getnet
www.getnet.com.tw

Wireless Broadband Router

GR-534W

User Manual

Version 1.0 / 8, 2009

CATALOG

About User Manual

This user manual mainly describes how to install and configure the Getnet GR-534W wireless router.

Organization

The GR-534W User Manual is organized as follows:

Chapter	Description
Chapter 1 : Overview	Provides a general overview of the GETNET GR-534W wireless router, and the package list.
Chapter 2 : Hardware Description and Hardware Installation	Mainly describes the front panel and the rear panel of the GETNET GR-534W and the procedure for hardware installation.
Chapter 3 : Network Configuration and Introduction to Network Connection Modes	Describes how to configure the network settings and provides the introduction to network connection modes.
Chapter 4 Quick Start	Provides quick start for configuring GETNET GR-534W.
Chapter 5 Web Configuration	Mainly describes how to navigate through the Web pages and how to configure the parameters.
Chapter 6 : Troubleshooting	Describes how to solve some simple problems.

Features

- Support IEEE802.11b, IEEE802.11g, IEEE802.11n, IEEE802.3, IEEE802.3u, IEEE802.11i, and IEEE802.11e
- The transmission data rate is up to 150 Mbps
- Support WEP and WPA for data transmission security
- Support DHCP Server and Client
- Support static and dynamic routing

- Support upgrading firmware version via Web page
- Support restoring factory default settings
- Support virtual server
- Support DMZ (demilitarized zone)
- Support DNS proxy and forwarding
- Support setting QoS bandwidth, and generating rules based on protocol, port, IP, DSCP, or application
- Support wireless security authentication modes, including Open, Shared, WEPAUTO, WPA-Enterprise, WPA-PSK, WPA2-Enterprise, WPA2-PSK, WPA-PSK/WPA2-PSK, WPA/WPA2-Enterprise, and Dynamic WEP 802.1x
- Support 5 types of WAN connection modes, including STATIC (fixed IP), DHCP (Auto config), PPPoE (ADSL), L2TP, and PPTP
- Support remote access control
- Support firewall functions, including IP/MAC/port filter, URL filter, and Web content filter
- Support system status display
- Support backuping and restoring configuration file
- Ethernet provides cross-over cable detection and also provides auto modification and polarity modification function
- Support system log

1 Overview

Thank you for choosing GETNET GR-534W.

GETNET GR-534W is fully compatible with 802.11g standard. Meanwhile, it is also compatible with 802.11 standards and earlier 802.11b standards. GETNET GR-534W supports CCK and OFDM and its data rate is up to 150 Mbps. It is easy to install and can be applied to AP and router access.

GETNET GR-534W provides 64-bit and 128-bit WEP encryption schemes, and WPA encryption, associating with IEEE 802.1X authentication, which insures the security of wireless communication.

Package List

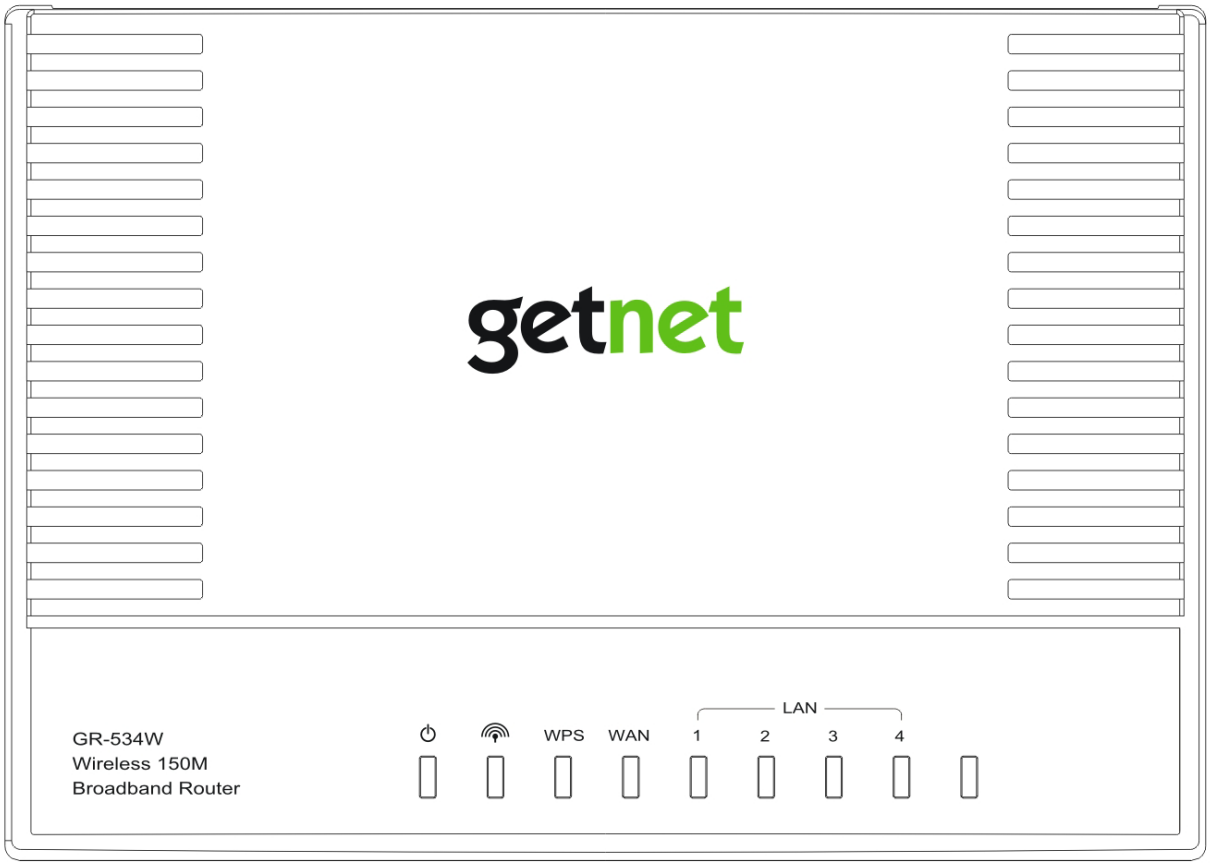
Please check whether your package list includes the following items:

- GR-534W x 1
- Power adapter x 1
- RJ 45 cable x 1

2 Hardware Description and Hardware Installation

2.1 Front Panel and LED Status

There are 8 LED indicators on the front panel of GR-534W. By observing their status, you can judge whether the device runs normally.

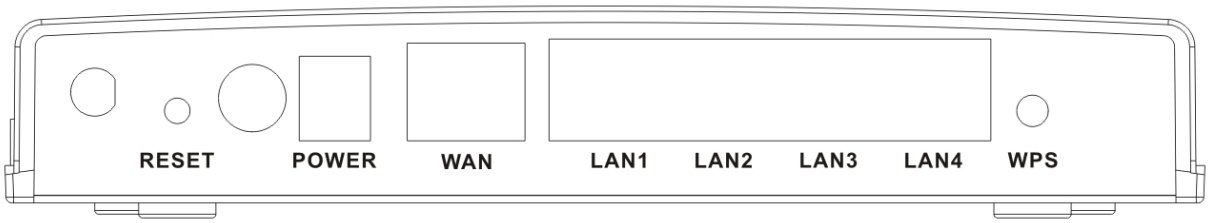


The following table describes the LED indicators on the front panel.

LED Indicator	Color	Status	Description
⏻	Red	On	Power is on.
	Green	On	The device runs normally.
	-	Off	Power is off or the device is down.
📶	Green	On	Radio switch is turned on.
	Green	Blink	Data is being transmitted.
	-	Off	Radio switch is shut off.
WPS	Green	On	Connection succeeds under Wi-Fi Protected Setup.

	Green	Blink	Negotiation is in progress under Wi-Fi Protected Setup.
	-	Off	Wi-Fi Protected Setup is disabled.
WAN	Green	On	Connection succeeds.
	Green	Blink	Data is being transmitted.
	-	Off	No WAN connection.
LAN 1/2/3/4	Green	On	LAN connection succeeds.
	Green	Blink	Data is being transmitted.
	-	Off	No LAN connection.

2.2 Rear Panel and Interface Description



The following table describes the interfaces or the buttons on the rear panel:

Interface/Button	Description
RESET	Press the button for 3 seconds and then release it. System restores the factory default settings.
ON/OFF	By pressing the button, the power is on. Press the button again, and then the power is off.
POWER	Power socket, for connecting the power adapter.
WAN	WAN interface, for connecting WAN or the uplink network devices.
LAN1~LAN4	LAN interface, for connecting hub, switch, or computer on LAN.
WPS	This button is used for enabling WPS PBC mode. If WPS is enabled, press this button, and then AP starts to

	accept the negotiation of PBC mode.

Note:

*Do not press the **Reset** button unless you want to clear the current settings. The **Reset** button is in a small circular hole on the rear panel. If you want to restore the default settings, please press the **Reset** button gently for 3 seconds with a fine needle inserted into the hole and then release the button. The system reboots and returns to the factory defaults.*

Warning:

The power specification is 12V, 500 mA. If the power adapter does not match the specification, it may damage the device.

2.3 Hardware Installation

2.3.1 System Requirements

Before installing the device, please make sure that the following items are ready.

- At least one Ethernet RJ45 cable (10Base-T/100Base-T)
- GR-534W x 1
- A PC has been installed PCP/IP protocol and it can access the Internet.

2.3.2 Before You Begin

Before you install the device, please pay attention to the following items:

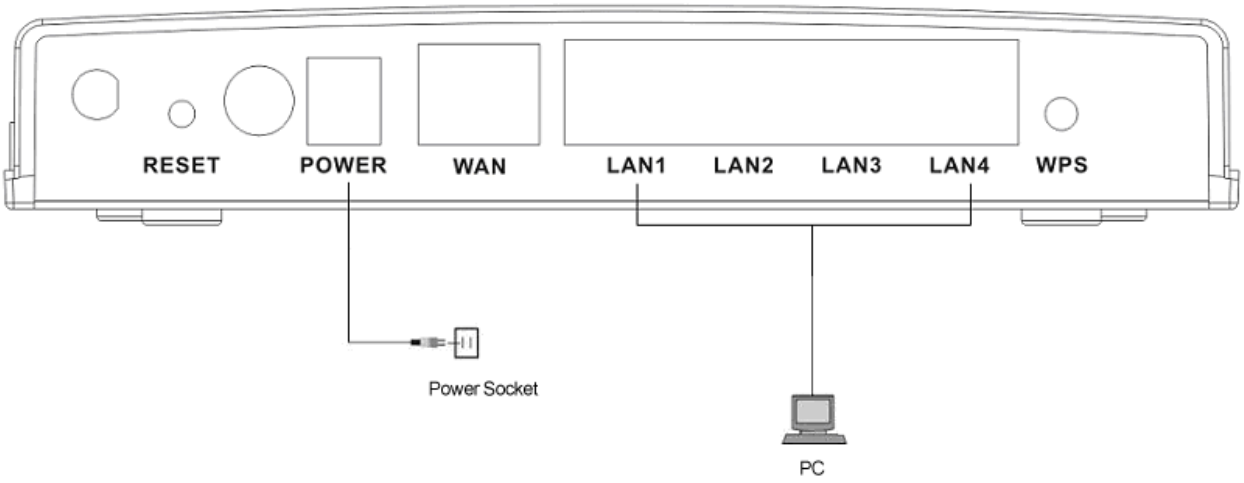
- When connecting the device to the computer, hub, router or switch, the Ethernet cable should be less than 100 meters.
- Do not place this device on an unstable surface or support. Do not put this device on the ground.
- Keep the device clean. Avoid the device from direct sunshine. Avoid any metal in the device.
- Place the device in the center of the area, and try to optimize the wireless coverage.

2.3.3 Connecting AP

Step 1 Connect one end of the RJ45 cable to the LAN interface of the GR-534W.

Step 2 Connect the other end of the RJ45 cable to your PC.

Step 3 Connect the power adapter to the power socket of the GR-534W.



2.4 Operation Range

The operation range of GR-534W depends on the actual environment. When the device is placed in the house or in the office, the overall arrangements are different. So the path and effect for the signal transmission are different. For example, the outdoor straight transmission distance for some devices in the open air is up to 300 meters, and the indoor straight transmission distance is up to 100 meters.

2.5 Roaming

Suppose that several GR-534Ws run in the same network. Each GR-534W acts as one BSS, and has its coverage. One wireless client terminal (e.g. notebook PC or PDA) can realize roaming from one AP to another AP correctly. In that case, the wireless client terminal can communicate with the other devices within the GR-534Ws' coverage.

In order to realize the wireless client roaming among different GR-534Ws, you need to set the GR-534W properly. Do as follows:

- Set the same SSID for different GR-534Ws.
- The SSIDs of all the computers and PDAs should be consistent with that of the GR-534Ws.
- All the BSSs must use the same wireless channel.
- If the encryption function is enabled, all the GR-534Ws should configure the same encryption mode and the encryption key for establishing connection.
- GR-534W must keep the wireless signal covering the whole operation environment and the wireless signal should be continuous. Please put the GR-534Ws to the appropriate places for a better network coverage.

3 Network Configuration and Introduction to Network Connection Modes

Web management tool allows you to configure GR-534W. The recommended browser is Internet Explorer 5.0 version or above.

The following sections describe how to set the Internet connection, local Ethernet connection, and wireless connection, and how to access the Web page of the GR-534W.

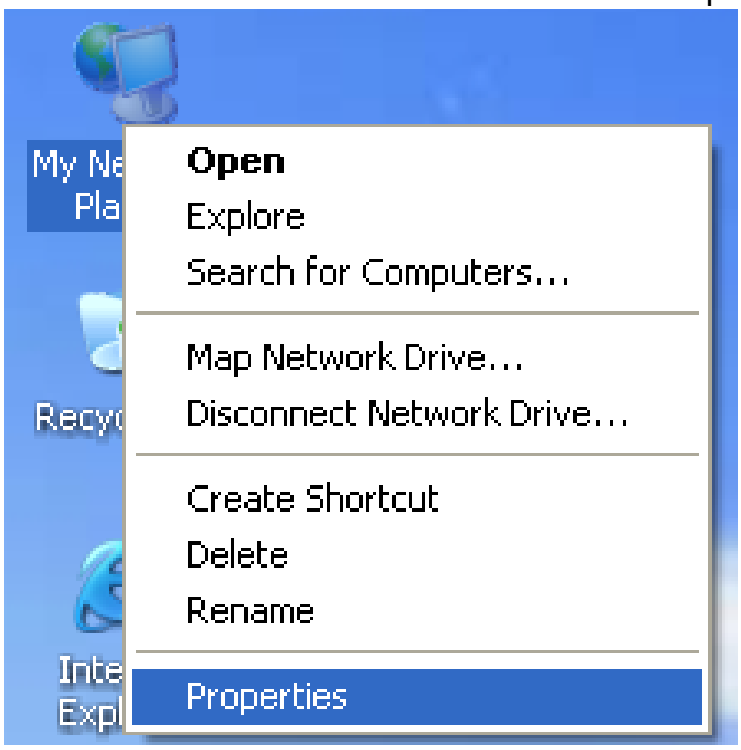
3.1 TCP/IP Settings

By default, the IP address of LAN interface of the GR-534W is 192.168.1.1.The subnet mask is 255.255.255.0. The DHCP Server is enabled.

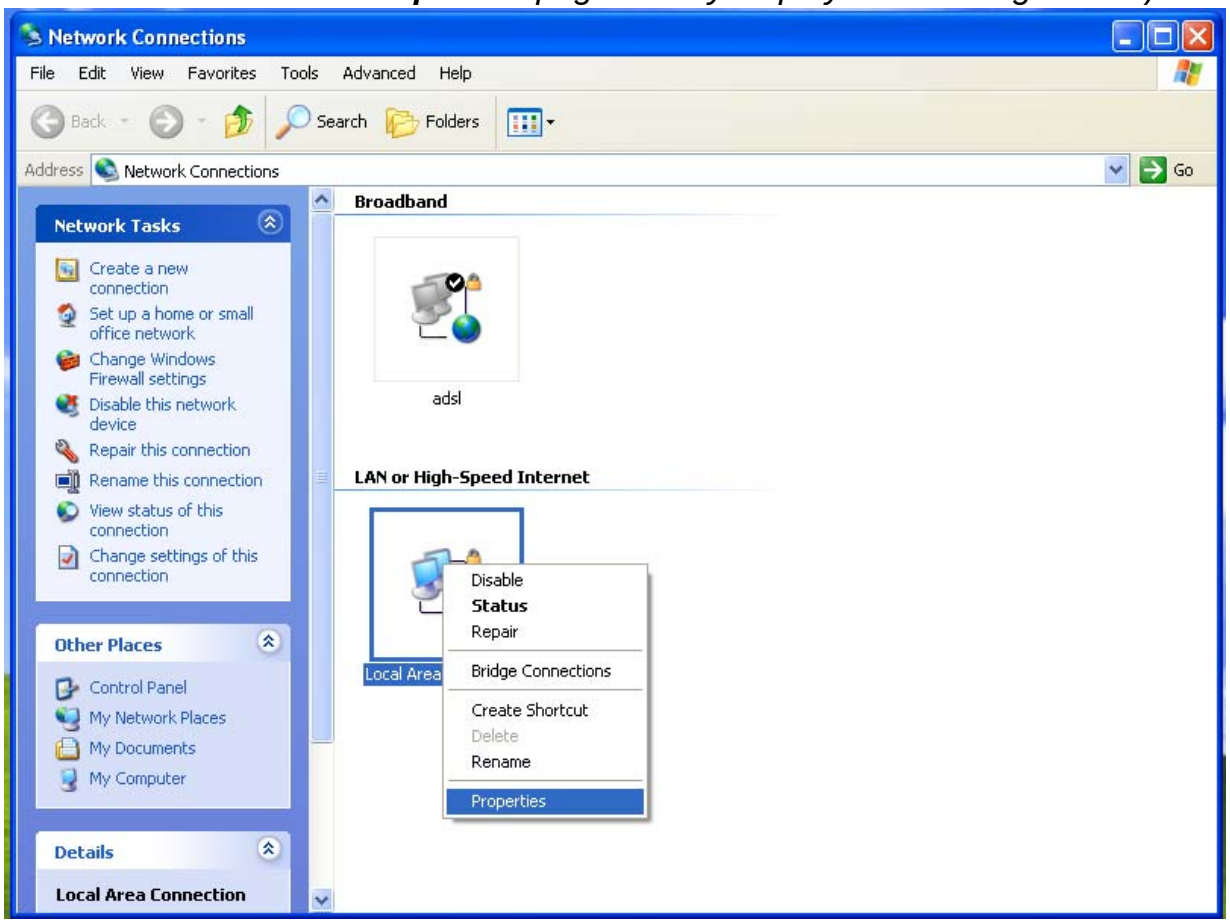
It is recommended you set the network adapter to be **Obtain an IP address automatically**. Your PC automatically acquires IP address, subnet mask, gateway, and DNS address via the GR-534W. If you know the setting of the current LAN interface, you can manually set the TCP/IP properties of the network adapter, so that your PC can communicate with the GR-534W.

You may manually set the network adapter by following the steps below:

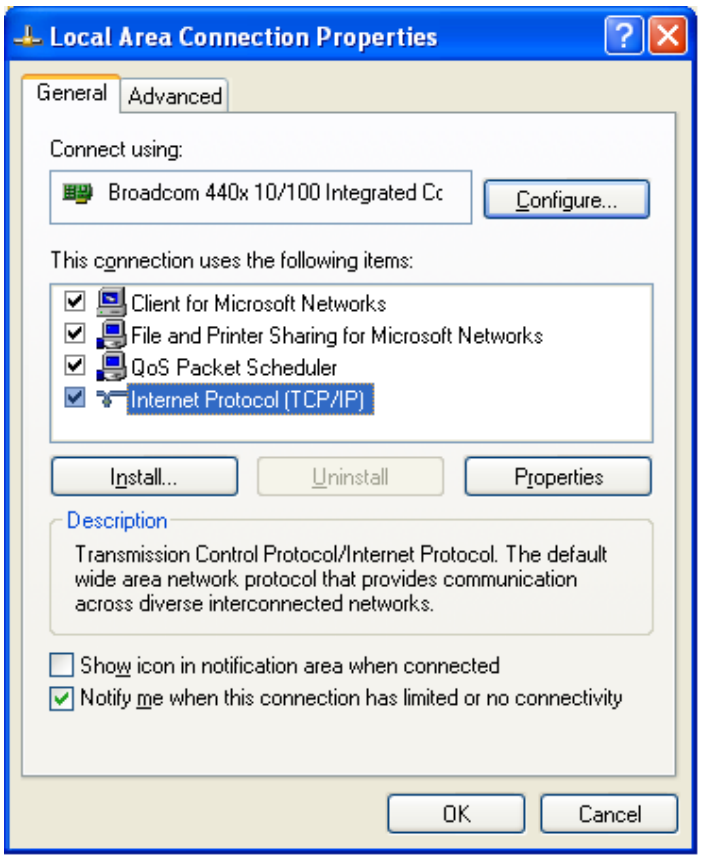
Step1 Right click the icon of **My Network Places** (e.g., Windows XP) and select **Properties** in the menu. The **Network Connections** page appears.



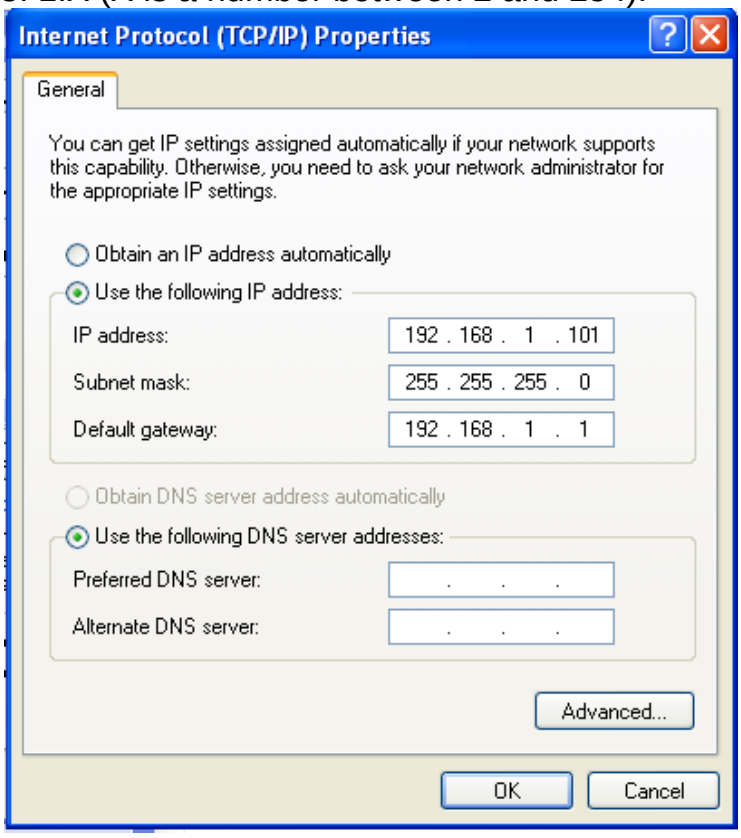
Step2 Right click the network adapter icon and select **Properties** in the menu. The **Local Area Connections Properties** appears. (**Note:** *If there are several network cards on your PC, it may not display the* ***Local Area Connections Properties*** *page. It may display other dialog boxes.*)



Step3 Double click the **Internet Protocol (TCP/IP)** to display the **Internet Protocol (TCP/IP) Properties** page.

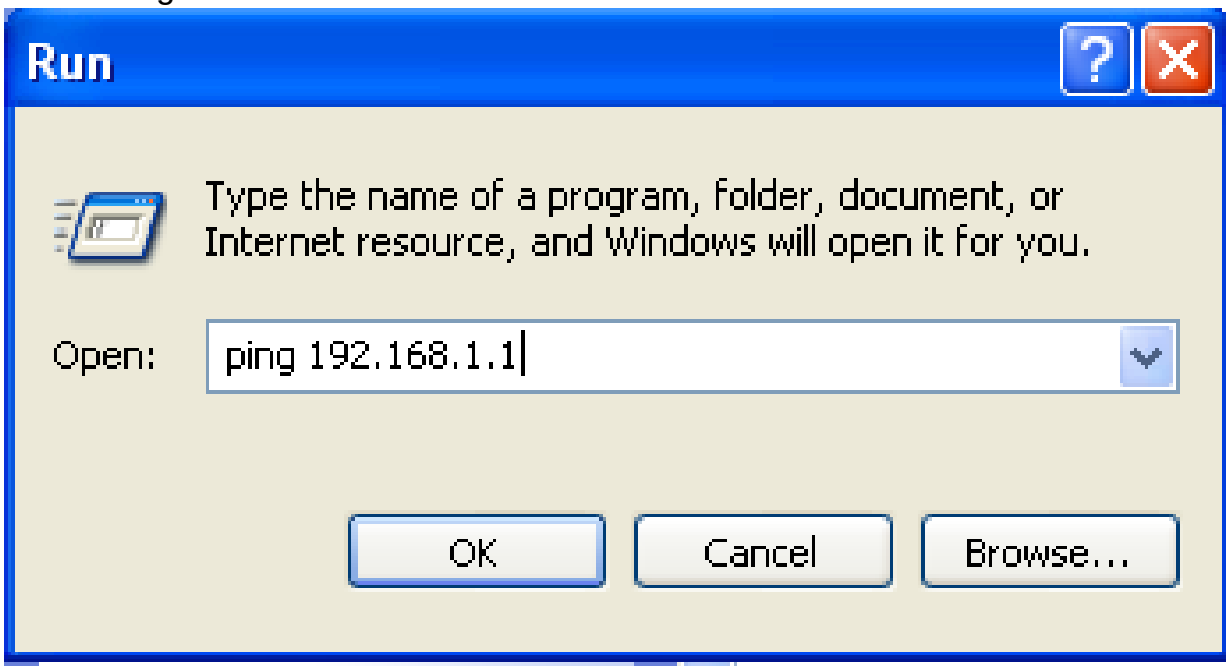


Step4 Select **Use the following IP address** and enter the IP address of the network adapter. The IP address should belong to the IP network segment 192.168. 1.X (X is a number between 2 and 254).



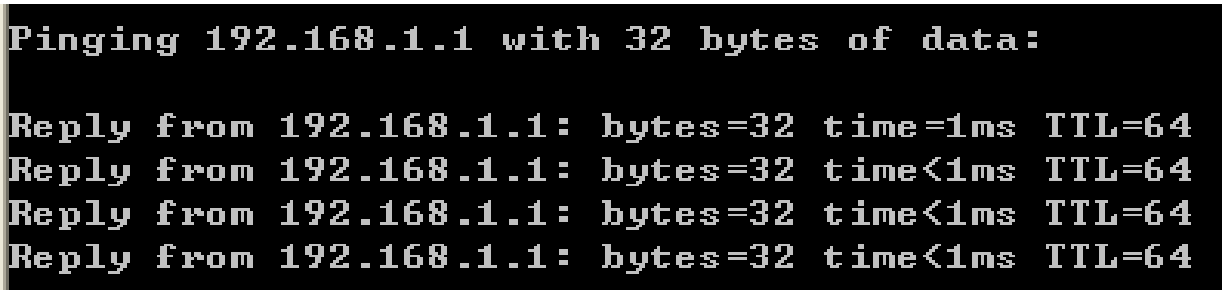
Step5 Set subnet mask and then click the **OK** button to finish manual setting.

Step6 After finishing setting, you may ping the default IP address of the GR-534W, to check whether the current connection between PC and the GR-534W is normal. Click **RUN…** in the lower left corner on the desktop, and then enter **ping *192.168.1.1*** in the dialog box. See the following figure:



Note:
192.168.1.1 *is the default IP address of the LAN interface. If this IP address is changed and you need to ping the IP address of the* GR-534W*, you should enter the current IP address in the dialog box above.*

Step7 If PC can ping through the default IP address of the GR-534W and the following page appears, it indicates that the connection between PC and the GR-534W is normal.



3.2 Introduction to PPPoE (ADSL) and DHCP (Auto config)

If you want to access the Internet via the GR-534W, there are two common access ways, including PPPoE and DHCP (Auto config). The following sections describe the common network connection modes of these two ways.

Note:

In the gateway mode, GR-534W provides 5 types of uplink access modes, including STATIC (fixed IP), DHCP (Auto config), PPPoE (ADSL), L2TP, and PPTP. For more details, please refer to 5.3.2 WAN.

- **The Network Connection Mode of PPPoE**

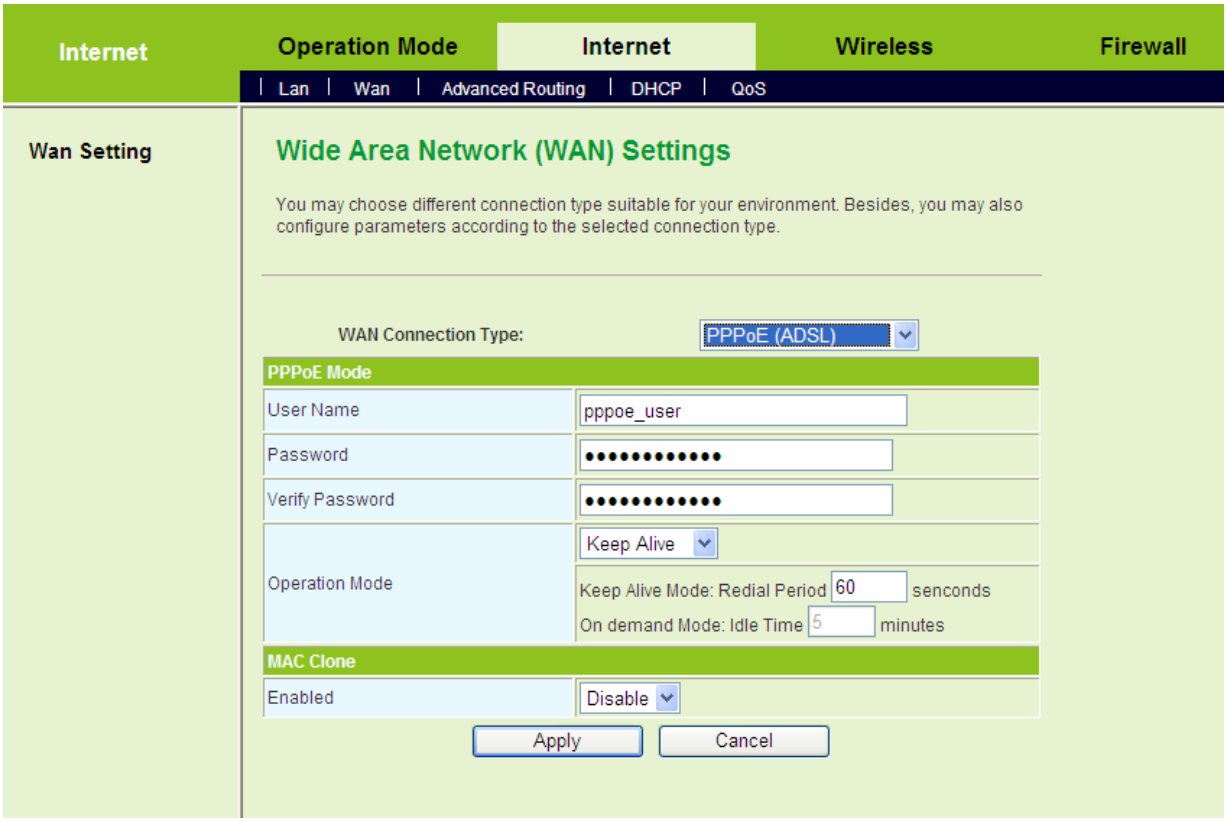
If you access the Internet by PPPoE, please do as follows:

Step1 Connect the uplink interface of ADSL or cable modem to the ISP office end, and make sure that the communication between both sides is normal. Set your ADSL or cable modem to be bridge mode. For more details, please refer to ADSL or cable modem user manual, or consult ISP, and the manufactures of the ADSL or cable modem.

Step2 Use one Ethernet cable connects the LAN interface of the ADSL or cable modem to the WAN interface of the GR-534W.

Step3 Use one Ethernet cable connects your PC to the LAN interface of the GR-534W. Set the TCP/IP properties of the network adapter. By default, it is recommended you set the network adapter to be **Obtain an IP address automatically**. If you want to manually set the TCP/IP properties, please refer to 3.1 TCP/IP Settings.

Step4 Log in to the Web page of the GR-534W. Click **Internet** > **WAN** to display the **Wide Area Network (WAN) Settings** page.



Step5 On the **Wide Area Network (WAN) Settings** page, set the **WAN Connection Type** to be **PPPoE (ADSL)** and enter the correct PPPoE username and password. After finishing setting, click the **Apply** button to start dial-up.

- **The Network Connection Mode of DHCP (Auto config)**

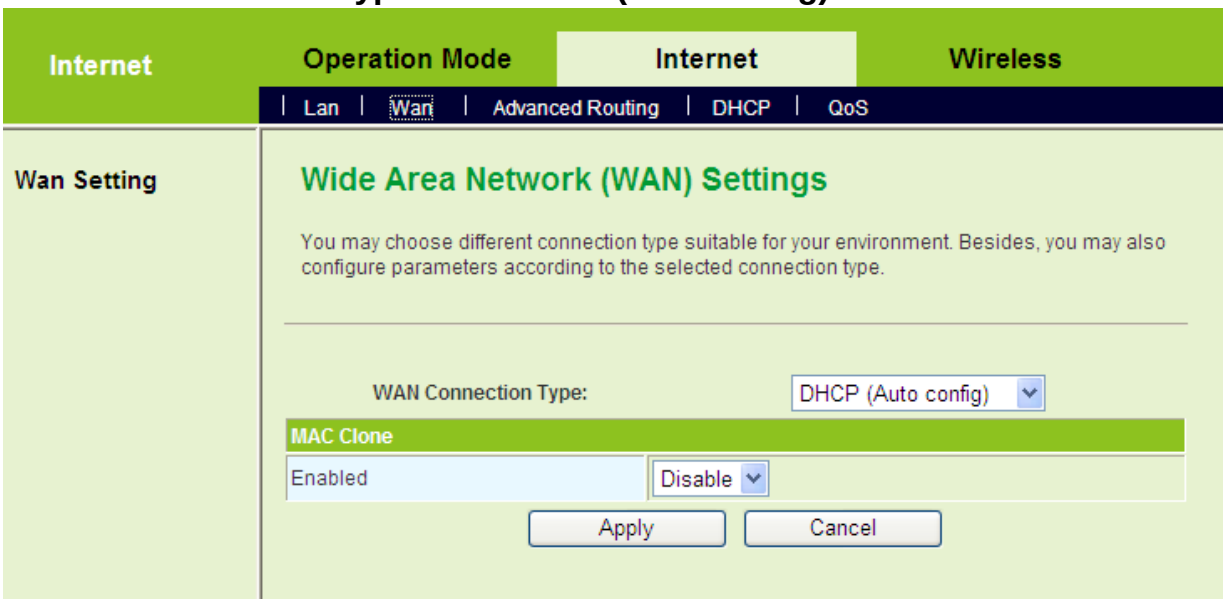
If you can access the Internet without dial-up, and ISP provides DHCP service, please follow the steps below to finish setting.

Step1 Use one Ethernet cable to connect the uplink interface of router or gateway to the WAN interface of the GR-534W.

Step2 Use one Ethernet cable connects your PC to the LAN interface of the GR-534W. Set the TCP/IP properties of the network adapter. By default, it is recommended you set the network adapter to be **Obtain an IP address**

automatically. If you want to manually set the TCP/IP properties, please refer to 3.1 TCP/IP Settings.

Step3 Log in to the Web page of the GR-534W. Click **Internet** > **WAN** to display the **Wide Area Network (WAN) Settings** page. On this page, set **WAN Connection Type** to be **DHCP (Auto config)**.



Step4 After finishing settings, click the **Apply** button, and then GR-534W starts to acquire the parameters assigned by the DHCP server, such as the IP address, and the DNS address.

3.3 Connection Introduction for Ethernet User

In the gateway mode, by default, the NAT function of the GR-534W is enabled. Users using the LAN interfaces of the GR-534W will use the same IP address of the WAN interface to access the Internet.

Usually, users using the LAN interfaces of the GR-534W need to set the network adapter to be **Obtain an IP address automatically.** If any user wants to manually set the TCP/IP properties, please refer to 3.1 TCP/IP Settings.

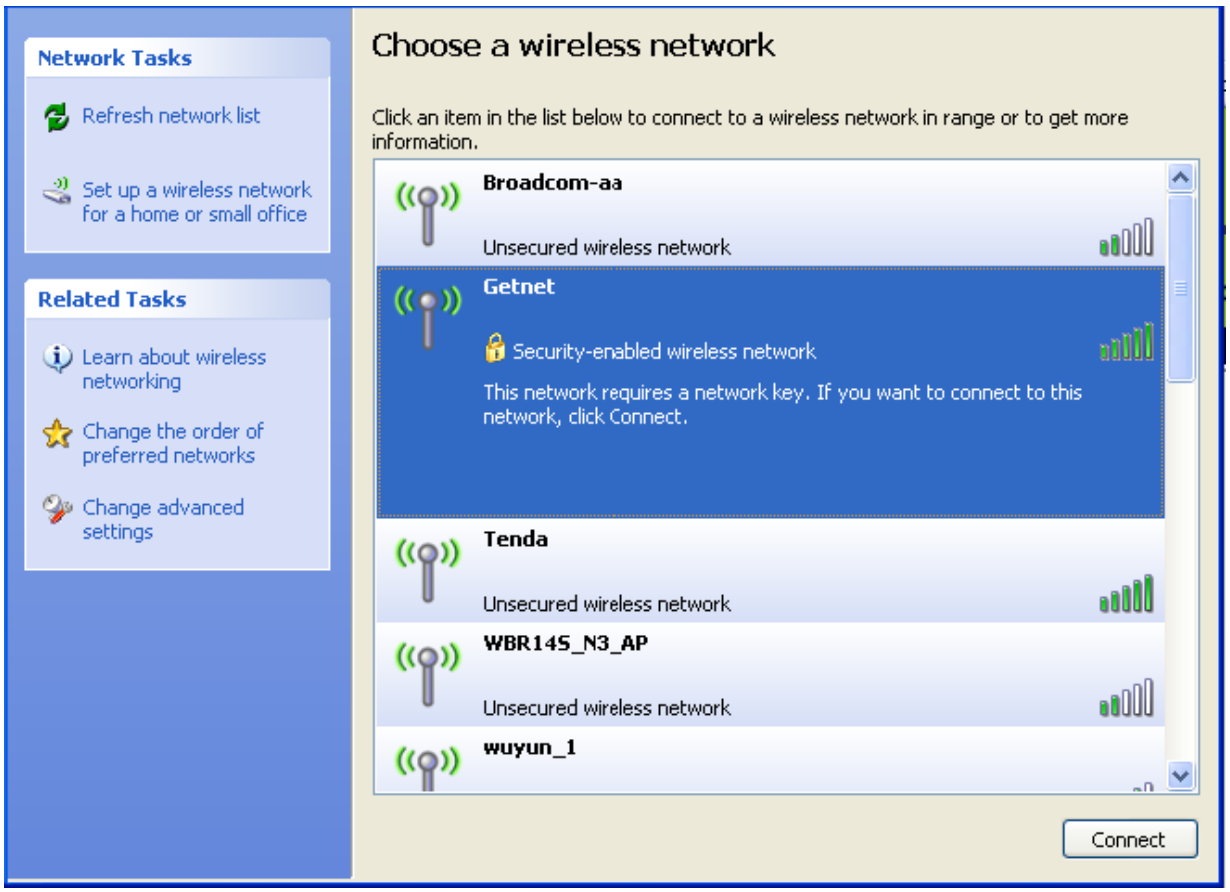
3.4 Connection Introduction for Wireless User

By default, the AP function of the GR-534W is enabled. User that uses the wireless network adapter can follow the steps below to finish setting.

Step1 Enable your wireless network adapter on your PC, and make sure that **Wireless Zero Configuration** tool is available. Right click the **Wireless**

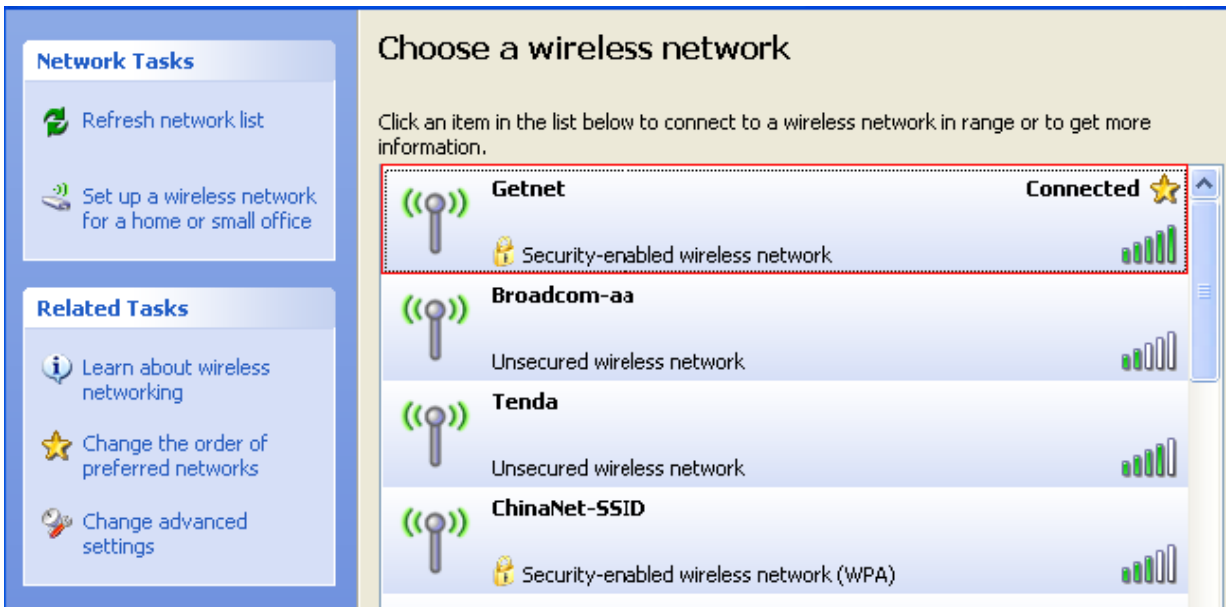
Network Connection icon and select **View Available Wireless Networks**.

Step2 On the **Wireless Network Connection** page, click **Refresh network list** and the network list will be refreshed. The default SSID of the GR-534W is **Getnet**. Choose the AP that you want to connect, and then click the **Connect** button. The default wireless security mode is **Disable**, and you can connect AP directly without the encryption key. If the GR-534W is encrypted, this AP is marked with a lock icon.

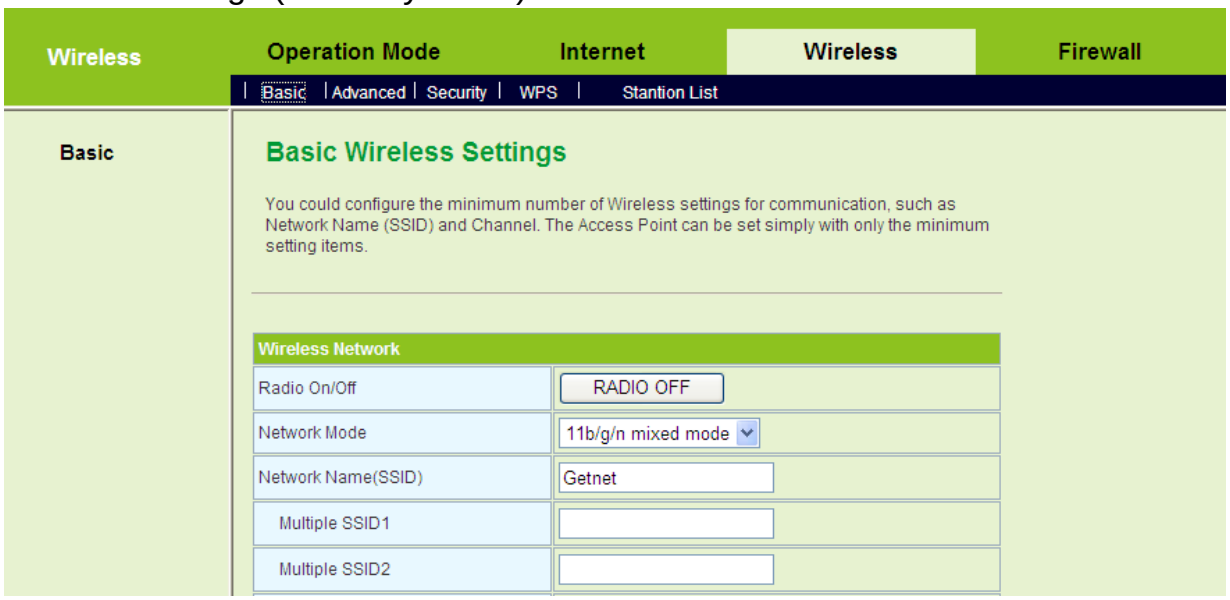


Step3 If the GR-534W is encrypted, you need to enter the encryption key in the field of network key and then click the **Connect** button.

Step4 If the wireless network card connects to GR-534W successfully, the character **Connected** will appear in the AP's upper right corner.



Step5 If you are not sure of the SSID available, please log in to the Web page of AP, and view the SSID on the **Basic Wireless Settings** page. For more information about the wireless settings, please refer to 5.4 Wireless Settings (Gateway Mode).

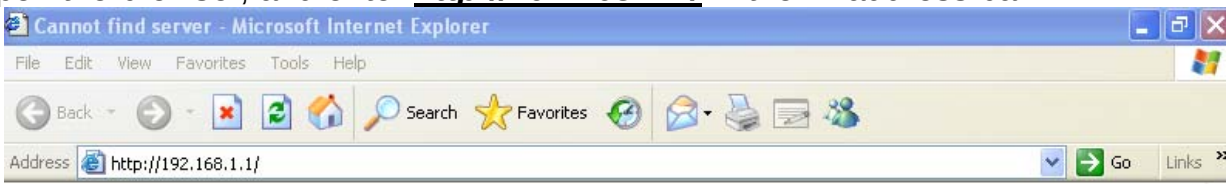


Note:

After your wireless network card connects to AP successfully, usually, you should set the network adapter to be ***Obtain an IP address automatically.***

3.5 Log In to the Web Page

Open the browser, and enter ***http://192.168.1.1/*** in the IE address bar.



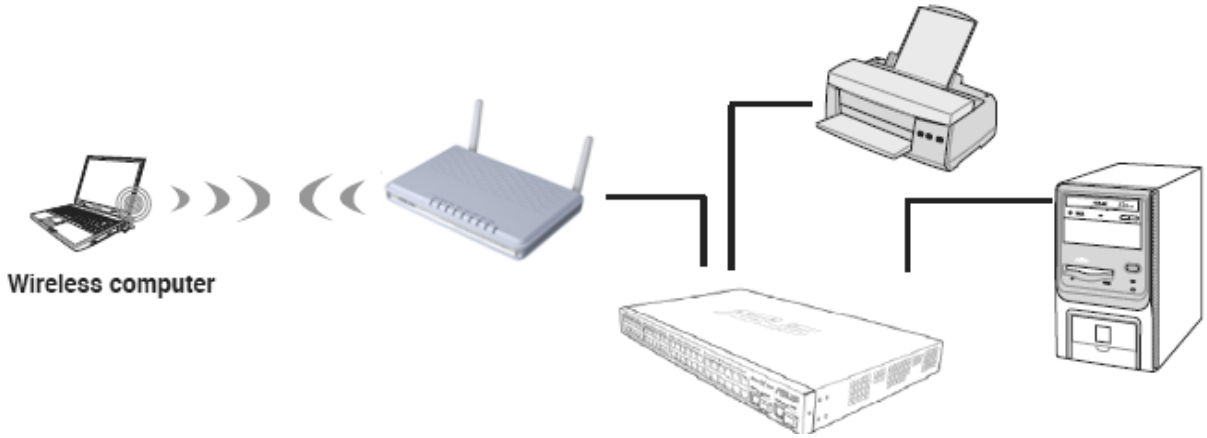
Enter the user name (**admin**, by default) and the password (**admin**, by default) on the login page.

After clicking the **OK** button on the login page, you can log in to the Web page

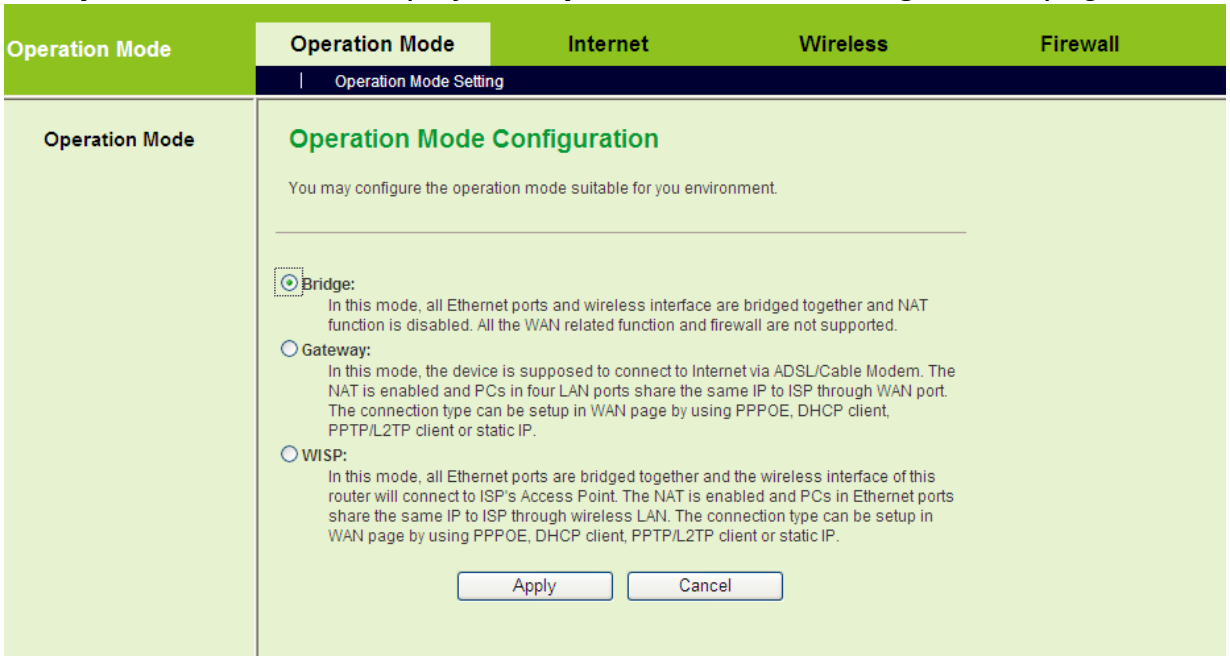
4 Quick Start

4.1 Quick Start in the Bridge Mode

In the bridge mode, you may connect the LAN interfaces of the GR-534W or other wireless devices to a LAN.



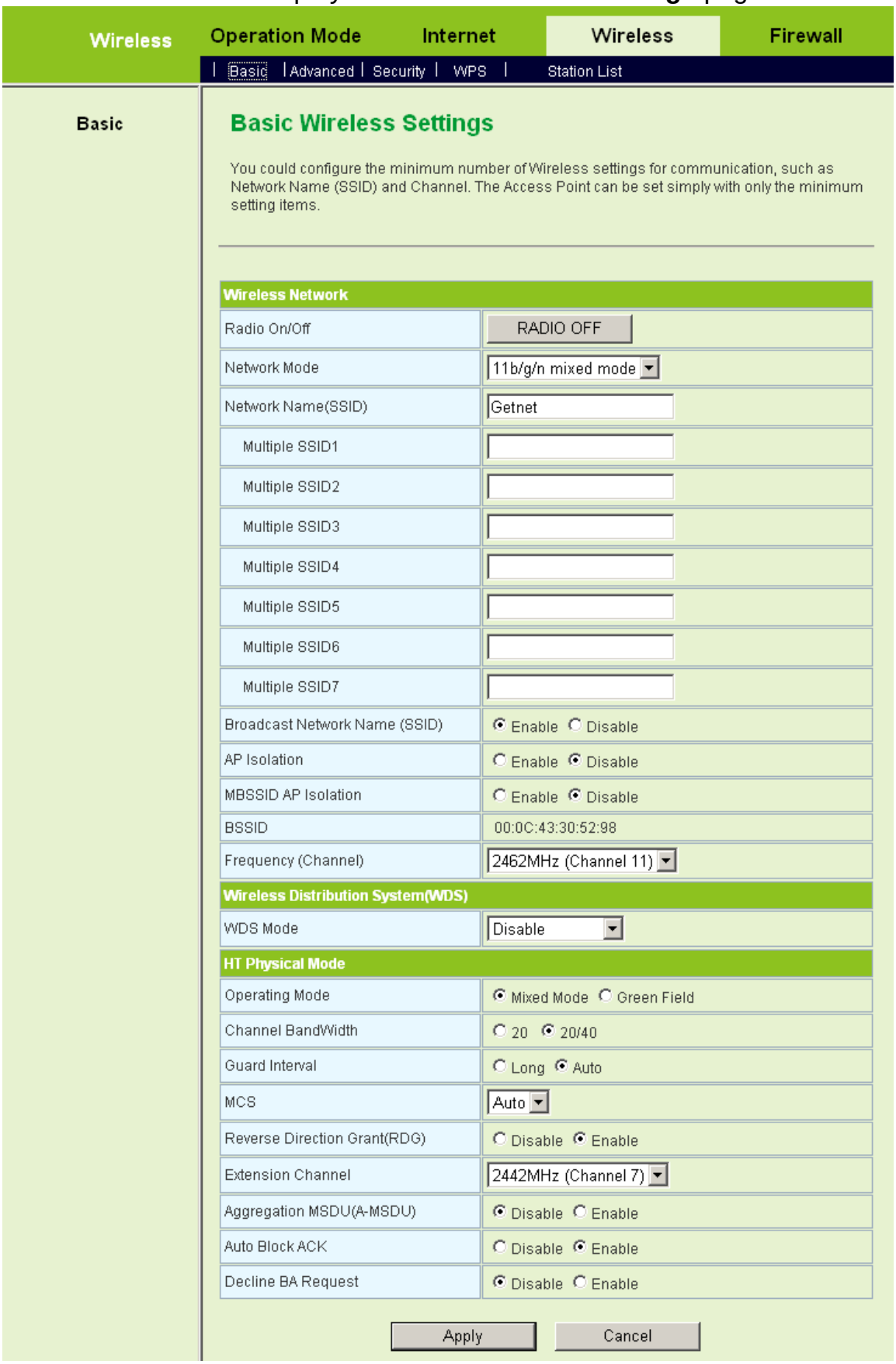
Click **Operation Mode** to display the **Operation Mode Configuration** page.



On the **Operation Mode Configuration** page, choose the **Bridge** mode, and then click the **Apply** button.

Wireless Settings

Click **Wireless** > **Basic** to display the **Basic Wireless Settings** page.



On this page, enable the radio switch and set at least one legal SSID. Make sure that

the wireless devices can connect to the AP.

After finish the settings, click the **Apply** button to apply the settings.

4.2 Quick Start in the Gateway Mode

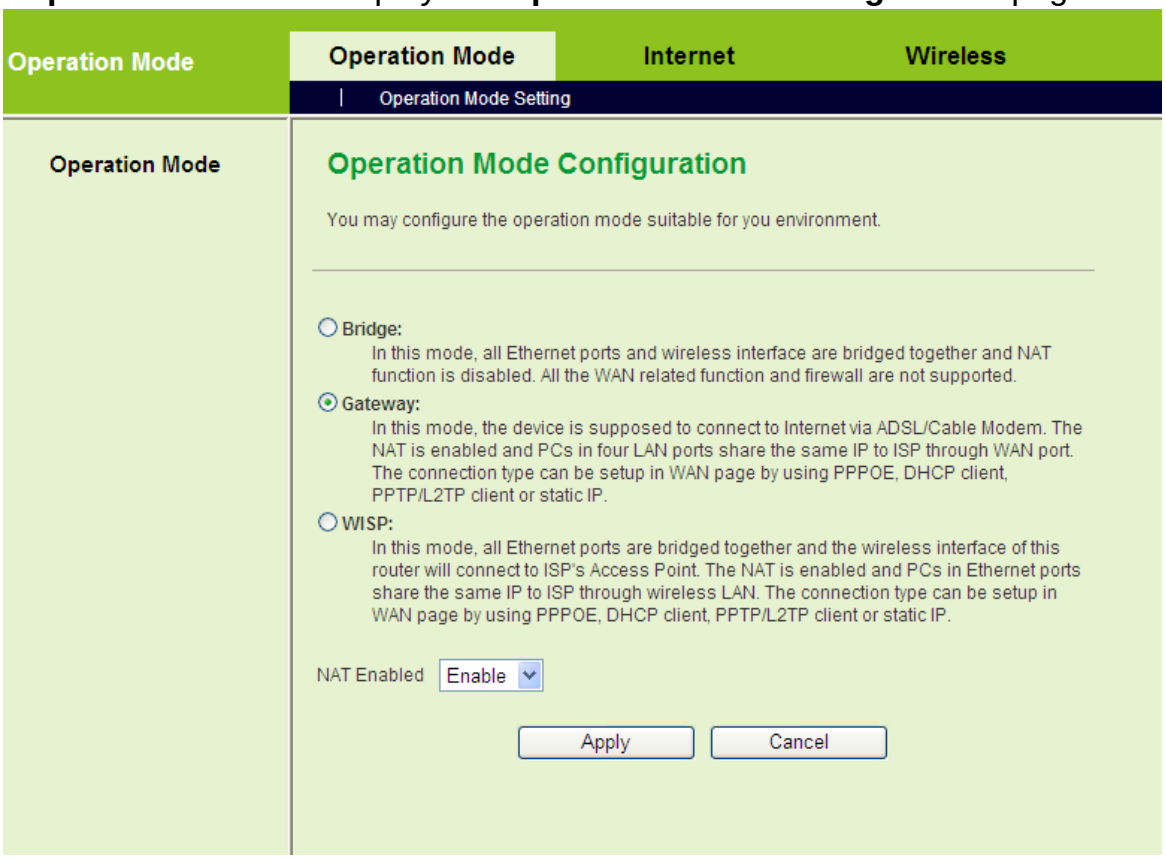
In the gateway mode, the GR-534W accesses the Internet by ADSL or cable modem, and several users share the IP address provided by the ISP on your network.

In the gateway mode:

- NAT is enabled.
- WAN interface can be connected to the Internet by STATIC (fixed IP), DHCP (Auto config), PPPoE (ADSL), L2TP, and PPTP.

If you want to configure GR-534W working in gateway mode, do as follows:

Click **Operation Mode** to display the **Operation Mode Configuration** page.

