# WA3001 Indoor AP

## Wireless Access Point

## USER GUIDE

Release: 1.1

Doc. Code: L3 DW09 1000 02 010 00

UTStarcom, Inc.

# Regulatory statement (FCC)

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## IMPORTANT NOTE (CO-LOCATION)

FCC RF Radiation Exposure Statement: This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

### MPE Statement (Safety Information)

Your device contains a low power transmitter. When device is transmitted it sends out Radio Frequency (RF) signal.

### Safety Information

In order to maintain compliance with the FCC RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use only with supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

## 15.105(b) Information of the responsible party for a DoC product

The identification of the product:
Product Name: Wireless Access Point
Model: WA3001

| | |
|---|---|
| Technical Support:<br>UTStarcom Telecom Co., Ltd.<br>Address:<br>NO.88 Wenhua Road,<br>Hangzhou PRC 310012<br>Telephone : 0571-88862342-3524<br>Email: cbshi@utstar.com | Technical Support in the US:<br>UTStarcom, Inc.<br>Address:<br>1275 Harbor Bay Parkway<br>Alameda, CA 94502 USA<br>Telephone: 1 (866) 663-3266<br>Email: ips@utstar.com |

## 15.21 Regulatory information / Disclaimers

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## 15.105 Federal Communications Commission (FCC) Requirements, Part 15

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.

## Regulatory statement (CE R&TTE)

European standards dictate maximum radiated transmit power of 100mW EIRP and frequency range 2.400-2.4835GHz; In France, the equipment must be restricted to the 2.4465-2.4835GHz frequency range and must be restricted to indoor use.

### Declaration of Conformity

For the following equipment: WA3001 Access Point

CE0984 (!)

Is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (89/336/EEC), Low-voltage Directive (73/23/EEC) and the Amendment Directive (93/68/EEC), the procedures given in European Council Directive 99/5/EC and 89/3360EEC.

The equipment was passed. The test was performed according to the following European standards:

- EN 300 328 V.1.4.1 (2003-04)
- EN 301 489-1 V.1.3.1 (2001-09) / EN 301 489-17 V.1.1.1 (2000-09)
- EN 50371: 2002
- EN 60950: 2000

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# 1 Product Introduction

WA3001 is a switch-like WLAN Access Point that offers industry-leading performance/price ratio and a comprehensive feature set. It is designed especially for a Wireless Internet Service Provider (WISP) that provides Wireless Internet services - including hotspot and corporate deployment planning. WA3001 supports IEEE802.11b and 802.11g, SNMP centralized network management, authentication and billing systems. It provides a variety of security mechanisms to ensure safer data transmission within the public network.

WA3001 is the premier choice for WISP Hotspot Network Solutions because of its user-friendly design, high-speed data transmission rate of up to 54Mbps, additional long distance network coverage and high sensitivity. WA3001 is typically applied in public areas such as airports, hotels, exhibitions, bars and news centers.

WA3001 also supports NT authentication to provide a cost-effective and efficient wireless connection for corporations. Using its 4 LAN ports switch like functionality ensures customers always enjoy an easy network buildup.

Presently, the new WLAN technology is focused on throughput rates and network coverage improvement, along with the elimination of blind spots. UTStarcom has made rapid progress on all of these areas utilizing the latest XR and Super G technology.

## Product Introduction

**Port Introduction:**

- One 10/100M Ethernet WAN port
- Four 10/100M Ethernet LAN ports
- One Mini-PCI socket supports Type III PC card
- One hot pluggable CardBus socket supports Type II PC card
- One RS-232 port for management and console

**Compliance:**

- IEEE 802.3X, duplex 10BaseT, 100BaseTX ports
- IEEE802.3u, 100BaseTX specification
- IEEE802.3, 10BaseT specification
- IEEE802.3af standard
- CardBus socket supports both 16-bit PC Cards and 32-bit CardBus Cards
- CardBus is compliant with the PCI Local Bus Specification Revision 2.2
- Mini-PCI socket supports the PCI Local Bus Specification Revision 2.2

**Connector:**

- 10/100Base-TX port: RJ-45
- Management console ports: RS-232

## Product Features

- 6M/s throughput rate
- Supports 802.3af inline power supply (PoE)
- Compatible with 802.11b and 802.11g
- Supports four adjustable RF power levels (10mw–20mw–50mw-100mw)
- Supports 64/128-bit WEP Encryption
- Supports 802.1x to provide high data security
- Supports EAP-MD5
- Supports DHCP server
- Supports WEB pass-through
- Supports PPPoE
- Provides remote management and diagnosis (Inband and Outband)
- Supports Layer2 ACL (at least 256 in the access control list)
- Supports broadcast threshold
- Supports end-user isolated and VLAN

- Supports user-access load-share (roundrobin& leastconn&hash) and control based on flow and user number
- Supports NAT or any IP
- Supports link-test (default-gateway is unavailable for WA3001)
- Supports Repeater mode (dual mode)
- Super G maximize network throughput, peak flow is able to reach the wire LAN throughput at 10/100M. It exceeds the previous generation wireless functionality
- Supports XR, the received sensibility reach -103dBm
- Operation temperature: -15 ~ 50°C
- Network Management

- WEB based configuration
- Supports SNMP MIB (MIB II or private MIB)
- SNMP Agent
- Console port management
- In-Band/Out-Band network management
- Statistic

# 2 System Application

WA3001 is built with both regular AP (miniPCI network card) and Repeater (CardBus adapters) functions. As a Repeater, from network coverage point of view, the AP can be configured in point-to-point (P2P) mode or point-to-multiple points (P2MP) mode (one AP connects with up to four APs). As a regular adapter, the AP can be configured as a single-cell network, a multi-cell network, or an extension of wired network.

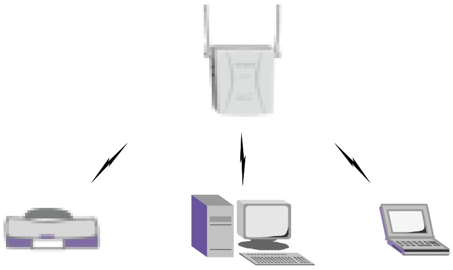
## Wireless Network Access (MiniPCI Network Card)

### Single-cell Wireless Network

A single AP used without the wired network providing a single-cell wireless network for peer-to-peer stations.

E.g. In SOHO mode, the AP provides a quick and efficient solutions to printers, PCs and Server.

**Figure 1** Single-cell Wireless Network Topology

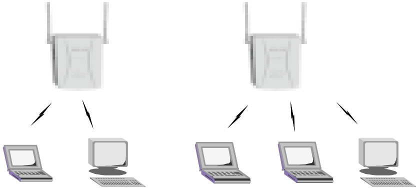


## Multiple APs in Separate Networks

Multiple APs can coexist as separate networks in the same site without interference by using different ESS_IDs.

E.g. In an exhibition, where each company's network is independent

**Figure 2** Multi-APs with different ESS_IDs in Separate Networks Topology

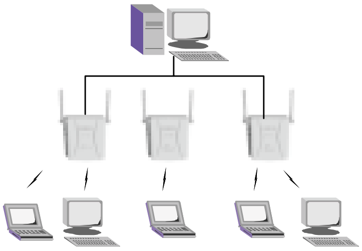


## Multiple APs within a Network

Multiple APs wired together provide a network with a better coverage area and performance - by using the same ESS_ID.

E.g. Within a company, each department accesses a public file server through its own AP.

**Figure 3** Multi-APs within a Network Topology

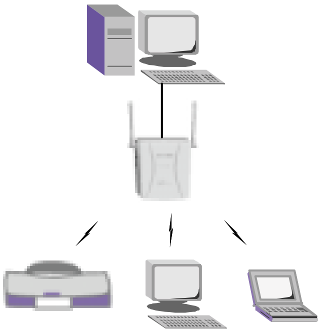


## Extension of Wired Network

AP can connect to the wired network through WAN ports, or connect to wireless clients through wireless ports.

E.g.: In a company, using APs to quickly setup a network for a newly added department is an efficient way to extend the existing wired network.

**Figure 4** Extension of Wired Network Topology



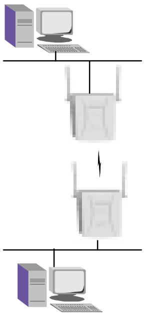
## Repeater Mode (CardBus Adapter)

### Point-to-Point Mode

Point-to-Point mode is used to connect two networks in WLAN application.

E.g.: In a campus, using WA3001's point-to-point mode to connect two buildings in a separate wired network. In this mode, AP must to be configured with a cardBus adapter to function as a repeater.

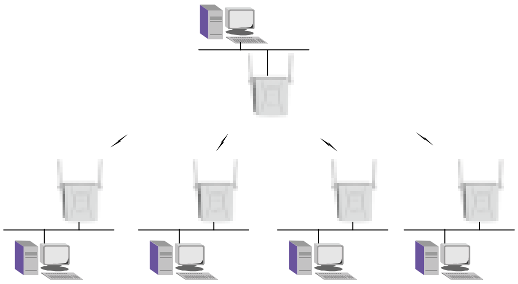
**Figure 5** Repeater Point-to-Point Mode Network Topology



## Point-to-Multiple Points Mode

In WLAN application, point-to-multiple points mode dramatically expands network coverage and quickly establishes the connectivity among existing networks.

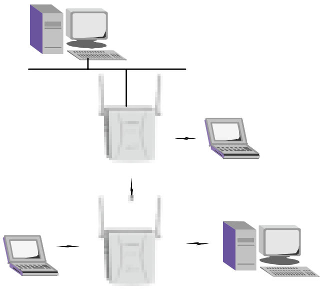
**Figure 6** Repeater Point to Multi-points Mode Network Topology



## Repeater + AP Combined Network

Capable of being a wireless entrance for wireless clients, or a repeater of a wired network, the WA3001 expands network coverage easily via wireless connection.

**Figure 7** Repeater+AP Combined Network Topology



# 3 Hardware Installation

## Package Contents

Before using this AP, check the accessories in the box. If you find anything missing or the documentation set is incomplete, contact your local dealer immediately. The following accessories are shipped with the product:

- One WA3001 AP
- One user guide
- One power adapter
- Two small antennas
- One installation bracket
- Three screws
- One warranty card

## Installation Requirements

AP installation environment:

- WA3001 power supply mode:

- Support IEEE802.3af, remote Cat 5, DC -48V/300mA

- Support local DC 12V/1.25A

***Note:*** *The two power supply modes cannot be used simultaneously. In PoE power supply mode, RJ45 4/5(+)7/8(-) connects to WAN port.*

- One RJ-45 LAN port, supports 10/100Mbps data transmission rate

## Product Physical Characteristics

### Product Front View

**Figure 8** WA3001 Front View

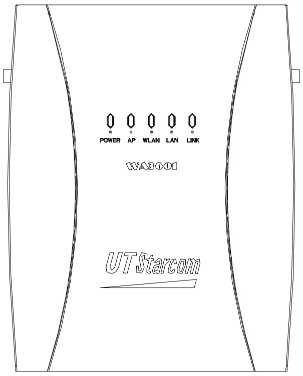


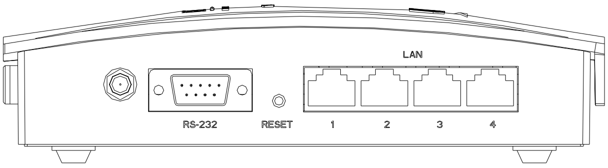
Table 1 shows the list of LED indicators (from left to right) on the front panel along with their activity status and descriptions

**Table 1** WA3001 Front Panel LED Indicators

| LED Indicators | Status | Description |
|---|---|---|
| POWER | Lighting in green | Lights when power is being supplied well |
| AP | Lighting in green | Lights when AP is able to be connected by clients |
| WLAN | Blinking in green | Off: No wireless channel |
| | | Blinking: with wireless connections |
| LAN | Blinking in green | Off: No Ethernet connection |
| | | Blinking: with LAN connection |
| LINK | Lighting in green | Off: No accessing activities from wireless clients. |
| | | Lighting: AP gets connected by wireless clients |

## Product Side View

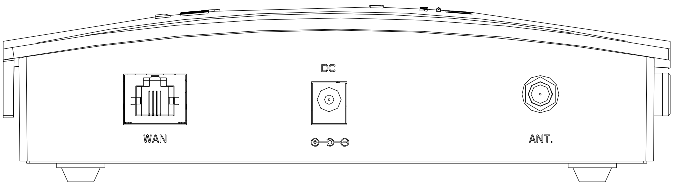
**Figure 9** WA3001 Side View (1)



The following table lists the items on side panel (1) (from left to right)

| Interface | Description |
|---|---|
| Console port | RS-232 connector for LAN management |
| RESET | Restore button to reboot/reset the AP to its default settings |
| LAN | Four LAN ports to access Ethernet, RJ-45 connector |

**Figure 10** WA3001 Side View (2)

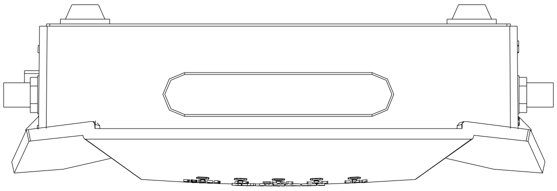


The following table lists the items on the side panel (2) (from left to right)

| Interface | Description |
|---|---|
| WAN | WAN port used for uplink connection. RJ-45 connector |
| DC | Power jack, 12V |
| ANT | Antenna installation jack |

### Product Top View

**Figure 11** WA3001 Top View



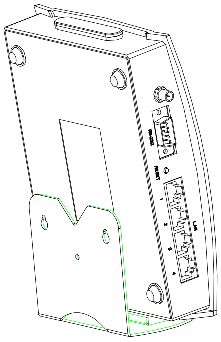
WA3001 AP’s rubber top shown in Figure 11 is for installing a Wireless LAN CardBus Adapter.

## Hardware Installation

**Steps:**

1. Location: Place the AP in an appropriate place in a room.
2. Antenna: Screw two antennae into both side of the AP
3. Install bracket (or put the AP on the table directly)
4. Fix the AP into the bracket

**Figure 12** Installation Diagram



## System Access

Network management methods:

- Through LAN port: connects PC to LAN port that can identify the connection automatically, use crossover or straight-through network cable
- Through WAN port: connects PC to WAN port, use crossover network cable
- Through wireless port: installs a wireless network card into PC and find AP through Windows IE. The default ESSID is "UT"

***Note:** It is suggested to use WAN or LAN port to configure the AP**.***

System default IP address:

- WAN port: 192.168.1.1/255.255.255.0
- LAN port: 172.18.37.1/255.255.255.0

Default user name and password:

- Administrator:

  User name: admin

  Password: admin

- Guest:

  User name: guest

  Password: guest

System access procedure:

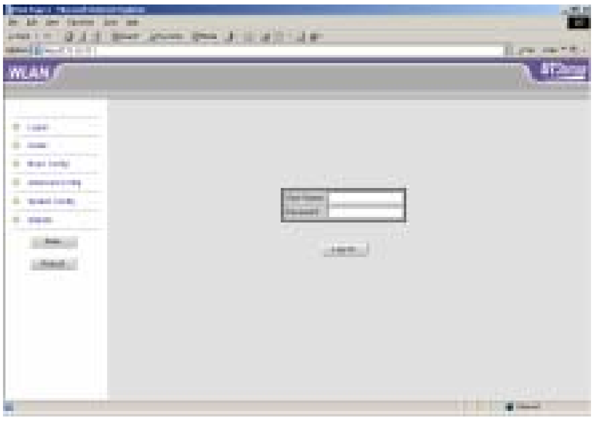
1. Connects the power adapter to an AP
2. Makes sure that the connection between PC and AP's LAN port is connected.
3. Configures PC network card's IP address to 172.18.37.100/255.255.255.0 in order to connect the PC to LAN port
4. Enters AP LAN port's default IP address into the PC web browser at http://172.18.37.1

5 Use the default user name and password to logon

User name: admin

Password: admin

**Figure 13** Logon Window



## Firmware Description

The default setting of WA3001 firmware is different according to the nation-wide regulation of wireless frequency channel. The AP configuration of this manual applies to China area only. The values listed in Table 2 are wireless frequency channel default settings of other areas.

**Table 2** Wireless Frequency Channel Default Setting

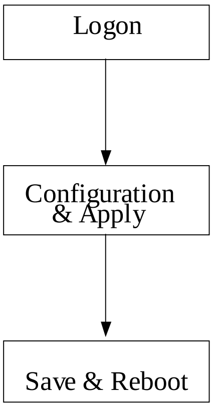
| | North America/FCC | Europe/ETSI |
|---|---|---|
| Operation Channel | 2.412-2.462GHz | 2.412-2.472GHz |
| Frequency Channel | 1-11 (Default: 1) | 1-13 (Default: 1) |
| Default RF Power | Mode b: 40mw (16dBm) | |
| | Mode g: 25mw (14.5dBm) / 70mw (18.5dBm) | |

4

# Web-based Configuration Introduction

## Configuration Flow

**Figure 14** Configuration Flow Chart



## System Configuration Introduction

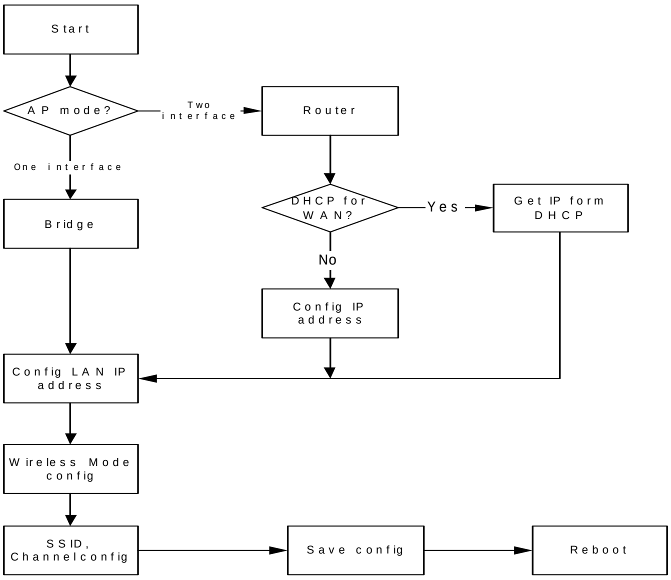
Log on the system, select an operation mode and configure the ports accordingly.

In Router mode, WAN port configuration depends on the retrieval of IP address (Either DHCP server or DHCP client is provided). In Bridge mode, configuration is not required for the WAN port.

The LAN port must be configured in both modes based on the IP address.

In wireless mode, configure the wireless port and its channel attributes.

After configuration, save it and reboot the system



## Bridge/Router Mode Introduction

**Table 3** Configuration Menu in Bridge Mode

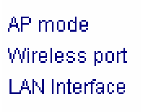
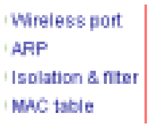
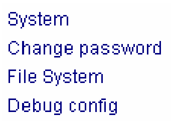
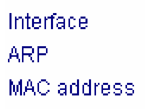
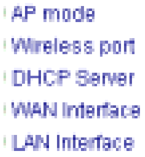
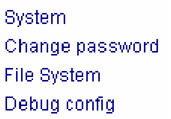
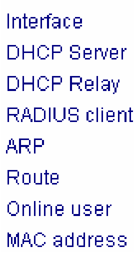
| Main Menu | Sub Menu |
|---|---|
| Logon | |
| Guide | |
| Basic Config | <br>AP mode<br>Wireless port<br>LAN Interface |
| Advanced Config | <br>Wireless port<br>ARP<br>Isolation & filter<br>MAC table |
| System Config | <br>System<br>Change password<br>File System<br>Debug config |
| Statistic | <br>Interface<br>ARP<br>MAC address |

**Table 4** Configuration Menu in Router Mode

| Main Menu | Sub Menu |
|---|---|
| Logon | / |
| Guide | / |
| Basic Config | <br>AP mode<br>Wireless port<br>DHCP Server<br>WAN Interface<br>LAN Interface |
| Advanced Config | <br>Wireless port<br>RADIUS Client<br>Authentication<br>Subscriber<br>ARP<br>Route<br>NAT<br>Isolation & filter<br>MAC table |
| System Config | <br>System<br>Change password<br>File System<br>Debug config |

| Main Menu | Sub Menu |
|---|---|
| Statistic | <br>Interface<br>DHCP Server<br>DHCP Relay<br>RADIUS client<br>ARP<br>Route<br>Online user<br>MAC address |

**Description:**

- Wireless port configuration

- The system is able to configure two wireless network cards at the same time. The default assumes a Mini PC card on Wireless port 2.
- Configure the 802.11b attributes for the wireless port
- Activate WDS mode to implement Repeater functions
- Activate WEP encryption to provide data transmission security. Four sets of Key values can be configured

- Interface configuration

- Include WAN and LAN ports
- Configure the port IP address to enable communication at IP layer

- DHCP Server configuration

- Configure the DHCP server when the AP needs to allocate an IP address to its clients
- Configure the DHCP address field attributes, or keep the default attributes
- DHCP Client configuration
- Configure the DHCP client when the AP needs to allocate an IP address to a client through the remote DHCP server

- Authentication

- Activate the option for 802.1x authentication
- Configure global user authentication attributes among the Server, the AP and the Client.

- RADIUS Client configuration

- Configure this option while using a Radius server to perform authentication or accounting

- Users Management: Dynamic, Static and Online users

- Configure this option while managing the users in local authentication mode, local + Radius or Radius + local mode

- NAT configuration

- In Router mode, configure the NAT when the system requires AP to manage the IP addresses for its clients
- There are two types of NAT configurations: Static NAT and NAPT (based on port forwarding)

- Route configuration
  - In Router mode, users can define AP’s next route
- ARP management
  - Provides information about network equipment connected to the AP intended for users
- MAC filter configuration
  - Manages the accessed users based on MAC. This includes the MAC white list and black list
  - Implements VLAN end-user isolation
- MAC table management
  - Adds the MAC address table to speed forwarding of user data
- System document management
  - Manages the system documents remotely through FTP or TFTP server. This includes Image and Config files
  - Retrieves the default system’s configuration by deleting the recently added configuration file
- Change user password
  - Provides the option for users to increase the system’s security
- Debug configuration
  - Observes the system’s operational situation and makes it convenient for advanced users to adjust and solve the problems

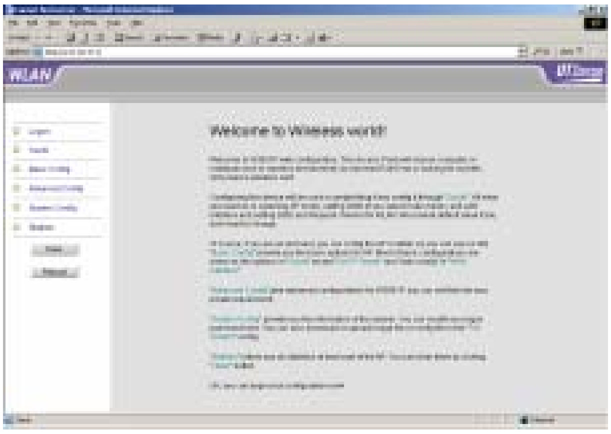
## Logon the System

**Access Methods**:

Enter the default IP address in the browser’s logon field, then enter the default user name and password.

