WRT300N-DD
User Manual

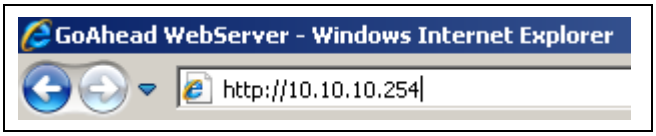
Contents

Features

► Complies with IEEE 802.11g, IEEE 802.11b, IEEE 802.3, IEEE 802.3u standards.
► 1 10/100M Auto-Negotiation RJ45 WAN port, 4 10/100M Auto-Negotiation RJ45 LAN ports, supporting Auto MDI/MDIX.
► Adopts 2x to 3x eXtended Range wireless LAN transmission technology.
► Supports 54/48/36/24/18/12/9/6Mbps or 11/5.5/3/2/1Mbps data transfer rates. Up to 300Mbps
► Provides WEP,WPA,WPA2,WPA2 Mixed authentication, TKIP/AES encryption security.
► Shares data and Internet access for users, supporting PPPoE, Dynamic IP, Static IP, PPTP Internet access.
► Supports Virtual Server, Special Application and DMZ host.
► Supports UPnP, Dynamic DNS, Static Routing.
► Connecting Internet on demand and disconnecting from the Internet when idle for PPPoE.
► Built-in NAT and DHCP server supporting static IP address distributing.
► Built-in firewall supporting IP address filtering, Port filtering, and MAC address filtering.
► Provides 64/128/152-bit WEP encryption security and wireless LAN ACL (Access Control List).
► Supports Flow Statistics.
► Supports ICMP-FLOOD, UDP-FLOOD, and TCP-SYN-FLOOD filter
► Ignores Ping packets from WAN or LAN ports.
► Supports firmware upgrade.
► Supports Web management.

Configuring the Router

In the IE browser, type "10.10.10.254" into the login screen.



Enter you username and password, the default username is "admin", and the default password is "admin".
After your successful login, you can see the interface as follows:

You can configure and manage the router. There are six main menus on the left of the web pages. Submenus will be available after you click one of the main menus. The six main menus are: Operation Mode, Internet Settings, Wireless Settings, Firewall, Storage, Administration. To apply any settings you have altered on the page, please click the Apply button.

There are three buttons at the top of the menus, "open all" ,"close all" and "Ralink".

Open all: open all the sub-menu.

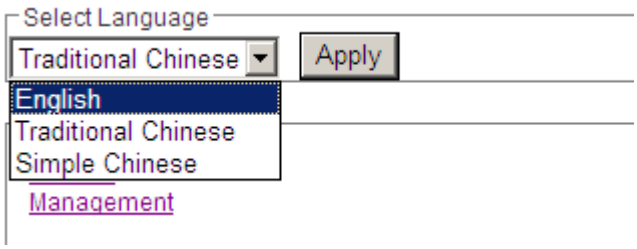
Close all: close all the sub-menu.

Ralink: return to the login page.

On the right of the web page, you can see four setting button: Select Language, Status, Statistic, Management

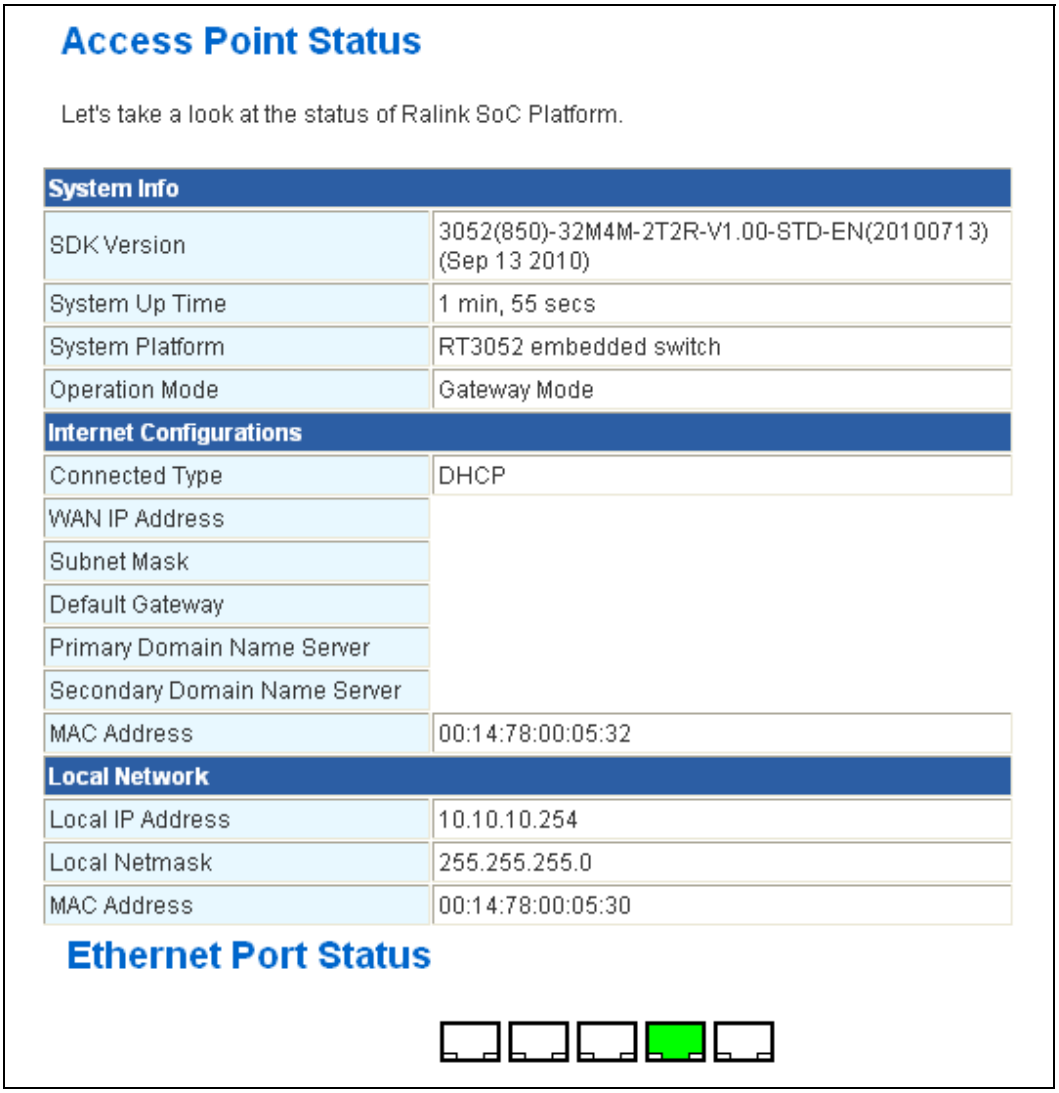
Select Language

You can choose three languages: English, Traditional Chinese and Simple Chinese.



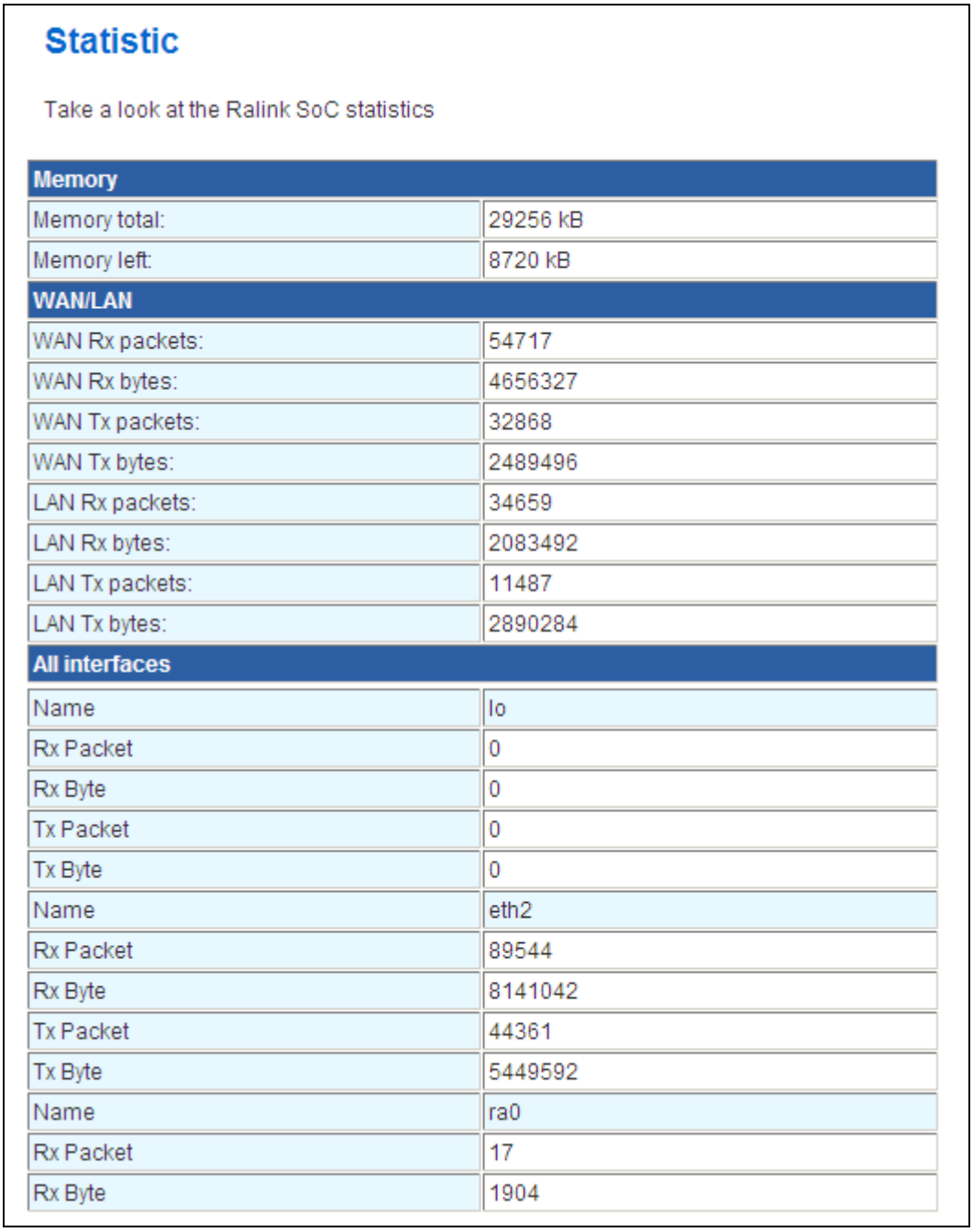
Status

Click the "Status" button, the page will displays the status of Ralink SoC Platform, including System Info, Internet Configurations and Local Network. As follows:



Statistic:

Click the "Statistic" button, the page will display the Ralink SoC statistics. You can see the information of send and receive packets in all ports.



Statistic

Take a look at the Ralink SoC statistics

Memory	
Memory total:	29256 kB
Memory left:	8720 kB
WAN/LAN	
WAN Rx packets:	54717
WAN Rx bytes:	4656327
WAN Tx packets:	32868
WAN Tx bytes:	2489496
LAN Rx packets:	34659
LAN Rx bytes:	2083492
LAN Tx packets:	11487
LAN Tx bytes:	2890284
All interfaces	
Name	lo
Rx Packet	0
Rx Byte	0
Tx Packet	0
Tx Byte	0
Name	eth2
Rx Packet	89544
Rx Byte	8141042
Tx Packet	44361
Tx Byte	5449592
Name	ra0
Rx Packet	17
Rx Byte	1904

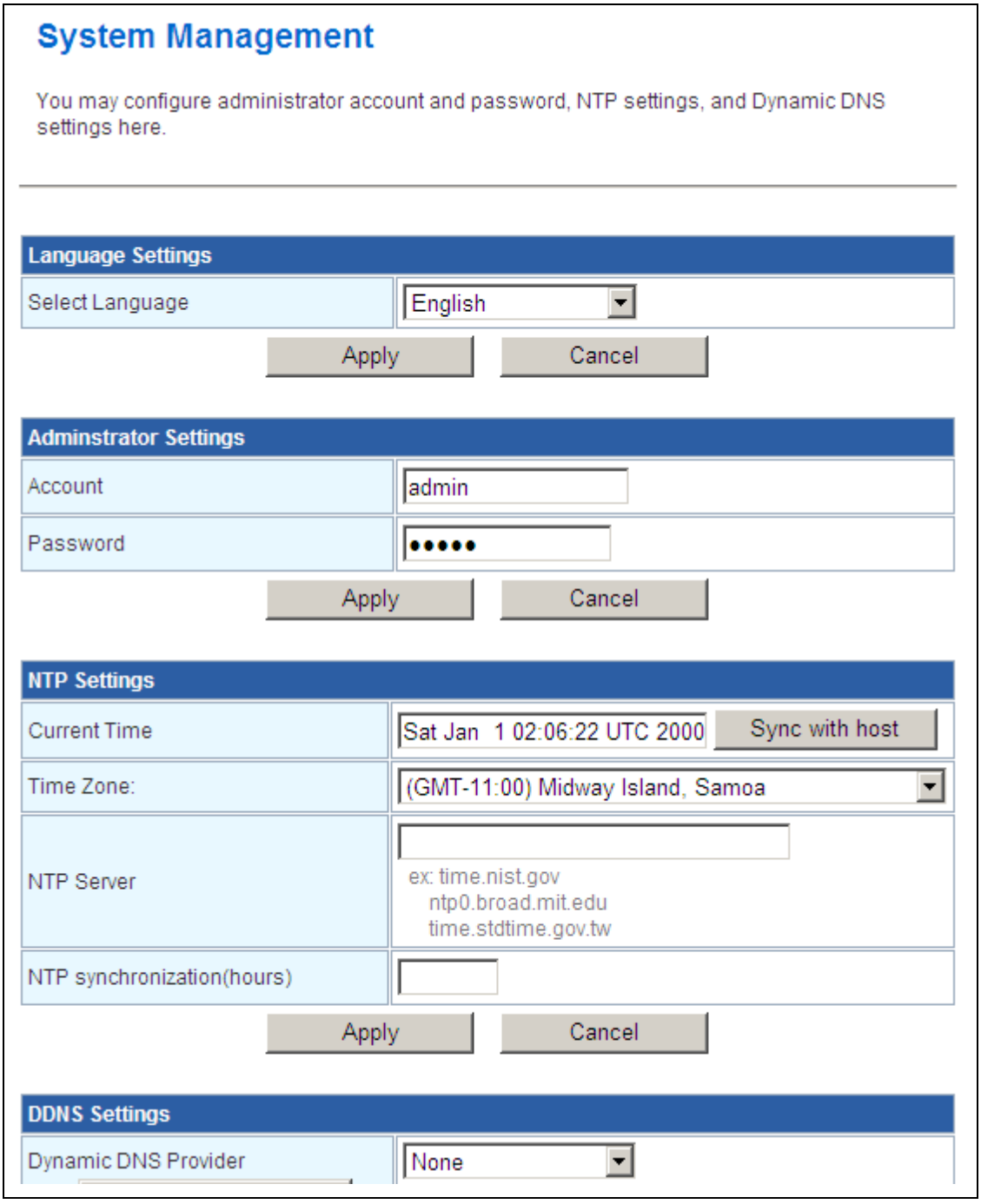
System Management:

Click the "Management" button, enter into the system management setting page.

