BiPAC 7800GZ(L)

3G/ wireless-G ADSL2+ (VPN) Firewall Router

User Manual

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Table of Contents

Chapter 1: Introduction 1
Introduction to your Router 1
3G Mobility and Always-On Connection 1
Secure VPN Connections (BiPAC 7800GZ only) 1
Smooth, Responsive Net Connection 1
Wireless Mobility and Double-layer Protection 2
Features 3
ADSL Compliance 3
3G/HSPA 3
Network Protocols and Features 4
Virtual Private Network (VPN) (BiPAC 7800GZ only) 4
Firewall 4
Quality of Service Control 4
IPTV Applications 5
ATM and PPP Protocols 5
Wireless LAN 5
Management 6
Hardware Specifications 6
Physical Interface 6
Chapter 2: Installing the Router 7
Package Contents 7
Important note for using this router 8
Device Description 9
The Front LEDs 9
The Rear Ports 10
Cabling 11
Chapter 3: Basic Installation 12
Connecting Your Router 13
Network Configuration 15
Configuring PC in windows 7 15
Configuring PC in Windows Vista 17
Configuring PC in Windows XP 19
Configuring PC in Windows 2000 20
Configuring PC in Windows 95/98/Me 21
Configuring PC in Windows NT4.0 22
Factory Default Settings 23
Information from your ISP 25
Chapter 4: Configuration 26
Easy Sign-On (EZSO) 26
Configuration via Web Interface 29
Quick Start 30
Basic Configuration Mode 47
Status 47
WAN – Main Port (ADSL) 48

PPPoE Connection (ADSL) 48
PPPoA Connection (ADSL) 49
MPoA Connection (ADSL) 50
IPoA Connections (ADSL) 51
Pure Bridge Connections (ADSL) 52
WAN – Main Port (EWAN) 53
PPPoE (EWAN) 53
Obtain IP Address Automatically (EWAN) 54
Fixed IP Address (EWAN) 54
Pure Bridge (EWAN) 55
WAN – Main Port (3G) 55
WLAN 57
Advanced Configuration Mode 61
Status 61
ADSL Status 62
WAN Statistics 63
3G Status 64
ARP Table 65
DHCP Table 66
System Log 67
Firewall Log 68
UPnP Portmap 68
IPSec Status 69
VRRP Status 69
Configuration 70
LAN - Local Area Network 71
WAN - Wide Area Network 94
System 112
Firewall 120
VPN 130
QoS - Quality of Service 134
Virtual Server 138
Wake on LAN 143
Certificate 144
Time Schedule 147
Advanced 148
Save Configuration to Flash 165
Restart 166
Logout 167
Chapter 5: Troubleshooting 168
Appendix: Product Support & Contact 170

Chapter 1: Introduction

Introduction to your Router

The BiPAC 7800GZ(L), a Dual-WAN 3G / ADSL2+ firewall router integrated with the 802.11g Wireless Access Point and 4-port switch is a cutting-edge networking product for SOHO and office users. Uniquely, the router offers users more flexibility to directly insert a 3G / HSPA SIM card into its built-in SIM slot instead of requiring external USB modems. This design will avoid compatibility issues of many different 3G USB modems. With the increasing popularity of the 3G standard, communication via the BiPAC 7800GZ(L) is becoming more convenient and widely available - enabling users to use a 3G / UMTS HSDPA / HSUPA or GSM GPRS / EDGE Internet connection, making downstream rates of up to 7.2Mbps possible. Users can watch movies, download music on the road or access e-mail wherever a 3G connection is available. Additionally, the integrated IPSec VPN function allows you to encrypt connections of up to 4 VPN tunnels to securely transmit data over the Internet (BiPAC 7800GZ only). The support for auto fail-over means that users will be assured of a constant Internet connection - in the event that the ADSL line fails, the BiPAC 7800GZ(L) will connect via the embedded 3G card to deliver uninterrupted connectivity.

3G Mobility and Always-On Connection

The BiPAC 7800GZ(L) router allows you to insert a 3G / HSPA USIM card to its built-in SIM slot, enabling you to use a 3G / HSPA, UMTS, EDGE, GPRS, or GSM Internet connection, which makes downstream rates of up to 7.2Mbps*4 possible. With the increasing popularity of the 3G standard, communication via the BiPAC 7800GZ(L) is becoming more convenient and widely available - allowing you to watch movies, download music on the road, or access e-mail no matter where you are. You can even share your Internet connection with others, no matter if you're in a meeting, or speeding across the country on a train. The auto fail-over feature ensures maximum connectivity and minimum interruption by quickly and smoothly connecting to a 3G network in the event that your ADSL line fails. The 7800GZ(L) will then automatically reconnect to the ADSL connection when it's restored, reducing connection costs. These features are perfect for office situations where constant connection is paramount.

Secure VPN Connections (BiPAC 7800GZ only)

The BiPAC 7800GZ supports embedded IPSec VPN (Virtual Private Network) protocols, allowing users to establish encrypted private connections of up to 4 simultaneous tunnels over the Internet. So that you can access your corporate intranet and transmit sensitive data between branch offices and remote sites anytime; even when you are on the road, thus enhancing productivity

Smooth, Responsive Net Connection

Quality of Service (QoS) gives user full control over outgoing data traffic. Priority can be assigned by the router to ensure that important transmissions like gaming packets, VoIP calls or IPTV / streaming content passes through the router at lightning speed, even when there is heavy Internet traffic. The speed of different types of outgoing data passing through the router is also controlled to ensure that users do not saturate bandwidth with their browsing activities.

Wireless Mobility and Double-layer Protection

An integrated 802.11g Wireless Access Point offers quick yet easy access with data encryption for added security. Wi-Fi Protected Access (WPA-PSK / WPA2-PSK) and Wired Equivalent Privacy (WEP) support ensures high-level data protection and WLAN access control. In addition, rich firewall security features such as SPI, DoS attack prevention and URL content filtering are integrated to provide unparalleled protection for Internet access. The router also supports the Wi-Fi Protected Setup (WPS) standard, allowing users to establish a secure wireless network by simply pushing a button. If your network requires wider coverage, the built-in Wireless Distribution System (WDS) repeater function allows you to expand your wireless network without the need for any external wires or cables.

Features

- Dual WAN approach - ADSL2+, 3G or Ethernet WAN for broadband connectivity.
- 3G/ HSPA embedded with a built-in SIM card slot
- Integrated 4-port Ethernet switch, one port can be configured as a WAN interface
- 4 IPSec VPN tunnels supported (BiPAC 7800GZ only)
- 4 GRE VPN tunnels supported (BiPAC 7800GZ only)
- Secure VPN with powerful DES / 3DES / AES (BiPAC 7800GZ only)
- High-speed Internet access via ADSL2 / 2+; backward compatible with ADSL
- Supports 802.11g wireless access point with WPA-PSK / WPA2-PSK
- WPS (Wi-Fi Protected Setup) for easy setup
- Quality of Service control for traffic prioritization and bandwidth management
- SOHO firewall security with DoS prevention and Packet Filtering
- Supports IPTV application*2

ADSL Compliance

- Compliant with ADSL Standard
- Full-rate ANSI T1.413 Issue 2
- G.dmt (ITU G.992.1)
- G.lite (ITU G.992.2)
- G.hs (ITU G.994.1)
- ADSL over ISDN / U-R2
- Compliant with ADSL2 Standard*1
- G.dmt.bis (ITU G.992.3)
- ADSL2 Annex M (ITU G.992.3 Annex M) (BiPAC 7800GZA only)
- Compliant with ADSL2+ Standard*1
- G.dmt.bis plus (ITU G.992.5)
- ADSL2+ Annex M (ITU G.992.5 Annex M) (BiPAC 7800GZA only)

3G/HSPA*4

- Supports third generation (3G/ 3.5G/ 3.75G) digital cellular standards
- Peak downlink speeds up to 7.2Mbps and peak uplink speeds up to 2.0Mbps
- Web-based GUI for 3G configuration and management

Network Protocols and Features

- NAT, static routing and RIP-1 / 2
- Universal Plug and Play (UPnP) Compliant
- Dynamic Domain Name System (DDNS)
- Virtual Server and DMZ
- SNTP, DNS relay and IGMP Proxy
- IGMP snooping for video service
- Management based-on IP protocol, port number and address
- SMTP client with SSL/TLS

Virtual Private Network (VPN) (BiPAC 7800GZ only)

- 4 IPSec VPN Tunnels
- 4 GRE VPN Tunnels
- IKE key management
- DES, 3DES and AES encryption for IPSec.
- IPSec pass-through

Firewall

- Built-in NAT Firewall
- Stateful Packet Inspection (SPI)
- Prevents DoS attacks including Land Attack, Ping of Death, etc.
- Remote access control for web base access
- Packet Filtering - port, source IP address, destination IP address, MAC address
- URL Content Filtering - string or domain name detection in URL string
- MAC Filtering
- Password protection for system management
- VPN pass-through

Quality of Service Control

- Supports the DiffServ approach
- Traffic prioritization and bandwidth management based-on IP protocol, port number and address

IPTV Applications*2

- IGMP Snooping
- Virtual LAN (VLAN)
- Quality of Service (QoS)
- IGMP Snooping & IGMP Proxy

ATM and PPP Protocols

- ATM Adaptation Layer Type 5 (AAL5)
- Multiple Protocol over AAL5 (RFC 2684, formerly RFC 1483)
- Bridged or routed Ethernet encapsulation
- VC and LLC based multiplexing
- PPP over Ethernet (PPPoE)
- PPP over ATM (RFC 2364)
- Classical IP over ATM (RFC 1577)
- MAC Encapsulated Routing (RFC 1483 MER)
- OAM F4 / F5

Wireless LAN

- Compliant with IEEE 802.11g and 802.11b standards
- 2.4 GHz - 2.484 GHz frequency range
- Up to 54Mbps wireless operation rate
- Wi-Fi Protected Setup (WPS) for easy setup
- 64 / 128 bits WEP supported for encryption
- Wireless Security with WPA-PSK / WPA2-PSK supported
- WDS repeater function support
- 802.1x radius supported
- WLAN on/off time schedule control

Management

- Easy Sign-On (EZSO) and Auto-scan ADSL settings
- Web-based GUI for remote and local management
- Firmware upgrades and configuration data upload and download via web-based GUI
- Embedded Telnet server and SSH for remote and local management
- Available Syslog
- Mail Alert for WAN IP Changed, Failover indication
- Wake on LAN
- High availability (device redundancy)
- Supports DHCP server / client / relay
- TR-069 *3 supports remote management
- SNMP v1/v2/v3 *3 supports remote and local management

NOTE:

1. The router may require firmware modification for certain ADSL2 / 2+ / Annex M DSLAMs.
2. IPTV application may require subscription to IPTV services from a Telco / ISP.
3. Either TR-069 or SNMP v1/v2/v3 can be available; but only upon request for Telco / ISP tender projects. The TR-069 and SNMP v1/v2/v3 software can only be applied to one device and will not work together on the same device.
4. The 3G / HSDPA data rate is dependent on your local service provider and your 3G / HSDPA card.

Hardware Specifications

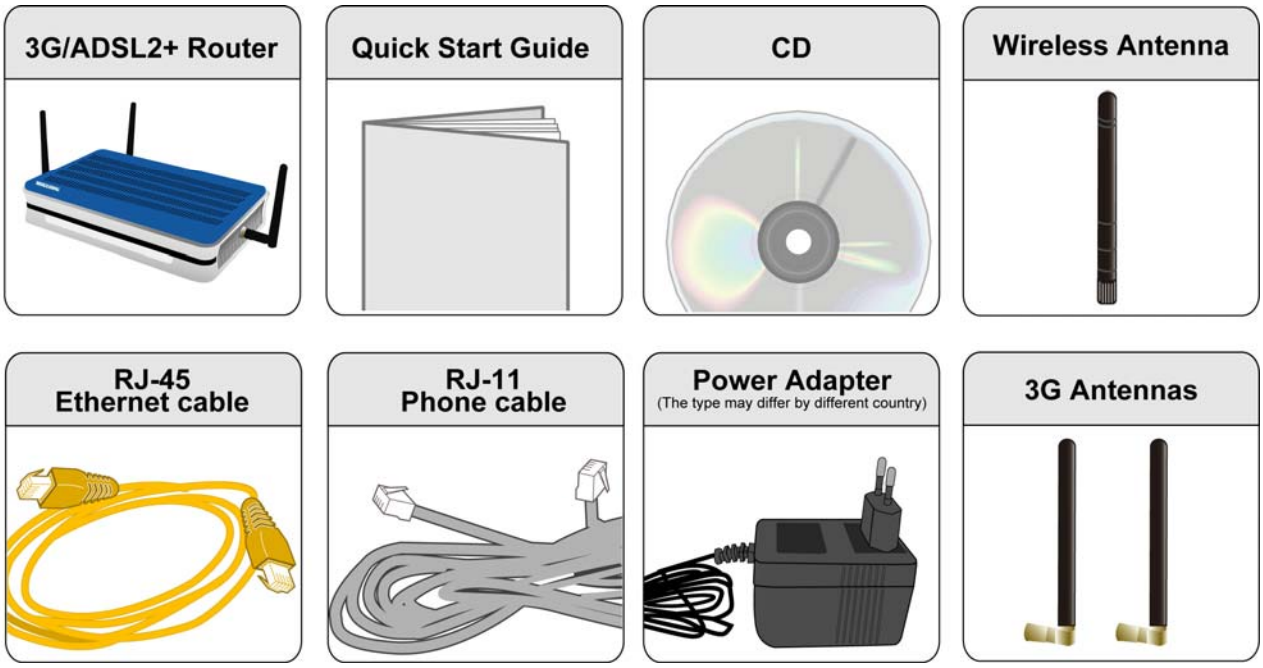
Physical Interface

- 3G wireless: 2pcs. x 3G antennae
- Power jack
- Power switch
- Factory default reset button
- WPS push button
- SIM slot: (for the SIM card from Telco / ISP)
- Ethernet: 4-port 10 / 100Mbps auto-crossover (MDI / MDI-X) Switch
- EWAN: Ethernet port #4 can be configured as a WAN interface for connecting to ADSL / Cable / VDSL / Fiber modem device
- DSL: ADSL port
- WLAN: 1pce x 2dBi detachable antenna

Chapter 2: Installing the Router

Package Contents

- 3G/ Wireless-G ADSL2+ (VPN) Firewall Router
- CD containing the online manual
- RJ-11 ADSL/Telephone cable
- Ethernet (RJ-45) cable
- One 2dBi Wireless detachable antenna
- Two 3G antennas
- Power adapter
- Quick Start Guide
- Splitter / Micro-filter (Optional)



Important note for using this router

Warning

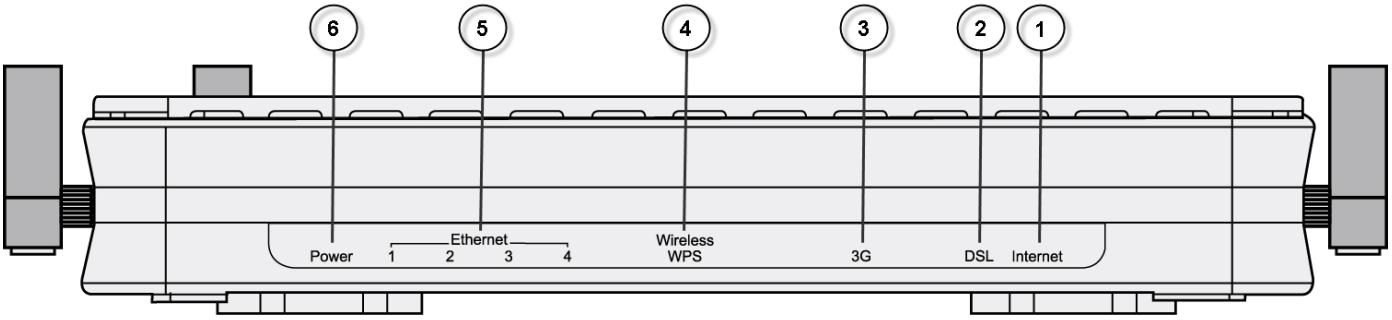
- Do not use the router in high humidity or high temperatures.
- Do not use the same power source for the router as other equipment.
- Do not open or repair the case yourself. If the router is too hot, turn off the power immediately and have it repaired at a qualified service center.
- Avoid using this product and all accessories outdoors.

Attention

- Place the router on a stable surface.
- Only use the power adapter that comes with the package. Using a different voltage rating power adaptor may damage the router.

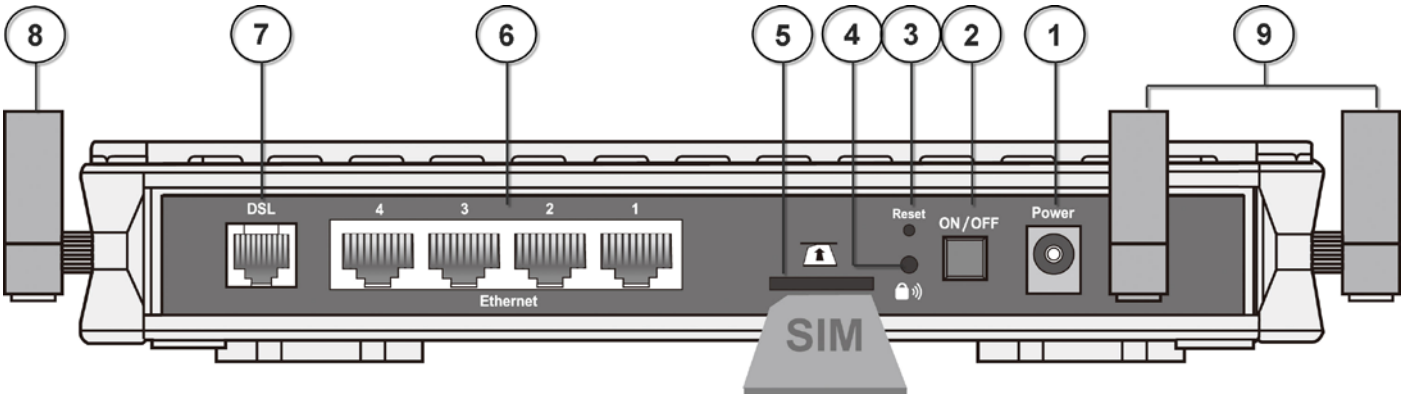
Device Description

The Front LEDs



LED		Meaning
1	**Internet**	Lit red when WAN port fails to get IP address. Lit green when WAN port gets IP address successfully. Lit off when the device is in bridge mode or when ADSL connection is absent.
2	**DSL**	Lit green when the device is successfully connected to an ADSL DSLAM. (“line sync”)
3	**3G**	Lit green when 3G service is ready. Blinking orange slowly when 3G signal is weak; blinking orange fast when 3G signal is middle; lit up orange steady when 3G signal is strong. Lit off when there is no 3G signal.
4	**Wireless / WPS**	Lit green when a wireless connection is established. Flash orange when WPS configuration is in progress. However, if WPS fails the LED will only lit for 1 min before goes off. Blinking when data is transmitted/received.
5	**Ethernet port 1X - 4X (RJ-45 connector)**	Lit green when successfully connected to an Ethernet device. Blinking when data is transmitted/received.
6	**Power**	When the device is booting, the green light will lit while the red light will flash. When the system is ready, it will lit green. Lit red when the device fails to boot or when the device is in emergency mode.

The Rear Ports



Port		Meaning
1	**Power**	Connect it with the supplied power adapter.
2	**Power Switch**	Power ON/OFF switch.
3	**Reset**	Press for more than 5 seconds to restore the device to its default mode.
4	**WPS**	Push WPS button to trigger Wi-Fi Protected Setup function. For WPS configuration, please refer to the WPS section of User Manual.
5	**USIM**	Insert a SIM card into this slot. ***Warning: Before inserting or removing the SIM card, you must disconnect the router from the power adapter.***
6	**Ethernet**	Connect your computer to a LAN port using the included Ethernet cable (with RJ-45 cable) Ethernet port 4 can be used for EWAN
7	**DSL**	Connect the supplied RJ-11 cable to this port when connecting to the ADSL/telephone network
8	**Wireless Antenna**	Connect the detachable antenna for wireless connection.
9	**3G Antenna**	Connect the detachable antennas to these two ports for 3G connection.

Connect the detachable 3G antennae to the two jacks on the back and right side of device(from the perspective of rear panel). Making sure they are firmly screwed in.

Cabling

One of the most common causes of problem is bad cabling or ADSL line(s). Make sure that all connected devices are turned on. On the front panel of your router is a bank of LEDs. Verify that the LAN Link and ADSL line LEDs are lit. If they are not, verify if you are using the proper cables. If the error persists, you may have a hardware problem. In this case you should contact technical support.

Ensure that all other devices connected to the same telephone line as your router (e.g. telephones, fax machines, analogue modems) have a line filter connected between them and the wall socket (unless you are using a Central Splitter or Central Filter installed by a qualified and licensed electrician), and ensure that all line filters are correctly installed and the right way around. Missing line filters or line filters installed the wrong way around can cause problems with your ADSL connection, including causing frequent disconnections. If you have a back-to-base alarm system you should contact your security provider for a technician to make any necessary changes.

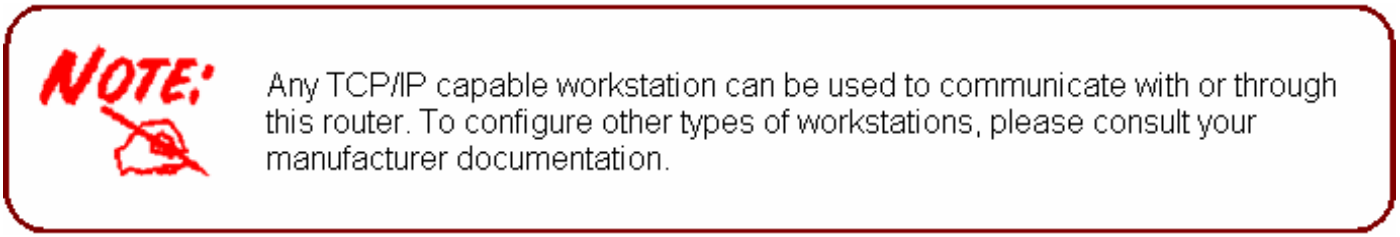
Chapter 3: Basic Installation

The router can be configured through your web browser. A web browser is included as a standard application in the following operating systems: Linux, Mac OS, Windows 98/NT/2000/XP/Me/Vista, etc. The product provides an easy and user-friendly interface for configuration.

Please check your PC network components. The TCP/IP protocol stack and Ethernet network adapter must be installed. If not, please refer to your Windows-related or other operating system manuals.

There are ways to connect the router, either through an external repeater hub or connect directly to your PCs. However, make sure that your PCs have an Ethernet interface installed properly prior to connecting the router device. You ought to configure your PCs to obtain an IP address through a DHCP server or a fixed IP address that must be in the same subnet as the router. The default IP address of the router is 192.168.1.254 and the subnet mask is 255.255.255.0 (i.e. any attached PC must be in the same subnet, and have an IP address in the range of 192.168.1.1 to 192.168.1.253). The best and easiest way is to configure the PC to get an IP address automatically from the router using DHCP. If you encounter any problem accessing the router web interface it is advisable to uninstall your firewall program on your PCs, as they can cause problems accessing the IP address of the router. Users should make their own decisions on what is best to protect their network.

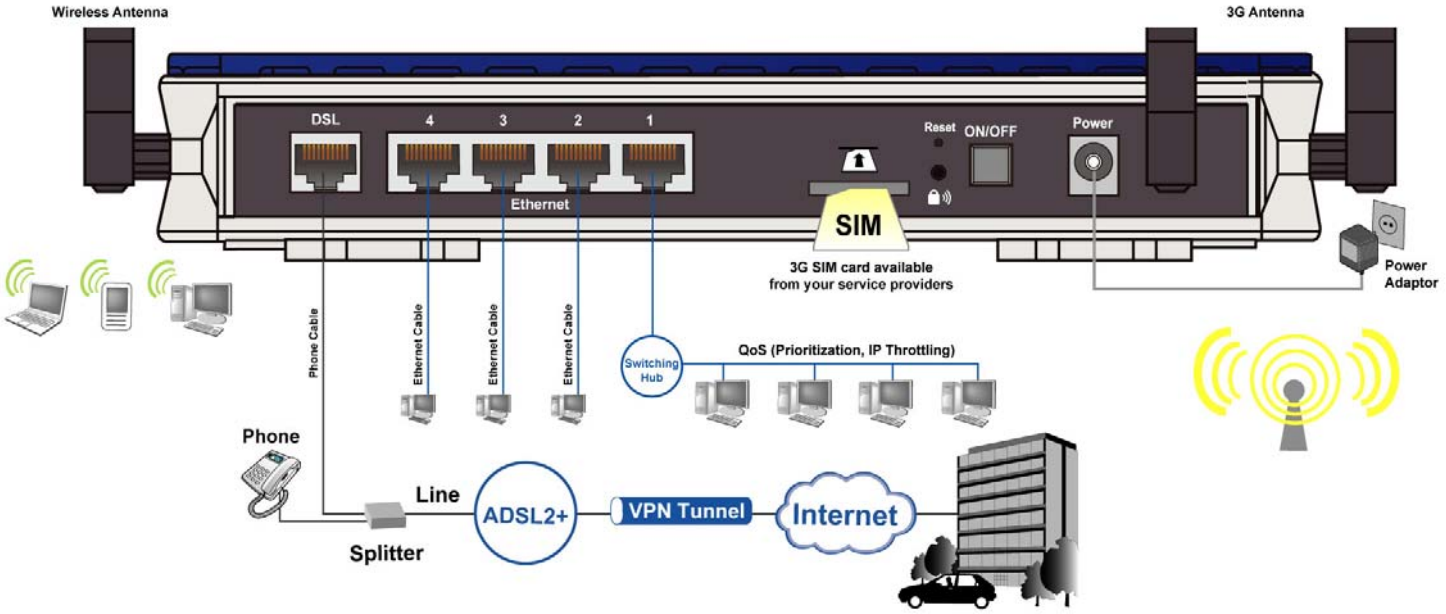
Please follow the following steps to configure your PC network environment.



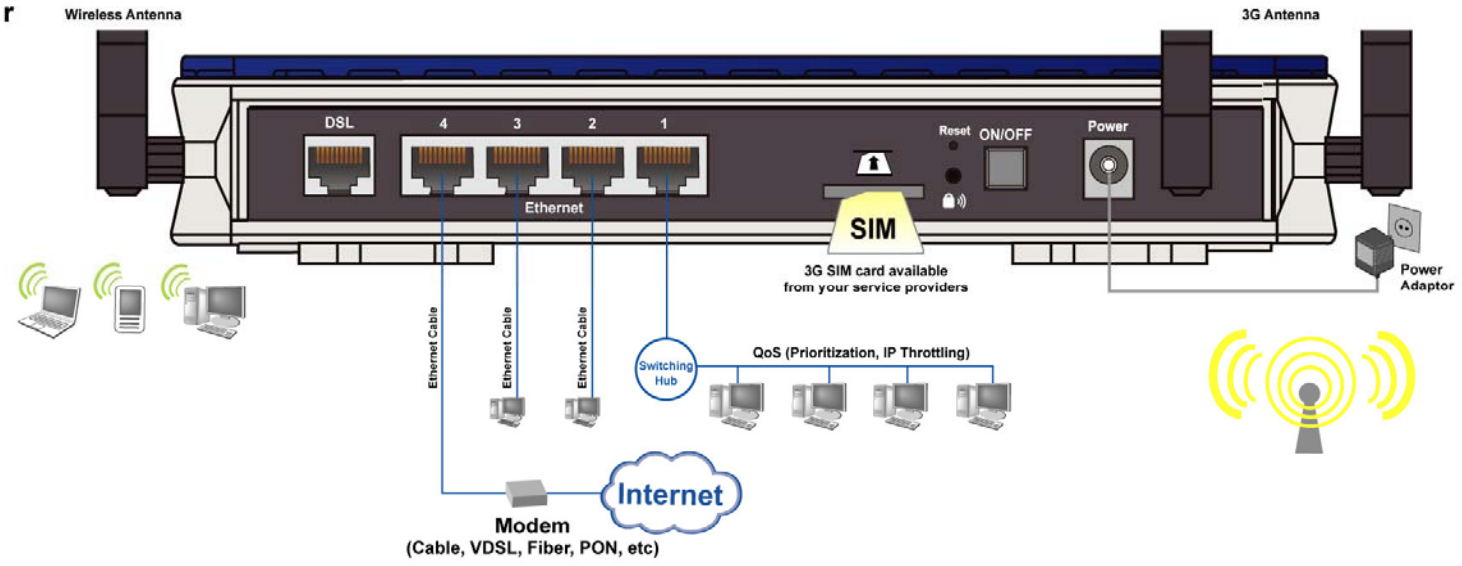
Connecting Your Router

BiPAC 7800GZ(L) offers three modes to connect to the internet. Besides using ADSL, users can set EWAN (Ethernet port # 4) or 3G for internet connection. BiPAC 7800GZ(L) also allows Dual WAN connection: ADSL fail-over to 3G, EWAN fail-over to 3G, ADSL fail-over to EWAN, and counter likewise.

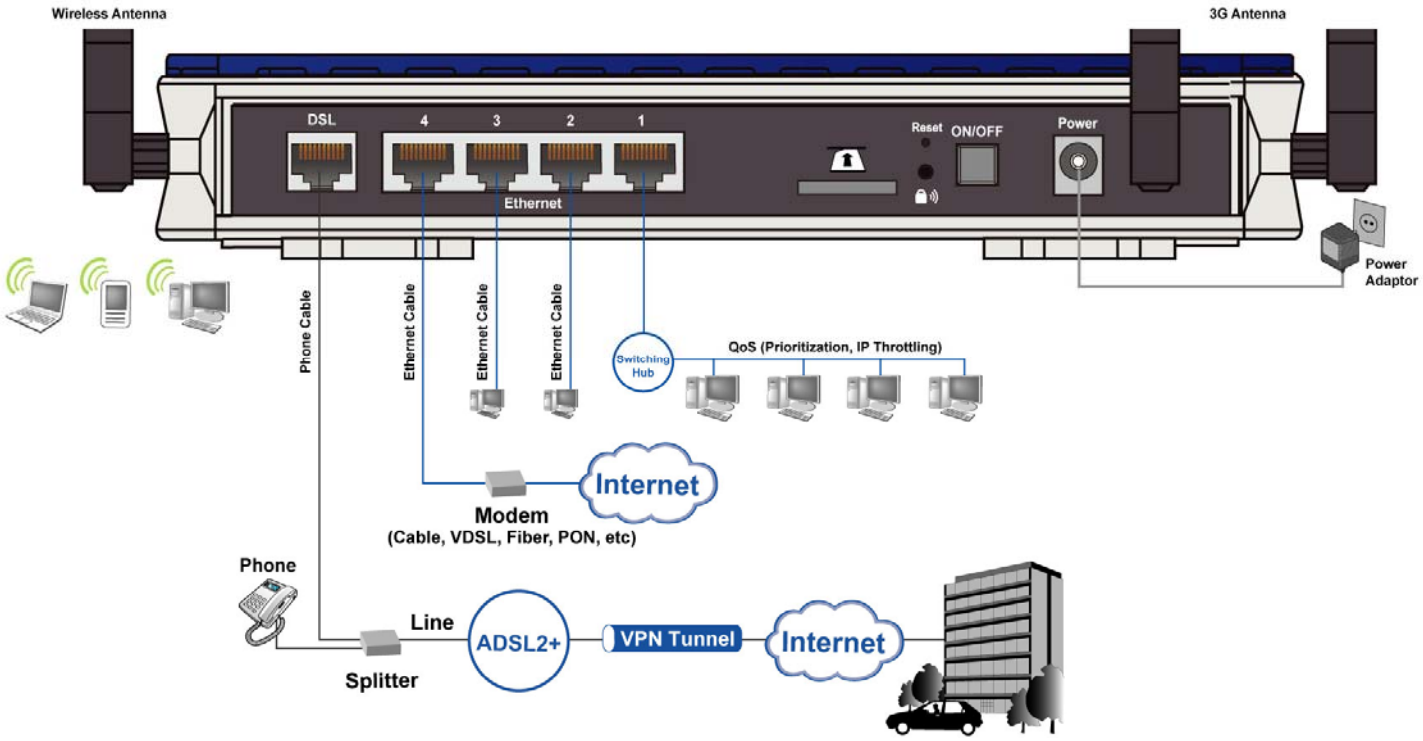
ADSL fail-over to 3G



Broadband (EWAN) fail-over to 3G



ADSL fail-over to EWAN

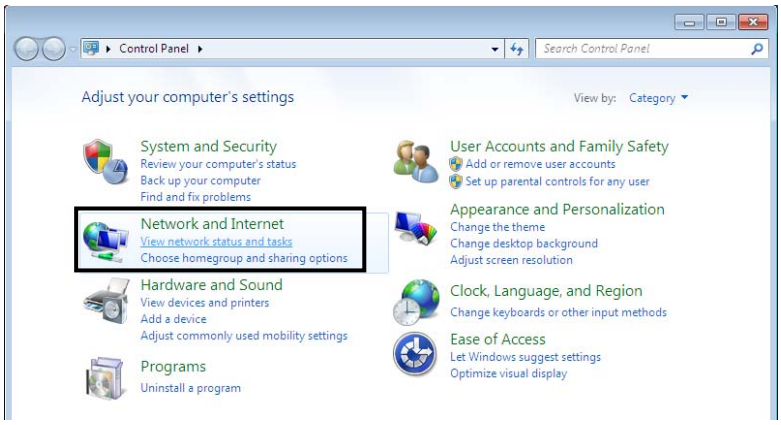


Network Configuration

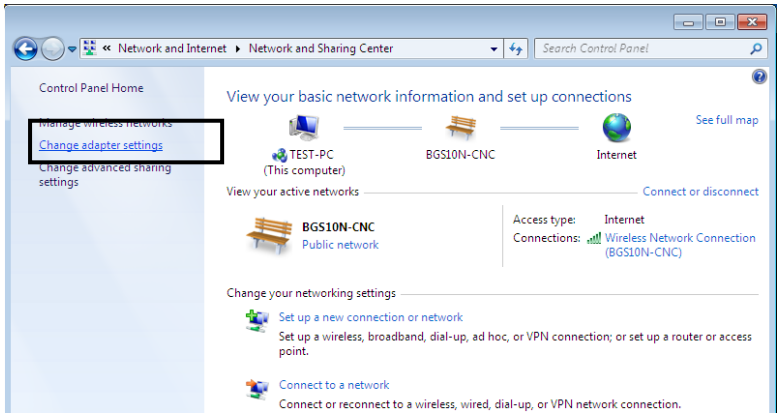
Configuring PC in windows 7

1. Go to Start. Click on Control Panel.

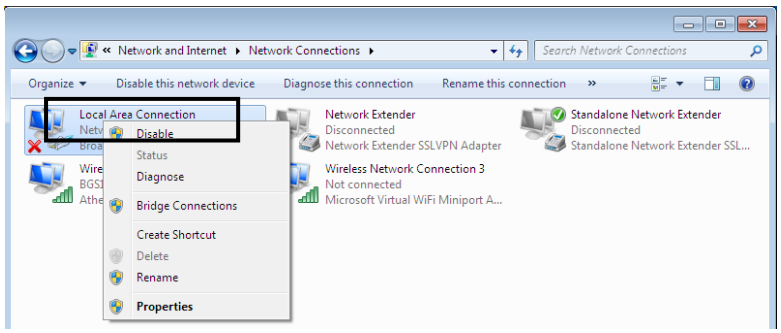
Then click on Network and Internet.



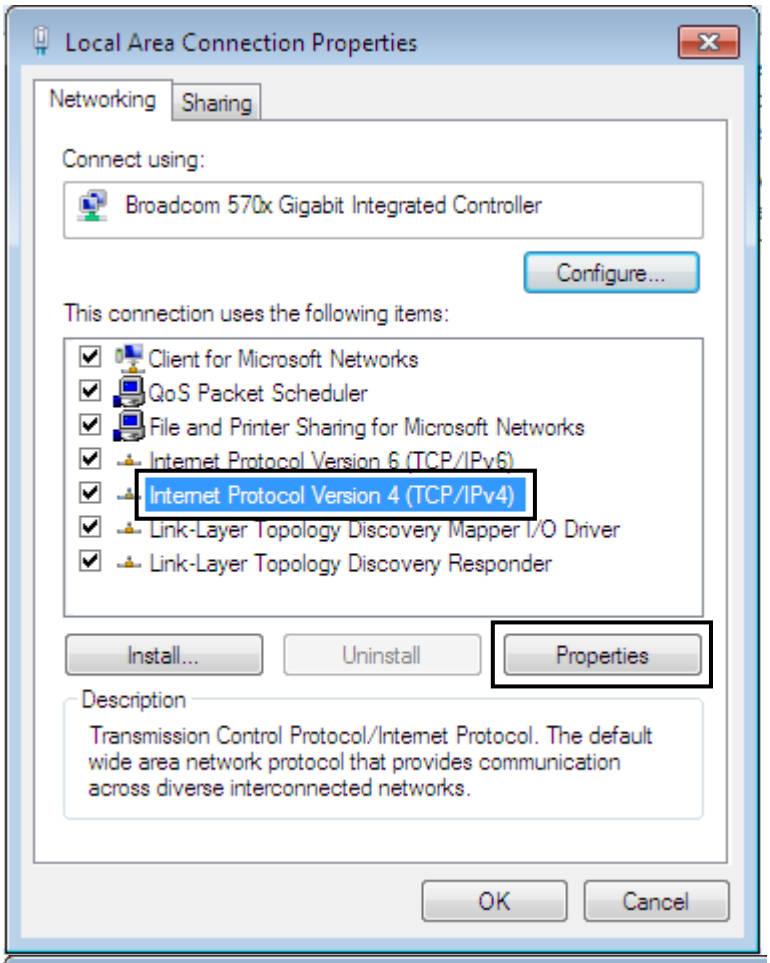
2. When the Network and Sharing Center window pops up, select and click on Change adapter settings on the left window panel.



3. Select the Local Area Connection, and right click the icon to select Properties.

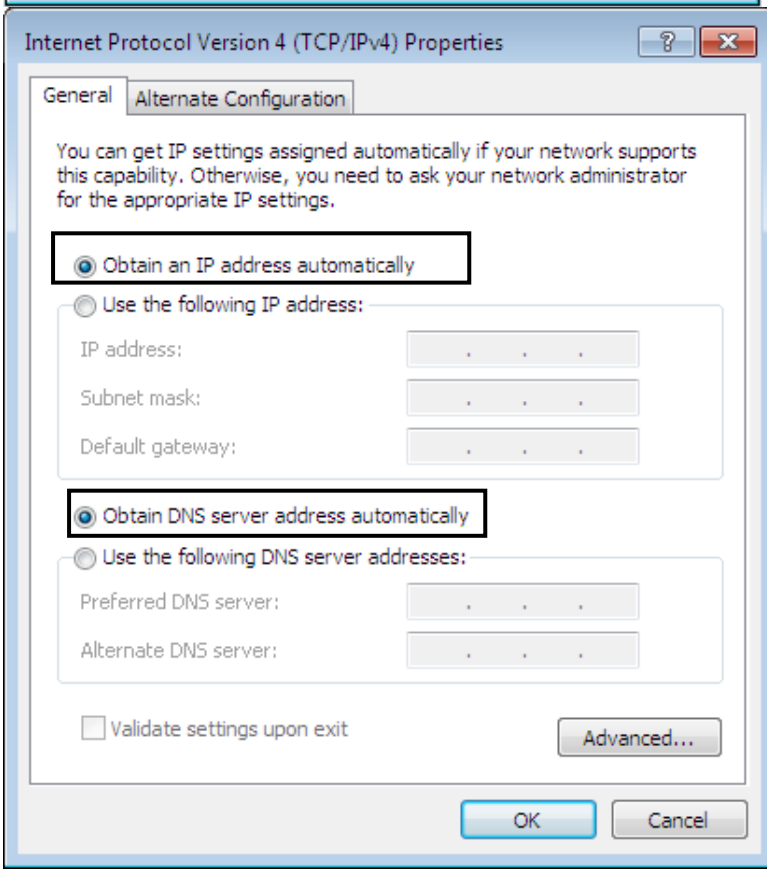


4. Select Internet Protocol Version 4 (TCP/IPv4) then click Properties.



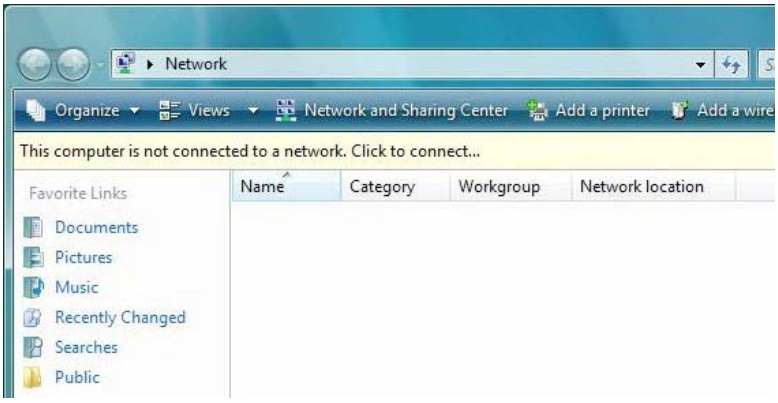
5. In the TCP/IPv4 properties window, select the Obtain an IP address automatically and Obtain DNS Server address automatically radio buttons. Then click OK to exit the setting.

6. Click OK again in the Local Area Connection Properties window to apply the new configuration.

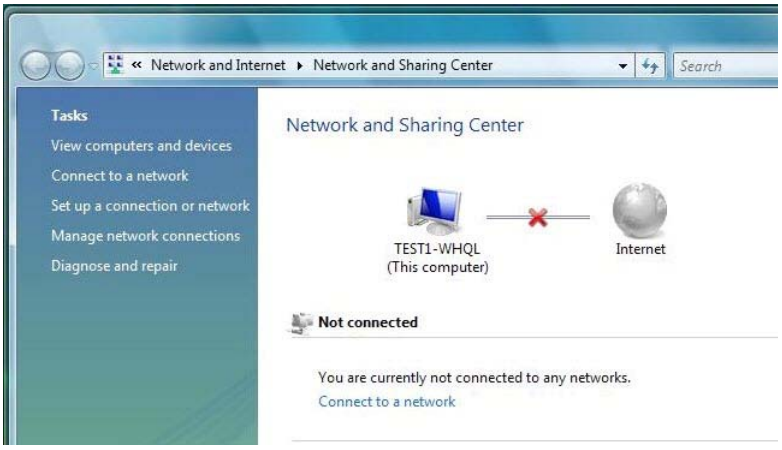


Configuring PC in Windows Vista

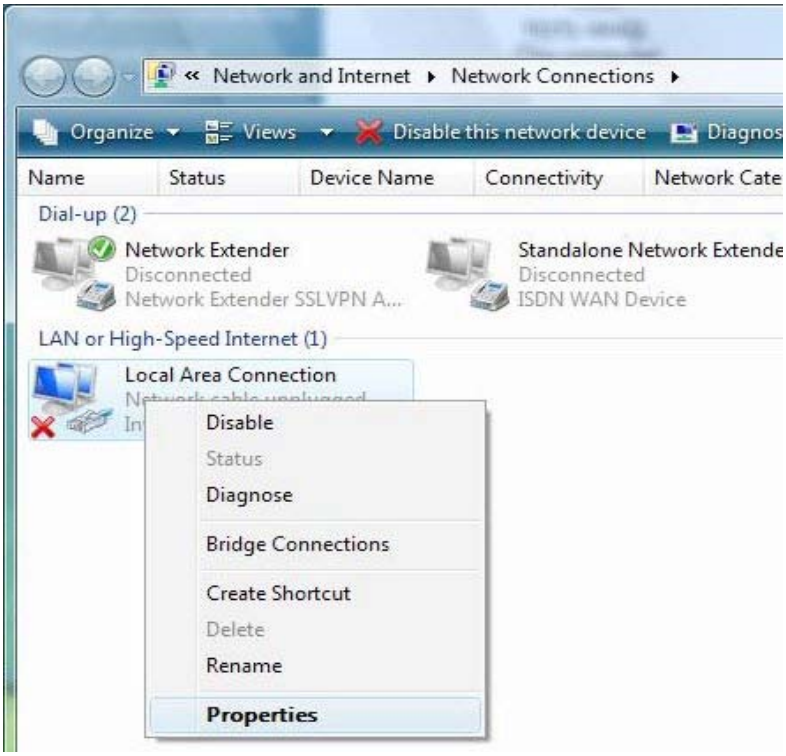
1. Go to Start. Click on Network.
2. Then click on Network and Sharing Center at the top bar.