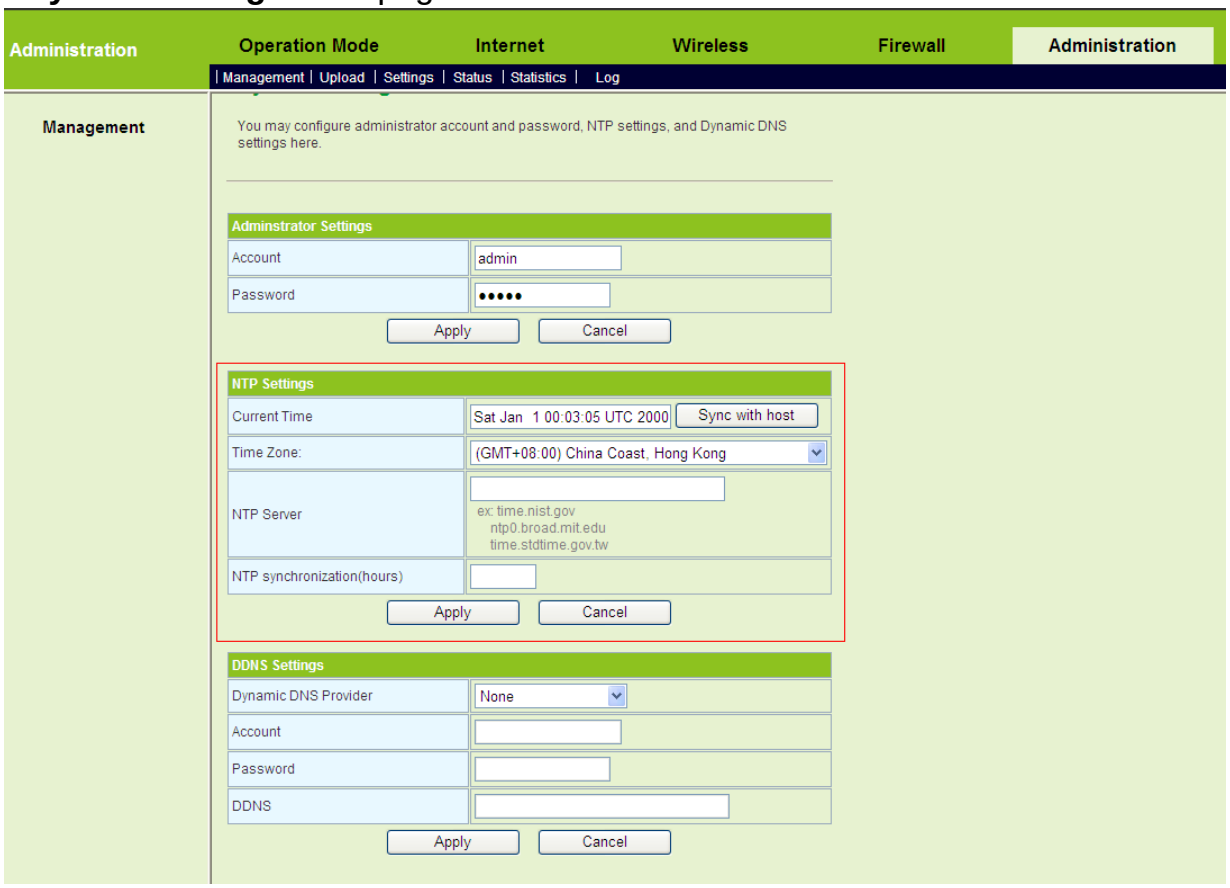


On the **Operation Mode Configuration** page, choose the **Gateway** mode, and then

click the **Apply** button.

4.2.1 System Management

If you want to set the network time, click **Administration** > **Management** to display the **System Management** page.

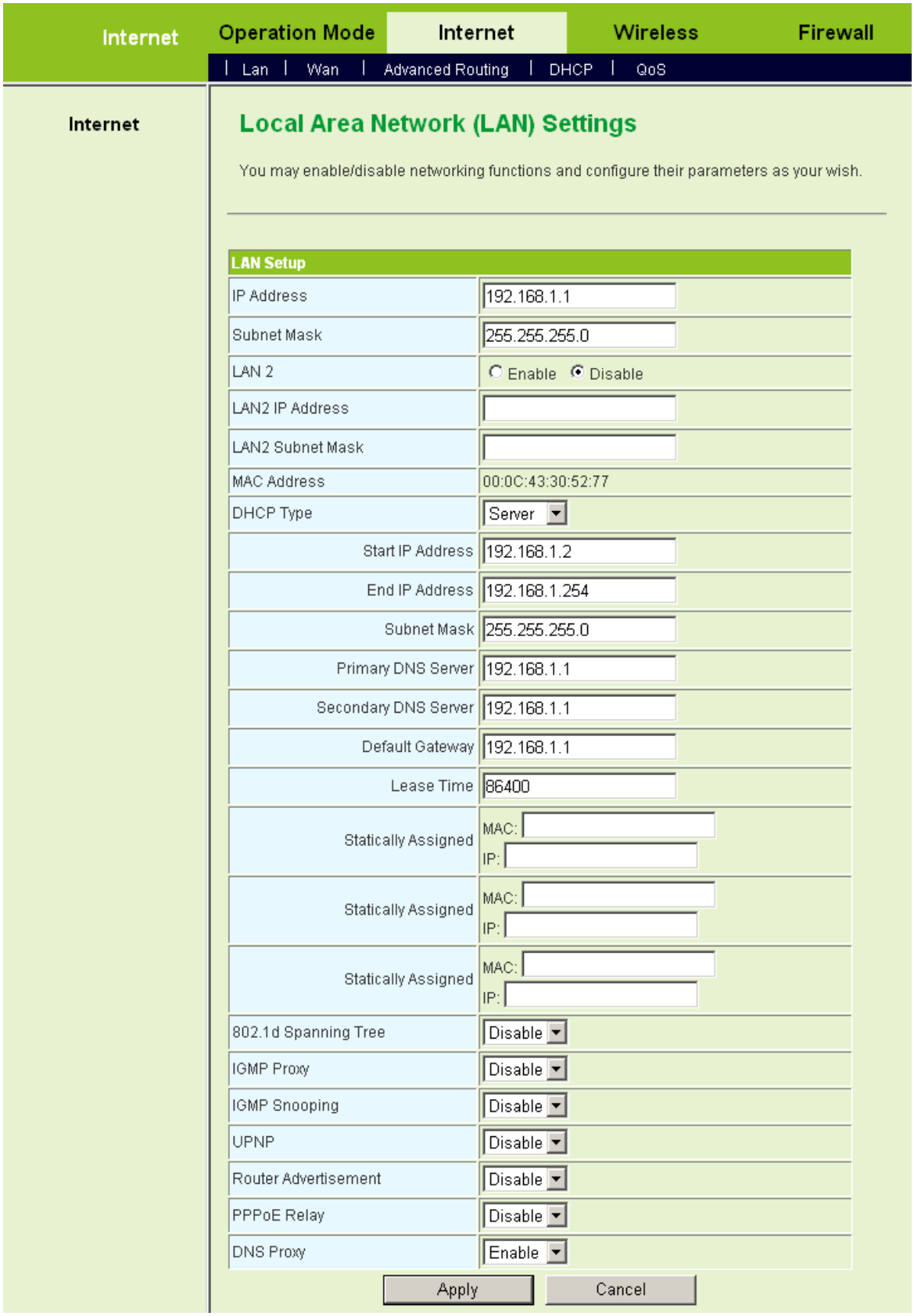


In the table of **NTP Settings**, choose your time zone, enter the NTP server address, and set the NTP synchronization time.

After finish setting, click the **Apply** button to apply the settings, and then AP can synchronize its time with the network time server.

4.2.2 LAN Settings

If you want to change the default IP address of the GR-534W, click the **Internet** > **LAN** to display the **Local Area Network (LAN) Settings** page.



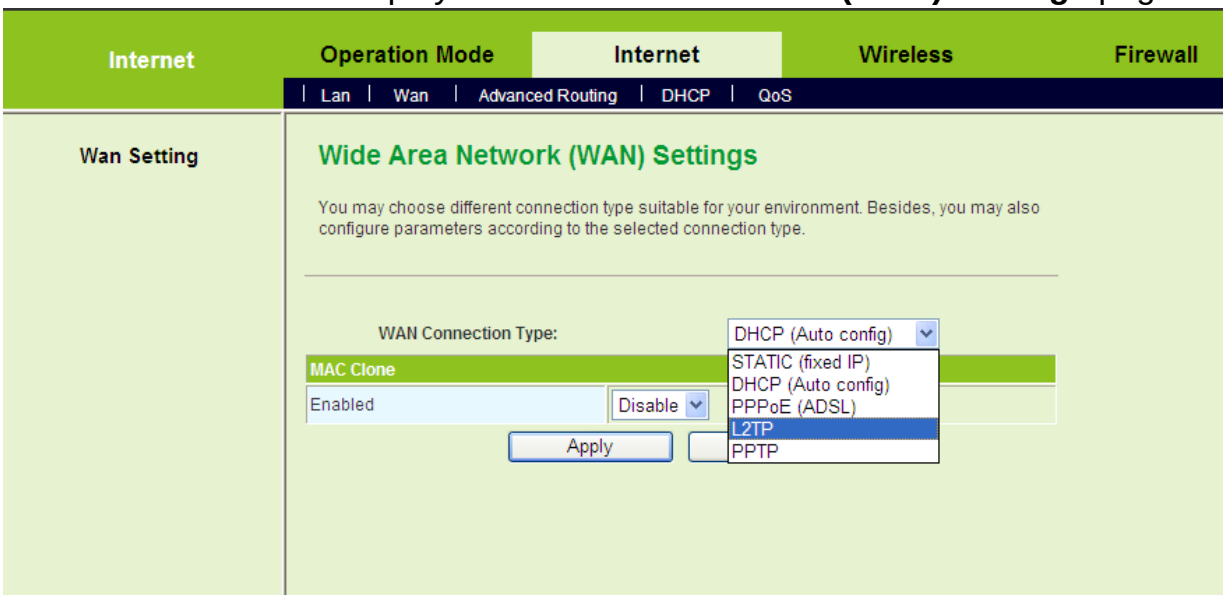
On this page, you may manually enter the IP address. It is recommended you keep the default setting.

If you do not know the IP address of the DNS server provided by the ISP, please

enable DNS Proxy and change your network setting. Assign the IP address of current DNS server to be the LAN IP address of the GR-534W. If you use P2P software, the UPnP function needs to be enabled.
After finishing setting, click the **Apply** button to apply the settings.

4.2.3 WAN Settings

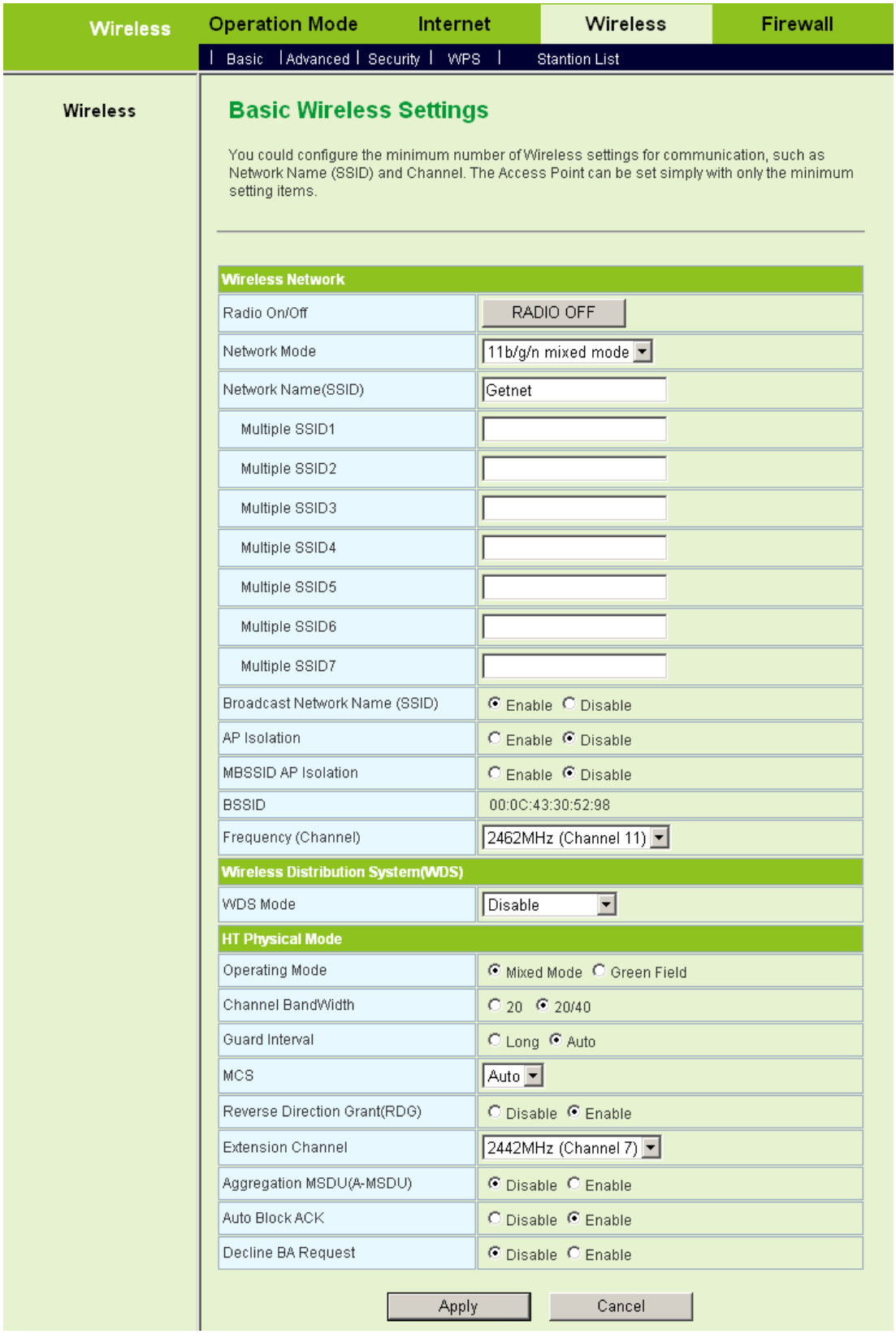
Click **Internet** > **WAN** to display the **Wide Area Network (WAN) Settings** page.



This page provides 5 types of WAN connection modes, including STATIC (fixed IP), DHCP (Auto config), PPPoE (ADSL), L2TP, and PPTP. On this page, select the proper WAN connection type according to the connection types provided by your ISP, and configure its parameters.
After finishing setting, click the **Apply** button to apply the settings.

4.2.4 Wireless Settings

Click **Wireless** > **Basic** to display the **Basic Wireless Settings** page.



On this page, it provides 4 types of network modes, including 11 b/g/n mixed mode, 11 b/g mixed mode, 11 b only, and 11g only. The default network mode is 11 b/g/n mixed mode. You can set the SSID according to your actual application. The maximum character length is up to 32 characters. The default channel is channel 11.

After finishing setting, click the **Apply** button to apply the settings.

4.2.5 Wireless Security

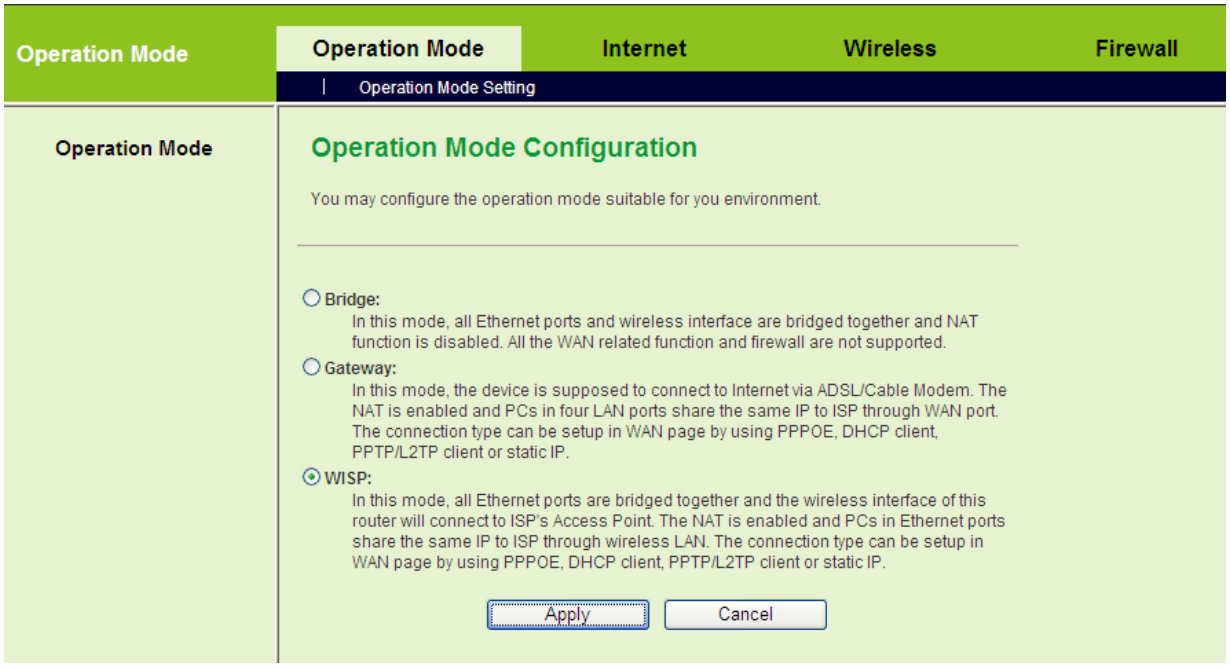
Click **Wireless** > **Security** to display the **Wireless Security/Encryption Settings** page.

On this page, you can set the security mode. The security modes include Open, Shared, WEPAUTO, WPA-Enterprise, WPA-PSK, WPA2-Enterprise, WPA2-PSK, WPA-PSK/WPA2-PSK, WPA1/WPA2-Enterprise, and Dynamic WEP 802.1X.
After finishing setting, click the **Apply** button to apply the settings.

4.3 Quick Start in the WISP Mode

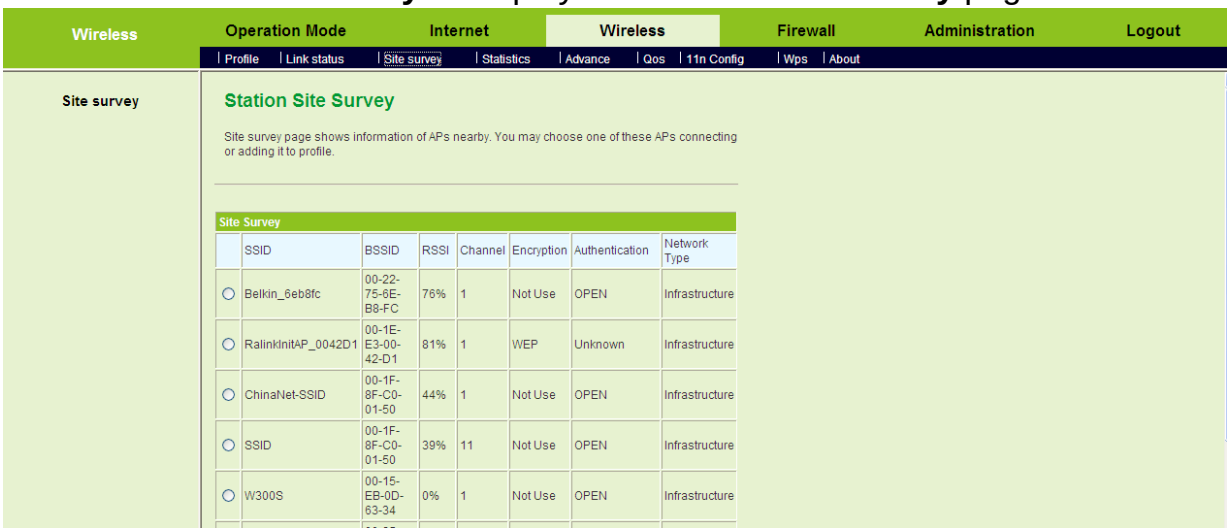
In the WISP (Wireless Internet Service Provider) mode, GR-534W works as a station, and it can connect to another AP. All the Ethernet interfaces can access the Internet by wireless routing. Several GR-534Ws can realize more flexible network structure.

Click **Operation Mode** to display the **Operation Mode Configuration** page.

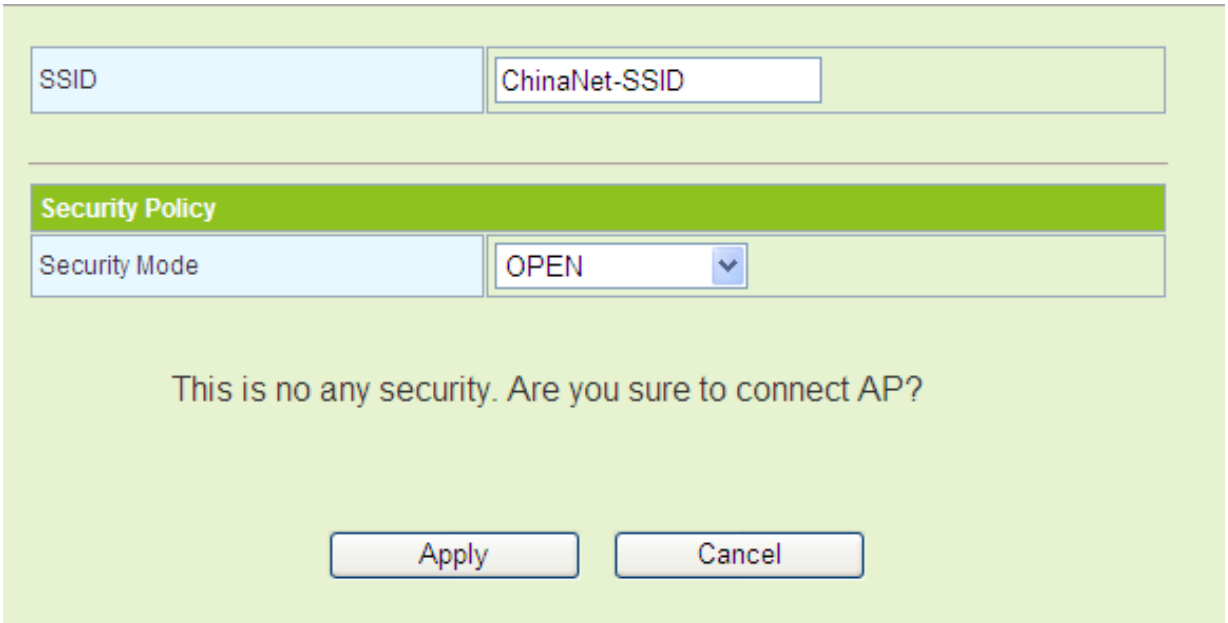


On the **Operation Mode Configuration** page, choose the **WISP** mode, and then click the **Apply** button.

Click **Wireless** > **Site Survey** to display the **Station Site Survey** page.



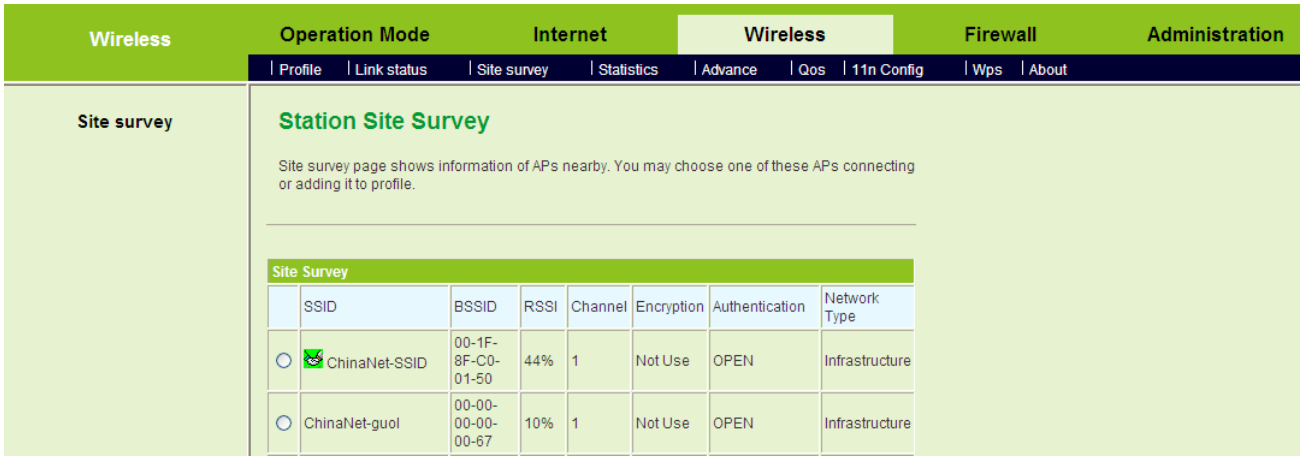
On this page, choose an AP in the **Site Survey** list, and then click the **Connect** button. After clicking the **Connect** button, the following page appears.



If this AP is not encrypted, you can click the **Apply** button on the pop-up page to confirm the connection.

If the AP that you want to connect is encrypted, you need to enter the key on the pop-up page.

If the connection succeeds, the SSID of the AP in the **Site Survey** list will be marked with an icon .

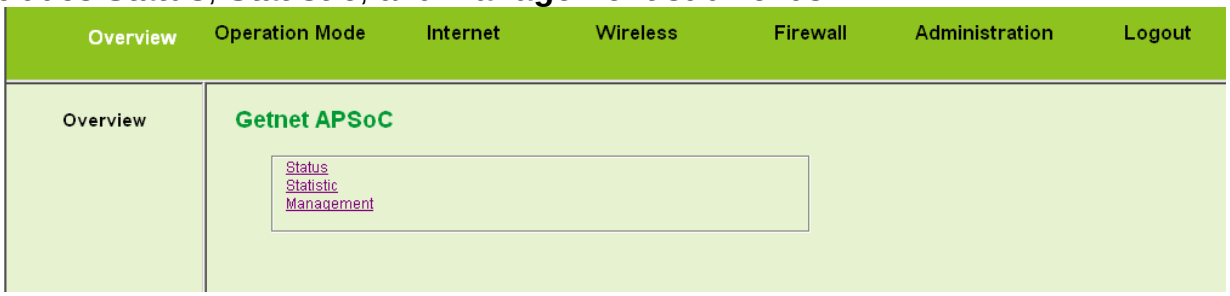


After finishing the connection, you may establish PPPoE, L2TP, PPTP, DHCP, and Static connections. For more details, please refer to 5.3.2 WAN.

5 Web Configuration

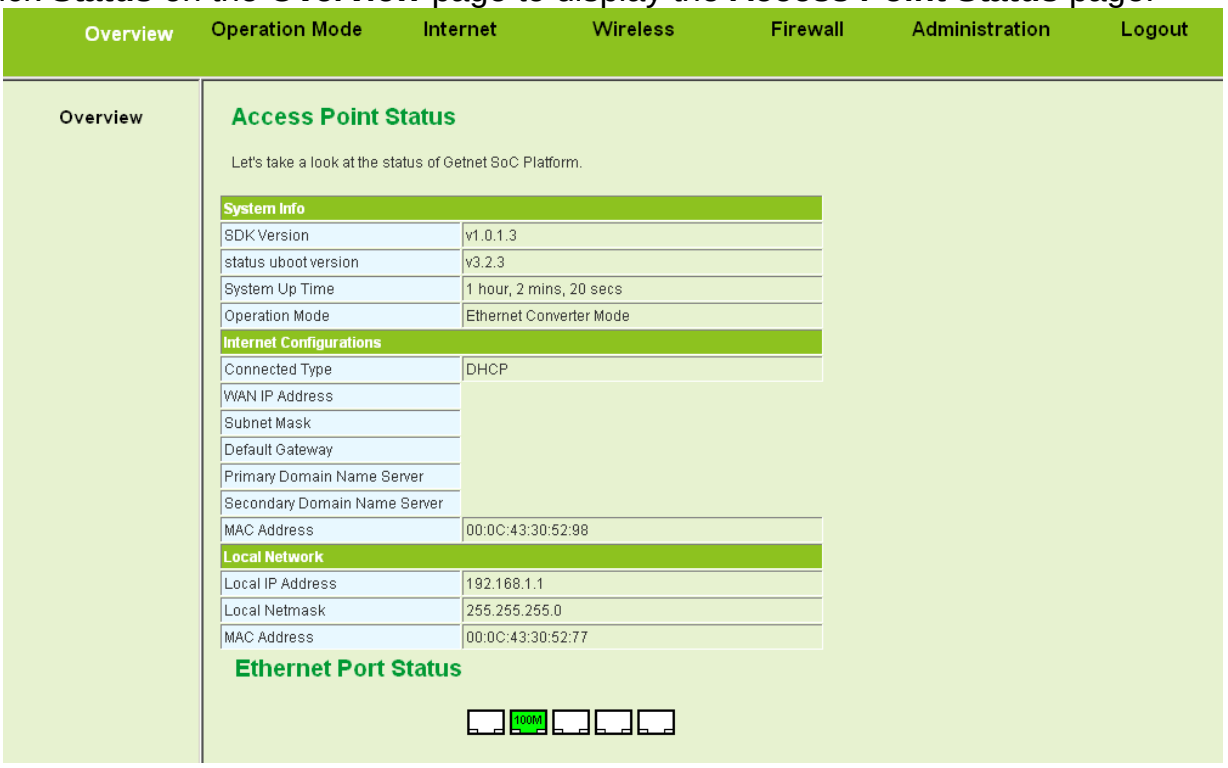
5.1 Overview

After finishing login, system displays the **Overview** page. The **Overview** page includes **Status**, **Statistic**, and **Management** submenus



5.1.1 Status

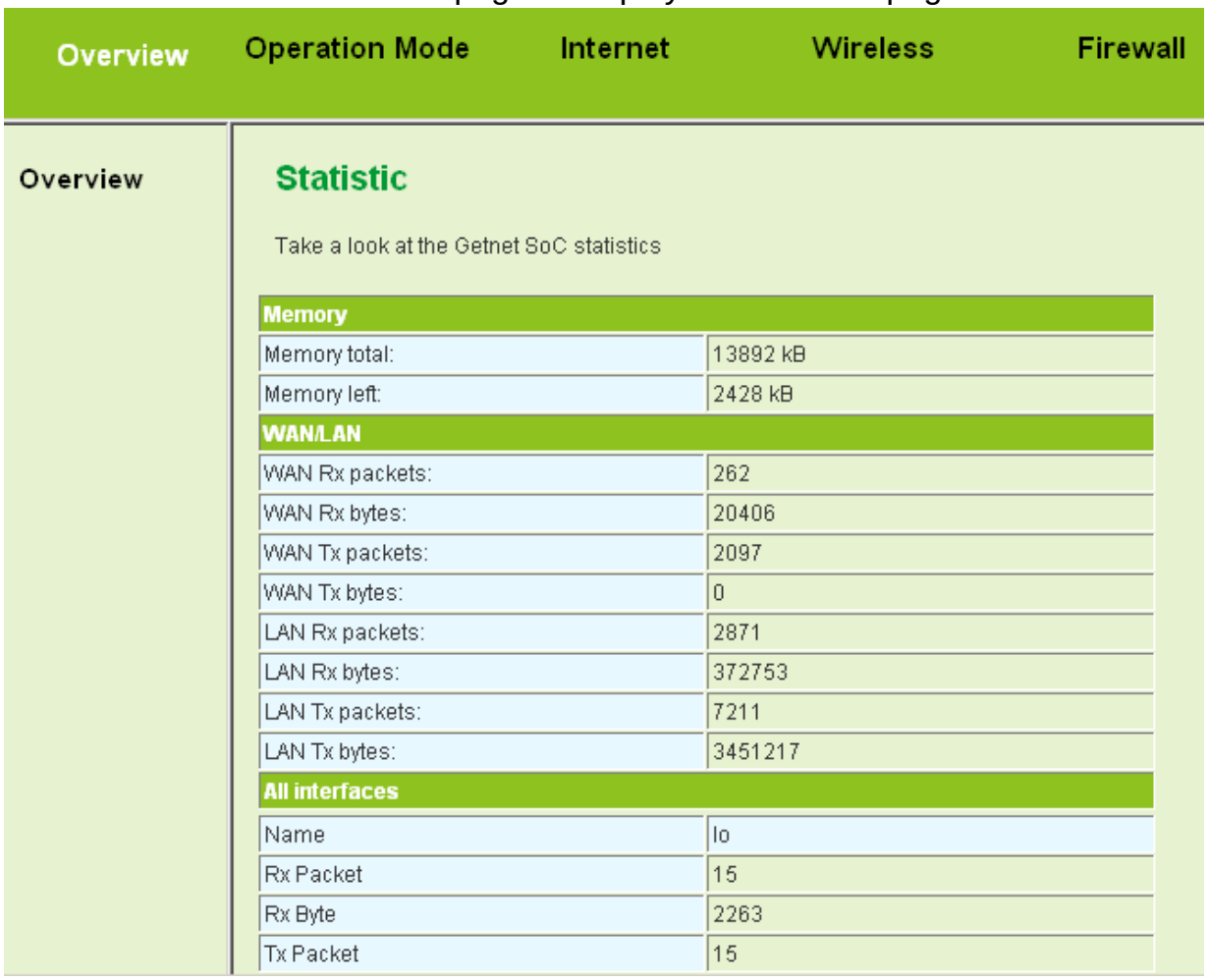
Click **Status** on the **Overview** page to display the **Access Point Status** page.



This page displays system information, Internet configuration, and local network settings.

5.1.2 Statistic

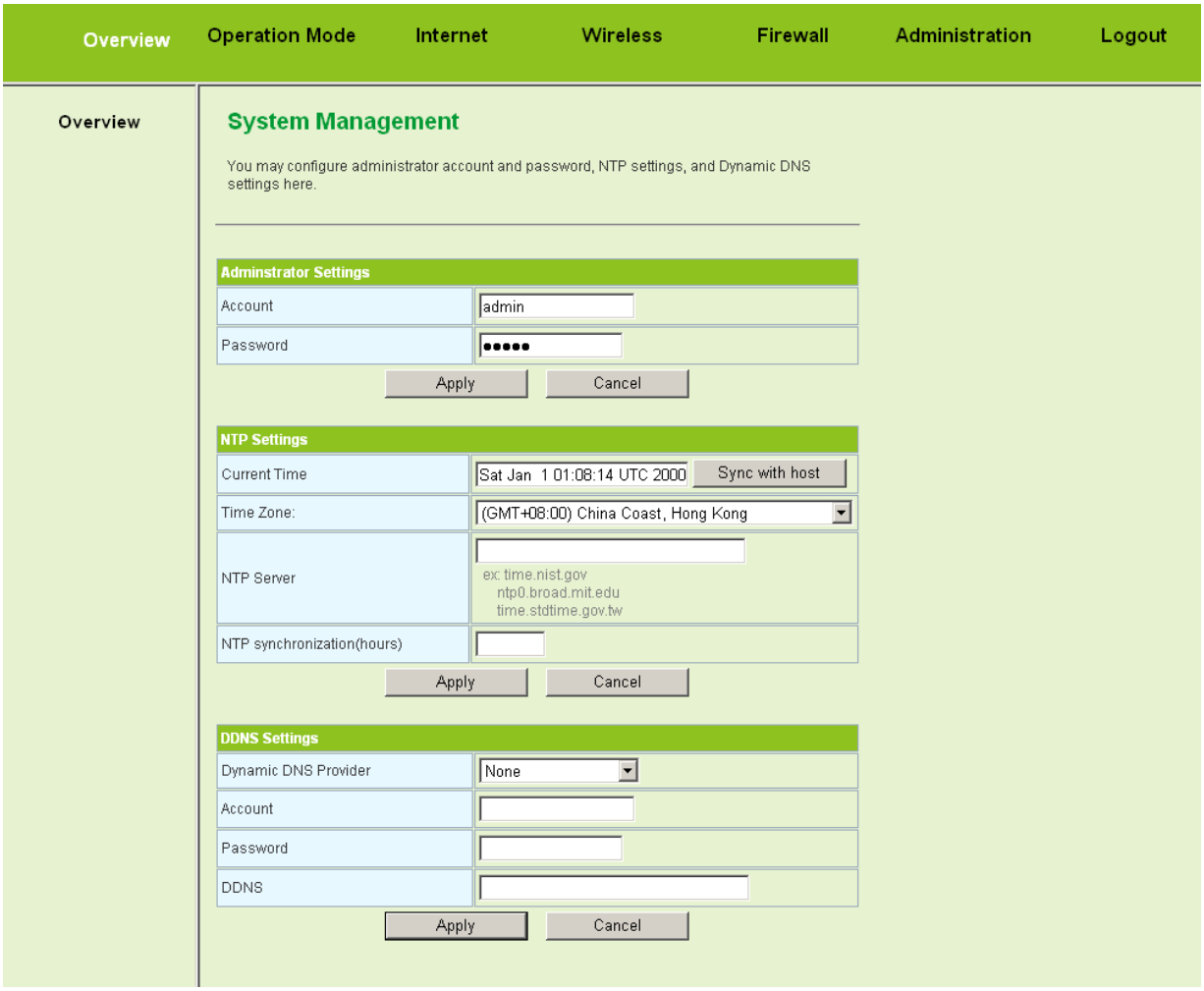
Click **Statistic** on the **Overview** page to display the **Statistic** page.



This page displays the memory status, the numbers of transmitted and received data packets of the WLAN, LAN, and WAN.

5.1.3 Management

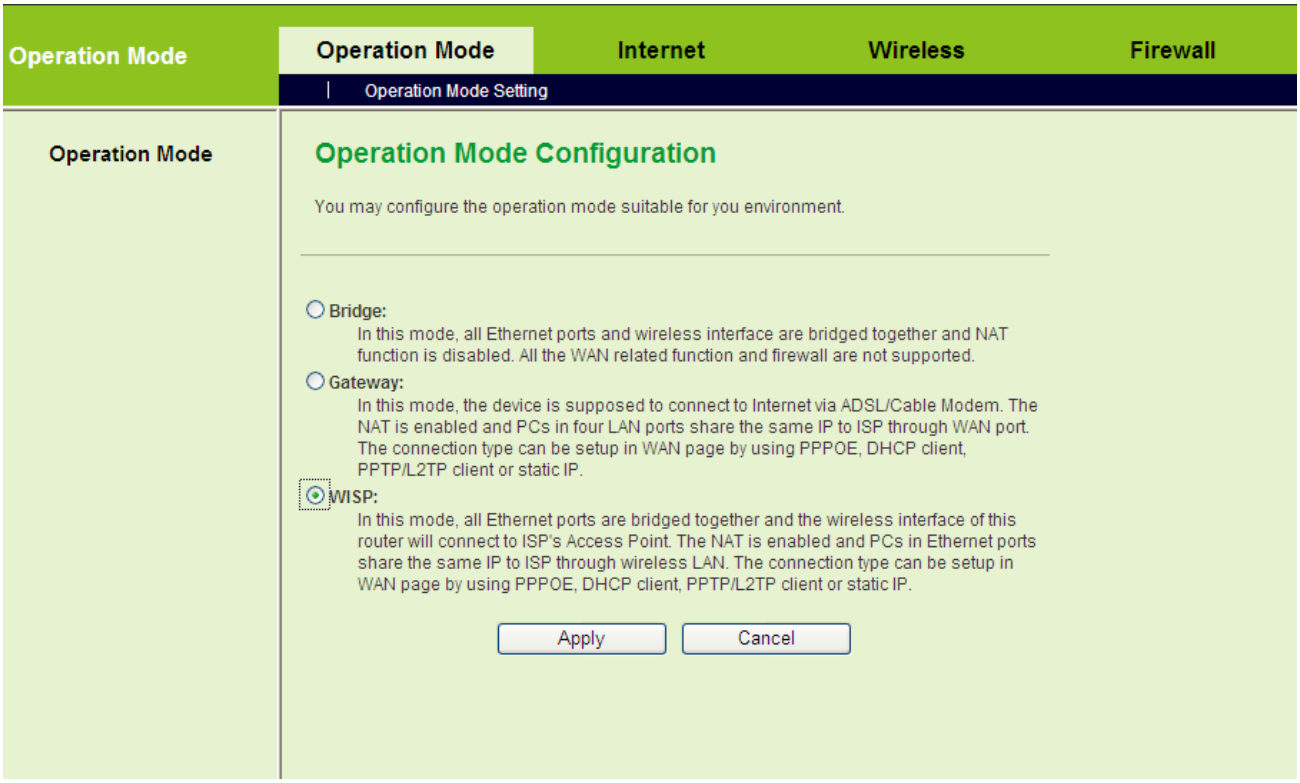
Click **Management** on the **Overview** page to display the **System Management** page.



This page provides administration settings, NTP settings, and DDNS settings. For more details, please refer to 5.7.1 Management.

5.2 Operation Mode

Click the **Operation Mode** to display the **Operation Mode Configuration** page.



GETNET GR-534W provides three types of operation modes, including Bridge, Gateway, and WISP modes.

The parameters on this page are described as follows:

Mode	Description
Bridge	In the bridge mode, AP acts as a hub.
Gateway	In the gateway mode, GR-534W allows routing between WAN and LAN, or WAN and wireless network.
WISP	In the WISP mode, all the Ethernet interfaces can access the Internet by wireless routing.
NAT Enabled	Only in the gateway mode can this function be used. After enabling NAT, it can provide address translation between the interior network and the exterior network for LAN and wireless network.

After finishing setting, click the **Apply** button to apply the settings.

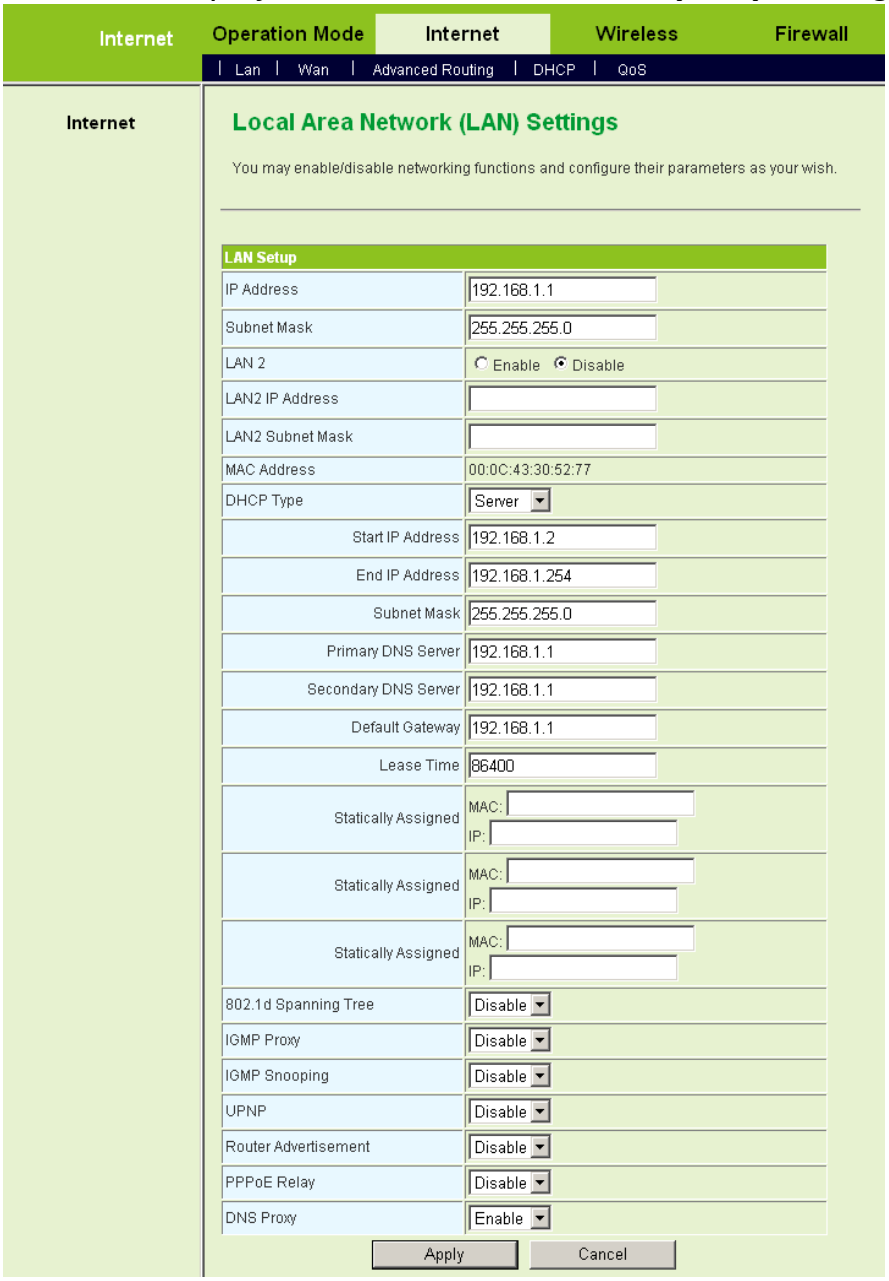
5.3 Internet Settings

In the gateway mode, the following figure shows the navigation menu of the **Internet** settings:

The sub-menus of the **Internet** include **LAN**, **WAN**, **Advanced Routing**, **DHCP** and **QoS**.

5.3.1 LAN

Click **Internet** > **LAN** to display the **Local Area Network (LAN) Settings** page.



This page is used to configure the LAN parameters. This page allows you to configure LAN interface properties, DHCP server properties, and other parameters

related to LAN.

The parameters on this page are described as follows:

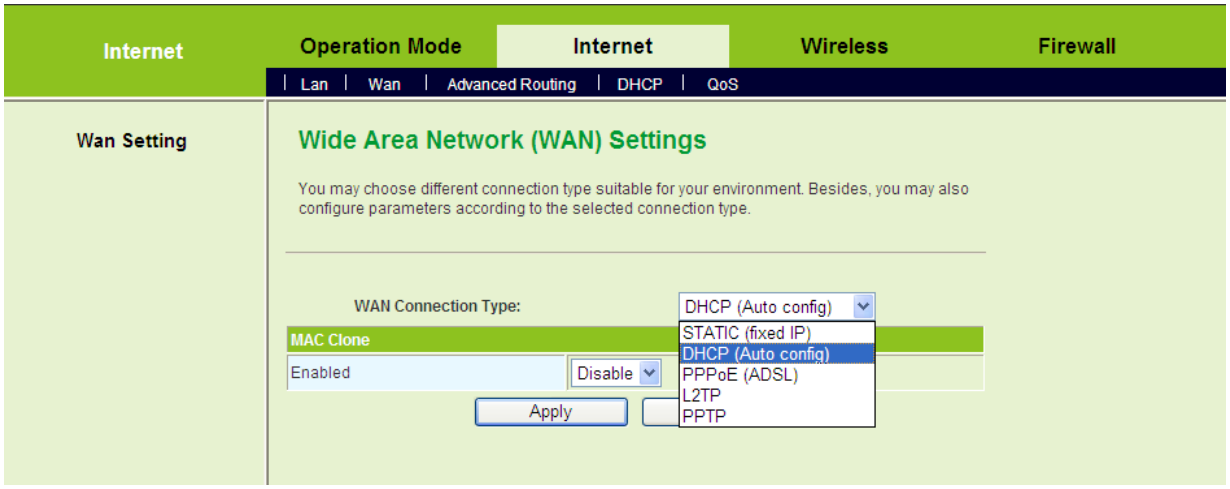
Field	Description
IP Address	The IP address of the LAN interface. The default IP address is 192.168.1.1.
Subnet Mask	The subnet mask of the IP address of the LAN interface. The default subnet mask is 255.255.255.0.
LAN 2	Enable or disable the second IP address of the LAN interface. The default setting is **Disable**.
LAN 2 IP Address	The second IP address of the LAN interface. This IP address should not collide with the IP address of the interior network.
LAN 2 Subnet Mask	The subnet mask of the second IP address of the LAN interface.
MAC Address	Display the current MAC address that LAN interface uses.
DHCP Type	Enable or disable DHCP service. You can select **Server** or **Disable** in the drop down list. The default setting is **Server**, it indicates DHCP service is enabled. After enabling DHCP service, you can configure the following parameters of the DHCP server: ● Start IP Address: The start IP address of the DHCP address pool. ● End IP Address: The end IP address of the DHCP address pool. ● Subnet Mask: The subnet mask that DHCP server assigns. ● Primary DNS Server: The primary DNS server that DHCP server assigns. ● Secondary DNS Server: The secondary DNS server that DHCP server assigns. ● Default Gateway: The gateway that DHCP server assigns. ● Lease Time: The lease time of the IP address. ● Statically Assigned: For binding MAC and IP.
802.1d Spanning Tree	It provides redundant link and prevents network from generating loop. You may select **Enable** or **Disable**.

Field	Description
LLTD	After enabling LLTD (Link Layer Topology Discovery), Windows Vista automatically discovers other devices' link topologies, and these devices are also compatible with LLTD. You may select **Enable** or **Disable**.
IGMP Proxy	Enable or disable IGMP Proxy.
IGMP Snooping	Enable or disable IGMP Snooping. After enabling this function, the packets of the IGMP broadcast will not be sent to the LAN interface that does not belong to the group.
UPNP	Enable or disable the UPnP function. After enabling this function, AP will provide automatic port-mapping for P2P software on the interior network.
Router Advertisement	Enable or disable router advertisement. After enabling this function, APs will send broadcast message or send back message to show their existence.
PPPoE Relay	Enable or disable PPPoE Relay. After enabling this function, the local PC can directly make PPPoE dial-up in the gateway mode.
DNS Proxy	Enable or disable DNS Proxy. After enabling this function, the devices on the LAN where AP acts as a proxy can send domain resolution request to AP.

After finishing the settings, click the **Apply** button to apply the settings.

5.3.2 WAN

Click **Internet** > **WAN** to display the **Wide Area Network (WAN) Settings** page.



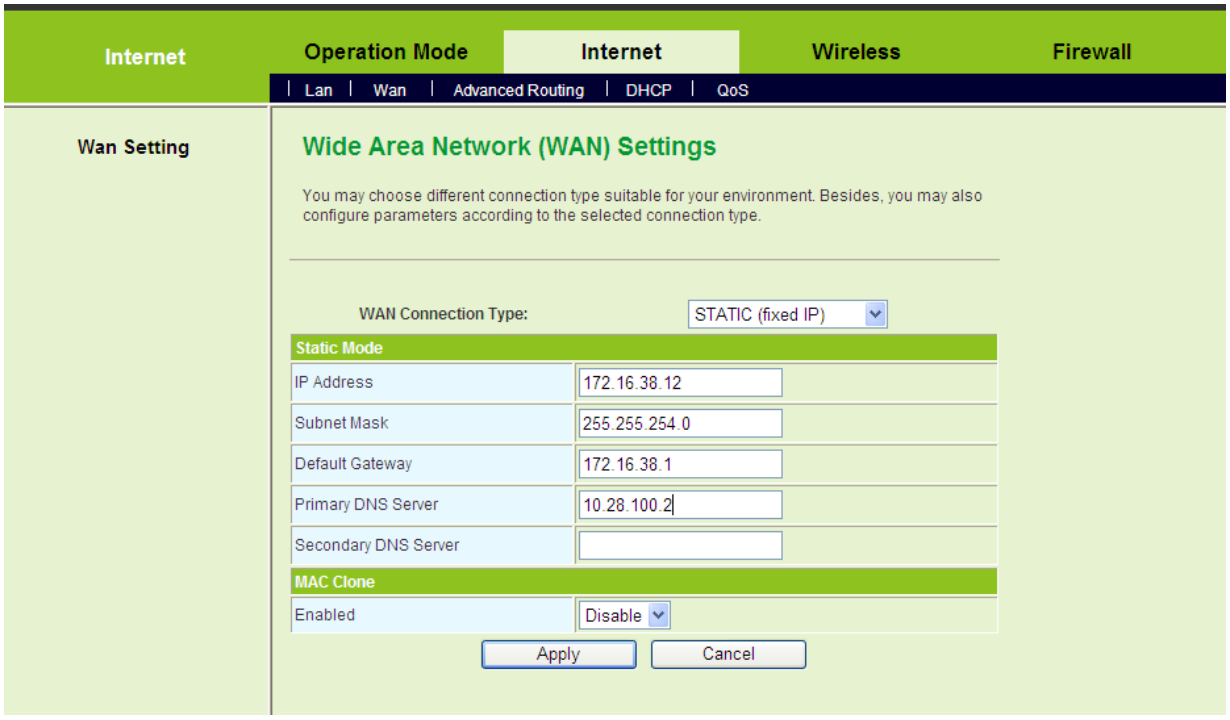
This page is used to configure the parameters of WAN connection. On this page, you may choose the proper WAN connection type and configure the parameters related to the connection type.

The parameters on this page are described as follows:

Field	Description
WAN Connection Type	The WAN connection types include STATIC (fixed IP), DHCP (Auto config), PPPoE (ADSL), L2TP, and PPTP. The default WAN connection type is **DHCP (Auto config)**.
MAC Clone	Enable or disable MAC Clone. After enabling this function, click the **Fill my MAC** button, and then AP will use this MAC address to communicate with the device that connects to the AP's WAN interface. The default setting is **Disable**.

- **STATIC (fixed IP)**

On the **Wide Area Network (WAN) Settings** page, select **STATIC (fixed IP)** as the WAN connection type, and the following page appears.

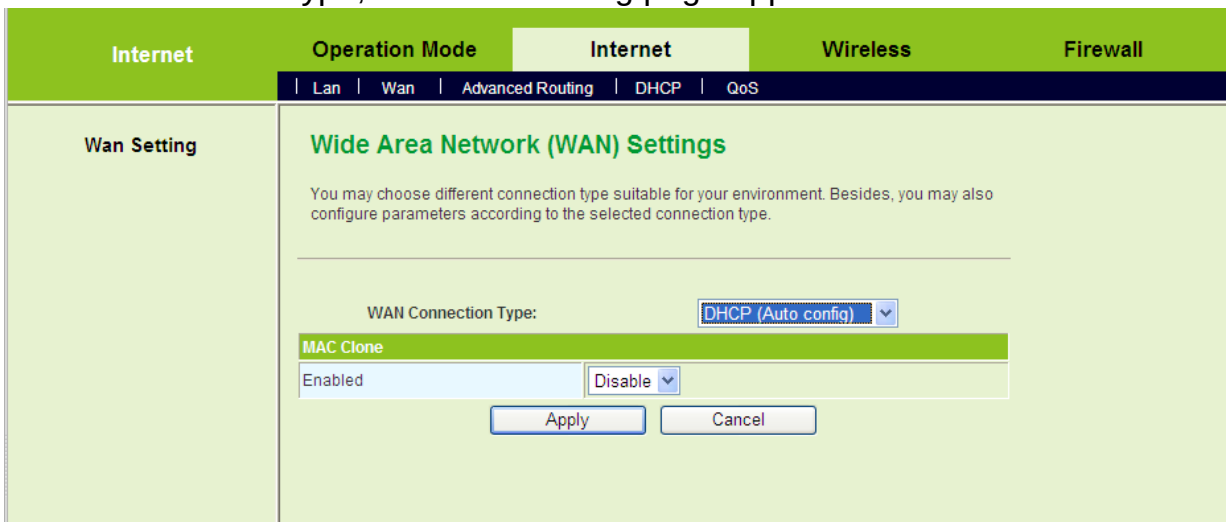


On this page, enter the IP address, the subnet mask, the default gateway, and the DNS server provided by the ISP.

After finishing setting, click the **Apply** button to apply the settings.

- **DHCP (Auto config)**

On the **Wide Area Network (WAN) Settings** page, select **DHCP (Auto config)** as the WAN connection type, and the following page appears.

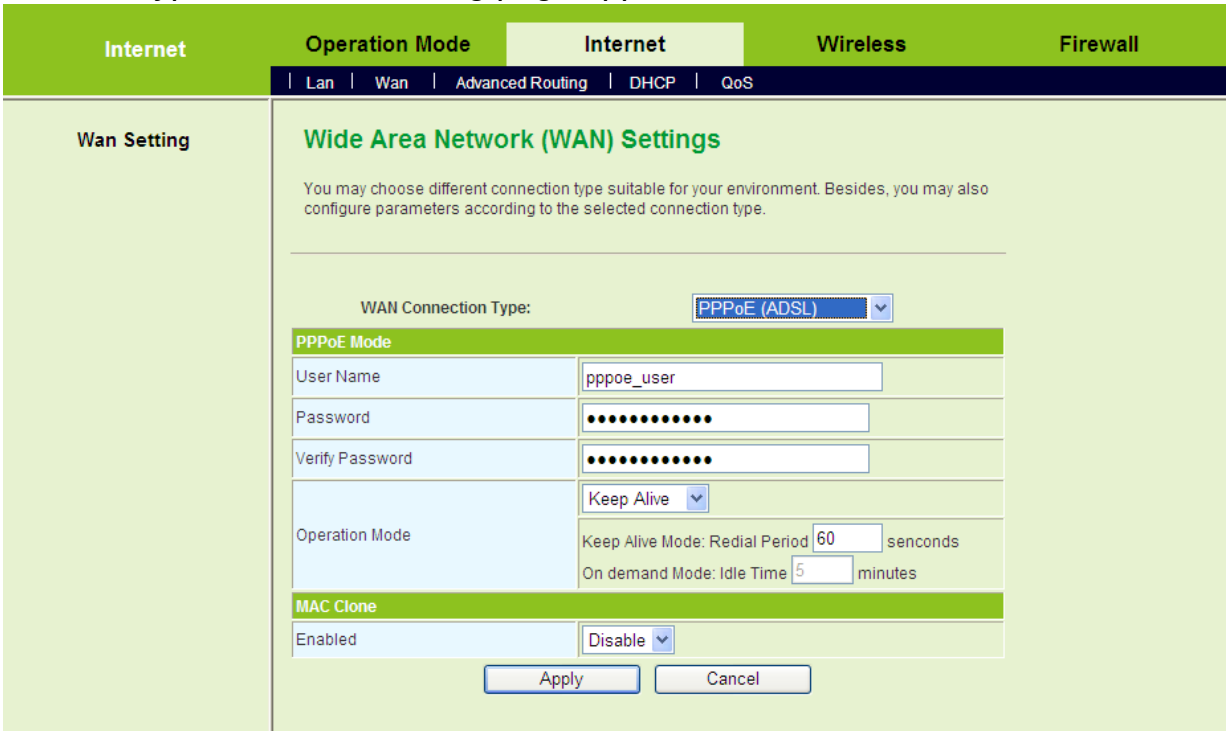


If you select DHCP (Auto config), AP acquires the network parameters via the WAN interface, such as the IP address, the subnet mask, the gateway, and the DNS server address.

After finishing the settings, click the **Apply** button to apply the settings.

