic-bw-beacon-failed-thresh** • **dynamic-bw-cca-ibss-thresh** • **dynamic-bw-cca-intf-thresh** • **dynamic-bw-clear-time** • **dynamic-bw-wait-time**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

rf dot11a-radio-profile

```
rf dot11a-radio-profile <profile>
   am-scan-profile <profile-name>
   arm-profile <profile>
   beacon-period <milliseconds>
   beacon-regulate
   cap-reg-eirp <cap-reg-eirp>
   cell-size-reduction <cell-size-reduction>
   channel <num|num+|num->
   channel-reuse {static|dynamic|disable}
   channel-reuse-threshold
   clone <profile>
   csa
   csa-count <number>
   disable-arm-wids-function
   dot11h
   high-throughput-enable
   ht-radio-profile <profile>
   interference-immunity
   maximum-distance <maximum-distance>
   mgmt-frame-throttle-interval <seconds>
   mgmt-frame-throttle-limit <number>
   mode {ap-mode|am-mode|spectrum-mode}
   no ...
   radio-enable
   slb-mode channel|radio
   slb-threshold
   slb-update-interval <secs>
   spectrum-load-bal-domain
   spectrum-load-balancing
   spectrum-monitoring
   spectrum-profile <profile>
   spur-immunity <spur-immunity>
   tpc-power <tpc-power>
   tx-power <dBm>
   very-high-throughput-enable
```

Description

This command configures AP radio settings for the 5 GHz frequency band, including the Adaptive Radio Management (ARM) profile and the high-throughput (802.11n) radio profile.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`am-scan-profile <name>`	Configure an Air Monitor (AM) scanning profile	—	“default”

Parameter	Description	Range	Default
`arm-profile`	Configures Adaptive Radio Management (ARM) feature. See rf arm-profile on page 714.	—	"default"
`beacon-period`	Time, in milliseconds, between successive beacon transmissions. The beacon advertises the AP's presence, identity, and radio characteristics to wireless clients.	60-2000 (milliseconds)	100 (milliseconds)
`beacon-regulate`	Enabling this setting introduces randomness in the beacon generation so that multiple APs on the same channel do not send beacons at the same time, which causes collisions over the air.	—	disabled
`cap-reg-eirp <cap-reg-eirp>`	Work around a known issue on Cisco 7921G telephones by specifying a cap for a radio's maximum equivalent isotropic radiated power (EIRP). When you enable this parameter, even if the regulatory approved maximum for a given channel is higher than this EIRP cap, the AP radio using this profile will advertise only this capped maximum EIRP in its radio beacons.	1–31 dBm.	
`cell-size-reduction <cell-size-reduction>`	The cell size reduction feature allows you manage dense deployments and to increase overall system performance and capacity by shrinking an AP's receive coverage area, thereby minimizing co-channel interference and optimizing channel reuse. This value should only be changed if the network is experiencing performance issues. The possible range of values for this feature is 0-55 dB. The default 0 dB reduction allows the radio to retain its current default Rx sensitivity value. Values from 1 dB - 55 dB reduce the power level that the radio can hear by that amount. If you configure this feature to use a non-default value, you must also reduce the radio's transmission (Tx) power to match its new received (Rx) power level. Failure to match a device's Tx power level to its Rx power level can result in a configuration that allows the radio to send messages to a device that it cannot hear.	1-5 5dB	0 dB
`channel`	Channel number for the AP 802.11a/802.11n.802.11ac physical layer. The available channels depend on the regulatory domain (country). Channel number configuration options for 20 MHz, 40 MHz, and 80 Mhz modes:	Depends on regulatory domain	—

Parameter	Description	Range	Default
	• num: Entering a channel number disables 40 MHz mode and activates 20 MHz mode for the entered channel. • num+: Entering a channel number with a plus (+) sign selects a primary and secondary channel for 40 MHz and 80 Mhz modes. The number entered becomes the primary channel and the secondary channel is determined by increasing the primary channel number by 4. Example: 157+ represents 157 as the primary channel and 161 as the secondary channel. • num-: Entering a channel number with a minus (-) sign selects a primary and secondary channel for 40 MHz and 80 Mhz modes. The number entered becomes the primary channel and the secondary channel is determined by decreasing the primary channel number by 4. Example: 157- represents 157 as the primary channel and 153 as the secondary channel. **NOTE:** 20 MHz clients are allowed to associate when a primary and secondary channel are configured; however, the client will only use the primary channel.		
`channel-reuse`	When you enable the channel reuse feature, it can operate in either of the following three modes; static, dynamic or disable. (This feature is disabled by default.) • Static mode: This mode of operation is a coverage-based adaptation of the Clear Channel Assessment (CCA) thresholds. In the static mode of operation, the CCA is adjusted according to the configured transmission power level on the AP, so as the AP transmit power decreases as the CCA threshold increases, and vice versa. • Dynamic mode: In this mode, the Clear Channel Assessment (CCA) thresholds are based on channel loads, and take into account the location of the associated clients. When you set the Channel Reuse This feature is automatically enabled when the wireless medium around the AP is busy greater than half the time. When this mode is enabled, the CCA threshold adjusts to accommodate transmissions between the AP its most distant associated client.	enabled disabled	enabled

Parameter	Description	Range	Default
	• Disable mode: This mode does not support the tuning of the CCA Detect Threshold.		
`channel-reuse-threshold`	RX Sensitivity Tuning Based Channel Reuse Threshold, in - dBm. If the Rx Sensitivity Tuning Based Channel reuse feature is set to static mode, this parameter manually sets the AP's Rx sensitivity threshold (in -dBm). The AP will filter out and ignore weak signals that are below the channel threshold signal strength. If the value is set to zero, the feature will automatically determine an appropriate threshold.	Depends on regulatory domain	—
`client-match`	The ARM client match feature continually monitors a client's RF neighborhood to provide ongoing client bandsteering and load balancing, and enhanced AP reassignment for roaming mobile clients. This feature is recommended over the legacy bandsteering and spectrum load balancing features, which, unlike client match, do not trigger AP changes for clients already associated to an AP. When this feature is enabled on an AP, that AP is responsible for measuring the RF health of its associated clients. The AP receives and collects information about clients in its neighborhood, and periodically sends this information to the controller. The controller aggregates information it receives from all APs using client match, and maintains information for all associated clients in a database. The controller shares this database with the APs (for their associated clients) and the APs use the information to compute the client-based RF neighborhood and determine which APs should be considered candidate APs for each client. When the controller receives a client steer request from an AP, the controller identifies the optimal AP candidate and manages the client's relocation to the desired radio. This is an improvement from previous releases, where the ARM feature was managed exclusively by APs, the without the larger perspective of the client's RF neighborhood	–	Disabled
`clone`	Name of an existing radio profile from which parameter values are copied.	—	—

Parameter	Description	Range	Default
csa	Channel Switch Announcement (CSA), as defined by IEEE 802.11h, allows an AP to announce that it is switching to a new channel before it begins transmitting on that channel. Clients must support CSA in order to track the channel change without experiencing disruption.	—	disabled
csa-count	Number of CSA announcements that are sent before the AP begins transmitting on the new channel.	1-16	4
disable-arm-wids-function	Disables Adaptive Radio Management (ARM) and Wireless IDS functions. These can be disabled if a small increase in packet processing performance is desired. If a radio is configured to operate in Air Monitor mode, then these functions are always enabled irrespective of this option. CAUTION: Use this parameter with caution. Enabling this parameter effectively disables ARM and WIDS.	—	OFF
dot11h	Enable advertisement of 802.11d (Country Information) and 802.11h (TPC or Transmit Power Control) capabilities This parameter is disabled by default.	—	disabled
high-throughput-enable	Enables high-throughput (802.11n) features on a radio using the 5 GHz frequency band.	—	enabled
ht-radio-profile	Name of high-throughput radio profile to use for configuring high-throughput support on the 5 GHz frequency band. See rf ht-radio-profile on page 761.	—	“default-a”
interference-immunity	Set a value for 802.11 Interference Immunity. The default setting for this parameter is level 2. When performance drops due to interference from non-802.11 interferers (such as DECT or Bluetooth devices), the level can be increased up to level 5 for improved performance. However, increasing the level makes the AP slightly “deaf” to its surroundings, causing the AP to lose a small amount of range. The levels for this parameter are: • Level-0: no ANI adaptation. • Level-1: noise immunity only.	Level-0 - Level-15	Level-2

Parameter	Description	Range	Default
	• Level-2: noise and spur immunity. This is the default setting • Level-3: level 2 and weak OFDM immunity. • Level-4: level 3 and FIR immunity. • Level-5: disable PHY reporting. **NOTE:** Do not raise the noise immunity feature's default setting if the channel-reuse-threshold on page 736 feature is also enabled. A level-3 to level-5 Noise Immunity setting is not compatible with the Channel Reuse feature.		
`maximum-distance`	Maximum distance between a client and an AP or between a mesh point and a mesh portal, in meters. This value is used to derive ACK and CTS timeout times. A value of 0 specifies default settings for this parameter, where timeouts are only modified for outdoor mesh radios which use a distance of 16km. The upper limit for this parameter varies, depending on the 20/40 MHz mode for a 5 GHz frequency band radio: • 20MHz mode: 58km • 40MHz mode: 27km Note that if you configure a value above the supported maximum, the maximum supported value will be used instead. Values below 600m will use default settings.	0-57km (40MHz mode) 0-27km (20MHz mode)	0 meters
`mgmt-frame-throttle-interval`	Averaging interval for rate limiting management frames in seconds. Zero disables rate limiting. Note: This parameter only applies to AUTH and ASSOC/RE-ASSOC management frames.	0-60	1 second interval
`mgmt-frame-throttle-limit`	Maximum number of management frames allowed in each throttle interval. **NOTE:** This parameter only applies to AUTH and ASSOC/RE-ASSOC management frames.	0-999999	20 frames per interval
`mode`	One of the operating modes for the AP.		ap-mode

Parameter	Description	Range	Default
ap-mode	Device provides transparent, secure, high-speed data communications between wireless network devices and the wired LAN.	–	–
am-mode	Device behaves as an air monitor to collect statistics, monitor traffic, detect intrusions, enforce security policies, balance traffic load, self-heal coverage gaps, etc.	–	–
spectrum-mode	Device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client. For a list of APs that can be converted into a spectrum monitor or hybrid AP, refer to the Spectrum Analysis chapter of the Dell Networking W-Dell Networking W-Series ArubaOS 6.5.x User Guide.	–	–
no	Negates any configured parameter.	—	—
radio-enable	Enables or disables radio configuration.	—	enabled
slb-mode channel|radio	SLB Mode allows control over how to balance clients. Select one of the following options • channel: Channel-based load-balancing balances clients across channels. This is the default load-balancing mode • radio: Radio-based load-balancing balances clients across APs		channel
slb-update-interval <secs>	Specify how often spectrum load balancing calculations are made (in seconds). The default value is 30 seconds.	1-2147483647 seconds	30 seconds
spectrum-load-bal-domain	Define a spectrum load balancing domain to manually create RF neighborhoods. Use this option to create RF neighborhood information for networks that have disabled Adaptive Radio Management (ARM) scanning and channel assignment. • If spectrum load balancing is enabled in a 802.11a radio profile but the spectrum load balancing domain is not defined, ArubaOS uses the ARM feature to calculate RF neighborhoods. • If spectrum load balancing is enabled in a 802.11a radio profile and a	—	—

Parameter	Description	Range	Default
	spectrum load balancing domain isalso defined, AP radios belonging to the same spectrum load balancing domain will be considered part of the same RF neighborhood for load balancing, and will not recognize RF neighborhoods defined by the ARM feature.		
`spectrum-load-balancing`	The Spectrum Load Balancing feature helps optimize network resources by balancing clients across channels, regardless of whether the AP or the controller is responding to the wireless clients' probe requests. If enabled, the controller compares whether or not an AP has more clients than its neighboring APs on other channels. If an AP's client load is at or over a predetermined threshold as compared to its immediate neighbors, or if a neighboring Dell AP on another channel does not have any clients, load balancing will be enabled on that AP. This feature is disabled by default.	—	disabled
`spectrum-monitoring`	Issue this command to turn APs in ap-mode into a hybrid AP. An AP in hybrid AP mode will continue to serve clients as an access point while it scans and analyzes spectrum analysis data for a single radio channel. For further details on using hybrid APs and spectrum monitors to examine the radio frequency (RF) environment in which the Wi-Fi network is operating, refer to the Spectrum Analysis chapter of the Dell Networking W-Series ArubaOS User Guide. For a list of APs that can be converted into a spectrum monitor or hybrid AP, refer to the Spectrum Analysis chapter of the Dell Networking W-Dell Networking W-Series ArubaOS 6.5.x User Guide.	—	default
`spectrum-profile <profile>`	Specify the rf spectrum profile used by hybrid APs and spectrum monitors. This profile sets the spectrum band and device ageout times used by a spectrum monitor or hybrid AP radio. For details, see rf spectrum-profile on page 766.	—	default

Parameter	Description	Range	Default
`spur-immunity <spur-immunity>`	Spur Immunity for 5 GHz radio. This parameter fine-tunes the Cyclic Power Threshold (CPT) of a 5 GHz radio. The value specified here is the offset from the base value of 2 dB (for example, setting the CPT value to 1 corresponds to 2 + 1 = 3 dB. Similarly, setting the CPT value to 10 corresponds to 2+10 = 12 dB). Use this parameter when high channel utilization is observed in the 5 GHz radio of W-AP130 Series access points in a noise-free environment causing client association or throughput issues. Adjust the CPT value to eliminate the spur impacts. Range definition is as follows: • 0: default CPT • 1-19: CPT growth from default (3 dB to 21 dB) • 20: Setting this parameter to 20 sets the cell-size-reduction value to 1. Cell-size-reduction is the receive coverage area of the AP. **NOTE:** Configure this parameter under the supervision of Dell Technical Support. **NOTE:** Setting the spur immunity to a higher value may decrease the AP RF coverage. **NOTE:** This parameter is applicable for W-AP130 Series access points only. The controller ignores this parameter if configured for non-W-AP130 Series access points.	0-20 CPT	0 CPT
`tpc-power`	The transmit power advertised in the TPC IE of beacons and probe responses. Range: 0-51 dBm	0-51 dBm	15 dBm
`tx-power`	Sets the initial transmit power (dBm) on which the AP operates, unless a better choice is available through calibration . This parameter can be set from 0 to 51 in .5 dBm increments, or set to the regulatory maximum value of 127 dBm. Transmission power may be further limited by regulatory domain constraints and AP capabilities.	0-51 dBm, 127 dBm	14 dBm
`very-high-throughput-enable`	Enable or disable support for Very High Throughput (802.11ac) on the radio.	–	Enabled

Usage Guidelines

This command configures radios that operate in the 5 GHz frequency band, which includes radios utilizing the IEEE 802.11a or IEEE 802.11n standard. Channels must be valid for the country configured in the AP regulatory domain profile (see ap regulatory-domain-profile on page 202).To view the supported channels, use the **show ap allowed-channels** command.

APs initially start up with default **ack-timeout**, **cts-timeout** and **slot-time** values. When you modify the **maximum-distance** parameter in an rf dot11a radio profile or rf dot11g radio profile, new **ack-timeout**, **cts-timeout** and **slot-time** values may be derived, but those values are never less then the default values for an indoor AP.

Mesh radios on outdoor APs have additional constraints, as mesh links may need to span long distances. For mesh radios on outdoor APs, the effect of the default **maximum-distance** parameter on the **ack-timeout**, **cts-timeout** and **slot-time** values depends on whether the APs are configured as mesh portals or mesh points. This is because mesh portals use a default **maximum-distance** value of 16,050 meters, and mesh points use, by default, the maximum possible **maximum-distance** value.

The **maximum-distance** value should be set correctly to span the largest link distance in the mesh network so that when a mesh point gets the configuration from the network it will apply the correct **ack-timeout**, **cts-timeout** and **slot-time** values.The values derived from the **maximum-distance** setting depend on the band and whether 20Mhz/40MHz mode of operation is in use.

The following table indicates values for a range of distances:

Timeouts[usec]	--- 5GHz radio ---			--- 2.4GHz radio ---		
Distance[m]	Ack	CTS	Slot	Ack	CTS	Slot
0 (outdoor:16050m)	128	128	63	128	128	63
0 (indoor:600a,6450g)	25	25	9	64	48	9
200 (==default)	25	25	9	64	48	9
500	25	25	9	64	48	9
600	25	25	9	64	48	9
1050	28	28	13	64	48	31
5100	55	55	26	64	55	31
10050	88	88	43	88	88	43
15000	121	121	59	121	121	59
16050	128	128	63	128	128	63
58200(5G limit 20M)	409	409	203	-	-	-
52650(2.4G limit 20M)	-	-	-	372	372	185
27450(5G limit 40M)	204	204	101	-	-	-
24750(2.4G limit 40M)	-	-	-	186	186	92

Examples

The following command configures APs to operate in AM mode for the selected dot11a-radio-profile named “samplea:”

```
(host) (config) #rf dot11a-radio-profile samplea mode am-mode
```

The following command configures APs to operate in high-throughput (802.11n) mode on the 5 Ghz frequency band for the selected dot11a-radio profile named “samplea” and assigns a high-throughout radio profile named “default-a:”

```
(host) (config) #rf dot11a-radio-profile samplea
  high-throughput-enable
  ht-radio-profile default-a
```

The following command configures a primary channel number of 157 and a secondary channel number of 161 for 40 MHz mode of operation for the selected dot11a-radio profile named “samplea:”

```
(host) (config) #rf dot11a-radio-profile samplea
  channel <157+>
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.3.2	Introduced support for the high-throughput IEEE 802.11n standard.
ArubaOS 3.4	The following parameters were introduced: • Spectrum load balancing • Spectrum load balancing domain • RX Sensitivity Tuning Based Channel Reuse • RX Sensitivity Threshold • ARM/WIDS Override
ArubaOS 3.4.1	The **maximum-distance** parameter was introduced.
ArubaOS 3.4.2	The **beacon-regulate** parameter was introduced.
ArubaOS 6.0	The following parameters were introduced: • am-scan-profile • cap-reg-eirp • slb-mode • slb-update-interval
ArubaOS 6.1	The **spectrum-monitoring** and **slb-threshold** parameters were introduced.
ArubaOS 6.1.3.2	The **cell-size-reduction** parameter was introduced.
ArubaOS 6.3	The **very-high-throughput-enable** parameter was introduced.
ArubaOS 6.4.2.10, ArubaOS 6.4.3.3	The **spur-immunity** parameter was introduced.
ArubaOS 6.5	The upper limit for the **beacon-period** parameter was set to 2000 milliseconds.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

rf dot11g-radio-profile

```
rf dot11g-radio-profile <profile>
   am-scan-profile <profile-name>
   arm-profile <profile>
   beacon-period <milliseconds>
   beacon-regulate
   cap-reg-eirp <cap-reg-eirp>
   cell-size-reduction <cell-size-reduction>
   channel <num|num+|num->
   channel-reuse {static|dynamic|disable}
   channel-reuse-threshold
   clone <profile>
   csa
   csa-count <number>
   disable-arm-wids-function
   dot11b-protection
   dot11h
   high-throughput-enable
   ht-radio-profile <profile>
   interference-immunity
   maximum-distance <maximum-distance>
   mgmt-frame-throttle-interval <seconds>
   mgmt-frame-throttle-limit <number>
   mode {ap-mode|am-mode|spectrum-mode}
   no ...
   radio-enable
   slb-mode channel|radio
   slb-threshold
   slb-update-interval <secs>
   spectrum-load-bal-domain
   spectrum-load-balancing
   spectrum-monitoring
   spectrum-profile
   tpc-power <tpc-power>
   tx-power <dBm>
   very-high-throughput-rates-enable
```

Description

This command configures AP radio settings for the 2.4 GHz frequency band, including the Adaptive Radio Management (ARM) profile and the high-throughput (802.11n) radio profile.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`am-scan-profile <profile-name>`	Configure an Air Monitor (AM) scanning profile.	—	—

Parameter	Description	Range	Default
`arm-profile`	Configures Adaptive Radio Management (ARM) feature. See rf arm-profile on page 714.	—	“default”
`beacon-period`	Time, in milliseconds, between successive beacon transmissions. The beacon advertises the AP’s presence, identity, and radio characteristics to wireless clients.	60-2000 (milliseconds)	100 (milliseconds)
`beacon-regulate`	Enabling this setting introduces randomness in the beacon generation so that multiple APs on the same channel do not send beacons at the same time, which causes collisions over the air.	—	disabled
`cap-reg-eirp <cap-reg-eirp>`	Work around a known issue on Cisco 7921G telephones by specifying a cap for a radio’s maximum equivalent isotropic radiated power (EIRP). When you enable this parameter, even if the regulatory approved maximum for a given channel is higher than this EIRP cap, the AP radio using this profile will advertise only this capped maximum EIRP in its radio beacons.	1–31 dBm.	
`cell-size-reduction <cell-size-reduction>`	The cell size reduction feature allows you manage dense deployments and to increase overall system performance and capacity by shrinking an AP’s receive coverage area, thereby minimizing co-channel interference and optimizing channel reuse. This value should only be changed if the network is experiencing performance issues. The possible range of values for this feature is 0-55 dB. The default 0 dB reduction allows the radio to retain its current default Rx sensitivity value. Values from 1 dB - 55 dB reduce the power level that the radio can hear by that amount. If you configure this feature to use a non-default value, you must also	1-5 5dB	0 dB

Parameter	Description	Range	Default
	reduce the radio's transmission (Tx) power to match its new received (Rx) power level. Failure to match a device's Tx power level to its Rx power level can result in a configuration that allows the radio to send messages to a device that it cannot hear.		
`channel`	Channel number for the AP 802.11g/802.11n.802.11ac physical layer. The available channels depend on the regulatory domain (country). Channel number configuration options for 20 MHz, 40 MHz, and 80 Mhz modes: • num: Entering a channel number disables 40 MHz mode and activates 20 MHz mode for the entered channel. • num+: Entering a channel number with a plus (+) sign selects a primary and secondary channel for 40 MHz and 80 Mhz modes. The number entered becomes the primary channel and the secondary channel is determined by increasing the primary channel number by 4. Example: 157+ represents 157 as the primary channel and 161 as the secondary channel. • num-: Entering a channel number with a minus (-) sign selects a primary and secondary channel for 40 MHz and 80 Mhz modes. The number entered becomes the primary channel and the secondary channel is determined by decreasing the primary channel number by 4. Example: 157- represents 157 as the primary channel and 153 as the secondary channel. **NOTE:** 20 MHz clients are allowed to associate when a primary and secondary channel are configured; however, the client will only use	Depends on regulatory domain	—

Parameter	Description	Range	Default
	the primary channel.		
`clone`	Name of an existing radio profile from which parameter values are copied.	—	—
`csa`	Channel Switch Announcement (CSA), as defined by IEEE 802.11h, allows an AP to announce that it is switching to a new channel before it begins transmitting on that channel. Clients must support CSA in order to track the channel change without experiencing disruption.	—	disabled
`csa-count`	Number of CSA announcements that are sent before the AP begins transmitting on the new channel.	1-16	4
`channel`	Channel number for the AP 802.11g/802.11n physical layer. The available channels depend on the regulatory domain (country). Channel number configuration options for 20 MHz and 40 MHz modes: • **num**: Entering a channel number disables 40 MHz mode and activates 20 MHz mode for the entered channel. • **num+**: Entering a channel number with a plus (+) sign selects a primary and secondary channel for 40 MHz mode. The number entered becomes the primary channel and the secondary channel is determined by increasing the primary channel number by 4. Example: 157+ represents 157 as the primary channel and 161 as the secondary channel. • **num-**: Entering a channel number with a minus (-) sign selects a primary and secondary channel for	Depends on regulatory domain	—

Parameter	Description	Range	Default
	40 MHz mode. The number entered becomes the primary channel and the secondary channel is determined by decreasing the primary channel number by 4. Example: 157- represents 157 as the primary channel and 153 as the secondary channel. **NOTE:** 20 MHz clients are allowed to associate when a primary and secondary channel are configured; however, the client will only use the primary channel.		
`channel-reuse`	When you enable the channel reuse feature, it can operate in either of the following three modes; static, dynamic or disable. (This feature is disabled by default.) • **Static mode**: This mode of operation is a coverage-based adaptation of the Clear Channel Assessment (CCA) thresholds. In the static mode of operation, the CCA is adjusted according to the configured transmission power level on the AP, so as the AP transmit power decreases as the CCA threshold increases, and vice versa. • **Dynamic mode**: In this mode, the Clear Channel Assessment (CCA) thresholds are based on channel loads, and take into account the location of the associated clients. When you set the Channel Reuse This feature is automatically enabled when the wireless medium around the AP is busy greater than half the time. When this mode is enabled, the CCA threshold adjusts to accommodate transmissions between the AP its most distant associated client. • **Disable mode**: This mode does not support the tuning	enabled disabled	enabled

Parameter	Description	Range	Default
	of the CCA Detect Threshold.		
`channel-reuse-threshold`	RX Sensitivity Tuning Based Channel Reuse Threshold, in -dBm. If the Rx Sensitivity Tuning Based Channel reuse feature is set to static mode, this parameter manually sets the AP's Rx sensitivity threshold (in -dBm). The AP will filter out and ignore weak signals that are below the channel threshold signal strength. If the value is set to zero, the feature will automatically determine an appropriate threshold.	depends on regulatory domain	—
`disable-arm-wids-function`	Disables Adaptive Radio Management (ARM) and Wireless IDS functions. These can be disabled if a small increase in packet processing performance is desired. If a radio is configured to operate in Air Monitor mode, then these functions are always enabled irrespective of this option. CAUTION: Use this parameter with caution. Enabling this parameter effectively disables ARM and WIDS.	—	OFF
`dot11b-protection`	Enable or disable protection for 802.11b clients. This parameter is enabled by default. Disabling this feature may improve performance if there are no 802.11b clients on the WLAN. WARNING: Disabling protection violates the 802.11 standard and may cause interoperability issues. If this feature is disabled on a WLAN with 802.11b clients, the 802.11b clients will not detect an 802.11g client talking and can potentially transmit at the same time, thus garbling both frames.	—	enabled

Parameter	Description	Range	Default
`dot11h`	Enable advertisement of 802.11d (Country Information) and 802.11h (TPC or Transmit Power Control) capabilities This parameter is disabled by default.	—	disabled
`high-throughput-enable`	Enables high-throughput (802.11n) features on a radio using the 2.4 GHz frequency band.	—	enabled
`ht-radio-profile`	Name of high-throughput radio profile to use for configuring high-throughput support on the 5 GHz frequency band. See rf ht-radio-profile on page 761.	—	“default-a”
`interference-immunity`	Set a value for 802.11 Interference Immunity. The default setting for this parameter is level 2. When performance drops due to interference from non-802.11 interferers (such as DECT or Bluetooth devices), the level can be increased up to level 5 for improved performance. However, increasing the level makes the AP slightly “deaf” to its surroundings, causing the AP to lose a small amount of range. The levels for this parameter are: • Level-0: no ANI adaptation. • Level-1: noise immunity only. • Level-2: noise and spur immunity. This is the default setting • Level-3: level 2 and weak OFDM immunity. • Level-4: level 3 and FIR immunity. • Level-5: disable PHY reporting. **NOTE:** Do not raise the noise immunity feature’s default setting if the channel-reuse-threshold on page 736 feature is also enabled. A level-3 to level-5 Noise Immunity setting	Level-0 - Level-5	Level-2

Parameter	Description	Range	Default
	is not compatible with the Channel Reuse feature.		
maximum-distance	Maximum distance between a client and an AP or between a mesh point and a mesh portal, in meters. This value is used to derive ACK and CTS timeout times. A value of 0 specifies default settings for this parameter, where timeouts are only modified for outdoor mesh radios which use a distance of 16km. The upper limit for this parameter varies, depending on the 20/40 MHz mode for a 2.4GHz frequency band radio: • 20MHz mode: 54km • 40MHz mode: 24km Note that if you configure a value above the supported maximum, the maximum supported value will be used instead. Values below 600m will use default settings.	0-24km (40MHz mode) 0-54km (20MHz mode)	0 meters
mgmt-frame-throttle-interval	Averaging interval for rate limiting management frames in seconds. Zero disables rate limiting. Note: This parameter only applies to AUTH and ASSOC/RE-ASSOC management frames.	0-60	1 second interval
mgmt-frame-throttle-limit	Maximum number of management frames allowed in each throttle interval. **NOTE:** This parameter only applies to AUTH and ASSOC/RE-ASSOC management frames.	0-999999	20 frames per interval
mode	One of the operating modes for the AP.		ap-mode

Parameter	Description	Range	Default
`ap-mode`	Device provides transparent, secure, high-speed data communications between wireless network devices and the wired LAN.		
`am-mode`	Device behaves as an air monitor to collect statistics, monitor traffic, detect intrusions, enforce security policies, balance traffic load, self-heal coverage gaps, etc.		
`spectrum-mode`	Device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client. For a list of APs that can be converted into a spectrum monitor or hybrid AP, refer to the Spectrum Analysis chapter of the Dell Networking W-Dell Networking W-Series ArubaOS 6.5.x User Guide.		
`no`	Negates any configured parameter.	—	—
`radio-enable`	Enables or disables radio configuration.	—	enabled
`slb-mode channel|radio`	SLB Mode allows control over how to balance clients. Select one of the following options: • **channel**: Channel-based load-balancing balances clients across channels. This is the default load-balancing mode • **radio**: Radio-based load-balancing balances clients across APs		channel

Parameter	Description	Range	Default
`slb-threshold`	If the spectrum load balancing feature is enabled, this parameter controls the percentage difference between number of clients on a channel channel that triggers load balancing. The default value is 20%, meaning that spectrum load balancing is activated when there are 20% more clients on one channel than on another channel used by the AP radio.	1-100%	20%
`slb-update-interval <secs>`	Specify how often spectrum load balancing calculations are made (in seconds). The default value is 30 seconds.	1-2147483647 seconds	30 seconds
`spectrum-load-bal-domain`	Define a spectrum load balancing domain to manually create RF neighborhoods. Use this option to create RF neighborhood information for networks that have disabled Adaptive Radio Management (ARM) scanning and channel assignment. • If spectrum load balancing is enabled in a 802.11g radio profile but the spectrum load balancing domain is *not* defined, ArubaOS uses the ARM feature to calculate RF neighborhoods. • If spectrum load balancing is enabled in a 802.11g radio profile and a spectrum load balancing domain *isalso* defined, AP radios belonging to the same spectrum load balancing domain will be considered part of the same RF neighborhood for load balancing, and will not recognize RF neighborhoods defined by the ARM feature.	—	—

Parameter	Description	Range	Default
`spectrum-load-balancing`	The Spectrum Load Balancing feature helps optimize network resources by balancing clients across channels, regardless of whether the AP or the controller is responding to the wireless clients' probe requests. If enabled, the controller compares whether or not an AP has more clients than its neighboring APs on other channels. If an AP's client load is at or over a predetermined threshold as compared to its immediate neighbors, or if a neighboring Dell AP on another channel does not have any clients, load balancing will be enabled on that AP. This feature is disabled by default.	—	disabled
`spectrum-monitoring`	Issue this command to turn APs in ap-mode into a hybrid AP. An AP in hybrid AP mode will continue to serve clients as an access point while it scans and analyzes spectrum analysis data for a single radio channel. For further details on using hybrid APs and spectrum monitors to examine the radio frequency (RF) environment in which the Wi-Fi network is operating, refer to the Spectrum Analysis chapter of the Dell Networking W-Series ArubaOS User Guide. For a list of APs that can be converted into a spectrum monitor or hybrid AP, refer to the Spectrum Analysis chapter of the Dell Networking W-Dell Networking W-Series ArubaOS 6.5.x User Guide.	—	default
`spectrum-profile <profile>`	Specify the rf spectrum profile used by hybrid APs and spectrum monitors. This profile sets the spectrum band and device ageout times used by a spectrum monitor or hybrid AP radio. For details, see rf spectrum-profile on page 766.	—	default

Parameter	Description	Range	Default
tpc-power	The transmit power advertised in the TPC IE of beacons and probe responses. Range: 0-51 dBm	0-51 dBm	15 dBm
tx-power	Sets the initial transmit power (dBm) on which the AP operates, unless a better choice is available through calibration. This parameter can be set from 0 to 51 in .5 dBm increments, or set to the regulatory maximum value of 127 dBm. Transmission power may be further limited by regulatory domain constraints and AP capabilities.	0-51 dBm, 127 dBm	14 dBm
very-high-throughput-rates-enable	This feature enables Very High Throughput (VHT) rates on the 2.4 GHz band, providing 256-QAM modulation and encoding that allows for 600 Mbit/sec performance over 802.11n networks. Maximum data rates are increased on the 2.4 GHz band through the addition of VHT Modulation and Coding Scheme (MCS) values 8 and 9, which support the highly efficient modulation rates in 256-QAM. Starting with ArubaOS 6.4.2.0, VHT is supported on W-AP220 Series access points on both 20 and 40 MHz channels. Using the controller's CLI or WebUI, VHT MCS values 0-9 are enabled, overriding the existing high-throughput (HT) MCS values 0-7, which have a lower maximum data rate. However, this feature should be disabled if individual rate selection is required.	–	disabled

Usage Guidelines

This command configures radios that operate in the 2.4 GHz frequency band, which includes radios utilizing the IEEE 802.11b/g or IEEE 802.11n standard. Channels must be valid for the country configured in the AP regulatory domain profile (see ap regulatory-domain-profile on page 202).To view the supported channels, use the **show ap allowed-channels** command.

APs initially start up with default **ack-timeout**, **cts-timeout** and **slot-time** values. When you modify the **maximum-distance** parameter in an rf dot11a radio profile or rf dot11g radio profile, new **ack-timeout**, **cts-**

timeout and **slot-time** values may be derived, but those values are never less then the default values for an indoor AP.

Mesh radios on outdoor APs have additional constraints, as mesh links may need to span long distances. For mesh radios on outdoor APs, the effect of the default **maximum-distance** parameter on the **ack-timeout**, **cts-timeout** and **slot-time** values depends on whether the APs are configured as mesh portals or mesh points. This is because mesh portals use a default **maximum-distance** value of 16,050 meters, and mesh points use, by default, the maximum possible **maximum-distance** value.

The **maximum-distance** value should be set correctly to span the largest link distance in the mesh network so that when a mesh point gets the configuration from the network it will apply the correct **ack-timeout**, **cts-timeout** and **slot-time** values.The values derived from the **maximum-distance** setting depend on the band and whether 20Mhz/40MHz mode of operation is in use.

The following table indicates values for a range of distances:

Timeouts[usec]	--- 5GHz radio ---			--- 2.4GHz radio ---		
Distance[m]	Ack	CTS	Slot	Ack	CTS	Slot
0 (outdoor:16050m)	128	128	63	128	128	63
0 (indoor:600a,6450g)	25	25	9	64	48	9
200 (==default)	25	25	9	64	48	9
500	25	25	9	64	48	9
600	25	25	9	64	48	9
1050	28	28	13	64	48	31
5100	55	55	26	64	55	31
10050	88	88	43	88	88	43
15000	121	121	59	121	121	59
16050	128	128	63	128	128	63
58200(5G limit 20M)	409	409	203	-	-	-
52650(2.4G limit 20M)	-	-	-	372	372	185
27450(5G limit 40M)	204	204	101	-	-	-
24750(2.4G limit 40M)	-	-	-	186	186	92

Examples

The following command configures APs to operate in AM mode for the selected dot11g-radio-profile named “sampleg:”

```
rf dot11g-radio-profile sampleg
   mode am-mode
```

The following command configures APs to operate in high-throughput (802.11n) mode on the 2.4 Ghz frequency band for the selected dot11g-radio profile named “sampleg” and assigns a high-throughout radio profile named “default-g:”

```
rf dot11g-radio-profile sampleg
   high-throughput-enable
   ht-radio-profile default-g
```

The following command configures a primary channel number of 1 and a secondary channel number of 5 for 40 MHz mode of operation for the selected dot11g-radio profile named “sampleg:”

```
rf dot11g-radio-profile sampleg
   channel <1+>
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3.2	Introduced protection for 802.11b clients and support for the high-throughput IEEE 802.11n standard.
ArubaOS 3.4	The following parameters were introduced: • Spectrum load balancing • Spectrum load balancing domain • RX Sensitivity Tuning Based Channel Reuse • RX Sensitivity Threshold • ARM/WIDS Override
ArubaOS 3.4.1	The **maximum-distance** parameter was introduced.
ArubaOS 3.4.2	The **beacon-regulate** parameter was introduced.
ArubaOS 6.0	The following parameters were introduced: • am-scan-profile • cap-reg-eirp • slb-mode • slb-update-interval
ArubaOS 6.1	The **spectrum-monitoring** and **slb-threshold** parameters were introduced.
ArubaOS 6.1.3.2	The **cell-size-reduction** parameter was introduced.
ArubaOS 6.4.2.0	The **very-high-throughput-rates-enable** parameter was introduced.
ArubaOS 6.5	The upper limit for the **beacon-period** parameter was set to 2000 milliseconds.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

rf event-thresholds-profile

```
rf event-thresholds-profile <profile>
   bwr-high-wm <percent>
   bwr-low-wm <percent>
   clone <profile>
   detect-frame-rate-anomalies
   fer-high-wm <percent>
   fer-low-wm <percent>
   ffr-high-wm <percent>
   ffr-low-wm <percent>
   flsr-high-wm <percent>
   flsr-low-wm <percent>
   fnur-high-wm <percent>
   fnur-low-wm <percent>
   frer-high-wm <percent>
   frer-low-wm <percent>
   frr-high-wm <percent>
   frr-low-wm <percent>
   no ...
```

Description

This command configures the event thresholds profile.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`bwr-high-wm`	If bandwidth in an AP exceeds this value, a bandwidth exceeded condition exists. The value represents the percentage of maximum for a given radio. (For 802.11b, the maximum bandwidth is 7 Mbps. For 802.11 a and g, the maximum is 30 Mbps.) The recommended value is 85%.	0-100	0%
`bwr-low-wm`	After a bandwidth exceeded condition exists, the condition persists until bandwidth drops below this value. The recommended value is 70%.	0-100	0%
`clone`	Name of an existing radio profile from which parameter values are copied.	—	—
`detect-frame-rate-anomalies`	Enable or disables detection of frame rate anomalies.	—	disabled

Parameter	Description	Range	Default
`fer-high-wm`	If the frame error rate (as a percentage of total frames in an AP) exceeds this value, a frame error rate exceeded condition exists. The recommended value is 16%.	0-100	0%
`fer-low-wm`	After a frame error rate exceeded condition exists, the condition persists until the frame error rate drops below this value. The recommended value is 8%.	0-100	0%
`ffr-high-wm`	If the frame fragmentation rate (as a percentage of total frames in an AP) exceeds this value, a frame fragmentation rate exceeded condition exists. The recommended value is 16%.	0-100	16%
`ffr-low-wm`	After a frame fragmentation rate exceeded condition exists, the condition persists until the frame fragmentation rate drops below this value. The recommended value is 8%.	0-100	8%
`flsr-high-wm`	If the rate of low-speed frames (as a percentage of total frames in an AP) exceeds this value, a low-speed rate exceeded condition exists. This could indicate a coverage hole. The recommended value is 16%.	0-100	16%
`flsr-low-wm`	After a low-speed rate exceeded condition exists, the condition persists until the percentage of low-speed frames drops below this value. The recommended value is 8%.	0-100	8%
`fnur-high-wm`	If the non-unicast rate (as a percentage of total frames in an AP) exceeds this value, a non-unicast rate exceeded condition exists. This value depends upon the applications used on the network.	0-100	0%
`fnur-low-wm`	After a non-unicast rate exceeded condition exists, the condition persists until the non-unicast rate drops below this value.	0-100	0%
`frer-high-wm`	If the frame receive error rate (as a percentage of total frames in an AP) exceeds this value, a frame receive error rate exceeded condition exists. The recommended value is 16%.	0-100	16%
`frer-low-wm`	After a frame receive error rate exceeded condition exists, the condition persists until the frame receive error rate drops below this value. The recommended value is 8%.	0-100	8%

Parameter	Description	Range	Default
`frr-high-wm`	If the frame retry rate (as a percentage of total frames in an AP) exceeds this value, a frame retry rate exceeded condition exists. The recommended value is 16%.	0-100	16%
`frr-low-wm`	After a frame retry rate exceeded condition exists, the condition persists until the frame retry rate drops below this value. The recommended value is 8%.	0-100	8%
`no`	Negates any configured parameter.	—	—

Usage Guidelines

The event threshold profile configures Received Signal Strength Indication (RSSI) metrics. When certain RF parameters are exceeded, these events can signal excessive load on the network, excessive interference, or faulty equipment. This profile and many of the detection parameters are disabled (value is 0) by default.

Example

The following command configures an event threshold profile:

```
(host) (config) #rf event-thresholds-profile et1
   detect-frame-rate-anomalies
```

Command History

This command was introduced in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

rf ht-radio-profile

```
rf ht-radio-profile <profile>
   40MHz-intolerance
   clone <profile>
   diversity-spreading-workaround
   honor-40MHz-intolerance
   no
```

Description

This command configures high-throughput AP radio settings. High-throughput features use the IEEE 802.11n standard.

Syntax

Parameter	Description	Range	Default
`<profile>`	Name of this instance of the profile. The name must be 1-63 characters. **Default Options:** • "Default-a" is generally used in association with high-throughput devices running on the 5 GHz frequency band, see rf dot11a-radio-profile on page 733. • "Default-g" is generally used in association with high-throughput devices running on the 2.4 GHz frequency band, see rf dot11g-radio-profile on page 744. • "Default" is generally used when the same ht-radio-profile is desired for use with both frequency bands.	—	default-a default-g default
`40MHz-intolerance`	Controls whether or not APs using this radio profile will advertise intolerance of 40 MHz operation. By default, 40 MHz operation is allowed.	—	disabled
`clone`	Name of an existing high-throughput radio profile from which parameter values are copied.	—	—
`honor-40MHz-intolerance`	When enabled, the radio will stop using the 40 MHz channels if the 40 MHz intolerance indication is received from another AP or station.	—	enabled
`no`	Negates any configured parameter.	—	—

Parameter	Description	Range	Default
`diversity-spreading-workaround`	When this feature is enabled, all legacy transmissions will be sent using a single antenna. This enables interoperability for legacy or high-throughput stations that cannot decode 802.11n cyclic shift diversity (CSD) data. This feature is disabled by default and should be kept disabled unless necessary.		disabled

Usage Guidelines

The ht-radio-profile configures high-throughput settings for networks utilizing the IEEE 802.11n standard, which supports 40 MHZ channels and operates in both the 2.4 GHZ and 5 GHZ frequency bands.

Most transmissions to high throughput (HT) stations are sent through multiple antennas using cyclic shift diversity (CSD). When you enable the single-chain-legacydisable-diversity-spreadingparameter, CSD is disabled and only one antenna transmits data, even if they are being sent to high-throughput stations. Use this feature to turn off antenna diversity when the AP must support legacy clients such as Cisco 7921g VoIP phones, or older 802.11g clients (e.g. Intel Centrino clients). Note, however, that enabling this feature can reduce overall throughput rates.

The ht-radio-profile you wish to use must be assigned to a dot11a and/or dot11g-radio-profile. You can assign the same profile or different profiles to the 2.4 GHZ and 5 GHZ frequency bands. See rf dot11a-radio-profile on page 733 and rf dot11g-radio-profile on page 744.

Example

The following command configures an ht-radio-profile named “default-g” and enables 40MHz-intolerance:

```
(host) (config) #rf ht-radio-profile default-g
   40MHz-intolerance
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3.2	Support for the **dsss-cck-40mhz parameter**was removed
ArubaOS 3.4	Introduced the **single-chain-legacy** parameter.
ArubaOS 6.2	The **single-chain-legacy** parameter was renamed to **diversity-spreading-workaround**.

Command Information

Platforms	Licensing	Command Mode
All platforms, but operates with IEEE 802.11n compliant devices only	Base operating system	Config mode on master controllers

rf optimization-profile

```
rf optimization-profile <profile-name>
   clone <profile>
   handoff-assist
   low-rssi-threshold <number>
   no ...
   rssi-check-frequency <number>
   rssi-falloff-wait-time <number>
```

Description

This command configures the RF optimization profile.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`clone`	Name of an existing optimization profile from which parameter values are copied.	—	—
`handoff-assist`	Allows the controller to force a client off an AP when the RSSI drops below a defined minimum threshold.	—	disabled
`low-rssi-threshold`	Minimum RSSI, above which deauth should never be sent.	1-255	10
`no`	Negates any configured parameter.	—	—
`rssi-check-frequency`	Interval, in seconds, to sample RSSI.	9-255	3 seconds
`rssi-falloff-wait-time <number>`	Number of times the detected client RSSI level must fall below the minimum RSSI threshold the before the AP sends a deauthorization message to the client. The maximum value is 8 times.	0-8	4

Example

The following command configures an RF optimization profile:

```
(host) (config) #rf optimization-profile Angela1
(host) (RF Optimization Profile "Angela1") #rssi-falloff-wait-time 3
(host) (RF Optimization Profile "Angela1") #rssi-check-frequency 2
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4	The following parameters were deprecated: • ap-lb-max-retries <number> • ap-lb-user-high-wm <percent> • ap-lb-user-low-wm <percent> • ap-lb-util-high-wm <percent> • ap-lb-util-low-wm <percent> • ap-lb-util-wait-time <seconds • ap-load-balancing Use the command rf dot11a-radio-profile spectrum-load-balancing and rf dot11g-radio-profile spectrum-load-balancing to enable the spectrum load balancing feature.
ArubaOS 5.0	The following parameters were deprecated: • coverage-hole-detection hole-detection-interval • hole-good-rssi-threshold • hole-good-sta-ageout • hole-idle-sta-ageout • hole-poor-rssi-threshold
ArubaOS 6.0	The following parameters were deprecated: • detect-association-failure • detect-interference • hole-detection-interval • hole-good-rssi-threshold • hole-good-sta-ageout • hole-idle-sta-ageout • hole-poor-rssi-threshold • interference-baseline • interference-exceed-time • interference-threshold

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

rf spectrum-profile

```
rf spectrum-profile <profile-name>
   age-out audio|bluetooth|cordless-ff-phone|cordless-fh-base|cordless-fh-network|generic-
   ff|generic-fh|microwave|microwave-inverter|unknown|video|wifi|xbox
   clone <source>
   no ...
```

Description

Define the device ageout times used by a spectrum monitor, or hybrid AP radio.

Syntax

Parameter	Description	Range	Default
`age-out`	Use the **age-ou t** parameter to define the number of seconds for which a specific device type must stop sending a signal before the spectrum monitor considers that device no longer active on the network.		
`audio`	Some audio devices such as wireless speakers and microphones also use fixed frequency to continuously transmit audio. These devices are classified as Fixed Frequency (Audio).	5-65535 seconds	10 sec
`bluetooth`	Bluetooth devices. Note that this setting is applicable to 2.4GHz spectrum monitor radios only.	5-65535 seconds	25 sec
`cordless-ff-phone`	Some cordless phones use a fixed frequency to transmit data (much like the fixed frequency video devices). These devices are classified as Fixed Frequency (Cordless Phones).	5-65535 seconds	10 sec
`cordless-fh-base`	Frequency hopping cordless phone base units transmit periodic beacon-like frames at all times. When the handsets are not transmitting (i.e., no active phone calls), the cordless base is classified as Frequency Hopper (Cordless Base).	5-65535 seconds	240 sec
`cordless-fh-network`	When there is an active phone call and one or more handsets are part of the phone conversation, the device is classified as Frequency Hopper (Cordless Network). Cordless phones may operate in 2.4 GHz or 5 GHz bands. Some phones use both 2.4 GHz and 5 GHz bands (for example, 5 GHz for Base-to-handset and 2.4 GHz for Handset-to-base). These phones may be classified as unique Frequency Hopper devices on both bands..	5-65535 seconds	60 sec

Parameter	Description	Range	Default
generic-ff	All fixed frequency devices that do not fall into one of the other categories are classified as Fixed Frequency (Other). Note that the RF signatures of the fixed frequency audio, video and cordless phone devices are very similar and that some of these devices may be occasionally classified as Fixed Frequency (Other).	5-65535 seconds	10 sec
generic-fh	When the classifier detects a frequency hopper that does not fall into one of the above categories, it is classified as Frequency Hopper (Other). Some examples include IEEE 802.11 FHSS devices, game consoles and cordless/hands-free devices that do not use one of the known cordless phone protocols.	5-65535 seconds	25 sec
generic-interferer	Any non-frequency hopping device that does not fall into one of the other categories described in this table is classified as a Generic Interferer. For example a Microwave-like device that does not operate in the known operating frequencies used by the Microwave ovens may be classified as a Generic Interferer. Similarly wide-band interfering devices may be classified as Generic Interferers.	5-65535 seconds	30 sec
microwave	Common residential microwave ovens with a single magnetron are classified as a Microwave. These types of microwave ovens may be used in cafeterias, break rooms, dormitories and similar environments. Some industrial, healthcare or manufacturing environments may also have other equipment that behave like a microwave and may also be classified as a Microwave device. Note that this setting is applicable to 2.4GHz spectrum monitor radios only.	5-65535 seconds	15 sec
microwave-inverter	Some newer-model microwave ovens have the inverter technology to control the power output and these microwave ovens may have a duty cycle close to 100%. These microwave ovens are classified as Microwave (Inverter). Dual-magnetron industrial microwave ovens with higher duty cycle may also be classified as Microwave (Inverter). As in the Microwave category described above, there may be other equipment that behave like inverter microwaves in some industrial, healthcare or manufacturing environments. Those devices may also be classified as Microwave (Inverter).	5-65535 seconds	15 sec
video	Video transmitters that continuously transmit video on a single frequency are classified as Fixed Frequency (Video). These devices typically have close to a 100% duty cycle. These	5-65535 seconds	60 sec

Parameter	Description	Range	Default
	types of devices may be used for video surveillance, TV or other video distribution, and similar applications.		
`wifi`	Wi-Fi devices.	5-65535 seconds	600 sec
`xbox`	The Microsoft Xbox device uses a frequency hopping protocol in the 2.4 GHz band. These devices are classified as Frequency Hopper (Xbox). Note that this setting is applicable to 2.4GHz spectrum monitor radios only.	5-65535 seconds	25 sec
`clone <source>`	Make a copy of an existing spectrum profile.		600 sec
`no`	Remove a spectrum profile or negate a configured parameter.		

Usage Guidelines

The Spectrum Analysis software module provides visibility into RF coverage, allowing you to troubleshoot RF interference and identify the 802.11 devices on the network. APs that gather spectrum data are called Spectrum Monitors, or *SMs*, and reference a spectrum profile that determines the band monitored by that SM radio. Use this profile to modify default device ageout times for spectrum monitors and hybrid APs using this profile.

For a list of APs that can be converted into a spectrum monitor or hybrid AP, refer to the Spectrum Analysis chapter of the Dell Networking W-Dell Networking W-Series ArubaOS 6.5.x User Guide.

Example

The following command creates the spectrum profile **spectrum2**.

```
(host) (config) #rf spectrum-profile spectrum2
```

Related Commands

show rf spectrum-profile

Command History

Release	Modification
ArubaOS 6.0	Command introduced
ArubaOS 6.2	The spectrum-band parameter was deprecated. The following default ageout times were changed: • cordless-fh-base default timeout is 240 seconds (was 25 sect in previous releases) • cordless-fh-network default timeout is 60 sect (was 10 sect in previous releases) • generic-interferer default timeout is 30 sect (was 25 sect in previous releases) • video default timeout is 60 sect (was 10 sect in previous releases)

Command Information

Platforms	Licensing	Command Mode
All platforms	RF Protect license	Config mode on master and local controllers

router mobile

```
router mobile
```

Description

This command enables Layer-3 (IP) mobility.

Syntax

No parameters.

Usage Guidelines

Use this command to enable IP mobility on a controller. IP mobility is disabled by default on the controller. This command must be executed on all controllers(master and local) that need to provide support for layer-3 roaming in a mobility domain. You can enable or disable IP mobility on a virtual AP profile with the **wlan virtual-ap** command (IP mobility is enabled by default in a virtual AP profile).

It is recommended to reboot the controller every time you enable or disable IP mobility.

Example

This command enables IP mobility:

```
(host) (config) #router mobile
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

router ospf

```
router ospf
   aggregate-route rapng-vpn <addr>
   area <area-id>
           default-cost <cost>
           nssa [default-information no-redistribution | no-summary]
           stub [no-summary]
   default-information originate always
   redistribute
           loopback
           rapng-vpn
           vlan [<vlan-ids> | add <vlan-ids> | remove <vlan-ids>]
   router-id <rtr-id>
   subnet exclude <addr> <mask>
```

Description

Global OSPF configuration for the upstream router.

Syntax

Parameter	Description
`aggregate-route`	Enter the aggregate route information.
`area <area-id>`	Enter the keyword area followed by the area identification, in dotted decimal format, to configure an OSPF area.
`default-cost <cost>`	Set the summary cost of a NSSA/stub area (in route metric) Range: 0 to 16777215
`nssa`	Set an area as a NSSA
`default-information-originate`	Originate Type 7 default into the NSSA area
`no-redistribution`	Set the NSSA area for no distribution into this NSSA area
`no-summary`	Do not send summary LSA into this NSSA area
`stub [no-summary]`	Set an area as a Total Stub Area and optionally do not send summary LSA into this area
`default-information originate always`	Control distribution of default information by distributing a default route.
`redistribute`	Redistributes the route.
`loopback`	Redistributes loopback addresses.
`rapng-vpn`	Redistribute IAP-VPN addresses.

Parameter	Description
`vlan <vlan-ids>`	Redistribute the vlan user subnet.
`add <vlan-ids>`	Add the user VLANs to the list
`remove <vlan-ids>`	Remove user VLANs to the list.
`router-id <rtr-id>`	Enter the router ID in IP address format.
`subnet exclude <addr> <mask>`	Specify the subnet that OSPF will *not* advertise. Enter the subnet and mask address in dotted decimal format (A.B.C.D).

Usage Guidelines

OSPFv2 is a dynamic Interior Gateway routing Protocol (IGP) based on IETF RFC 2328. The ArubaOS implementation of OSPF allows controllers to deploy effectively in a Layer 3 topology. For more detailed information, refer to the OSPF Chapter in the *Dell Networking W-Series ArubaOS User Guide*.

Example

By default OSPF will advertise all the user VLAN subnet addresses in the router LSA (Link-State Advertisement). To control the OSPF advertisement, execute the following command:

```
(host) (config) # router ospf subnet exclude 75.1.1.0 255.255.0.0
```

With the above command, any user VLAN subnet matching 75.1/16 will not be advertised in the router LSA. To return to the default advertisement, execute the command:

```
(host) (config) # no router ospf subnet exclude 75.1.1.0 255.255.0.0
```

Related Commands

Command	Description
show ip ospf	View OSPF configuration

Command History

Release	Modification
ArubaOS 3.4	Command introduced
ArubaOS 6.0	Added the options: area, default-cost, nssa, and default-information originate always
ArubaOS 6.3	The **aggregate-route and rapng-vpn** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All Platforms	Base operating system	Configuration Mode (config)

routing-policy-map

```
routing-policy-map
   {branch <mac-addr>}|{role <user-role>} access-list <route-acl>
```

Description

This command associates a routing access control list (ACL) with a specific user role or a GRE tunnel on a branch controller.

Syntax

Parameter	Description
`branch <mac-addr>`	By default, when a branch office deployment uses IPsec maps to define the connections between each branch controller and its master controller, the global ACL **master-boc-traffic** is applied to those IPsec maps. Use this command to apply a local ACL to the GRE tunnel between a specific branch controllerand its master controller, overriding the default **master-boc-traffic** ACL.
`role <user-role>`	Name of the user role to be associated with the specified routing ACL.
`access-list <route-acl>`	Name of the route ACL to be associated to the specified user role.

Usage Guidelines

The commands to associate an access list to a user role vary, depending upon the type of access list being associated to that role. Ethertype, MAC and session ACLs are applied globally across all controllers, but routing access lists may vary between locations, so they are mapped to a user role in a local configuration setting.

In a branch controllerenvironment, where an IPsec map defines the connections between the local branch controllers and a master controller, the global ACL **master-boc-traffic** is applied to all IPsec maps between the master and the branch controllers. If any branch controller requires a different ACL, issue the command **routing-policy-map branch <mac-addr> access-list <acl>** on that branch controller to associate a different ACL to the L3 GRE tunnel between that one branch controller and its master. This local setting will override the global settings defined in the master-boc-traffic ACL.

Example

The following example maps a user role to a routing ACL.

```
(host)(config) #routing-policy-map
   role employee access-list branch1
```

To associate the user role with an ethertype, MAC or session ACL, use the command **user-role <role> access-list eth|mac|session <acl>**.

Related Commands

Command	Description
ip access-list route	Use this command to configure an access control list (ACL) for policy-based routing (PBR).
ip nexthop-list	Use this command to define a next-hop list for a routing policy

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.
ArubaOS 6.4.4.0	The **branch** parameter is introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

service

```
service [dhcp] [dhcpv6] [network-storage] [print-server]
```

Description

This command enables the DHCP server on the controller.

Syntax

Parameter	Description	Default
dhcp	Enables the DHCP server	disabled
dhcpv6	Enables the DHCPv6 server	disabled
network-storage	Enables the NAS service	disabled
print-server	Enables the printer service	disabled

Usage Guidelines

You can enable and configure DHCP, DHCPv6, network-storage or print server in the controller to provide the following:

- DHCP: IP addresses to wireless clients if an external DHCP server is not available.
- DHCPv6: IPv6 addresses to wireless clients if an external DHCPv6 server is not available.
- Network-storage: To provide access to the storage devices attached to the controller.
- Printer-server: To provide access to printers attached to the controller.

Example

The following command enables the DHCP server in the controller:

```
(host) (config) #service dhcp
```

The following command enables the DHCPv6 server in the controller:

(host) (config) #service dhcpv6

The following command enables the NAS services in the controller:

(host) (config) #service network-storage

The following command enables the printer services in the controller:

(host) (config) #service print-server

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 3.4	The **network-storage** and **print-server** options were introduced.
ArubaOS 6.3	The **dhcpv6** command was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show aaa accounting tacacs

```
show aaa accounting tacacs
```

Description

Show configuration information for TACACS+ accounting servers.

Usage Guidelines

This command displays TACACS+ data for your controller if you have previously configured a TACACS+ server and server group. The output includes the current TACACS+ accounting mode (enabled or disabled), and the name of the TACACS+ server group.

Example

The output of the **show aaa accounting tacacs** command displays configuration information for a TACACS+ accounting server. The output of this command includes the following parameters:

```
(host) #show aaa accounting tacacs
TACACS Accounting Configuration
-------------------------------
Parameter      Value
---------      -----
Mode           Enabled
Commands       configuration
Server-Group   tacacs1
```

Parameter	Description
Mode	Shows whether this server group is **Enabled** or **Disabled**.
Commands	Displays the types of commands that are reported to the TACACS server group. • **action** reports action commands only. • **all** reports all commands. • **configuration** reports configuration commands only • **show** reports show commands only
Server-Group	Shows whether this server is **Enabled** or **Disabled**.

Related Commands

Command	Description	Mode
aaa authentication-server tacacs	Configure the TACACS+ accounting feature.	Config mode

Command	Description	Mode
aaa server-group	Add a configured authentication server to an ordered list in a server group, and configure server rules to derive a user role, VLAN ID or VLAN name from attributes returned by the server during authentication	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication all

```
show aaa authentication all
```

Description

Show authentication statistics for your controller, including authentication methods, successes and failures.

Usage Guidelines

This command displays a general overview of authentication statistics. To view authentication information for specific profiles such as a captive-portal, MAC or 801.x authentication profile, issue the commands specific to those features.

Example

The output of this command displays an authentication overview for your controller, including the authentication methods used, and the numbers of successes or failures for each method. This example shows the numbers of authentication successes and failures for a controller using TACACS+ and RADIUS authentication methods.

```
(host) #show aaa authentication all

Auth Method Statistics
----------------------
Method  Success  Failures
------  -------  --------
tacacs                 12                                                  2Radius                 9
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show aaa authentication captive-portal

```
show aaa authentication captive-portal [<profile-name>]
```

Description

This command shows configuration information for captive portal authentication profiles.

Syntax

Parameter	Description
<profile-name>	The name of an existing captive portal authentication profile.

Usage Guidelines

Issue this command without the **<profile-name>** parameter to display the entire Captive Portal Authentication profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

If you do not yet have any captive portal authentication profiles defined, use the command **aaa authentication captive-portal** to configure your captive portal profiles.

Examples

This first example shows that there are three configured captive portal profiles in the Captive Profile Authentication Profile List. The **References** column lists the number of other profiles with references to a captive portal authentication profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) #show aaa authentication captive-portal

Captive Portal Authentication Profile List
------------------------------------------
Name            References  Profile Status
----            ----------  --------------
c-portal        2
remoteuser                                                    1
portal1                                                       1

Total: 4
```

Include a captive portal profile name to display a complete list of configuration settings for that profile. The example below shows settings for the captive portal profile portal1.

```
Captive Portal Authentication Profile "portal1"
-----------------------------------------------
Parameter                                       Value
---------                                       -----
Default Role                                    guest
Default Guest Role                              guest
Server Group                                    default
Redirect Pause                                  10 sec
User Login                                      Enabled
Guest Login                                     Disabled
Logout popup window                             Enabled
```

```
Use HTTP for authentication                          Disabled
Logon wait minimum wait                              5 sec
Logon wait maximum wait                              10 sec
logon wait CPU utilization threshold                 60 %
Max Authentication failures                          0
Show FQDN                                            Disabled
Authentication Protocol                              PAP
Login page                                           /auth/index.
Welcome page                                         /auth/welcom
Show Welcome Page                                    Yes
Add switch IP address in the redirection URL         Disabled
Adding user vlan in redirection URL                  Disabled
Add a controller interface in the redirection URL    N/A
Allow only one active user session                   Disabled
White List                                           N/A
Black List                                           N/A
Show the acceptable use policy page                  Disabled
User idle timeout                                    N/A
Redirect URL                                         N/A
Bypass Apple Captive Network Assistant               Disabled
URL Hash Key                                         ********
```

The output of this command includes the following parameters:

Parameter	Description
`Default Role`	Role assigned to the captive portal user upon login.
`Default Guest Role`	Guest role assigned to the captive portal user upon login.
`Server Group`	Name of the group of servers used to authenticate captive portal users.
`Redirect Pause`	Time, in seconds, that the system remains in the initial welcome page before redirecting the user to the final web URL. If set to 0, the welcome page displays until the user clicks on the indicated link.
`User Login`	Shows whether the profile has enabled or disabled captive portal with authentication of user credentials.
`Guest Login`	Shows whether the profile has enabled or disabled captive portal guest login without authentication.
`Logout popup window`	Shows whether the profile has enabled or disabled a pop-up window that allows a user to log out. If this is disabled, the user remains logged in until the user timeout period has elapsed or the station resets.

Parameter	Description
Use HTTP for authentication	Shows whether the profile has enabled or disabled the ability to use the HTTP protocol to redirect users to the captive portal page.
Logon wait minimum wait	Minimum time, in seconds, the user will have to wait for the logon page to pop up if the CPU load is high.
Logon wait maximum wait	Maximum time, in seconds, the user will have to wait for the logon page to pop up if the CPU load is high.
logon wait CPU utilization threshold	CPU utilization percentage above which the logon wait interval is applied when directing a captive portal user with the logon page.
Max Authentication failures	Maximum number of authentication failures before the user is blacklisted.
Show FQDN	If enabled, the user can see and select the fully-qualified domain name (FQDN) on the captive portal login page.
Authentication Protocol	This parameter specifies the type of authentication required by this profile, PAP is the default authentication type
Login page	URL of the page that appears for the user logon.
Welcome page	URL of the page that appears after logon and before the user is redirected to the web URL.
Add controller IP address in the redirection URL	If enabled, this option sends he controller's IP address in the redirection URL when external captive portal servers are used. An external captive portal server can determine the controller from which a request originated by parsing the 'switchip' variable in the URL.
Adding user vlan in redirection URL	Shows the user's VLAN ID sent in the redirection URL, if enabled
Add a controller interface in the redirection URL	Shows the IP address of a controller interface added to the redirection URL, if enabled.

Parameter	Description
Allow only one active user session	If enabled, only one active user session is allowed at any time. This feature is disabled by default.
White List	Shows the configured white list on an IPv4 or IPv6 network destination. The white list contains authenticated websites that a guest can access.
Black List	Shows the configured black list on an IPv4 or IPv6 network destination. The black list contains websites (unauthenticated) that a guest cannot access.
Show the acceptable use policy page	If enabled, the captive portal page will show the acceptable use policy page before the user logon page. This feature is disabled by default.
User Idle Timeout	The user idle timeout for this profile. The valid range is 30-15300 in multiples of 30 seconds. Enabling this option overrides the global settings configured in the AAA timers. If this is disabled, the global settings are used.
redirect-url <url>	URL to which an authenticated user will be directed.
URL hash key	If this value is set, the redirection URL is hashed using the defined hash key. The characters in the hash key are hidden in the output of this command

Related Commands

Command	Description	Mode
aaa authentication captive-portal	Use aaa authentication captive-portal to configure the parameters displayed in the output of this show command.	Config mode

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **sygate-on-demand** parameter was deprecated, and the **white-list** and **black-list** parameters were added.
ArubaOS 6.2	the **Authentication Protocol** parameter was added, and the **Use CHAP** parameter was deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication captive-portal customization

```
show aaa authentication captive-portal customization <profile-name>
```

Description

Display customization settings for a captive portal profile

Syntax

Parameter	Description
`<profile-name>`	The name of an existing captive portal authentication profile.

Usage Guidelines

The this command shows how a captive portal profile has been customized with non-default configuration settings. If you do not yet have any captive portal authentication profiles defined, use the command aaa authentication captive-portal to configure your captive portal profiles

Example

The output of the following command shows how the captive portal profile *c-portal* has been customized. If an individual parameter has not been changed from its default settings, its value entry will be blank.

```
(host) #show aaa authentication captive-portal customization c-portal
Captive-Portal Customization
----------------------------
Parameter                       Value
---------                       -----
Login page design theme         3
Login page logo image
Login page text URL             /flash/upload/custom/ssu-guest-cp/logintext.html
Login policy text URL           /upload/custom/ssu-guest-cp/acceptableusepolicy.html
Custom page background color
Custom page background image    /upload/custom/default/auth-slider-1.gif
```

The output of this command includes the following parameters:

Parameters	Description
`Login page design theme`	Indicates whether the controller is using one of the two predefined login page designs (**1** or **2**) or has a custom background (**3**).
`Login page logo image`	Path and filename for a custom captive portal logo. This option is only available if the controller has a predefined login design.
`Login page text`	Path and filename of the page that appears for the user logon.
`Login policy text`	Path and filename of the page that displays user policy text.

Parameters	Description
`Custom page background color`	Hexadecimal value for a custom background color. This option is only available if the controller has a custom login page design theme.
`Custom page background image`	Path and filename for a custom JPEG captive portal background image. This option is only available if the controller has a custom login page design theme.

Related Commands

Command	Description	Mode
`aaa authentication captive-portal`	If you do not yet have any captive portal profiles defined, use the command aaa authentication captive-portal to configure your captive portal profiles.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication dot1x

```
show aaa authentication dot1x [<profile-name>|countermeasures]
```

Description

This command shows information for 802.1X authentication profiles.

Syntax

Parameter	Description
`<profile-name>`	The name of an existing 802.1X authentication profile.
`countermeasures`	Reports if WPA/WPA2 Countermeasures have been enabled for 802.1X profiles. If enabled, the AP scans for message integrity code (MIC) failures in traffic received from clients.

Usage Guidelines

Issue this command without the **<profile-name**> or **countermeasures** options to display the entire 802.1X Authentication profile list, including profile status and the number of references to each profile. Include a profile name to display detailed dot1x authentication configuration information for that profile. The **countermeasures** option indicates whether the 802.1X profiles have been configured for WPA/WPS2 countermeasures. If countermeasures have not been configured, the output for this command will be blank.

Examples

The following example lists all dot1x authentication profiles. The **References** column lists the number of other profiles with references to a 802.1X authentication profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined 802.1X profiles will not have an entry in the **Profile Status** column.

```
(host) #show aaa authentication dot1x

802.1X Authentication Profile List
----------------------------------
Name          References  Profile Status
----          ----------  --------------
default       2
default-psk   1           Predefined (editable)
dot1x         5
dot1xtest                       0

Total:4
```

To display a complete list of parameters for an individual profile, include the <profile> parameter. The example below displays some of the profile details for the authentication profile pDotix.

```
(host) #show aaa authentication dot1x pDot1x

802.1X Authentication Profile "pDot1x"
--------------------------------------
Parameter                                                 Value
---------                                                 -----
Max authentication failures                               0
```

```
Enforce Machine Authentication                          Disabled
Machine Authentication: Default Machine Role            guest
Machine Authentication Cache Timeout                    24 hrs
Blacklist on Machine Authentication Failure             Disabled
Machine Authentication: Default User Role               guest
Interval between Identity Requests                      30 sec
Quiet Period after Failed Authentication                30 sec
Reauthentication Interval                               86400 sec
Use Server provided Reauthentication Interval           Disabled
Multicast Key Rotation Time Interval                    1800 sec
Unicast Key Rotation Time Interval                      900 sec
...
```

The output of the **show aaa authentication dot1x**command includes the following parameters:

Parameter	Value
`Max authentication failures`	Number of times a user can try to login with wrong credentials after which the user is blacklisted as a security threat. Blacklisting is disabled if this parameter is set to 0.
`Enforce Machine Authentication`	Shows if machine authentication is enabled or disabled for Windows environments. If enabled, If enabled, either the machine-default-role or the user-default-role is assigned to the user, depending on which authentication is successful.
`Machine Authentication: Default Machine Role`	Default role assigned to the user after completing only machine authentication.
`Machine Authentication Cache Timeout`	The timeout period, in hours, for machine authentication. After this period passes, the use will have to re-authenticate.
`Blacklist on Machine Authentication Failure`	If enabled, the client is blacklisted if machine authentication fails.
`Machine Authentication: Default User Role`	Default role assigned to the user after 802.1X authentication.

Parameter	Value
Interval between Identity Requests	Interval, in seconds, between identity request retries
Quiet Period after Failed Authentication	Interval, in seconds, following failed authentication.
Reauthentication Interval	Interval, in seconds, between reauthentication attempts.
Use Server provided Reauthentication Interval	If enabled, 802.1X authentication will use the server-provided reauthentication period.
Multicast Key Rotation Time Interval	Interval, in seconds, between multicast key rotations.
Unicast Key Rotation Time Interval	Interval, in seconds, between unicast key rotations.
Authentication Server Retry Interval	Server group retry interval, in seconds.
Authentication Server Retry Count	The number of server group retries.
Framed MTU	Shows the framed MTU attribute sent to the authentication server.
Number of times ID-Requests are retried	Maximum number of times ID requests are sent to the client.
Maximum Number of Reauthentication Attempts	Maximum number of reauthentication attempts.

Parameter	Value
Maximum number of times Held State can be bypassed	Number of consecutive authentication failures which, when reached, causes the controller to not respond to authentication requests from a client while the controller is in a held state after the authentication failure.
Dynamic WEP Key Message Retry Count	Number of times unicast/multicast EAPOL key messages are sent to the client.
Dynamic WEP Key Size	Dynamic WEP key size, either 40 or 128 bits.
Interval between WPA/WPA2 Key Messages	Interval, in milliseconds, between each WPA key exchange. The allowed range of values is 1000-5000 msecs, and the default value is 1000 msecs.
Delay between EAP-Success and WPA2 Unicast Key Exchange	Show the delay interval between EAP-Success and unicast key exchanges, in msec. Range: 0-2000msec. Default: 0 (no delay).
Delay between WPA/WPA2 Unicast Key and Group Key Exchange	Interval, in milliseconds, between unicast and multicast key exchanges.
Time interval after which the PMKSA will be deleted	Show the PMKSA cache interval. Time interval in Hours. Range: 1-2000. Default: 8 hrs.
Delete Keycache upon user deletion Enabled	If enabled, the controller deletes the key cache entry when the user entry is deleted.
WPA/WPA2 Key Message Retry Count	Number of times WPA/WPA2 key messages are retried.

Parameter	Value
Multicast Key Rotation	Shows if multicast key rotation is enabled or disabled.
Unicast Key Rotation	Shows if unicast key rotation is enabled or disabled.
Reauthentication	If enabled, this option forces the client to do a 802.1X reauthentication after the expiration of the default timer for reauthentication. (The default value of the timer is 24 hours.)
Opportunistic Key Caching	If enabled, a cached pairwise master key (PMK) is derived with a client and an associated AP and used when the client roams to a new AP.
Validate PMKID	Shows if the **Validate PMKID** feature is enabled or disabled. When this option is enabled, the client must send a PMKID in the associate or reassociate frame to indicate that it supports OKC; otherwise, full 802.1X authentication takes place. (This feature is optional, since most clients that support OKC do not send the PMKID in their association request.)
Use Session Key	If enabled, the controller will use a RADIUS session key as the unicast WEP key.
Use Static Key	If enabled, the controller will use a static key as the unicast/multicast WEP key.
xSec MTU	Shows the size of the MTU for xSec.

Parameter	Value
Termination	Shows if 802.1X termination is enabled or disabled on the controller.
Termination EAP-Type	Shows the current Extensible Authentication Protocol (EAP) method, either EAP-PEAP or EAP-TLS.
Termination Inner EAP-Type	When EAP-PEAP is the EAP method, this parameter displays the inner EAP type.
Enforce Suite-B 128 bit or more security level Authentication	Shows if Suite-B 128 bit or more security level authentication enforcement is enabled or disabled.
Enforce Suite-B 192 bit security level Authentication	Shows if Suite-B 192 bit or more security level authentication enforcement is enabled or disabled.
Token Caching	If this feature enabled (and EAP-GTC is configured as the inner EAP method), token caching allows the controller to cache the username and password of each authenticated user.
Token Caching Period	Timeout period, in hours, for the cached information.
CA-Certificate	Name of the CA certificate for client authentication loaded in the controller.
Server-Certificate	Name of the Server certificate used by the controller to authenticate itself to the client.
TLS Guest Access	Shows if guest access for valid EAP-TLS users is enabled or disabled.

Parameter	Value
TLS Guest Role	User role assigned to EAP-TLS guest.
Ignore EAPOL-START after authentication	If enabled, the controller ignores EAPOL-START messages after authentication.
Handle EAPOL-Logoff	Shows if handling of EAPOL-LOGOFF messages is enabled or disabled.
Ignore EAP ID during negotiation	If enabled, the controller will Ignore EAP IDs during negotiation.
WPA-Fast-Handover	Shows if WPA-fast-handover is enabled or disabled. This feature is only applicable for phones that support WPA.
Disable rekey and reauthentication for clients on call	Shows if the rekey and reauthentication features for voice-over-WLAN clients has been enabled or disabled.
Check certificate common name against AAA server	If enabled, this parameter verifies that the certificate's common name exists in the server. This parameter is disabled by default dot1x profiles.

Related Commands

Command	Description	Mode
aaa authentication dot1x	If you do not yet have any 802.1X authentication profiles defined, use the command aaa authentication dot1x to configure your 802.1X profiles.	Config mode

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **Check certificate common name against AAA server, Enforce Suite-b-128** and **Enforce Suite-b-192** parameters were introduced.
ArubaOS 6.3.1.2	The **Delete Keycache upon user deletion** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication mac

```
show aaa authentication mac [<profile-name>]
```

Description

This command shows information for MAC authentication profiles.Issue this command without the **<profile-name>** option to display the entire MAC Authentication profile list, including profile status and the number of references to each profile. Include a profile name to display detailed MAC authentication configuration information for that profile.

Syntax

Parameter	Description
<profile-name>	The name of an existing MAC authentication profile.

Examples

The output of the example below shows two MAC authentication profiles, **default** and **macProfile1**, which are referenced three times by other profiles. the **Profile Status** columns are blank, indicating that these profiles are both user-defined. (If a profile is predefined, the value **Predefined** appears in the Profile Status column.)

```
(host) #show aaa authentication dot1x pDot1x

802.1X Authentication Profile "pDot1x"
--------------------------------------
Parameter                                                Value
---------                                                -----
Max authentication failures                              0
Enforce Machine Authentication                           Disabled
Machine Authentication: Default Machine Role             guest
Machine Authentication Cache Timeout                     24 hrs
Blacklist on Machine Authentication Failure              Disabled
Machine Authentication: Default User Role                guest
Interval between Identity Requests                       30 sec
Quiet Period after Failed Authentication                 30 sec
Reauthentication Interval                                86400 sec
Use Server provided Reauthentication Interval            Disabled
Multicast Key Rotation Time Interval                     1800 sec
Unicast Key Rotation Time Interval                       900 sec
...
```

The following example displays configuration details for the MAC authentication profile “MacProfile1,” including the delimiter and case used in the authentication request, and the maximum number of times a client can fail to authenticate before it is blacklisted.

```
(host) #show aaa authentication mac MacProfile1
MAC Authentication Profile "MacProfile1"
----------------------------------------
Parameter                   Value
---------                   -----
Delimiter                   colon
Case                        upperMax Authentication failures  3
```

Related Commands

Command	Description	Mode
aaa authentication mac	Configure MAC authentication values on your controller.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication mgmt

```
show aaa authentication mgmt
```

Description

This command displays administrative user authentication information, including management authentication roles and servers.

Usage Guidelines

Issue this command to identify the default management role assigned to authenticated administrative users, and the name of the group of servers used to authenticate these users.

Example

The output of the following example displays management authentication information for your controller.

```
(host) #show aaa authentication mgmt

Management Authentication Profile
---------------------------------
Parameter     Value
---------     -----
Default Role  root
Server Group  ServerGroup1
Enable          Enabled
```

Parameter	Description
`Default Role`	This parameter shows which of the following roles the controller uses for authentication management. • **root**, the super user role (default). • **guest-provisioning**, guest provisioning role. • **network-operations**, network operator role. • **read-only**, read only role. • **location-api-mgmt**, location API management role. • **no-access**, no commands are accessible.
`Server Group`	The name of a server group.
`Enable`	The **Enable** parameter indicates whether or not this feature is enabled or disabled.

The output of the **show aaa authentication mgmt** command includes the following parameters:

Related Commands

Command	Description	Mode
aaa authentication mgmt	Configure management authentication settings.	Config mode

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **Mode** parameter in the command output was renamed **Enable**.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication stateful-dot1x

```
show aaa authentication stateful-dot1x [config-entries]
```

Description

This command displays configuration settings for 802.1X authentication for clients on non-Dell APs.

Syntax

Parameter	Description
`config-entries`	Display details for the AP Server configuration list.

Usage Guidelines

Issue this command to identify the default role assigned to the 802.1X user group, name of the group of RADIUS servers used to authenticate the 802.1X users, and the 802.1X authentication timeout period, in seconds.

Example

The output of the following example displays 802.1X authentication information for your controller.

```
(host) #show aaa authentication stateful-dot1x

Stateful 802.1X Authentication Profile
--------------------------------------
Parameter     Value
---------     -----
Default Role  guest
Server Group  newgroup2
Timeout       10 sec
Mode          Enabled
```

Parameter	Description
`Default Role`	This parameter shows which role the controller uses for 802.1X authentication management.
`Server Group`	The name of a server group.
`Timeout`	Timeout period for an authentication request, in seconds.
`Mode`	The **Mode** parameter indicates whether or not this feature is enabled or disabled.

The output of this command includes the following parameters:

When you include the **config-entries** parameter, the output shows the AP - Server Configuration List.

```
(host) #show aaa authentication stateful-dot1x config-entries
```

```
AP-Server Configuration List
----------------------------
Cfg-Name  AP-IP                                  Server                 Shared-Secret
--------  -----                                  ------                 -------------
cfg22                          10.3.14.6                RADIUS1                          secret-pwd
```

Parameter	Description
Cfg-Name	is a auto-generated name
AP-IP	IP address of the AP.
Server	Name of the authentication server.
Shared-Secret	Shared authentication secret.

The output of this command includes the following parameters:

Related Commands

Command	Description	Mode
aaa authentication stateful-dot1x	Use the command aaa authentication stateful-dot1x to configure the settings displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication stateful-ntlm

```
show aaa authentication stateful-ntlm
```

Description

This command displays configuration settings for the Stateful NTLM Authentication profile.Issue this command without the **<profile-name>** option to display the entire Stateful NTLM Authentication profile list, including profile status and the number of references to each profile. Include a profile name to display detailed Stateful NTLM authentication configuration information for that profile.

Syntax

Parameter	Description
<profile-name>	The name of an existing Stateful NTLM authentication profile.

Usage Guidelines

Issue this command to identify the default role assigned to users who have successfully authenticated using the NT LAN Manager (NTLM) authentication protocol, the name of the group of windows servers used to authenticate these users, and the NTLM authentication timeout period, in seconds.

Examples

The output of the example below shows two stateful NTLM authentication profiles, **default** and **NTLMprofile1**, which are each referenced one time by other profiles. the **Profile Status** columns are blank, indicating that these profiles are both user-defined. (If a profile is predefined, the value **Predefined** appears in the Profile Status column.)

```
(host) #show aaa authentication stateful-ntlm

Stateful NTLM Authentication Profile List
-----------------------------------------
Name                References  Profile Status
----                ----------  --------------
default             1
NTLMprofile1                                                    1

Total:2
```

The following example displays configuration details for the stateful NTLM authentication profile “default”.

```
(host) #show aaa authentication stateful-ntlm default


Stateful NTLM Authentication Profile "default"
----------------------------------------------
Parameter     Value
---------     -----
Default Role  guest
Server Group  default
Mode          Disabled
Timeout       10 sec
```

Parameter	Description
Default Role	This parameter shows the role assigned to NTLM authenticated users.
Server Group	The name of a windows server group.
Mode	The **Mode** parameter indicates whether or not this authentication profile is enabled or disabled.
Timeout	Timeout period for an authentication request, in seconds.

The output of this command includes the following parameters:

Related Commands

Command	Description
aaa authentication stateful-ntlm	Use the command aaa authentication stateful-ntlm to configure the settings displayed in the output of this show command.

Command History

This command was introduced in ArubaOS 3.4.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication via auth-profile

```
show aaa authentication via auth-profile [<profile-name>]
```

Description

This command displays configuration settings for the VIA Authentication profile. Issue this command without the **<profile-name>** option to display the entire VIA Authentication profile list, including profile status and the number of references to each profile. Include a profile name to display detailed VIA authentication configuration information for that profile.

Syntax

Parameter	Description
<profile-name>	The name of an existing VIA authentication profile.

Usage Guidelines

Issue this command without the **<profile-name>** parameter to display the entire VIA Authentication profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

If you do not yet have any VIA authentication profiles defined, use the command **aaa authentication via auth-profile to configure your VIA authentication profiles.**

Examples

This first example shows that there are three configured captive portal profiles in the Captive Profile Authentication Profile List. The **References** column lists the number of other profiles with references to a VIA authentication profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) #show aaa authentication via auth-profile

VIA Authentication Profile List
-------------------------------
Name     References  Profile Status
----     ----------  --------------
default  0
via1     2
via2     1

Total:3
```

Include a VIA authentication profile name to display a complete list of configuration settings for that profile. The example below shows settings for the VIA authentication profile via1.

```
VIA Authentication Profile "via1"
---------------------------------
Parameter                   Value
---------                   -----
Default Role                default-via-role
Server Group                internal
Max Authentication failures  2
```

```
Description                    VIA config for the MV office
```

The output of this command includes the following parameters:

Parameter	Description
`Default Role`	Role assigned to the captive portal user upon login.
`Server Group`	Name of the group of servers used to authenticate captive portal users.
`Max Authentication failures`	Maximum number of authentication failures before the user is blacklisted.
`Description`	Description of the VIA authentication profile.

Related Commands

Command	Description	Mode
`aaa authentication via auth-profile`	Use aaa authentication via auth-profile to configure the parameters displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication via connection-profile

```
show aaa authentication via connection-profile [<profile-name>]
```

Description

This command displays configuration settings for the VIA connection profile. Issue this command without the **<profile-name>** option to display the entire VIA Connection profile list, including profile status and the number of references to each profile. Include a profile name to display detailed VIA connection configuration information for that profile.

Syntax

Parameter	Description
<profile-name>	The name of an existing VIA connection profile.

Usage Guidelines

Issue this command without the **<profile-name>** parameter to display the entire VIA connection profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

If you do not yet have any VIA connection profiles defined, use the command **aaa authentication via connection-profile to configure your VIA connection profiles.**

Examples

This first example shows that there are three configured connection profiles in the Captive Profile Authentication Profile List. The **References** column lists the number of other profiles with references to a VIA connection profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) #show aaa authentication via connection-profile

VIA Connection Profile List
---------------------------
Name          References  Profile Status
----          ----------  --------------
connection_1  3
connection_2  1
default       0

Total:3
```

Include a connection profile name to display a complete list of configuration settings for that profile. The example below shows settings for the captive portal profile connection_1.

```
VIA Connection Profile "default"
--------------------------------
Parameter                                          Value
---------                                          -----
VIA Servers                                        N/A
Client Auto-Login                                  Enabled
VIA Authentication Profiles to provision           N/A
```

```
Allow client to auto-upgrade                                  Enabled
VIA tunneled networks                                         N/A
Enable split tunneling                                        Disabled
VIA Client WLAN profiles                                      N/A
Allow client side logging                                     Enabled
VIA IKE V2 Policy                                             Default
VIA IKE Policy                                                Default
Use Windows Credentials                                       Enabled
Enable IKEv2                                                  Disabled
Use Suite B Cryptography                                      Disabled
IKEv2 Authentication method                                   user-cert
VIA IPSec V2 Crypto Map                                       default-ikev2-dynamicmap/10000
VIA IPSec Crypto Map                                          default-dynamicmap/10000
Allow user to save passwords                                  Enabled
Enable Supplicant                                             Disabled
Enable FIPS Module                                            Disabled
Auto-launch Supplicant                                        Disabled
Lockdown All Settings                                         Disabled
Domain Suffix in VIA Authentication                           Disabled
Enable Controllers Load Balance                               Disabled
Enable Domain Pre-connect                                     Enabled
VIA Banner Message Reappearance Timeout(minutes)              60
VIA Client Network Mask                                       255.255.255.255
Validate Server Certificate                                   Enabled
VIA Client DNS Suffix List                                    N/A
VIA max session timeout                                       1440 min
VIA Logon Script                                              N/A
VIA Logoff Script                                             N/A
VIA Support E-Mail Address                                    N/A
Maximum reconnection attempts                                 3
VIA external download URL                                     N/A
Allow user to disconnect VIA                                  Enabled
Content Security Gateway URL                                  N/A
Comma seperated list of HTTP ports to be inspected
(apart from default port 80)                                  N/A
Enable Content Security Services                              Disabled
Keep VIA window minimized                                     Disabled
Block traffic until VPN tunnel is up                          Disabled
Block traffic rules                                           N/A
```

The output of this command includes the following parameters:

Parameter	Description
VIA servers	Displays the following information about the VIA server: • *Controller Hostname/IP Address*: This is the public IP address or the DNS hostname of the VIA controller. Users will connect to remote server using this IP address or the hostname. • Controller Internal IP Address: This is the IP address of any of the VLAN interface IP addresses belongs to this controller. • Controller Description: This is a human-readable description of the controller.
Client Auto-Login	Enable or disable VIA client to auto login and establish a secure connection to the controller. Default: Enabled

Parameter	Description
VIA Authentication Profiles to provision	This is the list of VIA authentication profiles that will be displayed to users in the VIA client.
Allow client to auto-upgrade	Enable or disable VIA client to automatically upgrade when an updated version of the client is available on the controller. Default: Enabled
VIA tunneled networks	A list of network destination (IP address and netmask) that the VIA client will tunnel through the controller. All other network destinations will be reachable directly by the VIA client.
`Enable split-tunneling`	Enable or disable split tunneling. • If enabled, all traffic to the VIA tunneled networks will go through the controller and the rest is just bridged directly on the client. • If disabled, all traffic will flow through the controller. Default: off
Allow client-side logging	Enable or disable client side logging. If enabled, VIA client will collect logs that can be sent to the support email-address for troubleshooting. Default: Enabled
VIA Client WLAN profiles	A list of VIA client WLAN profiles that needs to be pushed to the client machines that use Windows Zero Config (WZC) to configure or manage their wireless networks.
VIA IKEv2 Policy	A list of IPsec crypto maps that the VIA client uses to connect to the controller. These IPsec Crypto Maps are configured in the CLI using the `crypto-local ipsec-map <ipsec-map-name>` command.
VIA IKE Policy	List of IKE policies that the VIA Client has to use to connect to the controller.
Use Windows Credentials	Enable or disable the use of the Windows credentials to login to VIA. If enabled, the SSO (Single Sign-on) feature can be utilized by remote users to connect to internal resources. Default: Enabled
Enable IKEv2	Select this option to enable or disable the use of IKEv2 policies for VIA.
Use Suite B Cryptography	Select this option to use Suite B cryptography methods. You must install the Advanced Cryptography license to use the Suite B cryptography.
IKEv2 Authentication method	List of all IKEv2 authentication methods.
VIA IPSec V2 Crypto Map	List of all IPSec V2 that the VIA client uses to connect to the controller.

Parameter	Description
VIA IPsec Crypto Map	List of IPsec Crypto Map that the VIA client uses to connect to the controller. These IPsec Crypto Maps are configured in CLI using the `crypto-local ipsec-map <ipsec-map-name>` command.
Allow user to save passwords	Enable or disable users to save passwords entered in VIA. Default: Enabled
Enable Supplicant	If enabled, VIA starts in bSec mode using L2 suite-b cryptography. This option is disabled by default.
Enable FIPS Module	Shows if the VIA (Federal Information Processing Standard) FIPS module is enabled, so VIA checks for FIPS compliance during startup. This option is disabled by default.
Auto-Launch Supplicant	Select this option to automatically connect to a configured WLAN network.
Lockdown All Settings	If enabled, all user options on the VIA client are disabled.
Domain Suffix in VIA Authentication	Enables a domain suffix on VIA Authentication, so client credentials are sent as *domainname\username* instead of just *username*.
Enable Controllers Load Balance	This option allows the VIA client to failover to the next available selected randomly from the list as configured in the VIA Servers option. If disabled, VIA will failover to the next in the sequence of ordered list of VIA Servers.
Enable Domain Pre-Connect	This option allows users with lost or expired passwords to establish a VIA connection to corporate network. This option authenticates the user's device and establishes a VIA connection that allows users to reset credentials and continue with corporate access.
VIA Banner Reappearance Timeout	The maximum time (in minutes) allowed before the VIA login banner reappears. Default: 1440 min
VIA Client Network Mask	The network mask that has to be set on the client after the VPN connection is established. Default: 255.255.255.255
Validate Server Certificate	Enable or disable VIA from validating the server certificate presented by the controller. Default: Enabled
VIA Client DNS Suffix List	The DNS suffix list (comma separated) that has be set on the client once the VPN connection is established. Default: None.
VIA max session timeout	The maximum time (minutes) allowed before the VIA session is disconnected.

Parameter	Description
	Default: 1440 min
VIA Logon Script	Name of the logon script that must be executed after VIA establishes a secure connection. The logon script must reside in the client computer.
VIA Logoff Script	Name of the log-off script that must be executed after the VIA connection is disconnected. The logoff script must reside in the client computer.
VIA Support E-mail Address	The support e-mail address to which VIA users will send client logs. Default: None.
Maximum reconnection attempts	The maximum number of re-connection attempts by the VIA client due to authentication failures. Default: 3
VIA external download URL	End users will use this URL to download VIA on their computers.
Allow user to disconnect VIA	Enable or disable users to disconnect their VIA sessions. Default: Enabled
Comma Separated List of HTTP Ports	Traffic from the specified ports will be verified by the content security service provider.
Keep VIA window minimized	Enable this option to minimize the VIA client to system tray during the connection phase. Applicable to VIA client installed in computers running Microsoft Windows operating system.
Block traffic until VPN tunnel is up	If enabled, this feature will block network access until the VIA VPN connection is established.
Block traffic rules	Specify a hostname or IP address and network mask to define a whitelist of users to which the **Block traffic until VPN tunnel is up** setting will not apply.

Related Commands

Command	Description	Mode
aaa authentication via connection-profile	Use aaa authentication via connection-profile to configure the parameters displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication via web-auth

```
show aaa authentication via web-auth [default]
```

Description

A VIA web authentication profile contains an ordered list of VIA authentication profiles. The web authentication profile is used by end users to login to the VIA download page (https://<server-IP-address>/via) for downloading the VIA client. Only one VIA web authentication profile is available. If more than one VIA authentication profile is configured, users can view this list and select one during the client login.

Syntax

No parameters.

Usage Guidelines

Issue this command to view the authentication profiles associated with the default web authentication profile. Use it without the profile name to see the list of authentication profiles.

Examples

```
(host) #show aaa authentication via web-auth

VIA Web Authentication List
---------------------------
Name     References  Profile Status
----     ----------  --------------
default  2

Total:1

(host) #show aaa authentication via web-auth default

VIA Web Authentication "default"
--------------------------------
Parameter                   Value
---------                   -----
VIA Authentication Profiles  via1
```

The output of this command includes the following parameters:

Parameter	Description
VIA Authentication Profiles	This is the name of the VIA authentication profile. The value column displays the order of priority in which the profiles are displayed in the VIA client login.

Related Commands

Command	Description	Mode
aaa authentication via web-auth	Use aaa authentication via web-auth to configure the parameters displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication vpn

```
show aaa authentication vpn [default|default-cap|default-rap]
```

Description

This command displays VPN authentication settings, including authentication roles and servers.

Usage Guidelines

Issue this command to identify the default role assigned to VPN users, the name of the group of servers used to authenticate the VPN users, and the maximum number of authentication failures allowed before the user is blacklisted.

Example

The following example displays configuration details for the VPN authentication profile **default**, **default-cap** and **default-rap**.

```
(host) #show aaa authentication vpn default

VPN Authentication Profile "default"
------------------------------------
Parameter                    Value
---------                    -----
Default Role                 default-vpn-role
Server Group                 default
Max Authentication failures  2

(TechPubs) #show aaa authentication vpn default-cap

VPN Authentication Profile "default-cap" (Predefined)
-----------------------------------------------------
Parameter                    Value
---------                    -----
Default Role                 ap-role
Server Group                 internal
Max Authentication failures  0

(TechPubs) #show aaa authentication vpn default-rap

VPN Authentication Profile "default-rap" (Predefined (changed))
---------------------------------------------------------------
Parameter                    Value
---------                    -----
Default Role                 default-vpn-role
Server Group                 default
Max Authentication failures  0
```

Parameter	Description
Default Role	The default role to be assigned to VPN users.
Server Group	The name of the server group that performs the authentication.

Parameter	Description
Max Authentication failures	Number of times a user attempted to authenticate, but failed.

Related Commands

Command	Description	Mode
aaa authentication via auth-profile	Use the command aaa authentication via auth-profile to configure the settings displayed in the output of this show command.	Config mode

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 5.0	The **default-cap** and **default-rap** profiles were introduced.
ArubaOS 6.1	The **Check certificate common name against AAA server** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	The PEFV license and the base operating system.	Enable or Config mode on master or local controllers

show aaa authentication wired

```
show aaa authentication wired
```

Description

View wired authentication settings for a client device that is directly connected to a port onthe controller.

Usage Guidelines

This command displays the name of the AAA profile currently used for wired authentication.

Example

The following example shows the current wired profile for the controller is a profile named “secure_profile_3.”

```
(host) #show aaa authentication wired
Wired Authentication Profile
----------------------------
Parameter    Value
---------    -----
AAA Profile  Secure_profile_3
```

Related Commands

Command	Description	Mode
aaa authentication wired	Use the command aaa authentication wired to configure the settings displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication wispr

```
show aaa authentication wispr <profile-name)
```

Description

This command shows information for a WISPr authentication profiles. Issue this command without the **<profile-name>** option to display the entire WISPr Authentication profile list, including profile status and the number of references to each profile. Include a profile name to display detailed WISPr authentication configuration information for that profile.

Parameter	Description
<profile-name>	The name of an existing MAC authentication profile.

Examples

The output of the example below shows two WISPr authentication profiles, **default** and **WISPR1**, which are referenced two times by other profiles. the **Profile Status** columns are blank, indicating that these profiles are both user-defined. (If a profile is predefined, the value **Predefined** appears in the Profile Status column.)

```
(host) #show aaa authentication wispr

WISPr Authentication Profile List
---------------------------------
Name          References  Profile Status
----          ----------  --------------
default       2
WISPr1  2

Total:2

(host) #show aaa authentication wispr WISPr1
WISPr Authentication Profile "WISPr1"
-------------------------------------
Parameter                           Value
---------                           -----
Default Role                        guest
Server Group                        default
Logon wait minimum wait             5 sec
Logon wait maximum wait             10 sec
logon wait CPU utilization threshold  60 %
WISPr Location-ID ISO Country Code    US
WISPr Location-ID E.164 Country Code  1
WISPr Location-ID E.164 Area Code     408
WISPr Location-ID SSID/Zone           Corp1
WISPr Operator Name                   MyCompany
WISPr Location Name                   Sunnyvale
```

The following example displays configuration details for the WISPr authentication profile “WISPr1”.

```
(host) #show aaa authentication wispr WISPr1
WISPr Authentication Profile "WISPr1"
-------------------------------------
```

```
Parameter                              Value
---------                              -----
Default Role                           guest
Server Group                           default
Logon wait minimum wait                5 sec
Logon wait maximum wait                10 sec
logon wait CPU utilization threshold   60 %
WISPr Location-ID ISO Country Code     US
WISPr Location-ID E.164 Country Code   1
WISPr Location-ID E.164 Area Code      408
WISPr Location-ID SSID/Zone            Corp1
WISPr Operator Name                    MyCompany
WISPr Location Name                    Sunnyvale
```

The output of this command includes the following parameters:

Parameter	Description
Default Role	The default role to be assigned to users that have completed WISPr authentication.
Server Group	The name of the server group that performs the authentication.
`Logon wait minimum wait`	If the controller's CPU utilization has surpassed the **Login wait CPU utilization threshold value,** the **Logon wait minimum wait** parameter defines the minimum number of seconds a user will have to wait to retry a login attempt. Range: 1-10 seconds. Default: 5 seconds.
`Logon wait maximum wait`	If the controller's CPU utilization has surpassed the logon **wait CPU utilization threshold** value, the **Logon wait maximum wait** parameter defines the maximum number of seconds a user will have to wait to retry a login attempt. Range: 1-10 seconds. Default: 10 seconds.
`WISPr Location-ID E.164 Area Code`	The E.164 Area Code in the WISPr Location ID.
`WISPr Location-ID E.164 Country Code  1`	The 1-3 digit E.164 Country Code in the WISPr Location ID.
`WISPr Location-ID ISO Country Code`	The ISO Country Code in the WISPr Location ID.
`WISPr Location-ID SSID/Zone`	The SSID/network name in the WISPr Location ID.
`WISPr Location Name`	A name identifying the hotspot location. If no name is defined, the default ap-name is used.
`WISPr Operator Name`	A name identifying the hotspot operator.

Related Commands

Command	Description	Mode
aaa authentication wispr	Configure WISPr authentication values on your controller.	Config mode on master or local controllers.

Command History

This command was introduced in ArubaOS 3.4.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication-server all

```
show aaa authentication-server all
```

Description

View authentication server settings for both external authentication servers and the internal controller database.

Usage Guidelines

The output of this command displays statistics for the Authentication Server Table, including the name and address of each server, server type and configured authorization and accounting ports.

Examples

The following command shows information for the internal Authentication server, and another RADIUS server named RADIUS-1.

```
(host) #show aaa authentication-server all

Auth Server Table
-----------------
Name      Type    FQDN  IP addr     AuthPort  AcctPort  Status    Requests
----      ----    ----  -------     --------  --------  ------    --------
Internal  Local   n/a   10.4.62.11  n/a       n/a       Enabled   0
server    Ldap    n/a   0.0.0.0     389       n/a       Enabled   0
server    Radius  SRVR1 127.9.9.61  1812      1813      Enabled   0
default   Tacacs  n/a   127.9.10.61 49        n/a       Enabled   0
```

The following data columns appear in the output of this command:

Parameter	Description
Name	Name of the authentication server.
Type	The type of authentication server. ArubaOS supports LDAP, RADIUS and TACACS+ servers, in addition to its own local, internal authentication server.
FQDN	The Fully-Qualified Domain Name of the server, if configured.
IP addr	IP address of the server, in dotted-decimal format.
AuthPort	Port number used for authentication. An LDAP server uses port 636 for LDAP over SSL, and port 389 for SSL over LDAP, Start TLS operation andclear text. The default RADIUS authentication port is port 1812.
AcctPort	Accounting port on the server. The default RADIUS accounting port is port 1813.

Parameter	Description
AcctPort	Accounting port on the server.
Status	Shows whether the Authentication server is enable or disabled.
Requests	Number of authentication requests received by the server.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication-server internal

```
show aaa authentication-server internal [statistics]
```

Description

View authentication server settings for the internal controller database.

Examples

The output of the command below shows that the internal authentication server has been disabled

```
(host) #show aaa authentication-server internal

Internal Server
---------------
Host      IP addr         Retries  Timeout  Status
----      -------         -------  -------  ------
Internal  10.168.254.221  3        5        Disabled
```

The following data columns appear in the output of this command:

Parameter	Description
Host	Name of the internal authentication server.
IP addr	Address of the internal server, in dotted-decimal format.
Retries	Number of retries allowed before the server stops attempting to authenticate a request.
Timeout	Timeout period, in seconds.
Status	Shows if the server is enabled of disabled

Include the **statistics** parameter to display additional details for the internal server.

```
(host) #show aaa authentication-server internal statistics

Internal Database Server Statistics
-----------------------------------
PAP Requests            8
PAP Accepts             8
PAP Rejects             0
MSCHAPv2 Requests       0
MSCHAPv2 Accepts        0
MSCHAPv2 Rejects        0
Mismatch Response       0
Users Expired           1
Unknown Response        0
Timeouts                1
AvgRespTime (ms)        0
Uptime (d:h:m)          4:3:32
SEQ first/last/free     1,255,255
```

The following data columns appear in the output of this command:

Parameter	Description
PAP Requests	Number of PAP requests received by the internal server.
PAP Accepts	Number of PAP requests accepted by the internal server.
PAP Rejects	Number of PAP requests rejected by the internal server.
MSCHAPv2 Requests	Number of MSCHAPv2 requests received by the internal server.
MSCHAPv2 Accepts	Number of MSCHAPv2 requests accepted by the internal server.
MSCHAPv2 Rejects	Number of MSCHAPv2 requests rejected by the internal server.
Mismatch Response	Number of times the server received an authentication response to a request after another request had been sent.
Users Expired	Number of users that were deauthenticated because they stopped responding.
Unknown Response	Number of times the server did not recognize the response, possibly due to internal errors.
Timeouts	Number of times that the controller timed out an authentication request.
AvgRespTime (ms)	Time it takes the server to respond to an authentication request, in seconds.
Uptime (d:h:m)	Time elapsed since the last server reboot.
SEQ first/last/free	This internal buffer counter keeps track of the requests to the authentication server.

Related Commands

Command	Description	Mode
aaa authentication-server internal	Issue the command aaa authentication-server internal to use the internal database on a local controller for authenticating clients.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication-server ldap

```
show aaa authentication-server ldap [<ldap_server_name>]
```

Description

Display configuration settings for your LDAP servers.

Syntax

Parameter	Description
<ldap_server_name>	Name that identifies an LDAP server.

Examples

The output of the example below displays the LDAP server list with the names of all the LDAP servers. The **References** column lists the number of other profiles that reference an LDAP server, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) #aaa authentication-server ldap

LDAP Server List
----------------
Name   References  Profile Status
----   ----------  --------------
ldap1  5
ldap2    3
ldap3    1


Total:3
```

Include the **<ldap_server_name>** parameter to display additional details for an individual server.

```
(host) #show aaa authentication-server ldap ldap1

LDAP Server "ldap1"
-------------------
Parameter                 Value
---------                 -----
Host                      10.1.1.234
Admin-DN                  cn=corp,cn=Users,dc=1m,dc=corp,dc=com
Admin-Passwd              ********
Allow Clear-Text          Disabled
Auth Port                 389
Base-DN                   cn=Users,dc=1m,dc=corp,dc=com
Filter                    (objectclass=*)
Key Attribute             sAMAccountName
Timeout                   20 sec
Mode                      Enabled
Preferred Connection Type ldap-s
```

The output of this command includes the following parameters:

Parameter	Description
host	IP address of the LDAP server
Admin-DN	Distinguished name for the admin user who has read/search privileges across all of the entries in the LDAP database.
Admin Passwd	Password for the admin user.
Allow Clear-Text	If enabled, this parameter allows clear-text (unencrypted) communication with the LDAP server.
Auth Port	Port number used for authentication. Port 636 will be attempted for LDAP over SSL, while port 389 will be attempted for SSL over LDAP, Start TLS operation and clear text.
Base-DN	Distinguished Name of the node which contains the required user database.
Filter	Filter that should be applied to search of the user in the LDAP database (default filter string is: ì(objectclass=*)î).
Key attribute	Attribute that should be used as a key in search for the LDAP server.
Timeout	Timeout period of a LDAP request, in seconds.
Mode	Shows whether this server is **Enabled** or **Disabled**.
Preferred Connection Type	Preferred type of connection to the server. Possible values are • Clear text • LDAP-S • START-TLS

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication-server radius

```
show aaa authentication-server radius [<rad_server_name>|statistics]
```

Description

Displays the configuration settings of your RADIUS servers.

Syntax

Parameter	Description
<rad_server_name>	Name that identifies a RADIUS server.
statistics	Displays the statistics for all RADIUS servers.

Usage Guidelines

Timeouts information in the output of this command includes RADIUS accounting requests. Timeouts are kept track for every request the controller sends to the RADIUS server,so each retry is counted towards a timeout.

Examples

The output of the example below displays the RADIUS server list with the names of all the RADIUS servers. The **References** column lists the number of other profiles that reference a RADIUS server, and the **Profile Status** column indicates whether the profile is predefined. User-defined servers will not have an entry in the **Profile Status** column.

```
(host) #show aaa authentication-server radius

RADIUS Server List
------------------
Name        References  Profile Status
----        ----------  --------------
myserver    3
radius      0
servername  0

Total:3
```

Include the <rad_server_name> parameter to display additional details for an individual server.

```
(host) #show  aaa authentication-server radius radsec

RADIUS Server "radsec"
----------------------
Parameter                           Value
---------                           -----
Host                                10.15.28.101
Key                                 ********
CPPM credentials                    ade/********
Auth Port                           1812
Acct Port                           1813
Radsec Port                         2083
Retransmits                         3
Timeout                             5 sec
NAS ID                              N/A
```

```
NAS IP                                  N/A
Enable IPv6                             Disabled
NAS IPv6                                N/A
Source Interface                        N/A
Use MD5                                 Disabled
Use IP address for calling station ID   Disabled
Mode                                    Enabled
Lowercase MAC addresses                 Disabled
MAC address delimiter                   none
Service-type of FRAMED-USER             Disabled
Radsec                                  Enabled
Radsec Trusted CA Name                  can-new
Radsec Server Cert Name                 N/A
Radsec Client Cert                      client-new
called-station-id                       macaddr colon disable
```

The output of this command includes the following information:

Parameter	Description
host	IP address of the RADIUS server
Key	Shared secret between the controller and the authentication server.
CPPM credentials	Setting this parameter allows the controller to use configurable username and password instead of a support password.
Auth port	Authentication port on the server.
Acct Port	Accounting port on the server.
Radsec Port	Displays the Radsec port for RADIUS data transport.
Retransmits	Maximum number of retries sent to the server by the controller before the server is marked as down.
Timeout	Maximum time, in seconds, that the controller waits before timing out the request and resending it.
NAS ID	Network Access Server (NAS) identifier to use in RADIUS packets.
NAS IP	NAS IP address to send in RADIUS packets. If you do not configure a server-specific NAS IP, the global NAS IP is used.
Enable IPv6	Shows if the RADIUS server is enabled in IPv6 mode.
NAS IPv6	IPv6 address for the global NAS IP which the controller uses to communicate with all the RADIUS servers.

Parameter	Description
Source Interface	The source interface VLAN ID number.
Use MD5	If enabled, the RADIUS server will use a MD5 hash of cleartext password.
Use IP address for calling station ID	If enabled, the RADIUS server will use an IP address instead of a MAC address for calling station IDs.
Mode	Shows whether this server is **Enabled** or **Disabled**.
Lowercase MAC addresses	If this feature is enabled, the server will send MAC addresses in lowercase letters.
MAC address delimiter	The character used as a MAC address delimiter. If no character is specified, the RADIUS server will use a colon (:) by default.
Service-type of FRAMED-USER	If this option is enabled, the server sends the service-type as FRAMED-USER instead of LOGIN-USER. This option is disabled by default
Radsec	Displays the status of the Radsec server.
Radsec Trusted CA	Displays the Certificate Authority to sign Radsec certificates.
Radsec Server Cert Name	Displays the trusted Radsec server certificate.
Radsec Client Cert	Displays the Radsec client certificate on the RADIUS server that identifies and authenticates clients.
called-station-id	Configure this parameter to be sent with the RADIUS attribute Called Station ID for authentication and accounting requests. The **called-station-id** parameter can be configured to include AP group, AP MAC address, AP name, controller IP, controller MAC address, or user vlan. The default value is controller MAC address.

Include the optional **statistics** parameter in this command to display the following statistics for all RADIUS servers:

Parameter	Description
Server	Name of the RADIUS server.

Parameter	Description
Acct Rq	Accounting requests. This reports of the number of accounting messages (for example, start/stop/interim update) sent by the controller to a RADIUS server. This counter increments whenever the controller sends one of these messages.
Raw Rq	Raw requests. Number of raw authentication requests the controller sent to a RADIUS server.
PAP Rq	Pap Requests. Number of PAP authentication requests the controller sent to a RADIUS server.
CHAP Rq	CHAP requests. Number of CHAP authentication requests the controller sent to a RADIUS server.
MSCHAP Rq	MSCHAP requests. Number of MS-CHAP authentication requests the controller sent to a RADIUS server.
MSCHAPv2 Rq	MSCHAPv2 requests. Number of MS-CHAPv2 requests the controller sent to a RADIUS server.
Mismatch Rsp	Mismatch responses. Number of responses from a RADIUS server for which the controller does not have the proper request context.
Bad Auth	Bad authenticator. Number of responses from the RADIUS server with an invalid secret or bad reply digest.
Acc	Access accept. Number of responses from the RADIUS server with invalid secret or bad reply digest.
Rej	Access reject. Number of responses from the RADIUS server that indicate that client authentication failed.
Acct Rsp	Accounting response. Number of responses sent from the RADIUS server in response to accounting requests sent from the controller.
Chal	Access challenge. Number of responses from the RADIUS server containing a challenge for the client (to complete authentication).
Ukn Rsp	Unknown Response code. Number of responses from the RADIUS server that were not understood by the controller due to the purpose or type of the response
Tmout	Timeouts. Number of messages sent by the controller for which the controller did not receive a response before the message timed out. **NOTE:** Timeouts include RADIUS accounting requests. Every request controller sends to the RADIUS server is monitored for a timeout, so each retry increments this counter.

Parameter	Description
AvgRspTme	Average response time. Time taken, on an average, for the RADIUS server to respond to a message from the controller.
Tot Rq	Total errors. This counter reflects the total number of requests sent to the RADIUS server (auth and accounting requests).
Tot Rsp	This counter reflects the total number of responses received by the RADIUS server (auth and accounting responses).
Rd Err	Read errors. This counter reflects the total number of errors encountered while reading off socket corresponding to that RADIUS server.
Uptime	Amount of for which the RADIUS server has been active/up. The RADIUS server is considered to have an UP status if the server is active and serving requests. The RADIUS server is considered to be DOWN if the server is not responding. For example, if the RADIUS server does not respond for (<no of retries> *< timeout>) seconds, the controller takes the RADIUS server down. It brings the radius server back into service after the dead timeout.
SEQ	Information corresponding to the sequence number of requests. **SEQ total** corresponds to the total number of sequence numbers that can be used to communicate with the RADIUS server. **SEQ free** corresponds to the free/available/not in use sequence numbers for a particular RADIUS server.

```
(host) #show  aaa authentication-server radius <servername> dsec radsec status
Radius Server "radsec" Radsec Status
------------------------------------
Radsec Server Attribute  Value
-----------------------  -----
In Service               Yes
Connected Sockets        1
```

The output of this command includes the following information:

Parameter	Description
In Service	Shows the status of the Radsec RADIUS server.
Connected Sockets	Shows the number of TLS connections with the RADIUS server.

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **Source Interface** parameter was introduced.
ArubaOS 6.3	The **enable-ipv6** and **nas-ip6** fields were added to the output of this command.
ArubaOS 6.4	The **called-station-id** and **cppm credentials** parameter was added to the output of this command.
ArubaOS 6.4.2.5	The **CPPM credentials** parameter was introduced.
ArubaOS 6.4.3.0	The following parameters were introduced: • **enable-radsec** • **radsec-client-cert-name** • **radsec-port** • **radsec-trusted-cacert-name** • **radsec-trusted-servercert-name**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication-server tacacs

```
show aaa authentication-server tacacs [<tacacs_server_name>]|statistics
```

Description

Display configuration settings for your TACACS+ servers.

Syntax

Parameter	Description
<tacacs_server_name>	Name that identifies an TACACS+ server.
statistics	Displays accounting, authorization, and authentication request and response statistics for the TACACS server.

Examples

The output of the example below displays the TACACS+ server list with the names of all the TACACS+ servers. The **References** column lists the number of other profiles that reference a TACACS+ server, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) #aaa authentication-server tacacs

TACACS Server List
------------------
Name                    References  Profile Status
----                    ----------  --------------
LabAuth                  5
TACACS1                  3

Total:2
```

Include the <tacacs_server_name> parameter to display additional details for an individual server

```
(host) #show aaa authentication-server tacacs tacacs1

TACACS Server "tacacs1"
-----------------------
Parameter    Value
---------    -----
Host         10.1.1.16
Key          ********
TCP Port     49
Retransmits  3
Timeout      20 sec
Mode         Enabled
```

Parameter	Description
host	IP address of the TACACS+ server

Parameter	Description
Key	Shared secret between the controller and the authentication server.
TCP Port	TCP port used by the server.
Retransmits	Maximum number of retries sent to the server by the controller before the server is marked as down.
Timeout	Maximum time, in seconds, that the controller waits before timing out the request and resending it.
Mode	Shows whether this server is **Enabled** or **Disabled**.

The output of this command includes the following parameters:

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.0	The **Statistics** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa authentication-server windows

```
show aaa authentication-server windows [<windows_server_name>]
```

Description

Display configuration settings for your Windows servers.

Syntax

Parameter	Description
<windows_server_name>	Name that identifies a Windows server.

Examples

The output of the example below displays the Windows server list with the names of all the Windows servers used for NTLM authentication. The **References** column lists the number of other profiles that reference a Windows server, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) #aaa authentication-server tacacs

Windows Server List
-------------------
Name              References  Profile Status
----              ----------  --------------
NTLM               1
Windows2           1

Total:2
```

Include the <windows_server_name> parameter to display additional details for an individual server.

```
(host) #show aaa authentication-server windows Windows2

Windows Server "windows"
------------------------
Parameter         Value
---------         -----
Host              172.21.18.170
Mode              Enabled
Windows Domain    MyCompanyDomain
```

The output of this command includes the following parameters:

Parameter	Description
host	IP address of the Windows server
Mode	Shows whether this server is **Enabled** or **Disabled**.
Windows Domain	Name of the Windows domain to which this server is assigned.

Command History

This command was introduced in ArubaOS 3.4.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa bandwidth-contracts

```
show aaa bandwidth-contracts [<bwname>]
```

Description

This command shows the contract names, ID numbers and Rate limits for your bandwidth contracts.

Syntax

Parameter	Description
<bwname>	(Optional) Name of a bandwidth contract.

Example

Specify a bandwidth contract name to view information for a specific bandwidth contract, or omit that parameter to veiw information for all configured bandwidth contracts. The output of the following command shows that the bandwidth contract **VLAN** has a configured rate of 6 Mbps, and the contract **User** has a rate of 2048 Kbps.

```
(host) #show aaa bandwidth-contracts VLAN

Bandwidth ContractInstances
-------------------
Contract      Id  Rate (bits/second)
--------      --  ------------------
VLAN          1   6000000
User          2   2048000

Total contracts = 2
Per-user contract total = 4096
Per-user contract usage = 0
```

Related Commands

Command	Description	Mode
aaa bandwidth-contract	Use this command to define contracts to limit traffic for a user or VLAN.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa debug

```
show aaa debug
   age {dev-id-cache [mac <A:B:C:D:E:F>]|key-cache [mac <A:B:C:D:E:F>]|pmk-cache [mac
   <A:B:C:D:E:F>]}
   pmk bss-table [<A:B:C:D:E:F>]
   role user {ip <A.B.C.D>|ipv6 <ipv6addr>|mac <A:B:C:D:E:F>}
   vlan user {ip <A.B.C.D>|ipv6 <ipv6addr>|mac <A:B:C:D:E:F>}
```

Description

Displays AAA related debug information.

Syntax

Parameter	Description

`age`
`dev-id-cache`
`key-cache`
`pmk-cache`
	Displays the age of the GSM entry since the previous refresh (in seconds) based on:
	• **dev-id-cache**—Device ID information in memory.
	• **key-cache**—Key cache information in memory.
	• **pmk-cache**—Pairwise Master Key (PMK) cache information in memory.

`pmk bss-table`	Displays PMK related debug information based on the BSSID address.

`role user`
`ip`
`ipv6`
`mac`
	Displays role derivation related debug information based on:
	• **ip**—IPv4 address of the client.
	• **ipv6**—IPv6 address of the client.
	• **mac**—MAC address of the client.

`vlan user`
`ip`
`ipv6`
`mac`
	Displays VLAN derivation related debug information based on:
	• **ip**—IPv4 address of the client.
	• **ipv6**—IPv6 address of the client.
	• **mac**—MAC address of the client.

Example

The output of the example below displays the VLAN derivation debug information of an user with IPv4 address.

```
(host) #show aaa debug vlan user ip 192.0.2.1

VLAN types present for this User
================================
Default VLAN                    : 3
Initial Role Contained          : 1
User Dot1x Role Contained       : 5
Dot1x Server Rule               : 5

VLAN Derivation History
=======================
VLAN Derivation History Index  :  8
```

```
1. VLAN 1    for Default VLAN
2. VLAN 1    for Current VLAN updated
3. VLAN 0    for Reset VLANs for Station up
4. VLAN 3    for Default VLAN
5. VLAN 1    for Initial Role Contained
6. VLAN 5    for Dot1x Server Rule
7. VLAN 5    for User Dot1x Role Contained
8. VLAN 5    for Current VLAN updated

Current VLAN : 5 (Dot1x Server Rule)
```

Command History

Release	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.4.2.6	The **age key-cache | pmk-cache** parameters were introduced.
ArubaOS6.4.3.0	The following parameters were introduced: • **age** • **role** The **dev-id-cache** sub-parameter was moved under the **age** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa derivation-rules

```
show aaa derivation-rules [server-group <group-name>|user <name>]
```

Syntax

Parameter	Description
`<group-name>`	Name of a server group
`<name>`	Name of a user rule group

Description

Show derivation rules based on user information or configured for server groups.

Example

The output of the following command shows that the server group group1 has the internal database configured as its authentication server, and that there is a single rule assigned to that group. You can omit the **<group-name>** parameter to show a table of all your server groups.

```
(host) #show aaa derivation-rules server-group group1

Server Group

Name      Inservice  trim-FQDN  match-FQDN
----      ---------  ---------  ----------
Internal         Yes        No

Server Rule Table
-----------------
Priority  Attribute  Operation  Operand   Action    Value  Total Hits  New Hits
--------  ---------  ---------  -------   ------    -----  ----------  --------
1         Filter-Id  equals     nsFilter  set vlan  111    24
Rule Entries: 1
```

The following data columns appear in the output of this command:

Parameter	Description
`Name`	Name of the authentication server assigned to this server group
`Inservice`	Specifies if the server is in service or out-of-service.
`trim-FDQN`	If enabled, user information in an authentication request is edited before the request is sent to the server.
`match-FDQN`	If enabled, the authentication server is associated with a specified domain.

Parameter	Description
Priority	The priority in which the rules are applied. Rules at the top of the list are applied before rules at the bottom.
Attribute	This is the attribute returned by the authentication server that is examined for **Operation** and **Operand** match
Operation	This is the match method by which the string in **Operand** is matched with the attribute value returned by the authentication server. • **contains** – The rule is applied if and only if the attribute value contains the string in parameter **Operand**. • **starts-with** – The rule is applied if and only if the attribute value returned starts with the string in parameter **Operand**. • **ends-with** – The rule is applied if and only if the attribute value returned ends with the string in parameter **Operand**. • **equals** – The rule is applied if and only if the attribute value returned equals the string in parameter **Operand**. • **not-equals** – The rule is applied if and only if the attribute value returned is not equal to the string in parameter **Operand**. • **value-of** – This is a special condition. What this implies is that the role or VLAN is set to the value of the attribute returned. For this to be successful, the role and the VLAN ID returned as the value of the attribute selected must be already configured on the controller when the rule is applied.
Operand	This is the string to which the value of the returned attribute is matched.
Action	This parameter identifies whether the rule sets a server group role (**set role**) or a VLAN (**set vlan**).
Value	Sets the user role or VLAN ID to be assigned to the client if the condition is met.
Total Hits	Number of times the rule has been applied since the last server reboot.
New Hits	Number of times the rule has been applied since the **show aaa derivation-rules** command was last issued.

To display derivation rules for a user group, include the **user <name>** parameter. You can also display a table of all user rules by including the **user** parameter, but omitting the **<name>** parameter

```
(host) #show aaa derivation-rules user user44
User Rule Table
---------------
Priority  Attribute  Operation  Operand  Action    Value  Total Hits  New Hits
Description
--------  ---------  ---------  -------  ------    -----  ----------  --------                  ------
-
1         location   equals     ap23                                    set role  guest  56
                                                                 guestrole1
```

The following data columns appear in the output of this command:

Parameter	Description
Priority	The priority in which the rules are applied. Rules at the top of the list are applied before rules at the bottom.
Attribute	This is the attribute returned by the authentication server that is examined for **Operation** and **Operand** match.
Operation	This is the match method by which the string in **Operand** is matched with the attribute value returned by the authentication server. • **contains** – The rule is applied if and only if the attribute value contains the string in parameter **Operand**. • **starts-with** – The rule is applied if and only if the attribute value returned starts with the string in parameter **Operand**. • **ends-with** – The rule is applied if and only if the attribute value returned ends with the string in parameter **Operand**. • **equals** – The rule is applied if and only if the attribute value returned equals the string in parameter **Operand**. • **not-equals** – The rule is applied if and only if the attribute value returned is not equal to the string in parameter **Operand**. • **value-of** – This is a special condition. What this implies is that the role or VLAN is set to the value of the attribute returned. For this to be successful, the role and the VLAN ID returned as the value of the attribute selected must be already configured on the controller when the rule is applied.
Operand	This is the string to which the value of the returned attribute is matched.
Action	This parameter identifies whether the rule sets a server group role (**set role**) or a VLAN (**set vlan**).
Value	Sets the user role or VLAN ID to be assigned to the client if the condition is met.
Total Hits	Number of times the rule has been applied since the last server reboot.
New Hits	Number of times the rule has been applied since the **show aaa derivation-rules** command was last issued.
Description	This optional parameter describes the rule. If no description was configured then it does not appear when you view the User Table.

Related Commands

Command	Description	Mode
aaa derivation-rules	Use aaa derivation-rules to define the parameters displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa dns-query-interval

```
show aaa dns-query-interval <minutes>
```

Description

View the configured interval between DNS requests sent from the controller to the DNS server.

Syntax

No parameters

Usage Guidelines

If you define a RADIUS server using the FQDN of the server rather than its IP address, the controller will periodically generate a DNS request and cache the IP address returned in the DNS response. By default, DNS requests are sent every 15 minute, but the interval can be changed using the aaa dns-query-period command. Issue the **show aaa dns-query-period** command to view the current DNS query interval.

Example

This command shows that the controller will send a DNS query every 30 minutes

```
(host) # show aaa dns-query-period
DNS Query Interval = 30 minutes
```

Related Commands

To configure the DNS query interval, issue the command aaa dns-query-interval.

Command History

This command was available in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show aaa fqdn-server-names

```
show aaa fqdn-server-names
```

Description

Show a table of IP addresses that have been mapped to fully qualified domain names (FQDNs).

Syntax

No parameters.

Usage Guidelines

If you define a RADIUS server using the FQDN of the server rather than its IP address, the controller will periodically generate a DNS request and cache the IP address returned in the DNS response. Issue this command to view the IP addreses that currently correlate to each RADIUS server FQDN.

Example

The output of this command shows the IP addresses for two RADIUS servers.

```
(host) #show aaa fqdn-server-names

Auth Server FQDN names
----------------------
FQDN                    IP Address      IPv6 Address    Refcount
----                    ----------      --------        --------
myhost1.example.com     192.0.2.3
2myhost2.example.com    192.0.2.5                       3
```

Related Commands

To configure a RADIUS authentication server using that server's fully qualified domain name, use the command aaa authentication-server radius.

Command History

This command was available in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show aaa load-balance statistics

```
show aaa load-balance statistics server-group <sg_name>
```

Description

Display the load balancing statistics for RADIUS servers.

Syntax

Parameter	Description
`<sg_name>`	Name of the server group.

Example

```
(host) #show aaa load-balance statistics server-group dot1x-test-apsim
Statistics for Radius Servers in Server Group
---------------------------------------------
Server         Acct Rq  Raw Rq  PAP Rq  CHAP Rq  MSCHAP Rq  MSCHAPv2 Rq  Mismatch Rsp  Bad
Auth  Acc  Rej  Acct Rsp  Chal  Ukn Rsp  Tmout  Tot Rq  Tot Rsp  Rd Err  Outstanding Auths
------         -------  ------  ------  -------  ---------  -----------  ------------  -------
-  ---  ---  --------  ----  -------  -----  ------  -------  ------  -----------------
abc _RADIUS    0        0       0       0        0          26           0             0
 26   0    0         0     0        0      26      26        0       0
AUTOMATIONRAD  0        0       0       0        0          207          0             0
  207  0    0         0     0        0      207     207       0       0
```

Parameter	Description
`Server`	Name of the RADIUS server.
`Acct Rq`	Accounting requests. This reports the number of accounting messages (for example, start/stop/interim update) sent by the controller to a RADIUS server. This counter increments whenever the controller sends one of these messages.
`Raw Rq`	Raw requests. Number of raw authentication requests the controller sent to a RADIUS server.
`PAP Rq`	PAP Requests. Number of PAP authentication requests the controller sent to a RADIUS server.
`CHAP Rq`	CHAP requests. Number of CHAP authentication requests the controller sent to a RADIUS server.
`MSCHAP Rq`	MSCHAP requests. Number of MS-CHAP authentication requests the controller sent to a RADIUS server.
`MSCHAPv2 Rq`	MSCHAPv2 requests. Number of MS-CHAPv2 requests the controller sent to a RADIUS server.
`Mismatch Rsp`	Mismatch responses. Number of responses from a RADIUS server for which the controller does not have the proper request context.
`Bad Auth`	Bad authenticator. Number of responses from the RADIUS server with an invalid

Parameter	Description
	secret or bad reply digest.
Acc	Access accept. Number of responses from the RADIUS server with invalid secret or bad reply digest.
Rej	Access reject. Number of responses from the RADIUS server that indicate that client authentication failed.
Acct Rsp	Accounting response. Number of responses sent from the RADIUS server in response to accounting requests sent from the controller.
Chal	Access challenge. Number of responses from the RADIUS server containing a challenge for the client (to complete authentication).
Ukn Rsp	Unknown Response code. Number of responses from the RADIUS server that were not understood by the controller due to the purpose or type of the response
Tmout	Timeouts. Number of messages sent by the controller for which the controller did not receive a response before the message timed out. **NOTE:** Timeouts include RADIUS accounting requests. Every request controller sends to the RADIUS server is monitored for a timeout, so each retry increments this counter.
AvgRspTme	Average response time. Time taken, on an average, for the RADIUS server to respond to a message from the controller.
Tot Rq	Total errors. This counter reflects the total number of requests sent to the RADIUS server (auth and accounting requests).
Tot Rsp	This counter reflects the total number of responses received by the RADIUS server (auth and accounting responses).
Rd Err	Read errors. This counter reflects the total number of errors encountered while reading off socket corresponding to that RADIUS server.
Uptime	Amount of for which the RADIUS server has been active/up. The RADIUS server is considered to have an UP status if the server is active and serving requests. The RADIUS server is considered to be DOWN if the server is not responding. For example, if the RADIUS server does not respond for (<no of retries> *< timeout>) seconds, the controller takes the RADIUS server down. It brings the radius server back into service after the dead timeout.
SEQ	Information corresponding to the sequence number of requests. **SEQ total** corresponds to the total number of sequence numbers that can be used to communicate with the RADIUS server. **SEQ free** corresponds to the free/available/not in use sequence numbers for a particular RADIUS server.
Outstanding Auths	This value keeps track of the number of clients that are currently getting authenticated against this authentication server, i.e. clients for which the controller has sent Access-Request but has not yet received Access-Accept or Access-Reject and also the Access-Request has not timed out completely.

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **Source Interface** parameter was introduced.
ArubaOS 6.3	The **enable-ipv6** and **nas-ip6** fields were added to the output of this command.
ArubaOS 6.4	The **Outstanding Auths** parameter was added to the output of this command.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa main-profile

```
show aaa main-profile summary
```

Description

Show a summary of all AAA profiles.

Example

The output of the **show aaa main-profile summary** command shows roles, server group settings, and wire-to-wireless-roaming statistics for each AAA profile.

```
(host) #show aaa main-profile summary

AAA Profile summary
-------------------
                            dot1x-  rad-                                UDR-   ww-    enforce
Name       role   mac-auth  auth    acct   XML-api   RFC3576   group roam    devtype -dhcp
----       ----   --------  ------  ----   -------   -------   ----- ----    ------- -------
aaa_dot1x  logon  macprof2  dot1x   RADIUS 10.3.1.15 10.3.15.2 Usr1  Disable enabled disabled
default    logon  macprof2  dot1x   RADIUS 10.3.1.15 10.3.15.2 Usr1  Disable enabled disabled
default    guest  macprof1  default RADIUS 10.3.1.15 10.3.15.2 Usr2  Disable enabled disabled
guest
```

The following data columns appear in the output of this command:

Parameter	Description
Name	Name of the AAA profile.
role	Role for unauthenticated users.
mac-auth	Name of the server group used for MAC authentication.
dot1x-auth	Name of the server group used for dot1x authentication.
rad-act	Name of the server group used for RADIUS authentication.
XML-api	IP address of a configured XML API server.
RFC3576	IP address of a RADIUS server that can send user disconnect, session timeout and change-of-authorization messages, as described in RFC 3576.
UDR-group	Name of the user derivation rule profile.
ww-roam	Shows if wired-to-wireless roaming is enabled or disabled.
devtype	Shows if the device identification feature is enabled or disabled. When devtype-classification parameter is enabled, the output of the show user and show user-table commands shows each client's device type, if that client device can be identified.

Parameter	Description
enforce-dhcp	When this option is enabled, clients must complete a DHCP exchange to obtain an IP address. Best practices are to enable this option when you use the **aaa derivation-rules** command to create a rule with the **DHCP-Option** rule type. This parameter is disabled by default.

Related Commands

Command	Description	Mode
aaa profile	Use aaa profile define the parameters displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa password-policy mgmt

```
show aaa password-policy mgmt [statistics]
```

Description

Show the current password policy for management users.

Syntax

Parameter	Description
`statistics`	Include this optional parameter to show the numbers of failed login attempts and any lockout periods for management user accounts.

Examples

The output of the **show aaa password-policy mgmt** command below shows that the current password policy requires a management user to have a password with a minimum of 9 characters, including one numeric character and one special character

```
(host) #show aaa password-policy mgmt

Mgmt Password Policy
--------------------
Parameter Value
--------- -----
Enable password policy                  Yes
Minimum password length required                        9
Minimum number of Upper Case characters                         0
Minimum number of Lower Case characters                         0
Minimum number of Digits                        1
Minimum number of Special characters (!, @, #, $, %, ^, &, *, <, >, {, }, [, ], :, ., comma,
|, +, ~, `)                     1
Username or Reverse of username NOT in Password                         No
Maximum Number of failed attempts in 3 minute window to lockout user                    0
Time duration to lockout the user upon crossing the "lock-out" threshold                        3
Maximum consecutive character repeats                   0
```

The following data columns appear in the output of this command:

Parameter	Description
Enable password policy	Shows if the defined policy has been enabled
Minimum password length required	Minimum number of characters required for a management user password. The default setting is 6 characters.
Minimum number of Upper Case characters	The maximum number of uppercase letters required for a management user password. By default, there is no requirement for uppercase letters in a password, and the parameter has a default value of 0.

Parameter	Description
Minimum number of Lower Case characters	The maximum number of lowercase letters required for a management user password. By default, there is no requirement for lowercase letters in a password, and the parameter has a default value of 0.
Minimum number of Digits	Minimum number of numeric digits required in a management user password. By default, there is no requirement for digits in a password, and the parameter has a default value of 0.
Minimum number of Special characters	Minimum number of special characters required in a management user password. By default, there is no requirement for special characters in a password, and the parameter has a default value of 0.
Username or Reverse of username NOT in Password	If **Yes**, a management user's password cannot be the user's username or the username spelled backwards. If **No**, the password can be the username or username spelled backwards.
Maximum Number of failed attempts in 3 minute window to lockout user	Number of times a user can unsuccessfully attempt to log in to the controller before that user gets locked out for the time period specified by the **lock-out threshold** below. By default, the password lockout feature is disabled, and the default value of this parameter is 0 attempts.
Time duration to lockout the user upon crossing the "lock-out" threshold	Amount of time a management user will be "locked out" and prevented from logging into the controller after exceeding the maximum number of failed attempts setting show above. The default lockout time is 3 minutes.
Maximum consecutive character repeats	The maximum number of consecutive repeating characters allowed in a management user password. By default, there is no limitation on the numbers of character that can repeat within a password, and the parameter has a default value of 0 characters.

```
(host) #show aaa password-policy mgmt statistics

Management User Table
---------------------
USER    ROLE    FAILED_ATTEMPTS   STATUS
----    ----    ---------------   ------
admin14 root    1                 Locked until 12/1/2009 22:28
```

Include the optional **statistics** parameter to show failed login statistics in the Management User table. The example below shows that a single failed login attempt locked out the root user **admin14**, and displays the time when that user can attempt to login to the controller again.

Related Commands

Command	Description	Mode
aaa profile	Use aaa profile define the parameters displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 3.4.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa profile

```
show aaa profile <profile-name>
```

Description

Show configuration details for an individual AAA profile.

Example

The output of the following command shows roles, servers and server group settings, and wire-to-wireless-roaming statistics for each AAA profile.

```
(host) #show aaa profile default

AAA Profile "default"
---------------------
Parameter                          Value
---------                          -----
Initial role                       guest
MAC Authentication Profile         N/A
MAC Authentication Default Role    guest
MAC Authentication Server Group    default
802.1X Authentication Profile      default
802.1X Authentication Default Role guest
802.1X Authentication Server Group N/A
Download Role from CPPM            Disabled
L2 Authentication Fail Through     Disabled
Multiple Server Accounting         Disabled
User idle timeout                  N/A
RADIUS Accounting Server Group     N/A
RADIUS Interim Accounting          Disabled
XML API server                     N/A
RFC 3576 server                    N/A
User derivation rules              N/A
Wired to Wireless Roaming          Enabled
SIP authentication role            N/A
Device Type Classification         Enabled
Enforce DHCP                       Disabled
PAN Firewall Integration           Disabled
Open SSID radius accounting        Disabled
```

The following data columns appear in the output of this command:

Parameter	Description
Name	The name of the AAA profile.
Initial Role	Role for unauthenticated users.
MAC Authentication Profile	Name of the MAC authentication profile.
MAC Authentication Default Role	Configured role assigned to the user after MAC authentication.

Parameter	Description
MAC Authentication Server Group	Name of the server group used for MAC authentication.
8021.X Authentication Profile	Name of the 802.1X authentication profile.
8021.X Authentication Default Role	Configured role assigned to the user after 802.1X authentication.
8021.X Authentication Server Group	Name of the server group used for 802.1X authentication.
Download Role from CPPM	Status of role download from CPPM. If enabled, the controller downloads the role from ClearPass Policy Manager (CPPM) if not defined.
L2 Authentication Fail Through	To select the other authentication method if one fails.
Multiple Server Accounting	Status of multiple server accounting. If enabled, the controller sends RADIUS accounting to all servers in RADIUS accounting server group.
User idle timeout	The user idle timeout for this profile. Specify the idle timeout value for the client in seconds. A value of 0, deletes the user immediately after disassociation from the wireless network. Valid range is 30-15300 in multiples of 30 seconds.
RADIUS Accounting Server Group	Name of the server group used for RADIUS authentication.
RADIUS Interim Accounting	By default, the RADIUS accounting feature sends only start and stop messages to the RADIUS accounting server. If RADIUS Interim Accounting is enabled, the controller to can also end Interim-Update messages with current user statistics to the server at regular intervals.
XML API server	IP address of a configured XML API server.
RFC 3576 server	IP address of a RADIUS server hat can send user disconnect, session timeout and change-of-authorization messages, as described in RFC 3576.
User derivation rules	User attribute profile from which the user role or VLAN is derived.
Wired to Wireless Roaming	Shows whether Wired to Wireless Roaming is **Enabled** or **Disabled**.
SIP authentication role	For controllers with an installed PEFNG license, this parameter displays the configured role assigned to a session initiation protocol (SIP) client upon registration.

Parameter	Description
Device Type Classification	Shows if the device identification feature is enabled or disabled. When devtype-classification parameter is enabled, the output of the show user and show user-table commands shows each client's device type, if that client device can be identified.
Enforce DHCP	When this option is enabled, clients must complete a DHCP exchange to obtain an IP address. Best practices are to enable this option when you use the **aaa derivation-rules** command to create a rule with the **DHCP-Option** rule type. This parameter is disabled by default.
PAN firewall Integration	Displays the status of the PAN firewall integration.
Open SSID Radius Accounting	Displays the Open system SSID RADIUS accounting status.

Related Commands

Command	Description	Mode
aaa profile	Use the command aaa profile to define AAA profiles.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 3.4.1	License requirements changed in ArubaOS 3.4.1, so the **sip-authentication-role** parameter required the Policy Enforcement Firewall license instead of the Voice Services Module license required in earlier versions.
ArubaOS 6.1	The **radius-interim-accounting**, **devtype-classification** and **enforce-dhcp** parameters were introduced.
ArubaOS 6.3	The **user-idle-timeout** parameter was introduced.
ArubaOS 6.4	The **multiple-server-accounting, PAN_firewall-integration** and **down-load-role** parameters were introduced.
ArubaOS 6.4.3	The **open ssid radius accounting** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa radius-attributes

```
show aaa radius-attributes
```

Description

Show RADIUS attributes recognized by the controller.

Example

The output of the following command shows the name, currently configured value, type, vendor and RADIUS ID for each attribute.

```
(host) #show aaa radius-attributes

Dictionary
----------
Attribute                       Value  Type     Vendor     Id
---------                       -----  ----     ------     --
MS-CHAP-NT-Enc-PW               6      String   Microsoft  311
Suffix                          1004   String
Menu                            1001   String
Acct-Session-Time               46     Integer
Framed-AppleTalk-Zone           39     String
Connect-Info                    77     String
Acct-Ouput-Packets              48     Integer
Aruba-Location-Id               6      String   Aruba      14823
Service-Type                    6      Integer
Rad-Length                      310    Integer
CHAP-Password                   3      String
Aruba-Template-User             8      String   Aruba      14823
Event-Timestamp                 55     Date
Login-Service                   15     Integer
Exec-Program-Wait               1039   String
Tunnel-Password                 69     String
Framed-IP-Netmask               9      IP Addr
Acct-Output-Gigawords           53     Integer
MS-CHAP-CPW-2                   4      String   Microsoft  311
Acct-Tunnel-Packets-Lost        86     Integer
...
```

Related Commands

Command	Description	Mode
aaa profile	Use the command aaa profile to define AAA profiles.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers.

show aaa rfc-3576-server

```
show aaa rfc-3576-server
<server-ip>
statistics
udp-port
```

Description

Show configuration details for an RFC-3576 server, which is a RADIUS server that can send user disconnect, session timeout and change-of-authorization (CoA) messages, as described in RFC 3576.

Syntax

Parameter	Description
`<server-ip>`	IP address of an RFC-3576 server
`statistics`	View detailed connection and authentication information for all RFC 3575 servers.
`udp-port`	Show the configured RFC3576 server port. The default value is port 3799.

Example

This first example shows that there are two configured servers in the RFC 3567 Server List. The **References** column lists the number of other profiles with references to the RFC 3567 server, and the **Profile Status** column indicates whether the server is predefined. User-defined servers will not have an entry in the **Profile Status** column.

```
(host) #show aaa rfc-3567-server

RFC 3576 Server List
--------------------
Name       References  Profile Status
----       ----------  --------------
10.2.14.6  2
```

To view details for a specific server, include the IP address of that server in the command.

```
(host)  #show aaa rfc-3576-server 192.0.2.31
RFC 3576 Server "192.0.2.31"
----------------------------
Parameter  Value
---------  -----
Key        ********
```

To view information for all RFC 3576 servers, include the **statistics** parameter.

```
(host) #show aaa rfc-3576-server statistics

RADIUS RFC 3576 Statistics
--------------------------
Statistics           10.1.2.3  10.1.2.34
----------           --------  ---------
Disconnect Requests  13         3
Disconnect Accepts   12         3
```

```
Disconnect Rejects    1          0
No Secret             0          0
No Session ID         0          0
Bad Authenticator     0          0
Invalid Request       0          0
Packets Dropped       0          2
Unknown service       0          0
CoA Requests          1          0
CoA Accepts           1          0
CoA Rejects           0          0
No permission         0          0

Packets received from unknown clients: 0
Packets received with unknown request: 0
Total RFC3576 packets Received       : 0
```

The output of the **show aaa rfc-3576-server statistics** command includes the following parameters:

Parameter	Description
Disconnect Requests	Number of disconnect requests sent by the server.
Disconnect Accepts	Number of disconnect requests sent by the server that were accepted by the user.
Disconnect Rejects	Number of disconnect requests sent by the server that were rejected by the user.
No Secret	Number of authentication requests that did not contain a RADIUS secret.
No Session ID	Number of authentication requests that did not contain a session ID.
Bad Authenticator	Number of authentication requests that contained a missing or invalid authenticator field in the packet.
Invalid Request	Number of invalid requests.
Packets Dropped	Number of packets dropped.
Unknown service	Number of requests for an unknown service type.
CoA Requests	Number of requests for a Change of Authorization (CoA).
CoA Accepts	Number of times a CoA request was accepted.
CoA Rejects	Number of times a CoA request was rejected.
No permission	Number of requests for a service that has been defined, but has not been administratively enabled.

Related Commands

Command	Description	Mode
aaa rfc-3576-server	Define RFC 3576 server profiles.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa server-group

```
show aaa server-group [<group-name>|summary]
```

Description

Show configuration details for your AAA server groups.

Syntax

Parameter	Description
<group-name>	The name of an existing AAA server group.

Usage Guidelines

Issue this command without the ><**group-name** or**summary** options to display the entire server group list, including profile status and the number of references to each profile. The **References** column lists the number of other profiles that reference a server group, and the **Profile Status** column indicates whether the server group is predefined. User-defined server groups will not have an entry in the Profile Status column. Examples

This first example shows that there are five configured server groups

```
(host) #show aaa server-group summary

Server Group List
-----------------
Name                      References  Profile Status
----                      ----------  --------------
auth-profile-2            1
coltrane-server-group     1
default                   25
group1                    0
internal                  0           Predefined

Total:5
```

To view additional statistics for all server groups, include the **statistics** parameter.

```
(host) #show aaa server-group summary
Server Groups
-------------
Name                      Servers  Rules  hits  Out-of-service
----                      -------  -----  ----  --------------
auth-profile-2            1        0      0
coltrane-server-group     1        0      0
default                   1        0      0
group1                    1        1      0
internal                  1        1      0
```

The output of the show aaa server-group summary command includes the following parameters:

Parameter	Description
name	Name of an existing AAA server group.
Servers	Number of servers in the group.
Rules	Number of rules configured for the server group.
hits	Number of hits for the server's rules.
Out-of-Service	Indicates whether the server is active, or out of service. Active servers may not have an entry in the Out-of-Service column.

To display detailed authorization, role and vlan statistics for an individual server group, include the name of the group for which you want more information.

```
(host) #show aaa server-group summary group1

Fail Through:No

Auth Servers
------------
Name      Server-Type  trim-FQDN  Match-Type  Match-Op  Match-Str
----      -----------  ---------  ----------  --------  ---------
rad1      Radius       No
rad3      Radius       No

Role/VLAN derivation rules
--------------------------
Priority  Attribute  Operation  Operand  Action    Value
--------  ---------  ---------  -------  ------    -----
1                      class      contains   admin    set role          root
```

The output of the show aaa server-group <group-name> command includes the following parameters:

Parameter	Description
Name	Specifies if the server is in service or out-of-service.
Server-Type	If enabled, user information in an authentication request is edited before the request is sent to the server.
trim-FDQN	If enabled, user information in an authentication request is edited before the request is sent to the server.
Match-Type	If the match type is **authstring** he authentication server associates with a match rule that the controller can compare with the user/client information in the authentication request. A **fdqn** match type associates the authentication server with a specified domain. An authentication request is sent to the server only if there is an exact match between the specified domain and the <domain> portion of the user information sent in the authentication request.

Parameter	Description
Match-Op	This is the match method by which the string in **Match-Str** is matched with the attribute value returned by the authentication server. • **contains** – The rule is applied if and only if the attribute value contains the string in parameter **Operand**. • **starts-with** – The rule is applied if and only if the attribute value returned starts with the string in parameter **Operand**. • **ends-with** – The rule is applied if and only if the attribute value returned ends with the string in parameter **Operand**. • **equals** – The rule is applied if and only if the attribute value returned equals the string in parameter **Operand**. • **not-equals** – The rule is applied if and only if the attribute value returned is not equal to the string in parameter **Operand**. • **value-of** – This is a special condition. What this implies is that the role or VLAN is set to the value of the attribute returned. For this to be successful, the role and the VLAN ID returned as the value of the attribute selected must be already configured on the controller when the rule is applied
Match-Str	This is the string to which the value of the returned attribute is matched.
Priority	The priority in which role or VLAN derivation rules are applied. Rules at the top of the list are applied before rules at the bottom.
Attribute	For role or VLAN derivation rules, this is the attribute returned by the authentication server that is examined for **Operation** and **Operand** match.
Operation	For role or VLAN derivation rules, this is the match method by which the string in **Operand** is matched with the attribute value returned by the authentication server. • **contains** – The rule is applied if and only if the attribute value contains the string in parameter **Operand**. • **starts-with** – The rule is applied if and only if the attribute value returned starts with the string in parameter **Operand**. • **ends-with** – The rule is applied if and only if the attribute value returned ends with the string in parameter **Operand**. • **equals** – The rule is applied if and only if the attribute value returned equals the string in parameter **Operand**. • **not-equals** – The rule is applied if and only if the attribute value returned is not equal to the string in parameter **Operand**. • **value-of** – This is a special condition. What this implies is that the role or VLAN is set to the value of the attribute returned. For this to be successful, the role and the VLAN ID returned as the value of the attribute selected must be already configured on the controller when the rule is applied.
Operand	For role or VLAN derivation rules, this is the string to which the value of the returned attribute is matched.

Parameter	Description
Action	This parameter identifies whether the derivation rule sets a server group role (**set role**) or a VLAN (**set vlan**).
Value	Sets the user role or VLAN ID to be assigned to the client if the rule condition is met.

Related Commands

Command	Description	Mode
aaa server-group	Use aaa server-group to configure the settings displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa state ap-group

```
show aaa state ap-group
```

Description

Show the names and ID numbers of your AP groups

Example

This first example shows that the selected controller has two defined AP groups.

```
(host) #show aaa state ap-group

AP Group Table
--------------
Name  ID
----  --
ap1             1
ap2             2
```

Related Commands

Command	Description	Mode
aaa server-group	Use aaa server-group to define the AP groups displayed in the output of this show command	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

.

show aaa state configuration

```
show aaa state configuration
```

Description

Display authentication state configuration information, including the numbers of successful and failed authentications.

Example

This example shows authentication settings and values for a controller with no current users.

```
(host) #show aaa state configuration

Authentication State
--------------------
Name                            Value
----                            -----
Switch IP                       10.6.2.253
Switch IPv6
Master IP                       10.100.103.253
Switch Role                     local
Current/Max/Total IPv4 Users    0/6/14
Current/Max/Total IPv6 Users    0/1/1
Current/Max/Total User Entries  0/4/15
Current/Max/Total Stations      121/190/367550
Captive Portal Users            4
802.1X Users                    119
VPN Users                       0
MAC Users                        0
Stateful 802.1X Users           0
Tunneled users                   0
Configured user roles            21
Configured session ACL          41
Configured destinations         32
Configured services              77
Configured Auth servers         9
Auth server in service          9
Radius server timeouts          7062

Successful authentications
--------------------------
Web  MAC  VPN  802.1X  Krb  RadAcct  SecureID  Stateful-802.1X  Management
---  ---  ---  ------  ---  -------  --------  ---------------  ----------
138  0    0    10117   0    0        0         0                0

Failed authentications
----------------------
Web  MAC  VPN  802.1X  Krb  RadAcct  SecureID  Stateful-802.1X  Management
---  ---  ---  ------  ---  -------  --------  ---------------  ----------
48   0    0    32235   0    0        0         0                0

Idled users              = 3366
Mobility                 = Enabled
fast age                 = Disabled
per-user log             = Disabled
Bandwidth contracts       = 2/1
IP takeovers             = 21
```

```
Ping/SYN/Session attacks = 0/0/0
```

The output of the **show aaa state configuration** command includes the following parameters:

Parameter	Description
Switch IP	IP address of the local controller.
Master IP	IP address of the master controller.
Switch Role	Role assigned to the controller on which you issued the **show aaa state** command.
Current/Max/Total IPv4 Users	Current number of IPv4 users on the controller/Maximum number of IPv4 users that can be assigned to the controller at any time/Total number of IPv4 users that have been assigned to the controller since the last controller reboot.
Current/Max/Total IPv6 Users	Current number of IPv6 users on the controller/Maximum number of IPv6 users that can be assigned to the controller at any time/Total number of IPv6 users that have been assigned to the controller since the last controller reboot.
Current/Max/Total Users	Current number of users on the controller/Maximum number of users that can be assigned to the controller at any time/Total number of users that have been assigned to the controller since the last controller reboot.
Current/Max/Total Stations	Current number of stations registered with the controller/Maximum number of stations that can be registered with the controller at any time/Total number of stations that have registered the controller since the last controller reboot.
Captive Portal Users	Number of current users authenticated via captive portal.
802.1X Users	Number of current users authenticated via 802.1X authentication.
VPN Users	Number of current users authenticated via VPN authentication.
MAC Users	Number of current users authenticated via MAC authentication.
Stateful 802.1X Users	Number of current users authenticated via stateful 802.1X authentication.
Tunneled users	Number of stations in tunneled forwarding mode, where 802.11 frames are tunneled to the controller using generic routing encapsulation (GRE).
Configured user roles	Number of configured user roles.
Configured session ACL	Number of configured session ACLs.

Parameter	Description
Configured destinations	Number of destinations configured using the netdestination command.
Configured services	Number of service aliases configured using the netservice command.
Configured Auth servers	Number of configured authentication servers.
Auth server in service	Number of authentication servers currently in service.
Radius server timeouts	Number of times the RADIUS server did not respond to the authentication request.
Web	Total number of captive portal authentications or authentication failures since the last controller reset.
MAC	Total number of MAC authentications or authentication failures since the last controller reset.
VPN	Total number of VPN authentications or authentication failures since the last controller reset.
802.1X	Total number of 802.1X authentications or authentication failures since the last controller reset.
Krb	Total number of Kerberos authentications or authentication failures since the last controller reset.
RadAcct	Total number of RADIUS accounting verifications or accounting failures since the last controller reset.
SecureID	Number of authentication verifications or failures using methods which use one-time passwords. (For example, EAP-GTC being used as the inner EAP protocol of EAP-PEAP.)
Stateful-802.1X	Total number of Stateful 802.1X authentications or authentication failures since the last controller reset.
Management	Total number of Management user authentications or authentication failures since the last controller reset.
Idled users	Total number of users that are not broadcasting data to an AP.
Mobility	Shows whether the IP mobility feature has been enabled or disabled on the controller.

Parameter	Description
fast age	This parameter shows if fast aging of user table entries has been enabled or disabled. When this feature is enabled, if a device comes up on the network with a different IP address, the device's old IP address is immediately deleted. If the user fast-age feature is not configured, the controller retains up to two IPv4 and two IPv6 addresses per device , and these IPs are aged out only when the device becomes inactive.
Per-User Log	Shows if a controller collects per-user log files for debugging. **NOTE:** This option is enabled using the **aaa log** command.
Bandwidth contracts	Number of configured bandwidth contracts on the controller.
IP takeovers	Number of times a two different stations have attempted to use the same IP address (IP spoofing).
Ping/SYN/Session attacks	Number of reported ping, SYN and session attacks.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.3	The **per-user log** field was added to the output of this command

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa state debug-statistics

```
show aaa state debug statistics
```

Description

show debug statistics for controller authentication, authorization and accounting.

Syntax

No parameters.

Example

The following example displays debug statistics for a variety of authentication errors:

```
(host) #show aaa state debug-statistics
user miss: ARP=47, 8021Q=5216, non-IP=0, zero-IP=0, loopback=0
user miss: mac mismatch=0, spoof=269 (74), drop=390, ncfg=0
user miss: non-auth opcode=0, no-l2-user=0, l2tp=0, vrrp=0, special mac=0, iap l3 user=0
Idled users = 3376
Idled users due to MAC mismatch = 0
Idled users due to SOS: wireless tunnel=0 wireless dtunnel=0
Idled users due to SOS: wired tunnel=0 wired dtunnel=0
Idled users due to SOS: other=0
Idled users due STM deauth: tunnel=0 dtunnel=0
Idled users from STM timeout: tunnel=0 dtunnel=0
Idled users from STM: other=0
Current users with STM idle flag = 0
Idle messages: SOS=0 STM deauth=0 STM timeout=0
Logon lifetime iterations = 4501, entries deleted = 121
SIP authentication messages received 29227, dropped 29227
Missing auth user deletes: 0
Captive-portal forced user deletes: 1
Mobility Stats
         INTRA_MS 0, MAC mismatch 0, HA mismatch 0
         INTER_MS 0, MAC mismatch 0, HA mismatch 0
         MIP Update   0, Move 0, Del 0, TunAcl 0
         AAA Done 0, Del 2
         IPIP Loop forced Del: 0, Validate Visitor 0
Auth User rejects Received
L2 User:0, IPV4 :0, IPV6:0
Auth User rejects Processed
L2 User:0, IPV4 :0, IPV6:0
```

The output of this command includes the following parameters:

Parameter	Description
User Miss	
ARP	Number of ARP packets sent between the datapath and the controlpath.
8021q	Number of 802.1q (VLAN tag) packets sent between the datapath and the controlpath.

Parameter	Description
non-ip	Number of non-IP type packets sent between the datapath and the controlpath.
zero-ip	Number of packets sent without an internet protocol (IP).
loopback	If **1**, the controller has a defined loopback address. If **0**, a loopback address has not yet been configured.
mac mismatch	Number of users that were not authenticated due to MAC mismatches.
spoof	Number of users that were not authenticated due to spoofed IP addresses.
drop	Number of user authentication attempts that were dropped.
ncfg	Number of packets sent between datapath and controlpath, where the authentication module has not completed the initialization required to process the traffic.
Non-auth opcode	Number of packets whose opcode is non-auth opcode. This is a check to find if auth is responsible for processing received packet.
No-l2-user	Number of user packets dropped due to absence ofan L2 entry for the user.
l2tp	Number of l2tp users.
vrrp	Number of VRRP users.
special mac	Number of users with a special MAC address.
iap	Number of instant AP users.
idled users	Number of inactive stations that are not broadcasting data to an AP.
idled users due to MAC mismatch	For internal use only.
Idled users due to SOS	
wireless tunnel	Number of wireless users in tunnel forwarding mode that were aged out by the controller.
wireless dtunnel	Number of wireless users in decrypt tunnel forwarding mode that were aged out by the controller.
wired tunnel	Number of wired users in tunnel forwarding mode that were aged out by the controller.
wired dtunnel	Number of wired users in decrypt tunnel forwarding mode that were aged out by the controller.
Other	Number of users using modes other than tunneled or Decrypt tunneled aged out

Parameter	Description
	by the controller.
Idled users due STM deauth	
tunnel	Number of users in tunnel forwarding mode that aged out after STM deauthentication, and timer expiration.
dtunnel	Number of users in decrypt tunnel forwarding mode that aged out after STM deauthentication, and timer expiration.
Idled users from STM timeout	
tunnel	Number of users in tunnel forwarding mode that aged out after the STM timer expired.
dtunnel	Number of users in decrypt tunnel forwarding mode that aged out after the STM timer expired.
Idled users from STM	
other	Number of users in fowarding modes other than decrypt tunnel or tunnel mode that aged out after the STM timer expired.
Logon lifetime iteration	Number of users deleted for lack of activity.
SIP authentication message	Number of session initiation protocol (SIP) authentication messages received.
Missing auth user deletes	Number of users removed from the datapath by the auth module, even without a mapping entry in control path. This counter can help identify problems with messages sent between the controlpath and the datapath.
Mobility Stats	Number of different messages exchanged between the mobile IP and the auth module. **NOTE:** This is used for troubleshooting purposes only.
Captive-portal forced user deletes	Number of idle users deleted after captive portal authentication.
Auth User Rejects Received	
L2 User	Number of authentication rejects received for L2 users from the datapath due to a failure of the operation.
IPv4	Number of authentication rejects received for IPv4 users from the datapath due to a failure of the operation.
IPv6	Number of authentication rejects received for IPv6 users from the datapath due to a failure of the operation.
Auth User Rejects Processed	
L2 User	Number of authentication rejects for L2 users that were processed after the reject

Parameter	Description
	was received.
IPv4	Number of authentication rejects for IPv4 users that were processed after the reject was received.
IPv6	Number of authentication rejects for IPv6 users that were processed after the reject was received.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The **Mobility Stats** parameter was introduced.
ArubaOS 6.2	Additional statistics for idled users and user rejects were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local or local controllers

show aaa state log

```
show aaa state log [info]
```

Description

Display global log files for AAA events.

Syntax

Parameter	Description
`info`	This parameter displays debugging information for internal use only.

Usage Guidelines

If you have enabled per-user logging using the aaa log command, the output of this command displays global AAA log files for events that are not triggered by individual user authentication, such as AP authentication and the initial pre-authentication processes that occur before a client authenticates to the controller.

To display log files for events triggered by a specific user, use the command **show user** or **show ipv6 user-table ip <ipv6-addr> log**.

Example

The example below shows a partial list of the global log files displayed by the **show aaa state log** command..

```
(host) #show aaa state log
   1: At Thu Apr 11 10:41:27:  [L] Type cert-downloaded        * id 0 len 0, bssid
   00:00:00:00:00:00 | mac: 00:00:00:00:00:00
   2: At Thu Apr 11 10:43:17:  [L] Type ap-up                  * id 0 len 0, bssid
   6c:f3:7f:5f:2c:b0 | mac: 00:00:00:00:00:00
   3: At Thu Apr 11 10:43:17:  [L] Type ap-up                  * id 0 len 0, bssid
   6c:f3:7f:5f:2c:a0 | mac: 00:00:00:00:00:00
   4: At Thu Apr 11 10:43:50:  [L] Type station-term-start     * id 10 len 0, bssid
   6c:f3:7f:5f:2c:a0 | mac: 50:a4:c8:bd:be:41
   5: At Thu Apr 11 10:43:50:  [L] Type station-data-ready_ack * id 10 len 0, bssid
   00:00:00:00:00:00 | mac: 50:a4:c8:bd:be:41
```

Related Commands

Parameter	Description
aaa log	Issue this command to enable per-user logging.
show user show ipv6 user-table	Display log files for authentication events triggered by a specific IPv4 or IPV6 user.

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa state messages

Description

Display numbers of authentication messages sent and received.

Syntax

No parameters.

Usage Guidelines

This command displays a general overview of authentication statistics. To view authentication information for specific profiles such as a captive-portal, MAC or 801.x authentication profile, issue the commands specific to those features.

Example

The output of this command displays tables of statistics for PAPI, RAW socket and Sibyte messages.

```
(host) #show aaa state messages
PAPI Messages
-------------
Msg ID  Name                    Since last Read  Total
------  ----                    --------------  -----
5004    set master ip           2               2
7005    Set switch ip           1               1
7007    Set VLAN ip             5               5
66      delete xauth vpn users  1               1

RAW socket Messages
-------------------
Msg ID  Name                        Since last Read  Total
------  ----                        --------------  -----
1       raw PAP req                 188             188
33      captive portal config       11113           11113
59      TACACS ACCT config for cli  1               1
60      TACACS ACCT config for web  1               1

Sibyte Messages
---------------
Opcode  Name        Sent Since Last Read  Sent Total  Recv Since Last Read  Recv Total
------  ----        --------------------  ----------  --------------------  ----------
2       bridge      21                    21          0                     0
4       session     4877                  4877        0                     0
11      ping        768                   768         768                   768
13      8021x       114563                114563      229126                229126
15      acl         803                   803         0                     0
16      ace         5519                  5519        0                     0
17      user        781821                781821      0                     0
27      bwm         3                     3           0                     0
29      wkey        27109                 27109       4                     4
42      nat         1                     1           0                     0
43      user tmout  4164                  4164        4160                  4160
56      forw unenc  1787103               1787103     0                     0
64      auth        5268                  5268        5267                  5267
94      aesccm key  17885                 17885       0                     0
111     dot1x term  196813                196813      151161                151161
```

```
114     rand        1614                1614        1612                1612
126     eapkey      1316231             1316231     2632462             2632462

114     rand        2                   2           0                   0
```

The output of this command contains the following parameters:

Parameter	Description
`Msg ID`	ID number for the message type.
`Name`	Message name.
`Since last Read`	Number of messages received since the buffer was last read.
`Total`	Total number of message received since the controller was last reset.
`opcode`	Code number of the message type.
`Sent Since last Read`	Number of messages sent since the buffer was last read.
`Sent Total`	Total number of message sent since the controller was last reset.
`Recv Since last Read`	Number of messages received since the buffer was last read.
`Recv Total`	Total number of message received since the controller was last reset.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show aaa state station

```
show aaa state station <A:B:C:D:E:F>
```

Description

Display AAA statistics for a station.

Syntax

Parameter	Description
<A:B:C:D:E:F>	MAC address of a station.

Example

The example below shows statistics for a station with four associated user IP addresses. The output of this command shows station data, the AAA profiles assigned to the station, and the station's authentication method.

```
(host) #show aaa state station 00:21:5c:85:d0:4b
Association count = 1, User count = 4
User list = 10.1.10.10 10.6.5.168 192.168.229.1 192.168.244.1
essid: ethersphere-wpa2, bssid: 00:1a:1e:8d:5b:31 AP name/group: AL40/corp1344 PHY: a,
ingress=0x10e8 (tunnel 136)
vlan default: 65, assigned: 0, current: 65 cached: 0, user derived: 0, vlan-how: 0
name: MYCOMPANY\tgonzales, role:employee (default:logon, cached:employee, dot1x:), role-how:
1, acl:51/0, age: 00:02:50
Authentication: Yes, status: successful, method: 802.1X, protocol: EAP-MD5, server: vortex
dot1xctx:1 sap:1
Flags: mba=0
AAA prof: default-corp1344, Auth dot1x prof: default, AAA mac prof:, def role: logon
ncfg flags udr 1, mac 0, dot1x 1
Born: 1233767066 (Wed Feb  4 09:04:26 2009
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show aaa state user

```
show aaa state user <A.B.C.D>
```

Description

Display statistics for an authenticated user.

Syntax

Parameter	Description
<A.B.C.D>	IP address of a user.

Example

The example below shows statics for a user with the IP address 10.1.10.11. The output of this command shows user data, the user's authentication method. and statistics for assigned roles, timers and flags.

```
(host) #show aaa state user 10.1.10.11
Name: MYCOMPANY\tsenter, IP: 10.1.10.11, MAC: 00:21:5c:85:d0:4a, Role:employee, ACL:51/0, Age:
00:01:46
Authentication: Yes, status: successful, method: 802.1X, protocol: EAP-MD5, server: vortex
Bandwidth = No Limit
Bandwidth = No Limit
Role Derivation: Default
VLAN Derivation: Matched user rule
Idle timeouts: 0, ICMP requests sent: 0, replies received: 0, Valid ARP: 0
Mobility state: Associated, HA: Yes, Proxy ARP: No, Roaming: No Tunnel ID: 0 L3 Mob: 0
Flags: internal=0, trusted_ap=0, delete=0, l3auth=0, l2=1 mba=0
Flags: innerip=0, outerip=0, guest=0, station=0, download=1, nodatapath=0
Auth fails: 0, phy_type: a-HT, reauth: 0, BW Contract: up:0 down:0, user-how: 1
Vlan default: 65, Assigned: 0, Current: 65 vlan-how: 0
Mobility Messages: L2=0, Move=0, Inter=0, Intra=0, ProxyArp=0, Flags=0x0
Tunnel=0, SlotPort=0x1018, Port=0x10e2 (tunnel 130)
Role assigned: n/a, VPN: n/a, Dot1x:  Name: employee role-how: 0
Essid: ethersphere-wpa2, Bssid: 00:1a:1e:11:6b:91 AP name/group: AL31/corp1344 Phy-type: a-HT
RadAcct sessionID:n/a
RadAcct Traffic In 0/0 Out 0/0 (0:0/0:0:0:0,0:0/0:0:0:0)
Timers: arp_reply 0, spoof reply 0, reauth 0
Profiles AAA:default-corp1344, dot1x:default, mac: CP: def-role:'logon' sip-role:''
ncfg flags udr 0, mac 0, dot1x 0
Born: 1233772328 (Wed Feb  4 10:32:08 2009)
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show aaa tacacs-accounting

Description

Show TACACS accounting configuration.

Syntax

No parameters.

Example

The example below shows that TACACS accounting has been enabled, and that the TACACS server is in the server group acct-server.

```
(host) #show aaa tacacs-accounting
TACACS Accounting Configuration
-------------------------------
Parameter      Value
---------      -----
Mode           Enabled
Server-Group   acct-server
```

The output of this command includes the following parameters:

Parameter	Description
Mode	Shows if the TACACS accounting feature is enabled or disable
Server-Group	The server group that contains the active TACACS server.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show aaa timers

Description

Show AAA timer values.

Syntax

No parameters

Example

The example below shows that the controller has all default timer values:

```
(host) #show aaa timers
User idle timeout = 6 minutes
Auth Server dead time = 10 minutes
Logon user lifetime = 5 minutes
```

Related Commands

Command	Description	Mode
aaa timers	Use aaa timers to define the settings displayed in the output of this show command.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show aaa web admin-port

```
show aaa web admin-port
```

Description

Show the port numbers of HTTP and HTTPS ports used for web administration.

Syntax

No parameters.

Example

The example below shows that the controller is configured to use HTTPS on port 4343 or 443, and HTTP on port 8888.

```
(host) #show aaa web admin-port
https port = 4343
http  port = 8888
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show aaa xml-api server

```
show aaa xml-api server [<server_ip>]
```

Description

Show a list of XML servers used for authentication, authorization and accounting.

Syntax

Parameter	Description
<server_ip>	IP address of an XML API server. Include this parameter to see if a secret key is configured for the specified server.

Example

The output of this command shows that the controller has two configured XML API servers that are each referenced by two different AAA profiles. Note that user-defined servers will not have an entry in the **Profile Status** column.

```
(host) #show aaa xml-api statistics
XML API Server List
-------------------
Name      References  Profile Status
----      ----------  --------------
10.1.2.3  2
10.4.3.2  2
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show aaa xml-api statistics

```
show aaa xml-api statistics
```

Description

Display statistics for an external XML API server.

Syntax

Parameter	Description
<server_ip>	IP address of XML API server.

Usage Guidelines

Issue this command to troubleshoot AAA problems and monitor usage on an XML server.

Example

The example below shows AAA statistics for an external XML server with the IP address 10.1.2.3. This command shows the number of times that a particular event has occurred per client. The first number is the number of times this event occurred. The number of new events since the last time the counters were displayed is shown in parentheses.

```
(host) #show aaa xml-api statistics
Statistics                              10.1.2.3
----------                              --------
user_authenticate                       0 (0)
user_add                                0 (0)
user_delete                             0 (0)
user_blacklist                          0 (0)
user_query                              0 (0)
unknown user                            0 (0)
unknown role                            0 (0)
unknown external agent                  0 (0)
authentication failed                   0 (0)
invalid command                         0 (0)
invalid message authentication method   0 (0)
invalid message digest                  0 (0)
missing message authentication          0 (0)
missing or invalid version number       0 (0)
internal error                          0 (0)
client not authorized                   0 (0)
Cant use VLAN IP                        0 (0)
Invalid IP                              0 (0)
Cant use Switch IP                      0 (0)
missing MAC address                     0 (0)
Packets received from unknown clients:  0 (0)
Packets received with unknown request:  0 (0)
Requests Received/Success/Failed    :    0/0/0 (0/0/0)
```

The output of this command includes the following parameters:

Parameter	Description
user_authenticate	Number of users authenticated on the XML server since the last controller reboot.
user_add	Number of users added to the controller's user table.
user_delete	Number of users removed from the controller's user table.
user_blacklist	Number of denied user association requests.
user_query	Number of user queries performed.
unknown user	Number of unknown users.
unknown role	Number of unknown user roles.
unknown external agent	Number of requests by an unknown external agent.
authentication failed	Number of failed authentication requests.
invalid command	Number of invalid XML commands
invalid message authentication method	Number of XML commands with an invalid authentication method (when a key is configured on the controller).
invalid message digest	Number of XML commands with an invalid digest type (when a key is configured on the controller).
missing message authentication	Number of XML commands with an missing authentication method (when a key is configured on the controller).
missing or invalid version number	Number of commands with a missing or invalid version number. The version number should always be 1.0.
internal error	Number of internal server errors
client not authorized	Number of unauthorized clients
Cant use VLAN IP	Number of time a user IP is same as the VLAN IP.
Invalid IP	Number of XML commands with an invalid IP address.
Cant use Switch IP	Redirection to a IP failed, possibly because the source IP has been NATted.

Parameter	Description
missing MAC address	Number of XML commands with a missing MAC address.
Packets received from unknown clients	Number of packets received from unknown clients.
Packets received with unknown request	Number of packets received with unknown request
Requests Received/Success/ Failed	Total number of requests received / number of successful requests / number of failed requests

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show acl ace-table

```
show acl ace-table {ace <0-1999>}|{acl <1-2700>}
```

Description

Show an access list entry (ACE) table for an access control list (ACL).

Syntax

Parameter	Description
`ace <0-1999>`	Show a single ACE entry.
`acl <1-2700>`	Show all ACE entries for a single ACL.

Example

The following example shows that there are eighteen access control entries for ACL 1.

```
(host) #show acl ace-table acl 1
  1020: any any  1  0-65535  0-65535  f80001:permit
  1021: any any  17  0-65535  53-53  f80001:permit
  1022: any any  17  0-65535  8211-8211  f80001:permit
  1023: any any  17  0-65535  8200-8200  f80001:permit
  1024: any any  17  0-65535  69-69  f80001:permit
  1025: any any  17  0-65535  67-68  f80001:permit
  1026: any any  17  0-65535  137-137  f80001:permit
  1027: any any  17  0-65535  138-138  f80001:permit
  1028: any any  17  0-65535  123-123  f80001:permit
  1029: user 10.6.2.253 255.255.255.255  6  0-65535  443-443  f80001:permit
  1030: user any  6  0-65535  80-80  d1f90,0000 f80021:permit dnat
  1031: user any  6  0-65535  443-443  d1f91,0000 f80021:permit dnat
  1032: any any  17  0-65535  500-500  f80001:permit
  1033: any any  50  0-65535  0-65535  f80001:permit
  1034: any any  17  0-65535  1701-1701  f80001:permit
  1035: any any  6  0-65535  1723-1723  f80001:permit
  1036: any any  47  0-65535  0-65535  f80001:permit
  1037: any any  0  0-0  0-0  f180000:deny
```

Related Commands

Configure ACLs using the command ip access-list session.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

show acl acl-table

```
show acl acl-table <1-2700>
```

Description

Display information for a specified access control list (ACL).

Syntax

Parameter	Description
`acl-table <1-2700>`	Specify the number of the ACL for which you want to view information.

Example

The following example displays the ACL table for the controller.

```
(host) #show acl acl-table acl 1

AclTable
--------
ACL  Type  ACE Index  Ace Count  Name   Applied
---  ----  ---------  ---------  ----   -------
1    role  1459       18         logon  0

Total free ACE entries = 3591
Free ACE entries at the bottom = 2552
Next ACE entry to use = 1480 (table 1)
Ace entries reused 622 times
ACL count 64, tunnel acl 0

Ace entries reused 373 times
```

ACL count 64, tunnel acl 0

The output of this command displays the following parameters:

Parameter	Description
ACL	Number of the specified ACL
Type	Shows the ACL type: • **role**: Access list is used to define a user role. • **mac**: MAC ACLs allow filtering of non-IP traffic. This ACL filters on a specific source MAC address or range of MAC addresses. • **session**: Session ACLs define traffic and firewall policies on the controller. • **ether-type**: This type of ACL filters on the Ethertype field in the Ethernet frame header, and is useful when filtering non-IP traffic on a physical port. • **standard**: Standard ACLs are supported for compatibility with router

Parameter	Description
	software from other vendors. This ACL permits or denies traffic based on the source address of the packet.
ACE Index	Starting index entry for the ACL's access control entries
ACE count	Number of access control entries in the ACL
Name	Name of the access control list
Applied	Number of times the ACL was applied to a role.
Total free ACE entries	The total number of free ACE entries. This includes available ACE entries at the bottom of the list, as well as free ACE entries in the middle of the table from previous access list entries that were later removed.
Free ACE entries at the bottom	The total number of free ACE entries at the bottom of the list.
Next ACE entry to use	Ace number of the first free entry at the bottom of the list.
ACE entries reused	For internal use only.
ACL count	Total number of defined ACLs
Tunnel ACL	Total number of defined tunnel ACLs.

The following example displays the ACL table for ACL 1.

```
(host) #show acl ace-table acl 1
Acl Table
--------
ACL  Type  ACE Index  Ace Count  Name   Applied
---  ----  ---------  ---------  ----   -------
1    role  1020       18         logon  0

Total free ACE entries = 3591
Free ACE entries at the bottom = 2991
Next ACE entry to use = 1041 (table 1)
Ace entries reused 373 times
```

ACL count 64, tunnel acl 0

Related Commands

Configure ACLs using the command ip access-list session.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

show acl hits

```
show acl hits
```

Description

Show internal ACL hit counters.

Syntax

No parameters.

Usage Guidelines

Issue this command to see the number of times an access control list defined a user's role, or traffic and firewall policies for a user session.

Example

In the example below, the output of the *User Role ACL Hits* table is shown in two separate tables to allow the output to fit on a single page of this document. In the actual controller command-line interface, the *User Role ACL Hits* table is shown in a single, wide table.

```
(host) #show acl ace-table acl 1
User Role ACL Hits
------------------
Role            Policy               Src          Dst
----            ------               ---          ---
logon           control              any          any
logon           control              any          any
logon                                any          any
visitor         vp-control           any          any
visitor         vp-control           any          any
visitor         vp-access            any          any
visitor         vp-access            user         mswitch-master
visitor         vp-access            any          any

User Role ACL Hits------------------
Service       Action   Dest/Opcode  New Hits  Total Hits  Index
-------       ------   -----------  --------  ----------  -----
svc-icmp      permit                0         6           5052
svc-dhcp      permit                0         2           5057
0             deny                  0         53          5069
svc-dns       permit                9         46079       4885
svc-dhcp      permit                0         788         4886
svc-icmp      permit                0         536         4887
svc-http      permit                0         41          4889
6 9100-9100   permit                0         31          4892
Port Based Session ACL
----------------------
Policy     Src                    Dst  Service  Action  Dest/Opcode  New Hits  Total Hits
Index
------     ---                    ---  -------  ------  -----------  --------  ----------  --
---
validuser  10.1.1.0 255.255.255.0 any  any      deny                0         214
4655
validuser  any                    any  any      permit              6         2502
4656

Port ACL Hits
```

```
-------------
ACL  ACE  New Hits  Total Hits  Index
---  ---  --------  ----------  -----
5              22                                                  0
```

The output of this command includes the following information:

Parameter	Description
Role	Name of the role assigned by the ACL.
Policy	Name of the policy used by the ACL
Src	The traffic source, which can be one of the following: • <*alias*>: Name of a user-defined alias for a network host, subnetwork, or range of addresses. • **any**: match any traffic. • **host**: specify a single host IP address. • **network**: specify the IP address and netmask. • **user**: represents the IP address of the user.
Dst	The traffic destination, which can be one of the following: • <*alias*>: Name of a user-defined alias for a network host, subnetwork, or range of addresses. • **any**: match any traffic. • **host**: specify a single host IP address. • **network**: specify the IP address and netmask. • **user**: represents the IP address of the user.
Service	Network service, which can be one of the following: • IP protocol number (0-255) • name of a network service (use the show netservice command to see configured services) • **any**: match any traffic • **tcp**: specify the TCP port number (0-65535) • **udp**: specify the UDP port number (0-65535)
Action	Action if rule is applied, which can be one of the following: • **deny**: reject packets • **dst-nat**: perform destination NAT on packets • **dual-nat**: perform both source and destination NAT on packets • **permit**: forward packets • **redirect**: specify the location to which packets are redirected • **src-nat**: perform source NAT on packets

Parameter	Description
Dest/Opcode	The datapath destination ID.
New Hits	Number of ACL hits that occurred since this command was last issued.
Total Hits	Total number of ACL hits recorded since the controller last reset.
Index	Index number of the ACL.
ACL	ACL number
ACE	ACE number
New Hits	Number of times the ACL was applied since this command was last issued.
Total Hits	Number of times the ACL was applied since the controller was last reset.
Index	Index number of the ACL.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

show activate-service-whitelist

```
show activate-service-whitelist
```

Description

This command displays the profile that allows the controller to synchronize its remote AP whitelist with the Dell Activate cloud-based services.

Syntax

No parameters.

Usage Guidelines

Use this command to view the credentials the controlleruses to synchronize the remote AP whitelist with an Activate server.

Example

The following example displays the Activate whitelist service settings on the controller:

```
(host)(config)# show activate-service-whitelist
(host)(activate-service-whitelist) #username user2 password pA$$w0rd whitelist-enable
activate-service-whitelist
--------------------------
Parameter                                 Value
---------                                 -----
Activate Whitelist Service                Enabled
Activate Login Username                   Marin
Activate Login Password                   ********
Periodic Interval for WhiteList Download  1
Add-Only Operation                        Enabled
```

Related Commands

Parameter	Description
activate	This command synchronizes the remote AP whitelist on the controller with the Activate whitelist database.

Command History

This command was introduced in ArubaOS 6.3

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or enable mode on master or local controllers

show adp config

```
show adp config
```

Description

Show Aruba Discovery Protocol (ADP) configuration settings.

Syntax

No parameters.

Example

The following example shows that the controller has all default settings for ADP.

```
(host) #show adp config
ADP Configuration
-----------------
key         value
---         -----
discovery   enable
igmp-join   enable
igmp-vlan   0
```

The output of this command includes the following parameters:

Parameter	Description
discovery	Dell APs send out periodic multicast and broadcast queries to locate the master controller. If the APs are in the same broadcast domain as the master controller and ADP is enabled on the controller, the controller automatically responds to the APs' queries with its IP address. This command shows whether ADP is enabled or disabled on the controller.
igmp-join	Shows whether the controller has enabled or disabled the sending of Internet Group Management Protocol (IGMP) join requests.
igmp-vlan	ID of the VLAN to which IGMP reports are sent. If this value is set to 0, the controller will use the default route VLAN used.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show adp counters

```
show adp counters
```

Description

Show Aruba Discovery Protocol (ADP) counters.

Syntax

No parameters.

Example

The following example shows the ADP counter table for the controller.

```
(host) #show adp counters
ADP Counters
------------
key            value
---            -----
IGMP Join Tx   1
IGMP Drop Tx   0
ADP Tx         0
ADP Rx         0
```

The output of this command includes the following parameters:

Parameter	Description
`IGMP Join Tx`	Number of Internet Group Management Protocol (IGMP) join requests sent by the controller.
`IGMP Drop Tx`	Number of Internet Group Management Protocol (IGMP) drop requests sent by the controller.
`ADP Tx`	Number of ADP responses sent to APs.
`ADP Rx`	Number of multicast and broadcast queries received from APs trying to locate the master controller.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show airgroup

```
show airgroup
   active-domains
   aps
   blocked-queries {dlna|mdns}
   blocked-service-id {dlna|mdns}
   cache entries {dlna|mdns|static}
   cppm {entries | server-group}
   cppm-server {aaa | query-interval | radius statistics | rfc3576 statistics}
   domain
   global-credits
   internal-state statistics {dlna|mdns}
   multi-controller-table
   servers {dlna | mdns | verbose}
   status
   users {dlna|mdns|verbose}
   vlan
```

Description

This command displays AirGroup global settings, domain, active-domain, and more AirGroup configuration information on the controller.

Syntax

Parameter	Description
`active-domains`	This command displays a list of AirGroup active-domains configured on the controller. For more information, see show airgroup active-domains on page 904
`aps`	This command displays the AP table on the controller.
`blocked-queries` `{dlna|mdns}`	• **dlna** - This command displays the DLNA blocked queries. • **mdns** - This command displays the mDNS blocked queries. For more information, see show airgroup blocked-queries on page 905
`blocked-service-id` `{dlna|mdns}`	• **dlna** - This command displays the DLNA blocked service IDs. • **mdns** - This command displays the mDNS blocked service IDs. For more information, see show airgroup blocked-service-id on page 907
`cache entries` `{dlna|mdns|static}`	• **dlna** - This command displays the DLNA cache entries. • **mdns** - This command displays the mDNS cache entries.

Parameter	Description
	• **static** - This command displays the AirGroup static cache entries. For more information, see show airgroup cache entries
cppm {entries|server-group}	• **cppm entries**: This command displays information for devices registered in ClearPass Policy Manager (CPPM). • **cppm server-group**: This command displays AirGroup CPPM server group defined in the controller. For more information, see show airgroup cppm on page 911
cppm-server aaa query-interval radius statistics rfc3576 statistics	• **aaa**: This command displays the AAA parameters for AirGroup. • **query-interval**: The AirGroup CPPM query interval is used to refresh the CPPM entries at periodic intervals. This command displays the CPPM query interval value configured in the controller. • **radius statistics**: This command displays the RADIUS statistics for AirGroup. • **rfc3576 statistics**: This command displays the Dynamic Authorization Extensions to RADIUS statistics for AirGroup. For more information, see show airgroup cppm-server on page 913
domain	This command displays the IP address of all the controllers participating in an AirGroup multi controller environment. For more information, see show airgroup domain on page 916
global-credits	This command displays tokens assigned to query and response packets. It displays configured and current global tokens. For more information, see show airgroup global-credits on page 921
internal-state statistics {dlna|mdns}	• **dlna** - This command displays the DLNA statistics. • **mdns** - This command displays the mDNS statistics. For more information, see show airgroup internal-state statistics on page 918
multi-controller-table	This command displays the AirGroup cluster information. For more information, see show airgroup multi-controller-table on page 923
servers {dlna|mdns|verbose}	• **dlna** - This command displays the DLNA servers. • **mdns** - This command displays the mDNS servers.

Parameter	Description
	• **Verbose** - This command displays the AirGroup server (Apple TV, AirPrint Printer) status in the controller. For more information, see show airgroup servers on page 925
status	This command displays the current status of the AirGroup configuration and AirGroup services configured on the controller. For more information, see show airgroup status on page 928
users {dlna|mdns|verbose}	• **dlna** - This command displays the DLNA users. • **mdns** - This command displays the mDNS users. • **Verbose** - This command displays the AirGroup client or user status in the controller. For more information, see show airgroup users on page 931
vlan	This command displays the status of all the disallowed AirGroup VLANs. For more information, see show airgroup vlan on page 933

Example

Access the controller's command-line interface and use the following command to display the current status of the AirGroup configuration and AirGroup services configured on the controller:

```
(host) #show airgroup status

AirGroup Feature
----------------
Status
------
Enabled
AirGroup- MDNS Feature
----------------------
Status
------
Enabled
AirGroup- DLNA Feature
----------------------
Status
------
Enabled
AirGroup Location Discovery
---------------------------
Status
------
Enabled
AirGroup Active Wireless Discovery
----------------------------------
Status
------
Disabled
AirGroup Enforce Registration
```

```
----------------------------
Status
------
Enabled
AirGroup IPV6 Support
---------------------
Status
------
Disabled
AirGroup Service Information
----------------------------
Service     Status
-------     ------
airplay     Enabled
airprint    Enabled
itunes      Disabled
remotemgmt  Disabled
sharing     Disabled
chat        Disabled
googlecast  Disabled
DIAL        Enabled
DLNA Media  Enabled
DLNA Print  Disabled
allowall    Disabled
```

Use the following command to display the IP address of all the controllers participating in an AirGroup multi controller environment:

```
(host) #show airgroup domain

AirGroup Domains
----------------
Name      Description        IP-Address
----      -----------        ----------
Campus1   AirGroup_campus1   10.10.10.1
                             11.11.11.1
Campus2   AirGroup_campus2   9.9.9.1
                             8.8.8.1
Num domains:2
```

Use the following command to displays a list of AirGroup active-domains configured on the controller:

```
(host) #show airgroup active-domains

AirGroup Active-Domains
-----------------------
Domain Name  Status
-----------  ------
Campus1      Included
Campus2      Included

Num active-domains:2
```

Related Commands

Command	Description
airgroup	This command configures AirGroup global settings, domain, and active-domain parameters.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.3.1	The unsolicited-responses-received parameter was deprecated.
ArubaOS 6.4	The **dlna**,and **mdns** parameters were introduced in the following commands: • show airgroup blocked-queries • show airgroup blocked-service-id • show airgroup internal-state statistics The **dlna**, **mdns** , and **verbose** parameters were introduced in the following commands: • show airgroupservice • show airgroup servers • show airgroup users The **dlna**, **mdns** , and **static** parameters were introduced in the following command: • show airgroup cache entries

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master and local controllers

show airgroup active-domains

```
show airgroup active-domains
```

Description

This command displays a list of AirGroup active-domains configured.

Syntax

No parameters.

Example

The following example displays a list of AirGroup active-domains configured:

```
(host) #show airgroup active-domains

AirGroup Active-Domains
-----------------------
Domain Name  Status
-----------  ------
Campus1      Included
Campus2      Included

Num active-domains:2
```

The output of this command includes the following parameters:

Column	Description
`Domain Name`	Displays the name of the domain.
`Status`	Displays the status of the domain if it is part of the active-domain list.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup blocked-queries

```
show airgroup blocked-queries [mdns|dlna]
```

Description

This command displays the service ID that was queried but not available in the AirGroup service table.

Syntax

Parameter	Description	Range	Default
`mdns`	Specifies the mDNS blocked queries.	—	—
`dlna`	Specifies the DLNA blocked queries.	—	—

Example

The following example displays the service ID that was queried but not available in the AirGroup service table:

```
(host) #show airgroup blocked-queries
AirGroup dropped Query IDs
--------------------------
Service ID                                                    #query-hits
----------                                                    -----------
urn:schemas-upnp-org:device:InternetGatewayDevice:1           744
urn:schemas-microsoft-com:nhed:presence:1                     9
uuid:10000000-0000-0000-0200-7CED8DAB677F                     9
_touch-remote._tcp                                            5
_00000000-54ce-c0a7-a21f-369c70ae4de6._sub._home-sharing._tcp 5
_00000000-54ce-c0a7-a21f-369c70ae4de6._sub._hs-dpap._tcp      5
47dd055b._sub._apple-mobdev2._tcp                             55
urn:schemas-upnp-org:service:WANPPPConnection:1               4
urn:schemas-upnp-org:service:WANIPConnection:1                4
50.64.15.10.in-addr.arpa                                      1
urn:schemas-opencable-com:service:Tuner:1                     9
urn:schemas-microsoft-com:service:pbda:tuner:1                9
_atc._tcp                                                     6
10.15.121.240.in-addr.arpa                                    6
10.15.121.240.in-addr.arpa                                    3
Num dropped Query IDs:15
```

The output of this command includes the following parameters:

Parameter	Description
`Service ID`	Displays the service ID that was queried but not available in the AirGroup service table. An AirGroup service ID is the name of a DLNA or mDNS service.
`#query-hits`	Displays the number of query hits for a service blocked by AirGroup.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup blocked-service-id

```
show airgroup blocked-service-id [mdns|dlna]
```

Description

This command displays the list of blocked services.

Syntax

Parameter	Description	Range	Default
`mdns`	Specifies the mDNS blocked services.	—	—
`dlna`	Specifies the DLNA blocked services.	—	—

Example

The **airgroup service <servicename> disable** command disables an AirGroup service by blocking the service IDs for that service. When you enable an AirGroup service, service IDs of that service are enabled automatically. The following example displays the list of blocked services:

```
(host) (config) #show airgroup blocked-service-id
AirGroup Blocked Service IDs
----------------------------
Origin        Service ID                                                  #response-hits
------        ----------                                                  --------------
10.15.121.240 urn:schemas-upnp-org:service:RenderingControl:1             3196
10.15.121.240 urn:schemas-upnp-org:service:ContentDirectory:1             7048
10.15.121.240 urn:schemas-upnp-org:service:ConnectionManager:1            7082
10.15.121.240 _sleep-proxy._udp                                           34
10.15.121.240 _touch-able._tcp                                            12
10.15.121.240 urn:schemas-upnp-org:service:AVTransport:1                  30
10.15.121.240 _apple-mobdev._tcp                                          83
10.15.121.240 _workstation._tcp                                           8
10.15.121.240 _LifeLineDevice._tcp                                        8
10.15.121.240 _daap._tcp                                                  16
10.15.121.240 _adisk._tcp                                                 16
10.15.121.240 urn:schemas-emc-com:device:sohodevice:1                     1007
10.15.121.240 urn:schemas-emc-com:service:sohoOSabout:1                   1006
Num Blocked Service-ID:13
```

The output of this command includes the following parameters:

Parameter	Description
`Origin`	Displays the source IP address of the AirGroup server that advertises this service.
`Service ID`	Displays the blocked service ID of the server.
`#response-hits`	Displays the number of response messages received for this service ID.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup cache entries

```
show airgroup cache <entries> [mdns|dlna|static]
```

Description

This command displays the AirGroup mDNS and DLNA resource records in cache in a controller:

Syntax

Parameter	Description	Range	Default
`<entries>`	Displays the AirGroup mDNS and DLNA resource records in the cache.	—	—
`mdns`	Displays the mDNS cache entries.	—	—
`dlna`	Displays the DLNA cache entries.	—	—
`static`	Displays static cache entries.	–	–

Example

The following example displays the AirGroup mDNS and DLNA resource records in cache in a controller:

```
(host) #show airgroup cache entries

Cache Entries
-------------
Name                                          Type        Class  TTL   Origin         Expiry
Last Update
----                                          ----        -----  ---   ------         ------
-----------
_http._tcp.local                              PTR         IN     4500  10.15.121.240  wireless
 Mon Dec  2 02:01:48 2013
hmnhd-TID44Q.local                            A           IN     120   10.15.121.240  wireless
 Mon Dec  2 02:01:48 2013
hmnhd-TID44Q Web Management._http._tcp.local  SRV/NBSTAT  IN     120   10.15.121.240  wireless
 Mon Dec  2 02:01:48 2013
hmnhd-TID44Q Web Management._http._tcp.local  TXT         IN     4500  10.15.121.240  wireless
 Mon Dec  2 02:01:48 2013
urn:schemas-upnp-org:device:MediaRenderer:1   N/A         N/A    1800  10.15.121.240  N/A
 Mon Dec  2 07:28:52 2013
urn:schemas-upnp-org:device:MediaServer:1     N/A         N/A    1810  10.15.121.240  N/A
 Mon Dec  2 07:34:05 2013
urn:schemas-upnp-org:device:MediaRenderer:1   N/A         N/A    1800  10.15.121.240  N/A
 Mon Dec  2 07:21:06 2013
urn:schemas-upnp-org:device:MediaServer:1     N/A         N/A    900   10.15.121.240  N/A
 Mon Dec  2 07:32:25 2013
urn:schemas-upnp-org:device:MediaServer:1     N/A         N/A    900   10.15.121.240  N/A
 Mon Dec  2 07:33:39 2013
urn:schemas-upnp-org:device:MediaServer:1     N/A         N/A    900   10.15.121.240  N/A
 Mon Dec  2 07:33:39 2013
urn:schemas-upnp-org:device:MediaRenderer:1   N/A         N/A    1800  10.15.121.240  N/A
 Mon Dec  2 07:21:06 2013
Num Cache Entries:11
```

The output of this command includes the following parameters:

Column	Description
Name	Displays the name of the Service ID.
Type	Displays the type of mDNS or DLNA record.
Class	Displays the class of the record. This is usually IN.
TTL	Displays the time to live value of the service ID in seconds.
Origin	Displays the source IP of the AirGroup server.
Expiry	Displays the expiry period of the mDNS or DLNA record in seconds.
Last Update	Displays the time stamp of the last cache update.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup cppm

```
show airgroup cppm {<entries>|<server-group>}
```

Description

This command displays the information for devices registered in ClearPass Policy Manager.

Syntax

Parameter	Description	Range	Default
<entries>	Displays the CPPM registration information.	—	—
<server-group>	Displays the Server Group information.	—	—

Example

The following example displays the information for devices registered in ClearPass Policy Manager:

```
(host) #show airgroup cppm entries

ClearPass Guest Device Registration Information
-----------------------------------------------
Device             device-owner  shared location-id AP-name  shared location-id AP-FQLN
shared location-id AP-group  shared user-list  shared group-list  shared role-list  CPPM-Req
CPPM-Resp
------             ------------  --------------------------  --------------------------  -----
---------------------  ---------------  ----------------  ---------------  --------  -----
----
cc:3a:61:b1:4a:cc  lecturer
                       lecturer2                                                 1         1
c4:85:08:a2:15:1b  N/A
                                        DEPT1                                  1         1
00:1e:65:2d:ae:44  N/A
                                        Physics                                1         1
                                        Chemistry
                                        Biology

Num CPPM Entries:3
```

The following example displays the server group information:

```
(host) (config) #show airgroup cppm server-group
Airgroup AAA Server Group
-------------------------
Name  Inservice  trim-FQDN  match-FQDN
----  ---------  ---------  ----------
cppm  Yes        No
```

The output of this command includes the following parameters:

Column	Description
Device	Displays the MAC address of the AirGroup device.
device-owner	Displays the user name of the AirGroup device.
shared location-id AP-name	Displays the location ID based on an AP name. **NOTE:** The geographical location of AirGroup device can be tracked with respect to its RF neighbors. AirGroup devices connected to APs can be located based on nearby APs. In this case, an AirGroup user's AP could be any of the APs in AirGroup server's neighbor AP list, in addition to the server's own associated AP to receive the service advertisements from the corresponding AirGroup server.
shared location-id AP-FQLN	Displays the location ID based on the Fully Qualified Location Name (FQLN) value of an AP. AP FQLN is configured in the format **apname>.<floor>.<building>.<campus>**
shared location-id AP-group	Displays the location ID based on the name of an AP group.
shared user-list	Displays one or more primary login IDs of an AirGroup user.
shared group-list	Displays one or more primary login IDs of an AirGroup user group.
shared role-list	Displays the name of the controller role.
CPPM-Req	Displays the number of requests sent by the controller to CPPM server to populate the policy details for the given client.
CPPM-Resp	Displays the number of responses received from the CPPM server for policy details of the given client.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup cppm-server

```
show airgroup cppm-server {<aaa>|<query-interval>|radius <statistics>|rfc3576 <statistics>}
```

Description

This command displays the information for devices registered in ClearPass Policy Manager.

Syntax

Parameter	Description	Range	Default
`cppm-server`	Displays the ClearPass Policy Manager server information.	—	—
`<aaa>`	Displays the data for the ClearPass Policy Manager servers.	—	—
`<query-interval>`	Specifies the value in which the AirGroup ClearPass Policy Manager query interval refreshes the ClearPass Policy Manager entries at periodic intervals.	1 - 24 hours	10 hours
`radius <statistics>`	Displays the AirGroup RADIUS server statistics.	—	—
`rfc3576 <statistics>`	Displays the AirGroup RFC3576 server statistics.	—	—

Example

The following example displays the information for devices registered in ClearPass Policy Manager:

```
(host) #show airgroup cppm entries

ClearPass Guest Device Registration Information
-----------------------------------------------
Device             device-owner  shared location-id AP-name  shared location-id AP-FQLN
shared location-id AP-group  shared user-list  shared group-list  shared role-list  CPPM-Req
CPPM-Resp
------             ------------  --------------------------  --------------------------  -----
---------------------  ----------------  -----------------  ----------------  --------  -----
----
cc:3a:61:b1:4a:cc  lecturer
                       lecturer2                                              1         1
c4:85:08:a2:15:1b  N/A
                                         DEPT1                                1         1
00:1e:65:2d:ae:44  N/A
                                         Physics                              1         1
                                         Chemistry
                                         Biology

Num CPPM Entries:3
```

The following example displays the server group information:

```
(host) (config) #show airgroup cppm server-group
Airgroup AAA Server Group
-------------------------
```

```
Name   Inservice   trim-FQDN   match-FQDN
----   ---------   ---------   ----------
cppm   Yes         No
```

The output of this command includes the following parameters:

Column	Description
Device	Displays the MAC address of the AirGroup device.
device-owner	Displays the user name of the AirGroup device.
shared location-id AP-name	Displays the location ID based on an AP name. **NOTE:** The geographical location of AirGroup device can be tracked with respect to its RF neighbors. AirGroup devices connected to APs can be located based on nearby APs. In this case, an AirGroup user's AP could be any of the APs in AirGroup server's neighbor AP list, in addition to the server's own associated AP to receive the service advertisements from the corresponding AirGroup server.
shared location-id AP-FQLN	Displays the location ID based on the Fully Qualified Location Name (FQLN) value of an AP. AP FQLN is configured in the format **apname>.<floor>.<building>.<campus>**
shared location-id AP-group	Displays the location ID based on the name of an AP group.
shared user-list	Displays one or more primary login IDs of an AirGroup user.
shared group-list	Displays one or more primary login IDs of an AirGroup user group.
shared role-list	Displays the name of the controller role.
CPPM-Req	Displays the number of requests sent by the controller to ClearPass Policy Manager server to populate the policy details for the given client.
CPPM-Resp	Displays the number of responses received from the ClearPass Policy Manager server for policy details of the given client.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.4	The **shared group-list** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup domain

```
show airgroup domain
```

Description

This command displays a list of AirGroup domains configured.

Syntax

No parameters.

Example

Use this command to view a list of AirGroup domains configured:

```
(host) #show airgroup domain

AirGroup Domains
----------------
Name       Description         IP-Address
----       -----------         ----------
Campus1    AirGroup_campus1    10.15.121.240
                               11.11.11.1
Campus2    AirGroup_campus2    9.9.9.1
                               8.8.8.1
Num domains:2
```

The output of this command includes the following parameters:

Column	Description
Name	Displays the name of the AirGroup domain.
Description	Displays a short description of the domain.
IP-Address	Displays the controller or VRRP IP address.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup internal-state statistics

```
show airgroup internal-state <statistics> [mdns|dlna]
```

Description

This command displays the statistics of packets sent and received per second by a controller:

Syntax

Parameter	Description	Range	Default
`statistics`	Displays the Packets sent and received.	—	—
`dlna`	Displays the DLNA statistics.	—	—
`mdns`	Displays the mDNS statistics.	—	—

Example

The following example displays the packets sent and received per second by the controller:

```
(host) (config) #show airgroup internal-state statistics

PAPI Messages
-------------
Msg ID  Name                              Sent Since last Read  Sent Total  Recv

       Since Last Read  Recv Total
------  ----                              --------------------  ----------  -----

       ---------------  ----------
10005   Auth - Request UserInfo           50                    249         0

                        0
10006   Auth - Set UserInfo               0                     0           50

                        249
7062    Set switch ip6                    0                     0           0

                        1
1003    mdns cli log config - LOG LEVEL   0                     0           0
  1
10004   Auth - User Role                  0                     0           62
  302
RADIUS Client Messages
----------------------
Type                       Sent Since Last Read  Sent Total  Recv Since Last Read  Recv Total
----                       --------------------  ----------  --------------------  ----------
Auth Req/Resp              111                   569         61                    322
RFC3576                    N/A                   N/A         11                    17
CPPM Device-Entry Added    N/A                   N/A         16                    56
CPPM Device-Entry Deleted  N/A                   N/A         1                     1
Sibyte MDNS Messages
--------------------
Opcode  Name                          Sent Since Last Read  Sent Total  Recv Since Last Read
Recv Total
```

```
------  ----                          -------------------  ----------  --------------------  -
---------
7       app                           0                    6           0                     0
193     N/A                           859                  2985        214
619
Rx      Request                       N/A                  N/A         71
318
Rx      Response                      N/A                  N/A         143
301
Tx      Request-Refresh               0                    1           N/A
N/A
Tx      Request-discovery             55                   300         N/A
N/A
Tx      Request-wildcard              0                    0           N/A
N/A
Tx      Response-Solicited            0                    0           N/A
N/A
Tx      Response-Solicited-Fragment   0                    0           N/A
N/A
Tx      Response-Unsolicited          0                    0           N/A
N/A
Sibyte DLNA Messages
--------------------
Opcode  Name             Sent Since Last Read  Sent Total  Recv Since Last Read  Recv Total
------  ----             --------------------  ----------  --------------------  ----------
193     N/A              711                   3614        18182                 97564
Rx      Query            N/A                   N/A         8806                  40946
Rx      Notify Announce  N/A                   N/A         1181                  10090
Rx      Notify Bye       N/A                   N/A         0                     0
Tx      Response         651                   2800        N/A                   N/A
Internal MDNS Statistics
------------------------
Functionality                      Hit Count Since Last Read  Hit Count Total  Average Time in
microsec (since last read)  Average Time in microsec (alltime)
-------------                      -------------------------  ---------------  ----------------
-------------------------  ---------------------------------
Response - Cache Update            799                        1842             608
                           612
Response                           143                        301              4136
                           4869
Query - prepare records + Policy   71                         318              964
                           1372
Query - Policy                     0                          195              0
                           51
Query - resp pkt gen & send        0                          0                0
                           0
Query - Response packet send       833                        2831             351
                           339
Query                              71                         318              2377
                           2373
Internal DLNA Statistics
------------------------
Functionality                      Hit Count Since Last Read  Hit Count Total  Average Time in
microsec (since last read)  Average Time in microsec (alltime)
-------------                      -------------------------  ---------------  ----------------
-------------------------  ---------------------------------
Response - Cache Update            4679                       28293            395
                           394
Response                           0                          0                0
                           0
Query - prepare records + Policy   2153                       4377             3468
                           2744
Query - Policy                     7674                       12526            572
                           395
```

```
Query - resp pkt gen & send       453                       2537            1437
                          1149
Query - Response packet send      4739                      28569           549
                          552
Query                             8806                      40946           2162
                          1184
MDNS Multi-controller Cluster Messages
--------------------------------------
Type                      Sent Since Last Read  Sent Total  Recv Since Last Read  Recv Total
----                      --------------------  ----------  --------------------  ----------
Unicast Response with tag 0                     0           0                     0
Request with tag          66                    311         5                     7
Raw Response              0                     0           0                     0
DLNA Multi-controller Cluster Messages
--------------------------------------
Type              Sent Since Last Read  Sent Total  Recv Since Last Read  Recv Total
----              --------------------  ----------  --------------------  ----------
Request with tag  7517                  39582       1289                  1364
Raw Response      87                    87          20                    20
```

The output of this command includes the following parameters:

Column	Description
PAPI Messages	Displays the statistics of Performance Application Programming Interface (PAPI) messages between mDNS and other processes.
RADIUS Client Messages	Displays the statistics of RADIUS messages sent and received by AirGroup.
Sibyte Messages	Displays the statistics of messages sent and received from the datapath.
Internal Statistics	Displays the statistics about the number of response and query messages received and the time taken to process each of these messages.
Multi-controller Cluster Messages	Displays the statistics about the query and response messages among controllers in a multi-controller cluster.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup global-credits

```
show airgroup global credits
```

Description

This command displays the current and user configured global tokens assigned to query and response packets.

Syntax

No parameters.

Example

In an AirGroup network, AirGroup devices generate excess mDNS query and response packets. Using airgroup global-credits command, the AirGroup controller restricts these packets by assigning tokens. The controller processes these mDNS packets based on this token value. The controller rejects any packets beyond this token limit. The token renews every 15 seconds. The renewal interval is not a configurable parameter.

In the following example, the AirGroup controller restricts the number of query packets to 450 and response packets to 90 from AirGroup devices in a time frame of 15 seconds.

```
(host)(config) #airgroup global-credits 450 90
```

The following command displays tokens assigned to query and response packets. It displays the current and user configured global tokens.

```
(host) #show airgroup global-credits

Global Credits - Default
------------------------
Type              Value
----              -----
Query Packets     450
Response Packets  90

Global Credits - Current
------------------------
Type              Value
----              -----
Query Packets     400
Response Packets  85
```

The output of this command includes the following parameters:

Column	Description
Type	Displays the mDNS or DLNA packet type.
Value	Displays the limit of the token.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup multi-controller-table

```
show airgroup multi-controller-table [mdns|dlna] [verbose]
```

Description

This command displays the IP address of all the controllers participating in an AirGroup multi-controller environment.

Syntax

Parameter	Description	Range	Default
`mdns`	Displays the mDNS statistics.	—	—
`dlna`	Displays the DLNA statistics.	—	—
`verbose`	Displays additional information in a tabular format.	–	–

Example

All controllers communicate with each other based on the multi-controller table in an AirGroup cluster. This table is a combination of controllers specified in each domain, as part of active-domains. Use the following command to view the IP address of all the controllers participating in an AirGroup multi-controller environment:

```
(host) (config) #show airgroup multi-controller-table

AirGroup Multi-Controller-Table
---------------------------------------
IP-Address    Type  Request with Tag Tx  Unicast Response with tag Tx  Raw Response Tx
Request with Tag Rx  Unicast Response with tag Rx  Raw Response Rx
----------    ----  -------------------  ----------------------------  ---------------  ------
-------------  ---------------------------  ---------------
10.15.121.240  mDNS  43                   0                             0                0
               0                            0
10.15.121.240  mDNS  43                   0                             0                0
               0                            0
Num IP-Address:2
```

The output of this command includes the following parameters:

Table 8: *show airgroup multi-controller-table*

Column	Description
IP-Address	Displays the IP address of all the controllers participating in an AirGroup multi-controller environment.
Type	Displays the type of record.
Request with Tag Tx	Displays the number of AirGroup multi-controller queries transmitted with meta-tag information by the controller to other controllers in its multi-controller domain.
Unicast Response with tag Tx	Displays the number of AirGroup multi-controller responses transmitted with meta-tag information by the controller to other controllers in its multi-controller domain.
Raw Response Tx	Displays the number of mDNS or DLNA responses transmitted by the controller in response to multi-controller queries from other controllers in the domain.
Request with Tag Rx	Displays the number of AirGroup multi-controller queries received with meta-tag information by the controller from other controllers in its multi-controller domain.
Unicast Response with tag Rx	Displays the number of AirGroup multi-controller responses received with meta-tag information by the controller from other controllers in its multi-controller domain.
Raw Response Rx	Displays the number of mDNS or DLNA responses received by the controller in response to multi-controller queries sent by the controller.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup servers

```
show airgroup servers [mdns|dlna] [verbose]
```

Description

This command displays the status of the AirGroup server (Apple TV, AirPrint Printer, Google ChromeCast, and so on) in a controller:

Syntax

Parameter	Description	Range	Default
`mdns`	Displays the mDNS servers.	—	—
`dlna`	Displays the DLNA servers.	—	—
`verbose`	Displays additional information in a tabular format.	–	–

Example

The following example displays the status of the AirGroup server (Apple TV, AirPrint Printer, Google ChromeCast, and so on) in a controller:

```
(host) (config) #show airgroup servers
AirGroup Servers
----------------
MAC IP Type Host Name Service VLAN Wired/Wireless Role
Group Username AP-Name
--- -- ---- --------- ------- ---- -------------- ----
----- -------- -------
00:25:11:3c:a3:5a 10.15.121.240 mDNS nandan allowall 64 N/A
00:25:90:cc:6e:b3 10.15.121.240 DLNA allowall 64 N/A
d4:be:d9:1f:83:c9 10.15.121.240 DLNA allowall 1 N/A
DLNA Media
00:1e:65:2d:ae:44 10.15.121.240 DLNA allowall 3 wireless authenticated Mathematics user1 104_
AP105
DLNA Media
Num Servers: 4, Max Servers: 2000.
```

The output of this command includes the following parameters:

Column	Description
`MAC`	Displays the MAC address of the AirGroup server.
`IP`	Displays the IP address of the AirGroup server.
`Type`	Displays the type of the device.

Column	Description
Host Name	Displays the host name of the AirGroup server.
Service	Displays the AirGroup service hosted by the server.
VLAN	Displays the VLAN ID of the AirGroup server.
Wired/Wireless	Indicates if the AirGroup server is connected to a Wired LAN or Wireless LAN. **NOTE:** The column displays **Wired** when the server is connected to an untrusted wired port. When the server is connected to a trusted wired port, the column displays **N/A**.
Role	Displays the user role of the AirGroup server.
Group	Displays the group of the AirGroup user.
Username	Displays the user name of the AirGroup server.
AP-Name	Displays the AP name to which the AirGroup server is connected.
Rec-dropped	Displays the number of queries dropped from the AirGroup server.
Rec-filtered	Displays the number of queries filtered as a result of the policies.
Rec-responded	Displays the number of queries responded from the AirGroup server.
Last-query	Displays the time stamp of the last query received.
CPPM-Req	Displays the number of requests sent by the controller to the CPPM server to populate the policy details for the given AirGroup server.
CPPM-Rsp	Displays the number of responses received from the CPPM server for policy details of the given AirGroup server.
CoA	Displays the number of Change of Authorization (CoA) requests sent by CPPM to notify the controller about the registered device.
CPPM Dev-Added	Displays the last time stamp the controller learned about the CPPM policy information.
CPPM Dev-Deleted	Displays the last time stamp when this device entry was deleted from the CPPM table.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup status

```
show airgroup status
```

Description

This command displays the global settings of the AirGroup configuration and AirGroup services configured in the WLAN controller.

Syntax

No parameters.

Example

Issue this command to view the global settings of the AirGroup configuration and AirGroup services configured in the WLAN controller.

```
(host) #show airgroup status

AirGroup Feature
----------------
Status
------
Enabled
AirGroup- MDNS Feature
----------------------
Status
------
Enabled
AirGroup- DLNA Feature
----------------------
Status
------
Enabled
AirGroup Location Discovery
---------------------------
Status
------
Enabled
AirGroup Active Wireless Discovery
----------------------------------
Status
------
Disabled
AirGroup Enforce Registration
-----------------------------
Status
------
Disabled
AirGroup IPV6 Support
---------------------
Status
------
Disabled
AirGroup Service Information
----------------------------
Service     Status
-------     ------
airplay     Enabled
```

```
airprint     Enabled
itunes       Disabled
remotemgmt   Disabled
sharing      Disabled
chat         Disabled
googlecast   Disabled
DIAL         Enabled
DLNA Media   Enabled
DLNA Print   Disabled
allowall     Enabled
test         Enabled
airplay      Enabled
```

The output of this command includes the following parameters:

Column	Description
`AirGroup Feature Status`	Displays the status of AirGroup in the controller.
`AirGroup - MDNS Feature`	Displays the status of mDNS.
`AirGroup - DLNA Feature`	Displays the status of DLNA.
`AirGroup Location Discovery`	Displays the status of AirGroup location discovery. If enabled, AirGroup user can see shared devices based on the user's proximity.
`AirGroup Active Wireless Discovery`	Displays the status of wireless AirGroup server discovery. If enabled, AirGroup controller actively sends refresh requests to discover wireless servers. If disabled, the controller sends refresh requests to wired AirGroup servers only.
`AirGroup Enforce Registration Status`	Displays the status of AirGroup server registration with the CPPM server.
`AirGroup IPV6 Support`	Displays the status of AirGroup IPv6 support on the controller.
`AirGroup Service Information`	Displays the status of all the AirGroup services.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.4.1	• The **Chromecast** service was renamed to **DIAL**. • The **googlecast** service was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup users

```
show airgroup users [mdns|dlna] [verbose]
```

Description

This command displays the user table.

Syntax

Parameter	Description	Range	Default
`mdns`	Displays the mDNS users.	—	—
`dlna`	Displays the DLNA users.	—	—
`verbose`	Displays additional information in a tabular format.	–	–

Example

The following example displays the AirGroup users:

```
(host) (config) #show airgroup users
AirGroup Users
--------------
MAC IP Type Host Name VLAN Role Group Username AP-Name
--- -- ---- --------- ---- ---- ----- -------- -------
d4:be:d9:1f:83:c9 10.15.121.240 DLNA 1
Num Users: 1, Max Users: 6000.
```

The output of this command includes the following parameters:

Column	Description
`MAC`	Displays the MAC address of the AirGroup user.
`IP`	Displays the IP address of the AirGroup user.
`Type`	Displays the type of the AirGroup device.
`Host Name`	Displays the host name of the AirGroup user.
`VLAN`	Displays the VLAN ID of the AirGroup user.
`Role`	Displays the user role of the AirGroup user.
`Group`	Displays the group of the AirGroup user.
`Username`	Displays the user name of the AirGroup user.

Column	Description
AP-Name	Displays the AP name to which the AirGroup user is connected.
Rec-dropped	Displays the number of queries dropped from the AirGroup user.
Rec-filtered	Displays the number of queries filtered as a result of the policies.
Rec-responded	Displays the number of queries responded from the AirGroup user.
Last-query	Displays the time stamp of the last query received.
CPPM-Req	Displays the number of requests sent by the controller to the CPPM server to populate the policy details for the given AirGroup client.
CPPM-Rsp	Displays the number of responses received from the CPPM server for policy details of the given AirGroup client.
CoA	Displays the number of Change of Authorization (CoA) requests sent by CPPM to notify the controller about the registered device.
CPPM Dev-Added	Displays the last time stamp when the controller learned about the CPPM policy information.
CPPM Dev-Deleted	Displays the last time stamp when this device entry was deleted from the CPPM table.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroup vlan

```
show airgroup vlan
```

Description

This command displays the status of the disallowed AirGroup VLANs.

Syntax

No parameters.

Example

The following example displays the status of the disallowed AirGroup VLANs:

```
(host) #show airgroup vlan
VLAN Table
----------
Vlan-Id         IP-Address      IPv6-Address            Status
-------         ----------      ------------            ------
1               10.15.121.240   2001:1:1:16::165/64     Allowed
2               0.0.0.0         2002:1:1:17::165/64     Disallowed
3               10.15.121.240   2003:1:1:18::165/64     Allowed
4               10.15.121.240   2004:1:1:19::165/64     Allowed
Num Vlans:4
```

The output of this command includes the following parameters:

Column	Description
`Vlan-Id`	Displays the identification number of the AirGroup VLAN.
`IP-Address`	Displays the IP address of the VLAN interface.
`IPv6-Address`	Displays the IPv6 address of the VLAN interface.
`Status`	Displays the status of AirGroup access to devices for the VLAN.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show airgroupservice

```
show airgroupservice [dlna|mdns] [verbose]
```

Description

This command displays the service details of all AirGroup services in the controller.

