WA6011/6012 Outdoor AP

Access Point

ADMINISTRATOR GUIDE

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About This Guide

Introduction

This guide is specific guiding the Administrators to operate and configure the outdoor AP WA6011 and WA6012

Conventions

This guide may contain notices, figures, screen captures, and certain text conventions.

Notice

The following table lists notices icons used in this guide.

Icon	Notice Type	Description
ℹ	Note	Information that contains important features or instructions but is not hazard-related.
⚠	Caution	Information to alert of potential damage to a program, data, system, or device. If not avoided, may result in minor or moderate injury. It may also alert against unsafe practices and potential program, data, system, device damage.
⚡	Warning	Information to alert of operations that may cause potential accident, casualty, personal injury, fatality or potential electrical hazard. If not avoided, could result in death or serious injury.
⚠	ESD	Information that indicates proper grounding precautions is required before handling a product.

Text

The following table lists text conventions in this guide.

Convention	Description
Text represented by `Courier New Font`	`This typeface` represents text that appears on a terminal screen, including, configuration file names (only for system output file names), and command names, for example `login.`
Text represented by **bold**	This typeface represents function names, window tabs, field names, for example, Set the **Time** field.
Text represented as **`user entry`**	**`This typeface`** represents commands entered by the user, for example, **`cd $HOME`**.
Text represented by “ ”	This typeface represents window and dialogue box names, directory, file names, process name, and command in text, for example, open the “NE Inventory Management” window.

Convention	Description
Text represented by [Menu] and [Menu/Sub-menu]	This typeface represents menus such as [File], and [File/New]
Text represented by <Button>	This typeface represents button on screen, function key on the keyboard and icon names for example, click <OK>.
Text represented by *Document Name*	This typeface represents documents for reference, for example, *Netman 2020-based AN2000B-900 Installation Guide*
Text represented by `# File format:`	This typeface represents files in Unix/Linux system flies.

Figures and Screen Captures

This guide provides figures and screen captures as example. These examples contain sample data which may vary from the actual data on an installed system.

Related Documentation

- *WA6011/6012 Outdoor AP CLI Command Reference*

1

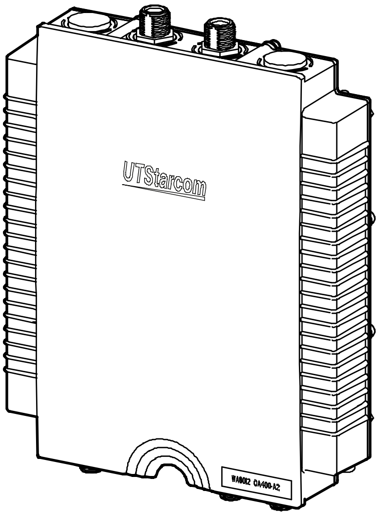
Overview

WA6011 and WA6012 is carrier class outdoor model of AP (Access Point) that provides the uplink to Ethernet and ADSL (Asymmetrical Digital Subscriber Loop). It is a typical designed product for Service Providers. WA6011/6012 supports IEEE802.11a/b/g and provides 54 Mbps data transfer speed among buildings.

Product Front View

Figure 1 shows the front view of WA6011/6012. The device is waterproofed by using completely wipe out encapsulation.

Figure 1 WA6011/6012 Front View



Product Features

- Compliant with IEEE802.11a/b/g
- Supports PTP (point to point), PMP (point to multi-points) wireless bridge mode
- The assembled antenna is facility for user to use the outdoor antenna easily
- Automatically select data transfer rate
- Supports a router mode
- Supports 802.1x to provide high data security
- Supports DHCP server
- Supports RADIUS Client
- Supports 802.1x

- Supports PPPoE pass-through
- Supports NAT
- Supports broadcast threshold
- Supports 64/128-bit WEP encapsulation
- Supports remote firmware management
- Provides load-balancing control based on the volume of traffic and the number of accesses
- Supports MAC address filter configuration
- Provides WEB, SNMP, and CLI based management

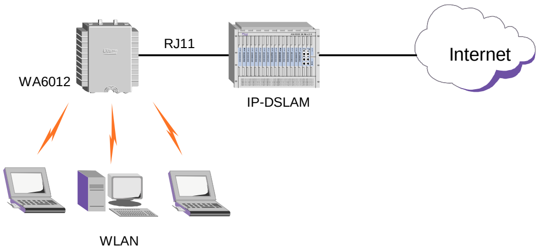
***Note:** In this guide, the description about WA6011 is the same as WA6012 if there is no specific illustration.*

Network Topology

AP Mode

WA6011/6012 can provide wireless access (AP mode). AP is used to establish connection between wireless network and wired network, while its wireless network can support up to hundred users within hundred meters. Figure 2 shows an example of WA6012 in AP mode. AP connects to WAN through ADSL, while it is connected with wireless users through its wireless network card.

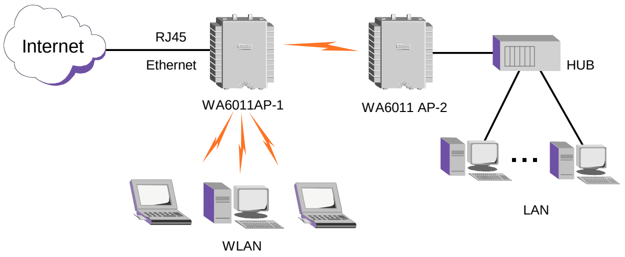
Figure 2 Network Topology in AP Mode



Point To Point Mode (P2P)

WA6011/6012 can work in P2P mode, connection between wireless network and wired network through two APs realizes resource sharing, as well as network extension. Figure 3 shows that the wired LAN of AP-2 accesses network resource in bridge mode connected with AP-1, meanwhile AP can have wireless access.

Figure 3 Network Topology in P2P Mode

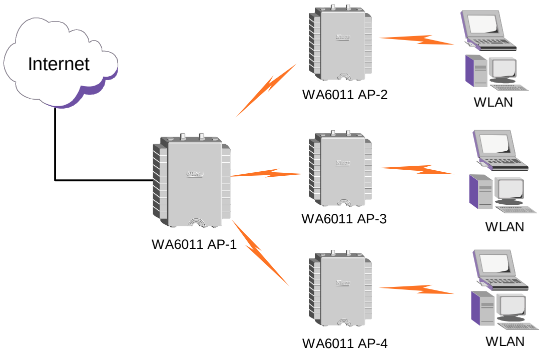


Note: *WA6011/6012 can configure two network cards simultaneously. One is configured in AP mode for WLAN, the other one is configured in P2P or P2MP mode for wireless bridging among two or more. To avoid radio interference, configuring two network cards on different working channels is recommended.*

Point To Multi-Point Mode (P2MP)

P2MP wireless network bridging is able to connect several individual remote networks together. Its network topology is more complicated than P2P. In P2MP mode, radio signal is sent from one network as the center, other receiving points receive the signals. WA6011/6012 supports up to six remote APs' access.

Figure 4 WA6011 Network Topology in P2MP Mode



2

Hardware Installation

Package Contents

Before the installation, check the following accessories in the box:

- WA6011 (AC Power Supply)
  - One WA6011
  - 50m Ethernet cable
  - 35m AC power cable
  - One Console cable with RS232 Interface (Option)
  - One Installation Rack
  - Four screws
  - Four sleeves
  - One User Guide (this one)
  - One guarantee card
- WA6011 (DC Power Supply)
  - One WA6011
  - One PoE module with power cable
  - 50m Ethernet cable
  - One Console cable with RS232 Interface (Option)
  - One Installation Rack
  - Four screws
  - Four sleeves
  - One User Guide (this one)
  - One guarantee card
- WA6012
  - - One WA6012
  - - 50m ADSL cable
  - - 35m power cable
  - - One Console cable with RS232 Interface (Option)
  - - One Installation Rack
  - - Four screws
  - - Four sleeves
  - - One User Guide (this one)
  - - One guarantee card

Note: *1. If you find anything missing or if the documentation set is incomplete, contact your local dealer immediately.*

2. The product is only for professional installation.

Interface Description

WA6011/6012 side panel (I) is shown in Figure 5. Table 1 describes the interfaces on the side panel (I).

Figure 5 WA6011/6012 Side View (I)

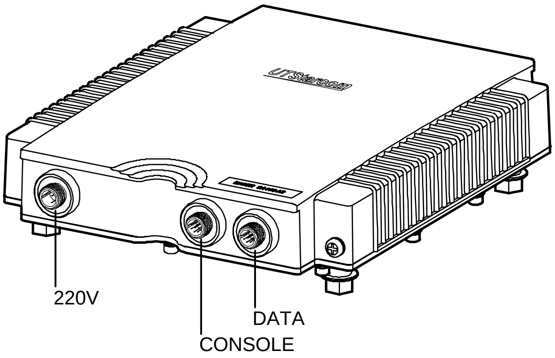


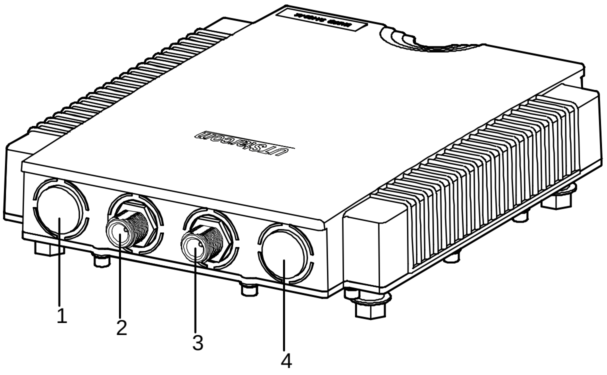
Table 1 Interface Description on Side Panel (I)

Interface	Color	Description
220V	Red	AC Power Connection Adapter
CONSOLE	Green	RS232 port provides CLI configuration interface
DATA	WA6011: Blue WA6012: Yellow	Data Interface: WA6011: Ethernet port; WA6012: ADSL port

Note: *WA6011 supports PoE（Power Over Ethernet）mode. Use an Ethernet cable to connect AP's Data interface with the DC power output port in the DC power supply module to implement data transmission and DC power supply.*

Figure 6 shows the side panel (II) of WA6011/6012. WA6011 provides four antenna jacks marked with number 1 to 4 from left to right. Two wireless network cards can be installed. Jack 2 & 3 are used if only one network card installed; If two network cards are installed at the same time, jack 1 & 2 are used for one card, jack 3 & 4 are used for the other card.

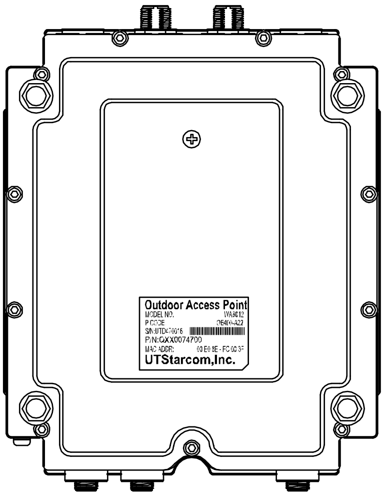
Figure 6 WA6011/6012 Side Panel (II)

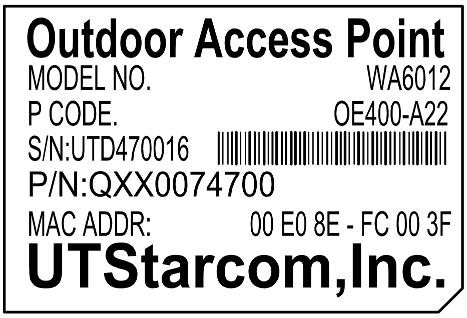


Product Label Description

The label on the bottom of WA6011/6012 marks the product model and code.

Figure 7 WA6012 Bottom View





Outdoor Access Point

MODEL NO. WA6012

P CODE. OE400-A22

S/N:UTD470016

P/N:QXX0074700

MAC ADDR: 00 E0 8E - FC 00 3F

UTStarcom,Inc.

Table 2 Label Description

Name	Description
Outdoor Access Point	Outdoor Access Point

Name	Description
MODEL NO	WA6012
P CODE	Product Code: **O:** outdoor **E:** Ethernet port **A:** ADSL port for WA6012 **400**：400mw power **A:** AC power supply **D:** PoE **2:** Support b/g mode **3**: Supports a/b/g mode. A supplementary digit represents two network cards installed.
S/N	Serial number
MAC ADDR	Device MAC address

Cable Connection

WA6011/6012 are outdoor AP, its rack installation, please refer to ***WA6011/6012 Outdoor AP Installation Guide*.** The cable connection will be described in this section.

WA6011 in AP mode:

- AC power supply

1 Connect the 220V AC power adapter to the AC power supply

2 Connect the DATA interface in AP to the Internet (usually is a port of an Ethernet switch) through a data cable

3 Configure the wireless network card for wireless users access

- PoE power supply

1 Connect the 220V power connection socket on PoE module to the AC power supply through a power cable

2 Connect the Input jack in PoE module to the internet (usually is a port of an Ethernet switch) through an Ethernet cable

3 Connect the DATA interface in AP to the Output interface in PoE module through a data cable, the cable provides data transmission and DC power

4 Configure the wireless network card for wireless users access

WA6012 in AP mode:

1 Connect the 220V AC power adapter to the AC power supply

2 Connect the DATA (ADSL) interface in AP to the internet through a data cable

3 Configure the wireless network card for wireless users access

3

Web-based Configuration

Introduction

There are two working modes available in WA6011: Route and Bridge mode. The default is bridge mode.

WA6011 default settings:

- Working mode is Bridge mode
- IP Address of the LAN interface is 172.18.37.1. Mask is 255.255.255.0.
- ESSID of wireless interface is set to “UT”. Wireless channel is set to “1”
- When the AP is in route mode, IP Address of the WAN interface is 192.168.1.1. Mask is 255.255.255.0.

If security setting is not requested, only ESSID setting in the wireless network card of user’s terminal is configured to be same as the one in the AP, then AP can work properly with the card after power is supplied (WA6012 needs to set VPI/VCI)

Login AP

Access the AP through LAN port or the uplink port:

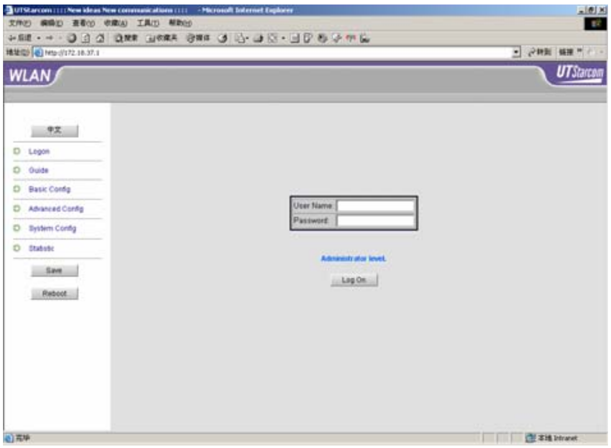
- After the configuration of AP and PC wireless network card is completed, the user can access AP wirelessly. (AP works in Bridge or Router mode)
    - Install a wireless network card in a PC, set its IP Address the same as the AP’s and LAN port’s, e.g. 172.18.37.10, Mask: 2555.2555.255.0, set the ESSID the same as the AP’s, check the status of the wireless network card, make sure it connects to the AP. Logon to the WA6011/6012 through the web browser.
- Access AP through the uplink ports
    - In Bridge mode, the IP addresses of the PC and the AP LAN interface should be set the same, e.g. 172.18.37.10. Use the web browser to logon.

Note: *To access AP through the Ethernet port on DSLAM because the uplink of WA6012 is ADSL (RJ11)*

- In Route mode, the IP addresses of the PC and the AP’s WAN interface should be set the same, e.g. 192.168.1.10. Set the Mask to 255.255.255.0. Use the web browser to logon.

The Logon Interface is displayed in Figure 8. The user name for administrator is “*admin*”, and password is “*admin*”. The user name for guest (read only) is “*guest*”, the password is “*guest*”. The administrator has right to set all configurations for the AP, but guests can read the AP status and statistic information only

Figure 8 Logon Window

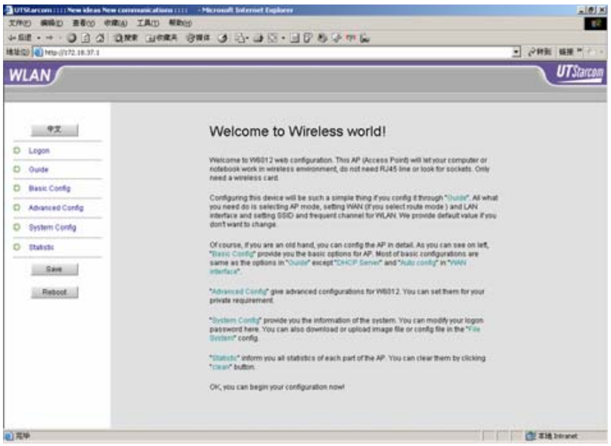


Web Configuration User Interface

WA6011 web user interface (UI) is shown in Figure 9. The left panel lists all configuration options, save and reboot buttons. Click on the <中文> button to switch the UI to Chinese mode, see Figure 10

Table 3 lists all configuration options in Bridge and Route modes (WA6011)

Figure 9 Web Configuration UI (English)



Welcome to Wireless world!

