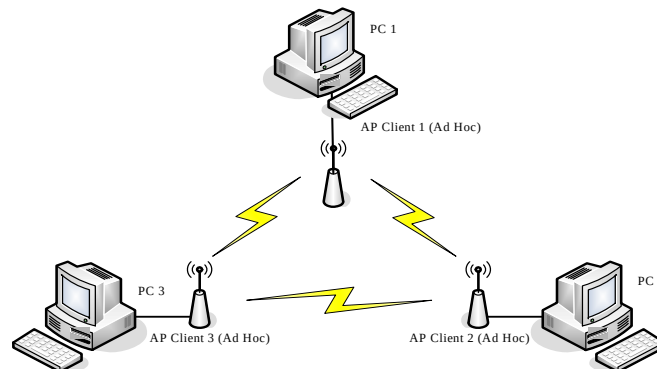


stations. All the communication is done from Client to Client without any Access Point involved. Ad Hoc networking must use the same SSID and channel for establishing the wireless connection.



In client mode, the device can't support the Router mode function include Firewall and WAN settings.

3. WDS

Wireless Distribution System, this mode serves as a wireless repeater, only devices with WDS function supported can connect to it, all the wireless clients can't survey and connect the device when the mode is selected.

4. AP+WDS

Support both AP and WDS functions, the wireless clients and devices with WDS function supported can survey and connect to it.

SSID:

The SSID is a unique identifier that wireless networking devices use to establish and maintain wireless connectivity. Multiple access point/bridges on a network or sub-network can use the same SSID. SSIDs are case sensitive and can contain up to 32 alphanumeric characters. Do not include spaces in your SSID.

Channel Number

The following table is the available frequencies (in MHz) for the 2.4-GHz radio:

Channel No.	Frequency	Country Domain
1	2412	Americas, EMEA, Japan, and China
2	2417	Americas, EMEA, Japan, and China
3	2422	Americas, EMEA, Japan, Israel, and China
4	2427	Americas, EMEA, Japan, Israel, and China
5	2432	Americas, EMEA, Japan, Israel, and China
6	2437	Americas, EMEA, Japan, Israel, and China
7	2442	Americas, EMEA, Japan, Israel, and China
8	2447	Americas, EMEA, Japan, Israel, and China
9	2452	Americas, EMEA, Japan, Israel, and China
10	2457	Americas, EMEA, Japan, and China
11	2462	Americas, EMEA, Japan, and China
12	2467	EMEA and Japan only
13	2472	EMEA and Japan only

14	2484	Japan only
----	------	------------

When set to “Auto”, the device will find the least-congested channel for use.

Associated Client

Show the information of active wireless client stations that connected to the device.

Advanced Settings

These settings are only for more technically advanced users who have sufficient knowledge about wireless LAN. These settings should not be changed unless you know what effect the changes will have on your device. The default setting is optimized for the normal operation. For specific application, setting configuration will required highly attention to reach optimistic condition.

Note : Any unreasonable value change to default setting will reduce the throughput of the device.

Authentication Type

The device supports two Authentication Types “Open system” and “Shared Key”. When you select “Share Key”, you need to setup “WEP” key in “Security” page (See the next section). The default setting is “Auto”. The wireless client can associate with the device by using one of the two types.

Fragment Threshold

The fragmentation threshold determines the size at which packets are fragmented (sent as several pieces instead of as one block). Use a low setting in areas where communication is poor or where there is a great deal of radio interference. This function will help you to improve the network performance.

RTS Threshold

The RTS threshold determines the packet size at which the radio issues a request to send (RTS) before sending the packet. A low RTS Threshold setting

can be useful in areas where many client devices are associating with the device, or in areas where the clients are far apart and can detect only the device and not each other. You can enter a setting ranging from 0 to 2347 bytes.

Data Rate

The standard IEEE 802.11b/11g supports 1, 2, 5.5, 11/6, 9, 12, 18, 24, 36, 48 and Mbps data rates. You can choose the rate that the device uses for data transmission. The default value is "auto". The device will use the highest possible selected transmission rate.

Beacon Interval

The beacon interval is the amount of time between access point beacons in microseconds. The default beacon interval is 100.

Broadcast SSID

Broadcasting the SSID will let your wireless clients find the device automatically. If you are building a public Wireless Network, disable this function can provide better security. Every wireless stations located within the coverage of the device must connect this device by manually configure the SSID in your client settings.

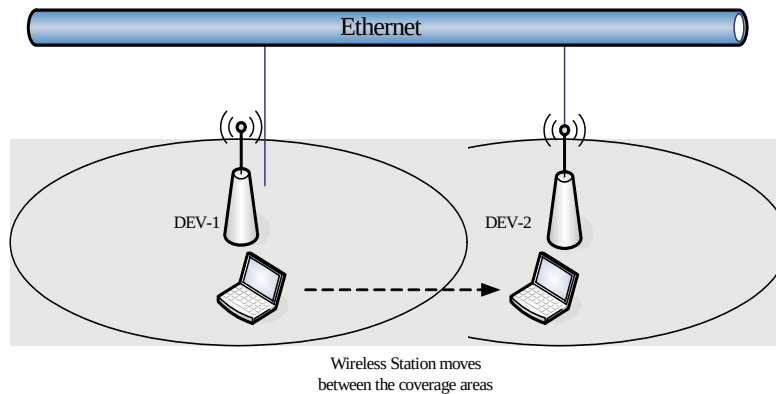
Int. Roaming

This function will let Wireless Stations roam among a network environment with multiple devices. Wireless Stations are able to switch from one device to another as they move between the coverage areas. Users can have more wireless working range. An example as the following figure

You should comply with the following instructions to roam among the wireless coverage areas.

Note : For implementing the roaming function, the setting **MUST** comply the following two items.

- All the devices must be in the same subnet network and the SSID must be the same.
 - If you use the 802.1x authentication, you need to have the user profile in these devices for the roaming station.
-



Block WLAN Relay (Isolate Client)

The device supports isolation function. If you are building a public Wireless Network, enable this function can provide better security. The device will block packets between wireless clients (relay). All the wireless clients connected to the device can't see each other.

Transmit Power

The device supports four transmission output power levels 250, 200, 150 and 100mW for CCK (802.11b) mode and two transmission output power levels 100 and 50mW for OFDM (802.11g) mode. User can adjust the power level to change the coverage of the device. Every wireless stations located within the coverage of the device also needs to have the high power radio. Otherwise the wireless stations only can survey the device, but can't establish connection with device.