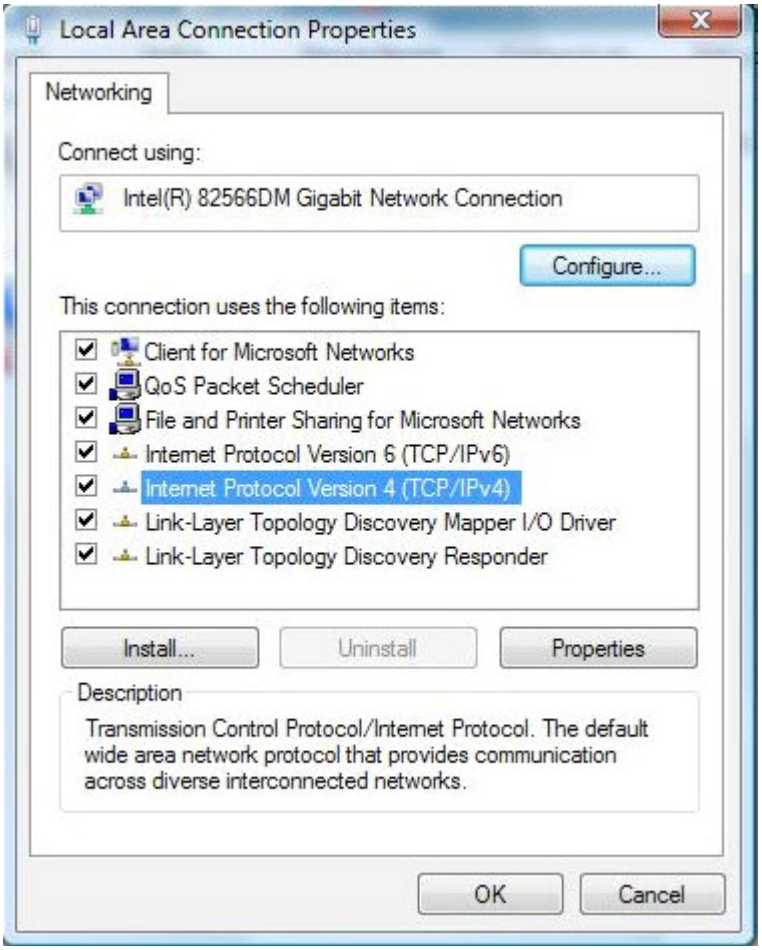
3. When the Network and Sharing Center window pops up, select and click on Manage network connections on the left window column.



4. Select the Local Area Connection, and right click the icon to select Properties.

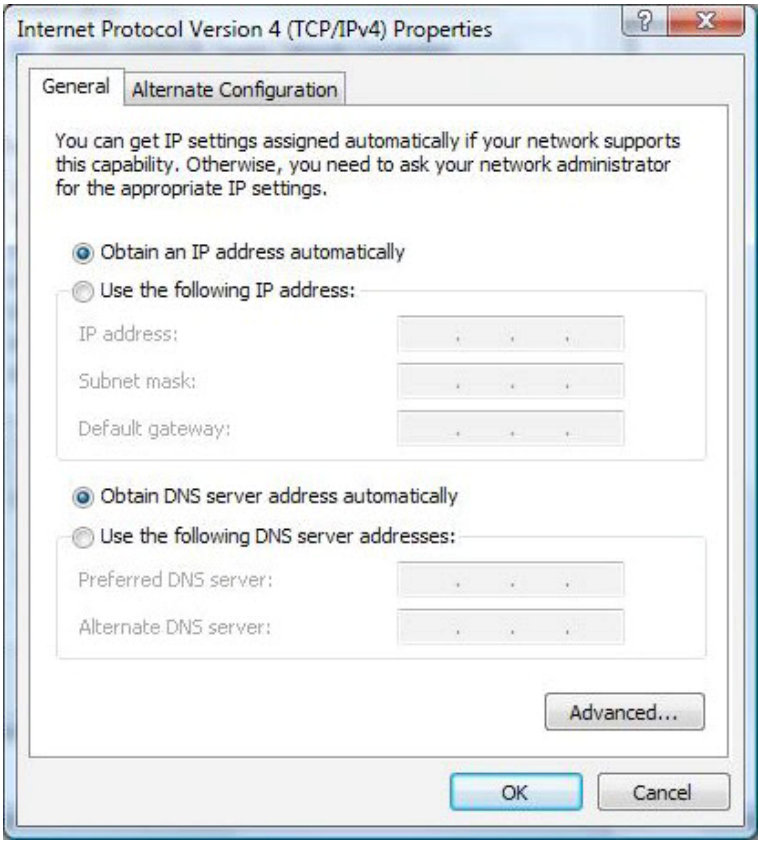


5. Select Internet Protocol Version 4 (TCP/IPv4) then click Properties.



6. In the TCP/IPv4 properties window, select the Obtain an IP address automatically and Obtain DNS Server address automatically radio buttons. Then click OK to exit the setting.

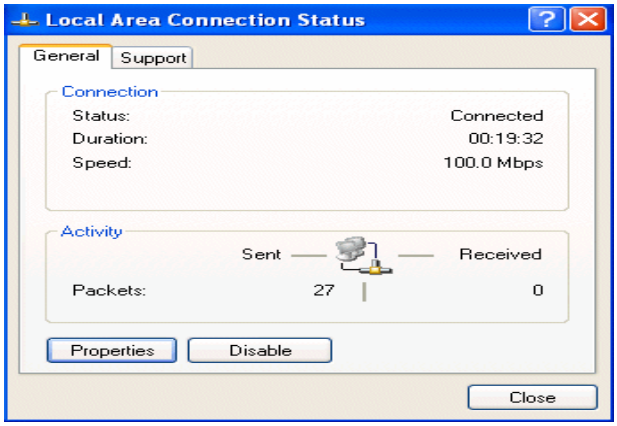
7. Click OK again in the Local Area Connection Properties window to apply the new configuration.



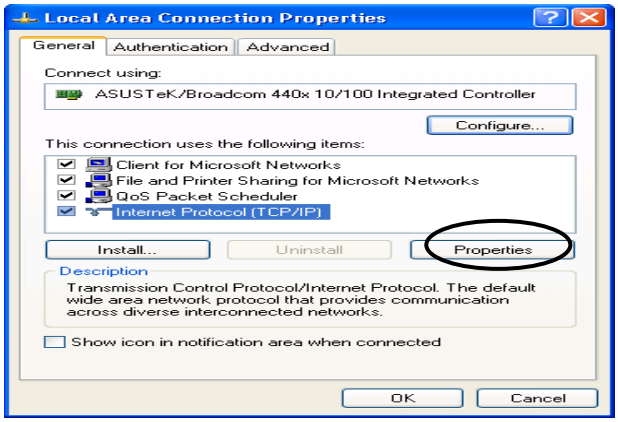
Configuring PC in Windows XP

1. Go to Start > Control Panel (in Classic View). In the Control Panel, double-click on Network Connections
2. Double-click Local Area Connection.

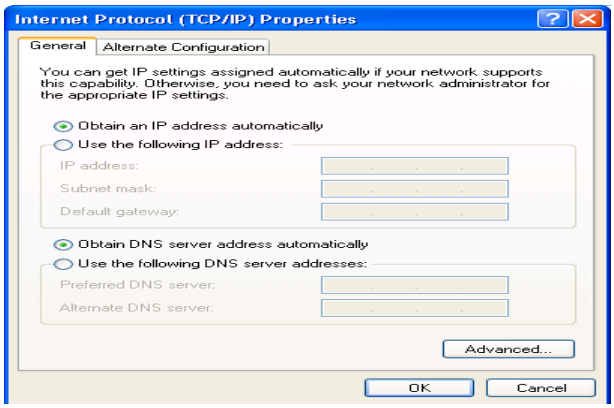
3. In the Local Area Connection Status window, click Properties.



4. Select Internet Protocol (TCP/IP) and click Properties.

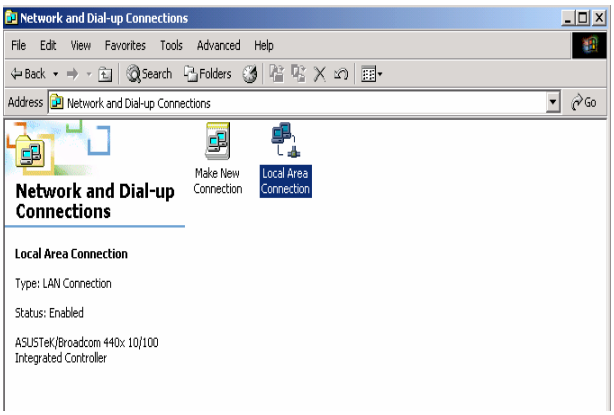


5. Select the Obtain an IP address automatically and the Obtain DNS server address automatically radio buttons.
6. Click OK to finish the configuration.

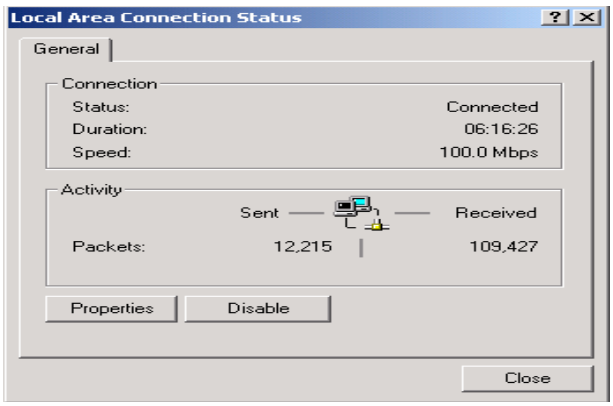


Configuring PC in Windows 2000

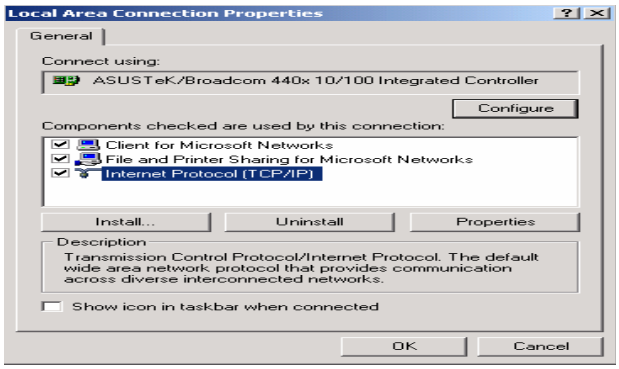
1. Go to Start > Settings > Control Panel. In the Control Panel, double-click on Network and Dial-up Connections.
2. Double-click Local Area Connection.



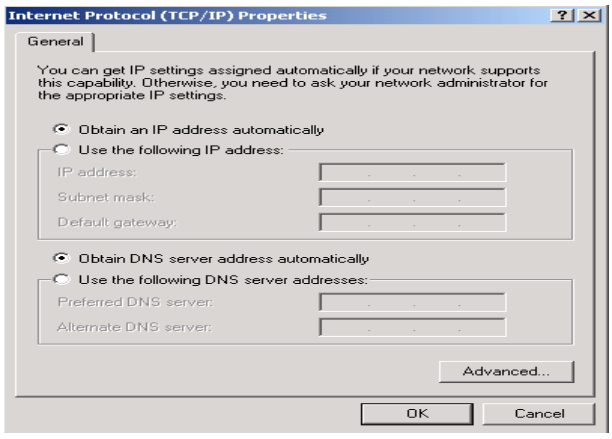
3. In the Local Area Connection Status window click Properties.



4. Select Internet Protocol (TCP/IP) and click Properties.

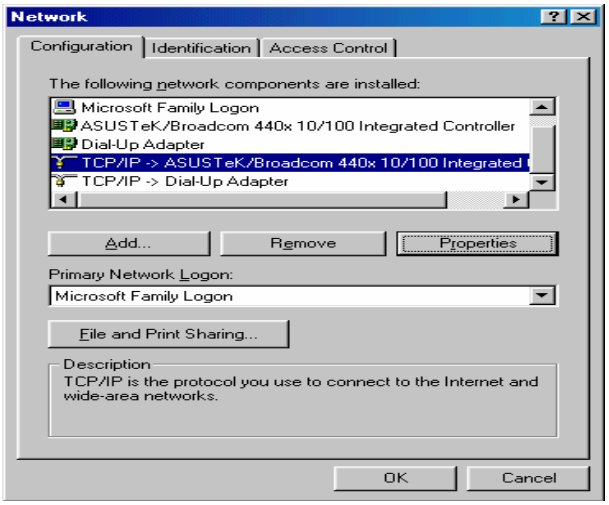


5. Select the Obtain an IP address automatically and the Obtain DNS server address automatically radio buttons.
6. Click OK to finish the configuration.

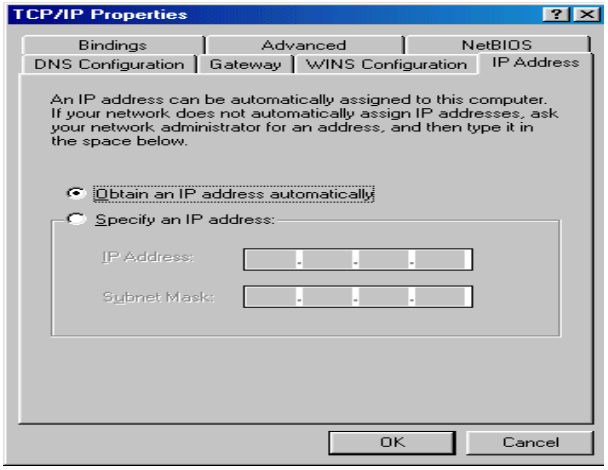


Configuring PC in Windows 95/98/Me

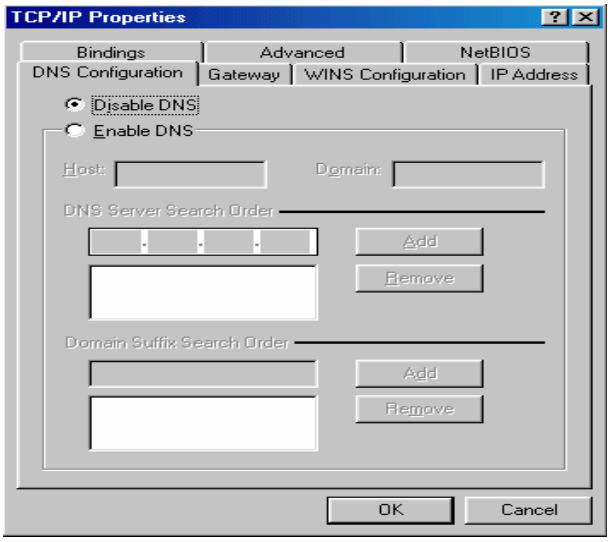
1. Go to Start > Settings > Control Panel. In the Control Panel, double-click on Network and choose the Configuration tab.
2. Select TCP/IP > NE2000 Compatible, or the name of your Network Interface Card (NIC) in your PC.



3. Select the Obtain an IP address automatically radio button.

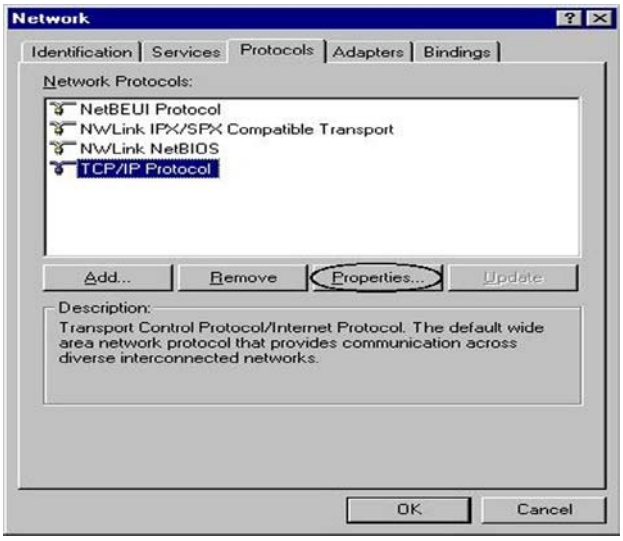


4. Then select the DNS Configuration tab.
5. Select the Disable DNS radio button and click OK to finish the configuration.

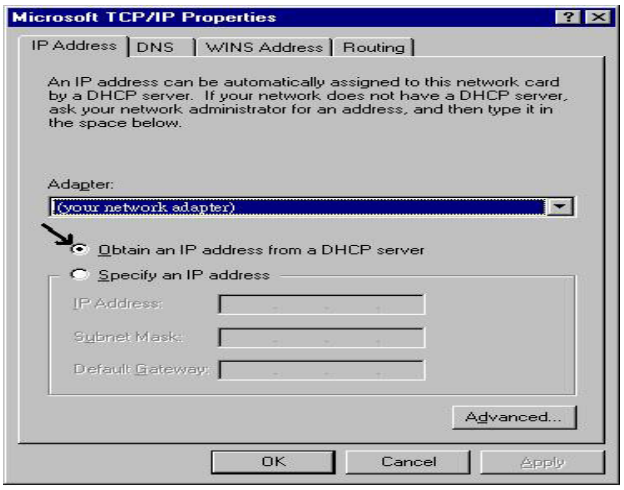


Configuring PC in Windows NT4.0

1. Go to Start > Settings > Control Panel. In the Control Panel, double-click on Network and choose the Protocols tab.
2. Select TCP/IP Protocol and click Properties.



3. Select the Obtain an IP address from a DHCP server radio button and click OK.



Factory Default Settings

Before configuring your router, you need to know the following default settings.

Web Interface (Username and Password)

Three user levels are provided by this router, thus **Administrator**, **Basic** and **Advanced** respectively. You can turn to User Management to change the corresponding passwords and understand more.

Administrator

- Username: admin
- Password: admin

Basic

- Username: user
- Password: user

Advanced (for remote login)

- Username: support
- Password: support

The default username and password are “**admin**” and “**admin**” respectively.

If you have forgotten your username or password for the router, you can restore your device to its default setting by pressing the Reset button for more than 1 second.

Device LAN IP settings

- IP Address: 192.168.1.254
- Subnet Mask: 255.255.255.0

ISP setting in WAN site

- PPPoE

DHCP server

- DHCP server is enabled.
- Start IP Address: 192.168.1.100
- IP pool counts: 100

LAN and WAN Port Addresses

The parameters of LAN and WAN ports are pre-set in the factory. The default values are shown in the table.

LAN Port		WAN Port
IP address	192.168.1.254	The PPPoE function is enabled to automatically get the WAN port configuration from the ISP.
Subnet Mask	255.255.255.0	
DHCP server function	Enabled	
IP addresses for distribution to PCs	100 IP addresses continuing from 192.168.1.100 through 192.168.1.199	

Information from your ISP

Before configuring this device, you have to check with your ISP (Internet Service Provider) to find out what kind of service is provided such as DHCP (Obtain an IP Address Automatically, Static IP (Fixed IP Address) or PPPoE.

Gather the information as illustrated in the following table and keep it for reference.

PPPoE(RFC2516)	VPI/VCI, VC / LLC-based multiplexing, Username, Password, Service Name, and Domain Name System (DNS) IP address (it can be automatically assigned by your ISP when you connect or be set manually).
PPPoA(RFC2364)	VPI/VCI, VC / LLC-based multiplexing, Username, Password and Domain Name System (DNS) IP address (it can be automatically assigned by your ISP when you connect or be set manually).
MPoA(RFC1483/ RFC2684)	VPI/VCI, VC / LLC-based multiplexing, IP address, Subnet mask, Gateway address, and Domain Name System (DNS) IP address (it is a fixed IP address).
IPoA(RFC1577)	VPI/VCI, VC / LLC-based multiplexing, IP address, Subnet mask, Gateway address, and Domain Name System (DNS) IP address (it is a fixed IP address).
Pure Bridge	VPI/VCI, VC / LLC-based multiplexing to use Bridged Mode.

Chapter 4: Configuration

To easily configure this device for internet access, you must have IE 5.0 / Netscape 4.5 or above installed on your computer. There are basically 2 ways to configure your router before you are able to connect to the internet: **Easy Sign-On** & **Web Interface**. Configuration of each method will be discussed in detail in the following sections.

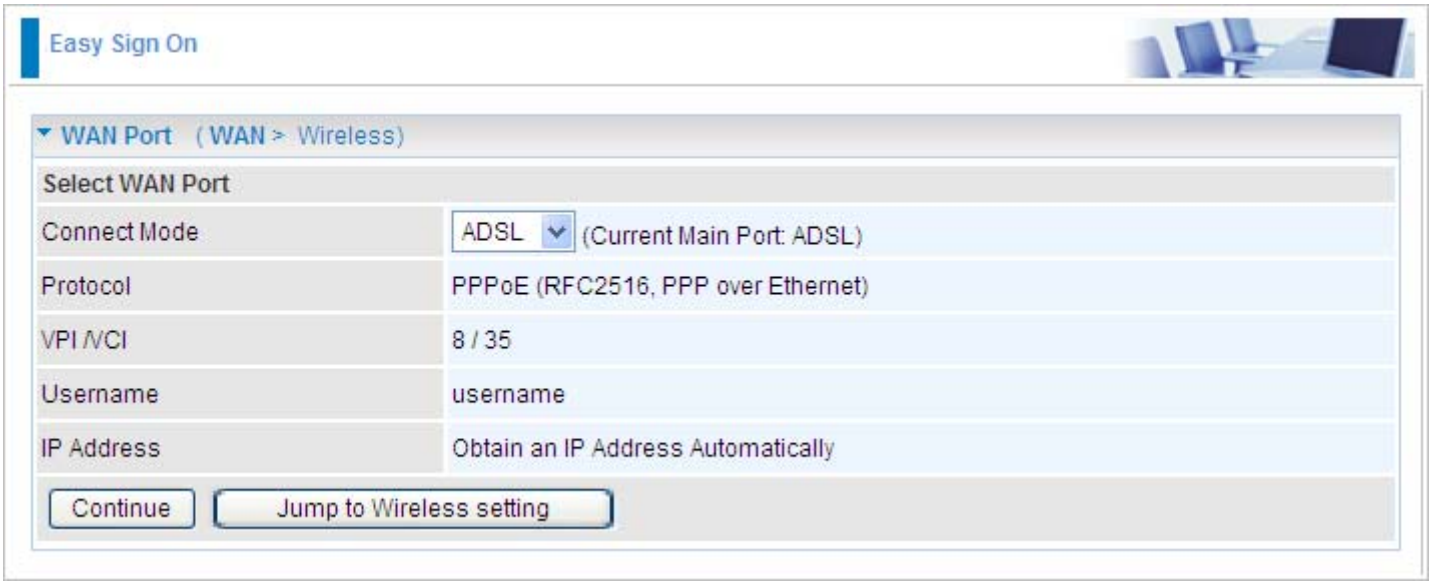
Easy Sign-On (EZSO)

This special feature makes it easier for you to configure your router so that you can connect to the internet in a matter of seconds without having to logon to the router GUI for any detail configuration. This configuration method is usually auto initiated if user is to connect to the internet via Billion's router for the first time.

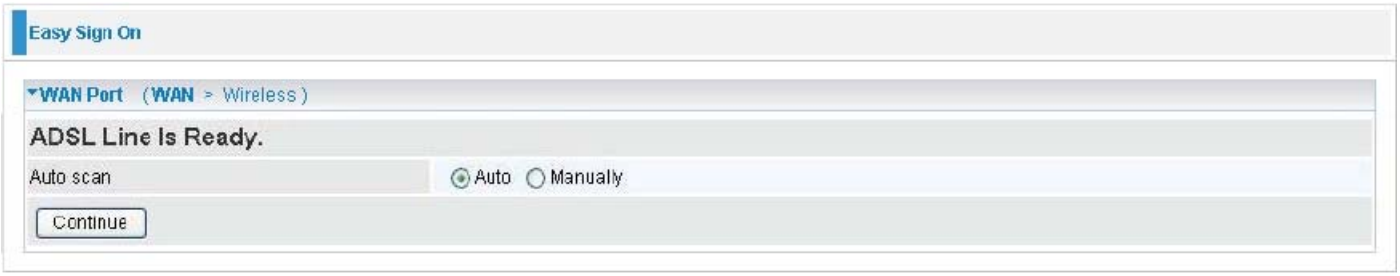
After setting up the router with all the appropriate cables plugged-in, open up your IE browser, the EZSO WEB GUI will automatically pop up and request that you enter some basic information that you have obtained from your ISP. By following the instructions given carefully and through the information you provide, the router will be configured in no time and you will find yourself surfing the internet sooner than you realize.

Follow the Easy Sign-On configuration wizard to complete the basic network configuration.

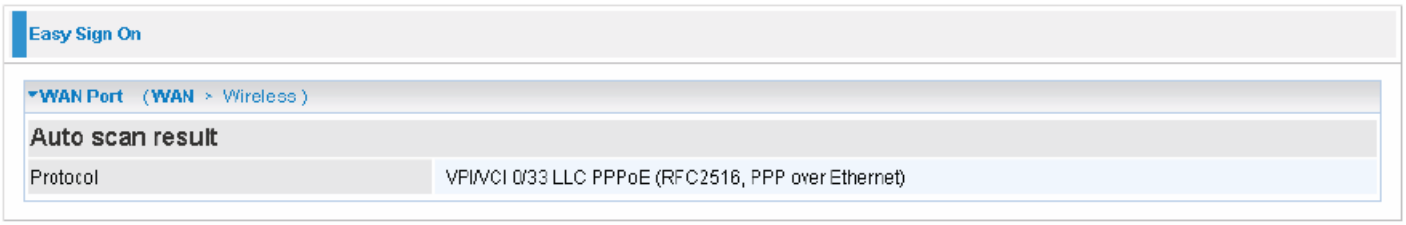
1. Connect your router with all the appropriate cables. Then, load your IE / Netscape browser.
2. When the EZSO configuration wizard pops up, select the connect mode which you want to set up and then click continue. (There are three modes that you may select: “EWAN” “ADSL” and another is “3G”.)



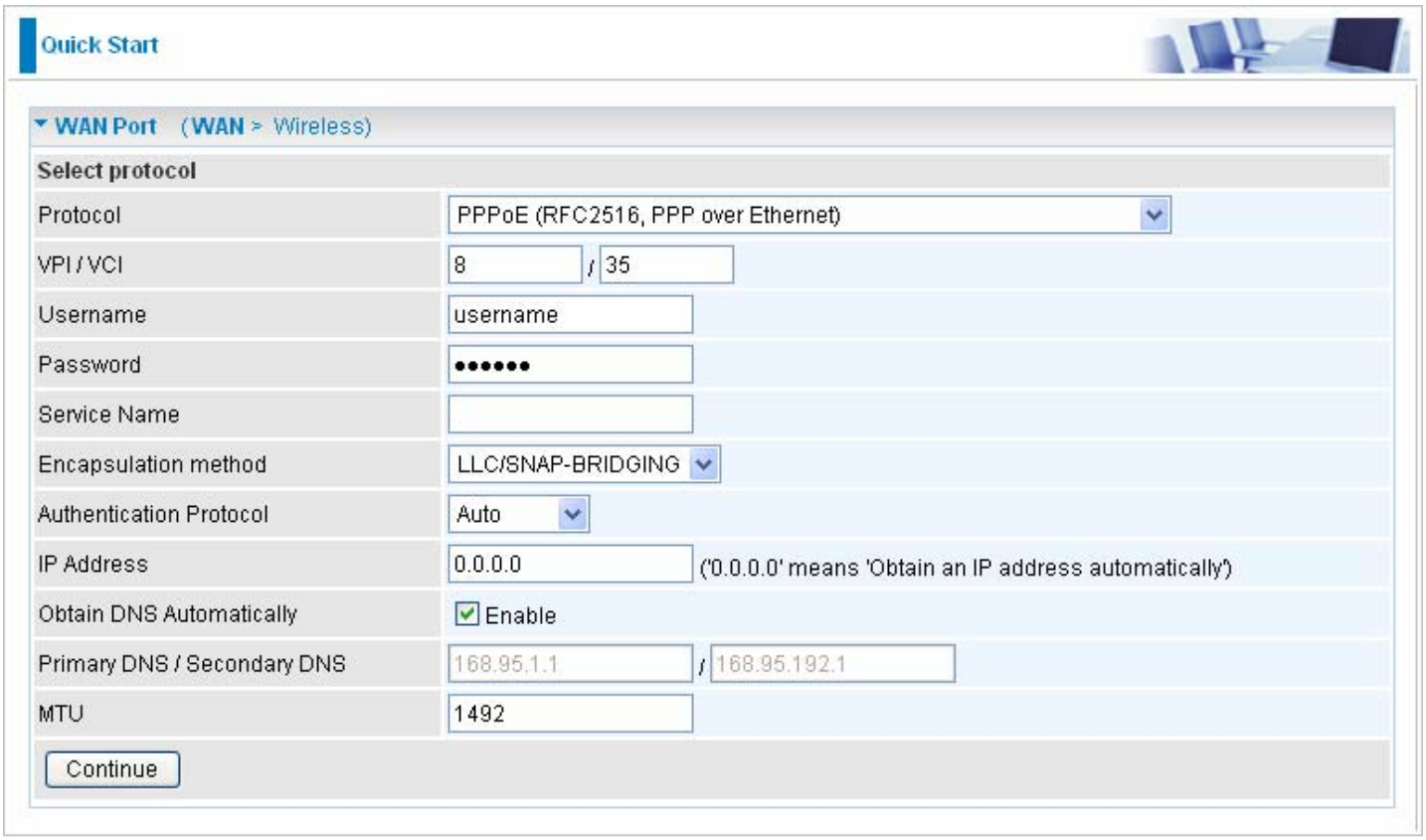
3. Choose “Auto” or “Manually” to scan ADSL information.



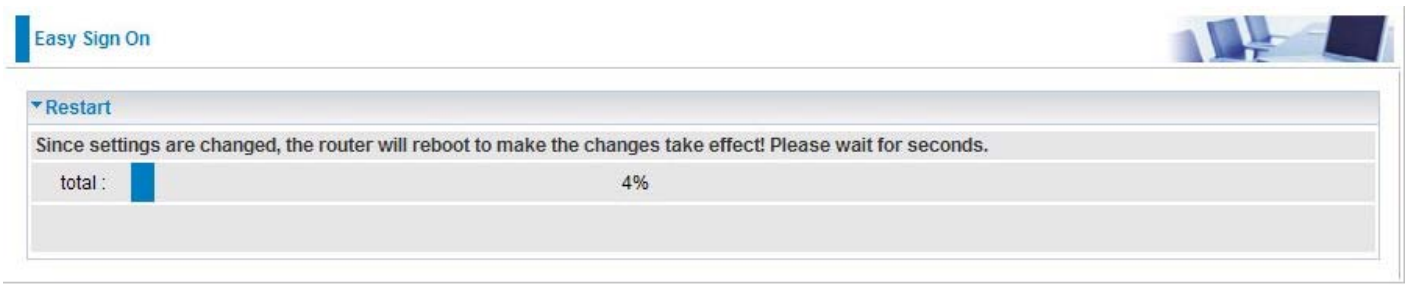
4. The window will then display the Protocol information obtained from the scan result before redirect you to the next configuration page.



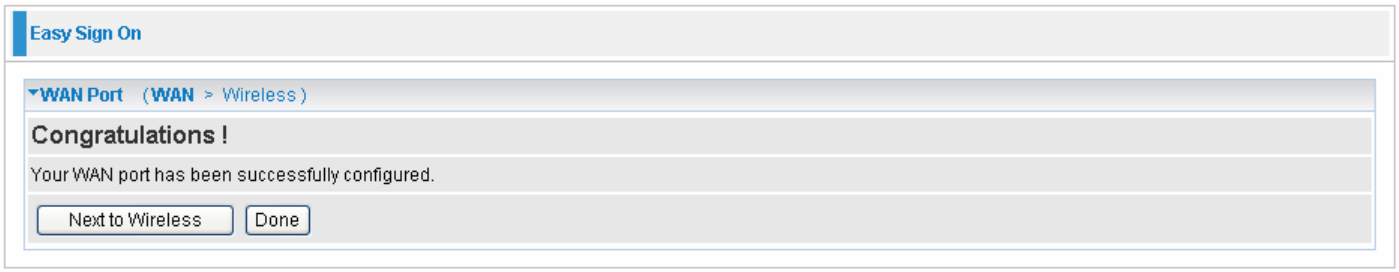
5. Please enter all the information in the blanks provided and then click continue.



6. The device will reboot and then load the new configuration.



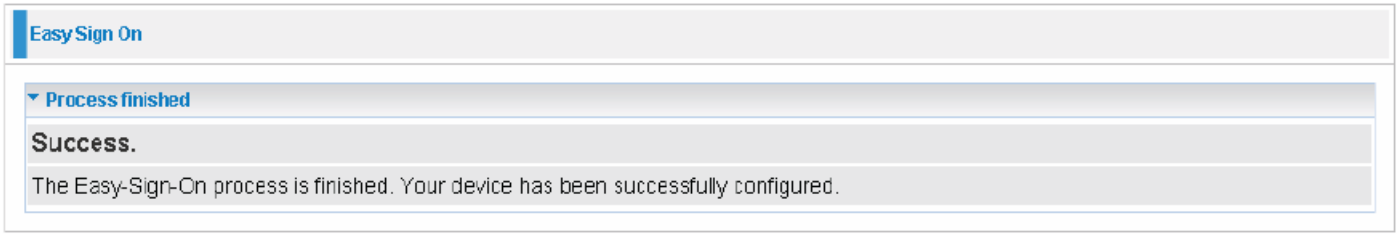
7. If all information provided is valid and the device successfully connects to WAN, a dialog box will appear to signify the completion of the WAN port setup. At this point you can either click Done to finish the EZSO configuration or you can click Next to wireless to proceed to the wireless configuration if you have.



8. Select Enable and enter the necessary information in the blanks provided for the Wireless LAN setting if you would like to use this feature and then click Continue.

9. The system will save your new configuration and complete the setup.

10. Congratulations! You've completed the setup and are now ready to surf the Internet.

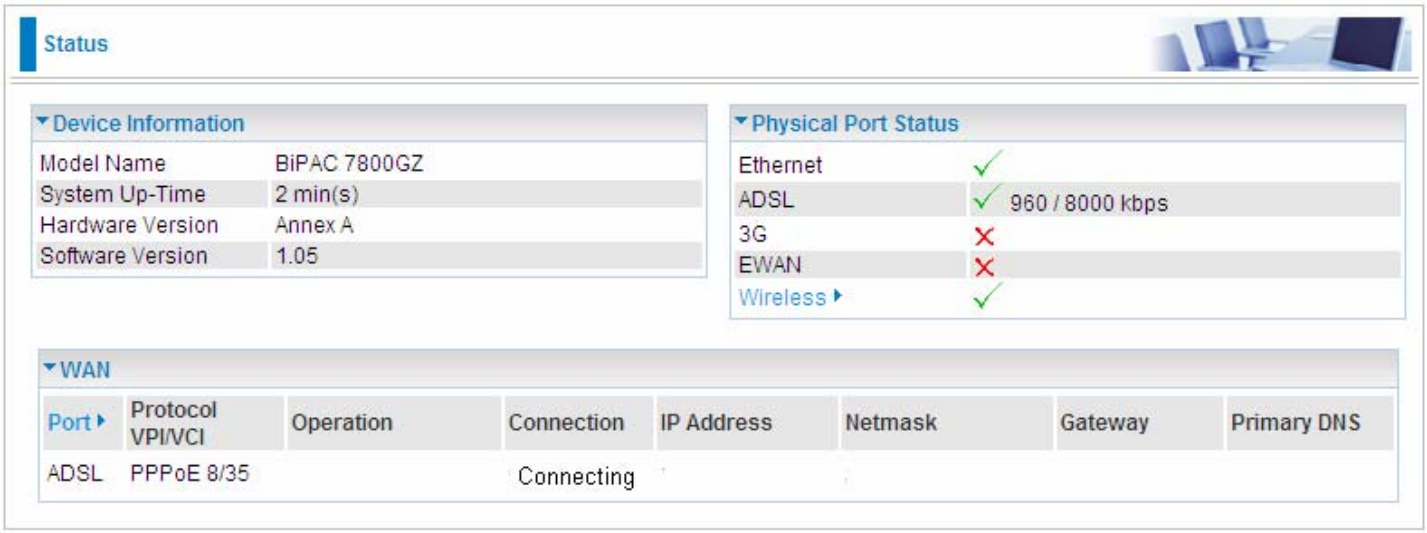


11. You can test the connection by clicking on the URL link provided. If the setup is successful you will be redirected to website.

Configuration via Web Interface

Open your web browser; enter the IP address of your router, which by default is 192.168.1.254, and click “Go”, a login window prompt will appear. The default username and password are “admin” and “admin” respectively.

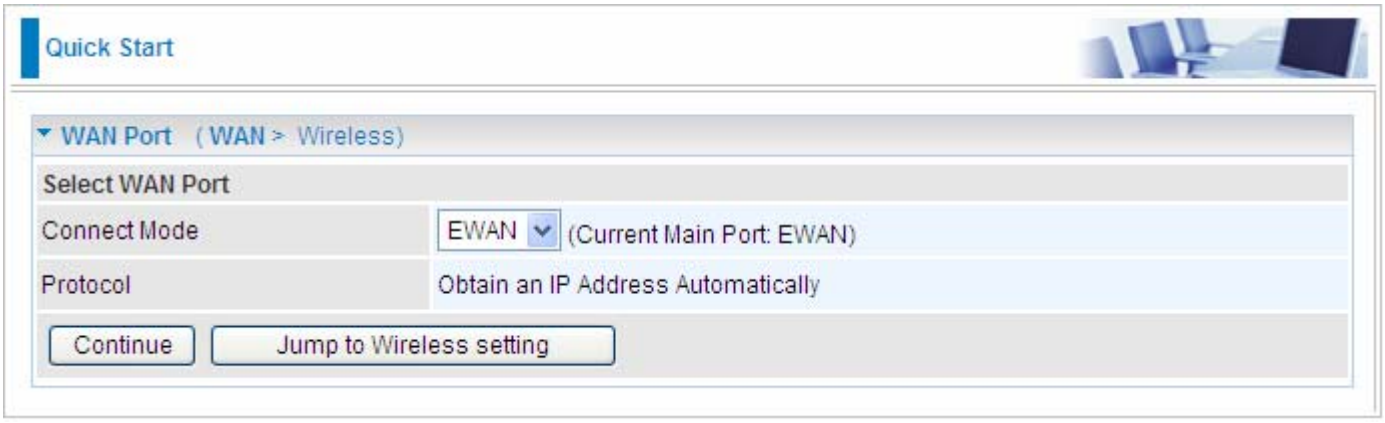
Congratulations! You are now successfully logon to the Firewall Router!



If the authentication succeeds, the homepage Status will appear on the screen.

Quick Start

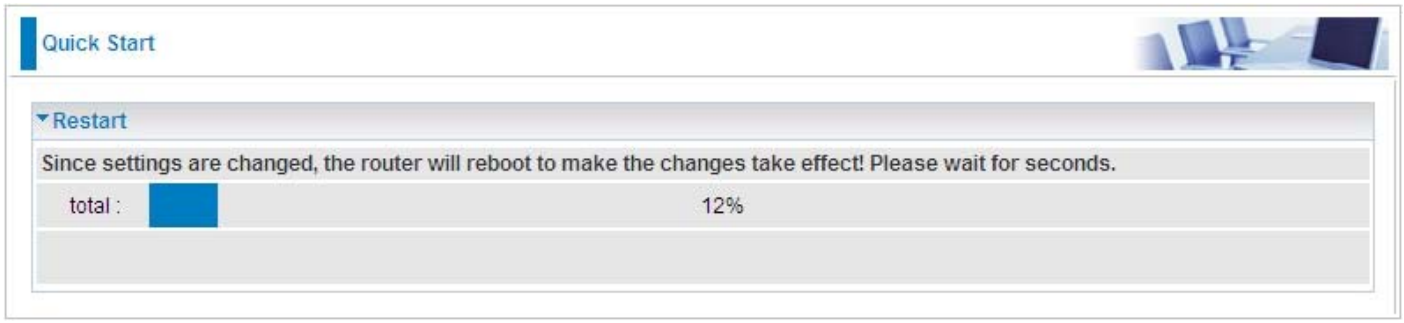
Whether on the Basic or Advanced Configuration Mode, click Quick Start link to WAN Port setup pages.

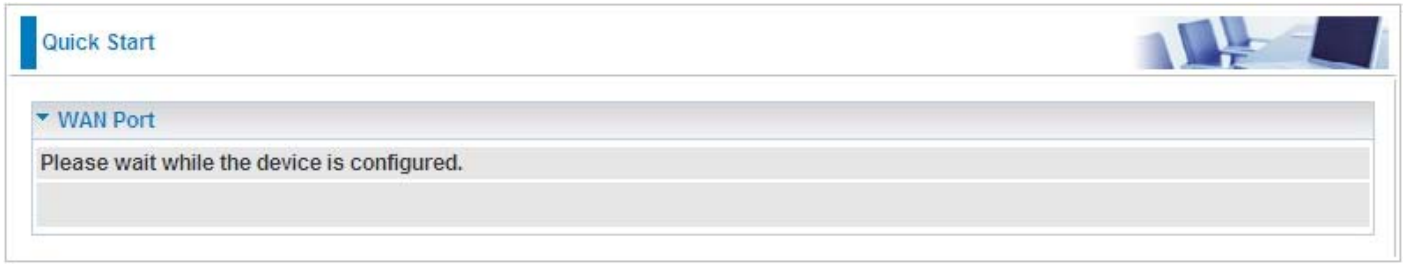


Step 1: Select WAN port connect mode from the connect mode drop down menu. There are three types of connect mode to choose from: EWAN, 3G or ADSL.

Step 2: After selecting the connect mode, press Continue to move on to the next configuring page. There are 5 types of phone service standards available for 3G connect mode while there are 5 types of connection protocols available under ADSL connect mode, 3 types of connection protocols available for EWAN connect mode. ***Each type of connection mode is described in the following sections of 3G Connect mode, ADSL Connect mode and EWAN Connect mode.***

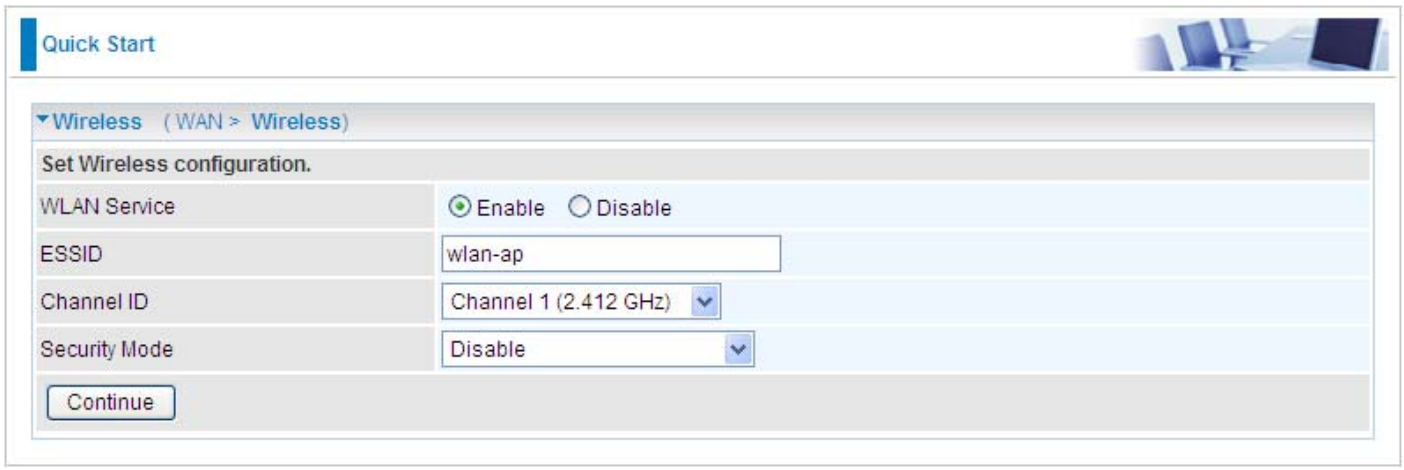
Step 3: After finishing configuring the WAN port connection, click Continue to proceed. The system will upload and apply the new WAN port configuration to the device.





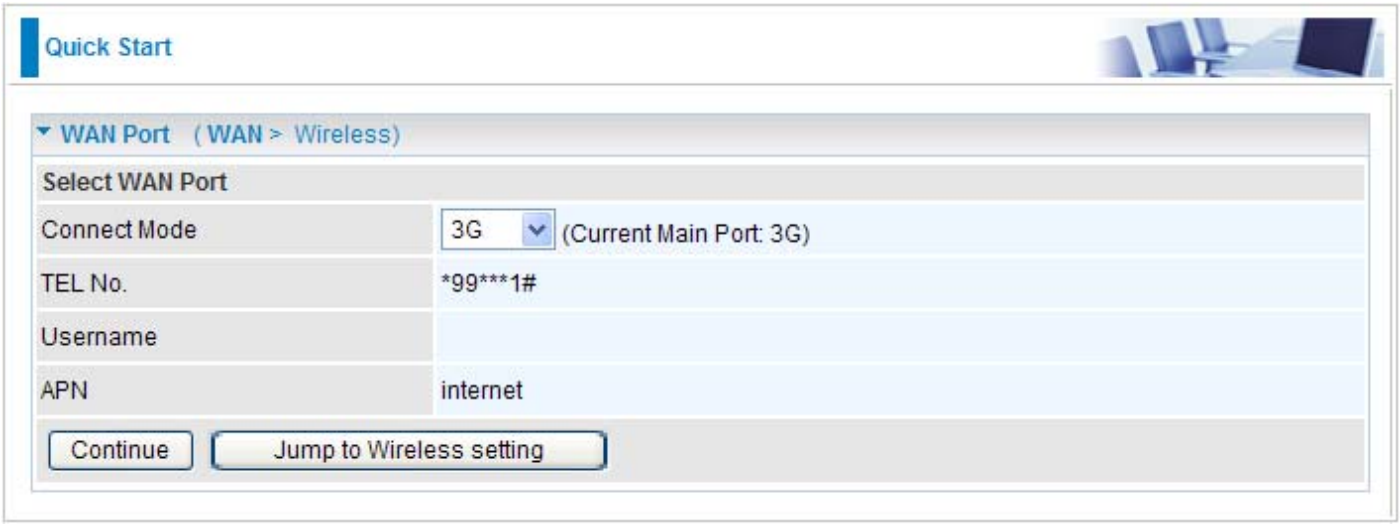
Note: If the WAN line is not ready, a page will display as below and your new configuration can not be saved.