- **PPPoE (ADSL)**

If you want to use PPPoE service, please select **PPPoE (ADSL)** connection type. On the **Wide Area Network (WAN) Settings** page, select **PPPoE (ADSL)** as the WAN connection type, and the following page appears.

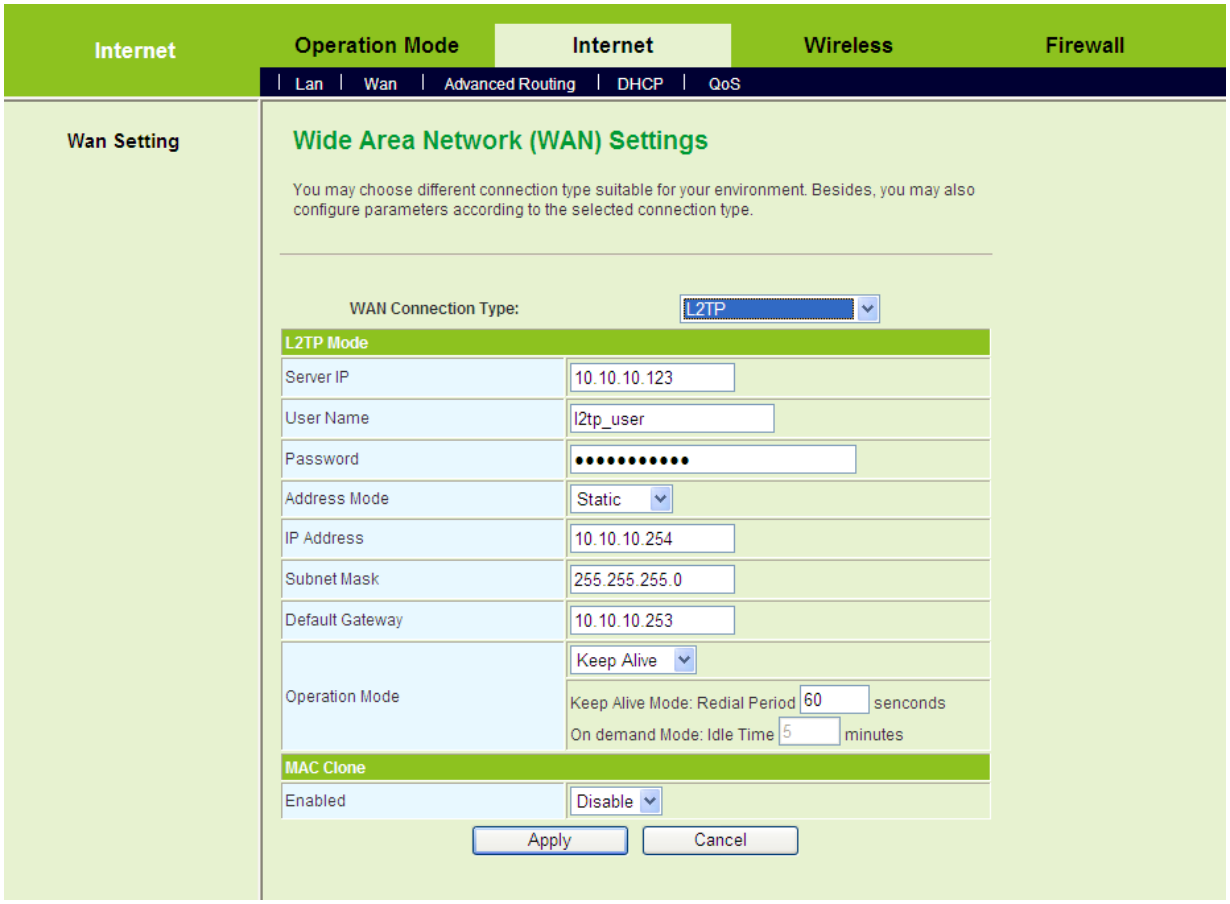


On this page, enter the username and the password provided by the ISP, and set the value of the **Keep Alive** mode. You can also use the default value of the **Keep Alive** mode.

After finishing the settings, click the **Apply** button to apply the settings.

- **L2TP**

If you want to use L2TP service, please select **L2TP** connection type. On the **Wide Area Network (WAN) Settings** page, select **L2TP** as the WAN connection type, and the following page appears.

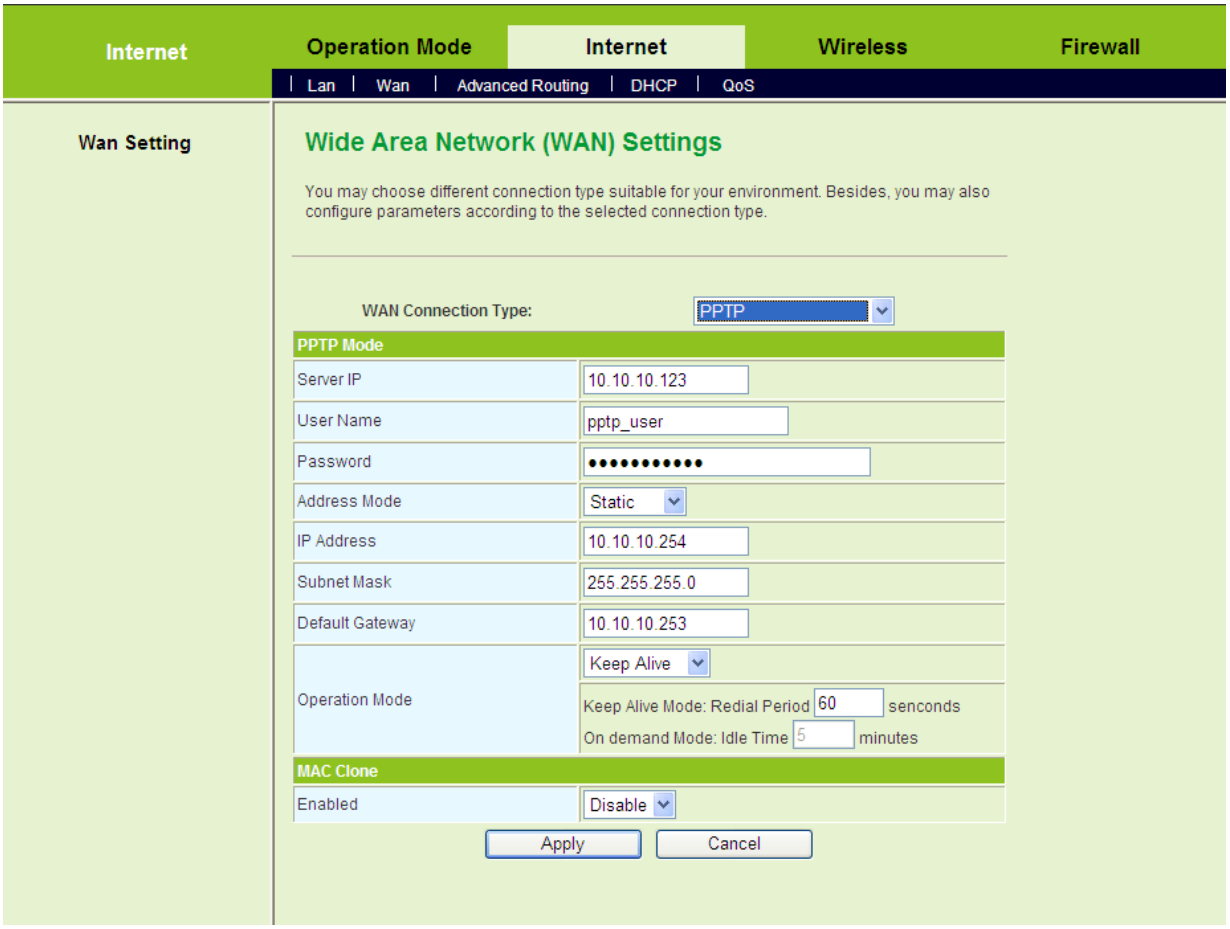


On this page, enter the server IP, the username, and the password provided by the ISP. Set the IP address, the subnet mask, and the default gateway. When the **Address Mode** is **Dynamic**, the IP address, the subnet mask, and the default gateway of the WAN interface are automatically assigned by the DHCP server. Set the value of **Keep Alive** mode. You can also use the default value of the **Keep Alive** mode.

After finishing the settings, click the **Apply** button to apply the settings.

- **PPTP**

If you want to use PPTP service, please select **PPTP** connection type. On the **Wide Area Network (WAN) Settings** page, select **PPTP** as the WAN connection type, and the following page appears.

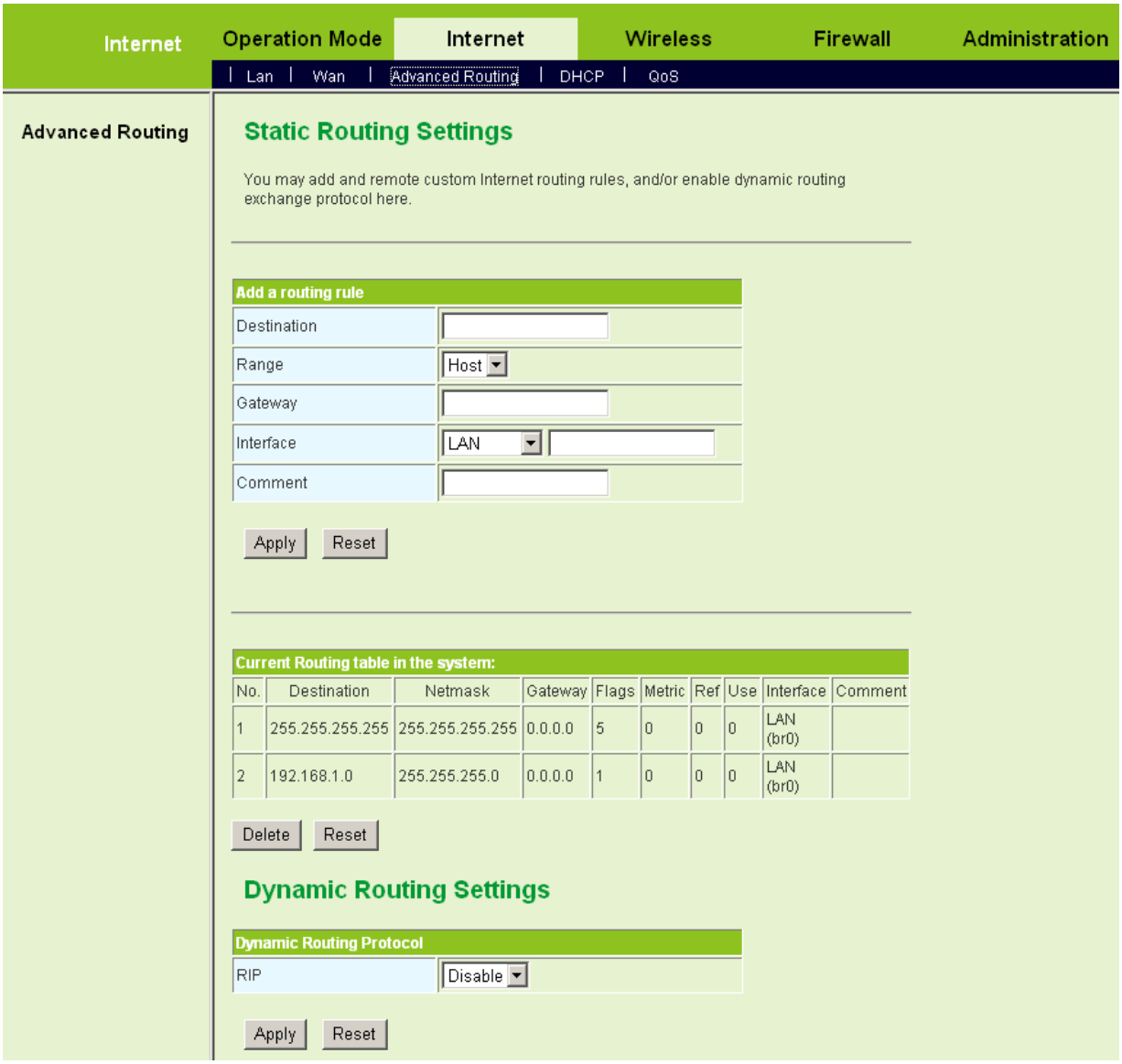


On this page, enter the server IP, the username, and the password provided by the ISP. Set the IP address, the subnet mask, and the default gateway. When the **Address Mode** is **Dynamic**, the IP address, the subnet mask, and the default gateway of the WAN interface are automatically assigned by the DHCP server. Set the value of **Keep Alive** mode. You can also use the default value of the **Keep Alive** mode.

After finishing the settings, click the **Apply** button to apply the settings.

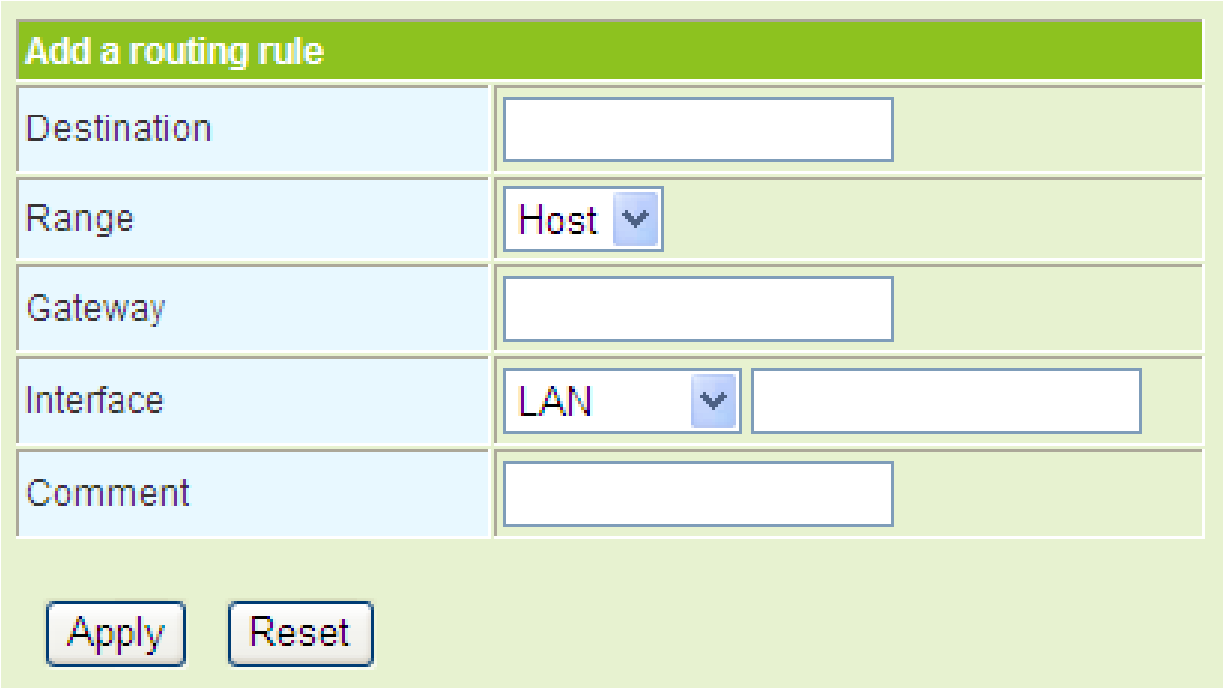
5.3.3 Advanced Routing

Click **Internet** > **Advanced Routing** to display the **Static Routing Settings** page.



This page is used to manage the routing rules, view the routing table, and set the routing RIP function.

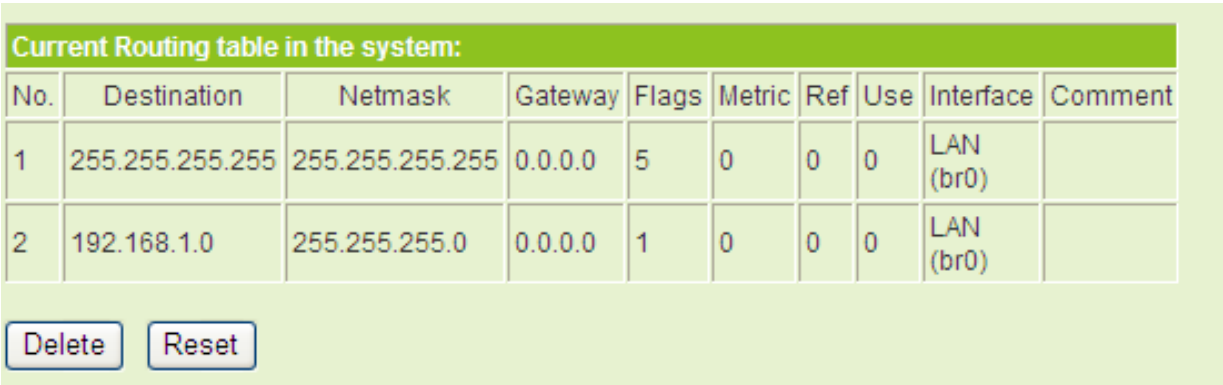
- **Add a Routing Rule**



The parameters for adding a routing rule are described as follows:

Field	Description
Destination	The destination address of the routing rule.
Range	You may select **Host** or **Net**.
Gateway	The IP address that the routing rule passes.
Netmask	When the range is **Net**, you can set this option.
Interface	The local legal interface that the routing rule passes. You may select **LAN**, **WAN**, or **Custom**.
Comment	Comment about the rule.

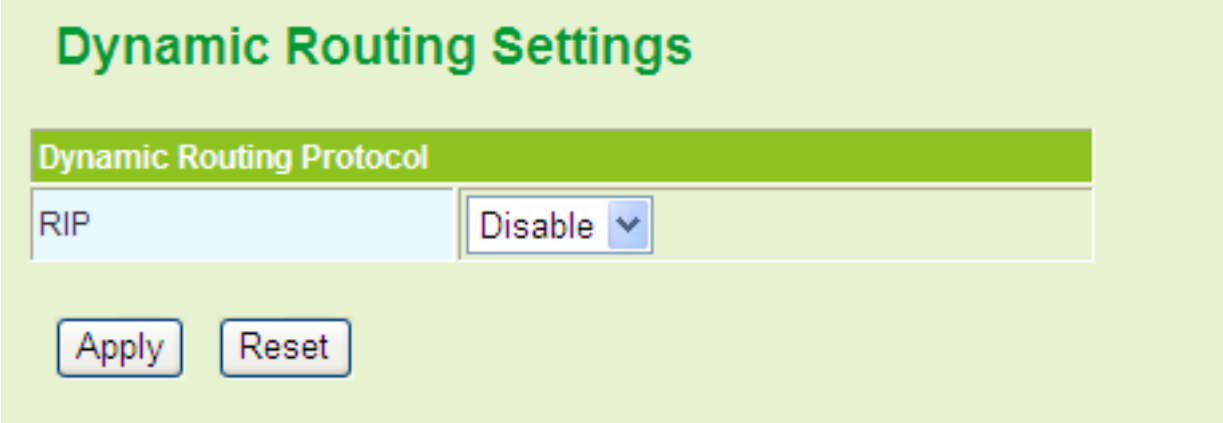
- **Current Routing Table in the System**



The routing table above displays the preset rules in the system. The numbers of

self-defined rules are marked with ☐. If you want to delete one rule, choose the rule and then click the **Delete** button.

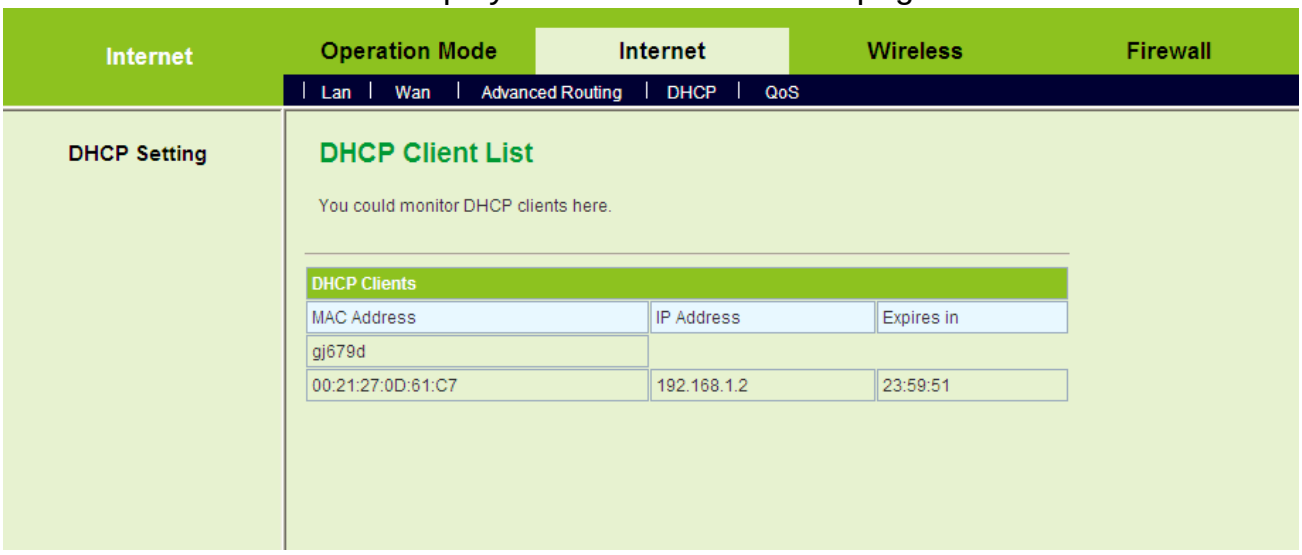
- **Dynamic Routing Settings**



You may enable or disable the RIP function (Routing Information Protocol) here. After enabling RIP function, AP can refresh its routing information and send RIP information to other devices.

5.3.4 DHCP Client

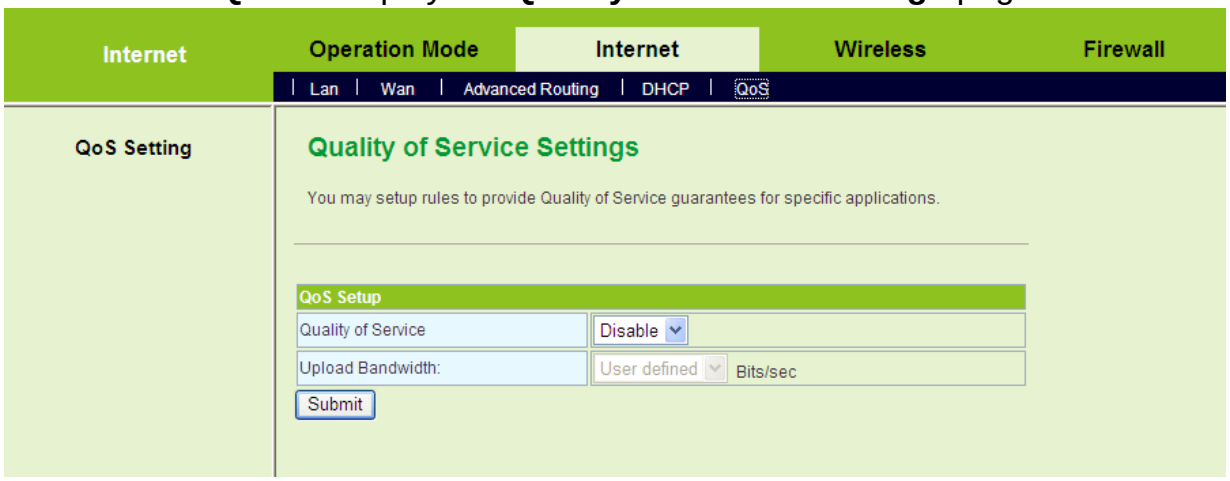
Click **Internet** > **DHCP** to display the **DHCP Client List** page.



On this page, you can view the clients' information assigned by the DHCP server, including the MAC address, the IP address, and the lease time of the IP address and so on.

5.3.5 QoS

Click **Internet** > **QoS** to display the **Quality of Service Settings** page.

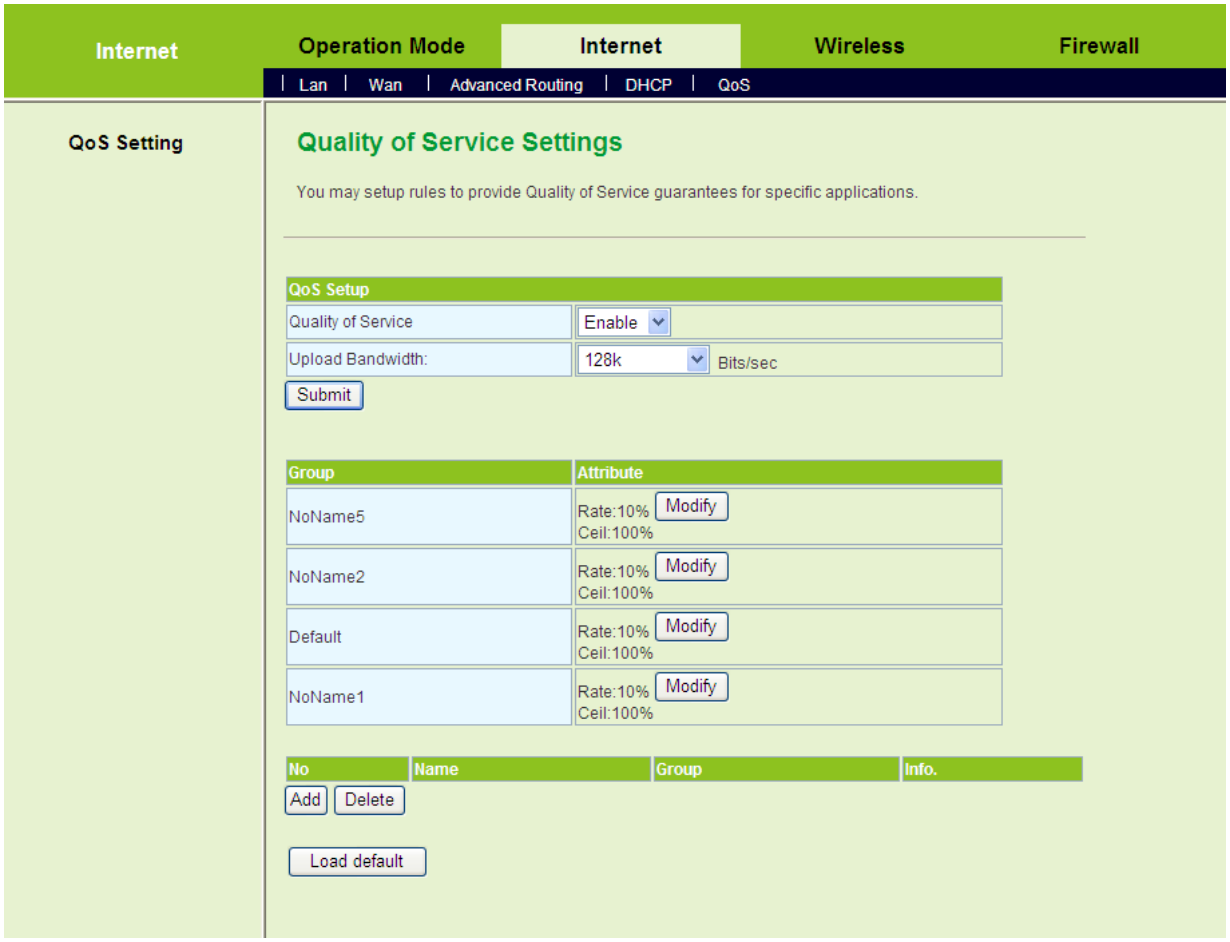


This page is used to configure the upload bandwidth of WAN interface and the QoS rules.

The parameters on this page are described as follows:

Field	Description
Quality of Service	Enable or disable QoS. The default QoS setting is **Disable**. After enabling QoS, you may set the upload bandwidth of the WAN interface.
Upload Bandwidth	You may self-define the bandwidth, or select a proper bandwidth in the drop down list.

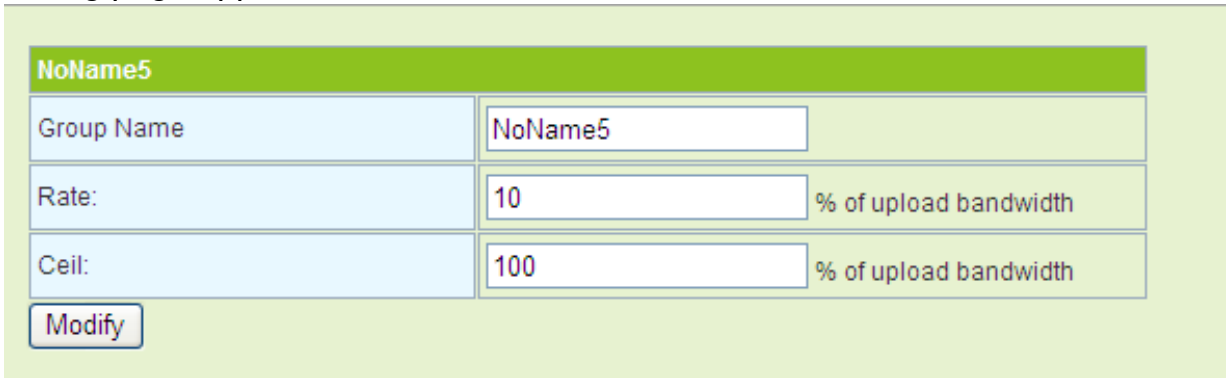
After enabling QoS and setting the upload bandwidth (e.g. the upload bandwidth is 128 kbps), click the **Submit** button, and the following page appears.



On this page, the group table displays 4 groups of bandwidth assignation attributes. The new rule can join any group. If the new rule joins a group, it indicates that the minimum and the maximum available bandwidths of the new rule are the same as the preset values of the group that it joins.

- **Modify the Group**

Click the **Modify** button of a group in the group table (e.g. NoName5), and the following page appears.

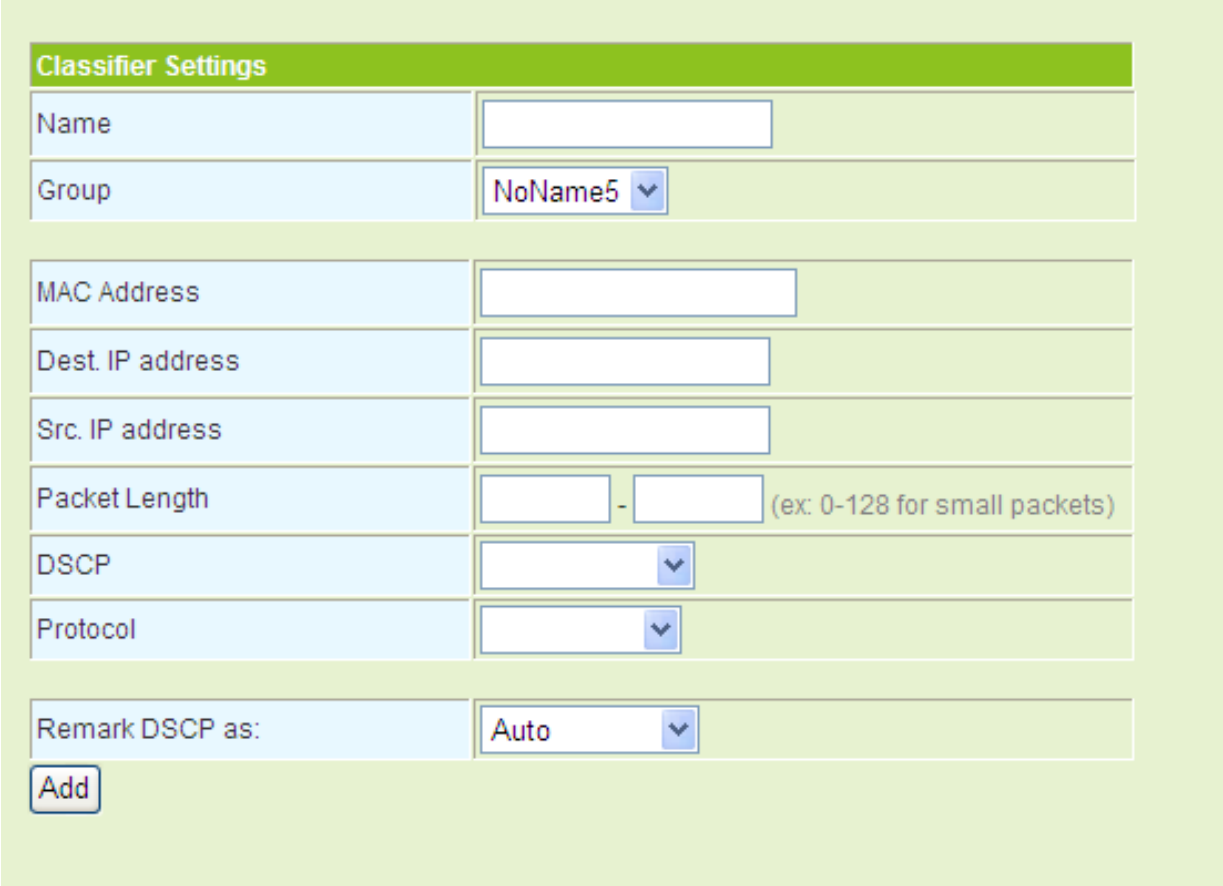


The parameters on this page are described as follows:

Field	Description
Group Name	Display the group name. You may modify it if necessary.
Rate	When the data flow is large, this value shows that the minimum bandwidth that this group can share. Its value range is between 1 and **Ceil**.
Ceil	When the data flow is small, this value shows that the maximum bandwidth that this group can share. Its value is between 1 and 100.

- **Add a QoS Rule**

Click the **Add** button on the **Quality of Service Settings** page, and the following page appears.



The parameters on this page are described as follows:

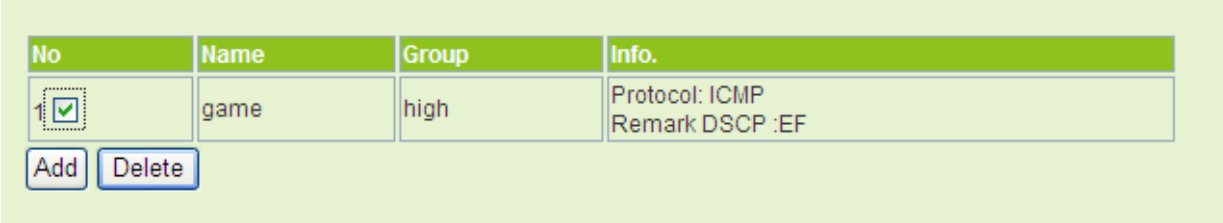
Field	Description
Name	Set the rule name.

Group	Select the group that the rule belongs to.
MAC Address	The source MAC address of the rule. If data packets include the MAC address, the data packets are placed into the group.
Dest. IP address	The destination IP address of the rule. If data packets include the IP address, the data packets are placed into the group.
Src. IP address	The source IP address of the rule. If data packets include the IP address, the data packets are placed into the group.
Packet Length	The packet length of the rule. If data packets match the packet length, the data packets are placed into the group.
DSCP	The DSCP mark. If data packets include the DSCP, the data packets are placed into the group.
Protocol	The protocol types include **TCP**, **UDP**, **ICMP**, and **Application**. If data packets match the protocol, the data packets are placed into the group. When selecting **TCP** or **UDP**, you need to set **Src Port** and **Src Port** ranges. When selecting **Application**, you may select a proper protocol in the drop down list.
Remark DSCP as	If data packets match the parameters above, you can determine whether to remark DSCP. The default setting is **Auto**.

After finishing the settings, click the **Add** button to add the new rule.

- **Delete a QoS Rule**

If there are QoS rules in the QoS rule table, and you want to delete a QoS rule, you can select the rule, and then click the **Delete** button to delete this rule.



- **Load Default Settings**

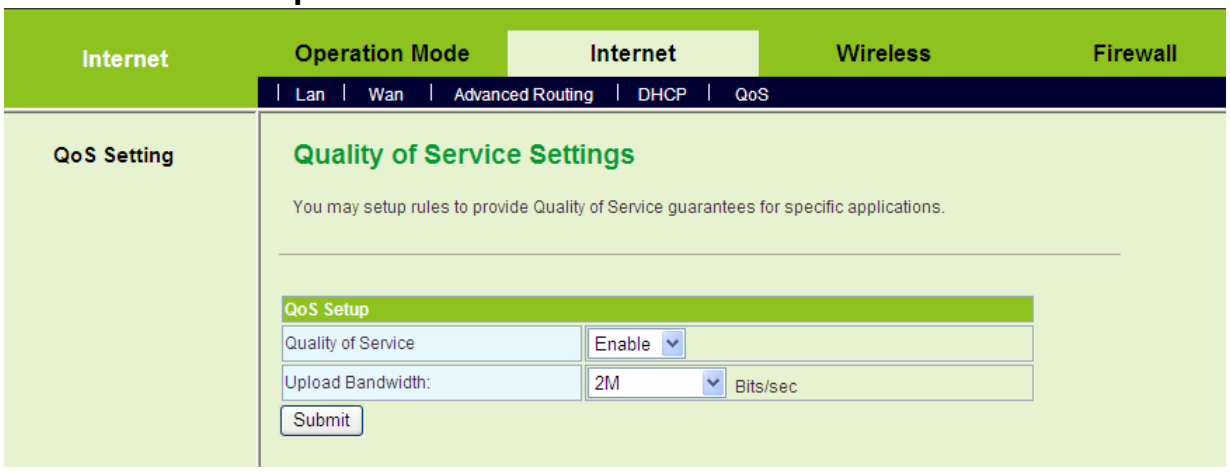
Click the **Load Default** button on the **Quality of Service Settings** page, system will load the default QoS rules. See the following figure:

After loading the default rules, the four groups are redefined as **High**, **Middle**, **Default**, and **Low**, and the minimum bandwidth values of the corresponding groups are changed as 30%, 20%, 5%, and 10%. You can also delete the default rules if

necessary.

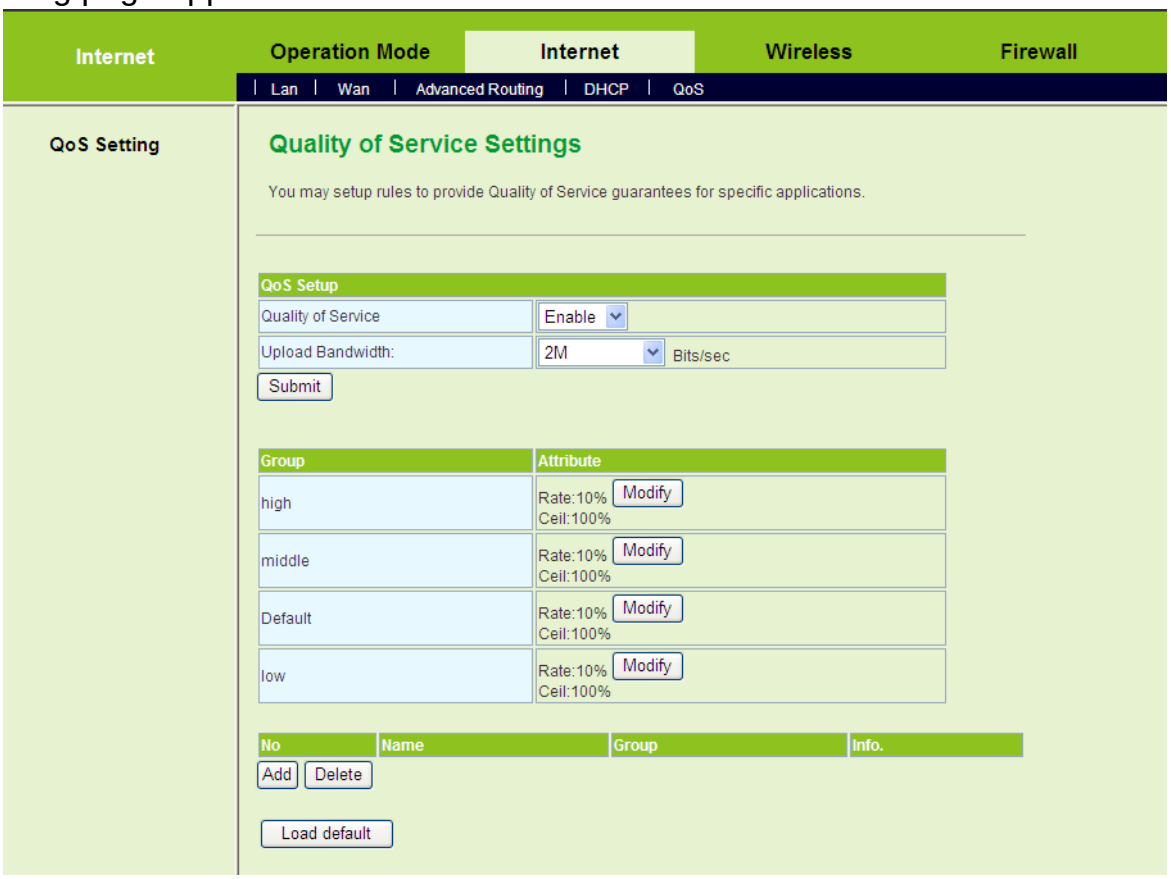
- **The examples of QoS Settings**

  - **Set the Upload Bandwidth**



On the **Quality of Service Settings** page, enable the QoS, and set the upload bandwidth. For example, set the value of upload bandwidth to be 2Mbps.

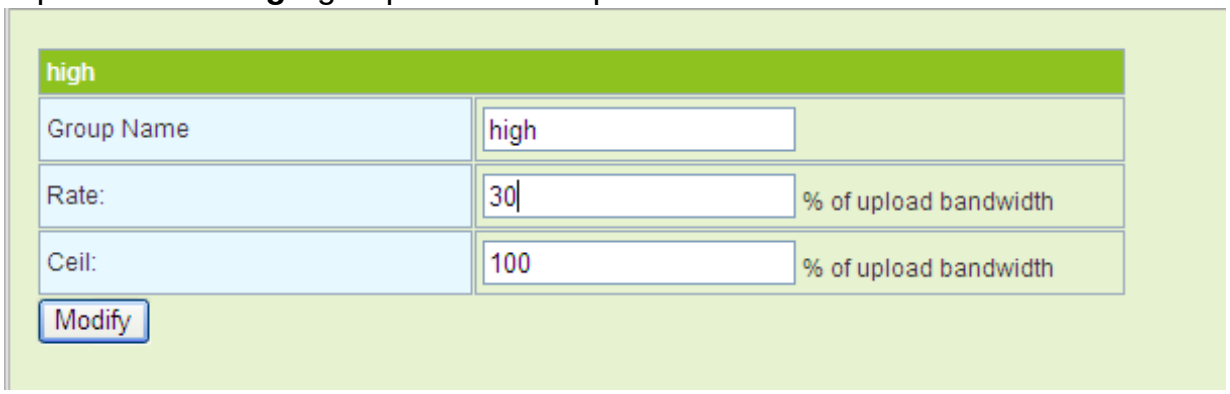
After finishing the settings, click the **Submit** button to submit the settings and the following page appears.



  - **Modify a Group Attribute**

After enabling QoS, system establishes 4 groups. Click the **Modify** button of the

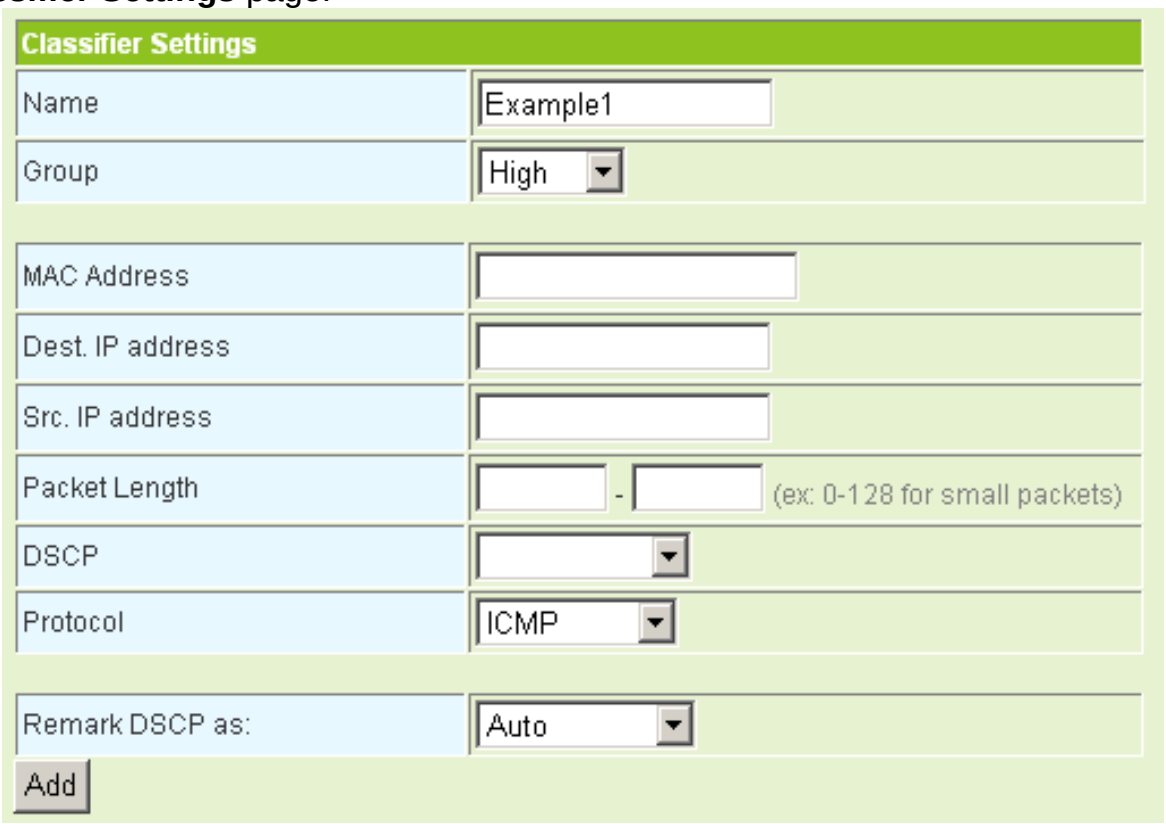
corresponding group, and you can modify the attribute settings of the corresponding group. Let's take **High** group as an example.



On this page, set the **Rate** value to be 30. If the upload bandwidth is 2Mbps, when the data flow is large, it indicates that the minimum bandwidth that **High** group can share is 30% of the total bandwidth, that is, 06 Mbps. When the data flow is little, the maximum bandwidth that **High** group can share is 100% of the total bandwidth, that is, 2Mbps.

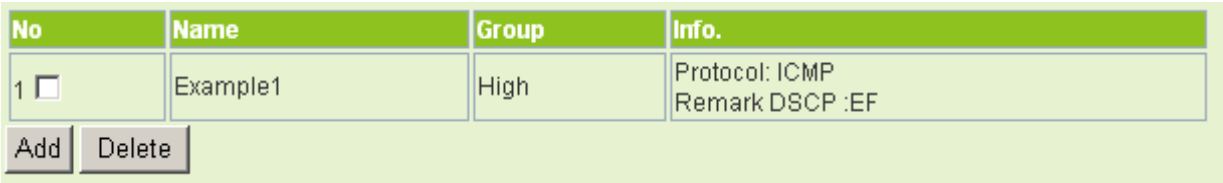
- **Add a QoS Rule**

Click the **Add** button on the **Quality of Service Settings** page to display the **Classifier Settings** page.



On this page, you can add a QoS group. For example, set the name to be Example1, add it to the High group, and select the ICMP protocol.

After finishing the settings, click the **Add** button and the new rule appears.



- **About DSCP**

DSCP consists of 6 bits of IP packet header. It uses ToS field. This byte is also called DSCP byte. Its position among the byte is as follows:

DS5 DS4 DS3 DS2 DS1 DS0 CU CU

DSCP priority: 6 bits (DS5-DS0)

Unused (CU): 2 bits

The values of DSCP priority are 64 (0~63). 0 is the lowest priority level, and the 63 is the highest priority level. In fact, DSCP field is the superset of the IP priority field. DSCP field is backward compatible with the IP priority. At present, the defined default DSCP is 0. Class selector DSCP is backward compatible with the IP priority. The values are 8, 16, 24, 32, 40, 48, and 56. Usually, EF (Expedited Forwarding) is used for low delay service and the recommended value is 46 (101110). AF (assured forwarding) defines 4 service levels, and each service level includes three descending levels. The following table shows the concrete values as follows:

Service level / priority	Type 1	Type 2	Type 3	Type 4
Low discarding priority	AF11 = 10	AF21 = 18	AF31 = 26	AF41 = 34
Medium discarding priority	AF12 = 12	AF22 = 20	AF32 = 28	AF42 = 36
High discarding priority	AF13 = 14	AF23 = 22	AF33 = 30	AF43 = 38

5.4 Wireless Settings (Gateway Mode)

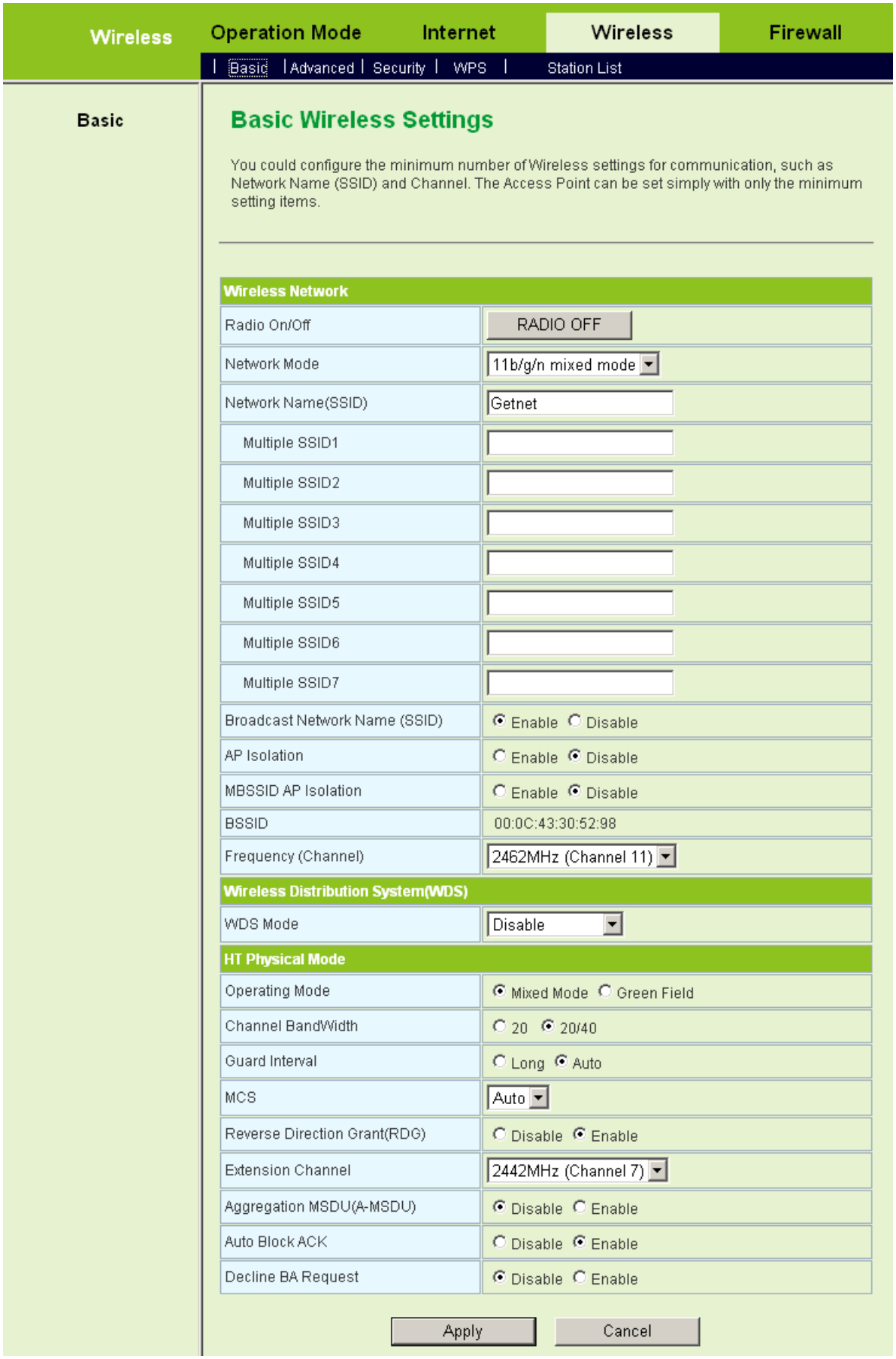
In the gateway mode, the following figure shows the navigation menu of the

Wireless:

In the gateway mode, the sub-menus of the **Wireless Settings** include **Basic**, **Advanced**, **Security**, **WPS**, and **Station List**.

5.4.1 Basic

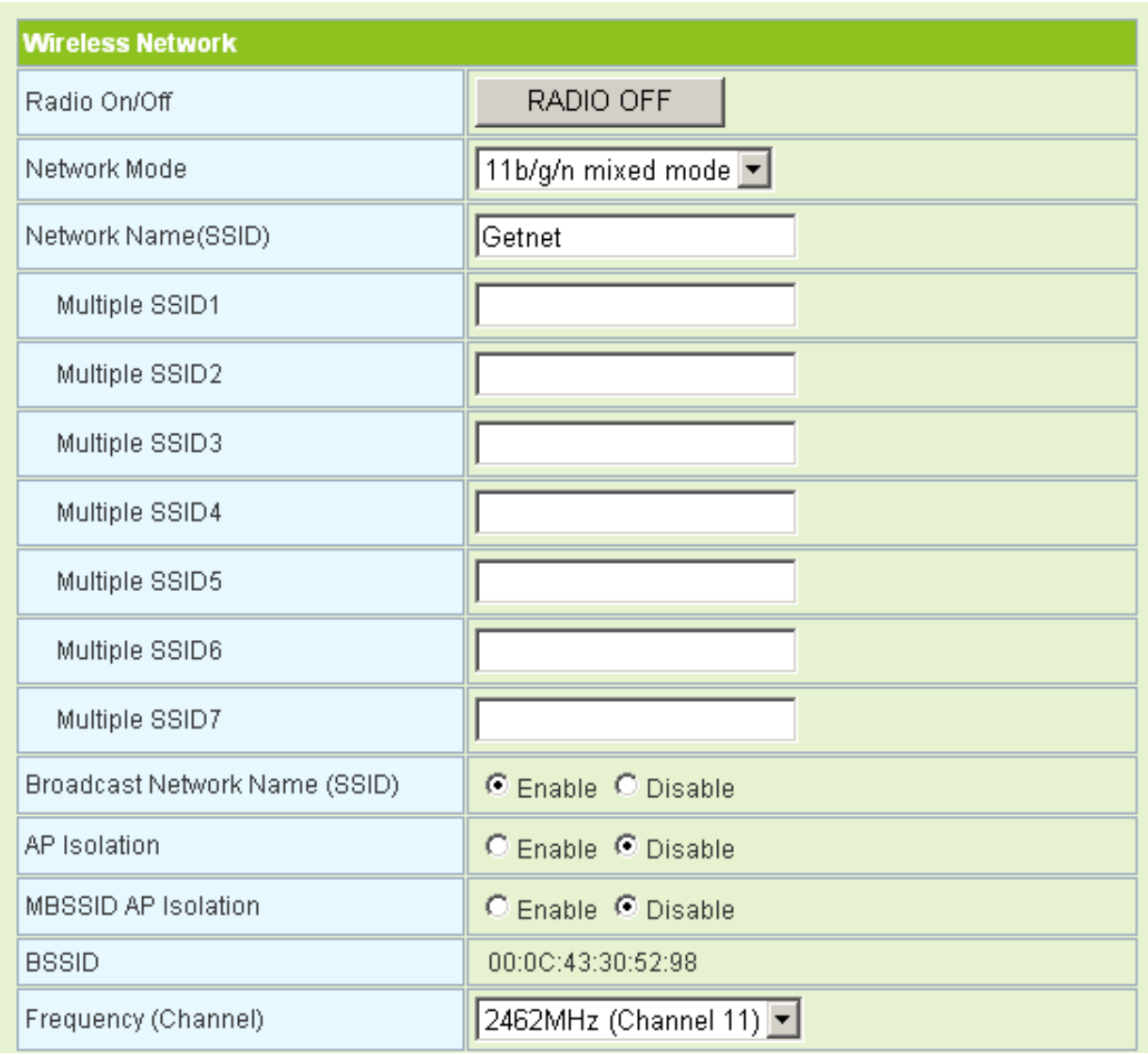
Click **Wireless** > **Basic** to display the **Basic Wireless Settings** page.



On this page, you may set the parameters of wireless network, WDS, and HT

Physical mode.

- **Wireless Network**



The parameters of **Wireless Network** are described as follows:

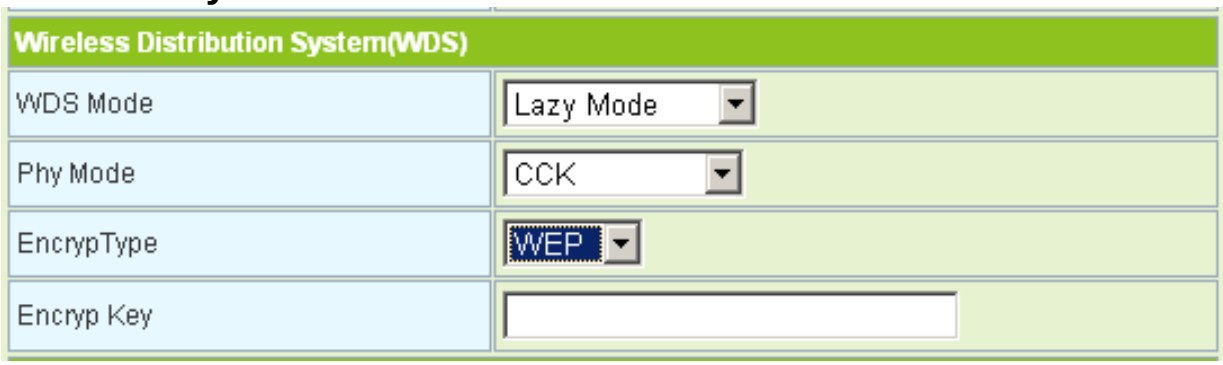
Field	Description
Radio On/Off	Enable or disable the wireless switch.
Network Mode	You may select a proper network mode in the drop down list. ● 11b/g mixed mode ● 11b only ● 11g only ● 11b/g/n mixed mode (default)
Network Name (SSID)	The maximum character number for SSID is 32 characters. The legal characters include letter,

Field	Description
	number, underline or the combination of these characters.
Multiple SSID1~7	Accessional network SSID. Each SSID can use wireless security setting independently.
Broadcast Network Name (SSID)	Whether to broadcast SSID. After enabling this function, AP will broadcast its SSID.
AP Isolation	Enable or disable the isolation among AP clients. After enabling this function, the client terminals that connect to the same AP can not communicate each other.
MBSSID AP Isolation	Enable or disable the isolation among different SSIDs. After enabling this function, the client terminals with different SSIDs can not communicate each other.
BSSID	The MAC address of the wireless interface.
Frequency(Channel)	You may select a proper channel in the drop down list. The default channel is Channel 11.