Configuring Wireless Security

This device provides complete wireless security function include WEP, 802.1x, WPA-TKIP, WPA2-AES and WPA2-Mixed in different mode (see the Security Support Table).

The default security setting of the encryption function is disabled. Choose your preferred security setting depending on what security function you need.

Wireless LAN Series

Wireless Security Setup

This page allows you setup the wireless security. Turn on WEP or WPA by using Encryption Keys could prevent any unauthorized access to your wireless network.

Encryption: None

☐ Use 802.1x Authentication ☒ WEP 64bits ☐ WEP 128bits

☐ Enable MAC Authentication

WPA Authentication Mode: ☐ Enterprise (RADIUS) ☒ Personal (Pre-Shared Key)

Pre-Shared Key Format: Passphrase

Pre-Shared Key:

☐ Enable Pre-Authentication

Authentication RADIUS Server: Port 1812 IP address Password

Note: When encryption WEP is selected, you must set WEP key value.

WEP Encryption Setting

Wired Equivalent Privacy (WEP) is implemented in this device to prevent unauthorized access to your wireless network. The WEP setting must be as same as each client in your wireless network. For more secure data transmission, you can change encryption type to “WEP” and click the “Set WEP Key” button to open the “Wireless WEP Key setup” page.

Encryption: WEP

☐ Use 802.1x Authentication ☒ WEP 64bits ☐ WEP 128bits

☐ Enable MAC Authentication

WPA Authentication Mode: ☐ Enterprise (RADIUS) ☒ Personal (Pre-Shared Key)

Pre-Shared Key Format: Passphrase

Pre-Shared Key:

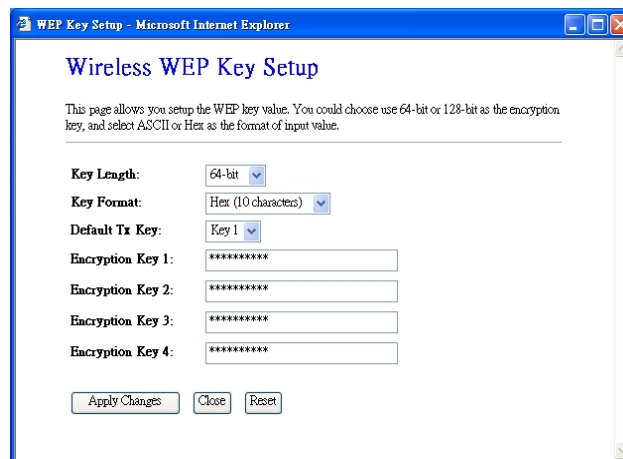
☐ Enable Pre-Authentication

Authentication RADIUS Server: Port 1812 IP address Password

When you decide to use the WEP encryption to secure your WLAN, please

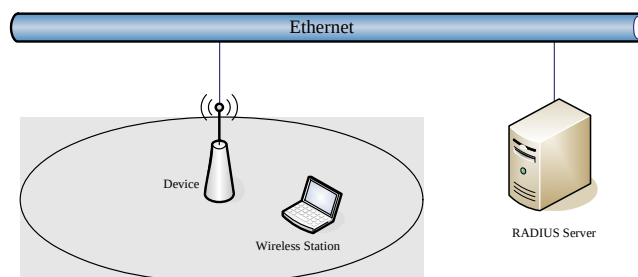
refer to the following setting of the WEP encryption:

- 64-bit WEP Encryption : 64-bit WEP keys are as same as the encryption method of 40-bit WEP. You can input 10 hexadecimal digits (0~9, a~f or A~F) or 5 ACSII chars.
- 128-bit WEP Encryption : 128-bit WEP keys are as same as the encryption method of 104-bit WEP. You can input 26 hexadecimal digits (0~9, a~f or A~F) or 10 ACSII chars.
- The Default Tx Key field decides which of the four keys you want to use in your WLAN environment.



WEP Encryption with 802.1x Setting

The device supports external RADIUS Server that can secure networks against unauthorized access. If you use the WEP encryption, you can also use the RADIUS server to check the admission of the users. By this way every user must use a valid account before accessing the Wireless LAN and requires a RADIUS or other authentication server on the network. An example is shown as following.



You should choose WEP 64 or 128 bit encryption to fit with your network environment first. Then add user accounts and the target device to the RADIUS server. In the device , you need to specify the IP address 、 Password (Shared Secret) and Port number of the target RADIUS server.

Encryption: WEP

☒ Use 802.1x Authentication ☒ WEP 64bits ☐ WEP 128bits

☐ Enable MAC Authentication

WPA Authentication Mode: ☐ Enterprise (RADIUS) ☒ Personal (Pre-Shared Key)

Pre-Shared Key Format:

Pre-Shared Key:

☐ Enable Pre-Authentication

Authentication RADIUS Server: Port IP address Password

WPA Encryption Setting

WPA feature provides a high level of assurance for end-users and administrators that their data will remain private and access to their network restricted to authorized users. You can choose the WPA encryption and select the Authentication Mode.

WPA Authentication Mode

This device supports two WPA modes. For personal user, you can use the Pre-shared Key to enhance your security setting. This mode requires only an access point and client station that supports WPA-PSK. For Enterprise, authentication is achieved via WPA RADIUS Server. You need a RADIUS or other authentication server on the network.

- **Enterprise (RADIUS):**

When WPA Authentication mode is Enterprise (RADIUS), you have to add user accounts and the target device to the RADIUS Server. In the device , you need to specify the IP address 、 Password (Shared Secret) and Port number of the target RADIUS server.

- **Pre-Share Key:**

This mode requires only an access point and client station that supports WPA-PSK. The WPA-PSK settings include Key Format, Length and Value. They must be as same as each wireless client in your wireless network. When Key format is Passphrase, the key value should have 8~63 ACSII chars. When Key format is Hex, the key value should have 64 hexadecimal digits (0~9, a~f or A~F).

Configuring as WLAN Client Adapter

This device can be configured as a wireless Ethernet adapter. In this mode, the device can connect to the other wireless stations (Ad-Hoc network type) or Access Point (Infrastructure network type) and you don't need to install any driver.

Quick start to configure

Step 1. In “Basic Settings” page, change the Mode to “Client” mode. And key in the SSID of the AP you want to connect then press “Apply Changes” button to apply the change.

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
- Basic Settings**
- Advanced Settings
- Security
- Access Control
- WDS settings
- Site Survey
- TCP/IP
- Firewall
- Management
- Reboot

Wireless Basic Settings

This page is used to configure the parameters for wireless LAN clients which may connect to your Access Point. Here you may change wireless encryption settings as well as wireless network parameters.