**Interface**:

**Figure 15** Logon Successful

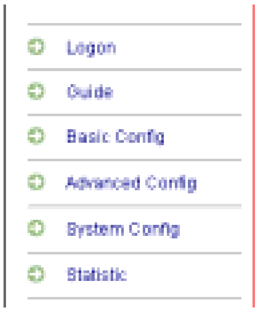


**Description:**

- General introduction

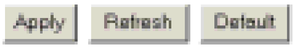
The left panel is the function link area. The right panel is the information display area and configuration area

- Left panel introduction



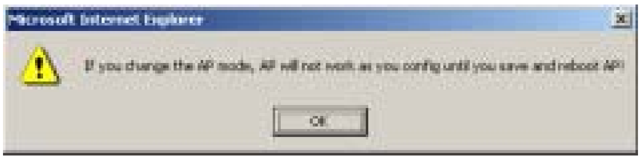
- Logon: log on the system
- Guide: A brief instructional guide describes the basic system configuration of WA3001 step by step. It helps user to complete the configuration quickly
- Basic Config: Implements the system's basic configurations
- Advanced Config: Implements the system's advanced configurations
- System Config: Downloads/uploads the system files and upgrades the image files
- Statisic: Statistical information about ports, the DHCP server or Relay, and the Radius Client

- Button Description



- <Apply>: Presses to apply a configuration changes. Some configurations are applied only after saving and rebooting the AP. A corresponding prompt window will be popped up.
- <Refresh>: refreshes the interface.
- <Default>: restores the default parameters.

**Figure 16** AP Reboot Prompt Window



If you change the AP mode, AP will not work as you config until you save and reboot AP!

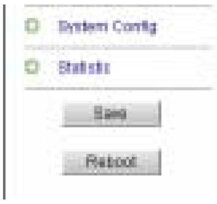
## Save and Reboot

**Access Method:**

Located on the bottom of the left function panel

**Interface:**

**Figure 17** Save and Reboot



**Description:**

- Press <Save> to save the system configuration changes
- Press <Reboot> to apply the configuration. This is similar to the <Reset> button in the equipment

***Note:*** *Click <Save> to save the configuration changes even if it has been applied by clicking <Apply>*

# 5 Web-based Configuration

This chapter introduces all Web-based configuration steps.

- Guide-based configuration operations
- Functional menu-based operations in Basic and Advanced configuration modes
- Figure 18 lists all configurable items in Basic Config
- Figure 19 and Figure 20 list all configurable items in Advanced Config

The following section describes these items in detail

**Figure 18** Basic Configuration

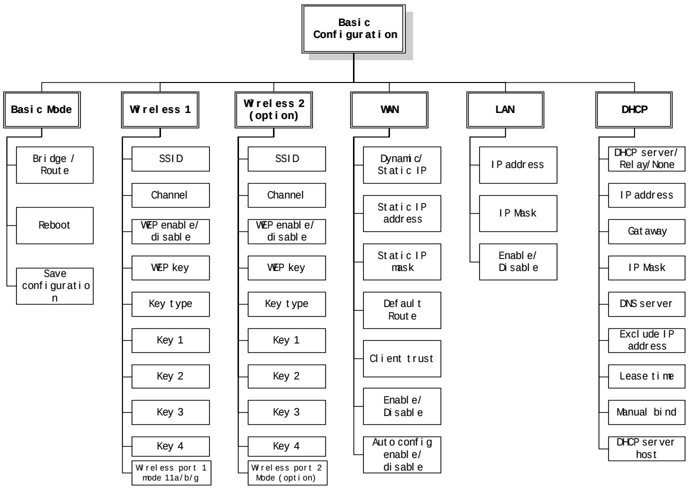


**Figure 19** Advanced Configuration Part I

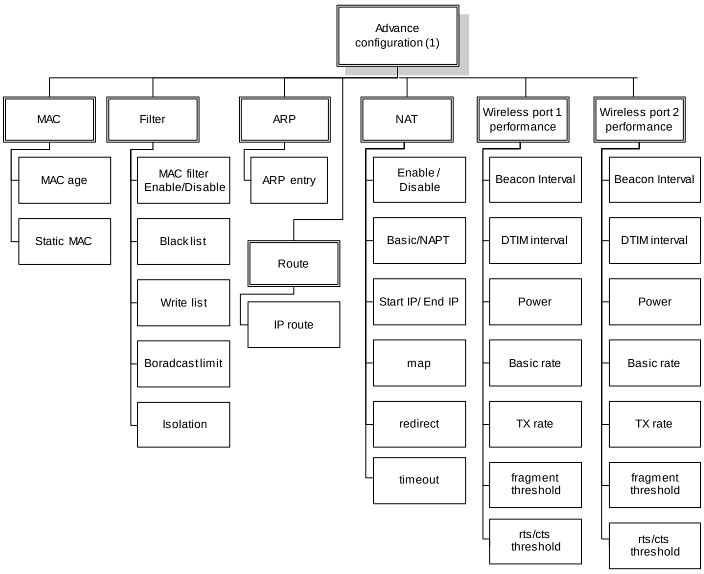
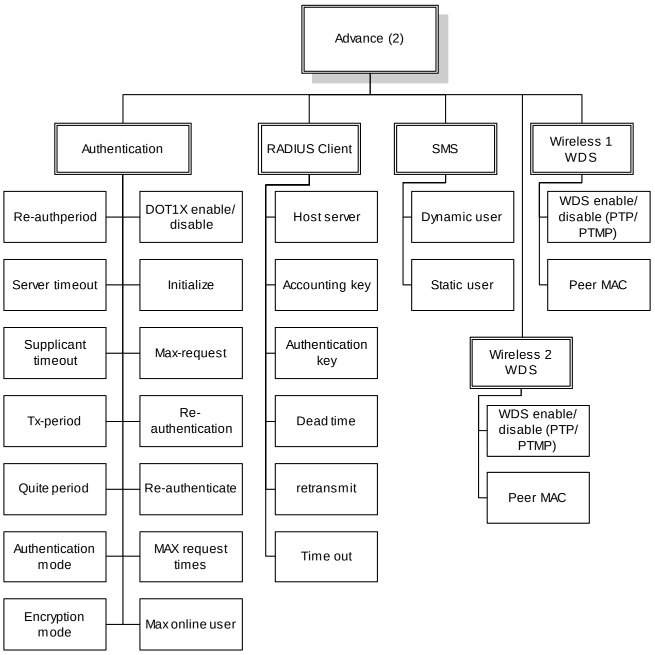


**Figure 20** Advanced Configuration Part II



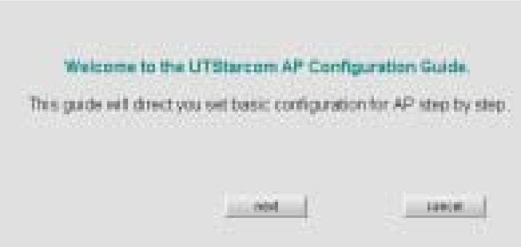
## Guide Configuration

### Objective:

Use AP quickly through the Guide-based configuration system

### Detailed Instructions:

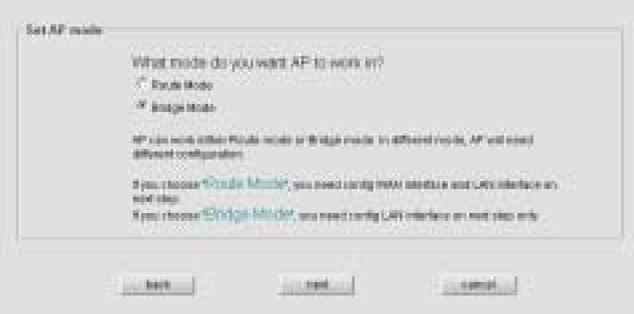
1. Click the “Guide” link on the left panel



Welcome to the UTStarcom AP Configuration Guide.

This guide will direct you set basic configuration for AP step by step.

2. Click <next>, set AP operation mode to “Bridge Mode”



Set AP mode

What mode do you want AP to work in?

○ Route Mode

● Bridge Mode

AP can work either Route mode or Bridge mode. In different mode, AP will need different configuration.

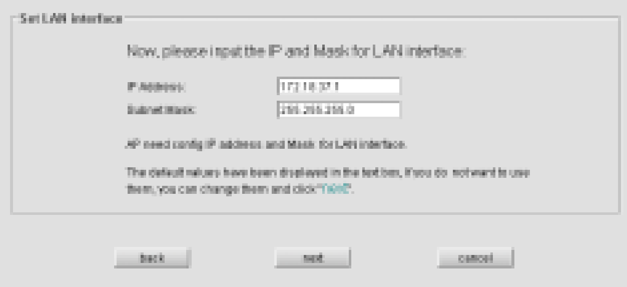
If you choose “Route Mode”, you need config WAN interface and LAN interface on next step.

If you choose “Bridge Mode”, you need config LAN interface on next step only.

**Description:**

If AP is used as Layer 2 bridging, choose the Bridge mode. If AP involves in Layer 3 communication, choose the Router mode.

1. Click <next> to set LAN interface IP address, the default address is 172.18.37.1/255.255.255.0



Set LAN interface

Now, please input the IP and Mask for LAN interface:

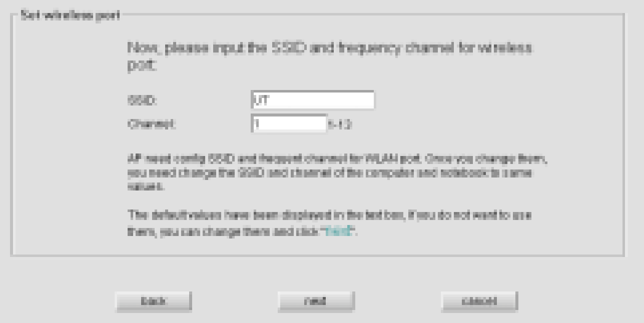
IP Address: 172.18.37.1

Subnet Mask: 255.255.255.0

AP need config IP address and Mask for LAN interface.

The default values have been displayed in the text box, if you do not want to use them, you can change them and click "next".

2. Click <next> to set wireless SSID and Channel, the default SSID is “UT” and the default channel is “1”



Set wireless port

Now, please input the SSID and frequency channel for wireless port:

SSID: UT

Channel: 1 1-13

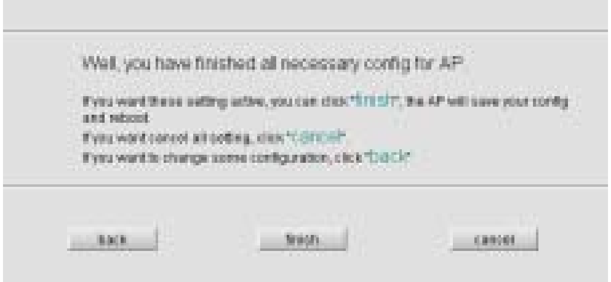
AP need config SSID and frequent channel for WLAN port. Once you change them, you need change the SSID and channel of the computer and notebook to same values.

The default values have been displayed in the text box, if you do not want to use them, you can change them and click "next".

**Description:**

In a planned AP wireless network, SSID is a service ID which is assigned to the AP by the system administrator. Only a wireless network card with a configured ESSID can get connection from the AP. ESSID has the maximum of 32 characters. Wireless channel is normally set to 1, 6, 11 or 1, 7, 13, hence the interaction is reduced in most of the situations.

1. Click <next> to complete the Guide configuration



Well, you have finished all necessary config for AP

If you want these setting active, you can click "finish", the AP will save your config and reboot

If you want cancel all setting, click "cancel"

If you want to change some configuration, click "back"

2. Click <finish> to save the configuration, click <cancel> to keep the current configuration

## Wireless Port Configuration

**Objective 1:**

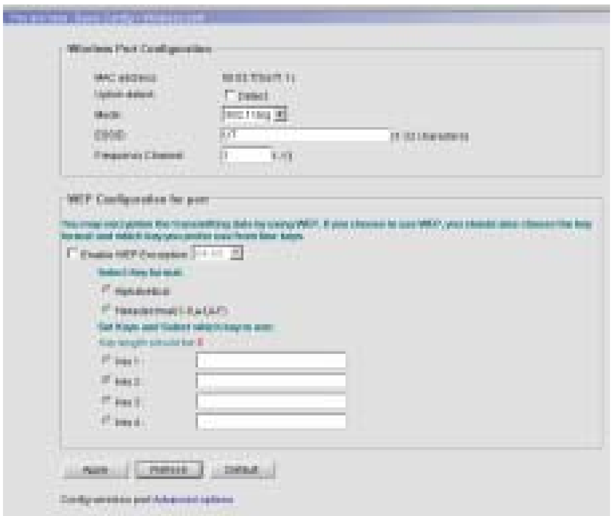
Wireless port parameters settings in “Basic Config”

**Access Method:**

Click the “Basic Config/Wireless Port” link on the left panel

**Interface:**

**Figure 21** Basic Config - Wireless Port Config



**Description:**

**Table 5** Wireless Port 1 Interface Specification

| Field | Description | Default Value |
|---|---|---|
| MAC Address | Wireless network card MAC address | / |
| Uplink Detect | Detect the uplink | Disabled |

| Field | Description | Default Value |
|---|---|---|
| ESSID | ESSID is a service ID assigned to an AP by the system admin. Only a wireless network card with a configured ESSID can get connection from AP. ESSID has maximum of 32 characters | UT |
| Mode | 3 optional modes are 802.11b/g, 802.11b and 802.11g. Select b/g compatible mode to get connection through traditional wireless network card in b mode | 802.11b/g |
| Frequency Channel | Display AP’s current channel. | 1 |

**WEP Description:**

By default, WEP encryption is disabled. User can choose any one of the two available encryption modes

- WEP-64
- WEP-128

The system provides 4 groups of encryption keys. User can select any one of 2 key formats

- Alphabetical

- Hexadecimal

**Table 6** WA3001 WEP Encryption Configuration

| Encryption Mode | Alphabetical | HEX |
|---|---|---|
| WEP-64 | Uses any 5 alphanumeric characters between “a-z”, “A-Z” and “0-9”.<br>E.g. MyKey | 10 hexadecimal digits between “a-f”, “A-F” and “0-9” with prefix “0x”<br>E.g. 0x11AA22BB33 |
| WEP-128 | Uses any 13 alphanumeric characters between “a-z”, “A-Z” and “0-9”.<br>E.g. MyKey12345678 | 26 hexadecimal digits between “a-f”, “A-F” and “0-9” with prefix “0x”<br>E.g.0X00112233445566778899AABBCC |

**Objective 2:**

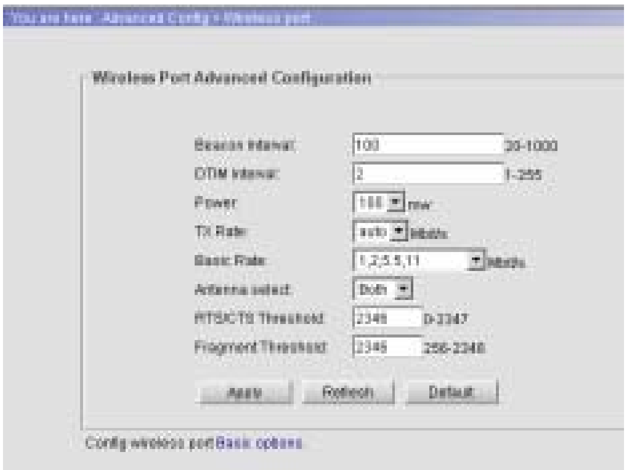
Wireless Port advanced parameter settings in “Advanced Config”

**Access Method:**

Click “Advanced Config/Wireless Port” on the left panel

**Interface:**

**Figure 22** Wireless Port Configuration



You are here : Advanced Config > Wireless port

Wireless Port Advanced Configuration

Beacon Interval: 100 20-1000

DTIM Interval: 2 1-255

Power 100 mw

TX Rate auto Mbit/s

Basic Rate 1,2,5.5,11 Mbit/s

Antenna select: Both

RTS/CTS Threshold 2346 0-2347

Fragment Threshold 2346 256-2346

Config wireless port Basic options

**Description:**

**Table 7** Wireless Port 2 Interface Specification

| Field | Description | Default Value |
|---|---|---|
| Beacon Interval | Interval between Beacon packets; the Beacon packet contains network card information, duration of broadcast to the wireless network. | 100(ms) |
| DTIM Interval | Interval between Delivery Traffic Indication Message | 2(ms) |

| Field | Description | Default Value |
|---|---|---|
| Power | Transmitting power of the AP wireless port.<br>Possible values are: 10mw, 20mw, 50mw, 100mw | 100mw |
| Tx Rate | Transmission rate.<br>The range of selectable values is decided based on the wireless mode set in the basic config. If *Auto* is chosen, the network card will select the current optimum rate.<br>Possible values are: 11Mbit/s, 5.5Mbit/s, 2Mbit/s, 1Mbit/s, Auto. | auto |
| Basic Rate | The network card is restricted to operate at the selected Tx rates. | 1, 2Mbit/s |
| Antenna | Possible values are: Both, Ant A, Ant B<br>***Note*:** From the front view of AP, left is Ant A, right is Ant B | Both |
| RTS/CTS Threshold | Request To Send/Clear To Send mechanism is used in WLAN; RTS/CTS threshold is configurable; When a data package size exceeds the threshold, choose a setting within a range of 0-2347. Suggestion: do not modify the value | 2347 |

| Field | Description | Default Value |
|---|---|---|
| Fragment Threshold | Fragment Threshold mechanism is used to improve the efficiency in a high volume wireless network. It defines the limit of data packages size. Any package with bigger size than the value will be fragmented into several smaller packages within a range of 256-2346 bytes. Suggestion: do not modify the value | 2346 |

User can configure all items in table 5-3, but usually “Antenna”, “Power” and “Tx Rate” are configurable. The rest of the items are not recommended to configure

***Note:*** *The system provides shortcuts between “Basic Config” and “Advance Config” interfaces for wireless port*

## DHCP Server Configuration

**Objective:**

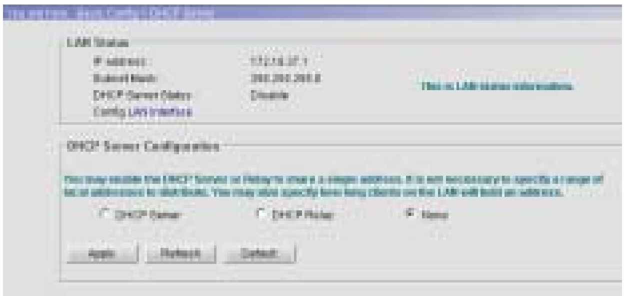
WAN gets IP address via DHCP Server and DHCP Relay when AP works in Router Mode

**Access Method:**

Click the “Basic Config/DHCP Server” link on the left panel

**Interface:**

**Figure 23** DHCP Server Configuration



LAN Status

IP address: 172.16.37.1

Subnet Mask: 255.255.255.0

DHCP Server Status: Disable

Config LAN Interface

This is LAN status information.

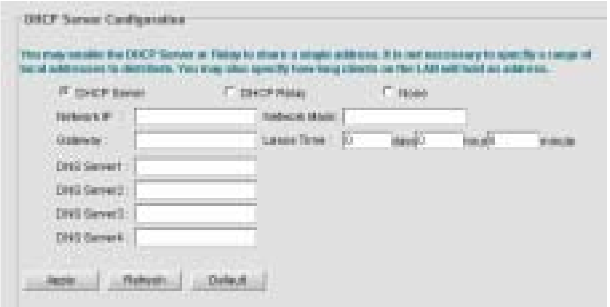
DHCP Server Configuration

You may enable the DHCP Server or Relay to share a single address. It is not necessary to specify a range of local addresses to distribute. You may also specify how long clients on the LAN will hold an address.

○ DHCP Server ○ DHCP Relay ● None

**Detailed Instructions:**

- When DHCP Server is enabled, the system automatically displays the following configuration interface



DHCP Server Configuration

You may enable the DHCP Server or Relay to share a single address. It is not necessary to specify a range of local addresses to distribute. You may also specify how long clients on the LAN will hold an address.

● DHCP Server ○ DHCP Relay ○ None

Network IP:

Network Mask:

Gateway:

Lease Time: 0 days 0 hours 0 minute

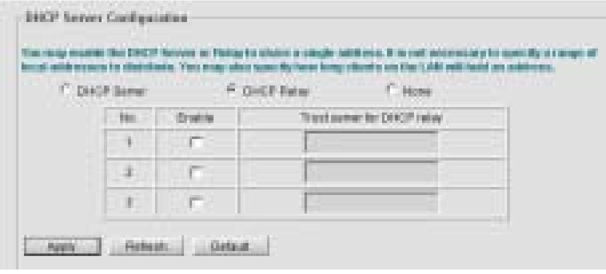
DNS Server1:

DNS Server2:

DNS Server3:

DNS Server4:

- When DHCP Relay is enabled, the system automatically displays the following configuration interface



DHCP Server Configuration

You may enable the DHCP Server or Relay to obtain a single address. It is not necessary to specify a range of local addresses to distribute. You may also specify how long clients on the LAN will hold an address.

○ DHCP Server ● DHCP Relay ○ None

| No. | Enable | Trust server for DHCP relay |
|---|---|---|
| 1 | □ | |
| 2 | □ | |
| 3 | □ | |

**Table 8** DHCP Server Configuration Specification

| Field | Description | Default Value |
|---|---|---|
| LAN Status | | |
| IP Address | IP address | 172.18.37.1 |
| Subnet Mask | Subnet mask | 255.255.255.0 |
| DHCP Server Configuration | | |
| Use DHCP Server | Enable/Disable DHCP server options | Disable |
| Network IP | IP address of DHCP address pool | |
| Network Mask | Network mask | |
| Lease Time | Lease Time | |
| Gateway | Gateway | |
| DNS Server1-4 | DNS Server(s), total 4 servers can be set | |
| DHCP Relay Configuration | | |

| Field | Description | Default Value |
|---|---|---|
| Trusted DHCP Server1-3 | Trusted DHCP server settings, total 3 servers can be set | |

**Description:**

When DHCP Server is enabled

- When DHCP server is enabled, it allocates IP address to a Client or AP through LAN port
- The subnet mask of DHCP Server IP address pool must be less than the network mask used in LAN interface
- Able to allocate maximum of 1024 addresses from IP address pool, including reserved addresses

When DHCP Relay is enabled

- Normally AP connects to remote DHCP server via WAN, in this case, users must require a certificate for LAN configuration
- Recommendation: When Relay is enabled, AP directly connects to DHCP server

## WAN Interface Configuration

**Objective:**

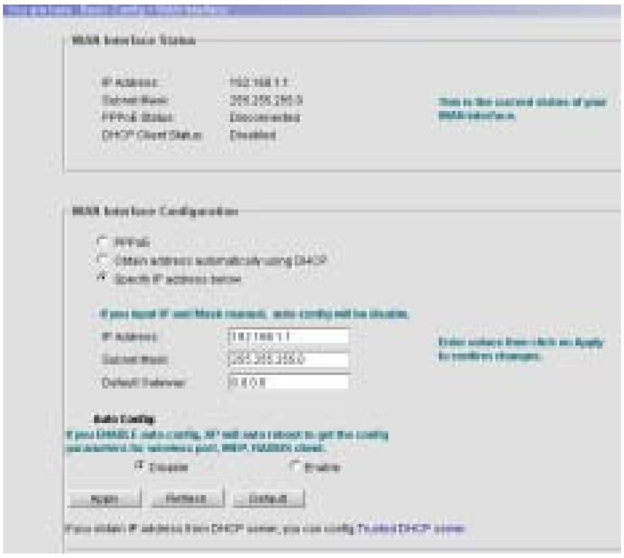
## Configure WAN interface when AP is in Router mode

**Access Method:**

Click the “Basic Config/WAN Interface” link on the left panel

**Interface:**

**Figure 24** WAN Port Configuration Interface



You are here : Basic Config > WAN Interface

WAN Interface Status

IP Address: 192.168.1.1
Subnet Mask: 255.255.255.0
PPPoE Status: Disconnected
DHCP Client Status: Disabled

This is the current status of your WAN interface.