- **Wireless Distribution System (WDS)**

WDS modes include **Lazy Mode**, **Bridge Mode**, and **Repeater Mode**. You can also enable WDS.

- **Lazy Mode**

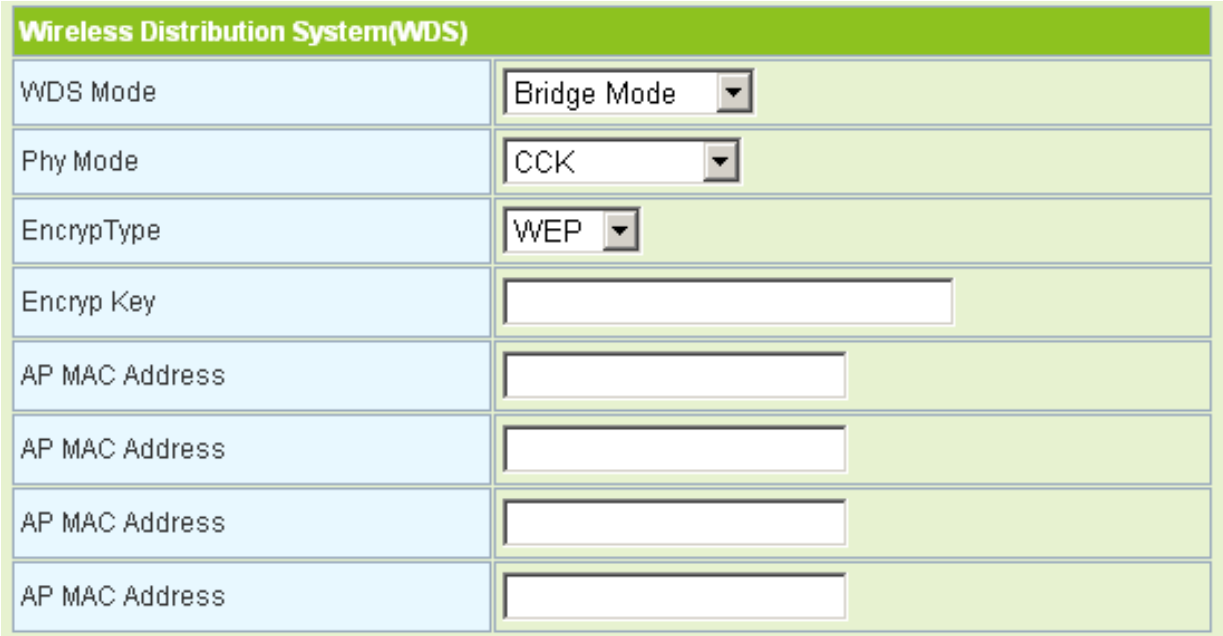


The parameters of **Lazy Mode** are described as follows:

Field	Description
WDS Mode	Select the **Lazy Mode** in the drop down list.

Field	Description
Phy Mode	The physical modes in the drop down list include **CCK**, **OFDM**, **HTMIX**, and **GREENFIELD**.
Encryp Type	The encryption types you can select include **NONE**, **WEP**, **TKIP**, and **AES**. If selecting **WEP**, **TKIP**, or **AES**, you need to set the encryption key.
Encryp Key	Set the encryption key.

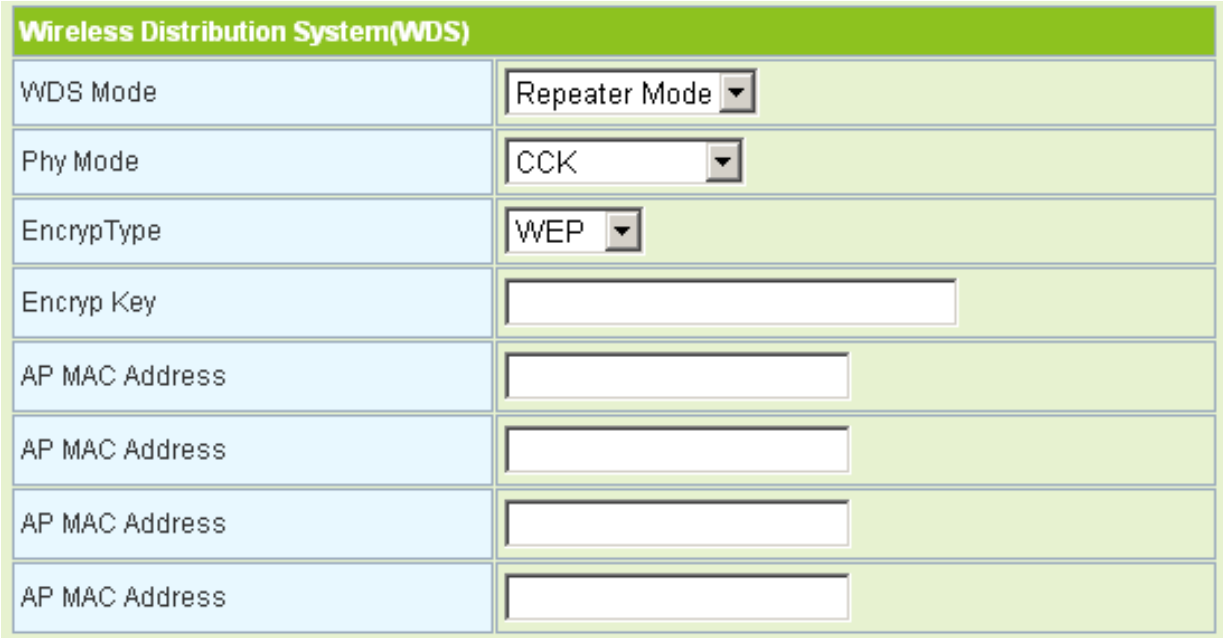
- **Bridge Mode**



The parameters of **Bridge Mode** are described as follows:

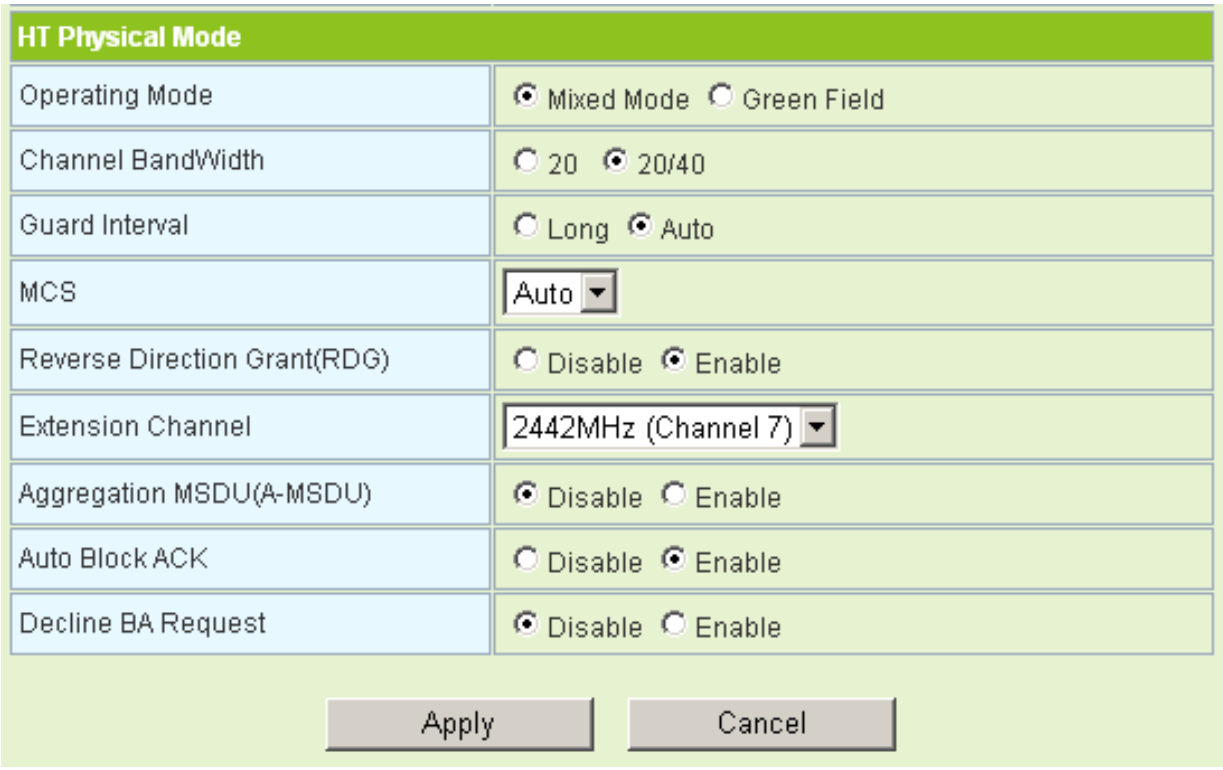
Field	Description
WDS Mode	Select the **Bridge Mode**.
Phy Mode	The physical modes in the drop down list include **CCK**, **OFDM**, **HTMIX**, and **GREENFIELD**.
Encryp Type	The encryption types you can select include **NONE**, **WEP**, **TKIP**, and **AES**. If selecting **WEP**, **TKIP**, or **AES**, you need to set the encryption key.
Encryp Key	Set the encryption key.
AP MAC Address	The MAC address of another AP that connects to the GR-534W by WDS.

- **Repeater Mode**



The parameters' description of **Repeater Mode**, please refer to the **Bridge Mode**.

- **HT Physical Mode**



The parameters of **HT Physical Mode** are described as follows:

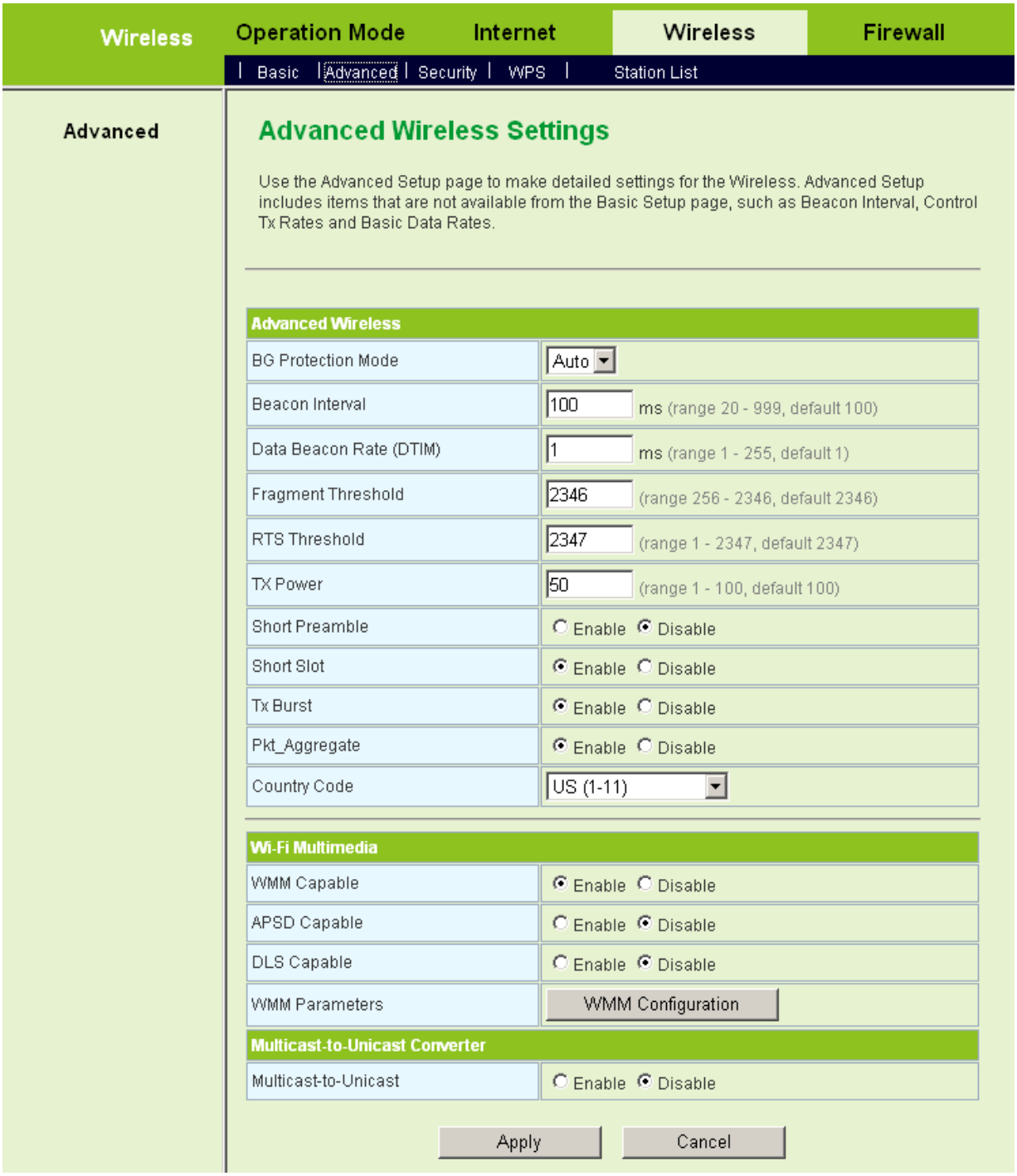
Field	Description
Operation Mode	You may select **Mixed Mode** or **Green Field**. The default operation mode is **Mixed Mode**.
Channel	You may select **20** or **20/40**. The default channel

Field	Description
BandWidth	bandwidth is **20/40**.
Guard Interval	You may select **Long** or **Auto**. The default guard interval is **Auto**.
MCS	You may select the MCS value from 0 to 32. The default MCS is **Auto**.
Reverse Direction Grant(RDG)	You may select **Disable** or **Enable**. The default RDG setting is **Enable**.
Extension Channel	Select a proper channel in the drop down list. When the channel bandwidth is set to be 20/40 MHz, the extension channel will provide a channel that is adjacent to the primary channel but not overlaps. The wireless network will acquire diploid bandwidth by this extension channel, that is, 20MHz bandwidth. **Note:** *IEEE 802.11n can bind two adjacent 20 MHz bandwidths together to form a 40MHz bandwidth. Actually, the 40MHz bandwidth can act as two 20 MHz bandwidths. One is the primary bandwidth, the other is the secondary bandwidth. When data is being transmitted, it can act as 40MHz bandwidth, and it can also acts as 20 MHz bandwidth independently. In this way, the data rate is doubled.*
Aggregation MSDU (A-MSDU)	Enable or disable A-MSDU. MSDU is the aggregation of multiple MSDUs by using certain method and the multiple MSDUs forms a greater load. MSDU can be considered as Ethernet message. Usually, when AP or wireless client receives MSDUs from protocol stack, the MSDUs will be marked with the Ethernet message header (also called A-MSDU Subframes). Before sending them out, the A-MSDU Subframes need to be transformed into the message format of 802.11 one by one. A-MSDU aggregates multiple A-MSDU Subframes

Field	Description
	and encapsulates them to be an 802.11 message. In this way, PLCP Preamble, PLCP Header, and 802.11 MAC overhead that are needed to send an 802.11 message decrease. At the same time, the acknowledge frames also decrease, and the efficiency for sending message is improved.
Auto Block ACK	Enable or disable Auto Block ACK. In order to insure the security of the data transmission, 802.11n protocol requires that if the client receives a unicast frame, it should immediately send back a ACK frame. After the receiver of A-MPDU receives A-MPDU, it needs to process every MPDU. In that case, it sends out ACK frames to every MPDU. Block Acknowledgement is used to reduce the number of the ACK frames by using a ACK frame.
Decline BA Request	Enable or disable **Decline BA Request**.

5.4.2 Advanced Settings

Click **Wireless** > **Advanced** to display the **Advanced Wireless Settings** page.

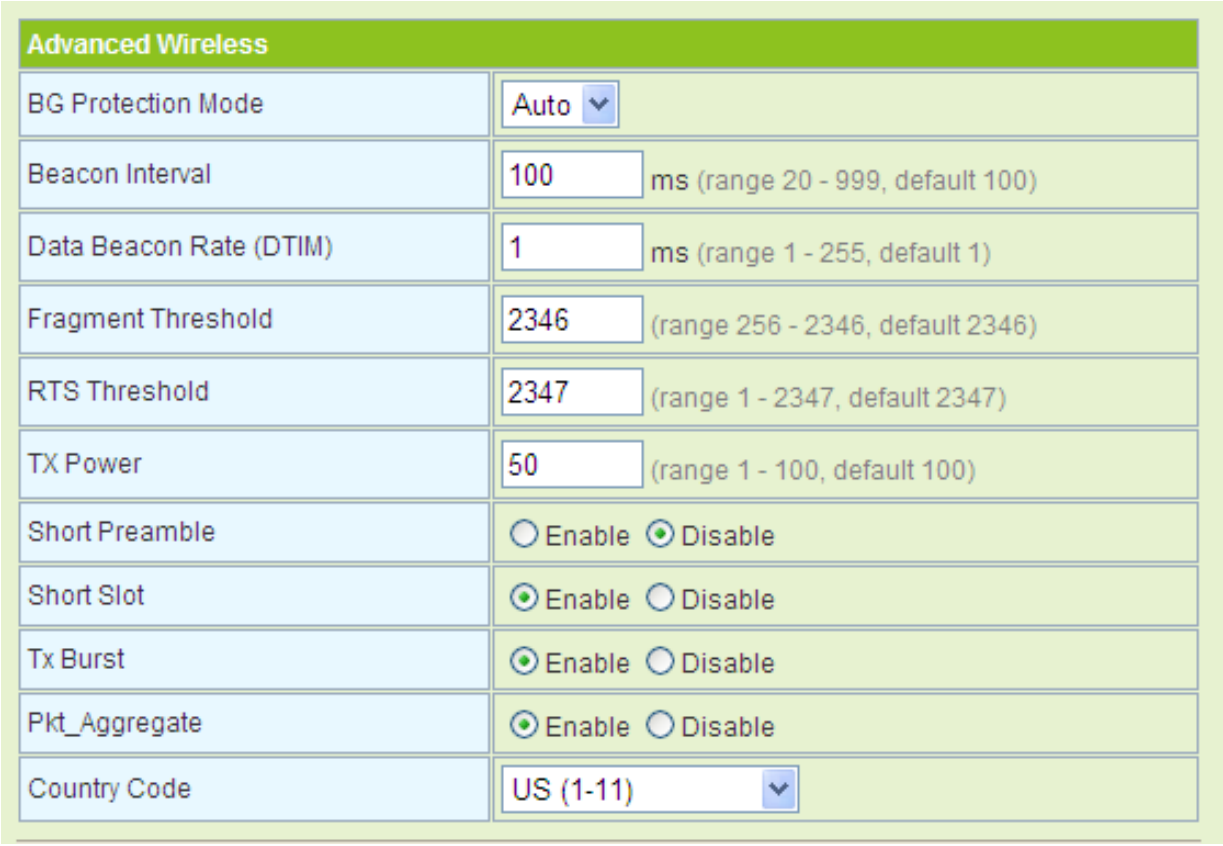


On this page, you may configure advanced wireless parameters, such as beacon interval, data beacon rate, and Tx power.

Note:

The advanced wireless setting is only for advanced user. For the common user, do not change any setting on this page.

- **Advanced Wireless**

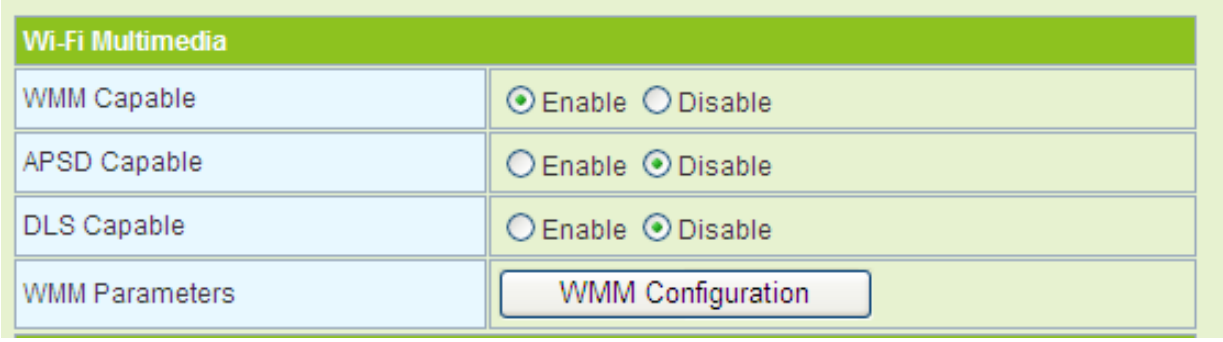


The parameters of **Advanced Wireless** are described as follows:

Field	Description
BG Protection Mode	You may select **On**, **Off**, or **Auto**. The default BG protection mode is **Auto**.
Beacon Interval	By default, wireless beacon signal sends data to station every other 100 ms. The range is 20~999.
Data Beacon Rate (DTIM)	The default DTIM is 1ms. The range is 1~255.
Fragment Threshold	The default fragment threshold is 2346. The range is 256~2346.
RTS Threshold	The default RTS threshold is 2347.The range is 1~2347.
TX Power	Set the Tx power. 100% indicates full power.
Short Preamble	Enable or disable short preamble. The default setting is **Disable**. Preamble defines the length of CRC correction block for wireless devices. Short preamble adopts 56-bit synchronization field. The network whose

Field	Description
	network traffic is dense should use shorter preambles. Short Preamble is mainly applied to the efficiency improvement of real- time applications, such as streaming video, and Voice-Over-IP telephony.
Short Slot	Enable or disable short slot.
Tx Burst	Tx Burst can be used to improve the efficiency of data transmission. It can make system transmit more data during a period of time.
Pkt_Aggregate	Pkt_Aggregate can aggregate multiple data packets together for improving the transmission efficiency.
Country Code	Select a proper country code in the drop down list.

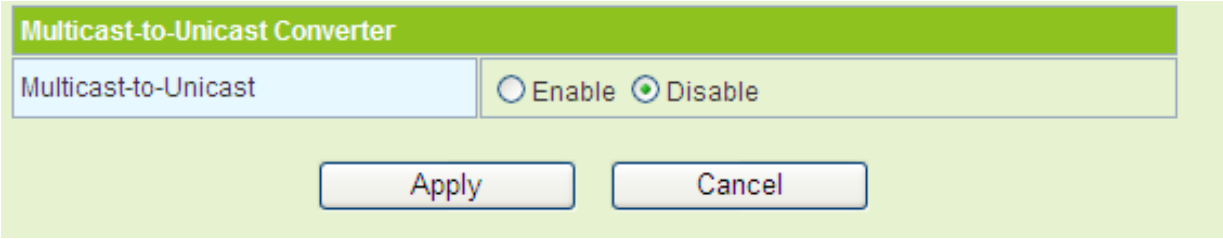
- **Wi-Fi Multimedia**



The parameters of WMM are described as follows:

Field	Description
Wi-Fi Capable	Enable or disable WMM. After enabling WMM, AP can process different types of wireless data according to their priority levels.
APSD Capable	Enable or disable APSD. After enabling APSD, it can decrease the consumption of the power supply device.
DLS Capable	Enable or disable DLS.
WMM Parameters	Click the **WMM Configuration** button to display the configuration page of WMM parameters.

● Multicast-to-Unicast Converter



Enable or disable **Multicast-to-Unicast**. After enabling this function, the transmission quality of wireless multicast stream can be improved.

● About WMM

- WMM Access Categories

At present, WMM defines traffic into 4 access categories.

Access Category	Description	802.1d Tags
WMM Voice Priority	Highest priority Allows multiple concurrent VoIP calls, with low latency and toll voice quality	7, 6
WMM Video Priority	Prioritize video traffic above other data traffic One 802.11g or 802.11a channel can support 3-4 SDTV streams or 1 HDTV streams	5, 4
WMM Best Effort Priority	Traffic from legacy devices, or traffic from applications or devices that lack QoS capabilities Traffic less sensitive to latency, but affected by long delays, such as Internet surfing	0, 3
WMM Background Priority	Low priority traffic (file downloads, print jobs) that does not have strict latency and throughput requirements	2, 1

AC_VO: Voice (highest priority)
AC_VI: Video (high priority)
AC_BE: Best effort (medium priority)
AC_BK: Background (low priority)

802.11 uses DCF (Distributed Coordination Function) scheme of the CSMA/CA (Carrier Sense Multiple Access / Collision Avoidance) protocol to reduce the chances of packets collision while one more devices access the wireless media at the same time. A client wishing to transmit has to first listen to the channel for a predetermined amount of time so as to check for any activity on the channel. If the channel is sensed "idle" then the client is permitted to transmit. If the channel is sensed as "busy" the station has to defer its transmission. The random interval provides a fair transmission

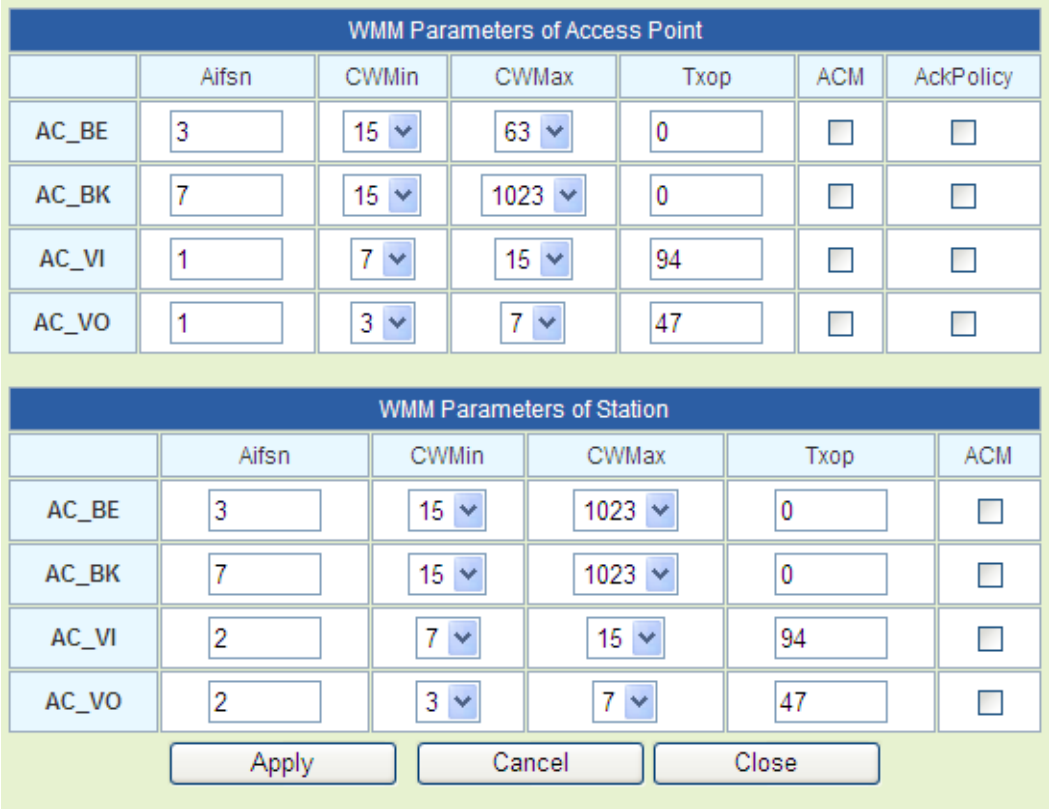
chance for all the devices.

When each priority queue waits for sending packets, it has to wait a fixed time AIFSN and a random time CW. They define time values by multiple time slots. For 802.11b, its time slot is 20ms. The time slot of 802.11a and 802.11g is 9 ms. CW insures the random delay time of DCF, so that the packets collision among the devices with the same access category can be avoided. If collision occurs, CW is doubled until it exceeds its maximum value. After every successful transmission, CW returns to the minimum value.

The priority queue that succeeds in the competition of sending packets will acquire Txop time to send packets. If the txop value is 0, it is limited to be a MSDC (MAC Service Data Unit).

- **Set WMM Parameters**

Click the **WMM Configuration** button on the **Advanced Wireless Settings** page, the following page appears.



On this page, you can configure the WMM parameters of access point and station.

Note:

GR-534W provides standard WMM settings. If you want to modify the parameters above, please refer to the WMM settings of your WMM products.

The parameters on this page are described as follows:

Field	Description
Aifsn	Aifsn (Arbitrary Inter-Frame Space Number). This parameter influences the delay time of WMM access category. If you use voice or video service, you'd better set this parameter to be smaller in the fields of AC_VI and AC_VO. If it is E-mail or Web service, you should set a bigger value in the fields of AC_BE and AC_BK.
Cwmin	Cwmin (Mini. Contention Window) also influences the delay time of WMM access category. The difference between AC_VI and AC_VO should be smaller, but the difference between AC_BE and AC_BK should be bigger.
Cwmax	Cwmax (Max.Contention Window)
Txop	Txop (Opportunity to Transmit) may optimize the WMM access. Compared to the WMM access that needs a higher priority, such as AC_VI and AC_VO, this value should be bigger.
ACM	ACM (Admission Control Mandatory) parameter only reacts on AC_VI and AC_VO. If you set this value to be 0, it indicates that AP is in the charge of the access commands. If this value is 1, it means the client is in the charge of the access commands.
Ackpolicy	When WMM packets are transmitting, AP will receive an echo request. If you set this value is 0, it means AP does not send back an echo request, which will bring positive effect for WMM. If this value is 1, AP generates the response to the request.

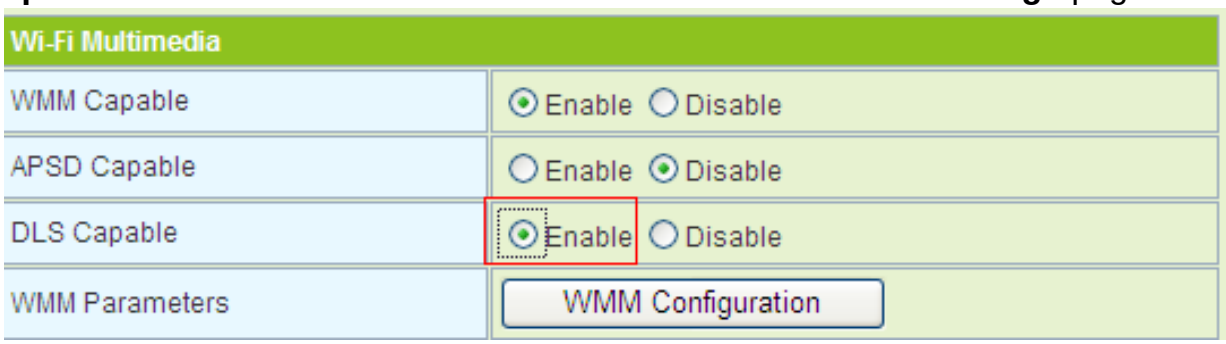
- **DLS (Direct Link Setup)**

GR-534W provides DLS function. Suppose that there are two WMM devices. Enter the MAC address of a WMM device in the DLS setting of the other device, and then connect the two WMM devices to the GR-534W. In this way, these two WMM devices can transmit message directly.

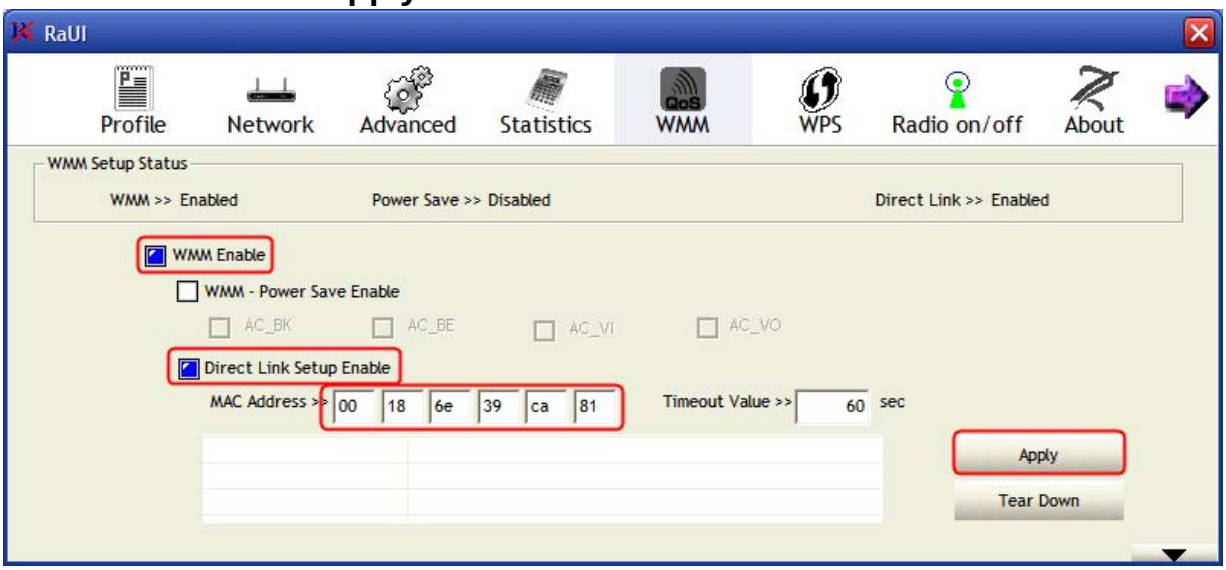
If you want to configure WMM DLS, do as follows:

Step1 Prepare two wireless network cards (A and B) and one GR-534W.

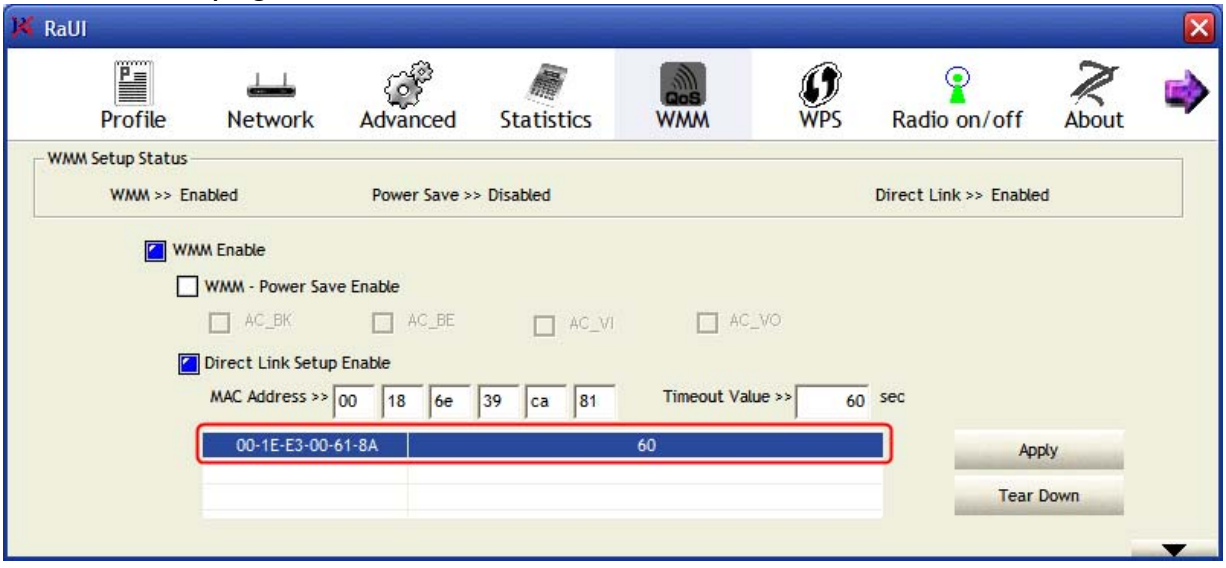
Step2 Enable the DLS function on the **Advanced Wireless Settings** page.



Step3 Enable the DLS function of wireless network cards. Enter the MAC address of wireless card A on the **WMM** page of the wireless network card B, and then click the **Apply** button.

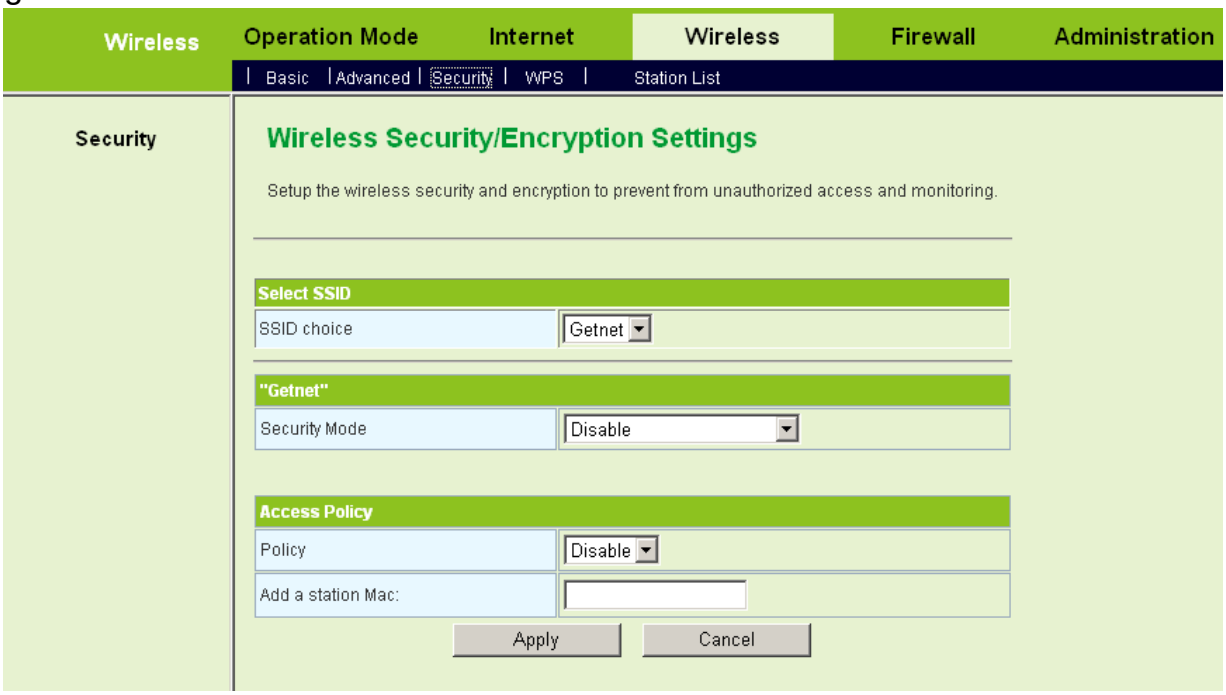


Step4 If DLS succeeds, you can view the MAC address of wireless card A on the **WMM** page of wireless card B, and vice versa.



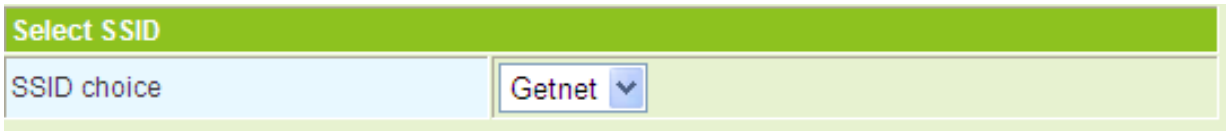
5.4.3 Security

Click **Wireless** > **Security** to display the **Wireless Security/Encryption Settings** page.



This page allows you to configure wireless security modes and set the encryption keys, to prevent unauthorized access and monitoring.

- **Select SSID**

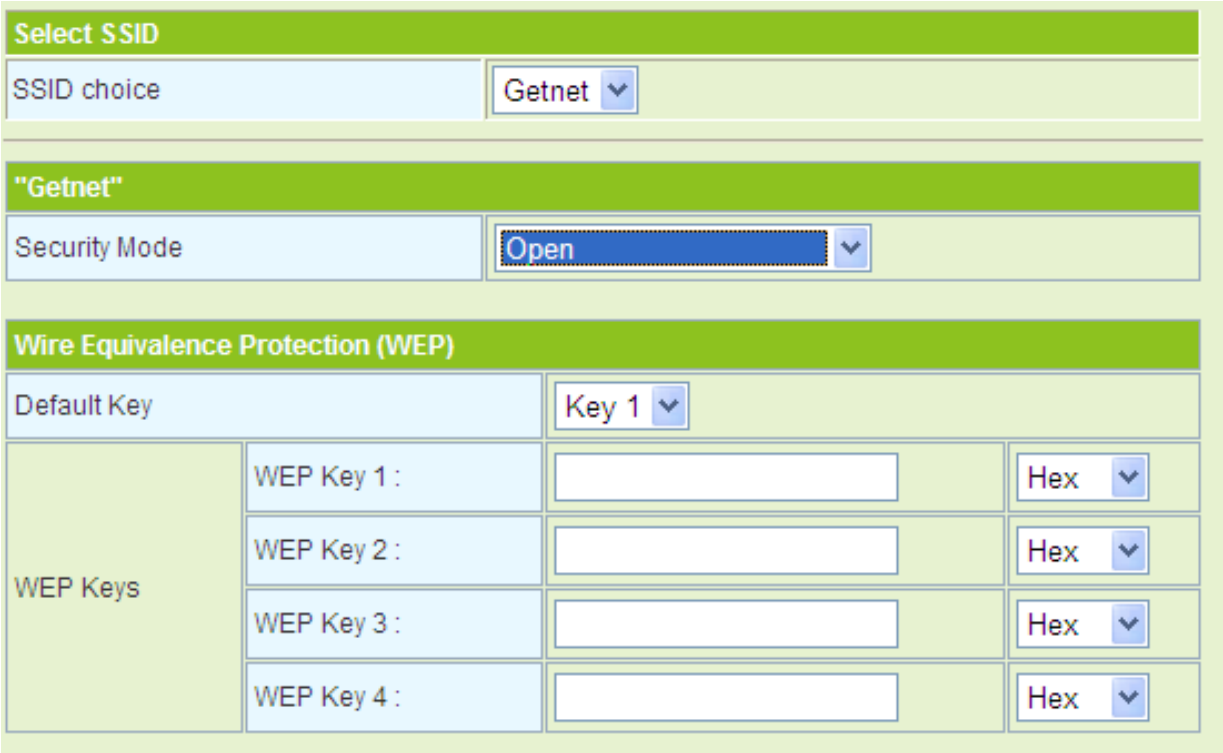


SSID choice: select the SSID that you want to configure.

- **Security Mode**

This page provides 10 types of security modes, including OPEN, SHARED, WEPAUTO, WPA-Enterprise, WPA-PSK, WPA2-Enterprise, WPA2-PSK, WPA-PSK/WPA2PSK, WPA1/WPA2-Enrterprise, and Dynamic WEP 8021.X.

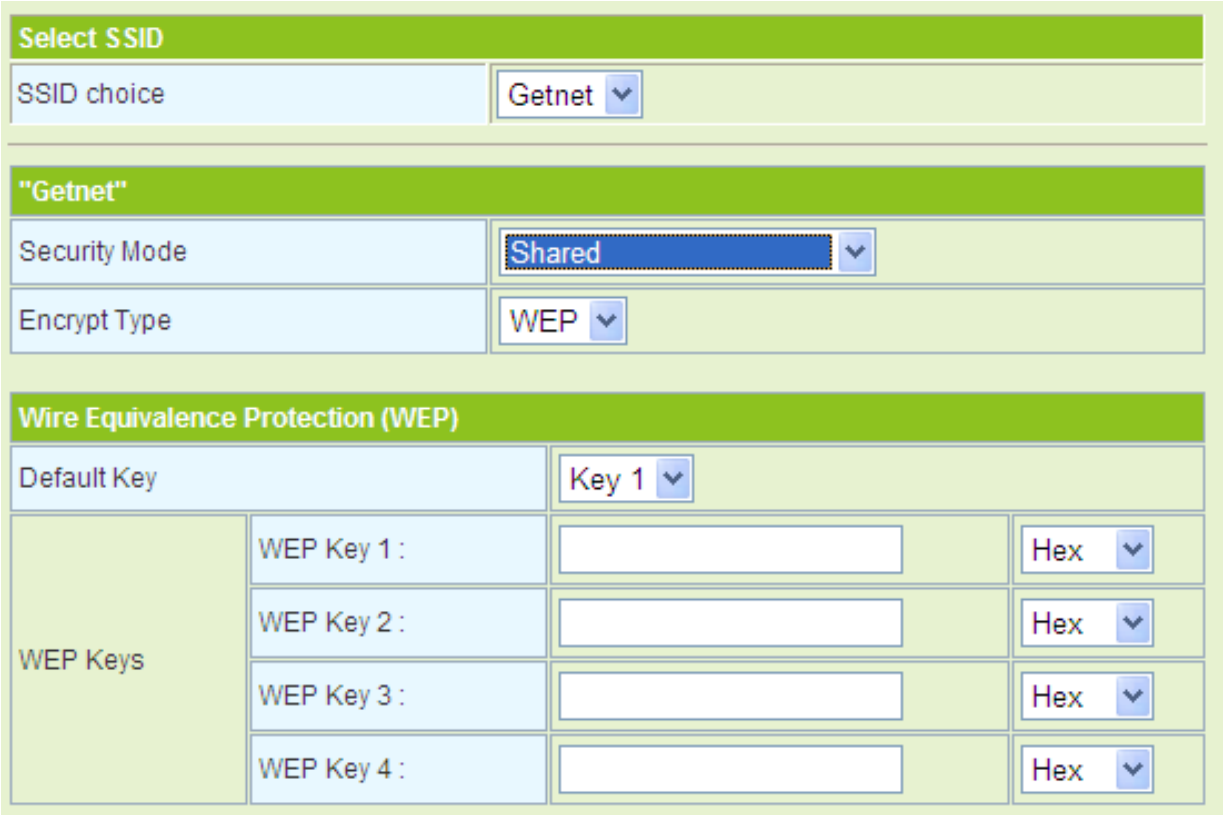
  - **OPEN**



The parameters of **OPEN** mode are described as follows:

Field	Description
Security Mode	Select **OPEN**.
Default Key	Select a key as the default key.
WEP Keys WEP Key (1/2/3/4)	Set 64-bit or 128-bit key. The key format is **Hex** or **ASCII**.

- **SHARED**



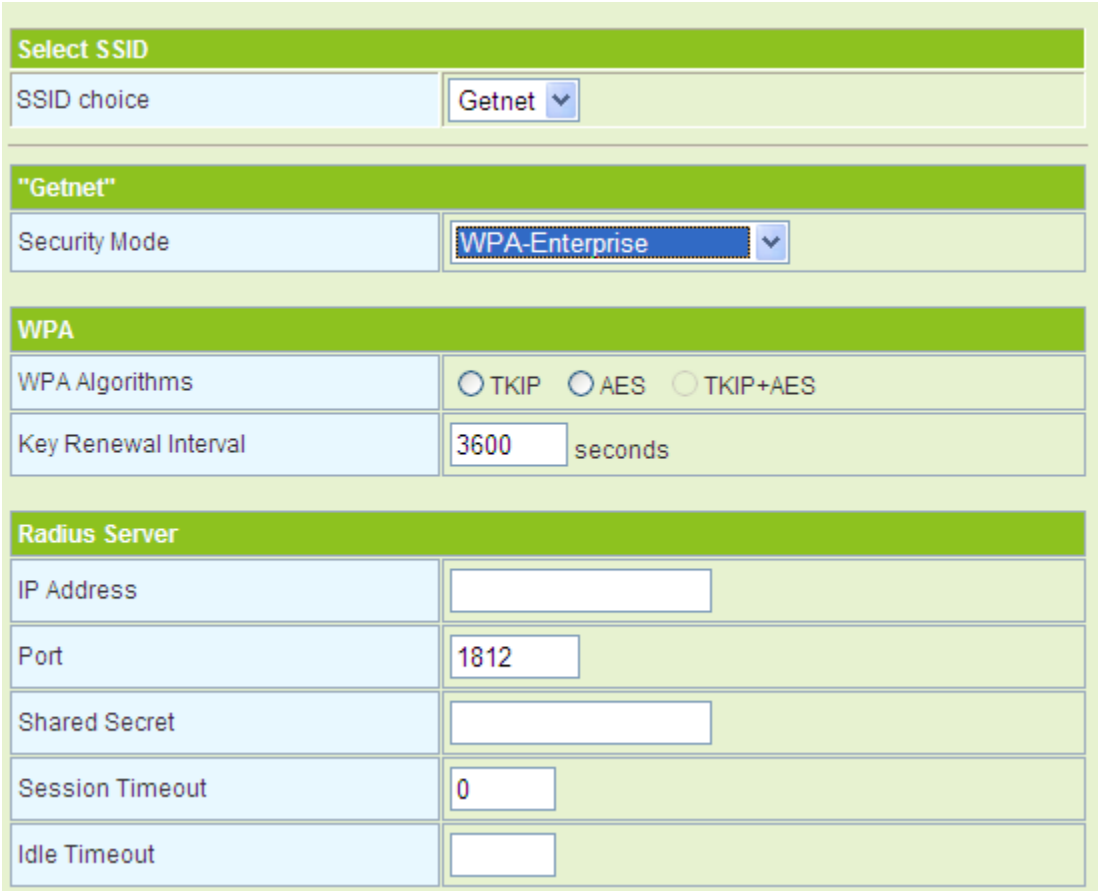
The parameters of **SHARED** mode are described as follows:

Field	Description
Security Mode	Select **SHARED**.
Encrypt Type	You may select **WEP** or **None**.
Default Key	Select a key as the default key.
WEP Keys (WEP Key1/2/3/4)	Set 64-bit or 128-bit key. The key format is **Hex** or **ASCII**.

- **WEPAUTO**

The parameters' description of **WEPAUTO** mode, please refer to **OPEN** mode.

- **WPA-Enterprise**

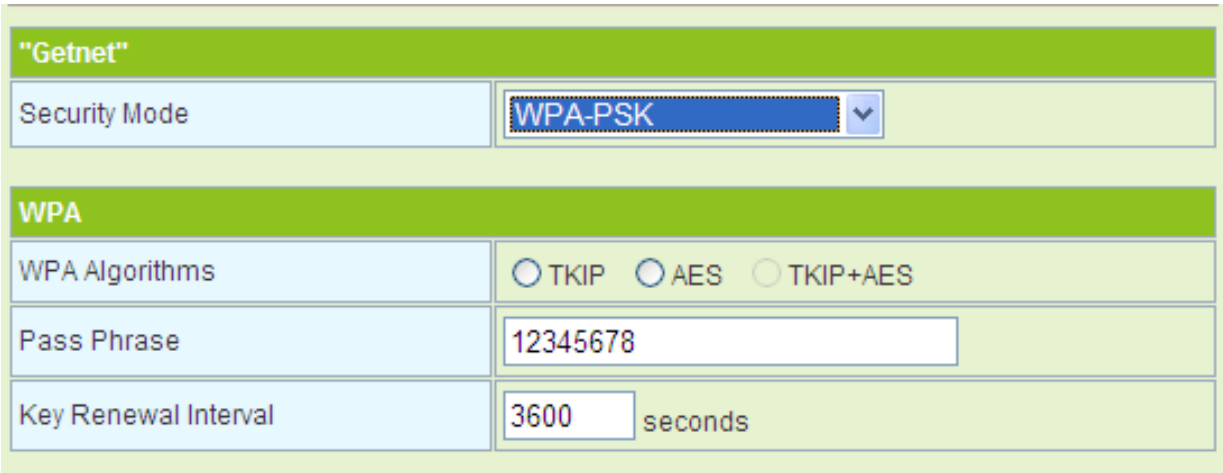


The parameters of **WPA-Enterprise** mode are described as follows:

Field	Description

Field	Description
Security Mode	Select **WPA-Enterprise**.
WPA Algorithms	You may select **TKIP** or **AES**.
Key Renewal Interval	Set the key renewal interval.
IP Address	The IP address of RADIUS server.
Port	The default port number is 1812. You may change it according to the server setting.
Shared Secret	The shared key that RADIUS server needs to authenticate.
Session Timeout	If this value is 0, it indicates that there is no session time limit.
Idle Timeout	Set the idle timeout.

- **WPA-PSK**

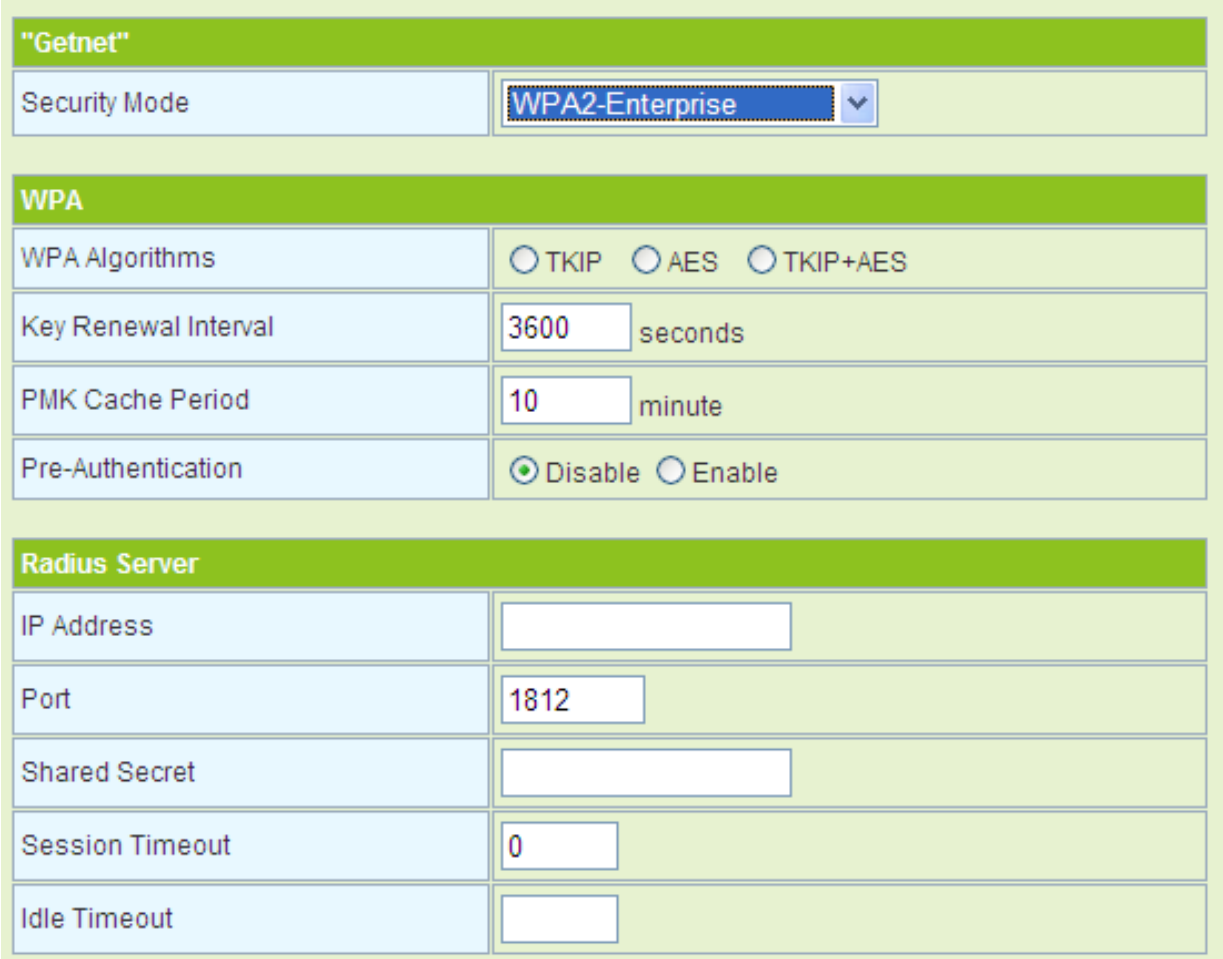


The parameters of **WPA-PSK** mode are described as follows:

Field	Description
Security Mode	Select **WPA-PSK**.
WPA Algorithms	Select **TKIP** or **AES**.
Pass	Set 8-bit to 64-bit key.

Field	Description
Phrase	
Key Renewal Interval	Set the key renewal interval.

- **WPA2-Enterprise**

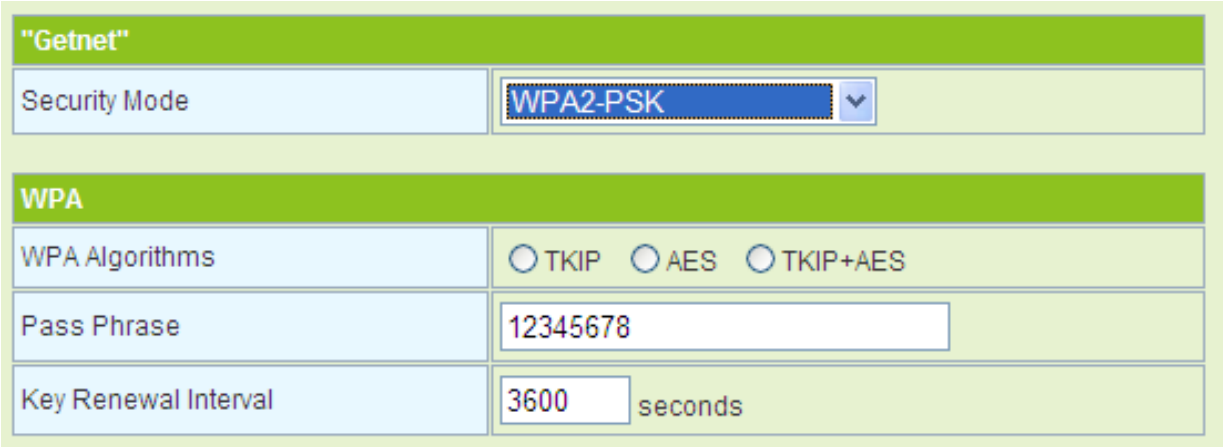


The parameters of **WPA2-Enterprise** are described as follows:

Field	Description
Security Mode	Select **WPA2-Enterprise**.
WPA Algorithms	You may select **TKIP**, **AES**, or **TKIPAES**.
Key Renewal Interval	Set the key renewal interval.
PMK Cache Period	Set the PMK (Pairwise Master Key) cache period. PMK scheme allows the roaming users that pass through the 802.11X/EAP handshake protocol roam

Field	Description
	to the previous AP again. PMK can decrease the roaming delay and improve the roaming speed.
Pre-Authentication	Enable or disable pre-authentication.
IP Address	The IP address of RADIUS server.
Port	The default port number is 1812. You may change it according to the server setting.
Shared Secret	The shared key that RADIUS server needs to authenticate.
Session Timeout	If this value is 0, it indicates that there is no session time limit.
Idle Timeout	Set the idle timeout.