You can set the account to access the web server of Access Point, NTP settings and DDNS settings here.

Click the "Apply" button to enable configuration to take effect.

Click the "Cancel" button to cancel the setting.



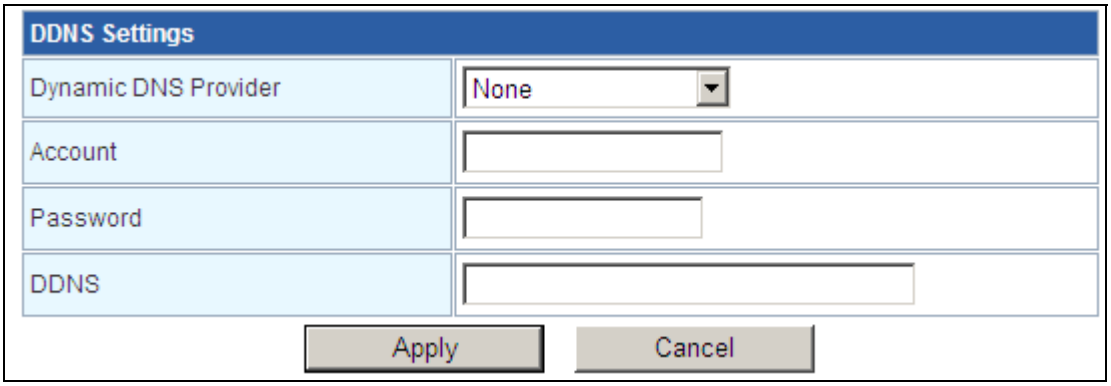
DDNS:

The router offers a Dynamic Domain Name System (DDNS) feature. DDNS lets you assign a fixed host and domain name to a dynamic Internet IP Address. It is useful when you are hosting your own website, FTP server, or other server behind the router. Before using this feature, you need to sign up for DDNS service providers such as www.zoneedit.com or www.no-ip.com. The Dynamic DNS client service provider will give you a password or key.

To set up for DDNS, follow these instructions:

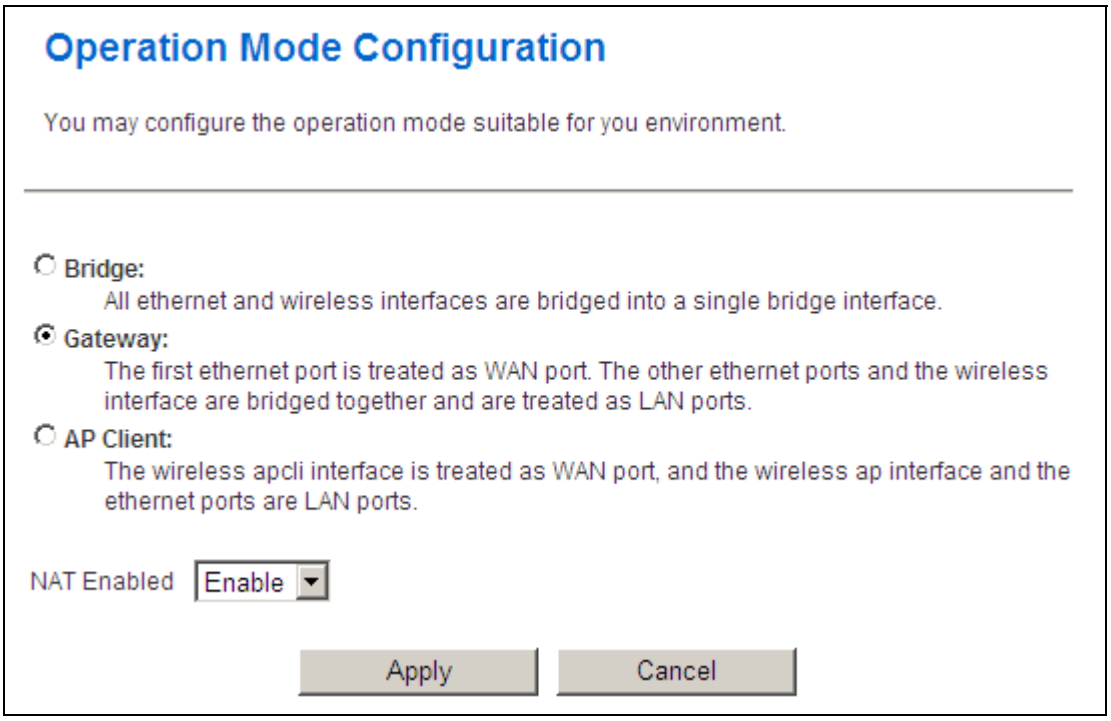
1. Type the domain names your dynamic DNS service provider gave.
2. Type the Account for your DDNS account.
3. Type the Password for your DDNS account.

4. Click the Apply button to apply to the DDNS service.



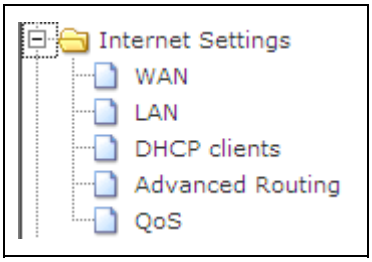
1 Operation Mode

You can setup different modes to LAN and WLAN interface for NAT and bridging function.
Click "Apply" button to enable configuration to take effect.
Click "Cancel" button to cancel the settings.



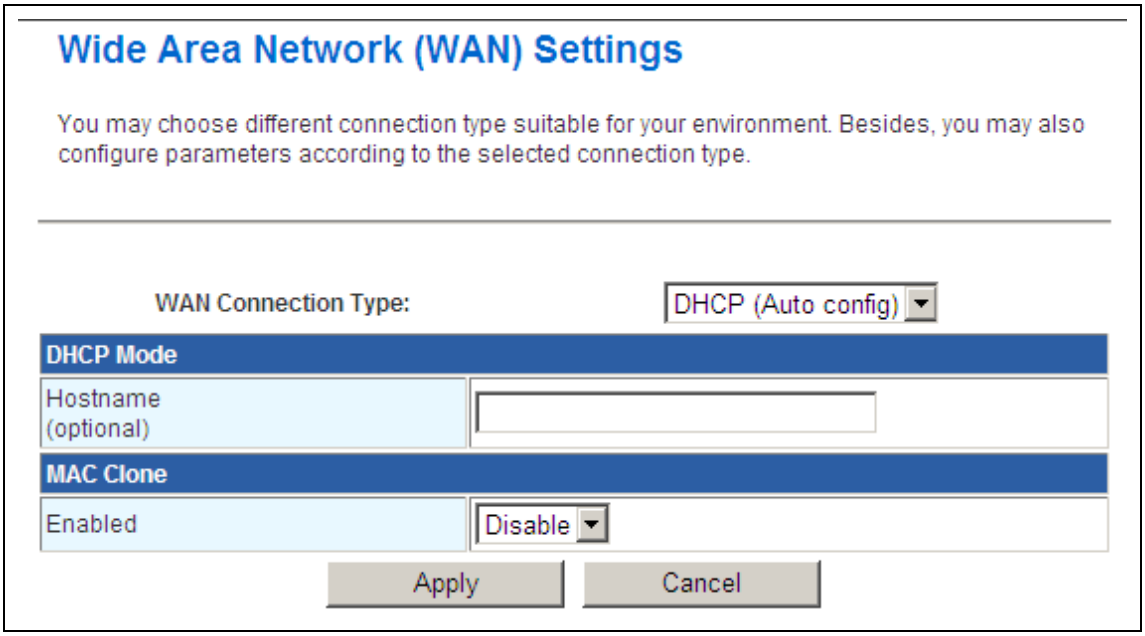
2 Internet Settings

There are five submenus under the Internet Settings menus: WAN, LAN, DHCP clients, Advanced Routing, QoS.

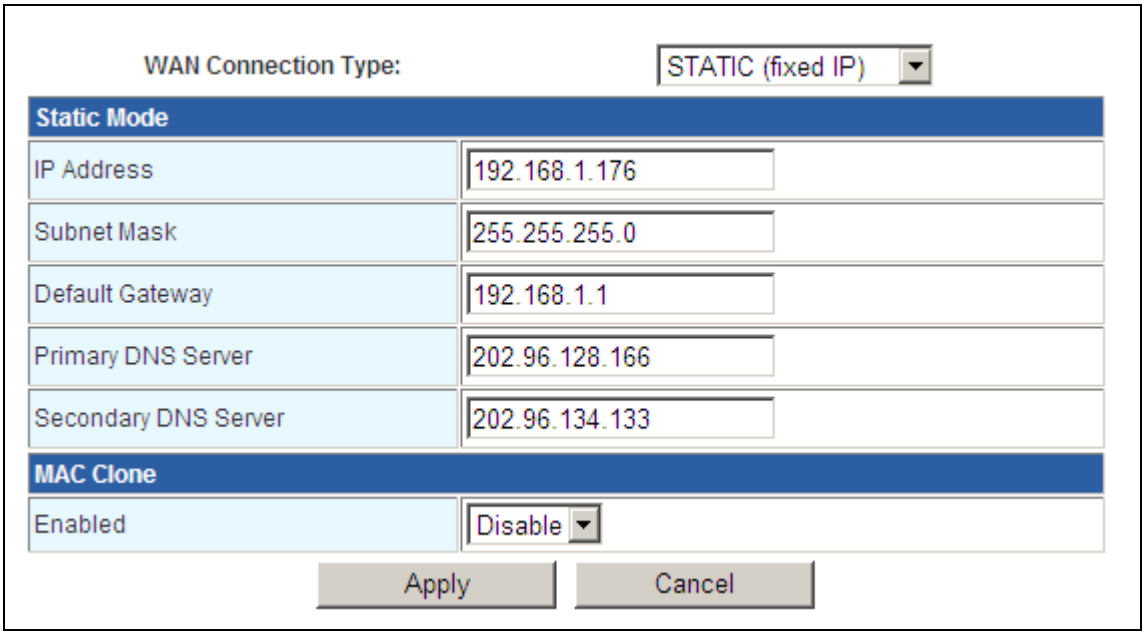


2.1 WAN

You can configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE , L2TP, PPTP or 3G by click the item value of WAN Connection type.



a. If you choose Static IP, you should have fixed IP Parameters specified by your ISP.



You should type the following parameters into the spaces provided:

IP Address – Enter the IP address in dotted-decimal notation provided by your ISP.

Subnet Mask – Enter the subnet Mask in dotted-decimal notation provided by your ISP, usually is 255.255.255.0.

Default Gateway – (Optional) Enter the gateway IP address in dotted-decimal notation provided by your ISP.

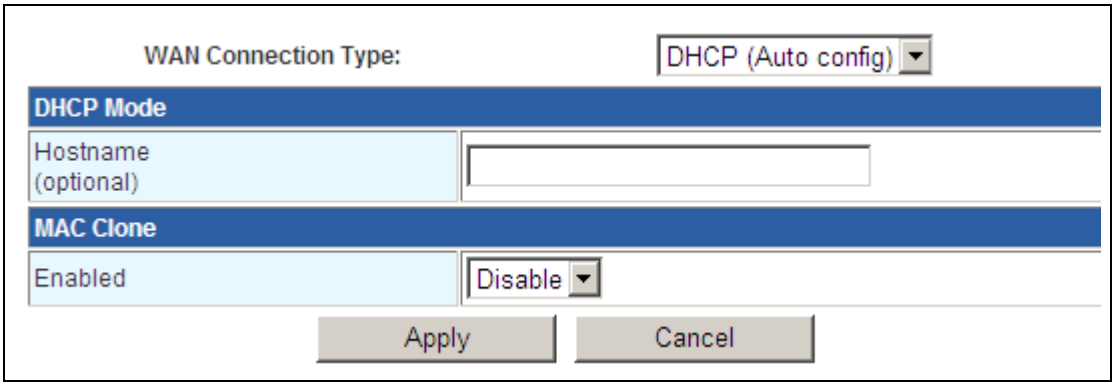
Primary DNS Server – (Optional) Enter the DNS address in dotted-decimal notation provided by your ISP.

Secondary DNS Server – (Optional) Type another DNS address in dotted-decimal notation provided by your ISP if provided.