Welcome to W6012 web configuration. This AP (Access Point) will let your computer or notebook work in wireless environment, do not need RJ45 line or look for sockets. Only need a wireless card.

Configuring this device will be such a simple thing if you config it through "Guide". All what you need do is selecting AP mode, setting WAN (if you select route mode) and LAN interface and setting SSID and frequent channel for WLAN. We provide default value if you don't want to change.

Of course, if you are an old hand, you can config the AP in detail. As you can see on left, "Basic Config" provide you the basic options for AP. Most of basic configurations are same as the options in "Guide" except "DHCP Server" and "Auto config" in "WAN interface".

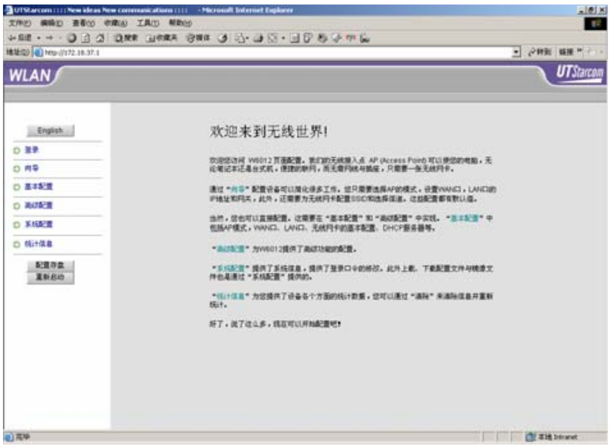
"Advanced Config" give advanced configurations for W6012. You can set them for your private requirement.

"System Config" provide you the information of the system. You can modify your logon password here. You can also download or upload image file or config file in the "File System" config.

"Statistic" inform you all statistics of each part of the AP. You can clear them by clicking "clear" button.

OK, you can begin your configuration now!

Figure 10 Web Configuration UI (Chinese)



欢迎来到无线世界!

欢迎您访问 W6012 页面配置。我们的无线接入点 AP (Access Point) 可以使您的电脑，无论笔记本还是台式机，便捷的联网，而无需网线与插座，只需要一张无线网卡。

通过"向导"配置设备可以简化很多工作，您只需要选择AP的模式，设置WAN口，LAN口的IP地址和网关，此外，还需要为无线网卡配置SSID和选择信道。这些配置都有默认值。

当然，您也可以直接配置，这需要在"基本配置"和"高级配置"中实现。"基本配置"中包括AP模式，WAN口、LAN口、无线网卡的基本配置、DHCP服务器等。

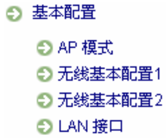
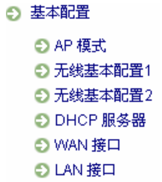
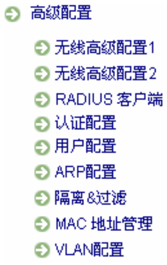
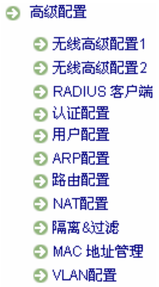
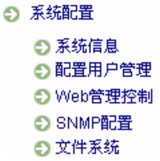
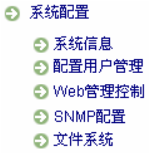
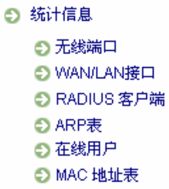
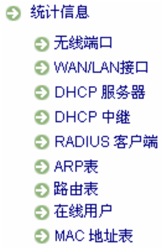
"高级配置"为W6012提供了高级功能的配置。

"系统配置"提供了系统信息，提供了登录口令的修改。此外上载、下载配置文件与镜像文件也是通过"系统配置"提供的。

"统计信息"为您提供了设备各个方面的统计数据，您可以通过"清除"来清除信息并重新统计。

好了，说了这么多，现在可以开始配置吧!

Table 3 Configuration Description Table (WA6011)

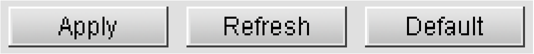
Menu	Bridge Mode	Router Mode
Basic Config	 基本配置 AP 模式 无线基本配置1 无线基本配置2 LAN 接口	 基本配置 AP 模式 无线基本配置1 无线基本配置2 DHCP 服务器 WAN 接口 LAN 接口
Advanced Config	 高级配置 无线高级配置1 无线高级配置2 RADIUS 客户端 认证配置 用户配置 ARP配置 隔离&过滤 MAC 地址管理 VLAN配置	 高级配置 无线高级配置1 无线高级配置2 RADIUS 客户端 认证配置 用户配置 ARP配置 路由配置 NAT配置 隔离&过滤 MAC 地址管理 VLAN配置
System Config	 系统配置 系统信息 配置用户管理 Web管理控制 SNMP配置 文件系统	 系统配置 系统信息 配置用户管理 Web管理控制 SNMP配置 文件系统
Statistic	 统计信息 无线端口 WAN/LAN接口 RADIUS 客户端 ARP表 在线用户 MAC 地址表	 统计信息 无线端口 WAN/LAN接口 DHCP 服务器 DHCP 中继 RADIUS 客户端 ARP表 路由表 在线用户 MAC 地址表

Button Description

In the main configuration options window, there are two more buttons, “Save” and “Reboot” available in the left panel of the logon screen, click <Reboot> to re-start the AP.

The buttons shown in Figure 11 will appear during the configuration.

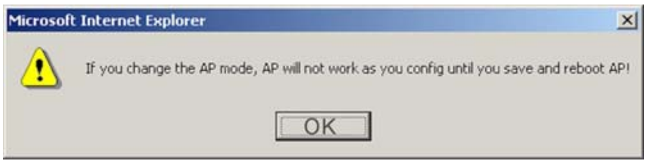
Figure 11 Buttons



- <Apply>: Press to apply a configuration changes. Some configurations are applied only after saving and rebooting the AP. The corresponding prompt window will pop up.
- <Refresh>: Press <Refresh> to refresh the interface.
- <Default>: Press <Default> to restore the default parameters.

For some parameter’s configuration, e.g. ESSID, click <Apply>, the system will prompt that the configuration will be effective after save and reboot the AP, see Figure 12

Figure 12 AP Reboot Prompt Window



Microsoft Internet Explorer

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

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

4

Web-based Configuration

This chapter will introduce all Web configurations in Route mode. The Web-based configuration in Bridge mode will not be described here because they are included in the configurations in Route mode.

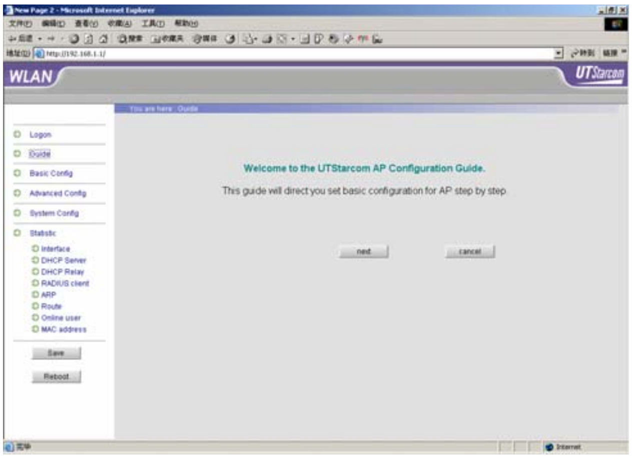
Guide Configuration

"**Guide**" provides users the ability to configure the AP in Route/Bridge mode according to the instructions in the Web interface.

Note: *User can configure more functions via "Basic config" and "Advanced config"*

Refer to Figure 13, click "Guide" on the left panel of the Logon interface.

Figure 13 Guide Configuration

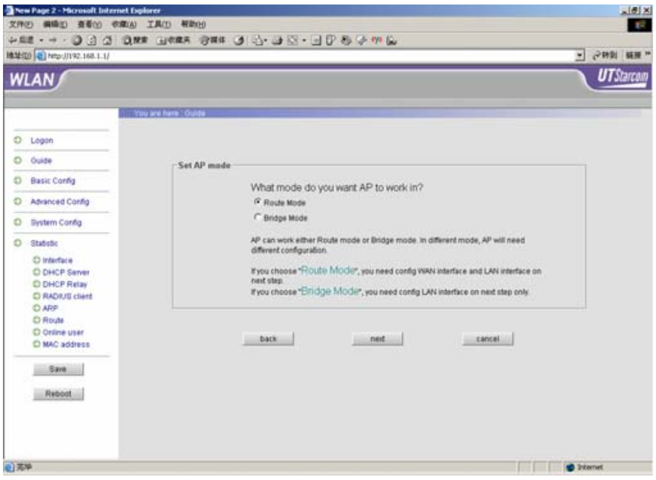


Welcome to the UTStarcom AP Configuration Guide.

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

Entering the Guide configuration window, as shown in Figure 14

Figure 14 AP Mode Setting



Set AP mode

What mode do you want AP to work in?

● Route Mode

○ Bridge Mode

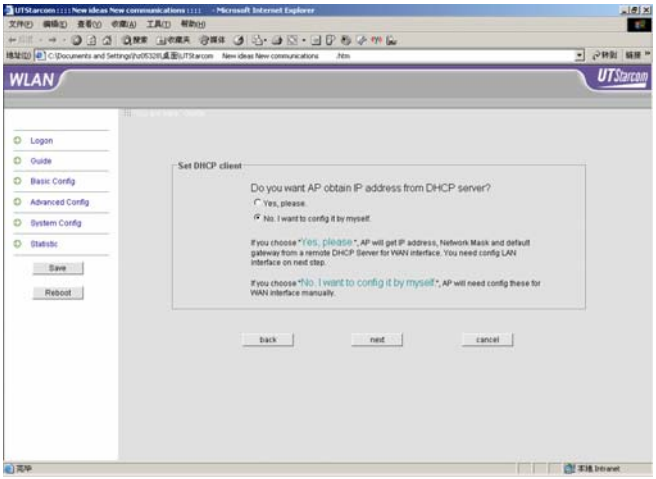
AP can work either Route mode or Bridge mode. In different mode, AP will need different configuration.

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.

- Configuration in Route Mode

Select "Route Mode" in Figure 14, click "next" to go to the route mode configuration screen as shown in Figure 15.

Figure 15 DHCP Configuration



Set DHCP client

Do you want AP obtain IP address from DHCP server?

○ Yes, please.

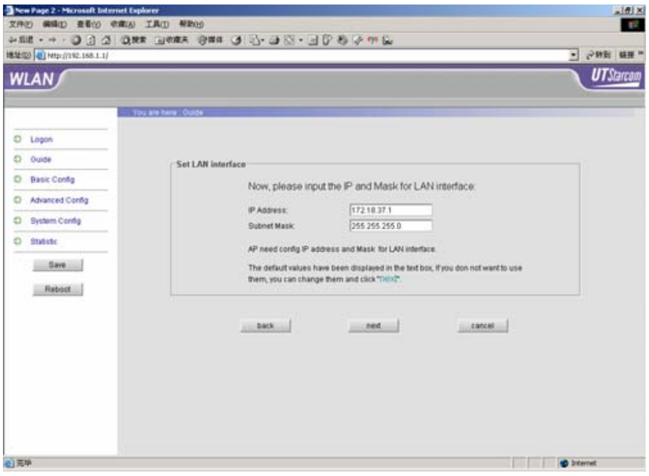
● No. I want to config it by myself.

If you choose "Yes, please.", AP will get IP address, Network Mask and default gateway from a remote DHCP Server for WAN interface. You need config LAN interface on next step.

If you choose "No. I want to config it by myself.", AP will need config these for WAN interface manually.

If you want to obtain the IP address for the WAN port from the DHCP server, select "**Yes, please**", then click <next> to go to the LAN port configuration window, as shown in Figure 16

Figure 16 LAN Port Configuration



Set LAN interface

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

IP Address: 172.18.37.1

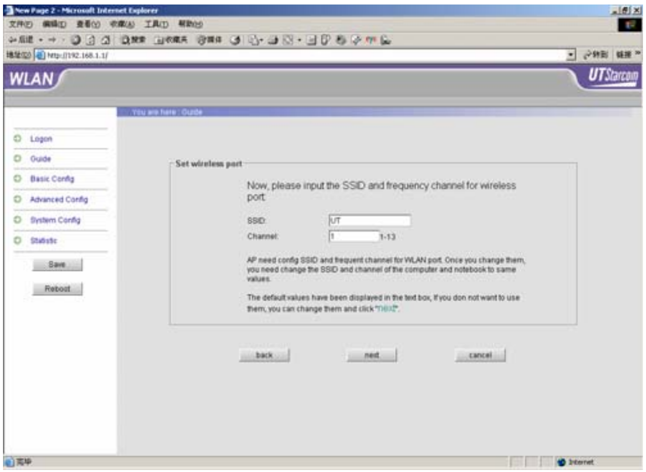
Subnet Mask: 255.255.255.0

AP need config IP address and Mask for LAN interface.

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

The LAN port configuration window displays the default IP Address and Mask. The IP address is able to enter a new one, then click <next> to go to the wireless port configuration, as shown in Figure 17

Figure 17 Wireless Port Configuration



Set wireless port

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

SSID: UT

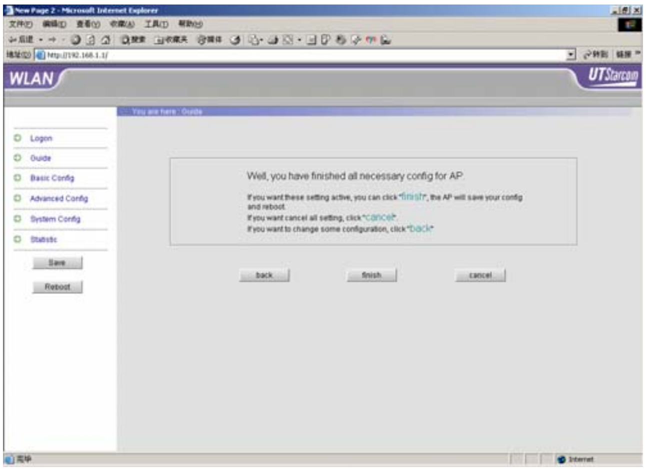
Channel: 1 1-13

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 don not want to use them, you can change them and click "next".

The default SSID is “UT”, and the Channel is “1”. The value of SSID and channel are changeable. User can access the AP only when the ESSID setting in the wireless network card of user’s terminal is configured to be same as the one in the AP. Click <next> to go to the completed configuration window shown in Figure 18. Click <finish>, the AP will save the configuration and restart automatically.

Figure 18 Configuration Completed

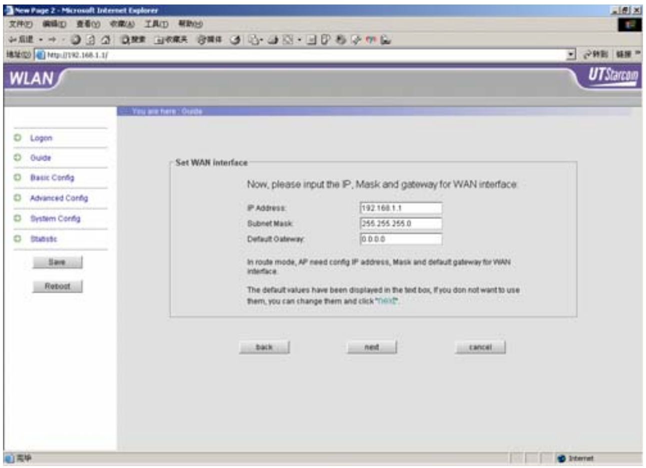


Well, you have finished all necessary config for AP

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"

To obtain the IP Address for the WAN port by manually, select "**No, I want config it by myself**" as shown in Figure 15, then click <next>, see Figure 19.

Figure 19 WAN Port Configuration



Set WAN interface

Now, please input the IP, Mask and gateway for WAN interface:

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

In route mode, AP need config IP address, Mask and default gateway for WAN interface.

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

The AP default IP address for the WAN port is 192.168.1.1, Mask is 255.255.255.0, and the default Gateway is 0.0.0.0.

Click <next>, the system prompts the LAN port and Wireless port configuration. Finally, click <finish>, the AP will save the configuration changes and restart automatically.

- Configuration in Bridge Mode

Select "Bridge Mode" in Figure 14, the system will guide user how to configure the IP address for LAN port, and the SSID and Channel for wireless port. The details will not be described here because they are included in the configurations in Route mode. Please refer to the configuration steps in Router mode.