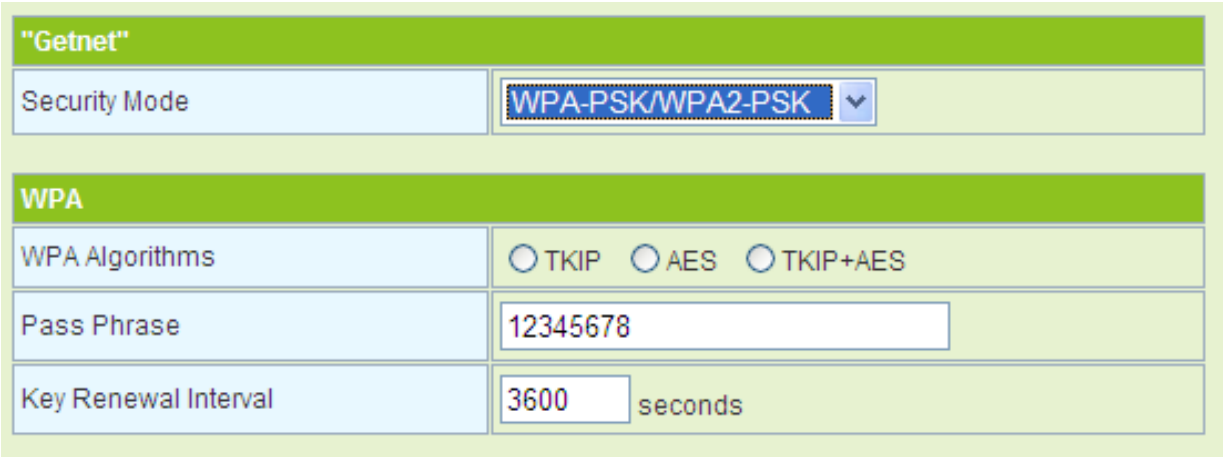
- **WPA2-PSK**



The parameters of **WPA2-PSK** mode are described as follows:

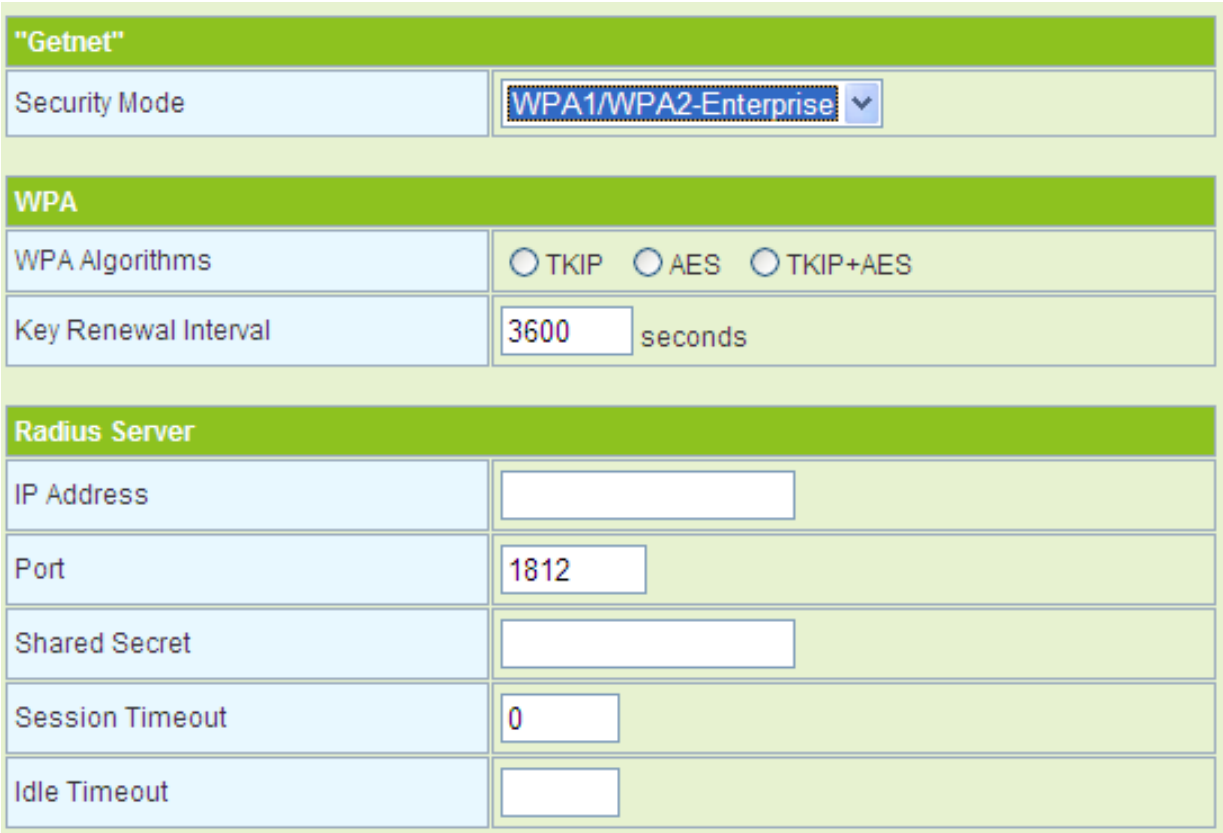
Field	Description
Security Mode	Select **WPA2-PSK**.
WPA Algorithms	You may select **TKIP**, **AES**, or **TKIPAES**.
Pass Phrase	Set 8-bit to 64-bit key.
Key Renewal Interval	Set the key renewal interval.

- **WPA-PSK/WPA2-PSK**



The parameters' description of **WPA-PSK/WPA2-PSK** mode, please refer to **WPA2-PSK**.

- **WPA1/WPA2-Enterprise**

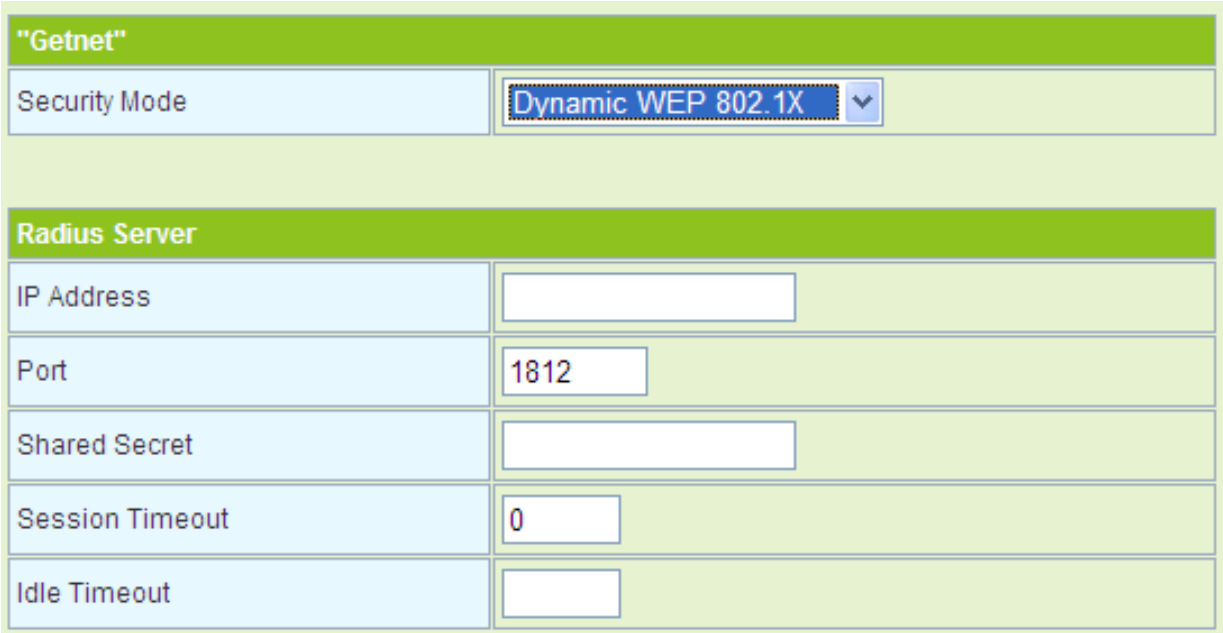


The parameters of **WPA1/WPA2-Enterprise** are described as follows:

Field	Description
Security Mode	Select **WPA1/WPA2-Enterprise**.
WPA Algorithms	You may select **TKIP**, **AES**, or **TKIPAES**.
Key Renewal	Set the key renewal interval.

Field	Description
Interval	
IP Address	The IP address of RADIUS server.
Port	The default port number is 1812. You may change it according to the server setting.
Shared Secret	The shared key that RADIUS server needs to authenticate.
Session Timeout	If this value is 0, it indicates that there is no session time limit.
Idle Timeout	Set the idle timeout.

- **Dynamic WEP 802.1X**

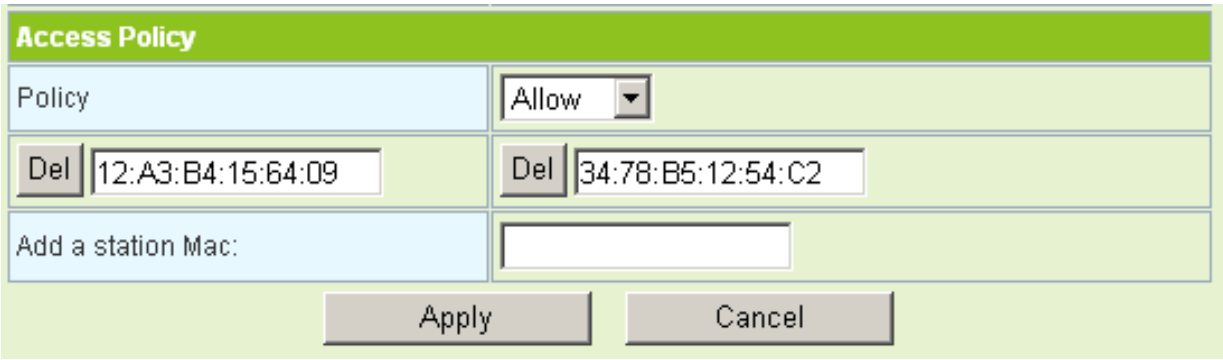


The parameters of **Dynamic WEP 802.1X** mode are described as follows:

Field	Description
Security Mode	Select **Dynamic WEP 802.1X**.
IP Address	The IP address of RADIUS server.
Port	The default port number is 1812. You may change it according to the server setting.
Shared Secret	The shared key that RADIUS server needs to authenticate.
Session Timeout	If this value is 0, it indicates that there is no session time limit.

Field	Description
Idle Timeout	Set the idle timeout.

- **Access Policy**



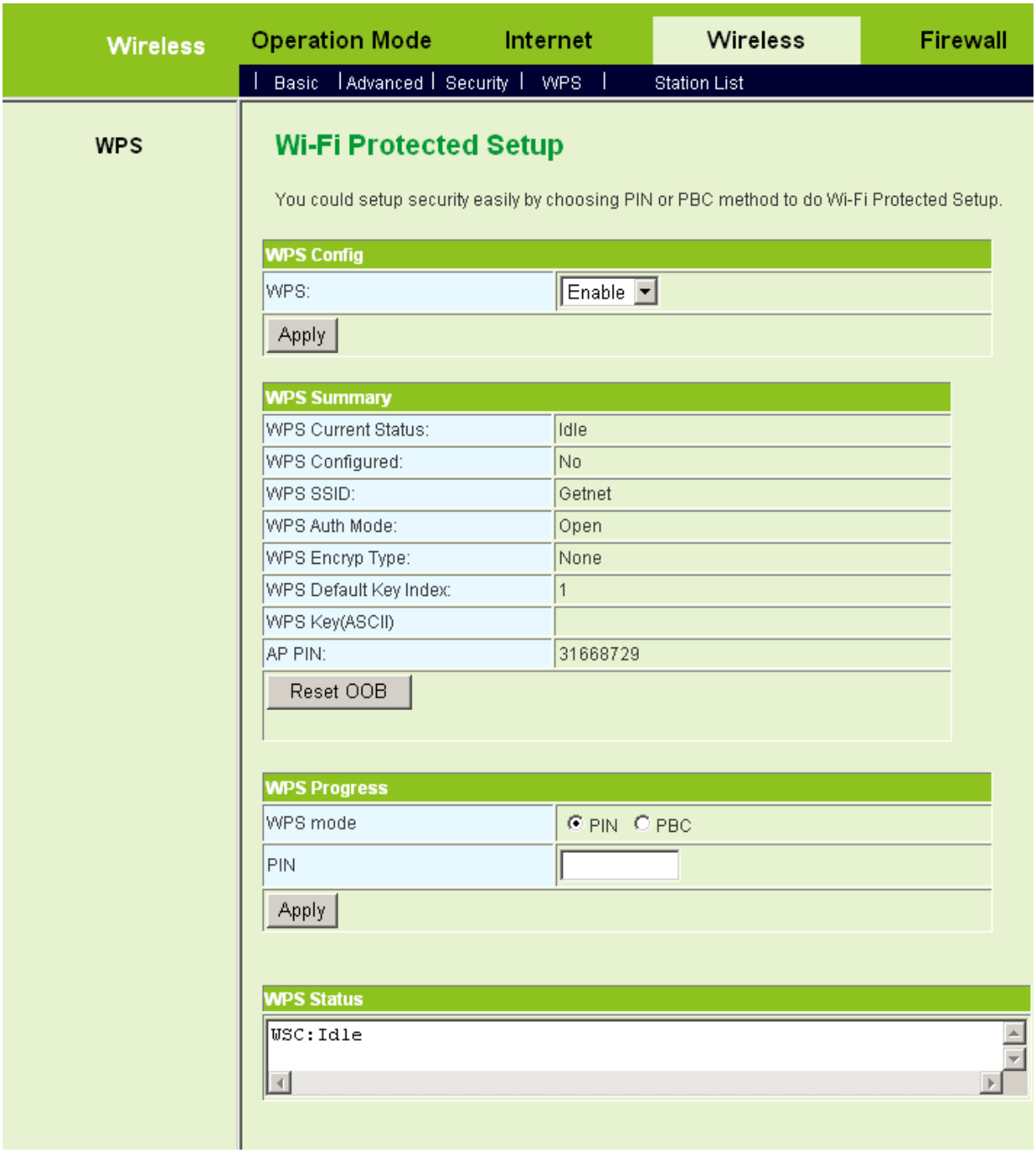
The parameters of **Access Policy** are described as follows:

Field	Description
Policy	**Disable**: Stop the access control to the wireless devices in the MAC list. **Allow**: Allow the access control to the wireless devices in the MAC list. **Reject**: Reject the access control to the wireless devices in the MAC list.
Add a station Mac	Enter the MAC address of wireless device that you want to allow or reject.

After finishing the settings, click the **Apply** button to apply the settings.

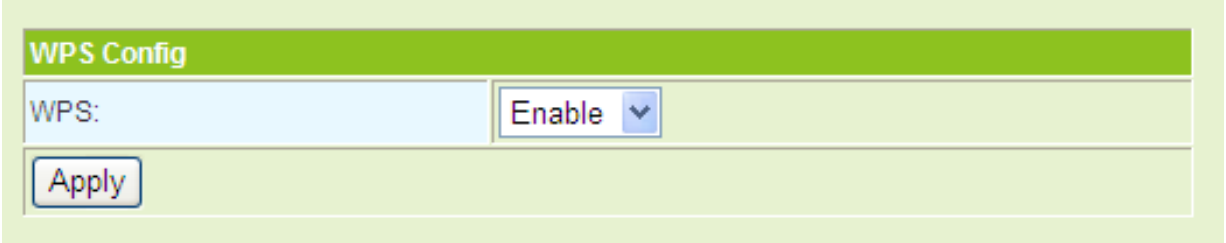
5.4.4 WPS

Click **Wireless** > **WPS** to display the **Wi-Fi Protected Setup** page.



On this page, you can modify the WPS settings. WPS can make your client automatically synchronize with the AP setting, and establish connection.

- **WPS Config**



WPS: enable or disable WPS.

After enabling WPS, you can configure the parameters related to WPS.

- **WPS Summary**

WPS Summary	
WPS Current Status:	Idle
WPS Configured:	No
WPS SSID:	Getnet
WPS Auth Mode:	Open
WPS Encryp Type:	None
WPS Default Key Index:	1
WPS Key(ASCII)	
AP PIN:	31669603

Reset OOB

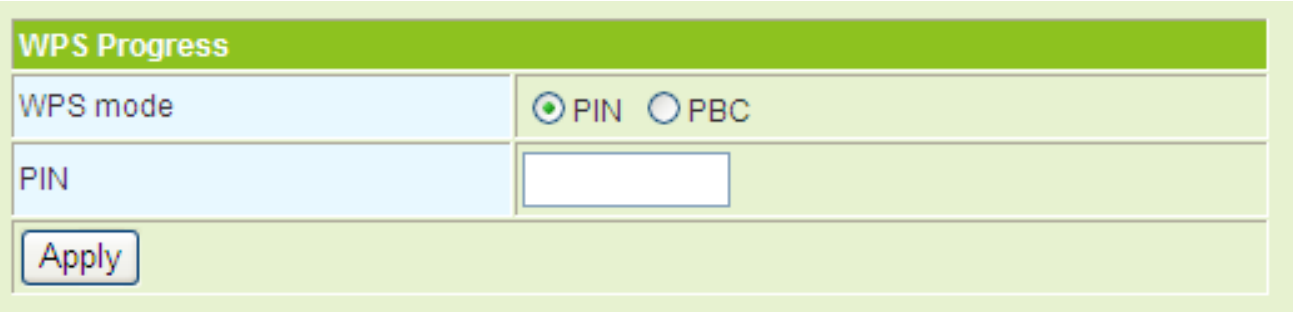
WPS summary displays the preset WPS information, such as WPS current status, WPS authentication mode, and WPS encryption type.

Click the **Reset OOB** button on the **Wi-Fi Protected Setup** page, system displays the WPS default settings. See the following figure:

WPS Summary	
WPS Current Status:	Idle
WPS Configured:	No
WPS SSID:	default_305298
WPS Auth Mode:	WPA-PSK
WPS Encryp Type:	TKIP
WPS Default Key Index:	2
WPS Key(ASCII)	12345678
AP PIN:	31668729

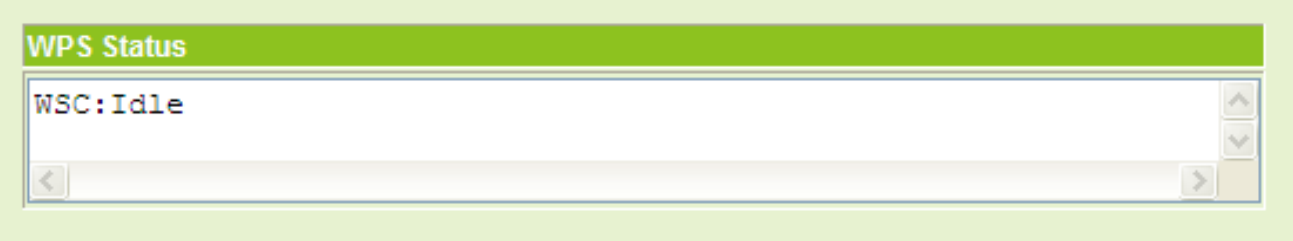
Reset OOB

- **WPS Progress**



WPS modes include PIN and PBC. For more details, please refer to **WPS Applications**.

- **WPS Status**



The figure above displays WPS current status.

- **WPS Applications**

This page provides two WPS modes, including PIN and PBC modes.

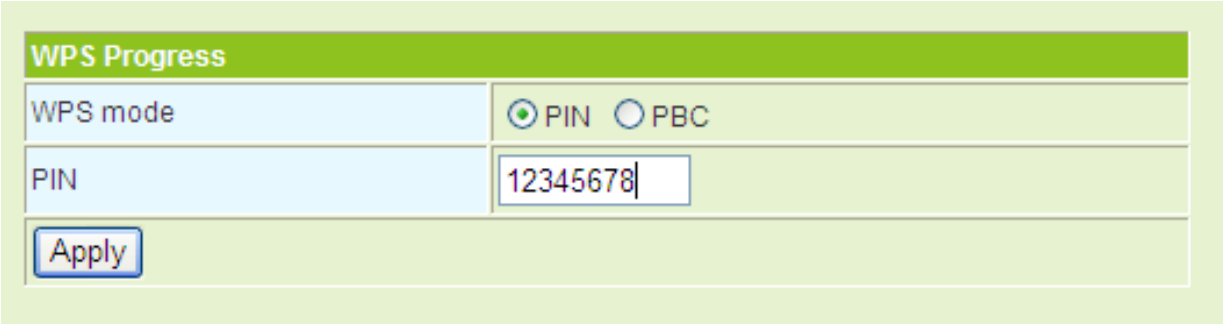
At present, WPS supports three types of operation modes, including **Enrollee** mode, **Registrar** mode, and **PBC** mode. **Enrollee** and **Registrar** modes need to apply PIN negotiation.

- **Enrollee Mode**

Step1 Select the enrollee mode on the wireless client, and the software of wireless client generates a random PIN code, for example, 12345678.

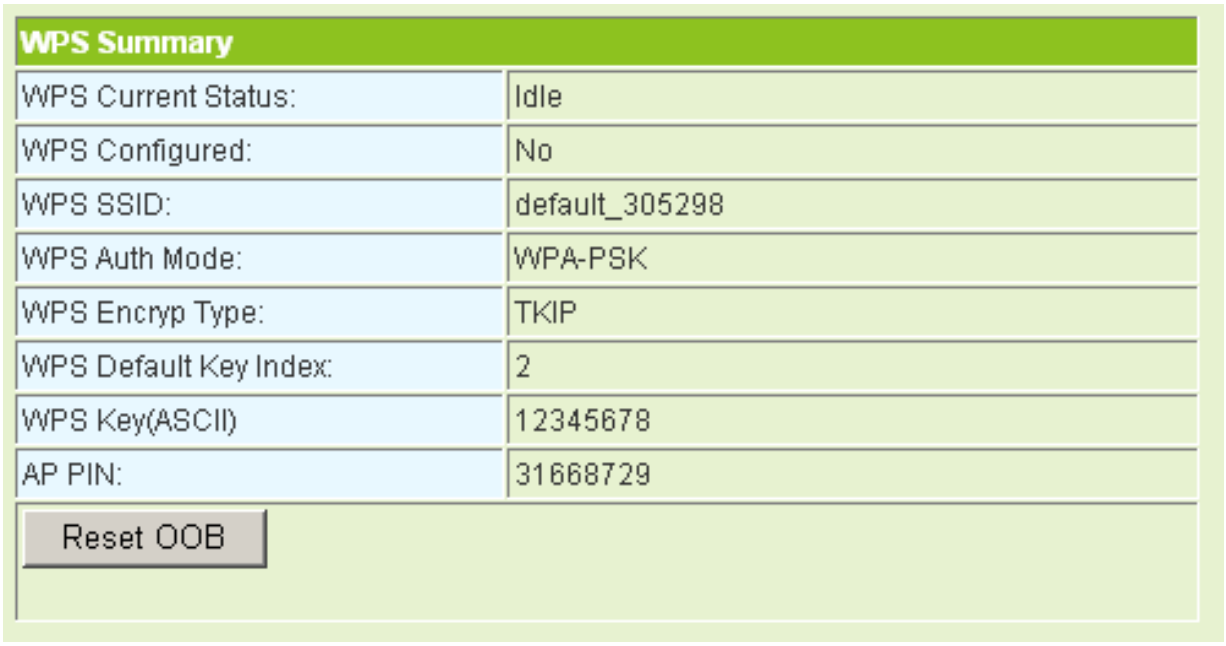
Step2 On the **Wi-Fi Protected Setup** page, enter the PIN code of wireless client, for example, 12345678.

Step3 Click the **Apply** button on the **Wi-Fi Protected Setup** page to submit the setting.

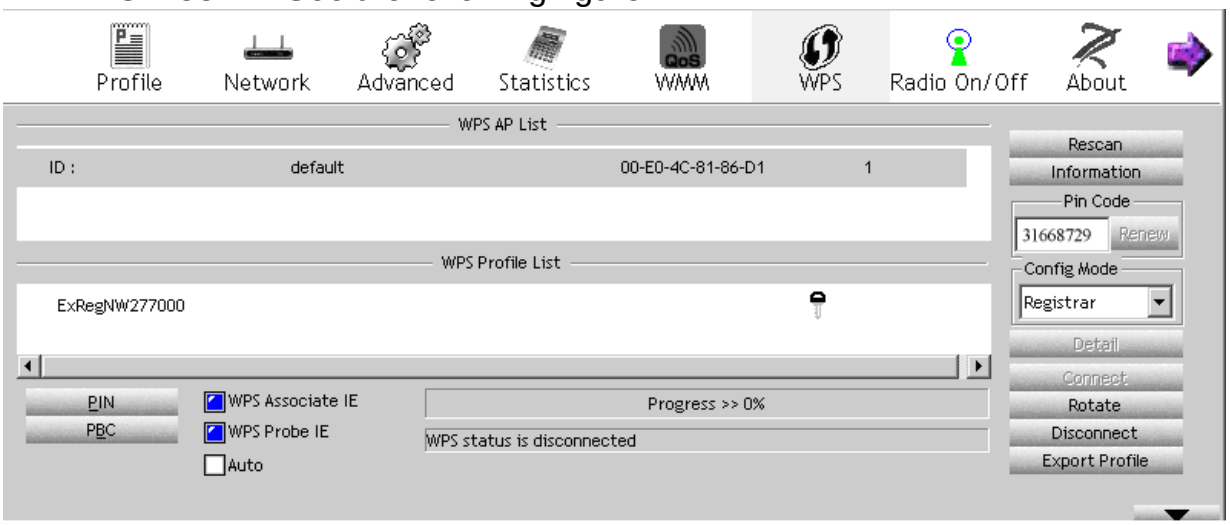


- **Registrar Mode**

Step1 View the AP PIN on the **Wi-Fi Protected Setup** page, for example, 31668729.

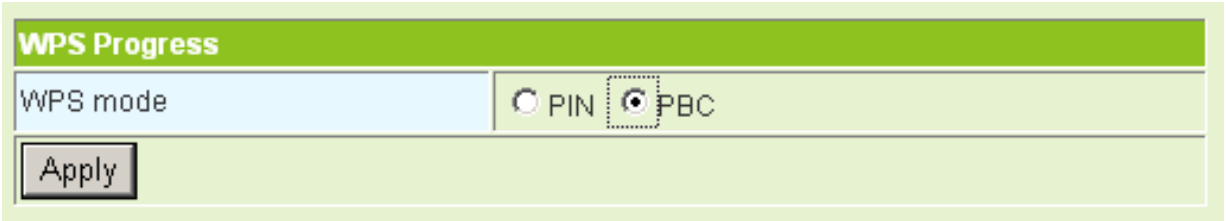


Step2 Select **Registrar** mode on the wireless client and enter the PIN code of the GR-534W. See the following figure:



- **PBC Mode**

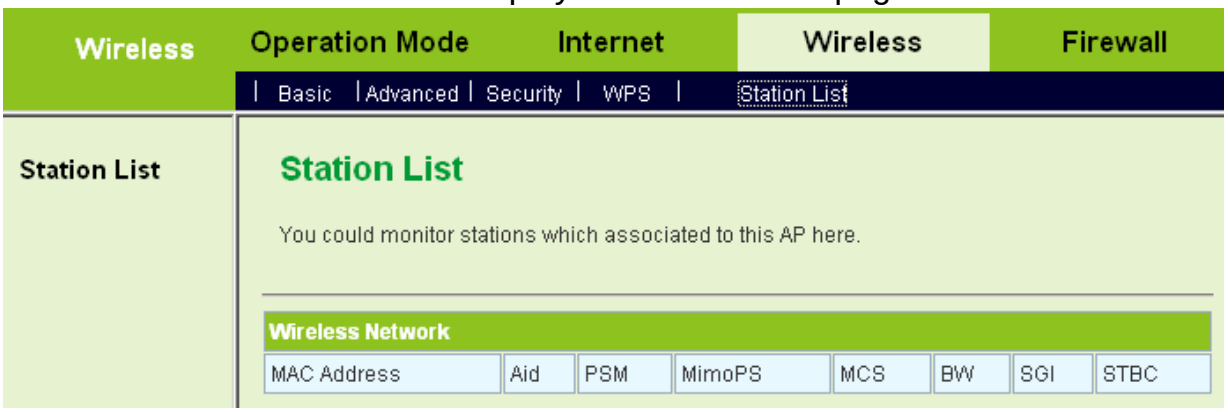
Step1 On the **Wi-Fi Protected Setup** page, select the **PBC** mode, and then click the **Apply** button. Or press the **WPS** button on the rear panel.



Step2 Enable the PBC function on the wireless client. In that case, GR-534W and wireless client will automatically establish connection.

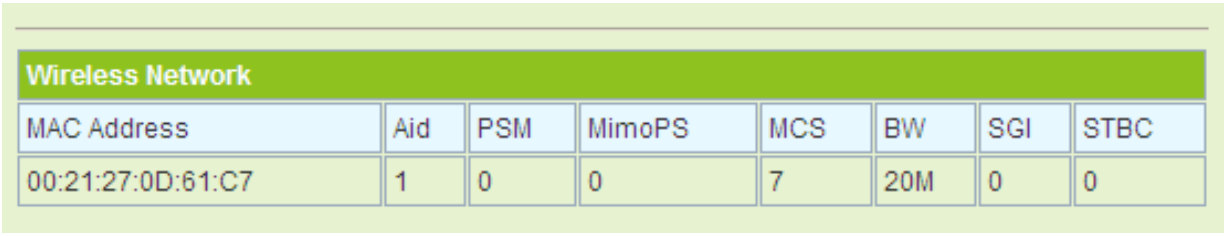
5.4.5 Station List

Click **Wireless** > **Station List** to display the **Station List** page.



On this page, you can view the wireless networks that connect to the GR-534W.

If there is any wireless network connects to GR-534W, refresh this page and the connection information of the wireless network is displayed. See the following figure:



Wireless Network

MAC Address	Aid	PSM	MimoPS	MCS	BW	SGI	STBC
00:21:27:0D:61:C7	1	0	0	7	20M	0	0

5.4.6 Wireless WDS Setting

The WDS modes of the GR-534W include **Repeater** mode, **Bridge** mode, and **Lazy** mode.

Note:

For better compatibility, please try to adopt the products with the same model to connect to the GR-534W.

- **WDS Repeater Mode**

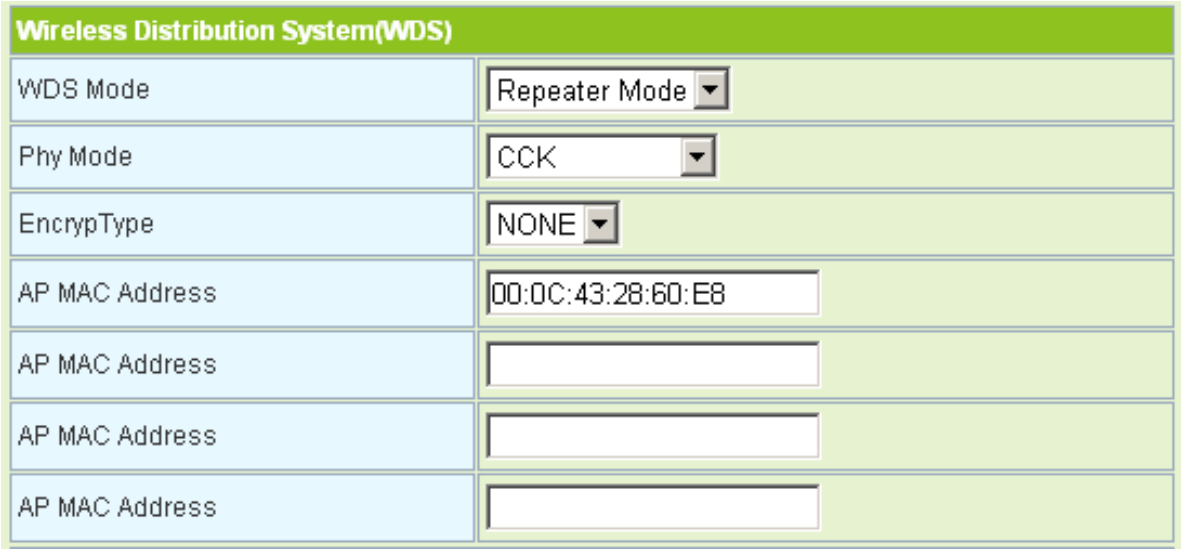
In the Repeater mode, you can use the GR-534W to connect to the primary router, for extending the wireless coverage.

Step1 Click **Wireless** > **Basic** to display the **Basic Wireless Settings** page.

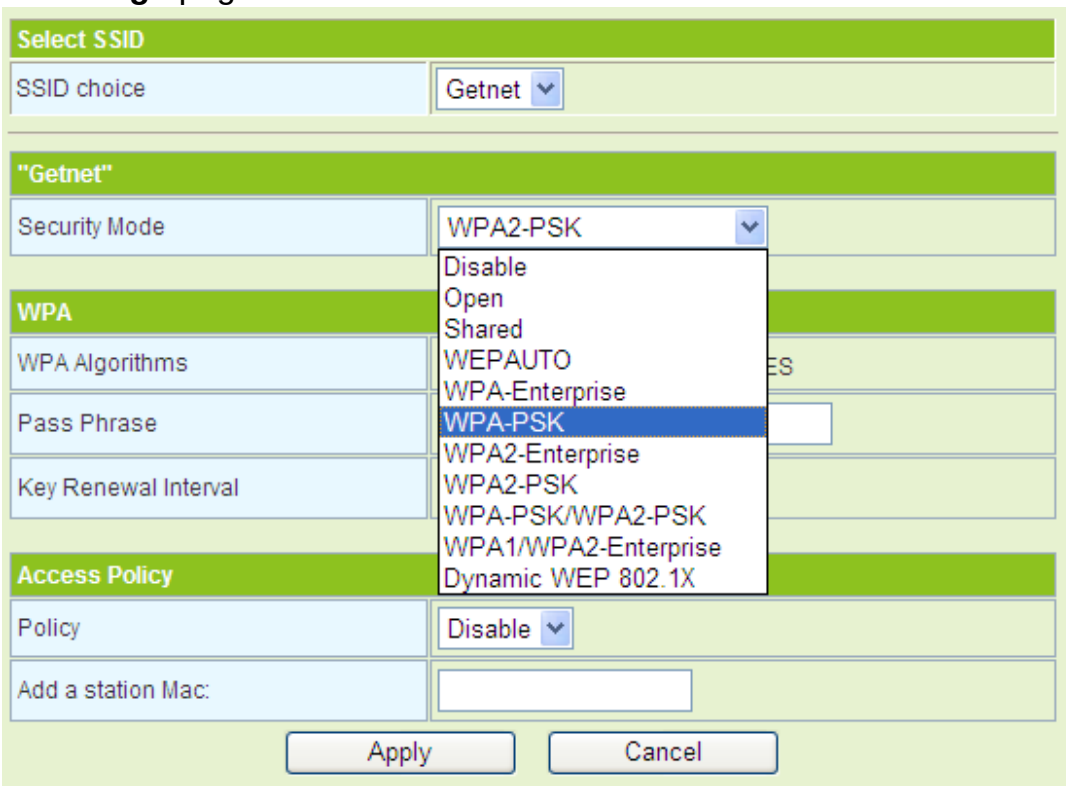
Wireless Network	
Radio On/Off	RADIO OFF
Network Mode	11b/g/n mixed mode
Network Name(SSID)	Getnet
Multiple SSID1	
Multiple SSID2	
Multiple SSID3	
Multiple SSID4	
Multiple SSID5	
Multiple SSID6	
Multiple SSID7	
Broadcast Network Name (SSID)	Enable Disable
AP Isolation	Enable Disable
MBSSID AP Isolation	Enable Disable
BSSID	00:0C:43:30:52:F0
Frequency (Channel)	2462MHz (Channel 11)

Step2 On this page, set the AP channel to accord with the peer AP (An AP that wants to connect to the GR-534W by WDS).

Step3 On the **Basic Wireless Settings** page, set the WDS mode to be **Repeater Mode**, set the physical mode and the encryption type of AP to accord with that of peer AP, and then enter the MAC address of the peer AP. After finishing the settings, click the **Apply** button to apply the settings. The GR-534W will work in the **Repeater Mode**.



Step4 Click **Wireless** > **Security** to display the **Wireless Security/Encryption Settings** page.



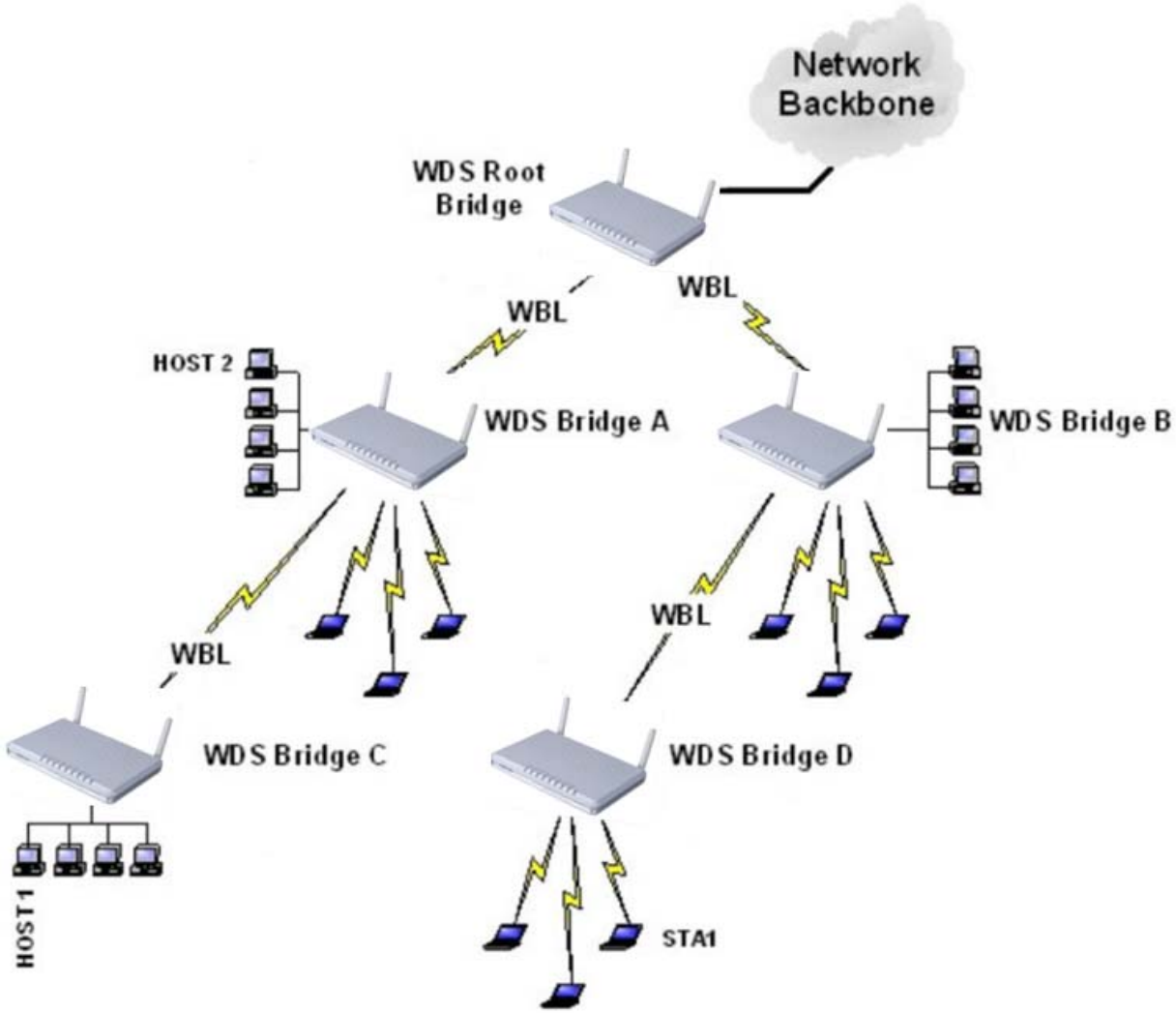
Step5 On this page, set the security mode of the GR-534W to accord with the peer AP.

Note:
In the WDS mode, do not set any mixed modes, for example, WPA-PSK/WPA2-PSK.

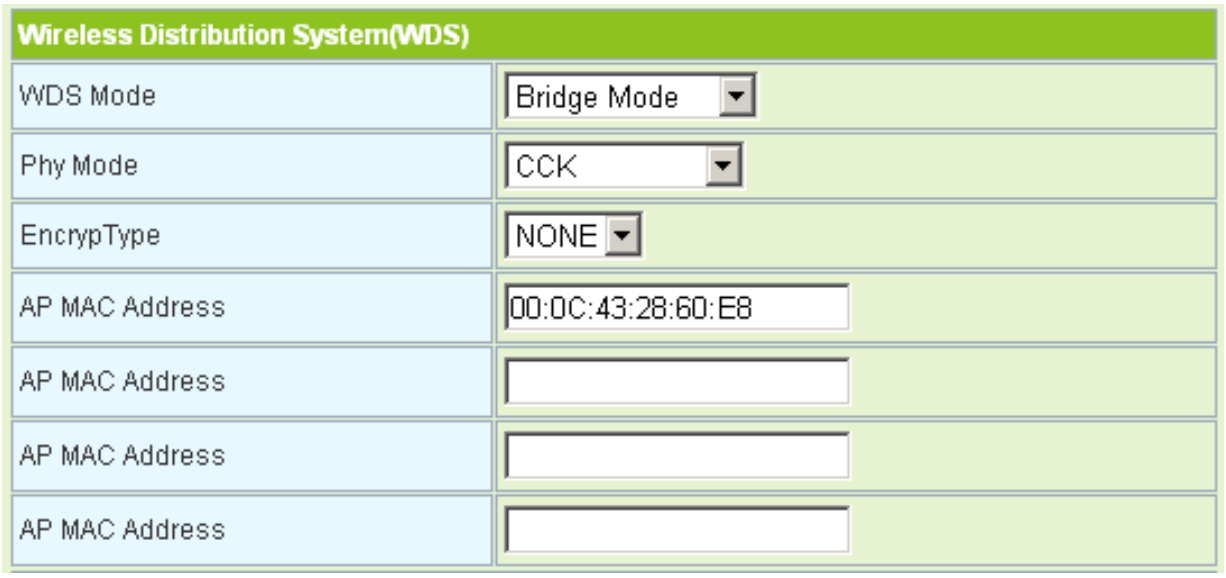
- **WDS Bridge Mode**

In the Bridge mode, you can use the GR-534W to connect to your router, for

extending wireless coverage. Meanwhile, it can also decrease the working load of the AP that accesses the Internet. In that case, the wireless card does not directly communicate with the wireless device that accesses the Internet, but it directly communicates with the GR-534W.

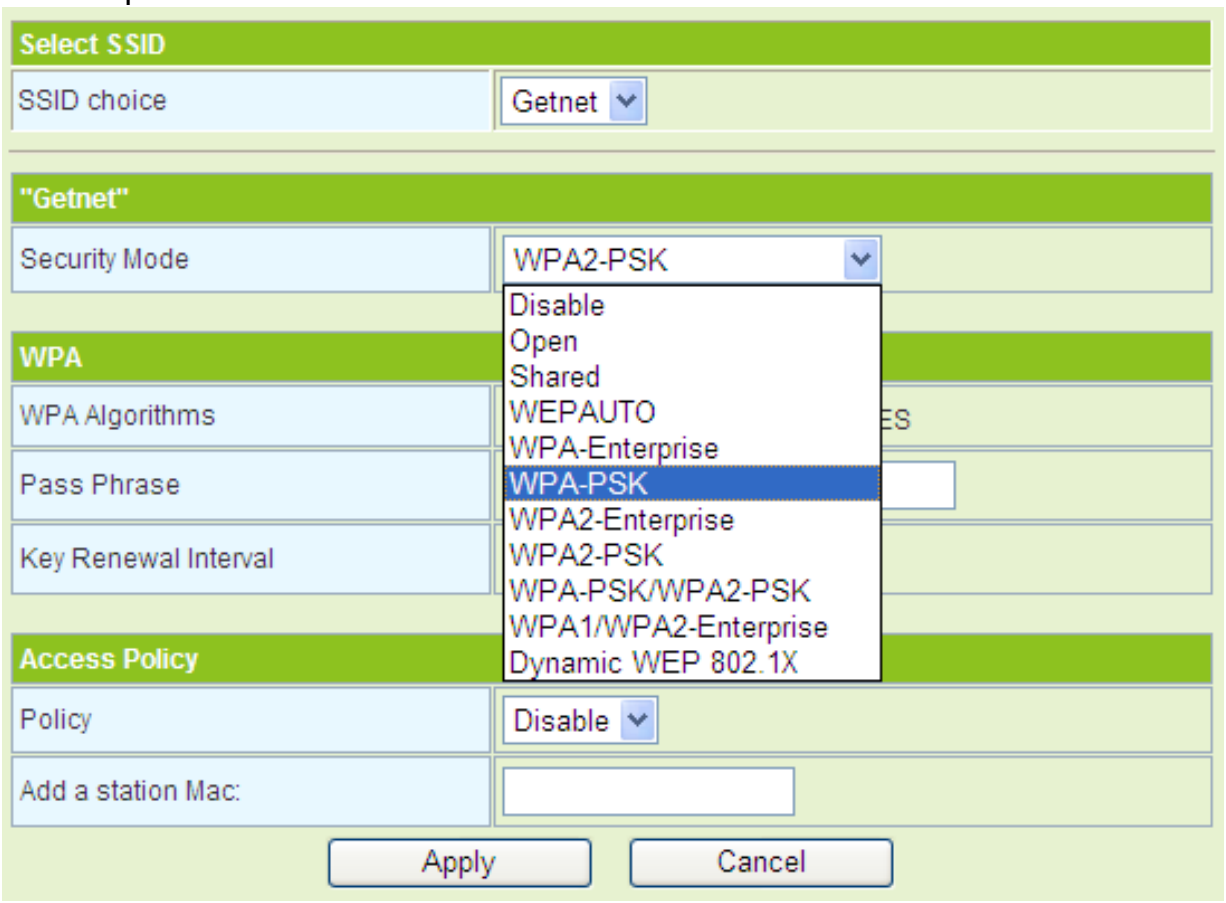


Step1 On the **Basic Wireless Settings** page, select the WDS mode to be **Bridge Mode**.



Step2 On the **Basic Wireless Settings** page, set the physical mode and the encryption type of AP to accord with that of peer AP, and then enter the MAC address of the peer AP. After finishing the settings, click the **Apply** button to apply the settings. The GR-534W will work in the **Bridge** mode.

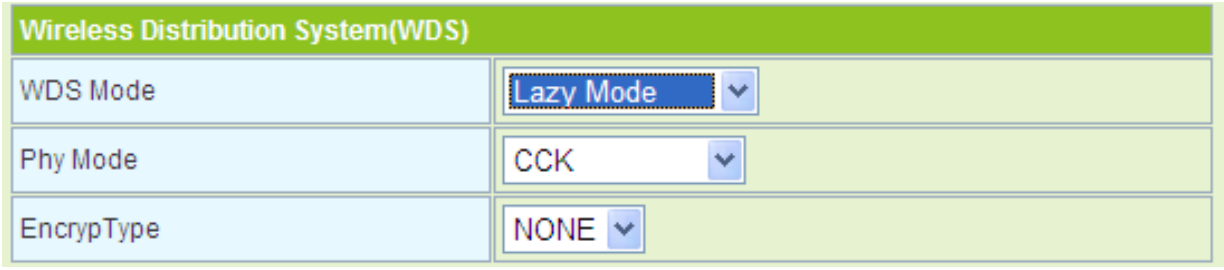
Step3 On this page, set the security mode of the GR-534W to accord with the peer AP.



Note:
In the WDS mode, do not set any mixed modes, for example, WPA-PSK/WPA2-PSK.

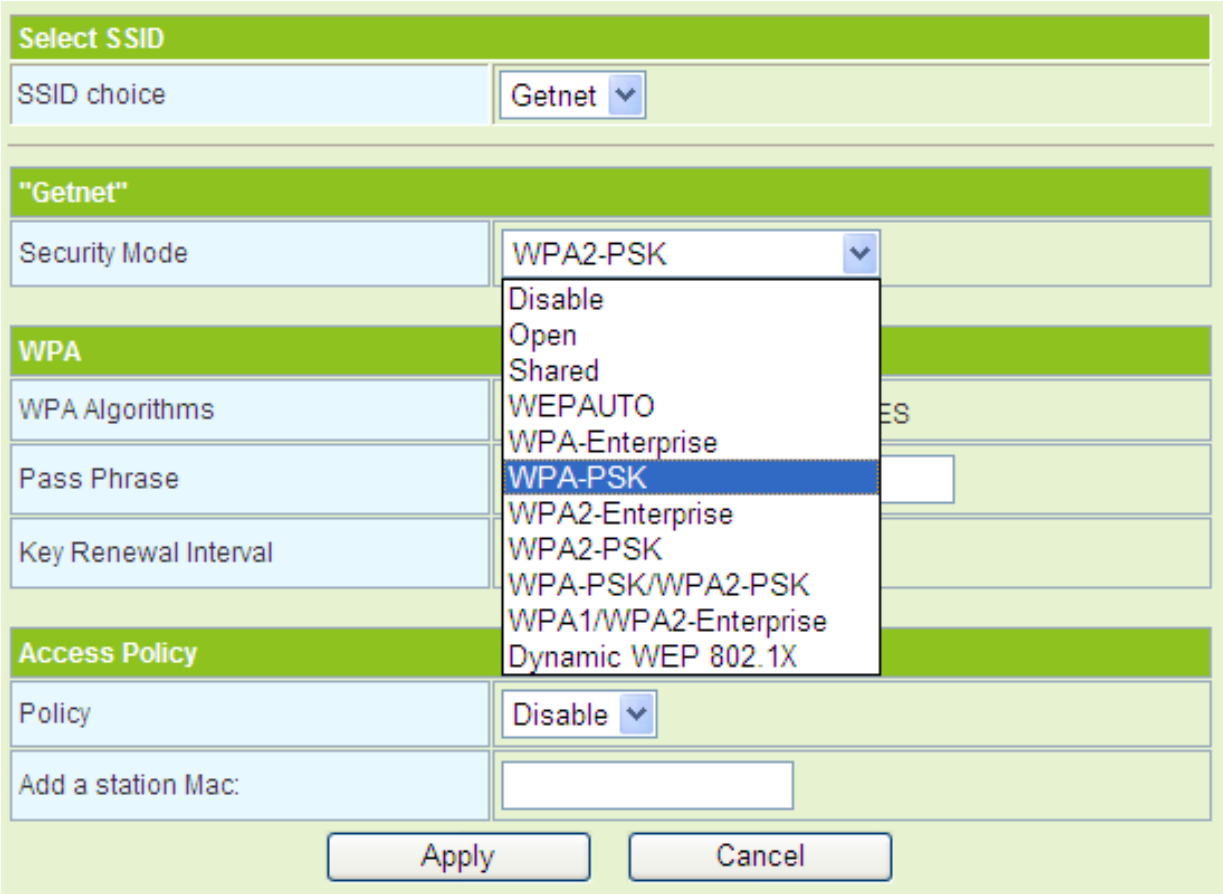
● WDS Lazy Mode

In the Lazy mode, the GR-534W automatically connects to the WDS devices that use the same SSID, channel, encryption mode, and physical mode. You do not need to manually enter other MAC addresses of peer APs.



Step1 On the **Basic Wireless Settings** page, set the WDS mode to be **Lazy Mode**, set the physical mode and the encryption type of AP to accord with that of peer AP, and then enter the MAC address of peer AP. After finishing the settings, click the **Apply** button to apply the settings. The GR-534W will work in the **Lazy** mode.

Step2 On this page, set the security mode of the GR-534W to accord with the peer AP.

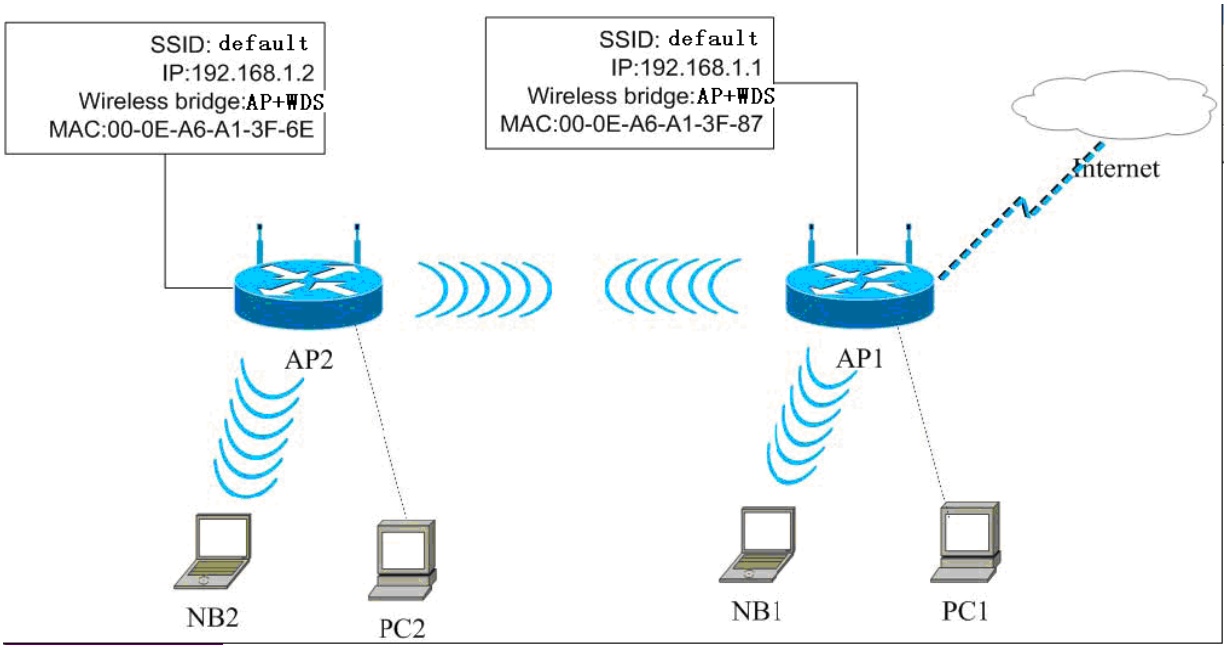


Note:
*In the WDS mode, do not set any mixed modes, for example, WPA-PSK/WPA2-PSK. Do not set all the WDS APs to be **Lazy** mode, please ensure that at least one WDS AP acts as **Root Bridge**, and enter the MAC addresses in the WDS table on the **Basic Wireless Settings** page.*

- **Establishing a Network by WDS Bridge Mode**

The following description shows how to use the WDS bridge modes of two devices to establish a network. You may add more devices to establish a network.

Suppose that there are two APs. One is AP1, the other is AP2. Enable the DHCP server of AP1 and AP2.



The following table shows the settings of AP1 and AP2.

	Access Point 1	Access Point 2
SSID	default	default
LAN IP Address	192.168.1.1	192.168.1.2
Encryption	NONE	NONE
Wireless Bridge	WDS Mode	WDS Mode
MAC Address	00:0E:A6:A1:3F:87	00:0E:A6:A1:3F:6E
Allow Anonymous	No	No
DHCP Server	Yes	No

- **Set AP1**

Step1 Enter http://192.168.1.1 in the IE address bar, and then enter the user name (by default, **admin**) and the password (by default, **admin**) to log in to the Web page.

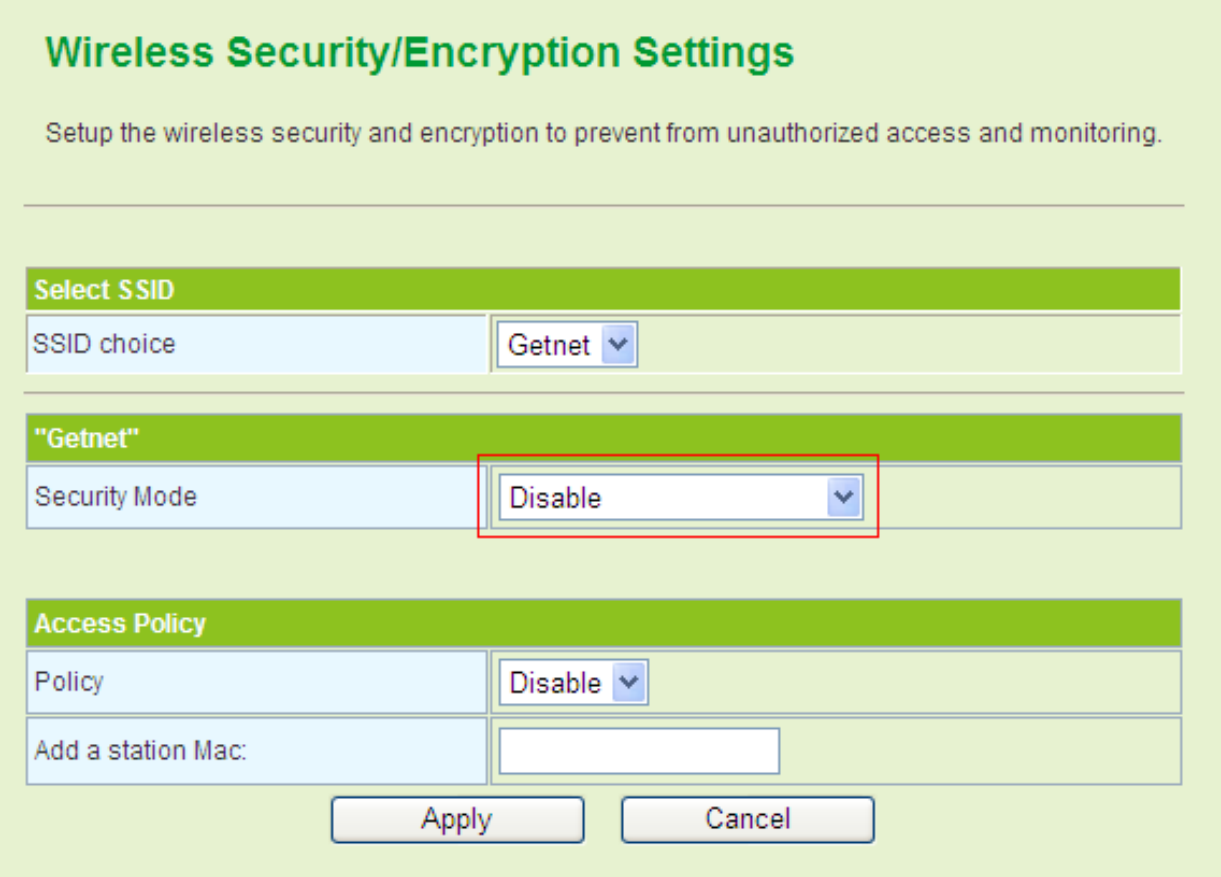
Step2 On the **Basic Wireless Settings** page, set the WDS mode to be **Bridge Mode**, and enter the MAC address of the AP2.