Syntax

Parameter	Description	Range	Default
`airgroupservice`	This command displays the service details of all AirGroup services in the controller.	—	—
`mdns`	Displays the mDNS services.	—	—
`dlna`	Displays the DLNA services.	—	—
`Verbose`	Displays additional services information in a tabular format.	—	—

Example

The following example displays the service details of all AirGroup services in the controller. In this example, the output has been divided into multiple sections to better fit on the pages of this document. In the actual command-line interface, the output appears in a single, long table.

```
(host) (config) #show airgroupservice

AirGroupService Details
-----------------------
Service     Description        Status    Disallowed-Role  Disallowed-VLAN  ID
-------     -----------        ------    ---------------  ---------------  --
airplay     AirPlay            Enabled                                     _airplay._tcp
                                                                           _raop._tcp
                                                                           _appletv-v2._tcp
airprint    AirPrint           Enabled                                     _ipp._tcp
                                                                           _pdl-datastream._tcp
                                                                           _printer._tcp
                                                                           _scanner._tcp
                        -----text removed for brevity--------
itunes      iTunes             Disabled                                    _home-sharing._tcp
                                                                           _apple-mobdev._tcp
                                                                           _daap._tcp
                                                                           _dacp._tcp
remotemgmt  Remote management  Disabled                                    _ssh._tcp
                                                                           _sftp-ssh._tcp
                                                                           _ftp._tcp
                                                                           _telnet._tcp
                                                                           _rfb._tcp
                                                                           _net-assistant._tcp

AirGroupService Details
-----------------------
Service     Description                                 Status    Disallowed-Role
-------     -----------                                 ------    ---------------
```

```
sharing     Sharing                                          Disabled


chat        Chat                                             Disabled
googlecast  GoogleCast supported by Chromecast etc           Disabled
DIAL        DIAL supported by Chromecast,FireTV,Roku etc     Enabled

DLNA Media  Media                                            Disabled
                        -----text removed for brevity--------

DLNA Print  Print                                            Disabled


allowall    Remaining-Services                               Disabled

Disallowed-VLAN  ID
---------------  --
                 _odisk._tcp
                 _afpovertcp._tcp
                 _xgrid._tcp
                 _presence._tcp
                 _googlecast._tcp
                 urn:dial-multiscreen-org:service:dial:1
                 urn:dial-multiscreen-org:device:dial:1
                 urn:schemas-upnp-org:device:MediaServer:1
        -----text removed for brevity--------
                 urn:schemas-upnp-org:device:MediaPlayer:1
                 urn:schemas-upnp-org:device:Printer:1
                 urn:schemas-upnp-org:service:PrintBasic:1
                 urn:schemas-upnp-org:service:PrintEnhanced:1

Num Services:12
Num Service-ID:50
```

The output of this command includes the following parameters:

Column	Description
Service	Displays the name of the AirGroup service.
Description	Displays the description of the AirGroup service.
Status	Displays the status of the service.
Disallow-Roles	Displays the User Roles restricted from accessing the service.
Disallow-VLANs	Displays the User VLANs restricted from accessing the service.
ID	An AirGroup mDNS or DLNA service ID.
#query-hits	Displays the number of query hits for a particular service.
#servers	Displays the number of AirGroup servers advertising this service.

Command History:

Release	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.4	mDNS and DLNA parameters were introduced.
ArubaOS 6.4.1	• The **Chromecast** service was renamed to **DIAL**. • The **googlecast** service was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show ap active

```
show ap active [ap-name <ap-name>|{arm-edge dot11a|dot11g|voip-only}|dot11a|dot11g|essid
<essid>|ip-addr <ip-addr>|ip6-addr <ip6-addr>|{type access-point|air-monitor|(sensor
dot11a|dot11g|voip-only)}|voip-only
```

Description

Show all active APs registered to a controller.

Syntax

Parameter	Description
`ap-name <ap-name>`	View data for an AP with a specified name.
`arm-edge`	Show the state of ARM edge APs.
`counters`	Show the counters.
`dot11a`	Show 802.11a radio information.
`dot11g`	Show 802.11g radio information.
`voip-only`	Show AP information filtered by associated/active VoIP clients.
`essid <essid>`	View data for a specific ESSID (Extended Service Set Identifier). An Extended Service Set Identifier (ESSID) is a alphanumeric name that uniquely identifies a wireless network. If the name includes spaces, enclose the ESSID in quotation marks.
`ip-addr <ip-addr>`	View data for an AP with a specified IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	View data for an AP with a specified IPv6 address.
`type`	Show AP information filtered by type of AP.
`access-point`	Show information for Access Points only.
`air-monitor`	Show information for Air Monitors only.
`ap-monitor`	Show information for AP Monitors only.
`spectrum`	Show only Spectrum Sensor information.
`voip-only`	Show AP information filtered by associated/active VoIP clients.

Usage Guidelines

This command displays details for all active APs on the controller. If an AP on your network *does not* appear in this table, it may have been classified as an inactive AP for any of the following reasons:

- The AP is configured with a missing or incorrect VLAN. (For example, the AP is configured to use a tunneled SSID of VLAN 2 but the controller doesn't have a VLAN 2.)
- The AP has an unknown AP group.
- The AP has a duplicate AP name.
- An AP with an external antenna is not provisioned with external antenna gain settings.
- Both radios on the AP are disabled.
- No virtual APs are defined on the AP.
- The AP has profile errors. Issue the command "show profile errors" for details.
- The GRE tunnel between the AP and the controller was blocked by a firewall after the AP became active.
- The AP is temporarily down while it is upgrading its software. The AP will become active after upgrading.
- An AP has conflicting configuration settings. For example, if the AP system profile on a single radio dual-band AP configures the radio uses 802.11g, but the virtual AP profile on the AP is set to use 802.11a, the AP might not appear to be active.

Example

The output of the command in the example below shows that the controller sees an active AP. In this example, the output has been divided into multiple sections to better fit on the pages of this document. In the actual command-line interface, it will appear in a single, long table.

```
(host)# show ap active
Active AP Table
---------------
Name  Group  IP Address 11g Clients  11g Ch/EIRP/MaxEIRP  11a Clients 11a Ch/EIRP/MaxEIRP
----  -----  ----------  -----------  -------------------- -----------  -------------------
AP205  AP205  172.16.0.5  0          AP:HT:1+/6/20        0           AP:VHT:40E/18/21
AP325  AP325  172.16.0.4  0          AP:HT:7+/6/21.5      0           AP:VHT:157E/18/21
AP115  Ap115  172.16.0.6  0          AP:HT:11-/9/25.5     0           AP:HT:48-/18/19
AP335  AP335  172.16.0.3  0          AP:HT:1+/6/21.5      0           AP:VHT:149E+36E/18/21.5
AP315  AP315  172.16.0.7  0          AP:HT:7+/6/21.5      0           AP:VHT:40E/15/21
AP Type  Flags  Uptime      Outer IP
-------  -----  ------      --------
205      2a     6h:41m:53s  N/A
325      A2a    6h:48m:5s   N/A
115      2a     6h:46m:5s   N/A
335      A2a    6h:52m:57s  N/A
315      2a     6h:51m:20s  N/A

Flags: 1 = 802.1X authenticated AP; 2 = Using IKE version 2;
       A = Enet1 in active/standby mode;  B = Battery Boost On; C = Cellular;
       D = Disconn. Extra Calls On; E = Wired AP enabled; F = AP failed 802.1X authentication;
       H = Hotspot Enabled; K = 802.11K Enabled; L = Client Balancing Enabled; M = Mesh;
       N = 802.11b protection disabled; P = PPPOE; R = Remote AP;
       S = AP connected as standby; X = Maintenance Mode;
       a = Reduce ARP packets in the air; d = Drop Mcast/Bcast On; u = Custom-Cert RAP;
       i = Provisioned as Indoor; o = Provisioned as Outdoor;
       r = 802.11r Enabled
       Q = DFS CAC timer running
       E = 80 MHz Channel Width
       +/- = 40 MHz Channel Width
       S = 160 MHz Channel Width
       E+E = 80 + 80 MHz Channel Width (i.e. 36E+149E)
```

The output of this command includes the following information:

Column	Description
Name	Name of an AP
Group	The AP is associated with this AP group.
IP address	IP address of the AP, in dotted decimal format.
11g Clients	Number of 802.11g clients using the AP.
11g Ch/EIRP/MaxEIRP	802.11g radio channel used by the AP/current effective Isotropic Radiated Power (EIRP) /maximum EIRP.
11a Clients	Number of 802.11a clients using the AP.
11a Ch/EIRP/MaxEIRP	802.11a radio channel used by the AP/current EIRP/maximum EIRP.
AP Type	AP model type.
Flags	This column displays any flags for this AP. The list of flag abbreviations is also included in the output of the **show ap active** command. • 1 = 802.1X authenticated AP • 2 = Using IKE version 2; • A = Enet1 in active/standby mode • B = Battery Boost On • C = Cellular; • D = Disconn. Extra Calls On • E = Wired AP enabled • F = AP failed 802.1X authentication • H = Hotspot Enabled • K = 802.11K Enabled • L = Client Balancing Enabled • M = Mesh • N = 802.11b protection disabled • P = PPPOE • R = Remote AP • S = AP connected as standby • X = Maintenance Mode • a = Reduce ARP packets in the air • d = Drop Mcast/Bcast On • u = Custom-Cert RAP • i = Provisioned as indoor

Column	Description
	• o = Provisioned as outdoor • r = 802.11r Enabled • Q = DFS CAC timer running
`Uptime`	Number of hours, minutes and seconds since the last controller reboot or bootstrap, in the format *hours:minutes:seconds*.
`Outer IP`	The outer IP address of a remote AP (RAP) is used to establish an IPsec VPN tunnel to the terminating master controller. The RAP acquires an outer IP address from the locally connected network, usually via DHCP. (A RAP is typically behind a NAT device whose public IPis seen as the outer ip for the RAP).

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The parameter **ip6-addr** was added to view data for an IPv6 AP.
ArubaOS 6.4.3.0	The **Q** flag was introduced in the output of this command.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap-group

```
show ap-group [<ap-group>]
```

Description

Show settings for an AP group.

Syntax

Parameter	Description
<ap-group>	The name of an AP group.

Usage Guidelines

Issue this command without the optional **<ap-group>** parameter to display the entire AP group list, including profile status for each profile. Include an AP group name to display detailed configuration information for that AP group profile.

Example

This first example shows that the controller has nine configured AP groups. The **Name** column lists the names of all configured AP groups. the **Profile Status** column indicates whether the AP group is predefined. (User-defined profiles will not have an entry in the **Profile Status** column.)

```
(host) #show ap-group
AP group List
-------------
Name                Profile Status
----                --------------
corp-office
branch-office-am
corp
corp1
Corp1-AM
Corp1-AM-Ch11
Corp1-AM-Ch6
corp1-AP85
corp1-lab

Total: 9
```

Include an AP group name to display a complete list of configuration settings for that profile. The example below shows settings for the AP group **corp1**.

```
(host) #show ap-group corp1
AP group "corp1"
--------------------
Parameter                          Value
---------                          -----
Virtual AP                         corp1-guest
Virtual AP                         corp1-wpa2
802.11a radio profile              default
802.11g radio profile              profile1-g
Wired AP profile                   default
```

```
Ethernet interface 0 link profile    default
Ethernet interface 1 link profile    default
AP system profile                    corp1344
VoIP Call Admission Control profile  default
802.11a Traffic Management profile   N/A
802.11g Traffic Management profile   N/A
Regulatory Domain profile            corp1344-channel-profile
SNMP profile                         default
RF Optimization profile              handoff-aggressive
RF Event Thresholds profile          default
IDS profile                          ids-low-setting
Mesh Radio profile                   default
Mesh Cluster profile                 N/A
```

The output of this command includes the following parameters:

Parameter	Description
Virtual AP	Virtual AP profile that which configures a specified WLAN.
802.11a radio profile	Profile that defines 802.11a radio settings for the AP group.
802.11g radio profile	Profile that defines 802.11g radio settings for the AP group.
Wired AP profile	Profile that defines wired port settings for APs assigned to the AP group.
Ethernet interface 0 link profile	Profile that defines the duplex and speed of the Ethernet 0 interface on the AP.
Ethernet interface 1 link profile	Profile that defines the duplex and speed of the Ethernet 0 interface on the AP.
AP system profile	Name of the AP system profile for the AP group.
VoIP Call Admission Control profile	Name of the AP system profile for the AP group.
802.11a Traffic Management profile	Name of the 802.11a WLAN traffic management profile for the AP group.
802.11g Traffic Management profile	Name of the 802.11g WLAN traffic management profile for the AP group.
Regulatory Domain profile	Name of the regulatory domain profile for the AP group.
SNMP profile	Name of the SNMP profile for the AP group.
RF Optimization profile	Name of the RF optimization profile for the AP group.
RF Event Thresholds profile	Name of the RF event thresholds profile for the AP group.
IDS profile	IDS profile for the AP group.

Parameter	Description
Mesh Radio profile	Mesh radio profile assigned to the AP group.
Mesh Cluster profile	Mesh cluster profile assigned to the AP group.

Related Commands

Configure AP group settings using the command ap-group.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap-name

```
show ap-name [<ap-name>]
```

Description

Show a list of AP names. Include the **<ap-name>** parameter to display detailed configuration information for that AP.

Syntax

Parameter	Description
<ap-name>	The name of an AP.

Example

This first example shows that the controller has eight registered APs. The **Name** column lists the names of each registered AP. Note that APs are all user-defined, so they will not have an entry in the **Profile Status** column.

```
(host) #show ap-name
AP name List
------------
Name            Profile Status
----            --------------
mp3
sw-ad-11
sw-ad-13sw-ad-15sw-ad-17sw-ad-18sw-ad-19sw-ad-3
Total: 8
```

Include an AP name to display a complete list of configuration settings for that AP. If the AP has default settings, the value may appear as N/A. The AP in the example below has all default profile settings.

```
(host) #show ap-group corp1
AP name "mp3"
-------------
Parameter                          Value
---------                          -----
Virtual AP                         N/A
Excluded Virtual AP                N/A
802.11a radio profile              N/A
802.11g radio profile              N/A
Wired AP profile                   N/A
Ethernet interface 0 link profile  N/A
Ethernet interface 1 link profile  N/A
AP system profile                  N/A
VoIP Call Admission Control profile N/A
802.11a Traffic Management profile N/A
802.11g Traffic Management profile N/A
Regulatory Domain profile          N/A
RF Optimization profile            N/A
RF Event Thresholds profile        N/A
IDS profile                        N/A
Mesh Radio profile                 N/A
Mesh Cluster profile               N/A
Excluded Mesh Cluster profile      N/A
```

The output of this command includes the following parameters:

Parameter	Description
Virtual AP	Virtual AP profile that which configures a specified WLAN.
Excluded Virtual AP	Excludes the specified mesh cluster profile from this AP.
802.11a radio profile	Profile that defines 802.11a radio settings for the AP.
802.11g radio profile	Profile that defines 802.11g radio settings for the AP.
Wired AP profile	Profile that defines wired port settings for APs assigned to the AP.
Ethernet interface 0 link profile	Profile that defines the duplex and speed of the Ethernet 0 interface on the AP.
Ethernet interface 1 link profile	Profile that defines the duplex and speed of the Ethernet 0 interface on the AP.
AP system profile	Name of the AP system profile for the AP.
VoIP Call Admission Control profile	Name of the AP system profile for the AP.
802.11a Traffic Management profile	Name of the 802.11a WLAN traffic management profile for the AP group.
802.11g Traffic Management profile	Name of the 802.11g WLAN traffic management profile for the AP.
Regulatory Domain profile	Name of the regulatory domain profile for the AP.
RF Optimization profile	Name of the RF optimization profile for the AP.
RF Event Thresholds profile	Name of the RF event thresholds profile for the AP.
IDS profile	IDS profile for the AP.
Mesh Radio profile	Mesh radio profile assigned to the AP.
Mesh Cluster profile	Mesh cluster profile assigned to the AP.
Excluded Mesh Cluster profile	Excludes the specified mesh cluster profile from this AP.

Related Commands

Configure AP settings using the command ap-name.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ap allowed-channels

```
show ap allowed-channels
ap-name <ap-name>
country-code <country-code> [ap-type <ap-type>]
ip-addr <ip-addr>
```

Description

This command shows the allowed channels on a specific AP or country code.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of an AP.
`country-code <country-code> [ap-type <ap-type>]`	Specify a country code to display allowed channels for that country. If you include the optional **ap-type <ap-type>** parameter, the output displays allowed channels for the specified AP type in that country code. The **<ap-type>** parameter is the two or three digit model number of the AP, such as **135** for the W-AP135, or **225** for the W-AP225**.** Remote APs, such as the W-IAP3WN, require that you enter the prefix RAP- before the model number. If the AP model number includes an alphabetic suffix, such as the W-AP175AC, you must enter the suffix after the model number. Note that this suffix may be case-sensitive.
`<ip-addr>`	IP address of an AP, in dotted-decimal format.

Usage Guidelines

Specify the country code for your controller during initial setup. Changing the country code causes the valid channel lists to be reset to the defaults for that country.

Examples

The output of this example shows all allowed channels for the country code **US.**

```
(host)# show ap allowed-channels US

Allowed Channels for Country Code "US"
--------------------------------------
PHY Type                 Allowed Channels
--------                 ----------------
802.11g (indoor)         1 2 3 4 5 6 7 8 9 10 11
802.11a (indoor)         36 40 44 48 149 153 157 161 165
802.11g (outdoor)        1 2 3 4 5 6 7 8 9 10 11
802.11a (outdoor)        149 153 157 161 165
802.11g 40MHz (indoor)   1-5 2-6 3-7 4-8 5-9 6-10 7-11
802.11a 40MHz (indoor)   36-40 44-48 149-153 157-161
802.11g 40MHz (outdoor)  1-5 2-6 3-7 4-8 5-9 6-10 7-11
802.11a 40MHz (outdoor)  149-153 157-161
```

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap ap-group

```
show ap ap-group {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>}
```

Description

Show the AP group settings for an individual AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID). An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address. Enter the IP address in dotted-decimal format.

Usage Guidelines

Use this command to display the contents of an AP's group profile. If you know the name of the group whose profile settings you want to view, use the command **show ap-group <profile-name>**. To view a list of all configured AP groups on your controller, use the command **show ap-group**.

Examples

In the example below, the output of this command lists the profiles associated with the AP group **Corp13**.

```
(host) #show ap ap-group AP2
AP group "corp13"
-------------------
Parameter                           Value
---------                           -----
Virtual AP                          corp13-guest
Virtual AP                          corp13-ether-wpa2
Virtual AP                          corp13-ether-voip
Virtual AP                          corp13-ether-comm
802.11a radio profile               default
802.11g radio profile               default
Wired AP profile                    default
Ethernet interface 0 link profile   default
Ethernet interface 1 link profile   default
AP system profile                   corp13
VoIP Call Admission Control profile default
802.11a Traffic Management profile  N/A
802.11g Traffic Management profile  N/A
Regulatory Domain profile           corp13-channel-profile
SNMP profile                        default
RF Optimization profile             handoff-aggressive
RF Event Thresholds profile         default
IDS profile                         ids-low-setting
Mesh Radio profile                  default
Mesh Cluster profile                N/A
```

Related Commands

Command	Description	Mode
ap-group	Configure your AP groups and AP group profiles.	Config mode

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm client-match history

```
show ap arm client-match history
   advanced
   client-mac <macaddr>
```

Description

If the client match feature is enabled, the output of this command shows the history of AP association changes triggered by the client match feature.

Syntax

Parameter	Description
`advanced`	Provides additional client-match history information, including: • **Eff_Signal** • **EIRP** • **ESSID**
`client-mac <macaddr>`	MAC address of a client for which you want to view a history of AP association changes triggered by the client match feature.

Example

The following command displays information on the Client Match history.

```
(AP-7010) # show ap arm client-match history

S: Source, T: Target, A: Actual
Unit of Roam Time: second
Unit of Signal: dBm

ARM Client match History
------------------------
Time of Change       Station            Reason      Status/Roam Time/Mode Signal(S/T/A)  Band
(S/T/A)  Radio Bssid(S/T/A)                                  AP Name(S/T/A)
-------------       -------            ------      -------------------- -------------  -----
------  ------------------                                  --------------
2014-08-13 14:41:20  84:38:38:20:df:68  User-action Success/0/11v-BTM     -0/-0/-0
5G/5G/5G     d8:c7:c8:46:e0:10/6c:f3:7f:e7:1d:30/6c:f3:7f:e7:1d:30  ap135/ac/ac
```

The output of this command includes the following parameters:

Parameter	Description
`Time of Change`	Timestamp showing the date and time the client match feature associated the client to a different AP radio.
`Station`	The station MAC address.
`Reason`	Reason why the client match feature made the change. Possible reasons include:

Parameter	Description
	• **Sticky**: A mobile roaming client was staying associated (sticking) to a sub-optimal AP for too long. • **Band steer**: A dual-band capable client was steered toward a 5Ghz radio on a dual-band AP. • **Band Balance**: A dual-band capable client was steered toward a different radio to balance the load between the two radios on a single AP. • **Load Balance**: Client match moved the client to a different AP, based upon the load on APs in the client's RF neighborhood, and the SNR levels the client detected from each underutilized AP.
`Status/Roam Time/Mode`	The status, roam time, and mode of client steering using Client Match.
`Signal (S/T/A)`	The output of this column shows the following values: • S: Radio signal strength of the source AP • T: Radio signal strength of the target AP • A: Radio signal strength of the AP that the client is actually associated to
`Band (S/T/A)`	The output of this column shows the following values: • S: Radio frequency band of the source AP (e.g. 2.4GHz and 5GHz) • T: Radio frequency band of the target AP • A: Radio frequency band of the AP that the client is actually associated to
`Radio BSSID (S/T/A)`	The output of this column shows the following values: • S: MAC address of the source AP radio • T: MAC address of the target AP radio • A: MAC address of the AP radio that the client is actually associated to
`AP Name (S/T/A)`	The output of this column shows the following values: • S: Name of the source AP • T: Name of the target AP • A: Name of the AP that the client is actually associated to

The advanced command provides additional information on the Client Match history.

```
(host) #show ap arm client-match history advanced

S: Source, T: Target, A: Actual
Unit of Roam Time: second
Unit of Eff_Signal, Signal, EIRP: dBm

ARM Client match History
------------------------
Time of Change       Station            Reason       Status/Roam Time    Eff_Signal(S/T/A)
Signal(S/T/A)  EIRP(S/T/A)  Band(S/T/A)                Radio Bssid(S/T/A)
              AP Name(S/T/A)     Essid(S/A)
-------------       -------            ------       ---------------    -----------------  --
----------  ----------  ----------                 ------------------
            -------------     ----------
```

```
2014-05-13 16:30:08  f8:f1:b6:03:0d:ff  Band-steer   Success/1          -35/-50/-50       -
35/-50/-50    21/21/21     2.4G/5G/5G
6c:f3:7f:e7:2d:40/6c:f3:7f:e7:2d:50/6c:f3:7f:e7:2d:50  ap225/ap225/ap225  jxie2/jxie2
```

The output of this command includes the following additional parameters:

Parameter	Description
`Eff_Signal (S/T/A)`	The output of this column shows the following values: • S: The relative received signal strength indicator (RSSI) of the source AP radio. This value is derived from the transmit power of the source AP radio and received power from the client. • T: The relative RSSI of the target AP radio. This value is derived from the transmit power of the target AP radio and received power from the client. • A: The relative RSSI of the AP radio that the client is actually associated to. This value is derived from the transmit power of the AP radio and received power from the client.
`EIRP (S/T/A)`	The output of this column shows the following values: • S: The amount of power transmitted from an antennae in the source AP • T: The amount of power transmitted from an antennae in the target AP • A: The amount of power transmitted from an antennae in the AP that the client is actually associated to
`Essid (S/A)`	The output of this column shows the following values: • S: The identifying name of the source wireless network • A: The identifying name of the wireless network the client is actually associated to

Related Commands

Use the following command to enable the client match feature:

- rf arm-profile client-match

The following commands display statistics for the client match feature:

- show ap arm client-match probe-report
- show ap arm client-match neighbors
- show ap arm client-match restriction-table
- show ap arm virtual-beacon-report
- show ap arm client-match unsupported
- show ap arm client-match summary

Command History

Version	Description
ArubaOS 6.3	Command Introduced
ArubaOS 6.4.3.0	The following output parameters were introduced: • **Station** • **Status/Roam Time/Mode** • **Signal** • **Band** • **Radio BSSID** • **AP Name** The **advanced** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm client-match neighbors

```
show ap arm client-match neighbors
   ap-name <name>
   ip-addr <ipaddr>
   ip6-addr <ipaddr>
```

Description

If the client match feature is enabled, the output of this command displays the BSSID of other APs seen by clients in the select AP's RF neighborhood.

Syntax

Parameter	Description
`ap-name <name>`	View neighboring clients for an AP with a specified name
`ip-addr <ipaddr>`	View neighboring clients for an AP with a specified IP address.
`ipv6-addr <ipaddr>`	View neighboring clients for an AP with a specified IPv6 address.

Usage Guidelines

Issue this command to view a list of other APs seen by clients currently associated to the selected AP.

Example

The example below indicates that the clients currently associated to the AP can detect signals from three other APs.

```
(host)#show ap arm client-match neighbors ap-name <ap-name>

Client View
------------
BSSID              Channel
-----              -------
d8:c7:c8:37:84:70  132
d8:c7:c8:88:b6:50  132
d8:c7:c8:37:84:10  124
Num Neighbors:3
```

The output of this command includes the following parameters:

Parameter	Description
`Client MAC`	AP name of the AP from which the client can detect a signal.
`Signal`	Signal strength, in dBm, of the probe request received from Client
`Assoc`	A "Y" in this field indicates that the client is currently associated to that AP radio.
`Sec since last heard`	Time elapsed since the AP radio heard from the client.
`Sec since last repor-`	Time elapsed since the AP radio heard from the client.

Parameter	Description
ted	
Last heard	Date and time at which the AP last heard from the client

Related Commands

Use the following command to enable the client match feature:

- rf arm-profile client-match

The following commands display additional statistics for the client match feature:

- show ap arm client-match probe-report
- show ap arm client-match restriction-table
- show ap arm virtual-beacon-report
- show ap arm client-match unsupported
- show ap arm client-match summary
- show ap arm client-match history

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm client-match Pending

```
show ap arm client-match pending
```

Description

This parameter filters and displays only the pending client-match entries where the moves have not been completed.

Example

The following command displays information on the Client Match pending.

```
(AP-7010) # show ap arm client-match pending

S: Source, T: Target, A: Actual
BTM-ACC: 11v BTM Accept, BTM-REJ#: 11v-BTM Reject with reason #, BTM-TO: 11v-BTM Timeout, BTM-
FA: 11v-BTM False Accept
Unit of Roam Time: second
Unit of Signal: dBm

ARM Client match History
------------------------
Time of Change       Station            Reason  Status/Roam Time/Mode
--------------       -------            ------  --------------------
2016-05-24 15:53:26  xx:xx:xx:xx:xx:xx  Sticky  Pending/5403/Deauth
2016-05-24 13:08:01  yy:yy:yy:yy:yy:yy  Sticky  Pending/15328/Deauth

Signal(S/T/A)  Band(S/T/A)  Radio Bssid(S/T/A)                    AP Name(S/T/A)
-------------  -----------  -------------------                    --------------
-89/-59/-      5G/5G/-      11:11:11:11:11:11/22:22:22:22:22:22/-  AP1/AP2/-
-83/-64/-      5G/5G/-      22:22:22:22:22:22/33:33:33:33:33:33/-  AP2/AP3/-
```

The output of this command includes the following parameters:

Parameter	Description
`Time of Change`	Timestamp showing the date and time the client match feature associated the client to a different AP radio.
`Station`	The station MAC address.
`Reason`	Reason why the client match feature made the change. Possible reasons include: • **Sticky**: A mobile roaming client was staying associated (sticking) to a sub-optimal AP for too long. • **Band steer**: A dual-band capable client was steered toward a 5Ghz radio on a dual-band AP. • **Band Balance**: A dual-band capable client was steered toward a different radio to balance the load between the two radios on a single AP. • **Load Balance**: Client match moved the client to a different AP, based upon the load on APs in the client's RF neighborhood, and the SNR levels the client detected from each underutilized AP.
`Status/Roam Time/Mode`	The status, roam time, and mode of client steering using Client Match.

Parameter	Description
`Signal (S/T/A)`	The output of this column shows the following values: • S: Radio signal strength of the source AP • T: Radio signal strength of the target AP • A: Radio signal strength of the AP that the client is actually associated to
`Band (S/T/A)`	The output of this column shows the following values: • S: Radio frequency band of the source AP (e.g. 2.4GHz and 5GHz) • T: Radio frequency band of the target AP • A: Radio frequency band of the AP that the client is actually associated to
`Radio BSSID (S/T/A)`	The output of this column shows the following values: • S: MAC address of the source AP radio • T: MAC address of the target AP radio • A: MAC address of the AP radio that the client is actually associated to
`AP Name (S/T/A)`	The output of this column shows the following values: • S: Name of the source AP • T: Name of the target AP • A: Name of the AP that the client is actually associated to

Related Commands

Use the following command to enable the client match feature:

- rf arm-profile client-match

The following commands display statistics for the client match feature:

- show ap arm client-match probe-report
- show ap arm client-match neighbors
- show ap arm client-match restriction-table
- show ap arm virtual-beacon-report
- show ap arm client-match unsupported
- show ap arm client-match summary

Command History

Version	Description
ArubaOS 6.5	Command Introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm client-match probe-report

```
show ap arm client-match probe-report
   ap-name <name>
   ip-addr <ipaddr>
   ip6-addr <ip6-addr>
   assoc
   phy-type 802.11a|802.11b|80211g
```

Description

If the client match feature is enabled, the output of this command displays the client probe report for the specified AP.

Syntax

Parameter	Description
`ap-name <name>`	Name of the AP for which you want to view a client report.
`ip-addr <ip-addr>`	IPv4 address of an AP for which you want to view a client probe report.
`ip6-addr <ip6-addr>`	IPv6 address of an AP for which you want to view a client probe report.
`assoc`	Show information for associated clients only.
`phy-type`	Show information for one of the following phy types: • 802.11a • 802.11b • 80211g

Usage Guidelines

APs using the client match feature maintain a table of clients that have sent probe requests, and the signal-to-noise ratio (SNR) of the frame the AP received from the client. The AP sends these reports to the controller ever 30 seconds, and the controller uses the information in these reports to steer each client to its optimal AP.

Example

```
(host)#show ap arm client-match probe-report ap-name <ap-name>

AP Client Probe Report for Wifi0
--------------------------------
Client MAC         Signal  Assoc  Sec since    Sec since       Last heard
                                  last heard   last reported
----------         ------  -----  ------------ ----------     ----------
00:24:d7:40:ca:88  15      0      49           10             Wed Apr 10 01:20:46 2013
00:26:c6:4d:2b:74  21      0      23           10             Wed Apr 10 01:21:12 2013
00:1e:65:2b:7a:3e  23      0      55           10             Wed Apr 10 01:20:40 2013
74:e5:43:4b:3b:ff  34      0      20           10             Wed Apr 10 01:21:15 2013
AP Client Probe Report for Wifi1
--------------------------------
Client MAC         Signal  Assoc  Sec since    Sec since      Last heard
            last heard   last reported
----------         ------  -----  ------------ -------------- ----------
```

```
22:33:44:55:66:77  50       0       6            9              Wed Apr 10 01:21:29 2013
c8:f7:33:29:82:db  41       0       60           9              Wed Apr 10 01:20:35 2013
ac:81:12:59:5c:12  32       0       50           9              Wed Apr 10 01:20:45 2013
00:24:d7:40:bb:b0  31       0       58           9              Wed Apr 10 01:20:37 2013
00:1a:73:15:8c:5f  32       0       57           9              Wed Apr 10 01:20:38 2013
```

The output of this command includes the following parameters:

Parameter	Description
`Client MAC`	AP name of the AP from which the client can detect a signal.
`Signal`	Signal strength, in dBm, of the probe request received from the client.
`Assoc`	A "Y" in this field indicates that the client is currently associated to that AP radio.
`Sec since last heard`	Time elapsed since the AP radio heard from the client.
`Sec since last reported`	Time elapsed since the AP radio heard from the client.
`Last heard`	Date and time at which the AP last heard from the client

Related Commands

Use the following command to enable the client match feature:

- rf arm-profile client-match

The following commands display additional statistics for the client match feature:

- show ap arm client-match neighbors
- show ap arm client-match restriction-table
- show ap arm virtual-beacon-report
- show ap arm client-match unsupported
- show ap arm client-match summary
- show ap arm client-match history

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm client-match restriction-table

```
show ap arm client-match restriction-table
   ap-name <name>
   ip-addr <ipaddr>
   ip6-addr <ip6-addr>
```

Description

If the client match feature is enabled, the output of this command displays the list of clients that the client match feature has restricted from the specified AP.

Syntax

Parameter	Description
`ap-name <name>`	Name of the AP for which you want to view the list of restricted clients
`ip-addr <ipaddr>`	IPv4 address of the AP for which you want to view the list of restricted clients
`ip6-addr <ipaddr>`	IPv6 address of the AP for which you want to view the list of restricted clients

Usage Guidelines

If the client match feature is enabled, the controller sends APs a list of clients that should not be allowed to associate to that AP. These lists of restricted clients help the client associate to the best AP, by preventing the client from associating with a sub-optional AP radio. The output of this command shows a list of all clients that were ever blacklisted from the specified AP.

Example

```
(host)#show ap arm client-match restriction-table ap-name <ap-name>

   Client Restriction Table for Wifi0
   ----------------------------------
   Client MAC         Time last restricted     Restricted(Cur/Last)
   ----------         --------------------     --------------------
   24:77:03:32:88:ec  Wed Apr 10 03:51:00 2014  0

   PS deauth  Probe(home/scan/bc_ssid)  Auth(home/scan)
   ---------  ------------------------  ---------------
   -          2/0/no                    4/0

   Time since last restriction(sec)  Radio Bssid
   --------------------------------  -----------
   18603                             00:1a:1e:89:c0:d0

   Client Restriction Table for Wifi1
   ----------------------------------
   Client MAC         Time last restricted    Restricted(Cur/Last)
   ----------         --------------------    --------------------
   24:77:03:32:7b:cc  Wed Apr 10 03:47:16 2014  0

   PS deauth  Probe(home/scan/bc_ssid)  Auth(home/scan)
   ---------  ------------------------  ---------------
   0/0/no     0/0/no                    0/0
```

```
Time since last restriction(sec)  Radio Bssid
--------------------------------  -----------
3866                              00:1a:1e:89:c0:c0
```

The output of this command includes the following parameters:

Parameter	Description
`Client MAC`	Displays the MAC address of the client that Client Match is attempting to steer.
`Time last restricted`	Displays the date and time at which the client was last steered in the vicinity of this radio.
`Restricted(Cur/Last)`	A "1" in this field indicates that the client is currently in the process of being steered to another radio.
`PS deauth`	Displays if the client is in power save mode when client match is attempting to steer the client.
`Probe(home/scan/bc_ssid)`	Displays the number of probe requests received on home channel, AP scanning, and SSID broadcast probe.
`Auth(home/scan)`	Displays the number of probe requests received on home channel and AP scanning for 802.11 authentication frames.
`Time since last restricted`	Display the time (in seconds) since the client was last steered in the vicinity of this radio.
`Radio Bssid`	Displays the unique hard-wireless MAC address of the AP. A unique BSSID applies to each frequency– 802.11a and 802.11g–used from the AP.

Related Commands

Use the following command to enable the client match feature

- rf arm-profile client-match

The following commands display additional statistics for the client match feature

- show ap arm client-match probe-report
- show ap arm client-match neighbors
- show ap arm virtual-beacon-report
- show ap arm client-match unsupported
- show ap arm client-match summary
- show ap arm client-match history

Command History

Release	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.4.1.0	Following parameters were introduced: • **PS deauth** • **Probe(home/scan/bc_ssid)** • **Auth(home/scan)** • **Radio Bssid** The following parameters were modified: • **Time last restricted** • **Restricted(Cur/Last)** • **Time since last restricted**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm client-match summary

```
show ap arm client-match summary [client-mac <macaddr>]|[advanced]
```

Description

If the client match feature is enabled, the output of this command shows the history of AP association changes triggered by the client match feature.

Syntax

Parameter	Description
`client-mac <macaddr>`	MAC address of a client for which you want to view a history of AP association changes triggered by the client match feature.
`advanced`	Display advanced debugging information. Include this parameter only under the supervision of Dell support.

Example

The following command displays information on the Client Match summary.

```
(host) #show ap arm client-match summary

SM: Sticky Moves, BM: Bandsteer Moves, LM: Load Balance Moves, VM: VHTsteer Moves, T: Total,
S: Success, R: Reject, TO: Timeout
Client Match Summary
--------------------
MAC                 SM (T/S)  BM (T/S)  LM (T/S)  VM (T/S)  Moves (T/S)   Last Move
(Time/Rsn/Dur))          Device Type  11v Moves (T/S/R/TO)
---                 --------  --------  --------  --------  -----------   ----------------------
----          -----------  --------------------
84:38:38:20:df:68  0/0       1/1       0/0       0/0       1/1           Aug 13 15:58:51
2014/Bandsteer/X  UNKNOWN      1/1/0/0
Total clients:1
Sticky Moves (T/S):0/0
Bandsteer Moves (T/S):1/1
VHTsteer Moves (T/S):0/0
Load Balance Moves (T/S):0/0
Moves using 11v BTM (T/S):1/1
```

The output of this command includes the following parameters:

Parameter	Description
`MAC`	MAC address of the client that was moved to a different AP radio.
`Sticky Moves(T/S)`	The output of this column shows the following two values: • T: Total number of times the client match feature attempted to move a mobile roaming client because it was staying associated (sticking) to a sub-optimal AP. • S: Number of times the client match successfully moved a mobile roaming client because it was staying associated (sticking) to a sub-optimal AP.

Parameter	Description
`Bandsteer Moves(T/S)`	The output of this column shows the following two values: • T: Total number of times the client match feature attempted to steer a dual-band client to a 5GHz radio. • S: Number of times the client match feature successfully moved a dual-band client to a 5GHz radio.
`Load Balance Moves (T/S)`	The output of this column shows the following two values: • T: Total number of times the client match feature attempted to move an AP to a different radio on dual-radio AP to balance the client load between the AP radios. • S: Number of times the client match feature successfully moved an AP to a different radio on dual-radio AP to balance the client load between the AP radios.
`VHT Steer Moves(T/S)`	The output of this column shows the following two values: • T: Total number of times the client match feature attempted to steer a VHT-capable (802.11ac) client from an 802.11n radio to a VHT radio that supports 802.11ac. • S: Number of times the client match feature successfully steered a VHT-capable (802.11ac) client from an 802.11n radio to a VHT radio that supports 802.11ac.
`Moves(T/S)`	The output of this column shows the following two values: • T: Total number of times the client match feature attempted to move an AP to a different radio. • S: Number of times the client match feature successfully moved an AP to a different radio.
`Last Move`	This column shows the date and time the client was steered to a different AP radio, the reason why the client match feature made the change, and the number of seconds it took for the change to take place. Possible reasons include: • **Sticky**: A mobile roaming client was staying associated (sticking) to a sub-optimal AP for too long. • **Band steer**: A dual-band capable client was steered toward a 5Ghz radio on a dual-band AP. • **Band Balance**: A dual-band capable client was steered toward a different radio to balance the load between the two radios on a single AP. • **Load Balance**: Client match moved the client to a different AP, based upon the load on APs in the client's RF neighborhood, and the SNR levels the client detected from each underutilized AP. • **VHT Steer:** A client was steered to a very-high-throughput radio that supports 802.11ac.
`Device type`	Type of client, if the value can be determined.
`11v Moves (T/S/R/TO)`	The output of this column shows the following values:

Parameter	Description
	• T: Total number of times the client match feature attempted to move an AP to a different radio using the dot11v BSS transition management request. • S: Number of times the client match feature successfully moved an AP to a different radio using the dot11v BSS transition management request. • R: Number of times the dot11v BSS transition management request was rejected. • TO: Number of times the dot11v BSS transition management request timed out.

The advanced command provides additional information on the Client Match summary.

```
(host) #show ap arm client-match summary advanced

SM: Sticky Moves, BM: Bandsteer Moves, LM: Load Balance Moves, VM: VHTsteer Moves, T: Total,
S: Success, R: Reject, TO: Timeout FA: False Accept
A: Acceptable, L: Too Long, W: Wrong Radio, UF: Uncontrolled Radio(Full VBR), UI: Uncontrolled
Radio(Incomplete VBR), M: Multiple SSIDs
Client Match Summary
---------------------
MAC  SM (T/S/A/L/W/UF/UI/M)  BM (T/S/A/L/W/UF/UI/M)  LM (T/S/A/L/W/UF/UI/M)  VM
(T/S/A/L/W/UF/UI/M)  Moves (T/S/A/L/W/UF/UI/M)  Last Move (Time/Rsn/Dur))       Device Type
     SAP miss/Stale/11v/Other/SSID check/Unst
---  ---------------------  ---------------------  ---------------------  -----------------
----  ------------------------  ------------------------       -----------         ---------
------------------------------

Total clients:0
Sticky Moves (T/S/A/L/W/UF/UI/M):0/0/0/0/0/0/0/0/0
Bandsteer Moves (T/S/A/L/W/UF/UI/M):0/0/0/0/0/0/0/0/0
VHTsteer Moves (T/S/A/L/W/UF/UI/M):0/0/0/0/0/0/0/0/0
Load Balance Moves (T/S/A/L/W/UF/UI/M):0/0/0/0/0/0/0/0/0
```

Related Commands

Use the following command to enable the client match feature:

- rf arm-profile client-match

The following commands display additional statistics for the client match feature:

- show ap arm client-match probe-report
- show ap arm client-match neighbors
- show ap arm client-match restriction-table
- show ap arm virtual-beacon-report
- show ap arm client-match unsupported
- show ap arm client-match history

Command History

Version	Description
ArubaOS 6.3	Command Introduced.
ArubaOS 6.4.3.0	Introduced the following output parameters: • **VHT Steer Moves** • **Moves** • **11v Moves**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm client-match unsupported

```
show ap arm client-match unsupported
```

Description

If the client match feature is enabled, the output of this command displays a list of clients that failed to be steered to a more optimal AP, and the reason the initial steering request was triggered,.

Syntax

No parameters.

Usage Guidelines

The controller also keeps track of the number of times the client match feature failed to steer a client to a different radio, and the reason that each steer attempt was triggered. If the client match feature attempts to steer a client to a new radio multiple consecutive times for the same reason but client steering fails each time, the controller notifies the AP to mark the client as unsteerable for that specific trigger.

Example

```
(host) #show ap arm client-match unsupported

Client Match Unsteerable Clients
--------------------------------
MAC  Unsteerable Flags  Last Steer Time  Expiry Time                    Total
steers/successful
---  -----------------  ---------------  -----------                    ----------------------
--
S: Sticky L: Load Balance V: VHT steer B: Bandsteer I: IOS T: Temporary

Total Unsteerable Clients:0
```

The output of this command includes the following parameters:

Parameter	Description
MAC	MAC address of the client that could not be steered to a different AP radio.
Unsteerable Flags	The client is marked unsteerable under specific client steer triggers. These triggers include: • **Sticky:** A mobile roaming client was staying associated (sticking) to a sub-optimal AP for too long. • **Band steer:** A dual-band capable client was steered toward a 5GHz radio on a dual-band AP. • **Load Balance:** Client match moved the client to a different AP, based upon the load on APs in the client's RF neighborhood, and the SNR levels the client detected. from each underutilized AP. • **IOS:** An IOS device is temporarily prevented from steering to avoid blacklisting the ESS. • **Temporary:** A client is temporarily prevented from steering after undergoing a successful band steer, then reverting back to a 2.4GHz radio.

Parameter	Description
`Last Steer Time`	Timestamp showing the date and time the client match feature failed to associate the client to a different AP radio.
`Expiry Time`	The amount of time before a client steer attempt expires.
`Total steer-s/successful`	The total number of client steer attempts, and the number of successful client steer attempts.

Related Commands

Use the following commands to enable the client match feature:

- rf arm-profile client-match

The following commands display additional statistics for the client match feature:

- show ap arm client-match probe-report
- show ap arm client-match neighbors
- show ap arm client-match restriction-table
- show ap arm virtual-beacon-report
- show ap arm client-match unsupported
- show ap arm client-match summary
- show ap arm client-match history

Command History

Version	Description
ArubaOS 6.3	Command Introduced.
ArubaOS 6.4.3.0	Introduced the following output parameters: • **Unsteerable Flags** • **Expiry Time** • **Total steers/successful**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm history

```
show ap arm history {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

For each interface on an AP, show the history of channel and power changes due to Adaptive Radio Management (ARM).

Syntax

Parameter	Description
`ap-name <ap-name>`	Show ARM history for an AP with a specific name.
`bssid <bssid>`	Show ARM history for a specific Basic Service Set Identifier (BSSID) on an AP. An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show ARM history for an AP with a specific IP address. Enter the IP address in dotted-decimal format.

Examples

Adaptive Radio Management (ARM) can automatically change channel and power levels based on a number of factors such as noise levels and radio interference. The output of the **show ap arm history** command shows you an AP's channel and power changes over time, and the reason why those changes took place.

```
(host) #show ap arm history ap-name ap-3rd-floor

Interface :wifi0
ARM History
-----------
Time of Change       Old Channel  New Channel  Old Power  New Power  Reason  Result
--------------       -----------  -----------  ---------  ---------  ------  ------
2016-05-08 14:42:35  161E         161E         21         24         P+      Configured
2016-05-08 14:35:25  161E         161E         18         21         P+      Configured
2016-05-08 14:29:41  161E         161E         15         18         P+      Configured
2016-05-08 14:25:13  161E         161E         12         15         P+      Configured
2016-05-08 14:17:29  161E         161E         9          12         P+      Not accepted
2016-05-08 13:37:56  161E         161E         15         9          P-      Configured

Interface :wifi1
ARM History
-----------
Time of Change       Old Channel  New Channel  Old Power  New Power  Reason  Result
--------------       -----------  -----------  ---------  ---------  ------  ------
2016-05-04 15:20:56  11           11           15         9          P-      Configured
2016-05-04 15:12:59  11           11           21         15         P-      Not accepted
2016-05-04 14:35:30  11           11           18         21         P+      Configured
2016-05-04 14:29:17  11           11           15         18         P+      Overridden
2016-05-04 14:23:10  11           11           12         15         P+      Configured
2016-05-04 14:17:12  11           11           9          12         P+      -
```

```
I: Interference, R: Radar detection, N: Noise exceeded, Q: Bad Channel Quality E: Error
threshold exceeded,
INV: Invalid Channel, G: Rogue AP Containment, M: Empty Channel, P+: Increase Power, P-:
Decrease Power,
40INT: 40MHZ intol detected on 2.4G, NO40INT: 40MHz intol cleared on 2.4G, OFF: Turn off
Radio,
ON: Turn on Radio, D: Dynamic Bandwidth Switch, I*: CCA Interference
```

The output of this command includes the following information:

Parameter	Description
`Time of Change`	Time elapsed since the change, in the format *yyyy-mm-dd hours:minutes:seconds*.
`Old Channel`	Channel number used by the AP interface before the ARM change.
`New Channel`	Channel number used by the AP interface after the ARM change.
`Old Power`	Power level of the AP interface before the ARM change.
`New Power`	Power level of the AP interface after the ARM change.
`Reason`	This column displays one of the following code to indicate why the channel or power change was made. • **I**: Interference • **R**: Radar detected • **N**: Noise exceeded • **E**: Error threshold exceeded • **INV**: Invalid Channel • **G**: Rogue AP Containment • **M**: Empty Channel • **P+**: Increase Power • **P-**: Decrease Power • **OFF**: Turn off Radio • **ON**: Turn on Radio The Reason key appears at the bottom of the ARM History table.
`Result`	This column displays if the previous ARM request of channel or Equivalent Isotropically Radiated Power (EIRP) change is accepted, and the radio is configured accordingly. This column can have the following values: • **Configured**: ARM's channel or EIRP change request is applied to the radio. • **Not accepted**: ARM's channel or EIRP change request is not accepted. This may be due to a loss of the request message, a loss of the configuration message, full station management queue, or more. • **Overridden**: Request is sent; but radio configuration applied is different from the one that was requested. • **–**: Feedback unidentified.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.5	The **Result** column was introduced to the output of this command to indicate the status of the requested change in channel or EIRP by ARM.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap arm neighbors

```
show ap arm neighbors {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Show the ARM settings for an AP's neighbors.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID). An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address. Enter the IP address in dotted-decimal format.

Examples

The output of this command shows ARM neighbor information for AP name **ap70_1**.

```
(host)# show ap arm neighbors ap-name ap70_1

BSSID: BSSID of discovered radio
ESSID: ESSID of discovered radio/Src BSSID through which the neighbor is discovered
Channel: Channel of operation of discovered radio
SNR: Signal to noise ratio of discovered radio
tx-power: Tx Power of disovered radio (if known)
PL: Path loss to discovered radio (using txpower and SNR)
AP Flags: Active: Discovered using OTA updates
          Passive: Discovered using passive scan
          Indirect: Two hop neighbors discovered using neighbors OTA update
Last Update: Timestamp when last OTA update was received (total OTA updates)

ARM Neighbors
-------------
BSSID              ESSID      Channel  SNR  Tx-power  PL (dB)  AP Flags  Last Update (Total
updates)
-----              -----      -------  ---  --------  -------  --------  ----------------------
------
6c:f3:7f:b6:68:14  ssid-ap1   153      49   22        69       Passive
18:64:72:93:6a:f2  ssid-ap2   132      48   24        68       Passive
18:64:72:02:24:30  ssid-ap3   153      47   18        63       Passive
18:64:72:01:f8:f0  ssid-ap4   36       60   22        0        Indirect  2015-03-12 16:38:26
9c:1c:12:fe:96:e4  ssid-ap5   11       33   18        123      Indirect  2015-03-13 08:37:18
6c:f3:7f:4b:64:23  ssid-ap6   6        51   20        125      Active    2015-03-12 14:05:48
```

The output of this command includes the following information:

Parameter	Description
BSSID	BSSID of the discovered radio of the AP.
ESSID	ESSID of the discovered radio of the AP or source BSSID through which the neighbor is discovered.
Channel	Channel of operation of the discovered radio of the AP.
SNR	Signal to noise ratio of the discovered radio of the AP.
Tx-power	Transmitter power of the discovered radio of the AP (if known).
PL (dB)	Path loss to the discovered radio (using tx-power and SNR)
AP Flags	• **Active**: Discovered using Over-The-Air (OTA) updates • **Passive**: Discovered using passive scan • **Indirect**: Two hop neighbors discovered using neighbors OTA update
Last Update	Time stamp when last OTA update was received (total OTA updates)

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4.3.0	Introduced CLI help text before the output table.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm rf-summary

```
show ap arm rf-summary {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>} [verbose]
```

Description

Show the state and statistics for all channels being monitored by an individual AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show channel data for an AP with a specific name.
`bssid <bssid>`	Show channel data for a specific Basic Service Set Identifier (BSSID) on an AP. An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show channel data for an AP with a specific IP address. Enter the IP address in dotted-decimal format.
`verbose`	(Optional) Include the channel quality history for all channels on the AP's radios in the output of this command.

Examples

The output of this command shows detailed information for the individual channels being monitored and statistics for each AP interface. Use this command verify an AP's RF health, or to determine why multiple APs in the same area are on the same channel.

```
(host) #show ap arm rf-summary ap-name ap-225

Channel Summary
---------------
channel  retry  phy-err  mac-err  noise  util(Qual)     cov-idx(Total)  intf_idx(Total)
-------  -----  -------  -------  -----  ----------     --------------  ---------------
36       0      0        0        92     0/0/0/0/95     0/0(0)          118/18//0/0(136)
40       0      0        0        89     8/1/2/1/95     0/0(0)          139/47//0/0(186)
44       0      0        0        89     7/0/2/2/95     0/0(0)          117/36//0/0(153)
48       0      0        0        89     10/3/2/0/96    0/0(0)          175/109//0/0(284)
52       0      0        0        90     9/2/2/2/95     0/0(0)          328/87//0/0(415)
56       0      0        0        90     6/0/2/3/96     0/0(0)          81/128//0/0(209)
60       0      0        0        89     8/1/2/0/95     0/0(0)          385/49//0/0(434)
64       0      0        0        90     8/1/2/1/95     0/0(0)          65/0//0/0(65)
149      0      0        0        92     7/3/0/0/94     0/0(0)          349/48//0/0(397)
153      0      0        0        93     6/6/0/0/95     0/0(0)          428/105//0/0(533)
157      0      0        0        92     10/3/2/0/95    0/0(0)          290/229//0/0(519)
161      0      0        9        92     4/1/0/6/95     7/0(7)          308/114//0/0(422)
11       0      0        10       91     58/51/1/0/94   7/0(7)          1064/284//0/0(1348)

Columns:util(Qual): ch-util/rx/tx/ext-ch-util/quality

HT/VHT Channel Summary
----------------------
Bandwidth  Channel range  Total interference index
---------  -------------  ------------------------
40MHz       36-40         0
```

```
40MHz       132-136         0
80MHz        52-64          0
80MHz       100-112         0
160MHz       36-64          0

Interface Name            :wifi0
Current ARM Assignment    :161-/21
Covered channels a/g      :1/0
Free channels a/g         :3/0
ARM Edge State            :disable
Last check channel/pwr    :7m:13s/22s
Last change channel/pwr   :32m:22s/10h:15m:40s
Next Check channel/pwr    :33s/4m:43s
Assignment Mode           :Single Band
Interface Name            :wifi1
Current ARM Assignment    :11/21
Covered channels a/g      :0/1
Free channels a/g         :0/0
ARM Edge State            :disable
Last check channel/pwr    :3m:25s/2m:1s
Last change channel/pwr   :10h:15m:40s/10h:15m:40s
Next Check channel/pwr    :1m:4s/3m:59s
Assignment Mode           :Single Band
```

The output of this command includes the following information:

Parameter	Description
channel	Number of a radio channel used by the AP.
retry	Number of 802.11 retry frames sent because a client failed to send an ACK.
phy-err	Number of PHY errors on the AP's current channel seen during the last second.
mac-err	Number of MAC errors on the AP's current channel seen during the last second.
noise	Current noise level, in -dBm.
util(Qual)	The quality of the channel based on the channel utilization.
cov-idx	The AP uses this metric to measure RF coverage. The coverage index is calculated as x+y, where "x" is the AP's weighted calculation of the Signal-to-Noise Ratio (SNR) on all valid APs on a specified 802.11 channel, and "y" is the weighted calculation of the Dell APs SNR the neighboring APs see on that channel.
intf_idx	The AP uses this metric to measure co-channel and adjacent channel interference. The Interference Index is calculated as a/b//c/d, where: • Metric value "a" is the channel interference the AP sees on its selected channel. • Metric value "b" is the interference the AP sees on the adjacent channel. • Metric value "c" is the channel interference the AP's neighbors see on the selected channel.

Parameter	Description
	• Metric value “d” is the interference the AP’s neighbors see on the adjacent channel. • To calculate the total Interference Index for a channel add “a+b+c+d”.
`Interface Name`	Name of the fastethernet or gigabit Ethernet interface
`Current ARM Assignment`	Current channels assigned by the AP’s ARM profile.
`Target Coverage Index`	Ideal value of coverage index an AP tries to achieve on its channel.
`Covered channels a/g`	Number of channels that are currently being used by an AP’s BSSIDs.
`Free channels a/g`	Number of channels that are available to an AP because that channel has a lower interference index.
`ARM Edge State`	If enabled, ARM-enabled APs on the network edge will not become Air Monitors.
`Last check channel/pwr`	Time elapsed since the AP checked its channel and power settings, in *hour:minute:second* format.
`Last change channel/pwr`	Time elapsed since the AP changed its channel and power settings, in *hour:minute:second* format.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.3	A new column **util(Qual)** was added to the output to indicate the channel quality.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm scan-times

```
show ap arm scan-times {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>}
```

Description

Shows channel scan times for an individual AP and information on the channel being scanned.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show channel scan data for an AP with a specific name.
`bssid <bssid>`	Show channel scan data for a specific Basic Service Set Identifier (BSSID) on an AP.
`ip-addr <ip-addr>`	Show channel scan data for an AP with a specific IP address. Enter the IP address in dotted-decimal format.

Examples

The output of this command shows scan times for every channel on W-AP225.

```
(host) #show ap arm scan-times ap-name W-AP225

Channel Scan Time
-----------------
channel  assign-time(ms)  scans-attempted  scans-rejected  scans-deferred  dos-scans  flags
   timer-tick
-------  ---------------  ---------------  --------------  --------------  ---------  -----
   ----------
44       796070           7237             0               0               0          DACLYS
   183703
140      704550           6405             0               0               0          DALY
   183715
144      395780           3598             0               0               0          DAUY
   183689
149      14550890         7399             0               0               0
DVACLYFETS  183695
14       488400           4440             0               0               0          DA
   183713

Channel Flags: D: All-Reg-Domain Channel, C: Reg-Domain Channel, A: Activity Present
L: Scan Secondary Above, U: Scan Secondary Below, Y: Scan 80MHz, Z: Rare Channel
V: Valid, T: Valid 20MHZ Channel, F: Valid 40MHz Channel,  P: Valid 40MHZ Channel Pair
E: Valid 80MHz Channel (lower 20M), B: Belongs to valid 80MHz channel
O: DOS Channel, K: DOS 40MHz Upper, H: DOS 40MHz Lower, N: Split Channel Scan
R: Radar detected in last 30 min, X: DFS required, S: Transmit Allowed
J: Unconventional Scan 40MHz Above, M: Unconventional Scan 40MHz Below

WIFI Channel Scanning State
---------------------------
Scan mode   channel  current-scan-channel  last-dos-channel  timer-milli-tick  next-scan-
milli-tick (jitter)  scans (Tot:Rej:Eff(%):Last intvl(%))
---------   -------  --------------------  ----------------  ----------------  ---------------
-------------  ------------------------------------
Aggressive  153E     161E                  0                 180855370         180855550 (-
219)              181716:0:100:100
```

```
Aggressive  11       3+                    0                 180855370         180855960 (163)
              181658:0:100:100

Group Scan Time
-----------------
channels         assign-time(ms)  scans-attempted  scans-rejected  scans-deferred  group-width
 timer-tick
--------         ---------------  ---------------  --------------  --------------  -----------
 ----------
34               113960           1036             0               0               20MHz
 183544
36,40,44,48      3184390          28949            0               0               80MHz
 183711
38               114070           1037             0               0               20MHz
 183575
42               114070           1037             0               0               20MHz
 183591
```

The output of this command includes the following parameters:

Parameter	Description
channel	Displays the channels in the group.
assign-time (ms)	The cumulative time spent on the channel.
scans-attempted	The number of times an AP attempted to scan a channel.
scans-rejected	The number of times an AP attempted to scan a channel, but was unable to scan because the scan was halted by the power save, VoIP aware, or load aware ARM features.
scans-deferred	The number of times an AP deferred to scan a channel due to an event such as a radar detection.
dos-scans	The number of times an AP visited the channel to contain a rogue device.
flags	Displays additional information about the channel. The flags key is displayed at the bottom of the Channel Scan Time table.
group_width	The channel width of the group.
timer-tick	The timer-tick of the last scan.

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4.3.0	The following parameters were introduced under **Group Scan Times**: • **channels** • **assign-time (ms)** • **scans-attempted** • **scans-rejected** • **scan-deferred** • **group-width** • **timer-tick**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm split-scan-history

```
show ap arm split-scan-history {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>}
```

Description

Show scanning information for a "split-scan", where ARM performs an additional scans on each channel within a 40 MHz channel pair or 80 MHz channel set.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show scan data for an AP with a specific name.
`bssid <bssid>`	Show scan data for a specific Basic Service Set Identifier (BSSID) on an AP. An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show scan data for an AP with a specific IP address. Enter the IP address in dotted-decimal format.

Usage Guidelines

Starting with ArubaOS 6.3.1, if ARM reports a high noise floor on a channel within a 40 MHz channel pair or 80 MHz channel set, ARM performs an additional 20 MHz scan on each channel within that channel pair or set, to determine the actual noise floor of each affected channel. This allows ARM to avoid assigning the overutilized channel, while still allowing channel assignments to the other unaffected channels in that channel pair or set.

Examples

The output of this command shows information about one split-scan performed on channel 161E.

```
(host)# show ap arm split-scan-history ap-name 1242-ac
Interface :wifi0
Split Scan History
------------------
Time of setup        Channel scan  Number of Split scans  Noise Floor
-------------        ------------  ---------------------  -----------
2013-10-08 03:11:40  161E          4                      69
Interface :wifi1
```

The output of this command includes the following parameters:

Parameter	Description
`Time of setup`	Timestamp showing the date and time the scan was performed
`Channel Scan`	The channel pair or channel set scanned
`Number of Split Scans`	The number of times ARM performed an additional split scan.
`Noise Floor`	Noise floor recorded on the primary channel within that channel pair or channel set.

Command History

Introduced in ArubaOS 6.3.1

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm state

```
show ap arm state [ap-name <ap-name>|dot11a|dot11g|ip-addr <ip-addr>]
```

Description

Display Adaptive Radio Management (ARM) information for an individual AP's neighbors, or show all available data for any neighboring AP using an 802.11a or 802.11g radio type.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show aggregate ARM Neighbor Information for a specific AP.
`dot11a`	Show aggregate ARM Neighbor Information for all APs using an 802.11a radio.
`dot11g`	Show aggregate ARM Neighbor Information for all APs using an 802.11g radio.
`ip-addr <ip-addr>`	Show aggregate ARM Neighbor Information for a AP with a specific IP address by entering its IP address in dotted-decimal format.

Usage Guidelines

The output of the **show ap arm state** command shows 802.11a and 802.11g information for all APs. Include an AP name or IP address to show data for just a single AP, or use the **dot11a** or **dot11g** keywords to show data for all APs using that radio type.

Examples

The output of this command shows 802.11a information for all neighboring APs.

```
(host)# show ap arm state

show ap arm state ap-name AP49
AP-1249:10.100.139.233:52:21:26-Edge:disable : Client Density:13
Neighbor Data
-------------
Name               IP Address SNR  Assignment  Neighbor Density
----               ----------      ---  ----------  ----------------
AP42               10.100.139.249  41   52/21       13/17/100/76
AP09               10.100.139.224  22   56/21       3/5/23/60
AP48               10.100.139.241  36   60/21       9/11/69/81
```

The output of this command includes the following information:

Column	Description
`Name`	Name of an AP.
`IP address`	IP address of an AP.

Column	Description
SNR	Signal-to-noise (SNR) ratio. SNR is the power ratio between an information signal and the level of background noise.
Assignment	The AP's current channel assignment.
Neighbor Density	The neighborhood density for the specified AP is listed with the values A/B/C/D, where: • A= Number of the AP's clients heard in the AP neighbor's client list • B= Number of clients in AP neighbor's client list • C= Density percentage, (AP clients heard in in the AP neighbor client list / AP client density * 100). • D= Density Percentage (AP clients heard in the AP neighbor's client list / neighbor client density * 100)

Command History

Version	Description
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The **neighbor density** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm status

```
show ap arm status {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Issue this command under the supervision of Dell support to display detailed debugging Adaptive Radio Management (ARM) information and ARM status counters for an individual AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show ARM status for an AP with a specific name.
`bssid <bssid>`	Show ARM status for a specific Basic Service Set Identifier (BSSID) on an AP. An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show ARM status for an AP with a specific IP address. Enter the IP address in dotted-decimal format.

Usage Guidelines

The output of the **show ap arm status** command shows internal ARM status counters that can be used by Dell support for debugging purposes.

Command History

Version	Description
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap arm virtual-beacon-report

```
show ap arm virtual-beacon-report
   ap-name <name>
   ip-addr <ipaddr>
   ip6-addr <ip6-addr>
   phy-type 80211a|80211b|80211g
```

Description

If the client match feature is enabled, the output of this command displays the virtual beacon report for an AP with a specific IP or MAC address.

Syntax

Parameter	Description
`ap-name <name>`	Name of an AP for which you want to view a virtual beacon report.
`ip-addr <ipaddr>`	IPv4 address of an AP for which you want to view a virtual beacon report.
`ip6-addr <ipv6addr>`	IPv6 address of an AP for which you want to view a virtual beacon report.
`phy-type`	Display virtual beacon report data for an AP radio with one of the following phy types: • 80211a • 80211b • 80211g

Usage Guidelines

If the client match feature is enabled, the controller sends APs a list of clients that should not be allowed to associate to that AP.

Example

```
(host) #show ap arm virtual-beacon-report ap-name 1263-ac

Interface:wifi0
Rx VBR Reports:683

Client MAC:24:77:03:cf:fa:5c
Dual band:Yes
Active Voice:No
Steerable:Yes
Dual network capable:No
Current Association:6c:f3:7f:e7:5a:b0

Virtual Beacon Report
---------------------
AP                 Channel  Signal (dBm)  EIRP  Assoc
--                 -------  ------------  ----  -----
9c:1c:12:fd:d2:10  60       -76           12
9c:1c:12:fd:d2:00  1        -66           12
```

```
9c:1c:12:fe:13:50  52       -73          21
9c:1c:12:fe:0f:d0  52       -74          24
9c:1c:12:fd:f7:b0  44       -49          20
6c:f3:7f:e7:5a:b0  60       -73          12    Y
9c:1c:12:fd:f2:30  60       -69          12
9c:1c:12:fd:f7:a0  1        -55          12
9c:1c:12:fd:f2:20  1        -65          12
9c:1c:12:fe:13:40  1        -68          12
```

The output of this command includes the following parameters:

Parameter	Description
AP	MAC address of the AP from which the client can detect a signal
Channel	Channel on which the signal was deteched
Signal	Signal strength, in dBm, of the probe request received from Client
EIRP	Amount of power transmitted from the AP antennae
Assoc	A "Y" in this field indicates that the client is currently associated to that AP radio

Related Commands

Use the following command to enable the client match feature

- rf arm-profile client-match

The following commands display additional statistics for the client match feature

- show ap arm client-match probe-report
- show ap arm client-match neighbors
- show ap arm client-match restriction-table
- show ap arm virtual-beacon-report
- show ap arm client-match unsupported
- show ap arm client-match summary
- show ap arm client-match history

Command History

Version	Description
ArubaOS 6.3	Command Introduced.
ArubaOS 6.4.3.0	The following output parameters were introduced: • **Active Voice** • **Steerable** • **Dual-Network Capable** • **VHT-Capable** • **EIRP**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap association

```
show ap association [ap-name <ap-name>|ap-group <ap-group>|bssid <bssid>|channel
<channel>|client-mac <client-mac>|essid <essid>|ip-addr <ip-addr> |ip6-addr <ip-addr>|phy
{a|b|g}|voip-only]
```

Description

Show the association table for an AP group or for an individual AP.

Syntax

Parameter	Description
`ap-group <ap-group>`	Show AP associations for a specific AP group. You can also include the **channel**, **essid** or **voip-only** keywords to further filter the output of this command.
`ap-name <ap-name>`	Show AP associations for a specific AP. You can also include the **essid**, **phy** or **voip-only** keywords to further filter the output of this command.
`bssid <bssid>`	Show the AP associations for an specific AP Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`channel <channel>`	Show AP associations for an individual channel by specifying the channel for which you want to view information.
`client-mac <client-mac>`	Show the AP associations for a specific MAC address by entering the MAC address of a client for which you want to view association information.
`essid <essid>`	Show AP associations for an Extended Service Set Identifier (ESSID). An Extended Service Set Identifier (ESSID) is a alphanumeric name that uniquely identifies a wireless network. If the name includes spaces, you must enclose the ESSID in quotation marks.
`ip-addr <ip-addr>`	Show AP associations for a specific AP by entering an IP address in dotted-decimal format. You can also include the **essid**, **phy** or **voip-only** keywords to further filter the output of this command.
`ip6-addr <ip-addr>`	Ahow AP association for a specific AP by entering an IPv6 address.
`phy`	Include the **phy** [**a**|**b**|**g**] keywords to show associations for a specific 802.11 radio type, either 802.11a, 802.11b or 802.11g.
`voip-only`	Show VoIP client information only.

Usage Guidelines

Use this command to check if user is connected to an AP. This command validates whether the client is associated and indicates the last AP to which it was connected. If the flags column shows an 'A', the client is

currently associated with that AP. Alternately, if the client is not currently associated, the AP with the smallest value of association time is the last AP used by the client.

Example

Use the **show ap association client-mac** command to verify that a user has associated with an AP, or to determine last AP to which the client was connected. The output of this command in the example below shows the association table for the client with the MAC address 00:13:fd:5c:7c:59. If the flags column in the output of this command shows an '*A*', the client associated last to that AP. Alternately, the AP with the smallest value of association time is the last AP to which the client had associated.

In the example below, the output of this command has been broken into two separate tables to better fit this page. In the actual output of the command, this information is shown in a single, wide table.

```
(host) #show ap association client-mac  00:13:fd:5c:7c:59

Flags: W: WMM client, A: Active, R: RRM client
PHY Details: HT: High throughput; 20: 20MHz; 40: 40MHzss:  spatial streams

Association Table
-----------------
Association Table
-----------------
-----------------
Name  bssid              mac                auth  assoc  aid  l-int  essid
----  -----              ---                ----  -----  ---  -----  -----
AL12  00:1a:1e:11:5f:11  00:21:5c:50:b1:ed  y     y      12   10     ethersphere-wpa2AL5
00:1a:1e:88:88:31  00:19:7d:d6:74:93  y     y      6    10     ethersphere-wpa2

vlan-id  tunnel-id  phy            assoc. time  num assoc  Flags
-------  ---------  ---            -----------  ---------  -----
65       0x10c4     a-HT-40sgi-2ss  35m:41s      1          WA65       0x1072     a
                                                                24m:29s      1          WA
```

The output of this command includes the following information:

Column	Description
Name	Name of an AP
bssid	The AP Basic Service Set Identifier (BSSID)
mac	MAC address of the AP
auth	This column displays a **y** if the AP has been configured for 802.11 authorization frame types. Otherwise, it displays an **n**.
assoc	This column displays a **y** if the AP has been configured for 802.11 association frame types. Otherwise, it displays an **n**.
aid	802.11 association ID. A client receives a unique 802.11 association ID when it associates to an AP.

Column	Description
1-int	Number of beacons in the 802.11 listen interval. There are ten beacons sent per second, so a ten-beacon listen interval indicates a listen interval time of 1 second.
essid	Name that uniquely identifies the AP's Extended Service Set Identifier (ESSID).
vlan-id	Identification number of the AP's VLAN.
tunnel-id	Identification number of the AP's tunnel.
assoc. time	Amount of time the client has associated with the AP, in the format *hours:minutes:seconds*.
num assoc	Number of clients associated with the AP.
flags	This column displays any flags for this AP. The list of flag abbreviations is included in the output of the **show ap association** command.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap association remote

```
show ap association remote [ap-name <ap-name>|ap-group <ap-group>|bssid <bssid>|channel
<channel>|essid <essid>
```

Description

Display the association table for an individual AP or group of APs in bridge mode.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show AP associations for a specific remote AP.
`ap-group <ap-group>`	Show AP associations for a specific group of remote APs.
`bssid <bssid>`	Show the AP associations for an specific AP Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`channel <channel>`	Show remote AP associations for a specific channel.
`essid <essid>`	Show remote AP associations for an Extended Service Set Identifier (ESSID). An Extended Service Set Identifier (ESSID) is a alphanumeric name that uniquely identifies a wireless network. If the name includes spaces, you must enclose the ESSID in quotation marks.

Examples

The output of the command below shows the association table for clients in the AP group **group1**.

```
show ap association remote ap-group group1

Flags: W: WMM client, A: Active, R: RRM client
PHY Details: HT: High throughput; 20: 20MHz; 40: 40MHz ss:  spatial streams

Association Table
-----------------
Name    bssid
essid  vlan-id  tunnel-id phy  assoc.time  num assoc  Flags
----    -----
-  -------  --------- ---  ----------  ---------  -----
AP71 00:0b:23:c1:d6:11 00:12:6d:03:1c:f1        y              y                          1
                        a                       23s
Num Clients:1
```

The output of this command includes the following information:

Column	Description
Name	Name of an AP

Column	Description
bssid	The AP Basic Service Set Identifier (BSSID)
mac	MAC address of the AP
auth	This column displays a **y** if the AP has been configured for 802.11 authorization frame types. Otherwise, it displays an **n**.
assoc	This column displays a **y** if the AP has been configured for 802.11 association frame types. Otherwise, it displays an **n**.
aid	802.11 association ID. A client receives a unique 802.11 association ID when it associates to an AP.
1-int	Number of beacons in the 802.11 listen interval. There are ten beacons sent per second, so a ten-beacon listen interval indicates a listen interval time of 1 second.
essid	Name that uniquely identifies the AP's Extended Service Set Identifier (ESSID).
vlan-id	Identification number of the AP's VLAN.
tunnel-id	Identification number of the AP's tunnel.
phy	The RF band in which the AP should operate: **g** = 2.4 GHz **a** = 5 GHz
assoc. time	Amount of time the client has associated with the AP, in the format *hours:minutes:seconds*.
num assoc	Number of clients associated with the AP.
flags	This column displays any flags for this AP. The list of flag abbreviations is included in the output of the **show ap association remote** command.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap authorization-profile

```
show ap authorization-profile [<profile-name>]
```

Description

This command shows information for AP authorization profiles.

Syntax

Parameter	Description
<profile-name>	The name of an an existing AP authorization profile.

Usage Guidelines

The AP authorization profile specifies which configuration should be assigned to a remote AP that has been provisioned but not yet authenticated at the remote site. By default, these yet-unauthorized APs are put into the temporary AP group **authorization-group** and assigned the predefined profile **NoAuthApGroup**. This configuration allows the user to connect to an unauthorized remote AP via a wired port then enter a corporate username and password. Once a valid user has authorized the AP and the remote AP will be marked as authorized on the network. The remote AP will then download the configuration assigned to that AP by it's permanent AP group.

Issue this command without the **<profile-name>** option to display the entire AP authorization profile list, including profile status and the number of references to each profile. Include a profile name to display the authorization group defined for that profile.

Examples

The following example lists all AP authorization profiles. The **References** column lists the number of other profiles with references to that authorization profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined AP authorization profiles will not have an entry in the **Profile Status** column.

```
(host) #show ap authorization-profile

AP Authorization profile List
-----------------------------
Name           References  Profile Status
----           ----------  --------------
Noauthprofile  1
default        2                   Predefined (editable)
Total:2
```

To display the authentication group for an individual profile, include the <profile> parameter. The example below shows the profile details for the AP authorization profile **Default**.

```
(host) #show ap authorization-profile default

AP Authorization profile "default" (Predefined (editable))
----------------------------------------------------------
Parameter               Value
---------               -----
AP authorization group  NoAuthApGroup
```

The output of the **show ap authorization** command includes the following parameters:

Parameter	Value
AP authorization group	Name of a configuration profile to be assigned to the group unauthorized remote APs.

Related Commands

Command	Description	Mode
ap authorization-profile	This command defines a temporary configuration profile for remote APs that are not yet authorized on the network.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap blacklist-clients

```
show ap blacklist-clients
```

Description

Show a list of clients that have been denied access.

Usage Guidelines

Use the stm CLI command to add or remove users from a blacklist. Additionally, the **dot1x authentication**, **VPN authentication** and **MAC authentication** profiles allow you to automatically blacklist a client if machine authentication fails.

Examples

The output of this command shows that the controller has a single user-defined blacklisted client.

```
(host)# show ap blacklist-clients

Blacklisted Clients
-------------------
STA                reason        block-time(sec)   remaining time(sec)
---                ------        ---------------   -------------------
00:1E:37:CB:D4:52  user-defined  45                3555
```

The output of this command includes the following information:

Column	Description
STA	MAC address of the blacklisted client.
reason	The reason that the user was blacklisted. • **ARP-attack**: Blacklisted for an ARP attack. • **user-defined:** Blacklisted due to blacklist criteria were defined by the network administrator • **mitm-attack**: Blacklisted for a man in the middle (MITM) attack; impersonating a valid enterprise AP. • **gratuitous-ARP-attack**: Blacklisted for a gratuitous ARP attack. • **ping-flood**: Blacklisted for a ping flood attack. • **session-flood**: Blacklisted for a session flood attack. • **syn-flood**: Blacklisted for a syn flood attack. • **session-blacklist:** User session was blacklisted • **IP spoofing**: Blacklisted for sending messages using the IP address of a trusted client. • **ESI-blacklist**: An external virus detection or intrusion detection application or appliance blacklisted the client. • **CP-flood**: Blacklisting for flooding with fake AP beacons. • **UNKNOWN**: Blacklist reason unknown.

Column	Description
`block-time (sec)`	Amount of time the client has been blocked, in seconds.
`remaining time(sec)`	Amount of time remaining before the client will be allowed access to the network again.

Related Commands

Command	Description	Mode
`stm add-blacklist-client` `stm remove-blacklist-client <macaddr>`	Manually add or remove clients from a blacklist.	Config mode

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4.1.0	The following reason codes were added: • **ARP-attack** • **gratuitous-ARP-attack**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap bss-table

```
show ap bss-table [ap-name <ap-name>|bssid <bssid>|counters|essid <essid>|ip-addr <ip-addr>|ip6-addr <ip-addr>|port <slot>/<module>/<port>|standby>]
```

Description

Show an AP's Basic Service Set (BSS).

Syntax

Parameter	Description
`ap-name <ap-name>`	Show the BSS table for a specific AP.
`bssid <bssid>`	Show the BSS table for an specific AP Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`counters`	Show the BSS table for a specific AP by providing the counter.
`essid <essid>`	Show the BSS table for an Extended Service Set Identifier (ESSID). An Extended Service Set Identifier (ESSID) is a alphanumeric name that uniquely identifies a wireless network. If the name includes spaces, you must enclose the ESSID in quotation marks.
`ap-name`	Filters by AP name.
`ip-addr`	Filters by IP address.
`ip6-addr`	Filters by IPv6 address.
`port`	Filter on port in <slot>/<module>/<port> format.
`ip-addr <ip-addr>`	Show the BSS table for a specific AP by entering an IP address in dotted-decimal format.
`ip6-addr <ip-addr>`	Show the BSS table for a specific AP by providing the IPv6 address.
`port <slot>/<module>/<port>`	Show the BSS table for a specific port and slot on an AP. The slot, module and port numbers should be separated by a forward slash (/).
`standby`	Show the BSS table for a specific AP in standby mode.

Usage Guidelines

The output of the **show ap bss-table** command shows the Dell AP BSS table for all APs. To filter this information and view BSS table data for an individual AP or a specific slot, module and port number, include the **ap-name**, **bssid**, **essid**, **ip-addr** or **port** keywords.

Example

The output of this command shows the BSS table for the seven active APs using the controller.

```
(host) #show ap bss-table

fm (forward mode): T-Tunnel, S-Split, D-Decrypt Tunnel, B-Bridge (s-standard, p-persistent, b-
backup, a-always), n-anyspot
Aruba AP BSS Table
------------------
bss                ess          port  ip            phy    type  ch/EIRP/max-EIRP  cur-cl  ap
name  in-t(s)  tot-t            mtu   acl-state  acl  fm
---                ---          ----  --            ---    ----  ----------------  ------  ---
----  -------  -----            ---   ---------  ---  --
9c:1c:12:fd:ec:e0  qa_testing   N/A   172.16.10.20  g-HT   ap    6/19/19           0       204
     0        27d:21h:54m:23s  1578  -          58   T
9c:1c:12:fd:ec:e1  qa_testing1  N/A   172.16.10.20  g-HT   ap    6/19/19           0       204
     0        27d:21h:54m:23s  1578  -          58   Tn
9c:1c:12:fd:ec:f0  qa_testing   N/A   172.16.10.20  a-VHT  ap    36/10/20          2       204
     0        27d:21h:54m:23s  1578  -          58   T
9c:1c:12:fd:ec:f1  qa_testing1  N/A   172.16.10.20  a-VHT  ap    36/10/20          0       204
     0        27d:21h:54m:23s  1578  -          58   Tn

Channel followed by "*" indicates channel selected due to unsupported configured channel.
"Spectrum" followed by "^" indicates Local Spectrum Override in effect.

Num APs:4
Num Associations:2
```

The output of this command includes the following information:

Column	Description
bss	The AP Basic Service Set Identifier (BSSID). This is usually the MAC address of the AP
ess	The AP Extended Service Set Identifier (ESSID).
port	The slot and port used by the controller, in the format <slot>/<module>/<port>.
ip	IP address of an AP.
phy	An AP radio type. Possible values are: • a—802.11a • a-HT—802.11a high throughput • g— 802.11g • g-HT—802.11g high throughput
type	Shows whether the AP is working as an access point (AP) or air monitor (AM).
ch/EIRP/max-EIRP	Radio channel used by the AP/current effective Isotropic Radiated Power (EIRP) /maximum EIRP.
cur-cl	Current number of clients on the AP.

Column	Description
ap name	Name of the AP.
in-t(s)	Number of seconds that an AP has been inactive.
tot-t	An AP's total active time, in seconds.
mtu	Maximum Transmission Unit (MTU) size, in bytes. This value describes the greatest amount of data that can be transferred in one physical frame.
acl-state	An access control list (ACL) can enable or disable an AP during specific time ranges. • **Disabled**: An ACL with time restrictions is currently **disabled** (so the AP is enabled). • **Enabled**: An ACL with time restrictions is currently **enabled** (so the AP is disabled). • This data column will display a dash (**-**) if no ACLs are currently configured for the AP.
acl	The access control list (ACL) id is displayed based on the role set.
fm	Listed below are the forwarding modes available: • **T-Tunnel** • **S-Split** • **D-Decrypt Tunnel** • **B-Bridge** (s-standard, p-persistent, b-backup, a-always) **NOTE:** If anyspot is enabled for a particular BSSID, then it is represented as **n** in the **Forwarding Mode** parameter.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.2	Introduced support for the following parameters: • **essid <ap-name>** • **essid <ip-addr>** • **essid <ip6-addr>** • **essid <port>**
ArubaOS 6.4.3.0	The **n-anyspot** forwarding-mode flag was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap bw-report

```
show ap bw-report {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>}
```

Description

Show the bandwidth reporting table for a specific AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show bandwidth data for an AP with a specific name.
`bssid <bssid>`	Show bandwidth data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show bandwidth data for an AP with a specific IP address by entering an IP address in dotted-decimal format.

Examples

The output of the following command shows the Dell AP bandwidth table for an AP with the IP address 192.0.2.170.

```
show ap bw-report ip-addr 192.0.2.170

Bandwidth report for AP "AL16" radio 0
--------------------------------------
Virtual AP                Allocated Share  Actual Share  Offered Load  Delivered Load
----------                ---------------  ------------  ------------  --------------
corp1344-guest            0%               0%            0 kbps        0 kbps
corp1344-ethersphere-wpa2 0%               0%            0 kbps        0 kbps
Average Throughput:0 kbps

Bandwidth report for AP "AL16" radio 1
--------------------------------------
Virtual AP                  Allocated Share  Actual Share  Offered Load  Delivered Load
----------                  ---------------  ------------  ------------  --------------
corp1344-guest              0%               0%            0 kbps        0 kbps
corp1344-ethersphere-voip   0%               0%            0 kbps        0 kbps
corp1344-ethersphere-vocera 0%               0%            0 kbps        0 kbps
Average Throughput:0 kbps
```

The output of this command includes the following information for all radios on the AP:

Column	Description
Virtual AP	Name of a Virtual AP
Allocated Share	Maximum percentage of total bandwidth available to that Virtual AP.
Actual Share	Actual percentage of total bandwidth used by a Virtual AP.
Offered Load	Attempted throughput for the Virtual AP, in kbps.
Delivered Load	Actual throughput for the Virtual AP, in kbps. This value may be less than the offered load if the Virtual AP has used all its allocated bandwidth.
Average Throughput	Average throughput for the virtual AP, in kbps.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap client status

```
show ap client status <client-mac>
```

Description

Show the current status of a specific client.

Syntax

Parameter	Description
`<client-mac>`	MAC address of a client

Examples

The output of the command shows the status of an individual client in the STA (station) table.

```
(host) #show ap client status  00:13:fd:42:32:38

STA Table
---------
bssid              auth  assoc  aid  l-int  essid      vlan-id  tunnel-id
-----              ----  -----  ---  -----  -----      -------  ---------
00:1a:1e:a3:02:c9  y     y      7    10     corp-wpa2  65       0x10c0
State Hash Table
----------------
bssid              state       reason
-----              -----       ------
00:1a:1e:a3:02:c9  auth-assoc  0
```

The output of this command includes the following information:

Column	Description
`bssid`	Basic Service Set ID (BSSID) of the client.
`auth`	This column displays a **y** if the AP has been configured for 802.11 authorization frame types. Otherwise, it displays an **n**.
`assoc`	This column displays a **y** if the AP has been configured for 802.11 association frame types. Otherwise, it displays an **n**.
`aid`	Number of beacons in the 802.11 listen interval. There are ten beacons sent per second, so a ten-beacon listen interval indicates a listen interval time of 1 second.
`l-int`	Number of beacons in the 802.11 listen interval. There are ten beacons sent per second, so a ten-beacon listen interval indicates a listen interval time of 1 second.
`essid`	Extended Service Set ID (ESSID) of the client.

Column	Description
vlan-id	VLAN ID of the VLAN used by the client
tunnel-id	Identification number for the tunnel
state	If the client has been both authorized and associated, this data column will display **auth-assoc**. If the client has only been authorized, this data column will display **auth**.
Reason	If the client failed to authenticate, this data column lists the reason code for 802.11 authentication failure

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap client trail-info

```
show ap client trail-info [<client-mac>]
```

Description

Use this command to show client activity for debugging purposes.

Syntax

Parameter	Description
<client-mac>	MAC address of the client.

Usage Guidelines

Use this command to view client activity, including reasons for client deauthentication, the history of how that client moved between different APs, and any alerts or errors encountered by that client. Include the optional **<client-mac>** parameter to show additional details for that specific client.

Client-trail information may be available for clients that are no longer active, as the controller saves a limited amount of client data in a buffer. The maximum number of clients for which trail-information is saved is determined by is determined by the controller platform. Each controller saves client trail information for twice the number of active clients supported by that controller platform.

Examples

The following example shows client-trail information for all clients associated with the controller.

```
(host) #show ap client trail-info

Client Trail Info
-----------------
MAC                BSSID              ESSID   AP-name   VLAN   Deauth-reason    Alert
-----------------  -----------------  ------  --------  -----  ---------------  -------------
00:11:22:33:44:55  00:0b:86:11:22:33  corp    ap1       10     AP-Down          Auth-failure
00:12:32:43:54:65  00:0b:86:11:22:34  corp    ap2       10     AP-Down          Auth-failure
00:31:42:53:64:75  00:0b:86:11:22:35  corp    ap3       10     AP-Down          Auth-failure
```

This example shows client-trail information for a specific user that includes information about AP alerts and mobility trails.

```
(host) #show ap client trail-info 00:11:22:33:44:55
MAC                BSSID              ESSID   AP-name  VLAN   Deauth-reason   Alert
-----------------  -----------------  -----   -------  ----   -------------   ------------
00:11:22:33:44:55  00:0b:86:11:22:33  corp    ap1      10     AP-down         Auth-failure
Deauth Reason
Reason             Timestamp
------------       --------------------------
AP-Down            Apr-12-2013 08:12:34
Alert
Reason             Timestamp
--------------     ------------------
Auth-Failure       Apr-10-2013 03:45:11
Mobility Trail
AP-name      BSSID              ESSID     Timestamp
-------      -----------------  -----     --------------------
Ap1          00:0b:86:11:11:11  corp      Apr-10-2013 03:45:11
AP2          00:0b:86:22:22:22  abc       Apr-10-2013 03:45:11
```

The output of these commands include the following information:

Column	Description
MAC	MAC address of the client
BSSID	BSSID of the client
ESSID	ESSID to which the client associated
AP-name	Name of the AP to which the client associated
VLAN	VLAN ID of the VLAN to which the client associated.
Deauth-reason	Reason why the client was deauthorized.
Alert	Reason why alerts were triggered by the client
Timestamp	If you include the optional <client-mac> parameter, the output will include a timestamp that indicates the time each alert or deauthorization was triggered.
Mobility-Trail	If you include the optional <client-mac> parameter, the output will include the AP name, BSSID and ESSID of the APs to which the cient connected, as well as a timestamp showing when the connections were initiated.

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show ap config

```
show ap config {ap-group <ap-group>}|{ap-name <ap-name>}|{essid <essid>}
```

Description

Show a large list of configuration settings for an ap-group or an individual AP.

Syntax

Parameter	Description
`ap-group <ap-group>`	Display configuration settings for an AP group.
`ap-name <ap-name>`	Display configuration settings for an AP with a specific name.
`essid <essid>`	Display configuration settings for an AP with a specific Extended Service Set Identifier (ESSID). An Extended Service Set Identifier (ESSID) is a alphanumeric name that uniquely identifies a wireless network. If the name includes spaces, you must enclose the ESSID in quotation marks.

Examples

The example output below shows just some of the configuration settings displayed in the output of this command.

```
show ap config ap-group apgroup14
-----------------------------------------------------
Parameter                                802.11g         802.11a         Source
---------                                -------         -------         ------
LMS IP                                   N/A             N/A             ap system-profile
"default"
Backup LMS IP                            N/A             N/A             ap system-profile
"default"
LMS Preemption                           Disabled        Disabled        ap system-profile
"default"
LMS Hold-down Period                     600 sec         600 sec         ap system-profile
"default"
Master controller IP address          N/A             N/A             ap system-profile
"default"
RF Band                                  g               g               ap system-profile
"default"
Double Encrypt                           Disabled        Disabled        ap system-profile
"default"
Native VLAN ID                           1               1               ap system-profile
"default"
SAP MTU                                  N/A             N/A             ap system-profile
"default"
Bootstrap threshold                      8               8               ap system-profile
"default"
Request Retry Interval                   10 sec          10 sec          ap system-profile
"default"
Maximum Request Retries                  10              10              ap system-profile
"default"
Keepalive Interval                       60 sec          60 sec          ap system-profile
"default"
Dump Server                              N/A             N/A             ap system-profile
"default"
```

```
Telnet                                  Disabled        Disabled        ap system-profile
"default"
FIPS enable                             Disabled        Disabled        ap system-profile
"default"
SNMP sysContact                         N/A             N/A             ap system-profile
"default"
RFprotect Server IP                     N/A             N/A             ap system-profile
"default"
RFprotect Backup Server IP              N/A             N/A             ap system-profile
"default"
AeroScout RTLS Server                   N/A             N/A             ap system-profile
"default"
RTLS Server configuration               N/A             N/A             ap system-profile
"default"
Remote-AP DHCP Server VLAN              N/A             N/A             ap system-profile
"default"
Remote-AP DHCP Server Id                192.168.11.1    192.168.11.1    ap system-profile
"default"
Remote-AP DHCP Default Router           192.168.11.1    192.168.11.1    ap system-profile
"default"
Remote-AP DHCP Pool Start               192.168.11.2    192.168.11.2    ap system-profile
"default"
Remote-AP DHCP Pool End                 192.168.11.254  192.168.11.254  ap system-profile
"default"
Remote-AP DHCP Pool Netmask             255.255.255.0   255.255.255.0   ap system-profile
"default"
Remote-AP DHCP Lease Time               0 days          0 days          ap system-profile
"default"
Heartbeat DSCP                          0               0               ap system-profile
"default"
Session ACL                             N/A             N/A             ap system-profile
"default"
Image URL                               N/A             N/A             ap system-profile
"default"
Maintenance Mode                        Disabled        Disabled        ap system-profile
"default"
...
```

The output of this command includes the following parameters.

Parameter	Description
LMS IP	The IPv4 address of the local management switch (LMS)—the Dell controller which is responsible for terminating user traffic from the APs, and processing and forwarding the traffic to the wired network.

Parameter	Description
LMS IPv6	The IPv6 address of the local management switch (LMS)—the Dell controller which is responsible for terminating user traffic from the APs, and processing and forwarding the traffic to the wired network.
Backup LMS IP	For multi-controller networks, this parameter displays the IPv4 address of a backup to the IP address specified with the lms-ip parameter.
Backup LMS IP	For multi-controller networks, this parameter displays the IPv6 address of a backup to the IP address specified with the lms-ip parameter.
LMS Preemption	When this parameter is enabled, the local management switch automatically reverts to the primary LMS IP address when it becomes available.
LMS Hold-down Period	Time, in seconds, that the primary LMS must be available before an AP returns to that LMS after failover.
Number of IPsec retries	Shows the number of times the AP will attempt to recreate an IPsec tunnel with the master controller before the AP will reboot. The supported range is 0-1000 retries, and the default value is 360. A value of 0 disables the reboot.
LED operation mode	The operating mode for the LEDs (11n APs only) • normal: Normal mode

Parameter	Description
	• off: All LEDs off
Master controller IP address	For multi-controller networks, this parameter displays the IP address of the master controller.
RF Band	For dual-band radios, this parameter displays the RF band in which the AP should operate: • **g** = 2.4 GHz • **a** = 5 GHz
Double Encrypt	This parameter applies only to remote APs. Double encryption is used for traffic to and from a wireless client that is connected to a tunneled SSID. When enabled, all traffic is re-encrypted in the IPsec tunnel. When disabled, the wireless frame is only encapsulated inside the IPsec tunnel.
Native VLAN ID	Native VLAN for bridge mode virtual APs (frames on the native VLAN are not tagged with 802.1q tags).
SAP MTU	Maximum Transmission Unit (MTU) size, in bytes. This value describes the greatest amount of data that can be transferred in one physical frame.
Bootstrap threshold	Number of consecutive missed heartbeats on a GRE tunnel (heartbeats are sent once per second on each tunnel) before an AP rebootstraps. On the controller, the GRE tunnel timeout is 1.5 x bootstrap-threshold; the tunnel is torn down after this number of seconds of inactivity on the tunnel.

Parameter	Description
Request Retry Interval	Interval, in seconds, between the first and second retries of AP-generated requests. If the configured interval is less than 30 seconds, the interval for subsequent retries is increased up to 30 seconds.
Maximum Request Retries	Maximum number of times to retry AP-generated requests, including keepalive messages. After the maximum number of retries, the AP either reboots or tries the IP address specified by the backup LMS IP address (if configured).
Keepalive Interval	Time, in seconds, between keepalive messages from the AP
Dump Server	(For debugging purposes.) Displays the server to receive the core dump generated if an AP process crashes.
Telnet	Reports whether telnet access the AP is enabled or disabled.
SNMP sysContact	SNMP system contact information.
AeroScout RTLS Server	Displays whether or not the AP will send RFID tag information to an AeroScout real-time asset location (RTLS) server.
RTLS Server configuration	Displays whether or not the AP will send RFID tag information to an RTLS server.

Parameter	Description
Remote-AP DHCP Server VLAN	Shows the VLAN ID of the remote-AP DHCP server used when controller is unreachable.
Remote-AP DHCP Server Id	Shows the IP Address of the DHCP DNS Server.
Remote-AP DHCP Default Router	Shows the IP Address of the DHCP Default Router.
Remote-AP DHCP Pool Start	Shows the IP Address used as start of DHCP Pool.
Remote-AP DHCP Pool End	Shows the IP Address used as end of DHCP Pool.
Remote-AP DHCP Pool Netmask	Shows the netmask of DHCP Pool.
Remote-AP DHCP Lease Time	Shows the length of leases, in days (0 means infinite).
Remote-AP uplink total bandwidth	This is the total reserved uplink bandwidth (in Kilobits per second)
Remote-AP bw reservation	Session ACLs with uplink bandwidth reservation in kilobits per second. You can specify up to three session ACLs to reserve uplink bandwidth.
Heartbeat DSCP	DSCP value of AP heartbeats (0-63).
Session ACL	Shows the access control list (ACL) applied on the uplink of a remote AP.

Parameter	Description
Maintenance Mode	Shows if Maintenance mode is enabled or disabled. If enabled, APs stop flooding unnecessary traps and syslog messages to network management systems or network operations centers when deploying, maintaining, or upgrading the network. The controller still generates debug syslog messages if debug logging is enabled.
Remote-AP Local Network Access	Enable or disable local network access across VLANs in a Remote-AP.
Radio enable	Shows if the AP's radio is enabled or disabled.
Mode	Shows the operating modes for the AP. • **ap-mode**: Device provides transparent, secure, high-speed data communications between wireless network devices and the wired LAN. • **am-mode**: Device behaves as an air monitor to collect statistics, monitor traffic, detect intrusions, enforce security policies, balance traffic load, self-heal coverage gaps, etc. • spectrum-mode: Device behaves as a spectrum monitor, sending spectrum analysis data to the controller. Spectrum monitors do not serve clients.

Parameter	Description
High throughput enable (radio)	Shows if high-throughput (802.11n) features on the 2.4 GHz frequency band are enabled or disabled.
Channel	Shows the channel number for the AP's 802.11a/802.11n physical layer.
Beacon Period	Shows the time, in milliseconds, between successive beacon transmissions. The beacon advertises the AP's presence, identity, and radio characteristics to wireless clients.
Beacon Regulate	Enabling this setting introduces randomness in the beacon generation so that multiple APs on the same channel do not send beacons at the same time, which causes collisions over the air.
Transmit EIRP	Shows the current transmission power level.
Advertise 802.11d and 802.11h Capabilities	This column reports whether or not the AP will advertise its 802.11d (Country Information) and 802.11h (TPC or Transmit Power Control) capabilities
TPC Power	The transmit power advertised in the TPC IE of beacons and probe responses. Range: 0-51 dBm
Spectrum Load Balancing	The Spectrum Load Balancing feature helps optimize network resources by balancing clients across channels, regardless of whether the AP or the controller is responding to the wireless clients' probe requests.

Parameter	Description
	If enabled, the controller compares whether or not an AP has more clients than its neighboring APs on other channels. If an AP's client load is at or over a predetermined threshold as compared to its immediate neighbors, or if a neighboring Dell AP on another channel does not have any clients, load balancing will be enabled on that AP. This feature is disabled by default.
`Spectrum Load Balancing mode`	Spectrum Load Balancing Mode allows control over how to balance clients. Select one of the following options • **channel**: Channel-based load-balancing balances clients across channels. This is the default load-balancing mode • **radio**: Radio-based load-balancing balances clients across APs
`Spectrum load balancing update interval`	This value determines how often spectrum load balancing calculations are made (in seconds). The default value is 30 seconds.
`Advertised regulatory max EIRP`	A cap for an radio's maximum equivalent isotropic radiated power (EIRP). Even if the regulatory approved maximum for a given channel is higher than this EIRP cap, the AP radio using this profile will advertise only this capped maximum EIRP in its radio beacons.

Parameter	Description
`Spectrum load balancing domain`	Define a spectrum load balancing domain to manually create RF neighborhoods. This option creates RF neighborhood information for networks that have disabled Adaptive Radio Management (ARM) scanning and channel assignment. • If spectrum load balancing is enabled in a 802.11a radio profile but the spectrum load balancing domain is *not* defined, ArubaOS uses the ARM feature to calculate RF neighborhoods. • If spectrum load balancing is enabled in a 802.11a radio profile and a spectrum load balancing domain *isalso* defined, AP radios belonging to the same spectrum load balancing domain will be considered part of the same RF neighborhood for load balancing, and will not recognize RF neighborhoods defined by the ARM feature.
`Rx sensitivity tuning based channel reuse`	The channel reuse feature can operate in either of the following three modes; static, dynamic or disable. (This feature is disabled by default.) • **Static mode**: This mode of operation is a coverage-based adaptation of the Clear Channel Assessment (CCA) thresholds. In the static mode of operation, the CCA is adjusted according to the configured transmission power level on the AP, so as the AP transmit power decreases as the CCA

Parameter	Description
	threshold increases, and vice versa. • **Dynamic mode**: In this mode, the Clear Channel Assessment (CCA) thresholds are based on channel loads, and take into account the location of the associated clients. When you set the Channel Reuse This feature is automatically enabled when the wireless medium around the AP is busy greater than half the time. When this mode is enabled, the CCA threshold adjusts to accommodate transmissions between the AP its most distant associated client. • **Disable mode**: This mode does not support the tuning of the CCA Detect Threshold.
`Rx sensitivity threshold`	RX Sensitivity Tuning Based Channel Reuse Threshold, in -dBm. If the Rx Sensitivity Tuning Based Channel reuse feature is set to static mode, this parameter manually sets the AP's Rx sensitivity threshold (in -dBm). The AP will filter out and ignore weak signals that are below the channel threshold signal strength. If the value is set to zero, the feature will automatically determine an appropriate threshold
`Non 802.11a interference Immunity`	The value for 802.11 Interference Immunity. This parameter sets the interference immunity on the 2.4 Ghz band.

Parameter	Description
	The default setting for this parameter is level 2. When performance drops due to interference from non-802.11 interferers (such as DECT or Bluetooth devices), the level can be increased up to level 5 for improved performance. However, increasing the level makes the AP slightly “deaf” to its surroundings, causing the AP to lose a small amount of range. The levels for this parameter are: • Level-0: no ANI adaptation. • Level-1: noise immunity only. • Level-2: noise and spur immunity. This is the default setting • Level-3: level 2 and weak OFDM immunity. • Level-4: level 3 and FIR immunity. • Level-5: disable PHY reporting.
`Enable CSA`	Displays whether or not the AP has enabled channel switch announcements (CSAs) for 802.11h.
`CSA Count`	Number of channel switch announcements that must be sent before the AP will switch to a new channel.
`Management Frame Throttle interval`	Average interval that rate limiting management frames are sent from this radio, in seconds. If this column displays a zero (**0**) rate limiting is disabled for this AP.

Parameter	Description
Management Frame Throttle Limit	Maximum number of management frames that can come from this radio in each throttle interval.
ARM/WIDS Override	Shows if Adaptive Radio Management (ARM) and Wireless IDS functions are enabled or disabled. If a radio is configured to operate in Air Monitor mode, then these functions are always enabled, regardless of this option.
Protection for 802.11b Clients	Displays whether or not protection for 802.11b clients is enabled or disabled.
Maximum Distance	Maximum distance between a client and an AP or between a mesh point and a mesh portal, in meters. This value is used to derive ACK and CTS timeout times. A value of 0 specifies default settings for this parameter, where timeouts are only modified for outdoor mesh radios which use a distance of 16km. The upper limit for this parameter varies, depending on the 20/40 MHz mode for a 2.4GHz frequency band radio: • 20MHz mode: 54km • 40MHz mode: 24km Iff you configure a value above the supported maximum, the maximum supported value will be used instead. Values below 600m will use default settings.

Parameter	Description
Spectrum Monitoring	When this parameter is enabled, it turns an AP in ap-mode into a hybrid AP. An AP in hybrid AP mode will continue to serve clients as an access point while it scans and analyzes spectrum analysis data for a single radio channel.
Assignment	Displays whether or not ARM channel and power assignment has been enabled or disabled.
Allowed bands for 40MHz channels	Forty MHz channels may be used on the specified radio bands (802.11a or 802.11g).
Client Aware	Shows if the client aware feature has been enabled or disabled for this AP. If enabled, AP will not change channels when there are active clients.
Max Tx Power	Maximum transmission power for this AP, in dBm.
Min Tx Power	Minimum transmission power for this AP, in dBm.
Multi Band Scan	Shows if the multi-band scan feature has been enabled or disabled on this AP. If enabled, single-radio APs will try to scan across bands for Rogue AP detection
Rogue AP Aware	Shows if the rogue AP awareness feature has been enabled or disabled on this AP. If enabled, the AP will try to contain off-channel Rogue APs

Parameter	Description
Scan Interval	This column indicates, in seconds, how often the AP will leave its current channel to scan other channels in the band if scanning is enabled
Active Scan	Displays whether or not the active scan feature is enabled. **NOTE:** This option elicits more information from nearby APs, but also creates additional management traffic on the network. **Active Scan** is disabled by default, and should *not be enabled* except under the direct supervision of Dell Support.
Scanning	Shows if scanning is enabled or disabled for this AP. If this option is disabled, the following other options will also be disabled: • Multi Band Scan • Rogue AP Aware • Voip Aware Scan • Power Save Scan
Scan Time	The amount of time, in milliseconds, an AP will drift out of the current channel to scan another channel. The supported range for this setting is 0-2,147,483,647 seconds. Best practices are to configure a scan time between 50-200 msec.

Parameter	Description
VoIP Aware Scan	Shows if VoIP aware scanning is enabled or disabled. If you use voice handsets in the WLAN, **VoIP Aware Scan** should be enabled in the ARM profile so the AP will not attempt to scan a different channel if one of its clients has an active VoIP call. This option requires that **Scanning** is also enabled.
Power Save Aware Scan	Shows if the power save aware scan is enabled or disabled. If enabled, the AP will not scan a different channel if it has one or more clients and is in power save mode. Default: enabled
Ideal Coverage Index	The Dell coverage index metric is a weighted calculation based on the RF coverage for all DellAPs and neighboring APs on a specified channel. The **Ideal Coverage Index** specifies the ideal coverage that an AP should try to achieve on its channel. The denser the AP deployment, the lower this value should be.
Acceptable Coverage Index	For multi-band implementations, the **Acceptable Coverage Index** specifies the minimal coverage an AP it should achieve on its channel. The denser the AP deployment, the lower this value should be.
Free Channel Index	The current free channel index value. The Dell Interference index metric measures interference for a specified channel and its surrounding channels. This value is calculated and weighted for all APs on those channels (including 3rd-party APs).

Parameter	Description
	An AP will only move to a new channel if the new channel has a lower interference index value than the current channel. **Free Channel Index** specifies the required difference between the two interference index values before the AP moves to the new channel. The lower this value, the more likely it is that the AP will move to the new channel.
`Backoff Time`	After an AP changes channel or power settings, it waits for this backoff time interval before it asks for a new channel/power setting.
`Error Rate Threshold`	The minimum percentage of PHY errors and MAC errors in the channel that will trigger a channel change.
`Error Rate Wait Time`	Minimum time in seconds the error rate on the AP has to exceed its defined error rate threshold before it triggers a channel change.
`Noise Threshold`	Maximum level of noise in a channel that triggers a channel change.
`Noise Wait Time`	Minimum time in seconds the noise level has to exceed the Noise Threshold before it triggers a channel change on the AP.
`Minimum Scan Time`	Minimum number of times a channel must be scanned before it is considered for assignment. Best practices are to configure a **Minimum Scan Time** between 1-20 scans.

Parameter	Description
Load aware Scan Threshold	The **Load Aware Scan Threshold** is the traffic throughput level an AP must reach before it stops scanning. Load aware ARM preserves network resources during periods of high traffic by temporarily halting ARM scanning if the load for the AP gets too high.
Mode Aware Arm	Shows if the mode-aware ARM feature has been enabled or disabled for this AP. If enabled, ARM will turn the AP into an Air Monitors (AMs) if it detects higher coverage levels than necessary. This helps avoid higher levels of interference on the WLAN. Although this setting is disabled by default, you may want to enable this feature if your APs are deployed in close proximity (e.g. less than 60 feet apart).
Scan mode	Identifies the scan mode for the AP. • **all-reg-domain**: The AP scans channels within all regulatory domains. This is the default setting. • **reg-domain**:Limit the AP scans to just the regulatory domain for that AP.
40 MHz intolerance	The specified setting allows ARM to determine if 40 MHz mode of operation is allowed on the 5 GHz or 2.4 GHz frequency band only, on both frequency bands, or on neither frequency band.

Parameter	Description
Honor 40 MHz intolerance	Shows if 40 MHz intolerance is enabled or disabled. If enabled, the radio will stop using the 40 MHz channels if the 40 MHz intolerance indication is received from another AP or station.
Legacy station workaround	Shows if interoperability for misbehaving legacy stations is enabled or disabled.
SSID enable	Shows if the SSID is enabled or disabled
ESSID	Name that uniquely identifies the Extended Service Set Identifier (SSID).
Encryption	Encryption type used on this AP.
DTIM Interval	Shows the interval, in milliseconds, between the sending of Delivery Traffic Indication Messages (DTIMs) in the beacon. This is the maximum number of beacon cycles before unacknowledged network broadcasts are flushed.
Basic Rates	Lists supported 802.11a rates, in Mbps, that are advertised in beacon frames and probe responses from this AP.
Transmit Rates	Lists 802.11a rates at which the AP is allowed to send data. The actual transmit rate depends on what the client is able to handle, based on information sent at the time of association and on the current error/loss rate of the client.

Parameter	Description
Station Ageout Time	Time, in seconds, that a client is allowed to remain idle before being aged out.
Max Transmit Attempts	Maximum number of retries allowed for the AP to send a frame
RTS Threshold	Wireless clients transmitting frames larger than this threshold must issue Request to Send (RTS) and wait for the AP to respond with Clear to Send (CTS). This helps prevent mid-air collisions for wireless clients that are not within wireless peer range and cannot detect when other wireless clients are transmitting.
Short Preamble	Shows if a short preamble for 802.11b/g radios is enabled or disabled for this AP. Network performance may be higher when short preamble is enabled. In mixed radio environments, some 802.11b wireless client stations may experience difficulty associating with the AP using short preamble. To use only long preamble, disable short preamble. Legacy client devices that use only long preamble generally can be updated to support short preamble.
Max Associations	Maximum number of wireless clients allowed to associate to the AP

Parameter	Description
Wireless Multimedia (WMM)	Shows if Wireless Multimedia (WMM) is enabled or disabled for this AP. WMM provides prioritization of specific traffic relative to other traffic in the network
Wireless Multimedia U-APSD (WMM-UAPSD) Powersave	Shows if Wireless Multimedia (WMM) UAPSD powersave is enabled or disabled.
WMM TSPEC Min Inactivity Interval	Displays the minimum inactivity time-out threshold of WMM traffic for this AP.
DSCP mapping for WMM voice AC	Displays the DSCP value used to map WMM voice traffic.
DSCP mapping for WMM video AC	Displays the DSCP value used to map WMM video traffic.
DSCP mapping for WMM best-effort AC	Displays the DSCP value used to map WMM best-effort traffic
DSCP mapping for WMM background AC	Displays the DSCP value used to map WMM background traffic.
902il Compatibility Mode	Shows if 902 il compatibility mode is enabled or disabled. (This parameter only needs to be enabled for APs with associated clients using NTT DoCoMo 902iL phones.)
Hide SSID	Shows if the feature to hide a SSID name in beacon frames is enabled or disabled.

Parameter	Description
Deny_Broadcast Probes	When a client sends a broadcast probe request frame to search for all available SSIDs, this option controls whether or not the system responds for this SSID. When enabled, no response is sent and clients have to know the SSID in order to associate to the SSID. When disabled, a probe response frame is sent for this SSID.
Local Probe Response	Shows if local probe response is enabled or disabled on the AP. If this option is enabled, the AP is responsible for sending 802.11 probe responses to wireless clients' probe requests. If this option is disabled, then the controller sends the 802.11 probe responses
Disable Probe Retry	If disabled, the AP will not resend probes if it does not get a response.
Battery Boost	Shows if the battery boost feature is enabled or disabled for the AP. If enabled, this feature converts multicast traffic to unicast before delivery to the client, thus allowing you to set a longer DTIM interval. The longer interval keeps associated wireless clients from activating their radios for multicast indication and delivery, leaving them in power-save mode longer and thus lengthening battery life
Drop Broadcast and Multicast	If this feature is enabled on an AP, it drops all downstream broadcast or multicast traffic to increase battery life.

Parameter	Description
WEP Key 1	Displays the static WEP key (1 of 4).
WEP Key 2	Displays the static WEP key (2 of 4).
WEP Key 3	Displays the static WEP key (3 of 4).
WEP Key 4	Displays the static WEP key (4 of 4).
WEP Transmit Key Index	Displays the key index that specifies which static WEP key is to be used.
WPA Hexkey	Displays the WPA pre-shared key (PSK).
WPA Passphrase	Displays the WPA passphrase with which the AP generates a pre-shared key (PSK).
Maximum Transmit Failures	Display the maximum number of transmission failures allowed before the client gives up.
BC/MC Rate Optimization	Shows if the AP has enabled or disabled scanning of all active stations currently associated to that AP to select the lowest transmission rate for broadcast and multicast frames. This option only applies to broadcast and multicast data frames; 802.11 management frames are transmitted at the lowest configured rate.
Rate Optimization for delivering EAPOL frames	Shows if the AP has enabled or disabled rate optimization for delivering EAPOL frames.

Parameter	Description
Strict Spectralink Voice Protocol (SVP)	Shows if strict Spectralink Voice Protocol (SVP) is enabled or disabled.
802.11g Beacon Rate	Sets the beacon rate for 802.11g for APs use a Distributed Antenna System (DAS). Using this parameter in normal operation may cause connectivity problems.
802.11a Beacon Rate	Sets the beacon rate for 802.11a for APs use a Distributed Antenna System (DAS). Using this parameter in normal operation may cause connectivity problems.
Advertise QBSS Load IE	Shows if the AP has enabled or disabled the advertising of QBSS in the load IE.
High throughput enable (SSID)	Shows if the AP has enabled or disabled the use of its high-throughput SSID in 40 MHz mode.
40 MHz channel usage	Determines if this high-throughput SSID allows high-throughput (802.11n) stations to associate.
MPDU Aggregation	Shows if the AP has enabled or disabled MAC protocol data unit (MDPU) aggregation.
Max transmitted A-MPDU size	Shows the maximum size, in bytes, of an A-MPDU that can be sent on the AP's high-throughput SSID.
Max received A-MPDU size	Shows the maximum size, in bytes, of an Aggregated-MAC Packet Data Unit (A-MPDU) that can be received on the AP's high-throughput SSID.

Parameter	Description
Min MPDU start spacing	Displays the minimum time between the start of adjacent MDPUs within an aggregate MDPU, in microseconds.
Supported MCS set	Comma-separated list of Modulation Coding Scheme (MCS) values or ranges of values to be supported on this high-throughput SSID.
Short guard interval in 20 MHz mode	Shows if the AP has enabled or disabled use of short guard interval in 20 MHz mode of operation.
Short guard interval in 40 MHz mode	Shows if the AP has enabled or disabled use of short guard interval in 40 MHz mode of operation.
Maximum number of spatial streams usable for STBC transmission	Controls the maximum number of spatial streams usable for STBC transmission. 0 disables STBC transmission, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on the W-AP130 Series, W-AP175, and W-AP105 only. The configured value will be adjusted based on AP capabilities.)
Minimum number of spatial streams usable for STBC transmission	Controls the maximum number of spatial streams usable for STBC reception. 0 disables STBC reception, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on the W-AP130 Series, W-AP175, and W-AP105 only. The configured value will be adjusted based on AP capabilities.)

Parameter	Description
Legacy stations	Shows if the AP has enabled or disabled the legacy stations option, which controls whether or not legacy (non-HT) stations are allowed to associate with the AP's SSID. By default, legacy stations are allowed to associate. **NOTE:** This setting has no effect on a BSS in which HT support is not available.
Allow weak encryption	Shows if the AP has enabled or disabled the weak encryption option. The use of TKIP or WEP for unicast traffic forces the use of legacy transmissions rates. Disabling this mode prevents the association of stations using TKIP or WEP for unicast traffic. This mode is disabled by default.
Virtual AP enable	Wireless LAN profiles configure WLANs in the form of virtual AP profiles. This parameter shows if the AP has enabled or disabled virtual APs.
Allowed band	Shows the band(s) on which to use the virtual AP: • a—802.11a band only (5 GHz) • g—802.11b/g band only (2.4 GHz) • all—both 802.11a and 802.11b/g bands (5 GHz and 2.4 GHz)
VLAN	Shows the VLAN(s) into which users are placed in order to obtain an IP address.

Parameter	Description
`Forward mode`	Shows the current forward mode (tunnel, bridge, split-tunnel, or decrypt-tunnel) for the virtual AP. This parameter controls whether 802.11 frames are tunneled to the controller using generic routing encapsulation (GRE), bridged into the local Ethernet LAN (for remote APs), or a combination thereof depending on the destination (corporate traffic goes to the controller, and Internet access remains local). When an AP is configured to use the decrypt-tunnel forwarding mode, that AP decrypts and decapsulates all 802.11 frames from a client and sends the 802.3 frames through the GRE tunnel to the controller, which then applies firewall policies to the user traffic. When the controller sends traffic to a client, the controller sends 802.3 traffic through the GRE tunnel to the AP, which then converts it to encrypted 802.11 and forwards to the client. Only 802.1X authentication is supported when configuring bridge or split tunnel mode.
`Deny time range`	Shows the time range for which the AP will deny access for a virtual AP.
`Mobile IP`	Shows if IP mobility has been enabled or disabled for the virtual AP.

Parameter	Description
`HA Discovery on-association`	If enabled, home agent discovery is triggered on client association instead of home agent discovery based on traffic from client. Mobility on association can speed up roaming and improve connectivity for clients that do not send many uplink packets to trigger mobility (VoIP clients).Best practices is to keep this parameter disabled,r as it increases IP mobility control traffic between controllers in the same mobility domain. Enable this parameter only when voice issues are observed in VoIP clients. **NOTE:** `ha-disc-onassoc` parameter works only when IP mobility is enabled and configured on the controller.
`DoS Prevention`	Shows the status of the Dos Prevention option. If enabled, virtual APs ignore deauthentication frames from clients. This prevents a successful deauth attack from being carried out against the AP. This does not affect third-party APs.
`Station Blacklisting`	Shows if the virtual AP has enabled or disabled detection of denial of service (DoS) attacks, such as ping or SYN floods, that are not spoofed deauth attacks.
`Blacklist Time`	Shows the number of seconds that a client will be quarantined from the network after being blacklisted.

Parameter	Description
Authentication Failure Blacklist Time	Shows the time, in seconds, a client is blocked if it fails repeated authentication. If the virtual AP shows a value of 0, a blacklisted client is blocked indefinitely.
Fast Roaming	Shows if the AP has enabled or disabled fast roaming.
Strict Compliance	If enabled, the virtual AP denies client association requests if the AP and client station have no common rates defined. Some legacy client stations which are not fully 802.11-compliant may not include their configured rates in their association requests. Such non-compliant stations may have difficulty associating with APs unless strict compliance is disabled.
VLAN Mobility	Shows if a virtual AP has enabled or disabled VLAN (Layer-2) mobility
Remote-AP Operation	Shows when the virtual AP operates on a remote AP: • **always**—Permanently enables the virtual AP (Bridge Mode only). This option can be used for non-802.1X bridge VAPs. • **backup**—Enables the virtual AP if the remote AP cannot connect to the controller (Bridge Mode only). This option can be used for non-802.1X bridge VAPs. • **persistent**—Permanently enables the virtual AP after the remote AP initially **connects** to the controller (Bridge Mode only). This option can be used for any

Parameter	Description
	(Open/PSK/802.1X) bridge VAPs. • **standard**—Enables the virtual AP when the remote AP connects to the controller. This option can be used for any (bridge/split-tunnel/tunnel/d-tunnel) VAPs.
`Convert Broadcast ARP requests to unicast`	If this option is enabled, all broadcast ARP requests are converted to unicast and sent directly to the client. You can check the status of this option using the **show ap active** and the **show datapath** tunnel command. If enabled, the output will display the letter **a** in the flags column.
`Band Steering`	Shows if band-steering has been enabled or disabled for a virtual AP. ARM's band steering feature encourages dual-band capable clients to stay on the 5GHz band on dual-band APs. This frees up resources on the 2.4GHz band for single band clients like VoIP phones. Band steering reduces co-channel interference and increases available bandwidth for dual-band clients, because there are more channels on the 5GHz band than on the 2.4GHz band. Dual-band 802.11n-capable clients may see even greater bandwidth improvements, because the band steering feature will automatically select between 40MHz or 20MHz channels in 802.11n networks. This feature is disabled by default, and must be enabled in a Virtual AP profile.

Parameter	Description
VoIP Call Admission Control	Shows if WiFi VoIP Call Admission Control features are enabled or disabled.
VoIP Bandwidth based CAC	Shows the maximum bandwidth that can be handled by one radio, in kbps.
VoIP Call Capacity	Show the number of simultaneous calls that can be handled by one radio.
VoIP Bandwidth Capacity (kbps)	Shows the maximum bandwidth that can be handled by one radio, in kbps.
VoIP Call Handoff Reservation	Shows the percentage of call capacity reserved for mobile VoIP clients on call.
VoIP Send SIP 100 Trying	If enabled, the AP sends SIP 100 - trying messages to a call originator to indicate that the call is proceeding. This is useful when the SIP invite may be redirected through a number of servers before reaching the controller.
VoIP Disconnect Extra Call	If enabled, the AP disconnects calls that exceed the high capacity threshold by sending a deauthentication frame.
VOIP TSPEC Enforcement	Shows if validation of TSPEC requests for call admission controls is enabled or disabled.
VOIP TSPEC Enforcement Period	Displays the maximum time for the station to start a call after the TSPEC request.

Parameter	Description
`VoIP Drop SIP Invite and send status code (client)`	Displays the status code sent to the client when a SIP Invite is dropped. • **480**: Temporary Unavailable • **486**: Busy Here • **503**: Service Unavailable • **none**: Don't send SIP status code
`VoIP Drop SIP Invite and send status code (server)`	Displays the status code sent to the server when a SIP Invite is dropped. • **480**: Temporary Unavailable • **486**: Busy Here • **503**: Service Unavailable • **none**: Don't send SIP status code

Related Commands

Command	Description	Mode

`ap system-profile`
`rf dot11g-radio-profile`
`rf arm-profile`
`rf ht-radio-profile`
`wlan ht-ssid-profile`
`wlan virtual-ap`
`wlan voip-cac-profile`
	The output of the `show ap config` command displays the content of the profile settings for an individual AP or AP group. Use the commands displayed in the column to the left to configure these parameters.	Enable and Config modes

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap consolidated-provision info

```
show ap consolidated-provision info
   ap-name <ap-name>
   ip-addr <ip-address>
   ip6-addr <ipv6-address>
```

Description

This command displays the consolidated provision details of an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show consolidated provision information for the AP based on the AP name.
`ip-addr <ip-address>`	Show consolidated provision information for the AP based on the AP's IP address.
`ip6-addr <ipv6-address>`	Show consolidated provision information for the AP based on the AP's IPv6 address.

Usage Guidelines

This command is executed from the controller CLI to get the consolidated provisioning details of an AP. This feature is especially useful while upgrading from ArubaOS 6.x to ArubaOS 8.0.

Specify the name, IP address, or IPv6 address of the AP for which you need the consolidated provisioning information.

Examples

The example output of this command here provides IPv4 information pertaining to the AP such as address type, address, netmask, gateway, lease, DHCP server, DNS sever; IPv6 address (if any); master controller details such as master IP address, discover type; and the local switch details such as previous LMS and the LMS address.

```
(host) #show ap consolidated-provision info ap-name xxxxx-ap-135
ap name: xxxxx-ap-135
ipv4 address type: dynamic
ipv4 address: 10.17.160.247
ipv4 netmask: 255.255.255.0
ipv4 gateway: 10.17.160.2
ipv4 lease: 43200
ipv4 dhcp server: 10.17.160.2
ipv4 dns server: 10.13.6.110, 0.0.0.0
ipv6 address: none
master: 10.17.160.4
master discover type: Provisioned manually
previous lms: none
lms addrs [0]: 10.17.160.4
```

The output of this command includes the following parameters.

Parameter	Description
ap name	The name of the AP for which consolidated provisioned information is required.
ipv4 address type	The IPv4 address type of the AP.
ipv4 address	The IPv4 address of the AP.
ipv4 netmask	The IPv4 subnet mask of the AP.
ipv4 gateway	The IPv4 gateway information of the AP.
ipv4 lease	The IPv4 lease information pertaining to the AP.
ipv4 dhcp server	The IPv4 DHCP server of the AP.
ipv4 dns server	The IPv4 DNS server of the AP.
ipv6 address	The IPv6 address of the AP.
master	The master controller IP address of the AP.
master discover type	The master controller discover (provisioning) type information for the AP
previous lms	The previous LMS IP address of the AP.
lms addrs	The LMS IP address of the AP.

Related Commands

Command	Description
ap consolidated-provision info	This command helps you get the consolidated provision details of all access points connected to a controller.

Command History

Release	Modification
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Mode
All platforms	Base operating system	Enable or Config mode on the master controller

show ap-crash-transfer

```
show ap-crash-transfer
```

Description

This command displays info for the AP crash transfer feature, which transfers AP coredump files to the controller flash memory if no dumpserver is configured.

Syntax

No Parameters

Usage Guidelines

The command **ap system-profile <profile> dump-server <server>** specifies a server to receive a core dump generated when an AP process crashes. If no dump server is configured, issue the **ap-crash-transfer** command to save dump files to the controller flash memory.

If you define a dump server and issue the ap-crash-server command, the dump server configuration takes precedence, and coredump files are sent to the dump server.

Example

```
(host)) #show ap-crash-transfer
AP Crash Transfer:enabled
AP Crash folder limit:50 MB (non-editable)
```

Related Commands

Command	Description
ap-crash-transfer	This command allows AP coredump files to be transferred he controller flash memory if no dumpserver is configured.

Command History

Release	Modification
ArubaOS 6.4	This command is introduced.

Command Information

Platforms	Licensing	Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers.

show ap database

```
show ap database {flags|group <group>|inactive|indoor|local|long|outdoor|{page <page>}|
sensors [disconnected]|sort-by [ap-flags|ap-group|ap-ip|
ap-mac|ap-name|ap-serial|ap-type|fqln|provisioned|status {up|down}|switch-ip]|sort-direction
[ascending|descending]|start <start> |status {up|down]|switch <switch-ip-
addr>|unprovisioned|usb}
```

Description

Show the list of access points in the controller's database.

Syntax

Parameter	Description
`flags`	Show only APs with flags set [LUDINRCc12ME] .
`group <group>`	Show data for a specified AP group.
`inactive`	Show only local APs with no active BSSIDs or wired AP interfaces.
`indoor`	Show only APs that have an installation mode set to "indoor."
`local`	Show only APs connected to this controller.
`long`	Display the following additional data columns: • Wired MAC Address, • Serial # • Port • FQLN • Service Tag
`outdoor`	Show only APs that have an installation mode set to "outdoor."
`page <page>`	Display a limited number of APs by entering the number of APs to be displayed in the output of this command.
`disconnected`	Show only disconnected RFprotect sensors.
`sort-by`	Sort the output of this command by a specific data column.
`ap-flags`	Sort by AP flags.
`ap-group`	Sort by AP group name.

Parameter	Description
ap-ip	Sort by AP group name.
ap-mac	Sort by AP wired MAC address .
ap-name	Sort by AP name.
ap-serial	Sort by AP serial number.
ap-type	Sort by AP model.
fqln	Sort by Fully Qualified Location Name (FQLN).
provisioned	Sort by provisioning statistics.
status up|down	If used with the **sort-by** keyword, **status** sorts the output of the command by status type (**up** or **down**.) Otherwise, use the **status** keyword to display APs with the specified status.
switch-ip	Sort by controller IP address.
uptime	Sort by AP uptime.
sort-direction	Choose sort direction of AP list:.
ascending	Sort AP list in ascending order by name.
descending	Sort AP list in descending order by name.
start <start>	Start showing the AP index at the specified index number.
status	Show only APS with a given status as active or inactive.
down	Show only APs that are inactive.
up	Show only APs that are active.
switch <switch-ip-addr>	Show only APs registered with a specified controller by entering a controller IP address.
unprovisioned	Show only unprovisioned APs (using modifiers).
usb	Show USB related parameters.

Usage Guidelines

Many of the parameters in this command can be used together to filter a large database of information down to just the AP data you want to see. For example, you can issue the **command show ap database group**

<group> local status up to view a list of local APs within a specific AP group that are reporting an **up** status. Include the **sort-by** and **sort-direction** keywords to specify how the data is sorted in the output of this command.

Examples

The output of the command **show ap database** shows the controller's database of information for APs in the group **default**. The output also includes a description of the flag types that may appear in the **Flags** column.

```
show ap database group default
AP Database
-----------
Name               Group    AP Type  IP Address     Status            Flags  Switch IP     Standby IP
----               -----    -------  ----------     ------            -----  ---------     ----------
00:24:6c:cb:d7:48  default  92       172.20.72.233  Down                     172.20.1.103  0.0.0.0
W-AP105-F2:EC       default  92       172.20.72.234  Up 2d:1h:59m:51s          172.20.1.103  0.0.0.0
W-AP105-F3:48       default  92       172.20.72.238  Up 2d:1h:59m:25s          172.20.1.103  0.0.0.0
W-AP105-00:01       default  105      172.20.72.232  Up 2d:1h:59m:47s          172.20.1.103  0.0.0.0
W-AP105-0D:E7       default  105      172.20.72.231  Up 2d:1h:59m:13s          172.20.1.103  0.0.0.0
W-AP204-35-A2       default  120      172.20.72.243  Down                      172.20.1.103  0.0.0.0
W-AP204-29:3A       default  124      172.20.72.252  Up 2d:2h:0m:22s           172.20.1.103  0.0.0.0
W-AP204-5B:2A       default  124abg   172.20.72.245  Up 2d:2h:0m:43s           172.20.1.103  0.0.0.0
W-AP204-D7:D6       default  124      172.20.72.244  Up 2d:2h:0m:25s           172.20.1.103  0.0.0.0
W-AP204-E5:41       default  124      172.20.72.248  Up 2d:2h:0m:10s           172.20.1.103  0.0.0.0
W-AP204-F3:CE       default  124      172.20.72.242  Up 2d:2h:0m:5s            172.20.1.103  0.0.0.0
W-AP204-F3:DE       default  124      172.20.72.247  Up 2d:2h:0m:32s           172.20.1.103  0.0.0.0
W-AP204-F3:EA       default  124      172.20.72.246  Up 2d:2h:0m:40s           172.20.1.103  0.0.0.0
W-AP204-53:56       default  125      172.20.72.237  Up 2d:2h:0m:15s           172.20.1.103  0.0.0.0
W-AP135-7F:A0       default  135      172.20.72.240  Up 2d:2h:0m:35s           172.20.1.103  0.0.0.0
VW-092-96:18       default  92       172.20.72.253  Up 2d:2h:2m:4s           172.20.1.103  0.0.0.0
VW-092-F3:03       default  92       172.20.72.235  Up 2d:1h:59m:53s          172.20.1.103  0.0.0.0
VW-092-F3:70       default  92       172.20.72.236  Up 2d:1h:59m:52s          172.20.1.103  0.0.0.0
VW-134-11:3C       default  134      172.20.72.239  Up 2d:2h:0m:3s            172.20.1.103  0.0.0.0
Flags: U = Unprovisioned; N = Duplicate name; G = No such group; L = Unlicensed
I = Inactive; D = Dirty or no config; E = Regulatory Domain Mismatch
X = Maintenance Mode; P = PPPoE AP; B = Built-in AP; s = LACP striping
R = Remote AP; R- = Remote AP requires Auth; C = Cellular RAP;
c = CERT-based RAP; 1 = 802.1X authenticated AP; 2 = Using IKE version 2
u = Custom-Cert RAP; S = Standby-mode AP; J = USB cert at AP
M = Mesh node; Y = Mesh Recovery
Total APs:19
```

Related Commands

Command	Description	Mode
show ap database-summary	To display a more general summary overview of the AP registered to a controller, use the command show ap database-summary.	Enable and Config modes

Command History

Version	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.2	The **usb** parameter was introduced
ArubaOS 6.4.2.0	The **LACP Striping** flag was introduced to indicate of the AP is configured with a LACP striping IP address. See ap-lacp-striping-ip on page 167 The output of **show ap database long** command displays the service tag of an AP.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap database-summary

```
show ap database-summary
```

Description

Show a general summary of access point information for this controller.

Usage Guidelines

Use this command to show the current number of active APs and Air Monitors. This command is also useful for determining how many unprovisioned APs or duplicate APs are on the network. For full details on each AP registered to a controller, use the command show ap database.

Examples

The output of this command shows that this controller can detect a total of five APs, four up, and one down.

```
AP Database Summary
-------------------
AP Mode               Total Up  Total Down  Total Upgrading*  Total Rebooting*  RAP Up  RAP
Down  RAP Upgrading*  RAP Rebooting*
-------               --------  ----------  ----------------  ----------------  ------  -------
-  --------------  --------------
Access Points         4         1           0                 0                 0       0
  0               0
Air Monitors          0         0           0                 0                 0       0
  0               0
Wired Access Points   0         0           0                 0                 0       0
  0               0
Mesh Portals          0         0           0                 0                 0       0
  0               0
Mesh Points           0         0           0                 0                 0       0
  0               0
Spectrum Monitors     1         1           0                 0                 0       0
  0               0

*Upgrading and Rebooting counts only reflect APs registered on this controller.
```

The output of this command includes the following information:

Column	Description
Total Up	Total number of APs with an *up* status.
Total Down	Total number of APs with a *down* status.
IPSEC Up	Total number of APs with an active (up) IPsec tunnel.
IPSEC Down	Total number of APs with an inactive (down) IPsec tunnel.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug bandwidth-management

```
show ap debug bandwidth-management [ap-name <ap-name>|ip-addr <ip-addr>
|ip6-addr <ip6-addr>]
```

Description

This command shows bandwidth management information for clients.

Syntax

Parameter	Description
ap-name <ap-name>	Name of the access point.
ip-addr <ip-addr>	IP address of the access point.
ip6-addr <ip6-addr>	IPv6 address of the access point

```
(host) (config) #show ap debug bandwidth-management ip-addr 172.16.10.64
Interface :wifi0
Shaping policy:Preferred-access
VAP aruba000
in      out     drop    fail    q       cmn[C:O:H:V]                    Numcl[C:O:H:V]  TotCl
 BWmgmt
1695206 75024   653909  0       13440   0-0-0--220      0-5-5-5 15      1-1
d1      d2      d3      d4      d5      d6      d7      d8      d9
0       1695206 1695206 0       6730    423252  20      0       0
idx     tokens  last-t  bw-t    in      out     drop    fail    q       tx-t    rx-t    al-t
 rate
1       -3640   9520    0       3671    1288    2367    0       672     350     3       533
 54/4342
2       -3640   9520    0       3665    1286    2363    0       672     349     3       533
 54/4342
3       -3640   9520    0       3666    1287    2363    0       672     350     3       533
 54/4342
4       -3640   9520    0       3665    1289    2360    0       672     350     3       533
 54/4342
5       -1319   38080   0       167680  1335    128487  0       2016    167     3       2132
 300/9500
6       -3640   9520    0       3661    1298    2347    0       672     353     3       533
 54/4342
7       -1362   38080   0       167645  1339    128438  0       2016    168     3       2132
 300/9500
8       -1319   38080   0       167659  1339    128462  0       2016    168     3       2132
 300/9500
9       -1577   38080   0       167651  1343    128383  0       2016    169     3       2132
 300/9500
10      -1577   38080   0       167643  1344    128339  0       2016    168     3       2132
 300/9500
11      86405   152320  0       167669  12289   0       0       0       697     3       7284
 866/20894
12      86475   152320  0       167635  12307   0       0       0       698     3       7284
 866/20894
13      86420   152320  0       167655  12299   0       0       0       698     3       7284
 866/20965
14      86345   152320  0       167653  12319   0       0       0       699     3       7284
 866/20965
```

```
15      86235   152320  0       167662  12336   0       0       0       700     3       7284
 866/20823
idx     d1      d2      d3      d4      d5      d6      d7      d8      d9      d10
0       0       74698   0       1695206 1040977 0       0       0       00
1       0       0       0       3671    1288    0       0       0       00
2       0       0       0       3665    1286    0       0       0       00
3       0       0       0       3666    1287    0       0       0       00
4       0       0       0       3665    1289    0       0       0       00
5       0       0       0       167680  39145   0       0       0       00
6       0       0       0       3661    1298    0       0       0       00
7       0       0       0       167645  39159   0       0       0       00
8       0       0       0       167659  39149   0       0       0       00
9       0       0       0       167651  39220   0       0       0       00
10      0       0       0       167643  39256   0       0       0       00
11      0       0       0       167669  167669  0       0       0       00
12      0       0       0       167635  167635  0       0       0       00
13      0       0       0       167655  167655  0       0       0       00
14      0       0       0       167653  167653  0       0       0       00
15      0       0       0       167662  167662  0       0       0       00
Interface :wifi1
Shaping policy:Preferred-access
```

The output of this command shows interface and a **fair-access** shaping policy for this AP.

```
(host) (config) #show ap debug bandwidth-management ap-name 2041
Interface :wifi0
Shaping policy:Fair-access
VAP aruba000
in      out     drop    fail    q       cmn[C:O:H:V]                    Numcl[C:O:H:V]  TotCl
 BWmgmt
1893229 62012   574014  0       11289   0-0-0-0 0-5-5-5 15      1-1
d1      d2      d3      d4      d5      d6      d7      d8      d9
0       1893229 1893229 0       1576    319320  27      0       0
idx     tokens  last-t  bw-t    in      out     drop    fail    q       tx-t    rx-t    al-t
 rate
1       60800   66666   0       4100    4097    0       0       0       1119    3       3773
 54/4243
2       60800   66666   0       4090    4087    0       0       0       1116    3       3773
 54/4342
3       36802   66666   0       187233  2367    114747  0       2256    296     3       3773
 300/9500
4       60800   66666   0       4083    4080    0       0       0       1113    3       3773
 54/4342
5       36997   66666   0       187253  2373    114784  0       2256    297     3       3773
 300/9500
6       60800   66666   0       4087    4084    0       0       0       1116    3       3773
 54/4292
7       36921   66666   0       187235  2382    114822  0       2256    298     3       3773
 300/9500
8       60800   66666   0       4095    4092    0       0       0       1117    3       3773
 54/4342
9       36921   66666   0       187205  2371    114780  0       2256    297     3       3773
 300/9500
10      36921   66666   0       187268  2367    114881  0       2256    296     3       3773
 300/9500
11      57151   66666   0       187254  5860    0       0       0       333     3       3578
 866/20965
12      57151   66666   0       187251  5891    0       0       2       334     3       3578
 866/20965
13      57151   66666   0       187236  5873    0       0       1       333     3       3578
 866/20965
14      57151   66666   0       187256  5880    0       0       4       334     3       3578
 866/20965
```

```
15      57151   66666   0       187254  5879    0       0       2       334     3       3578
 866/20965
idx     d1      d2      d3      d4      d5      d6      d7      d8      d9      d10
0       0       61683   0       1893229 1319215 0       0       0       00
1       0       0       0       4100    4100    0       0       0       00
2       0       0       0       4090    4090    0       0       0       00
3       0       0       0       187233  72486   0       0       0       00
4       0       0       0       4083    4083    0       0       0       00
5       0       0       0       187253  72469   0       0       0       00
6       0       0       0       4087    4087    0       0       0       00
7       0       0       0       187235  72413   0       0       0       00
8       0       0       0       4095    4095    0       0       0       00
9       0       0       0       187205  72425   0       0       0       00
10      0       0       0       187268  72387   0       0       0       00
11      0       0       0       187254  187254  0       0       0       00
12      0       0       0       187251  187251  0       0       0       00
13      0       0       0       187236  187236  0       0       0       00
14      0       0       0       187256  187256  0       0       0       00
15      0       0       0       187254  187254  0       0       0       00
```

The output of these commands include the following information:

Column	Description
VAP common counters	
d1	New tokens allocated for the Virtual AP
d2:	Rx time (past token update interval)
d3:	Rx time (token update interval prior to last one)
d4:	Rx time (packets in error)
d5:	Indicates whether high priority frames were received from the controllerin the last token update interval (mostly voice/video)
d6:	Frames with a policy set to Shape (Mostly TCP)
d7:	Frames with a policy set to Drop (mostly UDP)
d8, d9	Reserved for future use
Station allocation counters	
in	Number of inbound packets
out	Number of outbound packets
drop	Number of dropped packets
fail	Number of packets that failed to send
q	Number of queued packets

Column	Description
cmn[C:O:H:V]	Common pool tokens [Complimentary Code Keying (C): Orthogonal Frequency-Division Multiplexing (O): high throughput (H): Very High Throughput (V)]
Numcl[C:O:H:V]	Number of clients [Complimentary Code Keying (C): Orthogonal Frequency-Division Multiplexing (O): high throughput (H): Very High Throughput (V)]
TotCl	Total number of clients associated to the radio
BWmgmt	Indicates whether bandwidth shaping is enabled
idx	Association ID
tokens	Current tokens allocated for this client
last-t	Last tokens allocation
i	Packets in (from controller for this client)
out	Packets sent out (for this client)
drop	Packets dropped for client
q	Packets queues for this client
tx-t	Time spent on downstream sent transmissions (Tx) for this client
rx-t	Time spent on received transmissions (Rx) for this client
al-t	Allocated time for downstream Tx for this client
rate	Current Tx rate used for client

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug ble-config

```
show ap debug ble-config {ap-name <ap-name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

This command displays the Bluetooth Low Energy (BLE) configuration of the AP. In addition, the command displays the update interval to the Beacon Management Console (BMC), BLE token, AP Beacon (APB) status, the last update time to BMC, and the beacon MAC for which the last update was sent.

This command is supported in W-AP210 Series, W-AP220 Series (with external BLE USB), and W-AP320 Series.

Syntax

Parameter	Description
ap-name	Displays the BLE configuration of an AP for a specific AP based on the AP name.
ip-addr	Displays the BLE configuration of an AP for a specific AP based on the IPv4 address.
ip6-addr	Displays the BLE configuration of an AP for a specific AP based on the IPv6 address.

Example

The output of this command displays the update interval to the Beacon Management Console (BMC), BLE token, AP Beacon (APB) status, the last update time to BMC, and the beacon MAC for which the last update was sent.

```
(host) #show  ap debug ble-config ap-name ap325
BLE Configuration
-----------------
Item                              Value
----                              -----
LMS IP                            192.0.2.1
Authorization Token               YzJlNmEzOTMtYjE4MC00ZTc4LWJmNDEtMzMzNGEyY2NjY2RmOj
                                  Y4YzBhOWI2LWYxMGQtNGZlMi05YmVkLTI5ZTY5MDNkYjhmYQ==
Endpoint URL                      https://edit.meridianapps.com/api/beacons/manage
BLE Ready                         Yes
Update Intvl (in sec)             300
BLE debug log                     Enabled
Operational Mode                  Beaconing (APB: Beaconing)
Uplink Status                     Up (APB: -NA-)
APB Connection Status             0
Last BLE Device Update Attempt    c4:be:84:19:ef:99
Last Update Sent Time             2015-09-27 11:45:50
-----------------
Note: Uplink status is applicable only for Dynamic Console operational mode.
For APBs of type LS-BT1USB, applied operational mode is Beaconing if ap system profile setting
is either Persistent or Dynamic.
```

Command History

Command	Description
ArubaOS 6.4.4.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug ble-counters

```
show ap debug ble-counters {ap-name <ap-name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

This command displays the packet counters for BLE devices seen by the AP. In addition, the command displays if any high power beacons are seen, the time at which configuration update was received for the beacons from the BMC and the updated response sent back.

This command is supported in W-AP210 Series, W-AP220 Series (with external BLE USB), and W-AP320 Series.

Syntax

Parameter	Description
ap-name	Displays the packet counters for BLE devices seen by the AP for a specific AP based on the AP name.
ip-addr	Displays the packet counters for BLE devices seen by the AP for a specific AP based on the IPv4 address.
ip6-addr	Displays the packet counters for BLE devices seen by the AP for a specific AP based on the IPv6 address.

Example

The output of this command displays the packet counters for BLE devices seen by the AP. In addition, it displays if any high power beacons are seen, the time at which configuration update was received for the beacons from the BMC and the updated response sent back.

```
(host) #show  ap debug ble-counters ap-name ap325

BLE Device Table
----------------
MAC                Major#  Minor#  iBeacon     ScanRspV0   ScanRspV1   HiPwr       RSSI
---                ------  ------  -------     ---------   ---------   -----       ----
d0:39:72:d5:43:75  1000    1215           453           0          62           4  -71
c4:be:84:19:8b:a3  0       0              617           0           6           4  -81
c4:be:84:19:ec:67  0       0              604           0           1           4  -83
d0:39:72:d4:fa:9c  6       1                1           0           0           0  -89
c4:be:84:19:ef:99  1000    1374           126           0           0           0  --
78:a5:04:15:23:35  1000    1222           445           0          47           1  -70
c4:be:84:19:ec:2f  0       0              575           0           1           5  -84

LastUpdate  CfgRx     CfgTx
----------  -----     -----
4s          NoUpdate  NoUpdate
4s          NoUpdate  NoUpdate
4s          NoUpdate  NoUpdate
1292s       NoUpdate  NoUpdate
4s          NoUpdate  NoUpdate
4s          NoUpdate  NoUpdate
4s          NoUpdate  NoUpdate
```

```
Total beacons:7
Total serial bytes read from APB:138761
Total msg bytes processed:138761
Total serial bytes dropped:0
```

Command History

Command	Description
ArubaOS 6.4.4.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug ble-log

```
show ap debug ble-log {ap-name <ap-name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

This command displays the BLE debug logs of the AP.

This command is supported in W-AP210 Series, W-AP220 Series (with external BLE USB), and W-AP320 Series.

Syntax

Parameter	Description
ap-name	Displays the BLE debug logs of an AP for a specific AP based on the AP name.
ip-addr	Displays the BLE debug logs of an AP for a specific AP based on the IPv4 address.
ip6-addr	Displays the BLE debug logs of an AP for a specific AP based on the IPv6 address.

Example

The output of this command displays BLE process logs in the AP.

```
(Aruba7220) #show  ap debug ble-log ap-name ap325
[2127]2015-10-27 11:45:50 ble_ap_send_bmrequest:377 ble_
token:YzJlNmEzOTMtYjE4MC00ZTc4LWJmNDEtMzMzNGEyY2NjY2RmOjY4YzBhOWI2LWYxMGQtNGZlMi05YmVkLTI5ZTY5
MDNkYjhmYQ==. length:100
[2127]2015-10-27 11:45:50 ble_ap_send_bmrequest:378 ble_
url:https://edit.meridianapps.com/api/beacons/manage. length:48
[2127]2015-10-27 11:45:50 construct_bmrequest_payload:1265 mac:d0:39:72:d4:fa:9c retry bmreq
later... some attr pending (1/1/1/0/0).
[2127]2015-10-27 11:45:50 construct_bmrequest_payload:1337 6/7 beacons added to JSON. Total
beacons processed:7/7
[2127]2015-10-27 11:45:50 ble_ap_send_bmrequest: Sending BMRequest msg to ble_relay@192.0.2.2
[100/48] jsonlen:2145
[2127]2015-10-27 11:45:51 ble_ap_handle_bmresponse_msg:222 Result from 172.20.1.1:8505
strlen:30 footer:0xdeadbeef
[2127]2015-10-27 11:45:51 dwas_command:(nil) 1.
[2127]2015-10-27 11:45:51 process_json_response_from_ble_relay:2623 next_sync[0]:300 dwas_
command[0]:(null) updates array size is 0..
[2127]2015-10-27 11:45:56 msglen=90 :: 04 ff 57 f5 00 06 99 ef 19 84 be c4 0d 01 02 03 01 83
01 02 e8 03 02 02 5e 05 0f 10 09 45 8c 20 45 86 4e d3 8d 2f a0 84 2a cb d6 e6 06 01 02 07 01
08 08 01 01 09 01 01 0a 01 01 0b 01 26 0c 04 20 07 01 00 18 0b db 19 00 00 02 99 ef 19 84 be
c4 1a 01 03 19 01 00 04 01 00
[2127]2015-10-27 11:45:56 update_ble_data:2347 cmd status: seq_num: 6619 (19db) app_err (0):
Good  sys_err: 0  progress (2): Done  upg_progress[0]: 0.
[2127]2015-10-27 11:45:58 ageout_ble_device:694 numentries:7 sizeof(ble_mon_data_t):520.
[2127]2015-10-27 11:46:16 msglen=90 :: 04 ff 57 f5 00 06 99 ef 19 84 be c4 0d 01 02 03 01 83
01 02 e8 03 02 02 5e 05 0f 10 09 45 8c 20 45 86 4e d3 8d 2f a0 84 2a cb d6 e6 06 01 02 07 01
08 08 01 01 09 01 01 0a 01 01 0b 01 26 0c 04 34 07 01 00 18 0b db 19 00 00 02 99 ef 19 84 be
c4 1a 01 03 19 01 00 04 01 00
[2127]2015-10-27 11:46:16 update_ble_data:2347 cmd status: seq_num: 6619 (19db) app_err (0):
Good  sys_err: 0  progress (2): Done  upg_progress[0]: 0.
```

Command History

Command	Description
ArubaOS 6.4.4.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug ble-table

```
show ap debug ble-table {ap-name <ap-name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

This command displays the statistics for BLE devices seen by the AP. In addition, the command displays beacons seen by the APB, each of the beacons' attributes such as the Major-Minor numbers, Batter Level, Firmware version, time since the beacon was last heard by the APB.

This command is supported in W-AP210 Series, W-AP220 Series (with external BLE USB), and W-AP320 Series.

Syntax

Parameter	Description
ap-name	Displays the statistics for the BLE devices seen by the AP for a specific AP based on the AP name.
ip-addr	Displays the statistics for the BLE devices seen by the AP for a specific AP based on the IPv4 address.
ip6-addr	Displays the statistics for the BLE devices seen by the AP for a specific AP based on the IPv6 address.

Example

The output of this command displays the statistics for BLE devices seen by the AP.

```
(host) #show  ap debug ble-table ap-name ap325

BLE Device Table
----------------
MAC                HW_Type    FW_Ver         Flags   Status  Batt(%)  RSSI  Major#  Minor#
---                -------    ------         -----   ------  -------  ----  ------  ------
d0:39:72:d5:43:75  LS-BT1     OAD A 1.1-25   0x0001  IAH     100      -71   1000    1215
c4:be:84:19:8b:a3  LS-BT1USB  OAD B 1.1-25   0x0003  IAH     USB      -83   0       0
c4:be:84:19:ec:67  OCTOMORE   OAD B 1.1-26   0x0003  IAH     --       -74   0       0
c4:be:84:19:ef:99  OCTOMORE   OAD B 1.1-38   0x0083  LIA     --       --    1000    1374
78:a5:04:15:23:35  LS-BT1     OAD A 1.1-25   0x0001  IAH     100      -79   1000    1222
c4:be:84:19:ec:2f  OCTOMORE   OAD B 1.1-26   0x0003  IAH     --       -83   0       0

UUID                                   Tx_Power  Last Update  Uptime
----                                   --------  -----------  ------
5D3BCC63-BD6B-4FAF-906F-91C91519A69B   13        8s           11h:3m:0s
4152554E-F99B-4A3B-86D0-947070693A78   14        4s           23h:51m:30s
4152554E-F99B-4A3B-86D0-947070693A78   14        0s           19h:38m:30s
09458C20-4586-4ED3-8D2F-A0842ACBD6E6   2         4s           18h:45m:0s
09458C20-4586-4ED3-8D2F-A0842ACBD6E6   13        0s           22h:36m:0s
4152554E-F99B-4A3B-86D0-947070693A78   14        0s           19h:39m:0s

Total beacons:6
APB UI:[0/NO_UPGRADE_REQD]:65535(0xffff) blks:0/0 rep:0  total:0(0x0)
APB UI:upg_b_status-next:0x00/ooo:0x00/next2:0x00/upg_
b:0x00/allrx:0x00/oooBlk:0x00/oooBlk:0x00/oooBlk:0x00
```

```
APB UI:upg_b_status_errs-inv_upg:0x00/inv_cmd:0x00/inv_op:0x00/buf_tl:0x00/good:0x00
APB UI:acks/ka-From APB:0x00/0x00 From app:0x00,0x00/0x00
APB UI Clock:Start:1969-12-31 16:00:00  End:1969-12-31 16:00:00  Current:2015-10-27 11:48:20
Note: Battery level for LS-BT1USB devices is indicated as USB.
Note: Uptime is shown as Days hour:minute:second.
Note: Last Update is time in seconds since last heard update.
Status Flags:L:AP's local beacon; I:iBeacon; A: Aruba Beacon; H: Aruba HiPower Beacon
                :U:Image Upgrade Pending
```

Command History

Command	Description
ArubaOS 6.4.4.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug ble-update-status

```
show ap debug ble-update-status {ap-name <ap-name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

This command displays the configuration update status for BLE devices seen by the AP. In addition, the command displays the active versus desired configuration based on the configuration received from the BMC (if any).

This command is supported in W-AP210 Series, W-AP220 Series (with external BLE USB), and W-AP320 Series.

Syntax

Parameter	Description
ap-name	Displays the configuration update status for BLE devices seen by the AP based on the AP name.
ip-addr	Displays the configuration update status for BLE devices seen by the AP based on the IPv4 address.
ip6-addr	Displays the configuration update status for BLE devices seen by the AP based on the IPv6 address.

Example

The output of this command displays the configuration update status for BLE devices seen by the AP. In addition, the command displays the active versus desired configuration based on the configuration received from the BMC (if any).

```
(host) #show  ap debug ble-update-status ap-name ap325

BLE Device Table
----------------
BLE Device MAC     Attribute  Actual/Observed                       Desired/Pending
--------------     ---------  ---------------                      ---------------
d0:39:72:d5:43:75  Tx Power   13                                   13
d0:39:72:d5:43:75  Major      1000                                 1000
d0:39:72:d5:43:75  Minor      1215                                 1215
d0:39:72:d5:43:75  UUID       5D3BCC63-BD6B-4FAF-906F-91C91519A69B  5D3BCC63-BD6B-4FAF-906F-
91C91519A69B
d0:39:72:d5:43:75  DWAS       0                                    0
c4:be:84:19:8b:a3  Tx Power   14                                   14
c4:be:84:19:8b:a3  Major      0                                    0
c4:be:84:19:8b:a3  Minor      0                                    0
c4:be:84:19:8b:a3  UUID       4152554E-F99B-4A3B-86D0-947070693A78  4152554E-F99B-4A3B-86D0-
947070693A78
c4:be:84:19:8b:a3  DWAS       0                                    0
c4:be:84:19:ec:67  Tx Power   14                                   14
c4:be:84:19:ec:67  Major      0                                    0
c4:be:84:19:ec:67  Minor      0                                    0
c4:be:84:19:ec:67  UUID       4152554E-F99B-4A3B-86D0-947070693A78  4152554E-F99B-4A3B-86D0-
947070693A78
c4:be:84:19:ec:67  DWAS       0                                    0
```

```
d0:39:72:d4:fa:9c  ---         Ineligible                              Reason:Missing data
c4:be:84:19:ef:99  Tx Power    2                                       2
c4:be:84:19:ef:99  Major       1000                                    1000
c4:be:84:19:ef:99  Minor       1374                                    1374
c4:be:84:19:ef:99  UUID        09458C20-4586-4ED3-8D2F-A0842ACBD6E6    09458C20-4586-4ED3-8D2F-
A0842ACBD6E6
c4:be:84:19:ef:99  Firmware    1.1-38                                  1.1-38 (Status:65535/0 -
NotRequired)
c4:be:84:19:ef:99  DWAS        0                                       0
78:a5:04:15:23:35  Tx Power    13                                      13
78:a5:04:15:23:35  Major       1000                                    1000
78:a5:04:15:23:35  Minor       1222                                    1222
78:a5:04:15:23:35  UUID        09458C20-4586-4ED3-8D2F-A0842ACBD6E6    09458C20-4586-4ED3-8D2F-
A0842ACBD6E6
78:a5:04:15:23:35  DWAS        0                                       0
c4:be:84:19:ec:2f  Tx Power    14                                      14
c4:be:84:19:ec:2f  Major       0                                       0
c4:be:84:19:ec:2f  Minor       0                                       0
c4:be:84:19:ec:2f  UUID        4152554E-F99B-4A3B-86D0-947070693A78    4152554E-F99B-4A3B-86D0-
947070693A78
c4:be:84:19:ec:2f  DWAS        0                                       0

Total beacons:7
Devices marked "Ineligible" are currently not capable of being upgraded.
```

Command History

Command	Description
ArubaOS 6.4.4.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug bss-config

```
show ap debug bss-config [ap-name <ap-name>|bssid <bssid>||essid <essid>|ip-addr <ip-addr>|ip6-addr <ip6-addr>|port <slot>/<module>/<port>]
```

Description

Show the configuration for each BSSID of an AP. This information can be used to troubleshoot problems on an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Filter the AP Config table by AP name.
`bssid <bssid>`	Filter the AP Config table by BSSID. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`essid <essid>`	Filter the AP Config table by ESSID. An Extended Service Set Identifier (ESSID) is a alphanumeric name that uniquely identifies a wireless network. If the name includes spaces, you must enclose the ESSID in quotation marks.
`ip-addr <ip-addr>`	Filter the AP Config table by IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Filter the AP Config table by IP address by entering an IPv6 IP address in dotted-decimal format.
`port <slot>/<module>/<port>`	Filter the AP Config table by port numbers. The slot , module and port numbers should be separated by a forward slash (/).

Examples

The output of this command shows the AP configuration table for a specific BSSID.

```
(host) #show ap debug bss-config
Dell AP Config Table
--------------------
bss                ess   vlan ip          phy type fw-mode max-cl rates tx-rates preamble  mtu
---                ----  ---- --          --- ---- ------- ------  ----- -------- --------  ---
status wmm
------ ---
00:1a:1e:11:24:c2  cera2 66   10.6.1.203  g-HT ap  tunnel  64      0x3   0xfff    enable    0
enable enable
00:1a:1e:8d:5b:11  wpa2  65   10.6.1.198  a-HT ap  tunnel  20      0x150 0xff0    -         0
enable  enable
00:0b:86:9b:e5:60  guest 63   10.6.14.79  g    ap  tunnel  20      0x2   0x3fe    enable    0
enable  enable
00:1a:1e:97:e5:41  voip  66   10.6.1.199  g-HT ap  tunnel  20      0xc   0x14c    enable    0
enable enable
00:1a:1e:11:74:a1  voip  66   10.6.1.197  g-HT ap  tunnel  20      0xc   0x14c    enable    0
enable enable
00:1a:1e:11:5f:11  wpa2  65   10.6.1.200  a-HT ap  tunnel  20      0x150 0xff0    -         0
enable enable
```

The output of this command includes the following information:

Column	Description
bss	Basic Service Set (BSS) identifier, which is usually the AP's MAC address.
ess	Extended Service Set (ESS) identifier; a user-defined name for a wireless network.
vlan	The BSSID's VLAN number.
IP	The AP's IP address.
phy	One of the following 802.11 types • a • a-HT (high-throughput) • g • g-HT (high-throughput)
type	This column shows if the BSSID is for an access point (**ap**) or an air monitor (**am**).
fw-mode	The configured forward mode for the AP's virtual AP profile. • **bridge**: Bridge locally • **split-tunnel**: Tunnel to controller or NAT locally • **tunnel**: Tunnel to controller
max-cl	The maximum number of clients allowed for this BSSID.
preamble	Shows if short preambles are enabled for 802.11b/g radios. Network performance may be higher when short preamble is enabled. In mixed radio environments, some 802.11b wireless client stations may experience difficulty associating with the AP using a short preamble.
MTU	Maximum Transmission Unit (MTU) size, in bytes. This value describes the greatest amount of data that can be transferred in one physical frame.
status	Shows if this BSSID is enabled or disabled.
wmm	Shows if the BSSID has enabled or disabled WMM, also known as IEEE 802.11e Enhanced Distribution Coordination Function (EDCF) WMM provides prioritization of specific traffic relative to other traffic in the network.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug bss-stats

```
show ap debug bss-stats [bssid <bssid>]
```

Description

Show debug and troubleshooting statistics from a specific BSSID of an AP.

Syntax

Parameter	Description
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. An AP's BSSID is usually the AP's MAC address.

Examples

The example below shows part of the output of the command **show ap debug bss-stats bssid <bssid>**.

```
(host) #show ap debug bss-stats bssid 00:1a:1e:11:5f:11
BSSID Stats
-----------
BSSID Stats
-----------
Parameter                      Value
---------                      -----
------------------             General
------------------             Transmit
Tx Frames Rcvd                 972118
Tx Bcast Frames Rcvd           4139
Tx Frames Dropped              375241
Tx Bcast Frames Dropped        0
Tx Frames Transmitted          596088
Tx Bytes Rcvd                  633849487
Tx Bytes Transmitted           593931482
Tx Time Frames Rcvd            705492586
Tx Time Frames Dropped         397125178
Tx Time Frames Transmitted     308367408
Tx Success With Retry          91875
Tx Multiple Retries            467116
Tx Mgmt Frames                 502661
Tx Beacons Transmitted         3528036
Tx Probe Responses             502612
Tx Data Transmitted Retried    91867
Tx Data Transmitted            467744
Tx Data Frames                 469457
Tx Broadcast Data Frames In    4139
Tx Data Bytes Transmitted      580843154
Tx Data Bytes                  582581297
Tx Time Data Transmitted       173621140
Tx Time BC/MC Data             0
Tx Time Data dropped           4070686
Tx Time Data                   177691826
Tx Time Data (Ideal)           0
Tx Broadcast Data Frames Sent  4136
Tx Multicast Data Frames       4011
Tx DMO Multicast               0
Tx DMO Invalid                 0
```

. . .

The output of this command includes the following information:

Parameter	Description
Tx Frames Rcvd	Number of transmitted frames that were received.
Tx Bcast Frames Rcvd	Number of transmitted broadcast frames that were received.
Tx Frames Dropped	Number of transmitted frames that were dropped.
Tx Bcast Frames Dropped	Number of transmitted broadcast frames that were dropped.
Tx Frames Transmitted	Number of frames successfully transmitted.
Tx Bytes Rcvd	Number of transmitted bytes received.
Tx Bytes Transmitted	Number of transmitted bytes.
Tx Time Frames Rcvd	Number of times transmitted frames were received.
Tx Time Frames Dropped	Number of times transmitted frames were dropped.
Tx Time Frames Transmitted	Number of times frames were transmitted.
Tx Success With Retry	Number of frames that were successfully transmitted after being retried.
Tx Multiple retries	Number of frames that were successfully transmitted after being retried multiple times.
Tx Mgmt Frames	Number of management frames transmitted.
Tx Beacons Transmitted	Number of beacons transmitted.
Tx Probe Responses	Number of transmitted probe responses.
Tx Data Transmitted Retried	Number of retried data frames.
Tx Data Transmitted	Number of transmitted data frames.
Tx Data Frames	Number of transmitted data frames.
Tx Broadcast Data Frames In	Number of broadcast data frames received by the AP from wired interface to be transmitted in the air.
Tx Data Bytes Transmitted	Total data bytes received by an AP from its wired interface to be transmitted over the air.
Tx Data Bytes	Total data bytes transmitted by the AP over the air.
Tx Time BC/MC Data	Total time spent transmitting broadcast/multicast frames.

Parameter	Description
Tx Time Data dropped	Total time spent transmitting dropped frames.
Tx Time Data	Total time spent sending frames received for transmission, including the frames that were dropped after retrying.
Tx Broadcast Data Frames Sent	Broadcast data frames transmitted by the AP.
Tx Multicast Data Frames	Multicast data frames transmitted by the AP.
Tx DMO Multicast	**NOTE:** This counter applies to APs in decrypt-tunnel or split forwarding modes only. They may also increment for Instant APsin bridge forwarding mode if the Instant AP performs bridge-mode multicast conversion.
Tx DMO Invalid	**NOTE:** This counter applies to APs in decrypt-tunnel or split forwarding modes only. They may also increment for Instant APsin bridge forwarding mode if the Instant AP performs bridge-mode multicast conversion.
Tx DMO Converted	**NOTE:** This counter applies to APs in decrypt-tunnel or split forwarding modes only. They may also increment for Instant APsin bridge forwarding mode if the Instant AP performs bridge-mode multicast conversion.
Tx DMO Replicated	**NOTE:** This counter applies to APs in decrypt-tunnel or split forwarding modes only. They may also increment for Instant APsin bridge forwarding mode if the Instant AP performs bridge-mode multicast conversion.
Tx DMO Dropped	**NOTE:** This counter applies to APs in decrypt-tunnel or split forwarding modes only. They may also increment for Instant APsin bridge forwarding mode if the Instant AP performs bridge-mode multicast conversion.
Tx DMO No Client	Number of times no client was found for an association-ID indicated by the frame. (This value is typically normally 0.) **NOTE:** This counter applies to APs in decrypt-tunnel or split forwarding modes only. They may also increment for Instant APs in bridge forwarding mode if the Instant AP performs bridge-mode multicast conversion.
Tx DMO No BSSID	Number of times the BSSID indicated by the frame was not found. (This value is typically normally 0.) **NOTE:** This counter applies to APs in decrypt-tunnel or split forwarding modes only. They may also increment for Instant APsin bridge forwarding mode if the Instant AP performs bridge-mode multicast conversion.
Tx Unicast Data Frames	Number of transmitted unicast data frames.
Tx RTS Success	Number of Ready To Send (RTS) frames successfully transmitted.
Tx RTS Failed	Number of Ready To Send (RTS) frames that were not successfully transmitted
Tx CTS Frames	Number of Clear-to-Send (CTS) frames transmitted.

Parameter	Description
Tx Dropped After Retry	Number of frames dropped after an attempted retry.
Tx Dropped No Buffer	Number of frames dropped because the AP's buffer was full.
Tx Missed ACKs	Number of retries triggered because an acknowledgement was not received.
Tx EAPOL Frames	Number of EAPOL frames transmitted
TX STBC Frames	Number of transmitted frames with Space-time block coding (STBC) enabled.
TX LDPC Frames	Number of transmitted frames with Low Density Parity Check (LDPC) enabled.
Tx WMM	Number of Wi-fi Multimedia (WMM) packets transmitted for the following access categories. If the AP has not transmitted packets in a category type, this data row will not appear in the output of the command. • Tx WMM [BE]: Best Effort • Tx WMM [BK]: Background • Tx WMM [VO]: VoIP • Tx WMM [VI]: Video
Tx Data <value> Mbps	Number of frames transmitted at the specified rate, (Mbps).
Tx Data Bytes <value> Mbps	Number of bytes of data transmitted at the specified rate, (Mbps).
UAPSD OverflowDrop	Number of packets dropped due to Unscheduled Automatic Power Save Delivery (U-APSD) overflow.
Tx Mgmt Bytes	Total management frame bytes transmitted.
Tx Beacons Bytes	Total number of Beacon frame bytes transmitted.
Tx AMSDU pkt count	Total number of AMSDU bytes transmitted.
Rx Last SNR	The last recorded signal-to-noise ratio.
Rx Last SNR CTL0	The signal-to-noise ratio for the last received data packet on the primary (control) channel 0. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last SNR CTL1	The signal-to-noise ratio for the last received data packet on the secondary (control) channel 1. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last SNR CTL2	The signal-to-noise ratio for the last received data packet on the secondary (control) channel 2. This parameter is only displayed for APs operating in 40 Mhz mode.

Parameter	Description
Rx Last ACK SNR	Signal-to-noise ratio for the last received ACK packet.
Rx Last ACK SNR CTL0	Signal-to-noise ratio for the last received ACK packet on the primary (control) channel 0. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last ACK SNR CTL1	Signal-to-noise ratio for the last received ACK packet on the primary (control) channel 1. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last ACK SNR CTL2	Signal-to-noise ratio for the last received ACK packet on the primary (control) channel 2. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Frames Received	Number of frames received.
Rx retry frames	Number of retried frames received.
Rx data frames retried	Number of retried data frames received.
Rx Data Frames	Number of data frames received.
Rx Data Bytes	Number of data bytes received.
Rx Time Data	Total time spent on frames successfully received.
Rx Duplicate Frames	Number of duplicate frames received.
Rx Broadcast Data Frames	Number of broadcast frames received.
Rx Multicast Data Frames	Number of multicast frames received.
Rx Unicast Data Frames	Number of unicast frames received.
Rx Null Data Frames	Number of null data frames received.
Rx Mgmt Frames	Number of management frames received.
Control Frames	Number of control frames received.
Frames To Me	Number of frames received that are addressed to the specified BSSID.
Bytes To Me	Number of bytes received that are addressed to the specified BSSID.
Time To Me	Total time spent receiving frames sent to a specified BSSID.
Rx Probe Requests	Number of probe requests received.

Parameter	Description
`RX PS Poll Frames`	Power-Save Poll (PS-Poll) frames received. When a client exits a power-saving mode, it transmits a PS-Poll frame to the AP to retrieve any frames buffered while it was in power-saving mode.
`RX STBC Frames`	Number of received frames with STBC enabled.
`RX LDPC Frames`	Number of received frames with LDPC enabled.
`Rx Data <value> Mbps`	Number of frames received at the specified rate, (Mbps).
`Rx Data Bytes <value> Mbps`	Number of bytes of data received at the specified rate, (Mbps).

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug client-deauth-reason-counters

```
show ap debug client-deauth-reason-counters
```

Description

Shows the aggregate client deauth reason counters

Examples

The output of the command below shows client deauth reason counters.

```
(host) #show ap debug client-deauth-reason-counters
Deauth Reason Counters
----------------------
Name            Value
----            -----
```

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug client-mgmt-counters

```
show ap debug client-mgmt-counters
```

Description

Show the numbers of each type of message from an AP's clients. This information can be used to troubleshoot problems on an AP.

Examples

The output of the command below shows client management counters.

```
(host)#show ap debug client-mgmt-counters
Counters
--------
Name                            Value
----                            -----
Validate Client                 512
AP Stats Update Message         557750
3087                            6
Tunnel VLAN Membership          4493
Update STA Tunnel Request       229
Update STA Tunnel Response      229
ARM Update                      808921
ARM Propagate                   590567
ARM Neighbor Assigned           55396
STM SAP Down                    19
AP Message                      192
STA On Call Message             12164
STA Message                     19750
STA SIP authenticate Message    10919
STA Deauthenticate              707
Stat Update V3                  441447
VoIP CAC State Announcement     37185
Remote AP State                 371330
AP Message Response             164
assoc-req                       4358
assoc-resp                      4358
reassoc-req                     950
reassoc-resp                    950
disassoc                        452
deauth                          5117
sapcp                           351131
```

The output of this command includes the following information:

Parameter	Description
Validate Client	Number of times a client was validated.
AP Stats Update Message	Number of times an AP updated its statistics with the controller.
3087	(For internal use only)

Parameter	Description
Tunnel VLAN Membership	(For internal use only)
Update STA Tunnel Request	(For internal use only)
Update STA Tunnel Response	(For internal use only)
ARM Update	Number of times an AP has changed its adaptive radio management (ARM) settings.
ARM Propagate	(For internal use only)
ARM Neighbor Assigned	(For internal use only)
STM SAP Down	(For internal use only)
AP Message	(For internal use only)
STA On Call Message	Number of counters indicating that a station has an active phone call
STA Message	(For internal use only)
STA SIP authenticate Message	Number of messages indicating that a telephone has completed SIP registration and authentication.
STA Deauthenticate	Number of times a station sent a message to an AP to deauthenticate a client.
Stat Update V3	(For internal use only)
VoIP CAC State Announcement	Number of times a controller announces a call admission control (CAC) state change to the AP. Changes in CAC state could include the ability of call admission controls to accept more or fewer calls than previously configured.
Remote AP State	(For internal use only)
AP Message Response	(For internal use only)
assoc-req	Number of 802.11 association request management frames from the controller.
assoc-resp	Number of 802.11 association responses to the controller.
reassoc-req	Number of 802.11 reassociation requests to the controller.
reassoc-resp	Number of 802.11 reassociation responses from the controller.

Parameter	Description
`disassoc`	Number of 802.11 disassociation messages to the controller.
`deauth`	Number of 802.11 deauthorization messages from the controller.
`sapcp`	(For internal use only)

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug client-stats

```
show ap debug client-stats <client-mac)
```

Description

Show detailed statistics about a client.

Example

The command below displays statistics for packets received from and transmitted to the specified client.

```
(host) #show ap debug client-stats 00:19:7e:89:fa:e7

Station Stats
-------------
Parameter            Value
---------            -----
----------------     General Per-radio Statistics
----------------     Transmit specific Statistics
Frames Rcvd For TX   22
Tx Frames Dropped    0
Frames Transmitted   22
Success With Retry   1
Tx Mgmt Frames       2
Tx Probe Responses   0
Tx Data Frames       20
Tx CTS Frames        0
Dropped After Retry  0
Dropped No Buffer    0
Missed ACKs          1
Long Preamble        22
Short Preamble       0
Tx EAPOL Frames      13
Tx 6 Mbps            15
Tx 48 Mbps           5
Tx 54 Mbps           2
Tx WMM [VO]          15
UAPSD OverflowDrop   0
----------------     Receive specific Statistics
Last SNR             31
Last SNR CTL0        28
Last SNR CTL1        25
Last SNR CTL2        22
Last ACK SNR         32
Last ACK SNR CTL0    30
Last ACK SNR CTL1    28
Last ACK SNR CTL2    21
Last ACK SNR EXT0    5
Last ACK SNR EXT1    4
Frames Received      2932
Rx Data Frames       2930
Null Data Frames     2879
Rx Mgmt Frames       1
PS Poll Frames       0
Rx 6 Mbps            14
Rx 12 Mbps           6
Rx 18 Mbps           5
Rx 24 Mbps           2
Rx 36 Mbps           13
Rx 48 Mbps           1162
```

```
Rx 54 Mbps              1730
Rx WMM [BE]             39
```

The output of this command includes the following information:

Parameter	Description
`Frames Rcvd For TX`	Number of frames received for transmission.
`Tx Frames Dropped`	Number of transmission frames that were dropped.
`Frames Transmitted`	Number of frames successfully transmitted.
`Success With Retry`	Number of frames that were transmitted after being retried.
`Tx Mgmt Frames`	Number of management frames transmitted.
`Tx Probe Responses`	Number of transmitted probe responses.
`Tx Data Frames`	Number of transmitted data frames.
`Tx CTS Frames`	Number of clear-to-sent (CTS) frames transmitted.
`Dropped After Retry`	Number of frames dropped after an attempted retry.
`Dropped No Buffer`	Number of frames dropped because the AP's buffer was full.
`Missed ACKs`	Number of missed acknowledgements (ACKs)
`Long Preamble`	Number of frames sent with a long preamble.
`Short Preamble`	Number of frames sent with a short preamble.
`Tx EAPOL Frames`	Number of Extensible Authentication Protocol over LAN (EAPOL) frames transmitted.
`Tx <n> Mbps`	Number of frames transmitted at <n> Mbps, where <n> is a value between 6 and 300.
`Tx WMM`	Number of Wifi Multimedia (WMM) packets transmitted for the following access categories. If the AP has not transmitted packets in a category type, this data row will not appear in the output of the command. **`Tx WMM [BE]:`** Best Effort **`Tx WMM [BK]:`** Background **`Tx WMM [VO]:`** VoIP **`Tx WMM [VI]:`** Video
`UAPSD OverflowDrop`	Number of packets dropped due to Unscheduled Automatic Power Save Delivery (U-APSD) overflow.

Parameter	Description
Last SNR	The last recorded signal-to-noise ratio.
Last SNR CTL0	The signal-to-noise ratio for the last received data packet on the primary (control) channel 0. This parameter is only displayed for APs operating in 40 Mhz mode.
Last SNR CTL1	The signal-to-noise ratio for the last received data packet on the secondary (control) channel 1. This parameter is only displayed for APs operating in 40 Mhz mode.
Last SNR CTL2	The signal-to-noise ratio for the last received data packet on the secondary (control) channel 2. This parameter is only displayed for APs operating in 40 Mhz mode.
Last ACK SNR	Signal-to-noise ratio for the last received ACK packet.
Last ACK SNR CTL0	Signal-to-noise ratio for the last received ACK packet on the primary (control) channel 0. This parameter is only displayed for APs operating in 40 Mhz mode.
Last ACK SNR CTL1	Signal-to-noise ratio for the last received ACK packet on the primary (control) channel 1. This parameter is only displayed for APs operating in 40 Mhz mode.
Last ACK SNR CTL2	Signal-to-noise ratio for the last received ACK packet on the primary (control) channel 2. This parameter is only displayed for APs operating in 40 Mhz mode.
Last ACK SNR EXT0	Signal-to-noise ratio for the last received ACK packet on the secondary (extension) channel 0. This parameter is only displayed for APs operating in 40 Mhz mode.
Last ACK SNR EXT1	Signal-to-noise ratio for the last received ACK packet on the secondary (extension) channel 1. This parameter is only displayed for APs operating in 40 Mhz mode.
Frames Received	Number of frames received.
Rx Data Frames	Number of data frames received.
Null Data Frames	Number of null data frames received.
Rx Mgmt Frames	Number of management frames received.
PS Poll Frames	Number of power save poll frames received.
Rx <n> Mbps	Number of frames received at <n> Mbps, where <n> is a value between 6 and 300.
Tx WMM	Number of Wifi Multimedia (WMM) packets transmitted for the following access categories. If the AP has not transmitted packets in a category type, this data row will not appear in the output of the command.

Parameter	Description
	`Tx WMM [BE]:` Best Effort **`Tx WMM [BK]:`** Background **`Tx WMM [VO]:`** VoIP **`Tx WMM [VI]:`** Video

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug client-table

```
show ap debug client-table [ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>|ip6-addr <ip6-addr>]
```

Description

Show clients associated to an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Filter the client table by AP name.
`bssid <bssid>`	Filter the client table by BSSID. This will print clients on top from given BSSID.
`ip-addr <ip-addr>`	Filter the client table by AP IP address.
`ip6-addr <ip-addr>`	Filter the client table by AP IPv6 address.

Usage Guidelines

The **Tx_Rate**, **Rx_Rate**, **Last_ACK_SNR**, and **Last_Rx_SNR** columns shown in the output of this command display valuable troubleshooting information for clients trying to connect to a specific AP. Use this command to verify that the transmit (Tx_Rate) and receive (Rx_Rate) rates are not too low, and that the signal-to-noise (SNR) ratio is acceptable.

Examples

The example below the AP configuration table for a specific BSSID. In this example, the output is divided into multiple sections to better fit on the pages of this document. In the actual command-line interface, it appears in a single, long table.

```
(host) #show ap debug client-table ap-name apname1
Client Table
------------
MAC                ESSID            BSSID             Assoc_State  HT_State  AID
---                -----            -----             -----------  --------  ---
00:10:18:a9:7c:48  essidname1       6c:f3:7f:e7:5c:90  Associated   cAWvSseM  0x1

PS_State  UAPSD           Tx_Pkts  Rx_Pkts  PS_Qlen  Tx_Retries  Tx_Rate  Rx_Rate
--------  -----           -------  -------  -------  ----------  -------  -------
Awake     (0,0,0,0,N/A,0)  799      1377     0        48          1300     1053

Last_ACK_SNR  Last_Rx_SNR  TX_Chains Tx_Timestamp
------------  -----------  --------- ------------
32            47           3[0x7]    Sun Jul 21 11:05:50 2013

Rx_Timestamp              MFP Status (C,R)  Idle time  Client health (C/R)
------------              ----------------  ---------  -------------------
Sun Jul 21 11:05:50 2013  (0,0)             119        90/90

UAPSD:(VO,VI,BK,BE,Max SP,Q Len)
HT  Flags: A - LDPC Coding; W - 40MHz; S - Short GI 40; s - Short GI 20
D - Delayed BA; G - Greenfield; R - Dynamic SM PS
```

```
Q - Static SM PS; N - A-MPDU disabled; B - TX STBC
b - RX STBC; M - Max A-MSDU; I - HT40 Intolerant
VHT Flags: C - 160MHz; c - 80MHz;  V - Short GI 160; v - Short GI 80
E - Beamformee; e - Beamformer
HT_State shows client's original capabilities (not operational capabilities)
```

The output of this command includes the following information:

Parameter	Description
MAC	MAC address of a client.
ESSID	Extended Service Set identifier (ESSID) used by the client. An ESSID is a user-defined name for a wireless network.
BSSID	Basic Service Set identifier for the client.
Assoc_State	The associated state column shows whether or not the client is currently authorized and/or associated with the AP.
HT_State	Shows information about the client's high-throughput or very-high throughput transmission type. The description for each of the flags that can appear in this column follows the output of the command. • A - LDPC Coding • W - 40MHz • S - Short GI 40 • s - Short GI 20 • D - Delayed BA • G - Greenfield • R - Dynamic SM PS • Q - Static SM PS • N - A-MPDU disabled • B - TX STBC • b - RX STBC • M - Max A-MSDU • I - HT40 Intolerant • C - 160MHz • c - 80MHz • V - Short GI 16 • v - Short GI 80 • E - Beamformee • e - Beamformer
AID	802.11 association ID. A client receives a unique 802.11 association ID when it associates to an AP.
PS_State	Powersave state, showing if the AP is in the awake or power-save state.

Parameter	Description
UAPSD	This parameter shows the Unscheduled Automatic Power Save Delivery (UAPSD) queue statuses in the following comma-separated format: (<VO>,< VI>,< BK>, <BE>,< Max SP>,<Q Len>). • VO: If **1**, UAPSD is enabled for the VoIP access category. If UAPSD is disabled for this access category, this value is **0**. • VI: If **1**, UAPSD is enabled for the Video access category. If UAPSD is disabled for this access category, this value is **0**. • BK: If **1**, UAPSD is enabled for the Background access category. If UAPSD is disabled for this access category, this value is **0**. • BE: If **1**, UAPSD is enabled for the Best Effort access category. If UAPSD is disabled for this access category, this value is **0**. • Max SP: The maximum service period is the number of frame sent per trigger packet. This value is value can be 0, 2, 4 or 8. • Q Len: The number of frames currently queued for the client, from 0 to 16 frames.
Tx_Pkts	Number of packets transmitted from the AP to the client.
Rx_Pkts	Number of packets the AP received from the client.
PS_Qlen	Number of packets in the power save queue length.
Tx_Retries	Number of packets that the AP had to resend to the client due to an initial transmission failure.
Tx_rate	Rate at which last packet was sent to client (in Mbps)
Rx_rate	Rate at which last packet was received from client (in Mbps)
Last_ACK_SNR	Signal-to-Noise ratio of the last acknowledge packet sent by client.
Last_Rx_SNR	Signal-to-Noise ratio of the last data packet received from the client.
TX_Chains	The first digit in this value indicates the number of transmission chains on the radio currently in use, and the number in brackets shows which of the chains are active. The current status of each chain is indicated by a single-digit binary number; **1** if the chain is active, and **0** if it is inactive. In the example output above (**2 [0x5]**), two chain are active; chain one and chain three. • chain one: **1** (active) • chain two: **0** (inactive) • chain three: **1** (active In the example above, the chain would generate the value **101**, which translates to the hexadecimal number **5**. If all three chain were active, it would generate the value **111**, (the hexadecimal number **7**), and would appear in the CLI output as **3 [0x7]**.
Tx_timestamp	Date and time the last packet was sent to the client.

Parameter	Description
Rx_timestamp	Date and time the last packet was received from the client.
MFP status	Client is 802.11W capable/802.11W is enabled on Radio
Idle Time	Number of seconds elapsed since a packet was received from the client.
Client Health	This column shows the client health of the client and the AP radio, in the format <client_health>/<AP-health>. These values report the quality of link between the client and radio, An AP's client health is the efficiency at which that AP transmits downstream traffic to a particular client. This value is determined by comparing the amount of time the AP spends transmitting data to a client to the amount of time that would be required under ideal conditions, that is, at the maximum Rx rate supported by client, with no data retries. A client health metric of 100% means the actual airtime the AP spends transmitting data is equal to the ideal amount of time required to send data to the client. A client health metric of 50% means the AP is taking twice as long as is ideal, or is sending one extra transmission to that client for every packet. A metric of 25% means the AP is taking four times longer than the ideal transmission time, or sending 3 extra transmissions to that client for every packet.

Command History

Version	Description
ArubaOS 3.0	Command Introduced
ArubaOS 6.3.1	The Client Health metric was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug client-trace

```
show ap client-trace
   {ap-name <ap-name>}|{ip-addr <ip>}|{ip6-addr <ip6>} mac <client-mac>
```

Description

Use this command to show counts of different types of management data frames traced from a client MAC address.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IPv4 address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.
mac <client-mac>	MAC address of the client..

Usage Guidelines

This command should only be used under the guidance of Dell technical support.

Related Commands

Command	Description
ap debug client-trace start	Use this command to trace management packets from a client MAC address.
ap debug client-trace stop	Use this command to stop tracing management packets from a client MAC address.

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show ap debug counters

```
show ap debug counters {ap-name <ap-name>|bssid <bssid>|group <group>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

Show AP reboot/bootstrap counters, and crash information for an individual AP or AP group, or all APs referenced on the controller.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show debug counters for an AP with a specified name.
`bssid <bssid>`	Show debug counters for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`group <group>`	Show debug counters for an AP group.
`ip-addr <ip-addr>`	Show debug counters for an AP with a specified IP address by entering an IP address in dotted-decimal format.
ip6-addr <ip6-addr>	Show debug counters for an AP with a specified IPv6 address by entering an IP address in dotted-decimal format.

Example

The output of this command shows how many times each AP has rebooted (a hard boot) or bootstrapped (a soft boot), the number of configuration changes sent and acknowledged by that AP, and whether or not the AP rebooted due to a kernel crash.

In this example, the output has been divided into multiple sections to better fit on the pages of this document. In the actual command-line interface, it will appear in a single, long table.

```
(host) #show ap debug counters group corp1
AP Counters
-----------
Name  Group  IP Address  Configs Sent  Configs Acked  AP Boots Sent
----  -----  ----------  ------------  -------------  -------------
AL1   corp1  10.6.1.209  1597             1597           0
AL10  corp1  10.6.1.198  165              165            0
AL12  corp1  10.6.1.200  195              195            0
AL15  corp1  10.6.1.197  1580             1580           0
AL16  corp1  10.6.1.199  73               73             0
AL19  corp1  10.6.1.212  8                8              0

AP Boots Acked  Bootstraps (Total)  Reboots  Crash
--------------  ------------------  -------  -----
0               1           (1)       0       N
0               2           (2)       1       Y
0               1           (1)       0       N
0               1           (1)       0       N
0               1           (1)       0       N
```

```
0               1           (1)        0        N
Total APs :6
```

The output of this command includes the following information:

Column	Description
Name	Name of the AP.
Group	Name of the AP's group.
IP Address	IP address of the AP.
Configs sent	Number of times configuration changes have been sent to the AP.
Configs Acked	Number of times that the AP has acknowledged receiving a configuration change.
AP Boots Sent	Number of times reboot requests have been sent to the AP.
AP Boots Acked	Number of times that the AP has acknowledged receiving a reboot request.
Bootstraps	Number of times the AP bootstrapped since AP reboot. Bootstraps are also known as "soft" restarts.
Total Bootstraps	Total number of times the AP bootstrapped since AP image upgrade.
Reboots	Number of times power to the AP cycled off and then on again since image upgrade. Reboots also known as "hard" restarts.
Crash	Indicates whether or not the AP was rebooted due to a kernel crash. Use show ap debug crash-info to view the crash signature.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug crash-info

```
show ap debug crash-info {ap-name <ap-name>|ip-addr <ip-addr>

ip6-addr <ip6-addr>}
```

Description

Show crash log information (if it exists) for an individual AP. The stored information is cleared from the flash after the AP reboots.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show crash information for an AP with a specified name.
`ip-addr <ip-addr>`	Show crash information for an AP with a specified IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show crash information for an AP with a specified IPv6 address by entering an IP address in dotted-decimal format.

Example

The output of this command shows a partial sample crash log information for an AP named **MyAP**

```
(host) #show ap debug crash-info ap-name MyAP

<4>ArubaOS Version x.x.x.x (build xxxx / label #xxxx)
<4>Built by p4build@cartman on 2012-07-29 at 14:44:06 PST (gcc version x.x.x
Cavium Networks Version: 1.4.0, build 58)
<4>CVMSEG size: 2 cache lines (256 bytes)
<4>Setting flash physical map for 16MB flash at 0x1ec00000
<4>Determined physical RAM map:
<7>On node 0 totalpages: 16384
<7>  DMA zone: 16384 pages, LIFO batch:3
<7>  DMA32 zone: 0 pages, LIFO batch:0
<7>  Normal zone: 0 pages, LIFO batch:0
<7>  HighMem zone: 0 pages, LIFO batch:0
<4>Primary instruction cache 32kB, virtually tagged, 4 way, 64 sets, linesize 128 bytes.
<4>Primary data cache 16kB, 64-way, 2 sets, linesize 128 bytes.
<4>Using 500.000 MHz high precision timer. cycles_per_jiffy=1000000
<6>Memory: 56636k/65536k available (1925k kernel code, 8840k reserved, 575k data, 2716k init,
0k highmem)
<4>Calibrating delay using timer specific routine.. 1000.32 BogoMIPS (lpj=1000322)
<4> available.
<4>Checking for the multiply/shift bug... no.
<4>Checking for the daddi bug... no.
<4>Checking for the daddiu bug... no.
<5>detected lzma initramfs
<5>initramfs: LZMA lc=3,lp=0,pb=2,dictSize=8388608,origSize=15217664
<5>LZMA initramfs
```

Command History

Introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug crypto

```
show ap debug crypto {ap-name <ap-name>|detail|history|ip-addr <ip-addr>}
```

Description

This command shows the debug crypto logs for an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Shows crypto logs information for an AP with a specified name.
`detail`	Specifies the crypto logs details for the following: **ap-name:** Specifies the name of AP. **ip-addr:** Specifies the IP Address of AP.
`history`	Specifies the crypto logs history information for the following: **ap-name:** Specifies the name of AP. **ip-addr:** Specifies the IP Address of AP.
`ip-addr <ip-addr>`	Shows crypto logs information for an AP with a specified IP address by entering an IP address in dotted-decimal format.

Example

The output of this command shows a partial debug crypto information for an AP named **MyAP**

```
(host) (config) #show ap debug crypto ap-name MyAP

2014-01-07 14:48:43 ESP: spi[93477900] 10:15:64:104 << 10:15:66:151
2014-01-07 14:48:43 ESP: spi[ca0db300] 10:15:66:151 << 10:15:64:104
2014-01-07 15:19:34 SEND: a793342e9b6f8bec : 25baf55ae40e91c3 , np=46, EXHG: CREATE_CHILD_SA
2014-01-07 15:19:34 RECV: a793342e9b6f8bec : 25baf55ae40e91c3 , np=46, EXHG: CREATE_CHILD_SA
2014-01-07 15:19:39 SEND: a793342e9b6f8bec : 25baf55ae40e91c3 , np=46, EXHG: INFORMATIONAL
2014-01-07 15:19:39 RECV: a793342e9b6f8bec : 25baf55ae40e91c3 , np=46, EXHG: INFORMATIONAL
2014-01-07 18:00:49 RECV: 090cbf2a1ff1c433 : a496e13623118522 , np=46, EXHG: CREATE_CHILD_SA
2014-01-07 21:33:02 RECV: 090cbf2a1ff1c433 : a496e13623118522 , np=46, EXHG: INFORMATIONAL
2014-01-07 22:49:00 SEND: d6e361df5a012297 : f5ffdd8f2be2f073 , np=46, EXHG: CREATE_CHILD_SA
2014-01-07 22:49:00 RECV: d6e361df5a012297 : f5ffdd8f2be2f073 , np=46, EXHG: CREATE_CHILD_SA
2014-01-07 22:49:00 ESP: spi[d774af00] 10:15:64:104 << 10:15:66:151
2014-01-07 22:49:00 ESP: spi[49799700] 10:15:66:151 << 10:15:64:104
2014-01-08 00:25:05 SEND: d6e361df5a012297 : f5ffdd8f2be2f073 , np=46, EXHG: CREATE_CHILD_SA
2014-01-08 00:25:05 RECV: d6e361df5a012297 : f5ffdd8f2be2f073 , np=46, EXHG: CREATE_CHILD_SA
2014-01-08 00:25:05 ESP: spi[83c32c00] 10:15:64:104 << 10:15:66:151
2014-01-08 00:25:05 ESP: spi[072a9200] 10:15:66:151 << 10:15:64:104
```

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show ap debug datapath

```
show ap debug datapath {ap-group <ap-group>|ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

Show datapath tunnel parameters of an AP or AP group.

Syntax

Parameter	Description
`ap-group <ap-group>`	Show data path information for a specific AP group.
`ap-name <ap-name>`	Show data path information for an AP with a specific name.
`bssid <bssid>`	Show data path information for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data path information for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show data path information for an AP with a specific IPv6 address by entering an IP address in dotted-decimal format.

Example

The output of the following command shows datapath tunnel parameters for an AP with the IP address 192.0.2.32.

```
(host) #show ap debug datapath ip-addr 192.0.2.32

Datapath Parameters Table
-------------------------
essid   encr-alg        client-vlan-id  tunnel-id  gre-type  deny-bcast  num-clients
-----   --------        --------------  ---------  --------  ----------  -----------
guest   Open            63              0x10f6     0x8300    disable     0
voip    WPA2 8021X AES  66              0x1103     0x8310    disable     7
corp    WPA2 PSK AES    66              0x10f1     0x8320    disable     0
guest   Open            63              0x10f7     0x8200    disable     1
wpa2    WPA2 8021X AES  65              0x10be     0x8210    enable      15
```

The output of this command includes the following information:

Column	Description
ESSID	The Extended Service Set Identifier is a unique name that identifies a wireless network
encr-alg	Encryption algorithm used by the network

Column	Description
client-vlan-id	ID of the network VLAN
tunnel-id	Identification number of the AP's tunnel.
gre-type	GRE tunnel type.
deny-bcast	If **enabled**, the AP will respond to broadcast probe requests. If **disabled**, the AP will not respond to these requests.
num-clients	Number of clients currently using the network.

The output of the following command shows datapath tunnel parameters for an AP with the IPv6 address 11:12:11:11::2.

```
(host) #show ap debug datapath ip6-addr 11:12:11:11::2
Datapath Parameters Table
-------------------------
essid                    encr-alg      client-vlan-id  tunnel-id  gre-type  deny-bcast  num-
clients
-----                    --------      --------------  ---------  --------  ----------  ------
-----
i-platform-mobility  WPA2 PSK AES  10              0x1000b    0x8300    disable     0
i-platform-mobility  WPA2 PSK AES  10              0x1000a    0x8200    disable     1
```

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug dot11r

```
show ap  debug dot11r
   efficiency <client-mac>
   state [ap-name <ap-name> | ip-addr <ip-addr>]
```

Description

This command displays all the r1 keys that are stored in an AP and the hit/miss rate of r1 keys cached on an AP before a Fast BSS Transition roaming.

Syntax

Parameter	Description
`efficiency <client-mac>`	Show the hit/miss rate of r1 keys cached on an AP before a Fast BSS Transition roaming for the specified client MAC address.
`state`	Show all the r1 keys that are stored in an AP based on the filter specified.
`ap-name <ap-name>`	Show debugging information for a specific AP.
`ip-addr <ip-addr>`	Show debugging information for an AP with a specific IP address by entering its IP address in dotted-decimal format.

Examples

Use this command to view all the r1 keys that are stored in an AP. You can filter the output based on the AP name or IP address.

```
(host) #show ap  debug dot11r state ap-name MAcage-105-GL

Stored R1 Keys
--------------
Station MAC        Mobility Domain ID  Validity Duration  R1 Key
-----------        ------------------  -----------------  ------
00:50:43:21:01:b8  1                   3568               (32): 94 ff 18 0a 5f 47 8b 3e 95 2b
93 31 bd 44 58 fe fe 6a ad aa 1d d7 29 94 fb 5b 7c 15 76 66 d2 1f
```

Use this command to view the hit/miss rate of r1 keys cached on an AP before a Fast BSS Transition roaming. This counter helps to verify if enough r1 keys are pushed to the neighboring APs.

```
(host) #show ap  debug dot11r efficiency
Fast Roaming R1 Key Efficiency
------------------------------
Client MAC         Hit (%)  Miss (%)
----------         -------  --------
00:50:43:21:01:b8  0 (0%)   0 (0%)
```

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show ap debug dot11r state

```
show ap  debug dot11r state [ap-name <ap-name> | ip-addr <ip-addr>]
```

Description

This command displays all the r1 keys that are stored in an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show debugging information for a specific AP.
`ip-addr <ip-addr>`	Show debugging information for an AP with a specific IP address by entering its IP address in dotted-decimal format.

Examples

Use this command to view all the r1 keys that are stored in an AP. You can filter the output based on the AP name or IP address.

```
(host) #show ap  debug dot11r state ap-name MAcage-105-GL

Stored R1 Keys
--------------
Station MAC        Mobility Domain ID  Validity Duration  R1 Key
-----------        ------------------  -----------------  ------
00:50:43:21:01:b8  1                   3568               (32): 94 ff 18 0a 5f 47 8b 3e 95 2b
93 31 bd 44 58 fe fe 6a ad aa 1d d7 29 94 fb 5b 7c 15 76 66 d2 1f
```

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show ap debug driver-log

```
show ap debug driver-log {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>|ip6-addr <ip-addr>}
```

Description

Show an AP's driver logs.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show log information for an AP with a specific name.
`bssid <bssid>`	Show log information for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show log information for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip-addr>`	Show log information for an AP with a specific IPv6 address.

Usage Guidelines

Use this command to review configuration changes made since the AP was last reset.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug gre-tun-stats

```
show ap debug gre-tun-stats {ap-name <ap-name>| bssid <bssid>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

Shows GRE tunnel packet statistics of an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Shows GRE tunnel packets information for an AP.
`bssid <bssid>`	Shows GRE tunnel packets information for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Shows GRE tunnel packets information for an AP with a specified IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip-addr>`	Shows GRE tunnel packets information for an AP with a specific IPv6 address.

Example

The output of this command shows GRE tunnel packets information for an AP named myAP.

```
(host) #show ap debug gre-tun-stats myAP
GRE HBT Tunnel Stats
--------------------
AP IP          Controller IP  Sent Count  HBT Tx Seqnum  Idle (secs)  Rcvd Count  HBT Rx
Seqnum  Idle (secs)
-----          -------------  ----------  -------------  -----------  ----------  ------------
-  -----------
10.15.121.240  10.15.121.240    0           12025          0            1506655     12025
    0
GRE Tunnel Packet Stats
-----------------------
MAC  BSSID  Tun Input  In IP Frags  To WLAN  Idle (secs)  Rate pps  From WLAN  Tun Output  Out
IP Frags  Idle (secs)  Rate pps
---  -----  ---------  -----------  -------  -----------  --------  ---------  ----------  ---
---------  -----------  --------
```

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show ap debug gsm-counters

```
show ap debug gsm-counters
  verbose
```

Description

Displays the GSM counters of an AP or AP group.

Syntax

Parameter	Description
verbose	Displays the event statistics in a tabular format.

Example

The output of the following command shows gsm counters of an AP:

```
(host) (config) #show ap debug gsm-counters verbose
STM GSM Counters
----------------
Name                                                    Value
----                                                    -----
AP Publish Events                                       15
AP Delete Events                                        3
Radio Publish Events                                    9548
Radio Delete Events                                     0
BSS Publish Events                                      6
Responses to BSS Rcvd                                   6
BSS Delete Events                                       0
STA Publish Events                                      0
STA Delete Events                                       0
WIRED_AP Publish Events                                 0
Responses to WIRED_AP Rcvd                              0
WIRED_AP Delete Events                                  0
MAC-User Publish Notifications                          0
MAC-User Notify Events                                  0
MAC-User Responses Sent                                 0
BSS Response time histogram [1...128] seconds in powers of 2  4 2 0 0 0 0 0 0
STA Response time histogram [1...128] seconds in powers of 2  0 0 0 0 0 0 0 0
STA Delete Reason                                       Count
-----------------                                       -----
```

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode

show ap debug ipc forwarding-statistics

```
show ap debug ipc forwarding-statistics {ap-name <ap-name>|ip-addr <ip-addr>|ip6-addr <ip-addr>}
```

Description

Show an AP's ipc forwarding statistics.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show log information for an AP with a specific name.
`ip-addr <ip-addr>`	Show log information for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip-addr>`	Show log information for an AP with a specific IPv6 address.

Usage Guidelines

Use this command to review configuration changes made since the AP was last reset.

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug lacp

```
show ap debug lacp {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>|ip6-addre<ipv6-addr>}
```

Description

Displays the number of GRE packets sent and received on the two Ethernet ports.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show LACP information for an AP with a specific name.
`bssid <bssid>`	Show LACP information for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show LACP information for an AP with a specific IPv4 address.
`ip6-addr <ipv6-addr>`	Show LACP information for an AP with a specific IPv6 address.

Usage Guidelines

Use this command to know if LACP is active on an AP from the number of GRE packets sent and received on the two Ethernet ports. If a GRE striping IP address is configured in the **ap-lacp-striping-ap** profile, the output of this command displays the GRE striping IP address.

Example 1

The following example displays that the wireless GRE packets are being sent and received on different wired ports of the AP for the 5GHz and 2.4GHz bands, and is only applicable to W-AP220 Series and W-AP270 Series. It also shows that the interfaces eth0 and eth1 are part of the link aggregation group (LAG):

```
AP LACP GRE Striping IP: 10.65.30.50
AP LACP Status
--------------
Link Status  LACP Rate  Num Ports  Actor Key  Partner Key  Partner MAC
-----------  ---------  ---------  ---------  -----------  -----------
Up           slow       2          17         2            00:0b:86:61:7a:58
Slave Interface Status
----------------------
Slave I/f Name  Permanent MAC Addr  Link Status  Member of LAG  Link Fail Count
--------------  -----------------  -----------  -------------  ---------------
eth0            6c:f3:7f:c6:72:82   Up           Yes            0
eth1            6c:f3:7f:c6:72:83   Up           Yes            1
GRE Radio Traffic Received on Enet Ports
----------------------------------------
Radio Num  Enet 0 Rx Count  Enet 1 Rx Count
---------  ---------------  ---------------
0          5048             0
1          0                23
Traffic Sent on Enet Ports
--------------------------
Radio Num  Enet 0 Tx Count  Enet 1 Tx Count
---------  ---------------  ---------------
```

```
0           65              3466
1           64              0
non-wifi    2               50
```

The following example is only applicable to W-AP320 Series:

```
#show ap debug lacp ap-name ap325 verbose
AP LACP GRE Striping IP: 10.3.44.34
AP LACP Status
--------------
Link Status  LACP Rate  Num Ports  Actor Key  Partner Key  Partner MAC
-----------  ---------  ---------  ---------  -----------  -----------
Up           slow       2          17         4            00:1a:1e:0f:b4:80
Slave Interface Status
----------------------
Slave I/f Name  Permanent MAC Addr  Link Status  Member of LAG  Link Fail Count
--------------  ------------------  -----------  -------------  ---------------
eth0            ac:a3:1e:cd:35:ce   Up           Yes            1
eth1            ac:a3:1e:cd:35:cf   Up           Yes            1
GRE Traffic Received on Enet Ports
----------------------------------
Radio Num  Enet 0 Rx Count  Enet 1 Rx Count
---------  ---------------  ---------------
0          23785            22083
1          0                0
non-wifi   15684            3
Traffic Sent on Enet Ports
--------------------------
Radio Num  Enet 0 Tx Count  Enet 1 Tx Count
---------  ---------------  ---------------
0          8166             307
1          0                0
non-wifi   32326            7
Link Aggregation destination list
---------------------------------
[ 0] 00:1A:1E:01:4F:28  Tx: 6008
[ 1] 24:77:03:F4:82:B4  Tx: 28
[ 2] 78:31:C1:BC:D6:12  Tx: 26
[ 3] F0:1F:AF:69:51:9E  Tx: 229
Total: 4
Odd numbered entries use striping GRE tunnel.
Total tunnel mode AMSDU Tx: 99
Link Aggregation station packet re-ordering statistics
------------------------------------------------------
3C:A9:F4:24:B2:54: exp-seq 21; eap 0 zero 0; rx 20 tx 20 drop 0 max_hold 0 skip 0 old-seq 0
(last-seq# 0); window: resets 0 pkts 0; Timer: start 0 stop 0 run 0 more 0
78:31:C1:BC:D6:12: exp-seq 223; eap 0 zero 0; rx 222 tx 222 drop 0 max_hold 0 skip 0 old-seq 0
(last-seq# 0); window: resets 0 pkts 0; Timer: start 0 stop 0 run 0 more 0
```

Command History

Version	Modification
ArubaOS 6.3.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug lldp

```
show ap debug lldp
```

Description

Show an AP's debug log.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show log information for an AP with a specific name.
`bssid <bssid>`	Show log information for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show log information for an AP with a specific IP address by entering an IP address in dotted-decimal format.

Usage Guidelines

An AP's log files show configuration changes since the AP was last reset.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug log

```
show ap debug log {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

Show an AP's debug log.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show log information for an AP with a specific name.
`bssid <bssid>`	Show log information for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show log information for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show log information for an AP with a specific IPv6 address by entering an IPv6 address in dotted-decimal format.

Usage Guidelines

An AP's log files show configuration changes since the AP was last reset.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.3	The **ip6-addr** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug config-msg-history

```
show ap debug config-msg-history [ap-name <ap-name>|ip-addr <ip-addr>
|ip6-addr <ip6-addr>]
```

Description

This command shows recent configuration messages sent and received by an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the access point.
`ip-addr <ip-addr>`	IP address of the access point.
`ip6-addr <ip6-addr>`	IPv6 address of the access point

Examples

The output of this command shows the configuration message history for the AP named "myAP-W-AP105."

```
(host) #show ap debug config-msg-history ap-name myAP-W-AP105
Thu Feb 13 06:32:31 2014(1843 secs ago): RCVD REQ type=CONFIG len=206 peer=10.17.160.4 seq_
num=2623 resps_sent=1
04000000C9040000000E050A11A0040452E90ED00400000A3F040000000104000000180400000000020102010200040
0000000102FF02FF02FF02FF0400000005
```

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug dot11r state

```
show ap  debug dot11r state [ap-name <ap-name> | ip-addr <ip-addr>]
```

Description

This command displays all the r1 keys that are stored in an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show debugging information for a specific AP.
`ip-addr <ip-addr>`	Show debugging information for an AP with a specific IP address by entering its IP address in dotted-decimal format.

Examples

Use this command to view all the r1 keys that are stored in an AP. You can filter the output based on the AP name or IP address.

```
(host) #show ap  debug dot11r state ap-name MAcage-105-GL

Stored R1 Keys
--------------
Station MAC        Mobility Domain ID  Validity Duration  R1 Key
-----------        ------------------  -----------------  ------
00:50:43:21:01:b8  1                   3568               (32): 94 ff 18 0a 5f 47 8b 3e 95 2b
93 31 bd 44 58 fe fe 6a ad aa 1d d7 29 94 fb 5b 7c 15 76 66 d2 1f
```

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show ap debug port status

```
show ap debug port status {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

Shows the status of the AP's wired ports.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the AP.
`bssid <bssid>`	BSSID of the AP.
`ip-addr <ip-addr>`	IP address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.

Examples

The output of the command displays the wired port status of an AP named **LocalAP1**. In this example, the output is divided into multiple sections to fit better on the pages of this document. In the actual command-line interface, it appears in a single long table.

```
(host) #show ap debug port status ap-name LocalAP1

AP "LocalAP1" Port Status
-----------------------------
Port  MAC                Type  Forward Mode  Admin    Oper  Speed   Duplex  802.3az   PoE  STP
 Portfast  TX-Packets  TX-Bytes   RX-Packets  RX-Bytes
----  ---                ----  ------------  -----    ----  -----   ------  -------   ---  ---
 --------  ----------  --------   ----------  --------
0     9c:1c:12:c0:ab:40  GE    N/A           enabled  up    1 Gb/s  full    disabled  N/A  N/A
 N/A       613192      318529911  963948      116679839
1     9c:1c:12:c0:ab:41  GE    tunnel        enabled  down  N/A     N/A     N/A       N/A  N/A
 N/A       0           0          0           0
```

Command History

Version	Modification
ArubaOS 6.2	Command introduced.
ArubaOS 6.3	A new column **STP** displays the spanning tree state of the wired port. The **ip6-addr** parameter was introduced.
ArubaOS 6.5	A new column **Portfast** displays the Portfast state of the wired port.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug radar-logs

```
show ap debug radar-logs
   ap-name <ap-name>
   ip-addr <ip-addr>
   ip6-addr <ip6-addr>
```

Description

Displays the latest four RADAR event logs from the AP. This command is useful for debugging false radar detection related issues.

This command is applicable for APs running the Broadcom chip-set.

Syntax

Parameter	Description
`ap-name <ap-name>`	Displays RADAR logs for an AP with a specific name.
`ip-addr <ip-addr>`	Displays RADAR logs for an AP with a specific IP address.
`ip6-addr <ip6-addr>`	Displays RADAR logs for an AP with a specific IPv6 address.

Example

The output of this command displays RADAR logs from an W-AP225.

```
(host) #show ap debug radar-logs ap-name W-AP225

The latest 4 radar event logs
Radar logs:

Pruned Intv:
3220-0
3220-1
3220-2
3220-3
3220-4
3220-5
3220-6
3220-7
3220-8
3220-9
3220-10

Pruned PW:
50-0
50-1
50-2
50-3
50-4
50-5
50-6
50-7
```

```
50-8
50-9
50-10

Nepochs=1 len=27 epoch_#=1; det_idx=0 pw_delta=0 min_pw=50 max_pw=50
Type 7 Radar Detection. Detected pulse index=0 fm_min=0 fm_max=0 nconsecq_pulses=5. Time from
last detection = 19, = 0min 19sec, Time 244
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Radar logs:

Pruned Intv:
4140-0
4140-1
4140-2
4140-3
4140-4
4140-5
4140-6
4140-7
4140-8
4140-9
4140-10

Pruned PW:
19-0
18-1
18-2
19-3
19-4
18-5
19-6
18-7
18-8
18-9
18-10

Nepochs=1 len=30 epoch_#=1; det_idx=0 pw_delta=1 min_pw=18 max_pw=19
Type 7 Radar Detection. Detected pulse index=0 fm_min=0 fm_max=0 nconsecq_pulses=9. Time from
last detection = 3, = 0min 3sec, Time 247
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Radar logs:

Pruned Intv:
4200-0
4200-1
4200-2
4200-3
4200-4
4200-5
4200-6
4200-7
4200-8
4200-9
4200-10

Pruned PW:
17-0
18-1
17-2
16-3
17-4
17-5
```

```
17-6
17-7
17-8
17-9
17-10

Nepochs=1 len=30 epoch_#=1; det_idx=0 pw_delta=2 min_pw=16 max_pw=18
Type 7 Radar Detection. Detected pulse index=0 fm_min=0 fm_max=0 nconsecq_pulses=9. Time from
last detection = 3, = 0min 3sec, Time 250
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Radar logs:
Valid LP: KIntv=151077 Ksalintv=27820 PW=1557 FM=255 pulse#=0 pw2=0 pw_dif=0 pw_tol=8 fm2=0
fm_dif=0 fm_tol=0
nLP=1 nSKIP=0 skipped_salvate=0 pw_fm_matched=0 #non-single=0 skip_tot=0 csect_single=1
Valid LP: KIntv=23 Ksalintv=23 PW=1558 FM=255 pulse#=1 pw2=1557 pw_dif=1 pw_tol=8 fm2=255 fm_
dif=0 fm_tol=127
nLP=2 nSKIP=0 skipped_salvate=0 pw_fm_matched=1 #non-single=1 skip_tot=0 csect_single=0
Valid LP: KIntv=36 Ksalintv=36 PW=1557 FM=255 pulse#=2 pw2=1558 pw_dif=1 pw_tol=8 fm2=255 fm_
dif=0 fm_tol=127
nLP=3 nSKIP=0 skipped_salvate=0 pw_fm_matched=2 #non-single=2 skip_tot=0 csect_single=0
Skipped LP: nLP=3 nSKIP=1 KIntv=59 Ksalintv=59 PW=1557 FM=255 Type=4 pulse#=3 skip_tot=1
csect_single=0
Valid LP: KIntv=35680 Ksalintv=35740 PW=1904 FM=255 pulse#=0 pw2=0 pw_dif=0 pw_tol=8 fm2=0 fm_
dif=0 fm_tol=0
nLP=4 nSKIP=0 skipped_salvate=0 pw_fm_matched=2 #non-single=2 skip_tot=1 csect_single=1
Valid LP: KIntv=25 Ksalintv=25 PW=1904 FM=255 pulse#=1 pw2=1904 pw_dif=0 pw_tol=8 fm2=255 fm_
dif=0 fm_tol=127
nLP=5 nSKIP=0 skipped_salvate=0 pw_fm_matched=3 #non-single=3 skip_tot=1 csect_single=0
Valid LP: KIntv=28 Ksalintv=28 PW=1904 FM=255 pulse#=2 pw2=1904 pw_dif=0 pw_tol=8 fm2=255 fm_
dif=0 fm_tol=127
nLP=6 nSKIP=0 skipped_salvate=0 pw_fm_matched=4 #non-single=4 skip_tot=1 csect_single=0
FCC-5 Radar Detection. Time from last detection = 17, = 0min 17sec, Time 454
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Parameter	Description
Pruned Intv	Displays the filtered and pre-processed RADAR pulse interval.
Pruned PW	Displays the filtered and pre-processed RADAR pulse width.

Command History

Command	Description
ArubaOS 6.4.3.0	Command Introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug radio-event-log status

```
show ap debug radio-event-log status {ap-name <ap-name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

Show information about the radio event information captured in packet log files.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show log information for an AP with a specific name.
`ip-addr <ip-addr>`	Show log information for an AP with a specific IPv4 address by entering its IPv4 address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show log information for an AP with a specific IPv6 address by entering its IPv6 address.

Example

```
Radio Event Logs
----------------
Radio Index  Radio's Bssid      Radio's Band  Event Type  Log File Size  Status
-----------  -------------      ------------  ----------  -------------  ------
0            00:24:6c:bd:65:b0  80211a        N/A         N/A            start
1            00:24:6c:bd:65:a0  80211g        N/A         N/A            stop
```

The output of this command includes the following information:

Parameter	Description
`radio Index`	Index number of the AP radio (0 or 1)
`Radio's BSSID`	BSSID of the AP radio. This is typically the AP radio's MAC address.
`Radio's Band`	Band used by the AP radio.
`Event Type`	Type of events recorded. By default, all supported event types are recorded. • N/A: The default event type setting, which captures all supported types of radio events. • ani Adaptive Noise Immunity control events • rcfind: Transmission (Tx) control event • rcupdate: Transmission (Tx) rate update event • rx: Received (Rx) status register event • text: Text record event • tx: Transmission (Tx) control and Tx status register event

Parameter	Description
`Log File Size`	Size of the log file. A value of N/A indicates that the packet log feature uses the default log file size of 3145728 bytes (3MB)
`Status`	Shows if packet log capture was started or stopped on the AP radio.

Related Commands

ap debug radio-event-log

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug radio-info

```
show ap debug radio-info
   ap-name <ap-name> radio <radio>
   ip-addr <ip-addr> radio <radio>
   ip6-addr <ip6-addr> radio <radio>
```

Description

Displays the Wi-Fi radio debug logs from the AP driver.

This command is applicable for W-AP200 Series, W-AP210 Series, W-AP220 Series, and W-AP270 Series access points.

Syntax

Parameter	Description
`ap-name <ap-name>`	Displays Wi-Fi radio debug logs for an AP with a specific name.
`ip-addr <ip-addr>`	Displays Wi-Fi radio debug logs for an AP with a specific IP address.
`ip6-addr <ip6-addr>`	Displays Wi-Fi radio debug logs for an AP with a specific IPv6 address.

Example

The output of this command displays the log information about Wi-Fi radio 0 for a W-AP225:

```
(host) #show ap debug radio-info ap-name W-AP225 radio 0

Radio Info Script
------------------
aruba_dbg_radio_info_0 Start time: Fri Mar 27 14:33:21 IST 2015
----------------------------------------------------------------
wifi0-drop-list:
_dma_rxreclaim(1633): 2520/2520 0/0
wlc_recvctl(44993): 3130421/3130421 0/0
wlc_dotxstatus(41101): 2502/2502 2502/2502
...
```

Command History

Command	Description
ArubaOS 6.4.2.6, ArubaOS 6.4.3.0	Command Introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug radio-registers

```
show ap debug radio-registers  {ap-name <name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>} {radio 0|1}
```

Description

This command allows you to view radio register changes.

Syntax

Parameter	Description
`ap-name`	Name of the AP for which you want to view register changes.
`ip-addr`	IPv4 address of the AP for which you want to view register changes.
`ip6-addr`	IPv6 address of the AP for which you want to view register changes.
`radio 0|1`	Show information for the specified radio on the AP.

Usage Guidelines

This command displays radio register changes made under the supervision of Dell technical support.

Command History

Introduced in ArubaOS6.2.

Command Information

Platforms	Licensing	Command Mode
802.11n-capable APs	Base operating system	Enable mode on master controllers

show ap debug radio-stats

```
show ap debug radio-stats {ap-name <ap-name>|ip-addr <ip-addr>} radio {0|1} [advanced]
```

Description

Show aggregate radio debug statistics of an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show log information for an AP with a specific name.
`ip-addr <ip-addr>`	Show log information for an AP with a specific IP address by entering its IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	IPv6 address of the Access Point.
`radio {0|1}`	Specify the ID number of the radio for which you want to view statistics.
`advanced`	Include this parameter to display additional radio statistics.

Example

The output of this command displays general statistics for the radio, as well as statistics for transmitted and received frames.

