ZXR10 WAS (V1.0) IP Wireless Access System

W200A Wireless Access Point

User’s Manual

ZTE CORPORATION

ZXR10 WAS (V1.0) IP Wireless Access System
W200A Wireless Access Point
User's Manual

Manual Version **20040306-R1.0**
Product Version **V1.0**
BOM **××××××××**

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Document Name	ZXR10 WAS (V1.0) IP Wireless Access System W200A Wireless Access Point User’s Manual					
Product version	V1.0		Document version	20040306-R1.0		
Equipment installation time						
Your information						
Name		Company				
Postcode		Company address				
Telephone			E-mail			
Your evaluation of this documentation		Good	Fair	Average	Poor	Bad
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Preface

About This Manual

This manual is used for ZXR10 WAS (V1.0) IP Wireless Access System W200A Wireless Access Point (hereinafter called W200A).

ZXR10 (V1.0) IP Wireless Access System is developed independently by ZTE CORPORATION. It is composed of a range of wireless access products, including wireless network card and wireless router with combined functions of AP and DSL.

This manual presents the functional characteristics, installation, operation, usage and maintenance of W200A, and is used as the operation guide for this product. This manual contains 8 chapter and 2 appendices.

Chapter 1: Safety Instructions. It presents the safety requirements in operations and safety signs used in this manual.

Chapter 2: Overview. It presents the functions, features and technical parameters of W200A.

Chapter 3: Structure and Principle It presents the structure and principle of W200A.

Chapter 4: Installation and Debugging It presents the installation and debugging methods for W200A.

Chapter 5: Command Line Configurations It presents the command line configurations of W200A.

Chapter 6: WEB configurations. It presents the web configurations of W200A.

Chapter 7: Integrated GUI Management. It presents the integrated GUI Integration management of W200A.

Chapter 8: Maintenance It presents the methods of routine maintenance and version upgrade.

Appendix A: Package, Transportation and Storage It presents the packing methods, storage conditions and transportation requirements of W200A.

Appendix B: Making Ethernet cables It presents the Ethernet power supplies for W200A and the methods to make network cables.

Statement: The actual product may differ from what is described in this manual due to frequent update of ZTE products and fast development of technologies. Please contact the local ZTE office for the latest updating information of the product.

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1 Safety Statements

This chapter introduces the safety precautions of this product and safety symbols used in this manual.

1.1 Safety Precautions

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.

To assure continued compliance, (example － use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

NOTE: 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.

This equipment is with high temperature and voltage, so only the professional

personnel who had passed the training can install, operate and maintain it.

ZTE assumes no responsibility for consequences resulting from violation of general specifications for safety operations or of safety rules for design, production and use of equipment.

1.2 Symbol Description

See Table 1.2-1 for the safety symbols used in this manual, which serves to remind the readers of the safety precautions to be taken when the equipment is installed, operated and maintained.

Table 1.2-1 Safety Symbols and Descriptions

Safety Symbols	Meaning
	Call for notice
	Call for antistatic measures
	Warn against electric shock
	Caution against scald
	Warn against laser
	Caution against microwave

Four types of safety levels are available: danger, warning, caution and note. To the right of a safety symbol is the text description of its safety level. Under the symbol is the detailed description about its contents. See the following formats.

Danger:

Any failure to take the reminder seriously may lead to important accidents, such as casualties or damage to the equipment.

Cautions:

Any failure to take the reminder seriously may lead to important or severe injury accidents, or damage to the equipment.

Caution:

Any failure to take the reminder seriously may lead to severe injury accidents or damage to the equipment.

Note:

Any failure to take the reminder seriously may lead to injury accidents or damage to the equipment.

Remark, reminder, tip…

The remarks, prompt and tips in addition to safety statements.

2 Overview

This chapter presents the functions, features, technical characteristics and parameters of W200A.

2.1 Introduction

ZXR10 WAS (V1.0) IP Wireless Access System W200A Wireless Access Point is developed independently by ZTE CORPORATION. It is designed in full accordance with relevant international standards. The W200A product can be used to realize single and multiple access point connections and wireless cellular roaming within a long range, greatly increasing the work efficiency and providing convenience for the user.

2.2 Functions and Features

W200A can offer connections to the Ethernet via UTP cables at 10/100Mbps, providing the user with wireless access services. With a wireless network card and proper network configurations, the user can be connected at a high speed to the LAN and then the Internet from any place within the effective coverage range allowed by W200A. Functions and features of W200A include:

- Access rate up to 11Mbps; number of access stations up to 100.
- Transparent bridging: implementing packet forwarding between Basic Service Set (BSS) and Distributed System (DS).The maximum forwarding rate is no less than 10Mbps.
- Load balancing: Internal protocols are used to provide balance of multiple APs at the same place.
- Static MAC filtration: Provide filtration of use-specified MAC addresses. Up to 100 filtration groups can be set. Each group can have up to 64 filtration rules.
- Version upgrade function: Allows the upgrade of W200A software versions; remote load of versions on-line is supported.
- Built-in SNMP Agent supporting SNMP v1/2c for realizing MIB II, IEEE802dot11-MIB, IF-MIB, EtherLike-MIB and private MIB.

- Supports command line and Web configurations.
- Provides the seamless roaming technology that allows the user to communicate with others easily.
- ESSID is used to provide network authentication, preventing illegal users from accessing the network.
- High interconnectivity. Provides interconnections to the 10/100Mbps Ethernet, according with IEEE 802.3 network protocols.
- Provides data verification and security management; 64-bit and 128-bite WEP encryption functions are supported.
- Automatic Scale Back Functionality (ASBF) correcting WLAN automatically to provide optimum connections.
- Offers integrated management servers for the control and management of ZTE's wireless network devices including W200A in a distributed environment.

2.3 Technical Characteristics and Parameters

Technical characteristics and specifications of W200A are shown in Table 2.3-1 below.

Table 2.3-1 Technical Parameters of W200A

Item	Specifications
Standard	802.11b, 802.1d, 802.3u
Operating frequency range	2400MHz~2483.5MHz
Spread spectrum system	DSSS
Modulation system	CCK, DQPSK, DBPSK
Error rate	$<10^{-5}$
Data rate	1Mbps, 2Mbps, 5.5Mbps and 11Mbps autosensing
Distance (m)	30m~100m indoors; 100m~300m outdoors
External interface	RJ45, serial, wireless
Operation mode	Half duplex
Antenna system	Non-directional, 2dB gain, integrated antenna
Number of channels	European Union: 13; US and Canada: 11; France: 4; Japan: 14
Recommended/maximum number of subscribers	30/100
MAC address capacity	1024

Item	Specifications
Size	208mm×180mm×47mm
Weight	1000g (power supply not included)
Power supplies	5V DC/PoE Ethernet 48V
Power adapter	Input: 100VAC~240VAC; 50Hz~60Hz Output: 5VDC, 1.2A
Operating temperature	0°C~ 40°C
Storage temperature	-40°C~ 70°C
Operating humidity	10%~90% (no condensation)
Storage humidity	5%~95% (no condensation)

3 Structure and Principle

This chapter presents the structure and principle of W200A, including software and hardware structure, working principle, interfaces, indicators and networking modes.

3.1 Structure and Working Principle

See W200A as shown in Fig. 3.1-1 below.

Fig. 3.1-1 Outside View of W200A

Hardware of W200A includes main body, antenna and external power adapter.

The software package of W200A includes the basic service subsystem and the network management subsystem. The basic service subsystem includes 802.11b access point driver, 802.3 Ethernet driver, transparent bridge, load balance, TCP/IP protocol suite, dynamic address allocation and static MAC address filtration. The network management subsystem includes SNMP Agent, command line configuration module (including Telnet configurations and serial port configurations), Web configuration module and integrated GUI management module.

3.2 Units and Components

3.2.1 Front Panel

On the front panel of W200A, 3 LEDs are used to indicate the status of the equipment. The indication of each LED is shown in Table 3.2-1.

Table 3.2-1 W200A Panel LED Indications

LED	Indication
Power	Power indicator of W200A. A lit LED indicates the power is on.
RUN	When W200A is operating normally, the RUN LED flashes slowly at an average of 1 flash every other second.
ACT	Status indicator of the wireless network. The ACT LED is lit steadily when the wireless interface of W200A is operating normally.

3.2.2 Rear Control Panel

On the rear control panel there are a variety of interfaces and LEDs, as show in Fig. 3.2-1.

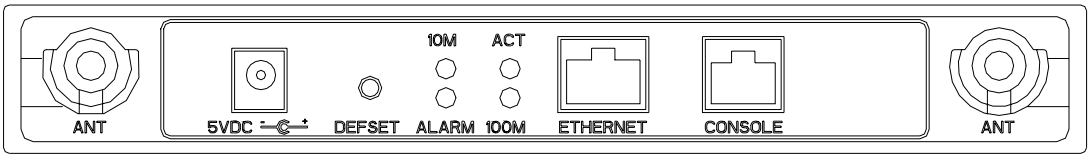


Fig. 3.2-1 W200A Rear Control Panel Diagram

The interfaces and LEDs on the rear control panel are detailed as follows.

1. Status indicator

   10M: A lit LED indicates the Ethernet is being connected to the remote equipment at 10Mbps.

   100M: A lit LED indicates the Ethernet is being connected to the remote equipment at 100Mbps.

   ACT: A flashing LED indicates the Ethernet is sending/receiving data.

   ALARM: Alarm LED. A lit LED indicates the PoE is operating improperly.

2. 5V DC (power receptacle)

   Used to connect the power adapter.

Note:

Only the built-in power adapter can be used. Do not connect other power adapters, otherwise the equipment may be damaged or burnt out.

3. Defset (default button)

   This button is used to reset the W200A configurations to the factory presets. For example, reset the management interface IP address of W200A to default 192.168.1.254, and subnet mask to 255.255.255.0; reset SSID (service ID) to default zxwlan; reset the login username and password to default root and public, and reset the privileged user password to default zte.

4. Ethernet (Ethernet RJ45 interface)

   This interface has 3 functions:

1) When W200A is operating normally in a network, this interface is used as an up-link interface and connected to W112P (AP remote power feeding mode) via a directly powered Ethernet cable or connected (using a power adapter to supply the AP in a near-end power mode)to the down-link interface of an Ethernet switch via a directly connected Ethernet cable.

2) Before W200A is installed, you can connect to the wired network interface of a computer via a cross network cable, log in to W200A via Web or Telnet and configure parameters of W200A.

3) To load a version to W200A via a hyperterminal, you can connect this interface with the wired network interface of the computer via a cross network cable, and run FTP/TFTP server program on the computer to load the version file to the flash of W200A.

5. CONSOLE (RJ11 interface for configurations)

   Connect to the serial port of the computer using a serial cable so that you can load, configure and debug the version for the equipment via the hyperterminal.

6. ANT (antenna port)

   Used to install the antenna.

3.3 Network Mode

W200A is designed to provide wire access for indoor and outdoor wireless users. It can be installed in offices, hotel halls and corridors, top of buildings, and residential yards. The major operation modes are described as follows.

1. Establishing a small-scale wireless LAN

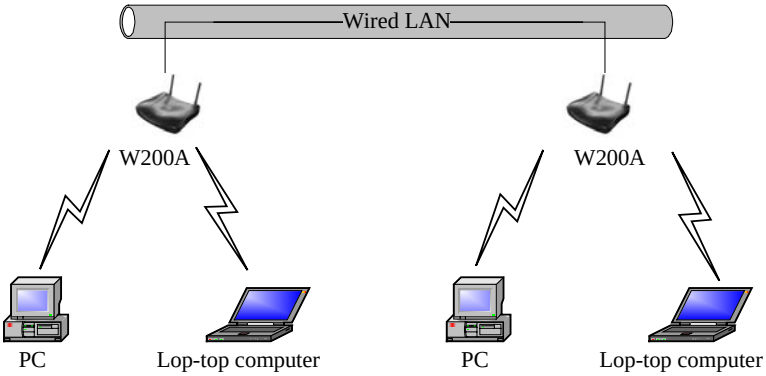


Fig. 3.3-1 Establishing a Small-scale Wireless LAN

2. Comprising a wireless access network to the Internet together with other equipment including ACs and bridges.

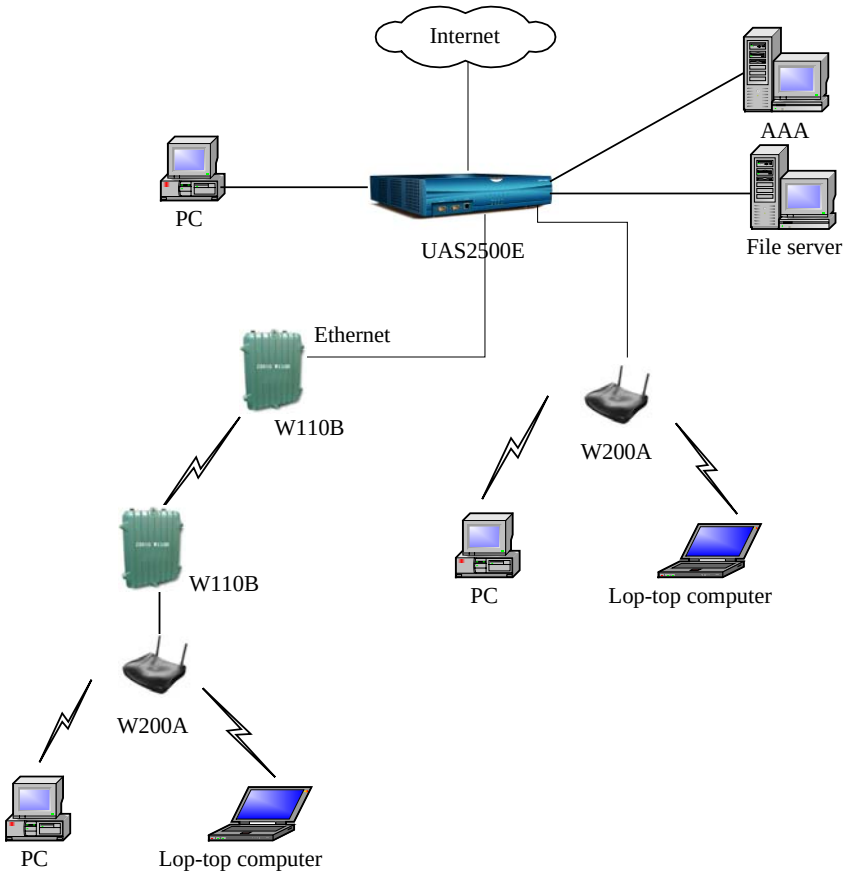


Fig. 3.3-2 Comprising a Wireless Access Network to the Internet together with ACs, bridges and other APs.

4 Installation and Debugging

See document “ZXR10 WAS (V1.0) IP Wireless Access System W200A Wireless Access Point Professional Installation Instruction manual”

5 Command Line Configurations

This chapter presents the operating procedures of command line configurations and the commands used.

5.1 Overview

W200A offers Command Line Interfaces (CLIs) for the configurations of all types of data the W200A uses.

Features of the CLI configurations include:

1. The user can perform either local configurations by using hyperterminal software via the serial port or local/remote configuration by using Telnet software via the Ethernet interface or wireless network card.
2. 5 command modes can be used in CLI configuration interfaces: user mode, privileged mode, configuration mode, Ethernet interface configuration mode and wireless interface configuration mode. Each mode is the execution environment of a set of relevant commands. A command can only be executed in its corresponding command mode. To get the executable commands in the current mode, type in "**?**" under this mode.
3. There are two types of commands, information query command and functional command. information query commands are used to get required information. Functional commands are used to change configurations of W200A functions. Changed configurations are saved in the operation configuration database. To cancel function configurations, execute the reverse command of the original one (that is, add the **no** keyword to the front of the original command).
4. The CLI configuration offers a sophisticated help system. You can get relevant help information by typing "**?**" at any time.
5. A fuzzy match function is offered for the command input. If the characters you entered can determine exclusively the command to be executed, you needn't to input the whole word.

6. A history function is offered in the CLI configuration interface. You can select a history command by using the ↑ and ↓ keys on the keyboard.
7. A dual password protect is offered in the interface to prevent unauthorized users from accessing. The first password verification appears on the Welcome interface of the Telnet program, where you will enter the user mode for safety authentication. The default username and password are "root" and "public". You can enter the privileged mode by inputting "enable" and a correct password in the user mode. The password for the privileged mode is "zte" by default.

Tips:

When you perform configurations via serial port, no authentication will be needed because the terminal screen enters user mode directly.

8. The CLI configuration interface supports the automatic paging of command output on terminals. The "--More--" on the lower left corner of the command output window indicates there are more output commands. To display the next page, press the space bar. To exit, press <q>. To output the next line, press the Enter key.
9. The CLI configuration interface offers a basic command line editing function. The shortcut key for editing command lines are defined as follows:

   Ctrl+U: Delete the whole command being input

   Ctrl+A: Move the cursor to the first character of a command line

   Ctrl+E: Move the cursor to the last character of a command line

   Ctrl+X: Delete all the characters before the cursor

   Ctrl+K: Delete all the characters after the cursor (including the character where the cursor is)

   Ctrl+C: Abandon all input. A new line and a new prompt appear.

To configure the W200A via the serial port, set the serial port attributes of the hyperterminal as shown in Fig. 5.1-1.

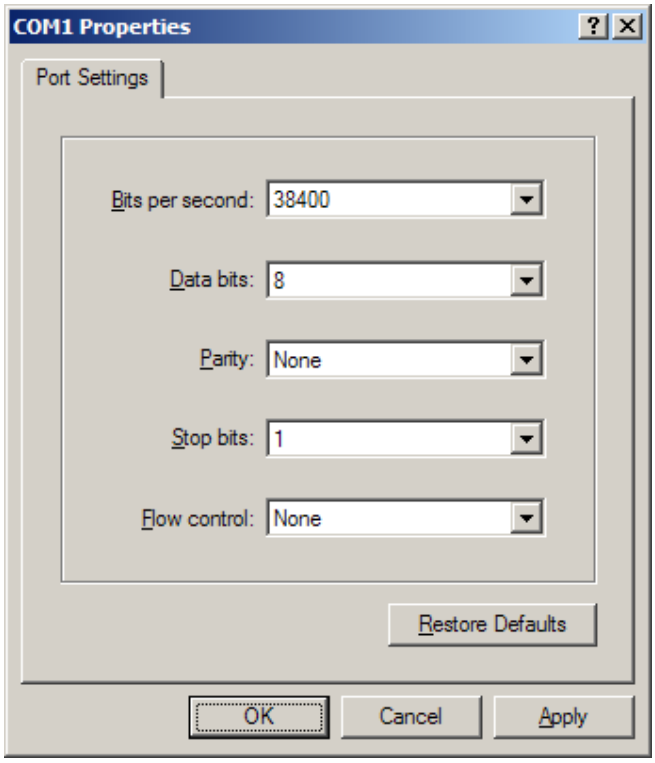


Fig. 5.1-1 Serial Port Configuration

To configure the W200A via Telnet, input telnet/operating IP address of the W200A, as shown in Fig. 5.1-2. By default, the operating IP address of the W200A is 192.168.1.254 and the subnet mask is 255.255.255.0.

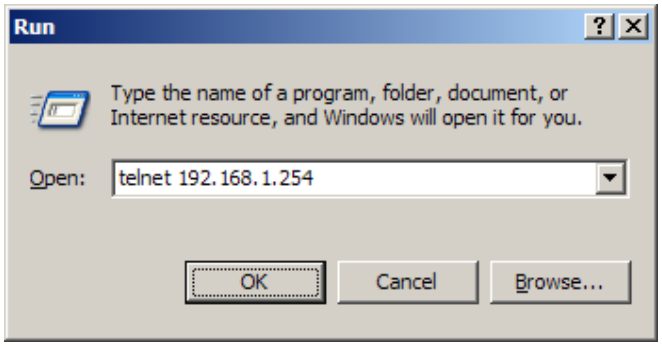


Fig. 5.1-2 Telnet to W200A

The 5 configuration modes for W200A and all the executable commands in each mode are described in details as follows. In the following text, conventions are given as

follows to the expression of commands:

1. *abc* denotes the contents that you should enter.
2. {abc|def} denotes that you must type in one of the two options.
3. The number range with [A~B] denotes you can type in a configuration parameter within this range.
4. [ ] denotes that you can either enter the contents in [ ] or not.