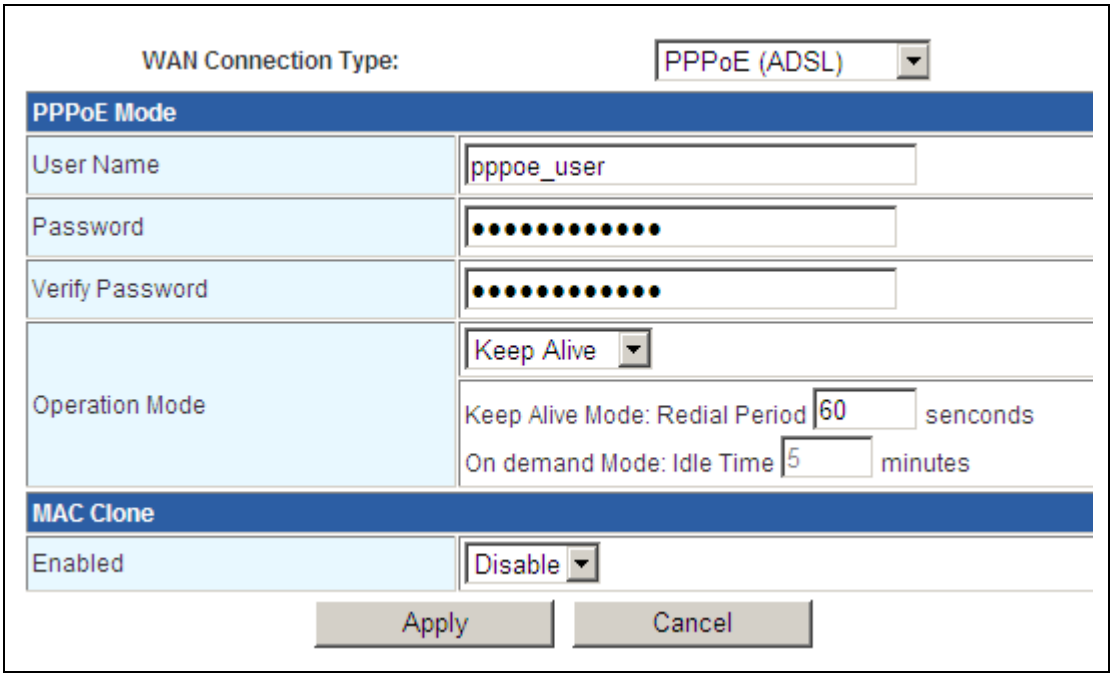
Click the "Apply" button to enable configuration to take effect.

Click the "Cancel" button to cancel the setting.

b. The router is set up by default as a DHCP (Dynamic Host Configuration Protocol) server, which provides the TCP/IP configuration for all the PC(s) that are connected to the router on the LAN.



c. If you choose PPPoE, you should enter the following parameters.

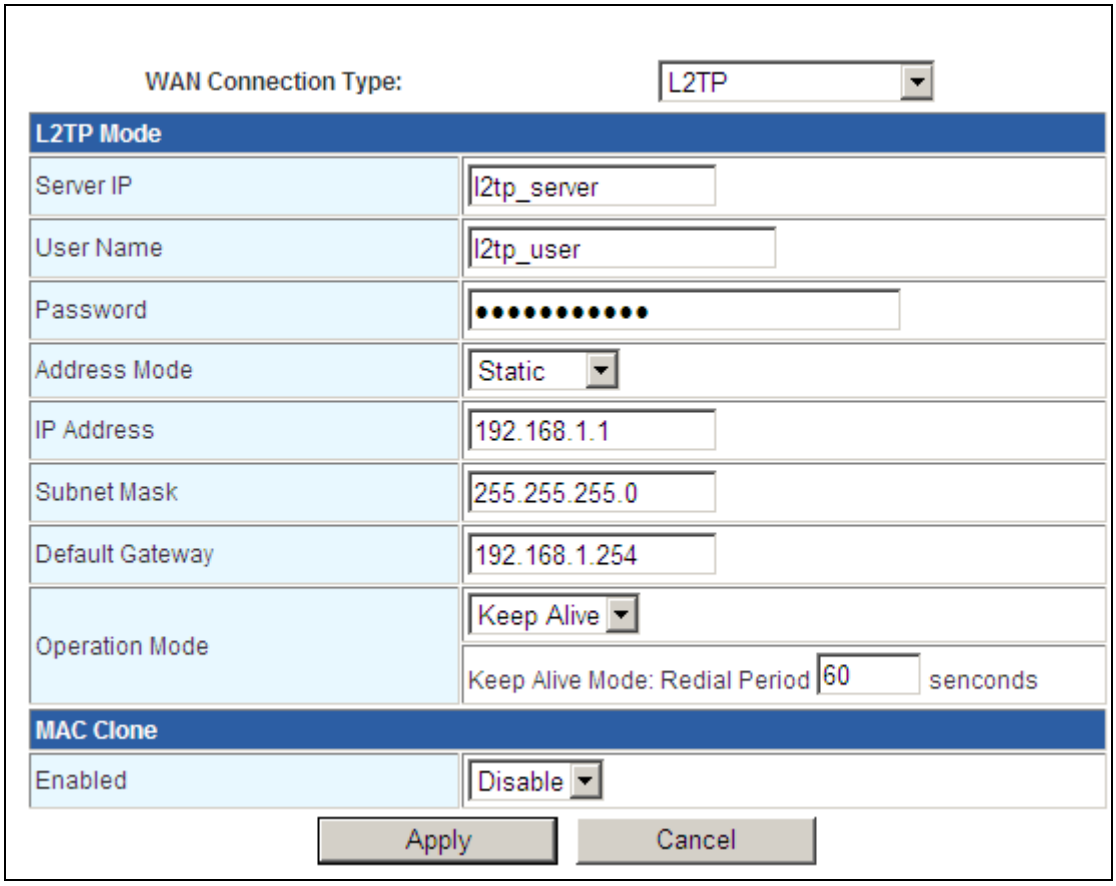


User Name/Password – Enter the User Name and Password provided by your ISP. These fields are case-sensitive.

Connect on Demand – You can configure the router to disconnect your Internet connection after a specified period of inactivity (Max Idle Time). If your Internet connection has been terminated due to inactivity, Connect on Demand enables the router to automatically re-establish your connection as soon as you attempt to access the Internet again. If you wish to activate Connect on Demand, click the radio button. If you want your Internet connection to remain active at all times, enter 0 in the Max Idle Time field. Otherwise, enter the number of minutes you want to have elapsed before your Internet connection terminates.

Manually – You can configure the router to make it connect or disconnect manually. After a specified period of inactivity (Max Idle Time), the router will disconnect from the Internet connection, and you will not be able to re-establish your connection automatically as soon as you attempt to access the Internet again. To use this option, click the radio button. If you want your Internet connection to remain active at all times, enter "0" in the Max Idle Time field. Otherwise, enter the number time in minutes that you wish to have the Internet connecting last unless a new link is requested.

d. If you choose L2TP, you should enter the following parameters



User Name/Password – Enter the User Name and Password provided by your ISP. These fields are case-sensitive.

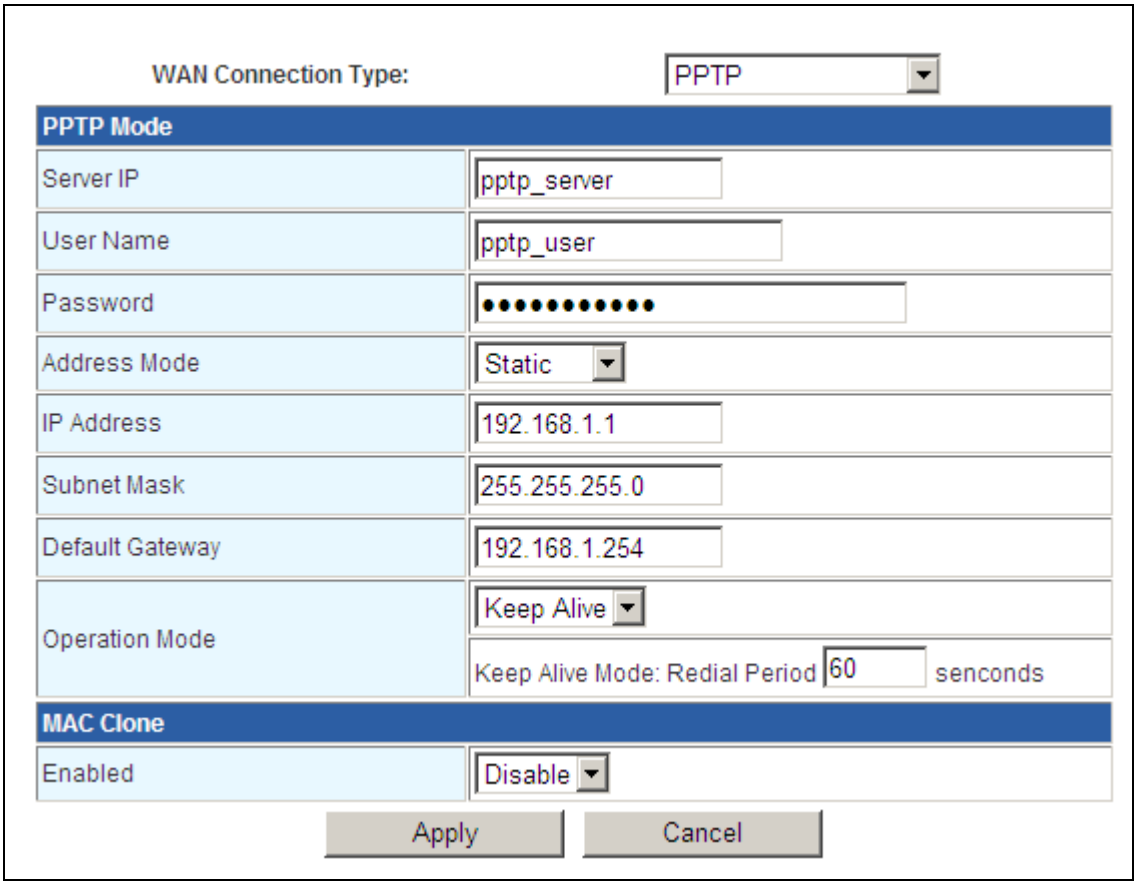
Dynamic IP/ Static IP ¨ Choose either as you are given by your ISP.

Click the Connect button to connect immediately. Click the Disconnect button to disconnect immediately.

Connect on Demand – You can configure the router to disconnect from your Internet connection after a specified period of inactivity (Max Idle Time). If your Internet connection has been terminated due to inactivity, Connect on Demand enables the router to automatically re-establish your connection as soon as you attempt to access the Internet again. If you wish to activate Connect on Demand, click the radio button. If you want your Internet connection to remain active at all times, enter 0 in the Max Idle Time field. Otherwise, enter the number of minutes you want to have elapsed before your Internet connection terminates.

Caution: Sometimes the connection cannot be disconnected although you specify a time to Max Idle Time, since some applications is visiting the Internet continually in the background.

e. If you choose PPTP, you should enter the following parameters.

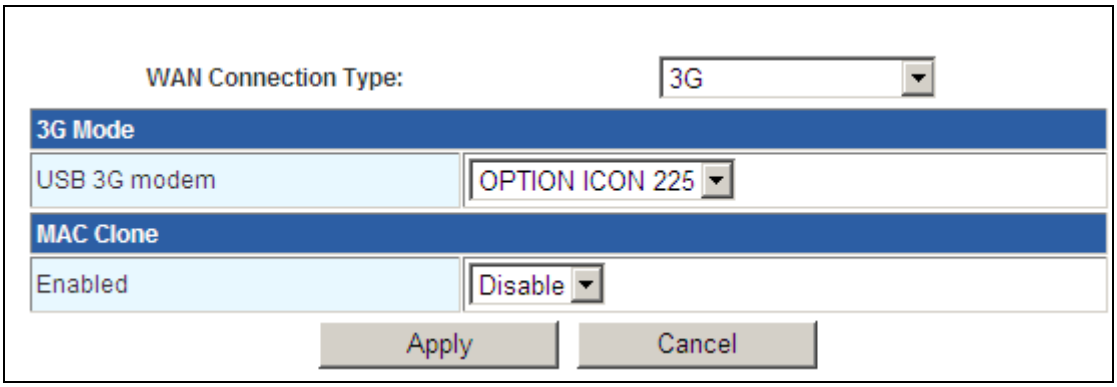


User Name/Password – Enter the User Name and Password provided by your ISP. These fields are case-sensitive.

Address Mode: Dynamic and Static.

Dynamic IP/ Static IP – Choose either as you are given by your ISP and enter the ISP's IP address or the domain name.