Step 4: After the configuration is successful, click Next to Wireless button and you may proceed to configure the Wireless setting. There are 4 types of security mode: WPA, WPA2, WPA/WPA2 Pre-Shared Key and WEP. Please refer to the **Wireless Setting Mode** section for detail description of each security mode.



Step 5: After finishing configuring the WLAN setting, press Continue to finish the Quick Start.

3G Connect Mode



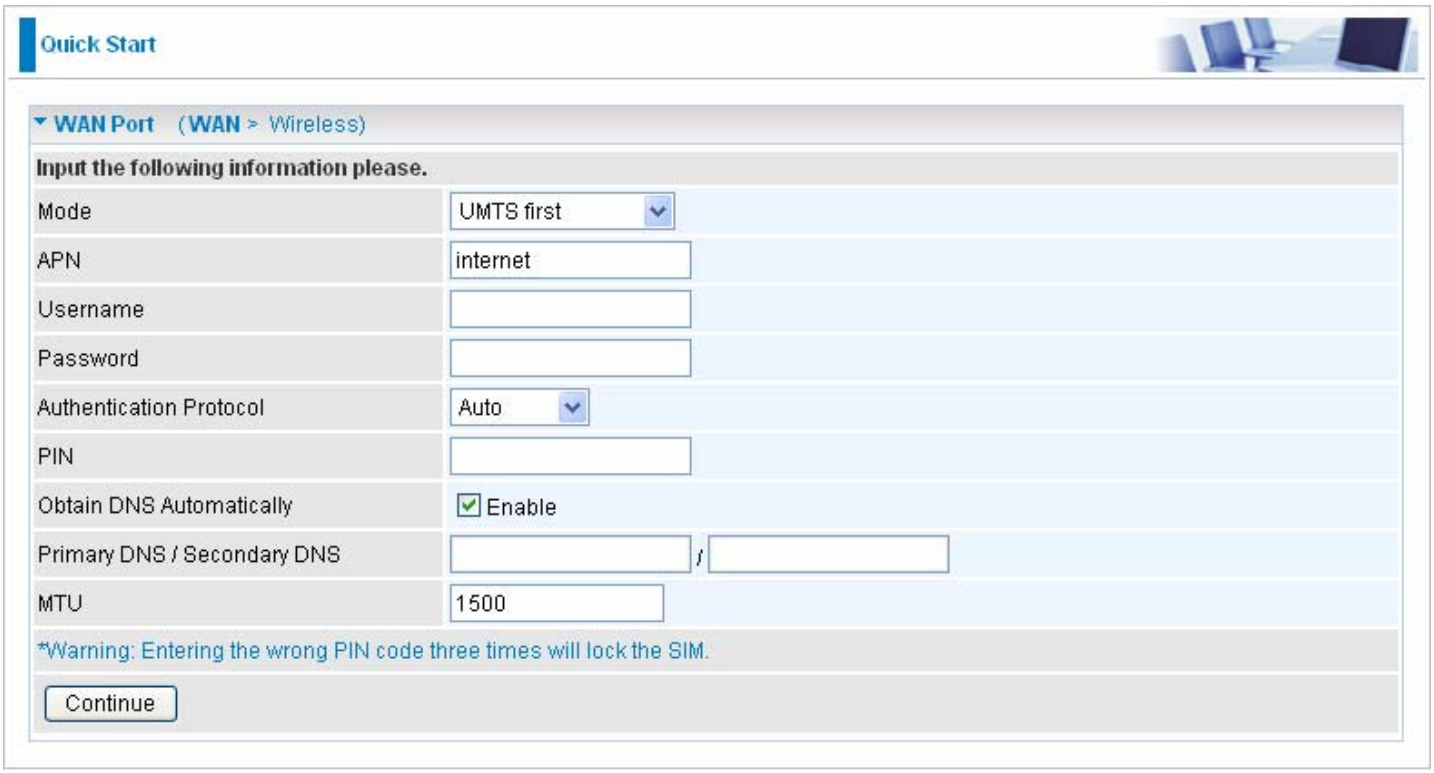
Connect Mode: You can choose either “ADSL” “EWAN” or “3G” mode.

TEL No.: The dial string to make a GPRS / 3G user internetworking call.

Username: The username provided by your service provider.

APN: An APN is similar to a URL on the WWW, it is what the unit makes a GPRS / UMTS call.

Click **Continue** to go on to next step.



Mode: There are 5 options of phone service standards: GSM only, UTMS only, GPRS/EDGE first, UMTS first, and Automatic. If you are uncertain what services are available to you, and then please select Automatic.

APN: An APN is similar to a URL on the WWW, it is what the unit makes a GPRS / UMTS call. The service provider is able to attach anything to an APN to create a data connection, requirements for APNs varies between different service providers. Most service providers have an internet portal which they use to connect to a DHCP Server, thus giving you access to the internet i.e. Some 3G

operators use the APN ‘internet’ for their portal. The default value is “internet”.

Username/**Password:** Enter the username and password provided by your ISP.

Authentication Protocol: Default is Auto. Please consult your ISP on whether to use PAP, CHAP or MSCHAP.

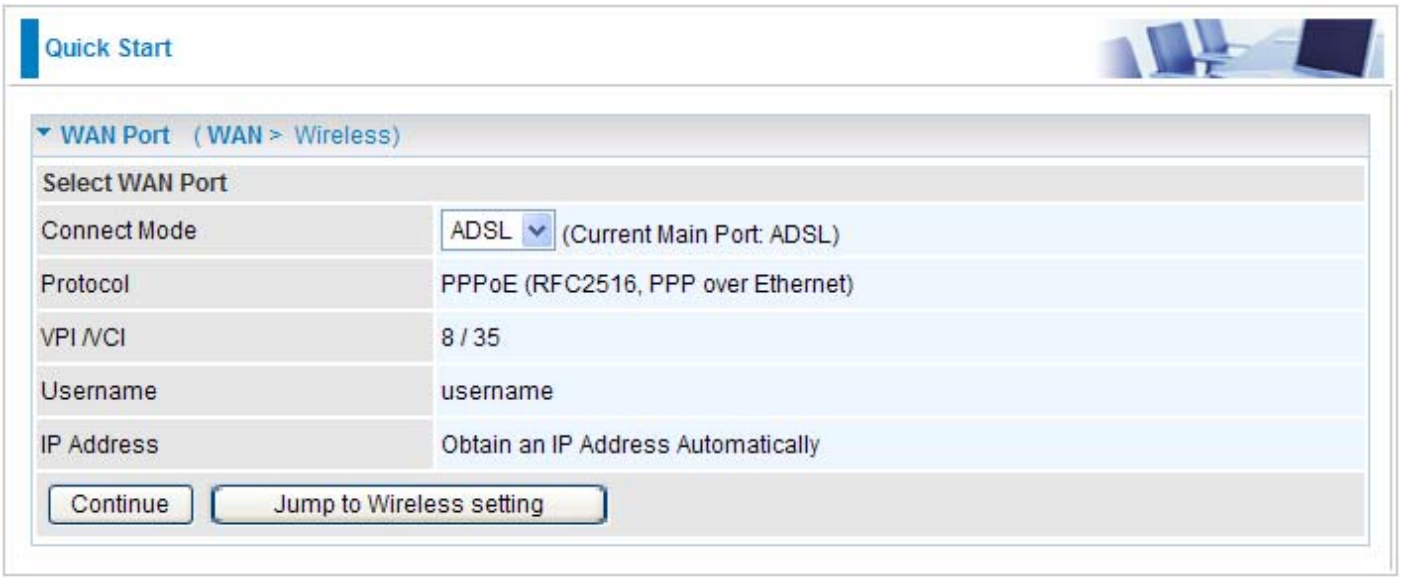
PIN: PIN stands for Personal Identification Number. A PIN code is a numeric value used in certain systems as a password to gain access, and authenticate. In mobile phones a PIN code locks the SIM card until you enter the correct code. If you enter the PIN code incorrectly into the phone 3 times in a row, then the SIM card will be blocked and you will require a PUK code from your network/ service provider.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

ADSL Connect Mode



Connect Mode: You can choose either “ADSL” “EWAN” or “3G” mode.

Protocol: The current ATM protocol in the device.

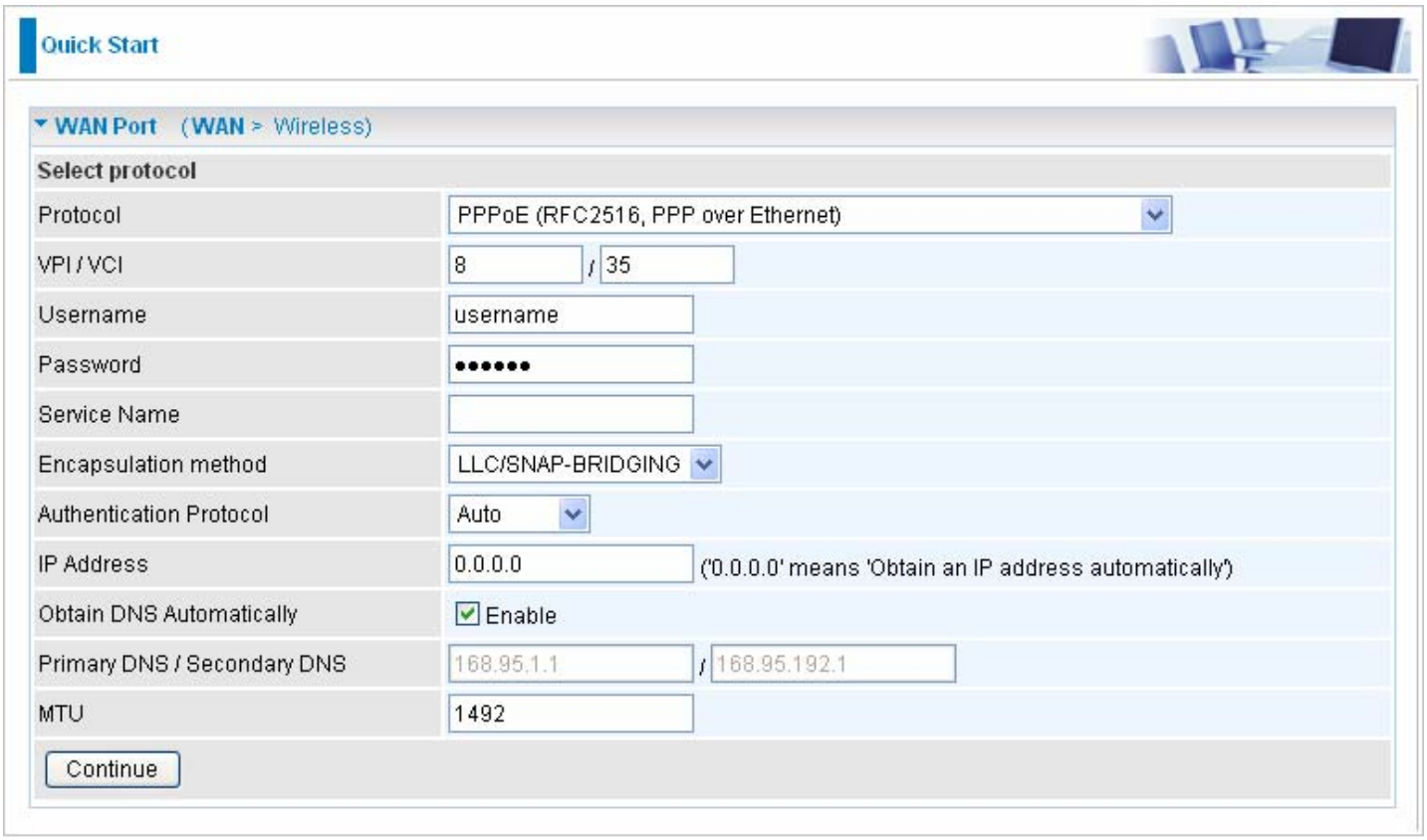
VPI/VCI: The current value of VPI/VCI in the device.

Username: To show current authentication username.

IP Address: To show current value of IP address in the device.

For ADSL connect mode there are 5 types of connection protocols: **PPPoE**, **PPPoA**, **IPoA**, **MPoA** and **Pure Bridge**.

PPPoE Connection



VPI/VCI: Enter the information provided by your ISP.

Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

Service Name: This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

Encapsulation method: Select the encapsulation format. Select the one provided by your ISP.

Authentication method: Default is Auto. Please consult your ISP on whether to use Chap, Pap or MSCHAP.

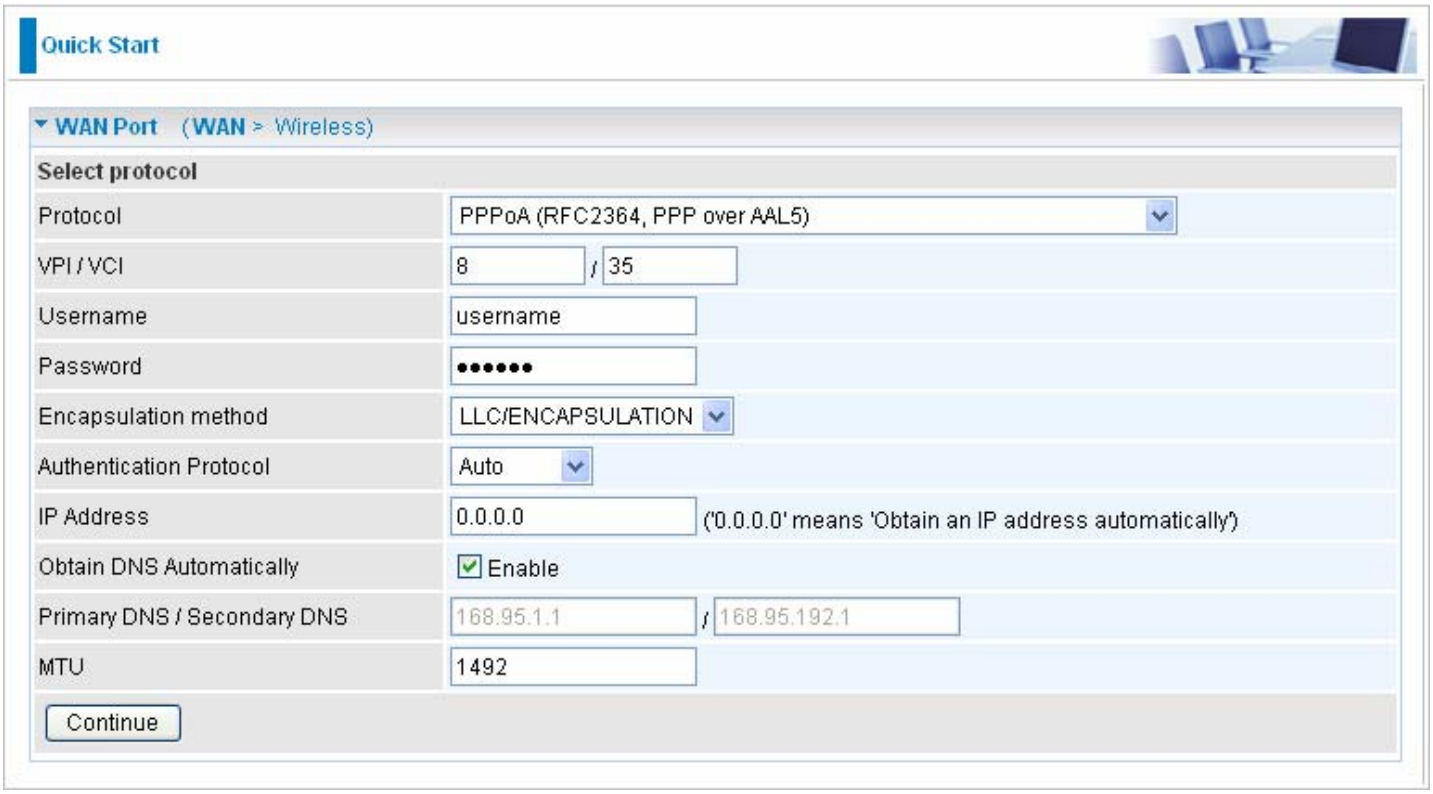
IP Address: Your WAN IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

PPPoA Connection



VPI/VCI: Enter the information provided by your ISP.

Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

Encapsulation method: Select the encapsulation format. Select the one provided by your ISP.

Authentication method: Default is Auto. Please consult your ISP on whether to use Chap, Pap or MSCHAP.

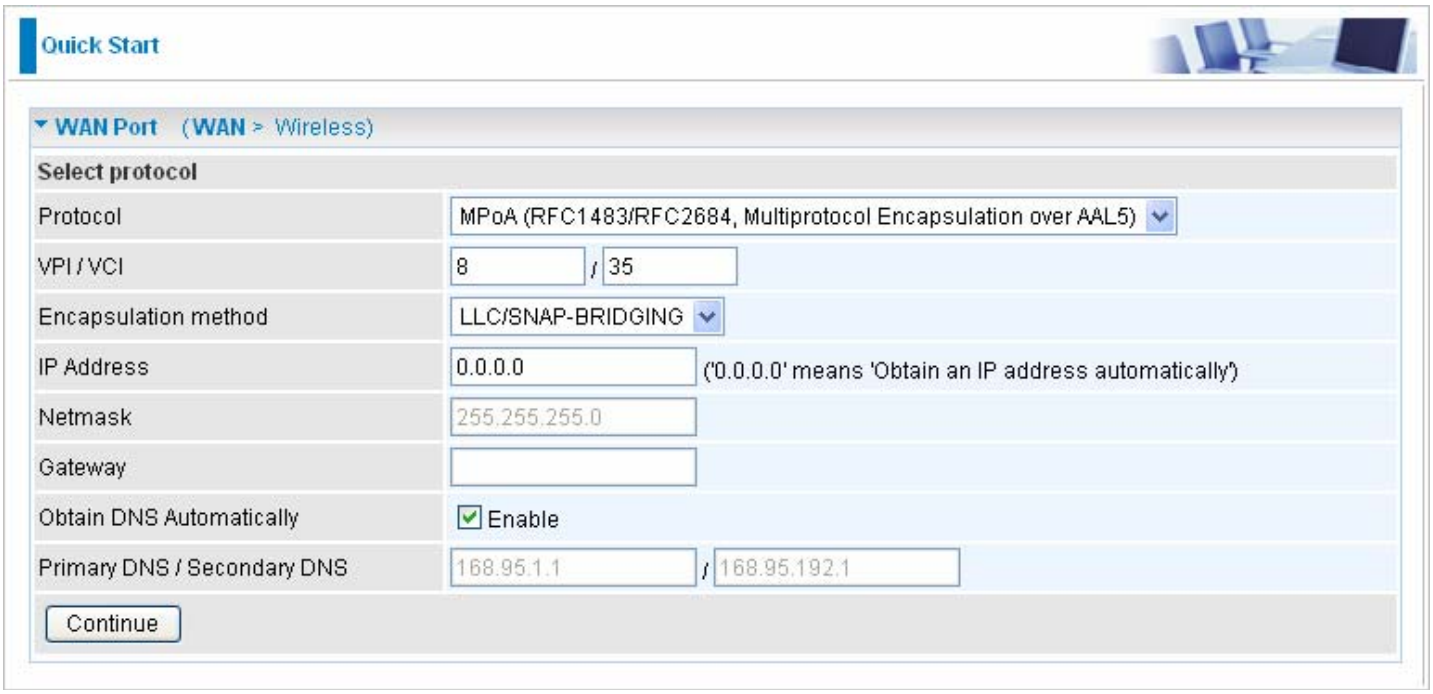
IP Address: Your WAN IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

MPoA Connection



VPI/VCI: Enter the VPI and VCI information provided by your ISP.

Encapsulation method: Select the encapsulation format. Select the one provided by your ISP.

IP Address: IPOA WAN IP address can only set fixed IP address.

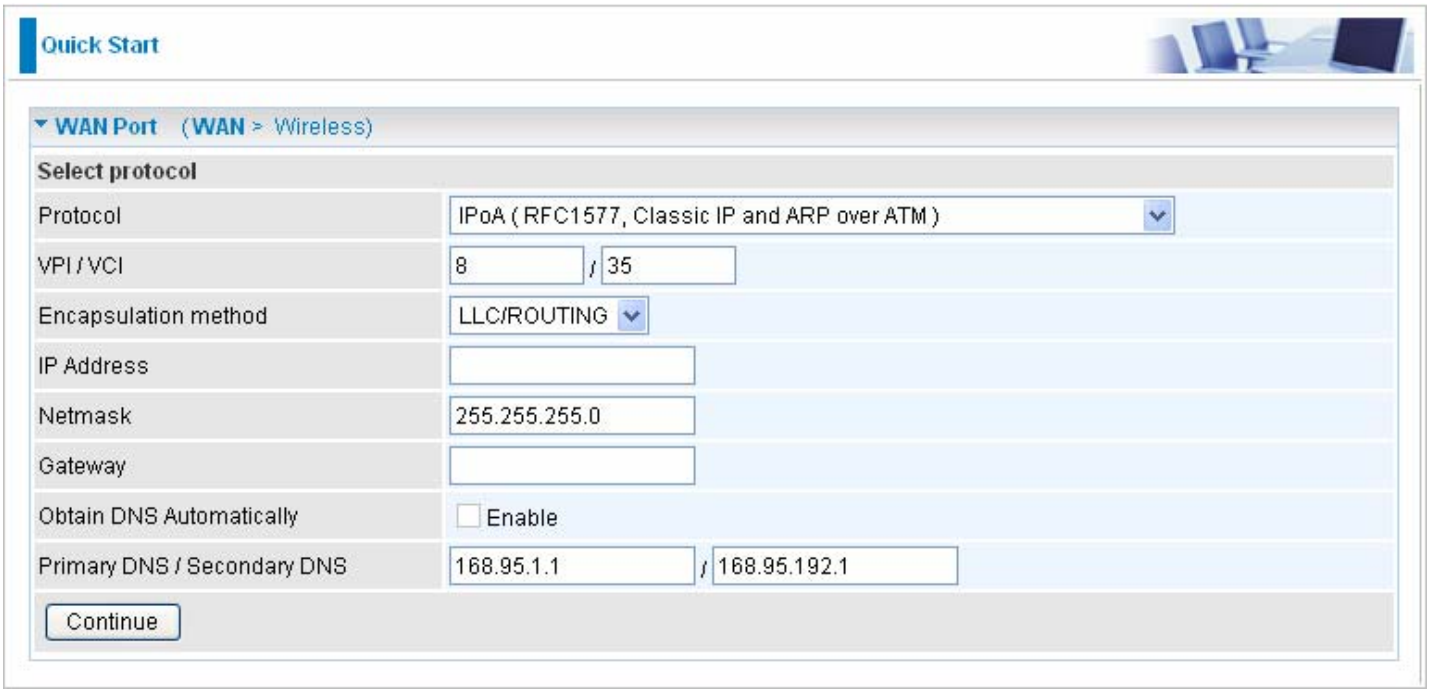
Netmask: User can change it to others such as 255.255.255.128. Type the Netmask assigned to you by your ISP (if given).

Gateway: Enter the IP address of the default gateway.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

IPoA Connection



VPI/VCI: Enter the VPI and VCI information provided by your ISP.

Encapsulation method: Select the encapsulation format. Select the one provided by your ISP.

IP Address: Your WAN IP address. If the IP is set to 0.0.0.0 (auto IP detect), both Netmask and gateway may be left blank.

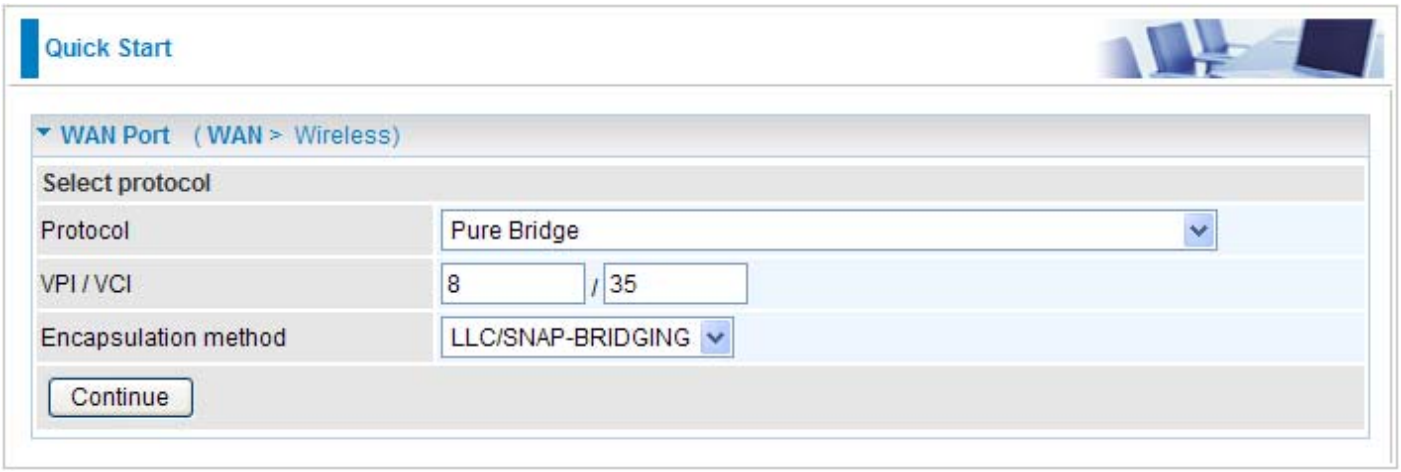
Netmask: User can change it to others such as 255.255.255.128. Type the Netmask assigned to you by your ISP (if given).

Gateway: Enter the IP address of the default gateway.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

Pure Bridge Connection

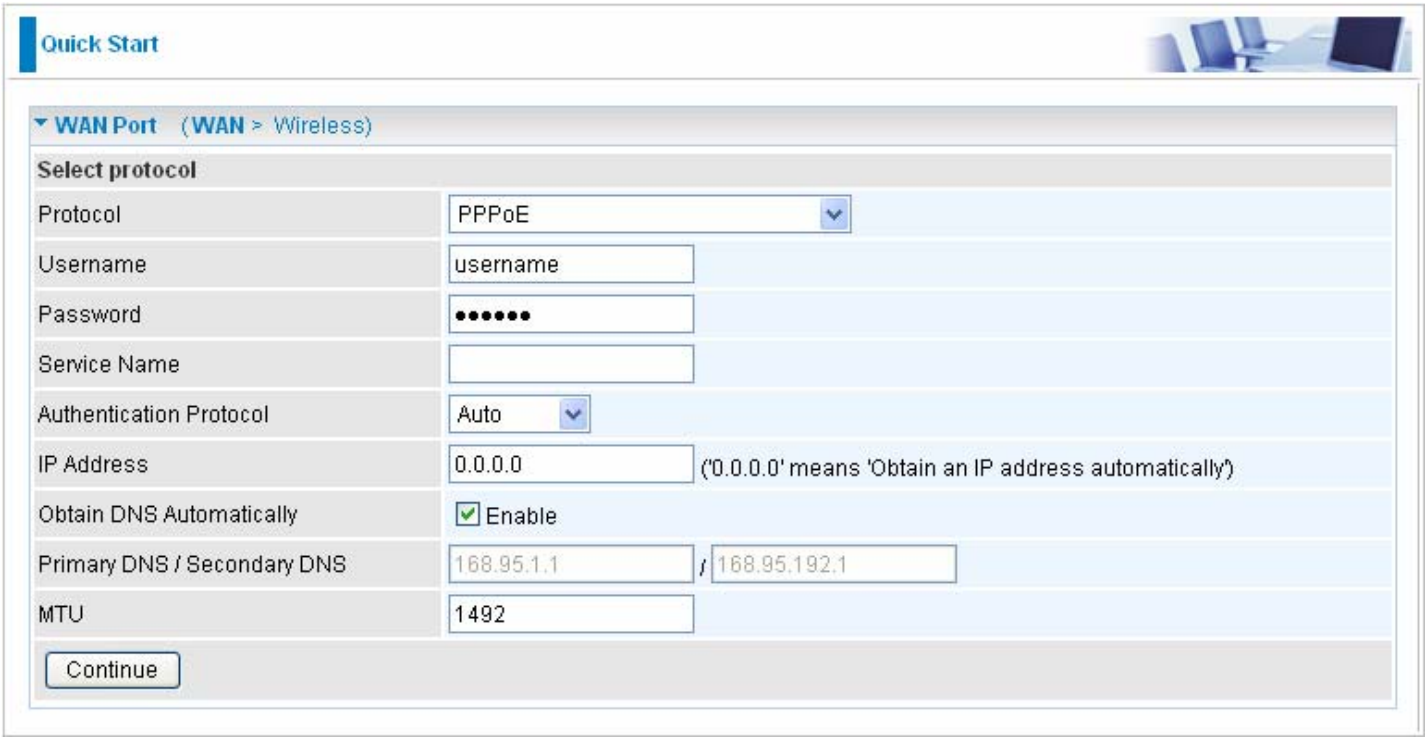


VPI/VCI: Enter the VPI and VCI information provided by your ISP.

Encapsulation method: Select the encapsulation format. Select the one provided by your ISP.

EWAN Connect Mode

PPPoE Connection



Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive). This is in the format of “username@ispname” instead of simply “username”.

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

Service Name: This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

Authentication method: Default is Auto. Please consult your ISP on whether to use Chap, Pap or MSCHAP.

IP Address: Your WAN IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

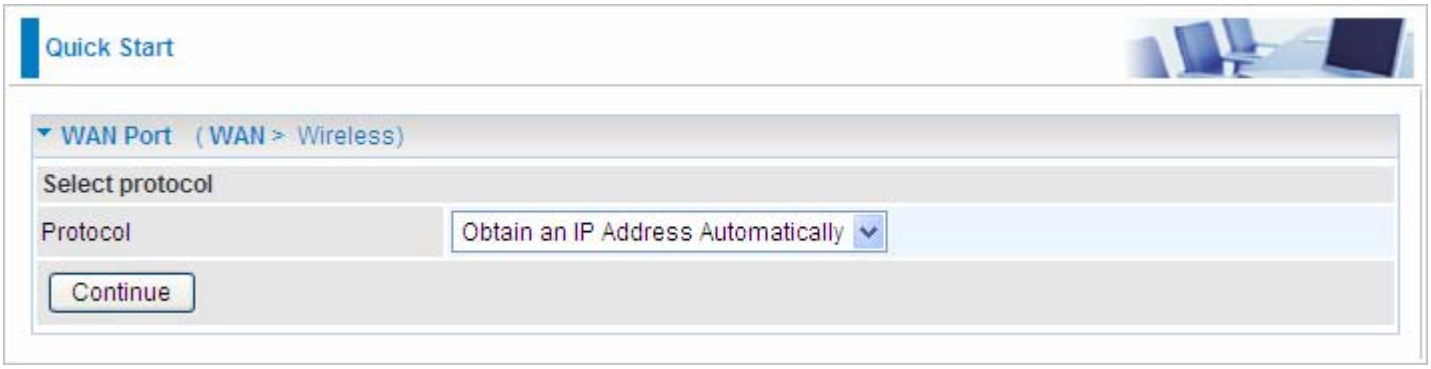
Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

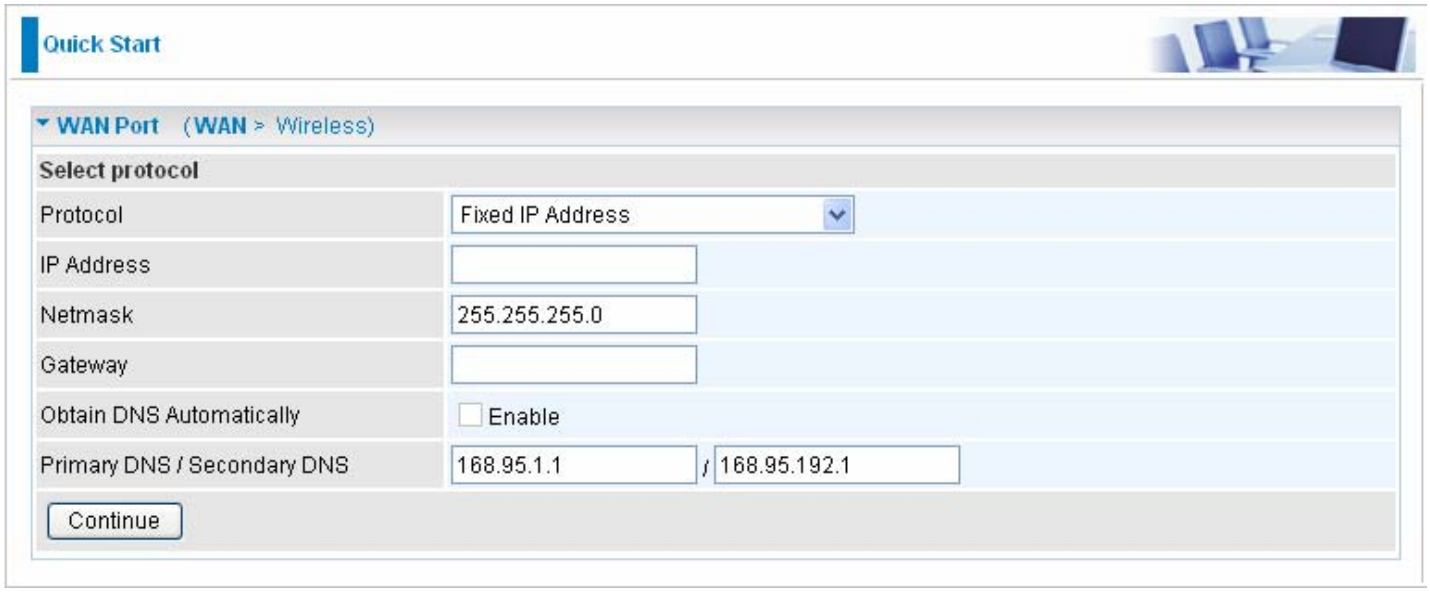
MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

Obtain an IP Address Automatically

Select this protocol enables the device to automatically retrieve IP address.



Fixed IP Address Connection



IP Address: Your WAN IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Netmask: The default is 0.0.0.0. User can change it to other such as 255.255.255.0. Type the subnet mask assigned to you by your ISP (if given).

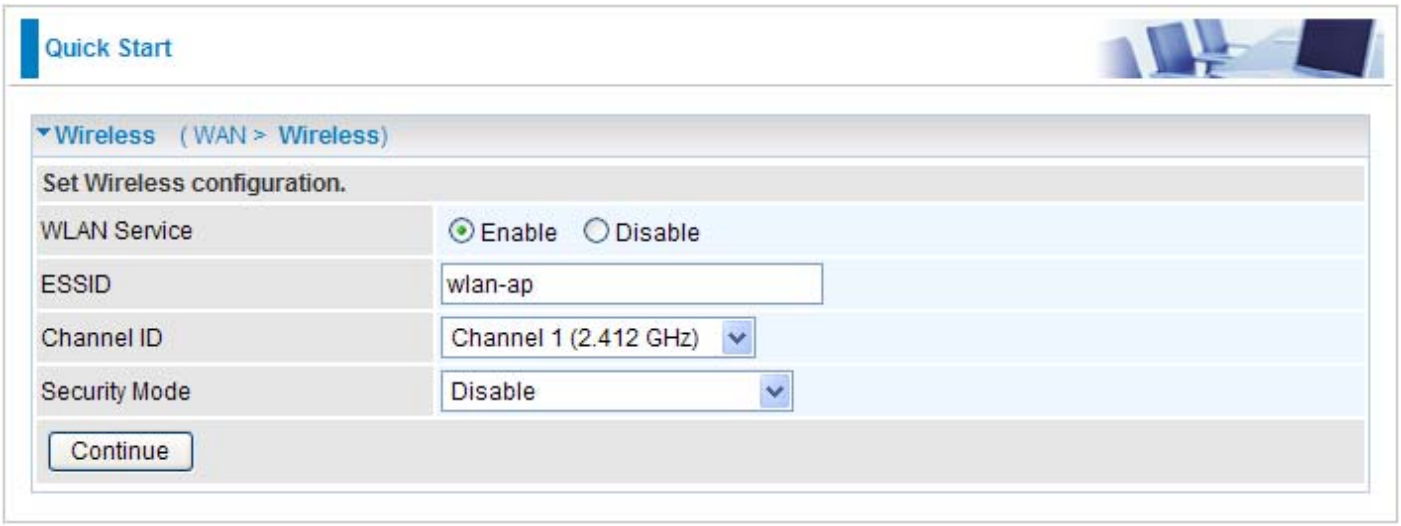
Gateway: You must specify a gateway IP address (supplied by your ISP).

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

Pure Bridge

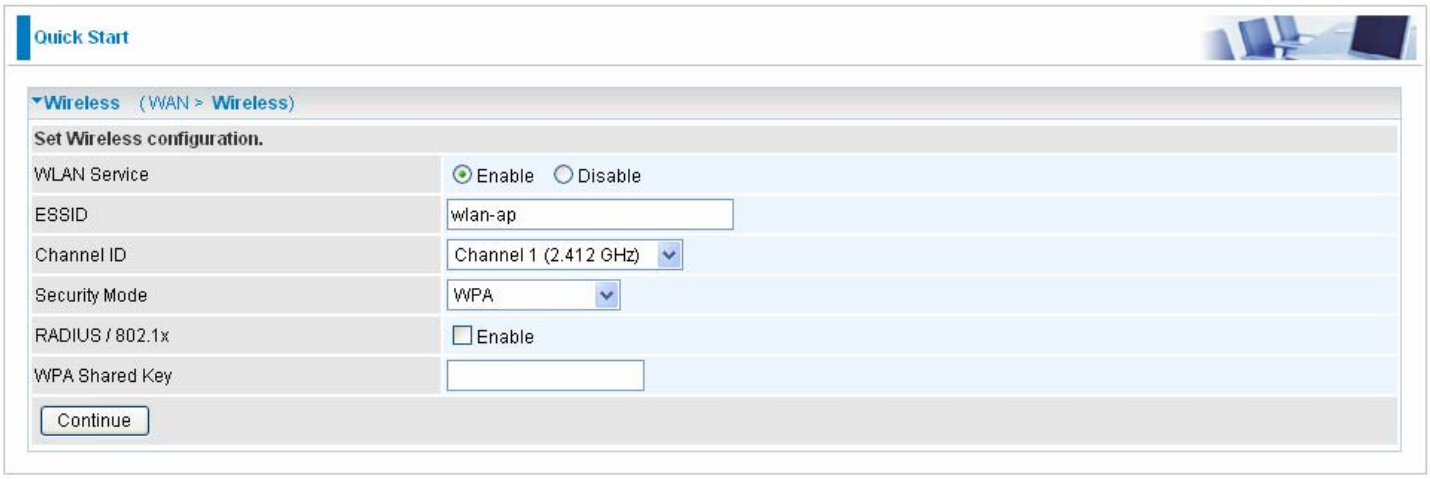
Wireless Setting Mode



There are 4 types of wireless security modes: **WPA Pre-Shared Key**, **WPA2 Pre-Shared Key**, **WPA/WPA2 Pre-Shared Key** and **WEP**.

WPA or WPA2 Pre-Shared Key

Here take **WPA** for example.



WLAN Service: Default setting is Enable. If you want to use wireless, you can select Enable.

ESSID: The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

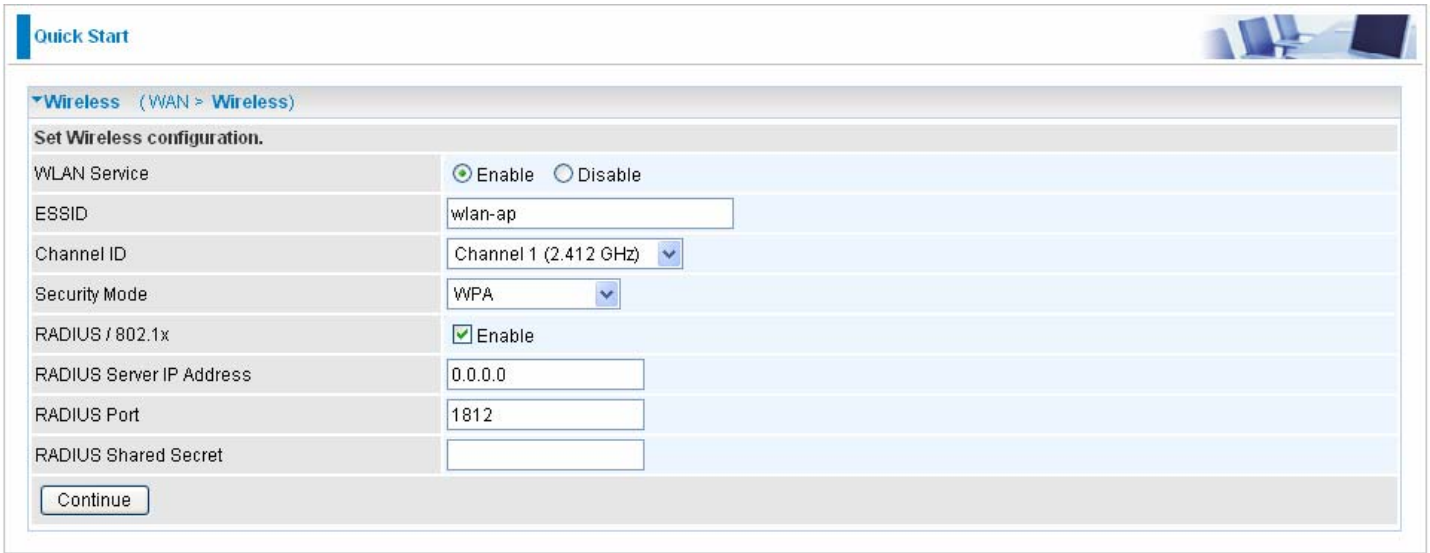
Channel ID: Select the channel ID that you would like to use.

Security Mode: You can disable or enable with WPA or WEP to protect wireless network. The default mode of wireless security is Disable.

RADIUS/802.1x: Select Whether to enable or disable the RADIUS Service.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

If you want to enable the RADIUS service, check Enable and then do the following settings.

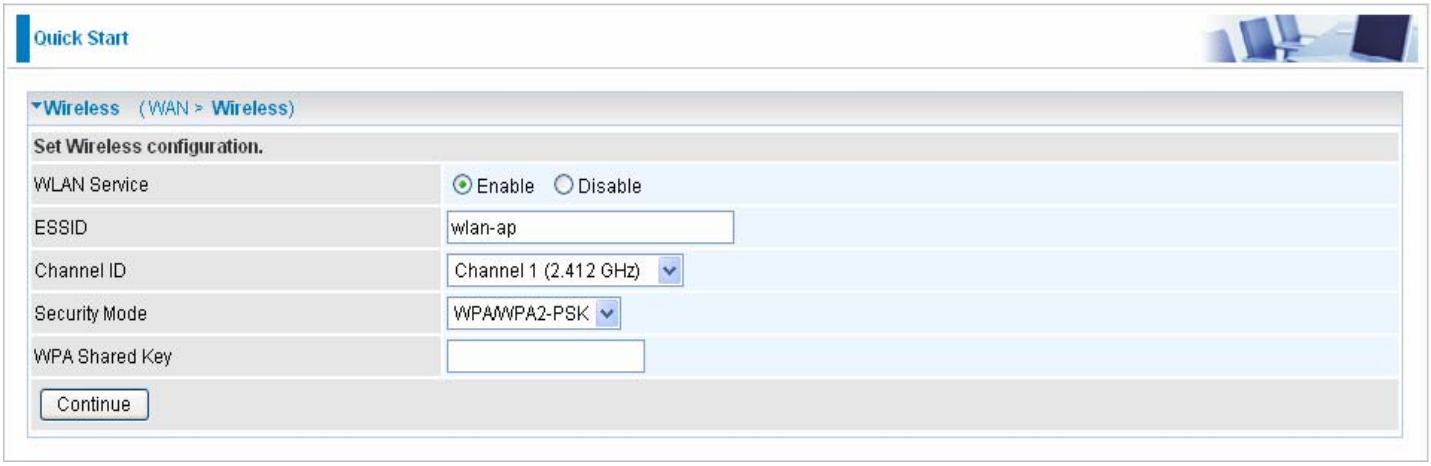


RADIUS Server IP Address: Enter the IP address of RADIUS authentication server.
RADIUS Server Port: Enter the port number of RADIUS authentication server here. Default value is 1812.

RADIUS Shared Secret: Enter the password of RADIUS authentication server.

WPA/WPA2 Pre-Shared Key

WPA and WPA2 pre-shared keys are an authentication mechanism in which users provides some form of credentials to verify that they should be allowed access to a network. This requires a single password entered into each WLAN node (Access Points, Wireless Routers, client adapters, bridges). As long as the passwords match, a client will be granted access to a WLAN.



WLAN Service: Default setting is Enable. If you want to use wireless, you can select Enable.