```
(host) #show ap debug radio-stats ap-name AP12 radio 1
RADIO Stats
-----------
Parameter            Value
---------            -----
------------------   General Per-radio Statistics
Total Radio Resets   0
Resets Beacon Fail   0
TX Power Changes     5
Channel Changes      2
Radio Band Changes   0
Current Noise Floor  95
11g Protection       0
------------------   Transmit specific Statistics
Frames Rcvd For TX   2452151
Tx Frames Dropped    1736429
Frames Transmitted   4247212
...
```

If you include the **advanced** option at the end of the **show ap debug radio-stats** command, the output of this command will include all the following parameters, as well as additional information for the SNR, frame counts, channel busy times, and data bytes for transmitted and received packets. If you omit the **advanced** option, the output will include less information, and the data will be displayed in a different order. The following table describes the output of this command when the **advanced** option is included.

Parameter	Description
Total Radio Resets	Total number of times the radio reset.
Resets Beacon Fail	Number of times the radio reset due to beacon failure.
BB check positives	Number of times the radio checked for a base-band hang condition
Resets BeacQ Stuck	An AP's radio typically sends a beacon every 100 milliseconds. If beacons are not sent at a regular interval or the radio experiences excessive noise, the beacon queue will reset. This parameter indicates the number of queue resets.
Resets Fatal Intr	Number of time the radio was reset because the AP hardware was unresponsive.
Resets RX Overrun	The number of radio resets due to Receive FIFO overruns.
Resets RF Gain	Number of radio resets due to gain changes.
Resets MTU Change	Number of times the radio reset due to a change in the Maximum Transmission Unit (MTU) value.
Resets TX Timeouts	Number of radio resets due to transmission timeouts (the radio doesn't transmit a signal within the required time frame.)
POE-Related Resets	If the radio power profile drops, an AP may not be able to support three transmit chains, and may drop to two chains only. This parameter displays the number of resets due to this type of power change.
External Reset	Number of times the AP has been reset because it was unplugged or its reset button was pressed.
PCI Fatal Intr Reset	Radio reset due to PCI fatal interrupt received from radio chip.
Chaimask Reset	Radio reset when new chain mask is configured.
TX stat Reset	Radio reset caused by inconsistent state of hardware transmit queue.
TX Power Changes	Number of times the radio's transmission power changed.
Channel Changes	Number of times the radio's channel changed.
Radio Band Changes	Number of time the radio's band changed.
Current Noise Floor	The residual background noise detected by an AP.

Parameter	Description
	Noise seen by an AP is reported as -dBm. Therefore, a noise floor of -100 dBm is smaller (lower) than a noise floor of -50 dBm. For most environments, the noise floor should be no greater than -80 dBm. Anything larger may indicate an interference problem which is drowning out good signals (data) in background noise.
`Dummy NF pkts on home channel`	Number of noise floor readings on the home channel.
`Dummy NF pkts on scan channel`	Number of noise floor readings on the scan channel.
`Avail TX Buffers`	An AP has a set number of buffers which it can use to buffer frames for non-responsive power save clients. The total number of buffer frames depends upon the AP model type.
`11g Protection`	This parameter shows whether 802.11g protection has been enabled or disabled.
`Last TX Antenna`	This parameter indicates whether the last frame transmitted was sent on antenna 1 or antenna 0. This parameter can be useful for troubleshooting external antennas.
`Last RX Antenna`	This parameter indicates whether the last frame received was via antenna 1 or antenna 0. This parameter can be useful for troubleshooting external antennas.
`Scan Requests`	Total number of scan requests received by the AP.
`Scan Rejects`	Total number of scan rejected by the AP.
`Scan Rejects (Misc 1)`	Number of scan rejects due to pending transmissions.
`Load aware Scan Rejects`	Load aware ARM preserves network resources during periods of high traffic by temporarily halting scanning if the load for the AP gets too high. The **load aware Scan Rejects** parameter shows the number of times the AP has rejected a scan because of the load aware scan feature.
`PS aware Scan Rejects`	If the ARM power-save aware scan feature is enabled, the AP will not scan a different channel if it has one or more clients and is in power save mode. The **ps aware Scan Rejects** parameter shows the number of times the AP has rejected a scan because of the power-save aware scan feature.
`EAP Scan Rejects`	If you enable the EAP-aware scanning feature in the AP's ARM profile, the AP will not attempt to scan a different channel if the Extensible Authentication Protocol over LAN (EAPOL) exchange is in progress with a client. This parameter shows the number of times the AP has rejected a scan because of the EAP aware scanning feature.

Parameter	Description
Voice aware Scan Rejects	If you enable the VoIP Aware Scan feature in the AP's ARM profile, the AP will not attempt to scan a different channel if one of its clients has an active VoIP call. This **Voice aware scan Rejects** parameter shows the number of times the AP has rejected a scan because of the Voip aware scan feature.
Video aware Scan Rejects	If you enable the Video Aware Scan feature in the AP's ARM profile, the AP will not attempt to scan a different channel if one of its clients has an active video session. This **Video aware scan Rejects** parameter shows the number of times the AP has rejected a scan because of the Video aware scan feature.
UAPSD Scan Rejects	Number of times the scan was rejected due to UAPSD-related transmissions.
Post radar related scan Rejects	Number of times the scan was rejected due to recent radar detection.
CABQ traffic Scan Rejects	Number of times the scan was rejected due to pending multicast transmissions.
Radio Reset Scan Rejects	Number of times the scan was rejected due to a recent radio reset.
Queue Drain Scan Rejects	This legacy statistic has been deprecated, and will not increment.
Scan Success	Number of successful scans. To view scan details, use the command **show ap arm scan-times**.
Scan Deferred	Number of times the scan was deferred due to pending beacon transmissions on the home channel.
EIRP	The value of this parameter is the transmission power level (in dBm) + the antenna gain value.
MAX EIRP	The max EIRP depends on AP capability and the regulatory domain constraint for the channel of operation. For example, in the US, Channels 36-48 have max EIRP of 23dBm
Dummy<number>	For internal use only.
UAPSD Flush STA Wake	Number of times a client wakes from power-save mode and flushes the UAPSD queue.
UAPSD SP Set	The number of unique UAPSD Scheduled Period is started in response to UAPSD trigger frames.

Parameter	Description
UASPD Dup Trig	The number of times duplicate UAPSD trigger frames are received (i.e., retried UAPSD triggers that were received by the AP more than once).
UAPSD Recv frame for TX	The number of frames received for transmission over the air interface using UAPSD
UAPSD Ageout Drain	The number of time UAPSD queue is drained (i.e. frames are dropped) due to ageout.
UAPSD TX proc comp	The number of UAPSD frames that were successfully transmitted
UAPSD SP In prog	The number of times a trigger frame was received while a Scheduled Period (SP) was already in progress based on an earlier trigger frame.
UAPSD QOS NULL TX	The number of times the AP had to respond with a QoS Null Data frame in response to a UAPSD trigger because AP did not have Data frame queued for that client
UAPSD TX HW Queued	The number of frames (Data and Null Data) that were transferred to the radio HW for transmission, in response to UAPSD triggers.
UAPSD SP Reset	The number of times the UAPSD Scheduled Period (SP) in progress is reset or canceled.
Tx Time perct @ beacon intvl	Percentage of time spent transmitting Wi-Fi frames since the last beacon.
Tx Frames Rcvd	Number of transmitted frames that were received.
Tx Bcast Frames Rcvd	Number of transmitted broadcast frames that were received.
Tx Frames Dropped	Number of transmitted frames that were dropped.
Tx Bcast Frames Dropped	Number of transmitted broadcast frames that were dropped.
Tx Frames Transmitted	Number of frames successfully transmitted.
Tx Bytes Rcvd	Number of transmitted bytes received.
Tx Bytes Transmitted	Number of transmitted bytes
Tx Time Frames Rcvd	Number of times transmitted frames were received.
Tx Time Frames Dropped	Number of times transmitted frames were dropped.

Parameter	Description
Tx Time Frames Transmitted	Number of times frames were transmitted.
Tx PS Unicast	Number of power save unicast frames
Tx DTIM Broadcast	Number of broadcast frames with DTIM values.
Tx Success With Retry	Number of frames that were successfully transmitted after being retried.
Tx Multiple retries	Number of frames that were successfully transmitted after being retried multiple times.
Tx Mgmt Frames	Number of management frames transmitted.
Tx Mgmt Frames (PPS)	Rate of retransmitted frames, in packets per second.
Tx Beacons Transmitted	Number of beacons transmitted.
Tx Beacons Transmitted (PPS)	Rate of transmitted beacons, in packets per second.
Tx Probe Responses	Number of transmitted probe responses.
Tx Probe Responses (PPS)	Rate of transmitted probe responses, in packets per second.
Tx Data Transmitted Retried	Number of retried data frames.
Tx Data Transmitted	Number of transmitted data frames.
Tx Data Frames	Number of transmitted data frames.
Tx Broadcast Data Frames In	Number of broadcast data frames received by the AP from wired interface to be transmitted in the air.
Tx Data Bytes Transmitted	Total data bytes received by an AP from its wired interface to be transmitted over the air.
Tx Data Bytes	Total data bytes transmitted by the AP over the air.
Tx Time Data Transmitted	Total time on spent successfully transmitting frames (including the retried frames).
Tx Time BC/MC Data	Total time spent transmitting broadcast/multicast frames.
Tx Time Data dropped	Total time spent transmitting dropped frames.

Parameter	Description
Tx Time Data	Total time spent sending frames received for transmission, including the frames that were dropped after retrying.
Tx Broadcast Data Frames Sent	Broadcast data frames transmitted by the AP.
Tx Broadcast Data Frames Sent (PPS)	Rate of broadcast data frames transmitted by the AP, in packets per second.
Tx Multicast Data Frames	Multicast data frames transmitted by the AP.
Tx Multicast Data Frames(PPS)	Rate of multicast data frames transmitted by the AP, in packets per second.
Tx DMO Multicast	The number of multicast frames transmitted as multicast without converting to unicast.
Tx DMO Invalid	The number of multicast frames which should have been converted but were not as due to invalid format. (This value is typically normally 0.)
Tx DMO Converted	The number of multicast frames received as multicast which were then converted to unicast one or more times. This counter increments once per multicast frame.
Tx DMO Replicated	The number of frames transmitted as unicast frames. For each multicast frame the counter is incremented by the number of replications for that frame. (The number of replications is the number of clients associated to the BSSID, VLANor group receiving these frames).
Tx DMO Dropped	The number of frames dropped as conversion was not consistent with state on the AP. (This value is typically normally 0.)
Tx DMO No Client	Number of times no client was found for an association-ID indicated by the frame. (This value is typically normally 0.)
Tx DMO No BSSID	Number of times the BSSID indicated by the frame was not found. (This value is typically normally 0.)
Tx Unicast Data Frames	Number of transmitted unicast data frames
Tx RTS Success	Number of Ready To Send (RTS) frames successfully transmitted.
Tx RTS Failed	Number of Ready To Send (RTS) frames that were not successfully transmitted

Parameter	Description
Tx CTS Frames	Number of Clear-to-Send (CTS) frames transmitted.
Tx CTS Frames (PPS)	Rate of CTS frames sent, in packets per second. (This parameter does not include CTS frames send in response to RTS).
Tx Powersave Queue Timeouts	Number of transmit frames discarded from the power save queue because the frames aged out
Tx Dropped After Retry	Number of frames dropped after an attempted retry.
Tx Dropped No Buffer	Number of frames dropped because the AP's buffer was full.
Tx Missed ACKs	Number of retries triggered because an acknowledgment was not received.
Tx Failed Beacons	Number of times a radio failed to transmit a beacon at the scheduled interval (100ms).
Tx Multi-Beacon Fail	Number of times multiple consecutive beacons failed to transmit.
Tx Long Preamble	Number of frames sent with a long preamble.
Tx Short Preamble	Number of frames sent with a short preamble.
Tx Beacon Interrupts	Number of broadcast beacons that were interrupted.
TX Interrupts	Number of transmission interrupts.
Tx FIFO Underrun	The number of transmitted FIFO overruns.
Tx Allocated Desc	Number of allocated transmit descriptors.
Tx Freed Desc	Number of freed transmit descriptors.
Tx EAPOL Frames	Number of EAPOL frames transmitted
TX STBC Frames	Number of transmitted frames with Space-time block coding (STBC) enabled.
TX LDPC Frames	Number of transmitted frames with Low Density Parity Check (LDPC) enabled.
Tx AGGR Good	Number of aggregated frames successfully transmitted.

Parameter	Description
`Tx AGGR Unaggr`	Number of non-aggregate frames transmitted due to unavailability of additional frames for aggregation at the time of transmission.
`Tx data <number> Mbps`	Number of frames transmitted at the specified rate (in Mbps).
`Tx <number> Mbps [Long]`	Number of frames with a long preamble transmitted at the specified rate.
`Tx <number> Mbps [Short]`	Number of frames with a short preamble transmitted at the specified rate.
`Tx HT <number> Mbps`	Number of high-throughput frames transmitted at the specified rate.
`Tx WMM [category]`	Number of Wi-Fi Multimedia (WMM) packets transmitted for the following access categories. If the AP has not transmitted packets in a category type, this data row will not appear in the output of the command. Tx WMM [BE]: Best Effort Tx WMM [BK]: Background Tx WMM [VO]: VoIP Tx WMM [VI]: Video
`Tx WMM [category] dropped`	Number of dropped Wi-Fi Multimedia (WMM) packets in the following access categories . If the AP has not transmitted packets in a category type, this data row will not appear in the output of the command. Tx WMM [BE]: Best Effort Tx WMM [BK]: Background Tx WMM [VO]: VoIP Tx WMM [VI]: Video
`Tx UAPSD OverflowDrop`	Number of packets dropped due to Unscheduled Automatic Power Save Delivery (U-APSD) overflow.
`TX Timeouts`	Number of transmission timeouts
`Lost Carrier Events`	Number of carrier sense timeouts.
`Tx HT40 Hang Detected`	Parameter deprecated.
`Tx HT40 Hang Stuck`	Parameter deprecated.
`Tx HT40 Hang Possible`	Parameter deprecated.

Parameter	Description
Tx HT40 Dfs IMM WAR	Number of times the HT 40 RX Clear Hang immunity workaround was employed.
Tx HT40 Dfs HT20 WAR	Number of times the HT 20 RX Clear Hang immunity workaround was employed.
Tx MAC/BB Hang Stuck	Number of times a workaround was employed for potential beacons stuck due to MAC or base-band stuck conditions.
Tx Mgmt Bytes	Total management frame bytes transmitted.
Tx Beacons Bytes	Total number of Beacon frame bytes transmitted.
Tx Data Frames Dropped	Number of transmitted data frames that were dropped.
Tx AMSDU pkt count	Total number of AMSDU bytes transmitted.
Rx Last SNR	The last recorded signal-to-noise ratio.
Rx Last SNR CTL0	The signal-to-noise ratio for the last received data packet on the primary (control) channel 0. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last SNR CTL1	The signal-to-noise ratio for the last received data packet on the secondary (control) channel 1. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last SNR CTL2	The signal-to-noise ratio for the last received data packet on the secondary (control) channel 2. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last SNR EXT0	Signal-to-noise ratio for the last received ACK packet on the secondary (extension) channel 0. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last SNR EXT1	Signal-to-noise ratio for the last received ACK packet on the secondary (extension) channel 1. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last SNR EXT2	Signal-to-noise ratio for the last received ACK packet on the secondary (extension) channel 2. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last ACK SNR EXT0	Signal-to-noise ratio for the last received ACK packet on the secondary (extension) channel 0. This parameter is only displayed for APs operating in 40 Mhz mode.

Parameter	Description
Rx Last ACK SNR EXT1	Signal-to-noise ratio for the last received ACK packet on the secondary (extension) channel 1. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Last ACK SNR EXT2	Signal-to-noise ratio for the last received ACK packet on the secondary (extension) channel 2. This parameter is only displayed for APs operating in 40 Mhz mode.
Rx Frames Received	Number of frames received.
Rx Good Frames	Number of frames received with no errors.
Rx Bad Frames	Number of bad or error frames received.
Rx Total Data Frames Recvd	Total number of data frames received.
Rx Total Mgmt Frames Recvd	Total number of management frames received.
Rx Total Control Frames Recvd	Total number of control frames received.
Rx Total Bytes Recvd	Total number of bytes received.
Rx Total Data Bytes Recvd	Total number of data bytes received.
Rx Total RTS Frames Recvd	Total number of Ready-To-Send (RTS) frames received.
Zx Total CTS Frames Recvd	Number of Clear-to-Send (CTS) frames received.
Rx Total ACK Frames	Number of acknowledgment frames received.
Rx Total Beacons Received	Number of beacons received.
Rx Total Probe Requests	Number of probe requests received.
Rx Total Probe Responses	Number of probe responses received.
Rx retry frames	Number of retried frames received.
Channel busy 1s	The percentage of time the radio channel was busy in the last 1 second.
Channel busy 4s	The percentage of time the radio channel was busy in the last 4 seconds.
Channel busy 64s	The percentage of time the radio channel was busy in the last 64 seconds.

Parameter	Description
Ch Busy perct @ beacon intvl	Percentage of time the channel was busy over the last 30 beacon intervals.
Rx Time perct @ beacon intvl	Percentage of time the AP was receiving data over the last 30 beacon intervals.
Rx Discarded Events	Number of non-802.11 events that were detected and discarded during normal operation.
Rx ARM Scan Frames	Number of scan frames sent for the adaptive radio management (ARM) feature.
Rx Data Frames	Number of data frames received.
Rx Data Frames (PPS)	Rate at which data frames were received, in packets per second.
Rx Data Bytes	Number of data bytes received.
Rx Time Data	Total time spent on frames successfully received.
Rx Duplicate Frames	Number of duplicate frames received.
Rx Broadcast Data Frames	Number of broadcast frames received.
Rx Multicast Data Frames	Number of multicast frames received.
Rx Unicast Data Frames	Number of unicast frames received.
Rx Null Data Frames	Number of null data frames received.
Rx Mgmt Frames	Number of management frames received.
Rx Mgmt Frames (PPS)	Rate at which management frames were received, in packets per second.
Rx Control Frames	Number of control frames received.
Rx Control Frames (PPS)	Rate at which control frames were received, in packets per second.
Rx Frames To Me	Number of frames received that are addressed to the specified BSSID.
Rx Bytes To Me	Number of bytes received that are addressed to the specified BSSID.

Parameter	Description
Rx Time To Me	Total time spent receiving frames sent to a specified BSSID.
Rx Broadcast Frames	Number of broadcast frames received.
Rx Probe Requests	Number of Probe requests received.
Rx Probe Requests (PPS)	Rate at which probe requests were received, in packets per second.
Rx RTS Frames	Ready To Send (RTS) frames received. These frames are sent when a computer has data to transmit.
Rx RTS Frames (PPS)	Rate at which RTS frames were received, in packets per second.
Rx CTS Frames	Clear To Send (CTS) frames received. This type of frame are used to verify that a client is ready to receive information.
Rx CTS Frames (PPS)	Rate at which CTS frames were received, in packets per second.
RX PS Poll Frames	Power-Save Poll (PS-Poll) frames received. When a client exits a power-saving mode, it transmits a PS-Poll frame to the AP to retrieve any frames buffered while it was in power-saving mode.
RX CRC Errors	Cyclic Redundancy Check (CRC) is a data sequence that is sent with a frame to help verify if all the data received correctly. Possible CRC error causes include: • Hardware malfunction • Loose or unconnected cables • RF interference, such as overlapping access point coverage on a channel or interfering 2.4-GHz signals from devices like microwave ovens • and wireless handset phones
RX PLCP Errors	Physical Layer Convergence Protocol (PLCP) errors.
Rx Frames Dropped	Number of received frames that were dropped.
Rx PHY Events	The number of Physical Layer Events, that are not 802.11 packets, detected by radio as part of its normal receive operation.
Rx RADAR Events	Number of times an AP detects a radar signature. Dell APs are DFS-compliant detects a radar signature, it will change its channel.
RX Interrupts	The number of receive interrupts received by the CPU from the radio.

Parameter	Description
RX Overrun	The number of Receive FIFO overruns.
Rx undecryptable	Number of non-decryptable frames received.
RX STBC Frames	Number of received frames with STBC enabled.
RX LDPC Frames	Number of received frames with LDPC enabled.
Rx data <number> Mbps	Data packets received at the specified rate (in Mbps).
Rx <number> Mbps	Packets received at the specified rate (in Mbps).
Rx data <number> Mbps	Packets received at the specified rate (in Mbps).
Rx HT <number> Mbps	Number of high-throughput packets received at the specified rate.
Rx WMM [BE]	Number of Wifi Multimedia (WMM) packets received for the following access categories. If the AP has not transmitted packets in a category type, this data row will not appear in the output of the command. Rx WMM [BE]: Best Effort Rx WMM [BK]: Background Rx WMM [VO]: VoIP Rx WMM [VI]: Video
RX bad length	Number of frames received with incorrect length.
Rx Null Src MAC	Number of received frames with source MAC address as NULL.
Rx Managment Frames Dropped	Number of received management frames that were dropped.
Rx Data Frames Dropped	Number of received data frames that were dropped.
SNR from CTL0	Signal-to-noise ratio (SNR) on chain 0.
Throttle drops	Number of received frames dropped by AP due to throttling when AP is under high load.
Stop all but Mgmt	Number of data frames dropped because radar was detected on a channel. An AP is allowed to send management frames only and must drop all other frames when radar is detected on a channel.

Command History

Command	Description
ArubaOS 3.0	Command Introduced
ArubaOS 6.3	The output of this command was enhanced to include the following information types, when their collection is enabled using the command ap debug advanced-stats. • Advanced statistics for transmitted and received frames. • Information about packets per second statistics for different frame types. • Advanced radio driver statistics for the specified radio. The **ip6-addr** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug received-config

```
show ap debug received-config
   ap-name <ap-name> [essid <essid>]
   bssid <bssid> [essid <essid>]
   ip-addr <ip-addr> [essid <essid>]
   ip6-addr <ip6-addr> [essid <essid>]
```

Description

Show the configuration the AP downloaded from the controller.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show log information for an AP with a specific name.
`bssid <bssid>`	Show log information for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show log information for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show log information for an AP with a specific IPv6 address by entering an IPv6 address in dotted-decimal format.

Example

The output of this command displays configuration information for each interface. The example below shows only part of the output for this command. Additional parameters not displayed are described in the table below.

```
(host) #show ap debug received-config ap-name AP12

Downloaded Config for WIFI 0
----------------------------
Item                                Value
----                                -----
BSSID
LMS IP                              10.6.2.250
Master IP                           10.100.103.2
Mode                                AP Mode
QBSS Probe Response                 Allow Access
Native VLAN ID                      1
SAP MTU                             1500 bytes
Heartbeat DSCP                      0
High throughput enable (radio)      Enabled
Channel                             40-
Beacon Period                       100 msec
Transmit Power                      15 dBm
Advertise TPC Capability            Disabled
Enable CSA                          Disabled
CSA Count                           4
Management Frame Throttle interval  1 sec
Management Frame Throttle Limit     20
```

```
Active Scan                          Disabled
VoIP Aware Scan                      Enabled
Power Save Aware Scan                Enabled
Load aware Scan Threshold            1250000 Bps
40 MHz intolerance                   Disabled
Honor 40 MHz intolerance             Enabled
Legacy station workaround            Disabled
Country Code                         US
ESSID                                guest
...
```

The output of this command includes the following information:

Parameter	Description
BSSID	The BSSID of the AP.
LMS IP	The LMS IP is the IP address of the local controller used by the AP for client data processing.
Master IP	For environments with multiple controllers, the master controller is the central configuration and management point for all local controllers.
Mode	Shows the operating modes for the AP. ap-mode: Device provides transparent, secure, high-speed data communications between wireless network devices and the wired LAN. am-mode: Device behaves as an air monitor to collect statistics, monitor traffic, detect intrusions, enforce security policies, balance traffic load, self-heal coverage gaps, etc.
QBSS Probe Response	Quality-of-service BSS (QBSS).
Native VLAN ID	The ID number of the Native VLAN.
SAP MTU	The Maximum Transmission Unit (MTU) for the GRE tunnel.
Heartbeat DSCP	DSCP value for the heartbeat traffic between the AP and the controller.
High throughput enable (radio)	Shows if high-throughput (802.11n) features on tare enabled or disabled on the radio.
Channel	Shows the channel number for the AP's 802.11a/802.11n physical layer.
Beacon Period	Shows the time, in milliseconds, between successive beacon transmissions. The beacon advertises the AP's presence, identity, and radio characteristics to wireless clients.
Transmit Power	Shows the current transmission power level.

Parameter	Description
Advertise TPC Capability	If enabled, the AP will advertise its Transmit Power Control (TPC) capability.
Enable CSA	Displays whether or not the AP has enabled channel switch announcements (CSAs) for 802.11h.
CSA Count	Number of channel switch announcements that must be sent before the AP will switch to a new channel.
Management Frame Throttle interval	Average interval that rate limiting management frames are sent from this radio, in seconds. If this column displays a zero (**0**), rate limiting is disabled for this AP.
Management Frame Throttle Limit	Maximum number of management frames that can come from this radio in each throttle interval.
Active Scan	Displays whether or not the active scan feature is enabled. This option elicits more information from nearby APs, but also creates additional management traffic on the network. **Active Scan** is disabled by default, and should *not be enabled* except under the direct supervision of Dell Support.
VoIP Aware Scan	Shows if VoIP aware scanning is enabled or disabled. If you use voice handsets in the WLAN, **VoIP Aware Scan** should be enabled in the ARM profile so the AP will not attempt to scan a different channel if one of its clients has an active VoIP call. This option requires that **Scanning** is also enabled.
Power Save Aware Scan	Shows if the power save aware scan is enabled or disabled. If enabled, the AP will not scan a different channel if it has one or more clients and is in power save mode.
Load aware Scan Threshold	The **Load Aware Scan Threshold** is the traffic throughput level an AP must reach before it stops scanning. Load aware ARM preserves network resources during periods of high traffic by temporarily halting ARM scanning if the load for the AP gets too high.
40 MHz intolerance	The specified setting allows ARM to determine if 40 MHz mode of operation is allowed on the 5 GHz or 2.4 GHz frequency band only, on both frequency bands, or on neither frequency band.
Honor 40 MHz intolerance	Shows if 40 MHz intolerance is enabled or disabled. If enabled, the radio will stop using the 40 MHz channels if the 40 MHz intolerance indication is received from another AP or station.
Legacy station workaround	Shows if interoperability for misbehaving legacy stations is enabled or disabled.

Parameter	Description
Country Code	Display the country code for the AP. The country code specifies allowed channels for that country.
ESSID	An Extended Service Set Identifier (ESSID), for the AP.
Encryption	Encryption type used on this AP.
WPA2 Pre-Auth	802.11x settings are **enabled** or **disabled**.
DTIM Interval	Number of beacons that should elapse before an AP sends beacon broadcasts for power save clients.
802.11a Basic Rates	Minimum data rate required for a client to associate with the AP. For an 802.11a radio, this value can be 6, 12 and 24 802.11 data rates. 802.11b/g radios will report a value of 1 and 2 802.11 data rates.
802.11a Transmit Rates	802.11 data rate at which the AP will transmit data to its clients. This value can be 6-54 for 802.11a radios, and 1-54 for 802.11b/g radios.
Station Ageout Time	Number of seconds a station may be idle before it is deauthorized from an AP.
Max Transmit Attempts	maximum number of times the AP will attempt to retransmit data.
RTS Threshold	The minimum packet size at which the AP will issue a request-to-send (RTS) before sending the packet.
Max Associations	The maximum number of clients allowed to associated with the AP
Wireless Multimedia (WMM)	Shows if Wireless Multimedia (WMM) is enabled or disabled for this AP. WMM provides prioritization of specific traffic relative to other traffic in the network.
WMM TSPEC Min Inactivity Interval	Displays the minimum inactivity time-out threshold of WMM traffic for this AP.
DSCP mapping for WMM voice AC	Displays the DSCP value used to map WMM voice traffic.
DSCP mapping for WMM video AC	Displays the DSCP value used to map WMM video traffic.
DSCP mapping for WMM best-effort AC	Displays the DSCP value used to map WMM best-effort traffic

Parameter	Description
DSCP mapping for WMM background AC	Displays the DSCP value used to map WMM background traffic.
Hide SSID	Shows if the feature to hide a SSID name in beacon frames is **enabled** or **disabled**.
Deny_Broadcast Probes	When a client sends a broadcast probe request frame to search for all available SSIDs, this option controls whether or not the system responds for this SSID. When enabled, no response is sent and clients have to know the SSID in order to associate to the SSID. When disabled, a probe response frame is sent for this SSID.
Local Probe Response	Shows if local probe response is enabled or disabled on the AP. If this option is enabled, the AP is responsible for sending 802.11 probe responses to wireless clients' probe requests. If this option is disabled, then the controller sends the 802.11 probe responses
Disable Probe Retry	Shows if the AP has enabled or disabled MAC-level retries for probe response frames. By default this parameter is enabled, which mean that MAC level retries for probe response frames is disabled.
Maximum Transmit Failures	Display the maximum number of transmission failures allowed before the client gives up.
BC/MC Rate Optimization	Shows if the AP has enabled or disabled scanning of all active stations currently associated to that AP to select the lowest transmission rate for broadcast and multicast frames. This option only applies to broadcast and multicast data frames; 802.11 management frames are transmitted at the lowest configured rate.
High throughput enable (SSID)	Shows if the AP has enabled or disabled the use of its high-throughput SSID in 40 MHz mode.
40 MHz channel usage	Determines if this high-throughput SSID allows high-throughput (802.11n) stations to associate.
MPDU Aggregation	Shows if the AP has enabled or disabled MAC protocol data unit (MDPU) aggregation.
Max transmitted A-MPDU size	Shows the maximum size, in bytes, of an A-MPDU that can be sent on the AP's high-throughput SSID.
Max received A-MPDU size	Shows the maximum size, in bytes, of an Aggregated-MAC Packet Data Unit (A-MPDU) that can be received on the AP's high-throughput SSID.

Parameter	Description
`Min MPDU start spacing`	Displays the minimum time between the start of adjacent MDPUs within an aggregate MDPU, in microseconds.
`Supported MCS set`	Comma-separated list of Modulation Coding Scheme (MCS) values or ranges of values to be supported on this high-throughput SSID.
`Short guard interval in 40 MHz mode`	Shows if the AP has enabled or disabled use of short guard interval in 40 MHz mode of operation.
`VLAN`	VLAN ID used by the SSID.
`Forward mode`	Shows the current forward mode (bridge, split-tunnel, or tunnel) for the virtual AP. This parameter controls whether 802.11 frames are tunneled to the controller using generic routing encapsulation (GRE), bridged into the local Ethernet LAN (for remote APs), or a combination thereof depending on the destination (corporate traffic goes to the controller, and Internet access remains local). Only 802.1X authentication is supported when configuring bridge or split tunnel mode.
`Band Steering`	Shows if band-steering has been enabled or disabled for a virtual AP. ARM's band steering feature encourages dual-band capable clients to stay on the 5GHz band on dual-band APs. This frees up resources on the 2.4GHz band for single band clients like VoIP phones. Band steering reduces co-channel interference and increases available bandwidth for dual-band clients, because there are more channels on the 5GHz band than on the 2.4GHz band. Dual-band 802.11n-capable clients may see even greater bandwidth improvements, because the band steering feature will automatically select between 40MHz or 20MHz channels in 802.11n networks. This feature is disabled by default, and must be enabled in a Virtual AP profile.

Command History

Command	Description
ArubaOS 3.0	Command Introduced
ArubaOS 6.3	The **ip6-addr** and **essid** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug shaping-table

```
show ap debug shaping-table {ap-name <ap-name>|ip-addr <ip-addr>}
```

Description

Show shaping information for clients associated to an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show shaping table information for a specific AP.
`ip-addr <ip-addr>`	Show shaping table information for a specific AP IP address by entering its IP address in dotted-decimal format.

Example

The following command shows the shaping table of an AP named ap22.

```
(host) #show ap debug shaping-table ap-name ap22

VAP station000
pktin   pktout  pktdrop pktqd   cmn[C:O:H]      drop    Numcl   TotCl   BWmgmt
0       0       0       0      0-0-0   0-0     0-0-0   0       0

d1      d2      d3      d4      d5      d6      d7      d8      d9
0       0       0       0      0       0       0       0       0

idx     tokens  last-t  in      out     drop    q       tx-t    rx-t    al-t    rate

idx     d1      d2      d3      d4      d5      d6      d7      d8      d9
0       0       0       0      0       0       0       0       0       0

VAP station001
pktin   pktout  pktdrop pktqd   cmn[C:O:H]      drop    Numcl   TotCl   BWmgmt
0       8144    0       0      0-0-0   0-0     0-2-0   2       0

d1      d2      d3      d4      d5      d6      d7      d8      d9
0       0       0       0      0       0       0       0       0

idx     tokens  last-t  in      out     drop    q       tx-t    rx-t    al-t    rate
1       0       0       0      2966    0       0       716     0       0       0
3       0       0       0      31      0       0       8       0       0       0

idx     d1      d2      d3      d4      d5      d6      d7      d8      d9
0       0       0       0      0       0       0       0       0       0
1       0       0       0      0       0       0       0       0       0
3       0       0       0      0       0       0       0       0       0
```

The output of this command includes the following information:

Column	Description
pktin	Number of packets received by the AP.
pktout	Number of packets sent by the AP.
pktdrop	Number of packets dropped by the AP.
pktqd	Number of packets queued.
cmn [C:O:H]	(For internal use only.)
drop	Number of CCK (802.11b) and OFDM (802.11a/g) packets dropped.
Numcl	Number of CCK (802.11b) and OFDM (802.11a/g) packets dropped.
TotCl	Total number of clients associated with the AP
Bwmgmt	This data column displays a 1 if the bandwidth management feature has been enabled. Otherwise, it displays a 0.
d<n>	(For internal use only.)
idx	Association ID.
tokens	This value represents the credits the station has to transmit tokens.
last-t	Number of tokens that were allocated to the station last time token allocation algorithm ran.
in	Number of packets received.
out	Number of packets sent.
drop	Number of dropped packets.
q	Number of queued packets
tx-t	Total time spent transmitting data.
rx-t	Total time spent receiving data.
al-t	Total time allocated for transmitting data to this station.
rate	(For internal use only.)

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug spanning-tree

```
show ap debug spanning-tree {ap-group <ap-group>|ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>}
```

Description

Show an AP's spanning tree statistics.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show log information for an AP with a specific name.
`bssid <bssid>`	Show log information for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show log information for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show log information for an AP with a specific IPv6 address by entering an IPv6 address in dotted-decimal format.

Example

The following command shows the .....

```
(host) #show ap debug spanning-tree
```

Command History

This command was introduced in ArubaOS 3.0

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug switching

```
show ap debug switching {ap-name <ap-name>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

Show an AP's switching statistics.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the Access Point.
`ip-addr <ip-addr>`	IP address of the Access Point.
`ip6-addr <ip6-addr>`	IPv6 address of the Access Point.

Example

The following command shows the .....

```
(host) #show ap debug switching
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.3	The **ip6** parameters was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug system-status

```
show ap debug system-status
   ap-name <ap-name>
   bssid <bssid>
   ip-addr <ip-addr>
   ip6-addr <ip6-addr>
```

Description

Show detailed system status information for an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show system status data for an AP with a specific name.
`bssid <bssid>`	Show system status data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show system status data for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show system status data for an AP with a specific IPv6 address by entering an IPv6 address in dotted-decimal format.

Usage Guidelines

Issue this command under the guidance of Dell technical support to troubleshoot network issues. The output of this command displays the following types of information (if it exists) for the selected AP:

• Bootstrap information	• Per-radio statistics	• Ethernet duplex/speed settings
• Descriptor Usage	• Encryption statistics	• Tunnel heartbeat stats
• Interface counters	• AP uptime	• Boot version
• MTU discovery	• memory usage	• LMS information
• ARP cache	• Kernel slab statistics	• Power status
• Route table	• Interrupts	• CPU type
• Interface Information	• Crash Information	• CPU usage statistics
• System Status Script		

The following parameters are included in the output of this command, and can help troubleshoot problems on an AP or wireless network.

Parameter	Description
The **Failed** column in the **Descriptor Usage** section	This parameter can tell you if the AP is dropping packets.
Interface Information table	This parameter can tell you if the Ethernet network is working properly. This table should not show an excessive number of errors.
AP Uptime table	Low values in this table can indicate problems with the wired network, or with the AP itself.
Tunnel Heartbeat table	This table can indicate the health of the underlying wired network.
Rebootstrap Information table /**Reboot Information** table	A large number of reboots can mean that the AP has hardware problems.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 5.0	Crash information parameter was introduced.
ArubaOS 6.3	The output of this command was enhanced to include the following information type for each ethernet interface: • broadcast and multicast TX/RX counts • fragmentation and reassembly counts • packets per second statistics for different frame types The **ip6-addr** parameter was introduced.
ArubaOS 6.4.2.0	Changed the format of the **System Status Script** output to the following: **function-name(line-num): new-total-drops/total-drops new-priority-drops/total-priority-drops** Example: **wlc_dotxstatus(40576): 5034/3231117 4272/1907873** This change helps to determine if priority (voice or video) frames are dropped from the AP Wi-Fi driver drop-list. **NOTE:** The **System Status Script** is displayed for W-AP200 Series and W-AP220 Series access points only.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug trace-addr

```
show ap debug trace-addr
```

Description

Show MAC addresses in the trace buffer.

Usage Guidelines

Use this command to troubleshoot wireless clients that are being traced for 802.11 communication

Examples

The output of the command shows the **Trace List** table. If no wireless clients are being traced, this table will be empty.

```
(host) #show ap debug trace-addr

Trace List
----------
MAC Address
-----------
00:1a:1e:c5:ca:b4
00:1a:1e:c5:d6:46
00:1a:1e:c5:d7:40
00:1a:1e:c5:d7:64
00:1a:1e:c5:d9:56
```

00:1a:1e:c5:d9:b0

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap debug usb

```
show ap debug usb

   ap-name <ap-name>

   ip-addr <ip-addr>

   ip6-addr <ip6-addr>
```

Description

This command displays the USB information provisioned on the RAP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show system status data for an AP with a specific name.
`ip-addr <ip-addr>`	Show system status data for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show system status data for an AP with a specific IPv6 address by entering an IPv6 address in dotted-decimal format.

Usage Guidelines

Use this command to view the USB information provisioned on the RAP.

Examples

The output of the command shows the USB information provisioned on the RAP.

```
(host) #show ap debug usb ap-name RAP2
USB Information
---------------
Parameter                   Value
---------                   -----
Manufacturer                 Pantech,
Product                      PANTECH
Serial Number
Driver                       ptuml_cdc_ether
Vendor ID                    106c
Product ID                   3718
USB Modem State              Active
USB Uplink RSSI(in dBm)      -73
Supported Network Services   CDMA GSM LTE
Firmware Version             L0290VWB522F.242
ESN Number                   990000472325325
Current Network Service      4G-LTE
```

Command History

Release	Modification
ArubaOS 6.2	Command introduced
ArubaOS 6.3	The **ip6-addr** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master or local controllers

show ap details

```
show ap details [advanced]{ap-name <ap-name>||ip-addr <ip-addr>|ip6-addr <ip6-addr>|wired-mac
<wired-mac>}
```

Description

Show detailed provisioning parameters, hardware, and operating information for a specific AP.

Syntax

Parameter	Description
`advanced`	Include the following additional data in the output of this command: • switch message counts • AP group information • Virtual AP operating information
`ap-name <ap-name>`	Show data for a specific AP by entering the name of the AP for which you want to display information.
`wired-mac <wired-mac>`	Show mac address of an AP.
`ip-addr <ip-addr>`	Show data for an AP with the specified IP address.
`ip6-addr <ip6-addr>`	Show data for an AP with the specified IPv6 address.

Examples

The example below shows part of the output for the command **show ap details ap-name <ap-name>**.

```
(host) # show ap details ap-name AP32
AP "AL39" Basic Information
---------------------------
Item            Value
----            -----
AP IP Address   10.6.1.206
LMS IP Address  10.6.2.253
Group           corp1344
Location Name   N/A
Status          Up
Up time         4d:12h:47m:32s

AP "AL39" Hardware Information
------------------------------
Item                Value
----                -----
AP Type             125
Serial #            AD0054972
Wired MAC Address   00:1a:1e:c9:17:38
Radio 0 BSSID       00:1a:1e:11:73:90
Radio 1 BSSID       00:1a:1e:11:73:80
Enet 1 MAC Address  00:1a:1e:c9:17:39
Service Tag         N/A
```

```
AP "AL39" Operating Information
-------------------------------
Item                 Value
----                 -----
AP State             Running
Entry created        2008-10-23 20:04:53
Last activity        2008-10-28 08:07:48
Reboots              0
Bootstraps           1
Bootstrap Threshold  7Slot/Port            2/24
```

The output of this command includes the following information:

Column	Description
AP IP Address	IP address of the AP
LMS IP Address	The IP address of the local management switch (LMS)—the Dell controller which is responsible for terminating user traffic from the APs, and processing and forwarding the traffic to the wired network.
Group	Name of the AP's AP group.
Location Name	Location of the AP.
Status	Current status of the AP, either **Up** or **Down**.
Up time	Number of hours, minutes and seconds since the last controller reboot or bootstrap, in the format *hours:minutes:seconds*.
Installation	AP Installation mode. The AP can be default (the factory set AP installation type, indoor or outdoor.
AP Type	AP model
Serial #	Serial number for the AP
Wired MAC address	MAC address of the wired interface.
Radio 0 BSSID	Basic Service Set Identifier (BSSID) of the AP's radio 0. This is usually the radio's MAC address.
Radio 1 BSSID	Basic Service Set Identifier (BSSID) of the AP's radio 1. This is usually the radio's MAC address.
Enet 1 MAC address	MAC address of the AP's Ethernet port.
Service Tag	Service tag of the AP.
AP State	Displays the AP's current operational state.

Column	Description
Entry created	Timestamp showing the time the AP registered with the controller.
Last activity	Timestamp showing the last time the AP communicated with the controller. An AP typically sends keepalive messages every minute.
Reboots	Number of times power to the AP cycled off and then on again. Reboots also known as “hard” restarts.
Bootstraps	Number of times the AP restarted. Bootstraps are also known as “soft” restarts.
Bootstrap threshold	Number of consecutive missed heartbeats on a GRE tunnel (heartbeats are sent once per second on each tunnel) before an AP rebootstraps. On the controller, the GRE tunnel timeout is 1.5 x bootstrap-threshold; the tunnel is torn down after this number of seconds of inactivity on the tunnel.
Port	The controller port used by the AP, in the format <slot>/<module>/<port>.
High throughput	Shows if high-throughput (802.11n) features are **enabled** or **disabled**.
Mode	Shows the operating modes for the AP. • **AP**: Device provides transparent, secure, high-speed data communications between wireless network devices and the wired LAN. • **AM**: Device behaves as an air monitor to collect statistics, monitor traffic, detect intrusions, enforce security policies, balance traffic load, self-heal coverage gaps, etc.
Band	The RF band in which the AP should operate: • 802.11g = 2.4 GHz • 802.11a = 5 GHz
Channel	Channel number for the AP 802.11a/802.11n physical layer. The available channels depend on the regulatory domain (country).
Secondary Channel	The secondary channel number for the AP. The secondary channel is a 20 MHz channel used in conjunction with the primary channel to create a 40 MHz channel for high-throughput clients. High-throughput capable APs use only the primary channel to communicate with 20 MHz clients. The secondary channel is used for transmissions with 40 MHz capable high-throughput clients.
EIRP	Current effective Isotropic Radiated Power (EIRP).

Column	Description
AP Name	Name of the AP.
AP Group	AP group to which the AP belongs.
Location name	Fully-qualified location name (FQLN) for the AP.
SNMP sysLocation	User-defined description of the location of the AP, as defined with the command **provision-ap syslocation**.
Master	Name or IP address for the master controller.
Gateway	IP address of the default gateway for the AP.
Netmask	Netmask for the AP's IP address.
IP Addr	IP address for the AP.
Dns IP	IP address of the DNS server.
Domain Name	Domain name used by the AP.
Server Name	DNS name of the controller from which the AP boots.
Server IP	IP address of the controller from which the AP boots
Antenna gain for 802.11a	Antenna gain for 802.11a (5GHz) antenna.
Antenna gain for 802.11g	Antenna gain for 802.11g (2.4GHz) antenna.
Antenna for 802.11a	Antenna use for 5 GHz (802.11a) frequency band. • 1: AP uses antenna 1 • 2: AP uses antenna 2 • both: AP uses both antennas
Antenna for 802.11g	Antenna use for 2.4 GHz (802.11g) frequency band. • 1: AP uses antenna 1 • 2: AP uses antenna 2 • both: AP uses both antennas
IKE PSK	The IKE pre-shared key.
PPPOE User Name	Point-to-Point Protocol over Ethernet (PPPoE) user name for the AP.

Column	Description
PPPOE Password	PPPoE password for the AP.
PPPOE Service Name	PPPoE service name for the AP.
USB User Name	The PPP username provided by the cellular service provider.
USB Password	A PPP password, if provided by the cellular service provider.
USB Device Type	The USB driver type.
USB Device Identifier	The USB device identifier.
USB Dial String	The dial string for the USB modem.
USB Initialization String	The initialization string for the USB modem.
USB TTY device path	The TTY device path for the USB modem.
Mesh Role	If the mesh role is “none,” the AP is operating as a thin AP. An AP operating as a mesh node can have one of two roles: mesh portal or mesh point.
Installation	The type of installation (**indoor** or **outdoor**). The **default** parameter indicates that the ArubaOS automatically selects an installation mode based upon the AP’s model type.
Latitude	Latitude coordinates of the AP, in the format *Degrees Minutes Seconds* (DMS).
Longitude	Longitude coordinates of the AP, in the format *Degrees Minutes Seconds* (DMS).
Altitude	Altitude, in meters, of the AP. This parameter is supported on outdoor APs only.
Antenna bearing for 802.11a	Horizontal coverage distance of the 802.11a (5GHz) antenna from true north, from 0-360 degrees. **NOTE:** This parameter is supported on outdoor APs only. The horizontal coverage pattern does not consider the elevation or vertical antenna pattern.
Antenna bearing for 802.11g	Horizontal coverage distance of the 802.11g (2.4GHz) antenna from true north, from 0-360 degrees. **NOTE:** This parameter is supported on outdoor APs only. The horizontal coverage pattern does not consider the elevation or vertical antenna pattern.

Column	Description
`Antenna tilt angle for 802.11a`	The angle of the 802.11a (5GHz) antenna. This parameter can range from between -90 degrees and 0 degrees for downtilt, and between +90 degrees and 0 degrees for uptilt.
`Antenna tilt angle for 802.11g`	The angle of the 802.11g (2.4GHz) antenna. This parameter can range from between -90 degrees and 0 degrees for downtilt, and between +90 degrees and 0 degrees for uptilt.
`Mesh SAE`	Shows if the AP has enabled or disabled Secure Attribute Exchange (SAE) on a mesh network. This setting is disabled by default.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.2	Introduced support for mesh parameters, additional antenna parameters, and AP location parameters.
ArubaOS 3.4	Introduced support for the following parameters: • installation • mesh-sae • set-ikepsk-by-addr • usb-dev • usb-dial • usb-init • usb-passwd • usb-tty • usb-type • usb-user
ArubaOS 5.0	The **mesh-sae** parameter no longer displays the **sae-default** setting if the parameter is disabled. Only the **sae-disable** option indicates that this parameter is currently in its default disabled state.
ArubaOS 6.1	The parameter **ip6-addr** was added to show data for an IPv6 AP.
ArubaOS 6.3	The parameter **bassid** was deprecated.
ArubaOS 6.4.2.0	The output of this command displays the service tag of an AP.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap enet-link-profile

```
show ap enet-link-profile [<profile>]
```

Description

Show a list of all Ethernet Link profiles.

Usage Guidelines

Include a profile name to display details for the specified Ethernet Link Profile, or omit the <profile> parameter to display a list of all Ethernet Link profiles.

Example

This command shows the speed of the Ethernet interface and the current duplex mode for the Ethernet Link profile “default”:

```
(host) #show ap enet-link-profile default

AP Ethernet Link profile "default"
---------------------------------
Parameter  Value
---------  -----
Speed      auto
Duplex     auto
```

The output of this command includes the following parameters:

Parameter	Description
Speed	The speed of the Ethernet interface. This value can be either **10 Mbps**, **100 Mbps**, **1000Mbps** (1 Gbps), or **auto** (auto-negotiated).
Duplex	The duplex mode of the AP’s Ethernet interface. This value can be either **full**, **half**, or **auto** (auto-negotiated).

Related Commands

Command	Description	Mode
ap enet-link-profile	This command configures an AP Ethernet link profile.	Config mode

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap essid

```
show ap essid
```

Description

Show a Extended Service Set Identifier (ESSID) summary for the controller, including the numbers of APs and clients associated with each ESSID.

Examples

The output of the command in the example below shows statistics for four configured ESSIDs.

```
(host) #show ap essid
ESSID Summary
-------------
ESSID            APs  Clients  VLAN(s)  Encryption
-----            ---  -------  -------  ----------
vocera  21   0        66       WPA2 PSK AES
voip    23   52       66,64    WPA2 8021X AES
guest            49   6        63       Open
wpa2    26   88       65,64    WPA2 8021X AES
Num ESSID:4
```

The output of this command includes the following information:

Column	Description
ESSID	An Extended Service Set Identifier (ESSID) is the identifying name of an 802.11 wireless network.
APs	Number of APs associated with the ESSID.
VLAN(s)	VLAN IDs of the VLANs for the ESSID.
Encryption	The layer-2 authentication and encryption used on this ESSID to protect access and ensure the privacy of the data transmitted to and from the network.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap ht-rates

```
show ap ht-rates bssid <bssid>
```

Description

Show high-throughput rate information for a basic service set (BSS).

Syntax

Parameter	Description
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. An AP's BSSID is usually the AP's MAC address.

Examples

The output of this command shows high-throughput rates for each supported MCS value. These values are applicable to high-throughput (802.11n-capable) APs only.

```
(host) #show ap ht-rates bssid 00:1a:1e:1e:5a:10

AP "AL12" Radio 0 BSSID 00:1a:1e:1e:5a:10 High-throughput Rates (Mbps)
-----------------------------------------------------------------------
MCS   Streams  20 MHz   40 MHz   40 MHz SGI
---   -------  ------   ------   ----------
  0    1          6.5     13.5     15.0
  1    1         13.0     27.0     30.0
  2    1         19.5     40.5     45.0
  3    1         26.0     54.0     60.0
  4    1         39.0     81.0     90.0
  5    1         52.0    108.0    120.0
  6    1         58.5    121.5    135.0
  7    1         65.0    135.0    150.0
  8    2         13.0     27.0     30.0
  9    2         26.0     54.0     60.0
 10    2         39.0     81.0     90.0
 11    2         52.0    108.0    120.0
 12    2         78.0    162.0    180.0
 13    2        104.0    216.0    240.0
 14    2        117.0    243.0    270.0
 15    2        130.0    270.0    300.0
```

The output of this command includes the following information:

Column	Description
`MCS`	A Modulation Coding Scheme (MCS) values supported on this high-throughput SSID.
`Streams`	Number of spatial streams used by the MCS index value.
`20 MHz`	802.11n data rates for the MCS for 20 Mhz transmissions.

Column	Description
`40 MHz`	802.11n data rates for the MCS for 40 Mhz transmissions.
`40 MHz SGI`	802.11n data rates for the MCS for 40 Mhz transmissions using a short guard interval.

Related Commands

Command	Description
show ap vht-rates	Show very-high-throughput rate information for a basic service set (BSS).

Command History

Introduced in ArubaOS 3.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap image-preload-status (deprecated)

```
show ap image-preload-status
   page <page>
   start <start>
```

Description

This command displayed the list of APs that will preload a new version of software from a controller with the AP preload feature activated. Starting with ArubaOS 6.4, command was replaced by the command show ap image-preload status.

Command History

Release	Modification
ArubaOS 6.3	Command introduced
ArubaOS 6.4	Command deprecated

show ap image-preload status

```
show ap image-preload status
   all
   list
   summary
```

Description

Display the list of APs that will preload a new version of software from a controller with the AP preload feature activated.

Syntax

Parameter	Description
`all`	Display the complete status of AP image preload operation.
`list`	Displays the list of APs and their image preload statuses.
`summary`	Summarizes the status of AP image preload operation.

Usage Guidelines

Issue this command to display a list of APs in the AP image preload list, and monitor the download status of each AP.

Example

The example below shows the current status of APs downloading a new image using the AP image preload feature.

```
(host) #show ap image-preload status all

AP Image Preload Parameters
---------------------------
Item                        Value
----                        -----
Status                      Active
Mode                        All APs
Partition                   0
Build                       40740
Max Simultaneous Downloads  512
Start Time                  2013-11-05 15:38:50

AP Image Preload AP Status Summary
----------------------------------
AP Image Preload State  Count
----------------------  -----
Preloaded               1
TOTAL                   1

AP Image Preload AP Status
--------------------------
AP Name             AP Group    AP IP       AP Type Preload State   Start Time          End
Time            Failure Count Failure Reason
```

```
-------            --------    -----       -------  -------------   ----------           -----
---              -------------  --------------
6c:f3:7f:c3:a6:56   SecureJack  10.3.90.14  135      Preloaded      2013-11-05 15:38:50  2013-
11-05 15:39:58  0
```

(host) #show ap image-preload status list

```
AP Image Preload AP Status
--------------------------
AP Name            AP Group    AP IP       AP Type  Preload State  Start Time           End
Time             Failure Count  Failure Reason
-------            --------    -----       -------  -------------  ----------           ------
--             -------------  --------------
6c:f3:7f:c3:a6:56  SecureJack  10.3.90.14  135      Preloaded      2013-11-05 15:38:50  2013-
11-05 15:39:58  0
```

(host) #show ap image-preload status summary

```
AP Image Preload Parameters
---------------------------
Item                        Value
----                        -----
Status                      Active
Mode                        All APs
Partition                   0
Build                       40740
Max Simultaneous Downloads  512
Start Time                  2013-11-05 15:38:50
AP Image Preload AP Status Summary
----------------------------------
AP Image Preload State  Count
----------------------  -----
Preloaded               1
TOTAL                   1
```

The output of this command includes the following information:

Column	Description
AP Image Preload Parameters	Shows if this feature has been enabled (has an active status) or is disabled (has an inactive status).
AP Image Preload AP Status Summary	These two columns list the different possible preload states for APs eligible to preload a new software image, and the total number of APs in each state. • **Preloaded**: Number of APs that have finished preloaded a new software image. • **Preloading**: Number of APs that are currently downloading the new image. • **Waiting**: Number of APs that are waiting to start preloading the new image from the controller.
AP Image Preload AP Status	This section displays the following details for each preload attempt.

Column	Description
AP Name	Name of an AP eligible to preload a new software image.
AP Group	AP group of an AP eligible to preload a new software image.
AP IP	IP address of the AP.
AP Type	AP model type.
Preload State	Current state of the AP's preload attempt • **Preloaded**: The AP is finished preloading a new software image. • **Preloading**: The AP is currently downloading the new image. • **Waiting**: The AP is waiting to start preloading the new image from the controller.
Start Time	Time the AP starting preloading an image.
End Time	Time the AP completed the image preload.
Failure Count	Number of times that the AP failed to preload the new image.
Failure Reason	In the event of an image preload failure, this column will display the reason that the image download failed.

Related Commands

show ap image version

Command History

Release	Modification
ArubaOS 6.4	This command is introduced to replace **show ap image-preload-status** command, which is deprecated in 6.4.

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap image version

```
show ap image version [ap-name <ap-name>|ip-addr <ip-addr>]
```

Description

Display an AP's image version information.

Syntax

Parameter	Description
`ap-name <ap-name>`	View image version information for an AP with a specific name.
`ip-addr <ip-addr>`	View image version information for an AP with a specific IP address. Enter the address of the AP in dotted-decimal format.

Usage Guidelines

By default, this command displays image version information for all APs associated with the controller. To view image version information for a single AP, specify an AP using the **ap-name** or **ip-addr** parameters

Example

The output in the example below shows the current running image version as well as the image version stored in the controller's flash memory.

```
(host) #show ap image version ip-addr 192.0.2.45
Access Points Image Version
---------------------------
AP                              Running Image Version String
--                              ---------------------------
192.0.2.45                      6.4.0.0 Wed Nov 27 10:46:42 PDT 2013

Flash Image Version String            Matches    Num Matches
--------------------------            -------    -----------
6.4.0.0 Wed Nov 27 10:46:42 PDT 2013  Yes        3

Num Mismatches    Bad Checksums    Image Load Status
--------------    -------------    ----------------
0                                  Done
```

The output of this command includes the following information:

Column	Description
`AP`	Name or IP address of an AP
`Running Image Version String`	String identifying the number of the image version currently running on the AP, as well as the date on which that version was created.
`Flash Image Version String`	String identifying the number of the image version in the AP's flash memory, as well as the date on which that version was created.

Column	Description
Matches	If **yes**, the running image version matches the image version currently in the AP's flash memory. If **no**, the two image versions do not match.
Num Matches	Number of times the running image version matched the flash image version after a reboot.
Num Mismatches	Number of times the running image version did not match the flash image version after a reboot. If the images do not match, the AP will upgrade to the flash image.
Bad Checksums	Number of bad checksum calculations due to an invalid or corrupted image file.
Image Load Status	Current status of the AP following an upgrade. **Done**: This status indicates that the controller reset after the upgrade was performed, or the upgrade was performed after the AP first registered with the controller. **Completed**: The AP was updated after it was registered to the controller, and after the controller's last reset. If AP shows a status of **completed**, it will also display the time it took it update that AP. **In progress:** The AP is currently updating its image.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap-lacp-striping-ip

```
show ap-lacp-striping-ip
```

Description

Profile to enable/disable AP LACP feature and to specify GRE striping IP to LMS IP mapping.

Syntax

No parameters

Usage Guidelines

Example

@@@.

```
(host) (config) #show ap-lacp-striping-ip
AP LACP LMS map information
---------------------------
Parameter            Value
---------            -----
AP LACP Striping IP  Enabled
GRE Striping IP      2.2.2.2 LMS 3.3.3.3
GRE Striping IP      4.4.4.4 LMS 5.5.5.5
GRE Striping IP      10.65.30.50 LMS 10.65.30.60
```

Command History

This command was introduced in ArubaOS 6.4.2.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show ap license-usage

```
show ap license-usage
```

Description

Show AP license usage information.

Examples

The output of the command below shows that controller has 13 associated campus APs using licenses, with 3 unused campus AP licenses remaining.

```
(host) #show ap license-usage

AP Licenses
-----------
Type                      Number
----                      ------
AP Licenses               64
RF Protect Licenses       64
PEF Licenses              64
Overall AP License Limit  64

AP Usage
--------
Type             Count
----             -----
CAPs             13
RAPs             2
Remote-node APs  0
Tunneled nodes   0
Total APs        0

Remaining AP Capacity
---------------------
Type  Number
----  ------
CAPs  3
RAPs  62
```

The output of this command includes the following information:

Parameter	Description
AP Licenses	Number of AP licenses currently available on the controller.
RF Protect Licenses	Number of RF Protect licenses currently available on the controller.
PEF Licenses	Number of Policy Enforcement Firewall (PEF) licenses currently available on the controller.
Overall AP Licenses	Total number of APs supported by licenses on the controller.
CAPs	Number of campus APs currently using a license on the controller.

Parameter	Description
RAPs	Number of remote APs currently using a license on the controller.
Remote-Node APs	Number of APs currently using a license on the branch controller.
Tunneled Nodes	Number of tunneled nodes currently using a license on the controller.
CAPs	Number of unused campus APs licenses remaining on the controller.
RAPs	Number of unused remote APs licenses remaining on the controller.

Command History

Release	Modification
ArubaOS 3.0	Command Introduced.
ArubaOS 3.3	The following parameters were introduced: • Total 802.11n-120abg Licenses • 802.11n-120abg Licenses Used • Total 802.11n-121abg Licenses • 802.11n-121abg Licenses Used • Total 802.11n-124abg Licenses • 802.11n-124abg Licenses Used • Total 802.11n-125abg Licenses • 802.11n-125abg Licenses Used
ArubaOS 6.2	The output of this command was reorganized to reflect updated the newest license scheme.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system. The output of this command varies, according to the licenses currently installed on the controller.	Enable or Config mode on master controllers

show ap lldp

```
show ap lldp [<profile>]
```

Description

Display a list of LLDP-MED Network Policy profiles, or display the current configuration settings of an individual profile.

Syntax

Parameter	Description
<profile>	Specify a LLDP profile name to view configuration settings for that profile.

Examples

The following example lists all LLDP profile profiles. The References column lists the number of other profiles with references to that LLDP-MED Network policy profile profile, and the ProfileStatus column indicates whether the profile is predefined.

The output of the command below shows that the controller has two LLDP profiles.

```
(host) #show ap lldp med-network-policy-profile
AP LLDP Profile List
---------------------------------------
Name     References  Profile Status
----     ----------  --------------
default  0
video    2
Total:2
```

The following command displays configuration details for the LLDP profile named default.

```
(host) #show ap lldp med-network-policy-profile video
AP LLDP Profile "new"
---------------------
Parameter                       Value
---------                       -----
PDU transmission                Enabled
Reception of LLDP PDUs          Enabled
Transmit interval (seconds)     30
Transmit hold multiplier        4
Optional TLVs                   port-description system-description system-name capabilities
management-address
802.1 TLVs                      port-vlan vlan-name
802.3 TLVs                      mac link-aggregation mfs power
LLDP-MED TLVs
LLDP-MED network policy profile  N/A
```

The output of this command includes the following information:

Parameter	Description
PDU transmission	Shows if LLDP PDU transmission is enabled on the AP.
Reception of LLDP PDUs	Shows if LLDP PDU reception is enabled on the AP.
Transmit interval (seconds)	The interval between LLDP TLV transmission seconds. The supported range is 1-3600 seconds and the default value is 30 seconds.
Transmit hold multiplier	This value is multiplied by the transmit interval to determine the number of seconds to cache learned LLDP information before that information is cleared. If the transmit-hold value is at the default value of 4, and the transmit interval is at its default value of 30 seconds, then learned LLDP information will be cached for 4 x 30 seconds, or 120 seconds.
Optional TLVs	The AP sends the listed optional TLVs in LLDP PDUs.
802.1 TLVs	The AP sends the listed 802.1 TLVs in LLDP PDUs. By default, the AP will send all 802.1 TLVs.
802.3 TLVs	The AP sends the listed 802.3 TLVs in LLDP PDUs. By default, the AP will send all 802.3 TLVs.
LLDP-MED TLVs	Lists the LLDP-MED TLVs the AP will send in LLDP PDUs. By default, the AP will not send any LLDP-MED TLVs
LLDP-MED network policy profile	Specifies the LLDP MED Network Policy profile to be associated with this LLDP profile.

Command History

Command introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Enable or Config mode on master or local controllers

show ap lldp counters

```
show ap lldp counters
   ap-name  <ap-name>
   ip-addr <ip-addr>
   ip6-addr (ipv6-addr>
```

Description

Show LLDP counters for a specific AP, or all APs sending or receiving LLDP Protocol Data Units (PDUs).

Syntax

Parameter	Description
`ap-name <ap-name>`	Show counter statistics for an AP with a specific name.
`ip-addr <ip-addr>`	View counter statistics for an AP with a specific IP address. Enter the IP address of the AP in dotted-decimal format.
`ip6-addr <ip-addr>`	View counter statistics for an AP with a specific IPv6 address.

Examples

The output of the command below shows LLDP counter information for two interfaces.

```
(host) #show ap lldp counters
AP LLDP Counters (Updated every 60 seconds)
-------------------------------------------
AP                 Interface  Received  Unknown TLVs  Malformed  Overflow  Transmitted
--                 ---------  --------  ------------  ---------  --------  -----------
00:1a:1e:ce:fb:bf  bond0      0         0             0          0         68159
00:24:6c:c0:00:86  bond0      0         0             0          0         68153
```

The output of this command includes the following information:

Parameter	Description
`AP`	Name of the AP sending or receiving LLDP PDUs.
`Interface`	Name of the AP interface sending or re ce vi ng LLDP PDUs.
`Received`	Number of packets received on the specified interface.
`Unknown TLVs`	Number of LLDP Protocol Data Units (PDUs) with an unknown type-length-value (TLV).
`Number of Malformed packets`	Number of malformed packets received on that interface
`Overflow`	Number of times that an LLDP neighbor could not be added to the neighbor table (there is a limit of 8 per port)

Parameter	Description
`Transmitted`	Number of packets transmitted from that interface

Command History

Command introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Enable or Config mode on master or local controllers

show ap lldp med-network-policy-profile

```
show ap lldp med-network-policy-profile [<profile>]
```

Description

Display a list of LLDP-MED Network Policy profiles, or display the current configuration settings of an individual profile.

Syntax

Parameter	Description
<profile>	Specify a LLDP-MED Network Policy profile name to view configuration settings for that profile.

Usage Guidelines

The LLDP-MED Network policy profile allows you to configure an extension to LLDP that supports interoperability between VoIP devices and other networking clients. LLDP-MED network policy discovery lets end-points and network devices advertise their VLAN IDs (e.g. voice VLAN), priority levels, and DSCP values.allows you to define a set of provisioning parameters to an AP group.

Issue this command without the **<profile-name**> option to display the entire LLDP-MED Network policy profile list, including profile status and the number of references to each profile. Include a profile name to display the configuration settings for that profile.

Examples

The following example lists all LLDP-MED Network policy profile profiles. The **References** column lists the number of other profiles with references to that LLDP-MED Network policy profile, and the **ProfileStatus** column indicates whether the profile is predefined.

The output of the command below shows that the controller has three LLDP-MED network profiles.

```
(host) #show ap lldp med-network-policy-profile
AP LLDP-MED Network Policy Profile List
---------------------------------------
Name     References  Profile Status
----     ----------  --------------
default  0
video    2
voice    1
Total:2
The following command displays configuration details for the LLDP-MED Network Policy profile
named video.

(host) #show ap lldp med-network-policy-profile video
AP LLDP-MED Network Policy Profile "default"
--------------------------------------------
Parameter                                          Value
---------                                          -----
LLDP-MED application type                          streaming-video
LLDP-MED application VLAN                          16
LLDP-MED application VLAN tagging                  Tagged
LLDP-MED application Layer-2 priority              0
LLDP-MED application Differentiated Services Code Point  0
```

The output of this command includes the following information:

Parameter	Description
LLDP-MED application type	Type of application that this profile manages. This profile supports the following options: • **guest-voice** : The AP services a separate voice network for guest users and visitors. • **guest-voice-signaling** : The AP is part of a network that requires a different policy for guest voice signaling than for guest voice media. Do not use this application type if both the same network policies apply to both guest voice and guest voice signaling traffic. • **softphone-voice** : The AP supports voice services using softphone software applications on devices such as PCs or laptops. • **streaming-video** : T The AP supports broadcast or multicast video or other streaming video services that require specific network policy treatment. This application type is not recommended for video applications that rely on TCP with buffering. • **video-conferencing** : T The AP supports video conferencing equipment that provides real-time, interactive video/audio services. • **video-signaling** : T The AP is part of a network that requires a different policy for video signaling than for the video media. Do not use this application type if both the same network policies apply to both video and video signaling traffic. • **voice** : T he AP services IP telephones and other appliances that support interactive voice services. This is the default application type. • **voice-signaling** : T The AP is part of a network that requires a different policy for voice signaling than for the voice media. Do not use this

Parameter	Description
	application type if both the same network policies apply to both voice and voice signaling traffic.
`LLDP-MED application VLAN`	Indicates the VLAN ID (0-4094) or VLAN name of the VLAN used by the application.
`LLDP-MED application VLAN tagging`	Indicates if the policy applies to a to a VLAN that is tagged with a VLAN ID or untagged. The default value is untagged. **NOTE:** When an LLDP-MED network policy is defined for use with an untagged VLAN, then the L2 priority field is ignored and only the DSCP value is used.
`LLDP-MED application Layer-2 priority`	Displays a configured 802.1p priority level for the specified application type, where 0 is the lowest priority level and 7 is the highest priority.
`LLDP-MED application Differentiated Services Code Point`	Displays a configured Differentiated Services Code Point (DSCP) priority value for the specified application type, where 0 is the lowest priority level and 63 is the highest priority.

Command History

Command introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Enable or Config mode on master or local controllers

show ap lldp neighbors

```
show ap lldp neighbors
   ap-name  <ap-name>
   ip-addr <ip-addr>
   ip6-addr (ipv6-addr>
```

Description

Show LLDP neighbors for a specific AP, or all APs sending or receiving LLDP Protocol Data Units (PDUs).

Syntax

Parameter	Description
`ap-name <ap-name>`	Show LLDP neighbor statistics for an AP with a specific name.
`ip-addr <ip-addr>`	View LLDP neighbor statistics for an AP with a specific IP address. Enter the IP address of the AP in dotted-decimal format.
`ip6-addr <ip-addr>`	View LLDP neighbor statistics for an AP with a specific IPv6 address.

Usage Guidelines

The LLDP protocol allows switches, routers, and wireless LAN access points to advertise information about themselves such as identity, capabilities, and neighbors to other nodes on the network. Use this command to display information about the AP's LLDP peers.

By default, this command displays LLDP neighbors for the entire list of LLDP interfaces. Include a the name of IP address of an AP to display neighbor information only for that one device.

Examples

The output of the command below shows the LLDP neighbor list for an AP named **ap12**.

```
(host) show ap lldp neighbors ap-name ap12
AP LLDP Neighbors (Updated every 60 seconds)
-------------------------------------------
AP  Interface  Neighbor  Chassis Name/ID    Port Name/ID  Mgmt. Address  Capabilities
--  ---------  --------  ---------------    ------------  -------------  ------------
uc  bond0      0         d8:c7:c8:c4:4f:4e  bond0         10.3.44.193
Capability codes: (R)Router, (B)Bridge, (A)Access Point, (P)Phone, (O)Other
```

The output of this command includes the following information:

Parameter	Description
`AP`	Name of the LLDP neighbor
`Interface`	Interface on the AP sending or receiving LLDP PDUs.
`Neighbor`	LLDP neighbor number

Parameter	Description
`Chassis Name/ID`	The name of the LLDP neighbor AP
`Port Name/ID`	Port name or ID if the interface sending LLDP PDUs.
`Mgmt. Address`	Management address of the LLDP neighbor
`Capabilities`	This data column can list any of the following data codes to indicate LLDP neighbor capabilities. • R: Router • B: Bridge • A: Access Point • P: Phone • O: Other

Command History

Command introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Enable or Config mode on master or local controllers

show ap load-balancing

```
show ap load balancing
```

Description

Show the load-balancing information for each AP with load balancing enabled.

Examples

The output of the command in the example below shows details for a single AP enabled with the load-balancing feature.

```
(host) #show ap load-balancing
Load Balance Enabled Access Point Table
---------------------------------------
bss                ess           name    Port   ip          phy  chan   cur-cl  util(kbps)
---                ---           ----    ---    --          ---   ----  ------  --
00:0b:86:cc:8e:4e  Wireless_1    mp22    0/0/4  10.3.148.12 a-HT  413   3       14
```

The output of this command includes the following information:

Column	Description
BSS	The Basic Service Set (BSS) Identifier for the AP. This is usually the APs MAC address.
ESS	The Extended Service Set (ESS) Identifier is the user-defined name of an 802.11 wireless network.
port	The controller slot and port used by the AP, in the format <slot>/<module>/<port>.
ip	IP address of the AP
phy	One of the following 802.11 types • a • a-HT (high-throughput) • g • g-HT (high-throughput)
chan	Channel number for the AP 802.11a/802.11n physical layer. The available channels depend on the AP's regulatory domain (country).
cur-cl	Current number of clients on the AP.
util (kbps)	Current bandwidth utilization, in kbps.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap mesh active

```
show ap mesh active [<mesh-cluster>|{page <page>}|{start <start>}]
```

Description

Show active mesh cluster APs currently registered on this controller.

Syntax

Parameter	Description
`<mesh-cluster>`	Name of a mesh cluster profile.
`page <page>`	Limit the output of this command to a specific number of entries by entering the number of entries you want to display.
`start <start>`	Start displaying the index of mesh APs at a chosen index number by entering the index number of the AP at which command output should start.

Examples

The output of this command displays a list of all active mesh points and mesh portals.

```
(host) #show ap mesh active
Mesh Cluster Name: meshprofile1
------------------------------
Name  Group   IP Address    BSSID             Band/Ch/EIRP/MaxEIRP  MTU   Enet 0/1
Mesh Role
----  -----   ----------    -----             --------------------  ---   --------
--------
mp1   mp1     10.3.148.245  00:1a:1e:85:c0:30  802.11a/157/19/36          Off/Off
Point
mp2   mp2     10.3.148.250  00:1a:1e:88:11:f0  802.11a/157/19/36
                                                  Bridge/Bridge Point
mp3   mp3     10.3.148.253  00:1a:1e:88:01:f0  802.11a/157/19/36          Bridge/Bridge Point
mpp   mpp125  10.3.148.252  00:1a:1e:88:05:50  802.11a/157/19/36     1578  -/Bridge
Portal

Parent  #Children  AP Type  Uptime
 ------  ---------  -------  ------
 mp3     0          125      13d:2h:25m:19s
 mpp     1          125      14d:21h:23m:49s
 mp2     1          125      14d:21h:14m:55s
 -       1          125      14d:19h:5m:3s
```

The output of this command includes the following information:

Column	Description
Name	Name of an AP.
Group	AP group which includes the specified AP.

Column	Description
IP Address	IP address of the AP.
BSSID	Basic Service Set Identifier (BSSID) for the AP. This is usually the AP's MAC address.
Band/Ch/EIRP/MaxEIRP	The RF band in which the AP should operate (**a** or **g**)/ Radio channel used by the AP/Current effective Isotropic Radiated Power (EIRP) /maximum EIRP
MTU	Maximum Transmission Unit (MTU) size, in bytes. This value describes the greatest amount of data that can be transferred in one physical frame.
Enet 0/1	Shows the current mode of each wired interface. • **Bridge**: 802.11 frames are bridged into the local Ethernet LAN. • **Tunnel**: 802.11 frames are tunneled to the controller using generic routing encapsulation (GRE). • **Split-tunnel**: 802.11 frames are either bridged into the local Ethernet LAN or tunneled to the controller, depending upon their destination. • **Off**: Interface is not available for serving clients. If an AP has only one wired interface, the output of this command will display a dash (-) for the unavailable port.
Mesh Role	An AP operating as a mesh node can have one of two roles: mesh portal or mesh point.
Parent	If the AP is operating as a mesh point, this parameter displays the name of its parent mesh portal. Mesh portals will display a dash (-).
#Children	If the AP is operating as a mesh portal, this parameter shows the number of mesh point children associated with that mesh portal.
AP type	The AP model type.
Uptime	Number of hours, minutes and seconds since the last controller reboot or bootstrap, in the format *hours:minutes:seconds*.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the secure enterprise mesh solution for outdoor APs require the Outdoor Mesh license.	Enable or Config mode on master controllers

show ap mesh-cluster-profile

```
show ap mesh-cluster-profile [<profile>]
```

Description

Show configuration settings for a mesh cluster profile.

Syntax

Parameter	Description
`<profile>`	Name of a mesh cluster profile

Usage Guidelines

The command **show ap mesh-cluster-profile** displays a list of all mesh cluster profiles configured on the controller, including the number of references to each profile and each profile's status. Include the optional <profile> parameter to show detailed settings for an individual mesh cluster profile.

Examples

The example below shows the configuration settings for the mesh cluster profile "meshcluster2".

```
(host) #show ap mesh-cluster-profile meshcluster2

Mesh Cluster profile "meshcluster2"
-----------------------------
Parameter       Value
---------       -----
Cluster Name    company-mesh
RF Band         a
Encryption      opensystem
WPA Hexkey      N/A
WPA Passphrase  N/A
```

The output of this command includes the following information:

Parameter	Description
`Cluster Name`	Name of the mesh cluster using this profile
`RF band`	The RF band in which the AP should operate: • **g** = 2.4 GHz • **a** = 5 GHz
`Encryption`	Data encryption setting for the mesh cluster profile. • **opensystem**—No authentication and encryption. • **wpa2-psk-aes**—WPA2 with AES encryption using a preshared key.

Parameter	Description
`WPA Hexkey`	The WPA pre-shared key (only for mesh cluster profiles using WPA2 with AES encryption).
`WPA Passphrase`	The WPA password that generates the preshared key (only for mesh cluster profiles using WPA2 with AES encryption).

Command History

Introduced in ArubaOS 3.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Enable or Config mode on master controllers

show ap mesh debug counters

```
show ap mesh debug counters {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Show counters statistics for a mesh node.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show counter statistics for an AP with a specific name.
`bssid <bssid>`	Show counter statistics for a specific Basic Service Set Identifier (BSSID) on an AP. An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	View counter statistics for an AP with a specific IP address. Enter the IP address of the AP in dotted-decimal format.

Example

The example below shows the Mesh Packet Counters table for an AP named meshpoint1. The **Probe Resp**, **Assoc Req**, and **Assoc Resp** data columns show both the total number of counters and, in parenthesis, the number of requests or responses with high-throughput information elements (HE IEs).

```
(host) #show ap mesh debug counters ap-name meshpoint1
Mesh Packet Counters
--------------------
Interface  Echo Sent  Echo Recv  Probe Req  Probe Resp  Assoc Req  Assoc Resp  Assoc Fail  ---
---------  ---------  ---------  ---------  ----------  ---------  ----------  ----------
Link up/down  Resel.  Switch  Other
------------  ------  ------  ------
Parent     68865      68755      24         8(8 HT)     3(1 HT)    3(1 HT)     1
1             -       -       0
Child      68913      67373      6          8           2
1             2       0       2618886

Received Packet Statistics: Total 2890717, Mgmt 2618946 (dropped non-mesh 0), Data 271771
(dropped unassociated 1)HT: pns=8 ans=1 pnr=0 ars=0 arr=1 anr=0

Recovery Profile Usage Counters
-------------------------------
Item                          Value
----                          -----
Enter recovery mode           0
Exit recovery mode            0
Total connections to switch   0

Mesh loop-prevention Sequence No.:1256947
Mesh timer ticks:68930
```

The output of this command includes the following information:

Column	Description
`Interface`	Indicates whether the mesh interface connects to a **Parent** AP or a **Child** AP. Each row of data in the *Mesh Packet Counters* table shows counter values for an individual interface.
`Echo Sent`	Number of echo packets sent.
`Echo Recv`	Number of echo packets received.
`Probe Req`	Number of probe request packets sent from the interface specified in the **Mesh-IF** parameter.
`Probe Resp`	Number of probe response packets sent to the interface specified in the **Interface** parameter.
`Assoc Req`	Number of association request packets from the interface specified in the **Interface** parameter.
`Assoc Resp`	Number of association response packets from the interface specified in the **Interface** parameter. This number includes valid responses and fail responses.
`Assoc Fail`	Number of fail responses received from the interface specified in the **Interface** parameter.
`Link up/down`	Number of times the link up or link down state has changed.
`Resel.`	Number of times a mesh point attempted to reselect a different mesh portal.
`Switch`	Number of times a mesh point successfully switched to a different mesh portal.
`Other Mgmt`	Management frames of any type other than association and probe frames, either received on child interface, or sent on parent interface.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Enable or Config mode on master controllers.

show ap mesh debug current-cluster

```
show ap mesh debug current-cluster {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Display information for the mesh cluster currently used by a mesh point or mesh portal.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show mesh cluster data for an AP with a specific name.
`bssid <bssid>`	Show mesh cluster data for a specific Basic Service Set Identifier (BSSID) on an AP. An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show mesh cluster data for an AP with a specific IP address. Enter the IP address in dotted-decimal format.

Examples

The output of the command below shows mesh cluster profile configuration parameters for the mesh cluster currently used by an AP named "mp2."

```
(host) #show ap mesh debug current-cluster ap-name mp2

AP "mp2" Current Cluster Profile: default
-----------------------------------------
Item            Value
----            -----
Cluster Name    smettu-mesh
RF Band         a
Encryption      opensystem
WPA Hexkey      N/A
WPA Passphrase  ********
```

The output of this command includes the following information:

Column	Description
`Cluster Name`	Name of the mesh cluster using this profile
`RF band`	The RF band in which the mesh point or mesh portal operates: • **g** = 2.4 GHz • **a** = 5 GHz
`Encryption`	Data encryption setting for the mesh cluster profile. • **opensystem**—No authentication and encryption. • **wpa2-psk-aes**—WPA2 with AES encryption using a preshared key.

Column	Description
WPA Hexkey	The WPA pre-shared key (only for mesh cluster profiles using WPA2 with AES encryption).
WPA Passphrase	The WPA password that generates the preshared key (only for mesh cluster profiles using WPA2 with AES encryption).

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Enable or Config mode on master controllers

show ap mesh debug forwarding-table

```
show ap mesh forwarding-table {ap-name <ap-name>}|{ip-addr <ip-addr>}
```

Description

Show the forwarding table for a remote mesh point or remote mesh portal.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for a remote mesh node with a specific name.
`ip-addr <ip-addr>`	Show data for a remote mesh node with a specific IP address by entering its IP address in dotted-decimal format.

Usage Guidelines

This is an internal technical support command. Dell technical support may request that you issue this command to help analyze and troubleshoot problems with your mesh network.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Enable or Config mode on master controllers

show ap mesh debug hostapd-log

```
show ap mesh debug hostapd-log {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Show the debug log messages for the **hostapd** process.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address by entering an IP address in dotted-decimal format.

Usage Guidelines

This is an internal technical support command. Dell technical support may request that you issue this command to help analyze and troubleshoot problems with the **hostapd** process or your mesh network.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Enable or Config mode on master controllers

show ap mesh debug meshd-log

```
show ap mesh debug meshd-log {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>} [<page>]
```

Description

Show the debug log messages for the **meshd** process.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`<page>`	Display page number 0, 1 or 2, where page 0 has the newest information and page 2 has the oldest. If this parameter is omitted, this command will display all meshd log information, oldest first.

Usage Guidelines

This is an internal technical support command. Dell technical support may request that you issue this command to help analyze and troubleshoot problems with the **meshd** process or your mesh network.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.4	The **page** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Enable or Config mode on master controllers

show ap mesh debug provisioned-clusters

```
show ap mesh debug provisioned-clusters {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Show cluster profiles provisioned on a mesh portal or mesh point.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for a mesh node with a specific name.
`bssid <bssid>`	Show data for a mesh node with a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for a mesh node with a specific IP address by entering an IP address in dotted-decimal format.

Example

The output of the command below shows statistics for the AP's mesh cluster profile and recovery cluster profile.

```
(host) #show ap mesh debug provisioned-clusters ap-name portal2
AP Portal Cluster Profile: mesh-cluster-profile
-----------------------------------------------
-------------------------
Parameter       Value
---------       -----
Cluster Name    sw-ad-GB32
RF Band         a
Encryption      opensystem
WPA Hexkey      N/A
WPA Passphrase  ********

AP "Portal" Cluster Profile: Recovery Cluster Profile
-----------------------------------------------------
Item            Value
----            -----
Cluster Name    Recovery-ZF-xAPl5z-g15VN
RF Band         a
Encryption      pa2-psk-aes
WPA Hexkey      ********
WPA Passphrase  N/A
```

The output of this command displays the following information for the AP's mesh cluster profile and recovery cluster profiles:

Column	Description
`Cluster Name`	Name of the mesh cluster using this profile
`RF band`	The RF band in which the AP should operate: • **g** = 2.4 GHz • **a** = 5 GHz
`Encryption`	Data encryption setting for the mesh cluster profile. • **opensystem**—No authentication and encryption. • **wpa2-psk-aes**—WPA2 with AES encryption using a preshared key.
`WPA Hexkey`	The WPA pre-shared key (only for mesh cluster profiles using WPA2 with AES encryption).
`WPA Passphrase`	The WPA password that generates the preshared key (only for mesh cluster profiles using WPA2 with AES encryption).

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Enable or Config mode on master controllers

show ap mesh-ht-ssid-profile

```
show ap mesh-ht-ssid-profile [<profile>]
```

Description

Show configuration settings for a mesh high-throughput Service Set Identifier (SSID) profile.

Syntax

Parameter	Description
<profile>	Name of a mesh high-throughput SSID profile.

Usage Guidelines

High-throughput APs support additional settings not available in legacy APs. A mesh high-throughput SSID profile can enable or disable high-throughput (802.11n) features and 40 Mhz channel usage, and define values for aggregated MAC protocol data units (MDPUs) and Modulation and Coding Scheme (MCS) ranges.

The command **show ap mesh-ht-ssid-profile** displays a list of all mesh high-throughput SSID profiles configured on the controller, including the number of references to each profile and each profile's status. Include the optional **<profile>** parameter to show detailed settings for an individual mesh high-throughput SSID profile.

Examples

The example below shows the configuration settings for the mesh high-throughput radio profile "default".

```
(host) #show ap mesh-ht-ssid-profile default

Mesh High-throughput SSID profile "default"
-------------------------------------------
Parameter                                                    Value
---------                                                    -----
40 MHz channel usage                                         Enabled
BA AMSDU Enable                                              Enabled
Temporal Diversity Enable                                    Disabled
High throughput enable (SSID)                                Enabled
Legacy stations                                              Allowed
Low-density Parity Check                                     Enabled
Maximum number of spatial streams usable for STBC reception  1
Maximum number of spatial streams usable for STBC transmission  1
MPDU Aggregation                                             Enabled
Max received A-MPDU size                                     65535 bytes
Max transmitted A-MPDU size                                  65535 bytes
Min MPDU start spacing                                       8 usec
Short guard interval in 20 MHz mode                          Enabled
Short guard interval in 40 MHz mode                          Enabled
Supported MCS set                                            0-23
```

The output of this command includes the following information:

Column	Description
40 MHz channel usage	This parameter shows if the profile enables or disables the use of 40 MHz channels.
BA AMSDU Enable	Shows of the AP has enabled or disabled the ability to receive AMSDU in BA negotiation.
Temporal Diversity Enable	Shows if temporal diversity has been enabled or disabled. When this feature is enabled and the client is not responding to 802.11 packets, the AP will launch two hardware retries; if the hardware retries are not successful then it attempts software retries.
High throughput enable (SSID)	Shows if 802.11n high-throughput features are enabled or disabled for this profile. By default, high-throughput features are enabled.
Legacy stations	Allow or disallow associations from legacy (non-HT) stations. By default, this parameter is enabled (legacy stations are allowed).
Low-density Parity Check	If enabled, the AP will advertise Low-density Parity Check (LDPC) support. LDPC improves data transmission over radio channels with high levels of background noise.
Maximum number of spatial streams usable for STBC reception	Shows the maximum number of spatial streams usable for STBC reception. 0 disables STBC reception, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on the W-AP130 Series, W-AP175 and W-AP105 only. The configured value will be adjusted based on AP capabilities.) **NOTE:** If transmit beamforming is enabled, STBC will be disabled for beamformed frames.
Maximum number of spatial streams usable for STBC transmission	Shows the maximum number of spatial streams usable for STBC transmission. 0 disables STBC transmission, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on W-AP175, W-AP130 Series and W-AP105 only. The configured value will be adjusted based on AP capabilities.) **NOTE:** If transmit beamforming is enabled, STBC will be disabled for beamformed frames.

Column	Description
MPDU Aggregation	Shows if the profile enables or disables MAC protocol data unit (MPDU) aggregation.
Max received A-MPDU size	Configured maximum size of a received aggregate MPDU, in bytes.
Max transmitted A-MPDU size	Configured maximum size of a transmitted aggregate MPDU, in bytes.
Min MPDU start spacing	Configured minimum time between the start of adjacent MPDUs within an aggregate MPDU, in microseconds.
Supported MCS set	Displays a list of Modulation Coding Scheme (MCS) values or ranges of values to be supported on this SSID. The MCS you choose determines the channel width (20MHz vs. 40MHz) and the number of spatial streams used by the mesh node.
Short guard interval in 20 MHz mode	Shows if the profile enables or disables use of short (400ns) guard interval in 20 MHz mode.
Short guard interval in 20 MHz mode	Shows if the profile enables or disables use of short (400ns) guard interval in 40 MHz mode.
Explicit Transmit Beamforming	Shows if Explicit Transmit Beamforming is enabled or disabled for W-AP130 Series APs. **NOTE:** If this parameter is disabled, the other transmit beamforming configuration settings have no effect.
Transmit Beamforming Compressed Steering	When enabled, the AP can use explicit compressed feedback from clients to obtain a steering matrix. (For W-AP130 Series APs only.)
Transmit Beamforming non Compressed Steering	When enabled, the AP can use explicit noncompressed feedback from clients to obtain a steering matrix. (For W-AP130 Series only)
Transmit Beamforming delayed feedback support	Shows if the AP has enabled or disabled delayed feedback/report support in Transmit Beamforming. (For W-AP130 Series only)

Column	Description
`Transmit Beamforming immediate feedback support`	Shows if the AP has enabled or disabled immediate feedback/report support in Transmit Beamforming. (For W-AP130 Series only)
`Transmit Beamforming Sounding Interval`	Time interval in seconds between updates of Transmit Beamforming channel estimation. (For W-AP130 Series only)

Command History

Version	Description
ArubaOS 3.4	Command introduced
ArubaOS 6.1	The **allow weak encryption** parameter was deprecated. The following parameters were introduced: • Short guard interval in 20 MHz mode • Low-density Parity Check • Maximum number of spatial streams usable for STBC reception • Maximum number of spatial streams usable for STBC transmission
ArubaOS 6.2	The following parameters were introduced. • Transmit Beamforming Compressed Steering • Transmit Beamforming non Compressed Steering • Transmit Beamforming delayed feedback support • Transmit Beamforming immediate feedback support • Transmit Beamforming Sounding Interval

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap mesh neighbors

```
show ap mesh neighbors {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>} [names]
```

Description

Show all mesh neighbors for an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show mesh neighbors for an AP with a specific name.
`bssid <bssid>`	Show mesh neighbors for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show mesh neighbors for an AP with a specific IP address by entering its IP address in dotted-decimal format.
`names`	If you include this optional parameter, the **Portal** column in the output of this command will translate the BSSIDs of mesh parent and child APs to AP names (where available).

Example

In the example below, the output has been split into two tables to better fit on the page. In the actual command-line interface, the output appears in a single, wide table. The **Flags** column the output of this command indicates the high-throughput (HT) properties of the mesh node. In the example below, the string "HT-40MHzsgi-2ss" indicates that the node uses a 40MHz channel with a short guard interval (sgi) and sends 2 spatial streams (ss).

```
(host) #show ap mesh neighbors ap-name portal

Neighbor list
-------------
MAC                Portal             Channel  Age  Hops  Cost   Relation      Flags  RSSI
Rate Tx/Rx
---                ------             -------  ---  ----  ----   --------      -----  ----  --
--------
00:0b:86:e8:09:d1  00:1a:1e:88:01:f0  157      0    1     11.00  C 3h:15m:42s  -      65
54/54
00:1a:1e:88:02:91  00:1a:1e:88:01:f0  157      0    1     4.00   C 3h:35m:30s  HL     59
300/300
00:0b:86:9b:27:78  Yes                157      0    0     12.00  N 3h:22m:46s  -      26    -

00:0b:86:e8:09:d0  00:1a:1e:88:01:f0  157      0    1     11.00  N 3h:15m:36s  -      65    -

00:1a:1e:88:02:90  00:1a:1e:88:01:f0  157+     0    1     2.00   N 3h:35m:6s   HL     59    -


A-Req  A-Resp  A-Fail  HT-Details       Cluster ID
-----  ------  ------  ----------       ----------
1      1       0       Unsupported      sw-ad-GB32
1      1       0       HT-40MHzsgi-2ss  sw-ad-GB322
0      0       0       Unsupported      mc1
0      0       0       Unsupported      sw-ad-GB32
```

```
0       0       0       HT-40MHzsgi-2ss  sw-ad-GB32

Total count: 5, Children: 2
Relation: P = Parent; C = Child; N = Neighbor; B = Blacklisted-neighbor
Flags: R = Recovery-mode; S = Sub-threshold link; D = Reselection backoff; F = Auth-failure; H
= High Throughput; L = Legacy allowed
```

The output of this command includes the following information:

Column	Description
MAC	MAC address of the mesh node.
Portal	By default, this column displays the BSSID of the mesh point. If you include the optional **names** parameter, this column will display AP names, if available. The AP names will include **[p]** (parent), or **[c]** (child) suffixes to indicate the role of the mesh BSSID.
Channel	Number of a radio channel used by the AP.
Age	Number of seconds elapsed since the AP heard from the neighbor.
Hops	Indicates the number of hops it takes traffic from the mesh node to get to the mesh portal. The mesh portal advertises a hop count of 0, while all other mesh nodes advertise a cumulative count based on the parent mesh node
Cost	A relative measure of the quality of the path from the AP to the controller. A lower number indicates a better quality path, where a higher number indicates a less favorable path (e.g, a path which may be longer or more congested than a path with a lower value.) For a mesh point, the path cost is the sum of the (parent path cost) + (the parent node cost) + (the link cost).
Relation	Shows the relationship between the specified AP and the AP on the neighbor list and the amount of time that relationship has existed. • **P** = Parent • **C** = Child • **N** = Neighbor • **B** = Blacklisted-neighbor
Flags	This parameter shows additional information about the mesh neighbor. The key describing each flag appears at the bottom of the neighbor list.
RSSI	The Receive Signal Strength Indicator (RSSI) value displayed in the output of this command represents signal strength as a signal to noise ratio. For example, a value of 30 would indicate that the power of the received signal is 30 dBm above the signal noise threshold.
Rate Tx/Rx	The rate, in Mbps, that a neighbor transmits data to or receives data from the mesh-node specified by the command.

Column	Description
A-Req	Number of association requests from clients
A-Resp	Number of association responses from the mesh node
A-Fail	Number of association failures
Cluster	Name of the Mesh cluster that includes the specified AP or BSSID.

Command History

Version	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4.1	The names **parameter** was introduced. The output of this command was also modified to include the **Rate Tx/Rx** column.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Enable or Config mode on master controllers

show ap mesh-radio-profile

```
show ap mesh-radio-profile [<profile>]
```

Description

Show configuration settings for a mesh radio profile.

Syntax

Parameter	Description
<profile>	Name of a mesh radio profile.

Usage Guidelines

The radio profile determines the radio frequency/channel used only by mesh nodes to establish mesh links. Mesh nodes operating in different cluster profiles can share the same radio profile. Conversely, mesh portals using the same cluster profile can be assigned different mesh radio profiles to achieve frequency separation.

The command s**how ap mesh-radio-profile** displays a list of all mesh radio profiles configured on the controller, including the number of references to each profile and each profile's status. Include the optional <*profile*> parameter to show detailed settings for an individual mesh radio profile.

Example

The example below shows the configuration settings for the mesh cluster profile "default".

```
(host) #show ap mesh-radio-profile default
Mesh Radio profile "default"
----------------------------
Parameter                                                    Value
---------                                                    -----
802.11a Transmit Rates                                       6 9 12 18 24 36 48 54
802.11g Transmit Rates                                       1 2 5 6 9 11 12 18 24 36 48 54
Allowed VLANs on mesh link                                   1-4094
BC/MC Rate Optimization                                      Enabled
Heartbeat threshold                                          10
Link Threshold                                               12
Maximum Children                                             64
Maximum Hop Count                                            8
Mesh Private Vlan                                            0
Mesh High-throughput SSID Profile                            default
Mesh Survivability                                           Disabled
Metric algorithm                                             distributed-tree-rssi
Rate Optimization for delivering EAPOL frames and mesh echoes Disabled
Reselection mode                                             startup-subthreshold
Retry Limit                                                  8
RTS Threshold                                                2333 bytes
```

The output of this command includes the following information:

Parameter	Description
802.11a Transmit Rates	Indicates the transmit rates for the 802.11a radio. The AP attempts to use the highest transmission rate to establish a mesh link. If a rate is unavailable, the AP goes through the list and uses the next highest rate.
802.11g Transmit Rates	Indicates the transmit rates for the 802.11g radio. The AP attempts to use the highest transmission rate to establish a mesh link. If a rate is unavailable, the AP goes through the list and uses the next highest rate.
Allowed VLANs on mesh link	Specify a list of VLAN IDs that can be used by a mesh link on APs associated with this mesh radio profile
BC/MC Rate Optimization	If enabled, the mesh node will use the slowest associated mesh-point rate for broadcast/multicast data (rather than minimum).
Heartbeat Threshold	Indicates the maximum number of heartbeat messages that can be lost between neighboring mesh nodes before the mesh node is considered inactive and is dropped as a mesh neighbor.
Link Threshold	Indicates the threshold for the lowest acceptable Receive Signal Strength Indicator (RSSI) value. Links that drop below this threshold will have an increased link cost. Default: 12.
Maximum Children	The maximum number of children a mesh portal can accept.
Maximum Hop Count	The maximum number of hops allowed between a mesh point and a mesh portal.
Mesh Private Vlan	This parameter is experimental and reserved for future use.
Mesh High-throughput SSID Profile	The High-throughput SSID Profile associated with this mesh radio profile.
Mesh Survivability	This parameter shows if mesh points and portals can become active even if the controller cannot be reached by bridging LAN traffic. This is a beta feature that is disabled by default; it should not be enabled unless you are instructed to do so by Dell technical support.
Metric algorithm	Algorithm used by a mesh node to select its parent.
Rate Optimization for delivering EAPOL frames and mesh echoes	If this option is enabled, mesh APs will use a more conservative rate for more reliable delivery of EAPOL frames.
Reselection Mode	Specifies the one of the following methods used to find a better mesh link. • **startup-sub-threshold**: When bringing up the mesh network, mesh nodes have 3 minutes to find a better uplink. After that time,

Parameter	Description
	each mesh node evaluates alternative links only if the existing uplink falls below the configured threshold level (the link becomes a sub-threshold link). The reselection process is canceled if the average RSSI rises on the existing uplink rises above the configured link threshold. • **reselect-any-time:** Connected mesh nodes evaluate alternative mesh links every 30 seconds. If a mesh node finds a better uplink, the mesh node connects to the new parent to create an improved path to the mesh portal. • **reselect-never**: Connected mesh nodes do not evaluate other mesh links to create an improved path to the mesh portal. • **subthreshold-only**: Connected mesh nodes evaluate alternative links only if the existing uplink becomes a sub-threshold link.
`Retry Limit`	Maximum number of times a mesh node can re-send a packet.
`RTS Threshold`	The packet size sent by mesh nodes. Mesh nodes transmitting frames larger than this threshold must issue request to send (RTS) and wait for other mesh nodes to respond with clear to send (CTS) to begin transmission. This helps prevent mid-air collisions.

Command History

Release	Modification
ArubaOS 3.2	Command Introduced.
ArubaOS 3.4	The **802.11g Portal channel** and **802.11a Portal channe**l parameters were deprecated, and the **Mesh High-throughput SSID Profile** parameter was introduced.
ArubaOS 6.2	The **Rate Optimization for delivering EAPOL frames and mesh echoes** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap mesh tech-support

```
show ap mesh tech-support ap-name <ap-name> <filename>
```

Description

Display all information for an AP, and save that information in a file on the controller

Syntax

Parameter	Description
`<ap-name>`	Name of an AP for which you want to create a report
`<filename>`	Filename for the report created by this command. The file can only be saved in the flash directory. If desired, you can use FTP or TFTP to copy the file to another destination.

Usage Guidelines

This command displays the output of the multiple mesh and debug CLI commands, then saves that data into a report file on the controller's flash drive, where it can be analyzed for debugging purposes. The information in this report includes the output of the following commands:

- show ap mesh neighbors
- show ap mesh debug current-cluster
- show ap mesh debug provisioned-clusters
- show ap mesh debug counters
- show ap mesh debug forwarding-table
- show ap mesh debug meshd-log
- show ap mesh debug hostapd-log

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Config mode on master controllers

show ap mesh topology

```
show ap mesh topology [long] [page <page>] [start <start>]
```

Description

Show the mesh topology tree.

Syntax

Parameter	Description
`long`	Include the names of a mesh portal's children in the output of this command
`page <page>`	Limit the output of this command to a specific number of entries by entering the number of entries you want to display.
`start <start>`	Start displaying the mesh topology tree at a chosen index number by entering the index number of the AP at which command output should start.

Example

An **(N)** in the **Mesh Role** column indicates the node is 11N capable. An **(N)** beside the parent name in the **Parent** column indicates that the mesh node's the parent is also 11N capable.

```
(host) #show ap mesh topology

Mesh Cluster Name: sw-ad-GB32
-----------------------------
Name Mesh Role    Parent  Path Cost  Node Cost  Link Cost  Hop Count  RSSI  Rate Tx/Rx
---- ---------    ------  ---------  ---------  ---------  ---------  ----  ----------  Last
Update  Uplink Age  #Children
----------  ----------  ---------

ad-ap Point (N)    mp3     2          0          0          1          61    300/270     6m:12s
     3h:8m:7s    0

msc-1 Point        mp3     2          0  0          1          64    54/54       6m:36s
2h:48m:12s  0

Total APs :2
(R): Recovery AP. (N): 11N Enabled. For Portals 'Uplink Age' equals uptime.
```

The output of this command includes the following information:

Column	Description
`Name`	Name of the mesh node.
`Mesh Role`	An AP operating as a mesh node can have one of two roles: mesh portal or mesh point.

Column	Description
Parent	If the AP is operating as a mesh point, this parameter displays the name of its parent mesh portal.
Path Cost	A relative measure of the quality of the path from the AP to the controller. A lower number indicates a better quality path, where a higher number indicates a less favorable path (e.g, a path which may be longer or more congested than a path with a lower value.) For a mesh point, the path cost is the sum of the (parent path cost) + (the parent node cost) + (the link cost).
Node Cost	A relative measure of the quality of the node, where a lower number of is more favorable than a higher number. This cost is related to the number of children on the specified node.
Link Cost	A relative measure of the quality of the link. For example, a more congested link will have a higher link cost than a similar, less-congested link.
Hop Count	Number of hops to the mesh portal.
RSSI	The Receive Signal Strength Indicator (RSSI) value displayed in the output of this command represents signal strength as a signal to noise ratio. For example, a value of 30 would indicate that the power of the received signal is 30 dBm above the signal noise threshold.
Rate Tx/Rx	The rate, in Mbps, that a mesh point transmits and receives at on its uplink. Note that the rate information is only as current as indicated in the **Last Update** column.
Last Update	Time elapsed since the mesh node last updated its statistics.
Uplink Age	Time elapsed since the mesh node became active in the mesh topology.
#Children	Number of children associated with a parent mesh point.

Command History

Version	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4.1	The output of this command was also modified to include the **Rate Tx/Rx** column.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system. Commands to configure the mesh feature require the Mesh license.	Enable or Config mode on master controllers

show ap monitor

```
show ap monitor active-laser-beams|ap-list|channel|client-list|containment-info|debug|ids-state|mesh-list|pot-ap-list|pot-client-list|routers|wired-mac {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>} {ap-bssid <ap-bssid>}|{enet-mac <enet-mac>}
```

Description

Show information for Dell Air Monitors.

Syntax

Parameter	Description
`active-laser-beams`	Show active laser beam generators. The output of this command shows a list of all APs that are actively performing policy enforcement containment such as rogue containment. This command can tell us which AP is sending out deauthorization frames, although it does not specify which AP is being contained.
`ap-list`	Show list of APs being monitored.
`arp-cache`	Show ARP Cache of learned IP to MAC binding
`channel`	Show state and stats of a specific channel.
`client-list`	Show list of client being monitored.
`containment-info`	Show containment events and counters triggered by the wired containment and wireless containment features configured in the ids general-profile. The output of this command shows device and target data for wired containment activity, a well as data for the following counters. Wireless Containment Counters: • Last Deauth Timer Tick • Deauth frames to AP • Deauth frames to Client • Last Tarpit Timer Tick • Tarpit Frames: Probe Response • Tarpit Frames: Association Response • Tarpit Frames: Authentication • Tarpit Frames: Data from AP • Tarpit Frames: Data from Client • Last Enhanced Adhoc Containment Timer Tick • Enhanced Adhoc Containment: Frames To Data Sender • Enhanced Adhoc Containment: Frames To Data Receiver • Enhanced Adhoc Containment: Response to Request

Parameter	Description
	• Enhanced Adhoc Containment: Replay Response Wired Containment Counters: • Last Wired Containment Timer Tick • Last Tagged Wired Containment Timer Tick • Spoof frames sent • Spoof frames sent on tagged VLAN
`debug`	Show the Air Monitor debugging information.
`counters`	Shows the maximum classification delay that was observed in monitored APs and clients, the number of Unclassified Device messages that were sent to the WMS, and the number of monitored APs/clients that were present in those messages. This parameter also shows the number of monitored APs/clients that were created and removed by the AP. This information is captured on an hourly basis for the last 24 hours. **NOTE:** The maximum delay for clients is not displayed if the **unclass_sta_update** parameter is not enabled.
`profile-config`	Shows the configuration received by the AP for each profile.
`status`	Shows general AP status information and the maximum classification delay that was observed in monitored APs and clients, in the **WLAN Interface** option. **NOTE:** The maximum delay for clients is not displayed if the **unclass_sta_update** parameter is not enabled.
`ids-state`	Show IDS State.
`ap-name`	Name of Access Point.
`bssid`	BSSID of Access Point.
`ip-addr`	IP Address of Access Point.
`mesh-list`	Show list of Mesh APs being monitored.
`pot-ap-list`	Display the Potential AP table. The Potential AP table shows the following data: • **bssid**: the AP's Basic Service Set Identifier. • **channel**: The AP's current radio channel • **phy type**: The radio's PHY type. Possible values are 802.11a, 802.11a-HT-40, 802.11b/g, 802.11b/g-HT-20. • **num-beacons**: Number of beacons seen during a 10-second scan • **tot-beacons**: Total number of beacons seen since the last reset.

Parameter	Description
	• **num-frames**: Total number of frames seen since the last rest. • **mt**: Monitor time; the number of timer ticks elapsed since the controller first recognized the AP. • **at**: Active time, in timer ticks. • **ibss**: Shows if ad-hoc BSS is enabled or disabled. It will be enabled if the bssid has detected an ad-hoc BSS (an ibss bit in an 802.11 frame). • **rssi**: The Receive Signal Strength Indicator (RSSI) value displayed in the output of this command represents signal strength as a signal to noise ratio. For example, a value of 30 would indicate that the power of the received signal is 30 dBm above the signal noise threshold.
`pot-client-list`	Display the Potential client table. The Potential Client table shows the following values: • **last-bssid**: the Last BSSID to which the client associated. • **from-bssid** • **to-bssid** • **mt:** monitor time - the number of timer ticks elapsed since the controller first recognized the client. • **it:** client idle time - expressed as a number of timer ticks.
`routers`	Show Router MAC Addresses learned. The output of this command includes the router's MAC address, IP address and uptime.
`wired-mac`	Show Wired MAC Addresses learned.
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address by entering its IP address in dotted-decimal format.
`ap-bssid <ap-bssid>`	Include the optional **ap-bssid <ap-bssid>** parameters to show how the AP is monitoring information for another AP with a specific BSSID.
`enet-mac <enet-mac>`	Include the optional e**net-mac <enet-mac>** parameters to show how the AP is monitoring information for an interface with a specific Ethernet MAC address.

Examples

The output of the command displays the Monitored AP table, which lists all the APs monitored by a specified AP or BSSID.

```
(host) #show ap monitor ap-list ap-name al12

Monitored AP Table
------------------
```

```
bssid              essid                chan  ap-type              phy-type        dos
dt/mt        ut/it
-----              -----                ----  -------              --------        ---      -
----         -----
24:de:c6:be:c3:fa  bridge-85            161   interfering          80211a-HT-40    disable
33633/17957  0/0
24:de:c6:8e:aa:86  ap214-tb2-%apprf%    11    interfering          80211b/g-HT-20  disable
33633/33633  0/0
24:de:c6:be:b7:3a  bridge-85            64    interfering          80211a-HT-40    disable
33633/17065  8/4
24:de:c6:be:bf:fa  bridge-85            149   interfering          80211a-HT-40    disable
33633/17404  0/0
24:de:c6:8e:9a:85  sys-tb2-4meshpt      11    interfering          80211b/g-HT-20  disable
33633/33633  0/0
9c:1c:12:89:e2:95  RBC-BYOD             153   interfering          80211a-VHT-20   disable
33633/33633  1/0
24:de:c6:be:bd:f8  Centl2-250           157   interfering          80211a-HT-40    disable
33633/17914  0/0
24:de:c6:be:bd:f9  Centl2-251           157   interfering          80211a-HT-40    disable
33633/17800  0/0
24:de:c6:8e:9a:86  ap214-tb2-%apprf%    11    interfering          80211b/g-HT-20  disable
33633/33633  0/0
9c:1c:12:89:e2:93  ssid1-vc-wpa         153   interfering          80211a-VHT-20   disable
33633/33633  0/0

encr            nstas  avg-snr  curr-snr  avg-rssi  curr-rssi  wmacs  ibss  cl-delay
----            -----  -------  --------  --------  ---------  -----  ----  --------
wpa2-psk-aes    0      37       37        57        58         0      no    0
open            0      53       55        41        40         0      no    0
wpa2-psk-aes    0      45       45        49        50         0      no    0
wpa2-psk-aes    0      37       37        57        58         0      no    0
wpa2-psk-aes    0      50       56        44        39         0      no    0
wpa2-psk-aes    0      38       40        56        55         0      no    0
wpa2-psk-aes    0      30       31        64        64         0      no    0
wpa2-8021x-aes  0      30       31        64        64         0      no    0
open            0      52       55        42        40         0      no    0
wpa-psk-tkip    0      38       40        56        55         0      no    0
```

The output of this command includes the following information:

Parameter	Description
bssid	Basic Service Set Identifier for (bssid) an AP. This is usually the AP's MAC address.
essid	Extended service set identifier that names a wireless network.
chan	Radio channel used by the BSSID.
ap-type	Shows classification of the AP.
phy-type	Radio phy type. Possible types include: • 802.11a • 802.11a-HT-40 • 802.11b/g • 802.11b/g-HT-20

Parameter	Description
dos	Shows if the feature to contain DoS attacks has been enabled or disabled.
dt/mt	**dt**—Detected time: the number of timer ticks since the AP was last detected. **mt**—Monitor time; the number of elapsed timer ticks since the AP first recognized the monitored AP.
ut/it	**ut**—Unseen time: the number elapsed timer ticks the monitored AP was not seen when scanning a channel of the device. **it**—AP idle time, the number of timer ticks since the AP last saw any frames from the monitored AP.
encr	Shows the encryption type of the BSSID. If there are multiple encryption types, this command shows the lowest encryption type.
ntsas	Shows the number of stations connected to the AP (as seen by the monitoring AP).
avg-snr	Shows the average Signal to Noise Ratio (SNR).
curr-snr	Shows the current Signal to Noise Ratio (SNR).
avg-rssi	Shows the average RSSI (Received Signal Strength) for the device. **NOTE:** RSSI is an indication of the power level being received by the antenna. Therefore, the higher the RSSI number, the stronger the signal.
curr-rssi	Shows the current RSSI for the device.
wmacs	Shows the number of unique wireless MAC addresses seen on the Wi-Fi network from the AP's BSSID.
ibss	Shows all the monitored APs (BSSIDs).
cl-delay	Shows the delay in classification of each device. **NOTE:** The maximum delay for clients is not displayed if the **unclass_sta_update** parameter is not enabled.

Command History

Version	Modification
ArubaOS 3.0.	Command introduced
ArubaOS 3.4.	The **ap-bssid** and **enet-mac** parameters were added to the **show ap monitor wired-mac** command.
ArubaOS 6.1	The following parameters were added to **ids-state**:

Version	Modification
	ap-name bssid ip-addr
ArubaOS 6.4.4.0	The **cl-delay** column was added to **ap-list** parameter**.** The **cl-delay** and **valid-exempt** columns were added to **client-list** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap monitor association

```
show ap monitor association {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>} <ap-bssid>
```

Description

Show the association table for an Air Monitor (AM).

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AM with a specific name.
`bssid <bssid>`	Show data for an AM with a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AM's MAC address.
`ip-addr <ip-addr>`	Show data for an AM with a specific IP address by entering its IP address in dotted-decimal format.
`<ap-bssid>`	BSSID of an AP.

Examples

The output of the command lists the MAC addresses associated with the Air Monitor BSSID.

```
(host) #show ap monitor association ap-name ap9 00:1a:1e:11:74:a1
Association Table
-----------------
mac               rsta-type  auth  phy-type
---               ---------  ----  --------
00:1d:d9:01:c4:50  valid      yes   80211a
00:17:f2:4d:01:e2  valid      yes   80211a
00:1f:3b:8c:28:89  valid      yes   80211a
00:1d:d9:05:05:d0  valid      yes   80211a
00:14:a4:25:72:6d  valid      yes   80211a
00:19:7d:d6:74:8d  valid      yes   80211a
```

The output of this command includes the following information:

Column	Description
`mac`	MAC address associated with the Air Monitor BSSID
`rsta-type`	Rogue station type: • **interfering**: Interfering station. • **valid**: Station is not a rogue station. • **DoS**: Station may have attempted a DoS attack.
`auth`	Displays a **yes** if the client has been authenticated.

Column	Description
`phy-type`	The RF band in which the AP should operate: **802.11g** = 2.4 GHz **802.11a** = 5 GHz

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap monitor debug

```
show ap monitor debug counters|status {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
show ap monitor debug profile-config {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
ap-radio|ap-system|arm|event-thresholds|ids-dos|ids-general|ids-impersonation|ids-signature-
matching|ids-unauthorized-device|interference|regulatory-domain|rf-behavior
```

Description

Show information for an Air Monitor's current status, message counters, or profile settings.

Syntax

Parameter	Description
`counters`	Show Air Monitor (AM) message counters.
`status`	Show the status of an Air Monitor.
`ap-name <ap-name>`	Show data for an AM with a specific name.
`bssid <bssid>`	Show data for an AM with a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AM with a specific IP address by entering its IP address in dotted-decimal format.
`profile-config`	Show an Air Monitor profile configuration.
`ap-radio`	Show the Air Monitor radio configuration parameters, as defined in the AM's 802.11a, 802.11b, or high-throughput radio profiles.
`ap-system`	Show an Air Monitor's system configuration settings, as defined in it's AP System profile.
`arm`	Show an Air Monitor's Adaptive Radio Management (ARM) settings, as defined in its current ARM profile
`event-thresholds`	Show an Air Monitor Event Thresholds settings, as defined in its current RF Event Thresholds profile
`ids-dos`	Show an Air Monitor IDS DoS settings, as defined in its current IDS DoS profile.
`ids-general`	Show an Air Monitor IDS General Configuration settings, as defined in its IDS General profile.

Parameter	Description
ids-impersonation	Show an Air Monitor IDS Impersonation Configuration settings, as defined in its IDS Impersonation profile.
ids-signature-matching	Show an Air Monitor IDS Signature Matching configuration settings, as defined in its IDS Signature Matching profile
ids-unauthorized-device	Show an Air Monitor IDS Unauthorized Device configuration settings, as defined in its IDS Unauthorized Device profile.
interference	Show an Air Monitor's interference configuration settings, as defined in its current RF Optimization profile.
regulatory-domain	Show an Air Monitor's Regulatory Domain configuration settings, as defined in its Regulatory Domain profile.
rf-behavior	Show an Air Monitor RF Behavior Configuration

Examples

The output of the following command includes the *WLAN Interface*, *Data Structures*, *WLAN InterfaceSwitch Status* and *RTLS Configuration* tables for the specified AP.

```
(host) #show ap monitor debug status ap-name ap12
WLAN Interface
--------------
bssid              scan    monitor  probe-type  phy-type        task   channel  pkts
-----              ----    -------  ----------  --------        ----   -------  ----
00:1a:1e:11:5f:10  enable  enable   sap         80211a-HT-40    tuned  153      496970814
00:1a:1e:11:5f:00  enable  enable   sap         80211b/g-HT-20  tuned  6        391278179

Wired Interface
---------------
mac                ip                   gw-ip           gw-mac             status  pkts
---                --                   -----           ------             ------  ----
macs gw-macs tagged-pkts vlan
---- ------- ----------- ----
00:1a:1e:c9:15:f0  192.0.2.32.200       192.0.2.32.254  00:0b:86:08:e1:00  enable  101960
2    3       1           03
Global Counters
---------------
key                   value
---                   -----
Packets Read          888248993
Bytes Read            2819670134
Num Interrupts        681037971
Num Buffer Overflows  591393
Max PPS               16239
Cur PPS               1130
Max PPI               20
Cur PPI               2
Uptime                3323085
AP Name               AL12
LMS IP
Master IP
AP Type               125
Country Code          2
```

```
Data Structures
---------------
ap  sta  pap  psta  ch  msg-hash  ap-l
--  ---  ---  ----  --  --------  ----
20  40   17   55    24  21        20

Other Parameters
----------------
key                    value
---                    -----
WMS on Master          disabled
Stats Update Interval  60
Poll Interval          174000
Num Switches           1
Collect Stats          enabled

WLAN Interface Switch Status
----------------------------
Bssid              Type   Status  Last-reg  N-reg  Last-update  Next-update  N-updates  Last-
ack
-----              ----   ------  --------  -----  -----------  -----------  ---------  ------
--
00:1a:1e:11:5f:10  local  up      3321891   3821   3322965      197          10368
3322965
00:1a:1e:11:5f:00  local  up      3321891   3821   3322917      187          10378
3322965

RTLS Configuration and State
----------------------------
Type       Server IP  Port  Freq  Active  Rpt-Tags  Tag-Mcast-Addr     Tags-Sent  Rpt-Sta
Incl-Unassoc-Sta  Sta-Sent  Cmpd-Msgs-Sent
----       ---------  ----  ----  ------  --------  --------------     ---------  -------  ---
-------------  --------  --------------
MMS        N/A        N/A   N/A           disable   01:0c:cc:00:00:00  N/A        disable  N/A
              N/A       N/A
Aeroscout  N/A        N/A   30     *      disable   00:00:00:00:00:00  N/A        enable
disable           2610      265
RTLS       N/A        N/A   20     *      disable   01:18:8e:00:00:00  N/A        enable
enable
```

The output of this command includes the following information:

Column	Description
bssid	The Basic Service Set Identifier (BSSID) for the AP. This is usually the AP's MAC address.
scan	Indicates whether or not if active scanning is enabled on this AP.
monitor	Indicates whether the AP radio is currently enabled or disabled.
probe-type	This parameter displays one of the following options to show the AP is configured. • **sap**: Default AP setting. • **am**: AP is configured as an Air Monitor. • **m-portal**: AP is configured as a Mesh portal.

Column	Description
	• **m-point**: AP is configured as a Mesh point.
task	This parameter displays one of the following options to show the radio's current task: • **scan**: AP is scanning other channels. • **tuned**: AP is tuned on one channel. • **locate**: AP has been asked to locate a specific AP or client. • **pcap**: The AP is enabled with the Packet Capture feature.
channel	The radio channel currently used by an AP's WLAN interface.
pkts	Number of packets seen on the interface.
mac	MAC address for the AP's wired interface.
ip	The AP's IP address.
gw-ip	IP address for the AP's gateway.
gw-mac	MAC address for the AP's gateway.
status	Shows if the interface is currently enabled or disabled.
pkts	Number of packets seen on the AP's wired interface.
macs	Number of MAC addresses in the Wired MAC table for that interface.
gw-macs	Number of MAC addresses in the Wired MAC table for that interface.
tagged-pkts	Number VLAN-tagged packets sent to that interface.
vlan	The VLAN ID for the packets sent to that interface.
Packets read	Number of packets read by the AP since it was last reset.
Bytes read	Number of bytes read by the AP since it was last reset.
Num Intercepts	Number of interrupts from the AP's driver.
Num Buffer Overflows	Number of times excessive traffic has filled the AP's buffers.
Max PPS	Maximum throughput rate seen on the interface, in packets per second.

Column	Description
Cur PPS	Current throughput rate seen on the interface, in packets per second.
Max PPI	Maximum interrupt rate seen on the interface, in interrupts per second.
Cur PPI	Current interrupt rate seen on the interface, in interrupts per second.
Uptime	Number of seconds since the AP was last reset.
LMS IP	IP address of the AP's local controller.
Master IP	IP address of the AP's master controller.
AP type	AP model type.
Country Code	The AP's country code. Valid radio channels for your wireless network are based on your country code. If you change the AP's country code, the valid channels will be reset to the defaults for the new country.
ap	Number of other APs monitored by this AP.
sta	Number of clients and APs seen by this AP.
pap	Number of potential APs; APs which have transmitted a beacon, but have not yet been registered.
psta	Number of potential stations; AP has seen a MAC address from the station but hasn't yet received traffic from it.
ch	Number of channel entries in the channel table.
msg-hash	Number of different message types seen on the interface.
ap-l	(For internal use only)
WMS on Master	Indicates if the AP communicates to the wms process on a master or local controller. **enabled**: Communicates with a master controller. **disabled**: Communicates with a local controller only.
Stats Update Interval	If the AP is collecting statistics, this value is the interval in seconds in which the AP sends statistics to the WMS process on a controller.
Poll Interval	Interval, in milliseconds, that the AP sends RSSI updates to the WMS process on a controller.

Column	Description
Num Switches	Number of controllers to which this AP has access. If the value is 1, the AP has access to a master *or* a local controller. If the value is 2, the AP has access to a master *and* a local controller.
Collect Stats	If enabled, the AP will collect statistics to send the WMS process on its controller.
Bssid	BSSID of the radio.
Type	Indicates whether the controller type is **master** or **local**.
Status	If **up**, the AP can reach the controller. If **down**, the AP cannot reach the controller.
Last-reg	The time the AP last registered with the WMS process.
N-reg	Number of times the AP has registered with the WMS process.
Last-update	The last timer tick time the AP updated the WMS process.
Next-update	Interval between the last update and the next scheduled update.
N-updates	Number of updates sent to the WMS process.
Last-ack	Number of timer ticks since the AP received an acknowledgement from the WMS process.
Type	Type of RTLS server used by the AP, such as MMS or Aeroscout.
Server IP	IP address of the RTLS server.
Port	Port used by the RTLS server.
Frequency	Rate, in seconds, at which RTLS messages are sent to the server.
Active	Indicates if the server is active on the AP.
Rpt-Tags	Displays whether tag reporting is enabled or not.
Tag-Mcast-Addr	Displays MAC OUI of the tags that are forwarded to the server.
Tags-Sent	Displays the cumulative count of the tag reports sent to server.
Rpt-Sta	Displays whether station reporting is enabled or not.

Column	Description
Incl-Unassoc-Sta	Displays whether unassociated stations are included in station reporting or not.
Sta-Sent	Displays cumulative count of station reports sent to server.
Cmpd-Msgs-Sent	Displays cumulative count of compound messages containing station reports sent to server.

Command History

Version	Modification
ArubaOS 3.0.	Command introduced.
ArubaOS 3.4.	The **tagged-pkts** and **vlan** parameters were added to the Wired Interface table in the output of the **show ap monitor debug status** command.
Dell Networking W-Series ArubaOS 6.5.x	The **Rpt-Tags**, **Tag-Mcast-Addr**, **Tags-Sent**, **Rpt-Sta**, **Incl-Unassoc-Sta**, **Sta-Sent**, and **Cmpd-Msgs-Sent** were added to the RTLS configuration and state table.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap monitor stats

```
show ap monitor stats advanced {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>} client-mac <client-mac>

show ap monitor stats {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>} mac <mac>
```

Description

Show packet, signal and channel statistics for an AP or a client.

Syntax

Parameter	Description
`advanced`	Show advanced statistics for an AP or client.
`ap-name <ap-name>`	Show statistics for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address by entering its IP address in dotted-decimal format.
`mac <mac>`	Show data for a specific MAC address by entering the MAC address of a client or AP.
`client-mac <client-mac>`	Show data for a specific client MAC address by entering the MAC address of a client.

Example

The output of the following command shows monitoring statistics for the AP al12, and a client with the MAC address 00:03:2a:02:6a:d7.

```
(host) #show ap monitor stats ap-name al12 mac 00:03:2a:02:6a:d7

Aggregate Stats
---------------
retry  low-speed  non-unicast  recv-error  frag  bwidth
-----  ---------  -----------  ----------  ----  ------
0      0          0            0           0     0
RSSI
----
avg-signal  low-signal  high-signal  count  duration (sec)
----------  ----------  -----------  -----  --------------
51          51          51           4      50
Monitored Time:6626
Last Packet Time:585500
Uptime:585502

DoS Frames
----------
tx  old-tx  rx  old-rx
--  ------  --  ------
```

```
0    0       0    0
Interference Baseline
---------------------
FRR  FRER
---  ----
17   4
Handoff Assist
--------------
rssi-index  cur-signal  old-cur-signal
----------  ----------  --------------
0           51          0
High Throughput Parameters
--------------------------
ht-type  primary-channel  sec-channel  gf-supported  40mhz-intolerance
-------  ---------------  -----------  ------------  -----------------
none     0                0            0             0
```

The output of this command includes the following information:

Column	Description
retry	Percent of 802.11 retry frames sent because a client failed to send an ACK.
Low-speed	Percent of frames sent at a data rate of 18 Mbps or slower.
non-unicast	Percent of non-unicast frames
recev-error	Percent of error frames of all frames seen in the last second.
frag	Rate of fragmented packets, in frames per second
bwth	Current bandwidth, in bps.
avg-signal	Average signal-to-noise ratio over the interval since the AP's last reset.
Low-signal	Lowest signal-to-noise ratio over the interval since the AP's last reset.
high-signal	Highest signal-to-noise ratio over the interval since the AP's last reset.
count	Number of packets seen on the AP over the interval since the AP's last reset.
Duration	Time over which the AP has measured RSSI values.
tx	The total number of deauthorization frames sent to this MAC address for containment in the interval from the AP's last reset until the current timer tick.
old-tx	The total number of deauthorization frames sent to this MAC address for containment until the previous timer tick.
rx	The total number of deauthorization frames spoofing the MAC address in the interval from the AP's last reset until the current timer tick.

Column	Description
old-rx	The total number of deauthorization frames sent to this MAC address for containment until the previous timer tick.
FRR	Frame retry rate, in frames per second.
FRER	Frame error retry rate, in frames per second.
rssi-index	This value indicates the number of consecutive timer ticks over which the value of the Receive Signal Strength Indicator (RSSI) of the client has reduced by more than 3 units. **NOTE:** This value is updated only if 'handoff-assist' is enabled in the AP's RF Optimization profile.
cur-signal	The Receive Signal Strength Indicator (RSSI) of the most recent frame received from the specified MAC address.
old-cur-signal	The most recent Receive Signal Strength Indicator (RSSI) of the MAC which is 3 lower or 5 higher than the current RSSI. **NOTE:** This value is updated only if 'handoff-assist' is enabled in the AP's RF Optimization profile
ht-type	This parameter indicates support for the following HT types: **no**: No support for high-throughput. **HT-20**: Support for 20 Mhz high-throughput only. **HT-40**: Support for 40 Mhz high-throughput.
primary-channel	Primary radio channel.
sec-channel	Secondary radio channel
gf-supported	If **1**, this AP supports greenfield mode. If **0**, greenfield is not supported.
40mhz-intolerance	Indicates whether the specified MAC address is 40 Mhz intolerant.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap packet capture

```
show ap pcap status {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Show the status of outstanding packet capture (pcap) sessions.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address by entering its IP address in dotted-decimal format.

Usage Guidelines

The Packet Capture (pcap) feature copies control path packets from the Dell Control Processor, providing visibility for packets to or from the controller. This provides a useful troubleshooting tool for diagnosing communication problems with elements such as a Radius server. You can retrieve these packets by issuing the command **tar logs**, and then viewing the file filter.pcap on the controller's flash drive.

Example

The example below shows the Packet Capture Sessions table for an AP named AP16.

```
(host) #show ap pcap status ap-name AP16
Packet Capture Sessions
-----------------------
pcap-id  filter  type  intf              channel max-pkt-size  num-pkts  status       url
target
-------  ------  ----  ----              ------- ------------  --------  ------       ---  --
----
1                raw   00:1a:1e:82:ab:b0  161
                                        in-progress       10.3.9.225/5555
```

The output of this command includes the following information:

Column	Description
`pcap-id`	ID number of the packet capture session.
`filter`	Packet Capture filter specification.
`type`	A **raw** packet capture type indicates that the controller is streaming raw packets to an external viewer.

Column	Description
intf	BSSID of the interface for the PCAP session.
channel	Channel used by AP to capture packets.
max-pkt-size	Maximum size of all captured packets.
num-pkts	Number of packets captured during the session.
status	Shows the current status of the packet-capture session.
url	Packet capture data can be downloaded to this URL
target	IP address of the client station running Wildpacket's AiroPeek monitoring application

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap papi-err

```
show ap papi-err {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>|ip6-addr <ip6-addr>}
```

Description

Show PAPI error messages.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address by entering its IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show data for an AP with a specific IPv6 address by entering its IPv6 address in dotted-decimal format.

Examples

The output of the command displays the status.

```
(host) #show ap papi-err
STM SAP PAPI Send Error
-----------------------
Name  bssid  ip  Tunnel Add  Tunnel Remove  Arp Req  Vlan Req  Sta Req  Mcast Req
----  -----  --  ----------  -------------  -------  --------  -------  ---------
```

Command History

Version	Modification
ArubaOS 3.0.	Command introduced
ArubaOS 6.3	The **ip6** parameter was added.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap port status

```
ap-name <ap-name>
bssid <bssid>
ip-addr <ip-addr>
ip6-addr <ip6-addr>
wired-mac <wired-mac>
```

Description

Shows the status of the AP's wired ports. The status is updated every 60 seconds.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the AP.
`bssid <bssid>`	BSSID of the AP.
`ip-addr <ip-addr>`	IP address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.
`wired-mac <wired-mac>`	MAC address of the AP.

Examples

The output of the command displays the wired port status of an AP named **LocalAP1**. In this example, the output is divided into multiple sections to fit better on the pages of this document. In the actual command-line interface, it appears in a single long table.

```
(host) #show ap port status ap-name LocalAP1

AP "LocalAP1" Port Status (updated every 60 seconds)
-----------------------------------------------
Port  MAC                Type  Forward Mode  Admin    Oper  Speed   Duplex  802.3az   PoE  STP
 Portfast  TX-Packets  TX-Bytes   RX-Packets  RX-Bytes
----  ---                ----  ------------  -----    ----  -----   ------  -------   ---  ---
 --------  ----------  --------   ----------  --------
0     9c:1c:12:c0:ab:40  GE    N/A           enabled  up    1 Gb/s  full    disabled  N/A  N/A
 N/A       593105      308049749  932290      112871941
1     9c:1c:12:c0:ab:41  GE    tunnel        enabled  down  N/A     N/A     N/A       N/A  N/A
 N/A       0           0          0           0
```

Command History

Version	Modification
ArubaOS 6.2	Command introduced.
ArubaOS 6.3	A new column **STP** displays the spanning tree state of the wired port.
ArubaOS 6.5	A new column **Portfast** displays the Portfast state of the wired port.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap profile-usage

```
show ap profile-usage {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>}
```

Description

Show a complete list of all profiles referenced by an individual AP or an AP BSSID.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address by entering its IP address in dotted-decimal format.

Usage Guidelines

Use this command to monitor the configuration profiles in use by an AP or a specific BSSID. The output of this command shows the name of each profile type that is associated with the AP or BSSID, as well as the source that associates the profile with the AP.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap provisioning

```
show ap provisioning {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Show provisioning parameters currently used by an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address.

Example

```
The output of this command shows that the AP named AP8 has mostly default parameters. These
appear with the value N/A.
(host) #show ap provisioning ap-name AP8
AP "mp2" Provisioning Parameters
--------------------------------
Item                            Value
----                            -----

(host) (config) #show ap provisioning ap-name 00:24:6c:c7:d5:c8

AP "00:24:6c:c7:d5:c8" Provisioning Parameters
----------------------------------------------
Item                                                                    Value
----                                                                    -----
AP Name                                                                 00:24:6c:c7:d5:c8
AP Group                                                                default
Location name                                                           N/A
SNMP sysLocation                                                        N/A
Master                                                                  10.4.62.9
Gateway                                                                 N/A
IPv6 Gateway                                                            N/A
Netmask                                                                 N/A
IP Addr                                                                 N/A
IPv6 Addr                                                               N/A
IPv6 Prefix                                                             64
DNS IP                                                                  N/A
DNS IPv6                                                                N/A
Domain Name                                                             N/A
Server Name                                                             aruba-master
Server IP                                                               10.4.62.9
Antenna gain for 802.11a                                                N/A
Antenna gain for 802.11g                                                N/A
Antenna for 802.11a                                                     both
Antenna for 802.11g                                                     both
Single chain mode for Radio 0                                           0
Single chain mode for Radio 1                                           0
```

```
IKE PSK                                                    N/A
PAP User Name                                              N/A
PAP Password                                               N/A
PPPOE User Name                                            N/A
PPPOE Password                                             N/A
PPPOE Service Name                                         N/A
PPPOE CHAP Secret                                          N/A
USB User Name                                              N/A
USB Password                                               N/A
USB Device Type                                            any
...
...
...
```

The output of this command includes the following information:

Column	Description
AP Name	Name of the AP.
AP Group	AP group to which the AP belongs.
Location name	Fully-qualified location name (FQLN) for the AP.
SNMP sysLocation	User-defined description of the location of the AP, as defined with the command provision-ap syslocation.
Master	Name or IP address for the master controller.
Gateway	IP address of the default gateway for the AP.
Netmask	Netmask for the AP's IP address.
IP Addr	IP address for the AP.
IPv6	The static IP6 address of the AP.6
IPv6 Prefix	The prefix of static IPv6 address of the AP.
Dns IP	IP address of the DNS server.
DNS IPv6	The prefix of static IPv6 address of the AP.
Domain Name	Domain name used by the AP.
Server Name	DNS name of the controller from which the AP boots.
Server IP	IP address of the controller from which the AP boots
Antenna gain for 802.11a	Antenna gain for 802.11a (5GHz) antenna.

Column	Description
Antenna gain for 802.11g	Antenna gain for 802.11g (2.4GHz) antenna.
Antenna for 802.11a	Antenna use for 5 GHz (802.11a) frequency band. • **1**: AP uses antenna 1 • **2**: AP uses antenna 2 • **both**: AP uses both antennas
Antenna for 802.11g	Antenna use for 2.4 GHz (802.11g) frequency band. • **1**: AP uses antenna 1 • **2**: AP uses antenna 2 • **both**: AP uses both antennas
Single chain mode for Radio 0	If this parameter is set to 1 for an 802.11n-capable radio, the radio will operate in single-chain mode, and will transmit and receive data using only legacy rates and single-stream HT rates up to MCS 7. This parameter is set to 0 (disabled) by default.
Single chain mode for Radio 1	If this parameter is set to 1 for an 802.11n-capable radio, the radio will operate in single-chain mode, and will transmit and receive data using only legacy rates and single-stream HT rates up to MCS 7. This parameter is set to 0 (disabled) by default.
IKE PSK	IKE PSK The IKE pre-shared key.
PAP password	Password Authentication Protocol (PAP) password for the AP.
PAP User Name	PAP username for the AP.
PPPOE User Name	Point-to-Point Protocol over Ethernet (PPPoE) user name for the AP.
PPPOE Password	PPPoE password for the AP.
PPPOE Service Name	PPPoE service name for the AP.
PPPOE CHAP secret	PPPoE CHAP secret key for the AP.
USB User Name	The PPP username provided by the cellular service provider
USB Password	A PPP password, if provided by the cellular service provider
USB Type	The USB driver type.
USB Device Identifier	The USB device identifier.

Column	Description
USB Dial String	The dial string for the USB modem. This parameter only needs to be specified if the default string is not correct.
USB Initialization String	The initialization string for the USB modem. This parameter only needs to be specified if the default string is not correct.
USB TTY device data path	The TTY device path for the USB modem. This parameter only needs to be specified if the default path is not correct.
USB TTY device control path	The TTY device control path for the USB modem. This parameter only needs to be specified if the default path is not correct.
Uplink VLAN	If you configured an uplink VLAN on an AP connected to a port in trunk mode, the AP sends and receives frames tagged with this VLAN on its Ethernet uplink. By default, an AP has an uplink vlan of 0, which disables this feature.
Link Priority Ethernet	Set the priority of the wired uplink, from 0-255. Each uplink type has an associated priority; wired ports having the highest priority by default.
Link Priority Cellular	The priority of the cellular uplink, from 0-255. By default, the cellular uplink is a lower priority than the wired uplink; making the wired link the primary link and the cellular link the secondary or backup link.
Mesh Role	If the mesh role is “none,” the AP is operating as a thin AP. An AP operating as a mesh node can have one of two roles: mesh portal or mesh point.
Installation	Indicates the type of installation (**indoor** or **outdoor**). The **default** parameter indicates that the installation mode is determined by the AP model type.
Latitude	Latitude coordinates of the AP, in the format *Degrees Minutes Seconds* (DMS).
Longitude	Longitude coordinates of the AP, in the format *Degrees Minutes Seconds* (DMS).
Altitude	Altitude, in meters, of the AP. This parameter is supported on outdoor APs only.
Antenna bearing for 802.11a	Horizontal coverage distance of the 802.11a (5GHz) antenna from true north, from 0-360 degrees. **NOTE:** This parameter is supported on outdoor APs only. The horizontal coverage pattern does not consider the elevation or vertical antenna pattern.

Column	Description
Antenna bearing for 802.11g	Horizontal coverage distance of the 802.11g (2.4GHz) antenna from true north, from 0-360 degrees. **NOTE:** This parameter is supported on outdoor APs only. The horizontal coverage pattern does not consider the elevation or vertical antenna pattern.
Antenna tilt angle for 802.11a	The angle of the 802.11a (5GHz) antenna. This parameter can range from between -90 degrees and 0 degrees for downtilt, and between +90 degrees and 0 degrees for uptilt.
Antenna tilt angle for 802.11g	The angle of the 802.11g (2.4GHz) antenna. This parameter can range from between -90 degrees and 0 degrees for downtilt, and between +90 degrees and 0 degrees for uptilt.
Mesh SAE	Shows if the AP has enabled or disabled Secure Attribute Exchange (SAE) on a mesh network.

Related Commands

Command	Description
provision-ap	Change provisioning parameters for an individual AP. This command does not save the provisioning parameters settings in a reusable profile.
ap provisioning-profile	This command defines a provisioning profile for an AP or group of APs.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.2	Introduced support for mesh parameters, additional antenna parameters, and AP location parameters.
ArubaOS 3.4	Introduced support for the following parameters: • Installation • Mesh SAE • USB User Name • USB Password • USB Device Type • USB Device Identifier • USB Dial String • USB Initialization String • USB TTY device path

Release	Modification
ArubaOS 5.0	The **mesh-sae** parameter no longer displays the **sae-default** setting if the parameter is disabled. Only the **sae-disable** option indicates that this parameter is currently in its default disabled state.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on the controller where the AP is terminating.

show ap provisioning-profile

```
ap provisioning-profile [<profile-name>]
```

Description

This command shows information for AP provisioning profiles.

Syntax

Parameter	Description
<profile-name>	The name of an an existing AP provisioning profile.

Usage Guidelines

The AP provisioning profile allows you to define a set of provisioning parameters to an AP group. These settings can be saved or assigned to an AP group via the command **ap-group <group> provisioning-profile <profile>**.

Issue this command without the **<profile-name>** option to display the entire AP provisioning profile list, including profile status and the number of references to each profile. Include a profile name to display the authorization group defined for that profile.

Examples

The following example lists all AP provisioning profiles. The **References** column lists the number of other profiles with references to that provisioning profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined AP provisioning profiles will not have an entry in the **Profile Status** column.

```
(host) #show ap provisioning-profile

Provisioning profile List
-------------------------
Name     References  Profile Status
----     ----------  --------------
default  12
outdoor  3
```

To display the configuration settings for an individual profile, include the <profile> parameter. The example below shows the profile details for the AP provisioning profile **Default**.

```
(host) #show ap provisioning-profile default

Provisioning profile "default"
------------------------------
Parameter                                                  Value
---------                                                  -----
Remote-AP                                                  No
Master IP/FQDN                                             N/A
PPPOE User Name                                            N/A
PPPOE Password                                             N/A
PPPOE Service Name                                         N/A
USB User Name                                              N/A
USB Password                                               N/A
USB Device Type                                            none
USB Device Identifier                                      N/A
USB Dial String                                            N/A
```

```
USB Initialization String                                        N/A
USB TTY device data path                                         N/A
USB TTY device control path                                      N/A
USB modeswitch parameters                                        N/A
Link Priority Ethernet                                           0
Link Priority Cellular                                           0
Cellular modem network preference                                auto
Username of AP so that AP can authenticate to 802.1X using PEAP  N/A
Password of AP so that AP can authenticate to 802.1X using PEAP  N/A
Uplink VLAN                                                      0
USB power mode                                                   auto
AP POE Power optimization                                        disabled
```

Description

This command defines a provisioning profile for an AP or group of APs.

Syntax

Parameter	Description
`Remote-AP`	Indicates that the profile is associated with a remote AP using certificates.
`Master IP/FQDN`	The FQDN or IP address for the master controller.
`PPPOE User Name`	PPPoE username for the AP.
`PPPOE Password`	Point-to-Point Protocol over Ethernet (PPPoE) password for the AP.
`PPPOE Service Name`	PPPoE service name for the AP.
`USB User Name`	The PPP username provided by the cellular service provider
`USB Password`	A PPP password, if provided by the cellular service provider
`USB Device Type`	The USB driver type.
`USB Device Identifier`	The USB device identifier.
`USB Dial String`	The dial string for the USB modem. This parameter only needs to be specified if the default string is not correct.
`USB Initialization String`	The initialization string for the USB modem. This parameter only needs to be specified if the default string is not correct.
`USB TTY device data path`	The TTY device path for the USB modem. This parameter only needs to be specified if the default path is not correct.
`USB TTY device control path`	The TTY device control path for the USB modem. This parameter only needs to be specified if the default path is not correct.

Parameter	Description
USB modeswitch parameters	All the parameters that is required to be passed to the USB mode switch utility.
Link Priority Ethernet	Set the priority of the wired uplink, from 0-255. Each uplink type has an associated priority; wired ports having the highest priority by default.
Link Priority Cellular	The priority of the cellular uplink, from 0-255. By default, the cellular uplink is a lower priority than the wired uplink; making the wired link the primary link and the cellular link the secondary or backup link.
Cellular modem network preference	Multi-mode cellular modem network preference type.
Username of AP so that AP can authenticate to 802.1X using PEAP	If your AP uses PEAP authentication, this field displays the AP username.
Password of AP so that AP can authenticate to 802.1X using PEAP	If your AP uses PEAP authentication, this field displays the AP password.
Uplink VLAN	If you configured an uplink VLAN on an AP connected to a port in trunk mode, the AP sends and receives frames tagged with this VLAN on its Ethernet uplink. By default, an AP has an uplink vlan of 0, which disables this feature.
USB power mode	The USB power mode to control the power to the USB port.
AP POE Power optimization	Displays the AP POE power optimization status.

Usage Guidelines

The AP provisioning profile allows you to define a set of provisioning parameters to an AP group. These settings can be saved or assigned to an AP group via the command **ap-group <group> provisioning-profile <profile>**.

Related Commands

Command	Description
provision-ap	Change provisioning parameters for an individual AP. This command does not save the provisioning parameters settings in a reusable profile.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.0	The **uplink-vlan** parameter was introduced.
ArubaOS 6.3.1.10	The **AP power mode** parameter was introduced.
ArubaOS 6.3.1.11	The **AP power mode** parameter was renamed to **AP POE Power optimization**.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show ap radio-database

```
show ap radio-database [band a|g] [group <group>] [mode access-point|air-
monitor|disabled|ht|ht-40mhz|legacy|sap-monitor] [sort-by ap-group|ap-ip|ap-name|ap-
type|switch-ip] [sort-direction ascending|descending] [start <start>] [switch <switch-ip-
addr>]
```

Description

Show radio information for Access Points visible to this controller.

Syntax

Parameter	Description
band	Show only APs with a radio operating in the specified band.
a	Show only APs with a radio operating in the 802.11a band (5 GHz).
g	Show only APs with a radio operating in the 802.11g band (2.4 GHz).
group <group>	Show only APs associated with the specified AP group.
mode	Show only APs with a radio operating in the specified mode.
access-point	Show only APs operating as access points.
air-monitor	Show only APs operating as air monitors.
disabled	Show only disabled APs.
ht	Show only high-throughput APs.
ht-40mhz	Show only 40 Mhz high-throughput APs.
legacy	Show only legacy (not high-throughput) APs.
sap-monitor	Show only APs operating as SAP monitors.
sort-by	Sort the output of this command by a specific data column.
ap-group	Sort the output of this command by AP group name.
ap-ip	Sort the output of this command by AP IP address.
ap-name	Sort the output of this command by AP name.
ap-type	Sort the output of this command by AP model type.

Parameter	Description
switch-ip	Sort the output of this command by controller ip address.
sort-direction	Select a sort direction for the output of this command.
ascending	Sort the output in ascending order.
descending	Sort the output in descending order.
start	Start displaying the output of this command at a chosen index number by entering the index number of the AP at which command output should start.
switch <switch-ip-addr>	Display information for APs associated with a specific controller by entering the IP address of that controller.

Example

The output of the command shows that the AP is aware of five other access points, three of which are active.

```
(host) #show ap radio-database
AP Radio Database
-----------------
Name             Group    AP Type  IP Address   Status          Flags  Switch IP     11g
Mode/Chan/EIRP/Cli  11a Mode/Chan/EIRP/Cli
----             -----    -------  ----------   ------          -----  ---------     ----------
------------  ----------------------
mp3              default  125      10.3.129.96  Up 14h:45m:0s   M      10.3.129.232  AP(HT)
/10/0/0            AP(HT)/100/4/0
sw-ad-ap124-11   default  124      10.3.129.99  Up 14h:43m:18s  M      10.3.129.232  AP(HT)
/10/0/0            AP(HT)/100+/2/0
sw-ad-ap125-13   default  125      10.3.129.98  Up 14h:49m:36s  M      10.3.129.232  AP(HT)
/10/2.5/0          AP(HT)/100/4/0
sw-ad-ap65-19    default  65       10.3.129.95  Down                   10.3.129.232

   Flags: U = Unprovisioned; N = Duplicate name; G = No such group; L = Unlicensed
          R = Remote AP; I = Inactive; X = Maintenance Mode; P = PPPoE AP; B = Built-in AP
          S = RFprotect Sensor; d = Disconnected Sensor; H = Using 802.11n license
       M = Mesh node; Y = Mesh Recovery
```

The output of this command includes the following information:

Column	Description
Name	Name of the AP.
Group	AP group to which the AP is associated.
AP Type	AP model type.
IP address	IP address of the AP.

Column	Description
`Status`	Current AP status. If the AP is currently up, this data column also shows the amount of time for which the AP has been active.
`Flags`	This column displays a letter that corresponds to some type of additional information for the AP. The key to the list of possible flags appears at the bottom of the output of this command.
`Switch IP`	IP address of the AP's controller.
`11g Mode/Chan/EIRP/Cli`	802.1g radio type and mode/802.11g radio channel used by the AP/current Effective Isotropic Radiated Power (EIRP)/Number of Clients associated with the radio
`11a Mode/Chan/EIRP/Cli`	802.1a radio type and mode/802.11a radio channel used by the AP/current Effective Isotropic Radiated Power (EIRP)/Number of Clients associated with the radio.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap radio-summary

```
show ap radio-summary
   ap-group <ap-group>
   ap-name <ap-name>
   dot11a
   dot11g
   ip-addr <ip-addr>
   ip6-addr <ip6-addr>
```

Description

Show AP radios registered to this controller.

Syntax

Parameter	Description
`ap-group`	Allows you to filter radio information by AP group.
`ap-name <ap-name>`	Allows you to filter radio information by AP name.
`dot11a`	Allows you to filter 802.11a radio information.
`dot11g`	Allows you to filter 802.11g radio information.
`ip-addr <ip-addr>`	Allows you to filter radio information by IP address.
`ip6-addr <ip-addr>`	Allows you to filter radio information by IPv6 address.

Example

The output of the command in the example below displays statistics for the AP's radio, as well as statistics for transmitted and received frames.

In the actual command-line interface, it will appear in a single, long table.

```
(host) #show ap radio-summary
APs Radios information
----------------------
Name              Group              AP Type  IP Address    Band  Mode
----              -----              -------  ----------    ----  ----
172.17.153-7      172.17.153         104      55.55.57.44   2.4   AP:1
172.17.150-5      172.17.150         104      55.55.57.42   2.4   AP:6
172.17.153-13     172.17.153         104      55.55.57.35   2.4   AP:6
172.17.151-42     172.17.151         104      55.55.57.34   2.4   AP:11
172.17.151-34     172.17.151         104      55.55.57.33   2.4   AP:11
172.17.155-26     172.17.155         104      55.55.57.22   2.4   AP:1

EIRP/MaxEIRP  NF/U/I       TD                TM                TC
------------  ------       --                --                --
28/29.5       -96/ 67/  5  0/0/0/0/0/0       33/33/33/32/32/32 0/0/0/0/0/0
29.5/29.5     -96/ 27/  3  0/0/0/0/0/0       12/11/12/12/12/11 0/0/0/0/0/0
29.5/29.5     -96/ 31/  3  0/0/0/0/0/0       13/13/14/14/12/14 0/0/0/0/0/0
25/29.5       -96/ 28/  6  0/0/0/0/0/0       10/10/10/9/11/10  0/0/0/0/0/0
25/29.5       -96/ 32/  7  0/0/0/0/0/0       10/11/11/10/11/11 0/0/0/0/0/0
```

```
28/29.5       -96/ 70/  4  0/0/0/0/0/0        27

NF: Noise Floor(dBm); U: Utilization(%); I: Interference(%)
TD: Time used by data frames (%); TM: time used by mgnt frames(%); time used by ctrl frames
(%)
Total Radios:6
```

The output of this command includes the following information:

Parameter	Description
Name	Name of the AP.
Group	Group to which AP radio is assigned.
AP Type	AP model.
IP Address	Radio IP address.
Band	Band on which radio is operating on (2.4 or 5 GHz).
Mode	Mode on which radio is operating; AP: AP Mode; AM: Air Monitor Mode, Spectrum: Spectrum Monitor Mode. Optionally, you can also specify the channel number.
EIRP/Max EIRP	Current EIRP output and maximum EIRP allowed for this radio (dBm).
NF/U/I	Noise Floor (dBm) / Utilization (%) / Interference (%).
TD	Time used by data frames (%).
TM	Time used by mgmt frames(%).
TC	Time used by ctrl frames (%).

Command History

Release	Modification
ArubaOS 6.2	Command was introduced
ArubaOS 6.3	The **ap-group** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap regulatory

```
show ap regulatory
```

Description

Shows the currently active Regulatory Cert.

Syntax

None.

Usage Guidelines

Issue this command to view the currently active Regulatory Cert

Examples

The example below shows the version of Regulatory Cert currently active on the controller.

```
(host) #show ap regulatory
Regulatory Version :1.0_43859
```

Command History

Introduced in ArubaOS 6.4.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap regulatory-domain-profile

```
show ap regulatory-domain-profile [<profile-name>]
```

Description

Show the list of regulatory domain profiles, or the settings in an individual regulatory domain profile

Syntax

Parameter	Description
<profile-name>	Show data for a specific regulatory domain profile

Usage Guidelines

Issue this command without the **<profile>**parameter to display the entire regulatory domain profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has three regulatory domain profiles. The **References** column lists the number of other profiles with references to the regulatory domain profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column

```
(host) # show ap regulatory-domain-profile
Regulatory Domain profile List
------------------------------
Name                            References  Profile Status
----                            ----------  --------------
corp-channel-profile            8
default                         10
channel-test                           1.
```

This example displays the configuration settings for the profile **corp-channel-profile**. The output of this command shows the profile's country code and the valid channel and channel pairs for that profile.

```
host) #show ap regulatory-domain-profile corp-channel-profile
Regulatory Domain profile "corp-channel-profile"
-------------------------------------------------
Parameter                         Value
---------                         -----
Country Code                       US
Valid 802.11g channel              1
Valid 802.11g channel              6
Valid 802.11a channel              36
Valid 802.11a channel              40
Valid 802.11a channel              44
Valid 802.11a channel              48
Valid 802.11a channel              149
Valid 802.11a channel              153
Valid 802.11g 40MHz channel pair   N/A
Valid 802.11a 40MHz channel pair   36-40
Valid 802.11a 40MHz channel pair   44-48
Valid 802.11a 40MHz channel pair   149-153
Valid 802.11a 80MHz channel group  36-48
```

```
Valid 802.11a 80MHz channel group   52-64
Valid 802.11a 80MHz channel group   100-112
Valid 802.11a 80MHz channel group   116-128
Valid 802.11a 80MHz channel group   132-144
Valid 802.11a 80MHz channel group   149-161
Valid 802.11a 160MHz channel group  36-64
```

The output of this command includes the following information:

Column	Description
Country Code	Code that represents the country in which the APs will operate. The country code determines the 802.11 wireless transmission spectrum.
Valid 802.11g channel	Selected 802.11b/g channel available for use by an AP using the specified regulatory domain profile. These channels are limited to those valid for the profile's country code.
Valid 802.11a channel	Selected 802.11a channel available for use by an AP using the specified regulatory domain profile. These channels are limited to those valid for the country code.
Valid 802.11g 40MHz channel pair	Selected 802.11b/g 40 MHz channel pair available for use by an AP using the specified domain profile. These channels are limited to those valid for the profile's country code.
Valid 802.11a 40MHz channel pair	Selected 802.11a 40 MHz channel pair available for use by an AP using the specified domain profile. These channels are limited to those valid for the profile's country code.
Valid 802.11a 80MHz channel group	Selected 802.11a 80 MHz channel group available for use by an AP using the specified domain profile. These channels are limited to those valid for the profile's country code.
Valid 802.11a 160MHz channel group	Selected 802.11a 1600 MHz channel group available for use by an AP using the specified domain profile. These channels are limited to those valid for the profile's country code.

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.5	The **Valid 802.11a 160MHz channel group** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap remote counters

```
show ap remote counters {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Show the numbers of message counters for Remote APs

Syntax

Parameter	Description
`ap-name <ap-name>`	Show data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. You must specify an AP's BSSID, which is usually the AP's MAC address
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address.

Examples

Use this command to determine the number of message counters recorded for each counter type seen by the remote AP. The output of the command in the example below shows counters for Remote AP State and VoIP CAC State Announcements.

```
(host) #show ap remote counters ap-name al22

Counters
--------
Name                          Value
----                          -----
Remote AP State               62851
VoIP CAC State Announcement   13605
```

The output of this command includes the following information:

Column	Description
`Name`	Name of the counter type.
`Value`	Number of counters recorded since the AP was last reset.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap remote debug anul-sta-entries

```
show ap remote debug anul-sta-entries {ap-name <ap-name>|ip-addr <ip-addr>}
```

Description

Displays a list of VAPs and stations stored in the AP's datapath.

Syntax

Parameter	Description
ap-name <ap-name>	Show LACP information for an AP with a specific name.
radio	Shows the radio ID. Valid values are 0 and 1.
ip-addr <ip-addr>	Show LACP information for an AP with a specific IPv4 address.

Example 1

Using the following example, for W-AP320 Series check LAG columns to see if any packets are dropped.

```
#show ap remote  debug anul-sta-entries ap-name ap325
ANUL BSS Table for Radio 0
--------------------------
bssid              num_stas  data ready drops
-----              --------  ----------------
AC:A3:1E:53:5C:F0  2         0
ANUL STA State
--------------
mac                bssid              aid  data ready  bss  Drops  LAG  LAG drops
---                -----              ---  ----------  ---  -----  ---  ---------
3C:A9:F4:24:B2:54  AC:A3:1E:53:5C:F0  2    Yes         B    0      Yes  0
78:31:C1:BC:D6:12  AC:A3:1E:53:5C:F0  1    Yes         B    0      Yes  0
```

The following parameters appear in the output of the **show ap remote debug anul-sta-entries** command, and are useful for debugging purposes.

Parameter	Description
bssid	The BSS Id of the VAP.
num_stas	Indicates the number of stations associated to a VAP.
data ready drops	Indicates the total packets received and dropped before clients were ready to receive data packets.
ANUL STA State	
mac	The MAC address of a client.
bssid	The BSS Id of the VAP that the client is associated to.

Parameter	Description
`aid`	The association ID of the station.
`data ready`	Indicates if the client has completed authentication.
`bss`	Indicates if a client is associated to a BSS or not. The **B** flag indicates that the client is associated to a BSS. The **F** flag indicates that the entry is free and not attached to any BSS.
`Drops`	Indicates the number of data packets received and dropped before data ready is set to yes.
`LAG`	Indicates if link aggregation is used to achieve high throughput by transmitting the packets on both Ethernet ports, for a given station. This field is displayed only in W-AP320 Series access points.
`LAG drops`	Indicates the number of packets dropped by the AP due to packets reordered in the network by link aggregation. This field is displayed only in W-AP320 Series access points.

Command History

Version	Modification
ArubaOS 6.4.4	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap remote debug association

```
show ap remote debug association [ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>]
```

Description

Show the association table of the AP to identify the clients associated to each AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show client associations for a specific AP name.
`bssid <bssid>`	Show client associations for an specific AP Basic Service Set Identifier (BSSID). The BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show client associations for an AP with a specific IP address. Enter the IP address in dotted-decimal format.

Usage Guidelines

Use this command to verify if a remote user is connected to an AP, and to validate the AP to which is connected.

Example

The output of this command displays information about the remote clients associated with an AP with the IP address 192.0.2.32.

```
(host) #show ap remote debug association ip-addr 192.0.2.32

Flags: W: WMM client, A: Active, R: RRM client

PHY Details: HT: High throughput; 20: 20MHz; 40: 40MHz
             <n>ss: <n> spatial streams

Association Table
-----------------
Name  bssid              mac               auth  assoc  aid  l-int  essid
----  -----              ---               ----  -----  ---  -----  -----
AP71  00:0a:23:c1:d4:11  00:16:6d:08:1s:f1  y     y      1    10     t-lab

vlan-id  tunnel-id  phy  assoc. time  num assoc  Flags
-------  ---------  ---  -----------  ---------  -----
111      0x108e     a    23s          1          A

Num Clients:1
```

The output of this command includes the following information:

Column	Description
Name	Name of an AP.

Column	Description
bssid	The AP Basic Service Set Identifier (BSSID).
mac	MAC address of the client.
auth	This column displays a **y** if the AP has been configured for 802.11 authorization frame types. Otherwise, it displays an **n**.
assoc	This column displays a **y** if the AP has been configured for 802.11 association frame types. Otherwise, it displays an **n**.
aid	802.11 association ID. A client receives a unique 802.11 association ID when it associates to an AP.
1-int	Number of beacons in the 802.11 listen interval. There are ten beacons sent per second, so a ten-beacon listen interval indicates a listen interval time of 1 second.
essid	Name that uniquely identifies the AP's Extended Service Set Identifier (ESSID).
vlan-id	Identification number of the AP's VLAN.
tunnel-id	Identification number of the AP's tunnel.
phy	The RF band in which the AP operates: **a** = 5 GHz **b**, **g** = 2.4 GHz
assoc. time	Amount of time the client has associated with the AP, in the format hours:minutes:seconds.
num assoc	Number of clients associated with the AP.
flags	This column displays any flags for this AP. The list of flag abbreviations is included in the output of the **show ap association** command.

Command History

Introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap remote debug association

```
show ap remote debug association [ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>
```

Description

Show the association table for an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show AP associations for a specific AP. You can also include the **essid**, **phy** or **voip-only** keywords to further filter the output of this command.
`bssid <bssid>`	Show the AP associations for an specific AP Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show AP associations for a specific AP by entering an IP address in dotted-decimal format. You can also include the **essid**, **phy** or **voip-only** keywords to further filter the output of this command.

Usage Guidelines

Use this command to check if user is connected to an AP. This command validates whether the client is associated and indicates the last AP to which it was connected. If the flags column shows an 'A', the client is currently associated with that AP. Alternately, if the client is not currently associated, the AP with the smallest value of association time is the last AP used by the client.

Example

Use the **show ap association bssid** command to verify that a user has associated with an AP, or to determine last AP to which the client was connected. The output of this command in the example below shows the association table for the client with the MAC address 00:13:fd:5c:7c:59. If the flags column in the output of this command shows an 'A', the client associated last to that AP. Alternately, the AP with the smallest value of association time is the last AP to which the client had associated.

In the example below, the output of this command has been broken into two separate tables to better fit this page. In the actual output of the command, this information is shown in a single, wide table.

```
host) #show ap association bssid 00:13:fd:5c:7c:59

Flags: W: WMM client, A: Active, R: RRM client
PHY Details: HT: High throughput; 20: 20MHz; 40: 40MHz
             ss:  spatial streams

Association Table
-----------------
Name  bssid              mac               auth  assoc  aid  l-int  essid
----  -----              ---               ----  -----  ---  -----  -----
AL12  00:1a:1e:11:5f:11  00:21:5c:50:b1:ed  y     y      12   10     ethersphere-wpa2AL5
00:1a:1e:88:88:31  00:19:7d:d6:74:93 y y 6 10 ethersphere-wpa2


vlan-id  tunnel-id  phy            assoc. time  num assoc  Flags
```

```
-------  ---------  ---              -----------  ---------  -----
65       0x10c4     a-HT-40sgi-2ss   35m:41s      1          WA65       0x1072     a
                                                                24m:29s      1          WA
```

The output of this command includes the following information:

Column	Description
Name	Name of an AP
bssid	The AP Basic Service Set Identifier (BSSID)
mac	MAC address of the AP
auth	This column displays a **y** if the AP has been configured for 802.11 authorization frame types. Otherwise, it displays an **n**.
assoc	This column displays a **y** if the AP has been configured for 802.11 association frame types. Otherwise, it displays an **n**.
aid	802.11 association ID. A client receives a unique 802.11 association ID when it associates to an AP.
1-int	Number of beacons in the 802.11 listen interval. There are ten beacons sent per second, so a ten-beacon listen interval indicates a listen interval time of 1 second.
essid	Name that uniquely identifies the AP's Extended Service Set Identifier (ESSID).
vlan-id	Identification number of the AP's VLAN.
tunnel-id	Identification number of the AP's tunnel.
assoc. time	Amount of time the client has associated with the AP, in the format *hours:minutes:seconds*.
num assoc	Number of clients associated with the AP.
flags	This column displays any flags for this AP. The list of flag abbreviations is included in the output of the **show ap association** command.

Command History

Introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers.

show ap remote debug association-failure

```
show ap remote debug association-failure [{ap-name <ap-name>}|{bssid <bssid>}{essid <essid>}]
```

Description

Display association failure information that can be used to troubleshoot problems on an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Filter the Association Failure Table by AP name.
`bssid <bssid>`	Filter the Association Failure Table by Basic Service Set Identifier (BSSID). The BSSID is usually the AP's MAC address.
`essid <essid>`	Filter the Association Failure Table by Extended Service Set Identifier (ESSID) of an AP.

Usage Guidelines

Use this command to determine whether the client is associated, and identify the last AP to which it was connected.

Example

The output of the command show ap remote debug association-failure displays the Association Failure Table show below. If the **Idle time** column in the output of this command is a low value, **reason** column will describe why association failed.

```
(host)#show ap remote debug association-failure ap-name AP-65-port3
Association Failure Table
-------------------------
MAC Address        AP Name  BSSID              ESSID  State  Radio    Idle Time    Reason
-----------        -------  -----              -----  -----  -----    ---------    ------
00:16:6f:09:54:3e  AL29     00:1a:1e:11:6f:00  guest         802.11g  20h:39m:33s  Denied; AP
Going Down
00:16:6f:09:54:3e  AL33     00:1a:1e:11:6e:60  guest  auth   802.11g             20h:39m:33s
Unspecified Failure
00:16:6f:09:54:3e  AL40     00:1a:1e:8d:5b:20  guest         802.11g  20h:39m:33s  Denied;
Ageout
Num Association Failures:3
```

The output of this command includes the following parameters:

Column	Description
`MAC address`	MAC address of the client that failed to associate with an AP.
`AP Name`	Name of an AP to which the client attempted to associate.

Column	Description
BSSID	Basic Service Set Identifier of an AP.
ESSID	Extended Service Set Identifier of an AP.
State	This data column shows if the client is currently authorized or both authorized and associated with an AP.
Radio	The AP radio type.
Idle Time	Amount of time that the client has been idle, in the format *hours:minutes:seconds*.
Reason	A brief description of the reason why the client failed to associate.

Command History

Introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap remote debug bss-config

```
show ap remote debug bss-config [ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>Description
```

Show the configuration for each BSSID of an AP. This information can be used to troubleshoot problems on an AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Filter the AP Config Table by AP name.
`ip-addr <ip-addr>`	Filter the AP Config Table by IP address by entering an IP address in dotted-decimal format.

Examples

The output of this command shows the AP configuration table for a specific BSSID.

```
host) #show ap remote debug bss-config ap-name ap93-3
Dell AP Config Table
---------------------
bss                ess    vlan  ip            phy   type  fw-mode  max-cl  rates tx-rates  preamble  mtu

---                ---    ----  --            ---   ----  -------  ------  ----- --------  --------  --- status
 wmm
------  ---
00:1a:1e:11:24:c2  cera2  66    10.6.1.203    g-HT  ap    tunnel   64      0x3   0xfff     enable    0
enable  enable

00:1a:1e:8d:5b:11  wpa2   65    10.6.1.198    a-HT  ap    tunnel   20      0x150 0xff0     -         0
enable  enable

00:0b:86:9b:e5:60  guest  63    10.6.14.79    g     ap    tunnel   20      0x2   0x3fe     enable    0
enable  enable

00:1a:1e:97:e5:41  voip   66    10.6.1.199    g-HT  ap    tunnel   20      0xc   0x14c     enable    0
enable  enable

00:1a:1e:11:74:a1  voip   66    10.6.1.197    g-HT  ap    tunnel   20      0xc   0x14c     enable    0
enable  enable

00:1a:1e:11:5f:11  wpa2   65    10.6.1.200    a-HT  ap    tunnel   20      0x150 0xff0     -         0
enable  enable
```

The output of this command includes the following information:

Column	Description
`bss`	Basic Service Set (BSS) identifier, which is usually the AP's MAC address.
`ess`	Extended Service Set (ESS) identifier; a user-defined name for a wireless network.
`vlan`	The BSSID's VLAN number.
`IP`	The AP's IP address.
`phy`	One of the following 802.11 types

Column	Description
	• a • a-HT (high-throughput) • g • g-HT (high-throughput)
type	This column shows if the BSSID is for an access point (**ap**) or an air monitor (**am**).
fw-mode	The configured forward mode for the AP's virtual AP profile. • **bridge**: Bridge locally • **split-tunnel**: Tunnel to controller or NAT locally • **tunnel**: Tunnel to controller
max-cl	The maximum number of clients allowed for this BSSID.
preamble	Shows if short preambles are enabled for 802.11b/g radios. Network performance may be higher when short preamble is enabled. In mixed radio environments, some 802.11b wireless client stations may experience difficulty associating with the AP using a short preamble.
MTU	Maximum Transmission Unit (MTU) size, in bytes. This value describes the greatest amount of data that can be transferred in one physical frame.
status	Shows if this BSSID is enabled or disabled.
wmm	Shows if the BSSID has enabled or disabled WMM, also known as IEEE 802.11e Enhanced Distribution Coordination Function (EDCF) WMM provides prioritization of specific traffic relative to other traffic in the network.

Command History

Introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap remote debug client-mgmt-counters

```
show ap remote debug client-mgmt-counters
```

Description

Show the numbers of each type of message from an AP's clients. This information can be used to troubleshoot problems on an AP.

Examples

The output of this command shows client management counters for the specified AP

```
host)#show ap remote debug client-mgmt-counters ap-name ap120-3
Counters
--------
Name                           Value
----                           -----
Validate Client                512
AP Stats Update Message        557750
3087                           6
Tunnel VLAN Membership         4493
Update STA Tunnel Request      229
Update STA Tunnel Response     229
ARM Update                     808921
ARM Propagate                  590567
ARM Neighbor Assigned          55396
STM SAP Down                   19
AP Message                     192
STA On Call Message            12164
STA Message                    19750
STA SIP authenticate Message   10919
STA Deauthenticate             707
Stat Update V3                 441447
VoIP CAC State Announcement    37185
Remote AP State                371330
AP Message Response            164
assoc-req                      4358
assoc-resp                     4358
reassoc-req                    950
reassoc-resp                   950
disassoc                       452
deauth                         5117
sapcp                          351131
```

The output of this command includes the following information:

Parameter	Description
Validate Client	Number of times a client was validated.
AP Stats Update Message	Number of times an AP updated its statistics with the controller.
3087	(For internal use only)

Parameter	Description
Tunnel VLAN Membership	(For internal use only)
Update STA Tunnel Request	(For internal use only)
Update STA Tunnel Response	(For internal use only)
ARM Update	Number of times an AP has changed its adaptive radio management (ARM) settings.
ARM Propagate	(For internal use only)
ARM Neighbor Assigned	(For internal use only)
STM SAP Down	(For internal use only)
AP Message	(For internal use only)
STA On Call Message	Number of counters indicating that a station has an active phone call
STA Message	(For internal use only)
STA SIP authenticate Message	Number of messages indicating that a telephone has completed SIP registration and authentication.
STA Deauthenticate	Number of times a station sent a message to an AP to deauthenticate a client.
Stat Update V3	(For internal use only)
VoIP CAC State Announcement	Number of times a controller announces a call admission control (CAC) state change to the AP. Changes in CAC state could include the ability of call admission controls to accept more or fewer calls than previously configured.
Remote AP State	(For internal use only)
AP Message Response	(For internal use only)
assoc-req	Number of 802.11 association request management frames from the controller.
assoc-resp	Number of 802.11 association responses to the controller.
reassoc-req	Number of 802.11 reassociation requests to the controller.
reassoc-resp	Number of 802.11 reassociation responses from the controller.

Parameter	Description
`disassoc`	Number of 802.11 disassociation messages to the controller.
`deauth`	Number of 802.11 deauthorization messages from the controller.
`sapcp`	(For internal use only)

Command History

Introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap remote debug flash-config

```
show ap remote debug flash-config {ap-name <ap-name>|bssid <bssid>|ip-addr <ip-addr>|ip6-addr
<ip6-addr>} acls|vap <vap>|vaps
```

Description

Show the remote AP configuration stored in flash memory.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show debugging data for an AP with a specific name.
`bssid <bssid>`	Show data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show data for an AP with a specific IP address by entering its IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show data for an AP with a specific IP6 address by entering its IP6 address in dotted-decimal format.
`acls`	Display ACLs of offline Virtual APs (VAPs).
`vap <vap>`	Display the configuration of a specific offline VAP by entering the name of an VAP.
`vaps`	Display the current number of offline VAPs.

Example

The output of this command can be used to debug problems with a remote AP. The command below shows statistics for an AP with the IP address `192.0.2.64`.

```
(host) #show ap remote debug flash-config ip-addr 192.0.2.64 acls
Offline ACLs
------------
Item                    Value
----                    -----
Native VLAN             1
DHCP VLAN               N/A
DHCP ADDR               192.168.11.1
DHCP POOL NETMASK       255.255.255.0
DHCP POOL START         192.168.11.2
DHCP POOL END           192.168.11.254
DHCP DNS SERVER         0.0.0.0
DHCP ROUTER             192.168.11.1
DHCP DNS DOMAIN         mycompany
DHCP LEASE              0
Session ACL             N/A
Session ACL Name        N/A
Session ACL Count       N/A
Session Aces            N/A
```

```
ACL 1                   1
ACL 1 Name              logon
ACL 1 Count             21
Aces 1                  16 1 4294
...
```

The output of this command includes the following information:

Column	Description
Native VLAN	VLAN ID of the native VLAN.
DHCP VLAN	VLAN ID of Remote AP DHCP server used when the controller is unreachable.
DHCP ADDR	IP Address used as DHCP Server Identifier.
DHCP POOL NETMASK	Netmask of the DHCP server pool.
DHCP POOL START	IP Address used as the start of a range of addresses for a DHCP pool.
DHCP POOL END	IP Address used as the end of a range of addresses for a DHCP pool.
DHCP DNS SERVER	IP Address for the DHCP DNS server.
DHCP ROUTER	IP Address for the DHCP default router.
DHCP DNS DOMAIN	Domain name for the DHCP DNS server.
DHCP LEASE	Length of DHCP DNS leases in days. If this parameter displays a zero (0) the DHCP lease is has no defined end.
Session ACL	Name of the ACL applied to the user session.
Session ACL name	Name of the ACL applied to the user session.
Session ACL count	Number of rules in the applied to the user session.
Session Aces	A list of the individual rules in the session ACL.
ACL 1	This parameter shows the position of an individual ACL.
ACL1 Name	Name of the ACL in the first position.
ACL1 Count	Number of rules in the specified ACL.
ACL1 Aces	A list of the individual rules in the specified ACL.

Command History

Release	Modification
ArubaOS 3.0	Command was introduced
ArubaOS 6.3	The **ip6-addr** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap remote debug mgmt-frames

```
show ap remote debug mgmt-frames {ap-name <ap-name>}|{bssid <bssid>|{ip-addr <ip-addr>}
[client-mac <client-mac>] [count <count>]
```

Description

Show traced 802.11 management frames for a remote AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show debugging information for a specific AP.
`bssid <bssid>`	Show debugging information for a specific Basic Service Set Identifier (BSSID). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address
`ip-addr`	Show debugging information for an AP with a specific IP address by entering its IP address in dotted-decimal format.
`client-mac`	Show the AP associations for a specific MAC address by entering the MAC address of the client.
`count <count>`	Limit the amount of information displayed by specifying number of frames to appear in the output of this command.

Examples

Use this command to debug 802,1 authentication on a remote AP. The example below shows that a client successfully associated with the remote AP, then was later deauthenticated.

```
(host) #show ap remote debug mgmt-frames ap-name AP32

Traced 802.11 Management Frames
-------------------------------
Timestamp        stype       SA                DA                BSS
                       signal  Misc
---------        -----       --                --                ---
                 ------  ----
Oct 30 11:20:19  deauth                                          00:23:6c:2f:9a:85  00:1a:1e:11:56:40
     STA has left and is deauthenticated
Oct 30 11:04:39  assoc-resp      00:1a:1e:11:56:40       00:23:6c:2f:9a:85  00:1a:1e:11:56:40  15
 Success
Oct 30 11:04:39  assoc-req   00:23:6c:2f:9a:85  00:1a:1e:11:56:40  00:1a:1e:11:56:40  0
-
```

The output of this command includes the following information:

Column	Description
`Timestamp`	The time the management frame was sent

Column	Description
stype	One of the following 802.11 frame types: auth: Authorization frame deauth: Deauthorization frame assoc-resp: Association response assoc-req: Association request
SA	Source MAC address.
DA	Destination MAC address.
BSS	Basic Service Set Identifier (BSSID) of the AP
signal	Signal strength as a signal to noise ratio. For example, a value of 30 would indicate that the power of the received signal is 30 dBm above the signal noise threshold.
Misc	Additional information describing the client's action. In the case of deauthentication, a reason associated with the event will be displayed in this column.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap snmp

```
show ap snmp
   wlsxSwitchStationMgmtTable
   wlsxSwitchStationStatsTable
   wlsxWlanAPBssidTable
   wlsxWlanAPTable
   wlsxWlanRadioTable
```

Description

This command displays the AP-related SNMP tables.

Syntax

Parameter	Description
`wlsxSwitchStationMgmtTable`	Display user tree.
`wlsxSwitchStationStatsTable`	Display user statistics tree.
`wlsxWlanAPBssidTable`	Display BSSID SNMP tree.
`wlsxWlanAPTable`	Display SNMP tree
`wlsxWlanRadioTable`	Display radio table SNMP tree.

Example

Access the controller's command-line interface and use the following command to display BSSID SNMP tree:

```
(host) #show ap snmp wlsxWlanAPBssidTable

SNMP - AP BSSID Table
---------------------
AP MAC             Radio  BSSID             Phy Type  Status  Channel
------             -----  -----             --------  ------  -------
00:24:6c:c3:d6:82  1      00:24:6c:bd:68:30  1         1       149
00:24:6c:c3:d6:82  2      00:24:6c:bd:68:20  2         1       11

Num BSSIDs:2
```

Command History

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or configuration mode.

show ap spectrum ap-list

```
show ap spectrum ap-list {ap-name <ap-name>}|{ip-addr <ip-addr>}
   ap-bssid <bssid>
   channel <channel>
   essid <essid>
   limit <number>
   or
   page <number>
   freq-band 2.4ghz|5ghz
   sort <sort>
   start <index>
```

Description

This command shows spectrum data seen by an access point that has been converted to a spectrum monitor.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor for which you want to view spectrum information.
`channel <channel>`	View spectrum information for a specific radio channel.
`essid <essid>`	View spectrum information for a specific ESSID.
`limit <number>`	Limit the displayed output to the specified number of entries
`or`	Use this parameter to display information that meets either of two criteria, such as a specified ESSID or channel.
`page <number>`	Enter a number from 10-100 (inclusive) to specify the number of entries that should appear in each page of the output for this command. For example, if the output of this command has 100 entries and you select a page value of 20, the output will appear in 5 pages each with 20 entries. If you selected a page value of 10, the output would appear in 10 pages with 10 entries.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either 2.4 GHz or 5 Ghz.
`sort <sort>`	Sort the output by the specified data column
`start <index>`	Start displaying the output at specific spectrum index value.

Usage Guidelines

The Spectrum Analysis feature provides visibility into RF coverage, allowing you to troubleshoot RF interference and identify 802.11 devices on the network. Issue this command to display and sort APs seen by a specific

spectrum monitor.

Examples

The output of this example shows spectrum data seen by spectrum monitor ap123. The output in the example below has been divided into two tables to better fit this document. In the ArubaOS CLI, the output appears as a single, long table.

```
(host)# show ap spectrum ap-list ap-name ap123

Spectrum AP Table
-----------------
bssid              essid          spectrum-id  chan  phy-type        signal(dBm)
-----              -----          -----------  ----  --------        ---------------
00:0b:86:cd:22:d0  ECSD Wireless  2            161   80211a          62
00:0b:86:cb:cf:30  ECSD Wireless  3            157   80211a          68
00:0b:86:f6:f6:a0  osuwireless    3            1     80211b/g        48
00:0b:86:f6:f6:a1  osuvoice       4            1     80211b/g        47
00:0b:86:f6:f6:a2  osuguest       5            1     80211b/g        45

avg-rssi(dB)  curr-rssi(dB)  ibss  add-time             last-seen
------------  -------------  ----  --------             -----------
29            31             no    2010-05-16 17:41:36  2010-05-18 13:39:38
24            25             no    2010-05-16 17:41:36  2010-05-18 14:19:03
37            38             no    2010-05-16 17:41:36  2010-05-18 15:06:02
38            38             no    2010-05-16 17:41:36  2010-05-18 15:04:23
37            40             no    2010-05-16 17:41:36  2010-05-18 15:07:32
```

The output of this command includes the following information:

Column	Description
bssid	Basic Service Set Identifier for an AP. This is usually the AP's MAC address.
essid	Extended service set identifier that names a wireless network.
spectrum-id	Identifier assigned to the device by the spectrum monitor
chan	Radio channel used by the BSSID
freq-band	Radio phy type. Possible types include: • 2.4 GHz • 5 GHz
signal (dBm)	Strength of the signal received by the device, in dBm.
avg-rssi	The average signal-to-noise ratio seen by the AP.
curr-rssi	Most recent signal-to-noise ratio seen by the AP.
ibss	Shows if ad-hoc BSS is enabled or disabled. It will be enabled if the bssid has detected an ad-hoc BSS (an ibss bit in an 802.11 frame).
add-time	Time when the AP was first detected by the spectrum monitor.

Column	Description
last-seen	Time when the AP was last seen by the spectrum monitor.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum channel-metrics

```
show ap spectrum channel-metrics {ap-name <ap-name>}|{ip-addr <ip-addr>} freq-band 2.4ghz|5ghz
```

Description

This command shows channel quality, availability and utilization metrics as seen by a spectrum monitor.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either 2.4 GHz or 5 GHz.

Usage Guideline

This chart displays channel utilization data, showing the percentage of each channel that is currently being used by Wi-Fi devices, and the percentage of each channel being used by non-Wi-Fi devices and 802.11 adjacent channel interference (ACI).

ACI refers to the interference on a channel created by a transmitter operating in an adjacent channel. A transmitter on a nonadjacent or partially overlapping channel may also cause interference, depending on the transmit power of the interfering transmitter and/or the distance between the devices. In general, ACI may be caused by a Wi-Fi transmitter or a non-Wi-Fi interferer. However, whenever the term ACI appears in Spectrum Analysis graphs, it refers to the ACI caused by Wi-Fi transmitters. The channel utilization option in the Channel Metrics Chart shows the percentage of the channel utilization due to both ACI and non-Wi-Fi interfering devices. Unlike the ACI shown in the show ap spectrum interference-power output, the ACI shown in this graph indicates the percentage of channel time that is occupied by ACI or unavailable for Wi-Fi communication due to ACI.

The Channel Metrics table can also show channel availability, the percentage of each channel that is available for use, or display the current relative quality of selected channels in the 2.4 GHz or 5 GHz radio bands. In the spectrum analysis feature, channel quality is a relative measure that indicates the ability of the channel to support reliable Wi-Fi communication. Channel quality, which is represented as a percentage in this chart, is a weighted metric derived from key parameters that can affect the communication quality of a wireless channel, including noise, non-Wi-Fi (interferer) utilization and duty-cycles, and certain types of retries. Note that channel quality is not directly related to Wi-Fi channel utilization, as a higher quality channel may or may not be highly utilized.

A hybrid AP on a 20 MHz channel will see 40 MHz Wi-Fi data as non-Wi-Fi data.

Examples

The output of this example shows part of the channel metrics table for channels seen by the spectrum monitor ap123.

```
(host)# show ap spectrum channel-metrics ap-name ap123 freq-band 2.4GHz

Channel Metrics Table
---------------------
Channel   Quality(%)   Availability(%)   Utilization(%)   WiFi Util(%)   Interference Util(%)
-------   ----------   ---------------   --------------   ------------   --------------------
1         97           57                43               40             3
2         80           58                42               22             20
3         63           58                42               5              37
4         71           57                43               16             27
5         88           54                46               36             10
6         98           51                49               47             2
7         88           54                46               35             11
8         69           56                44               14             30
9         60           57                43               3              40
10        30           29                71               1              70
11        0            0                 100              0              100
12        25           50                50               0              50
13        50           99                1                0              1
14        99           99                1                0              1
1+/5-     63           54                46               36             10
2+/6-     63           51                49               47             2
3+/7-     63           51                49               47             2
4+/8-     69           51                49               47             2
5+/9-     60           51                49               47             2
6+/10-    30           29                71               1              70
7+/11-    0            0                 100              0              100
```

The output of this command includes the following information:

Column	Description
channel	An 802.11a or 82.11g radio channel.
Quality(%)	Current relative quality of selected channels in the 802.11a or 802.11g radio bands, as determined by the percentage of packet retries, the current noise floor, and the duty cycle for non-Wi-Fi devices on that channel.
Availability(%)	The percentage of the channel currently available for use.
Utilization(%)	The percentage of the channel being used.
WiFi Util(%)	The percentage of the channel currently being used by wifi devices.
Interference Util (%)	The percentage of the channel currently being used by non-Wi-Fi interference + wifi ACI (Adjacent Channel Interference)

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum channel-summary

```
show ap spectrum channel-summary {ap-name <ap-name>}|{ip-addr <ip-addr>} freq-band 2.4ghz|5ghz
```

Description

This command displays a summary of the 802.11a or 802.11g channels seen by a spectrum monitor.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor for which you want to view spectrum information.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either **2.4 GHz** or **5 GHz**.

Usage Guidelines

This table can display data aggregate data for each channel seen by the spectrum monitor radio, including the maximum AP power, interference and the signal-to-noise-and-interference Ratio (SNIR).

SNIR is the ratio of signal strength to the combined levels of interference and noise on that channel. This value is calculated by determining the maximum noise-floor and interference-signal levels, and then calculating how strong the desired signal is above this maximum.

A hybrid AP on a 20 MHz channel will see 40 MHz Wi-Fi data as non-Wi-Fi data.

Examples

The output of the example below shows information for 802.11a radio channels seen by the spectrum monitor **ap999**.

```
(host)# show ap spectrum channel-summary ap-name ap999 freq-band 5ghz

Channel Summary Table
---------------------
Channel   KnownAPs   UnknownAPs   Util(%)   MaxAPSignal(dBm)   MaxInterference(dBm)   SNIR(dB)
-------   --------   ----------   -------   ----------------   --------------------   -------
149       69         0            5         -39                -69                    30
153       20         0            100       -42                -60                    18
157       56         0            6         -53                -59                    6
161       54         0            4         -43                -71                    28
165       32         0            3         -27                -70                    43
149+      69         0            100       -39                -60                    21
157+      20         0            6         -43                -59                    16
```

The output of this command includes the following information:

Column	Description
Channel	An 802.11a or 802.11g radio channel.
Known APs	Number of valid APs identified on the radio channel.
UnKnown APs	Number of invalid or rogue APs identified on the radio channel.
Channel Util (%)	Percentage of the channel currently in use.
Max AP Signal (dBm)	Signal strength of the AP that has the maximum signal strength on a channel.
Max Interference (dBm)	Signal strength of the non-Wi-Fi device that has the highest signal strength.
SNIR (db)	The ratio of signal strength to the combined levels of interference and noise on that channel. This value is calculated by determining the maximum noise-floor and interference-signal levels, and then calculating how strong the desired signal is above this maximum.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum client-list

```
show ap spectrum client-list {ap-name <ap-name>}|{ip-addr <ip-addr>}
|{ip6-addr <ip6-addr>}
   ap-bssid <bssid>
   channel <channel>
   essid <essid>
   mac <mac-addr>
   or
   page <page>
   freq-band 2.4ghz|5ghz
```

Description

This command shows details for clients seen by a specified spectrum monitor.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor for which you want to view spectrum information.
ip6-addr <ip6-addr>	IPv6 address of the spectrum monitor for which you want to view spectrum information.
`ap-bssid <bssid>`	View information for a client with a specific BSSID.
`channel <channel>`	view information for clients on a specific radio channel.
`essid <essid>`	View information for clients using a specific ESSID.
`mac <mac-addr>`	View information for a client with a specific MAC address.
`or`	Use this parameter to display information that meets either or two criteria, such as a specified ESSID or channel.
`page <number>`	Enter a number from 10-100 (inclusive) to specify the number of entries that should appear in each page of the output for this command. For example, if the output of this command has 100 entries and you select a page value of 20, the output will appear in 5 pages each with 20 entries. If you selected a page value of 10, the output would appear in 10 pages with 10 entries.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either **2.4 GHz** or **5 GHz**.

Usage Guidelines

Use this command to view channel and signal information for wireless clients seen by the spectrum monitor.

Examples

The example shows that the spectrum monitor **ap999** sees eight different clients on channel 149. The output in the example below has been divided into two tables to better fit this document. In the ArubaOS CLI, the output appears as a single, long table.

```
(host)# show ap spectrum client-list ap-name ap999 channel 149

Spectrum Client Table
---------------------
mac                bssid              essid              spectrum-id  channel  phy-type
---                -----              -----              -----------  -------  --------
00:14:a4:d1:34:63  00:24:6c:80:48:79  ethersphere-wpa2   14           149      80211a
00:19:7d:3a:96:d9  00:24:6c:80:7b:c9  ethersphere-wpa2   198          149      80211a
00:16:cf:af:3e:e1  00:24:6c:80:48:79  ethersphere-wpa2   80           149      80211a
00:1c:26:5b:a7:ac  00:24:6c:81:8b:19  ethersphere-wpa2   125          149      80211a
00:21:6b:c6:b2:12  00:24:6c:80:48:79  ethersphere-wpa2   118          149      80211a-HT-40
00:21:6a:9c:0e:36  00:24:6c:81:8b:19  ethersphere-wpa2   121          149      80211a
00:21:6a:51:e4:30  00:1a:1e:87:c1:91  ethersphere-wpa2   164          149      80211a-HT-40
00:24:d6:65:a9:e6  00:24:6c:80:48:7a  ethersphere-voip   222          149      80211a-HT-40

signal(dBm)                    add-time             last-seen
---------------    --------             -----------
-71                2010-05-17 09:53:47  2010-05-17 12:36:54
-66                2010-05-17 12:01:01  2010-05-17 12:36:42
-74                2010-05-17 09:54:59  2010-05-17 12:35:55
-79                2010-05-17 10:23:29  2010-05-17 12:37:28
-66                2010-05-17 10:17:05  2010-05-17 12:31:58
-72                2010-05-17 10:20:05  2010-05-17 12:37:30
-63                2010-05-17 11:07:21  2010-05-17 12:29:01
-69                2010-05-17 12:37:25  2010-05-17 12:37:25

start:0
Length:8
Total:8
```

The output of this command includes the following information:

Column	Description
mac	MAC address of the client.
bssid	Basic Service Set Identifier for a client. This is usually the device's MAC address.
essid	Extended service set identifier that names a wireless network.
spectrum-id	Identifier assigned to the client by the spectrum monitor.
chan	Radio channel used by the BSSID
phy-type	Radio phy type. Possible types include: • 802.11a • 802.11a-HT-40 • 802.11b/g

Column	Description
	• 802.11b/g-HT-20
signal(dBm)	Client signal strength, in dBm.
add-time	Time when the client was first detected by the spectrum monitor.
last-seen	Time when the spectrum monitor last detected that the client was active.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum debug

```
show ap spectrum debug {channel-info|channel-quality|classify|classify-fft|device-details|device-info|devices-seen} {ap-name <ap-name>}|{ip-addr <ip-addr>} freq-band {2.4ghz|5ghz}
```

Description

This command saves spectrum analysis channel information to a file on the spectrum monitor.

Syntax

Parameter	Description
`channel-info`	Save channel information for later analysis.
`channel-quality`	Save channel quality information for later analysis
`classify`	Save information on classification for later analysis.
`classify-fft`	Save information on classification and FFT data for later analysis.
`device-details`	Save device details for later analysis.
`device-info`	Save device information for later analysis.
`devices-seen`	Save information on devices seen by the spectrum monitor.
`ap-name <ap-name>`	Name of the spectrum monitor for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor for which you want to view spectrum information.
`freq-band 2.4ghz|5ghz`	Save information for a specific radio type, either **2.4 GHz** or **5 GHz**.

Usage Guidelines

Use this command under the supervision of your Dell technical support representative to troubleshoot spectrum analysis issues or errors. If a dump-server is defined in the AP's AP system profile, the file created by this command will be sent from the AP to the dump-server using TFTP.

Related Commands

Command	Description	Mode
`ap spectrum local-override`	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers

Command	Description	Mode
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum debug fft

```
show ap spectrum debug fft {ap-name <ap-name>}|{ip-addr <ip-addr>} freq-band {2.4ghz|5ghz}
   avg
   duty-cycle
   fft-to-controller
   max
   normalized
   raw
   raw-normalized
```

Description

Save FFT (Fast Fourier Transform) power data to a file on the spectrum monitor.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor.
`freq-band 2.4ghz|5ghz`	Save information for a specific radio type, either **2.4 GHz** or **5 GHz**.
`avg`	Save FFT average information.
`duty-cycle`	Save FFT duty-cycle data.
`fft-to-controller`	Save the FFT max, average and duty-cycle data.
`max`	Save the maximum FFT power measured for all samples taken over the last second.
`normalized`	Save normalized FFT information.
`raw`	Save the raw FFT information received from driver.
`raw-normalized`	Save FFT information received from driver and its normalized FFT.

Usage Guidelines

Use this command under the guidance of your Dell technical support representative to troubleshoot FFT power issues seen on W-AP104, W-AP105, W-AP175, W-AP130 Series, or W-AP220 Series series APs.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum debug monitors

```
show ap spectrum debug monitors
```

Description

Show a detailed description of all spectrum monitors on the controller.

Syntax

No parameters

Examples

The output of this command shows a list of available spectrum monitor or hybrid AP devices, a list of spectrum devices currently subscribed to a spectrum client, message counters for subscribed spectrum devices and the subscription history.

```
(host)# show ap spectrum debug monitors
List of Available Sensors
---------------------------------
AP name  Phy  Band
-------  ---  ----
ap999    G    2GHz
ap999    A    5GHz
Total: 2
List of Subscriptions
---------------------
AP name  Band        Client IP      Subscribe Time          HTTPD pid  Last Data Sent  Send
Failed
-------  ----        ---------      -------------          ---------  --------------  -------
----
ap123    2GHz        10.100.100.67  2010-05-18 03:49:44 PM  1711       1s              0
ap123    5GHz        10.100.100.67  2010-05-18 03:49:51 PM  1711       1s              0
Num Subscriptions: 2
Current Time: 2010-05-18 03:49:54 PM
Message Counters
----------------
AP name  Band        FFT Data  FFT Duty Cycle  Device Info  Device Details  Devices Seen
Channel Info
-------  ----        --------  --------------  -----------  --------------  ------------  ----
--------
ap123    2GHz        4         4               1            194             1             1
ap123    5GHz        0         0               0            0               0             0
Subscription History
--------------------
Message          AP/Radio/Band          Client IP      HTTPD  Timestamp               Result
        pid
-------          -------------          ---------      ------ ---------               ------
Subscribe        "ap123"/1/2GHz         10.240.16.165  1701   2010-05-17 01:29:16 PM  Success
Re-subscribe     "ap123"/0/5GHz         10.240.16.165  1700   2010-05-17 01:29:16 PM  Success
Unsubscribe-All  "ap123"/-/-            10.240.16.165  1701   2010-05-17 02:44:18 PM  Client
Not found
Subscribe        "ap123"/1/2GHz         10.100.100.67  1716   2010-05-18 03:44:28 PM  Success
```

Usage Guidelines

Use this command under the guidance of a Dell technical support representative to troubleshoot spectrum analysis errors.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum debug status

```
show ap spectrum debug status {ap-name <ap-name>}|{ip-addr <ip-addr>} freq-band 2.4ghz|5ghz
```

Description

This command shows detailed status and statistics for a spectrum monitor or hybrid AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum device for which you want to view status information.
`ip-addr <ip-addr>`	IP address of the spectrum device for which you want to view status information.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either 2.4 GHz or 5 GHz.

Usage Guidelines

Use this command under the guidance of a Dell technical support representative to troubleshoot spectrum analysis errors.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum device-duty-cycle

```
show ap spectrum device-duty-cycle {ap-name <ap-name>}|{ip-addr <ip-addr>} freq-band
2.4ghz|5ghz
```

Description

Shows the current duty cycle for devices on all channels being monitored by the spectrum monitor or hybrid AP radio.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum device for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum device for which you want to view spectrum information.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either 2.4 GHz or 5 GHz.

Usage Guidelines

The FFT Duty Cycle table in the output of this command shows the duty cycle for each radio channel. The duty cycle is the percentage of time each device type operates or transmits on that channel. For additional details about non-Wi-Fi device types shown in this table, see Non-Wi-Fi Interferers on page 1299.

This chart is not available for W-AP68 access points. A hybrid AP on a 20 MHz channel will see 40 MHz Wi-Fi data as non-Wi-Fi data.

Examples

The output of this command shows that video devices sent a signal on channels 153 and 157 during 99% of the last sample interval.

```
Device Duty Cycle Table (in %)
------------------------------
Device Type          149  153  157  161  165  149+  157+
-----------          ---  ---  ---  ---  ---  ----  ----
Generic Interferer   0    0    0    0    0    0     0
WIFI                 5    0    5    12   8    0     12
Microwave            0    0    0    0    0    0     0
Bluetooth            0    0    0    0    0    0     0
Generic Fixed Freq   0    0    0    0    0    0     0
Cordless Phone FF    0    0    0    0    0    0     0
Video                0    99   99   0    0    0     0
Audio                0    0    0    0    0    0     0
Generic Freq Hopper  0    0    0    0    0    0     0
Cordless Network FH  0    0    0    0    0    0     0
Xbox                 0    0    0    0    0    0     0
Microwave Inverter   0    0    0    0    0    0     0
Cordless Base FH     5    5    5    5    5    0     0
Total:7
```

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum device-history

```
show ap spectrum device-history {ap-name <ap-name>}|{ip-addr <ip-addr>}
   freq-band 2.4ghz|5ghz
   [type audio-ff|bluetooth|cordless-base-fh|cordless-network-fh|cordless-phone-ff|generic-
   ff|generic-fh|generic-interferer|microwave|microwave-inverter|video|xbox]
```

Description

This command shows the history of the last 256 non-Wi-Fi devices.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor or hybrid AP for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor or hybrid AP for which you want to view spectrum information.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either 2.4 GHz or 5 GHz.
`type`	Show information for one type of device only by specifying a non-Wi-Fi device.
`audio-ff`	View information for audio devices seen by the spectrum device.
`bluetooth`	View information for bluetooth devices seen by the spectrum device. **NOTE:** This option is available only for 2.4 GHz spectrum devices.
`cordless-base-fh`	View information for frequency-hopping cordless phone bases seen by the spectrum device.
`cordless-phone-ff`	View information for frequency-hopping cordless phones seen by the spectrum device.
`cordless-network-fh`	View information for frequency-hopping cordless network devices seen by the spectrum device.
`generic-ff`	View information for generic fixed-frequency devices seen by the spectrum device.
`generic-fh`	View information for generic frequency-hopping devices seen by the spectrum device.
`generic-interferer`	Show only generic interfering devices.
`microwave`	View information for microwave-emitting devices seen by the spectrum device. **NOTE:** This option is available only for 2.4 GHz spectrum devices.

Parameter	Description
`microwave-inverter`	View information for inverter microwave devices seen by the spectrum device. **NOTE:** This option is available only for 2.4 GHz spectrum devices.
`video`	View information for video devices seen by the spectrum device.
`xbox`	View information for Xbox devices seen by the spectrum device. **NOTE:** This option is available only for 2.4 GHz spectrum devices.

Usage Guidelines

Use this command to view channel, signal and duty-cycle information and add/delete times for the last 256 devices seen by a spectrum monitor or hybrid AP.

Non-Wi-Fi Interferers

The following table describes each type of non-Wi-Fi interferer detected by a spectrum monitor or hybrid AP. Note also that a hybrid AP on a 20 MHz channel will see 40 MHz Wi-Fi data as non-Wi-Fi data.

Non-Wi-Fi Interferer Type	Description
Bluetooth	Any device that uses the Bluetooth protocol to communicate in the 2.4 GHz band is classified as a *Bluetooth* device. Bluetooth uses a frequency hopping protocol.
Fixed Frequency (Audio)	Some audio devices such as wireless speakers and microphones also use fixed frequency to continuously transmit audio. These devices are classified as *Fixed Frequency (Audio)*.
Fixed Frequency (Cordless Phones)	Some cordless phones use a fixed frequency to transmit data (much like the fixed frequency video devices). These devices are classified as *Fixed Frequency (Cordless Phones)*.
Fixed Frequency (Video)	Video transmitters that continuously transmit video on a single frequency are classified as *Fixed Frequency (Video*). These devices typically have close to a 100% duty cycle. These types of devices may be used for video surveillance, TV or other video distribution, and similar applications.
Fixed Frequency (Other)	All other fixed frequency devices that do not fall into one of the above categories are classified as *Fixed Frequency (Other*). Note that the RF signatures of the fixed frequency audio, video and cordless phone devices are very similar and that some of these devices may be occasionally classified as Fixed Frequency (Other).
Frequency Hopper (Cordless Base)	Frequency hopping cordless phone base units transmit periodic beacon-like frames at all times. When the handsets are not transmitting (i.e., no active phone calls), the cordless base is classified as *Frequency Hopper (Cordless Base*).

Non-Wi-Fi Interferer Type	Description
Frequency Hopper (Cordless Network)	When there is an active phone call and one or more handsets are part of the phone conversation, the device is classified as *Frequency Hopper (Cordless Network*). Cordless phones may operate in 2.4 GHz or 5 GHz bands. Some phones use both 2.4 GHz and 5 GHz bands (for example, 5 GHz for Base-to-handset and 2.4 GHz for Handset-to-base). These phones may be classified as unique Frequency Hopper devices on both bands.
Frequency Hopper (Xbox)	The Microsoft Xbox device uses a frequency hopping protocol in the 2.4 GHz band. These devices are classified as *Frequency Hopper (Xbox*).
Frequency Hopper (Other)	When the classifier detects a frequency hopper that does not fall into one of the above categories, it is classified as Frequency Hopper (Other). Some examples include IEEE 802.11 FHSS devices, game consoles and cordless/hands-free devices that do not use one of the known cordless phone protocols.
Microwave	Common residential microwave ovens with a single magnetron are classified as a *Microwave*. These types of microwave ovens may be used in cafeterias, break rooms, dormitories and similar environments. Some industrial, healthcare or manufacturing environments may also have other equipment that behave like a microwave and may also be classified as a Microwave device.
Microwave (Inverter)	Some newer-model microwave ovens have the inverter technology to control the power output and these microwave ovens may have a duty cycle close to 100%. These microwave ovens are classified as *Microwave (Inverter)*. Dual-magnetron industrial microwave ovens with higher duty cycle may also be classified as Microwave (Inverter). As in the Microwave category described above, there may be other equipment that behave like inverter microwaves in some industrial, healthcare or manufacturing environments. Those devices may also be classified as Microwave (Inverter).
Generic Interferer	Any non-frequency hopping device that does not fall into one of the other categories described in this table is classified as a *Generic Interferer*. For example a Microwave-like device that does not operate in the known operating frequencies used by the Microwave ovens may be classified as a Generic Interferer. Similarly wide-band interfering devices may be classified as Generic Interferers.

Example

The output of this example shows details for fixed-frequency video devices seen by a spectrum monitor or hybrid AP radio.

```
host)# show ap spectrum device-history ap-name ap123 freq-band 5ghz type video

Non-Wifi Device History Table
-----------------------------
Type    ID   Cfreq(Khz)  Bandwidth(KHz)  Channels-affected  Signal-strength  Duty-cycle
----    --   ------      ---------       -----------------  ---------------  ----------
Add-time             Delete-time
--------             -----------
Video   1    5745312     6000            149                76               99
2010-05-16 20:07:08  -
Video   2    5745312     6000            149                75               99
2010-05-16 20:07:39  2010-05-17 16:50:24
Video   3    5745312     6000            149                74               99
2010-05-16 20:20:25  2010-05-16 20:20:36
```

```
Video   4    5745312     6000            149                 76                99
2010-05-16 20:32:44  2010-05-16 20:33:07
Video   5    5742031     6000            149                 79                99
2010-05-16 20:33:43  2010-05-16 20:33:53
Video   6    5745312     6000            149                 75                99
2010-05-16 20:34:08  2010-05-16 20:34:20
```

The output of this command includes the following information:

Column	Description
Type	Device type. This parameter can be any of the following: • audio FF (fixed frequency) • bluetooth • cordless base FH (frequency hopper) • cordless phone FF (fixed frequency • cordless network FH (frequency hopper) • generic FF (fixed frequency • generic FH (frequency hopper) • generic interferer • microwave • microwave inverter • video • xbox **NOTE:** For additional details about non-Wi-Fi device types shown in this table, see Non-Wi-Fi Interferers on page 1299
ID	ID number assigned to the device by the spectrum monitor or hybrid AP radio. Spectrum monitors and hybrid APs assign a unique spectrum ID per device type.
Cfreq	Center frequency of the signal sent from the device.
Bandwidth	Channel bandwidth used by the device, in Kilohertz.
Channels-affected	Radio channels affected by the wireless device, in Kilohertz.
Signal-strength	Strength of the signal sent from the device, in dBm.
Duty-cycle	Device duty cycle. This value represents the percent of time the device broadcasts on the specified channel or frequency.
Add-time	Time at which the device was first detected.
Delete-time	Time at which the device was aged out.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum device-list

```
show ap spectrum device-list {ap-name <ap-name>}|{ip-addr <ip-addr>}
   freq-band 2.4ghz|5ghz
   [type audio-ff|bluetooth|cordless-base-fh|cordless-network-fh|cordless-phone-ff|generic-
   ff|generic-fh|generic-interferer|microwave|microwave-inverter|video|xbox]
```

Description

Show a device summary table and channel information for non-Wi-Fi devices currently seen by a spectrum monitor or hybrid AP radio.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor or hybrid AP for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor or hybrid AP for which you want to view spectrum information.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either 2.4 GHz or 5 GHz.
`type`	Show data for a specific device type only.
`audio-ff`	Show only audio fixed frequency devices.
`bluetooth`	Show only bluetooth devices. **NOTE:** This option is available only for 2.4 GHz spectrum devices.
`cordless-base-fh`	View information for frequency-hopping cordless phone bases seen by the spectrum device.
`cordless-phone-ff`	View information for frequency-hopping cordless phones seen by the spectrum device.
`cordless-network-fh`	View information for frequency-hopping cordless network devices seen by the spectrum device.
`generic-ff`	View information for generic fixed-frequency devices seen by the spectrum device.
`generic-fh`	View information for generic frequency-hopping devices seen by the spectrum device.
`generic-interferer`	Show only generic interfering devices.
`microwave`	Show only microwave devices. **NOTE:** This option is available only for 2.4 GHz spectrum devices.

Parameter	Description
microwave-inverter	Show only microwave inverter devices. **NOTE:** This option is available only for 2.4 GHz spectrum devices.
video	Show only video fixed frequency devices.
xbox	Show only xbox frequency hopper devices. **NOTE:** This option is available only for 2.4 GHz spectrum devices.

Usage Guidelines

Issue this command to view detailed information about currently active non-Wi-Fi devices on the network. Use the optional **type** parameter to display data for one specific device type only. For additional details about non-Wi-Fi device types shown in this table, see Non-Wi-Fi Interferers on page 1299.

A hybrid AP on a 20 MHz channel will see 40 MHz Wi-Fi data as non-Wi-Fi data.

Examples

The output of this example shows that the spectrum monitor **ap123** is able to see data for a single non-Wi-Fi device on its 802.11a radio. Note that the output below is divided into two sections to better fit on the page of this document. In the ArubaOS CLI, this information is displayed in a single long table.

```
(host) #show ap spectrum device-list ap-name ap123 freq-band 5ghz
Non-Wifi Device List Table
--------------------------
Type               ID  Cfreq    Bandwidth  Channels-affected  Signal-strength
----               --  -----    ---------  -----------------  ---------------
Cordless Phone FH  3   5826093  80000      149 157 161 165    49
Duty-cycle  Add-time             Update-time
----------  --------             -----------
5           2010-05-17 10:04:53  2010-05-17 10:04:55
Total:1
Current Time:2010-05-17 10:04:56
```

The output of this command includes the following information:

Column	Description
Type	Device type. This parameter can be any of the following: • audio FF (fixed frequency) • bluetooth • cordless base FH (frequency hopper) • cordless phone FF (fixed frequency • cordless network FH (frequency hopper) • generic FF (fixed frequency • generic FH (frequency hopper)

Column	Description
	• generic interferer • microwave • microwave inverter • video • xbox **NOTE:** For additional details about non-Wi-Fi device types shown in this table, see Non-Wi-Fi Interferers on page 1299
ID	ID number assigned to the device by the spectrum monitor or hybrid AP radio. Spectrum monitors and hybrid APs assign a unique spectrum ID per device type.
Cfreq	Center frequency of the signal sent from the device.
Bandwidth	Channel bandwidth used by the device.
Channels-affected	Radio channels affected by the wireless device.
Signal-strength	Strength of the signal sent from the device, in dBm.
Duty-cycle	Device duty cycle. This value represents the percent of time the device broadcasts a signal.
Add-time	Time at which the device was first detected.
Update-time	Time at which the device's status was updated.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum device-log

```
show ap spectrum device-log {ap-name <ap-name>}|{ip-addr <ip-addr>}
   freq-band 2.4ghz|5ghz
   [type audio-ff|bluetooth|cordless-phone-ff|cordless-phone-fh|
   generic-ff|generic-fh|generic-interferer|microwave|microwave-inverter|video|xbox]
```

Description

This command shows a time log of add and delete events for non-Wi-Fi devices.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor for hybrid AP or which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor or hybrid AP for which you want to view spectrum information.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either 2.4 GHz or 5 GHz.
`type`	Show data for a specific device type only.
`audio-ff`	Show only audio fixed frequency devices.
`bluetooth`	Show only bluetooth devices. **NOTE:** This option is available only for 2.4 GHz spectrum device radios.
`cordless-base-fh`	View information for frequency-hopping cordless phone bases seen by the spectrum device.
`cordless-phone-ff`	View information for frequency-hopping cordless phones seen by the spectrum device.
`cordless-network-fh`	View information for frequency-hopping cordless network devices seen by the spectrum device.
`generic-ff`	View information for generic fixed-frequency devices seen by the spectrum device.
`generic-fh`	View information for generic frequency-hopping devices seen by the spectrum device.
`generic-interferer`	Show only generic interfering devices.
`microwave`	Show only microwave devices. **NOTE:** This option is available only for 2.4 GHz spectrum device radios.

Parameter	Description
microwave-inverter	Show only microwave inverter devices. **NOTE:** This option is available only for 2.4 GHz spectrum device radios.
video	Show only video fixed frequency devices.
xbox	Show only xbox frequency hopper devices. **NOTE:** This option is available only for 2.4 GHz spectrum device radios.

Usage Guidelines

Use this table to show a time log of when non-Wi-Fi devices were added to and deleted from the Wi-fi Device log table. For additional details about non-Wi-Fi device types shown in this table, see Non-Wi-Fi Interferers on page 1299.

A hybrid AP on a 20 MHz channel will see 40 MHz Wi-Fi data as non-Wi-Fi data.

Examples

The output of this example shows that the spectrum monitor **ap123** logged data for four frequency-hopping cordless base devices seen by its 802.11g radio. Note that the output below is divided into two sections to better fit on the page of this document. In the ArubaOS CLI, this information is displayed in a single long table.

```
(host) #show ap spectrum device-log ap-name ap123 freq-band 5ghz cordless-base-fh

Non-Wifi Device Log Table
-------------------------
Device Type       ID  Added/Deleted  Signal Strength  Duty Cycle  Center Freq
-----------       --  -------------  ---------------  ----------  -----------
Cordless Base FH  1   Added          78               5           5773281
Cordless Base FH  1   Deleted        78               5           5747343
Cordless Base FH  2   Added          78               5           5757656
Cordless Base FH  2   Deleted        78               5           5760469
Cordless Base FH  3   Added          80               5           5802813
Cordless Base FH  3   Deleted        80               5           5802813
Cordless Base FH  4   Added          80               5           5770781

Start Freq  End Freq  Channels Affected     Bandwidth
----------  --------  -----------------     ---------
5733281     5813281   153                   80000
5707343     5787343   149 153 157 161 165   80000
5717656     5797656   153                   80000
5720469     5800469   153 157 161 165       80000
5762813     5842813   161                   80000
5762813     5842813   161                   80000
5730781     5810781   153                   80000

Total:7
Current Time:2012-09-25 12:04:54
```

The output of this command includes the following information:

Column	Description
Device Type	Type of non-Wi-Fi device detected by the spectrum monitor or hybrid AP
ID	The spectrum ID number assigned to that device. Spectrum monitors and hybrid APs assign a unique spectrum ID per device type.
Added/Deleted	The non-Wi-Fi Device Log table can show signal data for a device when that device was added or removed from the log table.
Signal Strength	Strength of the signal sent by the device.
Duty Cycle	Device duty cycle. This value represents the percent of time a signal is broadcast on a specific channel or frequency.
Center Freq	Center frequency of the signal sent by the device.
Start Freq	Lowest signal frequency sent by the device.
End Freq	Highest signal frequency sent by the device.
Channels affected	Radio channels affected by the device signal.
Bandwidth	Amount of signal bandwidth used by the device, in kilohertz.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum device-summary

```
show ap spectrum device-summary {ap-name <ap-name>}|{ip-addr <ip-addr>} freq-band 2.4ghz|5ghz
```

Description

This command shows the numbers of wi-fi and non-Wi-Fi device types on each channel monitored by a spectrum monitor or hybrid AP

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor or hybrid AP for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor or hybrid APfor which you want to view spectrum information.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either 2.4 GHz or 5 GHz.

Usage Guidelines

Use this command to show the types of devices that the spectrum device can detect on each channel it monitors. For additional details about non-Wi-Fi device types shown in this table, see Non-Wi-Fi Interferers on page 1299.

Examples

The output of this example shows that the spectrum monitor **ap123** is able to detect 61wi-fi devices on channel 149g.

```
(host) #show ap spectrum device-summary ap-name ap123 freq-band 5ghz

Device Summary Table
--------------------
Device               149  153  157  161  165
-------              ---  ---  ---  ---  ---
Unknown              0    0    0    0    0
WIFI                 61   6    14   29   9
Microwave            0    0    0    0    0
Bluetooth            0    0    0    0    0
Generic Fixed Freq   0    0    0    0    0
Cordless Phone FF    0    0    0    0    0
Video                0    0    0    0    0
Audio                0    0    0    0    0
Generic Freq Hopper  0    0    0    0    0
Cordless Phone FH    0    0    0    0    0
Xbox                 0    0    0    0    0
Microwave Inverter   0    0    0    0    0
Total:12
```

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemodespectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers
rf dot11g-radio-profilemodespectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum interference-power

```
show ap spectrum interference-power {ap-name <ap-name>}|{ip-addr <ip-addr>} freq-band
2.4ghz|5ghz [<chan-width>]
```

Description

This command shows the interference power detected by a 802.11a or 80211g radio on a spectrum monitor or hybrid AP.

Syntax

Parameter	Description
`ap-name <ap-name>`	Name of the spectrum monitor or hybrid AP for which you want to view spectrum information.
`ip-addr <ip-addr>`	IP address of the spectrum monitor or hybrid AP for which you want to view spectrum information.
`freq-band 2.4ghz|5ghz`	View information for a specific radio type, either 2.4 GHz or 5 GHz.
`<chan-width>`	Specify **20MHz** or **40MHz** to select the channel width for which you want to view information. If you do not specify a channel width, the output of this command will display the default 20MHz setting.

Usage Guidelines

This table displays information about AP power levels, channel noise and adjacent channel interference seen on each channel by a spectrum monitor or hybrid AP radio.

The output of this command displays the noise floor of each selected channel in dBm. The noise floor of a channel depends on the noise figure of the RF components used in the radio, temperature, presence of certain types of interferers or noise, and the width of the channel. For example, in a clean environment, the noise floor of a 20 MHz channel will be around -95 dBm and that of a 40 MHz channel will be around -92 dBm. Certain types of fixed frequency continuous transmitters such as video bridges, fixed frequency phones, and wireless cameras typically elevate the noise floor as seen by the Wi-Fi radio. Other interferers such as the frequency hopping phones, Bluetooth and Xbox devices may not affect the noise floor of the radio. A Wi-Fi radio can only reliably decode Wi-Fi signals that are a certain dB above the noise floor and therefore estimating and understanding the actual noise floor of the radio is critical to understanding the reliability of the RF environment.

The ACI column displayed in the Interference Power Chart displays adjacent-channel interference (ACI) power levels based on the signal strength(s) of the Wi-Fi APs on adjacent channels. A higher ACI value in Interference Power Chart does not necessarily mean higher interference since the AP that is contributing to the maximum ACI may or may not be very actively transmitting data to other clients at all times. The ACI power levels are derived from the signal strength of the beacons.

Examples

The output of this example shows interference power levels for each channel seen by the spectrum monitor **ap123**.

```
(host)# show ap spectrum interference-power ap-name ap123 freq-band 5ghz
```

```
Interference Power Table
------------------------
Channel  Noise Floor(dBm)  Max AP Signal(dBm)  Max AP SSID        Max AP BSSID       ACI(dBm)
Max Interference(dBm)
-------  ----------------  ------------------  -----------        ------------       --------
---------------------
149      -91               -40                 ethersphere-wpa2   00:24:6c:80:7b:c9  -77
-71
153      -63               -42                 guest              00:1a:1e:87:c1:90  -63
-58
157      -92               -48                 alpha              00:1a:1e:50:01:30  -74
-60
161      -94               -39                 00:24:6C:C0:15:EB  00:24:6c:81:57:c8  -61
-70
165      -93               -26                 sw-jfb-attack      00:1a:1e:9b:1d:c8  -74
-69
149+     -60               -40                 ethersphere-wpa2   00:24:6c:80:7b:c9  -0
-58
157+     -89               -39                 00:24:6C:C0:15:EB  00:24:6c:81:57:c8  -0
-60
```

The output of this command includes the following information:

Column	Description
Channel	An 802.11a or 802.11g radio channel.
Noise Floor (dBm)	Current noise floor recorded on the channel.
Max AP Signal (dBm)	Power level of the AP on the channel with the highest signal power.
Max AP SSID	SSID of the AP on the channel with the highest signal power.
Max AP BSSID	BSSID of the AP on the channel with the highest signal power.
ACI (dBm)	Adjacent channel interference level detected by the spectrum device.
Max Interference Power (dBm)	Signal strength of the non-Wi-Fi device that has the highest signal strength.