5.2 User Mode

Mode of entry: Telnet

Exit mode: exit

Default prompt: wlan>

Note: When an ordinary user logs in to the W200A via Telnet, he/she will not be able to enter the user mode unless he/she passes the username and password authentication. By default, the username and password are "root" and "public". To prevent illegal users from attempting the password frequently, the system will cut the Telnet connections of a user automatically if incorrect passwords has been entered 3 times continuously.

5.3 Privileged Mode

Mode of entry: Type in the enable command in the in use mode and enter the correct password.

Exit mode: disable for entering the user mode; exit for exiting the privileged mode and go back to the system.

Default prompt: wlan#

5.3.1 Command to Test Network Connectivity

Command mode: privileged mode

Function: Test the network connectivity

Command format: wlan#ping A.B.C.D [-n echo-number] [-w timeout] [-l packet-size]

Parameter description:

Name	Range	Description
A.B.C.D	IP address	Destination IP address
-n	Null	Sets the flag bits for the number of PING packets
echo-number	1~40	The number of PING packets
-w	Null	Sets the flag bits for the maximum timeout interval
Timeout	1~2	Maximum timeout interval (unit: s)
-l	Null	Sets the flag bits for the capacity of buffer area
packet-size	0~1504	Capacity of buffer area

5.3.2 Command to Save Configurations to Flash

Command mode: privileged mode

Function: Save configurations to flash

Command format: wlan#write flash

5.3.3 Command to Reset Software

Command mode: privileged mode

Function: Reset W200A

Command format: wlan#reboot

5.3.4 Command to Enter Configure Mode

Command mode: privileged mode

Function: Enter configuration modes

Command format: wlan#configure terminal

5.3.5 Command to Exit Privileged Mode

Command mode: privileged mode

Function: Exit Privileged Mode and enter User Mode

Command format: wlan#disable

5.3.6 Command to Exit TELNET Configuration

Command mode: privileged mode

Function: Exit Telnet and go back to the system

Command format: wlan#exit

Note: This command can only be used via Telnet. If you log in by using a hyperterminal mode via the serial port, this command will not be available.

5.4 Configure Mode

Mode of entry: Enter the configure terminal command in Privileged Mode

Exit mode: Exit and enter privileged mode

Default prompt: wlan (config) #

Note: In this mode (including the sub-mode), all the configuration commands can be executed.

5.4.1 Commands to Configure Wireless Access-Bridge

Mode of entry: Enter the access-bridge command in configure mode

1. access-bridge client connect-server

   Command mode: Configure mode

   Function: Configure the MAC address of the access bridge connecting the server

   Command format: wlan (config) #access-bridge client connect-server *mac*

   Parameter description:

Name	Range	Description
mac	MAC address in the xx-xx-xx-xx-xx-xx format	MAC address of the access bridge connecting the server

2. access-bridge client enable

   Command mode: Configure mode

   Function: Enable/disable the wireless bridge client

   Command format: wlan(config) #[no] access-bridge client enable

3. access-bridge server connect-client

   Command mode: Configure mode

   Function: Configure the MAC address of the access bridge connecting clients

   Command format: wlan（config）#[no] access-bridge server connect-client *mac*

   Parameter description:

Name	Range	Description
mac	MAC address in the xx-xx-xx-xx-xx-xx format	MAC address of the access bridge connecting clients

4. access-bridge server enable

   Command mode: Configure mode

   Function: Enable/disable the wireless bridge server

   Command format: wlan (config) #[no] access-bridge server enable

5.4.2 Command to Configure Bridge Information

Mode of entry: Enter the **bridge** command in configure mode

bridge filterdb

Command mode: Configure mode

Function: Configure bridge filtration or cancel the configuration

Command format: wlan (config) #[no] bridge filterdb *max-user aging-time alarm-percent*

Parameter description:

Name	Range	Description
max-user	512~1024	Maximum capacity of the MAC address list
aging-time	10~100,000	Aging time of the MAC address list entries
alarm-percent	1~10	Percent of alarms

5.4.3 Commands to Configure DHCP Server

Mode of entry: Enter the dhcp server command in configure mode

1. dhcp server dns

   Command mode: Configure mode

   Function: Configure the IP addresses of the master/slave DNS server in the DHCP server

   Command format: wlan (config) # dhcp server dns *A.B.C.D [A.B.C.D]*

   Parameter description:

Name	Range	Description
A.B.C.D	IP address	IP address of the master DNS server
[*A.B.C.D*]	IP address	IP address of the slave DNS server (optional)

2. dhcp server gateway

   Command mode: Configure mode

   Function: Configure the IP address of the default gateway of the DHCP server

   Command format: wlan (config) # dhcp server gateway *A.B.C.D*

   Parameter description:

Name	Range	Description
A.B.C.D	IP address	IP address of the gateway

3. dhcp server leasetime

   Command mode: Configure mode

   Function: Configure the address lease time of the DHCP server

   Command format: wlan (config) # dhcp server leasetime *time-value*

   Parameter description:

Name	Range	Description
time-value	60~3600	DHCP server address lease time (unit: s), 60s by default

4. dhcp server run

   Command mode: Configure mode

   Function: Start, stop or restart the DHCP server

   Command format: wlan (config) # dhcp server run *run-flag*

Parameter description:

Name	Range	Description
run-flag	start, stop, restart	start: Start the DHCP server stop: Stop the DHCP server restart: Restart the DHCH server

5. dhcp server start-flag

   Command mode: Configure mode

   Function: Configure the start flag of the DHCP server for the restart of the system

   Command format: wlan (config) # dhcp server start-flag {true|false}

   Parameter description:

Name	Range	Description
{true|false}	True, false	Start flag of the DHCP server. If it is set to **true**, it will be started when the system is restarted. If **false**, the DHCP server will not be started.

5.4.4 Discover commands

Mode of entry: Enter the **discover** command in configure mode

1. discover device

   Command mode: Configure mode

   Function: Configure the multicasting address for the integrated management and the port number of the equipment

   Command format: wlan (config) #discover device *A.B.C.D* [0~65535]

   Parameter description:

Name	Range	Description
A.B.C.D	IP address	Multicasting address for the integrated management of the equipment
[0~65535]	0~65535	Snooping port number for the integrated management of the equipment

2. discover manager

   Command mode: Configure mode

Function: Configure the multicasting address and port number for the integrated management server

Command format: wlan (config) #discover manager *A.B.C.D* [0~65535]

Parameter description:

Name	Range	Description
A.B.C.D	IP address	Multicasting address for the integrated management server
[0~65535]	0~65535	Snooping port number for the integrated management server

5.4.5 Commands to Configure 802.1X Parameters

Mode of entry: Enter the dot1x command in configure mode

1. dot1x enable

   Command mode: Configure mode

   Function: Enable or disable 802.1x

   Command format: wlan (config) #[no] dot1x enable

2. dot1x max-reauth

   Command mode: Configure mode

   Function: Configure the maximum number of attempts for 802.1x authentication

   Command format: wlan (config)# dot1x max-reauth *max-reauth-times*

   Parameter description:

Name	Range	Description
max-reauth-times	0~10	802.1x 重复认证的最大尝试次数

3. dot1x max-request

   Command mode: Configure mode

   Function: Configure the maximum number requests for 802.1x authentication

   Command format: wlan (config) # dot1x max-request max-request-times

Parameter description:

Name	Range	Description
max-request-times	1~10	Maximum number requests for 802.1x authentication

4. dot1x md5-domain

Command mode: Configure mode

Function: Configure the domain name in the EAP-MD5 authentication mode

命令格式：wlan（config）Command format: wlan (config) # dot1x md5-domain *string*

Parameter description:

Name	Range	Description
String	No more than 32 characters	Domain name in the EAP-MD5 authentication mode

5. dot1x nas-id

Command mode: Configure mode

Function: Configure the NAS-ID field for 802.1x

Command format: wlan (config) # dot1x nas-id *string*

Parameter description:

Name	Range	Description
String	No more than 64 characters	NAS-ID character string

6. dot1x portenable

Command mode: Configure mode

Function: Enable or disable 802.1x port control

Command format: wlan (config) # [no] dot1x portenable

7. dot1x quiet-period

Command mode: Configure mode

Function: Configure the quiet-period for 802.1x

Command format: wlan (config) # dot1x quiet-period *value*

Parameter description:

Name	Range	Description
Value	1~255	802.1x quiet-period (unit: s)

8. dot1x server-timeout

Command mode: Configure mode

Function: Configure the hold time for the 802.1x authentication server

Command format: wlan (config) # dot1x server-timeout *value*

Parameter description:

Name	Range	Description
value	1~255	Hold time of the authentication server (unit: s)

9. dot1x sim-domain

Command mode: Configure mode

Function: Configure the domain name in the EAP-SIM authentication mode

Command format: wlan (config) # dot1x sim-domain *string*

Parameter description:

Name	Range	Description
string	不超过 32 个字符	EAP-SIM 认证方式下的域名

10. dot1x supp-timeout

Command mode: Configure mode

Function: Configure the supp hold time for 802.1x

Command format: wlan (config) # dot1x supp-timeout *value*

Parameter description:

Name	Range	Description
value	1~255	Hold time of the 802.1x client (unit: s)

11. dot1x tx-period

Command mode: Configure mode

Function: Configure the transmission period for 802.1x

Command format: wlan (config) # dot1x tx-period *value*

Parameter description:

Name	Range	Description
value	1~255	802.1x transmission-period (unit: s)

5.4.6 Command to Set User Password in Privileged Mode

Mode of entry: Enter the enable-password command in configure mode

Command mode: Configure mode

Function: Set user passwords in privileged mode

Command format: wlan（config）#enable-password *password*

Parameter description:

Name	Range	Description
password	No more than 30 characters	User password in privileged mode

5.4.7 Command to Delete Filtration Rules

Mode of entry: Enter the erase command in configure mode

erase mac-access-rule

Command mode: Configure mode

Function: Delete MAC rules according to global rule numbers

Command format: wlan（config）#erase mac-access-rule {static} *acl-rule-number*

Parameter description:

Name	Range	Description
{static}	static	Static mac-access-rule flag
acl-rule-number	0~1023	Filtration rule number

5.4.8 Command to Exit Configuration Mode

Mode of entry: Enter the **exit** command in configure mode

Command mode: Configure mode

Function: Exit configure mode and enter privileged Mode

Command format: wlan (config) #exit

5.4.9 Commands to Configure IAPP (Load-balance)

Mode of entry: Enter the **iapp** command in configure mode

1. iapp balance

   Command mode: Configure mode

   Function: Set the load-balance group ID and nominal capacity

   Command format: wlan (config) #iapp balance group-id capability

   Parameter description:

Name	Range	Description
group-id	1~65535	Load-balance group ID
capability	1~30	Nominal capacity

2. iapp enable-flag

   Command mode: Configure mode

   Function: Enable or disable load balance and the restriction to the maximum number of users allowed

   Command format: wlan (config) #iapp enable-flag {disable|balance|max-user}

   Parameter description:

Name	Range	Description
{disable|balance|max-user}	disable, balance, max-user	disable: Disable the IAPP function. Neither load-balance nor the restriction to the maximum number of users will be enabled. balance: Enable load-balance Max-user: Enable the restriction to the maximum number of users

Tips:

The **iapp balance** and **iapp max-user** configurations cannot take effect at the same time.

3. iapp max-user

   Command mode: Configure mode

Function: Set the number of users allowed

Command format: wlan (config) #iapp max-user *value*

Parameter description:

Name	Range	Description
Value	1~150	Sets the number of users allowed

5.4.10 Interface Skip

Mode of entry: Enter the **interface** command in configure mode

1. interface ethernet

   Command mode: Configure mode

   Function: Skip to the Ethernet interface configuration mode. This command ends with the unit number of the Ethernet interface. For equipment, multiple Ethernet interfaces are available.

   Command format: wlan (config) #interface ethernet {0}

   Parameter description:

Name	Range	Description
{0}	0	Unit number of the Ethernet interface. W200A has only one Ethernet interface with the unchangeable value of 0.

2. interface wlan

   Command mode: Configure mode

   Function: Skip to the wireless interface configuration mode. This command ends with the unit number of the wireless interface. For equipment, multiple wireless interfaces are available.

   Command format: wlan (config) #interface wlan {0}

   Parameter description:

Name	Range	Description
{0}	0	Unit number of the wireless interface. W200A has only one wireless interface with the unchangeable value of 0.

5.4.11 Commands to Configure Layer 2 Isolation

Mode of entry: Enter the intra-security command in configure mode

1. intra-security enable

   Command mode: Configure mode

   Function: Enable or disable Layer 2 Isolation

   Command format: wlan (config) #[no] intra-security enable

2. intra-security gateway

   Command mode: Configure mode

   Function: Configure the IP address or MAC address of the gateway

   Command format: wlan (config) # intra-security gateway {ip *A.B.C.D* | mac *xx-xx-xx-xx-xx-xx*}

   Parameter description:

Name	Range	Description
A.B.C.D	IP address	IP address of the gateway
xx-xx-xx-xx-xx-xx	MAC address	MAC address of the gateway

5.4.12 Commands to Configure IP network Parameters

Mode of entry: Enter the ip command in configure mode

1. ip arp

   Command mode: Configure mode

   Function: Add/delete ARP list entries

   Command format: wlan (config) #[no] ip arp *A.B.C.D xx-xx-xx-xx-xx-xx*

   Parameter description:

Name	Range	Description
A.B.C.D	IP address	IP address of the host
xx-xx-xx-xx-xx-xx	MAC address	Hardware address of the host

2. ip route

   Command mode: Configure mode

   Function: Configure the default routing address for the system

Command format: wlan (config) #[no] ip route *A.B.C.D*[1] *A.B.C.D*[2] *A.B.C.D*[3]

Parameter description:

Name	Range	Description
A.B.C.D[1]	IP address	IP address of the host
A.B.C.D[2]	Subnet mask	IP address mask of the host
A.B.C.D[3]	IP address	IP address of the next-hop router

3. ip pool

Command mode: Configure mode

Function: Configure the IP address pool for the system

Command format: wlan (config) #[no] ip pool *index* *A.B.C.D*[1] *A.B.C.D*[2] *A.B.C.D*[3]

Parameter description:

Name	Range	Description
index	0~9	Group number of the IP address pools
A.B.C.D[1]	IP address	Starting IP address of the host address pool
A.B.C.D[2]	IP address	Ending IP address of the host address pool
A.B.C.D[3]	Subnet mask	Subnet mask of the addresses in an address pool

5.4.13 Command to Configure Log Print Information

Mode of entry: Enter the logmsg command in configure mode

1. logmsg all-enable

Command mode: Configure mode

Function: Open or close the log print information in all modules

Command format: wlan (config) #[no] logmsg all-enable

2. logmsg level

Command mode: Configure mode

Function: Configure the level of log print information to be output

Command format: wlan (config) # logmsg level *level-num*

Parameter description:

Name	Range	Description
level-num	Lowest (Flood) Lower (Info) Higher (Error) Highest (Fatal)	Level of the log print information to be output. Only the information with a higher level will be output.

3. logmsg mod-enable

   Command mode: Configure mode

   Function: Determine the module whose log print information should be output

   Command format: wlan (config) # [no] logmsg mod-enable *module*

   Parameter description:

Name	Range	Description
module	A specified module name	Module whose log print information should be output

4. logmsg telnet-log

   Command mode: Configure mode

   Function: Set the log print information output window to the active Telnet window.

   Command format: wlan (config) #[no] logmsg telnet-log

5.4.14 Command to Configure MAC Filter

Mode of entry: Enter the mac-access-list command in configure mode

Command mode: Configure mode

Function: Add/delete an access list by serial number

Command format: wlan（config）#[no] mac-access-list *acl-list-number* {deny|permit} {*macaddr*|any}

Parameter description:

Name	Range	Description
acl-list-number	1~99	MAC filter group number
{ deny|permit }	Deny, permit	Deny: If the conditions meet the requirements, the MAC communication is denied. Permit: If the conditions meet the requirements, the MAC communication is allowed.
{*macaddr*|any}	MAC address in the xx-xx-xx-xx-xx-xx format or any	MAC address from which MAC packets are sent. The source address can be specified in two ways: One is to use six 48-bit hexadecimal numbers with dashes between them (HYPHEN), e.g. 00-d0-d0-f1-c4-ef Another is to use the any keyword as the abbreviation of source 00-00-00-00-00-00. It is not recommended to use this keyword.

5.4.15 Command to Configure MAC Address Authentication

Mode of entry: Enter the mac-authen command in configure mode

Command mode: Configure mode

Function: Configure MAC address authentication

Command format: wlan (config) #[no] mac-authen {deny|permit} {*macaddr*|any}

Parameter description:

Name	Range	Description
{deny|permit}	Deny, permit	deny: If the conditions meet the requirements, the MAC communication is denied. permit: If the conditions meet the requirements, the MAC communication is allowed.
{*macaddr*|any}	MAC address in the xx-xx-xx-xx-xx-xx format or any	MAC address from which MAC packets are sent. The source address can be specified in two ways: One is to use six 48-bit hexadecimal numbers with dashes between them (HYPHEN), e.g. 00-d0-d0-f1-c4-ef Another is to use the any keyword as the abbreviation of source 00-00-00-00-00-00. It is not recommended to use this keyword.