☐ Disable Wireless LAN Interface

Band: 2.4 GHz (B+G)

Mode: 2. Client

Network Type: Infrastructure

SSID: 3. Target-AP-SSID

Channel Number: 11

Associated Clients: Show Active Clients

☐ Enable Mac Clone (Single Ethernet Client)

Apply Changes Reset

Step 2. Check the status of connection in “Status” web page

Wireless LAN Series

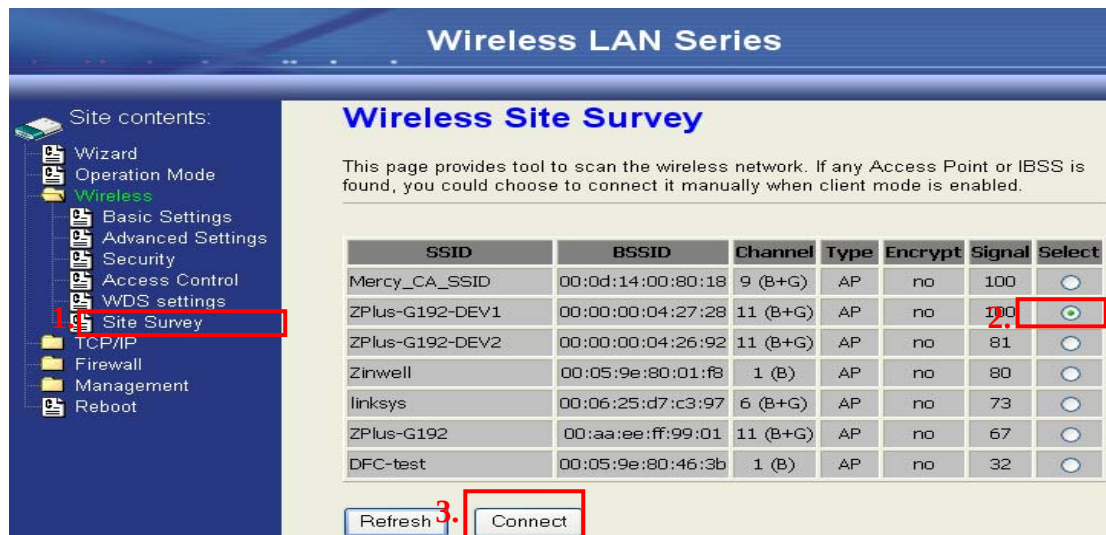
Site contents:

- Wizard
- Operation Mode
- Wireless
- TCP/IP
- Firewall
- Management
- Status**
- Statistics
- DDNS
- Time Zone
- Log
- Upgrade Firmware
- Save/Reload Setting
- Password
- Reboot

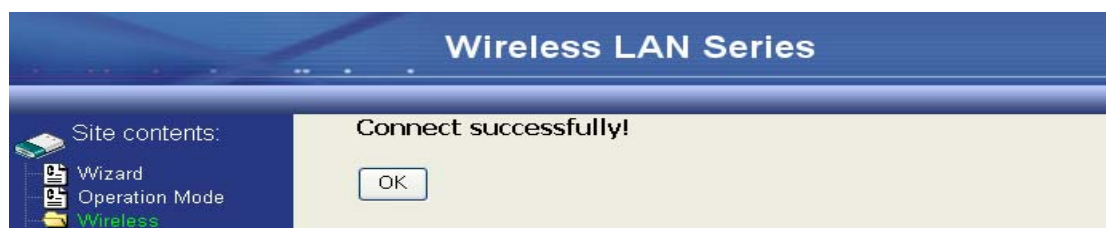
System	
Uptime	0day:1h:13m:5s
Free Memory	2292 kB
Firmware Version	v1.2.1
Webpage Version	v1.2.1
Wireless Configuration	
Mode	Infrastructure Client - Bridge
Band	2.4 GHz (B+G)
SSID	Target-AP-SSID
Channel Number	5
Encryption	Disabled
BSSID	00:00:00:00:00:00
State	Scanning
RSSI	0
TCP/IP Configuration	
Attain IP Protocol	Fixed IP
IP Address	192.168.2.254
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.254
DHCP Server	Enabled
MAC Address	00:00:aa:bb:dd:91

The alternative way to configure as following:

- Step 1.** In “Wireless Site Survey” page, select one of the SSIDs you want to connect and then press “Connect” button to establish the link.



- Step 2.** If the linking is established successfully. It will show the message “Connect successfully”. Then press “OK”.



- Step 3.** Then you can check the linking information in “Status” page.



Note :

If the available network requires authentication and data encryption, you need to setup the authentication and encryption before step1 and all the settings must be as same as the Access Point or Station. About the detail authentication and data encryption settings, please refer the security section.

Authentication Type

In client mode, the device also supports two Authentication Types “Open system” and “Shared Key”. Although the default setting is “Auto”, not every Access Points can support “Auto” mode. If the authentication type on the Access Point is known by user, we suggest to set the authentication type as same as the Access Point.

Data Encryption

In client mode, the device supports WEP and WPA Personal/Enterprise except WPA2 mixed mode data encryption. About the detail data encryption settings, please refer the security section.

Chapter 3 - Configuring WDS

Wireless Distribution System (WDS) uses wireless media to communicate with the other devices, like the Ethernet does. This function allows one or more remote LANs connect with the local LAN. To do this, you must set these devices in the same channel and set MAC address of other devices you want to communicate with in the WDS AP List and then enable the WDS.

When you decide to use the WDS to extend your WLAN, please refer the following instructions for configuration.

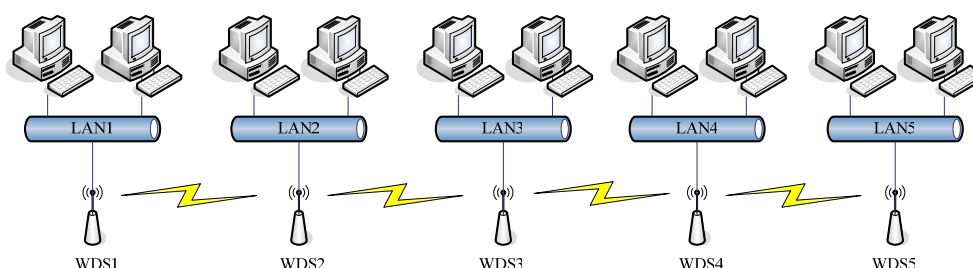
- The bridging devices by WDS must use the same radio channel.
- When the WDS function is enabled, all wireless stations can't connect the device.
- If your network topology has a loop, you need to enable the 802.1d Spanning Tree function.
- You don't need to add all MAC address of devices existed in your network to WDS AP List. WDS AP List only needs to specify the MAC address of devices you need to directly connect to.
- The bandwidth of device is limited, to add more bridging devices will split the more bandwidth to every bridging device.