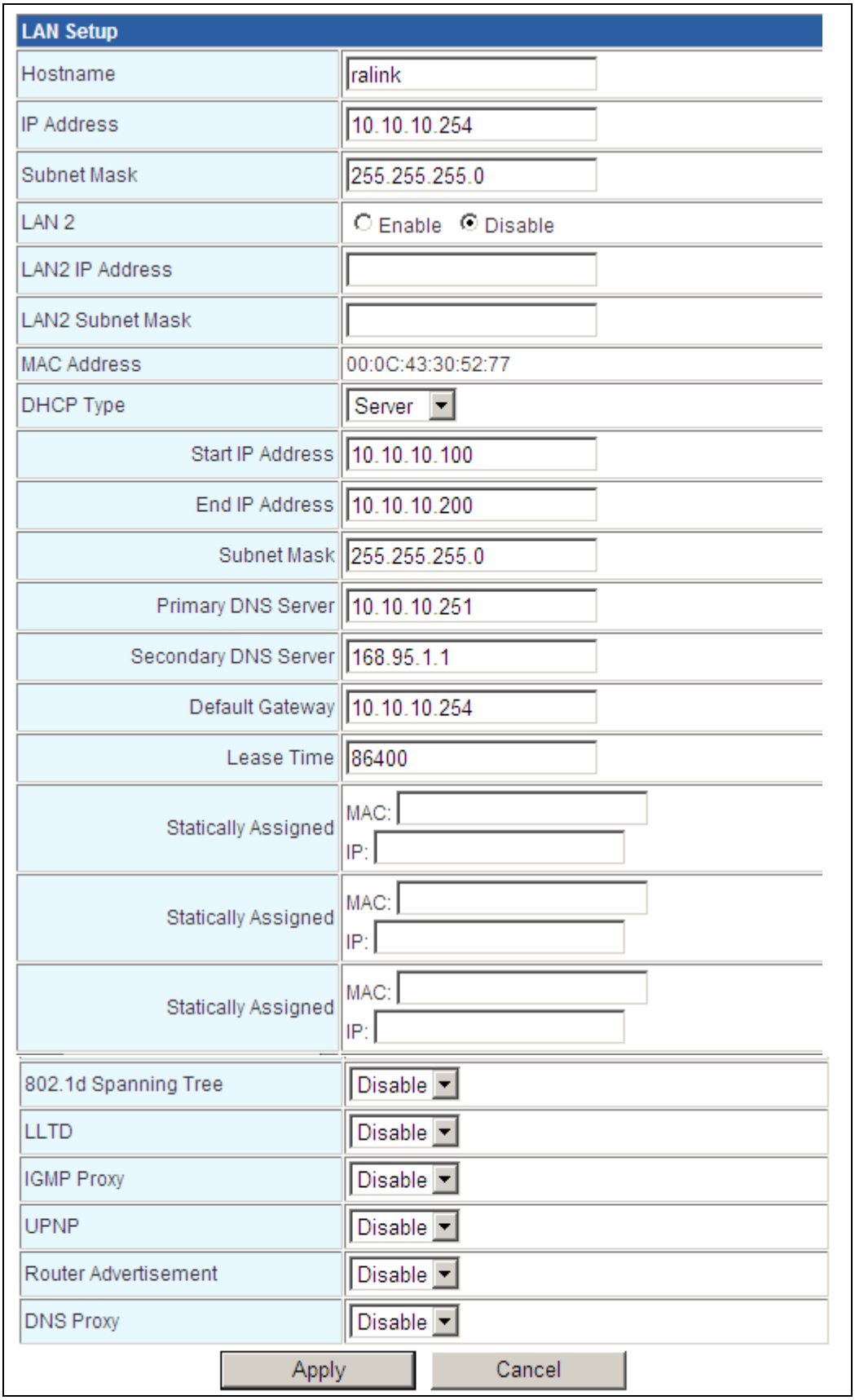
f. If you choose 3G, you can select the following parameters.



3G Mode: you can select the USB 3G modem, OPTION ICON 225, NU MU-Q 101, HUAWEI E169, BandLuxe C270.

2.2 LAN

You may enable/disable networking functions and configure their parameters as your wish.



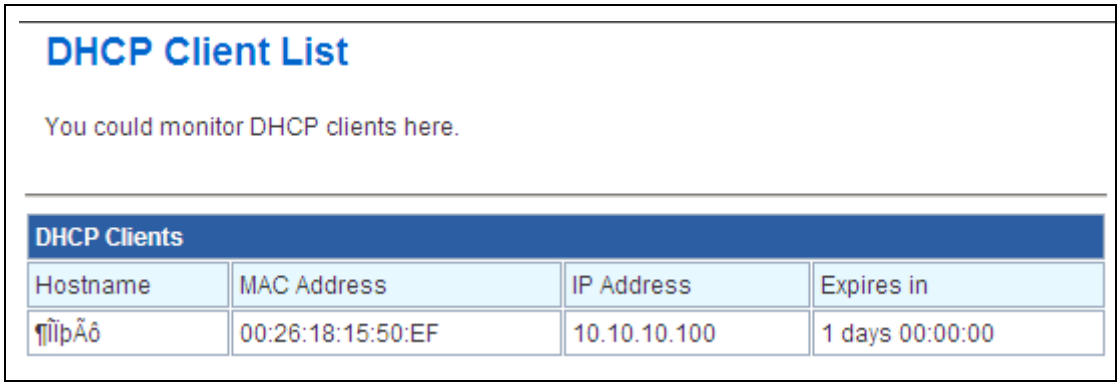
Note:

a. If you change the IP Address of LAN, you must use the new IP Address to login the router and you must change the DHCP Client Range at the same time.

b. If the new LAN IP Address you set is not in the same subnet, the IP Address pool of the DHCP server will not take effect, until they are re-configured.
c. If the new LAN IP Address you set is not in the same subnet, the Virtual Server and DMZ Host will change accordingly at the same time.

2.3 DHCP clients

You can see DHCP clients list in this page.



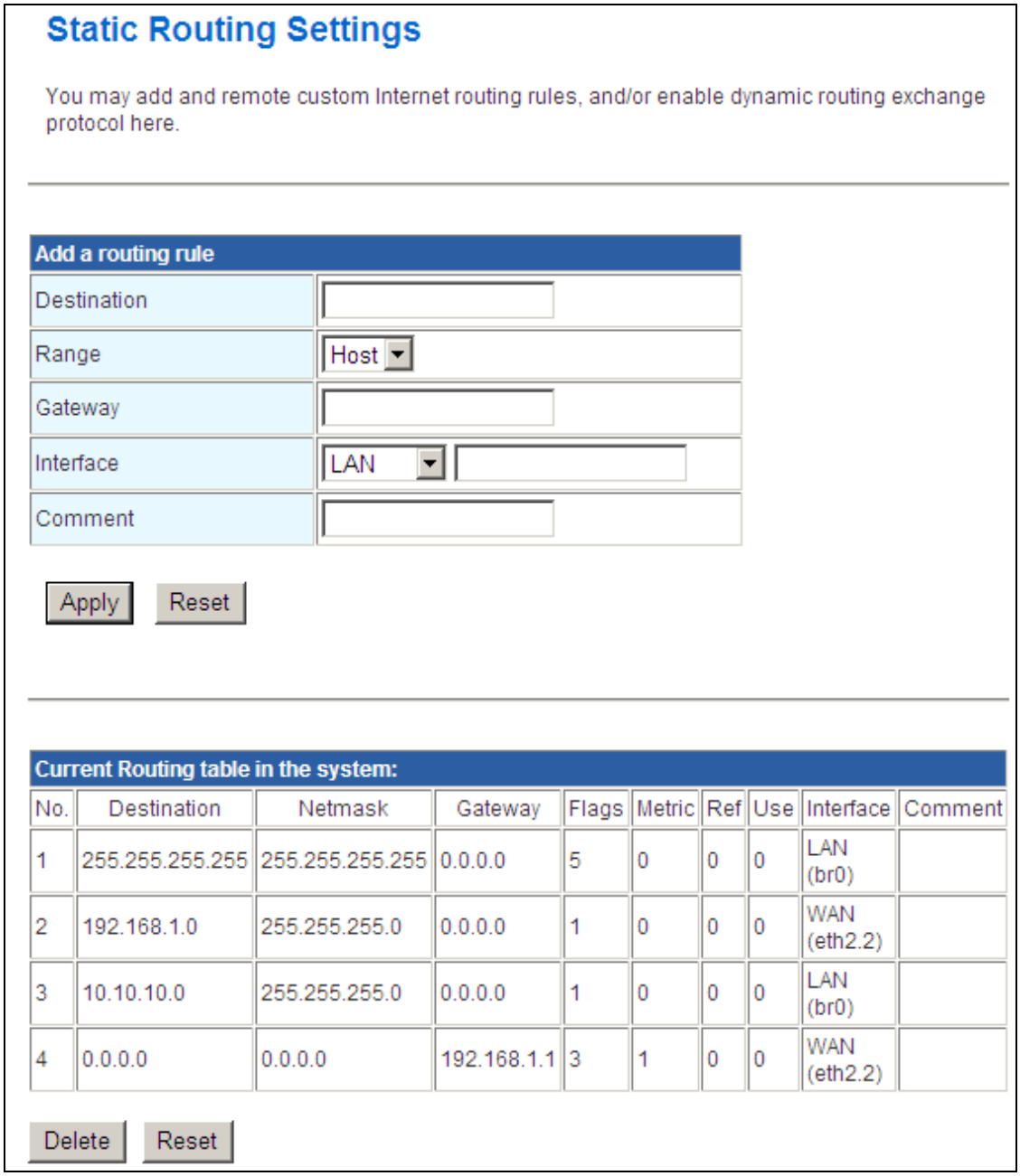
DHCP Client List

You could monitor DHCP clients here.

DHCP Clients			
Hostname	MAC Address	IP Address	Expires in
¶ÎÌþÃô	00:26:18:15:50:EF	10.10.10.100	1 days 00:00:00

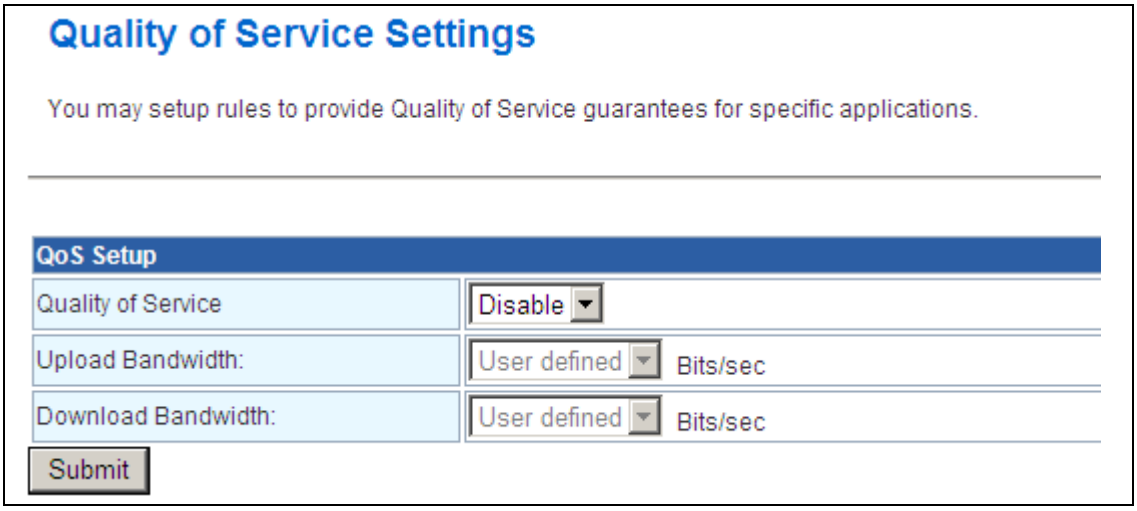
2.4 Advanced Routing

You may add and remote custom Internet routing rules, and enable dynamic routing exchange protocol here.



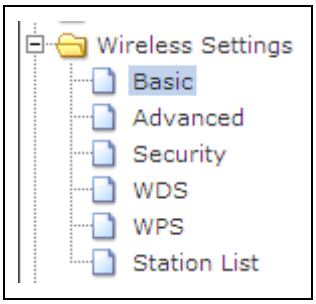
2.5 QoS

If you enable QoS, you can set the Upload Bandwidth and Download Bandwidth. Click "Submit" button to enable configuration to take effect.



3 Wireless Settings

There are six submenus under the Wireless Settings menus: Basic, Advanced, Security, WDS, WPS, Station List.



3.1 Wireless Network

You could configure the minimum number of Wireless settings for communication, such as Network Name (SSID) and Channel. The Access Point can be set simply with only the minimum setting items.

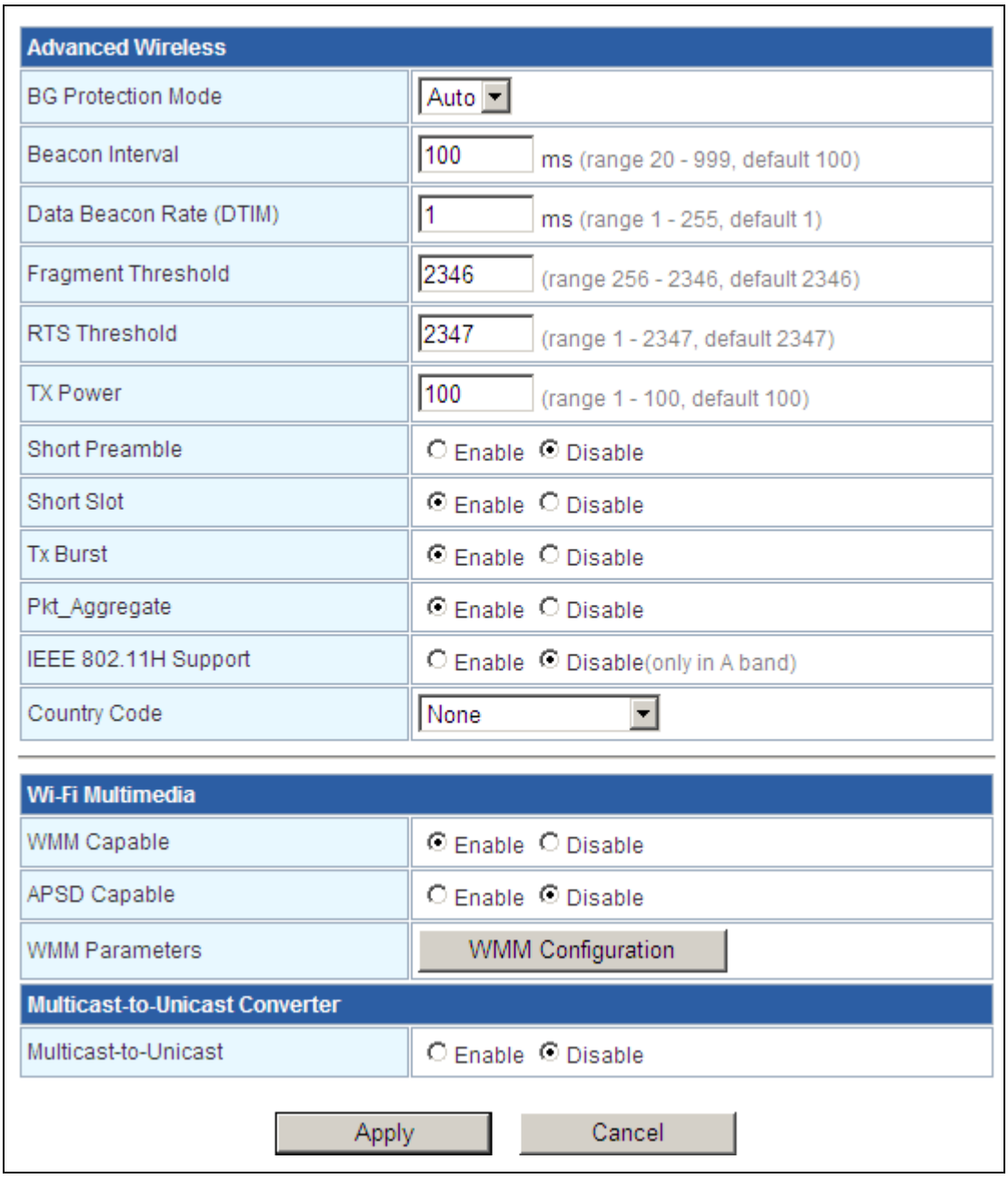
Wireless Network	
Radio On/Off	RADIO OFF
Network Mode	11b/g/n mixed mode
Network Name(SSID)	RT305x_AP Hidden ☐ Isolated ☐
Multiple SSID1	Hidden ☐ Isolated ☐
Multiple SSID2	Hidden ☐ Isolated ☐
Multiple SSID3	Hidden ☐ Isolated ☐
Multiple SSID4	Hidden ☐ Isolated ☐
Multiple SSID5	Hidden ☐ Isolated ☐
Multiple SSID6	Hidden ☐ Isolated ☐
Multiple SSID7	Hidden ☐ Isolated ☐
Broadcast Network Name (SSID)	◉ Enable ○ Disable
AP Isolation	○ Enable ◉ Disable
MBSSID AP Isolation	○ Enable ◉ Disable
BSSID	00:0C:43:30:52:78
Frequency (Channel)	2437MHz (Channel 6)