Basic Configuration

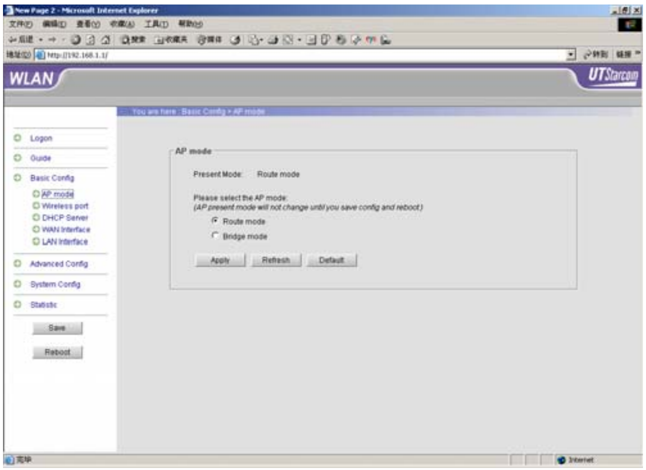
This section introduces each item of the basic configuration of WA6011 including WAN, LAN and wireless port configuration.

Click "Basic Config" on left panel of the Logon interface, the basic configuration items of the AP will be displayed. The following sections will describe each item.

AP Mode Configuration

Click "AP mode" on left panel of the Logon interface, see Figure 20, Route Mode is the default. Click <Apply> after configuration completed. See Figure 21, the popup dialogue box prompts that the configuration will not work until it's saved, then reboot the AP.

Figure 20 AP Mode Configuration



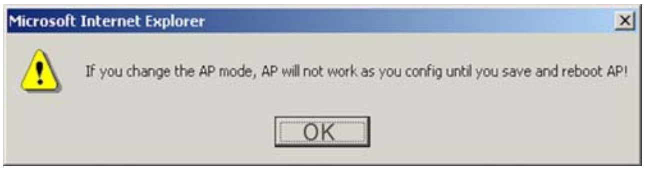
AP mode

Present Mode: Route mode

Please select the AP mode:
(AP present mode will not change until you save config and reboot.)

● Route mode
○ Bridge mode

Figure 21 Prompt Window after Apply AP Mode Changes

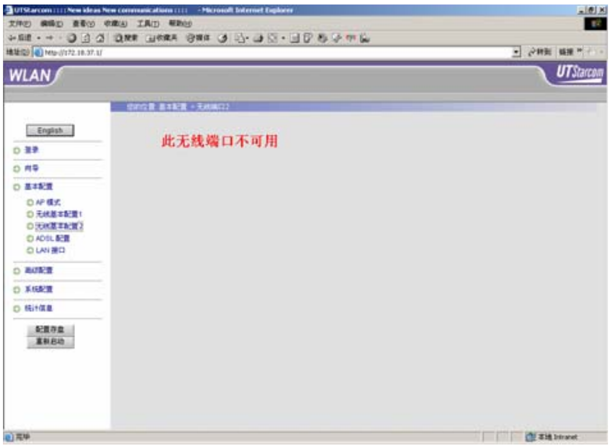


If you change the AP mode, AP will not work as you config until you save and reboot AP!

Wireless Port1/Wireless Port 2 Configuration

Two wireless network cards can be installed in WA6011. Their corresponding configuration ports are wireless port 1 and wireless port 2. Figure 22 displays the port configuration without wireless network card plugged.

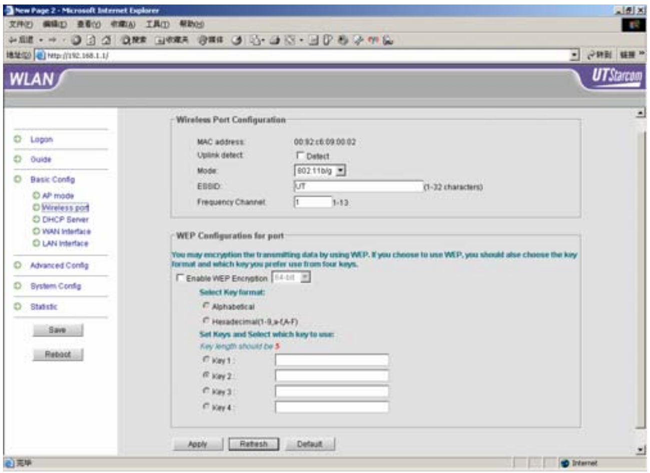
Figure 22 Wireless Port Configuration (without Wireless Network Card)



此无线端口不可用

Click “Wireless port 1” to go to the Wireless Port Configuration section on the top of the window as shown in Figure 23.

Figure 23 Wireless Port Configuration



Wireless Port Configuration

MAC address: 00:92:c6:09:00:02

Uplink detect: □ Detect

Mode: 802.11b/g

ESSID: UT (1-32 characters)

Frequency Channel: 1 1-13

WEP Configuration for port

You may encryption the transmitting data by using WEP. If you choose to use WEP, you should also choose the key format and which key you prefer use from four keys.

□ Enable WEP Encryption 64-bit

Select Key format:

○ Alphabetical

○ Hexadecimal(1-9,a-f,A-F)

Set Keys and Select which key to use:

Key length should be 5

○ Key 1 :

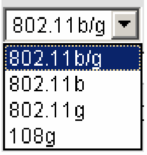
● Key 2 :

○ Key 3 :

○ Key 4 :

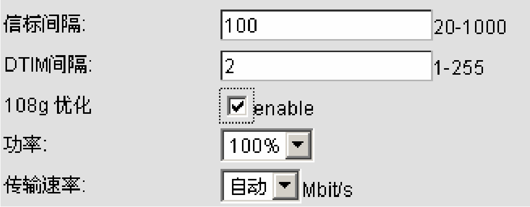
Apply Refresh Default

- Wireless Port Configuration
  - *Uplink detect*: If the “Detect” check box is selected, after click <Apply>, the AP will automatically disconnect from the wireless LAN when the uplink has been lost or does not work properly.
  - *Mode*: WA6011 complies with the 802.11b/g which is the default working mode. Data transfer speed in 108g mode is 108Mbps. Click <Apply>, the system will prompt to save the configuration and reboot the AP.



***Note:** When the 108g mode is selected, the "108g optimization" parameter option in "Advance Config/Wireless Port Config" has to be activated. See Figure 24*

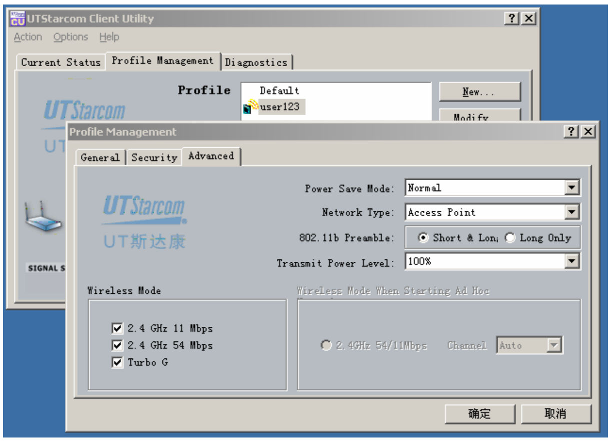
Figure 24 108g Optimisation Parameter Configuration



信标间隔:	100	20-1000
DTIM间隔:	2	1-255
108g 优化	☑ enable	
功率:	100%	
传输速率:	自动	Mbit/s

In addition, the wireless network card should support 108g to implement 108g mode, e.g. UTStarcom WNIC2010 Wireless Network Card. *See Figure 25, select the "Turbo G" function in the "Advance" option menu in WNIC2010 Utility Settings.*

Figure 25 Set WNIC2010 to Enable Turbo G Mode



Profile: Default, user123

Power Save Mode: Normal

Network Type: Access Point

802.11b Preamble: ● Short & Lon; ○ Long Only

Transmit Power Level: 100%

Wireless Mode

☑ 2.4 GHz 11 Mbps
☑ 2.4 GHz 54 Mbps
☑ Turbo G

Wireless Mode When Starting Ad Hoc

○ 2.4GHz 54/11Mbps Channel Auto

- *ESSID*: Each AP can be set with a specific ESSID (or they can be set the same), also each wireless card can be set with a specific ESSID. The AP only accepts wireless access when the ESSID of the wireless card matches the AP's ESSID. Specific ESSIDs can be used for grouping users to avoid security and access problems arising from random roaming. the default ESSID of WA6011 is "UT", but other ESSIDs are accepted between 1-32 characters. Click <Apply>, the system will prompt to save the configuration and reboot the AP.
- *Frequency Channel*: The Channel can be set in the range of 1-13. The default is 1.

***Note:** The Frequency Channel is fixed to 6 by the system when the Mode is "Dynamic G" or 108g.*

- WEP Configuration

WEP encryption uses a static secret key, each WLAN terminal uses the same key to access the wireless network. WA6011 supports 64-bit or 128-bit static WEP encryption, to prevent illegal access of data.

- Enable WEP encryption: select either 64-bit or 128-bit encryption mode
- Select Key format: Select either Alphabetical or Hexadecimal.

Description:

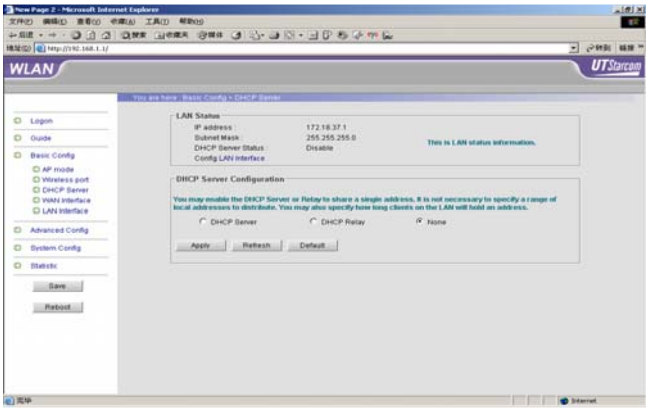
- 64-bit WEP keys (password) can use any 5 alphanumeric characters between “a-z”, “A-Z” and “0-9” or 10 hexadecimal digits between (0-9, A-F). For example, a 5-character password string could be “MyKey”. Or input 10 digits like “11AA22BB33” for a Hexadecimal key.
- 128-bit WEP keys (passwords) can use any 13 alphanumeric characters between “a-z”, “A-Z” and “0-9”, or 26 hexadecimal digits between (0-9, A-F). For example, a 13-character password string could be: *utstarcomKey1*. Or input 26 digits: “*00112233445566778899AABBCC*” for a Hexadecimal key.

Switch the configuration to wireless port advance configuration by clicking the “Advanced Config” link on the bottom-right screen.

DHCP Server Configuration

Click “DHCP Server”, see Figure 26, “LAN Status” shows the AP’s current LAN configuration. The default DHCP Server Status is “Disable”

Figure 26 DHCP Server



LAN Status

IP address : 172.18.37.1

Subnet Mask : 255.255.255.0

DHCP Server Status : Disable

Config LAN Interface

This is LAN status information.

DHCP Server Configuration

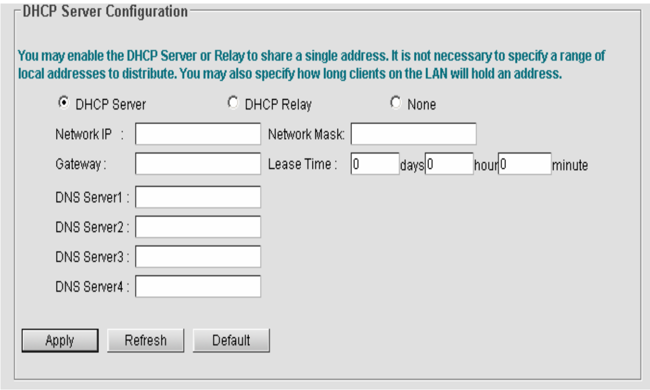
You may enable the DHCP Server or Relay to share a single address. It is not necessary to specify a range of local addresses to distribute. You may also specify how long clients on the LAN will hold an address.

○ DHCP Server ○ DHCP Relay ● None

- DHCP Server

Select “DHCP Server”, the configuration window will appear as shown in Figure 27.

Figure 27 DHCP Server Configuration



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 hour 0 minute

DNS Server1 :

DNS Server2 :

DNS Server3 :

DNS Server4 :

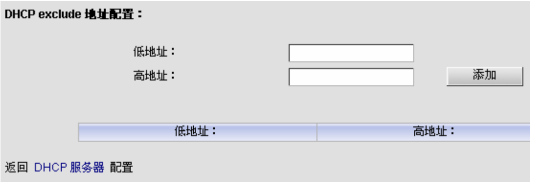
Table 4 describes the configuration parameters of DHCP server

Table 4 DHCP Server Parameter Description

Parameters	Descriptions
Network IP	IP address of DHCP address pool
Network Mask	The network IP address pool plus a Subnet Mask to define a DHCP server address pool.
Lease Time	IP address lease time
Gateway	Gateway address, i.e. IP address of LAN interface.
DNS Server1-4	DNS servers, up to 4 servers can be configured.

Configure those IP address which are not allowed to assign to users by click “DHCP server Config” on the bottom screen. See Figure 28, set a specific IP address or a subnet.

Figure 28 DHCP exclude Address Configuration



DHCP exclude 地址配置：

低地址：

高地址：

低地址：	高地址：

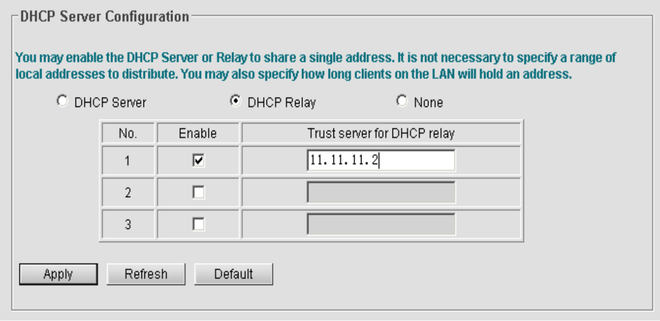
返回 DHCP 服务器 配置

- The first IP address (byte) of a specific IP address or an IP subnet
- The last IP address (byte) of an IP subnet

- DHCP Relay

Select “DHCP Relay”, the configuration details are shown in Figure 29.

Figure 29 DHCP Relay Configuration



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	☑	11.11.11.2
2	□	
3	□	

Three IP addresses of trusted DHCP server can be set here. The AP will obtain LAN's IP address, Subnet mask, Gateway, and DNS server from the DHCP server configured here.

DHCP exclude IP address can be configured in DHCP Relay mode.

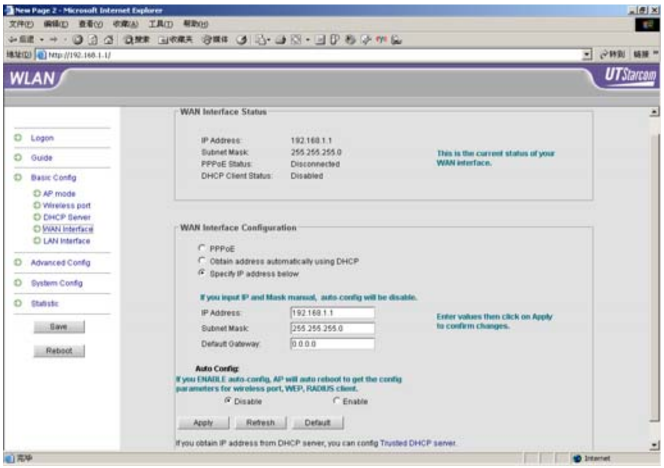
- None

Select "None" to disable the DHCP server

WAN Interface Configuration (WA6011)

Click "WAN Interface", see Figure 30, "WAN Interface Status" displays the current WAN port status.

Figure 30 WAN Interface Configuration (WA6011)



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 manual, 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.

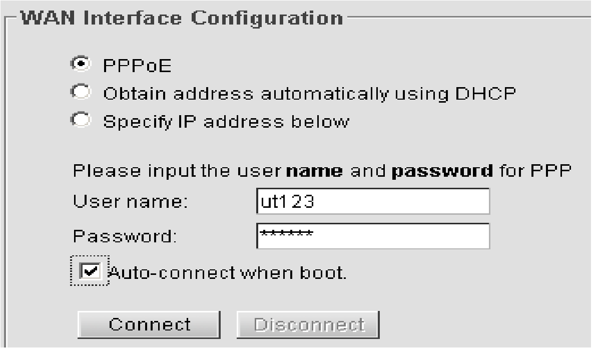
Auto Config:
If you ENABLE auto-config, AP will auto reboot to get the config parameters for wireless port, WEP, RADIUS client.

● Disable ○ Enable

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

- PPPoE：WA6011 can obtain the WAN IP address via PPPoE dialup, see Figure 31.