WDS network topology

In this section, we will demonstrate the WDS network topologies and WDS AP List configuration. You can setup the four kinds of network topologies: bus, star, ring and mesh.

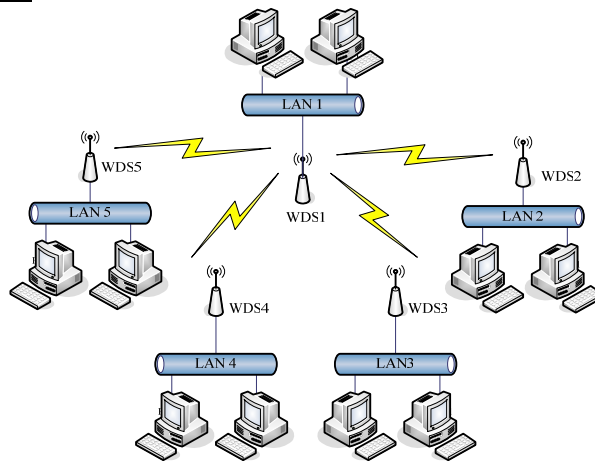
In this case, there are five devices with WDS enabled: WDS1, WDS2, WDS3, WDS4 and WDS5.

Bus topology :



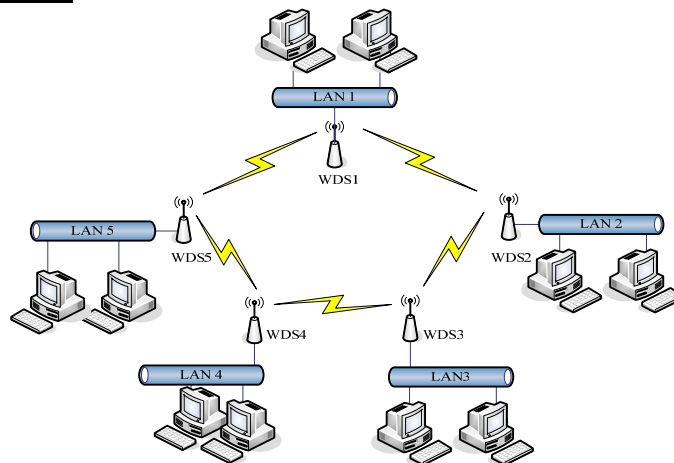
Device	Entries of WDS AP List	Spanning Tree Protocol Required
WDS1	The MAC Address of WDS2	No
WDS2	The MAC Addresses of WDS1 and WDS3	No
WDS3	The MAC Addresses of WDS2 and WDS4	No
WDS4	The MAC Addresses of WDS3 and WDS5	No
WDS5	The MAC Address of WDS4	No

Star topology :



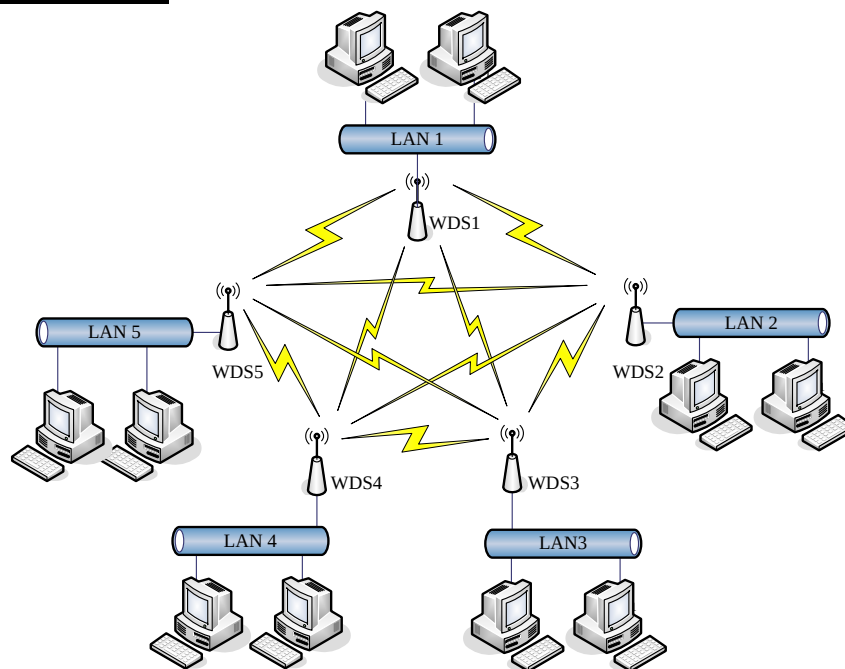
Device	Entries of WDS AP List	Spanning Tree Protocol Required
WDS1	The MAC Addresses of WDS2, WDS3, WDS4 and WDS5	No
WDS2	The MAC Address of WDS1	No
WDS3	The MAC Address of WDS1	No
WDS4	The MAC Address of WDS1	No
WDS5	The MAC Address of WDS1	No

Ring topology :



Device	Entries of WDS AP List	Spanning Tree Protocol Required
WDS1	The MAC Addresses of WDS2 and WDS5	Yes
WDS2	The MAC Addresses of WDS1 and WDS3	Yes
WDS3	The MAC Addresses of WDS2 and WDS4	Yes
WDS4	The MAC Addresses of WDS3 and WDS5	Yes
WDS5	The MAC Addresses of WDS4 and WDS1	Yes

Mesh topology :



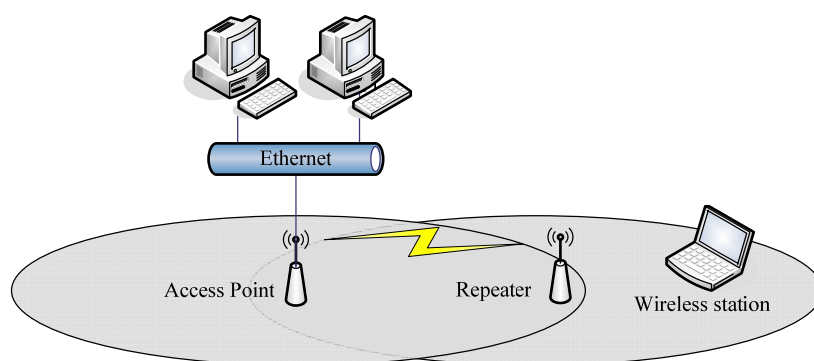
Device	Entries of WDS AP List	Spanning Tree Protocol Required
WDS1	The MAC Addresses of WDS2, WDS3, WDS4 and WDS5	Yes
WDS2	The MAC Addresses of WDS1, WDS3, WDS4 and WDS5	Yes
WDS3	The MAC Addresses of WDS1, WDS2, WDS4 and WDS5	Yes
WDS4	The MAC Addresses of WDS1, WDS2, WDS3 and WDS5	Yes
WDS5	The MAC Addresses of WDS1, WDS2, WDS3 and WDS4	Yes

WDS Application

Wireless Repeater

Wireless Repeater can be used to increase the coverage area of another device (Parent AP). Between the Parent AP and the Wireless Repeater, wireless stations can move among the coverage areas of both devices. When you decide to use the WDS as a Repeater, please refer the following instructions for configuration.