Wireless Distribution System(WDS)	
WDS Mode	Bridge Mode
Phy Mode	CCK
EncrypType	NONE
AP MAC Address	00:0E:A6:A1:3F:6E
AP MAC Address	
AP MAC Address	
AP MAC Address	

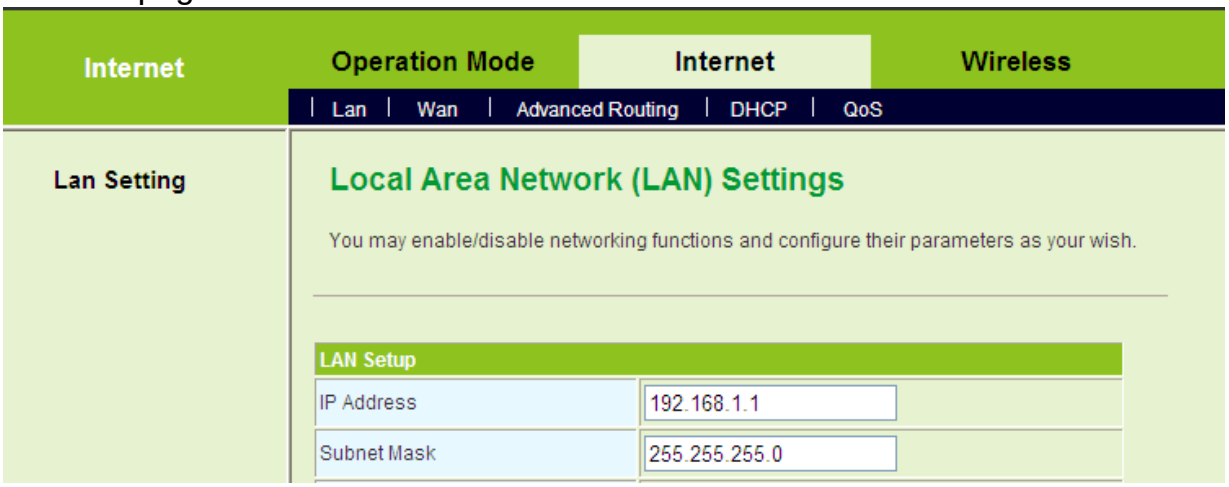
Step3 Set the SSID of AP1. AP1 and AP2 must use the same SSID and channel.

Wireless Network	
Radio On/Off	RADIO OFF
Network Mode	11b/g/n mixed mode
Network Name(SSID)	Getnet
Multiple SSID1	
Multiple SSID2	
Multiple SSID3	
Multiple SSID4	
Multiple SSID5	
Multiple SSID6	
Multiple SSID7	
Broadcast Network Name (SSID)	Enable Disable
AP Isolation	Enable Disable
MBSSID AP Isolation	Enable Disable
BSSID	00:0C:43:30:52:F0
Frequency (Channel)	2462MHz (Channel 11)

Step4 On the **Wireless Security /Encryption Settings** page, disable the security mode.



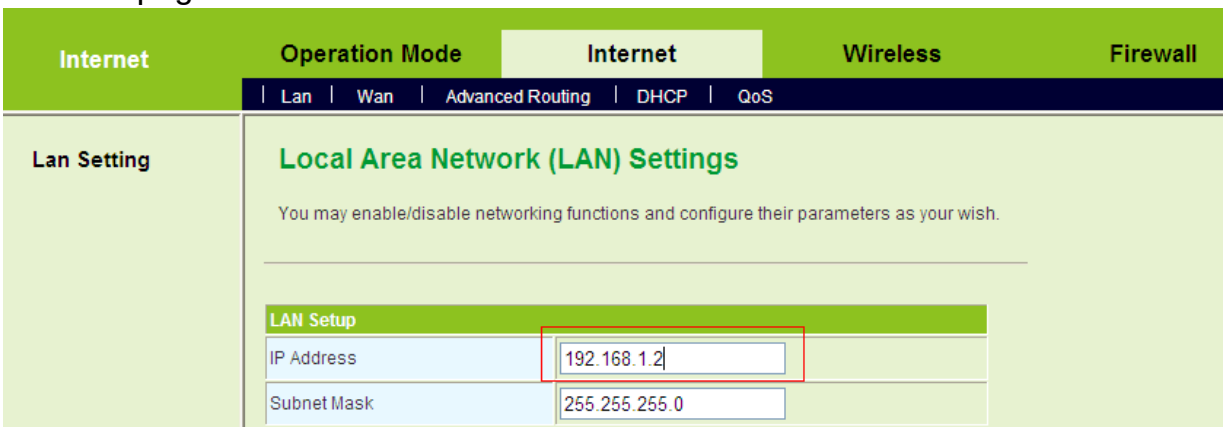
Step5 Click **Internet** > **LAN** to display the **Local Area Network (LAN) Settings** page. Set the IP address of AP1 to be 192.168.1.1.



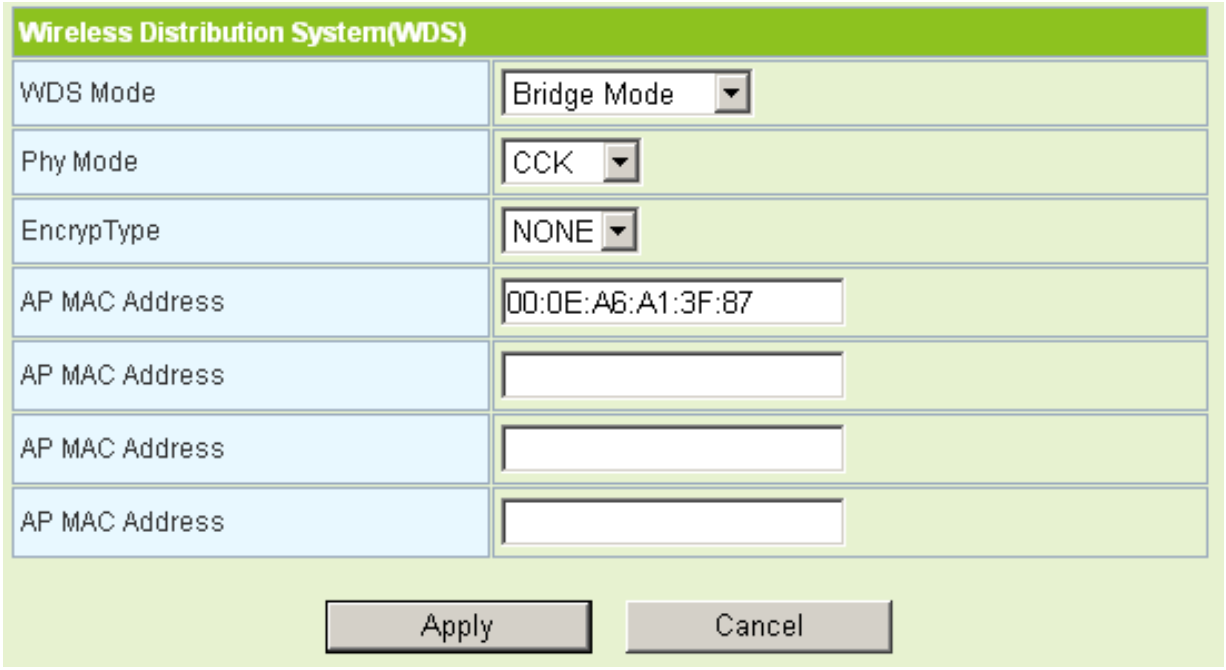
Step6 Click **Administration** > **Statistics** to display the **Statistic** page. On this page, you can view the information of WDS AP, such as the MAC address, and the number of transmitted frames.

- **Set AP2**

Step1 Click **Internet** > **LAN** to display the **Local Area Network (LAN) Settings** page. Set the IP address of AP2 to be **192.168.1.2**.



Step2 On the **Basic Wireless Settings** page, set the WDS mode to be **Bridge Mode** and enter the MAC address of the AP1.



5.5 Wireless Settings (WISP Mode)

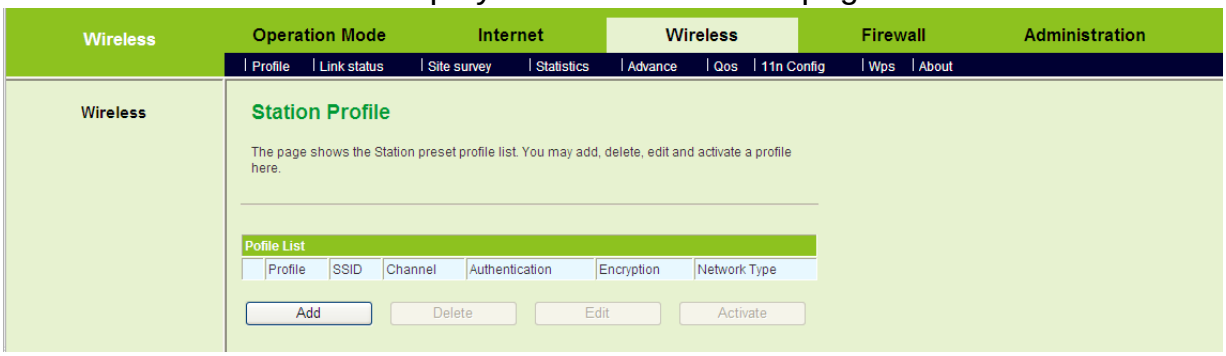
In the WISP mode, the following figure shows the navigation menu of the **Wireless** settings:

In the WISP mode, the sub-menus of the **Wireless Settings** include **Profile**, **Link Status**, **Site Survey**, **Statistics**, **Advance**, **QoS**, **11n Configuration**, **WPS** and

About.

5.5.1 Profile

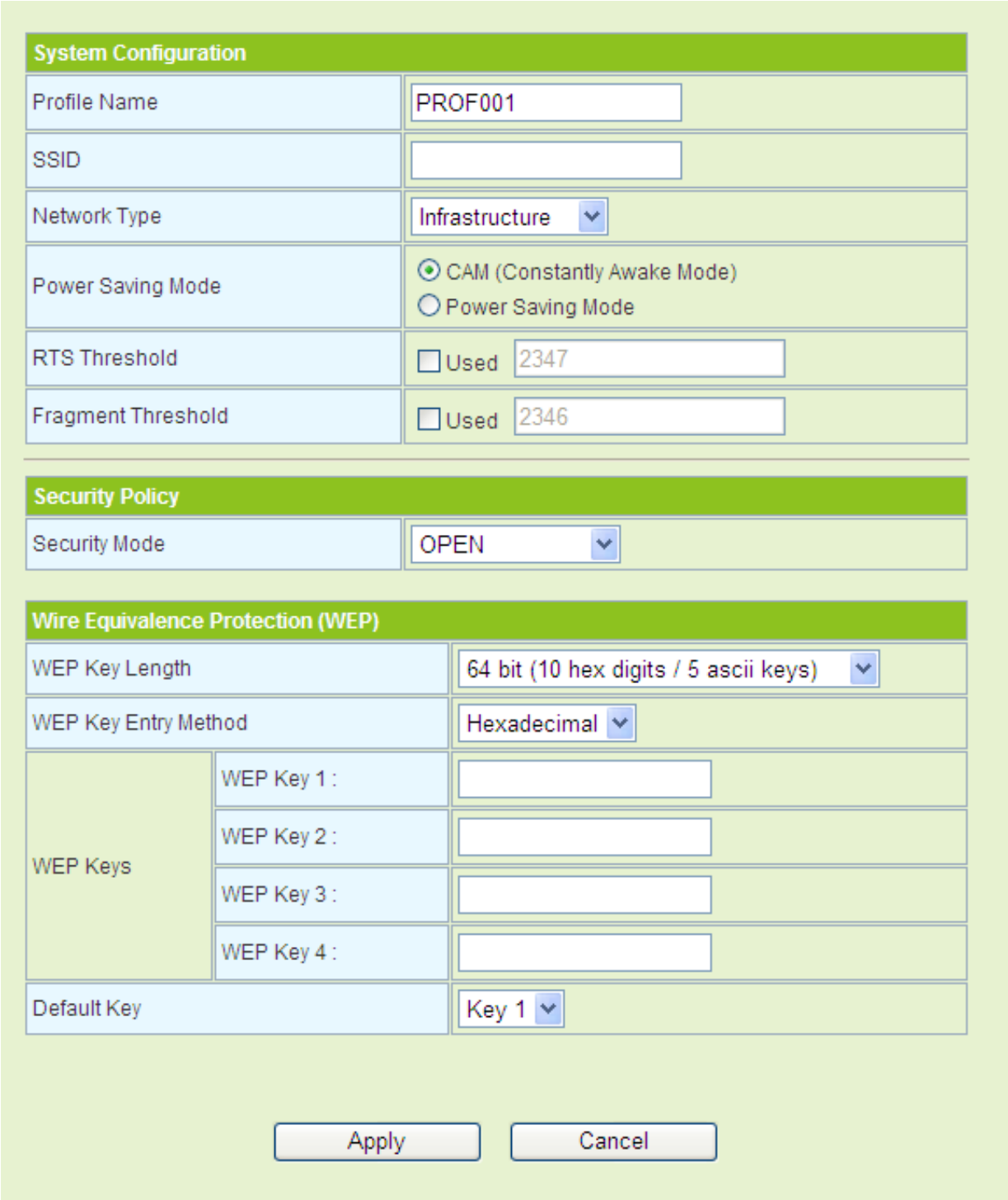
Click **Wireless** > **Profile** to display the **Station Profile** page.



On this page, you can add a new profile, delete, edit, and active a preset profile in the profile list.

- **Add a Profile**

Click the **Add** button on the **Station Profile** page, and the **System Configuration** page appears.



- **System Configuration**

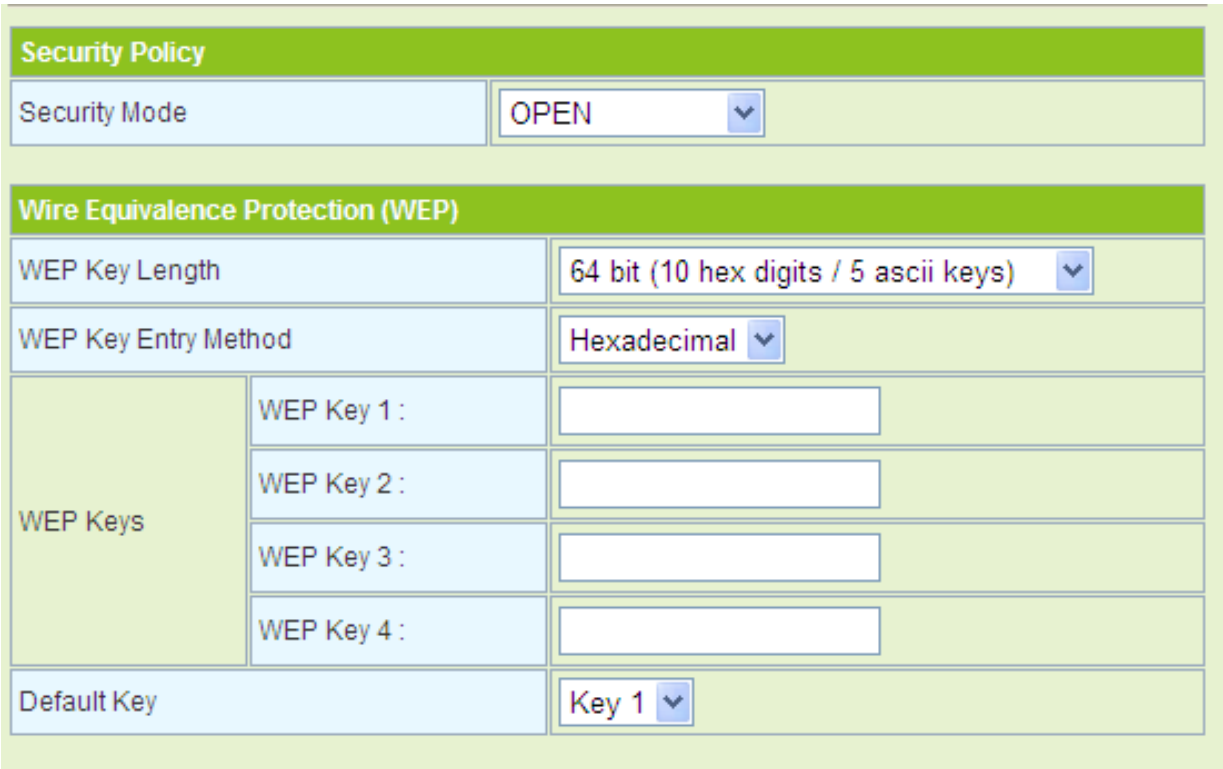
The parameters of **System Configuration** page are described as follows:

Field	Description
Profile Name	Set a profile name.
SSID	Enter the SSID of AP that you want to connect.
Network Type	● Infrastructure: An application mode for integrating the cable LAN and the wireless

Field	Description
	LAN structures. The devices need an AP to communicate each other. ● 802.11 Ad Hoc :A point to point connection mode without AP.
Power Saving Mode	● CAM (Constantly Awake Mode) is not a power saving mode. CAM is the default setting. ● Power Saving Mode: For saving power.
Channel	When selecting the network type to be **802.11 Ad hoc**, you may select a proper channel in the drop down list.
11B Preamble Type	When selecting the network type to be **802.11 Ad hoc**, you are allowed to set the 11B preamble type. You may select **Auto** or **Long**.
RTS Threshold	Whether to set the RTS Threshold. The default value is 2347.
Fragment Threshold	Whether to set the fragment threshold. The default value is 2346.

- **Security Policy (OPEN and SHARED Mode)**

When selecting the security mode to be **OPEN** or **SHARED**, the WEP table appears on the **System Configuration** page.

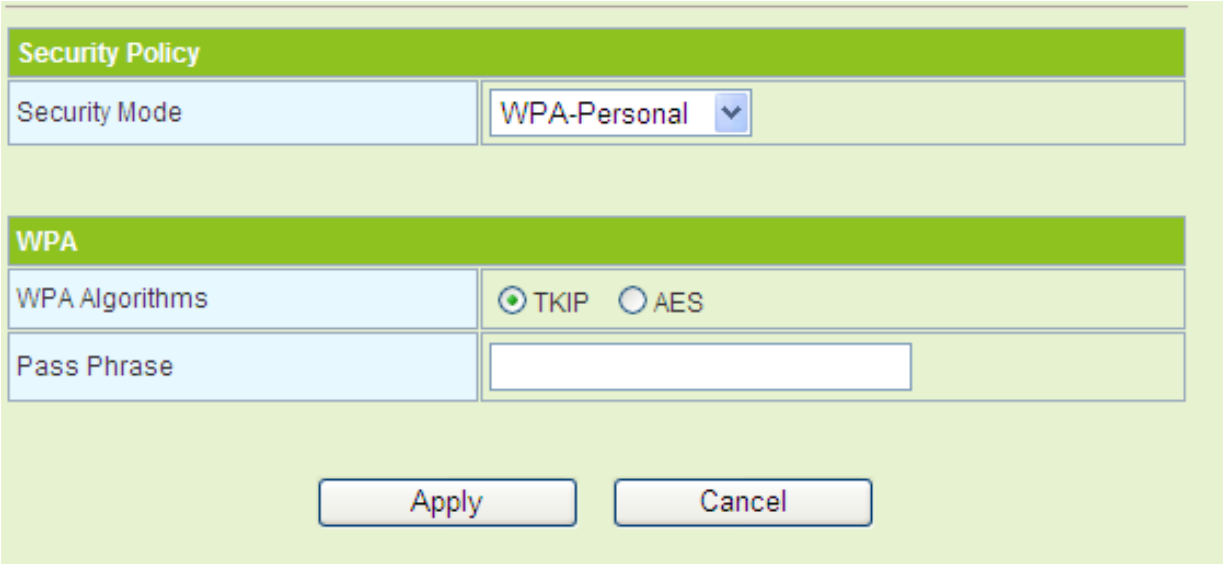


The parameters of **WEP** (Wire Equivalence Protection) are described as follows:

Field	Description
WEP Key Length	When selecting 64 bit (10 hex digits/5 ascii keys), it allows you to set 10-hex-digit or 5-ASCII-character key. When selecting 128 bit (26 hex digits/13 ascii keys), it allows you to set 26-hex-digit or 13 - ASCII-character key.
WEP Key Entry Method	You may select **Hexadecimal** or **ASCII text**.
WEP Keys (WEP key 1~4)	For setting WEP keys.
Default Key	Set a default key.

- **Security Policy (WPA-Personal or WPA2-Personal Mode)**

When selecting the security mode to be **WPA-Personal** or **WPA2-Personal**, the WPA table appears on the **System Configuration** page.



The parameters of **WPA** are described as follows:

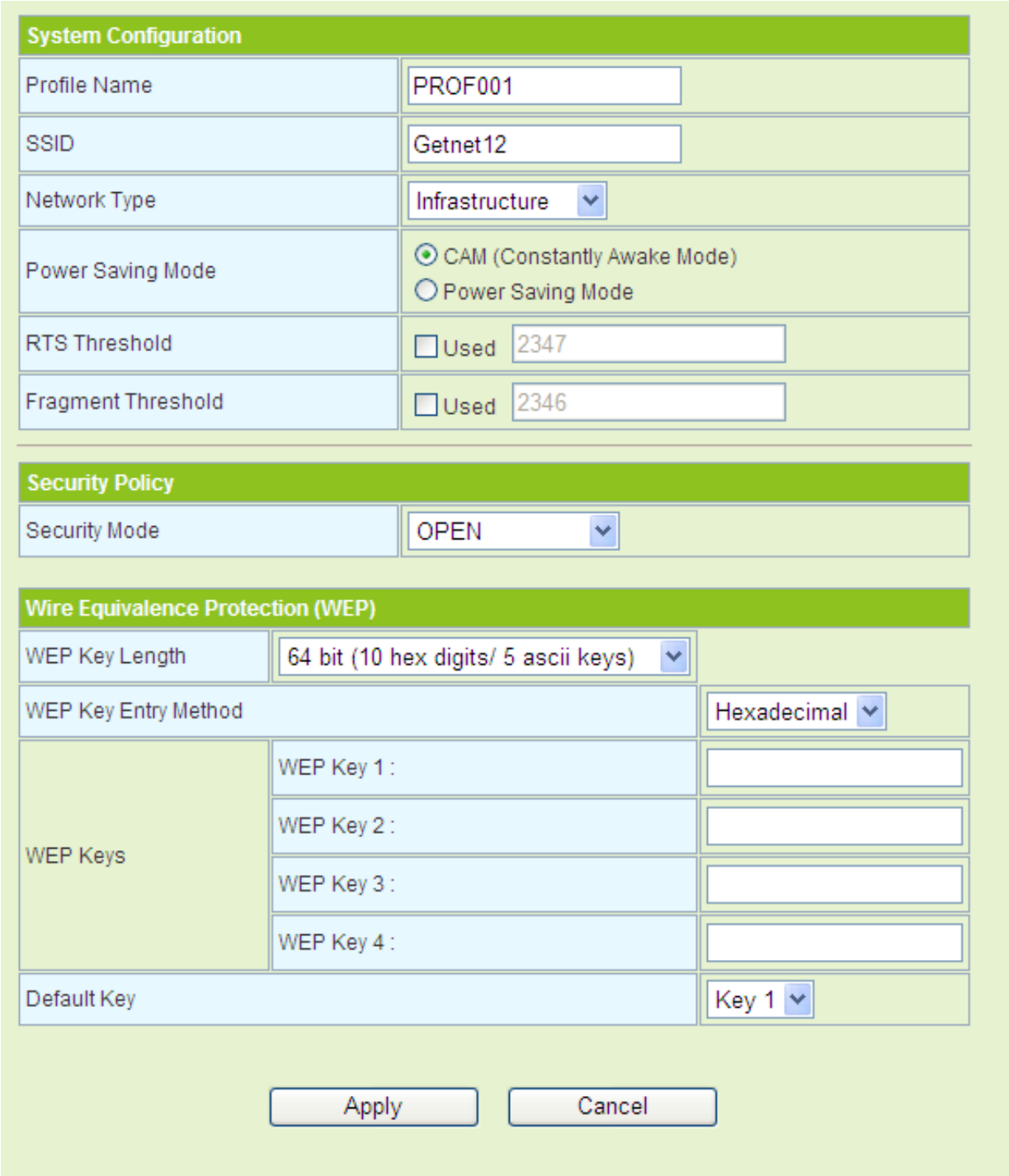
Field	Description
WPA Algorithms	You may select **TKIP** or **AES**.
Pass Phrase	Set the encryption key.

- **Delete a Profile**

If you want to delete a preset profile (e.g. PR0F001), choose this profile and then click the **Delete** button. See the following figure:

- **Edit a Profile**

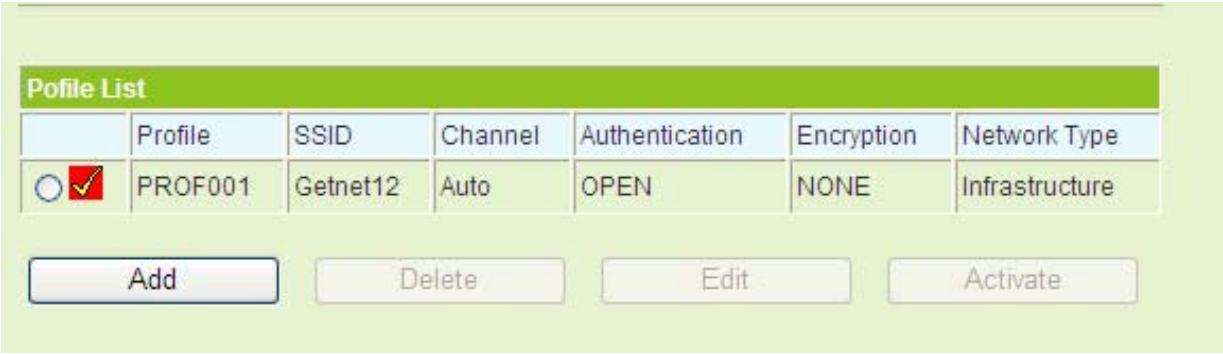
If you want to delete a preset profile (e.g. PR0F001), choose this profile and then click the **Edit** button. See the following figure:



On this page, you can modify the parameters of PROF001, such as SSID, network type and security mode.

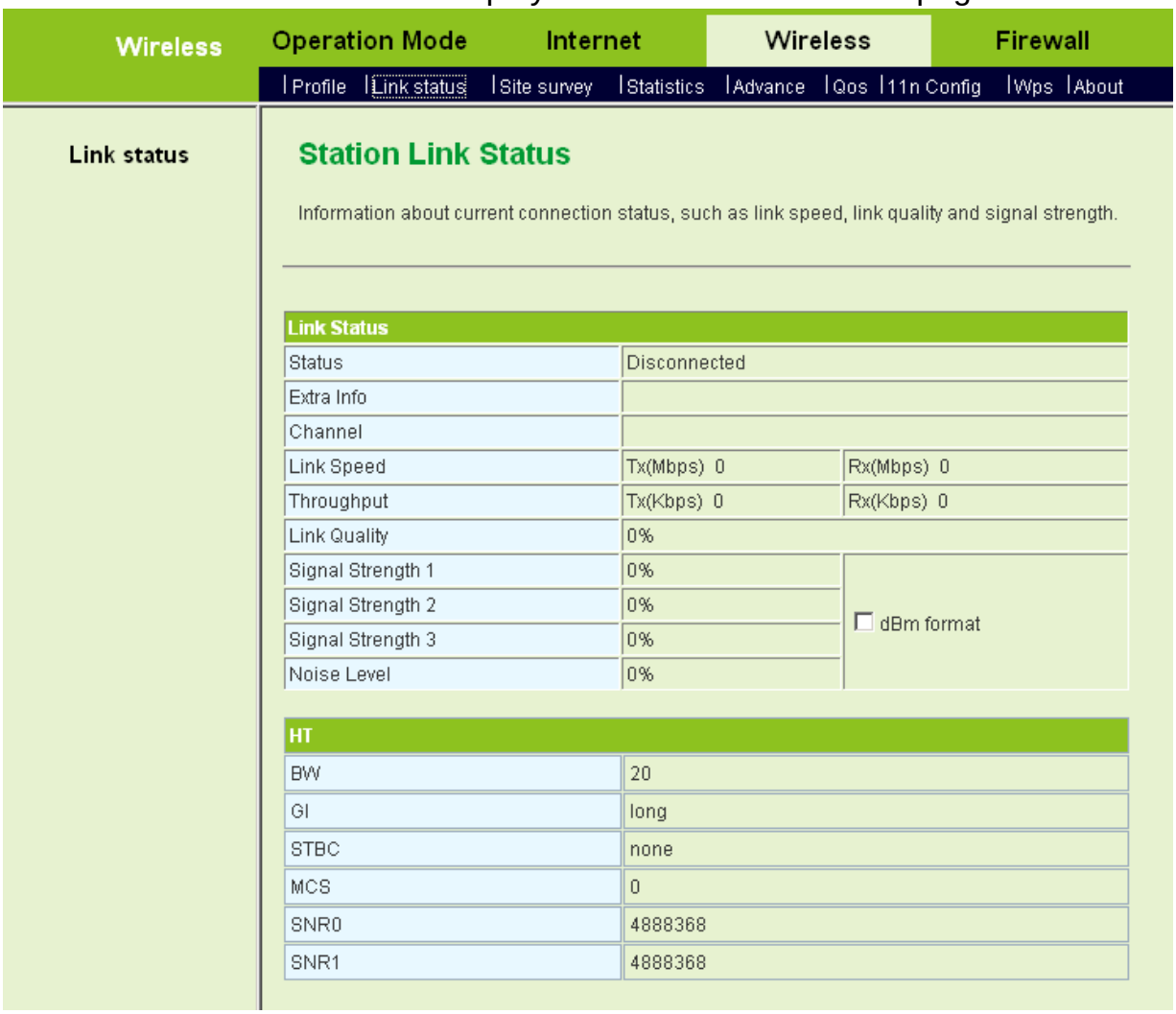
- **Activate a Profile**

If you want to delete a preset profile (e.g. PR0F001), choose this profile and then click the **Activate** button. The activated file will be marked with an icon .See the following figure:



5.5.2 Link Status

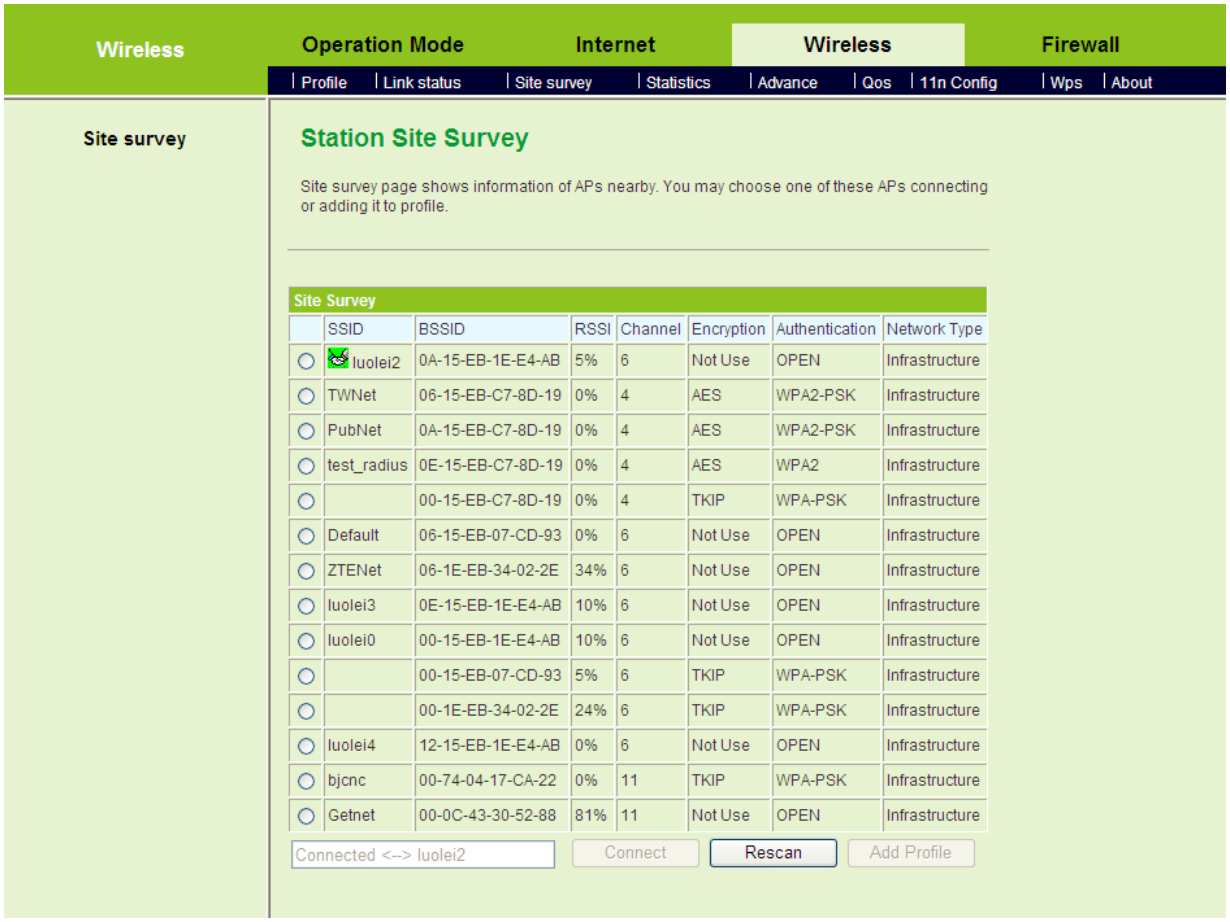
Click **Wireless** > **Link Status** to display the **Station Link Status** page.



On this page, you can view the connection status of AP in the STA mode.

5.5.3 Site Survey

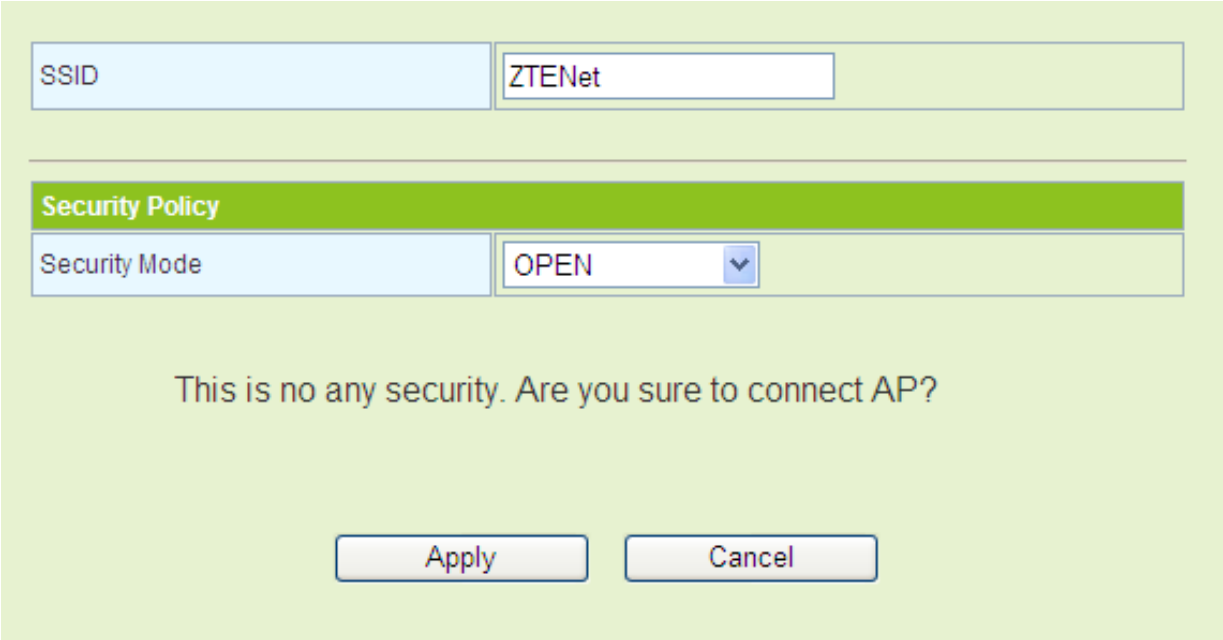
Click **Wireless** > **Site Survey** to display the **Station Site Survey** page.



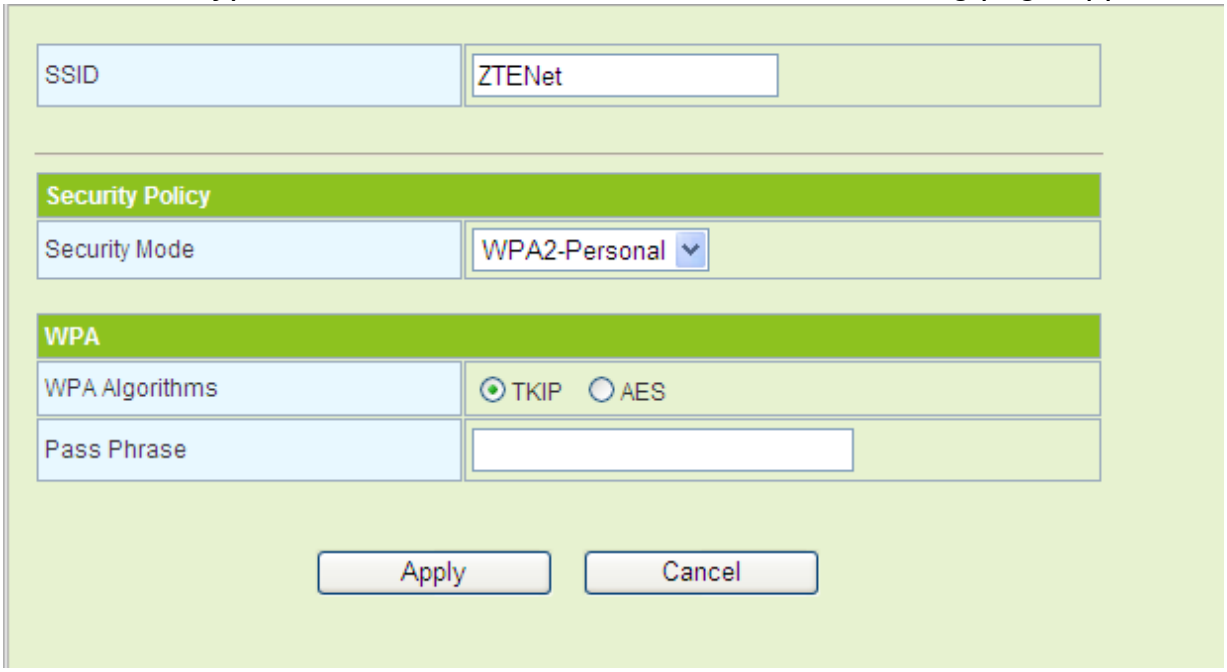
On this page, you can view the scanned APs, scan the nearby APs, connect an AP, or add the connection parameters of an AP to the profile list.

- **Connect an AP**

If you want to connect an AP, choose the AP's SSID, and then click the **Connect** button. If this AP is not encrypted, click the **Apply** button on the following page to establish connection.

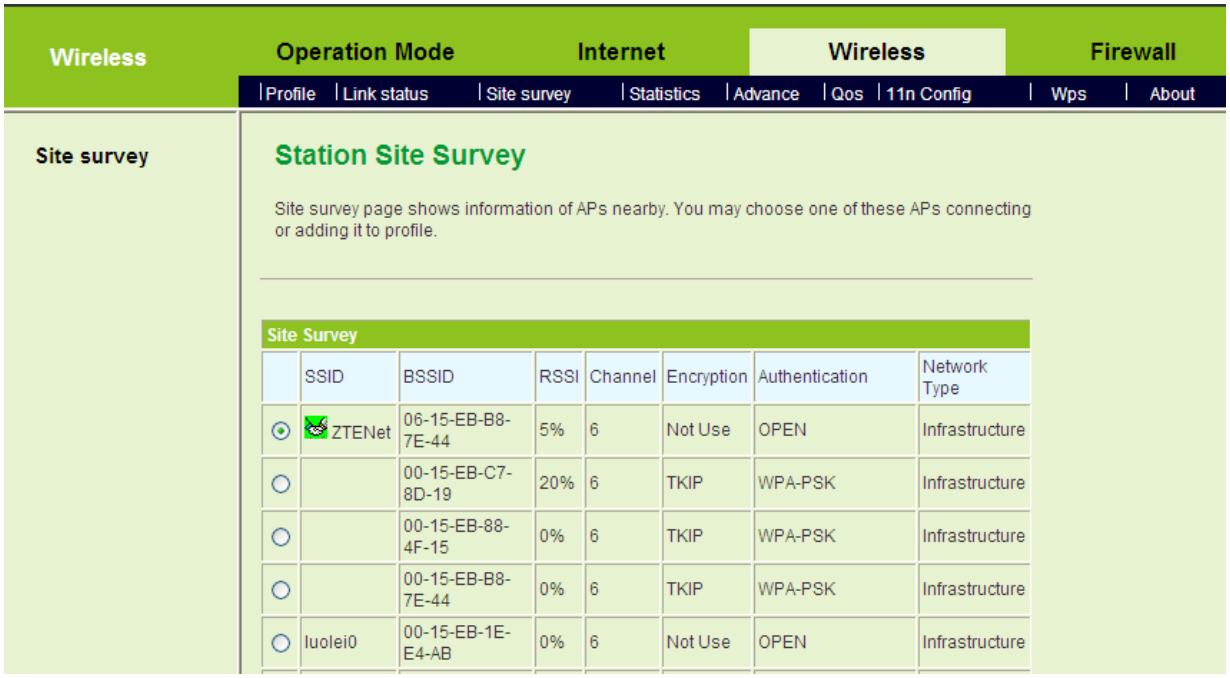


If this AP is encrypted, click the **Connect** button, and the following page appears.



On this page, you need to enter the password in the **Pass Phrase** field.

After clicking the **Apply** button, and if this encrypted AP is connected successfully, the SSID of this AP is marked with a green icon .



- **Scan APs**

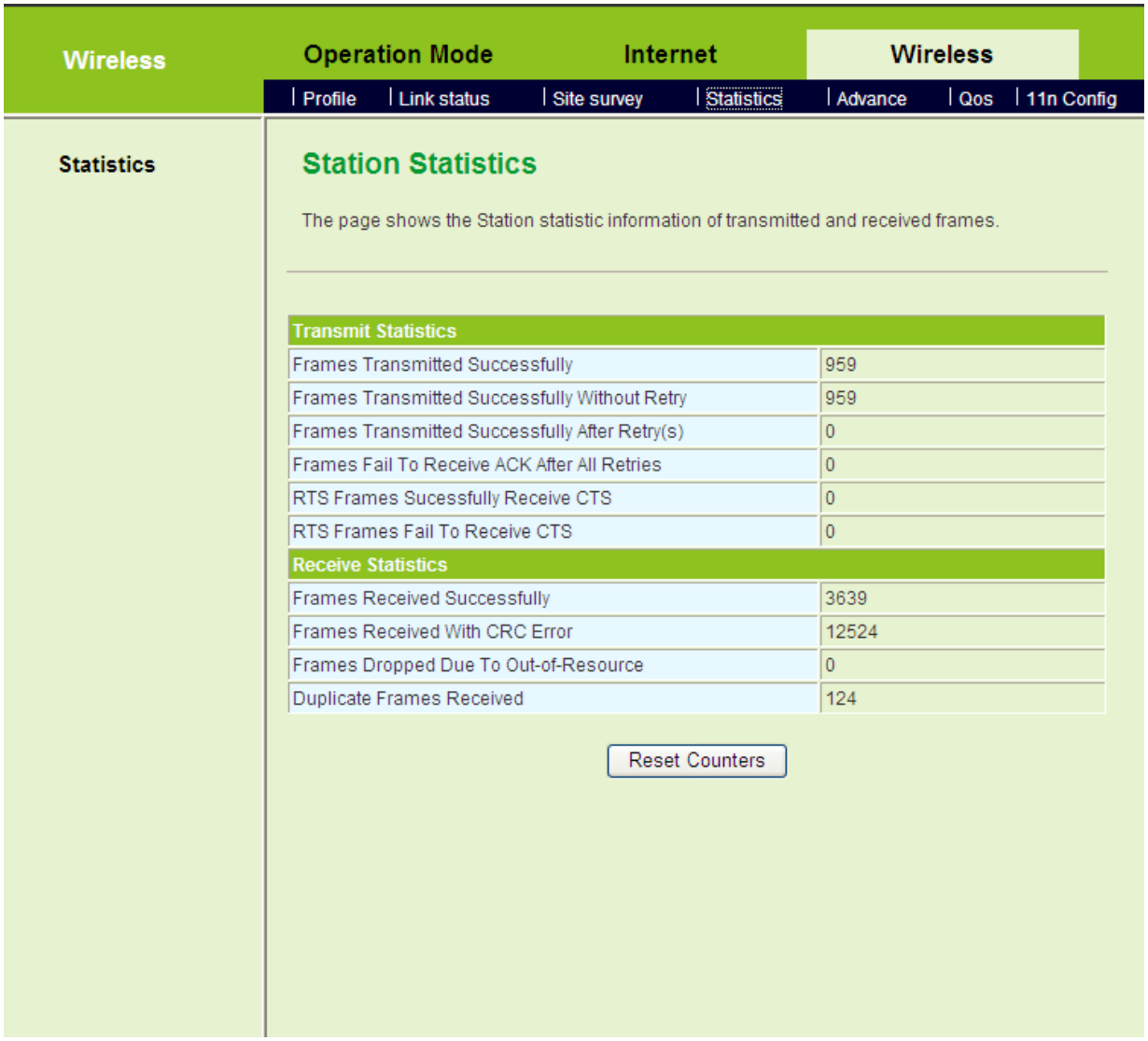
Click the **Rescan** button on the **Station Site Survey** page, and then you can rescan the nearby APs. If new APs are detected, **Site Survey** table will be refreshed.

- **Add a Profile**

On the **Station Site Survey** page, select an AP in the **Site Survey** table, and then click the **Add Profile** button to enter **System Configuration** page. On **System Configuration** page, click the **Apply** button to add this AP to the profile list.

5.5.4 Statistics

Click **Wireless** > **Statistics** to display the **Station Statistics** page.

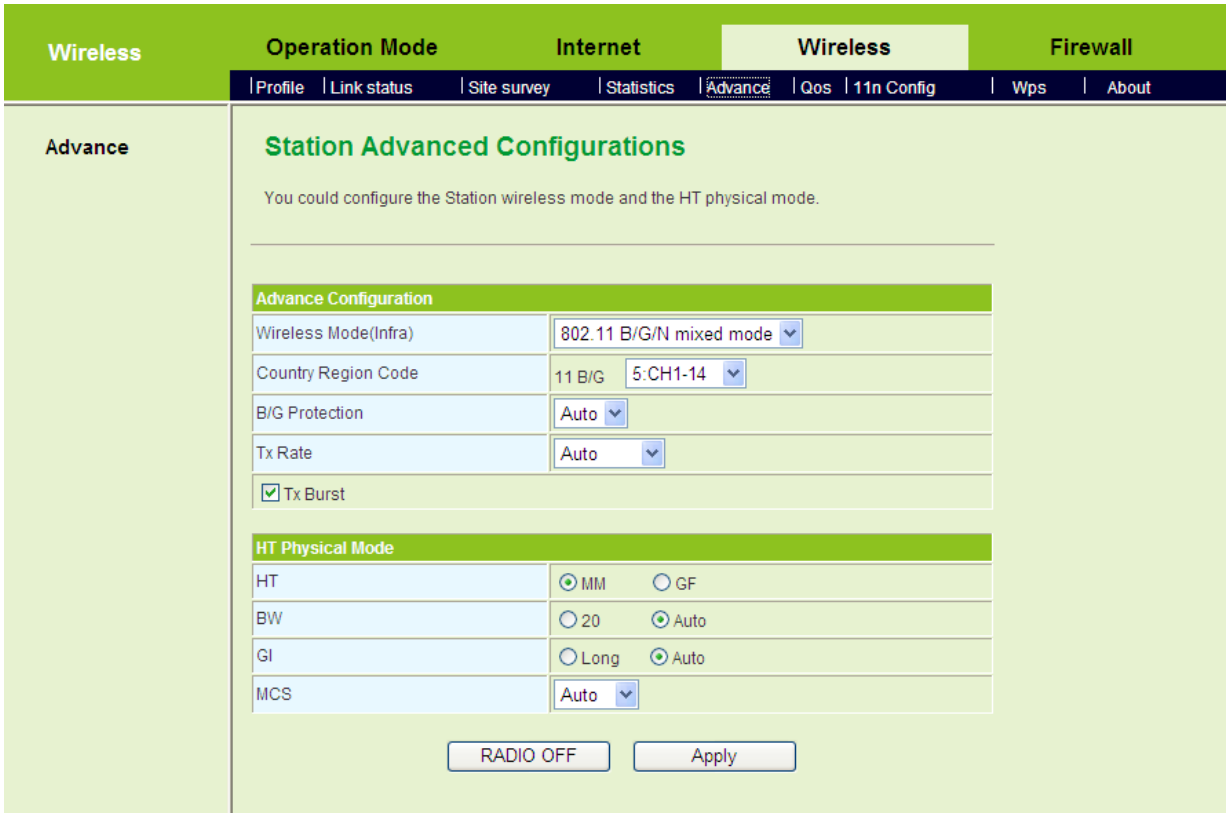


On this page, you can view the status of transmitted and received data.

Click the **Reset Counters** button, and then the data statistic information can be refreshed.

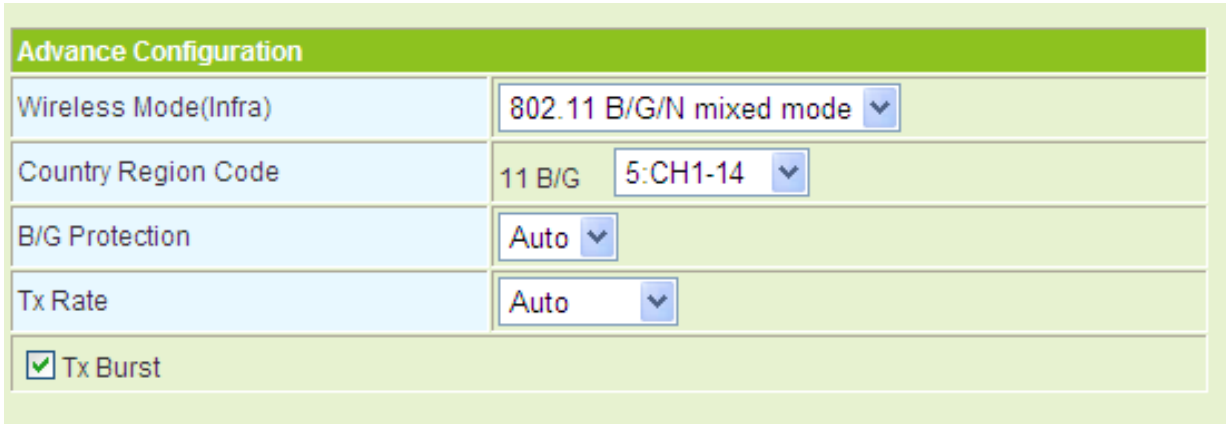
5.5.5 Advance

Click **Wireless** > **Advance** to display the **Station Advanced Configurations** page.



This page is used to enable the wireless function, configure the wireless advanced properties, and set the HT physical mode.

- **Advance Configuration**



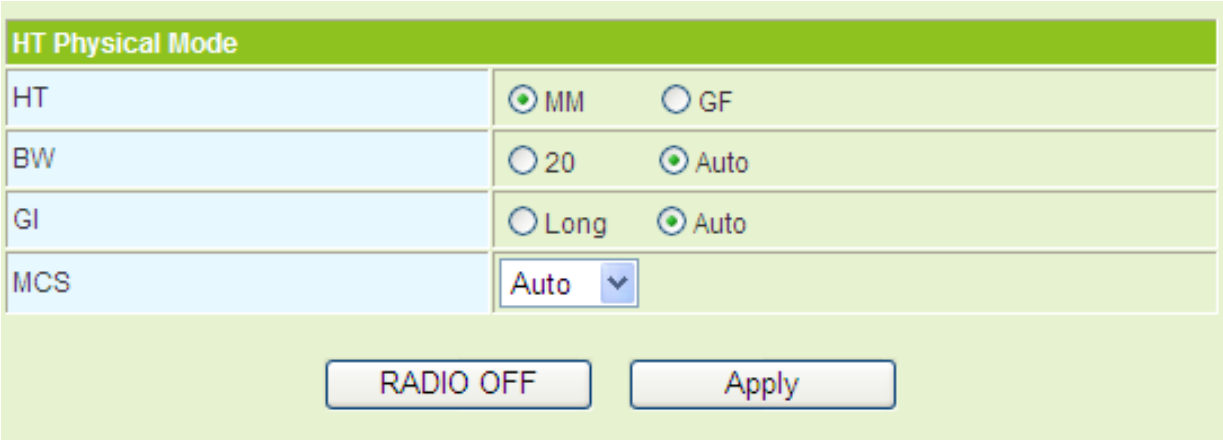
The parameters of **Advance Configuration** are described as follows:

Field	Description
Wireless Mode (Infra)	The wireless modes include: ● 802.11 B/G mixed mode ● 802.11 B Only ● 802.11 G Only ● 802.11 N Only

Field	Description
	● 802.11 GN mixed mode ● 802.11 B/G/N mixed mode The default wireless mode is 802.11 B/G/N mixed mode.
Country Region Code	Select the proper country region code. For example, America's (FCC) channel range is 1~11. Europe (ETSI) channel range is 1~13.
B/G Protection	If 802.11b and 802.11g coexist on your network, it is recommended you enable this option. In this way, the probability of data collision will be reduced, but the transmission efficiency will also be reduced. You may select **Auto**, **On**, or **Off**. ● Auto: If selecting this option, AP enables or disables the B/G protection mode according to the network status. ● On: Enable the B/G protection mode. ● Off: Disable the B/G protection mode.
Tx Rate	You may select a proper data rate in the drop down list. You may also leave it blank. If selecting **Auto**, AP will automatically judge the data rate. If selecting a higher data rate, the transmission distance will be shorter.
Tx Burst	Enable or disable Tx Burst. After enabling this option, the transmission efficiency can be improved.

- **HT Physical Mode**

When the wireless mode is **802.11 N Only**, **802.11GN mixed mode**, or **802.11B/G./N mixed mode**, you may set the parameters of HT physical mode.

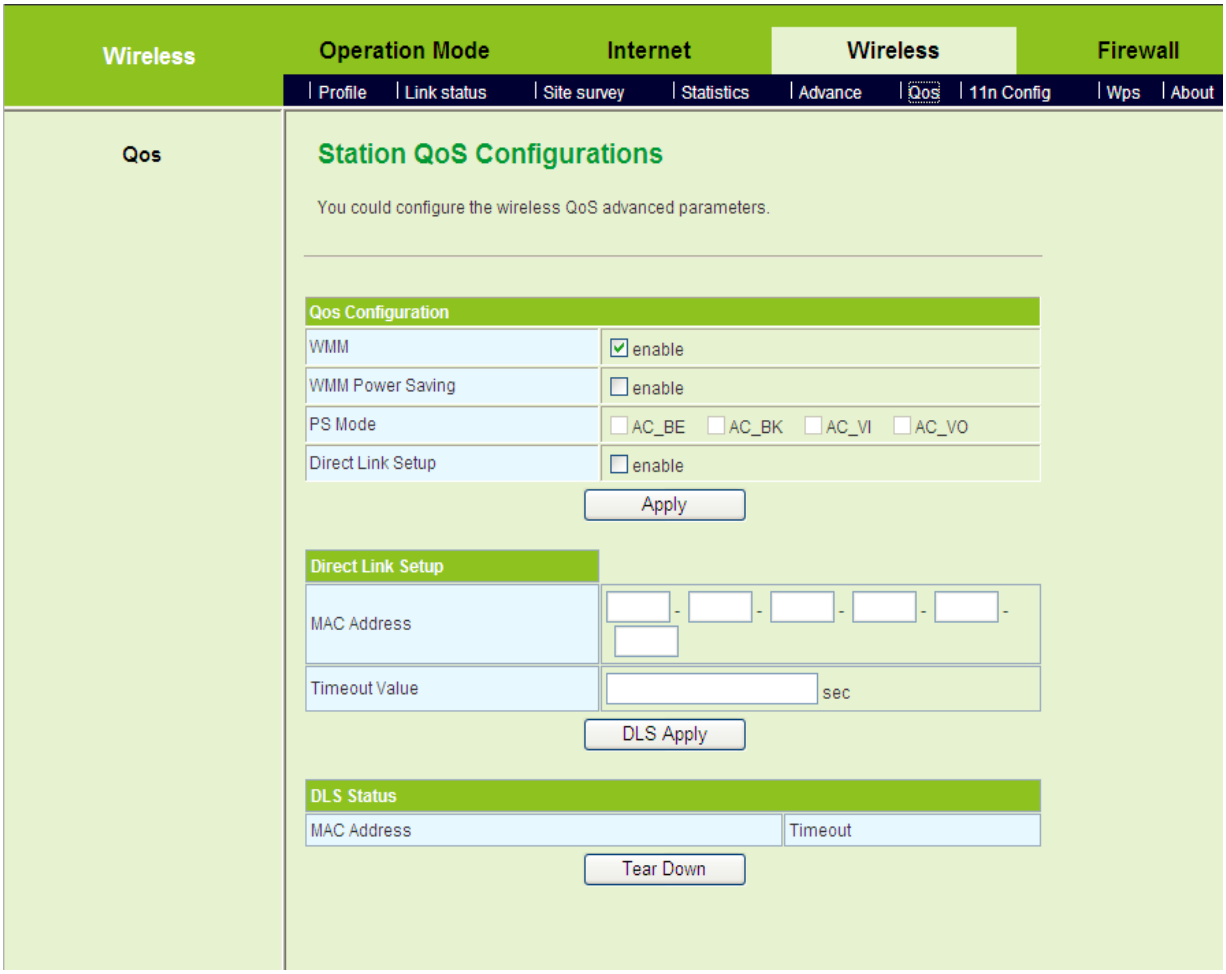


The parameters of **HT Physical Mode** are described as follows:

Field	Description
HT	You may select **MM (Mixed Mode)** or **GF (Green Field)**. The default setting is **MM**.
BW (Bandwidth)	You may select **20** or **Auto**.
GI (Guard Interval)	You may select **Long** or **Auto**.
MCS	MCS (Modulation and Coding Scheme) is for denoting the WLAN data rate. The default setting is **Auto**.