HT Physical Mode	
Operating Mode	◉ Mixed Mode ○ Green Field
Channel BandWidth	○ 20 ◉ 20/40
Guard Interval	○ Long ◉ Auto
MCS	Auto
Reverse Direction Grant(RDG)	○ Disable ◉ Enable
Extension Channel	2457MHz (Channel 10)
Aggregation MSDU(A-MSDU)	◉ Disable ○ Enable
Auto Block ACK	○ Disable ◉ Enable
Decline BA Request	◉ Disable ○ Enable
Other	
HT TxStream	2
HT RxStream	2

Apply Cancel

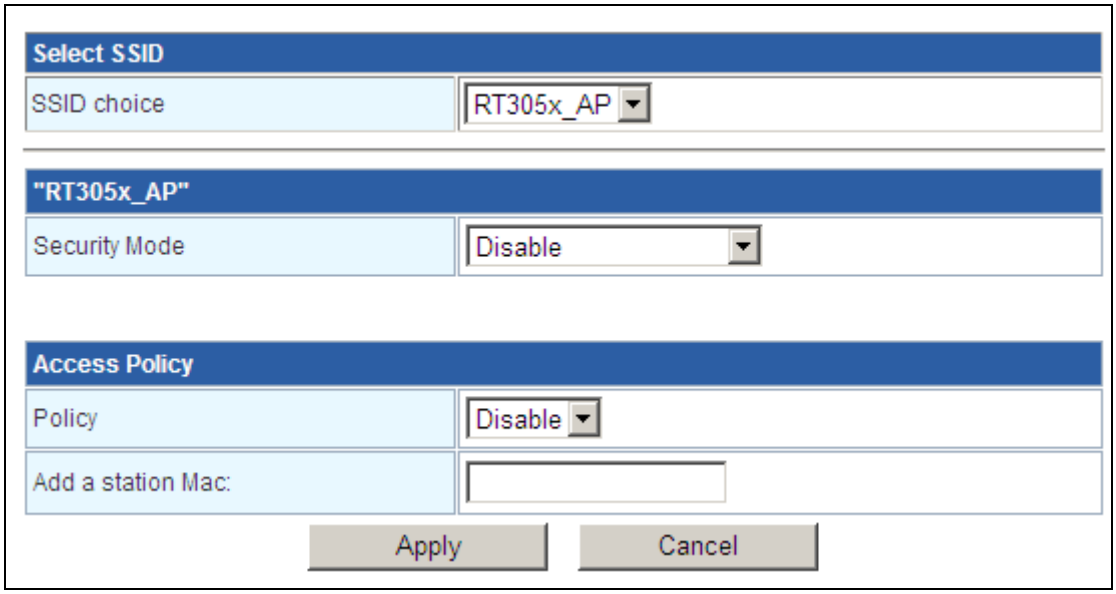
3.2 Advanced

Use the Advanced Setup page to make detailed settings for the Wireless. Advanced Setup includes items that are not available from the Basic Setup page, such as Beacon Interval, Control Tx Rates and Basic Data Rates.



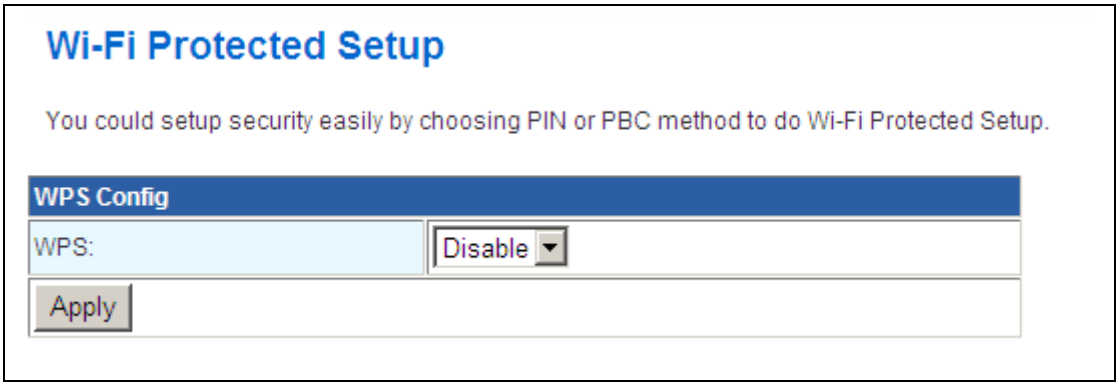
3.3 Security

Setup the wireless security and encryption to prevent from unauthorized access and monitoring.

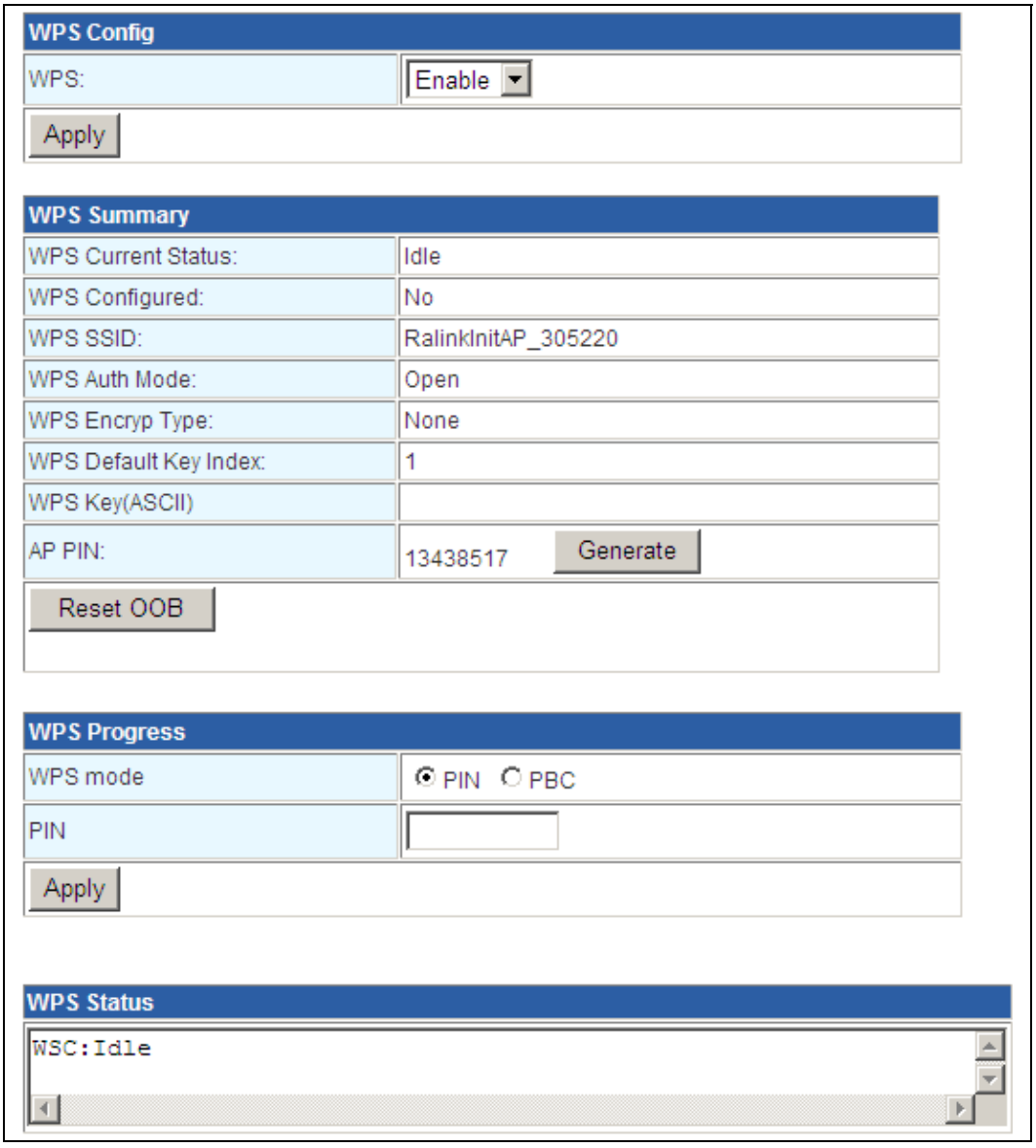


3.4 WPS

Wi-Fi Protected Setup
You could setup security easily by choosing PIN or PBC method to do Wi-Fi Protected Setup.



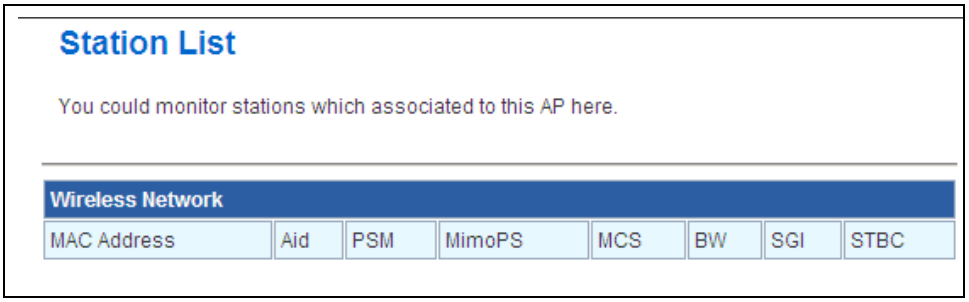
If you open the WPS function, you'll see the interface as follows:



You can see WPS summary, such as WPS SSID, WPS Auth Mode.
Click the "Generate" button, generate PIN number;
WPS mode: you can setup WPS mode to PIN or PBC method.

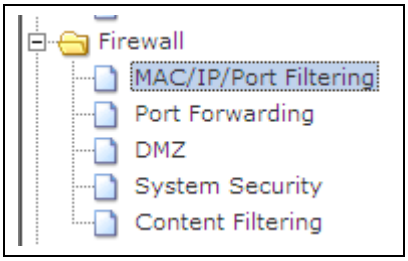
3.5 Station List

You can view the user's station which associated to this AP here.