5.4.16 Command to Configure Users

Mode of entry: Enter the manage-user command in configure mode

Command mode: Configure mode

Function: Add/delete usernames

Command format: wlan (config) #[no] manage-user *username password*

Parameter description:

Name	Range	Description
username	1~32 characters	Username
password	1~32 characters	User password

5.4.17 Commands to Configure Radius Server

Mode of entry: Enter the radius-server command in configure mode

1. radius-server account

   Command mode: Configure mode

   Function: Add/delete the accounting server of an ISP

   Command format: wlan (config) #[no] radius-server account isp-name master-flag A.B.C.D key-string

   Parameter description:

Name	Range	Description
isp-name	1~255 characters	ISP name
master-flag	master, slave	Master/slave flag of the accounting server
A.B.C.D	IP address	IP address of the accounting server
key-string	1~255 characters	Shared key string for accounting

2. radius-server authen

   Command mode: Configure mode

   Function: Add/delete the authentication server of an ISP

   Command format: wlan (config) wlan（config）#[no] radius-server authen *isp-name master-flag A.B.C.D key-string*

Parameter description:

Name	Range	Description
isp-name	1~255 个字符	ISP name
master-flag	master, slave	Master or slave authentication server. Only one master server can be set.
A.B.C.D	IP address	IP address of the authentication server
key-string	1-255 characters	Shared key string for authentication

3. radius-server dns

Command mode: Configure mode

Function: Add/delete the DNS server of an ISP

Command format: wlan (config) #[no] radius-server dns isp-name A.B.C.D [A.B.C.D]

Parameter description:

Name	Range	Description
isp-name	1~255 characters	ISP name
A.B.C.D	IP address	IP address of the master DNS server
[*A.B.C.D*]	IP address	IP address of the slave DNS server

4. radius-server isp-name

Command mode: Configure mode

Function: Add/delete an ISP

Command format: wlan (config) #[no] radius-server isp-name *isp-name*

Parameter description:

Name	Range	Description
isp-name	1~255 character	ISP name

5. radius-server retry-times

Command mode: Configure mode

Function: Set the number of retries of RADIUS authentication of an ISP

Command format: wlan (config) #radius-server retry-times *isp-name retry-time*

Parameter description:

Name	Range	Description
isp-name	1~255 characters	Name of an ISP which has been created.
retry-time	1~10	Number of retries of RADIUS authentication

6. radius-server timeout

   Command mode: Configure mode

   Function: Set the hold time of the RADIUS authentication of an ISP

   Command format: wlan (config) #radius-server timeout *isp-name timeout*

   Parameter description:

Name	Range	Description
isp-name	1~255 characters	Name of an ISP which has been created.
timeout	1~65535	Hold time of the RADIUS authentication (unit: s)

5.4.18 Command to Configure SNMP Module

Mode of entry: Enter the snmp command in configure mode

1. snmp access-host

   Command mode: Configure mode

   Function: Add and delete host IP addresses allowed to access

   Command format: wlan (config) #[no] snmp access-host *A.B.C.D*

   Parameter description:

Name	Range	Description
A.B.C.D	IP address	Host IP addresses (up to 10) in dotted decimal format (A.B.C.D)

2. snmp access-mode

   Command mode: Configure mode

   Function: Allow all hosts or hosts in the server-list to access this agent

   Command format: wlan (config) #snmp access-mode {all|list}

Parameter description:

Name	Range	Description
{all|list}	all, list	all: All users are allow to access list: Users in server-list are allowed to access

3. snmp community

Command mode: Configure mode

Function: Configure the SNMP access community string and its access right

Command format: wlan (config) #snmp community *comstr* {read-only| read-write}

wlan（config）#no snmp community *comstr*

Parameter description:

Name	Range	Description
comstr	1~32 characters	Names of the SNMP access community strings (up to 10). comstr is a string with up to 32 characters
{read-only|read-write}	read-only, read-write	read-only: read-only access read-write: Read-write access

4. snmp contact

Command mode: Configure mode

Function: Set the name and contact information of the equipment administrator

Command format: wlan (config) #snmp contact *sysContact*

Parameter description:

Name	Range	Description
sysContact	1~255 characters	A management variable of the system group in MIB II, denotes the name and contact information of the equipment administrator

5. snmp location

Command mode: Configure mode

Function: Configure the geographical location of the managed equipment

Command format: wlan (config) #snmp location *sysLocation*

Parameter description:

Name	Range	Description
sysLocation	1~255 characters	A management variable of the system group in MIB, used to define the geographic location of the managed equipment

6. snmp nodecode

Command mode: Configure mode

Function: Configure the network element (NE) codes of the managed equipment

Command format: wlan (config) #snmp nodecode *node-code*

Parameter description:

Name	Range	Description
node-code	>= 0 (integer)	A management variable of the system group in MIB, used to define the NE code of the managed equipment

7. snmp nodeid

Command mode: Configure mode

Function: Configure the NE ID of the managed equipment

Command format: wlan (config) #snmp nodeid *node-id*

Parameter description:

Name	Range	Description
node-code	1~31 characters	A management variable of the system group in MIB, used to define the NE ID of the managed equipment

8. snmp nodecreatdate

Command mode: Configure mode

Function: Configure the NE creation date of the managed equipment

Command format: wlan (config) #snmp nodecreatdate *hh:mm:ss month day year*

Parameter description:

Name	Range	Description
hh:mm:ss	Time	hh (hour): mm (minute): ss (second)
month	1~12	Month
day	1~31	Day
year	2002~2130	Year: 4 bits

hh:mm:ss month day year: A management variable of the system group in MIB, used to define the NE creation date of the managed equipment

9. snmp proxytraphost

Command mode: Configure mode

Function: Add the address information of a proxy Trap destination host

Command format: wlan (config) #[no] snmp proxytraphost *A.B.C.D*

Parameter description:

Name	Range	Description
A.B.C.D	IP address	Addresses of the proxy Trap destination hosts (up to 10)

10. snmp sysname

Command mode: Configure mode

Function: Set the name of the managed equipment

Command format: wlan (config) #snmp sysname *sysName*

Parameter description:

Name	Range	Description
sysName	1~255 characters	A management variable of the system group in RFC1213 MIB, used as the name of the managed equipment

11. snmp trap enable

Command mode: Configure mode

Function: Configure if the SNMP Agent is allowed to send Trap

Command format: wlan (config) #[no] snmp trap enable

12. snmp authtrap enable

    Command mode: Configure mode

    Function: Configure if the SNMP Agent is allowed to send the authentication failed Trap

    Command format: wlan (config) #[no] snmp authtrap enable

13. snmp traphost

    Command mode: Configure mode

    Function: Add the address of a trap destination host and the trap version number

    Command format: wlan (config) #snmp traphost *A.B.C.D* [version *version*]

    wlan（config）#no snmp traphost *A.B.C.D*

    Parameter description:

Name	Range	Description
A.B.C.D	IP address	Addresses of Trap destination hosts
version	1~2	Trap version number

5.4.19 Command to Manage Telnet Idle Timeout

Mode of entry: Enter the Telnet idle-timeout command in configure mode

Command mode: Configure mode

Function: Set the automatic exit time when the Telnet window is idle

Command format: wlan (config) #telnet idle-timeout *time-value*

Parameter description:

Name	Range	Description
time-value	300~3600 (unit: s)	The automatic exit time when the Telnet window is idle (300s by default)

5.4.20 Commands to Upload/download TFTP Files

Mode of entry: Enter the tftp command in configure mode

1. tftp dir

   Command mode: Configure mode

   Function: Check the free space of a flash disk (unit: byte)

   Command format: wlan (config) #tftp dir

2. tftp pic

   Command mode: Configure mode

   Function: Download graphics files from the Web configuration pages on the TFTP server and save them to a flash disk.

   Command format: wlan (config) #tftp pic *A.B.C.D*

   Parameter description:

Name	Range	Description
A.B.C.D	IP address	IP Address of a TFTP server in dotted decimal format

3. Download files using tftp get

   Command mode: Configure mode

   Function: Download files from the TFTP server using TFTP and save them to the flash disk.

   Command format: wlan (config) #tftp get A.B.C.D *flash-file-name*

   Parameter description:

Name	Range	Description
A.B.C.D	IP address	IP Address of a TFTP server in dotted decimal format
flash-file-name	Filename of a version	Full name (including the extension name) of the file to be transmitted from the TFTP server

4. Upload files using tftp put

   Command mode: Configure mode

   Function: Upload files from the flash disk to the TFTP server using TFTP

   Command format: wlan (config) #tftp put *A.B.C.D flash-file-name*

Parameter description:

Name	Range	Description
A.B.C.D	IP address	IP Address of a TFTP server in dotted decimal format
flash-file-name	Filename of a version	Full name (including the extension name) of the file to be transmitted from the flash disk

5.4.21 Commands to Configure VLAN

Mode of entry: Enter the vlan command in configure mode

1. vlan ap-vid

   Command mode: Configure mode

   Function: Configure the VLAN ID of AP

   Command format: wlan (config) **#vlan ap-vid** *value*

   Parameter description:

Name	Range	Description
value	0~4094	VLAN ID

2. vlan enable

   Command mode: Configure mode

   Function: Enable VLAN

   Command format: wlan (config) **#vlan enable**

3. vlan keep-vid

   Command mode: Configure mode

   Function: Allow a terminal to switch over with the same VLAN ID between different APs

   Command format: wlan (config) **#vlan keep-vid**

4. vlan sta-default-vid

   Command mode: Configure mode

   Function: Configure the default VLAN ID of the STA accessed from the AP

   Command format: wlan (config) **#vlan sta-default-vid** *value*

Parameter description:

Name	Range	Description
value	1~4094	Default VLAN ID when the STA is accessed

5. vlan sta-vid

Command mode: Configure mode

Function: Configure the specified VLAN ID of the STA accessed from the AP

Command format: wlan (config) **#vlan sta-vid** *xx-xx-xx-xx-xx-xx* vlan *value*

Parameter description:

Name	Range	Description
value	1~4094	Default VLAN ID when the STA is accessed
xx-xx-xx-xx-xx-xx	MAC address	MAC address of the accessed STA

5.4.22 Show Commands

Mode of entry: Enter show commands in configure mode

1. show access-bridge

Command mode: Configure mode

Function: Display configured parameters of a wireless bridge

Command format: wlan (config) #show access-bridge

2. show alarm

1) show alarm all

Command mode: Configure mode

Function: Display all alarm information

Command format: wlan (config) #show alarm all

2) show alarm bycode

Command mode: Configure mode

Function: Display alarm Information by alarm code

Command format: wlan (config) #show alarm bycode *code*

Parameter description:

Name	Range	Description
code	1001~3999	Code of an alarm

3) show alarm bylevel

Command mode: Configure mode

Function: Display alarm information by alarm level

Command format: wlan (config) #show alarm bylevel *level*

Parameter description:

Name	Range	Description
level	1~3	Alarm level

3. show bridge configure

Command mode: Configure mode

Function: Display configured bridge parameters

Command format: wlan (config) #show bridge configure

4. show dhcp server

Command mode: Configure mode

Function: Display DHCP server parameters

Command format: wlan (config) #show dhcp server

5. show discover

Command mode: Configure mode

Function: Display configured discover parameters of the equipment

Command format: wlan (config) #show discover

6. show dot1x-cfg

Command mode: Configure mode

Function: Display 802.1x parameters

Command format: wlan (config) #show dot1x-cfg

7. show dynamic-key

   Command mode: Configure mode

   Function: Display dynamic WEP key parameters

   Command format: wlan (config) #show dynamic-key

8. show iapp

   Command mode: Configure mode

   Function: Display configured load-balance parameters

   Command format: wlan (config) #show iapp

9. show interface

   Command mode: Configure mode

   Function: Display configured interface parameters

   Command format: wlan (config) #show interface {ethernet|wlan} Function: Display configured Layer 2 isolation parameters

   Command format: wlan (config) #show intra-security

11. show ip

1) show ip arp

   Command mode: Configure mode

   Function: Display ARP address resolution information

   Command format: wlan (config) #show ip arp

2) show ip if-stat

   Command mode: Configure mode

   Function: Display IP interface status information

   Command format: wlan (config) #show ip if-stat

3) show ip pool

- show ip pool config

  Command mode: Configure mode

  Function: Display information of all IP address pools

Command format: wlan (config) #show ip pool config

- show ip pool used

  Command mode: Configure mode

  Function: Display information of allocated IP addresses in the specified IP address pool

  Command format: wlan (config) #show ip pool used index

  Parameter description:

Name	Range	Description
Index	0~9	Serial number of an IP address pool

4) show ip route

   Command mode: Configure mode

   Function: Display configured IP route parameters

   Command format: wlan (config) #show ip route

12. show logmsg

    Command mode: Configure mode

    Function: Display all configured log print information

    Command format: wlan (config) #show logmsg

13. show mac-access-list

    Command mode: Configure mode

    Function: Display configured mac-access-list information

    Command format: wlan (config) #show mac-access-list {static} [1~99]

14. show mac-authen

    Command mode: Configure mode

    Function: Display configured mac-authen parameters

    Command format: wlan (config) #show mac-authen

15. show manage-user

    Command mode: Configure mode

Function: Display configured manage-user parameters

Command format: wlan (config) #show manage-user

16. show radius

Command mode: Configure mode

Function: Display configured radius parameters

Command format: wlan (config) #show radius

17. show snmp

1) show snmp access-host

Command mode: Configure mode

Function: Display configured snmp access-host parameters

Command format: wlan (config) #show snmp access-host

2) show snmp community

Command mode: Configure mode

Function: Display configured snmp community parameters

Command format: wlan (config) #show snmp community

3) show snmp nodeinfo

Command mode: Configure mode

Function: Display configured snmp nodeinfo parameters

命令格式：wlan（config）#show snmp nodeinfo

4) show snmp sysinfo

Command mode: Configure mode

Function: Display configured snmp sysInfo parameters

Command format: wlan (config) #show snmp sysinfo

5) show snmp traphost

Command mode: Configure mode

Function: Display configured snmp traphost parameters

Command format: wlan (config) #show snmp traphost

18. show telnet idle-timeout

    Command mode: Configure mode

    Function: Display the configured interval for telnet idle time-out

    Command format: wlan (config) #show telnet idle-timeout

19. show version

    Command mode: Configure mode

    Function: Display the software version number

    Command format: wlan (config) #show version

20. show vlan

    Command mode: Configure mode

    Function: Display configured VLAN information

    Command format: wlan (config) #show vlan

5.5 Ethernet Interface Configuration Mode

Mode of entry: Enter the interface ethernet command in configure mode

Exit mode: Exit and enter configure mode

Default prompt: wlan (config-int-ethernet)#

Note: In this mode (including the sub-mode), all information can be configured for relevant interfaces.

5.5.1 Configurations in the Ethernet Interface Mode

Command mode: Ethernet Interface Configuration Mode

Function: Set the mode of rate negotiation for the Ethernet interface

Command format: wlan (config-int-ethernet)# ethernet-mode *mode*

Parameter description:

Name	Range	Description
mode	10M, autoNeg (100M/10M)	Mode of the Ethernet Interface

5.5.2 Command to Exit the Ethernet Interface Configuration Mode

Command mode: Ethernet Interface Configuration Mode

Function: Exit Ethernet interface configuration mode and enter configure Mode

Command format: wlan (config-int-ethernet)# #exit

5.5.3 Command to Configure Ethernet interface IP addresses

Command mode: Ethernet Interface Configuration Mode

Function: Set the IP address of the Ethernet interface

Command format: wlan（config-int-ethernet）#ipaddr $A.B.C.D^1$ $A.B.C.D^2$ [second]

wlan（config-int-ethernet）#no ipaddr $A.B.C.D^1$ [$A.B.C.D^2$]

Parameter description:

Name	Range	Description
$A.B.C.D^1$	IP address	IP address of an interface
$A.B.C.D^2$	IP address	IP address mask of an interface
[second]	Optional	The additional IP address flag of an interface

5.5.4 Command to Configure MAC filter for the Ethernet Interface

Command mode: Ethernet Interface Configuration Mode

Function: Configure MAC filter for the Ethernet interface

Command format: wlan（config-int-ethernet）#[no] mac-access-group *acl-number direction*

Parameter description:

Name	Range	Description
acl-num	1~99	MAC filter entry number bound to the interface
direction	in	Bind to the "in" direction of the interface

5.6 Wireless Interface Configuration Mode

Mode of entry: Enter the interface wlan command in configure mode

Exit mode: Exit and enter configure mode

Default prompt: wlan (config-int-wlan)#

Note: In this mode (including the sub-mode), all information can be configured for relevant interfaces.

5.6.1 Command to Configure 80211b-related Parameters for the Wireless Interface

Mode of entry: Enter the 80211b command in configure mode

1. 80211b channel

   Command mode: Wireless interface configuration mode

   Function: Set the current operating channel

   Command format: wlan (config-int-wlan) #80211b channel *channel-num*

   Parameter description:

Name	Range	Description
channel-num	1~13	Wireless channel number: 6 by default

2. 80211b dynamic-key

   Command mode: Wireless interface configuration mode

   Function: Set the dynamic key of the wireless network

   Command format: wlan (config-int-wlan) #80211b dynamic-key key *xx-xx-xx-xx-xx-xx key1-string key2-string used-key*

   wlan（config-int-wlan）#no 80211b dynamic-key *xx-xx-xx-xx-xx-xx*

   wlan（config-int-wlan）#80211b dynamic-key enable *xx-xx-xx-xx-xx-xx*

   wlan（config-int-wlan）#no 80211b dynamic-key enable *xx-xx-xx-xx-xx-xx*

   Note: The **80211b dynamic-key key** command is used to set the dynamic key for a specified MAC address. The **80211b dynamic-key enable** command is used to enable this dynamic key.

Parameter description:

Name	Range	Description
xx-xx-xx-xx-xx-xx	MAC address	MAC address of the wireless user using the dynamic key
key1-string	5 or 13 characters	First dynamic key (the key length can only be 5 or 13 characters)
key2-string	5 or 13 characters	Second dynamic key (the key length can only be 5 or 13 characters)
used-key	key1, key2	Key number that is used

3. 80211b enh-security enable

   Command mode: Wireless interface configuration mode

   Function: Set to enable or disable the enhanced security function of AP

   Command format: wlan (config) #[no] 80211b enh-security enable

   Note: If the enhanced security function is enabled, the wireless terminal will not be able to scan the AP. If this function is disabled, the AP can be scanned.

4. 80211b essid

   Command mode: Wireless interface configuration mode

   Function: Set ESSID of the wireless network

   Command format: wlan (config-int-wlan) #80211b essid *essid-string*

   Parameter description:

Name	Range	Description
essid-string	1~31 characters	ESSID of the wireless network. By default, it is zxwlan.

5. 80211b frg-threshold

   Command mode: Wireless interface configuration mode

   Function: Set fragment threshold

   Command format: wlan (config-int-wlan) #80211b frg-threshold *value*

   Parameter description:

Name	Range	Description
value	256~2346 (even)	Threshold of fragments, 2346 by default

6. 80211b power

Command mode: Wireless interface configuration mode

Function: Set the transmission power of the wireless network card

Command format: wlan (config-int-wlan) #80211b power value

Parameter description:

Name	Range	Description
value	auto， 10/20/30/40/50/60/70/80/90/100(unit: mW) max	auto: automatic power control (default) 10/20/30/40/50/60/70/80/90/100: fixed transmission power max: maximal transmission power

7. 80211b rts-threshold

Command mode: Wireless interface configuration mode

Function: Set RTS threshold

Command format: wlan (config-int-wlan) #80211b rts-threshold value

Parameter description:

Name	Range	Description
value	0~2347	RTS threshold, 2347 by default

5.6.2 Command to Exit Wireless Interface Configuration Mode

Command mode: Wireless interface configuration mode

Function: Exit wireless interface configuration mode and enter configure mode

Command format: wlan (config-int-wlan)# exit

5.6.3 Command to Enable Link Integrity Detection

Command mode: Wireless interface configuration mode

Function: Set to enable or disable link integrity detection

Command format: wlan (config-int-wlan)#[no] link-integrity enable

Note: the link integrity detection function of AP means that when the Ethernet link of the AP is disconnected, the AP will release all connected wireless users, close the wireless port, and deny the connection requests of other wireless terminals. When the

link is recovered, the AP will open the wireless port and accept connections of wireless users.