- In AP mode, enable the WDS function.
- You must set these connected devices with the same radio channel and SSID.
- Choose “WDS+AP” mode.
- Using the bus or star network topology.



Description	Entries of WDS AP List	Spanning Tree Protocol Required
Access Point	The MAC Address of Repeater	Yes
Repeater	The MAC Address of Access Point	Yes

Wireless Bridge

Wireless Bridge can establish a wireless connection between two or more Wired LANs. When you decide to use the WDS as a Wireless Bridge, please refer the following instructions for configuration.

- In AP mode, enable the WDS function.
- You must set these connected devices with the same radio channel, but you may use different SSID.
- Choose “WDS” mode for only wireless backbone extension purpose.
- You can use any network topology, please refer the WDS topology section.

Chapter 4 - Advanced Configurations

Configuring LAN to WAN Firewall

Filtering function is used to block packets from LAN to WAN. The device supports three kinds of filter Port Filtering, IP Filtering and MAC Filtering. All the entries in current filter table are used to restrict certain types of packets from your local network to through the device. Use of such filters can be helpful in securing or restricting your local network.

Port Filtering

When you enable the Port Filtering function, you can specify a single port or port ranges in current filter table. Once the source port of outgoing packets match the port definition or within the port ranges in the table, the firewall will block those packets from LAN to WAN.

The screenshot shows the 'Port Filtering' configuration page for a 'Wireless LAN Series' device. On the left is a 'Site contents' tree with options like Wizard, Operation Mode, Wireless, TCP/IP, Firewall (selected), Port Filtering, IP Filtering, MAC Filtering, Port Forwarding, DMZ, VPN, Management, and Reboot. The main area is titled 'Port Filtering' and contains a checkbox for 'Enable Port Filtering'. Below it are input fields for 'Port Range' (with a hyphen separator) and a 'Protocol' dropdown menu set to 'Both'. There is also a 'Comment' field. 'Apply Changes' and 'Reset' buttons are present. Below this is a 'Current Filter Table' with columns: Port Range, Protocol, Comment, and Select. At the bottom are 'Delete Selected', 'Delete All', and 'Reset' buttons.

IP Filtering

When you enable the IP Filtering function, you can specify local IP Addresses in current filter table. Once the source IP address of outgoing packets match the IP Addresses in the table, the firewall will block this packet from LAN to WAN.

The screenshot shows the 'IP Filtering' configuration page for a 'Wireless LAN Series' device. The 'Site contents' tree on the left is identical to the previous screenshot, with 'IP Filtering' selected under the 'Firewall' category. The main area is titled 'IP Filtering' and contains a checkbox for 'Enable IP Filtering'. Below it is an input field for 'Local IP Address' and a 'Protocol' dropdown menu set to 'Both'. There is also a 'Comment' field. 'Apply Changes' and 'Reset' buttons are present. Below this is a 'Current Filter Table' with columns: Local IP Address, Protocol, Comment, and Select. At the bottom are 'Delete Selected', 'Delete All', and 'Reset' buttons.

MAC Filtering

When you enable the MAC Filtering function, you can specify the MAC Addresses in current filter table. Once the source MAC Address of outgoing packets match the MAC Addresses in the table, the firewall will block this packet from LAN to WAN.

The screenshot shows the 'MAC Filtering' configuration page in the 'Wireless LAN Series' interface. On the left is a 'Site contents' tree with 'Firewall' expanded, showing 'MAC Filtering' selected. The main area has a title 'MAC Filtering' and a description: 'Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.' Below this is a checkbox 'Enable MAC Filtering'. There are input fields for 'MAC Address' and 'Comment', followed by 'Apply Changes' and 'Reset' buttons. At the bottom, there is a 'Current Filter Table' with columns 'MAC Address', 'Comment', and 'Select'. Below the table are 'Delete Selected', 'Delete All', and 'Reset' buttons.

Configuring Port Forwarding (Virtual Server)

This function allows you to automatically redirect common network services to a specific machine behind the NAT firewall. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind the device's NAT firewall.

The screenshot shows the 'Port Forwarding' configuration page in the 'Wireless LAN Series' interface. On the left is a 'Site contents' tree with 'Firewall' expanded, showing 'Port Forwarding' selected. The main area has a title 'Port Forwarding' and a description: 'Entries in this table allow you to automatically redirect common network services to a specific machine behind the NAT firewall. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind your Gateway's NAT firewall.' Below this is a checkbox 'Enable Port Forwarding'. There are input fields for 'IP Address', a 'Protocol' dropdown menu (set to 'Both'), 'Port Range' (with a '-' separator), and 'Comment'. There are 'Apply Changes' and 'Reset' buttons. At the bottom, there is a 'Current Port Forwarding Table' with columns 'Local IP Address', 'Protocol', 'Port Range', 'Comment', and 'Select'. Below the table are 'Delete Selected', 'Delete All', and 'Reset' buttons.