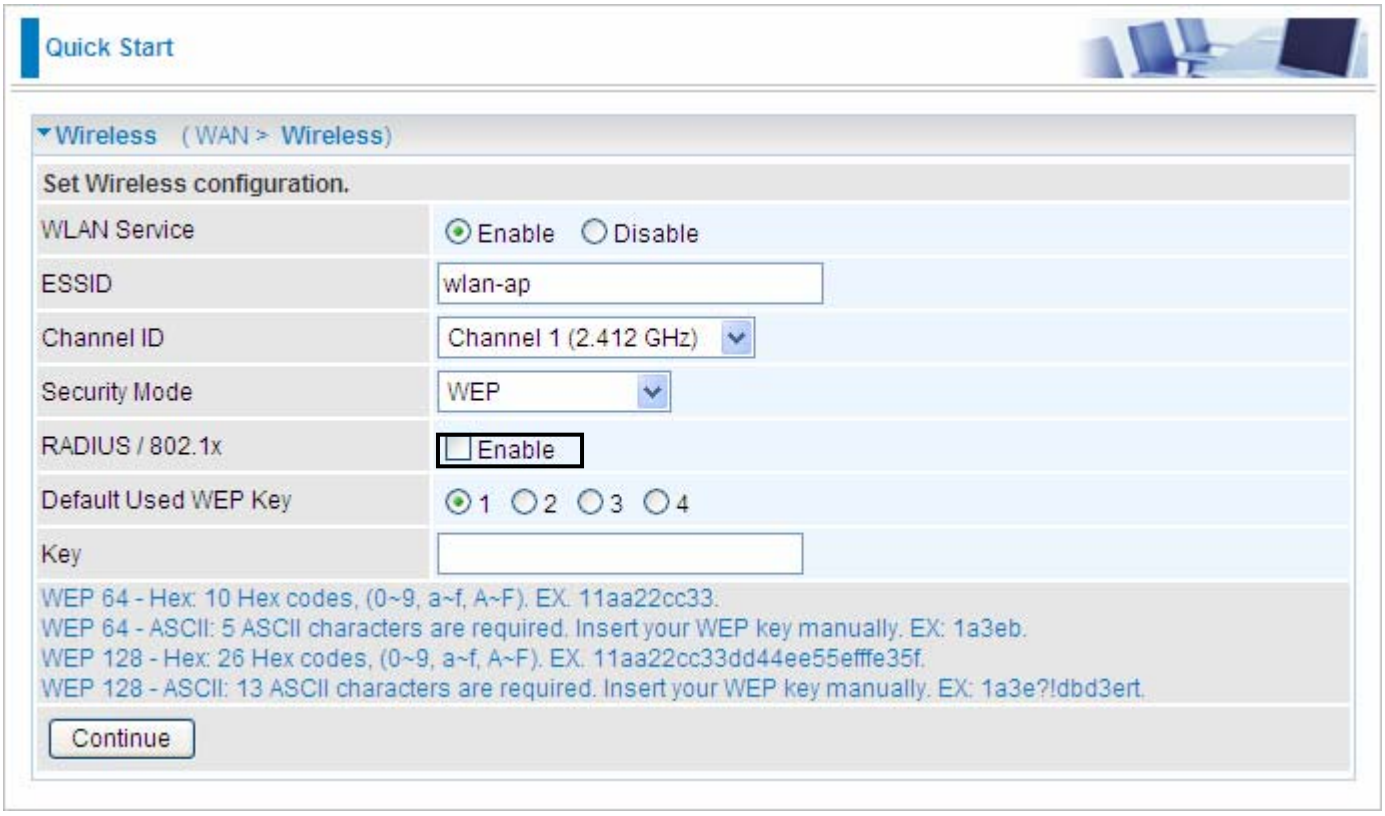
ESSID: The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

Channel ID: Select the channel ID that you would like to use.

Security Mode: You can disable or enable with WPA or WEP to protect wireless network. The default mode of wireless security is Disable.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

WEP



WLAN Service: Default setting is set to Enable. If you want to use wireless, you can select Enable.

ESSID: The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

Channel ID: Select the channel ID that you would like to use.

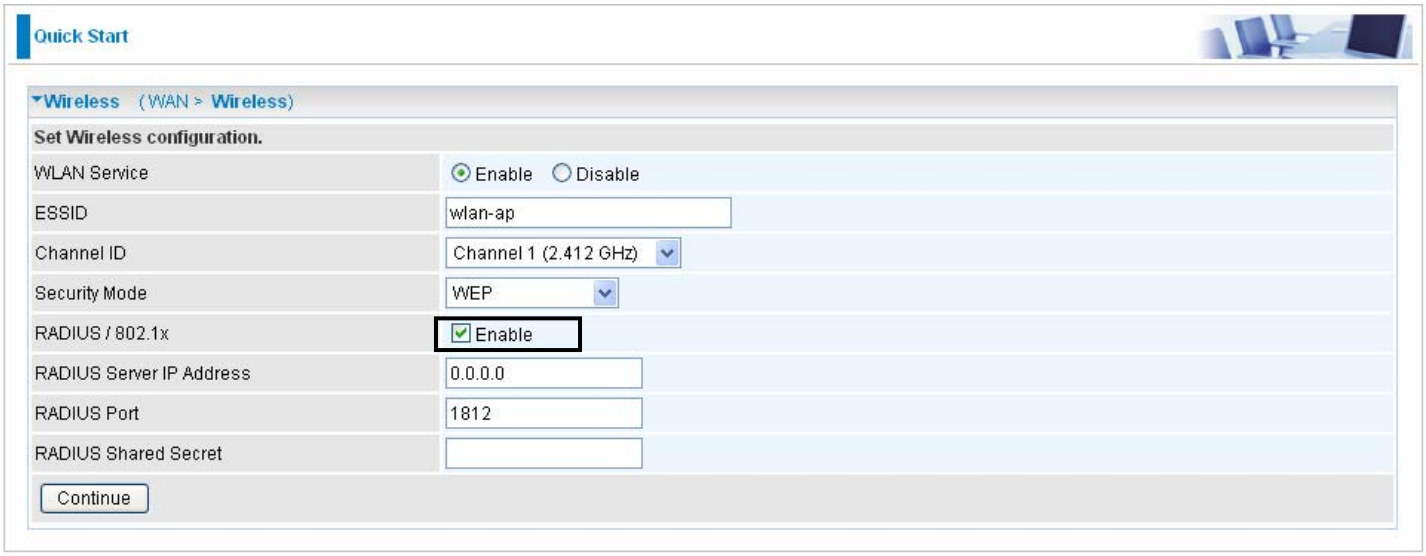
Security Mode: You can disable or enable with WPA or WEP to protect wireless network. The default mode of wireless security is Disable.

RADIUS/802.1x: Choose this box enable RADIUS/802.1x authentication protocol for boosting up WLAN Security.

Default Used WEP Key: Select the encryption key ID; please refer to **Key (1~4)** below.

Key (1-4): Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four keys for your selection. The input format can either be HEX style or ASCII format, 10 and 26 HEX codes or 5 and 13 ASCII codes are required for WEP64 and WEP128 respectively.

If you want to enable the RADIUS service, check Enable and then do the following settings.

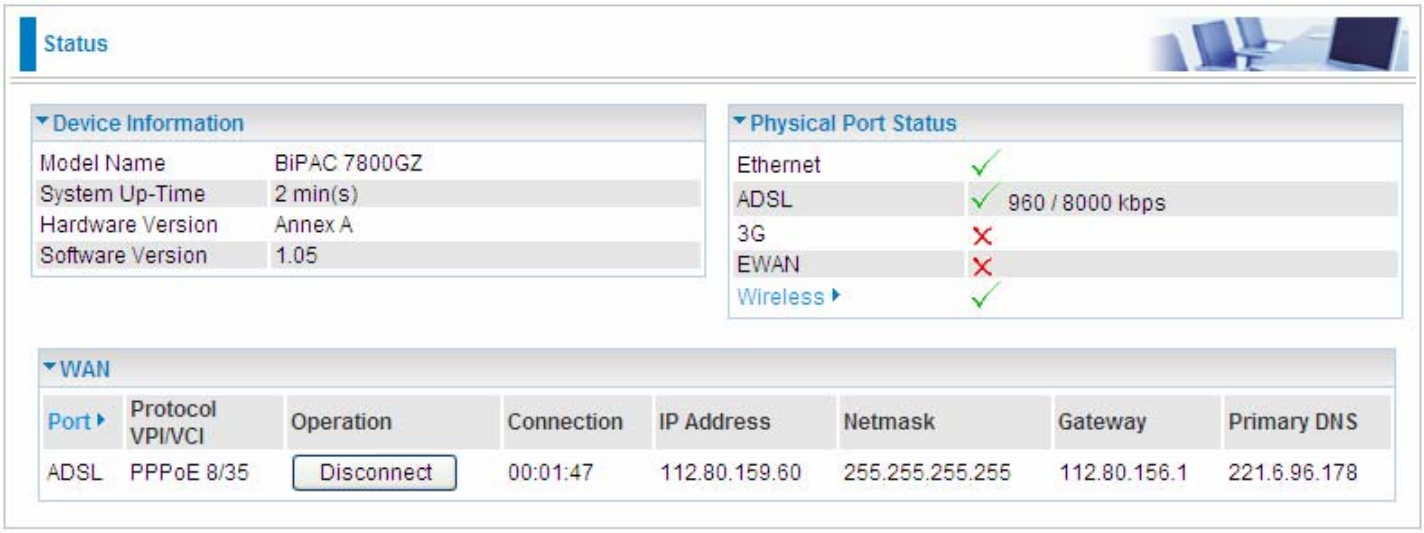


RADIUS Server IP Address: Enter the IP address of RADIUS authentication server.
RADIUS Server Port: Enter the port number of RADIUS authentication server here. Default value is 1812.

RADIUS Shared Secret: Enter the password of RADIUS authentication server.

Basic Configuration Mode

Status



Device Information

Model Name: Provide a name for the router for identification purposes.

System Up-Time: Record system up-time.

Hardware Version: Hardware version.

Software Version: Firmware version.

Port Status

Port Status: User can look up to see if they are connected to Ethernet, ADSL, 3G, EWAN and Wireless.

WAN

Port: Name of the WAN connection.

Protocol VPI/VCI: Virtual Path Identifier and Virtual Channel Identifier.

Operation: Current status in WAN interface.

Connection: Current connection status.

IP Address: WAN port IP address.

Netmask: WAN port IP subnet mask.

Gateway: IP address of the default gateway.

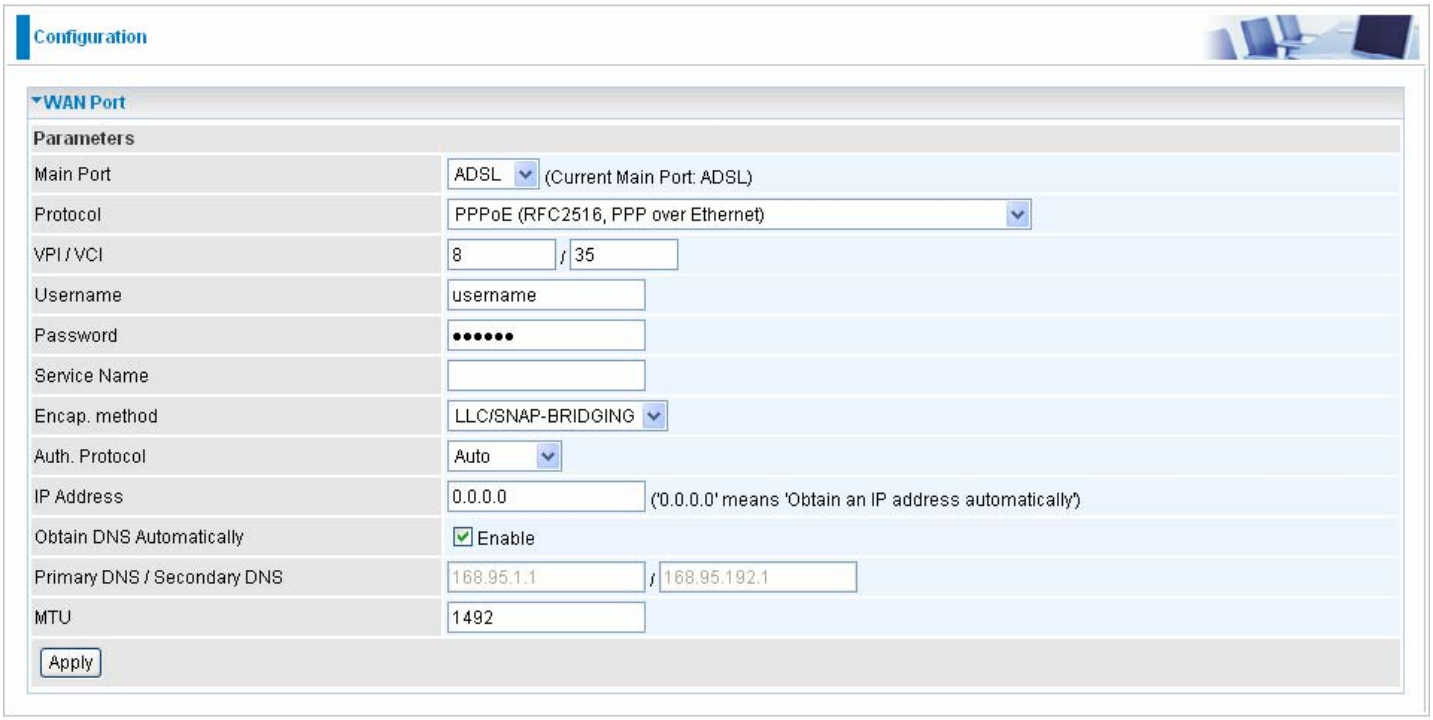
Primary DNS: IP address of the primary DNS server.

WAN – Main Port (ADSL)

A WAN (Wide Area Network) is an outside connection to another network or the Internet.

PPPoE Connection (ADSL)

PPPoE (PPP over Ethernet) provides access control in a manner similar to dial-up services using PPP.



VPI/VCI: Enter the information provided by your ISP.

Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

Service Name: This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

Encap. method: Select the encapsulation format. Select the one provided by your ISP.

Auth. Protocol: Default is Auto. Please consult your ISP on whether to use Chap, Pap or MSCHAP.

IP Address: Enter your WAN IP address. Leave the IP address empty or enter 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

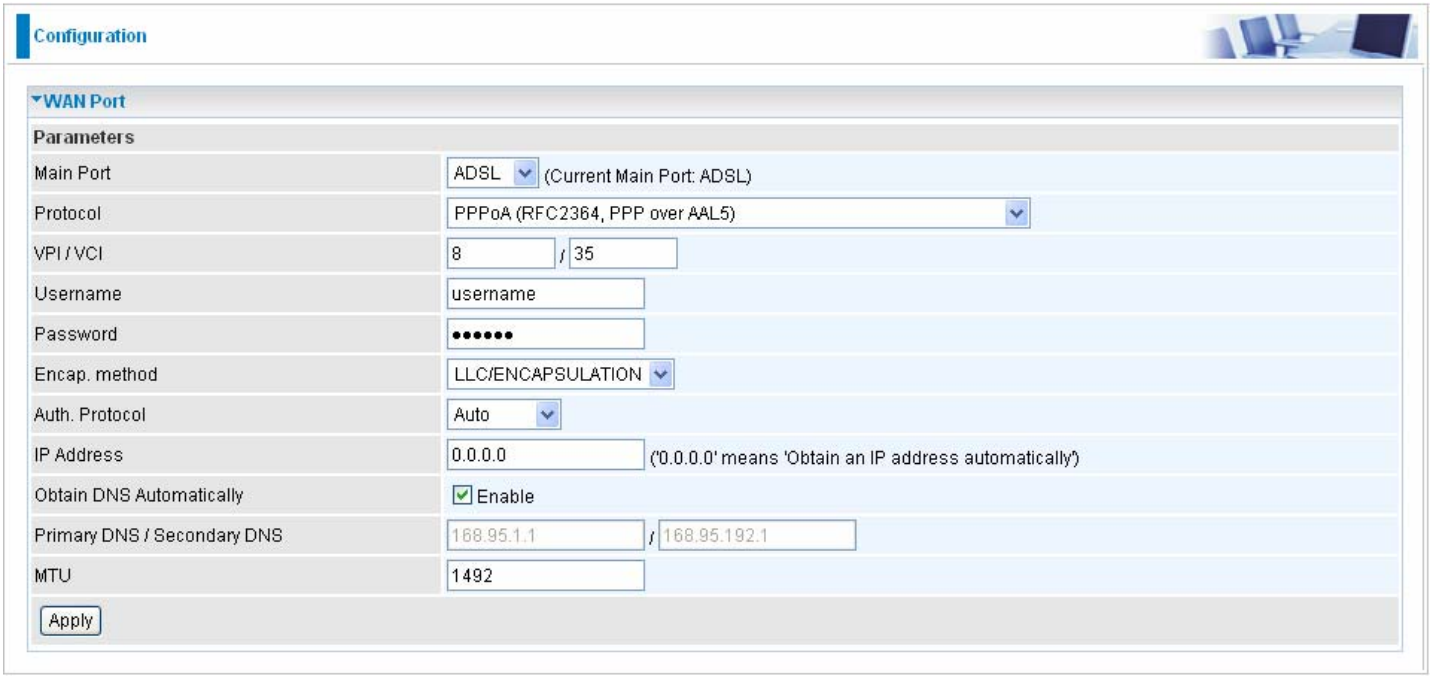
Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

Click Apply to confirm the settings.

PPPoA Connection (ADSL)

PPPoA stands for Point to Point Protocol over ATM Adaptation Layer 5 (AAL5). It provides access control and billing functionality in a manner similar to dial-up services using PPP.



VPI/VCI: Enter the information provided by your ISP.

Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

Encap. method: Select the encapsulation format. Select the one provided by your ISP.

Auth. Protocol: Default is Auto. Please consult your ISP on whether to use Chap, Pap or MSCHAP.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

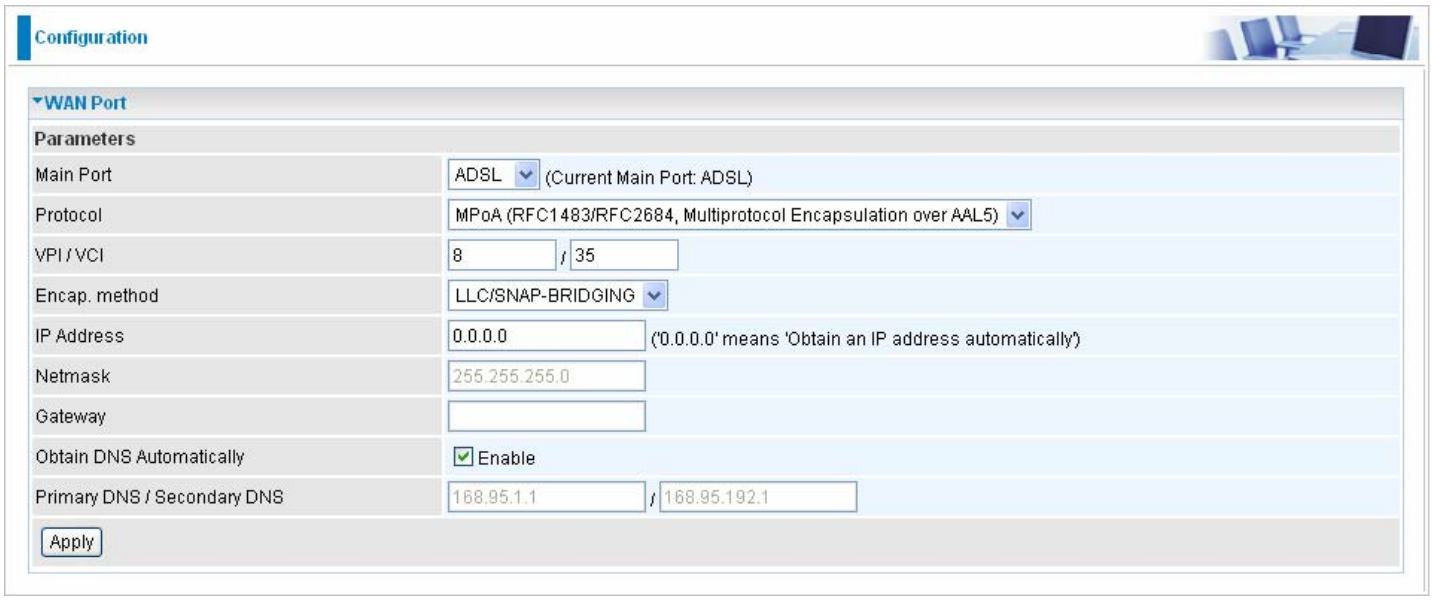
Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

IP Address: Enter your WAN IP address. Leave the IP address empty or enter 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

Click Apply to confirm the settings.

MPoA Connection (ADSL)



VPI/VCI: Enter the VPI and VCI information provided by your ISP.

Encap. method: Select the encapsulation format. Select the one provided by your ISP.

IP Address: Enter your WAN IP address. If the IP is set to 0.0.0.0 (auto IP detect), both Netmask and gateway may be left blank.

Netmask: User can change it to others such as 255.255.255.128. Type the Netmask assigned to you by your ISP (if given).

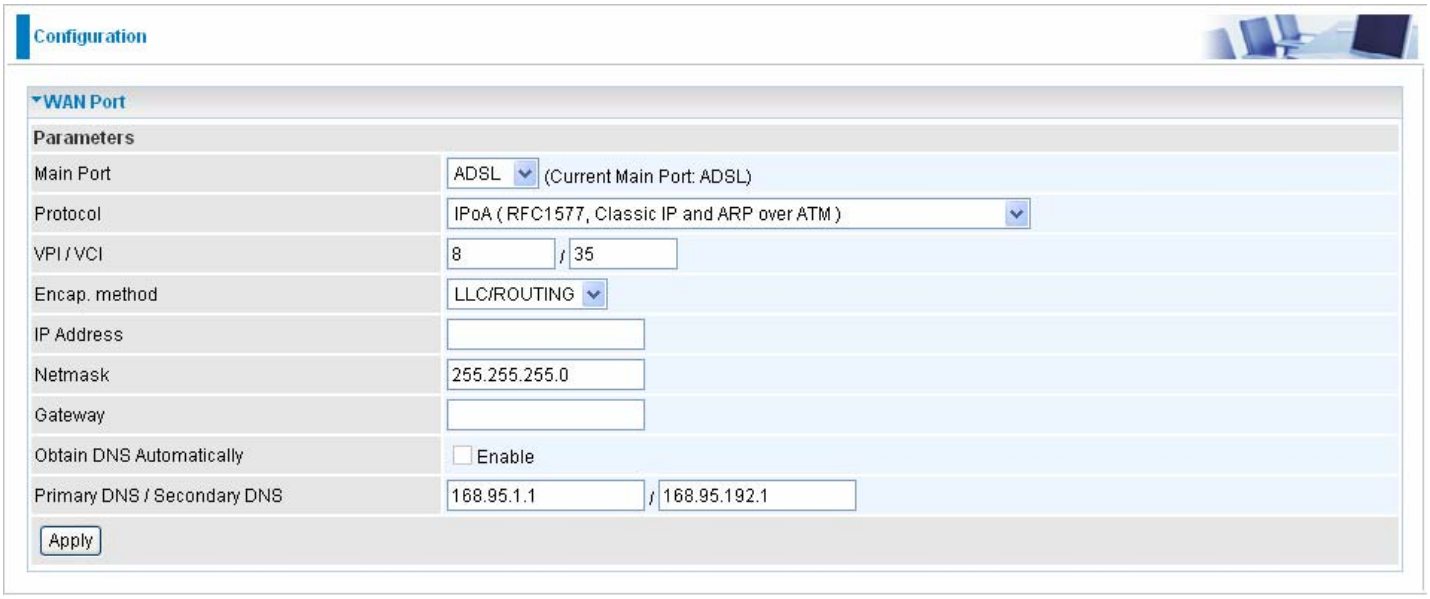
Gateway: Enter the IP address of the default gateway.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

Click Apply to confirm the settings.

IPoA Connections (ADSL)



VPI/VCI: Enter the VPI and VCI information provided by your ISP.

Encap. method: Select the encapsulation format. Select the one provided by your ISP.

IP Address: Enter your fixed IP address.

Netmask: User can change it to others such as 255.255.255.128. Type the Netmask assigned to you by your ISP (if given).

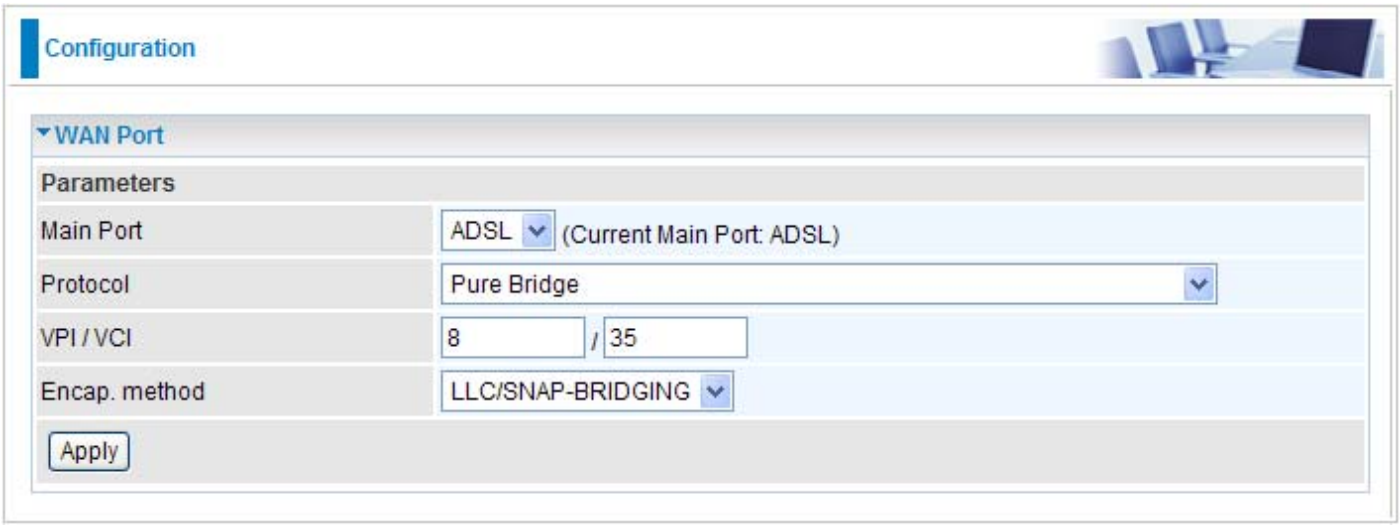
Gateway: Enter the IP address of the default gateway.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

Click Apply to confirm the settings.

Pure Bridge Connections (ADSL)



VPI/VCI: Enter the VPI and VCI information provided by your ISP.

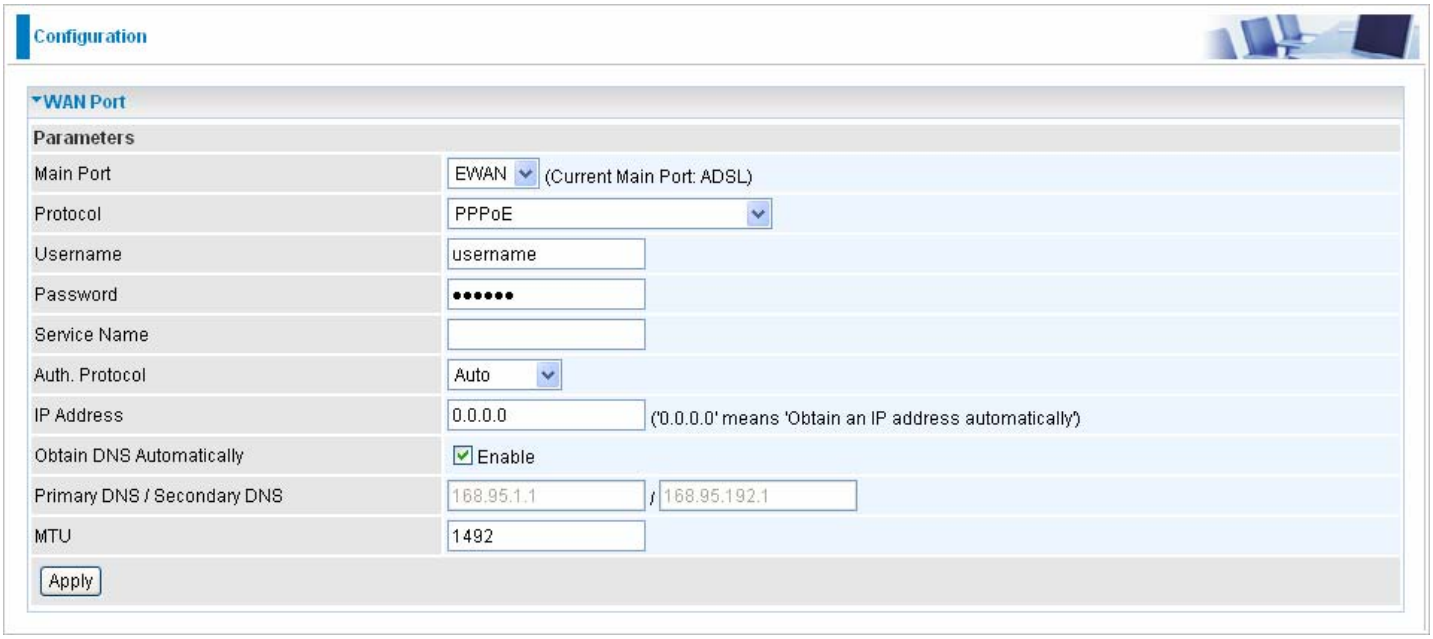
Encap. method: Select the encapsulation format. Select the one provided by your ISP.

Click Apply to confirm the settings.

WAN – Main Port (EWAN)

Besides using ADSL to get connected to the Internet, Ethernet port 4 of BiPAC 7800GZ(L) can be used as an alternative to connect to Cable Modems, VDSL and fiber optic lines. This alternative not only provides faster connection to the Internet, it also provides users with more flexibility to get online.

PPPoE (EWAN)



Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

Service Name: This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

Auth. Protocol: Default is Auto. Please consult your ISP on whether to use Chap, Pap or MSCHAP.

IP Address: Enter your fixed IP address.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

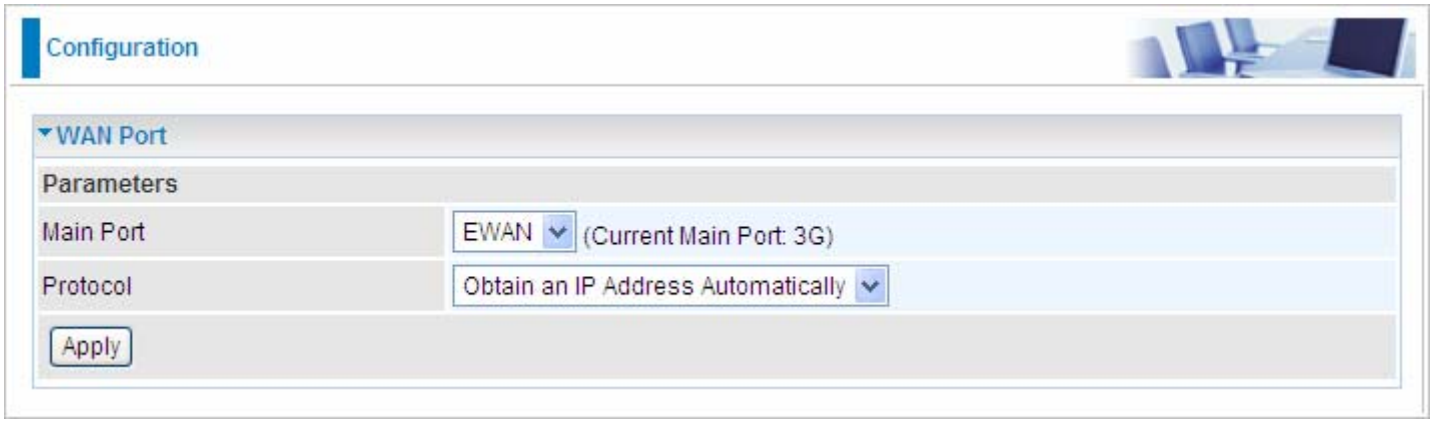
Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

Click Apply to confirm the settings.

Obtain IP Address Automatically (EWAN)

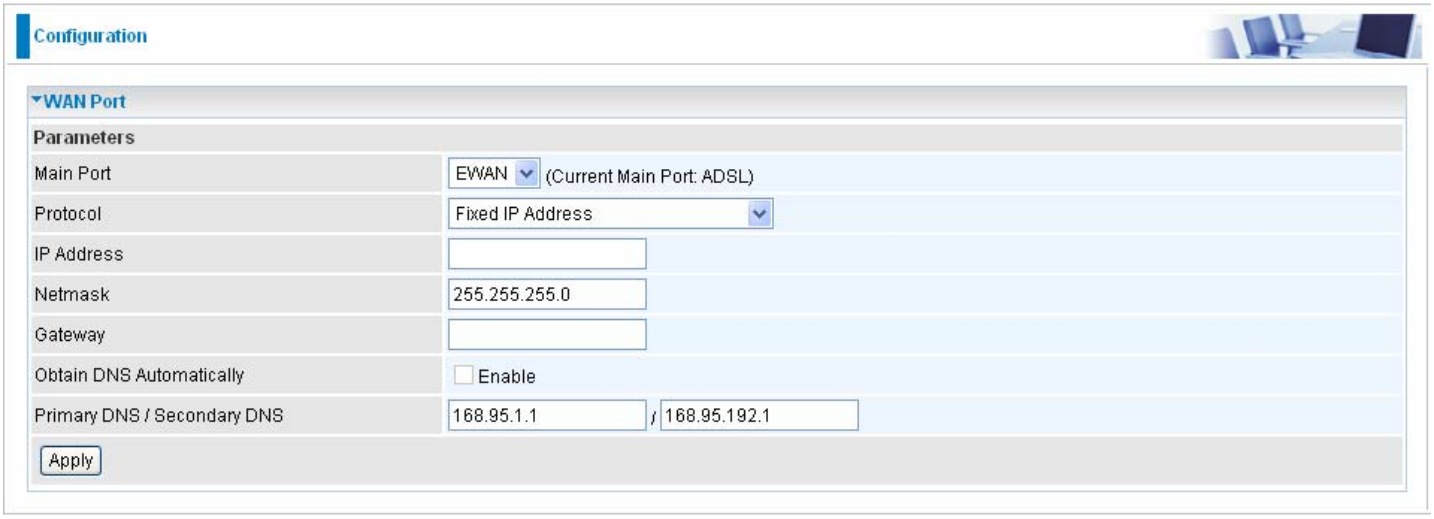
Select this protocol enables the device to automatically retrieve IP address.



Main Port: Choose **EWAN** as the main port.

Click Apply to confirm the change.

Fixed IP Address (EWAN)



IP Address: Enter your fixed IP address.

Netmask: User can change it to others such as 255.255.255.128. Type the Netmask assigned to you by your ISP (if given).

Gateway: Enter the IP address of the default gateway.

Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

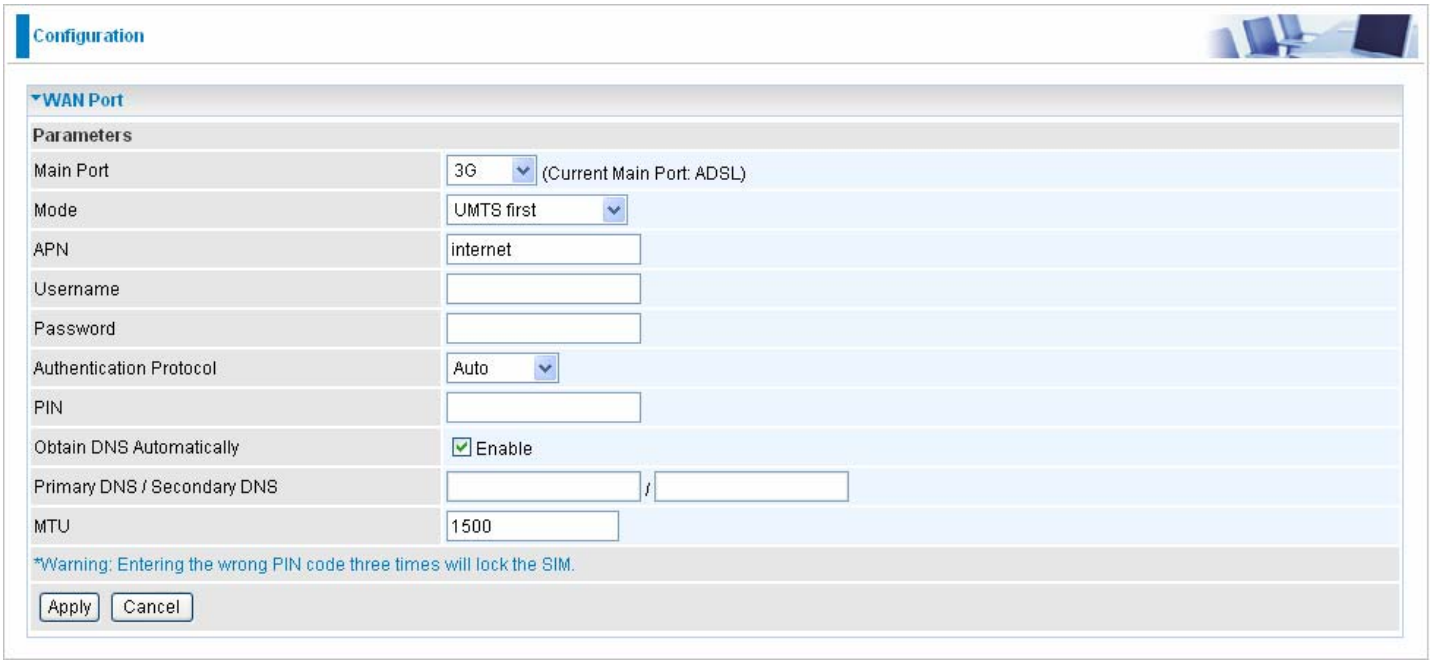
Click Apply to confirm the settings.

Pure Bridge (EWAN)

Main Port: Select EWAN as the profile port.

WAN – Main Port (3G)

The setup of 3G is simplified by the web browser-based configuration. It is easy for you to access to the Internet wherever a 3G connection is available.



Mode: There are 5 options of phone service standards: GSM only, UTMS only, GPRS/EDGE first, UMTS first, and Automatic. If you are uncertain what services are available to you, and then please select Automatic.

APN: An APN is similar to a URL on the WWW, it is what the unit makes a GPRS / UMTS call. The service provider is able to attach anything to an APN to create a data connection, requirements for APNs varies between different service providers. Most service providers have an internet portal which they use to connect to a DHCP Server, thus giving you access to the internet i.e. Some 3G operators use the APN 'internet' for their portal. The default value is "internet".

Username/Password: Enter the username and password provided by your ISP.

Authentication Protocol: Default is Auto. Please consult your ISP on whether to use PAP, CHAP or MSCHAP.

PIN: PIN stands for Personal Identification Number. A PIN code is a numeric value used in certain systems as a password to gain access, and authenticate. In mobile phones a PIN code locks the

SIM card until you enter the correct code. If you enter the PIN code incorrectly into the phone 3 times in a row, then the SIM card will be blocked and you will require a PUK code from your network/ service provider.

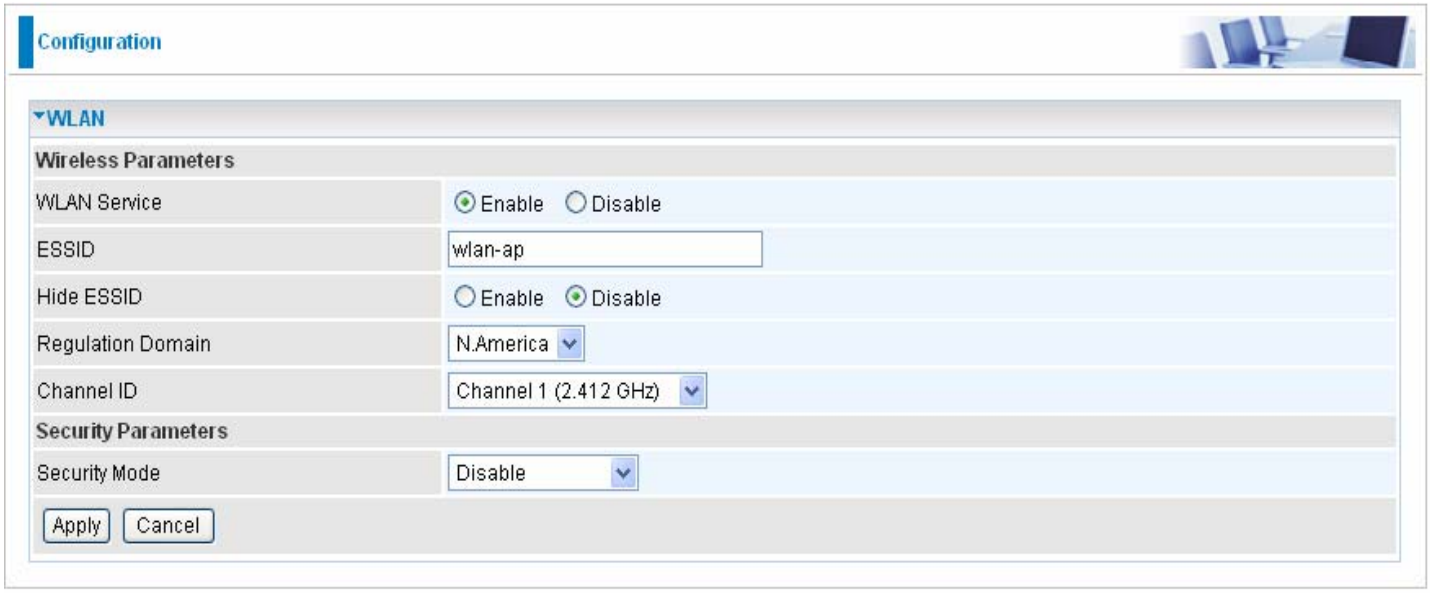
Obtain DNS Automatically: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address for the specific domain name. Check the checkbox to enable this function.

Primary DNS/Secondary DNS: Enter the primary and secondary DNS.

MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

Click Apply to confirm the settings.

WLAN



Wireless Parameters

WLAN Service: Default setting is set to Enable. If you do not have any wireless, select Disable.

ESSID: The ESSID is a unique name of a wireless access point (AP) used to distinguish one from another. For security purpose, change the default wlan-ap to a unique ID name that is already built into the router wireless interface. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

Note: It is case sensitive and must not exceed 32 characters.

Hide ESSID: It is used to broadcast its ESSID on the network so that when a wireless client searches for a network, the router can be discovered and recognized. Default setting is Disable.

> **Enable:** When enabled, you do not broadcast your ESSID. Therefore, no one will be able to locate the Access Point (AP) of your router.
>
> **Disable:** When disabled, you allow anybody with a wireless client to be able to locate the Access Point (AP) of your router.

Regulation Domain: There are seven Regulation Domains for you to choose from, including North America (N.America), Europe, France, etc. The Channel ID will be different based on this setting.

Channel ID: Select the wireless connection channel ID that you would like to use.

Note: Wireless performance may degrade if the selected channel ID is already being occupied by other AP(s).

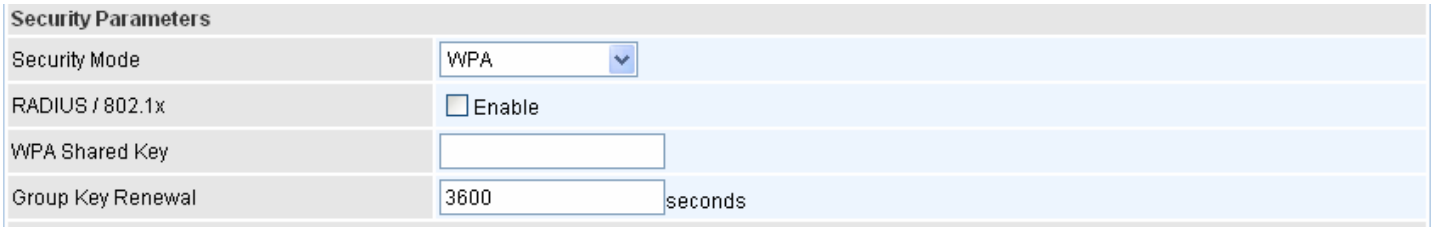
Security Parameters

Security Mode: You can disable or enable the function with WPA or WEP to protect the wireless network. The default mode of wireless security is Disable.

Click Apply to confirm the settings.

Security Mode

WPA or WPA2 Pre-Shared Key



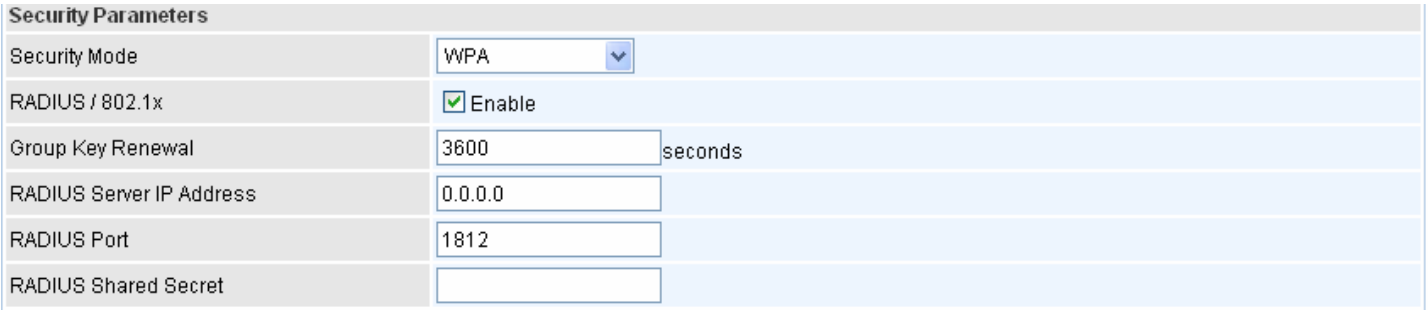
Security Mode: You can disable or enable with WPA or WEP for protecting wireless network.