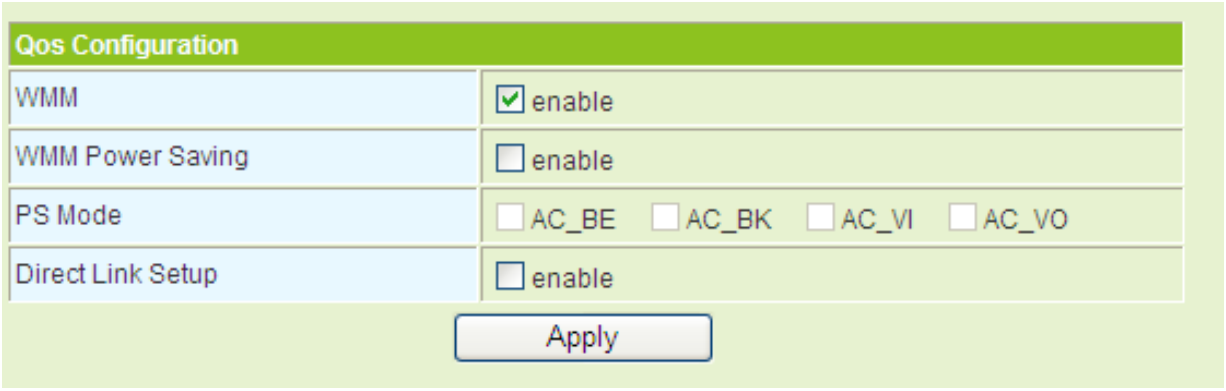
5.5.6 QoS

Click **Wireless** > **QoS** to display the **Station QoS Configurations** page.



This page is used to configure the wireless QoS properties in the station mode.

- **QoS Configuration**



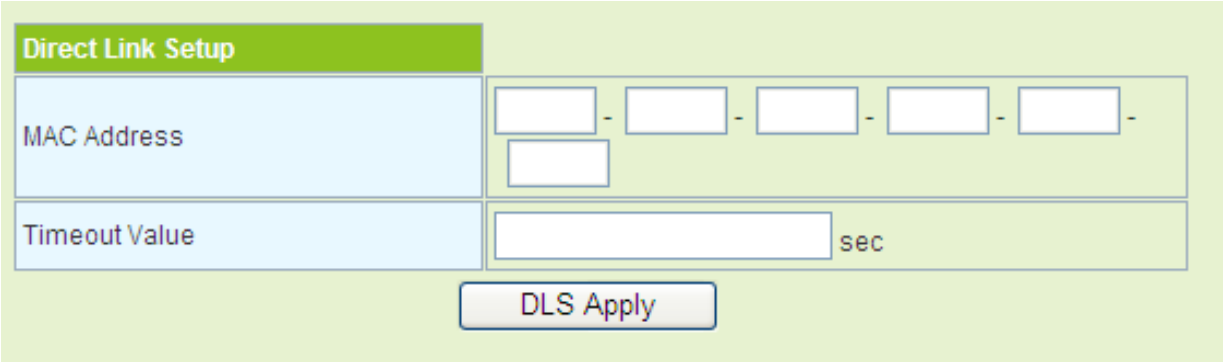
The parameters of **QoS Configuration** are described as follows:

Field	Description
WMM	Enable or disable WMM.
WMM Power Saving	Enable or disable WMM power saving mode.
PS Mode	Power saving modes include AC_BE, AC_BK,

Field	Description
	AC_VI, and AC_VO.
Direct Link Setup	Enable or disable direct link setup.

- **Direct Link Setup (DLS)**

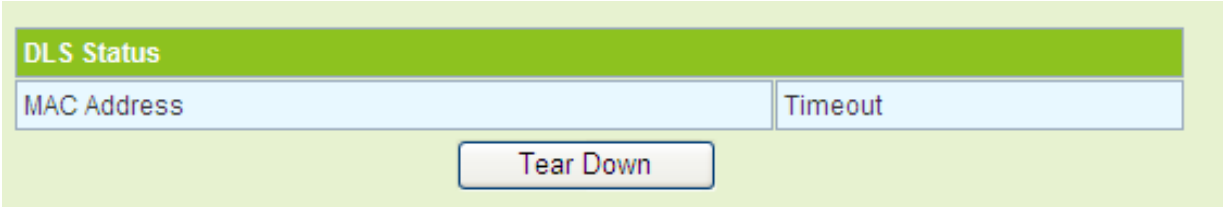
After enabling direct link setup, you are allowed to set the MAC address and the timeout value.



The parameters of **Direct Link Setup** are described as follows:

Field	Description
MAC Address	Enter the MAC address of the DLS client.
Timeout Value	Enter the timeout value for stopping DLS.

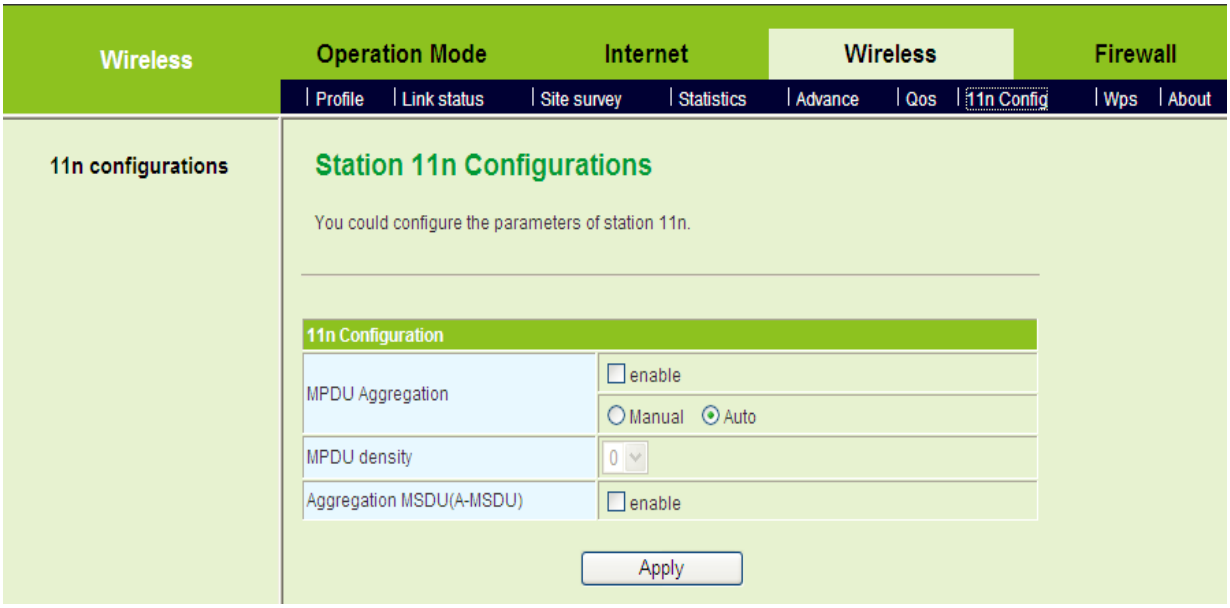
- **DLS Status**



The figure above displays the DLS clients' status.

5.5.7 11n Configurations

Click **Wireless** > **11n Config** to display the **Station 11n Configurations** page.



This page is used to configure the parameters of 802.11n in the station mode. The parameters of this page are described as follows:

Field	Description
MPDU Aggregation	Enable or disable MPDU (Message Protocol Data Unit) aggregation. A-MPDU aggregates the MPDUs that are encapsulated by 802.11 message. MPDU is data frame that is encapsulated by 802.11. By sending A-MPDU, it decreases PLCP Preamble and PLCP Header that are needed to send an 802.11 message, and the system throughput is improved. You may select **Manual** or **Auto**.
MPDU density	IF selecting **Manual**, you are allowed to set the MPDU density.
Aggregation MSDU(A-MSDU)	Enable or disable A-MSDU. MSDU is the aggregation of multiple MSDUs by using some methods and the multiple MSDUs form a greater load. MSDU can be considered as Ethernet message. Usually, when AP or wireless client receives MSDUs from protocol stack, the MSDUs will be marked with the Ethernet message header (also called A-MSDU Subframes). Before sending them out, the A-MSDU Subframes need to be transformed into the message format of

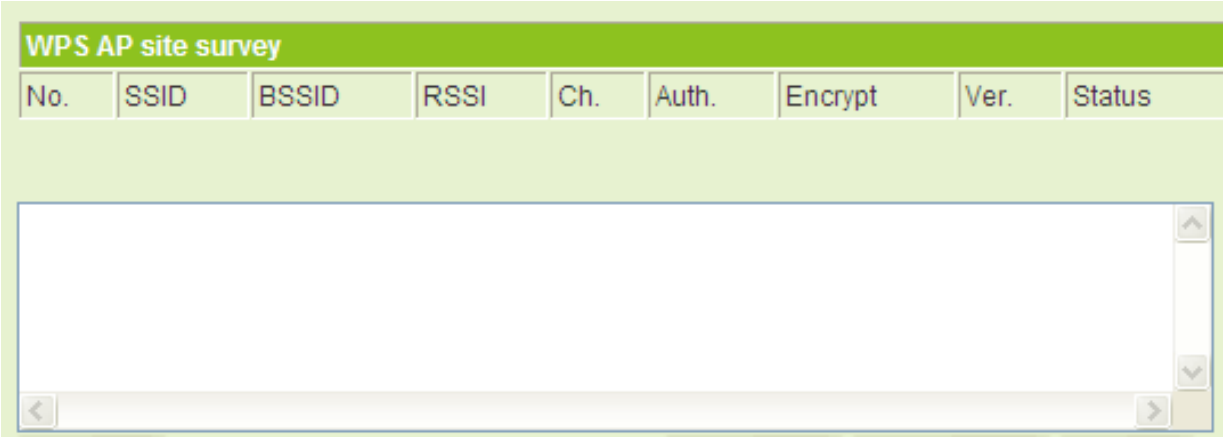
Field	Description
	802.11 one by one. A-MSDU aggregates multiple A-MSDU Subframes and encapsulates them to be an 802.11 message. In this way, PLCP Preamble, PLCP Header, and 802.11 MAC overhead that are needed for sending an 802.11 message decrease. At the same time, the acknowledge frames also decrease, and the efficiency for sending message is improved.

5.5.8 WPS

Click **Wireless** > **WPS** to display the **Wi-Fi Protected Setup (STA)** page.

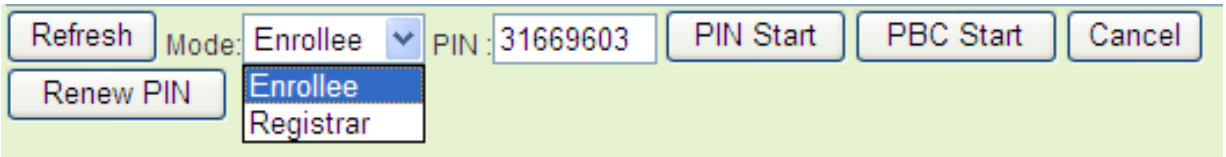
On this page, you are allowed to configure WPS and view the current WPS status.

- **WPS AP site survey**



If the nearby APs are scanned, the **WPS AP Site Survey** list will display the information about the scanned APs, such as SSID, BSSID, and encryption status.

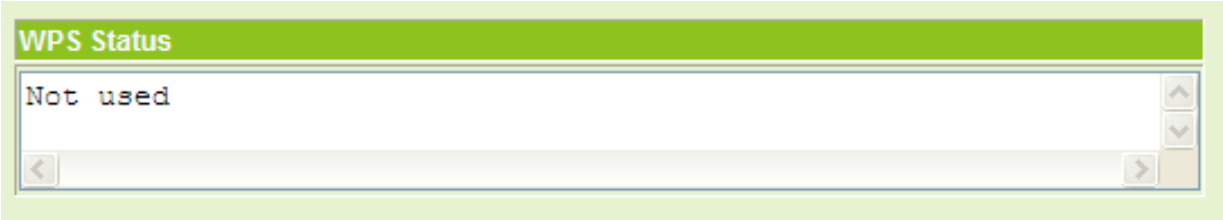
- **WPS Buttons and Modes**



The buttons and WPS modes are described as follows:

Button/Field	Description
Refresh	Click this button, and then the **WPS AP Site Survey** list will be refreshed.
Mode	It provides **Enrollee** mode and **Registrar** mode. ● Enrollee mode: if selecting this mode, you need to enter Station PIN on AP for WPS connection. ● Registrar mode: If selecting this mode, you need to enter AP Pin on your Station.
PIN	Display PIN (Personal Information Number).
PIN Start	Click this button to start the Pin connection mode.
PBC Start	Click this button to start the PBC (Push Button Configuration) connection mode.
Cancel	Cancel the current WPS connection.
Renew PIN	Click this button to renew PIN.

- **WPS Status**



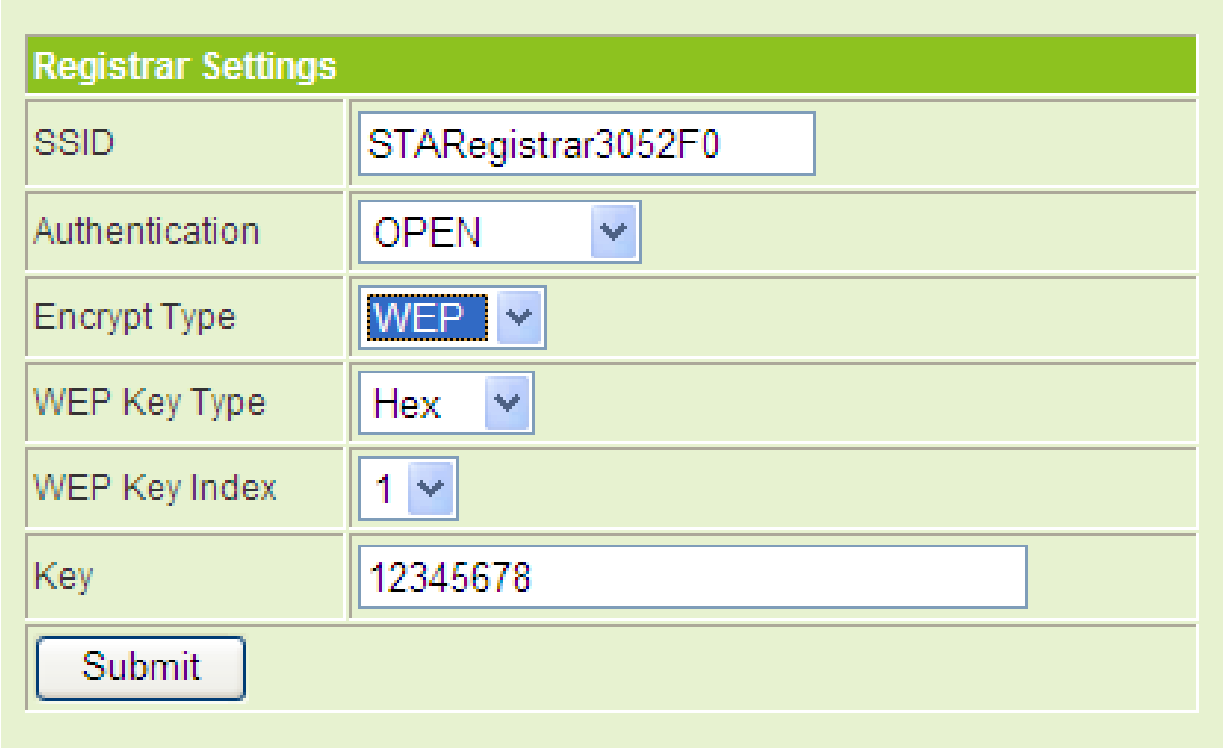
The figure above shows the WPS status.

- **Registrar Settings**

When selecting **Registrar** mode, system displays the **Registrar Settings** table. **Registrar Settings** table provides **OPEN**, **WPA-PSK**, and **WAP2-PSK** authentication modes.

- **OPEN**

When selecting the **OPEN** authentication mode, the system displays the following page:



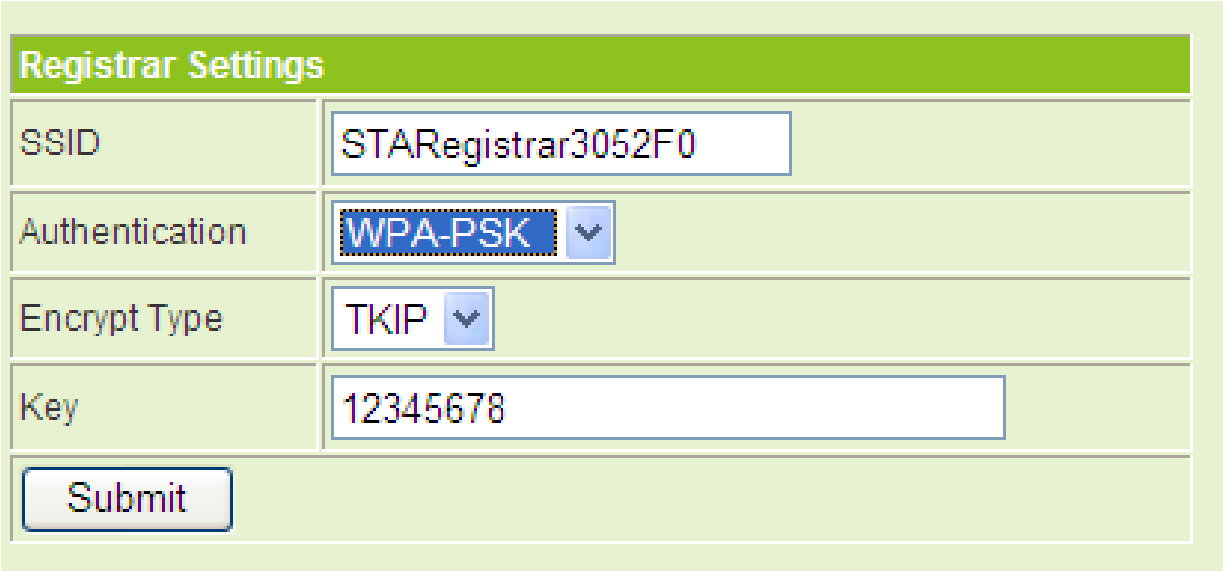
The parameters of **OPEN** authentication mode are described as follows:

Field	Description
SSID	Set the network name.
Authentication	Select **OPEN** mode in the drop down list.
Encrypt Type	You may select **NONE** or **WEP**. When selecting WEP, you are allowed to set the encryption type and key.

Field	Description
WEP Key Type	The key type is Hex or ASCII. ● Hex: the key length can be 10 bits or 26 bits. ● ASCII: the key length can be 5 bits or 13 bits.
WEP Key Index	Select the WEP key in the drop down list.
Key	Set the key according to the key type and the key length.

- **WPA-PSK and WAP2-PSK**

When selecting the **WPA-PSK** or **WPA2-PSK** authentication mode, the system displays the following page:



The parameters of **WPA-PSK** or **WPA2-PSK** authentication mode are described as follows:

Field	Description
SSID	Set the network name.
Authentication	Select **WPA-PSK** or **WPA2-PSK**.
Encrypt Type	You may select **TKIP** or **AES**.
key	Set 8-bit or 64-bit key.

After finishing setting, click the **Submit** button to apply the settings.

● The Examples of WPS Settings

The following section describes the application examples of three WPS connection modes.

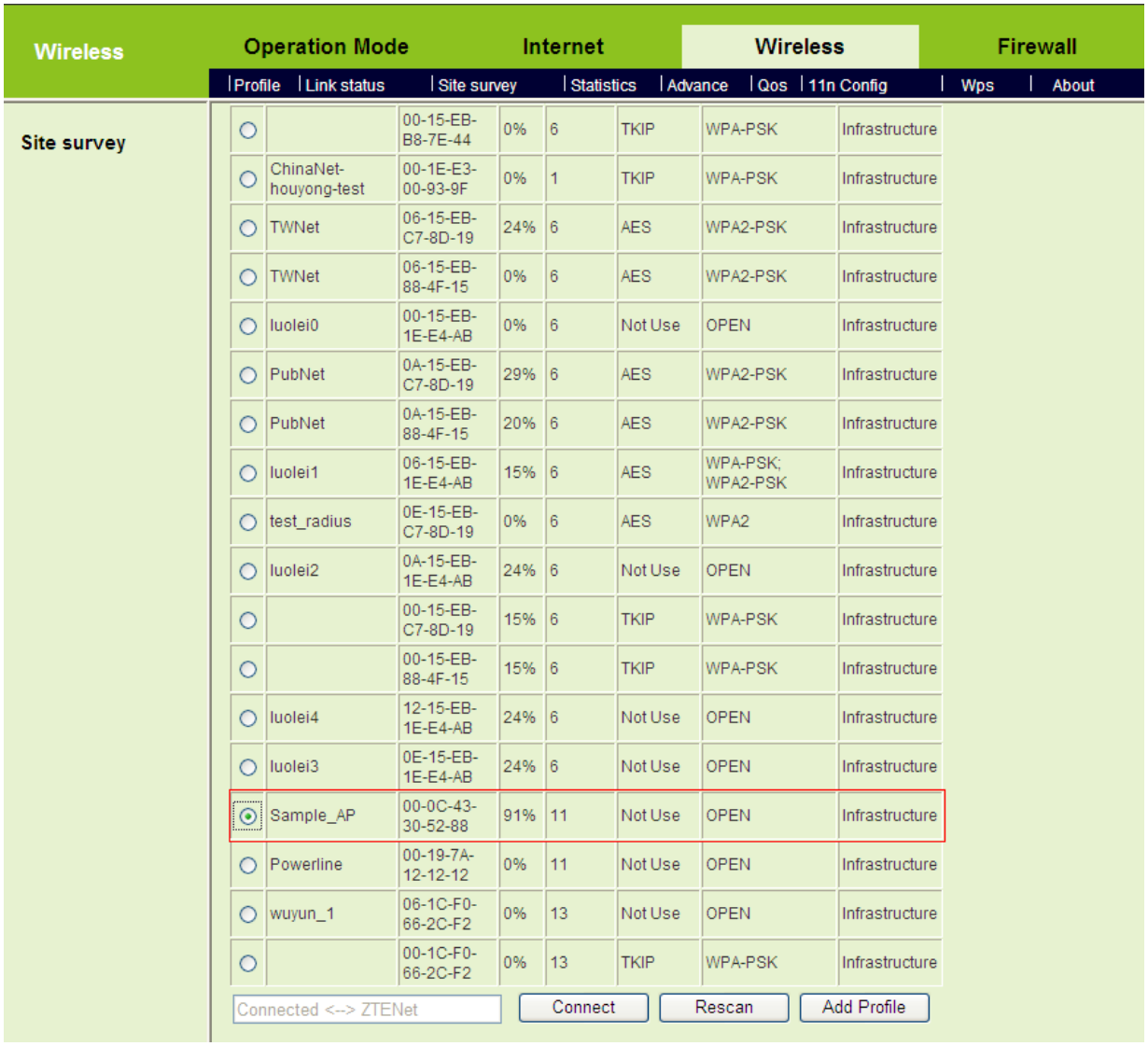
Preparation:

Prepare two GR-534W s, and set their operation modes.

(1) One is set to be WISP mode, that is, wireless station mode .This device is called STA hereinafter. The Pin code is 31669603.

(2) The other is set to be **Gateway** mode or **Bridge** mode, that is, wireless AP mode. This device is called AP hereinafter. The PIN code is 31668569.

(3) Enter the **Station Site Survey** page of STA to view the APs in the **Site Survey** list. Please make sure that the **Sample_AP** is in the list and its signal quality is excellent.

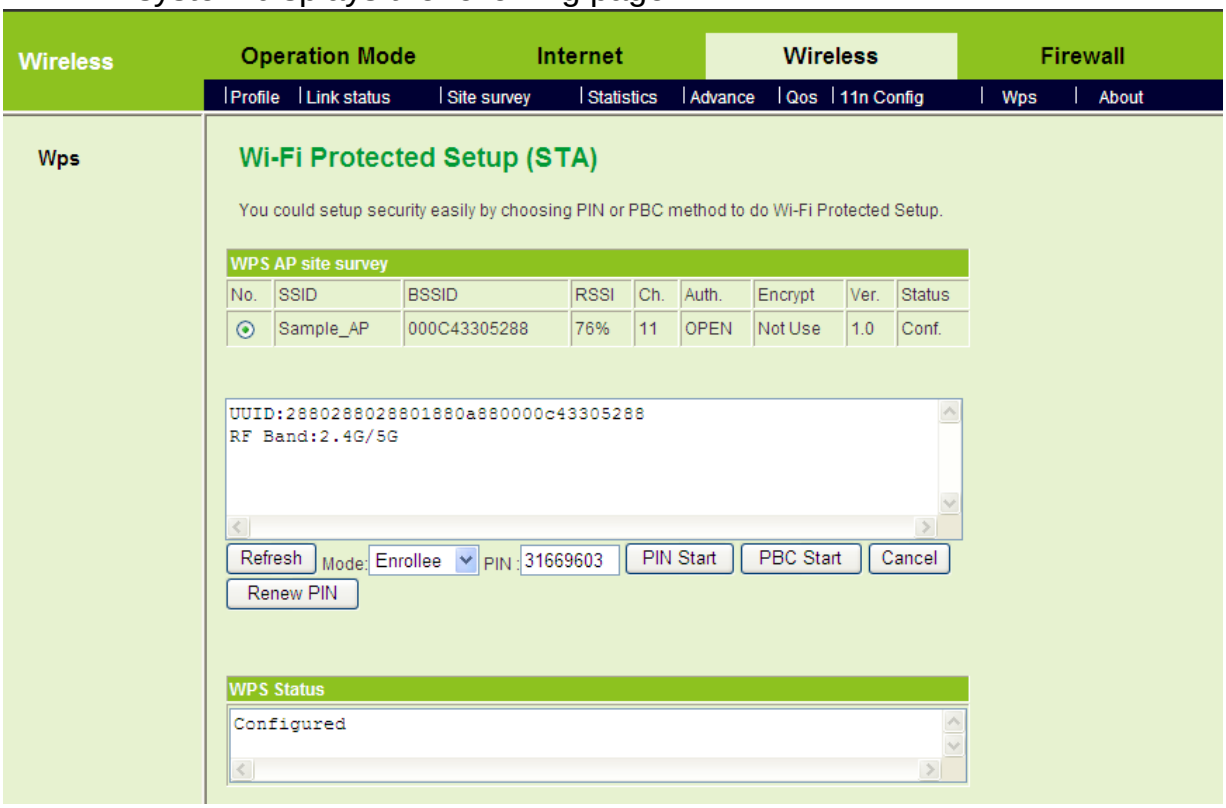


- **PBC Mode**

Step1 Enter the **Wi-Fi Protected Setup** page of AP. On this page, select **PBC** and then click the **Apply** button to make AP start WPS negotiation.

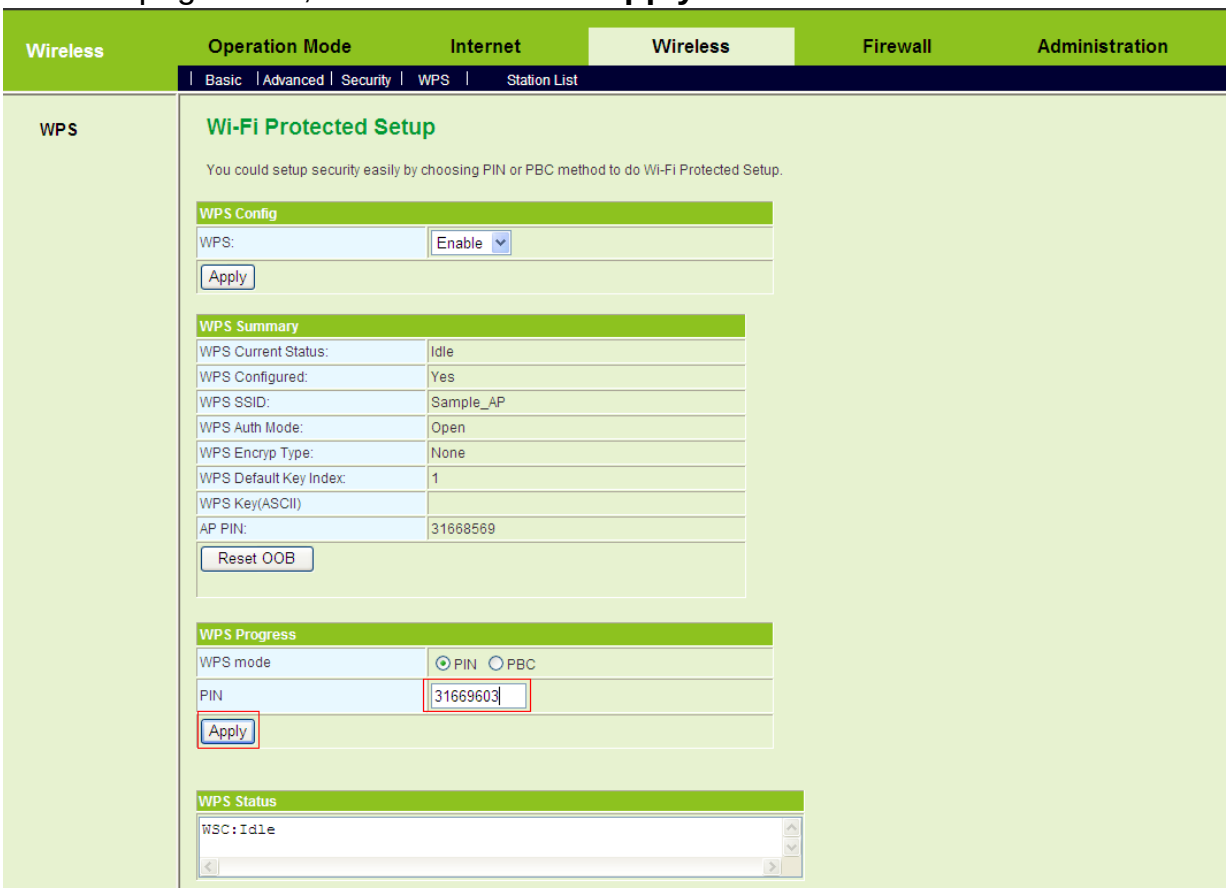
Step2 Enter the **Wi-Fi Protected Setup (STA)** page of STA. On this page, click the **PBC Start** button to make STA start WPS negotiation.

Step3 Please pay attention to the WPS status of STA. After finishing negotiating, system displays the following page.

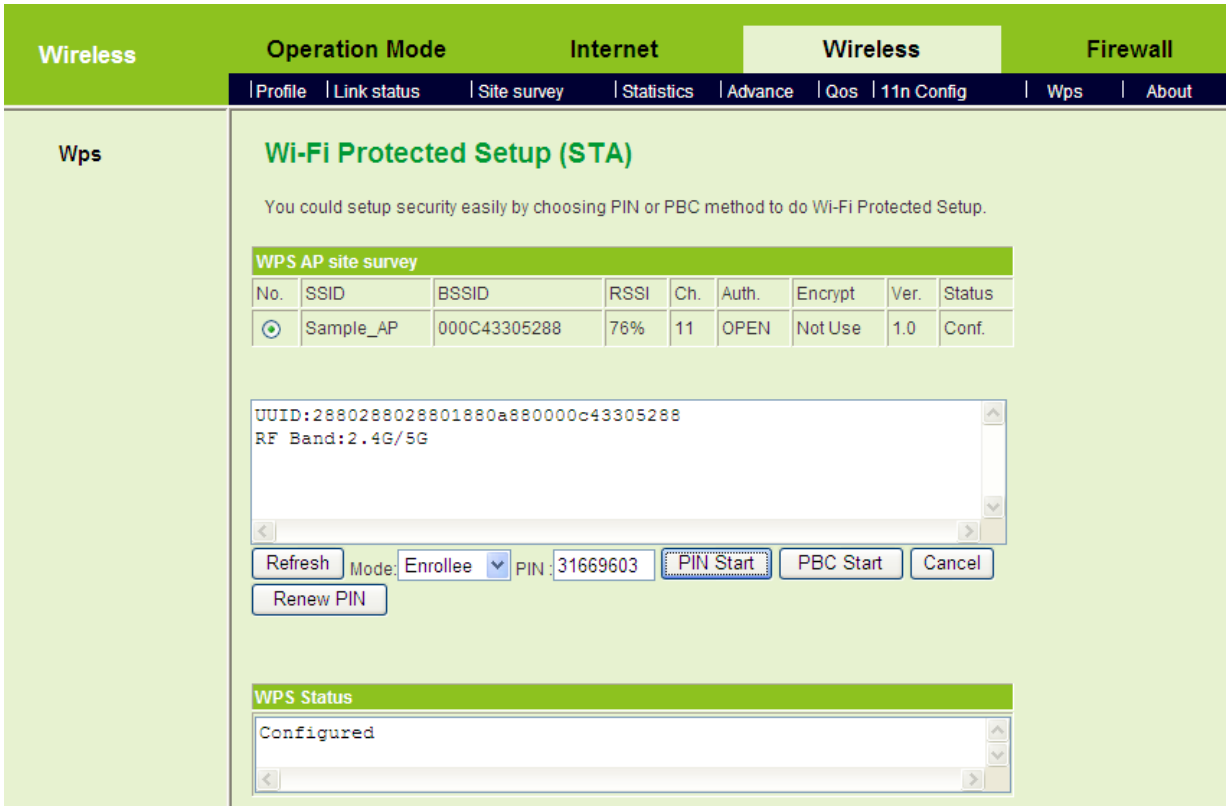


- **Enrollee Mode**

Step1 Enter the PIN code of STA (31669603) on the **Wi-Fi Protected Setup** page of AP, and then click the **Apply** button.



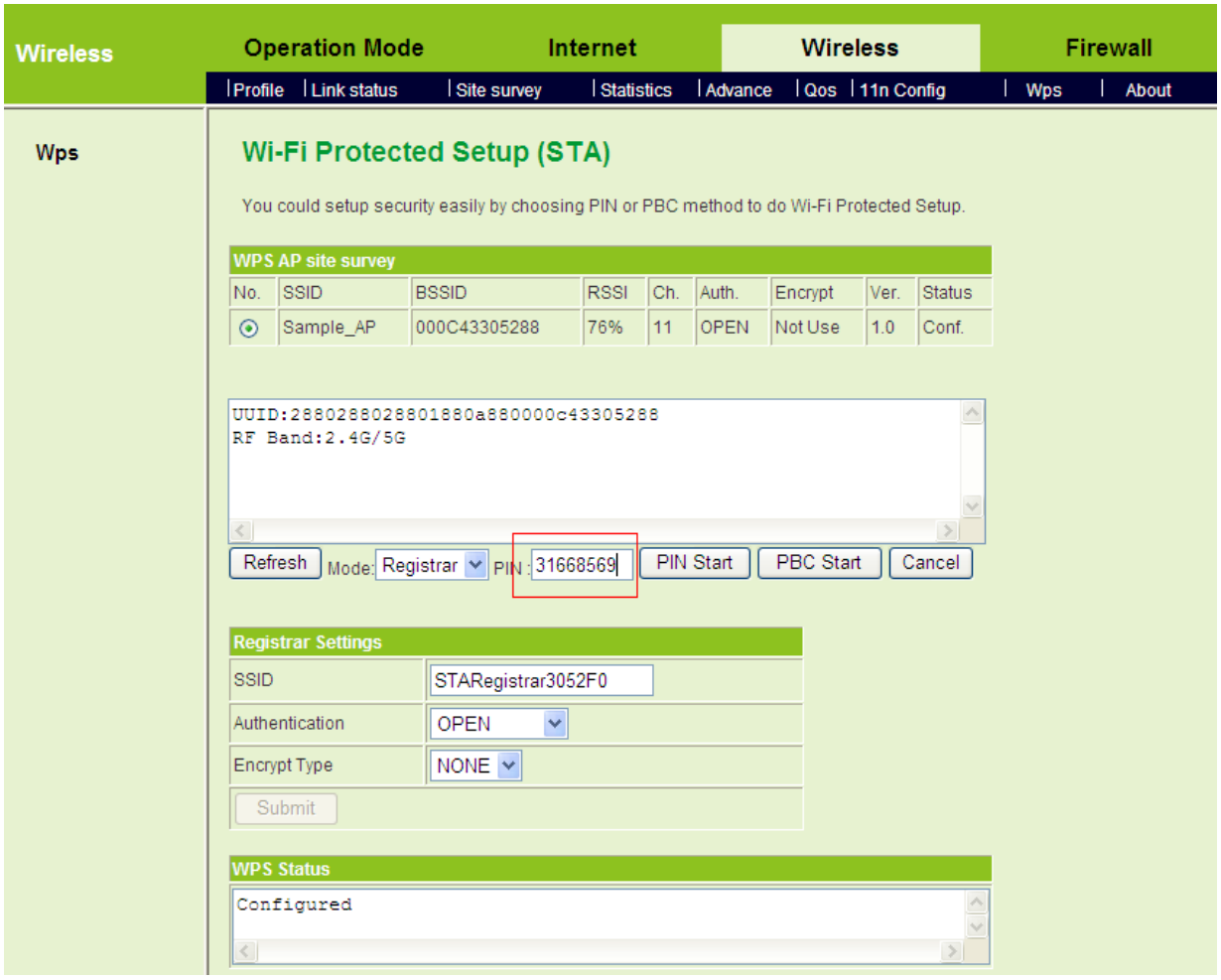
Step2 Meanwhile, click the **PIN Start** button on the **Wi-Fi Protected Setup** (STA) page of STA to make STA start negotiation. After finishing negotiation, system displays the following page.



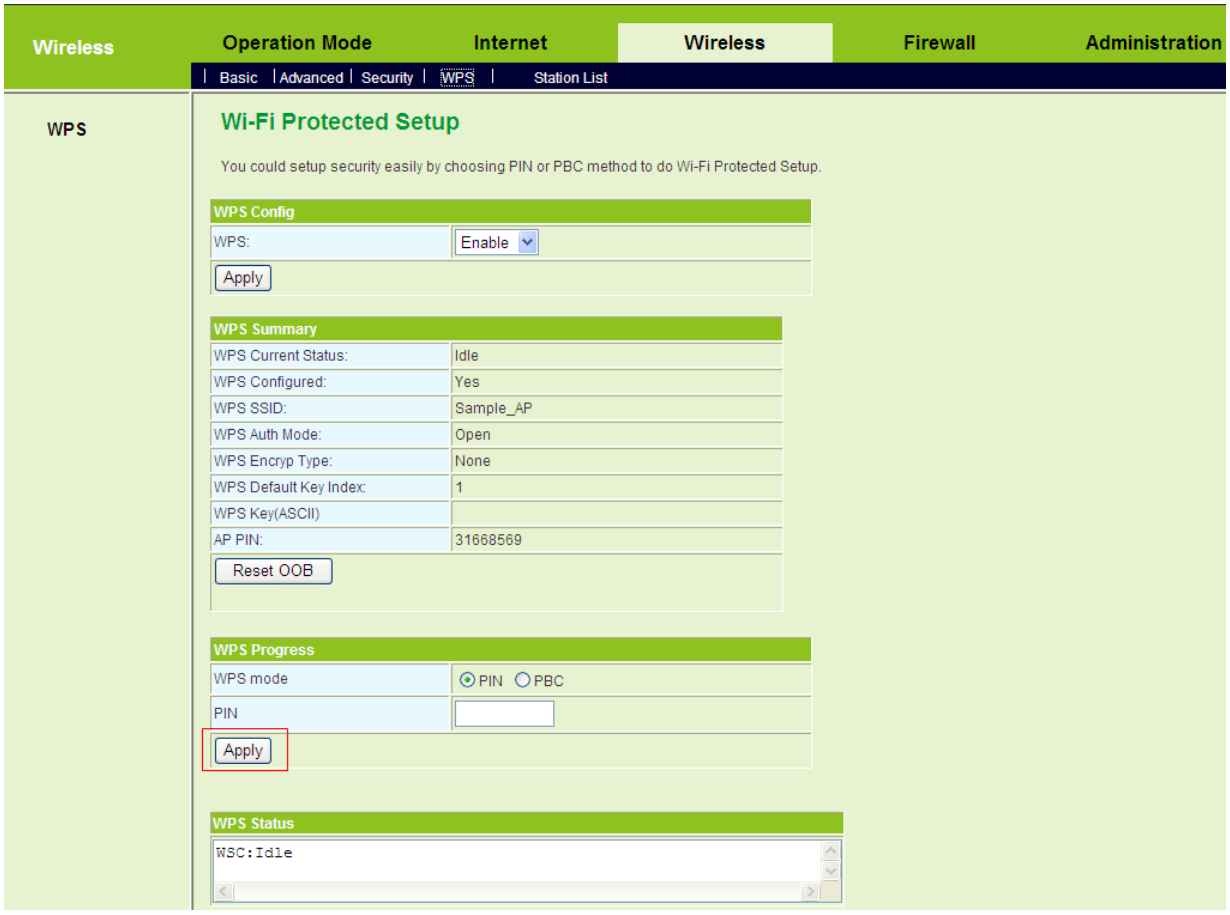
- **Registrar Mode**

Step1 Enter the **Wi-Fi Protected Setup (STA)** page of STA. On this page, Select the **Registrar** mode and set its parameters. You may apply the default registrar settings. After finishing setting, click the **Submit** button.

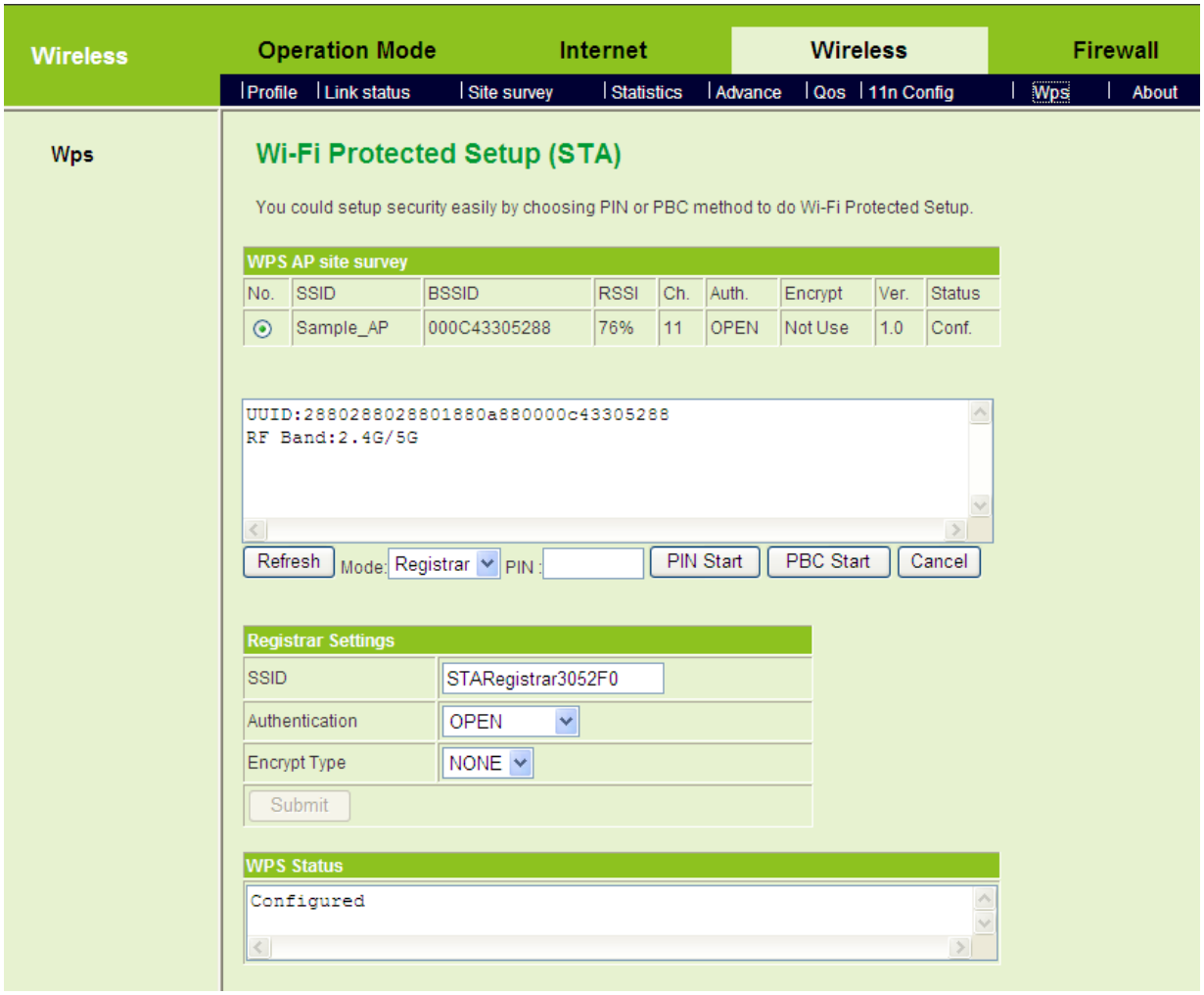
Step2 On the **Wi-Fi Protected Setup** (STA) page of STA, enter the AP's PIN code (31668569), and then click the **PIN Start** button.



Step3 On the **Wi-Fi Protected Setup** page of AP, click the **Apply** button under **WPS Progress** to make AP start to negotiate with STA.

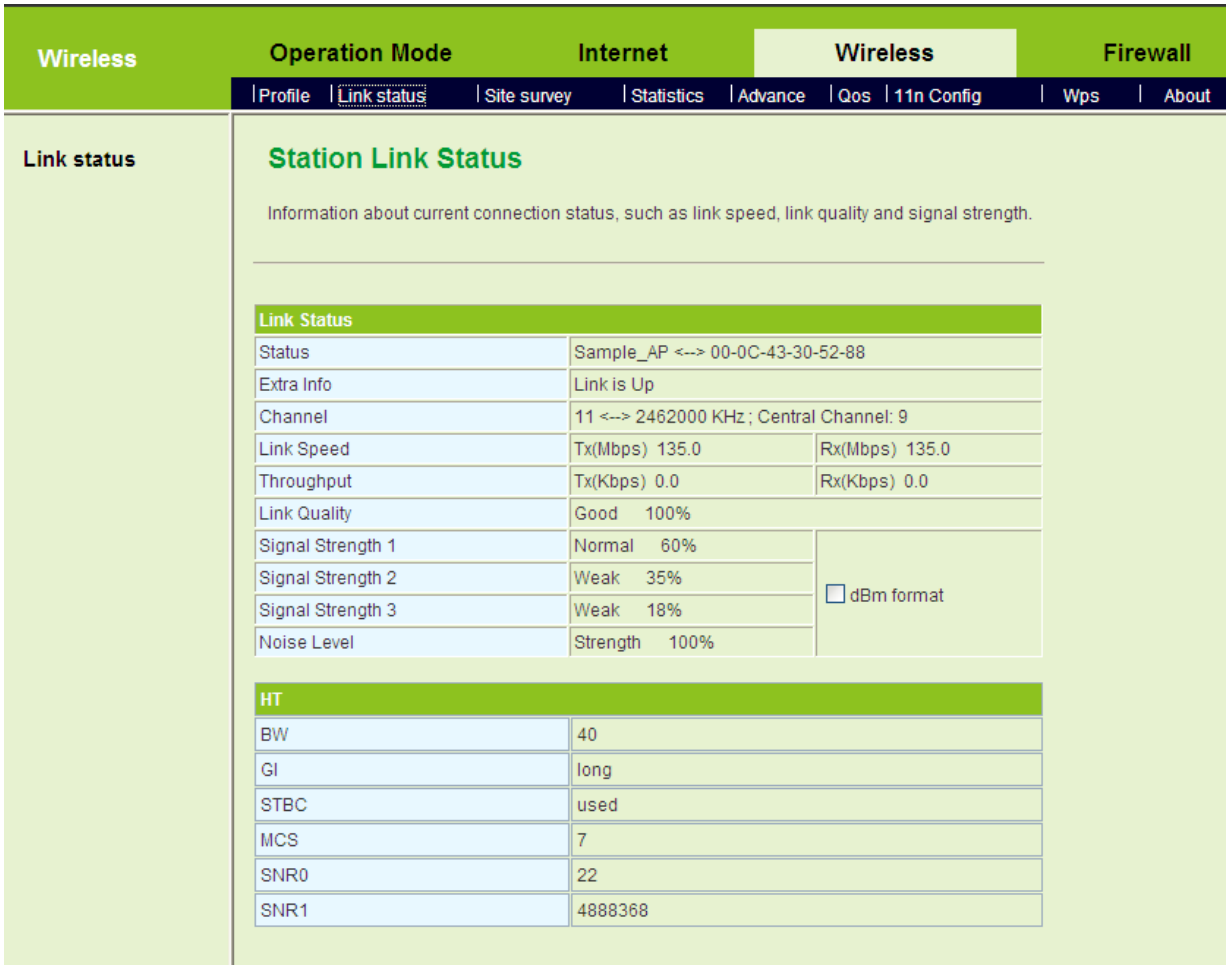


Step4 After finish the negotiation process, system displays the **Wi-Fi Protected Setup** (STA) page as follows:

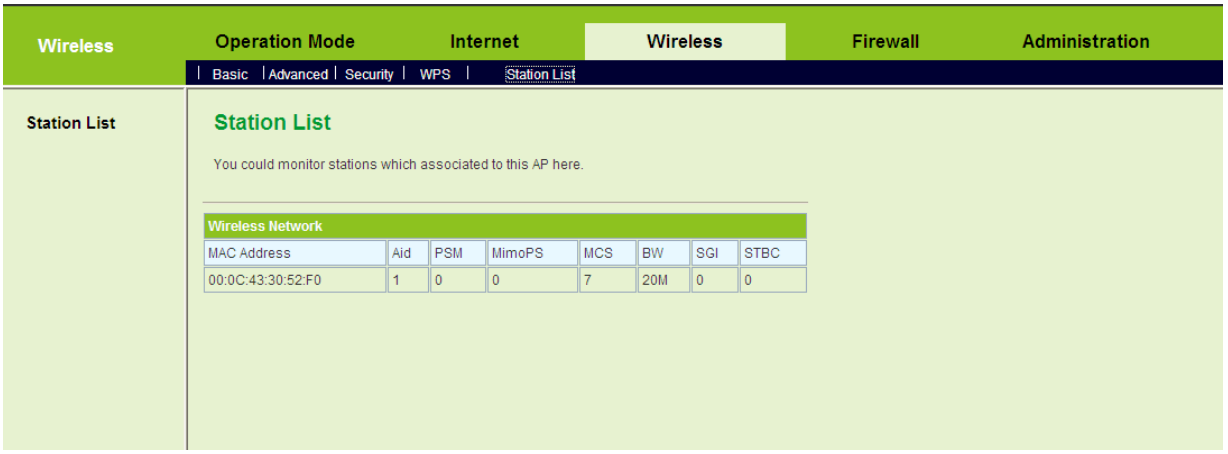


You may check whether WPS connection is successful by viewing the following pages.

(1) On the **Station Link Status** page of STA, you can view the current AP status. See the following figure:

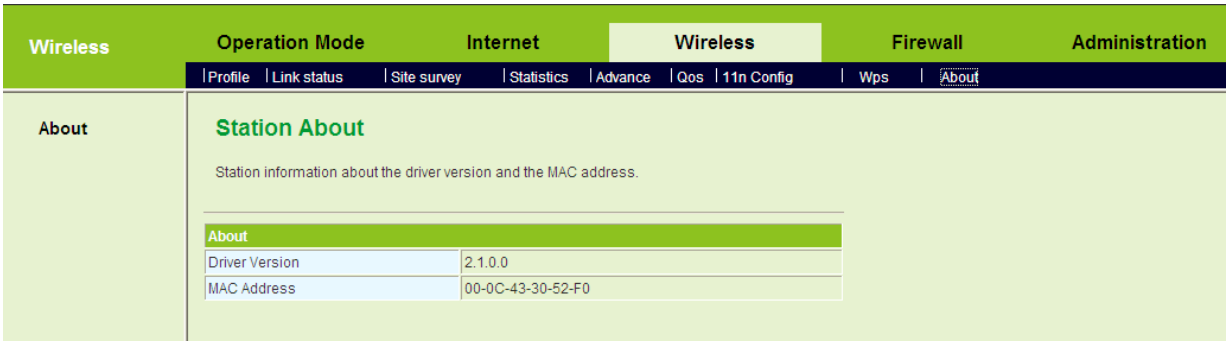


(2) On the **Station List** page of AP, you can view the STA in the **Wireless Network** list.



5.5.9 About

Click **Wireless** > **About** to display the **Station About** page.



On this page, you can view the AP's driver version and MAC address.

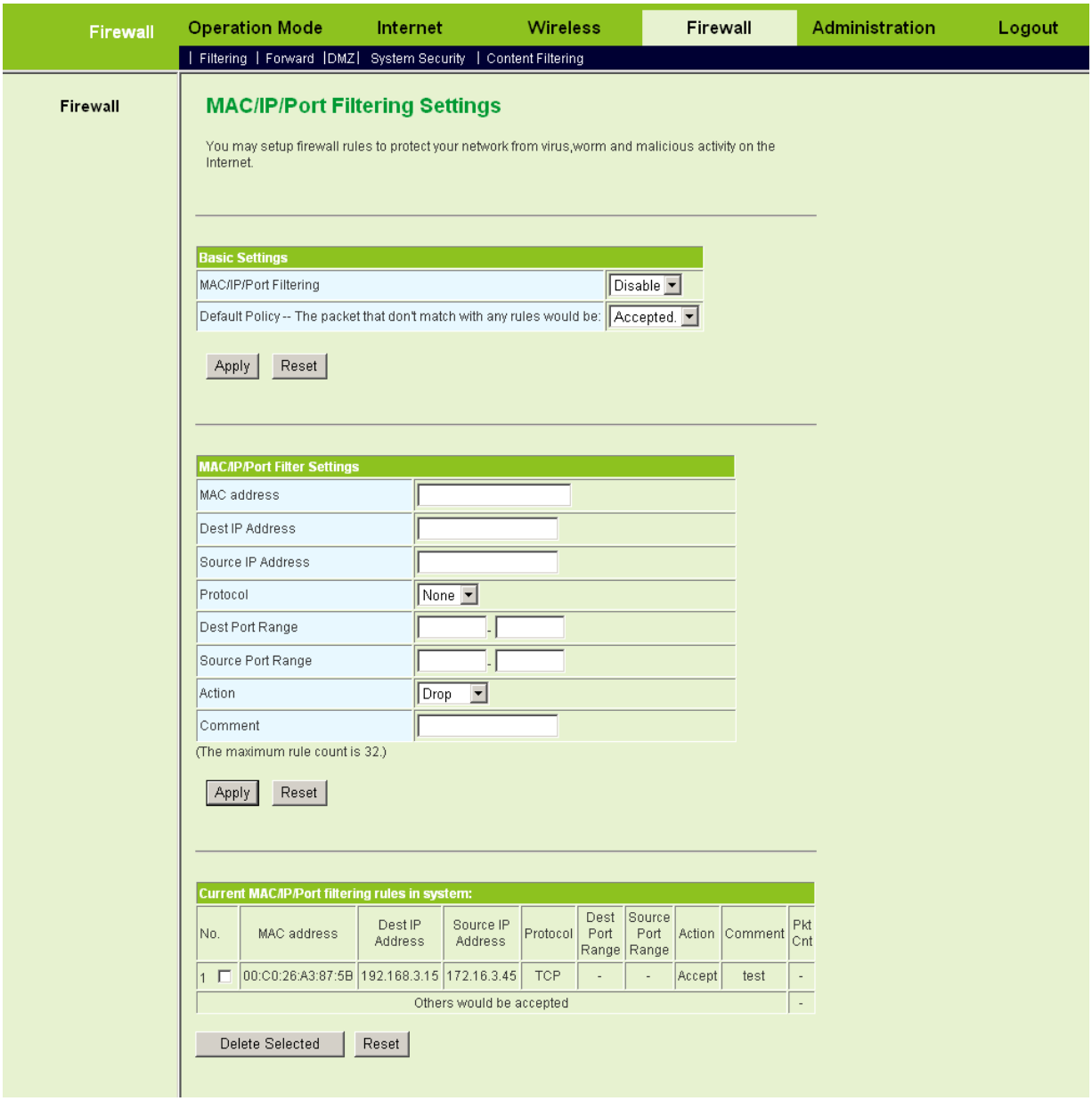
5.6 Firewall

The following figure shows the navigation menu of **Firewall**:

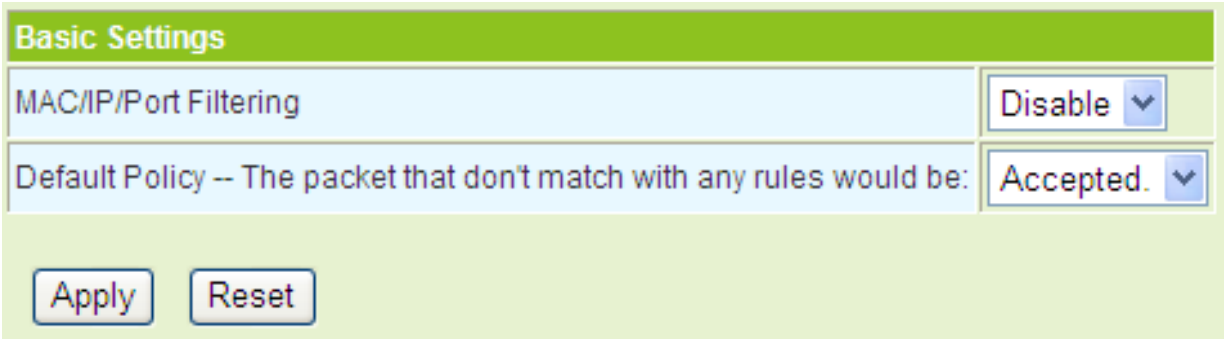
Firewall is an advanced setting, which is used to block or allow the data packets that pass through the AP. The sub-menus of the **Firewall** include **Filtering**, **Forward**, **DMZ**, **System Security**, and **Content Filtering**.

5.6.1 Filtering

Click **Firewall** > **Filtering** to display the **MAC/IP/Port Filtering Settings** page.