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum-load-balancing

```
show ap spectrum-load-balancing [group <group>]
```

Description

Show spectrum load balancing information for an AP with this feature enabled.

Syntax

Parameter	Description
`group <group>`	Filter this information to show only data for the specified spectrum load balancing domain.

Examples

The output of the command below shows the APs currently using the spectrum load-balancing domain **default-1**.

```
(host) #show ap spectrum-load-balancing group default-1

Spectrum Load Balancing Group
-----------------------------
Name      IP Address       Domain     Assignment  Clients
----      ----------       ------     ----------  -------
ap121-1   192.168.151.253  default-1  149/21      3
ap124-1   192.168.151.254  default-1  48/15       3
ap125-1   192.168.151.251  default-1  44/15       2
```

The output of this command includes the following information:

Column	Description
`Name`	Name of an AP
`IP address`	AP IP address
`Domain`	Name of the spectrum load balancing domain assigned to the AP
`Assignment`	Current channel and power assignment for the AP.
`Clients`	Number of clients currently using the AP.

Command History

Introduced in ArubaOS 3.3.2.14.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap spectrum local-override

```
show ap spectrum local-override
```

Description

This command shows a list of AP radios currently converted to spectrum monitors via the spectrum local-override list

Syntax

No parameters

Examples

The output of this example shows that three APs each have two radios defined as spectrum monitors.

```
(host) #show ap spectrum local-override
Spectrum Local Override Profile
-------------------------------
Parameter       Value
---------       -----
Override Entry  AP ap125 band 2ghz
Override Entry  AP ap125 band 5ghz
Override Entry  AP ap105 band 2ghz
Override Entry  AP ap105 band 5ghz
Override Entry  AP apcorp1 band 2ghz
Override Entry  AP APcorp1 band 5ghz
```

The Value column in the output of this command includes the following information:

Parameter	Description
Override Entry	Indicates that an AP radio has been added to the local override list
Value	Radio that has been added to the override list, and the band used by that radio.

Related Commands

Command	Description	Mode
ap spectrum local-override	Convert an AP or AM into a spectrum monitor by adding it to the spectrum local-override list.	Config mode on master or local controllers
rf dot11a-radio-profilemode spectrum-mode	Set a 802.11a radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command	Description	Mode
rf dot11g-radio-profilemode spectrum-mode	Set a 802.11g radio so the device operates as an spectrum monitor, and can send spectrum analysis data to a desktop or laptop client.	Config mode on master or local controllers

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum monitors

```
show ap spectrum monitors
```

Description

This command shows a list of APs terminating on the controller that are currently configured as spectrum monitors or hybrid APs

Syntax

No parameters

Examples

The output of this example shows that the 802.11a radio on a spectrum monitor named **ap123** is sending spectrum analysis data to a client with the IP address 10.240.16.177.

```
(host)#show ap spectrum monitors

List of Sensors
---------------
AP name            Group    AP Type  Phy  Band       Channel  Mode
    Subscribe Time
-------            -----    -------  ---  ----       -------  ----             -----
          --------------
00:24:6c:c0:0c:89  default  105      G    2GHz       1        Access Point
    10.240.16.177  2011-01-21 07:09:32 AM
00:24:6c:c0:0c:89  default  105      A    5GHz       44+      Access Point     10.240.16.177
2011-01-21 07:17:57 AM
00:24:6c:c7:d6:1c  default  93       A    5GHz        -        Spectrum Monitor 10.240.16.177
 2011-01-21
07:18:22 AM
```

The output of this command includes the following information:

Column	Description
AP name	Name of an AP configured as a spectrum monitor or hybrid AP
Group	Name of the spectrum device's AP group
Ap Type	the AP model number
Phy	The radio's PHY type. Possible values are **A** for 802.11a and **G** for 802.11b/g,
Band	Spectrum band that the spectrum monitor or hybrid AP radio s currently monitoring.
Mode	This column shows whether the device is an access point configured as a hybrid AP, or a spectrum monitor.
Client IP	IP address of the client to which the spectrum monitor or hybrid AP is sending data.

Column	Description
Subscribe time	Time at which the spectrum monitor or hybrid AP was connected to the client.

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ap spectrum technical-support

```
show ap spectrum technical-support ap-name <ap-name> <filename>
```

Description

Save spectrum data for later analysis by technical support.

Syntax

Parameter	Description
`<ap-name>`	Save technical support information for a specific spectrum monitor.
`<filename>`	Name of the file to which this data should be saved. This file does not have to already exist on the controller, the **show ap spectrum technical-support** command will create this file.

Usage Guidelines

Use this command under the supervision of your Dell technical support representative to troubleshoot spectrum analysis issues or errors.

Command History

Introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap standby

```
show ap active [ap-name <ap-name>|{arm-edge dot11a|dot11g|voip-only}|dot11a|dot11g|essid
<essid>|ip-addr <ip-addr>|ip6-addr <ip6-addr>|{type access-point|air-monitor|(sensor
dot11a|dot11g|voip-only)}|voip-only
```

Description

Show all APs in standby mode currently registered to a controller.

Syntax

Parameter	Description
`ap-name <ap-name>`	View data for an AP with a specified name.
`bssid <bssid>`	View data for a specific BSSID.
`ip-addr <ip-addr>`	View data for an AP with a specified IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	View data for an AP with a specified IPv6 address.

Usage Guidelines

This command displays details for all APs connected to a controller in standby mode.

Example

```
host)# show ap active
Active AP Table
---------------
Name       Group  IP Address   11g Clients  11g Ch/EIRP/MaxEIRP  11a Clients  11a
Ch/EIRP/MaxEIRP  AP Type  Flags  Uptime  Outer IP
----       -----  ----------   -----------  -------------------  -----------  ----------------
---  -------  -----  ------  --------
AP1X       default   10.3.15.107  0            AP:HT:1/15/21.5      0            AP:HT:44/15/21
      125       1E2    5m:48s  N/A

Flags: 1 = 802.1X authenticated AP; 2 = Using IKE version 2;
A = Enet1 in active/standby mode;  B = Battery Boost On; C = Cellular;
D = Disconn. Extra Calls On; E = Wired AP enabled; F = AP failed 802.1X authenticati
H = Hotspot Enabled; K = 802.11K Enabled; L = Client Balancing Enabled; M = Mesh;
N = 802.11b protection disabled; P = PPPOE; R = Remote AP;
S = AP connected as standby; X = Maintenance Mode;
a = Reduce ARP packets in the air; d = Drop Mcast/Bcast On; u = Custom-Cert RAP;
r = 802.11r Enabled
```

The output of this command includes the following information:

Column	Description
Name	Name of an AP

Column	Description
Group	The AP is associated with this AP group.
IP address	IP address of the AP, in dotted decimal format.
11g Clients	Number of 802.11g clients using the AP.
11g Ch/EIRP/MaxEIRP	802.11g radio channel used by the AP/current effective Isotropic Radiated Power (EIRP) /maximum EIRP.
11a Clients	Number of 802.11a clients using the AP.
11a Ch/EIRP/MaxEIRP	802.11a radio channel used by the AP/current EIRP/maximum EIRP.
AP Type	AP model type.
Flags	This column displays any flags for this AP. The list of flag abbreviations is also included in the output of the **show ap active** command. • 1 = 802.1X authenticated AP • 2 = Using IKE version 2; • A = Enet1 in active/standby mode • B = Battery Boost On • C = Cellular; • D = Disconn. Extra Calls On • E = Wired AP enabled • F = AP failed 802.1X authenticatition • H = Hotspot Enabled • K = 802.11K Enabled • L = Client Balancing Enabled • M = Mesh • N = 802.11b protection disabled • P = PPPOE • R = Remote AP • S = AP connected as standby • X = Maintenance Mode • a = Reduce ARP packets in the air • d = Drop Mcast/Bcast On • u = Custom-Cert RAP • r = 802.11r Enabled

Column	Description
Uptime	Number of hours, minutes and seconds since the last controller reboot or bootstrap, in the format *hours:minutes:seconds*.
Outer IP	The outer IP address of a remote AP (RAP) is used to establish an IPsec VPN tunnel to the terminating master controller. The RAP acquires an outer IP address from the locally connected network, usually via DHCP. (A RAP is typically behind a NAT device whose public IPis seen as the outer ip for the RAP).

Command History

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap system-profile

```
show ap system-profile <profile>
```

Description

Show an AP's system profile settings.

Syntax

Parameter	Description
<profile>	Name of a system profile.

Examples

```
The output of the command below shows the current configuration settings for the default
system profile.
(host) #show ap system-profile default

AP system profile "default"
---------------------------
Parameter                                Value
---------                                -----
RF Band                                  g
RF Band for AM mode scanning             all
Native VLAN ID                           10
Tunnel Heartbeat Interval                1
Session ACL                              ap-uplink-acl
Corporate DNS Domain                     N/A
SNMP sysContact                          N/A
LED operating mode (11n/11ac APs only)   normal
LED override                             Disabled
Driver log level                         emergencies
SAP MTU                                  N/A
RAP MTU                                  1200 bytes
LMS IP                                   N/A
Backup LMS IP                            N/A
LMS IPv6                                 N/A
Backup LMS IPv6                          N/A
LMS Preemption                           Disabled
LMS Hold-down Period                     600 sec
LMS ping interval                        20
Remote-AP DHCP Server VLAN               N/A
Remote-AP DHCP Server Id                 192.168.11.1
Remote-AP DHCP Default Router            192.168.11.1
Remote-AP DHCP DNS Server                N/A
Remote-AP DHCP Pool Start                192.168.11.2
Remote-AP DHCP Pool End                  192.168.11.254
Remote-AP DHCP Pool Netmask              255.255.255.0
Remote-AP DHCP Lease Time                0 days
Remote-AP uplink total bandwidth         0 kbps
Remote-AP bw reservation 1               N/A
Remote-AP bw reservation 2               N/A
Remote-AP bw reservation 3               N/A
Remote-AP Local Network Access           Disabled
Bootstrap threshold                      8
Double Encrypt                           Disabled
```

```
Dump Server                                 N/A
Heartbeat DSCP                              0
Maintenance Mode                            Disabled
Maximum Request Retries                     10
Request Retry Interval                      10 sec
Number of IPSEC retries                     85
Secondary Master IP/FQDN                    N/A
AeroScout RTLS Server                       N/A
RTLS Server configuration                   N/A
RTLS Server Compatibility Mode              Enabled
Slow Timer Recovery by rebooting itself     Disabled
Telnet                                      Enabled
Disable RAP Tftp Image Upgrade              Disabled
Spanning Tree                               Disabled
AP multicast aggregation                    Disabled
AP ARP attack protection                    Enabled
AP multicast aggregation allowed VLANs      none
Console enable                              Enabled
AP Console Protection                       Enabled
AP Console Password                         ********
Password for Backup                         ********
AP USB Power override                       Disabled
RF Band for Backup                          all
Operation for Backup                        off
BLE Endpoint URL                            N/A
BLE Auth Token                              N/A
BLE Operation Mode                          Disabled
```

The output of this command includes the following information:

Column	Description
RF Band	For dual-band radios, this parameter displays the RF band in which the AP should operate: • **g** = 2.4 GHz • **a** = 5 GHz
RF Band for AM mode scanning	Scanning band for multiple RF radios. • **g** = 2.4 GHz • **a** = 5 GHz • **all** = Radio scans both bands. This is the default setting.
Native VLAN ID	Native VLAN for bridge mode virtual APs (frames on the native VLAN are not tagged with 802.1q tags).
Tunnel Heartbeat Interval	Interval between heartbeat messages between a remote or campus AP and its associated controller. An increase in the heartbeat interval increases the time it will take for an AP to detect the loss in connectivity to the controller, but can reduce internet bandwidth consumed by a remote AP.
Session ACL	This parameter shows the access control list (ACL) applied on the uplink of a remote AP.

Column	Description
Corporate DNS Domain	DNS name used by the corporate network.
SNMP sysContact	SNMP system contact information.
SAP MTU	Maximum Transmission Unit (MTU) size, in bytes. This value describes the greatest amount of data that can be transferred in one physical frame.
LMS IP	The IP address of the local management switch (LMS)—the Dell controller which is responsible for terminating user traffic from the APs, and processing and forwarding the traffic to the wired network. **NOTE:** If the LMS-IP is blank, the access point will remain on the controller that it finds using methods like DNS or DHCP. If an IP address is configured for the LMS IP parameter, the AP will be immediately redirected to the controller at that address.
Backup LMS IP	For multi-controller networks, this parameter displays the IP address of a backup to the IP address specified with the lms-ip parameter.
LMS IPv6	In multi-controller ipv6 networks, this parameter specifies the IPv6 address of the local management switch (LMS)—the Dell controller—which is responsible for terminating user traffic from the APs, and processing and forwarding the traffic to the wired network. This can be the IP address of the local or master controller.
Backup LMS IPv6	In multi-controller ipv6 networks, this parameter specifies the IPv6 address of a backup to the IPv6 address specified with the **LMS IPv6** setting.
LMS Preemption	When this parameter is enabled, the local management switch automatically reverts to the primary LMS IP address when it becomes available.
LMS Hold-down Period	Time, in seconds, that the primary LMS must be available before an AP returns to that LMS after failover.rap-dhcp-server-vlan VLAN ID of the remote AP DHCP server used if the controller is unavailable. This VLAN enables the DHCP server on the AP (also known as the remote AP DHCP server VLAN). If you enter the native VLAN ID, the DHCP server is unavailable.
Remote-AP DHCP Server VLAN	VLAN ID of the remote AP DHCP server used if the controller is unavailable. This VLAN enables the DHCP server on the AP (also known as the remote AP DHCP server VLAN).

Column	Description
`Remote-AP DHCP Server ID`	IP address used as the DHCP server identifier.
`Remote-AP DNS Server`	IP address of the DNS server.
`Remote-AP DHCP Default Router`	IP address for the default DHCP router.
`Remote-AP DHCP Pool Start`	This parameter defines the starting IP address in the DHCP pool for remote APs.
`Remote-AP DHCP PoolEnd`	This parameter defines the last IP address in the DHCP pool for remote APs.
`Remote-AP DHCP PoolNetmask`	Configures a DHCP pool for remote APs. This is the netmask used for the DHCP pool.
`Remote-AP uplink total bandwidth`	This is the total reserved uplink bandwidth (in Kilobits per second).

`Remote-AP bw reservation 1`
`Remote-AP bw reservation 2`
`Remote-AP bw reservation 3`
	Session ACLs with uplink bandwidth reservation in kilobits per second. You can specify up to three session ACLs to reserve uplink bandwidth. The sum of the three uplink bandwidths should not exceed the `rap-bw-total` value.

`Remote-AP Local Network Access`	Shows if Remote-AP Local Network Access is enabled or disabled. By enabling this option, the clients that are connected to a RAP can communicate. Note: By default, the Remote-AP Local Network Access will be disabled.
`Bootstrap threshold`	Number of consecutive missed heartbeats on a GRE tunnel (heartbeats are sent once per second on each tunnel) before an AP rebootstraps. On the controller, the GRE tunnel timeout is 1.5 x bootstrap-threshold; the tunnel is torn down after this number of seconds of inactivity on the tunnel.
`Double Encrypt`	This parameter applies only to remote APs. Double encryption is used for traffic to and from a wireless client that is connected to a tunneled SSID. When enabled, all traffic is re-encrypted in the IPsec tunnel. When disabled, the wireless frame is only encapsulated inside the IPsec tunnel.
`Dump Server`	(For debugging purposes.) Displays the server to receive the core dump generated if an AP process crashes.

Column	Description
Heartbeat DSCP	DSCP value of AP heartbeats (0-63).
Maintenance Mode	Shows if Maintenance mode is enabled or disabled. If enabled, APs stop flooding unnecessary traps and syslog messages to network management systems or network operations centers when deploying, maintaining, or upgrading the network. The controller still generates debug syslog messages if debug logging is enabled.
Maximum Request Retries	Maximum number of times to retry AP-generated requests, including keepalive messages. After the maximum number of retries, the AP either tries the IP address specified by the bkup-lms-ip (if configured) or reboots.
Request Retry Interval	Interval, in seconds, between the first and second retries of AP-generated requests. If the configured interval is less than 30 seconds, the interval for subsequent retries is increased up to 30 seconds.
Number of IPSEC retries	The number of times the AP will attempt to recreate an IPsec tunnel with the master controller before the AP will reboot. A value of 0 disables the reboot.
Secondary master IP/FQDN	IP address or the FQDN value of the secondary master controller.
AeroScout RTLS Server	IP address of an AeroScout real-time asset location (RTLS) server.
RTLS Server configuration	This parameter contains the following information, separated by colons. • The IP address of the RTLS server to which the AP sends RFID tag information. • Number of the RTLS server port to which the AP sends RFID tag information • Shared secret key for the server • Frequency at which packets are sent to the server, in seconds
Telnet	Reports whether telnet access the AP is enabled or disabled.
Disable RAP Tftp Image Upgrade	Displays if the TFTP image upgrade for RAP is enabled or disabled.
Spanning Tree	Displays the status of spanning tree on the controller.

Column	Description
AP multicast aggregation	Displays the status of multicast aggregation at AP.
AP ARP attack protection	Drop ARP packets coming from wired or wireless clients with AP gateway IP address. In other words, disallow ARP attack from un-trusted ports.
AP multicast aggregation allowed VLANs	Displays a list of VLANs where AP multicast aggregation is allowed.
Console enable	Displays if the console port of the AP is enabled.
AP Console Protection	Displays if the AP console password is enable.
AP Console Password	Displays the AP console password set on the controller. **NOTE:** The password string is encrypted. You can view the password string by executing the **encrypt disable** command followed by the **show ap system-profile <profile-name>** command.
Password for Backup	Displays the WPA passphrase for backup Virtual AP.
AP USB Power override	Displays the AP USB power override status. Enabling override enables the USB port of the AP with POE AT power. **NOTE:** This parameter is applicable for W-AP205H access point only.
RF Band for Backup	If the system profile is enabled AP console access using a backup ESSID, this parameter
Operation for Backup	This parameter allows AP console access using a backup ESSID, allowing users to access an AP console after the AP has disconnected from the controller. When the AP advertises a backup ESSID in either static or dynamic mode, a user is able to access and debug the AP remotely through a virtual AP. This feature is disabled by default.
BLE Endpoint URL	Displays the URL of the Meridian server to which the Bluetooth Low Energy (BLE) sends monitoring data.
BLE Auth Token	Displays the BLE endpoint authorization token. This token is unique for each deployment.
BLE Operation Mode	Displays the BLE operation mode of the AP.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.2	Support for additional RTLS servers and remote AP enhancements was introduced.
ArubaOS 3.3.2	• **Maintenance-mode** parameter was introduced. • Multiple remote AP DHCP server enhancements were introduced. • Support for RFprotect server and backup server configuration was introduced. • The **mms-rtls-server** parameter was deprecated in ArubaOS 3.3.2.
ArubaOS 5.0	The **master IP**, **RFP rotect server IP** and **RFP rotect Backup Server IP** parameters were deprecated.
ArubaOS 6.0	Added support for the option to set the RF scanning band (am-scan-rf-band). The **keepalive interval** parameter was deprecated.
ArubaOS 6.2.1.3	The **root-ap** parameter was deprecated. This parameter identified the root AP in a hierarchy of Remote APs.
ArubaOS 6.3	The output of this command includes the **Tunnel Heartbeat Interval** parameter.

Release	Modification
ArubaOS 6.4.3.0	The following new parameters were introduced: • **AP ARP attack protection** • **AP multicast aggregation** • **AP multicast aggregation allowed VLANs** • **AP USB Power override** • **Shell Password** • **RF Band for Backup** • **Operation for Backup** • **Password for Backup** • **BLE Endpoint URL** • **BLE Auth Token**
ArubaOS 6.4.3.3	The **BLE Operation Mode** parameter was introduced as part of the output of this command.
ArubaOS 6.5	The following parameters were introduced as part of the output of this command: • **Secondary Master IP/FQDN** • **Disable RAP Tftp Image Upgrade** • **AP Console Protection** • **AP Console Password** The **Shell Password** parameter was deprecated from the output of this command.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap tech-support

```
show ap tech-support ap-name <name> [<filename>]
```

Description

Display all information for an AP, or save that information to a file on the controller. This information can be used by Dell technical support to diagnose a problem with an AP.

Syntax

Parameter	Description
`<name>`	Name of the AP for which you want to view tech support data.
`<filename>`	Save the output of this command into a file on the controller with the specified filename.

Usage Guidelines

This is an internal technical support command. Dell technical support may request that you issue this command to help analyze and troubleshoot problems with an AP or your wireless network.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap vht-rates

```
show ap vht-rates bssid <bssid>
```

Description

Show very-high-throughput (VHT) rates for an AP that supports 802.11ac.

Syntax

Parameter	Description
`bssid <bssid>`	Show VHT rates for a specific Basic Service Set Identifier (BSSID) on an 802.11ac-capable AP. The Basic Service Set Identifier (BSSID) is usually the AP's radio's MAC address.

Examples

The output of the command below shows very-high-throughput rates for 20Mhz, 40 Mhz and 80 Mhz data streams with and without a short guard interval (SGI).

```
(host) # show ap vht-rates bssid 6c:f3:7f:e6:52:f1
AP "Corp-ac" Radio 0 BSSID 6c:f3:7f:e7:51:f0 Very-high-throughput Rates (Mbps)
-------------------------------------------------------------------------------
MCS  Streams  20 MHz  20 MHz SGI  40 MHz  40 MHz SGI  80 MHz   80 MHz SGI
---  -------  ------  ----------  ------  ----------  ------   ----------
0    1          6.5     7.2        13.5    15.0        29.3     32.5
1    1         13.0    14.4        27.0    30.0        58.5     65.0
2    1         19.5    21.7        40.5    45.0        87.8     97.5
3    1         26.0    28.9        54.0    60.0       117.0    130.0
4    1         39.0    43.3        81.0    90.0       175.5    195.0
5    1         52.0    57.8       108.0   120.0       234.0    260.0
6    1         58.5    65.0       121.5   135.0       263.3    292.5
7    1         65.0    72.2       135.0   150.0       292.5    325.0
8    1         78.0    86.7       162.0   180.0       351.0    390.0
9    1         --      --         180.0   200.0       390.0    433.3
0    2         13.0    14.4        27.0    30.0        58.5     65.0
1    2         26.0    28.9        54.0    60.0       117.0    130.0
2    2         39.0    43.3        81.0    90.0       175.5    195.0
3    2         52.0    57.8       108.0   120.0       234.0    260.0
4    2         78.0    86.7       162.0   180.0       351.0    390.0
5    2        104.0   115.6       216.0   240.0       468.0    520.0
6    2        117.0   130.0       243.0   270.0       526.5    585.0
7    2        130.0   144.4       270.0   300.0       585.0    650.0
8    2        156.0   173.3       324.0   360.0       702.0    780.0
9    2         --      --         360.0   400.0       780.0    866.7
0    3         19.5    21.7        40.5    45.0        87.8     97.5
1    3         39.0    43.3        81.0    90.0       175.5    195.0
2    3         58.5    65.0       121.5   135.0       263.3    292.5
3    3         78.0    86.7       162.0   180.0       351.0    390.0
4    3        117.0   130.0       243.0   270.0       526.5    585.0
5    3        156.0   173.3       324.0   360.0       702.0    780.0
6    3        175.5   195.0       364.5   405.0        --       --
7    3        195.0   216.7       405.0   450.0       877.5    975.0
8    3        234.0   260.0       486.0   540.0      1053.0   1170.0
9    3        260.0   288.9       540.0   600.0      1170.0   1300.0
-- : not valid.
Range for 20 MHz:   6.5 - 288.9 Mbps
```

```
Range for 40 MHz:  13.5 - 600.0 Mbps
Range for 80 MHz:  29.3 - 1300.0 Mbps
```

The output of this command includes the following information:

Column	Description
MCS	A Modulation Coding Scheme (MCS) values supported on this high-throughput SSID.
Streams	Number of spatial streams used by the MCS index value.
20 MHz	802.11n data rates for the MCS for 20 Mhz transmissions.
20 MHz SGI	802.11n data rates for the MCS for 20 Mhz transmissions using a short guard interval.
40 MHz	802.11n data rates for the MCS for 40 Mhz transmissions.
40 MHz SGI	802.11n data rates for the MCS for 40 Mhz transmissions using a short guard interval.
80 MHz	802.11n data rates for the MCS for 80 Mhz transmissions.
80 MHz SGI	802.11n data rates for the MCS for 80 Mhz transmissions using a short guard interval.

Related Commands

Command	Description
show ap ht-rates	Show high-throughput rate information for a basic service set (BSS).

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
This command will only show rate information for 802.11ac-capable APs	Base operating system	Enable or Config mode on master controllers

show ap virtual-beacon-report

```
show ap virtual-beacon-report
   all
   ap-name <name>
   client-mac <macaddr>
   ip-addr <ipaddr>
   ip6-addr <ipv6addr>
```

Description

If the client match feature is enabled, the output of this command displays the virtual beacon report for an AP or a client with a specific IP or MAC address.

Syntax

Parameter	Description
`all`	Virtual beacon report for all clients on the controller.
`ap-name <name>`	Name of the AP for which you want to view a virtual beacon report.
`client-mac <macaddr>`	MAC address of a client for which you want to view a virtual beacon report.
`ip-addr <ipaddr>`	IPv4 address of an AP for which you want to view a virtual beacon report.
`ip6-addr <ipv6addr>`	IPv6 address of an AP for which you want to view a virtual beacon report.

Usage Guidelines

Use this command to display the client RSSI from the APs in its RF neighborhood, the channel used by each AP radio, and the number of clients associated to each radio.

Example

The example below displays the virtual beacon report for a client with MAC address 24:77:03:d1:24:b8.

```
(host) #show ap virtual-beacon-report client-mac 24:77:03:d1:24:b8

Client MAC :24:77:03:d1:24:b8
Current association :1260-205 (9c:1c:12:fe:0f:d0)
Steer attempts/Success :2/1
Consecutive (Fails/BTM Rej/BTM Timeouts) :0/0/0
Bandsteer window (Steers/Start time/Expiry time) :0/0/0
Client Device Type :Win 7
Current state :Steerable
Client Supported Channels :{36,4}{52,4}{100,11}{149,4}{165,1}
Current Time :Oct 29 15:56:06 2014

STA Beacon Report
-----------------
AP        IP address     Radio              ESSID             Signal (dBm)  Last update
Add time         Channel/EIRP/Clients  Flag
--        ----------     -----              -----             ------------  -----------      -
-------         --------------------  ----
```

```
1310-205  10.100.66.102  9c:1c:12:fd:f7:b0  ethersphere-wpa2  -64          Oct 29 15:55:59
Oct 29 09:21:56  44/20/38
1248-205  10.100.66.128  9c:1c:12:fe:19:f0  ethersphere-wpa2  -85          Oct 29 15:56:04
Oct 29 09:22:08  60/24/15
1263-205  10.100.66.126  9c:1c:12:fd:d2:10  ethersphere-wpa2  -63          Oct 29 15:55:38
Oct 29 09:22:12  52/12/0
1263-205  10.100.66.126  9c:1c:12:fd:d2:00  ethersphere-wpa2  -61          Oct 29 15:55:38
Oct 29 09:22:12  1/12/1
1362-205  10.100.66.127  9c:1c:12:fd:f2:30  ethersphere-wpa2  -53          Oct 29 15:55:55
Oct 29 15:23:35  52/12/5
1263-ac   10.100.66.121  6c:f3:7f:e7:5a:b0  ethersphere-wpa2  -55          Oct 29 15:55:54
Oct 29 09:22:17  60/18/7
AP205-TE  10.100.66.124  9c:1c:12:fd:e4:d0  ethersphere-wpa2  -69          Oct 29 15:55:36
Oct 29 09:22:21  40/20/15
1372-205  10.100.66.120  9c:1c:12:fe:13:50  ethersphere-wpa2  -63          Oct 29 15:55:33
Oct 29 09:22:23  52/12/11
1310-205  10.100.66.102  9c:1c:12:fd:f7:a0  ethersphere-wpa2  -66          Oct 29 15:52:00
Oct 29 09:23:02  1/12/4                S
1263-ac   10.100.66.121  6c:f3:7f:e7:5a:a0  ethersphere-wpa2  -51          Oct 29 15:55:54
Oct 29 09:23:22  1/12/1
1242-205  10.100.66.123  9c:1c:12:fd:d1:30  ethersphere-wpa2  -70          Oct 29 15:55:36
Oct 29 09:23:24  40/19/6
AP205-TE  10.100.66.124  9c:1c:12:fd:e4:c0  ethersphere-wpa2  -76          Oct 29 15:55:36
Oct 29 09:23:27  1/12/0
1372-205  10.100.66.120  9c:1c:12:fe:13:40  ethersphere-wpa2  -75          Oct 29 15:54:58
Oct 29 09:23:29  1/12/2
1260-205  10.100.66.100  9c:1c:12:fe:0f:d0  ethersphere-wpa2  -63          Oct 29 15:55:45
Oct 29 09:24:07  52/12/6               *
1260-205  10.100.66.100  9c:1c:12:fe:0f:c0  ethersphere-wpa2  -59          Oct 29 15:55:45
Oct 29 09:25:47  1/12/0
1362-205  10.100.66.127  9c:1c:12:fd:f2:20  ethersphere-wpa2  -55          Oct 29 15:54:47
Oct 29 15:24:38  1/12/1
1248-205  10.100.66.128  9c:1c:12:fe:19:e0  ethersphere-wpa2  -81          Oct 29 15:29:57
Oct 29 10:10:30  1/12/1                S
1242-205  10.100.66.123  9c:1c:12:fd:d1:20  ethersphere-wpa2  -69          Oct 29 15:44:03
Oct 29 10:58:40  1/12/0                S
VBR Flags *-Associated S-Stale U-Unsupported Channel
```

The output of this command includes the following parameters:

Parameter	Description
Client MAC	MAC address of the client
Current association	MAC address of the AP radio to which the client is currently associated
Steer Attempts/Success	Number of steer attempts, and the number of successful steers
Consecutive (Fails/BTM Rej/BTM Timeouts)	Consecutive number of failed steer attempts, rejected BSS Transition Management Requests, and BSS Transition Management timeouts.
Bandsteer Window (Steers/State Time/Expiry Time)	Number of band steers, the start time of the band steer, and the expiry time of band the steer
Client Device Type	Type of device used by the client (e.g. Windows)

Parameter	Description
Current State	Indicates whether the client is currently steerable
Client Supported Channels	Lists the channels that support client use
Current Time	Timestamp showing the current date and time
AP	Name of the AP from which the client can detect a signal
IP address	IP address of the AP from which the client can detect a signal
Radio	MAC address of the AP radio from which the client can detect a signal
ESSID	Identifying name of the wireless network for each AP
Signal (dBm)	Signal strength, in dBm, from the AP radio
Last Update	Time that the virtual beacon report last updated information for the AP radio
Add Time	Date and time the client is successfully steered and added to the AP
Channel/EIRP/Clients	Channel used by the AP radio, the amount of power transmitted from the AP antennae, and the number of clients associated to it
Flag	The output of this column shows the following values: • *: Flag indicating that the client is currently associated to this AP • S: Flag indicating a stale entry, with the last client update from this radio produced 120+ seconds ago • U: Flag indicating that the client does not support the channel the radio is currently operating on

The following example displays a virtual beacon report for all clients in the network.

```
(host) #show ap virtual-beacon-report all

Client MAC :60:d9:c7:a2:42:cb
Current association :1260-205 (9c:1c:12:fe:0f:d2)
Steer attempts/Success :0/0
Consecutive (Fails/BTM Rej/BTM Timeouts) :0/0/0
Bandsteer window (Steers/Start time/Expiry time) :0/0/0
Client Device Type :Unknown
Current state :Steerable
Active media sessions: No
Client Supported Channels :{36,4}{52,4}{100,11}{149,4}{165,1}
Current Time :Oct 29 12:38:35 2014

STA Beacon Report
-----------------
AP        IP address     Radio              ESSID            Signal (dBm)  Last update
Add time         Channel/EIRP/Clients  Flag
--        ----------     -----              -----            ------------  -----------      --
------         --------------------  ----
```

```
1372-205  10.100.66.120  9c:1c:12:fe:13:50  ethersphere-psk  -67          Oct 29 12:38:22
Oct 29 07:19:33  52/21/10
1260-205  10.100.66.100  9c:1c:12:fe:0f:d0  ethersphere-psk  -53          Oct 29 12:38:18
Oct 29 07:19:44  52/24/15              *
1263-ac   10.100.66.121  6c:f3:7f:e7:5a:b0  ethersphere-psk  -73          Oct 29 07:20:52
Oct 29 07:19:49  52/12/5               S
1362-205  10.100.66.127  9c:1c:12:fd:f2:30  ethersphere-psk  -73          Oct 29 07:57:21
Oct 29 07:52:31  60/12/12              S
1310-205  10.100.66.102  9c:1c:12:fd:f7:b0  ethersphere-psk  -80          Oct 29 10:36:15
Oct 29 07:52:51  44/20/34              S
1263-205  10.100.66.126  9c:1c:12:fd:d2:10  ethersphere-psk  -67          Oct 29 08:42:20
Oct 29 08:22:32  60/12/4               S
```

The output of this command includes the additional `Active Media Sessions` parameter, which indicates whether the client is involved in any active media sessions.

Related Commands

Use the following commands to enable the client match feature:

- rf arm-profile client-match

The following commands display additional statistics for the client match feature:

- show ap arm client-match probe-report
- show ap arm client-match restriction-table

Command History

Version	Description
ArubaOS 6.3	Command Introduced.
ArubaOS 6.4.3.0	The following parameters were introduced as part of this command output: • **Steer attempts/success** • **Consecutive (Fails/BTM Rej/BTM Timeouts)** • **Client Device Type** • **Current State** • **Client Supported Channels** • **ESSID** • **Add Time** • **EIRP** • **Flag** • **Active Media Sessions** Additionally, the **all** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap vlan-usage

```
show ap vlan-usage [{ap-name <ap-name>}|{bssid <bssid>|{essid <essid>|{ip-addr <ip-addr>}|
{virtual-ap <virtual-ap}
```

Description

Show the numbers of clients on each VLAN.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show VLAN data for an AP with a specific name.
`bssid <bssid>`	Show VLAN data for a specific Basic Service Set Identifier (BSSID) on an AP. The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`essid <essid>`	Show VLAN data for a specific Extended Service Set Identifier (ESSID). An Extended Service Set Identifier (ESSID) is a alphanumeric name that uniquely identifies a wireless network. If the name includes spaces, you must enclose the ESSID in quotation marks.
`ip-addr <ip-addr>`	Show VLAN data for an AP with a specific IP address by entering an IP address in dotted-decimal format.
`ip6-addr <ip6-addr>`	Show VLAN data for an AP with a specific IPv6 address by entering an IP address in dotted-decimal format.
`virtual-ap <virtual-ap>`	Show VLAN pool allocation by VAP name.

Examples

The output of this command displays the **VLAN Usage** table.

```
(host) #show ap vlan-usage
VLAN Usage Table
----------------
VLAN ID  Clients
-------  -------
64       1
65       32
66       44
```

The output of this command includes the following information:

Column	Description
`VLAN ID`	ID number of the wireless VLAN.
`Clients`	Number of clients currently using the specified VLAN.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap wired-ap-profile

```
show ap wired-ap-profile [<profile>]
```

Description

Show a list of all wired AP profiles, or display the configuration parameters in a specific wired AP profile.

Syntax

Parameter	Description
<profile>	Name of a wired AP profile.

Usage Guidelines

The command show ap wired-ap-profile displays a list of all wired AP profiles, including the number of references to each profile and the profile status. If you include the optional <profile> parameter, the command will display detailed information for that one profile.

Example

The output of this command shows the configuration parameters for the wired AP profile “default”.

```
(host) #show ap wired-ap-profile default

Wired AP profile "default"
--------------------------
Parameter                 Value
---------                 -----
Wired AP enable           Disabled
Forward mode              tunnel
Switchport mode           access
Access mode VLAN          1
Trunk mode native VLAN    1
Trunk mode allowed VLANs  1-4094
Trusted                   Not Trusted
Broadcast                 Broadcast
```

The output of this command includes the following information:

Column	Description
Wired AP enable	Indicates whether the wired AP profile is **enabled** or **disabled**.
Forward mode	The configured forward mode for the profile. • **bridge**: Bridge locally • **split-tunnel**: Tunnel to controller or NAT locally • **tunnel**: Tunnel to controller
Switchport mode	The profile’s switching mode. • **access**: Set access mode characteristics of the interface.

Column	Description
	• **mode**: Set trunking mode of the interface. • **trunk**: Set trunk mode characteristics of the interface.
`Access mode VLAN`	VLAN ID of the access mode VLAN.
`Trunk mode native VLAN`	VLAN ID of the native VLAN.
`Trunk mode allowed VLANs`	Range of allowed VLAN IDs for the native VLAN.
`Trusted`	Shows if the wired port on an AP using this profile is a trusted port. Possible values are **Trusted** or **Not Trusted**.
`Broadcast`	If set to **broadcast**, the wired AP port will forward broadcast traffic. If the parameter displays **Do Not Broadcast**, broadcast traffic will not be forwarded.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap wired-port-profile

```
show ap wired-port-profile
```

Description

Shows all AP wired port profiles and their status.

Syntax

No parameters.

Example

The example below shows that the controller has three wired port profiles. The **References** column lists the number of other profiles with references to the wired port profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) (config) #show ap  wired-port-profile

AP wired port profile List
--------------------------
Name             References  Profile Status
----             ----------  --------------
default          3
NoAuthWiredPort  4           Predefined (editable)
portfast         0
shutdown         3           Predefined
Total:3
```

The following command displays information for an individual wired port profile:

```
(host)#show ap wired-port-profile default

AP wired port profile "default"
-------------------------------
Parameter                                 Value
---------                                 -----
Wired AP profile                          default
Ethernet interface link profile           default
AP LLDP profile                           default
Shut down                                 No
Remote-AP Backup                          Enabled
AAA Profile                               N/A
Bridge Role                               N/A
Time to wait for authentication to succeed  20 sec
Spanning Tree                             Enabled
PortFast                                  Enabled
PortFast on trunk                         Disabled
```

The output of this command includes the following information:

Parameter	Description
Wired AP profile	Name of a wired AP profile to be used by devices connecting the AP's wired port. The wired AP profile defines the forwarding mode and switchport values used by the port.
Ethernet interface link profile	An Ethernet Link profile to be used by devices connecting to the AP's wired port profile. This profile defines the duplex value and speed to be used by the port.
AP LLDP Profile	Name of an LLDP Profile associated with this wired port.
Shut Down?	Shows if the wired AP port is enabled (no) or disabled (yes).
Remote AP Backup	Use the rap-backup parameter to use the wired port on a Remote AP for local connectivity and troubleshooting when the AP cannot reach the controller. If the AP is not connected to the controller, no firewall policies will be applied when this option is enabled. (The AAA profile will be applied when the AP is connected to controller).
AAA Profile	Name of a AAA profile to be used by devices connecting to the AP's wired port.
Bridge Role	Role that is assigned to a user if split-tunnel authentication fails.
Time to wait for authentication to succeed	Authentication timeout value, in seconds, for devices connecting the AP's wired port. The supported range is 1-65535 seconds, and the default value is 20 seconds.
Spanning Tree	Enables the spanning tree protocol.
PortFast	Enables portfast on access mode ports.
PortFast on Trunk	Enables portfast on trunk mode ports.

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap wired stats

```
show ap wired stats {ip-addr <ip-addr>} | {ap-name <ap-name>}|{client-ip <client-ip>} |
{client-mac <client-mac>}
```

Description

Shows statistics for campus and remote AP wired clients.

Syntax

Parameter	Description
`ap-name <ap-name>`	Show wired AP statistics for a specified AP name.
`ip-addr <ip-addr>`	Show wired AP statistics for a specified AP by entering an IP address in dotted-decimal format.
`client-ip <client-ip>`	Show wired AP statistics for a specified client IP address.
`client-mac <client-mac>`	Show wired AP statistics for a specified client MAC address

Example

```
(host) #show ap wired stats ap-name rap5wn client-mac 00:14:d1:19:3c:0b

AP Wired User Statistics
------------------------
Counter                 Value
-------                 -----
Slot                    0
Port                    1
VLAN                    1
TX Packets              78
TX Bytes                7894
RX Packets              37
RX Bytes                5352
TX Broadcast Packets    36
TX Broadcast Bytes      4410
TX Multicast Packets    22
TX Multicast Bytes      1990
```

The output of this command includes the following information:

Column	Description
`Slot`	Slot number
`Port`	Port number
`VLAN`	Associated VLAN number

Column	Description
TX Packets	Number of packets sent
TX Bytes	Number of bytes sent
RX Packets	Number of packets received
RX Bytes	Number of bytes received
TX Broadcast Packets	Number of broadcast packets sent
TX Broadcast Bytes	Number of broadcast bytes sent
TX Multicast Packets	Number of multicast packets sent
TX Multicast Bytes	Number of multicast bytes sent

Command History

Version	Description
ArubaOS 5.0	Command Introduced.
ArubaOS 6.4.3.0	This command now displays results for both Campus and Remote access points.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap wmm-flow

```
show ap wmm-flow [{ap-name <ap-name>}|{bssid <bssid>}|{essid <essid>}|{ip-addr <ip-addr>}]
dotlla|dotllg
```

Description

Show the Wireless Multimedia (WMM) flow table.

Syntax

Parameter	Description
`ap-name <ap-name>`	View an AP with a specified name.
`bssid <bssid>`	View data for an AP with a specific BSSID (Basic Service Set Identifier). The Basic Service Set Identifier (BSSID) is usually the AP's MAC address.
`essid <essid>`	View data for a specific ESSID (Extended Service Set Identifier). An Extended Service Set Identifier (ESSID) is a alphanumeric name that uniquely identifies a wireless network. If the name includes spaces, you must enclose the ESSID in quotation marks.
`ip-addr <ip-addr>`	View an AP with a specified IP address by entering an IP address in dotted-decimal format.
`dot11a`	Show the WMM flow table for a 802.11a radio.
`dot11g`	Show the WMM flow table for a 802.11g radio.

Usage Guidelines

WMM, or Wireless Multimedia Extensions, are a subset of the 802.11e standard. WMM provides for four different types of traffic classification: voice, video, best effort, and background, with voice having the highest priority and background the lowest. Issue the **show ap wmm-flow** command to view WMM flow data for all APs. Include any of the optional parameters described in the table above to filter the table by a specific AP, radio channel (a or g), or both an ap and radio type.

Example

The example below shows WMM flow data for all APs.

```
(host) #show ap wmm-flow

WMM Flow Table
--------------
AP Name    ESSID  Client             Description
-------    -----  ------             -----------
AP125-srk  NOE    00:90:7a:06:1f:5b  tsid 6:prio 6:inactivity 2157352960
us:bidir:apsd:normalack:tclas prio 6 ip DIP-192.168.101.194 DP-32514 DSCP-48:one-match
AP125-srk  NOE    00:90:7a:06:1f:5b  tsid 0:prio 0:inactivity 100000000
us:bidir:apsd:normalack:no-match
Num Flows:0
```

The output of this command includes the following parameters:

Column	Description
AP name	Name of an AP with recorded WMM flows
ESSID	Extended Service Set Identifier (ESSID) of a wireless network.
Client	MAC address of the client.
Description	The description is a long string that includes the following information. **TSID:** Traffic Stream Identifier. The TSID should match the priority level for each flow. **Priority**: One of the following IEEE 802.1p priority values: • 0,3 = Best Effort • 1,2 = Background • 4-5 = Video • 6-7 = Voice **Inactivity**: Tspec inactivity threshold, in microseconds. **<country code>**: AP country code, e.g. US. **bdir**: flow is bidirectional. **apsd**: flow has enabled auto power save delivery. **<ack>**: Displays the ack policy negotiated for the flow. Possible values are: • normalack • noack • blockack • resack (reserved ack) **Tclas**: traffic classification element. Tclas information includes one of the following classification types, the 802.1p priority and IP version (ver-4 or ver-6) • **type0** - Classification based on Ethernet parameters • **type1** - Classification based on TCP/UDP or IP parameters (IPv4 or IPv6) • **type2** - Classification based on based on IEEE802.1Q **DIP**: Destination IP address for the flow. **DP**: Destination IP Port specified in the TCLAS for flow negotiation. **DCSP**: The Differentiated Services Code Point (DSCP) priority value that matches the flows 802.1p priority.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show app skype4b call-cdrs

```
show app skype4b prioritized-calls [all]
```

Description

This command displays the Call Detail Record (CDR) for prioritized Skype for Business (Skype4b) calls in the controller.

Syntax

Parameter	Description
`all`	Displays CDR information for all Skype calls.

Example

In this example, the output is divided into multiple sections to better fit on the pages of this document. In the actual command-line interface, it appears in a single, long table.

```
(host) #show app skype4b call-cdrs

Skype4B Session CDRs (Prioritized)
----------------------------------
CDR Id  Client IP     Client Name  ALG         Dir  Called to  Status
------  ---------     -----------  ---         ---  ---------  ------
4       192.0.2.10    6000         Skype4b     IC   6001       SUCC
3       192.0.2.20    6002         Skype4b     OG   6012       SUCC

Dur(sec)  Orig time        MOS Value  Reason      Codec  Band
--------  ---------        ---------  ------      -----  ----
19        May 15 15:20:34  3.910000   Terminated  G722   GREEN
85        May 15 15:16:30  3.910000   Terminated  G722   GREEN

Setup Time(sec)  Re-Assoc  Initial-BSSID      Initial-ESSID
---------------  --------  -------------      -------------
0                0         00:24:6c:27:5f:f0  test1
0                0         00:24:6c:27:5f:f0  test1

Initial-AP Name  Call Type  Src port  Dest port  DSCP  WMM AC
---------------  ---------  --------  ---------  ----  ------
AP175            Voice      17120     31826      46    7
AP175            Voice      31826     17120      46    7

Num CDRS:2
```

The output of this command includes the following parameters:

Column	Description
`CDR Id`	Displays the call detail record ID of a Skype4b call.
`Client IP`	Displays the IP address of the Skype4b client.

Column	Description
Client Name	Displays the user name of the Skype4b client.
ALG	Displays the Application Layer Gateway protocol for Skype4b clients.
Dir	Displays the following call direction: • **OG** — outgoing • **IC** — incoming
Called To	Displays the user name of the Skype4b client being called.
Status	Displays the following call status: • **CONNECTED** — active call • **SUCC** — successful terminated call • **ABORTED** — aborted call
Dur(sec)	Displays the time duration of the Skype4b call.
Orig time	Displays the time stamp when the Skype4b call originated.
MOS Value	Displays the Mean Opinion Score of the voice call.
Reason	Displays the reason code for call termination.
Codec	Displays the voice compression protocol used for the Skype4b call.
Band	Indicates the quality of the Skype4b call based on the following color band: • **GREEN** • **YELLOW** • **RED**
Setup Time(sec)	Displays the time taken to establish the call.
Re-Assoc	Displays the number of times the client re-associated while on an active call.
Initial-BSSID	Displays the BSSID of the AP the client was connected while the call was made.
Initial-ESSID	Displays the ESSID the client was connected while the call was made.
Initial-AP Name	Displays the name of the AP the client was connected while the call was made.
Call Type	Displays the type of Skype4b call: • **Desktop-sharing**

Column	Description
	• **Desktop-sharing conference** • **File-transfer** • **Video** • **Voice** • **Video conference** • **Voice conference**
`Src Port`	Displays the source port of the Real-Time Protocol (RTP) session or file transfer session.
`Dest Port`	Displays the destination port of the RTP session or file transfer session.
`DSCP`	Displays the DSCP value for the session.
`WMM AC`	Displays the value of the Wi-Fi Multimedia Access Category. The controller sends the packet with this value.

Related Commands

Command	Description
show ucc call-info cdrs	This command displays the Call Detailed Records (CDR) statistics for Unified Communication and Collaboration (UCC).

Command History

Version	Description
ArubaOS 6.4.4.0	Command introduced. **NOTE:** This command replaces the **show app lync call-cdrs** command introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config or Enable mode on master or local controllers

show app skype4b call-quality

```
show app skype4b call-quality [all]
```

Description

This command displays the call quality information for Skype for Business (Skype4b) voice and video calls.

Syntax

Parameter	Description
`all`	Displays call quality information for all voice and video Skype4bcalls.

Example

In this example, the output is divided into multiple sections to better fit on the pages of this document. In the actual command-line interface, it appears in a single, long table.

```
(host) #show app skype4b call-quality

Skype4b Client(s) Prioritized Call Quality Reports (Only Voice & Video)
-----------------------------------------------------------------------
Client(IP)     Client(MAC)        Client(Name)  ALG      Orig Time
----------     -----------        ------------  ---      ---------
192.0.2.10   9c:b7:0d:89:a5:f5  6000          skype4b  May 15 15:30:48
192.0.2.20   9c:b7:0d:89:ae:83  6002          skype4b  May 15 15:16:30

Direction  Called to  Duration  Codec  Delay  Jitter  Pkt Loss
---------  ---------  --------  -----  -----  ------  --------
IC         6001       8         G722   0.686  0.000   0.769
OG         6012       8         G722   0.714  0.000   0.784

MOS Value  Band   BSSID              ESSID     AP Name   Call Type
---------  ----   -----              -----     -------   ---------
4.130000   GREEN  d8:c7:c8:89:51:f2  test      local1    Voice
4.130000   GREEN  d8:c7:c8:89:51:f2  test      local1    Voice

Num Records:2
```

The output of this command includes the following parameters:

Column	Description
`Client(IP)`	Displays the IP address of the Skype4b client.
`Client(MAC)`	Displays the MAC address of the Skype4b client.
`Client(Name)`	Displays the user name of the Skype4b client.
`ALG`	Displays the Application Layer Gateway protocol for Skype4b clients.
`Orig Time`	Displays the time stamp when the Skype4b call originated.

Column	Description
Direction	Displays the call direction. • **OG** — Outgoing • **IC** — Incoming
Called To	Displays the user name of the Skype4b client being called.
Duration	Displays the time duration of the Skype4b call.
Codec	Displays the voice compression protocol used for the Skype4b call.
Delay	Displays the average delay in milli seconds.
Jitter	Displays the jitter in milli seconds.
Pkt Loss	Displays the loss of packet in percentage.
MOS Value	Displays the Mean Opinion Score of the voice call.
Band	Indicates the quality of the Skype4b call based on the following color band. • **GREEN** • **YELLOW** • **RED**
BSSID	Displays the BSSID of the AP to which the Skype4b client is connected.
ESSID	Displays the SSID of the wireless network.
AP Name	Displays the name of the access point to which the Skype4b client is connected.
Call Type	Displays the type of Skype4b call: • **Desktop-sharing** • **Desktop-sharing conference** • **File-transfer** • **Video** • **Voice** • **Video conference** • **Voice conference**

Related Commands

Command	Description
show ucc call-info cdrs	This command displays the Call Detailed Records (CDR) statistics for Unified Communication and Collaboration (UCC).

Command History

Version	Description
ArubaOS 6.4.4.0	Command introduced. **NOTE:** This command replaces the deprecated command **show app lync call-cdrs**.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config or Enable mode on master or local controllers

show app skype4b client-status

```
show app skype4b client-status
   active-only
   bssid <bssid_string>
   essid <essid_string>
   extn <extn_string>
   ip <ipaddr>
   sta <mac>
   <cr>
```

Description

Displays details of clients that are actively using Skype for Business (Skype4b). An entry is created for clients that have actively participated in voice, video, desktop-sharing or file-sharing sessions.

Syntax

Parameter	Description
`active-only`	Filter records based on active Skype4b clients
`bssid <bssid_string>`	Filter records based on BSSID of a Skype4b client.
`essid <essid_string>`	Filter records based on ESSID of Skype4b client.
`extn <extn_string>`	Filter records based on the extension of a Skype4b client.
`ip <ipaddr>`	Filter records based on the IP address of a Skype4b client.
`sta <mac>`	Filter records based on the MAC address of a Skype4b client.

Example

The output of the command in the example below displays all current Skype4b client statistics in the controller. The output is divided into multiple sections to better fit on the pages of this document, however, in the actual command-line interface, data appears in a single, long table.

```
(host) #show app skype4b client-status

Skype4b Client(s) Status
--------------------
Client(IP)    Client(MAC)         Client Name  Registration State
----------    -----------         -----------  ------------------
192.0.2.10    9c:b7:0d:89:a5:f5   6000         REGISTERED
192.0.2.20    9c:b7:0d:89:ae:83   6002         REGISTERED

Call Status    BSSID                ESSID    AP Name    Flags
-----------    -----                -----    -------    -----
In-Call        d8:c7:c8:89:51:f2    test     W-AP135     Vo
Idle           d8:c7:c8:89:51:f2    test     W-AP135

Num Clients:2
Flags: V - Visitor, W - Wired, R - Remote, B - Blocked, b - Best Effort, Vo-Voice, Vi-Video,
Ds-Desktop Sharing, Ft-File Transfer
```

The output of this command includes the following parameters:

Column	Description
Client(IP)	Displays the IP address of the Skype4b client.
Client(MAC)	Displays the MAC address of the Skype4b client.
Client Name	Displays the user name of the Skype4b client.
Registration State	Displays the following registration state of the Skype4b client with Skype4b server: • **UNKNOWN**: The Skype4b client is connected to the controller. The client is yet to initiate any Skype4b voice, video, desktop sharing, or file transfer session. • **REGISTERED**: The Skype4b client is in registered state once it makes or receives a voice, video, desktop sharing, or file transfer session.
Call Status	Displays if the Skype4b client is in any of the following call status: • **Idle** • **In-Call**
BSSID	Displays the BSSID of the AP to which the Skype4b client is connected.
ESSID	Displays the SSID of the wireless network to which the Skype4b client is connected.
AP Name	Displays the name of the access point to which the Skype4b client is connected.
Flags	Displays any flag for a Skype4b client. The list of flag abbreviations is also included as part of this command.

Related Commands

Command	Description
show ucc client-info	This command displays the UCC client status and CDR statistics.

Command History

Version	Description
ArubaOS 6.4.4.0	Command introduced. **NOTE:** This command replaces the **show app lync client-status** command introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config or Enable mode on master or local controllers

show app skype4b tracebuf

```
show app skype4b tracebuf
```

Description

This command displays the Skype for Business (Skype4b) message trace buffer for the first 256 events. Events such as establishing voice, video, desktop sharing, and file transfer are recorded.

Syntax

No parameters.

Example

The output is divided into multiple sections to better fit on the pages of this document, however, in the actual command-line interface, data appears in a single, long table.

```
(host) #show app skype4b tracebuf

Skype4B Voice Client(s) Message Trace
-------------------------------------
Client Name  Client(MAC)        Client(IP)    Called To
-----------  -----------        ----------    ---------
6000         9c:b7:0d:89:a5:f5  192.0.2.10    6001
6002         9c:b7:0d:89:ae:83  192.0.2.20    6012

Event Time       BSSID              CAC-Status  Media Type
----------       -----              ----------  ----------
May 15 15:30:56  d8:c7:c8:89:51:f2  PASS        Voice
May 15 15:16:30  d8:c7:c8:89:51:f2  PASS        Voice

DSCP  WMM AC  AP-Name   Src Port  Dest Port  Call Status
----  ------  -------   --------  ---------  -----------
46    7       local1    33228     35546      End of call
46    7       local1    33228     35546      After call update

Num of Rows:2
```

The output of this command includes the following parameters:

Column	Description
Client Name	Displays the user name of the Skype4b client.
Client (MAC)	Displays the MAC address of the Skype4b client.
Client (IP)	Displays the IP address of the Skype4b client.
Called To	Displays the user name of the Skype4b client being called.
Event Time	Displays the time stamp when the Skype4b call originated.

Column	Description
BSSID	Displays the BSSID of the access point to which the Skype4b client is connected.
CAC-Status	Displays if call admission control limit is reached. The values are: • **PASS** • **FAIL** • **NA** **NOTE:** When the call status for the Skype4B client is **Call quality update**, the value of the **CAC-Status** for the Skype4b client is **NA.**
Media Type	Displays the type of Skype4B call: • **Desktop-sharing** • **File-transfer** • **Video** • **Voice**
DSCP	Displays the DSCP value for the session.
WMM AC	Displays the value of the Wi-Fi Multimedia Access Category. The controller sends the packet with this value.
AP-Name	Displays the name the access point receiving calls.
Src Port	Displays the source port of the Real-Time Protocol (RTP) session or file transfer session.
Dest Port	Displays the destination port of the RTP session or file transfer session.
Call Status	Displays if the Skype4b client is in any one of the following call status: • **Start of call** • **End of call** • **Before call update** • **Call quality update** • **After call update**

Related Commands

Command	Description
show ucc trace-buffer	This command displays the UCC call message trace buffer for Skype4b, SCCP, and SIP ALGs. Call signaling events such as establishing voice, video, desktop sharing, and file transfer are recorded.

Command History

Version	Description
ArubaOS 6.4.4.0	Command introduced. This command replaces the deprecated command **show app lync tracebuf**.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config or Enable mode on master or local controllers

show app skype4b traffic-control

```
show app skype4b traffic-control [<profile-name>]
```

Description

This command displays the types of Skype for Business (Skype4b) traffic prioritized through the Skype4b Application Layer Gateway (ALG) QoS.

Syntax

Parameter	Description
`profile-name`	Skype4b traffic control profile name.

Example

The following command displays the Skype4b traffic control profile configuration in the controller:

```
(host) #show app skype4b traffic-control default

Skype4b Traffic-Control
-----------------------
Parameter                    Value
---------                    -----
Prioritize Voice             Enabled
Prioritize Video             Enabled
Prioritize Desktop-sharing   Enabled
Prioritize File-transfer     Enabled
```

Related Commands

Command	Description
app skype4b traffic-control	This command creates a traffic control profile that allows the controller to recognize and prioritize a specific type of Skype for Business (Skype4b) traffic in order to apply QoS through the Skype Application Layer Gateway (ALG).

Command History

Version	Description
ArubaOS 6.4.4.0	Command introduced. This command replaces the deprecated command **show app lync traffic-control**.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config or Enable mode on master or local controllers

show ap-group

```
show ap-group [<ap-group>]
```

Description

Show settings for an AP group.

Syntax

Parameter	Description
<ap-group>	The name of an AP group.

Usage Guidelines

Issue this command without the optional **<ap-group>** parameter to display the entire AP group list, including profile status for each profile. Include an AP group name to display detailed configuration information for that AP group profile.

Example

This first example shows that the controller has nine configured AP groups. The **Name** column lists the names of all configured AP groups. the **Profile Status** column indicates whether the AP group is predefined. (User-defined profiles will not have an entry in the **Profile Status** column.)

```
(host) #show ap-group
AP group List
-------------
Name                Profile Status
----                --------------
corp-office
branch-office-am
corp
corp1
Corp1-AM
Corp1-AM-Ch11
Corp1-AM-Ch6
corp1-AP85
corp1-lab

Total: 9
```

Include an AP group name to display a complete list of configuration settings for that profile. The example below shows settings for the AP group **corp1**.

```
(host) #show ap-group corp1
AP group "corp1"
--------------------
Parameter                          Value
---------                          -----
Virtual AP                         corp1-guest
Virtual AP                         corp1-wpa2
802.11a radio profile              default
802.11g radio profile              profile1-g
Wired AP profile                   default
```

```
Ethernet interface 0 link profile    default
Ethernet interface 1 link profile    default
AP system profile                    corp1344
VoIP Call Admission Control profile  default
802.11a Traffic Management profile   N/A
802.11g Traffic Management profile   N/A
Regulatory Domain profile            corp1344-channel-profile
SNMP profile                         default
RF Optimization profile              handoff-aggressive
RF Event Thresholds profile          default
IDS profile                          ids-low-setting
Mesh Radio profile                   default
Mesh Cluster profile                 N/A
```

The output of this command includes the following parameters:

Parameter	Description
Virtual AP	Virtual AP profile that which configures a specified WLAN.
802.11a radio profile	Profile that defines 802.11a radio settings for the AP group.
802.11g radio profile	Profile that defines 802.11g radio settings for the AP group.
Wired AP profile	Profile that defines wired port settings for APs assigned to the AP group.
Ethernet interface 0 link profile	Profile that defines the duplex and speed of the Ethernet 0 interface on the AP.
Ethernet interface 1 link profile	Profile that defines the duplex and speed of the Ethernet 0 interface on the AP.
AP system profile	Name of the AP system profile for the AP group.
VoIP Call Admission Control profile	Name of the AP system profile for the AP group.
802.11a Traffic Management profile	Name of the 802.11a WLAN traffic management profile for the AP group.
802.11g Traffic Management profile	Name of the 802.11g WLAN traffic management profile for the AP group.
Regulatory Domain profile	Name of the regulatory domain profile for the AP group.
SNMP profile	Name of the SNMP profile for the AP group.
RF Optimization profile	Name of the RF optimization profile for the AP group.
RF Event Thresholds profile	Name of the RF event thresholds profile for the AP group.
IDS profile	IDS profile for the AP group.

Parameter	Description
Mesh Radio profile	Mesh radio profile assigned to the AP group.
Mesh Cluster profile	Mesh cluster profile assigned to the AP group.

Related Commands

Configure AP group settings using the command ap-group.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers

show ap-name

```
show ap-name [<ap-name>]
```

Description

Show a list of AP names. Include the **<ap-name>** parameter to display detailed configuration information for that AP.

Syntax

Parameter	Description
<ap-name>	The name of an AP.

Example

This first example shows that the controller has eight registered APs. The **Name** column lists the names of each registered AP. Note that APs are all user-defined, so they will not have an entry in the **Profile Status** column.

```
(host) #show ap-name
AP name List
------------
Name            Profile Status
----            --------------
mp3
sw-ad-11
sw-ad-13sw-ad-15sw-ad-17sw-ad-18sw-ad-19sw-ad-3
Total: 8
```

Include an AP name to display a complete list of configuration settings for that AP. If the AP has default settings, the value may appear as N/A. The AP in the example below has all default profile settings.

```
(host) #show ap-group corp1
AP name "mp3"
-------------
Parameter                          Value
---------                          -----
Virtual AP                         N/A
Excluded Virtual AP                N/A
802.11a radio profile              N/A
802.11g radio profile              N/A
Wired AP profile                   N/A
Ethernet interface 0 link profile  N/A
Ethernet interface 1 link profile  N/A
AP system profile                  N/A
VoIP Call Admission Control profile N/A
802.11a Traffic Management profile N/A
802.11g Traffic Management profile N/A
Regulatory Domain profile          N/A
RF Optimization profile            N/A
RF Event Thresholds profile        N/A
IDS profile                        N/A
Mesh Radio profile                 N/A
Mesh Cluster profile               N/A
Excluded Mesh Cluster profile      N/A
```

The output of this command includes the following parameters:

Parameter	Description
Virtual AP	Virtual AP profile that which configures a specified WLAN.
Excluded Virtual AP	Excludes the specified mesh cluster profile from this AP.
802.11a radio profile	Profile that defines 802.11a radio settings for the AP.
802.11g radio profile	Profile that defines 802.11g radio settings for the AP.
Wired AP profile	Profile that defines wired port settings for APs assigned to the AP.
Ethernet interface 0 link profile	Profile that defines the duplex and speed of the Ethernet 0 interface on the AP.
Ethernet interface 1 link profile	Profile that defines the duplex and speed of the Ethernet 0 interface on the AP.
AP system profile	Name of the AP system profile for the AP.
VoIP Call Admission Control profile	Name of the AP system profile for the AP.
802.11a Traffic Management profile	Name of the 802.11a WLAN traffic management profile for the AP group.
802.11g Traffic Management profile	Name of the 802.11g WLAN traffic management profile for the AP.
Regulatory Domain profile	Name of the regulatory domain profile for the AP.
RF Optimization profile	Name of the RF optimization profile for the AP.
RF Event Thresholds profile	Name of the RF event thresholds profile for the AP.
IDS profile	IDS profile for the AP.
Mesh Radio profile	Mesh radio profile assigned to the AP.
Mesh Cluster profile	Mesh cluster profile assigned to the AP.
Excluded Mesh Cluster profile	Excludes the specified mesh cluster profile from this AP.

Related Commands

Configure AP settings using the command ap-name.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show arp

```
show arp
```

Description

Show Address Resolution Protocol (ARP) entries for the controller.

Syntax

No parameters

Example

This example shows configured static ARP entries for the controller.

```
(host) #show arp
Protocol        Address          Hardware Address        Interface
Internet        10.3.129.98      00:1A:1E:C0:80:28       vlan1
Internet        10.3.129.253     00:0B:86:42:35:80       vlan1
Internet        10.3.129.250     00:1A:92:45:DB:00       vlan1
Internet        10.3.129.99      00:1A:1E:C0:1C:60       vlan65
Internet        10.3.129.96      00:1A:1E:C0:80:1E       vlan65
Internet        10.3.129.254     00:0B:86:02:EE:00       vlan1
```

The output of this command includes the following parameters:

Parameter	Description
`Protocol`	Protocol using ARP. Although the controller will most often use ARP to translate IP addresses to Ethernet MAC addresses, ARP may also be used for other protocols, such as Token Ring, FDDI, or IEEE 802.11, and for IP over ATM.
`Address`	IP address of the device.
`Hardware Address`	MAC address of the device.
`Interface`	Interface used to send ARP requests and replies.

Related Commands

Add a static Address Resolution Protocol (ARP) entry using the command show arp.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master and local controllers

show audit-trail

```
show audit-trail {<number> | login <number>]
```

Description

Show the controller's audit trail log.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`login <number>`	Start displaying the log output from the specified number of lines from the end of the login/logout log.

Example

By default, the audit trail feature is enabled for all commands in configuration mode. The example below shows the most recent ten audit log entries for the controller.

```
(host) # show audit-trail 10
Feb  5 06:13:17  cli[1239]: USER: admin has logged in from 10.240.16.118.
Feb  5 06:20:13  cli[1239]: USER: admin connected from 10.240.16.118 has logged out.
Feb  5 06:24:37  cli[1239]: USER: admin has logged in from 10.240.16.118.
Feb  5 06:37:01  cli[1239]: USER:admin@10.3.129.250 COMMAND:<wlan virtual-ap "mp-only" no vap-
enable > -- command executed successfully
Feb  5 06:37:14  cli[1239]: USER:admin@10.3.129.250 COMMAND:<wlan virtual-ap "mp-a-only" no
vap-enable > -- command executed successfully
Feb  5 06:37:20  cli[1239]: USER:admin@10.3.129.250 COMMAND:<wlan virtual-ap "default" no vap-
enable > -- command executed successfully
Feb  5 06:37:29  cli[1239]: USER:admin@10.3.129.250 COMMAND:<wlan virtual-ap "mpp-a-only" no
vap-enable > -- command executed successfully
Feb  5 06:46:10  cli[1239]: USER:admin@10.3.129.250 COMMAND:<interface gigabitethernet "1/2"
port monitor igigabitethernet "1/1" > -- command executed successfully
Feb  5 06:57:44  cli[1239]: USER:admin@10.3.129.250 COMMAND:<ap system-profile "default"
heartbeat-dscp 12 > -- command executed successfully
Feb  5 07:05:48  cli[1239]: USER:admin@10.3.129.250 COMMAND:<wlan virtual-ap "mp-a-only" vap-
enable > -- command executed successfully
```

Related Commands

Enable or disable the audit trail feature using the command audit-trail.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.3	Introduced **login** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes. Audit trails can only be enabled on master controllers

show auth-survivability

```
show auth-survivability
```

Description

This command displays the **auth-survivability** parameters that are configured in the local controller.

Example

```
host # show auth-survivability
   Auth-Survivability: Enabled (Running)
   Survival-Server Server-Cert: dot1x2k-server
   Survival-Server Cache lifetime: 48 hours
```

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.

Platform Support

Platforms	Licensing	Command Mode
W-7000 Series controllers	Base operating system	Config or Enable mode on master or local controllers

show auth-survivability-cache

```
show auth-survivability-cache
```

Description

This command displays the data currently in the local Survival Server cache.

Example

```
host(config) # show auth-survivability-cache
```

Figure 2 *Displaying the Local Survival Server Cache*

```
(C) # show aaa auth-survivability-cache

Auth-Survivability Cached Data
------------------------------
Station        User Name              Authenticated Using  Authenticated By  Authenticated On
-------        ---------              -------------------  ----------------  ----------------
6427377FBC34   test1                  PAP                  RadServer1        2014-04-01 01:54
642739AFBCF0   vpnclientcert2K-xyz     EAP-TLS              RadServer2        2014-04-01 18:21
101C0C6CB16D   testcp                 QUERY                RadServer3        2014-04-01 10:07

(C) #
```

Command History

Version	Description
ArubaOS 6.4	Command introduced.

Platform Support

Platforms	Licensing	Command Mode
W-7000 Series controllers	Base operating system	Config or Enable mode on master or local controllers

show auth-tracebuf

```
show auth-tracebuf [count <1-250] [failures] [mac <address>]
```

Description

Show the trace buffer for authentication events.

Syntax

Parameter	Description
`count <1-250>`	limit the output of the command to the specified number of packets.
`failures`	Filter the output of this command to display only authentication failures
`mac <address>`	Filter the output of this command to display only information for a specified MAC address.

Usage Guidelines

Use the output of this command to troubleshoot 802.1X authentication errors. Include the **<address>** parameter to filter data by the MAC address of the client which is experiencing errors. This command can tell you, for example, when 802.1X authentication completed and when keys were plumbed correctly.

Example

The example below shows the most recent ten trace buffer entries for the controller. Each row includes the following information:

```
(host) # show auth-tracebuf count 10
Auth Trace Buffer
-----------------
Feb  5 08:08:29  wpa2-key2            ->  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   119  mic
failure
Feb  5 08:08:30  wpa2-key1            <-  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   117
Feb  5 08:08:30  wpa2-key2            ->  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   119  mic
failure
Feb  5 08:08:31  wpa2-key1            <-  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   117
Feb  5 08:08:31  station-down          *   00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   -
Feb  5 08:08:31  station-up            *   00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   -    wpa2
psk aes
Feb  5 08:08:31  station-data-ready    *   00:09:ef:05:1e:b2  00:00:00:00:00:00  66  -
Feb  5 08:08:31  wpa2-key1            <-  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   117
Feb  5 08:08:31  wpa2-key2            ->  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   119  mic
failure
Feb  5 08:08:32  wpa2-key1            <-  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   117
Feb  5 08:08:32  wpa2-key2            ->  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   119  mic
failure
Feb  5 08:08:33  wpa2-key1            <-  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   117
Feb  5 08:08:33  wpa2-key2            ->  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   119  mic
failure
Feb  5 08:08:34  wpa2-key1            <-  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   117
Feb  5 08:08:34  wpa2-key2            ->  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   119  mic
failure
Feb  5 08:08:35  wpa2-key1            <-  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   117
```

```
Feb  5 08:08:35  station-down           *  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   -
Feb  5 08:08:35  station-up             *  00:09:ef:05:1e:b2  00:1a:1e:97:e5:42  -   -    wpa2
psk aes
Feb  5 08:08:35  station-data-ready     *  00:09:ef:05:1e:b2  00:00:00:00:00:00  66  -
```

Each row in the output of this table may include some or all of the following information:

- A timestamp that indicates when the entry was created.
- The type of exchange that was made.
- The direction the packet was sent.
- The source MAC address.
- The destination MAC address.
- BSSID/Server Name.
- The packet number.
- The packet length.
- Additional information (if available), e.g.username, encryption and WPA type, or reason for failure.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable or Config modes on master or local controllers

show banner

```
show banner
```

Description

Show the current login banner

Syntax

No parameters

Usage Guidelines

Issue this command to review the banner message that appears when you first log in to the controller's command-line or browser interfaces.

Example

```
(host) # show banner This testlab controller is scheduled for maintenance starting Saturday night at 11 p.m.
```

Related Commands

Configure a banner message using the command banner motd.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show ble_relay

```
show ble_relay
   jobs
```

Description

Displays Bluetooth Low Energy (BLE) relay status.

Syntax

Parameter	Description
jobs	Displays the BLE relay job queue status

Example

The output of the example below displays the VLAN derivation debug information of an user with IPv4 address.

```
(host) #show ble_relay jobs

Pending Jobs
------------
Slot    AP IP   Payload Size    Status  Last updated
----    -----   ------------    ------  ------------
All Slots Unused
```

Command History

Release	Modification
ArubaOS 6.5.0.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show boot

```
show boot
   history
```

Description

Display boot parameters, including the boot partition and the configuration file to use when booting the controller.

Syntax

Parameter	Description
history	Displays the controller's reloads and upgrade history.

Example

```
(host) #show boot history
Reboot History Table
--------------------
No Description                                                    User    Role IP      Timestamp
-- -----------                                                    ----    ---- --      ---------
1  Centralized Upgrade to 6.3.1.0 for target 192.168.89.2 Successful.system  -   Master Fri Aug 23 16:12:39
2013
2  Centralized Upgrade to 6.3.1.0 for target 192.174.27.2 Successful.system  -   Master Fri Aug 23 16:12:39
2013
3  Centralized Upgrade to 6.3.1.0 for target 192.168.53.2 Successful.system  -   Master Fri Aug 23 16:12:40
2013
4  Centralized Upgrade to 6.3.1.0 for target 192.172.12.2 Successful.system  -   Master Fri Aug 23 16:12:43
2013
5  Centralized Upgrade to 6.3.1.0 for target 192.168.22.2 Successful.system  -   Master Fri Aug 23 16:12:43
2013
```

Related Commands

Configure boot parameters using the command boot.

Command History

This command was available in ArubaOS 1.0.

Release	Modification
ArubaOS 1.0	Command available.
ArubaOS 6.3	The **history** parameter was added.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show branch

```
show branch
   config  {mac-address <mac-address>}|{name <hostname>}
   dhcp-instance {mac-address <mac-address>}|{name <hostname>}
   master-l3redundancy status
   running-config
```

Description

Shows configuration and DHCP address settings on a branch controller.

Syntax

Parameter	Description
`config <mac-address>`	Shows configuration information for the branch controller
`dhcp-instance mac-address <mac-address> hostname <name>`	Shows the branch controller address pool information including pool name, DHCP pool start IP address, DHCP pool mask, DHCP pool broadcast IP address, and the DHCP pool gateway IP address.
`master-l3redundancy status`	Displays the IP address and status of a Layer-3 master and secondary master controller A redundant secondary master controller in a branch controller deployments prevents a scenario where a master controller acts as a single point of failure if the link to the master goes down, or a co-located Master-Standby VRRP controller pair fail due to a network failure or local natural disaster.
`running-config`	Shows the running configuration for a branch controller.

Usage Guidelines

Issue this command to display the configuration, DHCP pool information and running configuration information for a branch controller.

Examples

This example shows a the branch config group settings applied to a branch controller.

```
(host) #show branch config mac-address 00:0b:86:f0:26:e0

model 7010
controller-ip vlan 2
vlan 2
vlan 3
interface fastethernet "1/7"
  interface fastethernet "1/7" switchport access vlan 3
  interface fastethernet "1/7" trusted
interface fastethernet "1/2"
  interface fastethernet "1/2" switchport access vlan 2
  interface fastethernet "1/2" trusted
interface fastethernet "1/3"
  interface fastethernet "1/3" switchport access vlan 2
  interface fastethernet "1/3" trusted
interface fastethernet "1/1"
```

```
  interface fastethernet "1/1" switchport access vlan 2
  interface fastethernet "1/1" trusted
interface vlan 3
  interface vlan 3 ip address 10.3.29.79 255.255.255.0
interface vlan 2
  interface vlan 2 ip address 192.167.1.1 255.255.255.240
uplink wired vlan 4
interface tunnel 1
  interface tunnel 1 tunnel destination remote-node-master-ip
ip route 10.100.102.217 255.255.255.255 10.3.29.254
ip route 10.100.102.173 255.255.255.255 10.3.29.254
ip route 10.1.1.41 255.255.255.255 10.3.29.254
mgmt-user "admin" "root" "ade8c0d3890aa97914d926120279aef2"
service dhcp
ip dhcp pool vlanx domain-name mycorp.com
ip dhcp pool vlanx
ip dhcp pool vlanx default-router 192.167.1.1
ip dhcp pool vlanx dns-server 192.167.1.1
ip dhcp pool vlanx network 192.167.1.0 255.255.255.240
remote-node config-id 32
```

Command History

Release	Modification
ArubaOS 6.0	Command introduced.
ArubaOS 6.2	Command is deprecated.
ArubaOS 6.4.3.0	Command reinstated.
ArubaOS 6.4.4.0	The **master-l3redundancy status** parameter is introduced

Command Information

Platforms	Licensing	Command Mode
Available on W-7010, W-7005, W-7024, and W-7030 controllers	Base operating system	Enable or Config mode on master controllers

show branch-config-group

```
show branch-config-group [<group-name>]
```

Description

The output of this command shows configuration settings for a branch config group.

Syntax

Parameter	Description
<group-name>	(Optional) Name of the branch config group.

Usage Guidelines

When this command includes the optional branch config group name, the output of the command shows the configuration status of that specific branch config group. If no branch config group name is specified, the output of this command displays a high-level status of all branch config groups configured on that master controller.

Example

The following example shows the configuration status of all branch config groups on the controller.

```
(host) (config) #show branch-config-group
Branch Config Groups
--------------------
Name        Status              Reboot-Required
----        ------              ---------------
branch1     Validated           No
branch2     Validated           No
New-Group   Not Validated       No
```

The output of this command displays the branch config group name, validated/not validated status, and reboot status for each branch config group.

- **Status**: A status of **Validated** indicates that the branch config group has a complete configuration that can be applied to branch controllers. (For example, a branch config group might have a status of **Not Validated** if the branch config group does not have a IP address defined for the controller or a controller VLAN interface.)
- **Reboot-Required**: This column indicates that the branch config group includes a configuration change that requires a reboot on the branch controllers using that config group.

The following example shows the configuration status of branch config group named “branch1”

```
(host) #show branch-config-group branch1
model 7005
vlan 4094
interface vlan 4094
uplink wired vlan 4094
controller-ip vlan 1
vlan 1
interface vlan 1
description "test"
operstate up
ip address internal
```

```
!
uplink wired vlan 1 priority 102
uplink enable
interface gigabitethernet "0/0/0"
bandwidth-contract app "vox" "test" downstream
!
remote-node-dhcp-pool Pool1
pool-type vlan 1
domain-name example.com
dns-server 10.1.1.91
range startip 5.5.5.16 endip 6.6.6.6 hosts 16
!
!
```

Command History

Release	Modification
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
Available on W-7010, W-7005, W-7024, W-7030 , and W-7200 Series controllers.	Base operating system	Enable mode on master controllers.

show branch-dhcp-pool

```
show branch-dhcp-pool config-group <group-name> [pool-name <pool>]
```

Description

The output of this command shows a summary of DHCP pool information for branch controllers.

Syntax

Parameter	Description
`config-group <group-name>`	Name of the branch config group
`pool-name <pool>`	(Optional) include the name of the DHCP pool in this command to view information only for the selected DHCP pool. If these parameters are omitted, the output of this command shows information for all DHCP pools associated with the branch config group.

Usage Guidelines

Each branch config group contains a branch controller DHCP address pool, which defines a range of IP addresses allocated for branch controllers at a remote site, and the VLAN to be associated with those addresses. A remote-node dhcp pool is configured in the branch controller mode.

Use the **show branch-dhcp-pool** command to view a summary of branch controller address pool information.

Example

This example shows a summary of branch controller DHCP address pool information.

```
DHCP Address Pools
------------------
Start IP Address  Mask             Interface IP Address  Is Active
----------------  ----             --------------------  ---------
192.168.20.2      255.255.255.252  192.168.20.1          Active
192.168.20.6      255.255.255.252  192.168.20.5          Active

Branch controller MAC Address  Hostname
-----------------------------  --------
00:0b:86:99:d6:97              Cube-7010
00:0b:86:99:89:97              7010-234

(host) #show branch-dhcp-pool config-group it pool-name controller_ip
Pool Name      : controller_ip
Vlan           : 20
Start IP       : 192.168.20.0
End IP         : 192.168.20.16
Domain Name    :
Number of Hosts: 4
```

The output of this command includes the following parameters:

Parameter	Description
`Pool Name`	Name of the new DHCP pool.
`Type`	Type of pool. This can be tunnel or vlan.
`Start IP Address`	IP addresses at the start of the branch controller's address range, in dotted-decimal format.
`End IP Address`	IP address at the end of the branch controller's address range, in dotted-decimal format.
`Domain Name`	The DHCP domain name.
`Num Hosts`	Maximum number of hosts allocated by a branch controller using this pool.

Command History

Release	Modification
ArubaOS 6.0	Command introduced.
ArubaOS 6.2	Command was deprecated.
ArubaOS 6.4.3.0	Command reinstated.

Command Information

Platforms	Licensing	Command Mode
Available on W-7010, W-7005, W-7024, and W-7030 controllers	Base operating system	Enable mode on master and branch controllers

show branch master-l3redundancy

```
show branch master-l3redundancy
   status
   switchover-timeout
```

Description

A redundant secondary master controller in a branch controller deployment prevents a scenario in which a master controller acts as a single point of failure if the link to the master controller goes down, or a co-located Master-Standby VRRP controller pair fail due to a network failure or local natural disaster.

This command displays the status of both the primary and secondary (backup) master controllers. It also shows the currently configured **switchover-timeout** value.

Syntax

Parameter	Description
`status`	Displays the IP address and status of the Layer-3 master controller and the secondary (backup) master controller.
`switchover-timeout`	This switchover period defines the number of minutes that a primary branch master controller will wait before switching from an unreachable primary controller to the backup controller. • Switchover-timeout range: 15 - 60 minutes • Default: 15 minutes

Usage Guidelines

You can run this command only from a branch controller.

Issue this command to:

- View the status of the primary and backup master controllers.
- View the current setting for the number of minutes configured to wait before the switchover is made from the primary master controller to the backup Layer-3 master controller.

If there is no secondary master controller configured for the primary branch controller, the Master L3-Redundancy feature is not enabled. In this case, the CLI displays the following message:

L3-domain master redundancy not configured.

Examples

The following examples show the CLI output for both parameters of the **show branch master-l3redundancy** command:

```
(host) #show branch master-l3redundancy status
```

```
(Aruba7010) #show branch master-l3redundancy status

L3 Redundancy Status
--------------------
Role              IP Address    Status
----              ----------    ------
Master            [redacted].72  Up
Secondary Master  [redacted].98  Up
```

```
(host) #show branch master-l3redundancy switchover-timeout
```

```
(Aruba7010) #show branch master-l3redundancy switchover-timeout

switchover-timeout: 15 minutes
```

Command History

Release	Modification
ArubaOS 6.4.4.0	This command is introduced.

Command Information

Platforms	Licensing	Command Mode
Available on all Dell branch controllers.	Base operating system	Enable mode on branch controllers

show cellular profile

```
show cellular profile [<name>] | [factory]
```

Description

Display the cellular profiles and profile settings.

Syntax

Parameter	Description
`<name>`	Enter the name of an existing cellular profile
`factory`	Display a list of factory supported cellular profiles.

Usage Guidelines

Issue this command without the **<name>** parameter to display configuration parameters for the entire list of available cellular profiles. Include a profile name to display configuration information for that one profile.

Example

The output of this command displays the Cellular Profile table. The example below shows eight preconfigured cellular profiles.

```
(host) #show cellular profile

Cellular Profile Table
----------------------
Name                   Vend      Prod      Serial   Dialer    Tty      Driver   Priority
Modeswitch
----                   ----      ----      ------   ------    ---      ------   --------  --------
--
Novatel_U720           1410      2110               evdo_us   ttyUSB0  option   default
Novatel_U727           1410      4100               evdo_us   ttyUSB0  option   default
Kyocera_KPC680         0c88      180a               evdo_us   ttyUSB0  option   default
Sierra_Compass_597     1199      0023               evdo_us   ttyUSB0  sierra   default
Pantech_UM175          106c      3714               evdo_us   ttyUSB1  option   default
Sierra_USBConn_881     1199      6856               gsm_us    ttyUSB0  option   default
USBConn_Mercury_C885   1199      6880               gsm_us    ttyUSB3  option   default
Globetrotter_Icon322   0af0      d033               gsm_us    ttyHS3   hso      default
Default cellular priority:       100
```

The output of this command includes the following parameters:

Parameters	Description
Name	Name of a cellular profile.
Vend	Vendor ID in hexadecimal

Parameters	Description
Prod	USB product ID in hexadecimal
Serial	USB device serial number.
Dialer	Name of a dialer group profile.
TTY	Modem TTY port.
Driver	One of the following cellular modem drivers: • acm: Linux ACM driver. • hso: Option High Speed driver. • option: Option USB data card driver (default). • sierra: Sierra Wireless driver.
Priority	Displays the cellular profile priority; profiles with the default priority of 100 will display the word default in the Priority column Range: 1 to 255. Default: 100
Modeswitch	One of two USB device modeswitch settings: • eject: Eject the CDROM device. • rezero: Send SCSI CDROM rezero command.

Command History

Introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show clock

```
show clock [summer-time|timezone|append]
```

Description

Display the system clock.

Syntax

Parameter	Description
`summer-time`	Show summer (daylight savings) time settings.
`timezone`	Show the configured timezone for the controller.
`append`	If the timestamp feature is enabled, including a timestamp in show command output.

Usage Guidelines

Include the optional summer-time parameter to display configured daylight savings time settings. The timezone parameter shows the current timezone, with its time offset from Greenwich Mean Time.

Example

The output below shows the current time on the controller clock.

```
(host) # show clock Thu Feb  5 16:52:28 PST 2009
```

Related Commands

Configure clock settings using the commands clock append, clock summer-time recurring, and clock timezone.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show cluster-config

```
show cluster-config
```

Description

Show the multi-master cluster configuration for the control plane security feature.

Usage Guidelines

When you issue this command from the cluster *root*, the output of this command shows the cluster role of the controller, and the IP address of each member controller in the cluster.

When you issue this command from a cluster *member*, the output of this command shows the cluster role of the controller, and the IP address of the cluster root.

Example

In the example below, the **Cluster Role** section in the output of this command shows that the controller on which the command was issued is the cluster root. The **Cluster IPSEC Controllers** section of the output shows the IP address of each cluster member.

```
(host) (config) #show cluster-config

Cluster Role
------------
Root
----

Cluster IPSEC Controllers
-------------------------
Switch IP address of Cluster-Members  Key
-------------------------------------  ---
172.21.18.18    ********
172.21.18.19    ********
```

Related Commands

Command	Description	Mode
control-plane-security	Configure the control plane security profile.	Config mode
cluster-member-ip	This command sets the controller as a control plane security cluster root, and specifies the IPsec key for a cluster member.	Config mode on cluster root controllers
cluster-root-ip	This command sets the controller as a control plane security cluster member, and defines the IPsec key for communication between the cluster member and the controller's cluster root.	Config mode on cluster member controllers

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on cluster member or cluster root controllers

show cluster-switches

```
show cluster-switches
```

Description

Issue this command on a master controller using control plane security in a multi-master environment to show other the other controllers to which it is connected.

Usage Guidelines

When you issue this command from the cluster root, the output of this command displays the IP address of the VLAN used by the cluster member to connect to the cluster root.

If you issue this command from a cluster member ,the output of this command displays the IP address of the VLAN used by the cluster root to connect to the cluster member.

Example

In the example below, the **show cluster-switches** command was issued on a cluster member. The **Switch-IP** section of the output shows the IP address of a VLAN on cluster root, indicating that the cluster member can currently communicate with the cluster root. If the member controller cannot communicate with the cluster root, this table will be blank.

```
(host) (config) #show cluster-switches

SWITCH-IP        CLUSTER-ROLE
-----------------------------
172.21.18.18     ROOT
```

In this example, the **show cluster-switches** command was issued on a cluster root. The **Switch-IP** section of the output shows the IP address of a VLAN on each cluster member that can currently communicate with the cluster root.

```
(host) (config) #show cluster-switches

SWITCH-IP        CLUSTER-ROLE
-----------------------------
172.21.18.18    MEMBER
172.21.18.19    MEMBER
```

Related Commands

Parameter	Description	Mode
control-plane-security	Configure the control plane security profile.	Config mode
cluster-member-ip	This command sets the controller as a control plane security cluster root, and specifies the IPsec key for a cluster member.	Config mode on cluster root controllers
cluster-root-ip	This command sets the controller as a control plane security cluster member, and defines the IPsec key for communication between the cluster member and the controller's cluster root.	Config mode on cluster member controllers

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on cluster member or cluster root controllers

show command-mapping

```
show command-mapping [reverse]
```

Description

Show the mapping new commands to deprecated commands.

Syntax

Parameter	Description
reverse	Sort the command map by deprecated command syntax. This command is useful to find the current command syntax for a deprecated command.

Usage Guidelines

The syntax of many commands changed after the release of ArubaOS 3.0. Use this command to display a list of current commands and their deprecated command equivalents. Include the **reverse** parameter sort the output of this table by the deprecated command syntax.

Example

The example below shows part of the output for this command. Note that a single new command may have replaced several older commands.

```
(host) # show command-mappingCommand Map
-----------
New Command                          Old Command
-----------                          -----------
show ap active                       show wlan ap
show ap arm neighbors                show ap arm-neighbors
show ap arm rf-summary               show am rf-summary
show ap arm scan-times               show am scan-times
show ap arm state                    show wlan arm
show ap association                  show stm association
                                     show wlan client
                                     show wlan remote-client
show ap blacklist-clients            show stm dos-sta
show ap bss-table                    show stm connectivity
show ap client status                show stm state
show ap coverage-holes               show rfsm coverage-holes
show ap database                     show ap global-list
                                     show sapm ap search
                                     show ap registered
show ap debug association-failure    show wlan association-failure
....
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show configuration

```
show configuration
   diff
```

Description

Show the saved configuration on the controller.

Syntax

Parameter	Description
`diff`	Displays a list of successfully executed configuration commands since the last **write memory**. The configuration differences are cleared whenever a **write memory** is performed.

Usage Guidelines

Issue this command to view the entire configuration saved on the controller, including all profiles, ACLs, and interface settings.

Example

The example below shows part of the output for this command.

```
(host) #show configuration diff
interface port-channel 6
interface port-channel 6 trusted
ids unauthorized-device-profile "default"
```

Command History

Release	Modification
ArubaOS 1.0	Command introduced.
ArubaOS 6.3	The **diff** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show controller-ip

```
show controller-ip
```

Description

Show controller's country and domain upgrade trail.

Syntax

No parameters.

Example

The output of this command shows the controller's IP address and VLAN interface ID.

```
(host) # show controller-ip

Switch IP Address: 10.168.254.221
Switch IP is configured to be Vlan Interface: 1
```

Command History

This command was available in ArubaOS 3.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show controller-ipv6

```
show controller-ipv6
```

Description

Show controller's IPv6 address and VLAN interface ID.

Syntax

No parameters.

Example

```
(host) # show controller-ipv6

Switch IPv6 Address: 2005:d81f:f9f0:1001::14
Switch IPv6 address is from Vlan Interface: 1
```

The output of this command shows the controller's IPv6 address and VLAN interface ID.

Command History

This command is introduced in ArubaOS 6.1

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show control-plane-security

```
show control-plane-security
```

Description

Show the current configuration of the control plane security profile.

Syntax

No parameters.

Usage Guidelines

The control plane security profile enables and disables the control plane security feature and identifies campus APs to receive security certificates. Issue this command to view current control plane security settings.

Example

The following command shows the control plane security and auto certificate provisioning features are enabled in the control plane security profile, and that the controller will send certificates to a range of IP addresses:

```
(host)(config) #show control-plane-security
Control Plane Security Profile
------------------------------
Parameter                   Value
---------                   -----
Control Plane Security      Enabled
Auto Cert Provisioning      Enabled
Auto Cert Allow All         Disabled
Auto Cert Allowed Addresses 10.1.1.16 - 10.1.42.55
```

Related Commands

Command	Description	Mode
control-plane-security	Configure the control plane security profile by identifying APs to receive security certificates.	Config mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Enable mode on master or local controllers

show country

```
show country [trail]
```

Description

Show controller's country and domain upgrade trail.

Syntax

Parameter	Description
`trail`	Display the record showing how the switch was reconfigured for it's current country domain when the controller hardware was upgraded.

Usage Guidelines

A controller's country code sets the regulatory domain for the radio frequencies that the APs use. This value is typically set during the controller's initial setup procedure. Use this command to determine the country code specified during setup.

Example

The output of this command shows the controller's country, model and hardware types.

```
(host) # show country

Country:US
Model:DellW-7210-US
Hardware:Restricted US
```

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show cp-bwcontracts

```
show cp-bwcontract
```

Description

Displays a list of Control Processor (CP) bandwidth contracts for whitelist ACLs.

Syntax

No parameters.

Example

The *CP bw contracts* table lists the contract names, the ID number assigned to each contract, and its defined traffic rate in packets per second.

```
(host) #show cp-bwcontracts

CP bw contracts
---------------
Contract                  Id     Rate (packets/second)
--------                  --     ---------------------
cpbwc-ipv4                15785  2000
cpbwc-ipv6                15798  2000
cp-rate                   15809  20
```

Related Commands

Command	Description
cp-bandwidth-contract	This command configures a bandwidth contract traffic rate which can then be associated with a whitelist session ACL.
firewall cp	This command creates a new whitelist ACL and can associate a bandwidth contract with that ACL.

Command History

Version	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.4.3.0	The **CP bw contracts** table now lists the traffic rate in packets/second instead of bits/second.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license.	Config mode on master controllers

show cpuload

```
show cpuload [current]
```

Description

Display the controller CPU load for application and system processes.

Syntax

Parameter	Description
`current`	Include this optional parameter at the request of Dell technical support to display additional CPU troubleshooting statistics.

Example

This example shows that the majority of the controller's CPU resources are not being used by either application (user) or system processes.

```
(host) #show cpuload
user 6.9%, system 7.7%, idle 85.4%
```

The output of this command includes the following parameters:

Parameter	Description
`user`	Percentage of controller CPU resources used by application processes.
`system`	Percentage of controller CPU resources used by system processes.
`idle`	Percentage of unused controller CPU resources.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show crypto-local ipsec-map

```
show crypto-local ipsec [tag <ipsec-map-name>]
```

Description

Displays the current IPsec map configuration on the controller.

Syntax

Parameter	Description
`tag <ipsec-map-name>`	Display a specific IPsec map.

Usage Guidelines

The command **show crypto-local ipsec** displays the current IPsec configuration on the controller.

Examples

The command **show crypto-local ipsec-map** shows the default map configuration along with any specific IPsec map configurations.

```
(host) #show crypto-local ipsec-map
Crypto Map Template "sample" 5
IKE Version: 2
IKEv2 Policy: 20
Security association lifetime seconds : 300
Security association lifetime kilobytes: N/A
PFS (Y/N): N
Transform sets={ default-transform }
Peer gateway: gateway.example.com
Interface: VLAN 0
Source network: 10.4.215.10/255.255.255.255
Destination network: 10.3.75.15/255.255.255.255
Pre-Connect (Y/N): Y
Tunnel Trusted (Y/N): Y
Forced NAT-T (Y/N): N
Uplink Failover (Y/N):N
IP Compression (Y/N):N
```

Related Commands

Command	Description	Mode
crypto-local ipsec-map	Use this command to configure IPsec mapping for site-to-site VPN.	Config mode

Command History

Version	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.1	The output of this command displays the configured IKE version.
ArubaOS 6.3	The output of this command displays the **Security association lifetime kilobytes** parameter.
ArubaOS 6.4.4.0	The output of this command indicates if the **Uplink Failover** and **IP Compression** features are enabled.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show crypto dp

```
show crypto dp [peer <source-ip>]
```

Descriptions

Displays crypto data packets.

Syntax

Parameter	Description
dp	Shows crypto latest datapath packets. The output is sent to crypto logs.
peer <source-ip>	Clears crypto ISAKMP state for this IP.

Usage Guidelines

Use this command to send crypto data packet information to the controller log files, or to clear a crypto ISAKMP state associated with a specific IP address.

Examples

The command show crypto dp sends debug information to CRYTPO logs.

```
(host) # show crypto

Datapath debug output sent to CRYPTO logs.
```

Related Commands

Command	Description	Mode
crypto isakmp	Use this command to configure Internet Key Exchange (IKE) parameters for the Internet Security Association and Key Management Protocol (ISAKMP)	Enable and Config modes

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show crypto dynamic-map

```
show crypto dynamic-map [tag <dynamic-map-name>]
```

Descriptions

Displays IPsec dynamic map configurations.

Syntax

Parameter	Description
`dynamic-map`	IPsec dynamic maps configuration.
`tag <dynamic-map-name>`	A specific dynamic map.

Usage Guidelines

Dynamic maps enable IPsec SA negotiations from dynamically addressed IPsec peers. Once you have defined a dynamic map, you can associate that map with the default global map using the command crypto map global-map.

Examples

The command show crypto dynamic-map shows IPsec dynamic map configuration.

```
(host) #show crypto dynamic-map

Crypto Map Template"default-dynamicmap" 10000
                        IKE Version: 1
          lifetime: [300 - 86400] seconds, no volume limit
          PFS (Y/N): N
          Transform sets={ default-transform }
```

Related Commands

Command	Description	Mode
crypto dynamic-map	Use this command to configure a dynamic map.	Config mode

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The output of this command displays the configured IKE version.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show crypto ipsec

```
show crypto ipsec {mtu|sa[peer <peer-ip>]|transform-set [tag <transform-set-name>]}
```

Descriptions

Displays the current IPsec configuration on the controller.

Syntax

Parameter	Description
`mtu`	IPsec maximum mtu.
`sa`	Security associations.
`peer <peer-ip>`	IPsec security associations for a peer.
`transform-set`	IPsec transform sets.
`tag <transform-set-name>`	A specific transform set.

Usage Guidelines

The command **show crypto ipsec** displays the Maximum Transmission Unit (MTU) size allowed for network transmissions using IPsec security. It also displays the transform sets that define a specific encryption and authentication type.

Examples

The command **show crypto transform-set** shows the settings for both preconfigured and manually configured transform sets.

```
(host) #show crypto ipsec transform-set

Transform set default-transform: { esp-3des esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
Transform set default-ml-transform: { esp-3des esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
Transform set default-boc-bm-transform: { esp-3des esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
Transform set default-cluster-transform: { esp-aes256 esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
Transform set default-1st-ikev2-transform: { esp-aes256 esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
Transform set default-3rd-ikev2-transform: { esp-aes128 esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
Transform set default-gcm256: { esp-aes256-gcm esp-null-hmac }
         will negotiate = { Transport, Tunnel }
Transform set default-gcm128: { esp-aes128-gcm esp-null-hmac }
         will negotiate = { Transport, Tunnel }
Transform set default-rap-transform: { esp-aes256 esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
Transform set default-remote-node-bm-transform: { esp-3des esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
```

```
Transform set default-aes: { esp-aes256 esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
Transform set newset: { esp-3des esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
Transform set name: { esp-aes256-gcm esp-sha-hmac }
         will negotiate = { Transport, Tunnel }
```

Use the **peer** parameter to view details about an IPsec connection

```
(host) #show crypto ipsec sa peer 80.254.65.210

Initiator IP: 80.254.65.210
Responder IP: 10.69.69.16
Initiator: No
Initiator cookie:018006409496dde5 Responder cookie:659f346abddccaf7
SA Creation Date: Fri Jun 25 13:21:23 2010
Life secs: 7200
Initiator Phase2 ID: 10.69.16.7/255.255.255.255
Responder Phase2 ID: 0.0.0.0/0.0.0.0
Phase2 Transform: EncAlg:esp-3des HMAC:esp-sha-hmac
Encapsulation Mode:UDP-encapsulated Tunnel
IP Compression Disabled
PFS: No
OUT SPI 1b0aa012, IN SPI 1b5c5300
Inner IP 10.69.16.7, internal type C
Aruba VIA
Reference count: 3
```

Related Commands

Command	Description	Mode
crypto ipsec	Use this command to configure IPsec parameters.	Config mode

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4.4.0	The output of the **show crypto SA peer** command is enhanced to display IP compression settings.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show crypto isakmp

```
show crypto isakmp
   eap-passthrough
   groupname
   ipsecSPI
   key
   log ap <mac-address>
   packet-dump
   policy
   sa
   stats
   transports
   udpencap-behind-natdevice
```

Descriptions

This command displays Internet Key Exchange (IKE) parameters for the Internet Security Association and Key Management Protocol (ISAKMP).

Syntax

Parameter	Description
`eap-passthrough`	Display configured IKEv2 EAP Methods.
`groupname`	Show the IKE Aggressive group name.
`ipsecSPI`	Show IPSEC spi hash table entries.
`key`	Show the IKE pre-shared keys.
`log ap <mac-address>`	Show debugging log.
`packet-dump`	Show the packet dump configuration.
`policy`	Show the following information for predefined and manually configured IKE policies: • IKE version • encryption and hash algorithms • authentication method • PRF methods, • DH group • lifetime settings
`sa`	Show the security associations.
`peer <peer-ip>`	Shows crypto ISAKMP security associations for this IP.

Parameter	Description
stats	Show detailed IKE statistics. This information can be very useful for troubleshooting problems with ISAKMP.
transports	Show IKE Transports.
udpencap-behind-nat-device	Show the Configuration if NAT-T is enabled if controller is behind a NAT device .

Usage Guidelines

Use the show crypto isakmp command to view ISAKMP settings, statistics and policies.

Examples

The command **show crypto isakmp stats** shows the IKE statistics.

```
(host) #show crypto isakmp stats

Default protection suite 10001
         Version 1
         encryption algorithm: 3DES - Triple Data Encryption Standard (168 bit keys)
         hash algorithm: Secure Hash Algorithm 160
         authentication method: Pre-Shared Key
         Diffie-Hellman Group: #2 (1024 bit)
         lifetime: [300 - 86400] seconds, no volume limit
Default RAP Certificate protection suite 10002
         Version 1
         encryption algorithm: AES - Advanced Encryption Standard (256 bit keys)
         hash algorithm: Secure Hash Algorithm 160
         authentication method: Rivest-Shamir-Adelman Signature
         Diffie-Hellman Group: #2 (1024 bit)
         lifetime: [300 - 86400] seconds, no volume limit
Default RAP PSK protection suite 10003
         Version 1
         encryption algorithm: AES - Advanced Encryption Standard (256 bit keys)
         hash algorithm: Secure Hash Algorithm 160
         authentication method: Pre-Shared Key
         Diffie-Hellman Group: #2 (1024 bit)
         lifetime: [300 - 86400] seconds, no volume limit
```

Related Commands

Command	Description	Mode
crypto isakmp	Use this command to configure Internet Key Exchange (IKE) parameters for the Internet Security Association and Key Management Protocol (ISAKMP).	Config mode

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The eap-passthrough parameter was introduced. The output of the **show crypto isakmp policy** command displays the configured IKE version.

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show crypto-local isakmp

```
show crypto-local isakmp
   allow-via-subnet-routes
   ca-certificate
   certificate-group
   disable-aggressive-mode
   dpd
   key [peer <peer-ip> | fqdn <ike-id-fqdn>]
   server-certificate
   xauth
```

Descriptions

This command displays Internet Key Exchange (IKE) parameters for the Internet Security Association and Key Management Protocol (ISAKMP).

Syntax

Parameter	Description
`allow-via-subnet-routes`	Shows if the controller is configured to accept subnet routes from VIA clients.
`ca-certificate`	Shows all the Certificate Authority (CA) certificate associated with VPN clients.
`certificate-group`	Shows the existing certificate groups by server certificate name and CA certificate.
`disable-aggressive-mode`	Shows if aggressive-mode is enabled or disabled.
`dpd`	Shows the IKE Dead Peer Detection (DPD) configuration on the local controller.
`key [peer <peer-ip> | fqdn <ike-id-fqdn>]`	Shows the IKE pre-shared key on the local controller for site-to-site VPN. This is includes keys configured by Fully Qualified Domain Name (FQDN) and local and global keys configured by IP address.
`server-certificate`	Shows all the IKE server certificates used to authenticate the controller for VPN clients.
`xauth`	Shows the IKE XAuth configuration for VPN clients.

Usage Guidelines

Use the **show crypto-local isakmp** command to view IKE parameters.

Examples

This example shows sample output for the **show crypto-local isakmp allow-via-subnet-routes**, **show crypto-local ca-certificate**, **show crypto-local dpd**, **show crypto-local key**, **show crypto-local server-**

certificate and **show crypto-local xauth** commands:

```
(host) #show crypto-local isakmp allow-via-subnet-routes
Controller will accept subnet routes from via client

(host) #show crypto-local isakmp ca-certificate
ISAKMP CA Certificates
----------------------
CA certificate name  Client-VPN  # of Site-Site-Maps
-------------------  ----------  -------------------
Dell-Factory-CA      Y           0


(host) #show crypto-local isakmp certificate-group

ISAKMP Certificate Groups
-------------------------
Server certificate name  CA certificate name
-----------------------  -------------------


(host) #show crypto-local isakmp dpd
DPD is Enabled: Idle-timeout = 22 seconds, Retry-timeout = 2 seconds, Retry-attempts = 3


(host) #show crypto-local isakmp key
ISAKMP Local Pre-Shared keys configured for ANY FQDN
----------------------------------------------------
Key
---
ISAKMP Local Pre-Shared keys configured by FQDN
-----------------------------------------------
FQDN of the host    Key
----------------    ---
servers.mycorp.com  ********

ISAKMP Local Pre-Shared keys configured by Address
--------------------------------------------------
IP address of the host  Subnet Mask Length  Key
----------------------  ------------------  ---
10.4.62.10              32                  ********

ISAKMP Global Pre-Shared keys configured by Address
---------------------------------------------------
IP address of the host  Subnet Mask Length  Key
----------------------  ------------------  ---
0.0.0.0                 0                   ********


(host) (config) #show crypto-local isakmp server-certificate
ISAKMP Server Certificates
--------------------------
Server certificate name          Client-VPN  # of Site-Site-Maps
-----------------------          ----------  -------------------
Dell-Factory-Server-Cert-Chain  RAP-only    0


(host) #show crypto-local isakmp xauth
IKE XAuth Enabled.
```

Related Commands

Command	Description	Mode
crypto-local isakmp allow-via-subnet-routes	Use this command to allow a controller to accept VIA-published subnets.	Config mode
crypto-local isakmp ca-certificate	Use this command to assign the Certificate Authority (CA) certificate used to authenticate VPN clients.	Config mode
crypto-local isakmp certificate-group	Use this command to assign a certificate group so you can access multiple types of certificates on the same controller.	Config mode
crypto-local isakmp disable-aggressive-mode	Use this command to disable the IKEv1 aggressive mode.	Config mode
crypto-local isakmp dpd	Use this command to configure IKE Dead Peer Detection (DPD) on the local controller.	Config mode
crypto-local isakmp key	Use this command to configure the IKE preshared key on the local controller for site-to-site VPN.	Config mode
crypto-local isakmp server-certificate	Use this command to assign the server certificate used to authenticate the controller for VPN clients.	Config mode
crypto-local isakmp xauth	Use this command to enable the IKE XAuth for VPN clients.	Config mode

Command History

Release	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.1	The **show crypto-local isakmp certificate-group** command was introduced.
ArubaOS 6.3	The **disable-aggressive-mode** parameter was introduced.
ArubaOS 6.4.2.9, ArubaOS 6.4.3.3	The **peer** and **fqdn** sub-parameters were introduced.
ArubaOS 6.5.0.0	The **show crypto-local isakmp allow-via-subnet-routes** command was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show crypto-local pki

```
show crypto-local pki
   CRL [<name> ALL|crlnumber|fingerprint|hash|issuer|lastupdate|nextupdate]
   IntermediateCA
   [<name>ALL|alias|dates|fingerprint|hash|issuer|modulus|purpose|serial|subject]

   OCSPResponderCert
   [<name>ALL|alias|dates|fingerprint|hash|issuer|modulus|purpose|serial|subject]

   OCSPSignerCert
   [<name>ALL|alias|dates|fingerprint|hash|issuer|modulus|purpose|serial|subject]

   PublicCert
   [<name>ALL|alias|dates|fingerprint|hash|issuer|modulus|purpose|serial|subject]

   ServerCert
   [<name>ALL|alias|dates|fingerprint|hash|issuer|modulus|purpose|serial|subject]

   TrustedCA
   [<name>ALL|alias|dates|fingerprint|hash|issuer|modulus|purpose|serial|subject]

   crl-stats
   ocsp-client-stats
   rcp
   service-ocsp-responder [stats]
```

Descriptions

Issue this command to show local certificate, OCSP signer or responder certificate and CRL data and statistics.

Syntax

Parameter	Description
`CRL`	Shows the name, original filename, reference count and expiration status of all CRLs on this controller.
`<CRL name> ALL`	Shows the version, signature algorithm, issuer, last update, next update, and CRL extensions and all other attributes of this CRL.
`<CRL name> crlnumber`	Shows the number of this CRL.
`<CRL name> fingerprint`	Shows the fingerprint of this CRL.
`<CRL name> hash`	Shows the hash number of this CRL.
`<CRL name> issuer`	Shows the issuer of this CRL.
`<CRL name> lastupdate`	Shows the last update (date and time) at which the returned status is known to be correct.

Parameter	Description
`<CRL name> nextupdate`	Shows the next date and time (date and time) where the responder retrieves updated status information for this certificate. If this information is not present, then the responder always holds up to date status information.
`IntermediateCA`	Shows the name, original filename, reference count and expiration status of this certificate. **NOTE:** IntermediateCA has the identical sub-parameters as those listed under the TrustedCA parameter in this table.
`OSCPResponderCert`	Shows the name, original filename, reference count and expiration status of all ocsprespondercert certificates on this controller. **NOTE:** OCSPResponderCert has the identical sub-parameters as those listed under the TrustedCA parameter in this table.
`OCSPSignerCert`	Shows the OCSP Signer certificate. **NOTE:** OCSPSignerCert has the identical sub-parameters as those listed under the TrustedCA parameter in this table.
`PublicCert`	Shows Public key information of a certificate. This certificate allows an application to identify an exact certificate. **NOTE:** PublicCert has the identical sub-parameters as those listed under the TrustedCA parameter in this table.
`ServerCert`	Shows Server certificate information. This certificate must contain both a public and a private key (the public and private keys must match). You can import a server certificate in either PKCS12 or x509 PEM format; the certificate is stored in x509 PEM DES encrypted format on the controller. **NOTE:** ServerCert has the identical sub-parameters as those listed under the TrustedCA parameter in this table.
`TrustedCA`	Shows trusted CA certificate information. This certificate can be either a root CA or intermediate CA. Dell encourages (but does not require) an intermediate CA's signing CA to be the controller itself.
`<name> ALL`	Shows the version, signature algorithm, issuer, last update, next update, and CRL extensions and all other attributes of this certificate.
`<name> alias`	Shows this certificate's alias, if it exists.
`<name> dates`	Shows the dates for which this certificate is valid.
`<name> fingerprint`	Shows the certificate's fingerprint.

Parameter	Description
<name> hash	Shows the hash number of this certificate.
<name> issuer	Shows the certificate issuer.
<name> modulus	Shows the modulus which is part of the public key of the certificate.
<name> purpose	Shows the certificate's purposes such as if this is an SSL server, SSL server CA and so on.
<name> serial	Shows the certificate's serial number.
<name> subject	Shows the certificate's subject identification number.
crl-stats	Shows the CRL request statistics.
ocsp-client-stats	Shows the OCSP client statistics.
rcp	Shows the revocation check point.
service-ocsp-responder [stats]	Shows if OCSP responder service is enabled and shows statistics.

Usage Guidelines

Use the **show crypto-local pki** command to view all CRL and certificate status, OCSP client and OCSP responder status and statistics.

Example

This example displays a list of all OCSP responder certificates on this controller.

```
(host) (config) #show crypto-local pki OCSPResponderCert

Certificates
------------
Name                        Original Filename          Reference Count  Expired
--------------              -----------------          ---------------  -------
ocspJan28                   ocspresp-jan28.cer         0                No
ocspresp-standalone-feb21   ocspresp-feb21.cer         0                No
ocsprespFeb02               ocspresp-feb2.cer          1                No
OCSPresponder1              ocspresponder-new1.cer     0                No
ocspresponder2              subsubCA-ocsp-res-2.cer    0                No
OCSPresponderlatest         ocspresponder-latest.cer   0                No
```

The output of this command includes the following parameters:

Parameter	Description
Name	Name of the OCSP responder certificate.

Parameter	Description
Original Filename	Name of the original certificate when it was added to the controller.
Reference Count	Number of RCPs that reference this OCSP responder certificate, signer certificate or CRL.
Expired	Shows whether the controller has enabled or disabled client remediation with Sygate-on-demand-agent.

This example shows the dates for which this OCSP responder certificate is valid.

```
(host) (config) #show crypto-local pki OCSPResponderCert ocspJan28 dates
notBefore=Jan 21 02:37:47 2011 GMT
notAfter=Jan 20 02:37:47 2013 GMT
```

This example displays the certificate's hash number.

```
(host) (config) #show crypto-local pki OCSPResponderCert ocspJan28 hash 91dcb1b3
```

This example shows the purpose and information about this certificate.

```
(host) (config) #show crypto-local pki OCSPResponderCert ocspJan28 purpose
Certificate purposes:For validation
SSL client : No
SSL client CA : No
SSL server : No
SSL server CA : No
Netscape SSL server : No
Netscape SSL server CA : No
S/MIME signing : No
S/MIME signing CA : No
S/MIME encryption : No
S/MIME encryption CA : No
CRL signing : No
CRL signing CA : No
Any Purpose : Yes
Any Purpose CA : Yes
OCSP helper : Yes
OCSP helper CA : No
```

This example displays the certificate's subject.

```
(host) (config) #show crypto-local pki OCSPResponderCert ocspJan28 subject

subject= /CN=WIN-T1BQQFMVDED.security1.qa.mycorp.com
```

Related Commands

Command	Description	Mode
crypto-local pki	This command is saved in the configuration file and verifies the presence of the certificate in the controller's internal directory structure.	Config mode
crypto-local pki rcp <name>	Specifies the certificates that are used to sign OCSP responses for this revocation check point	Config mode

Command History

Version	Modification
ArubaOS 3.2	Command introduced.
ArubaOS 6.1	The following parameters were introduced: • CRL • Intermediate CA • OCSPResponderCert • OCSPSignerCert • global-ocsp-signer-cert • rcp • service-ocsp-responder

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode

show crypto map

```
show crypto ipsec map
```

Descriptions

This command displays the IPsec map configurations.

Syntax

Parameter	Description
map	

Usage Guidelines

Use the show crypto map command to view configuration for global, dynamic and default map configurations.

Examples

The command **show crypto map** shows statistics for the global, dynamic and default maps.

```
(host) (config) #show crypto map
Crypto Map "GLOBAL-IKEV2-MAP" 10000 ipsec-isakmp
Crypto Map Template"default-rap-ipsecmap" 10001
IKE Version: 2
IKEv2 Policy: DEFAULT
Security association lifetime seconds : [300 -86400]
Security association lifetime kilobytes: N/A
PFS (Y/N): N
Transform sets={ default-gcm256, default-gcm128, default-rap-transform }
Crypto Map "GLOBAL-MAP" 10000 ipsec-isakmp
Crypto Map Template"default-dynamicmap" 10000
IKE Version: 1
IKEv1 Policy: All
Security association lifetime seconds : [300 -86400]
Security association lifetime kilobytes: N/A
PFS (Y/N): N
Transform sets={ default-transform, default-aes }
```

Related Commands

Command	Description	Mode
crypto map global-map	Use this command to configure the default global map.	Config mode

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The output of this command displays the configured IKE version for the map.
ArubaOS 6.3	The output of this command displays the **Security association lifetime kilobytes** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show crypto pki

```
show crypto pki csr
```

Descriptions

This command displays the certificate signing request (CSR) for the captive portal feature.

Syntax

Parameter	Description
csr	

Usage Guidelines

Use the **show crypto pki** command to view the CSR output.

Examples

The command **show crypto pki** shows output from the **crypto pki csr** command.

```
(host) #show crypto pki csr

Certificate Request:
    Data:
        Version: 0 (0x0)
        Subject: C=US, ST=CA, L=Sunnyvale, O=sales, OU=EMEA,
CN=www.mycompany.com/emailAddress=myname@mycompany.com
        Subject Public Key Info:
            Public Key Algorithm: rsaEncryption
            RSA Public Key: (1024 bit)
                Modulus (1024 bit):
                    00:e6:b0:f2:95:37:d0:18:c4:ee:f7:bd:5d:96:85:
                    49:a3:56:63:76:ee:99:82:fe:4b:31:6c:80:25:c4:
                    ed:c7:9e:8e:5e:3e:a2:1f:90:62:b7:91:69:75:27:
                    e8:29:ba:d1:76:3c:0b:14:dd:83:3a:0c:62:f2:2f:
                    49:90:47:f5:2f:e6:4e:dc:c3:06:7e:d2:51:29:ec:
                    52:8c:40:26:de:ae:c6:a0:21:1b:ee:46:b1:7a:9b:
                    dd:0b:67:44:48:66:19:ec:c7:f4:24:bd:28:98:a2:
                    c7:6b:fb:b6:8e:43:aa:c7:22:3a:b8:ec:9a:0a:50:
                    c0:29:b7:84:46:70:a5:3f:09
                Exponent: 65537 (0x10001)
        Attributes:
            a0:00
    Signature Algorithm: sha1WithRSAEncryption
        25:ce:0f:29:91:73:e9:cd:28:85:ea:74:7c:44:ba:b7:d0:5d:
        2d:53:64:dc:ad:07:fd:ed:09:af:b7:4a:7f:14:9a:5f:c3:0a:
        8a:f8:ff:40:25:9c:f4:97:73:5b:53:cd:0e:9c:d2:63:b8:55:
        a5:bd:20:74:58:f8:70:be:b9:82:4a:d0:1e:fc:8d:71:a0:33:
        bb:9b:f9:a1:ee:d9:e8:62:e4:34:e4:f7:8b:7f:6d:3c:70:4c:
        4c:18:e0:7f:fe:8b:f2:01:a2:0f:00:49:81:f7:de:42:b9:05:
        59:7c:e4:89:ed:8f:e1:3b:50:5a:7e:91:3b:9c:09:8f:b7:6b:
        98:80
-----BEGIN CERTIFICATE REQUEST-----
MIIB1DCCAT0CAQAwgZMxCzAJBgNVBAYTAlVTMQswCQYDVQQIEwJDQTESMBAGA1UE
BxMJU3Vubnl2YWxlMQ4wDAYDVQQKEwVzYWxlczENMAsGA1UECxMERU1FQTEaMBgG
A1UEAxMRd3d3Lm15Y29tcGFueS5jb20xKDAmBgkqhkiG9w0BCQEWGXB3cmVkZHlA
```

```
YXJ1YmFuZXR3b3Jrcy5jb20wgZ8wDQYJKoZIhvcNAQEBBQADgY0AMIGJAoGBAOaw
8pU30BjE7ve9XZaFSaNWY3bumYL+SzFsgCXE7ceejl4+oh+QYreRaXUn6Cm60XY8
CxTdgzoMYvIvSZBH9S/mTtzDBn7SUSnsUoxAJt6uxqAhG+5GsXqb3QtnREhmGezH
9CS9KJiix2v7to5DqsciOrjsmgpQwCm3hEZwpT8JAgMBAAGgADANBgkqhkiG9w0B
AQUFAAOBgQAlzg8pkXPpzSiF6nR8RLq30F0tU2TcrQf97Qmvt0p/FJpfwwqK+P9A
JZz0l3NbU80OnNJjuFWlvSB0WPhwvrmCStAe/I1xoDO7m/mh7tnoYuQ05PeLf208
cExMGOB//ovyAaIPAEmB995CuQVZfOSJ7Y/hO1BafpE7nAmPt2uYgA==
```

-----END CERTIFICATE REQUEST-----

Related Commands

Command	Description	Mode
crypto	Use this command to generate a certificate signing request (CSR) for the captive portal feature.	Enable mode
crypto pki-import	Use this command to import certificates for the captive portal feature.	Enable mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show database

```
show database synchronization
```

Description

Shows database synchronization status.

Syntax

No parameters.

Usage Guidelines

Issue this command to show the status database synchronization status.

Example

This example shows a database synchronization status.

```
(host) #show database synchronize

Last synchronization time: Not synchronized since last reboot

Periodic synchronization is enabled and runs every 25 minutes
```

Related Commands

Command	Description	Mode
database synchronize	Show the output of the database synchronize command.	Enable and Config modes

Command History

Release	Modification
ArubaOS 3.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master and local controllers

show datapath

```
acl id <ACL-id>
acl {[ap-name <ap-name> | ip-addr <ip-address>] name <acl-name> type <acl-type>}
amsdu tx
application {ap-name <ap-name>|counters|ip-addr <ip-address>}
bridge [ap-name <ap-name>|counters|ip-addr <ip-address>|table
 <macaddr>|verbose]
bwm table
compression
cp-bwm
crypto
debug {dma counters|epa|eth1info|opcode|performance|pkttrace-buffer|
 trace-buffer|trace-route}
dhcp {vm-mac}
dpi
error [counters]
esi table
exthdr
firewall-agg-sess [counters]
fqdn
frame {ap-name <ap-name>|counters|ip-addr <ip-address>}
hardware {counters|statistics}
internal dir <dir>|file <file>
ip-fragment-table {ipv4|ipv6}
ip-geolocation [counters]
ip-mcast
ip-reassembly {ap-name <ap-name>|counters|ip-addr <ip-address>|ipv4|ipv6}
ip-reputation [counters|rtc]
ipv6-mcast
lag table
maintenance counters
message-queue counters
mobility {discovery-table|home-agent-table|mcast-table|stats}
nat {ap-name <ap-name>|counters|ip-addr <ip-address>}
network ingress
nexthop-list
papi counters
port
rap-bw-resv
rap-pkt-trace
rap-stats
route {ap-name <ap-name>|counters|ip-addr <ip-address>]|ipv4|ipv6|table |verbose}
route-cache {ap-name <ap-name>|counters|ip-addr <ip-address>|ipv4|ipv6|table|verbose}
services
session ap-name <ap-name>
session counters
session dpi{counters [all[top]|top[all]}|table <ip-address> <app-id>]|appid ip-addr <ip-ad
dress>}
session ip-addr <ip-address>|[counters|table <ip-address>]
session ip-classification
session ipv6 {counters|table <ipv6 address>|verbose}
session session-id dpi
session web-cc
station [counters|mac <macaddr>|table]
tcp {app <app>|counters|tunnel}
tunnel [counters|heartbeat|ipv4|ipv6|station-list|table|tunnel-id
 |verbose]
tunnel-group
user {ap-name <ap-name>|counters|ip-addr <ip-address>|ipv4|ipv6|table}
```

```
utilization
vlan {ap-name <ap-name>}|{ip-addr <ip-address>|table}
vlan-mcast
web-cc [counters]
wifi-reassembly counters
wmm counters
```

Descriptions

Displays system statistics for your controller.

Syntax

Parameter	Description
`acl id <id-name>`	Displays datapath statistics associated with a specified ACL. The ACL index is found in the **show rights** command.
`amsdu tx`	Shows datapath AMSDU TX queue statistics
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-address>`	IP address of the AP
`application counters`	Shows application counters and errors generated by applications running on a particular AP. These include stateful firewall application layer statistics.
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-address>`	IP address of the AP.
`bridge`	Shows bridge table entry statistics including MAC address, VLAN, assigned VLAN, Destination and flag information for an AP.
`ap-name <ap-name>`	Name of the AP. Shows MAC address, VLAN, assigned VLANs, destination and flags information.
`counters`	Shows datapath bridge table statistics such as current entries, high water mark, maximum entries, total entries, allocation failures and max link length.
`ip-addr <ip-address>`	IP address of the AP. Shows MAC address, VLAN, assigned VLANs, destination and flags information.
`table <macaddr>`	Displays the current high, maximum, and total number of bridge table entries for the Dell controller.
`verbose`	Displays datapath bridge details in a tabular format.

Parameter	Description
bwm	Displays the following bandwidth management table entry statistics: • Type: Indicates whether the contract is a control plane denial-of-service contract (0), a contract configured through the bandwidth management WebUI or CLI Interfaces (1), or a contract for multicast traffic generated by the controller(2). • Cont ID: An ID number unique to each contract. • Rate: Contract traffic rate, in 256-byte packets/second. • Policed: The number of packets dropped because the policy was applied. • Avail Credits: This value is the (contract rate)/32, and is used for internal debugging purposes. • Queued Pkts/ Bytes: Number of bytes/pkts currently being queued. • Flags: Flags applied to the contract. • CPU: A value in this column indicates that the traffic passed through the slowpath CPU, and is used for internal debugging purposes. • Status: Indicates whether the bandwidth contract has been successfully applied.
ap-name <ap-name>	View a bandwidth contract for a specific AP.
ip-addr <ip-addr>	View a bandwidth contract for an AP with the specified IP address.
table	Display a table of all configured bandwidth contracts.
type	Display only bandwidth contracts of a specific type (0,1 or 2).
compression	Displays datapath compression statistics. By default, the combined statistics of all CPUs are shown.
cp-bwm	Displays the data path CP bandwidth management table information.
crypto counters	Displays crypto parameter statistics including crypto, IPsec, PPTP, WEP, TKIP, AESCCM encryption and decryptions, WEP CRC, crypto hardware, XSEC, DOT1X, and L2TP information.
debug	Displays datapath debug details. These are low-level datapath details.

Parameter	Description
dma counters	DMA statistics are displayed.
eap counters	EAP termination statistics are displayed.
eth1info	Displays IPv4 fragment table statistics.
memory	Displays SOS memory statistics.
opcode	Displays datapath debugging information. **NOTE:** Use this command only under the supervision of Dell technical support.
performance all	Displays datapath debug performance statistics including the SUM/CPU, addr, and description.
<id>	Displays datapath performance counters by specified CPU ID display.
counters	Displays datapath performance counters.
event-guide	Displays : • COP0 Events • L3 Cache Events • NAE-RX Events • NAE-TX Events (by register index 0-4)
verbose	Displays debug performance statistics including: SUM/CPU, addr, description, value, and difference from last show.
dhcp	Datapath DHCP -related information.
dpi application <appid>	Displays the Deep Packet Inspection application default ports.
error	Datapath error statistic errors.
counters	Show datapath errors including SUM, CPU, Addr and description information.
esi table	Displays the contents of the datapath ESI server table entries including server, IP, MAC, destination, VLAN, type, session and flag information.

Parameter	Description
exthdr	Displays the datapath default IPv6 Extended Header Map.
firewall-agg-sess	Displays the datapath firewall aggregated sessions table.
counters	Displays the datapath aggregate session statistics.
fqdn	Displays datapath fully qualified domain name (FQDN) entries.
frame counters	Displays frame statistics that are received and transmitted from the data path of the controller. Several output fields include the following descriptions: • **Descr failures**-This is the number of times a packet descriptor was not available and the packet dropped. • **Dot1QDiscards**-The number of packets received on a trunk port where the VLAN presented did not match any configured on the controller and the packet dropped. • **Dot1d Discards**-Spanning tree is disabled and each BPDU frame is counted and dropped. • **Denied Frames**-Frames that are denied by the ACL's data path of the controller.
ap-name <ap-name>	Name of the AP.
ip-addr <ip-address>	IP address of the AP.
hardware	Displays datapath hardware counters and hardware packet statistics information.
internal	Internal details are displayed.
dir <dir>	Hardware directory
file <file>	File in the directory.
ip-fragment-table	Displays ip-fragment statistics including CPU, current entries, high water mark, max , total, and aged entries.
ipv4	Displays IPv4 fragment statistics.
ipv6	Displays IPv6 fragment statistics.

Parameter	Description
counters	Hardware counters.
statistics	Hardware packet statistics.
ip-geolocation	Datapath IP geolocation table entries.
counters	Displays IP geolocation statistics.
ip-mcast	Displays the Datapath IP Multicast Entries table statistics.
client	Datapath Layer 3 groups for specified client.
destination	Datapath tunnel and port membership.
group	Datapath Layer 3 groups.
station	Datapath station membership.
ip-reassembly	Displays the contents of the IP Reassembly statistics tables.
ap-name <ap-name>	Name of the AP.
counters	IP reassembly counters.
ip-addr <ip-address>	IP address of the AP
ipv4	Displays the IPv4 contents of the IP Reassembly statistics table.
ipv6	Displays the IPv6 contents of the IP Reassembly statistics table.
ip-reputation	Datapath IP reputation table entries.
counters	Displays IP reputation statistics.
rtc	Displays IP reputation real time cache.
ipv6-mcast	Displays the datapath IP multicast table statistics.
destination	Displays the IPv6 tunnel and port membership.
group	Displays the IPv6 multicast group.
station	Displays the IPv6 station membership.

Parameter	Description
`lag table`	Displays contents of the datapath link aggregation group (LAG) or port channel table.
`message-queue counters`	Displays statistics of messages received by a CPU from other datapath CPUs (only CPUs that receive messages and non-zero statistics are shown).
`maintenance counters`	Displays datapath maintenance statistics.
`mobility`	Displays datapath IP mobility information.
`discovery-table`	Displays the discovery count table that is used to keep track of per client home agent discovery.
`home-agent-table`	Displays the datapath HA table information.
`mcast-table`	Displays the mobility multicast-group table that is used to flood the multicast RA traffic to the roamed clients.
`stats`	Displays the statistics of the datapath mobility.
`nat`	Displays the contents of the datapath NAT entries table. It displays NAT pools as configured in the datapath. Statistics include pool, SITP start, SIP end and DIP.
`network ingress`	Displays ingress queue counters.
`ap-name <ap-name>`	Name of AP.
`counters`	Nat counters.
`ip-addr <ip-address>`	IP address of the AP.
`nexthop-list`	Displays the following types of information about the dapath for packets routed to next-hop devices. • SOS Dest : Unique datapath identifier for each next-hop list • Active IP: • NhIdx: Unique identifier for each next-hop list • NhVer: Internally generated number used to synchronize the next-hop and session tables.
`papi`	Displays datapath papi counters including: SUM/CPU, addr, description, and value.

Parameter	Description
`port`	Displays the datapath port table information. This includes the port number, PVID, Ingress ACL, Egress ACL, Session ACL, and the following flags: • B: Blocked by the Spanning Tree protocol • L: LSG • M: Tunneled node • Q: Trunk • T: Trusted • X: xSec • Z: QinQ
`link-event`	Displays port link up and link down event counters.
`monitor`	Displays the monitor port configuration.
`stats <slot>/<module>/<port>`	Displays the physical port statistics.
`status <slot>/<module>/<port>`	Displays the physical port status.
`trusted`	Displays the trusted ports.
`tunneled-node`	Displays the tunneled node ports.
`untrusted-vlan <slot>/<module>/<port>`	Show if there are untrusted vlan entries for the indicated slot and port.
`xsec`	Displays the xsec ports.

`rap-bw-resv`
`ap-name`
`ip-addr`
	Displays the remote AP uplink BW reservation statistics of the RAP only.

`rap-pkt-trace`
`ap-name`
`ip-addr`
	Displays the remote AP packet-trace statistics of the RAP only.

`rap-stats`
`ap-name`
`ip-addr`
	Displays the remote AP statistics of the RAP only.

`route`	Displays datapath route table statistics.
`ap-name <ap-name>`	Name of the AP.

Parameter	Description
counters	Displays route table statistics such as current entries, high water mark, maximum entries, total entries, allocation failures and max link length.
ip-addr <ip-address>	IP address of the AP.
ipv4	Displays datapath IPv4 routing table.
ipv6	Displays datapath IPv6 routing table.
table	Displays route table entries such as IP, mask, gateway, cost, VLAN and flags.
verbose	Displays all detailed route table entries including IP, mask, gateway, cost, VLAN, flags, Internal VerNum Index.
route-cache	Displays datapath route cache table statistics.
ap-name <ap-name>	Name of the AP.
counters	Displays route cache table statistics such as current entries, high water mark, maximum entries, total entries, allocation failures and max link length.
ip-addr <ip-address>	Address of IP.
ipv4	Displays datapath IPv4 route cache.
ipv6	Displays datapath IPv6 route cache.
table	Displays route cache table entries such as IP, mask, gateway, cost, VLAN and flags.
verbose	Displays all detailed route cache table entries including IP, mask, gateway, cost, VLAN, flags, Internal VerNum Index.
services	Displays the datapath services table statistics including protocol, port and service.
session	Displays datapath session statistics.
ap-name <ap-name>	Name of AP.

Parameter	Description
`counters`	Displays counters statistics including current entries, high water mark, maximum entries, total entries, allocation failures, duplicate entries, cross linked entries, number of reverse entries and maximum link length.
`dpi`	Displays Deep Packet Information for this session. The output includes: • **AclVersion:** This is used to store the current version number of the ACL that is used at session creation time and is used for troubleshooting purposes. • **PktsDpi:** The number of packets sent to the DPI engine for a given session. • **AceIdx:** The Index of the Access List entry (in a given ACL) that triggered a match during session creation. • **DpiTIdx:** This is an index to the DPI engine Tbl and is only used for troubleshooting purposes.
`ip-addr <ip-address>`	IP address of the AP.
`ip-classification`	IP reputation/geolocation information for session.
`ipv6`	Displays datapath IPv6 session entries and statistics including current entries, high water mark, maximum entries, total entries, allocation failures, duplicate entries, cross linked entries, number of reverse entries and maximum link length.
`session-id`	Displays datapath session FIB for a given session index.
`table`	Displays all the IP flows of a wireless device or Dell AP. Statistics include table entries including source IP, destination IP, protocol, SPort, DPort, Cntr, priority, ToS, age, destination, TAge and flags.
`verbose`	Displays additional information about the session that can be used by technical support for debugging purposes.
`web-cc`	Displays web-content category information about the session. The output of this command includes the following data columns: • **WebCC rep**: Reputation score (integer). To see the reputation type associated with that particular score, issue the command **show web-cc reputation**.

Parameter	Description
	• **WebCCID**: Web content category ID. To see the name of the category associated with that category ID, issue the command **show web-cc category**. • **WebCCU**: URL for that session entry.
station	Displays datapath station association table statistics.
counters	Display the current and high water mark amount of 802.11 associated wireless devices on a controller. Values output from this command represent the water-marks since the last boot of the controller. This is the same value obtainable from the Num Associations output from the **show stm connectivity** command.
mac <macaddr>	Hardware address, in hexadecimal format.
tcp	Displays contents of the tcp tunnel table. This command displays all tcp tunnels that are terminated by the controller.
app <app>	Name of the application.
counters	Displays the tcp tunnel statistics.
tunnel	Displays the tcp tunnel table.
table	This command displays the Datapath Station Table Statistics detail. Display all associated wireless devices on the controller with their corresponding AP BSSID and VLAN ID. Displays the wireless device is associated with the correct encryption type (if the device is associated to an AP BSSID that has encryption enabled and verifies whether the controller is having a problem in decrypting the wireless device's frames.
tunnel	Displays contents of the datapath tunnel table. This command displays all the tunnels that are terminated by the controller, including Dell AP's GRE tunnels. For example, a GRE tunnel is created and terminated on the Dell controller for every SSID/BSSID configured on the Dell AP. You can filter and view the tunnel using the following options: • counters • encaps • heartbeat

Parameter	Description
	• ipv4 • ipv6 • station-list • table • tunnel-id • verbose
counters	Tunnel counters.
heartbeat	Displays the datapath heartbeat tunnel details.
ipv4	Displays the TCP tunnel table filtered on IPv4 entries.
ipv6	Displays the TCP tunnel table filtered on IPv6 entries.
station-list	Displays the list of stations on the tunnel.
table	Tunnel table statistics.
tunnel-group	Displays the tunnel group, active status and members.
user	Displays datapath user statistics such as current entries, pending deletes, high water mark, maximum entries, total entries, allocation failures, invalid users and maximum link length.
ap-name <ap-name>	Name of AP.
counters	User counters.
ip-addr <ip-address>	IP address of the AP.
ipv4	Displays datapath IPv4 user entries and statistics such as current entries, pending deletes, high water mark, maximum entries, total entries, allocation failures, invalid users, and maximum link length.
ipv6	Displays datapath IPv6 user entries and statistics such as current entries, pending deletes, high water mark, maximum entries, total entries, allocation failures, invalid users, and maximum link length.
table	User table statistics.

Parameter	Description
`utilization`	Displays the current CPU utilization of all datapath CPUs.
`vlan`	Displays VLAN table information such as VLAN memberships inside the datapath including Layer 2 tunnels which tunnel L2 traffic.
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-address>`	IP address of AP.
`table`	Displays VLAN number, flag, port and datapath VLAN multicast entries.
`vlan-mcast`	Displays the datapath VLAN multicast table.
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-address>`	IP address of AP.
`table`	Displays datapath VLAN Multicast table entries.
`web-cc [counters]`	Displays web content classification table information. The output of this command includes the following data columns: • **WebCC rep**: Reputation score (integer). To see the reputation type associated with that particular score, issue the command **show web-cc reputation**. • **WebCCID**: Web content category ID. To see the name of the category associated with that category ID, issue the command **show web-cc category**. • **WebCCU**: URL for that session entry. Include the optional **counters** parameter to display the maximum number of entries allowed in the web content category table.
`wifi-reassembly counters`	Displays WiFi reassembly counters including CPU, current entries, high water-mark, maximum entries, total entries, and allocation failures.
`wmm counters`	Displays VOIP statistics, including the number of uplink and downlink resets.

Usage Guidelines

Use the **show datapath** command to display various datapath statistics for debugging purposes.

Example

The following example displays the discovery count table that keeps track of per client home agent discovery:

```
(host) #show datapath mobility discovery-table
Datapath Mobility Discovery Count Table
-----------------------------------------------
Index     Valid    Version   Retry#    No-Response    Ack      Mac                Vlan
-------   ------   -------   ------    -----------    ------   --------------     -----
1         1         2        1         a              0        10:78:D2:FA:7D:38  74
```

The following example displays the datapath HA table information:

```
(host) #show datapath mobility home-agent-table
Datapath Mobility Home Agent Table
----------------------------------
Switch IP
---------------
10.16.19.14
10.16.19.140
```

The following example displays the mobility multicast-group table that floods the multicast RA traffic to the roaming clients:

```
(host) # show datapath mobility mcast-table
Datapath Mobility Multicast Table
---------------------------------
GRE Tunnel   HomeVlan   McastGroup   Members
----------   --------   ----------   -------
0x10009        501            0   1
```

The following example displays the statistics of the datapath mobility:

```
(host) #show datapath mobility stats
Datapath Mobility Stats
Mcast group entry alloc errors           : 0
Frames flooded over MMG (@HA)            : 0
Frames subjected to MMG (@FA)            : 0
Frames sent to roamed clients            : 0
HA Discovery failure to notify NACK      : 0
HA Discovery invalid DCT                 : 0
HA Discovery DCT allocation failed       : 0
HA Discovery Probes sent                 : 0
HA Discovery NULL bridge entry in DCT    : 0
HA Discovery failed to start             : 0
HA Discovery successfully started        : 0
HAT insert failure                       : 0
HAT insert success                       : 0
HAT delete failure                       : 0
HAT delete success                       : 0
```

The following example displays the mobility multicast VLAN table information:

```
(host) #show ip mobile multicast-vlan-table
Mobility Multicast Vlan Table
-----------------------------
Client MAC           Home vlan  Current vlan
----------           ---------  ------------
40:2C:F4:36:16:07    501        501
```

The following example displays a list of tunnels.

```
(host) (config) #show datapath tunnel
+----+------+-------------------------------------------------------+
|SUM/|      |                                       |               |
|CPU | Addr | Description                                     Value |
+----+------+-------------------------------------------------------+
```

```
|    | [04] | Tunnel FIB stale                                    37368 |
+----+------+----------------------------------------------------------+
|    |      |                                                          |
| G  | [00] | Current Entries                                        15 |
| G  | [02] | High Water Mark                                        15 |
| G  | [03] | Maximum Entries                                     49152 |
| G  | [04] | Total Entries                                          29 |
| G  | [06] | Max link length                                         1 |
| G  | [07] | Current Tunnel FIB                             4294967295 |
| G  | [08] | Tunnel FIB recompute                                37368 |
+----+------+----------------------------------------------------------+
Datapath Tunnel Table Entries
-----------------------------
Flags: E - Ether encap,  I - Wi-Fi encap,  R - Wired tunnel,  F - IP fragment OK
W - WEP,  K - TKIP,  A - AESCCM,  G - AESGCM,  M - no mcast src filtering
S - Single encrypt,  U - Untagged,  X - Tunneled node,  1(cert-id) - 802.1X Term-PEAP
2(cert-id) - 802.1X Term-TLS,  T - Trusted,  L - No looping, d - Drop Bcast/Mcast,
D - Decrypt tunnel,  a - Reduce ARP packets in the air, e - EAPOL only
C - Prohibit new calls, P - Permanent, m - Convert multicast
n - Convert RAs to unicast(VLAN Pooling/L3 Mobility enabled), s - Split tunnel
V - enforce user vlan(open clients only)
H - Standby (HA-Lite)
#          Source       Destination    Prt  Type  MTU   VLAN       Acls                BSSID
       Decaps     Encaps   Heartbeats Flags  EncapKBytes  DecapKBytes
------  -------------  -------------  ---  ----  ----  ---- --------------------  -----------
------ ---------- ---------- ---------- ----- ------------ -----------
10      10.15.46.20     10.15.47.104    47   8200  1500  10   0    0    1    0
00:24:6C:80:05:68      11735        136          0 IMSPa
9       10.15.46.20     10.15.47.105    47   8200  1500  10   0    0    1    0
D8:C7:C8:F1:14:E8      10674        234          0 IMSPa
13      10.15.46.20     10.15.47.105    47   8300  1500  10   0    0    1    0
D8:C7:C8:F1:14:E0       8577          0          0 IMSPa
12      10.15.46.20     10.15.47.105    47   9000  1500  0    0    0    0    0
D8:C7:C8:C7:11:4E     183230          0     180225 TES
15      10.15.46.20     10.15.47.104    47   8300  1500  10   0    0    1    0
00:24:6C:80:05:60     433930     829442          0 IMSPa
14      10.15.46.20     10.15.47.104    47   9000  1500  0    0    0    0    0
00:24:6C:C0:00:56     183252          0     180246 TES
```

The following example displays output of L2 GRE Tunnel Interface.

```
(host) (config) #show datapath tunnel ipv6
Datapath Tunnel Table Entries
-----------------------------
Flags: E - Ether encap,  I - Wi-Fi encap,  R - Wired tunnel,  F - IP fragment OK
W - WEP,  K - TKIP,  A - AESCCM,  M - no mcast src filtering
S - Single encrypt,  U - Untagged,  X - MUX,  1 - 802.1X Term
T - Trusted,  L - No looping, d - Drop Bcast/Mcast, D - Decrypt tunnel
a - Reduce ARP packets in the air, e - EAPOL only
C - Prohibit new calls, P - Permanent, m - Convert multicast, n - Convert RAs to unicast(VLAN
Pooling/L3 Mobility enabled),
V - enforce user vlan(open clients only)
H - Standby (HA-Lite)
#      Source          Destination         Prt  Type  MTU   VLAN OVLAN        Acls    BSSID
          Decaps     Encaps   Heartbeats   Flags
------ -------------  -------------------- ---  ----  ----  ---- ----- -------------- --------
---------  --------- --------- -----------  -----
16     2046:eab::25    2047:eab::25        47   0     1280  0    0      0    0    0
00:00:00:00:00:00   119209     25535    28873        TEFPR
```

The following example displays a partial list of crypto parameter statistics.

```
(host) (config) #show datapath crypto counters

Datapath Crypto Statistics
```

```
-------------------------
Crypto Accelerator          Present
Crypto Cores In Use         1
Crypto Cores Total          4
Crypto Requests Total       16
Crypto Requests Queued      0
Crypto Requests Failed      0
Crypto Timeouts             0
Crypto NoCoreFree           0
Crypto BadNPlus             0
Crypto SendNPlusFailed      0
IPSec Encryption Failures   0
IPSec Decryption Failures   0
IPSec Decryption Loops      0
IPSec Decryption BufFail    0
IPSec Decr SPI(client) ERR  0
IPSec Decrypt SA Not Ready  0
IPSec Frag Failures         0
IPSec Bad Pad Length        0
IPSec Invalid TCP Index     0
IPSec Invalid Length        0
IPSec Invalid Head-Room     0
IPSec Invalid Protocol      0
PPTP Encryption Failures    0
PPTP Decryption Failures    0
WEP Encryption Failures     0
WEP Decryption Failures     0
WEP No Key (not serious)    0
TKIP Encryptions            0
TKIP Encryption Failures    0
TKIP Decryptions            0
TKIP Decryption Failures    0
TKIP MIC Failures   0
TKIP Decrypt Bad Counter    0
TKIP P1Key Not Ready        0
...
```

The following parameters appear in the output of the **show datapath crypto counters** command, and are useful for debugging purposes.

Parameter	Description
`Crypto BadNPlus`	Indicates a queue overrun in the output of the encryption circuit.
`Crypto SendNPlusFailed`	Indicates a queue overrun in the input of the encryption circuit.
`IPSec Frag Failures`	This counter increments when the AP detects a failure to fragment a frame before or after IPsec encryption.
`IPSec Invalid Length`	The inbound IPsec frame length is verified before and after decryption. If the frame length is found to be incorrect , this counter is incremented.
`IKE Rate`	When the controller firewall receives a UDP packet, it determines if the packet is destined for an IKE (500) or IPSEC_NATT (4500) port. This counter increments when the AP receives an initial IKE packet that has an 8-byte responder cookie defined all 0s.

Example of the **show datapath compression** command output

```
+----+------+-----------------------------------------------------+
|SUM/|      |                                     |                 |
|CPU | Addr | Description                                    Value |
+----+------+-----------------------------------------------------+
|    | [00] | Compression Engine Present                      True |
|    | [01] | Comp Response received                           150 |
|    | [02] | Comp Response failed                               0 |
|    | [03] | Decomp Requests                                   80 |
|    | [04] | Decomp Response received                          80 |
|    | [05] | Decomp Requests queued                            75 |
| G  | [06] | Compression Engine Total                           4 |
+----+------+-----------------------------------------------------+
```

The following output displays the

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 5.0	The **tcp** parameter was introduced.
ArubaOS 6.1	The **crypto counters** parameter now displays a number of TKIP/AESCCM/AESGCM decriptions per priority level along with any counter errors per priority. The **ipv6** filter option is added to the following parameters in the command: • **session** • **tunnel** • **user** • **route-cache** • **route** • **ip-reassembly**
ArubaOS 6.1.3.2	The **debug opcode** parameter was introduced. Issue this command only under the supervision of Dell technical support.
ArubaOS 6.2	• The **firewall-agg-sess** parameter is introduced. • The **heartbeat** parameter is introduced.
ArubaOS 6.3	The following parameters were introduced: • **a-msdu** • **mobility** • **tunnel-group** The output of the **bridge ap-name** parameter, displays a new flag **b - blocked by STP** to indicate whether the firewall considers the port to be blocked.
ArubaOS 6.4	The following parameters were introduced:

Version	Description
	• **dpi** • **session dpi** • **session ipv6 dpi** • **session session-id dpi**
ArubaOS 6.4.1.0	The following parameters were introduced as part of the **show datapath frame** command output: • **Excessive ARP Requests** • **Excessive Gratuitous ARP Requests** The **acl id <ACL-id>** parameter was added.
ArubaOS 6.4.2.0	• The **session web-cc** parameter was introduced. This command displays web-content category information about the session. • The **web-cc** parameter was introduced. This command parameter displays web-content classification table information, including the web content category ID, reputation score, and URL.
ArubaOS 6.4.3.0	The following changes were introduced: • The **compression** parameter displays datapath compression statistics. By default, the combined statistics for all CPUs are shown. • The output of the **show datapath session** command now supports the **r** flag,which indicates that the session was routed through a nexthop device defined by a nexthop-list. For more information, see ip nexthop-list. • The output of the **show datapath cp-bwm** command now displays the rate in pps.
ArubaOS 6.5	The following parameters were introduced: • **ip-geolocation [counters]** • **ip-reputation [counters|rtc]** • **session ip-classification**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show destination

```
show destination <string>
```

Description

Display the aliases for default and user-defined network destinations.

Syntax

Parameter	Description
`string`	Optional parameter to view details of a specific destination alias.

Example

This example displays the network destinations configured in the controller.

```
(host) #show destination
controller
----------
Position  Type  IP addr      Mask/Range
--------  ----  -------      ----------
1         host  10.16.15.1

user
----
Position  Type     IP addr           Mask/Range
--------  ----     -------           ----------
1         network  255.255.255.255   0.0.0.0

mswitch
-------
Position  Type  IP addr      Mask/Range
--------  ----  -------      ----------
1         host  10.16.15.1

any
---
Position  Type     IP addr   Mask/Range
--------  ----     -------   ----------
1         network  0.0.0.0   0.0.0.0
```

The output of this command includes the following parameters:

Parameter	Description
`Position`	Displays the priority position of the alias.
`Type`	The rule type of the destination alias.

Parameter	Description
`IP addr`	The IP address configured in the alias. This can be a network address, host address or a range.
`Mask/Range`	Network mark or the IP address range.

Command History

This command was available in ArubaOS 1.0.

Replaced with `netdestination` in 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	You must have a PEFNG license to configure or view a destination.	Enable or Config mode on master and local controllers

show dialer group

```
show dialer group
```

Description

Display dialer group information.

Syntax

No parameters.

Usage Guidelines

Displays the Dialer Group Table with the current dialing parameters.

Example

```
(host) #show dialer group
Dialer Group Table
------------------
Name     Init String                       Dial String
----     -----------                       -----------
evdo_us  ATQ0V1E0                          ATDT#777
gsm_us   AT+CGDCONT=1,"IP","ISP.CINGULAR"  ATD*99#
```

Command History

Introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

show dir (deprecated)

```
show dir usb: disk <disk-name><filesystem-path>
```

Description

Display the list of directories in the specified disk and the filesystem path.

Command History

This command was introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

show dot1x ap-table

```
show dot1x ap-table
```

Description

Shows the 802.1X AP table.

Syntax

No parameters.

Example

Issue this command to display details from the AP table.

```
AP Table
--------
MAC               IP         Essid       Type AP name           Vlan Enc          Stations
Forwarding-Mode       Profile          Acl
---               --         -----       ---- -------           ---- ---          -------- ---
------------       -------         ---
00:1a:1e:87:ff:c0 10.3.9.242             AP   00:1a:1e:c0:7f:fc 0    -            0
FORWARD_TUNNEL_80211  default/        1
00:1a:1e:87:ff:d0 10.3.9.242 sw-pn-nokia AP   00:1a:1e:c0:7f:fc 0    WPA2-AES     0
FORWARD_TUNNEL_80211  default/default 1
00:1a:1e:82:ab:a0 10.3.9.220             AP   monitor-124       0    -            0
FORWARD_TUNNEL_80211  default/        1
00:1a:1e:82:ab:b0 10.3.9.220             AP   monitor-124       0    -            0
FORWARD_TUNNEL_80211  default/        1
00:1a:1e:87:ff:d1 10.3.9.242 sw-pn-t2    AP   00:1a:1e:c0:7f:fc 0    WPA2-PSK-AES 0
FORWARD_TUNNEL_80211  default/default 1
Num APs: 5
```

The output of this command includes the following parameters:

Parameter	Description
MAC	The MAC address of the AP
IP	The IP address of the AP
Essid	The AP's ESSID
Type	Device type
AP name	Name of the AP
Vlan	Number of VLANs associated with the specified AP
Enc	AP's encryption method
Stations	Number of stations associated with the specified AP

Parameter	Description
`Forwarding Mode`	Forwarding mode used by the specified AP
`Profile`	AP profile
`Acl`	Number of ACLs this AP belongs to

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x ap-table aes

```
show dot1x ap-table aes
```

Description

Shows the AES keys of all APs.

Syntax

No parameters.

Example

Issue this command to display AES keys of all APs.

```
AP Table Showing AES Keys
-------------------------
AP-MAC             GTK/Size/Slot
------             -------------
00:1a:1e:87:ff:d0  * * * * * * * */128-Bit/1
00:1a:1e:87:ff:d1  * * * * * * * */128-Bit/1
```

The output of this command includes the following parameters:

Parameter	Description
AP-MAC	AP MAC address
GTK/Size/Slot	GTK: The group temporal key Size: Size of the AES key Slot: Slot number

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x ap-table dynamic-wep

```
show dot1x ap-table dynamic-wep
```

Description

Shows the dynamic WEP keys of all APs.

Syntax

No parameters.

Example

Issue this command to display dynamic keys of all APs.

```
Dynamic-WEP Key Information
---------------------------
AP-MAC  Key1/Size/Slot  Key2/Size/Slot
------  --------------  --------------
Num APs: 0
```

The output of this command includes the following parameters:

Parameter	Description
AP-MAC	AP MAC address
Key1/Size/Slot	Key1: The WEP key Size: Size of the WEP key Slot: Slot number
Key12/Size/Slot	Key2: The WEP key Size: Size of the WEP key Slot: Slot number

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x ap-table static-wep

```
show dot1x ap-table static-wep
```

Description

Shows the static WEP keys of all APs.

Syntax

No parameters.

Example

Issue this command to display the static WEP keys of all APs.

```
Static-WEP Key Information
--------------------------
AP-MAC  Key1/Size  Key2/Size  Key3/Size  Key3/Size
------  ---------  ---------  ---------  ---------
Num APs: 0
```

The output of this command includes the following parameters:

Parameter	Description
`AP-MAC`	AP's MAC address
`Key1/Size`	WEP key 1 and its size
`Key2/Size`	WEP key 2 and its size
`Key3/Size`	WEP key 3 and its size
`Key3/Size`	WEP key 3 and its size

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x ap-table tkip

```
show dot1x ap-table tkip
```

Description

Displays a table of TKIP keys on the controller.

Syntax

No parameters.

Example

Issue this command to display all TKIP keys.

```
AP Table Showing TKIP Keys
--------------------------
AP-MAC             GTK/Size/Slot
------             -------------
00:1a:1e:6f:e5:10  * * * * * * * */256-Bit/1
Num APs: 1
```

The output of this command includes the following parameters:

Parameter	Description
AP-MAC	AP MAC Address
GTK/Size/Slot	GTK: The group temporal key Size: Size of the AES key Slot: Slot number

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x counters

```
show dot1x counters
```

Description

Displays a table of dot1x counters.

Example

Issue this command to display all 802.1X counter information.

```
802.1X Counters

AP
 Sync Request...................4
 Sync Response..................3
 Up.............................4
 Down...........................1
 Resps..........................4
 Acl............................53
Station
 Sync Request...................9
 Sync Response..................9
 Up.............................2321
 Down...........................2272
 Unknown........................72
EAP
 RX Pkts........................4811
 Dropped Pkts...................4497
 TX Pkts........................5253
WPA
 Message-1......................2484
 Message-2......................63
 Message-3......................63
 Message-4......................63
 Group Message-1................63
 Group Message-2................63
 Rx Failed......................2418
 IE Mismatches..................4836
 Key Exchange Failures..........602
WPA2
 Message-1......................2630
 Message-2......................13
 Message-3......................13
 Message-4......................13
 Rx Failed......................2079
 IE Mismatches..................4158
 Key Exchange Failures..........549
Radius
 Accept.........................1217
Station Deauths.................1151
```

The output of this command includes the following parameters:

Parameter	Description
AP • Sync Request • Sync Response • Up • Down • Resps • Acl	• Number of sync requests sent • Number of sync responses sent • Number of times an AP has come up • Number of times an has gone down • Number of response messages sent to the AP due to an AP up message • Number of access control lists
Station • Sync Request • Sync Response • Up • Down • Unknown	• Number of sync requests sent to find all APs and stations that are connected • Number of sync responses received • Number of times a station (any station) connected to the AP • Number of times a station (any station) disconnected from the AP • Number of times a station attempted to start an EAP exchange before associating to an AP. In other words, the number of times the auth module saw the start of an EAP exchange before auth was notified that a station has associated an AP
EAP • RX Pkts • Dropped Pkts • TX Pkts	• Number of EAP packets received • Number of EAP packets dropped (ignored) for any reason, such as bad packet, length, EAP ID mismatch, etc. • Number of EAP packets sent
WPA • Message-1 • Message-2 • Message-3 • Message-4 • Group Message-1 • Group Message-2 • Rx Failed • IE Mismatches • Key Exchange Failures	• Number of WPA message-1s sent • Number of WPA message-2s sent • Number of WPA message-3s sent • Number of WPA message-4s sent • Number of WPA group message-1s sent • Number of WPA group message-2s sent • Number of WPA related EAP packets dropped for any reason • Number of WPA related EAP packets dropped because the station and controller have a different perception of what the connection details are • Number of key exchange failures
WPA2 • Message-1 • Message-2	• Number of WPA2 message-1s sent • Number of WPA2 message-2s sent

Parameter	Description
• Message-3 • Message-4 • Rx Failed • IE Mismatches • Key Exchange Failures	• Number of WPA2 message-3s sent • Number of WPA2 message-4s sent • Number of WPA2 related EAP packets dropped for any reason • Number of WPA2 related EAP packets dropped because the station and controller have a different perception of what the connection details are • Number of key exchange failures
Radius Accept	Number of RADIUS accepts
Station Deauths	Number of stations deaths

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x supplicant-info

```
show dot1x supplicant-info <supplicant-mac> <ap-mac>
```

Description

Shows the details about a specific supplicant.

Example

Issue this command to display the details about a supplicant.

```
Name                                MYCORPNETWORKS\ccutler
MAC Address                         00:19:7e:a9:8e:b0
AP MAC Address                      00:1a:1e:11:5f:11
Status                              Authentication Success
Unicast Cipher                      WPA2-AES
Multicast Cipher                    WPA2-AES
EAP-Type                            EAP-PEAP
Packet Statistics:
EAPOL Starts                        0
EAP ID Requests                     0
EAP ID Responses                    0
EAPOL Logoffs from station          0
EAP pkts to the station             2
EAP pkts from station               2
Unknown EAP pkts from station       0
EAP Successes sent                  0
EAP Failures sent                   0
Station failed to respond           0
Station NAKs                        0
Radius pkts to the server           0
Radius pkts from the server         0
Server failed to respond            0
Server rejects                      0
WPA/WPA2-Key Message1               1
WPA/WPA2-Key Message2               1
WPA/WPA2-Key Message3               1
WPA/WPA2-Key Message4               1
WPA-GKey Message1                   0
WPA-GKey Message2                   0
ID of the last EAP request          0
Length of the last EAP request      151
ID of the last EAP response         0
Length of the last EAP response     0
ID of the last radius request       0
Length of the last radius request   0
ID of the last radius response      0
```

The output of this command includes the following parameters:

Parameter	Description
Name	Supplicant name.
MAC Address	Supplicant MAC address.
AP MAC Address	AP MAC address.
Status	Supplicant's status.
Unicast Cipher	Supplicant's unicast cipher.
Multicast Cipher	Supplicant's multicast cipher.
EAP-Type	Supplicant's EAP-Type.
EAPOL Starts	Number of EAPOL starts.
EAP ID Requests	Number of EAP ID requests.
EAP ID Responses	Number of EAP ID responses.
EAPOL Logoffs from station	Number of EAPOL logoffs from the station.
EAP pkts to the station	Number of EAP packets sent to the station.
EAP pkts from station	Number of EAP packets sent from the station.
Unknown EAP pkts from station	Number of unknown EAP packets sent from the station.
EAP Successes sent	Number of EAP successes sent.
EAP Failures sent	Number of EAP failures sent.
Station failed to respond	Number of times the station failed to respond.
Station NAKs	Number of station negative-acknowledgement characters.
Radius pkts to the server	Number of radius packets set to the server.
Radius pkts from the server	Number of radius packets sent from the server.
Server failed to respond	Number of times the server failed to respond.
Server rejects	Number of times ac connection was rejected by the server.

Parameter	Description
WPA/WPA2-Key Message1	Number of WPA message-1s sent.
WPA/WPA2-Key Message2	Number of WPA message-2s sent.
WPA/WPA2-Key Message3	Number of WPA message-3s sent.
WPA/WPA2-Key Message4	Number of WPA message-4s sent.
WPA-GKey Message1	Number of WPA group message-1s sent.
WPA-GKey Message2	Number of WPA group message-2s sent.
ID of the last EAP request	The ID of the last EAP request.
Length of the last EAP request	The length of the last EAP request.
ID of the last EAP response	The ID of the last EAP response.
Length of the last EAP response	The length of the last EAP response.
ID of the last radius request	The ID of the last radius request.
Length of the last radius request	The length of the last radius request.
ID of the last radius response	The ID of the last radius response.
Length of the last radius response	The length of the last radius response.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x supplicant-info list-all

```
show dot1x supplicant-info list all
```

Description

Shows all 802.1X supplicants.

Syntax

No parameters.

Example

Issue this command to display all 802.1X supplicants as well as additional relevant information.

```
802.1X User Information
-----------------------
     MAC               Name     Auth  AP-MAC                 Enc-Key/Type              Auth-Mode
 EAP-Type  Remote
------------       --------  ----  ------              -------------------       ------------
---------  ------
00:15:00:26:f8:f5  user1     Yes   00:0b:86:8b:68:68  * * * * * * * */WPA2-AES  Explicit Mode
EAP-PEAP   No

Station Entries: 1
```

The output of this command includes the following parameters:

Parameter	Description
MAC	Supplicant MAC address
Name	Supplicant name
Auth	Shows if the supplicant authenticated successfully
AP-MAC	AP MAC address
Enc-Key/Type	Enc-Key: Supplicant's encryption key Type: Encryption type used by the supplicant
Auth-Mode	Authentication mode
EAP-Type	EAP type
Remote	Is the supplicant remote

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x supplicant-info pmkid

```
show dot1x supplicant-info pmkid <supplicant-mac>
```

Description

Shows the PMKIDs of the various stations on the controller.

Syntax

No parameters.

Example

Issue this command to display the PMKIDs of the various stations on the controller.

```
PMKID Table
  -----------
  Mac                 Name            AP                  PMKID
  ---                 ----            --                  -----
  00:03:7f:bf:12:ac   zoobar22   00:0b:86:a0:57:60
c2:7d:12:1a:1c:5b:40:f8:89:46:22:a5:ec:9b:fb:a6
  00:03:7f:bf:12:ac   zoobar22   00:0b:86:c0:04:88
bb:2d:e1:57:e1:b8:9b:a2:71:f5:98:ad:61:db:47:e7
```

The output of this command includes the following parameters:

Parameter	Description
MAC	Supplicant MAC address
Name	Supplicant name
AP	AP MAC address
PMKID	Station PMKID

Command History

This command was introduces in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x supplicant-info statistics

```
show dot1x supplicant-info statistics
```

Description

Shows the 802.1X statistics of the users.

Syntax

No parameters.

Example

Issue this command to display the 802.1X statistics of the users.

```
802.1X Statistics
-----------------
Mac                 Name    AP                 Auth-Succs  Auth-Fails  Auth-Tmout  Re-Auths
Supp-Naks  UKeyRotations  MKeyRotations
---                 ----    --                 ----------  ----------  ----------  --------  ---
------  -------------  -------------
00:15:00:26:f8:f5  user1   00:0b:86:8b:68:68  1           0           0           0         0
       0              0
Total:                                         2           0           0           0         0
       0              0

Station Entries: 1
```

The output of this command includes the following parameters:

Parameter	Description
MAC	Supplicant MAC address.
Name	Supplicant name.
AP	AP MAC address.
Auth-Succs	Number of successful authentications.
Auth-Fails	Number of authentication failures.
Auth-Tmout	Number of authentication timeouts.
Re-Auths	Number of reauthentications.
Supp-Naks	Number of negative-acknowledgement characters sent by the supplicant.
UKeyRotations	Number of unicast key rotations.
MKeyRotations	Number of multicast key rotations.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show dot1x watermark

```
show dot1x watermark
   history
   table {active|pending}
```

Description

Use this command under the guidance of Dell support to view information about the table that contains 802.1X sessions being processed.

Syntax

Parameter	Description	Range	Default
`history`	Displays all historical sessions in the 802.1X session queue.	—	—
`table {active|pending}`	Table types: • **active**: Displays all current active sessions in the 802.1X queue and the corresponding user-age. • **pending**: Displays all pending sessions in the 802.1X queue, the duration for which the user is pending in the queue, and the corresponding user-age.	—	—

Command History

Version	Modification
ArubaOS 6.3.1.0	Command introduced.
ArubaOS 6.4.2.4	The **table** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show dpi

```
show dpi
application
   name
   all
   category <name>
   custom-app <name>
global-bandwidth-contract
   all
   category <name>
   custom-app <name>
```

Description

Shows applications and application categories that are configured for deep-packet inspection. It also shows DPI global bandwidth contracts by application or application category.

Syntax

Parameter	Description
`name`	Name of the application
`all`	Shows all applications
`category <name>`	Shows all applications within a category.
`custom-app <name>`	Shows all custom applications.
`global-bandwidth-contract`	Shows the DPI global bandwidth contracts.
`all`	Shows all bandwidth contracts.
`app <name>`	Shows bandwidth contracts by application name.
`appcategory <name>`	Shows bandwidth contracts by application category name.

Example

The output of the following command shows custom applications by name, ID, application category, and default ports that are configured for DPI.

```
(host) (config) #show dpi application all
Applications
------------
Name                App ID  App Category         Default Ports              Applied
----                ------  ------------         -------------              -------
01net               948     web                  tcp 80                     0
050plus             1123    audio-video          tcp 80 443                 0
0zz0                584     web                  tcp 80                     0
10050net            1339    web                  tcp 80                     0
10086cn             949     web                  tcp 80 443                 0
104com              1336    web                  tcp 80                     0
1111tw              1338    web                  tcp 80                     0
1141a               950     web                  tcp 80                     0
115com              951     web                  tcp 80 443                 0
```

```
118114cn            952     web                 tcp 80                  0
11st                1191    web                 tcp 80                  0
```

Related Commands

Command	Description	Mode
dpi	Use this command to configurs Deep-Packet Inspection and the global bandwidth contract for an application or application categories for the AppRF feature.	Config mode

Command History

This command was introduced in ArubaOS 6.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show esi groups

```
show esi groups [{group-name <groupname>|{ping-name <ping-name>}]
```

Description

Show ESI group information.

Syntax

Parameter	Description
group-name <groupname>	View the facility used when logging messages into the remote syslog server.
ping-name <ping-name>	Enter the name of a set of ping values to how the names of ESI groups using that set of ping attributes. Define a set of ESI ping values using the command esi ping.
server	Show the IP address of a remote logging server.

Usage Guidelines

The ESI parser is a mechanism for interpreting syslog messages from third party appliances such as anti-virus gateways. Use this command to view configured ESI server groups.

Example

This example below displays the name of each configured ESI group, including its ping definitions and ESI server.

```
(host) #show esi groups

ESI Group Table
---------------
Name        Tunnel ID  Ping      Flags  Servers
----        ---------  ----      -----  -------
anything    0x1042     pingset_1 C      0
cupertino   0x1043     -         C      0
Flags:
  C:Datapath Download complete
```

Related Commands

Platforms	Licensing	Command Mode
esi parser domain	This command configures an ESI syslog parser domain.	Config mode on master or local controllers.
esi parser rule	This command creates or changes an ESI syslog parser rule.	Config mode on master or local controllers.

Platforms	Licensing	Command Mode
esi parser rule-test	This command allows you to test all of the enabled parser rules.	Config mode on master or local controllers.

Command History

This command was introduced in ArubaOS 2.5.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show esi parser

```
show esi parser domains|rules|stats
```

Description

Show ESI parser information.

Syntax

Parameter	Description
`domains`	Show ESI parser domain information.
`rules`	Show ESI parser rule information.
`stats`	Show ESI parser rule stats.

Usage Guidelines

The ESI parser is a generic syslog parser on the controller that accepts syslog messages from external third-party appliances such as anti-virus gateways, content filters, and intrusion detection systems. It processes syslog messages according to user-defined rules and takes configurable actions on the corresponding system users.

ESI servers are configured into domains to which ESI syslog parser rules are applied.

Use the **`show esi parser domains`** command to show ESI parser domain information.

Example

The ESI Parser Domain table in the example below shows that the controller has two ESI domains and two ESI servers.

```
(host) #show esi parser domains

ESI Parser Domain Table
-----------------------
Domain          ESI Servers    Peer Controllers
------          -----------    ----------------
corp_domain     172.21.5.50    10.3.132.14
remote_domain   192.84.66.30

Total number of servers configured: 2
```

Related Commands

Platforms	Licensing	Command Mode
esi parser domain	This command configures an ESI syslog parser domain.	Config mode on master or local controllers.

Platforms	Licensing	Command Mode
esi parser rule	This command creates or changes an ESI syslog parser rule.	Config mode on master or local controllers.
esi parser rule-test	This command allows you to test all of the enabled parser rules.	Config mode on master or local controllers.

Command History

This command was introduced in ArubaOS 3.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show esi ping

```
show esi ping [ping-name <ping-name>]
```

Description

Show settings for ESI ping health check attributes.

Syntax

Parameter	Description
`ping-name <ping-name>`	Include the optional **ping-name <ping-name>** parameters to display settings for one specified set of ping settings.

Example

This example below shows that the controller has three defined sets of ping attributes.

```
(host) #show esi groups

ESI Ping Table
--------------
Name        Frequency (sec)  Timeout (sec)  Retry Count  ID  Num Groups
----        ---------------  -------------  -----------  --  ----------
ping_att1                        5                2              2            0   1
ESIping                                  5                2              2            1   0
ESIping2                                 50000            2              2            2   2
```

The output of this command includes the following information:

Column	Description
`Name`	Name of a group of ping settings.
`frequency`	Specifies the ping frequency in seconds.
`timeout`	Specifies the ping timeout in seconds.
`retry-count`	Specifies the ping retry count
`ID`	ID number assigned to the ping attributes when that set of attributes was defined.
`Num Groups`	Number of ESI groups to which this set of ping attributes is assigned.

Related Commands

Platforms	Licensing	Command Mode
esi ping	This command specifies the ESI ping health check configuration.	Config mode on master or local controllers.

Command History

This command was introduced in ArubaOS 2.5.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show esi servers

```
show esi servers [{group-name <groupname>|{server-name <server-name>}]
```

Description

Show configuration information for ESI servers.

Syntax

Parameter	Description
group-name <groupname>	Include this optional parameter to display information for all ESI servers assigned to a specific ESI group.
server-name <server-name>	Specify an ESI server name to view configuration information for just that server.

Usage Guidelines

By default, this command displays configuration settings for all ESI servers. You can include the name of an ESI group to view servers assigned to just that group, or specify a server name to view information for that server only.

Example

This example below displays configuration details for the ESI server name **forti_1**.

```
(host) #show esi servers server-name forti_1

ESI Server Table
----------------
Name     Trusted IP    Untrusted IP  Trusted port Untrusted port Group   Mode   NAT Port  ID
----     ----------    ------------  ------------ -------------- -----   ----   --------  --
forti_1  10.168.173.2  10.168.171.3  -/-/-        -/-/-          default route  0         4

Flags
-----
U

Flags:
  C :Datapath Download complete
  U :Server Up
  D :Server Down
  PT:Trusted Ping response outstanding
  PU:Untrusted Ping response outstanding
  HT:Health Check Trusted IP
  HU:Health Check Untrusted IP
  FT:Trusted Ping failed
  FU:Untrusted Ping failed
```

The output of this command includes the following information:

Column	Description
Name	Name of the ESI server.
Trusted IP	Displays the server IP address on the trusted network. As an option, you can also enable a health check on the specified address
Untrusted IP	Displays the server IP address on the untrusted network. As an option, you can also enable a health check on the specified address
Trusted port	Shows the slot, module and port connected to the trusted side of the ESI server; slot/port format.
Untrusted port	Shows theslot, module and port connected to the untrusted side of the ESI server.
Group	Name of the ESI group to which this server is assigned. If the server has not yet been assigned to a group, this column will be blank.
Mode	Specifies the ESI server mode of operation: bridge, nat, or route
Nat Port	Displays the NAT destination TCP/UDP port.
ID	ID number assigned to the server when it was first defined.
Flags	This data column displays any flags associated with this server. The flag key appears below the ESI Server Table.

Related Commands

Platforms	Licensing	Command Mode
esi server	This command configures an ESI server.	Config mode on master or local controllers.

Command History

This command was introduced in ArubaOS 2.5.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show faults

```
show fault [history]
```

Description

Display a list of faults, which are any problematic conditions of the ArubaOS software or hardware.

Syntax

Parameter	Description
history	Include this parameter to display a history of faults cleared by the controller or the operator.

Usage Guidelines

A controller can maintain a list of up to 100 faults. Once 100 faults have been logged, any faults arising after that are dropped. The controller maintains a history of the last 100 faults that have cleared. Every time a new fault clears clear, the oldest fault in the fault history is purged from the list.

Example

This example below shows all active faults the controller, including the time the fault occurred, the fault ID number, and a description of the problem.

```
(host) #show faults

Active Faults
-------------
Time                 Number  Description
----                 ------  -----------
2009-03-02 18:13:08  93      Authentication Server vortex is down.
2009-03-02 18:13:08  94      Authentication Server vortex is down.
2009-03-02 18:13:08  95      Authentication Server vortex is down.
2009-03-02 18:13:08  96      Authentication Server vortex is down.
2009-03-02 18:13:08  97      Authentication Server corp1-supersvr is down.
2009-03-02 18:13:08  98      All authentication servers in server group sg-auth2 are brought
back in service.
2009-03-02 18:13:08  99      Authentication Server corp1-supersvr is down.
2009-03-02 18:13:08  100     All authentication servers in server group sg-auth2 are brought
back in service.
2009-03-02 18:13:08  101     Authentication Server corp1-supersvr is down.
2009-03-02 18:13:08  102     All authentication servers in server group sg-auth2 are brought
back in service.
2009-03-02 18:13:08  103     Authentication Server corp1-supersvr is down.
2009-03-02 18:13:08  104     All authentication servers in server group sg-auth2 are brought
back in service.
2009-03-02 18:13:08  105     Authentication Server corp1-supersvr is down.
2009-03-02 18:13:08  106     All authentication servers in server group sg-auth2 are brought
back in service.
2009-03-02 18:13:09  107     Authentication Server corp1-supersvr is down.
2009-03-02 18:13:09  108     All authentication servers in server group sg-auth2 are brought
back in service.
2009-03-02 18:13:09  109     Authentication Server corp1-supersvr is down.
2009-03-02 18:13:09  110     All authentication servers in server group sg-auth2 are brought
back in service.
```

```
2009-03-02 18:13:09  111     Authentication Server corp1-supersvr is down.
2009-03-02 18:13:09  112     All authentication servers in server group sg-auth2 are brought
back in service.
2009-03-02 18:13:09  113     Authentication Server corp1-supersvr is down.
2009-03-02 18:13:09  114     All authentication servers in server group sg-auth2 are brought
back in service.
2009-03-02 18:13:09  115     Authentication Server corp1-supersvr is down.
Total number of entries in the queue    :23
```

Related Commands

Command	Description	Mode
`clear fault <id>|all`	Manually clear a single fault by specifying the fault ID number, or clear all faults by including the **all** parameter.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show file syncing profile

```
show file syncing profile
```

Description

This command displays the configuration the file syncing profile.

Syntax

None.

Usage Guidelines

Execute this command to view the file syncing profile.

Example

The following example shows the output of **show file syncing profile**.

```
(host) #show file syncing profile
File syncing profile
--------------------
Parameter     Value
---------     -----
File syncing  Enabled
sync time     30
```

Command History

This command was introduced in ArubaOS 6.4.1.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system	Enable mode on master controllers.

show fips

```
show fips
```

This command applies only to the FIPS version of ArubaOS.

Description

Displays FIPS mode of operation status as enabled or disabled.

Syntax

No parameters.

Example

The output of this command shows that the FIPS mode of operation is currently enabled.

```
(host) # show fips

FIPS Settings:
--------------
Mode  Enabled
```

Command History

This command was introduced in ArubaOS-FIPS 2.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show firewall

```
show firewall [debug-route][dns-names]
```

Description

Display a list of global firewall policies and policy details.

Syntax

Parameter	Description
debug-route	Show global route debug settings, including the route protocol (IPv4/IPv6) and IP address.
dns-names	Display a list of DNS names and IP addresses used in firewall commands.

Examples

Include the optional **dns-names** parameter to list the DNS names used in firewall policies currently configured on the controller.

```
(host) #show firewall dns-names
FW DNS names
------------
Name                       Id  InUse  List
----                       --  -----  ----
*.google.                  13  1      216.58.213.174 216.58.213.163 74.125.24.94 216.58.210.131
youtube.googleapis.com     9   1
m.youtube.com              7   1
accounts.google.com        1   1
www.youtube.com            6   1      64.233.167.91 64.233.167.93 64.233.167.190 216.58.198.110
graph.facebook.com         3   1
www.bing.com               12  1      204.79.197.200
www.youtube-nocookie.com   10  1
ssl.gstatic.com            2   1      216.58.213.163 216.58.198.99
youtubei.googleapis.com    8   1
www.googleapis.com         11  1      216.58.213.138 64.233.184.95
facebook.com               5   1
fbstatic-a.akamaihd.net    4   1
```

This example below shows all firewall policies currently configured on the controller.

```
(host) (config) #show firewall
Global firewall policies
------------------------
Policy                                    Action          Rate       Port
------                                    ------          ----       ----
Enforce TCP handshake before allowing data  Disabled
Prohibit RST replay attack                Disabled
Deny all IP fragments                     Disabled
Prohibit IP Spoofing                      Enabled
Monitor ping attack                       Disabled
Monitor TCP SYN attack                    Disabled
Monitor IP sessions attack                Disabled
Deny inter user bridging                  Disabled
Log all received ICMP errors              Disabled
Per-packet logging                        Disabled
Blacklist Grat ARP attack client          Disabled
```

```
Stateful SIP Processing                     Enabled
Allow tri-session with DNAT                 Disabled
Disable FTP server                          No
Blacklist ARP attack client                 Disabled
Monitor ARP attack                          Disabled
Monitor Gratuitous ARP attack               Enabled          50/sec
GRE call id processing                      Disabled
Session Idle Timeout                        Disabled
WMM content enforcement                     Disabled
Session VOIP Timeout                        Disabled
Stateful H.323 Processing                   Enabled
Stateful SCCP Processing                    Enabled
Only allow local subnets in user table      Disabled
Monitor/police CP attacks                   Disabled
Rate limit CP untrusted ucast traffic       Enabled           9765 pps
Rate limit CP untrusted mcast traffic       Enabled           1953 pps
Rate limit CP trusted ucast traffic         Enabled           65535 ps
Rate limit CP trusted mcast traffic         Enabled           1953 pps
Rate limit CP route traffic                 Enabled           976 pps
Rate limit CP session mirror traffic        Enabled           976 pps
Rate limit CP auth process traffic          Enabled           976 pps
Deny inter user traffic                     Disabled
Prohibit ARP Spoofing                       Disabled
Stateful VOCERA Processing                  Enabled
Stateful UA Processing                      Enabled
Enforce bw contracts for broadcast traffic  Disabled
Multicast automatic shaping                 Disabled
Stall Detection                             Enabled
Enforce TCP Sequence numbers                Disabled
AMSDU Rx                                    Enabled
Jumbo Frames                                Disabled
Session-tunnel FIB                          Enabled
Prevent DHCP exhaustion                     Disabled
Stateful SIPS Processing                    Enabled
Deny source routing                         Disabled
Immediate Freeback                          Disabled
DPI Classification                          Enabled [Cfg: enabled, PEF license: installed]
STUN Based Traversal                        Enabled
Web Content Classification                  Enabled
Web Content Cache Miss Drop                 Disabled
Stateful ICMP Processing                    Disabled
Optimize Duplicate Address Detection frames Enabled
IP classification                           Enabled
```

The output of this command includes the following information:

Parameter	Description
`Enforce TCP handshake before allowing data`	If enabled, this feature prevents data from passing between two clients until the three-way TCP handshake has been performed. This option should be disabled when you have mobile clients on the network as enabling this option will cause mobility to fail. You can enable this option if there are no mobile clients on the network.
`Prohibit RST replay attack`	If enabled, this setting closes a TCP connection in both directions if a TCP RST is received from either direction.

Parameter	Description
Deny all IP Fragments	If enabled, all IP fragments are dropped.
Prohibit IP Spoofing	When this option is enabled, source and destination IP and MAC addresses are checked; possible IP spoofing attacks are logged and an SNMP trap is sent.
Monitor ping attack	If enabled, the controller monitors the number of ICMP pings per second. If this value exceeds the maximum configured rate, the controller will register a denial of service attack.
Monitor TCP SYN attack	If enabled, the controller monitors the number of TCP SYN messages per second. If this value exceeds the maximum configured rate, the controller will register a denial of service attack.
Monitor IP sessions attack	If enabled, the controller monitors the number of TCP sessions requests per second. If this value exceeds the maximum configured rate, the controller will register a denial of service attack sessions.
Deny inter user bridging	If enabled this setting prevents the forwarding of Layer-2 traffic between wired or wireless users. You can configure user role policies that prevent Layer-3 traffic between users or networks but this does not block Layer-2 traffic.
Log all received ICMP errors	Shows if the controller will log received ICMP errors.
Per-packet logging	If active, and logging is enabled for the corresponding session rule, this feature logs every packet.
Blacklist Grat ARP attack client	If enabled, blacklist clients exceeding the Gratuitous ARP attack rate.
Stateful SIP Processing	Shows if the controller has enabled or disabled monitoring of exchanges between a voice over IP or voice over WLAN device and a SIP server. This option should be enabled only when thee is no VoIP or VoWLAN traffic on the network
Allow tri-session with DNAT	Shows if the controller allows three-way session when performing destination NAT.
Disable FTP server	If active, this feature disables the FTP server on the controller.

Parameter	Description
Blacklist ARP attack client	If enabled, blacklist clients exceeding the ARP attack rate.
Monitor ARP attack	Shows the status of the ARP attack monitor.
Monitor Gratuitous ARP attack	Shows the status of the Gratuitous ARP attack monitor.
GRE call id processing	If active the controller creates a unique state for each PPTP tunnel.
Session Idle Timeout	Shows if a session idle timeout interval has been defined.
WMM content enforcement	If traffic to or from the user is inconsistent with the associated QoS policy for voice, this feature reclassifies traffic to best effort and data path counters are incremented.
Session VOIP Timeout	If enabled, a idle session timeout is defined for sessions that are marked as voice sessions.
Stateful H.323 Processing	Shows if the controller has enabled or disabled stateful H.323 processing.
Stateful SCCP Processing	Shows if the controller has enabled or disabled stateful SCCP processing.
Only allow local subnets in user table	If enabled, the controller only adds IP addresses which belong to a local subnet to the user table.
Monitor/police CP attacks	If enabled, the controller monitors a misbehaving user's inbound traffic rate. If this rate is exceeded, the controller can register a denial of service attack.
Rate limit CP untrusted ucast traffic	Shows the inbound traffic rate
Rate limit CP untrusted mcast traffic	Displays the untrusted multicast traffic rate limit.
Rate limit CP trusted ucast traffic	Displays the trusted unicast traffic rate limit.
Rate limit CP trusted mcast traffic	Displays the trusted multicast traffic rate limit.
Rate limit CP route traffic	Displays the traffic rate limit for traffic that needs generated ARP requests.

Parameter	Description
Rate limit CP session mirror traffic	Displays the traffic rate limit for session mirrored traffic forwarded to the controller.
Rate limit CP auth process traffic	Displays the traffic rate limit for traffic forwarded to the authentication process.
Deny inter user traffic	If enabled, this setting disables traffic between all untrused users. You can configure user role policies that prevent Layer-3 traffic between users or networks but this does not block Layer-2 traffic.
Prohibit ARP Spoofing	When this option is enabled, possible arp spoofing attacks are logged and an SNMP trap is sent.
Stateful VOCERA Processing	VOCERA processing is disabled by default.
Stateful UA Processing	UA processing is disabled by default.
Enforce bw contracts for broadcast traffic	If enabled, bw contracts are applied ot local subnet broadcast traffic.
Multicast automatic shaping	If enabled, enables multicast optimization and provides excellent streaming quality regardless of the amount of VLANs or IP IGMP groups that are used.
Stall Detection	If enabled, triggers datapath crash on stall detection. Applies to the to W-7200 Seriescontrollers only.
Enforce TCP Sequence numbers	If enabled, prevents data from passing between two clients until the three-way TCP handshake has been performed.
AMSDU Rx	Aggregated Medium Access Control Service Data Units (AMSDU) packets are dropped if this option is enabled.
Jumbo Frames	If enabled, supports up to 9216 bytes of payload on the controller.
Session-tunnel FIB	Enables session tunnel based forwarding.

Parameter	Description
Prevent DHCP Exhaustion	If enabled, this option checks for DHCP client hardware address against the packet source MAC address. This command checks the frame's source-MAC against the DHCPv4 client hardware address and drops the packet if it does not match. This feature prevents a client from submitting multiple DHCP requests with different hardware addresses, thereby preventing DHCP pool depletion.
Stateful SIPS Processing	If disabled, disables monitoring of exchanges between a voice over IP or voice over WLAN device and a SIP server. This option should be enabled only when there is no VoIP or VoWLAN traffic on the network.
Deny Source Routing	If enabled, forwarding of IP frames with source routing with the source routing options set is disallowed.
Immediate Freeback	If enabled, immediately frees buffers on controllers. Do not enable this option unless instructed to do so by a technical support representative.
DPI Classification	If enabled, performs deep packet inspection.
STUN Based Traversal	If enabled, allows STUN- based firewall traversal.
Web Content Classification	If enabled, allows web content classification for all HTTP traffic. Default: disabled
Web Content Cache Miss Drop	If enabled, allows the controller to drop any packets that do not match any web content category or reputation levels in the controller's internal web content cache. Default: disabled
Stateful ICMP Processing	Process stateful inspection of ICMP packets. Default: disabled
Optimize Duplicate Address Detection frames	Reduce flooding of IPv4 Gratuitous ARPs/IPv6 Duplicate Address Detection (DAD) frames onto wireless clients. Default: enabled

Parameter	Description
IP classification	If enabled, supports IP (reputation/geolocation) classification. This helps in rejecting traffic sent or received from those IP addresses classified as malicious based on the policy configured. Using the geolocation IP database the geographical location of the malicious IP address is also determined, and traffic is permitted or denied after scanning the geographic based rules configured by the administrator. Default: enabled

Related Commands

Command	Description
firewall	This command configures firewall options on the controller.
firewall cp	This command creates whitelist session ACLs
firewall cp-bandwidth-contract	This command configures bandwidth contract traffic rate limits to prevent denial of service attacks.

Command History

Release	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.4	The following parameters were introduced: • **Jumbo Frames** • **Stall Detection** • **DPI Classification** • **STUN Based Traversal**
ArubaOS 6.4.1	The following parameters were introduced as part of the **show firewall** command: • **Blacklist Grat ARP attack client** • **Blacklist ARP attack client** • **Monitor ARP attack** • **Monitor Gratuitous ARP attack**

Release	Modification
ArubaOS 6.4.2.0	The following parameters were introduced as part of the show firewall command: • **Web Content Classification** • **Web Content Cache Miss Drop**
ArubaOS 6.4.2.5	The **Optimize Duplicate Address Detection frames** parameter was introduced.
ArubaOS 6.5	The **IP classification** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show firewall-cp

```
show firewall-cp [internal]
```

Description

Displays the captive-portal (CP) firewall policies on the controller.

Syntax

No Parameters

Example

The output of this command shows the CP firewall policies.

```
(host) #show firewall-cp

CP firewall policies
--------------------
IP Version  Source IP    Source Mask  Protocol  Start Port  End Port  Permit/Deny  hits
contract
----------  ---------    -----------  --------  ----------  --------  -----------  ----  -----
---
ipv4        any                       6         21          21        Permit       0     test
ipv4        10.10.10.10  2.2.2.2      6         8           9         Permit       0
ipv4        2:2:2:2::2                1         1           2         Permit       0
```

Command History

Release	Modification
ArubaOS 3.4	Command introduced.
ArubaOS6.2	The **IP Version** parameter was added.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show firewall-visibility

```
show firewall-visibility {debug|status}
```

Description

Displays the policy enforcement firewall visibility process state and status information.

Syntax

Parameter	Description
`debug`	Displays process state information for debugging firewall visibility.
`status`	Displays the status of firewall visibility as enabled or disabled.

Example

The output of this command shows the status of firewall visibility.

```
(host) #show firewall-visibility status

enabled
```

Command History

This command is introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config or Enable mode on master or local controller

show flush-r1-on-new-r0

```
ap·flush-r1-on-new-r0 {enable|disable}
```

Description

Use this command to view the status of flushing r1 keys on new r0.

Syntax

No parameters.

Example

The following example displays the status of flushing r1 keys on new r0:

```
(host) (config) #show flush-r1-on-new-r0
Fast Roaming flush-r1-on-new-r0:enable
```

Command History

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Enable mode or Config mode.

show gap-debug

```
show gap-debug
```

Description

Displays the troubleshooting information for the global AP database.

Usage Guidelines

Use this command to identify any issues with the global AP database. This command displays the troubleshooting information for the global AP database.

Example

The following is a sample output of this command:

```
(6000-202) #show gap-debug
GAP Master LMS Table
--------------------
IP             Master Cookie           Master Seq  LMS Cookie              LMS Seq  Activity
Status  Msg In Prog  Msg Len  Attempts  Last Reset Reason
--             -------------           ----------  ----------              -------  --------  ---
---  -----------  -------  --------  -----------------
172.20.1.101   172.20.1.102,521bbce7  0           0.0.0.0,00000000        0        --        up
    no           -        -         down notification
172.20.1.102   172.20.1.102,521ba3b1  0           0.0.0.0,00000000        0        --        up
    no           -        -         switched to backup
192.168.2.2    172.20.1.102,521ba5e6  0           192.168.2.2,521ba6fd    170      30        up
    no           -        -         down notification
192.168.3.2    172.20.1.102,521ba67e  0           192.168.3.2,521ba71b    172      34        up
    no           -        -         down notification
192.168.4.2    172.20.1.102,521ba6af  0           192.168.4.2,521ba724    163      58        up
    no           -        -         down notification
192.168.5.2    172.20.1.102,521ba6be  0           192.168.5.2,521ba794    169      19        up
    no           -        -         down notification
192.168.6.2    172.20.1.102,521ba694  0           192.168.6.2,521ba730    163      40        up
    no           -        -         down notification
192.168.7.2    172.20.1.102,521ba677  0           192.168.7.2,521ba6fd    170      29        up
    no           -        -         down notification
```

The output of this command includes the following information:

Column	Description
IP	The IP address of the local management switch (LMS).
Master Cookie	The cookie information on the master controller that is used to communicate with the LMS.
Master Seq	The sequence number used by the master controller to sync up with the LMS. This tracks the number of times the master controller has communicated with the LMS.
LMS Cookies	The cookie information on the LMS that is used to communicate with the master controller.
LMS Seq	The sequence number used by the LMS to sync up with the master controller.This

Column	Description
	tracks the number of times the LMS has communicated with the master controller.
Activity	The time at which the last activity happened on the LMS.
Status	Indicates if the status of the LMS is up or down.
Msg in Prog	Indicates if an active communication is happening between the LMS and the master controller. It can be Yes or No. If it is yes, then the Msg Len and Attempt fields are set.
Msg Len	The length of the message that the master controller is syncing with the LMS.
Attempts	Number of times the master controller has attempted to sync with the LMS.
Last Reset Reason	Indicates the reason for last reset.

Command History

This command is introduced in Dell Networking W-Series ArubaOS 6.5.x.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master controllers.

show gateway health-check

```
show gateway health-check
```

Description

Display the current status of the gateway health-check feature.

Syntax

No parameters.

Usage Guidelines

The gateway health check feature can only be enabled by Dell Technical Support.

Example

This example below shows that the gateway health-check feature has not been enabled on the controller.

```
(host) #show gateway health-check
Gateway health check not enabled
```

Related Commands

Command	Description	Mode
gateway health-check disable	Disable the gateway health check	Config mode

Command History

This command was introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show global-user-table count

```
show global-user-table count
   [current-switch] <IP address>
   [authentication-method] {dot1x | mac | stateful-dot1x | vpn | web}
   [role] <role name>
   [bssid] <bssid MAC>
   [essid] <essid>
   [ap-name] <AP name>
   [phy-type] {a | b | g}
   [age] <starting time dd:hh:mm> <ending time dd:hh:mm>
```

Description

This command displays a count of global user based on the specified criteria.

Syntax

Parameter	Description
`current-switch`	Match IP address of the switch where the user is currently associated
`authentication-method`	Count users matching the specified authentication method
`role`	Count users matching the specified role
`bssid`	Count users matching the specified BSSID
`essid`	Count users matching the specified ESSID. If the ESSID includes spaces, you must enclose it in quotation marks.
`ap-name`	Count users matching the specified AP name
`phy-type`	Count users matching the specified Phy type
`age`	Count users matching the specified age

Example

Issue this command to display a global user count. The output shown below is a result of the command **show global-user-table count current-switch <ip-address>**.

```
Complete results.
The number of global users : 2
```

The output includes the following parameters:

Parameter	Description
`The number of global users:`	Total number of global users meeting the specified criteria.

Command History

This command was introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms Master controller only	Base operating system	Enable or config mode on master controllers

show-global-user-table list

```
show global-user-table list
   current-switch] <IP address>
   authentication-method] {dot1x | mac | stateful-dot1x | vpn | web}
   role <role name>
   bssid <bssid MAC>
   devtype <device>
   essid <essid>
   ap-name <AP name>
   phy-type a|b|g
   age <starting time dd:hh:mm> <ending time dd:hh:mm>
   not
   or
   rows
   sort {sort_by_ap-name | sort_by_authtype | sort_by_bssid | sort_by_current-switch | sort_
   by_essid | sort_by_ip | sort_by_mac | sort_by_name | sort_by_phy-type | sort_by_role}{asc |
   desc}
   start
```

Description

This command displays a list of current users on a specified switch.

Syntax

Parameter	Description
current-switch	Match IP address of the switch where the user is currently associated
authentication-method	Count users matching the specified authentication method
role	Count users matching the specified role
bssid	Count users matching the specified BSSID
essid	Count users matching the specified ESSID. If the ESSID includes spaces, you must enclose it in quotation marks.
ap-name	Count users matching the specified AP name
phy-type	Count users matching the specified Phy type
age	Count users matching the specified age
current-switch	Match IP address of the switch where the user is currently associated
authentication-method	Count users matching the specified authentication method
role	Count users matching the specified role

Parameter	Description
not	Show users that do not satisfy the given criteria
or	Show users that satisfy any of the given criteria
rows	Number of rows to show
sort	Sort the list based on a specified criteria, in ascending or descending order
start	Show user table starting from a specific row

Example

Issue this command to display a global user count. The output of this command is split into two tables in this document, however it appears in one table in the CLI.

```
(host) (config) show user role employee
Global Users
-----
    IP               MAC            Name           Role      Age(d:h:m)  Auth    VPN link  AP
name
----------      ------------       ------         ----      ----------  ----    --------  ----
---
192.168.160.1   00:23:6c:80:3d:bc  madisonQ       employee  01:05:50    802.1X            AP63
10.100.105.100  00:05:4e:45:5e:c8  CorpNetwork2   employee  00:02:22    802.1X
wlanAP
10.100.105.102  00:14:a5:30:c2:7f  fdedhia        employee  01:20:09    802.1X            AP98
10.100.105.97   00:1b:77:c4:a2:fa  CorpNetwork2   employee  00:02:18    802.1X            AP98
10.100.105.109  00:21:5c:02:16:bb  melindayao     employee  00:05:40    802.1X            AP09

users
-----
Roaming          Essid            Bssid        Phy   Profile
 -------    ---------------- -------                                          ---------- ---   -----
Associated  wirelessint-wpa2 00:1a:1e:85:d3:b1 a-HT  default
Associated  wirelessint-wpa2 00:1a:1e:6f:e5:51 a     default
Associated  wirelessint-wpa2 00:1a:1e:87:ef:f1 a     default
Associated  wirelessint-wpa2 00:1a:1e:87:ef:f1 a     default
Associated  wirelessint-wpa2 00:1a:1e:85:c2:11 a-HT  default
```

The output of this command includes the following parameters:

Parameter	Description
IP	IP address of user.
MAC	MAC address of user.
Name	User name.
Current Switch	IP address of the switch where the user is currently associated.

Parameter	Description
`Role`	User role.
`Age`	User age, displayed as *days:hours:minutes*.
`Auth`	Authentication method used by user.
`VPN Link`	IP address of the client VPN gateway.
`AP name`	AP name.
`Roaming`	Roaming status.
`Essid`	User's extended service set identifier (ESSID).
`Bssid`	User's basic service set identifier (BSSID).
`Phy`	User Phy type (*a*, *b* or *g*).
`Profile`	Profile name
`Forward mode`	Forwarding mode assigned to the user (tunnel, split-tunnel, decrypt-tunnel or bridge).
`Type`	Type of client device, if identified.

Command History

Release	Modification
ArubaOS 3.4	Command introduced
ArubaOS 6.1	The **devtype** parameter was introduced, and the output of this command expanded to include the **Type** column.

Command Information

Platforms	Licensing	Command Mode
All platforms Master controller only	Base operating system	Enable or config mode on master controllers

show guest-access-email

```
show guest-access-email
```

Description

This command shows a guest access email profile configuration. The guest access email process sends email to either the guest or the sponsor whenever a guest user account is created or when the Guest Provisioning user manually sends email from the Guest Provisioning page.

Syntax

No parameters.

Usage Guidelines

Issue this command to show the current guest access email profile parameters. The Parameter and **Value** columns show the configured SMTP server and SMTP ports. that process guest email.

```
(host) #show guest-access-email

Guest-access Email Profile
--------------------------
Parameter    Value
---------    -----
SMTP Server  10.1.1.4
SMTP Port    25
```

Related Commands

Command	Description	Mode
guest-access-email	This command shows a guest access email profile configuration.	Enable or Config modes
local-userdb-guest add	This command creates a guest user in a local user database.	Enable or Config modes

Command History

This command was introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ha ap

```
show ha ap
   information {ip-addr <ip-addr>|ip6-addr <ip6-addr>}
   table
```

Description

This command displays information about APs using the High Availability feature.

Syntax

Parameter	Description

`information`
`ip-addr <ip-addr>`
`ip6-addr <ip6-addr>`
	Issue this command under the supervision of Dell support to troubleshoot the High Availability feature.

`table`	Display the High Availability AP table to view information about APs configured to use the High Availability feature.

Usage Guidelines

The High Availability features work across Layer-3 networks, so there is no need for a direct Layer-2 connection between in a high-availability group When the AP first connects to its active , the active provides the IP address of a standby , and the AP attempts to establish a tunnel to the standby to the standby . If an AP fails to connect to the first standby , the active will select a new standby for that AP, and the AP will attempt to connect to that standby .

An AP will failover to its backup if it fails to contact its active through regular heartbeats and keepalive messages, or if the user manually triggers a failover using the WebUI or CLI.

Examples

The following command displays the HA table for the HA group **default**.

```
(host)  #show ha ap table
HA AP Table
-----------
AP          IP-Address   MAC-Address        AP-flags  HA-flags
--          ----------   -----------        --------  --------
ard         10.3.31.245  6c:f3:7f:c6:72:c0  LU
arr         10.3.31.222  d8:c7:c8:c0:02:7c  LU
kalap105-2  10.3.31.253  00:24:6c:c0:22:6b  LU        S
Total Num APs::3
Active APs::2
Standby APs::1
AP Flags: R=RAP; S=Standby; s=Bridge Split VAP L=Licensed; M=Mesh, U=Up
HA Flags: S=Standby, C=Standby connected, L=LMS, F=Sent Failover Request to AP,
H=AP flagged for Inter Controller Heartbeat
```

Command History

Introduced in ArubaOS 6.4

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Enable mode on master and local controllers.

show ha group

```
show ha
   group-membership
   group-profile [<profile>]}
```

Description

This command displays High Availability profile settings and shows the high availability group to which the controller is currently assigned.

Syntax

Parameter	Description
`group-membership <profile>`	Name of the high availability group to which the controller should be a member.
`group-profile [<profile>]`	Display a list of all high availability groups, or include the optional <profile> parameter to display configuration settings for the specified profile.

Usage Guidelines

The High Availability feature supports redundancy models with an active controller pair, or an active/standby deployment model with one backup controller supporting one or more active controllers. Each of these clusters of active and backup controllers comprises a high-availability group. Note that all active and backup controllers within a single high-availability group must be deployed in a single master-local topology. The High Availability feature works across Layer-3 networks, so there is no need for a direct Layer-2 connection between controllers in a high-availability group.\

Examples

The following command shows that the controller from which the command was issued is a member of the high availability group ha-group2.

```
(host)  #show ha-group-member
Member of HA group :ha-group2
```

The example below shows that the controller has two configured high availability group profiles. The **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
HA group information List
-------------------------
Name      Profile Status
----      --------------
default
new
Total:2
```

Command History

Introduced in ArubaOS 6.3

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Enable mode on master and local controllers.

show ha heartbeat counters

```
show ha heartbeat counters
```

Description

This command displays statistics for the High Availability extended controller capacity feature.

Syntax

No parameters.

Usage Guidelines

The high availability inter-controller heartbeat feature allows for faster AP failover from an active controller to a standby controller, especially in situations where the active controller reboots or loses connectivity to the network.

The inter-controller heartbeat feature works independently from the AP mechanism that sends heartbeats from the AP to the controller. If enabled, the inter-controller heartbeat feature supersedes the AP's heartbeat to its controller. As a result, if a standby controller detects missed inter-controller heartbeats from the active controller, it triggers its standby APs to failover to the standby controller, *even if those APs have not detected any missed heartbeats between the APs and their active controller*. Use this feature with caution in deployments where the active and standby controllers are separated over high-latency WAN links.

When this feature is enabled, the standby controller starts sending regular heartbeats to an AP's active controller as soon as the AP has an UP status on the standby controller. By default, the standby controller sends heartbeat messages every 100ms. If the active controller becomes unreachable for the number of heartbeats defined by the heartbeat threshold (by default, 5 missed heartbeats), the standby controller immediately detects this error, and informs the APs using the standby controller to fail over from the active controller to the standby controller .

This feature is disabled by default. It can be used in conjunction with the high availability state synchronization feature only in topologies that use a single active and standby controller, or a pair dual-mode active controllers that act as standby controllers for each other. High availability inter-controller heartbeats can be enabled and configured in the high-availability group profile using the WebUI or Command-Line interfaces.

Examples

The following command displays high-availability heartbeat statistics for the high availability group **default**.

```
(host) (HA group information "default") #show ha heartbeat counters

Heartbeat stats
---------------
Controller IP  Active Reference Count    Total Heartbeat Sent   Total Heartbeat Received
-------------  ----------------------    --------------------   ------------------------
172.14.0.2     1                         101                    101

Last Missed Heartbeat (Count) Time
----------------------------------
0
```

The output of this command includes the following parameters:

Parameter	Description
`Controller IP`	IP address of the controller from which this command was issued.
`Active Reference Count`	Number of APs that are using that standby controller as their active controller.
`Total HeartBeat Sent`	Total number of heartbeats sent by the controller.
`Total Heartbeat REceived`	Total nunmber of heartbeats received by the controller.
`Last Missed Heartbeat (count) time`	Timestamp showing when the last heartbeat sent was not received, as well as the number of heartbeats that failed to be sent.

Command History

Introduced in ArubaOS 6.4

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Enable mode on master and local controllers.

show ha oversubscription statistics

```
show ha oversubscription statistics
```

Description

This command displays statistics for the High Availability extended controller capacity feature

Syntax

No parameters.

Usage Guidelines

Starting with ArubaOS 6.4.0.0, a controller acting as a standby controller can oversubscribe to standby APs by up to four times that controller's rated AP capacity, as long as the tunnels consumed the standby APs do not exceed the maximum tunnel capacity for that standby controller.

Feature Requirements

All controllers using this feature must be deployed in a master-local topology where centralized licensing is enabled on the active and standby controllers. If centralized licensing is disabled, the standby AP oversubscription feature are disabled also. Standby controller oversubscription and the high availability state synchronization features are mutually incompatible cannot be be enabled simultaneously. If your deployment uses the state synchronization feature, you must disable it before you enable standby controller oversubscription.

Standby Controller Capacity

The following table describes the AP oversubscription capacity maximum supported tunnels and for controllers that support this feature.

Controller Model	Standby AP Capacity	Maximum Tunnels Supported
W-7210	4x rated AP capacity	16384 tunnels
W-7220	4x rated AP capacity	32768 tunnels
W-7240	4x rated AP capacity	65536 tunnels

To determine the number of standby tunnels consumed by APs on each active controller, multiply the number of APs on the active controllers by the number of BSSIDs per AP. As an example, consider a deployment with four active W-7210 controllers that each have 512 APs with 8 BSSIDs. The APs on each active controller consume (512 * 8) tunnels, for a combined total of 16,384 tunnels. A single W-7210 controller using the standby controller oversubscription feature can act as the standby controller for all four active controllers in this example, because this topology is within the 4x rated AP capacity limit and maximum tunnel limit for the a W-7210 controller model.

If the network administrator later changed all the APs in this deployment to support 10 BSSIDs, each active controller would use (512 * 10) tunnels, for a combined total of 20,480 tunnels on the four active controllers. The tunnels required by the APs on the active controllers would then exceed the maximum tunnel limit for the standby controller, so the standby controller can no longer support all APs on the active controllers.

AP Failover

If a standby controller reaches its AP oversubscription capacity or exceeds its maximum BSSID limit, the standby controller drops any subsequent standby AP connections. A dropped AP attempts to reconnect to the standby controller, but after it exceeds the maximum number of request retries, the AP informs the active controller that it is unable to connect to the standby controller. The active controller then prompts the AP to create a standby tunnel to another standby controller, if one is configured.

If an active controller fails, the APs on the active controller fail over to the standby controller. Once the standby controller has reached its capacity for active APs,it terminates tunnels to any standby APs that controller can no longer serve. When these APs detect that there is no longer a heartbeat between the AP and the standby controller, they notify their active controller that they can no longer connect to the standby. The active controller then prompts the APs to establish standby tunnels to another standby controller, if one is configured.

Examples

The following command displays oversubscription statistics for APs and tunnels

```
(host) #show ha oversubscription statistics
Platform oversubscription factor :          4
APs Limits
------------------
APs                      Number
----                     ------
Platform Limit           512
Current Active           2
Current Standby          694
Active remaining         0
Standby remaining        1
Maximum allowed Standby  697

BSS Limits
--------------------
Tunnels                Limits
-------                ------
Maximum BSS tunnels    16384
Average BSS/AP         23
BSS tunnels in use     16360
BSS tunnels available  24
```

The output of this command includes the following parameters:

Parameter	Description
`Platform limit`	Maximum number of APs supported by the controller platform.
`Current Active`	Number of active APs currently associated to the controller.
`Current Standby`	Number of APs that are currently using the controller as a standby controller.
`Active Remaining`	Number of APs that can connect to this controller in Active mode.
`Standby Remaining`	Number of APs that can connect to this controller in Standby mode.
`Maximum allowed Standby`	Maximum number of Standby APs supported by the controller.

Parameter	Description
`Maximum BSS tunnels`	The maximum number of BSS tunnels supported by the controller.
`Average BSS/AP`	The average number of BSS tunnels per AP using the controller as a standby controller.
`BSS tunnels in use`	Number of BSS tunnels currently in use by the controller.
`BSS tunnels available`	Number of BSS tunnels not currently in use by the controller.

Command History

Introduced in ArubaOS 6.4

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Enable mode on master and local controllers.

show hostname

```
show hostname
```

Description

Show the hostname of the controller.

Syntax

No parameters.

Example

The output of this command shows the hostname configured for the controller. A hostname can contain alphanumeric characters, spaces, punctuation, and symbol characters.

```
(host) # show hostname
hostname is SampleHost
```

Related Commands

Configure the controller's hostname using the command hostname.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available on master or local controllers

show iap detailed-table

```
show iap detailed-table
   branch-key <brkey>
   long
```

Description

Displays the details of all the branches terminating at the controller.

Syntax

Parameter	Description
`branch-key <brkey>`	Key for the branch, which is unique to each branch.
`long`	Displays the branches connected to the controller in detailed view.

Example

This example shows the details of the branches connected to the controller:

```
(host) #show iap detailed-table long

Name              VC MAC Address     Status   Inner IP   Key
----              --------------     ------   --------   ---
Instant-C0:8C:08 d8:c7:c8:c4:73:53  UP       1.1.1.1    2d15576901190269568c3d9837fc1b414e1b06
                                                        523282805aaa
Instant-C0:8C:08 d8:c7:c8:c4:73:53  UP       1.1.1.1    2d15576901190269568c3d9837fc1b414e1b06
                                                        523282805aaa
Instant-C0:8C:08 d8:c7:c8:c4:73:53  UP       1.1.1.1    2d15576901190269568c3d9837fc1b414e1b06
                                                        523282805aaa

Flags    Branch (Subnet / Vlan)    BID    IP Address Range      Client Count
-----    ----------------------    ---    ----------------      ------------
PD2      52                        0      52.1.1.2-52.1.1.100   5
PD3      53.1.1.8/29               0      53.1.1.1-53.1.1.100   5
PC2      51                        0

Flags: P = Primary Tunnel; B = Backup Tunnel; C = Centralized; U = Unassigned;
       D = Distributed; L = Local; 3 = Routed(L3); 2 = Bridged(L2);
```

The output of this command includes the following parameters:

Parameter	Description
`Name`	Name of the branch
`VC MAC Address`	MAC address of the Virtual Controllerof the branch
`Status`	Current status of the branch (UP/DOWN)
`Inner IP`	Internal VPN IP of the branch

Parameter	Description
Key	Key for the branch, which is unique to each branch
Flags	This column displays any flags for the branch subnet • P = Primary Tunnel • B = Backup Tunnel • C = Centralized • D = Distributed • L = Local • U = Unassigned • 3 = Routed(L3) • 2 = Bridged(L2)
Branch (Subnet/Vlan)	Subnet mask or VLAN assigned to the branch
BID	Branch ID
IP Address Range	Allocated branch subnet IP address range
Client Count	Number of client terminating on this controller

Command History

Release	Modification
ArubaOS 6.4	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Enable or Configuration mode on master and local controller

show iap table

```
show iap table
   branch-key <brkey>
   long
```

Description

Displays the branch details connected to the controller.

Syntax

Parameter	Description
`branch-key <brkey>`	Key for the branch, which is unique to each branch.
`long`	Displays the branches connected to the controller in detailed view.

Example

This example shows the details of the branches connected to the controller:

```
(host) #show iap table long

IAP Branch Table
----------------
Name              VC MAC Address     Status   Inner IP       Assigned Subnet  Assigned Vlan
----              --------------     ------   --------       ---------------  -------------
Tokyo-CB:D3:16    6c:f3:7f:cc:42:f8  DOWN     0.0.0.0
Paris-CB:D3:16    6c:f3:7f:cc:3d:04  UP       10.15.207.140  10.15.206.99/29  2
LA                6c:f3:7f:cc:42:25  UP       10.15.207.111  10.15.206.24/29  2
Munich            d8:c7:c8:cb:d3:16  DOWN     0.0.0.0
London-c0:e1      6c:f3:7f:c0:e1:b1  UP       10.15.207.120  10.15.206.64/29  2
Instant-CB:D3     6c:f3:7f:cc:42:1e  DOWN     0.0.0.0
Delhi             6c:f3:7f:cc:42:ca  DOWN     0.0.0.0
Singapore         6c:f3:7f:cc:42:cb  UP       10.15.207.122  10.15.206.120/29 2


Key         Bid(Subnet Name)
---         ----------------
b3c65c...
b3c65c...
b3c65c...   2(10.15.205.0-10.15.205.250,5),1(10.15.206.1-10.15.206.252,5)
a2a65c...   0
b3c65c...   7(10.15.205.0-10.15.205.250,5),8(10.15.206.1-10.15.206.252,5)
b3c65c...
b3c65c...   1(10.15.205.0-10.15.205.250,5),2(10.15.206.1-10.15.206.252,5)
b3c65c...   14(10.15.205.0-10.15.205.250,5),15(10.15.206.1-10.15.206.252,5)
```

The output of this command includes the following parameters:

Parameter	Description
`Name`	Name of the branch.

Parameter	Description
VC MAC Address	MAC address of the Virtual Controller of the branch.
Status	Current status of the branch (UP/DOWN).
Inner IP	Internal VPN IP of the branch.
Assigned Subnet	Subnet mask assigned to the branch.
Assigned Vlan	VLAN ID assigned to the branch.
Key	Key for the branch, which is unique to each branch.
Bid(Subnet Name)	Branch ID (BID) of the subnet. • In the example above, the controller displays bid-per-subnet-per-branch i.e., for "LA" branch, BID "2" for the ip-range "10.15.205.0-10.15.205.250" with client count per branch "5"). If a branch has multiple subnets, it can have multiple BIDs. • Branches that are in **UP** state and do not have a **Bid(Subnet Name)** means that the IAP is connected to a controller which did not assign any bid for any subnet. In the above example, "Paris-CB:D3:16" branch is **UP** and does not have a **Bid(Subnet Name)** information. This means that either the IAP is connected to a backup controller or connected to a primary controller without any distributed L2 or L3 subnets. For more information on bid-per-subnet-per-branch and distributed L2 and L3 subnets, see the *DHCP Configuration* chapter of the Dell *Instant Access Point 6.2.1.0-3.3 User Guide*.

Related Commands

Command	Description
iap del branch-key	This command removes a branch from the controller based on the branch key.

Command History

Release	Modification
ArubaOS 6.2	Command introduced
ArubaOS 6.3	The **long** parameter is introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Enable or Configuration mode on master and local controller

show iap trusted-branch-db

```
show iap trusted-branch-db
```

Description

Displays the details of IAP trusted branch database information.

Syntax

None

Example

This example shows the details of IAP trusted branch database information:

```
(host) #show iap trusted-branch-db

Trusted Branch Validation: Enabled
IAP Trusted Branch Table
------------------------
Branch MAC
----------
01:01:0e:3e:4c:33
```

Another example:

```
(host) #show iap trusted-branch-db

Trusted Branch Validation: Disabled
IAP Trusted Branch Table
------------------------
Branch MAC
----------
(allow all as trusted branch)
```

The output of this command includes the following parameters:

Parameter	Description
Branch MAC	MAC address of the trusted IAP branch

Related Commands

Command	Description
iap trusted-branch-db	This command configures an IAP-VPN branch as trusted

Command History

Release	Modification
ArubaOS 6.2	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system, except for noted parameters	Enable or Configuration mode on master and local controller

show ids ap-classification-rule

```
id-classification-rule <rule-name>
```

Description

Display the IDS AP classification rule profile.

Syntax

Parameter	Description
<rule-name>	Enter the AP classification rule profile name.

Usage Guidelines

Issue this command without the **<rule-name>**option to view the AP Classification Rule Profile list. Add the rule name option to display values for the rule.

Example

Below is the show command *without* the rule name option:

```
(host) (config) #show ids ap-classification-rule
IDS AP Classification Rule Profile List
---------------------------------------
Name               References  Profile Status
----               ----------  --------------
exclude-ssid-rule  1
rule1              1
rule2              1
Total:3
```

In the example above, the **Reference** column indicates the number of references to the rule named in the **Name** column. The **Profile Status** column is blank unless the rule is predefined. Optionally, you can enter a rule name to view the parameters for that rule. For example:

```
(host) (config) # show ids ap-classification-rule rule1
IDS AP Classification Rule Profile "rule1"
------------------------------------------
Parameter                     Value
---------                     -----
SSID                          Dell-ap
Match SSIDs                   true
Min SNR value                 0
Max SNR value                 255
Discovered APs count          2
Check for Min Discovered APs  true
Classify To AP Type           suspected-rogue
Confidence level increase     5
```

Command History

Release	Modification
ArubaOS 6.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids ap-rule-matching

Description

Display the IDS active AP rules profile.

Example

```
(host) (config) #show ids ap-rule-matching

IDS Active AP Rules Profile
---------------------------
Parameter     Value
---------     -----
AP Rule name  snr0
AP Rule name  rule1
AP Rule name  rule2
AP Rule name  exclude-ssid-rule
```

In the above example, the rule names in the *Value* column have been activated by the **ids ap-rule-matching** command.

Command History

Release	Modification
ArubaOS 6.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids dos-profile

```
show ids dos-profile <profile-name>
```

Description

Show an IDS Denial Of Service (DoS) Profile

Syntax

Parameter	Description
<profile-name>	Name of an IDS DoS profile.

Usage Guidelines

Issue this command without the **<profile-name>**parameter to display an IDS DoS profile.

Examples

The example below shows that the controller has four configured DoS profiles.