WAN Interface Configuration

○ PPPoE
○ Obtain address automatically using DHCP
● Specify IP address below

If you input IP and Mask manually, auto config will be disable.

IP Address: 192.168.1.1
Subnet Mask: 255.255.255.0
Default Gateway: 0.0.0.0

Enter values then click on Apply to confirm changes.

Auto Config:
If you ENABLE auto config, AP will auto reboot to get the config parameters for wireless port, WEP, RADIUS client.

● Disable ○ Enable

If you obtain IP address from DHCP server, you can config Trusted DHCP server.

**Table 9** WAN Interface Configuration Specification

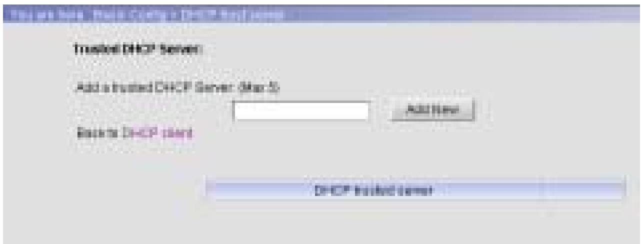
| Field | Description | Default Value |
|---|---|---|
| WAN Interface Status | | |
| IP address | IP address | 192.168.1.1 |
| Subnet mask | Subnet mask | 255.255.255.0 |
| PPPoE Status | PPPoE Status | Disconnected |
| DHCP Client Status | DHCP Client Status | Disabled |
| WAN IP Address Configuration | | |
| IP Address Obtain Methods | 1. PPPoE mode<br>2. Obtain address automatically using DHCP<br>3. Specify IP address below | Specified IP address mode;<br>IP Address: 192.168.1.1<br>Subnet Mask: 255.255.255.0 |
| Auto Configuration | | |
| Auto config | Enable or Disable auto configuration for WAN Interface<br>Enable “Auto Config” to have WAN interface obtained IP address from DHCP server. AP will get its configuration information from DHCP server after reboot | Disable |

| Field | Description | Default Value |
|---|---|---|
| Config Trusted DHCP Server | Perform Trusted DHCP Server Configuration to obtain IP address through DHCP server | |

**Detailed Instructions:**

Click the "Trusted DHCP Server" link to show the following configuration interface

**Figure 25** Trusted DHCP Server Configuration



**Description:**

Up to 5-trusted DHCP servers can be configured

In Figure 25, enter DHCP server's IP address into the input field. Press <Add New> to add or press <Remove> to delete

## LAN Interface Configuration

**Objective:**

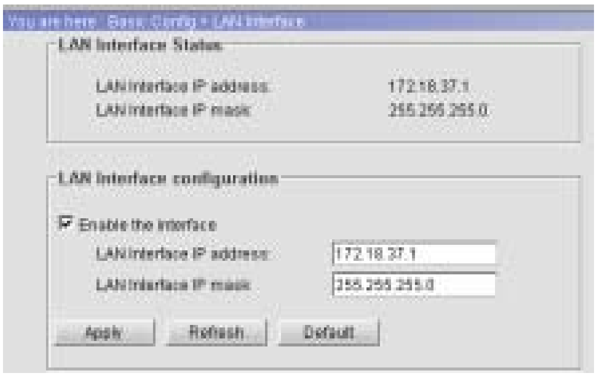
User needs to perform LAN interface configuration regardless AP working mode.

**Access Method:**

Click the “Basic Config/LAN Interface” link.

**Interface:**

**Figure 26** LAN Interface Configuration



You are here: Basic Config > LAN Interface

LAN Interface Status

LAN interface IP address: 172.18.37.1
LAN interface IP mask: 255.255.255.0

LAN Interface configuration

☑ Enable the interface
LAN interface IP address: 172.18.37.1
LAN interface IP mask: 255.255.255.0

**Interface Description:**

**Table 10** LAN Interface Specification

| Field | Description | Default Value |
|---|---|---|
| LAN Interface | | |
| Enable the interface | Enable the interface | Enable |
| IP address | IP address | 172.18.37.1 |
| Subnet mask | Subnet mask | 255.255.255.0 |

## Radius Client

**Objective:**

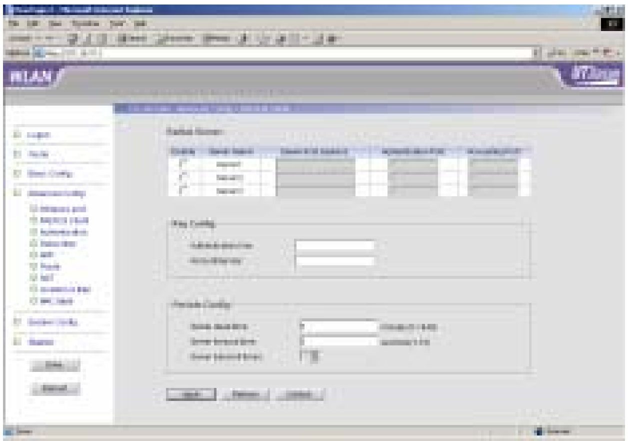
Provides accounting service to AP subscribers when AP is in Router mode.

**Access Method:**

Click the “Advanced Config/Radius Client” link on the left panel.

**Configuration Interface:**

**Figure 27** Radius Client Configuration Interface



**Interface Description:**

**Table 11** Radius Client Configuration Specification

| Field | Description | Default Value |
|---|---|---|
| Radius Server | | |
| Enable Server1-3 | Enable or disable Radius server, up to 3 servers can be configured | Disable |
| Server host address | Server host address | |
| Authentication Port | Authentication Port between AP and Server | 0 |

| Field | Description | Default Value |
|---|---|---|
| Accounting POrt | Accounting Port between AP and Server | 0 |
| Key Config | | |
| Authentication Key | Authentication Key between AP and Server | |
| Accounting Key | Accounting Key between AP and Server | |
| Periods Config | | |
| Server dead time | If the request sent to the Radius Server does not get a response within Timeout value, the request is re-sent to the server until the number of re-tries reaches the value set in the Transmit Times. If any re-try does not get a response, then the AP considers that the Radius server failed. It will wait a period of time as defined in the Dead Time. Then the AP will re-send a request. | 5 minutes |
| Server timeout time | | 5 seconds |
| Server transmit times | | 3 times |

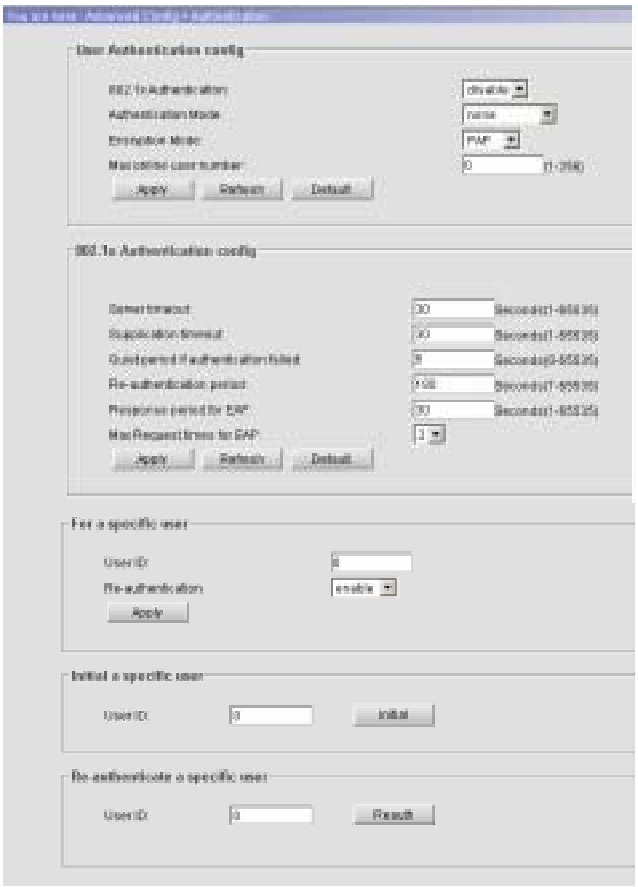
## 802.1x Authentication

**Access Method:**

Click the “Advanced Config/Authentication” link on the left panel

**Configuration Interface:**

**Figure 28** 802.1x Authentication Configuration



You are here: Advanced Config > Authentication

User Authentication config

802.1x Authentication: disable

Authentication Mode: none

Encryption Mode: PAP

Max online user number: 0 (1-256)

802.1x Authentication config

Server timeout: 30 Seconds(1-65535)

Supplication timeout: 30 Seconds(1-65535)

Quiet period if authentication failed: 0 Seconds(0-65535)

Re-authentication period: 3600 Seconds(1-65535)

Response period for EAP: 30 Seconds(1-65535)

Max Request times for EAP: 2

For a specific user

User ID: 0

Re-authentication: enable

Initial a specific user

User ID: 0

Re-authenticate a specific user

User ID: 0

**Interface Description:**

**Table 12** 802.1x Configuration Specification

| Field | Description | Default Value |
|---|---|---|
| User Authentication Config | | |
| 802.1x Authentication | Enable or Disable 802.1x Authentication | disable |
| Authentication Mode | Authentication mode options: none, local, remote, local-remote, remote-local | none |
| Encryption Mode | Encryption mode between wireless terminals and AP. Options: CHAP, PAP | PAP |
| Max online user number | Max online user number. Options: 1-256 | 0 |
| 802.1x Authentication Config | | |
| **Parameter** | **Specification** | **Default** |
| Server timeout | Interval between retries of sending a request frame from AP to Server (second). If within the Timeout period the Server doesn’t respond to the AP’s request, the AP will re-send the request frame. Possible values: 1-65535 seconds. | 30 |

| Field | Description | Default Value |
|---|---|---|
| Supplication timeout | Interval between retries of sending a request frame from AP to Client (second). If within the Timeout period the Client does not respond to the AP's request, the AP will re-send the request frame.  Possible values: 1-65535 seconds. | 30 |
| Quiet period if authentication failed | If the user name or password failed because of authentication, the AP will not process the authentication request from the Client within Quiet-period value. Possible values: 1-65535 seconds. | 5 |
| Response period for EAP | Interval of AP sending Request-challenge request to the client under EAP authentication (Re-sending because the Response-challenge was not received). Possible values: 1-65535 seconds. | 30 |

| Field | Description | Default Value |
|---|---|---|
| Max Request times for EAP | Maximum number of retries to send a Request-challenge request from AP to client under EAP authentication (Re-sending because the Response-challenge was not received). Possible values: 1-2. | 2 |
| For a specific user | | |
| User ID | User ID, the system automatically generates a unique id when adding a new user | |
| Re-authentication | Enable or Disable Re-authentication | |
| Initial a specific user | | |
| User ID | User ID | |
| Re-authenticate a specific user | | |
| User ID | User ID | |
| UI buttons | | |
| Apply | Configurations take effect | |
| Refresh | Refresh selections | |
| Restart | Authentication parameters take effect | |
| Initial | Initialize configurations | |
| Re-auth | Force user to re-authenticate | |

**Description:**

Available Functionality:

- Global user configuration parameters (LAN interface and Wireless connected clients), e.g. enable or disable 802.1x authentication, authentication mode, encryption mode, max online user number
- Global 802.1x authentication, Server-AP-Client authentication parameters configuration
- Specify authenticated users, initialize authenticated users and re-authenticated users

## User Management

**Objective:**

After 802.1x authentication is enabled, AP is able to manage both dynamic and static users. Dynamic users require authentication whereas Static users do not require authentication.

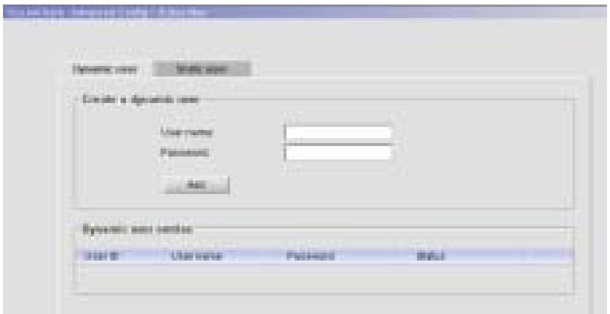
### Dynamic Users

**Access Method:**

Click the “Advanced Config/Subscriber” link on the left panel, then choose “Dynamic user”

**Configuration Interface:**

**Figure 29** Dynamic User Configuration Interface

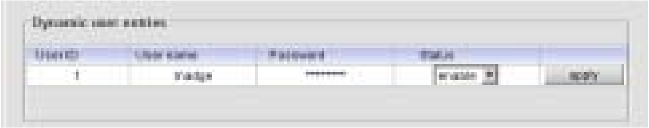


**Configuration Description:**

**Detailed Instructions:**

- Add a new dynamic user

  Enter User name and Password, and then click <Add>. A new entry will be added in the table as shown below. User ID is automatically generated by the system.



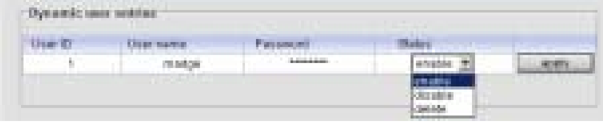
Dynamic user entries

| User ID | User name | Password | Status | |
|---|---|---|---|---|
| 1 | tradge | ******** | enable | apply |

- Enable, disable or delete dynamic users

  Select the option from the Status drop-down box to manage dynamic users

- Enable: enables a specific dynamic user and allows the user to access
- Disable: disables a specific dynamic user and prohibits the user access
- Delete: deletes a specific dynamic user and removes the user information from the database



Dynamic user entries

| User ID | User name | Password | Status | |
|---|---|---|---|---|
| 1 | madge | ****** | enable | apply |

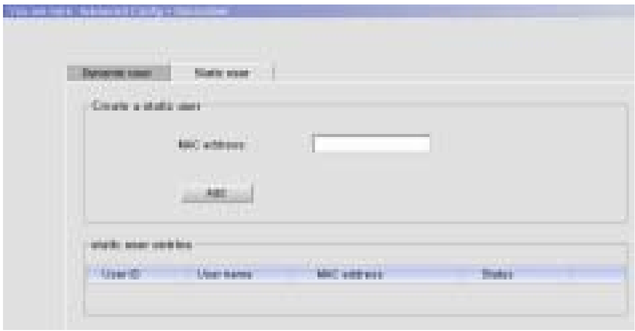
## Static Users

### Access Method:

Click the “Advanced Config/Subscriber” link on the left panel, choose “Static user”

### Configuration Interface:

**Figure 30** Static User Configuration Interface



| User ID | User name | MAC address | Status |
|---|---|---|---|

**Configuration Description:**

Detailed Instructions:

- Add a new static user

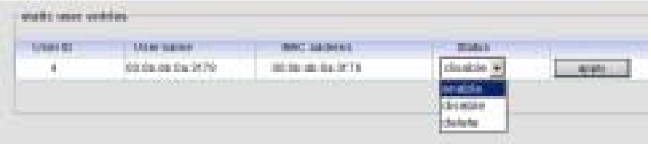
Enter static user’s PC MAC address, and then click <Add>. A new user entry will be added in the table as shown below. User ID is automatically generated. User name is identical to MAC address

- Enable or disable static users

Select the option from the Status drop-down box to manage static users

  - Enable: enables a specific static user and allows the user to access

- Disable: disables a specific static user and prohibits the user access
- Delete: deletes a specific static user and removes the user information from the database



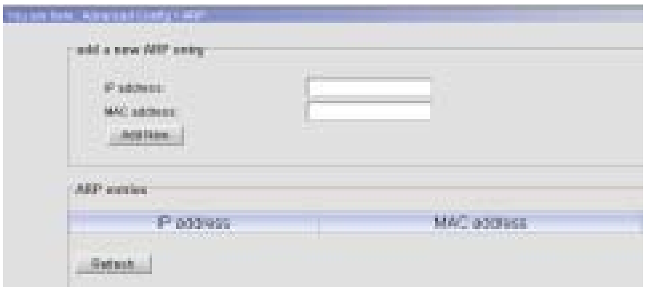
## ARP Management

**Access Method:**

Click the “Advance Config/ARP” link on the left panel

**Configuration Interface:**

**Figure 31** ARP Configuration Interface



**Configuration Description:**

Refer to the detailed instructions given below to speed up AP data transmission through configure the static ARP table.

- Add a new ARP entry

Enter IP address, MAC address, and then click <Add New>

- Remove ARP

Click <Remove> to delete one ARP entry

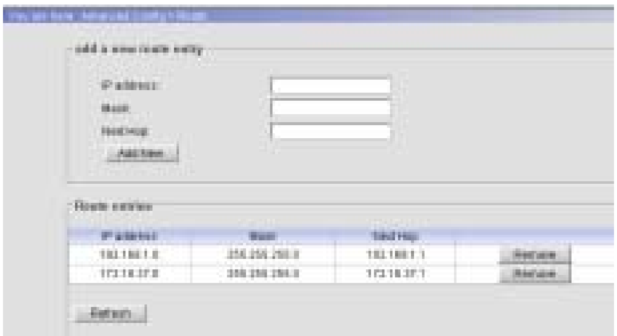
## Route Configuration

**Access Method:**

Click the “Advanced Config/Route” link on the left panel

**Configuration Interface:**

**Figure 32** Route Configuration Interface



| IP address | Mask | Next Hop | |
|---|---|---|---|
| 192.168.1.0 | 255.255.255.0 | 192.168.1.1 | Remove |
| 172.16.37.0 | 255.255.255.0 | 172.16.37.1 | Remove |

**Interface Description:**

**Figure 33** Table 5-1 Route Configuration Interface Spec

| Field | Description |
|---|---|
| IP address | Route’s beginning IP address |
| Mask | Route’s beginning Subnet mask |
| Next Hop | Route’s next hop address |

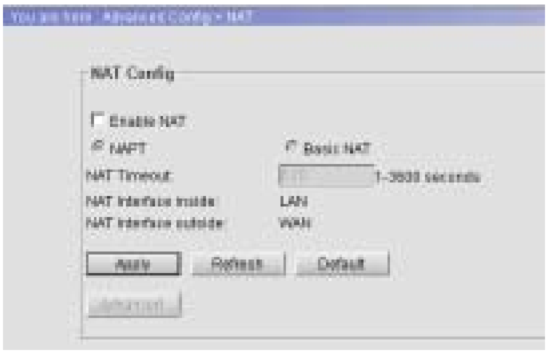
## NAT Configuration

**Access Method:**

Click the “Advanced Config/NAT” link on the left panel

**Configuration Interface:**

**Figure 34** NAT Configuration Interface



You are here : Advanced Config > NAT

NAT Config

☐ Enable NAT

● NAPT ○ Basic NAT

NAT Timeout: [illegible] 1-3600 seconds

NAT Interface inside: LAN

NAT Interface outside: WAN

**Interface Description:**

**Figure 35** Table 5-2 NAT Configuration Specification

| Field | Description | Default Value |
|---|---|---|
| Enable NAT | Enable or Disable NAT | Disable |
| NAT Mode | Two NAT modes are available after enable NAT, NAPT mode and Basic NAT mode | NAPT |
| NAT Timeout | NAT timeout options: 1-3600 seconds | 120 |
| NAT Interface inside | NAT Interface inside | LAN Port |
| NAT Interface outside | NAT Interface outside | WAN port |

**Configuration Description:**

When NAT is enabled, select NAPT mode. Click <Apply> to apply the configuration and click <Advanced> to take effect. For more details, refer to the section 5.11.1 to configure the IP address based mapping and port based mapping.

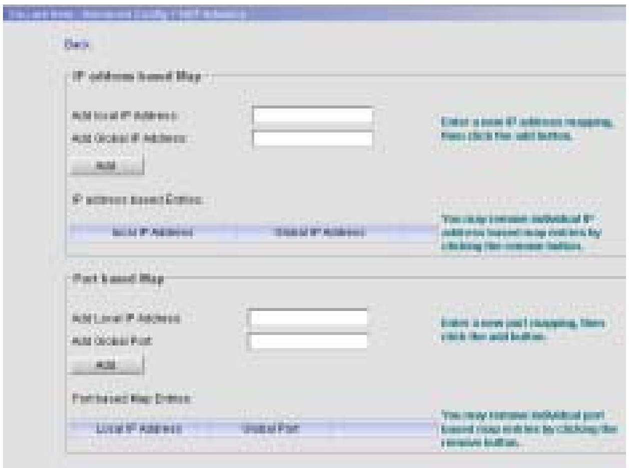
When NAT is enabled, select Basic mode. Click <Apply> to apply the configuration and click <Advanced> to take effect. User should configure the link between “NAT Pool” and “NAT Static Map” based on port.

## NAPT Mode

**Access Method:**

Click the “Advanced Config/NAT Advance” link, then click “NAT” on the left and click “NAT Pool” on the right

**Configuration Interface:**



You are here: Advanced Config / NAT Advance

Back

IP address based Map

Add Local IP Address:

Add Global IP Address:

Enter a new IP address mapping, then click the add button.

IP address based Entries:

| Local IP Address | Global IP Address |
|---|---|

You may remove individual IP address based map entries by clicking the remove button.

Port based Map

Add Local IP Address:

Add Global Port:

Enter a new port mapping, then click the add button.

Port based Map Entries:

| Local IP Address | Global Port |
|---|---|

You may remove individual port based map entries by clicking the remove button.