5.6.4 WEP Configuration of the Wireless Interface

Mode of entry: Enter the wep command in wireless interface configuration mode

1. wep mode

   Command mode: Wireless interface configuration mode

   Function: Set WEP encryption mode and WEP key format

   Command format: wlan (config-int-wlan) #wep mode {disable | wep64 | wep128 | mix-wep64 | mix-wep128} {Alphanumeric|Hexadecimal}

   Parameter description:

Name	Range	Description
{disable|wep64|wep128| mix-wep64|mix-wep128}	disable wep64 wep128 mix-wep64 mix-wep128	Disable: disable the WEP encryption function wep64: Use the 64-bit WEP encryption wep128: Use the 128-bite WEP encryption mix-wep64: Use a mixed 64-bit WEP encryption. In this mode, the clients can communicate normally with a correct 64-bit encryption key or without encryption. Mix-wep128: Use a mixed 128-bite WEP encryption. In this mode, the clients can communicate normally with a correct 128-bite encryption key or without encryption.
{Alphanumeric| Hexadecimal}	Alphanumeric Hexadecimal	Alphanumeric: WEP key in string format Alphanumeric: WEP key in sexadecimal format

2. wep set-key

   Command mode: Wireless interface configuration mode

   Function: Set the key of WEP encryption

   Command format: wlan (config-int-wlan) #wep set-key *key-id key-text*

Parameter description:

Name	Range	Description
key-id	key1, key2, key3, key4	Entry number of the key to be set
key-text	5 or 13 characters, or a combination of 10 or 26 sexadecimal digits	If it is set to 64-bit encryption, the key_text argument can be 5 case sensitive characters (in alphanumeric format), e.g. MyKey, or 10 sexadecimal digits (in hexadecimal format), e.g. 11AA22BB33 If it is set to 128-bit encryption, the key_text argument can be 13 case sensitive characters (in alphanumeric format), e.g. MyKey12345678, or 26 sexadecimal digits (in hexadecimal format), e.g. 00112233445566778899AABBCC

3. wep use-key

Command mode: Wireless interface configuration mode

Function: Set the WEP encryption key to be used

Command format: wlan (config-int-wlan) #wep use-key *key-id*

Parameter description:

Name	Range	Description
Key-id	key1, key2, key3, key4	Entry number of the key to be used

5.6.5 Command to Configure MAC Filter in Wireless Interface Configuration

Command mode: Wireless interface configuration mode

Function: Configure MAC filter for the wireless interface

Command format: wlan (config-int-wlan) #[no] mac-access-group *acl-list-number direction*

Parameter description:

Name	Range	Description
Acl-list-number	1~99	MAC filter entry number bound to the interface
direction	in	Bind to the "in" direction of the interface

5.6.6 Command to Configure Authentication Mode in Wireless Interface Configuration

Command mode: Wireless interface configuration mode

Function: Configure authentication mode for the wireless interface

Command format: wlan (config-int-ethernet) #authmode *auth mode*

Parameter description:

Name	Range	Description
Authmode	OpenSystem SharedKey Both	OpenSystem: Authentication using Opensystem SharedKey: Authentication using Sharedkey Both: Both authentication modes are supported

6 WEB Configuration

6.1 Overview

For the W200A, we also provide a WEB configuration page to configure the various parameters of the W200A. The configuration page is same as an ordinary Web page, and the followings are some instructions on WEB configuration:

1. We provide a means to log into the W200A in the HTTP mode to configure parameters. Users can open the WEB configuration login page of the W200A by entering **http://Working IP Address of W200A** in the address bar of the WEB browser (the default working IP address of the W200A is 192.168.1.254, and the subnet is 255.255.255.0).

2. To simplify operation, only one operation mode is available at present for WEB configuration (similar to the CONFIG mode in CLI configuration), with two levels of password protection. The first level of password allows users to browse the current parameters. To submit data for the first time after login, users must enter the privileged user password, and it is unnecessary to re-enter the privileged user password for submitting other data pages if the password is correct. These two levels of passwords are same as those of the CLI configuration.

3. Browsing and setting functions: After you logs in successfully, you can open a certain WEB page to browse the current parameters. To modify a certain parameter, you just need to enter the new value and then submit the modification. If the setting operation is successful, you can view the new setting by returning to the previous page. WEB configuration will resolve the newly entered value, and a failure message will be returned if the format is incorrect.

4. At present, only one user is allowed to configure or browse parameters for WEB configuration. If the user is idle for over 5 minutes, he will automatically exit and another user can log in for configuration.

The path diagram of WEB configuration is as shown in Fig. 6.1-1.

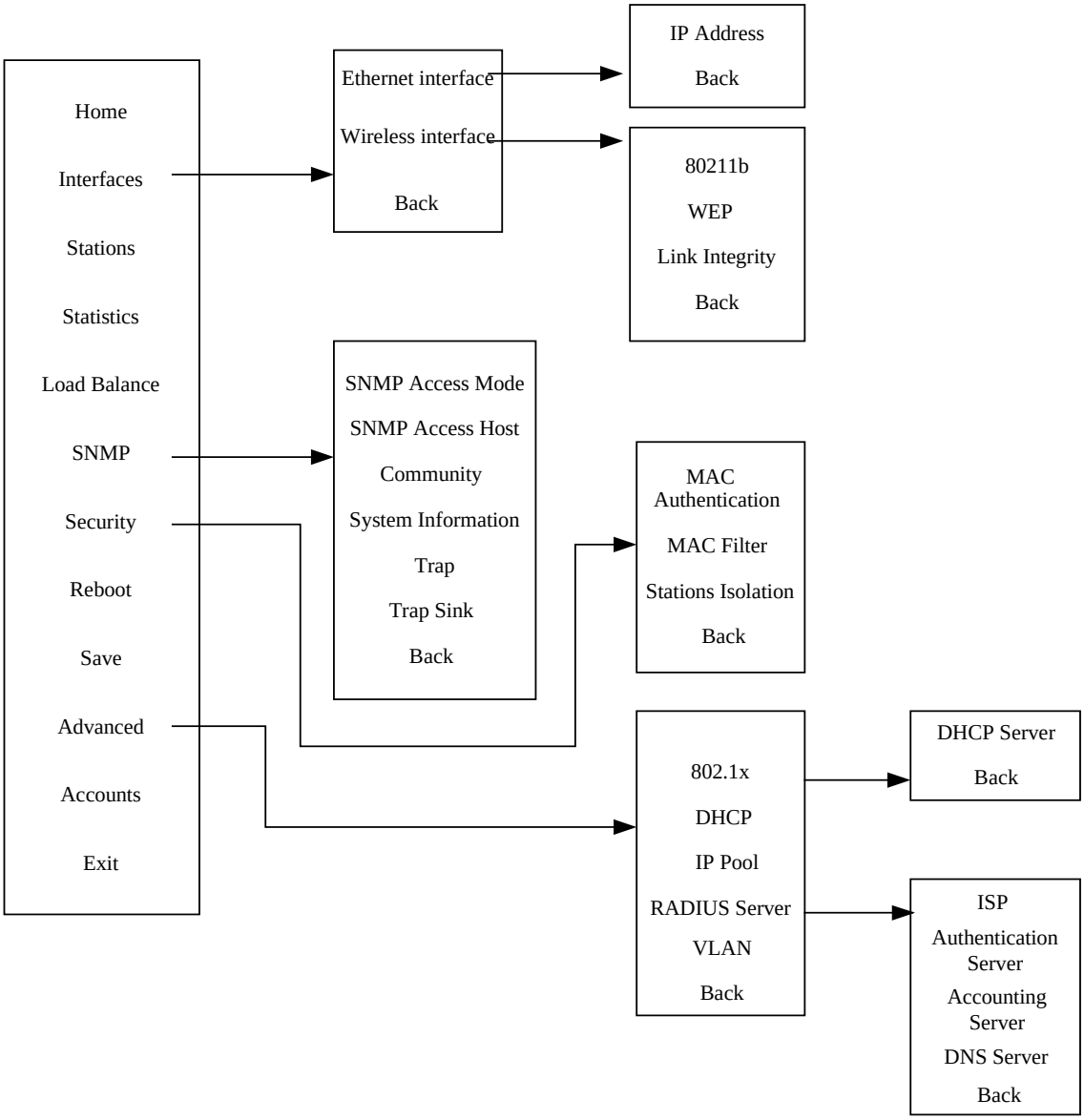


Fig. 6.1-1 Path diagram of WEB configuration

6.2 Opening the login WEB page

Open the WEB browser, and enter "**Http:**//*Working IP Address of the W200A*" in the address bar of the browser to display the WEB page shown in Fig. 6.2-1. You can open the parameter-browsing page by entering the correct user name and password in this page.

Fig. 6.2-1 Login page for WEB configuration

If someone has already logged in for WEB configuration (or you have opened the WEB configuration window), the following message will be given after you submit your user name and password, as shown in Fig. 6.2-2.

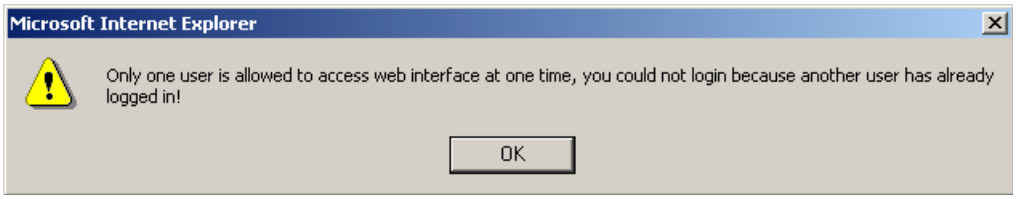


Fig. 6.2-2 Alert box for prompting that someone has already logged in for WEB configuration

If the entered user name and password are incorrect, the following message will be given after you submit your user name and password, as shown in Fig. 6.2-3.

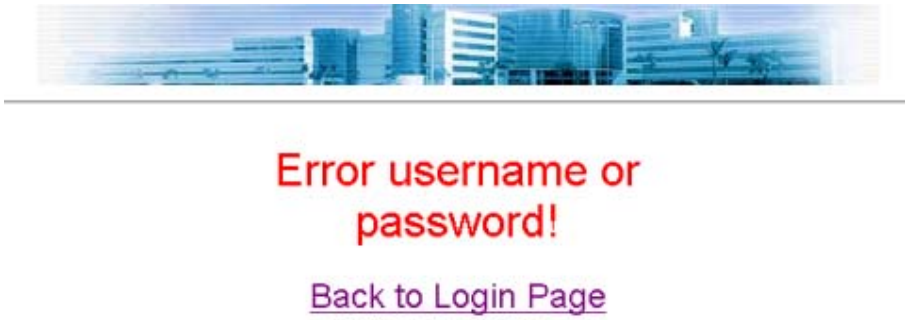


Fig. 6.2-3 Alert box for prompting that the entered user name and password are incorrect

6.3 Main menu of WEB configuration

After you log into the system successfully, the main menu page for user browsing will be opened. The main menu includes the following items: **Home, Interfaces, Stations, Statistics, Load Balance, SNMP, Security, Reboot, Save, Advanced, Accounts and Exit**. Among them, **Interfaces, SNMP, Security** and **Advanced** also have submenus, while other configuration modules only have one WEB page for configuration. The main menu is on the left of the WEB page, as shown in Fig. 6.3-1, and the right pane is the page of the currently selected configuration module.

6.3.1 Home page (basic product information)

The contents in this page are read-only, which can only be browsed and cannot be set.

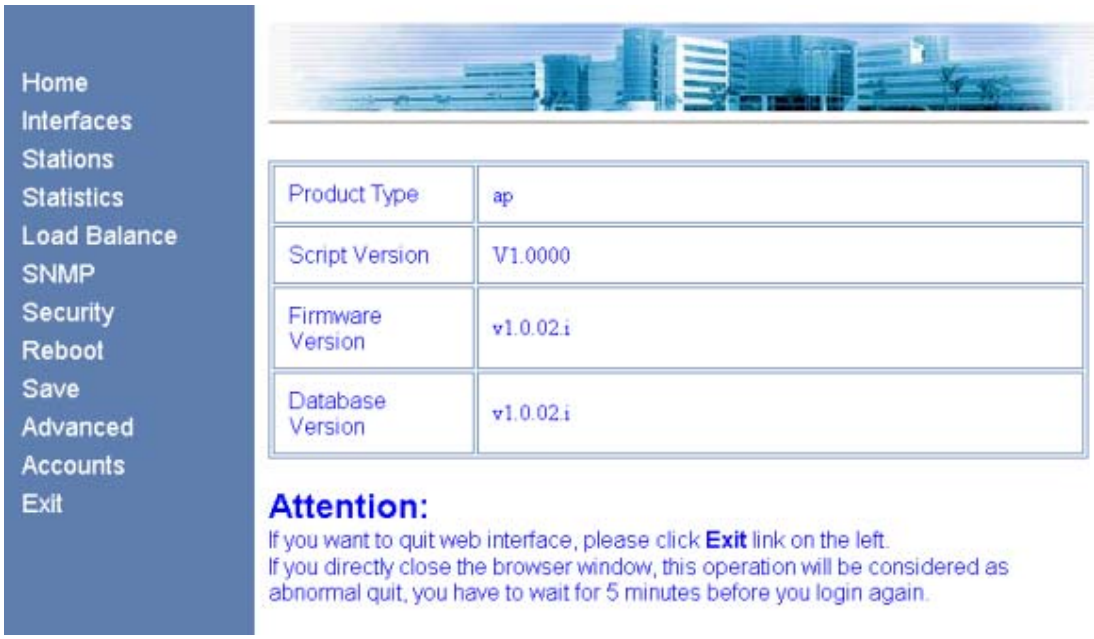


Fig. 6.3-1 Home page (basic product information)

6.3.2 Stations page

Click **Stations** in the main menu to display the page as shown in Fig. 6.3-2.

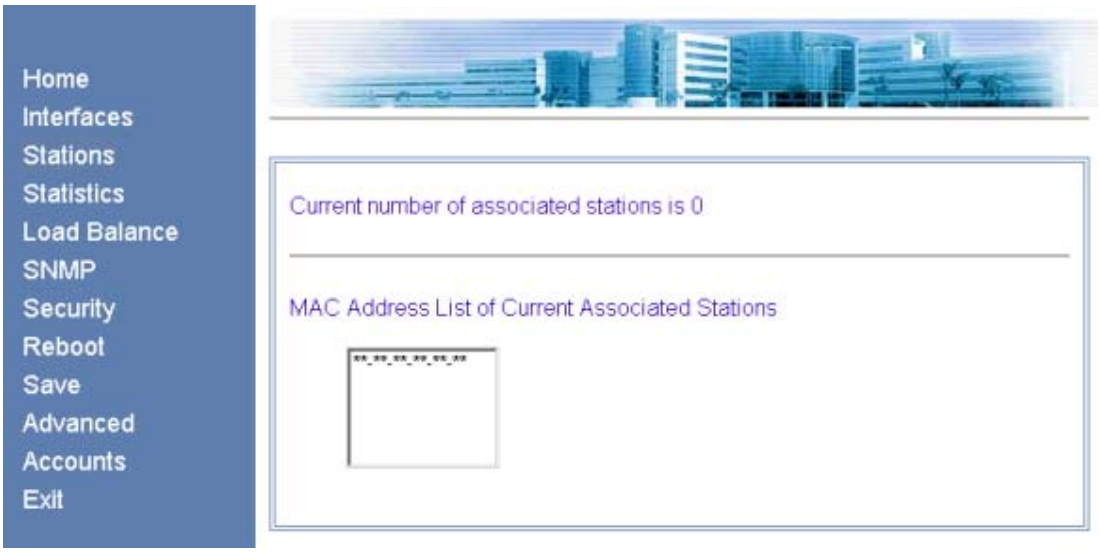


Fig. 6.3-2 Stations page

This page displays the information about the wireless users who have logged into this AP. The parameters include the number of wireless users and the MAC address of the users.

6.3.3 Statistics Page

Click **Statistics** in the main menu to display the page as shown in Fig. 6.3-3.

Fig. 6.3-3 Statistics page

This page displays the flow information of each wireless user, including uplink flow, downlink flow, uplink packets and downlink packets.

6.3.4 Load Balance page

Click **Load Balance** in the main menu to display the page as shown in Fig. 6.3-4.

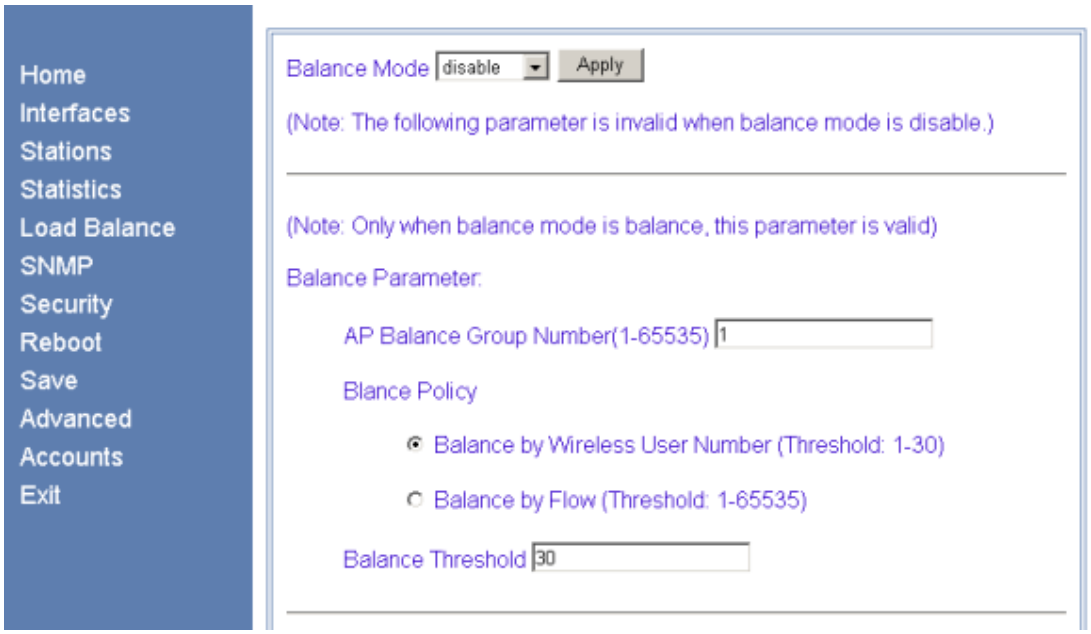


Fig. 6.3-4 Load Balance page

This page is used to configure IAPP parameters, including balance mode, AP load balance (AP group number and nominal capacity) and the maximum number of users, all of which have a certain value range. Three balance modes are available: disable, balance and max-user. When you configure the mode as "disable", the IAPP mode will be disabled; when you configure the mode as "balance", the AP load balance will be enabled, and the parameter in the "AP Balance Group Number (1-65535)" box will take effect; and when you configure the mode as "max-user", the parameter in the "Balance Threshold" box will take effect.

Note: You can only select one from AP load balance or Max-user.

6.3.5 SNMP page

Click **SNMP** in the main menu to display the page as shown in Fig. 6.3-5.

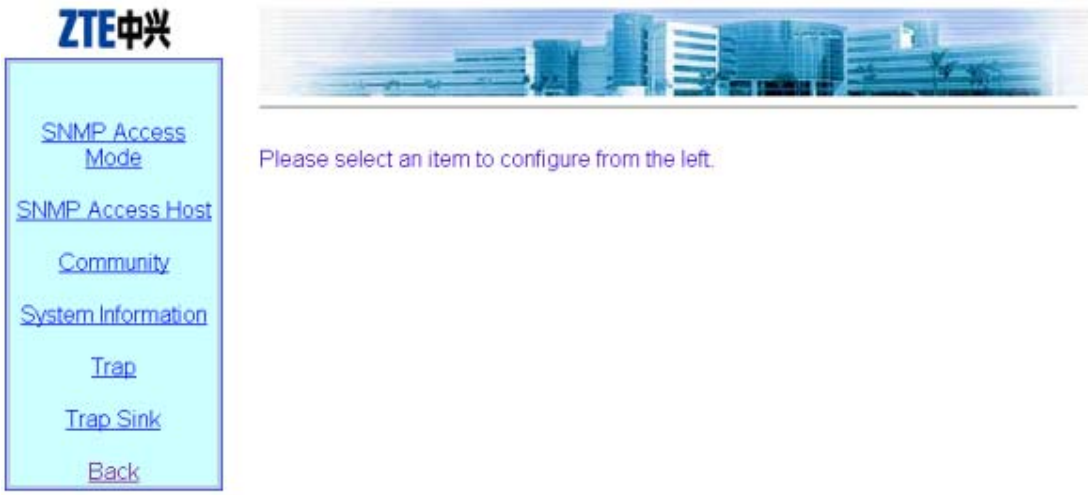


Fig. 6.3-5 Submenu for SNMP configuration

On the left of this page is the submenu for SNMP configuration: SNMP Access Mode, SNMP Access Host, Community, System Information, Trap, Trap Sink and Back.

6.3.5.1 SNMP Access Mode page

Click **SNMP Access Mode** in the **SNMP** menu to display the page as shown in Fig. 6.3-6.