```
((host) (config) #show ids dos-profile

IDS Denial Of Service Profile List
----------------------------------
Name           References  Profile Status
----           ----------  --------------
default        4
test           0
test1          1
Wizard-test    1
Wizard-test2   1

Total:5
```

In the example above, the **Reference** column indicates the number of references to the profile named in the **Name** column. The **Profile Status** column is blank unless the rule is predefined.

The example below displays a partial output for the profile “test1”.

```
(host) (config) #show ids dos-profile test1
Parameter                                       Value
---------                                       -----
Detect Disconnect Station Attack                true
Disconnect STA Assoc Response Theshold          5
Disconnect STA Deauth and Disassoc Theshold     8
Disconnect STA Detection Quiet Time             900 sec
Spoofed Deauth Blacklist                        Disabled
Detect AP Flood Attack                          false
AP Flood Threshold                              50
AP Flood Increase Time                          3 sec
AP Flood Detection Quiet Time                   900 sec
Detect Client Flood Attack                      false
Client Flood Threshold                          150
Client Flood Increase Time                      3 sec
Client Flood Detection Quiet Time               900 sec
Detect EAP Rate Anomaly                         false
```

```
EAP Rate Threshold                              60
EAP Rate Time Interval                          3 sec
EAP Rate Quiet Time                             900 sec
Detect CTS Rate Anomaly                         false
CTS Rate Threshold                              5000
CTS Rate Time Interval                          5 sec
CTS Rate Quiet Time                             900 sec
Detect RTS Rate Anomaly                         false
RTS Rate Threshold                              5000
RTS Rate Time Interval                          5 sec
RTS Rate Quiet Time                             900 sec
Detect Rate Anomalies                           false
Rate Thresholds for Assoc Frames                default
Rate Thresholds for Disassoc Frames             default
Rate Thresholds for Deauth Frames               default
...
```

For a detailed explanation of the output shown above, see the ids dos-profile command.

Related Commands

Configure IDS DoS profiles using the command ids dos-profile.

Command History

Release	Modification
ArubaOS 6.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids general-profile

```
show ids general-profile <profile-name>
```

Description

Display an IDS General profile.

Syntax

Parameter	Description
<profile-name>	Name of an IDS General profile.

Usage Guidelines

Issue this command without the **<profile-name>** parameter to display the IDS General profile list. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has four configured General profiles.

```
(host) (config) # show ids general-profile
IDS General Profile List
------------------------
Name           References  Profile Status
----           ----------  --------------
default        2
helen          0
wired-lb       1
Wizard-test2   1
Total:4
```

In the example above, the **Reference** column indicates the number of references to the profile named in the **Name** column. The **Profile Status** column is blank unless the rule is predefined.

The example below displays the settings for the profile **Michael**.

```
(host) (config) #show ids general-profile Michael

IDS General Profile "Michael"
-----------------------------
Parameter                                 Value
---------                                 -----
Adhoc AP Max Unseen Timeout               180 sec
Adhoc (IBSS) AP Inactivity Timeout        5 sec
AP Inactivity Timeout                     20 sec
AP Max Unseen Timeout                     600 sec
Frame Types for RSSI calculation          ba pr dlow dnull mgmt ctrl
IDS Event Generation on AP                none
Max Monitored Stations                    1024
Max Unassociated Stations                 256
Min Potential AP Beacon Rate              25 %
Min Potential AP Monitor Time             2 sec
Mobility Manager RTLS                     false
Monitored Device Stats Update Interval    0 sec
Packet SNR Threshold                      0
```

```
Send Adhoc Info to Controller            true
Signature Quiet Time                     900 sec
STA Inactivity Timeout                   60 sec
STA Max Unseen Timeout                   600 sec
Stats Update Interval                    60 sec
Wired Containment                        true
Wired Containment of AP's Adj MACs       true
Wired Containment of Suspected L3 Rogue  false
Wireless Containment                     deauth-only
Debug Wireless Containment               false
WMS Client Monitoring                    all
```

The output of this command includes the following parameters:

Parameter	Description
Adhoc AP Max Unseen Timeout	Ageout time in seconds since adhoc (IBSS) AP was last seen.
Adhoc (IBSS) AP Inactivity Timeout	Adhoc (IBSS) AP inactivity timeout in number of scans.
AP Inactivity Timeout	Time, in seconds, after which an AP is aged out.
AP Max Unseen Timeout	Ageout time, in seconds, since AP was last seen.
Frame Types for RSSI calculation	Frame types used in AM RSSI calculation.
IDS Event Generation on AP	Enable or disable IDS event generation from the AP. Event generation from the AP can be enabled for syslogs, traps, or both. This does not affect generation of IDS correlated events on the switch.
Max Monitored Stations	Maximum number of monitored stations.
Max Unassociated Stations	Maximum number of unassociated stations.
Min Potential AP Beacon Rate	Minimum beacon rate acceptable from a potential AP, in percentage of the advertised beacon interval.
Min Potential AP Monitor Time	Minimum time, in seconds, a potential AP has to be up before it is classified as a real AP.
Mobility Manager RTLS	Shows if RTLS communication with the configured mobility-manager is enabled or disabled.
Monitored Device Stats Update Interval	Time interval, in seconds, for AP to update the switch with stats for monitored devices. Minimum is 60.
Packet SNR Threshold	The packet Signal to Noise Ratio (SNR) threshold. All packets with SNR below this threshold is dropped from IDS and ARM processing. No packets are dropped if the threshold is set to 0.

Parameter	Description
Send Adhoc Info to Controller	Enable or disable sending adhoc information to the controller from the AP.
Signature Quiet Time	After a signature match is detected, the time to wait, in seconds, to resume checking.
STA Inactivity Timeout	Time, in seconds, after which a station is aged out.
STA Max Unseen Timeout	Time, in seconds, after which an AP is aged out.
Stats Update Interval	Interval, in seconds, for the AP to update the controller with statistics. This setting takes effect only if the Dell Mobility Manager is configured. Otherwise, statistics update to the controller is disabled.
Wired Containment	Shows if the profile has enabled or disabled containment from the wired side.
Wired Containment of AP's Adj MACs	Shows if the profile has enabled or disabled wired containment of MACs offset by one from APs BSSID.
Wired Containment of Suspected L3 Rogue	Shows if the profile has enabled or disabled the feature to identify and contain an AP with a preset wired MAC address that is completely different from the AP's BSSID. where the MAC address that the AP provides to wireless clients as a 'gateway MAC' is offset by one character from its wired MAC address.
Wireless Containment	Shows if the profile has enabled or disabled containment from the wireless side.
Debug Wireless Containment	Shows if the profile has enabled or disable debugging of containment from the wireless side.
Wired Containment of AP's Adj MACs	Enable/disable wired containment of MACs offset by one from APs BSSID.

Related Commands

Configure IDS General profiles using the command ids general-profile.

Command History

Version	Description
ArubaOS 3.0	Command Introduced
ArubaOS 5.0	Mobility Manager RTLS parameter introduced
ArubaOS 6.0	Refreshed show output
ArubaOS 6.3	Introduced the **Wired Containment of Suspected L3 Rogue** parameter.
ArubaOS 6.4.2.3	The following parameters were introduced as part of this command output: • **Packet SNR Threshold** • **Frame Types for RSSI calculation** • **Max Monitored Stations** • **Max Unassociated Stations**

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids impersonation-profile

```
show ids impersonation-profile <profile-name>
```

Description

Display an IDS Impersonation Profile.

Syntax

Parameter	Description
<profile-name>	Name of an IDS Impersonation profile.

Usage Guidelines

Issue this command without the **<profile-name>**parameter to display the IDS Impersonation profile list. Include a profile name to display detailed configuration information for that profile.

Examples

The example below displays that the controller has five configured Impersonation profiles.

```
(host) (config) #show ids impersonation-profile

IDS Impersonation Profile List
------------------------------
Name           References  Profile Status
----           ----------  --------------
default        4
test           0
test1          1
Wizard-test    1
Wizard-test2   1

Total:5
```

In the example above, the **Reference** column indicates the number of references to the profile named in the **Name** column. The **Profile Status** column is blank unless the rule is predefined.

The example below displays the configuration settings for the profile **test1**.

```
(host) (config) #show ids impersonation-profile test1

IDS Impersonation Profile "test1"
---------------------------------
Parameter                                 Value
---------                                 -----
Detect AP Impersonation                   false
Protect from AP Impersonation             false
Beacon Diff Threshold                     50 %
Beacon Increase Wait Time                 3 sec
Detect AP Spoofing                        true
Detect Beacon Wrong Channel               false
Beacon Wrong Channel Detection Quiet Time 900 sec
Detect Hotspotter Attack                  true
Hotspotter Quiet Time                     900 sec
```

The output of this command includes the following parameters:

Parameter	Description
Detect AP Impersonation	Shows of the profile has enabled or disabled detection of AP impersonation.
Protect from AP Impersonation	Shows if AP impersonation is enabled or disabled for the profile. When AP impersonation is detected, both the legitimate and impersonating AP are disabled using a denial of service attack.
Beacon Diff Threshold	Percentage increase in beacon rates that triggers an AP impersonation event.
Beacon Increase Wait Time	Time, in seconds, after the beacon difference threshold is crossed before an AP impersonation event is generated.
Detect AP Spoofing	AP Spoofing detection is enabled
Detect Beacon Wrong Channel	Disable detection of beacons advertising the incorrect channel
Beacon Wrong Channel Detection Quiet Time	Wait 90 seconds after detecting a beacon with the wrong channel after which the check can be resumed.
Detect Hotspotter Attack	Enable detection of the Hotspotter attack to lure away valid clients.
Hotspotter Quiet Time	Wait 90 seconds after detecting an attempt to Use the Hotspotter tool against clients.

Related Commands

Configure IDS impersonation profiles using the command ids impersonation-profile.

Command History

Version	Description
ArubaOS 3.0	Command Introduced
ArubaOS 6.0	Refreshed show output

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids management-profile

Description

Displays the management event correlation for IDS event traps and sylogs (logs).

Example

The following example displays the current management status.

```
(host) (config) #show ids management-profile

IDS Management Profile
----------------------
Parameter                     Value
---------                     -----
IDS Event Correlation         logs-and-traps
Event Correlation Quiet Time  900 sec
```

The display output of the above command includes:

Parameter	Description
IDS Event Correlation	Management profile is set for logs-and-traps.
Event Correlation Quiet Time	The time to wait, 900 seconds, before the event can be raised again.

Command History

Version	Description
ArubaOS 6.0	Command Introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids profile

```
show ids profile <profile-name>
```

Description

Display all ids profiles or display a specific profile name.

Syntax

Parameter	Description
<profile-name>	Name of an IDS profile.

Usage Guidelines

Issue this command without the **<profile-name>**parameter to display the list of IDS profiles. Include a profile name to display detailed information for that profile.

Examples

The example below shows that the controller has seven configured IDS Profiles.

```
(host) (config) #show ids profile

IDS Profile List
----------------
Name            References  Profile Status
----            ----------  --------------
default         5
test            0
test-tarpit     1
test-wired-lb   0
test1           0
Wizard-test     0
Wizard-test2    0

Total:7
```

In the example above, the **Reference** column indicates the number of references to the profile named in the **Name** column. The **Profile Status** column is blank unless the rule is predefined.

This example displays the configuration settings for the profile **test1**.

```
(host) (config) #show ids profile test1

IDS Profile "test1"
-------------------
Parameter                       Value
---------                       -----
IDS General profile             test1
IDS Signature Matching profile  test1
IDS DOS profile                 test1
IDS Impersonation profile       test1
IDS Unauthorized Device profile test1
```

The output of this command includes the following parameters:

Parameter	Description
`IDS General profile`	Name of a IDS General profile to be applied to an AP or AP group.
`IDS Signature Matching profile`	Name of a IDS Signature Matching profile to be applied to an AP or AP group.
`IDS DOS profile`	Name of a IDS Denial of Service profile to be applied to an AP or AP group.
`IDS Impersonation profile`	Name of a IDS Impersonation profile to be applied to an AP or AP group.
`IDS Unauthorized Device profile`	Name of a IDS Unauthorized Device profile to be applied to an AP or AP group.

Related Commands

Configure the IDS profile using the command ids profile.

Command History

Version	Description
ArubaOS 3.0	Command Introduced
ArubaOS 6.0	Refreshed show output

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids rate-thresholds-profile

```
show ids rate-thresholds-profile <profile-name>
```

Description

Show an IDS Rate Thresholds profile.

Syntax

Parameter	Description
<profile-name>	Name of an IDS Rate Threshold profile.

Usage Guidelines

Issue this command without the **<profile-name>**parameter to display the IDS Rate Threshold profile list. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has three configured IDS Rate Threshold profiles.

```
(host) (config) #show ids rate-thresholds-profile

IDS Rate Thresholds Profile List
--------------------------------
Name                               References  Profile Status
----                               ----------  --------------
default                            20
probe-request-response-thresholds  10          Predefined
test                               0

Total:3
```

In the example above, the **Reference** column indicates the number of references to the profile named in the **Name** column. The **Profile Status** column is blank unless the rule is predefined.

This example displays the configuration settings for the profile **test**.\

```
(host) (config) #show ids rate-thresholds-profile test

IDS Rate Thresholds Profile "test"
----------------------------------
Parameter              Value
---------              -----
Channel Increase Time  15 sec
Channel Quiet Time     900 sec
Channel Threshold      300
Node Time Interval     15 sec
Node Quiet Time        900 sec
Node Threshold         200
```

The output of this command includes the following parameters:.

Parameter	Description
`Channel Increase Time`	Time, in seconds, in which the threshold must be exceeded in order to trigger an alarm.
`Channel Quiet Time`	The time that must elapse after a channel rate alarm before another identical alarm may be triggered. This option prevents excessive messages in the log file.
`Channel Threshold`	Number of a specific type of frame that must be exceeded within a specific interval in an entire channel to trigger an alarm.
`Node Time Interval`	Time, in seconds, in which the threshold must be exceeded in order to trigger an alarm.
`Node Quiet Time`	The time that must elapse after a node rate alarm before another identical alarm may be triggered. This option prevents excessive messages in the log file.
`Node Threshold`	Number of a specific type of frame that must be exceeded within a specific interval for a particular client MAC address to trigger an alarm.

Related Commands

Configure the IDS Rate Threshold profile using the command ids rate-thresholds-profile.

Command History

Version	Description
ArubaOS 3.0	Command Introduced
ArubaOS 6.0	Refreshed show output

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids signature-matching-profile

```
show ids signature-matching-profile <profile-name>
```

Description

Show an IDS Signature Matching profile.

Syntax

Parameter	Description
`<profile-name>`	Name of an IDS Signature Matching profile.

Usage Guidelines

Issue this command without the **<profile-name>**parameter to display the entire IDS Signature Matching profile list. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has four configured Signature Matching profiles.

```
(host) (config) #show ids signature-matching-profile

IDS Signature Matching Profile List
-----------------------------------
Name           References  Profile Status
----           ----------  --------------
default        4
test1          1
Wizard-test    1
Wizard-test2   1

Total:4
```

In the example above, the **Reference** column indicates the number of references to the profile named in the **Name** column. The **Profile Status** column is blank unless the rule is predefined.

This example displays the configuration settings for the profile **test1**.

```
(host) (config) #show ids signature-matching-profile test1

IDS Signature Matching Profile "test1"
--------------------------------------
Parameter       Value
---------       -----
IDS Signature   Deauth-Broadcast
IDS Signature   Disassoc-Broadcast
```

The output of this command includes the following parameters:

Parameter	Value
`IDS Signature`	Broadcast is not authorized
`IDS Signature`	Disassociate broadcast

Related Commands

Configure the Signature Matching profile using the command ids signature-matching-profile.

Command History

Version	Description
ArubaOS 3.0	Command Introduced
ArubaOS 6.0	Refreshed show output

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids signature-profile

```
show ids signature-profile <profile-name>
```

Description

Show an IDS signature profile.

Syntax

Parameter	Description
<profile-name>	Name of an IDS Signature profile.

Usage Guidelines

Issue this command without the **<profile>**parameter to display the entire IDS Signature profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has eight configured Signature profiles.

```
(host) # show ids signature-profile

IDS Signature Profile List
--------------------------
Name                        References  Profile Status
----                        ----------  --------------
AirJack                     1           Predefined
ASLEAP                      1           Predefined
Deauth-Broadcast            1           Predefined
default                     1
Netstumbler Generic         1           Predefined
Netstumbler Version 3.3.0x  1           Predefined
Null-Probe-Response         1           Predefined
sample                      0

Total:8
```

This example displays the configuration settings for the profile **AirJack**.

```
(host) # show ids signature-profile
IDS Signature Profile "AirJack" (predefined)
--------------------------------------------
Parameter   Value
---------   -----
Frame Type  beacon SSID = AirJack
```

The output of this command includes the following parameters:

Parameter	Description
`Frame Type`	Type of 802.11 frame. For each type of frame, further parameters may be included to filter and detect only the required frames. • **assoc**: Association frame type. • **auth**: Authentication frame type. • **beacon**: Beacon frame type. • **control**: All control frames. • **data**: All data frames. • **deauth**: Deauthentication frame type. • **disassoc**: Disassociation frame type. • **mgmt**: Management frame type. • **probe-reques**t: Probe request frame type. • **probe-response:** Probe response frame type. • **ssid**: For beacon, probe-request, and probe-response frame types, the SSID as either a string or hex pattern. • **ssid-length**: For beacon, probe-request, and probe-response frame types, the length, in bytes, of the SSID.
`payload`	Pattern at a fixed offset in the payload of an 802.11 frame.
`sequence number`	Sequence number of the frame.
`src- mac`	Source MAC address in the 802.11 frame header.
`dst- mac`	Source MAC address in the 802.11 frame header.
`bssid`	BSSID field in the 802.11 frame header.

Related Commands

Configure the Signature profile using the command ids signature-profile.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config mode on master or local controllers

show ids unauthorized-device-profile

```
show ids unauthorized-device-profile <profile-name>
```

Description

Show an IDS Unauthorized Device Profile.

Syntax

Parameter	Description
<profile-name>	Name of an IDS Unauthorized Device profile

Usage Guidelines

Issue this command without the **<profile-name>** parameter to display the IDS Unauthorized Device profile list. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has five configured Unauthorized Device profiles.

```
(host) (config) #show ids unauthorized-device-profile

IDS Unauthorized Device Profile List
------------------------------------
Name           References  Profile Status
----           ----------  --------------
default        4
test           0
test1          1
Wizard-test    1
Wizard-test2   1

Total:5
```

In the example above, the **Reference** column indicates the number of references to the profile named in the **Name** column. The **Profile Status** column is blank unless the rule is predefined.

This example displays the configuration settings for the profile **test1**.

```
(host) (config) #show ids unauthorized-device-profile test1

IDS Unauthorized Device Profile "test1"
IDS Unauthorized Device Profile "default"
-----------------------------------------
Parameter                                       Value
---------                                       -----
Protect 802.11n High Throughput Devices         false
Protect 40MHz 802.11n High Throughput Devices   false
Detect Active 802.11n Greenfield Mode           false
Detect Adhoc Networks                           false
Protect from Adhoc Networks                     false
Protect from Adhoc Networks - Enhanced          false
Detect Adhoc Network Using Valid SSID           true
Adhoc Network Using Valid SSID Quiet Time       900 sec
Allow Well Known MAC                            N/A
```

```
Detect Devices with an Invalid MAC OUI              false
MAC OUI detection Quiet Time                        900 sec
Detect Misconfigured AP                             false
Protect Misconfigured AP                            false
Detect Bad WEP                                      false
Privacy                                             false
Require WPA                                         false
Valid 802.11g channel for policy enforcement        N/A
Valid 802.11a channel for policy enforcement        N/A
Valid and Protected SSIDs                           N/A
Valid MAC OUIs                                      N/A
Rogue AP Classification                             true
Overlay Rogue AP Classification                     true
OUI-based Rogue AP Classification                   true
Propagated Wired MAC based Rogue AP Classification  true
Rogue Containment                                   false
Suspected Rogue Containment                         false
Suspected Rogue Containment Confidence Level        60
Detect Station Association To Rogue AP              true
Detect Unencrypted Valid Clients                    true
Unencrypted Valid Client Detection Quiet Time       900 sec
Detect Valid Client Misassociation                  true
Detect Valid SSID Misuse                            false
Protect SSID                                        false
Protect Valid Stations                              false
Valid Wired MACs                                    N/A
Detect Windows Bridge                               true
Protect Windows Bridge                              false
Detect Wireless Bridge                              false
Wireless Bridge detection Quiet Time                900 sec
Detect Wireless Hosted Network                      true
Wireless Hosted Network Quiet Time                  900 sec
Protect From Wireless Hosted Networks               false
```

The output of this command includes the following parameters:

Parameter	Description
`Protect 802.11n High Throughput Devices`	Shows if the profile enables or disables protection of high-throughput (802.11n) devices.
`Protect 40MHz 802.11n High Throughput Devices`	Shows if the profile enables or disables protection of high-throughput (802.11n) devices operating in 40 MHz mode.
`Detect Active 802.11n Greenfield Mode`	Shows if the profile enables or disables detection of high-throughput devices advertising greenfield preamble capability.
`Detect AdHoc Networks`	Shows if the profile has enabled or disabled detection of adhoc networks.
`Protect from Adhoc Networks`	Shows if the profile has enabled or disabled protection from WPA/WPA2 adhoc networks.

Parameter	Description
Protect from Adhoc Networks-Enhanced	Shows if the profile has enabled or disabled protection from WEP/Open adhoc networks.
Detect Valid SSID Misuse	Shows if the detect valid SSID minuse is enabled (true) or disabled (false).
Adhoc Network Using Valid SSID Quiet Time	Shows time to wait, in seconds, after detecting an adhoc network using a valid SSID, after which the check can be resumed.
Allow Well Known MAC	Shows if the profile allows devices with known MAC addresses to classify rogue APs.
Detect Devices with an Invalid MAC OUI	Shows if the profile has enabled or disabled checking of the first three bytes of a MAC address, known as the organizationally unique identifier (OUI), assigned by the IEEE to known manufacturers.
MAC OUI detection Quiet Time	Time, in seconds, that must elapse after an invalid MAC OUI alarm has been triggered before another identical alarm may be triggered.
Detect Misconfigured AP	Shows if the profile has enabled or disabled detection of misconfigured APs.
Protect Misconfigured AP	Shows if the profile has enabled or disabled protection of misconfigured APs.
Detect Bad WEP	Shows if the profile has enabled or disabled detection of WEP initialization vectors that are known to be weak and/or repeating.
Privacy	Shows if the profile has enabled or disabled encryption as a valid AP configuration.
Require WPA	Shows if the controller will flag any valid AP not using WPA as a misconfigured AP.
Valid 802.11g channel for policy enforcement	A list of valid 802.1b/g channels that third-party APs are allowed to use.
Valid 802.11a channel for policy enforcement	A list of valid 802.11a channels that third-party APs are allowed to use.
Valid and Protected SSIDs	A list of valid and protected SSIDs.

Parameter	Description
Valid MAC OUIs	A list of valid MAC Organizationally Unique Identifiers (OUIs).
Rogue AP Classification	Shows if the profile has enabled or disabled rogue AP classification.
Overlay Rogue AP Classification	Shows if the controller allows APs that are plugged into the wired side of the network to be classified as “suspected rogue” instead of “rogue”.
OUI-based Rogue AP Classification	Shows if OUI-based rogue AP classification is enabled or disabled.
Propagated Wired MAC based Rogue AP Classification	Shows if rogue AP classification through propagated wired MACs is enabled or disabled.
Rogue Containment	Shows if the controller will automatically shut down rogue APs.
Suspected Rogue Containment	Shows if the controller will automatically treat suspected rogue APs as interfering APs.
Suspected Rogue Containment Confidence Level	Confidence level of suspected Rogue AP to trigger containment, expressed as a percentage.
Detect Station Association To Rogue AP	Shows if the profile has been configured to detect station association to a rogue AP.
Detect Unencrypted Valid Clients	Shows if the profile has enabled or disabled detection of unencrypted valid clients.
Unencrypted Valid Client Detection Quiet Time	Shows the time to wait, in seconds, after detecting an unencrypted valid client after which the check can be resumed.
Detect Valid Client Misassociation	Shows if the profile has enabled or disabled detection of a misassociation between a valid client and an unsafe AP.
Detect Valid SSID Misuse	Shows if the profile has enabled or disabled detection of Interfering or Neighbor APs using valid/protected SSIDs.
Protect SSID	Shows if the profile has enabled or disabled use of SSID by valid APs only.
Protect Valid Stations	Shows if the controller will allow valid stations to connect to a non-valid AP.

Parameter	Description
Valid Wired MACs	List of valid and protected SSIDs.
Detect Windows Bridge	Shows if the profile has enabled or disabled detection of Windows station bridging.
Protect Windows Bridge	Shows if the profile has enabled or disabled protection of Windows station bridging.
Detect Wireless Bridge	Shows if the profile has enabled or disabled detection of wireless bridging.
Wireless Bridge detection Quiet Time	Time, in seconds, that must elapse after a wireless bridge alarm has been triggered before another identical alarm may be triggered.
Protect From Wireless Hosted Networks	Shows if the profile has enabled or disabled detection of a wireless hosted network.
Wireless Hosted Network Quiet Time	The wireless hosted network detection feature sends a log message and trap when a wireless hosted network is detected. The quiet time displayed in this field displays the amount of time, in seconds, that must elapse after a wireless hosted network log message or trap has been triggered before an identical log message or trap can be sent again.
Protect From Wireless Hosted Networks	Shows if the profile has enabled or disabled containment on a wireless hosted network by launching a denial of service attack to disrupt associations between a Windows 7 software-enabled Access Point (softAP) and a client, and disrupt associations between the client that is hosting the softAP and any access point to which the host connects.

Related Commands

Configure the Unauthorized Device profile using the command ids unauthorized-device-profile.

Command History

Version	Description
ArubaOS 3.0	Command Introduced
ArubaOS 6.1	The **detect valid SSID Misuse** parameter was introduced
ArubaOS 6.3	The following parameters were introduced.

Version	Description
	• Protect From Wireless Hosted Networks • Wireless Hosted Network Quiet Time • Protect From Wireless Hosted Networks • Protect from Adhoc Networks-Enhanced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Requires the RFprotect license	Config mode on master controllers

show ids wms-general-profile

```
show ids wms-general-profile
```

Description

Display general statistics for the wms configuration.

Syntax

No parameters.

Example

```
This example shows per-channel statistics for all monitored APs.

(host) #show ids wms-general-profile

IDS WMS General Profile
-----------------------
Parameter                                   Value
---------                                   -----
AP poll interval                            60000 msec
AP poll retries                             3
AP ageout interval                          0 minutes
Adhoc AP ageout interval                    31 minutes
Station ageout interval                     100 minutes
Statistics update                           true
Persistent Neighbor APs                     true
Persistent Valid STAs                       false
AP learning                                 false
Propagate Wired Macs                        true
Collect Stats for Monitored APs and Clients false
Learn System Wired Macs                     false
```

Column	Description
AP poll interval	Interval, in milliseconds, for communication between the controller and AMs. The controller contacts the AM at this interval to download AP to station associations, update policy configuration changes, and download AP and station statistics.
AP poll retries	Maximum number of failed polling attempts before the polled AM is considered to be down.
AP ageout interval	Time, in minutes, that an AP must remain unseen by any probes before it is deleted from the database.
Adhoc AP ageout interval	Time, in minutes, that an adhoc (IBSS) AP remains unseen before it is deleted (ageout) from the database.
Station ageout interval	Time, in minutes, that an client must unseen by any probes before it is deleted from the database.

Column	Description
Statistics update	Shows the status of the statistics updates in the database.
Persistent Neighbor APs	Shows the status of known AP neighbors.
Persistent Valid STAs	Shows the status of known AP neighbors.
AP learning	Shows the status of “learning” of non-Dell APs.
Propagate Wired Macs	Shows if the controller has enabled or disabled the propagation of the gateway wired MACs.
Collect Stats for Monitored APs and Clients	Shows if the master controller will collect up to 25,000 statistic entries for monitored APs and clients.
Learn System Wired Macs	Shows the status of “learning” of wired MACs at the controller.

The output of this command includes the following information:

Command History

Release	Modification
ArubaOS 3.0	Command introduced

ArubaOS 6.1	Added the following parameters
	`adhoc-ap-ageout-interval`
	`debug`
	`persistent-neighbor`
	`event-correlation`
	`event-correlation-quiet-time`
	`Minutes Tick`

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show ifmap

```
show ifmap
   cppm
   state cppm
```

Descriptions

Issue this command to show the CPPM IF-MAP configuration profile and the IP-MAP connection state.

Syntax

Parameter	Description
`cppm`	Shows the CPPM IF-MAP profile parameters and their values.
`state cppm`	Shows the CPPM IF-MAP connection state including if it is enabled, and the servers and their state.

Example

To configure this feature using the CLI:

```
(host) (config) #ifmap
(host) (config) #ifmap cppm
(host) (CPPM IF-MAP Profile) #server host <host>
(host) (CPPM IF-MAP Profile) #port <port>
(host) (CPPM IF-MAP Profile) #passwd <psswd>
(host) (CPPM IF-MAP Profile) #enable
```

This show command show if the CCPM interface is enable and the CPPM server IP address, username and password.

```
(host) (CPPM IF-MAP Profile) #show ifmap cppm
CPPM IF-MAP Profile
-------------------
Parameter              Value
---------              -----
CPPM IF-MAP Interface  Enabled
CPPM IF-MAP Server     10.10.10.10:443 admin/********
```

This show command shows if state of all enabled CPPM servers.

```
(host) (CPPM IF-MAP Profile) #show ifmap state cppm
CPPM IF-MAP Connection State [Interface: Enabled]
-------------------------------------------------
Server           State
------           -----
10.4.191.32:443  UP
```

Related Commands

Command	Description	Mode
ifmap	This command is used in conjunction with ClearPass Policy Manager. It sends HTTP User Agent Strings and mDNS broadcast information to ClearPass so that it can make more accurate decisions about what types of devices are connecting to the network	Config mode

Command History

Version	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode

show ip interface brief

```
show ip interface brief
```

Description

View IP-related information on all interfaces in summary format.

Syntax

No parameters.

Example

```
(host) #show  ip interface brief

Interface                   IP Address / IP Netmask        Admin    Protocol
vlan 1                   172.16.0.254 / 255.255.255.0      up       up
vlan 2                      10.4.62.9 / 255.255.255.0      up       up
loopback                  unassigned / unassigned          up       up
mgmt                      unassigned / unassigned          down     down
```

The following table details the columns and content in the show command.

Column	Description
`Interface`	List the interface and interface identification, where applicable.
`IP Address /IP Netmask`	List the IP address and netmask for the interface, if configured.
`Admin`	States the administrative status of the interface. Enabled—up Disabled—down
`Protocol`	Status of the IP on the interface. Enabled—up Disabled—down

Command History

Release	Modification
ArubaOS 3.4	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master controllers.

show image version

Description

Display the current system image version on both partition 0 and 1.

Syntax

No parameters.

Example

The following example shows that the controller is running ArubaOS 3.4 and booting off partition 0:0.

```
(host) #show image version
---------------------------------
Partition               : 0:0 (/dev/hda1) **Default boot**
Software Version        : AOS-W 3.3.2.0
Build number            : 18661
Label                   : 18661
Built on                : 2008-06-12 04:24:34 PDT
---------------------------------
Partition               : 0:0 (/dev/hda1)
Software Version        : AOS-W 3.3.2.0
Build number            : 18661
Label                   : 18661
Built on                : 2008-06-12 04:24:34 PDT
```

The output of this command includes the following parameters:

Parameter	Description
Partition	Partition number and name. The default boot partition will display a **Default boot** notice by the partition name.
Software Version	Version of ArubaOS software running on the partition.
Build number	Build number for the software version.
Label	The label parameter can display additional information for the build. By default, this value is the software build number.
Built on	Date the software build was created.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show interface cellular access-group

```
show interface cellular access-group
```

Description

List the Access groups configured on the cellular interface.

Example

```
(host) (config-cell)#show interface cellular access-group

Cell Interface:
 session access list 3 is configured
```

Command History

Release	Modification
ArubaOS 5.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Configuration Mode (config-cell)

show interface counters

```
show interface counters
```

Description

Displays a table of L2 interfaces counters.

Syntax

No parameters

Example

The example below shows the output of **show interface counters**.

```
Port          InOctets     InUcastPkts     InMcastPkts     InBcastPkts
GE0/0/0        250559459         1664878               0              16
GE0/0/1       1615683022         1230973               0              16
GE0/0/2           204909            1511               0              16
GE0/0/3          2964355           22155               0              17
GE0/0/4       1612815178        12509415               0             228
GE0/0/6      23571170611        15545404               0               4
GE0/0/7      23562566444        15530432            8236             146

Port          OutOctets    OutUcastPkts    OutMcastPkts    OutBcastPkts
GE0/0/0        2504472376         2645877            8243           16770
GE0/0/1         169128719          820198            8243           17083
GE0/0/2           1881584           25785            8243           16771
GE0/0/3           5247669           47718            8245           16813
GE0/0/4      26893373267        20838930            8243           16561
GE0/0/6         539935348         8160008            8139             461
GE0/0/7      23563612641        15531317               7             336
```

The output of this command includes the following parameters:

Parameter	Description
Port	Port number.
InOctets	Number of octets received through the port.
InUcastPkts	Number of unicast packets received through the port.
InMcastPkts	Number of multicast packets received through the port.
InBcastPkts	Number of broadcast packets received through the port.
OutOctets	Number of octets sent through the port.
OutUcastPkts	Number of unicast packets sent through the port.
OutMcastPkts	Number of multicast packets sent through the port.
OutBcastPkts	Number of broadcast packets sent through the port.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show interface fastethernet

```
show interface fastethernet <slot>/<module>/<port>
```

Description

Displays information about a specified fast Ethernet port.

Syntax

Parameter	Description
`access-group`	Displays access groups configured on this interface.
`counters`	Displays L2 interface counters for the specified interface.
`switchport`	Displays L2 interface information.
`untrusted-vlan`	Displays port member vlan untrusted status.
`xsec`	Displays xsec configuration.

Examples

The example below shows the output of **show interface fastethernet 0/0/1**.

```
FE 0/0/1 is up, line protocol is up
Hardware is FastEthernet, address is 00:0B:86:51:14:D1 (bia 00:0B:86:51:14:D1)
Description: fe1/0
Encapsulation ARPA, loopback not set
Configured: Duplex ( AUTO ), speed ( AUTO )
Negotiated: Duplex (Full), speed (100 Mbps)
MTU 1500 bytes, BW is 100 Mbit
Last clearing of "show interface" counters 15 day 21 hr 34 min 53 sec
link status last changed 15 day 21 hr 32 min 16 sec
    1122463 packets input, 196293018 bytes
    Received 661896 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input error bytes, 0 CRC, 0 frame
    661881 multicast, 460567 unicast
    191428 packets output, 97063150 bytes
    0 output errors bytes, 0 deferred
    0 collisions, 0 late collisions, 0 throttles
This port is TRUSTED
POE Status of the port is OFF
```

The output of this command includes the following parameters:

Parameter	Description
`FE 1/0 is...`	Displays the status of the specified port.

Parameter	Description
line protocol is...	Displays the status of the line protocol on the specified port.
Hardware is....	Describes the hardware interface type.
address is...	Displays the MAC address of the hardware interface.
Description	The port type, name, and connector type.
Encapsulation	Encapsulation method assigned to this port.
loopback...	Displays whether or not loopback is set.
Configured	Configured transfer operation and speed.
Negotiated	Negotiated transfer operation and speed.
MTU bytes	MTU size of the specified port in bytes.
BW is...	Bandwidth of the link.
Last clearing of "show interface counters"	Time since "show interface counters" was cleared. Below the time, all current counters related to the specified port are listed.
This port is...	Whether or not this port is trusted.
POE status of the port is...	The POE status of the specified port.

```
#show interface fastethernet 1/0 access-group

FE 1/0:

Port-Vlan Session ACL
---------------------
SessionACL            Vlan     Status
----------            ----     ------
```

The output of this command includes the following parameters:

Parameter	Description
SessionACL	Session ACL name.
Vlan	VLAN number.
Status	ACL status.

```
#show interface fastethernet 1/0 counters
Port           InOctets     InUcastPkts     InMcastPkts     InBcastPkts
FE1/0        196310364          460655          661932              15

Port          OutOctets    OutUcastPkts    OutMcastPkts    OutBcastPkts
FE1/0          97074242          191401               3              72
```

The output of this command includes the following parameters:

Parameter	Description
Port	Port number.
InOctets	Number of octets received through the port.
InUcastPkts	Number of unicast packets received through the port.
InMcastPkts	Number of multicast packets received through the port.
InBcastPkts	Number of broadcast packets received through the port.
OutOctets	Number of octets sent through the port.
OutUcastPkts	Number of unicast packets sent through the port.
OutMcastPkts	Number of multicast packets sent through the port.
OutBcastPkts	Number of broadcast packets sent through the port.

```
#show interface fastethernet 1/0 switchport
Name:  FE1/0
Switchport:  Enabled
Administrative mode:  trunk
Operational mode:  trunk
Administrative Trunking Encapsulation:  dot1q
Operational Trunking Encapsulation:  dot1q
Access Mode VLAN: 0 ((Inactive))
Trunking Native Mode VLAN: 1 (Default)
Trunking Vlans Enabled: ALL
Trunking Vlans Active: 1-3
```

The output of this command includes the following parameters:

Parameter	Description
Name	Port name.
Switchport	Whether or not switchport is enabled.
Administrative mode	Administrative mode.
Operational mode	Operational mode.
Administrative Trunking Encapsulation	Encapsulation method used for administrative trunking.

Parameter	Description
Operational Trunking Encapsulation	Encapsulation method used for operational trunking.
Access Mode VLAN	The access mode VLAN for the specified port.
Trunking Native Mode VLAN	The trunking native mode VLAN for the specified port.
Trunking Vlans Enabled	Number of trunking VLANs currently enabled.
Trunking Vlans Active	Number of trunking VLANs currently active.

```
#show interface fastethernet 1/0 untrusted-vlan
Name:  FE1/0
Untrusted Vlan(s)
```

The output of this command includes the following parameters:

Parameter	Description
Name	Name of the specified port.
Untrusted Vlan(s)	List of untrusted VLANs.

```
#show interface fastethernet 1/1 xsec
xsec vlan 7 is ACTIVE
```

The output of this command includes the following parameters:

Parameter	Description
xsec vlan 7 is ACTIVE	This states that xsec is active on the specified port as well as the associated VLAN.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show interface gigabitethernet

```
show interface gigabitethernet <slot>/<module>/<port>
```

Description

Displays information about a specified Gigabit Ethernet port.

Syntax

Parameter	Description
`counters`	Displays L2 interface counters for the specified interface.
`switchport`	Displays L2 interface information.
`untrusted-vlan`	Displays port member vlan untrusted status.
`xsec`	Displays xsec configuration.

Examples

The example below shows the output of **show interface gigabitethernet 0/0/1**.

```
(host)# show interface gigabitethernet 0/0/0
GE 0/0/1 is up, line protocol is up
Hardware is Gigabit Ethernet, address is 00:1A:1E:00:0D:09 (bia 00:1A:1E:00:0D:09)
Description: GE0/0/0 (RJ45 Connector)
Encapsulation ARPA, loopback not set
Configured: Duplex ( AUTO ), speed ( AUTO )
Negotiated: Duplex (Full), speed (1000 Mbps)
Jumbo Support is enabled on this interface MTU 9216
Last clearing of "show interface" counters 1 day 20 hr 32 min 38 sec
link status last changed 1 day 19 hr 37 min 57 sec
120719 packets input, 24577381 bytes
Received 84208 broadcasts, 0 runts, 0 giants, 780 throttles
0 input error bytes, 0 CRC, 0 frame
32939 multicast, 36511 unicast
19865402 packets output, 4953350248 bytes
0 output errors bytes, 0 deferred
0 collisions, 0 late collisions, 0 throttles
This port is TRUSTED
```

The output of this command includes the following parameters:

Parameter	Description
`GE 1/0 is...`	Displays the status of the specified port.
`line protocol is...`	Displays the status of the line protocol on the specified port.

Parameter	Description
Hardware is....	Describes the hardware interface type.
address is...	Displays the MAC address of the hardware interface.
Description	The port type, name, and connector type.
Encapsulation	Encapsulation method assigned to this port.
loopback...	Displays whether or not loopback is set.
Configured	Configured transfer operation and speed.
Jumbo support...	Jumbo frame support is enabled.
Negotiated	Negotiated transfer operation and speed.
MTU bytes	MTU size of the specified port in bytes.
BW is...	Bandwidth of the link.
Last clearing of "show interface counters"	Time since "show interface counters" was cleared.
link status last changed...	Time since "show interface counters" was cleared. Below the time, all current counters related to the specified port are listed.
This port is...	Whether or not this port is trusted.
POE status of the port is...	The POE status of the specified port.
BW-Contract List/ Application Exception List/ Application BW-Contract list	Information about the bandwidth contract applied to the interface. For details, see interface fastethernet | gigabitethernet.

```
(host)#show interface gigabitethernet 1/0

Port          InOctets     InUcastPkts     InMcastPkts     InBcastPkts
GE1/0        112670646         1137507          907019            4983

Port         OutOctets    OutUcastPkts    OutMcastPkts    OutBcastPkts
GE1/0         58342401          170490             104           15373
```

The output of this command includes the following parameters:

Parameter	Description
Port	Port number.
InOctets	Number of octets received through the port.
InUcastPkts	Number of unicast packets received through the port.
InMcastPkts	Number of multicast packets received through the port.
InBcastPkts	Number of broadcast packets received through the port.
OutOctets	Number of octets sent through the port.
OutUcastPkts	Number of unicast packets sent through the port.
OutMcastPkts	Number of multicast packets sent through the port.
OutBcastPkts	Number of broadcast packets sent through the port.

```
#show interface gigabitethernet 1/0 switchport

Name:  GE1/0
Switchport:  Enabled
Administrative mode:  static access
Operational mode:  static access
Administrative Trunking Encapsulation:  dot1q
Operational Trunking Encapsulation:  dot1q
Access Mode VLAN: 62 (VLAN0062)
Trunking Native Mode VLAN: 1 (Default)
Trunking Vlans Enabled: NONE
Trunking Vlans Active: NONE
```

The output of this command includes the following parameters:

Parameter	Description
Name	Port name.
Switchport	Whether or not switchport is enabled.
Administrative mode	Administrative mode .
Operational mode	Operational mode.
Administrative Trunking Encapsulation	Encapsulation method used for administrative trunking.
Operational Trunking Encapsulation	Encapsulation method used for operational trunking.
Access Mode VLAN	The access mode VLAN for the specified port.
Trunking Native Mode VLAN	The trunking native mode VLAN for the specified port.

Parameter	Description
Trunking Vlans Enabled	Number of trunking VLANs currently enabled.
Trunking Vlans Active	Number of trunking VLANs currently active.

```
(host) #show interface gigabitethernet 1/0 untrusted-vlan

Name:  GE1/0
Untrusted Vlan(s)
```

The output of this command includes the following parameters:

Parameter	Description
Name	Name of the specified port.
Untrusted Vlan(s)	List of untrusted VLANs.

```
(host)# show interface gigabitethernet 1/1 xsec
xsec vlan 7 is ACTIVE
```

The output of this command includes the following parameters:

Parameter	Description
xsec vlan 7 is ACTIVE	This states that xsec is active on the specified port as well as the associated VLAN.

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.4.3	Additional command introduced.
ArubaOS 6.4.3	Deprecated empty Bandwidth contracts.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show interface loopback

```
show interface loopback
```

Description

Displays information about the loopback IP interface.

Syntax

No parameters

Example

The example below shows the output of **show interface loopback**.

```
#show interface loopback
loopback interface is up line protocol is up
Hardware is Ethernet, address is 00:0B:86:51:14:D0
Internet address is 10.3.49.100  255.255.255.255
```

The output of this command includes the following parameters:

Parameter	Description
`loopback interface is...`	Status of the loopback interface.
`line protocol is...`	Status of the line protocol on the specified port.
`Hardware is...`	Hardware interface type.
`address is...`	MAC address of the loopback interface.
`Internet address is...`	IP address and subnet mask of the loopback interface.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers.

show interface port-channel

```
show interface port-channel
```

Description

Displays information about a specified port-channel interface.

Syntax

Parameter	Description
`access-group`	Displays access groups configured on this interface.
`counters`	Displays L2 interface counters for the specified interface.
`untrusted-vlan`	Displays port member vlan untrusted status.
`xsec`	Displays xsec configuration.

Example

The example below shows the output of **show interface port-channel 0** on a controller.

```
(host) #show interface port-channel 6
Port-Channel 6 is administratively up
Hardware is Port-Channel, address is 00:1A:1E:00:0D:08 (bia 00:1A:1E:00:0D:08)
Description: Link Aggregate (LACP)
Spanning Tree is forwarding
Switchport priority: 0
Jumbo Support is enabled on this interface MTU 9216
Member port:
GE 0/0/4, Admin is up, line protocol is up
GE 0/0/5, Admin is up, line protocol is up
Last clearing of "show interface" counters 1 day 20 hr 32 min 43 sec
link status last changed 1 day 20 hr 29 min 58 sec
69425936 packets input, 15102169223 bytes
Received 27578 broadcasts, 0 runts, 0 giants, 0 throttles
0 input error bytes, 0 CRC, 0 frame
27568 multicast, 69398358 unicast
270782 packets output, 37271325 bytes
0 output errors bytes, 0 deferred
0 collisions, 0 late collisions, 0 throttles
Port-Channel 6 is TRUSTED
```

The output of this command includes the following parameters:

Parameter	Description
`Port-Channel 6 is...`	Status of the specified port.
`line protocol is...`	Status of the line protocol on the specified port.

Parameter	Description
Hardware is....	Hardware interface type.
address is...	MAC address of the hardware interface.
Description	The port type, name, and connector type. If the LAG is created by LACP, it is indicated as shown in the display output above. If the LAG is created by LACP, you can not statically add or delete any ports under that port channel. All other commands are allowed. If LACP is not shown, then the LAG is created by static configuration.
Spanning Tree is...	Spanning tree status on the specified port-channel.
VLAN membership	Number of VLANs the specified port-channel is associated with.
Switchport priority	Switchport priority of the specified port-channel.
Jumbo Support is...	Displays the status of jumbo frame on a port channel.
Last clearing of "show interface counters"	Time since "show interface counters" was cleared. Below the time, all current counters related to the specified port are listed.
Port-channel 0 is...	Whether or not this port-channel is trusted.

```
#show interface port-channel 0 access-group

Port-Channel 0:

Port-Vlan Session ACL
---------------------
SessionACL            Vlan     Status
----------          ----     ------
```

The output of this command includes the following parameters:

Parameter	Description
SessionACL	Session ACL name.
Vlan	VLAN number.
Status	ACL status.

```
#show interface port-channel 0 counters
Port          InOctets     InUcastPkts     InMcastPkts     InBcastPkts
PC 0:                0               0               0               0
Port         OutOctets    OutUcastPkts    OutMcastPkts    OutBcastPkts
```

```
PC 0:                0              0              0              0
```

The output of this command includes the following parameters:

Parameter	Description
PC	Port number.
InOctets	Number of octets received through the port.
InUcastPkts	Number of unicast packets received through the port.
InMcastPkts	Number of multicast packets received through the port.
InBcastPkts	Number of broadcast packets received through the port.
OutOctets	Number of octets sent through the port.
OutUcastPkts	Number of unicast packets sent through the port.
OutMcastPkts	Number of multicast packets sent through the port.
OutBcastPkts	Number of broadcast packets sent through the port.

```
#show interface port-channel 0 untrusted-vlan

Name:  FE1/0
Untrusted Vlan(s)
```

The output of this command includes the following parameters:

Parameter	Description
Name	Name of the specified port.
Untrusted Vlan(s)	List of untrusted VLANs.

```
#show interface port-channel 0 xsec
xsec vlan 7 is ACTIVE
```

The output of this command includes the following parameters:

Parameter	Description
xsec vlan 7 is ACTIVE	This states that xsec is active on the specified port as well as the associated VLAN.

Command History

Release	Modification
ArubaOS 3.4.1	Modified to display LACP when applicable.
ArubaOS 3.0.	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show interface-profile voip-profile

```
show interface-profile voip-profile <profile-name>
```

Description

This command displays the specified VoIP profile configuration information.

Syntax

Parameter	Description
<profile-name>	Name of the VoIP profile.

Examples

The following example shows configuration details for the VoIP profile:

```
(host) #show interface-profile voip-profile profile1
VOIP profile "profile1"
-----------------------
Parameter  Value
---------  -----
VOIP VLAN  1
DSCP       0
802.1 UP   0
VOIP Mode  auto-discover
```

The output of this command includes the following information:

Parameter	Description
VOIP VLAN	The Voice VLAN ID.
DSCP	The DSCP value for the voice VLAN.
802.1 UP	The 802.11p priority level.
VOIP Mode	The mode of VoIP operation. It can be auto-discover or static.

Command History

Command introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Enable or Config mode on master or local controllers

show interface tunnel

```
show interface tunnel <id>
```

Description

Displays information about tunnel interfaces.

Syntax

Parameter	Description
`id`	Tunnel interface number.

Example

The example below shows the output of **show interface tunnel** for IPv4.

```
#show interface tunnel 2000
Tunnel 64001 is up line protocol is up
Description: Internal Tunnel created for Branch controller communication
Internet address is 14.14.14.2 255.255.255.252
Source  10.4.251.65
Destination 12.12.12.1
Tunnel mtu is set to 1100
Tunnel is an IP GRE TUNNEL
Tunnel is Trusted
Inter Tunnel Flooding is enabled
Tunnel keepalive is disabled
ip access-group r1 in
```

The example below shows the output of **show interface tunnel** for IPv6.

```
#show interface tunnel 21
Tunnel 21 is up line protocol is up
Description: Tunnel Interface
Internet address is 2005:81::1:2
Source  2082::802:1(Vlan 802)
Destination 2082::802:2
Tunnel mtu is set to 1280
Tunnel is an IPv6 GRE TUNNEL
Tunnel is Trusted
Inter Tunnel Flooding is enabled
Tunnel keepalive is disabled
```

The output of this command includes the following parameters:

Parameter	Description
`Tunnel 2000 is...`	Status of the specified tunnel.
`line protocol is...`	Displays the status of the line protocol on the specified tunnel.
`Description`	Description of the specified interface.

Parameter	Description
`Internet address is...`	IP address of the specified interface.
`Source`	IP address of the tunnel's source.
`Destination`	IP address of the tunnel's destination.
`Tunnel mtu is set to...`	Size of the specified tunnel's MTU.
`Tunnel is an...`	Description of the specified tunnel.
`Tunnel is...`	Whether or not the specified tunnel is trusted.
`Inter tunnel flooding is...`	Status of inter tunnel flooding on the specified tunnel.
`Tunnel keepalive is...`	Status of tunnel keepalive on the specified tunnel.
`ip access-group`	Name of a routing access control list (ACL) applied to inbound traffic on a controller terminating a L3 GRE tunnel in an IPv4 network.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4.4.0	The **ip access-group** parameter is introduced in the output of this command.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show interface vlan

```
show interface vlan
```

Description

Displays information about a specified VLAN interface.

Syntax

No parameters

Example

The example below shows the output of **show interface vlan 1**.

```
#show interface vlan 1

VLAN1 is up line protocol is down
Hardware is CPU Interface, Interface address is 00:0B:86:61:82:40 (bia 00:0B:86:61:82:40)
Description: 802.1Q VLAN
Internet address is 10.3.49.50  255.255.255.0
Routing interface is enable, Forwarding mode is enable
Directed broadcast is disabled, BCMC Optimization disabled ProxyARP disabled Suppress ARP
disabled
Encapsulation 802, loopback not set
MTU 1500 bytes
Last clearing of "show interface" counters 4 day 0 hr 28 min 58 sec
link status last changed 4 day 0 hr 28 min 58 sec
Proxy Arp is disabled for the Interface
DHCP Option-82 AP name and ESSID are configured on this Interface
```

The output of this command includes the following parameters:

Parameter	Description
`VLAN1 is...`	Status of the specified VLAN
`line protocol is...`	Displays the status of the line protocol on the specified port
`Hardware is...`	Describes the hardware interface type
`Interface address is...`	Displays the MAC address of the hardware interface
`Description`	Description of the specified VLAN
`Internet address is...`	IP address and subnet mask of the specified VLAN
`Routing interface is...`	Status of the routing interface
`Forwarding mode is...`	Status of the forwarding mode

Parameter	Description
`Directed broadcast is...`	Displays whether or not directed broadcast is enabled
`Encapsulation`	Encapsulation type
`loopback...`	Loopback status
`MTU`	MTU size of the specified port in bytes
`Last clearing of "show interface counters"`	Time since "show interface counters" was cleared
`link status last changed`	Time since link status last changed
`Proxy ARP is...`	Status of proxy ARP on the specified interface
`DHCP Option-82 is...`	Status of DHCP Option 82 if the MAC address and ESSID are configured on this interface. Or AP-name and ESSID are configured on this interface.

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.4.3.0	The **DHCP Option-82 AP name and ESSID are configured on this Interface** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show inventory

```
show inventory
```

Description

Displays hardware inventory of the controller.

Syntax

No parameters.

Example

Issue this command to display the hardware component inventory of the controller. The output of this command will vary, depending upon controller type.

```
Supervisor Card slot            : 1
Mobility Processor              : FPGA Rev 0x30030920
Mobility Processor Assembly#    : 2010027B
Mobility Processor Serial#      : F00488202
SC      Assembly#               : 2010032B (Rev:02.00)
SC      Serial#                 : FP0001470 (Date:07/01/24)
SC      Model#                  : M3mk1
Mgmt Port HW MAC Addr           : 00:0B:86:F0:23:02
HW MAC Addr                     : 00:0B:86:01:C5:00 to 00:0B:86:01:C5:7
FXPLD Version                   : (Rev: 20)
PEER Supervisor Card            : Absent
Line Card 0                     : Absent
Line Card 1                     : Not accessible from this SC
Line Card 2                     : Present
Line Card 2 FPGA                : LCCI Rev 0x6
Line Card 2 Switch Chip         : Broadcom 56308 Rev 0x3
Line Card 2 Mez Card            : Present
Line Card 2 SPOE                : Present
Line Card 2 Sup Card 0          : Absent
Line Card 2 Sup Card 1          : Present ( Active )
Line Card 2 Assembly#           : 2000001C (Rev:03.00) (24FE+2GE)
Line Card 2 Serial#             : C00000277 (Date:02/22/05)
Line Card 2 SPOE Assembly#      : 2000020B (Rev:01.00) (SPOE-2)
Line Card 2 SPOE Serial#        : FP0000100
Line Card 2 MEZZ Assembly#      : 2000002A (Rev:01.00)
Line Card 2 MEZZ Serial#        : S00000540
Line Card 3                     : Present
Line Card 3 FPGA                : LCCI Rev 0x6
Line Card 3 Switch Chip         : Broadcom 56308 Rev 0x3
Line Card 3 Mez Card            : Present
Line Card 3 SPOE                : Present
Line Card 3 Sup Card 0          : Absent
Line Card 3 Sup Card 1          : Present ( Active )
Line Card 3 Assembly#           : 2000001C (Rev:03.00) (24FE+2GE)
Line Card 3 Serial#             : C00007293 (Date:09/27/05)
Line Card 3 SPOE Assembly#      : 2000003B (Rev:02.00) (SPOE-1)
Line Card 3 SPOE Serial#        : S00001750
Line Card 3 MEZZ Assembly#      : 2000002A (Rev:01.00)
Line Card 3 MEZZ Serial#        : C00007172
FAN 0                           : OK, Speed High
FAN 1                           : OK, Speed High
FAN 2                           : OK, Speed High
Fan Tray Assembly#              : 2000007C (Rev:01.00)
```

```
Fan Tray Serial#                : C00013879 (Date:12/18/04)
Back Plane Assembly#            : 2000006B (Rev:01.00)
Back Plane Serial#              : A00000250 (Date:12/18/04)
Power Supply type               : Power One (400W)
Power Supply 0                  : OK (400W)
Power Supply 1                  : FAILED
Power Supply 2                  : Absent
M3mk1 Card Temperatures         : M3mk1 card                47 C
                                : CPU                       47 C
AMP Card Temperatures           : Processor Card            41 C
                                : Mobility Processor        56 C
M3mk1 Card Voltages             : M3mk1 5000mV              5010 mV
                                : M3mk1 3300mV              3340 mV
                                : M3mk1 2500mV              2432 mV
                                : M3mk1 1800mV              1790 mV
                                : M3mk1 1500mV              1490 mV
                                : M3mk1 1250mV              1260 mV
                                : M3mk1 1200mV              1200 mV
                                : M3mk1 IBC 12000mV        11815 mV
                                : M3mk1 CPU Fan Speed       6887 RPMs
                                : M3mk1 CPU CORE  1200mV    1080 mV
                                : M3mk1 XGMII VTT 750mV      750 mV
                                : M3mk1 VTT0(a&b) 900mV      900 mV
                                : M3mk1 VTT1(c&d) 900mV      900 mV
                                : AMP 3300mV                3320 mV
                                : AMP 2500mV                2480 mV
                                : AMP 1800mV                1800 mV
                                : AMP 1500mV                1500 mV
                                : AMP BCM 1200mV            1200 mV
                                : AMP FPGA 1200mV(1)        1200 mV
: AMP FPGA 1200mV(2)        1200 mV
```

The output includes the following parameters:

Parameter	Description
Supervisor Card Slot	Supervisor card slot number
Mobility Processor	Revision of the image downloaded to the FPGA. This can change if a newer image is included in a newer release.
SC Assembly#	Assembly number of the supervisor card.
SC Serial#	Serial number of the supervisor card.
SC Model#	Model number of the supervisor card.
Mgmt Port HW MAC Address	MAC address of the mgmt port
HW MAC Address	MAC address
FXPLD Version	Revision of programmable logic device on supervisor card.
PEER Supervisor Card	States whether or not a PEER supervisor card is present.

Parameter	Description
`Line Card <slot number>`	States whether or not a line card is present in the specified slot
`Line Card <slot number> FPGA`	Name/type of FPGA associated with the specified line card slot
`Line Card <slot number> Switch Chip`	Name/type of switch card associated with the specified line card slot
`Line Card <slot number> Mez Card`	States whether or not a mezzanine card is present in the specified slot
`Line Card <slot number> SPOE`	States whether or not a SPOE card is present in the specified slot
`Line Card <slot number> Sup Card 0`	States whether or not a supervisor card 0 is present in the specified slot
`Line Card <slot number> Sup Card 1`	States whether or not a supervisor card 1 is present in the specified slot
`Line Card <slot number> Assembly#`	Assembly number of the line card in the specified slot
`Line Card <slot number> Serial#`	Serial number of the line card in the specified slot
`Line Card <slot number> SPOE Assembly#`	Assembly number of SPOE line card in the specified slot
`Line Card <slot number> SPOE Serial#`	Serial number of SPOE line card in the specified slot
`Line Card <slot number> MEZZ Assembly#`	Assembly number of the mezzanine card in the specified slot
`Line Card <slot number> MEZZ Serial#`	Serial number of the mezzanine card in the specified slot
`FAN <Fan number>`	Status of the specified fan
`Fan Tray Assembly#`	Assembly number of the fan tray
`Fan Tray Serial#`	Serial number of fan tray
`Back Plane Assembly#`	Assembly number of the back plane
`Back Plane Serial#`	Serial number of the back plane
`Power Supply Type`	Power supply type

Parameter	Description
`Power Supply <power supply number>`	Power supply status
`M3mk1 Card Temperatures` • M3mk1 card • CPU	• The temperature from the sensor on the supervisor card • The temperature from the CPU die
`AMP Card Temperatures` • Processor Card • Mobility Processor	• The temperature from the sensor on the Mobility Processor card • The temperature from the FPGA die
`M3mk1 Card Voltages`	This parameter displays to columns of voltages for many components displayed previously by this command. The voltage displayed in the right column should match the corresponding value in the left column, generally with +/- 5%.

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show iostat

```
show iostat
```

Description

Displays IO statistics information. This command reports Central Processing Unit (CPU) statistics and input/output statistics for devices and partitions.

Syntax

No parameters.

Example

Issue this command to display the IO statistics of the controller.

```
cpu  290556 0 4305598 107533173
cpu0 290556 0 4305598 107533173
page 46291 249539
swap 0 0
intr 17959116 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 17950877 0 8148 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 30 61 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 0
disk_io: (3,0):(679,460,7196,219,950)
ctxt 135640513
btime 1241728432
processes 357519
```

The output includes the following parameters:

Parameter	Description
cpu	The number of jiffies (1/100th of a second) that the system spent in user mode, user mode with low priority, system mode, and the idle task, respectively.
page	The number of pages the system paged in and the number that were paged out (from disk).
swap	The number of swap pages that have been brought in an out.
intr	The number of interrupts received from the system boot.
disk_io	(x,y) is (major, minor):(xx, xx, xxxx, x, x) is (noinfo, read_io_ops, blks_read, write_io_ops, blks_written)
ctxt	The number of context switches that the system underwent.

Parameter	Description
`btime`	The boot time, in seconds.
`processes`	The number of forks since boot.

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show ip access-group

```
show ip access-group
```

Description

Display access control lists (ACLs) configured for each port on the controller.

Syntax

No parameters.

Examples

The example below shows part of the output of this command. If a port does not have a defined session ACL, the *Port-Vlan Session ACL* table will be blank.

```
(host) # show ip access-group
FE 1/0:
Rx access list 200 is applied
session access list User14 is applied

Port-Vlan Session ACL
---------------------
SessionACL            Vlan     Status
----------            ----     ------
coltrane              22       configured
```

The output of this command includes the following parameters:

Parameter	Description
`Session ACL`	Name of the ACL applied to the interface.
`VLAN`	If the ACL was applied to a VLAN associated with this port, this column will show the VLAN ID.
`Status`	Shows whether or not the session ACL is configured.

Related Commands

Command	Description
`interface fastethernet | gigabitethernet ip access-group`	Configure an access group for an interface.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4	The VLAN output parameters was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ip access-list

```
show ip access-list {brief|<string>}
```

Description

Display a table of all configured access control lists (ACLs), or show details for a specific ACL.

Syntax

Parameter	Description
`brief`	Display a table of information for all ACLs.
`<string>`	Specify the name of a single ACL to display detailed information on that ACL.

Examples

The example below shows general information for all ACLs in the Access List table.

```
(Host) #show ip access-list brief

Access list table
-----------------
Name                    Type       Use Count  Roles
----                     ----       ---------  -----
200                     eth
33                      standard
allowall                session    2          trusted-ap default-vpn-role
ap-acl                  session    2          rap_role ap-role
captiveportal           session    4          coltrane-logon wizardtest-logon test-logon logon
captiveportal6          session    2          guest-logon logon
control                 session    7          ap-role coltrane-logon wizardtest-logon guest
stateful test-logon logon
cplogout                session    1          guest
default                 session
global-geolocation-acl  geolocation(4)
guest                   session
log-https               session
srcnat                  session
stateful-dot1x          session    2          stateful-dot1x logon
stateful-kerberos       session
validuser               session    1          test-24325
```

The output of this command includes the following parameters:

Parameter	Description
Name	Name of an access-control list (ACL).
Type	Shows that the ACL is one of the following ACL policy types: • Ethertype • Standard

Parameter	Description
	• Session • MAC • Extended • Geolocation
Use Count	Number of rules defined in the ACL.
Roles	Names of user roles associated with the ACL.

Include the name of a specific ACL to show detailed configuration information for that ACL. The output in the example below has been divided into two sections to better fit int this document. The output in the command-line interface will appear in a single, long table.

```
(host)# show ip access-list captiveportal6
ip access-list session captiveportal6
captiveportal6
--------------
Priority  Source  Destination  Service          Action   NextHopList TimeRange  Log  Expired

--------  ------  -----------  -------          ------   ----------- ---------  ---  -------

1         user    controller6  svc-https        captive
2         user    any          svc-http         captive
3         user    any          svc-https        captive
4         user    any          svc-http-proxy1  captive
5         user    any          svc-http-proxy2  captive
6         user    any          svc-http-proxy3  captive
6

Queue TOS  8021P  Blacklist  Mirror  DisScan  ClassifyMedia  IPv4/6
----- ---  -----  ---------  ------  -------  -------------  ------
Low                                                        6

Low                                                        6

Low                                                        6

Low                                                        6

Low                                                        6

Low                                                        6
```

The output of the **show ip access-list** command may include some or all of the following parameters:

Parameter	Description
Priority	Name of an access-control list (ACL).
Source	The traffic source, which can be one of the following: • **alias**: The network resource (use the netdestination command to configure aliases; use the show netdestination command to see configured aliases)

Parameter	Description
	• **any**: Matches any traffic. • **host**: A single host IP address. • **network**: The IP address and netmask. • **user**: The IP address of the user. • **localip**: The set of all local IP addresses on the system, on which the ACL is applied.
Destination	The traffic destination, which can be one of the following: • **alias**: The network resource (use the netdestination command to configure aliases; use the show netdestination command to see configured aliases) • **any**: Matches any traffic. • **host**: A single host IP address. • **network**: An IP address and netmask. • **user**: The IP address of the user. • **localip**: The set of all local IP addresses on the system, on which the ACL is applied.
Service	Network service, which can be one of the following: • An IP protocol number (0-255). • The name of a network service (use the show netservice command to see configured services). • **any**: Matches any traffic. • **tcp**: A TCP port number (0-65535). • **destination port number**: specify the TCP port number (0-65535) • **source**: TCP/UDP source port number • **udp**: A UDP port number (0-65535).
Application	Name of the application to which the access control list is applied. (For a complete list of supported applications, issue the command **show dpi application all**.)
Action	Action if rule is applied, which can be one of the following: **deny**: Reject packets. **dst-nat**: Perform destination NAT on packets. **dual-nat**: Perform both source and destination NAT on packets. **permit:** Forward packets. **redirect**: Specify the location to which packets are redirected, which can be one of the following: • Datapath destination ID (**0-65535**). • **esi-group**: Specify the ESI server group configured with the esi group command • **opcode**: Specify the datapath destination ID (0x33, 0x34, or 0x82). Do not use this parameter without proper guidance from Dell. **tunnel:** Specify the ID of the tunnel configured with the interface tunnel command.

Parameter	Description
	src-nat: Perform source NAT on packets.
IpsecMap	Packets can be redirected over a VPN tunnel by specifying the name of an IPsec map in the access control list. This column specifies the name of an IPsec map used by a router ACL. For more information on IPsec maps, see crypto-local ipsec-map.
Timerange	Any defined time range for this rule.
NextHopList	If the access rule uses policy-based routing to forwards packets to a nexthop device, then this column displays the next-hop list associated with the rule. More more information on next-hop lists, see ip nexthop-list on page 525.
Tunnel	Packets can be redirected over an L3 GRE tunnel. If the ACL routes packets over a tunnel, this column specifies the tunnel used by the ACL.
TunnelGroup	Packets can be redirected over an L3 GRE tunnel group. If the ACL routes packets over a tunnel in a tunnel group, this column specifies the tunnel group used by the ACL. For more information on tunnel groups, see tunnel-group.
Log	Shows if the rule was configured to generate a log message when the rule is applied.
Expired	Shows if the rule has expired.
Queue	Shows if the rule assigns a matching flow to a priority queue (high/low).
8021.p	802.11p priority level applied by the rule (0-7).
Blacklist	Shows if the rule should blacklist any matching user.
Mirror	Shows if the rule was configured to mirror all session packets to datapath or remote destination.
DisScan	Shows if the rule was configured to pause ARM scanning while traffic is present.
IPv4/6	Shows the IP version.

Related Commands

Command	Description
ip access-list session	Configure an access list for an interface.

Command History

Introduced in ArubaOS 3.0.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.5	The **global-geolocation-acl** was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ip cp-redirect-address

```
show ip cp-redirect-address
```

Description

Show the captive portal automatic redirect IP address.

Syntax

No parameters.

Examples

The example below shows the IP address to which captive portal users are automatically directed.

```
(host) # show ip cp-redirect-address
Captive Portal redirect Address... 10.3.63.11
```

Related Commands

Command	Description
ip cp-redirect-address	This command configures a redirect address for captive portal.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ip dhcp

```
show ip dhcp {binding|database|statistics}
```

Description

Show DHCP Server Settings.

Syntax

Parameter	Description
`binding`	Show DHCP server bindings.
`database`	Show DHCP server settings.
`statistics`	Show DHCP pool statistics.

Examples

The example below shows DHCP statistics for two configured networks.

```
(host) # show ip dhcp statistics

DHCPv4 enabled; DHCPv6 enabled
DHCP Pools
----------
Network Name  Type  Active  Configured leases  Active leases  Free leases  Expired leases
Abandoned leases
------------  ----  ------  -----------------  -------------  -----------  --------------  ---
-------------
2-2-2-nw      v4    Yes     242                0              242          0               0
3-2-2-nw      v4    Yes     254                0              254          0               0
test          v4    Yes     254                0              254          0               0
2011          v6    No      5                  -              -            -               -
2012          v6    No      5                  -              -            -               -
Current leases          750
Total leases            512
```

The output of this command includes the following parameters:

Parameter	Description
Network Name	Range of addresses that the DHCP server may assign to clients.
Type	Indicates the IP version of the DHCP server. It can be v4 or v6.
`Active`	Indicates if the DHCP server is active or not.
`Configured leases`	Number of leases configured on the DHCP server.
`Active leases`	Number of active DHCP leases.

Parameter	Description
Free leases	Number of available DHCP leases.
Expired leases	Number of leases that have expired because they have extended past their valid lease period.
Abandoned leases	Number of abandoned leases. Abandoned leases will not be reassigned unless there are no free leases available.

Related Commands

Command	Description
ip dhcp pool	This command configures a DHCP pool on the controller.
ipv6 dhcp pool	This command configures a DHCPv6 pool on the controller.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.3	The output of the **statistics** command was modified to show more details such as DHCPv6 statistics.

show ip domain-name

```
show ip domain-name
```

Description

Show the full domain name and server.

Syntax

No parameters.

Examples

The example below shows that the IP domain lookup feature is enabled, but that no DNS server has been configured on the controller.

```
(host) #show ip domain-name

IP domain lookup:       Enabled
IP Host.Domain name:    MyCompany2400.

No DNS server configured
```

Related Commands

Command	Description
ip domain lookup	This command enables Domain Name System (DNS) hostname to address translation.
ip domain-name	This command configures the default domain name.
ip dhcp pool	This command configures a DHCP pool on the controller.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ip health-check

Description

Display the health-check status of the uplink interfaces of a branch-office controller.

Syntax

No parameters.

Example

The following example displays the status of two uplinks on a branch controller.

```
(host) #show ip health-check
IP Health-Check Entries
-----------------------
Probe IP        Src Interface   State    Probe-Profile   Avg Delay(ms)  Jitter
--------        -------------   ------   -------------   -------------  ------
192.168.100.1   vlan 4094       Up       health-check     0.237         0.038
```

The output of this command includes the following data columns.

Parameter	Description
`Probe IP`	IP address of the master controller.
`Src Interface`	IP address of the uplink gateway interface through which the probes were sent.
`State`	Shows if the uplink is in an UP or DOWN state.
`Probe-Profile`	A branch controller supports the default probe profile to define probe settings for policy-based routing using next-hop lists, and the health-check probe profile to define probe settings to measure WAN uplink health.
`delay (in ms)`	The average delay on the interface, in milliseconds.

Related Commands

Command	Description
ip probe default	This command configures IP probes for policy-based routing using a next-hop list.
ip probe health-check	This command configures WAN health-check probes for measuring WAN availability and latency on branch controller uplinks.

Command History

Release	Modification
ArubaOS 6.4.3	Command Introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ip igmp

```
show ip igmp config|counters|{group maddr <maddr> [<mac> <source>]}|{interface [vlan <vlan>]}|
{proxy-group vlan <vlan>}|{proxy-mobility-group maddr <maddr>}|proxy-mobiity-stats|proxy-stats
```

Description

Display Internet Group Management Protocol (IGMP) timers and counters.

Syntax

Parameter	Description
`config`	Show the current IGMP configuration
`counters`	Display a list counters for the following IGMP queries: • received-total • received-queries • received-v1-reports • received-v2-reports • received-leaves • received-unknown-types • len-errors • checksum-errors • not-vlan-dr • transmitted-queries • forwarded
`group maddr <maddr>`	Displays the following IGMP group information: • mac: Specify MAC address of the specific member. • source: Specify the source address of the specific SSM group.
`interface vlan <vlan>`	Show IGMP interface information
`proxy-group vlan <vlan>`	Show IGMP proxy group information for a specific interface.
`proxy-mobility-group maddr <maddr>`	Display the IGMP proxy group information stored for mobile clients which are away from the controller.
`proxy-mobiity-stats`	Display the most important messages exchanged between the mobility process and the IGMP proxy.
`proxy-stats`	Display the number of messages transmitted and received by the IGMP proxy on the upstream interface

Examples

The example below displays the IGMP interface table for all VLANs on the controller.

```
(host) # show ip igmp interface vlan 2
IGMP Interface Table
--------------------
VLAN  Addr        Netmask        MAC Address        IGMP      Snooping  Querier
Destination IGMP Proxy
----  ----        -------        -----------        ----      --------  -------     ----------
- -----------
64    10.6.4.252  255.255.255.0  00:0b:86:01:99:00  disabled  disabled  10.6.4.252  CP
                                                                 disabled
65    10.6.5.252  255.255.255.0  00:0b:86:01:99:00  disabled  disabled  10.6.5.252        CP
                                                                 disabled
1     10.6.2.252  255.255.255.0  00:0b:86:01:99:00  disabled  disabled  10.6.2.252        CP
                                                                 disabled
66    10.6.6.252  255.255.255.0  00:0b:86:01:99:00  disabled  disabled  10.6.6.252        CP
                                                                 disabled
63    10.6.3.252  255.255.255.0  00:0b:86:01:99:00  disabled  disabled  10.6.3.252        CP
                                                                 disabled
```

The output of this command includes the following parameters:

Parameter	Description
VLAN	A VLAN ID number.
Addr	IP address of a VLAN router.
Netmask	Subnet mask for the IP address.
MAC Address	MAC destination address.
IGMP	Indicates if IGMP is enabled (or disabled) on the interface.
Snooping	Indicates if IGMP snooping is enabled (or disabled).
Querier	IP address of an IGMP querier.
Destination	Traffic destination.
IGMP Proxy	Indicates if IGMP proxy is enabled (or disabled).

The following example displays the current IGMP configuration settings for the controller.

```
(host) #show ip igmp config

IGMP Config
-----------
Name                            Value
----                            -----
robustness-variable             2
query-interval                  30
query-response-interval         100
startup-query-interval          31
startup-query-count             2
last-member-query-interval      10
```

```
last-member-query-count           2
version-1-router-present-timeout  400
version-2-router-present-timeout  400
max-members-per-group             300
quick-client-convergence          enabled
ssm-range                         IANA standard range. 232.0.0.0/8
```

The output of this command includes the following parameters:

Parameter	Description
robustness-variable	This variable is increased from its default level of 2 to allow for expected packet loss on a subnetwork.
query-interval	Interval, in seconds, at which the controller sends host-query messages to the multicast group address 224.0.0.1 to solicit group membership information.
query-response-interval	Maximum time, in .1 second intervals, that can elapse between when the controller sends a host-query message and when it receives a response. This must be less than the **query-interval**.
startup-query-count	Number of queries that the controller sends out on startup, separated by startup-query-interval. The default setting is the value of the **robustness-variable** parameter.
startup-query-interval	Interval, in seconds, at which the controller sends general queries on startup. The default value of this parameter is 1/4 of the **query-interva**l.
last-member-query-count	Number of group-specific queries that the controller sends before assuming that there are no local group members.
last-member-query-interval	Maximum time, in seconds, that can elapse between group-specific query messages.
version-1-router-present-timeout	Timeout, in seconds, if the controller detects a version 1 IGM router.
version-2-router-present-timeout	Timeout, in seconds, if the controller detects a version 2 IGM router.

The following examples displays the information on IGMP groups :

```
(host) #show ip igmp group
IGMP Group Table
----------------
(Source,Group)            Members
--------------            -------
(172.12.2.2, 232.0.0.2)   2
(172.12.2.2, 232.0.0.1)   2
(*, 224.0.0.252)          2
(*, 239.255.255.250)      2
Total Groups: 4

(host) #show ip igmp group maddr 232.0.0.1 source 172.12.2.2
IGMP Group (172.12.2.2, 232.0.0.1) Table
```

```
---------------------------------------
Member          MAC                Vlan  Destination  Version  Age
------          ---                ----  -----------  -------  ---
172.13.0.4      00:00:00:00:00:00  13    0/0/0        0        4
172.12.255.252  98:fc:11:c6:20:04  13    Tunnel 9     3        4
```

Related Commands

Command	Description
ip igmp	This command configures Internet Group Management Protocol (IGMP) timers and counters.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master controllers.

show ip mobile

```
show ip mobile
   active-domains
   binding [<host-ip>|<host-ipv6>|<host-macaddr>|brief]
   domain [<name>]
   global
   hat
   host [<host-ip>|<host-ipv6>|<host-macaddr>|brief]
   multicast-vlan-table [client-macaddr]
   packet-trace [<count>]
   remote <host-ip>|<host-ipv6>|<host-macaddr>
   trace <host-ip>|<host-ipv6>|<mac-addr>|{force <host-ip>|<mac-addr>}
   traffic dropped|foreign-agent|home-agent|proxy
   trail <host-ip>|<host-ipv6><host-macaddr>
   tunnel
   visitor [<host-ip>|<host-ipv6>|<host-macaddr>|brief]
```

Description

Display statistics and configuration information for the mobile protocol.

Syntax

Parameter	Description
`active domains`	IP mobility domains active on this switch
`binding`	Display a list of Home Agent Bindings
`[<host-ip>]`	Filter the Home Agent Bindings list to display data for a specific host IPv4 address.
`[<host-ipv6>]`	Filter the Home Agent Bindings list to display data for a specific host IPv6 address.
`[<host-macaddr>]`	Filter the Home Agent Bindings list to display data for a specific host MAC address.
`[brief]`	Limit the output of this command to show just two lines of data.
`domain [<name>]`	Display subnet, VLAN and home agent information for all mobility domains, or specify a mobility domain name to view data for that domain only.
`global`	View the current Mobility Agents global configuration
`hat`	Display the Active Home Agent Table

Parameter	Description
host	Display a list of Mobile IP hosts.
[<host-ip>]	Filter the Mobile Host List to display data for a specific host IPv4 address.
[<host-ipv6>]	Filter the Mobile Host List to display data for a specific host IPv6 address.
[<host-macaddr>]	Filter the Mobile Host List to display data for a specific host MAC address.
[brief]	Limit the output of this command to show just two lines of data.
multicast-vlan-table	Displays mobility multicast VLAN table information.
mac	MAC address of the client.
packet-trace [<count>]	The output of this command shows when packets of different types were sent between a source IP or MAC address and a destination IP or MAC address.
remote <host-ip>|<host-ipv6>|<host-macaddr>	This is a debug command can be used to identify the controller associated with the specified client IPv4/IPv6 address or MAC address. The output of this command shows the home agent (HA) and foreign agent (FA) for a mobile client, as well as the client's roaming status.
trace	Show if the Mobile IP feature will poll remote controllers for mobility status of station
<host-ip>	Host IPv4 address.
<host-ipv6>	Host IPv6 address.
<mac-addr>	Host MAC address
force <host-ip>|<mac-addr>	Show if the Mobile IP feature will poll remote controllers for mobility status of station.
traffic	Display mobile IP protocol statistics for: • Proxy Mobile IP • Home Agent Registrations • Foreign Agent Registrations • Registration Revocations

Parameter	Description
dropped	Show only counters for dropped mobility traffic.
foreign-agent	Show only mobile IP foreign agent statistics. A foreign agent is the controller which handles all mobile IP communication with a home agent on behalf of a roaming client.
home-agent	Show only mobile IP home agent statistics. A home agent for a mobile client is the controller where the client first appears when it joins the mobility domain.
proxy	Show only counters for mobile IP proxy traffic.
trail <host-ip>|<host-ipv6>|<host-macaddr>	Show the mobile IP roaming trail by entering a host's IP(IPv4 or IPv6)or MAC address.
tunnel	Show the Mobile Tunnel Table for IPIP Tunnels.
visitor	Display a list of mobile nodes visiting a foreign agent.
[<host-ip>]	Filter the Foreign Agent Visitor list to display data for a specific host IPv4 address.
[<host-ipv6>]	Filter the Foreign Agent Visitor list to display data for a specific host IPv6 address.
[<host-macaddr>]	Filter the Foreign Agent Visitor list to display data for a specific host MAC address.
[brief]	Limit the output of this command to show just two lines of data.

Examples

The example below lists mobility domains configured on the controller, and shows information for any subnets defined on these domains.

```
(host) #show ip mobile domain
Mobility Domains:, 2 domain(s)
------------------------------

Domain name default
   Home Agent Table, 0 subnet(s)

Domain name newdomain
   Home Agent Table, 2 subnet(s)
        subnet          mask            VlanId Home Agent         Description
        --------------- --------------- ------ ---------------    -----------------------
        10.2.124.76     255.255.255.255 1      10.4.62.2          Corporate mobility entry
        172.21.5.50     255.255.255.255 1      10.4.62.2          Reserved entries
```

The output of this command includes the following parameters:

Parameter	Description
Home Agent	IP address of the home agent or mobility agent.
Description	Description of the HAT entry.

Use the **show ip mobile host** command to track mobile users.

```
(host) # show ip mobile host
Mobile Host List, 1 host(s)
---------------------------
9c:b7:0d:3f:a6:dd  10.16.23.219  mob1
IPv4: 10.16.23.219
IPv6: fe80::826:aa9a:fe35:53e0
2004:deed::34
Roaming Status: Home Switch/Home VLAN, Service time 0 days 01:34:19
Home VLAN 623 on network 10.16.23.0/24
DHCP lease for PC at Sun Dec 23 20:32:00 2012 for 86400 secs from 10.16.28.1
```

The output of this command includes the following parameters:

Parameter	Description
<mac-addr> <ip-addr>	MAC and IP addresses of the host
Roaming Status	Displays how long the host has used its current controller and VLAN.
Home VLAN	VLAN ID, IP address and subnet of the home VLAN.
DHCP lease	Displays the amount of time the station has had its current DHCP lease.

Related Commands

Command	Description
ip mobile active-domain	This command configures the mobility domain that is active on the controller.
ip mobile domain	This command configures the mobility domain on the controller.
ip mobile foreign-agent	This command configures the foreign agent for IP mobility.
ip mobile home-agent	This command configures the home agent for IP mobility.
ip mobile proxy	This command configures the proxy mobile IP module in a mobility-enabled controller.
ip mobile revocation	This command configures the frequency at which registration revocation messages are sent.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4	The **multicast-vlan-table**, **ipv6**, **mac-address**, parameters were introduced. The **proxy-dhcp** parameter was deprecated.
ArubaOS 6.5	The **ip-mobile-trail** parameter was deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ip nat pool

```
show ip nat pool
```

Description

Display pools of IP addresses for network address translation (NAT.

Syntax

No parameters

Examples

The example below shows the current NAT pool configuration on the controller.

```
(host) # show ip nat pools
NAT Pools
---------
Name  Start IP     End IP       DNAT IP
----  --------     ---------    -------
2net               2.1.1.1      2.1.1.125
```

The output of this command includes the following parameters:

Parameter	Description
Name	Name of the NAT pool.
Start IP	IP address that defines the beginning of the range of source NAT addresses in the pool.
End IP	IP address that defines the end of the range of source NAT addresses in the pool.
DNAT IP	Destination NAT IP address, if defined.

Related Commands

Command	Description
ip nat	This command configures a pool of IP addresses for network address translation (NAT).

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Though this command is available in the operating system, you must have a PEFNG license to configure a NAT pool.	Available in Config or Enable mode on master or local controllers

show ip nexthop-list

Description

Display nexthop list settings for policy-based routing.

Syntax

No parameters.

Usage Guidelines

A nexthop IP is the IP address of a adjacent router or device with layer-2 connectivity to the controller. The Nexthop list provides redundancy for the nexthop devices by forwarding the traffic to a backup nexthop device in case of failures. If active nexthop device on the list becomes unreachable, traffic matching a policy-based routing ACL is forwarded using the highest-priority active nexthop on the list. For more information on this feature, see ip nexthop-list on page 525.

Example

The following command displays the configuration settings for the one configured nexthop list.

```
(host))# show ip nexthop-list
--------------------
Nexthop-list Name  Nexthop-list Id  Preemptive Failover  Active IP
-----------------  ---------------  -------------------  ---------
NH_list_1          0x4401           Enabled              10.10.10.254

Nexthop IPs(Priority)
---------------------
10.18.2.254(2), 10.10.10.254(1)

The output of this command displays the following information
```

Parameter	Description
Nexthop-list Name	Name of the nexthop list
Nexthop-list Id	Nexthop list ID assigned by the controller.
Preemptive Fail-over	This column indicates whether preemptive failover is enabled or disabled. If preemption is enabled and a higher priority nexthop becomes reachable again, packets are again forwarded to the higher priority nexthop.
Active IP	IP address of the actively used nexthop device.
Nexthop IPs(Pri-ority)	List of the IP addresses of all nexthop IPs, including the priority assigned to each device when the list was configured.

Related Commands

Command	Description
ip route	This command configures a static route on the controller. (These routes can use a nexthop list.)
ip nexthop-list	Configure nexthop list settings for policy-based routing.

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config mode on master controllers

show ip ospf

```
show ip ospf
   database
   debug route
   interface [tunnel|vlan] <id>
   neighbor
   rapng-vpn aggregate-routes <ip-addr>
   redistribute
   subnet
```

Description

Display statistics and configuration information for the Open Shortest Path First (OSPF) routing protocol.

Syntax

Parameter	Description
`database`	Show database information for the OSPF protocol.
`debug route`	Show debugging information for OSPF routes.
`interface [tunnel|vlan] <id>`	Display the status of OSPF on an individual interface by specifying a tunnel or VLAN ID number. The tunnel ID range is 1-16777215.
`neighbor`	Display data for OSPF neighboring routers.
`rapng-vpn`	Display IAP-VPN information.
`aggregate-routes <ip-addr>`	Display IAP-VPN aggregate route information.
`redistribute`	Display OSPF route distribution information.
`subnet`	Display the subnets manually added to the Subnet Exclude List via the router ospf subnet exclude <addr> <mask>command.

Example

If you issue this command without any of the optional parameters described in the table above, the show ip ospf command will display general router and area settings for the OSPF.

```
(host) (config-subif)# show ip ospf
OSPF is currently running with Router ID 123.45.110.200
Number of areas in this router is 1
Area 10.1.1.0
        Number of interfaces in this area is 2
        Area is totally stub area
```

SPF algorithm executed 0 times

The output of this command includes the following parameters.

Parameter	Description
OSPF Router ID	Verifies that OSPF is running and the router ID that OSPF is running on.
Number of areas	List the number of areas configured in the router.
Area	Displays the Area ID followed by: • number of interfaces in the area • indicates if the area is a totally stub area • number of times the SPF algorithm has been executed

To display OSPF settings for an individual interface, you must specify a VLAN or tunnel ID number. The example below displays part of the output of the **show ip ospf interface vlan** command.

```
(host) # show ip ospf interface vlan 10
Vlan 3 is up, line protocol is up
Internet Address 3.3.3.1, Mask 255.255.255.0, Area 10.1.1.1
Router ID 10.4.131.227, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State WAIT, Priority 1
Designated Router id 0.0.0.0, Interface Address 3.3.3.1
Backup designated Router id 0.0.0.0, Interface Address 3.3.3.1
Timer intervals configured, Hello 10, Dead 40, Retransmit 5
Neighbor Count is 0
Tx Stat: Hellos 1 DbDescr 0 LsReq 0 LsUpdate 0 LsAck 0 Pkts 1
Rx Stat: Hellos 0 DbDescr 0 LsReq 0 LsUpdate 0 LsAck 0 Pkts 0
         DisCd 0 BadVer 0 BadNet 0 BadArea 0 BadDstAdr 0 BadAuType 0
         BadAuth 0 BadNeigh 0 BadPckType 0 BadVirtLink 0
```

...

The output may include some or all of the following parameters.

Parameter	Description
Vlan <number>	Identifies that the interface type and ID are up and functional.
Internet Address	Internet address, network mask, and area assigned to the interface.
Router ID	Displays the router ID, that the network type is Broadcast, and the cost value.
Transmit Delay	Details of the transmit delay, state, and priority.
Designated Router	Details of the designated router ID and interface address.
Backup Designated Router ID	Details of the backup router ID and interface address.
Timer intervals configured	Details of elapse time intervals for Hello, Dead, Transmit (wait), and retransmit.

Parameter	Description
Neighbor Count	Details the number of neighbors and adjacent neighbors.
Tx Stat	Counters and statistics for transmitted data. • **Hellos**: Number of transmitted hello packets. These packets are sent every hello interval. • **DbDescr**: Number of transmitted database description packets. • **LsReq**: Number of transmitted link state request packets. • **LsUpdate**: Number of transmitted link state update packets. • **LsAck**: Number of transmitted link state acknowledgment packets • **Pkts**: Total number of transmitted packets.
Rx Stat	Counters and statistics for received data. • **Hellos**: Number of received hello packets. These packets are sent every hello interval. • **DbDescr**: Number of received database description packets. • **LsReq**: Number of received link state request packets. • **LsUpdate**: Number of received link state update packets. • **LsAck**: Number of received link state acknowledgment packets • **Pkts**: Total number of received packets.
DisCd	Number of received packets that are discarded.
BadVer	Number of received packets that have bad OSPF version number.
BadNet	Number of received packets that belong to different network than the local interface.
BadArea	Number of received packets that belong to different area than the local interface.
BadDstAdr	Number of received packets that have wrong destination address.
BadAuType	Number of received packets that have different authentication type than the local interface.
BadAuth	Number of received packets where authentication failed.
BadNeigh	Number of received packets which didn't have a valid neighbor.
BadPckType	Number of received packets that have wrong OSPF packet type.
BadVirtLink	Number of received packets that didn't match have a valid virtual link.

Related Commands

Command	Description
ip ospf	Configure OSPF on the interface
router ospf	Configure OSPF on the router

Command History

Release	Modification
ArubaOS 3.4	Command introduced
ArubaOS 6.0	Added the options: area, default-cost, nssa, and default-information originate always
Dell Networking W-Series ArubaOS 6.5.x	The **redistribute** and **rapng-vpn aggregate-routes <ip-addr>** parameters were introduced.
ArubaOS 6.3.1	The database parameter output now displays the link-state advertisement (LSA) type.
ArubaOS 6.4.3.0	The tunnel ID limit was changed from 2147483647 to 16777215.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show ip pppoe-info

```
show ip pppoe-info
```

Description

Display configuration settings for Point-to-Point Protocol over Ethernet (PPPoE).

Syntax

No parameters.

Examples

The example below shows the current PPPoE configuration.

```
(host) #show ip pppoe-info

PPPoE username: rudolph123
PPPoE password: <HIDDEN>
PPPoE service name: ppp2056
PPPoE VLAN: 22
```

The output of this command includes the following parameters:

Parameter	Description
`PPPoE username`	PAP username configured on the PPPoE access concentrator.
`PPPoE password`	If this parameter displays the word **<HIDDEN>**, a PAP password is configured on the PPPoE access concentrator. If this parameter is **<NONE>**, there is no PPOE password configured.
`PPPoE service name`	PPPoE service name.
`PPPoE VLAN`	VLAN configured to use PPPoE to obtain an IP address via the command **interface vlan <id> ip address pppoe.**

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ip probe

```
show ip probe
```

Description

This command displays the **health-check** profile settings for measuring WAN reachability and latency on a branch controller uplink, and the **default** probe profile settings for policy-based routing using next-hop lists.

Syntax

No parameters

Usage Guidelines

The health-check feature uses ping or UDP probes for measuring WAN reachability and latency. Policy-based routing uses ping probes to determine the reachability of devices on a next-hop list.

Examples

The following command displays the current IP probe settings for the **default** and **health-check** IP probe profiles.

```
IP Probe Entries
----------------
Name           Probe Mode  Frequency(in sec)  Retries  Burst size
----           ----------  -----------------  -------  ----------
default        Ping        10                 19       3
health-check   Ping        10                 3        5
```

The output of this command contains the following information:

Column	Description
Name	Name of the ip probe profile, which is either **default** or **health-check**.
Probe Mode	Indicates whether the probes are sent as ping or UDP packets.
Frequency	Probe interval, in seconds. The controller sends the number of probes in the **Burst Size** column during each frequency interval.
retries	Number of times the controller attempts to resend a probe.
burst-size	Number of probes sent during the probe frequency interval that appears in the **Frequency** column.

Related Commands

Command	Description
ip probe default	This command configures IP probes for policy-based routing using a next-hop list.
ip probe health-check	This command configures WAN health-check probes for measuring WAN availability and latency on branch controller uplinks.

Command Information

Platform	License	Command Mode
Available on all platforms	Available in the base operating system.	Config and Enable mode on master and local controllers

Command History

Release	Modification
ArubaOS 6.4.3	Command introduced

show ip radius

```
show ip radius nas-ip|source-interface
```

Description

Display global parameters for configured RADIUS servers.

Syntax

Command	Description
`nas-ip`	Show the Network Access Server (NAS) IP address attribute sent in outgoing RADIUS requests
`source-interface`	Show the source address of outgoing RADIUS requests

Examples

The example below shows the RADIUS client NAS IP address.

```
(host) #show ip radius nas-ip

RADIUS client NAS IP address = 10.168.254.221
```

Related Commands

Command	Description
`ip radius`	This command configures global parameters for configured RADIUS servers.

Command History

Introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ip-reputation

```
show ip-reputation
```

Description

This command displays the status of ip-reputation and related configuration.

Examples

The example below shows the status of inbound and outbound services.

```
(host) #show ip-reputation
IP Reputation Status
--------------------
Service                  Status
-------                  ------
IP Reputation enabled :  Yes
Deny inbound :           Yes
Deny outbound :          No
DB downloaded :          Yes (Major 1 Minor 718 Update 68)
```

Related Commands

Command	Description
ip reputation	This command blocks connectivity to IP addresses that are classified as malicious.

Command History

This command was introduced in ArubaOS 6.5.

show ip route

```
show ip route
   counters
   static
   stats
```

Description

View the Dell controller routing table.

Syntax

Command	Description
`counters`	Displays the number of routes present, categorized by type.
`static`	Include this optional parameter to display only static routes.
`stats`	Displays route statistics.

Usage Guidelines

This command displays static routes configured on the controller via the ip route command. Use the ip default-gateway command to set the default gateway to the IP address of the interface on the upstream router or switch to which you connect the controller.

Examples

The example below shows the ip address of routers and the VLANs to which they are connected.

```
(host) #show ip route
Codes: C - connected, O - OSPF, R - RIP, S - static
M - mgmt, U - route usable, * - candidate default, V - RAPNG VPN
Gateway of last resort is Imported from DHCP to network 0.0.0.0 at cost 10
Gateway of last resort is Imported from CELL to network 0.0.0.0 at cost 10
Gateway of last resort is Imported from PPPOE to network 0.0.0.0 at cost 10
Gateway of last resort is 10.15.231.185 to network 0.0.0.0 at cost 1
S*    0.0.0.0/0  [1/0] via 10.15.231.185*
O     10.15.228.0/27 [333/0] via 21.21.21.1*
O     12.12.12.0/25 [0/0] via 21.21.21.1*
O     22.22.22.0/24 [3/0] via 21.21.21.1*
O     23.23.23.0/24 [2/0] via 21.21.21.1*
O     25.25.25.0/24 [333/0] via 21.21.21.1*
…
V     201.201.203.0/26 [10/0] ipsec map
O     202.202.202.0/29 [0/0] via 21.21.21.1*
C     192.100.2.0/24 is directly connected, VLAN2
C     10.15.231.184/29 is directly connected, VLAN1
C     172.16.0.0/24 is directly connected, VLAN3
C     21.21.21.0/24 is directly connected, VLAN21
C     5.5.0.2/32 is an ipsec map 10.15.149.30-5.5.0.2
```

Related Commands

Command	Description
ip radius	This command configures global parameters for configured RADIUS servers.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.3	Introduced **counters** parameter.

.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ipc statistics app-ap

```
show ipc statistics app-ap {am|sapd|sta} {ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
```

Description

Display Inter Process Communication (IPC) statistics for a specific AP or BSSID.

Syntax

Parameter	Description
`am`	Show IPC statistics for an air monitor.
`sapd`	Show IPC statistics for the SAPD process.
`stm`	Show IPC statistics for station management communications.
`ap-name <ap-name>`	Show IPC statistics for an AP with a specific name.
`bssid <bssid>`	Show IPC statistics for a specific Basic Service Set Identifier (BSSID). An AP's BSSID is usually the AP's MAC address.
`ip-addr <ip-addr>`	Show IPC statistics for an AP with a specific IP address. Enter the IP address in dotted-decimal format.

Usage Guidelines

Issue this command at the request of Dell support to troubleshoot application errors.

Example

The following example shows IPC statistics for the SAPD process on an AP named **mpp125**.

```
(host) #show ipc statistics app-ap sapd ap-name mpp125
Local Statistics
To application      Tx Msg   Tx Blk   Tx Ret  Tx Fail   Rx Ack   Rx Msg  Rx Drop   Rx Err   Tx
Ack
MESH                     3        0        1        0        3        1        1        0
  1
RF Client                1        0        0        0        1        1        0        0
  1
STM                      1        0        0        0        1        0        0        0
  0
Nanny                    1        0        0        0        1        0        0        0
  0

Remote Statistics
To application      Tx Msg   Tx Blk   Tx Ret  Tx Fail   Rx Ack   Rx Msg  Rx Drop   Rx Err   Tx
Ack
AMAPI CLI Client         0        0        0        0        0        1        0        0
  1
STM                    248        0        0        0        0      248        0        0
  0
```

```
Allocated Buffers    0
Static Buffers       1
Static Buffer Size   1444
```

The output of this command includes the following data columns:

Parameter	Description
Tx Msg	Number of transmitted messages.
Tx Blk	Number of blocking messages transmitted.
Tx Ret	Number of transmitted messages that were returned.
Tx Fail	Number of failure messages that were transmitted.
Rx Ack	Number of received acknowledgements.
Rx Msg	Number of received messages.
Rx Drop	Number of received messages that were dropped.
Rx Err	Number of received messages with errors.
Tx Ack	Number of transmitted acknowledgements.
Allocated Buffers	Number of allocated buffers for IPC messages.
Static Buffers	Number of static buffers for IPC messages.
Static Buffer Size	Size of the static buffer.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show ipc statistics app-id

```
show ipc statistics app-id <app-id>
```

Description

Display Inter Process Communication (IPC) statistics for a specific AP or BSSID.

Syntax

Parameter	Description
`<app-id>`	Application ID number. This number must be obtained from Dell support.

Usage Guidelines

Issue this command at the request of Dell support to troubleshoot application errors.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show ipc statistics app-name

```
show ipc statistics app-name <name>
```

Description

Display Inter Process Communication (IPC) statistics for a specific application.

Syntax

Parameter	Description	
`<name>`	One of the following application names: • **aaa**: Administrator Authentication • **ads**: Anomaly Detection • **auth-resp**: Authentication Response • **authmgr**: User Authentication • **certmgr**: Certificate Manager • **cfgm**: Config Manager • **cpsec**: Control-Plane Security Manager • **cts**: Transport Service • **dbsync**: Database Synchronization • **dds**: Distributed data store • **dhcp**: DHCP Server • **esi**: Server Load Balancing • **fpapps**: Layer 2,3 control • **gsmmgr**: GSM manager • **ha_mgr**: HA manager • **httpd**: HTTPD • **ike**: IKE Daemon • **l2tp**: L2TP • **licensemgr**: License Manager • **mdns**: AirGroup mdns • **mobileip**: Mobile IP	• **ntp**: NTP Daemon • **ospf**: OSPF • **phonehome**: PhoneHome • **pim**: Protocol Independent Multicast • **pktfilter**: Packet Filter • **pptp**: PPTP • **profmgr**: Profile Manager • **publisher**: Publish subscribe service • **resolver**: Resolver • **sapm**: SAPM • **snmp**: SNMP agent • **stm**: Station Management • **stm-lopri**: Station Management Low Priority • **syslogd**: Syslog Manager • **ucm**: • **userdb**: User Database Server • **wms**: Wireless Management

Example

The following example shows IPC statistics for the **STM** process.

```
(host) #show ipc statistics app-name stm

Local Statistics
```

```
To application      Tx Msg   Tx Blk   Tx Ret  Tx Fail   Rx Ack   Rx Msg  Rx Drop   Rx Err   Tx
Ack
AMAPI Web Client         0        0        0        0        0    34405        0        0
34405
Layer2/3            233098        1        0        0   233095       12        0        0
 12
Authentication Se  1076236        0        0        0  1076236        0        0        0
  0
Authentication       54494     7448       54        1    54050   468811        0        0
  0
Publisher                4        0        0        0        4        2       52        0
  2
AMAPI CLI Client         1        0        0        0        1      702        0        0
702
Profile Manager          1        1        0        0        1        0        0        0
  0
Mobile IP          1120303        0        0        0  1076236        1        0        0
  0
Syslog Manager           2        2        0        0        2        0        0        0
  0
WMS                      0        0        0        0        0       19        0        0
 19
PIM                      2        1        0        0        2        1        1        0
  1
Configuration Man        2        1        0        0        2       13        0        0
 12
License Manager          1        1        0        0        1        0        0        0
  0
Datapath           3281237    66425        1        0  1907552  1382289      104        6
  0
Nanny                    1        0        0        0        0        0        0        0
  0

Remote Statistics
To application      Tx Msg   Tx Blk   Tx Ret  Tx Fail   Rx Ack   Rx Msg  Rx Drop   Rx Err   Tx
Ack
WMS                      59        0        0        0       59        0        0        0
  0
STM                   54983        0        0        0        0  1527435        0        0
  0

Allocated Buffers   0
Static Buffers      4
Static Buffer Size  1400
```

The output of this command includes the following data columns:

Parameter	Description
Tx Msg	Number of transmitted messages.
Tx Blk	Number of blocking messages transmitted.
Tx Ret	Number of transmitted messages that were returned.
Tx Fail	Number of failure messages that were transmitted.

Parameter	Description
Rx Ack	Number of received acknowledgements.
Rx Msg	Number of received messages.
Rx Drop	Number of received messages that were dropped.
Rx Err	Number of received messages with errors.
Tx Ack	Number of transmitted acknowledgements.
Allocated Buffers	Number of allocated buffers for IPC messages.
Static Buffers	Number of static buffers for IPC messages.
Static Buffer Size	Size of the static buffer.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show ipv4 user-table

```
show ipv4 user-table
   ap-group <ap-group>
   ap-name <ap-name>
   authentication-method dot1x|mac|opensystem|psk|stateful-dot1x|via-vpn|vpn|web
   bssid <A:B:C:D:E:F>
   debug
   essid <STRING>
   internal
   ip <addr> [log]
   mac <A:B:C:D:E:F>
   mobile {[bindings][visitors]}
   name <STRING>
   phy-type {[a]|[b]}
   role <STRING>
   rows <NUMBER> <NUMBER>
   station
   verbose
```

Description

Displays IPv4 user table entries. You can filter the output based on various parameters are described in table.

Syntax

Parameter	Description
`ap-group <ap-group>`	Filter the output of this command by showing users connected to APs that belong to the specified AP group.
`ap-name <ap-name>`	Filter the output of this command by showing users connected to an AP with the specified AP name.
`authentication-method`	Filter the output of this command by the authentication method used for the device:
`dot1x`	Show data for devices using 802.1X authentication.
`mac`	Show data for devices using MAC authentication.
`opensystem`	Show data for devices using open (no) authentication.
`psk`	Show data for devices that do not use authentication but use a pre-shared key for encryption.
`stateful-dot1x`	Show data for devices using stateful 802.1X authentication.
`via-vpn`	Show data for devices that authenticate using Dell VIA.
`vpn`	Show data for devices using VPN authentication.

Parameter	Description
web	Show data for devices using captive portal authentication.
bssid	Displays entries in the IPv4 user-table that are associated to the specified BSSID.
debug	Displays entries in the IPv4 user-table that are in debug mode.
essid	Displays entries in the IPv4 user-table that are associated to the specified ESSID. If the ESSID includes spaces, you must enclose it in quotation marks.
internal	Displays internal IPv4 users.
ip <A.B.C.D>	Displays IPv4 users that match the specified IPv4 IP address.
log	Displays the log information for the specified IPv4 client.
mac	Displays users with the specified MAC address.
mobile	Displays list of mobile users in the IPv4 user table. The following filters are available for this parameter: • **bindings**—list of users that have moved away from the current controller. • **rows**—displays entries that match the specified row number. • **unique**—displays unique entries in the IPv6 user-table. • **visitors**—displays users that have associated with the current controller.
name	Displays IPv4 user table entries that match the specified name.
phy-type	Displays IPv4 user table entries that match **a** or **b** phy-type.
role	Displays IPv4 user table entries that match the specified role.
rows	Displays specific rows in the IPv4 user table. Enter the starting row number and the number of rows to be displayed.
station	Displays the station table information for the IPv4 user table entries.
verbose	Displays the complete IPv4 user table with all details.

Example

This example displays a list of users.

```
(host) #show ipv4 user-table
Users
-----
IP                MAC               Name                                Role       Age(d:h:m)   Auth
   VPN link  AP name            Roaming   Essid/Bssid/Phy                          Profile
Forward mode  Type     Host Name
```

```
----------       ------------       ------                                  ----      ----------
----    --------  -------             -------   ---------------                        -------
 ------------  ----     ---------
10.20.102.175    08:70:45:43:b5:e5  iakasapu                                employee  00:01:11
802.1X            SH-1F-11           Wireless  alpha-voip/d8:c7:c8:44:31:40/g-HT   aplha-india
 tunnel        iPhone
10.20.102.176    58:94:6b:79:7b:ec  ALCATEL-LUCENT\john                     employee  00:01:20
802.1X            SH-1F-06           Wireless  alpha-wpa2/6c:f3:7f:4a:47:91/a-HT   aplha-india
 tunnel        Win 7
10.16.82.1       24:77:03:d1:07:ac  ALCATEL-LUCENT\jerry                    employee  00:01:42
802.1X            SH-1F-19           Wireless  alpha-wpa2/6c:f3:7f:e7:45:b1/a-HT   aplha-india
 tunnel        Windows
10.20.102.229    58:c3:8b:5f:76:1e  allan@example.com             employee  00:00:02    802.1X
           SH-3F-06           Wireless  alpha-voip/00:24:6c:80:74:00/g-HT   aplha-india
tunnel        Android
10.20.102.113    24:77:03:cf:ff:98  ALCATEL-LUCENT\laura                  employee  00:01:27
802.1X            SH-GF-1            Wireless  alpha-wpa2/d8:c7:c8:44:2c:51/a-HT   aplha-india
 tunnel        Win 7
10.20.102.36     00:27:10:5c:b5:38  mbabu                                   employee  00:01:04
802.1X            SH-1F-13           Wireless  alpha-wpa2/d8:c7:c8:89:c9:f1/a-HT   aplha-india
 tunnel        Win 7    BLR-MBABU-T410
10.20.102.131    58:94:6b:7a:40:c0  ALCATEL-LUCENT\sneeralgi              employee  00:00:53
802.1X            SH-3F-05           Wireless  alpha-wpa2/00:24:6c:80:50:28/a-HT   aplha-india
 tunnel        Win 7
10.20.102.156    84:7a:88:05:72:1b  hvyas                                   employee  00:01:19
802.1X            SH-1F-22           Wireless  alpha-wpa2/6c:f3:7f:e7:44:d1/a-VHT  aplha-india
 tunnel        Android
(host) #show ipv4 user-table authentication-method dot1x
Users
-----
IP                MAC            Name                                  Role      Age(d:h:m)  Auth
   VPN link  AP name            Roaming   Essid/Bssid/Phy                       Profile
Forward mode  Type     Host Name
----------       ------------       ------                                  ----      ----------
----    --------  -------             -------   ---------------                        -------
 ------------  ----     ---------
10.20.102.175    08:70:45:43:b5:e5  iakasapu                                employee  00:01:12
802.1X            SH-1F-11           Wireless  alpha-voip/d8:c7:c8:44:31:40/g-HT   aplha-india
 tunnel        iPhone
10.20.102.176    58:94:6b:79:7b:ec  ALCATEL-LUCENT\skilladi               employee  00:01:21
802.1X            SH-1F-06           Wireless  alpha-wpa2/6c:f3:7f:4a:47:91/a-HT   aplha-india
 tunnel        Win 7
10.16.82.1       24:77:03:d1:07:ac  ALCATEL-LuCENT\nchudasma               employee  00:01:43
802.1X            SH-1F-19           Wireless  alpha-wpa2/6c:f3:7f:e7:45:b1/a-HT   aplha-india
 tunnel        Windows
10.20.102.229    58:c3:8b:5f:76:1e  allan@example.com             employee  00:00:03    802.1X
           SH-3F-06           Wireless  alpha-voip/00:24:6c:80:74:00/g-HT   aplha-india
tunnel        Android
10.20.102.113    24:77:03:cf:ff:98  ALCATEL-LUCENT\aismail                employee  00:01:27
802.1X            SH-GF-1            Wireless  alpha-wpa2/d8:c7:c8:44:2c:51/a-HT   aplha-india
 tunnel        Win 7
10.20.102.36     00:27:10:5c:b5:38  mbabu                                   employee  00:01:05
802.1X            SH-1F-13           Wireless  alpha-wpa2/d8:c7:c8:89:c9:f1/a-HT   aplha-india
 tunnel        Win 7    BLR-MBABU-T410
10.20.102.131    58:94:6b:7a:40:c0  ALCATEL-LUCENT\sneeralgi              employee  00:00:54
802.1X            SH-3F-05           Wireless  alpha-wpa2/00:24:6c:80:50:28/a-HT   aplha-india
 tunnel        Win 7
```

The output of this command includes the following parameters:

Parameter	Description
IP	IP address of the client in that row that authenticating using dot1x
MAC	MAC address of the client.
Name	Name of the client.
Role	The role assigned to the client.
Age (d:h:m)	Total time that client is connected to controller.
Auth	Authentication type.
AP name	Name of the AP associated with the client.
Roaming	Current roaming status of the client.
Essid/Bssid/Phy	ESSID/BSSID/Phy to which the client is associated.
Profile	Displays the AAA profile.

Command History

Release	Modification
ArubaOS 3.3	Command introduced
ArubaOS 6.3	The optional **log** parameter was introduced to display log files for events triggered by a specific user.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ipv6 dhcp

```
show ipv6 dhcp
   binding
   database [pool<pool_name>]
```

Description

Shows DHCPv6 server settings.

Syntax

Parameter	Description
`binding`	Show DHCPv6 server bindings.
`database`	Show DHCPv6 server settings.
`statistics`	Show DHCPv6 pool statistics.

Examples

The example below shows the DHCPv6 database:

```
(host)#show ipv6 dhcp database

DHCPv6 enabled

# 2001-feed-64-nw
subnet6 2001:feed::/120 {
        option vendor-class-identifier  "ArubaAP";
        option dhcp6.vendor-opts  "2001:feed::235";
        range6 2001:feed::1 2001:feed::234;
        range6 2001:feed::236 2001:feed::ffff:ffff:ffff:fffe;
}
# 2003-feed-64-nw
subnet6 2003:feed::/120 {
        option vendor-class-identifier  "ArubaAP";
        option dhcp6.vendor-opts  "2001:feed::235";
        range6 2003:feed::1 2003:feed::234;
        range6 2003:feed::236 2003:feed::ffff:ffff:ffff:fffe;
}
# DHCPv6
subnet6 2001:470:faca:4::/120 {
        default-lease-time 43200;
        max-lease-time 43200;
        option dhcp6.domain-search "test.org";
        option vendor-class-identifier  "ArubaAP";
        option dhcp6.vendor-opts  "2001:feed::235";
        option dhcp6.name-servers 2001:470:20::2;
        option dhcp6.preference 25;
        option dhcp6.usr-opt-24-DHCPv6 "Domain Search List";
        range6 2001:470:20::1 2001:470:faca:4::1;
        range6 2001:470:20::3 2001:470:faca:4:ffff:ffff:ffff:fffe;
}
```

The example below shows the DHCPv6 database for a specific pool:

```
(host) (config) #show ipv6 dhcp database [pool <pool-name>]
(host) (config) #show ipv6 dhcp database pool DHCPv6

# DHCPv6
subnet6 2001:470:faca:4::/120 {
        default-lease-time 43200;
        max-lease-time 43200;
        option dhcp6.domain-search "test.org";
        option vendor-class-identifier  "ArubaAP";
        option dhcp6.vendor-opts  "2001:feed::235";
        option dhcp6.name-servers 2001:470:20::2;
        option dhcp6.preference 25;
        option dhcp6.usr-opt-24-DHCPv6 "Domain Search List";
        range6 2001:470:20::1 2001:470:faca:4::1;
        range6 2001:470:20::3 2001:470:faca:4:ffff:ffff:ffff:fffe;
}
```

The example below shows the DHCPv6 binding information:

```
(host)# show ipv6 dhcp binding
# Client: fe80::1cf:2e1:cd13:356b; IA ID 0x13001f3c
ia-na "\023\000\037<\000\001\000\001\030\223\211\242\000%\263J\372\364" {
cltt epoch 1364206514; # Mon Mar 25 15:45:14 2013
iaaddr 2001:470:faca:4:21a:1eff:fe00:9e6 {
binding state expired;
preferred-life 187;
max-life 300;
ends epoch 1364206814; # Mon Mar 25 15:50:14 2013
}
```

The example below shows the DHCPv6 active pools:

```
(host) #show ipv6 dhcp active-pools

DHCPv6 Active Pools
-------------------
Vlan Pool Name
---- ---------
10   DHCPv6
```

Related Commands

Command	Description
ipv6 dhcp pool	This command configures a DHCPv6 pool on the controller.

Command History

Introduced in ArubaOS 6.3.

show ipv6 firewall

```
show ipv6 firewall
```

Example

This example displays the status of all firewall configurations.

```
(host) #show ipv6 firewall

Global IPv6 firewall policies
-----------------------------
Policy                                      Action    Rate  Port
------                                      ------    ----  ---------
Monitor ping attack                         Disabled
Monitor TCP SYN attack                      Disabled
Monitor IPv6 sessions attack                Disabled
Deny inter user bridging                    Disabled
Deny all IPv6 fragments                     Disabled
Per-packet logging                          Disabled
Enforce TCP handshake before allowing data  Disabled
Prohibit RST replay attack                  Disabled
Session Idle Timeout                        Disabled
Session mirror destination                  Disabled
Prohibit IPv6 Spoofing                      Disabled
Enable IPv6 Stateful Firewall               Disabled
```

The output of this command includes the following parameters:

Parameter	Description
`Monitor ping attack`	If enabled, the controller monitors the number of ICMP pings per second. If this value exceeds the maximum configured rate, the controller will register a denial of service attack.
`Monitor TCP SYN attack`	If enabled, the controller monitors the number of TCP SYN messages per second. If this value exceeds the maximum configured rate, the controller will register a denial of service attack.
`Monitor IPv6 sessions attack`	If enabled, the controller monitors the number of TCP session requests per second. If this value exceeds the maximum configured rate, the controller will register a denial of service attack sessions.
`Deny inter user bridging`	If enabled this setting prevents the forwarding of Layer-2 traffic between wired or wireless users. You can configure user role policies that prevent Layer-3 traffic between users or networks but this does not block Layer-2 traffic.
`Deny all IPv6 fragments`	If enabled, all IPv6 fragments are dropped.

Parameter	Description
`Per-packet logging`	If active, and logging is enabled for the corresponding session rule, this feature logs every packet.
`Enforce TCP handshake before allowing data`	If enabled, this feature prevents data from passing between two clients until the three-way TCP handshake has been performed. Enabling this option causes mobility to fail. So, disable this option if you have mobile clients on the network as.
`Prohibit RST replay attack`	If enabled, this setting closes a TCP connection in both directions if a TCP RST is received from either direction.
`Session Idle Timeout`	Shows if a session idle timeout interval has been defined.
`Session mirror destination`	Destination to which mirrored packets are sent.
`Prohibit IPv6 Spoofing`	Status on IPv6 spoofing. When this option is enabled, IP and MAC addresses are checked; possible IP spoofing attacks are logged and an SNMP trap is sent.
`Enable IPv6 Stateful Firewall`	Shows if IPv6 stateful firewall is enabled.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ipv6 interface

```
show ipv6 interface [brief]
```

Description

View IPv6-related information on all interfaces.

Syntax

Parameter	Description
brief	Optional parameter. If specified, displays the IPv6-related information on all the interfaces in a summary format.

Example

```
(host) #show IPv6 interface
VLAN1 is up line protocol is down
IPv6 Router Advertisements are disabled
IPv6 is disabled
VLAN46 is up line protocol is up
IPv6 is enabled, link-local address is fe80::1a:1e00:2e00:9f0
Global unicast address(es):
2046:eab::25, subnet is 2046:eab::/64
IPv6 Router Advertisements are disabled
VLAN50 is up line protocol is up
IPv6 Router Advertisements are disabled
IPv6 is disabled
VLAN10 is up line protocol is up
IPv6 is enabled, link-local address is fe80::1a:1e00:a00:9f0
Global unicast address(es):
2010:eab::1, subnet is 2010:eab::/64
fc01:eab::1, subnet is fc01:eab::/64
IPv6 Router Advertisements are enabled
loopback is up line protocol is up
IPv6 is enabled, link-local address is fe80::1a:1e0f:ff00:9f0
Global unicast address:
2046:eab::2, subnet is 2046:eab::2/128
TUNNEL2 is up line protocol is up
tunnel mode is Layer2 IPv6 GRE, tunnel vlan 10
tunnel source ipv6 address is 2046:eab::25
tunnel destination ipv6 address is 2047:eab::25

(host) #show ipv6 interface brief
Interface                   [Status/Protocol]
vlan 800                    [  up/up   ]
  unassigned
vlan 1                      [  up/down]
  unassigned
vlan 802                    [  up/up   ]
  fe80::b:8603:226d:863c/64
  2082::802:1/64
vlan 32                     [  up/up   ]
  unassigned
vlan 801                    [  up/up   ]
  fe80::b:8603:216d:863c/64
  2005:81::1/64
```

```
vlan 50                       [  up/down]
  fe80::b:8600:326d:863c/64
  2050:3::50:1/64
loopback                      [  up/up  ]
  fe80::b:860f:ff6d:863c/64
mgmt                          [down/down]
  unassigned
tunnel 2                      [  up/up  ]
  unassigned
```

The following table details the columns and content in the show command.

Column	Description
Interface	List the interface and interface identification with the IPv6 address and netmask for the interface, if configured.
Status/Protocol	States the administrative status and the IPv6 status on the interface. Enabled—up Disabled—down

Command History

Release	Modification
ArubaOS 6.1	Command introduced
ArubaOS 6.4	The **tunnel** parameter was introduced in the output.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master controllers.

show ipv6 mld config

```
show ipv6 mld config
```

Description

Displays Multicast Listener Discover (MLD) configuration details.

Example

This example displays the current MLD configuration values.

```
(host) #show ipv6 mld config

MLD Config
----------
Name                      Value
----                      -----
robustness-variable       2
query-interval            125
query-response-interval   100
ssm-range                 FF3X::4000:1 - FF3X::FFFF:FFFF
```

The output of this command includes the following parameters:

Parameter	Description
`robustness-variable`	Denotes the value that is used to calculate the timeout value of an MLD client.
`query-interval`	Denotes the time interval at which the MLD query is sent.
`query-response-interval`	Denotes the time interval at which the MLD query response should be received.
`ssm-range`	Denotes the source specific multicast range. When you enter the SSM Range ensure that the upstream router has the same range, else the multicast stream would be dropped. **Note:** Only SSM enabled clients can subscribe to the multicast stream in the multicast range. The default ssm-range in case of IPv6 is FF3X::4000:1 - FF3X::FFFF:FFFF, this range is configurable. If MLDv1 or a non SSM client sends a report on a specified SSM range, it is rejected by the controller.

Command History

Release	Modification
ArubaOS 3.3	Command introduced.
ArubaOS 6.4	The **ssm-range** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ipv6 mld counters

```
show ipv6 mld counters
```

Description

Displays the statistics of MLD.

Example

This example displays the MLD statistics for the following values.

```
(host) #show ipv6 mld counters

MLD Statistics
--------------
Name                    Value
----                    -----
received-total          0
received-queries        0
received-v1-reports     0
received-leaves         0
received-unknown-types  0
len-errors              0
checksum-errors         0
not-vlan-dr             0
transmitted-queries     0
forwarded               0
```

The output of this command includes the following parameters:

Parameter	Description
`received-total`	The total number of MLD messages.
`received-queries`	The total number of MLD queries.
`received-v1-reports`	The total number of MLD v1 reports received.
`received-leaves`	The total number of MLD v1 leave messages received.
`received-unknown-types`	The total number of unrecognized messages received.
`len-errors`	The total number of error message where the length check has failed.
`checksum-errors`	The total number of error message where the checksum has failed.
`not-vlan-dr`	The number of messages received for which the current controller is not the designated router.
`transmitted-queries`	The total number of transmitted MLD queries.

Parameter	Description
`forwarded`	The total number of MLD messages forwarded.

Command History

This command was available in ArubaOS 3.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ipv6 mld group

```
show ipv6 mld group
```

Example

This example displays MLD group details.

```
(host) #show ipv6 mld group

MLD Group Table
---------------
Group               Members  Mode     Age
-----               -------  ----     ---
ff02::1:ff00:0      2        Exclude  4
ff02::1:ff00:1900   2        Exclude  1
ff1e::2             2        Include  0
ff02::1:3           4        Exclude  1
ff02::202           2        Exclude  4
ff02::2             3        Exclude  1
ff02::1:ff20:d6e2   2        Exclude  4
ff02::c             4        Exclude  2
ff02::1:ffab:4027   2        Exclude  6
ff02::d             2        Exclude  1
ff02::1:ff00:12     2        Exclude  4
ff02::1:ffd6:4d41   1        Exclude  7
ff02::16            2        Exclude  1
ff02::1:ffd6:4d40   1        Exclude  1
ff02::1:ff8a:4951   2        Exclude  4
ff02::1:ff5b:aac4   2        Exclude  11
ff02::1:ff9f:df01   2        Exclude  3
Total Groups: 17
```

The output of this command includes the following parameters:

Parameter	Description
Group	Name of MLD groups.
Members	Number of members in an MLD group.
Mode	Controller supports two IPv6 multicast source filtering modes - Include and Exclude.In Include mode, the reception of packets sent to a specified multicast address is enabled only from the source addresses listed in the source list. In Exclude mode, the reception of packets sent to a specific multicast address is enabled from all source addresses (MLDv1 mode).
Age	This parameter specifies the aging time.

This example displays MLD group address details.

```
(host) #show ipv6 mld group maddr ff1e::2 mac 9c:b7:0d:3f:a8:fc

MLD member 9c:b7:0d:3f:a8:fc Table
----------------------------------
Source         Age
------         ---
2001:feed::2   26
```

The output of the `show ipv6 mld group` command includes the following parameters:

Parameter	Description
`Source`	IP address of the multicast source.
`Age`	This parameter specifies the aging time.

Command History

Release	Modification
ArubaOS 3.3	Command introduced
ArubaOS 6.4	The **mode** and **age** parameters were introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ipv6 mld interface

```
show ipv6 mld interface
```

Example

This example displays MLD status on VLANs. To view details for a specific VLAN, you can specify the VLAN ID.

```
(host) #show ipv6 mld interface

MLD Interface Table
-------------------
VLAN  Link local address  Snooping  Proxy     Querier  Querier-dest  Upstream querier
Upstream port
----  ------------------  --------  -----     -------  ------------  ----------------  -------
------
1     ::                  disabled  disabled  ::       unknown       ::                -
160   ::                  disabled  disabled  ::       unknown       ::                -
```

The output of this command includes the following parameters:

Parameter	Description
VLAN	Denotes the VLAN ID.
Link local address	IP address of the VLAN interface.
Snooping	Status of MLD snooping.
Proxy	Status of MLD proxy configuration.
Querier	IPv6 address of the MLD querier for the VLAN.
Querier-dest	Denotes the destination of MLD querier on VLAN.
Upstream querier	Denotes the address of upstream MLD querier on VLAN.
Upstream port	Denotes the destination of upstream MLD querier on VLAN.

Command History

This command was available in ArubaOS 3.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers.

show ipv6 mld proxy-group

```
show ipv6 mld proxy-group [vlan <vlan>]
```

Example

This example displays MLD proxy-group details.

```
(host) #show ipv6 mld proxy-group
MLD Proxy Group Table
---------------------
VLAN  Addr                    Group              Num Members
----  ----                    -----              -----------
10    fe80::b:8600:a61:cc5c   ff1e::5            2
10    fe80::b:8600:a61:cc5c   ff02::1:ff9e:dc4c  1
10    fe80::b:8600:a61:cc5c   ff02::1:3          2
10    fe80::b:8600:a61:cc5c   ff02::1:ff83:d718  1
10    fe80::b:8600:a61:cc5c   ff02::1:ff13:356b  1
10    fe80::b:8600:a61:cc5c   ff02::c            2
Total displayed proxy groups: 6
```

The output of this command includes the following parameters:

Parameter	Description
VLAN	Denotes the VLAN ID.
Addr	IP address of the VLAN interface.
Group	Name of MLD group.
Num Members	Number of members in an MLD group.

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ipv6 mld proxy-stats

```
show ipv6 mld proxy-stats
```

Example

This example displays the status of the MLD proxy.

```
(host) #show ipv6 mld proxy-stats
MLD Proxy Statistics(Upstream)
------------------------------
Name      Sent  Received
----      ----  --------
Queries   -     39
Joins     51    112
Leaves    9     0
```

The output of this command includes the following parameters:

Parameter	Description
Name	Type of packet.
Sent	Number of packets sent.
Received	Number of packets received.

Command History

This command was available in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ipv6 mld proxy-mobility-group

```
show ipv6 mld proxy-mobility-group [maddr <maddr>]
```

Example

This example displays MLD proxy-mobility-group details.

```
(host) #show ipv6 mld proxy-mobility-group
MLD MIP Group Table
-------------------
Group Members
----- -------
ff1e::2 1
ff02::1:3 2
ff02::c 1
```

The output of this command includes the following parameters:

Parameter	Description
Group	Name of MLD mobility group.
Members	Number of members in an MLD mobility group.

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ipv6 mld proxy-mobility-stats

```
show ipv6 mld proxy-mobility-stats
```

Example

This example displays the details of MLD proxy-mobility statistics.

```
(host) #show ipv6 mld proxy-mobility-stats

MLD Mobility Multicast Statistics
---------------------------------
Name               Sent  Received
----               ----  --------
Joins              -     2
Leaves             -     0
Intra-move         -     1
Inter-move         -     0
Client-away        -     0
Back-home          -     0
Query-db           -     0
Query-foreign-db   -     0
Query-home-db      -     0
Add-visitor        -     0
Replies            0     -
```

The output of this command includes the following parameters:

Parameter	Description
Name	Type of packet.
Sent	Number of packets sent.
Received	Number of packets received.

Command History

This command was available in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show ipv6 neighbors

```
show ipv6 neighbors
```

Description

Displays the IPv6 neighbors configured on a VLAN interface.

Usage Guidelines

This command displays the IPv6 neighbors configured on a VLAN interface via the ipv6 neighbor command.

Examples

The example below shows the ipv6 neighbors configured on VLAN 1 .

```
(host) #show ipv6 neighbors vlan 1

IPv6 Neighbors
--------------
IPv6 Address          Age  Link-layer Addr    State      Interface
------------          ---  ---------------    -----      ---------
2cce:205:160:100::fe  -    00:0b:86:61:13:28  PERMANENT  vlan 1
```

Command History

Introduced in ArubaOS 6.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ipv6 ra status

```
show ipv6 ra status
```

Description

Displays the IPv6 RA status on the VLAN interfaces.

Usage Guidelines

This command displays the IPv6 RA status on the VLAN interfaces.

Examples

The example below shows the IPv6 RA status on the VLAN interfaces .

```
(host) #show ipv6 ra status

IPv6 RA Status
--------------
VlanId  State    Prefix(es)
------  -----    ----------
1       enabled  2001:abcd:1234:dead::/64
220     enabled  2200:eab:feed:12::/64
230     enabled  2300:eab:feed::/64
7       enabled  2001:470:faca:2::/64
                 2001:470:faca:3::/64
                 2001:470:faca:4::/64
```

Command History

Introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ipv6 route

```
show ipv6 route [counters | static]
```

Description

Displays the Dell controller IPv6 routing table.

Syntax

Command	Description
`counters`	Displays the number of routes present, categorized by type.
`static`	Include this optional parameter to display only static IPv6 routes.

Usage Guidelines

This command displays static IPv6 routes configured on the controller via the ipv6 route command. Use the ipv6 default-gateway command to set the default gateway to the IPv6 address of the interface on the upstream router or switch to which you connect the controller.

Examples

The examples below show the ipv6 address of routers and the VLANs to which they are connected.

```
(host) #show ipv6 route

Codes: C - connected, O - OSPF, R - RIP, S - static
       M - mgmt, U - route usable, * - candidate default

Gateway of last resort is 2001::3 to network ::/128 at cost 1
S*    ::/0 [1/0] via 2001::3*
C    2001::/64 is directly connected, VLAN1
C    2010:abcd:1234:dead::/64 is directly connected, VLAN10

(host) #show ipv6 route static

Gateway of last resort is 2001::3 to network ::/128 at cost 1
S*    ::/0 [1/0] via 2001::3*
```

Command History

Release	Modification
ArubaOS 6.1	Command introduced.
ArubaOS 6.3	Introduced **counters** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master or local controllers

show ipv6 user-table

```
show ipv6 user-table
   ap-group <ap-group>
   ap-name <ap-name>
   authentication-method dot1x|mac|opensystem|psk|stateful-dot1x|via-vpn|vpn|web
   bssid <A:B:C:D:E:F>
   debug
   essid <STRING>
   internal
   ip <A.B.C.D> [log]
   mac <A:B:C:D:E:F>
   mobile {[bindings][visitors]}
   name <STRING>
   phy-type {[a]|[b]}
   role <STRING>
   rows <NUMBER> <NUMBER>
   station
   verbose
```

Description

Displays IPv6 user table entries. You can filter the output based on various parameters are described in table.

Syntax

Parameter	Description
`ap-group <ap-group>`	Filter the output of this command by showing users connected to APs that belong to the specified AP group.
`ap-name <ap-name>`	Filter the output of this command by showing users connected to an AP with the specified AP name.
`authentication-method`	Filter the output of this command by the authentication method used for the device:
`dot1x`	Show data for devices using 802.1X authentication.
`mac`	Show data for devices using MAC authentication.
`opensystem`	Show data for devices using open (no) authentication.
`psk`	Show data for devices that do not use authentication but use a pre-shared key for encryption.
`stateful-dot1x`	Show data for devices using stateful 802.1X authentication.
`via-vpn`	Show data for devices that authenticate using Dell VIA.
`vpn`	Show data for devices using VPN authentication.

Parameter	Description
web	Show data for devices using captive portal authentication.
bssid	Displays entries in the IPv6 user-table that are associated to the specified BSSID.
debug	Displays entries in the IPv6 user-table that are in debug mode.
essid	Displays entries in the IPv6 user-table that are associated to the specified ESSID. If the ESSID includes spaces, you must enclose it in quotation marks.
internal	Displays internal IPv6 users.
ip <A.B.C.D>	Displays IPv6 users that match the specified IPv6 IP address.
log	Displays the log information for the specified IPv6 client.
mac	Displays users with the specified MAC address.
mobile	Displays list of mobile users in the IPv6 user table. The following filters are available for this parameter: • **bindings**—list of users that have moved away from the current controller. • **rows**—displays entries that match the specified row number. • **unique**—displays unique entries in the IPv6 user-table. • **visitors**—displays users that have associated with the current controller.
name	Displays IPv6 user table entries that match the specified name.
phy-type	Displays IPv6 user table entries that match **a** or **b** phy-type.
role	Displays IPv6 user table entries that match the specified role.
rows	Displays specific rows in the IPv6 user table. Enter the starting row number and the number of rows to be displayed.
station	Displays the station table information for the IPv6 user table entries.
verbose	Displays the complete IPv6 user table with all details.

Example

This example displays a list of users.

```
(host)#show ipv6 user-table
Users
-----
IP                                MAC                 Name      Role      Age(d:h:m)  Auth     VPN
link  AP name  Roaming  Essid/Bssid/Phy                      Profile  Forward mode  Type
Host Name
```

```
----------                    ------------       ------    ----      ----------  ----    ----
----  -------  -------  ---------------                          -------  ------------  ----
---------
2010:eab::59ee:264a:a702:ca57  c0:14:3d:d9:e2:1b  salz      guest     00:04:30    802.1X
     AP-105   Away     IPv6-dot1x-7220/00:24:6c:11:88:40/g-HT  default  tunnel        Win 7
User Entries: 1/1
```

This example displays 802.1X authenticated users in the IPv6 user table.

```
(host)#show ipv6 user-table authentication-method dot1x

Users
-----
    IP                                      MAC                Name      Role      Age(d:h:m)
Auth    VPN link  AP name            Roaming   Essid/Bssid/Phy             Profile
----------                              ------------       ------    ----      ----------  --
--    --------  -------            -------   ---------------           -------
fe80::216:ceff:fe2c:b485                00:16:ce:2c:b4:85  Wing-A    logon     00:00:06
802.1X            00:0b:86:c1:0e:8c  Wireless  Wing-A/00:0b:86:90:e8:c0/g  default-dot1x
2003:d81f:f9f0:1001:617c:9151:6d25:f754  00:16:ce:2c:b4:85  Wing-A    logon     00:00:06
802.1X            00:0b:86:c1:0e:8c  Wireless  Wing-A/00:0b:86:90:e8:c0/g  default-dot1x
```

The output of this command includes the following parameters:

Parameter	Description
IP	IP address of the client in that row that authenticating using dot1x
MAC	MAC address of the client.
Name	Name of the client.
Role	The role assigned to the client.
Age (d:h:m)	Total time that client is connected to controller.
Auth	Authentication type.
AP name	Name of the AP associated with the client.
Roaming	Current roaming status of the client.
Essid/Bssid/Phy	ESSID/BSSID/Phy to which the client is associated.
Profile	Displays the AAA profile.

Command History

Release	Modification
ArubaOS 3.3	Command introduced
ArubaOS 6.3	The optional **log** parameter was introduced to display log files for events triggered by a specific user. All controllers support per-user logging.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show keys

```
show keys [all]
```

Description

Show whether optional keys and features are enabled or disabled on the controller.

Syntax

Parameter	Description
all	Include this optional parameter to display the status of all optional keys and features. If this parameter is omitted, the output displays the status of the most commonly used features and keys.

Example

The following example displays the status of the most commonly used keys and features on the controller.

```
(host) #show keys
Licensed Features
-----------------
Feature                                          Status
-------                                          ------
Access Points                                    64
Remote Access Points                             64
Outdoor Mesh Access Points                       64
RF Protect                                       64
Voice Service Module                             Unlimited
VPN Server Module                                512
xSec Module                                      96
Next Generation Policy Enforcement Firewall Module  64
Advanced Cryptography                            2024
Service provider AP                              0
RF Protect                                       ENABLED
Policy Enforcement Firewall                      ENABLED
Remote APs                                       ENABLED
External Services Interface                      ENABLED
Client Integrity Module                          ENABLED
VPN Server                                       ENABLED
Wired 802.1X                                     ENABLED
xSec Module                                      ENABLED
MMC AP                                           DISABLED
Netgear AP                                       DISABLED
Voice Services Module                            ENABLED
Mesh Point APs                                   ENABLED
AP Developers Module                             DISABLED
Power Over Ethernet                              ENABLED
Internal Test Functions                          DISABLED
Public Access                                    ENABLED
Policy Enforcement Firewall for VPN users        ENABLED
Advanced Cryptography                            ENABLED
Service Provider Access Point                    DISABLED
L2/L3 Switching                                  DISABLED
Maritime Regulatory Domain                       ENABLED
```

Related Commands

To view the license usage database (including the license key strings) use the command show license on page 1662.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show lacp

```
show lacp <group_number> {counters | internal | neighbor}
```

Description

View the LACP configuration status.

Syntax

Parameter	Description
`<group_number>`	Enter the Link aggregation group number. Range: 0-7
`counters`	Enter the keyword **counters** to view the LACP traffic.
`internal`	Enter the keyword **internal** to view the LACP internal information.
`neighbor`	Enter the keyword **neighbor** to view the LACP neighbor information.

Example

The port uses the group number +1 as its “actor admin key”. By default, all the ports use the long timeout value (90 seconds).

```
(Host)#show lacp 0 neighbor
Flags:  S - Device is requesting Slow LACPDUs
        F - Device is requesting fast LACPDUs
        A - Device is in active mode P - Device is in passive mode
Partner's information
---------------------
Port    Flags  Pri  OperKey  State Num  Dev Id
----    -----  ---- -------  ----- ---- ----------------
FE 1/1  SA     1    0x10     0x45  0x5  00:0b:86:51:1e:70
FE 1/2  SA     1    0x10     0x45  0x6  00:0b:86:51:1e:70
```

When a port, in a LAG, is misconnected (that is, the partner device is different than the other ports or the neighborship times out or can not exchange LACPDUs with the partner), the port status is displayed as “DOWN” (see the following example).

```
(Host)#show lacp 0 internal
Flags:  S - Device is requesting Slow LACPDUs
        F - Device is requesting fast LACPDUs
        A - Device is in active mode P - Device is in passive mode

Port    Flags  Pri  AdminKey  OperKey  State Num  Status
----    -----  ---- --------  -------- ----- ---- -------
FE 1/1  SA     1    0x1       0x1      0x45  0x2  DOWN
FE 1/2  SA     1    0x1       0x1      0x45  0x3  UP
```

The “counters” option allows you to view LACP received (Rx) traffic, transmitting (Tx) traffic, data units (DU) received and transmitted by port.

```
(Host)#show lacp 0 counters
Port     LACPDUTx   LACPDURx   MarkrTx   MarkrRx   MrkrRspTx MrkrRspRx
----     --------   --------   -------   --------  --------- ---------
FE 1/1   10         10         0         0         0         0
FE 1/2   12         12         0         0         0         0
```

Related Command

Command	Description
lacp group	Enable LACP and configure on the interface
show interface port-channel	View information on a specified port-channel interface
show lacp sys-id	View the LACP system ID information

Command History

Release	Modification
ArubaOS 3.4.1	Command introduced

Command Information

Platform	Licensing	Command Mode
All Platforms	Base operating system	Enable and Configuration modes for Master and Local controllers

show lacp sys-id

```
show lacp sys-id
```

Description

View the LACP system MAC address and port priority.

Example

This command returns the port priority and the MAC address (comma separated). In the example below, the port priority is the default value 32768 followed by the MAC address 00:0B:86:40:37:C0.

```
(Host)#show lacp sys-id
32768,00:0B:86:40:37:C0
```

Related Commands

Command	Description
lacp group	Enable LACP and configure on the interface
lacp port-priority	Configure the LACP port priority
show lacp	View the LACP configuration status
show interface port-channel	View information on a specified port channel interface

Command History

Release	Modification
ArubaOS 3.4.1	Command introduced

Command Information

Platform	Licensing	Command Mode
All Platforms	Base operating system	Enable and Configuration modes (config) for Master and Local controller

show lcd-menu

```
show lcd-menu
```

Description

Displays the current LCD Menu configuration.

Syntax

None.

Example

An example output of the **show lcd-menu** command.

```
lcd-menu
--------
Parameter                                   Value
---------                                   -----
menu maintenance upgrade-image partition0   enabled
menu maintenance upgrade-image partition1   enabled
menu maintenance upgrade-image              enabled
menu maintenance upload-config              enabled
menu maintenance factory-default            enabled
menu maintenance media-eject                enabled
menu maintenance reload-system              enabled
menu maintenance halt-system                enabled
menu maintenance                            enabled
menu                                        enabled
```

Related Commands

Command History

Release	Modification
ArubaOS 6.2	Command introduced.

Command Information

Platforms	Licensing	Command Mode
W-7200 Series	Base operating system	Config mode on local and master controllers

show license

```
show license [limits]
```

Description

Displays the license table.

Syntax

Parameter	Description
limits	Enter the keyword **limit** to display the current license limits.

Example

An example output of the **show license** command.

```
(host) # show license

License Table
-------------
Key                                                 Installed   Expires  Flags  Service Type
---                                                 ---------   -------  -----  ------- -----
x7kbiBm5-3jI5MiBY-HVTAH/ci-llxPiKBV-dY8QGBMg-240    2010-01-21  Never           Access Points:
1024
                                                    21:00:22
itY24Hca-HSQlvJhi-yZtW6RB7-HGuBXzIq-N6hd6TNV-nZk    2010-01-21  Never     E     120abg Upgrade:
128
                                                    21:01:03
oqdLOxZ6-+FS5DT2P-iNmtvc3o-NFyasYrO-ixGUrszE-4uo    2010-01-21  Never     E     121abg Upgrade:
128
                                                    21:01:13
GIleLrCX-d8lxt3z5-vQC50n60-f31amOxu-Rf0uEoTn-qXQ    2010-01-21  Never     E     124abg Upgrade:
128
                                                    21:01:22
ldsXG7ik-pj/HVm4t-Qt3541UC-3wzC+Efj-yn08g/HF-/Dg    2010-01-21  Never     E     125abg Upgrade:
128
                                                    21:01:3
sJvaPL88-gWDdlMpj-LZMZ2YKK-2fU8NV6l-XIH4wRk8-44I    2010-05-05  Never     E     RF Protect: 512
                                                    08:51:57
QtemJpLj-Qm5D9WvK-8c9lbaL6-t2nU6/Pj-LSNd00FZ-tJo    2010-05-05  Never     E     RF Protect: 1024
                                                    08:52:07
                                                    21:18:55
WNx6RasB-Qn9YVZ+5-giraq0Uy-aoIqS3as-FXmFh5dY-cSs    2010-01-21  Never     E     xSec Module:
1024
                                                    21:20:56
u/GdQHWa-m4bzUCMC-ydMsWTif-hDMDajyB-qAlIMwnN-pGM    2010-01-25  Never     E     Policy
Enforcement Firewall for VPN users
                                                    18:44:19
F9dGNdjV-EmwLhqlI-oKMQQepZ-b9Jl3OB2-HQjwmc+r-vhI    2010-01-25  Never     E     Next Generation
Policy Enforcement Firewall Module: 128
                                                    18:44:19
License Entries: 11

Flags: A - auto-generated; E - enabled; R - reboot required to activate
```

The output of this command includes the following data columns:

Parameter	Description
`Key`	The license key.
`Installed`	The license installation date and time.
`Expires`	The date that your evaluation license expires is listed in this column. Permanent license will always have a “Never” in this column. Expired evaluation licenses will also be indicated in this column.
`Flags`	This column displays some status about your license. The legend for this column appears at the bottom of the display output. They are: **A**: The license is auto-generated. **E**: The license if fully enabled. **R**: You must reboot your controller to fully enable this license.
`Service Type`	The license name (feature).

Related Commands

To view additional statistics for license key usage, use the command show keys.

Command History

Release	Modification
ArubaOS1.0	Command introduced.
ArubaOS 3.4	Verbose parameter was deprecated. This command now displays the entire license key by default.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on local and master controllers

show license aggregate

```
show license aggregate
```

Description

Display the license limits sent from centralized licensing clients to the licensing server.

Syntax

No Parameters.

Usage Guidelines

If your deployment uses the centralized licensing feature, you can issue this command from the command-line interface of the centralized licensing server controller to view license limits sent by licensing clients.

Example

Issue this command from the command-line interface of the centralized licensing server controller. The following example displays output of the **show license aggregate** command.

```
Aggregate License Table
-----------------------
Hostname      IP Address  AP    PEF   RF Protect  xSec Module  ACR  Last update (secs. ago)
--------      ----------  ---   ---   ----------  -----------  ---  -----------------------
Spectrum14   172.3.21.10  3587  2432  1536        8192         0    6

Total AP License Count          :3587
Total PEF License Count         :2432
Total RF Protect License Count  :1536
Total XSEC License Count        :8192
Total ACR License Count         :0
```

The output of this command includes the following data columns:

Parameter	Description
Hostname	Name of the licensing client controller.
IP Address	IP address of the licensing client controller.
AP	Total number of AP licenses sent from licensing clients associated with this controller.
PEF	Total number of Policy Enforcement Firewall (PEF) licenses sent from licensing clients associated with this controller.
RF Protect	Total number of RFprotect licenses sent from licensing clients associated with this controller.
xSec Module	Total number of Extreme Security (xSec) licenses sent from licensing clients associated with this controller.

Parameter	Description
`ACR`	Total number of advanced Cryptography (ACR) licenses sent from licensing clients associated with this controller.
`Last update (secs. ago`	Time, in seconds, that has elapsed since the licensing table on the master licensing controller was updated.
`Total <license> License Count`	These rows display the total numbers of licenses available for each license type. These numbers include licenses sent from licensing clients and any licenses currently installed on the licensing master.

Related Commands

Issue this command from the command-line interface of the centralized licensing master controller.

Command History

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on centralized licensing master controllers

show license client-table

```
show license client-table
```

Description

Display the centralized license limits applied to each licensing client.

Syntax

No Parameters.

Usage Guidelines

If your deployment uses the centralized licensing feature, issue this command from the command-line interface of a centralized licensing client to view license limits applied to that licensing client from the licensing table.

Example

The following example displays output of the **show license client-table** command.

```
(host) #show license client-table
Built-in limit: 32
License Client Table
--------------------
Service Type                    System Limit  Server Lic.  Used Lic.  Contributed Lic.
Remaining Lic.
------------                    ------------  -----------  ---------  ----------------  ------
--------
Access Points                   256           5120         1          5120              255
Next Generation PEF Module      256           2047         1          2048              255
RF Protect                      256           6143         1          6144              255
xSec Module                     4096          16384        0          16384             4096
Advanced Cryptography           4096          1024         0          1024              1024
```

The output of this command includes the following data columns:

Parameter	Description
Service Type	Type of license on the licensing client.
System Limit	The maximum number of licenses supported by the controller platform.
Server Lic.	Number of licenses available for use by the licensing client. **NOTE:** This number is limited by the total license capacity of the controller platform. A controller cannot use more licenses than is supported by that controller platform, even if additional license are available.
Used Lic.	Total number of licenses of each license type used by the licensing client controller.

Parameter	Description
`Contributed Lic.`	Total number of licenses of each license type contributed by the licensing client controller.
`Remaining Lic.`	Total number of remaining licensing available on this controller. This number is also limited by the total license capacity of the controller platform.

Related Commands

To view additional statistics for license usage on the licensing server, use the command show license aggregate.

Command History

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on centralized licensing client controllers

show license debug

```
show license debug
```

Description

Displays a summary of the current settings of the centralized licensing feature.

Syntax

No parameters

Example

The following example shows the output of the **show license debug** command.

```
(host) # show license debug

Summary of licensing state
Centralized Licensing: Enabled
Switch Role: Master
License Role: License Server
Master IP: 192.0.2.100
Switch IP: 192.0.1.103
License Server IP: 0.0.0.0
```

The output of this command includes the following data columns:

Parameter	Description
`Centralized licensing`	Shows if centralized licensing is enable or disabled
`Switch Role`	Role of the controller on which this command is run
`License Role`	Licensing role of the controller on which this command is run. A master controller can be a licensing client or a licensing server. Local controllers can be licensing clients only.
`Master IP`	IP address used by the master controller. If the master controller is using VRRP, this parameter displays the VRRP virtual IP address.
`Switch IP`	IP address assigned to the controller on which this command is run.
`License Server IP`	<Reserved for future use>

Related Commands

To view additional statistics for license usage on the licensing server master, use the command show license aggregate.

Command History

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on local and master controllers.

show license heartbeat stats

```
show license heartbeat stats
```

Description

Display the license heartbeat statistics between the centralized licensing server and the license client.

Syntax

No Parameters.

Usage Guidelines

If your deployment uses the centralized licensing feature, issue this command from the command-line interface of a centralized licensing server to view heartbeat requests to and responses from each licensing client associated to that licensing server. If you issue this command from a licensing client, the output displays information for that one client only.

Example

The following example displays output of the **show license heartbeat stats** command issued from the licensing server.

```
(host) #show license heartbeat stats
License Heartbeat Table
-----------------------
IP Address      HB Req  HB Resp         Total Missed    Last Update
10.3.17.130     233     233             0               18
10.3.17.120     233     233             0               19
10.3.17.190     234     234             0               9
10.3.17.140     233     233             0               7
```

The output of this command includes the following data columns:

Parameter	Description
IP address	IP address of the licensing client.
HB Req	Heartbeat requests sent from the licensing client.
HB Resp	Heartbeat responses received from the license server.
Total Missed	Total number of heartbeats that were not received by the licensing client.
Last Update	Number of seconds elapsed since the licensing client last sent a heartbeat request.

Related Commands

To view additional statistics for license usage on the licensing server master, use the command show license aggregate.

Command History

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on centralized licensing master or licensing client controllers.

show license profile

```
show license profile
```

Description

Display the license profile to determine if centralized licensing is enabled on the controller.

Syntax

No Parameters.

Usage Guidelines

If your deployment uses the centralized licensing feature, issue this command from the command-line interface of a centralized licensing master or client to determine if centralized licensing is enabled on that controller. Note that each controller supports only one licensing profile.

Example

The following example displays output of the **show license profile** command issued from a licensing master.

```
(host) #show license profile
License provisioning profile
----------------------------
Parameter              Value
---------              -----
Centralized Licensing  Enabled
```

Related Commands

To view additional statistics for license usage on the licensing server master, use the command show license aggregate.

Command History

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on centralized licensing server or client controllers.

show license server-table

```
show license server-table
```

Description

Display the license table as it appears on the centralized licensing server.

Syntax

No Parameters.

Usage Guidelines

If your deployment uses the centralized licensing feature, issue this command from the command-line interface of a centralized licensing server to view to view licensing counts for each supported license type..

Example

The following example displays output of the **show license server-table** command issued from a licensing server.

```
(host) #show license server-table
License Server Table
--------------------
Service Type                                        Aggregate Lic.  Used Lic.  Remaining Lic.
------------                                        --------------  ---------  --------------
Access Points                                       3587            0          3587
Next Generation Policy Enforcement Firewall Module  2432            3          2429
RF Protect                                          1536            3          1533
xSec Module                                         8192            0          8192
Advanced Cryptography                               0               0          0
```

The output of this command includes the following data columns:

Parameter	Description
`Service Type`	Type of license on the licensing server.
`Available Lic.`	Number of licenses in the licensing table on the licensing server.
`Used Lic.`	Total number of licenses of each license type reported as used by the licensing clients or licensing server.
`Remaining Lic.`	Total number of remaining licensing available in the licensing table.

Related Commands

To view additional statistics for license usage on the licensing server master, use the command show license aggregate.

Command History

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on centralized licensing master or licensing client controllers.

show license server-redundancy

```
show license server-redundancy
```

Description

Display information about a redundant server used by the centralized licensing feature.

Syntax

No Parameters.

Usage Guidelines

If your deployment uses the centralized licensing feature, issue this command from the command-line interface of a centralized licensing server to view to information for the redundant server.

Example

The following example displays output of the **show license server-redundancy** command issued from a licensing server.

```
(host) #show license server-redundancy
License Server redundancy configuration:
License VRRP Id 1 current state is BACKUP
License Peer's IP Address is 10.1.1.42
```

Related Commands

For more information on configuring a redundant licensing server for the centralized licensing feature, see license .

Command History

Release	Modification
ArubaOS 6.3	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on centralized licensing master or licensing client controllers.

show license-usage

```
show license-usage acr | ap | user | xsec |client
```

Description

Display license usage information.

Syntax

Parameter	Description
`acr`	Show ACR license usage
`ap`	Show AP license usage information.
`user`	Show Policy Enforcement Firewall (PEF) user license usage.
xsec	Show Extreme Security (xSec) user and tunnel license usage.
`client`	For deployments using centralized licensing, show the license usage by centralized licensing clients.

Examples

The following example displays the user license usage.

```
(host) #show license-usage user

User License Usage
------------------
Name                 Value
----                 -----
License Limit        2048
License Usage        12
License Available    2036
License Exceeded     0
```

The AP license usage is displayed below:

```
(host) #show license-usage AP
```

```
AP Licenses
-----------
Type                       Number
----                       ------
AP Licenses                512
RF Protect Licenses        512
PEF Licenses               512
Overall AP License Limit   512

AP Usage
--------
Type              Count
----              -----
Active CAPs       3
Standby CAPs      0
RAPs              0
Remote-node APs   0
Tunneled nodes    0
Total APs         3

Remaining AP Capacity
---------------------
Type  Number
----  ------
CAPs  509
RAPs  509
```

When you issue the **show license-usage client** command from the command-line interface of a controller configured as a centralized licensing server, the output displays license usage statistics for each licensing client associated to that server. The output in the example below is separated into two tables to better fit in this document. In the ArubaOS command-line interface, the output appears in a single wide table.

```
License Clients License Usage
-----------------------------
Hostname           IP Address  AP Lic. Used  PEF Lic. Used  RF Protect Lic. Used
--------           ----------  ------------  -------------  --------------------
controller_corp11  192.0.2.10  16             1              1
controller_corp17  192.0.2.12  16             1              1

xSec Lic. Used  ACR Lic. Used  Last update (secs. ago)
--------------  -------------  -----------------------
0               0              16
1               0              18

Total AP Licenses Used          :32
Total PEF Licenses Used         :2
Total RF Protect Licenses Used  :2
Total XSEC Licenses Used        :1
Total ACR Licenses Used         :0
Total no. of clients            :2
```

The output of the show license-usage client command includes the following data columns:

Parameter	Description
Hostname	Name of the licensing client controller.
IP Address	IP address of the licensing client controller.
AP	Total number of AP licenses used by a licensing client associated with this controller.

Parameter	Description
PEF	Total number of Policy Enforcement Firewall (PEF) licenses used by a licensing client associated with this controller.
RF Protect	Total number of RFprotect licenses used by a licensing client associated with this controller.
xSec Module	Total number of Extreme Security (xSec) licenses used by a licensing client associated with this controller.
ACR	Total number of advanced Cryptography (ACR) licenses used by a licensing client associated with this controller.
Last update (secs. ago)	Time, in seconds, that has elapsed since the licensing table on the licensing client was updated.

Command History

Release	Modification
ArubaOS 3.0	Command Introduced.
ArubaOS 3.3	The following parameters were introduced in the output of **show license-usage ap**. • Total 802.11n-120abg Licenses • 802.11n-120abg Licenses Used • Total 802.11n-121abg Licenses • 802.11n-121abg Licenses Used • Total 802.11n-124abg Licenses • 802.11n-124abg Licenses Used • Total 802.11n-125abg Licenses • 802.11n-125abg Licenses Used
ArubaOS 5.0	Deprecated the option “vpn”
ArubaOS 6.1	Added option for ACR license
ArubaOS 6.2	The output of the **show license-usage ap** and **show license-usage user** commands was reorganized to reflect the newest license scheme.
ArubaOS 6.3	The **client** parameter was added to display license usage by centralized licensing clients.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system. The output of this command varies, according to the licenses currently installed on the controller.	Enable or Config mode on master controllers

show lldp interface

```
show lldp interface [fastethernet <slot>/<module>/<port> | gigabitethernet
<slot>/<module>/<port>
```

Description

This command displays the LLDP interfaces information.

Syntax

Parameter	Description
`fastethernet <slot>/<module>/<port>`	Displays LLDP information on a fastethernet port.
`gigabitethernet <slot>/<module>/<port>`	.Displays LLDP information on a gigabitethernet interface.

Example

The example shows two commands. The output of the **show lldp interface** command displays information for all LLDP interfaces.

```
(host) #show lldp interface
LLDP Interfaces Information
---------------------------
Interface LLDP TX LLDP RX LLDP-MED TX interval Hold Timer
--------- ------- ------- -------- ----------- ----------
GE1/3     Enabled Enabled Enabled 30 120
```

The following example only shows information for the GE1/3 interface.

```
(host) #show lldp interface gigabitethernet 1/3
Interface: gigabitethernet1/3
LLDP Tx: Enabled, LLDP Rx: Enabled
LLDP-MED: Enabled
Transmit interval: 30, Hold timer: 120
```

Parameter	Description
`Interface`	Name of an LLDP interface.
`LLDP TX`	Shows if LLDP Protocol Data Unit (PDU) transmission is enabled or disabled.
`LLDP RX`	Shows if the controller has enabled or disabled processing of received LLDP PDUs.
`LLDP-MED`	Shows if LLDP MED protocol is enabled or disabled.
`TX interval`	The LLDP transmit interval, in seconds.
`Hold Timer`	The LLDP transmit hold multiplier.

Command History

Release	Modification
ArubaOS 6.4	Command Introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show lldp neighbor

```
show lldp neighbor interfaces [fastethernet <slot>/<module>/<port> | gigabitethernet
<slot>/<module>/<port> [detail]]
```

Description

This command displays information about LLDP peers.

Syntax

Parameter	Description
`fastethernet <slot>/<module>/<port>`	Displays LLDP information on a fastethernet port.
`gigabitethernet <slot>/<module>/<port>`	Displays LLDP information on a gigabitethernet interface.
`detail`	Include details.

Example

The command in the first example below shows that the ports GE 0/0/3 and GE0/0/4 recognize each other as an LLDP peers.

```
(host)#show lldp neighbor
Capability codes: (R)Router, (B)Bridge, (A)Access Point, (P)Phone, (O)Other
LLDP Neighbor Information
-------------------------
Local Intf Chassis ID Capability Remote Intf Expiry-Time (Secs)
---------- ----------- ----------- ----------- ------------------
GE0/0/3 00:0b:86:6a:25:40 B:R GE0/0/17 105
GE0/0/4 00:0b:86:6a:25:40 B:R GE0/0/18 105
System name
-----------
Dell W-7220
Dell W-7220
Number of neighbors: 2
(host) #show lldp neighbor interface gigabitethernet 0/0/3 detail
Interface: gigabitethernet1/3, Number of neighbors: 1
------------------------------------------------------------
Chassis id: d8:c7:c8:ce:0d:63, Management address: 192.168.0.252
Interface description: bond0, ID: d8:c7:c8:ce:0d:63, MTU: 1522
Device MAC: d8:c7:c8:ce:0d:63
Last Update: Thu Sep 27 10:59:37 2012
Time to live: 120, Expires in: 103 Secs
System capabilities : Bridge,Access point
Enabled capabilities: Access point
System name: IAP-105
System description:
ArubaOS (MODEL: 105), Version 6.1.3.4-3.1.0.0 (35380)
Auto negotiation: Supported, Enabled
Autoneg capability:
10Base-T, HD: yes, FD: yes
100Base-T, HD: yes, FD: yes
1000Base-T, HD: no, FD: yes
Media attached unit type: 1000BaseTFD - Four-pair Category 5 UTP, full duplex mode (30)
MAC: 7c:d1:c3:c7:e9:72: Blacklist
MAC: 9c:b7:0d:7d:0b:72: Blacklist
```

```
MAC: 7c:d1:c3:d1:02:c8: Blacklist
```

The output of the **`show lldp neighbor`** command includes the following information:

Parameter	Description
`Local Intf`	Slot and port number.
`Chassis ID`	MAC address of the LLDP Peer.
`Capability`	Shows the capabilities of the peer to operate as a router, bridge, access point, phone or other network device.
`Remote Intf`	Remote interface.
`Expiry-time`	Expiry time.
`System Name`	Name of the peer system, as supplied by the peer.

The output of the **show lldp neighbor interface gigabitethernet <slot>/<module>/<port> detail** command varies, depending upon the type of LLDP peer detected. The output in the example above contains the following information:

Parameter	Description
`Interface`	Name of the port for which you are viewing LLDP neighbor information.
`Number of Neighbors`	Number of LLDP neighbors seen by the port.
`Chassis id`	MAC address of the neighbor device.
`Management address`	MAC address of the neighbor's management port.
`Interface description`	Description of the LLDP neighbor interface.
`ID`	Interface ID of the LLDP neighbor interface.
`MTU`	Maximum Transmission Unit size allowed by the neighbor device in bytes.
`Device MAC`	Shows the MAC address of the IAP connected to the MAS port.
`Last Update`	Date and time the neighbor device's status changed.
`Time to live`	Time, in seconds, for which this information is valid.
`Expires in`	Time, in seconds, before this information is considered invalid.

Parameter	Description
System capabilities	This column shows the capabilities of the peer to operate as a router, bridge, access point, phone or other network device.
Enabled capabilities	This column if the peer has been actively configured to operate as a router, bridge, access point, phone or other network device.
System name	Name of the peer system, as supplied by the peer.
System description	Description of the peer system, as supplied by the peer.
Auto negotiation	Shows if link auto-negotiation is enabled for the peer interface.
Media attached unit type	This parameter displays additional details about an LLDP-MED device attached to the interface. The specific details depend upon the capabilities of the device.
VLAN	VLAN ID assigned to the peer interface.
pvid	Indicates if the VLAN ID is assigned to the peer access port.
MAC	Shows the MAC address of the rogue AP detected by the Instant AP(IAP), which is blacklisted by the MAS.
LLDP-MED	Shows details for LLDP-MED (Media Endpoint Discovery), if applicable.
Device Type	Type of LLDP-MED device connected to the peer interface.
Capability	Capabilities of the LLDP-MED device connected to the peer interface.

Command History

Release	Modification
ArubaOS 6.4	Command Introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show lldp statistics

```
show lldp statistics [interface fastethernet <slot>/<module>/<port> | gigabitethernet
<slot>/<module>/<port>]
```

Description

This command displays the LLDP statistics information.

Syntax

Parameter	Description
`fastethernet <slot>/<module>/<port>`	Displays LLDP information on a fastethernet port.
`gigabitethernet <slot>/<module>/<port>`	Displays LLDP information on a gigabitethernet interface.

Usage Guidelines

By default, this command displays LLDP statistics for the entire list of LLDP interfaces. Include a slot/port number to display statistics only for that one interface.

Example

The example command below shows LLDP statistics for the Gigabit Ethernet interface **0/0/0**.

```
(host) #show lldp statistics interface gigabitethernet 0/0/0

LLDP Statistics
---------------
Interface             Received  Unknow TLVs  Malformed  Transmitted
---------             --------  -----------  ---------  -----------
gigabitethernet0/0  1249      0            0          1249
```

The output of this command includes the following information:

Parameter	Description
`Interface`	Name of an LLDP interface.
`Received`	Number of packets received on that interface.
`Unknown TLVs`	Number of LLDP Protocol Data Units (PDUs) with an unknown type-length-value (TLV).
`Number of Malformed packets`	Number of malformed packets received on that interface.
`Transmitted`	Number of packets transmitted from that interface.

Command History

Release	Modification
ArubaOS 6.4	Command Introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master and local controllers

show local-cert-mac

```
show local-cert-mac
   tag <mac>
```

Description

Display the IP, MAC address and certificate configuration of local controllers in a master-local configuration.

Syntax

Parameter	Description
`tag <tag>`	IP address of the local controller or MAC address of the local controller certificate.

Usage Guidelines

By default the output of this command shows each local controller's IP and MAC address and the type of certificate used by those local controllers (Custom or Factory). Use the optional **tag** parameter to display information for a single controller only.

Example

The output of this command shows that two local controllers have a custom certificate installed.

```
(host) # show local-cert-mac
Local Switches configured by Local Certificate
----------------------------------------------
Switch IP of the Local  MAC address of the Local Certificate  Cert-Type  CA cert
----------------------  -----------------------------------  ---------  -------
10.4.62.3                                 0B:86:F0:12:AC:15
```

10.4.62.5 00:0B:86:F0:05:60 Custom Undefined

The output of this command includes the following information:

Column	Description
Switch IP of the Local	IP address of the local controller
MAC address of the Local Certificate	MAC address of the certificate on the local controller
Cert-Type	Type of certificate used by the local controller. • Custom: User-installed, custom certificate • Factory: Factory-installed certificate
CA Cert	Name of the Certificate Authority (CA) certificate.

Related Commands

Command	Description	Mode
local-factory-cert	This command configures the factory-installed certificate for secure communication between a local controller and a master controller.	Enable or Config mode on master controllers.
local-custom-cert	This command configures a custom certificate for secure communication between a local controller and a master controller.	Enable or Config mode on master or local controllers.

Command History

Available in ArubaOS 6.1

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show localip

```
show localip
```

Description

Displays the IP address and VPN shared key between master and local.

Syntax

No parameters.

Example

The output of this command shows the controller's IP address and shared key between master and local controllers.

```
(host) # show localip

Local Switches configured by Local Switch IP
--------------------------------------------
Switch IP address of the Local  Key
------------------------------  ---
0.0.0.0                         ********
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show local-userdb

```
show local-userdb {[maximum-expiration][start <offset> page <page_size]}
```

Description

Shows information about user's accounts in the local user database.

Syntax

Parameter	Description
`maximum-expiration`	How long the account is valid, in minutes, in the internal database.
`<offset>`	The user account record's location (by number) as it is listed in the database.
`<page_size>`	The number of user account records that display on one page.

Usage Guidelines

Issue this command without any parameters to display a general overview of user's accounts in the database. Use the **maximum-expiration** parameter to show how long the account is valid for in minutes. Use the **start <offset> page <page_size>** parameters to control which user account records in the database display initially and the number of account records displayed on a page.

Example

This example shows the basic summary of a user accounts in the database.

```
(host) #show local-userdb maximum-expiration start 5 page 4

local-userdb maximum-expiration 90

User Summary
------------
Name           Password  Role   E-Mail  Enabled  Expiry  Status  Sponsor-Name  Grantor-Name
----           --------  ----   ------  -------  ------  ------  ------------  ------------
guest-0657984  ********  guest          Yes              Active                admin
guest-8330301  ********  guest          Yes              Active                admin
guest-5433352  ********  guest          Yes              Active                admin
guest-3469360  ********  guest          Yes              Active                admin

User Entries: 11
```

The output of this command includes the following parameters:

Parameter	Description
`Name`	Name of the user.
`Password`	The user's password.

Parameter	Description
Role	Role for the user. This role takes effect when the internal database is specified in a server group profile with a server derivation rule. If there is no server derivation rule configured, then the user is assigned the default role for the authentication method.
E-mail	Shows the email address of the user account.
Enabled	Shows whether the account is enabled or disabled.
Expiry	Shows the expiration date for the user account. If this is not set, the account does not expire.
Status	Shows whether the profile has enabled or disabled the ability to use the HTTP protocol to redirect users to the captive portal page.
Sponsor-Name	Shows the sponsor's name.
Grantor-Name	Shows the grantor's name.
User Entries	Shows the number of user accounts in the database.

Related Commands

Command	Description	Mode
local-userdb add	Use this command to configure the parameters displayed in the output of this show command.	Enable and Config modes
local-userdb-guest add	Use this command to configure parameters for a guest user account.	Enable and Config modes

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4	The **Expiry**, **Status**, **Sponsor-name** and **Grantor-name** were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master and local controllers

show local-userdb-ap

```
local-userdb-ap
   mac-address <macaddr>
   start
```

Description

View detailed information for the obsolete RAP whitelist database used in ArubaOS 6.1 and earlier.

Syntax

Parameter	Description
`mac-address <mac-addr>`	MAC address of the remote AP to be removed from the Remote AP Whitelist table.
`start <offset>`	Start displaying the table at the specified record in the database

Usage Guidlines

When you upgrade from ArubaOS 5.0-6.1 to ArubaOS 6.2 or later, the remote AP whitelist table will automatically move from the legacy Remote AP whitelist to the newer Remote AP whitelist. Issue the **show local-userdb-ap** command to view and troubleshoot any AP entries that did not properly move to the new table during the upgrade procedure. In the example below, the command output has been divided into two tables to fit on a single page of this document. In the command-line interface, this output would appear in a single, wide table.

```
(host) #show local-userdb-ap

AP-entry Details
----------------

Name               AP-Group  AP-Name            Full-Name    Authen-Username  Revoke-Text
----               --------  -------            ---------    ---------------  -----------
00:0b:86:c3:58:38  local     chuck              chuck        naveen
00:0b:86:66:01:aa  default   rap2               moscato                       AP is not valid
anymore
00:1a:1e:c0:1b:e0  default   00:1a:1e:c0:1b:e0               naveen
00:0b:86:66:03:3f  default   rap                moscato-rap  INDIAQA\naveen
00:0b:86:66:02:09  default   00:0b:86:66:02:09

AP_Authenticated  Description  Date-Added                Enabled
----------------  -----------  ----------                -------
Authenticated                  Thu Mar  5 21:25:36 2009  Yes
Provisioned                    Thu Mar  5 21:25:49 2009  No
Authenticated                  Wed Mar  4 20:16:16 2009  Yes
Authenticated                  Tue May 19 07:53:29 2009  Yes
Provisioned                    Fri May  8 10:37:40 2009  Yes

AP Entries: 5
```

The output of this command includes the following information:

Parameter	Description
Name	MAC address of the AP.
AP-Group	Name of the AP group to which the AP has been assigned.
AP-name	Name of the AP. If no name has been specified, this column will display the AP's MAC address
Full-name	Text string used to identify the AP. This field often describes the AP's user, and corresponds to the **User Name** field in the RAP whitelist in the WebUI.
Authen-Username	User name of the user who authenticated the remote AP. This parameter holds the user name of the user who authenticated the remote AP. This is related to the zero touch authentication feature, as a user needs authenticate an AP before it gets its complete configuration. Before the AP is authenticated, it is given a restricted configuration to allow users to perform captive portal authorization via the remote AP's ENET ports to authenticate the remote AP. The username used during captive portal authentication will be stored in this field. This cannot be added manually when creating a local-userdb-ap entry.
Revoke-Text	The command l**ocal-userdb-aprevoke** includes an optional **revoke-comment** parameter that allows network administrators to explain why the AP was revoked. If an AP is revoked, and a revoke comment entered, this text appears in the **revoke-text** column in the **show local-userdb-ap** command. When a local DB entry is reenabled via the command **local-userdb-ap modify mac-addr mode enable**, this field is cleared.
AP_Authenticated	This column indicates the authorization status of the AP. An AP can either be **Authenticated** or **Provisioned**. Remote APs that *do not* support certificated-based provisioning will always display a **Provisioned** status. Remote APs that support certificated-based provisioning can display either a **Authenticated** or **Provisioned** status, depending on their configuration and authentication status. • If the remote AP has a defined AP authorization profile, the remote AP will be in a "Provisioned" state with a limited configuration until it is authenticated. After it the remote AP has been authenticated, it will be in an "Authenticated" state. • If the remote AP does not have a defined AP authorization profile, the remote AP will be in a"Provisioned" state, but will still receive the full configuration assigned to that AP and its AP group.
Description	A text string used to further identify the remote AP.
Date-Added	Date and time that the AP was added to the local user database

Enabled	This column shows if the entry in the database is enabled or disabled. Database entries can be enabled or disabled using the CLI commands:
	`local-userdb-ap {add|modify} mac-address <mac-addr> mode {enable|disable}`
	and
	`local-userdb-ap revoke mac-address <mac-addr>`

Related Commands

Command	Description
local-userdb-ap del	Delete Remote AP entries from the obsolete remote AP whitelist table.
whitelist-db rap add	Add, delete, modify or revoke remote AP entries in the current emote AP whitelist table.

Command History

	Modification
ArubaOS 5.0	Command introduced.
ArubaOS 6.2	Command replaced by show whitelist-db rap on page 2044.

show local-userdb-branch

```
show local-userdb-branch mac-address <mac-addr> start <offset>
```

Description

The output of this command lists the MAC address and assigned branch config group for branch controllers associated with that master.

Syntax

Parameter	Description
`mac-address <mac-addr>`	Branch controller's MAC address in the local user database.
`start`	The user account record's location (by number) as it is listed in the database.
`<page_size>`	The number of user account records that display on one page.

Usage Guidelines

If your network includes multiple master controller under a single root master controller, the output of this command shows all branch controllers and master controllers on the network.By default, this command displays all entries in the whitelist. To display only part of the branch controller whitelist, include the **start <offset>** parameters to start displaying the branch controller whitelist at the specified entry value. You can also include the optional **mac-address <mac-addr>** parameters to display values for a single branch controller entry.

Example

This example shows the basic summary of a user accounts in the database.

```
(host) #show local-userdb-branch

Branch-controller-entry Details
-------------------------------
Mac                Branch-config-group  Hostname
---                -------------------  --------
00:0b:86:bb:b5:47  eng                  7024-242
00:0b:86:b8:a2:60  plm-2                7005-236
00:0b:86:99:89:97  it                   7010-234

Branch Controller Entries: 3
```

The output of this command includes the following parameters:

Parameter	Description
`Name`	Mac address of the branch controller
`Branch-Config-Group profile`	Name of the branch controller group
`Branch controller entries`	Number of branch controllers associated to this master controller.

Command History

Release	Modification
ArubaOS 6.0	Command introduced.
ArubaOS 6.2	Command deprecated.
ArubaOS 6.4.3.0	Command reinstated.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show local-userdb-guest

```
show local-userdb-guest
```

Description

Shows information about guest accounts in the local user database.

Syntax

Parameter	Description
`maximum-expiration`	How long the account is valid, in minutes, in the internal database.
`<offset>`	The user account record's location (by number) as it is listed in the database.
`<page_size>`	The number of user account records that display on one page.

Usage Guidelines

Issue this command without any parameters to display a general overview of guest accounts in the database. Use the **maximum-expiration** parameter to show how long the account is valid for in minutes. Use the **start <offset> page <page_size>** parameters to control which guest account records in the database display initially and the number of account records displayed on a page.

Example

This example shows the basic summary of a user accounts in the database.

```
(host) #show local-userdb-guest maximum-expiration start 5 page 4

local-userdb-guest maximum-expiration 90

Guest UserSummary
-----------------
Name           Password  Role   E-Mail  Enabled  Expiry  Status  Sponsor-Name  Grantor-Name
----           --------  ----   ------  -------  ------  ------  ------------  ------------
guest-0657984  ********  guest          Yes              Active                admin
guest-8330301  ********  guest          Yes              Active                admin
guest-5433352  ********  guest          Yes              Active                admin
guest-3469360  ********  guest          Yes              Active                admin

User Entries: 11
```

The output of this command includes the following parameters:

Parameter	Description
`Name`	Name of the user.
`Password`	The user's password.

Parameter	Description
Role	Role for the user. This role takes effect when the internal database is specified in a server group profile with a server derivation rule. If there is no server derivation rule configured, then the user is assigned the default role for the authentication method.
E-mail	Shows the email address of the user account.
Enabled	Shows whether the account is enabled or disabled.
Expiry	Shows the expiration date for the user account. If this is not set, the account does not expire.
Status	Shows whether the profile has enabled or disabled the ability to use the HTTP protocol to redirect users to the captive portal page.
Sponsor-Name	Shows the sponsor's name.
Grantor-Name	Shows the grantor's name.
User Entries	Shows the number of user accounts in the database.

Related Commands

Command	Description	Mode
local-userdb add	Use this command to configure the parameters displayed in the output of this show command.	Enable and Config modes
local-userdb-guest add	Use this command to configure parameters for a guest user account.	Enable and Config modes

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4	The **Expiry**, **Status**, **Sponsor-name** and **Grantor-name** were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master and local controllers

show local-userdb username

```
show local-userdb username <name>
```

Description

Shows information about specific user account in the internal controller database.

Usage Guidelines

Issue this command to display an overview of a particular user account in the database.

Example

This example shows the basic summary of a user account **Paula** in the database.

```
(host) #show local-userdb username Paula

User Summary
------------
Name    Password  Role    E-Mail  Enabled  Expiry  Status    Sponsor-Name  Grantor-Name
----    --------  ----    ------  -------  ------  ------    ------------  ------------
paula   ********  guest           Yes              Inactive                admin

User Entries: 1
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master and local controllers

show local-userdb username

```
show local-userdb username <name>
```

Description

Shows information about specific user account in the internal controller database.

Usage Guidelines

Issue this command to display an overview of a particular user account in the database.

Example

This example shows the basic summary of a user account **Paula** in the database.

```
(host) #show local-userdb username Paula

User Summary
------------
Name    Password  Role    E-Mail  Enabled  Expiry  Status    Sponsor-Name  Grantor-Name
----    --------  ----    ------  -------  ------  ------    ------------  ------------
paula   ********  guest           Yes              Inactive                admin

User Entries: 1
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master and local controllers

show localip

```
show localip
```

Description

Displays the IP address and VPN shared key between master and local.

Syntax

No parameters.

Example

The output of this command shows the controller's IP address and shared key between master and local controllers.

```
(host) # show localip

Local Switches configured by Local Switch IP
--------------------------------------------
Switch IP address of the Local  Key
------------------------------  ---
0.0.0.0                         ********
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show log all

```
show log all [<number>]
```

Description

Show the controller's full log.

Syntax

Parameter	Description
<number>	Start displaying the log output from the specified number of lines from the end of the log.

Example

This example shows the most ten recent log entries for the controller.

```
(host) #show log all 10

Mar  3 13:26:20  localdb[567]: <133006> <ERRS> |localdb|  User admin Failed Authentication
Mar  3 13:26:20  localdb[567]: <133006> <ERRS> |localdb|  User admin Failed Authentication
Mar  3 13:26:20  localdb[567]: <133019> <ERRS> |localdb|  User admin was not found in the
database
Mar  3 13:26:20  localdb[567]: <133019> <ERRS> |localdb|  User admin was not found in the
database
Mar  3 13:46:54  fpcli: USER: admin connected from 10.100.100.66 has logged out.
Mar  3 13:57:53  fpcli: USER: admin has logged in from 10.100.100.66.
Mar  3 13:57:53  localdb[567]: <133006> <ERRS> |localdb|  User admin Failed Authentication
Mar  3 13:57:53  localdb[567]: <133006> <ERRS> |localdb|  User admin Failed Authentication
Mar  3 13:57:53  localdb[567]: <133019> <ERRS> |localdb|  User admin was not found in the
database
Mar  3 13:57:53  localdb[567]: <133019> <ERRS> |localdb|  User admin was not found in the
database
```

Command History

This command was introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log ap-debug

```
show log ap-debug{[<number>][all]}
```

Description

Show the controller's AP debug logs.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the AP debug logs for the controller.

Example

This example shows the ten most recent AP debug logs for the controller.

```
(host) #show log ap-debug 10

Nov 24 20:54:24  KERNEL(AP39@10.6.1.21): Copyright (c) 2005-2006 Atheros Communications, Inc.
All Rights Reserved
Nov 24 20:54:24  KERNEL(AP39@10.6.1.21): wifi0: Base BSSID 00:1a:1e:25:97:d0, 16 available
BSSID(s)
Nov 24 20:54:24  KERNEL(AP39@10.6.1.21): edev->dev_addr=00:1a:1e:ca:59:7c
Nov 24 20:54:24  KERNEL(AP39@10.6.1.21): wifi1: Base BSSID 00:1a:1e:25:97:c0, 16 available
BSSID(s)
Nov 24 20:54:24  KERNEL(AP39@10.6.1.21): edev->dev_addr=00:1a:1e:ca:59:7c
Nov 24 20:54:24  KERNEL(AP39@10.6.1.21):  ^H<6>Ethernet Channel Bonding Driver: v3.0.1
(January 9, 2006)
Nov 24 20:54:24  KERNEL(AP39@10.6.1.21): secure_jack_link_state_change: Error finding device
eth0
Nov 24 20:54:25  KERNEL(AP39@10.6.1.21): Kernel watchdog refresh ended.
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log arm-user-debug

```
show log arm-user-debug{[<number>][all]}
```

Description

Show the controller's ARM user debug logs.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the ARM user debug logs for the controller.

Example

This example shows the controller's last ten ARM user debug logs.

```
(host) #show log arm-user-debug 10

Aug 12 16:03:03 :508164:  <DBUG> |ARM Process|  Client Match: Found 11v Capable STA
b0:ee:45:49:60:3c
Aug 12 16:03:03 :508201:  <DBUG> |ARM Process|  Client Match: Sending BSS transition req to
client b0:ee:45:49:60:3c token 14
Aug 12 16:03:03 :508202:  <DBUG> |ARM Process|  Client Match: Timer started for BTM response
STA b0:ee:45:49:60:3c timerid 5176652
Aug 12 16:03:06 :508161:  <DBUG> |ARM Process|  Client Match Received probe report: AP
6c:f3:7f:e7:1d:20 ESSID sganu-wpa2-psk Assoc ESSID sganu-wpa2-psk for client b0:ee:45:49:60:3c
with signal -44
Aug 12 16:03:06 :508161:  <DBUG> |ARM Process|  Client Match Received probe report: AP
d8:c7:c8:46:e0:00 ESSID sganu-wpa2-psk Assoc ESSID sganu-wpa2-psk for client b0:ee:45:49:60:3c
with signal -38
Aug 12 16:03:06 :508161:  <DBUG> |ARM Process|  Client Match Received probe report: AP
6c:f3:7f:e7:1d:20 ESSID sganu-wpa2-psk Assoc ESSID sganu-wpa2-psk for client b0:ee:45:49:60:3c
with signal -35
Aug 12 16:03:11 :508161:  <DBUG> |ARM Process|  Client Match Received probe report: AP
d8:c7:c8:46:e0:00 ESSID sganu-wpa2-psk Assoc ESSID sganu-wpa2-psk for client b0:ee:45:49:60:3c
with signal -36
Aug 12 16:03:13 :508203:  <DBUG> |ARM Process|  Client Match: Timer cleared for BTM response
STA b0:ee:45:49:60:3c timerid 5176652
Aug 12 16:03:13 :508186:  <DBUG> |ARM Process|  Client Match: Tracking unsuccessful failure
for client b0:ee:45:49:60:3c num fails 0 btm rejects 0 btm timeouts 4
Aug 12 16:03:13 :508185:  <DBUG> |ARM Process|  Client Match: move status: Uncontrolled-Radio
complete move for client b0:ee:45:49:60:3c from Source AP ap135 d8:c7:c8:46:e0:00 Eff_Signal -
0 dBm (Signal -0 dBm EIRP 0 dBm) to Target AP ac 6c:f3:7f:e7:1d:20 Eff_Signal -0 dBm (Signal -
0 dBm EIRP 0 dBm) Actual AP ap135 d8:c7:c8:46:e0:00 Time diff 9 Reason Denied; User action
```

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log bssid-debug

```
show log bssid-debug{[<number>][all]}
```

Description

A Basic Service Set Identifier (BSSID) uniquely defines each wireless client and Wireless Broadband Router. This command shows the controller's BSSID debug logs.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the BSSID debug logs for the controller.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes

show log errorlog

```
show log errorlog{[<number>][all]}
```

Description

Show the controller's system errors and other critical information.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the error logs for the controller.

Example

This example shows the ten most recent system log errors.

```
(host) #show log errorlog 10

Mar 5 10:30:34 <sapd 106007>  <ERRS> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Rogue
AP detected with SSID cto-dnh-blah, BSSID 00:0b:86:b5:86:c0, Wired MAC 00:0b:86:02:ee:00, and
IP 10.3.49.254
Mar 5 10:31:39 <sapd 404080>  <ERRS> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: ADHOC
network detected with Src 00:13:ce:45:91:a0, BSSID 02:13:ce:2d:37:50, ESSID adhoc_ap70 Channel
11 and RSSI 22
Mar 5 10:32:12 <sapd 106007>  <ERRS> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Rogue
AP detected with SSID cto-dnh-blah, BSSID 00:0b:86:b5:86:c0, Wired MAC 00:0b:86:02:ee:00, and
IP 10.3.49.254
Mar 5 10:32:46 <sapd 106007>  <ERRS> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Rogue
AP detected with SSID cto-dnh-blah, BSSID 00:0b:86:b5:86:c0, Wired MAC 00:0b:86:02:ee:00, and
IP 10.3.49.254
Mar 5 10:40:32 <localdb 133019>  <ERRS> |localdb|  User admin was not found in the database
Mar 5 10:40:32 <localdb 133006>  <ERRS> |localdb|  User admin Failed Authentication
Mar 5 10:41:10 <sapd 106007>  <ERRS> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Rogue
AP detected with SSID sw-rlo-open, BSSID 00:0b:86:c9:9e:20, Wired MAC 00:00:00:00:00:00, and
IP 0.0.0.0
Mar 5 10:41:31 <sapd 106007>  <ERRS> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Rogue
AP detected with SSID QA_MARORA_VOCERA, BSSID 00:0b:86:c9:9e:21, Wired MAC 00:0b:86:02:ee:00,
and IP 10.3.49.254
Mar 5 10:48:01 <sapd 404080>  <ERRS> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: ADHOC
network detected with Src 00:13:ce:45:d9:4d, BSSID 02:13:ce:28:40:48, ESSID adhoc_ap70 Channel
11 and RSSI 8
Mar 5 11:04:21 <sapd 404080>  <ERRS> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: ADHOC
network detected with Src 00:13:ce:45:d9:4d, BSSID 02:13:ce:2d:37:50, ESSID adhoc_ap70 Channel
11 and RSSI 9
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log essid-debug

```
show log essid-debug{[<number>][all]}
```

Description

Show the controller's ESSID debug logs.

An Extended Service Set Identifier (ESSID) is used to identify the wireless clients and Wireless Broadband Routers in a WLAN. All wireless clients and Wireless Broadband Routers in the WLAN must use the same ESSID.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the ESSID debug logs for the controller.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log network

```
show log network{[<number>][all]}
```

Description

Show the controller's system network errors.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the network logs for the controller.

Example

This example shows the controller's recent network log errors

```
(host) #show log network all

Feb 17 14:47:14 :209801:  <WARN> |fpapps|  Physical link down: port 1/1
Feb 17 14:48:04 :209801:  <WARN> |fpapps|  Physical link down: port 1/1
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log security

```
show log security{[<number>][all]}
```

Description

Show the controller's security logs.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the security logs for the controller.

Example

This example shows the controller's last seven security logs.

```
(host) #show log security 7

Mar 5 11:53:43 :124004:  <DBUG> |authmgr|  Local DB auth failed for user admin, error (User
not found in UserDB)
Mar 5 11:53:43 :124003:  <INFO> |authmgr|  Authentication result=Authentication failed(1),
method=Management, server=Internal, user=10.100.100.66
Mar 5 11:53:43 :124004:  <DBUG> |authmgr|  Auth server 'Internal' response=1
Mar 5 11:53:43 :125027:  <DBUG> |aaa|  mgmt-auth: admin, failure, , 0
Mar 5 11:53:43 :125024:  <NOTI> |aaa|  Authentication Succeeded for User admin, Logged in from
10.100.100.66 port 1778, Connecting to 10.3.49.100 port 22 connection type SSH
Mar 5 11:53:58 :103060:  <DBUG> |ike|  ipc.c:ipc_get_cfgm_role:2826 Sending REQUEST for CFGM
Role
Mar 5 11:53:58 :103060:  <DBUG> |ike|  ipc.c:get_local_cfg_trigger_ike:2653 IKE got trigger
from CFGM : state :3
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log system

```
show log system{[<number>][all]}
```

Description

Show the controller's system logs.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the system logs for the controller.

Example

This example shows the controller's last ten system logs.

```
(host) #show log system 10

Mar 5 11:55:59 :316073:  <DBUG> |wms|  Received New AP Message: AP 00:0b:86:b5:87:c2 Status 1
Num-WM 0
Mar 5 11:55:59 :316083:  <DBUG> |wms|  mysql: UPDATE ap_table SET ssid='qa-abu-customerissue',
current_channel='11', type='generic-ap', ibss='no', phy_type='80211g', rap_type='interfering',
match_mac='00:00:00:00:00:00', power_level='255', status='up' WHERE id='71575' ;
Mar 5 11:55:59 :316029:  <DBUG> |wms|  Sending message to Probe: IP:10.3.49.253 Msg-
Type:PROBE_RAP_TYPE  AP 00:0b:86:b5:87:c2 Type:1
Mar 5 11:55:59 :316036:  <DBUG> |wms|  Received New STA Message: MAC 00:0b:86:b5:87:c2 Status
0
Mar 5 11:55:59 :316032:  <DBUG> |wms|  STA Probe: ADD Probe 00:0b:86:a2:e7:40 for STA
00:0b:86:b5:87:c2
Mar 5 11:56:00 :399814:  <DBUG> |fpapps|  PoE: RAN THRU ITERATION 2
Mar 5 11:56:00 :326001:  <DBUG> |AP 1.1.1@10.3.49.253 sapd|  AM: am_read_bss_data_stats: radio
0: pktsIn 0 pktsOut 0 bytesIn 0 bytesOut 0
Mar 5 11:56:00 :326001:  <DBUG> |AP 1.1.1@10.3.49.253 sapd|  AM: am_read_bss_data_stats: radio
0: pktsIn 0 pktsOut 52107 bytesIn 0 bytesOut 18143486
Mar 5 11:56:01 :326001:  <DBUG> |AP 1.1.1@10.3.49.253 sapd|  AM: MPPS 2722 CPPS 338 PKTS
452036609 BYTES 2062458092 INTR 334327351
Mar 5 11:56:02 :399814:  <DBUG> |fpapps|  PoE: Evaluating port 1/5 rv is 0 and crv is 1
state :3
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log user

```
show log user{[<number>][all]}
```

Description

Show the controller's user logs.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the user logs for the controller.

Example

This example shows the controller's last ten user logs.

```
(host) #show log user 10

Mar 5 13:29:57 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
Mar 5 13:32:08 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
Mar 5 13:36:41 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
Mar 5 13:38:42 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
Mar 5 13:40:41 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
Mar 5 13:42:51 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
Mar 5 13:47:03 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
Mar 5 13:49:07 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
Mar 5 13:53:08 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
Mar 5 13:55:14 :501083:  <WARN> |stm|  Probe request: 00:0b:86:cd:1a:00: Invalid Station MAC
address from AP 10.3.49.253-00:0b:86:a2:e7:40-1.1.1
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log user-debug

```
show log user-debug{[<number>][all]}
```

Description

Show the controller's user debug logs.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the user debug logs for the controller.

Example

This example shows the controller's last ten user debug logs.

```
(host) #show log user-debug 10

Mar 5 13:57:24 :501090:  <DBUG> |stm|  Probe response: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:40-1.1.1 SSID
Mar 5 13:57:24 :501090:  <DBUG> |stm|  Probe response: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:41-1.1.1 SSID
Mar 5 13:58:26 :501082:  <DBUG> |stm|  Probe request: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:40-1.1.1
Mar 5 13:58:26 :501085:  <DBUG> |stm|  Probe request: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:40-1.1.1 SSID
Mar 5 13:58:26 :501090:  <DBUG> |stm|  Probe response: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:40-1.1.1 SSID
Mar 5 13:58:26 :501090:  <DBUG> |stm|  Probe response: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:41-1.1.1 SSID
Mar 5 13:58:27 :501082:  <DBUG> |stm|  Probe request: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:40-1.1.1
Mar 5 13:58:27 :501085:  <DBUG> |stm|  Probe request: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:40-1.1.1 SSID
Mar 5 13:58:27 :501090:  <DBUG> |stm|  Probe response: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:40-1.1.1 SSID
Mar 5 13:58:27 :501090:  <DBUG> |stm|  Probe response: 00:18:f8:ab:77:a4: AP 10.3.49.253-
00:0b:86:a2:e7:41-1.1.1 SSID
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show log wireless

```
show log wireless{[<number>][all]}
```

Description

Show the controller's wireless logs.

Syntax

Parameter	Description
`<number>`	Start displaying the log output from the specified number of lines from the end of the log.
`all`	Shows all the wireless logs for the controller.

Example

This example shows the controller's last ten wireless logs.

```
(host) #show log wireless 10

Mar 5 13:59:31 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID mak-cp-psk and BSSID 00:0b:86:8b:70:20
Mar 5 13:59:35 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID  and BSSID 00:0b:86:c0:06:83
Mar 5 13:59:38 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID  and BSSID 00:0b:86:c0:06:85
Mar 5 13:59:41 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID  and BSSID 00:0b:86:89:f9:42
Mar 5 13:59:41 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID QA-SANJAY-OSUWIRELESS and BSSID 00:0b:86:89:f9:40
Mar 5 13:59:44 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID QA-SANJAY-OSUVOICE and BSSID 00:0b:86:8c:fb:c0
Mar 5 13:59:44 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID Google and BSSID 00:0b:86:4f:82:c0
Mar 5 13:59:47 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID QA-SANJAY-OSUVOICE and BSSID 00:0b:86:89:f9:41
Mar 5 13:59:50 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID  and BSSID 00:0b:86:c0:06:86
Mar 5 13:59:50 :404003:  <WARN> |AP 1.1.1@10.3.49.253 sapd|  AM 00:0b:86:a2:e7:40: Interfering
AP detected with SSID cto-dnh-blah and BSSID 00:0b:86:60:b8:80
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show logging

```
show logging facility|server|{level [verbose]}
```

Description

the IP address of the remote logging server, as well as facility log types and their associated facility levels.

Syntax

Parameter	Description
`facility`	View the facility used when logging messages into the remote syslog server.
`server`	Show the IP address of a remote logging server.
`level [verbose]`	Show logging levels at which the messages are logged. Include the optional verbose parameter to display additional data for logging subcategories and processes.

Usage Guidelines

The ArubaOS logging levels follow syslog convention:

- level 7: Emergency
- level 6: Alert
- level 5: Critical
- level 4: Errors.
- level 3: Warning
- level 2:Notices
- level 1:Informational
- level 0: Debug

The default logging level is **leve1 1**. You can change this setting via the **logging** command.

Example

This example below displays defined logging levels for each logging facility.

```
(host) #show logging level

LOGGING LEVELS
--------------
Facility  Level
--------  -----
network   warnings
security  warnings
system    warnings
user      warnings
wireless  warnings
```

This example below displays the IP address of a remote log server. If a remote log server has not yet been defined, this command will not display any output.

```
(host) #show logging server

Remote Server: 1.1.1.1

FACILITY MAPPING TABLE
----------------------
local-facility  severity   remote-facility
--------------  --------   ---------------
user            debugging  local1
```

Related Commands

Command	Description	Mode
logging	Use this command to specify the IP address of the remote logging server, as well as facility log types and their associated facility levels.	Config mode on master and local controllers

Command History

This command was introduced in ArubaOS 2.5.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show loginsessions

```
show loginsessions
```

Description

Displays the current administrator login sessions statistics.

Syntax

No parameters.

Example

Issue this command to display the admin login session statistics.

```
Session Table
-------------
ID  User Name  User Role  Connection From  Idle Time  Session Time
--  ---------  ---------  ---------------  ---------  ------------
1   admin      root       10.100.102.43    00:00:00   00:27:59
```

The output includes the following parameters:

Parameter	Description
`ID`	Sessions identification number
`User Name`	Administrator's user name
`User Role`	Administrator's role
`Connection From`	The IP address from which the administrator is connecting
`Idle Time`	Amount of time the user has been idle
`Session Time`	Total time the session has been open

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show mac-address-table

```
show mac-address-table
```

Description

Displays a MAC forwarding table.

Syntax

No parameters.

Example

Issue this command to display the MAC forwarding table.

```
Dynamic Address Count:           0
Static Address (User-defined) Count:              0
System Self Address Count:               0
Total MAC  Addresses :           6
Maximum MAC addresses :                  6
MAC Address Table
------------------
Destination Address  Address Type  VLAN  Destination Port
-------------------  ------------  ----  ----------------
00:0b:86:00:00:00    Mgmt          1     vlan 1
00:0b:86:f0:05:60    Mgmt          1     vlan 1
00:0b:86:00:00:00    Mgmt          62    vlan 62
00:0b:86:f0:05:60    Mgmt          62    vlan 62
00:0b:86:00:00:00    Mgmt          4095  vlan 4095
00:0b:86:f0:05:60    Mgmt          4095  vlan 4095
```

The output includes the following parameters:

Parameter	Description
`Dynamic Address Count`	Count of dynamic addresses currently associated with the controller
`Static Address (User-defined) Count`	Count of static, user-defined addresses associated with the controller
`System Self Address Count`	Number of self system addresses
`Total MAC Addresses`	Total number of MAC addresses associated with the controller
`Maximum MAC Addresses`	Maximum number of MAC addresses
`Destination Address`	Destination MAC address
`Address Type`	Destination address type

Parameter	Description
`VLAN`	Associated VLAN
`Destination Port`	Destination port

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show master-configpending

```
show master-configpending
```

Description

Displays the list of global commands which are not saved and are not sent to the local controller.

Syntax

No parameters.

Example

This example below displays the commands which are not saved and are not sent to the local controller.

```
(host) #show master-configpending

aaa profile "default-xml-api"
aaa xml-api server "10.17.93.2"
aaa xml-api server "10.17.93.2"
aaa xml-api server "10.17.93.2" key "12345678"
aaa profile "default-xml-api"
aaa profile "default-xml-api" xml-api-server "10.17.93.2"
user-role "logon"
user-role "logon" captive-portal "default"
user-role "logon"
user-role "logon" no captive-portal "default"
user-role "logon"
user-role "logon" captive-portal "default"
voice rtp-analysis-config
voice rtp-analysis-config rtp-analysis
voice rtp-analysis-config rtp-analysis
voice rtp-analysis-config no rtp-analysis
voice rtp-analysis-config rtp-analysis
```

Related Commands

Command	Description
master-redundancy	This command associates a VRRP instance with master controller redundancy.
master-local	This command displays the statistics between the local and the master controllers.
switches	This command provides the details on the switches connected to the master controller, including the master controller itself.

Command History

This command was introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers.

show master-local stats

```
show master-local stats [<ip-addr>] [<page>]
```

Description

Display statistics for communication between master and local controllers.

Syntax

Parameter	Description
<ip-addr>	Include the IP address of a controller to display statistics that controller only.
<page>	Start displaying the output of this command at the specified page number.

Usage Guidelines

By default, master and Local controllers exchange heartbeat messages every 10 seconds. These "Heartbeats" a include configuration timestamp. If a master controller has later timestamp than the local controller, the state of the local controller changes from 'Update Successful' to 'Update Required'.

Example

This example below shows statistics for all communications between the master and local controller.

```
(host) #show master-local stats

Missed -> HB Resp from Master
-----------------------------
IP Address  HB Req      HB Resp     Total Missed  Last Sent Missed  Peer Reset  Cfg Terminate
Last Synced
----------  ------      -------     ------------  ----------------  ----------  -------------
-----------
10.6.2.252  194721      194208      926           0                 105         1
Thu Feb 26 21:12:04 2009
```

The output of this command includes the following data columns:

Parameter	Description
IP Address	IP address of the local controller.
HB Req	Heartbeat requests sent from the local controller.
HB Resp	Heartbeat responses sent from the master controller.
Total Missed	Total number of heartbeats that were not received by the local controller.

Parameter	Description
`Last Sent Missed`	This counter will increment if controller misses the last heartbeat from the peer controller. This counter will keep on incrementing until the heartbeat message is received from peer.
`Peer Reset`	The number of times the connection to peer is been reset. The connection could reset due to network connectivity problems or when the peer switch reboots.
`Cfg Terminate`	Number of times the controller has failed to upgrade to a new configuration
`Last Synced`	Timestamp showing the last time the local controller synched its configuration from the master controller.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show master-redundancy

```
show master-redundancy
```

Description

Display the master controller redundancy configuration.

Syntax

No parameters.

Example

This example below shows the current master redundancy configuration, including the ID number of the master VRRP virtual router and the IP address of the peer controller for master redundancy.

```
(host) #show master-redundancy
Master redundancy configuration:
    VRRP Id 2 current state is MASTER
    Peer's IP Address is 2.1.1.4
```

Related Commands

Command	Description
master-redundancy master-vrrp	This command associates a VRRP instance with master controller redundancy.
vrrp	This command configures the Virtual Router Redundancy Protocol (VRRP).
master-redundancy peer-ip	This command configures the IP address and preshared key or certificate for a redundant master controller on another master controller.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers.

show memory

```
show memory
   aaa
   ap {meshd|rfd|sapd}|{ap-name <ap-name>}|{bssid <bssid>}|{ip-addr <ip-addr>}
   auth
   certmgr
   cfgm
   cpsec
   dbsync
   debug [verbose]
   dhcpd
   ecc
   fpapps
   fpcli
   isakmpd
   l2tpd
   mdns
   mobileip
   ospf
   pim
   pptpd
   profmgr
   slb
   snmpd
   stm
   udbserver
   wms
   <cr>
```

Description

Show the amounts of free and available memory on the controller, or include a process name to show memory information for a process on the AP or controller.

Syntax

Parameter	Description
`aaa`	Display memory information for the AAA process on the controller.
`ap`	Display memory information for a process running on a specific AP.
`meshd`	Display memory information for the meshd process on the specified AP.
`rfd`	Display memory information for the rfd process on the specified AP.
`sapd`	Display memory information for the rfd process on the specified AP.
`ap-name <ap-name>`	Display memory information for an AP with the specified AP name.
`bssid <bssid>`	Display memory information for an AP with the specified BSSID.

Parameter	Description
ip-addr <ip-addr>	Display memory information for an AP with the specified IP address.
auth	Display memory information for the **auth** process on the controller.
certmgr	Display the memory information for certmgr process.
cfgm	Display memory information for the **cfgm** process on the controller.
cpsec	Displays memory information for the Control Plane Security process on the controller.
dbsync	Display memory information for the **dbsync** process on the controller.
debug [verbose]	Display detailed memory information to debug memory errors the controller. This command should only be used under the supervision of Dell Technical Support.
dhcpd	Display memory information for the DHCP process on the controller.
ecc	Display the DRAM ecc counters on the controller.
fpapps	Display memory information for the **fpapps** process on the controller.
fpcli	Display memory information for the **fpcli** process on the controller.
isakmpd	Display memory information for the **isakmpd** process on the controller.
l2tpd	Display memory information for the **l2tpd** process on the controller.
mdns	Display memory information for the mDNS process on the controller.
mobileip	Display memory information for the **mobileip** process on the controller.
ospf	Display memory information for the **ospf** process on the controller.
pim	Display memory information for the **pim** process on the controller.
pptpd	Display memory information for the **pptpd** process on the controller.
profmgr	Display memory information for the **profmgr** process on the controller.
slb	Display memory information for the **slb** process on the controller.
apsnmpd	Display memory information for the **apsnmpd** process on the controller.
stm	Display memory information for the **auth** process on the controller.

Parameter	Description
udbserver	Display memory information for the **udbserver** process on the controller.
wms	Display memory information for the **wms** process on the controller.

Usage Guidelines

Include the name of a process to show memory information for that process. Use this command under the supervision of Dell technical support to help debug process errors.

Example

The command **show memory** displays, in Kilobytes, the total memory on the controller, the amount of memory currently being used, and the amount of free memory.

```
(host) # show memory
Memory (Kb): total: 256128, used: 162757, free: 93371
```

Include the name of a process to show memory statistics for that process. The example below shows memory statistics for **mobileip**.

```
(host) # show memory mobileip
Type              Num Allocs     Size Allocs     Total Allocs     Total Size
default           92                              145622

                                        PC
           0x1000be14                    1              64
           0x10016cb0                    1           41000
           0x10021604                    1              80
           0x10032e34                    1              24
           0x30019a24                    1            2200
           0x30019bd8                    1           41000
           0x30019bf0                    1           41000
           0x30019c28                    1           11263
           0x3001b134                    2            1967
           0x300326b8                    9              72
           0x30032738                    4              64
           0x3019dfdc                    1              44
           0x3019ee60                    3              48
           0x3019ef18                    1             784
           0x301b63bc                   13             312
           0x301b6470                   10             200
           0x301b648c                   10             920
           0x301b7614                    3              36
           0x301b7770                    8             128
           0x301bd460                    3              60
```

The output of this command includes the following columns:

Column	Description
Type	The show memory command currently shows information for predefined processes only, so this column always displays the parameter default.

Column	Description
Num Alloc	Current number of memory allocations.
Size Allocs	Total size of all memory allocations, in bytes.
Total Allocs	Maximum number of allocations used throughout in the life of the process.
Total Size	Maximum size of allocations used throughout in the life of the process, in bytes.
PC	Program counter: the address of a memory allocation. (For internal use only.)
Allocs	Number of memory allocations at that program counter. (For internal use only.)
Size	Size of all memory allocations at that program counter. (For internal use only.)

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.3	The following parameters were introduced: • **aaa** • **cpsec** • **ecc** • **mdns**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show mgmt-role

```
show mgmt-role
```

Description

This command allows the user to view a list of management role configurations.

Syntax

No parameters.

Example

Issue this command to display a list of management user roles.

```
Management User Roles
---------------------
ROLE                 DESCRIPTION
----                 -----------
root                 Super user role
read-only            Read only commands
network-operations   network-operations
guest-provisioning   guest-provisioning
location-api-mgmt    location-api-mgmt
no-access            Default role, no commands are accessible for this role
location-api-mgmt    location-api-mgmt
```

The output includes the following parameters:

Parameter	Description
ROLE	Name of the management user role
DESCRIPTION	Description of the management user role

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master controllers

show mgmt-server

```
show mgmt-server
   message-counters process {auth | fw_visibility | spectrum | stm | wms}
   profile <profile-name>
```

Description

Displays the message counter information of management server.

Syntax

Parameter	Description
`message-counters`	Message counter in the recent past.
`process {auth | fw_visibility | spectrum | stm | wms}`	Controller processes: • Authentication • Firewall Visibility • Spectrum • Station Management • WLAN Management System
`profile <profile-name>`	Displays the list of configuration profiles and the details of the specified configuration profiles for the management server.

Example

The output of this command shows the message counter information of the WLAN Management System process in the controller.

```
(host) (config) #show mgmt-server message-counters process wms

Message Counter History
-----------------------
Message Number  Time                      Packets  Monitored AP Info  Monitored AP Stats
Monitored STA Info  Monitored STA Stats
--------------  ----                      -------  -----------------  ------------------  -----
-------------  -------------------
82              Tue Apr 2 14:56:43 2013  1        0                  0                   3
               3
81              Tue Apr 2 14:56:13 2013  1        14                 218                 2
               67
80              Tue Apr 2 14:55:43 2013  1        0                  0                   0
               2
79              Tue Apr 2 14:55:13 2013  1        0                  0                   0
               2
```

The output of the following command displays the details of the default-amp management configuration profile:

```
(host) #show mgmt-server profile default-amp
```

```
Mgmt Config profile "default-amp" (Predefined (editable))
----------------------------------------------------------
Parameter         Value
---------         -----
Stats             Enabled
Tag               Enabled
Sessions          Enabled
Monitored Info    Disabled
Monitored Stats   Disabled
Misc              Enabled
Location          Enabled
Voice Info        Disabled
```

Command History

Release	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.3	The **wms** process is introduced to track the Advanced Monitoring (AMON) message counters.
ArubaOS 6.3.1	The **profile** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show mgmt-servers

```
show mgmt-servers
```

Description

Displays list of management servers that receive Advanced Monitoring (AMON) messages from the controller.

Syntax

Parameter	Description
`mgmt-servers`	Management Servers. This could be W-AirWave Management Server or any other server that receive messages from the controller using AMON protocol.

Example

The output of this command shows list of management servers in the controller.

```
(host) (config) #show mgmt-servers

List of Management Servers
--------------------------
Type     Primary Server  Profile
----     --------------  -------
AirWave  10.4.14.200     default-amp
ALE       1.1.1.1        default-ale
Num Rows:2
```

Command History

Release	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.3.1	The management server configuration profile column was included in the output.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show mgmt-users

```
show mgmt-users [ <username> |
   local-authentication-mode <username> |
   ssh-pubkey <username> |
   webui-cacert <username> ]
```

Description

Displays list of management users on the controller and also details of each management users.

Syntax

Parameter	Description
username	To view details of a specific management user.
local-authentication-mode	Status of local-authentication mode.
ssh-pubkey	Number of management users using the ssh-pubkey.
webui-cacert	Number of management users using web CA certificates.

Example

The output of this command shows the client certificate name, username, user role, and revocation checkpoint for management users using the ssh-pubkey in the controller.

```
(host) #show mgmt-user ssh-pubkey

SSH Public Key Management User Table
------------------------------------
CLIENT-CERT  USER    ROLE   STATUS   REVOCATION CHECKPOINT
-----------  ----    ----   ------   --------------------
client1-rg   test1   root   ACTIVE   ca-rg
client2-rg   test2   root   ACTIVE   none
client3-rg   test3   root   ACTIVE   ca-rg
client1-rg   test4   root   ACTIVE   ca-rg
```

Command History

Release	Modification
ArubaOS 3.3.2	Command introduced
ArubaOS 6.3	The ssh-pubkey **Revocation Checkpoint** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show tunneled-node config

```
show tunneled-node config
```

Description

Displays wired tunneled node configuration details.

Syntax

No parameters.

Example

The output of this command shows the tunneled node configuration details.

```
(host) # show tunneled-node config

Tunneled Node:Enabled
Tunneled Node Server:4.4.4.1
Tunnel Loop Prevention:Disabled
Tunnel Node MTU:5000
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The command name was changed to `show tunneled-node config`.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show netdestination

```
show netdestination <netdestination name>
```

Description

Displays IPv4 and IPv6 network destination information.

Syntax

No parameters.

Example

Issue this command to display all netdestination configured on this controller. The output below displays information for all configured IPv4 and IPv6 netdestinations. To display additional detailed information for an individual netdestinations, include the name of the netdestination at the end of the command.

```
(host) >enable
Password:******
(host) #show netdestination
Name: white-list
Position  Type  IP addr  Mask-Len/Range
--------  ----  -------  --------------
Name: localnetwork
Position  Type     IP addr   Mask-Len/Range
--------  ----     -------   --------------
1         network  0.0.0.2   0.0.0.0
Name: store
Position  Type      IP addr  Mask-Len/Range
--------  ----      -------  --------------
1         override  vlan 55  offset 36
```

The output includes the following parameters:

Parameter	Description
Name	Network destination name
Position	Network destination position
Type	Network destination type
IP addr	IP address of the network destination
Mask-Len/Range	Network destination subnet mask and range. If the netdestination object has a defined domain or host name, that value will appear in the mask-Len/Range column.

Related commands

Command	Description
netdestination	This command configures an alias for an IPv4 network host, subnetwork, or range of addresses.
netdestination6	This command configures an alias for an IPv6 network host, subnetwork, or range of addresses.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	You must have a PEFNG license to configure or view a netdestination.	Enable or config mode on master controllers

show netexthdr

```
show netexthdr <alias-name>
```

Description

This command displays the IPv6 extension header (EH) types that are denied.

Syntax

Parameter	Description	Default
`<alias-name>`	Specify the EH alias name.	default

Usage Guidelines

Example

The following command displays the denied extended header types in the default EH:

```
(host) #show netexthdr default

Extended Header type(s) Denied
------------------------------
51,
```

Command History

Release	Modification
ArubaOS 6.1	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on the master controllers

show netservice

```
show netservice [<string>]
```

Description

Show network services

Syntax

Parameter	Description
<string>	Name of a network service.

Usage guidelines

Issue this command without the optional **<string>** parameter to view a complete table of network services on the controller. Include the **<string>** parameter to display settings for a single network service only.

Example

The following example shows the protocol type, ports and application-level gateway (ALG) for the DHCP service.

```
(host) #show netservice svc-dhcp
Services
--------
Name      Protocol  Ports  ALG
----      --------  -----  ---
svc-dhcp  udp       67                          68
```

Related Commands

To configure an alias for network protocols, use the command netservice.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show netstat stats

```
show netstat stats
```

Description

Show network statistics for current active network connections, filtered by protocol type.

Syntax

No parameters

Usage guidelines

Issue this command to display aggregate statistics for IP, ICMP, TCP and UDP protocols, and extended TCP statistics

Example

The following example shows incoming and outgoing packet statistics for the controller.

```
(host) #show netstat stats
Ip:
    1084012095 total packets received
    2 with invalid headers
    3 forwarded
    426940 incoming packets discarded
    932097114 incoming packets delivered
    1004595164 requests sent out
    52847 fragments dropped after timeout
    201323411 reassemblies required
    50179757 packets reassembled ok
    53204 packet reassembles failed
    136827034 fragments created
Icmp:
    1969625 ICMP messages received
    5 input ICMP message failed.
    ICMP input histogram:
        destination unreachable: 1752058
        timeout in transit: 1684
        redirects: 70805
        echo requests: 145073
        echo replies: 5
    249806 ICMP messages sent
    0 ICMP messages failed
    ICMP output histogram:
        destination unreachable: 51944
        time exceeded: 52796
        redirect: 2
        echo replies: 145064
Tcp:
    3 active connections openings
    0 passive connection openings
    0 failed connection attempts
    0 connection resets received
    2 connections established
    1006383 segments received
    1147229 segments send out
    9603 segments retransmitted
    0 bad segments received.
```

```
    2568 resets sent
Udp:
    928478757 packets received
    40767 packets to unknown port received.
    426937 packet receive errors
    910267627 packets sent
```

Related Commands

To configure an alias for network protocols, use the command netservice.

Command History

Release	Modification
ArubaOS 6.4.0	The **stats** parameter, which was optional in earlier version of ArubaOS was made a required part of the command syntax.
ArubaOS 1.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on local and master controllers

show network-printer (deprecated)

```
show network-printer [config | job <printer-name> | status]
```

Description

Displays configuration, job status details, and printer status of USB printers connected to older controllers not supported by this version of ArubaOS

Command History

Release	Modification
ArubaOS 3.4	Command introduced
ArubaOS 6.5	Command deprecated

show network-storage (deprecated)

```
show network-storage [ files opened |
   shares {<file-system-path> | disk |
   status |
   users {disk <disk-name>} ]
```

Description

Displays details about the USB storage device connect connected to older controllers not supported by this version of ArubaOS

Command History

Release	Modification
ArubaOS 3.4	Command introduced
ArubaOS 6.5	Command deprecated

show ntp trusted-keys

```
show ntp trusted-keys
```

Description

Show information for the NTP trusted key

Syntax

No parameters.

Example

The following example shows values for the NTP authentication keys, Key ID and Md5 secret key.

```
(host) #show ntp authentication-keys

Key Id      md5 secret
------      ----------
12345      4567
```

The output of this command includes the following parameters:

Parameter	Description
Key ID	The key identifier used to when you configured the NTP authentication key.
md5 secret	The key value for the MD5 hash used when you configured the NTP authentication key.

Related Commands

To configure NTP authentication keys, use the command ntp authentication-key.

Command History

This command was available in ArubaOS 6.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show ntp peer

```
show ntp peer <IPv4/IPv6 Address>
```

Description

Show NTP peer information.

Syntax

Parameter	Description
<IPv4/IPv6 Address>	IPv4/IPv6 Address of the peer.

Example

The output of this commands shows IPv4 and IPv6 address of the peer.

```
(host) #show ntp peer 2008::2

remote 2008::2, local 2008::1
hmode client, pmode sym_active, stratum 16, precision -20
leap 11, refid [73.78.73.84], rootdistance 0.00000, rootdispersion 0.00262
ppoll 6, hpoll 6, keyid 0, version 4, association 53202
reach 000, unreach 1, flash 0x1620, boffset 0.00000, ttl/mode 0
timer 0s, flags config, bclient
reference time:      00000000.00000000  Wed, Feb  6 2036 22:28:16.000
originate timestamp: 00000000.00000000  Wed, Feb  6 2036 22:28:16.000
receive timestamp:   d6186e9b.5723196a  Sun, Oct 27 2013 21:03:23.340
transmit timestamp:  d6186e9b.5723196a  Sun, Oct 27 2013 21:03:23.340
filter delay:  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000
filter offset: 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000
filter order:  0        1        2        3
4        5        6        7
offset 0.000000, delay 0.00000, error bound 3.99217, filter error 0.00000
remote host:          2008::2
local interface:      2008::1
time last received:   59s
time until next send: 5s
reachability change:  61s
packets sent:         1
packets received:     1
bad authentication:   0
bogus origin:         0
duplicate:            0
bad dispersion:       1
bad reference time:   0
candidate order:      0
flags:     config, bclient

(host) #show ntp peer 10.20.22.17

remote ::, local ::
hmode client, pmode unspec, stratum 3, precision -23
leap 00, refid [125.62.193.121], rootdistance 0.32069, rootdispersion 0.15305
ppoll 6, hpoll 6, keyid 0, version 4, association 26134
```

```
reach 001, unreach 2, flash 0x0400, boffset 0.00113, ttl/mode 0
timer 0s, flags config, bclient
reference time:      d6186d7e.c99ed7ba  Sun, Oct 27 2013 20:58:38.787
originate timestamp: 00000000.00000000  Wed, Feb  6 2036 22:28:16.000
receive timestamp:   d6186e24.f02d3f57  Sun, Oct 27 2013 21:01:24.938
transmit timestamp:  d6186e24.f02d3f57  Sun, Oct 27 2013 21:01:24.938
filter delay:  0.00113  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000
filter offset: 0.398620 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000
filter order:  0        1        2        3
4        5        6        7
offset 0.398620, delay 0.00113, error bound 2.81735, filter error 0.00276
remote host:          10.20.22.17
local interface:      10.16.32.90
time last received:   1s
time until next send: 1s
reachability change:  1s
packets sent:         2
packets received:     1
bad authentication:   0
bogus origin:         0
duplicate:            0
bad dispersion:       0
bad reference time:   0
candidate order:      0
flags:     config, bclient, iburst
```

Usage guidelines

The **show ntp peer** command is used for NTP server troubleshooting, and should only be used under the supervision of Dell technical support. Issue the show ntp servers command to view basic settings for currently configured NTP servers.