- **Basic Settings**

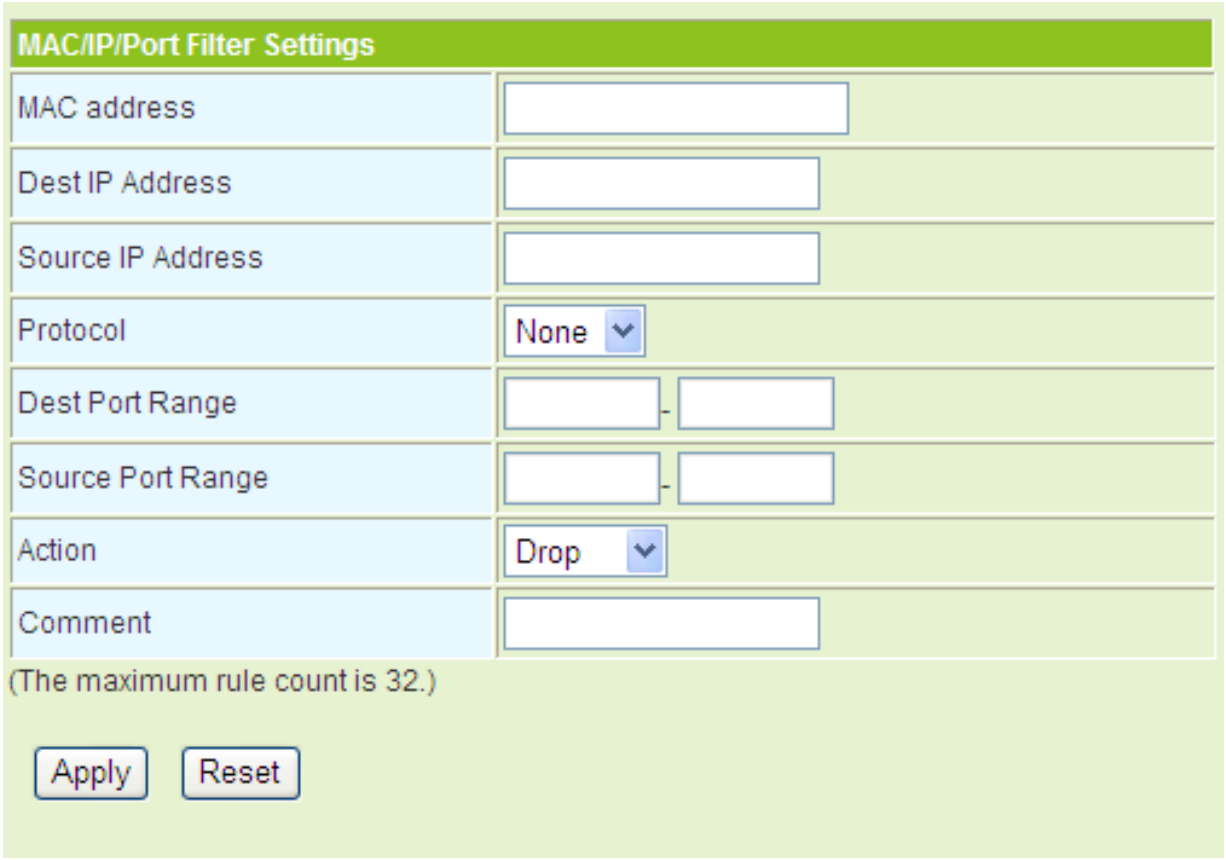


The parameters of **Basic Settings** are described as follows:

Field	Description

Field	Description
MAC/IP/Port Filtering	Enable or disable MAC/IP/Port filtering. The default setting is **Disable**.
Default Policy	By default, AP will accept all the packets that do not match any rule.

- **MAC/IP/Port Filter Settings**



The filter modes of **MAC/IP/Port Filter Settings** are described as follows:

Filter Mode	Description
MAC Filter	MAC filter can block the hosts on the local network to access the Internet.
IP Filter	IP filter can block a user on the LAN to access the Internet.
Port Filter	Port filter can block certain ports of the IP addresses or the traffic of all the ports.

On this page, the maximum rule number you can add is 32.

When the data packets match the following parameters, the data packets will be discarded.

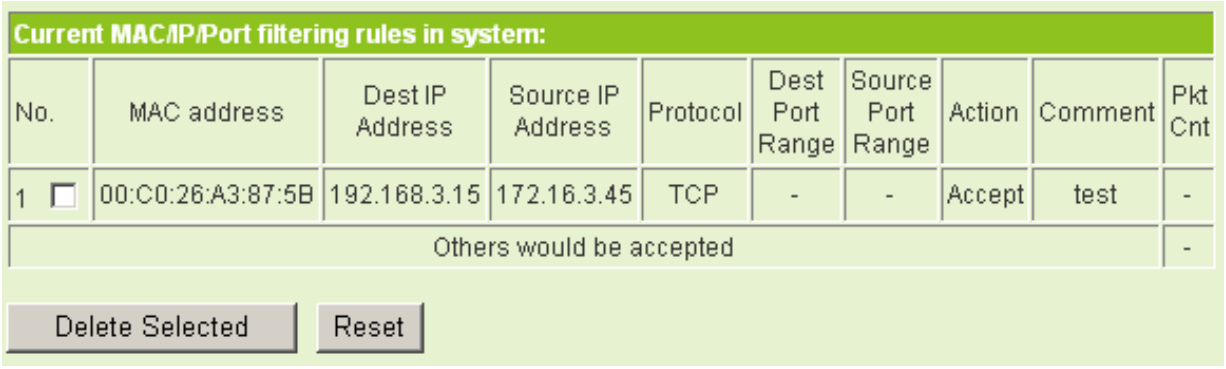
The parameters of **MAC/IP/Port Filter Settings** are described as follows:

Field	Description
MAC Address	The MAC addresses included in the data packets. It can be a destination MAC address or a source MAC address.
Dest IP Address	The destination IP address.
Source IP Address	The source IP address.
Protocol	The protocol types of data packets, includes **TCP**, **UDP**, and **ICMP**.
Dest Port Range	The destination port range is 1~65535.
Source Port Range	The source port range is 1~65535.
Action	Select **Accept** or **Drop**.
Comment	Comment about the rule.

Note:

You should set at least a parameter above, or you may set several parameters or all the parameters above.

- **Current MAC/IP/Port Filtering Rules in System**

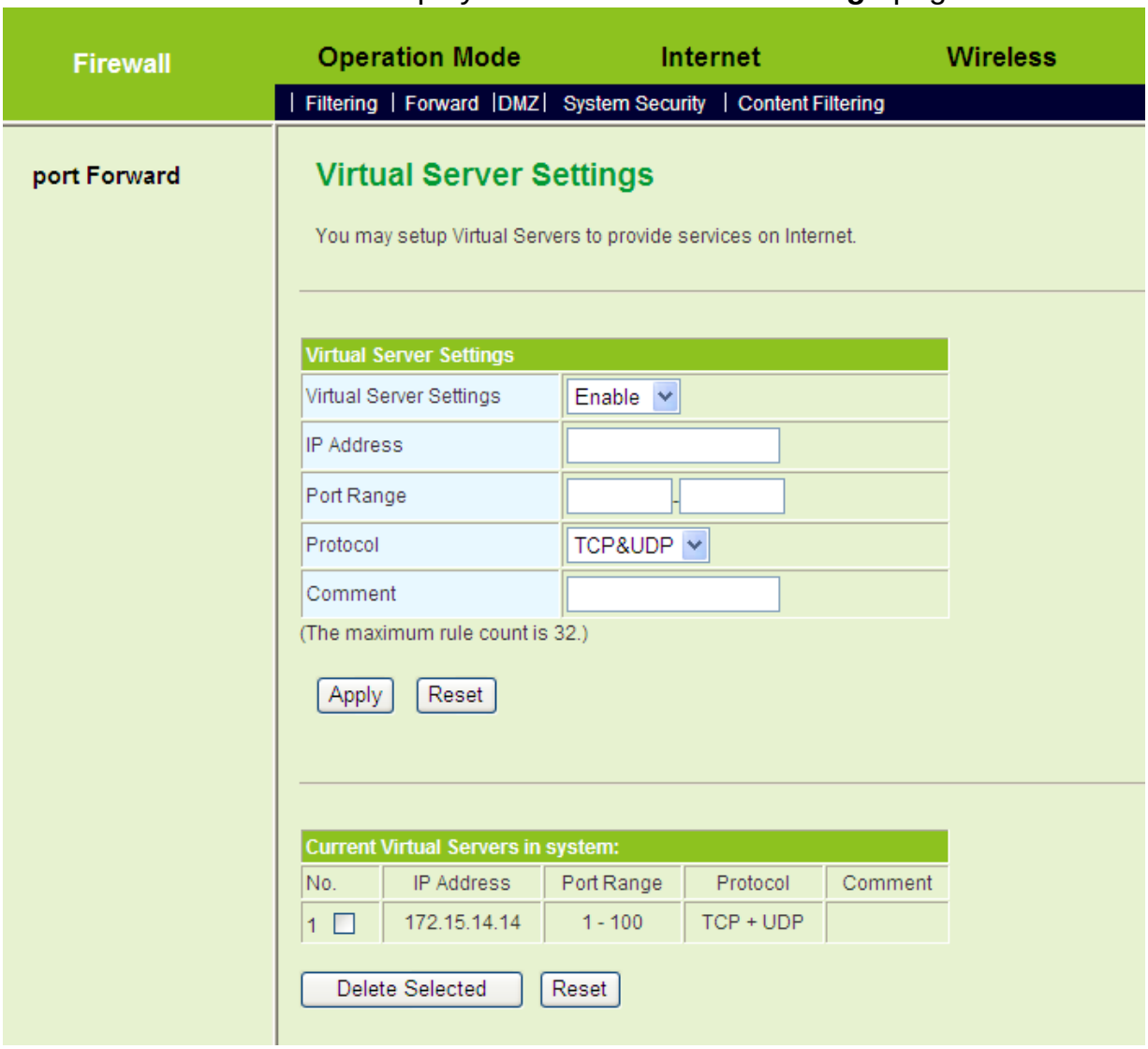


The figure above shows the current rules in the system.

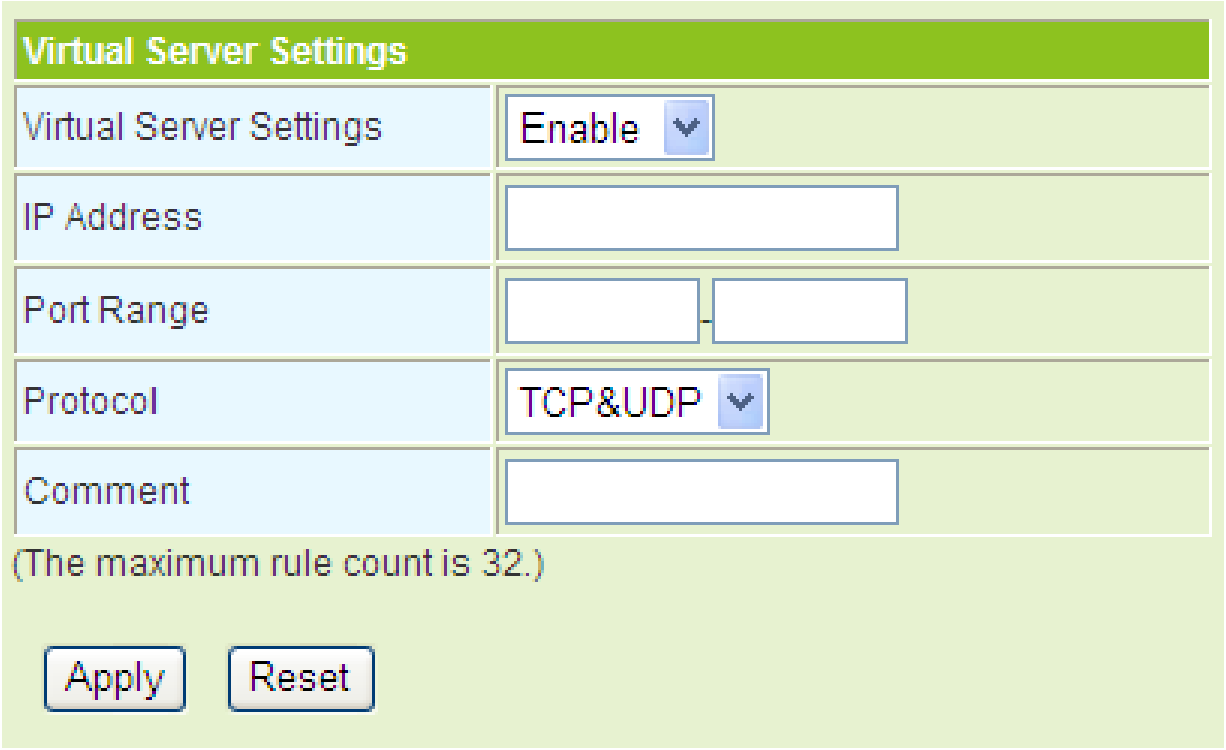
5.6.2 Virtual Server

Firewall can prevent unexpected traffic on the Internet from your host on the LAN. The virtual server can create a channel that can pass through the firewall. In that case, the host on the Internet can communicate with a host on your LAN within certain port range.

Click **Firewall** > **Forward** to display the **Virtual Server Settings** page.



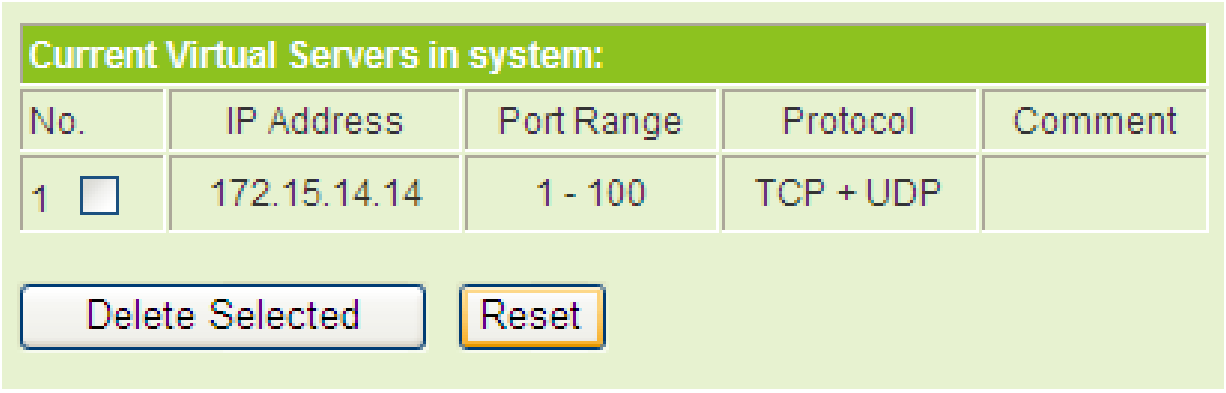
- **Virtual Server Settings**



The parameters of **Virtual Server Settings** are described as follows:

Field	Description
Virtual Server Settings	Enable or disable the virtual server settings.
IP Address	Enter the IP address that you allow to access.
Protocol	Select the protocol that you allow to access. You may select **TCP**, **UDP** or **TCP&UDP**.
Port Range	Enter the port range that you allow to access.
Comment	Enter the comment about the virtual server.

- **Current Virtual Servers in System**

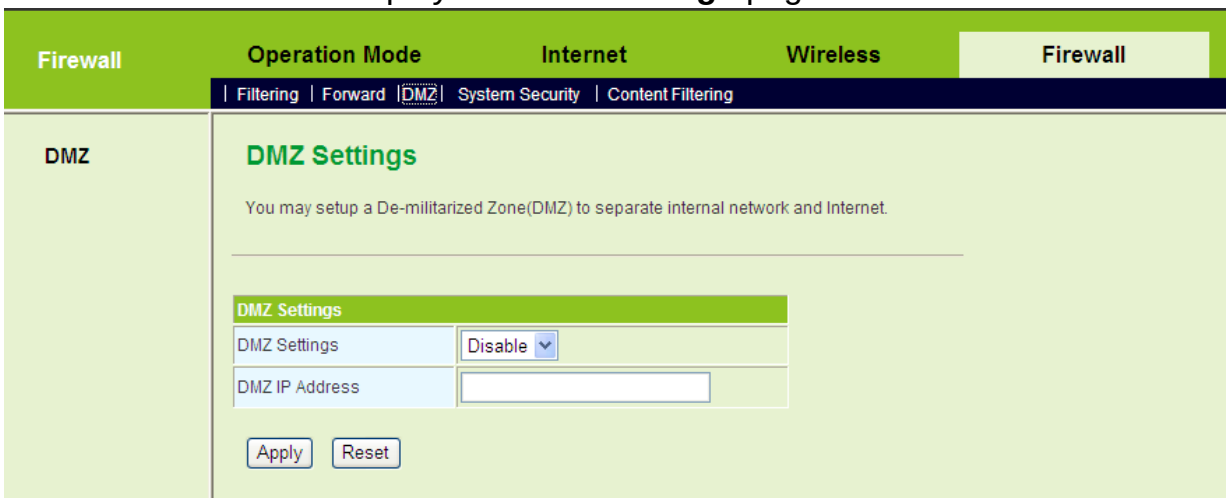


The figure above shows the current virtual server in the system.

5.6.3 DMZ

DMZ allows all the ports of a PC on your LAN to be exposed to the Internet. Set the IP address of the PC to be DMZ host, so that the DMZ host will not be blocked by firewall.

Click **Firewall** > **DMZ** to display the **DMZ Settings** page.



The parameters of **DMZ settings** are described as follows:

Field	Description
DMZ Settings	Enable or disable the DMZ settings.
DMZ IP Address	Enter the IP address of the DMZ host.

After finishing the settings, click the **Apply** button to apply the settings.

5.6.4 System Security

Click **Firewall** > **System Security** to display the **System Security Settings** page.

This page provides the security management for the WAN interface.

The parameters of **System Security Settings** are described as follows:

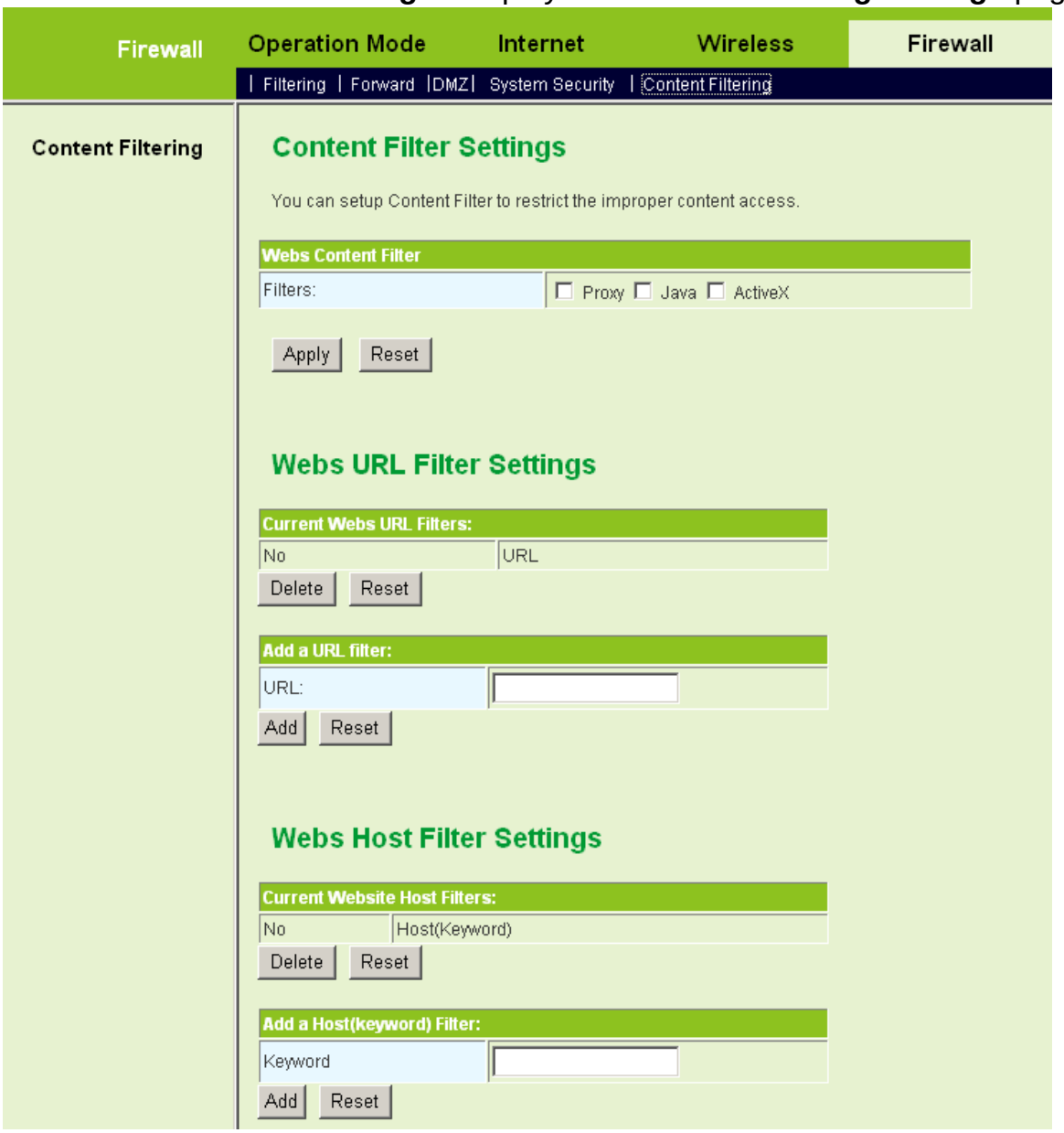
Field	Description
Remote management (Via WAN)	Enable or disable remote management. You may select **Deny** or **Allow**. If selecting **Allow**, users in other regions can access the Internet and configure AP.
WAN Ping Filter	Enable or disable WAN Ping filter. **Note:** *When the remote management is **Allow**, the WAN Ping filter is disabled.*
SPI Firewall	Enable or disable SPI (Stateful Packet Inspection) firewall. Stateful inspection tracks each connection traversing all interfaces of the firewall and makes sure that they are valid. When an IP packet arrives at the firewall from the Internet, the firewall inspects the packet to see what connections have been opened from the inside of the network to the Internet. If there is a connection open that applies to the packet that has arrived from the Internet, this incoming packet is let through;

Field	Description
	otherwise, this incoming packet is rejected. Compared to the NAT firewall, the security level of the SPI firewall is higher.

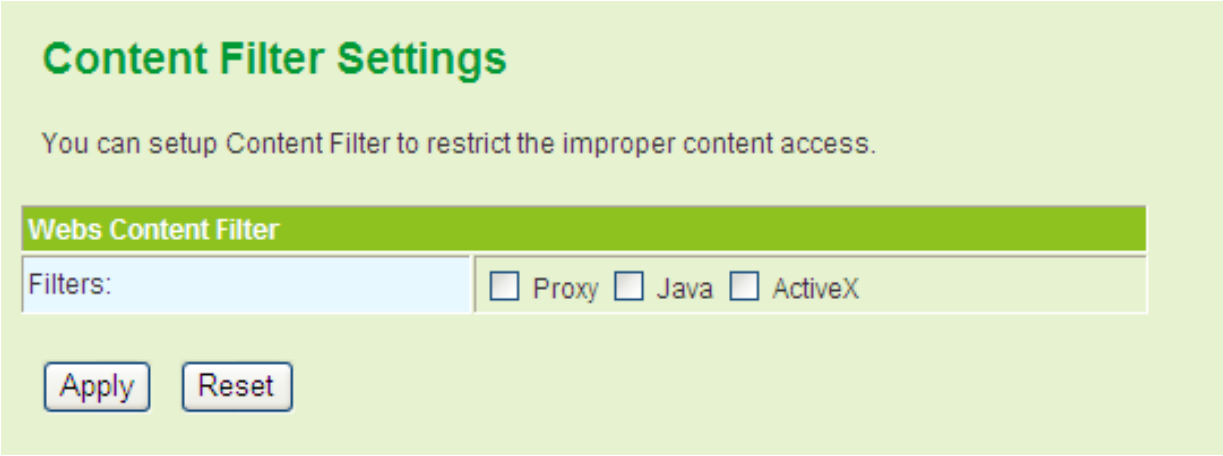
5.6.5 Content Filtering

Content filter can prevent user on LAN from accessing some Web sites on the Internet.

Click **Firewall** > **Content Filtering** to display the **Content Filtering Settings** page.



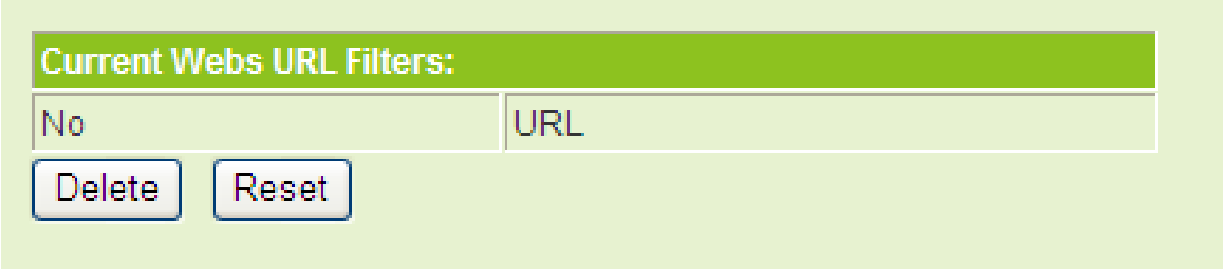
- **Webs Content Filter**



Webs Content Filter includes three types of filters. See the following table:

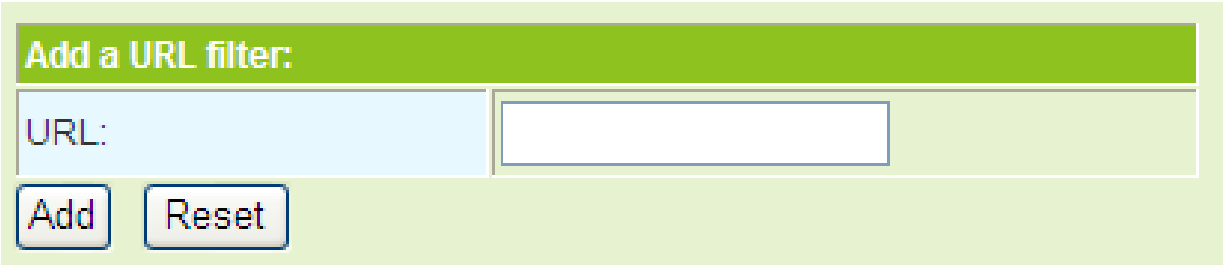
Filter	Description
Proxy	For filtering the proxy pages.
Java	For filtering pages that use Java script.
ActiveX	For filtering plug-in pages.

- **Current Webs URL Filters**



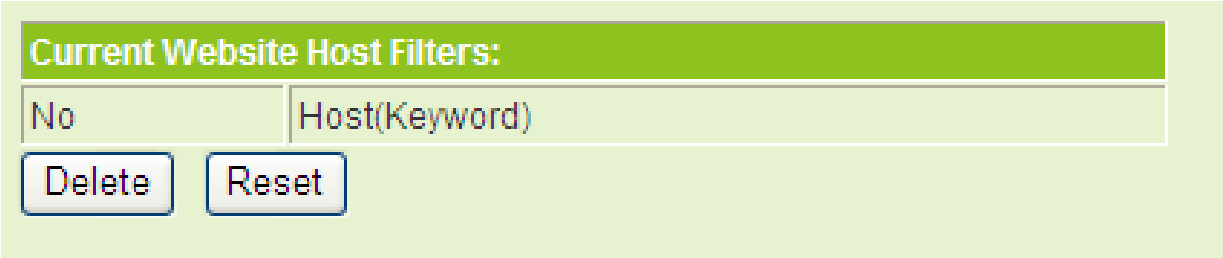
The figure above shows the current Web URL filters in the system.

- **Add a URL Filter**



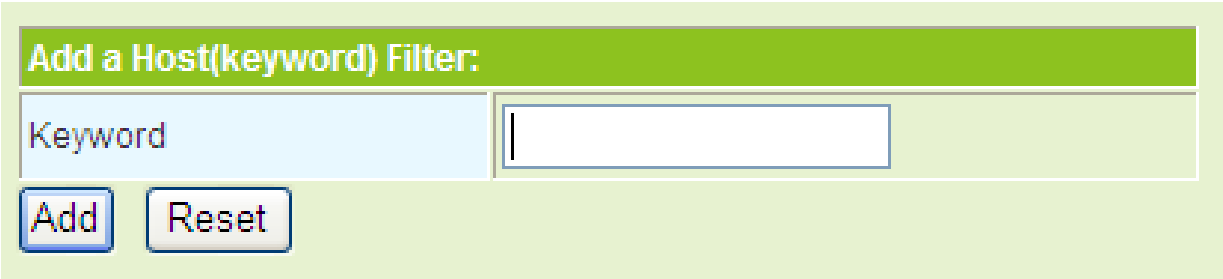
URL: Enter the URL that needs to be filtered.

- **Current Website Host Filters**



The figure above shows the current Website host filters in the system.

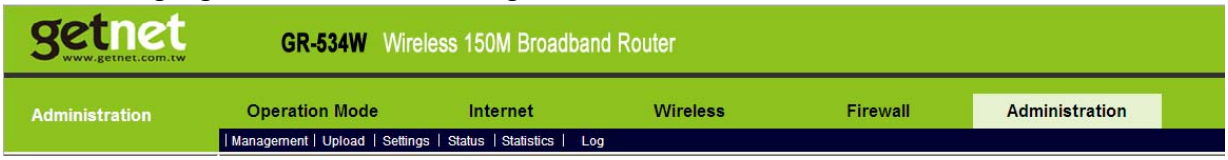
- **Add a Host (keyword) Filter**



Keyword: Enter the key words of the host that needs to be filtered.
After finishing the settings, click the **Add** button to add a new host filter.

5.7 Administration

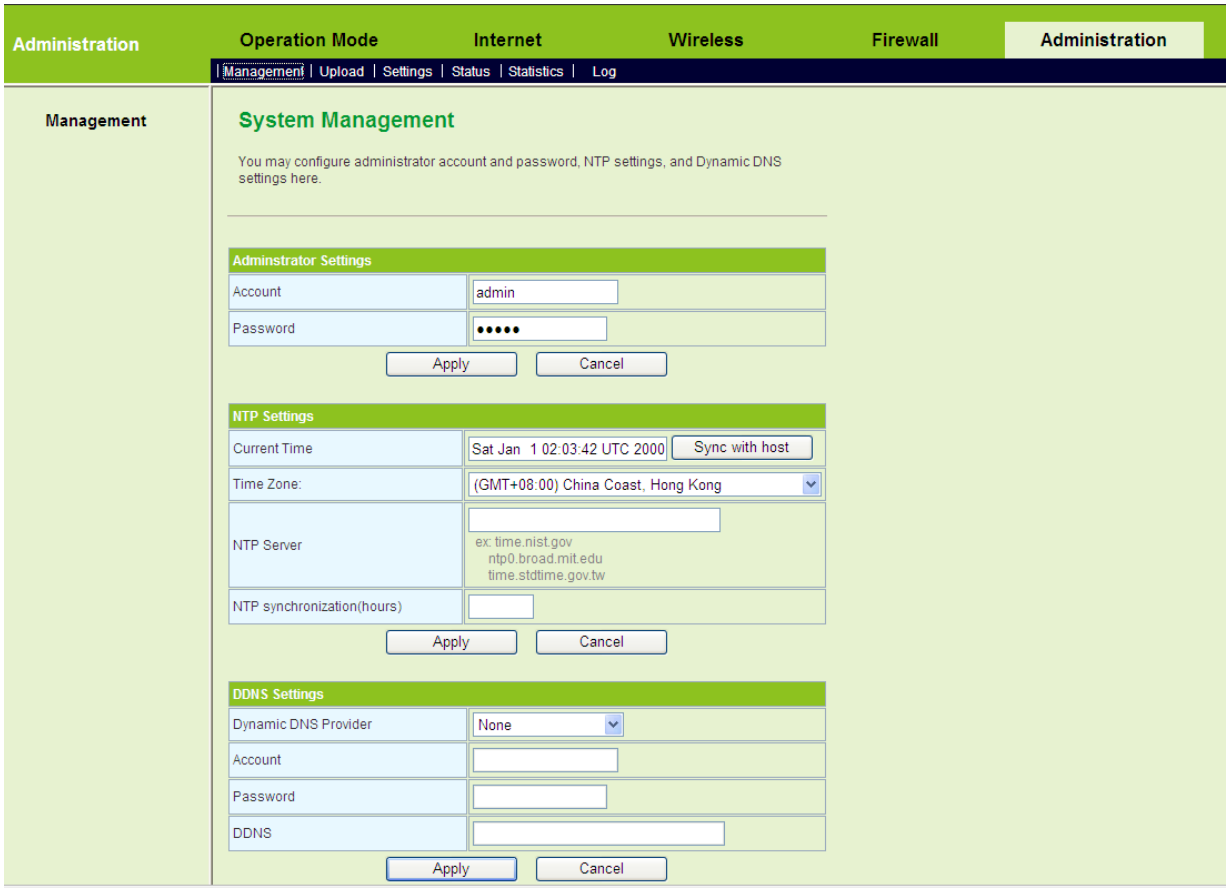
The following figure shows the navigation menu of the **Administration**:



The sub-menus of the **Administration** include **Management**, **Upload**, **Settings**, **Status**, **Statistics** and **Log**.

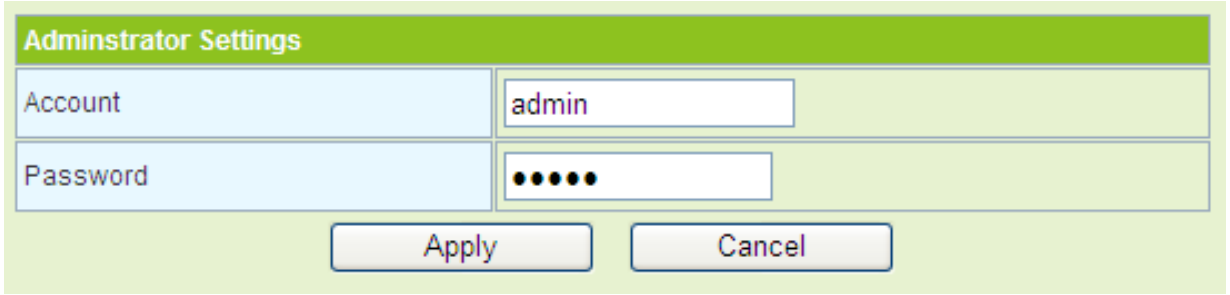
5.7.1 Management

Click **Administration** > **Management** to display the **System Management** page.



This page provides administration settings, NTP settings, and DDNS settings.

- **Administrator Settings**



The parameters of **Administrator Settings** are described as follows:

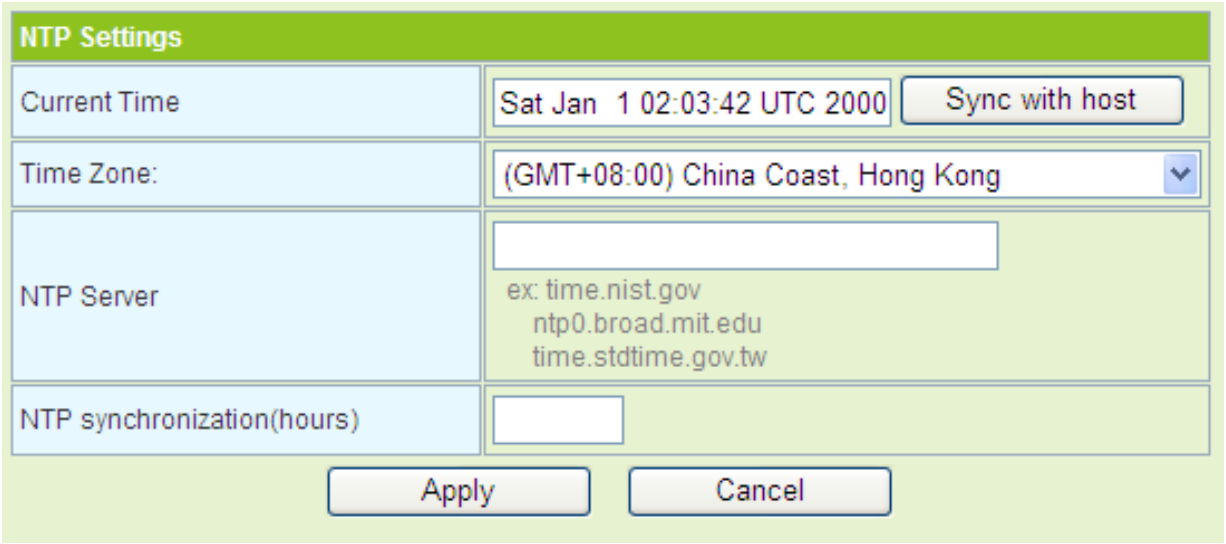
Field	Description
Account	Enter the account that you want to change.
Password	Enter the password for the new account.

Note:

*If you forget the account and the password, please press the **Reset** button. The system will return to the factory default settings. The default account and the password are **Admin**.*

- **NTP Settings**

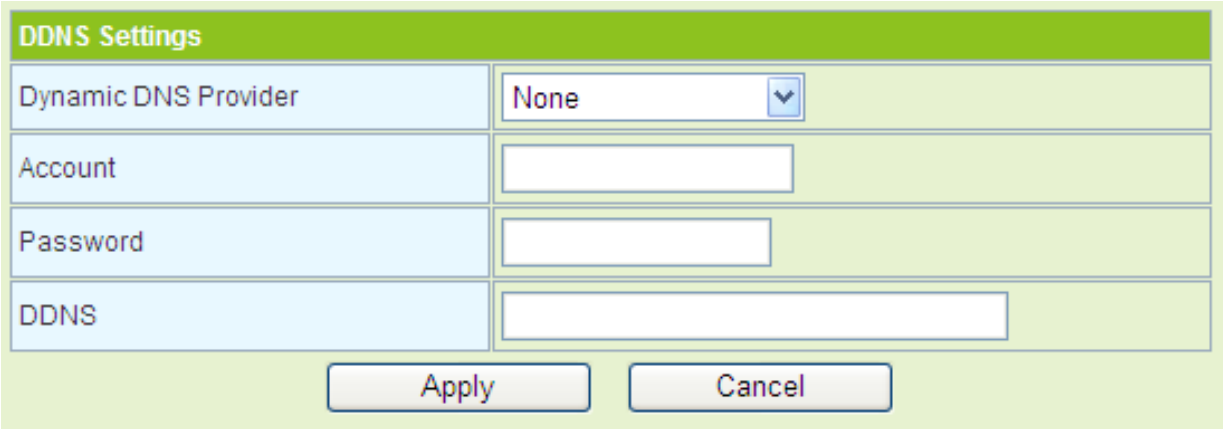
You may set the AP time to synchronize the time with your PC or the NTP server.



The parameters of the **NTP Settings** are described as follows:

Field	Description
Current Time	Display the current system time. Click the **Sync with Host** button, and then AP can synchronize its time with your PC.
Time Zone	Select your proper time zone.
NTP Server	Enter the URL of the time server.
NTP synchronization (hours)	Set the interval for synchronizing with the time server.

- **DDNS Settings**

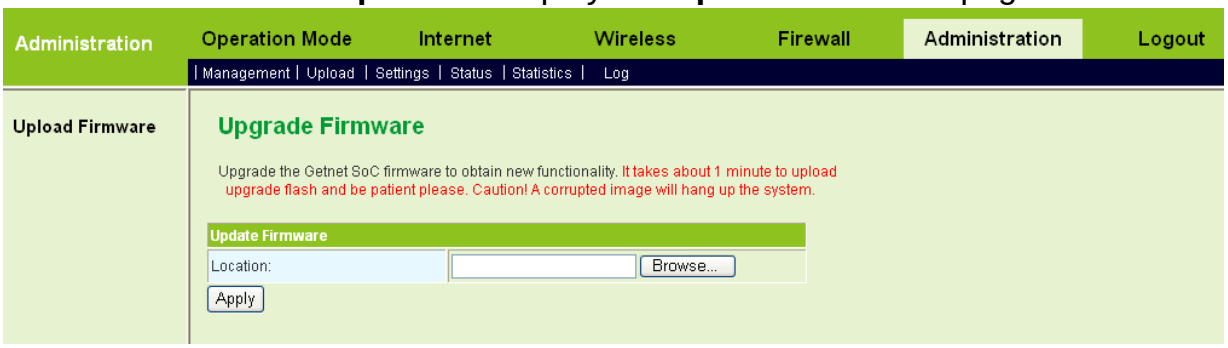


The parameters of **DDNS Settings** are described as follows:

Field	Description
Dynamic DNS Provider	You may select a proper DDNS provider in the drop down list. The DDNS providers include Dyndns.org, freedns.afraid.org, www.zoneedit.com, and www.no-ip.com
Account	Enter the DDNS account.
Password	Enter the DDNS password.
DDNS	Enter the domain name of DDNS.

5.7.2 Upload Firmware

Click **Administration** > **Upload** to display the **Upload Firmware** page.



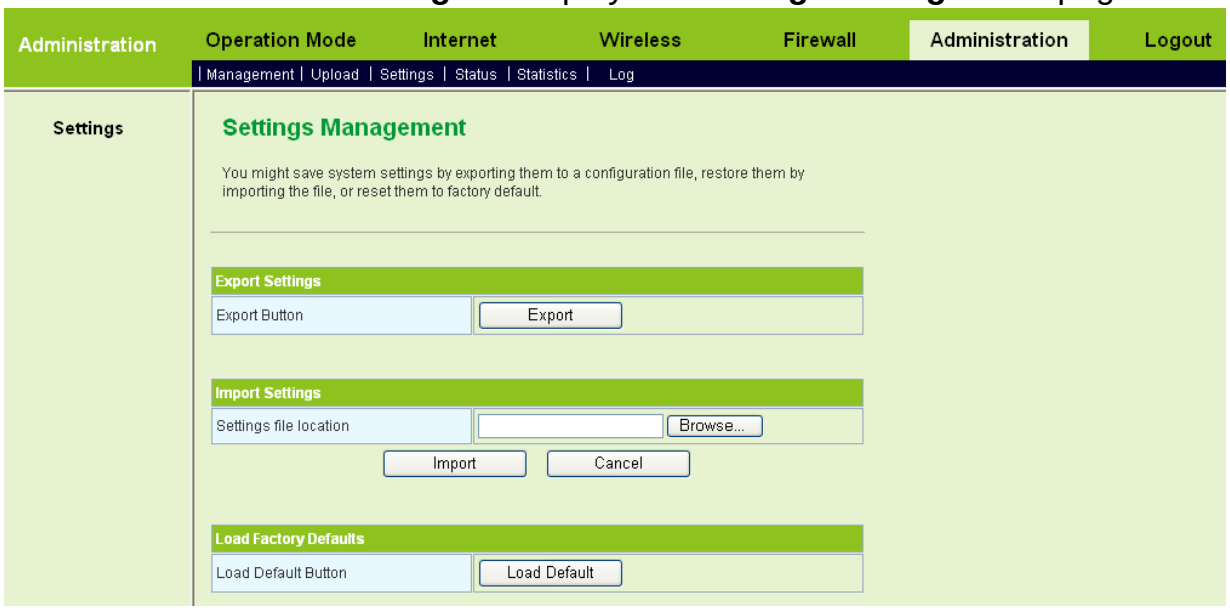
If you want to upload the firmware, click the **Browse…** button to choose the correct new firmware, and then click the **Apply** button. System begins to upgrade firmware. After upgrading firmware, system reboots and automatically enters the Web page.

Note:

Upgrading firmware will make the AP return to the factory defaults. In order to avoid the settings loss, please save the settings before upgrading firmware.
*During upgrading, do not cut off the power or press the **Reset** button.*

5.7.3 Settings Management

Click **Administration** > **Settings** to display the **Settings Management** page.

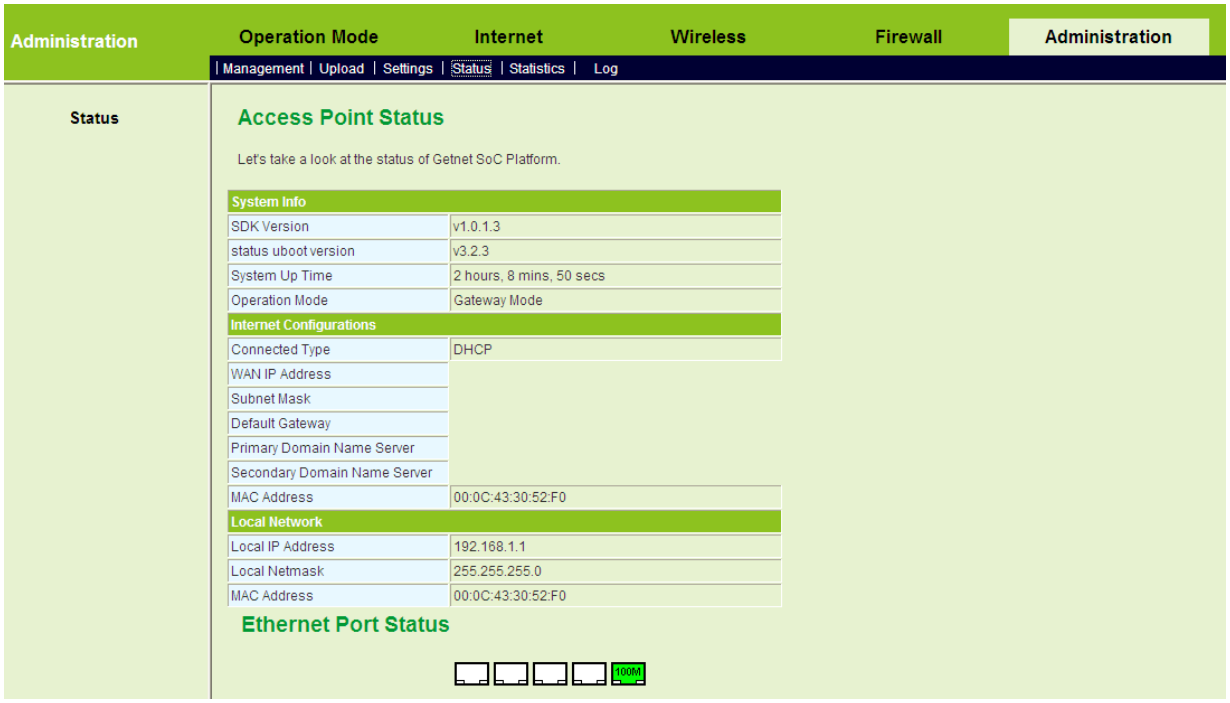


The parameters on this page are described as follows:

Field	Description
Export Settings	Click the **Export** button to save the settings to your local PC.
Import Settings	Click the **Browse…** button to choose the settings on your PC, and then click the **Import** button to import the settings to AP.
Load Factory Defaults	Click the **Load Default** button, and then system returns to the factory default settings.

5.7.4 Status

Click **Administration** > **Status** to display the **Access Point Status** page.



This page displays system information, Internet configuration, and local network settings.

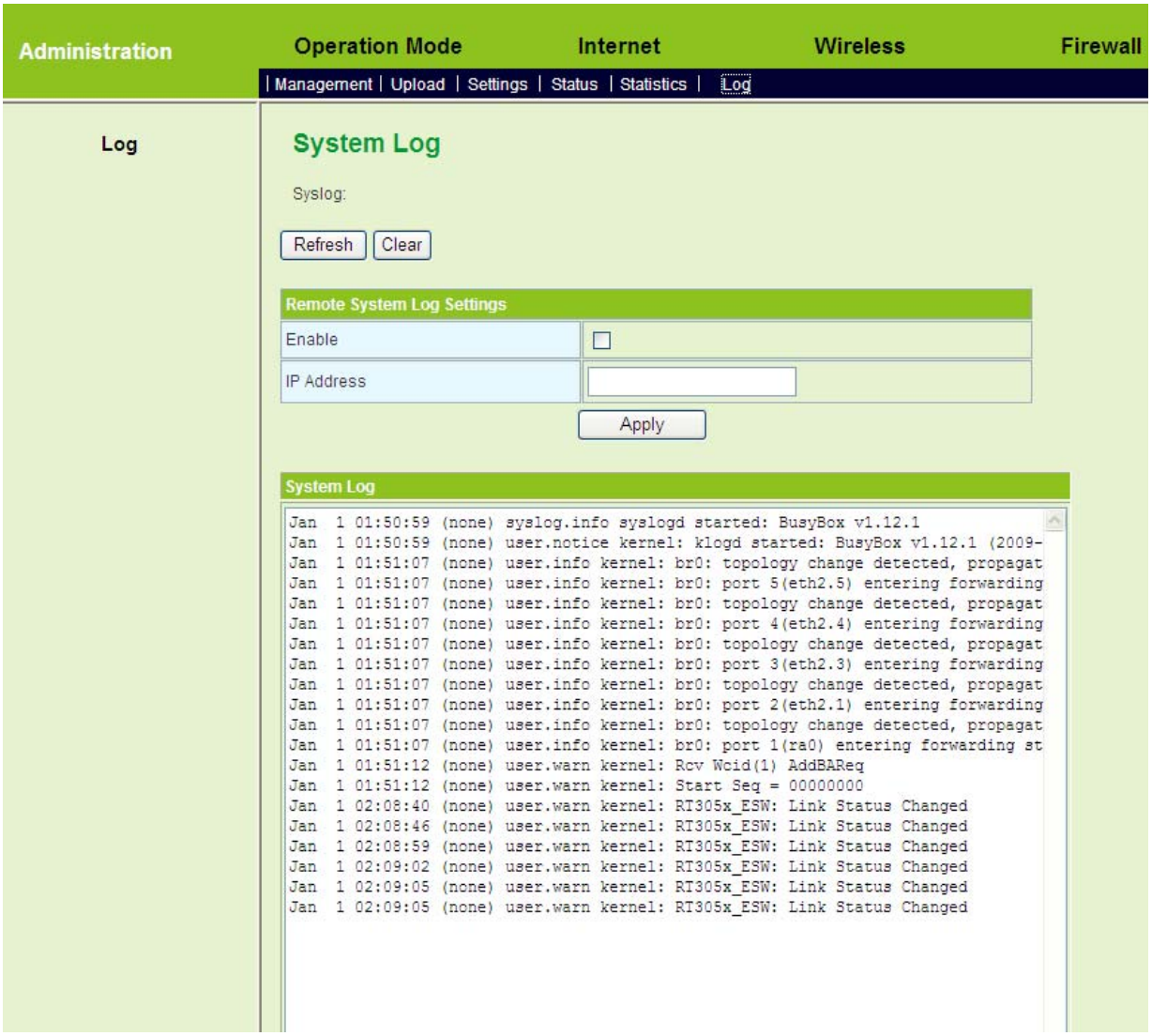
5.7.5 Statistic

Click **Administration** > **Statistics** to display the **Statistic** page.

This page displays the memory status, the numbers of transmitted and received data packets of the WLAN, LAN, and WAN.

5.7.6 System Log

Click **Administration** > **Log** to display the **System Log** page.

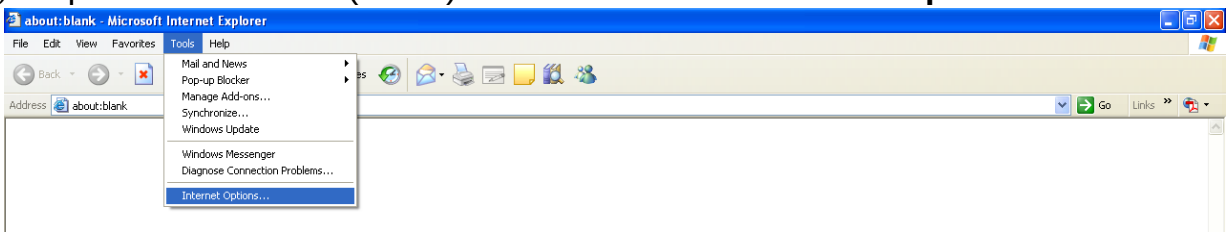


On this page, you are allowed to set the log server and view the system log.
After enabling the remote log server and enter the IP address of the server, click the **Apply** button, and then the log information can be sent to the remote log server.

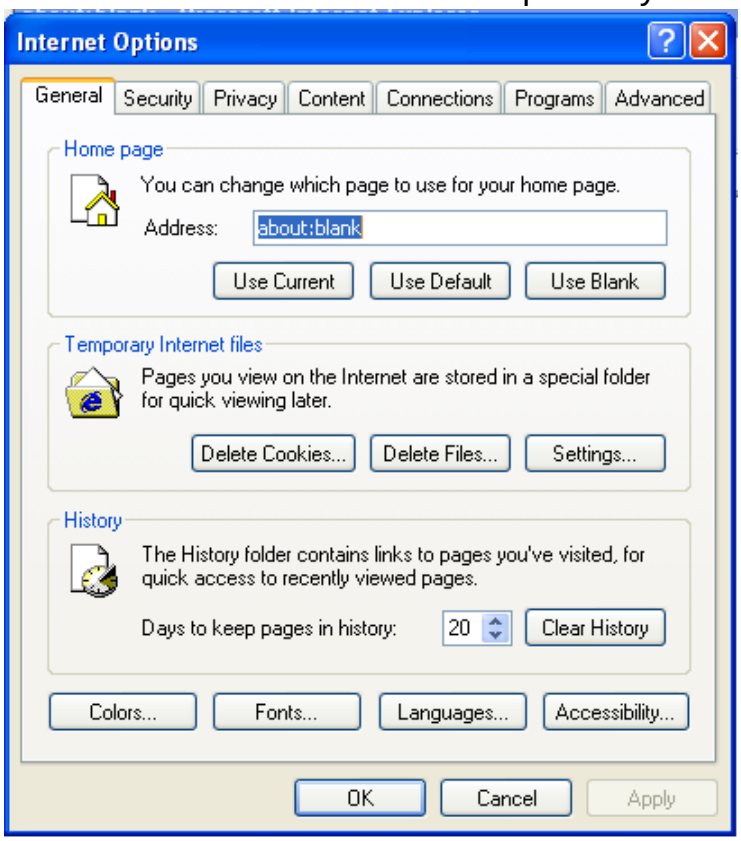
6 Troubleshooting

Why you can not access Web page to configure AP?

(1) Open Web browser (i.e. IE) and select **Tools** > **Internet Options…**.



(2) Click **Delete Cookies…** and **Delete Files…** respectively.



Why you can not establish the network connection?

- Beyond the wireless coverage

(1) Place the device near to the client.

(2) Try to change the channel setting

- Authentication problem

(1) Use the cable to connect the computer to the device.

(2) Check the network security setting.

(3) Try to reset the device by pressing the **Reset** button.

- Can not search the device.

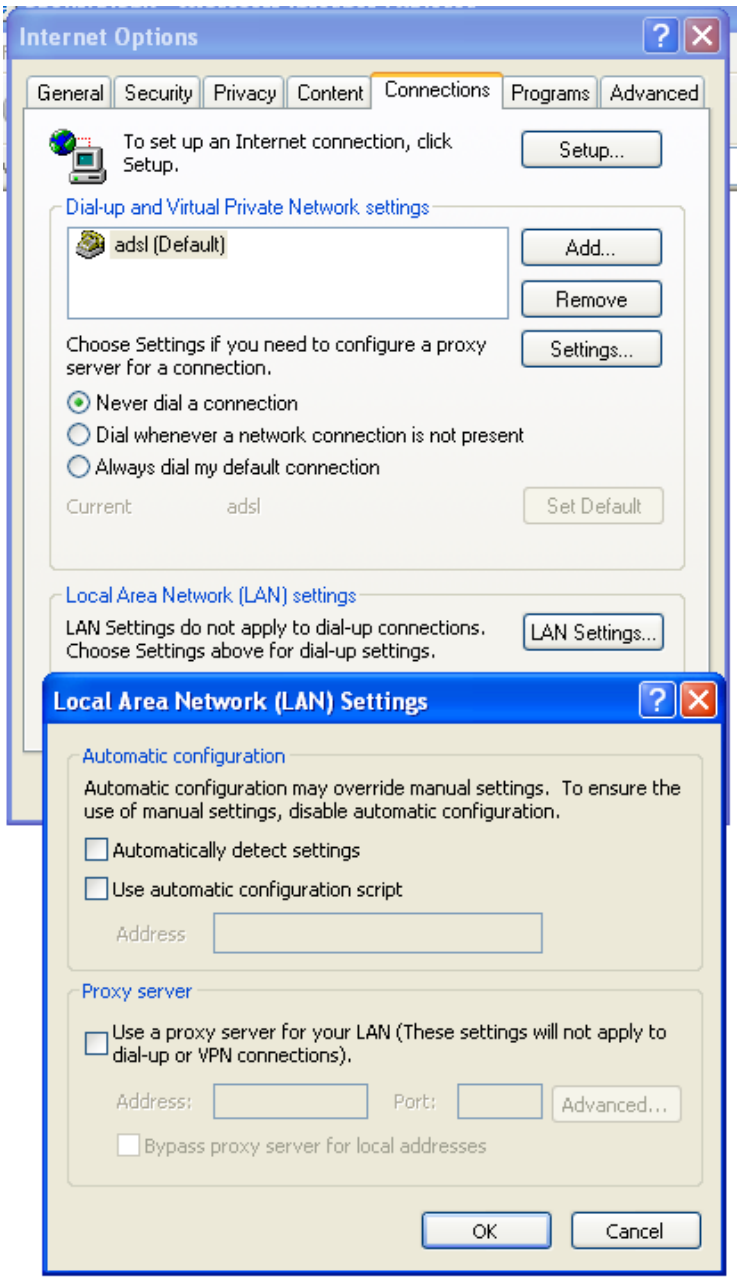
(1) Try to reset the router and test the device again.
(2) Check the setting of the wireless network card.
(3) Check the SSID and the encryption setting.

Why you can not access the Internet wirelessly via the device?

(1) Place the device to the wireless area where user can access the Internet.
(2) Check whether the wireless network card can connect to the right station.
(3) Check whether the wireless channel accords with the channel that your country or zone states.
(4) Check the encryption configuration.
(5) Check whether your ADSL cable is connected to the correct interfaces.
(6) Replace a network cable to connect to the device.

Why you can not access the Internet?

(1) Check whether the LEDs status on the ADSL modem and the wireless device is normal.
(2) Check whether the WAN indicator is on. If the WAN indicator is off, please check whether the cable connected to the WAN interface is loose.
(3) When the Link indicator keeps on but does not blink, it indicates that the device has accessed the Internet.
(4) Reboot your computer.
(5) Set the device again.
(6) Check whether the WAN LED is on.
(7) Check the encryption setting of wireless network.
(8) Check whether the PC that connects to the device can acquire the IP address via the wireless network or the cable network.
(9) Check the LAN settings of your Internet options, and do not use a proxy server for your LAN. See the following figure:


Internet Options
General
Security
Privacy
Content
Connections
Programs
Advanced
To set up an Internet connection, click Setup.
Setup...
Dial-up and Virtual Private Network settings
adsl (Default)
Add...
Remove
Choose Settings if you need to configure a proxy server for a connection.
Settings...
Never dial a connection
Dial whenever a network connection is not present
Always dial my default connection
Current
adsl
Set Default
Local Area Network (LAN) settings
LAN Settings do not apply to dial-up connections. Choose Settings above for dial-up settings.
LAN Settings...
Local Area Network (LAN) Settings
Automatic configuration
Automatic configuration may override manual settings. To ensure the use of manual settings, disable automatic configuration.
Automatically detect settings
Use automatic configuration script
Address
Proxy server
Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections).
Address:
Port:
Advanced...
Bypass proxy server for local addresses
OK
Cancel

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