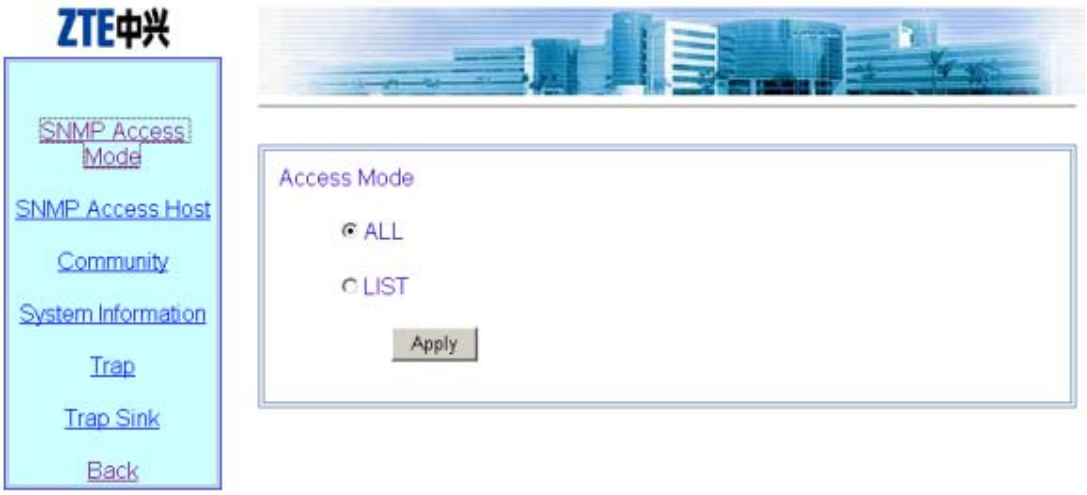


Fig. 6.3-6 Access mode configuration page of the SNMP module

This page is used to configure the access mode of SNMP, with two options: **all** and **list**.

6.3.5.2 SNMP Access Host page

Click **SNMP Access Host** in the **SNMP** menu to display the page as shown in Fig. 6.3-7.

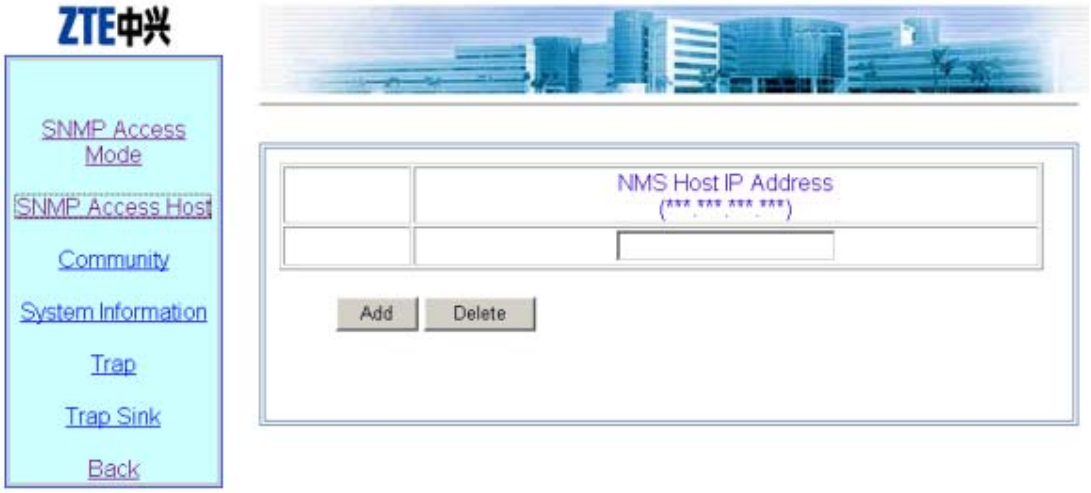


Fig. 6.3-7 Access host configuration page of the SNMP module

This page is used to add or delete the IP address of SNMP access host, and the parameter includes the IP address of the accessible host .

Operation instructions: there are two buttons “Add” and “Delete” on the page. To perform the adding operation, you just need to enter the data in the blank box on the bottom; and to perform the deleting operation, you just need to check off the record to be deleted (you may delete multiple records simultaneously).

Note: the operation for other pages with multiple records is similar to this.

6.3.5.3 Community page

Click **Community** in the **SNMP** menu to display the page as shown in Fig. 6.3-8.

Fig. 6.3-8 Community configuration page of the SNMP module

This page is used to add or delete SNMP community strings, and the parameters include community ID and access right.

6.3.5.4 System information page

Click **System Information** in the **SNMP** menu to display the page as shown in Fig. 6.3-9.

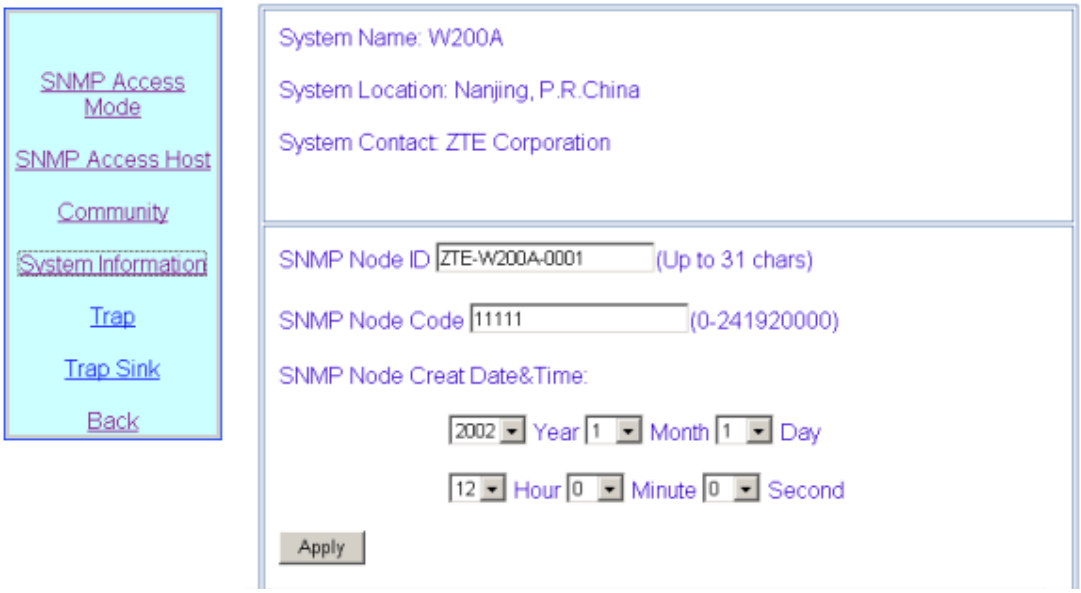


Fig. 6.3-9 System information configuration page of the SNMP module

This page displays the name, location and contact information of the current SNMP management equipment. You can also configure the related information of the NE in this page, including NE ID, NE code and NE creation date and time.

6.3.5.5 Trap page

Click **Trap** in the **SNMP** menu to display the page as shown in Fig. 6.3-10.

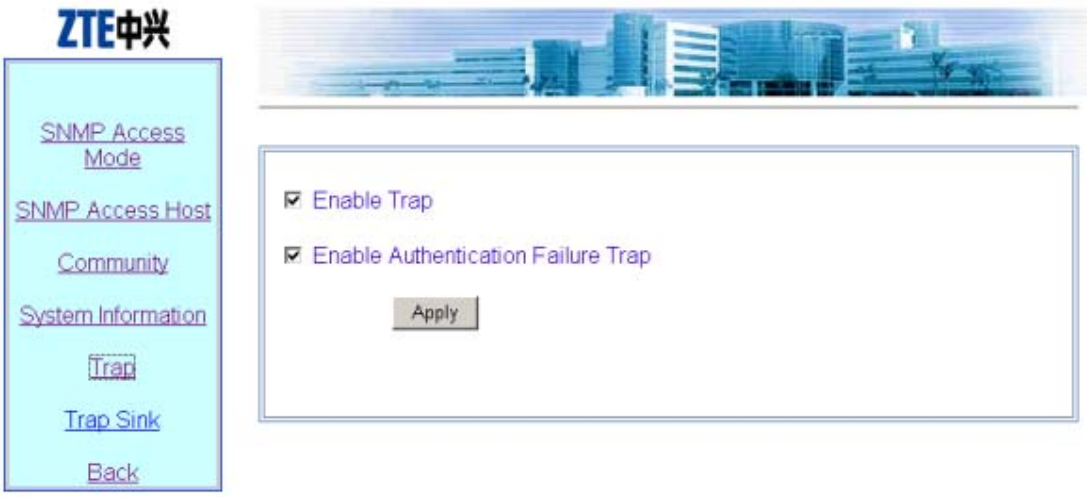


Fig. 6.3-10 Trap configuration page of the SNMP module

This page is used to configure the Trap of the SNMP module, with two parameters for configuration: **Enable Trap and Enable Authentication Failure Trap**.

6.3.5.6 Trap Sink page

Click **Trap Sink** in the **SNMP** menu to display the page as shown in Fig. 6.3-11.

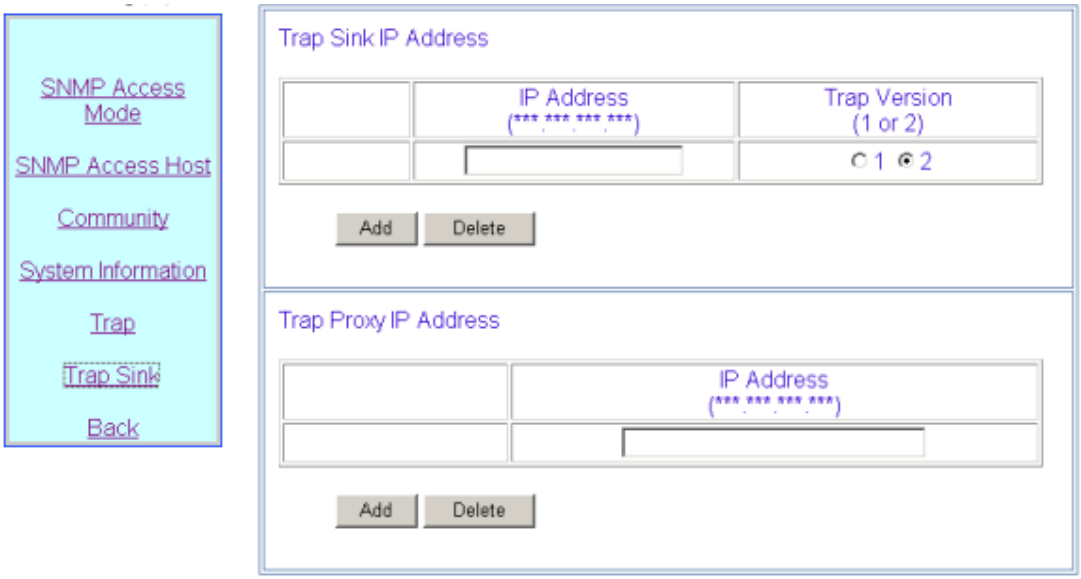


Fig. 6.3-11 Trap sink configuration page of the SNMP module

This page is used to add or delete the Trap Sink host and Trap Proxy host of the SNMP module. The parameters include the IP address and Trap version.

6.3.6 Security page

Click **Security** in the main menu to display the page as shown in Fig. 6.3-12.

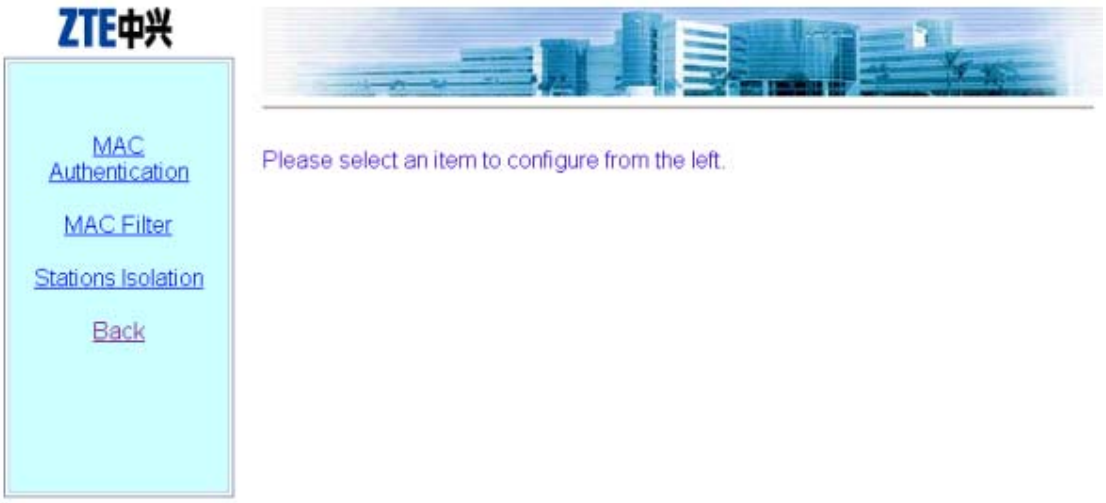


Fig. 6.3-12 Submenu of security configuration

On the left of this page is the security configuration submenu: MAC Authentication, MAC Filter, Stations Isolation and Back.

6.3.6.1 MAC Authentication page

Click **MAC Authentication** in the **Security** menu to display the page as shown in Fig. 6.3-13.

Fig. 6.3-13 MAC authentication configuration page

This page is used to add or delete MAC authentication rules, and the parameters include Access Mode (permit or deny) and filter type (any or single).

6.3.6.2 MAC filter page

Click **MAC filter** in the **Security** menu to display the page as shown in Fig. 6.3-14.

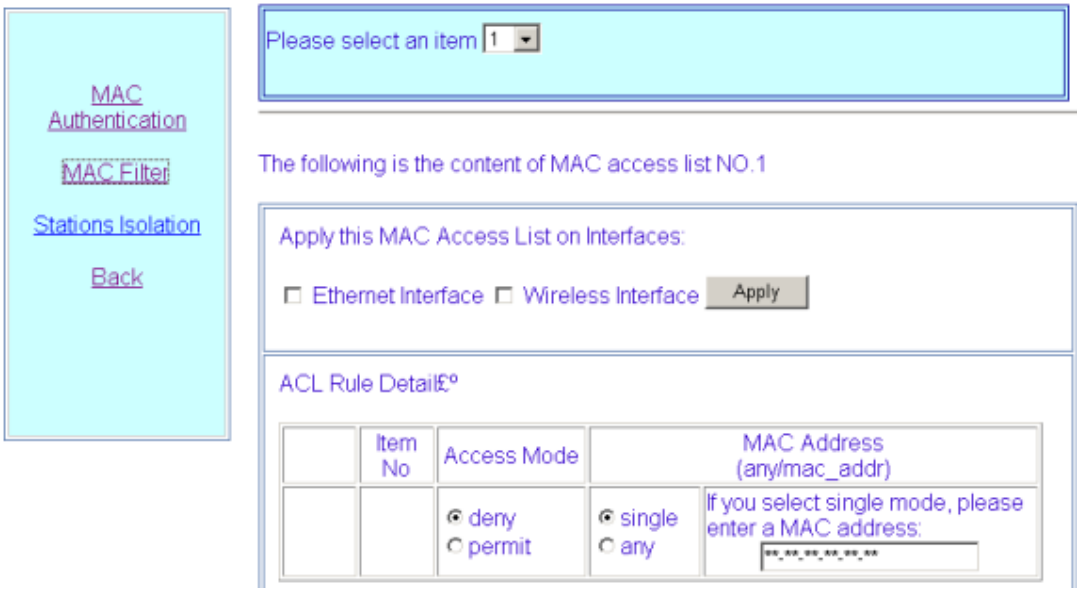


Fig. 6.3-14 MAC filter rule configuration page

This page is used to add or delete a certain filter rule and configure whether to apply the setting for certain interfaces. The parameters include filter mode and filter type.

6.3.6.3 Stations Isolation page

Click **Stations Isolation** in the **Security** menu to display the page as shown in Fig. 6.3-15.

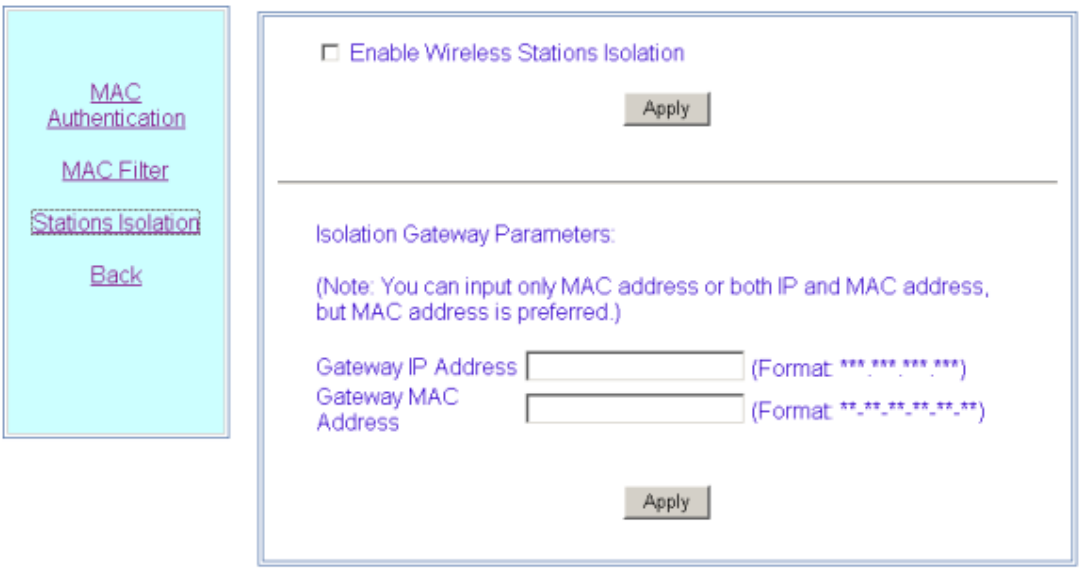


Fig. 6.3-15 Stations Isolation page

This page is used to enable wireless stations isolation and set the gateway IP address or MAC address for stations isolation. The parameters include Gateway IP Address and Gateway MAC Address.

6.3.7 Save page

Click **Save** in the main menu to display the page as shown in Fig. 6.3-16.

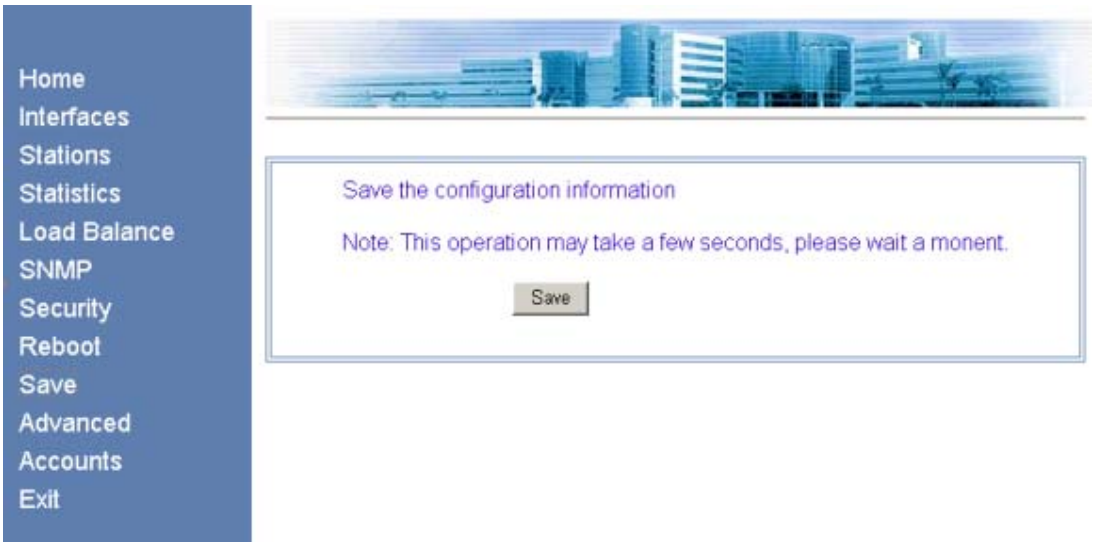


Fig. 6.3-16 Save page

This page is used to save the configured parameters in FLASH.