Related Commands

To configure an NTP server, use the command ntp server.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4	The IPv6 parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show ntp servers

```
show ntp servers [brief]
```

Description

Show information for Network Time Protocol (NTP) servers.

Syntax

Parameter	Description
`brief`	Display the IP address of the defined NTP servers, iburst and key settings.

Examples

The following example shows values for the primary and backup NTP servers. The primary server is marked with an asterisk (*****) and the backup server is marked with an equals sign (**=**). Note that a backup server will not display delay, offset or dispersion data, as it is not currently in use.

```
(host) (config) #show ntp server
NTP Server Table Entries
------------------------
Flags:     * Selected for synchronization
+ Included in the final selection set
# Selected for synchronization but distance exceeds maximum
- Discarded by the clustering algorithm
= mode is client
remote                          local        st   poll   reach    delay     offset      disp
================================================================================================
===
*2012::d63d:7eff:fe46:7309       2012::40       3 1024     377    0.00169    -0.001367
0.13815
```

The output of this command includes the following parameters:

Parameter	Description
`flags`	The flags indicate the status of the server.
remote	IP address of the remote NTP server defined using the CLI command ntp server.
local	IP address of the local clock.
st	NTP uses hierarchical levels of clock sources, or strata, and assigns each layer a number starting with zero at the root. The **st** column in the output of this command represents the number of servers between the configured NTP server and the root reference clock.
poll	Interval, in seconds, between the local NTP server's attempt to poll the remote NTP server.
reach	An index that measures whether or not the remote NTP server could be reached at eight most recent polling intervals. If the NTP server has just been configured and hasn't yet been polled successfully, the value will be zero (0). A value of 377 indicates that the last eight poll queries were successful.

Parameter	Description
delay	Delay, in seconds, between the time that the local clock polls the NTP server and the NTP server returns a reply.
offset	The difference in time, in seconds, between the local clock and the NTP server.
disp	Dispersion represents the maximum error of the local clock relative to the reference clock, and is a measurement of the time server and network quality. Lower dispersion values are preferred over higher dispersion values.

The following example shows the **ntp servers** configuration. The NTP server IP address, key ID and iburst status are shown when the **ntp servers brief** command is used.

The following output is for IPv4:

```
(host) (config) #show ntp servers brief
server 1.1.1.1  key 1234
server 10.1.1.245 iburst key 12345
```

The following output is for IPv6:

```
(host) (config) #show ntp servers brief
server 2012::d63d:7eff:fe46:7309
```

Related Commands

To configure an NTP server, use the command ntp server.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The key-id parameter output displays when the **ntp servers brief** command is used.
ArubaOS 6.4	Flags indicating the status of the server, were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show ntp status

```
show ntp status
```

Description

Show information for a NTP server.

Syntax

No parameters.

Example

The following example shows values for the primary NTP server.

```
(host) #show ntp status

Authentication:          enabled
time since restart:      2347
time since reset:        7594
packets received:        4
packets processed:       0
current version:         0
previous version:        0
declined:                0
access denied:           0
bad length or format:    0
bad authentication:      0
rate exceeded:           0
system peer:             10.1.1.250
system peer mode:        client
leap indicator:          00
stratum:                 3
precision:               -18
root distance:           0.03236 s
root dispersion:         0.06728 s
reference ID:            [10.1.1.250]
reference time:          cd45b701.bcbc05d5  Tue, Feb 17 2009 14:21:53.737
system flags:            auth monitor ntp kernel stats
jitter:                  0.005020 s
stability:               0.866 ppm
broadcastdelay:          0.003998 s
authdelay:               0.000000 s
```

The output of this command includes the following parameters:

Parameter	Description
`authentication`	Indicates if authentication is enabled for the NTP server.
`time since restart`	Time in hours since the system was last rebooted.
time since reset	The number of seconds since the last time the local NTP server was restarted.
`packets received`	Total number of packets received.

Parameter	Description
packets processed	Number of packets received in response to previous packets sent.
current version	Number of packets matching the current NTP version.
previous version	Number of packets matching the previous NTP version.
declined	Number of packets declined.
access denied	Number of packets for which access has been denied.
bad length or format	Number of packets with invalid length, format or port number.
packets received	Total number of packets received.
bad authentication	Number of NTP packets that failed to be authenticated.
rate exceeded	Number of packets discarded due to rate limitation.
system peer	The IP address of the peer NTP server.
system peer mode	The peer mode of this remote association: • Symmetric Active • Symmetric Passive • Client • Server • Broadcast
leap indicator	This parameter indicates whether or not a leap-second should be inserted or removed at the end of the last day of the current month. • 00 no warning • 01 +1 second (following minute has 61 seconds) • 10 -1 second (following minute has 59 seconds)
stratum	The stratum level of the peer
precision	The advertised precision of the switch. This value can range from -4 and -20, inclusive.
root distance	Total round trip delay to the stratum 1 reference clock.
root dispersion	Total dispersion to the stratum 1 reference clock. This value is a cumulative measure of all errors associated with the network hops and servers between the NTP server and its stratum 1 server.
reference ID	IPv4/IPv6 address of the remote NTP server.

Parameter	Description
	Note: When NTP server is reachable through IPv4 address, use the address as is. If done through IPv6 address, the Reference ID is calculated instead of directly taking the IPV6 address on the NTP Server. The controller performs a MD5 checksum and the last 4 bytes are considered as the reference ID.
reference time	Time when the local system clock was last set or corrected, in NTP timestamp format.
system flags	This parameter displays any flags configured for this NTP entity.
jitter	The average magnitude of jitter between several time queries.
stability	The average magnitude of offset between several time queries
broadcastdelay	The broadcast delay of this NTP server association, in seconds.
authdelay	The authentication delay of this NTP server association, in seconds.

Related Commands

To configure an NTP server, use the command ntp server.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.4	The following parameters were introduced: • time since restart • packets received • packets processed • current version • previous version • declined • access denied • bad length or format • bad authentication • rate exceeded

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show packet-capture

```
show packet-capture
   controlpath-pcap [hex]
   datapath-pcap [hex]
```

Description

Displays packet capture status on the controller.

Syntax

Parameter	Description
`controlpath-pcap [hex]`	Displays controlpath packets captured in the local-filesystem.
`datapath-pcap [hex]`	Displays datapath packets captured in the local-filesystem.

Example

The output of this command shows the packet capture configuration details.

```
(host) #show packet-capture
Active Capture Destination
--------------------------
Destination    IP         1.2.3.4
Active Capture (Controlpath)
----------------------------
Interprocess   Disabled
Sysmsg         Disabled
TCP            Enabled    Ports: 2
UDP            Enabled    Ports: 5
Other          Enabled
Active Capture (Datapath)
-------------------------
Wifi-Client    Enabled    Mac: 00:0b:86:6d:47:6c   Filter: Decrypted
Ipsec          Enabled    Peer: 10.1.1.1
(host) (config) #show packet-capture-defaults
Default Capture Destination
---------------------------
Destination    Local-Filesystem
Default Capture (Controlpath)
-----------------------------
Interprocess   Disabled
Sysmsg         Disabled
TCP            Enabled    Ports: 80 8080
UDP            Enabled    Ports: All
Other          Disabled
Default Capture (Datapath)
--------------------------
Wifi-Client    Enabled    Mac: 00:0b:86:6d:47:6c   Filter: Encrypted
Ipsec          Disabled
```

Command History

Release	Modification
ArubaOS 3.3.2	Command introduced.
ArubaOS 6.3	**Controlpath-pcap** and **datapath-pcap** parameters added.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show packet-capture-defaults

```
show packet-capture-defaults
```

Description

Displays the status of default packet capture options.

Syntax

No parameters.

Example

The output of this command shows packet capture status.

```
(host) # show packet-capture-defaults

Current Active Packet Capture Actions(current switch)
=====================================================
Packet filtering for TCP ports disabled.
Packet filtering for UDP ports disabled.
Packet filtering for internal messaging opcodes disabled.
Packet filtering for all other packets disabled.


Packet Capture Defaults(across switches and reboots if saved)
=============================================================
Packet filtering for TCP ports disabled.
Packet filtering for UDP ports disabled.
Packet filtering for internal messaging opcodes disabled.
Packet filtering for all other packets disabled.
```

Command History

This command was available in ArubaOS 3.3.2

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show pan active-profile

```
show pan active-profile
```

Description

This command shows the active PAN firewall profile at the local controller level.

Syntax

No syntax.

Usage Guidelines

Issue this command to show the current active PAN firewall profile running on the controller.

```
(host) #show pan active-profile
Palo Alto Networks Active Profile
---------------------------------
Parameter                         Value
---------                         -----
Active Palo Alto Networks profile  PAN-Group-1
```

Command History

	Modification
ArubaOS 6.4	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show pan-options

```
show pan-options
```

Description

This command displays configured settings for integrating a branch controller with a Palo Alto Networks (PAN) firewall.

Syntax

No syntax.

Usage Guidelines

Issue this command to see the connection status of the PAN firewalls associated with the controller.

```
(host)#show pan profile PAN-Group-1

Palo Alto Networks Servers Profile "PAN-Group-1"
------------------------------------------------
Parameter                                 Value
---------                                 -----
Palo Alto Networks Firewall               1.2.3.4:443 abc/********
Palo Alto Networks Firewall               2.2.2.2:123 2222/********
Palo Alto Networks Firewall               3.3.3.3:333 3333/********
Palo Alto Networks Firewall               1.1.1.1:443 admin/********
```

Command History

	Modification
ArubaOS 6.4	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show pan state

```
show pan state
```

Description

This command shows the current connection status of PAN firewalls.

Syntax

No syntax.

Usage Guidelines

Issue this command to see the connection status of the PAN firewalls associated with the controller.

```
(host) #show pan state
Palo Alto Networks Servers Connection State[PAN-Group-1]
-------------------------------------------------------
Firewalls   State
---------   -----
1.2.3.4:443 DOWN
2.2.2.2:123 UP[11/25/13 12:45:49]Established
3.3.3.3:333 UP[11/25/13 12:45:48]Established
1.1.1.1:443 UP[11/25/13 12:45:50]Established
```

Command History

	Modification
ArubaOS 6.4	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show pan statistics

```
show pan statistics
```

Description

This command shows PAN firewall interface statistics.

Syntax

No syntax.

Usage Guidelines

Issue this command to see PAN firewall interface statistics.

```
(host) (config) #show pan statistics
Palo Alto Networks Interface Statistics Summary
-----------------------------------------------
Login Reqts  Logout Reqts  Refresh Reqts
-----------  ------------  -------------
0            0             0
Per-PAN server Statistics Summary
---------------------------------
PAN Server       User-ID Reqts  Sent  Skipped  Success  Failure  Last Error
----------       -------------  ----  -------  -------  -------  ----------
1.2.3.4:443  0              0     0        0        0
```

Parameter	Description
Palo Alto Networks Interface Statistics Summary	
Login Reqts	Total number of login requests.
Logout Reqts	Total number of logout requests.
Refresh Reqts	Total number of refresh requests.
Per-PAN server Statistics Summary	
PAN Server	The PAN Server IP address.
User-ID Reqts	Total number of login, logout, and refresh requests.
Sent	Number of requests sent.
Skipped	Number of requests skipped.
Success	Number of requests successfully handled.
Failure	Number of requests that were not successfully received.
Last Error	The last failure error received.

Command History

	Modification
ArubaOS 6.4	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show pan-gp

```
show pan-options
```

Description

This command displays Palo Alto Networks portal or gateway settings on a branch or local controller.

Syntax

No parameters.

Usage Guidelines

Issue this command to view GlobalProtect protocol settings for a Palo Alto Networks portal or gateway on a on a branch controller using the Palo Alto Networks firewall integration feature.

Examples

The following example displays the portal information seen by a branch controller connected to a Palo Alto Networks portal.

```
(host) #show pan-gp portal-info
Global Protect Portal Information
=================================
Portal Config.............. 172.16.2.1:443
Name....................... Portal-profile-1
State...................... GET CONFIG SUCCESS
Config Refresh Interval... 1 hours
Root CA Name............... LSVPNCert
Gateway [01]
Name.............. 172.16.2.1
Desc.............. GW-1
Priority.......... 10
Gateway [02]
Name.............. 172.16.2.50
Desc.............. GW-2
Priority.......... 15
Refresh Timer Armed....... YES
Failure Timer Armed....... NO
```

The following example displays the gateway information seen by a branch controller connected to a Palo Alto Networks gateway.

```
show pan-gp gateway-info
Global Protect Gateway Information
==================================
Name....................... PAN-GW-1
Description................ PAN-GW-1-S
State...................... GET CONFIG SUCCESS
Config Refresh Interval... 1 hours
Software Version.......... 1.0.0
Satellite Serial Number... SN000B8699E0D7
Accept published routes... YES
Gateway Address............ 172.16.2.1
Default Gateway............ 192.168.100.254
IP Address................. 192.168.100.87
IP Mask.................... 255.255.255.255
Priority................... 10
Keepalive Information
Enabled.......... YES
```

```
Interval.......... 3 secs
Action............ 0
Threshold......... 5
Source Address.... 192.168.100.254
Dest Address...... 192.168.100.87
Key Information
Authentication.... sha1
Encryption........ aes256
C2S SPI........... 45735d16
S2C SPI........... 366f1987
SA Lifetime
Lifetime.......... 3 mins
Lifetime Secs..... 180
Delayed Timer Armed....... NO
Refresh Timer Armed....... YES
SA Lifetime Timer Armed... YES
Failure Timer Armed....... NO
Name...................... PAN-GW-2
Description............... PAN-GW-2-S
State..................... GET CONFIG SUCCESS
Config Refresh Interval... 2 hours
Software Version.......... 1.0.0
Satellite Serial Number... SN000B8699E0D7
Accept published routes... YES
Gateway Address........... 172.16.2.50
Default Gateway........... 192.168.101.254
IP Address................ 192.168.101.116
IP Mask................... 255.255.255.255
Priority.................. 15
Keepalive Information
Enabled........... YES
Interval.......... 3 secs
Action............ 0
Threshold......... 5
Source Address.... 192.168.101.254
Dest Address...... 192.168.101.116
Key Information
Authentication.... sha1
Encryption........ aes256
C2S SPI........... 51d03875
S2C SPI........... 31d42d17
SA Lifetime
Lifetime.......... 5 mins
Lifetime Secs..... 300
Delayed Timer Armed....... NO
Refresh Timer Armed....... YES
SA Lifetime Timer Armed... YES
Failure Timer Armed....... NO
```

Related Commands

	Modification
pan-options	This command configures options to integrate a branch controller with a Palo Alto Networks (PAN) firewall.
ip nexthop-list	Define a nexthop list for policy-based routing.
pan active-profile	This command selects an active Palo Alto Network (PAN) profile from a set of pro-

	Modification
	files.
pan profile	This command configures a Palo Alto Networks (PAN) profile to allow a controller to communicate with a PAN firewall.
uplink	Manage and configure the uplink network connection.

Command History

	Modification
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
W-7000 Series controllers, when configured as a branch controller, or any controller model when used in conjunction with uplink manager feature.	Base operating system	Config mode on master or local controllers

show pan-options

```
show pan-options
```

Description

This command displays configured options to integrate a branch controller with a Palo Alto Networks (PAN) firewall.

Syntax

No parameters.

Usage Guidelines

Issue this command to view Palo Alto Networks firewall integration settings for branch, standalone or local controllers. Note that the PAN firewall integration feature can only be used on standalone or local controllers when used in conjunction with the controller uplink VLAN manager feature, which must be enabled using the uplink command in the controller command-line interface.

Examples

```
(host)# show pan-options
Configure Palo Alto Networks options
------------------------------------
Parameter                                        Value
---------                                        -----
Portal IP for Palo Alto Networks Global Protect  portal-ip 172.16.2.1 cert cert_LSVPNCert
```

The output of this command contains the following parameters:

Parameter	Description
Value	This column contains displays the following parameters for Palo Alto firewall integration feature: • **portal-ip <ip-addr>**: The IP address of the firewall management portal • **cert <cert-name>**: Name of the self-signed or external certification authority (CA) certificate to sign the controller and gateway server certificates

Related Commands

	Modification
pan-options	This command configures options to integrate a branch controller with a Palo Alto Networks (PAN) firewall.
ip nexthop-list	Define a nexthop list for policy-based routing.
pan active-profile	This command selects an active Palo Alto Network (PAN) profile from a set of profiles.

	Modification
pan profile	This command configures a Palo Alto Networks (PAN) profile to allow a controller to communicate with a PAN firewall.
uplink	Manage and configure the uplink network connection.

Command History

	Modification
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
W-7000 Series controllers, when configured as a branch controller, or any controller model when used in conjunction with uplink manager feature.	Base operating system	Config mode on master or local controllers

show papi kernel-socket-stats

```
show papi kernel-socket-stats
```

Description

This command shows the state of UDP PAPI sockets in the kernel.

Syntax

No syntax.

Usage Guidelines

Issue this command to show the state of the UDP PAPI sockets in the kernel. The following example shows partial output of this command.

```
(host) #show papi-security

(7240-223) #show papi kernel-socket-stats Kernel PAPI Statistics
Port                                                RxSockbufSize RxSockbufHimark CurRxQLen MaxRxQLen Drops
9344(9344)                                            2097152                7104         0         3         0
8449(Utility Process)                                 2097152                   0         0         0         0
9345(9345)                                            2097152                   0         0         0         0
514(514)                                              2097152                   0         0         0         0
9476(9476)                                            2097152                   0         0         0         0
9348(9348)                                            2097152                   0         0         0         0
9220(9220)                                            2097152                   0         0         0         0
8453(Control Plane Security Daemon)                   2097152                2368         0         1         0
9222(9222)                                            2097152                   0         0         0         0
9478(9478)                                            2097152                   0         0         0         0
8455(Spectrum Process)                                2097152                   0         0         0         0
8456(STM Monitoring)                                  2097152                   0         0         0         0
9224(9224)                                            2097152                   0         0         0         0
9481(9481)                                            2097152                   0         0         0         0
9482(9482)                                            2097152                   0         0         0         0
8458(Arci cli helper server)                          2097152                   0         0         0         0
9226(9226)                                            2097152                   0         0         0         0
9483(9483)                                            2097152                   0         0         0         0
9355(9355)                                            2097152                   0         0         0         0
8459(WMS Monitoring)                                  2097152                   0         0         0         0
9484(9484)                                            2097152                   0         0         0         0
9485(9485)                                            2097152                   0         0         0         0
9486(9486)                                            2097152                   0         0         0         0
9359(9359)                                            2097152                   0         0         0         0
9231(9231)                                            2097152                   0         0         0         0
```

Command History

	Modification
ArubaOS 6.2	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show papi-security

```
show papi-security
```

Description

This command shows the status of the PAPI enhanced security mode.

Syntax

Parameter	Description	Range	Default
`PAPI Key`	The key string. The key authenticates the messages between systems.	Range: 10–64 characters	—
`Enhanced security mode`	Indicates if the enhanced security mode is enabled or disabled. This mode causes the system to reject messages when an incorrect key is used.	—	disabled

Usage Guidelines

Issue this command to show the status of the PAPI Enhanced Security mode of the selected security configuration. The **papi-security** command is used to enforce advanced security options and provides an enhanced level of security.

The **Parameter** column displays the PAPI Key and Enhanced security mode parameters. The **Value** column displays a PAPI key value (encrypted) and indicates whether the Enhanced security mode is enabled or disabled. If an AP cannot be authenticated because it has the wrong key, the show ap database command displays a “Bad key” status.

```
(host) #show papi-security

PAPI Security Profile
---------------------
Parameter               Value
---------               -----
PAPI Key                ********
Enhanced security mode  Enabled
```

Related Commands

Command	Description
papi-security	Enforces advanced security options and provides an enhanced level of security.
show ap database	Displays the “Bad key” status of APs.

Command History

	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.2	Command deprecated.
ArubaOS 6.5	Command is reintroduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show perf-test reports

```
show perf-test reports
   ap {ap-name <ap-name>}|{ip-addr <ip>}|{ip6-addr <ip6>}
   controller
```

Description

Use this command under the guidance of Dell technical support to view the results of an Iperf throughput test launched from an AP or controller.

Syntax

Parameter	Description
ap	Display the results of an Iperf throughput test launched from an AP.
`ap-name <ap-name>`	Name of the AP.
`ip-addr <ip-addr>`	IPv4 address of the AP.
`ip6-addr <ip6-addr>`	IPv6 address of the AP.
`controller`	Display the results of an Iperf throughput test launched from a controller.

Usage Guidelines

Issue this command to view a report file of test data from a client-mode Iperf throughput test launched from an AP or controller. Tests launched in server mode do not generate reports.

Related Commands

Command	Description
perf-test	Use this command under the guidance of Dell technical support to launch an Iperf throughput test

Command History

Introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show poe

```
show poe [slot/port]
```

Description

Displays the PoE status of all or a specific port on the controller.

Syntax

No parameters.

Example

The output of this command shows the PoE status of port 10 in slot 1.

```
(host) # show poe 1/10

PoE Status
----------
Port      Status  Voltage(mV)  Current(mA)  Power (mW)
----      ------  -----------  -----------  ----------
FE 1/10   Off     N/A          N/A          N/A
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show port link-event

```
show port link-event
```

Description

Displays the link status on each of the port on the controller.

Syntax

No parameters.

Example

The output of this command shows the link status on all ports in the controller.

```
(host) # show port link-event

Slot/Port    UP      DOWN              Slot/Port    UP      DOWN
---------    --      ----              ---------    --      ----
  2 /  0     0       0                   2 /  1     0       0
  2 /  2     0       0                   2 /  3     1       1
  2 /  4     0       0                   2 /  5     0       0
  2 /  6     0       0                   2 /  7     1       1
  2 /  8     0       0                   2 /  9     0       0
  2 / 10     10      9                   2 / 11     2       1
  2 / 12     1       0                   2 / 13     0       0
  2 / 14     1       0                   2 / 15     6       5
  2 / 16     5       4                   2 / 17     9       8
  2 / 18     1       0                   2 / 19     5       4
  2 / 20     0       0                   2 / 21     4       4
  2 / 22     2       2                   2 / 23     9       9
  2 / 24     0       0                   2 / 25     0       0
  3 /  0     24      23                  3 /  1     0       0
  3 /  2     0       0                   3 /  3     0       0
  3 /  4     1       0                   3 /  5     1       0
  3 /  6     0       0                   3 /  7     0       0
  3 /  8     94      94                  3 /  9     0       0
  3 / 10     0       0                   3 / 11     5886    5886
  3 / 12     49751   49750               3 / 13     50      49
  3 / 14     2589    2588                3 / 15     228     227
  3 / 16     2       1                   3 / 17     2423    2423
  3 / 18     8245    8244                3 / 19     5098    5098
  3 / 20     74      73                  3 / 21     2       2
  3 / 22     1       0                   3 / 23     0       0
  3 / 24     0       0                   3 / 25     0       0
```

Command History

This command was available in ArubaOS 3.3.2

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show port monitor

```
show port monitor
```

Description

Displays the list of ports that are configured to be monitored.

Syntax

No parameters.

Example

The output of this command shows the link status on all ports in the controller.

```
(host) # show port monitor

Monitor Port  Port being Monitored
------------  --------------------
FE 1/10       FE 1/20
```

Command History

This command was available in ArubaOS 3.3.2

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show port stats

```
show port status
   [<slot>/<module>/<port>]
```

Description

Displays the activity statistics on each of the port on the controller.

Syntax

Parameter	Description
<slot>/<module>/<port>	Physical port in **<slot>/<module>/<port>** format.

Example

The output of this command shows the link status on all ports in the controller.

```
(host) # show port stats

Port Statistics
---------------
Port     PacketsIn   PacketsOut   BytesIn   BytesOut   InputErrorBytes   OutputErrorBytes   CRCErrors
----     ---------   ----------   -------   --------   ---------------   ----------------   ---------
GE 0/0/0   0           0            0         0          0                 0                  0
GE 0/0/1   0           0            0         0          0                 0                  0
GE 0/0/2   3142        176          170305    26266      0                 0                  0
GE 0/0/3   0           0            0         0          0                 0                  0
```

The output of this command includes the following parameters:

Parameter	Description
Port	Displays the physical port on the controller.
PacketIn	Indicates the total number of incoming packets to the port.
PacketOut	Indicates the total number of outgoing packets from the port.
BytesIn	Indicates the total number of incoming data (in bytes) to the port.
BytesOut	Indicates the total number of outgoing data (in bytes) from the port.
InputErrorBytes	Indicates input error bytes on the port.
OutputErrorBytes	Indicates the output error bytes on the port.
CRCErrors	Indicates the Cyclic Redundancy Check (CRC) errors on the port.

Command History

Release	Modification
ArubaOS 3.3.2	Command introduced.
ArubaOS 6.4.3.0	The **PC #** (port-channel) value was introduced under the **Port** column.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show port status

```
show port status
   [<slot>/<module>/<port>]
```

Description

Displays the status of all ports on the controller.

Syntax

Parameter	Description
`<slot>/<module>/<port>`	Physical port in **<slot>/<module>/<port>** format.

Example

The output of this command shows the status of all ports in the controller.

```
(host) # show port status

Port Status
-----------
Slot-Port  PortType  AdminState  OperState  PoE  Trusted  SpanningTree  PortMode
---------  --------  ----------  ---------  ---  -------  ------------  --------
0/0/0      GE        Enabled     Up         N/A  Yes      Forwarding    Access
0/0/1      GE        Enabled     Down       N/A  Yes      Disabled      Access
0/0/2      GE        Enabled     Down       N/A  Yes      Disabled      Access
0/0/3      GE        Enabled     Down       N/A  Yes      Disabled      Access
0/0/4      GE        Enabled     Down       N/A  Yes      Disabled      Access
0/0/5      GE        Enabled     Down       N/A  Yes      Disabled      Access

Speed   Duplex
-----   ------
1 Gbps   Full
Auto     Auto
Auto     Auto
Auto     Auto
Auto     Auto
Auto     Auto
```

The output of this command includes the following parameters:

Parameter	Description
`SlotPort`	Displays the physical port in **<slot>/<module>/<port>** format.
`PortType`	Displays the type of physical port. • **FE**: Fast Ethernet • **GE**: Gigabit Ethernet • **PC**: Port Channel

Parameter	Description
AdminState	Indicates if the physical port is enabled or disabled.
OperState	Indicates if the current status of the physical port is up or down.
PoE	Indicates if the physical port is Power over Ethernet (PoE) enabled.
Trusted	Indicates if the physical port is trusted.
SpanningTree	Indicates the state of spanning tree.
PortMode	Indicates the port mode of the physical port.
Speed	Indicates the port speed.
Duplex	Indicates the direction of traffic.

Command History

Release	Modification
ArubaOS 3.3.2	Command introduced.
ArubaOS 6.4.2.6	The **Speed** and **Duplex** columns were introduced.
ArubaOS 6.4.3.0	Following values were introduced: • The **PC#** (port-channel) value was introduced under the **PortMode** column. • The **PC** (port-channel) value was introduced under the **PortType** column. • **Speed** and **Duplex** columns were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show port trusted

```
show port trusted
```

Description

Displays the list of ports configured with trusted profiles.

Syntax

No parameters.

Example

The output of this command shows the list of ports with trusted profile.

```
(host) # show port trusted

FE 1/0
FE 1/1
FE 1/2
FE 1/3
FE 1/4
FE 1/5
FE 1/6
FE 1/7
FE 1/8
FE 1/9
FE 1/10
FE 1/11
FE 1/12
FE 1/13
FE 1/14
FE 1/15
FE 1/16
FE 1/17
FE 1/18
FE 1/19
FE 1/20
FE 1/21
FE 1/22
FE 1/23
GE 1/24
GE 1/25
```

Command History

This command was available in ArubaOS 3.3.2

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show port xsec

```
show port xsec
```

Description

Displays the list of xSec enabled ports.

Syntax

No parameters.

Example

The output of this command shows the list of xSec enabled ports.

```
(host) #show port xsec

Xsec Ports
----------
Interface  xsec vlan  state

--------- --------- -----
```

Command History

This command was available in ArubaOS 3.3.2

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show priority-map

```
show priority-map
```

Description

Displays the list of priority maps on a interface.

Syntax

No parameters.

Example

The output of this command shows the priority maps configured on all interfaces.

```
(host) # show priority-map

Priority Map
------------
ID  Name    DSCP-TOS  DOT1P-COS
--  ----    --------  ---------
1   my-map  4-20,60      4-7
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show processes

```
show processes [sort-by {cpu | memory}]
```

Description

Displays the list of all system process running on the controller. You can sort the list either by CPU intensive or memory intensive processes.

Syntax

Parameter	Description
`sort-by`	Add a sort filter to the output
`cpu`	This will sort output based on CPU usage.
`memory`	This will sort output based on memory usage.

Example

The output of this command shows list of system processes sorted by CPU usage.

```
(host) # show priority-map

%CPU S   PID  PPID   VSZ  RSS   F  NI START     TIME      EIP CMD
 3.7 S   595   517 20908 12184 040   0 Apr24 03:39:04 303a4fa8 /mswitch/bin/fpapps
 0.2 S 12354   410  1028  296 000    0 02:13 00:00:00 30087fa8 sleep 10
 0.1 S   536   441 12012 7264 040    0 Apr24 00:09:08 100e4a74 /mswitch/mysql/libexec/mysqld --
basedir=/mswitch/mysql --datadir=/var/
 0.0 S     2     1     0     0 040    0 Apr24 00:00:00 00000000 [keventd]
 0.0 S     4     0     0     0 040    0 Apr24 00:00:00 00000000 [kswapd]
 0.0 S     6     0     0     0 040    0 Apr24 00:00:00 00000000 [kupdated]
 0.0 S    57     1     0     0 040    0 Apr24 00:00:00 00000000 [kjournald]
 0.0 S    67     1  1036  424 000    0 Apr24 00:00:00 30087fa8 /bin/sh /mswitch/bin/syslogd_
start
 0.0 S     1     0  1028  384 100    0 Apr24 00:00:12 30087fa8 init
 0.0 S   397     1  1732  804 100    0 Apr24 00:00:00 30152fa8 /mswitch/bin/nanny
/mswitch/bin/nanny_list 0
 0.0 S   399   397 14140 10172 100   0 Apr24 00:00:16 303c8fa8 /mswitch/bin/arci-cli-helper
 0.0 S   402     1   768  268 040    0 Apr24 00:00:00 30060fa8 /sbin/tftpd -s -l -u nobody
/mswitch/sap
 0.0 S    69    67  1404  752 100    0 Apr24 00:01:27 300d3fa8 /mswitch/bin/syslogd -x -r -n -m
0 -f /mswitch/conf/syslog.conf
 0.0 S   407   397  3100 1028 100    0 Apr24 00:00:00 302a0fa8 /mswitch/bin/packet_filter
 0.0 S   408   397  4296 1340 100    0 Apr24 00:00:00 30339fa8 /mswitch/bin/certmgr
 0.0 R     3     0     0     0 040   19 Apr24 00:00:01 00000000 [ksoftirqd_CPU0]
 0.0 S   453   397   700  284 000    0 Apr24 00:01:20 30087fa8 /mswitch/bin/msgHandler -g
 0.0 S   468   397  1236  492 100    0 Apr24 00:00:00 300f8fa8 /mswitch/bin/pubsub
 0.0 S   484   397 18456 14064 100   0 Apr24 00:00:19 303c8fa8 /mswitch/bin/cfgm
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platformss	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-errors

```
show profile-errors
```

Description

Displays the list of invalid user-created profiles.

Syntax

No parameters.

Example

The output of this command shows list of profiles that are invalid and also displays the error in those profiles. In this example, the VLAN 1000 that is mapped to a virtual-ap that does not exist.

```
(host) #show profile-errors

Invalid Profiles
----------------
Profile                     Error
-------                     -----

wlan virtual-ap "test-vap"  VLAN 1000 does not exist
```

The following are the list of some profile errors:

Error	Description
Named VLAN [named_VLAN] is removed	These errors are displayed if a virtual AP profile is configure with a VLAN that does not exist.
Named VLAN [named_VLAN] is not mapped	
Named VLAN [named_VLAN] is invalid	
VLAN [x] does not exist	
Server group is invalid	This error is displayed if an AAA profile is configured an invalid server group.
User derivation rule is invalid	This error is displayed if a user role in an AAA profile is invalid.
User role is invalid	
Controller country code is undefined	These errors are displayed, if your controller is not set to the correct country code or if the country code specified in a WLAN profile does not match the controller's country code.
Country [country_name] does not match controller country [country_name]	
Opmode requires WPA key	This message is displayed if a SSID profile is configured without a WPA key.

Error	Description
WARNING: if weptxkey = [x], wepkey[x] must be set in order to use static WEP	This message is displayed if a SSID profile is configured to use a static WEP and the WEP is not configured.

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-hierarchy

```
show profile-hierarchy
```

Description

Displays the profile hierarchy template.

Syntax

No parameters.

Usage Guidelines

The output of this command shows how profiles relate to each other, and how some higher-level profiles reference other lower-level profiles. The output of this command will vary, depending upon controller configuration and licenses.

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-list aaa

```
show profile-list aaa [{alias-group [page | start]} | {authentication [captive-portal | dot1x
| mac | stateful-ntlm | wispr]} |{authentication-server [ldap | radius | tacacs | windows]} |
{profile} | {rfc-3576-server} | {server-group} | {xml-api}]
```

Description

Displays the list of AAA profiles.

Syntax

Parameter	Description
`alias-group`	Lists all alias-groups.
`page`	Specify the number of items to display
`start`	Specify the first item to display
`authentication`	List of aaa authentication profiles.
`captive-portal`	Captive portal authentication profiles.
`dot1x`	802.1X authentication profiles.
`mac`	MAC authentication profiles.
`stateful-ntlm`	Stateful-NTLM authentication profiles.
`wispr`	WISPr authentication profiles.
`authentication-server`	List of aaa authentication servers
`ldap`	List of servers using LDAP for AAA authentication.
`radius`	List of servers using RADIUS for AAA authentication.
`tacacs`	List of servers using TACACS+ for AAA authentication.
`windows`	List of Windows servers used for AAA authentication.
`profile`	Displays the AAA profile details.
`rfc-3576-server`	Displays IP address of RADIUS servers that use RFC 3576 specification to exchange authorization messages.
`server-group`	List of server group used for RADIUS accounting.
`xml-api`	List of servers configured in an external XML API server.

Example

The output of this command shows list of AAA profiles that use captive-portal authentication.

```
(host) # show profile-list aaa authentication captive-portal

Captive Portal Authentication Profile List
------------------------------------------
Name     References  Profile Status
----     ----------  --------------
default  1
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-list ap

```
show profile-list ap [ enet-link-profile | mesh-cluster-profile |
   mesh-ht-ssid-profile | mesh-radio-profile | regulatory-domain-profile |
   snmp-profile | snmp-user-profile | system-profile | wired-ap-profile ]
```

Description

Displays the list of AP profiles.

Syntax

Parameter	Description
`enet-link-profile`	Display a list of AP Ethernet link profiles.
`mesh-cluster-profile`	Display a list of mesh cluster profiles used by mesh nodes.
`mesh-ht-ssid-profile`	Display a list of mesh high-throughput SSID profiles used by mesh nodes.
`mesh-radio-profile`	Display a list of mesh radio profiles used by mesh nodes.
`regulatory-domain-profile`	Display a list of AP regulatory profiles.
`snmp-profile`	Display a list of SNMP profiles.
`snmp-user-profile`	Display a list of SNMPv3 user profiles.
`system-profile`	Display a list of AP system profiles.
`wired-ap-profile`	Display a list of wired AP profiles.

Example

The output of this command shows list of profiles that are invalid and also displays the error in those profiles.

```
(host) # show profile-list aaa authentication captive-portal

Captive Portal Authentication Profile List
------------------------------------------
Name     References  Profile Status
----     ----------  --------------
default  1
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-list app

```
show profile-list app
   skype4b traffic-control
```

Description

Displays the list of AP Skype4b traffic control profiles.

Syntax

Parameter	Description
`skype4b traffic-control`	Display a list of Skype4b traffic control profiles.
`page`	Specify the number of items to display
`start`	Specify the first item to display

Example

The output of this command shows a list of the Skype4b traffic control prioritization profiles.

```
(host) # show profile-list aaa authentication captive-portal

Traffic Control Prioritization Profile List
-------------------------------------------
Name     References  Profile Status
----     ----------  --------------
default  1
voice    2
video    1
```

Command History

Version	Description
ArubaOS 6.3	Command introduced
ArubaOS 6.4.4.0	The **lync** parameter is deprecated, and is replaced by the **skype4b** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-list ap-group

```
show profile-list ap-group
```

Description

Displays the status of AP groups profiles in the controller.

Syntax

No parameters.

Example

The output of this command shows the status of AP group profiles in the controller.

```
(host) # show profile-list ap-group

AP group List
-------------
Name      Profile Status
----      --------------
default

Total:1
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-list ap-name

```
show profile-list ap-name
```

Description

Displays the status of AP profiles in the controller.

Syntax

No parameters.

Example

The output of this command shows status of AP profiles in the controller.

```
(host) # show profile-list ap-name

AP name List
------------
Name  Profile Status
----  --------------

Total:0
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-list ha

```
show profile-list ha
   group-profile [page | start]
```

Description

Displays the list of HA profiles.

Syntax

Parameter	Description
`group-profile`	Lists all HA group information.
`page`	Specify the number of items to display
`start`	Specify the first item to display

Example

The output of this command shows list of HA group profile information.

```
(host) # show profile-list ha group-profile

HA group information List
-------------------------
Name  Profile Status
----  --------------
Total:0
```

Command History

This command was available in ArubaOS 6.3

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-list ids

```
show profile-list ids [dos-profile | general-profile | impersonation-profile |
   profile | rate-thresholds-profile | signature-matching-profile |
   signature-profile | unauthorized-device-profile ]
```

Description

Displays the status of all IDS profiles in the controller.

Syntax

Parameter	Description
dos-profile	Display a list of IDS DoS profiles.
general-profile	Display a list of IDS generate profiles.
impersonation-profile	Display a list IDS impersonation profile.
profile	Display a list of IDS profiles.
rate-thresholds-profile	Display a list of IDS rate threshold profiles.
signature-matching-profile	Display a list of IDS signature-matching profiles.
signature-profile	Display a list of IDS signature profiles.
unauthorized-device-profile	Display a list of IDS unauthorized device profiles.

Example

The output of this command shows a list of all IDS DoS profiles.

```
(host) # show profile-list ids dos-profile

IDS Denial Of Service Profile List
----------------------------------
Name                    References  Profile Status
----                    ----------  --------------
default                 1
ids-dos-disabled        1           Predefined
ids-dos-high-setting    1           Predefined
ids-dos-low-setting     1           Predefined
ids-dos-medium-setting  1           Predefined

Total:5
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-list mgmt-server

```
show profile-list mgmt-server {profile <profile_name>} [page <number>] [start <number>]
```

Description

Displays all the Mgmt Config profiles in the controller.

Syntax

Parameter	Description
`mgmt-server {profile <profile_name>`	Specifies the name of the management server profile.
`page <number>`	Include this optional parameter to limit output of this command to the specified number of items.
`start <number>`	Include this optional parameter to start displaying the output of this command at the specified index number.

Example

The output of this command shows the management server profiles in the controller.

```
(host) (config) #show profile-list mgmt-server profile
Mgmt Config profile List
------------------------
Name          References  Profile Status
----          ----------  --------------
default-ale   0           Predefined (editable)
default-amp   0           Predefined (editable)
Total:2
```

Command History

This command was available in ArubaOS 6.3

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode.

show profile-list rf

```
show profile-list rf [ arm-profile | dot11a-radio-profile | dot11g-radio-profile |
   event-thresholds-profile | ht-radio-profile | optimization-profile ]
```

Description

Displays the status of all radio profiles.

Syntax

Parameter	Description
`arm-profile`	Details of Adaptive Radio Management (ARM) Profile.
`dot11a-radio-profile`	Details of AP radio settings for the 5GHz frequency band, including the ARM profile and the high-throughput (802.11n) radio profile.
`dot11g-radio-profile`	Details of AP radio settings for the 2.4 GHz frequency band, including the ARM profile and the high-throughput (802.11n) radio profile.
`event-thresholds-profile`	Details of events thresholds profile.
`ht-radio-profile`	Details of high-throughput AP radio settings
`optimization-profile`	Details of the RF optimization profile

Example

The output of this command shows status of ARM profile.

```
(host) # show profile-list rf arm-profile

Adaptive Radio Management (ARM) profile List
--------------------------------------------
Name     References  Profile Status
----     ----------  --------------
default  2

Total:1
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show profile-list wlan

```
show profile-list wlan
   bcn-rpt-req-profile
   client-wlan-profile
   dotllk-profile
   dot11r-profile
   edca-parameters-profile
   handover-trigger-profile
   hotspot
   ht-ssid-profile
   ssid-profile
   traffic-management-profile
   virtual-ap
   voip-cac-profile
   wmm-traffic-management-profile]
```

Description

Displays the status of WLAN profiles on the controller.

Syntax

Parameter	Description
bcn-rpt-req-profile	Shows a list of all Beacon Report Request profiles
client-wlan-profile	Shows a list of all client WLAN profiles
dot11r-profile	Shows a list of all 802.11r profiles
dot11k-profile	Show a list of all 802.11K profiles
edca-parameters-profile	Show a list of all enhanced distributed channel access (EDCA) profile for APs or for clients (stations)
handover-trigger-profile	Shows a list of all Handover Trigger profiles
hotspot	Hotspot/Passpoint configuration settings
advertisement-profile	Shows a list of all Advertisement profile
angp-3gpp-nwk-profile	Shows a list of all ANQP 3GPP Cellular Network profiles
anqp-domain-name-profile	Shows a list of all ANQP Domain Name profiles
anqp-ip-addr-avail-profile	Shows a list of all ANQP IP Address Availability profiles
anqp-nai-realm-profile	Shows a list of all ANQP NAI Realm profiles
anqp-nwk-auth-profile	Shows a list of all ANQP Network Authentication profiles
anqp-roam-cons-profile	Shows a list of all ANQP Roaming Consortium profiles

Parameter	Description
anqp-venue-name-profile	Shows a list of all ANQP Venue Name profiles
h2qp-conn-capability-profile	Shows a list of all H2QP Connection Capability profiles
h2qp-op-cl-profile	Shows a list of all H2QP Operating Class Indication profiles
h2qp-operator-friendly-profile	Shows a list of all H2QP Operator Friendly Name profiles
h2qp-wan-metrics-profile	Shows a list of all H2QP WAN Metrics profiles
hs2-profile	Shows a list of all Hotspot 2.0 profiles
ht-ssid-profile	Show a list of all high-throughput SSID profiles
traffic-management-profile	Show a list of all traffic management profiles
virtual-ap	Show a list of all the virtual AP profiles
voip-cac-profile	Show a list of all voice over IP (VoIP) call admission control (CAC) profiles
wmm-traffic-management-profile	Show a list of all WMM traffic management profiles

Example

The output of this command shows that the controller has a single ARM profile, “default”.

```
(host) # show profile-list rf arm-profile

Adaptive Radio Management (ARM) profile List
--------------------------------------------
Name     References  Profile Status
----     ----------  --------------
default  2

Total:1
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.3	The **dot11r** prarameter was introduced.
ArubaOS 6.4	The **hotspot** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show provisioning-ap-list

```
show provisioning-ap-list
```

Description

Displays the list of all APs that are in queue to be provisioned by the admin.

Syntax

No parameters.

Command History

Release	Modification
ArubaOS 3.4	Command introduced
ArubaOS 6.4.2.0	The output of this command displays the service tag of an AP.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show provisioning-params

```
show provisioning-params
```

Description

Displays the list of parameters and the values used to provision the APs.

Syntax

No parameters.

Example

The output of this command shows list of all provisioning parameters and their values.

```
(host) # show provisioning-params
AP provisioning
---------------
Parameter                       Value
---------                       -----
AP Name                         N/A
AP Group                        default
Location name                   N/A
SNMP sysLocation                N/A
Master                          N/A
Gateway                         N/A
Netmask                         N/A
IP Addr                         N/A
DNS IP                          N/A
Domain Name                     N/A
Server Name                     N/A
Server IP                       N/A
Antenna gain for 802.11a        N/A
Antenna gain for 802.11g        N/A
Use external antenna            No
Antenna for 802.11a             both
Antenna for 802.11g             both
IKE PSK                         N/A
PAP User Name                   N/A
PAP Password                    N/A
PPPOE User Name                 N/A
PPPOE Password                  N/A
PPPOE Service Name              N/A
PPPOE CHAP Secret               N/A
USB User Name                   N/A
USB Password                    N/A
USB Device Type                 any
USB Device Identifier           N/A
USB Dial String                 N/A
USB Initialization String       N/A
USB TTY device path             N/A
Mesh Role                       none
Installation                    default
Latitude                        N/A
Longitude                       N/A
Altitude                        N/A
Antenna bearing for 802.11a     N/A
Antenna bearing for 802.11g     N/A
Antenna tilt angle for 802.11a  N/A
```

```
Antenna tilt angle for 802.11g  N/A
Mesh SAE                        sae-default
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show rap-wml

```
show rap-wml [cache <server-name> | server | wired-mac <bssid-of-AP>]
```

Description

Displays the name and attributes of a MySQL database or a MySQL server.

Syntax

Parameter	Description
`cache`	Displays the cache of all lookups for a database server.
`servers`	Displays the database server state.
`wired-mac`	Displays the wired MAC discovered on traffic through the AP.

Example

The output of this command shows status of all database servers.

```
(host) # #show rap-wml servers

WML DB Servers
--------------
name  ip  type  user  password  db-name  cache  ageout(sec)  in-service
----  --  ----  ----  --------  -------  -----  -----------  ----------
WML DB Tables
-------------
server  db  table  column  timestamp-column  lookup-time(sec)  delimiter  query-count
------  --  -----  ------  ----------------  ----------------  ---------  -----------
Mesh SAE                        sae-default
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show references aaa authentication

```
show references aaa authentication {captive-portal <profile-name>}|{dot1x <profile-name>}|{mac
<profile-name>}|mgmt|stateful-dot1x|{stateful-ntlm <profile-name>}|vpn|wired|{wispr {profile-
name>} [page <number>] [start <number>]
```

Description

Show AAA profile references.

Syntax

Parameter	Description
`captive-portal <profile-name>`	Show the number of references to a captive-portal profile.
`dot1x <profile-name>`	Show the number of references to a 802.1X authentication profile.
`mac <profile-name>`	Show the number of references to a MAC authentication profile.
`mgmt <profile-name>`	Show the number of references to a management authentication profile.
`stateful-dot1x`	Show the number of references to the stateful 802.1X authentication profile.
`stateful-ntlm <profile-name>`	Show the number of references to the specified stateful NTLM authentication profile.
`vpn`	Show the number of references to VPN authentication.
`wired`	Show the number of references to wired authentication.
`wired`	Show the number of references to a wispr authentication.
`wispr <profile-name>`	Show the number of references to the specified WISPr authentication profile.
`page <number>`	Include this optional parameter to limit output of this command to the specified number of items.
`start <number>`	Include this optional parameter to start displaying the output of this command at the specified index number.

Example

Use this command to show where a specified AAA profile has been applied. The output of the example shown below indicates that the aaa profile **default-dot1x** contains a single reference to the 802.1X authentication profile **default**.

```
(host) #show references aaa authentication dot1x default
```

```
References to 802.1X Authentication Profile "default"
-----------------------------------------------------
Referrer                                          Count
--------                                          -----
aaa profile "default-dot1x" authentication-dot1x  1
Total References:1
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4.1	The **stateful-ntlm** and **wispr** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references aaa authentication-server

```
show references aaa authentication-server {ldap <ldap-server-name>}|{radius <radius-server-
name>}|{tacacs <tacacs-server-name>} [page <number>] [start <number>]
```

Description

Display information about AAA authentication servers.

Syntax

Parameter	Description
`ldap <ldap-server-name>`	Show the number of server groups that include references to the specified LDAP server.
`radius <radius-server-name>`	Show the number of server groups that include references to the specified RADIUS server.
`tacacs <radius-server-name>`	Show the number of server groups that include references to the specified TACACS server.
`page <number>`	Include this parameter to limit output of this command to the specified number of items.
`start <number>`	Include this parameter to start displaying the output of this command at the specified index number.

Example

Issue this command to show the AAA server groups that include references to the specified server. The example below shows that two server groups, **default** and **rad,** each include a single reference to the radius server **rad01**.

```
(host) #show references aaa authentication-server radius rad01

References to RADIUS Server "rad01"
-----------------------------------
Referrer                                Count
--------                                -----
aaa server-group "default" server_group  1
aaa server-group "rad" server_group      1
Total References:2
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references aaa profile

```
show references aaa profile <profile-name>
```

Description

Show references to an AAA Profile.

Syntax

Parameter	Description
`profile <profile-name>`	Name of an AAA profile for which you want to view references.

Example

Issue this command to show the wlan virtual AP profiles that include references to the specified AAA profile. The example below shows that seven different virtual AP profiles include a single reference to the AAA profile **default**.

```
(host) #References to AAA Profile "default"
-----------------------------------
Referrer                                              Count
--------                                              -----
wlan virtual-ap "1.0.0_corporateHQ-wpa2" aaa-profile   1
wlan virtual-ap "110.0.corporateHQ-wpa2" aaa-profile             1
wlan virtual-ap "default" aaa-profile                  1
wlan virtual-ap "corporateHQ-vocera" aaa-profile       1
wlan virtual-ap "corporateHQ-voip-wpa2" aaa-profile    1
wlan virtual-ap "Test123" aaa-profile                  1
wlan virtual-ap "branch12" aaa-profile                 1
Total References:7
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references aaa rfc-3576-server

```
show references aaa rfc-3576-server <server-ip>{page<page> start<start>}
```

Description

Show information about the configuration profiles that reference a specific RFC 3576 server.

Syntax

Parameter	Description
`<server-ip>`	IP address of an RFC-3576 server
`page <page>`	Include this parameter to limit output of this command to the specified number of items.
`start <start>`	Include this parameter to start displaying the output of this command at the specified index number

Example

This first example shows that the **default** AAA profile and the AirGroup CPPM-server AAA profile reference an RFC 3567 Server with the IP address 10.1.1.41.

```
(host) #(host) (config) #show references aaa rfc-3576-server 10.1.1.41
References to RFC 3576 Server "10.1.1.41"
-----------------------------------------
Referrer                                  Count
--------                                  -----
aaa profile "default" rfc-3576-server     1
airgroup cppm-server aaa rfc-3576-server  1
Total References:2
```

Related Commands

Command	Description	Mode
aaa rfc-3576-server	Define RFC 3576 server profiles.	Config mode

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show references aaa server-group

```
show references aaa server-group {<sg-name>[page][start]}
```

Description

Show references to a server group.

Syntax

Parameter	Description
`server-group <sg-name>`	Name of the server group for which you want to show references
`page <number>`	Include this parameter to limit output of this command to the specified number of items.
`start <number>`	Include this parameter to start displaying the output of this command at the specified index number.

Example

Issue this command to display a list of AAA profiles that include references to the specified server group.

```
(host) #show references aaa server-group default

References to Server Group "default"
------------------------------------
Referrer                                                Count
--------                                                -----
aaa profile "aircorp-office-ssid" mac-server-group      1
aaa profile "amigopod-guest" mac-server-group           1
aaa profile "default" mac-server-group                  1
aaa profile "default-airwave-office" mac-server-group   1
aaa profile "defaultcorporate" mac-server-group         1
aaa profile "defaultcorporate-no-okc" mac-server-group  1
aaa profile "defaultcorporate-okc" mac-server-group     1
aaa profile "default-dot1x" mac-server-group            1
aaa profile "default-India" mac-server-group            1
aaa profile "default-india-hotel" mac-server-group      1
aaa profile "default-India-split" mac-server-group      1
aaa profile "voip-psk" mac-server-group                 1
aaa profile "default-dot1x-psk" mac-server-group        1
aaa profile "default-mac-auth" mac-server-group         1
aaa profile "default-open" mac-server-group             1
aaa profile "default-xml-api" mac-server-group          1
Total References:16
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references activate-service-whitelist

```
show references activate-service-whitelist <server-ip>{page<page> start<start>}
```

Description

Displays activate service whitelist profile references.

Syntax

Parameter	Description
`activate-service-whitelist`	Name of the activate service whitelist profile for which you want to show references
`page <number>`	Include this parameter to limit output of this command to the specified number of items.
`start <number>`	Include this parameter to start displaying the output of this command at the specified index number.

Example

Issue this command to display a list of activate service whitelist profiles that include references to the specified profile

```
(host) #show references activate-service-whitelist
References to activate-service-whitelist
----------------------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references airgroup

```
show references airgroup
cppm-server aaa  [page <number>] [start <number>]
```

Description

Display information about AAA authentication servers.

Syntax

Parameter	Description
`cppm-server`	Specifies the ClearPass Policy Server information.
`aaa`	Specifies the AAA parameters for AirGroup.
`page <number>`	Include this optional parameter to limit output of this command to the specified number of items.
`start <number>`	Include this optional parameter to start displaying the output of this command at the specified index number.

Example

Use this command to show the AAA server groups that include references to the AirGroup.

```
References to Airgroup AAA profile
----------------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references ap

```
show references ap
   enet-link-profile <profile-name>
   mesh-cluster-profile <profile-name>
   mesh-ht-ssid-profile <profile-name>
   mesh-radio-profile <profile-name>
   regulatory-domain-profile <profile-name>
   system-profile <profile-name>
   wired-ap-profile <profile-name>
   page <number>
   start <number>
```

Description

Show the number of references to a specific AP profile.

Syntax

Parameter	Description
`enet-link-profile <profile-name>`	Show AP groups that include a references to this Ethernet link profile.
`mesh-cluster-profile <profile-name>`	Show AP groups that include a references to this mesh cluster profile.
`mesh-ht-ssid-profile <profile-name>`	Show AP groups that include a references to this mesh high-throughput SSID profile.
`mesh-radio-profile <profile-name>`	Show AP groups that include a references to this mesh radio profile.
`regulatory-domain-profile <profile-name>`	Show AP groups that include a references to this regulatory domain profile.
`system-profile <profile-name>`	Show AP groups that include a references to this system profile.
`wired-ap-profile <profile-name>`	Show AP groups that include a references to this wired AP profile.
`page <number>`	Include this optional parameter to limit output of this command to the specified number of items.
`start <number>`	Include this optional parameter to start displaying the output of this command at the specified index number.

Example

The example below shows that 10 different AP groups include links to the AP Ethernet link profile **Default**. These 10 AP groups reference the **Default** Ethernet link profile for both their Ethernet 0 and Ethernet 1 interfaces, for a total of 20 references altogether.

```
(host)#show references ap enet-link-profile default

References to AP Ethernet Link profile "default"
------------------------------------------------
Referrer                                    Count
--------                                    -----
ap-group "10.0.0" enet0-profile             1
ap-group "10.0.0" enet1-profile             1
ap-group "corp" enet0-profile               1
ap-group "corp" enet1-profile               1
ap-group "Corp_AM_Ch1" enet0-profile        1
ap-group "Corp_AM_Ch1" enet1-profile        1
ap-group "Corp_AM_Ch6" enet0-profile        1
ap-group "Corp_AM_Ch6" enet1-profile        1
ap-group "corpTest" enet0-profile           1
ap-group "corpTest" enet1-profile           1
ap-group "default" enet0-profile            1
ap-group "default" enet1-profile            1
ap-group "India_Local" enet0-profile        1
ap-group "India_Local" enet1-profile        1
ap-group "ops" enet0-profile                1
ap-group "ops" enet1-profile                1
ap-group "voip-test" enet0-profile          1
ap-group "voip-test" enet1-profile          1
ap-group "voip-test-nokia" enet0-profile    1
ap-group "voip-test-nokia" enet1-profile    1
Total References:20
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references app

```
show references app
   skype4b traffic-control <profile-name>
```

Description

Show the number of references to a specific Skype4b traffic control prioritization profile.

Syntax

Parameter	Description
`skype4b traffic-control <profile-name>`	Show the number of references to a specific Skype4b traffic control prioritization profile.
`page <number>`	Include this optional parameter to limit output of this command to the specified number of items.
`start <number>`	Include this optional parameter to start displaying the output of this command at the specified index number.

Example

The example below shows the user roles that reference the skype4b traffic-control profile **Default**.

```
References to Traffic Control Prioritization Profile "default"
--------------------------------------------------------------
Referrer                                      Count
--------                                      -----
user-role "default" traffic-control-profile   1
Total References:1
```

Command History

Version	Description
ArubaOS 6.3	Command introduced.
ArubaOS 6.4.4.0	The **lync** parameter is deprecated, and is replaced by the **skype4b** parameter

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references guest-access-email

```
show references guest-access-email [page <number>] [start <number>]
```

Description

Show references to the global guest access email profile.

Syntax

Parameter	Description
`page <number>`	Include this optional parameter to limit output of this command to the specified number of items.
`start <number>`	Include this optional parameter to start displaying the output of this command at the specified index number.

Example

```
(host) #show references guest-access-email

References to Guest-access Email Profile
----------------------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references ha

```
show references ha group-profile <profile-name> {page<page> start<start>}
```

Description

Displays HA group profile references.

Syntax

Parameter	Description
`group-profile <profile-anme>`	Name of the HA group profile for which you want to show references
`page <number>`	Include this parameter to limit output of this command to the specified number of items.
`start <number>`	Include this parameter to start displaying the output of this command at the specified index number.

Example

Issue this command to display a list of references for a specific HA group profile.

```
(host) (config) #show references ha group-profile newgroup
References to HA group information "newgroup"
---------------------------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references ids

```
show references ids
   dos-profilegeneral-profile
   general-profile
   impersonation-profile
   profile
   rate-thresholds-profile
   signature-matching-profile
   signature-profile
   unauthorized-device-profile
```

Description

Displays IDS profile references.

Syntax

Parameter	Description
`dos-profilegeneral-profile`	Show references to an IDS Denial Of Service Profile
`general-profile`	Show references to an IDS General Profile
`impersonation-profile`	
`profile`	
`rate-thresholds-profile`	Show references to an IDS Rate Thresholds Profile
`signature-matching-profile`	Show references to an IDS Signature Matching Profile
`signature-profile`	Show references to an IDS Signature Profile
`unauthorized-device-profile`	Show references to an IDS Signature Profile

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references ifmap cppm

```
show references ifmap cppm {page<page> start<start>}
```

Description

Displays the CPPM IF-MAP references.

Syntax

Parameter	Description
`ifmap cppm`	Shows references to the CPPM IF-MAP profile.
`page <number>`	Include this parameter to limit output of this command to the specified number of items.
`start <number>`	Include this parameter to start displaying the output of this command at the specified index number.

Example

Issue this command to display a list of references for the CPPM IF-MAP profile.

```
(host) #show references ifmap cppm
References to CPPM IF-MAP Profile
---------------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references license profile

```
show references license profile {page<page> start<start>}
```

Description

Displays the license provisioning profile references.

Syntax

Parameter	Description
`license`	Shows references to the license provisioning profile.
`profile`	Enables or disables centralized licensing.
`page <number>`	Include this parameter to limit output of this command to the specified number of items.
`start <number>`	Include this parameter to start displaying the output of this command at the specified index number.

Example

Issue this command to display a list of references for the license provisioning profile.

```
(host) #show references license profile
References to License provisioning profile
------------------------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references mgmt-server profile

```
show references mgmt-server profile <profile_name>
```

Description

Shows the management server configuration profiles.

Syntax

Parameter	Description
`mgmt-server profile`	Specifies the management profile name.
`page <number>`	Include this optional parameter to limit output of this command to the specified number of items.
`start <number>`	Include this optional parameter to start displaying the output of this command at the specified index number.

Example

```
(host) (config) #show references mgmt-server profile default
References to Mgmt Config profile "default"
-------------------------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references papi-security

```
show references papi-security [page <number>] [start <number>]
```

Description

Show references to a PAPI security profile.

Syntax

Parameter	Description
`page <number>`	Include this optional parameter to limit output of this command to the specified number of items.
`start <number>`	Include this optional parameter to start displaying the output of this command at the specified index number.

Example

```
(host) #show references papi-security

References to PAPI Security Profile
-----------------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references rf

```
show references rf
   dot11a-radio-profile <profile-name>
   dot11g-radio-profile <profile-name>
   event-thresholds-prof <profile-name>
   ht-radio-profile <profile-name>
   optimization-profile <profile-name>
```

Description

Show RF profile references.

Syntax

Parameter	Description
`dot11a-radio-profile`	Show references to a 802.11a radio profile
`dot11g-radio-profile`	Show references to a 802.11g radio profile
`event-thresholds-prof`	Show references to an RF Event Thresholds Profile
`ht-radio-profile`	Show references to a High-throughput radio profile
`optimization-profile`	Show references to an RF Optimization Profile

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references upgrade-profile

```
show references upgrade-profile {page<page> start<start>}
```

Description

Displays the upgrade profile references.

Syntax

Parameter	Description
`upgrade-profile`	Shows references to the upgrade profile.
`page <number>`	Include this parameter to limit output of this command to the specified number of items.
`start <number>`	Include this parameter to start displaying the output of this command at the specified index number.

Example

Issue this command to display a list of references for the upgrade profile.

```
(host) #show references upgrade-profile
References to Upgrade Profile
-----------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references user-role

```
show references user-role <role_name>
```

Description

Show access rights for user role.

Syntax

Parameter	Description
<role_name>	The role name assigned to a user.

Example

```
(host) #show references user-role guest

References to User Role "guest"
-------------------------------
aaa profile "airwave-office-ssid" mac-default-role
aaa profile "amigopod-guest" mac-default-role
aaa profile "corp1344-voip" mac-default-role
aaa profile "default" mac-default-role
aaa profile "default-airwave-office" mac-default-role
aaa profile "default-corp1344" mac-default-role
aaa profile "default-corp1344-no-okc" mac-default-role
aaa profile "default-corp1344-okc" mac-default-role
aaa profile "default-dot1x" mac-default-role
aaa profile "default-dot1x-psk" mac-default-role
aaa profile "default-dot1x-psk" dot1x-default-role
aaa profile "default-India" mac-default-role
aaa profile "default-india-hotel" mac-default-role
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references web-server

```
show references web-server [page <number>] [start <number>]
```

Description

Show the Web server configuration references.

Syntax

Parameter	Description
`page <number>`	Include this optional parameter to limit output of this command to the specified number of items.
`start <number>`	Include this optional parameter to start displaying the output of this command at the specified index number.

Example

```
(host) #show references web-server

References to Web Server Configuration
--------------------------------------
Referrer  Count
--------  -----
Total References:0
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show references wlan

```
show references wlan
   bcn-rpt-req-profile
   client-wlan-profile
   dot11k-profile <profile-name>
   dot11r-profile <profile-name>
   edca-parameters-profile <profile-name>
   handover-trigger-profile
   hotspot {advertisement-profile}|{anqp-3gpp-nwk-profile <profile-name>}|{anqp-domain-name-
      profile <profile-name>}|{anqp-ip-addr-avail-profile <profile-name>}|{anqp-nai-realm-
      profile <profile-name>}|{anqp-nwk-auth-profile <profile-name>}|{anqp-roam-cons-profile
      <profile-name>}|{anqp-venue-name-profile <profile-name>}|{h2qp-conn-capability-profile
      <profile-name>}|{h2qp-op-cl-profile <profile-name>}|{h2qp-operator-friendly-name-profile
      <profile-name>}|{h2qp-wan-metrics-profile  <profile-name>}|{hs2-profile  <profile-name>}
      |ht-ssid-profile <profile-name>
   ht-ssid-profile
   rrm-ie-profile
   ssid-profile <profile-name>
   traffic-management-pr <profile-name>
   tsm-req-profile
   virtual-ap <profile-name>
   voip-cac-profile <profile-name>
   wmm-traffic-management
```

Description

Show information about the different configuration profiles that reference a specific WLAN profile.

Syntax

Parameter	Description
`bcn-rpt-req-profile`	Shows references to a Beacon Report Request profile.
`client-wlan-profile`	Shows references for the Client WLAN profile.
`dot11k-profile <profile-name>`	Shows references to a 802.11k profile.
`dot11r-profile <profile-name>`	Shows references to a 802.11r profile.
`edca-parameters-profile <profile-name>`	Shows references to an EDCA parameters profile.
`handover-trigger-profile`	Show references to a Handover Trigger profile.
`hotspot`	Shows references to one of the following hotspot profile types:

Parameter	Description
	• advertisement-profile • anqp-3gpp-nwk-profile • anqp-domain-name-profile • anqp-ip-addr-avail-profile • anqp-nai-realm-profile • anqp-nwk-auth-profile • anqp-roam-cons-profile • anqp-venue-name-profile • h2qp-conn-capability-profile • h2qp-op-cl-profile • h2qp-operator-friendly-name-profile • h2qp-wan-metrics-profile • hs2-profile
`ht-ssid-profile <profile-name>`	Shows references to a high-throughput SSID profile.
`rrm-ie-profile`	Shows references to an RRM IE profile.
`ssid-profile <profile-name>`	Shows references to an SSID management profile.
`traffic-management-pr <profile-name>`	Shows references to a traffic management profile.
`virtual-ap <profile-name>`	Shows references to a virtual AP profile.
`tsm-req-profile`	Show references to a TSM Report Request profile.
`voip-cac-profile <profile-name>`	Shows references to a VOIP Call Admission Control profile.
`wmm-traffic-management`	Shows references to a WMM Traffic management profile.

Example

The following example shows that two different WLAN hotspot 2.0 profiles reference the **default** WLAN hotspot advertisement profile.

```
(host) #show references wlan hotspot advertisement-profile default
References to Advertisement Profile "default"
-----------------------------------------
Referrer                                                  Count
--------                                                  -----
wlan hotspot hs2-profile "deploytest" advertisement-profile  1
wlan hotspot hs2-profile "default" advertisement-profile     1
```

```
Total References:2
```

Command History

	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4	The **hotspot** parameter was added.

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master and local controllers

show rf am-scan-profile

```
show rf am-scan-profile [<profile-name>]
```

Description

Display the Air Monitor (AM) scanning profile list. Optionally display parameter and values of a specified Air Monitor profile.

Syntax

Parameter	Description
<profile-name>	Name of this instance of the profile.

Usage Guidelines

Enter the basic show command to view a list of profiles, the number of profiles and the profile status. For example:

```
(host) #show rf am-scan-profile

AM Scanning profile List
------------------------
Name     References  Profile Status
----     ----------  --------------
default  9
north    0

Total:2
```

Example

In the example above, their are two profile names; default and north. The Reference column indicates the number of references to this profile name. The Profile Status column is blank unless the profile is predefined.

Optionally, you can enter a profile name to view the parameters for that profile. For example:

```
(host) #show rf am-scan-profile default

AM Scanning profile "default"
-----------------------------
Parameter                                 Value
---------                                 -----
Scan Mode                                 all-reg-domain
Dwell time: Active channels               500
Dwell time: Regulatory Domain channels    250
Dwell time: non-Regulatory Domain channels  200
Dwell time: Rare channels                 100
```

The explanation of the display output is described in the table below.

Parameter	Description
Scan-mode	The scanning mode for the radio
all-reg-domain	Scan channels in all regulatory domain
rare	Scan all channels (all regulatory domains and rare channels)
reg-domain	Scan channels in the APs regulatory domain
Dwell time: Active channels	Dwell time (in ms) for channels where there is wireless activity
Dwell time: Regulatory Domain channels	Dwell time (in ms) for AP's Regulatory domain channels
Dwell time: non-Regulatory Domain channels	Dwell time (in ms) for channels not in the APs regulatory domain
Dwell time: Rare channels	Dwell time (in ms) for rare channels

Command History

Release	Modification
ArubaOS 6.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All Platforms	RFProtect	Configuration Mode (config)

show rf arm-rf-domain-profile

```
show rf arm-rf-domain profile
```

Description

This profile contains a non-editable key defined by the master controller, and used to sign over-the air (OTA) ARM updates exchanged between APs.

Syntax

No parameters

Example

The output of this command displays the OTA key defined by the master controller.

```
(host) # #show rf arm-rf-domain-profile

ARM RF domain
-------------
Parameter          Value
---------          -----
ARM RF domain key  27f71ad66f28c374a8904b4a82177e2c
```

Command History

Release	Modification
ArubaOS 6.2	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show rf arm-profile

```
show rf arm-profile [<profile>]
```

Description

Show an Adaptive Radio Management (ARM) profile.

Syntax

Parameter	Description
<profile>	Name of an ARM profile.

Usage Guidelines

Issue this command without the **<profile>** parameter to display the entire ARM profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has five configured ARM profiles. The **References** column lists the number of other profiles with references to the ARM profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) # show rf arm-profile

Adaptive Radio Management (ARM) profile List
--------------------------------------------
Name                    References  Profile Status
----                    ----------  --------------
airwave                 2
default                 4
default-AP85            2
no-scanning             1
Wireless-rf-profile                     1

Total:5.
```

This example displays the configuration settings for the profile **Wireless_rf_profile**.

```
(host) #show rf arm-profile Wireless_rf_profile

Adaptive Radio Management (ARM) profile "Wireless_rf_profile"
-------------------------------------------------------------------------------------------------
----
Parameter                                                                        Value
---------                                                                        -----
Assignment                                                                      single-band
Allowed bands for 40MHz channels                                                a-only
80MHz support                                                                   Enabled
160MHz-support                                                                  None
Client Aware                                                                    Enabled
Max Tx EIRP                                                                     127 dBm
Min Tx EIRP                                                                     9 dBm
Rogue AP Aware                                                                  Disabled
```

```
Scan Interval                                                                  10 sec
Aggressive scanning                                                            true
Active Scan                                                                    Disabled
ARM Over the Air Updates                                                       Enabled
Scanning                                                                       Enabled
Multi Band Scan                                                                Enabled
VoIP Aware Scan                                                                Enabled
Power Save Aware Scan                                                          Disabled
Video Aware Scan                                                               Enabled
Ideal Coverage Index                                                           10
Acceptable Coverage Index                                                      4
Free Channel Index                                                             25
Interfering AP Weight                                                          25 %
Backoff Time                                                                   240 sec
Error Rate Threshold                                                           50 %
Error Rate Wait Time                                                           30 sec
Channel Quality Aware Arm                                                      Disabled
Channel Quality Threshold                                                      70 %
Channel Quality Wait Time                                                      120 sec
Minimum Scan Time                                                              8
Load aware Scan Threshold                                                      1250000 Bps
Mode Aware Arm                                                                 Disabled
Scan Mode                                                                      all-reg-domain
Client Match                                                                   Enabled
Client Match report interval (sec)                                             30
Allows Client Match to Automatically Clear Unsteerable Clients after Ageout    Enabled
Client Match Unsteerable Client Ageout Interval                                2 Days 0 Hours
Client Match Band Steering G Max Signal (-dBm)                                 45
Client Match Band Steering A Min Signal (-dBm)                                 75
Client Match Sticky Client Check Interval (sec)                                3
Client Match Sticky Client Check SNR (dB)                                      25
Client Match SNR Delta Bound(dB)                                               10
Client Match Sticky Min Signal                                                 70
Client Match Steering Timeout (sec)                                            10
Client Match Load Balancing Threshold (%)                                      20
Client Match IOS Steering Backoff Interval (sec)                               300
Client Match VBR Stale Entry Age (sec)                                         120
Client Match Max Steering Failures                                             2
Client Match Load Balancing Client Threshold                                   10
Client Match Load Balancing SNR Threshold (dB)                                 77
Client Match Load Balancing Signal Delta Bound (dB)                            5
Client Match 802.11v BSS Transition Management                                 Enabled
Dynamic Bandwidth Switch                                                       Enabled
Dynamic Bandwidth Switch Wait Time (sec)                                       30
Dynamic Bandwidth Switch Triggering Indicator CCA ibss Threshold (%)           10
Dynamic Bandwidth Switch Triggering Indicator Beacon Failed Threshold          30
Dynamic Bandwidth Switch Triggering Indicator CCA intf Threshold (%)           30
Dynamic Bandwidth Switch Clear Time (min)                                      30
Client Match MU Client threshold                                               15
Client Match MU SNR threshold (dB)                                             30
```

The output of this command includes the following parameters:

Parameter	Description
Assignment	Displays the current ARM channel/power assignment mode.

Parameter	Description
Allowed bands for 40MHz channels	Shows if 40 MHz mode of operation is allowed on the 5 GHz (802.11a) or 2.4 GHz (802.11b/g) frequency band only, on all frequency bands, or on neither frequency band.
80MHz support	Displays the status if 80 MHz channels can be used in the 5 GHz frequency band on APs that support 802.11ac.
160MHz-support	Displays the channel bandwidth mode on the 160 MHz frequency.
Client Aware	Shows if the client aware feature is enabled or disabled. When enabled, the AP does not change channels when there are active clients.
Max Tx Power	The highest transmit power levels for the AP, from 0-30 dBm in 3 dBm increments. Higher power level settings may be constrained by local regulatory requirements and AP capabilities. In the event that an AP is configured for a Max Tx Power setting it cannot support, this value will be reduced to the highest supported power setting.
Min Tx Power	The lowest transmit power levels for the AP, from 0-30 dBm, in 3 dBm increments. Note that power settings will not change if the Assignment option is set to disabled or maintain.
Multi Band Scan	If enabled, single-radio APs will try to scan across bands for rogue AP detection.
Rogue AP Aware	If enabled, Dell APs may change channels to contain off-channel rogue APs with active clients. This security features allows APs to change channels even if the Client Aware setting is disabled. This setting is disabled by default, and should only be enabled in high-security environments where security requirements are allowed to consume higher levels of network resources. You may prefer to receive Rogue AP alerts via SNMP traps or syslog events.
Scan Interval	If Scanning is enabled, the Scan Interval defines how often the AP will leave its current channel to scan other channels in the band. Off-channel scanning can impact client performance. Typically, the shorter the scan interval, the higher the impact on performance. If you are deploying a large number of new APs on the network, you may want to lower the Scan Interval to help those APs find their optimal settings more quickly. Raise the Scan Interval back to its default setting after the APs are functioning as desired.
Aggressive Scanning	When the aggressive scanning feature is enabled, an AP radio with no clients will scan channels every second.
Active Scan	If enabled, the AP initiates active scanning via probe request. This option elicits more information from nearby APs, but also creates additional management traffic on the network. Active Scan is disabled by default, and should not be enabled except under the direct supervision of Dell Support.

Parameter	Description
Scanning	Shows if the AP has enabled or disabled AP scanning of other channels.
Scan Time	The amount of time, in milliseconds, an AP will drift out of the current channel to scan another channel.
VoIP Aware Scan	Shows if Dell's VoIP Call Admission Control (CAC) prevents any single AP from becoming congested with voice calls. If CAC is enabled, you should also enable VoIP Aware Scan in the ARM profile, so the AP will not attempt to scan a different channel if one of its clients has an active VoIP call.
Power Save Aware Scan	When enabled, the AP will not scan if Power Save is active.
Video Aware Scan	If Video Aware Scan is enabled in the ARM profile, the AP will not attempt to scan a different channel if one of its clients has an active video session.
Ideal Coverage Index	The coverage that the AP should try to achieve on its channel. The denser the AP deployment, the lower this value should be.
Acceptable Coverage Index	The minimal coverage that the AP should try to achieve on its channel. The denser the AP deployment, the lower this value should be.
Free Channel Index	The difference in the interference index between the new channel and current channel must exceed this value for the AP to move to a new channel. The higher this value, the lower the chance an AP will move to the new channel.
Interfering AP Weight	Weight of interfering APs in interference index calculation.
Backoff Time	Time, in seconds, an AP backs off after requesting a new channel or power level.
Error Rate Threshold	The percentage of errors in the channel that triggers a channel change.
Error Rate Wait Time	Time, in seconds, that the error rate has to maintain or surpass the error rate threshold before it triggers a channel change.
Channel Quality Aware Arm	Shows if ARM changes are based upon an internally calculated channel quality metric. When this feature is disabled, ARM initiates channel changes based on thresholds defined in this profile, and chooses the channel based on the calculated interference index value. Default: Disabled.
Channel Quality Threshold	Displays the channel quality percentage below which ARM initiates a channel change.
Channel Quality Wait Time	If channel quality is below the specified channel quality threshold for this wait time period, ARM initiates a channel change.

Parameter	Description
Minimum Scan Time	Time, in seconds, that a channel must be scanned before it is considered for assignment.
Load aware Scan Threshold	The traffic throughput level an AP must reach before it stops scanning, in bytes/second. A value of 0 to disables this feature.
Mode Aware Arm	If enabled, ARM will turn APs into Air Monitors (AMs) if it detects higher coverage levels than necessary. This helps avoid higher levels of interference on the WLAN. Although this setting is disabled by default, you may want to enable this feature if your APs are deployed in close proximity (e.g. less than 60 feet apart).
Scan Mode	This parameter defines the scan mode for the AP. • all-reg-domain: The AP scans channels within all regulatory domains. This is the default setting. • reg-domain:Limit the AP scans to just the regulatory domain for that AP.
Client Match	The client match feature helps optimize network resources by balancing clients across channels, regardless of whether the AP or the controller is responding to the wireless clients' probe requests. If enabled, the controller compares whether or not an AP has more clients than its neighboring APs on other channels. If an AP's client load is at or over a predetermined threshold as compared to its immediate neighbors, or if a neighboring Dell AP on another channel does not have any clients, load balancing will be enabled on that AP. This feature is enabled by default
Client Match report interval (sec)	This interval defines how often an AP sends an updated client probe report to the controller. Each client probe report contains a list of MAC addresses for clients that have been active in the last two minutes, and the AP radio SNR values seen by those clients.
Allows Client Match to Automatically Clear Unsteerable Clients after Ageout	When client match and the client match unsteerable client ageout features are enabled, the controller periodically sends APs that are not a desired AP match for a client in a list of unsteerable clients. These lists contain a list of MAC addresses for up to 128 clients that should not be steered to that AP.
Client Match Unsteerable Client Ageout Interval	The client entries in an unsteerable client list remain in effect for the interval defined by this parameter before they age out.
Client Match Band Steering G Max Signal (-dBm)	Maximum signal level of the G band radio that can trigger a Client Match band steer move (-dBm)
Client Match Band Steering A Min Signal (-dBm)	Minimum signal level required for the targeted A band radio in a Client Match band steer move (-dBm).
Client Match Sticky Client Check Interval (sec)	Frequency at which the AP checks for client's received SNR values. If the SNR value drops below the threshold defined by the **cm-sticky-snr** parameter for three consecutive check intervals, that client may be moved to an different AP.

Parameter	Description
Client Match Sticky Client Check SNR (dB)	If the client's received signal strength indicator (RSSI) is above this signal-to-noise ratio (SNR) threshold, that client will be allowed to stay associated to its current AP. If the client's received signal strength is below this threshold, it may be moved to a different AP.
Client Match SNR Delta Bound(dB)	A client triggered to move to a different AP may consider an AP radio a better match if the client detects that the signal from the AP radio is stronger than its current radio by the dB level defined by the **cm-sticky-snr-thresh** parameter, and the candidate radio also has a minimum signal level defined by the **cm-sticky-min-signal** parameter.
Client Match Sticky Min Signal	A client triggered to move to a different AP may consider an AP radio a better match if the client detects that the signal from the candidate AP radio is at or higher than the minimum signal level defined by this parameter and the candidate radio has a higher signal strength than the radio to which the client is currently associated. (The required improvement in signal strength can be defined using the **cm-sticky-snr-delta** command.)
Client Match Steering Timeout (sec)	When a client is steered from one AP to a more desirable AP, the steer timeout feature helps facilitate the move by defining the amount of time that any APs to which the client should not associate will not respond to the AP.
Client Match Load Balancing Threshold (%)	When the client match feature is enabled, clients may be steered from a highly utilized channel on an AP to a channel with fewer clients. If a channel on an AP radio has this percentage fewer clients than another channel supported by the client, the client match feature may move clients from the busier channel to the channel with fewer clients.
Client Match IOS Steering Backoff Interval (sec)	Client Match attempts only one Apple iOS steer every backoff interval (in seconds).
Client Match VBR Stale Entry Age (sec)	The controller maintains client match data for up to 4096 clients showing the detected SNR values for up to 16 candidate APs per client. This table is periodically updated as APs send client probe reports to the controller. This parameter defines the amount of time that the controller should retain client match data from each client probe report.
Client Match Max Steering Failures	The controller keeps track of the number of times the client match feature failed to steer a client to a different radio, and the reason that each steer attempt was triggered. If the client match feature attempts to steer a client to a new radio multiple consecutive times for the same reason but client steering fails each time, the controller notifies the AP to mark the client as unsteerable for that specific trigger. This parameter defines the maximum allowed number of client match steering fails with the same trigger before the client is marked as unsteerable for that trigger.
Client Match Load Balancing Client Threshold	If an AP radio has fewer clients than the client match load balancing threshold defined by this parameter, the AP will not participate in load balancing.

Parameter	Description
Client Match Load Balancing SNR Threshold (dB)	Clients must detect a SNR from an underutilized AP radio at or above this threshold before the client match feature considers load balancing a client to that radio.
Client Match Load Balancing Signal Delta Bound (dB)	Client match will not move a client to a new radio if the signal strength of the target AP is this dB value lower than the radio to which the client is currently associated. This parameter works differently than the **cm-lb-snr-thresh** value, which imposes a definite value on the target AP's signal-to-noise radio. the **cm-lb-signal-delta** parameter imposes a relative constraint based upon the signal strength of the radio to which the client is currently associated.
Client Match 802.11v BSS Transition Management	Client Match steers using 802.11v BSS Transition Management.
Dynamic Bandwidth Switch	ARM dynamic 80MHz/40MHz bandwidth switch when 80MHz assignment is enabled.
Dynamic Bandwidth Switch Wait Time (sec)	Minimum time in seconds during which dynamic bandwidth switch indicators have to be true to trigger a 80MHz to 40MHz bandwidth change.
Dynamic Bandwidth Switch Triggering Indicator CCA ibss Threshold (%)	Dynamic Bandwidth Switch wait time window starts when load aware scan rejects increases and CCA ibss is below the threshold.
Dynamic Bandwidth Switch Triggering Indicator Beacon Failed Threshold	Dynamic Bandwidth Switch beacon failed indicator is true if beacon failed num is no less than this threshold during the wait time window.
Dynamic Bandwidth Switch Triggering Indicator CCA intf Threshold (%)	Dynamic Bandwidth Switch CCA intf indicator is true if CCA intf is no less than this threshold during the wait time window.
Dynamic Bandwidth Switch Clear Time (min)	Dynamic Bandwidth Switch back to 80MHz channel after the clear time in minutes if currently there is no high volume of traffic.
Client Match MU Client threshold	Total number of clients that can be associated to a radio, in which the radio can still be considered for multi-user (MU) steering.
Client Match MU SNR threshold (dB)	Minimum SNR value of a client on the target radio, in which the radio can still be considered for multi-user (MU) steering.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.3	The **noise-wait-time**, and **noise-threshold** parameters were deprecated, and the support for the following parameters were introduced. • 80MHz support • Aggressive scanning • Client match
ArubaOS 6.5	The following parameters were introduced as part of the output of this command: • **160MHz-support** • **Interfering AP Weight** • **Dynamic Bandwidth Switch** • **Dynamic Bandwidth Switch Wait Time (sec)** • **Dynamic Bandwidth Switch Triggering Indicator CCA ibss Threshold (%)** • **Dynamic Bandwidth Switch Triggering Indicator Beacon Failed Threshold** • **Dynamic Bandwidth Switch Triggering Indicator CCA intf Threshold (%)** • **Dynamic Bandwidth Switch Clear Time (min)**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show rf dot11a-radio-profile

```
show rf dot11a-radio-profile [<profile>]
```

Description

Show an 802.11a Radio profile.

Syntax

Parameter	Description
<profile>	Name of an 802.11a profile.

Usage Guidelines

Issue this command without the **<profile>** parameter to display the entire 802.11a Radio profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has three configured 802.11a Radio profiles. The **References** column lists the number of other profiles with references to the 802.11a Radio profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) # show rf dot11a-radio-profile
802.11a radio profile List
--------------------------
Name          References  Profile Status
----          ----------  --------------
default       18
default-AP85  1
test          1

Total:3.
```

This example displays the configuration settings for the profile default.

```
(host) # show rf dot11a-radio-profile default
802.11a radio profile "default"
Parameter                                   Value
---------                                   -----
Radio enable                                Enabled
Mode                                        ap-mode
High throughput enable (radio)              Enabled
Very high throughput enable (radio)         Enabled
Channel                                     N/A
Transmit EIRP                               15 dBm
Non-Wi-Fi Interference Immunity             2
Supr Immunity                               0
Enable CSA                                  Disabled
CSA Count                                   4
Spectrum Monitoring                         Enabled
Spectrum Monitoring Profile                 default-a
Advertise 802.11d and 802.11h Capabilities  Disabled
Spectrum Load Balancing                     Disabled
```

```
Spectrum Load Balancing Mode                    channel
Spectrum Load Balancing Update Interval (sec)   30 seconds
Spectrum Load Balancing Threshold (%)           20 percent
Spectrum Load Balancing Domain                  N/A
Beacon Period                                   100 msec
Beacon Regulate                                 Disabled
Advertized regulatory max EIRP                  0
ARM/WIDS Override                               OFF
Reduce Cell Size (Rx Sensitivity)               0 dB
Management Frame Throttle interval              1 sec
Management Frame Throttle Limit                 20
Maximum Distance                                0 meters
RX Sensitivity Threshold                        0 dB
RX Sensitivity Tuning Based Channel Reuse       disable
Adaptive Radio Management (ARM) Profile         default
High-throughput Radio Profile                   default-a
AM Scanning Profile                             default
```

The output of this command includes the following parameters:

Parameter	Description
Radio enable	Shows if the AP has enabled or disabled transmissions on this radio band.
Mode	Access Point operating mode. Available options are: • am-mode: Air Monitor mode • ap-mode: Access Point mode • apm-mode: Access Point Monitor mode • sensor-mode: RFprotect sensor mode
High throughput enable (radio)	Shows if high-throughput (802.11n) is enabled on the radio. A high-throughput profile manages 40 Mhz tolerance settings, and controls whether or not APs using this profile will advertise intolerance of 40 MHz operation. (This option is disabled by default, allowing 40 MHz operation.) A high-throughput profile also determines whether an AP radio using the profile will stop using the 40 MHz channels surrounding APs or stations advertise 40 Mhz intolerance. This option is enabled by default.
Very High Throughput-Enable	Enable or disable support for Very High Throughput (802.11ac) on the radio. This option is enabled by default.
Channel	Channel number for the AP 802.11a, 802.11n, or 802.11ac physical layer.
Beacon Period	Time, in milliseconds, between successive beacon transmissions. The beacon advertises the AP's presence, identity, and radio characteristics to wireless clients.
Beacon Regulate	If enabled, this option introduces randomness in the beacon generation so that multiple APs on the same channel do not send beacons at the same time, which causes collisions over the air. This option is disabled by default.
Transmit EIRP	Maximum transmit power (EIRP) in dBm from 0 to 51 in .5 dBm increments. Further limited by regulatory domain constraints and AP capabilities.

Parameter	Description
Spur Immunity	Displays the spur immunity value for 802.11a radio. **NOTE:** This parameter is applicable for W-AP130 Series access points only. The controller ignores this parameter if configured for non-W-AP130 Series access points.
Advertise 802.11d and 802.11h Capabilities	If enabled, the radio advertises its 802.11d (Country Information) and 802.11h (Transmit Power Control) capabilities.
TPC Power	The transmit power advertised in the TPC IE of beacons and probe responses
Spectrum load balancing	The Spectrum load balancing feature helps optimize network resources by balancing clients across channels, regardless of whether the AP or the controller is responding to the wireless clients' probe requests. If enabled, the controller compares whether or not an AP has more clients than its neighboring APs on other channels. If an AP's client load is at or over a predetermined threshold as compared to its immediate neighbors, or if a neighboring Dell AP on another channel does not have any clients, load balancing will be enabled on that AP. This feature is disabled by default.
Spectrum load balancing mode	SLB Mode allows control over how to balance clients. Channel-based load-balancing balances clients across channels. Radio-based load-balancing distributes clients across radios on the same band, independent of channels.
Spectrum load balancing mode update interval	This parameter specifies how often spectrum load balancing calculations are made (in seconds). The default value is 30 seconds.
Spectrum load balancing threshold	If the spectrum load balancing feature is enabled, this parameter controls the percentage difference between number of clients on a channel that triggers load balancing. The default value is 20%, meaning that spectrum load balancing is activated when there are 20% more clients on one channel than on another channel used by the AP radio.
Advertised Regulatory Max EIRP	Shows if the radio is configured to work around a known issue on Cisco 7921G telephones by capping for a radio's maximum equivalent isotropic radiated power (EIRP). When you enable this parameter, even if the regulatory approved maximum for a given channel is higher than this EIRP cap, the AP radio using this profile will advertise only this capped maximum EIRP in its radio beacons. The supported value is1–31 dBm.
Spectrum load balancing domain	Define a spectrum load balancing domain to manually create RF neighborhoods. Use this option to create RF neighborhood information for networks that have disabled Adaptive Radio Management (ARM) scanning and channel assignment. • If spectrum load balancing is enabled in a 802.11a radio profile but the spectrum load balancing domain is *not* defined, ArubaOS uses the ARM feature to calculate RF neighborhoods.

Parameter	Description
	• If spectrum load balancing is enabled in a 802.11a radio profile and a spectrum load balancing domain *isalso* defined, AP radios belonging to the same spectrum load balancing domain will be considered part of the same RF neighborhood for load balancing, and will not recognize RF neighborhoods defined by the ARM feature.
RX Sensitivity Tuning Based Channel Reuse	Shows if the channel reuse feature's current operating mode, static, dynamic or disable. • **Static**: This mode of operation is a coverage-based adaptation of the Clear Channel Assessment (CCA) thresholds. In the static mode of operation, the CCA is adjusted according to the configured transmission power level on the AP, so as the AP transmit power decreases as the CCA threshold increases, and vice versa. • **Dynamic**: In this mode, the Clear Channel Assessment (CCA) thresholds are based on channel loads, and take into account the location of the associated clients. When you set the Channel Reuse This feature is automatically enabled when the wireless medium around the AP is busy greater than half the time. When this mode is enabled, the CCA threshold adjusts to accommodate transmissions between the AP its most distant associated client. • **Disable**: This mode does not support the tuning of the CCA Detect Threshold.
RX Sensitivity Threshold	If the Rx Sensitivity Tuning Based Channel reuse feature is set to static mode, this parameter manually sets the AP's Rx sensitivity threshold (-dBm). The AP will filter out and ignore weak signals that are below the channel threshold signal strength. For example, if the RX sensitivity threshold was set to -65 dBm, the AP would ignore signals with a strength from -1 dBM to -64 dBm. If the value is set to zero, the feature will automatically determine an appropriate threshold.
Enable CSA	Shows if Channel Switch Announcements (CSAs) are enabled or disabled. CSAs, as defined by IEEE 802.11h, enable an AP to announce that it is switching to a new channel before it begins transmitting on that channel. This allows clients that support CSA to transition to the new channel with minimal downtime.
CSA Count	Number of channel switch announcements that must be sent prior to switching to a new channel. The default CSA count is 4 announcements.
Management Frame Throttle Interval	Averaging interval for rate limiting mgmt frames from this radio, in seconds. A management frame throttle interval of 0 seconds disables rate limiting.
Management Frame Throttle Limit	Maximum number of management frames that can come in from this radio in each throttle interval.

Parameter	Description
ARM/WIDS Override	If enabled, this option disables Adaptive Radio Management (ARM) and Wireless IDS functions and slightly increases packet processing performance. If a radio is configured to operate in Air Monitor mode, then the ARM/WIDS override functions are always enabled, regardless of whether or not this check box is selected.
Reduce Cell Size (Rx Sensitivity)	The cell size reduction feature allows you manage dense deployments and to increase overall system performance and capacity by shrinking an AP's receive coverage area, thereby minimizing co-channel interference and optimizing channel reuse. The possible range of values for this feature is 0-55 dB. The default 0 dB reduction allows the radio to retain its current default Rx sensitivity value.
Adaptive Radio Management (ARM) Profile	Name of an Adaptive Radio Management profile associated with this 802.11a profile.
High-throughput Radio Profile	Name of a High Throughput Radio profile associated with this 802.11a profile.
Maximum Distance	Maximum distance between a client and an AP or between a mesh point and a mesh portal, in meters. This value is used to derive ACK and CTS timeout times. A value of 0 specifies default settings for this parameter, where timeouts are only modified for outdoor mesh radios which use a distance of 16km..
Spectrum Monitoring	If enabled, the AP operates as a hybrid AP that can simultaneously serve clients and monitor a single channel for spectrum analysis data.
Spectrum Monitoring Profile	The spectrum monitoring profile referenced by APs using this 802.11a radio profile. For details, see rf spectrum-profile on page 766
AM Scanning Profile	The AM scanning profile referenced by APs using this 802.11a radio profile. For details, seerf am-scan-profile on page 710

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.3.2	Introduced support for the high-throughput IEEE 802.11n standard.
ArubaOS 3.4.0	Support for the following parameters: • Spectrum load balancing • RX Sensitivity Tuning Based Channel Reuse • RX Sensitivity Threshold • ARM/WIDS Override

Release	Modification
ArubaOS 3.4.2	Support for the **Beacon Regulate** parameter
ArubaOS 6.0	Support for the following parameters: • AM Scanning Profile • Advertised regulatory max EIRP • Spectrum Load balancing mode • Spectrum load balancing update interval (sec)
ArubaOS 6.1	Support for the following parameters: • Spectrum Monitoring • Spectrum load balancing threshold (%)
ArubaOS 6.2.1.0	The **Reduce Cell Size (Rx Sensitivity**) parameter was introduced.
ArubaOS 6.3	The **very-high-throughput-enable** parameter was introduced.
ArubaOS 6.4.2.10, ArubaOS 6.4.3.3	The **Spur Immunity** parameter was introduced as part of the output of this command.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show rf dot11g-radio-profile

```
show rf dot11g-radio-profile [<profile>]
```

Description

Show an 802.11g Radio profile.

Syntax

Parameter	Description
<profile>	Name of a 802.11g profile.

Usage Guidelines

Issue this command without the **<profile>**parameter to display the entire 802.11g profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has four configured 802.11g profiles. The **References** column lists the number of other profiles with references to the 802.11g profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column

```
(host) # show rf arm-profile
Adaptive Radio Management (ARM) profile List
-------------------------------------------
Name                   References  Profile Status
----                   ----------  --------------
airwave                4
default                4
no-scanning            1
nokia-rf-profile       1

Total:4.
This example displays the configuration settings for the profile airwave.

(host) # show rf dot11g-radio-profile default
Parameter                                    Value
---------                                    -----
Radio enable                                 Enabled
Mode                                         ap-mode
High throughput enable (radio)               Enabled
Channel                                      N/A
Beacon Period                                100 msec
Beacon Regulate                              Disabled
Transmit EIRP                                15 dBm
Advertise 802.11d and 802.11h Capabilities   Disabled
TPC Power                                    15 dBm
Spectrum load balancing                      Disabled
Spectrum Load balancing mode                 channel
Spectrum load balancing update interval (sec)  30 seconds
Advertised regulatory max EIRP               0
Spectrum Load Balancing domain               N/A
```

```
RX Sensitivity Tuning Based Channel Reuse      disable
RX Sensitivity Threshold                       0 -dBm
Non 802.11 Interference Immunity               Level-2
Enable CSA                                     Disabled
CSA Count                                      4
Management Frame Throttle interval             1 sec
Management Frame Throttle Limit                20
ARM/WIDS Override                              Disabled
Reduce Cell Size (Rx Sensitivity)              0 dB
Protection for 802.11b Clients                 Enabled
Adaptive Radio Management (ARM) Profile        default
High-throughput Radio Profile                  default-g
Maximum Distance                               0 meters
Spectrum Monitoring                            Disabled
Spectrum Monitoring Profile                    default-a
AM Scanning Profile                            default
```

The output of this command includes the following parameters:

Parameter	Description
Radio enable	Shows if the AP has enabled or disabled transmissions on this radio band.
Mode	Access Point operating mode. Available options are: • am-mode: Air Monitor mode • ap-mode: Access Point mode • apm-mode: Access Point Monitor mode • sensor-mode: RFprotect sensor mode
High throughput enable (radio)	Shows if high throughput (802.11n) is enabled or disabled on this radio. A high-throughput profile manages 40 Mhz tolerance settings, and controls whether or not APs using this profile will advertise intolerance of 40 MHz operation. (This option is disabled by default, allowing 40 MHz operation.) A high-throughput profile also determines whether an AP radio using the profile will stop using the 40 MHz channels surrounding APs or stations advertise 40 Mhz intolerance. This option is enabled by default.
Channel	Channel number for the AP 802.11a/802.11n physical layer.
Beacon Period	Time, in milliseconds, between successive beacon transmissions. The beacon advertises the AP's presence, identity, and radio characteristics to wireless clients.
Beacon Regulate	If enabled, this option introduces randomness in the beacon generation so that multiple APs on the same channel do not send beacons at the same time, which causes collisions over the air. This option is disabled by default.
Transmit EIRP	Maximum transmit power (EIRP) in dBm from 0 to 51 in .5 dBm increments. Further limited by regulatory domain constraints and AP capabilities.
Advertise 802.11d and 802.11h Capabilities	If enabled, the radio advertises its 802.11d (Country Information) and 802.11h (Transmit Power Control) capabilities.

Parameter	Description
TPC Power	The transmit power advertised in the TPC IE of beacons and probe responses
Spectrum load balancing	The Spectrum load balancing feature helps optimize network resources by balancing clients across channels, regardless of whether the AP or the controller is responding to the wireless clients' probe requests. If enabled, the controller compares whether or not an AP has more clients than its neighboring APs on other channels. If an AP's client load is at or over a predetermined threshold as compared to its immediate neighbors, or if a neighboring Dell AP on another channel does not have any clients, load balancing will be enabled on that AP. This feature is disabled by default.
Spectrum load balancing mode	SLB Mode allows control over how to balance clients. Channel-based load-balancing balances clients across channels. Radio-based load-balancing distributes clients across radios on the same band, independent of channels.
Spectrum load balancing mode update interval	This parameter specifies how often spectrum load balancing calculations are made (in seconds). The default value is 30 seconds.
Spectrum load balancing threshold	If the spectrum load balancing feature is enabled, this parameter controls the percentage difference between number of clients on a channel channel that triggers load balancing. The default value is 20%, meaning that spectrum load balancing is activated when there are 20% more clients on one channel than on another channel used by the AP radio.
Advertised Regulatory Max EIRP	Shows if the radio is configured to work around a known issue on Cisco 7921G telephones by capping for a radio's maximum equivalent isotropic radiated power (EIRP). When you enable this parameter, even if the regulatory approved maximum for a given channel is higher than this EIRP cap, the AP radio using this profile will advertise only this capped maximum EIRP in its radio beacons. The supported value is1–31 dBm.
Spectrum load balancing domain	Define a spectrum load balancing domain to manually create RF neighborhoods. Use this option to create RF neighborhood information for networks that have disabled Adaptive Radio Management (ARM) scanning and channel assignment. • If spectrum load balancing is enabled in a 802.11g radio profile but the spectrum load balancing domain is *not* defined, ArubaOS uses the ARM feature to calculate RF neighborhoods. • If spectrum load balancing is enabled in a 802.11g radio profile and a spectrum load balancing domain *isalso* defined, AP radios belonging to the same spectrum load balancing domain will be considered part of the same RF neighborhood for load balancing, and will not recognize RF neighborhoods defined by the ARM feature.
RX Sensitivity Tuning Based Channel Reuse	Shows if the channel reuse feature's current operating mode, static, dynamic or disable.

Parameter	Description
	• **Static**: This mode of operation is a coverage-based adaptation of the Clear Channel Assessment (CCA) thresholds. In the static mode of operation, the CCA is adjusted according to the configured transmission power level on the AP, so as the AP transmit power decreases as the CCA threshold increases, and vice versa. • **Dynamic**: In this mode, the Clear Channel Assessment (CCA) thresholds are based on channel loads, and take into account the location of the associated clients. When you set the Channel Reuse This feature is automatically enabled when the wireless medium around the AP is busy greater than half the time. When this mode is enabled, the CCA threshold adjusts to accommodate transmissions between the AP its most distant associated client. • **Disable**: This mode does not support the tuning of the CCA Detect Threshold.
RX Sensitivity Threshold	If the Rx Sensitivity Tuning Based Channel reuse feature is set to static mode, this parameter manually sets the AP's Rx sensitivity threshold (- dBm). The AP will filter out and ignore weak signals that are below the channel threshold signal strength. For example, if the RX sensitivity threshold was set to -65 dBm, the AP would ignore signals with a strength from -1 dBM to -64 dBm. If the value is set to zero, the feature will automatically determine an appropriate threshold.
Non 802.11 Interference Immunity	Show the current value for 802.11 Interference Immunity on the 2.4 Ghz band. The default setting for this parameter is level 2. When performance drops due to interference from non-802.11 interferers (such as DECT or Bluetooth devices), the level can be increased up to level 5 for improved performance. However, increasing the level makes the AP slightly "deaf" to its surroundings, causing the AP to lose a small amount of range. The levels for this parameter are: • Level-0: no ANI adaptation. • Level-1: noise immunity only. • Level-2: noise and spur immunity. • Level-3: level 2 and weak OFDM immunity. • Level-4: level 3 and FIR immunity. • Level-5: disable PHY reporting.
Enable CSA	Shows if Channel Switch Announcements (CSAs) are enabled or disabled. CSAs, as defined by IEEE 802.11h, enable an AP to announce that it is switching to a new channel before it begins transmitting on that channel. This allows clients that support CSA to transition to the new channel with minimal downtime.
CSA Count	Number of channel switch announcements that must be sent prior to switching to a new channel. The default CSA count is 4 announcements.

Parameter	Description
Management Frame Throttle Interval	Averaging interval for rate limiting mgmt frames from this radio, in seconds. A management frame throttle interval of 0 seconds disables rate limiting.
Management Frame Throttle Limit	Maximum number of management frames that can come in from this radio in each throttle interval.
ARM/WIDS Override	If enabled, this option disables Adaptive Radio Management (ARM) and Wireless IDS functions and slightly increases packet processing performance. If a radio is configured to operate in Air Monitor mode, then the ARM/WIDS override functions are always enabled, regardless of whether or not this check box is selected.
`Reduce Cell Size (Rx Sensitivity)`	The cell size reduction feature allows you manage dense deployments and to increase overall system performance and capacity by shrinking an AP's receive coverage area, thereby minimizing co-channel interference and optimizing channel reuse. The possible range of values for this feature is 0-55 dB. The default 0 dB reduction allows the radio to retain its current default Rx sensitivity value.
Protection for 802.11b Clients	Shows if the profile has enabled or disabled protection for 802.11b clients.
Adaptive Radio Management (ARM) Profile	Name of an Adaptive Radio Management profile associated with this 802.11a profile.
High-throughput Radio Profile	Name of a High Throughput Radio profile associated with this 802.11a profile.
Maximum Distance	Maximum distance between a client and an AP or between a mesh point and a mesh portal, in meters. This value is used to derive ACK and CTS timeout times. A value of 0 specifies default settings for this parameter, where timeouts are only modified for outdoor mesh radios which use a distance of 16km.
Spectrum Monitoring	If enabled, the AP operates as a hybrid AP that can simultaneously serve clients and monitor a single channel for spectrum analysis data.
Spectrum Monitoring Profile	The spectrum monitoring profile referenced by APs using this 802.11g radio profile. For details, see rf spectrum-profile on page 766
AM Scanning Profile	The AM scanning profile referenced by APs using this 802.11g radio profile. For details, seerf am-scan-profile on page 710

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3.2	Introduced protection for 802.11b clients and support for the high-throughput IEEE 802.11n standard
ArubaOS 3.4	Support for the following parameters: • Spectrum load balancing • RX Sensitivity Tuning Based Channel Reuse • RX Sensitivity Threshold • ARM/WIDS Override
ArubaOS 3.4.2	Support for the **Beacon Regulate** parameter
ArubaOS 6.0	Support for the following parameters: • AM Scanning Profile • Advertised regulatory max EIRP • Spectrum Load balancing mode • Spectrum load balancing update interval (sec)
ArubaOS 6.1	Support for the following parameters: • Spectrum Monitoring • Spectrum load balancing threshold (%)
ArubaOS 6.2.1.0	The **Reduce Cell Size (Rx Sensitivity)** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show rf event-thresholds-profile

```
show rf event-thresholds-profile [<profile>]
```

Description

Show an Event Thresholds profile.

Syntax

Parameter	Description
<profile>	name of an Event Thresholds profile

Usage Guidelines

Issue this command without the **<profile>**parameter to display the entire Event Thresholds profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured Event Thresholds profiles. The **References** column lists the number of other profiles with references to the Event Thresholds profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column

```
(host) # show rf event-thresholds-profile

RF Event Thresholds Profile List
--------------------------------
Name     References  Profile Status
----     ----------  --------------
default  6
event1           2

Total: 2.
```

This example displays the configuration settings for the profile **default**.

```
(host) # show rf event-thresholds-profile default
RF Event Thresholds Profile "default"
-------------------------------------
Parameter                                Value
---------                                -----
Detect Frame Rate Anomalies              Disabled
Bandwidth Rate High Watermark            0 %
Bandwidth Rate Low Watermark             0 %
Frame Error Rate High Watermark          0 %
Frame Error Rate Low Watermark           0 %
Frame Fragmentation Rate High Watermark  16 %
Frame Fragmentation Rate Low Watermark   8 %
Frame Low Speed Rate High Watermark      16 %
Frame Low Speed Rate Low Watermark       8 %
Frame Non Unicast Rate High Watermark    0 %
Frame Non Unicast Rate Low Watermark     0 %
Frame Receive Error Rate High Watermark  16 %
Frame Receive Error Rate Low Watermark   8 %
```

```
Frame Retry Rate High Watermark          16 %
Frame Retry Rate Low Watermark           8 %
```

The output of this command includes the following parameters:

Parameter	Description
Detect Frame Rate Anomalies	Shows of the profile enables or disables detection of frame rate anomalies.
Bandwidth Rate High Watermark	If bandwidth in an AP exceeds this value, it triggers a **bandwidth exceeded condition**. The value represents the percentage of maximum for a given radio. (For 802.11b, the maximum bandwidth is 7 Mbps. For 802.11 a and g, the maximum is 30 Mbps.) The recommended value is 85%.
Bandwidth Rate Low Watermark	If an AP triggers a **bandwidth exceeded** condition, the condition persists until bandwidth drops below this value.
Frame Error Rate High Watermark	If the frame error rate (as a percentage of total frames in an AP) exceeds this value, it triggers a **frame error rate exceeded** condition.
Frame Error Rate Low Watermark	If an AP triggers a **frame error rate exceeded** condition, the condition persists until the frame error rate drops below this value.
Frame Fragmentation Rate High Watermark	If the frame fragmentation rate (as a percentage of total frames in an AP) exceeds this value, it triggers a **frame fragmentation rate exceeded** condition.
Frame Fragmentation Rate Low Watermark	If an AP triggers a **frame fragmentation rate exceeded** condition, the condition persists until the frame fragmentation rate drops below this value.
Frame Low Speed Rate High Watermark	If the rate of low-speed frames (as a percentage of total frames in an AP) exceeds this value, it triggers a **low-speed rate exceeded** condition.
Frame Low Speed Rate Low Watermark	After a **low-speed rate exceeded condition** exists, the condition persists until the percentage of low-speed frames drops below this value.
Frame Non Unicast Rate High Watermark	If the non-unicast rate (as a percentage of total frames in an AP) exceeds this value, it triggers a **non-unicast rate exceeded** condition. This value depends upon the applications used on the network.
Frame Non Unicast Rate Low Watermark	If an AP triggers a **non-unicast rate exceeded** condition, the condition persists until the non-unicast rate drops below this value.
Frame Receive Error Rate High Watermark	If the frame receive error rate (as a percentage of total frames in an AP) exceeds this value, it triggers a **frame receive error rate exceeded** condition.
Frame Receive Error Rate Low Watermark	If an AP triggers a **frame receive error rate exceeded** condition, the condition persists until the frame receive error rate drops below this value.

Parameter	Description
Frame Retry Rate High Watermark	If the frame retry rate (as a percentage of total frames in an AP) exceeds this value, it triggers a **frame retry rate exceeded** condition.
Frame Retry Rate Low Watermark	If an AP triggers a **frame retry rate exceeded** condition exists, the condition persists until the frame retry rate drops below this value.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show rf ht-radio-profile

```
show rf ht-radio-profile [<profile>]
```

Description

Show a High-throughput Radio profile.

Syntax

Parameter	Description
<profile>	Name of a High-throughput Radio profile.

Usage Guidelines

Issue this command without the **<profile>**parameter to display the entire High-throughput Radio profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has five configured High-throughput Radio profiles. The **References** column lists the number of other profiles with references to the High-throughput Radio profile, and the **Profile Status** column indicates whether the profile is predefined and editable, and if that predefined profile has been changed from its default settings. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) # show rf ht-radio-profile
High-throughput radio profile List
----------------------------------
Name           References  Profile Status
----           ----------  --------------
default        0
default-a      8           Predefined (editable)
default-g      3           Predefined (changed)
legacystation  1
test           1

Total:5
```

This example displays the configuration settings for the predefined profile **default-a**.

```
(host) #show rf ht-radio-profile default-a
High-throughput radio profile "default-a" (Predefined (editable))
------------------------------------------------------------------
Parameter                      Value
---------                      -----
40 MHz intolerance             Disabled
Honor 40 MHz intolerance       Enabled
Diversity spreading workaround  Disabled
CSD Override                                        Disabled
```

The output of this command includes the following parameters:

Parameter	Description
40 MHz intolerance	Shows whether or not APs using this radio profile will advertise intolerance of 40 MHz operation. By default, 40 MHz operation is allowed.
Honor 40 MHz intolerance	If this parameter is enabled, the radio will stop using the 40 MHz channels if the 40 MHz intolerance indication is received from another AP or station.
CSD Override Diversity Spreading Workaround	When this feature is enabled, all legacy transmissions will be sent using a single antenna. This enables interoperability for legacy or high-throughput stations that cannot decode 802.11n cyclic shift diversity (CSD) data. This feature is disabled by default and should be kept disabled unless necessary.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3.2	Support for the **dsss-cck-40mhz** parameter was removed
ArubaOS 3.4	Introduced the **single-chain-legacy** parameter.
ArubaOS 6.2	The **CSD Override** parameter was renamed to **diversity spreading workaround**.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show rf optimization-profile

```
show rf optimization-profile [<profile>]
```

Description

Show an Optimization profile.

Syntax

Parameter	Description
<profile>	name of an ARM profile

Usage Guidelines

Issue this command without the **<profile>**parameter to display the entire Optimization profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured Optimization profiles. The **References** column lists the number of other profiles with references to the Optimization profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) # show rf optimization-profile
RF Optimization Profile List
----------------------------
Name     References  Profile Status
----     ----------  --------------
default  6
profile2 1

Total:2
```

This example displays the configuration settings for the profile **profile2**.

```
(host) #show rf optimization-profile profile2
RF Optimization Profile "profile2"
----------------------------------
Parameter                              Value
---------                              -----
Station Handoff Assist                 Disabled
Detect Association Failure             Disabled
Coverage Hole Detection                Disabled
Hole Good RSSI Threshold               20
Hole Good Station Ageout               30 sec
Hole Detection Interval                180 sec
Hole Idle Station Ageout               90 sec
Hole Poor RSSI Threshold               10
Detect interference                    Disabled
Interference Threshold                 90 %
Interference Threshold Exceed Time     25 sec
Interference Baseline Time             25 sec
RSSI Falloff Wait Time                 4
Low RSSI Threshold                     10
```

```
RSSI Check Frequency                    3 sec
```

The output of this command includes the following parameters:

Parameter	Description
Station Handoff Assist	If enabled, this parameter allows the controller to force a client off an AP when the RSSI drops below a defined minimum threshold.
Detect Association Failure	Shows if the profile enables or disables STA association failure detection.
Coverage Hole Detection	Shows if the profile enables or disables coverage hole detection.
Hole Good RSSI Threshold	Time, in seconds, after a coverage hole is detected until a coverage hole event notification is generated. This parameter requires the RF Protect license.
Hole Good Station Ageout	Stations with signal strength above this value are considered to have good coverage. This parameter requires the RF Protect license.
Hole Detection Interval	Time, in seconds, after which a station with good coverage is aged out. This parameter requires the RF Protect license.
Hole Idle Station Ageout	Time, in seconds, after which a station in a poor coverage area is aged out. This parameter requires the RF Protect license.
Hole Poor RSSI Threshold	Stations with signal strength below this value will trigger detection of a coverage hole. This parameter requires the RF Protect license.
Detect interference	Enables or disables interference detection.
Interference Threshold	Percentage increase in the frame retry rate (FRR) or frame receive error rate (FRER) before interference monitoring begins on a given channel.
Interference Threshold Exceed Time	Time, in seconds, the FRR or FRER exceeds the threshold before interference is reported.
Interference Baseline Time	Time, in seconds, the air monitor should learn the state of the link between the AP and client to create frame retry rate (FRR) and frame receive error rate (FRER) baselines.
RSSI Falloff Wait Time	Number of times the detected client RSSI level must fall below the minimum RSSI threshold the before the AP sends a deauthorization message to the client. The maximum value is 8 times.
Low RSSI Threshold	Minimum RSSI above which deauthorization messages should never be sent.

Parameter	Description
RSSI Check Frequency	Interval, in seconds, to sample RSSI.

Command History

Version	Modification
ArubaOS 3.0	Base operating system
ArubaOS 3.4	Output parameters displaying load balancing status were removed. You can now view the status of the load balancing feature via the commands show rf dot11a-radio-profile and show rf dot11g-radio-profile.

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show rf spectrum-profile

```
rf spectrum-profile <profile-name>
```

Description

Show a spectrum profile used by the spectrum analysis feature.

Syntax

Parameter	Description
<profile>	Name of a spectrum profile.

Usage Guidelines

Issue this command without the **<profile>**parameter to display the entire spectrum profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has three configured spectrum profiles. The **References** column lists the number of other profiles with references to the spectrum profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) #show rf spectrum-profile

Spectrum profile List
---------------------
Name        References  Profile Status
----        ----------  --------------
spectrum1   1
default-a   2           Predefined (editable)
default-g   2           Predefined (editable)
```

This example displays the configuration settings for the profile spectrum1.

```
(host) #show rf spectrum-profile default

Spectrum profile "default"
--------------------------
Parameter                                   Value
---------                                   -----
Age Out: WIFI                               600 sec
Age Out: Generic Interferer                 30 sec
Age Out: Microwave                          15 sec
Age Out: Microwave (Inverter type)          15 sec
Age Out: Video Device                       60 sec
Age Out: Audio Device                       10 sec
Age Out: Cordless Phone Fixed Frequency     10 sec
Age Out: Generic Fixed Frequency            10 sec
Age Out: Bluetooth                          25 sec
Age Out: Xbox                               25 sec
Age Out: Cordless Network Frequency Hopper  60 sec
Age Out: Cordless Base Frequency Hopper     240 sec
Age Out: Generic Frequency Hopper           25 sec
```

The output of this command includes the following information:

Parameter	Description
`Age Out: WIFI`	The number of seconds for which a wifi device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 600 seconds.
`Age Out: Generic Interferer`	The number of seconds for which an unknown device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 30 seconds.
`Age Out: Microwave`	The number of seconds for which a microwave device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 15 seconds. Note that this parameter is applicable to 2.4GHz spectrum monitor radios only.
`Age Out: Microwave (inverter type)`	The number of seconds for which an inverter microwave must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 15 seconds. Note that this parameter is applicable to 2.4GHz spectrum monitor radios only.
`Age Out: Video Device`	The number of seconds for which a video device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 60 seconds.
`Age Out: Audio Device`	The number of seconds for which an audio device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 10 seconds.
`Age Out: Cordless Phone Fixed Frequency`	The number of seconds for which a fixed frequency cordless phone must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 10 seconds.
`Age Out: Generic Fixed Frequency`	The number of seconds for which a generic fixed frequency device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 10 seconds.

Parameter	Description
`Age Out: Xbox`	The number of seconds for which an Xbox device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 25 seconds. Note that this parameter is applicable to 2.4GHz spectrum monitor radios only.
`Age Out: Bluetooth`	The number of seconds for which a bluetooth device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 25 seconds. Note that this parameter is applicable to 2.4GHz spectrum monitor radios only.
`Age Out: Cordless Network Frequency Hopper`	The number of seconds for which a frequency-hopping cordless network device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 60 seconds.
`Age Out: Cordless Base Frequency Hopper`	The number of seconds for which a frequency-hopping cordless phone base must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 240 seconds.
`Age Out: Generic Frequency Hopper`	The number of seconds for which a generic frequency-hopping device must stop sending a signal before the spectrum monitor considers that device no longer active on the network. The default value is 25 seconds.

Related Commands

rf spectrum-profile

Command History

Release	Modification
ArubaOS 6.0	Command introduced
ArubaOS 6.2	The spectrum-band parameter was deprecated. The following default ageout times were changed: • cordless-fh-base default timeout is 240 seconds (was 25 seconds in previous releases). • cordless-fh-network default timeout is 60 seconds (was 10 seconds in previous releases). • generic-interferer default timeout is 30 seconds (was 25 seconds in previous releases). • video default timeout is 60 seconds (was 10 seconds in previous releases).

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master and local controllers

show rft profile

```
show rft profile {all|antenna-connectivity|link-quality|raw}
```

Description

Show parameters for the predefined RF test profiles.

Syntax

Parameter	Description
`all`	Show all predefined profiles.
`antenna-connectivity`	Show configured parameters for the predefined **Antenna Connectivity** test profile.
`link-quality`	Show configured parameters for the predefined **Link Quality** test profile.
`raw`	Show configured parameters for the predefined **RAW** test profile.

Usage guidelines

The rft command is used for RF troubleshooting, and should only be used under the supervision of Dell technical support. Issue the **show rft profile** command to view the profiles used for these RF tests.

Example

The following example shows the testing parameters for the predefined link-quality RF test profile.

```
(host) #show rft profile link-quality

Profile LinkQuality: Built-in profile
-------------------------------------
Parameter    Value
---------    -----
Antenna      1 and/or 2
Frame Type   Null Data
Num Packets  100 for each data-rate
Packet Size  1500
Num Retries  0
Data Rate    All rates are tried
```

Related Commands

To view the results of an RF test, use the command show rft result.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show rft result

```
show rft result all|{trans-id <trans-id>}
```

Description

Show the results of an RF test.

Syntax

Parameter	Description
`all`	Show the most recent test result for each test type (antenna-connectivity, link-quality or raw).
`trans-id <trans-id>`	Each RF test is assigned a transaction ID. Include the **trans-id <trans-id>** parameters to show the test result for a specific transaction ID.

Usage guidelines

The rft command is used for RF troubleshooting, and should only be used under the supervision of Dell technical support.

Related Commands

To view a list of the most recent transaction IDs for each test type, use the command show rft transactions.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show rft transactions

```
show rft transactions
```

Description

Show transaction IDs of RF tests.

Syntax

No parameters.

Usage guidelines

The rft command is used for RF troubleshooting, and should only be used under the supervision of Dell technical support. Issue the **show rft transaction** command to view the transaction IDs for the most recent test of each test type.

Example

The following example shows the transaction IDs for the latest RAW, link-quality and antenna-connectivity tests.

```
(host) #show rft transactions

RF troubleshooting transactions
-------------------------------
Profile              Transaction ID
-------              --------------
RAW                  2001
LinkQuality          2101
AntennaConnectivity  1801
```

Related Commands

Use transaction IDs with the command show rft result to view results for individual RF tests.

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show rights

```
show rights [<name-of-a-role>]
```

Description

Displays the list of user roles in the roles table with high level details of role policies. To view role policies of a specific role specify the role name.

Syntax

Parameter	Description
`name-of-a-role`	Enter the role name to view its policy details.

Example

The output of this command shows the list of roles in the role table.

```
(host) # show rights

RoleTable
---------
Name              ACL  Bandwidth                 ACL List                                Type
----              ---  ---------                 --------                                ----
ap-role           4    Up: No Limit,Dn: No Limit control/,ap-acl/                        System
authenticated     39   Up: No Limit,Dn: No Limit allowall/,v6-allowall/                  User
default-vpn-role  37   Up: No Limit,Dn: No Limit allowall/,v6-allowall/                  User
guest             3    Up: No Limit,Dn: No Limit http-acl/,https-acl/,dhcp-acl/         User
guest-logon       6    Up: No Limit,Dn: No Limit logon-control/,captiveportal/          User
logon             1    Up: No Limit,Dn: No Limit logon-control/,captiveportal/          User
stateful-dot1x    5    Up: No Limit,Dn: No Limit                                       System
voice             38   Up: No Limit,Dn: No Limit sip-acl/,noe-acl/,svp-acl/,vocera-acl/ User
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show roleinfo

```
show roleinfo
```

Description

Displays the role of the controller.

Syntax

No parameters.

Example

The output of this command shows the role of the controller.

```
(host) # show roleinfo
switchrole:master
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show route-access-list

```
show route-access-list
```

Description

This command displays information about access control lists (ACLs) for policy-based routing (PBR).

Syntax

No Parameters

Usage Guidelines

Policy-based routing is an optional feature that allows allows packets to be routed based on access control lists (ACLs) configured by the administrator. By default, when a controller receives a packet for routing, it looks up the destination IP in the routing table and forwards the packet to the nexthop router. If policy-based routing is configured, the nexthop device can be chosen based on a defined access control list.

In a typical deployment scenario with multiple uplinks, the default route only uses one of the uplink next-hops for forwarding packets. If a nexthop becomes unreachable, the packets will not reach their destination. If your deployment uses policy-based routing based on a nexthop list, any of the uplink nexthops could be used for forwarding traffic. This requires a valid ARP entry (Route-cache) in the system for all the policy-based routing nexthops.

Example

The following command displays a list of configured routing access lists.

```
(host)(config)# (host) #show route-access-list
Router Access list table
------------------------
Name       Use Count  Roles
----       ---------  -----
attempt1   0
pbr        0
name       1          test
Tuesday    0
```

The output of this command includes the following parameters:

Parameter	Description
Name	Name of the access list
Use Count	Number of VLANs associated with this routing access list.
Roles	User role associated with the routing access list.

Related Commands

Command	Description
ip access-list route	This command configures an access control list (ACL) for policy-based routing (PBR).
ip nexthop-list	Use this command to define a next-hop list for a routing policy
routing-policy-map	This command associates a routing access control list (ACL) with a user role.

Command History

Release	Modification
ArubaOS 6.4.3	Command introduced.

Command Information

Platform	License	Command Mode
All platforms	Requires the PEFNG license	Config or Enable mode

show rrm dot11k admission-capacity

```
show rrm dot11k admission-capacity
```

Description

Displays the available admission capacity for voice traffic on an AP.

Syntax

No parameters.

Example

The output of this command shows the available admission capacity for voice traffic on all APs.

```
(host) # show rrm dot11k admission-capacity

802.11K Available Admission Capacity for Voice
----------------------------------------------

Flags: B: Bandwidth based CAC, C: Call-count based CAC
       D: CAC Disabled,        E: CAC Enabled

AP Name    IP Address    Freq Band  Chan  Total  Available  Flags
-------    ----------    ---------  ----  -----  ---------  -----
r-wing-94  10.16.12.247  5 GHz      40    31250  0          EC
r-wing-94  10.16.12.247  2.4 GHz    11    31250  0          EC

Num APs:2
```

Command History

This command was available in ArubaOS 3.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show rrm dot11k ap-channel-report

```
show rrm dot11k ap-channel-report [ap-name <name-of-an-ap> |
  bssid <bssid-of-an-ap> | ip-addr <ip-address-of-an-ap> | ip6-addr <ip-addr> | essid
  <essid>]
```

Description

Displays the channel information gathered by the AP. You can either specify an ap-name, bssid or ip-address of an AP to see more details.

Syntax

Parameter	Description
ap-name	Enter the name of the AP.
bssid	Enter the BSSID address of the AP.
ip-addr	Enter the IP address of the AP.
ip6-addr	Enter the IPv6 address of the AP
essid	Entries in the IPv4 user-table that are associated to the specified ESSID. If the ESSID includes spaces, you must enclose it in quotation marks.

Example

The output of this command shows the channel information for r-wing-94:94.

```
(host) # show rrm dot11k ap-channel-report ap-name r-wing-94

802.11K AP Channel Report Details
---------------------------------
Freq Band  Channel List
---------  ------------
2.4 GHz    11,
5 GHz      36, 40, 157, 161, 165,

Num Entries:2
```

Command History

This command was available in ArubaOS 3.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show rrm dot11k beacon-report

```
show rrm dot11k beacon-report
```

Description

Displays the beacon report information sent by a client to its AP.

Syntax

No parameters.

Example

The output of this command shows the beacon report for the client 00:1f:6c:7a:d4:fd.

```
(host) # show rrm dot11k beacon-report station-mac 00:1f:6c:7a:d4:fd

802.11K Beacon Report Details

-------------------------------------------------

Channel     BSSID              Reg Class     Antenna ID      Meas. Mode
----------  -------            ------------  -------------   ----------------
1           00:0b:86:6d:3e:40  0             1               Bcn Table

Num Elements:1
```

Command History

This command was available in ArubaOS 3.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show rrm dot11k neighbor-report

```
show rrm dot11k neighbor-report [ap-name |
   bssid <bssid-of-an-ap> | ip-addr <ip-address-of-an-ap>]
```

Description

Displays the neighbor information for a particular AP. If the AP name or the AP's IP address is specified, the user should specify the ESSID to get the neighbor information. If the ESSID is not specified, the command will display the neighbor information for all the Virtual AP's configured on the AP.

Syntax

Parameter	Description
ap-name	Identify the AP for which you want to view information.
<name-of-an-ap>	Name of an AP.
<essid>	ESSID of the AP. If the ESSID includes spaces, you must enclose it in quotation marks.
bssid	Enter the BSSID address of the AP.
ip-addr	Enter the IP address of the AP.

Example

The output of this command shows the neighbor information for r-wing-94.

```
(host) # show rrm dot11k neighbor-report ap-name r-wing-94

802.11K Neighbor Report Details
-------------------------------

Flags: S: Spectrum Management, Q: QoS, A: APSD, R: Radio Measurement

ESSID         BSSID              Channel  Reachability  Security  Authenticator  Preference
Flags
-----         -----              -------  ------------  --------  -------------  ----------  -
----
r-wing-voice  00:0b:86:6d:3e:30  165      Reachable     Same      Same           1
SR
r-wing-voice  00:0b:86:6d:3e:20  1        Reachable     Same      Same           1
SR
r-wing-data   00:0b:86:6d:3e:40  6        Reachable     Same      Same           1
SR
r-wing-data   00:0b:86:6d:4e:41  153      Reachable     Same      Same           1
SR

Num Entries:4
```

Command History

This command was available in ArubaOS 3.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show rrm dot11k transmit-stream-report station-mac

```
show rrm dot11k transmit-stream-report station-mac <mac-addr>
```

Description

This is a diagnostic option for quick verification of received transmit stream measurement reports. Displays the contents of the transmit stream measurement reports received from a client.

Syntax

Parameter	Description
`mac-addr`	MAC address of the client.

Command History

This command is introduced in ArubaOS 5.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show running-config

```
show running-config
```

Description

Displays the current controller configuration, including all pending changes which are yet to be saved.

Syntax

No parameters.

Example

The output of this command shows the running configuration on the controller.

```
(host) # show running-config

version 5.0
enable secret "******"
telnet soe
loginsession timeout 0
hostname "vjoshi-2400"
clock timezone PST -8
location "Building1.floor1"
mms config 0
controller config 986
ip access-list eth validuserethacl
  permit any
!
netservice svc-netbios-dgm udp 138
netservice svc-snmp-trap udp 162
netservice svc-https tcp 443
netservice svc-dhcp udp 67 68 alg dhcp
netservice svc-smb-tcp tcp 445
netservice svc-ike udp 500
netservice svc-l2tp udp 1701
...
...
...
netservice svc-bootp udp 67 69
netservice svc-snmp udp 161
netservice svc-v6-dhcp udp 546 547
netservice svc-icmp 1
--More-- (q) quit (u) pageup (/) search (n) repeat
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.4.2.5	The default **dot1x high-watermark** and **dot1x low-watermark** values were removed from the **show running-config** command.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show session-acl-list

```
show session-acl-list
```

Description

Displays the list of configured session ACLs in the controller.

Syntax

No parameters.

Example

The output of this command shows the session ACLs in the controller.

```
(host) # show session-access-list
v6-icmp-acl
allow-diskservices
control
validuser
v6-https-acl
vocera-acl
icmp-acl
v6-dhcp-acl
captiveportal
v6-dns-acl
allowall
test
sip-acl
https-acl
...
...
...
v6-http-acl
dhcp-acl
http-acl
stateful-dot1x
ap-acl
svp-acl
noe-acl
stateful-kerberos
v6-logon-control
h323-acl
```

Command History

This command was available in ArubaOS 3.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show slots

```
show slots
```

Description

Displays the list of slots in the controller, including the status and card type.

Syntax

No parameters.

Example

The output of this command shows slot details on the controller.

```
(host) # show slots

Slots
------
Slot  Status   Card Type
----  ------   ---------
1     Present  A2400
```

Command History

This command was available in ArubaOS 3.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show snmp community

```
show snmp community
```

Description

Displays the SNMP community string details.

Syntax

No parameters.

Example

The output of this command shows slot details on the controller.

```
(host) # show snmp community

SNMP COMMUNITIES
----------------
COMMUNITY  ACCESS     VERSION
---------  ------     -------
 public    READ_ONLY  V1, V2c
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show snmp inform

```
show snmp inform
```

Description

Displays the length of SNMP inform queue.

Syntax

No parameters.

Example

The output of this command shows slot details on the controller.

```
(host) # show snmp inform stats

Inform queue size is 100

SNMP INFORM STATS
-----------------
HOST   PORT   INFORMS-INQUEUE   OVERFLOW   TOTAL INFORMS
----   ----   ---------------   --------   -------------
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show snmp trap-hosts

```
show snmp trap-hosts
```

Description

Displays the configured SNMP trap hosts.

Syntax

No parameters.

Example

The output of this command shows details of a SNMP trap host.

```
(host) # show snmp trap-hosts

SNMP TRAP HOSTS
---------------
HOST           VERSION     SECURITY NAME   PORT    TYPE   TIMEOUT   RETRY
----           -------     -------------   ----    ----   -------   -----
 10.16.14.1     SNMPv2c     public          162     Trap   N/A       N/A
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show snmp trap-list

```
show snmp trap-list
```

Description

Displays the list of SNMP traps.

Syntax

No parameters.

Example

The output of this command shows the list of SNMP traps and the status.

```
(host) # show snmp trap-list

SNMP TRAP LIST
--------------
TRAP-NAME                                CONFIGURABLE  ENABLE-STATE
---------                                ------------  ------------
authenticationFailure                    Yes           Enabled
coldStart                                Yes           Enabled
linkDown                                 Yes           Enabled
linkUp                                   Yes           Enabled
warmStart                                Yes           Enabled
wlsxAPActiveUplinkChanged                Yes           Enabled
wlsxAPBssidEntryChanged                  Yes           Enabled
wlsxAPChannelChange                      Yes           Enabled
wlsxAPDeauthContainment                  Yes           Enabled
wlsxAPDown                               Yes           Enabled
wlsxAPEntryChanged                       Yes           Enabled
wlsxAPImpersonation                      Yes           Enabled
wlsxAPInterferenceCleared                Yes           Enabled
wlsxAPInterferenceDetected               Yes           Enabled
wlsxAPManagedModeConfigFailureTrap       Yes           Enabled
wlsxAPModeChange                         Yes           Enabled
wlsxAPNumColdStarts                      Yes           Enabled
wlsxAPNumDown                            Yes           Enabled
wlsxAPNumRadioDown                       Yes           Enabled
wlsxAPNumUpgradeFailure                  Yes           Enabled
wlsxAPNumWarmStarts                      Yes           Enabled
wlsxAPPowerChange                        Yes           Enabled
wlsxAPRadioAttributesChanged             Yes           Enabled
wlsxAPRadioEntryChanged                  Yes           Enabled
wlsxAPSpoofingDetected                   Yes           Enabled
wlsxAPTaggedWiredContainment             Yes           Enabled
wlsxAPUp                                 Yes           Enabled
wlsxAPWiredContainment                   Yes           Enabled
wlsxAdhocNetwork                         Yes           Enabled
...
...
...
wlsxWirelessHosteNetworkContainment      Yes           Enabled
wlsxWirelessHostedNetworkDeteced         Yes           Enabled
```

Command History

This command was available in ArubaOS 3.0

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.5.0.0	Two new fields, wlsxAPDown and wlsxAPUp have been introduced to provide MAC address, AP name, and IP address of access point when access point comes up or goes down.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show snmp trap-queue

```
show snmp trap-queue
```

Description

Displays the list of SNMP traps in queue.

Syntax

No parameters.

Example

The output of this command shows the list of SNMP traps sent to host.

```
(host) # show snmp trap-queue

a)wlsxMgmtUserAuthenticationFailed
The trap indicates that a management user authentication failed.
2013-10-29 08:08:10 Management user authentication failed for user commonuser1 with IP address
10.20.102.79 usermac 00:00:00:00:00:00 server name CiscoACS-2 serverip 10.15.28.41
b)wlsxNUserAuthenticationFailed :
The trap indicates that a user authentication has failed.
2013-10-29 07:47:07 User Authentication failed for user commonuser1 userip 0.0.0.0 usermac
00:5f:12:00:00:00 servername CiscoACS-1 serverip 10.15.28.40 bssid 00:d2:5d:80:00:08 apname
v5rapsim_000_000
c)wlsxNAuthServerReqTimeOut:
The trap indicates that the authentication server req timeout
2013-10-29 07:44:58 Authentication request timed out for server CiscoACS-1 serveip 10.15.28.4
username commonuser1 userip 0.0.0.0 usermac 00:5f:12:00:00:00 bssid 00:d2:5d:80:00:08 apname
v5rapsim_000_000
d)wlsxNAuthServerTimeOut :
The trap indicates the server taken out of service.
2013-10-29 07:45:48 Authentication server CiscoACS-1 serverip 10.15.28.4  timed out. Time out
value is 1383012948 for user commonuser1 ip 0.0.0.0 mac 00:5f:12:00:00:00 bssid
00:d2:5d:80:00:08 apname v5rapsim_000_000
e)wlsNAuthServerIsDown
The trap indicates that an authentication server is down.
2013-10-29 07:44:11 Authentication Server CiscoACS-1 with ip 10.15.28.4 is down.
f)wlsNAuthServerUp
The trap indicates that an authentication server is up.
2013-10-29 07:45:48 Authentication server CiscoACS-1 with ip 10.15.28.4 is up
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.4	Added more information to the output: Server IP address, user MAC, AP name, authentication failure details, authentication request time out, auth server down and up traps messages sending to the host .

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show snmp user-table

```
show snmp user-table [user <username> auth-prot [sha | md5] <value> priv-prot [aes | des]
<value>]
```

Description

Displays the list of SNMP user profile for a specified username.

Syntax

Parameter	Description
`auth-prot`	Authentication protocol for the user, either HMAC-MD5-98 Digest Authentication Protocol (MD5) or HMAC-SHA-98 Digest Authentication Protocol (SHA), and the password for use with the designated protocol.
`priv-prot`	Privacy protocol for the user, either Advanced Encryption Standard (AES) or CBC-DES Symmetric Encryption Protocol (DES), and the password for use with the designated protocol.

Example

The output of this command shows the list of SNMP traps sent to host.

```
(host) # show snmp user-table

SNMP USER TABLE
---------------
USER    AUTHPROTOCOL  PRIVACYPROTOCOL  FLAGS
----    ------------  ---------------  -----
 Sam    SHA           AES
 fire   SHA           AES
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show spanning-tree

```
show spanning-tree
   <interface [fastethernet slot/port | gigabitethernet slot/port | port-channel id]
   <vlan vlan-id>
```

Description

View the RSTP and PVST+ configuration.

Syntax

Parameter	Description
interface	Enter the keyword **interface** followed by the interface and slot/port or port-channel id: • for Fast Ethernet enter the keyword **fastethernet** followed by the slot/port • For Gigabit Ethernet enter the keyword **gigabitethernet** followed by the slot/port • For Port Channel enter the keyword **port-channel** followed by an id number Range: 0 to 7
vlan	Enter the keyword **vlan** follow by the VLAN ID. Range: 1 to 4094 Default: 1

Example—show spanning-tree

```
(host) # show spanning-tree

Spanning tree instance for vlan 10
Spanning Tree is executing the IEEE compatible Rapid Spanning Tree protocol
Bridge Identifier has priority 32768, address 00:0b:86:f0:20:00
Configured hello time 2, max age 20, forward delay 15
We are the root of the spanning tree
Topology change flag is not set, detected flag not set, changes 1
Times: hold 1, topology change 35 hello 2, max age 20, forward delay 15
Timers: hello 0, notification 0
Last topology change: 2 days, 0 hours, 31 mins, 21 secs

Spanning tree instance for vlan 20
Spanning Tree is executing the IEEE compatible Rapid Spanning Tree protocol
Bridge Identifier has priority 32768, address 00:0b:86:f0:20:00
Configured hello time 2, max age 20, forward delay 15
We are the root of the spanning tree
Topology change flag is not set, detected flag not set, changes 1
Times: hold 1, topology change 3 hello 2, max age 20, forward delay 15
Timers: hello 0, notification 0
Last topology change: 1 days, 0 hours, 3 mins, 2 secs
```

Example—show spanning-tree vlan

```
(host) # show spanning-tree vlan 2
```

```
Spanning Tree is executing the IEEE compatible Rapid Spanning Tree protocol
Bridge Identifier has priority 32768, address 00:0b:86:f0:20:00
Configured hello time 2, max age 20, forward delay 15
We are the root of the spanning tree
Topology change flag is not set, detected flag not set, changes 1
Times: hold 1, topology change 35 hello 2, max age 20, forward delay 15
Timers: hello 0, notification 0
Last topology change: 2 days, 0 hours, 31 mins, 21 secs
```

Example—show spanning-tree interface fastethernet

```
(host) (config-if)#show spanning-tree interface fastethernet 1/1

Interface FE 1/1 (port 2) in Spanning tree is FORWARDING
Port path cost 19, Port priority 128 Role DISNIGNATED
PortFast DISABLED P-to-P ENABLED
Designated root has priority 0 address 00:01:e8:d5:a3:6d
Designated bridge has priority 32768 address 00:0b:86:50:58:30
Designated port is 2, path cost 0
Timers:  message age 0, forward delay 20, hold 0
Counts:  BPDUs received 0, sent 0
```

Command History

Release	Modification
ArubaOS 6.0	PVST+ added
ArubaOS 3.4	Upgraded STP to RSTP with full backward compatibility.

Command Information

Platform	Licensing	Command Mode
All platforms	Base operating system	Enable mode and Configuration mode (config) on master controllers

show spantree

```
show spantree
   <blocking> | <enable> | <forwarding> | <off> | <vlan>
```

Description

View the global RSTP and PVST+ topology.

Syntax

Parameter	Description
blocking	View the spanning tree ports in the Blocking state.
enable	View the spanning tree ports in the Enable state.
forwarding	View the spanning tree ports in the Forwarding state.
off	View the ports with spanning tree disabled
vlan	View the spanning tree instance for the VLAN.

Example

```
(host) # show spantree

Spanning tree instance    vlan 1
Designated Root MAC       00:0b:86:6b:57:80
Designated Root Priority  32768
Root Cost                 20000
Root Max Age 20 sec   Hello Time 2 sec   Forward Delay 15 sec

Bridge MAC                00:1a:1e:00:89:b8
Bridge Priority           32768
Configured Max Age 20 sec   Hello Time 2 sec   Forward Delay 15 sec

Rapid Spanning Tree port configuration
--------------------------------------
Port      State       Cost     Prio  PortFast  BpduGuard  P-to-P  Role
----      -----       ----     ----  --------  ---------  ------  ----
GE 0/0/0  Forwarding  20000    128   Disable   Disable    Enable  Root
GE 0/0/1  Discarding  20000    128   Disable   Disable    Enable  Disabled
GE 0/0/2  Discarding  2000     128   Disable   Disable    Enable  Disabled
GE 0/0/3  Discarding  2000     128   Disable   Disable    Enable  Disabled
GE 0/0/4  Discarding  2000     128   Disable   Enable     Enable  Disabled
GE 0/0/5  Discarding  2000     128   Disable   Disable    Enable  Disabled
Pc 0      Discarding  2000000  128   Disable   Disable    Enable  Disabled
Pc 1      Discarding  2000000  128   Disable   Disable    Enable  Disabled
Pc 2      Discarding  2000000  128   Disable   Disable    Enable  Disabled
Pc 3      Discarding  2000000  128   Disable   Disable    Enable  Disabled
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.0	The **PVST+** parameter added.
ArubaOS 6.3	Upgraded STP to RSTP with full backward compatibility.
ArubaOS 6.4.3.0	The **BpduGuard** field was introduced as part of this command output.

Command Information

Platform	Licensing	Command Mode
All platforms	Base operating system	Enable mode and Configuration mode (config) on master controllers

show ssh

```
show ssh
```

Description

Displays the SSH configuration details.

Syntax

No parameters.

Example

The output of this command shows SSH configuration details.

```
(host) # show ssh

SSH Settings:
-------------
DSA                                 Enabled
Mgmt User Authentication Method     username/password
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show sso idp-profile

```
show sso idp-profile
```

Description

Displays all SSO IDP profiles.

Syntax

No parameters.

Example

The output of this command lists all SSO IDP profiles on the controller.

```
((host) (config) #show sso idp-profile
SSO Profile List
----------------
Name         References  Profile Status
----         ----------  --------------
sso-example 0
```

Command History

This command was available in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show startup-config

```
show startup-config
```

Description

Displays the configuration which will be used the next time the controller is rebooted. It contains all the options last saved using the write memory command. Any unsaved changes are not included.

Syntax

No parameters.

Example

The output of this command shows slot details on the controller.

```
(host) # show startup-config

version 3.4
enable secret "608265290155fb924578f15b12670a75a37045cbdf62fb0d3a"
telnet cli
telnet soe
loginsession timeout 30
hostname "FirstFloor2400"
clock timezone PST -8
location "Building1.floor1"
mms config 0
controller config 22

ip access-list eth validuserethacl
  permit any
!
netservice svc-snmp-trap udp 162
netservice svc-dhcp udp 67 68
netservice svc-smb-tcp tcp 445
netservice svc-https tcp 443
netservice svc-ike udp 500
netservice svc-l2tp udp 1701
netservice svc-syslog udp 514
...
...
...
netservice svc-msrpc-udp udp 135 139
netservice svc-ssh tcp 22
netservice svc-http-proxy1 tcp 3128
--More-- (q) quit (u) pageup (/) search (n) repeat
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show station-table

```
show station-table [mac <mac_address> | verbose ]
```

Description

Displays the internal station table entries and also details of a station table entry.

Syntax

Parameter	Description
`mac <mac_address>`	Displays the details of the AP that matches the specified MAC address.
`verbose`	Displays the details of all the APs in a table format.

Example

The output of this command shows details of an entry in the station table.

```
(host) # show station-table mac 00:1f:6c:7a:d4:fd

Association Table
-----------------
     BSSID              IP         Essid   AP name  Phy  Age
---------------    -----------   -------  -------  ---  ---
00:0b:86:6d:3e:30  10.15.20.252  sam      -        a    01:03:41
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show storage

```
show storage
```

Description

Displays the storage information on the controller.

Syntax

No parameters.

Example

The output of this command shows the storage details on the controller.

```
(host) # show storage
Filesystem                Size      Used Available Use% Mounted on
/dev/root                57.0M     54.6M      2.3M  96% /
none                     70.0M      2.0M     68.0M   3% /tmp
/dev/hda3               149.7M      9.3M    132.6M   7% /flash
/dev/usb/flash3           1.5G    168.6M      1.3G  12% /flash
/dev/usbdisk/2            3.5G     71.4M      3.2G   2% /mnt/usbdisk/2
/dev/usbdisk/1            3.9G    131.0M      3.8G   3% /mnt/usbdisk/1
```

The number at the end of the USB device's name is the partition. Unlike the controller's flash, the USB device has more than two partitions; not just 0 and 1. When copying a file from a USB device, you must know which partition the target file is on.

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show switch ip

```
show switch ip
```

Description

Displays the IP address of the controller and VLAN ID.

Syntax

No parameters.

Example

The output of this command shows the IP address and VLAN ID of the controller.

```
(host) # show switch ip

Switch IP Address: 10.16.15.1

Switch IP is from Vlan Interface: 1
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show switch software

```
show switch software
```

Description

Displays the details of the software running in the controller.

Syntax

No parameters.

Example

The output of this command shows the details of software running in the controller.

```
(host) # show switch software
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show switches

```
show switches [all | regulatory | state {complete | incomplete | inprogress | required} |
summary ]
```

Description

Displays the details of controllers connected to the master controller, including the master controller itself.

Syntax

Parameter	Description
`all`	List of all controllers.
`regulatory`	Displays information about the currently active regulatory file.
`state`	Configuration status of all controllers.
`summary`	Status of all controllers connected to the master.

Example

The output of this command shows that there is a single local controller connected to the master controller.

```
(host) # show switches all

All Switches
------------
IP Address  Name         Location          Type    Version        Status  Configuration State
Config Sync Time (sec)
----------  ----         --------          ----    -------        ------  -------------------
----------------------
10.16.12.1  r-wing-94    Building1.floor1  master  6.0.0.0_13782  up      UPDATE SUCCESSFUL
0192.0.2.12  CorpA2400    Building1.floor1  master  6.0.0.0_13782  up      UPDATE SUCCESSFUL
 0
```

The following command displays information about branch controllers defined using a branch config group on a master controller. In the example below, the table in the command output has been divided into two sections to better fit on this document. In the ArubaOS command-line interface, this output appears in a single, wide table.

```
(host) (config) #show switches branch
All Branch Controllers
----------------------
IP Address    MAC               Hostname  Model      Version        Status
----------    ---               --------  -----      -------        ------
172.16.0.254  00:1a:1e:00:56:68  host      DellW-7210  6.4.3.0_48786  up

Branch Group  Configuration State  Branch Config ID  Uptime
------------  -------------------  ----------------  ------
branch1       UPDATE SUCCESSFUL    3                 7d 21h 20m
```

The output of the previous command includes the following parameters:

Parameter	Description
IP address	IP address of the controller
MAC	MAC address of the controller
Hostname	hostname of the master controller
Model	Controller model type.
Version	Software version running on the controller
Status	A status of up indicates that the controller is active on the network. A status of down indicates that the controller is inactive or unreachable by the master controller
Branch Group	Name of the branch config group assigned to the branch controller.
Configuration State	Status of the configuration assigned to the branch controller,
Branch Config ID	The branch config ID increments every time the branch config group settings are updated. All branch controllers assigned to the same branch config group should display the same branch config ID, indicating that they are all running the same configuration version.
Uptime	Amount of time the controller has been active on the network.

The output of the following command shows the regulatory file active on the controller.

```
(host) #show switches regulatory

All Switches
------------
IP Address     Name  Location          Type    Model      File Version    File Build
----------     ----  --------          ----    -----      ------------    ----------
172.16.0.254   host  Building1.floor1  master  W-7210       1.0_43859       21/4/2014
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.0	The **version** column in the output of this command was expanded to include both the version and the build number for controllers running ArubaOS 6.0 and later releases.
ArubaOS 6.4.1	The **regulatory** parameter was added.
ArubaOS 6.4.3	The **branch** parameter was added to display settings for branch office controllers.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master controllers

show switchinfo

```
show switchinfo
```

Description

Displays the latest and complete summary of controller details including role, last configuration change, hostname, reason for last reboot.

Syntax

No parameters.

Example

The output of this command lists all controllers connected to the master controller including the master controller.

```
(host) # show switchinfo
Hostname is Techpubs
Console Baudrate: 115200
Location not configured
System Time:Tue Nov 27 16:22:14 PST 2012
Compiled on 2012-11-26 at 17:06:31 PST (build 36290) by p4build
ROM: System Bootstrap, Version CPBoot 1.2.0.9 (build 35873)
Built: 2012-10-24 13:51:09
Built by: p4build@re_client_35873
Switch uptime is 9 hours 34 minutes 3 seconds
Reboot Cause: User reboot.
Built: 2012-10-24 13:51:0
Built by: p4build@re_client_35873

Internet address is 172.16.0.254  255.255.255.0
Routing interface is enable, Forwarding mode is enable
Directed broadcast is disabled
Encapsulation 802, loopback not set
Last clearing of "show interface" counters 0 day 9 hr 34 min 3 sec
link status last changed 0 day 9 hr 34 min 3 sec
Proxy Arp is disabled for the Interface
switchrole:master
Configuration unchanged since last save
Crash information available.
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show syscontact

```
show syscontact
```

Description

Displays the contact information for support.

Syntax

No parameters.

Example

The output of this command shows the contact information for technical support.

```
(host) # show syscontact

admin@mycompany.com
```

Command History

This command was available in ArubaOS 3.1

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show syslocation

```
show syslocation
```

Description

Displays the location details of the controller.

Syntax

No parameters.

Example

The output of this command location of the controller.

```
(host) # show syslocation

Building 1, Floor 1
```

Command History

This command was available in ArubaOS 3.1

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show tech-support

```
show tech-support
<filename>
user
```

Description

Displays all information about the controller required for technical support purposes.

Syntax

Parameter	Description
`<filename>`	Stores the output in specified file name. Maximum length of the file name is 127 characters
`user`	Run a user specific tech-support command.

Command History

Release	Modification
ArubaOS 3.1	Command available.
ArubaOS 6.2	**User** and **<filename>** parameters added.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show telnet

```
show telnet
```

Description

Displays the status of telnet access using the command line interface (CLI) or Serial over Ethernet (SOE) to the controller.

Syntax

No parameters.

Example

The output of this command shows the status of CLI and SOE access to the controller.

```
(host) # show telnet

telnet cli is enabled
telnet soe is enabled
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show threshold

```
show threshold
   all|controlpath-cpu|controlpath-memory|datapath-cpu|
   no-of-aps|no-of-locals|total-tunnel-capacity|user-capacity|
```

Description

This command shows controller capacity thresholds which, when exceeded, will trigger alerts.

Syntax

Parameter	Description
`all`	Display all alert thresholds.
`controlpath-cpu`	Display the alert threshold for controlpath CPU capacity. The output of this command shows the percentage of the total controlpath CPU capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 80%.
`controlpath-memory`	Display the alert threshold for controlpath memory consumption. The output of this command shows the percentage of the total memory capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 85%.
`datapath-cpu`	Display the alert threshold for datapath CPU capacity. The output of this command shows the percentage of the total datapath CPU capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 30%.
`no-of-APs`	The maximum number of APs that can be connected to a controller is determined by that controller's model type and installed licenses. This threshold triggers an alert when the number of APs currently connected to the controller exceeds a specific percentage of its total AP capacity. The default threshold for this parameter is 80%.
`no-of-locals`	Display the alert threshold for the master controller's capacity to support branch and local controllers. A master controller can support a combined total of 256 branch and local controllers. The output of this command shows the percentage of the total master controller capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 80%.
`total-tunnel-capacity`	Display the alert threshold for the controller's tunnel capacity. The output of this command shows the percentage of the controller's total tunnel capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 80%

Parameter	Description
`user-capacity`	Display the alert threshold for the controller's user capacity. The output of this command shows the percentage of the total resource capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 80%.

Usage Guidelines

The controller will send a *wlsxThresholdAbove* SNMP trap and a syslog error message when the controller has exceeded a set percentage of the total capacity for that resource. A *wlsxThresholdBelow* SNMP trap and error message will be triggered if the resource usage drops below the threshold once again.

Example

```
(host) (config) #show threshold all
Controller Capacity Threshold Values
------------------------------------
RESOURCE                THRESHOLD(%)
--------                ------------
Datapath-Cpu            30 %
Controlpath-Cpu         80 %
Controlpath-Memory      85 %
Total-Tunnel-Capacity   80 %
Ap-Tunnel-Capacity      80 %
User-Capacity           80 %
No-of-APs               80 %
No-of-locals            80 %
```

Command History

The command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master and local controllers

show threshold-limits

```
show threshold-limits
   controlpath-memory|fan-speed|no-of-aps|no-of-locals|total-tunnel-capacity|user-capacity
```

Description

This command shows current values of the different resources monitored by the controller.

Syntax

Parameter	Description
`controlpath-memory`	The output of this command displays the default memory threshold which, when exceeded, will trigger an alert, the current configured threshold, the total memory (in MB) and the currently available memory (in MB).
`fan-speed`	The output of this command displays the fan alert threshold. This parameter is only available for controllers with fans, such as the W-7200 Series.
`no-of-aps`	The output of this command displays the following values: • The default threshold for the number of APs, which, when exceeded, will trigger an alert • The current configured threshold. • The maximum number of APs supported by the controller, • The number of available licenses for campus and remote APs, • The total number of APs, and the current number of campus, remote and virtual APs.
`no-of-locals`	The output of this command displays the default threshold for the number of local controllers which, when exceeded, will trigger an alert, and the current configured threshold. The output also displays the maximum number of local controllers that can be connected to this master controller, and the number of local controllers currently connected.
`total-tunnel-capacity`	The output of this command displays the default tunnel capacity threshold which, when exceeded, will trigger an alert, as well as the current configured tunnel threshold. The output also includes the maximum number of tunnels supported by the controller, as well as the number of tunnels currently used by the controller.
`user-capacity`	The output of this command displays the default user capacity threshold which, when exceeded, will trigger an alert, as well as the current configured user threshold. The output also includes the maximum number of users supported by the controller, as well as the number of users currently associated with the controller.

Usage Guidelines

The controller will send a *wlsxThresholdAbove* SNMP trap and a syslog error message when the controller has exceeded a set percentage of the total capacity for that resource. A *wlsxThresholdBelow* SNMP trap and error message will be triggered if the resource usage drops below the threshold once again.

Example

The following command shows the current alert thresholds for controlpath memory resources:

```
(host) (config) #show threshold-limits controlpath-memory

Threshold Values For Controlpath Memory
---------------------------------------
Default(%)  Current(%)  Total Memory (MB)  Available Memory (MB)
----------  ----------  -----------------  ---------------------
85                  77                 679                    225
```

The following command shows the current alert thresholds for all monitored controller resources:

Command History

The command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master and local controllers

show time-range

```
show time-range [<name>|summary]
```

Description

Displays the list of time range configured in the system and rules affected by the time range.

Syntax

No parameters.

Example

The output of this command shows the absolute time range details.

```
(host) # show time-range

Time-Range monitoring, Absolute
-------------------------------
StartDate  Start-time  EndDate    End-time  Applied
---------  ----------  -------    --------  -------
4/29/2009  23:00       4/30/2009  12:00     No
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show timer debug statistics app-name

```
show ipc statistics app-name <name>
```

Description

Displaytimer debugging statistics for a specific application.

Syntax

Parameter	Description	
`<name>`	One of the following application names: • **aaa**: Administrator Authentication • **ads**: Anomaly Detection • **authmgr**: User Authentication • **certmgr**: Certificate Manager • **cfgm**: Config Manager • **cpsec**: Control-Plane Security Manager • **cts**: Transport Service • **dbsync**: Database Synchronization • **dhcp**: DHCP Server • **esi**: Server Load Balancing • **fpapps**: Layer 2,3 control • **ha_mgr**: HA manager • **httpd**: HTTPD • **ike**: IKE Daemon • **l2tp**: L2TP • **licensemgr**: License Manager • **mdns**: AirGroup mdns • **mobileip**: Mobile IP	• **ntp**: NTP Daemon • **ospf**: OSPF • **pim**: Protocol Independent Multicast • **pktfilter**: Packet Filter • **pptp**: PPTP • **profmgr**: Profile Manager • **publisher**: Publish subscribe service • **resolver**: Resolver • **snmp**: SNMP agent • **stm**: Station Management • **syslogd**: Syslog Manager • **userdb**: User Database Server • **wms**: Wireless Management

Example

The following example shows IPC statistics for the **STM** process.

```
(host) #show timer debug statistics app-name stm

Granularity=100
Wheel Size=512
Tick Count=5744522
Spoke Index=394
Active timers=21
Expired timers=886374
Hiwater mark=49
Started timers=109893
```

```
Cancelled timers=4425
Timer info
SI       TV       RC       Recurring        RT       Callback         FN
0      3600000  30       Yes              1575400  0x2ad41c84       PAPI_Init_Prio:1245
0      3600000  30       Yes              1575400  0x2ad4a200       PAPI_Init_Prio:1249
0      3600000  30       Yes              1575400  0x2ad41c84       PAPI_Init_Prio:1245
0      3600000  30       Yes              1575400  0x2ad4a200       PAPI_Init_Prio:1249
0      3600000  30       Yes              1575400  0x2ad41c84       PAPI_Init_Prio:1245
0      3600000  30       Yes              1575400  0x2ad4a200       PAPI_Init_Prio:1249
0      3600000  30       Yes              1575400  0x2ad41c84       PAPI_Init_Prio:1245
0      3600000  30       Yes              1575400  0x2ad4a200       PAPI_Init_Prio:1249
0      3600000  30       Yes              1575400  0x2ad41c84       PAPI_Init_Prio:1245
360    300000   0        Yes              3400     0x57d564         sapm_ap_mgmt_init:831
360    60000    0        Yes              3400     0x46942c         addservicetomonitor:169
360    60000    0        Yes              3400     0x2b230730       Nanny_Start_Processing:98
360    60000    0        Yes              3400     0x54e8a4         voip_ucm_init:255
380    60000    0        No               1400     0x646fb8         mon_mgr_set_coll_stats_timer:48
402    1000     0        Yes              800      0x42a068         main:1104
410    300000   1        Yes              52800    0x5b599c         sapm_gap_read_db:3409
422    5000     0        Yes              2800     0x2b2544a0       boc_licusage_init:115
447    8085     0        No               5300     0x478660         mux_heartbeat:1017
472    10000    0        Yes              7800     0x41ce70         wifi_auth_reg_timer_init:7539
492    60000    0        No               9800     0x42a820         stm_set_net_stats_update_timer:
SI: Spoke Index TV: Timer Value RC: Rotation Count
RT: Remaining Time      FN: Function:Line Number
```

Command History

This command was available in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show tpm cert-info (deprecated)

```
show tpm cert-info
```

Description

Displays the TPM and Factory Certificate information on older MIPS controllersnot supported by this version of ArubaOS

Command History

Release	Modification
ArubaOS 5.0	Command introduced
ArubaOS 6.5	Command deprecated

show trunk

```
show trunk
```

Description

Displays the list of trunk ports on the controller.

Syntax

No parameters.

Example

The output of this command shows details of a trunk port.

```
(host) # show trunk

Trunk Port Table
-----------------
Port    Vlans Allowed                          Vlans Active                           Native
Vlan
----    -------------                          ------------                           --------
---
FE2/12  1,613,615-617,632-633,636-640,667-668  1,613,615-617,632-633,636-640,667-668  1
```

Command History

This command was available in ArubaOS 3.0

Command Information

Pslatforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show tunnel-group

```
show tunnel-group <tunnel-group-name>
```

Description

Displays the operational status of the tunnel-groups configured on the controller.

Syntax

Parameter	Description
<tunnel-group-name>	Displays the operational status of the specified tunnel-group.

Example

The output of this command shows the status of the configured tunnel-groups:

```
(host) #show tunnel-group

Tunnel-Group Table Entries
--------------------------
Tunnel Group Type Tunnel Group Id Preemptive Failover  Active Tunnel Id Tunnel Members
------------ ---- --------------- -------------------- ---------------- --------------
tgroup1      L3   16385           enabled              10               10 20
tgroup2      L2   16387           enabled              10               10 20 40
```

The output of the following command shows the status of the specified tunnel-group:

```
(host) #show tunnel-group tgroup1

Tunnel-Group Table Entries
--------------------------
Tunnel Group Type Tunnel Group Id Preemptive Failover  Active Tunnel Id Tunnel Members
------------ ---- --------------- -------------------- ---------------- --------------
tgroup1      L3   16385           enabled              10               10 20
```

The output of the following command shows the datapath Tunnel-Group table entries:

```
(host) #show datapath tunnel-group

Datapath Tunnel-Group Table Entries
-----------------------------------
Tunnel-Group Active Tunnel Members
------------ ------------ ---------
16385        10           10 20
```

Command History

Release	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.4.2.3	The **Type** parameter was introduced as part of this command output.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show tunneled-node

```
show tunneled-node [state|database]
```

Description

Displays the state of the tunneled node and lists all tunneled nodes connected to the controller.

Syntax

No parameters.

Example

The output of this command shows the tunneled node state.

```
(host) # show tunneled-node state

Tunneled Node State
---------
IP MAC port state vlan tunnel inactive-time
-- --- --- ----- ---- ------ -------------
192.168.123.14 00:0b:86:40:32:40 0/0/3 complete 10 9 1
192.168.123.14 00:0b:86:40:32:40 0/0/2 complete 10 10 1
192.168.123.14 00:0b:86:40:32:40 0/0/0 complete 10 11 1
```

On the tunneled node client:

```
(host) #show tunneled-node state
Tunneled Node State
-------------------
IP              MAC               port   state     vlan  tunnel  inactive-time
--              ---               ---    -----     ----  ------  -------------
192.168.123.16  00:0b:86:40:32:40  0/0/3  complete  10    21      0
192.168.123.16  00:0b:86:40:32:40  0/0/2  complete  10    9       0
192.168.123.16  00:0b:86:40:32:40  0/0/0  complete  10    13      0
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The command name was changed to **tunneled-node**. The **database** parameter was added.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show ucc call-info cdrs

```
show ucc call-info cdrs
   ap <ap_name> [app [WiFi-Calling | h323 | skhype4b| noe | sccp | sip | svp | vocera]]
   app {WiFi-Calling [detail] | h323 [detail] | skype4b [detail] | noe [detail] | sccp
   [detail] | sip [detail] | svp [detail] | vocera [detail]}
   cid <cid>
   detail
   <cr>
```

Description

This command displays the Call Detailed Records (CDR) statistics for Unified Communication and Collaboration (UCC).

When VoIP calls are prioritized using media classification, the **UCC Call ID**, **Client Name**, **Called to**, **Dir** (direction of the call), **End-to-End Delay(ms)/Jitter(ms)/PktLoss(%)**, **Codec**, **MOS**, and **MOS-Band** values are not available.

Syntax

Parameter	Description
`ap <ap_name> [app [WiFi-Calling | h323 | skype4b| noe | sccp | sip | svp | vocera]]`	Displays the CDR statistics of an AP for a specific Application Layer Gateway (ALG).
`app {WiFi-Calling [detail] | h323 [detail] | skype4b [detail] | noe [detail] | sccp [detail] | sip [detail] | svp [detail] | vocera [detail]}`	Displays the CDR statistics based on a specific ALG.
`cid <cid>`	Displays CDR statistics for a specific CDR-ID.
`detail`	Displays detailed CDR statistics.

Example

The following command displays the CDR statistics:

```
(host) #show ucc call-info cdrs
CDRS:
-----
CDR ID  UCC Call ID  Client IP     Client MAC         Client Name  ALG   Dir  Called to  Dur
(sec)
------  -----------  ---------     ----------         ---------- ------  ----  -----  -------
43      12           192.0.2.22    00:23:33:41:c8:b8  Alex       skype4b   IC   Joe        50
42      12           192.0.2.26    24:77:03:9a:6c:dc  John       skype4b   OG   Mike       50
41      11           192.0.2.29    00:22:90:ea:9e:f1  Steve      skype4b   IC   Ken        50

Orig Time        Status  Reason      Call Type        Client Health     UCC Score  UCC-Band
---------        ------  ------      ---------        -------------     ---------  --------
```

```
Jan  8 06:18:27  SUCC    Terminated  Video/Conf Call  81              81.52      Good
Jan  8 06:18:27  SUCC    Terminated  Voice            82              79.53      Good
Jan  8 06:16:49  SUCC    Terminated  Voice/Conf Call  86              86.34      Good

MOS     MOS-Band
---     --------
4.17    Good
4.15    Good
4.19    Good
```

The output of this command includes the following information:

Column	Description
CDR ID	Displays the Call Detail Record ID of a particular voice and video calls, desktop sharing, or file transfer session.
UCC Call ID	Displays the unique identifier for all call legs of a particular voice and video calls, desktop sharing, or file transfer session.
Client IP	Displays the IP address of the VoIP client.
Client MAC	Displays the MAC address of the VoIP client.
Client Name	Displays the username of the VoIP client.
ALG	Displays the VoIP protocol used by the VoIP client.
Dir	Displays the direction of the call. Possible values are: • **OG**—Outgoing • **IG**—Incoming
Called to	Displays the username of the VoIP client being called.
Dur(sec)	Displays the duration of the VoIP call in seconds.
Orig Time	Displays the time at which the VoIP call originated.
Status	Displays the status of the VoIP call. Possible values are: • **SUCCESS** • **FAILED** • **ABORTED** • **BLOCKED** • **FORWARDED** • **ALERTING** • **HOLD** • **ACTIVE**

Column	Description
Reason	Displays the reason code for call termination. Possible values are: • **NA** • **Capacity Reached** • **401 unauthorized** • **487 request timeout** • **Request timeout** • **Request canceled** • **Request terminated** • **Session timeout** • **Session timer expired** • **Session expired - request timeout** • **Aborted** • **Terminated** • **Forwarded** • **Transferred** • **Inactivity** • **Wrong number** • **Peer reset** • **Client reset** • **No answer** • **Missed** • **Parked** • **Invalid number** • **Tunnel down** • **Moved temporarily** • **4xx error** • **5xx error** • **Call leg does not exist** • **DELTS request** • **TCLAS flow deleted** • **No reason**
Call Type	Displays the type of VoIP call or session. Possible values are: • **Not Available** • **Voice** • **Video** • **Desktop Sharing**

Column	Description
	• **File Transfer** • **Voice/Conf Call** • **Video/Conf Call** • **Desktop-Sharing/Conf Call** • **File-Transfer/Conf Call**
Client Health	Displays the ratio of ideal air time required for transmitting a packet from an AP to a client to the actual air time taken for the packet transmission in percentage. Ideal air time assumes highest data rate without any retransmission.
UCC Score	Displays the UCC score based on the quality of the voice call or desktop sharing session. This is an AP-to-client score (wireless) of the VoIP call.
UCC-Band	Displays the quality band of the VoIP call based on the UCC score.
MOS	Displays the Mean Opinion Score of the VoIP call.
MOS-Band	Displays the Mean Opinion Score of the VoIP call. This is an end-to-end score (wired and wireless) of the VoIP call. MOS-Band is the quality band of the VoIP call based on the MOS of the voice call.

The following command displays the CDR statistics for an AP.

```
(host) #show ucc call-info cdrs ap AP225-1

CDR-AP:
-------
CDR ID  UCC Call ID  AP Name  Re-Assoc  CAC-Denied  Utilization(%)  Codec     Quality  Delay
(msec)
------  -----------  -------  --------  ----------  --------------  -----     -------  -------
----
18      7            AP225-1  0         No          37              G711      Good     0.74
17      7            AP225-1  0         No          37              G711      Fair     19.00
16      6            AP225-1  1         No          34              NA        Good     0.55

Jitter(msec)  Packet Loss(%)  Orig WMM-AC
------------  --------------  -----------
0.21          0.00            NA
0.37          14.93           0
0.05          0.00            0

Max Concurrent Calls: 2 At Jan 14 03:54:15
```

The output of this command includes the following information:

Column	Description
CDR ID	Displays the Call Detail Record ID of a particular voice and video calls, desktop sharing, or file transfer session.

Column	Description
UCC Call ID	Displays the unique identifier for all call legs of a particular voice and video calls, desktop sharing, or file transfer session.
AP Name	Displays the name that uniquely identifies the AP.
Re-Assoc	Displays the number of times the client re-associated while on an active call.
CAC-Denied	Displays the status of the Call Admission Control (CAC). Possible values are: • **Yes**—CAC denied • **No**—CAC allowed
Utilization(%)	Displays the channel utilization of the AP during the call.
Codec	Displays the compression protocol used for voice and video calls, desktop sharing, or file transfer session.
Quality	Displays the quality of the VoIP call based on the UCC score. Possible values are: • **Good** • **Fair** • **Poor** • **NA**
Delay(msec)	Displays the average delay in milliseconds.
Jitter(msec)	Displays the average jitter in milliseconds.
Packet Loss(%)	Displays the loss of packet in percentage.
Orig WMM-AC	Displays the original client value of the Wi-Fi Multimedia Access Category.

The following command displays detailed CDR statistics.

```
(host) #show ucc call-info cdrs detail

CDRS-Detail:
------------
CDR ID  UCC Call ID  AP Name  Re-Assoc  UCC Score  UCC-Band  WLAN Delay(ms)/Jitter(ms)/PktLoss
(%)
------  -----------  -------  --------  ---------  --------  ---------------------------------
---
29      11           AP135-1  0         82.70      Good      0.57/0.01/0.42
22      9            AP135-1  0         83.93      Good      0.30/0.00/0.00

21      9            AP135-1  0         85.07      Good      0.33/0.00/0.64


SNR  Avg Tx Rate(Mbps)  Tx Drop(%)  Tx Retry(%)  Avg Rx Rate(Mbps)  Rx Retry(%)
---  -----------------  ----------  -----------  -----------------  -----------
```

```
48    45.19              0.27         23.99         53.70
46    532.39             0.00         1.42          355.00             0.01
53    58.79              57.52        10.30         107.92             0.01

MOS    MOS-Band  End-to-End Delay(ms)/Jitter(ms)/PktLoss(%)
---    --------  ----------------------------------------
3.50   Good      11.00/11.00/0.24
2.64   Fair      5.00/4.00/NA
4.07   Good      5.00/2.00/0.46
```

The output of this command includes the following information:

Column	Description
CDR ID	Displays the Call Detail Record ID of a particular voice and video calls, desktop sharing, or file transfer session.
UCC Call ID	Displays the unique identifier for all call legs of a particular voice and video calls, desktop sharing, or file transfer session.
AP Name	Displays the name that uniquely identifies the AP.
Re-Assoc	Displays the number of times the client re-associated while on an active call.
UCC Score	Displays the UCC score based on the quality of the voice call or desktop sharing.
UCC-Band	Displays the quality band of the VoIP call based on the UCC score.
WLAN Delay(ms)/Jitter (ms)/PktLoss(%)	Displays the WLAN delay (in milliseconds), jitter (in milliseconds), and packet loss (in percentage). **NOTE:** This field takes only the wireless network QoS parameters into consideration.
SNR	Displays the Signal-to-noise (SNR) ratio. SNR is the power ratio between an information signal and the level of background noise.
Avg Tx Rate(Mbps)	Displays the average transmission rate in Mbps.
Tx Drop(%)	Displays the transmission packet drop in percentage.
Tx Retry(%)	Displays the transmission retry in percentage.
Avg Rx Rate(Mbps)	Displays the average receive rate in Mbps.
Rx Retry(%)	Displays the receive retry in percentage.
MOS	Displays the Mean Opinion Score of the VoIP call. This is an end-to-end score (wired and wireless) of the VoIP call.

Column	Description
`MOS-Band`	Displays the quality band of the VoIP call based on the Mean Opinion Score.
`End-to-End Delay(ms) /Jitter(ms)/PktLoss(%)`	Displays the end-to-end delay (in milliseconds), jitter (in milliseconds), and packet loss (in percentage). **NOTE:** This field takes the wired and wireless network QoS parameters into consideration.

Command History

Version	Description
ArubaOS 6.4	Command introduced.
ArubaOS 6.4.3.0	The **UCC-Band**, **MOS**, and **MOS-Band** fields were introduced as part of the **show ucc call-info cdrs** command output. Following changes were made as part of the **show ucc call-info cdrs cid <cid>** command output: • Moved the **UCC Score**, **Client Health**, **MOS** parameters from the **CDR-Basic** section to the **Call Samples** section heading. • Added a new **Call Sample(per 60 secs)** section heading. This section displays the properties of media session like IP, port, codec, DSCP, and WMM values. • Renamed the **CDRS-Detail** section heading to **WLAN Quality-Details**. • Added a new **End-to-End Quality-Details** section heading. This section displays the MOS, MOS band, delay, jitter, packet loss values. • Under the **Call Samples** section heading, added the **MOS**, **MOS-Band**, **End-to-End Delay(ms/Jitter(ms)/PktLoss(%)** fields. Following changes were made as part of the **show ucc call-info cdrs detail** command output: • Removed the **Src Port**, **Dest Port**, **Codec**, **DSCP**, **Orig DSCP**, **WMM-AC**, **Orig WMM-AC** fields. • Merged the **Delay(msec)**, **Jitter(msec)**, and **Packet Loss (%)** fields to **WLAN Delay(ms)/Jitter(ms)/PktLoss(%)**. • Added the **MOS**, **MOS-Band**, **End-to-End Delay(ms)/Jitter(ms) /PktLoss(%)** fields.
ArubaOS 6.4.4.0	The **lync** parameter was deprecated, and is replaced by the **skype4b** parameter.
ArubaOS 6.5	The **WiFi-Calling** application parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license.	Config or Enable mode on master or local controllers.

show ucc client-info

```
show ucc client-info
   app {WiFi-Calling [detail] | h323 [detail] | skype4b [detail] | noe [detail] | sccp
   [detail] | sip [detail] | svp [detail] | vocera [detail]}
   detail
   sta <mac>
   <cr>
```

Description

This command displays the UCC client status and CDR statistics.

When VoIP calls are prioritized using media classification, the **Client Name** value is not available.

Syntax

Parameter	Description
`app {WiFi-Calling [detail] | h323 [detail] | skype4b [detail] | noe [detail] | sccp [detail] | sip [detail] | svp [detail] | vocera [detail]}`	Displays the UCC client status and CDR statistics based on a specific ALG.
`detail`	Displays UCC client status details.
`sta <mac>`	Displays the detailed record for a specific client based on its MAC address.

Example

The following command displays the UCC client status and record:

```
(host) # show ucc client-info
Client Status:
--------------
Client IP     Client MAC         Client Name  ALG      Server(IP)  Registration State  Call
Status
---------     ----------         -----------  -----    ----------  ------------------  -------
----
192.0.2.22    00:23:33:41:c8:b8  Alex         skype4b  192.0.2.1   REGISTERED          Idle

192.0.2.26    24:77:03:9a:6c:dc  John         skype4b  192.0.2.1   REGISTERED          Idle


AP Name  Flags  Device Type
-------  -----  -----------
W-AP105          Windows
W-AP135          Win 7

Flags: V - Visitor, A - Away, W - Wired, R - Remote, B - Blocked, E - External
```

The output of this command includes the following information:

Column	Description
Client IP	Displays the IP address of the VoIP client.
Client MAC	Displays the MAC address of the VoIP client.
Client Name	Displays the username of the VoIP client.
ALG	Displays the Application Layer Gateway protocol used by the VoIP client.
Server(IP)	Displays the IP address of call server the client is registered to.
Registration State	Displays the registration status of the VoIP call. Possible values are: • **Registered** • **Registering** • **Unregistered** • **Rejected** • **Unknown**
Call Status	Displays the VoIP call status of the client. Possible values are: • **Idle** • **In-Call**
AP Name	Displays the name of the AP to which the VoIP client is associated.
Flags	Displays if the client is a visitor, away, wired, remote, blocked, or external.
Device Type	Displays the device type identification of the client.

The following command displays the UCC client status details:

```
(host) #show ucc client-info detail

Client Status Details(Average):
-------------------------------
Client IP     Client MAC         Client Name  WLAN Delay(ms)/Jitter(ms)/PktLoss(%)
---------     ----------         -----------  -------------------------------------
192.0.2.22    00:23:33:41:c8:b8  Alex         1.33/0.15/1.99
192.0.2.26    24:77:03:9a:6c:dc  John         0.82/0.17/0.05

End-to-End Delay(ms)/Jitter(ms)/PktLoss(%)  Call-Dur(sec)  TxRate(Mbps)  RxRate(Mbps)
------------------------------------------  -------------  ------------  ------------
79.00/3.23/1.72                             1114           84.42         130.56
10.36/3.55/0.07                             584            27.02         30.12

BW(kbps)  CAC Denied  ALG
--------  ----------  ---
1007      0           skype4b
795       0           skype4b
```

The output of this command includes the following information:

Column	Description
Client IP	Displays the IP address of the VoIP client.
Client MAC	Displays the MAC address of the VoIP client.
Client Name	Displays the username of the VoIP client.
WLAN Delay(ms)/Jitter(ms)/PktLoss(%)	Displays the WLAN delay (in milliseconds), jitter (in milliseconds), and packet loss (in percentage). **NOTE:** This field takes only the wireless network QoS parameters into consideration.
End-to-End Delay(ms)/Jitter(ms)/PktLoss(%)	Displays the end-to-end delay (in milliseconds), jitter (in milliseconds), and packet loss (in percentage). **NOTE:** This field takes the wired and wireless network QoS parameters into consideration.
Call-Dur(sec)	Displays the average call duration in seconds.
TxRate(Mbps)	Displays the average transmission rate in Mbps.
RxRate(Mbps)	Displays the average receive rate in Mbps.
BW(kbps)	Displays the bandwidth required (in kbps) for the VoIP call.
CAC Denied	Displays the number of times a call admission control is denied to a VoIP client.
ALG	Displays the Application Layer Gateway protocol used by the VoIP client.

The following command displays a detailed record for a specific client MAC address:

```
(host) #show ucc client-info sta 00:21:6a:b9:5f:34

Station Report:
---------------
Client IP     Client MAC         Client Name  AP-Name   SNR  Avg Tx Rate(Mbps)
---------     ----------         -----------  -------   ---  -----------------
10.15.88.245  00:21:6a:b9:5f:34  Alex         W-AP135-1  45   54.56

Tx Drop(%)  Tx Retry(%)  Avg Rx Rate(Mbps)  Rx Retry(%)  Un-steerable (reason)
----------  -----------  -----------------  -----------  ---------------------
1.06        24.06        43.16              0.41         NA

Active Calls:
-------------
CDR ID  UCC Call ID  Client IP     Client Name  ALG     Dir  Called To  Dur(sec)  Orig-Time
------  -----------  ---------     -----------  ---     ---  ---------  --------  ---------
116     12           10.15.88.245  Alex         skype4b OG   Joe        421       Jan 20
01:36:08
```

```
Status  Call Type  Client Health  UCC Score  UCC-Band  MOS   MOS-Band
------  ---------  -------------  ---------  --------  ---   --------
ACTIVE  Voice      62             81.52      Good      4.17  Good

Call History:
-------------
CDR ID  UCC Call ID  Client IP     Client Name  ALG     Dir  Called To  Dur(sec)  Orig-Time
------  -----------  ---------     -----------  ---     ---  ---------  --------  ---------
54      23           10.15.88.245  Alex         skype4b OG   Mike       847       Jan 16
02:45:22
53      22           10.15.88.245  Alex         skype4b OG   Ken        789       Jan 14
06:53:41

Status  Reason      Call Type        Client Health  UCC Score  UCC-Band  MOS   MOS-Band
------  ------      ---------        -------------  ---------  --------  ---   --------
SUCC    Terminated  Voice            49             71.72      Good      3.85  Good
SUCC    Terminated  Voice/Conf Call  44             68.22      Fair      4.13  Good
```

The output of this command includes the following information:

Column	Description
Station Report	
Client IP	Displays the IP address of the VoIP client.
Client MAC	Displays the MAC address of the VoIP client.
Client Name	Displays the username of the VoIP client.
AP-Name	Displays the name of the AP handling the VoIP call.
SNR	Displays the Signal-to-noise (SNR) ratio. SNR is the power ratio between an information signal and the level of background noise.
Avg Tx Rate(Mbps)	Displays the average transmission rate in Mbps.
Tx Drop(%)	Displays the transmission packet drop in percentage.
Tx Retry(%)	Displays the transmission retry in percentage.
Avg Rx Rate(Mbps)	Displays the average receive rate in Mbps.
Rx Retry(%)	Displays the receive retry in percentage.
Un-steerable (reason)	Displays the reason for steering/not steering the client to another band. Possible values are: • **Sticky** • **Load Balance** • **Band Steer** • **Band Balance** • **Administrator Added**

Column	Description
	• **(IOS)** • **NA**
Active Calls	
CDR ID	Displays the Call Detail Record ID of a particular voice and video calls, desktop sharing, or file transfer session.
UCC Call ID	Displays the unique identifier for all call legs of a particular voice and video calls, desktop sharing, or file transfer session.
Client IP	Displays the IP address of the VoIP client.
Client Name	Displays the username of the VoIP client.
ALG	Displays the Application Layer Gateway protocol used by the VoIP client.
Dir	Displays the direction of the call. Possible values are: • **OG**—Outgoing • **IG**—Incoming
Called To	Displays the username of the VoIP client being called.
Dur(sec)	Displays the duration of the VoIP call in seconds.
Orig-Time	Displays the time at which the VoIP call originated.
Status	Displays the status of the VoIP call. Possible values are: • **SUCCESS** • **FAILED** • **ABORTED** • **BLOCKED** • **FORWARDED** • **ALERTING** • **HOLD** • **ACTIVE**
Call Type	Displays the type of VoIP call or session. Possible values are: • **Not Available** • **Voice** • **Video** • **Desktop Sharing**

Column	Description
	• **File Transfer** • **Voice/Conf Call** • **Video/Conf Call** • **Desktop-Sharing/Conf Call** • **File-Transfer/Conf Call**
Client Health	Displays the ratio of ideal air time required for transmitting a packet from an AP to a client to the actual air time taken for the packet transmission in percentage. Ideal air time assumes highest data rate without any retransmission.
UCC Score	Displays the UCC score based on the quality of the voice call or desktop sharing session. This is an AP-to-client score (wireless) of the VoIP call.
UCC-Band	Displays the quality band of the VoIP call based on the UCC score.
MOS	Displays the Mean Opinion Score of the VoIP call.
MOS-Band	Displays the Mean Opinion Score of the VoIP call. This is an end-to-end score (wired and wireless) of the VoIP call. MOS-Band is the quality band of the VoIP call based on the MOS of the voice call.
Call History	
Reason	Displays the reason code for call termination. Possible values are: • **NA** • **Capacity Reached** • **401 unauthorized** • **487 request timeout** • **Request timeout** • **Request canceled** • **Request terminated** • **Session timeout** • **Session timer expired** • **Session expired - request timeout** • **Aborted** • **Terminated** • **Forwarded** • **Transferred** • **Inactivity** • **Wrong number** • **Peer reset**

Column	Description
	• **Client reset** • **No answer** • **Missed** • **Parked** • **Invalid number** • **Tunnel down** • **Moved temporarily** • **4xx error** • **5xx error** • **Call leg does not exist** • **DELTS request** • **TCLAS flow deleted** • **No reason**
NOTE: For information on additional field descriptions, refer the field descriptions under the **Active Calls** heading.	

Command History

Version	Description
ArubaOS 6.4	Command introduced.
ArubaOS 6.4.3.0	Following changes were made as part of the **show ucc client-info details** command output: • Renamed the **Client Status Details** section heading to **Client Status Details(Average)** and removed the **Avg** word from all field headings. • Added the **Client Name** field. • Merged the **Avg Delay(msec)**, **Avg Jitter(msec)**, and **Avg Packet Loss (%)** fields to **WLAN Delay(ms)/Jitter(ms)/PktLoss(%)**. • Added the **End-to-End Delay(ms)/Jitter(ms)/PktLoss(%)** field. • Renamed the **Num CAC Denied** field to **CAC Denied**. Following changes were made as part of the **show ucc client-info sta <mac>** command output: • Under the **Station Report** section heading, added the **Client Name** field. Removed the **UCC-Score** and **Client Health** fields. • Under the **Active Calls** section heading, added the **UCC-Band**, **MOS**, and **MOS-Band** fields. • Under the **Call History** section heading, added the **UCC-Band**, **MOS**, and **MOS-Band** fields.
ArubaOS 6.4.4.0	The **lync** parameter was deprecated, and is replaced by the **skype4b** parameter.
ArubaOS 6.5	The **WiFi-Calling** application parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license.	Config or Enable mode on master or local controllers.

show ucc configuration

```
show ucc configuration
   cac-alg
   dialplan-profile [<profile-name>]
   logging
   midcall-timeout
   realtime-analysis
   rtcp-inactivity
   sip
   traffic-control skype4b[<profile-name>]
   <cr>
```

Description

This command displays the UCC configuration in the controller.

Syntax

Parameter	Description
`cac-alg`	Displays the CAC profiles configured in the controller.
`dialplan-profile [<profile-name>]`	Displays the dialplan profile configured in the controller.
`logging`	Displays the MAC address of the voice client that has logging enabled.
`midcall-timeout`	Displays the status of the SIP mid-call request timeout configuration on the controller.
`realtime-analysis`	Displays the status of real-time call quality analysis configuration.
`rtcp-inactivity`	Displays the Real Time Control Protocol (RTCP) inactivity timer status.
`sip`	Displays the Session Initiation Protocol (SIP) settings in the controller.
`traffic-control skype4b [<profile-name>]`	Displays the Skype4b traffic control profile configuration in the controller.

Example

The following command displays the overall UCC configuration in the controller:

```
(host) #show ucc configuration

Voice firewall policies
-----------------------
Policy                      Action
------                      ------
Stateful SIP Processing     Enabled
WMM content enforcement     Disabled
Session VOIP Timeout        Enabled
Stateful H.323 Processing   Enabled
Stateful SIPS Processing    Enabled
Stateful SCCP Processing    Enabled
```

```
Stateful VOCERA Processing  Enabled
Stateful UA Processing      Enabled

SSID Profiles
-------------
Profile Name                    WMM       WMM-UAPSD  TSPEC Min Inactivity(msec)  DSCP-vo
------------                    ---       ---------  --------------------------  -------
AP01-SSID-PROFILE-WPA2          Disabled  Enabled    0                           56
default                         Disabled  Enabled    0                           56

DSCP-vi  DSCP-be  DSCP-bk  Battery Boost  EDCA STA prof  EDCA AP prof  Strict SVP
-------  -------  -------  -------------  -------------  ------------  ----------
40       24       8        Disabled       N/A            N/A           Disabled
34       24       8        Disabled       N/A            N/A           Disabled

AP Group Profiles
-----------------
Profile Name       VoIP CAC Profile
------------       ----------------
default            default
employee           default

Virtual AP Group Profiles
-------------------------
Profile Name               802.11K Profile  HA Discovery on-assoc.
------------               ---------------  ----------------------
default                    default          Enabled
VoIP-net                   default          Enabled

VoIP Call Admission Control Profiles
------------------------------------
Profile Name  VoIP CAC
------------  --------
default       Disabled
voip_cac      Disabled

802.11K Profiles
----------------
Profile Name  Advertise 802.11K Capability
------------  ----------------------------
default       Disabled

SIP settings
------------
Parameter         Value
---------         -----
Session Timer     Disabled
Session Expiry    300 sec
Dialplan Profile  N/A

Voice rtcp-inactivity:disable
Voice sip-midcall-req-timeout:disable
```

The following command displays the Skype4b traffic control profile configuration in the controller:

```
(host) #show ucc configuration traffic-control skype4b default

Traffic Control Prioritization Profile "default"
------------------------------------------------
Parameter                  Value
---------                  -----
prioritize voice           Enabled
prioritize video           Enabled
```

```
prioritize desktop-sharing  Enabled
prioritize file-transfer    Enabled
```

Command History

Version	Description
ArubaOS 6.4	Command introduced.
ArubaOS 6.4.4.0	The **lync** parameter is deprecated, and is replaced by the **skype4b** parameter

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license.	Config or Enable mode on master or local controllers.

show ucc dns-ip-learning

```
show ucc dns-ip-learning
```

Description

This command displays the carrier's evolved Packet Data Gateway (ePDG) IP address learned by the controller. This command is specific for Wi-Fi calling clients.

Syntax

No parameters.

Example

The following command displays the carrier's evolved Packet Data Gateway (ePDG) IP address learned by the controller:

```
(host) #show ucc dns-ip-learning

DNS IP Learning:
----------------
IP Address      Service Provider
----------      ----------------
208.54.85.108   T-Mobile
208.54.73.77    T-Mobile
208.54.70.110   T-Mobile
208.54.77.253   T-Mobile
208.54.75.2     T-Mobile
208.54.85.64    T-Mobile
208.54.73.76    T-Mobile
208.54.83.96    T-Mobile
208.54.85.111   T-Mobile

Total Entries:9
```

Command History

Version	Description
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license.	Config or Enable mode on master or local controllers.

show ucc statistics

```
show ucc statistics
   counter cac | call {client [app {WiFi-Calling | h323 | skype4b| noe | sccp | sip | svp |
   vocera}]| global [app {WiFi-Calling | h323 | skype4b| noe | sccp | sip | svp | vocera}]}
   dialplan-hits
   remote wmm-flow {ap-name <ap-name> | bssid <bssid> | ip-addr <ip-addr>}
   tspec-enforcement
   wmm-flow
```

Description

This command displays the UCC call statistics in the controller.

Syntax

Parameter	Description
`counter cac | call {client [app {WiFi-Calling | h323 | skype4b| noe | sccp | sip | svp | vocera}]| global [app {WiFi-Calling | h323 | skype4b| noe | sccp | sip | svp | vocera}]}`	Displays CAC, global, and client call counters.
`dialplan-hits`	Displays dialplan hits for UDP-based SIP calls.
`remote wmm-flow {ap-name <ap-name> | bssid <bssid> | ip-addr <ip-addr>}`	Displays Wi-Fi Multimedia (WMM) flows active on the AP based on the AP name, BSSID, or IP address.
`tspec-enforcement`	Displays the number of TSPEC requests accepted, rejected, or denied.
`wmm-flow`	Displays Wi-Fi Multimedia (WMM) flows active on the AP.

Example

The following command displays the global call counters:

```
(host) # show ucc statistics counter call global

System-wide Call Counters:
--------------------------
Call Originated  Call Terminated  Active  Success  Failed  Blocked  Aborted  Forwarded  WMM
AC-VI
---------------  ---------------  ------  -------  ------  -------  -------  ---------  ------
---
33               21               0       53       0       0        1        0          37


WMM AC-VO  WMM-BK  WMM-BE
---------  ------  ------
0          0       8
```

```
Device Type Allocations:
------------------------
Device Type  WMM AC-VI  WMM AC-VO  WMM-BK  WMM-BE
-----------  ---------  ---------  ------  ------
Windows      19         0          0       4
Win 7        18         0          0       4

WMM (VI, VO, BK, BE):total calls with received priority
```

The following command displays the client call counters:

```
(host) #show ucc statistics counter call client

Per Client Call Counters:
-------------------------
Client IP     Client MAC         Call Originated  Call Terminated  Active  Success  Failed
---------     ----------         ---------------  ---------------  ------  -------  ------
192.0.2.22    00:23:33:41:c8:b8  1                2                0       0        0
192.0.2.26    24:77:03:9a:6c:dc  0                2                0       2        0
192.0.2.29    00:22:90:ea:9e:f1  6                5                0       8        0

Blocked  Aborted  Forwarded  WMM AC-VI  WMM AC-VO  WMM-BK  WMM-BE
-------  -------  ---------  ---------  ---------  ------  ------
0        3        0          0          0          0       3
0        0        0          0          2          0       0
0        3        0          11         0          0       0

WMM (VI, VO, BK, BE):total calls with received priority
```

The output of this command includes the following information:

Column	Description
Client IP	Displays the IP address of the VoIP client.
Client MAC	Displays the MAC address of the VoIP client.
Call Originated	Displays the number of times a call originated from the VoIP client.
Call Terminated	Displays the number of times a call terminated on the VoIP client.
Active	Displays the number of active calls on the VoIP client.
Success	Displays the number of successful calls.
Failed	Displays the number of failed call setup calls.
Blocked	Displays the number of blocked calls due to CAC.
Aborted	Displays the number of terminated calls due to inactivity.
Forwarded	Displays the number of times a call is forwarded for a VoIP client.
WMM AC-VI	Displays the number of calls where the client sent RTP with WMM AC set to Video (VI).

Column	Description
WMM AC-VO	Displays the number of calls where the client sent RTP with WMM AC set to Voice (VO).
WMM-BK	Displays the number of calls where the client sent RTP with WMM AC set to Background (BK).
WMM-BE	Displays the number of calls where the client sent RTP with WMM AC set to Best Effort (BE).

Command History

Version	Description
ArubaOS 6.4	Command introduced.
ArubaOS 6.4.4.0	The **lync** parameter was deprecated, and is replaced by the **skype4b** parameter
ArubaOS 6.5	The **WiFi-Calling** application parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license.	Config or Enable mode on master or local controllers.

show ucc trace-buffer

```
show ucc trace-buffer
   skype4b[count <count>]
   sccp [count <count>]
   sip [count <count>]
```

Description

This command displays the UCC call message trace buffer for Skype4b, SCCP, and SIP ALGs. Call signaling events such as establishing voice, video, desktop sharing, and file transfer are recorded.

Syntax

Parameter	Description
`skype4b [count <count>]`	Displays Skype4b call message trace buffer.
`sccp [count <count>]`	Displays SCCP call message trace buffer.
`sip [count <count>]`	Displays SIP call message trace buffer.

Example

The following command displays Skype4b call message trace buffer:

```
(host) #show ucc trace-buffer skype4b

Skype4b Voice Client(s) Message Trace
-----------------------------------
Client IP     Client MAC         Client Name  Direction  Event Time       BSSID
---------     ----------         -----------  ---------  ----------       -----
192.0.2.22    00:23:33:41:c8:b8  Alex         OG         Jan  3 11:24:34  9c:1c:12:8a:b5:50
192.0.2.26    24:77:03:9a:6c:dc  John         OG         Jan  3 11:24:34  9c:1c:12:8a:b5:50
192.0.2.29    00:22:90:ea:9e:f1  Steve        OG         Jan  3 11:24:08  9c:1c:12:8a:b5:50

Called To  CAC-Status  Media Type   AP Name  Src Port     Dest Port    Call Status
---------  ----------  ----------   -------  --------     ---------    -----------
Joe        PASS        Voice/Video  W-AP225   50030/58008  50032/58006  Start of call
Mike       PASS        Voice/Video  W-AP225   50032/58006  50030/58008  InCallQuality Update
Ken        NA          Voice        W-AP225   50026        50038        Call Quality Update

Num of Rows:3
```

The output of this command includes the following information:

Column	Description
`Client IP`	Displays the IP address of the VoIP client.
`Client MAC`	Displays the MAC address of the VoIP client.
`Client Name`	Displays the user name of the VoIP client.

Column	Description
Direction	Displays the call direction. • **OG** — Outgoing • **IC** — Incoming
Event Time	Displays the time stamp when the VoIP call originated.
BSSID	Displays the BSSID of the AP to which the VoIP client is connected.
Called To	Displays the user name of the VoIP client being called.
CAC-Status	Displays if call admission control limit is reached. The values are: • **PASS** • **FAIL** • **NA** **NOTE:** The value of the **CAC-Status** for the Skype4b client is **NA**, when the call status is **Call Quality Update** or **In call Quality**.
Media Type	Displays the type of Skype4b call. This can be one of the following: • **Desktop-sharing** • **File-transfer** • **Video** • **Voice**
AP Name	Displays the name of the access point receiving calls.
Src Port	Displays the source port for the media session.
Dest Port	Displays the destination port of the particular media session.
Call Status	Displays if the Skype4b client is in any one of the following call status: • **Start of call** • **End of call** • **Before call update** • **Call Quality Update** • **InCallQuality Update** • **After call update**

Command History

Version	Description
ArubaOS 6.4	Command introduced.
ArubaOS 6.4.3.0	The **InCallQuality Update** value was added under the **Call Status** field.
ArubaOS 6.4.4.0	The **lync** parameter is deprecated, and is replaced by the **skype4b** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license.	Config or Enable mode on master or local controllers.

show upgrade configuration

```
show upgrade configuration
```

Description

The output of this command shows the current upgrade configuration, including profile settings, image files and targets.

Syntax

No parameters

Usage Guidelines

The centralized image upgrade feature allows a master controller to automatically upgrade its associated local controllers by sending an image from an image server to one or more local controllers. This feature can and supports up to 100 simultaneous image downloads, and is enabled and configured on a master controller only.

Example

```
(host) #show upgrade configuration
Upgrade configuration
---------------------
Parameter             Value
---------             -----
Protocol              scp
Server IP address     10.1.1.41
Username              tftp
Password              ******
File path             /tftpboot
Max downloads         100
Reboot automatically  true
Image file            ArubaOS_W-7200 Series_6.3.0.0_37916 (verified)
Upgrade target
--------------
IP address  Netmask
----------  -------
192.0.2.0   255.255.255.0
```

The output of this command includes the following information:

Parameter	Description	Range	Default
protocol	Specify the protocol used to send the software upgrade from the image server to the local controller. • TFTP • FTP • SCP	-	TFTP
Server IP	IP address of the image server.	-	-
Username	If the **protocol** parameter is set to **FTP** or **SCP**, this parameter displays the username that ArubaOS uses to connect to the image server	-	-

Parameter	Description	Range	Default
Password	If the **protocol** parameter is set to **FTP** or **SCP**, this parameter displays the password that ArubaOS will use to connect to the image server	-	-
File path	Location on the image server where the image file(s) are located	-	-
Max downloads	Maximum number of local controllers that can simultaneously download a file from a file server. The centralized image downloading feature supports up to 100 simultaneous downloads. If this field is left blank, ArubaOS will use its default value of 10 downloads.	1-100	10
Reboot automatically	If true, the local controllers reboot after they download their new images. **NOTE:** If you enable this option, local controllers will reboot without saving any changes to their current configuration. If you have any unsaved configuration changes on your local controller that you want to retain, do not enable this option	-	Disabled
Image File	Name of image files available for download by controllers using the centralized image upgrade feature. The output of this parameter also shows whether or not these image files have been verified as valid by the controller.	-	-
Target	IP address and netmask of controllers that should download the image from the image server.	-	-

Command History

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
all platforms	Base operating system	Enable mode on master controllers

show upgrade status

```
show upgrade status[summary]
```

Description

The output of this command shows the status of controllers using the centralized upgrade feature.

Syntax

Parameter	Description
`summary`	Display a summary of all local controllers using the centralized image upgrade, including the numbers of controllers currently in each upgrade state.

Usage Guidelines

The centralized image upgrade feature allows the master controller to automatically upgrade its associated local controllers by sending an image from an image server to one or more local controllers. The centralized image upgrade feature can be configured on a master controller only, and supports up to 100 simultaneous downloads.

Example

```
(host) #show upgrade status
All Controllers
---------------
IP Address     Hostname  Type     Model     Version        Upgrade Status
----------     --------  ----     -----     -------        --------------
192.0.2.103  corp-203  master   DellW-7240  6.3.1.0_39600  N/A
192.0.2.104  corp-204  standby  DellW-7220  6.3.1.0_39600  Up-to-date
```

The output of this command includes the following information:

Parameter	Description	Range	Default
`protocol`	Specify the protocol used to send the software upgrade from the image server to the local controller. • TFTP • FTP • SCP	-	TFTP
`Server IP`	IP address of the image server.	-	-
`Username`	If the **protocol** parameter is set to **FTP** or **SCP**, this parameter displays the user name that ArubaOS uses to connect to the image server.	-	-
`Password`	If the **protocol** parameter is set to **FTP** or **SCP**, this parameter displays the password that ArubaOS will use to connect to the image server.	-	-

Parameter	Description	Range	Default
File path	File path to the location on the image server where the image file(s) reside.	-	-
Max downloads	Maximum number of local controllers that can simultaneously download a file from a file server. The centralized image downloading feature supports up to 100 simultaneous downloads. If this field is left blank, ArubaOS will use its default value of 10 downloads.	1-100	10
Reboot automatically	If true, the local controllers reboot after they download their new images. **NOTE:** If you enable this option, local controllers will reboot without saving any changes to their current configuration. If you have any unsaved configuration changes on your local controller that you want to retain, do not enable this option	-	Disabled
Image File	Name of image files available for download by controllers using the centralized image upgrade feature. The output of this parameter also shows whether or not these image files have been verified as valid by the controller.	-	-
Target	IP address and netmask of controllers that should download the image from the image server.	-	-

If you include the optional **summary** parameter, the output of the **show upgrade status summary** command includes the following information.

Parameter	Description
Total Number of Local Switches	Number of local controllers using the centralized image upgrade feature.
Up-to-date	Number of local controllers with a current image that does not need to be upgraded.
Upgrade in progress	Number of local controllers downloading a new image.
Rebooting	Number of local controllers rebooting after downloading a new image.
Waiting	Number of local controllers waiting to download a new image.
Failed	If a local controller fails to download its new image, it goes into this state momentarily before it waits to retry the download.
Failed, waiting	A local controller has failed to upgrade its image and is waiting 15 minutes before it attempts the download again.
Down	The local controller cannot upgrade because it is down or not reachable.
Upgraded, reboot required	The local controller has upgraded its image, and is waiting to reboot. If you did not enable the auto-reboot feature in the upgrade profile, you must manually reboot each controller after it downloads its new image.

Parameter	Description
`Not supported`	The local controller is running a version of ArubaOS that does not support centralized image downloads.
`Waiting, image not verified`	The image must be verified as valid before the local controller can download that image.
`Not part of target`	The local controller is associated with a master controller using the centralized image upgrade feature, but is not part of the upgrade target.
`All target Configured`	All local controllers are on the target list defined by the **upgrade target** command.
`Total Number of host target`	Total number of controller IP address added to the upgrade target list.
`Total Number of subnet target`	Total number of controller subnets added to the upgrade target list.

Command History

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
all platforms	Base operating system	Enable mode on master controllers

show upgrade-profile

Description

The settings in this centralized image upgrade profile allow the master controller to automatically upgrade its associated local controllers by sending an image from an image server to one or more local controllers.

Syntax

No parameters

Usage Guidelines

The centralized image upgrade feature is enabled and configured on a master controller only, and supports up to 100 simultaneous image downloads.

Example

```
(host) (config) # show upgrade-profile
Upgrade Profile
---------------
Parameter                Value
---------                -----
Enable software upgrade  false
Max downloads            10
Reboot automatically     true
Protocol                 tftp
Server IP address        N/A
Username                 N/A
Password                 N/A
File path                N/A
```

The output of this command includes the following information:

Parameter	Description	Range	Default
`Enable software upgrade`	If **true**, the centralized image upgrade feature has been enabled. Note that this feature is disabled by default.	-	Disabled
`Max downloads`	Maximum number of local controllers that can simultaneously download a file from a file server. The centralized image downloading feature supports up to 100 simultaneous downloads. If this field is left blank, ArubaOS will use its default value of 10 downloads.	1-100	10
`Reboot automatically`	If true, the local controllers reboot after they download their new images. **NOTE:** If you enable this option, local controllers will reboot without saving any changes to their current configuration. If you have any unsaved configuration changes on your local controller that you want to retain, do not enable this option.	-	Disabled
`Protocol`	Specify the protocol used to send the software	-	TFTP

Parameter	Description	Range	Default
	upgrade from the image server to the local controller. • TFTP • FTP • SCP		
`Server IP address`	IP address of the image server.	-	-
`Username`	If the **protocol** parameter is set to **FTP** or **SCP**, this parameter displays the user name that ArubaOS uses to connect to the image server.	-	-
`Password`	If the **protocol** parameter is set to **FTP** or **SCP**, this parameter displays the password that ArubaOS will use to connect to the image server.	-	-
`File path`	File path to the location on the image server where the image file(s) reside.	-	-

Command History

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
all platforms	Base operating system	Enable mode on master or local controllers

show uplink

```
show uplink [config|{connection <link_id>}|signal|{stats <link_id}]
```

Description

Displays uplink manager configuration details.

Syntax

Parameter	Description
`config`	Enter the keyword **config** to display the uplink manager, the default wired priority and default cellular priority
`connection`	Enter the keyword **connection** followed by the uplink ID number to display the connection details.
`signal`	Enter the keyword **signal** to display the cellular uplink signal strength.
`stats`	Enter the keyword **stats** followed by the uplink ID number to display the statistical information on the designated uplink.

Example

The output of this command displays the controller uplink status . For a branch controller, the health status of these uplink connections is also displayed in the **Status** section of the **Dashboard>WAN** page of the branch controller WebUI.

```
(host) #show uplink
Uplink Manager: Disabled
Uplink Health-check: Enabled
Uplink Health-check IP/FQDN: 192.0.2.14
Uplink Management Table
-----------------------
Id  Uplink Type  Properties     Priority  State      Status      Reachability
--  -----------  ----------     --------  -----      ------      ------------
1   Wired        vlan 4094      200       Connected  Active      Reachable
2   Cellular     Novatel_U727   100       Standby    Ready       Reachable
```

Related Commands

Command	Description
ip probe default	This command configures WAN health-check ping-probes for measuring WAN availability and latency on branch controller uplinks.
uplink	Manage and configure the uplink network connection.

Command History

Release	Modification
ArubaOS 3.4	Command introduced.
ArubaOS 6.4.4.0	The output of this command was enhanced to display **Uplink Health-check** settings and the ability of the controller to contact the health check FQDN or IP address using each of these uplinks. The output of the **show uplink config** command was enhanced to display the **Default Cellular PID,APN** settings.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master and local controllers

show usb

```
show usb [cellular|ports|test|verbose]
```

Description

Display detailed USB device information.

Syntax

Parameter	Description
`cellular`	Enter the keyword **cellular** to display cellular devices.
`ports`	Enter the keyword **ports** to display detailed TTY port information such as signal strength.
`test`	Enter the keyword **test** to test the USB TTY ports. **NOTE:** Testing an invalid modem port may cause the controller to "hang". To resolve this, unplug and re-plug the modem.
`verbose`	Enter the keyword **verbose** to display detailed USB information including serial number and USB type.

Examples

The USB Device table, in the example below, displays the USB port is in the 'Device Ready' state, meaning that the port has passed the diagnostic test and is ready to send and receive data.

```
(host) (config-cellular new_modem)# show usb
USB Device Table
----------------
Address  Product                Vendor  ProdID  Serial           Type      Profile    State
-------  -------                ------  ------  ------           ----      -------    -----
18       Novatel Wireless CDMA  1410    4100    091087843891000  Cellular  new_modem  Device
ready
```

Below is an example of the **show usb verbose** display output (partial).

```
(host) #show usb verbose
...
T: Bus=01 Lev=02 Prnt=02 Port=00 Cnt=01 Dev#= 3 Spd=12 MxCh= 0
D: Ver= 1.10 Cls=00(>ifc ) Sub=00 Prot=00 MxPS=64 #Cfgs= 1
P: Vendor=1410 ProdID=4100 Rev= 0.00
S: Manufacturer=Novatel Wireless Inc.
S: Product=Novatel Wireless CDMA
S: SerialNumber=091087843891000
C:* #Ifs= 5 Cfg#= 1 Atr=a0 MxPwr=500mA
...
```

Command History

Introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

show user

```
show user
   ap-group <ap-group>
   ap-name <ap-name>
   authentication-method dot1x|mac|opensystem|psk|stateful-dot1x|via-vpn|vpn|web
   bssid <A:B:C:D:E:F>
   devtype <device>
   essid <STRING>
   internal
   ip <A.B.C.D> [log]
   location b.f.l
   mac <A:B:C:D:E:F> [log]
   mobile {[bindings][visitors]}
   name <STRING>
   phy-type {[a]|[b]}
   role <STRING>
   rows <NUMBER> <NUMBER>
```

Description

Displays detailed information about user in terms of AP group, authentication method, role and so on.

Syntax

Parameter	Description
`ap-group <ap-group>`	Filter the output of this command by showing users connected to APs that belong to the specified AP group.
`ap-name <ap-name>`	Filter the output of this command by showing users connected to an AP with the specified AP name.
`authentication-method`	Filter the output of this command by the authentication method used for the device:
`dot1x`	Show data for devices using 802.1X authentication.
`mac`	Show data for devices using MAC authentication.
`opensystem`	Show data for devices using open (no) authentication.
`psk`	Show data for devices that do not use authentication but use a pre-shared key for encryption.
`stateful-dot1x`	Show data for devices using stateful 802.1X authentication.
`via-vpn`	Show data for devices that authenticate using Dell VIA.
`vpn`	Show data for devices using VPN authentication.

Parameter	Description
web	Show data for devices using captive portal authentication.
bssid <A:B:C:D:E:F>	Show user data for a specific device BSSID.
devtype <device>	Show output for a specified device type, if identified. If the device name includes spaces, you must enclose it in quotation marks.
essid <STRING>	Show user data for a specific ESSID. If the ESSID includes spaces, you must enclose it in quotation marks.
internal	Display internal user entries only. Include the **rows** options to filter the output of this command by specifying the number of rows from the end of the output and the total number of rows to display/
ip <A.B.C.D>	Show user data for a specific IP address .
log	If per-user logging is enabled using the aaa log command, include the optional **log** parameter to display authentication log files for a user with the specified MAC address.
mac <A:B:C:D:E:F>	Show user data for a specific MAC address
log	If per-user logging is enabled using the aaa log command, include the optional **log** parameter to display authentication log files for a user with the specified MAC address.
mobile	Filter the output of this command to show data for Mobile users.
bindings	Show data for users that have moved away from their home network.
visitors	Show data for mobility users that are visiting the network.
name <STRING>	User's name.
phy-type	801.11 type
a	Matches PHY type a.
g	Matches PHY type b or g.
role <STRING>	User role such as employee, visitor and so on.
rows <NUMBER> <NUMBER>	Filter the output of the show user command by specifying the number of rows from the end of the output and the total number of rows to display/

Usage Guidelines

Use the **show user** command to show detailed user statistics and roles.

Example

```
(host) #show user
Users
-----
IP           MAC       Name    Role  Age(d:h:m)  Auth  VPN link  AP name  Roaming
Essid/Bssid/Phy  Profile  Forward mode  Type  Host Name
---------- ---------- ------ ---- ---------- ---- -------- ------- ------- --------
------- ------- ---------- ---- ---------
User Entries: 0/0
Curr/Cum Alloc:0/0 Free:0/0 Dyn:0 AllocErr:0 FreeErr:0
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The **devtype** parameter was introduced, and the output of this command expanded to include the **Type** column.
ArubaOS 6.2	Output for the IP address shows if it is derived using DHCP.
ArubaOS 6.3	The optional **log** parameter was introduced to display log files for events triggered by a specific user. All controllers support per-user logging.

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Enable and Config modes.

show user-table

```
show user-table
   ap-group <ap-group>
   ap-name <ap-name>
   authentication-method dot1x|mac|opensystem|psk|stateful-dot1x|via-vpn|vpn|web
   bssid <A:B:C:D:E:F>
   devtype <device>
   debug
   essid <STRING>
   internal
   ip <A.B.C.D> [log]|[detail]
   mac <A:B:C:D:E:F> [log]
   mobile {[bindings][visitors]}
   name <STRING>
   phy-type {[a]|[b]}
   role <STRING>
   rows <NUMBER> <NUMBER>
   station
   summary
   unique
   verbose
```

Description

Displays detailed information about the controller's connection to a user device, in regards to mobility state and statistics, authentication statistics, VLAN assignment method, AP datapath tunnel info, radius accounting statistics, user name, user-role derivation method, datapath session flow entries, and 802.11 association state and statistics. The **show user** command allows you to filter specific information by parameter.

Syntax

Parameter	Description
`ap-group <ap-group>`	Filter the output of this command by showing users connected to APs that belong to the specified AP group.
`ap-name <ap-name>`	Filter the output of this command by showing users connected to an AP with the specified AP name.
`authentication-method`	Filter the output of this command by the authentication method used for the device:
`dot1x`	Show data for devices using 802.1X authentication.
`mac`	Show data for devices using MAC authentication.
`opensystem`	Show data for devices using open (no) authentication.
`psk`	Show data for devices that do not use authentication but use a pre-shared key for encryption.

Parameter	Description
stateful-dot1x	Show data for devices using stateful 802.1X authentication.
via-vpn	Show data for devices that authenticate using Dell VIA.
vpn	Show data for devices using VPN authentication.
web	Show data for devices using captive portal authentication.
bssid <A:B:C:D:E:F>	Show user data for a specific device BSSID.
debug	Show all user data for debugging purposes.
devtype <device>	Show output for a specified device type, if identified. If the device name includes spaces, you must enclose it in quotation marks.
essid <STRING>	Show user data for a specific ESSID. If the ESSID includes spaces, you must enclose it in quotation marks.
internal	Display internal user entries only. Include the **rows** options to filter the output of this command by specifying the number of rows from the end of the output and the total number of rows to display/
ip <A.B.C.D>	Show user data for a specific IP address .
log	If per-user logging is enabled using the aaa log command, include the optional **log** parameter to display authentication log files for a user with the specified MAC address.
detail	Show detailed user data for a specific IP address including role-derivation.
mac <A:B:C:D:E:F>	Show user data for a specific MAC address
log	If per-user logging is enabled using the aaa log command, include the optional **log** parameter to display authentication log files for a user with the specified MAC address.
mobile	Filter the output of this command to show data for Mobile users.
bindings	Show data for users that have moved away from their home network.
visitors	Show data for mobility users that are visiting the network.
name <STRING>	User's name.
phy-type	801.11 type

Parameter	Description
a	Matches PHY type a.
g	Matches PHY type b or g.
role <STRING>	User role such as employee, visitor and so on.
rows <NUMBER> <NUMBER>	Filter the output of the show user command by specifying the number of rows from the end of the output and the total number of rows to display/
station	For internal use only.
summary	Shows the authentication and encryption type used by wired or wireless clients.
unique	Displays only information for users with a valid IP address.
verbose	Displays all information about the user table.

Usage Guidelines

Use the **show user-table** command to show detailed user statistics which includes the entire output of the user-table, mobility state and statics, authentication statistics, VLAN assignment method, AP datapath tunnel information, radius accounting statistics, user-role derivation method, datapath session flow entries and 802.11 association state and statistics.

Examples

This example displays users currently in the **employee** role. The output of this command is split into two tables in this document, however it appears in one table in the CLI.

```
(host) (config) show user role employee
Users
-----
    IP              MAC            Name           Role      Age(d:h:m)  Auth    VPN link  AP
name
----------      ------------       ------         ----      ----------  ----    --------  ----
---
192.168.160.1   00:23:6c:80:3d:bc  madisonl       employee  01:05:50    802.1X            1263
10.100.105.100  00:05:4e:45:5e:c8  CORP1NETWORKS  employee  00:02:22    802.1X
wlan-qa-cage
10.100.105.102  00:14:a5:30:c2:7f  pdedhia        employee  01:20:09    802.1X            2198
10.100.105.97   00:1b:77:c4:a2:fa  CORP1NETWORKS  employee  00:02:18    802.1X            2198
10.100.105.109  00:21:5c:02:16:bb  myao           employee  00:05:40    802.1X            1109


Users
-----
Roaming     Essid/Bssid/Phy                          Profile    Forward mode    Type
 -------     ---------------                          -------   ------------    ----
Associated  ethersphere-wpa2/00:1a:1e:85:d3:b1/a-HT  default    tunnel
Associated  ethersphere-wpa2/00:1a:1e:6f:e5:51/a     default    tunnel
Associated  ethersphere-wpa2/00:1a:1e:87:ef:f1/a     default    tunnel
Associated  ethersphere-wpa2/00:1a:1e:87:ef:f1/a     default    tunnel
```

```
Associated  ethersphere-wpa2/00:1a:1e:85:c2:11/a-HT  default    tunnel          ipad
```

The output of the **show user mac <mac-addr>** and **show user ip <ip-addr>** commands include the following information.