**Configuration Description:**

Detailed Instructions:

- Add a port based MAP

  Input the values in the “Add Local IP Address”, “Add Global Port” fields, click <Add>

- Delete a port based MAP

  Press <Remove> to delete a port based MAP

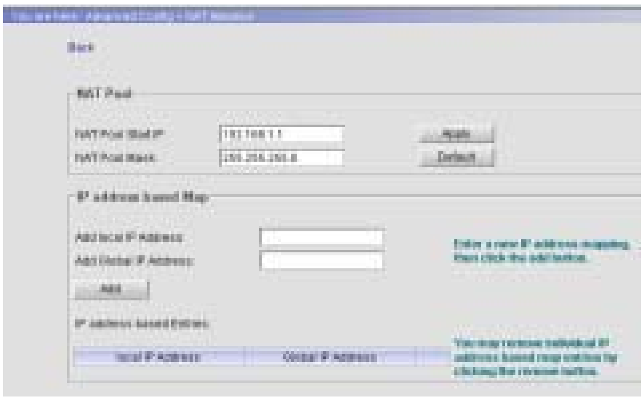
## Basic NAT Mode

### Access Method:

Click the “Advanced Config/NAT Advance” link, then click “NAT” link on the left, click “NAT Static Map” link on the right

### Configuration Interface:

**Figure 36** NAT Static MAP Configuration Interface



You are here: Advanced Config > NAT Advance

NAT Pool Start IP: 192.168.1.1

NAT Pool Mask: 255.255.255.0

Enter a new IP address mapping, then click the add button.

You may remove individual IP address based map entries by clicking the remove button.

| Local IP Address | Global IP Address |
|---|---|

### Configuration Description:

Detailed Instructions:

- Change NAT address pool

  Input the values in the “NAT Pool Start IP” and “NAT Pool Mask” fields, and then click <Apply>

- Add new IP Address based static MAP

  Input the values in the “Add local IP Address” and “Add Global IP Address” fields, then click <Add>

- Delete static MAP

  Click <Remove> to delete a static MAP

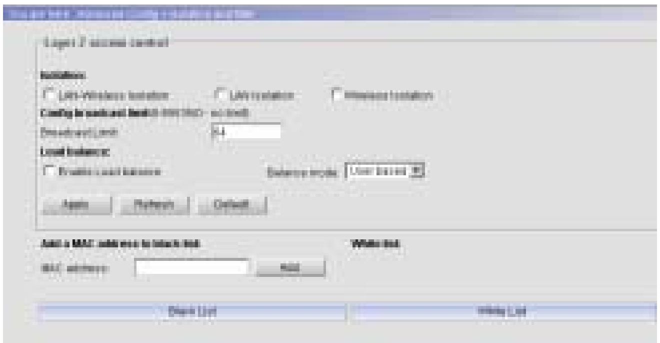
## Isolation&filter Configuration

**Access Method:**

Click the “Advanced/MAC Filter” link on the left panel

**Configuration Interface:**

**Figure 37** Isolation&filter Configuration Interface



Layer 2 access control

Isolation:

○ LAN-Wireless Isolation ○ LAN Isolation ○ Wireless Isolation

Config broadcast limit(0-65535 - second)

Broadcast Limit: 64

Load balance:

□ Enable Load balance Balance mode: User based

Add a MAC address to black list: White list

MAC address:

**Interface Description:**

**Table 13** MAC Filter Configuration Specification

| Field | Description | Default Value |
|---|---|---|
| Isolation:<br>-LAN-Wireless Isolation<br>-LAN Isolation<br>-Wireless Isolation | 3 types of isolations:<br>LAN-wireless isolation<br>LAN isolation<br>Wireless Isolation | Disable Isolation |
| Config broadcast limit | Broadcast limit options: 0-65535。 | 64 |

| Field | Description | Default Value |
|---|---|---|
| Load balance | Two modes of Load Balance:<br>User based – based on the number of AP's users<br>Flux based – based on AP's throughput | Disable |
| Add a MAC address to black List | MAC address black list. The clients in the black list are not allowed to access AP | |
| White list | MAC address white list. The clients in the white list are allowed to access AP | |

**Configuration Description:**

To prevent unauthorized access, or to fulfill the network design and unnecessary or prohibited MAC address into black list. When 802.1x authentication configuration adds a new static user and the status is enabled, this user will be added into white list automatically. These users do not require authentication to access AP

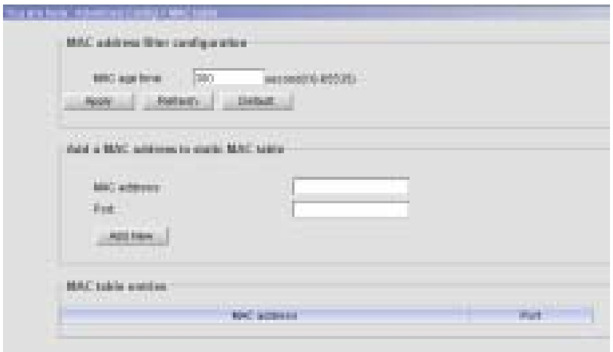
## MAC Management

**Access Method:**

Click the "Advance Config/MAC table" link on the left panel

**Configuration Interface:**

**Figure 38** MAC Table Configuration Interface



MAC address filter configuration

MAC age time: 300 second(10-65535)

Add a MAC address to static MAC table

MAC address:

Port:

MAC table entries

| MAC address | Port |
|---|---|

**Configuration Description:**

Detailed Instructions:

- MAC Age time:

- Value range: 10-65535

- Default value: 300 seconds

- Add a MAC address to static MAC table:

- MAC address: input format: 00:03:7F:BF:08:80

- Port: Originated port number of the transferred data

- Click <Add New>

- Remove MAC address: click <Remove>

# 6 Web-based System Configuration

This chapter primarily covers the following:

- Viewing System Information
- Changing Password
- Managing File System
- Debug Configuration

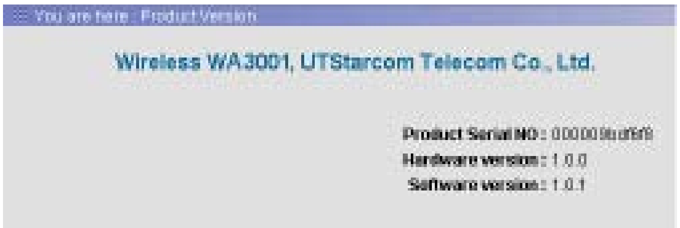
## Viewing System Information

**Access Method:**

Click “System Config/System” on the left panel.

**Configuration Interface:**

**Figure 39** System Information



You are here : Product Version

Wireless WA3001, UTStarcom Telecom Co., Ltd.

Product Serial NO : 000096d6f9
Hardware version : 1.0.0
Software version : 1.0.1

**Description:**

The system information includes the following fields:

- Product Serial No.
- Hardware version
- Software version

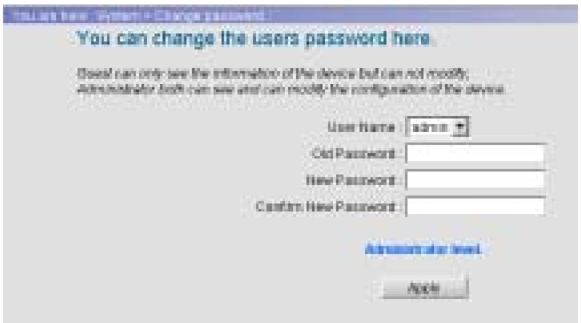
## Changing Password

**Access Method:**

Click “System Config/Change Password” on the left panel.

**Configuration Interface:**

**Figure 40** Change Password



You are here: System > Change password

You can change the users password here.

Guest can only see the information of the device but can not modify, Administrator both can see and can modify the configuration of the device.

User Name : admin

Old Password :

New Password :

Confirm New Password :

**Description:**

Two types of users can log into the system: admin and guest.

An “admin” has the privilege to perform all operations to the device, including information browse, configuration and modification and so on; while a “guest” only has the privilege to browse information.

An “admin” can modify passwords for all users in the system; while a “guest” can only modify his own password.

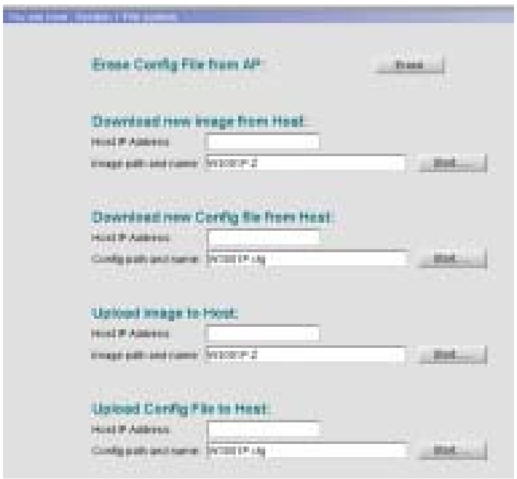
## Managing File System

**Access Method:**

Click “System Config/File System” on the left panel.

**Configuration Interface:**

**Figure 41** File System



You are here : System / File System

Erase Config File from AP

Download new Image from Host:

Host IP Address

Image path and name [illegible]

Download new Config file from Host:

Host IP Address

Config path and name [illegible]

Upload Image to Host:

Host IP Address

Image path and name [illegible]

Upload Config File to Host:

Host IP Address

Config path and name [illegible]

**Description:**

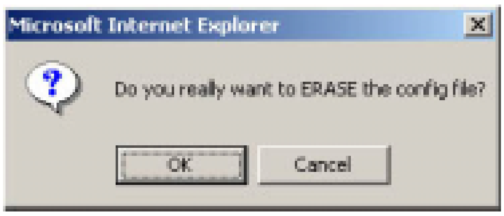
**Table 14** File System Window Description

| Fields | Description |
|---|---|
| Erase Config File from AP | Erases the current configuration file from the AP. |
| Download new image from Host | Downloads a new image (VxWorks.Z) from a host. |
| Download new Config file from Host | Downloads a new configuration file from host. |
| Upload image to Host | Uploads an image to a host |
| Upload Config File to Host | Uploads a configuration file to a host. |

**Description:**

Click <Erase> to erase the current configuration file from the AP; a dialog box will appear as shown in Figure 42. Click <OK> and a message box will appear as shown in Figure 43. It prompts the rebooting device and initiates the configuration erase.

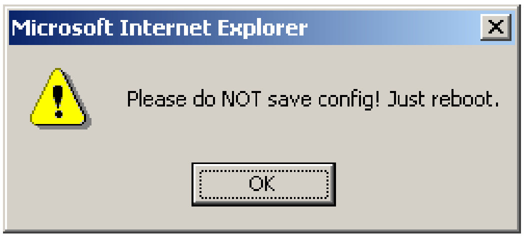
**Figure 42** Confirm Configuration File Erase



Microsoft Internet Explorer

Do you really want to ERASE the config file?

**Figure 43** Initiating Configuration File Erase Message



Microsoft Internet Explorer

Please do NOT save config! Just reboot.

Click <OK> to confirm the erasing; click <Reboot> to reboot the system and initiate the configuration. Do not click <Save> on the left to save the configuration.

For system file (including image and configuration file) management, specify the host IP address and the system file path and file name. Currently, the configuration file only supports TXT format.

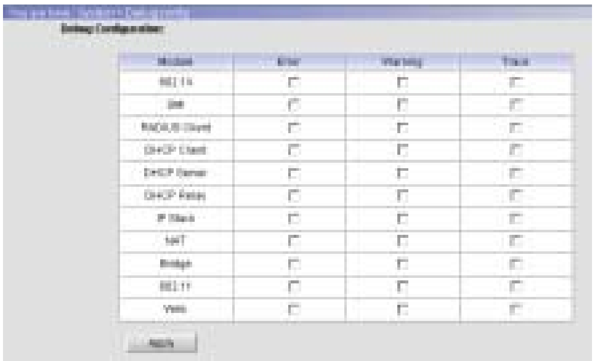
## Debug Configuration

**Access Method:**

Click “System Config/Debug Config” on the left panel.

**Configuration Interface:**

**Figure 44** Debug Configuration



Debug Configuration:

| Module | Error | Warning | Trace |
|---|---|---|---|
| 802.1X | □ | □ | □ |
| SMI | □ | □ | □ |
| RADIUS Client | □ | □ | □ |
| DHCP Client | □ | □ | □ |
| DHCP Server | □ | □ | □ |
| DHCP Relay | □ | □ | □ |
| IP Stack | □ | □ | □ |
| NAT | □ | □ | □ |
| Bridge | □ | □ | □ |
| 802.11 | □ | □ | □ |
| Web | □ | □ | □ |

**Description:**

Through debug configuration, the user can view the following information via CLI and SNMP:

Configurable items are: 802.1X, SMI, RADIUS Client, DHCP Client, DHCP Server, DHCP Relay, IP Stack, NAT, Bridge, 802.1 and Web.

Configurable types are: Error, Warning and Trace.

# 7 Performance Statistics

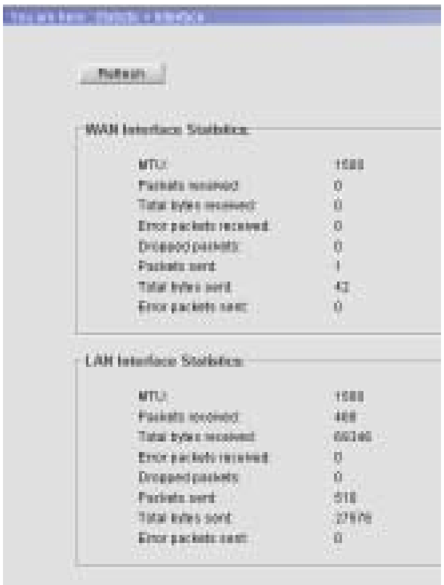
## Interface Statistics

**Access Method:**

Click “Statistic/Interface” on the left panel.

**Configuration Interface:**

**Figure 45** Interface Statistics



WAN Interface Statistics:

| | |
|---|---|
| MTU: | 1500 |
| Packets received: | 0 |
| Total bytes received: | 0 |
| Error packets received: | 0 |
| Dropped packets: | 0 |
| Packets sent: | 1 |
| Total bytes sent: | 42 |
| Error packets sent: | 0 |

LAN Interface Statistics:

| | |
|---|---|
| MTU: | 1500 |
| Packets received: | 468 |
| Total bytes received: | 66346 |
| Error packets received: | 0 |
| Dropped packets: | 0 |
| Packets sent: | 518 |
| Total bytes sent: | 27676 |
| Error packets sent: | 0 |

**Table 15** Interface Statistics Window Description

| Fields | Description |
|---|---|
| WAN/LAN Interface Description | |
| MTU (Maximum Transmission Unit) | Packets in MS are based on Ethernet standards. The MTU value is 1500. |
| Packets received | Number of packets received via the WAN/LAN interface. |

| Fields | Description |
|---|---|
| Total bytes received | Total number of bytes received via the WAN/LAN interface. |
| Error packets received | Number of error packets received via the WAN/LAN interface. |
| Dropped packets | Number of packets dropped by the WAN/LAN interface. |
| Packets sent | Number of packets sent from the WAN/LAN interface. |
| Total bytes sent | Number of bytes sent from the WAN/LAN interface. |
| Error bytes sent | Number of error bytes sent from the WAN/LAN interface. |
| Button | |
| Refresh | Click this button to retrieve the latest statistics of the system. |

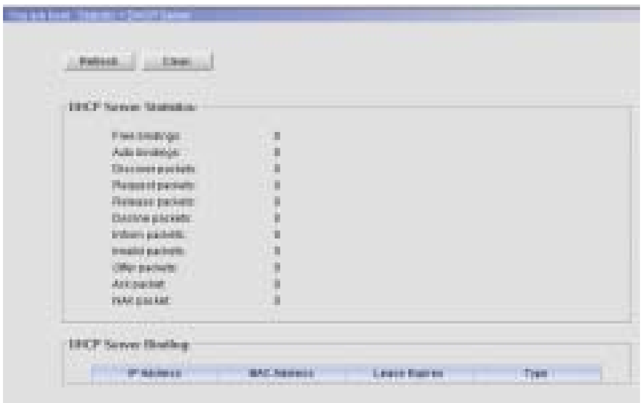
## DHCP Server Statistics

**Access Method:**

Click “Statistic/DHCP Server” on the left panel.

**Configuration Interface:**

**Figure 46** DHCP Server Statistics



DHCP Server Statistics

Free bindings: 0
Auto bindings: 0
Discover packets: 0
Request packets: 0
Release packets: 0
Decline packets: 0
Inform packets: 0
Invalid packets: 0
Offer packets: 0
Ack packet: 0
NAK packet: 0

DHCP Server Binding

| IP Address | MAC Address | Lease Expires | Type |
|---|---|---|---|

**Description:**

**Table 16** DHCP Server Statistics Window Description

| Fields | Description |
|---|---|
| DHCP Server Statistics | |
| Free bindings | Number of Free Binding IP addresses provided by the DHCP server. |
| Auto bindings | Number of Auto Binding IP addresses. |
| Discover packets | Number of Discovery packets received from the DHCP workstation by the DHCP server during the discovery period. |
| Request packets | Number of Request packets received from the DHCP workstation by the DHCP server during the selection period. |

| Fields | Description |
|---|---|
| Decline packets | Number of Decline packets received from the DHCP workstation by the DHCP server during the selection period. |
| Inform packets | Number of Inform packets of configuration information request sent from the DHCP workstation to the DHCP server. |
| Invalid packets | Number of invalid communication packets between the DHCP workstation and the DHCP server. |
| Offer packets | Number of Offer packets sent from the DHCP server to the DHCP workstation during the offer period. |
| Ack packets | Number of Ack packets sent from the DHCP server to the DHCP workstation during the acknowledge period. |
| NAK packets | Number of NAK (negative acknowledgement) packets sent from the DHCP server to the DHCP workstation during the acknowledge period. |
| DHCP Server Bindings | |
| IP Address | IP address bound to a MAC address in the DHCP server. |
| MAC Address | MAC address bound to an IP address in the DHCP server. |
| Lease Expires | The lease expiration time of the bound address. |
| Type | Type of bound address, e.g. Manual, Auto |
| Buttons | |
| Refresh | Click this button to retrieve the latest statistics of the system. |

| Fields | Description |
|---|---|
| Clean | Click this button to clean the statistics of the system. |

**Theory:**

DHCP service operation theory:

The communication method between the DHCP workstation and server is depending upon whether it is the first time that the DHCP workstation logs into the network. Consider the following situation as an example when the DHCP workstation logs into the network for the first time:

The first period is a discovery period when the DHCP workstation discovers DHCP servers. The DHCP workstation broadcasts the “dhcp discover” messages to search DHCP servers (DHCP server IP address is not known), i.e., the DHCP workstation sends specific broadcast information to 255.255.255.255. Every host installed with TCP/IP protocol on the network will receive such broadcast information. Only DHCP servers will respond to this broadcast information.

The second period is an offer period when DHCP servers offer the IP address. DHCP servers will respond when they receive the “dhcp discover” message and assign an unleased IP address to the DHCP workstation. Then send the DHCP workstation the “dhcp offer” message, which includes the IP address to be leased and other configuration.

The third period is a selection period when the DHCP workstation selects the IP address offered by one DHCP server. If multiple DHCP servers send “dhcp offer” messages to the DHCP workstation, the DHCP workstation will accept only the first received “dhcp offer” message, and broadcast one “dhcp request” message as response, which includes the selected DHCP server request IP address. The workstation broadcasts the “dhcp request” message in order to inform all DHCP servers that it has selected the IP address offered by one DHCP server.

The fourth period is an acknowledge period when the DHCP server acknowledges the offered IP address. When the DHCP server receives the “dhcp request” message responded by the DHCP workstation, it will send the DHCP workstation a “dhcp ack” message which includes the offered IP address and other configurations, informing the DHCP workstation to use the offered IP address. The DHCP workstation will then bind the TCP/IP protocol to the network card. All other DHCP servers except the selected server will take back their offered IP addresses.

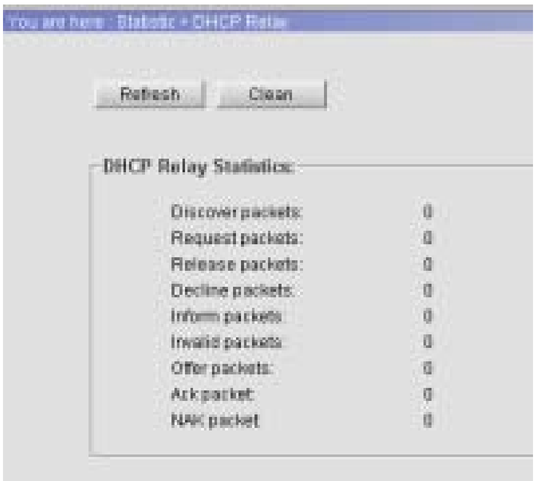
## DHCP Relay Statistics

**Access Method:**

Click “Statistic/DHCP Relay” on the left panel.

**Configuration Interface:**

**Figure 47** DHCP Relay Statistics



You are here : Statistic » DHCP Relay

DHCP Relay Statistics:

```
Discover packets:    0
Request packets:     0
Release packets:     0
Decline packets:     0
Inform packets:      0
Invalid packets:     0
Offer packets:       0
Ack packet:          0
NAK packet           0
```

**Description:**

**Table 17** DHCP Relay Statistics Window Description

| Fields | Description |
|---|---|
| DHCP Relay Statistics | |
| Discover packets | Number of Discover packets sent from the DHCP workstation to the DHCP server via the AP during the discovery period. |
| Request packets | Number of Request packets sent from the DHCP workstation to the DHCP server via the AP during the selection period. |

| Fields | Description |
|---|---|
| Release packets | Number of Release packets initiated by the DHCP workstation, and forwarded by the AP to the DHCP server, releasing IP addresses used by DHCP workstation. |
| Decline packets | Number of Decline packets sent from the DHCP workstation to the DHCP server via the AP to decline IP address Offer response(s) from DHCP server(s). |
| Inform packets | Number of Inform packets sent from the DHCP workstation to the DHCP server via the AP. |
| Offer packets | Number of Offer packets sent from the DHCP server to the DHCP workstation via the AP during the Offer period. |
| Ack packets | Number of Ack packets sent from the DHCP server to the DHCP workstation via the AP during the acknowledge period. |
| NAK packets | Number of NAK packets sent from the DHCP server to the DHCP workstation via the AP during the acknowledge period. |
| Buttons | |
| Refresh | Click this button to retrieve the latest statistics of the system. |
| Clean | Click this button to clean the statistics of the system. |

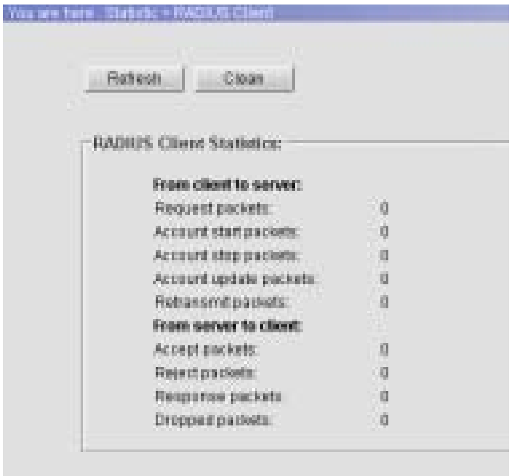
## RADIUS Client Statistics

**Access Method:**

Click “Statistic/RADIUS Client” on the left panel.