6.3.8 Reboot page

Click **Reboot** in the main menu to display the page as shown in Fig. 6.3-17.

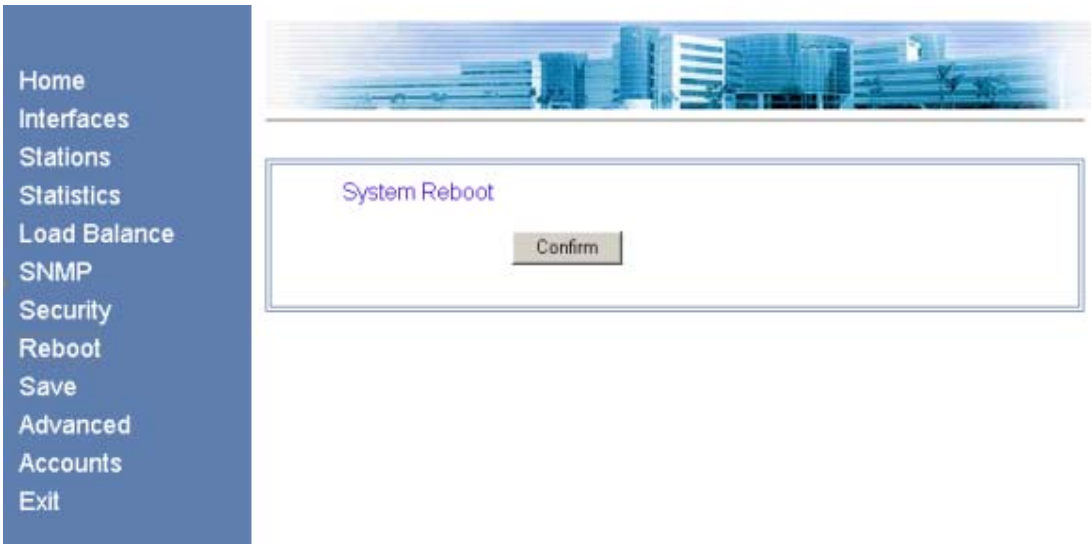


Fig. 6.3-17 Reboot page

This page is used to execute the reboot operation. This window will be closed after clicking the button.

6.3.9 Advanced options page

Click **Advanced** in the main menu to display the page as shown in Fig. 6.3-18.

Fig. 6.3-18 Submenu of advanced options configuration

On the left of this page is the submenu of the advanced options configuration: 802.1x, DHCP, IP Pool, RADIUS Server, VLAN and Back.

6.3.9.1 DHCP page

Click **DHCP** in the **Advanced** menu to display the page as shown in Fig. 6.3-19.

Fig. 6.3-19 Submenu of DHCP module

Click **DHCP Server** in the **DHCP** submenu to display the page as shown in Fig. 6.3-20.

Fig. 6.3-20 DHCP server configuration page

This page is used to configure the related parameters of the DHCP server: Primary DNS Server IP address, Secondary DNS Server IP Address, Default Gateway IP

Address, and Lease time.

6.3.9.2 IP Pool page

Click **IP Pool** in the **Advanced** menu to display the page as shown in Fig. 6.3-21.

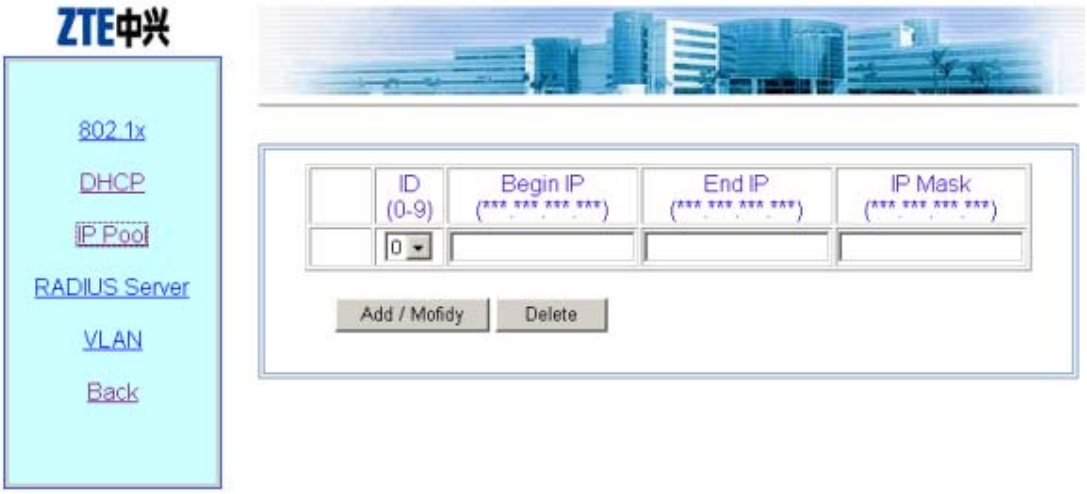


Fig. 6.3-21 IP pool page

This page is used to add, modify and delete IP pools. The parameters include ID, Begin IP, End Ip and IP Mask.

6.3.9.3 802.1x page

Click **802.1x** in the **Advanced** menu to display the page as shown in Fig. 6.3-22.

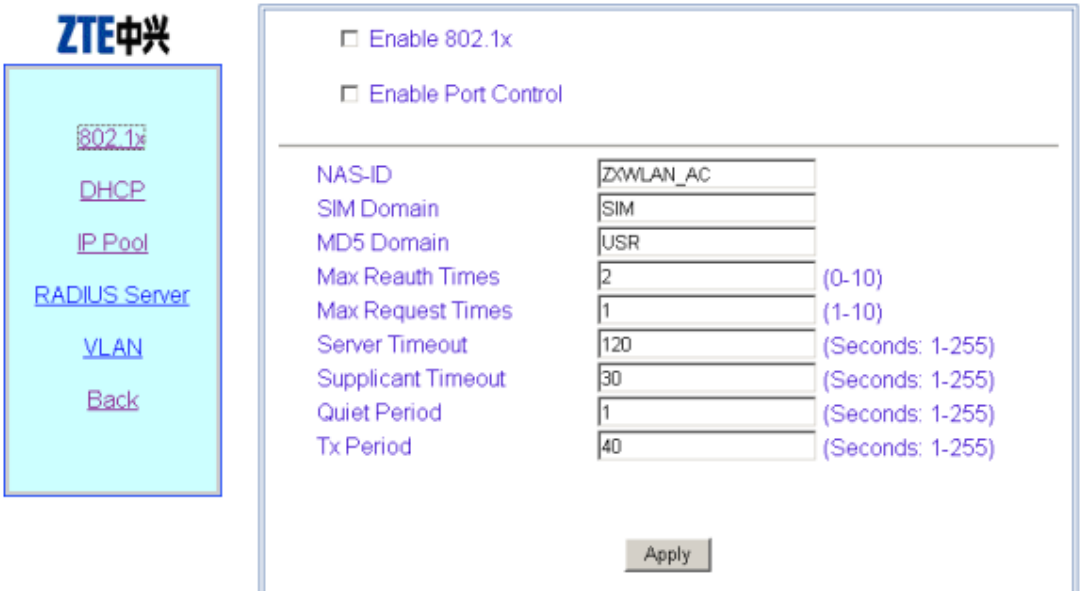


Fig. 6.3-22 802.11x configuration page

This page is used to configure 802.1x authentication parameters, including two check boxes: Enable 802.1x and Enable Port Control, and some other parameters: NAS-ID, SIM Domain, MD5 Domain, Max Reauth Times, Max Request Times, Server Timeout, Supplicant Timeout, Quiet Period and Tx Period.

6.3.9.4 RADIUS Server page

Click **RADIUS Server** in the **Advanced** menu to display the page as shown in Fig. 6.3-23.

Fig. 6.3-23 Submenu of RADIUS server configuration

The RADIUS configuration submenu includes: ISP, Authentication Server, Accounting Server, DNS Server and Back.

- ISP Page

Click **ISP** in the **RADIUS Server** menu to display the page as shown in Fig. 6.3-24.

Fig. 6.3-24 ISP configuration page

- Authentication Server page

Click **Authentication Server** in the **RADIUS Server** menu to display the page as shown in Fig. 6.3-25.

Fig. 6.3-25 Authentication Server configuration page

- Accounting Server page

Click **Accounting Server** in the **RADIUS Server** menu to display the page as shown in Fig. 6.3-26.

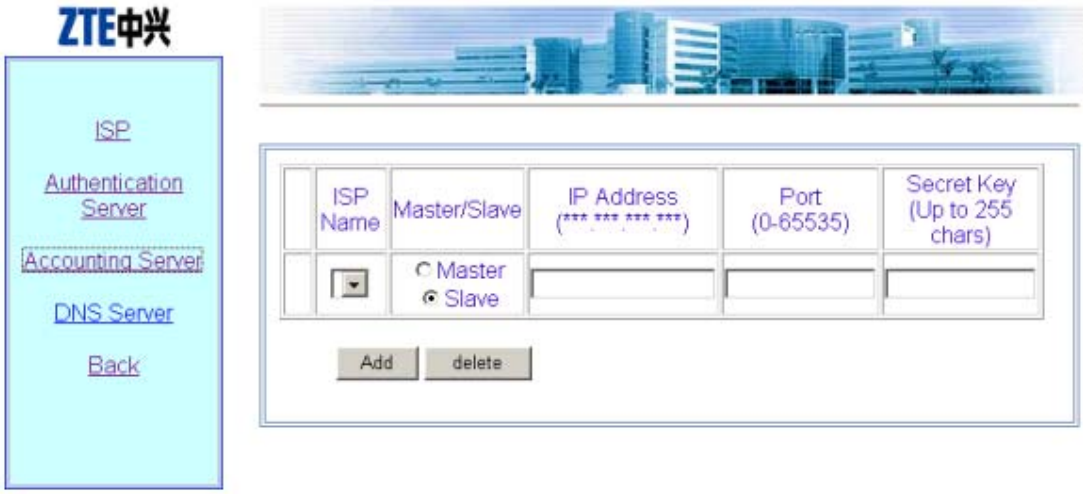


Fig. 6.3-26 Accounting Server configuration page

- DNS Server page

Click **DNS Server** in the **RADIUS Server** menu to display the page as shown in Fig. 6.3-27.

Fig. 6.3-27 DNS configuration page

6.3.9.5 VLAN page

Click **VLAN** in the **Advanced** menu to display the page as shown in Fig. 6.3-28.

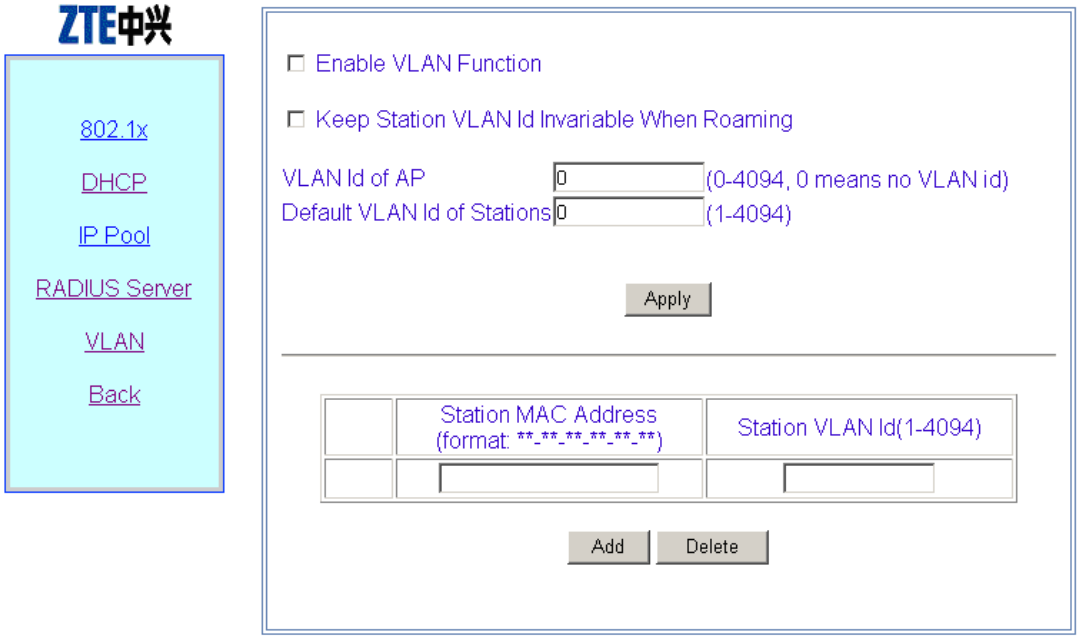


Fig. 6.3-28 VLAN configuration Page

This page serves to enable/disable the VLAN and configure its parameter.

6.3.10 Accounts page

Click **Accounts** in the main menu to display the page as shown in Fig. 6.3-29.

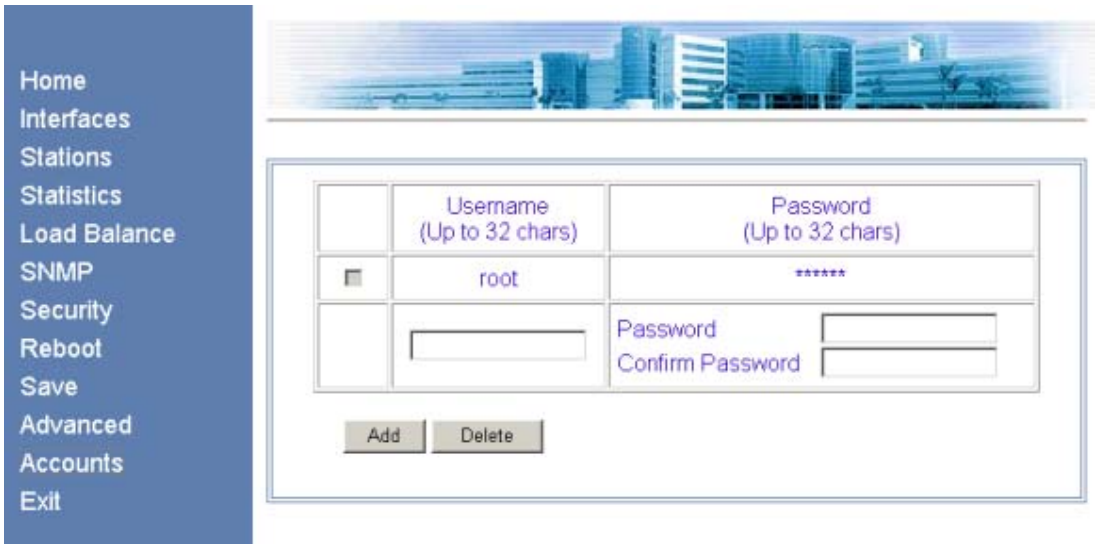


Fig. 6.3-29 Account configuration page

This page is used to add, delete or modify an ordinary user name and password.

6.4 Interfaces page

Open the submenu page of interface configuration by clicking **Interfaces** in the main menu. The W200A product involves the configuration of Ethernet interface and Wireless interface.

Fig. 6.4-1 Submenu for interface configuration

6.4.1 Ethernet Interface page

Click **Ethernet Interface** in Fig. 6.4-1 to open the submenu for Ethernet interface configuration, as shown in Fig. 6.4-2.

Fig. 6.4-2 Submenu for Ethernet interface configuration

On the left of this page is the submenu for Ethernet interface configuration: IP Address.

6.4.1.1 IP Address page

Click **IP Address** in the **Ethernet Interface** submenu to display the page as shown in Fig. 6.4-3.

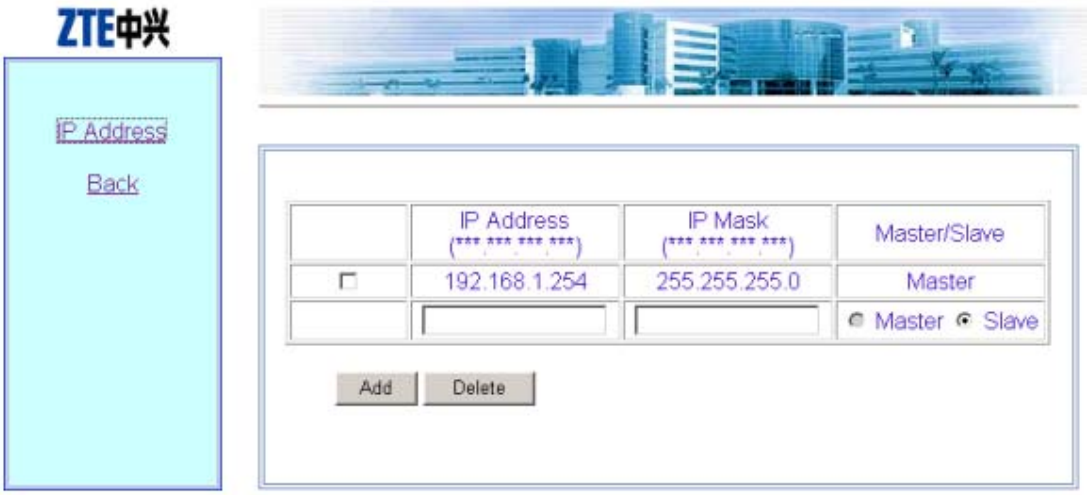


Fig. 6.4-3 IP address configuration page of Ethernet interface

This page is used to add or delete the IP address of the Ethernet interface module. The parameters include IP Address, IP Mask and Master/Slave.

6.4.2 Wireless Interface page

Click **Wireless Interface** in Fig. 6.4-1 to open the submenu for wireless interface configuration, as shown in Fig. 6.4-4.

Fig. 6.4-4 Submenu for wireless interface configuration

On the left is the submenu for wireless interface configuration: 802.11b, WEP, Link Integrity and Back.

6.4.2.1 802.11b page

Click **802.11b** in the **Wireless Interface** submenu to display the page as shown in Fig. 6.4-5.

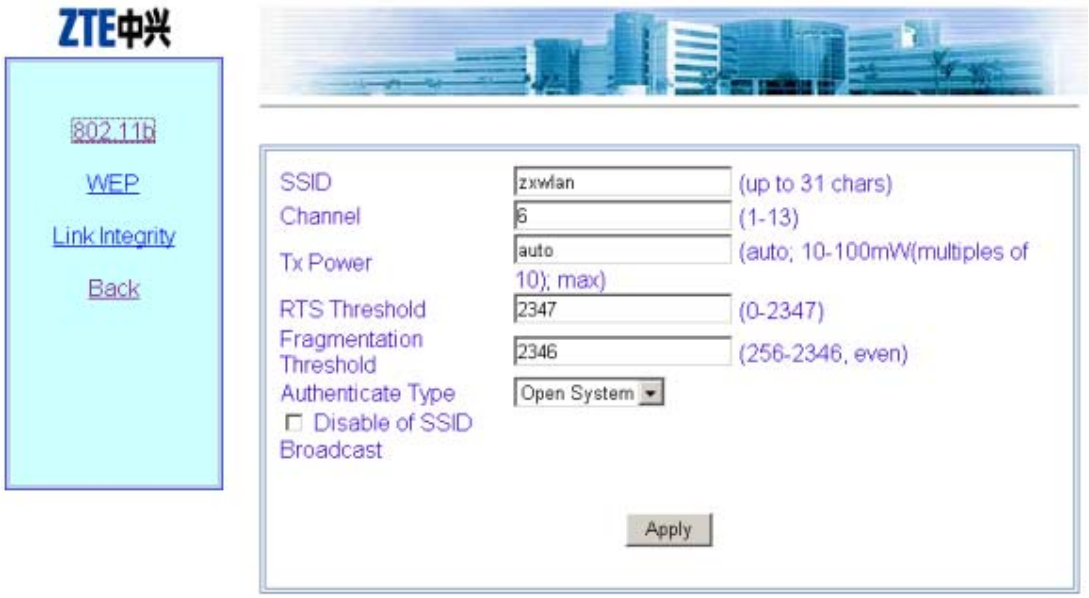


Fig. 6.4-5 802.11b parameter configuration page of wireless interface

This page is used to configure the 802.11b parameters of the wireless interface module. The parameters include SSID, Channel, Tx Power, RTS Threshold, Fragmentation Threshold, Authentication Type, and the check box "Disable SSID Broadcast".