```
(host) # show user-table ip 5.5.5.2
Name: 98:0c:82:45:d6:7b, IP: 5.5.5.2, MAC: 98:0c:82:45:d6:7b, Role: mac-role, ACL: 54/0/0,
Age: 00:00:07
Authentication: Yes, status: started, method: MAC, protocol: PAP, server: Internal
Bandwidth = No Limit
Bandwidth = No Limit
Role Derivation: default for authentication type MAC
VLAN Derivation: unknown
Idle timeouts: 0, Valid ARP: 0
Mobility state: Wireless, HA: Yes, Proxy ARP: No, Roaming: No Tunnel ID: 0 L3 Mob: 0
Flags: internal=0, trusted_ap=0, l3auth=0, mba=1, vpnflags=0, u_stm_ageout=1
Flags: innerip=0, outerip=0, vpn_outer_ind:0, guest=0, download=1, wispr=0
Auth fails: 0, phy_type: g-HT, reauth: 0, BW Contract: up:0 down:0, user-how: 14
Vlan default: 3, Assigned: 5, Current: 5 vlan-how: 0 DP assigned vlan:0
Mobility Messages: L2=0, Move=0, Inter=0, Intra=0, Flags=0x0
Tunnel=0, SlotPort=0x2000, Port=0x1000d (tunnel 13)
Role assigment - L3 assigned role: n/a, VPN role: n/a, Dot1x cached role: n/a
Current Role name: mac-role, role-how: 1, L2-role: mac-role, L3-role: mac-role
Essid: 1_wlan_135, Bssid: d8:c7:c8:38:f4:a0 AP name/group: d8:c7:c8:cb:8f:4a-135/groupfor135
Phy-type: g-HT
RadAcct sessionID:n/a
RadAcct Traffic In 4/216 Out 2/420 (0:4/0:0:0:216,0:2/0:0:0:420)
Timers: reauth 0
Profiles AAA:1_wlan_135-aaa_prof, dot1x:dot1x_prof-rwv10, mac:pMac CP: def-role:'logon' sip-
role:'' via-auth-profile:''
ncfg flags udr 0, mac 1, dot1x 1, RADIUS interim accounting 0
IP Born: 1354560806 (Mon Dec  3 10:53:26 2012)
Core User Born: 1354560805 (Mon Dec  3 10:53:25 2012)
Upstream AP ID: 0, Downstream AP ID: 0
Device Type: Dalvik/1.4.0 (Linux; U; Android 2.3.6; SAMSUNG-SGH-I777 Build/GINGERBREAD)
Session Timeout from Radius: No, Session Timeout Value:0
Address is from DHCP: yes
```

The **role-how** and **vlan-how** parameters in the output of this command display a code that corresponds to the following values:

Role Derivation Code	Description
1	AAA profile default role
2	Role derived from user rules
3	Role derived from UDR
4	Default role for authentication type
5	Role derived from server rules
6	Dell vendor-specific attribute (VSA)

Role Derivation Code	Description
7	Dot1X profile role
8	Dot1X server derived role
9	Dot1X role derived from Dell VSA
10	Dot1X role derived from CPPM VSA
11	Role derived from DHCP option
12	Change of authorization role
13	Forced role set by Extended Service Interface (ESI)
14	Role derived from mobility
15	Role assigned by external/internal captive portal
16	Role assigned by SIP
17	SDR derived role during L3 authentication
18	VSA derived role during L3 authentication
19	CPPM VSA derived role during L3 authentication
20	Authentication type VPN role (VIA, VPN, or Transport VPN)
21	Authentication type role (BTLM, Kerb, GIS, or so on)
22	System assigned AP role

VLAN Derivation Code	Description
1	Default VLAN
2	Initial role contained
3	User rule role contained
4	Matched user rule

VLAN Derivation Code	Description
5	DHCP Option 77 role contained
6	Matched DHCP Option 77
7	MBA role contained
8	MBA server rule role contained
9	MBA server rule
10	MBA Dell VSA role contained
11	MBA Dell VSA
12	MBA MSFT attributes
13	User Dot1X role contained
14	Dot1X server rule role contained
15	Dot1X server rule
16	Dot1X Dell VSA role contained
17	Dot1X Dell VSA
18	Dot1X MSFT attributes
19	VLAN from pmk-cache
20	DHCP options user rule role contained
21	DHCP options user rule
30	Adaptive DHCP VLAN

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.1	The **devtype** parameter was introduced, and the output of this command expanded to include the **Type** column.
ArubaOS 6.2	Output for the IP address shows if it is derived using DHCP.
ArubaOS 6.3	The optional **log** parameter was introduced to display log files for events triggered by a specific user. All controllers support per-user logging.
ArubaOS 6.4.3.0	The **detail** sub-parameter was introduced as part of the **ip** parameter.
ArubaOS 6.4.4.0	Updated the **role-how** (role derivation codes) and **vlan-how** (VLAN derivation codes) tables.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config modes.

show util_proc

```
show util_proc guest-email counters
```

Description

Show counters for the guest email process.

Syntax

No parameters.

Usage Guidelines

As part of guest provisioning, the guest access email feature allows you to define the SMTP port and server that processes guest provisioning email. This server sends email to the guest or the sponsor when a guest user manually sends email from the Guest Provisioning page, or when a user creates a guest account.

Example

The output of this command shows the numbers of guest emails received, sent and dropped since the controller was last reset

```
(host) #show util_proc guest-email counters

Guest Email Counters
--------------------
Name             Value
----             -----
Email Received   14
Email Sent       3
Email Dropped    0.
```

Related Commands

To configure SMTP servers and server ports for guest email, use the command guest-access-email.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show valid-network-oui-profile

```
show valid-network-oui-profile
```

Description

This command displays the Valid Equipment OUI Profile table

Syntax

No parameters

Usage Guidelines

If you used the valid-networkoui-profile to add a new OUI to the controller, issue the show valid-network-oui-profile command to see a list of current OUIs.

Example

```
(Host) (config) #show valid-network-oui-profile

Valid Equipment OUI profile
---------------------------
Parameter  Value
---------  -----
OUI        00:1A:1E
```

Command History

Release	Modification
ArubaOS 5.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master controllers

show version

```
show version
```

Description

Show the system software version.

Syntax

No parameters.

Example

```
(host) #show version
Aruba Operating System Software.
ArubaOS (MODEL: Dell Networking W-650 Controller-US), Version 6.1.0.0
Website: http://www.dell.com
Copyright (c) 2002-2011, Aruba Networks, Inc.
Compiled on 2011-04-28 at 00:18:36 PDT (build 28106) by p4build

ROM: System Bootstrap, Version CPBoot 1.0.0.0 (build 23274)
Built: 2010-01-19 11:11:41
Built by: p4build@re_client_23274

Switch uptime is 1 days 6 hours 2 minutes 4 seconds
Reboot Cause: User reboot.
Supervisor Card
Processor XLS 408 (revision B1) with 890M bytes of memory.
32K bytes of non-volatile configuration memory.
256M bytes of Supervisor Card System flash (model=NAND 256MB).
```

The output of this command includes the following information

Parameter	Description
Model	Controller model type.
Version	Version of ArubaOS software.
ROM	System bootstrap version.
Switch Uptime	Switch uptime (time elapsed since the last controller reset.
Reboot Cause	Reason the controller was last rebooted.
Supervisor Card	Details for the controller's internal supervisor card.

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on local and master controllers

show via

```
show via
   version
   websessions
```

Description

Displays VIA version and web session details.

Syntax

Parameter	Description	Range	Default
`version`	Displays the version of VIA client available on the controller.	—	—
`websessions`	Displays the list of users connected to the VIA controller using the VIA client.	—	—

Example

The following example displays the version of VIA client available on the controller.

```
(host) # show via version(host) (VIA Client WLAN Profile "example") #show  via version
Default VIA Installer:
----------------------
<aruba>
        <via>
                <platform>win32</platform>
                <version>1.0.0.23373</version>
        </via>
</aruba>
```

Command History

This command was available in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show vlan

```
show vlan <id>
```

Description

This command shows a configured VLAN interface number, description and associated ports.

Syntax

Parameter	Description	Range	Default
<id>	Identification number for the VLAN.	1-4094	1

Usage Guidelines

Issue this command to show the selected VLAN configuration. The **VLAN** column lists the VLAN ID. The **Description** column provides the VLAN name or number and the **Ports** column shows the VLAN's associated ports. The **AAA Profile column** shows if a wired AAA profile has been assigned to a VLAN, enabling role-based access for wired clients connected to an untrusted VLAN or port on the controller.

```
(host) #show vlan

VLAN CONFIGURATION
------------------
VLAN  Description     Ports                          AAA Profile
----  -----------     -----                          -----------
1     Default         GE0/3-7 GE0/9 XG0/10-11 Pc0-7  N/A
10    VLAN0010        GE0/8                          N/A
20    RAP_VLAN                                       N/A
25    VLAN0025        GE0/0                          mac-auth-aaa-prof
30    VLAN0030                                       N/A
56    VLAN0056                                       default
57    VLAN0057                                       default
58    VLAN0058                                       default
```

Related Commands

```
(host) (config) #vlan
(host) (config) #vlan-name
```

Command History

Release	Modification
ArubaOS 3.0	Command available.
ArubaOS 6.0	The output of this command was modified to include the **AAA Profile** column.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show vlan-assignment

```
show vlan-assignment
```

Description

This command shows the number of clients assigned to a VLAN.

Syntax

No parameters.

Usage Guidelines

Issue this command to show the number of clients that are assigned to a VLAN.

```
(host) #show vlan-assignment

VLAN Assignment
---------------
VLAN   #CLIENTS
----   --------
10     0
```

Related Commands

```
(host) (config) #vlan
(host) (config) #vlan-name
```

Command History

This command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show vlan-assignment-auth

```
show vlan-assignment-auth
```

Description

This command shows the VLAN usage in the user authentication module.

Syntax

No parameters.

Usage Guidelines

Issue this command to view all the VLAN IDs that are configured along with the current client count that uses that VLAN ID.

```
(host) #show vlan-assignment-auth

Vlan usage in AUTH
------------------
VLAN ID  Usage
-------  -----
10       0
```

Related Commands

```
(host) (config) #vlan
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show vlan mapping

```
show vlan mapping
```

Description

This command shows a configured VLAN name, its pool status, assignment type and the VLAN IDs assigned to the pool.

Syntax

Parameter	Description	Range	Default
<id>	Identification number for the VLAN.	1-4094	1

Usage Guidelines

Issue this command to show the selected VLAN configuration. The **VLAN Name** column displays the name of the VLAN pool. The **VLAN IDs** column lists the VLANs that are part of the pool.

```
(host) #show vlan mapping

Vlan Mapping Table
------------------
VLAN Name        Assignment Type  VLAN IDs
---------        ---------------  --------
mygroup          Hash             62,94
newpoolgroup     Even
vlannametest     Even             62,1511
yourvlan         N/A              62
```

Related Commands

```
(host) (config) #vlan
(host) (config) #vlan-name
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 6.2	The **Assignment Type** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show vlan status

```
show vlan status <id>
```

Description

This command shows the current status of all VLANs on the controller.

Syntax

No parameters.

Usage Guidelines

Issue this command to show the status of VLANs on the controller. The **VLANID** column displays the VLAN ID name or number. The **IP Address** column provides the VLAN's IP address. The **Adminstate** column indicates if the VLAN is enabled or disabled. The **Operstate** column indicates if the VLAN is currently up and running. The **PortCount** column shows how many ports are associated with the VLAN. The **Nat Inside** column displays whether source Nat is enabled for the VLAN interface. If Nat is enabled, all the traffic passing through this VLAN interface is the source natted to the outgoing interface's IP address.

```
(host) #show vlan status

Vlan Status
-----------
VlanId  IPAddress                    Adminstate  Operstate  PortCount  Nat Inside  Mode
Ports                                        AAA Profile
------  ---------                    ----------  ---------  ---------  ----------  ----     -
----                                        -----------
1       unassigned/unassigned        Enabled     Up         9          Disabled    Regular
GE1/0 GE1/2 GE1/5-9 XG1/10-11 Pc0 Pc2-5 Pc7   N/A
2       N/A                          N/A         N/A        3          Disabled    Regular
GE1/7-9                                      N/A
10      172.20.10.202/255.255.255.0  Enabled     Up         4          Disabled    Regular
GE1/7-9 Pc6                                  N/A
21      172.20.21.202/255.255.255.0  Disabled    Down       4          Disabled    Regular
GE1/7-9                                      N/A
24      172.20.24.202/255.255.255.0  Disabled    Down       3          Disabled    Regular
GE1/7-9                                      N/A
29      172.20.29.202/255.255.255.0  Enabled     Up         4          Disabled    Regular
GE1/7-9 Pc6                                  N/A
101     172.102.1.202/255.255.255.0  Enabled     Down       3          Disabled    Regular
GE1/7-9                                      N/A
102     172.102.2.202/255.255.255.0  Enabled     Down       3          Disabled    Regular
GE1/7-9                                      N/A
```

Related Commands

```
(host) (config) #vlan
(host) (config) #vlan-name
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show vlan summary

```
show vlan summary
```

Description

This command shows the number of existing VLANs.

Syntax

Parameter	Description
`Number of existing VLANs`	The number of existing VLANs on the controller.

Usage Guidelines

Issue this command to show the number of existing VLANs on the controller.

```
(host) #show vlan summary

Number of existing VLANs                :13
```

Related Commands

```
(host) (config) #vlan
(host) (config) #vlan-name
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or config mode on master or local controllers

show vlan-bwcontract-explist

```
show vlan-bwcontract-explist [internal]
```

Description

Show entries in the VLAN bandwidth contracts MAC exception lists.

Syntax

Parameter	Description
`internal`	Include the optional **internal** parameter to display the MAC addresses in the internal, preconfigured VLAN bandwidth contracts MAC exception list.

Example

The following command displays the MAC addresses in the internal MAC exception list.

```
(host) (config) #show vlan-bwcontract-explist internal

VLAN BW Contracts Internal MAC Exception List
---------------------------------------------
MAC address
-----------
01:80:C2:00:00:00
01:00:0C:CC:CC:CD
01:80:C2:00:00:02
01:00:5E:00:82:11
```

Command History

Command introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers

show voice alg-based-cac (deprecated)

```
show voice alg-based-cac
```

Description

Displays the status of the VoIP signaling based Call Admission Control (CAC).

Syntax

No parameters.

Command History

Version	Description
ArubaOS 6.2.0.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice call-cdrs (deprecated)

```
show voice call-cdrs
   bssid <bssid_string>
   cid <cid>
   count <count>
   detail
   essid <essid_string>
   extn <extn_string>
   ip <ipaddr>
   proto <proto_id>
   rtpa
   sta <mac>
```

Description

Displays detailed call records of voice client.

Syntax

Parameter	Description
`bssid <bssid_string>`	Filter records based on BSSID of voice clients.
`cid <cid>`	View the detailed call records for a specific client based on the Call Detail Record (CDR) ID.
`count <count>`	Specify the number of records to be displayed by entering a number.
`detail`	Include this parameter to view the following additional information for each call record. • Reason • Codec • Band • Setup Time (sec) • Re-Assoc • Initial-BSSID • Initial-ESSID • Initial-AP Name • Call Type • Src port • Dest port • DSCP • WMM AC
`essid <essid_string>`	Filter records based on ESSID of voice clients.

Parameter	Description
`extn <extn_string>`	Filter records based on the extension of a voice client.
`ip <ipaddr>`	Filter records based on the IP address of a voice client.
`proto <proto_id>`	View detailed records filtered on protocol including all of the following: • sip • svp • noe • sccp • vocera • h323 • lync
`rtpa`	Include this parameter to view the voice call quality reports based on the call quality analysis from the RTP media streams. **NOTE:** This parameter is applicable only if Real Time Call Quality Analysis is enabled on the voice calls.
`sta <mac>`	Filter records based on the MAC address of a voice client.

Command History

Version	Description
ArubaOS 3.3.1.0	Command introduced.
ArubaOS 6.0.0.0	The **cid** and **rtpa** parameters were introduced.
ArubaOS 6.3.0.0	Using the **detail** parameter now displays the following additional fields: • Call Type • Src port • Dest port • DSCP • WMM AC Under the **proto** parameter, the **lync** protocol is introduced. Using the **cid** parameter now displays Handoff Notification for the Lync client moving from one AP to another for the specific CDR.
ArubaOS 6.4.0.0	Command deprecated.

show voice call-counters (deprecated)

```
show voice call-counters
```

Description

Displays outgoing, incoming and terminated call counter details. The total calls equals the sum of the calls originated and terminated. It also equals the sum of the active, success, failed, blocked, aborted, and forwarded calls.

Syntax

No parameters.

Command History

Version	Description
ArubaOS 3.3.1.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice call-density (deprecated)

```
show voice call-density
   bssid <bssid_string>
   essid <essid_string>
   extn <extn_string>
   ip <ipaddr>
   proto <proto_id>
```

Description

Displays call density report for voice calls.

Syntax

Parameter	Description
`bssid <bssid_string>`	Filter records based on BSSID of voice clients.
`essid <essid_string>`	Filter records based on ESSID of voice clients.
`extn <extn_string>`	Filter records based on the extension of a voice client.
`ip <ipaddr>`	Filter records based on the IP address of an AP.
`proto <proto_id>`	Filter records based on a VOIP protocol. Supported values are: • sip • svp • noe • sccp • vocera • h323 • lync

Command History

Version	Description
ArubaOS 3.0.0.0	Command introduced.
ArubaOS 6.3.0.0	Under the **proto** parameter, the **lync** protocol is introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice call-perf (deprecated)

```
show voice call-perf
   bssid <bssid_string>
   essid <essid_string>
   extn <extn_string>
   ip <ipaddr>
   proto <proto_id>
```

Description

Displays the performance of voice calls of all clients connected to the controller. You can filter the report based on BSSID, ESSID, extension, IP address or the VOIP protocol type.

Syntax

Parameter	Description
`bssid <bssid_string>`	Filter records based on BSSID of voice clients.
`essid <essid_string>`	Filter records based on ESSID of voice clients.
`extn <extn_string>`	Filter records based on the extension of a voice client.
`ip <ipaddr>`	Filter records based on the IP address of an AP.
`proto <proto_id>`	Filter records based on a VOIP protocol. Supported values are: • sip • svp • noe • sccp • vocera • h323 • lync

Command History

Version	Description
ArubaOS 3.3.1.0	Command introduced.
ArubaOS 6.3.0.0	Under the **proto** parameter, the **lync** protocol is introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice call-quality (deprecated)

```
show voice call-quality
   bssid <bssid_string>
   essid <essid_string>
   extn <extn_string>
   ip <ipaddr>
   proto <proto_id>
   rtpa
   sta <mac>
```

Description

Displays voice call quality for each call over a period of time.

Syntax

Parameter	Description
`bssid <bssid_string>`	Filter records based on BSSID of voice clients.
`essid <essid_string>`	Filter records based on ESSID of voice clients.
`extn <extn_string>`	Filter records based on the extension of a voice client.
`ip <ipaddr>`	Filter records based on the IP address of a voice client.
`proto <proto_id>`	View detailed records filtered on protocol including all of the following: • sip • svp • noe • sccp • vocera • h323 • lync
`rtpa`	Include this parameter to view the voice call quality reports based on the call quality analysis from the RTP media streams. **NOTE:** This parameter is applicable only if Real Time Call Quality Analysis is enabled on the voice calls.
`sta <mac>`	Filter records based on the MAC address of a voice client.

Command History

Version	Description
ArubaOS 3.3.1.0	Command introduced.
ArubaOS 6.0.0.0	The rtpa and sta parameters were introduced.
ArubaOS 6.3.0.0	Under the **proto** parameter, the **lync** protocol is introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice call-stats (deprecated)

```
show voice call-stats
   bssid <bssid_string>
   cip <cipaddr>
   essid <essid_string>
   extn <extn_string>
   ip <ipaddr>
   proto <proto_id>
   sta <mac>
```

Description

Displays voice call statistics for each client.

Syntax

Parameter	Description
`bssid <bssid_string>`	Filter records based on BSSID of a voice client.
`cip <cipaddr>`	Filter records based on a client's IP address.
`essid <essid_string>`	Filter records based on ESSID of a voice client.
`extn <extn_string>`	Filter records based on the extension of a voice client.
`ip <ipaddr>`	Filter records based on the IP address of an AP.
`proto <proto_id>`	View detailed records filtered on protocol including all of the following: • sip • svp • noe • sccp • vocera • h323 • lync
`sta <mac>`	Filter records based on the MAC address of a voice client.

Command History

Version	Description
ArubaOS 3.3.1.0	Command introduced.
ArubaOS 6.3.0.0	Under the **proto** parameter, the **lync** protocol is introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice client-status (deprecated)

```
show voice client-status
   active-only
   bssid <bssid_string>
   essid <essid_string>
   extn <extn_string>
   ip <ipaddr>
   proto <proto_id>
   sta <mac>
```

Description

Displays list of voice clients and their status. You can also view details of a specific voice client.

Syntax

Parameter	Description
`active-only`	Filter records based on active voice clients
`bssid <bssid_string>`	Filter records based on BSSID of a voice client.
`essid <essid_string>`	Filter records based on ESSID of a voice client.
`extn <extn_string>`	Filter records based on the extension of a voice client.
`ip <ipaddr>`	Filter records based on the IP address of a voice client.
`proto <proto_id>`	Filter records based on a VOIP protocol. Supported values are: • sip • svp • noe • sccp • vocera • h323 • lync
`sta <mac>`	Filter records based on the MAC address of a voice client.

Command History

Version	Description
ArubaOS 3.3.1.0	Command introduced.
ArubaOS 6.0.0.0	The **sta** para\meter was introduced.
ArubaOS 6.3.0.0	• Under the **proto** parameter, the **lync** protocol is introduced. • **b — Best Effort** flag is introduced. • Using the **ip** or **mac** parameter now displays Handoff Notification for the Lync client moving from one AP to another.
ArubaOS 6.4.0.0	Command deprecated.

show voice configurations (deprecated)

```
show voice configurations
```

Description

Displays the details of the voice related configurations on your controller.

Syntax

No parameters.

Command History

Version	Description
ArubaOS 6.0.0.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice dialplan-profile (deprecated)

```
show voice dialplan-profile <profile>
```

Description

Displays list of SIP voice dialplan. You can also specify a dialplan to view configuration.

Syntax

No parameter.

Command History

Version	Description
ArubaOS 5.0.0.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice facetime

```
show voice facetime
```

Description

This command displays the user configured pattern that is matched against the User-Agent field of the SIP messages to determine if the session is a Facetime session.

Syntax

No parameters.

Example

The following command displays the user configured pattern that is matched against the User-Agent field of the SIP messages to determine if the session is a Facetime session:

```
(host) #show voice facetime

Apple Facetime Config
---------------------
Parameter                      Value
---------                      -----
Pattern to recognize Facetime  <pattern>
```

Command History

Version	Description
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

show voice logging (deprecated)

```
show voice logging
```

Description

Displays the MAC address of the voice client that has logging enabled.

Syntax

No parameters.

Command History

Version	Description
ArubaOS 6.0.0.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice msg-stats

```
show voice msg-stats
   skype4b {bssid <bssid_string> | cip <cipaddr> | essid <essid_string> | ip <ipaddr> | sta
   <mac>}
   sccp {bssid <bssid_string> | cip <cipaddr> | essid <essid_string> | ip <ipaddr> | sta
   <mac>}
   sip {bssid <bssid_string> | cip <cipaddr> | essid <essid_string> | ip <ipaddr> | sta <mac>}
```

Description

Displays voice client message statistics for each client using either Skype4b ALG, Signaling Connection Control Part (SCCP), or Session Initiation Protocol (SIP).

Syntax

Parameter	Description
`skype4b`	Show Skype4B voice client message statistics
`sccp`	Show SCCP voice client message statistics
`sip`	Show SIP voice client message statistics
`bssid <bssid_string>`	Filter records based on BSSID of a voice client.
`cip <cipaddr>`	Filter records based on a client's IP address.
`essid <essid_string>`	Filter records based on ESSID of a voice client.
`ip <ipaddr>`	Filter records based on the IP address of an AP.
`sta <mac>`	Filter records based on the MAC address of a voice client.

Example

The output of the command in the first example below shows voice message statistics for essid 'test' filtered on SCCP protocol. In both examples, the output is divided into multiple sections to better fit on the pages of this document. In the actual command-line interface, it appears in a single, long table.

```
(host) # show voice msg-stats sccp essid test

SCCP Voice Client(s) Msg Statistics
-----------------------------------
Client Name  Client IP     AP Name    BSSID              ESSID  Register  Register Ack
-----------  ---------     -------    -----              -----  --------  ------------
6005         10.15.86.248  AP-68-862  00:0b:86:6d:3e:30  test   5         1
6002         10.15.86.247  AP-68-862  00:0b:86:6d:3e:30  test   6         2

Unregister  Unregister Ack  Keepalive  Keepalive Ack  OpenRecvChannel  OpenRecvChannel Ack
----------  --------------  ---------  -------------  ---------------  -------------------
2           5950            6185       7              4                6
2           5936            6048       4              4                4

StartMedia  CloseRecvChannel  StopMedia  OffHook  OnHook  Ringing  Connected  Busy  Hold
```

```
----------  ----------------  ---------  -------  ------  -------  ---------  ----  ----
7           6                 5          17       2       8        0          0     0
7           6                 4          18       3       4        0          0     0

Transfer  Invalid
--------  -------
0
0

Num Clients:2
```

The output of the command in the second example shows voice message statistics for a Skype4b client with a MAC address.

```
(host) #show voice msg-stats skype4b sta 00:24:d7:40:ca:88

Skype4b Voice Client(s) Msg Statistics
----------------------------------
Client Name  Client IP   AP Name   BSSID              ESSID
-----------  ---------   -------   -----              -----
1001         10.16.33.61 myap_105  00:24:6c:27:5f:f8  test

startDialog updateDialog endDialog error 200
----------- ---------    -----     ---   ---
5           0            5         0     10

Num Clients:1
```

Command History

Version	Description
ArubaOS 3.3.1	Command introduced.
ArubaOS 6.3.0.0	The **lync** parameter is introduced.
ArubaOS 6.4.4.0	The **lync** parameter is deprecated, and is replaced by the **skype4b** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config or Enable mode on master or local controllers

show voice real-time-analysis (deprecated)

```
show voice real-time-analysis [sta <client MAC address>]
```

Description

Displays the call quality parameters based on the call quality analysis on the RTP media streams for voice calls.

Syntax

Parameter	Description
`sta`	View the detailed real time call quality analysis report for a voice client based on the MAC address. You can also view the average call quality values for all the clients without passing the MAC address. **NOTE:** The real time call quality reports are supported and applicable only for clients in decrypt-tunnel and split-tunnel modes.

Command History

Version	Description
ArubaOS 6.0.0.0	Command introduced.
ArubaOS 6.3.0.0	A new column, **Forward mode** was introduced in the output of the command.
ArubaOS 6.4.0.0	Command deprecated.

show voice real-time-analysis-config (deprecated)

```
show voice real-time-analysis-config
```

Description

Displays the status of Real Time Call Quality Analysis configuration.

Syntax

No parameters.

Command History

Version	Description
ArubaOS 6.0.0.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice rtcp-inactivity (deprecated)

```
show voice rtcp-inactivity
```

Description

Displays the status of RTCP protocol.

Syntax

Command History

Version	Description
ArubaOS 3.3.1.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice sip (deprecated)

```
show voice sip
```

Description

Displays the SIP settings on the controller.

Syntax

No parameters.

Command History

Version	Description
ArubaOS 6.0.0.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice sip-midcall-req-timeout (deprecated)

```
show voice sip-midcall-req-timeout
```

Description

Displays the status of the SIP mid-call request timeout configuration on the controller.

Syntax

No parameters.

Command History

Version	Description
ArubaOS 6.0.0.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice statistics (deprecated)

```
show voice statistics [ cac | sip-dialplan-hits | tspec-enforcement ]
```

Description

Displays the CAC, UDP SIP dial plan hits, and TSPEC enforced voice statistics.

Syntax

Parameter	Description
`cac`	Displays the dropped SIP Invites and SIP Status Code for both server and the client side. **Note**: This filter supports only the SIP protocol and will work only if CAC is enabled for the parameters.
`sip-dialplan-hits`	Displays the statistics of SIP dialplan hits.
`tspec-enforcement`	Displays the statistics of the number of TSPEC requests accepted, rejected, or denied.

Command History

Version	Description
ArubaOS 3.3.1.0	Command introduced.
ArubaOS 6.4.0.0	Command deprecated.

show voice trace

```
show voice trace
   skype4b[count <num> | ip <ipaddr> | mac <macaddr>]
   sccp [count <num> | ip <ipaddr> | mac <macaddr>]
   sip [count <num> | ip <ipaddr> | mac <macaddr>]
```

Description

Displays the signaling message trace details for either Skype4b ALG, Signaling Connection Control Part (SCCP), or Session Initiation Protocol (SIP) clients.

Syntax

Parameter	Description
`skype4b`	Show Skype4b trace details.
`sccp`	Show SCCP trace details.
`sip`	Show SIP trace details.
`count <num>`	View the specified number of the latest SIP, SCCP, or Skype4b voice client messages. Specify an integer value.
`ip <ipaddr>`	Specify the IP address of a client to display its SIP, SCCP, or Skype4b voice client messages.
`mac <macaddr>`	Specify the IP address of a client to display its SIP, SCCP, or Skype4b voice client messages.

Example

The output of this command shows signaling message trace. The first example shown is for a SIP client.

```
(host) #show voice trace sip count 4

SIP Voice Client(s) Message Trace
---------------------------------
ALG  Client Name  Client(MAC)        Client(IP)    Event Time
---  -----------  -----------        ----------    ----------
SIP  6201         00:24:7d:99:49:01  10.15.20.59   Aug 17 10:21:22
SIP  6201         00:24:7d:99:49:01  10.15.20.59   Aug 17 10:21:22
SIP  6201         00:24:7d:99:49:01  10.15.20.59   Aug 17 10:21:22
SIP  6201         00:24:7d:99:49:01  10.15.20.59   Aug 17 10:21:22

Direction         Msg                  BSSID
---------         ---                  -----
Server-To-Client  200_OK               00:1a:1e:a8:2d:80
Client-To-Server  REGISTER             00:1a:1e:a8:2d:80
Server-To-Client  4XX_REQUEST_FAILURE  00:1a:1e:a8:2d:80
Client-To-Server  REGISTER             00:1a:1e:a8:2d:80

Num of Rows:4
```

The second example shown is for the Skype4b ALG, displaying the exchange between a Skype4b server and Skype4b client. The output is divided into multiple sections to better fit on the pages of this document. In the actual command-line interface, it appears in a single, long table.

```
(host) #show voice trace skyper4b

Skype4b nVoice Client(s) Message Trace
----------------------------------
ALG       Client Name  Client(MAC)        Client(IP)    Event Time
---       -----------  -----------        ----------    ----------
Skype4b   1000         00:24:d7:40:a8:64  10.16.33.61   Jan  6 22:34:39
Skype4b   1000         00:24:d7:40:a8:64  10.16.33.61   Jan  6 22:34:39
Skype4b   1000         00:24:d7:40:a8:64  10.16.33.61   Jan  6 22:31:40
Skype4b   1000         00:24:d7:40:a8:64  10.16.33.61   Jan  6 22:31:40

Direction                Msg          BSSID
---------                ---          -----
Server-To-Client         200 OK       00:24:6c:27:5f:f8
Client-To-Server         endDialog    00:24:6c:27:5f:f8
Server-To-Client         200 OK       00:24:6c:27:5f:f8
Client-To-Server         startDialog  00:24:6c:27:5f:f8

Num of Rows:4
```

The output of this command includes the following parameters:

Column	Description
ALG	Displays the Application Layer Gateway protocol for Skype4b clients.
Client Name	Displays the user name of the Skype4b client.
Client(MAC)	Displays the MAC address of the Skype4b client.
Client(IP)	Displays the IP address of the Skype4b client.
Event Time	Displays the time stamp when the Skype4b call originated.
Direction	Displays one of the following message exchange directions between the Skype4b server and client: • **Client-To-Server** • **Server-To-Client**
Msg	Displays one of the following signaling message types: • **startDialog** • **updateDialog** • **endDialog** • **error** • **200**
BSSID	Displays the BSSID of the access point to which the Skype4b client is connected.

Command History

Version	Description
ArubaOS 3.3.1.0	Command introduced.
ArubaOS 6.0.0.0	The trace output included the BSSID parameter.
ArubaOS 6.3.0.0	The **lync** parameter is introduced.
ArubaOS 6.4.4.0	The **lync** parameter is deprecated, and is replaced by the **skype4b** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config or Enable mode on master or local controllers

show voice wificalling

```
show voice wificalling
```

Description

This command displays the Wi-Fi Calling ALG configuration on the controller.

Syntax

No parameters.

Example

The following commands display the Wi-Fi Calling ALG configuration on the controller.

```
(host) #show voice wificalling

WiFiCalling Configuration
-------------------------
Parameter            Value
---------            -----
WiFiCalling Support  Enabled
dns pattern          att.net ATT
```

Command History

Version	Description
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config or Enable mode on master or local controllers

show vpdn l2tp configuration

```
show vpdn l2tp configuration
```

Description

Displays the VPN L2TP tunnel configuration.

Syntax

No parameters.

Example

The output of this command shows the L2TP tunnel configuration.

```
(host) # show vpdn l2tp configuration

Enabled
Hello timeout: 30 seconds
DNS primary server: 10.16.15.1
DNS secondary server: 10.16.14.1
WINS primary server: 0.0.0.0
WINS secondary server: 0.0.0.0
PPP client authentication methods:
         PAP
IP LOCAL POOLS:
         vpnpool: 10.16.15.150 - 10.16.15.160
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show vpdn pptp configuration

```
show vpdn pptp configuration
```

Description

Displays the PPTP configuration on the controller.

Syntax

No parameters.

Example

The output of this command shows the L2TP tunnel configuration.

```
(host) # show vpdn pptp configuration

Enabled
Hello timeout: 30 seconds
DNS primary server: 10.15.1.1
DNS secondary server: 10.15.1.200
WINS primary server: 0.0.0.0
WINS secondary server: 0.0.0.0
PPP client authentication methods:
         MSCHAP
         MSCHAPv2
MPPE Configuration
         128 bit encryption enabled
IP LOCAL POOLS
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show vpdn pptp local pool

```
show vpdn pptp local pool <pool_name>
```

Description

Displays the IP address pool for VPN users using Point-to-Point Tunneling Protocol.

Syntax

No parameters.

Example

The output of this command shows the all IP address pools for VPN users.

```
(host) # show vpdn pptp local pool

IP addresses used in pool localgroup
0 IPs used - 11 IPs free - 11 IPs configured
```

Command History

This command was available in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show vpn-dialer

```
show vpn-dialer <dialer_name>
```

Description

Displays the VPN dialer configuration for users using VPN dialers.

Syntax

No parameters.

Example

The output of this command shows the VPN dialer configuration for remote Users.

```
(host) # show vpn-dialer remoteUser

remoteUser
----------
Attribute           Value
---------           -----
PPTP                disabled
L2TP                enabled
DNETCLEAR           disabled
WIREDNOWIFI         disabled
PAP                 enabled
CHAP                enabled
MSCHAP              enabled
MSCHAPV2            enabled
CACHE-SECURID       disabled
IKESECS             4000
IKEENC              3DES
IKEGROUP            ONE
IKEHASH             MD5
IKEAUTH             PRE-SHARE
IKEPASSWD           ********
IPSECSECS           4000
IPSECGROUP          GROUP1
IPSECENC            ESP-3DES
IPSECAUTH           ESP-MD5-HMAC
SECURID_NEWPINMODE  disabled
```

Command History

This command was introduced in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show vrrp

```
show vrrp {{<vrid>[statistics]}|ipv6{<vrid>|stats[all]}|stats[all]|summary}
```

Description

Displays the list of all VRRP configuration on the controller. To view a specific VRRP configuration, specify the VRID number.

Syntax

Parameter	Description	Range	Default
`<vrid>`	Displays the Virtual Router Id.	1-255	—
`ipv6`	Display VRRP information for IPv6 address.	—	—
`stats`	Displays the operational statistics of the VRRP.	—	—
`summary`	Displays the number of vrrp instances for IPv4 and IPv6.	—	—

Example

The output of the following command shows the VRRP IPv4 instance with vrid 1.

```
(host) (config-vrrp)#show vrrp
Virtual Router 1:
Description
Admin State UP, VR State BACKUP
IP Address 0.0.0.0, MAC Address 00:00:5e:00:01:01, vlan 99
Priority 100, Advertisement 1 sec, Preemption Disable Delay 0
Hold time 45 sec
Auth type NONE ********
tracking is not enabled
```

The output of the following command shows the statistics for IPv4 vrrp instance with vrid 10.

```
(host) # show vrrp 10 statistics
Virtual Router 10:
Admin State UP, VR State MASTER
Advertisements:
Sent:                              249562   Received:                          475
Zero priority sent:                     0   Zero priority received:              0
Lower IP address received             475   Lower Priority received              3
Tracking priority overflow:             0
Advertisements received errors:
Interval mismatch                       0   Invalid TTL                          0
Invalid packet type                     0   Authentication failure               0
Invalid auth type                       0   Mismatch auth type                   0
Invalid VRRP IP address                 0   Invalid packet length                0
VRRP Up timestamp:                          Fri Aug 23 15:49:27 2013
Master Up timestamp:                        Mon Aug 26 11:59:44 2013
Last advertisement sent timestamp:          Mon Aug 26 16:38:55 2013
Last advertisement received timestamp:      Mon Aug 26 11:59:44 2013
Current time:                               Mon Aug 26 16:38:55 2013
Number times became VRRP Master:        2
```

The output of the following command provides information about IPv6 VRRP instances.

```
(host) (config) # show vrrp ipv6
Virtual Router 1:
   Description
   Admin State DOWN, VR State INIT
   IPv6 Address ::
   MAC Address 00:00:5e:00:02:01, vlan 0
   Priority 100, Advertisement 1 sec, Preemption Disable Delay 0
   tracking is not enabled
Virtual Router 23:
   Description
   Admin State DOWN, VR State INIT
   IPv6 Address ::
   MAC Address 00:00:5e:00:02:17, vlan 0
   Priority 100, Advertisement 1 sec, Preemption Disable Delay 0
   tracking is not enabled
Virtual Router 255:
   Description
   Admin State UP, VR State MASTER
   IPv6 Address 2006::25
   MAC Address 00:00:5e:00:02:ff, vlan 521
   Priority 100, Advertisement 1 sec, Preemption Disable Delay 0
   tracking is not enabled
```

The output of the following command shows the statistics for IPv6 VRRP instances.

```
(host) #show vrrp ipv6 stats all
Virtual Router 1:
Admin State DOWN, VR State INIT
Advertisements:
Sent:                                0   Received:                        0
Zero priority sent:                  0   Zero priority received:          0
Lower IP address received            0   Lower Priority received          0
Tracking priority overflow:          0
Advertisements received errors:
Interval mismatch                    0   Invalid TTL                      0
Invalid packet type                  0
Invalid VRRP IP address              0   Invalid packet length            0
VRRP Up timestamp:                   N/A, DOWN
Master Up timestamp:                 N/A, not MASTER
Last advertisement sent timestamp:   never
Last advertisement received timestamp:   never
Current time:                        Wed Sep 25 19:40:42 2013
Number times became VRRP Master:     0
Virtual Router 23:
Admin State DOWN, VR State INIT
Advertisements:
Sent:                                0   Received:                        0
Zero priority sent:                  0   Zero priority received:          0
Lower IP address received            0   Lower Priority received          0
Tracking priority overflow:          0
Advertisements received errors:
Interval mismatch                    0   Invalid TTL                      0
Invalid packet type                  0
Invalid VRRP IP address              0   Invalid packet length            0
VRRP Up timestamp:                   N/A, DOWN
Master Up timestamp:                 N/A, not MASTER
Last advertisement sent timestamp:   never
Last advertisement received timestamp:   never
Current time:                        Wed Sep 25 19:40:42 2013
Number times became VRRP Master:     0
```

The output of the following command shows VRRP IPv4 and IPv6 instances.

```
(host) (config) #show vrrp summary
```

```
Number of exisitng VRRP IPv4 instances :    2
Number of exisitng VRRP IPv6 instances :    3
```

The output of the following command shows the configuration for all IPv6 VRRP instances.

```
(host) #show vrrp ipv6
Virtual Router 1:
   Description
   Admin State DOWN, VR State INIT
   IPv6 Address ::
   MAC Address 00:00:5e:00:02:01, vlan 0
   Priority 100, Advertisement 1 sec, Preemption Disable Delay 0
   tracking is not enabled
Virtual Router 23:
   Description
   Admin State DOWN, VR State INIT
   IPv6 Address ::
   MAC Address 00:00:5e:00:02:17, vlan 0
   Priority 100, Advertisement 1 sec, Preemption Disable Delay 0
   tracking is not enabled
Virtual Router 255:
   Description
   Admin State UP, VR State MASTER
   IPv6 Address 2006::25
   MAC Address 00:00:5e:00:02:ff, vlan 521
   Priority 100, Advertisement 1 sec, Preemption Disable Delay 0
   tracking is not enabled
```

The output of the following command shows the statistics for IPv4 VRRP instances.

```
(host) #show vrrp stats all
Virtual Router 1:
Admin State DOWN, VR State INIT
Advertisements:
Sent:                                0   Received:                          0
Zero priority sent:                  0   Zero priority received:            0
Lower IP address received            0   Lower Priority received            0
Tracking priority overflow:          0
Advertisements received errors:
Interval mismatch                    0   Invalid TTL                        0
Invalid packet type                  0   Authentication failure             0
Invalid auth type                    0   Mismatch auth type                 0
Invalid VRRP IP address              0   Invalid packet length              0
VRRP Up timestamp:                       N/A, DOWN
Master Up timestamp:                     N/A, not MASTER
Last advertisement sent timestamp:       never
Last advertisement received timestamp:   never
Current time:                            Wed Sep 25 19:55:33 2013
Number times became VRRP Master:         0
Virtual Router 23:
Admin State DOWN, VR State INIT
Advertisements:
Sent:                                0   Received:                          0
Zero priority sent:                  0   Zero priority received:            0
Lower IP address received            0   Lower Priority received            0
Tracking priority overflow:          0
Advertisements received errors:
Interval mismatch                    0   Invalid TTL                        0
Invalid packet type                  0   Authentication failure             0
Invalid auth type                    0   Mismatch auth type                 0
Invalid VRRP IP address              0   Invalid packet length              0
VRRP Up timestamp:                       N/A, DOWN
Master Up timestamp:                     N/A, not MASTER
Last advertisement sent timestamp:       never
```

```
Last advertisement received timestamp:    never
Current time:                             Wed Sep 25 19:55:33 2013
Number times became VRRP Master:          0
```

Command History

Version	Modification
ArubaOS 1.0	Command introduced
ArubaOS 3.3	The **tracking interface** and **tracking vlan** parameters were introduced.
ArubaOS 3.3.2	The **add** option was removed from the **tracking interface** and **tracking vlan** parameters.
ArubaOS 6.4	The **ipv6**, **stats**, and **summary** parameters were introduced.
ArubaOS 6.4.2.6, ArubaOS 6.4.3.0	The **Hold time** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show web-cc

```
show web-cc
   categories
   reputation
   stats
   status
   global-bandwidth-contract all|{web-cc-category <category>}|{web-cc-reputation <reputation>}
```

Description

Display information about web content (web-cc) classification settings, category and reputation types, classification statistics and bandwidth contracts.

Syntax

Parameter	Description
`categories`	Display the category index number and the category name for each category type.
`reputation`	Display the different reputation levels, and the range of reputation scores associated with each level.
`stats`	Display counters for web content traffic and web content classification table statistics
`status`	Display information about the current operational status of the web content classification feature.
`global-bandwidth-contract`	Display settings for global bandwidth contracts assigned to web content classification category types and reputation levels.
`all`	Show all bandwidth contracts
`web-cc-category <category>`	Display information for the specified web-cc category bandwidth contract.
`web-cc-reputation <reputation>`	Display information for the specified web-cc reputation bandwidth contract.

Usage Guidelines

The web content classification feature classifies all (HTTP) web traffic on the network. The output of the **show web-cc** command displays information about Webroot classification categories and risk reputation levels, bandwidth contracts, and the web content classification cache and database.

Example

The following command shows the global bandwidth contracts applied to upstream and downstream traffic matching the **music** content category.

```
(host)#how web-cc global-bandwidth-contract web-cc-category music
Web-cc Global Bandwidth Contract
--------------------------------
Web-cc Category/Reputation  Direction   Rate (bits/second)  Contract    Id
--------------------------  ---------   ------------------  --------    --
```

```
web-cc-category music       Upstream    55000000            music-2126  2
web-cc-category music       Downstream  20000000            music-745c  1
```

The output of the **show web-cc** command varies, depending upon the parameters specified. The following table describes the information displayed in the output of this command when that parameter is included.

Parameter	Description
`categories`	Include this parameter to display the following information categories in the command output: • **Name**: names of the available web content classification catetories • **Web Category ID**: ID number associated with a category name.
`reputation`	Include this parameter to display the following information categories in the command output: • **RiskLevel**: names of the available web content classification risk levels • **Score**: Range of risk scores associated with a risk level
`Stats`	Include this parameter to display the following information categories in the command output: • **URL miss from sos**: number of times a URL was not found in the internal web content classification cache. • **Database hit:** number of times a URL was not found in the interal web content classification cache, but was found by the local web content classification database. • **Cloud lookup**: number of times a URL was not found by the local web content classification database, and was sent to the cloud for identification. • **Cloud response**: number of times the cloud responded to a cloud lookup request. • **RTU updates**: Number of times that the internal web content classification cache was udpated • **DB Entries**: Maximum number of entries allowed in the local web content classification database. This value varies by controller type.
`Status`	Include this parameter to display the following information categories in the command output: • **Web Content Classification enabled**: Shows if the web content classification feature is enabled or disabled. • **DNS/Name Server configured**: Shows if DNS is configured on the controller. The web content classification feature uses DNS to identify the URL cloud server, so DNS must be configured on the controller for this feature to work. • **URL Cloud lookup server reachabl**e: Indicates if the controller is able to contact the URL cloud server.
`global-bandwidth-contract`	Include this parameter to display the following information categories in the command output: • **Web-cc Category/Reputation**: Name of the web content classification category or reputation level.

Parameter	Description
	• **Direction:** indicates whether the contract applies to upstream or downstream traffic. • **Rate (bits/second) :** bandwidth contract rate, in bits/second. • **Contract:** unique name assigned to the web-cc global bandwidth contract. • **Id:** identification number assigned to the web-cc global bandwidth contract.

Related Commands

Command	Description	Mode
web-cc	This command defines global bandwidth contracts for HTTP traffic matching a predefined web content category or reputation type.	Config mode

Command History

Version	Modification
ArubaOS 6.4.2.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	PEF-NG license	Config mode on master controllers

show web-server

```
show web-server
   profile
   statistics
```

Description

Displays the configuration and statistics of the controller's web server.

Syntax

Parameter	Description	Range	Default
`profile`	Displays the web server configuration profile.	—	—
`statistics`	Displays the web server statistics. This command helps to troubleshoot Captive Portal scale issues.	—	—

Example

The output of this command shows the web-server configuration.

```
(host) # show web-server profile

Web Server Configuration
------------------------
Parameter                                       Value
---------                                       -----
Cipher Suite Strength                           high
SSL/TLS Protocol Config                         tlsv1 tlsv1.1 tlsv1.2
Switch Certificate                              default
Captive Portal Certificate                      default
IDP Certificate                                 default
Management user's WebUI access method           username/password
User absolute session timeout <30-3600> (seconds)  0
User session timeout <30-3600> (seconds)        3600
Maximum supported concurrent clients <25-320>   75
Enable WebUI access on HTTPS port (443)         false
Web Skype4B Listen Protocol/Port Config         N/A
Enable bypass captive portal landing page       false
Exclude Security Headers from HTTP Response     false
```

The output of this command displays the web-server statistics.

```
(host) #show web-server statistics

Web Server Statistics:
----------------------
Current Request Rate:            1 Req/Sec
Current Traffic Rate:            1 KB/Sec
Busy Connection Slots:           7
Available Connection Slots:      68
Total Requests Since Up Time:    284
Total Traffic Since Up Time:     1122 KB
Avg. Request Rate Since Up Time: 1 Req/Sec
Avg. Traffic Rate Since Up Time: 6144 Bytes/Sec
Server Scoreboard:               _____________KKKKKK_W_____________
```

```
Scoreboard Key: _ - Waiting for Connection, s - Starting up
R - Reading Request, W - Sending Reply
K - Keepalive, D - DNS Lookup
C - Closing connection, L - Logging
G - Gracefully finishing, I - Idle cleanup of worker
. - Open slot with no current process
```

The output of the **show web-server statistics** command includes the following parameters.

Parameter	Description
`Current Request Rate`	HTTP/HTTPS request rate measured immediately within the last one second.
`Current Traffic Rate`	HTTP/HTTPS data transfer rate measured immediately within the last one second.
`Busy Connection Slots`	Number of simultaneous HTTP/HTTPS sessions currently being served. Each session occupy one slot from the total available slot configured under the web-max-clients <web-max-client> parameter.
`Available Connection Slots`	Number of simultaneous HTTP/HTTPS sessions which can be served more than what is being served currently.
`Total Requests Since Up Time`	Total number of HTTP/HTTPS requests received by the web server since the server was up.
`Total Traffic Since Up Time`	Total number of HTTP/HTTPS traffic handled by the web server since the server was up.
`Avg. Request Rate Since Up Time`	Lifetime average of HTTP/HTTPS request rate. This is calculated by dividing the total number of requests received with the web server up-time.
`Avg. Traffic Rate Since Up Time`	Lifetime average of HTTP/HTTPS traffic rate. This is calculated by dividing the total of HTTP/HTTPS traffic with the web server up-time.
`Server Scoreboard`	Displays information of each worker thread of web server.

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.3	The output of this command displays the **WebUI access on HTTPS port 443** status and the **Web Lync Listen Port**.
ArubaOS 6.4.2.3	The **profile** and **statistics** parameters were introduced.

Version	Description
ArubaOS 6.4.2.5	The **Enable bypass captive portal landing page** parameter was introduced.
ArubaOS 6.4.4.0	The **User absolute session timeout <30-3600> (seconds)** parameter was introduced as part of the **show web-server profile** command output. The **Web Skype4b Listen Port** parameter was introduced, replacing the **Web Lync Listen Port** parameter introduced in ArubaOSS 6.3.
ArubaOS 6.5	The **Exclude Security Headers from HTTP Response** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config or Enable mode on master or local controllers

show web-proxy

```
show web-proxy
```

Description

Displays information about the port and server configured for the web-proxy.

Example

The following command shows the port configured for the web-proxy server.

```
(host)#show web-proxy
   Server: arubaproxy.com
   port: 8080
```

Related Commands

Command	Description	Mode
web-proxy server	This command configures the web-proxy server related information.	Config mode

Command History

Version	Modification
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master controller.

show whitelist-db cpsec

```
show whitelist-db cpsec
   cert-type {factory-cert|switch-cert}
   mac-address <name>
   page <num>
   start <offset>
   state {approved-ready-for-cert|certified-factory-cert|unapproved-factory-cert|unapproved-
   no-cert}
```

Description

Display the campus AP whitelist for campus APs using the control plane security feature.

Syntax

Parameter	Description
`cert-type factory-cert|switch-cert`	• **factory-cert**: Use this parameter if AP is using a factory certificate. • **switch-cert**: Use this parameter if AP is using a certificate signed by the switch
`mac-address <name>`	MAC address of the campus AP you want to enter into the CPsec whitelist database.
`page <num>`	ArubaOS CLI displays 50 whitelist database entries per page. Filter the output of this command by displaying information starting at the specified page number.
`start <offset>`	Start displaying the table at the specified record in the database
`state approved-ready-for-cert certified-factory-cert unapproved-factory-cert unapproved-no-cert`	• **approved-ready-for-cert**: AP in Approved state and is ready to receive a certificate. • **certified-factory-cert**: AP in Certified state and has a factory certificate. • **unapproved-factory-cert**: AP in Unapproved state and has a factory certificate. • **unapproved-no-cert**: AP in Unapproved state and has no or unknown certificate.

Usage Guidelines

Use this command to display the contents of the control plane security whitelist. To view information for a single AP, use the command **show whitelist-db cpsec mac-address <mac-address>**. To view a list of all secure APs on your controller, use the command **show whitelist-db cpsec**. If your deployment includes both master and local controllers, then the campus AP whitelist on every controller contains an entry for every secure AP on the network, regardless of the controller to which it is connected.

Example

The output of the following command shows the campus AP whitelist entry for an AP with the MAC address 00:16:CF:AF:3E:E1:

```
(host) #show whitelist-db cpsec mac-address 00:16:CF:AF:3E:E1
```

```
Control-Plane Security Whitelist-entry Details
----------------------------------------------
MAC-Address        AP-Group     AP-Name         Enable    State
-----------        --------     -------         ------    -----
00:16:CF:AF:3E:E1  employee     ap-office1      Enabled   cert-cont-cert

Cert-Type    Description  Revoke Text  Last Updated
---------    -----------  -----------  ------------
switch-cert                            Fri Oct 16 01:21:09 2009

Whitelist Entries: 1
```

The output of this command includes the following parameters:

Parameter	Description
MAC-Address	MAC address of the campus AP.
Enable	Shows whether the campus AP has been enabled or disabled.
State	Shows the current state of the campus AP. • **unapproved-no-cert**: AP has no certificate and is not approved. • **unapproved-factory-cert:** AP has a preinstalled certificate that was not approved. • **approved-ready-for-cert**: AP is valid, but is waiting to receive a certificate. • **certified-factory-cert**: AP has an approved factory-installed certificate • **certified-controller-cert**: AP has an approved certificate from the controller. • **certified-hold-factory-cert**: An AP is put in this state when the controller thinks the AP has been certified with a factory certificate yet the AP requests to be certified again. Since this is not a normal condition, the AP will not be reapproved as a secure AP until a network administrator manually changes the status of the AP to verify that it is not compromised. • **certified-hold-controller-cert**: An AP is put in this state when the controller thinks the AP has been certified with a controller certificate yet the AP requests to be certified again. Since this is not a normal condition, the AP will not be reapproved as a secure AP until a network administrator manually changes the status of the AP to verify that it is not compromised.
Cert-Type	Type of certificate used by the AP. • **switch-cert**: AP received a certificate from the controller • **factory-cert**: AP has a factory-installed certificate
Description	If you included an optional description when you added the AP to the campus AP whitelist, that description will appear here.
Revoke Text	If you included an optional revoke description when you manually revoked the AP, that description will appear here.
Last Updated	Date and time that the AP record was last updated in the database.

Related Commands

Command	Description	Mode
whitelist-db cpsec add mac-address <name>	Configure the campus AP whitelist for the control plane security feature.	Config mode

Command History

Release	Modification
ArubaOS 5.0	Command introduced.
ArubaOS 6.4.1.0	The following new parameters were introduced: • **cert-type** • **page** • **start** • **state**
ArubaOS 6.4.3.0	The **ap-group** and **ap-name** parameters were introduced as part of this command output.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Enable mode on master or local controllers

show whitelist-db cpsec-local-switch-list

```
show whitelist-db cpsec-local-switch-list [mac-address <mac-address>]
```

Description

Display the list of local controllers with APs using the control plane security feature.

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the local controller whose data you want to view.

Usage Guidelines

When you use the control plane feature on a network with both master and local controllers, the master controller maintains a whitelist of local controllers with APs using control plane security. When you change a campus AP whitelist on any controller, that controller contacts the master controller to check the local switch whitelist, then contacts every other controller on the local switch whitelist to notify it of the change. This allows an AP to move between local controllers and still stay connected to the secure network.

To view information for a single local controller, use the command **show whitelist-db cpsec-local-switch-list mac-address <mac-address>**. To view a list of all local controllers, use the command **show whitelist-db cpsec-local-switch-list**.

Example

The following command shows information for all local controllers in the local controller whitelist:

```
(host) #show whitelist-db cpsec-local-switch-list
Registered Local Switch Details
-----------------------------------
MAC-Address         IP-Address  Sequence Number  Remote Sequence Number  NULL Update Count
-----------         ----------  ---------------  ----------------------  -----------------
00:0b:86:51:a5:4c 10.3.53.2                3    1
0
00:A0:C9:14:C8:29 10.3.53.4                3    0
0
Local Purge  Remote Purge  Remote Last-Seq  Last Update Sent           Last Update Received
-----------  ------------  ---------------  ----------------           --------------------
0            0              2                Mon May 4 13:33:29 2013   Mon May 4 13:33:18 2013
0            0              2                Mon May 4 13:32:55 2013   Mon May 4 13:32:19 2013

Whitelist Entries: 2
```

The output of this command includes the following information:

Parameter	Description
MAC-Address	MAC address of the local controller.
IP-Address	IP address of the local controller.

Parameter	Description
`Sequence Number`	The number of times the local controller in the whitelist received and acknowledged a campus AP whitelist change from the master controller. In the example above, both local controllers received and acknowledged three campus AP whitelist changes sent from the master controller.
`Remote Sequence Number`	The number of times that the master controller has received and acknowledged a campus AP whitelist change from the local controller in the whitelist. In the example above, the master controller received and acknowledged a single campus AP whitelist change from the local controller with the MAC address 00:0b:86:51:a5:4c.
`Null Update Count`	The number of times the controller has checked its control plane security whitelist and found nothing to synchronize with the remote controller. By default, the controller compares its control plane security whitelist against whitelists on other controllers every minute. If the null update count reaches 5, the controller will send an “empty sync” heartbeat to the remote controller to ensure the sequence numbers on both controllers are the same, then reset the null update count to zero.

Related Commands

Command	Description	Mode
`whitelist-db cpsec-local-switch-list`	Configure the local controller whitelist for the control plane security feature.	Config mode

Command History

Version	Modification
ArubaOS 5.0	Command introduced
ArubaOS 6.0	The **cpsec-local-ctrlr-list** parameter was modified to **cpsec-local-switch-list**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show whitelist-db cpsec-master-switch-list

```
show whitelist-db cpsec-master-switch-list [mac-address <mac-address>]
```

Description

Display the master switch list whitelist on local controllers with APs using the control plane security feature.

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the master controller.

Usage Guidelines

When you use the control plane feature on a network with both master and local controllers, each local controller has a master switch whitelist which contains the IP and MAC addresses of its master controller. If your network has a redundant master controller, then this whitelist will contain more than one entry.

To view information for a single master controller, use the command **show whitelist-db cpsec-master-switch-list mac-address <mac-address>**. To view a list of all master controllers, use the command **show whitelist-db cpsec-master-switch-list**.

Example

The following command shows that the local controllers have a single master controller with the IP address 10.3.53.3:

```
(host) #show whitelist-db cpsec-master-list
Registered Master Switch Details
--------------------------------
Active  MAC-Address        IP-Address  Sequence Number  Remote Sequence Number  NULL Update
Count
------  -----------        ----------  ---------------  ----------------------  --------------
---
1       00:0b:86:61:ed:6c  10.3.53.11  1                3                       1
Local Purge  Remote Purge  Remote Last-Seq  Last Update Sent          Last Update Received
-----------  ------------  ---------------  -----------------         --------------------
0            0             1                Tue Aug  2 13:33:29 2012  Tue Aug  2 13:33:18 2012
```

The output of this command includes

Syntax

Parameter	Description
`MAC-Address`	MAC address of the master controller.
`IP-Address`	IP address of the master controller.

Parameter	Description
Sequence Number	The number of times the master controller in the whitelist received and acknowledged a campus AP whitelist change from the local controller. In the example above, the master controller received and acknowledged one campus AP whitelist change from the local controller.
Remote Sequence Number	The number of times that the local controller has received and acknowledged a campus AP whitelist change from the master controller in the whitelist. In the example above, the local controller received and acknowledged three campus AP whitelist updates from the master controller.
Null Update Count	The number of times the controller has checked its control plane security whitelist and found nothing to synchronize with the master controller. By default, the controller compares its control plane security whitelist against whitelists on other controllers every minute. If the null update count reaches 5, the controller will send an “empty sync” heartbeat to the remote controller to ensure the sequence numbers on both controllers are the same, then reset the null update count to zero.

Related Commands

Command	Description	Mode
whitelist-db cpsec-master-switch-list	Configure the master controller whitelist for the control plane security feature.	Config mode

Command History

Version	Modification
ArubaOS 5.0	Command introduced
ArubaOS 6.0	The **cpsec-master-ctrlr-list** parameter was modified to **cpsec-master-switch-list**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on local controllers

show whitelist-db cpsec-seq

```
show whitelist-db cpsec-seq
```

Description

Display the current sequence number for the master or local controller whitelists.

Syntax

No Parameters

Usage Guidelines

The current sequence number in the **Sequence Number Details** table shows the number of changes to the campus AP whitelist made on this controller.

Each controller compares its campus AP whitelist against whitelists on other controllers every two minutes. If a controller detects a difference, it will send its changes to the other controllers on the network. If all other controllers on the network have successfully received and acknowledged all whitelist changes made on this controller, every entry in the **sequence number** column in the controller whitelist will have the same value as the number displayed in the **Sequence Number Details** table. If a controller in the master or local controller whitelist has a lower sequence number, that controller may still be waiting to complete its update, or its update acknowledgement may not have yet been received.

Example

The output of the first command below shows that the campus AP whitelist has been updated 3 times on the master controller. The second command shows the local controller list on the master controller, and verifies that both local controllers have received and acknowledged all three of these changes.

```
(host) #show whitelist-db cpsec-seq
Sequence Number Details
-----------------------
Table Name       Current Seq Number
----------       ------------------
cpsec_whitelist  3

Whitelist Entries: 97

(host) # show whitelist-db cpsec-local-list
Registered Local Controller Details
-----------------------------------
MAC-Address        IP-Address  Sequence Number  Remote Sequence Number  NULL Update Count
-----------        ----------  ---------------  ----------------------  -----------------
00:0b:86:51:a5:4c 10.3.53.2               3    1
0
00:A0:C9:14:C8:29 10.3.53.4               3    0
0

Whitelist Entries: 2
```

Related Commands

Command	Description	Mode
whitelist-db cpsec add mac-address <name>	Configure the campus AP whitelist for the control plane security feature.	Config mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show whitelist-db cpsec-status

```
show whitelist-db cpsec-status
   [lms-list]
```

Description

Display aggregate status information APs in the campus AP whitelist.

Syntax

Parameter	Description
`lms-list`	Displays a list of LMS IP addresses.

Example

The output of the following command shows current status information for all APs in the campus AP whitelist:

```
(host) #show whitelist-db cpsec-status

My Mac-Address                 00:1a:1e:00:89:b8
My IP-Address                  192.0.2.1
Master IP-Address              192.0.2.1
Switch-Role                    Master
Whitelist-sync is enabled

Entries in Whitelist database

Total entries:                 41
Approved entries:               0
Unapproved entries:             0
Certified entries:             40
Certified hold entries:         0
Revoked entries:                1
Marked for deletion entries:    0
Current Sequence Number:        0
```

The output of this command includes:

Parameter	Description
`My Mac-Address`	The MAC address of the controller.
`My IP-Address`	The IP address of the controller.
`Master IP-Address`	The IP address of the master controller.
`Switch-Role`	The role of the controller.
`Whitelist-sync is enabled`	The status of the whitelist synchronization with local or cloud services controller.

Parameter	Description
`Total entries`	Total number of entries in the campus AP whitelist
`Approved entries:`	Number of APs that are valid, but is waiting to receive a certificate.
`Unapproved entries`	Number of APs that have certificate that was not not approved.
`Certified entries`	Number of APs that have an approved certificate.
`Certified hold entries`	Number of APs in the certified hold state. An AP is put in this state when the controller thinks the AP a certified certificate yet the AP requests to be certified again. Since this is not a normal condition, the AP will not be reapproved as a secure AP until a network administrator manually changes the status of the AP to verify that it is not compromised.
`Revoked entries`	Number of APs whose entries have been revoked
`Marked for deletion entries`	Number of APs whose entries have been marked for deletion. An entry will not be permanently deleted until all other controllers on the network acknowledge the deletion.

Related Commands

Command	Description
`show whitelist-db cpsec`	Display the campus AP whitelist for campus APs using the control plane security feature.

Command History

Version	Description
ArubaOS 5.0	Command introduced.
ArubaOS 6.4.3.0	The **Whitelist-sync is enabled** parameter was introduced as part of the command output.

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Enable mode on master or local controllers

show whitelist-db rap

```
show whitelist-db rap
   apgroup <ap-group>
   apname <ap-name>
   export-css <filename>
   fullname <full-name>
   long
   mac-address <address>
   page <num>
   start <offset>
```

Description

View detailed information for the remote AP whitelist database.

Syntax

Parameter	Description
`apgroup <ap-group>`	Display specific AP-entries for this AP-group.
`apname <ap-name>`	Display specific AP-entry for this AP-name.
`export-css`	Export the remote AP white list to a file in the controller's /flash/config/ folder. This file can be given to a content security provider to manage the remote AP database.
`fullname <full-name>`	Display specific AP-entry for this full-name in the RAP whitelist database.
`long`	Display additional debugging information about an entry in the RAP whitelist, including when it was last updated, the sequence number for the update, and any flags for the entry.
`mac-address <mac-addr>`	Display a whitelist entry for the specified RAP MAC address.
`page`	ArubaOS CLI displays 50 whitelist database entries per page. Filter the output of this command by displaying information starting at the specified page number.
`start <offset>`	Start displaying the table at the specified record in the database

Example

In the example below, the command output has been divided into two tables to fit on a single page of this document. In the command-line interface, this output would appear in a single, wide table.

```
(host) #show whitelist-db rap

AP-entry Details
----------------

Name               AP-Group  AP-Name       Full-Name    Authen-Username  Revoke-Text
----               --------  -------       ---------    ---------------  -----------
00:0b:86:c3:58:38  local     AP-5B         chucks_AP    Dev\Sarah
00:0b:86:66:01:aa  default   AP-5C         upstairs     Dev              AP invalid
00:1a:1e:c0:1b:e0  default   AP-99                      Dev\Chris
00:0b:86:66:03:3f  default   LAB-AP        addtl_rap    PM\Kumar
```

```
00:0b:86:66:02:09  default   LAB-AP

AP_Authenticated  Description  Date-Added                Enabled  Remote-IP
----------------  -----------  ----------                -------  -------
Authenticated                  Thu Mar  5 21:25:36 2009  Yes      192.0.2.3
Provisioned                    Thu Mar  5 21:25:49 2009  No       192.0.2.78
Authenticated                  Wed Mar  4 20:16:16 2009  Yes      192.0.2.6
Authenticated                  Tue May 19 07:53:29 2009  Yes      192.0.2.12
Provisioned                    Fri May  8 10:37:40 2009  Yes      192.0.2.13

AP Entries: 5
```

The output of this command includes the following information:

Parameter	Description
Name	MAC address of the remote AP.
AP-Group	Name of the AP group to which th remotee AP has been assigned.
AP-name	Name of the remote AP. If no name has been specified, this column will display the remote AP's MAC address
Full-name	Text string used to identify the remote AP. This field often describes the AP's user, and corresponds to the **User Name** field in the RAP whitelist in the WebUI.
Authen-Username	User name of the user who authenticated the remote AP. This parameter holds the user name of the user who authenticated the remote AP. This is related to the zero touch authentication feature, as a user needs authenticate an AP before it gets its complete configuration. Before the AP is authenticated, it is given a restricted configuration to allow users to perform captive portal authorization via the remote AP's ENET ports to authenticate the remote AP. The username used during captive portal authentication will be stored in this field. This cannot be added manually when creating a local-userdb-ap entry.
Revoke-Text	The command **whitelist-db rap revoke** includes an optional **revoke-comment** parameter that allows network administrators to explain why the remote AP was revoked. If a remote AP is revoked, and a revoke comment entered, this text appears in the **revoke-text** column in the **show whitelist-db rap**command. When a local DB entry is reenabled via the command **whitelist-db rap modify mac-addr mode enable**, this field is cleared.
AP_ Authenticated	This column indicates the authorization status of the RAP. A RAP can either be **Authenticated** or **Provisioned**. Remote APs that *do not* support certificated-based provisioning will always display a **Provisioned** status. Remote APs that support certificated-based provisioning can display either a **Authenticated** or **Provisioned** status, depending on their configuration and authentication status. • If the remote AP has a defined AP authorization profile, the remote AP will be in a "Provisioned" state with a limited configuration until it is authenticated. After it the remote AP has been authenticated, it will be in an "Authenticated" state. • If the remote AP does not have a defined AP authorization profile, the remote AP will be in a"Provisioned" state, but will still receive the full configuration assigned to that AP and its AP group.

Parameter	Description
Description	A text string used to further identify the remote AP.
Date-Added	Date and time that the AP was added to the local user database

Enabled	This column shows if the entry in the database is enabled or disabled. Database entries can be enabled or disabled using the CLI commands:
	`whitelist-db rap {add|modify} mac-address <mac-addr> mode {enable|disable}`
	and
	`whitelist-db rap revoke mac-address <mac-addr>`

Related Commands

Command	Description
whitelist-db rap add	Add, delete, modify or revoke remote AP entries in the current emote AP whitelist table.

Command History

Release	Modification
ArubaOS 5.0	Command introduced.
ArubaOS 6.4.1.0	The following new parameters were introduced: • **apgroup** • **apname** • **fullname**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show whitelist-db rap-local-switch-list

```
show whitelist-db rap-local-switch-list [mac-address <mac-address>]
```

Description

Display the remote AP whitelist local switch list on a master controller.

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the local controller whose data you want to view.

Usage Guidelines

When you have remote APs on a network with both master and local controllers, the master controller maintains a whitelist of local controllers with remote APs. When you change a remote AP whitelist on any controller, that controller contacts the master controller to check the local switch whitelist, then contacts every other controller on the local switch whitelist to notify it of the change. This allows a remote AP to move between local controllers and still stay connected to the secure network.

To view information for a single local controller, use the command **show whitelist-db rap-local-switch-list mac-address <mac-address>**. To view a list of all local controllers, use the command **show whitelist-db rap-local-switch-list**.

Example

The following command shows information for all local controllers in the local controller whitelist. The output in the example below has been divided into sections to better fit on the pages of this document. In the ArubaOS CLI, the output appears in a single, long table.

```
(host) #show whitelist-db rap-local-switch-list


Active   MAC-Address        IP-Address          Sequence Number         Remote Sequence Number
-------  -----------        ----------          ---------------         ----------------------
1         00:0b:86:51:a5:4c 10.3.53.2   3                      1
1         00:A0:C9:14:C8:29 10.3.53.4   3                      0

NULL Update Count       Local Purge  Remote Purge  Remote Last-Seq  Last Update Sent
-----------------       -----------  ------------  ---------------  ----------------
0                       0            0              2                Mon May 4 13:33:29 2013
0                       0            0              2                Mon May 4 13:32:55 2013

Last Update Received
--------------------
Mon May 4 13:33:18 2013
Mon May 4 13:32:19 2013W

Whitelist Entries: 2
```

The output of this command includes the following information:

Parameter	Description
`Active`	Shows if the controller is active on the network. • 1: Active • 0: Inactive
`MAC-Address`	MAC address of the local controller.
`IP-Address`	IP address of the local controller.
`Sequence Number`	The number of times the local controller in the whitelist received and acknowledged a remote AP whitelist change from the master controller. In the example above, both local controllers received and acknowledged three remote AP whitelist changes sent from the master controller.
`Remote Sequence Number`	The number of times that the master controller has received and acknowledged a remote AP whitelist change from the local controller in the whitelist. In the example above, the master controller received and acknowledged a single remote AP whitelist change from the local controller with the MAC address 00:0b:86:51:a5:4c.
`Null Update Count`	The number of times the controller has checked its remote AP whitelist and found nothing to synchronize with the remote controller. By default, the controller compares its remote AP whitelist against whitelists on other controllers every minute. If the null update count reaches 5, the controller will send an “empty sync” heartbeat to the remote controller to ensure the sequence numbers on both controllers are the same, then reset the null update count to zero.

Related Commands

Command	Description	Mode
show whitelist-db rap-master-switch-list	Delete a master controller from the master switch table used by the remote AP whitelist	Config mode
whitelist-db rap del	Remove an AP entry from the remote AP whitelist.	Config mode

Command History

Version	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show whitelist-db rap-master-switch-list

```
show whitelist-db rap-local-switch-list [mac-address <mac-address>]
```

Description

Display the remote AP whitelist master switch list on local controllers with remote APs

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the local controller whose data you want to view.

Usage Guidelines

When your network has with both master and local controllers, each local controllerwith associated remote APs has a master switch whitelist which contains the IP and MAC addresses of its master controller. If your network has a redundant master controller, then this whitelist will contain more than one entry.

To view information for a single master controller, use the command **show whitelist-db rap-master-switch-list mac-address <mac-address>**. To view a list of all master controllers, use the command **show whitelist-db rap-master-switch-list**.

Example

The following command shows that the local controllers have a single master controller with the IP address 192.0.2.143. The output in the example below has been divided into sections to better fit on the pages of this document. In the ArubaOS CLI, the output appears in a single, long table.

```
Active   MAC-Address           IP-Address       Sequence Number          Remote Sequence
                                                                         Number
-------  -----------           ----------       ---------------          ---------------
1         00:0b:86:51:a5:4c   192.0.2.14        2                        2

NULL Update Count       Local Purge  Remote Purge  Remote Last-Seq  Last Update Sent
-----------------       -----------  ------------  ---------------  ----------------
0                       0            0              1               Mon May 4 12:44:24
0

Last Update Received
--------------------
Mon May 4 12:44:20

Whitelist Entries: 1
```

The output of this command includes the following information:

Parameter	Description
`Active`	Shows if the controller is active on the network. • 1: Active • 0: Inactive

Parameter	Description
MAC-Address	MAC address of the mastercontroller.
IP-Address	IP address of the mastercontroller.
Sequence Number	The number of times the mastercontroller in the whitelist received and acknowledged a remote AP whitelist change from the local controller. In the example above, the master controllers received and acknowledged three remote AP whitelist changes sent from a local controller.
Remote Sequence Number	The number of times that the local controller has received and acknowledged a remote AP whitelist change from the mastercontroller in the whitelist.
Null Update Count	The number of times the controller has checked its remote AP whitelist and found nothing to synchronize with the remote controller. By default, the controller compares its remote AP whitelist against whitelists on other controllers every minute. If the null update count reaches 5, the controller will send an “empty sync” heartbeat to the remote controller to ensure the sequence numbers on both controllers are the same, then reset the null update count to zero.

Related Commands

Command	Description	Mode
whitelist-db rap-local-switch-list	Delete a local controller from the local switch table used by the remote AP whitelist	Config mode
whitelist-db rap del	Remove an AP entry from the remote AP whitelist.	Config mode

Command History

Version	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show whitelist-db rap-status

```
show whitelist-db rap-status
```

Description

Display aggregate status information APs in the remote AP whitelist.

Syntax

No parameters.

Example

The output of the following command shows current status information for all APs in the remote AP whitelist:

```
(host) #show whitelist-db rap-status
Entries in Whitelist database

Total entries:                41
Revoked entries:               1
Marked for deletion entries:   0
```

The output of this command includes

Syntax

Parameter	Description
`Total entries`	Total number of entries in the remote AP whitelist
`Revoked entries`	Number of remote APs whose entries have been revoked
`Marked for deletion entries`	Number of remote APs whose entries have been marked for deletion. An entry will not be permanently deleted until all other controllers on the network acknowledge the deletion.

Related Commands

Command	Description	Mode
show whitelist-db rap-master-switch-list	Display the list of master controllers with remote APs managed using the remote AP whitelist	Enable or Config mode
show whitelist-db rap-local-switch-list	Display the list of local controllers with remote APs managed using the remote AP whitelist	Enable or Config mode
show whitelist-db rap	View detailed information for the remote AP whitelist database.	Enable or Config mode
whitelist-db rap add	Add an AP entry to the remote AP whitelist.	Config mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Enable mode on master or local controllers

show wlan anyspot-profile

```
show wlan anyspot-profile [<profile-name>]
```

Description

The output of this command displays configuration settings for a WLAN anyspot profile.

Syntax

Parameter	Description
<profile>	Name of an anyspot profile

Usage Guidelines

The anyspot client probe suppression feature decreases network traffic by suppressing probe requests from clients attempting to locate and connect to other known networks. Issue this command without the **<profile>** parameter to display the entire anyspot profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Example

The following command displays configuration information for an active (enabled) anyspot profile with two excluded ESSIDs, and one preset ESSID.

```
Anyspot profile "default"
-------------------------
Parameter                                 Value
---------                                 -----
Enable Anyspot                            true
Exclude ESSID(s) (exact match)            corp_dev_1
Exclude ESSID(s) (exact match)            corp_voip_1
Exclude ESSID(s) (containing string(s))   N/A
Preset ESSID(s)                           corpGuest
```

Parameter	Description
enable-anyspot	Indicates if the anyspot feature is enabled or disabled.
exclude-essid <exclude-essid>	An anyspot-enabled radio will not respond to client probe requests using an ESSID in the **Exclude ESSID** lists. ESSIDs from neighboring APs will automatically appear in this list as long as the anyspot-enabled AP can detect that ESSID.
exclude-wildcard <exclude-wildcard>	An anyspot-enabled radio will not respond to client probe requests using an ESSID that matches a string in the **Exclude ESSID (containing string) list.**
preset-essid <preset-essid>	If a client sends a probe request without an ESSID (that is, the probe request is not looking for a specific network) then the anyspot-enabled AP will respond to the probe request with an ESSID from this list.

Related Commands

Command	Description
wlan anyspot-profile	The anyspot client probe suppression feature decreases network traffic by suppressing probe requests from clients attempting to locate and connect to other known networks.

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show wlan bcn-rpt-req-profile

```
show wlan bcn-rpt-req-profile <profile-name>
```

Description

Shows configuration and other information about the parameters for the Beacon Report Request frames.

Syntax

Parameter	Description
<profile>	Name of a WLAN beacon report request profile.

Usage Guidelines

Issue this command without the <profile> parameter to display the entire Beacon Report Request profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

For this profile to take effect, the 802.11K feature needs to be enabled.

Examples

```
(host) #show wlan bcn-rpt-req-profile
Beacon Report Request Profile List
----------------------------------
Name     References  Profile Status
----     ----------  --------------
default  1
test     0
Total:2
(host) #
(host) #show wlan bcn-rpt-req-profile default

Beacon Report Request Profile "default"
---------------------------------------
Parameter                           Value
---------                           -----
Interface                           1
Regulatory Class                    12
Channel                             9
Randomization Interval              100
Measurement Duration                100
Measurement Mode for Beacon Reports active-all-ch
Reporting Condition                 2
ESSID Name                          aruba-ap
Reporting Detail                    Disabled
Measurement Duration Mandatory      Disabled
Request Information values          0/21/22
```

The output of this command includes the following parameters:

Parameter	Description
Interface	Specifies the Radio interface for transmitting the Beacon Report Request frame. It can have a value of either 0 or 1.
Regulatory Class	Specifies the Regulatory Class field in the Beacon Report Request frame.
Channel	Specifies the Channel field in the Beacon Report Request frame.
Randomization Interval	Specifies the Randomization Interval field in the Beacon Report Request frame. The Randomization Interval is used to specify the desired maximum random delay in the measurement start time. It is expressed in units of TUs (Time Units).
Measurement Duration	Specifies the Measurement Duration field in the Beacon Report Request frame. The Measurement Duration is set to the duration of the requested measurement. It is expressed in units of TUs.
Measuremement Mode for Beacon Reports	Specifies the mode used for the measurement. The valid measurement modes are: • active-all-ch • active-ch-rpt • beacon-table • passive
Reporting Condition	Specifies the value for the "Reporting Condition" field in the Beacon Reporting Information sub-element present in the Beacon Report Request frame.
ESSID Name	Specifies the value for the "SSID" field in the Beacon Report Request frame.
Reporting Detail	Indicates the value for the "Detail" field in the Reporting Detail sub-element present in the Beacon Report Request frame.
Measurement Duration Mandatory	Specifies the "Duration Mandatory" bit of the Measurement Request Mode field of the Beacon Report Request frame.
Request Information values	Indicates the contents of the Request Information IE that could be present in the Beacon Report Request frame. The Request Information IE is present for all Measurement Modes except the 'Beacon Table' mode. It consists of a list of Element IDs that should be included by the client in the response frame.

Command History

The command is introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show wlan dot11k-profile

```
show wlan dot11k-profile [<profile>]
```

Description

Show a list of all 802.11k profiles, or display detailed configuration information for a specific 802.11k profile.

Syntax

Parameter	Description
<profile>	Name of an 802.11k profile.

Usage Guidelines

Issue this command without the <profile> parameter to display the 802.11k profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured 802.11k profiles. The **References** column lists the number of other profiles with references to the 802.11k profile, and the **Profile Status** column indicates whether the profile is predefined. (User-defined profiles will not have an entry in the Profile Status column.)

```
(host) #show wlan dot11k-profile

802.11K Profile List
--------------------
Name                            References  Profile Status
----                            ----------  --------------
default                         8
11kprofile2             1
Total: 2
```

The following example shows configuration settings defined for the profile **default**.

```
(host) #show wlan dot11k-profile default

802.11K Profile "default"
-------------------------
Parameter                                                       Value
---------                                                       -----
Advertise 802.11K Capability                                    Disabled
Forcefully disassociate on-hook voice clients                   Disabled
Measurement Mode for Beacon Reports                             beacon-table
Configure specific channel for Beacon Requests                  Disabled
Channel requested for Beacon Reports in 'A' band                36
Channel requested for Beacon Reports in 'BG' band               1
Time duration between consecutive Beacon Requests               60 sec
Time duration between consecutive Link Measurement Requests     60 sec
Time duration between consecutive Transmit Stream Measurement Requests  90 sec
```

The output of this command includes the following data columns:

Parameter	Description
Advertise 802.11K Capability	Shows if the profile has enabled or disabled the 802.11K feature.
Forcefully disassociate on-hook voice clients	If enabled, the AP may forcefully disassociate clients that reach the maximum CAC peak capacity or call handoff reservation.
Measurement Mode for Beacon Reports	Shows the profile's beacon measurement mode: • **active**: In this mode, the client sends a probe request to the broadcast destination address on all supported channels, sets a measurement duration timer, and, at the end of the measurement duration, compiles all received beacons or probe response with the requested SSID and BSSID into a measurement report. • **beacon-table**: In this mode, the client measures beacons and returns a report with stored beacon information for any supported channel with the requested SSID and BSSID. The client does not perform any additional measurements. This is the default beacon measurement mode. • **passive**: In this mode, the client sets a measurement duration timer, and, at the end of the measurement duration, compiles all received beacons or probe response with the requested SSID and BSSID into a measurement report.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show wlan dot11r-profile

```
show wlan dot11r-profile [<profile>]
```

Description

Show a list of all 802.11r profiles, or display detailed configuration information for a specific 802.11r profile.

Syntax

Parameter	Description
<profile>	Name of an 802.11r profile.

Usage Guidelines

Issue this command without the <profile> parameter to display the 802.11r profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured 802.11r profiles. The **References** column lists the number of other profiles with references to the 802.11r profile, and the **Profile Status** column indicates whether the profile is predefined. (User-defined profiles will not have an entry in the Profile Status column.)

```
(host) #show wlan dot11r-profile

802.11r Profile List
--------------------
Name              References  Profile Status
----              ----------  --------------
default           8
voice-enterprise  1

Total: 2
```

The following example shows configuration settings defined for the profile **default**.

```
(host) #show wlan dot11r-profile default
802.11r Profile "default"
-------------------------
Parameter                    Value
---------                    -----
Advertise 802.11r Capability  Disabled
802.11r Mobility Domain ID    1
802.11r R1 Key Duration       3600
802.11r R1 Key Assignment     dynamic
```

The output of this command includes the following data columns:

Parameter	Description
Advertise 802.11r Capability	Shows if the profile has enabled or disabled the 802.11r feature.

Parameter	Description
802.11r Mobility Domain ID	Shows the unique ID that identifies the mobility domain.
802.11r R1 Key Duration	Shows the r1 key timeout value in seconds for decrypt-tunnel or bridge mode.
802.11r R1 Key Assignment	Shows if the r1 key assignment is static or dynamic.

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show wlan edca-parameters-profile

```
show wlan edca-parameters-profile ap|station [<profile>]
```

Description

Display an Enhanced Distributed Channel Access (EDCA) profile for APs or for clients (stations). EDCA profiles are specific either to APs or clients.

Syntax

Parameter	Description
<profile>	Name of a EDCA Parameters profile.

Usage Guidelines

Issue this command without the <profile> parameter to display a EDCA Parameters profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has three EDCA Parameters profiles configured for stations. The **References** column lists the number of other profiles with references to the EDCA Parameters profile, and the **Profile Status** column indicates whether the profile is predefined. (User-defined profiles will not have an entry in the Profile Status column.)

```
(host) #show wlan edca-parameters-profile station
EDCA Parameters profile (Station) List
----------------------------------
Name            References  Profile Status
----            ----------  --------------
station-corp1   3
station-corp2   1
testprofile     0

Total:3
```

The following example shows configuration settings defined for the profile **station-corp1**.

```
(host) #show wlan edca-parameters-profile ap station-corp1
EDCA Parameters
---------------
AC            ECWmin   ECWmax   AIFSN   TXOP   ACM
--            ------   ------   -----   ----   ---
Best-effort   4        6        3       0      0
Background    4        10       7       0      0
Video         3        4        1       94     0
Voice         2        3        1       47     0
```

The output of this command includes the following data columns:

Parameter	Description
AC	Name of an Access channel queue (**Best-effort**, **Background**, **Video** or **Voice**).
ECWmin	The exponential (n) value of the minimum contention window size, as expressed by 2^n-1. A value of 4 computes to 2^4-1 = 15.
ECWmax	The exponential (n) value of the maximum contention window size, as expressed by 2^n-1. A value of 4 computes to 2^4-1 = 15.
AIFSN	Arbitrary inter-frame space number.
TXOP	Transmission opportunity, in units of 32 microseconds.
ACM	If this column displays a 1, the profile has enabled mandatory admission control. If this column displays a 0, the profile has disabled this feature.

Command History

This command was introduced in ArubaOS 3.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	This show command is available in the base operating system, but the controller must have the PEFNG license in order to configure EDCA Parameter Profiles.	Enable and Config mode on master or local controllers

show wlan handover-trigger-profile

```
show wlan handover-trigger-profile [<profile-name>]
```

Description

Displays the current configuration settings for a handover trigger profile.

Usage Guidelines

Issue this command without the <profile> parameter to display a handover trigger profile profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

For this profile to take effect, the 802.11K feature needs to be enabled.

Example

```
(host) #show wlan handover-trigger-profile default
Handover Trigger Profile "default"
----------------------------------
Parameter                                                                    Value
---------                                                                    -----
Enable Handover Trigger feature
Enabled
Threshold signal strength value at which Handover Trigger should be sent to the client  25 -
dBm
```

The output of this command includes the following information:

Parameter	Description
Enable Handover Trigger feature	Shows if the handoff trigger feature is enabled of disabled. If enabled, the controller will initiate the handover of a voice client (for example: dual mode handsets) roaming at the edge of Wi-Fi coverage to an alternate carrier or connection. The handover trigger is initiated if the Wi-Fi signal strength reported by the voice client (received from all APs) is equal to or less than the threshold value.
Threshold signal strength value at which Handover Trigger should be sent to the client	Shows the threshold RSSI value below which a handover trigger message will be sent to an associated client by the AP.

Command History

This command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show wlan hotspot advertisement-profile

```
show wlan hotspot advertisement-profile [<profile-name>]
```

Description

The output of this command displays settings for a WLAN ANQP advertisement profile.

Syntax

Parameter	Description
<profile>	Name of a wlan hotspot advertisement profile.

Usage Guidelines

Access Network Query Protocol (ANQP) profiles and Hotspot 2.0 Query Protocol (H2QP) profiles define the 802.11u Information Elements (IEs) to be broadcast by an 802.11u-capable AP. Use this command to view the ANQP and H2QP profiles to be associated with the advertisement profile.

Issue this command without the **<profile>** parameter to display the entire ANQP advertisement profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured advertisement profiles. The **References** column lists the number of other profiles with references to the advertisement profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column

```
(host) # show wlan hotspot advertisement-profile
Advertisement Profile List
--------------------------
Name           References  Profile Status
----           ----------  --------------
default        1
Westgate_Mall  2
Total:2.
```

This example displays the configuration settings for the profile **Wireless_rf_profile.**

```
(host) (config) #show wlan hotspot advertisement-profile Wireless_rf_profile
Advertisement Profile "default"
------------------------------
Parameter                              Value
---------                              -----
ANQP Venue Name Profile                venue_mall
ANQP Network Authentication Profile    auth1
ANQP Roaming Consortium Profile        default
ANQP NAI Realm Profile                 Realm2
ANQP 3GPP Cellular Network Profile     default
ANQP IP Address Availability Profile   ipv4_Profile
H2QP WAN Metrics Profile        default
H2QP Operator Friendly Name Profile    default
H2QP Connection Capability Profile     default
H2QP Operating Class Indication Profile default
```

```
ANQP Domain Name Profile                corp_domain
```

The output of this command includes the following parameters:

Parameter	Description
ANQP Venue Name Profile	Name of the ANQP Venue Name profile associated with this WLAN advertisement profile.
ANQP Network Authentication Profile	Name of the ANQP Network Authentication profile associated with this WLAN advertisement profile.
ANQP Roaming Consortium Profile	Name of the ANQP Roaming Consortium profile associated with this WLAN advertisement profile.
ANQP NAI Realm Profile	Name of the ANQP NAI Realm profile associated with this WLAN advertisement profile.
ANQP 3GPP Profile	Name of the ANQP 3GPP Cellular Network profile associated with this WLAN advertisement profile.
ANQP IP Address Availability Profile	Name of the ANQP IP Address Availability profile associated with this WLAN advertisement profile.
H2QP WAN Metrics Profile	Name of the H2QPWAN Metrics profile associated with this WLAN advertisement profile.
H2QP Operator Friendly Name Profile	Name of the H2QP Operator Friendly Name profile associated with this WLAN advertisement profile.
H2QP Connection Capability Profile	Name of the H2QP Connection Capability profile associated with this WLAN advertisement profile.
H2QP Operating Class Indication Profile	Name of the H2QP Operating Class Indication profile associated with this WLAN advertisement profile.
ANQP Domain Name Profile	Name of the ANQP domain name profile associated with this WLAN advertisement profile.

Related Commands

wlan hotspot advertisement-profile

.Command History

The command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show wlan hotspot anqp-3gpp-nwk-profile

```
show wlan hotspot anqp-3gpp-nwk-profile [<profile-name>]
```

Description

This profile shows the configuration settings for for a 3rd Generation Partnership Project (3GPP) Cellular Network profile.

Syntax

Parameter	Description
<profile>	Name of a 3GPP Cellular Network profile.

Usage Guidelines

Access Network Query Protocol (ANQP) profiles define the 802.11u Information Elements (IEs) to be broadcast by an 802.11u-capable AP. Issue this command without the **<profile>**parameter to display the entire list of 3GPP profiles, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured 3GPP profiles. The **References** column lists the number of other profiles with references to the advertisement profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column

```
(host) (config)# show wlan hotspot anqp-3gpp-nwk-profile
ANQP 3GPP Cellular Network Profile List
---------------------------
Name            References  Profile Status
----            ----------  --------------
default         1
Updated_PLMN    2
Total:2.
```

This example displays the configuration settings for the profile **Updated_PLMN.**

```
(host) (config)# show wlan hotspot anqp-3gpp-nwk-profile Updated_PLMN
ANQP 3GPP Cellular Network Profile "Updated_PLMN"
-----------------------------------------
Parameter                       Value
---------                       -----
ANQP 3GPP network profile enable  Enabled
3GPP PLMN1                      310026
3GPP PLMN2                      208000
3GPP PLMN3                      208001
3GPP PLMN4                      N/A
3GPP PLMN5                      N/A
3GPP PLMN6                      N/A
```

The output of this command includes the following parameters:

Parameter	Description
`ANQP 3GPP network profile enable`	Shows if this profile has been enabled ANQP 3GPP Cellular Network profiles are disabled by default.
`3gpp PLMN1`	The Public Land Mobile Networks (PLMN) value of the highest-priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp PLMN2`	The Public Land Mobile Networks (PLMN) value of the second-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp PLMN3`	The Public Land Mobile Networks (PLMN) value of the third-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp PLMN4`	The Public Land Mobile Networks (PLMN) value of the fourth-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp PLMN5`	The Public Land Mobile Networks (PLMN) value of the fifth-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp PLMN6`	The Public Land Mobile Networks (PLMN) value of the sixth-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).

Usage Guidelines

The 3GPP Cellular Network Profile defines an ANQP information element (IE) to be sent in a Generic Advertisement Service (GAS) query response from an AP in a hotspot with a roaming relationship with a cellular operator. The 3GPP Mobile Country Code (MCC) and the 12-bit Mobile Network Code data in the IE can help the client select a 3GPP network.

Values configured in this profile will not be sent to clients unless you:

1. Associate the 3GPP Cellular Network profile with an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-3gpp-nwk-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name>hotspot-enable`)

Related Commands

wlan hotspot anqp-3gpp-nwk-profile

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show wlan hotspot anqp-domain-name-profile

```
show wlan hotspot anqp-domain-name-profile [<profile-name>]
```

Description

The output of this command displays settings for a WLAN ANQP Domain Name profile.

Syntax

Parameter	Description
<profile>	Name of a Domain Name profile.

Usage Guidelines

Access Network Query Protocol (ANQP) profiles define the 802.11u Information Elements (IEs) to be broadcast by an 802.11u-capable AP. Use this command to select one of each type of ANQP profile to be associated with the advertisement profile.

Issue this command without the **<profile>** parameter to display the entire ANQP Domain Name profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP Domain Name profile an ANQP advertisement profile. (wlan hotspot advertisement-profile <profile-name> anqp-domain-name-profile)
2. Associate the ANQP advertisement profile with a Hotspot profile. (wlan hotspot h2-profile advertisement-profile <profile-name>)
3. Enable the hotspot feature within that Hotspot profile. (wlan hotspot h2-profile <profile-name>hotspot-enable)

Examples

The example below shows that the controller has two configuredDomain Name profiles. The **References** column lists the number of other profiles with references to the Domain Name profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column

```
(host) # show wlan hotspot anqp-domain-name
ANQP Domain Name Profile List
-----------------------------
Name         References  Profile Status
----         ----------  --------------
corp_domain  2
default      1
Total:2.
```

This example displays the configuration settings for the profile **corp_domain.**

```
(host) #show wlan hotspot anqp-domain-name-profile corp_domain
ANQP Domain Name Profile "corp_domain"
--------------------------------------
Parameter    Value
---------    -----
Domain Name  example.com
```

The output of this command includes the following parameters:

Parameter	Description
Domain Name	Domain name of the hotspot operator.

Related Commands

wlan hotspot anqp-domain-name-profile

.Command History

The command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show wlan hotspot anqp-ip-addr-avail-profile

```
show wlan hotspot anqp-ip-addr-avail-profile [<profile-name>]
```

Description

The output of this command displays settings for a WLAN ANQP IP Address Availability profile.

Syntax

Parameter	Description
<profile>	Name of an IP Address Availability profile.

Usage Guidelines

Access Network Query Protocol (ANQP) profiles define the 802.11u Information Elements (IEs) to be broadcast by an 802.11u-capable AP. Use this command to select one of each type of ANQP profile to be associated with the advertisement profile.

Issue this command without the **<profile>** parameter to display the entire ANQP IP Address Availability profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP IP Address Availability profile an ANQP advertisement profile.(`wlan hotspot advertisement profile <profile-name> anqp-ip-addr-avail-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name>hotspot-enable`)

Examples

The example below shows that the controller has three configured IP Address Availability profiles. The **References** column lists the number of other profiles with references to the IP Address Availability profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column

```
(host) # show wlan hotspot anqp-ip-addr-avail-profile
ANQP IP Address Availability Profile List
-----------------------------------------
Name          References  Profile Status
----          ----------  --------------
default       0
ipv4_Profile  2
ipv6_profile  1
Total:3.
```

This example displays the configuration settings for the profile **ipv4_Profile.**

```
(host) #show rf anqp-ip-addr-avail-profile ipv4_Profile
ANQP IP Address Availability Profile "ipv4_Profile"
-------------------------------------------
Parameter                      Value
```

```
---------                          -----
IPv4 Address Availability Type  public
IPv6 Address Availability Type  not-available
The output of this command includes the following parameters:
```

Parameter	Description
IPv4 Address Availability Type	Indicates the availability of an IPv4 network. This parameter can display any of the following values: • availability-unknown: Network availability cannot be determined. • not-available : Network is not available. • port-restricted : Network has some ports restricted (for example, the network blocks port 110 to retrict POP mail). • port-restricted-double-nated : Network has some ports restricted and multiple routers performing network address translation. • port-restricted-single-nated : Network has some ports restricted and a single router performing network address translation. • private-double-nated : Network is a private network with multiple routers doing network address translation. • private-single-nated : Network is a private network a single router doing network address translation. • public : Network is a public network
IPv6 Address Availability Type	Indicates the availability of an IPv6 network. This parameter can display any of the following values: • available : An IPv6 network is available. • availability-unknown: Network availability cannot be determined. • not-available : Network is not available.

Related Commands

wlan hotspot anqp-ip-addr-avail-profile

.Command History

The command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show wlan hotspot anqp-nai-realm-profile

```
show wlan hotspot anqp-nai-realm-profile [<profile-name>]
```

Description

The output of this command displays settings for a WLAN ANQP Network Access Identifier (NAI) Realm profile.

Syntax

Parameter	Description
`<profile>`	Name of an NAI Realm profile.

Usage Guidelines

Access Network Query Protocol (ANQP) profiles define the 802.11u Information Elements (IEs) to be broadcast by an 802.11u-capable AP. Use this command to select one of each type of ANQP profile to be associated with the advertisement profile.

Issue this command without the **<profile>** parameter to display the entire ANQP NAI Realm profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP NAI Realm profile an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-nai-realm-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name>hotspot-enable`)

Examples

The example below shows that the controller has three configured NAI Realm profiles. The References column lists the number of other profiles with references to the NAI Realm profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column

```
(host) # show wlan hotspot anqp-nai-realm-profile

ANQP NAI Realm Profile List
---------------------------
Name     References  Profile Status
----     ----------  --------------
default  0
Realm1   2Realm2   2

Total:3
```

This example displays the configuration settings for the profile **Realm2.**

```
(host) #show wlan hotspot anqp-nai-realm-profile Realm2
ANQP NAI Realm Profile "Realm2"
-------------------------------
Parameter                              Value
```

```
---------                                   -----
NAI Realm name                              example.com
NAI Realm EAP Method                        eap-ttls
NAI Realm Authentication Parameter Type     expanded-eap
```

The output of this command includes the following parameters:

Parameter	Description
NAI Realm name	Name of the NAI realm. The realm name is often the domain name of the service provider.
NAI Realm EAP Method	The NAI Realm Authentication types sent as an ANQP IE in an GAS response
NAI Realm Authentication Parameter Type	The EAP authentication method supported by the hotspot realm.

Related Commands

wlan hotspot anqp-nai-realm-profile

.Command History

The command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show wlan hotspot anqp-nwk-auth-profile

```
show wlan hotspot anqp-nwk-auth-profile [<profile-name>]
```

Description

The output of this command displays settings for a WLAN ANQP network authentication profile.

Syntax

Parameter	Description
<profile>	Name of an ANQP Network Authentication profile.

Usage Guidelines

Access Network Query Protocol (ANQP) profiles define the 802.11u Information Elements (IEs) to be broadcast by an 802.11u-capable AP. Use this command to select one of each type of ANQP profile to be associated with the advertisement profile.

Issue this command without the **<profile>** parameter to display the entire ANQP network authentication profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured network authentication profiles. The **References** column lists the number of other profiles with references to the network authentication profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) # show wlan hotspot anqp-nwk-auth-profile

ANQP Network Authentication Profile List
----------------------------------------
Name         References  Profile Status
----         ----------  --------------
auth1        0
default      0

Total:2.
```

The following example displays the configuration settings for the profile **default.**

```
(host) #show wlan hotspot anqp-nwk-auth-profile default

ANQP Network Authentication Profile "default"
---------------------------------------------
Parameter                       Value
---------                       -----
Type of Network Authentication  acceptance
Redirect URL                    N/A
```

The output of this command includes the following parameters:

Parameter	Description
Type of Network Authentication	Network Authentication Type being used by the hotspot network. This parameter can be any of the following values: • acceptance: Network requires the user to accept terms and conditions. • dns-redirection: Additional information on the network is provided through DNS redirection. • http-https-redirection : Additional information on the network is provided through HTTP/HTTPS redirection. • online-enroll : Network supports online enrollment.
Redirect URL	If information on the network is provided through DNS redirection, this parameter displays the redirection URL.

Related Commands

wlan hotspot anqp-nwk-auth-profile

.Command History

The command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show wlan hotspot anqp-roam-cons-profile

```
show wlan hotspot anqp-roam-cons-profile [<profile-name>]
```

Description

The output of this command displays settings for a WLAN ANQP Roaming Consortium profile.

Syntax

Parameter	Description
<profile>	Name of an ANQP Roaming Consortium profile.

Usage Guidelines

Access Network Query Protocol (ANQP) profiles define the 802.11u Information Elements (IEs) to be broadcast by an 802.11u-capable AP. Use this command to select one of each type of ANQP profile to be associated with the advertisement profile.

Issue this command without the <profile>parameter to display the entire ANQP Roaming Consortiumprofile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP Roaming Consortium profile an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-roam-cons-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name>hotspot-enable`)

Examples

The example below shows that the controller has two configured Roaming Consortium profiles. The **References** column lists the number of other profiles with references to the Roaming Consortium profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) # show wlan hotspot anqp-roam-cons-profile
ANQP Roaming Consortium Profile List
------------------------------------
Name      References  Profile Status
----      ----------  --------------
default   1
Roam_OI2  1
Total:2.
```

This example displays the configuration settings for the profile **Roam_OI2.**

```
(host) #show wlan hotspot anqp-roam-cons-profile Roam_OI2
ANQP Roaming Consortium Profile "Roam_OI2"
------------------------------------------
Parameter                 Value
---------                 -----
Roaming consortium OI Len  3
```

```
Roaming consortium OI Len b32af0
```

The output of this command includes the following parameters:

Parameter	Description
`Roaming consortium OI Len`	Length of the OI. The roaming consortium OI length parameter is based upon the number of octets of the Roaming consortium OI. This parameter can have the following values: • **0**: 0 Octets in the OI (Null) • **3**: OI length is 24-bit (3 Octets) • **5**: OI length is 36-bit (5 Octets)
`Roaming Consortium OI`	The roaming consortium OI sent in a GAS query response.

Related Commands

wlan hotspot anqp-roam-cons-profile

.Command History

The command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show wlan hotspot anqp-venue-name-profile

```
show wlan hotspot anqp-venue-name-profile [<profile-name>]
```

Description

The output of this command displays settings for a WLAN ANQP Venue Name profile.

Syntax

Parameter	Description
<profile>	Name of an ANQP Venue Name profile.

Usage Guidelines

Access Network Query Protocol (ANQP) profiles define the 802.11u Information Elements (IEs) to be broadcast by an 802.11u-capable AP. Use this command to select one of each type of ANQP profile to be associated with the advertisement profile.

Issue this command without the <profile>parameter to display the entire ANQP Venue Name profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP Venue Name profile an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-venue-name-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name>hotspot-enable`)

Examples

The example below shows that the controller has two configured Venue Name profiles. The **References** column lists the number of other profiles with references to the Venue Name profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) # show wlan hotspot anqp-venue-name-profile
ANQP Venue Name Profile List
----------------------------
Name         References  Profile Status
----         ----------  --------------
default      0
venue_mall   0
Total:2.
```

This example displays the configuration settings for the profile venue_mall.

```
(host) #show wlan hotspot anqp-venue-name-profile venue_mall
ANQP Venue Name Profile "venue_mall"
------------------------------------
Parameter      Value
---------      -----
Venue Group    mercantile
```

```
Type of Venue  mercantile-shopping-mall
Venue Name     Westfield_Mall
```

The output of this command includes the following parameters:

Parameter	Description
Venue Group	The venue group to be advertised in the ANQP Information Elements (IEs) from APs associated with this profile. This parameter can have any of the following values: • assembly • business • educational • factory-or-industrial • institutional • mercantile • outdoor • reserved • residential • storage • unspecified • Utility-Misc • Vehicular
Type of Venue	The venue type to be advertised in the IEs from APs associated with this hotspot profile. The complete list of supported venue types is described in Venue Types on page 2309.
Venue Name	The venue name to be advertised in the ANQP IEs from APs associated with this profile.

Related Commands

wlan hotspot anqp-venue-name-profile

.Command History

The command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers

show wlan hotspot hs2-profile

```
show wlan hotspot h2-profile [<profile-name>]
```

Description

The output of this command displays settings for a Hotspot profile.

Syntax

Parameter	Description
<profile>	Name of a Hotspot profile.

Usage Guidelines

Organization Identifiers (OIs) are assigned to service providers when they register with the IEEE registration authority The Roaming Consortium Information Elements (IEs) contain information identifying the network and service provider, whose security credentials can then be used to authenticate with the AP transmitting this element.

The OI for the service provider is defined in the ANQP Roaming Consortium profile using the wlan hotspot anqp-roam-cons-profile command. This Hotspot profile allows you to define and send up to three additional OIs to a client. The configurable values for each additional OI include the Organization Identifier itself, the OI length, and the venue group and venue type associated with those OIs.

Issue this command without the **<profile>**parameter to display the entire ANQP advertisement profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured Hotspot profiles. The **References** column lists the number of other profiles with references to the Hotspot profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) # show wlan hotspot h2-profile
Hotspot Profile List
--------------------------
Name           References  Profile Status
----           ----------  --------------
default        1
Hotspot_1      2
Total:2.
```

The following example shows configuration settings defined for the profile **Hotspot1**.

```
(host) #show wlan hotspot h2-profile Hotspot1
Hotspot 2.0 Profile "default"
-----------------------------
Parameter                                                    Value
---------                                                    -----
Advertise Hotspot 2.0 Capability                             Enabled
Additional Steps required for Access Enabled                 Enabled
Network Internet Access                                      Enabled
Length of Query Response                                     255 octets
Access network Type                                          public-chargeable
```

```
Roaming Consortium Len Entry 1                                          3 octets
Roaming Consortium OI Entry 1                                           C499AA
Roaming Consortium Len Entry 2                                          0
Roaming Consortium OI Entry 2                                           N/A
Roaming Consortium Len Entry 3                                          0
Roaming Consortium OI Entry 3                                           N/A
Additional Roaming Consortium OI's(displayed in Advertisement Profile)  1
Venue Group Type                                                        mercantile
Venue Type                                                              mercantile-shopping-
mall
Type of Hotspot 2.0 Indication Element                                  31
Advertisement Profile                                                   Westgate_Mall
```

The output of this command includes the following data columns:

Parameter	Description
Advertise Hotspot 2.0 Capability	Shows if this profile has been enabled.
Additional Steps required for Access Enabled	If this parameter is enabled, the AP will send the following Information Elements (IEs) in response to the client's the ANQP query. • Venue Name • Domain Name List • Network Authentication Type • Roaming Consortium List • NAI Realm List **NOTE:** If **asra** is enabled, the advertisement profile for this hotspot must reference an enabled network authentication type profile. For more information on enabling an network authentication type profile, see wlan hotspot anqp-nwk-auth-profile on page 2304.
Network Internet Access	If enabled, the AP sends an Information Element (IE) indicating that the network allows internet access. By default, a hotspot profile does not advertise network internet access.
Length of Query Response	The maximum length of the GAS query response, in octets. The supported range is 1-255 octets.
Access network Type	The 802.11u network type. The default setting is *public-chargeable.* • emergency-services: emergency services only network • personal-device: personal device network • private: private network • private-guest: private network with guest access • public-chargeable: public chargeable network • public-free: free public network • test: test network • wildcard: wildcard network

Parameter	Description
Roaming Consortium Len Entry 1	Length of the OI. This value is based upon the number of octets in the **Roaming Consortium OI Entry 1** field. • **0**: Zero Octets in the OI (Null) • **3**: OI length is 24-bit (3 Octets) • **5**: OI length is 36-bit (5 Octets)
Roaming Consortium OI Entry 1	Roaming consortium OI assigned to one of the service provider's top three roaming partners. This additional OI will only be sent to a client if the **Additional Roaming Consortium OI's (displayed in Advertisement Profile)** parameter is set to 1 or higher.
Roaming Consortium Len Entry 2	Length of the OI. This value is based upon the number of octets in the **Roaming Consortium OI Entry 2** field. • **0**: Zero Octets in the OI (Null) • **3**: OI length is 24-bit (3 Octets) • **5**: OI length is 36-bit (5 Octets)
Roaming Consortium OI Entry 2	Roaming consortium OI assigned to one of the service provider's top three roaming partners. This additional OI will only be sent to a client if the **Additional Roaming Consortium OI's (displayed in Advertisement Profile)** parameter is set to 2 or higher.
Roaming Consortium Len Entry 3	Length of the OI. This value is based upon the number of octets in the **Roaming Consortium OI Entry 3** field. • **0**: Zero Octets in the OI (Null) • **3**: OI length is 24-bit (3 Octets) • **5**: OI length is 36-bit (5 Octets)
Roaming Consortium OI Entry 3	Roaming consortium OI assigned to one of the service provider's top three roaming partners. This additional OI will only be sent to a client if the **Additional Roaming Consortium OI's (displayed in Advertisement Profile)** parameter is set to 3 or higher.
Additional Roaming Consortium OI's (displayed in Advertisement Profile)	Number of additional roaming consortium Organization Identifiers (OIs) advertised by the AP.
Venue Group Type	The venue groups to be advertised in the IEs from APs associated with this hotspot profile. The default setting is **unspecified**.
Venue Type	Venue type to be advertised in the IEs from APs associated with this hotspot profile.
Type of Hotspot 2.0 Indication Element	Advertisement protocol types to be used by the AP. • **anqp**: Access Network Query Protocol (ANQP)

Parameter	Description
	• **emergency**: Emergency Alert System(EAS) • **mih-cmd-event**: Media Independent Handover (MIH) Command and Event Services Capability Discovery • **mih-info**: Media Independent Handover (MIH) Information Service. This option allows handovers between differing kinds of wireless access protocols and technologies, allowing access points on different IP subnets to communicate with each other at the link level while maintaining session continuity.
Advertisement Profile	Advertisement profile associated with this hotspot profile.

Command History

This command was introduced in ArubaOS 6.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show wlan hotspot h2qp-conn-capability-profile

```
show wlan hotspot h2qp-conn-capability-profile [<profile>]
```

Description

The output of this command displays settings for a WLAN Hotspot 2.0 Query Protocol (H2QP) connection capability profile.

Syntax

Parameter	Description
`<profile>`	Name of Hotspot 2.0 Query Protocol (H2QP) connection capability profile

Usage Guidelines

The values configured in this profile can be sent in an ANQP IE to provide hotspot clients information about the IP protocols and associated port numbers that are available and open for communication.

Values configured in this profile will not be sent to clients unless you:

1. Associate the H2QP profile with an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> h2qp-conn-cap-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

Examples

Issue this command without the optional <profile> parameter to display a list of all configured connection capability profiles. Include the <profile> parameter to display details for a specific profile.

The example below shows that the controller has four configured connection capability profiles. The **References** column lists the number of other profiles with references to the connection capability profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
H2QP Connection Capability Profile List
---------------------------------------
Name              References  Profile Status
----              ----------  --------------
branch-hotspot-1  6
branch-hotspot-2  5
default           1
downtown-hotspot  1
Total:4
```

The following example displays the current configuration settings for the default H2QP connection capability profile.

```
(host) (config) #show wlan hotspot h2qp-conn-capability-profile  default
H2QP Connection Capability Profile "default"
-------------------------------------------
Parameter                                                    Value
---------                                                    -----
```

```
H2QP Connection Capability ICMP port                                  Disabled
H2QP Connection Capability FTP port(TCP Protocol)                     Disabled
H2QP Connection Capability SSH port(TCP Protocol)                     Disabled
H2QP Connection Capability HTTP port(TCP Protocol)                    Disabled
H2QP Connection Capability TLS VPN port(TCP Protocol)                 Disabled
H2QP Connection Capability PPTP VPN port(TCP Protocol)                Disabled
H2QP Connection Capability VOIP port(TCP Protocol)                    Disabled
H2QP Connection Capability VOIP port(UDP Protocol)                    Disabled
H2QP Connection Capability IKEv2 port for IPSec VPN                   Disabled
H2QP Connection Capability May be used by IKEv2 port for IPSec VPN    Disabled
H2QP Connection Capability ESP port(Used by IPSec VPN)                Disabled
```

The output of this command includes the following information:

Parameter	Description
`H2QP Connection Capability ICMP port`	Shows if the ICMP port is enabled and available. (port 0)
`H2QP Connection Capability FTP port`	Shows if the FTP port is enabled and available. (port 20)
`H2QP Connection Capability SSH port`	Shows if the SSH port is enabled and available. (port 22)
`H2QP Connection Capability HTTP port`	Shows if the HTTP port is enabled and available. (port 80)
`H2QP Connection Capability TLS VPN port`	Shows if the TCP TLS port used VPNs is enabled and available. (port 80)
`H2QP Connection Capability PPTP VPN port`	Shows if the PPTP port used by IPSec VPNs is enabled and available. (port 1723)
`H2QP Connection Capability VoIP port (UDP)`	Shows if the UDP VoIP port is enabled and available. (port 5060)
`H2QP Connection Capability VoIP port (TCP)`	Shows if the TCP VoIP port is enabled and available. (port 5060)
`H2QP Connection Capability IKEv2 port for IPSec VPN`	Shows if the IKEv2 port 4500 is enabled and available
`H2QP Connection Capability May be used by IKEv2 port for IPSec VPN`	Shows if the IKEv2 port 500 is enabled and available
`H2QP Connection Capability ESP port(Used by IPSec VPN)`	Shows if the ESP port used by IPsec VPNs is enabled and available. (port 0)

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show wlan hotspot h2qp-op-cl-profile

```
show wlan hotspot h2qp-op-cl-profile [<profile>]
```

Description

The output of this command displays settings for a WLAN Hotspot 2.0 Query Protocol (H2QP) operating class profile.

Syntax

Parameter	Description
<profile>	Name of Hotspot 2.0 Query Protocol (H2QP) operating class profile

Usage Guidelines

The values configured in this H2QP Operating Class profile list the channels on which the hotspot is capable of operating. It may be useful where, for instance, a mobile device discovers a hotspot in the 2.4 GHz band but finds it is dual-band and prefers the 5 GHz band.

Examples

Issue this command without the optional <profile> parameter to display a list of all configured connection capability profiles. Include the <profile> parameter to display details for a specific profile.

The example below shows that the controller has two configured operating class profiles. The **References** column lists the number of other profiles with references to the operating class profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host)(H2QP Connection Capability Profile "default") #show wlan hotspot h2qp-op-cl-profile
H2QP Operating Class Indication Profile List
----------------------------------------
Name     References  Profile Status
----     ----------  --------------
default  0
newopcl  1
Total:2
```

The following example displays the current configuration setting for the default H2QP operating class profile.

```
(host)(H2QP Connection Capability Profile "default") #show wlan hotspot h2qp-op-cl-profile
default
H2QP Operating Class Indication Profile "default"
-------------------------------------------------
Parameter                                 Value
---------                                 -----
H2QP Operating Class(Valid Values 1-255)  1
```

The output of this command includes the following information:

Parameter	Description
H2QP Operating Class(Valid Values 1-255)	Displays the current operating class for the devices' BSS. The supported range for this field is 1-255, and the default value is 1.

Related Commands

wlan hotspot h2qp-op-cl-profile

Command History

This command was introduced in ArubaOS 6.3

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show wlan hotspot h2qp-operator-friendly-name-profile

```
show wlan hotspot h2qp-operator-friendly-name-profile [<profile>]
```

Description

The output of this command displays settings for a Hotspot 2.0 Query Protocol (H2QP) operator-friendly name profile.

Syntax

Parameter	Description
<profile>	Name of H2QP operator-friendly name profile.

Usage Guidelines

The operator-friendly name defined in this profile is a free-form text field that can identify the operator and also something about the location.Issue this command without the **<profile>** parameter to display the entire operator-friendly name profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured operator-friendly name profiles. The **References** column lists the number of other profiles with references to the operator-friendly name profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host)(config)# show wlan hotspot h2qp-operator-friendly-name-profile
H2QP Operator Friendly Name Profile List
----------------------------------------
Name       References  Profile Status
----       ----------  --------------
default    0
operator1  8
Total:2
```

The following example displays the configuration settings for the profile **operator1.**

```
(host) (H2QP Operator Friendly Name Profile "operator1") #show wlan hotspot h2qp-operator-
friendly-name-profile operator1
H2QP Operator Friendly Name Profile "operator1"
-----------------------------------------------
Parameter                          Value
---------                          -----
Operator Friendly Name Language Code  eng
Operator Friendly Name                CoffeeHouseGuest
```

The output of this command includes the following parameters:

Parameter	Description
Operator Friendly Name Language Code	An ISO 639 language code that identifies the language used in the Operator Friendly Name field.
Operator Friendly Name	An operator-friendly name sent by devices using this profile. The name can be up to 64 alphanumeric characters, and can include special characters and spaces. If the name includes quotation marks (“), you must include a backslash character (\) before each quotation mark. (e.g. \"example\")

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show wlan hotspot h2qp-wan-metrics-profile

```
show wlan hotspot h2qp-wan-metrics-profile [<profile-name>]
```

Description

The output of this command displays settings for a Hotspot 2.0 Query Protocol (H2QP) WAN metrics profile.

Syntax

Parameter	Description
<profile>	Name of H2QP WAN metrics profile.

Usage Guidelines

The values configured in this profile can be sent in an ANQP IE to provide hotspot clients information about access network characteristics such as link status and the capacity and speed of the WAN link to the Internet.Issue this command without the **<profile>** parameter to display the entire WAN metrics profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured WAN metrics profiles. The **References** column lists the number of other profiles with references to the WAN metrics profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(Host) (H2QP Connection Capability Profile "default") #show wlan hotspot h2qp-wan-metrics-
profile
H2QP WAN Metrics Profile List
-----------------------------
Name     References  Profile Status
----     ----------  --------------
default  0
fastwan  6
Total:2
```

The following example shows the current configuration settings for the profile fastwan.

```
(host) (config) #show wlan hotspot h2qp-wan-metrics-profile fastwan
H2QP WAN Metrics Profile "fastwan"
----------------------------------
Parameter                              Value
---------                              -----
H2QP WAN metrics link status           link_up
H2QP WAN metrics symmetric WAN link    Disabled
H2QP WAN metrics link at capacity      Disabled
WAN Metrics uplink speed               1000
WAN Metrics downlink speed             1000
WAN Metrics uplink load                100
WAN Metrics downlink load              100
WAN Metrics load measurement duration  100
```

The output of this command includes the following information:

Parameter	Description
`H2QP WAN metrics link status`	Indicates the status of the WAN Link by displaying one of the following values. The default link status is **reserved**, which indicates that the link status is unknown or unspecified. • link_down • link_test • link_up • reserved
`H2QP WAN metrics symmetric WAN link`	This parameter indicates if the WAN Link has same speed in both the uplink and downlink directions.
`H2QP WAN metrics link at capacity`	This parameter indicates if the WAN Link has reached its maximum capacity. If this parameter is enabled, no additional mobile devices will be permitted to associate to the hotspot AP.
`WAN Metrics uplink speed`	This parameter indicates the current WAN backhaul uplink speed in Kbps. If no value is set, this parameter will show a default value of 0 to indicate that the uplink speed is unknown or unspecified.
`WAN Metrics down link speed`	This parameter indicates the current WAN backhaul downlink speed in Kbps. If no value is set, this parameter will show a default value of 0 to indicate that the downlink speed is unknown or unspecified.
`WAN Metrics uplink load`	The percentage of the WAN uplink that is currently utilized. If no value is set, this parameter will show a default value of 0 to indicate that the downlink speed is unknown or unspecified.
`WAN Metrics downlink load`	The percentage of the WAN downlink that is currently utilized. If no value is set, this parameter will show a default value of 0 to indicate that the downlink speed is unknown or unspecified.
`WAN Metrics load measurement duration`	Duration over which the downlink load is measured, in tenths of a second.

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show wlan ht-ssid-profile

```
show wlan ht-ssid-profile [<profile>]
```

Description

Show a list of all High-throughput SSID profiles, or display detailed configuration information for a specific High-throughput SSID profile.

Syntax

Parameter	Description
<profile>	Name of a High-throughput SSID profile.

Usage Guidelines

Issue this command without the <profile> parameter to display the entire High-throughput SSID profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured High-throughput SSID profiles. The **References** column lists the number of other profiles with references to the High-throughput SSID profile, and the **Profile Status** column indicates whether the profile is predefined. (User-defined profiles will not have an entry in the Profile Status column.)

```
(host) #show wlan ht-ssid-profile

High-throughput SSID profile List
---------------------------------
Name                          References  Profile Status
----                          ----------  --------------
default                       2
dot1X_CP-htssid_prof          1
ade-sloan-htssid_prof         1

Total:3
```

The following example shows configuration settings defined for the profile **default**.

```
(host) #show wlan ht-ssid-profile default

High-throughput SSID profile "default"
--------------------------------------
Parameter                                                   Value
---------                                                   -----
High throughput enable (SSID)                               Enabled
40 MHz channel usage                                        Enabled
Very High throughput enable (SSID)                          Enabled
80 MHz channel usage (VHT)                                  Enabled
BA AMSDU Enable                                             Enabled
Temporal Diversity Enable                                   Disabled
Legacy stations                                             Allowed
Low-density Parity Check                                    Enabled
Maximum number of spatial streams usable for STBC reception     1
Maximum number of spatial streams usable for STBC transmission  1
```

```
MPDU Aggregation                                          Enabled
Max received A-MPDU size                                  65535 bytes
Max transmitted A-MPDU size                               65535 bytes
Min MPDU start spacing                                    0 usec
Short guard interval in 20 MHz mode                       Enabled
Short guard interval in 40 MHz mode                       Enabled
Short guard interval in 80 MHz mode                       Enabled
Supported MCS set                                         0-31
VHT - Supported MCS map                                   9,9,9,9
VHT - Explicit Transmit Beamforming                       Enabled
VHT - Transmit Beamforming Sounding Interval              25 msec
VHT - Multi User Transmit Beamforming                     Enabled
Maximum VHT MPDU size                                     11454 bytes
Maximum number of MSDUs in an A-MSDU on best-effort AC    2 MSDUs
Maximum number of MSDUs in an A-MSDU on background AC     2 MSDUs
Maximum number of MSDUs in an A-MSDU on video AC          2 MSDUs
Maximum number of MSDUs in an A-MSDU on voice AC          0 MSDUs
```

The output of this command includes the following data columns:

Parameter	Description
High throughput enable (SSID)	Displays if the high-throughput (802.11n) feature is enabled or disabled on the SSID. Default: Enabled.
40 MHz channel usage	Shows if the profile enables or disables the use of 40 MHz channels. Default: Enabled.
Very High throughput enable (SSID)	Displays if the very high-throughput (802.11ac) feature is enabled or disabled on the SSID. Default: Enabled.
80 MHz channel usage (VHT)	Displays the status of the 80 MHz channel for very high-throughput is enabled or disabled. Default: Enabled.
BA AMSDU Enable	Displays if the AP has enabled or disabled the ability to receive Aggregated-MAC Service Data Unit (A-MSDU) in Block ACK (BA) negotiation. Default: Enabled.
Temporal Diversity Enable	Displays if temporal diversity has been enabled or disabled. When this feature is enabled and the client is not responding to 802.11 packets, the AP will launch two hardware retries; if the hardware retries are not successful then it attempts software retries. Default: Disabled.
Legacy stations	Allow or disallow associations from legacy (non-HT) stations. By default, this parameter is enabled (legacy stations are allowed).

Parameter	Description
Low-density Parity Check	If enabled, the AP will advertise Low-density Parity Check (LDPC) support. LDPC improves data transmission over radio channels with high levels of background noise. Default: Enabled.
Maximum number of spatial streams usable for STBC reception	Displays the maximum number of spatial streams usable for Space-Time Block Code (STBC) reception. 0 disables STBC reception, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on the W-AP105, W-AP130 Series, and W-AP175 only. The configured value will be adjusted based on AP capabilities.) **NOTE:** If transmit beamforming is enabled, STBC will be disabled for beamformed frames.
Maximum number of spatial streams usable for STBC transmission	Displays the maximum number of spatial streams usable for STBC transmission. 0 disables STBC transmission, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on W-AP105, W-AP130 Series, and W-AP175 only. The configured value will be adjusted based on AP capabilities.) **NOTE:** If transmit beamforming is enabled, STBC will be disabled for beamformed frames.
MPDU Aggregation	Displays if the profile enables or disables MAC Protocol Data Unit (MPDU) aggregation. Default: Enabled.
Max received A-MPDU size	Displays the configured maximum size of a received aggregate MPDU, in bytes.
Max transmitted A-MPDU size	Displays the configured maximum size of a transmitted aggregate MPDU, in bytes.
Min MPDU start spacing	Displays the configured minimum time between the start of adjacent MPDUs within an aggregate MPDU, in microseconds.
Short guard interval in 20 MHz mode	Displays if the profile enables or disables use of short (400 ns) guard interval in 20 MHz mode. Default: Enabled.
Short guard interval in 40 MHz mode	Displays if the profile enables or disables use of short (400 ns) guard interval in 40 MHz mode. Default: Enabled.
Short guard interval in 80 MHz mode	Displays if the profile enables or disables use of short (400 ns) guard interval in 80 MHz mode.

Parameter	Description
	Default: Enabled.
Supported MCS set	Displays a list of Modulation Coding Scheme (MCS) values or ranges of values to be supported on this SSID. The MCS you choose determines the channel width (20 MHz vs. 40 MHz vs. 80 MHz) and the number of spatial streams used by the mesh node. Default: 0-31 • MCS value of 16-23 are supported on W-AP130 Series/W-IAP155/11ac APs only. • MCS value of 24-31 are supported on W-AP320 Series APs only.
VHT - Supported MCS map	Displays a list of supported MCS map for very high throughput SSID. Comma separated list of maximum supported MCS for spatial streams 1 through 4. Valid values for maximum MCS are 7, 8, 9, and '-' (if spatial stream is not supported). Maximum MCS of a spatial stream cannot be higher than the previous streams. If an MCS is not valid for a particular combination of bandwidth and number of spatial streams, it will not be used for Tx and Rx. Default: 9,9,9,9.
VHT - Explicit Transmit Beamforming	Displays if VHT Explicit Transmit Beamforming status is enabled or disabled for the 802.11ac-capable APs. When this feature is enabled, the AP requests information about the MIMO channel and uses that information to transmit data over multiple transmit streams using a calculated steering matrix. The result is higher throughput due to improved signal at the beamformee (the receiving client). If this parameter is disabled, all other transmit beamforming settings will not take effect. Default: Enabled.
VHT - Transmit Beamforming Sounding Interval	Displays the time interval in milliseconds between updates of VHT Transmit Beamforming channel estimation. (802.11ac-capable APs only) **NOTE:** This is applicable for 802.11ac-capable APs only. Default: 25 milliseconds.
VHT - Multi User Transmit Beamforming	Displays if the VHT Multi-User Transmit Beamforming is enabled or disabled. If this parameter is disabled, all other Multi-User Transmit Beamforming configuration parameters have no effect. **NOTE:** This parameter is applicable for W-AP320 Series APs only. Default: Enabled.
Maximum VHT MPDU size	Displays the maximum size of a VHT MPDU.

Parameter	Description
	Default: 11454 bytes.
`Maximum number of MSDUs in an A-MSDU on best-effort AC`	Displays the maximum number of MSDUs in a TX A-MSDU on best-effort Access Category (AC). Default: 2. **NOTE:** In tunnel and decrypt-tunnel forwarding mode, TX A-MSDU is disabled if the value is set to 0. If the value is set to non-zero, TX A-MSDU is enabled and set to this value.
`Maximum number of MSDUs in an A-MSDU on background AC`	Displays the maximum number of MSDUs in a TX A-MSDU on background AC. Default: 2. **NOTE:** TX A-MSDU is disabled if the value is set to 0. In decrypt-tunnel forwarding mode, TX A-MSDU on background AC is disabled and assigning any value has no effect.
`Maximum number of MSDUs in an A-MSDU on video AC`	Displays the maximum number of MSDUs in a TX A-MSDU on video AC. Default: 2. **NOTE:** TX A-MSDU is disabled if the value is set to 0. In decrypt-tunnel forwarding mode, TX A-MSDU on video AC is disabled and assigning any value has no effect.
`Maximum number of MSDUs in an A-MSDU on voice AC`	Displays the maximum number of MSDUs in a TX A-MSDU on voice AC. Default: 0. **NOTE:** TX A-MSDU is disabled if the value is set to 0. In decrypt-tunnel forwarding mode, TX A-MSDU on voice AC is disabled and assigning any value has no effect.

Command History

Version	Description
ArubaOS 3.3	Command introduced
ArubaOS 3.3.1	The **Legacy Stations** parameter was introduced
ArubaOS 3.3.2	**De-aggregation of MAC Service Data Units (A-MSDUs)** was introduced
ArubaOS 6.1	The following parameters were introduced: • **Short guard interval in 20 MHz mode** • **Low-density Parity Check** • **Maximum number of spatial streams usable for STBC reception** • **Maximum number of spatial streams usable for STBC transmission**

Version	Description
	The **Allow Weak Encryption** parameter was deprecated.
ArubaOS 6.2	The following parameters were introduced. • **Transmit Beamforming Compressed Steering** • **Transmit Beamforming non Compressed Steering** • **Transmit Beamforming delayed feedback support** • **Transmit Beamforming immediate feedback support** • **Transmit Beamforming Sounding Interval**
ArubaOS 6.3	The following parameters were introduced. • **80 MHz channel usage (VHT)** • **Maximum number of MSDUs in an A-MSDU on best-effort AC** • **Maximum number of MSDUs in an A-MSDU on background AC** • **Maximum number of MSDUs in an A-MSDU on video AC** • **Maximum number of MSDUs in an A-MSDU on voice AC** • **Maximum VHT MPDU size** • **Short guard interval in 80 MHz mode** • **Very High throughput enable (SSID)** • **VHT - Supported MCS map** • **VHT - Explicit Transmit Beamforming** • **VHT - Transmit Beamforming Sounding Interval** The following parameters were deprecated: • **Transmit Beamforming Compressed Steering** • **Transmit Beamforming non Compressed Steering** • **Transmit Beamforming delayed feedback support** • **Transmit Beamforming immediate feedback support** • **Transmit Beamforming Sounding Interval**
ArubaOS 6.4.4.0	The **VHT - Multi User Transmit Beamforming** parameter was introduced. The default value for the following parameters were changed: • The **Supported MCS set** default value was changed from **0-23** to **0-31**. • The **VHT - Supported MCS map** default value was changed from **9,9,9** to **9,9,9,9**.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show wlan ssid-profile

```
show wlan ssid-profile [<profile>]
```

Description

Show a list of all SSID profiles, or display detailed configuration information for a specific SSID profile.

Syntax

Parameter	Description
<profile>	Name of an SSID profile.

Usage Guidelines

Issue this command without the <profile> parameter to display the entire SSID profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has six configured SSID profiles. The **References** column lists the number of other profiles with references to the SSIDs profile, and the **Profile Status** column indicates whether the profile is predefined. (User-defined profiles will not have an entry in the Profile Status column.)

```
(host) #show wlan ssid-profile

SSID Profile List
-----------------
Name                              References  Profile Status
----                              ----------  --------------
coltrane-ssid-profile             1
corp1   -ssid-profile                                3
Remote                            1
Secure-Profile2                   0
test-ssid-profile                 1
wizardtest-ssid-profile           1

Total:6
```

The following example shows configuration settings defined for the SSID Profile **Remote**.

```
(host) #show wlan ssid-profile remote

SSID Profile "Remote"
-------------------
Parameter                                       Value
---------                                       -----
SSID enable                                     Enabled
ESSID                                           aruba-ap
Encryption                                      opensystem
Enable Management Frame Protection              Disabled
Require Management Frame Protection             Disabled
DTIM Interval                                   1 beacon periods
802.11a Basic Rates                             6 12 24
802.11a Transmit Rates                          6 9 12 18 24 36 48 54
802.11g Basic Rates                             1 2
```

```
802.11g Transmit Rates                              1 2 5 6 9 11 12 18 24 36 48 54
Station Ageout Time                                 1000 sec
Max Transmit Attempts                               8
RTS Threshold                                       2333 bytes
Short Preamble                                      Enabled
Max Associations                                    64
Wireless Multimedia (WMM)                           Disabled
Wireless Multimedia U-APSD (WMM-UAPSD) Powersave    Enabled
WMM TSPEC Min Inactivity Interval                   0 msec
Override DSCP mappings for WMM clients              Disabled
DSCP mapping for WMM voice AC                       N/A
DSCP mapping for WMM video AC                       N/A
DSCP mapping for WMM best-effort AC                 N/A
DSCP mapping for WMM background AC                  N/A
Multiple Tx Replay Counters                         Disabled
Hide SSID                                           Disabled
Deny_Broadcast Probes                               Disabled
Local Probe Request Threshold (dB)                  0
Auth Request Threshold (dB)                         0
Disable Probe Retry                                 Enabled
Battery Boost                                       Disabled
WEP Key 1                                           N/A
WEP Key 2                                           N/A
WEP Key 3                                           N/A
WEP Key 4                                           N/A
WEP Transmit Key Index                              1
WPA Hexkey                                          N/A
WPA Passphrase                                      N/A
Maximum Transmit Failures                           0
EDCA Parameters Station profile                     N/A
EDCA Parameters AP profile                          N/A
BC/MC Rate Optimization                             Disabled
Rate Optimization for delivering EAPOL frames       Enabled
Strict Spectralink Voice Protocol (SVP)             Disabled
High-throughput SSID Profile                        default
802.11g Beacon Rate                                 default
802.11a Beacon Rate                                 default
Video Multicast Rate Optimization                   default
Advertise QBSS Load IE                              Disabled
Advertise Location Info                             Enabled
Advertise AP Name                                   Disabled
802.11r Profile                                     N/A
Enforce user vlan for open stations                 Enabled
```

The output of this command includes the following data columns:

Parameter	Description
SSID	Shows of the profile has enabled or disabled this SSID
ESSID	Name that uniquely identifies a wireless network. If the ESSID includes spaces, you must enclose it in quotation marks.
Encryption	The layer-2 authentication and encryption type used on this ESSID.

Parameter	Description
DTIM Interval	The interval, in milliseconds, between the sending of Delivery Traffic Indication Messages (DTIMs) in the beacon.
802.11a Basic Rates	List of supported 802.11a rates, in Mbps, that are advertised in beacon frames and probe responses.
802.11a Transmit Rates	Set of 802.11a rates at which the AP is allowed to send data.
802.11g Basic Rates	List of supported 802.11b/g rates, in Mbps, that are advertised in beacon frames and probe responses.
802.11g Transmit Rates	Set of 802.11b/g rates at which the AP is allowed to send data.
Station Ageout Time	Time, in seconds, that a client is allowed to remain idle before being aged out.
Max Transmit Attempts	Maximum transmission failures allowed before the client gives up.
RTS Threshold	Wireless clients transmitting frames larger than this defined threshold must issue Request to Send (RTS) and wait for the AP to respond with Clear to Send (CTS).
Short Preamble	Shows if the profile enables or disables short preamble for 802.11b/g radios
Max Associations	Maximum number of wireless clients for the AP
Wireless Multimedia (WMM)	Shows if the profile enables or disables WMM, also known as IEEE 802.11e Enhanced Distribution Coordination Function (EDCF)
Wireless Multimedia U-APSD (WMM-UAPSD) Powersave	Shows if the profile enables or disables Wireless Multimedia (WMM) UAPSD powersave.
WMM TSPEC Min Inactivity Interval	Specifies the minimum inactivity time-out threshold of WMM traffic.
DSCP mapping for WMM voice AC	DSCP value used to map WMM voice traffic.

Parameter	Description
DSCP mapping for WMM video AC	DSCP value used to map WMM video traffic.
DSCP mapping for WMM best-effort AC	DSCP value used to map WMM best-effort traffic.
DSCP mapping for WMM background AC	DSCP value used to map WMM background traffic.
902il Compatibility Mode	(For clients using NTT DoCoMo 902iL phones only) When enabled, the controller does not drop packets from the client if a small or old initialization vector value is received.
Hide SSID	Shows if the profile enables or disables hiding of the SSID name in beacon frames.
Deny_Broadcast Probes	When a client sends a broadcast probe request frame to search for all available SSIDs, this option controls whether or not the system responds for this SSID. When enabled, no response is sent and clients have to know the SSID in order to associate to the SSID. When disabled, a probe response frame is sent for this SSID
Local Probe Response	Shows if the profile enables or disables local probe response on the AP. If this option is enabled, the AP is responsible for sending 802.11 probe responses to wireless clients' probe requests. If this option is disabled, then the controller sends the 802.11 probe responses
Auth Request Threshold (dB)	Displays the SNR threshold below which incoming authentication requests are ignored.
Disable Probe Retry	Shows if the profile enables or disables battery MAC level retries for probe response frames.
Battery Boost	If enabled, this feature converts multicast traffic to unicast before delivery to the client, thus allowing you to set a longer DTIM interval.
WEP Key 1	Displays the Static WEP key associated with this key index.

Parameter	Description
WEP Key 2	Displays the Static WEP key associated with this key index.
WEP Key 3	Displays the Static WEP key associated with this key index.
WEP Key 4	Displays the Static WEP key associated with this key index.
WEP Transmit Key Index	Show the key index that specifies which static WEP key is to be used
WPA Hexkey	WPA pre-shared key (PSK).
WPA Passphrase	WPA passphrase used to generate a pre-shared key (PSK).
Maximum Transmit Failures	Maximum transmission failures allowed before the client gives up.
EDCA Parameters Station profile	Name of the enhanced distributed channel access (EDCA) Station profile that applies to this SSID.
EDCA Parameters AP profile	Name of the enhanced distributed channel access (EDCA) AP profile that applies to this SSID.
BC/MC Rate Optimization	Shows if the profile enables or disables scanning of all active stations currently associated to an AP to select the lowest transmission rate for broadcast and multicast frames. This option only applies to broadcast and multicast data frames; 802.11 management frames are transmitted at the lowest configured rate
Rate Optimization for delivering EAPOL frames	If this option is enabled, APs using this profile will use a more conservative rate for more reliable delivery of EAPOL frames.
Strict Spectralink Voice Protocol (SVP)	Shows if the profile enables or disables strict Spectralink Voice Protocol (SVP).
High-throughput SSID Profile	Name of the high-throughput SSID profile associated with this SSID profile.

Parameter	Description
802.11g Beacon Rate	The beacon rate for 802.11g (use for Distributed Antenna System (DAS) only). Using this parameter in normal operation may cause connectivity problems.
802.11a Beacon Rate	The beacon rate for 802.11a (use for Distributed Antenna System (DAS) only). Using this parameter in normal operation may cause connectivity problems.
Video Multicast Rate Optimization	The rate for video multicast frames.
Advertise QBSS Load IE	Enables the AP to advertise the QBSS load element. The element includes the following parameters that provide information on the traffic situation: • **Station count**: The total number of stations associated to the QBSS. • **Channel utilization**: The percentage of time (normalized to 255) the channel is sensed to be busy. The access point uses either the physical or the virtual carrier sense mechanism to sense a busy channel. • **Available admission capacity**: The remaining amount of medium time (measured as number of 32us/s) available for a station via explicit admission control. The QAP uses these parameters to decide whether to accept an admission control request. A wireless station uses these parameters to choose the appropriate access points.
Advertise Location Info	APs that are part of this VAP will broadcast their GPS coordinates in the beacons and probe response frames as part of a vendor-specific Information Element.
Advertise AP Name	If this parameter enabled, APs will broadcast the AP name configured by the **ap-name** command. This option is disabled by default.
802.11r Profile	The associated **dot11r-profile** with the SSID profile.
Enforce user vlan for open stations	Shows the strict enforcement of data traffic only in user's assigned vlan (Open stations only).

Parameter	Description
`Enable OKC`	The status of the Opportunistic Key Caching. Opportunistic Key Caching (OKC) is a similar technique, not defined by 802.11i, available for authentication between multiple APs in a network where those APs are under common administrative control. A Dell deployment with multiple APs under the control of a single controller is one such example. Using OKC, a station roaming to any AP in the network will not have to complete a full authentication exchange, but will instead just perform the 4-way handshake to establish transient encryption keys.

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.2	The **WMM TSPEC Min Inactivity Interval** parameter was introduced.
ArubaOS 3.3	Support for the high-throughput IEEE 802.11n standard was introduced including the **High-throughput SSID Profile** parameter and various rate changes.
ArubaOS 3.3.1	Support for configurable WMM AC mapping was introduced including the **DSCP mapping for WMM voice AC**, **DSCP mapping for WMM video AC**, **DSCP mapping for WMM best-effort AC**, and **DSCP mapping for WMM background AC** parameters.
ArubaOS 3.4	The**Deny_Broadcast Probes** and **Disable Probe Retry** parameters were introduced.
ArubaOS 3.4.1	License requirements changed in ArubaOS 3.4.1, so the command required the PEF license instead of the Voice Services Module license required in earlier versions.
ArubaOS 6.1	The **Encryption** options **wpa2-aes-gcm-128** and **wpa2-aes-gcm-256** were introduced. These parameters require the ACR license. The **Advertise QBSS Load IE** option is included.
ArubaOS 6.1.4.1	The **Advertise AP Name** parameter was added.
ArubaOS 6.2	The **Advertise Location Info** and **Enforce user vlan for open stations** parameters were added.
ArubaOS 6.3	• The **802.11r Profile** parameter was added. • The **Encryption > bSec 256** parameter was added.

Release	Modification
ArubaOS 6.4	• The **Enable Management Frame Protection** and **Require Management Frame Protection** parameters were added. • The **Rate Optimization for delivering EAPOL frames** parameter was enabled by default.
ArubaOS 6.4.2.0	The description of the **Video Multicast Rate Optimization** parameter was changed to denote the rate for video multicast frames.
ArubaOS 6.4.3.0	The **Auth Request Threshold (dB)** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show wlan traffic-management-profile

```
show wlan traffic-management-profile [<profile>]
```

Description

Show a list of all traffic management profiles, or display detailed configuration information for a specific traffic management profile.

Syntax

Parameter	Description
<profile>	Name of a Traffic Management profile.

Usage Guidelines

Issue this command without the <profile> parameter to display the entire Traffic Management profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has three configured Traffic Management profiles. The **References** column lists the number of other profiles with references to the Traffic Management profile, and the **Profile Status** column indicates whether the profile is predefined. (User-defined profiles will not have an entry in the Profile Status column.)

```
(host) #show wlan traffic-management-profile
Traffic management profile List
-------------------------------
Name     References  Profile Status
----     ----------  --------------
mgmt1    3
mgmt2    2
Total:2
```

The following example shows configuration settings defined for the profile **mgmt1**.

```
(host) #show wlan traffic-management-profile mgmt1
Traffic management profile "default"
------------------------------------
Parameter                   Value
---------                   -----
Proportional BW Allocation  N/A
Report interval             5 min
Station Shaping Policy      default-access
```

The output of this command includes the following data columns:

Parameter	Description
Proportional BW Allocation	Minimum bandwidth, as a percentage of available bandwidth, allocated to an SSID when there is congestion on the wireless network. An SSID can use all available bandwidth if no other SSIDs are active.

Parameter	Description
`Report interval`	Number of minutes between bandwidth usage reports.
`Station Shaping Policy`	Shows which of three possible Station Shaping policies is configured on the profile. • **default-access**: Traffic shaping is disabled, and client performance is dependent on MAC contention resolution. This is the default traffic shaping setting. • **fair-access**: Each client gets the same airtime, regardless of client capability and capacity. This option is useful in environments like a training facility or exam hall, where a mix of 802.11a/g, 802.11g and 802.11n clients need equal to network resources, regardless of their capabilities. The **bw-alloc** parameter of a traffic management profile allows you to set a minimum bandwidth to be allocated to a virtual AP profile when there is congestion on the wireless network.You must set traffic shaping to f**air-access** to use this bandwidth allocation value for an individual virtual AP. • **preferred-access**: High-throughput (802.11n) clients do not get penalized because of slower 802.11a/g or 802.11b transmissions that take more air time due to lower rates. Similarly, faster 802.11a/g clients get more access than 802.11b clients.

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show wlan tsm-req-profile

```
show wlan tsm-req-profile
```

Description

Shows configuration and other information about the parameters for the Transmit Stream/Category Measurement Request frames.

Syntax

Parameter	Description
<profile-name>	Name of this instance of the profile. name must be 1-63 characters.

Usage Guidelines

Issue this command without the <profile> parameter to display the entire TSM Request profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

For this profile to take effect, the 802.11K feature needs to be enabled.

Examples

```
(host) #show wlan tsm-req-profile default
TSM Report Request Profile "default"
------------------------------------
Parameter                          Value
---------                          -----
Request Mode for TSM Report Request  normal
Number of repetitions              65535
Duration Mandatory                 Enabled
Randomization Interval             0
Measurement Duration               25
Traffic ID                         96
Bin 0 Range                        200
```

The output of this command includes the following information:

Parameter	Description
Request mode for TSM Report Request	Shows the request mode for the Transmit Stream/Category Measurement Request frame.
Number of repe-titions	Shows the "Number of Repetitions" field in the TransmitStream/Category Measurement Request frame.
Duration Mandatory	Shows the "Duration Mandatory" bit of the Measurement Request Mode field of the Transmit Stream/Category Measurement Request frame.
Randomization Inter-val	Shows the Randomization Interval field in the Transmit Stream/Category Measurement Request frame.

Parameter	Description
`Measurement Duration`	Shows the Measurement Duration field in the Transmit Stream/Category Measurement Request frame.
`Traffic ID`	Shows the Traffic Identifier field in the Transmit Stream/Category Measurement Request frame.
`Bin 0 Range`	Shows the 'Bin 0 Range' field in the Transmit Stream/Category Measurement Request frame.

Command History

This command is introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

show wlan virtual-ap

```
show wlan virtual-ap <profile-name>
```

Description

Show a list of all Virtual AP profiles, or display detailed configuration information for a specific Virtual AP profile.

Syntax

Parameter	Description
<profile-name>	Name of a Virtual AP profile

Usage Guidelines

Issue this command without the <profile> parameter to display the entire Virtual AP profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has six configured Virtual AP profiles. The **References** column lists the number of other profiles with references to the Virtual AP profile, and the **Profile Status** column indicates whether the profile is predefined. (User-defined profiles will not have an entry in the Profile Status column.)

```
(host) #show wlan virtual-ap

Virtual AP profile List
-----------------------
Name                            References  Profile Status
----                            ----------  --------------
coltrane-vap-profile            1
default
MegTest
Remote                          1
test-vap-profile                1
wizardtest-vap-profile          1
Total: 6
```

The following example shows configuration settings defined for the profile **wizardtest-vap-profile**.

```
(host) #show wlan virtual-ap test-vap-profile
Virtual AP profile "wizardtest-vap-profile"
---------------------------
Parameter                                   Value
---------                                   -----
AAA Profile                                 default
802.11K Profile                             default
SSID Profile                                default
Virtual AP enable                           Enabled
VLAN                                        N/A
Forward mode                                tunnel
Allowed band                                all
Band Steering                               Disabled
Steering Mode                               prefer-5ghz
```

```
Dynamic Multicast Optimization (DMO)            Enabled
Dynamic Multicast Optimization (DMO)            Threshold  6
Drop Broadcast and Multicast                     Disabled
Convert Broadcast ARP requests to unicast        Enabled
Authentication Failure Blacklist Time            3600 sec
Blacklist Time                                   3600 sec
Deny inter user traffic                          Disabled
Deny time range                                  N/A
DoS Prevention                                   Disabled
HA Discovery on-association                      Disabled
Mobile IP                                        Enabled
Preserve Client VLAN                             Disabled
Remote-AP Operation                              standard
Station Blacklisting                             Enabled
Strict Compliance                                Disabled
VLAN Mobility                                    Disabled
FDB Update on Assoc                              Disabled
WMM Traffic Management Profile                   N/A
Anyspot Profile                                  N/A
```

The output of this command includes the following data columns:

Parameter	Description
AAA Profile	Name of the AAA profile associated with this virtual AP.
802.11K Profile	Name of an 802.11k profile associated with this virtual AP.
SSID Profile	Name of an SSID profile associated with this virtual AP.
Virtual AP enable	Shows if the profile enables or disables the virtual AP.
VLAN	The VLAN(s) into which users are placed in order to obtain an IP address.
Forward mode	Forwarding mode defined on the profile: • **tunnel mode** • **bridge mode** • **split-tunnel mode** • **decrypt-tunnel mode** The forwarding mode controls whether data is tunneled to the controller using generic routing encapsulation (GRE), bridged into the local Ethernet LAN (for remote APs), or a combination thereof depending on the destination (corporate traffic goes to the controller, and Internet access remains local).

Parameter	Description
	When an AP is configured to use the decrypt-tunnel forwarding mode, that AP decrypts and decapsulates all 802.11 frames from a client and sends the 802.3 frames through the GRE tunnel to to the controller, which then applies firewall policies to the user traffic. When the controller sends traffic to a client, the controller sends 802.3 traffic through the GRE tunnel to the AP, which then converts it to encrypted 802.11 and forwards to the client.
`Allowed band`	The band(s) on which to use the virtual AP: • **a**—802.11a band only (5 GHz) • **g**—802.11b/g band only (2.4 GHz) • **all**—both 802.11a and 802.11b/g bands (5 GHz and 2.4 GHz)
`Band Steering`	If enabled, ARM's band steering feature encourages dual-band capable clients to stay on the 5GHz band on dual-band APs. This frees up resources on the 2.4GHz band for single band clients like VoIP phones.
`Steering Mode`	Band steering supports three different band steering modes. • **Force-5GHz**: When the AP is configured in **force-5GHz** band steering mode, the AP will try to force 5Ghz-capable APs to use that radio band. • **Prefer-5GHz** (Default): If you configure the AP to use **prefer-5GHz** band steering mode, the AP will try to steer the client to 5G band (if the client is 5G capable) but will let the client connect on the 2.4G band if the client persists in 2.4G association attempts. • **Balance-bands**: In this band steering mode, the AP tries to balance the clients across the two radios in order to best utilize the available 2.4G bandwidth. This feature takes into account the fact that the 5Ghz band has more channels than the 2.4 Ghz band, and that the 5Ghz channels operate in 40MHz while the 2.5Ghz band operates in 20MHz. **NOTE:** Steering modes do not take effect until the band steering feature has been enabled. The band steering feature in ArubaOS versions 3.3.2-5.0 does not support multiple band-steering modes. The band-steering feature in these versions of ArubaOS functions the same way as the default **prefer-5GHz** steering mode available in ArubaOS 6.0 and later.

Parameter	Description
Dynamic Multicast Optimization (DMO)	If enabled DMO techniques will be used to reliably transmit video data.
Dynamic Multicast Optimization (DMO) Threshold	Maximum number of high-throughput stations in a multicast group beyond which dynamic multicast optimization stops.
Drop Broadcast and Multicast	If enabled, the virtual AP will filter out broadcast and multicast traffic in the air.
Convert Broadcast ARP requests to unicast	If enabled, all broadcast ARP requests are converted to unicast and sent directly to the client.
Authentication Failure Blacklist Time	Time, in seconds, a client is blocked if it fails repeated authentication. An authentication failure blacklist time of 0 blocks failed users indefinitely.
Blacklist Time	Number of seconds that a client is quarantined from the network after being blacklisted.
Deny Inter User Traffic	This option, when enabled, denies traffic between the clients using this virtual AP profile. The **firewall** comand includes an option to deny all inter-user traffic, regardless of the Virtual AP profile used by those clients. If the global setting to deny inter-user traffic is enabled, all inter-user traffic between clients will be denied, regardless of the settings configured in the virtual AP profiles. If the setting to deny inter-user traffic is disabled globally but enabled on an individual virtual ap, only the traffic between un-trusted users and the clients on that particular virtual AP will be blocked.
Deny time range	Time range for which the AP will deny access.
DoS Prevention	If enabled, APs ignore deauthentication frames from clients. This prevents a successful deauth attack from being carried out against the AP. This does not affect third-party APs.
HA Discovery on-association	If enabled, home agent discovery is triggered on client association instead of home agent discovery based on traffic from client. Mobility on association can speed up roaming and improve connectivity for clients that do not send many uplink packets to trigger mobility (VoIP clients). Best practices is to leave this parameter disabled as it increases IP mobility control traffic between controllers in the same mobility domain. Enable this parameter only when voice issues are observed in VoIP clients.

Parameter	Description
	NOTE: ha-disc-onassoc parameter works only when IP mobility is enabled and configured on the controller.
`Mobile IP`	Shows if the profile has enabled or disabled IP mobility.
`Preserve Client VLAN`	This parameter allows clients to retain their previous VLAN assignment if the client disassociates from an AP and then immediately re-associates either with same AP or another AP on same controller.
`Remote-AP Operation`	Shows when the virtual AP operates on a remote AP: • **always**—Permanently enables the virtual AP (Bridge Mode only). This option can be used for non-802.1X bridge VAPs. • **backup**—Enables the virtual AP if the remote AP cannot connect to the controller (Bridge Mode only). This option can be used for non-802.1X bridge VAPs. • **persistent**—Permanently enables the virtual AP after the remote AP initially **connects** to the controller (Bridge Mode only). This option can be used for any (Open/PSK/802.1X) bridge VAPs. • **standard**—Enables the virtual AP when the remote AP connects to the controller. This option can be used for any (bridge/split-tunnel/tunnel/d-tunnel) VAPs.
`Station Blacklisting`	Shows if the profile has enabled or disabled detection of denial of service (DoS) attacks, such as ping or SYN floods, that are not spoofed deauth attacks.
`Strict Compliance`	If enabled, the AP denies client association requests if the AP and client station have no common rates defined. Some legacy client stations which are not fully 802.11-compliant may not include their configured rates in their association requests. Such non-compliant stations may have difficulty associating with APs unless strict compliance is disabled.
`Multi Association`	If enabled, this feature allows a station to be associated to multiple APs. If this feature is disabled, when a station moves to new AP it will be de authorized by the AP to which it was previously connected, deleting station context and flushing key caching information

Parameter	Description
Fast Roaming	Shows if the AP has enabled or disabled fast roaming.
VLAN Mobility	Shows if the AP has enabled or disabled VLAN (Layer-2) mobility.
WMM Traffic Management Profile	WMM Traffic Management Profile associated with this Virtual AP Profile
Anyspot profile	Anyspot Profile associated with this Virtual AP Profile

Command History

This command was introduced in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show wlan voip-cac-profile

```
show wlan voip-cac-profile [<profile>]
```

Description

Show a list of all VoIP Call Admission Control (CAC) profiles, or display detailed configuration information for a specific VoIP CAC profile.

Syntax

Parameter	Description
<profile>	Name of a VoIP CAC profile

Usage Guidelines

Issue this command without the <profile> parameter to display the entire VoIP CAC profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has three configured VoIP CAC profiles. The **References** column lists the number of other profiles with references to the VoIP CAC profile, and the **Profile Status** column indicates whether the profile is predefined. (User-defined profiles will not have an entry in the Profile Status column.)

```
(host) #show wlan voip-cac-profile
VoIP Call Admission Control profile List
----------------------------------------
Name        References  Profile Status
----        ----------  --------------
corp-voip               6
kgtest      0
QAlab-voip              1

Total:3
```

The following example shows configuration settings defined for the profile **QAlab-voip** .

```
(host) #show wlan voip-cac-profile QAlab-voip

VoIP Call Admission Control profile "QAlab-voip"
------------------------------------------------
Parameter                                       Value
---------                                       -----
VoIP Call Admission Control                     Disabled
VoIP Bandwidth based CAC                        Disabled
VoIP Call Capacity                              10
VoIP Bandwidth Capacity (kbps)                  2000
VoIP Call Handoff Reservation                   20 %
VoIP Send SIP 100 Trying                        Enabled
VoIP Disconnect Extra Call                      Disabled
VOIP TSPEC Enforcement                          Disabled
VOIP TSPEC Enforcement Period                   1 sec
VoIP Drop SIP Invite and send status code (client)  486
VoIP Drop SIP Invite and send status code (server)  486
```

```
Allow Idle VOIP Client                          Disabled
```

The output of this command includes the following data columns:

Parameter	Description
`VoIP Call Admission Control`	Shows if the profile enables or disables Wi-Fi VoIP CAC features.
`VoIP Bandwidth based CAC`	Shows the desired CAC mechanism: • Disable - CAC is based on Call Counts • Enable - CAC should be based on Bandwidth.
`VoIP Call Capacity`	Number of simultaneous calls that can be handled by one radio.
`VoIP Bandwidth Capacity (kbps)`	The maximum bandwidth that can be handled by one radio, in kbps.
`VoIP Call Handoff Reservation`	Percentage of call capacity reserved for mobile VoIP clients on call.
`VoIP Send SIP 100 Trying`	Shows if the profile enables or disables sending of *SIP 100 - trying* messages to a call originator to indicate that the call is proceeding.
`VoIP Disconnect Extra Call`	If enabled, the controller disconnects calls that exceed the high capacity threshold by sending a deauthentication frame.
`VOIP TSPEC Enforcement`	Shows if the profile enables or disables validation of TSPEC requests for CAC.
`VOIP TSPEC Enforcement Period`	Maximum time for the station to start the call after the TSPEC request
`VoIP Drop SIP Invite and send status code (client)`	Display the status code sent back to the client if the profile is configured to drop a SIP Invite: • **480**: Temporary Unavailable • **486**: Busy Here • **503**: Service Unavailable • **none**: Don't send SIP status code
`VoIP Drop SIP Invite and send status code (server)`	Display the status code sent back to the server if the profile is configured to drop a SIP Invite: • **480**: Temporary Unavailable

Parameter	Description
	• **486**: Busy Here • **503**: Service Unavailable • **none**: Don't send SIP status code
`Allow Idle VOIP Client`	Displays the status of the **allow-idle-voip-client** parameter. If enabled, the AP allows idle voice clients to associate even if the AP reaches its call capacity limit. If disabled, the AP rejects idle voice clients to associate if the AP reaches its call capacity limit. However, the AP continues to allow active (in-call) and non-voice clients to associate.

Command History

Version	Change
ArubaOS 3.0	Command introduced.
ArubaOS 3.4	The following parameters were deprecated: • active-load-balancing • high-threshold-capacity • noe-call-capacity • sccp-call-capacity • svp-call-capacity • vocera-call-capacity The following parameters were introduced: • VoIP Bandwidth based CAC • VoIP Call Capacity • VoIP Bandwidth Capacity (kbps)
ArubaOS 3.4.1	License requirements changed in ArubaOS 3.4.1, so the command required the PEF license instead of the Voice Services Module license required in earlier versions.
ArubaOS 6.5	The **Allow Idle VOIP Client** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master or local controllers.

show wlan wmm-traffic-management-profile

```
show wlan wmm-traffic-management-profile [<profile-name>]
```

Description

Display a list of all WMM traffic management profiles, or display detailed configuration information for a specific WMM traffic management profile.

Syntax

Parameter	Description
<profile-name>	Name of the WMM traffic management profile.

Usage Guidelines

Issue this command without the <profile> parameter to display the entire WMM traffic management profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has two configured WMM traffic management profiles. The **References** column lists the number of other profiles with references to the WMM traffic management profile, and the **Profile Status** column indicates whether the profile is predefined. (User-defined profiles will not have an entry in the Profile Status column.)

```
(host) #show wlan wmm-traffic-management-profile

WMM Traffic management profile List
-----------------------------
Name     References  Profile Status
----     ----------  --------------
default  3
test     2

Total:2
```

The following example shows configuration settings defined for the profile **test**.

```
(host) #show wlan traffic-management-profile test

WMM Traffic management profile "test"
-------------------------------------
Parameter              Value
---------              -----
Enable Shaping Policy  true
Voice Share            40 %
Video Share            43 %
Best-effort Share      10 %
Background Share       7 %
```

The output of this command includes the following data columns:

Parameter	Description
Enable Shaping Policy	Displays if WMM based traffic shaping is enabled on the controller.
Voice Share	Displays the bandwidth allocation in percentage (%) for voice access traffic category.
Viceo Share	Displays the bandwidth allocation in percentage (%) for video access traffic category.
Best-effort Share	Displays the bandwidth allocation in percentage (%) for best effort access traffic category.
Background Share	Displays the bandwidth allocation in percentage (%) for background access traffic category.

Related Commands

Command	Description
wlan wmm-traffic-management-profile	Configures WMM traffic management profile on the controller.

Command History

Version	Change
ArubaOS 5.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable or Config mode on master or local controllers.

show wms ap

```
show wms ap {<bssid>}|list|{stats [mon-mac <mon-mac> bssid <bssid>}
```

Description

Display information for APs currently monitored by the ArubaOS Wireless Management System (WMS).

Syntax

Parameter	Description
<bssid>	Enter the AP's BSSID number in hexadecimal format (XX:XX:XX:XX:XX:XX).
list	Show the AP Tree table for all APs.
stats	Show the AP Statistics table for all APs.
mon-mac <mon-mac>	Show the AP Tree table for an AP with the specified MAC address.
bssid <bssid>	Show the AP Tree table for an AP with the specified BSSID.

Usage Guidelines

The WMS feature periodically sends statistics that it has collected for APs and Probes to the WMS process. When WMS receives an event message from an AM, it will save the event information along with the BSSID of the AP that generated the event in the WMS database. When WMS receives statistics from the AM, it updates its state, and the database.

Examples

The command **show wms ap <bssid>** displays a list of AP MAC addresses and the BSSIDs seen by each AP.

```
(host)# show wms ap 00:1a:1e:88:01:e0

AP Info
-------
BSSID              SSID   Channel  Type     RAP_Type  Status  Match MAC          Ageout  HT-
Type   HT-Sec-Chan
-----              ----   -------  ----     --------  ------  ---------          ------  -----
--   -----------
00:1a:1e:88:01:e0  sw-ad  11       soft-ap  valid     up      00:00:00:00:00:00  -1

Probe Info
----------
MAC                IP           Name          Type     Status  AP Type
---                --           ----          ----     ------  -------
00:1a:1e:88:02:80  10.3.129.94  ad-ap125-13   soft-ap  up      125
00:1a:1e:88:01:e0  10.3.129.96  mp3           soft-ap  up      125
00:1a:1e:81:c6:00  10.3.129.99  ad-ap124-11   soft-ap  down    124
00:0b:86:8a:15:20  10.3.129.93  sap61-1-6     soft-ap  down    65
```

The output of this command includes the following information:

Column	Description
BSSID	Basic Service Set Identifier for the AP. This is usually the AP's MAC address.
SSID	The Service Set Identifier that identifies a wireless network.
Channel	Channel used by the AP's radio.
Type	A WMS AP type can be one of the following: • soft-ap: A Dell Access Point (AP). • air-monitor: A Dell Air Monitor (AM).
RAP_Type	Indicates one of the following Rogue AP types: • Valid (not a rogue AP) • Interfering • Rogue • Suspected Rogue • Disabled Rogue • Unclassified • Known Interfering
Status	If up, the AP is active. If down (or no information is shown) the AP is inactive.
Match MAC	MAC address of a wired device that helped identify the AP as a rogue. If the AP has not been identified as a rogue, this column will display the MAC address 00:00:00:00:00:00.
Ageout	An ageout time is the time, in minutes, that the client must remain unseen by any probes before it is eliminated from the database. If this column displays a -1, the client has not yet aged out. Any other number indicates the number of minutes since the client has passed its ageout interval.
HT-type	The type of high-throughput traffic sent by the AP: • HT-20mhz: The AP radio uses a single 20 mHz channel • HT-40mhz: The AP radio uses a 40 MHz channel pair comprised of two adjacent 20 MHz channels.
HT-Sec-Chan	Secondary channel used for 40 MHz high-throughput transmissions.
MAC	MAC address of a probe that can see the specified AP.
IP	IP address of a probe that can see the specified AP.
Name	Name of the probe.
Type	Displays the probe type: A WMS probe can be one of the following:

Column	Description
	• soft-ap: A Dell Access Point (AP). • air-monitor: A Dell Air Monitor (AM).
Status	If up, the AP is active. If down (or no information is shown) the AP is inactive.
AP Type	AP model type.

The example below shows received and transmitted data statistics for each BSSID seen by a monitoring AP.

```
(host)# show wms ap stats
AP Stats Table
----------------
Monitor-MAC        BSSID              RSSI  TxPkt    RxPkt   TxByte     RxByte    HTRates-Rx
-----------        -----              ----  -----    -----   ------     ------    ----------
00:0b:86:c1:af:20  00:0b:86:9a:f2:00  12    1575675  65      173239998  9340      0
00:0b:86:c1:af:20  00:0b:86:9a:f2:08  12    1560559  0       162297938  0         0
00:0b:86:c1:be:56  00:0b:86:9b:e5:60  12    1683013  4188    184400159  257583    0
00:0b:86:c1:be:56  00:0b:86:9b:e5:68  12    1580152  105     164216336  1470      0
00:0b:86:c2:0a:98  00:0b:86:a0:a9:80  48    1608023  40596   166962148  568386    0
00:0b:86:c2:1c:08  00:0b:86:a1:c0:80  42    1587097  26236   164904668  453196    0
00:0b:86:c2:1c:38  00:0b:86:a1:c3:80  42    1573040  20511   174536514  654024    0
00:0b:86:c2:3e:a9  00:0b:86:a3:ea:90  48    1588204  34179   165017293  897431    0
00:0b:86:c4:0f:3c  00:0b:86:c0:f3:d0  48    1571202  14258   174338376  351148    0
00:0b:86:c4:4d:06  00:0b:86:c4:d0:70  48    1598423  56198   182267018  3805826   0
00:1a:1e:c0:88:82  00:1a:1e:88:88:30  18    1717310  247532  394461405  14998234  8
00:1a:1e:c0:88:82  00:1a:1e:88:88:20  18    1092023  114722  242006054  2442917   10
00:1a:1e:c0:88:88  00:1a:1e:88:88:90  36    1783226  485620  460219125  27781583  16
```

The output of this command includes the following information:

Column	Description
Monitor-MAC	MAC address of an AP.
BSSID	Basic Service Set Identifier of a station.
RSSI	Received Signal Strength Indicator for the station, as seen by the AP.
txPkt	Number of transmitted packets.
RxPkt	Number of received packets.
TxByte	Number of transmitted bytes.
RxByte	Number of received bytes.
HTRates-Rx	Number of bytes received at high-throughput rates.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The **mon-mac <mon-mac>** and **bssid <bssid>** parameters for the list option were deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show wms channel

```
show wms channel stats
```

Description

Display per-channel statistics for monitored APs.

Syntax

No parameters.

Example

This example shows per-channel statistics for monitored APs.

```
(host) #show wms channel stats

 Channel Stats Table
--------------------
Monitor-MAC        Channel  NumAP  NumSta  TotalPkt  TotalByte   Noise
-----------        -------  -----  ------  --------  ---------   -----
00:0b:86:c1:af:20  1        1      0       5228276   613640650   97
00:0b:86:c1:af:20  6        1      0       1355      168764      0
00:0b:86:c1:af:20  11       8      0       5880      1040338     0
00:0b:86:c1:af:20  36       0      0       2         28          0
00:0b:86:c1:af:20  40       0      0       2         112         0
00:0b:86:c1:af:20  44       0      0       50        903         0
00:0b:86:c1:af:20  48       0      0       23        544         0
00:0b:86:c1:af:20  149      1      0       27094     557579      0
00:0b:86:c1:af:20  153      3      0       4648662   544817261   99
00:0b:86:c1:af:20  165      1      0       1655      200349      0
00:0b:86:c1:be:56  1        43     4       14446324  1959058619  0
00:0b:86:c1:be:56  6        8      1       14168505  1955474600  96
00:0b:86:c1:be:56  11       72     1       180553    23987119    0
00:0b:86:c1:be:56  36       53     0       14716     1022825     0
00:0b:86:c1:be:56  40       8      0       3033      501568      0
00:0b:86:c1:be:56  44       3      0       1453      217596      0
00:0b:86:c1:be:56  48       4      0       5330      1067660     0
00:0b:86:c1:be:56  149      0      0       609279    72205247    105
00:0b:86:c1:be:56  153      1      0       7615369   779579648   0
00:0b:86:c1:be:56  165      1      0       4238      486121      0
00:0b:86:c2:0a:98  40       4      0       4247      434512      0
00:0b:86:c2:0a:98  48       5      0       4052      420436      0
00:0b:86:c2:0a:98  149      4      0       6548323   732910481   104
00:0b:86:c2:1c:08  40       3      0       4613      478188      0
00:0b:86:c2:1c:08  48       4      0       6235436   658263321   103
00:0b:86:c2:1c:08  149      5      0       18904     803078      0
```

Column	Description
Monitor-MAC	MAC address of an AP.
Channel	802.11 radio channel.

Column	Description
NumAP	Number of other APs seen on the specified channel.
NumSta	Number stations seen on the specified channel.
TotalPkt	Number of received packets.
TotalByte	Number of received bytes.
Noise	Current noise level.

The output of this command includes the following information:

Command History

This command was introduced in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show wms client

```
show wms client <mac>|{list}|{probe <mac>}|{stats [mon-mac <mon-mac> mac <mac>]}|{valid-exempt}
```

Description

Display a list of client information for the clients that can be seen by monitoring APs.

Syntax

Parameter	Description
<mac>	Show statistics for a client with the specified MAC address, including the BSSID of the AP to which that client is currently associated, and the MAC addresses of other monitoring APs that can see that client.
list	Show statistics for all monitored clients.
probe <mac>	Specify a client's MAC address to show the BSSIDs of all probes that can see that client.
stats	Show the STA stats table, which displays data for all clients seen by each monitoring AP.
mon-mac <mon-mac> mac <mac>	Enter a monitoring AP's MAC address (<mon-mac>) and the MAC address of a client (<mac>) to show data for traffic received from and sent to a specific client as seen by a specific AP.
valid-exempt	Shows a list of valid-exempt clients.

Example

The AP Info table in the example below shows that the client is associated to an AP with the BSSID **00:0b:86:cd:86:a0**. The Probe info table shows the MAC addresses of three other APs that can see the client.

```
(host) #show wms client 00:0e:35:29:9b:28

STA Info
--------
MAC                Type    Status  Ageout
---                ----    ------  ------
00:0e:35:29:9b:28  valid   up      -1

AP Info
-------
BSSID              SSID    Channel  Type     RAP_Type  Status  Match MAC          Ageout
-----              ----    -------  ----     --------  ------  ---------          ------
00:0b:86:cd:86:a0  MySSiD  11       soft-ap  valid     up      00:00:00:00:00:00  -1


Probe Info
----------
MAC                IP            Name   Type     Status  Name    AP Type
```

```
---               --            ----  ----     ------  ----    -------
00:0b:86:a2:2b:50 192.168.2.10  0     soft-ap  up      LeftAP  61
00:0b:86:ad:94:40 192.168.2.5   0     soft-ap  up      1.1.1   61
00:0b:86:cd:86:a0 192.168.2.4   0     soft-ap  up      CEO     70
```

Column	Description
MAC	MAC address of the client
Type	Station type (**valid**, interfering, or **disabled rogue client**)
Status	If **up**, the client is active. If **down** (or no information is shown) the client is inactive.
ageout	An ageout time is the time, in minutes, that the client must remain unseen by any probes before it is eliminated from the database. If this column displays a **-1**, the client has not yet aged out. Any other number indicates the number of minutes since the client has passed its ageout interval.
BSSID	BSSID of the AP to which the client is associated.
SSID	Extended service set identifier (ESSID) of the BSSID.
RAP_Type	Indicates one of the following Rogue AP types: • Valid (not a rogue AP) • Interfering • Rogue • Disabled Rogue • Suspected Rogue • Unclassified • Known Interfering
Status	If **up**, the AP is active. If **down** (or no information is shown) the AP is inactive.
Match MAC	MAC address of a wired device that helped identify the AP as a rogue. If the AP has not been identified as a rogue, this column will display the MAC address 00:00:00:00:00:00.
Ageout	An ageout time is the time, in minutes, that the client must remain unseen by any probes before it is eliminated from the database. If this column displays a **-1**, the client has not yet aged out. Any other number indicates the number of minutes since the client has passed its ageout interval.
MAC	MAC address of a WMS probe.
IP	IP address of a WMS probe.
Type	A WMS AP type can be one of the following: • **soft-ap**: Dell Access Point (AP).

Column	Description
	• **air-monitor**: Dell Air Monitor (AM).
`Status`	If **up**, the probe is active. If **down** (or no information is shown) the probe is inactive.
`Name`	Name of the probe. If a name has not been defined for the probe, this column may display a zero (0).
`AP type`	Model type of the probe.

The output of this command includes the following information:

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.4.4.0	The following parameter was introduced. `valid-exempt`

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show wms counters

```
show wms counters [debug|event]
```

Description

Show WMS event and debug counters. If you omit the optional **debug** and **events** parameters, the **show wms counters** command will display the frequently used (general) counters in a single table.

Syntax

Parameter	Description
`debug`	Show debug counters only.
`events`	Show events counters only. If you omit the debug and events parameters, the show wms counters will display the frequently used (general) counters in a single table.

Usage Guidelines

This command displays counters for database entries, messages and data structures. The counters displayed will vary for each controller; if the controller does not have an entry for a particular counter type, it will not appear in the output of this command

Example

This example shows part of the output of the command **show wms counters**.

```
(host) #show wms counters

Counters
--------
Name                        Value
----                        -----
DB Reads                    288268
DB Writes                   350870
Probe Table DB Reads        2477
Probe Table DB Writes       952
AP Table DB Reads           143992
AP Table DB Writes          138867
STA Table DB Reads          40404
STA Table DB Writes         99687
Probe STA Table DB Reads    101352
Probe STA Table DB Writes   117566
Probe Register              2476
Probe State Update          37077
Set RAP Type                42552
Set RAP Type Conf Level     152
Valid Exempt Station Macs   10
...
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.4.4.0	The following counter was introduced. `Valid Exempt Station Macs`

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show wms monitor-summary

```
show wms channel stats
```

Description

Display the numbers of different AP and client types monitored over the last 5 minutes, 1 hour, and since the controller was last reset.

Syntax

No parameters.

Usage Guidelines

The WLAN management system (WMS) on the controller monitors wireless traffic to detect any new AP or wireless client station that tries to connect to the network. When an AP or wireless client is detected, it is classified and its classification is used to determine the security policies which should be enforced on the AP or client. Use the **show wms monitor-summary** command to view a quick summary of each classified AP and client type currently on the network.

If AP learning is enabled (with the wms general command), non-Dell APs connected on the same wired network as Dell APs are classified as valid APs. If AP learning is disabled, a non-Dell AP is classified as an unsecure or suspect-unsecure AP.

Example

This example shows that the controller currently has 144 valid APs and 32 active valid clients, and verifies that the controller currently aware of a single disabled rogue AP.

```
(host) #show wms monitor-summary

WMS Monitor Summary
-------------------
                           Last 5 Min  Last Hour  All
-                          ----------  ---------  ---
Valid APs                  1           1          1
Interfering APs            57          57         60
Rogue APs                  3           3          3
Manually Contained APs     0           0          0
Unclassified APs           0           0          0
Neighbor APs               0           0          0
Suspected Rogue APs        138         138        139
Valid Clients              0           0          0
Interfering Clients        1           1          1
Manually Contained Clients 0           0          0
```

Command History

Release	Release
ArubaOS 3.0.	Command Introduced
ArubaOS 6.1	The **Disabled Rogue AP**, **Known Interfering APs** and **Interfering Clients** entries were removed from the show command output, and the **suspected-rogue, Manually Contained APs** and **Manually Contained Clients** output entries were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show wms probe

```
show wms probe
```

Description

Display detailed information for a list of WMS probes.

Syntax

No parameters.

Example

This example shows the Probe List table for WMS probes. The output below has been split into two tables to better fit in this document. In the actual command-line interface, this information appears in a single, long table.

```
(host) #show wms monitor-summary

WMS Monitor Summary
-------------------
                           Last 5 Min  Last Hour  All
-                          ----------  ---------  ---
Valid APs                  1           1          1
Interfering APs            57          57         60
Rogue APs                  3           3          3
Manually Contained APs     0           0          0
Unclassified APs           0           0          0
Neighbor APs               0           0          0
Suspected Rogue APs        138         138        139
Valid Clients              0           0          0
Interfering Clients        1           1          1
Manually Contained Clients 0           0          0
```

Column	Description
Monitor Eth MAC	Ethernet MAC address of a probe.
BSSID	Probe Radio BSSID.
PHY Type	Radio PHY type: • 802.11A • 802.11AHT-40Mbps • 802.11AHT-20Mbps • 802.11G • 802,11GHT-20Mbps
IP	IP address of the AP.

Column	Description
LMS IP	IP address of the AP's local controller.
Scan	Shows if the Air Monitor is performing scanning.
Status	If the scan column displays a status of Up, the AP or AM is active
Updates	Number of updates the AP or AM sent to the WMS database since the controller was last reset.
Reqs/Fails	Number of database update requests that have not yet been added into the database. and the number of failed database requests.
Stats	Total number of statistics updates sent to the database.
Type	A WMS AP type can be one of the following: • **soft-ap**: A Dell Access Point (AP). • **air-monitor**: A Dell Air Monitor (AM).

The output of this command includes the following information:

Command History

Release	Release
ArubaOS 3.0.	Command Introduced
ArubaOS 6.1	The output of this command was modified to show the number of failed database requests.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show wms rogue-ap

```
show wms rogue-ap <mac>
```

Description

Display statistics for APs classified as rogues APs.

Syntax

Parameter	Description
<mac>	MAC address of a rogue AP.

Example

The output of this command shows statistics for a suspected Rogue AP, including how it was classified as a suspected rogue.

```
(host) #show wms rogue-ap 00:0b:86:d4:ca:12

Suspect Rogue AP Info
---------------------
Key               Value
---               -----
BSSID             00:0b:86:89:c6:20
SSID              aruba-ap
Channel           1
Type              generic-ap
RAP Type          suspected-rogue
Confidence Level  30%
Status            up
Match Type        AP-Rule
Match MAC         00:0b:86:61:8a:d0
Match IP          0.0.0.0
Match Rule Name   rule2
Match Method      Exact-Match
Match Time        Sun Sep 19 19:11:40 2010

Confidence Level Info
---------------------
Match Type     Match Method  Conf Level
----------     ------------  ----------
Eth-Wired-Mac  OUI-Match     20%
AP-Rule        rule1         5%
AP-Rule        rule2         5%
```

The output of this command includes the following information:

Column	Description
BSSID	BSSID of the suspected rogue AP.

Column	Description
SSID	The rogue AP's Extended service set identifier.
Channel	Channel used by a radio on the rogue AP.
Type	Indicates if the AP is a Dell AP, a Cisco AP, or an AP from any other manufacturer (generic AP).
RAP Type	Type of rogue AP, • Suspect-unsecure: AP has not been confirmed as a rogue AP. • unsecure: AP has been confirmed as a rogue AP
Status	Shows if the AP is active (**up**) or inactive (**down**).
Match Type	Describes how the AP was classified as a rogue. • Eth-Wired-MAC: A Dell AP or AM detected that a single MAC address was in both the Ethernet Wired-Mac table and a non-valid AP wired-Mac table. • AP-Wired-MAC: An interfering AP is marked as rogue when the Dell AP finds a MAC address in one of its valid AP wired-mac table and in an interfering AP wired-mac table. You can enable or disable the AP-Wired-MAC matching method using the CLI command `ids unauthorized-device-profile overlay-classification`. • Config-Wired-MAC: This type of classification occurs when a Dell AP or AM detects a match between a wired MAC table and a pre-defined MAC address that has manually defined via the command ids unauthorized-device-profile valid-wired-mac. • External-Wired-MAC: This type of classification occurs when a Dell AP or AM detects a match between a wired MAC table entry and a pre-defined MAC address manually defined in the ids rap-wml-server-profile table. • Base-BSSID-Override: If a Dell AP is detected as rogue, then all virtual APs on the particular rogue are marked as rogue using Base-BSSID-Override match type. • Manual: An AP is manually defined as a rogue by via the command wms ap <bssid> mode rogue. • EMS: An AP is manually defined as a rogue by via the Element Management System
Match MAC	MAC address of a wired device that helped identify the AP as a rogue. If the AP has not been identified as a rogue, this column will display the MAC address 00:00:00:00:00:00.
Match IP	IP address of a wired device that helped identify the AP as a rogue.
Match AM	Dell Air Monitor that reporting seeing the rogue AP.
Match Method	This variable indicates the type of match.

Column	Description
Suspect Match Types	Describes how an AP was classified as a suspected rogue AP.
Helper Ap BSSID	BSSID of the AP or AM that helped classify a rogue AP.
AP name	Names of APs that are able to see the specified MAC address.
Match Time	Time the AP was identified as a rogue AP.
Confidence Level	Shows the level of confidence that the AP was classified correctly for each match type.The suspected-rogue classification mechanism are: • Each mechanism that causes a suspected-rogue classification is assigned a confidence level increment of 20%. • AP classification rules have a configured confidence level. • When a mechanism matches a previously unmatched mechanism, the confidence level increment associated with that mechanism is added to the current confidence level (the confident level starts at zero). • The confidence level is capped at 100%. If your controller reboots, your suspected-rogue APs are not checked against any new rules that were configured after the reboot. Without this restriction, all the mechanisms that classified your APs as suspected-rogue may trigger again causing the confidence level to surpass their cap of 100%. You can explicitly mark an AP as “interfering” to trigger all new rules to match against it.

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	Confidence level information was added to the output of this command.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show wms routers

```
show wms routers <mac>
```

Description

Show Learned Router Mac Information for WMS APs.

Syntax

Parameter	Description
<mac>	MAC address of a probe that can see the router.

Usage Guidelines

This command displays the MAC addresses of devices that have been determined to be routers by the listed APs. This output of this command will be blank if there is not any broadcast/multicast activity in an AP's subnet.

Example

In the example below, a single WMS AP has learned MAC information for four different routers.

```
(host) #show wms routers

Router Mac 00:08:00:00:11:12 is Seen by APs
-------------------------------------------
AP-Name
-------
AP32
Router Mac 00:08:00:00:11:29 is Seen by APs
-------------------------------------------
AP-Name
-------
AP32
Router Mac 00:08:00:00:11:57 is Seen by APs
-------------------------------------------
AP-Name
-------
AP32
Router Mac 00:08:00:00:11:6e is Seen by APs
-------------------------------------------
AP-Name
-------
AP32
```

Command History

This command was introduced in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show wms rules

```
show wms rules
   config
   state
   summary
```

Description

Display the internal state and matching information of rules created using the ids ap-classification-rule change command.

Syntax

Parameter	Description
`config`	Display the following information for each AP classification rule. • name • ids • match-ssid • min-snr • max-snr • min-prcnt • max-prcnt • ssids • enabled • classify • conf-incr • flags • match-cnt
`state`	Display the following informatoin for each AP classification rule: • SSID Match Table • SSID Exclude Table • SNR Table • Probe Count Table
`summary`	Display an AP classification rules summary.

Usage Guidelines

Issue this command to view existing AP classification rules. AP classification rule configuration is performed only on a master controller. If AMP is enabled via the mobility-manager command, then processing of the AP classification rules is disabled on the master controller. A rule is identified by its ASCII character string name (32 characters maximum). The AP classification rules have one of the following specifications:

- SSID of the AP

- SNR of the AP
- Discovered-AP-Count or the number of APs that can see the AP

Example

The output in the example below shows that although two rules have been defined, neither have been enabled using the **ids ap-rule-matching rule-name <name>** command.

```
(host) (config) #show wms rules summary

AP Classification Rules Summary
-------------------------------
Parameter               Value
---------               -----
Num Rules               2
Num Active-Rules        0
Num SSID-to-match       0
Num SSID-to-exclude     0
Num SNR-bounds          0
Num Probe-Count-bounds  0
```

Command History

This command was introduced in ArubaOS 6.1

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

show wms system

```
show wms system
```

Description

Show the WMS system configuration and system state.

Syntax

No parameters.

Example

This example shows the WMS System Configuration and System State tables.

```
(host) #show wms system

System Configuration
--------------------
Key                         Value
---                         -----
max-threshold               0
max-rbtree-entries          0
max-system-wm               1000
system-wm-update-interval   8

System State
-------------
Key                 Value
---                 -----
Max Threshold       25000
Current Threshold   230
Total AP Count      228
Total STA Count     5
MAX RB-tree Count   50000
Total Tree Count    195
Poll Count(Max)     1(2)

Learned OUIs for Deployed APs
-----------------------------
OUI
---
00:1a:1e:00:00:00
```

Column	Description
Max Threshold	The maximum number of table entries allowed. If this table displays a zero (0), there is no configured limit. **NOTE:** If a configured maximum limit has reached, the controller will not create new WMS entries for monitored APs and monitored stations. If new APs are deployed after this limit is reached, those APs will not be marked as 'valid', which will impair the effectiveness of the Adaptive Radio Management feature. If there are new Rogue APs in the network, they will not be classified as a rogue.

Column	Description
`Current Threshold`	Current number of table entries.
`Total AP Count`	Total number of statistics entries for monitored APs in the AP table.
`Total STA Count`	Total number of statistics entries for monitored stations in the Station table.
`MAX RB-tree Count`	Maximum number of entries allowed in the statistics.
`Total Tree Count`	Total number of entries currently in the statistics tree. If this limit has been reached, the controller will not add entries with the RSSI information for APs, monitored APs and monitored clients that are seen by them.
`Poll Count (Max)`	Current and maximum poll counts.

The output of this command includes the following information:

Command History

This command was introduced in ArubaOS 3.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show wms wired-mac

```
show wms wired-mac
   gw-mac [<mac>]
   monitored-ap-wm <mac>
   prop-eth-mac
   reg-ap-oui
   summary
   system-gw-mac
   system-wired-mac
   wireless-device}
```

Description

Display a summary table of Wireless Management System (wms) wired MAC information. This command can display a list of APs aware of a specific gateway MAC address, or list the wired MAC addresses known to a single AP.

Syntax

Column	Description
`gw-mac <mac>`	Show Gateway Wired Mac Information Collected from the APs. If you include the optional **<mac>** MAC address parameter, the output of this command will show information for that single MAC address only.
`monitored-ap-wm <mac>`	Show Monitored AP Wired Mac Information Collected from the APs. If you include the optional **<mac>** MAC address parameter, the output of this command will show information for that single MAC address only.
`prop-eth-mac <mac>`	Show Wired Mac Information Collected from the APs. If you include the optional **<mac>** MAC address parameter, the output of this command will show information for that single MAC address only.
`reg-ap-oui <mac>`	Show Registered AP OUI Information Collected from the APs, including each registered OUI, and the time that OUI was last seen. If you include the optional **<mac>** MAC address parameter, the output of this command will show information for that single MAC address only
`summary`	Display a wired MAC summary that includes the number of each of the following MAC types: • Registered AP OUIs • Propagated Ethernet MACs. • Potential Wireless Device MACs • Monitored AP Wired MACs • System Wired MACs • System Gateway MACs

Column	Description
system-gw-mac	Show system gateway MAC information learned at the controller, including the age of each MAC address. If you include the optional **<mac>** MAC address parameter, the output of this command will show information for that single MAC address only.
system-wired-mac	Show system wired MAC information learned at the controller. If you include the optional **<mac>** MAC address parameter, the output of this command will show information for that single MAC address only.
wireless-device	Show Routers or potential wireless devices information, including the MAC address of the device, and the MAC address of the AP or controller that saw the device.

Example

This example shows the wired MAC summary.

```
(host) #show wms system

System Configuration
--------------------
Key                         Value
---                         -----
max-threshold               0
max-rbtree-entries          0
max-system-wm               1000
system-wm-update-interval   8

System State
-------------
Key                 Value
---                 -----
Max Threshold       25000
Current Threshold   230
Total AP Count      228
Total STA Count     5
MAX RB-tree Count   50000
Total Tree Count    195
Poll Count(Max)     1(2)

Learned OUIs for Deployed APs
-----------------------------
OUI
---
00:1a:1e:00:00:00
```

Command History

Version	Modification
ArubaOS 3.0	Command Introduced
ArubaOS 6.1	The **ap-name <ap-name>** parameter was deprecated, and the following parameters were introduced: • **gw-mac** • **monitored-ap-wm** • **prop-eth-mac** • **reg-ap-oui** • **summary** • **system-gw-mac** • **system-wired-mac** • **wireless-device**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

show ip interface brief

```
show ip interface brief
```

Description

View IP-related information on all interfaces in summary format.

Syntax

No parameters.

Example

```
(host) #show  ip interface brief

Interface                   IP Address / IP Netmask        Admin    Protocol
vlan 1                   172.16.0.254 / 255.255.255.0      up       up
vlan 2                      10.4.62.9 / 255.255.255.0      up       up
loopback                  unassigned / unassigned          up       up
mgmt                      unassigned / unassigned          down     down
```

The following table details the columns and content in the show command.

Column	Description
`Interface`	List the interface and interface identification, where applicable.
`IP Address /IP Netmask`	List the IP address and netmask for the interface, if configured.
`Admin`	States the administrative status of the interface. Enabled—up Disabled—down
`Protocol`	Status of the IP on the interface. Enabled—up Disabled—down

Command History

Release	Modification
ArubaOS 3.4	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Available in Config or Enable mode on master controllers.

shutdown

```
shutdown all
```

Description

This command disables all interfaces on the controller.

Usage Guidelines

This command stops all traffic through the physical ports on the controller. The console port remains active. Use this command only when you have physical access to the controller, so that you can continue to manage using the console port.

To shut down an individual interface, tunnel, or VLAN, use the `shutdown` option within the `interface` command. To restore the ports, use the `no shutdown` command.

Example

The following example shuts down all physical interfaces on the controller.

```
(host) (config)#shutdown all
```

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

snmp-server

```
snmp-server
   community <string>
   enable trap
   engine-id
   host IPv4/IPv6 Address|version {1 <name> udp-port <port>}|2c|{3 <name>} [inform] [interval
     <seconds>] [retrycount <number>] [udp-port <port>]}
   inform queue-length <size>
   source controller-ip
   stats
   trap enable|disable|{source [IPv4/IPv6 Address]}
   user <name> [auth-prot {md5|sha} <password>] [priv-prot {AES|DES} <password>]
```

Description

This command configures SNMP parameters.

Syntax

Parameter	Description	Range	Default
`community`	Sets the read-only community string.	—	—
`enable trap`	Enables sending of SNMP traps to the configured host.	—	disabled
`engine-id`	Sets the SNMP server engine ID as a hexadecimal number.	24 characters maximum	—
`host`	Configures the IPv4/IPv6 Address address of the host to which SNMP traps are sent. This host needs to be running a trap receiver to receive and interpret the traps sent by the controller.	—	—
`version`	Configures the SNMP version and security string for notification messages.	—	—
`inform`	Sends SNMP inform messages to the configured host.	—	disabled
`inform`	Specifies the length for the SNMP inform queue.	100-350	250
`stats`	Allows file-based statistics collection for server. The controller generates a file that contains statistics data used by server to display information in chart and graph formats. File-based statistics collection is transparent to the user and increases the efficiency of transferring information between the controller and server.		enabled

Parameter	Description	Range	Default
`trap`	Source IP address of SNMP traps.	—	disabled
`disable`	Disables an SNMP trap. You can get a list of valid trap names using the `show snmp trap-list` command.	—	—
`enable`	Enables an SNMP trap.	—	—
`source`	Enter the source IPv4/IPv6 Address address for sending traps.	—	—
`udp-port`	The port number to which notification messages are sent.	—	162
`user`	Configures an SNMPv3 user profile for the specified username.	—	—
`auth-prot`	Authentication protocol for the user, either HMAC-MD5-98 Digest Authentication Protocol (MD5) or HMAC-SHA-98 Digest Authentication Protocol (SHA), and the password for use with the designated protocol.	MD5/SHA	SHA
`priv-prot`	Privacy protocol for the user, either Advanced Encryption Standard (AES) or CBC-DES Symmetric Encryption Protocol (DES), and the password for use with the designated protocol.	AES/DES	DES

Usage Guidelines

This command configures SNMP on the controller only. You configure SNMP-related information for APs in an SNMP profile which you apply to an AP group or to a specific AP. To configure SNMP hostname, contact, and location information for the controller, use the **hostname**, **syscontact**, and **syslocation** commands.

Example

The following command configures an SNMP trap receiver:

```
(host) (config) #snmp-server host 191.168.1.1 version 2c 12345678
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.3.1	The **stats** parameter was introduced
ArubaOS 6.4	The **IPv6 Address** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

spanning-tree (Global Configuration)

```
spanning-tree
   [forward-time <value> | hello-time <value> | max-age <value> | priority <value> | vlan
   range <WORD>
```

RSTP is backward compatible with STP and is enabled by default. For ease of use, this command uses the spanning tree keyword.

Description

This command is the global configuration for the Rapid Spanning Tree Protocol (RSTP) and Per VLAN Spanning Tree (PVST+). See spanning-tree (Configuration Interface) for details on the RSTP (config-if) command.

Syntax

Parameter	Description	Range	Default
`forward-time`	Specifies the time, in seconds, the port spends in the listening and learning state. During this time, the port waits to forward data packets.	4-30	15 seconds
`hello-time`	Specifies the time, in seconds, between each bridge protocol data unit (BPDU) transmitted by the root bridge.	1-10	2 seconds
`max-age`	Specifies the time, in seconds, the root bridge waits to receive a hello packet before changing the STP topology.	6-40	20 seconds
`priority`	Set the priority of a bridge to make it more or less likely to become the root bridge. The bridge with the lowest value has the highest priority. When configuring the priority, remember the following: The highest priority bridge is the root bridge. The highest priority value is 0 (zero).	0-65535	32768
`vlan range <WORD>`	Enter the keywords **vlan range** followed by the range of VLAN iID's. Separate the VLAN IDs with a hyphen, comma or both to indicate the range. For example: 2-3 or 2,4,6 or 2-6,11	—	—

Usage Guidelines

This command configures the global RSTP settings on the controller and is backward compatible with past versions of ArubaOS using STP.

By default, all interfaces and ports on the controller run RSTP as specified in 802.1w and 802.1D. The default RSTP values can be used for most implementations.

Use the `no spanning-tree` command to disable RSTP.

Examples

The following command sets the time a port spends in the listening and learning state to 3 seconds:

```
spanning-tree forward-time 3
```

The following command sets the time the root bridge waits to transmit BPDUs to 4 seconds:

```
spanning-tree hello-time 4
```

The following command sets the time the root bridge waits to receive a hello packet to 30 seconds:

```
spanning-tree max-age 30
```

The following command sets the bridge priority to 10, making it more likely to become the root bridge:

```
spanning-tree priority 10
```

The follow command sets a spanning-tree VLAN range

```
spanning-tree vlan range 2-8,11
```

Command History

Release	Modification
ArubaOS 6.0	Added support for PVST+ and VLAN and VLAN Range
ArubaOS 3.4	Upgraded STP to RSTP with full backward compatibility
ArubaOS 1.0	Introduced the Spanning Tree Protocol (STP)

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Configuration (config)

spanning-tree mode

```
spanning-tree mode <rapid> | <rapid-pvst>
```

Description

Set the spanning tree mode to either Rapid Spanning Tree (802.1w) or PVST+ (Per VLAN Spanning Tree).

Syntax

Parameter	Description
rapid	Set the spanning tree mode to RSTP (Rapid Spanning Tree Protocol).
rapid-pvst	Set the spanning tree mode to PVST+ (Per VLAN Spanning Tree protocol)

Usage Guidelines

Once the spanning tree mode is set, you can configure RSTP or PVST+.

Command History

Release	Modification
ArubaOS 6.0	PVST+ added
ArubaOS 3.4	Upgraded STP to RSTP with full backward compatibility.

Command Information

Platform	Licensing	Command Mode
All platforms	Base operating system	Configuration mode (config) on master controllers

spanning-tree (Configuration Interface)

```
spanning-tree
   cost <value>
   point-to-point
   port-priority <value>
   portfast
   vlan <vlan-id>
           cost <value>
           port-priority <value>
   vlan range <WORD>
```

RSTP is backward compatible with STP and is enabled by default. For clarity, this RSTP command uses the spanning tree keyword.

Description

Dell's RSTP implementation interoperates with both PVST (Per VLAN Spanning Tree 802.1D) and Rapid-PVST (802.1w) implementation on industry-standard router/switches. Syntax

Parameter	Description	Range	Default
`cost <value>`	Enter the spanning tree path cost. Use the cost values to determine the most favorable path to a particular destination: the lower the cost, the better the path	1 - 65535	Default: Based on Interface type: • Fast Ethernet 10Mbs—100 • Fast Ethernet 100Mbs—19 • 1Gigabit Ethernet—4 • 10 Gigabit Ethernet—2
`point-to-point`	Set the interface to a point-to-point	n/a	Enabled
`port-priority <value>`	Change the spanning tree priority.	0 - 255	128
`portfast`	Change from blocking to forwarding	n/a	Disabled
`vlan <vlan-id>`	Enter the keyword **vlan** followed by the VLAN-ID	n/a	—

Parameter	Description	Range	Default
`cost <value>`	Enter th keyword cost followed by the cost value to change the interface's spanning tree path cost.	1 - 65535	
`port-priority <value>`	Change the spanning tree priority.	0 - 255	128
`vlan range <WORD>`	Enter the keywords **vlan range** followed by the range of VLAN iID's. Separate the VLAN IDs with a hyphen, comma or both to indicate the range. For example: 2-3 or 2,4,6 or 2-6,11	—	—

Usage Guidelines

Dell supports global instances of RSTP and PVST+. Therefore, the ports on industry-standard routers/switches must be on the default or untagged VLAN for interoperability with controllers.

ArubaOS supports RSTP on the following interfaces:

- FastEthernet IEEE 802.3—fastethernet
- Gigabitethernet IEEE 802.3—gigabitethernet
- Port Channel ID—port-channel

In addition to port state changes, RSTP introduces port roles for all the interfaces.

RSTP (802.1w) Port Role	Description
Root	The port that receives the best BPDU on a bridge.
Designated	The port can send the best BPDU on the segment to which it is connected.
Alternate	The port offers an alternate path, in the direction of root bridge, to that provided by bridge's root port.
Backup	The port acts as a backup for the path provided by a designated port in the direction of the spanning tree.

Example

The RSTP default values are adequate for most implementation. Use caution when making changes to the spanning tree values.

```
(host) (config-if) #spanning-tree cost 345

(host) (config-if) #spanning-tree point-to-point ?

(host) (config-if) #spanning-tree portfast ?
```

```
(host) (config-if) #spanning-tree vlan range 2-8,11
```

Related Commands

spanning-tree (Global Configuration)

Command History

Release	Modification
ArubaOS 6.0	Added support for PVST+ and VLAN and VLAN Range
ArubaOS 3.4	Upgraded STP to RSTP with full backward compatibility.
ArubaOS 1.0	Introduced the Spanning Tree Protocol (STP).

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Configuration Interface (config-if)

spanning-tree vlan range (PVST+)

```
spanning-tree vlan range <WORD>
[forward-time <value> | hello-time <value> | max-age <value> | priority <value>]
```

Description

Configure PVST+ on a range of VLANs.

Syntax

Parameter	Description	Range	Default
`<WORD>`	Enter a string representing the VLAN range	--	--
`forward-time`	Specifies the time, in seconds, the VLANs spends in the listening and learning state before transition to the forward state.	4-30	15 seconds
`hello-time`	Set the time interval, in seconds, between transmission of BPDUs.	1-10	2 seconds
`max-age`	Set the time interval for the PVST+ bridge to maintain configuration information before refreshing that information.	6-40	20 seconds
`priority`	Set the priority of a bridge to make it more or less likely to become the root bridge. The bridge with the lowest value has the highest priority. When configuring the priority, remember the following: The highest priority bridge is the root bridge. The highest priority value is 0 (zero).	0-65535	32768

Example

The following command sets the time the VLAN range 2-3 spends in the listening and learning state to 3 seconds:

```
spanning-tree vlan range 2-3 forward-time 3
```

The following command sets the time the VLAN range 2-3 waits to transmit BPDUs to 4 seconds:

```
spanning-tree vlan range 2-3 hello-time 4
```

The following command sets the time the VLAN range 2-3 waits to receive a hello packet to 30 seconds:

```
spanning-tree vlan range 2-3 max-age 30
```

The following command sets the VLAN range 2-3 priority to 10, making it more likely to become the root bridge:

```
spanning-tree vlan range 2-3 priority 10
```

Command History

Release	Modification
ArubaOS 6.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
All Platforms	Base operating system	Configuration Mode (config)

ssh

```
ssh disable_dsa | mgmt-auth {public-key [username/password] | username/password [public-key]}
```

Description

This command configures SSH access to the controller.

Syntax

Parameter	Description	Default
`disable_dsa`	Disables DSA authentication for SSH. Only RSA authentication is used.	—
`mgmt-auth`	Configures authentication method for the management user. You can specify username/password only, public key only, or both username/password and public key.	username/ password

Usage Guidelines

Public key authentication is supported using a X.509 certificate issued to the management client. If you specify public-key authentication, you need to load the client X.509 certificate into the controller and configure certificate authentication for the management user with the mgmt-user ssh-pubkey command.

Example

The following commands configure SSH access using public key authentication only:

```
(host) (config) #ssh mgmt-auth public-key
   mgmt-user ssh-pubkey client-cert ssh-pubkey cli-admin root
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.1	The **mgmt-auth** parameter was introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

ssh

```
ssh <user-at-host>
```

This command must be executed from the **enable** mode of the controller.

Description

This command initiate a remote SSH session from the controller to a remote host.

Syntax

Parameter	Description
`<user-at-host>`	Enter the remote user name and IP address in the **user@host** format.

Usage Guidelines

The command usage guidelines are as follows:

- This feature is supported from the SSH session of the controller only.
- There is an inactivity timeout for the CLI sessions. When an administrator initiates a remote session (inner) from the controller's SSH session (outer), and the remote session takes more time than the inactivity timeout session, the outer session times out although the inner session is active. The administrator has to log back in to the outer session once logged off from the inner session.
- Designated telnet client control keys do not work for remote telnet sessions. When an administrator initiates a remote telnet session (inner) from the controller's SSH session (outer), the designated telnet client control keys functions for the outer SSH session only. The administrator should designate unique control keys for each remote telnet sessions.

To end the remote host session, execute the **exit** command. The remote host displays the following message:

```
Connection closed by foreign host.
```

Example

The following command initiates a remote SSH session from the controller to a remote host:

```
(host) #ssh admin@192.0.2.1

Password: <enter remote host password>
```

The following command ends the remote host session:

```
(remote-host) #exit
Connection closed by foreign host.
(host) #
```

Command History

Version	Modification
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

sso idp-profile

```
sso idp-profile <idp profile name>
   clone
   idp <urlname> <url>
   no
```

Description

This command configures an SSO Identity Provider (IDP) profile for use with application Single Sign-On (SSO) with L2 Authentication.

Syntax

Parameter	Description
`clone <profile name>`	Copies the data from another SSO IDP profile
`idp <urlname> <url>`	Configures the name and URL of the controller's IDP server.
`no`	Deletes the command.

Usage Guidelines

This command is used to configure an SSO IDP profile, which establishes the name and URL of the IDP server that the controller uses for application

The Dell ClearPass Policy Manager is the only device that can act as an IDP server for application SSO with a Dell controller.

Example

```
sso idp-profile profile1
   idp url1 cppm128.arubanetworks.com/idp.login
```

Command History

Version	Modification
ArubaOS 6.4	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master controllers

stm

```
add-blacklist-client <macaddr>
kick-off-sta <macaddr> <bssid>
purge-blacklist-clients
remove-blacklist-client <macaddr>
```

Description

This command is used to manually disconnect a client from an AP or control the blacklisting of clients.

Syntax

Parameter	Description
`add-blacklist-client`	MAC address of the client to be added to the denial of service list.
`kick-off-sta`	When you use the kick-off-sta feature specify a client's MAC address and BSSID, the AP sends deauthorization frames to the station to disconnect it.
`<macaddr>`	MAC address of client to be disconnected.
`<bssid>`	The associated BSSID of the client to be disconnected.
`purge-blacklist-client`	Clear the entire client blacklist.
`remove-blacklist-client <macaddr>`	Specify the MAC address of a client to remove it from the denial of service list.

Usage Guidelines

When you blacklist a client, the client is not allowed to associate with any AP in the network. If the client is connected to the network when you blacklist it, a deauthentication message is sent to force the client to disconnect. The blacklisted client is blacklisted for the duration specified in the virtual AP profile. The client blacklist supports up to 4,000 individual client entries.

The controller retains the client blacklist in the user database, so the information is not lost if the controller reboots. When you import or export the controller's user database, the client blacklist will be exported or imported as well.

Example

The following command blacklists a client:

```
(host) #stm add-blacklist-client 00:01:6C:CC:8A:6D
```

Command History

Version	Modification
ArubaOS 1.0	Command introduced.
ArubaOS 6.0	The purge-client-blacklist parameter was introduced. The **start-trace** and **stop-trace** parameters are no longer functional.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master or local controllers

support

```
support
```

Description

This command, which should be used only in conjunction with Dell customer support, is for controller debugging purposes only.

Syntax

No parameters.

Usage Guidelines

This command is used by Dell customer support for debugging the controller. Do not use this command without the guidance of Dell customer support.

Example

The following command allows Dell customer support to debug the controller:

```
(host) #support
```

Command History

Version	Modification
ArubaOS 2.4	Command introduced as the **secret** command
ArubaOS 3.1	Command renamed to **support**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

syscontact

```
syscontact <syscontact>
```

Description

This command configures the name of the system contact for the controller.

Syntax

Parameter	Description
`syscontact`	An alphanumeric string that specifies the name of the system contact.

Usage Guidelines

Use this command to enter the name of the person who acts as the system contact or administrator for the controller. You can use a combination of numbers, letters, characters, and spaces to create the name. To include a space in the name, use quotation marks to enclose the alphanumeric string. For example, to create the system contact name Lab Technician 1, enter `"Lab Technician 1"` at the prompt.

To change the existing name, enter the command with a different string. The new name takes affect immediately. To unconfigure the name, enter `""` at the prompt.

Example

The following command defines **LabTechnician** as the system contact name:

```
(host) (config) #syscontact LabTechnician
```

Command History

This command was introduced in ArubaOS 3.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

syslocation

```
syslocation <syslocation>
```

Description

This command configures the name of the system location for the controller.

Syntax

Parameter	Description
`syslocation`	An alphanumeric string that specifies the name of the system location.

Usage Guidelines

Use this command to indicate the location of the controller. You can use a combination of numbers, letters, characters, and spaces to create the name. To include a space in the name, use quotation marks to enclose the text string.

To change the existing name, enter the command with a different string. To unconfigure the location, enter `""` at the prompt.

Example

The following command defines **SalesLab** as the location for the controller:

```
(host) # syslocation "Building 10, second floor, room 21E"
syscontact LabTechnician
```

Command History

This command was introduced in ArubaOS 3.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

tar

```
tar clean {crash|flash|logs}| crash{kernel} | flash | logs {tech-support|user}}
```

Description

This command archives a directory.

Syntax

Parameter	Description
`clean`	Removes a tar file
`crash`	Removes crash.tar
`flash`	Removes flash.tar.gz
`logs`	Removes logs.tar
`crash`	Archives the crash directory to crash.tar. A crash directory must exist.
`kernel`	Archives the kernel crash directory to kernel_crash.tar.
`flash`	Archives and compresses the /flash directory to flash.tar.gz.
`logs`	Archives the logs directory to log.tar.
`tech-support`	Optionally, technical support information can be included.
`user`	Runs the user specific tech-support command.

Usage Guidelines

This command creates archive files in Unix tar file format.

Example

The following command creates the log.tar file with technical support information:

```
tar logs tech-support
```

Command History

Version	Description
ArubaOS 3.0	Command introduced.
ArubaOS 6.4	The **kernel** parameter was introduced.
ArubaOS 6.4.2.5	The **show dot1x watermark history** was added as part of the **techsupport.log** file.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

telnet

```
telnet {cli|soe}
```

Description

Enable telnet to the controller or to an AP through the controller.

Syntax

Parameter	Description	Default
`cli`	Enable telnet using the CLI.	Disabled
`soe`	Enable telnet using Serial over Ethernet (SoE).	Disabled

Usage Guidelines

Use the **cli** option to enable telnet to the controller.

Use the **soe** option to enable telnet using the SoE protocol. This allows you to remotely manage an AP directly connected to the controller.

Example

The following example enables telnet to the controller using the CLI.

```
(host) (config) #telnet cli
```

Command History

The command was introduced in ArubaOS 1.0

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

telnet

```
telnet <user> <remote-host> [<port-num>]
```

This command must be executed from the **enable** mode of the controller.

Description

This command initiate a remote telnet session from the controller to a remote host.

Syntax

Parameter	Description
`<user>`	Enter the user name of the remote host.
`<remote-host>`	Enter the IP address of the remote host.
`<port-num>`	Enter the telnet port number of the remote host. This is an optional parameter.

Usage Guidelines

The command usage guidelines are as follows:

- This feature is supported from the SSH session of the controller only.
- There is an inactivity timeout for the CLI sessions. When an administrator initiates a remote session (inner) from the controller's SSH session (outer), and the remote session takes more time than the inactivity timeout session, the outer session times out although the inner session is active. The administrator has to log back in to the outer session once logged off from the inner session.
- Designated telnet client control keys do not work for remote telnet sessions. When an administrator initiates a remote telnet session (inner) from the controller's SSH session (outer), the designated telnet client control keys functions for the outer SSH session only. The administrator should designate unique control keys for each remote telnet sessions.

To end the remote host session, execute the **exit** command. The remote host displays the following message:

```
Connection closed by foreign host.
```

Example

The following command initiates a remote telnet session from the controller to a remote host:

```
(host) #telnet admin 192.0.2.1

User: <enter remote host username>
Password: <enter remote host password>
```

The following command ends the remote host session:

```
(remote-host) #exit
Connection closed by foreign host.
```

Command History

Version	Modification
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

threshold

```
threshold
   controlpath-cpu <percentage>
   controlpath-memory <percentage>
   datapath-cpu <percentage>
   no-of-APs <percentage>
   no-of-locals <percentage>
   total-tunnel-capacity <percentage>
   user-capacity <percentage>
   no ...
```

Description

This command configures controller capacity thresholds which, when exceeded, will trigger alerts.

Syntax

Parameter	Description
`controlpath-cpu <percentage>`	Set an alert threshold for controlpath CPU capacity. The <percentage> parameter is the percentage of the total controlpath CPU capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 80%.
`controlpath-memory <percentage>`	Set an alert threshold for controlpath memory consumption. The <percentage> parameter is the percentage of the total memory capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 85%.
`datapath-cpu <percentage>`	Set an alert threshold for datapath CPU capacity. The <percentage> parameter is the percentage of the total datapath CPU capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 30%.
`no-of-APs <percentage>`	The maximum number of APs that can be connected to a controller is determined by that controller's model type and installed licenses. Use this command to trigger an alert when the number of APs currently connected to the controller exceeds a specific percentage of its total AP capacity. The default threshold for this parameter is 80%.
`no-of-locals <percentage>`	Set an alert threshold for the master controller's capacity to support branch and local controllers.

Parameter	Description
	A master controller can support a combined total of 256 branch and local controllers. The <percentage> parameter is the percentage of the total master controller capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 80%.
`total-tunnel-capacity <percentage>`	Set an alert threshold for the controller's tunnel capacity. The <percentage> parameter is the percentage of the controller's total tunnel capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 80%
`user-capacity <percentage>`	Set an alert threshold for the controller's user capacity. The <percentage> parameter is the percentage of the total resource capacity that must be exceeded before the alert is sent. The default threshold for this parameter is 80%.

Usage Guidelines

The controller will send a *wlsxThresholdExceeded* SNMP trap and a syslog error message when the controller has exceeded a set percentage of the total capacity for that resource. A *wlsxThresholdCleared* SNMP trap and error message will be triggered if the resource usage drops below the threshold once again.

Example

The following command configures a new alert threshold for controlpath memory consumption:

```
(host) (config) #threshold datapath-cpu 90
```

If this threshold is exceeded then subsequently drops below the 90% threshold, the controller would send the following two syslog error messages.

```
Mar 10 13:13:58  nanny[1393]: <399816> <ERRS> |nanny|  Resource 'Control-Path Memory' has gone
above  90%  threshold, value : 93
Mar 10 13:16:58  nanny[1393]: <399816> <ERRS> |nanny|  Resource 'Control-Path Memory' has come
below  90%  threshold, value : 87
```

Command History

The command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

time-range

```
time-range <name> absolute [end <mm/dd/yyyy> <hh:mm>]|[start <mm/dd/yyyy> <hh:mm>]
   time-range <name> periodic
   Daily <hh:mm> to <hh:mm>
   Friday <hh:mm> to <hh:mm>
   Monday <hh:mm> to <hh:mm>
   Saturday <hh:mm> to <hh:mm>
   Sunday <hh:mm> to <hh:mm>
   Thursday <hh:mm> to <hh:mm>
   Tuesday <hh:mm> to <hh:mm>
   Wednesday <hh:mm> to <hh:mm>
   Weekday <hh:mm> to <hh:mm>
   Weekend <hh:mm> to <hh:mm>
   no ...
```

Description

This command configures time ranges.

Syntax

Parameter	Description
`<name>`	Name of this time range. You can reference this name in other commands.
`absolute`	Specifies an absolute time range, with a specific start and/or end time and date.
`periodic`	Specifies a recurring time range. Specify the start and end time and Daily, Weekday, Weekend, or the day of the week.
`no`	Negates any configured parameter.

Usage Guidelines

You can use time ranges when configuring session ACLs. Once you configure a time range, you can use it in multiple session ACLs.

Example

The following command configures a time range for daytime working hours:

```
(host) (config) #time-range working-hours periodic
   weekday 7:30 to 18:00
```

Command History

The command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Next Generation Policy Enforcement Firewall (PEFNG) license.	Config mode on master controllers

tracepath

```
tracepath <global-address>
```

Description

Traces the path of an IPv6 host.

Syntax

Parameter	Description
`<global-address>`	The IPv6 global address of the host.

Usage Guidelines

Use this command to identify points of failure in your IPv6 network.

Example

The following command traces the path of the specified IPv6 host.

```
(host) #tracepath 2005:d81f:f9f0:1001::14
```

Command History

The command was introduced in ArubaOS 6.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	User, Enable, and Config modes on local or master controllers

traceroute

```
traceroute <ipaddr>
   source
```

Description

Trace the route to the specified IP address.

Syntax

Parameter	Description
`<ipaddr>`	The destination IP address.
`source <ipaddr>`	Sets the source IP address through which packets are sent for tracing route.

Usage Guidelines

Use this command to identify points of failure in your network.

Example

The following command traces the route to the device identified by the IP address 10.1.2.3.

```
(host) (config) #traceroute 10.1.2.3
```

Command History

Release	Modification
ArubaOS 2.0	Command introduced
ArubaOS 6.3	Introduced **source** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	User, Enable, and Config modes on local or master controllers

trusted

```
trusted all
```

Description

This command makes all physical interfaces on the controller trusted ports.

Syntax

Parameter	Description
`all`	Makes all ports on the controller trusted.

Usage Guidelines

Trusted ports are typically connected to internal controlled networks. Untrusted ports connect to third-party APs, public areas, or any other network to which the controller should provide access control. When APs are attached directly to the controller, set the connecting port to be trusted.

By default, all ports on the controller are treated as trusted. You can use the **interface fastethernet** or **interface gigabitethernet** commands to make individual ports trusted.

Example

The following command makes all ports trusted:

```
(host) (config) #trusted all
```

Command History

The command was introduced in ArubaOS 2.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

tunnel-group

```
tunnel-group <tungrpname>
   mode {l2|l3)
   no
   preemptive-failover
   tunnel <tunnel-id>
```

Description

This command creates a tunnel-group to group a set of tunnels.

Syntax

Parameter	Description	Default
`mode {l2|l3}`	Set the type of tunnel-group.	l3
`no`	Negates any parameter configured.	—
`preemptive-failover`	When enabled, this option automatically redirects the traffic upon detecting an active tunnel with a higher precedence in the tunnel-group. When disabled, the traffic gets redirected to a higher precedence tunnel only when the tunnel carrying the traffic fails.	enabled
`tunnel <tunnel-id>`	Adds the specified tunnel ID to the tunnel group. The range is 1-16777215.	—

Usage Guidelines

Use this command to provide redundancy for L3 generic routing encapsulation (GRE) tunnels. This feature enables automatic redirection of the user traffic to a standby tunnel when the primary tunnel goes down.

To enable L3 GRE tunnel group, you must:

- configure a tunnel-group to group a set of tunnels.
- enable tunnel keepalives on all the tunnel interfaces assigned to the tunnel-group, and
- configure the session ACL with the tunnel-group as the redirect destination.

To enable L2 GRE tunnel group, you must:

- configure the member tunnel and add them to the appropriate VLAN.
- enable tunnel keepalives on the tunnel interface.
- configure the tunnel-group and set the group type to L2, and
- add the member tunnel to the group

You can configure up to 32 tunnel-groups on a controller with a maximum of 5 tunnels in each tunnel-group.