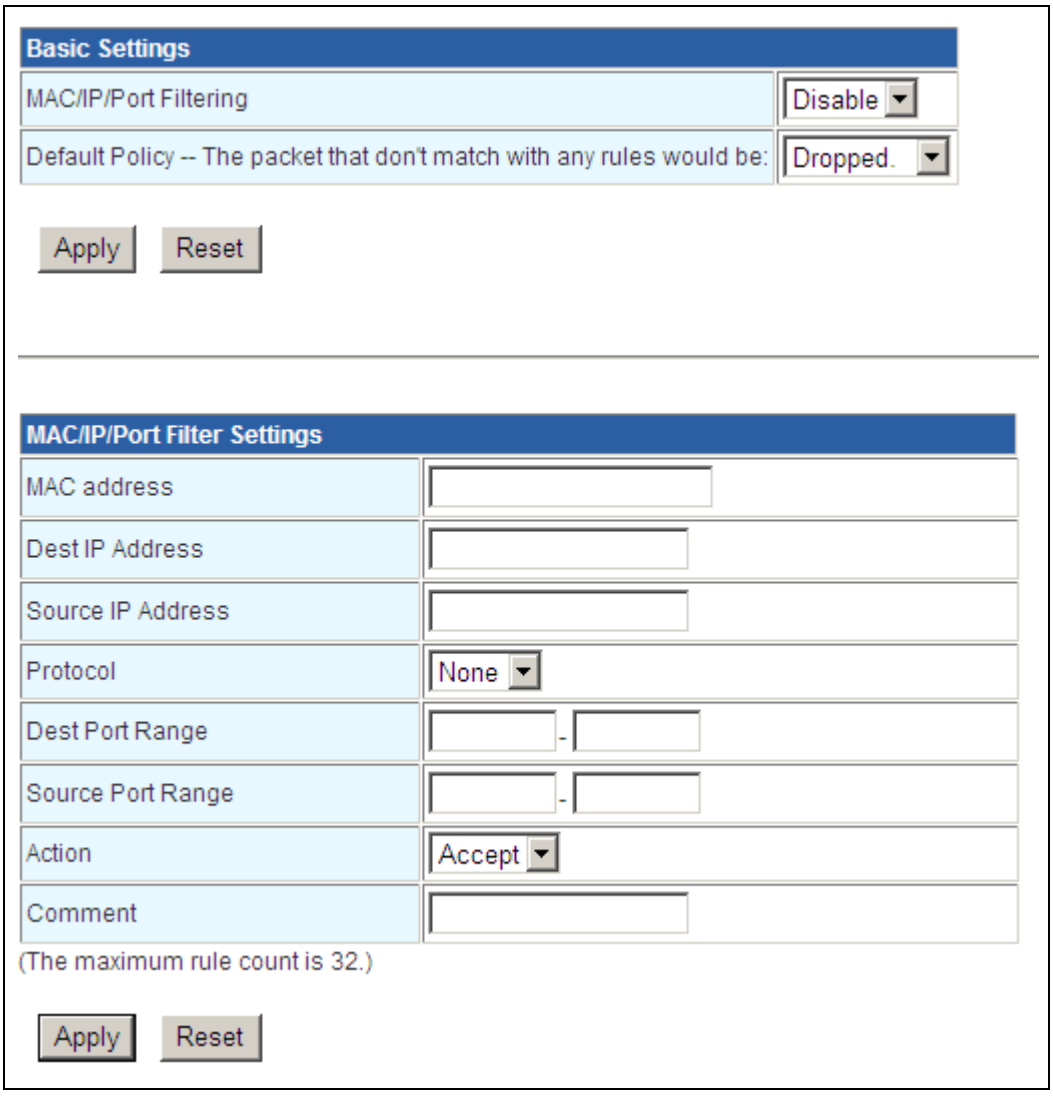
4 Firewall

There are five submenus under the Firewall Settings menus: MAC/IP/Port Filtering, Port Forwarding, DMZ, System Security and Content Filtering.



4.1 MAC/IP/Port Filtering

You may setup firewall rules to protect your network from virus, worm and malicious activity on the Internet.

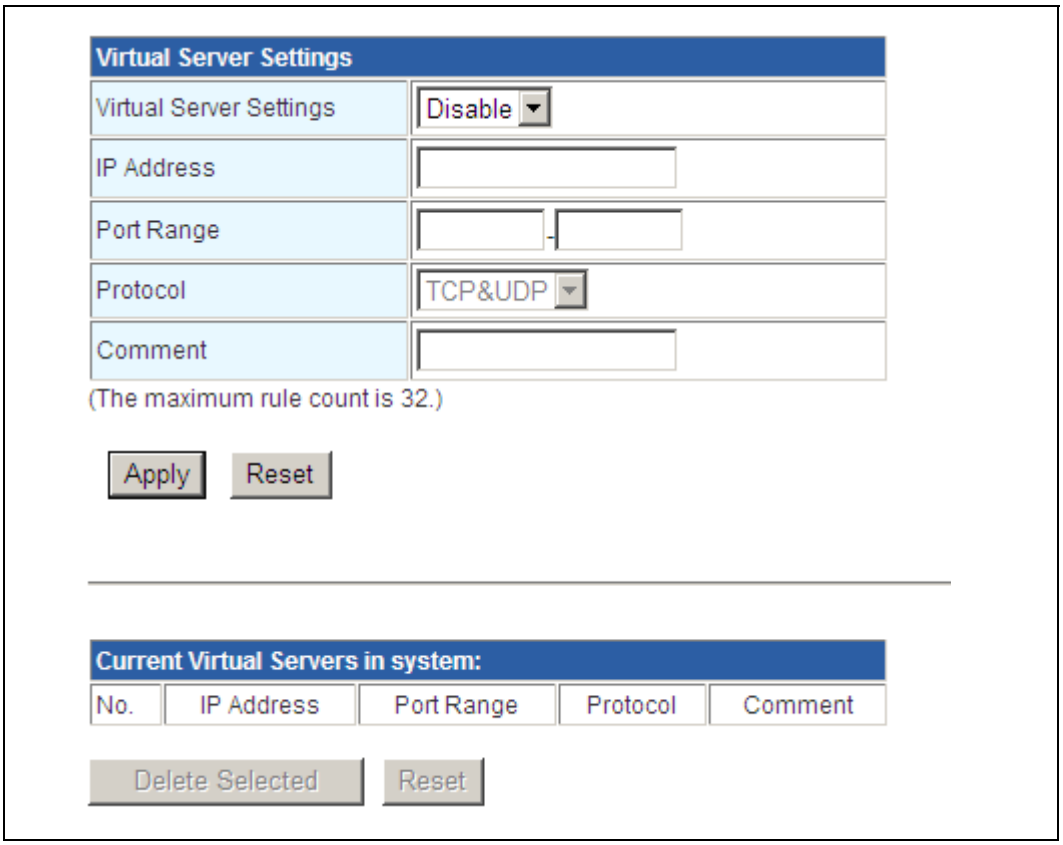


You can set MAC/IP/Port Filtering is enabled or disabled. You can select the default

filtering rules of MAC/IP/Port Filtering, either dropped or accepted.
MAC Address---to fill the MAC Address you want to filtering.
Dest IP Address --- fill the destination IP address you want to filtering.
Source IP Address ---fill the source IP address you want to filtering.
Protocol ---Select which protocol is to be used, either TCP, UDP or ICMP.
Dest Port Range---Fill the range of the destination port which you want to filtering.
Source Port Range---Fill the range of the source port which you want to filtering.
Action---You can select the action, drop or accept.

4.2 Port Forwarding

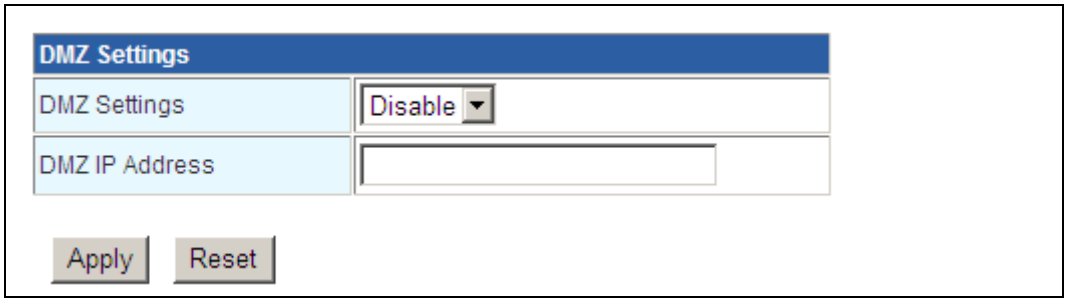
Virtual servers can be used for setting up public services on your LAN, such as DNS, Email and FTP. A virtual server is defined as a service port, and all requests from the Internet to this service port will be redirected to the computer specified by the server IP. Any PC that was used for a virtual server must have a static or reserved IP Address because its IP Address may change when using the DHCP function.



If you enable the Virtual Server Settings, you can select the protocol, TCP, UDP or TCP&UDP.

4.3 DMZ

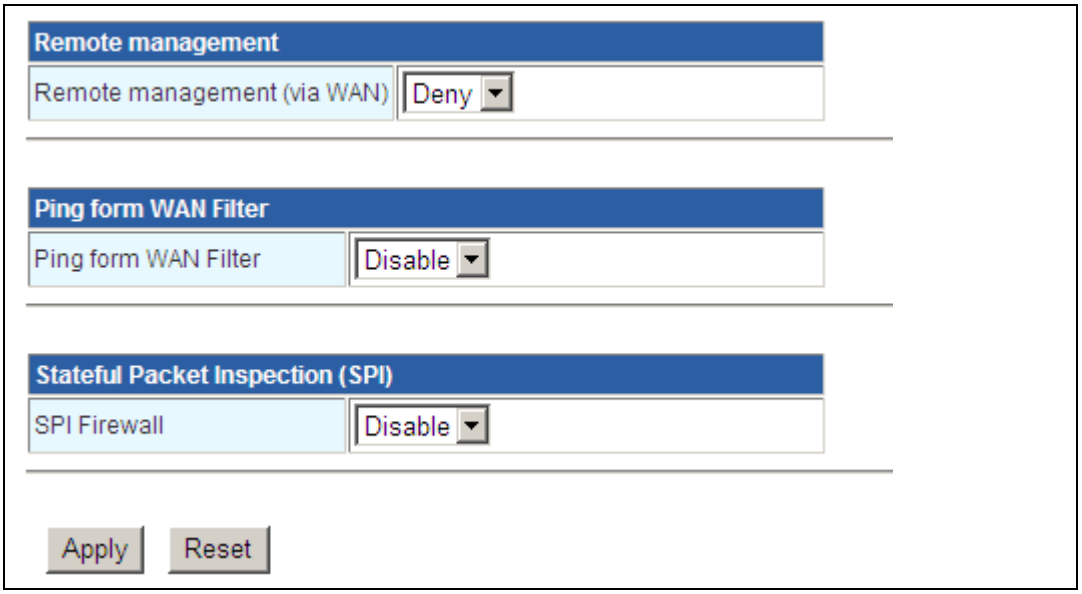
You may setup a De-militarized Zone to separate internal network and Internet.



To assign a computer or server to be a DMZ server:
Enable the DMZ Settings, enter the local host IP Address in the DMZ IP Address field,
Click the Apply button.

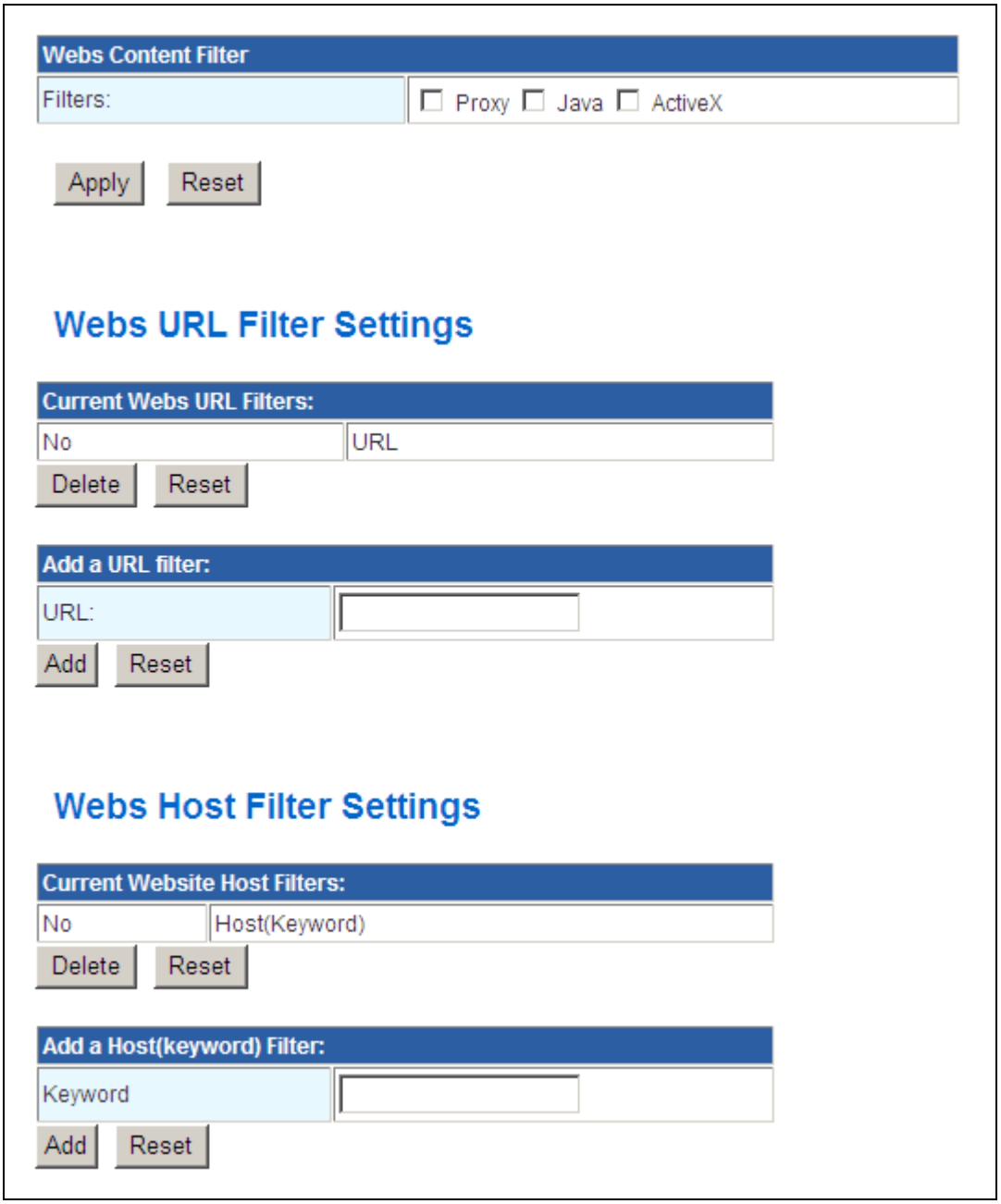
4.4 System Security

You may configure the system firewall to protect AP/Router itself from attacking.