6.4.2.2 WEP page

Click **WEP** in the **Wireless Interface** submenu to display the page as shown in Fig. 6.4-6.

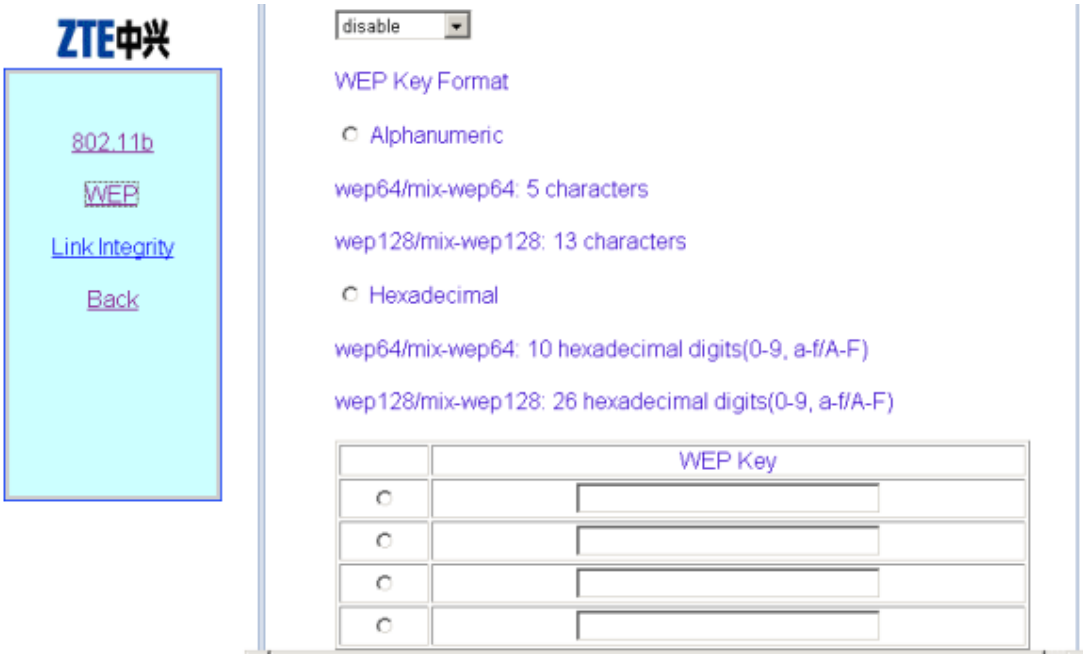


Fig. 6.4-6 WEP configuration page of wireless interface

This page is used to configure the WEP parameters of the wireless interface module. The parameters include WEP mode, WEP value and WEP keyword.

6.4.2.3 Link Integrity page

Click **Link Integrity** in the **Wireless Interface** submenu to display the page as shown in Fig. 6.4-7.

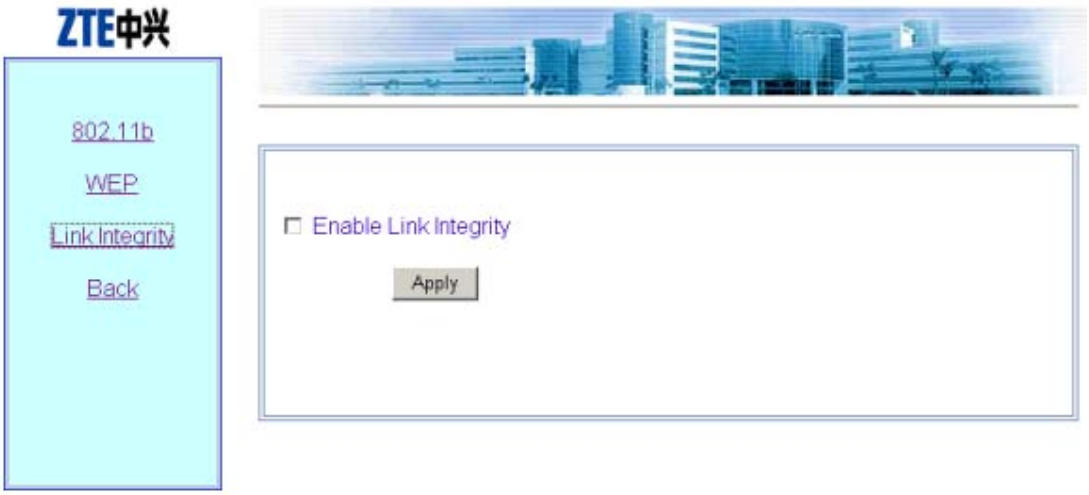


Fig. 6.4-7 Link integrity configuration page of wireless interface

This page is used to configure the link integrity parameters of the wireless interface module. The parameter includes the check box "Enable Link Integrity".

6.5 Data submission flow for WEB configuration

When you open a certain WEB configuration page and enter parameters in the corresponding text boxes, you can click “Submit” to immediately proceed to the next page. If you submit data for the first time after login, a page will pop up for you to enter the password of privileged user, as shown in Fig. 6.5-1. If you have already submitted data with correct password, the system will skip this page and directly proceed to the next page to prompt you whether the data have been submitted successfully when you submit dada again.

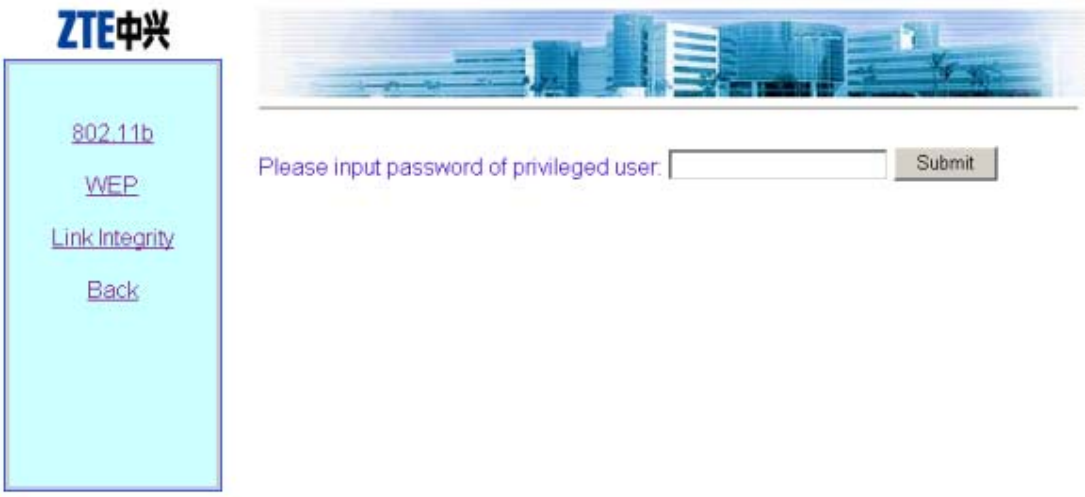


Fig. 6.5-1 The page for entering the password of privileged user

If the entered password is incorrect, a message will pop up, prompting you that the password is incorrect, as shown in Fig. 6.5-2. You can click “Back” to reselect page connection.

Fig. 6.5-2 The page indicating that the privileged user password is incorrect

If the entered password of the privileged user is correct, the system will resolve the entered data and judge whether the format and range are correct. Then, depending on whether the setting is successful, a corresponding prompting message will be returned, as shown in Fig. 6.5-3 (successful setting), and Fig. 6.5-4 (Failure in setting). You can click "Back" to return to the WEB page before submission, and the displayed data are the submitted new parameters.

Fig. 6.5-3 A message indicating successful data submission

Fig. 6.5-4 A message indicating failure in data submission

7 Maintenance

This chapter details the daily maintenance of the W200A and version upload & upgrade.

7.1 Explanation

To ensure proper, stable functioning of the equipment, please pay close attention to the suggestions below and perform necessary routine maintenance following the daily operation & maintenance instructions.

1. Always keep the equipment room clean, tidy, dust-proof and moisture-proof. Protect wires & cables from being damaged by rats and insects.
2. Perform a routine inspection and test everyday following the daily operation & maintenance instructions and take the records down.
3. Troubleshoot problems in a timely manner. For those beyond your control, please contact the local ZTE office for help. Don't get nervous when emergencies occur so as to avoid exacerbating the failures.
4. Follow the Disaster Handling sequence when major accidents like crashdown happen and contact the local ZTE office immediately.
5. Do not reset, load or modify the equipment data in a hurry. If data modification is necessary, make sure to backup the data before you change it. After the modification, backup of new data is also required. Save the new and old data respectively. Deletion of old data is allowed one week after confirming that the equipment functions properly with the new data.
6. Please have the contact information of the local ZTE office such as phone number, fax number posted in a conspicuous place in the equipment room so that each maintenance staff member knows it clearly.

7.2 Daily Maintenance

To check the operating condition of the W200A, perform the following:

1. Ping the management port address of all APs from an Ethernet switch, and check if the APs' wired ports function properly.
2. For hotspots adopting DHCP, check if validated users are able to obtain parameters such as IP Address, Gateway, DNS and so on correctly.
3. Check if access to the Internet is free from obstruction.
4. Check signal intensity and link quality in different places within the coverage of each AP using a wireless Ethernet card. Ping the gateway's IP address, view packet loss, and check if access to the Internet is normal.
5. Roaming between different APs. Ping the gateway's IP address, view packet loss, and check if access to the Internet is normal.

7.3 Version Upload & Upgrade

Version running files and graphics files have been loaded to the flash memory of the W200A prior to the shipment.

Version running files include:

Runbin	Running file
Database.dat	Database file
Zxipcmd.dat	Command script file
Tf010102.hex	Wireless Ethernet card 3rd-party firmware file
Th010000.hex	Wireless Ethernet card 3rd-party firmware file

There may be many wireless Ethernet card 3rd-party firmware files, but only one is needed during the operation of the W200A.

Graphics files form a graphics library for the web configuration page.

Version upload includes BOOT loading and online TFTP loading. The BOOT loading is mostly used to load the version running files; while via TFTP, both version running files and graphics files can be loaded. Wftpd and Tftpd are two tools needed for version loading.

7.3.1 BOOT Loading

The BOOT loading is mostly used to load the version running files. Prior to the loading, please prepare a serial port line and a crossover Ethernet cable and follow the steps below:

1. Connect the W200A's CONSOLE port to the serial port of a PC via the serial port line; connect the W200A's Ethernet port to the wired Ethernet port of the PC via the crossover cable.
2. Start HyperTerminal on the PC, execute Wftpd.exe to start the FTP server. For configurations of the serial port and FTP server, Refer to 7.3.1.1 for details.

Power on the W200A. Perform version installation or upgrade using commands listed in 7.3.1.2.

7.3.1.1 Configuration of Serial Port and FTP Server

1. Configuration of serial port

   For the W200A, the configuration of the serial port is shown as in Fig. 7.3-1.

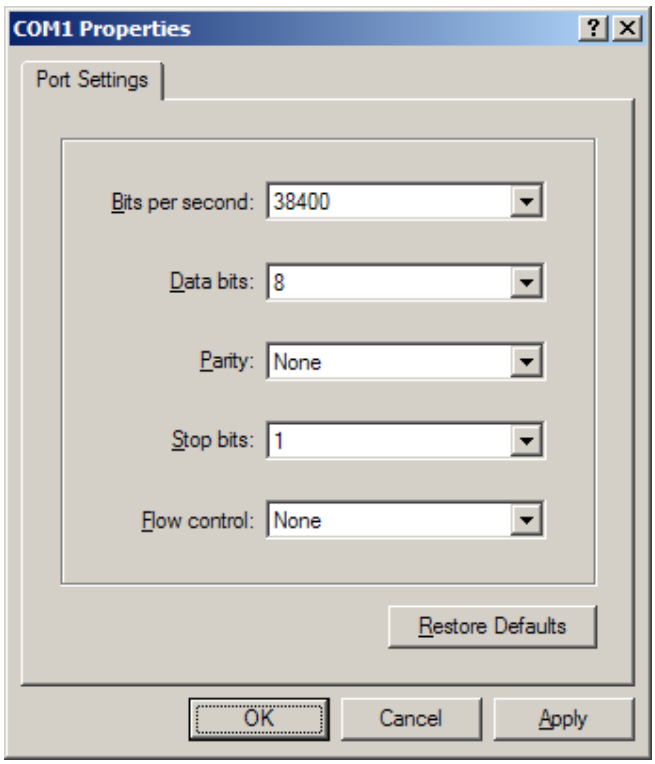


Fig. 7.3-1 Configuration of Serial Port

2. Configuration of FTP server

From the menu of Wftpd, choose **Security-> Users/rights....** The window as shown in Fig. 7.3-2 will appear.

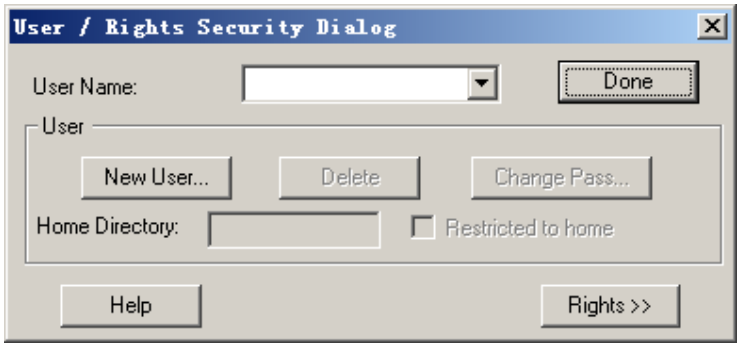


Fig. 7.3-2 Wftpd User Configuration

To add a new user, click **New User**, set the password, fill in **Home Directory** (the directory where to-be-loaded files on the PC are saved), as shown in Fig. 7.3-3.

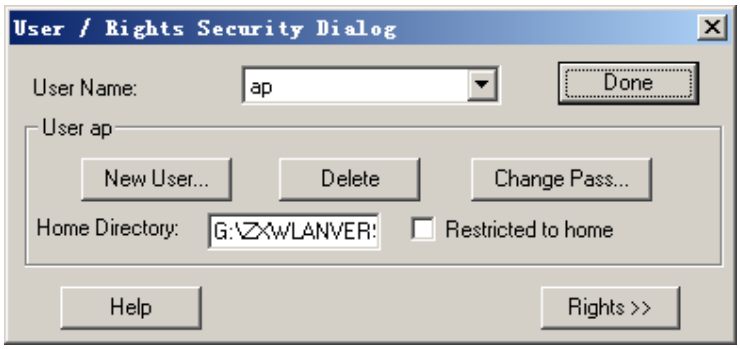


Fig. 7.3-3 Add a New User

7.3.1.2 Commands for BOOT Loading

Power on the W200A. When the number "3" appears on the HyperTerminal, press any key. The screen as shown in Fig. 7.3-4 will pop up.

```
                          VxWorks System Boot

Copyright 1984-1998  Wind River Systems, Inc.




CPU: KS32C50100 FOR SNDS100 Ver 1.0
Version: 5.4
BSP version: 1.2/0
Creation date: Sep  5 2002, 11:29:12



Press any key to stop auto-boot...
 3
[VxWorks Boot]: _
```

Fig. 7.3-4 Initial Window

1. Command: **p**

   Function: Show BOOT parameters

   Command format: [VxWorks Boot]: p

   Example: See Fig. 7.3-5.

```
[VxWorks Boot]: p

boot device          : secEnd
unit number          : 0
processor number     : 0
host name            : aman
file name            : vxworks
inet on ethernet (e) : 168.7.100.100
host inet (h)        : 168.7.15.204
user (u)             : target
ftp password (pw)    : target
flags (f)            : 0x0
target name (tn)     : snds100

[VxWorks Boot]: _
```

Fig. 7.3-5 Execution of "**p**" Command

2. Command: **c**

   Function: Modify BOOT parameters

   Command format: [VxWorks Boot]: c

   The following parameters are subject to modification:

file name Filename

inet on Ethernet (e) IP address of the W200A (used for communication with the host during version loading)

host inet (h) IP address of the host

user(u) User name

ftp password(pw) Password

Example: As shown in Fig. 7.3-6, change **inet on Ethernet (e)** to 168.1.100.100, **host inet (h)** to 168.1.15.204, **user (u)** to ap, **ftp password (pw)** to ap. Corresponding settings should be set in the FTP server when **user (u)** and **ftp password (pw)** have been changed.

```
[VxWorks Boot]: c

'.' = clear field;  '-' = go to previous field;  ^D = quit

boot device          : secEnd0
processor number     : 0
host name            : aman
file name            : vxworks
inet on ethernet (e) : 168.7.100.100 168.1.100.100
inet on backplane (b):
host inet (h)        : 168.7.15.204 168.1.15.204
gateway inet (g)     :
user (u)             : target ap
ftp password (pw) (blank = use rsh): target ap
flags (f)            : 0x0
target name (tn)     : snds100
startup script (s)   :
other (o)            :

[VxWorks Boot]: _
```

Fig. 7.3-6 Execution of "c" Command

3. Command: %

Function: Format the flash memory

Command format: [VxWorks Boot]: %

Explanation: Formatting of the Flash card is generally required before the version loading in order to ensure there is enough space for the files to be loaded.