**Configuration Interface:**

**Figure 48** RADIUS Client Statistics



RADIUS Client Statistics:

**From client to server:**

| | |
|---|---|
| Request packets: | 0 |
| Account start packets: | 0 |
| Account stop packets: | 0 |
| Account update packets: | 0 |
| Retransmit packets: | 0 |

**From server to client:**

| | |
|---|---|
| Accept packets: | 0 |
| Reject packets: | 0 |
| Response packets: | 0 |
| Dropped packets: | 0 |

**Description:**

**Table 18** RADIUS Client Statistics Window Description

| Fields | Description |
|---|---|
| From client to server | |
| Request packets | Number of Request packets sent by the RADIUS Client. |
| Account start packets | Number of Account Start packets sent by the RADIUS Client. |
| Account stop packets | Number of Account Stop packets sent by the RADIUS Client. |

| Fields | Description |
|---|---|
| Account update packets | Number of Account Update packets sent by the RADIUS Client. |
| Retransmit packets | Number of retransmitted packets sent by the RADIUS Client. |
| From server to client | |
| Accept packets | Number of Accept packets received by the RADIUS Client. |
| Reject packets | Number of Reject packets received by the RADIUS Client. |
| Response packets | Number of Response packets received by the RADIUS Client. |
| Dropped packets | Number of Dropped packets received by the RADIUS Client. |
| Buttons | |
| Refresh | Click this button to retrieve the latest statistics of the system. |
| Clean | Click this button to clean the statistics of the system. |

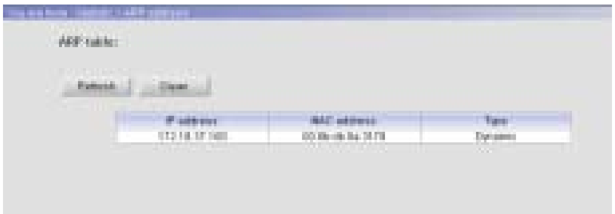
## ARP Table

**Access Method:**

Click “Statistic/ARP” on the left panel.

**Configuration Interface:**

**Figure 49** ARP Table



ARP table:

| IP address | MAC address | Type |
|---|---|---|
| [illegible] | [illegible] | Dynamic |

**Description:**

The ARP table fields include IP address, MAC address and ARP table obtaining type. The type can be “dynamic” or “static”. The obtaining type is dynamic only when the ARP entry is learnt during the AP packet forwarding period. The obtaining type is static only when the ARP entry is added manually.

To prevent the ARP table information from aging, click <Clean> to maintain the table.

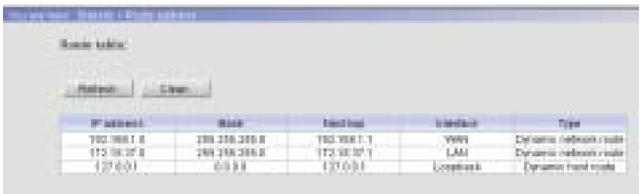
## Route Table

**Access Method:**

Click “Statistic/Route” on the left panel.

**Configuration Interface:**

**Figure 50** Route Table



Route table

| IP address | Mask | Next hop | Interface | Type |
|---|---|---|---|---|
| 192.168.1.0 | 255.255.255.0 | 192.168.1.1 | WAN | Dynamic network route |
| 172.16.37.0 | 255.255.255.0 | 172.16.37.1 | LAN | Dynamic network route |
| 127.0.0.1 | 0.0.0.0 | 127.0.0.1 | Loopback | Dynamic host route |

**Description:**

The ARP table information in the AP includes the following fields:

IP address and mask: The destination network segment and its subnet mask for the route.

Next hop: The IP address of the next hop router’s ingress.

Interface: The egress on the AP from which the route reaches the destination router.

Type: Dynamic network route or dynamic host route.

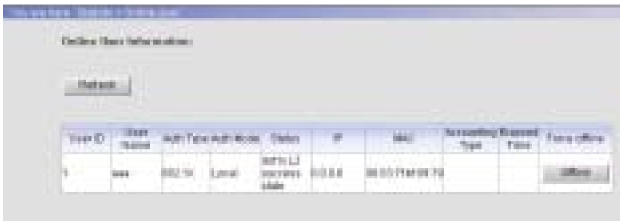
## Online User Information

**Access Method:**

Click “Statistic/Online user” on the left panel.

**Configuration Interface:**

**Figure 51** Online User Information



Online User Information:

Refresh

| User ID | User Name | Auth Type | Auth Mode | Status | IP | MAC | Accounting Type | Elapsed Time | Force offline |
|---|---|---|---|---|---|---|---|---|---|
| 1 | aaa | 802.1x | Local | [illegible] | 0.0.0.0 | [illegible] | | | Offline |

**Description:**

**Table 19** Online User Information Window Description

| Fields | Description |
|---|---|
| User ID | It is a unique ID automatically generated by the system when adding a new user. |
| User Name | The name of the online user. |
| Auth Type | The authentication type for the online user. |
| Auth Mode | The authentication mode for the online user. |
| Status | The status of the online user. |
| IP | The IP address assigned to the online user. |
| MAC | The MAC address of the online user. |
| Accounting Type | Accounting type for the online user. |
| Elapsed Time | The total elapsed online time. |
| Force Offline | Click this button to force the user offline. |

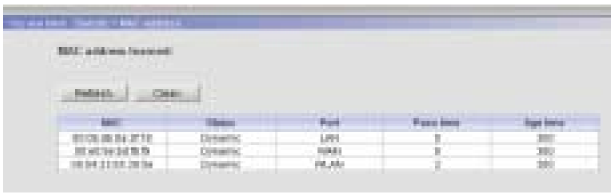
## MAC Address

**Access Method:**

Click “Statistic/MAC address” on the left panel.

**Configuration Interface:**

**Figure 52** MAC Address



MAC address learned:

| MAC | Status | Port | Pass time | Age time |
|---|---|---|---|---|
| [illegible] | Dynamic | LAN | 0 | 300 |
| [illegible] | Dynamic | WAN | 0 | 300 |
| [illegible] | Dynamic | WLAN | 2 | 300 |

**Description:**

The MAC address information includes the following fields:

MAC address, learning type, forwarding port (WAN port or LAN port), pass time and age time (aging time for the MAC address).

For example:

The pass time in the first line of the window shown in **錯誤! 找不到參照來源。** is 0, which means the MAC address is connected to the AP all the time.

In the third line, the age time for the MAC address “00:04:23:85:39:5e” is 300 seconds, the pass time is 2 seconds, then the remaining life time for this MAC address is 298 seconds.

# 8 Web-based Configuration Examples

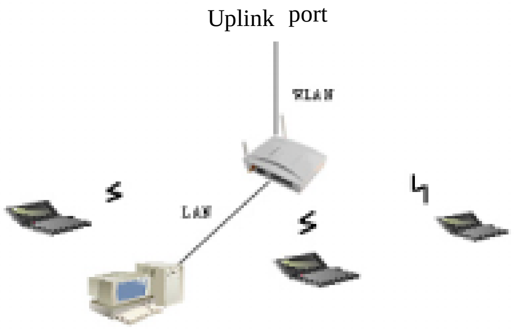
## AP in Bridge Mode

**Objective:**

To establish a wireless network to provide wireless access for subscribers. The AP works only as a bridge. Data is transmitted between the AP and clients by WEP encryption.

**Network Topology:**

**Figure 53** Network Topology



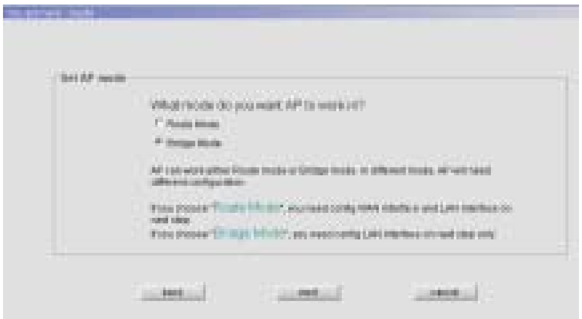
**Detailed Instructions:**

1. After completing the hardware installation, launch the WEB configuration interface.

   - According to the above network topology, use a network cable (straight-through or crossover) to connect the PC and the AP's LAN interface. Set the PC IP address as 172.18.37.X/255.255.255.0. The default IP address of the AP LAN interface is 172.18.37.1
   - Input http://172.18.37.1 in the PC browser. Use "admin" for both username and password to log in to the system

2. Set the AP in Bridge mode.

   - Click **Guide** to display the "Set AP Mode" window as shown below. The default mode is Bridge mode.



Set AP mode

What mode do you want AP to work in?

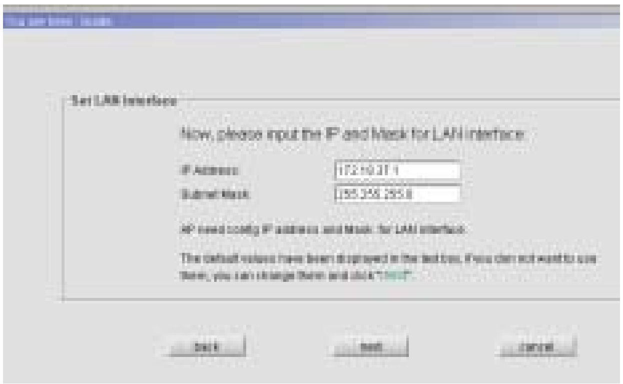
○ Route Mode

● Bridge Mode

AP can work either Route mode or Bridge mode. In different mode, AP will need different configuration.

If you choose "Route Mode", you need config WAN interface and LAN interface on next step.
If you choose "Bridge Mode", you need config LAN interface on next step only.

   - Click <Next> to display the "Set LAN Interface" window as shown below:



You are here : Guide

Set LAN Interface

Now, please input the IP and Mask for LAN interface

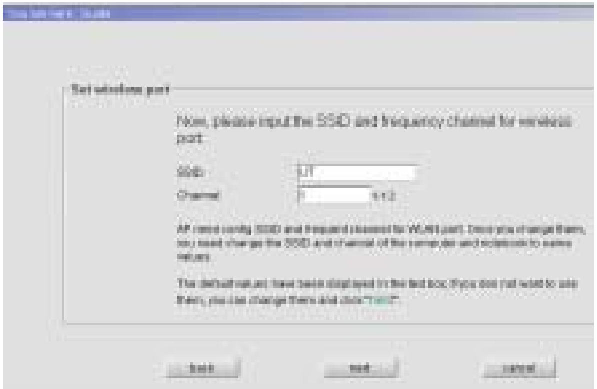
IP Address: 172.10.37.1

Subnet Mask: 255.255.255.0

AP need config IP address and Mask for LAN interface.

The default values have been displayed in the text box. If you don't want to use them, you can change them and click "next".

- Configure the IP address for the LAN interface. Click <Next> to display the “Set Wireless Port” window as shown below:



You are here : Guide

Set wireless port

Now, please input the SSID and frequency channel for wireless port:

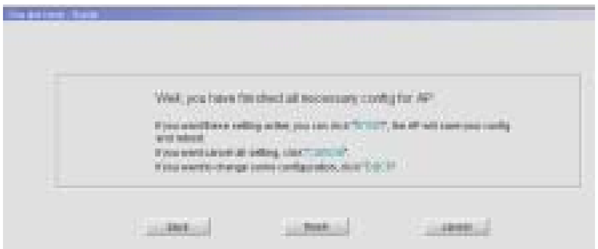
SSID: U7

Channel: 1 (1-13)

AP need config SSID and frequency channel for WLAN port. Once you change them, you need change the SSID and channel of the computer and notebook to same values.

The default values have been displayed in the text box. If you don't want to use them, you can change them and click "next".

- Configure the SSID for the WLAN port and select a channel. Default value can also be used. Click <Next> to display the window as shown below:



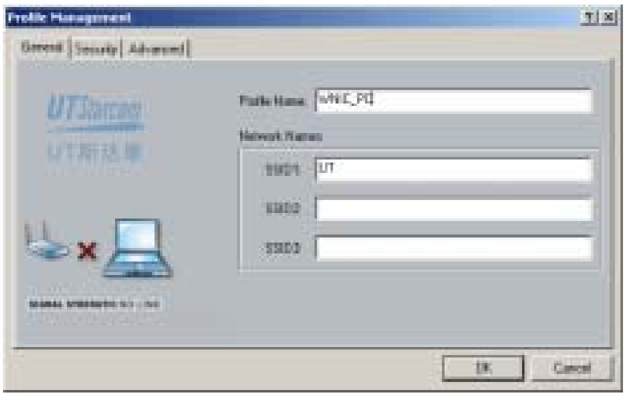
Well, you have finished all necessary config for AP

If you want/have setting active, you can click "finish", the AP will save your config and reboot.
If you want cancel all setting, click "Cancel"
If you want to change some configuration, click "Back"

- Click <finish>, and the AP will reboot. After the rebooting is complete, the configuration will be valid

3. Configure the WNIC SSID to enable the communication with the AP.

- Set the same SSID in WNIC Window IE as in AP



Profile Management

Profile Name: WNIC_PC

Network Names

SSID1: UT

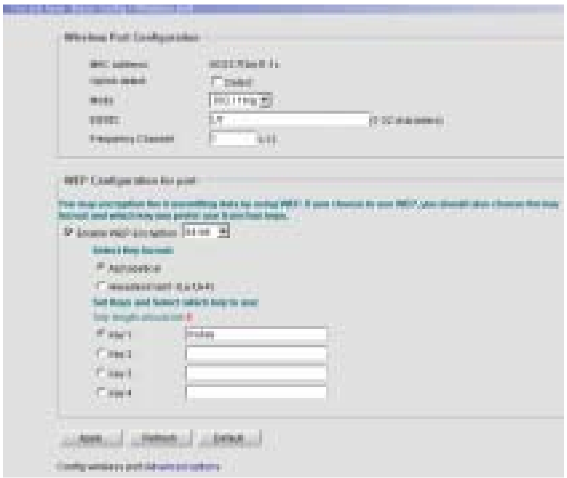
SSID2:

SSID3:

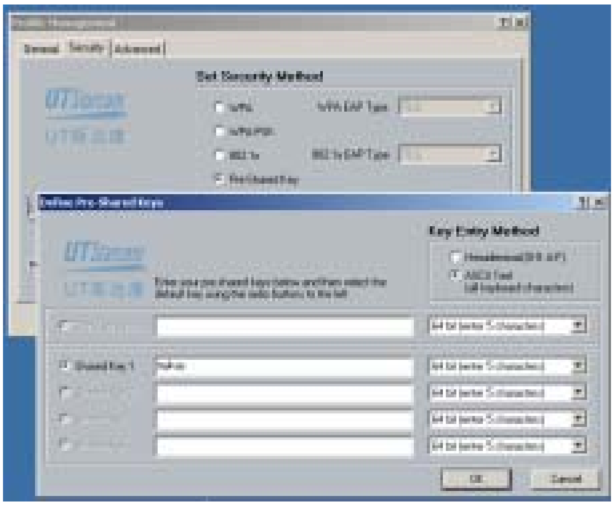
- Now the AP can communicate with the PC

4. Set the WEP encryption between the AP and Client WNIC.

- Click "Basic Config/Wireless Port" to display the window as shown below; enable WEP encryption with 64-bit, select "Alphabetical" key format and enter "mykey" as the key1 value



- Click <Apply>. The system will prompt the user to save the configuration, and then reboot the AP to initiate the configuration
- Set "mykey" as the WEP value in WNIC Windows IE



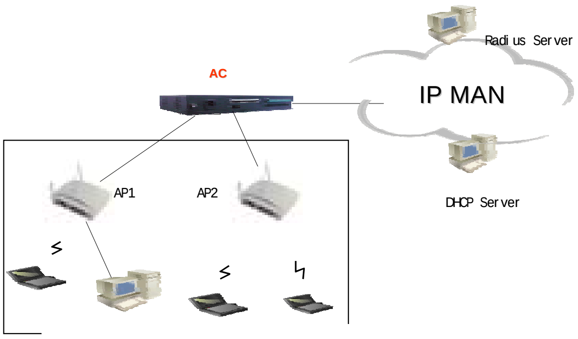
## AP in Router Mode (Case 1)

**Objective**:

To establish a medium-scale network for a company, where the AP acts as an authenticator, AC as an authentication agent and the remote server as RADIUS authentication and accounting server.

The AP obtains the IP address via the remote DHCP server. The AP will use NAT (Network Address Translation) for management when it works as a DHCP relay. Configure two dynamic subscribers and one static subscriber

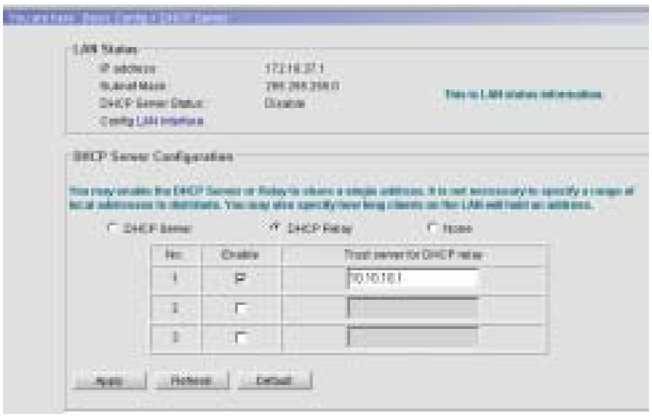
**Network Topology:**



Commercial Building

**Detailed Instructions:** (Consider AP1 as an example)

5. Click “Basic/DHCP Server” to display the “DHCP Server” window. Enable “DHCP Relay” and configure the trust server for DHCP relay.



You are here: Basic Config > DHCP Server

LAN Status

IP address: 172.16.37.1
Subnet Mask: 255.255.255.0
DHCP Server Status: Disable
Config LAN Interface

This is LAN status information.

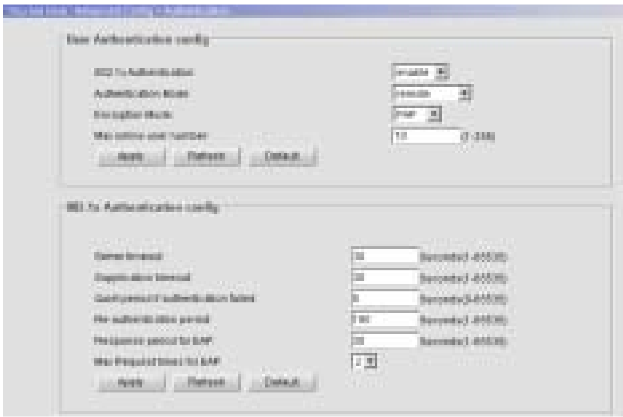
DHCP Server Configuration

You may enable the DHCP Server or Relay to share a single address. It is not necessary to specify a range of local addresses to distribute. You may also specify how long clients on the LAN will hold an address.

○ DHCP Server ● DHCP Relay ○ None

| No. | Enable | Trust server for DHCP relay |
|---|---|---|
| 1 | ☑ | 10.10.10.1 |
| 2 | ☐ | |
| 3 | ☐ | |

6. Configure 802.1x authentication. Click “Advanced Config/Authentication” to display the “Authentication” window. Enable 802.1x authentication, set the authentication mode to “remote” and set the maximum number of online users to “10”.



User Authentication config

802.1x Authentication: enable
Authentication Mode: [illegible]
Encryption Mode: PAP
Max online user number: 10 (1-256)

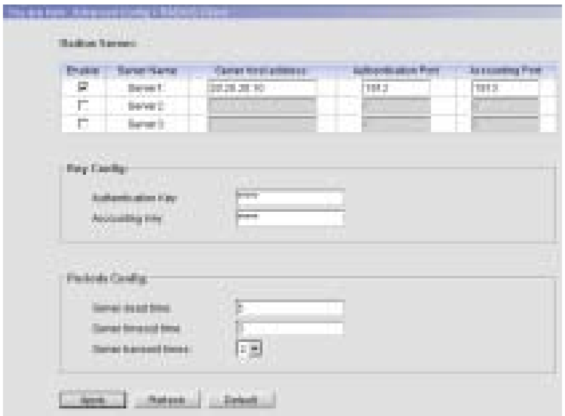
Apply | Refresh | Default

802.1x Authentication config

Server timeout: 30 Seconds(1-65535)
Supplication timeout: 30 Seconds(1-65535)
Quiet period if authentication failed: [illegible] Seconds(0-65535)
Re-authentication period: [illegible] Seconds(1-65535)
Response period for EAP: [illegible] Seconds(1-65535)
Max Request times for EAP: 2

Apply | Refresh | Default

7. Click “Advanced Config/RADIUS Client” to display the “RADIUS Client” window. Configure the RADIUS server and its parameters.



Radius Server:

| Enable | Server Name | Server host address | Authentication Port | Accounting Port |
|---|---|---|---|---|
| ☑ | Server1 | [illegible] | 1812 | 1813 |
| ☐ | Server2 | | | |
| ☐ | Server3 | | | |

Key Config

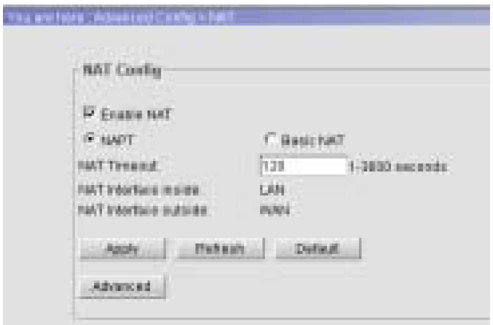
Authentication Key: [illegible]
Accounting Key: [illegible]

Protocols Config

Server dead time: [illegible]
Server timeout time: [illegible]
Server transmit times: [illegible]

Apply | Refresh | Default

8. Click “Advanced Config/NAT” to display the “NAT” window. Enable NAT and perform advanced NAT configuration.



You are here : Advanced Config > NAT

NAT Config

☑ Enable NAT

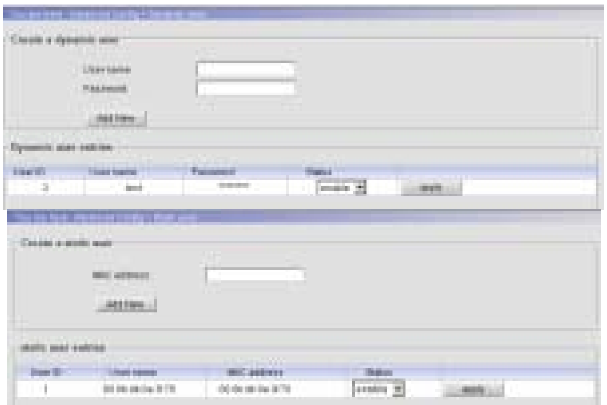
● NAPT ○ Basic NAT

NAT Timeout: 120 1-3600 seconds

NAT Interface inside: LAN

NAT Interface outside: WAN

9. Click “Advanced Config/Subscriber” to add dynamic subscribers and static subscribers.



Create a dynamic user

User name

Password

Dynamic user entries

| User ID | User name | Password | Status |
|---|---|---|---|
| 2 | test | ****** | enable |

Create a static user

MAC address

static user entries

| User ID | User name | MAC address | Status |
|---|---|---|---|
| 1 | [illegible] | [illegible] | enable |

## AP in Router Mode (Case 2)

**Objective**:

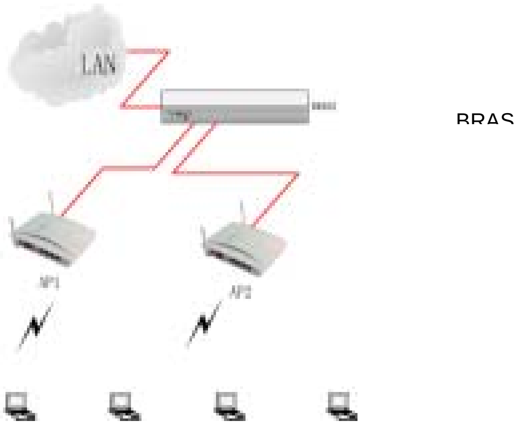
To establish a small-scale network for a company with low investment and strong functionality. The number of subscribers is no more than 20.