Figure 31 PPPoE Configuration



WAN Interface Configuration

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

Please input the user **name** and **password** for PPP

User name: ut123

Password: ******

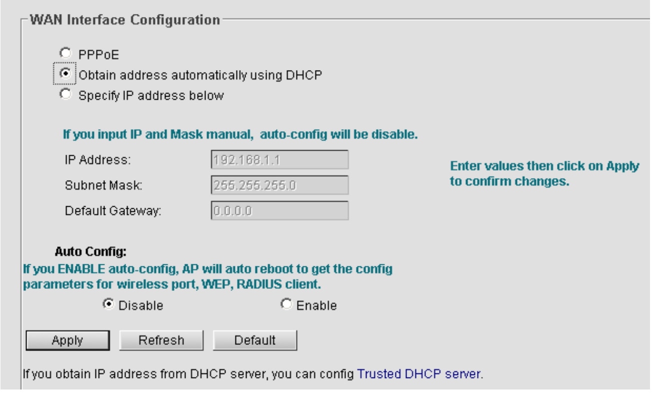
☑ Auto-connect when boot.

Enter user name and password provided by the service provider. Click <Connect> to dial up, when the dialup is successful, the <Disconnect> button will be activated. Select "Auto-connect when boot" to automatically connect after the AP is rebooted.

- Obtain address automatically using DHCP

Click "Obtain address automatically using DHCP", see Figure 32. The WAN IP address is automatically assigned to AP through DHCP server

Figure 32 Obtain Address Automatically Using DHCP



WAN Interface Configuration

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

If you input IP and Mask manual, 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:

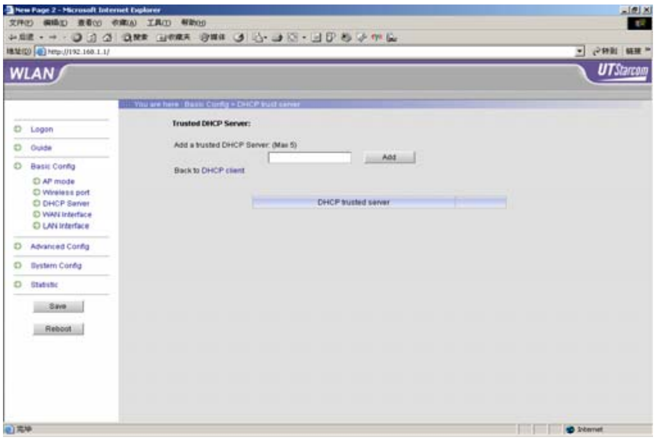
If you ENABLE auto-config, AP will auto reboot to get the config parameters for wireless port, WEP, RADIUS client.

● Disable ○ Enable

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

Click "DHCP Trusted Server", see Figure 33.

Figure 33 Trusted DHCP Server Configuration



Trusted DHCP Server:

Add a trusted DHCP Server: (Max 5)

Back to DHCP client

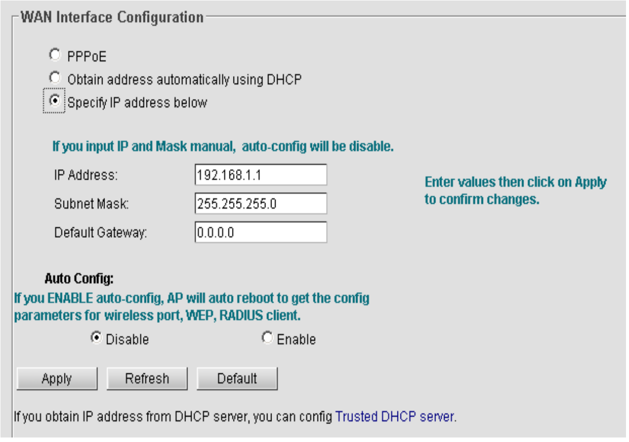
DHCP trusted server	

After the configuration of Trusted DHCP Server IP address, the AP will obtain the WAN IP address from the configured Trusted DHCP Server only. Click “Back to DHCP client” will return back to WAN interface configuration window.

- *Specify IP address*:

Click “Specify IP address”, user can configure the WAN IP address manually as shown in Figure 34. Click <Apply> to take the configuration effective.

Figure 34 Specify IP Address Manually



WAN Interface Configuration

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

If you input IP and Mask manual, 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.

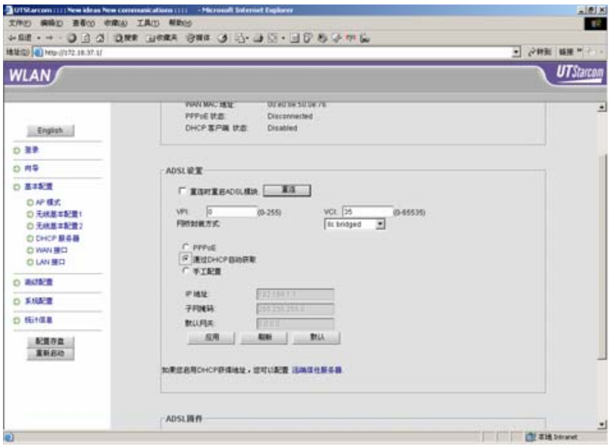
● Disable ○ Enable

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

WAN Interface Configuration (WA6012)

WA6012 WAN interface configuration window is shown in Figure 35. It contains “WAN Interface Status”, “ADSL Set” and “ADSL Firmware” options.

Figure 35 WAN Interface Configuration (WA6012)



PPPoE 状态: Disconnected
DHCP 客户端 状态: Disabled

ADSL 设置

VPI: 0 (0-255)
VCI: 35 (0-65535)
llc bridged

○ PPPoE
● 通过DHCP自动获取
○ 手工配置

ADSL 固件

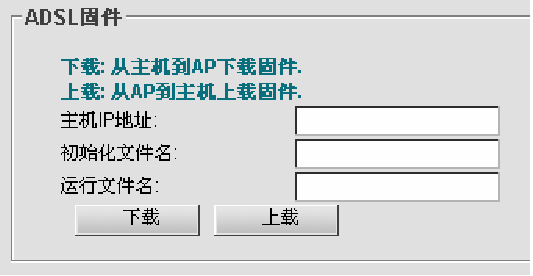
- ADSL Configuration
  - *Reboot ADSL after Reconnection*: ADSL module will get reboot when ADSL re-connects every time
  - *VPI/VCI*: VPI/VCI setting is same as what DSLAM setting is
  - *Network bridge WEP*: llc bridged/vcmux bridged, the default is “llc bridged”

For the detailed configuration of “PPPoE”, “Obtain address automatically using DHCP” and “Specify IP address”, please refer to “WAN Interface Configuration (WA6011)” section.

- Figure 36 shows the ADSL firmware configuration

ADSL module upgrade or ADSL image files backup can be done through “ADSL Firmware”.

Figure 36 ADSL Firmware Configuration



ADSL固件

下载: 从主机到AP下载固件.
上载: 从AP到主机上载固件.

主机IP地址:
初始化文件名:
运行文件名:

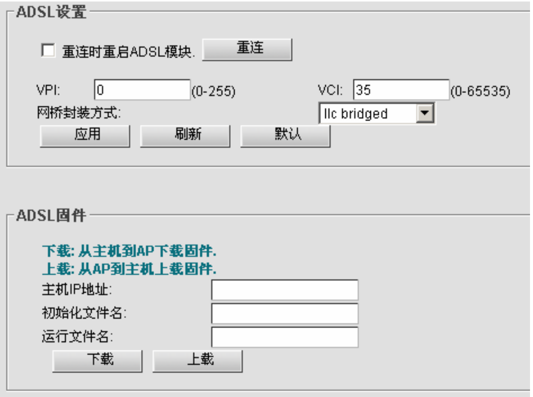
- *Host IP address*: Access AP host IP address
- *Initialization File Name/Execution File Name*: AP image files

Execute TFTP program and configure file path, click <Download> to start ADSL module upgrade, or click <Upload> to backup ADSL image file.

ADSL Configuration (WA6012 in Bridge Mode)

WA6012 ADSL configuration in Bridge mode contains “ADSL config” and “ADSL firmware” options, as shown in Figure 37

Figure 37 ADSL Configuration



ADSL设置

□ 重连时重启ADSL模块.

VPI: 0 (0-255)
VCI: 35 (0-65535)
网桥封装方式: llc bridged

ADSL固件

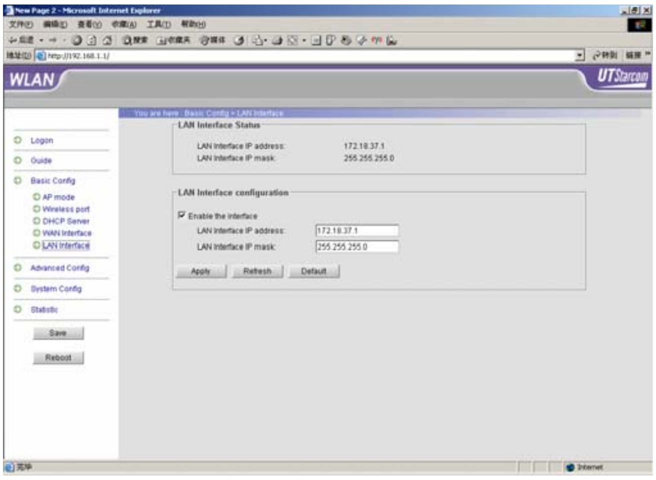
下载: 从主机到AP下载固件.
上载: 从AP到主机上载固件.

主机IP地址:
初始化文件名:
运行文件名:

LAN Interface Configuration

Click “LAN Interface”, the current LAN IP address and MAC address are shown in Figure 38. Click <Apply> to take the IP address effective.

Figure 38 LAN Interface Configuration



LAN Interface Status

LAN Interface IP address: 172.18.37.1
LAN Interface IP mask: 255.255.255.0

LAN Interface configuration

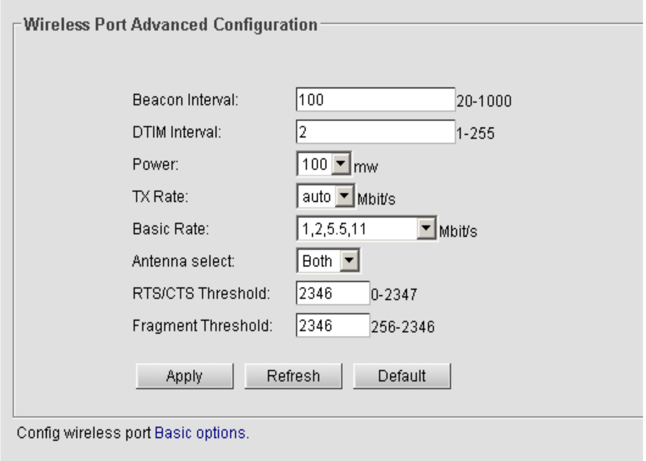
☑ Enable the interface
LAN Interface IP address: 172.18.37.1
LAN Interface IP mask: 255.255.255.0

Advanced Configuration

Wireless Port1 Configuration/Wireless Port2 Configuration

Click "Advanced Config/Wireless Port 1 Advanced Configuration", see Figure 39.

Figure 39 Wireless Port Advanced Configuration



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.

***Note:** Same as the wireless basic configuration, the interface will display "the wireless port cannot be used" when the wireless network card is unplugged.*

Table 5 Wireless Port Parameters Description

Parameters	Specifications	Default
Beacon Interval	Interval between Beacon packets, the Beacon packet contains network card information, duration of broadcast to the wireless network.	100(ms)

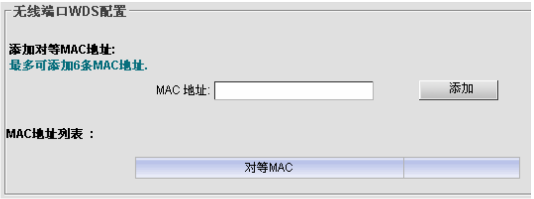
Parameters	Specifications	Default
DTIM Interval	Interval between Delivery Traffic Indication Messages.	2 x Actual beacon interval
Power	Transmitting power of the AP wireless port. Possible values: 12％，25％，50％，100％.	100% (400mw)
Tx Rate	Transmission rate. The range of selectable values is decided based on the wireless mode set in the basic configuration. If Auto is chosen, the network card will select current the optimum rate.	auto
Basic Rate	The network card is restricted to operating at a selected Tx rate at least.	1,2,5.5,11Mbit/s
Antenna	Possible values: Both, Ant A, Ant B	Both
RTS/CTS Threshold	WLAN is using the mechanism of Request To Send/Clear To Send. RTS/CTS threshold can be set, RTS/CTS is used when the data packet size exceeds the threshold. Choose a setting within a range of 0 – 2347. It is advisable not to change this setting.	2346
Fragment Threshold	Fragment threshold is used to improve the efficiency in a high volume wireless network. Define the data packet size limit here. Any packet greater than this value will be fragmented. Choose a setting within a range of 256 – 2346 bytes. It is advisable not to change this setting.	2346

WA6011 is able to work in multiple modes:

- AP mode: The AP is connected to the WAN through its uplink port and provides access to the wireless network through its wireless ports. In this way, the AP implements a combination of a wireless network with the WAN.
- Repeater mode: The AP is implemented as a signal relay that enhances signal strength. In this way, it extends the coverage of the wireless network. The central AP is connected to the WAN and the remote APs are connected to the central AP in bridge mode.

Select “Repeater Mode”, click <Apply>, the system will prompt to save the configuration and reboot the AP. The WDS (Wireless Distribution System) configuration window is shown in Figure 40.

Figure 40 WDS Configuration



无线端口WDS配置

添加对等MAC地址:
最多可添加6条MAC地址.

MAC 地址:

MAC地址列表 :

对等MAC	

Enter MAC address, click <Add>, and set the other party of AP in Repeater mode, then configure its MAC address

***Note:** Implement the wireless bridge and AP coverage by setting one AP’s wireless network card in AP mode, and the other in Repeater mode.*

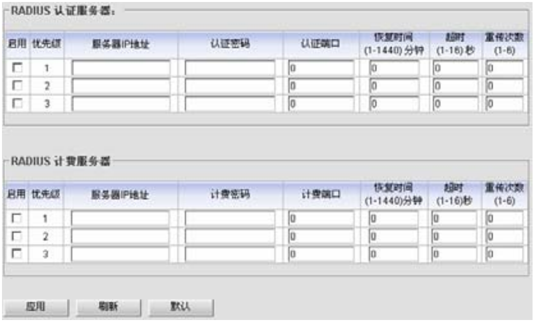
- P2MP

Click “P2MP mode”. The configuration steps are similar to those in “Repeater mode”. A central AP can connect to a maximum of 6 remote APs. Add MAC addresses for each remote AP through the window as shown in Figure 40. Configure each remote AP by setting the mode to “P2MP mode”, and then add the MAC address for the central AP.

RADIUS Client Configuration

Click “Radius Client” to configure the authentication server and the accounting server. See Figure 41 for the details.

Figure 41 Radius Client Configuration



RADIUS 认证服务器:

启用	优先级	服务器IP地址	认证密码	认证端口	恢复时间 (1-1440) 分钟	超时 (1-16) 秒	重传次数 (1-6)
□	1			0	0	0	0
□	2			0	0	0	0
□	3			0	0	0	0

RADIUS 计费服务器

启用	优先级	服务器IP地址	计费密码	计费端口	恢复时间 (1-1440)分钟	超时 (1-16)秒	重传次数 (1-6)
□	1			0	0	0	0
□	2			0	0	0	0
□	3			0	0	0	0

- Figure 41 shows the RADIUS Client configuration user interface
- *Priority Level (1-3):* AP will select a RADIUS server with 1st priority. Click “Apply” to enable the selected RADIUS server.
- *Authentication/Accounting Key*: In the AP, the authentication/Accounting key must be set to match the key in the RADIUS server.
- *Authentication/Accounting port*: Authentication/Accounting port number

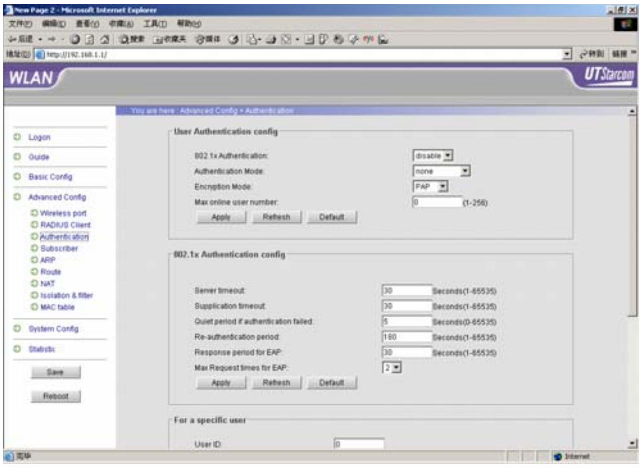
- *Server dead time/Server timeout time/Server transmit times:* If the request sent to the Radius Server does not get a response within Timeout value, the request is re-sent to the server until the number of re-tries reaches the value set in the Transmit Times. If any re-try does not get a response, 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.