Example

The following set of commands create a tunnel-group with tunnel IDs 10 and 20 as the members:

```
(host)(config) #tunnel-group tgroup1
(host)(config-tunnel-group)# mode l3
(host)(config-tunnel-group)# tunnel 10
(host)(config-tunnel-group)# tunnel 20
(host)(config-tunnel-group)#preemptive-failover
```

Command History

Version	Modification
ArubaOS 6.3	Command introduced.
ArubaOS 6.4.2.3	The **mode** parameter was introduced.
ArubaOS 6.4.3.0	The tunnel ID limit was changed from 2147483647 to 16777215.

This command was introduced in ArubaOS 6.3

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config mode on master controllers

tunnel-loop-prevention

`tunnel-loop-prevention`

Description

This command prevents prevent forwarding loops between tunneled nodes on the controller.

The tunneled node loop prevention function appears on the WebUI as the "Enable Wired Access Concentrator Loop Prevention" option. It is located on the **Configuration > Advanced Services > Wired Access > Wired Access Concentration Configuration** pane.

Syntax

No parameters.

Usage Guidelines

This command prevents forwarding loops between tunnels from the tunneled nodes on the controller.

To allow a tunneled node-connected machine to communicate with another controller that is a connected client on the same subnet, you must enable **broadcast-filter-arp**.

Example

The following command prevents tunneled node forwarding:

```
(host) (config) #tunnel-loop-prevention
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The command name changed from `mux-loop-prevention` to `tunnel-loop-prevention`.

Related Commands

```
(host) (config) #show tunneled-node config
(host) (config) #show tunneled-node state
```

Command Information

Platforms	Licensing	Command Mode
All platforms	Requires the Policy Enforcement Firewall Next Generation (PEFNG)license.	Config mode on master controllers

tunnel-node-mtu

```
tunnel-node-mtu <mtu>
```

Description

This command configures the MTU of a tunneled node.

Syntax

Parameter	Description
`tnode-mtu`	Value of the MTU for the tunneled nodes Range: 1024 to 9216

Usage Guidelines

A Dell controller can operate as a Wi-Fi controller, terminating GRE tunnels from tunneled node switches. As a Wi-Fi controller, the controller does not perform full Wi-Fi switching functions. Instead, it accepts traffic from ports designated as tunneled node ports, packages this traffic inside a GRE tunnel, and forwards the traffic back to a central controller for processing.

Example

The following command configures the MTU of a controller for tunneled nodes:

```
(host) (config) #tunnel-node-mtu 1030
```

Command History

The command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

tunneled-node-address

```
tunneled-node-address <ipaddr>
```

Description

This command configures the IP address of a tunneled node server.

Syntax

Parameter	Description
`tunneled-node-address`	IP address of the controller. This is the loopback or IP address of the controller acting as a tunneled node controller.

Usage Guidelines

A Dell controller can operate as a Wi-Fi controller, terminating GRE tunnels from tunneled node switches. As a Wi-Fi controller, the controller does not perform full Wi-Fi switching functions. Instead, it accepts traffic from ports designated as tunneled node ports, packages this traffic inside a GRE tunnel, and forwards the traffic back to a central controller for processing.

Example

The following command configures the address of a controller for tunneled nodes:

```
(host) (config) #tunneled-node-address 192.168.1.245
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 6.1	The command name changed to `tunneled-node-port`.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

upgrade

```
upgrade
   verify
   target add|del all|{host <ipaddr>}|{net <subnet>}
   target purge
```

Description

Specify which local controllers using the centralized image upgrade feature should download the image from the image server, or verify the validity of an image on the upgrade server.

Syntax

Parameter	Description
`verify`	When you verify the upgrade image, the master controller attempts to connect to the file server, download the different images for each unique local controller and verify the validity of the image. Once controller images are verified as valid images by the master controller, the local controllers that are in the upgrade target list connect to the file server, download the appropriate image, and upgrade their software to the downloaded version
`target add|del`	Use this parameters to edit the list of controllers to be automatically upgraded with the centralized image upgrade feature. • **all**: Add all local controllers to or remove all local controllers from the target list • **host <ipaddr>**: IPv4 address of a local controller to be added to or removed from the target list • **net <subnet>**: Subnet of local controllers to be added to or removed from the target list
`target purge`	Clear the entire centralized image upgrade target list.

Usage Guidelines

This feature can be configured on a master controller only, and supports up to 100 simultaneous downloads.

Example

```
(host)(config)# upgrade target add all
```

Command History

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
all platforms	Base operating system	Config mode on master controllers

upgrade-profile

```
auto-reboot
filepath <filepath>
max-downloads <1-100>
no ...
password  <password>
protocol tftp|ftp|scp
serverip  <ipaddr>
upgrade-enable
username <username>
```

Description

The settings in this centralized image upgrade profile allow the master controller to automatically upgrade its associated local controllers by sending an image from an image server to one or more local controllers.

Syntax

Parameter	Description	Range	Default
`auto-reboot`	Include this parameter to allow the local controllers to reboot after they download their new images. **NOTE:** If you enable this option, local controllers will reboot without saving any changes to their current configuration. If you have any unsaved configuration changes on your local controller that you want to retain, do not enable this option.	-	Disabled
`filepath`	file path to the location on the image server where the image file(s) reside.	-	-
`max downloads`	Maximum number of local controllers that can simultaneously download a file from a file server. The centralized image downloading feature supports up to 100 simultaneous downloads. If this field is left blank, ArubaOS will use its default value of 10 downloads.	1-100	10
`password`	If you selected the FTP or SCP protocol for the Protocol type, enter the password that ArubaOS will use to connect to the image server.	-	-
`protocol`	Specify the protocol used to send the software upgrade from the image server to the local controller. • TFTP • FTP • SCP	-	TFTP
`serverip`	IP address of the image server.	-	-
`upgrade-enable`	Issue the **upgrade-profile upgrade-enable** command to enable the centralized image upgrade feature.	-	Disabled

Parameter	Description	Range	Default
`username <username>`	If you specified FTP or SCP for the **protocol** parameter field, enter the user name that ArubaOS uses to connect to the image server.	-	-

Usage Guidelines

This feature can be configured on a master controller only, and supports up to 100 simultaneous downloads.

Example

```
(host)(config)# upgrade-profile
   serverip 192.0.2.15
   filepath /tftpboot
   auto-reboot
   upgrade-enable
```

Command History

Release	Modification
ArubaOS 6.3	Command introduced

Command Information

Platforms	Licensing	Command Mode
all platforms	Base operating system	Config mode on master controllers

uplink

```
uplink
   cellular {apn <APN-Profile-Pid> <APN-name> | priority <prior>}
   disable
   enable
   health-check enable|disable|{ip {<fqdn>|<ip>}
   wired priority <1-255>
   wired vlan <id> priority <1-255>
```

Description

Manage and configure the uplink network connection.

Syntax

Parameter	Description	Range

`cellular`
`apn <APN-Profile-Pid> <APN-Name>`
`priority <prior>`
	Set the cellular uplink configuration. This parameter has two sub-parameters:
	• **apn:** The access point name (apn) of the cellular uplink.
	<APN-Profile-Pid>: Connection ID in modem dial string (e.g. "*99***x#", where "x" is the appropriate APN-profile-id number in dial-string)
	<APN-Name>: Access Point Name (e.g. internet). Contact your service provider if not known.
	• **priority:** Set the priority of the cellular uplink. By default, the cellular uplink is a lower priority than the wired uplink; making the wired link the primary link and the cellular link the secondary or backup link. Configuring the cellular link with a higher priority than your wired link priority will set your cellular link as the primary controller link.
		priority: 1-255

`enable`	Enable the uplink manager.	—
`disable`	Disable the uplink manager.	—
`health-check enable|disable|{ip {<fqdn>|<ip>}`	The **health-check** parameter is introduced to monitor the availability and quality of the connection to a master controller with the specified FQDN or IP address.	—
`wired priority <prior>`	Set the priority of the wired uplink. Each uplink type has an associated priority; wired ports having the highest priority by default.	1-255
`wired vlan <id>`	Define the VLAN identification (ID) of the uplink VLAN . A maximim of four wired VLANs can be defined	1-4094

Usage Guidelines

A controller that supports multiple 3G cellular uplinks in addition to its standard wired ports, provides redundancy in the event of a connection failure. If a controller's wired link cannot access the internet, the controller can fail over to a secondary cellular link and continue routing traffic.

The uplink manager is enabled by default on branch controller uplinks. Master or local (non-branch) controllers using the PAN portal feature must issue the **uplink enable** command to enable the uplink manager.

To view the health status of an uplink on a master or local controller, issue the command show uplink in the controller command-line interface. For a branch controller, the health status of its uplink connections are also displayed in the **Status** section of the **Dashboard > WAN** page of the branch controller WebUI.

Related Commands

Command	Description
pan-options	This command configures options to integrate a branch controller with a Palo Alto Networks (PAN) firewall.
show uplink	Displays uplink configuration details.

Command History

Release	Modification
ArubaOS 3.4	Command introduced
ArubaOS 6.0	The **wired priority** parameter is introduced.
ArubaOS 6.4.4.0	The **health-check** and **cellular apn** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

usb-printer (deprecated)

```
usb-printer [printer <printer-name> alias <alias-name>]
```

Description

This command allows you to provide an alias to USB printers connected too older controllers not supported by this version of ArubaOS.

Command History

Release	Modification
ArubaOS 3.4	Command introduced
ArubaOS 6.5	Command deprecated

usb reclassify

```
usb reclassify <address>
```

Description

Disconnect and reclassify an USB device.

Syntax

Parameter	Description
`<address>`	USB device address from the show usb command.

Usage Guidelines

There's no way to power off an USB port on a controller, but you can re-initialize the device using the usb reclassify command. This command removes the modem from the USB device list, then detects it via the USB table.

Command History

Introduced in ArubaOS 3.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

user-role

```
user-role <name>
   access-list {eth|mac|session} <acl> [ap-group <group>] [position <number>]
   bw-contract <name>[per-user] {downstream|upstream}
   bw-contract {app|appcategory}{downstream|upstream}|
   exclude {app|appcategory}
   bw-contract web-cc-category|web-cc-reputation <cc-name> <bwc-name> downstream|upstream
   captive-portal {<STRING>|check-for-accounting}
   dialer <name>
   dpi
   max-sessions <number>
   no ...
   policer-profile <profile>
   pool {l2tp|pptp} <name>
   qos-profile <profile>
   reauthentication-interval [<minutes>|<seconds>]
   registration-role
   session-acl <string> [ap-group <group>] [position <number>]a
   sso <profile>
   stateful-kerberos <profile>
   stateful-ntlm <ntlm_profile_name>
   traffic-control-profile <STRING>
   via <profile>
   vlan {VLAN ID|VLAN name}
   voip-profile <profile>
   web-cc disable
   wispr <wispr_profile_name>
```

Description

This command configures a user role.

Syntax

Parameter	Description	Range	Default
`<name>`	Name of the user role.	—	—
`access-list`	Type of access control list (ACL) to be applied: **eth:** Ethertype ACL, configured with the **ip access-list eth** command. **mac:** MAC ACL, configured with the **ip access-list mac** command. **session:** Session ACL, configured with the **ip access-list session** command.	—	—

Parameter	Description	Range	Default
`<acl>`	Name of the configured ACL.	–	–
`ap-group`	(Optional) AP group to which this ACL applies.	—	—
`position`	(Optional) Position of this ACL relative to other ACLs that you can configure for the user role. 1 is the top.	—	(last)
`bandwidth-contract`	Name of a bandwidth contract or rate limiting policy configured with the **aaa bandwidth-contract** command. The bandwidth contract must be applied to either downstream or upstream traffic.	—	—
`app`	Name of the application bandwidth contract configured for the user role. The bandwidth contract must be applied to either downstream or upstream traffic. **NOTE:** For a complete list of supported applications, issue the command **show dpi application all**.	–	–
`appcategory`	Name of the application category bandwidth contract configured for the user role. The bandwidth contract must be applied to either downstream or upstream traffic. **NOTE:** For a complete list of supported applications, issue the command **show dpi application category all**.	–	–
`web-cc-category|web-cc-reputation <cc-name> <bwc-name>`	Apply a bandwidth conract to the specified web content category or reputation	Available reputation categories are:	–

Parameter	Description	Range	Default
	level. Bandwidth contracts can be applied to user-defined web content categories created using the web-cc command. The five web content reputation levels are predefined in ArubaOS. **NOTE:** bandwidth contracts applied to a web content category or reputation will not be enforced unless web content classification is enabled using the **firewall web-content-classification** command.	• high-risk • low-risk • moderate-risk • suspicious • trustworthy	
`exclude app|appcategory`	Excludes an application or application category from being configured as a bandwidth contract.	–	–
`downstream`	Applies the bandwidth contract to traffic from the controller to the client.	—	—
`per-user`	Specifies that bandwidth contract is assigned on a per-user basis instead of a per-role basis. For example, if two users are active on the network and both are part of the same role with a 500 Kbps bandwidth contract, then each user is able to use up to 500 Kbps.	—	(per role)
`upstream`	Applies the bandwidth contract to traffic from the client to the controller.	—	—
`captive-portal <STRING>`	Name of the captive portal profile configured with the **aaa authentication captive-portal** command.	—	—

Parameter	Description	Range	Default
check-for-accounting	If disabled, RADIUS accounting is done for an authenticated users irrespective of the captive-portal profile in the role of an authenticated user. If enabled, accounting is not done as long as the user's role has a captive portal profile on it. Accounting will start when Auth/XML-Add/CoA changes the role of an authenticated user to a role which doesn't have captive portal profile.	–	enabled
dialer	If VPN is used as an access method, name of the VPN dialer configured with the **vpn-dialer** command. The user can login using captive portal and download the dialer. The dialer is a Windows application that configures the VPN client.	—	—
dpi	Role specific DPI configuration.	–	–
disable	Disable role specific DPI configuration.	–	–
max-sessions	Maximum number of datapath sessions per user in this role.	0-65535	65535
no	Negates any configured parameter.	—	—
policer-profile	Applies a policer profile to the user role.	—	—
pool	If VPN is used as an access method, specifies the IP address pool from which the user's IP address is assigned:	—	—

Parameter	Description	Range	Default
	l2tp: When a user negotiates a Layer-2 Tunneling Protocol (L2TP)/ IPsec session, specifies an address pool configured with the **ip local pool** command. pptp: When a user negotiates a Point-to-Point Tunneling Protocol (PPTP) session, specifies an address pool configured with the **pptp ip local pool** command.		
`<name>`	Name of the L2TP or PPTP pool to be applied.	—	—
`qos-profile`	Applies a QOS profile to the user role.	—	—
`reauthentication-interval`	Interval, in minutes or seconds, after which the client is required to reauthenticate.	• 0-4096 in minutes • 0-245760 in seconds	0 (disabled)
`registration-role`	If enabled, a user is forced to do MAC-based authentication every time the user connects to the network.	—	disabled
`session-acl <string>`	Session ACL configured with the **ip access-list session** command. You can specify both IPv4 and IPv6 ACLs.	—	—
`ap-group`	(Optional) AP group to which this ACL applies.	—	—
`position`	(Optional) Position of this ACL relative to other ACLs that you can configure for the user role. 1 is the top.	—	(last)
`sso`	Applies an SSO profile to the user role.	—	—

Parameter	Description	Range	Default
`statefule-kerberos`	Applies a stateful Kerberos profile to the user role.	—	—
`stateful-ntlm`	Apply stateful NTLM authentication to the specified user role		
`traffic-control-profile <STRING>`	Apply the Skype4b traffic control priority profile to the user-role. **NOTE:** For the string value, enter the profile name that you created using the **app skype4b traffic-control** command.	—	—
`via`	Applies a VIA connection profile to the user role.	—	—
`vlan`	Identifies the VLAN ID or VLAN name to which the user role is mapped. This parameters works only when using Layer-2 authentication such as 802.1X or MAC address, ESSID, or encryption type role mapping because these authentications occur before an IP address is assigned. If a user authenticates using a Layer-3 mechanism such as VPN or captive portal this parameter has no effect. **NOTE:** VLAN IDs and VLAN names cannot be listed together.	—	—
`voip-profile`	Applies a VOIP profile to the user role.	—	—

Parameter	Description	Range	Default
`web-cc disable`	Disable web content classification for this user role. User role bandwidth contracts associated with web content classification categories and reputation types will not enforced unless web content classification is enabled using the **firewall web-content-classification** command.	—	—
`wispr`	Apply WISPr authentication to the specified user role.	—	—

Usage Guidelines

Every client in a user-centric network is associated with a user role. All wireless clients start in an initial role. From the initial role, clients can be placed into other user roles as they pass authentication.

Example

The following command configures a user role:

```
(host) (config) #user-role new-user
   dialer default-dialer
   pool pptp-pool-1
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.4.1	The **stateful-ntlm** and **wispr** parameters were introduced.
ArubaOS 6.1	The **ipv6 session-acl** parameter was removed. The **session-acl** parameter is common for both IPv4 and IPv6 ACLs.
ArubaOS 6.4	The **bandwidth-contract app**, **bandwidth-contract appcategory**, **bandwidth-contract exclude**, **traffic-control-profile**, and **sso** parameters were introduced.
ArubaOS 6.4.1.0	The **check-for-accounting** parameter was introduced.
ArubaOS 6.4.2.0	The **web-cc-category**, **web-cc-reputation** and **web-cc disable** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license.	Config mode on master controllers

valid-network-oui-profile

```
valid-network-oui-profile
   no
   oui <oui>
```

Description

This command allows you to add a new OUI to the controller

Syntax

Parameter	Description	Range	Default
`no`	Negates any configured parameter.	—	—
`oui <oui>`	The new OUI to be added. Use the aa:bb:cc format to input the new OUI.	—	—

Usage Guidelines

This command adds a new OUI to the controller. The new OUI must be entered in a aa:bb:cc format.

Example

The following command adds a new OUI to the controller.

```
(host) (config) #valid-network-oui-profile
(host) (Valid Equipment OUI profile) #
(host) (Valid Equipment OUI profile) #oui 00:11:22
This should only be used when adding equipment with a new OUI.  Are you sure you
want to proceed? [y/n]: y
```

Command History

Release	Modification
ArubaOS 5.0	Command introduced

Command Information

Platforms	Licensing	Command Mode
Available on all platforms	Base operating system	Config mode on master controllers

vlan-bwcontract-explist

```
vlan-bwcontract-explist mac <mac>
```

Description

Use this command to add entries to or remove entries from the MAC exception list for bandwidth contracts on broadcast/multicast traffic.

Syntax

Parameter	Description
`<mac>`	MAC address of a protocol that should be added to or removed from the exception list for bandwidth contracts.

Usage Guidelines

Bandwidth contracts on a VLAN can limit broadcast and multicast traffic. ArubaOS version 6.0 and later includes an internal exception list to allow broadcast and multicast traffic using the VRRP, LACP, OSPF, PVST and STP protocols. To remove per-vlan bandwidth contract limits on an additional broadcast or multicast protocol, add the MAC address for that broadcast/multicast protocol to the Vlan Bandwidth Contracts MAC Exception List.

Example

The following command adds the MAC address for CDP (Cisco Discovery Protocol) and VTP (Virtual Trunking Protocol to the list of protocols that are not limited by VLAN bandwidth contracts.

```
(host) (config) #vlan-bwcontract-explist mac 01:00:0C:CC:CC:CC
```

Command History

Command introduced in ArubaOS 6.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master or local controllers

vlan-name

```
vlan-name <name> [assignment {even|hash}]
```

Description

This command creates a named VLAN on the controller and given an assignment type.

Syntax

Parameter	Description	Range
`<name>`	Name of the VLAN.	1–32 characters
`assignment`	Sets the assignment type. This determines how a VLAN assignment is handled by the controller.	—
`even`	Sets the assignment type as even.The Even assignment type is based on an even distribution of VLAN pool assignments.	—
`hash`	Sets the assignment type as hash. The hash type means that the VLAN assignment is based on the station MAC address.	—

Usage Guidelines

Create a named VLAN so you can set up a VLAN pool. A VLAN pool consists of a set of VLAN IDs which are grouped together to efficiently manage multi-controller networks from a single location.

VLAN pooling should *not* be used with static IP addresses.

The Even VLAN assignment type maintains a dynamic latest usage level of each VLAN ID. Therefore, as users age out, the number of available addresses increases. This leads to a more even distribution of addresses.

The Even type is only supported in tunnel and decrypt tunnel forwarding modes. It is not supported in split or bridge modes and it is not allowed for VLAN pools that are configured directly under a virtual AP. It can only be used under named VLANs. If a VLAN is given an Even assignment in bridge mode, a message displays indicating that the Hash assignment is automatically used instead to retrieve the VLAN ID.

L2 Mobility is not compatible with the existing implementation of the Even VLAN pool assignment type.

Example

The following command creates a VLAN named **mygroup** with the assignment type “even” on the controller:

```
(host) (config) #vlan-name mygroup assignment even
```

Related Commands

```
(host) (config) #show vlan
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.4	The **pool** parameter was introduced.
ArubaOS 6.2	The **assignment** parameter was introduced along with the **even** and **hash** options.
ArubaOS 6.3	The **pool** parameter was deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

vlan

```
vlan <id> [<description>] |[<name> <vlan-ids>]|[range <range>]|[wired aaa-profile <profile>]
```

Description

This command creates a VLAN ID or a range of VLAN IDs on the controller.

Syntax

Parameter	Description	Range	Default
`<id>`	Identification number for the VLAN.	2-4094	1
`<description>`	Description of a VLAN ID.	1-32 characters; cannot begin with a numeric character	VLAN000x, where x is the ID number.
`<name>`	(Optional) Identification name of the VLAN. The VLAN name was created using the **vlan-name** command.	1-32 characters; a name cannot begin with a numeric character	VLAN<id>
`<vlan-ids>`	(Optional) List of VLAN IDs that are associated with this VLAN. If two or more IDs are listed, the VLAN needs to specified first as a VLAN pool using the **vlan-name** command.	Existing VLAN IDs	1
`range <range>`	Create a range of multiple VLAN IDs by specifying the beginning and ending VLAN ID separated by a hyphen. For example, 55-58	2-4094	—
`wired aaa-profile <profile>`	Assign an AAA profile to a VLAN to enable role-based access for wired clients connected to an untrusted VLAN or port on the controller. This parameter applies to wired clients only. Note that this profile will only take effect if the VLAN and/or the port on the controller is untrusted. If both the port and the VLAN are trusted, no AAA profile is assigned.	—	—

Usage Guidelines

Use the **interface vlan** command to configure the VLAN interface, including an IP address. Use the **vlan-name** command to create a named VLAN to set up a VLAN pool. A VLAN pool consists of a set of VLAN IDs which are grouped together to efficiently manage multi-controller networks from a single location.

To enable role-based access for wired clients connected to an untrusted VLAN and/or port on the controller, you must use the **wired aaa-profile** parameter to specify the wired AAA profile you would like to apply to that VLAN. If you do not specify a per-VLAN wired AAA profile, traffic from clients connected to an untrusted wired port or VLAN will use the global wired AAA profile, if configured.

Example

The following command creates VLAN ID 27 with the description **myvlan** on the controller.

```
(host) (config) #vlan 27 myvlan
```

The following command associates the VLAN IDs 5, 12 and 100 with VLAN guestvlan on the controller.

```
vlan guestvlan 5,12,100
```

The following command creates VLAN IDs 200-300, 302, 303-400.

```
(host) (config) #vlan range 200-300,302, 303-400
```

Related Commands

Command	Description
show vlan	This command shows a configured VLAN interface number, description and associated ports
aaa authentication wired	This command configures authentication for a client device that is directly connected to a port on the controller.

Command History

Release	Modification
ArubaOS 3.0	Command available.
ArubaOS 3.4	**vlan-ids** parameter introduced.
ArubaOS 3.4.1	**vlan range** parameter introduced.
ArubaOS 6.0	**wired aaa-profile** parameter introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

voice alg-based-cac

```
voice alg-based-cac
   disable
   enable
```

Description

This command is used to enable or disable VoIP signaling based Call Admission Control (CAC).

Syntax

Parameter	Description
`disable`	Disable VoIP signaling based CAC.
`enable`	Enable VoIP signaling based CAC.

Usage Guidelines

When call admission control in the VoIP CAC profile is enabled along with voice ALG based CAC, the controller does call admission control based on VoIP signaling and Traffic Specification (TSpec) messages (if handset supports TSpec), with precedence given to TSpec messages. When call admission control in the VoIP CAC profile is enabled while the voice ALG based CAC is disabled, the controller does call admission control based on TSpec signaling messages. If the handset does not support TSpec, call admission control is not applied.

Example

The following example disables VoIP signaling based CAC:

```
(host) (config) #voice alg-based-cac disable
```

Command History

Version	Description
ArubaOS 6.2	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

voice dialplan-profile

```
voice dialplan-profile <profile>
   clone <source>
   dialplan {<sequence> <pattern> <action>}
   no...
```

Description

This command allows you to create a dial plan profile and configure dial plans to the profile.

Syntax

Parameter	Description
`<profile>`	Name of this instance of the dial plan profile.
`clone`	Name of the existing dial plan profile from which parameter values are copied.
`dialplan`	Configures a dialplan with the sequence, pattern, and action specified for the profile. You can configure upto 20 dialplans for a profile.
`<sequence>`	A number that positions the dial plan in the list of dial plans configured in the controller. The range is 100 - 65535.
`<pattern>`	A digit pattern or the number of digits that will be dialed by the user. You can specify the digit pattern using 'X', 'Z', 'N', '[ ]' and '.'. • X is a wild card that represents any character from 0 to 9. • Z is a wild card that represents any character from 1 to 9. • N is a wild card that represents any character from 2 to 9. • [ ] is a wild card that represents the number or the range specified in the brackets. • . (period) is a wild card that represents any-length digit strings.
`<action>`	A prefix code that is automatically prefixed to the dialed number. This is specified as <prefix-code>%e. Examples of dial plans are: • 9%e: The number 9 is prefixed to the dialed number. • 91%e: The number 91 is prefixed to the dialed number.

Usage Guidelines

You can configure dial plans on the controller that are required by the local EPABX system to provide outgoing PSTN call facility from a SIP device.

Dial plan can be configured only for SIP over UDP.

Example

The following command creates a dial plan for the dial plan profile, *local*:

```
(host) (config) #voice dialplan-profile local
(host) (Dialplan Profile "local") #dialplan  300 Z. 91%e
```

Command History

Version	Description
ArubaOS 6.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

voice facetime

```
voice facetime
   no
   pattern <pattern>
```

Description

This command configures a pattern that is matched against the User-Agent field of the SIP messages to determine if the session is a Facetime session.

Syntax

Parameter	Description
`no`	Delete or negate a previously-entered configuration or parameter.
`pattern <pattern>`	Enter a pattern text to be searched in the user-agent field of the SIP signaling message header.

Usage Guideline

The controller can determine if the media session is a Facetime session by searching the presence of a pattern in the user-agent field of the SIP signaling message header. Apple refers the internal name of Facetime session as "Viceroy". "Viceroy" is the user-agent string of the SIP signaling message header. A provision to configure this string is available in the controller in case a new version of Apple Facetime uses a different user-agent string other than "Viceroy".

Do not configure a new pattern unless a new version of the Apple Facetime uses a different user-agent string other than "Viceroy". Contact Dell Technical Support for more information.

Command History

Version	Description
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

voice logging

```
voice logging
   client mac <client mac>
   no ...
```

Description

This command allows you to enable logging for a voice client.

Syntax

Parameter	Description
`client mac`	MAC address of the voice client to be enabled for voice logging.

Usage Guidelines

You can enable voice logging for a specific voice client based on the MAC address of the client to troubleshoot any voice issues.

Example

The following command enables voice logging on the client with the MAC address 11:22:33:44:55:67:

```
(host) (config) #voice logging
(host)(VoIP Logging) #client-mac 11:22:33:44:55:67
```

Command History

Version	Description
ArubaOS 6.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

voice real-time-config

```
voice real-time-config
   config-enable
   no...
```

Description

This command enables the controller to analyze the call quality of the voice calls based on the RTP media streams.

Syntax

Parameter	Description	Default
`config-enable`	Enables the controller to analyze the call quality of the voice calls based on the RTP media streams.	enabled

Usage Guidelines

You can enable the controller to compute and display the call quality parameters such as Jitter, delay, packet loss, and R-value directly from the RTP media stream of the voice calls. **config-enable** enables the controller to analyze the call quality of the voice calls based on the RTP media streams.

Example

The following command enables the controller to analyze the RTP media streams for call quality reports:

```
(host) (config) #voice real-time-config
(host) (Configure Real-Time Analysis) #config-enable
```

Command History

Version	Description
ArubaOS 6.0	Command introduced.
ArubaOS 6.4.3.0	The default value was changed to **enabled**.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

voice rtcp-inactivity

```
voice rtcp-inactivity {enable | disable}
```

Description

This command enables or diables the RTCP inactivity timer.

Syntax

Parameter	Description
`enable`	Enables the RTCP inactivity timer.
`disable`	Disables the RTCP inactivity timer.

Usage Guidelines

You can enable the RTCP inactivity timer to clear a voip session if an on-hold client moves out of the coverage area.

Example

The following command enables the RTCP inactivity timer:

```
(host) (config) #voice rtcp-inactivity enable
```

Command History

Version	Description
ArubaOS 5.0	The **rtcp-inactivity** parameter was introduced to the `voip` command.
ArubaOS 6.0	This was part of the `voip` command in the earlier version. `voip` command is now deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

voice sip

```
voice sip
   dialplan-profile <dial-plan profile>
   no...
   session-expiry <session-expiry>
   session-timer
```

Description

This command allows you to enable SIP session timer and associate a dial plan profile to the SIP ALG.

Syntax

Parameter	Description	Default
`dial-plan profile`	Name of the existing Dial plan profile to be associated to the SIP ALG.	_
`session-expiry`	Timeout value in seconds for the session timer. The range is 240 - 1200 seconds.	300 sec
`session-timer`	If enabled, the SIP session is terminated when no session refresh request is received within the timeout value.	disabled

Usage Guidelines

You can configure the SIP settings such as enabling the session timer and associating a dial plan profile to the SIP ALG. **session-timer** acts as a keep alive mechanism for the SIP sessions using the periodic session refresh requests from the user agents. The interval for the session refresh requests is determined through a negotiation mechanism. If a session refresh request is not received within the negotiated interval, the session is terminated. **session-expiry** is the timeout interval of the session timer configured on the SIP ALG.

Example

The following command enables session timer on the SIP ALG:

```
(host) (config) #voice sip
(host)(SIP settings) #session-timer
```

The following command sets the timeout value of the session timer to 400 seconds on the SIP ALG:

```
(host)(SIP settings) #session-expiry 400
```

The following command associates the dial plan profile, *default* to the SIP ALG:

```
(host)(SIP settings) #dialplan-profile default
```

Command History

Version	Description
ArubaOS 6.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

voice sip-midcall-req-timeout

```
voice sip-midcall-req-timeout {enable | disable}
```

Description

This command enables or diables the SIP mid-call request timer.

Syntax

Parameter	Description
`enable`	Enables the SIP mid-call request timer.
`disable`	Disables the timer.

Usage Guidelines

You can enable the SIP mid-call request timer on the controller to clear the voip session if there is no response to a SIP mid-call request.

Example

The following command enables the SIP mid-call request timer:

```
(host) (config) #voice sip-mid-call-req-timeout enable
```

Command History

Version	Description
ArubaOS 5.0	The **sip-midcall-req-timeout** parameter was introduced to the `voip` command.
ArubaOS 6.0	This was part of the `voip` command in the earlier version. `voip` command is now deprecated.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

voice wificalling

```
voice wificalling
   dns-pattern <dns-pattern> service-provider <service-provider>
   enable
   no
```

Description

This command configures Wi-Fi Calling on the controller.

Syntax

Parameter	Description
`dns-pattern <dns-patter> service-provider <service-provider>`	**dns-pattern**–Configure the DNS pattern for the carrier. A maximum of 10 DNS patterns can be configured. DNS patterns for known carriers are configured by default. Default built-in patterns are: • SmarTone - epdg.epc.mnc006.mcc454.pub.3gppnetwork.org • T-mobile - ss.epdg.epc.mnc260.mcc310.pub.3gppnetwork.org • Sprint - primgw.vowifi2.spcsdns.net • Verizon - wo.vzwwo.com • 3 HK - wlan.three.com.hk • ATT - epdg.epc.att.net If the ePDG FQDN of the carrier does not match with the default patterns, use this option to configure the DNS pattern for the carrier. **service-provider**–Service provider name for enhanced visibility.
`enable`	Enable the Wi-Fi Calling ALG. The ALG is enabled by default.
`no`	Delete or negate a previously-entered configuration or parameter.

Example

The following command enables Wi-Fi Calling and configures a DNS pattern for the carrier:

```
(host) (config) #voice wificalling
(host) (WiFiCalling Configuration) #enable
(host) (WiFiCalling Configuration) #dns-pattern att.net service-provider ATT
```

Command History

Version	Description
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	This command requires the PEFNG license	Config mode on master controller

vpdn group l2tp

```
vpdn group l2tp
   client configuration {dns|wins} <ipaddr1> [<ipaddr2>]
   disable|enable
   l2tp tunnel hello <seconds>
   no ...
   ppp authentication {CACHE-SECURID|CHAP|EAP|MSCHAP|MSCHAPv2|PAP}
   ppp securid cache <minutes>
```

Description

This command configures an L2TP/IPsec VPN connection.

Syntax

Parameter	Description	Range	Default
`client configuration`	Configures parameters for the remote clients.	—	—
`dns`	Configures a primary and optional secondary DNS server.	—	—
`wins`	Configures a primary and optional secondary WINS server.	—	—
`disable|enable`	Disables or enables termination of L2TP clients.	—	enabled
`l2tp tunnel hello`	Configures L2TP tunneling hello timeout, in seconds.	10-1440	60 seconds
`no`	Negates any configured parameter.	—	—
`ppp authentication`	Enables the protocols for PPP authentication. This list should match the L2TP configuration configured with the **vpn-dialer** command on the controller.	—	—
`CACHE-SECURID`	The controller caches Secure ID tokens so that the user does not need to reauthenticate each time a network connection is lost.	—	—
`CHAP`	Use CHAP with PPP authentication.	—	—
`EAP`	Use EAP-TLS with PPP authentication. Specify this protocol for Windows IPsec VPN clients that use Common Access Card (CAC) Smart Cards that contain user information and digital certificates.	—	—
`MSCHAP`	Use MSCHAP with PPP authentication.	—	—
`MSCHAPv2`	Use MSCHAPv2 with PPP authentication. This is the default for L2TP	—	—

Parameter	Description	Range	Default
PAP		—	—
ppp securid	If CACHE-SECURID is configured for PPP authentication, this specifies the time, in minutes, that the token is cached.	15-10080	1440 minutes

Usage Guidelines

L2TP/IPsec relies on the PPP connection process to perform user authentication and protocol configuration. You specify the protocol used for PPP authentication and whether SecureID tokens are cached on the controller. Client addresses are assigned from a pool configured with the **ip local pool** command.

Example

The following command configures virtual private dial-in networking:

```
(host) (coinfig) #vpdn group l2tp
  ppp authentication PAP
  client configuration dns 10.1.1.2
  client configuration wins 10.1.1.2
```

Command History

The command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

vpdn group pptp

```
vpdn group pptp
   client configuration {dns|wins} <ipaddr1> [<ipaddr2>]
   disable|enable
   no ...
   ppp authentication {MSCHAP|MSCHAPv2}
   pptp echo <seconds>
```

Description

This command configures a PPTP VPN connection.

Syntax

Parameter	Description	Range	Default
`client configuration`	Configures parameters for the remote clients.	—	—
`dns`	Configures a primary and optional secondary DNS server.	—	—
`wins`	Configures a primary and optional secondary WINS server.	—	—
`disable|enable`	Disables or enables termination of PPTP clients.	—	enabled
`no`	Negates any configured parameter.	—	—
`ppp authentication`	Enables the protocols for PPP authentication. This list should match the PPTP configuration configured with the **vpn-dialer** command on the controller.	—	—
`MSCHAP`	Use MSCHAP with PPP authentication.	—	—
`MSCHAPv2`	Use MSCHAPv2 with PPP authentication. This is the default for L2TP	—	—
`pptp echo`	Time, in seconds, that the controller waits for a PPTP echo response from the client before considering the client to be down. The client is disconnected if it does not respond within this interval.	10-300	60 seconds

Usage Guidelines

PPTP connections require user-level authentication through a PPP authentication protocol (MSHCAPv2 is the currently-supported method.) Client addresses are assigned from a pool configured with the **pptp** command.

Example

The following command configures virtual private dial-in networking:

```
vpdn group pptp
   ppp authentication MSCHAPv2
   client configuration dns 10.1.1.2
   client configuration wins 10.1.1.2
```

Command History

The command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

vpn-dialer

```
vpn-dialer <name>
   enable dnetclear|l2tp|pptp|securid_newpinmode|wirednowifi
   ike {authentication {pre-share <key>|rsa-sig}|encryption {3des|des}|
    group {1|2}|hash {md5|sha}|lifetime [<seconds>]}
   ipsec {encryption {esp-3des|esp-des}|hash {esp-md5-hmac|esp-sha-hmac}|
    lifetime [<seconds>]|pfs {group1|group2}}
   no {enable...|ipsec...|ppp...}
   ppp authentication {cache-securid|chap|mschap|mschapv2|pap}
```

Description

This command configures the VPN dialer.

Syntax

Parameter	Description	Range	Default
`<name>`	Name that identifies this VPN dialer configuration.	—	—
`enable`	Enables dialer operations:	—	—
`dnetclear`	Enables “split tunneling” functionality so that traffic destined for the internal network is tunneled while traffic for the Internet is not. This option is not recommended for security reasons.	—	disabled
`l2tp`	Allows the dialer to negotiate a Layer-2 Tunneling Protocol (L2TP)/IPsec tunnel with the controller.	—	enabled
`pptp`	Allows the dialer to negotiate a Point-to-Point Tunneling Protocol (PPTP) with the controller.	—	disabled
`securid_newpinmode`	Supports SecurID new and next pin mode.	—	disabled
`wirednowifi`	Allows the dialer to detect when a wired network connection is in use, and shuts down the wireless interface.	—	disabled
`ike`	Configures internet key exchange (IKE) protocol. This configuration must match the IKE policy configured with the **crypto isakmp policy** command on the controller.	—	—
`authentication`	Specifies whether preshared keys or RSA signatures are used for IKE authentication.	pre-share | rsa-sig	pre-share

Parameter	Description	Range	Default
encryption	Specifies the IKE encryption protocol, either DES or 3DES.	3des | des	3des
group	Specifies the Diffie-Hellman group, either 1 or 2.	1 | 2	2
hash	Specifies the HASH algorithm, ether SHA or MD5.	md5 | sha	sha
lifetime	Specifies how long an IKE security association lasts, in seconds.	300-86400	28800 seconds
ipsec	Configures IPsec. This configuration must match the IPsec parameters configured with the **crypto dynamic-map** and **crypto ipsec** commands on the controller.	—	—
encryption	Specifies the encryption type for IPsec, either DES or 3DES.	esp-3des | esp-des	esp-3des
hash	Specifies the hash algorithm used by IPsec, either MD5 or SHA.	esp-md5-hmac | esp-sha-hmac	esp-sha-hmac
lifetime	Specifies how long an IPsec security association lasts, in seconds.	300-86400	7200 seconds
pfs	Specifies the IPsec Perfect Forward Secrecy (PFS) mode, either group 1 or group 2.	group1 | group2	group2
no	Negates any configured parameter.	—	—
ppp authentication	Enables the protocols for PPP authentication. This list should match the L2TP or PPTP configuration configured with the **vpdn** command on the controller.	—	—
cache-securid	The controller caches Secure ID tokens so that the user does not need to reauthenticate each time a network connection is lost.	—	disabled
chap	Use CHAP with PPP authentication.	—	enabled
mschap	Use MSCHAP with PPP authentication.	—	enabled
mschapv2	Use MSCHAPv2 with PPP authentication.	—	enabled
pap	Use PAP with PPP authentication.	—	enabled

Usage Guidelines

A VPN dialer is a Windows application that configures a Windows client for use with the VPN services in the controller. When VPN is used as an access method, a user can login using captive portal and download a VPN dialer. You can customize a VPN dialer for a user role configured with the **user-role** command. After the user authenticates via captive portal, a link appears to allow download of the VPN dialer if a dialer is configured for the user role.

Example

The following command configures a VPN dialer:

```
(host) (config) #vpn-dialer default-dialer
   ike authentication pre-share f00xYz123BcA
```

Command History

The command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

vrrp

```
vrrp <id>
   advertise <interval>
   authentication <password>
   description <text>
   holdtime <secs>
   ip address <ipaddr>
   no...
   preempt
   priority <level>
   shutdown
   tracking interface {fastethernet <slot>/<module>/<port>|gigabitethernet
   <slot>/<module>/<port>}
     {sub <value>}
   tracking master-up-time <duration> add <value>
   tracking vlan <vlanid> {sub <value>}
   tracking vrrp-master-state <vrid> add <value>
   vlan <vlanid>
vrrp ipv6 <id>
   advertise <interval>
   description <text>
   holdtime <secs>
   ipv6 address <ipaddr>
   no...
   preempt
   priority <level>
   shutdown
   tracking interface {fastethernet <slot>/<module>/<port>|gigabitethernet
   <slot>/<module>/<port>}
     {sub <value>}
   tracking master-up-time <duration> add <value>
   tracking vlan <vlanid> {sub <value>}
   tracking vrrp-master-state <vrid> add <value>
   vlan <vlanid>
```

Description

This command configures the Virtual Router Redundancy Protocol (VRRP).

Syntax

Parameter	Description	Range	Default
id	Number that uniquely identifies the VRRP instance, also known as the VRID. This number should match the VRID on the other member of the redundant pair. For ease in administration, you should configure this with the same value as the VLAN ID. After you configure the VRID, the command platform enters VRRP mode. From here, you can access the remaining VRRP commands.	1-255	—

Parameter	Description	Range	Default
`advertise`	Specifies the time, in seconds, between successive VRRP advertisements sent by the current *master*. Best practices are to use the default value.	1-60 seconds	1 second (1s=1000ms)
`authentication`	Configure an optional password of up to eight characters to be used to authenticate VRRP peers in their advertisements. The password must be the same on both members of the redundant pair. The password is sent in plain-text and therefore should not be treated as a security measure. Rather, the purpose of the password is to guard against misconfigurations in the event that other VRRP devices exist on the same network. Note: This parameter is supported only for IPv4.	8 characters	—
`description`	Configure an optional text string to describe the VRRP instance.	1-80 characters	—
`holdtime <secs>`	The VRRP virtual router does not begin listening to advertisements until the holdtime expires. If your deployment includes a VRRP master with preemption disabled and an uplink switch is running RSTP, a higher value will prevent the VRRP master from regaining the master state after it reboots.	30-120 seconds.	45 seconds.
`ip address`	Configure the virtual IP address that will be owned by the elected VRRP *master*. Use the same IP address on each member of the redundant pair. This IP address will be redundant - it will be active on the VRRP master, and will become active on the VRRP backup in the event that the VRRP master fails.	—	—

Parameter	Description	Range	Default
	The IP address must be unique; the IP address cannot be the loopback address of the controller. Only IPv4 address formats are supported.		
`ipv6 address`	Configure the virtual IPv6 address that will be owned by the elected VRRP *master*. Use the same IPv6 address on each member of the redundant pair. This IPv6 address will be redundant - it will be active on the VRRP master, and will become active on the VRRP backup in the event that the VRRP master fails. The IPv6 address must be unique; the IPv6 address cannot be the loopback address of the controller. Only IPv6 address formats are supported.	—	—
`no`	Negates all configured VRRP parameters.	—	—
`preempt`	Preempt mode allows a controller to take over the role of master if it detects a lower priority controller currently acting as master. Best practices are to use the default value to avoid excessive interruption to users or “flapping” if a problematic controller is cycling up and down.	—	disabled
`delay`	Delay value in seconds. Specifying a value enables the delay timer. The timer is triggered when the VRRP state moves out of backup or init state to become a master. This is applicable only if router pre-emption is enabled.	0-60 seconds	0

Parameter	Description	Range	Default
	When the timer is triggered, it delays the router for a specified period of time before taking over the master router. In the mean time, if there is an advertisement from another VRRP master (existing master), the router stops the timer and does not transition to master.		
`priority`	Defines the priority level of the VRRP instance for the controller. This value is used in the election mechanism for the master. A higher number specifies a higher priority. The default priority setting is adequate for most networks.	100	1-255
`shutdown`	Administratively shutdown VRRP. When down, VRRP is not active, although the controller maintains the configuration information. To start the VRRP instance, use **no shutdown**.	—	enabled (VRRP is down)
`tracking interface`	Configures VRRP tracking based on Layer-2 interface state transitions. You can configure this on Fast Ethernet or Gigabit Ethernet interfaces. You can track a combined maximum of 16 VLAN and Layer-2 interfaces.	—	—
`<slot>/<module>/<port>`	Port interface in **<slot>/<-module>/<port>** format.	—	—
`sub`	Decreases the priority of the VRRP instance by the specified amount. When the interface comes up again, the value is restored to the previous priority level. The combined priority and tracking vales cannot exceed 255. If the priority value exceeds 255, the controller displays an error message.	0-255	—

Parameter	Description	Range	Default
`tracking master-up-time duration`	Monitors how long the controller has been master for the VRRP instance.	0-1440 minutes	—
`tracking master-up-time add`	Instructs the controller to add the specified value to the existing priority level. The combined priority and tracking values cannot exceed 255. If the priority value exceeds 255, the controller displays an error message similar to the following: Error: Vrrp 30 priority + tracking value exceeds 255	0-255	—
`tracking vlan`	Configures VRRP tracking based on VLAN state transitions. You can track a combined maximum of 16 VLAN and Layer-2 interfaces.	—	—
`sub`	Decreases the priority of the VRRP instance by the specified amount. When the VLAN comes up again, the value is restored to the previous priority level. The combined priority and tracking values cannot exceed 255. If the priority value exceeds 255, the controller displays an error message.	0-255	—
`vrrp-master-state`	Specifies the VRID to use for tracking the state of the VRRP master controller.	1-255	—
`vrrp-master-state add`	Instructs the controller to add the specified value to the existing priority level. The combined priority and tracking values cannot exceed 255. If the priority value exceeds 255, the controller displays an error message similar to the following: Error: Vrrp 30 priority + tracking value exceeds 255	0-255	—

Parameter	Description	Range	Default
vlan	Specifies the VLAN ID of the VLAN on which VRRP will run.	1-4094	—

Usage Guidelines

Use this command to set parameters for VRRP on the controller. The default VRRP parameters can be left for most implementations.

You can use a combination of numbers, letters, and characters to create the authentication password and the VRRP description. To include a space in the password or description, enter quotation marks around the string. For example, to create the password Floor 1, enter "Floor 1" at the prompt.

To change the existing password or description, enter the command with a different string. The new password or description takes affect immediately.

To unconfigure the existing password or description, enter "" at the prompt. If you update the password on one controller, you must update the password on the redundant member pair.

Interface Tracking

You can track multiple VRRP instances to prevent asymmetric routing and dynamically change the VRRP master to adapt to changes in the network. VRRP interface tracking can alter the priority of the VRRP instance based on the state of a particular VLAN or Layer-2 interface. The priority of the VRRP instance can increase or decrease based on the operational state of the specified interface. For example, interface transitions (up/down events) can trigger a recomputation of the VRRP priority, which can change the VRRP master depending on the resulting priority. You can track a combined maximum of 16 interfaces.

You must enable preempt mode to allow a controller to take over the role of master if it detects a lower priority controller currently acting as master

Example

The following command configures a priority of 105 for VRRP ID (VRID) 30:

```
(host) (config) #vrrp 30
  priority 105
```

The following commands configure VLAN interface tracking and assumes the following:

- You have two controllers, a primary and a backup.
- The configuration highlights the parameters for interface tracking. You may have other parameters configured for VRRP.

Primary Configuration	Backup Configuration

vrrp 10
  vlan 10
  ip address 10.200.22.254
  priority 105
  preempt
  tracking vlan 20 sub 10
 	
vrrp 20
  vlan 20
	vrrp 10
	  vlan 10
	  ip address 10.200.22.254
	  priority 100
	  preempt
	  tracking vlan 20 sub 10
	
	vrrp 20
	  vlan 20

Primary Configuration	Backup Configuration
ip address 10.200.22.254 preempt priority 105 tracking vlan 10 sub 10 vrrp 30 vlan 30 ip address 10.200.22.254 preempt priority 105 tracking vlan 20 sub 10	ip address 10.200.22.254 preempt priority 100 tracking vlan 10 sub 10 vrrp 30 vlan 30 ip address 10.200.22.254 preempt priority 100 tracking vlan 20 sub 10

If VLAN 20 goes down, VRRP 20 automatically fails over, VRRP 10 and VRRP 30 would drop their priority to 95, causing a failover to the backup controller. Once VLAN 20 comes back up, the primary controller restores the VRRP priority to 105 for all VRRP IDs and resumes the master VRRP role.

Command History

Version	Modification
ArubaOS 1.0	Command introduced
ArubaOS 3.3	The **tracking interface** and **tracking vlan** parameters were introduced.
ArubaOS 3.3.2	The **add** option was removed from the **tracking interface** and **tracking vlan** parameters.
ArubaOS 6.1	The **delay** option is added to the **preempt** parameter.
ArubaOS 6.4	The **IPv6** parameter was introduced.
ArubaOS 6.4.2.6, ArubaOS 6.4.3.0	The **holdtime** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master and local controllers

web-cc

```
web-cc global-bandwidth-contract
   web-cc-category <category-name> downstream|upstream kbits|mbits <bandwidth>
   web-cc-reputation high-risk|low-risk|moderate-risk|suspicious|trustworthy
   downstream|upstream kbits|mbits <1-2000>
```

Description

This command defines global bandwidth contracts for HTTP traffic matching a predefined web content category or reputation type.

Syntax

Parameter	Description	Range	Default
`web-cc-category <category-name>`	Specify a web content category to apply a bandwidth contract to that category type. To see the full list of available web content categories, issue the command **show web-cc categories**.	—	—
`downstream|upstream`	Specify **downstream** to apply the bandwidth contract to downstream traffic.from the controller. Specify **upstream** to apply the contract to upstream traffic to the controller	—	—
`kbits|mbits`	Select kbits to define the contract bandwidth in kilobits/second. Select mbits to define the contract in megabits/second.	–	–
`bandwidth`	Define the contract value, If you are defining the bandwith value in kilobits/second, the supported range is 256-2,000,000 kbits. If you are defining the bandwidth value in megabits/second, the supported range is 1-2000 mbits.	256-2,000,000 kbits 1-2000 mbits	—
`web-cc-reputation high-risk|low-risk|moderate-risk|suspicious|trustworthy`	Define a bandwidth contract for traffic associated with one of five predefined reputation types. Session access control lists (ACLs) can be applied to these risk categories using the ip access-list session command.	–	–

Usage Guidelines

The web content classification feature classifies all (HTTP) web traffic on the network. Dell Inc. uses the Webroot® classification categories and risk reputation levels, URL database and URL cloud look-up service to classify the web traffic. You can create firewall policies and bandwidth contracts based upon these web traffic classification and reputation types.

Example

The following example creates a 100 megabit/second bandwidth contract for a category called **music**.

```
(host) (config) #web-cc global-bandwidth-contract web-cc-category music downstream mbits 100
```

Command History

Version	Modification
ArubaOS 6.4.2.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	PEF-NG license	Config mode on master or local controllers

web-proxy server

```
web-proxy server <name>
   port
```

Description

This command configures the web-proxy server related information.

Syntax

Parameter	Description	Range	Default
`<name>`	Specifies the proxy server name / IP address.	—	—
`port`	Specifies the proxy server port.	—	—

Usage Guidelines

When the controller needs to access data on the cloud or the internet, and if the internet bound traffic needs to pass through a proxy, execute the **web-proxy server** command. Once the command is executed the controller routes web (HTTP/HTTPS) traffic through the proxy server.

Example

The following command configures the web-proxy server related information:

```
(host)(config) #web-proxy server arubaproxy.com port 8080
```

Command History

Version	Modification
ArubaOS 6.5	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on local and master controllers.

web-server profile

```
web-server profile
   absolute-session-timeout <30-3600>
   bypass-cp-landing-page
   captive-portal-cert <name>
   ciphers {high|low|medium}
   exclude-http-security..
   idp-cert <idp-cert>
   mgmt-auth [certificate] [username/password]
   no ...
   session-timeout <session-timeout>
   ssl-protocol [tlsv1 | tlsv1.1 | tlsv1.2]
   switch-cert <name>
   web-https-port-443
   web-max-clients <web-max-clients>
   web-skype4b-listen-port {http <listen-port>}|{https <listen-port>}
```

Description

This command configures the controller's web server.

Syntax

Parameter	Description	Range	Default
`absolute-session-timeout <30-3600>`	Specifies the absolute time after which the WebUI session times out post a successful authentication.	30-3600 seconds	0 (disabled)
`bypass-cp-landing-page`	If disabled, the controller uses the new redirection scheme also known as the landing page by default including the meta tag. This can reduce the CPU load on the controller. The controller falls back to the old redirection scheme if this parameter is enabled.	—	disabled
`captive-portal-cert`	Specifies the name of the server certificate associated with captive portal. Use the **show crypto-local pki ServerCert** command to see the server certificates installed in the controller.	—	default
`ciphers`	Configures the strength of the cipher suite: • **high**: encryption keys larger than 128 bits • **low**: 56 or 64 bit encryption keys • **medium**: 128 bit encryption keys **NOTE:** This command is not available in FIPS software images because ciphers are pre-configured only to acceptable values.	high, low, medium	high
`exclude-http-security`	This parameter excludes security headers from HTTP response.	—	default

Parameter	Description	Range	Default
idp-cert	Specifies the IDP certificate name configured in the controller	—	—
mgmt-auth	Specifies the authentication method for the management user; you can choose to use either username/password or certificates, or both username/password and certificates.	username/password, certificate	username/password
no	Negates any configured parameter.	—	—
session-timeout <session-timeout>	Specifies the time of inactivity after which the WebUI session times out and requires login for continued access.	30-3600 seconds	900 seconds
ssl-protocol	Specifies the Secure Sockets Layer (SSL) or Transport Layer Security (TLS) protocol version used for securing communication with the web server: • TLS v1 • TLS v1.1 • TLS v1.2	—	tlsv1 tlsv1.1 tlsv1.2
switch-cert	Specifies the name of the server certificate associated with WebUI access. Use the **show crypto-local pki ServerCert** command to see the server certificates installed in the controller.	—	default
web-https-port-443	Enables WebUI access on the HTTPS port (443). When you connect to the WebUI using https (tcp port 443), the controller continues using port 443 and no longer redirects to port 4343.	—	—
web-max-clients <web-max-client>	Configures the web server's maximum number of supported concurrent clients.	25-320	75
web-skype4b-listen-port {http <listen-port>}| {https <listen-port>}	Configures the port number on which the Skype4B plug-in sends HTTP/HTTPS messages to the Dellcontroller. **NOTE:** Disable the media classification ACL before using this feature. See ip access-list session.	1024-65535	0 (feature disabled)

Usage Guidelines

There is a default server certificate installed in the controller, However this certificate does not guarantee security in production networks. Best practices are to replace the default certificate with a custom certificate issued for your site by a trusted Certificate Authority (CA). See the *Dell Networking W-Series ArubaOS User Guide* for more information about how to generate a Certificate Signing Request (CSR) to submit to a CA and

how to import the signed certificate received from the CA into the controller. After importing the signed certificate into the controller, use the **web-server profile** command to specify the certificate for captive portal or WebUI access. If you need to specify a different certificate for captive portal or WebUI access, use the **no** command to revert back to the default certificate before you specify the new certificate (see the Example section).

You can use client certificates to authenticate management users. If you specify certificate authentication, you need to configure certificate authentication for the management user with the **mgmt-user webui-cacert** command.

Example

The following commands configure WebUI access with client certificates only, and specify the server certificate for the controller:

```
(host) (config) #web-server profile
(host) (Web Server Configuration) #mgmt-auth certificate
(host) (Web Server Configuration) #switch-cert ServerCert1
(host) (Web Server Configuration) #!
(host) (config) #mgmt-user webui-cacert test_string serial 1111 admin root
```

To specify a different server certificate, use the **no** command to revert back to the default certificate *before* you specify the new certificate:

```
(host) (config) #web-server profile
(host) (Web Server Configuration) #mgmt-auth certificate
(host) (Web Server Configuration) #switch-cert ServerCert1
(host) (Web Server Configuration) #no switch-cert
(host) (Web Server Configuration) #switch-cert ServerCert2
```

Command History

Version	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.1	The **mgmt-auth** parameter was introduced.
ArubaOS 3.2	The **captive-portal-cert** parameter was introduced.
ArubaOS 6.3	The following new parameters were introduced: • **web-https-port-443** • **web-lync-listen-port**
ArubaOS 6.3.1.0	Under the **web-lync-listen-port**, the following two parameters were introduced: • **http** • **https**
ArubaOS 6.4	The **idp-cert** parameter was introduced.
ArubaOS 6.4.2.3	The **web-server** command was renamed to **web-server profile**. The **sslv3** sub-parameter was deprecated.

Version	Modification
	The following parameters were introduced: • **tlsv1.1** • **tlsv1.2**
ArubaOS 6.4.2.5	The **bypass-cp-landing-page** parameter was introduced.
ArubaOS 6.4.4.0	The **absolute-session-timeout** parameter was introduced. The **web-skype4b-listen-port** parameter was introduced. This parameter replaced the **web-lync-listen-port** parameter introduced in ArubaOS 6.3.
ArubaOS 6.5.	The **excludes security headers** was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	The **web-server ciphers** and **web-server ssl-protocol** commands require the PEFNG license	Config mode on master or local controllers

whitelist-db cpsec add

```
whitelist-db cpsec add mac-address <name>
    ap-group <ap_group>
    ap-name <ap_name>
    description <description>
```

Description

Add an AP entry to the campus AP whitelist.

Syntax

Parameter	Description
`mac-address <name>`	MAC address of the AP you want to enter into the campus AP whitelist database.
`ap-group <ap_group>`	(Optional) Name of the AP group. **NOTE:** If the AP group is not entered, a campus AP boots with "default" as AP group.
`ap-name <ap_name>`	(Optional) Name of the AP. **NOTE:** If the AP name is not entered, a campus AP boots with its MAC address as AP name.
`description <description>`	(Optional) Brief description of the AP. If the description includes spaces, enclose the description in quotation marks.

Usage Guidelines

You can manually add entries to the campus AP whitelist to grant valid APs secure access to the network.

Example

The following command creates a new campus AP whitelist entry for an AP with the MAC address 00:16:CF:AF:3E:E1:

```
(host) #whitelist-db cpsec add mac-address 00:16:CF:AF:3E:E1
   ap-group default
   ap-name W-AP225
   description "W-AP225 in lobby"
```

Related Commands

Command	Description	Mode
show whitelist-db cpsec	Show the campus AP whitelist for the control plane feature.	Enable mode

Command History

Version	Modification
ArubaOS 5.0	Command introduced
ArubaOS 6.4.3.0	The **ap-group** and **ap-name** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db cpsec delete

```
whitelist-db cpsec delete mac-address <mac-address>
```

Description

Remove an individual AP entry to the campus AP whitelist.

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the AP you want to remove from the campus AP whitelist.

Usage Guidelines

Use this command to remove an individual whitelist entries for an AP that has been either removed from the network, or is no longer a candidate for automatic certificate provisioning. If the AP whose entry you deleted is still connected to the network and the control plane security feature is configured to send certificates to all APs (or a range of addresses that include that AP), then the controller will send the AP another certificate, and the AP will reappear in the campus whitelist. To permanently revoke a certificate from an invalid or suspected rogue AP, use the command whitelist-db cpsec revoke.

Example

The following command removes an AP with the MAC address 10:14:CA:AF:3E:E1 from the campus AP whitelist.:

```
(host) (config) #whitelist-db cpsec delete mac-address 10:14:CA:AF:3E:E1
```

Related Commands

Command	Description	Mode
show whitelist-db cpsec	Show the campus AP whitelist for the control plane feature.	Enable mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db cpsec-local-switch-list

```
whitelist-db cpsec-local-switch-list
   del mac-address <mac-address>
   purge
```

Description

Delete a local controller from the local switch whitelist.

Syntax

Parameter	Description
`del mac-address <mac-address>`	Remove a single controller from the local switch whitelist.
`purge`	Clear all entries from the local switch whitelist

Usage Guidelines

If your deployment includes both master and local controllers, then the campus AP whitelist on each controller contains an entry for every AP on the network, regardless of the controller to which it is connected. The master controller also maintains a whitelist of local controllers with APs using control plane security. When you change a campus AP whitelist on any controller, that controller contacts the master controller to check the local switch whitelist, then contacts every other controller on the local switch whitelist to notify it of the change.

If you ever remove a local controller from the network, you must also remove the local controller from the local switch whitelist. If the local switch whitelist contains entries for local controllers no longer on the network, then a campus AP whitelist entry can be marked for deletion but will not be physically deleted, as the controller will be waiting for an acknowledgement from another controller no longer on the network. Any unused local controller entries in the local switch whitelist can significantly increase network traffic and reduce controller memory resources.

Example

The following command removes a local controller from the local switch whitelist:

```
(host) (config) #whitelist-db cpsec-local-switch-list del mac-address 00:1E:33:CA:D2:51
```

Related Commands

Command	Description	Mode
show whitelist-db cpsec-local-switch-list	Show the local switch whitelist for the control plane feature.	Enable mode

Command History

Version	Modification
ArubaOS 5.0	Command introduced
ArubaOS 6.0	The **cpsec-local-ctlr-list** parameter was modified to **cpsec-local-switch-list**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

whitelist-db cpsec-master-switch-list

```
whitelist-db cpsec-master-switch-list
   del mac-address <mac-address>
   purge
```

Description

Delete a master controller from the master switch whitelist.

Syntax

Parameter	Description
`del mac-address <mac-address>`	Remove a single master controller from the master switch whitelist.
`purge`	Clear all entries from the master switch whitelist

Usage Guidelines

Each local controller using the control plane security feature has a master switch whitelist which contains the IP and MAC addresses of its master controller. If your network has a redundant master controller, then this whitelist will contain more than one entry.

The master switch whitelist rarely needs to be purged. Although you can delete an entry from the master switch whitelist, you should do so only if you have removed a master switch from the network. Deleting a valid master controller from the master switch whitelist can cause errors in your network.

Example

The following command removes a master controller from the master switch whitelist

```
(host) (config) #whitelist-db cpsec-master-switch-list del mac-address 00:1E:33:CA:D2:51
```

Related Commands

Command	Description	Mode
show whitelist-db cpsec-master-switch-list	Show the master switch whitelist for the control plane feature.	Enable mode

Command History

Version	Modification
ArubaOS 5.0	Command introduced
ArubaOS 6.0	The **cpsec-master-ctrlr-list** parameter was modified to **cpsec-master-switch-list**

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on local controllers

whitelist-db cpsec modify

```
whitelist-db cpsec modify mac-address <name>
   ap-group <ap_group>
   ap-name <ap_name>
   cert-type {factory-cert|switch-cert}
   description <description>
   mode {disable|enable}
   revoke-text <revoke-text>
   state {approved-ready-for-cert|certified-factory-cert}
```

Description

Modify an existing entry in the campus AP whitelist.

Syntax

Parameter	Description
`mac-address <name>`	MAC address of an AP in the campus AP whitelist database.
`ap-group <ap_group>`	(Optional) Name of the AP group to which an AP is assigned. **NOTE:** If AP group is not entered, a campus AP boots with "default" as the AP group.
`ap-name <ap_name>`	(Optional) Name of an AP. **NOTE:** If AP name is not entered, a campus AP boots with its MAC address as the AP name.
`cert-type {factory-cert|switch-cert}`	(Optional) Type of certificate used by an AP. • **factory-cert**: AP uses a factory-installed certificate. • **switch-cert**: AP uses a controller-signed certificate.
`description <description>`	(Optional) Brief description of an AP. If the description includes spaces, enclose the description in quotation marks.
`mode {disable|enable}`	(Optional) Mode of an AP. • **disable**: Disables an AP in the campus AP whitelist. A disabled AP cannot contact a controller over a secure connection. • **enable**: Enables a disabled AP in the campus AP whitelist.
`revoke-text <revoke-text>`	(Optional) Brief description why an AP was revoked.
`state {approved-ready-for-cert|certified-factory-cert}`	(Optional) State of an AP. • **approved-ready-for-cert**: AP is approved and is ready to receive a certificate. • **certified-factory-cert**: AP is certified and has a factory-installed certificate.

Example

The following command changes the AP group, AP name, certificate type, description, mode, revoke text, and state of an AP with MAC address 00:1E:37:CB:D4:52:

```
(host) #whitelist-db cpsec modify mac-address 00:1E:37:CB:D4:52
          ap-group default
          ap-name ap-225
          cert-type factory-cert
          description "AP-225 in lobby"
          mode disable
          revoke-text "Maintenance"
          state approved-ready-for-cert
```

Related Commands

Command	Description	Mode
show whitelist-db cpsec	Show the campus AP whitelist for the control plane feature.	Enable mode

Command History

Version	Modification
ArubaOS 5.0	Command introduced.
ArubaOS 6.0	The **controller-cert** parameter was modified to **switch-cert**.
ArubaOS 6.4.3.0	The **ap-group** and **ap-name** parameters were introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db cpsec purge

```
whitelist-db cpsec purge
```

Description

Clear the campus AP whitelist.

Syntax

No parameters.

Usage Guidelines

Use this command to clear all entries in the entire campus AP whitelist. If your network includes both master and local controllers, then each campus AP whitelist is synchronized across all controllers. If you purge the entire campus AP whitelist on one controller, that action will clear the campus AP whitelist on every controller in the network. To delete an individual entry in the campus AP whitelist, use the command whitelist-db cpsec delete.

Example

The following command remove all APs from the campus AP whitelist:

```
(host) (config) #whitelist-db cpsec purge
```

Related Commands

Command	Description	Mode
show whitelist-db cpsec	Show the campus AP whitelist for the control plane feature.	Enable mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db cpsec revoke

```
whitelist-db cpsec revoke mac-address <mac-address> revoke-text <revoke-text>
```

Description

Revoke a certificate from an AP in the campus AP whitelist.

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the AP you want to remove from the cpsec whitelist database.
`revoke-text <revoke-text>`	A brief description why the AP's certificate was revoked, up to 64 alphanumeric characters. If this comment includes spaces, you must enclose the comment in quotation marks.

Usage Guidelines

Use this command to revoke a certificate from a invalid or suspected rogue AP.

Example

The following command revokes a certificate from an AP. This command does not delete a whitelist entry for a revoked AP, but marks its entry with the revoked state.

```
(host) (config) #whitelist-db cpsec revoke mac-address 00:1E:37:CA:D4:51
   revoke-text "revoking cert from a rogue AP."
```

Related Commands

Command	Description	Mode
show whitelist-db cpsec	Show the campus AP whitelist for the control plane feature.	Enable mode

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db rap add

```
whitelist-db rap add mac-addr <mac-address>
   ap-group <ap-group>
   ap-name <ap-name>
   description <description>
   full-name <full-name>
   mode enable|disable
   remote-ip <ip-addr>
```

Description

Add an AP entry to the remote AP whitelist.

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the AP you want to enter into the remote AP whitelist database.
`ap-group <ap-group>`	AP group of the remote AP.
`ap-name <ap-name>`	Name of the Remote AP.
`description <description>`	Description of the remote AP. If the description includes spaces, it must be enclosed within quotation marks.
`full-name <full-name>`	Name of the client using the remote AP.
`remote-ip <ip-addr>`	IP address used to assign a static inner IP address for the remote AP.

Usage Guidelines

You can manually add entries to the remote AP whitelist to grant valid remote APs secure access to the network.

Example

The following command creates a new remote AP whitelist entry for an AP with the MAC address 00:16:CF:AF:3E:E1:

```
(host) (config) #whitelist-db rap add mac-address 00:16:CF:AF:3E:E1
```

Related Commands

Command	Description	Mode
show whitelist-db rap-master-switch-list	Display the list of master controllers with remote APs managed using the remote AP whitelist	Enable or Config mode
show whitelist-db rap-local-switch-list	Display the list of local controllers with remote APs managed using the remote AP whitelist	Enable or Config mode
show whitelist-db rap	View detailed information for the remote AP whitelist database.	Enable or Config mode

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db rap del

```
whitelist-db rap del mac-addr <mac-address>
```

Description

Remove an AP entry from the remote AP whitelist.

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the AP you want to remove from the remote AP whitelist database.

Usage Guidelines

You can manually remove entries from the remote AP whitelist to revoke a remote AP's secure access to the network. If you want to temporarily revoke an AP's access without removing the entry from the whitelist, use the command whitelist-db rap revoke.

Example

The following command revokes and deletes a remote AP whitelist entry for an AP with the MAC address 00:16:CF:AF:3E:E1:

```
(host) (config) #whitelist-db rap del mac-address 00:16:CF:AF:3E:E1
```

Related Commands

Command	Description	Mode
whitelist-db rap add	Add an entry into the remote AP whitelist.	Config mode on master or local controllers

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db rap modify

```
whitelist-db rap modify mac-addr <mac-address>
   ap-group <ap-group>
   ap-name <ap-name>
   description <description>
   full-name <full-name>
   mode enable|disable
   remote-ip <ip-addr>
```

Description

Remove an AP entry from the remote AP whitelist.

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the remote AP whose whitelist database entry you want to modify.
`ap-group <ap-group>`	AP group of the remote AP.
`ap-name <ap-name>`	Name of the Remote AP.
`description <description>`	Description of the remote AP. If the description includes spaces, it must be enclosed within quotation marks.
`full-name <full-name>`	Name of the client using the remote AP.
`mode enable|disable`	Enable or disable the remote AP without deleting it from the database.
`remote-ip <ip-addr>`	IP address used to assign a static inner IP address for the remote AP.

Usage Guidelines

You can manually remove entries from the remote AP whitelist to revoke a remote AP's secure access to the network.

Example

The following command modifies a remote AP whitelist entry for an AP with the MAC address 00:16:CF:AF:3E:E1:

```
(host) (config) #whitelist-db rap modify mac-address 00:16:CF:AF:3E:E1
   description "AP moved to second floor"
```

Related Commands

Command	Description	Mode
whitelist-db rap add	Add an entry into the remote AP whitelist.	Config mode on master or local controllers

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db rap revoke

```
whitelist-db rap revoke mac-address <mac-address> revoke-comment <comment>
```

Description

Revoke a certificate from an AP in the remote AP whitelist.

Syntax

Parameter	Description
`mac-address <mac-address>`	MAC address of the AP you want to remove from the remote AP whitelist database.
`revoke-comment <comment>`	A brief description why the AP's certificate was revoked, up to 64 alphanumeric characters. If this comment includes spaces, you must enclose the comment in quotation marks.

Usage Guidelines

Use this command to revoke a certificate from a invalid or suspected rogue AP.

Example

The following command revokes a certificate from an AP. This command does not delete a whitelist entry for a revoked AP, but marks its entry with the revoked state.

```
(host) (config) #whitelist-db rap revoke mac-address 00:1E:37:CA:D4:51
  revoke-comment "revoking cert from a rogue RAP."
```

Related Commands

Command	Description	Mode
whitelist-db rap del	Delete an entry from the remote AP whitelist	Config mode on master or local controllers.

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db rap-local-switch-list

```
whitelist-db rap-local-switch-list
   del mac-addr <mac-address>
   purge
```

Description

Delete a local controller from the local switch table used by the remote AP whitelist

Syntax

Parameter	Description
`del mac-address <mac-address>`	Remove a single controller from the local switch table.
`purge`	Clear all controllersfrom the local switch table

Usage Guidelines

If your deployment includes both master and local controllers, then the remote AP whitelist on each controller contains an entry for every remote AP on the network, regardless of the controller to which it is connected. The master controller also maintains a whitelist of local controllers with remote AP. When you change a remote AP whitelist on any controller, that controller contacts the master controller to check the local switch whitelist, then contacts every other controller on the local switch whitelist to notify it of the change.

If you ever remove a local controller from the network, you must also remove the local controller from the local switch whitelist. If the local switch whitelist contains entries for local controllers no longer on the network, then a remote AP whitelist entry can be marked for deletion but will not be physically deleted, as the controller will be waiting for an acknowledgment from another controller no longer on the network. Any unused local controller entries in the local switch whitelist can significantly increase network traffic and reduce controller memory resources.

Example

The following command removes a local controllerfrom the local switch whitelist table:

```
(host) (config) #whitelist-db rap-local-switch-list del mac-address 00:16:CF:AF:3E:E1
```

Related Commands

Command	Description	Mode
whitelist-db rap add	Add an entry into the remote AP whitelist.	Config mode on master or local controllers

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whitelist-db rap-master-switch-list

```
whitelist-db rap-master-switch-list
   del mac-addr <mac-address>
   purge
```

Description

Delete a master controller from the master switch table used by the remote AP whitelist.

Syntax

Parameter	Description
`del mac-address <mac-address>`	Remove a single master controller from the master switch whitelist.
`purge`	Clear all controllersfrom the Registered Master Switch table.

Usage Guidelines

Each local controller with remote APs managed through a remote AP whitelist has a master switch whitelist which contains the IP and MAC addresses of its master controller. If your network has a redundant master controller, then this whitelist will contain more than one entry.

The master switch whitelist rarely needs to be purged. Although you can delete an entry from the master switch whitelist, you should do so only if you have removed a master switch from the network. Deleting a valid master controller from the master switch whitelist can cause errors in your network.

Example

The following command removes a master controllerfrom the master switch whitelist table:

```
(host) (config) #whitelist-db rap-master-switch-list del mac-address 00:16:CF:AF:3E:E1
```

Related Commands

Command	Description	Mode
whitelist-db rap add	Add an entry into the remote AP whitelist.	Config mode on master or local controllers

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master or local controllers

whoami

```
whoami
```

Description

This command displays information about the current user logged into the controller.

Syntax

No parameters.

Usage Guidelines

Use this command to display the name and role of the user who is logged into the controller for this session.

Example

The following command displays information about the user logged into the controller:

```
(host) #whoami
```

Command History

This command was available in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config modes on master and local controllers

wipe

```
wipe out flash
```

Description

This command erases all data including configuration, logs, license keys, flash backup files and formats the flash file system in the controller.

Execute this command only when the controller is taken out of service or decommissioned.

Syntax

No syntax.

Example

The following command formats the flash file system:

```
(host) #wipe out flash
Do you really want to wipe out the entire flash (y/n): y
Zeroing out flash:.....................................
Flash zeroed out successfully.
```

Command History

Version	Modification
ArubaOS 6.4.4.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode

wlan anyspot-profile

```
wlan anyspot-profile <profile-name>
   clone <profile-name>
   enable-anyspot
   exclude-essid <exclude-essid>
   exclude-wildcard <exclude-wildcard>
   no
   preset-essid <preset-essid>
```

Description

The anyspot client probe suppression feature decreases network traffic by suppressing probe requests from clients attempting to locate and connect to other known networks.

Syntax

Parameter	Description
`clone <profile-name>`	Make a copy of an existing anyspot profile.
`enable-anyspot`	Issue this command to enable the anyspot feature. Note that you must associate the anyspot profile with a virtual AP profile for the settings to take effect.
`exclude-essid <exclude-essid>`	An anyspot-enabled radio will not respond to client probe requests using an ESSID in the **Exclude ESSID** lists. To add an ESSID to the list, enter the full name of the ESSID, then click **Add**. To remove an ESSID from the list, select it and click **Delete**. ESSIDs from neighboring APs will automatically appear in this list as long as the anyspot-enabled AP can detect that ESSID.
`exclude-wildcard <exclude-wildcard>`	An anyspot-enabled radio will not respond to client probe requests using an ESSID in the **Exclude ESSID** list. To exclude ESSIDs that partially match a text string, enter that string then click **Add**. To remove a matching string from the list, select it and click **Delete**.
`no`	Remove or negate any configured parameter.
`preset-essid <preset-essid>`	The anyspot-enabled AP will not send an ESSID in beacons, but if a client sends a probe request without an ESSIDs (that is, the probe request is not looking for a specific network) then the anyspot-enabled AP will respond to the probe request with an ESSID from this list.

Usage Guidelines

When an AP is configured to use this feature, the anyspot AP radio hides its configured ESSID in beacons, and compiles a list of other ESSIDs from detected neighboring APs. If the client sends a probe request without a specified ESSID, the anyspot AP will respond with a preconfigured ESSID.

When a client searches for a preferred network, that client sends the SSID of the preferred network in the probe request. The anyspot AP checks to see if there is a neighboring AP using that ESSID that can respond the

client's request. If no matching network is found, the anyspot AP sends a response to the client using the SSID from the client request. If the client is authorized to connect to the anyspot AP, that client associates to AP. Once connected to the anyspot AP, the client recognizes the ESSID to which it is connected as one associated with its preferred network, and does not send out any further probe requests.

Example

The following command defines a ESSID to be returned in probe requests that do not contain an ESSID, as well as two ESSIDs that should be excluded from anyspot responses, in the event that a client is probing for one of these excluded ESSIDs.

```
wlan anyspot-profile anyspot1
   preset SSID companyguest
   exclude-ssid corp_dev_essid
   exclude-ssid corp_voip_essid
```

Command History

Version	Description
ArubaOS 6.4.3.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan bcn-rpt-req-profile

```
wlan bcn-rpt-req-profile <profile-name>
   channel <channel>
   clone <source>
   interface <interface>
   measure-dur-mandatory
   measure-duration <measure-duration>
   measure-mode
   no
   random-interval <random-interval>
   reg-class {1|12}
   request-info <request-info>
   rpt-condition <rpt-condition>
   rpt-detail
   ssid <ssid>
```

Description

Configures a Beacon Report Request Profile to provide the parameters for the Beacon Report Request frames.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	"default"
`channel <channel>`	This option is used to set the Channel field in the Beacon Report Request frame. The Channel value can be set to one of the following: • The channel of the AP (when Measurement Mode is set to either 'Passive' or 'Active-All channels') • 0 (when Measurement Mode is set to 'Beacon Table') • 255 (when Measurement Mode is set to 'Active-Channel Report')	For 802.11b /g band: 1 to 14 For 802.11a band: 36 to 165	255
`clone <source>`	Creates a copy of the Beacon Report Request Profile specified as the <source>. <source> is the name of an existing Beacon Report Request Profile from which parameter values are copied.	—	—

Parameter	Description	Range	Default
`interface <interface>`	This field is used to specify the radio interface for transmitting the Beacon Report Request frame.	0-1	1
`measure-dur-mandatory`	This value is used to set the "Duration Mandatory" bit of the Measurement Request Mode field of the Beacon Report Request frame.	—	Disabled
`measure-duration <measure-duration>`	This value is used to set the Measurement Duration field in the Beacon Report Request frame. The Measurement Duration is set to the duration of the requested measurement. It is expressed in units of TUs.	0 – 65535	0
`measure-mode`	Indicates the mode used for the measurement. The valid measurement modes are: active-all-ch active-ch-rpt beacon-table passive	–	beacon-table
`no`	Negates any configured parameter.	—	—
`random-interval <random-interval>`	This value is used to set the Randomization Interval field in the Beacon Report Request frame. The Randomization Interval is used to specify the desired maximum random delay in the measurement start time. It is expressed in units of TUs (Time Units). A Randomization Interval of 0 in a measurement request indicates that no random delay is to be used.	0 – 65535	0
`reg-class {1|12}`	This option is used to specify the Regulatory Class field in the Beacon Report Request frame.	For 802.11b/g bands, 12. For 802.11a, use 1	—

Parameter	Description	Range	Default
`request-info <request-info>`	This option is used to indicate the contents of the Request Information IE that could be present in the Beacon Report Request frame. The Request Information IE is present for all Measurement Modes except the 'Beacon Table' mode. It consists of a list of Element IDs that should be included by the client in the response frame.	Any valid element ID in the x/y/z format. For example, 0/21/22.	—
`rpt-condtion <rpt-condition>`	This option is used to indicate the value for the "Reporting Condition" field in the Beacon Reporting Information sub-element present in the Beacon Report Request frame.	0 - 255	0
`rpt-detail`	This option is used to indicate the value for the "Detail" field in the Reporting Detail sub-element present in the Beacon Report Request frame.	—	Disabled
`ssid <ssid>`	A unique character string (sometimes referred to as a network name), consisting of no more than 32 characters. The SSID is case-sensitive (for example, WLAN- 01).	—	—

Usage Guidelines

The Beacon Report Request profile is configured under the 802.11K profile.

Example

The following commands configure the parameters under the bcn-rpt-req-profile.

```
(host) (config) #wlan bcn-rpt-req-profile default
(host) (Beacon Report Request Profile "default") #channel 9
(host) (Beacon Report Request Profile "default") #interface 1
(host) (Beacon Report Request Profile "default") #no measure-dur-mandatory
(host) (Beacon Report Request Profile "default") #measure-duration 100
(host) (Beacon Report Request Profile "default") #measure-mode active-all-ch
(host) (Beacon Report Request Profile "default") #random-interval 100
(host) (Beacon Report Request Profile "default") #reg-class 12

(host) (Beacon Report Request Profile "default") #rpt-condition 2
(host) (Beacon Report Request Profile "default") #no rpt-detail
(host) (Beacon Report Request Profile "default") #request-info 0/21/22
(host) (Beacon Report Request Profile "default") #ssid aruba-ap
```

Command History

This command is introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Configuration mode on master and local controllers

wlan client-wlan-profile

```
wlan client-wlan-profile <profile-name>
   auth-as-computer
   auth-as-guest
   clone
   eap-cert
   eap-cert-connect-only-to
   eap-peap
   eap-peap-connect-only-to
   eap-type
   enable-8021x
   ieap-cert-connect-only
   inner-eap
   inner-eap-type
   no
   non-broadcasting-connection
   range-connect
   ssid-profile
```

Description

You can push WLAN profiles to users computers that use the Microsoft Windows Wireless Zero Config (WZC) service to configure and maintain their wireless networks. After the WLAN profiles are pushed to user computers, they are automatically displayed as an ordered list in the preferred networks.

Syntax

Parameter	Description	Default
auth-as-computer	Authenticate with domain credentials.	
auth-as-guest	Authenticate as a guest user.	
clone	Copy settings from another WLAN client profile.	
eap-cert	If you select EAP type as certificate, you can use one of the following options: • mschapv2-use-windows-credentials • use-smartcard • simple-certificate-selection • use-different-name • validate-server-certificate	—
eap-cert-connect-only-to	Comma separated list of servers.	
eap-peap	Configure EAP-PEAP settings.	

Parameter	Description	Default
eap-peap-connect-only-to	Comma separated list of servers.	
eap-type	Enter a EAP type used by client to connect to wireless network.	EAP-PEAP
enable-8021x	Select this option to enable 802.1X authentication for this network.	Enabled
ieap-cert-connect-only	Command separated list of servers	
inner-eap	Enter the inner EAP type.	EAP-MSCHAPv2
inner-eap-type	Specify one of the following: • mschapv2-use-windows-credentials: Automatically use the Windows logon name and password (and domain if any) • use-smartcard: Use a smart card • simple-certificate-selection: Use a certificate on the users computer or use a simple certificate selection method (recommended) • validate-server-certificate: Validate the server certificate • use-different-name: Use a different user name for the connection (and not the CN on the certificate)	
no	Negate and reset all configuration settings.	
non-broadcasting-connection	Connect even if WLAN is not broadcasting.	Disabled
range-connect	Automatically connect to this WLAN if in range.	
ssid-profile	Enter the name of the SSID profile.	

Command History

This command was introduced in ArubaOS 5.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system on master controllers	Config mode on master controllers

wlan dot11k-profile

```
wlan dotllk <profile-name>
   ap-chan-rpt-11a
   ap-chan-rpt-11bg
   bcn-measurement-mode {active-all-ch|active-ch-rpt|beacon-table|passive}
   bcn-req-chan-11a
   bcn-req-chan-11bg
   bcn-req-time
   clone <profile-name>
   dot11k-enable
   force-disassoc
   handover-trigger-profile
   lm-req-time
   no ...
   rrm-ie-profile
   tsm-req-profile
   tsm-req-time
```

Description

Configure a 802.11k radio profile.

Syntax

Parameter	Description	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	"default"
`ap-chan-rpt-11a`	This value is sent in the 'Channel' field of the AP channel reports on the 'A' radio. You can specify values in the range 34 to 165.	36
`ap-chan-rpt-11bg`	This value is sent in the 'Channel' field of the AP channel reports on the 'BG' radio. You can specify values in the range 1 to 14.	1
`bcn-measurement-mode`	Configures a beacon measurement mode for the profile. • **active-all-ch**—Enables active beacon measurement mode. In this mode, the client sends a probe request to the broadcast destination address on all supported channels, sets a measurement duration timer, and, at the end of the measurement duration, compiles all received beacons or probe response with the requested SSID and BSSID into a measurement report. • **active-ch-rpt**—In this mode, the client and returns a report that contains a list of channels in a regulatory class where a client is likely to find an AP, including the AP transmitting the AP channel report. • **beacon-table**—Enables beacon-table beacon measurement mode. In this mode, the client measures beacons and returns a report with stored beacon information for any supported channel with the requested SSID and BSSID. The client does not perform	beacon-table

Parameter	Description	Default
	any additional measurements. • **passive**—Enables passive beacon measurement mode. In this mode, the client sets a measurement duration timer, and, at the end of the measurement duration, compiles all received beacons or probe response with the requested SSID and BSSID into a measurement report. **NOTE:** If a station doesn't support the selected measurement mode, it returns a Beacon Measurement Report with the Incapable bit set in the Measurement Report Mode field. Default Mode: beacon-table	
`clone <profile-name>`	Copy settings from another specified 802.11k profile.	—
`bcn-req-chan-11a`	This value is sent in the 'Channel' field of the beacon requests on the 'A' radio. You can specify values in the range 34 to 165.	36
`bcn-req-chan-11bg`	This value is sent in the 'Channel' field of the Beacon Requests on the 'BG' radio. You can specify values in the range 1 to 14.	1
`bcn-req-time`	This option configures the time duration between two consecutive beacon requests sent to a dot11K client. By default, the beacon requests are sent to a dot11K client every 60 seconds. However, if a different value is required, the `bcn-req-time` option can be used. This permits values in the range from 10 seconds to 200 seconds.	60 seconds
`dot11k-enable`	Enables the 802.11K feature. This feature is disabled by default.	Disabled
`force-dissasoc`	This feature allows the AP to forcefully disassociate “on-hook” voice clients (clients that are not on a call) after period of inactivity. Without the forced disassociation feature, if an AP has reached its call admission control limits and an on-hook voice client wants to start a new call, that client may be denied. If forced disassociation is enabled, those clients can associate to a neighboring AP that can fulfil their QoS requirements. This feature is disabled by default.	Disabled

Parameter	Description	Default
handover-trigger-profile	Name of the handover trigger profile associated with this 802.11k profile. If the handover trigger feature is enabled in the handover trigger profile, the controller will initiate the handover of a voice client (for example: dual mode handsets) roaming at the edge of Wi-Fi coverage to an alternate carrier or connection. The handover trigger is initiated if the Wi-Fi signal strength reported by the voice client (received from all APs) is equal to or less than the threshold value. You must enable dot11k before using this command.	
lm-req-time	This option configures the time duration between two consecutive link measurement requests sent to an dot11K client. By default, link measurement requests are sent to a dot11K client every 61 seconds. However, you can use the `lm-req-time` option to specify different time interval. This permits values in the range from 10 seconds to 200 seconds.	61 seconds
no	Negates or removes any configured parameter	
rrm-ie-profile	RRM IE Settings Profile	
tsm-req-profile	TSM Report Request Settings Profile	
tsm-req-time	This option configures the time duration between two consecutive transmit stream measurement requests sent to a dot11K client. By default, the transmit stream measurement requests are sent to a dot11K client every 90 seconds. However, you can use the `tsm-req time` option to specify a different time interval. This permits values in the range from 10 seconds to 200 seconds.	90 seconds

Usage Guidelines

In a 802.11k network, if the AP with the strongest signal is reaches its maximum capacity, clients may connect to an under utilized AP with a weaker signal. A 802.11k profile can assigned to each virtual AP.

Example

The following command enables the 802.11k feature on the 802.11k profile and configures the beacon measurement mode and specifies the time interval for beacon, link, and transmit stream measurement requests.

```
(host) (config) #wlan dot11k-profile default
(host) (802.11K Profile "default") #dot11k-enable
(host) (802.11K Profile "default") #bcn-measurement-mode beacon-table
(host) (802.11K Profile "default") #bcn-req-time 60
(host) (802.11K Profile "default") #lm-req-time 60
(host) (802.11K Profile "default") #tsm-req-time 90
```

Related Commands

Command	Description
wlan handover-trigger-profile	Configure a handover trigger profile to ensure QoS for voice calls.
wlan rrm-ie-profile	Configure an radio resource management RRM IE profile to define the information elements advertised by an AP with 802.11k support enabled.

Command History

Version	Description
ArubaOS 3.4	Command introduced
ArubaOS 6.2	The following parameters were introduced: • bcn-req-chan-11a • bcn-req-chan-11bg • ap-chan-rpt-11a • ap-chan-rpt-11bg • handover-trigger-profile • rrm-ie-profile • bcn-rpt-req-profile • tsm-req-profile The **handover trigger threshold** parameter was deprecated, as the handover trigger settings are now configured using the handover trigger profile.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan dot11r-profile

```
wlan dotllr-profile <profile-name>
   clone
   mob-domain-id <1-65535>
   dot11r
   no
   key-duration <60-86400>
   key-assignment
```

Description

This command configures an 802.11r radio profile.

Syntax

Parameter	Description	Range	Default
<profile-name>	Name of this instance of the profile. The name must be 1-63 characters.	—	"default"
clone	Name of an existing dot11r-profile from which the parameter values are copied.	—	—
mob-domain-id	An ID that uniquely identifies the mobility domain.	1-65535	1
dot11r	Enables the Fast BSS Transition capability.	—	Disabled
no	Negates or removes any configured parameter.		—
key-duration	The r1 key timeout value in seconds for decrypt-tunnel or bridge mode.	60-86400	3600
key-assignment	The list of neighbor APs for decrypt-tunnel or bridge mode. • static: Get neighbor AP list from ARM or VBR. • dynamic: Use all APs from ap-group as the neighbor list.	—	—

Usage Guidelines

You can enable and configure Fast BSS Transition on a per Virtual AP basis. You must create an 802.11r profile and associate that with the Virtual AP profile through an SSID profile.

Example

The following set of commands enable the 802.11r capability on the 802.11r profile, configures the Fast BSS mobility domain ID, and specifies the r1 key time-out value.

```
(host) (config) #wlan dot11r-profile default
(host) (802.11r Profile "default") #fastbss-transition
```

```
(host) (802.11r Profile "default") #fastbss-mob-domain-id 25
(host) (802.11r Profile "default") #r1key_validity_duration 2500
```

Configure a mobility domain ID that uniquely identifies a mobility domain using the following command:

```
(host) (802.11r Profile "default") #mob-domain-id <1-65535>
```

The default value is 1.

Configure the r1 key timeout value in seconds for decrypt-tunnel or bridge mode using the following command:

```
(host) (802.11r Profile "default") #key_duration <60-86400>
```

The default value is 3600 seconds.

Apply the 802.11r profile to an SSID profile using the following command:

```
(host) (config) #wlan ssid-profile voice dot11r-profile voice-enterprise
```

You can advertise the 802.11r capability on the Virtual AP profile by applying the SSID profile. Use the following command to apply the SSID profile to the Virtual AP profile:

```
(host) (config) #wlan virtual-ap voice-AP ssid-profile voice
```

Command History

This command was introduced in ArubaOS 6.3.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system.	Config mode on master controllers

wlan edca-parameters-profile

```
wlan edca-parameters-profile {ap|station} <profile-name>
   {background | best-effort | video | voice}
   [acm][aifsn <number>] [ecw-max <exponent> [ecw-min <exponent>] [txop <number>]
   [clone <profile-name>
```

Description

This command configures an enhanced distributed channel access (EDCA) profile for APs or for clients (stations).

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	"default"
`background`	Configures the background queue.	—	—
`best-effort`	Configures the best-effort queue.	—	—
`video`	Configures the video queue.	—	—
`voice`	Configures the voice queue.	—	—
`acm`	Specifies mandatory admission control. The client reserves the access category through traffic specification (TSPEC) signaling. Enter 1 to enable, 0 to disable.	0, 1	0 (disabled)
`aifsn`	Arbitrary inter-frame space number.	1-15	0
`ecw-max`	The exponential (n) value of the maximum contention window size, as expressed by 2^n-1. A value of 4 computes to 2^4-1 = 15.	1-15	0
`ecw-min`	The exponential (n) value of the minimum contention window size, as expressed by 2^n-1. A value of 4 computes to 2^4-1 = 15.	0-15	0
`txop`	Transmission opportunity, in units of 32 microseconds. Divide the desired transmission duration by 32 to determine the value to configure. For example, for a transmission duration of 3008 microseconds, enter 94 (3008/32).	0-2047	0
`clone`	Name of an existing EDCA profile from which parameter values are copied.	—	—

Usage Guidelines

EDCA profiles are specific either to APs or clients. You apply an EDCA profile to a specific SSID profile. use this command only under the guidance of your Dell technical support representative.

The following are the default values configured for APs:

Access Category	ecw-min	ecw-max	aifsn	txop	acm
best-effort	4	6	3	0	No
background	4	10	7	0	No
video	3	4	1	94	No
voice	2	3	1	47	No

The following are the default values configured for clients:

Access Category	ecw-min	ecw-max	aifsn	txop	acm
best-effort	4	10	3	0	No
background	4	10	7	0	No
video	3	4	2	94	No
voice	2	3	2	47	No

Example

The following command configures an EDCA profile for APs:

```
(host) (config) #wlan edca-parameters-profile ap edca1
  best-effort ecw-min 15 ecw-max 15 aifsn 15 txop 100 acm 1
```

Command History

Version	Description
ArubaOS 3.1	Command introduced.
ArubaOS 3.4.1	License requirements changed in ArubaOS 3.4.1, so the command requires the PEF license instead of the Voice Services Module license required in earlier versions.

This command was introduced in ArubaOS 3.1.

Command Information

Platforms	Licensing	Command Mode
All platforms	PEFNG license	Config mode on master controllers

wlan handover-trigger-profile

```
wlan handover-trigger-profile <profile-name>
   clone <source>
   handover-threshold <handover-threshold>
   handover-trigger
   no
```

Description

Configure a handover trigger profile to ensure QoS for voice calls.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	"default"
`clone <source>`	Creates a copy of the Handover Trigger Profile specified as the <source>. <source> is the name of an existing Handover Trigger Profile from which parameter values are copied.	—	—
`handover-threshold <handover-threshold>`	If the best signal strength (-dbm) of a WiFi signal received by a voice client from all the APs is equal to or lesser than this threshold value, the handover trigger feature initiates the handover process.. Threshold values can be specified in the range 20 to 70.	20 – 70 -dBM	50 -dBM
`handover-trigger`	Issue this command to enable the handover trigger feature. If enabled, the controller will initiate the handover of a voice client (for example: dual mode handsets) roaming at the edge of Wi-Fi coverage to an alternate carrier or connection. The handover trigger is initiated if the Wi-Fi signal strength reported by the voice client (received from all APs) is equal to or less than the threshold value. You must enable dot11k before using this command.	—	Enabled
`no`	Negates any configured parameter.	—	—

Usage Guidelines

The handover-trigger profile is a part of the 802.11K profile. It is used to configure the parameters for the “Wi-Fi Edge Detection and Handover of Voice Clients” feature. It is mandatory to enable the 802.11K feature before enabling the“Wi-Fi Edge Detection and Handover of Voice Clients” feature.

Example

The following command enables the handover trigger feature and sets the handover threshold at -20dbm.

```
(host) (config) #wlan handover-trigger-profile default
(host) (Handover Trigger Profile "default") #handover-trigger
```

```
(host) (Handover Trigger Profile "default") #handover-threshold 20
```

Command History

This command was introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Configuration mode on master or local controllers

wlan hotspot advertisement-profile

```
wlan hotspot advertisement profile <profile-name>
   anqp-3gpp-nwk-profile <profile-name>
   anqp-domain-name-profile <profile-name>
   anqp-ip-addr-avail-profile <profile-name>
   anqp-nai-realm-profile <profile-name>
   anqp-nwk-auth-profile <profile-name>
   anqp-roam-cons-profile <profile-name>
   anqp-venue-name-profile <profile-name>
   clone <profile-name>
   h2qp-conn-cap-profile <profile-name>
   h2qp-op-cl-profile <profile-name>
   h2qp-operator-friendly-profile <profile-name>
   h2qp-wan-metrics-profile <profile-name>
   no ...
```

Description

This command configures a WLAN advertisement profile for an 802.11u public access service provider.

Syntax

Parameter	Description
`anqp-3gpp-nwk-profile <profile-name>`	Name of the Access Network Query Protocol (ANQP) 3GPP cellular network profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot anqp-3gpp-nwk-profile on page 2293.
`anqp-domain-name-profile <profile-name>`	Name of the ANQP domain name profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot anqp-domain-name-profile on page 2295.
`anqp-ip-addr-avail-profile <profile-name>`	Name of the ANQP IP Address Availability profile to be associated with this WLAN advertisement profile.For more information on configuring this profile, refer to wlan hotspot anqp-ip-addr-avail-profile on page 2297.
`anqp-nai-realm-profile <profile-name>`	Name of the ANQP NAI Realm profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot anqp-nai-realm-profile on page 2299.
`anqp-nwk-auth-profile <profile-name>`	Name of the ANQP Network Authentication profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot anqp-nwk-auth-profile on page 2304.

Parameter	Description
`anqp-roam-cons-profile <profile-name>`	Name of the ANQP Roaming Consortium profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot anqp-roam-cons-profile on page 2306.
`anqp-venue-name-profile <profile-name>`	Name of the ANQP Venue Name profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot anqp-venue-name-profile on page 2308.
`clone <profile-name>`	Make a copy of an existing WLAN Advertisement profile.
`h2qp-conn-cap-profile <profile-name>`	Name of the Hotspot 2.0 Connection Capability profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot h2qp-conn-capability-profile on page 2311.
`h2qp-op-cl-profile <profile-name>`	Name of the Hotspot 2.0 Operating Class Indication profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot h2qp-op-cl-profile on page 2313.
`h2qp-operator-friendly-name-profile <profile-name>`	Name of the Hotspot 2.0 operator-friendly name profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot h2qp-operator-friendly-name-profile on page 2315.
`h2qp-wan-metrics-profile <profile-name>`	Name of the Hotspot 2.0 WAN Metrics profile to be associated with this WLAN advertisement profile. For more information on configuring this profile, refer to wlan hotspot h2qp-wan-metrics-profile on page 2317.
`no`	Negate or remove any existing parameter, returning it to its default value.

Usage Guidelines

Hotspot 2.0 is a Wi-Fi Alliance specification based upon the 802.11u protocol that provides wireless clients with a streamlined mechanism to discover and authenticate to suitable networks, and allows mobile users the ability to roam between partner networks without additional authentication.

Access Network Query Protocol (ANQP) and Hotspot 2.0 Query Protocol (H2QP) profiles define the information in the 802.11u Information Elements (IEs) to be broadcast by an 802.11u-capable AP. Use this command to select one of each type of ANQP and H2QP profile to be associated with the advertisement profile.

Values configured in the ANQP profiles will not be sent to clients unless you:

1. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
2. Enable the hotspot feature within that Hotspot profile (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

Example

The following command associates the ANQP domain name profile **anqp-dom-1** to the advertisement profile **network1**.

```
wlan hotspot advertisement-profile network1
   anqp-domain-name-profile anqp-dom-1
```

Related Commands

Use the following commands to configure the Hotspot feature.

Command	Description
• wlan hotspot anqp-3gpp-nwk-profile	This profile defines information for a 3rd Generation Partnership Project (3GPP) Cellular Network for hotspots that have roaming relationships with cellular operators
• wlan hotspot anqp-domain-name-profile	This command defines the domain name to be sent in an Access Network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.
• wlan hotspot anqp-ip-addr-avail-profile	This command defines available IP address types to be sent in an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.
• wlan hotspot anqp-nai-realm-profile	This command defines a Network Access Identifier (NAI) realm whose information can be sent as an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response
• wlan hotspot anqp-nwk-auth-profile	This command configures an ANQP Network Authentication profile to define authentication type being used by the hotspot network.
• wlan hotspot anqp-roam-cons-profile	This command configures the Roaming Consortium OI information to be sent in an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response
• wlan hotspot anqp-venue-name-profile	This command defines venue information be sent in an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.
• wlan hotspot h2qp-conn-capability-profile	This command defines a Hotspot 2.0 Query Protocol (H2QP) profile that advertises hotspot protocol and port capabilities.
• wlan hotspot h2qp-op-cl-profile	This command defines a Hotspot 2.0 Query Protocol (H2QP) profile that defines the Operating Class to be sent in the ANQP IE.
• wlan hotspot h2qp-	This command defines a Hotspot 2.0 Query Protocol (H2QP) operator-friendly name

Command	Description
operator-friendly-name-profile	profile.
• wlan hotspot h2qp-wan-metrics-profile	This command creates a Hotspot 2.0 Query Protocol (H2QP) profile that specifies the hotspot WAN status and link metrics.
• wlan hotspot hs2-profile	This command configures a hotspot profile for an 802.11u public access service provider.

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot anqp-3gpp-nwk-profile

```
wlan hotspot anqp-3gpp-nwk-profile <profile-name>
   3gpp_plmn1    <3GPP PLMN1 data>
   3gpp_plmn2    <3GPP PLMN2 data>
   3gpp_plmn3    <3GPP PLMN3 data>
   3gpp_plmn4    <3GPP PLMN4 data>
   3gpp_plmn5    <3GPP PLMN5 data>
   3gpp_plmn6    <3GPP PLMN6 data>
   clone <profile-name>
   enable
   no ...
```

Description

This profile defines information for a 3rd Generation Partnership Project (3GPP) Cellular Network for hotspots that have roaming relationships with cellular operators.

Syntax

Parameter	Description
`3gpp_plmn1`	The Public Land Mobile Networks (PLMN) value of the highest-priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp_plmn2`	The Public Land Mobile Networks (PLMN) value of the second-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp_plmn3`	The Public Land Mobile Networks (PLMN) value of the third-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp_plmn4`	The Public Land Mobile Networks (PLMN) value of the fourth-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp_plmn5`	The Public Land Mobile Networks (PLMN) value of the fifth-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`3gpp_plmn6`	The Public Land Mobile Networks (PLMN) value of the sixth-highest priority network. The PLMN is comprised of a 12-bit Mobile Country Code (MCC) and the 12-bit Mobile Network Code (MNC).
`clone <profile-name>`	Make a copy of an existing 3GPP profile.

Parameter	Description
`enable`	Issue this command to enable this profile. ANQP 3GPP profiles are disabled by default.
`no`	Remove an existing parameter.

Usage Guidelines

The 3GPP Cellular Network Profile defines an ANQP information element (IE) to be sent in a Generic Advertisement Service (GAS) query response from an AP in a hotspot with a roaming relationship with a cellular operator. The 3GPP Mobile Country Code (MCC) and the 12-bit Mobile Network Code data in the IE can help the client select a 3GPP network.

Values configured in this profile will not be sent to clients unless you:

1. Associate the 3GPP Cellular Network profile with an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-3gpp-nwk-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. ("`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

Example

The following command defines 3GPP data for the 3GPP profile cellcorp1.

```
wlan hotspot anqp-3gpp-nwk-profile cellcorp1
   enable
   3gpp_plmn1 310026
   3gpp_plmn2 208000
   3gpp_plmn3 208001
```

Command History

This command was introduced in ArubaOS 6.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot anqp-domain-name-profile

```
wlan hotspot anqp-domain-name-profile <profile-name>
   clone <profile-name>
   domain-name <domain-name>
   no ...
```

Description

This command defines the domain name to be sent in an Access Network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.

Syntax

Parameter	Description
`clone <profile-name>`	Make a copy of an existing ANQP domain name profile.
`domain-name <domain-name>`	Domain name of the hotspot operator. This alphanumeric string must be 32 characters or less.
`no`	Remove an existing parameter.

Usage Guidelines

Use this command to configure a domain name in the ANQP Domain Name profile. If a client uses the Generic Advertisement Service (GAS) to post an ANQP query to an Access Point, the AP will return an ANQP Information Element with the domain name configured in this profile.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP Domain Name profile with an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-domain-name-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name> )`
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

Example

The following command defines a domain name for the ANQP domain name profile domain1.

```
wlan hotspot anqp-domain-name-profile domain1
   domain-name example.com
```

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot anqp-ip-addr-avail-profile

```
wlan hotspot anqp-ip-addr-avail-profile <profile-name>
   clone <profile-name>
   ipv4-addr-avail availability-unknown|not-available|port-restricted|port-restricted-ouble-
   nated|port-restricted-single-nated|private-double-nated|private-single-nated
   ipv6-addr-avail available|availability-unknown|not-available
   no ...
```

Description

This command defines available IP address types to be sent in an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.

Syntax

Parameter	Description
`clone <profile-name>`	Make a copy of an existing ANQP IP Address Availability profile.
`ipv4-addr-avail`	Indicate the availability of an IPv4 network.
`availability-unknown`	Network availability cannot be determined.
`not-available`	Network is not available.
`port-restricted`	Network has some ports restricted (for example, the network blocks port 110 to restrict POP mail).
`port-restricted-double-nated`	Network has some ports restricted and multiple routers performing network address translation.
`port-restricted-single-nated`	Network has some ports restricted and a single router performing network address translation.
`private-double-nated`	Network is a private network with multiple routers doing network address translation.
`private-single-nated`	Network is a private network a single router doing network address translation.
`public`	Network is a public network.
`ipv6-addr-avail`	Indicate the availability of an IPv6 network.
`available`	An IPv6 network is available.
`availability-unknown`	Network availability cannot be determined.

Parameter	Description
not-available	Network is not available.
no	Remove an existing parameter.

Usage Guidelines

The IP Address Availability information configured using this command provides clients with information about the availability of IP address versions and types which could be allocated to those clients after they associate to the hotspot AP.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP IP Address Availability profile with an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-ip-addr-avail-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

Example

The following command configures an AP using this profile to advertise a public IPv4 network.

```
wlan hotspot anqp-ip-addr-avail-profile default
   ipv4-addr-avail public
   ipv6-addr-avail not-available
```

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot anqp-nai-realm-profile

```
wlan hotspot anqp-nai-realm-profile <profile-name>
   clone <profile-name>
   nai-home-realm
   nai-realm-auth-id-1|nai-realm-auth-id-2 {credential-type|expanded-eap|expanded-inner-
   eap|inner-auth-eap|non-eap-inner-auth|tunneled-eap-credential-type}
   nai-realm-auth-value-1|nai-realm-auth-value-2 {cred-cert|cred-hw-token|cred-nfc|cred-
   none|cred-rsvd|cred-sim|cred-soft-token|cred-user-pass|cred-usim|cred-vendor-spec|eap-
   crypto-card|eap-generic-token-card|eap-identity|eap-method-aka|eap-method-sim|eap-method-
   tls|eap-method-ttls|eap-notification|eap-one-time-password|eap-peap|eap-peap-mschapv2|non-
   eap-chap|non-eap-mschap|non-eap-mschapv2|non-eap-pap|non-eap-rsvd|reserved}
   nai-realm-eap-method crypto-card|eap-aka|eap-sim|eap-tls|eap-ttls|generic-token-
     card|identity|notification|one-time-password|peap|peap-mschapv2
   nai-realm-encoding
   nai-realm-name <nai-realm-name>
   no ...
```

Description

This command defines a Network Access Identifier (NAI) realm whose information can be sent as an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.

Syntax

Parameter	Description
`clone <profile-name>`	Make a copy of an existing NAI Realm profile.
`nai-home-realm`	Mark the realm in this profile as the NAI Home Realm.
`nai-realm-auth-id-1|nai-realm-auth-id-2`	Use the **nai-realm-auth-id-1** command to send the one of the following authentication methods for the primary NAI realm ID. Use the **nai-realm-auth-id-2** command to send the one of the following authentication methods for the secondary NAI realm ID.
`credential-type`	The specified authentication ID uses credential authentication.
`expanded-eap`	The specified authentication ID uses the expanded EAP authentication method.
`expanded-inner-eap`	The specified authentication ID uses the expanded inner EAP authentication method.
`inner-auth-eap`	The specified authentication ID uses inner EAP authentication type.

Parameter	Description
non-eap-inner-auth	The specified authentication ID uses non-EAP inner authentication type.
tunneled-eap-credential-type	The specified authentication ID uses the tunneled EAP credential type.
nai-realm-auth-value-1|nai-realm-auth-value-2	Use the **nai-ream-auth-value-1** command to select an authentication value for the authentication method specified by **nai-realm-auth-id-1**. Use the **nai-ream-auth-value-2** command to select the authentication value for the authentication method specified by **nai-realm-auth-id-2**.
cred-cert	Credential - Certificate
cred-hw-token	Credential - Hardware Token
cred-nfc	Credential - NFC
cred-none	Credential - None
cred-rsvd	Credential - Reserved
cred-sim	Credential - SIM
cred-soft-token	Credential - Soft Token
cred-user-pass	Credential - Username/password
cred-usim	Credential - USIM
cred-vendor-spec	Credential - Vendor-specific
eap-crypto-card	EAP Method - Crypto-card
eap-generic-token-card	EAP Method - Generic-Token-Card
eap-identity	EAP Method - Identity
eap-method-aka	EAP Method - AKA
eap-method-sim	EAP Method - SIM - GSM Subscriber Iden
eap-method-tls	EAP Method - TLS - Transport Layer Sec

Parameter	Description
eap-method-ttls	EAP Method - TTLS - Tunneled Transport Security
eap-notification	EAP Method - Notification
eap-one-time-password	EAP Method - One-Time-Password
eap-peap	EAP Method - PEAP
eap-peap-mschapv2	EAP Method - PEAP MSCHAP V2
non-eap-chap	Non-EAP Method - CHAP
non-eap-mschap	Non-EAP Method - MSCHAP
non-eap-mschapv2	Non-EAP Method - MSCHAPv2
non-eap-pap	Non-EAP Method - PAP
non-eap-rsvd	Non-EAP Method - Reserved for future use
reserved	Reserved for future use.
nai-realm-eap-method	Select one of the options below to identify the EAP authentication method supported by the hotspot realm.
crypto-card	Crypto card authentication
eap-aka	EAP for UMTS Authentication and Key Agreement
eap-sim	EAP for GSM Subscriber Identity Modules
eap-tls	EAP-Transport Layer Security
eap-ttls	EAP-Tunneled Transport Layer Security
generic-token-card	EAP Generic Token Card (EAP-GTC)
identity	EAP Identity type
notification	The hotspot realm uses EAP Notification messages for authentication.

Parameter	Description
one-time-password	Authentication with a single-use password.
peap	Protected Extensible Authentication Protocol
peap-mschapv2	Protected Extensible Authentication Protocol with Microsoft Challenge Handshake Authentication Protocol version 2
nai-realm-encoding <0-255>	Issue this command if the NAI realm named defined by nai-realm-name <nai-realm-name> is a UTF-8 formatted character string that is not formatted in accordance with IETF RFC 4282.
nai-realm-name <nai-realm-name>	Name of the NAI realm. The realm name is often the domain name of the service provider.
no	Negate or remove any existing parameter

Usage Guidelines

An AP's NAI Realm profile identifies and describes a NAI realm accessible using the AP, and the method that this NAI realm uses for authentication. These settings configured in this profile determine the NAI realm elements that are included as part of a GAS Response frame.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP NAI Realm profile with an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name>anqp-nai-realm-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profileadvertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name>hotspot-enable`)

Example

```
wlan hotspot anqp-nai-realm-profile home
   enable
   nai-realm-name corp-hotspot.com
   nai-realm-auth-id-1 credential-type
   nai-realm-auth-value-1 cred-cert
   nai-home-realm
!
wlan hotspot anqp-nai-realm-profile non-home
   nai-realm-name corp-hotspot-roam.com
   nai-realm-eap-method eap-sim
   nai-realm-auth credential-type
```

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot anqp-nwk-auth-profile

```
wlan hotspot anqp-nwk-auth-profile <profile-name>
   clone <profile-name>
   no ...
   nwk-auth-type acceptance|dns-redirection|http-https-redirection|online-enroll
   url <url>
```

Description

This command configures an ANQP Network Authentication profile to define authentication type being used by the hotspot network.

Syntax

Parameter	Description
`clone <profile-name>`	Make a copy of an existing ANQP Network Authentication profile.
`no`	Negate any existing parameter.
`nwk-auth-type`	Network Authentication Type being used by the hotspot network.
`acceptance`	Network requires the user to accept terms and conditions. **NOTE:** This option requires you to specify a redirection URL string as an IP address, FQDN or URL.
`dns-redirection`	Additional information on the network is provided through DNS redirection. **NOTE:** This option requires you to specify a redirection URL string as an IP address, FQDN or URL.
`http-https-redirection`	Additional information on the network is provided through HTTP/HTTPS redirection.
`online-enroll`	Network supports online enrollment.
`url`	URL, IP address, or FQDN used by the hotspot network for the **acceptance** or **dns-redirection** network authentication types.

Usage Guidelines

When you enable the asra option in the WLAN hotspot profile, the settings you configure in the Network Authentication profile are sent in the GAS response to the client.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP Network Authentication profile an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-nwk-auth-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile1advertisement-profile <profile-name>`)

3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

Example

The following command configures the default Network Authorization profile to use DNS redirection.

```
wlan hotspot anqp-nwk-auth-profile default
   nwk-auth-type dns-redirection redirect-url http://www.example.com/redirect.html
```

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot anqp-roam-cons-profile

```
wlan hotspot anqp-roam-cons-profile <profile-name>
   clone <profile-name>
   no ...
   roam-cons-oi <roam-cons-oi>
   roam-cons-oi-len <roam-cons-oi-len>
```

Description

This command configures the Roaming Consortium OI information to be sent in an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.

Syntax

Parameter	Description
`clone <profile-name>`	Make a copy of an existing ANQP Roaming Consortium profile.
`no`	Negate any existing parameter.
`roam-cons-oi <roam-cons-oi>`	Send the specified roaming consortium OI in a GAS query response. The OI must be a hexadecimal number 3-5 octets in length.
`roam-cons-oi-len <roam-cons-oi-len>`	Length of the OI. The value of the **roam-cons-oi-len** parameter must equal upon the number of octets of the **roam-cons-oi** field. • **0**: 0 Octets in the OI (Null) • **3**: OI length is 24-bit (3 Octets) • **5**: OI length is 36-bit (5 Octets)

Usage Guidelines

Organization Identifiers (OIs) are assigned to service providers when they register with the IEEE registration authority. The Roaming Consortium Information Elements (IEs) contain information identifying the network and service provider, whose security credentials can then be used to authenticate with the AP transmitting this element.

Use the wlan hotspot anqp-roam-cons-profile command to define the OI for the hotspot service provider in the ANQP Roaming Consortium profile. Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP Roaming Consortium profile an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-roam-cons-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

To identify additional Roaming consortium OIs used by the service provider's top three roaming partners, configure the roam-cons-oi-1, roam-cons-oi-2 or roam-cons-oi-3 parameters in the Hotspot Profile.

Example

The following command defines the roaming consortium OI and OI length in the ANQP roaming consortium profile:

```
wlan hotspot anqp-roam-cons-profile profile1
   roam-cons-oi 506F9A
   roam-cons-oi-len 3
```

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot anqp-venue-name-profile

```
wlan hotspot anqp-venue-name-profile <profile-name>
   clone
   no
   venue-group outdoor|reserved|utility-misc|vehicular|assembly|business  educational|factory-
   or-industrial|institutional|mercantile|residential|   storage|unspecified
   venue-language <language>
   venue-name <venue-name>
   venue-type <venue-type>
```

Description

This command defines venue information be sent in an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.

Syntax

Parameter	Description
`clone`	Make a copy of an existing ANQP Venue Name profile.
`no`	Negates any existing parameter.
`venue-group`	Specify one of the following venue groups to be advertised in the ANQP Information Elements (IEs) from APs associated with this profile. The default setting is unspecified. • assembly • business • educational • factory-or-industrial • institutional • mercantile • outdoor • reserved • residential • storage • unspecified • Utility-Misc • Vehicular
`venue-language <venue-name>`	An ISO 639 language code that identifies the language used in the Venue Name field.
`venue-name <venue-name>`	Venue name to be advertised in the ANQP IEs from APs associated with this profile. If the venue name includes spaces, the name must be enclosed in quotation marks, e.g. “Midtown Shopping Center”.

Parameter	Description
`venue-type <venue-type>`	Specify a venue type to be advertised in the IEs from APs associated with this hotspot profile. The complete list of supported venue types is described in Venue Types on page 2309.

Usage Guidelines

Use this command to configure the venue group and venue type in an ANQP Venue Name profile. If a client uses the Generic Advertisement Service (GAS) to post an ANQP query to an Access Point, the AP will return ANQP Information Elements with the values configured in this profile.

Values configured in this profile will not be sent to clients unless you:

1. Associate the ANQP Venue Name profile with an ANQP Advertisement profile. (`wlan hotspot advertisement profile <profile-name> anqp-venue-name-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

Venue Types

The following list describes the different venue types that may be configured in a hotspot profile:

• assembly-amphitheater • assembly-amusement-park • assembly-arena • assembly-bar • assembly-coffee-shop • assembly-convention-center • assembly-emer-coord-center • assembly-library • assembly-museum • assembly-passenger-terminal • assembly-restaurant • assembly-stadium • assembly-theater • assembly-unspecified • assembly-worship-place • assembly-zoo • business-attorney • business-bank • business-doctor • business-fire-station	• business-police-station • business-post-office • business-professional-office • business-research-and-development • business-unspecified • educational-primary-school • educational-secondary-school • educational-university • educational-unspecified • industrial-factory • institutional-alcohol-or-drug-rehab • institutional-group-home • institutional-hospital • institutional-prison • institutional-terminal-care • institutional-unspecified • mercantile-automotive-service-station • mercantile-gas-station • mercantile-grocery • mercantile-retail • mercantile-shopping-mall	• merchantile unspecified • outdoor-bus-stop • outdoor-city-park • outdoor-kiosk • outdoor-muni-mesh-nwk • outdoor-rest-area • outdoor-traffic-control • outdoor-unspecified • residential-boarding-house • residential-dormitory • residential-hotel • residential-private-residence • residential-unspecified • unspecified • vehicular-airplane • vehicular-automobile • vehicular-bus • vehicular-ferry • vehicular-motor-bike • vehicular-ship • vehicular-train • vehicular-unspecified

Example

The following command defines an ANQP Venue Name profile for a shopping mall.

```
wlan hotspot anqp-venue-name-profile Mallprofile1
   venue-group mercantile
   venue-name Westgate Shopping Center
   venue-type mercantile-shopping-mall
```

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot h2qp-conn-capability-profile

```
wlan hotspot h2qp-conn-capability-profile <profile>
   clone
   esp
   icmp
   no
   tcp-ftp
   tcp-http
   tcp-pptp-vpn
   tcp-ssh
   tcp-tls-vpn
   tcp-voip
   udp-ike2-4500
   udp-ike2-500
   udp-ipsec-vpn
   udp-voip
```

Description

Define a Hotspot 2.0 Query Protocol (H2QP) profile that advertises hotspot protocol and port capabilities.

Syntax

Parameter	Description
clone	Make a copy of an existing hotspot connection capability profile.
esp	Include this parameter to enable the Encapsulating Security Payload (ESP) port used by IPSec VPNs. (port 0)
icmp	Indicates that the ICMP port is enabled and available. (port 0)
no	Negates any existing parameter, returning it to its default disabled value.
tcp-ftp	Include this parameter to enable the FTP port. (port 20)
tcp-http	Include this parameter to enable the HTTP port. (port 80)
tcp-pptp-vpn	Include this parameter to enable the PPTP port used by IPSec VPNs. (port 1723)
tcp-ssh	Include this parameter to enable the SSH port. (port 22)
tcp-tls-vpn	Include this parameter to enable the TCP TLS port used by VPNs. (port 80)
tcp-voip	Include this parameter to enable the TCP VoIP port. (port 5060)
udp-ike2-4500	Include this parameter to enable the IKEv2. (port 4500)

Parameter	Description
udp-ike2-500	Include this parameter to enable the IKEv2. (port 500)
udp-ipsec-vpn	Include this parameter to enable the IPsec VPN port. (ports 500, 4500 and 0)
no	Negates any existing parameter, returning it to its default disabled value.
udp-voip	Include this parameter to enable the UDP VoIP port. (port 5060)

Usage Guidelines

The values configured in this profile can be sent in an ANQP IE to provide hotspot clients information about the IP protocols and associated port numbers that are available and open for communication.

Values configured in this profile will not be sent to clients unless you:

1. Associate the H2QP profile with an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> h2qp-conn-cap-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

Example

The following example allows the H2QP connection capability profile to advertise the availability of ICMP, HTTP and VOIP ports.

```
(host) (config)# wlan hotspot h2qp-conn-capability-profile Wan1
   icmp
   http
   voip
   enable
```

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot h2qp-op-cl-profile

```
wlan hotspot h2qp-op-cl-profile <profile>
   clone
   no
   op-cl <1-255>
```

Description

This command defines a Hotspot 2.0 Query Protocol (H2QP) profile that defines the Operating Class to be sent in the ANQP IE.

Syntax

Parameter	Description
`clone`	Makes a copy of an existing hotspot operating class profile.
`no`	Negates any existing parameter, returning it to its default disabled value.
`op-cl`	Configures the operating class for the devices' BSS. The supported range for this field is 1-255, and the default value is 1.

Usage Guidelines

The values configured in this H2QP Operating Class profile define the channels on which the hotspot is capable of operating. It may be useful where, for instance, a mobile device discovers a hotspot in the 2.4 GHz band but finds it is dual-band and prefers the 5 GHz band. For a definition of these global operating classes, refer to Table E-4 of IEEE Std 802.11-2012, Annex E.

Values configured in this profile will not be sent to clients unless you:

1. Associate the H2QP profile with an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name> h2qp-op-cl-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name> hotspot-enable`)

Example

The following example configures and enables a profile with the default operating class value.

```
(host)(config)#wlan hotspot h2qp-op-cl-profile
   op-cl 1
   enable
```

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot h2qp-operator-friendly-name-profile

```
wlan hotspot h2qp-operator-friendly-name-profile <profile>
   clone
   no
   op-fr-name <op-fr-name>
   op-lang-code <op-lang-code>
```

Description

This command defines a Hotspot 2.0 Query Protocol (H2QP) operator-friendly name profile.

Syntax

Parameter	Description
`clone`	Makes a copy of an existing operator-friendly name profile.
`no`	Negates any existing parameter.
`<op-fr-name>`	An operator-friendly name sent by devices using this profile. The name can be up to 64 alphanumeric characters, and can include special characters and spaces. If the name includes quotation marks (“), you must include a backslash character (\) before each quotation mark. (e.g. \"example\")
`<op-lang-code>`	An ISO 639 language code that identifies the language used in the op-fr-name field.

Usage Guidelines

The operator-friendly name configured in this profile is a free-form text field that can identify the operator and also something about the location.

Values configured in this profile will not be sent to clients unless you:

1. Associate the H2QP operator-friendly name profile with an ANQP advertisement profile. (`wlan hotspot advertisement profile <profile-name>h2qp-operator-friendly-profile <profile-name>`)
2. Associate the ANQP advertisement profile with a Hotspot profile. (`wlan hotspot h2-profile advertisement-profile <profile-name>`)
3. Enable the hotspot feature within that Hotspot profile. (`wlan hotspot h2-profile <profile-name>hotspot-enable`)

Example

The example below shows that the controller has two configured operator friendly name profiles. The **References** column lists the number of other profiles with references to the operator friendly name profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host)(config)# wlan hotspot h2qp-operator-friendly-name-profile
   op-fr-name my_hotspot
   op-lang-code <op-lang-code>
```

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot h2qp-wan-metrics-profile

```
wlan hotspot h2qp-wan-metrics-profile <profile-name>
at-capacity
clone
downlink-load
downlink-speed
load-dur
no
symm-link
uplink-load
uplink-speed
wan-metrics-link-status link_down|link_test|link_up|reserved
```

Description

Create a Hotspot 2.0 Query Protocol (H2QP) profile that specifies the hotspot WAN status and link metrics.

Syntax

Parameter	Description	Range	Default
`at_capacity`	Use the **at_capacity** parameter to indicate that the WAN Link has reached its maximum capacity. If this parameter is enabled, no additional mobile devices will be permitted to associate with the hotspot AP.	enabled disabled	disabled
`clone <profile>`	Make a copy of an existing H2QP profile.	-	-
`downlink_load <load>`	The percentage of the WAN downlink that is currently utilized. If no value is set, this parameter will show a default value of 0 to indicate that the downlink speed is unknown or unspecified.	1-100	0 (unspecified)
`downlink_speed <speed>`	Use the `downlink_speed <speed>` parameter to indicate the current WAN backhaul downlink speed in Kbps. If no value is set, this parameter will show a default value of 0 to indicate that the downlink speed is unknown or unspecified.	0 - 2,147,483,647 Kbps	0 (unspecified)
`load_dur <load_dur>`	Duration over which the downlink load is measured, in tenths of a second.	0 and 65535	0 (unspecified)
`no`	Negate any existing parameter	-	-
`symm_link`	Use the **symn_link** parameter to indicate that the WAN Link has same speed in both the uplink and downlink directions.	enabled disabled	disabled

Parameter	Description	Range	Default
`uplink_load <speed>`	The percentage of the WAN uplink that is currently utilized. If no value is set, this parameter will show a default value of 0 to indicate that the downlink speed is unknown or unspecified.	1-100	0 (unspecified)
`uplink_speed <speed>`	Use the **uplink <speed>** parameter to indicate the current WAN backhaul uplink speed in Kbps. If no value is set, this parameter will show a default value of 0 to indicate that the uplink speed is unknown or unspecified.	0 - 2,147,483,647 kbps	0 (unspecified)
`wan_metrics_link_status`	Define the status of the WAN Link by configuring one of the following values. The default link status is **reserved**, which indicates that the link status is unknown or unspecified.	• link_down • link_test • link_up • reserved	reserved
`link_down`	WAN link is down.	-	-
`link_test`	WAN link is currently in a test state.	-	-
`link_up`	WAN link is up.	-	-
`reserved`	This parameter is reserved by the Hotspot 2.0 specification, and cannot be configured. This is the default link status.	-	-

Usage Guidelines

The values configured in this profile can be sent in an ANQP IE to provide hotspot clients information about access network characteristics such as link status and the capacity and speed of the WAN link to the Internet.Issue this command without the **<profile>** parameter to display the entire WAN metrics profile list, including profile status and the number of references to each profile. Include a profile name to display detailed configuration information for that profile.

Examples

The example below shows that the controller has three configured WAN metrics profiles. The **References** column lists the number of other profiles with references to the operator-friendly name profile, and the **Profile Status** column indicates whether the profile is predefined. User-defined profiles will not have an entry in the **Profile Status** column.

```
(host) (config) #show wlan hotspot h2qp-wan-metrics-profile
H2QP WAN Metrics Profile List
-----------------------------
Name          References  Profile Status
----          ----------  --------------
default       0
WanFastlink
```

```
Total:1
```

Command History

This command was introduced in ArubaOS 6.4.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan hotspot hs2-profile

```
wlan hotspot hs2-profile <profile-name>
   access-network-type emergency-services|personal-device|private|private-guest|public-
   chargeable|public-free|test|wildcard
   addtl-roam-cons-ois <addtl-roam-cons-ois>
   advertisement-profile <profile-name>
   advertisement-protocol anqp|eas|mih-cmd-event|mih-info|rsvd
   asra
   clone <profile-name>
   comeback-mode
   gas-comeback-delay
   grp-frame-block
   hessid <id>
   hotspot-enable
   internet
   no ..
   p2p-cross-connect
   p2p-dev-mgmt
   pame-bi
   query-response-length-limit <query-response-length-limit>
   radius_cui
   radius_loc_data
   roam-cons-len-1 0|3|5
   roam-cons-len-2 0|3|5
   roam-cons-len-3 0|3|5
   roam-cons-oi-1 <roam-cons-oi-1>
   roam-cons-oi-2 <roam-cons-oi-1>
   roam-cons-oi-3 <roam-cons-oi-1>
   time-advt-cap no-std-ext-timesrc|timestamp-offset-utc |reserved
   time-error <milliseconds>
   time-zone <time-zone>
   venue-group <venue-group>
   venue-type <venue-type>
```

Description

This command configures a hotspot profile for an 802.11u public access service provider.

Syntax

Parameter	Description
`access-network-type`	Specify the 802.11u network type. The default setting is **public-chargeable.** • **emergency-services**: emergency services only network • **personal-device**: personal device network • **private**: private network • **private-guest**: private network with guest access • **public**-chargeable: public chargeable network • **public-free**: free public network • **test**: test network • **wildcard**: wildcard network

Parameter	Description
`addtl-roam-cons-ois <addtl-roam-cons-ois>`	Number of additional roaming consortium Organization Identifiers (OIs) advertised by the AP. This feature supports up to three additional OIs, which are defined using the roam-cons-oi-1, roam-cons-oi-2 and roam-cons-oi-3 parameters.
`advertisement-profile <profile-name>`	Advertisement profile associated with this hotspot profile. If this parameter is not changed, the hotspot profile uses with the **default** advertisement profile.
`advertisement-protocol`	Select one of the following advertisement protocol types to be used by the AP. • **anqp**: Access Network Query Protocol (ANQP) • **emergency**: Emergency Alert System(EAS) • **mih-cmd-event**: Media Independent Handover (MIH) Command and Event Services Capability Discovery • **mih-info**: Media Independent Handover (MIH) Information Service. This option allows handovers between differing kinds of wireless access protocols and technologies, allowing access points on different IP subnets to communicate with each other at the link level while maintaining session continuity. • **rsvd**: Reserved for future use.
`asra`	Issue the asra (Additional Steps Required for Access) subcommand if any additional steps are required for network access. If this parameter is enabled, the AP will send the following Information Elements (IEs) in response to the client's ANQP query. • Venue Name • Domain Name List • Network Authentication Type • Roaming Consortium List • NAI Realm List **NOTE:** If asra is enabled, the advertisement profile for this hotspot must reference an enabled network authentication type profile. For more information on enabling an network authentication type profile, see wlan hotspot anqp-nwk-auth-profile on page 2304.
`clone <profile-name>`	Makes a copy of an existing hotspot profile.
`comeback-mode`	By default, ANQP information is obtained from a GAS Request and Response. If you enable the comeback-mode option, advertisement information is obtained using a GAS Request and Response. as well as a Comeback-Request and Comeback-Response. This option is disabled by default.
`gas-comeback-delay <delay>`	At the end of the GAS comeback delay interval, the client may attempt to retrieve the query response using a Comeback Request Action frame. The supported range is 100-2000 milliseconds, and the default value is 500 milliseconds.

Parameter	Description
grp-frame-block	This option configures the Downstream Group Addressed Forwarding (DGAF) Disabled Mode. If this feature is enabled, it ensures that the AP does not forward downstream group-addressed frames. It is disabled by default, allowing the AP to forward downstram group-addressed frames.
hessid	This optional parameter devices an AP's homogenous ESS identifier (HESSSID), which is that device's MAC address in colon-separated hexadecimal format.
hotspot-enable	Enables or disables the hotspot. When this feature is enabled, the Information Elements (IEs) for this hotspot are included in beacons and probe responses from the AP. This setting is disabled by default.
internet	If you issue the **internet** parameter, the AP sends an Information Element (IE) indicating that the network allows internet access. By default, a hotspot profile does not advertise network internet access.
no	Negates or removes any configured parameter.
p2p-cross-connect	Issue this command to advertise support for P2P Cross Connections. This setting is disabled by default.
p2p-dev-mgmt	Issue this command to advertise support for P2P device management. This setting is disabled by default.
pame-bi	This option enables the Pre-Association Message Exchange BSSID Independent (PAME-BI) bit, which is used by an AP to indicate whether the AP indicates that the Advertisement Server can return a query response that is independent of the BSSID used for the GAS Frame exchange.
query-response-length-limit <query-response-length-limit>	Generic Advertisement Service (GAS) enables advertisement services that lets clients query multiple 802.11 neworks at once, while also allowing the client to learn more about a network's 802.11 infrastructure before associating. If a client transmits a GAS Query using a GAS Initial Request frame, the responding AP will provide the query response (or information on how to receive the query response) in a GAS Initial Response frame. This parameter sets the maximum length of the GAS query response, in octets. The supported range is 1-255 octets.
radius_cui	Include this parameter to enable the Chargeable-User-Identity RADIUS attribute defined by RFC 4372. Home networks can use this attribute to identify a user for the roaming transactions that take place outside of that home network.
radius_loc_data	Include this parameter to enable the Location Data RADIUS attribute defined by RFC 5580. Enabling this parameter allows the RADIUS server to use location data.

Parameter	Description
`roam-cons-len-1`	Length of the OI. The value of the **roam-cons-len-1** parameter is based upon the number of octets of the **roam-cons-oi-1** field. • **0**: Zero Octets in the OI (Null) • **3**: OI length is 24-bit (3 Octets) • **5**: OI length is 36-bit (5 Octets)
`roam-cons-len-2`	Length of the OI. The value of the **roam-cons-len-2** parameter is based upon the number of octets of the **roam-cons-oi-2** field. • **0**: Zero Octets in the OI (Null) • **3**: OI length is 24-bit (3 Octets) • **5**: OI length is 36-bit (5 Octets)
`roam-cons-len-3`	Length of the OI. The value of the **roam-cons-len-3** parameter is based upon the number of octets of the **roam-cons-oi-3** field. • **0**: Zero Octets in the OI (Null) • **3**: OI length is 24-bit (3 Octets) • **5**: OI length is 36-bit (5 Octets)
`roam-cons-oi-1`	Roaming consortium OI assigned to one of the service provider's top three roaming partners. This additional OI will only be sent to a client if the addtl-roam-cons-ois parameter is set to 1 or higher. **NOTE:** The service provider's own roaming consortium OI is configured using the **wlan hotspot anqp-roam-cons-profile** command.
`roam-cons-oi-2`	Roaming consortium OI assigned to one of the service provider's top three roaming partners. This additional OI will only be sent to a client if the addtl-roam-cons-ois parameter is set to 2 or higher. **NOTE:** The service provider's own roaming consortium OI is configured using the **wlan hotspot anqp-roam-cons-profile** command.
`roam-cons-oi-3`	Roaming consortium OI assigned to one of the service provider's top three roaming partners. This additional OI will only be sent to a client if the addtl-roam-cons-ois parameter is set to 3. **NOTE:** The service provider's own roaming consortium OI is configured using the **wlan hotspot anqp-roam-cons-profile** command.

`time-advt-cap`
`no-std-ext-timesrc`
`timestamp-offset-utc`
`reserved`
	This parameter specifies the AP's source of external time, and the current condition of its timing estimator.
	• **no-std-ext-time-src**: The AP using this profile has no standardized external time source.
	• **timestamp-offset-utc**: The AP has a timestamp offset based on UTC.
	• **reserved**: This setting is reserved for future use, and should not

Parameter	Description
	be used.
`time-error`	The standard deviation of error in time value estimate, in milliseconds. The default value is 0 milliseconds, and the supported range is 0- 2,147,483,647 milliseconds.
`time-zone`	The time zone in which the AP is operating, in the format `<std><offset>[dst[offset][,start[/time],end[/time]]` Where the <std> string specifies the abbreviation of the time zone, **<dst>** is the abbreviation of the timezone in daylight savings time, and the **<offset>** string specifies the time value you must add to the local time to arrive at UTC. **NOTE:** For complete details on configuring the timezone format, refer to section 8.3 of IEEE Std 1003.1, 2004 Edition.
`venue-group <venue-group>`	Specify one of the following venue groups to be advertised in the IEs from APs associated with this hotspot profile. The default setting is **unspecified**. • **assembly** • **business** • **educational** • **factory-or-industrial** • **institutional** • **mercantile** • **outdoor** • **reserved** • **residential** • **storage** • **unspecified** • **Utility-Misc** • **Vehicular** **NOTE:** This parameter only defines the venue group advertised in the IEs from hotspot APs. To define the venue group to be included in ANQP responses, use anqp-venue-name-profile <profile-name>.
`venue-type <venue-type>`	Specify a venue type to be advertised in the IEs from APs associated with this hotspot profile. The complete list of supported venue types is described in Venue Types on page 2325 **NOTE:** This parameter only defines the venue type advertised in the IEs from hotspot APs. To define the venue type to be included in ANQP responses, use anqp-venue-name-profile <profile-name>.

Usage Guidelines

Hotspot 2.0 is a Wi-Fi Alliance specification based upon the 802.11u protocol that provides wireless clients with a streamlined mechanism to discover and authenticate to suitable networks, and allows mobile users the ability to roam between partner networks without additional authentication.

ArubaOS 6.3 supports Hotspot 2.0 with enhanced network discovery and selection.Clients can receive general information about the network identity, venue and type via management frames from the Dell AP. Clients can also query APs for information about the network's available IP address type (IPv4 or IPv6), roaming partners, and supported authentication methods, and receive that information in Information Elements from the AP.

Generic Advertisement Service (GAS) Queries

An Organization Identifier (OI) is a unique identifier assigned to a service provider when it registers with the IEEE registration authority. Starting with ArubaOS 6.3, an AP can include its service provider OI in beacons and probe responses to clients. If a client recognizes an AP's OI, it will attempt to associate to that AP using the security credentials corresponding to that service provider.

If the client does *not* recognize the AP's OI, that client can send a Generic Advertisement Service (GAS) query to the AP to request more information more about the network before associating.

ANQP Information Elements

ANQP Information Elements (IEs) are additional data that can be sent from the AP to the client to identify the AP's network and service provider. If a client requests this information via a GAS query, the hotspot AP then sends the ANQP Capability list in the GAS Initial Response frame indicating support for the following IEs:

- **Venue Name**: defined using the wlan hotspot anqp-venue-name-profile command.
- **Domain Name**: defined using the wlan hotspot anqp-domain-name-profile command.
- **Network Authentication Type**: defined using the wlan hotspot anqp-nwk-auth-profile command.
- **Roaming Consortium List**: defined using the wlan hotspot anqp-roam-cons-profile command.
- **NAI Realm**: defined using the wlan hotspot anqp-nai-realm-profile command.
- **Cellular Network Data**: defined using the wlan hotspot anqp-3gpp-nwk-profile command.
- **Connection Capability**: defined using the wlan hotspot h2qp-conn-capability-profile command.
- **Operator Class**: defined using the wlan hotspot h2qp-op-cl-profile command.
- **Operator Friendly Name**: defined using the wlan hotspot h2qp-operator-friendly-name-profile command.
- **WAN Metrics**: defined using the wlan hotspot h2qp-wan-metrics-profile.

Roaming Consortium OIs

Organization Identifiers (OIs) are assigned to service providers when they register with the IEEE registration authority. You can specify the OI for the hotspot's service provider in the ANQP Roaming Consortium profile using the wlan hotspot anqp-roam-cons-profile command. This Hotspot profile also allows you to define and send up to three additional roaming consortium OIs for the service provider's top three roaming partners. To send this additional data to clients, you must specify the number of roaming consortium elements a client can query using the **addtl-roam-cons-ois <1-3>** parameter, then define those elements using the following parameters:

- **roam-cons-oi-1** and **roam-cons-len 1**
- **roam-cons-oi-2** and **roam-cons-len 2**
- **roam-cons-oi-3** and **roam-cons-len 3**

The configurable values for each additional OI include the Organization Identifier itself, the OI length, and the venue group and venue type associated with those OIs.

Venue Types

The following list describes the different venue types that may be configured in a hotspot profile:

- assembly-amphitheatre
- assembly-amusement-park
- assembly-arena
- assembly-bar
- assembly-coffee-shop
- assembly-convention-center
- assembly-emer-coord-center
- assembly-library
- assembly-musuem
- assembly-passenger-terminal
- assembly-restaurant
- assembly-stadium
- assembly-theater
- assembly-worship-place
- assembly-zoo
- business-attorney
- business-bank
- business-doctor
- business-fire-station
- business-police-station
- business-post-office
- business-professional-office
- business-research-and-development
- educational-primary-school
- educational-secondary-school
- educational-university
- industrial-factory
- institutional-alcohol-or-drug-rehab
- institutional-group-home
- institutional-hospital
- institutional-prison
- institutional-terminal-care
- mercantile-automotive-service-station
- mercantile-gas-station
- mercantile-grocery
- mercantile-retail
- mercantile-shopping-mall
- outdoor-bus-stop
- outdoor-city-park
- outdoor-kiosk
- outdoor-muni-mesh-nwk
- outdoor-rest-area
- outdoor-traffic-control
- residential-boarding-house
- residential-dormitory
- residential-hotel
- residential-private-residence
- unspecified
- vehicular-airplane
- vehicular-automobile
- vehicular-bus
- vehicular-ferry
- vehicular-motor-bike
- vehicular-ship
- vehicular-train

Example

The following command configures a hotspot profile with one additional roaming consortium OI for the service provider's top roaming partner.

```
wlan hotspot hs2-profile profile2
   venue-group mercantile
   venue-type mercantile-shopping-mall
   addtl-roam-cons-ois
   roam-cons-len 3
   roam-cons-oi1 415B8C
   hotspot-enable
```

Related Commands

Use the following commands to configure the Hotspot feature.

Command	Description
• wlan hotspot anqp-3gpp-nwk-profile	This profile defines information for a 3rd Generation Partnership Project (3GPP) Cellular Network for hotspots that have roaming relationships with cellular operators
• wlan hotspot anqp-domain-name-profile	This command defines the domain name to be sent in an Access Network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.
• wlan hotspot anqp-ip-addr-avail-profile	This command defines available IP address types to be sent in an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.
• wlan hotspot anqp-nai-realm-profile	This command defines a Network Access Identifier (NAI) realm whose information can be sent as an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response
• wlan hotspot anqp-nwk-auth-profile	This command configures an ANQP Network Authentication profile to define authentication type being used by the hotspot network.
• wlan hotspot anqp-roam-cons-profile	This command configures the Roaming Consortium OI information to be sent in an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response
• wlan hotspot anqp-venue-name-profile	This command defines venue information be sent in an Access network Query Protocol (ANQP) information element in a Generic Advertisement Service (GAS) query response.
• wlan hotspot h2qp-conn-capability-profile	Define a Hotspot 2.0 Query Protocol (H2QP) profile that advertises hotspot protocol and port capabilities.
• wlan hotspot h2qp-op-cl-profile	Define a Hotspot 2.0 Query Protocol (H2QP) profile that defines the Operating Class to be sent in the ANQP IE.
• wlan hotspot h2qp-operator-friendly-name-profile	Define a Hotspot 2.0 Query Protocol (H2QP) operator-friendly name profile.
• wlan hotspot h2qp-wan-metrics-profile	Create a Hotspot 2.0 Query Protocol (H2QP) profile that specifies the hotspot WAN status and link metrics.
• wlan hotspot hs2-profile	This command configures a hotspot profile for an 802.11u public access service provider.

Command History

This command was introduced in ArubaOS 6.4

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan ht-ssid-profile

```
wlan ht-ssid-profile <profile-name>
   40MHz-enable
   80MHz-enable
   ba-amsdu-enable
   clone <profile-name>
   high-throughput-enable
   ldpc
   legacy-stations
   max-rx-a-mpdu-size {8191|16383|32767|65535}
   max-tx-a-mpdu-size <bytes>
   max-tx-a-msdu-count-be {0-15}
   max-tx-a-msdu-count-bk {0-15}
   max-tx-a-msdu-count-vi {0-15}
   max-tx-a-msdu-count-vo {0-15}
   max-vht-mpdu-size
   min-mpdu-start-spacing {0|.25|.5|1|2|4|8|16}
   mpdu-agg
   no...
   short-guard-intvl-20MHz
   short-guard-intvl-40MHz
   short-guard-intvl-80MHz
   stbc-rx-streams
   stbc-tx-streams
   supported-mcs-set <mcs-list>
   temporal-diversity
   very-high-throughput-enable
   vht-mu-txbf-enable
   vht-supported-mcs-map
   vht-txbf-explicit-enable
   vht-txbf-sounding-interval
```

Description

This command configures a high-throughput SSID profile.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`40MHz-enable`	Enable or disable the use of this high-throughput SSID in 40 MHz mode.	—	enabled
`80MHz-enable`	Enable or disable the use of 80 MHz channels on Very High Throughput (VHT) APs.	—	enabled
`ba-amsdu-enable`	Enable or disable Receive AMSDU in Block ACK (BA) negotiation. If enabled, AP denies clients from sending AMSDU using BA agreement.	—	enabled

Parameter	Description	Range	Default
clone	Name of an existing high-throughput SSID profile from which parameter values are copied.	—	—
high-throughput-enable	Enable or disable high-throughput SSID to allow high-throughput (802.11n) stations to associate. Enabling high-throughput in an ht-ssid-profile enables Wi-Fi Multimedia (WMM) base features for the associated SSID.	—	enabled
ldpc	If enabled, the AP will advertise Low-Density Parity Check (LDPC) support. LDPC improves data transmission over radio channels with high levels of background noise.	—	enabled
legacy-stations	Control whether or not legacy (non-HT) stations are allowed to associate with this SSID. By default, legacy stations are allowed to associate. This setting has no effect on a BSS in which HT support is not available.	—	enabled
max-rx-a-mpdu-size	Control the maximum size, in bytes, of an Aggregated-MAC Packet Data Unit (A-MPDU) that can be received on this high-throughput SSID.	8191 16383 32767 65535	65535
8191	Maximum size of 8191 bytes.	—	—
16383	Maximum size of 16383 bytes.	—	—
32767	Maximum size of 32767 bytes.	—	—
65535	Maximum size of 65535 bytes.	—	—
max-tx-a-mpdu-size	Control the maximum size, in bytes, of an A-MPDU that can be sent on this high-throughput SSID.	1576-65535	65535
max-tx-a-masdu-count-be	Set the maximum number of MSDUs in a TX A-MSDU on best effort AC. **NOTE:** In tunnel and decrypt-tunnel forwarding mode, TX A-MSDU is disabled if the value is set to 0. If the value is set to non-zero, TX A-MSDU is enabled and set to this value.	0-15	2

Parameter	Description	Range	Default
max-tx-a-masdu-count-bk	Set the maximum number of MSDUs in a TX A-MSDU on background AC. **NOTE:** TX A-MSDU is disabled if the value is set to 0. In decrypt-tunnel forwarding mode, TX A-MSDU on background AC is disabled and assigning any value has no effect.	0-15	2
max-tx-a-masdu-count-vi	Set the maximum number of MSDUs in a TX A-MSDU on video AC. **NOTE:** TX A-MSDU is disabled if the value is set to 0. In decrypt-tunnel forwarding mode, TX A-MSDU on video AC is disabled and assigning any value has no effect.	0-15	2
max-tx-a-masdu-count-vo	Set the maximum number of MSDUs in a TX A-MSDU on voice AC. **NOTE:** TX A-MSDU is disabled if the value is set to 0. In decrypt-tunnel forwarding mode, TX A-MSDU on voice AC is disabled and assigning any value has no effect.	0-15	0
max-vht-mpdu-size	Maximum size of a VHT MPDU.	3895, 7991, or 11454 bytes	11454 bytes
min-mpdu-start-spacing	Minimum time between the start of adjacent MDPUs within an aggregate MDPU in microseconds.	0, .25, .5, 1, 2,4, 8,16	0
0	No restriction on MDPU start spacing.	—	—
.25	Minimum time of .25 µsec.	—	—
.5	Minimum time of .5 µsec.	—	—
1	Minimum time of 1 µsec.	—	—
2	Minimum time of 2 µsec.	—	—
4	Minimum time of 4 µsec.	—	—
8	Minimum time of 8 µsec.	—	—
16	Minimum time of 16 µsec.	—	—
mpdu-agg	Enable or disable MAC protocol data unit (MDPU) aggregation.	—	enabled

Parameter	Description	Range	Default
	High-throughput APs are able to send aggregated MAC protocol data units (MDPUs), which allow an AP to receive a single block acknowledgment instead of multiple ACK signals. This option, which is enabled by default, reduces network traffic overhead by effectively eliminating the need to initiate a new transfer for every MPDU.		
`no`	Negate any configured parameter.	—	—
`short-guard-intvl-20MHz`	Enable or disable use of short guard interval (400 ns) in 20 MHz mode. A guard interval is a period of time between transmissions that allows reflections from the previous data transmission to settle before an AP transmits data again. An AP identifies any signal content received inside this interval as unwanted inter-symbol interference, and rejects that data. The 802.11n standard specifies two guard intervals: 400 ns (short) and 800 ns (long). Enabling a short guard interval can decrease network overhead by reducing unnecessary idle time on each AP. Some outdoor deployments, may, however require a longer guard interval. If the short guard interval does not allow enough time for reflections to settle in your mesh deployment, inter-symbol interference values may increase and degrade throughput.	—	enabled
`short-guard-intvl-40MHz`	Enable or disable use of short guard interval (400 ns) in 40 MHz mode of operation.	—	enabled
`short-guard-intvl-80MHz`	Enable or disable use of short guard interval (400 ns) in 80 MHz mode of operation.	—	enabled
`stbc-rx-streams`	Control the maximum number of spatial streams usable for Space-Time Block Code (STBC) reception. 0 disables STBC reception, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on the W-AP105, W-AP130 Series, and W-AP175 only. The configured value will be adjusted based on AP capabilities.) **NOTE:** If transmit beamforming is enabled, STBC will be disabled for beamformed frames.	0-1	1

Parameter	Description	Range	Default
`stbc-tx-streams`	Control the maximum number of spatial streams usable for STBC transmission. 0 disables STBC transmission, 1 uses STBC for MCS 0-7. Higher MCS values are not supported. (Supported on W-AP105, W-AP130 Series, and W-AP175 only. The configured value will be adjusted based on AP capabilities.) **NOTE:** If transmit beamforming is enabled, STBC will be disabled for beamformed frames.	0-1	1
`supported-mcs-set`	A list of Modulation Coding Scheme (MCS) values or ranges of values to be supported on this SSID. The MCS you choose determines the channel width (20 MHz vs. 40 MHz vs. 80 MHz) and the number of spatial streams used by the mesh node. To specify a smaller range of values, enter a hyphen between the lower and upper values. To specify a series of different values, separate each value with a comma. Examples: 2–10 1,3,6,9,12 MCS value of 16-23 are supported on W-AP130 Series/W-IAP155/11ac APs only. MCS value of 24-31 are supported on W-AP320 Series APs only.	0-31	0-31
`temporal-diversity`	Enable or disable temporal diversity. When this setting is enabled and the client is not responding to 802.11 packets, the AP will launch two hardware retries; if the hardware retries are not successful then it attempts software retries.	—	disabled
`very-high-throughput-enable`	Enable or disable support for Very High Throughput (802.11ac) on the SSID.	—	enabled
`vht-mu-txbf-enable`	Enable or disable VHT Multi-User Transmit Beamforming. If this parameter is disabled, all other Multi-User Transmit Beamforming configuration parameters have no effect. **NOTE:** This parameter is applicable for W-AP320 Series APs only.	—	enabled

Parameter	Description	Range	Default
`vht-supported-mcs-map`	Comma separated list of maximum supported MCS for spatial streams 1 through 4. Valid values for maximum MCS are 7, 8, 9, and '-' (if spatial stream is not supported). Maximum MCS of a spatial stream cannot be higher than the previous streams. If an MCS is not valid for a particular combination of bandwidth and number of spatial streams, it will not be used for Tx and Rx.	7, 8, 9, or -	9,9,9,9
`vht-txbf-explicit-enable`	Enable or disable VHT Explicit Transmit Beamforming for the 802.11ac-capable APs. When this feature is enabled, the AP requests information about the Multiple-Input and Multiple-Output (MIMO) channel and uses that information to transmit data over multiple transmit streams using a calculated steering matrix. The result is higher throughput due to improved signal at the beamformee (the receiving client). If this parameter is disabled, all other transmit beamforming settings will not take effect.	—	Enabled
`vht-txbf-sounding-interval`	Time interval in milliseconds between channel information updates between the AP and the beamformee client. **NOTE:** This is applicable for 802.11ac-capable APs only.	1-1000 msec	25 msec

Usage Guidelines

The ht-ssid profile configures the high-throughput SSID. Stations are not allowed to use HT with TKIP standalone encryption, although TKIP can be provided in mixed-mode BSSIDs that support HT. HT is disabled on a BSSID if the encryption mode is standalone TKIP or WEP.

You can also use this profile to configure explicit transmit beamforming for W-AP130 Series access points. When this feature is enabled, the AP coordinates the signals sent from each antenna so the signals focus on the receiver, improving radio range and performance. The W-AP130 Series AP can advertise transmit beamforming capabilities in beacon, probe response and association responses in the HT capabilities IE, then use the compressed or noncompressed beamforming report from clients to form a steering matrix. The AP ensures that the steering matrix stays current by updating and recalibrating the steering matrix at regular intervals.

By default, W-AP130 Series access points support both compressed and non-compressed steering information from clients. If you have many clients that can send only non-compressed steering reports, best practices are to retain the default settings, allowing the AP to support both types of steering reports. If all (or nearly all) of the AP's clients are capable of sending compressed steering reports, best practices are to disable non-compressed steering in the AP's HT SSID profile.

De-aggregation of MAC Service Data Units (A-MSDUs) is supported with a maximum frame transmission size of 4k bytes; however, this feature is always enabled and is not configurable. Aggregation is not currently supported.

Example

The following command configures the maximum size of a received aggregate MDPU to be 8191 bytes for the high-throughput SSID named “htcorpnet:”

```
(host) (config) #wlan ht-ssid-profile htcorpnet
  max-rx-a-mpdu-size 8191
```

Command History

Version	Description
ArubaOS 3.3	Command introduced
ArubaOS 3.3.1	The **legacy-stations** parameter was introduced
ArubaOS 3.3.2	**De-aggregation of MAC Service Data Units (A-MSDUs)** was introduced.
ArubaOS 6.1	The **short-guard-intvl-20Mhz**, **ldpc**, **stbc-rx-streams** and **stbc-rx-streams** parameters were introduced. The **allow-weak-encryption** parameter was deprecated.

Version	Description
ArubaOS 6.2	The following parameters were introduced: • **txbf-comp-steering** • **txbf-noncomp-steering** • **txbf-delayed-feedback** • **txbf-immediate-feedback** • **txbf-sounding-interval**
ArubaOS 6.3	The following parameters were introduced. • **80-MHz-enable** • **max-tx-a-msdu-count-be** • **max-tx-a-msdu-count-bk** • **max-tx-a-msdu-count-vi** • **max-tx-a-msdu-count-vo** • **max-vht-mpdu-size** • **short-guard-intvl 80MHz** • **very-high-throughput-enable** • **vht-supported-mcs-map** • **vht-txbf-explicit-enable** • **vht-txbf-sounding-interval** The following parameters were deprecated: • **txbf-comp-steering** • **txbf-noncomp-steering** • **txbf-delayed-feedback** • **txbf-immediate-feedback** • **txbf-sounding-interval**
ArubaOS 6.4.4.0	The **vht-mu-txbf-enable** parameter was introduced. The default values for the following parameters were changed: • The **supported-mcs-set** default value was changed from **0-23** to **0-31**. • The **vht-supported-mcs-map** default value was changed from **9,9,9** to **9,9,9,9**.

Command Information

Platforms	Licensing	Command Mode
All platforms, but only operates with 802.11n-capable APs. The following parameters are supported on 802.11ac-capable APs only: • **80-MHz-enable** • **very-high-throughput-enable** • **vht-supported-mcs-map** • **vht-txbf-explicit-enable** • **vht-txbf-sounding-interval**	Base operating system.	Config mode on master controllers

wlan rrm-ie-profile

```
wlan rrm-ie-profile <profile-name>
   bss-aac-ie
   clone
   country-ie
   enabled-capabilities-ie
   no
   pwr-constraint-ie
   qbss-load-ie
   quiet-ie
   tpc-report-ie
```

Description

Configure an radio resource management RRM IE profile to define the information elements advertised by an AP with 802.11k support enabled.

Syntax

Parameter	Description
`bss-aac-ie`	The AP will advertise in beacon and probe responses the BSS Available Admission Capacity (ACC) IE, which contains information about the admission capabilities for each User Priority / Access Category
`clone`	Copy the settings of an existing RRM IE profile.
`country-ie`	The AP will advertise in beacon and probe responses the device's regulatory domain.
`enabled-capabilities-ie`	The AP will advertise in beacon and probe responses support for radio measurements in a device.
`no ...`	Disables the transmission of an IE in this profile.
`pwr-constraint-ie`	The AP will advertise in beacon and probe responses the regulatory maximum transmit power for that current channel.
`qbss-load-ie`	The AP will advertise in beacon and probe responses the QoS Basic Service Set (QBSS) Load IE, which contains information on the current station count, channel utilization and available admission capacity levels in the QBSS
`quiet-ie`	The AP will advertise in beacon and probe responses the Quiet IE, which is used to silence the channel for measurement purposes. When an AP uses a quiet IE to schedule a quiet interval, stations may not transmit on that channel during the quiet interval.
`tpc-report-ie`	The AP will advertise in beacon and probe responses information about its transmit power controls.

Usage Guidelines

ArubaOS supports RRM Information Elements (IEs) for APs with 802.11k support enabled. All IEs are sent by default.

Example

The following command prevents the AP from advertising the country IE.

```
(host) (config) #wlan rrm-ie-profile default
(host) (Handover Trigger Profile) #no country-ie
```

Related commands

wlan dot11k-profile <profile> dot11k-enable

Command History

Version	Description
ArubaOS 6.2	Command introduced

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan ssid-profile

```
wlan ssid-profile <profile-name>
   902il-compatibility-mode
   a-basic-rates <mbps>
   a-beacon-rate
   a-tx-rates <mbps>
   advertise-ap-name
   advertise-location
   ageout <seconds>
   battery-boost
   clone <profile-name>
   deny-bcast
   disable-probe-retry
   dot11r-profile
   dtim-period <milliseconds>
   eapol-rate-opt
   edca-parameters-profile {ap|station} <profile-name>
   enforce-user-vlan
   essid <name>
   g-basic-rates <mbps>
   g-beacon-rate
   g-tx-rates <mbps>
   hide-ssid
   ht-ssid-profile <profile-name>
   local-probe-req-thresh
   max-clients <number>
   max-retries <number>
   max-tx-fail <number>
   mcast-rate-opt
   mfp-capable
   mfp-required
   multicast-rate
   no ...
   okc
   opmode {bSec-128|bSec-256|dynamic-wep|opensystem|static-wep|wpa-aes|wpa2-aes-gcm-128|wpa2-
   aes-gcm-256|   wpa-psk-aes|wpa-psk-tkip|wpa-tkip|wpa2-aes|wpa2-psk-aes|wpa2-psk-tkip|wpa2-
   tkip   xSec}
   qbss-load-enable
   rts-threshold <number>
   short-preamble
   ssid-enable
   strict-svp
   wepkey1 <key>
   wepkey2 <key>
   wepkey3 <key>
   wepkey4 <key>
   weptxkey <index>
   wmm
   wmm-be-dscp <best-effort>
   wmm-bk-dscp <background>
   wmm-override-dscp-mapping
   wmm-ts-min-inact-int <milliseconds>
   wmm-uapsd
   wmm-vi-dscp <video>
   wmm-vo-dscp <voice>
   wpa-hexkey <psk>
   wpa-passphrase <string>
```

Description

This command configures an SSID profile.

Syntax

	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`902il-compatibility-mode`	(For clients using NTT DoCoMo 902iL phones only) When enabled, the controller does not drop packets from the client if a small or old initialization vector value is received. (When TKIP or AES is used for encryption and TSPEC is enabled, the phone resets the value of the initialization vector after add/delete TSPEC.) **NOTE:** This parameter requires the PEFNG license.	—	disabled
`a-basic-rates`	List of supported 802.11a rates, in Mbps, that are advertised in beacon frames and probe responses.	6, 9, 12, 18, 24, 36, 48, 54 Mbps	6, 12, 24 Mbps
`a-beacon-rate`	Sets the beacon rate for 802.11a (use for Distributed Antenna System (DAS) only). Using this parameter in normal operation may cause connectivity problems.	default, 6, 9, 12, 18,24,36,48, 54 Mbps	minimum valid rate
`a-tx-rates`	Set of 802.11a rates at which the AP is allowed to send data. The actual transmit rate depends on what the client is able to handle, based on information sent at the time of association and on the current error/loss rate of the client.	6, 9, 12, 18, 24, 36, 48, 54 Mbps	6, 9, 12, 18, 24, 36, 48, 54 Mbps
`advertise-ap-name`	If enabled, APs that are part of this VAP will broadcast the AP Name information in the beacons frames.	—	—
`advertise-location`	If enabled, APs that are part of this VAP will broadcast their GPS coordinates in the beacons and probe response frames as part of a vendor-specific Information Element.	—	disabled
`ageout`	Time, in seconds, that a client is allowed to remain idle before being aged out.		1000 seconds
`auth-req-thresh`	The SNR threshold below which incoming authentication requests are ignored.	0-100 dB	0 dB

	Description	Range	Default
	Use this parameter instead of the local probe request threshold parameter to filter out low SNR authentication request. **CAUTION:** Use this parameter with caution. Consult technical support before configuring this parameter.		
`battery-boost`	Converts multicast traffic to unicast before delivery to the client, thus allowing you to set a longer DTIM interval. The longer interval keeps associated wireless clients from activating their radios for multicast indication and delivery, leaving them in power-save mode longer and thus lengthening battery life. **NOTE:** This parameter requires the PEFNG license. This parameter should not be enabled if you plan on using the Push-To-Talk feature for Polycom SpectraLink devices.	—	disabled
`clone`	Name of an existing SSID profile from which parameter values are copied.	—	—
`deny-bcast`	When a client sends a broadcast probe request frame to search for all available SSIDs, this option controls whether or not the system responds for this SSID. When enabled, no response is sent and clients have to know the SSID in order to associate to the SSID. When disabled, a probe response frame is sent for this SSID.	—	disabled
`disable-probe-retry`	Enable or disable battery MAC level retries for probe response frames. By default this parameter is enabled, which mean that MAC level retries for probe response frames is disabled. **NOTE:** This parameter is not supported for W-AP200 Series, W-AP210 Series, W-AP220 Series, W-AP270 Series access points.		enabled
`dot11r-profile`	Associates the dot11r-profile with the SSID profile.	—	—

	Description	Range	Default
dtim-period	Specifies the interval, in milliseconds, between the sending of Delivery Traffic Indication Messages (DTIMs) in the beacon. This is the maximum number of beacon cycles before unacknowledged network broadcasts are flushed. When using wireless clients that employ power management features to sleep, the client must revive at least once during the DTIM period to receive broadcasts.		1
eapol-rate-opt	Use a more conservative rate for more reliable delivery of EAPOL frames.	—	enabled
edca-parameters -profile	Name of the enhanced distributed channel access (EDCA) profile that applies to this SSID. **NOTE:** This parameter requires the PEFNG license. Configure this parameter only under the guidance of your Dell representative.	—	—
ap|sta	Assigns the specified EDCA profile to AP or station (client).	—	—
enforce-user-vlan	Strict enforcement of data traffic only in user's assigned vlan (Open stations only).	—	—
essid	Name that uniquely identifies a wireless network. The ESSID can be up to 31 characters. If the ESSID includes spaces, you must enclose it in quotation marks.	—	aruba-ap
g-basic-rates	List of supported 802.11b/g rates that are advertised in beacon frames and probe responses.	1, 2, 5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps	1, 2 Mbps
g-beacon-rate	Sets the beacon rate for 802.11g (use for Distributed Antenna System (DAS) only). Using this parameter in normal operation may cause connectivity problems.	default, 1,2,5, 6 9, 11, 12, 18, 24, 36, 48, 54 Mbps	minimum valid rate
g-tx-rates	Set of 802.11b/g rates at which the AP is allowed to send data. The actual transmit rate depends on what the client is able to handle, based on information sent at the time of association and on the current error/loss rate of the client.	1, 2, 5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps	1, 2, 5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps

	Description	Range	Default
hide-ssid	Enables or disables hiding of the SSID name in beacon frames. Note that hiding the SSID does very little to increase security.	—	disabled
ht-ssid-profile	Name of high-throughput SSID profile to use for configuring high-throughput support. See wlan ht-ssid-profile on page 2329.	—	“default”
local-probe-req-thresh	APs will not respond to client probe requests if the SNR value in the probe request is less than the specified threshold value.	0-100 dB	0 dB
max-clients	Maximum number of wireless clients for the AP. This parameter is limited to 255 clients per radio.	0-255	64
max-retries	Maximum number of retries allowed for the AP to send a frame.	0-15	4
max-tx-fail	The AP assumes the client has left and should be deauthorized when the AP detects this number of consecutive frames were not delivered because the **max-retries** threshold was exceeded.	0 - 2,147,483,647	0
mcast-rate-opt	Enables or disables scanning of all active stations currently associated to an AP to select the lowest transmission rate for broadcast and multicast frames. This option only applies to broadcast and multicast data frames; 802.11 management frames are transmitted at the lowest configured rate. **NOTE:** Do not enable this parameter unless instructed to do so by your Dell technical support representative.	—	disabled
mfp-capable	When enabled, the SSID supports management frame protection (MFP) capable clients and traditional clients.	—	disabled
mfp-required	When enabled, the SSID only supports MFP capable clients.	—	disabled
multicast-rate	When configured, the controller chooses the rate for video multicast frames. You can configure Modulation Coding Scheme (MCS) rates as well. MCS is an important setting because it provides for potentially greater throughput.	default, 6, 9, 12, 18, 24, 36, 48, 54 Mbps mcs0-mcs15	default

	Description	Range	Default
	NOTE: The following information displays the MCS rate if the **short-guard-intvl-20MHz** parameter in **ht-ssid-profile** is either enabled or disabled: MCS Streams 20 MHz 20 MHz SGI --- ------- ------ --------- 0 1 6.5 7.2 1 1 13.0 14.4 2 1 19.5 21.7 3 1 26.0 28.9 4 1 39.0 43.3 5 1 52.0 57.8 6 1 58.5 65.0 7 1 65.0 72.2 8 2 13.0 14.4 9 2 26.0 28.9 10 2 39.0 43.3 11 2 52.0 57.8 12 2 78.0 86.7 13 2 104.0 115.6 14 2 117.0 130.0 15 2 130.0 144.4 **NOTE:** The MCS rates for video multicast are supported in all 802.11n -capable APs. This is not supported in W-AP320 Series AP.		
no	Negates any configured parameter.	—	—
okc	Opportunistic Key Caching (OKC) is a similar technique, not defined by 802.11i, available for authentication between multiple APs in a network where those APs are under common administrative control. A Dell deployment with multiple APs under the control of a single controller is one such example. Using OKC, a station roaming to any AP in the network will not have to complete a full authentication exchange, but will instead just perform the 4-way handshake to establish transient encryption keys.	—	Enabled
opmode	The layer-2 authentication and encryption to be used on this ESSID to protect access and ensure the privacy of the data transmitted to and from the network.	—	opensystem
bSec-128	WPA2 with AES GCM-128 encryption and dynamic keys using 802.1X	—	—

	Description	Range	Default
bSec-256	WPA2 with AES GCM-256 encryption and dynamic keys using 802.1X	—	—
dynamic-wep	WEP with dynamic keys.	—	—
opensystem	No authentication and encryption.	—	—
static-wep	WEP with static keys.	—	—
wpa-aes	WPA with AES encryption and dynamic keys using 802.1X.	—	—
wpa2-aes-gcm-128	WPA2 with AES GCM-128 (Suite-b) encryption and dynamic keys using 802.1X. This parameter requires the ACR license.	—	—
wpa2-aes-gcm-256	WPA2 with AES GCM-256 (Suite-b) encryption and dynamic keys using 802.1X. This parameter requires the ACR license.	—	—
wpa-psk-aes	WPA with AES encryption using a preshared key.	—	—
wpa-psk-tkip	WPA with TKIP encryption using a preshared key.	—	—
wpa-tkip	WPA with TKIP encryption and dynamic keys using 802.1X.	—	—
wpa2-aes	WPA2 with AES encryption and dynamic keys using 802.1X.	—	—
wpa2-psk-aes	WPA2 with AES encryption using a preshared key.	—	—
wpa2-psk-tkip	WPA2 with TKIP encryption using a preshared key.	—	—
wpa2-tkip	WPA2 with TKIP encryption and dynamic keys using 802.1X.	—	—
wpa-psk-aes	WPA with AES encryption using a preshared key.	—	—

	Description	Range	Default
wpa2-psk-tkip	WPA2 with TKIP encryption using a preshared key.	—	—
wpa2-tkip	WPA2 with TKIP encryption and dynamic keys using 802.1X.	—	—
xSec	Encryption and tunneling of Layer-2 traffic between the controller and wired or wireless clients, or between controllers. To use xSec encryption, you must use a RADIUS authentication server. For clients, you must install the Funk Odyssey client software. Requires installation of the xSec license. For xSec between controllers, you must install an xSec license in each controller.	—	—
qbss-load-enable	Enables the AP to advertise the QBSS load element. The element includes the following parameters that provide information on the traffic situation: • **Station count**: The total number of stations associated to the QBSS. • **Channel utilization**: The percentage of time (normalized to 255) the channel is sensed to be busy. The access point uses either the physical or the virtual carrier sense mechanism to sense a busy channel. • **Available admission capacity**: The remaining amount of medium time (measured as number of 32us/s) available for a station via explicit admission control. The QAP uses these parameters to decide whether to accept an admission control request. A wireless station uses these parameters to choose the appropriate access points. **NOTE:** For 802.11n APs, ensure that either wmm or high throughput is enabled.	—	disabled
rts-threshold	Wireless clients transmitting frames larger than this threshold must issue Request to Send (RTS) and wait for the AP to respond with Clear to Send (CTS). This helps prevent mid-air collisions for wireless clients that are not within wireless peer range and cannot detect when other wireless clients are transmitting.		2333 bytes

	Description	Range	Default
short-preamble	Enables or disables short preamble for 802.11b/g radios. Network performance may be higher when short preamble is enabled. In mixed radio environments, some 802.11b wireless client stations may experience difficulty associating with the AP using short preamble. To use only long preamble, disable short preamble. Legacy client devices that use only long preamble generally can be updated to support short preamble.	—	enabled
ssid-enable	Enables/disables this SSID.	—	enabled
strict-svp	Enable Strict Spectralink Voice Protocol (SVP)	—	disabled
wepkey1 - wepkey4	Static WEP key associated with the key index. Can be 10 or 26 hex characters in length.	—	—
weptxkey	Key index that specifies which static WEP key is to be used. Can be 1, 2, 3, or 4.	1, 2, 3, 4	1
wmm	Enables or disables WMM, also known as IEEE 802.11e Enhanced Distribution Coordination Function (EDCF). WMM provides prioritization of specific traffic relative to other traffic in the network.	—	disabled
wmm-be-dscp	DSCP value used to map WMM best-effort traffic.	0-63	—
wmm-bk-dscp	DSCP used to map WMM background traffic.	0-63	—
wmm-override-dscp-mapping	Overrides the default DSCP mappings in the SSID profile with the ToS value. This setting is useful when you want to set a non-default ToS value for a specific traffic.	—	disabled
wmm-ts-min-in act-int	Specifies the minimum inactivity time-out threshold of WMM traffic. This setting is useful in environments where low inactivity interval time-outs are advertised, which may cause unwanted timeouts.	0-3,600,000	0 milliseconds
wmm-uapsd	Enable Wireless Multimedia (WMM) UAPSD powersave.	—	enabled

	Description	Range	Default
wmm-vi-dscp	DSCP used to map WMM video traffic.	0-63	—
wmm-vo-dscp	DSCP used to map WMM voice traffic.	0-63	—
wpa-hexkey	WPA pre-shared key (PSK).	—	—
wpa-passphrase	WPA passphrase with which to generate a pre-shared key (PSK).	—	—

Usage Guidelines

The SSID profile configures the SSID. Default WMM mappings exist for all SSIDs. After you customize an WMM mapping and apply it to the SSID, the controller overwrites the default mapping values and uses the user-configured values.

Suite-B Cryptography

The **opmode** parameters for Suite-B encryption, **wpa2-aes-gcm-128** and **wpa2-aes-gcm-256**, require the ACR license. All controllers running ArubaOS 6.5 and later support Suite-B encryption.

Multicast Rate Optimization

The Multicast Rate Optimization feature dynamically selects the rate for sending broadcast/multicast frames on any BSS. This feature determines the optimal rate for sending broadcast and multicast frames based on the lowest of the unicast rates across all associated clients.

When the Multicast Rate Optimization option (mcast-rate-opt) is enabled, the controller scans the list of all associated stations in that BSS and finds the lowest transmission rate as indicated by the rate adaptation state for each station. If there are no associated stations in the BSS, it selects the lowest configured rate as the transmission rate for broadcast and multicast frames.

This feature is disabled by default. Multicast Rate Optimization applies to broadcast and multicast frames only. 802.11 management frames are not affected by this feature and will be transmitted at the lowest configured rate.

The Multicast Rate Optimization feature should only be enabled on a BSS where all associated stations are sending or receiving unicast data. If there is no unicast data to or from a particular station, then the rate adaptation state may not accurately reflect the current sustainable transmission rate for that station. This could result in a higher packet error rate for broadcast/multicast packets at that station.

Example

The following command configures an SSID for WPA2 AES authentication:

```
(host) (config) #wlan ssid-profile corpnet
  essid Corpnet
  opmode wpa2-aes
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.2	The **wmm-ts-min-inact-int** parameter was introduced. The **wpa2-preauth** parameter was removed.
ArubaOS 3.3	Support for the high-throughput IEEE 802.11n standard was introduced including the **ht-ssid-profile** parameter and various rate changes.
ArubaOS 3.3.1	Support for configurable WMM AC mapping was introduced including the **wmm-be-dscp**, **wmm-bk-dscp**, **wmm-vi-dscp**, and **wmm-vo-dscp** parameters.
ArubaOS 3.4	The **deny-bcas**t and **disable-probe-retry** parameters were introduced. The **drop-mcast** parameter was deprecated.
ArubaOS 3.4.1	License requirements changed in ArubaOS 3.4.1, so the command required the PEF license instead of the Voice Services Module license required in earlier versions.
ArubaOS 6.1	The **opmode** options **wpa2-aes-gcm-128** and **wpa2-aes-gcm-256** were introduced. These parameters require the ACR license. The **qbss-load-enable** option is included.
ArubaOS 6.1.4.1	The **advertise-ap-name** parameter was added.
ArubaOS 6.2	The **advertise-location** and **enforce-user-vlan** parameters were added.
ArubaOS 6.3	• The **dot11r-profile** parameter was added. • The **opmode bSec 256** parameter was added.
ArubaOS 6.4	• The **mfp-capable** and **mfp-required** parameters were added. • The **eapol-rate-opt** parameter was enabled by default.
ArubaOS 6.4.2.0	The description of the **multicast-rate** parameter was changed to denote the rate for video multicast frames.
ArubaOS 6.4.3.0	The **auth-req-thresh** parameter was introduced.
ArubaOS 6.4.4.0	The HT 20 MHz rates (mcs0-mcs15) were introduced as part of the **multicast-rate** parameter.

Command Information

Platforms	Licensing	Command Mode
All platforms, except for the noted **opmode** parameters.	Base operating system, except for the noted parameters	Config mode on master controllers

wlan traffic-management-profile

```
wlan traffic-management-profile <profile-name>
   bw-alloc virtual-ap <virtual-ap> share <percent>
   clone <profile-name>
   no ...
   report-interval <minutes>
   shaping-policy default-access|fair-access|preferred-access
```

Description

This command configures a traffic management profile.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	"default"
`bw-alloc`	Minimum bandwidth, as a percentage of available bandwidth, allocated to a Virtual AP when there is congestion on the wireless network. An virtual AP can use all available bandwidth if no other virtual APs are active.		
`virtual-ap <virtual-ap>`	Name of the virtual AP to which you will allocate a share of bandwidth.	—	—
`share <percent>`	Percentage of available bandwidth allocated to this virtual AP.	0-100	—
`clone <profile-name>`	Name of an existing traffic management profile from which parameter values are copied.	—	—
`no`	Negates any configured parameter.	—	—
`report-interval <minutes>`	Number of minutes between bandwidth usage reports.	1 - 999999 minutes	5 minutes
`shaping-policy`	Define Station Shaping Policy This feature has the following three options: • **default-access**: Traffic shaping is disabled, and client performance is dependent on MAC contention resolution. This is the default traffic shaping setting. • **fair-access**: Each client gets the same airtime, regardless of client capability and capacity. This option is useful in	default-access fair-access preferred-access	default-access

Parameter	Description	Range	Default
	environments like a training facility or exam hall, where a mix of 802.11a/g, 802.11g and 802.11n clients need equal to network resources, regardless of their capabilities. The **bw-alloc** parameter of a traffic management profile allows you to set a minimum bandwidth to be allocated to a virtual AP profile when there is congestion on the wireless network.You must set traffic shaping to f**air-access** to use this bandwidth allocation value for an individual virtual AP. • **preferred-access**: High-throughput (802.11n) clients do not get penalized because of slower 802.11a/g or 802.11b transmissions that take more air time due to lower rates. Similarly, faster 802.11a/g clients get more access than 802.11b clients.		

Usage Guidelines

The traffic management profile allows you to allocate bandwidth to SSIDs. When you enable the band-steering feature, an AP keeps track of all BSSIDs active on a radio, all clients connected to the BSSID, and 802.11a/g, 802.11b, or 802.11n capabilities of each client. Every sampling period, airtime is allocated to each client, giving it opportunity to get and receive traffic. The specific amount of airtime given to an individual client is determined by;

- Client capabilities (802.11a/g, 802.11b or 802.11n)
- Amount of time the client spent receiving data during the last sampling period
- Number of active clients in the last sampling period
- Activity of the current client in the last sampling period

The **bw-alloc** parameter of a traffic management profile allows you to set a minimum bandwidth to be allocated to a virtual AP profile when there is congestion on the wireless network.You must set traffic shaping to fair-access to use this bandwidth allocation value for an individual virtual AP.

Example

The following command configures a traffic management profile that allocates bandwidth to the corpnet virtual AP:

```
(host) (config) #wlan traffic-management-profile best
  bw-alloc virtual-ap corpnet share 75
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced
ArubaOS 3.2	The mode parameters were introduced in ArubaOS 3.2.
ArubaOS 6.3	The **bw-alloc virtual-ap default share (%) enforcement hard** command was introduced to set bandwidth allocation limit for an SSID.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system on master controllers	Config mode on master controllers

wlan tsm-req-profile

```
wlan tsm-req-profile <profle-name>
   bin0-range <bin0-range>
   clone
   dur-mandatory
   measure-duration <measure-duration>
   no
   num-repeats <num-repeats>
   random-interval <random-interval>
   request-mode {normal | triggered}
   traffic-id <traffic-id>
```

Description

This command configures a TSM Report Request Profile.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“defaul t”
`bin0-range <bin0-range>`	This value is used to set the 'Bin 0 Range' field in the Transmit Stream/Category Measurement Request frame. Bin 0 Range indicates the delay range of the first bin (Bin 0) of the Transmit Delay Histogram, expressed in units of TUs.	0- 255	6
`clone <source>`	Creates a copy of the Transmit Stream Measurement Request Report Request Profile. <source> is the name of an existing TSM Profile from which parameter values are copied.	—	—
`dur-mandatory`	This parameter is used to set the "Duration Mandatory" bit of the Measurement Request Mode field of the Transmit Stream/Category Measurement Request frame.	–	Enabled

Parameter	Description	Range	Default
`measure-duration <measure-duration>`	This parameter is used to set the Measurement Duration field in the Transmit Stream/Category Measurement Request frame. The Measurement Duration is set to the duration of the requested measurement. It is expressed in units of TUs. When the request mode for the Transmit Stream/Category Measurement Request frame is set to "triggered", the Measurement Duration field should be set to 0.	0-65535	9776
`no`	Negates any configured parameter	—	—
`num-repeats <num-repeats>`	This parameter is used to set the "Number of Repetitions" field in the Transmit Stream/Category Measurement Request frame. The Number of Repetitions field contains the requested number of repetitions for all the Measurement Request elements in this frame. A value of zero in the Number of Repetitions field indicates Measurement Request elements are executed once without repetition. A value of 65535 in the Number of Repetitions field indicates Measurement Request elements are repeated until the measurement is cancelled or superseded.	0-65535	65535
`random-interval <random-interval>`	This parameter is used to set the Randomization Interval field in the Transmit Stream/Category Measurement Request frame. The Randomization Interval is used to specify the desired maximum random delay in the measurement start time. It is expressed in units of TUs (Time Units). When the request mode for the Transmit Stream/Category Measurement Request frame is set to "triggered", the Randomization Interval is not used and is set to 0. A Randomization Interval of 0 in a measurement request indicates that no random delay is to be used.	0-65535	0
`request-mode {normal | triggered}`	This parameter is used to determine the request mode for the Transmit Stream/Category Measurement Request frame. There are two options for this field: • normal	–	normal

Parameter	Description	Range	Default
	• triggered		
`traffic-id <traffic-id>`	The parameter is used to set the Traffic Identifier field in the Transmit Stream/Category Measurement Request frame. The Traffic Identifier field contains the TID subfield. The TID subfield indicates the TC or TS for which traffic is to be measured.	0-255	96

Usage Guidelines

The tsm-req-profile is a part of the 802.11K profile. It is used to configure the parameters for the Transmit Stream/Category Measurement frames. It takes effect only when the 802.11K feature is enabled.

Example

```
(host) (config) # wlan tsm-req-profile default
(host) (TSM Report Request Profile "default") #bin0-range 1
(host) (TSM Report Request Profile "default") #dur-mandatory
(host) (TSM Report Request Profile "default") #measure-duration 25
(host) (TSM Report Request Profile "default") #num-repeats 0
(host) (TSM Report Request Profile "default") #random-interval 0
(host) (TSM Report Request Profile "default") #request-mode normal
(host) (TSM Report Request Profile "default") #traffic-id 96
```

Command History

This command is introduced in ArubaOS 6.2.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Configuration mode on master and local controllers

wlan virtual-ap

```
wlan virtual-ap <profile-name>
   aaa-profile <profile-name>
   allowed-band <band>...
   anyspot-profile <profile>
   auth-failure-blacklist-time <seconds>
   band-steering
   blacklist
   blacklist-time <seconds>
   broadcast-filter all|arp
   cellular-handoff-assist
   clone <profile-name>
   deny-inter-user-traffic
   deny-time-range <range>
   dos-prevention
   dot11k-profile
   dynamic-mcast-optimization
   dynamic-mcast-optimization-threshold
   fdb-update-on-assoc
   forward-mode {tunnel|bridge|split-tunnel|decrypt-tunnel}
   ha-disc-onassoc
   hs2-profile
   mobile-ip
   no ...
   outer-vlan
   preserve-vlan
   rap-operation {always|backup|persistent|standard}
   ssid-profile <profile-name>
   steering-mode band-balancing|force-5ghz|prefer-5ghz
   strict-compliance
   vap-enable
   vlan <vlan>...
   vlan-mobility
   wan-operation
   wmm-traffic-management-profile
```

Description

This command configures a virtual AP profile.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	“default”
`aaa-profile`	Name of the AAA profile that applies to this virtual AP.	—	“default”
`allowed-band`	The band(s) on which to use the virtual AP: a—802.11a band only (5 GHz)	a/g/all	all

Parameter	Description	Range	Default
	g—802.11b/g band only (2.4 GHz) all—both 802.11a and 802.11b/g bands (5 GHz and 2.4 GHz)		
`anyspot-profile`	Anyspot Profile associated with this Virtual AP Profile. The anyspot client probe suppression feature decreases network traffic by suppressing probe requests from clients attempting to locate and connect to other known networks.	–	–
`auth-failure-blacklist-time`	Time, in seconds, a client is blocked if it fails repeated authentication. A value of 0 blocks a client indefinitely.	0-2,147,483,647 seconds	0
`band-steering`	ARM's band steering feature can encourage or require dual-band capable clients to stay on the 5GHz band on dual-band APs. This frees up resources on the 2.4GHz band for single band clients like VoIP phones. Band steering reduces co-channel interference and increases available bandwidth for dual-band clients, because there are more channels on the 5GHz band than on the 2.4GHz band. Dual-band 802.11n-capable clients may see even greater bandwidth improvements, because the band steering feature will automatically select between 40MHz or 20MHz channels in 802.11n networks. This feature is disabled by default, and must be enabled in a Virtual AP profile. The band steering feature supports three steering modes, which can be configured via the steering-mode parameter:	—	disabled

Parameter	Description	Range	Default
	Band steering can be configured on both campus APs and remote APs that have a virtual AP profile set to tunnel, decrypt-tunnel, split-tunnel or bridge forwarding mode. Note, however, that if a campus or remote APs has virtual AP profiles configured in bridge or split-tunnel forwarding mode but no virtual AP in tunnel mode, those APs will gather information about 5G-capable clients independently and will not exchange this information with other APs that also have bridge or split-tunnel virtual APs only.		
`blacklist`	Enables detection of denial of service (DoS) attacks, such as ping or SYN floods, that are not spoofed deauth attacks.	—	enabled
`blacklist-time`	Number of seconds that a client is quarantined from the network after being blacklisted.	0-2,147,483,647 seconds	3600 seconds (1 hour)
`broadcast-filter`	Filter out broadcast and multicast traffic in the air. • all • arp Do not enable the **all** option for virtual APs configured in bridge forwarding mode. This configuration parameter is only intended for use for virtual APs in tunnel mode. In tunnel mode, all packets travel to the controller, so the controller is able to drop all broadcast traffic. When a virtual AP is configured to use bridge forwarding mode, most data traffic stays local to the AP, and the controller is not able to filter out that broadcast traffic.	—	For the option **all**, the default value is disabled. For the option **arp**, the default value is enabled.

Parameter	Description	Range	Default
	IMPORTANT: If you enable the **all** option, you must also enable the **Broadcast-Filter ARP** parameter in the stateful firewall configuration to prevent ARP requests from being dropped. Note also that although a virtual AP profile can be replicated from a master controller to local controllers, stateful firewall settings do not. If you select the **broadcast-filter all** option for a Virtual AP Profile on a master controller, you must enable the **broadcast-filter arp** setting on each individual local controller. If you enable the **arp** option, all broadcast ARP requests are converted to unicast and sent directly to the client. You can check the status of this option using the **show ap active** and the **show datapath tunnel** command. If enabled, the output will display the letter **a** in the flags column. Do not enable the **arp** option for virtual APs configured in bridge forwarding mode. This configuration parameter is only intended for use for virual APs in tunnel mode. In tunnel mode, all packets travel to the controller, so the controller is able to convert ARP requests directed to the broadcast address into unicast. When a virtual AP is configured to use bridge forwarding mode, most data traffic stays local to the AP, and the controller is not able to convert that broadcast traffic.		

Parameter	Description	Range	Default
	IMPORTANT: If you enable this option, you must also enable the **Broadcast-Filter ARP** parameter in the stateful firewall configuration to prevent ARP requests from being dropped. Note also that although a virtual AP profile can be replicated from a master controller to local controllers, stateful firewall settings do not. If you select the **broadcast-filter all** option for a Virtual AP Profile on a master controller, you must enable the **broadcast-filter arp** setting on each individual local controller. • arp If enabled, all broadcast ARP requests are converted to unicast and sent directly to the client. You can check the status of this option using the **show ap active** and the **show datapath tunnel** command. If enabled, the output will display the letter **a** in the flags column. Do not enable this option for virtual APs configured in bridge forwarding mode. This configuration parameter is only intended for use for virual APs in tunnel mode. In tunnel mode, all packets travel to the controller, so the controller is able to convert ARP requests directed to the broadcast address into unicast. When a virtual AP is configured to use bridge forwarding mode, most data traffic stays local to the AP, and the controller is not able to convert that broadcast traffic.		

Parameter	Description	Range	Default
`cellular-handoff -assist`	When both the client match and cellular handoff assist features are enabled, the cellular handoff assist feature can help a dual-mode, 3G/4G-capable Wi-Fi device such as an iPhone, iPad, or Android client at the edge of Wi-Fi network coverage switch from Wi-Fi to an alternate 3G/4G radio that provides better network access. This feature is disabled by default, and is recommended only for Wi-Fi hotspot deployments.	—	disabled
`clone`	Name of an existing traffic management profile from which parameter values are copied.	—	—
`deny-inter-user-traffic`	Select this checkbox to deny traffic between the clients using this virtual AP profile. The **firewall** comand includes an option to deny all inter-user traffic, regardless of the Virtual AP profile used by those clients. If the global setting to deny inter-user traffic is enabled, all inter-user traffic between clients will be denied, regardless of the settings configured in the virtual AP profiles. If the setting to deny inter-user traffic is disabled globally but enabled on an individual virtual ap, only the traffic between un-trusted users and the clients on that particular virtual AP will be blocked.	–	disabled
`deny-time-range`	Specify the name of the time range for which the AP will deny access. Time ranges can be defined using the CLI command time-range.	—	—

Parameter	Description	Range	Default
dos-prevention	If enabled, APs ignore deauthentication frames from clients. This prevents a successful deauth attack from being carried out against the AP. This does not affect third-party APs.	—	disabled
dot11k-profile	Name of an 802.11k profile to be associated with this VAP.	—	default
dynamic-mcast-optimization	Enable/Disable dynamic multicast optimization. This parameter can only be enabled on a controller with a PEFNG license.	—	disabled
dynamic-mcast-optimization-threshold	Maximum number of high-throughput stations in a multicast group beyond which dynamic multicast optimization stops.	2-255 stations	6 stations
fdb-update-on-assoc	This parameter enables seamless failover for silent clients, allowing them to re-associate. If you select this option, the controller will generate a Layer 2 update on behalf of client to update forwarding tables in bridge devices. Default: Disabled	—	disabled
forward-mode	Controls whether 802.11 frames are tunneled to the controller using generic routing encapsulation (GRE), bridged into the local Ethernet LAN (for remote APs), or a combination thereof depending on the destination (corporate traffic goes to the controller, and Internet access remains local). Select one of the following forward modes: • **Tunnel**: When an AP is in tunnel forwarding mode, the AP handles all 802.11 association requests and responses. The AP sends all 802.11 data packets, action frames and EAPOL frames over a GRE tunnel to the	tunnel bridge split-tunnel decrypt-tunnel	tunnel

Parameter	Description	Range	Default
	controller for processing. The controller removes or adds the GRE headers, decrypts or encrypts 802.11 frames and applies firewall rules to the user traffic as usual. • **Bridge**: When an AP is in bridge mode, data is bridged onto the local Ethernet LAN. When in bridge mode, the AP handles all 802.11 association requests and responses, encryption/decryption processes, and firewall enforcement. 802.11e and 802.11k action frames are also processed by the AP, which then sends out responses as needed. An AP in bridge mode supports only the 802.1X authentication type. • **Split-Tunnel**: Data frames are either tunneled or bridged, depending on the destination (corporate traffic goes to the controller, and Internet access remains local). The AP handles all 802.11 association requests and responses, encryption/decryption, and firewall enforcement. 802.11e and 802.11k action frames are also processed by the AP, which then sends out responses as needed. An AP in split-tunnel mode supports only the 802.1X authentication type. • **Decrypt-Tunnel:** An AP in decrypt-tunnel forwarding mode decrypts and decapsulates all 802.11 frames from a station and sends the 802.3 frames through the GRE tunnel to the controller, which then applies firewall policies to the user traffic. This mode allows a network to utilize the encryption/decryption capacity the AP while reducing the demand for processing resources on the		

Parameter	Description	Range	Default
	controller. APs in decrypt-tunnel forwarding mode also manage all 802.11 association requests and responses, and process all 802.11e and 802.11k action frames. **NOTE:** Virtual APs in bridge or split-tunnel mode using static WEP should use key slots 2-4 on the controller. Key slot 1 should only be used with Virtual APs in tunnel mode.		
`ha-disc-onassoc`	If enabled, home agent discovery is triggered on client association instead of home agent discovery based on traffic from client. Mobility on association can speed up roaming and improve connectivity for clients that do not send many uplink packets to trigger mobility (VoIP clients). Best practices is to leave this parameter disabled, as it increases IP mobility control traffic between controllers in the same mobility domain. Enable this parameter only when voice issues are observed in VoIP clients. **NOTE:** `ha-disc-onassoc` parameter works only when IP mobility is enabled and configured on the controller.	—	disabled
`hs2-profile`	Enables or disables a hotspot profile. This is enabled by default.	–	enabled
`mobile-ip`	Enables or disables IP mobility on a virtual AP. This is enabled by default. L3 mobility service is active on a VAP only if **router mobile** is also enabled on the controller.	—	enabled

Parameter	Description	Range	Default
multi-association	Enables or disables multi-association for this virtual AP. When enabled, this feature allows a station to be associated to multiple APs. If this feature is disabled, when a station moves to new AP it will be de authorized by the AP to which it was previously connected, deleting station context and flushing key caching information.	—	disabled
no	Negates any configured parameter.	—	—
outer-vlan	List of VLANs that can be used for QinQ outer vlan in this virtual AP.	–	–
preserve-vlan	This parameter allows clients to retain their previous VLAN assignment if the client disassociates from an AP and then immediately re-associates either with same AP or another AP on same controller.		
rap-operation	Configures when the virtual AP operates on a remote AP: • **always**—Permanently enables the virtual AP (Bridge Mode only). This option can be used for non-802.1X bridge VAPs. • **backup**—Enables the virtual AP if the remote AP cannot connect to the controller (Bridge Mode only). This option can be used for non-802.1X bridge VAPs. • **persistent**—Permanently enables the virtual AP after the remote AP initially **connects** to the controller (Bridge Mode only). This option can be used for any (Open/PSK/802.1X) bridge VAPs. • **standard**—Enables the virtual AP when the remote AP connects to the controller. This option can be used for any	always/ backup/ persistent/ standard	standard

Parameter	Description	Range	Default
	(bridge/split-tunnel/tunnel/d-tunnel) VAPs.		
`ssid-profile`	Name of the SSID profile that applies to this virtual AP.	—	"default"
`steering-mode`	Band steering supports three different band steering modes. • **Force-5GHz**: When the AP is configured in **force-5GHz** band steering mode, the AP will try to force 5Ghz-capable APs to use that radio band. • **Prefer-5GHz** (Default): If you configure the AP to use **prefer-5GHz** band steering mode, the AP will try to steer the client to 5G band (if the client is 5G capable) but will let the client connect on the 2.4G band if the client persists in 2.4G association attempts. • **Balance-bands**: In this band steering mode, the AP tries to balance the clients across the two radios in order to best utilize the available 2.4G bandwidth. This feature takes into account the fact that the 5Ghz band has more channels than the 2.4 Ghz band, and that the 5Ghz channels operate in 40MHz while the 2.5Ghz band operates in 20MHz. **NOTE:** Steering modes do not take effect until the band steering feature has been enabled. The band steering feature in ArubaOS versions 3.3.2-5.0 does not support multiple band-steering modes. The band-steering feature in these versions of ArubaOS functions the same way as the default **prefer-5GHz** steering mode available in ArubaOS 6.0 and later.	**Force-5GHz** prefer-5ghz balance-bands	prefer-5ghz

Parameter	Description	Range	Default
strict-compliance	If enabled, the AP denies client association requests if the AP and client station have no common rates defined. Some legacy client stations which are not fully 802.11-compliant may not include their configured rates in their association requests. Such non-compliant stations may have difficulty associating with APs unless strict compliance is disabled.	—	disabled
vap-enable	Enable or disable the virtual AP.	—	enabled
vlan	The VLAN(s) into which users are placed in order to obtain an IP address. Enter VLANs as a comma-separated list of existing VLAN IDs *or* VLAN names. A mixture of names and numeric IDs are not allowed. **NOTE:** You must add an existing VLAN ID to the Virtual AP profile.		1
vlan-mobility	VLAN mobility retains the client VLAN on roaming irrespective of the VAP VLAN, provided the user VLANs are extended. VLAN mobility and mobile IP are mutually exclusive. VLAN mobility does not re-use user firewall sessions on roaming as the sessions will have to be recreated locally on the roamed controller.	—	disabled
wan-operation	Specify the wan-operation to enable Virtual AP depending on the state of the WAN link.	always/ backup/ primary	always
wmm-traffic-management-profile	Specify the WMM Traffic Management Profile to be associated with this Virtual AP Profile.	—	—

Usage Guidelines

Wireless LAN profiles configure WLANs in the form of virtual AP profiles. A virtual AP profile contains an SSID profile which defines the WLAN and an AAA profile which defines the authentication for the WLAN. You can configure and apply multiple instances of virtual AP profiles to an AP group or to an individual AP.

A named VLAN can be deleted although it is configured in a virtual AP profile. If this occurs the virtual AP profiles becomes invalid. If the named VLAN is added back later the virtual AP becomes valid again.

Beginning with ArubaOS 6.1.3.2, the **broadcast-filter arp** parameter is enabled by default. Behaviors associated with these settings are enabled upon upgrade to ArubaOS 6.1.3.2. If your controller supports clients behind a wireless bridge or virtual clients on VMware devices, you must disable the broadcast-filter arp setting to allow those clients to obtain an IP address. In previous releases of ArubaOS, the virtual AP profile included two unique broadcast filter parameters; the **broadcast-filter all** parameter, which filtered out all broadcast and multicast traffic in the air except DHCP response frames (these were converted to unicast frames and sent to the corresponding client) and the **broadcast-filter arp** parameter, which converted broadcast ARP requests to unicast messages sent directly to the client.

Starting with ArubaOS 6.1.3.2, the **broadcast-filter arp** setting includes the additional functionality of broadcast-filter all parameter, where DHCP response frames are sent as unicast to the corresponding client. This can impact DHCP discover/requested packets for clients behind a wireless bridge and virtual clients on VMware devices. Disable the broadcast-filter arp setting using the **wlan virtual-ap <profile> no broadcast-filter arp** command to resolve this issue and allow clients behind a wireless bridge or VMware devices to receive an IP address.

In ArubaOS 6.2 and later, if there is only one VLAN defined, then the controller will send IPv6 router advertisements (RAs) as usual. If, however, there are multiple VLANs, then the controller will automatically convert 802.11 multicast frames to unicast. This conversion prevents RA frames from being sent with a multicast key to all clients on the BSSID, which could lead to clients having multiple IPv6 addresses.

Example

The following command configures a virtual AP:

```
wlan virtual-ap corpnet
   vlan 1
   aaa-profile corpnet
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced.
ArubaOS 3.2	Support for the split tunneling option and the rap-operation parameter was introduced.
ArubaOS 3.3	In support of the IEEE 802.11n standard, a change to the allowed-band parameter was introduced.
ArubaOS 3.3.2	• Support for the **ha-disc-onassoc** parameter was introduced. • The **band-steering** parameter was introduced but is not a released feature in ArubaOS 3.3.2. Do not **use band-steering** without proper guidance from Dell technical support. • Support for the **voip-proxy-arp** parameter was introduced.
ArubaOS 3.4	• The **voip-proxy-arp** parameter was renamed to **broadcast-filter-arp** and it does not require a Voice license. • The **fast-roaming** parameter was renamed to **multi-association**.
ArubaOS 5.0	The **decrypt-tunnel** forwarding mode was introduced.

Release	Modification
ArubaOS 6.0	The **steering-mode balance-bands|force-5ghz| prefer-5ghz** parameters are introduced.
ArubaOS 6.1	• The **deny inter user traffic** and **Disable conversion multicast RA packets to unicast** parameters are introduced. • The **multi-association** parameter is deprecated. • The **Multicast Optimization for Video** and **Multicast Optimization Threshold** parameter are renamed to **Dynamic Multicast Optimization (DMO)** and **Dynamic Multicast Optimization (DMO) Threshold**.
ArubaOS 6.2	The **outer-vlan** and **fdb-update-on-assoc** parameters are introduced, and the **disable-ra-mcast-to-ucas**t parameter is deprecated.
ArubaOS 6.3	The **hs2-profile** and **outer-vlan** parameters are introduced.
ArubaOS 6.4.3.0	The **wan-operation** parameter is introduced.
ArubaOS 6.5	The **cellular-handoff-assist** parameter is introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Config mode on master controllers

wlan voip-cac-profile

```
wlan voip-cac-profile <profile-name>
   allow-idle-voip-client
   bandwidth-cac
   bandwidth-capacity <bandwidth-capacity>
   call-admission-control
   call-capacity
   call-handoff-reservation <percent>
   clone <profile-name>
   disconnect-extra-call
   no ...
   send-sip-100-trying
   send-sip-status-code client|server <code>
   wmm_tspec_enforcement
   wmm_tspec_enforcement_period <seconds>
```

Description

This command configures a Voice over IP (VoIP) call admission control (CAC) profile.

Syntax

Parameter	Description	Range	Default
`<profile-name>`	Name of this instance of the profile. The name must be 1-63 characters.	—	"default"
`allow-idle-voip-client`	If enabled, the AP allows idle voice clients to associate even if the AP reaches its call capacity limit. If disabled, the AP rejects idle voice clients to associate if the AP reaches its call capacity limit. However, the AP continues to allow active (in-call) and non-voice clients to associate.	—	disabled
`bandwidth-cac`	Select the desired CAC mechanism: • Disable - CAC is based on Call Counts • Enable - CAC should be based on Bandwidth.	—	disabled
`bandwidth-capacity`	Define the maximum bandwidth that can be handled by one radio, in kbps. The default value is 2000 kbps (2 Mbps)	—	—

Parameter	Description	Range	Default
<bandwidth-capacity>	Maximum bandwidth that can be handled by one radio, in kbps. The default value is 2000 kbps (2 Mbps)	1-600000	2000
call-admission-control	Enables or disables WiFi VoIP CAC features.	—	disabled
call-capacity	Number of simultaneous calls that can be handled by one radio.	2-8000	10
call-handoff-reservation	Percentage of call capacity reserved for mobile VoIP clients on call.	0-100	20%
clone	Name of an existing VoIP CAC profile from which parameter values are copied.	—	—
disconnect-extra-call	Disconnects calls that exceed the high capacity threshold by sending a deauthentication frame.	—	disabled
no	Negates any configured parameter.	—	—
send-sip-100-trying	Enables sending of SIP 100 - trying messages to a call originator to indicate that the call is proceeding. This is useful when the SIP invite may be redirected through a number of servers before reaching the controller.	—	enabled
send-sip-status-code client|server <code>	Use this parameter with the **client** or **server** options to drop a SIP Invite and send status code back to the client or server. You must also include one of the following codes: • **480**: Temporary Unavailable • **486**: Busy Here • **503**: Ser vice Unavailable • **none**: Don't send SIP status code	—	486

Parameter	Description	Range	Default
wmm_tspec_enforcement	Enables validation of TSPEC requests for CAC.	—	disabled
wmm_tspec_enforcement_period	Maximum time for the station to start the call after the TSPEC request.	1-100	1 second

Usage Guidelines

The VoIP CAC profile prevents any single AP from becoming congested with voice calls.

Example

The following command enables VoIP CAC:

```
(host) (config) #wlan voip-cac-profile cac1
   call-admission-control
   disconnect-extra-call
```

Command History

Version	Change
ArubaOS 3.0	Command introduced
ArubaOS 3.4	The following parameters were deprecated: • active-load-balancing • high-threshold-capacity • noe-call-capacity • sccp-call-capacity • svp-call-capacity • vocera-call-capacity The following parameters were introduced: • bandwidth-cac • bandwidth-capacity • call-capacity
ArubaOS 3.4.1	License requirements changed in ArubaOS 3.4.1, so the command required the PEF license instead of the Voice Services Module license required in earlier versions.
ArubaOS 5.1	The supported range for the **call-capacity** parameter was changed from 0-8000 to 2-8000.
ArubaOS 6.5	The **allow-idle-voip-client** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	PEFNG license	Config mode on master controllers

wlan wmm-traffic-management-profile

```
wlan wmm-traffic-management-profile <profile-name>
   background <share>
   best-effort <share>
   clone <source>
   enable-shaping
   no
   video <share>
   voice <share>
```

Description

This command configures bandwidth shaping for WMM access categories.

The bandwidth shaping is applied on down-link traffic only.

Syntax

Parameter	Description	Range	Default
`background <share>`	Bandwidth allocation in percentage (%) for WMM background access traffic category.	1-99	5
`best-effort <share>`	Bandwidth allocation in percentage (%) for WMM best effort access traffic category.	1-99	5
`clone <source>`	Copy configuration from another WMM Traffic management profile.	–	–
`enable-shaping`	Enable a bandwidth shaping policy so that the allocated bandwidth share is appropriately used.	–	disabled
`no`	Negate any configured parameter.	–	–
`video <share>`	Bandwidth allocation in percentage (%) for video access traffic category.	1-99	55
`voice <share>`	Bandwidth allocation in percentage (%) for voice access traffic category.	1-99	35

Usage Guidelines

After you configure the WMM traffic management profile, apply it to the virtual AP profile. For WMM traffic management to take effect, you must enable **fair-access** or **preferred-access** parameter under wlan traffic-management-profile.

Example

The following command configures a WMM traffic management profile:

```
(host) (config) #wlan wmm-traffic-management-profile test
(host) (WMM Traffic management profile "test") #enable-shaping
(host) (WMM Traffic management profile "test") #background 7
(host) (WMM Traffic management profile "test") #best-effort 10
```

```
(host) (WMM Traffic management profile "test") #voice 40
(host) (WMM Traffic management profile "test") #video 43
```

Apply the WMM traffic management profile to the virtual AP profile.

```
(host) (config) #wlan virtual-ap employee
(host) (Virtual AP profile "employee") #wmm-traffic-management-profile test
```

Enable the **fair-access** or **preferred access** parameter under **wlan traffic-management-profile**.

```
(host) (config) #wlan traffic-management-profile test
(host) (Traffic management profile "test") #shaping-policy fair-access
```

OR

```
(host) (Traffic management profile "test") #shaping-policy preferred-access
```

Apply the traffic management profile to an ap group.

```
(host) (config) #ap-group default
(host) (AP group "default") #dot11a-traffic-mgmt-profile test
```

Related Commands

Command	Description
show wlan wmm-traffic-management-profile	Displays the WMM traffic management profile(s) configured on the controller.
wlan traffic-management-profile	Configures a traffic management profile.

Command History

Version	Change
ArubaOS 5.0	Command introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	PEFNG license	Config mode on master controllers

wms ap

```
wms ap <bssid> mode {interfering|manually-contained|neighbor|rogue|suspected-rogue|valid}
```

Description

This command allows you to classify an AP into one of several categories.

Syntax

Parameter	Description
`<bssid>`	BSSID of the AP.
`mode`	Classify the AP into one of the following categories.
`interfering`	An AP seen in the RF environment but is not connected to the wired network.
`manually-contained`	Manually enable denial of service from this AP
`neighbor`	An neighboring AP whose BSSID is known.
`suspected-rogue`	A suspected rogue AP that is plugged into the wired side of the network but may not be an unauthorized device. Automatic shutdown of rogue APs does not apply to these devices.
`rogue`	A rogue AP that is unauthorized and is plugged into the wired side of the network. You can configure automatic shutdown of rogue APs in the IDS unauthorized device detection profile.
`valid`	An AP that is part of the enterprise providing WLAN service.

Usage Guidelines

If AP learning is enabled (with the wms general learn-ap enable command), non-Dell APs connected on the same wired network as Dell APs are classified as valid APs. If AP learning is disabled, a non-Dell AP is classified as an unsecure or suspect-unsecure AP.

Example

The following command classifies an interfering AP as a known-interfering AP:

```
(host) #wms ap 01:00:00:00:00:00 mode known-interfering
```

Command History

Release	Modification
ArubaOS 3.0	Introduced
ArubaOS 6.0	Renamed the modes and deprecated the DoS mode.
ArubaOS 6.1	The **suspected-rogue** parameter was introduced.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

wms clean-db

```
wms clean-db
```

Description

This command deletes the WMS database.

Syntax

Parameter	Description
`clean-db`	Cleans the WMS database.

Usage Guidelines

This command deletes all entries from the WMS database. Do not use this command unless instructed to do so by a Dell representative.

Example

The following command cleans the WMS database:

```
(host) #wms clean-db
   WMS Database will be deleted. Do you want to proceed with this action [y/n]:
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

wms client

```
wms client <macaddr>
   mode {manually-contain|interfering|valid}
   valid-exempt {insert|remove}
```

Description

This command allows you to classify a wireless client into one of several categories.

Syntax

Parameter	Description
`client`	MAC address of the client.
`mode`	Classify the client into one of the following categories:
`manually-contain`	Manually enable denial of service to this client.
`interfering`	Setting the client mode to *interfering* makes it part of clients outside the enterprise
`valid`	A client that is part of the enterprise.
`valid-exempt`	Classify the client under this option to exempt from Valid Station Protection and Valid Station Misassociation Detection.
`insert`	Add the client to the valid-exempt list and exempt from Valid Station Protection and Valid Station Misassociation Detection. If the client exists in the WMS, the classification is set to valid. In case the client does not exist in the WMS, a client entry is created and then the classification is set to valid.
`remove`	Remove the client from the list of valid-exempt clients.

Usage Guidelines

ArubaOS can automatically determine client classification based on client behavior, but this command allows you to explicitly classify a client. The classification of a client is used in certain policy enforcement features. For example, if **protect-valid-sta** is enabled in the IDS Unauthorized Device Profile, then clients that are classified as valid cannot connect to non-valid APs.

Example

The following command classifies a client as valid:

```
(host) #wms client 00:00:A4:34:C9:B3 mode valid
```

Command History

Release	Modification
ArubaOS 3.0	Command introduced

ArubaOS 6.1	The following parameters were deprecated:
	`dos`
	`neighbor`
	The following parameters were introduced:
	`manually-contain`
	`interfering`

ArubaOS 6.4.4	The following parameters were introduced.
	`valid-exempt`
	`insert`
	`remove`

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

wms export-class

```
wms export-class <filename>
```

Description

This command exports classification information into a file.

Syntax

Parameter	Description
`<filename>`	Name of the file into which you want to export classification information

Usage Guidelines

This command writes classification data into comma separated values (CSV) files—one for APs and one for clients. You can import these files into the Dell Mobility Manager system.

Example

The following command exports classification data into an AP and a client file:

```
(host) #wms export-class class

Exported data to class_ap.csv and class_sta.csv
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

wms export-db

```
wms export-db <filename>
```

Description

This command exports the WMS database to a specified file.

Syntax

Parameter	Description
`<filename>`	Name of the file into which you want to export the database. The filename plus any extensions must be no longer than 32 characters and may contain only keyboard characters.

Usage Guidelines

The file is exported as an ASCII text file. If you have configured the controller for operation with server, this command will fail and an error will be returned.

Example

The following command exports the WMS database to a file:

```
(host) #wms export-db database

Exported WMS DB to database
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

wms import-db

```
wms import-db <filename>
```

Description

This command imports the specified file into the WMS database.

Syntax

Parameter	Description
`<filename>`	Name of the file into which you want to import into the database. The filename plus any extensions must be no longer than 32 characters and may contain only keyboard characters.

Usage Guidelines

The imported file replaces the WMS database. The imported file must be a valid WMS database file that you previously exported using the **wms export-db** command.

Example

The following command imports the WMS database from a file:

```
(host) #wms import-db database
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

wms reinit-db

```
wms reinit-db
```

Description

This command reinitializes the WMS database to its factory defaults.

Syntax

No parameters.

Usage Guidelines

When you use this command, there is no automatic backup of the current database. If a server is configured on the controller (See mobility-manager on page 628), this command will fail and return an error.

Example

The following command reinitializes the WMS database:

```
(host) #wms reinit-db
WMS Database will be re-initialized. Do you want to proceed with this action [y/n ]:
```

Command History

This command was introduced in ArubaOS 3.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable mode on master controllers

write

```
write {erase [all] | memory | terminal}
```

Description

This command saves the running configuration to memory or displays the running configuration on the screen. This command can also be used to erase the running configuration and return the controller to factory defaults.

Syntax

Parameter	Description
`erase`	Erases the running system configuration file. Rebooting the controller resets it to the factory default configuration. If you specify `all`, the configuration and all data in the controller databases (including the license, WMS, and internal databases) are erased.
`memory`	Saves the current system configuration to memory. Any configuration changes made during this session will be made permanent.
`terminal`	Displays the current system configuration.

Usage Guidelines

Configuration changes made using the CLI affect only the current session. You must save your changes for them to be retained across system reboots. Changes are lost if the system reboots before saving the changes. To save your configuration changes, use the **write memory** command.

If you use the **write erase** command, the license key management database on the controller is not affected. If you use the **write erase all** command, all databases on the controller are deleted, including the license key management database. If you reset the controller to the factory default configuration, perform the Initial Setup as described in the *Dell Networking W-Series ArubaOSQuick Start Guide*.

If you use the **write terminal** command, all of the commands used to configure the controller appear on the terminal. If paging is enabled, there is a pause mechanism that stops the output from printing continuously to the terminal. To navigate through the output, use any of the commands displayed at the bottom of the output, as described in below. If paging is disabled, the output prints continuously to the terminal. For more information about the **paging** command, see paging on page 650.

Key	Description
Q	Exit the display.
U	Page up through the output.
spacebar	Page down through the output.

Key	Description
/	Enter a text string to search for.
N	Repeat the text string to search for.

Example

The following command saves your changes so they are retained after a reboot:

```
(host) #write memory
```

The following command deletes the running configuration and databases and returns the controller to the factory default settings:

```
(host) #write erase
```

Command History

This command was introduced in ArubaOS 1.0.

Command Information

Platforms	Licensing	Command Mode
All platforms	Base operating system	Enable and Config modes

The Dell Networking W-Series ArubaOS command-line interface offers different levels of user access by differentiating between different command modes.

When you first log in to the CLI, you start your session in *User* mode, which provides only limited access for basic operational testing. You must enter an additional password to access *Enable* mode, which allows you to issue show commands run certain management functions. Configuration commands can only be issued in *Configuration* mode. You can access Config mode by entering **configure terminal** at the command prompt. You can exit your current command mode and return to a lower-level command mode at any time by entering **exit** at the command prompt.

The following sections describes how to access each command mode, the command prompt for each mode, and links to its available commands.

User mode

You always begin a CLI session in user mode, the command mode with the lowest level of user access. The command prompt for a user mode session is a greater-than (**>**) symbol:

(host) >

The following commands are available in user mode.

- enable
- exit
- help
- logout
- ping
- tracepath
- traceroute

Enable Mode

To move from user mode to enable mode, you must enter the command **enable**, press **Enter**, then enter config mode password that was defined during the controller's initial setup process. (The default password is **enable**.) Users in enable mode may return to user mode at any time by entering the command **exit**.

The command prompt for a CLI session in enable mode is a pound (**#**) symbol:

```
(host) #
```

To view a list of commands available in enable mode, access the CLI in enable mode and enter a question mark (?):

```
(host) #?
```

Some top-level commands have different sets of subcommands available in Enable or Config mode. To view a list of available subcommands in Enable mode, access the CLI in Enable mode, enter the top level command, then enter a question mark (?). For example, the following example shows which aaa commands are available in Enable mode:

```
(host) #aaa ?
authentication          Authentication
inservice               Bring authentication server into service
ipv6                    Internet Protocol Version 6
query-user              Query User
test-server             Test authentication server
user                    User commands
```

Config Mode

To move from enable mode to config mode, enter the command **config terminal**. Users in config mode may return to enable mode at any time by entering the command **exit**.

When you are in config mode, **(config)** appears before the # prompt:

(host) (config) #

Some top-level commands have different sets of subcommands available in Enable or Config mode. To view a list of available subcommands in Config mode, access the CLI in Config mode, enter the top level command, then enter a question mark (?). For example, the following example shows which aaa commands are available in Config mode:

```
(host) (config) #aaa ?
alias-group             Configure an Alias Group
authentication          Authentication
authentication-server   Authentication Servers
bandwidth-contract      Configure bandwidth contract (256 Kbps - 2 Gbps)
derivation-rules        Configure rules to derive user role or vlan
dns-query-interval      Set DNS query interval
password-policy         Password policy for locally configured management users
profile                 Configure an AAA Profile
radius-attributes       Configure RADIUS attribute
server-group            Configure a Server Group
tacacs-accounting       Configure accounting
timers                  Configure authentication timers
user                    User commands
```

Configuration Sub-modes

Some Config mode commands can enter you into a sub-mode with a limited number of available commands specific to that mode. When you are in a configuration sub-mode, the (config) that appears before the command prompt will change to indicate your current mode; e.g (config-if) for config-interface mode, and (config-tunnel) for config-tunnel mode.

You can exit a sub-command mode and return to the basic configuration mode at any time by entering the exit command.