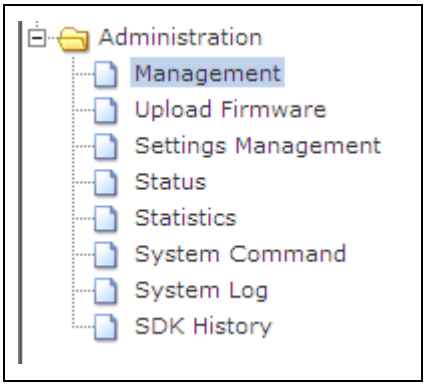
4.5 Content Filtering

You can setup Content Filter to restrict the improper content access.
Webs URL Filter Settings:
When you setup URL filtering, you should pay attention to the following:
1. Don't enter symbols, such as http://
2. Enter text, such as game, the "http://www.game.Com" web site will not be able to enter.
3. Enter the text in the URL, and click the "Add" button.
Select a filtering rule, and click "Delete" button, delete the filtering rule.
Click "Reset" button, re-edit the filter rules.



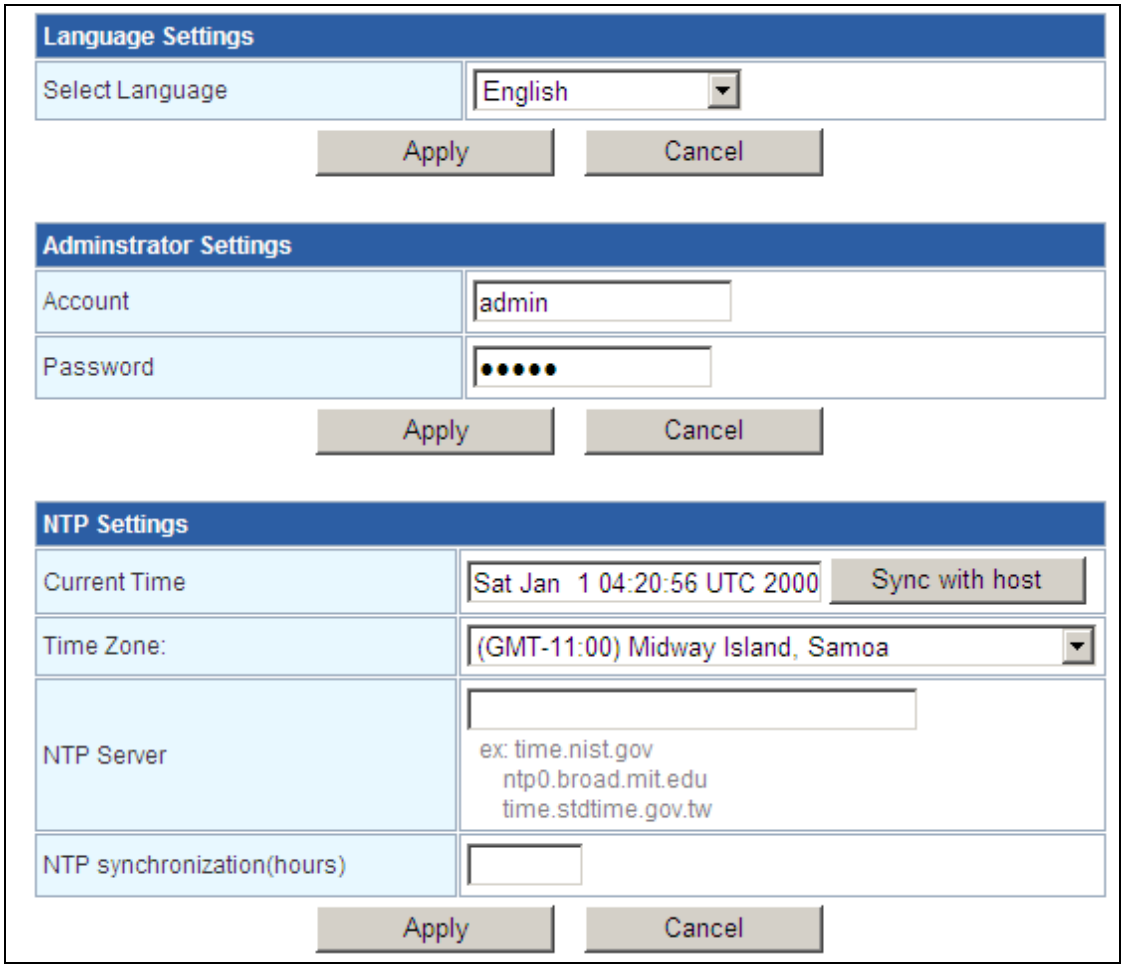
5 Administration

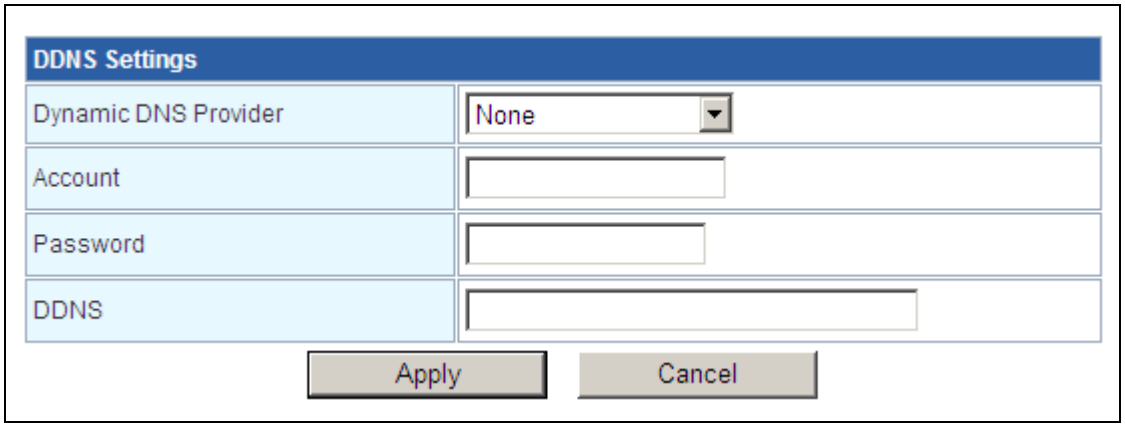
There are eight submenus under the Administration menus: Management, Upload Firmware, Settings Management, Status, Statistics, System Command, System Log, SDK History.



5.1 Management

You may select language, configure administrator account and password, NTP settings, and Dynamic DNS settings here.
Click "Apply" button, to enable the configuration to take effect.
Click "Cancel" button to upset.

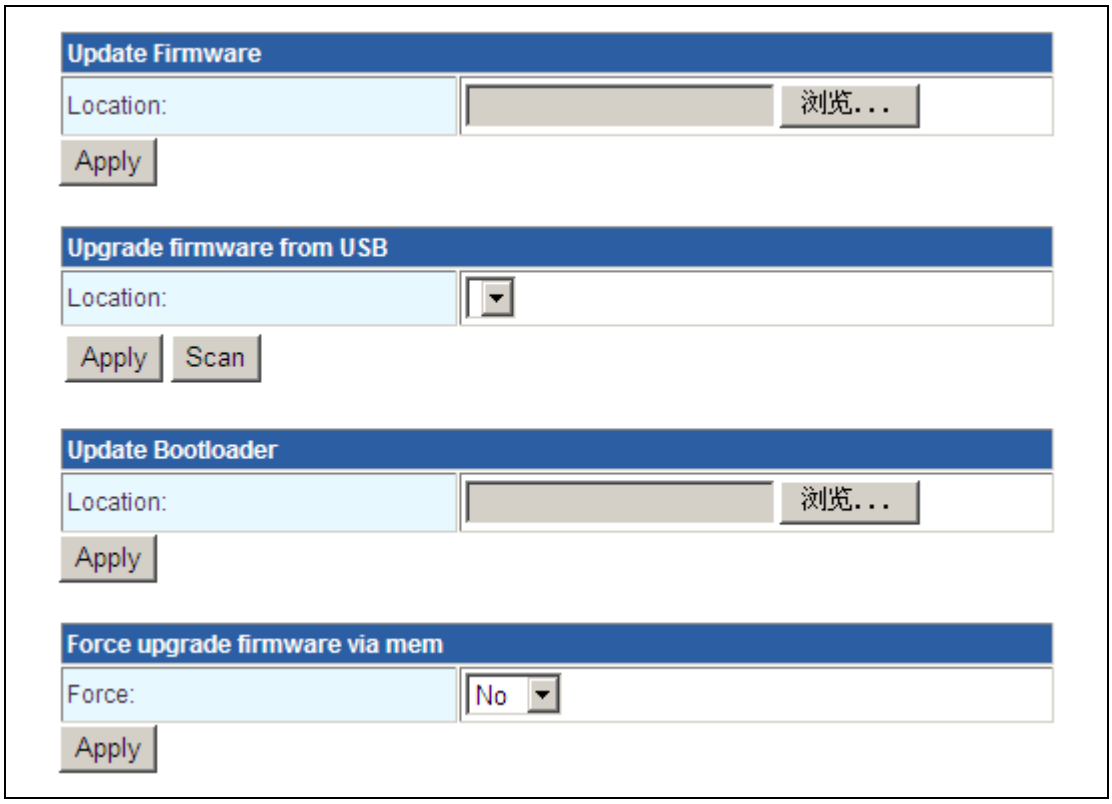




5.2 Upload Firmware

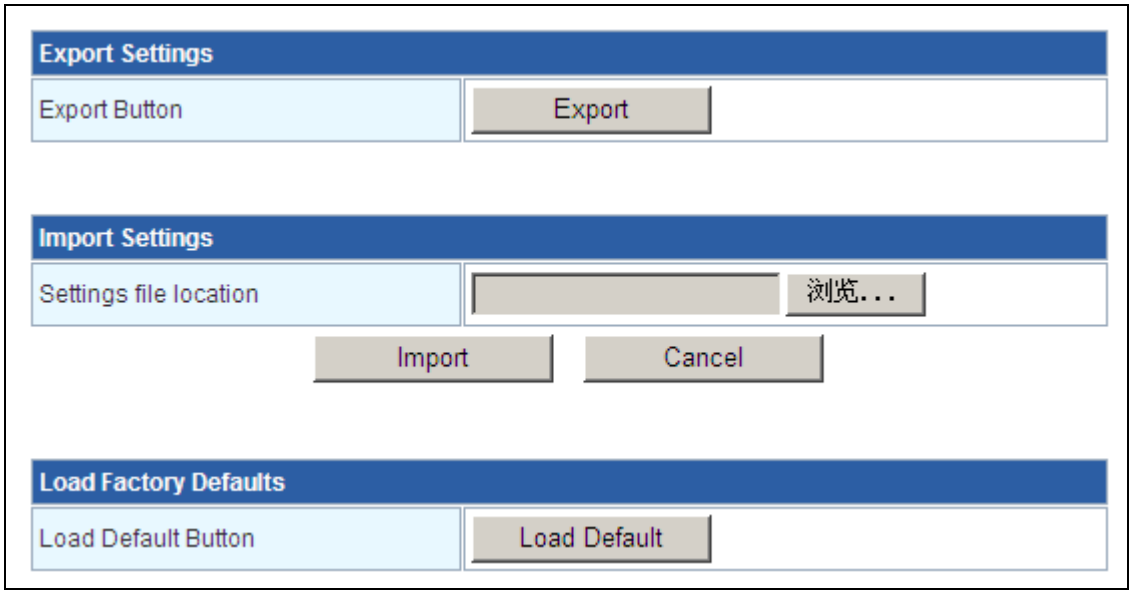
Upgrade the Ralink SoC firmware to obtain new functionality. It takes about 1 minute to upload upgrade flash and be patient please. Caution! A corrupted image will hang up the system.

Click "Browse" button, select the upgrade software, then click the "Apply" button.



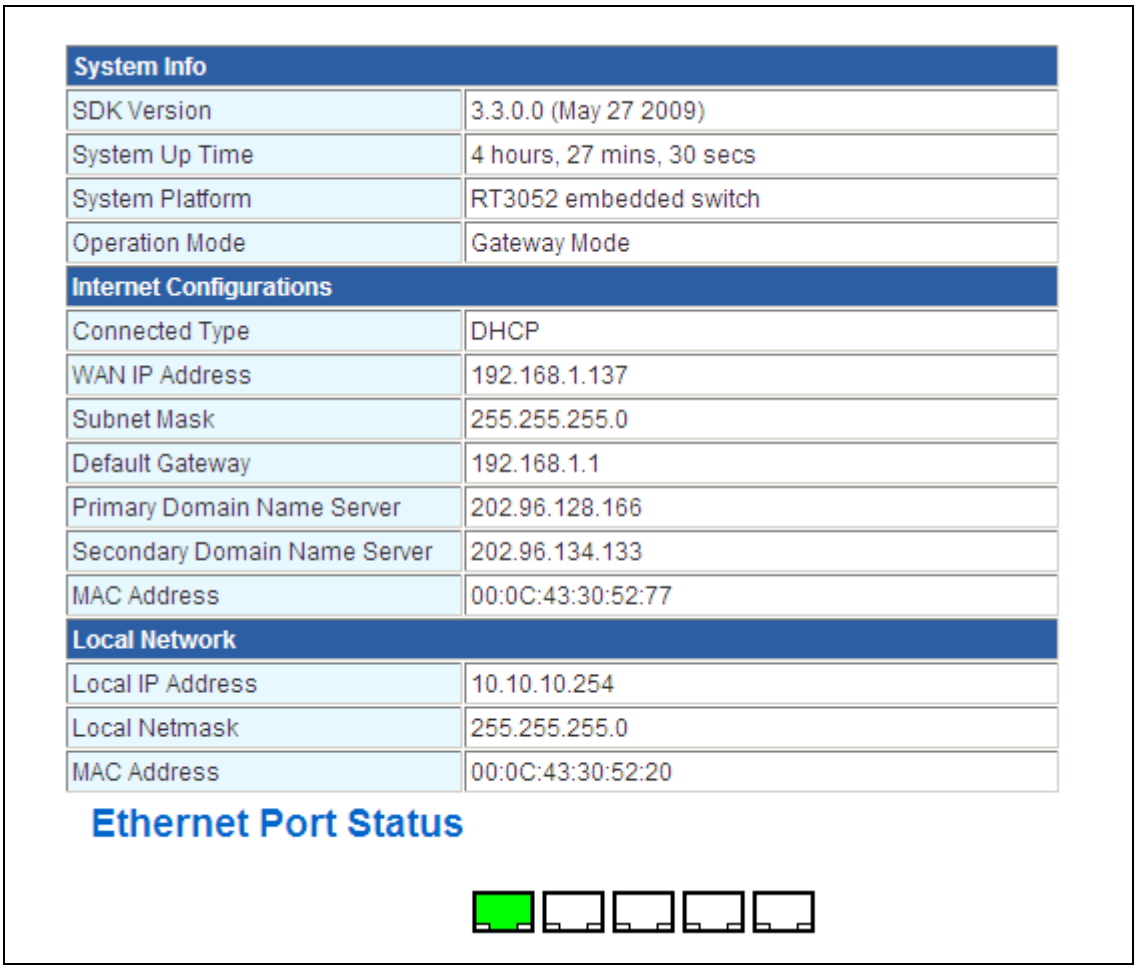
5.3 Setting Management

You might save system settings by exporting them to a configuration file, restore them by importing the file, or reset them to factory default.