Authentication

WA6011 provides 802.1x authentication mode. The user can configure the static or dynamic user information through “Subscriber”, and configure 802.1x authentication through “802.1x Authentication Config”.

Click “Advanced Config/Authentication”, see the configuration details in Figure 42.

Figure 42 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)
Apply Refresh Default

802.1x Authentication config

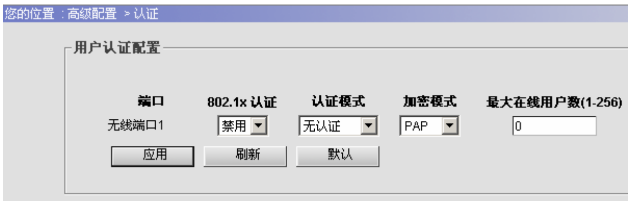
Server timeout: 30 Seconds(1-65535)
Supplication timeout: 30 Seconds(1-65535)
Quiet period if authentication failed: 5 Seconds(0-65535)
Re-authentication period: 180 Seconds(1-65535)
Response period for EAP: 30 Seconds(1-65535)
Max Request times for EAP: 2
Apply Refresh Default

For a specific user

User ID: 0

- User Authentication Configuration user interface is shown in Figure 43

Figure 43 User Authentication Configuration



您的位置 ：高级配置 > 认证

用户认证配置

端口	802.1x 认证	认证模式	加密模式	最大在线用户数(1-256)
无线端口1	禁用	无认证	PAP	0

- *Port*: Display the installed wireless ports of Wireless port 1 and Wireless port 2
- *802.1x Authentication*: disable or enable, the default is “disable”
- *Authentication Mode*:

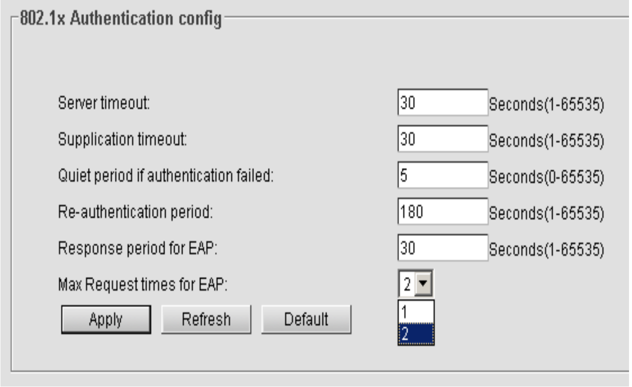
  The available options are:

  - *None*
  - *local-remote*: WA6011 is the authentication point.
  - *remote*: RADIUS server authentication.

  - *local-remote:* implement the remote authentication after the local authentication is failed.
  - *remote-local*: implement the local authentication after the remote authentication is failed.
- *Encryption Mode*: Choose either PAP or CHAP encryption mode.
- *Max online user number*: The range of the maximum number of online users is 1-256.

- *802.1x Authentication Config*: The configuration interface is shown in Figure 44. Table 6 describes the configuration parameters' specifications.

Figure 44 802.1x Authentication Configuration



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: 180 Seconds(1-65535)

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

Max Request times for EAP: 2

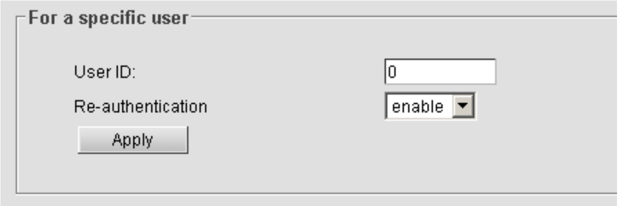
Table 6 802.1x Authentication Config Parameter Specification

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
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

Parameter	Specification	Default
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
Re-authentication period	Interval to re-authenticate a client. Possible values: 1-65535 seconds.	180
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
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*: The configuration user interface is shown in Figure 45

Figure 45 For a Specific User Configuration



For a specific user

User ID: 0

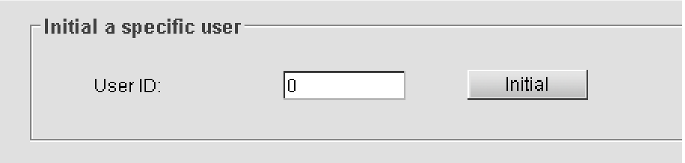
Re-authentication: enable

- *User ID*: The system automatically generates an unique ID when creating a new user.
- *Re-authentication*: Enable or disable re-authentication.

Note: *User ID can be searched through “Statistic Information” and “Online User".*

- Initial a specific user configuration interface is shown in Figure 46

Figure 46 Initial a Specific User Configuration



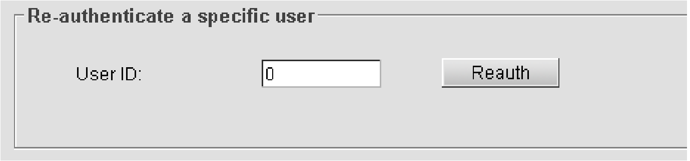
Initial a specific user

User ID: 0

Select a “User ID”, click <Initial>, the user’s information will be initialized.

- *Re-authenticate a specific user* configuration interface is shown in Figure 47

Figure 47 Re-authenticate a Specific User Configuration



Re-authenticate a specific user

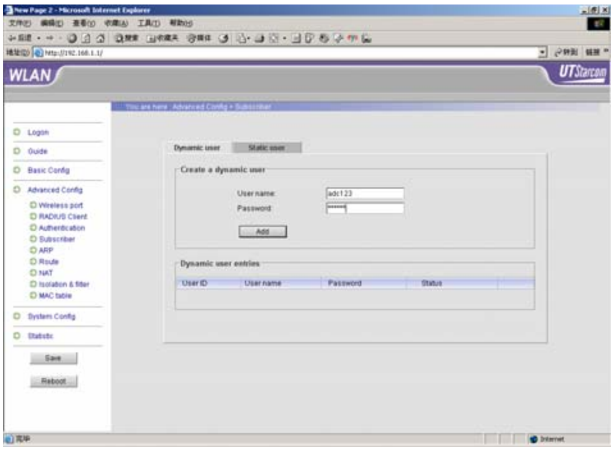
User ID: 0

Select user ID, click <Reauth>, AP starts the re-authentication for the user

Subscriber Configuration

Click “Advanced Config/Subscriber”, the dynamic subscriber configuration interface is shown in Figure 48.

Figure 48 Subscriber Configuration



Create a dynamic user

User name: adc123

Password: ******

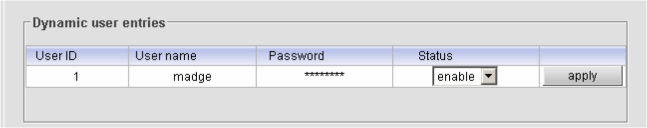
Dynamic user entries

User ID	User name	Password	Status

- Create a dynamic user

Enter User name and Password as shown in Figure 48, and then click <Add>. A new entry will be added in the table as shown in Figure 49. Select a status of enable/disable/delete, click <Apply> to take the configuration effect.

Figure 49 Dynamic User Table



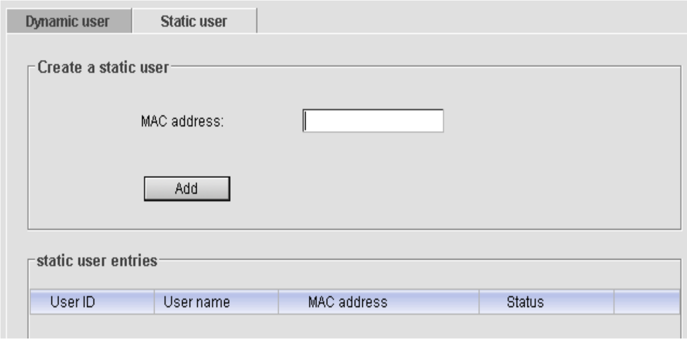
Dynamic user entries

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

- Create a static user

Enter the static user’s MAC address, click <Add>, see Figure 50. The format of MAC address is xx:xx:xx:xx:xx:xx or xx-xx-xx-xx-xx-xx. Select one status of enable/disable/delete, click <Apply> to take the configuration effect.

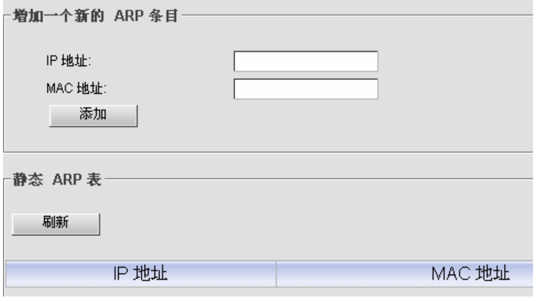
Figure 50 Create a Static User Configuration



ARP Configuration

Click “ARP”, the ARP configuration interface is shown in Figure 51.

Figure 51 ARP Configuration

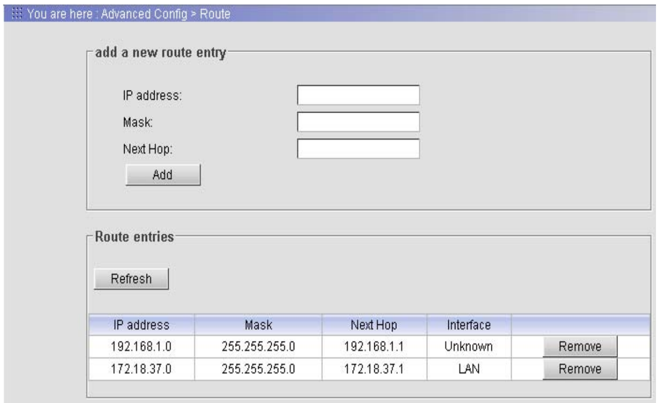


The user can add a new static ARP entry by entering the IP and MAC addresses. All ARP entries can be displayed for verification. Click <Add> to add new entry. The <Refresh> button will refresh the display of all ARP entries.

Route Configuration

Click “Advanced Config/Route”, the Route Configuration interface is shown in Figure 52.

Figure 52 Route Configuration



You are here : Advanced Config > Route

add a new route entry

IP address:

Mask:

Next Hop:

Route entries

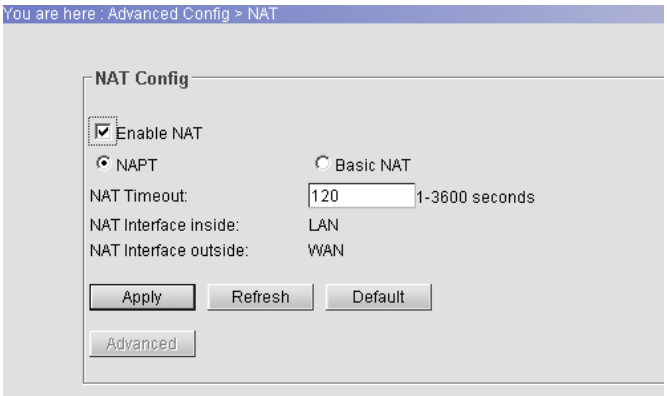
IP address	Mask	Next Hop	Interface	
192.168.1.0	255.255.255.0	192.168.1.1	Unknown	Remove
172.18.37.0	255.255.255.0	172.18.37.1	LAN	Remove

Enter IP address, Mask and the IP address of the Next Hop, click <Add> to add a new route entry. The <Refresh> button is used to refresh the display of all route entries. The <Remove> button is used to remove a route.

NAT Configuration

Click "Advanced/NAT", NAT (Network Address Translation) configuration interface is shown in Figure 53

Figure 53 NAT Configuration



You are here : Advanced Config > NAT

NAT Config

☑ Enable NAT

● NAPT ○ Basic NAT

NAT Timeout: 120 1-3600 seconds

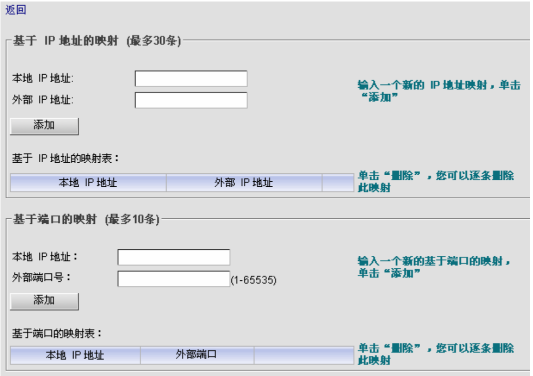
NAT Interface inside: LAN

NAT Interface outside: WAN

Select "Enable NAT", choose either NAPT mode or Basic NAT mode. The range of NAT Timeout is 1 – 3600 seconds. Click <Apply> to take the configuration effect, and then the NAT Advanced Configuration is available.

- NAPT (Network Address and Port Translation) mode configuration is shown in Figure 54

Figure 54 NAT/NAPT Configuration



基于 IP 地址的映射 (最多30条)

本地 IP 地址:

外部 IP 地址:

输入一个新的 IP 地址映射，单击“添加”

基于 IP 地址的映射表：

本地 IP 地址	外部 IP 地址	

单击“删除”，您可以逐条删除此映射

基于端口的映射 (最多10条)

本地 IP 地址：

外部端口号： (1-65535)

输入一个新的基于端口的映射，单击“添加”

基于端口的映射表：

本地 IP 地址	外部端口	

单击“删除”，您可以逐条删除此映射

IP Address mapping:

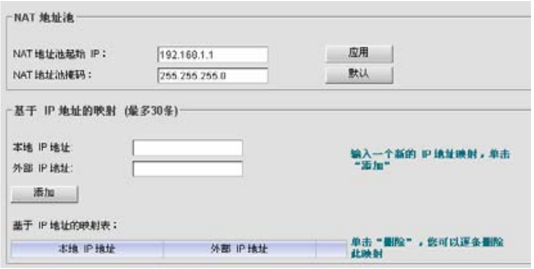
- *Local IP address*: IP address inside NAT interface
- *Remote IP address*: IP address outside NAT interface

Port mapping:

- *Local IP address*: Local IP address used for port mapping.
- *External port*: TCP port number used to differentiate the hosts

- NAT (Network Address Translation) advanced configuration is shown in Figure 55.

Figure 55 NAT Advanced Configuration



NAT 地址池

NAT 地址池起始 IP： 192.168.1.1

NAT 地址池掩码： 255.255.255.0

基于 IP 地址的映射 (最多30条)

本地 IP 地址:

外部 IP 地址:

输入一个新的 IP 地址映射，单击“添加”

基于 IP 地址的映射表：

本地 IP 地址	外部 IP 地址	

单击“删除”，您可以逐条删除此映射

NAT Address Pool:

- *The starting IP address in NAT address pool*: The first IP address of an external network address pool, it is mapped to the internal network by a way of dynamic address allocation.
- *NAT Mask*: the range of the address pool is defined by Mask and the first IP address in the pool.

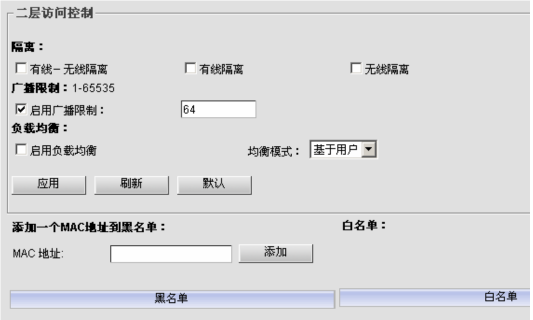
IP address mapping:

- *Local IP address*: IP address inside NAT interface.
- *Remote IP address*: IP address outside NAT interface.

Isolation & Filter Configuration

Click “Advanced Config/Isolation and Filter”, the configuration is shown in Figure 56

Figure 56 Isolation and Filter Configuration


二层访问控制

隔离：

□ 有线－无线隔离 □ 有线隔离 □ 无线隔离

广播限制：1-65535

☑ 启用广播限制： 64

负载均衡：

□ 启用负载均衡 均衡模式： 基于用户

添加一个MAC地址到黑名单：

MAC 地址:

白名单：

- *Isolation*
  - *Wired-wireless Isolation*: Wired users and wireless users cannot access with each other.
  - *Wired Isolation*: Wired users cannot access with each other.
  - *Wireless Isolation*: Wireless users cannot access with each other.
- *Config broadcast limit:* Configure the broadcast restriction, the range is 1-65535, the default value is 64.
- *Load balance*: Enable load balance in either "User based" or "Flux based" mode.

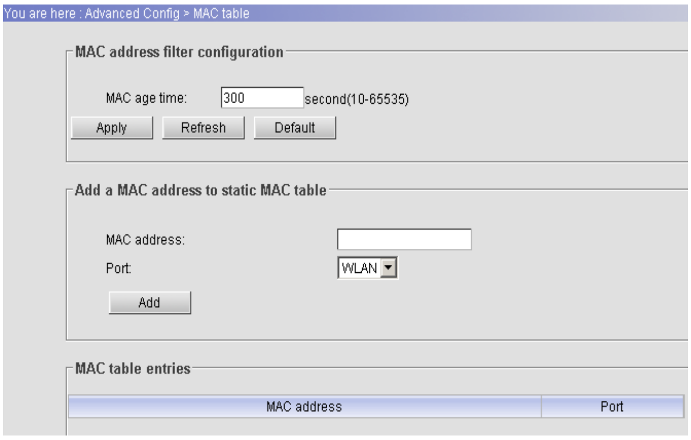
Click <Apply> to take the configuration effect.