RADIUS/802.1x: Select Whether to enable or disable the RADIUS Service.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

Group Key Renewal: The period of renewal time for changing the security key automatically between wireless client and Access Point (AP). Default value is 3600 seconds.

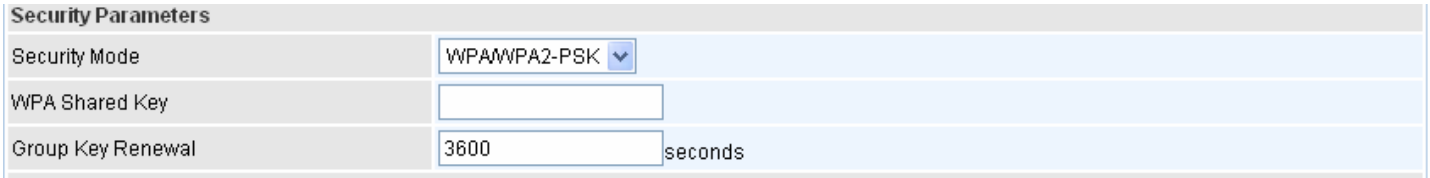
If you want to enable the RADIUS service, check Enable and then do the following settings.



RADIUS Server IP Address: Enter the IP address of RADIUS authentication server.
RADIUS Server Port: Enter the port number of RADIUS authentication server here. Default value is 1812.

RADIUS Shared Secret: Enter the password of RADIUS authentication server.

WPA/WPA2 Pre-Shared Key

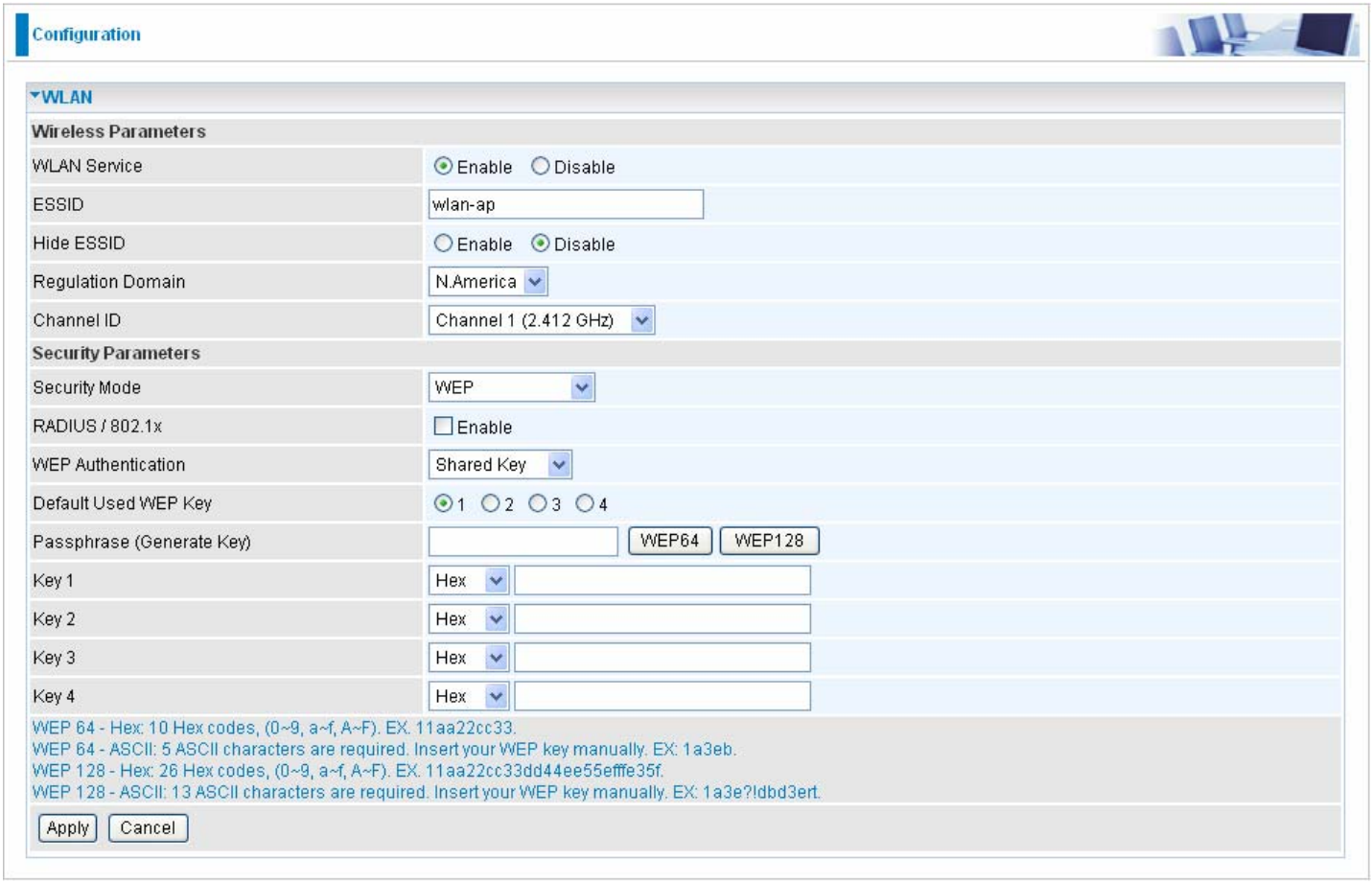


Security Mode: You can disable or enable with WPA or WEP for protecting wireless network.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

Group Key Renewal: The period of renewal time for changing the security key automatically between wireless client and Access Point (AP). Default value is 3600 seconds.

WEP



Security Mode: You can disable or enable with WPA or WEP for protecting wireless network.

RADIUS/802.1x: Choose this box enable RADIUS/802.1x authentication protocol for boosting up WLAN Security.

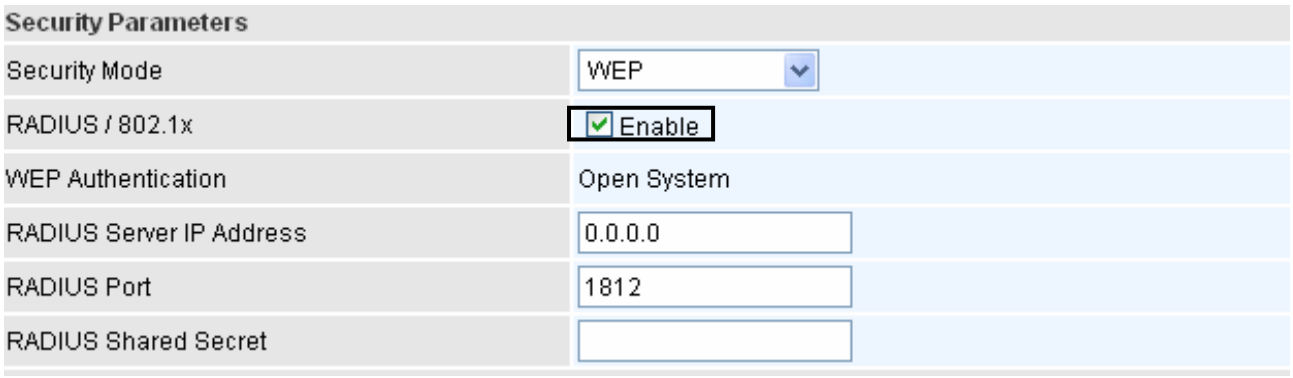
WEP Authentication: To prevent unauthorized wireless stations from accessing data transmitted over the network, the router offers secure data encryption, known as WEP. If you require high security for transmissions, there are 3 options to select from: **Open System**, **Share Key** and **Both**.

Default Used WEP Key: Select the encryption key ID; please refer to **Key (1~4)** below.

Passphrase: This is used to generate WEP keys automatically based upon the input string and a pre-defined algorithm in WEP64 or WEP128.

Key (1-4): Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four keys for your selection. The input format is in HEX or ASCII style, 5 and 13 ASCII codes are required for WEP64 and WEP128 or 10 and 26 HEX codes are required for WEP64 and WEP128 respectively.

If you want to enable the RADIUS service, check Enable and then do the following settings.

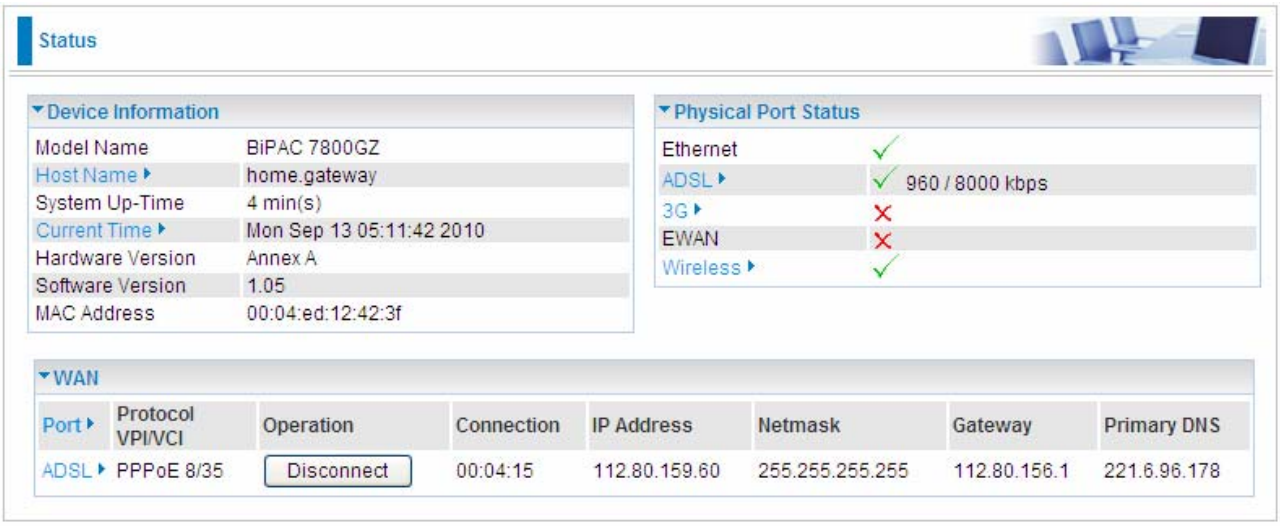


WEP Authentication: If you enable **RADIUS/802.1x,** then the default **WEP Authentication** is **Open System.**
RADIUS Server IP Address: Enter the IP address of RADIUS authentication server.
RADIUS Server Port: Enter the port number of RADIUS authentication server here. Default value is 1812.

RADIUS Shared Secret: Enter the password of RADIUS authentication server.

Advanced Configuration Mode

Status



Device Information

Model Name: Displays the model name.

Host Name: Provide a name for the router for identification purposes. Host Name lets you change the router name.

System Up-Time: Records system up-time.

Current time: Set the current time. See the Time Zone section for more information.

Hardware Version: Device version.

Software Version: Firmware version.

MAC Address: The LAN MAC address.

Physical Port Status

Port Status: User can look up to see if they are connected to Ethernet, WAN and Wireless.

WAN

Port: Name of the WAN connection.

Protocol VPI/VCI: Virtual Path Identifier and Virtual Channel Identifier

Operation: The current status in WAN interface.

Connection: The current connection status.

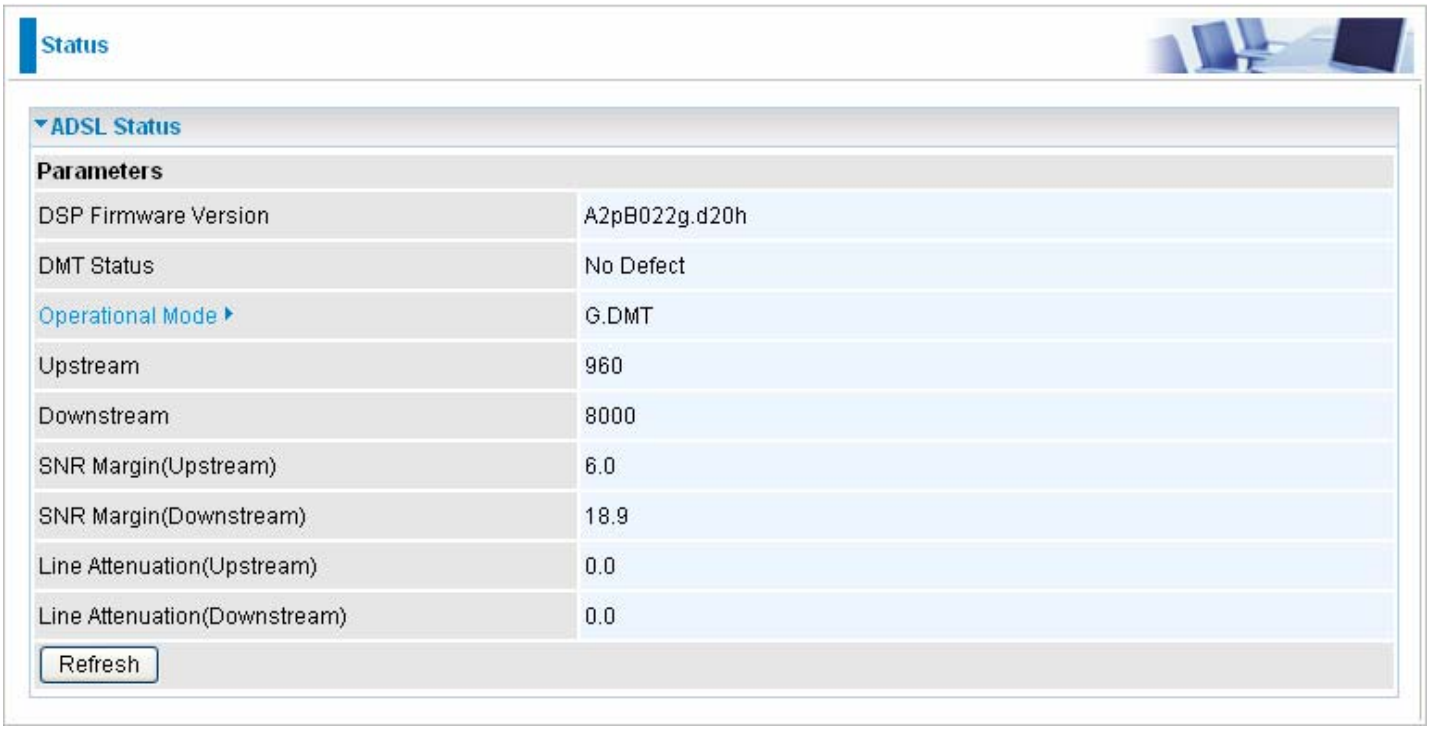
IP Address: WAN port IP address.

Netmask: WAN port IP subnet mask.

Gateway: The IP address of the default gateway.

Primary DNS: The IP address of the primary DNS server.

ADSL Status



DSP Firmware Version: DSP code version.

DMT Status: Current DMT Status.

Operational Mode: Displays the ADSL state when the connect mode is set to AUTO. Click Operational Mode link to go to the ADSL Mode configuration page. Click Operational Mode to go to **ADSL Mode** configuration page to configure ADSL mode.

Upstream: Upstream rate.

Downstream: Downstream rate.

SNR Margin (Upstream): This shows the SNR margin for upstream rate.

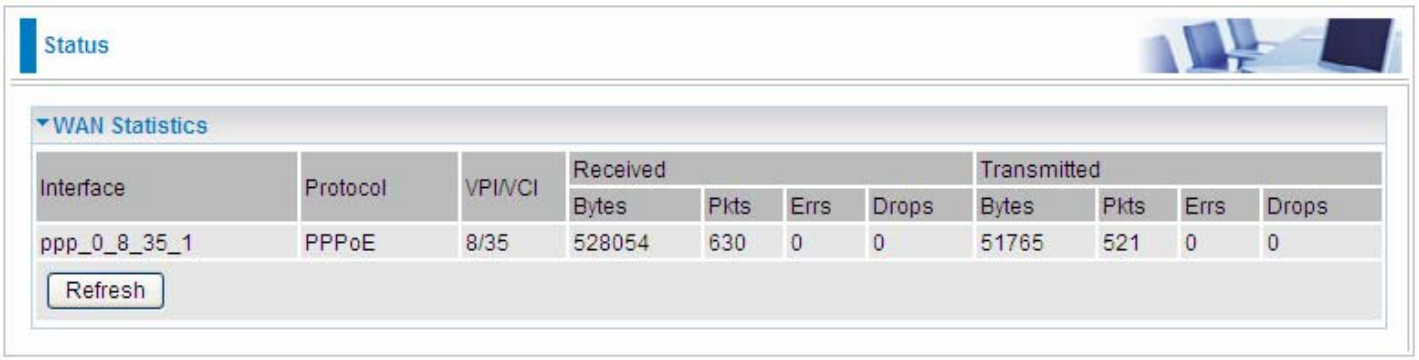
SNR Margin (Downstream): This shows the SNR margin for downstream rate.

Line Attenuation (Upstream): This is attenuation of signal in upstream.

Line Attenuation (Downstream): This is attenuation of signal in downstream.

Refresh: Click Refresh button to reset the statistics value of Upstream/Downstream rate.

WAN Statistics



Interface: the name of the WAN Connection

Protocol: the protocol the WAN Connection adopt

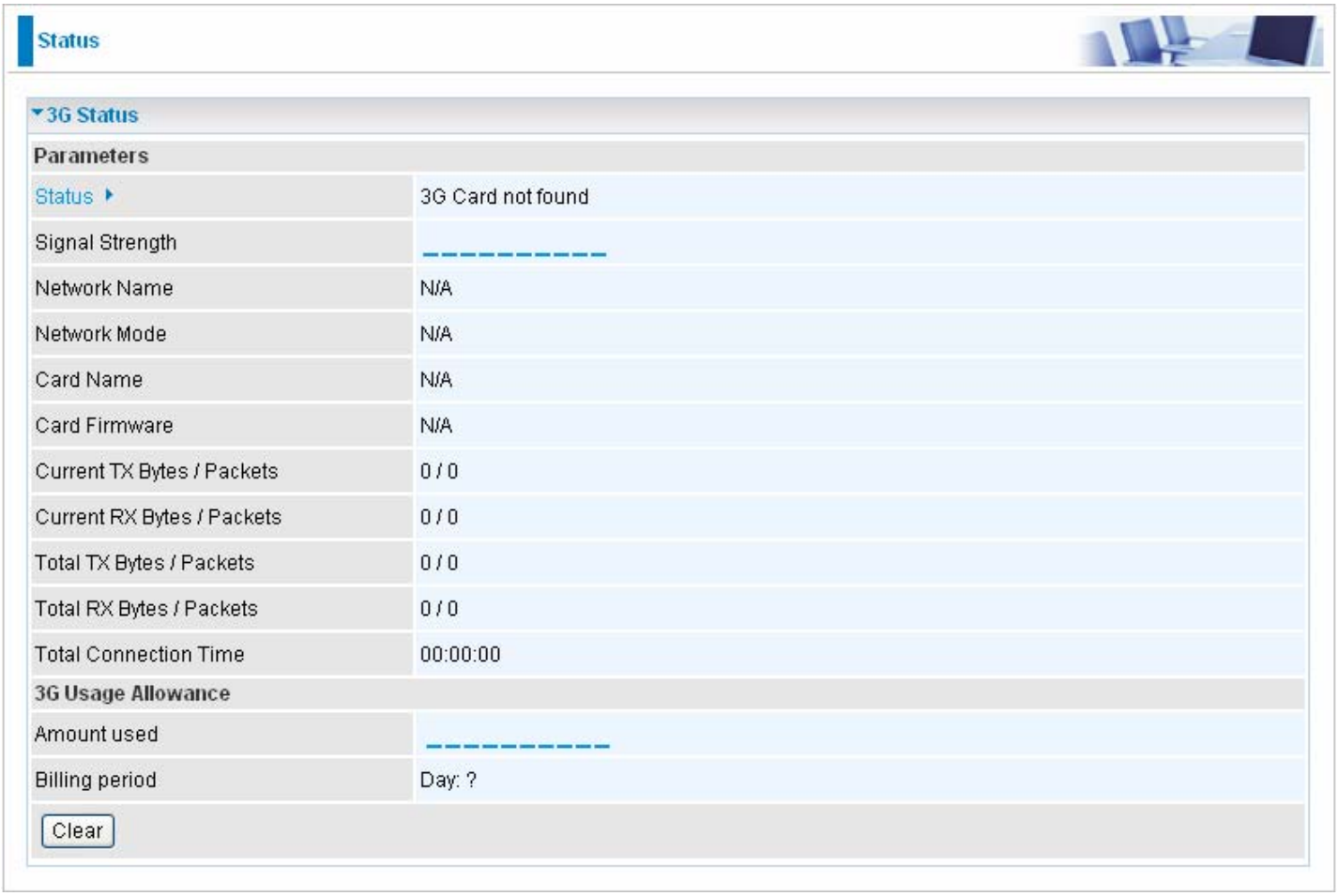
VPI/VCI: Virtual Path Identifier and Virtual Channel Identifier of the WAN Connection, it is provided by ISP.

Received: Include received Bytes, Pkts, Errs and Drops.

Transmitted: Include transmitted Bytes, Pkts, Errs and Drops.

Refresh: Click Refresh button to reset the statistics value of Received / Transmitted.

3G Status



Status: The current status of the 3G card. Click **Status** to go to 3G configuration page.

Signal Strength: The signal strength bar indicates current 3G signal strength.

Network Name: The network name that the device is connected to.

Network Mode: The current operation mode in 3G card, it depends on service provider and card's limitation. It may be UMTS(3G), GPRS, EDGE, or GSM .

Card Name: The name of the 3G card.

Card Firmware: The current firmware for the 3G card.

Current TX Bytes / Packets: The statistics of transmission, count for this call.

Current RX Bytes / Packets: The statistics of receive, count for this call.

Total TX Bytes / Packets: The statistics of transmission, count from system ready.

Total RX Bytes / Packets: The statistics of receive, count from system ready.

Total Connection Time: The statistics of the connection time since system is ready.

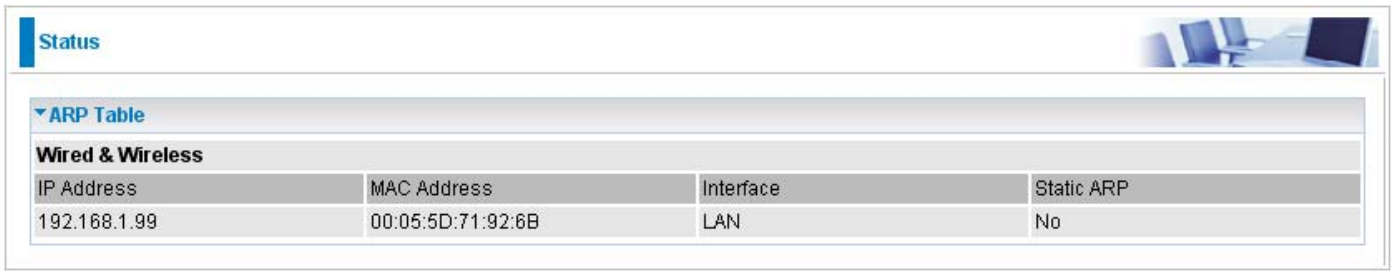
Amount used: the amount that have been used in 3G

Billing period: the remaining days before the billing terminated day.

Clear: Click Clear button to reset the statistics value of Total TX/RX.

ARP Table

This table stores mapping information that the device uses to find the Layer 2 Media Access Control (MAC) address that corresponds to the Layer 3 IP address of the device via the Address Resolution Protocol (ARP) feature.



IP Address: Shows the IP Address of the device that the MAC address maps to.

MAC Address: Shows the MAC address that is corresponded to the IP address of the device it is mapped to.

Interface: Shows the interface name (on the router) that this IP address connects to.

Static ARP: Shows the status of static ARP.

DHCP Table

The DHCP Table lists the DHCP lease information for all IP addresses assigned by the DHCP server in the device.

IP Address: The IP address which is assigned to the host with this MAC address.

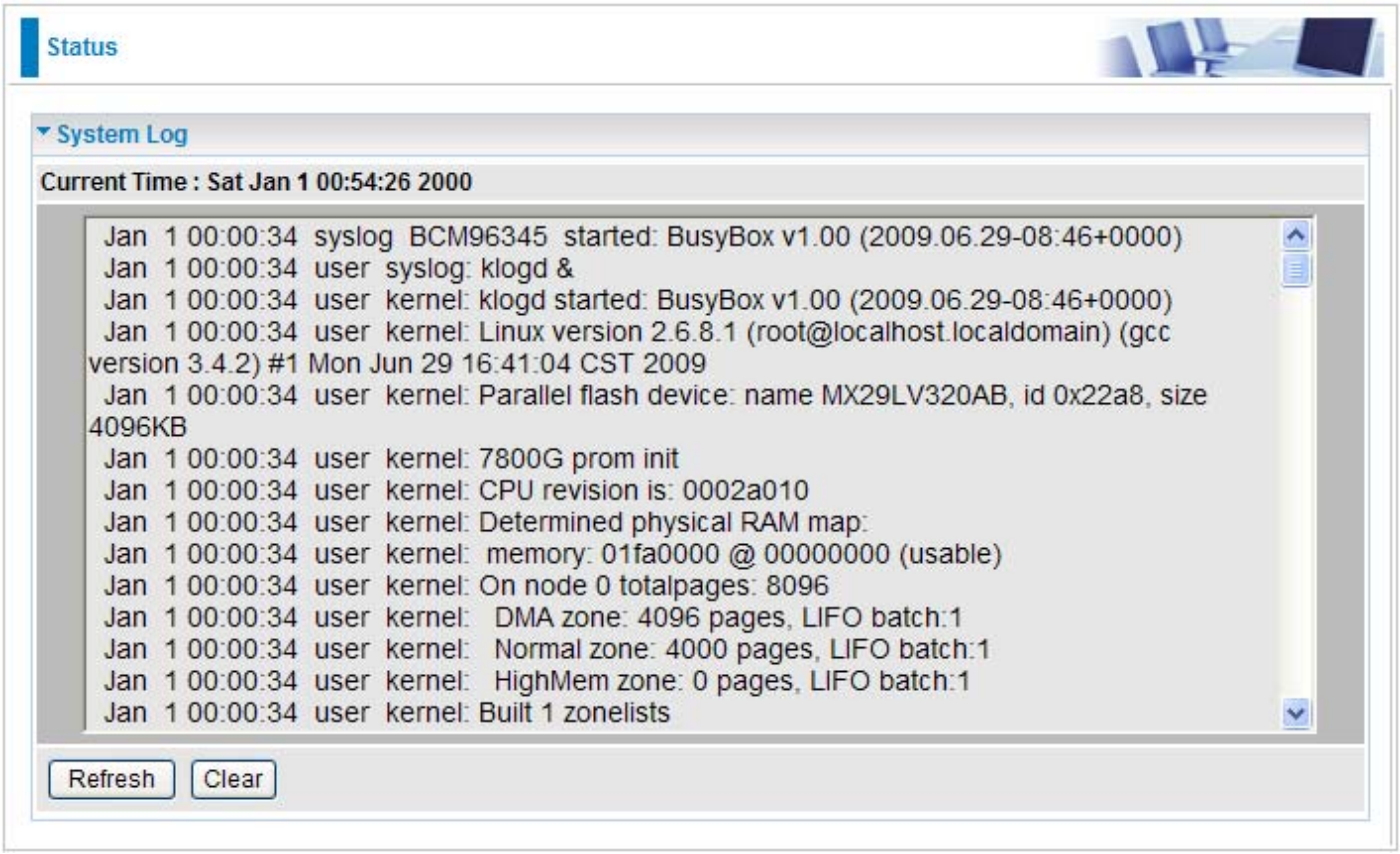
MAC Address: The MAC Address of internal dhcp client host.

Client Host Name: The Host Name of internal dhcp client.

Register Information: Shows the information provided during registration.

System Log

Display system logs accumulated up to the present time. You can trace its historical information with this function.



Refresh: Click to update the system log.

Clear: Click to clear the current log from the screen.

Firewall Log

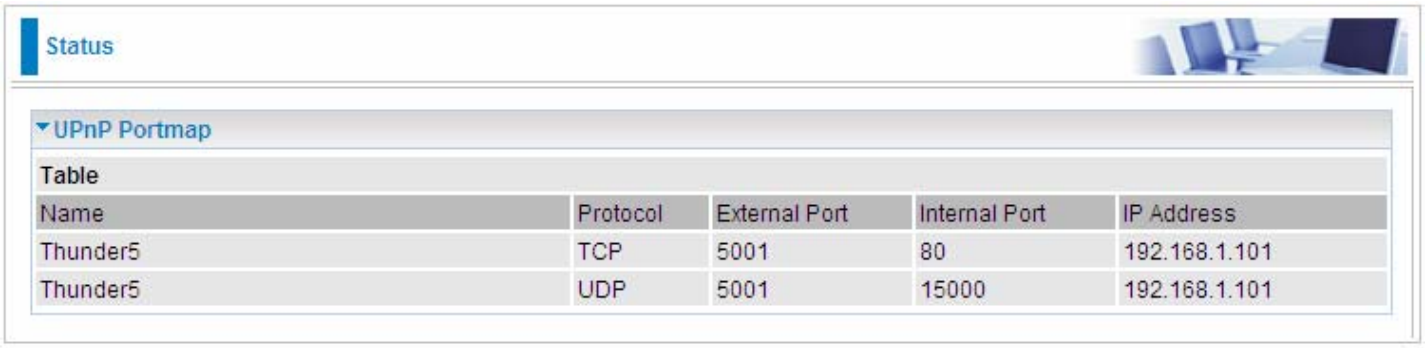
Firewall Log display log information of any unexpected action with your firewall settings. This page displays the router's Firewall Log entries. The log shows log entries when you have enabled Intrusion Detection or Block WAN PING in the **Configuration – Firewall** section of the interface. Please see the **Firewall** section of this manual for more details on how to enable Firewall logging.

Refresh: Click to update the firewall log.

Clear: Click to clear the current log from the screen.

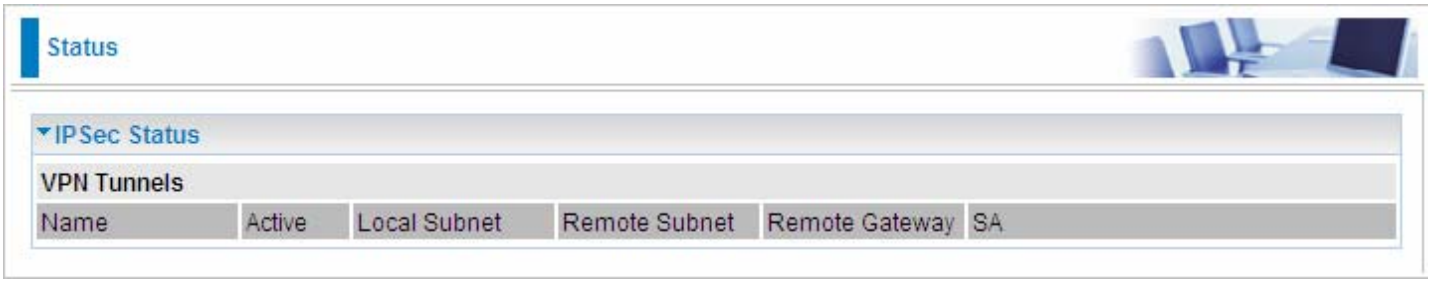
UPnP Portmap

The UPnP Portmap table displays the IP address of each UPnP device that is accessing the router. It also shows the ports (Internal and External) that device has opened.



IPSec Status

The IPSec Table provides administrators with detailed information regarding the configured IPSec VPN Connections.



Name: The name you assigned to the particular VPN entry.

Active: Whether the VPN Connection is currently Active.

Local Subnet: The local IP Address or Subnet used.

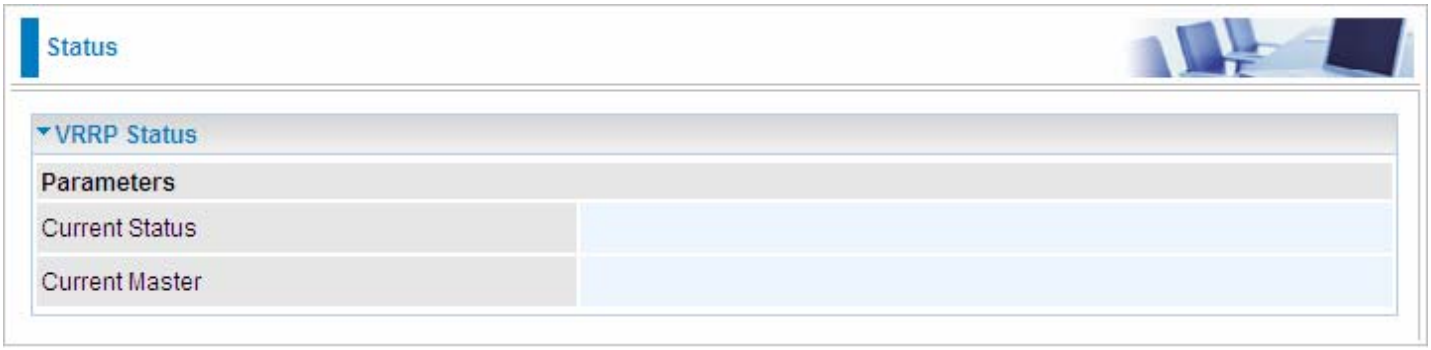
Remote Subnet: The Subnet of the remote site.

Remote Gateway: The Remote Gateway IP address.

SA: The Security Association for this VPN entry.

VRRP Status

The VRRP Status displays information of current status and current master of VRRP.



Current Status: Show VRRP current status, Master or Backup.

Current Master: Show the IP address of current master.

Configuration

When you click this item, the column will expand to display the sub-items that will allow you to further configure your router.

LAN, **WAN**, **System**, **Firewall**, **VPN**, **QoS**, **Virtual Server**, **Wake on LAN**, **Certificate**, **Time Schedule** and **Advanced**.

The function of each configuration sub-item is described in the following sections.

LAN - Local Area Network

A Local Area Network (LAN) is a shared communication system network where many computers are connected. This type of network is area defined and is usually limited to a confined region within a building or just within the same storey of a building.

There are 6 items within the LAN section: **Ethernet**, **IP Alias**, **Wireless**, **Wireless Security**, **WPS**, **DHCP Server** and **VRRP**.

Ethernet

The router supports more than one Ethernet IP addresses in the LAN that supports multiple internet access at the same time. Users usually only have one subnet in their LAN. The default IP address for the router is 192.168.1.254.

IP Address: The default IP on this router.

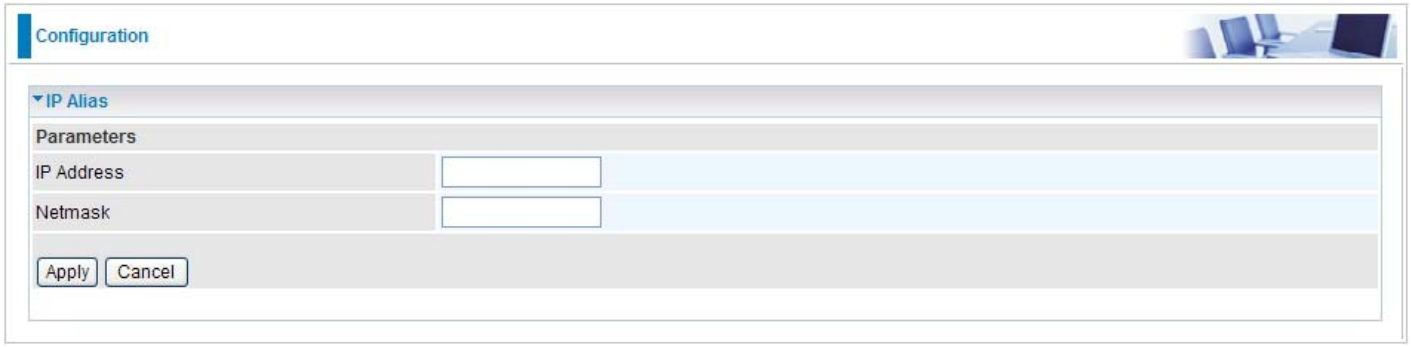
Netmask: The default subnet mask on this router.

RIP: RIP v1, RIP v2 and RIP v1+v2. Check to enable RIP function.

Click Apply to confirm the settings.

IP Alias

This function allows the addition an IP alias to the network interface. It further allows user the flexibility to assign a specific function to use this IP.

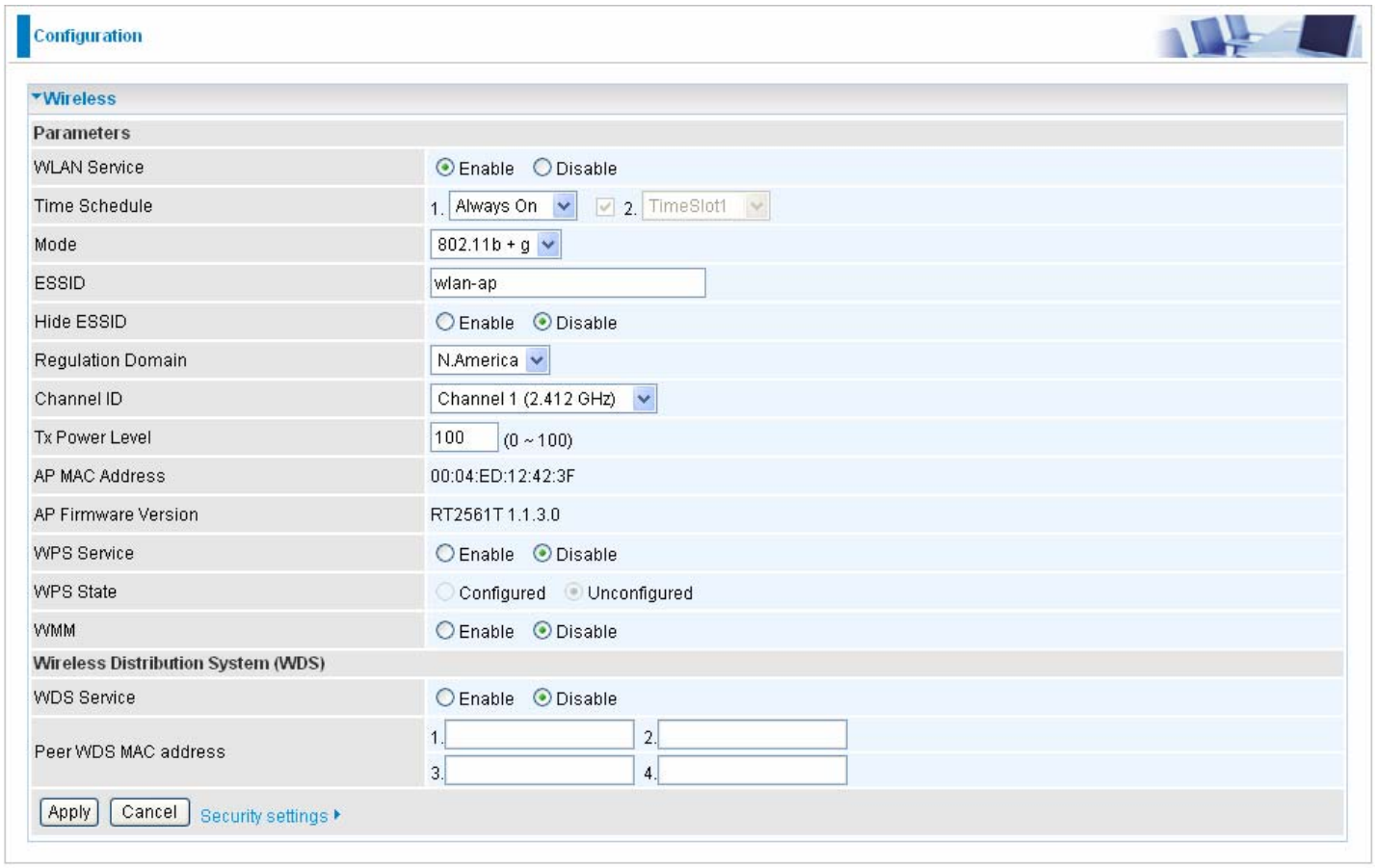


IP Address: Enter the IP address to be added to the network.

Netmask: Specify a subnet mask for the IP to be added.

Click Apply to confirm the settings.

Wireless



Parameters

WLAN Service: Default setting is set to Enable. If you do not have any wireless, select Disable.

Time Schedule: A self defined time period. You may specify a time schedule for your prioritization policy.

Here we provide two groups of **Time Schedule** setting. You can flexibly set the time you want the wireless connection works.

If you select **Always On** in group1, then the group2 is disabled.

While if you select any other item from the group1 drop-down menu, the group2 will be activated. Select the timeslot you want, then the wireless will work according to the time of the two time schedule settings. That is to say you can flexibly set the time the wireless works.

For setup and detail, refer to Time Schedule section.

Mode: The default setting is 802.11b+g. From the drop-down manual, you can select 802.11b if you have only 11b card. If you have only 11g card, select 802.11g.

ESSID: The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

Hide ESSID: This function enables the router to become invisible on the network. Thus, any clients using the wireless setting to search for available or specific router on the network will not be able to discover the router whose Hide ESSID function is set to enabled. The default setting is disabled.

Enable: When enabled, you do not broadcast your ESSID. Therefore, no one will be able to locate the Access Point (AP) of your router.

Disable: When disabled, you allow anybody with a wireless client to be able to locate the Access Point (AP) of your router.

Regulation Domain: There are seven Regulation Domains for you to choose from, including North America (N.America), Europe, France, etc. The Channel ID will be different based on this setting.

Channel ID: Select the wireless connection channel ID that you would like to use.

Note: Wireless performance may degrade if the selected channel ID is already being occupied by other AP(s).

TX PowerLevel: It is a function that enhances the wireless transmitting signal strength. User may adjust this power level from minimum 0 up to maximum 100.

Note: The Power Level maybe different in each access network user premise environment, choose the most suitable level for your network.

AP MAC Address: It is a unique hardware address of the Access Point.

AP Firmware Version: The Access Point firmware version.

WPS Service: Select Enable if you would like to activate WPS service.

WPS State: This column allows you to set the status of the device wireless setting whether it has been configured or unconfigured. For WPS configuration please refer to the section on **Wi-Fi Network Setup** for detail.

WMM: This feature is used to control the prioritization of traffic according to 4 Access categories: Voice, Video, Best Effort and Background. Default is set to disable.

Enable: Click to activate WMM feature.

Disable: Click to deactivate WMM feature.

Wireless Distribution System (WDS)

It is a wireless access point mode that enables wireless link and communication with other access points. It is easy to install simply by defining the peer's MAC address of the connected AP. WDS takes advantages of the cost saving and flexibility which no extra wireless client device is required to bridge between two access points and extending an existing wired or wireless infrastructure network to create a larger network. It can connect up to 4 wireless APs for extending cover range at the same time.

In addition, WDS also enhances its link connection security mode. Key encryption and channel must be the same for both access points.

WDS Service: The default setting is disabled. Check **Enable** radio button to activate this function.

1. **Peer WDS MAC Address:** It is the associated AP's MAC Address. It is important that your peer's AP must include your MAC address in order to acknowledge and communicate with each other.
2. **Peer WDS MAC Address:** It is the second associated AP's MAC Address.
3. **Peer WDS MAC Address:** It is the third associated AP's MAC Address.

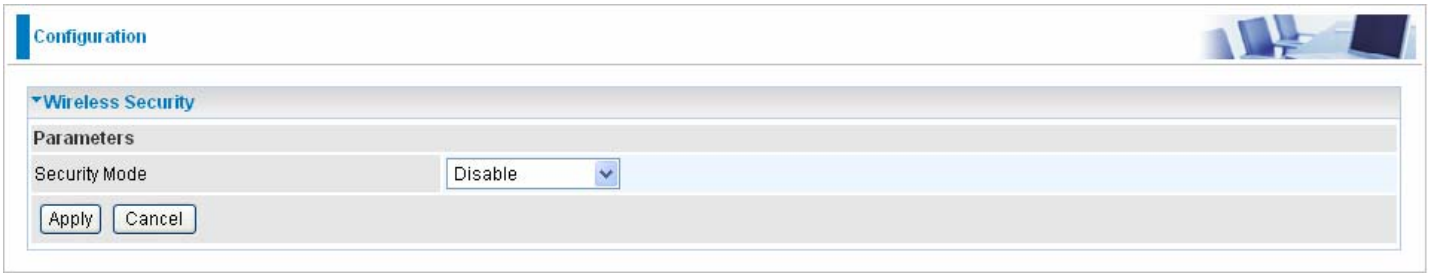
4. **Peer WDS MAC Address:** It is the fourth associated AP's MAC Address.

Note: For MAC Address, the format can be: xx:xx:xx:xx:xx:xx or xx-xx-xx-xx-xx-xx.

Click Apply to confirm the settings.
You can click Security settings link next to Cancel button to go to Wireless Security screen (see **Wireless Security** section).