Example: As shown in Fig. 7.3-7, prompts are given asking for confirming of the Flash formatting. Enter "y" within 3 seconds; otherwise, the operation will

be aborted.

```
[VxWorks Boot]: %

  This will format the Flash disk, you will lose data in flash.!!!
  are you sure......



   Now press 'y' to format the Flash disk. and others  to abort.
 1
 now is formatting......
status(flMountVolume)  = 0,
status(flGetBPB)  = 0,

 Formatting is OK!
[VxWorks Boot]:
```

Fig. 7.3-7 Execution of “%” Command

4. Command: &

   Function: Load the file "**runbin**" to the Flash memory

   Command format: [VxWorks Boot]: &

   Example: See Fig. 7.3-8.

```
[VxWorks Boot]: &

boot device          : secEnd
unit number          : 0
processor number     : 0
host name            : aman
file name            : vxworks
inet on ethernet (e) : 168.1.100.100
host inet (h)        : 168.1.15.204
user (u)             : ap
ftp password (pw)    : ap
flags (f)            : 0x0
target name (tn)     : snds100

Attached TCP/IP interface to secEnd0.

Loading runbin to flash... received file length  1f9df8
..................
flash receive FLASH:/runbin OK!! length 1f9df8

 the version loading is OK!
[VxWorks Boot]: _
```

Fig. 7.3-8 Execution of “&” Command

5. Command: #

   Function: Load database.dat, zxipcmd.dat, tf010102.hex, th010000.hex, tf010302.hex to the Flash memory

   Command format: [VxWorks Boot]: #

   Example: See Fig. 7.3-9.

```
[VxWorks Boot]: #

boot device          : secEnd
unit number          : 0
processor number     : 0
host name            : aman
file name            : vxworks
inet on ethernet (e) : 168.1.100.100
host inet (h)        : 168.1.15.204
user (u)             : ap
ftp password (pw)    : ap
flags (f)            : 0x0
target name (tn)     : snds100

Attached TCP/IP interface to secEnd0.

Loading zxipcmd.dat to flash... received file length  ecb0

flash receive FLASH:/zxipcmd.dat OK!! length ecb0

Loading th010000.hex to flash... Error: File G:\ZXWLANVERSION\th010000.hex does
not exist

Error loading th010000.hex file: errno = 0x226.

Loading tf010102.hex to flash... received file length  21174
.
flash receive FLASH:/tf010102.hex OK!! length 21174

Loading tf010302.hex to flash... received file length  2355c
.
flash receive FLASH:/tf010302.hex OK!! length 2355c

Loading database.dat to flash... received file length  b8d5

flash receive FLASH:/database.dat OK!! length b8d5

 the database files loading to flash is OK!
[VxWorks Boot]: _
```

Fig. 7.3-9 Execution of "#" Command

6. Command: +

   Function: Load a specified file to the Flash memory

   Command format: [VxWorks Boot]: +

   Example: Modify BOOT parameters using the **C** command and then type in

"+".As shown in Fig. 7.3-10, modify **file name** by means of the **C** command, change **vxworks** to “b.hex”, input “+” to load b.hex to the Flash memory.

```
[VxWorks Boot]: c

'.' = clear field;  '-' = go to previous field;  ^D = quit

boot device          : secEnd0
processor number     : 0
host name            : aman
file name            : vxworks b.hex
inet on ethernet (e) : 168.1.100.100
inet on backplane (b):
host inet (h)        : 168.1.15.204
gateway inet (g)     :
user (u)             : ap
ftp password (pw) (blank = use rsh): ap
flags (f)            : 0x0
target name (tn)     : snds100
startup script (s)   :
other (o)            :

[VxWorks Boot]: +

boot device          : secEnd
unit number          : 0
processor number     : 0
host name            : aman
file name            : b.hex
inet on ethernet (e) : 168.1.100.100
host inet (h)        : 168.1.15.204
user (u)             : ap
ftp password (pw)    : ap
flags (f)            : 0x0
target name (tn)     : snds100

Attached TCP/IP interface to secEnd0.
filename1 = FLASH:/b.hex
Loading b.hex to flash... received file length  0

flash receive FLASH:/b.hex OK!! length 0

 the file loading to flash is OK!
[VxWorks Boot]: _
```

Fig. 7.3-10 Execution of “+” Command

7. Command: s

   Function: Display files and free space of the Flash memory

   Command format: [VxWorks Boot]: s

   Example: See Fig. 7.3-11.

```
[VxWorks Boot]: s
     fileName        size
     --------        ------
         RUNBIN      2072056
    ZXIPCMD.DAT        60592
   TF010102.HEX       135540
   TF010302.HEX       144732
   DATABASE.DAT        47317
          B.HEX            0
available size 1456128
[VxWorks Boot]: _
```

Fig. 7.3-11 Execution of "s" Command

8. Command: -

   Function: Delete a file from the Flash memory

   Command format: [VxWorks Boot]: - *filename*

   Example: See Fig. 7.3-12.

```
[VxWorks Boot]: -b.hex
delete FLASH:/b.hex OK!!
[VxWorks Boot]: s
     fileName        size
     --------        ------
         RUNBIN      2072056
    ZXIPCMD.DAT        60592
   TF010102.HEX       135540
   TF010302.HEX       144732
   DATABASE.DAT        47317
available size 1458176
[VxWorks Boot]: _
```

Fig. 7.3-12 Execution of "-" Command

9. Command: v

   Function: Show version information of **runbin**

   Command format: [VxWorks Boot]: v

   Example: See Fig. 7.3-13.

```
[VxWorks Boot]: v
Version File  Information
product   version_id  offset file_identify run_start filesize
  ap      v1.0.02.e      0x100     0xa00        0x1d53f8  0x1f9df8
[VxWorks Boot]:
```

Fig. 7.3-13 Execution of "v" Command

10. Command: r

    Function: Show version information of **boot**

    Command format: [VxWorks Boot]: r

    Example: See Fig. 7.3-14.

```
[VxWorks Boot]: r

 BOOTROM_VER V2.002  by xuy 2002-9-5 11:28
 [VxWorks Boot]:
```

Fig. 7.3-14 Execution of “r” Command

11. Command: *

    Function: Run **runbin**, start the W200A.

    Command format: [VxWorks Boot]: *

    Example: See Fig. 7.3-15.

```
[VxWorks Boot]: *

boot device          : secEnd
unit number          : 0
processor number     : 0
host name            : aman
file name            : vxworks
inet on ethernet (e) : 168.7.100.100
host inet (h)        : 168.7.15.204
user (u)             : target
ftp password (pw)    : target
flags (f)            : 0x0
target name (tn)     : snds100

Attaching to TFFS... status(flMountVolume)  = 0,
status(flGetBPB)  = 0,
done.
Loading FLASH:/runbin...offset_addr = 256 Starting at 0x1d53f8...
```

Fig. 7.3-15 Execution of “*” Command

7.3.2 Online TFTP Loading

When the W200A functions properly, file downloading from the host to the Flash memory of the device via TFTP is available. The size of the Flash is only 4M, therefore there are some restrictions to the files to be loaded online. Generally via TFTP, version running files and graphics files can be loaded. No support for other files is provided temporarily.

7.3.2.1 Start the TFTP Server

Set the PC's IP address to be in the same network segment as the management port address of the W200A. Run **Tftpd.exe** (or other TFTP server software which supports the extended TFTP protocol). In the TFTP window, select **Tftpd-> Configure** to specify the path of the files to be downloaded, as shown in Fig. 7.3-16.

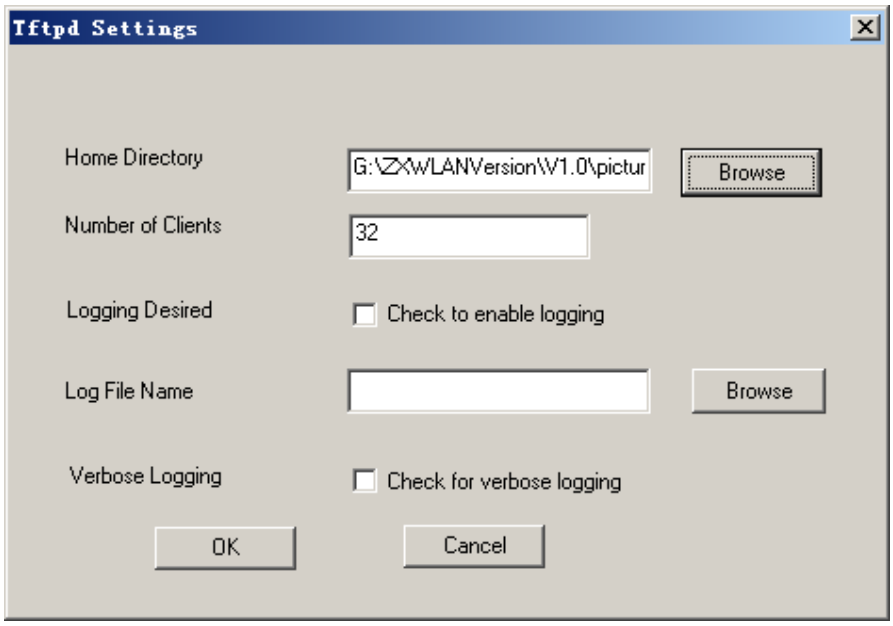


Fig. 7.3-16 TFTP Settings

In the TFTP window, click **Tftpd-> Start** to start the TFTP server.

7.3.2.2 Commands for TFTP Loading

Login to the W200A via Telnet, enter the configuration mode, and execute TFTP commands to upload needed files.

1. Upload of version running files

   Command format: zxwlan（config）#tftp get *A.B.C.D file-name*

   Explanation: *"A.B.C.D"* refers to the TFTP host's address; *"file-name"* stands for files to be uploaded including **runbin, database.dat, zxipcmd.dat, tf010102.hex, th010000.hex**.

```
wlan(config)#tftp get 168.1.15.204 database.dat
tftp fetch of database.dat from host 168.1.15.204 (168.1.15.204) started
wlan(config)#Have receive 10240 BYTE: 7%
Have receive 20480 BYTE: 14%
Have receive 30720 BYTE: 21%
Have receive 40960 BYTE: 29%
Have receive 51200 BYTE: 36%
Have receive 61440 BYTE: 43%
Have receive 71680 BYTE: 50%
Have receive 81920 BYTE: 58%
Have receive 92160 BYTE: 65%
Have receive 102400 BYTE: 72%
Have receive 112640 BYTE: 80%
Have receive 122880 BYTE: 87%
Have receive 133120 BYTE: 94%
%get file successful!!

Done with tftp get of database.dat
wlan(config)#tftp get 168.1.15.204 ?
  runbin
  tf010102.hex
  th010000.hex
  zxipcmd.dat
  database.dat
wlan(config)#
```

2. Upload of graphics files

   Command format: zxwlan（config) #tftp pic *A.B.C.D*

   Explanation: **A.B.C.D** refers to the host's address.

```
wlan(config)#tftp pic 168.1.15.204
tftp fetch of zte.gif from host 168.1.15.204 (168.1.15.204) started
wlan(config)#% get file successful!

Done with tftp get of zte.gif
wlan(config)#tftp fetch of back.gif from host 168.1.15.204
(168.1.15.204) started
% get file successful!

Done with tftp get of back.gif
wlan(config)#tftp fetch of login33.jpg from host 168.1.15.204
(168.1.15.204) started
```

```
% get file successful!

Done with tftp get of login33.jpg
wlan(config)#tftp  fetch  of  login23.jpg  from  host  168.1.15.204
(168.1.15.204) started
% get file successful!

Done with tftp get of login23.jpg
...
wlan(config)#
```

Appendix A Packaging, Transportation & Storage

This chapter describes precautions about packaging, storage and transportation of the W200A, as a guide for the equipment transportation, unpacking, installation and moving.

A.1 Packaging

Table A.1-1 Packing List of W200A

Item Name	Dimension	Quantity	Remarks
W200A	208mm×180mm×47mm	1	
Power adapter		1	
Console configuration line		1	
CD of documents that accompanied the device		1	
Warranty card	32K	1	
Certificate of Quality	32K	1	

A.2 Transportation

Handle with care. Always keep the device upright.

A.3 Storage

Keep the device in the package. The temperature/humidity requirements are:

Temperature: - 40℃~ 70℃

Relative humidity: 5%~95%

Appendix B Making Ethernet Cables

This chapter presents PoE for the W200A and the wiring of Ethernet cables.

B.1 Application of the W200A

The typical application of the IP wireless access system is shown as in Figure B.1-1.

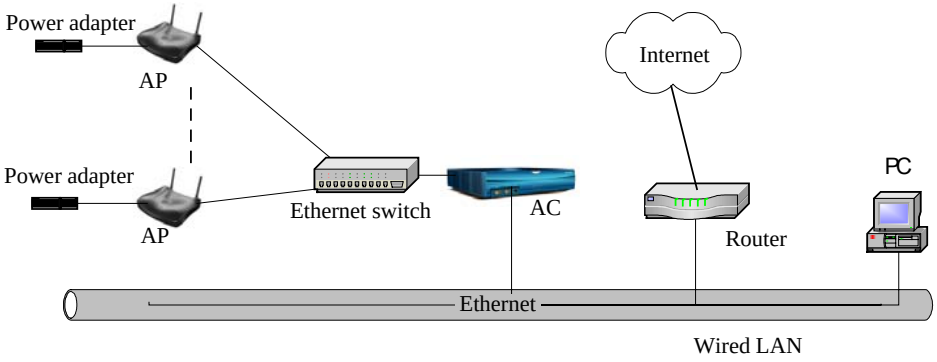
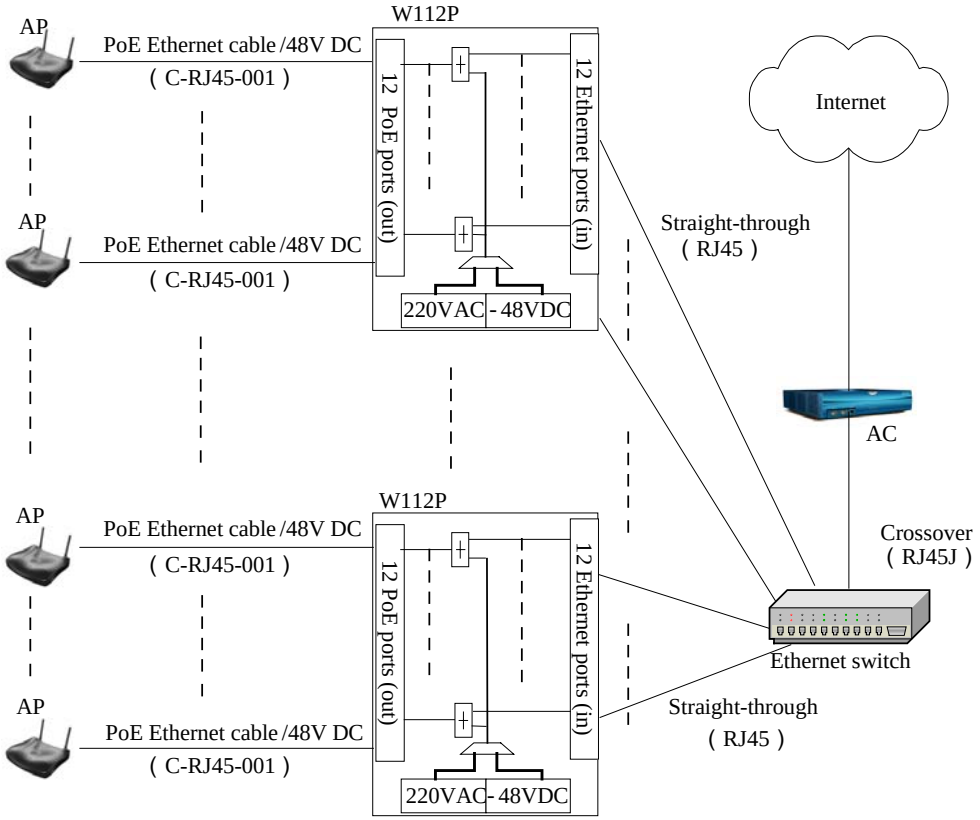


Figure B.1-1 Typical Application of the IP Wireless Access System

The AP helps realize access of wireless users. Via the 10/100M Ethernet, it is connected to the Ethernet switch and then to the Internet by a router after AC authentication. The AC is an equipment for authentication and accounting. In practical situations, some places don't need an AC. In the system, the APs, Ethernet switch, AC, and routers are interconnected by the 10/100M Ethernet.

Generally, all equipments have their own power adapters, converting external power supply voltage into the desired direct-current working volts.

But in a wireless LAN, APs are widely spread, the engineering environment is thus quite complicated. In some places, supply of AC power is not even available. Remote power feeding now becomes a necessity. ZTE's IP wireless access system provides also the Power over Ethernet (PoE) solution, as shown in Figure B.1-2.



The maximum ratio of APs to W112P is 12:1.

W112P: PoE source end

Figure B.1-2 Application of the System with PoE in Use

In Figure B.1-2, Ethernet cables contain straight-through, PoE, and crossover Ethernet cables. In practical situations, the supplier of APs may be different from that of the AC, and Ethernet cables are to be configured upon needs.

According to the Ethernet specifications, the transmission distance of the 100Base-T Ethernet is less than 100m, and that of the 10Base-T Ethernet is within 300m. Therefore in an wireless LAN, when the distance from the AP to the Ethernet switch greater than 100m (within 300m), it's strongly recommended you set the Ethernet switch port to 10M no matter whether PoE is adopted or not.

B.2 How to Make an Ethernet Cable

B.2.1 Making a Straight-through Ethernet Cable (RJ45)

In the IP wireless access system, the following Ethernet cables should be straight-through:

1. Ethernet cables from the Ethernet switch (End A) to the W112P (End B);
2. When the Ethernet switch is not used, the AP is connected directly to the downstream port of the AC. In this case, Ethernet cables from the AC (End A) to the AP (End B) must be straight through;
3. When the Ethernet switch is not used, the downstream port of the AC is directly connected to the W112P if PoE is adopted. Now Ethernet cables from the AC (End A) to the W112P (End B) must be straight through.

The wiring of straight-through Ethernet cables is shown as in Table B.2-1.

Table B.2-1 Wiring of a Straight-through Ethernet Cable (RJ45)

End A	Signal	Line Color	End B	Signal	Line Color
1	Rx+	White/orange	1	Tx+	White/orange
2	Rx-	Orange	2	Tx-	Orange
3	Tx+	White/green	3	Rx+	White/green
4	MATCH1	Blue	4	MATCH1	Blue
5	MATCH2	White/blue	5	MATCH2	White/blue
6	Tx-	Green	6	Rx-	Green
7	MATCH3	White/brown	7	MATCH3	White/brown
8	MATCH4	Brown	8	MATCH4	Brown

B.2.2 Making a PoE Ethernet Cable (C-RJ45-001)

The Ethernet cable from the W112P (End A) and AP (End B) is used to not only transmit signals, but also provide -48V DC via the load-matched 4&5, 7&8 twisted-pair cables, furnishing power to the AP.

The wiring of PoE Ethernet cables is the same as the straight-through Ethernet cables. For details, please refer to Table B.2-2.

Table B.2-2 Wiring of a PoE Ethernet Cable (C-RJ45-001)

End A	Signal	Line Color	End B	Signal	Line Color
1	Rx+	White/orange	1	Tx+	White/orange
2	Rx-	Orange	2	Tx-	Orange
3	Tx+	White/green	3	Rx+	White/green
4	GND	Blue	4	GND	Blue
5	GND	White/blue	5	GND	White/blue
6	Tx-	Green	6	Rx-	Green
7	−48V	White/brown	7	−48V	White/brown
8	−48V	Brown	8	−48V	Brown

Tips:

The PoE Ethernet cable carries -48V DC power. Short circuit is prohibited; otherwise, transmission of signals won't be available, which will cause malfunction or even protection measures of the equipment. The GND or -48V line should use a separate twisted-pair cable. No mixture of them is allowed, or it will result in short-circuit failures.

B.2.3 Making a Crossover Ethernet Cable (RJ45J)

The wiring of crossover Ethernet cables is shown as in Table B.2-3.

Table B.2-3 Wiring of a Crossover Ethernet Cable (RJ45J)

End A	Signal	Line Color	End B	Signal	Line Color
1	Rx+	White/orange	3	Tx+	White/green
2	Rx-	Orange	6	Tx-	Green
3	Tx+	White/green	1	Rx+	White/orange
4	MATCH1	Blue	4	MATCH1	Blue
5	MATCH2	White/blue	5	MATCH2	White/blue
6	Tx-	Green	2	Rx-	Orange
7	MATCH3	White/brown	7	MATCH3	White/brown
8	MATCH4	Brown	8	MATCH4	Brown

Tips:

Signals and Ethernet cable wiring are defined & designed based on the interface signals of ZTE's AC. If a 3rd-party AC is employed, the wiring of Ethernet cables should be decided according to the practical situations.

B.2.4 Ethernet Cable Labels

After the crimping of an Ethernet cable, a label should be attached to End A and B, labeling the name and length of the Ethernet cable.

1. Label of straight-through Ethernet cables

   The label of straight-through Ethernet cables (RJ45) is shown as in Figure B.2-1.

   RJ45 **m

   Figure B.2-1 Label of Straight-through Ethernet Cables

   "**m" in the above figure indicates the physical length of the Ethernet cable.

2. Label of PoE Ethernet Cables

   The label of PoE Ethernet cables (C-RJ45-001) is shown as in Figure B.2-2.

   C-RJ45-001 **m
   POE Cable

   Figure B.2-2 Label of PoE Ethernet Cables

   "**m" in the above figure indicates the physical length of the Ethernet cable. "PoE Cable" tells that this cable is a PoE Ethernet cable.

3. Label of crossover Ethernet cables

   The label of crossover Ethernet cables (RJ45) is shown as in Figure B.2-3.

   RJ45J **m

   Figure B.2-3 Label of Crossover Ethernet Cables

"**m" in the above figure indicates the physical length of the Ethernet cable. "J" tells this cable is a crossover Ethernet cable.

Warning:

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Any change to the equipment will void FCC grant.

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 or more 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.