The BRAS (Broadband Remote Access Server) aggregates the authentication and accounting information. Enable NAT and PPPoE server.

AP1 and AP2:

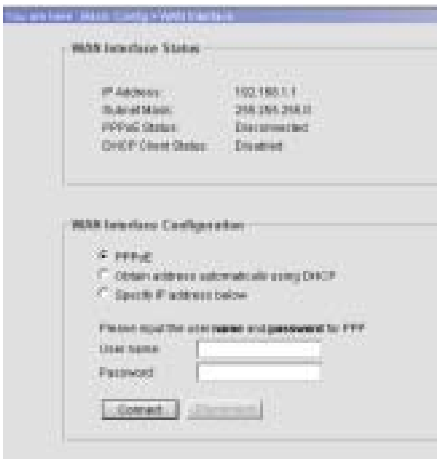
- Enable PPPoE client for WAN interface
- Enable DHCP server for LAN interface in order to assign addresses for wireless subscribers
- Enable 128-bit WEP encryption
- Enable load balance
- Enable 802.1x local authentication

**Network Topology:**



**Detailed Instructions**: (Consider AP1 as an example)

1. Click “Basic Config/WAN Interface” to display the “WAN Interface” window. Enable PPPoE.



You are here: Basic Config > WAN Interface

WAN Interface Status

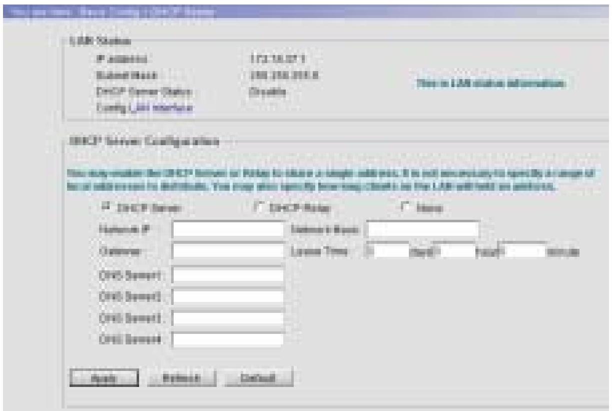
IP Address: 192.168.1.1
Subnet Mask: 255.255.255.0
PPPoE Status: Disconnected
DHCP Client Status: Disabled

WAN Interface Configuration

● PPPoE
○ Obtain address automatically using DHCP
○ Specify IP address below

Please input the user name and password for PPP
User Name:
Password:

2. Click “Basic Config/DHCP server” to display the “DHCP Server” window. Enable the DHCP server for the LAN interface.



You are here: Basic Config > DHCP Server

LAN Status

IP address: 172.16.27.1
Subnet Mask: 255.255.255.0
DHCP Server Status: Disable
Config LAN Interface

This is LAN status information

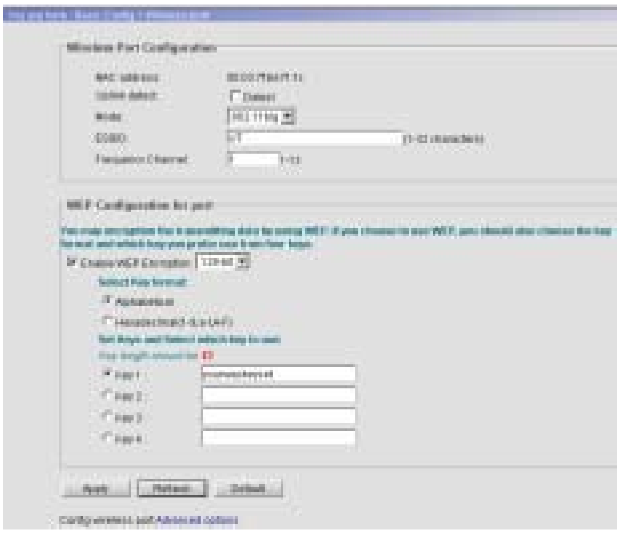
DHCP Server Configuration

You may enable the DHCP Server or Relay to share a single address. It is not necessary to specify a range of local addresses to distribute. You may also specify how long clients on the LAN will hold an address.

● DHCP Server ○ DHCP Relay ○ None

Network IP: Network Mask:
Gateway: Lease Time: 0 day(s) 0 hour(s) 0 minute
DNS Server1:
DNS Server2:
DNS Server3:
DNS Server4:

3. Click "Basic Config/Wireless port" to display the "Wireless Port" window. Configure WEP Encryption.



Wireless Port Configuration

MAC address: [illegible]

Uplink detect: □ Detect

Mode: 802.11b/g

ESSID: [illegible] (1-32 characters)

Frequency Channel: [illegible] 1-11

WEP Configuration for port

[illegible]

☑ Enable WEP Encryption 128-bit

Select Key format:

● Alphanumeric

○ Hexadecimal(0-9,a-f,A-F)

Set Keys and Select which key to use:

Key length should be 13

● Key 1 [illegible]

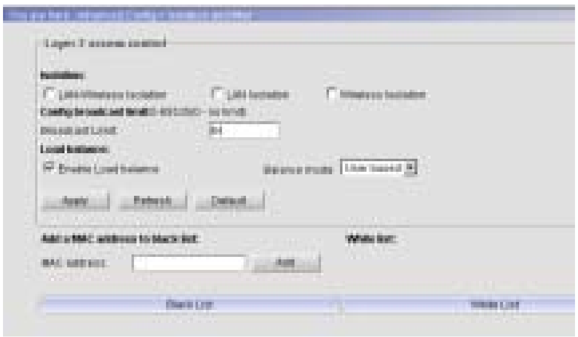
○ Key 2

○ Key 3

○ Key 4

Config wireless port Advanced options

4. Click "Advanced Config/Isolation&Filter" to display the "Isolation and Filter" window. Enable user based load balance.



Layer 2 access control

Isolation:

○ LAN-Wireless Isolation ○ LAN Isolation ○ Wireless Isolation

Config broadcast limit(0-65535 kb/s)

Broadcast Limit: 64

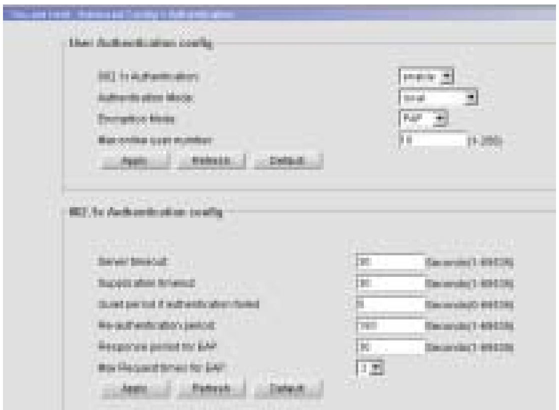
Load balance:

☑ Enable Load balance Balance mode: User based

Add a MAC address to black list: White list:

MAC address:

5. Configure 802.1x authentication. Click “Advanced Config/Authentication” to display the “Authentication” window. Enable 802.1x authentication, set the authentication mode to “local” and the maximum number of online users to “10”.



User Authentication config

802.1x Authentication: enable

Authentication Mode: local

Encryption Mode: EAP

Max online user number: 10 (1-256)

802.1x Authentication config

Server timeout: 30 Seconds(1-65535)

Supplication timeout: 30 Seconds(1-65535)

Quiet period if authentication failed: 5 Seconds(0-65535)

Re-authentication period: 3600 Seconds(1-65535)

Response period for EAP: 30 Seconds(1-65535)

Max Request times for EAP: 2

# 9 CLI Command Set

The version is 2.0.

## EXEC Commands

### Debug

This command is used for field debug support and can be performed only by an administrator.

**Syntax: debug**

**Access level:** 10

**Explanation:** Use this command to reach the debug level.

### Enable

Use this command to reach the privileged EXEC level.

**Syntax: enable**

**Access level:** 1

## Clear

Use this command to clear the screen. It can be used at any configuration level.

**Syntax: clear**

**Access level:** 0

## End

Use this command to return to the privileged EXEC mode from any CLI level except EXEC level. This command can be used at any configuration level except EXEC level.

**Syntax: end**

**Access level:** 0

## Exit

Use this command to return one level back. Use “**exit all**” to return to EXEC level. This command can be used at any configuration level.

**Syntax: exit** [all]

**Access level:** 0

## History

Use this command to show the history substitution buffer contents. This command can be used at any configuration level.

**Syntax: history**

**Access level:** 0

**Explanation:** Use this command to show the command history contents.

## Logout

Use this command to terminate a terminal session. It can be used at any configuration level.

**Syntax: logout**

**Access level:** 0

## Ping

Use this command to test the network layer connectivity between source and destination address. This command can be used at any configuration level.

**Syntax: ping** <ip-address>

**Access level:** 2

## Quit

Use this command to return to the EXEC mode from any CLI level. This command can be used at any configuration level.

**Syntax: quit**

**Access level:** 0

## Show

The show commands are described in Section 6.

## Tree

Use this command to show the command tree. It can be used at any configuration level.

**Syntax: tree**

**Access level:** 0

## Write Memory

Use this command to save the running configuration into the configuration file. This command can be used at any configuration level.

**Syntax: write memory**

**Access level:** 2

**Explanation:** Use this command to save the running configuration into the startup-config file.

## Privileged EXEC Commands

### Configure

Use this command to reach the global CONFIG level.

**Syntax: configure** {*terminal*}

**Access level:** 1

### Copy Config to TFTP

Use this command to upload a copy of the configuration file to the designated TFTP server.

**Syntax: copy config to tftp** <ip-address> <filename>

**Possible value:** *ip-address*: IP address of the TFTP server

*filename*: Up to 32 characters for the designated file name on the TFTP server

**Access level:** 2

## Copy Config from TFTP

Use this command to download a copy of the configuration file from the designated TFTP server.

**Syntax: copy config from tftp** <ip-address> <filename>

**Possible value:** *ip-address*: IP address of the TFTP server

*filename*: Up to 32 characters for the designated file name on the TFTP server

**Access level:** 2

## Copy Image From TFTP

Use this command to download a copy of the software image from TFTP server. Reload (reboot) the system to activate the newly downloaded image.

**Syntax: copy image from tftp** <ip-address> <filename>

**Possible value:** *ip-address*: IP address of the TFTP server

*filename*: Up to 32 characters for the designated file name on the TFTP server

**Access level:** 2

## Copy Image to TFTP

Use this command to download a copy of the software image to the TFTP server.

**Syntax: copy image from tftp** <ip-address> <filename>

**Possible value:** *ip-address*: IP address of the TFTP server

*filename*: Up to 32 characters for the designated file name on the TFTP server

**Access level:** 2

## Disable

Use this command to return to the EXEC command level from the Privileged EXEC level

**Syntax: disable**

**Access level:** 0

## Erase Config

Use this command to erase the config file stored in the flash.

**Syntax: erase config**

**Access level:** 2

## Clear ARP

Use this command to reset the ARP table.

**Syntax: clear arp**

**Access level:** 2

**Explanation:** Use this command to clear the ARP table or delete all dynamic entries.

## Clear DHCP Binding

Use this command to delete one or all automatic address binding(s) from the Dynamic Host Configuration Protocol (DHCP) Server database.

**Syntax: clear dhcp binding** [*ip-address*]

**Possible value:** *ip-address*: The address of the binding to be cleared

**Default value:** clear all bindings

**Access level: 2**

**Explanation:** Use this command to clear DHCP server IP address bind table.

## Clear DHCP Statistics

Use this command to reset all Dynamic Host Configuration Protocol (DHCP) Server counters or Relay counters.

**Syntax: clear dhcp statistics [relay | server]**

**Default value:** Relay and server’s statistics

**Access level: 2**

## Clear Dot1x Statistics

Use this command to reset all 802.1x counters.

**Syntax: clear dot1x statistics**

**Access level: 2**

**Explanation:** Use this command to clear DOT1X statistics.

## Clear RADIUS

Use this command to reset all radius counters.

**Syntax: clear radius**

**Access level: 2**

**Explanation:** Use this command to clear RADIUS client statistics.

### Clear MAC

Use this command to reset the MAC table.

**Syntax: clear mac**

**Access level:** 2

### Clear NAT

Use this command to clear all NAT entries.

**Syntax: clear nat**

**Access level:** 2

### Clear NAT Translation

Use this command to clear NAT translation entries.

**Syntax: clear nat**

**Access level:** 2

### Kill

Use this command to terminate a CLI session.

**Syntax: kill** <session-id>

**Possible value:** *session-id:* 0 - 4

**Access level:** 2

### Reboot

Use this command to reboot the system.

**Syntax: reboot**

**Access level:** 2

### Auto-config Enable/Disable

Use this command to enable or disable auto configuration.

**Syntax: auto-config enable/disable**

**Access level:** 2

## Global Config Commands

### AP-Mode

Use this command to select AP work mode.

**Syntax: ap-mode** {bridge|route}

**Access level:** 2

## ARP Entry

Use this command to add/delete an ARP entry.

**Syntax: arp entry** <ip-address> <mac-address>

**no arp <**ip-address**>**

**Possible value:** *mac-address:* MAC address, format: xx:xx:xx:xx:xx:xx

**Access level:** 2

## Broadcast Limit

Use this command to enable broadcast limit and set limit packets value per second

**Syntax: broadcast limit** <packets>

**no broadcast limit**

**Possible value:** *packets*: 0-65535; 0 means broadcast limit is disabled

**Default value:** 64

**Access level:** 2

## Console Baud-Rate

Use this command to set the baud rate of the console interface. After the configuration is changed, the connection to the current console-interface user will be lost.

**Syntax: console baud-rate** <value>

**no console baud-rate**

**Possible value:** *value*: {9600|19200|38400|57600|115200}

**Default value:** 9600

**Access level:** 2

## Console Timeout

Use this command to set the aging time how long the console will be logout without any input.

**Syntax: console timeout** <value>

**no console timeout**

**Possible value:** *value*: 0~240 minutes (0 means to disable console timeout)

**Default value:** 30 minutes

**Access level:** 2

**Explanation:** Use this command to set the console aging time.

## DHCP Service

Use the **dhcp service** global configuration command to select the DHCP configuration. Use the **no** form of this command to disable the DHCP service.

**Syntax: dhcp service {server| relay}**

**no dhcp service**

**Possible value:** Server or relay

**Access level: 2**

## DHCP-Client Enable /Disable

Use this command to enable or disable the DHCP client feature.

**Syntax: dhcp-client** {enable|disable}

**Default value:** enable

**Access level:** 2

## DHCP-Client Trust

Use this command to set the trusted DHCP server IP addresses. (Up to 5)

**Syntax:** [no] **dhcp-client trust** <ip-address>

**Possible value:** *ip-address*: IP address of DHCP server

**Access level:** 2

## DHCP-Pool

Use the **dhcp-pool** global configuration command to configure Dynamic Host Configuration Protocol (DHCP) address pool on the DHCP Server and enter the domain's DHCP pool configuration mode. Use the **no** form of this command to remove the address pool.

**Syntax:** [no] **dhcp-pool**

**Default value:** DHCP address pools are not configured.

**Access level: 2**

## DHCP-Server Host

Use this command to set the DHCP server's IP address when DHCP relay is enabled; use the **no** form to delete the server.

**Syntax:** [no]**dhcp-server host** <IPaddress> (Up to 3)

**Possible value:** ip address

**Access level: 2**

## Dot1x Authentication Enable / Disable

Use this command to enable or disable the DOT1X authentication function.

**Syntax: dot1x authentication {**enable|disable**}** <port>

**Possible value:** *Port***:** lan, wlan1, wlan2

**Default value:** disable

**Access level:** 2

## Dot1x Authentication Mode

Use this command to set the authentication mode for this AP.

**Syntax: dot1x authentication mode <**port**>** <mode>

**no dot1x authentication mode** <port>

**Possible value:**

*Port*: lan, wlan1, wlan2

*Mode*: local, remote, local-remote, remote-local

**Default value:** local-remote

**Access level: 2**

## Dot1x Encryption-Mode

Use this command to set the authentication encryption mode for each port.

**Syntax: dot1x encryption-mode <**port**>** {chap|pap}

**no dot1x encryption-mode** <port>

**Possible value:**

*Port*: lan, wlan1, wlan2

*chap*|*pap*: keyword

**default value:** pap

**Access level:** 2

## Dot1x Initialize

Use this command to initialize an 802.1x's user based on the user ID.

**Syntax: dot1x initialize <**userid**>**

**Possible value: <**userid>: 1-256

**Access level: 2**

**Explanation:** Use this command to initialize the DOT1X subscriber status.

## Dot1x Max-Req

Use this command to set the maximum number of times that the device sends an Extensible Authentication Protocol (EAP) – (request /identity frame (no response is received)) before restarting the authentication process. Use the **no** form of this command to return to the default setting.

**Syntax: dot1x max-req** <*count*>

**no dot1x max-req**

**Possible value:** *count***:** 1 - 2.

**Default value:** 2 times

**Access level: 2**

## Dot1x Quiet-Period

Use this command to set the number of seconds that the switch remains in the quiet state following a failed authentication exchange (for example, the client provided an invalid password). Use the **no** form of this command to return to the default setting.

During the quiet period, the switch does not accept or initiate any authentication requests. The user should change only the default value of this command to adjust for unusual circumstances such as unreliable links or specific behavioral problems with certain clients and authentication servers. To provide a faster response time to the user, enter a smaller number than the default.

**Syntax**: **dot1x quiet-period** *<seconds>*

**no dot1x quiet-period**

**Possible value:** *seconds*: 0-65535s

**Default value:** 5s

**Access level: 2**

**Explanation:** Use this command to set another authentication beginning period after a failed authentication exchange.

## Dot1x Re-Authenticate

Use this command to manually initiate a re-authentication of all 802.1X-enabled ports or the specified 802.1X-enabled port. The user can use this command to re-authenticate a subscriber without waiting for the configured number of seconds between re-authentication attempts (re-authperiod) and automatic re-authentication.

**Syntax: dot1x re-authenticate** <userid>

**Possible value:** *userid*: 1-256

**Access level: 2**

**Explanation:** Use this command to manually initiate a re-authentication for a subscriber at once.

## Dot1x Re-Authentication

Use this command to enable periodic re-authentication of the client. Use the **no** form of this command to return to the default setting. Configure the time period between periodic re-authentication attempts by using the **dot1x re-authperiod** command.

**Syntax: [no] dot1x re-authentication <**userid**>**

**Possible value:** *userid:* 1-256

**Default value:** Periodic re-authentication is disabled

**Access level: 2**

**Explanation:** Use this command to set the periodic re-authentication status while the subscriber is online.

## Dot1x Re-Authperiod

Use this command to set the number of seconds between re-authentication attempts. Use the **no** form of this command to return to the default setting. The **dot1x re-authperiod** configuration command affects the behavior of the device only if the user has enabled periodic re-authentication by using the **dot1x re-authentication** configuration command. The user should change the default value of this command only to adjust for unusual circumstances such as unreliable links or specific behavioral problems with certain clients or authentication servers.

**Syntax: dot1x re-authperiod <***seconds*>

**no dot1x re-authperiod**

**Possible value:** *seconds***:** 1-65535 s

**Default value:** 180s

**Access level: 2**

**Explanation:** Use this command to set the period between re-authentication attempts.

## Dot1x Server-Timeout

Use this command to set the Back-End Authenticator-to-Authentication-Server Retransmission Time for Transport Layer

Packets. Use the **no** form of this command to return to the default setting. The authentication server notifies the back-end authenticator each time it receives a transport layer packet. When the back-end authenticator does *not* receive a notification after sending a packet, the back-end authenticator waits for certain time period (i.e. set time period) and then retransmits the packet.

**Syntax: dot1x server-timeout <***seconds***>**

**no dot1x server-timeout**

**Possible value:** 1-65535s

**Default value:** 30s

**Access level: 2**

**Explanation:** Use this command to set dot1x server timeout.

## Dot1x Supplicant-Timeout

Use this command to set the Back-End Authenticator-to-Supplicant Retransmission Time for EAP-Request Frames. Use the **no** form of this command to return to the default setting. The supplicant notifies the back-end authenticator that the authenticator received the EAP-request frame. When the back-end authenticator does not receive this notification, the back-end authenticator waits for certain time period (i.e. set time period) and then retransmits the frame.

**Syntax: dot1x supplicant-timeout <***seconds***>**

**no dot1x supplicant-timeout**

**Possible value:** 1-65535s

**Default value:** 30s

**Access level: 2**

**Explanation:** Use this command to set dot1x supplicant timeout.

## Dot1x TX-Period

Use this command to set the number of seconds that the device waits for a response to an Extensible Authentication Protocol (EAP)-request /identity frame from the client before retransmitting the request. Use the **no** form of this command to return to the default setting. The user should change the default value of this command only to adjust for unusual circumstances such as unreliable links or specific behavioral problems with certain clients or authentication servers.

**Syntax: dot1x tx-period <***seconds***>**

**no dot1x tx-period**

**Possible value:** *<seconds>:* 1-65535 s

**Default value:** 30s

**Access level: 2**

**Explanation:** Use this command to set dot1x tx-period.

## Dynamic-User

Add or delete a dynamic user for local authentication

**Syntax: dynamic-user {name <**username**>} {password <**passwd>}

**no dynamic-user {name <**username**> }**

**Possible value:** *name*: no longer than 32 characters; *passwd*: no longer than 32 characters

**Access level: 2**

**Explanation:** Use this command to create/delete a local authentication user in the database.

## Dynamic-User Enable / Disable

Use this command to enable/disable a dynamic user account.

**Syntax: dynamic-user {name <**username**>} {enable| disable}**

**Access level: 2**

**Explanation:** Use this command to enable/disable an account in the database

## Ethernet-Port

Use this command to enter the Ethernet port configuration level.