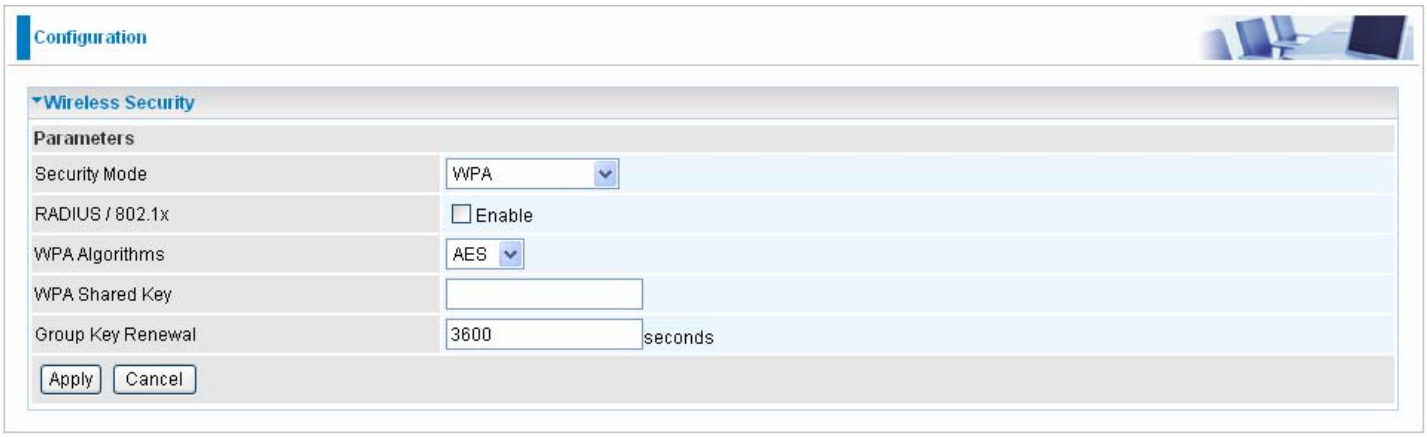
Wireless Security

You can disable or enable wireless security function using WPA or WEP for protecting wireless network. The default mode of wireless security is disabled.



WPA or WPA2 Pre-Shared Key

Here take **WPA** for example.



Security Mode: You can choose the type of security mode you want to apply from the drop-down menu.

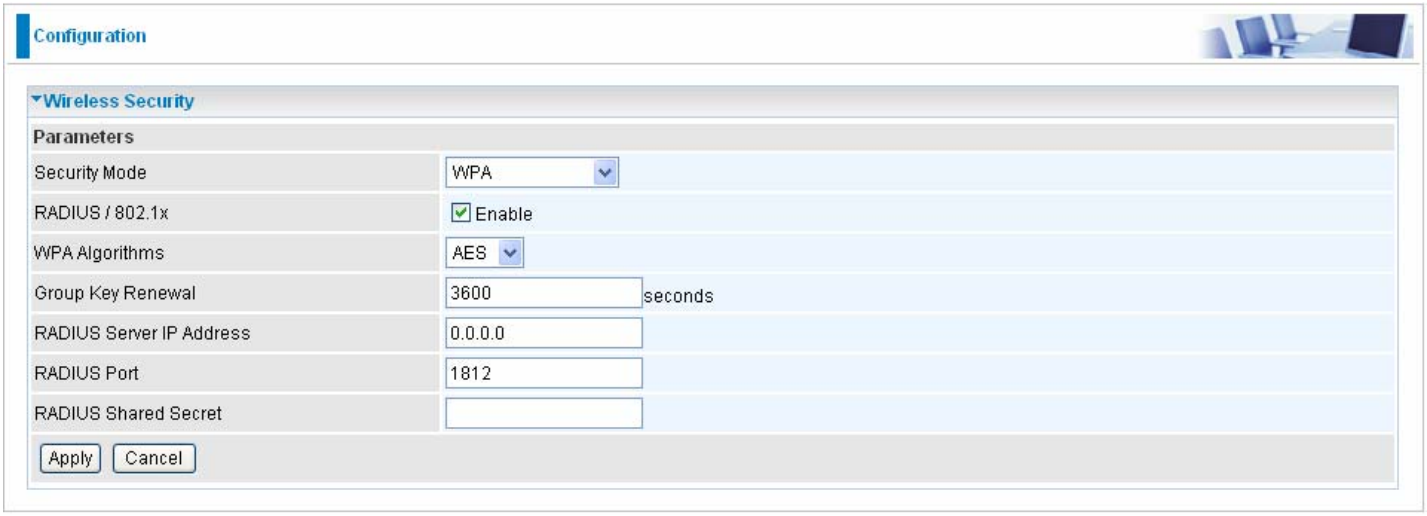
RADIUS/802.1x: Select Whether to enable or disable the RADIUS Service.

WPA Algorithms: There are two Algorithms, AES (Advanced Encryption Standard) and TKIP (Temporal Key Integrity Protocol) which help to protect the wireless communication. The Default algorithm is AES.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

Group Key Renewal: The period of renewal time for changing the security key automatically between wireless client and Access Point (AP). Default value is 3600 seconds.

If you want to enable the RADIUS service, check Enable and then do the following settings.

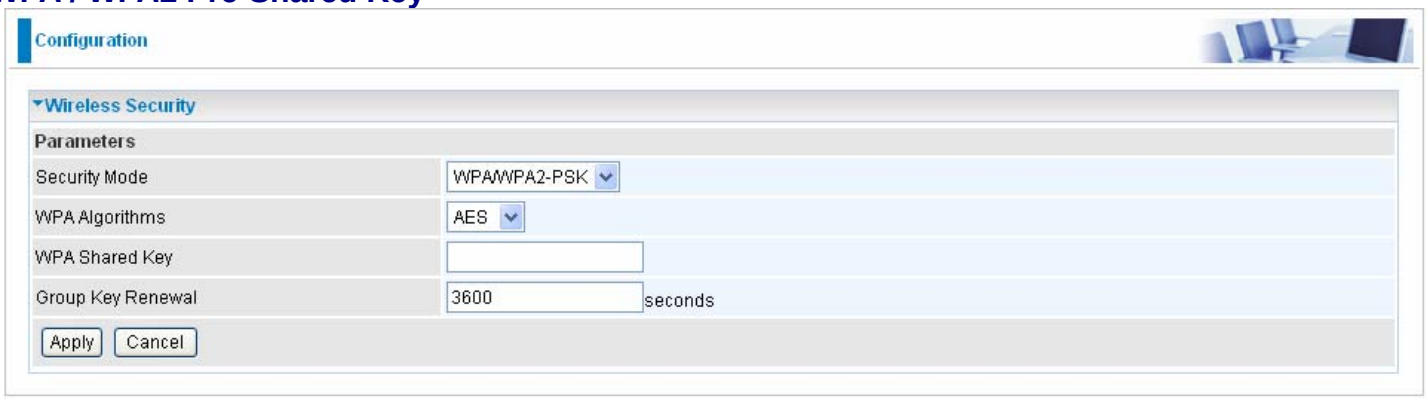


RADIUS Server IP Address: Enter the IP address of RADIUS authentication server.
RADIUS Server Port: Enter the port number of RADIUS authentication server here. Default value is 1812.

RADIUS Shared Secret: Enter the password of RADIUS authentication server.

Click Apply to confirm the settings.

WPA / WPA2 Pre-Shared Key



Security Mode: You can choose the type of security mode you want to apply from the drop-down menu.

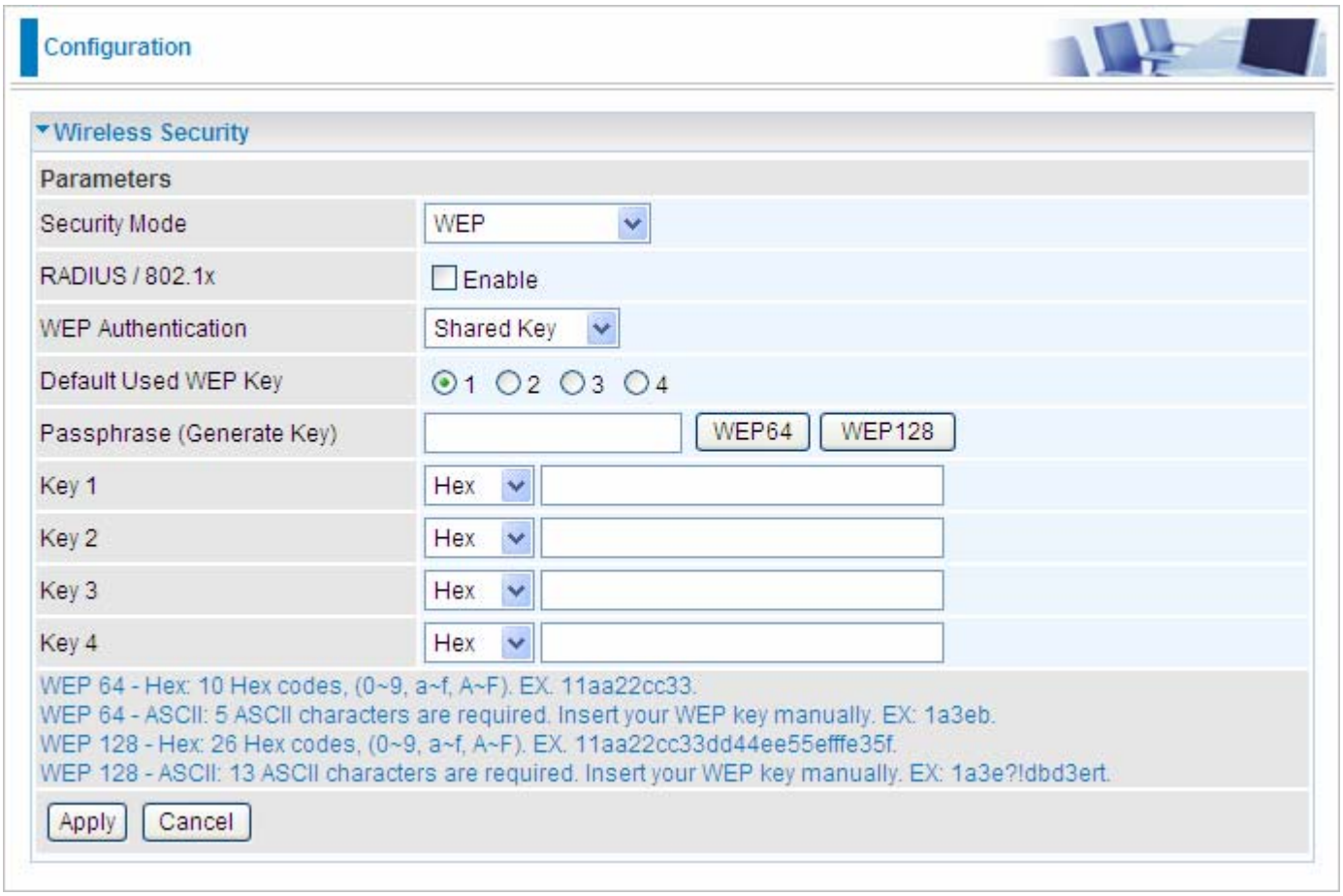
WPA Algorithms: There are two Algorithms, AES (Advanced Encryption Standard) and TKIP (Temporal Key Integrity Protocol) which help to protect the wireless communication. The Default algorithm is AES.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

Group Key Renewal: The period of renewal time for changing the security key automatically between wireless client and Access Point (AP). Default value is 3600 seconds.

Click Apply to confirm the settings.

WEP



Security Mode: Choose the type of security mode **WEP** from the drop-down menu.

RADIUS/802.1x: Choose this box enable RADIUS/802.1x authentication protocol for boosting up WLAN Security.

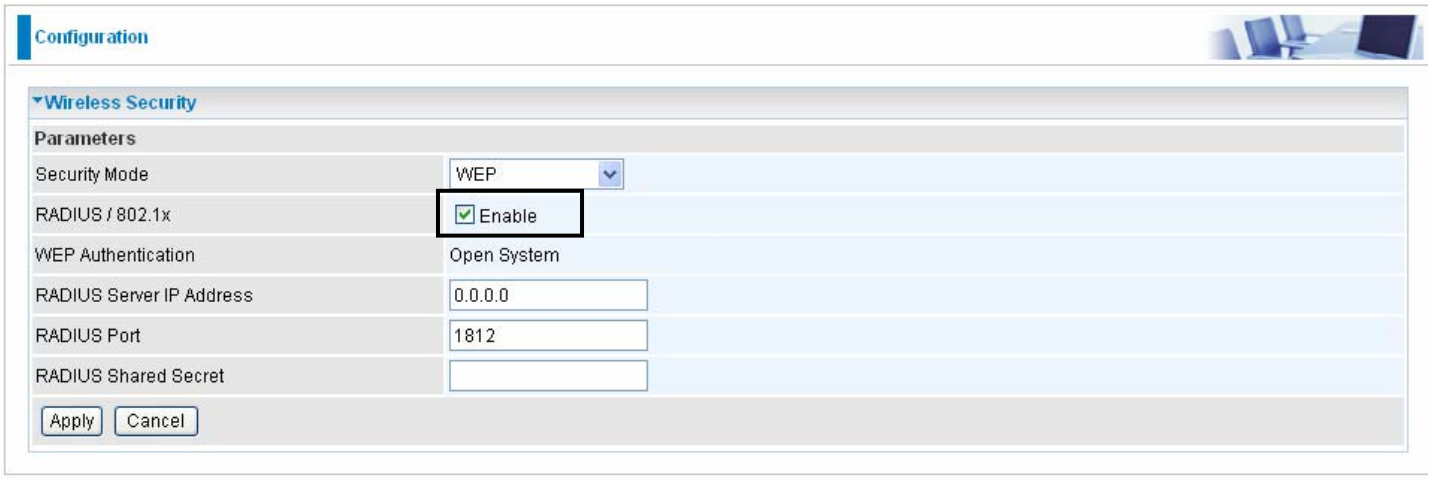
WEP Authentication: To prevent unauthorized wireless stations from accessing data transmitted over the network, the router offers secure data encryption, known as WEP. There are 3 options to select from: **Open System**, **Shared Key** or **Both**.

Default Used WEP Key: Select the encryption key ID; please refer to **Key (1~4)** below.

Passphrase: This is used to generate WEP keys automatically based upon the input string and a pre-defined algorithm in WEP64 or WEP128.

Key (1-4): Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four keys for your selection. The input format is in HEX or ASCII style, 5 and 13 ASCII codes are required for WEP64 and WEP128 or 10 and 26 HEX codes are required for WEP64 and WEP128 respectively.

If you want to enable the RADIUS service, check Enable and then do the following settings.



WEP Authentication: If you enable **RADIUS/802.1x,** then the default **WEP Authentication** is **Open System.**

RADIUS Server IP Address: Enter the IP address of RADIUS authentication server.

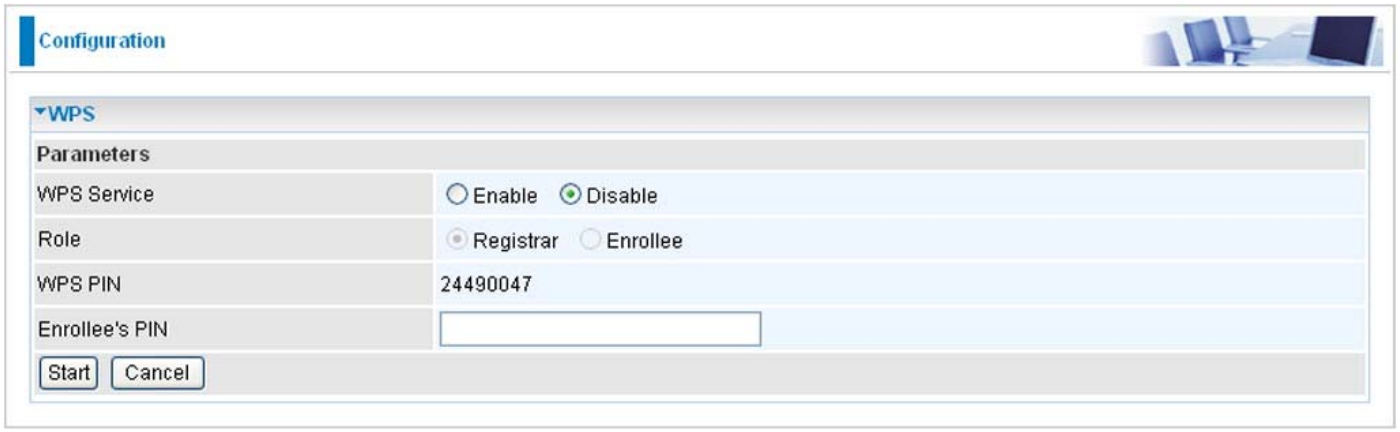
RADIUS Server Port: Enter the port number of RADIUS authentication server here. Default value is 1812.

RADIUS Shared Secret: Enter the password of RADIUS authentication server.

Click Apply to confirm the settings.

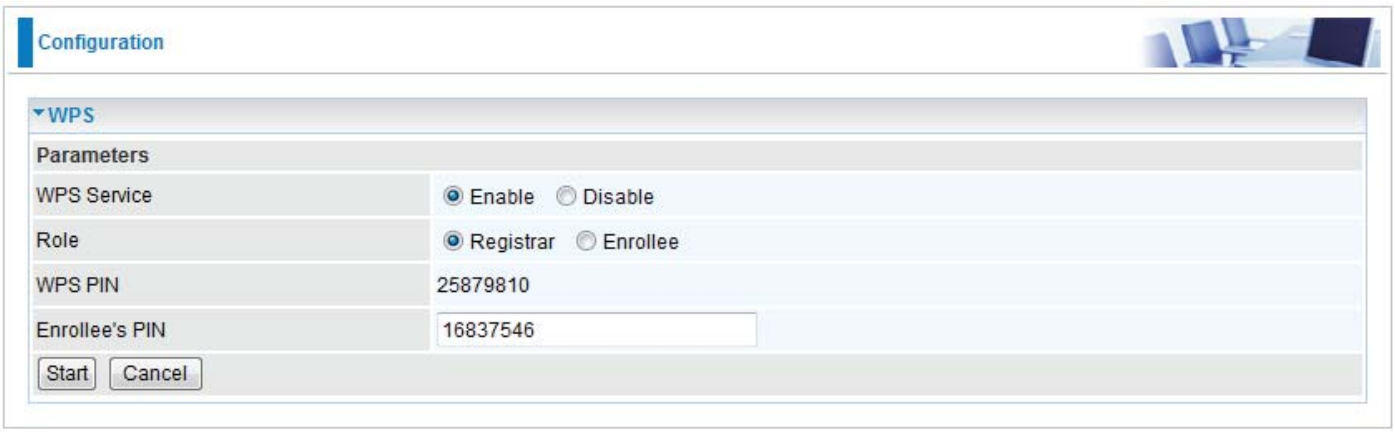
WPS

WPS (WiFi Protected Setup) feature is a standard protocol created by Wi-Fi Alliance. This feature greatly simplifies the steps needed to create a Wi-Fi network for a residential or an office setting. WPS supports 2 types of configuration methods which are commonly known among consumers: **PIN Method** & **PBC Method**.

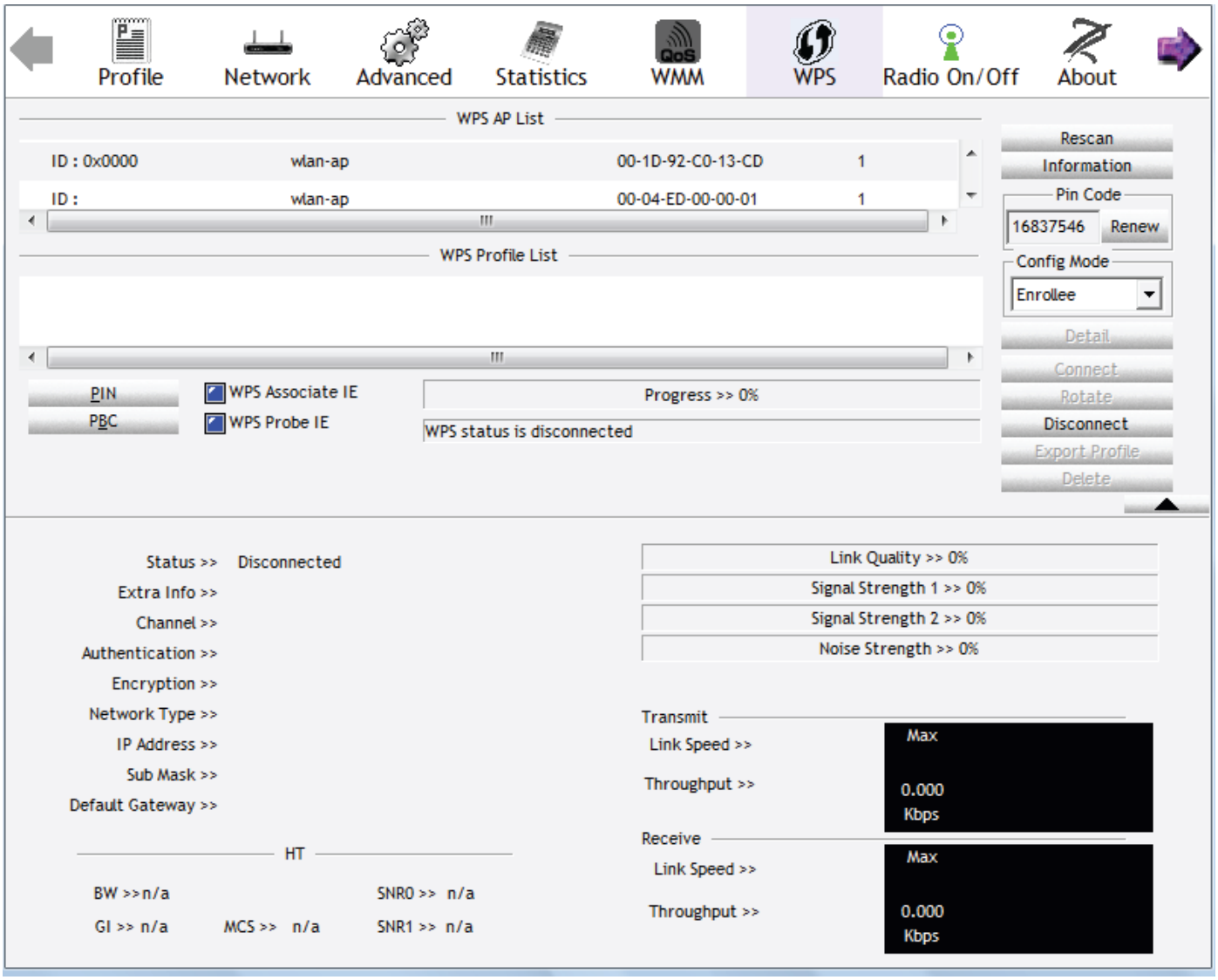


PIN Method: Configure AP as Registrar

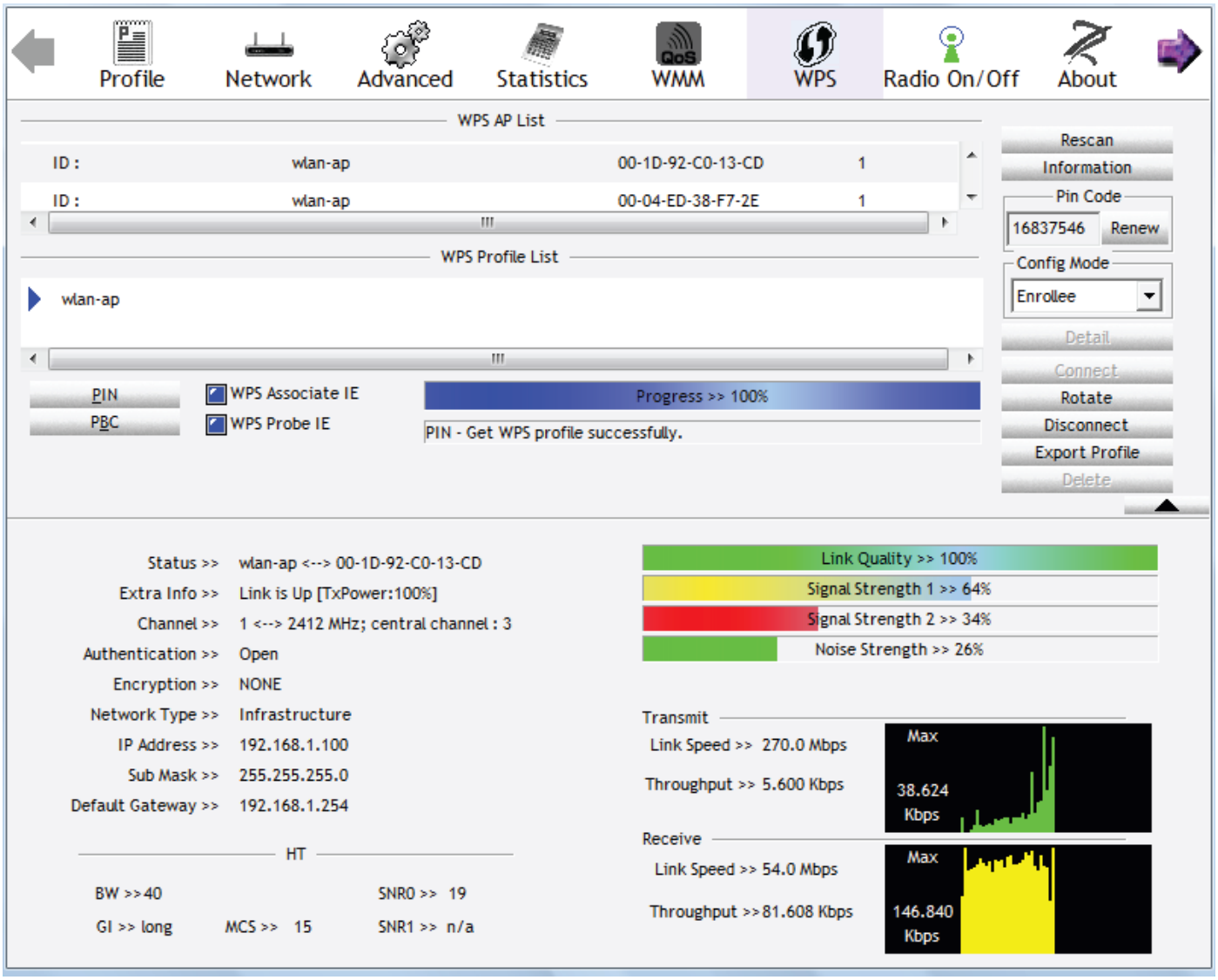
1. Jot down the client's Pin (eg. 16837546).



2. Enter the Enrollee's PIN number and then press Start.
3. Launch the wireless client's WPS utility (eg. Ralink Utility). Set the Config Mode as Enrollee, press the WPS button on the top bar, select the AP (eg. wlan-ap) from the WPS AP List column. Then press the PIN button located on the middle left of the page to run the scan.



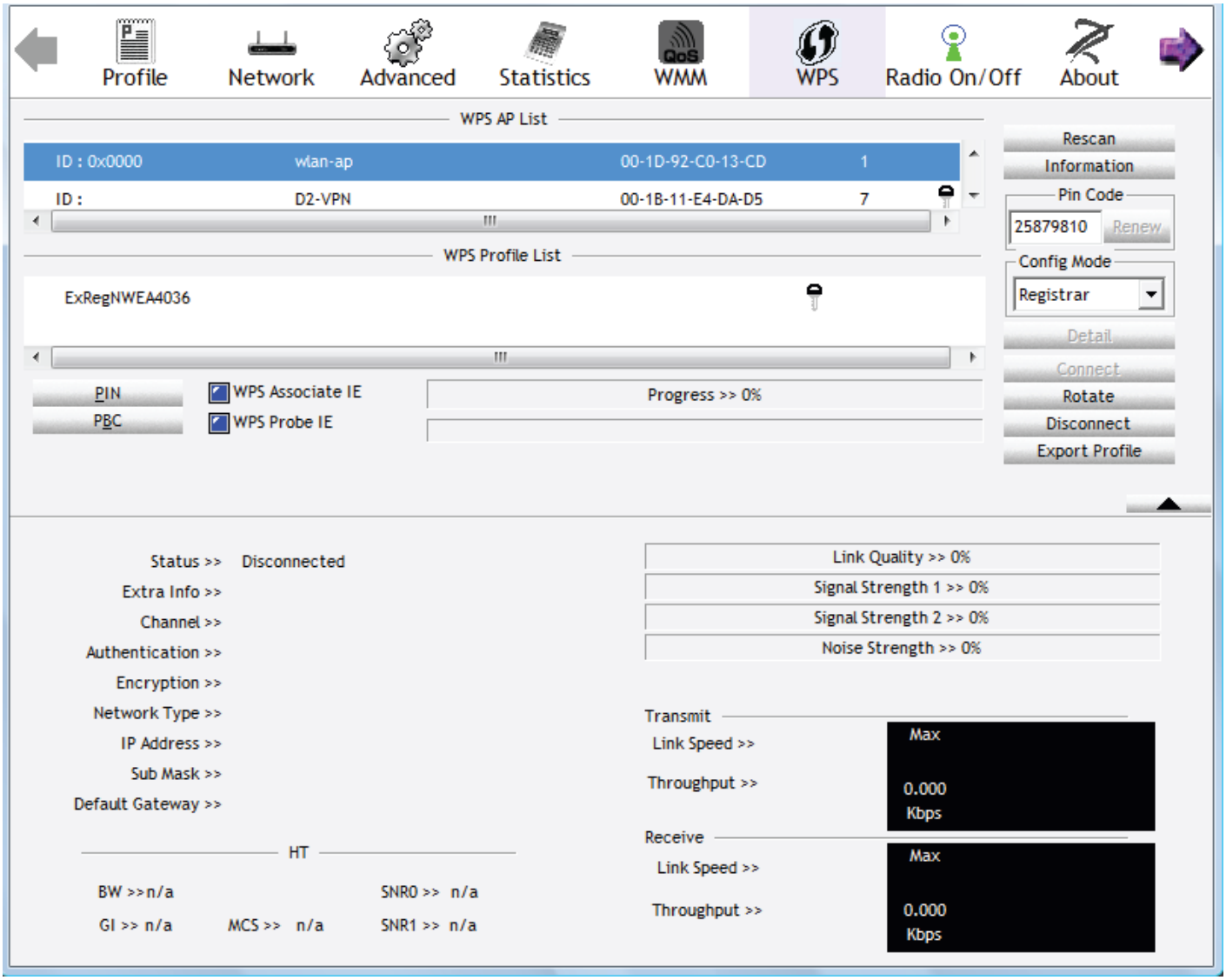
4. The client's SSID and security setting will now be configured to match the SSID and security setting of the registrar.



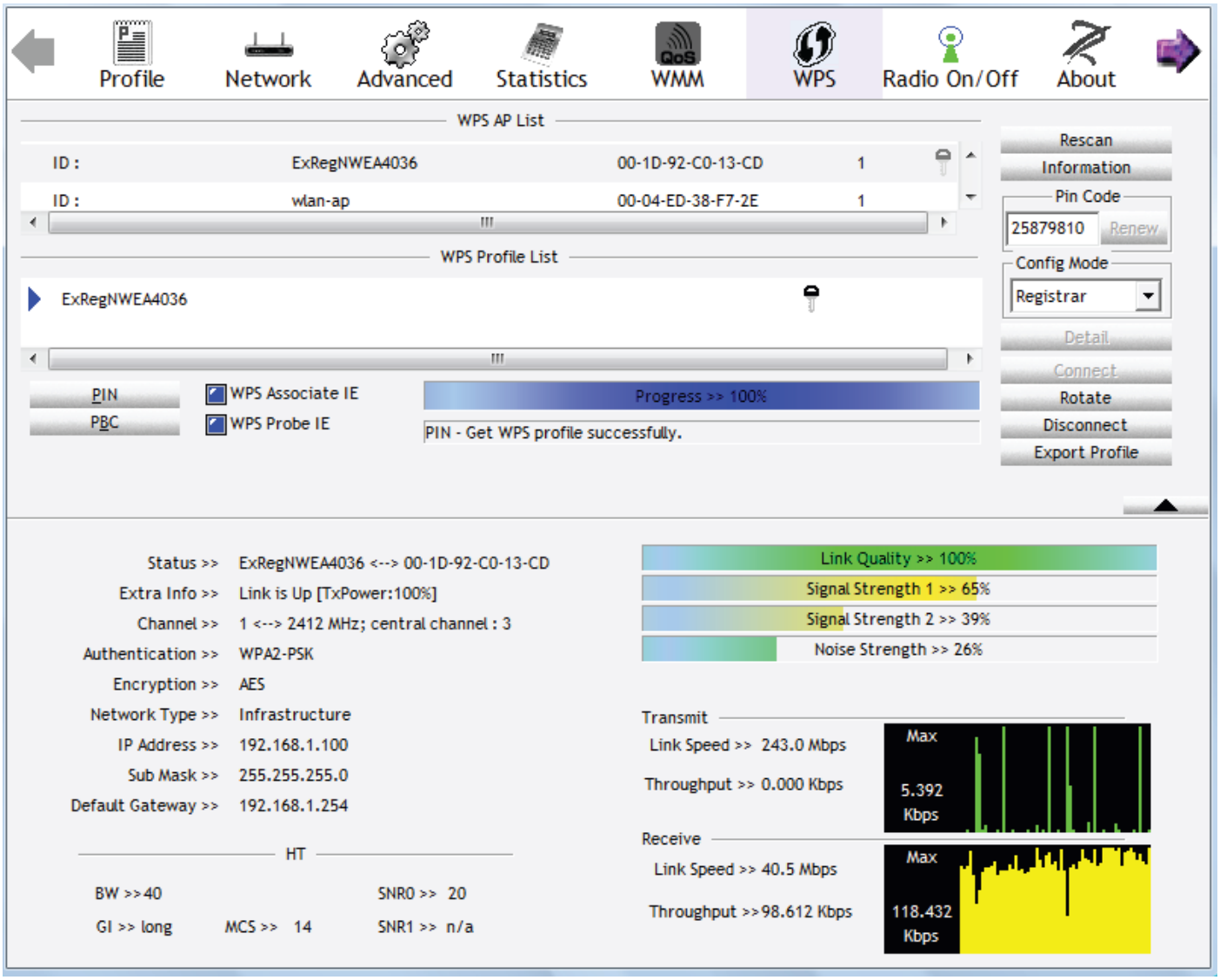
PIN Method: Configure AP as Enrollee

1. In the WPS configuration page, change the Role to Enrollee. Then press Start.
2. Jot down the WPS PIN (eg. 25879810).

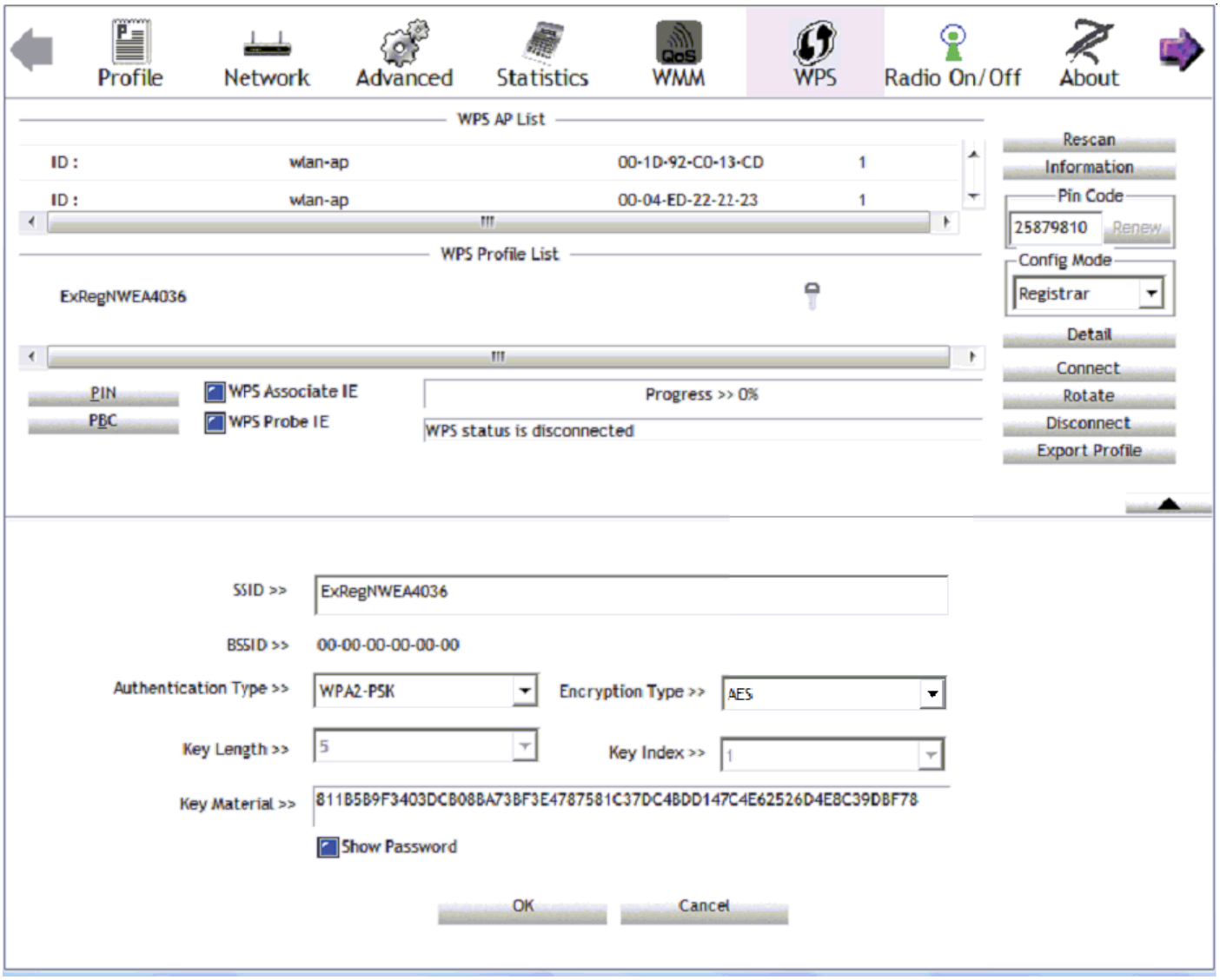
3. Launch the wireless client's WPS utility (eg. Ralink Utility). Set the Config Mode as Registrar. Enter the PIN number in the PIN Code column then choose the correct AP (eg. wlan-ap) from the WPS AP List section before pressing the PIN button to run the scan.



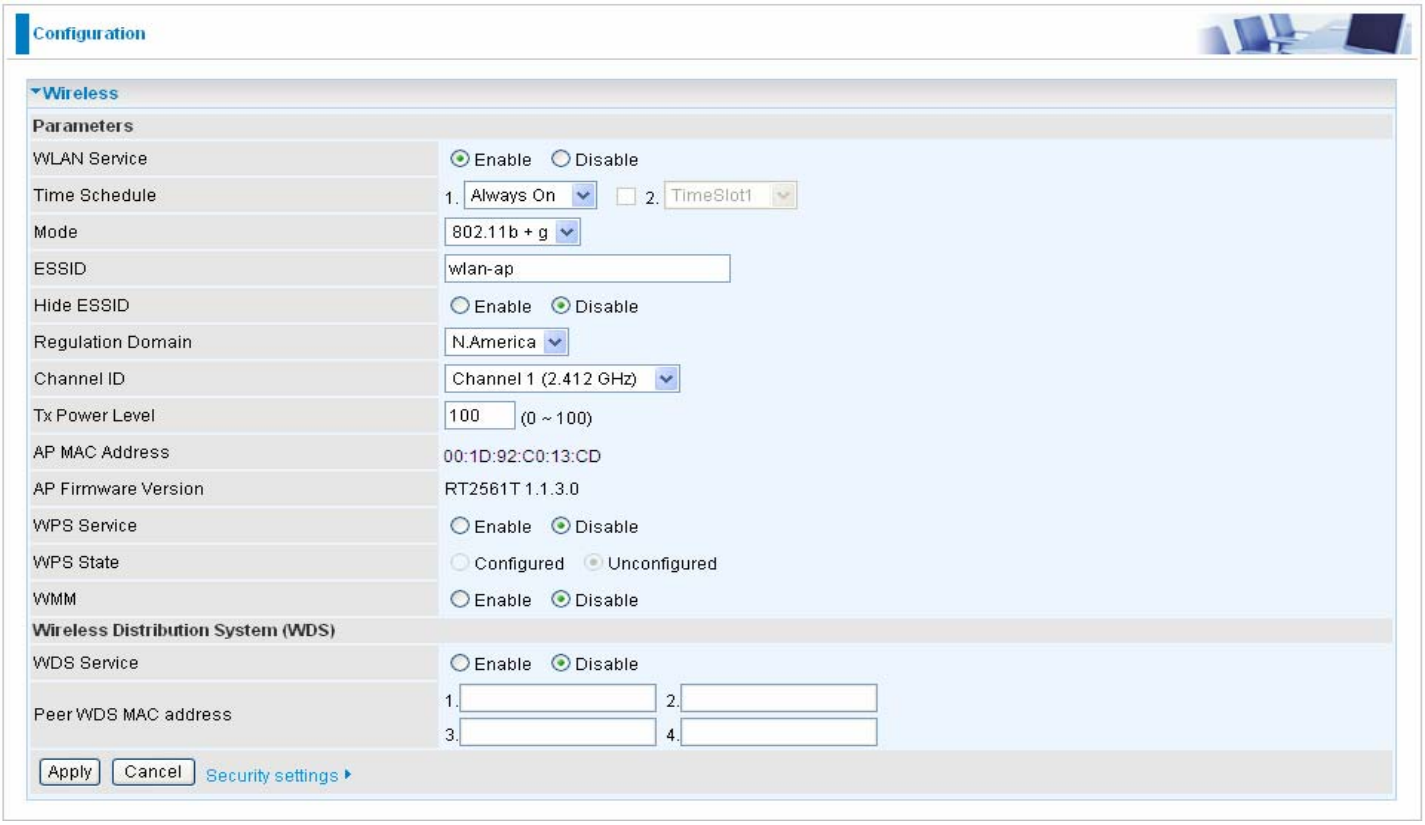
4. The router's (AP's) SSID and security setting will now be configured to match the SSID and security setting of the registrar.

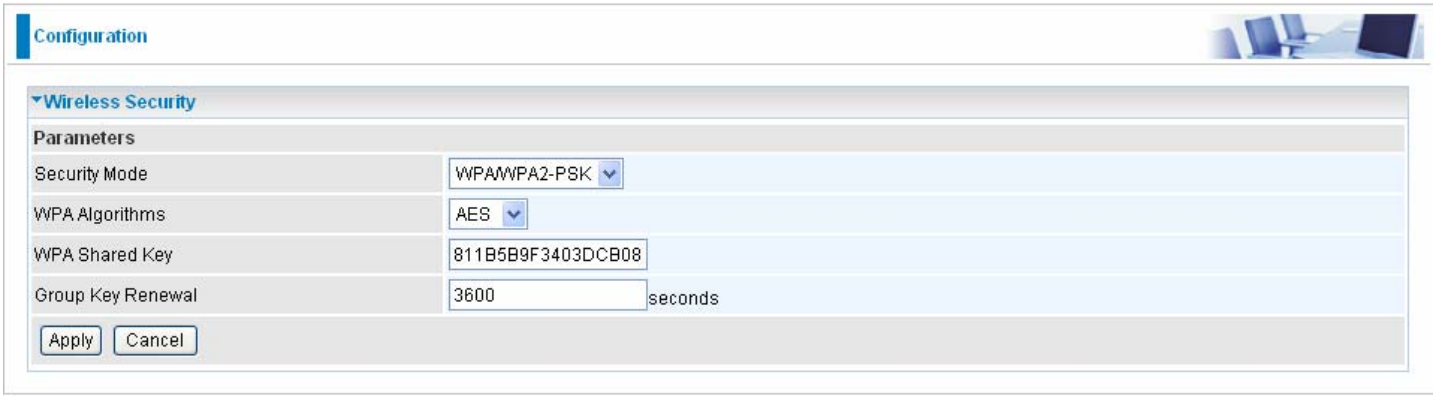


5. Now to make sure that the setup is correctly done, cross check to see if the SSID and the security setting of the registrar setting match with the parameters found on both Wireless Configuration and Wireless Security Configuration page.