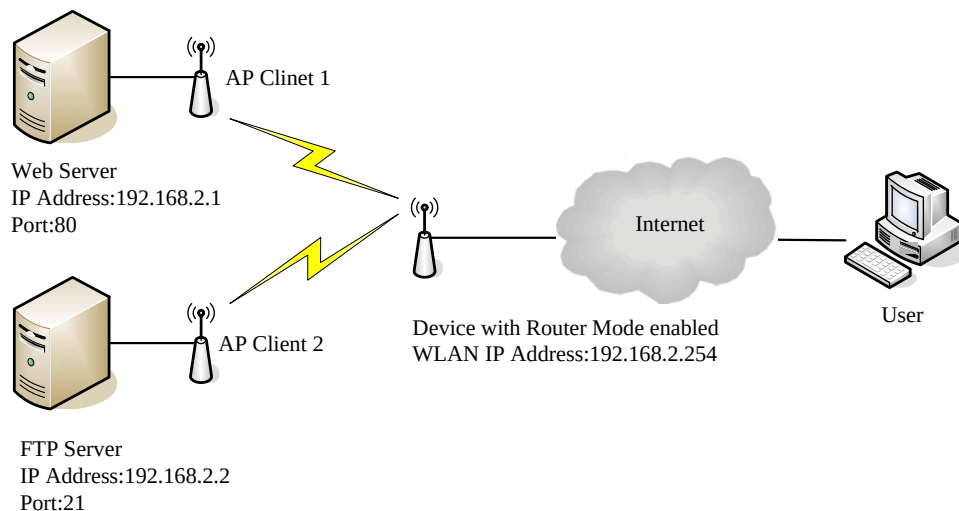
The most often used port numbers are shown in the following table.

Services	Port Number
ECHO	7

FTP (File Transfer Protocol)	21
Telnet	23
SMTP (Simple Mail Transfer Protocol)	25
DNS (Domain Name System)	53
Finger	79
HTTP (Hyper Text Transfer Protocol)	80
POP3 (Post Protocol)	110
NNTP (Network News Transport Protocol)	119
SNMP (Simple Network Management Protocol)	161
SNMP trap	162
SIP (Session Initiation Protocol)	5060
PPTP (Point-to-Point Tunneling Protocol)	1723

Multiple Servers behind NAT Example:

In this case, there are two PCs in the local network accessible for outside users.



Current Port Forwarding Table:

Local IP Address	Protocol	Port Range	Comment	Select
192.168.2.1	TCP+UDP	80	Web Server	☐
192.168.2.2	TCP+UDP	21	FTP Server	☐

Delete Selected

Delete All

Reset

Configuring DMZ

A Demilitarized Zone is used to provide Internet services without sacrificing unauthorized access to its local private network. Typically, the DMZ host contains devices accessible to Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers. So that all inbound packets will be redirected to the computer you set. It also is useful while you run some applications (ex. Internet game) that use uncertain incoming ports.

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
- TCP/IP
- Firewall
- Port Filtering
- IP Filtering
- MAC Filtering
- Port Forwarding
- DMZ
- VPN
- Management
- Reboot

DMZ

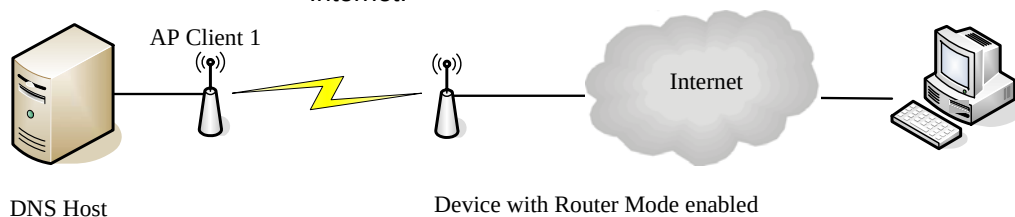
A Demilitarized Zone is used to provide Internet services without sacrificing unauthorized access to its local private network. Typically, the DMZ host contains devices accessible to Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers.

☐ **Enable DMZ**

DMZ Host IP Address:

Enable DMZ: Enable the “Enable DMZ”, and then click “Apply Changes” button to save the changes.

DMZ Host IP Address: Input the IP Address of the computer that you want to expose to Internet.



Configuring WAN Interface

The device supports four kinds of IP configuration for WAN interface, including Static IP, DHCP Client, PPPoE and PPTP. You can select one of the WAN Access Types depend on your ISP required. The default WAN Access Type is “Static IP”.

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
- TCP/IP
- LAN Interface
- WAN Interface
- Firewall
- Management
- Reboot

WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: Static IP

IP Address:

Subnet Mask:

Default Gateway:

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address:

☐ Enable uPNP
☒ **Enable Web Server Access on WAN**

Static IP

You can get the IP configuration data of Static-IP from your ISP. And you will need to fill the fields of IP address, subnet mask, gateway address, and one of the DNS addresses.

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
- TCP/IP
 - LAN Interface
 - WAN Interface
- Firewall
- Management
- Reboot

WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: Static IP

IP Address: 172.1.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 172.1.1.254

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 000000000000

☐ Enable uPNP

☒ Enable Web Server Access on WAN

Apply Changes Reset

- IP Address:** The Internet Protocol (IP) address of WAN interface provided by your ISP or MIS. The address will be your network identifier besides your local network.
- Subnet Mask:** The number used to identify the IP subnet network, indicating whether the IP address can be recognized on the LAN or if it must be reached through a gateway.
- Default Gateway:** The IP address of Default Gateway provided by your ISP or MIS. Default Gateway is the intermediate network device that has knowledge of the network IDs of the other networks in the Wide Area Network, so it can forward the packets to other gateways until they are delivered to the one connected to the specified destination.
- DNS 1~3:** The IP addresses of DNS provided by your ISP. DNS (Domain Name Server) is used to map domain names to IP addresses. DNS maintain central lists of domain name/IP addresses and map the domain names in your Internet requests to other servers on the Internet until the specified web site is found.
- Clone MAC Address:** Clone device MAC address to the specify MAC address required by your ISP
- Enable uPNP:** Enable uPNP, this function allows the device to be found and configured automatically by the system. (Ex. Window XP)

DHCP Client (Dynamic IP)

All IP configuration data besides DNS will obtain from the DHCP server when DHCP-Client WAN Access Type is selected.

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
- TCP/IP
 - LAN Interface
 - WAN Interface
- Firewall
- Management
- Reboot

WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: DHCP Client

☐ Attain DNS Automatically

☒ Set DNS Manually

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 000000000000

☐ Enable uPNP

☒ Enable Web Server Access on WAN

DNS1~3: The IP addresses of DNS provided by your ISP.

DNS (Domain Name Server) is used to map domain names to IP addresses. DNS maintain central lists of domain name/IP addresses and map the domain names in your Internet requests to other servers on the Internet until the specified web site is found.

Clone MAC Address: Clone device MAC address to the specify MAC address required by your ISP

Enable uPNP: Enable uPNP, this function allows the device to be found and configured automatically by the system. (Ex. Window XP)

PPPoE

When the PPPoE((Point to Point Protocol over Ethernet) WAN Access Type is selected, you must fill the fields of User Name, Password provided by your ISP. The IP configuration will be done when the device successfully authenticates with your ISP.