**Syntax: ethernet-port** <ports>

**Possible value:** *ports:* wan, lan1 lan2 lan3 lan4

**Access level:** 1

## Hostname

Use this command to set the host name of the current system for prompting.

**Syntax: hostname** <string>

**Possible value:** Up to 32 alphanumeric, '-', and '_' characters for the hostname text string

**Access level:** 2

## IAPP

Use this command to enter IAPP mode.

**Syntax: iapp**

**Access level:** 2

## Interface

Use this command to access the interface CONFIG level of the CLI.

**Syntax: interface ethernet** {**lan | wan**}

**Possible value:** *lan*: Enters the LAN interface,

*wan*: Enters the WAN interface.

**Access level: 2**

## IP Default-Route

Use the **ip default-route** global configuration command to define a default gateway (router) when IP routing is disabled.

**Syntax: ip default-route <***ip-address*>

***n*o ip default-route**

**Possible value:** *ip-address:* IP address of the router.

**Default value:** Disabled.

**Access level: 2**

**Explanation:** Use this command to set the default route for this AP.

## IP RADIUS Source-Interface

To force RADIUS to use the IP address of a specified interface for all outgoing RADIUS packets, use the **ip radius source-interface** global configuration command.

**Syntax: ip radius source-interface {wan | lan}**

**no ip radius source-interface**

**Access level: 2**

**Explanation:** Use this command to set the RADIUS source interface.

## IP Route

Use the **ip route** command in Global configuration command mode to establish static routes.

**Syntax: ip route <***ipaddr> <mask> <next-hop>*

**n***o* **ip route <***ipaddr> <mask>*

**Possible Value:**

*ipaddr:* This parameter identifies the destination IP address of the static route.

*mask:* This parameter identifies the destination prefix mask of the static route.

*next-hop:* This parameter identifies the IP address of the next hop that can be used to reach the network.

**Access level: 2**

## Isolation

Use this command to set isolation between the subscribers. No parameter means to isolate all.

**Syntax: isolation [lan | lan-wlan | wlan ]**

**Access level: 2**

## Load-Balance Enable/Disable

Use this command to enable or disable the load balance.

**Syntax: load-balance** {enable|disable}

**Access level: 2**

## Load-Balance Mode

Use this command to set load-balance mode.

**Syntax: load-balance mode {user-base | flux-base}**

**Default Value:** user-base

**Access level: 2**

## MAC Age Time

Use this command to set the aging period for all MAC address entries in the address table of the switch.

**Syntax: mac age time** <value>

**Possible value:** *value*: 10~65535 seconds

**Default value:** 300 seconds

**Access level:** 2

## MAC Black-List

Use this command to add/delete a MAC black list entry. The packets from the source MAC addresses will not be permitted to access the AP.

**Syntax:** [no] **mac black-list** <mac-address>

**Access level:** 2

## Max-Online-User

Use this command to set the maximum number of online users this AP permits.

**Syntax: max-online-user <**port**>** <count>

**no max-online-user <**port**>**

**Possible value:**

*Port*: lan,wlan1,wlan2

*Count*: 1-256

**Default value:** *count:* 256

**Access level: 2**

## NAT Enable/Disable

Use this command to enable or disable NAT.

**Syntax: nat** {enable|disable}

**Default value:** Enabled

**Access level:** 2

## NAT Interface

Use this command to specify the interface attached to NAT.

**Syntax: nat interface** {inside | outside} <lan | wan>

**Default value:**

*inside:* lan(downlink)

*outside: wan* (uplink)

**Access level:** 2

## NAT Map

Use this command to configure static entries of address mapping for basic NAT.

**Syntax:** [no] **nat map <local-ip> <global-ip>**

**Possible value:**

*local-ip:* Private IP address inside NAT .

*global-ip:* Global IP address outside NAT.

**Access level:** 2

## NAT Mode

Use this command to set NAT mode.

**Syntax: nat mode** {**napt|basic**}

**Default value**: napt

**Access level**:2

## NAT Pool

Use this command to configure address pool for dynamic NAT.

**Syntax: [no] nat pool <start-ip> <ip-mask>**

**Possible value:**

*start-ip:* Specifies the IP address at the beginning of the pool range.

*ip*-mask: Specifies the network mask associated with the address pool.

**Access level:** 2

## NAT Redirect

Use this command to configure static entry of host redirection for NAPT.

**Syntax:** [no] **nat redirect <global-port> <local-ip>**

**Possible value:**

*global_port:* Destination port number of incoming packets.

*local_ip:* Private IP address to be redirected.

**Access level:** 2

## NAT Timeout

Use this command to set the age timeout for all NAT entries.

**Syntax: nat timeout <secs>**

**Possible value:**

*secs:* 1-3600

**Default value:** 120

**Access level:** 2

## Operator Access level

Use this command to change the user's access level.

**Syntax: operator access level** {name <user-name>} {level <access-level>}

**Possible value:** *user-name*: Up to 16 alphanumeric characters for the user name

*access-level*:

**10** – Administrator

**2** – Power configuration access

**1** – Port-configuration access

**0** – Read-only access

**Access level:** 10

## Operator Add / Delete

Use this command to add/delete a user account.

**Syntax: operator add** {name <user-name>} {level <access-level>} {mode <access-mode>}

**operator delete {name <** name**>}**

**Possible value:** *user-name*: Up to 16 alphanumeric characters for the user name

*access-level*:

**10** – Administrator

**2** – Power configuration access

**1** – Port configuration access

**0** – Read only access

*access-mode*: Telnet, console or web. Multiple values can be input.

**Access level:** 10

***Note**: When the **operator** <user-name> **{level** <access-level>**} {mode** <access-mode>**}** command is entered, the system displays "**Enter new password**: " and "**Confirm new password**: " in next line, the user should input the correct password.*

### Operator Password

Use this command to change the user's password whose name is <username>.

**Syntax: operator password** <user-name>

**Possible value:** *user-name*: Up to 16 alphanumeric characters for the user name

**Access level:** 1

***Note**: When the command "**user password <user-name>**" is entered, the system displays "**Enter old password**: " (For system administrator, this line will not be displayed.), "**Enter new***

***password*: ” and “*Confirm new password*: ” in next line, the user should input the correct password.**

## PPPoE Auto-Connect Disable/Enable

Use this command to set auto connect to the PPPOE server when the AP boots successfully.

**Syntax: pppoe auto-connect {**disable|enable}

**Access level: 2**

## PPPoE Connect

Use this command to connect to the PPPOE server.

**Syntax: pppoe connect**

**Access level: 2**

## PPPoE Disconnect

Use this command to disconnect from the PPPOE server.

**Syntax: pppoe disconnect**

**Access level: 2**

## PPPoE User

Use this command to add a PPPoE user.

**Syntax: pppoe user {name** <name>} {password <pwd>}

**Possible value:** *name:* up to 30 characters; *pwd*: up to 30 characters.

**Access level: 2**

## RADIUS-Acctserver {Enable | Disable}

Use this command to enable/disable a designated accounting server.

**Syntax: radius-acctserver** {enable | disable} [first | second | third]

**Access level: 2**

## RADIUS-Acctserver Host

Use the **radius-acctserver host** global configuration command to specify a RADIUS accounting server host.

**Syntax: radius-acctserver host** {first | second | third} <ip-address>

**no radius-acctserver host** {first | second | third}

**Possible Value:** *ip-address***:** IP address of the RADIUS accounting server host.

**Access level: 2**

## RADIUS-Acctserver Info

Use this command to set the designated accounting server's parameter(s). Use the **no** form of this command to set the designated accounting server's parameter(s) as default value(s).

**Syntax: radius-acctserver info** {first | second | third} **[acct-port** <port-number>**] [accounting-key** {string}] [timeout <seconds >**] [dead-time** <minutes>**] [retransmit** <retries >**]**

**no radius-acctserver info** {first | second | third} **[acct-port]** [accounting-key] [timeout] [dead-time] [retransmit]

**Possible Value:**

*acct-port*: 1-65535; default value: 1813

*accounting-key {string}*: string, default value: “”

*timeout*: 1-16 seconds; default value: 5 seconds

*dead-time*: 1-1440 minutes; default value: 5 minutes

*retransmit*: 1-6; default value: 3

**Access level: 2**

## RADIUS-Authserver {Enable | Disable}

Use this command to enable/disable the designated authentication server.

**Syntax: radius-authserver {**enable | disable} [first | second | third]

**Access level: 2**

## RADIUS-Authserver Extra

Use this command to set authentication radius server's additional attribute.

**Syntax: radius-authserver extra {first | second | third} [iapp|wpa]**

**Possible value:** iapp|wpa: keywords

**Access level:** 2

## RADIUS-Authserver Host

Use the **radius-authserver host** global configuration command to specify a RADIUS authentication server host. The other parameters are default.

**Syntax: radius-authserver host {first | second | third}** <ip-address>

**no radius-authserver host {first | second | third}**

**Possible Value:** *ip-address*: IP address of the RADIUS authentication server host.

**Access level: 2**

## RADIUS-Authserver Info

Use this command to set the designated authentication server's parameter(s). Use the **no** form of this command to set the designated authentication server's parameter(s) as default value(s).

**Syntax: radius-authserver info** {first | second | third} **[auth-port** <port-number>**] [authentication-key** <string>**] [timeout** <seconds >**] [dead-time** <minutes>**] [retransmit** <retries >**]**

**no radius-authserver info** {first | second | third} **[auth-port] [authentication-key] [timeout] [dead-time] [retransmit]**

**Possible Value:**

*auth-port:* 1-65535; default value: 1812

*authentication-key* **<***string***>**:string; default value: “”

*timeout:* 1-16 seconds; default value: 5 seconds

*dead-time*: 1-1440 minutes; default value: 5 minutes *retransmit*: 1-6; default value: 3

**Access level: 2**

## RADIUS-Server Dead-Time

To improve RADIUS response time when some servers might be unavailable, use the **radius-server dead-time** global configuration command to cause the unavailable servers to be skipped immediately. Use the **no** form to set the dead time to 5 minutes.

**Syntax: radius-server dead-time <**minutes**>**

**no radius-server dead-time**

**Possible value:** *minutes*: 1-1440 minutes (24 hours).

**Default value:** 5.

**Access level: 2**

## RADIUS-Server Retransmit

Use this command to specify the number of times the RADIUS server sets to down. Use the **no** form to return to the default value.

**Syntax: radius-server retransmit <**retries **>**

**no radius-server retransmit**

**Possible Value:** *retries*: 1-6

**Default Value:** 3 times

**Access level: 2**

## RADIUS-Server Timeout

Use this command to set the interval a router waits for a server host to reply. Use the **no** form to restore the default value.

**Syntax: radius-server timeout <**seconds **>**

**no radius-server timeout**

**Possible Value:** *seconds:* 1-16

**Default:** 5 seconds

**Access level: 2**

## SNMP Client

Use this command to set SNMP client IP address.

**Syntax: snmp client <ipaddr> [mask]**

***no snmp client < ip>***

## SNMP Server Community

Use this command to set SNMP server community.

**Syntax: snmp server commnunity** {**ro | rw**} <community>

**no snmp server commnunity** <community>

**Possible value:** *community*: up to 64 characters

**Default value:** ro community: public; rw community: private.

**Access level:** 2

## SNMP Server Contact

Use this command to set SNMP server contact string

**Syntax: snmp server contact** <contact>

**Possible value:** any text up to 255 characters

**Access level:** 2

## SNMP Server Enable/Disable

Use this command to enable or disable SNMP agent.

**Syntax: snmp server enable**

**Default value:** SNMP agent is enabled

**Access level:** 2

## SNMP Server Location

Use this command to set SNMP server location string.

**Syntax: snmp server location** <location>

**Possible value:** any text up to 255 characters

**Access level:** 2

## SNMP Server Sysname

Use this command to set SNMP server system name string.

**Syntax: snmp server sysname** <sysname>

**Possible value:** Any text up to 255 characters

**Access level:** 2

## SNMP Server Trap Enable/Disable

Use this command to enable or disable SNMP trap.

**Syntax: snmp server trap** {enable|disable}

**Possible value:** N/A

**Default value:** trap is enable

**Access level:** 2

## SNMP Server Trap Host

Use this command to set SNMP trap host.

**Syntax: snmp server trap host** <host-addr> ***[*community *<trap-community>] [*port*<trap-port>][*version*<v1|v2>]***

**no snmp server trap host** <host-addr>

**Default value**: *community* :public *Port*:162 *Version*: v2

## Static-MAC-Address

Use this command to define or remove a MAC address in the static filtering database.

**Syntax:** [no] **static-mac-address** <mac-address> {wan|lan|wlan}

**Possible value:** *mac-address*: xx:xx:xx:xx:xx:xx

**Access level:** 2

## Static-User

Use this command to add or delete a static user.

**Syntax: static-user {mac <**mac-addr**>}**

**no static-user {mac <**mac-addr**>}**

**Access level: 2**

## Static-User Enable / Disable

Use this command to enable or disable a static user.

**Syntax: static-user {mac <**mac-addr**>} <[enable]/[disable]**

**Possible value:** *mac-addr:* xx:xx:xx:xx:xx:xx

**Default value:** disable

**Access level: 2**

## Telnet Client

Use this command to set which IP address (subnet) can or cannot access the device via telnet. (UP TO 10)

**Syntax: telnet client** <ip-address> [netmask]

**no telnet client** <ip-address> [netmask]

**Access level:** 2

## Telnet Server Enable / Disable

Use this command to enable/disable the telnet server.

**Syntax: telnet server** {enable|disable}

**Default value:** disable

**Access level:** 2

## Telnet Timeout

Use this command to set the aging time how long the Telnet will be logout without any user input.

**Syntax: telnet timeout** <value>

**no telnet timeout**

**Possible value:** *value*: 0~240 minutes (0 means to disable timeout)

**Default value:** *value*: 6 minutes

**Access level:** 2

**Explanation:** Use this command to set telnet aging time

## User-Force-Offline

Use this command to force the subscriber to be off-line.

**Syntax: user-force-offline** <userid>

**Possible value:** *userid*:1-256

**Access level: 2**

## VLAN Default VID

Use this command to set default VLAN VID. The command will be valid if the VLAN module is available.

**Syntax: vlan default-vid <vid>**

**no vlan default-vid**

***Possible value*:**

*vid:* 1-4094

**Default value:** 1

**Access level:** 2

## VLAN Employee Default VID

Use this command to set default VLAN employee VID.

**Syntax: vlan employee default-vid <vid>**

**no vlan employee default-vid**

**Possible value:**

*vid:* 1-4094

**Default value:** 1

**Access level:** 2

## VLAN Enable/Disable

Use this command to enable or disable VLAN. The command will be valid if the VLAN module is available.

**Syntax: vlan** {enable|disable}

**Access level:** 2

**Explanation:** Use this command to enable or disable VLAN

## VLAN Mode

Use this command to set VLAN work mode.

**Syntax: vlan mode** {user-based|port-based|mix}

**no vlan mode**

**Default value:** user-based

**Access level**: 2

## VLAN port-vid

Use this command to set the designated port's vid.

**Syntax: vlan port-vid** {lan|wlan1|wlan2} **<vid>**

**no vlan port-vid {lan|wlan1|wlan2}**

**Possible values:**

*Vid* range:1-4094

**Default value:**1

**Access level:** 2

**Explanation:** Use this command to set the vid of designated port when work on port-based mode.

## VLAN Tag Disable

Use this command to disable VLAN tag. The command will be valid if the VLAN module is available.

**Syntax: vlan tag disable**

**Access level:** 2

## VLAN Tag Enable

Use this command to enable VLAN tag. The command will be valid if the VLAN module is available.

**Syntax: vlan tag enable**

**Access level:** 2

## VLAN Visitor Default Vid

Use this command to set default VLAN visitor VID. The command will be valid if the VLAN module is available.

**Syntax: vlan visitor default-vid <vid>**

**No vlan visitor default-vid**

**Possible value:**

*vid:* 1-4094

**Default value:**1

**Access level:** 2

## Webserver

Use this command to enter webserver config mode

**Syntax: webserver**

**Access level: 2**

### Wireless-Port

Use this command to enter the wireless card configuration level.

**Syntax: wireless-port** <port>

**Possible value:** *ports:* 1-2

**Access level:** 1

## DHCP-pool Configuration Mode

### DNS-Server

Use the **dns-server** DHCP pool configuration command to specify the Domain Name System (DNS) IP servers available to a Dynamic Host Configuration Protocol (DHCP) client. To remove the DNS server list, use the **no** form of this command.

**Syntax: dns-server** <address> [address2] [address3].[address4]

**no dns-server**

**Possible value:** *address:* Specifies the IP address of a DNS server. One IP address is required. The user can specify up to four addresses in one command line.

*address2*...*address4:* (Optional) Specifies up to four addresses in the command line

**Default value:** If DNS IP servers are not configured for a DHCP client, the client cannot correlate host names to the IP addresses.

**Access level : 2**

**Explanation:** Use this command to set/remove DNS server(s).

## Excluded-Address

Use the **excluded-address** global configuration command to specify IP addresses that a DHCP Server should not assign to DHCP clients. To remove the excluded IP addresses, use the **no** form of this command. (Up to 8)

**Syntax:** **excluded-address** <*low-address*> [*high-address*]

**no excluded-address** <*low-address*> [*high-address*]

**Possible value:** *low-address*: The excluded IP address or first IP address in the excluded address range.

*high-address:* (Optional) The last IP address in the excluded address range

**Default value:** All IP pool addresses are assignable..

**Access level : 2**

**Explanation:** Use this command to exclude or remove the excluded IP address from the pool.

## Gateway

Use the **gateway** DHCP pool configuration command to specify the default gateway for a Dynamic Host Configuration Protocol (DHCP) client. To remove the default gateway, use the **no** form of this command.

**Syntax: gateway** <address>

**no gateway**

**Possible value:** *address:* Specifies the IP address of the gateway

**Access level: 2**

**Explanation:** Use this command to set/remove the gateway

## Lease

Use the **lease** DHCP pool configuration command to configure the duration of the lease for an IP address that is assigned by a Dynamic Host Configuration Protocol (DHCP) Server to a DHCP client. To restore the default value, use the **no** form of this command.

**Syntax: lease** {[[**days** <*days*>*]* *[***hours** <*hours*>] [**minutes** <*minutes*>] ] | [ **infinite**]}

**no lease**

**Possible value:** *days:* Specifies the duration of the lease in numbers of days

*hours:* Specifies the number of hours in the lease. A *day's* value must be fed before configuring an *hour's* value.

*minutes:* Specifies the number of minutes in the lease. A *day's* value and an *hour's* value must be fed before configuring a *minute's* value.

*Infinite:* Specifies that the duration of the lease is unlimited

**Default value:** One day

**Access level: 2**

**Explanation:** Use this command to set lease for an IP address that is assigned from the DHCP server.

## Network

Use the **network** DHCP pool configuration command to configure the subnet number and mask for a Dynamic Host Configuration Protocol (DHCP) address pool on a DHCP Server. To remove the subnet number and mask, use the **no** form of this command.

**Syntax: [no] network** <*network-number*> <*mask* >

**Possible value:** *network-number:* The IP address of the DHCP address pool

*mask:* The bit combination that renders which portion of the address of the DHCP address pool referring to the network or subnet and which part referring to the host.

**Access level: 2**

**Explanation:** Use this command to set/remove the network for DHCP pool on a DHCP server.

## Manual-Binding

Use this command to specify the IP address to a specific MAC address for a manual binding to a Dynamic Host Configuration Protocol (DHCP) client.

**Syntax: manual-binding** <ip-addr>  <mac-add>

**no manual-binding** <ip-addr>

**Access level: 2**

**Explanation:** Use this command to bind an IP address to a MAC address.

## Ethernet Port configuration level

### Speed-duplex

Use this command to modify the speed and duplex mode for the port.

**Syntax: speed-duplex** {auto | 10-full | 10-half | 100-full | 100-half}

**Default value:** auto

**Access level:** 2

## Interface Mode Commands

### Disable

Use this command to disable an interface.

**Syntax: disable**

**Access level: 2**

### Enable

Used this command to enable an interface.

**Syntax: enable**

**Access level: 2**

### IP Address

Use the **ip address** command in the interface configuration command mode to assign/remove an IP address for an interface on a router.

**Syntax: ip address <**ip*address> <netmask>*

**no ip address**

**Access level: 2**

## Wireless Port Configuration Level

### Beacon Interval

Use this command to set the beacon interval based on 802.11

**Syntax: beacon interval <** time**>**

**no beacon interval**

**Possible value:** *times:* 20-1000

**Default value:** 100

**Access level:** 2

**Explanation:** Use this command to set wireless card beacon frame send interval

## Basic Rate

Use this command to set the transmission rate of this wireless card

**Syntax: basic rate <** 2 | 11|12|g **>**

**Possible value:**

*value:* **2**: 1,2Mbit/s at  b mode or b/g mode

**11:** 1,2,5.5,11Mbit/s at b mode or b/g mode

**12:**  6, 9,12. at g mode

**g:** 1,2,5,5,11,6,9,12Mbit/s at b/g mode

**Access level:** 2

### Fragment Threshold

Use this command to set the fragment threshold. If the TX MSDU’s length is larger than the threshold, the mechanism is enabled.

**Syntax: fragment threshold <** value**>**

**Possible value:** *value:* 256-2346

**Default value:** 2346

**Access level:** 2

## DTIM Interval

Use this command to set the DTIM (Delivery Traffic Indication Message) interval based on 802.11

**Syntax: dtim interval <** number**>**

**Possible value:** *number:* 1-255

**Default value:** 2

**Access level:** 2

## Power

Use this command to set the transmit power of the wireless card

**Syntax: power <** value**>**

**Possible value:** *value:* 100mw, 50mw, 25mw, 10mw

**Access level:** 2

**Explanation:** Use this command to set the transmit power of the card

## RTS-CTS Threshold

Use this command to set RTS/CTS threshold. If the TX MPDU's length is larger than the threshold, the mechanism is enabled.

**Syntax: rts-cts threshold <** value**>**

**Possible value:** *value:* 0-2347

**Default value:** 2347

**Access level:** 2

## SSID

Use this command to set the network name of the wireless card. SSID (Service Set Identifier)

**Syntax: ssid <** string**>**

**Possible value:** *string length: 1-32, such as* 0-9, a-z, A-Z,

**Access level:** 2

**Explanation:** Use this command to set the hostname for this card

## Tx Rate

Use this command to set TX rate used for AP to send unicast frame. Auto means the AP will auto-select the TX Rate according to self algorithm.

**Syntax: tx rate <** value**>**

**Possible value:**

*value:* 1, 2, 5.5, 11, 6,9,12,18,24,36,48,54M, auto

**Default value: auto**

**Access level:** 2

**Explanation:** Use this command to set TX rate

## Wireless Mode

Use this command to set wireless card work mode: 11b, 11g, 108g or 11b/g

**Syntax: wireless mode <** value**>**

**Possible value:** *value:* 11b, 11g, 11b/g, 108g

**Default value: 11b/g**

**Access level:** 2

**Explanation:** Use this command to set wireless mode.

## WDS-Mode Enable / Disable

Use this command to set the wireless card work mode: either AP or WDS. When it is enabled, the wireless card supports WDS mode

Use this command to set repeater work mode, either PTP or PTMP. When it is enabled, the wireless card supports PTMP mode and enables the WDS mode.