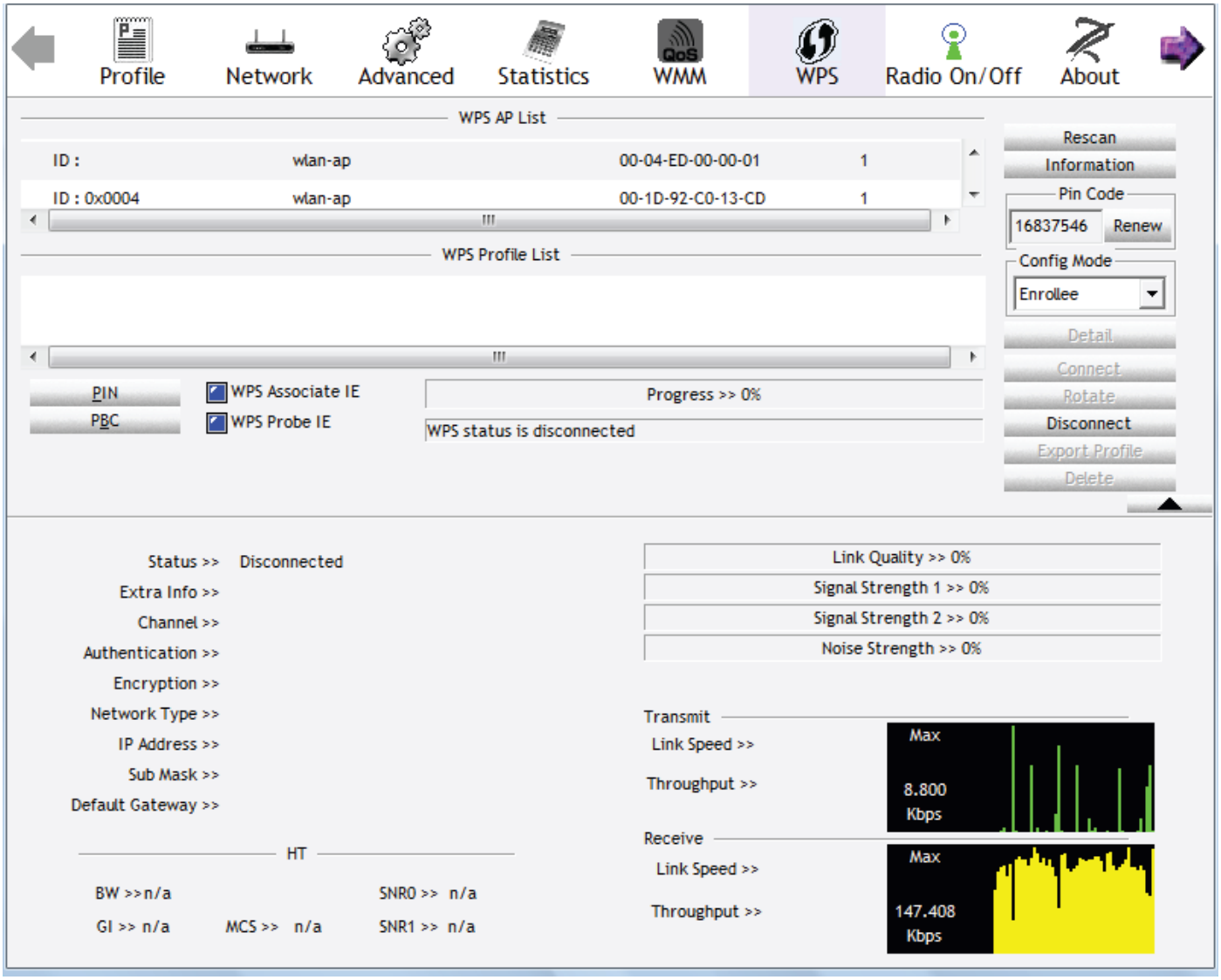
The parameters on both Wireless Configuration and Wireless Security Configuration page are as follows:



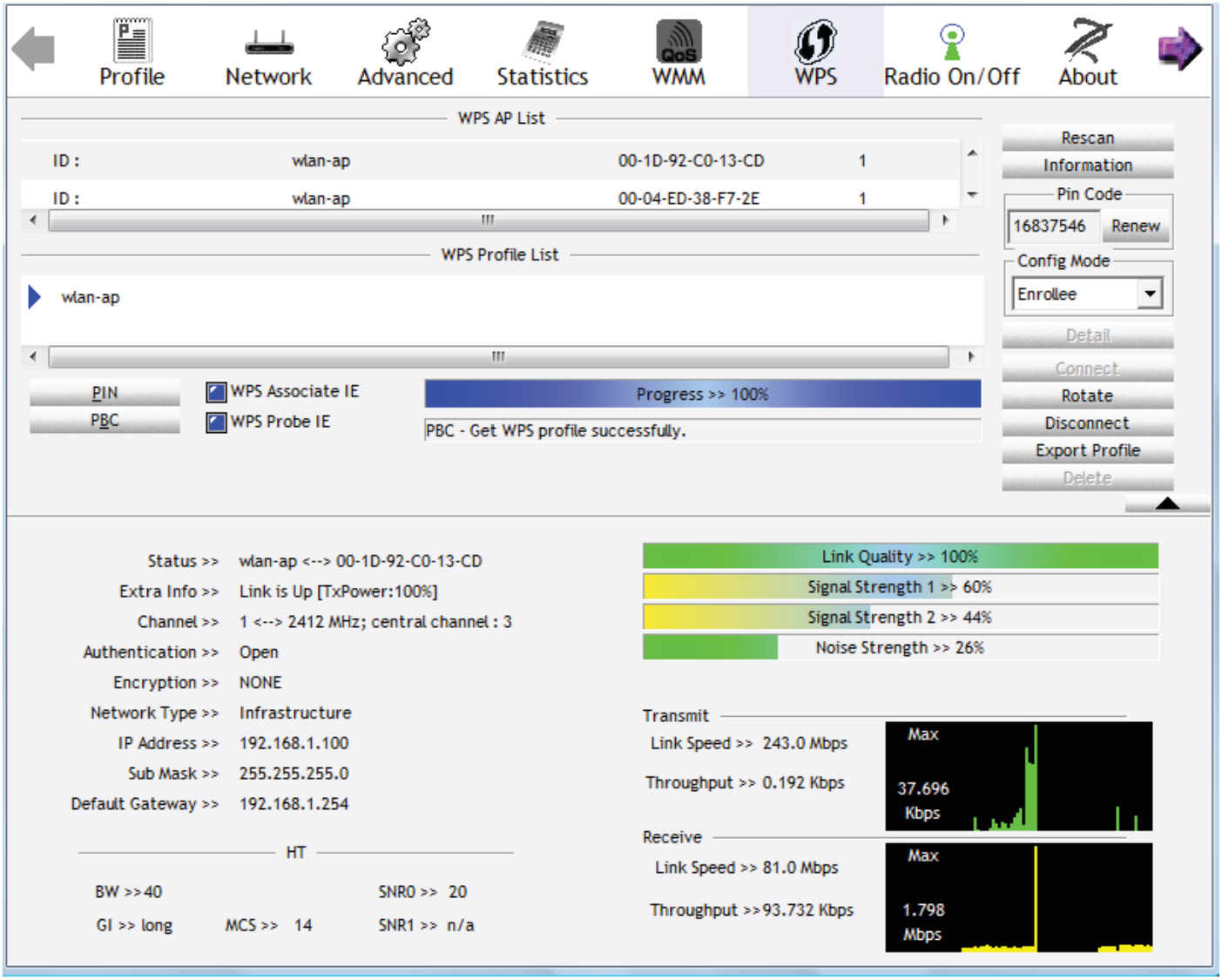


PBC Method:

1. Press the PBC button of the AP.
2. Launch the wireless client's WPS Utility (eg. Ralink Utility). Set the Config Mode as Enrollee. Then press the WPS button and choose the correct AP (eg. wlan-ap) from the WPS AP List section before pressing the PBC button to run the scan.



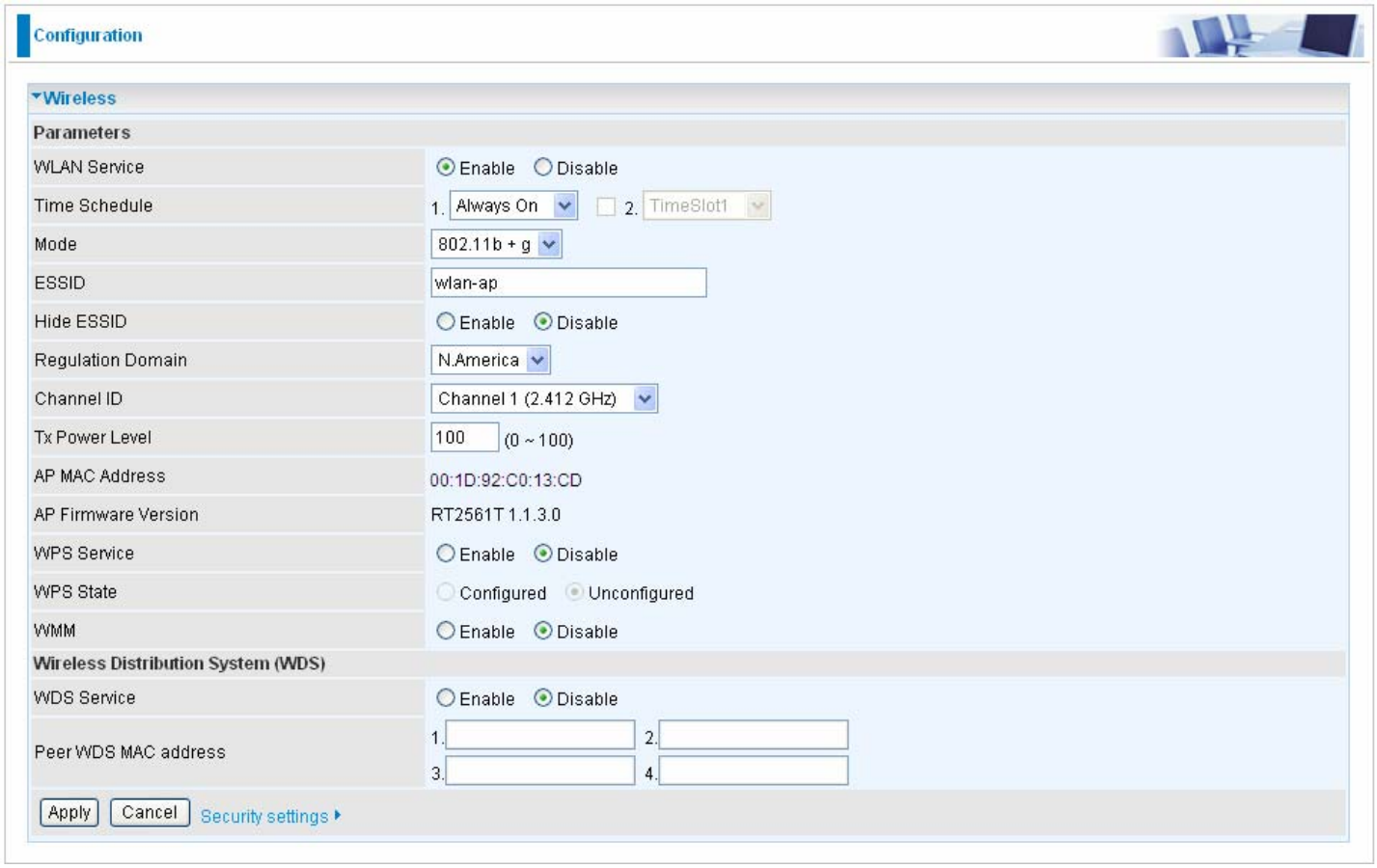
3. When the PBC button is pushed, a wireless communication will be established between your router and the PC. The client's SSID and security setting will now be configured to match the SSID and security setting of the router.



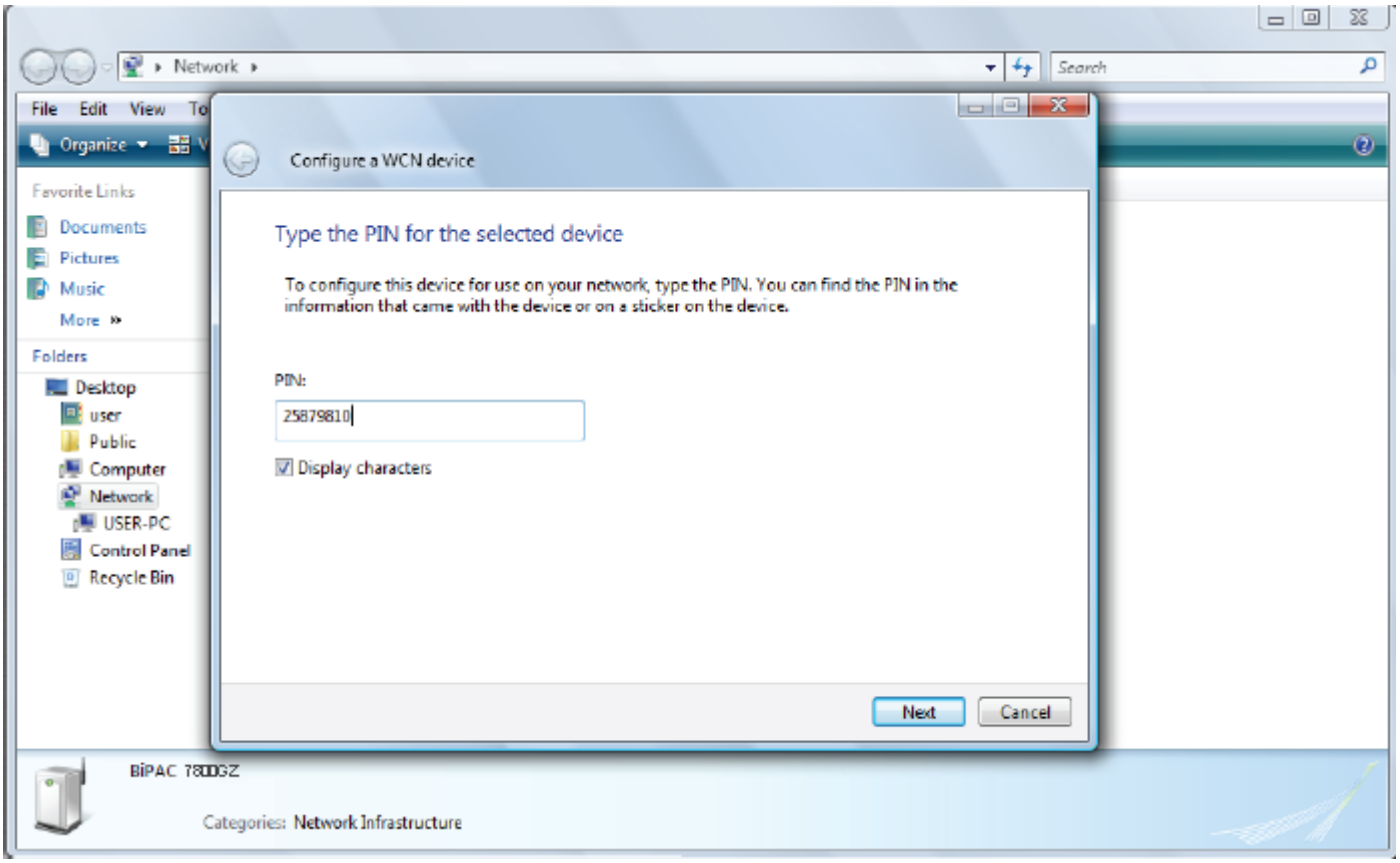
Wi-Fi Network Setup with Windows Vista WCN:

1. Jot down the AP PIN from the Web (eg. 25879810).

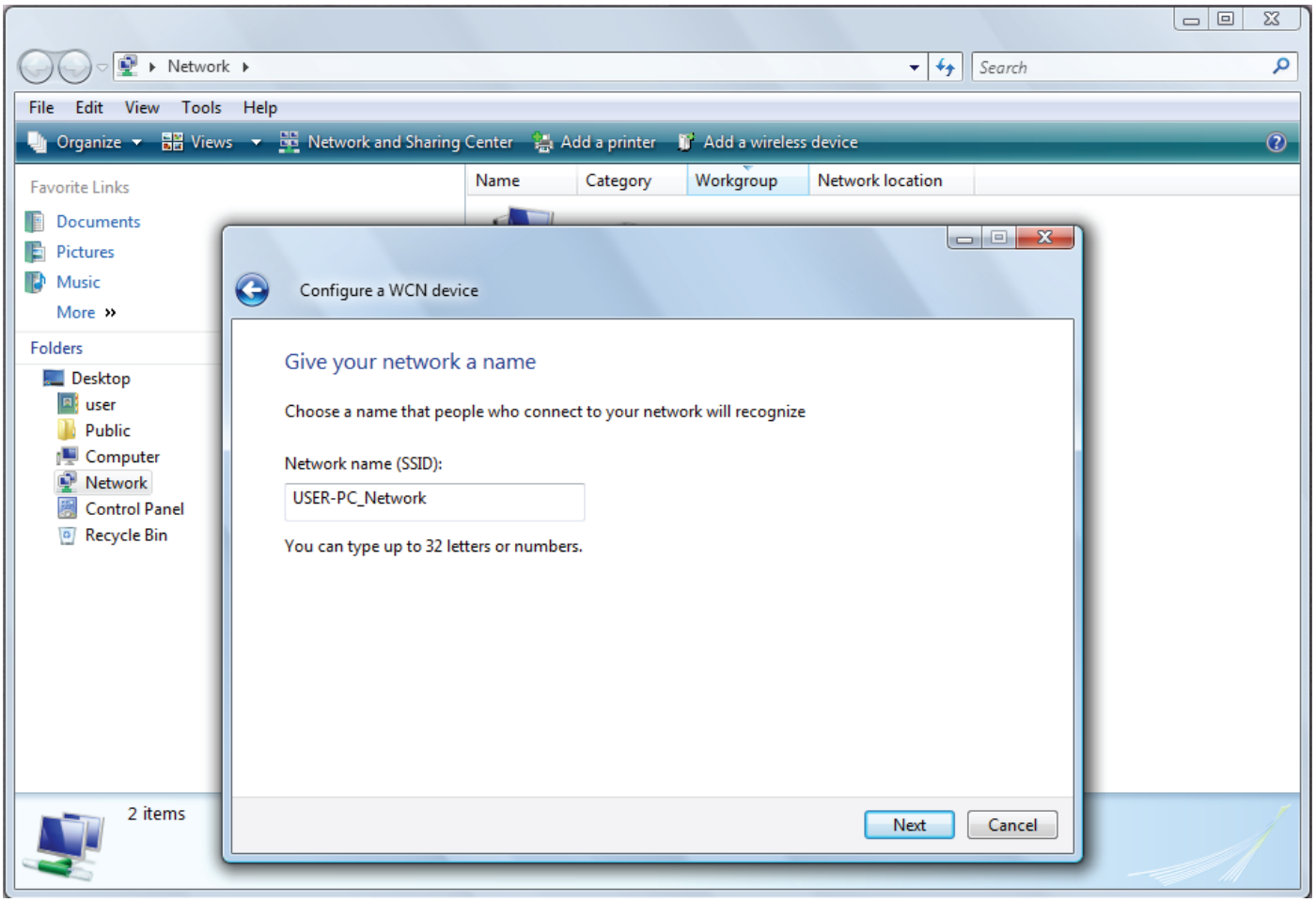
2. Access the Wireless configuration of the web GUI. Set the WPS State to Unconfigured then click Apply.



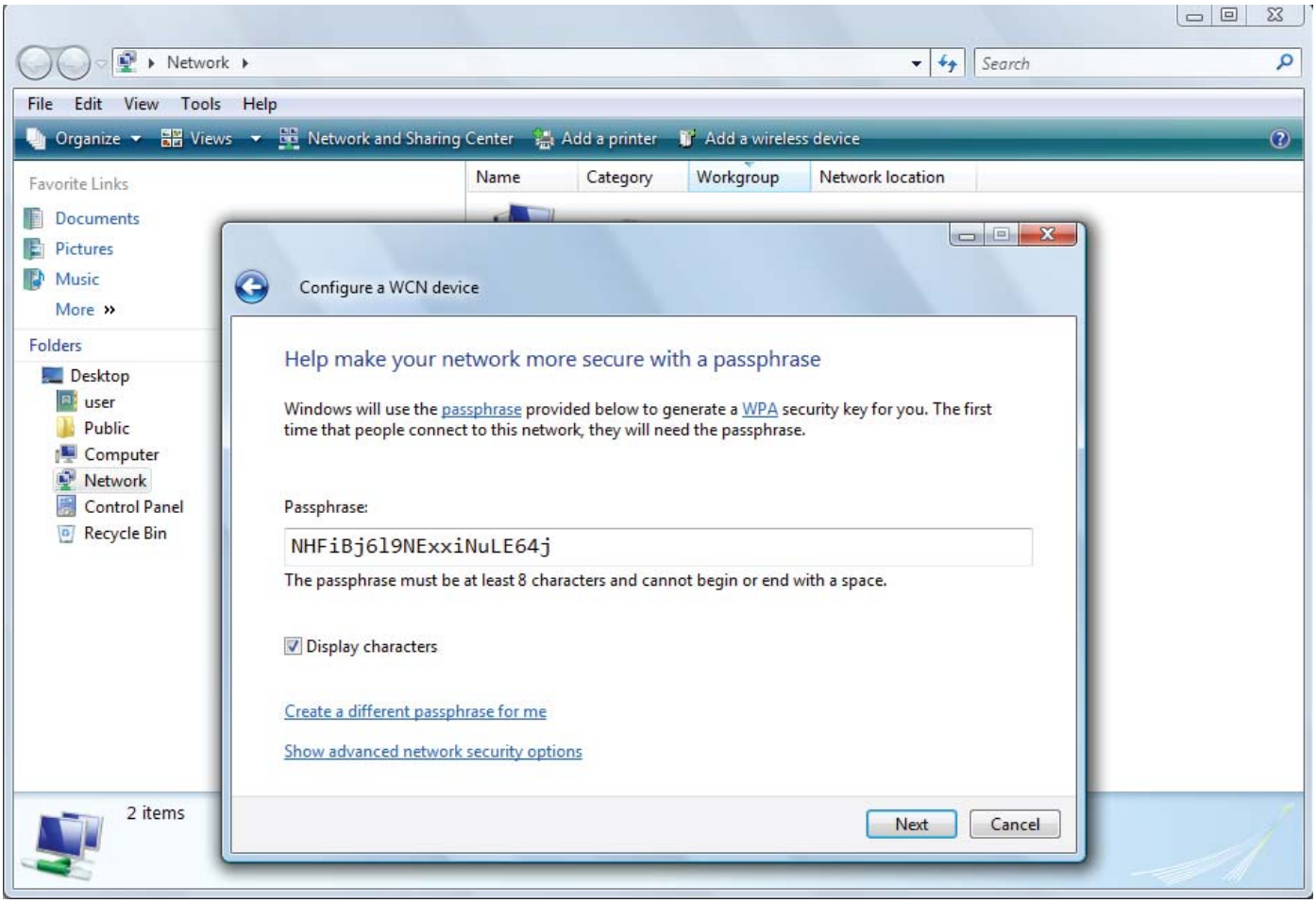
3. In your Vista operating system, access the Control Panel page, then select Network and Internet > View Network Computers and Devices. Double click on the BiPAC 7800GZ(L) icon and enter the AP PIN in the column provided then press Next.



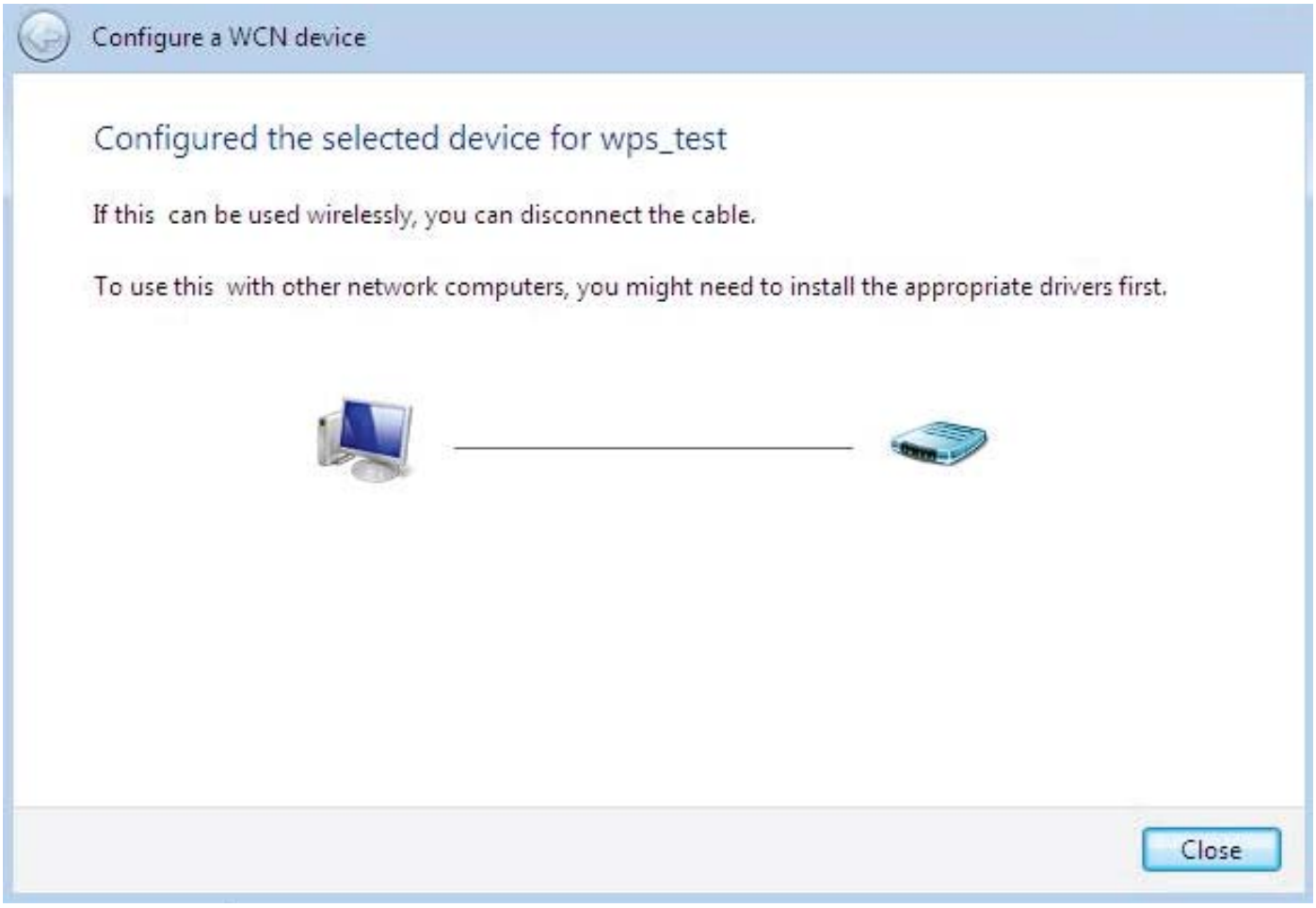
4. Enter the AP SSID then click Next.



5. Enter the Passphrase then click Next.

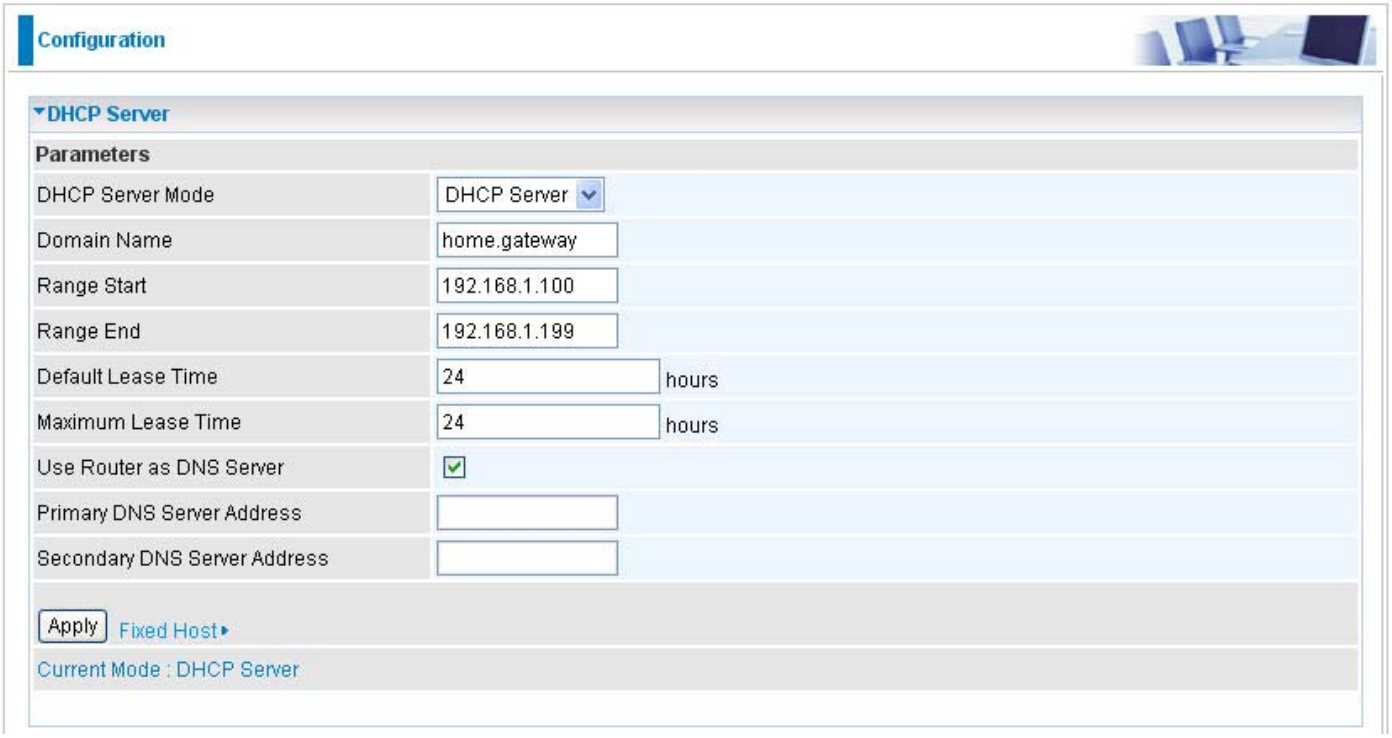


6. When you have come to this step, you will have completed the Wi-Fi network setup using the built-in WCN feature in Windows Vista.



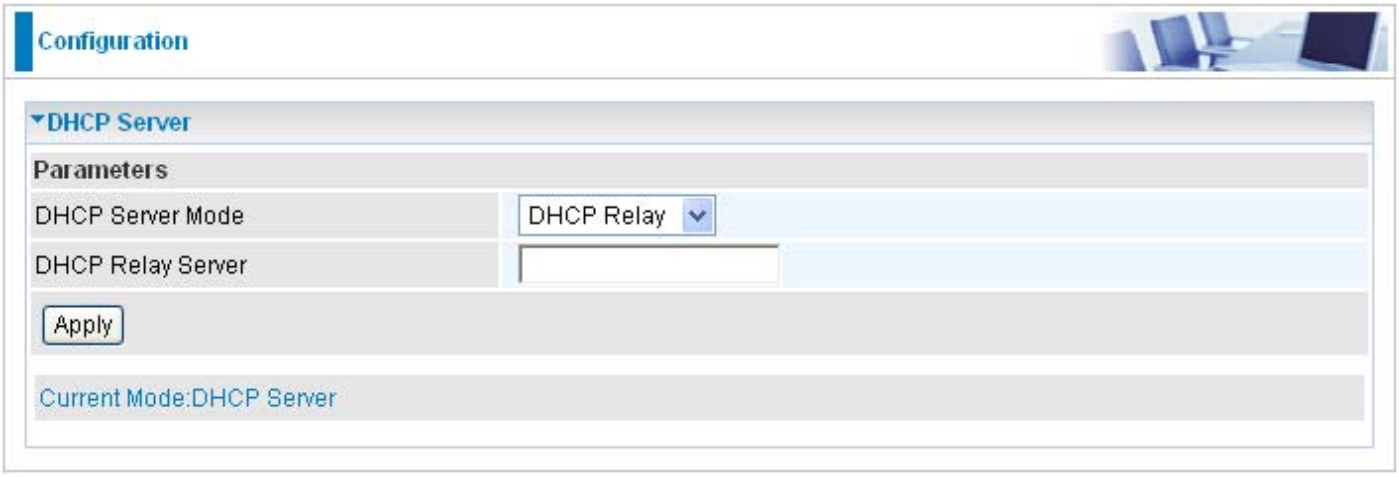
DHCP Server

DHCP allows networked devices to obtain information on the parameter of IP, Netmask, Gateway as well as DNS through the Ethernet Address of the device.



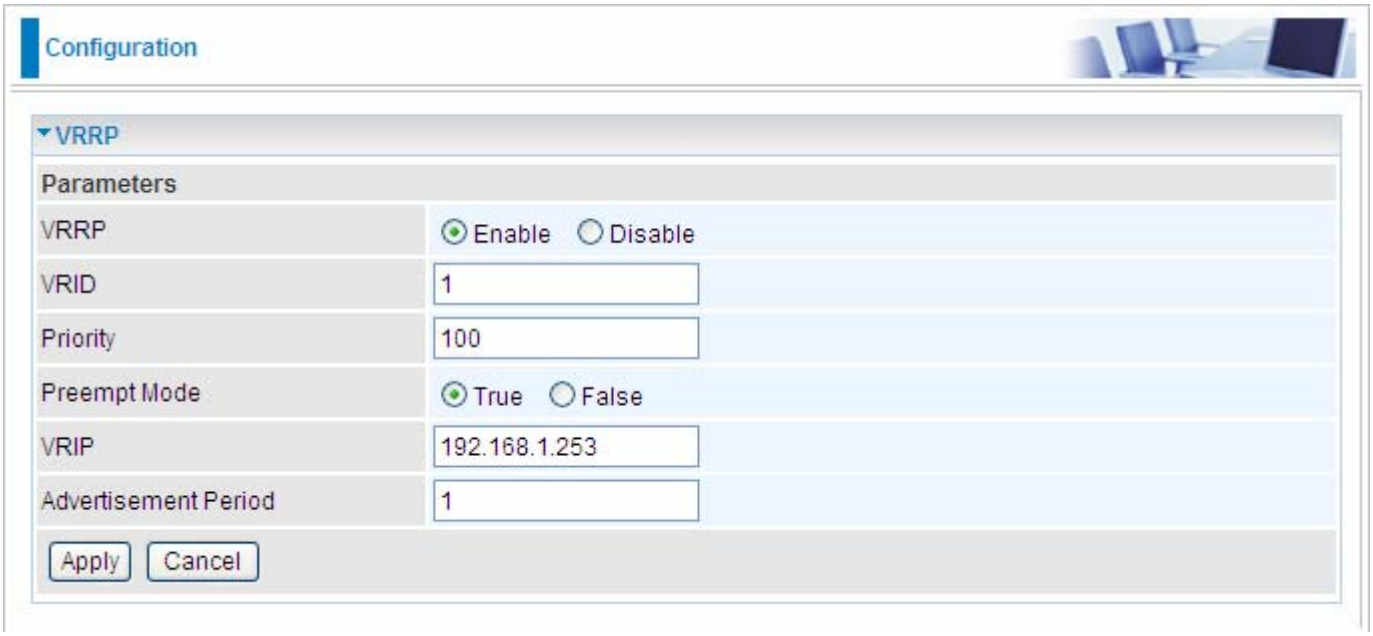
To configure the router's DHCP Server, select **DHCP Server** from the DHCP Server Mode drop-down menu. You can then configure parameters of the DHCP Server including the domain, IP pool (starting IP address and ending IP address to be allocated to PCs on your network), lease time for each assigned IP address (the period of time the IP address assigned will be valid), DNS IP address and the gateway IP address. These details are sent to the DHCP client (i.e. your PC) when it requests an IP address from the DHCP server. If you check "Use Router as a DNS Server", the ADSL Router will perform the domain name lookup, find the IP address from the outside network automatically and forward it back to the requesting PC in the LAN (your Local Area Network). Click Apply to enable this function.

If you select **DHCP Relay** from the DHCP Server Mode drop-down menu, you must enter the IP address of the DHCP server that assigns an IP address to the DHCP client in the LAN. Use this function only if advised to do so by your network administrator or ISP. Click Apply to enable this function.



VRRP

VRRP is designed to eliminate the single point of failure inherent in the static default routed environment. VRRP specifies an election protocol that dynamically assigns responsibility for a virtual router to one of the VRRP routers on a LAN. The VRRP router controlling the IP address associated with a virtual router is called the Master, and forwards packets sent to these IP addresses. The election process provides dynamic fail-over in the forwarding responsibility should the Master become unavailable. Any of the virtual router's IP addresses on a LAN can then be used as the default first hop router by end-hosts. The advantage gained from using VRRP is a higher availability default path without requiring configuration of dynamic routing or router discovery protocols on every end-host.



VRRP: The default setting is **Disable**. Check **Enable** radio button to activate this function.

VRID: A master or backup router running the VRRP protocol may participate in one VRID instance.

Priority: Specifies the sending VRRP router's priority for the virtual router. Higher values equal higher priority. The priority value for the VRRP router that owns the IP address associated with the virtual router MUST be **255**. VRRP routers backing up a virtual router MUST use priority values between **1** and **254**. The default priority value for VRRP routers backing up a virtual router is **100**. The priority value zero (0) has special meaning indicating that the current Master has stopped participating in VRRP. This is used to trigger Backup routers to quickly transition to Master without having to wait for the current Master to timeout.

Preempt Mode: When preempt mode is enabled, a backup router always takes over the responsibility of the master router. When disabled, the lower priority backup is left in the master state.

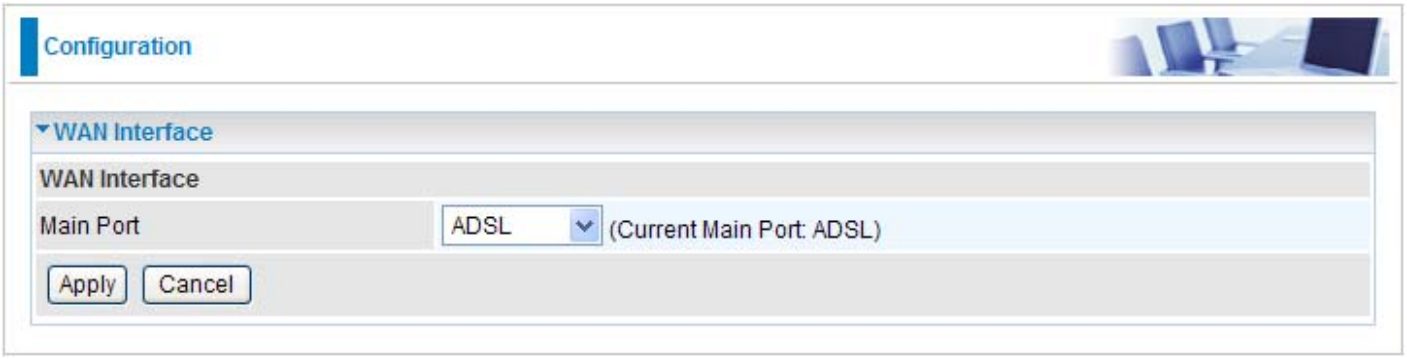
VRIP: One IP address that is associated with the virtual router.

Advertisement period: Indicates the time interval in seconds between advertisements. The default value is 1 second.

WAN - Wide Area Network

A WAN (Wide Area Network) is a computer network that covers a broad geographical area (e.g. Internet) that is used to connect LAN and other types of network systems. There are 4 items within the WAN section: **WAN Interface**, **WAN Profile**, **Mobile Networks** and **ADSL Mode**.

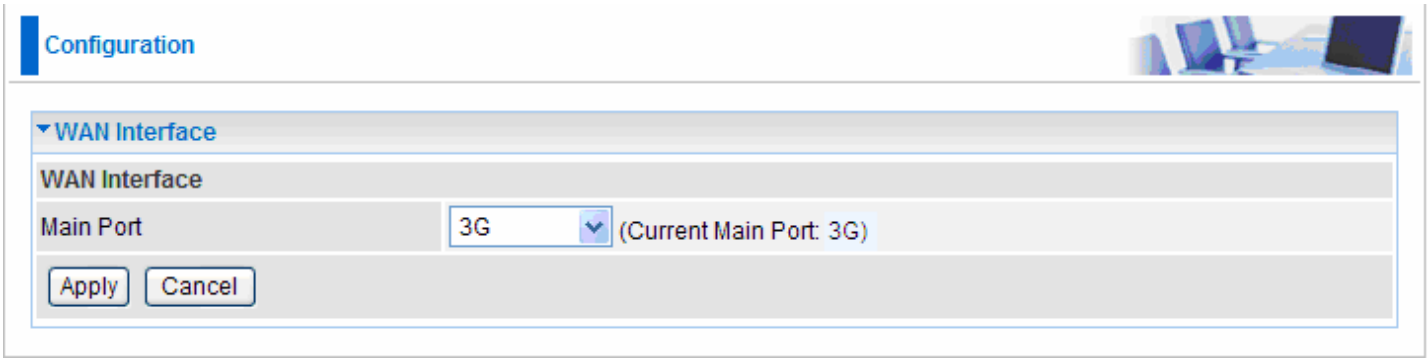
WAN Interface (ADSL)



Main Port: Select the main port from the drop-down menu.

Click Apply to confirm the change.

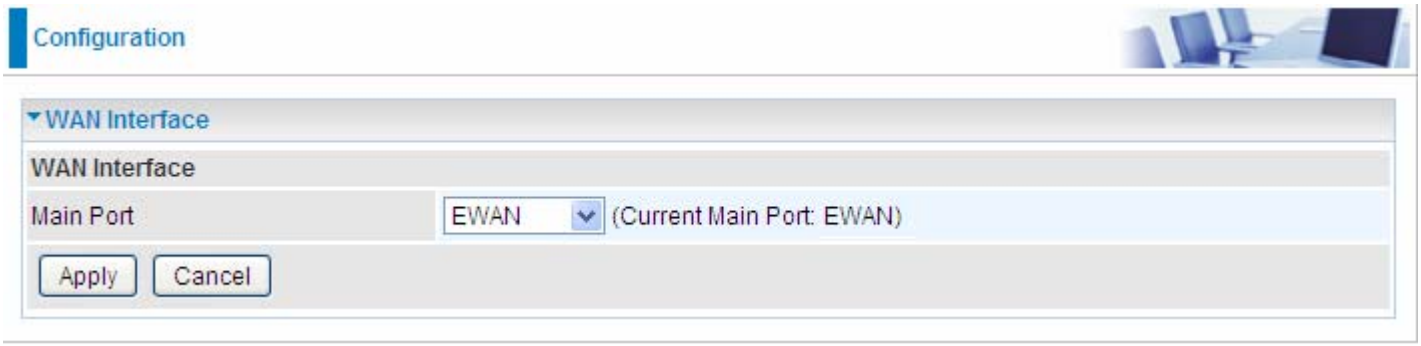
WAN Interface (3G)



Main Port: Select the main port from the drop-down menu.

Click Apply to confirm the change.

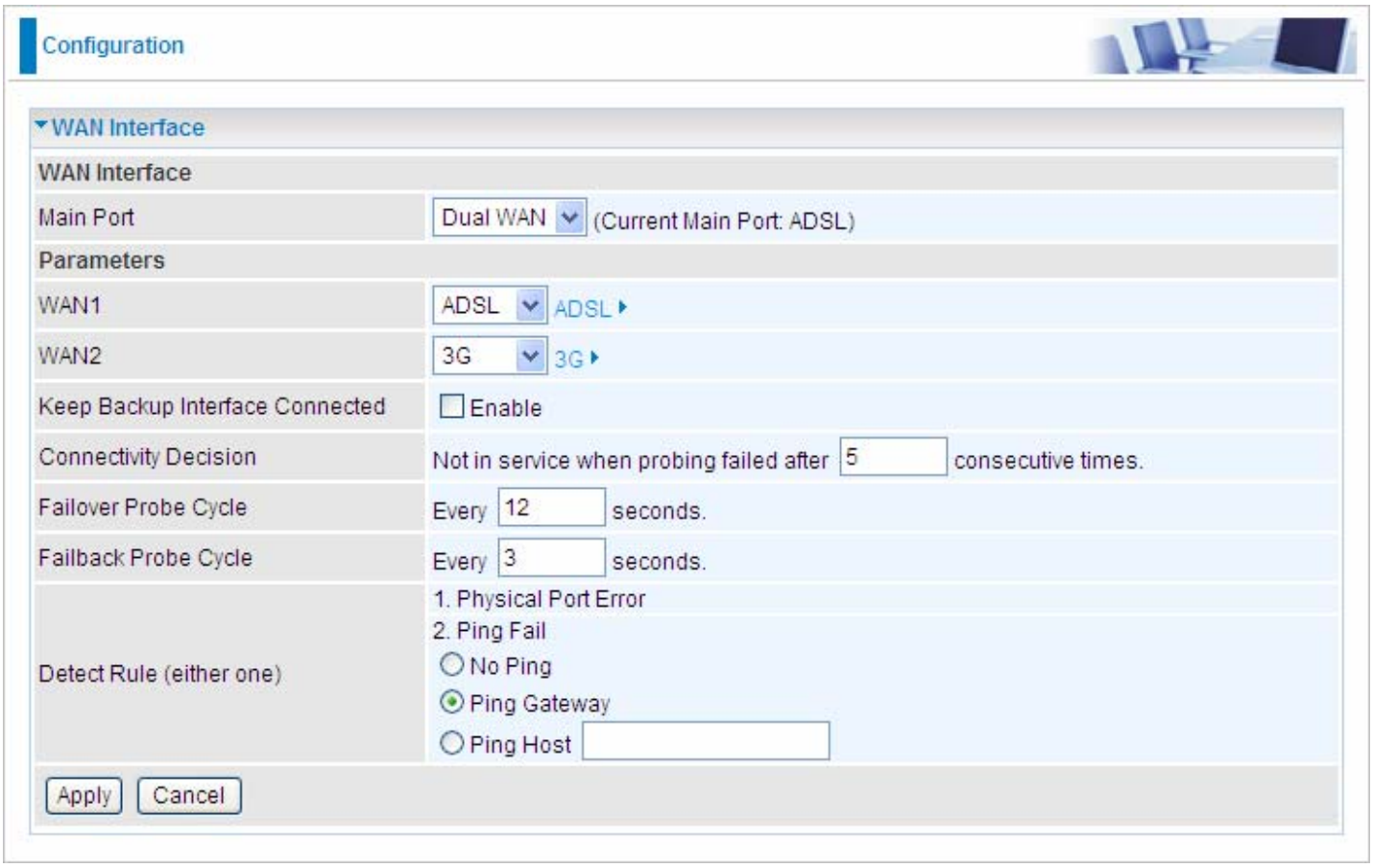
WAN Interface (EWAN)



Main Port: Select the main port from the drop-down menu.

Click Apply to confirm the change.

WAN Interface (Dual WAN)



Main Port: Select the main port from the drop-down menu.

WAN1: Choose ADSL EWAN or 3G for WAN1. Click the link to go to WAN Profile page to configure its parameters.