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
 - TCP/IP
 - LAN Interface
 - WAN Interface
- Firewall
- Management
- Reboot

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type:

User Name:

Password:

Connection Type:

Idle Time: (1-1000 minutes)

MTU Size: (1400-1492 bytes)

☐ Attain DNS Automatically

☒ Set DNS Manually

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address:

☐ Enable uPNP

☒ Enable Web Server Access on WAN

User Name: The account provided by your ISP

Password: The password for your account.

Connect Type: “Continuous “ : connect to ISP permanently

“Manual” : Manual connect/disconnect to ISP

“On-Demand” : Automatically connect to ISP when user need to access the Internet.

Idle Time: The number of inactivity minutes to disconnect from ISP. This setting is only available when “Connect on Demand” connection type is selected.

MTU Size: Maximum Transmission Unit, 1412 is the default setting, you may need to change the MTU for optimal performance with your specific ISP.

DNS1~3: The IP addresses of DNS provided by your ISP.

DNS (Domain Name Server) is used to map domain names to IP addresses. DNS maintain central lists of domain name/IP addresses and map the domain names in your Internet requests to other servers on the Internet until the specified web site is found.

Clone MAC Address: Clone device MAC address to the specify MAC address required by your ISP.

Enable uPNP: Enable uPNP, this function allows the device to be found and configured automatically by the system. (Ex. Window XP)

PPTP

Point to Point Tunneling Protocol (PPTP) is a service that applies to connections in Europe only

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
- TCP/IP
- LAN Interface
- WAN Interface
- Firewall
- Management
- Reboot

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: PPTP

IP Address: 172.1.1.2

Subnet Mask: 255.255.255.0

Server IP Address: 172.1.1.1

User Name:

Password:

MTU Size: 1412 (1400-1492 bytes)

☐ Attain DNS Automatically

☒ Set DNS Manually

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 000000000000

☐ Enable uPNP

☒ Enable Web Server Access on WAN

IP Address:	The Internet Protocol (IP) address of WAN interface provided by your ISP or MIS. The address will be your network identifier besides your local network.
Subnet Mask:	The number used to identify the IP subnet network, indicating whether the IP address can be recognized on the LAN or if it must be reached through a gateway.
Server IP Address: (Default Gateway)	The IP address of PPTP server
User Name:	The account provided by your ISP
Password:	The password of your account
MTU Size:	Maximum Transmission Unit, 1412 is the default setting, you may need to change the MTU for optimal performance with your specific ISP.
DNS1~3:	The IP addresses of DNS provided by your ISP. DNS (Domain Name Server) is used to map domain names to IP addresses. DNS maintain central lists of domain name/IP addresses and map the domain names in your Internet requests to other servers on the Internet until the specified web site is found.
Clone MAC Address:	Clone device MAC address to the specify MAC address required by your ISP.
Enable uPNP:	Enable uPNP, this function allows the device to be found and configured automatically by the system. (Ex. Window XP)

Configuring Clone MAC Address

The device provides MAC address clone feature to fit the requirement of some ISP need to specify the client MAC address.

Physical WAN interface MAC Address clone

1. Clone MAC address for DHCP Client WAN access type

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
 - TCP/IP
 - LAN Interface
 - WAN Interface
- Firewall
- Management
- Reboot

WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: DHCP Client

☐ Attain DNS Automatically
☒ Set DNS Manually

DNS 1:
 DNS 2:
 DNS 3:

Clone MAC Address:

☐ Enable uPNP
☒ Enable Web Server Access on WAN

2. Clone MAC address for Static IP WAN access type

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
 - TCP/IP
 - LAN Interface
 - WAN Interface
- Firewall
- Management
- Reboot

WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: Static IP

IP Address:
 Subnet Mask:
 Default Gateway:
 DNS 1:
 DNS 2:
 DNS 3:

Clone MAC Address:

☐ Enable uPNP
☒ Enable Web Server Access on WAN

3. Clone MAC address for PPPoE WAN access type

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
 - TCP/IP
 - LAN Interface
 - WAN Interface
- Firewall
- Management
- Reboot

WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: PPPoE

User Name: 87043609@hinnet.net

Password: *****

Connection Type: Continuous Connect Disconnect

Idle Time: 5 (1-1000 minutes)

MTU Size: 1412 (1400-1492 bytes)

☒ **Attain DNS Automatically**

☐ **Set DNS Manually**

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 001122334455

☐ **Enable uPNP**

4. Clone MAC address for PPTP WAN access type

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
 - TCP/IP
 - LAN Interface
 - WAN Interface
- Firewall
- Management
- Reboot

WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: PPTP

IP Address: 172.1.1.2

Subnet Mask: 255.255.255.0

Server IP Address: 172.1.1.1

User Name:

Password:

MTU Size: 1412 (1400-1492 bytes)

☒ **Attain DNS Automatically**

☐ **Set DNS Manually**

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 001122334455

☐ **Enable uPNP**

☒ **Enable Web Server Access on WAN**

5. Physical LAN interface MAC address clone

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
 - TCP/IP
 - LAN Interface
 - WAN Interface
- Firewall
- Management
- Reboot

LAN Interface Setup

This page is used to configure the parameters for local area network which connects to the device. Here you may change the setting for IP address, subnet mask, DHCP, etc..

IP Address: 192.168.3.254

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DHCP: Server

DHCP Client Range: 192.168.3.1 - 192.168.3.253 Show Client

802.1d Spanning Tree: Disabled

Clone MAC Address: 001122334455

Apply Changes Reset

Configuring DHCP Server

1. To use the DHCP server inside the device, please make sure there is no other DHCP server existed in the same network as the device.
2. Enable the DHCP Server option and assign the client range of IP addresses as following page.

The screenshot displays the 'LAN Interface Setup' page for a 'Wireless LAN Series' device. On the left is a 'Site contents' menu with options: Wizard, Operation Mode, Wireless, TCP/IP, LAN Interface (selected), WAN Interface, Firewall, Management, and Reboot. The main area contains the following configuration fields:

- IP Address:** 192.168.3.254
- Subnet Mask:** 255.255.255.0
- Default Gateway:** 0.0.0.0
- DHCP:** Server (selected from a dropdown)
- DHCP Client Range:** 192.168.3.1 to 192.168.3.253, with a 'Show Client' button
- 802.1d Spanning Tree:** Disabled (selected from a dropdown)
- Clone MAC Address:** 001122334455

At the bottom are 'Apply Changes' and 'Reset' buttons.

3. When the DHCP server is enabled and also the device router mode is enabled then the default gateway for all the DHCP client hosts will set to the IP address of device.

Using CLI Menu

Start a SSH(Secure Shell) client session to login the device

The SSH server daemon inside device uses well-known TCP port 22.