**Syntax: wds-mode** {<enable | disable> | <PTP|PTMP>}

**Default value:** disable

**Access level:** 2

**Explanation:** Use this command to enable/disable WDS mode on this card.

## WDS Peer MAC

Use this command to set toward AP MAC addresses based on WDS mode, when PTMP is enabled, input 1-6 MAC addresses for this wireless card

**Syntax: wds peer mac <**mac-address> [**<**mac-address> **<**mac-address> **<**mac-address> **<**mac-address> **<**mac-address>]

**no wds** peer **mac** **<**mac-address> [**<**mac-address> **<**mac-address> **<**mac-address> **<**mac-address> **<**mac-address>]

**Access level:** 2

**Explanation:** Use this command to set toward AP MAC address on this card.

## WEP Encryption Enable / Disable

Use this command to enable WEP encryption.

**Syntax: wep encryption <enable|disable>**

**Default value:** disable

**Access level:** 2

## WEP Encryption Key

Use this command to set the first WEP key.

**Syntax wep encryption key key1 <**string**> key2 <**string**> key3<**string**> key4<**string**>**

**no wep encryption key [key1] [key2] [key3] [key3]**

**Possible value:** *string length: 26*

**Access level:** 2

## Default WEP-Key

Use this command to set the default WEP key based on 802.11.

**Syntax: default wep-key <** number**>**

**Possible value:** *number:* 1-4

**Default value:** 1

**Access level:** 2

**Explanation:** Use this command to set wireless WEP key for this card

## WEP-Key-Format

Use this command to set WEP key format.

**Syntax: wep-key-format <** hex | ascii **>**

**Possible value:** *string:* hex or ascii

**Access level:** 2

## WEP-Key-Length

Use this command to set WEP key length.

**Syntax: wep-key-length <**string**>**

**Possible value:** *string:* 64 or 128

**Default value:** 64

**Access level:** 2

## Antenna

Use this command to select antenna.

**Syntax: antenna {ant-a | ant-b | both}**

**Default value: both**

**Access level:** 2

## WPA Mode

Use this command to set WPA authentication mode.

**Syntax: wpa auth-mode {wpa|wpapsk|disable}**

**Possible value:** wpa|wpapsk|disable: keywords

**Default value: disable**

**Access level:** 2

## WPA Encryp-Mode

Use this command to set WPA encryption mode.

**Syntax: wpa encryp-mode {aes|tkip|auto }**

**Possible value:** aes|tkip|auto :keywords

**Default value: auto**

**Access level:** 2

## WPA Psk-Passphrase

Use this command to set WPA pre-shared key.

**Syntax: wpa psk-passphrase <string>**

**Possible value:** *string*: Alphanumeric, length range: 8-63

**Access level:** 2

## WPA Groupkey-Update-Interval

Use this command to set WPA group key update interval.

**Syntax: wpa groupkey-update-interval <***value***>**

**no wpa groupkey-update-interval**

**Possible value:** *value* range:0(means no update), 30- 65535 seconds

**Default value:** 1800 seconds

**Access level:** 2

### Optimize-108g Enable/Disable

Use this command to enable or disable 108g optimization.

**Syntax:optimize-108g enable/disable**

**Access level:** 2

## Webserver Mode

### Enable/Disable

Use this command to enable or disable the web server.

**Syntax: enable/disable**

**Access level:** 2

**Explanation:** Use this command to enable or disable the web server.

## IP-Filter Enable/Disable

Use this command to enable or disable the web server’s IP-filter.

**Syntax: ip-filter enable/disable**

**Access level:** 2

**Explanation:** Use this command to enable or disable the web server’s IP-filter.

## IP-Filter Client

Use this command to set IP-filter’s IP address.

**Syntax: ip-filter client <ip> [mask]**

**no ip-filter client <ip>**

**Access level:** 2

**Explanation:** Use this command to add or remove the ipfilter’s IP address

## Port-Filter

Use this command to enable or disable the web server’s port filter.

**Syntax: port-filter {enable|disable} <port>**

**Possible value:**

*port***: wan,lan,wlan**

**Access level:** 2

# IAPP Mode

## Enable/Disable

Use this command to enable or disable IAPP.

**Syntax: enable/disable**

**Access level:** 2

## ESP Enable/Disable

Use this command to enable or disable ESP.

**Syntax: esp enable/disable**

**Access level:** 2

## Mode

Use this command to set IAPP mode.

**Syntax: mode {local|remote}**

**no mode**

**Possible value:** local|remote: keywords

**Default value:** remote

**Access level:** 2

## Map

Use this command to set IAPP map entry.

**Syntax: map <mac> <ip> (max 64 entries)**

**no map <mac>**

**Access level:** 2

**Explanation:** Use this command to add or delete IAPP map entry.

## Secret

Use this command to set IAPP secret.

**Syntax: secret <string>**

**Possible value:** *string*: alphanumeric; max length:16

**Access level:** 2

# Debug Mode

## Ping

Use this command to test the network layer connectivity between source and destination address. This command is a global command and can be used at any configuration level.

**Syntax: ping** <ip-address> [times <times>] [packet-size <size>]

**Possible value:** *ip-address*: Specifies the network layer destination address .

*Times*: Specifies the packets to send. Possible values are 1-10000.

*packets-size*: Specifies the data size of ICMP packet. 0-65000.

**Access level:** 2

**Explanation:** Use this command to test the network layer connectivity

## Debug-Module

Use this command to enable or disable every module's debug message

**Syntax: debug-module <**module-name**> <**level**>

**no debug-module** [module-*name*]

**Possible value:** *module name:* DOT1X, SMI, RADIUS, DHCPS, DHCPR, DHCPC, IP, NAT, BRIDGE,DOT11, WEB, CLI, SNMP, TELETE, L2TP, PPP, PPPOEC

*level:* ERROR, WAINING, TRACE

**Access level:** 2

## NAT Logging

Use this command to set NAT logging information.

**Syntax: nat logging [detail|data]**

**no nat logging [detail|data]**

**Possible value:** *detail|data: keywords*

**Access level:** 2

## NAT Print

Use this command to set NAT print information

**Syntax: nat print {detail|data|error}**

**no nat print {detail|data|error}**

**Possible value:** *detail|dat|error: keywords*

**Access level:** 2

## Sys-Function

Use this command to execute some system function.

**Syntax: sys-function <**function-name**>**

**Possible value:**

*function-name*: i, arpShow, ifShow, inetstatShow, ipstatShow, netStackDataPoolShow, netStackSysPoolShow, mbufShow, hostShow, routeShow, routeStatShow, udpstatShow, tcpstatShow, icmpstatShow, CPUReport

**Access level:** 2

## Show Version

Use this command to display internal version.

**Syntax: show version**

**Access level:** 2

**Explanation:**

Execute the command, and the following will be displayed:

Hardware version: 1.0.0.1

Software version: 1.1.1.0

Create date: Feb 9 2004, 13:49:59

## Show Memory

Use this command to display the memory information.

**Syntax: show memory**

**Access level:** 2

**Explanation:**

## Show NAT Run

Use this command to display NAT running configuration

**Syntax: show nat run**

**Access level:** 2

## Show Debug_Module

Use this command to display debug module status.

**Syntax: show debug_module**

**Access level**: 0

## Net-Security Rate-Limit Enable/Disable

Use this command to enable/disable the rate limit.

**Syntax: rate-limit enable/disable**

**Possible value**: N/A

**Access level**: 0

## Net-Security Syn-Cache Enable/Disable

Use this command to enable/disable SYN cache.

**Syntax: syn-cache enable/disable**

**Access level**: 0

## Net-Security Attack-Defense Enable/Disable

Use this command to enable/disable the network attack defense.

**Syntax: attack-defense enable/disable**

**Access level**: 0

## Show Net-Security

Use this command to display network security configuration.

**Syntax: show net-security**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
Rate Limit Status        : Enable
SYN Cache Status         : Disable
Network Attack Defense   : Disable
```

### Ipstack Debug

Use this command to enable IP stack print packet information.

**Syntax: ipstack-debug <module>**

**no ipstack-**debug <module>

**Possible value**: *module*: IP, ICMP, TCP, UDP, IGMP

**Access level**: 0

### Show Ipstack-Debug

Use this command to display the IP stack debug status.

**Syntax: show ipstack-debug**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
IP    debug          : On
ICMP  debug          : Off
TCP    debug         : On
UDP     debug        : Off
IGMP     debug       : On
```

## Show

### Show ARP

Use this command to display ARP entries.

**Syntax: show arp**

**Access level:** 0

### Show Console

Use this command to display the console config information, such as baud-rate, console session time-out and so on.

**Syntax: show console**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
Baud rate    : 9600
Timeout      : 30 minutes
Parity       : no
Data bits    : 8
Stop bits    : 1
Flow control : disable
```

### Show DHCP-Client

Use this command to display the DHCP client configuration.

**Syntax: show dhcp-client**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
  DHCP status        : enable
 DHCP server         :
 DHCP trusted server: 1.1.1.1
```

### Show DHCP Service

Use this command to display the current DHCP service (RELAY or SERVER) in the system.

**Syntax: show dhcp service**

**Access level: 0**

### Show DHCP Binding

Use this command to display address bindings on Dynamic Host Configuration Protocol (DHCP) server.

**Syntax: show dhcp binding** [*ip-address*] | [**manual** ] | [ **auto**]

**Possible value:** *ip-address:* Specifies the IP address of the DHCP client for which bindings will be displayed

*Manual*: Displays only manual binding's address

*Auto*: Displays only auto binding's address

**Default value:** All address bindings are shown.

**Access level: 0**

### Show DHCP Relay

Use this command to display DHCP relay agent's configuration parameters.

**Syntax: show dhcp relay**

**Access level:0**

## Show DHCP Server

Use this command to display DHCP server’s configuration parameters.

**Syntax: show dhcp server**

**Access level:0**

## Show DHCP Statistics

Use this command to display Dynamic Host Configuration Protocol (DHCP) Server statistics.

**Syntax: show dhcp statistics [relay |server]**

**Default value:** all statistics

**Access level: 0**

## Show Dot1x Configuration

Use this command to display the PAE capabilities, protocol version, and other global dot1x parameters such as max-req, re-authperiod, server-timeout supplicant-timeout and so on.

**Syntax: show dot1x**

**Access level: 0**

## Show Dot1x Statistics

Use this command to display the statistics of 802.1x.

**Syntax: show dot1x statistics**

**Access level : 0**

## Show Flash

Use this command to list the flash code information, such as version number, size and so on.

**Syntax: show flash**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
/image  <DIR>       2000-01-16 21:31:26
/image/3001A.Z    931895    2000-01-02 22:18:26
/config  <DIR>      2000-01-16 21:31:26
/config/config    6034    2000-01-09 21:34:08
```

## Show Dot1x Authentication Configuration

Use this command to display the dot1x authentication configuration.

**Syntax: show dot1x authentication configuration**

**Access level**: 0

## Show MAC

Use this command to display the MAC addresses.

**Syntax: show mac** [type] [port]

**Possible value**: *type*: static | dynamic

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
MAC     State   Port   Pass-time Ageing-Time
-----------------------------------------------
 00:06:5b:2c:eb:f8 Dynamic LAN    215     300
 00:06:5b:a2:07:f2 Dynamic LAN    264     300
 00:08:74:9c:e7:f0 Dynamic LAN    228     300
 00:08:74:92:07:ee Dynamic LAN     221     300
 00:0b:db:53:77:eb Dynamic LAN     223     300
 00:08:74:f1:8f:e5 Dynamic LAN     219     300
```

## Show MAC Black-List

Use this command to display the black MAC list.

**Syntax: show mac black-list**

**Access level:** 2

## Show MAC White-List

Use this command to display the white MAC list.

**Syntax: show mac white-list**

**Access level:** 2

## Show NAT Translation

Use this command to display the currently active NAT translations.

**Syntax: show nat translation**

**Access level:** 2

**Explanation:**

Execute this command, and the following will be displayed:

```
Local ip addr    global ip addr  local port      global port
```

## Show NAT Configuration

Use this command to display all NAT configuration information.

**Syntax: show nat configuration**

**Access level:** 2

**Explanation:**

Execute this command, and the following will be displayed:

Eable/disable , timeout value

Nat pool information(<start-ip> <end-ip> <ip-mask>)

Nat map information(<local-ip> <global-ip>)

Nat redirect information(<global-port> <local-port> <local-ip>)

## Show Managed-Interface

Use this command to display the IP information of the management interface.

**Syntax: show managed-interface**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

MAC address :

IP address :

Subnet mask :

Default gateway : (wan only)

### Show IP-Route

Use this command to display the static or all route entries.

**Syntax: show ip-route** [static]

**Access level:** 0

### Show Access-List Configuration

Use this command to display the access-list configuration.

**Syntax: show access-list configuration**

**Access level**: 0

### Show Port Config

Use this command to display the configuration information of one or all ports, such as speed duplex, priority, PVID and so on.

**Syntax: show port config**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
Port Link State   AutoCap SpeedDuplex   PVID Pri FlowCtrl
       Protected
1  up   enable  ----- 100-full    1  0  disable
```

## Show RADIUS Configuration

Use this command to show the radius configuration information summary.

**Syntax: show radius configuration**

**Access level: 0**

## Show RADIUS Statistics

Use this command to show the statistics of radius client.

**Syntax: show radius statistics**

**Access level: 0**

## Show Sms User

Use this command to show the local user configuration information, including: Status, ISP name, Flag, Username, password, MAC address, IP address, VLAN ID and Port.

**Syntax: show sms user** {**name** <name> | **mac** <macaddr> | {**all | dynamic | static**}} [parameters]]

**Possible value:** parameters : [lock<enable/disable>]

**Access level : 0**

### Show SMS Online-User

Use this command to show the online user 's information.

**Syntax: show sms online-user**

**Access level : 0**

### Show Wireless-Port

Use this command to show the wireless port configuration information.

**Syntax: show wireless-port**

**Access level**: 0

### Show System

Use this command to display the system information, such as contact, location, name, up-time, software version, hardware version and so on.

**Syntax: show system**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
Serial number           : 000008c42671
System uptime             : 0 days 21 hours 27 minutes 5
    seconds
Console baudrate          : 9600
Board temperature         : 48.0 (C)
Hardware version          : 1.0.0
Software version         : 1.0.0
```

## Show Telnet

Use this command to display all the telnet configuration information, such as the telnet server's status, telnet mode, telnet session time-out and so on.

**Syntax: show telnet**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
Telnet server status   : Enable
Telnet session timeout : 30 minute(s)
```

### Show SNMP Server Configuration

Use this command to disable SNMP server configuration, including trap configuration.

**Syntax: show snmp server configuration**

**Access level**: 0

### Show AP-Mode

Use this command to display the AP work mode.

**Syntax: show ap-mode**

**Access level**: 0

### Show Load-Balance Configuration

Use this command to show the load balance configuration.

**Syntax: show load-balance configuration**

**Access level**: 0

## Show Who

Use this command to display the login operator.

**Syntax: show who**

**Access level**: 0

## Show Running-Config

Use this command to display the running configuration.

**Syntax: show running-config**

**Access level**: 0

## Show Startup

Use this command to display the startup configuration.

**Syntax: show startup**

**Access level**: 0

## Show WPA Configuration

Use this command to display the WPA configuration.

**Syntax: show wpa configuration**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
wpa auth mode          :  wpa
encryption mode        :  tkip
gtk update interval    :  1800 seconds
wpa-psk passphrase     :  abcdefg
```

### Show Webserver

Use this command to display the WEB Server configuration.

**Syntax: show webserver**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
WEB Status             :  enable
```

### Show VLAN Configuration

Use this command to display VLAN configuration. This command will be valid if the VLAN module is available.

**Syntax: show vlan configuration**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
VLAN Status          : enable
VLAN Tag Status       : enable
VLAN Default vid      : 1
```

## Show VLAN Binding

Use this command to display VLAN binding. This command will be valid if the VLAN module is available.

**Syntax: show vlan binding**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
MAC              Vid    Name
---------------------------------------------
 00:00:00:00:00:01  123    utstar
 00:00:00:00:00:02  5      test
```

## Show IAPP Configuration

Use this command to display IAPP configuration.

**Syntax: show iapp configuration**

**Access level**: 0

**Explanation:**

Execute this command, and the following will be displayed:

```
IAPP config status    : enable
IAPP running status  : UP
IAPP mode              : local
ESP mode                : enable
IAPP secret             : *********


IAPP map:
MAC                              IP
----------------------------------------------
00:00:00:00:00:01        172.18.32.5
00:00:00:00:00:02        172.18.32.4
```

# 10 Troubleshooting

When the user has trouble using the AP, the starting point to troubleshoot the problem with the AP is to look at its LED activity. Table 20 is provided to assist the user in diagnosing and solving the operational problems.

**Table 20** Troubleshooting

| PWR | AP | WLAN | LAN | LINK | Description/Action |
|---|---|---|---|---|---|
| Green LED stays on | Green LED on | Green LED blinks | Green LED blinks | Green LED stays on | No action is required. |
| | | | | - | |
| | On | Off | Off | - | No LAN activity.<br>No action is required. |
| Off | Off | Off | Off | Off | Power problem.<br>Examine the power supply cable.<br>Check the power supply. |

| PWR | AP | WLAN | LAN | LINK | Description/Action |
|---|---|---|---|---|---|
| Green LED stays on | Off | Off | Off | Off | Hardware failure or AP freezes. Contact the product supplier. |
| | Green LED blinks | - | - | - | Software failure. Upgrade the software via Windows IE or console (hyper terminal). |
| | Green LED blinks | Green LED blinks | - | - | WLAN initialization failure.<br>Examine whether the wireless equipment has been installed correctly. |
| | Green LED blinks | - | Green LED blinks | - | Ethernet initialization failure.<br>Contact the product supplier. |

# 11 Technical Specifications

**Table 21** WA3001 AP Technical Specifications

| Type | | WA3001 |
|---|---|---|
| Description | | 2.4GHz(802.11g) 108Mbps enterprise class wireless access node |
| Standard Compliance | | -IEEE 802.11<br>-IEEE 802.11b<br>-IEEE 802.11g<br>-IEEE 802.3<br>-IEEE 802.11i<br>-IEEE 802.3af |
| Interfaces | Ethernet WAN Interface | One 10/100Mbps interface (RJ45) |
| | Ethernet LAN Interface | Four 10/100Mbps interfaces (RJ45) |
| | Console Interface | One RS-232 Console interface |
| | Auto rate scaling | Super G™: 108Mbps<br>802.11g: 54, 48, 36, 24, 18, 12, 9, 6Mbps<br>802.11b: 11, 5.5, 2, 1Mbps |
| | Online subscribers | Max. 256 |

| Type | | WA3001 |
|---|---|---|
| | Security | 64, 128bits WEP<br>802.1X (EAP-MD5, EAP-TLS, PEAP, CHAP, PAP)<br>WPA (TKIP，AES)<br>WAPI<br>MAC address access control<br>Subscriber isolation |
| | Authentication | Supports 802.1x and RADIUS Client<br>Supports DHCP Server and DHCP Client<br>Supports PPOE transparent transmission |
| | WDS | PtP(Point-to-Point) Bridge<br>PtMP(Point-to-Multi-point) Bridge |
| | L2 roaming | IAPP |
| | NAT | Supported |
| | Management | Web-based management<br>Telnet<br>CLI<br>SNMP v.2 (MIB II) |
| | Work mode | Bridge and Router |

| Type | | WA3001 |
|---|---|---|
| | Reception sensitivity | -73dBm @ 108Mbps, PER < 8%, OFDM<br>-73dBm @ 54Mbps, PER < 8%, ODFM<br>-90dBm @ 11Mbps, PER < 8%, CCK<br>-92dBm @ 6Mbps, PER < 8%, OFDM<br>-95dBm @ 1Mbps, PER < 8%, DBPSK |
| | Operational frequency range | 2.4GHz~2.4835GHz ISM Band |
| | Channels | Europe/FCC: 2.412～2.462GHz(11 channels)<br>China/Europe/ETSI: 2.412~2.472GHz(13 channels) |
| | Transmit Power | China: Four adjustable levels, the default is 100mw<br>FCC/EC (default value):<br>Mode b: 40mw<br>Mode g: 26mw / 70mw (Turbo mode) |
| Electrical Parameters | Local power supply | 12V/1.25A |
| | Remote power supply | Supports Standard 802.3af POE power supply |
| | Power consumption | Transmission: <530mA@ 12V DC<br>Reception: <400mA@ 12V DC |
| Physical Features | Dimensions | 180mm(L) X140mm (W) X40mm (H) |

| Type | | WA3001 |
|---|---|---|
| | Weight | 450g |
| | Antenna | External, various antennae can be assembled. |
| | LEDs | Power, AP, WLAN, LAN, LINK |
| Environmental | Operating temperature | -10℃~ 50℃ |
| | Storage temperature | -20℃~ 70℃ |
| | Humidity (non-condensing) | 10 ~ 90% |
| MTBF | >30000 hours | |
| Coverage | Indoors: 200m<br>Outdoors: 500m | |
| Security certificate | - GB9254 Class B<br>- FCC part 15 Class B (America)<br>- CE (Europe) | |
| Compatibility | - Wi-Fi WECA compatible | |
| Language | Chinese (web-based management)<br>English | |

# 12 Acronyms and Abbreviations

| | |
|---|---|
| AC | Access Controller |
| AS | Authentication Server |
| BRAS | Broadband Remote Access Server |
| CLI | Command Line Interface |
| DHCP | Dynamic Host Configuration Protocol |
| DTIM | Delivery Traffic Indication Message |
| EAP | Extensible Authentication Protocol |
| ESSID | Extended Service Set Identifier |
| IEEE | Institute of Electrical and Electronics Engineering |
| LAN | Local Area Network |
| MAC | Media Access Control |
| MD5 | Message Digest Algorithm 5 |

| | |
|---|---|
| MIB | Management Information Base |
| MII | Media Independent Interface |
| MTU | Maximum Transmission Unit |
| NAS | Network Access Server |
| NAPT | Network Address Port Translation |
| NAT | Network Address Translation |
| NMS | Network Management System |
| OAM | Operation Administration and Maintenance |
| PD | Powered Device |
| PoE | Power over Ethernet |
| PPPoE | PPP over Ethernet |
| PSE | Power Sourcing Equipment |
| PtMP | Point-to-Multi-Point |
| PtP | Point-to-Point |
| RADIUS | Remote Authentication Dial in User Service |

| | |
|---|---|
| SNMP | Simple Network Management Protocol |
| WEP | Wired Equivalent Privacy |
| WLAN | Wireless Local Area Network |
| WNIC | Wireless Network Interface Card |

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