- *Add a MAC address to the black list*: Add a MAC address to the black list, click <Add>, the user with this MAC address will then be blocked from accessing the AP.

MAC Table Configuration

Click "Advanced Config/MAC Table", the configuration interface is shown in Figure 57.

Figure 57 MAC Table Configuration


You are here : Advanced Config > MAC table

MAC address filter configuration

MAC age time: 300 second(10-65535)

Add a MAC address to static MAC table

MAC address:

Port: WLAN

MAC table entries

MAC address	Port

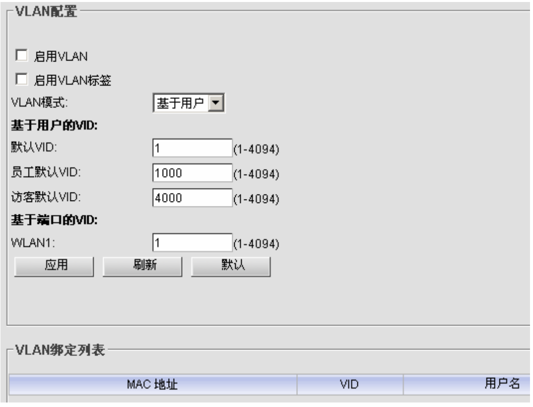
- MAC age time: Configure the MAC address age time, the range is 10-65535 seconds, the default is 300 seconds.

- *Add a MAC address to static MAC table*: Add MAC addresses to the MAC address table, two available ports, WLAN1/WLAN2. Click <Add> after the configuration.
- *MAC table entries*: Display MAC entries.

VLAN Configuration

Click “Advanced Config/VLAN”, the configuration user interface is shown in Figure 58. VLAN ID used for differentiating users access levels depends on access privilege. E.g. Administrators and Guests are two different groups of users depends on their VLAN ID.

Figure 58 VLAN Configuration



VLAN配置

□ 启用VLAN

□ 启用VLAN标签

VLAN模式: 基于用户

基于用户的VID:

默认VID: 1 (1-4094)

员工默认VID: 1000 (1-4094)

访客默认VID: 4000 (1-4094)

基于端口的VID:

WLAN1: 1 (1-4094)

VLAN绑定列表

MAC 地址	VID	用户名

- *Enable VLAN*: Enable the AP’s VLAN function
- To differentiate the user access privilege by enabling the VLAN tag.
- *VLAN mode*: Three modes are available. They are “User based”, “Port based” and “Mix”.
- *User based VID*
  - *Default VID*: The possible value are 1-4094, the default is 1.
  - *Employee default VID*: The VLAN ID used for company employees to access network. The possible values are 1-4094. The default value is 1000.
  - *Guest default VID*: The VLAN ID used for guests to access network. The possible values are 1-4094. The default value is 4000.
- *Port based VID*: The usable WLAN port (WLAN1/WLAN2) is displayed on the screen. Configure the WLAN port VLAN ID, the possible values are 1-4094, the default value is 1.

Click <Apply> to take the configuration effect, the “VLAN bounding table” displays the current users information bounding with VLAN.

System Configuration

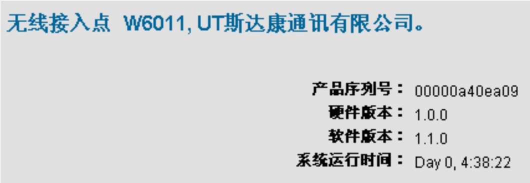
WA6011 provides password change, AP Management and Upgrade in System Configuration.

System Information

Click “System Config/System”, the System Information configuration interface is shown in Figure 59. It includes the following fields:

- Product Serial No.
- Hardware version
- Software version

Figure 59 System Information



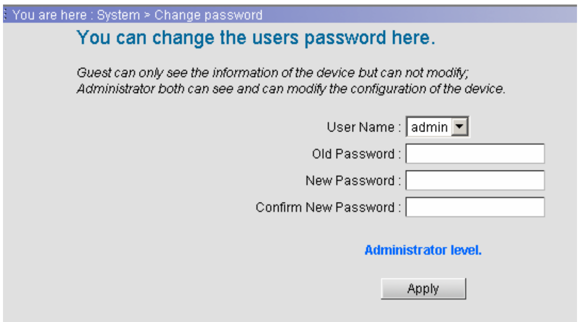
无线接入点 W6011, UT斯达康通讯有限公司。

产品序列号： 00000a40ea09
硬件版本： 1.0.0
软件版本： 1.1.0
系统运行时间： Day 0, 4:38:22

Change Password

Click “System Config/Change Password”, the configuration interface is shown in Figure 60

Figure 60 Change Password Configuration Interface



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 :

Administrator level.

User Name and *Password* can be modified. Click <Apply> to submit and save the change

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

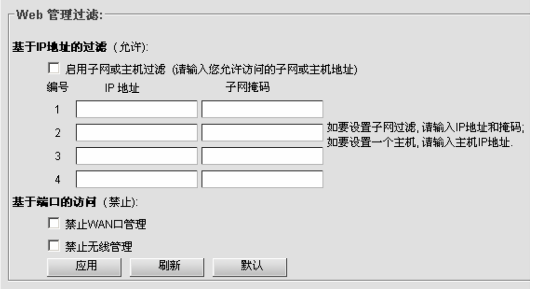
An “admin” has the privilege to perform all operations to the device, including information browse, configuration and modification and so on; while a “guest” only has the privilege to browse information.

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

Web Management Filter

Click “Advanced Config/Web Management Filter”, the configuration interface is shown in Figure 61. This function implements the control of Web users.

Figure 61 Web Management Filter Configuration



Web 管理过滤:

基于IP地址的过滤（允许):

□ 启用子网或主机过滤 (请输入您允许访问的子网或主机地址)

编号	IP 地址	子网掩码
1		
2		
3		
4		

如要设置子网过滤, 请输入IP地址和掩码;
如要设置一个主机, 请输入主机IP地址.

基于端口的访问（禁止):

□ 禁止WAN口管理

□ 禁止无线管理

- Filter based on IP address
  - *Enable Subnet or Mainframe Filter*: After activate the IP address filter function, the only configured IP address can access the AP.
  - *IP Address/Subnet Mask*: A mainframe has one only IP address input, a subnet mask needs one IP address and a subnet mask.
- Port based Network Access (Forbidden)
  - *Prohibit WAN Port Management*: User is unable to implement the management through WAN port after it is activated.
  - *Prohibit Wireless Port Management*: Wireless users are not able to access the AP after it's activated.

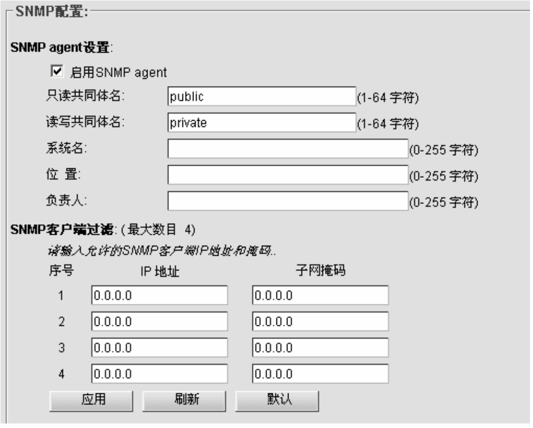
Click <Apply> to submit and save the change

SNMP Configuration

Click "Advanced Config/SNMP Config", it contains SNMP agent, SNMP end user filter and SNMP trap configuration.

- SNMP agent config/SNMP end user filter configuration interface is shown in Figure 62

Figure 62 SNMP Agent/SNMP End User Filter Interface



SNMP配置:

SNMP agent设置:

☑ 启用SNMP agent

只读共同体名: public (1-64 字符)

读写共同体名: private (1-64 字符)

系统名: (0-255 字符)

位 置: (0-255 字符)

负责人: (0-255 字符)

SNMP客户端过滤: (最大数目 4)

请输入允许的SNMP客户端IP地址和掩码..

序号	IP 地址	子网掩码
1	0.0.0.0	0.0.0.0
2	0.0.0.0	0.0.0.0
3	0.0.0.0	0.0.0.0
4	0.0.0.0	0.0.0.0

SNMP agent Setting:

- *Enable SNMP agent:* Activate SNMP agent function
- *Read-only Community Name*: The default is "public", 1-64 alphanumeric letters.

- *Read-write community Name*: The default is “private”, 1-64 alphanumeric letters.
- The system name, location name and principle name can also be configured, 0-255 alphanumeric letters.

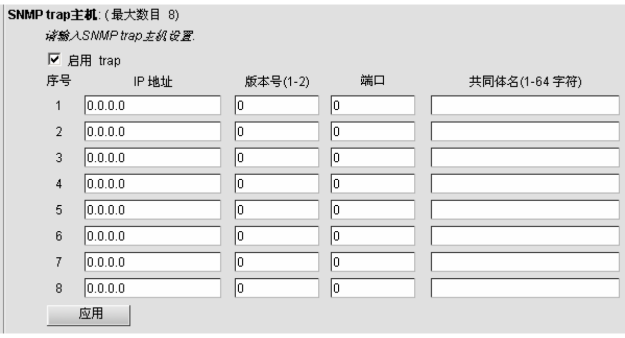
SNMP End-user Filter

The maximum SNMP end-user can be configured is 4. The only configured IP address can access AP through SNMP.

- SNMP trap host (Maximum number is 8)

The configuration interface is shown in Figure 63. There are totally 8 IP addresses can be configured for alarm server. If no IP address was configured for SNMP end-user, which means that all IP addresses can access AP through SNMP.

Figure 63 SNMP Trap Configuration



SNMP trap主机: (最大数目 8)

请输入SNMP trap主机设置.

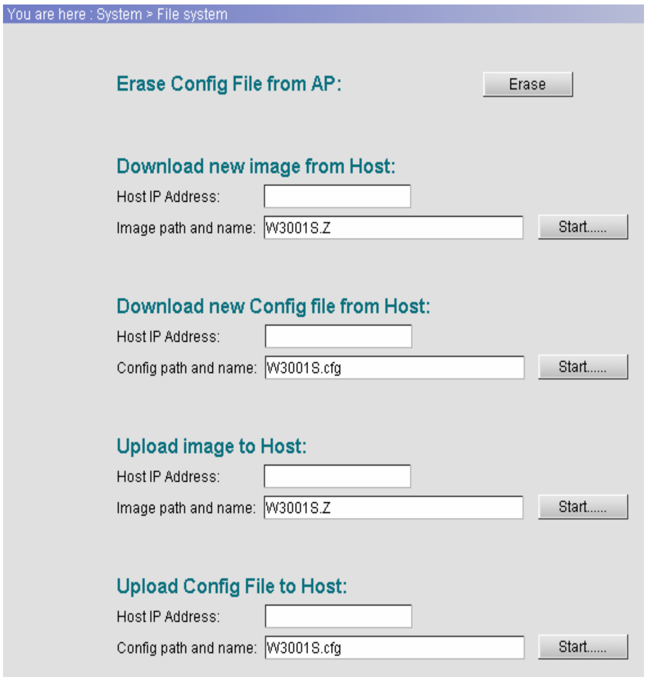
☑ 启用 trap

序号	IP 地址	版本号(1-2)	端口	共同体名(1-64 字符)
1	0.0.0.0	0	0	
2	0.0.0.0	0	0	
3	0.0.0.0	0	0	
4	0.0.0.0	0	0	
5	0.0.0.0	0	0	
6	0.0.0.0	0	0	
7	0.0.0.0	0	0	
8	0.0.0.0	0	0	

File System Management

Click “Advanced Config/File System”, the configuration interface is shown in Figure 64.

Figure 64 File System Configuration



You are here : System > File system

Erase Config File from AP:

Download new image from Host:

Host IP Address:

Image path and name: W3001S.Z

Download new Config file from Host:

Host IP Address:

Config path and name: W3001S.cfg

Upload image to Host:

Host IP Address:

Image path and name: W3001S.Z

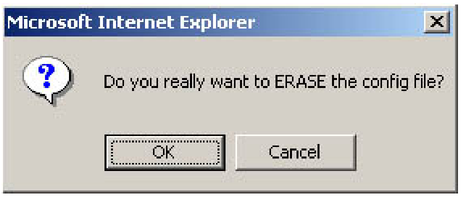
Upload Config File to Host:

Host IP Address:

Config path and name: W3001S.cfg

Erase Config File from AP: Click <Erase> to erase the current configuration file from the AP; a dialog box will appear as shown in Figure 65. Click <OK> and a message box will appear as shown in Figure 66. It prompts the rebooting device and initiates the configuration erase.

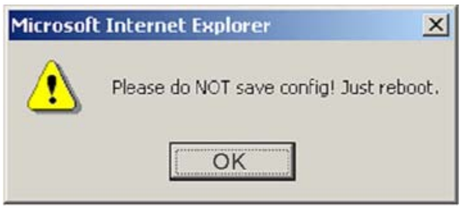
Figure 65 Erase Configuration File Dialog Window



Microsoft Internet Explorer

Do you really want to ERASE the config file?

Figure 66 Reboot Message Dialog Window



Microsoft Internet Explorer

Please do NOT save config! Just reboot.

For system file (including image and configuration file) management, specify the host IP address, set the system file path and file name. Click <Start> to start the download/upload AP Image or Config File.

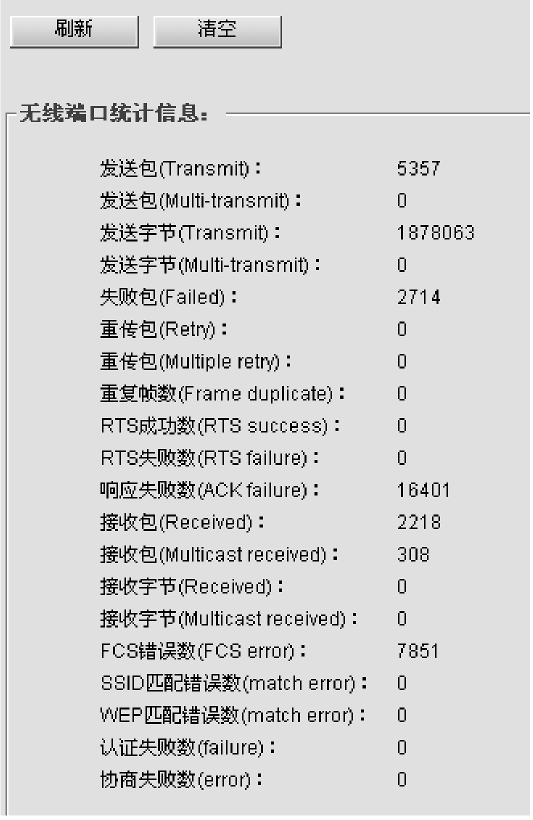
Statistic Information

This section will introduce the system statistic information of AP

Wireless Port (WA6011)

Click “Statistic/Wireless Port”, the configuration user interface will be shown in Figure 67.