5.4 Status

You can see the status of Ralink SoC platform in this page.



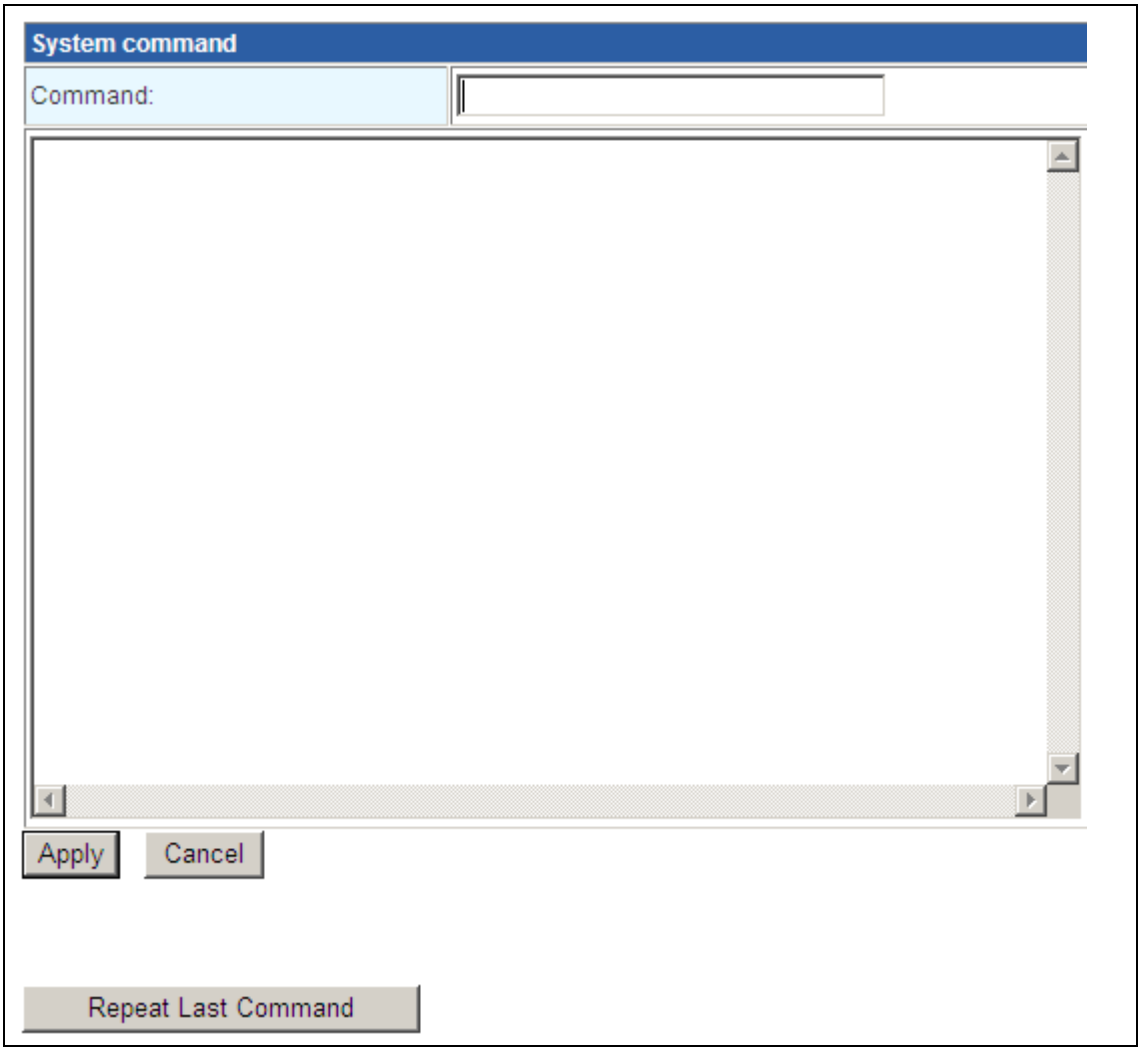
5.5 Statistics

Take a look at the Ralink SoC statistics.

Memory	
Memory total:	29256 kB
Memory left:	8216 kB
WAN/LAN	
WAN Rx packets:	103671
WAN Rx bytes:	14514565
WAN Tx packets:	10171
WAN Tx bytes:	3044531
LAN Rx packets:	12617
LAN Rx bytes:	3151073
LAN Tx packets:	18169
LAN Tx bytes:	10691612
All interfaces	
Name	lo
Rx Packet	14
Rx Byte	2251
Tx Packet	14
Tx Byte	2251
Name	eth2
Rx Packet	123178
Rx Byte	21978146
Tx Packet	28333
Tx Byte	13858814
Name	ra0
Rx Packet	0
Rx Byte	0

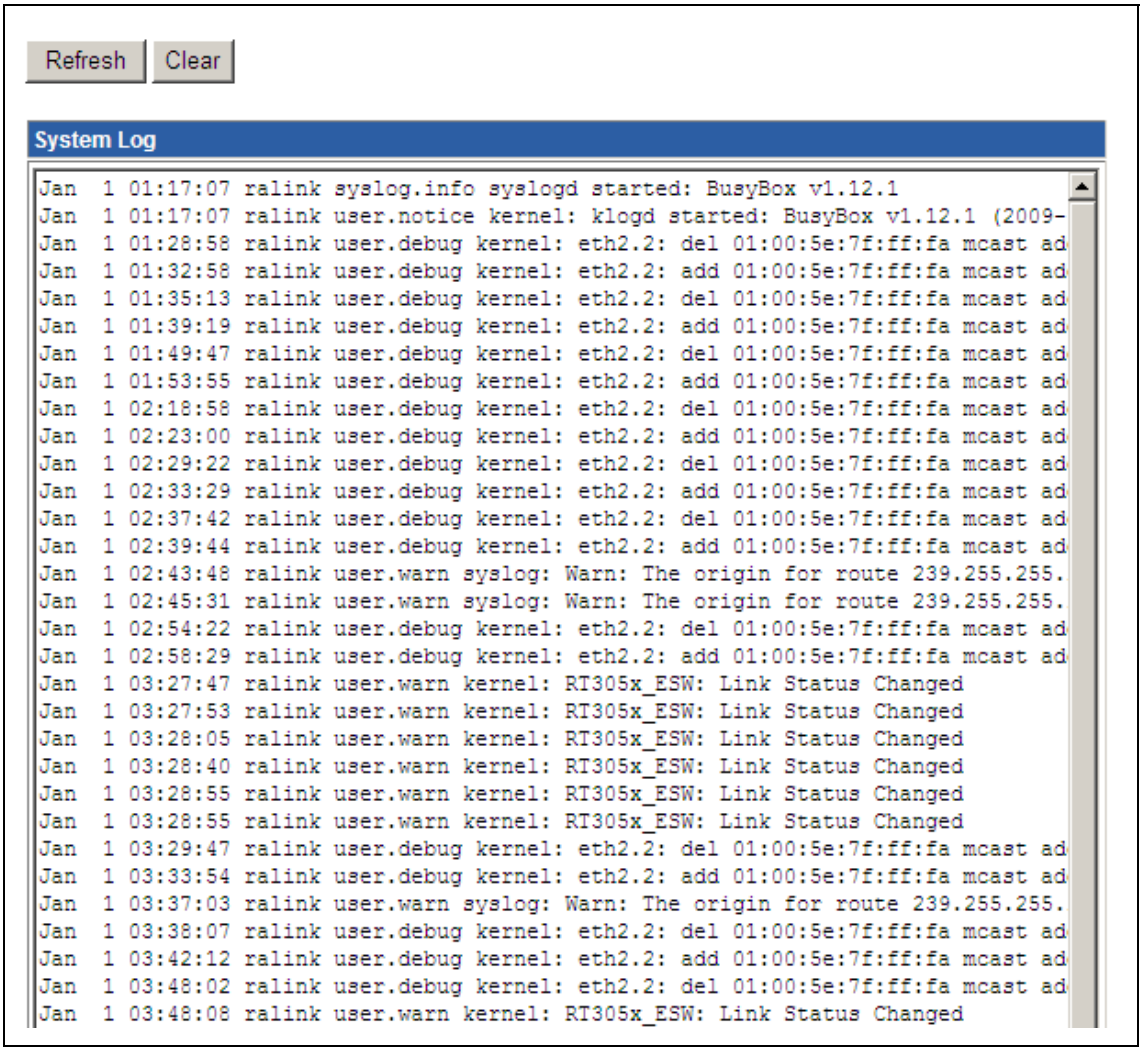
5.6 System Command

Run a system command as root, you can enter system commands such as ping.



5.7 System Log

This page allows you to query the logs of the router. The router can keep logs of all traffic. You can query the logs to find what happened of the router.
Click the "Refresh" button to refresh the logs.
Click the "Clear" button to clear all the logs.



5.8 SDK History

This page you can see the version of the router, and information the driver update, reference design, new feature, and the peripheral components.

Version 3.3.0.0

Driver update:
- **[Wifi]** AP driver v2.2.0.0
- **[Wifi]** STA driver v2.0.0.0
- **[USB]** USB driver updated to v2.72
- **[iNIC]** RT305x Mii iNIC v2.0
- **[Ethernet]** Raeth Driver v2.0
- **[Wifi/WSC]** wscd update
- **[Wifi/WebUI]** WPS update
- **[Wifi/802.1x]** rt2860apd update
- **[Wifi/WAPI]** add wapi daemon

Reference design:
- **[SDK]** 3G dongle support(Huawei E169, NU MU-Q101, BandLuxe C270)
- **[SDK]** DualImage

New Feature:
- **[Apps]** Bluetooth utility
- **[Apps]** Ixia endpoint v6.7
- **[Apps]** Printer server (P910nd)
- **[APPs]** Upgrade ntfs-3g to support utf8
- **[WebUI]** AP Isolated and Hidden BSSID for each SSID
- **[WebUI]** System Command: "repeat last command"
- **[WebUI]** add generating PIN Code Button
- **[NVRAM]** add WscVenPINCode item in ralink_init.c
- **[IGMPProxy]** support forwarding multicast packets to specific port instead of flooding (need latest RT3052)
- **[WiFi]** CoC function support

Peripheral Components:
- **[RT305x]** Boot From SPI Flash
- **[RT305x]** Samsung/Numonix/SST Nor Flash
- **[RT305x/Switch]** RT305x with Vitesse switch
- **[RT305x/PCM]** SLIC si3210 support
- **[RT305x/I2S]** Add config for 12Mhz or 12.288 Mhz external master clock.

Appendix: Glossary

2x to 3x eXtended Range WLAN Transmission Technology – The WLAN device with 2x to 3x eXtended Range WLAN transmission technology make its sensitivity up to 105 dB, which gives users the ability to have robust, longer-range wireless connections. With this based client and access point can range-enhancing technology, a 2x to 3x eXtended Range based client and access point can maintain a connection at as much as three times the transmission distance of traditional 802.11b and 802.11g products, for a coverage area that is up to nine times greater. A traditional 802.11b and 802.11g product transmission distance is about 300m, a 2x to 3x based client and access point can maintain a connection transmission eXtended Rangedistance may be up to 830m.

802.11b – The 802.11b standard specifies a wireless networking at 11 Mbps using

direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.

802.11g – specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.

DDNS (Dynamic Domain Name System) – The capability of assigning a fixed host and domain name to a dynamic Internet IP Address.

DHCP (Dynamic Host Configuration Protocol) – A protocol that automatically configure the TCP/IP parameters for the all the PC(s) that are connected to a DHCP server.

DMZ (Demilitarized Zone) – A Demilitarized Zone allows one local host to be exposed to the Internet for a special-purpose service such as Internet gaming or videoconferencing.

DNS (Domain Name System) – An Internet Service that translates the names of websites into IP addresses.

Domain Name – A descriptive name for an address or group of addresses on the Internet.

DoS (Denial of Service) – A hacker attack designed to prevent your computer or network from operating or communicating.

DSL (Digital Subscriber Line) – A technology that allows data to be sent or received over existing traditional phone lines.

ISP (Internet Service Provider) – A company that provides access to the Internet.

MTU (Maximum Transmission Unit) – The size in bytes of the largest packet that can be transmitted.

NAT (Network Address Translation) – NAT technology translates IP addresses of a local area network to a different IP address for the Internet.

PPPoE (Point to Point Protocol over Ethernet) – PPPoE is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.

SSID – A Service Set Identification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name.

WEP (Wired Equivalent Privacy) – A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.

Wi-Fi – A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see http://www.wi-fi.net), an industry standards group promoting interoperability among 802.11b devices.

WLAN (Wireless Local Area Network) – A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.

FCC Statement

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

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

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

FCC Radiation Exposure Statement

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

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.