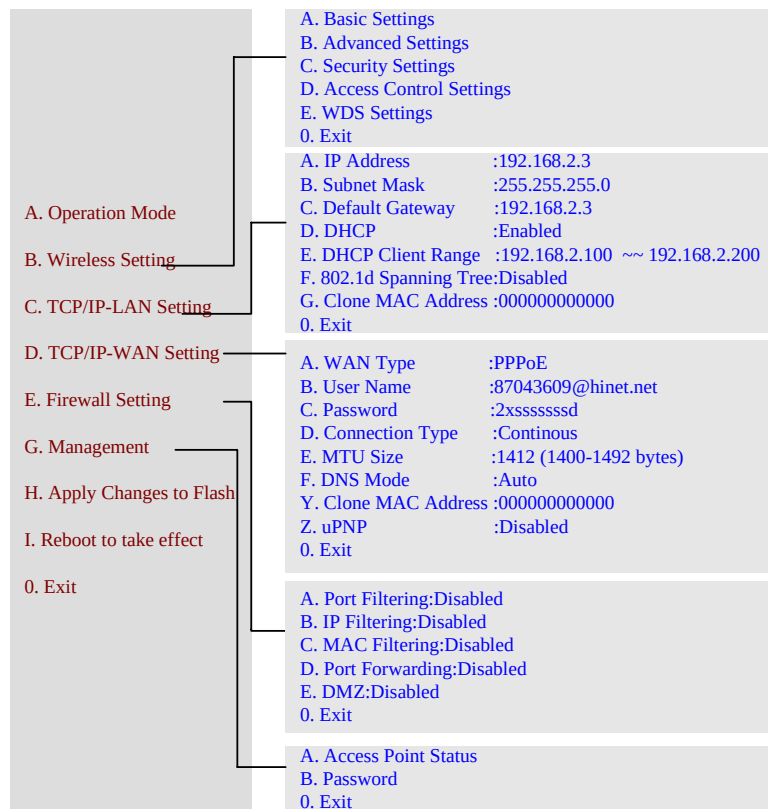
User must use SSH client utility such like Putty to login the device. The default password for user "root" is "qwerty", once user login the device then can change the password by CLI command.

Execute CLI program

This program won't execute automatically when user login the device.

User must manually execute it by typing the case-sensitive command "cli". Please note that any modified settings won't save permanently until user "Apply Changes to Flash" or reboot it. The new settings modified by CLI will take effect after rebooting the device.

Menu Tree List



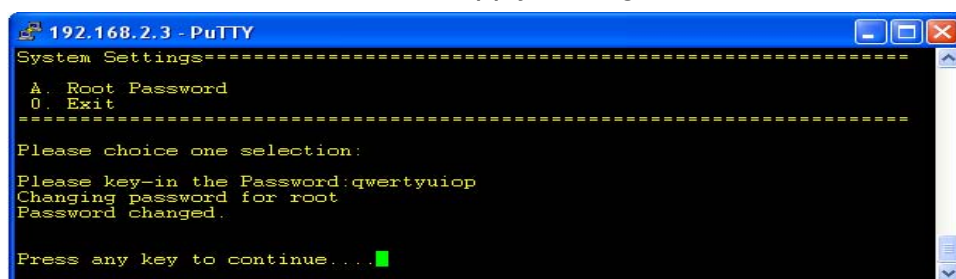
The System Management

Password Protection

Both Web-Browser and SSH configuration interfaces have password protection.



To disable the Web-Browser password protection just leave the “User Name” field to blank then click “Apply Changes” button.



To change the password of user “root” for SSH session, please use the CLI menu item G. System Setting→A. Root Password

About SNMP Agent

This device is compatible with SNMP v1/v2c and provide standard MIB II. Currently only the “public” community string is available and the modified settings by SNMP SET request will be lost after rebooting the device.

Firmware Upgrade

Firmware Types

The firmware for this device is divided into 2 parts, one is web pages firmware the other is application firmware, and the naming usually are g192webpage.bin and g192linux.bin. To upgrade firmware, we suggest user first upgrade the application firmware then web pages firmware.

Upgrading Firmware

The Web-Browser upgrading interface is the simplest and safest way for user, it will check the firmware checksum and signature, and the

wrong firmware won't be accepted. After upgrading, the device will reboot and please note that depends on the version of firmware, the upgrading may cause the device configuration to be restored to the factory default setting, and the original configuration data will be lost! To upgrade firmware, just assign the file name with full path then click "Upload" button as the following page.

Memory Limitation

To make sure the device have enough memory to upload firmware, the system will check the capacity of free memory, if the device lack of memory to upload firmware, please temporarily turn-off some functions then reboot the device to get enough memory for firmware uploading.

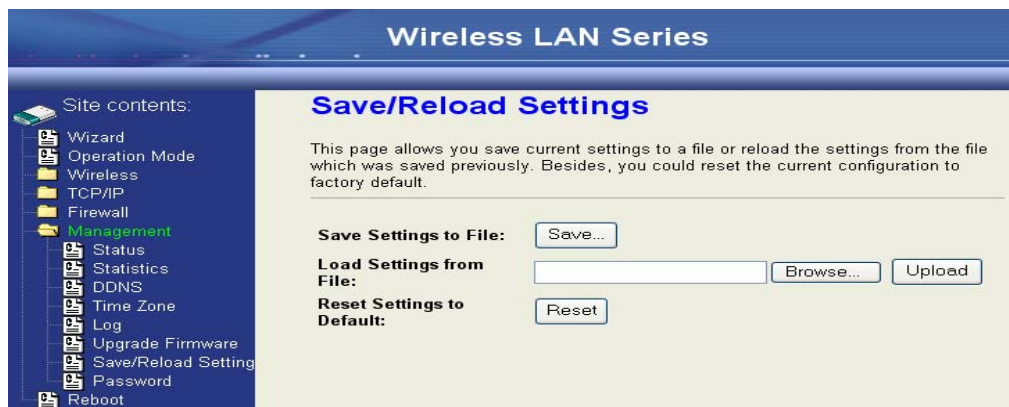


Configuration Data Backup & Restore

Rest Setting to Factory Default Value

Since the device is designed for outdoor used, there is no interface outside the housing to reset the configuration value to the factory default value. The device provides the Web-Browser interface to rest the configuration data. After resetting it, the current configuration data will be lost and restored to factory default value.

Saving & Restoring Configuration Data



To save & restore configuration data of device, just assign the target filename with full path at your local host, then you can backup configuration data to local host or restore configuration data to the device.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.