Figure 67 Wireless Port Statistic Information



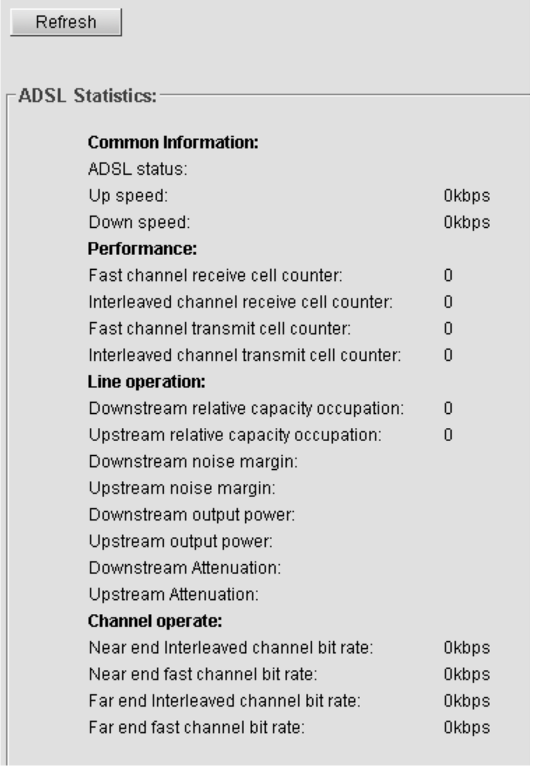
无线端口统计信息：

发送包(Transmit)：	5357
发送包(Multi-transmit)：	0
发送字节(Transmit)：	1878063
发送字节(Multi-transmit)：	0
失败包(Failed)：	2714
重传包(Retry)：	0
重传包(Multiple retry)：	0
重复帧数(Frame duplicate)：	0
RTS成功数(RTS success)：	0
RTS失败数(RTS failure)：	0
响应失败数(ACK failure)：	16401
接收包(Received)：	2218
接收包(Multicast received)：	308
接收字节(Received)：	0
接收字节(Multicast received)：	0
FCS错误数(FCS error)：	7851
SSID匹配错误数(match error)：	0
WEP匹配错误数(match error)：	0
认证失败数(failure)：	0
协商失败数(error)：	0

ADSL Statistic Information (WA6012)

WA6012 ADSL statistic Information is shown in Figure 68

Figure 68 ADSL Statistics Information



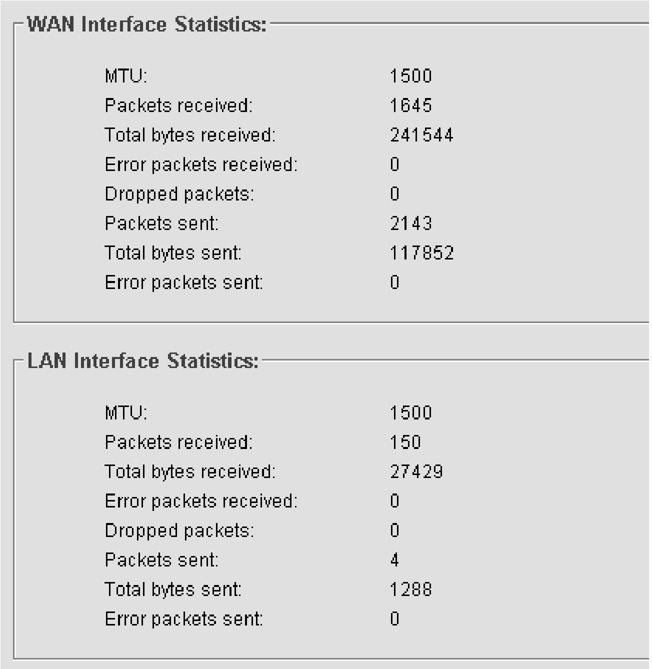
ADSL Statistics:

Common Information:	
ADSL status:	
Up speed:	0kbps
Down speed:	0kbps
Performance:	
Fast channel receive cell counter:	0
Interleaved channel receive cell counter:	0
Fast channel transmit cell counter:	0
Interleaved channel transmit cell counter:	0
Line operation:	
Downstream relative capacity occupation:	0
Upstream relative capacity occupation:	0
Downstream noise margin:	
Upstream noise margin:	
Downstream output power:	
Upstream output power:	
Downstream Attenuation:	
Upstream Attenuation:	
Channel operate:	
Near end Interleaved channel bit rate:	0kbps
Near end fast channel bit rate:	0kbps
Far end Interleaved channel bit rate:	0kbps
Far end fast channel bit rate:	0kbps

WAN/LAN Interface

Click “Statistic/WAN/LAN Interface”, the statistic information of WAN and LAN interfaces are shown in Figure 69.

Figure 69 WAN/LAN Interface Statistics Information



WAN Interface Statistics:

MTU:	1500
Packets received:	1645
Total bytes received:	241544
Error packets received:	0
Dropped packets:	0
Packets sent:	2143
Total bytes sent:	117852
Error packets sent:	0

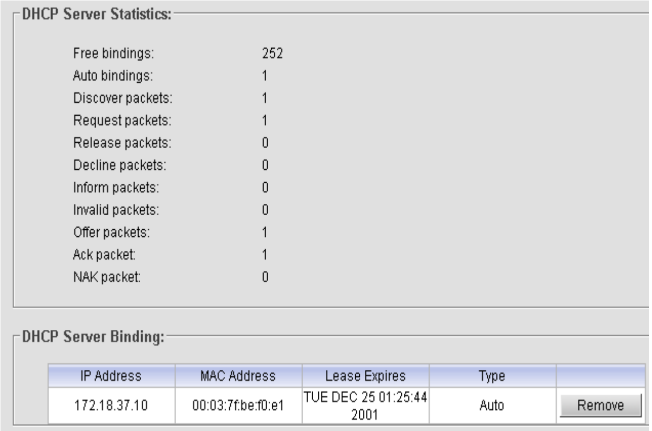
LAN Interface Statistics:

MTU:	1500
Packets received:	150
Total bytes received:	27429
Error packets received:	0
Dropped packets:	0
Packets sent:	4
Total bytes sent:	1288
Error packets sent:	0

DHCP Server

Figure 4-44 shows DHCP related information. Figure 70 describes the related parameters.

Figure 70 DHCP Server Statistics Information



DHCP Server Statistics:

Free bindings:	252
Auto bindings:	1
Discover packets:	1
Request packets:	1
Release packets:	0
Decline packets:	0
Inform packets:	0
Invalid packets:	0
Offer packets:	1
Ack packet:	1
NAK packet:	0

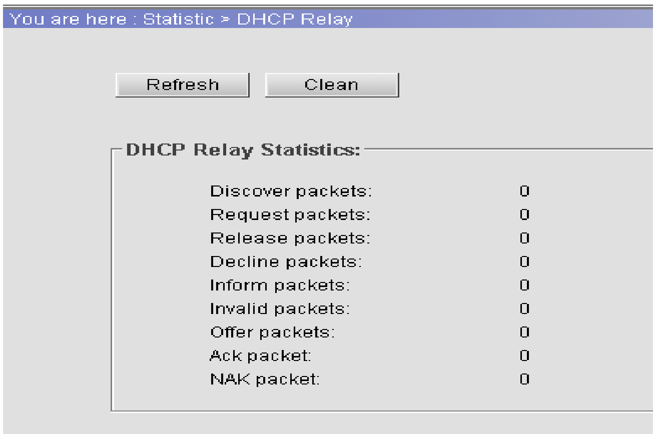
DHCP Server Binding:

IP Address	MAC Address	Lease Expires	Type	
172.18.37.10	00:03:7f:be:f0:e1	TUE DEC 25 01:25:44 2001	Auto	Remove

DHCP Relay

Click “Statistic/DHCP Relay”, Figure 71 shows the DHCP Relay statistic information.

Figure 71 DHCP Relay Statistic Information



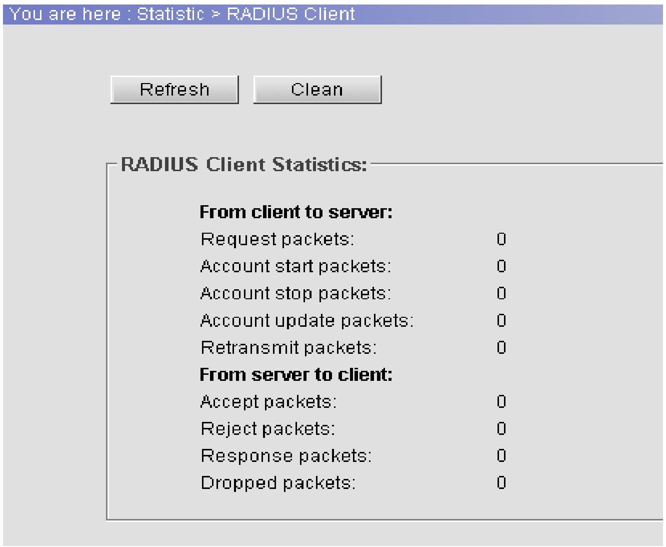
DHCP Relay Statistics:

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

RADIUS Client

Click “Statistic/RADIUS Client”, Figure 72 displays the RADIUS Client statistic information.

Figure 72 RADIUS Client Statistic Information



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

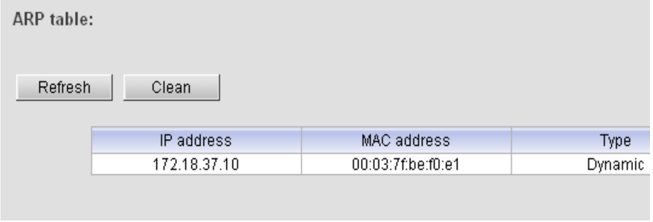
From server to client:

Accept packets:	0
Reject packets:	0
Response packets:	0
Dropped packets:	0

ARP

Click “Statistic/ARP”, Figure 73 displays ARP statistic information.

Figure 73 ARP Statistic Information



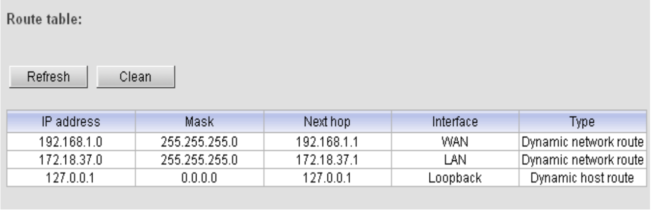
ARP table:

IP address	MAC address	Type
172.18.37.10	00:03:7f:be:f0:e1	Dynamic

Route

Click “Statistic/Route”, the current route information is shown in Figure 74.

Figure 74 Route Statistic Information



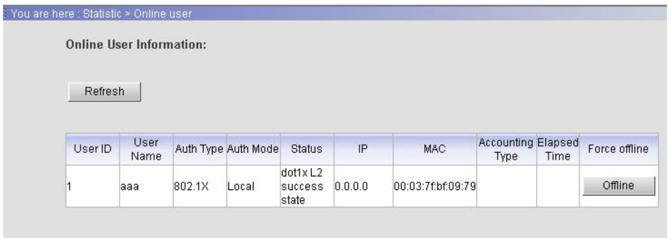
Route table:

IP address	Mask	Next hop	Interface	Type
192.168.1.0	255.255.255.0	192.168.1.1	WAN	Dynamic network route
172.18.37.0	255.255.255.0	172.18.37.1	LAN	Dynamic network route
127.0.0.1	0.0.0.0	127.0.0.1	Loopback	Dynamic host route

Online User

Click “Statistic/Online User”, Figure 75 shows online user statistic information. Click “Force Offline”, the user will be disconnected in force.

Figure 75 Online User Statistic Information



You are here : Statistic > Online user

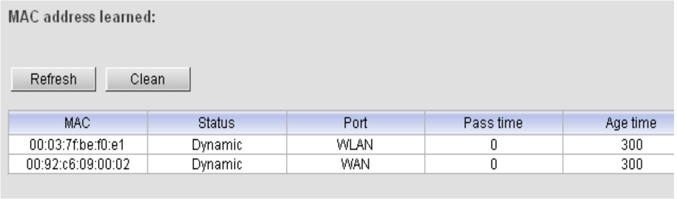
Online User Information:

User ID	User Name	Auth Type	Auth Mode	Status	IP	MAC	Accounting Type	Elapsed Time	Force offline
1	aaa	802.1X	Local	dot1x L2 success state	0.0.0.0	00:03:7f:bf:09:79			Offline

MAC Address

Click “Statistic/MAC Address”, Figure 76 shows MAC addresses learnt by the AP.

Figure 76 MAC Address Statistic Information



MAC address learned:

MAC	Status	Port	Pass time	Age time
00:03:7f:be:f0:e1	Dynamic	WLAN	0	300
00:92:c6:09:00:02	Dynamic	WAN	0	300

5

Typical Configuration Examples

AP in Bridge Mode

Take WA6012 as example:

Configuration Information:

1 AP working mode: Bridge mode

2 The default IP address for AP’s LAN interface is 172.18.37.1; Subnet mask is 255.255.255.0

3 Set ESSID to “AP123”, set Channel to 1

4 Enable WEP Encryption, use key1: mykey

5 VPI/VCI：0/35

6 Wireless network card configuration:

SSID: AP123

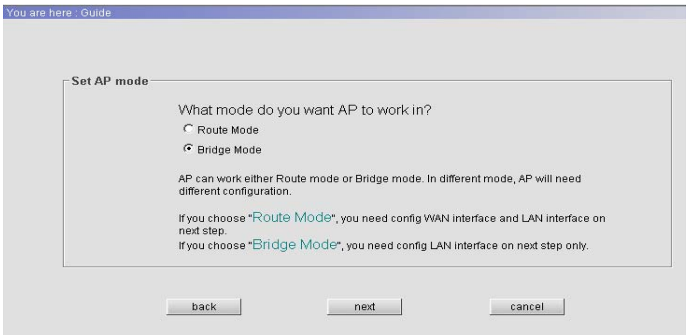
Use key1: mykey

The network topology refers to Figure 2.

Detailed Instructions:

Step 1: Refer to section “Login AP” in Chapter 3.

Step 2: Click the “Guide” link to go to the “Set AP mode” configuration window. The default mode is Bridge mode, then click <next>.



You are here : Guide

Set AP mode

What mode do you want AP to work in?

○ Route Mode

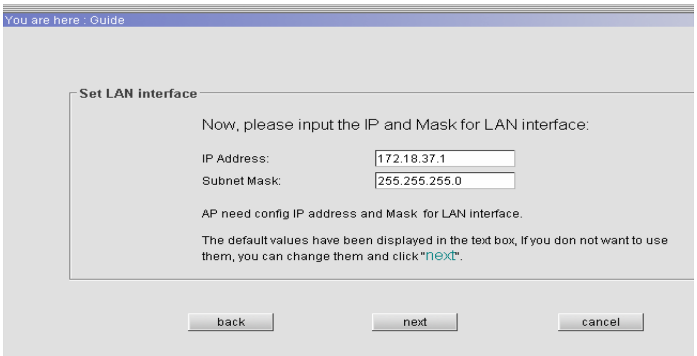
● Bridge Mode

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.

- The “Set LAN interface” configuration window appears, use the default IP address, then click <next>.



You are here : Guide

Set LAN interface

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

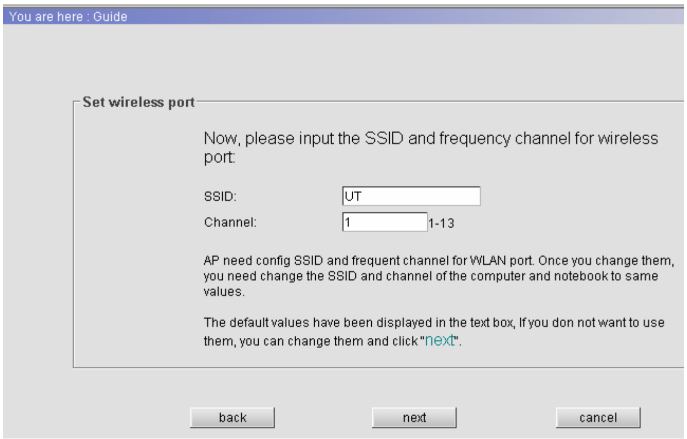
IP Address: 172.18.37.1

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 don not want to use them, you can change them and click "next".

- The “Set wireless port” configuration window appears. Set SSID to “AP123”, Channel to “1”.



You are here : Guide

Set wireless port

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

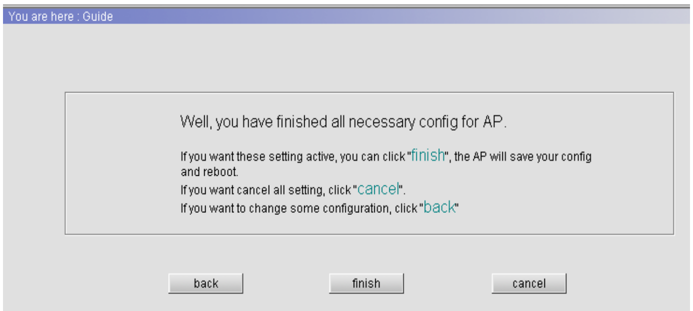
SSID: UT

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 don not want to use them, you can change them and click "next".

- Click <next>, the popped up window below prompts the completion of the configuration. Click <finish>, AP will reboot. The configuration will be effective after rebooting.



You are here : Guide

Well, you have finished all necessary config for AP.

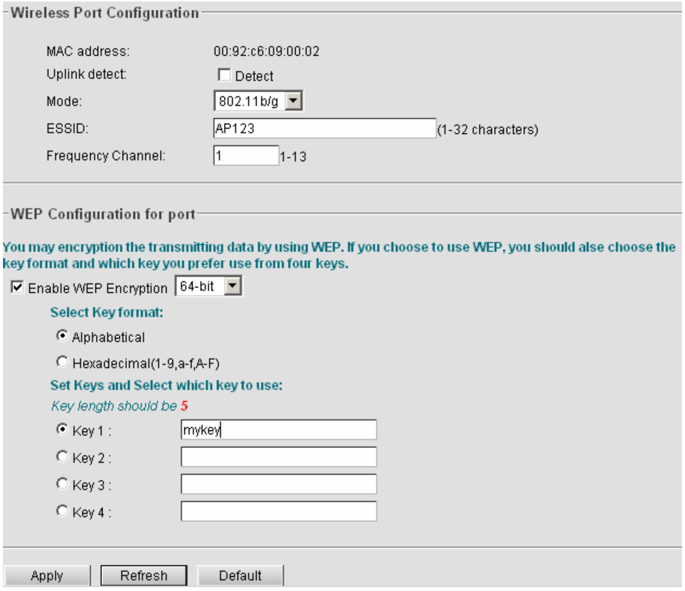
If you want these setting active, you can click "finish", the AP will save your config and reboot.

If you want cancel all setting, click "cancel".

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

Step 3: Set the WEP encryption for the AP

- Click “Basic Config/Wireless Port 1”, enable WEP encryption with 64-bit, select “Alphabetical” as a key format, enter “mykey” as the key1 value



Wireless Port Configuration

MAC address: 00:92:c6:09:00:02

Uplink detect: □ Detect

Mode: 802.11b/g

ESSID: AP123 (1-32 characters)

Frequency Channel: 1 1-13

WEP Configuration for port

You may encryption the transmitting data by using WEP. If you choose to use WEP, you should alse choose the key format and which key you prefer use from four keys.

☑ Enable WEP Encryption 64-bit

Select Key format:

● Alphabetical

○ Hexadecimal(1-9,a-f,A-F)

Set Keys and Select which key to use:

Key length should be 5

● Key 1 : mykey

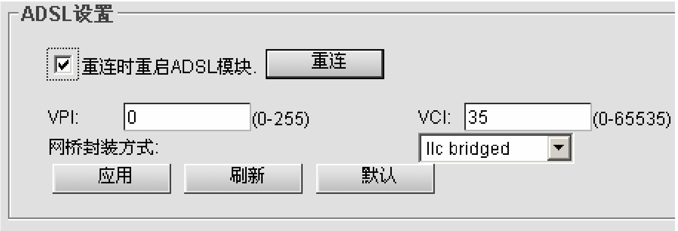
○ Key 2 :

○ Key 3 :

○ Key 4 :

- Click <Apply>, the system will remind you to save the configuration, and then restart the AP in order to take effect the configuration

Step 4: Click “Basic Config/ADSL Config”, set PVC to 0/35, enable “Reboot ADSL module while reconnection”, then click <apply>.



ADSL设置

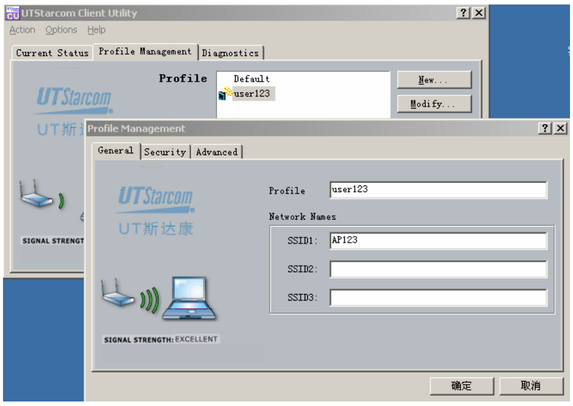
☑ 重连时重启ADSL模块.

VPI: 0 (0-255)

VCI: 35 (0-65535)

网桥封装方式: llc bridged

Step 5: In the “General” of the WNIC2010 Utility, set the SSID value to the same value as the AP



Profile Management

General | Security | Advanced

Profile: user123

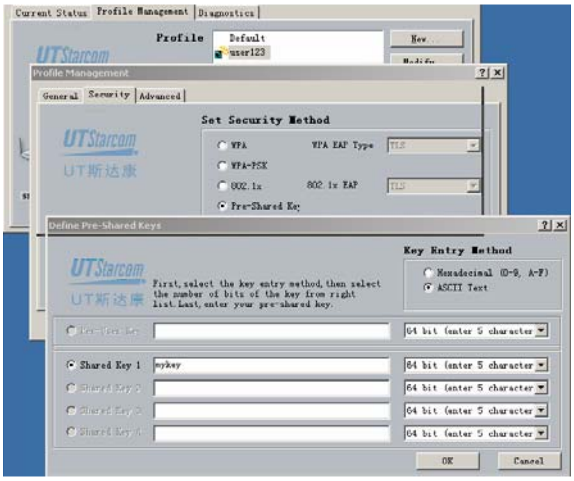
Network Names

SSID1: AP123

SSID2:

SSID3:

Step 6: In the “Security/Pre-Shared Key” of the WNIC2010 utility, enter “mykey” as the Key1 value



Profile: Default, user123

Set Security Method
○ WPA WPA EAP Type: TLS
○ WPA-PSK
○ 802.1x 802.1x EAP: TLS
● Pre-Shared Key

First, select the key entry method, then select the number of bits of the key from right list. Last, enter your pre-shared key.

Key Entry Method
○ Hexadecimal (0-9, A-F)
● ASCII Text

○ Per-User Key: 64 bit (enter 5 character
● Shared Key 1: mykey 64 bit (enter 5 character
○ Shared Key 2: 64 bit (enter 5 character
○ Shared Key 3: 64 bit (enter 5 character
○ Shared Key 4: 64 bit (enter 5 character

AP in Router Mode

Take WA6011 as example:

Description:

This example setup is used for establishing a small range network consisting of less than 10 users. AP supports IEEE 802.1x. There has a remote Radius/AAA (Authentication, Authorization and Accounting) server.

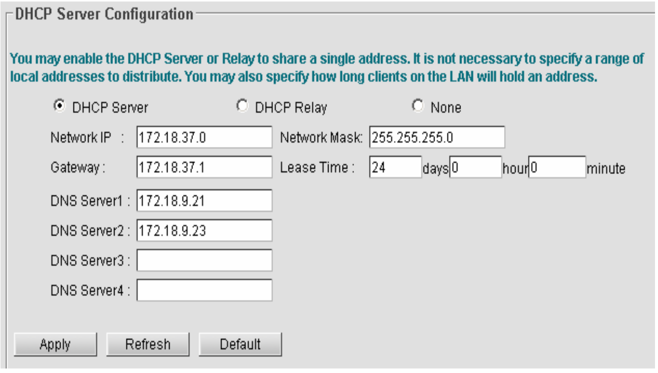
AP Configuration Information:

- AP working mode: Route mode
- IP address for AP’s WAN interface: assigned through DHCP server
- IP address for AP’s LAN interface: the default one is 172.18.37.1
- AP acts as a DHCP server to assign the IP addresses for the WLAN
- Managed by NAT
- Configure the Radius server
- Enable the 802.1x authentication of AP, set the maximum number of online users to 10

Detailed Instruction:

Step 1: Set the working mode to “Route mode” through the “Guide” link, get the WAN interface IP address through DHCP server, user the default IP address for LAN interface, and configure SSID. Click <Apply>, the pop-up window will remind user to save and reboot the AP to effect the configuration.

Step 2: Enable the DHCP Server through the “Basic Config/DHCP Server Configuration” link, set Network IP, Network Mask, DNS server and other parameters. Set the Gateway IP address to the one for AP LAN port, and then click <Apply>.



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 : 172.18.37.0 Network Mask: 255.255.255.0

Gateway : 172.18.37.1 Lease Time : 24 days 0 hour 0 minute

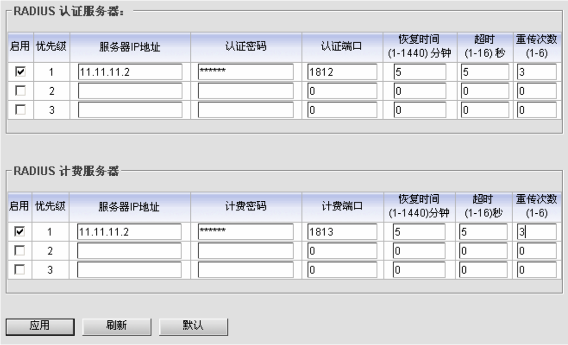
DNS Server1 : 172.18.9.21

DNS Server2 : 172.18.9.23

DNS Server3 :

DNS Server4 :

Step 3: Through the “Advanced Config/RADIUS Client” link to set the IP address for the remote Radius Server. If the authentication is enabled on Radius server, the same authentication has to be set for AP. Click on the <Apply> button to effect the configuration



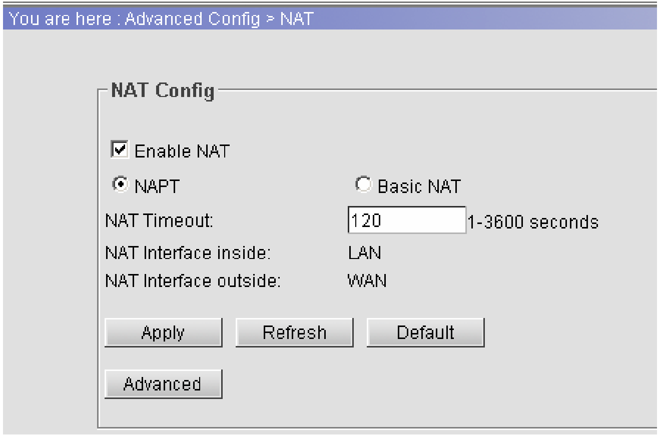
RADIUS 认证服务器：

启用	优先级	服务器IP地址	认证密码	认证端口	恢复时间 (1-1440) 分钟	超时 (1-16) 秒	重传次数 (1-6)
☑	1	11.11.11.2	******	1812	5	5	3
☐	2			0	0	0	0
☐	3			0	0	0	0

RADIUS 计费服务器

启用	优先级	服务器IP地址	计费密码	计费端口	恢复时间 (1-1440)分钟	超时 (1-16)秒	重传次数 (1-6)
☑	1	11.11.11.2	******	1813	5	5	3
☐	2			0	0	0	0
☐	3			0	0	0	0

Step 4: Enable NAT configuration through the “Advanced Config/NAT” link.



You are here : Advanced Config > NAT

NAT Config

☑ Enable NAT

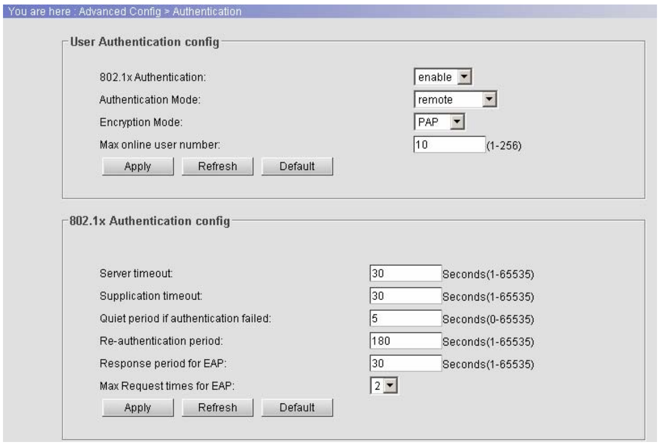
● NAPT ○ Basic NAT

NAT Timeout: 120 1-3600 seconds

NAT Interface inside: LAN

NAT Interface outside: WAN

Step 5: Through the “Advanced Config/Authentication” link to go to the “Authentication” configuration window. Enable the 802.1x authentication, set the Authentication mode to “Remote”, set the max online user number to “10”.



You are here : Advanced Config > Authentication

User Authentication config

802.1x Authentication:	enable	
Authentication Mode:	remote	
Encryption Mode:	PAP	
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:	180	Seconds(1-65535)
Response period for EAP:	30	Seconds(1-65535)
Max Request times for EAP:	2	

Step 6: For the detail of SSID configuration in client wireless network card, please refer to the section “AP in Bridge Mode” in Chapter 5.

AP in P2P Mode

Take WA6012 as example:

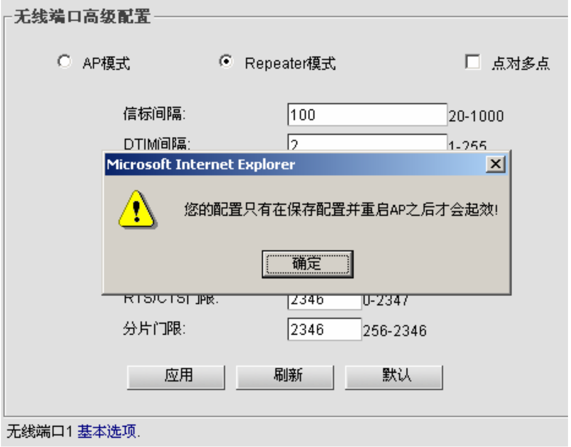
Configuration Information:

Set the working mode of AP-1 and AP-2 to Bridge mode, connect AP-1 to the network through its uplink, AP-2 connects to the network through AP-1.

For example, wireless bridging can be done through network card 1 of AP-1 and AP-2

AP-1 Configuration:

- Set the working mode to Bridge mode
- Through the “Advanced Config/Wireless Port 1” link, select “Repeater mode”, click <apply>, the pop-up window will remind user to save and reboot the AP to effect the configuration.



无线端口高级配置

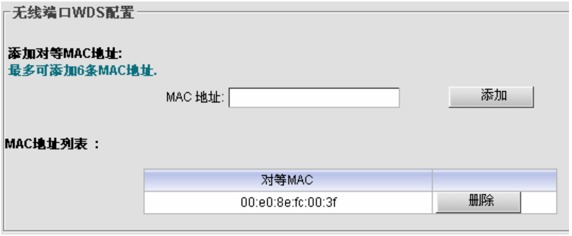
○ AP模式 ● Repeater模式 □ 点对多点

信标间隔:	100	20-1000
DTIM间隔:	2	1-255
RTS/CTS门限:	2346	0-2347
分片门限:	2346	256-2346

Microsoft Internet Explorer

您的配置只有在保存配置并重启AP之后才会起效!

- Click <OK>, the WDS configuration user interface appears. Add AP-2’s MAC address into the “MAC address” field. Click <Add>, the address will be displayed in the MAC address table.



无线端口WDS配置

添加对等MAC地址:
最多可添加6条MAC地址.

MAC 地址: 添加

MAC地址列表 ：

对等MAC	
00:e0:8e:fc:00:3f	删除

AP-2 Configuration:

Set the working mode to Bridge mode, select “Repeater Mode” in “Advanced Config/Wireless Port 1” configuration.

Connect the AP-2 to the wired network through its Ethernet port when AP-2 is WA6011, Meanwhile, AP can implement its network coverage by configuring the other network card. For the details of LAN interface IP address, SSID and other parameter configurations, please refer to the section “AP in Bridge Mode” in Chapter 5

6 Term and Acronym List

These terms and acronyms are used throughout the UTStarcom 4007 SS7 Signaling Gateway documentation. While not all terms in this list are used in this particular document, the complete list is provided to ensure fast access to the definition of these terms regardless of how they are encountered.

AP	Access Point
CLI	Command Line Interface
DHCP	Dynamic Host Configuration Protocol
IEEE	Institute of Electrical and Electronics Engineering
LAN	Local Area Network
MAC	Media Access Control
NAT	Network Address Translation
NAPT	Network Address Port Translation
PPPoE	PPP over Ethernet
SSID	Service Set Identifier
WEP	Wired Equivalent Privacy
WDS	Wireless Distribution System
WLAN	Wireless Local Area Network

7 Technical Specification

Product	WA6011/6012
Uplink	WA6011: RJ45, 10/100Mbps Adaption; WA6012: RJ11, ADSL interface
Auto Fall Back Rate Options	802.11b: 11Mbps & 5.5Mbps CCK, 2Mbps DQPSK, 1mbps DBPSK 802.11g: 54, 48, 36, 24, 18, 12, 9, 6Mbps (108Mbps in Super G mode)
Standard Compliance	IEEE 802.11b IEEE 802.11g IEEE 802.3 IEEE 802.1x
Operational Frequency Range	North America/FCC: 2.412~2.462GHz (11 channels) China/Europe/ETSI: 2.412~2.472GHz (13 channels)
Radio Frequency Output Power	4 adjustable levels within 400mw
Sensitivity	-73dBm@54Mbps PER< 8% OFDM -90dBm@11Mbps PER< 8% CCK -92dB @6Mbps PER< 8% OFDM -95dBm@1Mbps PER< 8% CCK
Coverage	Outdoors: >500m
Power Supply	AC: 220(±20%)V 50~60Hz(±20%) PoE power Supply (WA6011): Cat5 x 2, 48V/1.2A adapter
Power Consumption	Transmission: 30W Reception: 25W
Operation Temperature	-33 °C~ 55°C
Storage Temperature	-40°C ~ 80°C
Humidity	0~90%
Waterproof Level	5th level
Antenna	External, various antennae can be assembled
Dimensions	239(198)mm x 198(158)mm x 42mm (LxW.H)
Weight	2050g
EMC/EMI	CE mark： EN55022 (1997) Class A. EN55024 (1998) EN61000-4-2/3/4/5/6/11 EN61000-2-2 Class A. EN61000-2-3 FCC CFR 47 part 15 Class A(USA EMC standard) VCCI Class A CISPR Class A

Federal Communication Commission Interference Statement

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that

  to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

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

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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1275 Harbor Bay Parkway Alameda, CA 94502, USA
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http://www.utstar.com

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IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.