WAN2: Choose ADSL EWAN or 3G for WAN2. Click the link to go to WAN Profile page to configure its parameters.

Keep Backup Interface Connected: Select Enable this function, the backup port WAN2 will be connected all the time.

Connectivity Decision: Enter the value for the times when probing failed to switch backup port.

Failover Probe Cycle: Set the time duration for the Failover Probe Cycle to determine when the router will switch to the backup connection (backup port) once the main connection (main port) fails.

Failback Probe Cycle: Set the time duration for the Failback Probe Cycle to determine when the router will switch back to the main connection (main port) from the backup connection (backup port) once the main connection communicates again.

Note: The time values entered in Failover Probe Cycle and Failback Probe Cycle fields are set for each probe cycle and decided by Probe Cycle duration multiplied by Connection Decision value (e.g. 60 seconds are multiplied by 12 seconds and 5 consecutive fails).

Detect Rule (either one):

1. Physical Port Error

2. Ping Fail

• **No Ping:** It will not send any ping packet to determine the connection. It means to disable the ping fail detection.

• **Ping Gateway:** It will send ping packet to gateway and wait response from gateway in every “Probe Cycle”.

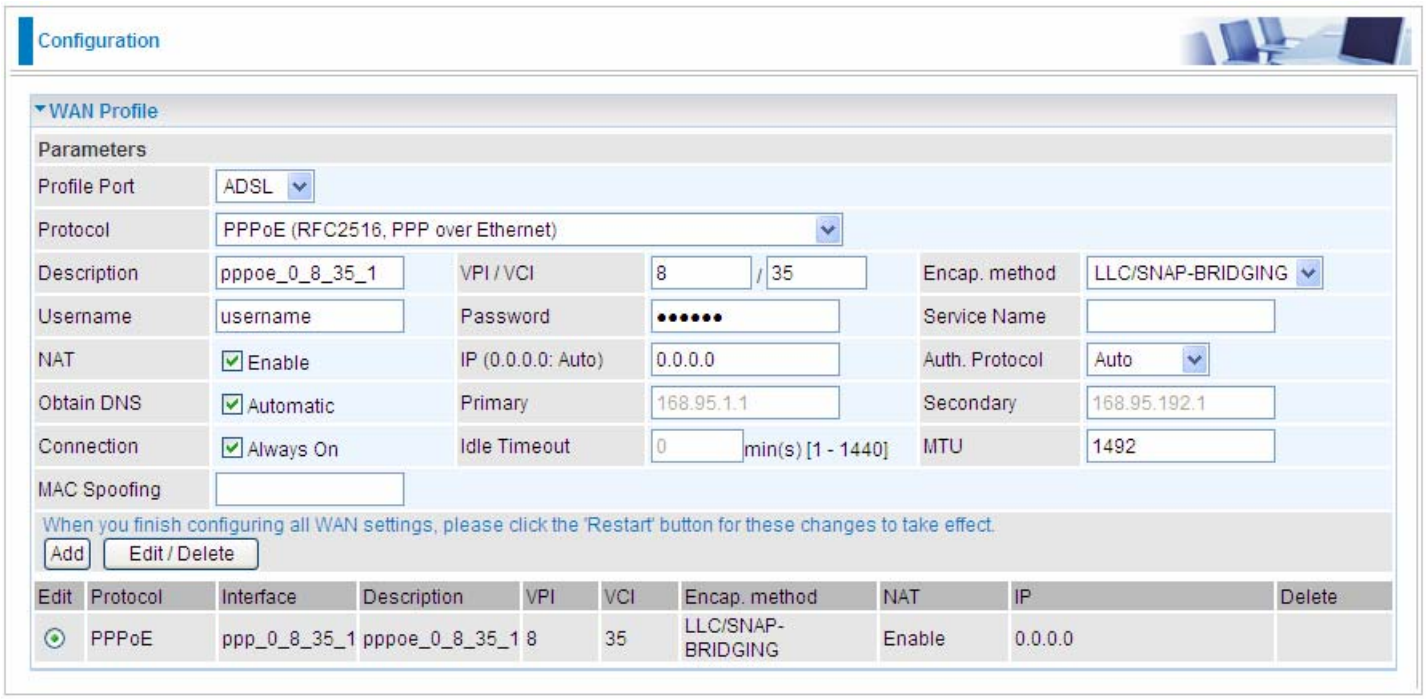
• **Ping Host:** It will send ping packet to specific host and wait response in every “Probe Cycle”. The host must be an IP address.

Click Apply to confirm the change.

WAN Profile (ADSL)

PPPoE (ADSL)

PPPoE (PPP over Ethernet) provides access control in a manner similar to dial-up services using PPP.



Description: A given name for the connection.

VPI/VCI: Enter the information provided by your ISP.

Encap. method: Select the encapsulation format. Select the one provided by your ISP.

Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

Service Name: This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single IP account by sharing a single IP address. If users on your LAN have their own public IP addresses to access the Internet, NAT function can be disabled.

IP (0.0.0.0:Auto): Your WAN IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Auth. Protocol: Default is Auto. Please consult your ISP on whether to use Chap, Pap or MSCHAP.

Obtain DNS: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address of a specific domain name. Check the checkbox to obtain DNS automatically.

Primary DNS / Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the Netmask.

Connection: Click on **Always on** to establish a PPPoE session during start up and to automatically re-establish the PPPoE session when disconnected by the ISP. You may uncheck the item to disable this function.

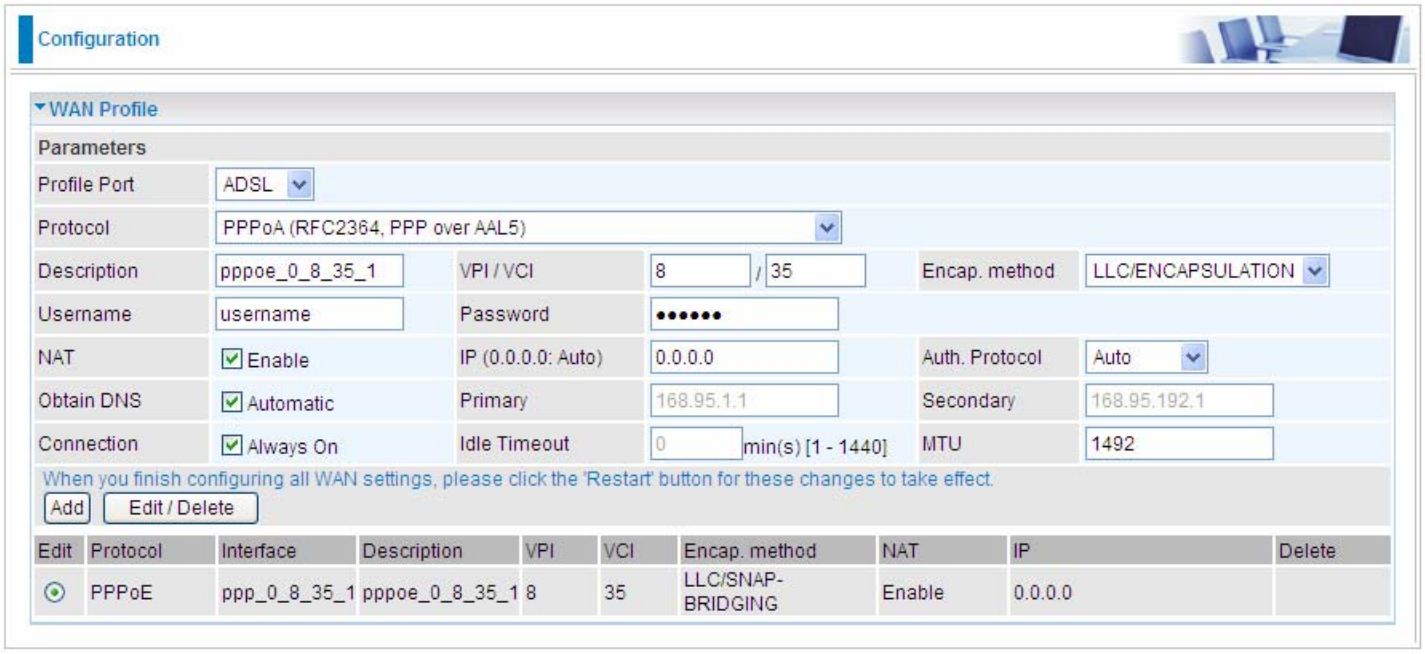
Idle Timeout: Auto-disconnect the broadband firewall gateway when there is no activity on the line for a predetermined period of time.

MTU: Control the maximum Ethernet packet size your PC will send.

MAC Spoofing: This option is required by some service Providers. You must fill the MAC address specified by your service provider when this information is required. The default setting is set to disable.

PPPoA (ADSL)

PPPoA stands for Point to Point Protocol over ATM Adaptation Layer 5 (AAL5). It provides access control and billing functions in a manner similar to dial-up services using PPP.



Description: A given name for the connection.

VPI/VCI: Enter the information provided by your ISP.

Encap. method: Select the encapsulation format. Select the one provided by your ISP.

Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single IP account by sharing a single IP address. If users on your LAN have their own public IP addresses to access the Internet, NAT function can be disabled.

IP (0.0.0.0:Auto): Your WAN IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Auth. Protocol: Default is Auto. Please consult your ISP on whether to use Chap, Pap or MSCHAP.

Obtain DNS: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address of a specific domain name. Check the checkbox to obtain DNS automatically.

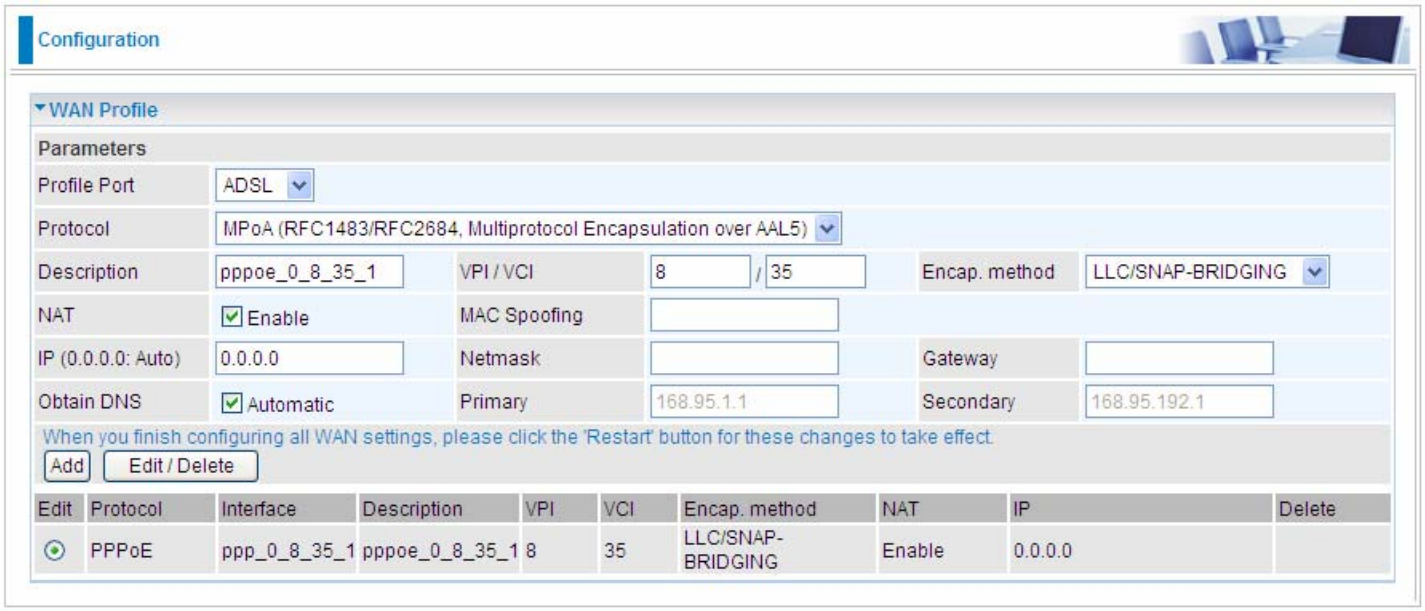
Primary DNS / Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the Netmask.

Connection: Click on **Always on** to establish a PPPoE session during start up and to automatically re-establish the PPPoE session when disconnected by the ISP. You may uncheck the item to disable this function.

Idle Timeout: Auto-disconnect the broadband firewall gateway when there is no activity on the line for a predetermined period of time.

MTU: Control the maximum Ethernet packet size your PC will send.

MPoA (ADSL)



Description: A given name for the connection.

VPI/VCI: Enter the VPI and VCI information provided by your ISP.

Encap. method: Select the encapsulation format. Select the one provided by your ISP.

NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single ISP account by sharing a single IP address. If users on your LAN have their own public IP addresses to access the Internet, NAT function can be disabled.

MAC Spoofing: This option is required by some service Providers. You must fill the MAC address specified by your service provider when this information is required. The default setting is set to disable.

IP (0.0.0.0:Auto): Your WAN IP address. If the IP is set to 0.0.0.0 (auto IP detect), both Netmask and gateway can be left blank.

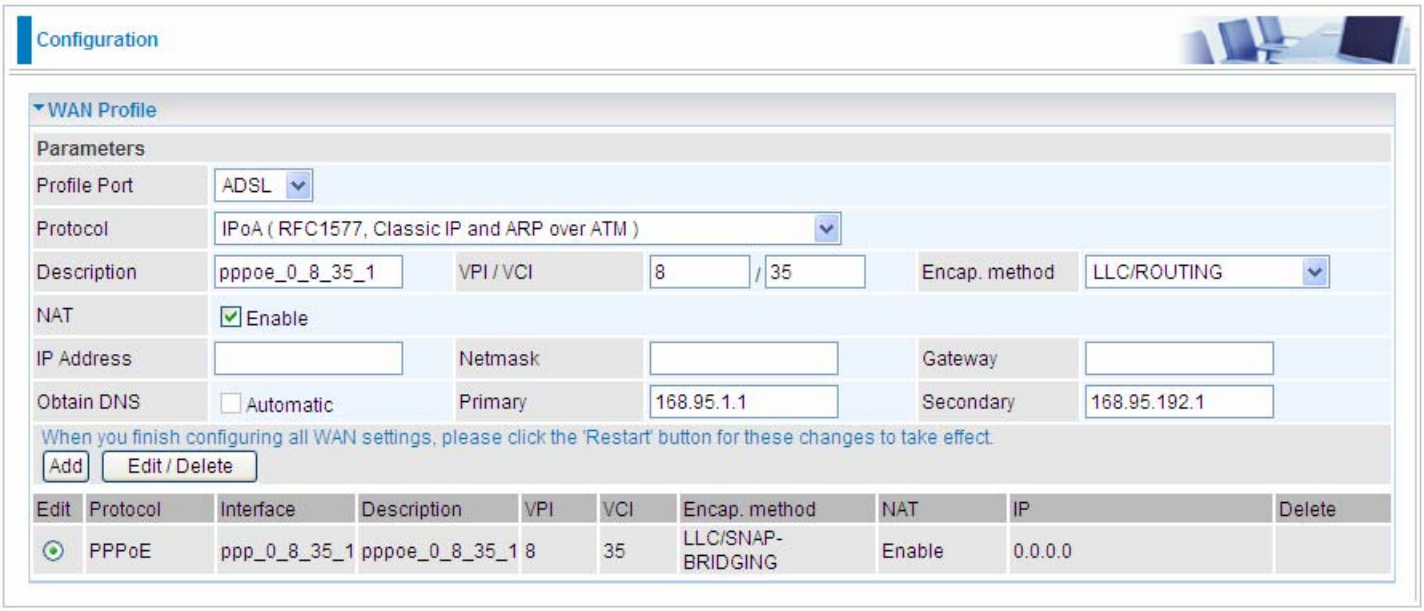
Netmask: User can change it to other such as 255.255.255.128. Type the Netmask assigned to you by your ISP (if given)

Gateway: Enter the IP address of the default gateway.

Obtain DNS: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address of a specific domain name. Check the checkbox to obtain DNS automatically.

Primary DNS / Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the Netmask.

IPoA (ADSL)



Description: A given name for the connection.

VPI/VCI: Enter the VPI and VCI information provided by your ISP.

Encap. method: Select the encapsulation format. Select the one provided by your ISP.

NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single ISP account by sharing a single IP address. If users on your LAN have their own public IP addresses to access the Internet, NAT function can be disabled.

IP Address: Enter your fixed IP address.

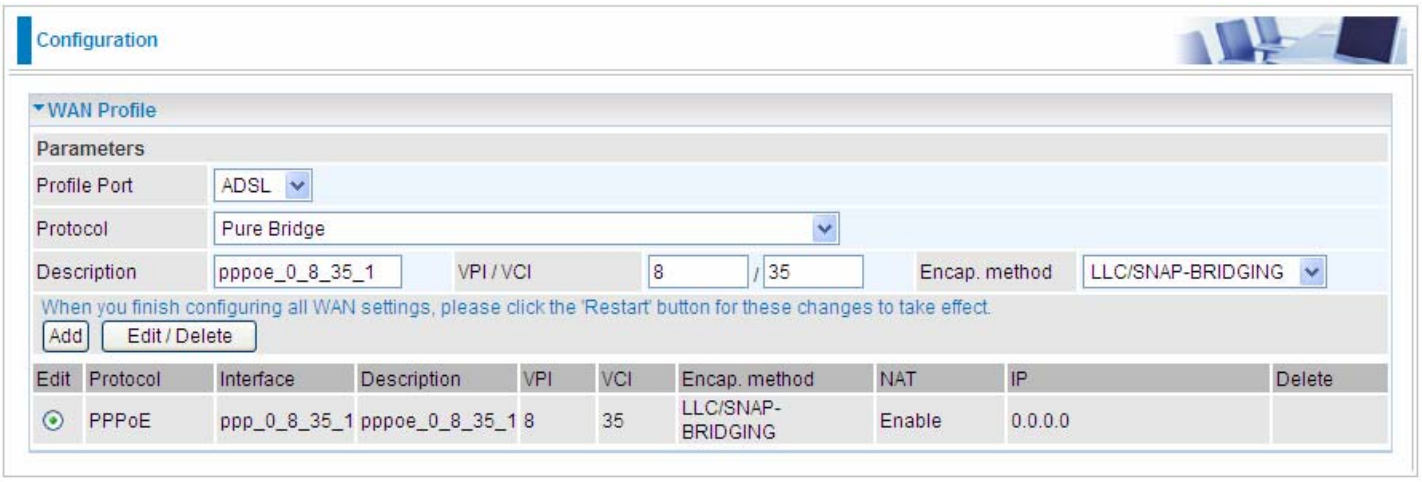
Netmask: User can change it to other such as 255.255.255.128. Type the Netmask assigned to you by your ISP (if given).

Gateway: Enter the IP address of the default gateway.

Obtain DNS Automatically: Select this check box to activate DNS.

Primary DNS / Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the Netmask.

Pure Bridge (ADSL)

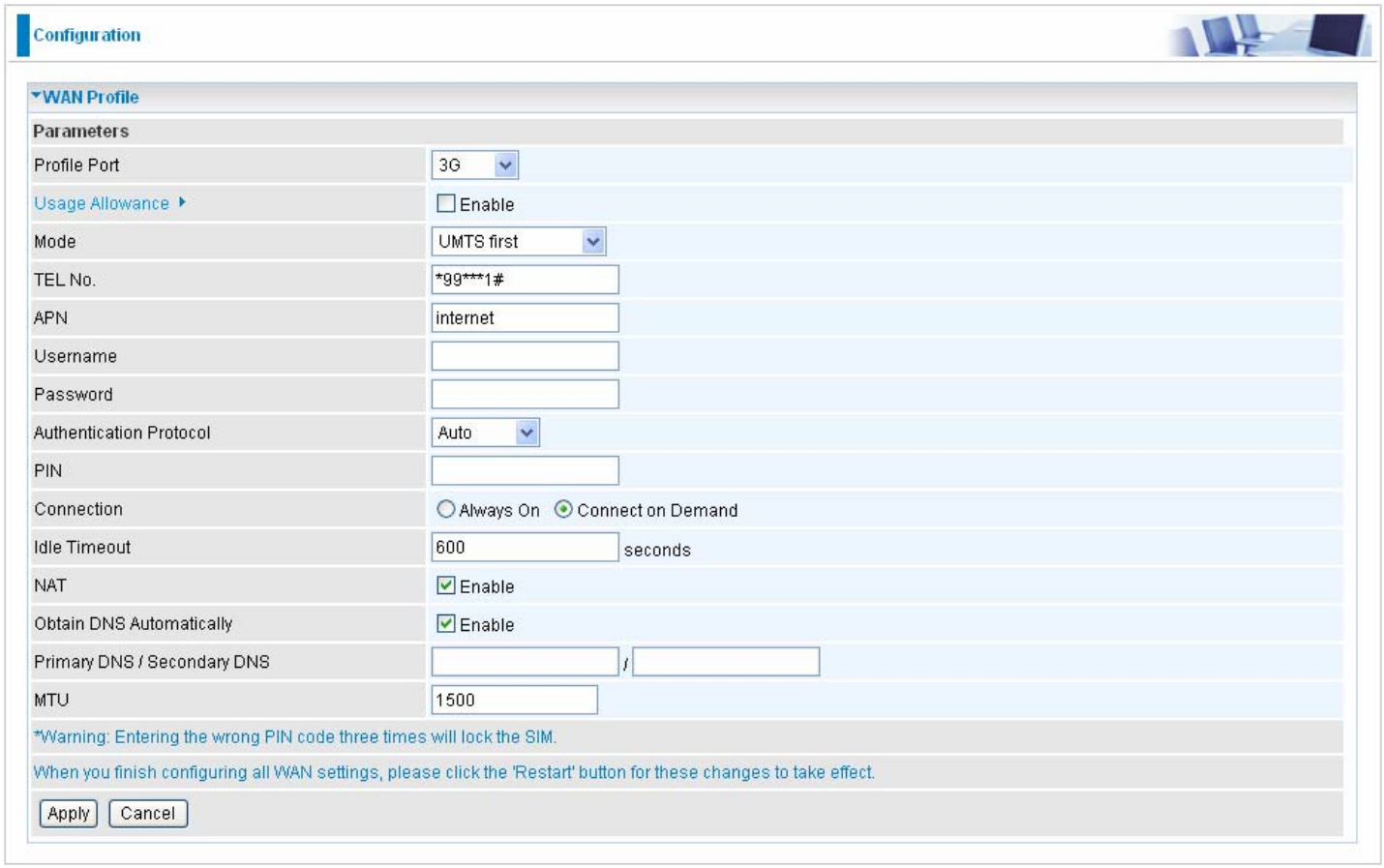


Description: A given name for the connection.

VPI/VCI: Enter the VPI and VCI information provided by your ISP.

Encap. method: Select the encapsulation format. Select the one provided by your ISP.

WAN Profile – Main Port (3G)



Usage Allowance: to control 3G flow, click it to further configure about 3G flow, refer to the following **3G Usage Allowance** for more information.

Mode: There are 5 options of phone service standards: GSM only, UTMS only, GPRS/EDGE first, UMTS first, and Automatic. If you are uncertain what services are available to you, then please select Automatic.

TEL No.: The dial string to make a GPRS / 3G user internetworking call. It may provide by your mobile service provider.

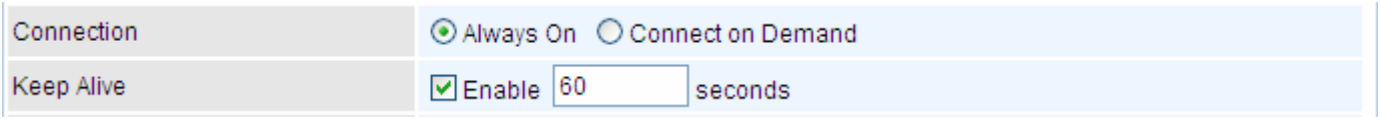
APN: An APN is similar to a URL on the WWW, it is what the unit makes a GPRS / UMTS call. The service provider is able to attach anything to an APN to create a data connection, requirements for APNs varies between different service providers. Most service providers have an internet portal which they use to connect to a DHCP Server, thus giving you access to the internet i.e. some 3G operators use the APN 'internet' for their portal. The default value is "internet".

Username/Password: Enter the username and password provided by your service provider. The username and password are case sensitive.

Authentication Protocol: Default is Auto. Please consult your service provider on whether to use PAP, CHAP or MSCHAP.

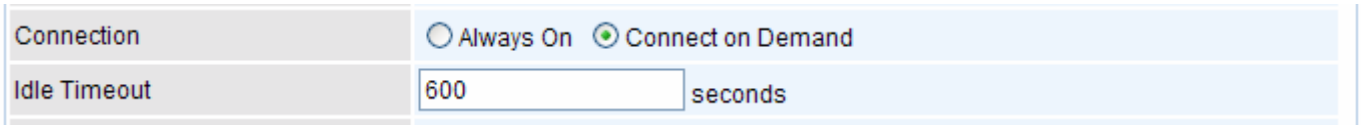
PIN: PIN stands for Personal Identification Number. A PIN code is a numeric value used in certain systems as a password to gain access, and authenticate. In mobile phones a PIN code locks the SIM card until you enter the correct code. If you enter the PIN code incorrectly into the phone 3 times in a row, then the SIM card will be blocked and you will require a PUK code from your network/ service provider.

Connection:



Always On: The router will make UMTS/GPRS call when starting up. Click on Always On, the Keep Alive field will display.

Keep Alive: Check Enable to allow the router automatically reconnects the connection when ISP disconnects it.



Connect on Demand: If you want to make UMTS/GPRS call only when there is a packet requesting access to the Internet (i.e. when a program on your computer attempts to access the Internet). In this mode, you must set Idle Timeout value at same time. Click on Connect on Demand, the Idle Timeout field will display.

Idle Timeout: Auto-disconnect the broadband firewall gateway when there is no activity on the line for a predetermined period of time. The idle timeout value is not allowed to be set under 10 seconds. Default is 600 seconds.

NAT: Check to enable the NAT function.

Obtain DNS Automatically: Select this check box to activate DNS automatically.

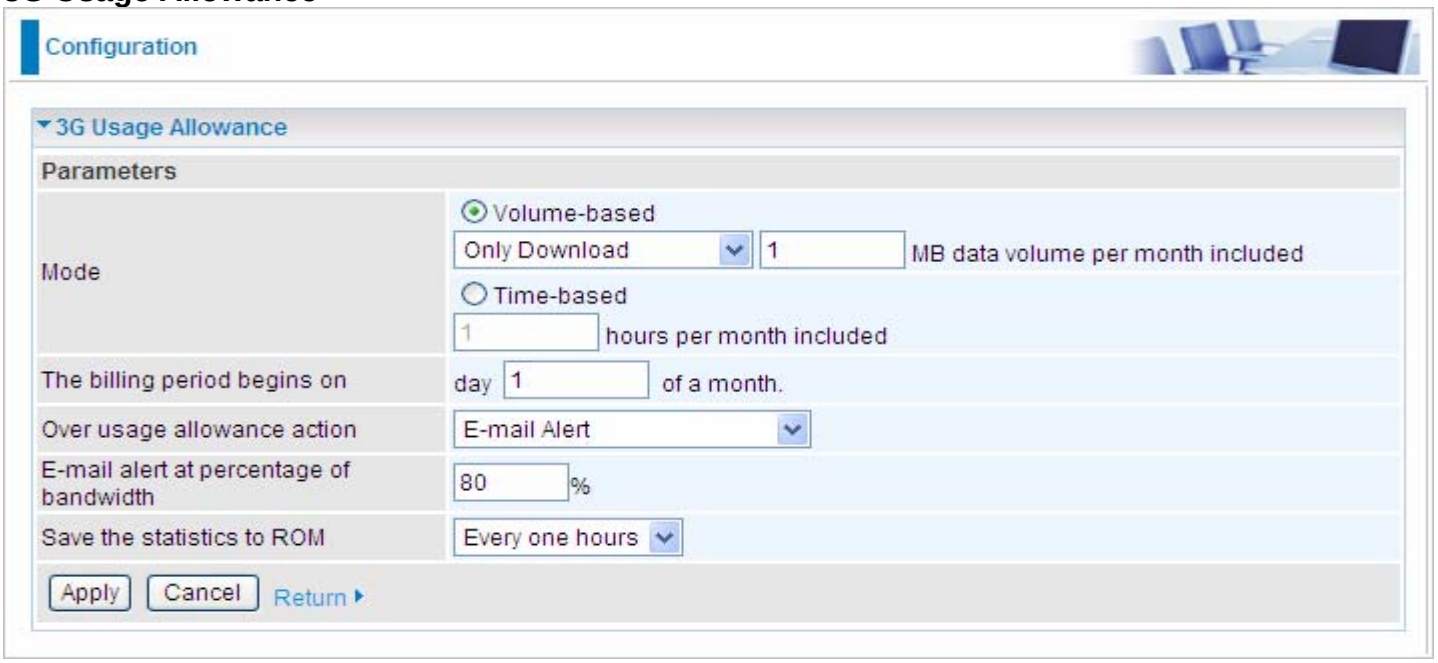
Primary DNS/ Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the Netmask.

MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

Click Apply to confirm the settings.

Note: If you don't know how to set these parameters, please keep them untouched.

3G Usage Allowance



Mode: include **Volume-based** and **Time-based** control.

Volume-based include “only Download”, ”only Upload” and “Download and Upload” to limit the flow.

Time-based control the flow by providing specific hours per month.

The billing period begins on: the beginning day of billing each month.

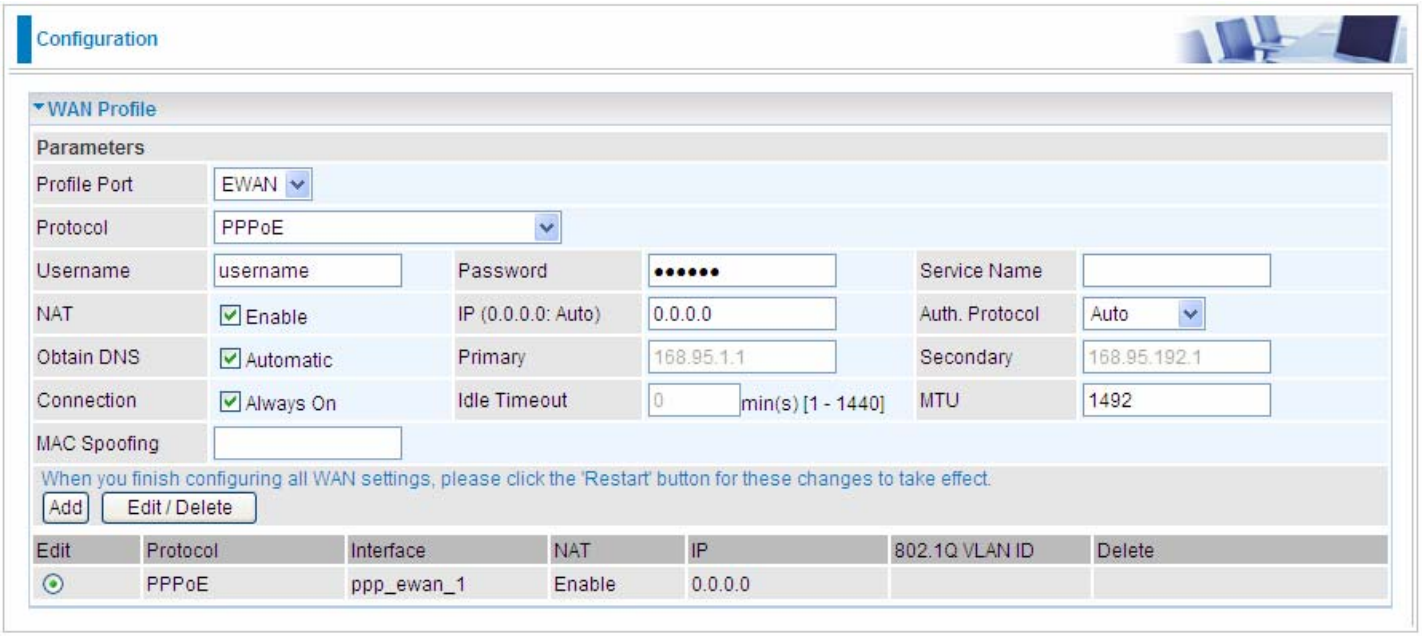
Over usage allowance action: what to do when the flow is over usage allowance, the available methods are “E-mail Alert”, ”Email Alert and Disconnect” and “Disconnect”.

E-mail alert at percentage of bandwidth: When the used bandwidth exceeds the set proportion, the system will send email to alert.

Save the statistics to ROM: to save the statistics to ROM system.

WAN Profile (EWAN)

PPPoE (EWAN)



Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

Service Name: This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single IP account by sharing a single IP address. If users on your LAN have their own public IP addresses to access the Internet, NAT function can be disabled.

IP (0.0.0.0:Auto): Your WAN IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Auth. Protocol: Default is Auto. Please consult your ISP on whether to use Chap, Pap or MSCHAP.

Obtain DNS: A Domain Name System (DNS) contains a mapping table for domain name and IP addresses. DNS helps to find the IP address of a specific domain name. Check the checkbox to obtain DNS automatically.

Primary DNS / Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the netmask.

Connection: Click on **Always on** to establish a PPPoE session during start up and to automatically re-establish the PPPoE session when disconnected by the ISP. You may uncheck the item to disable this function.

Idle Timeout: Auto-disconnect the broadband firewall gateway when there is no activity on the line for a predetermined period of time.

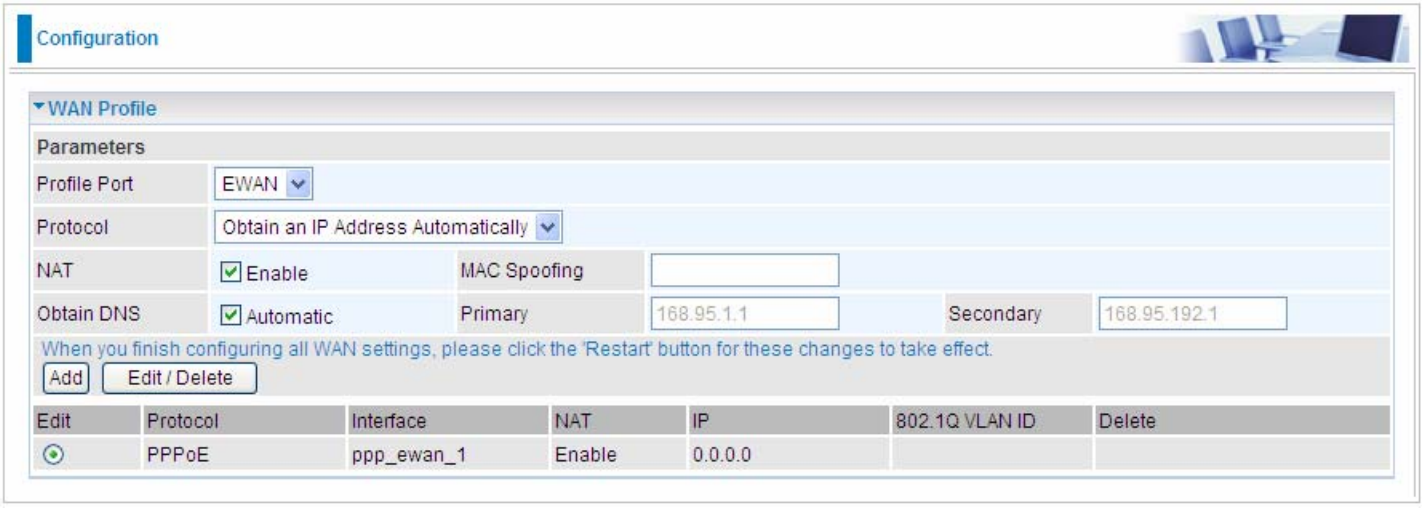
MTU: Control the maximum Ethernet packet size your PC will send.

MAC Spoofing: This option is required by some service Providers. You must fill the MAC address

specified by your service provider when this information is required. The default setting is set to disable.

Click Apply to confirm the settings.

Obtain an IP Address Automatically (EWAN)



NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single IP account by sharing the single IP address. If users on your LAN have their own public IP addresses to access the Internet, NAT function can be disabled.

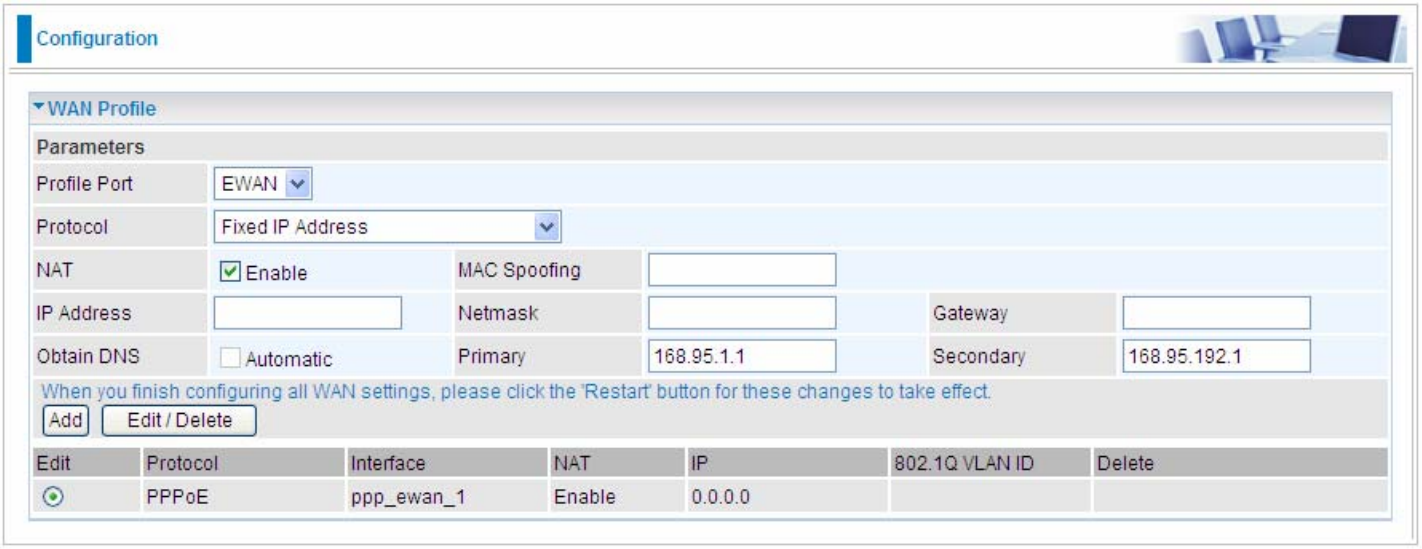
MAC Spoofing: This option is required by some service Providers. You must fill the MAC address specified by your service provider when this information is required. The default setting is set to disable.

Obtain DNS: Select this check box to activate DNS.

Primary DNS/ Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the Netmask.

Click Apply to confirm the settings.

Fixed IP Address (EWAN)



NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single IP account by sharing the single IP address. If users on your LAN have their own public IP addresses to access the Internet, NAT function can be disabled.

MAC Spoofing: This option is required by some service Providers. You must fill the MAC address specified by your service provider when this information is required. The default setting is set to disable.

IP Address: Enter your fixed IP address.

Netmask: User can change it to others such as 255.255.255.128. Type the Netmask assigned to you by your ISP (if given)

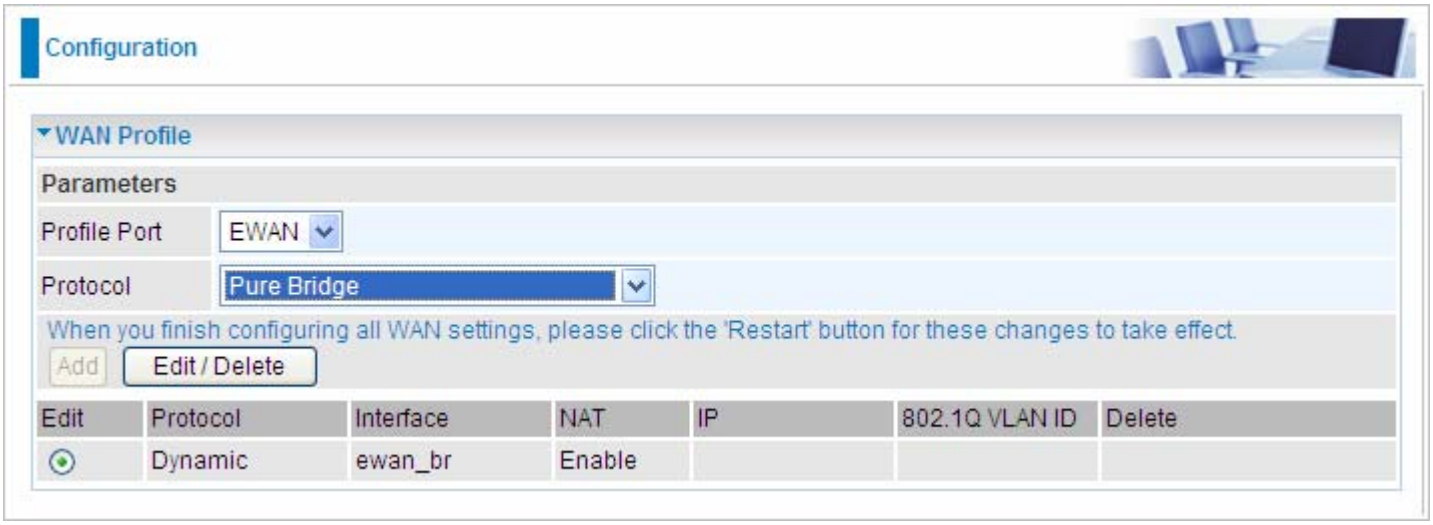
Gateway: Enter the IP address of the default gateway.

Obtain DNS: Select this check box to activate DNS.

Primary DNS/ Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the Netmask.

Click Apply to confirm the settings.

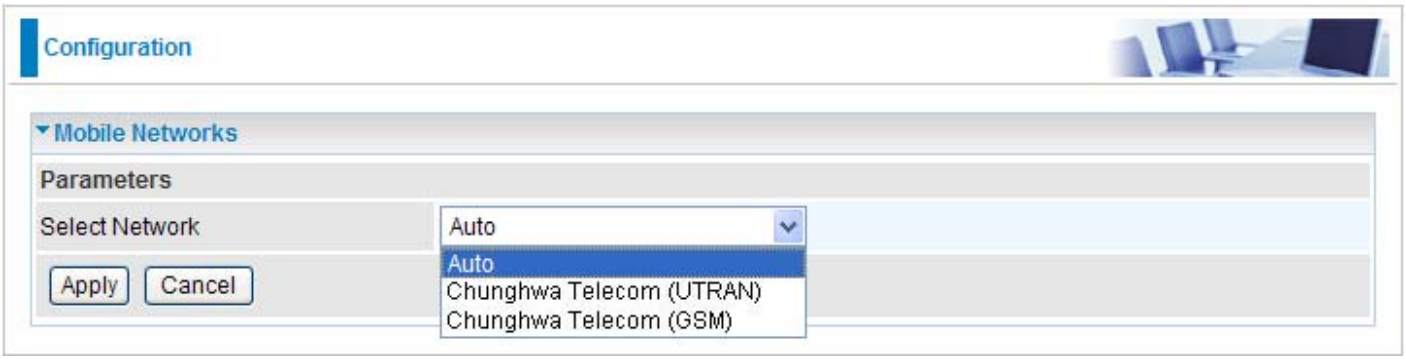
Pure Bridge (EWAN)



Profile Port: Select EWAN as the profile port.

Protocol: Select **Pure Bridge**.

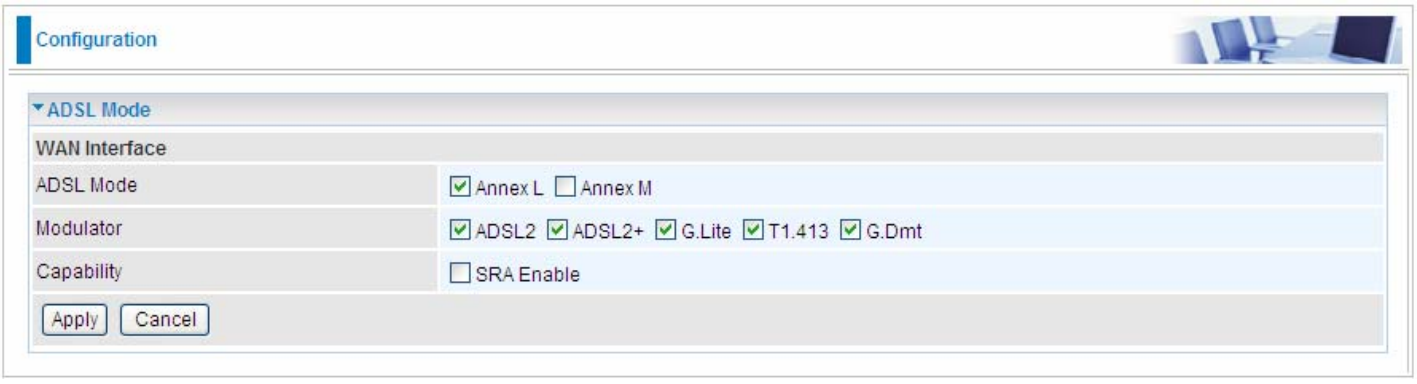
Mobile Networks



Select Network: Select the appropriate mobile network from the drop-down menu. Default is Auto.

Click Apply to confirm the settings.

ADSL Mode



ADSL Mode: There are 2 modes: Annex L and Annex M that you can select for this connection.

Modulator: There are 5 modes: ADSL2, ADSL2+, G.Lite, T1.413 and G.Dmt that you can select

for this connection.

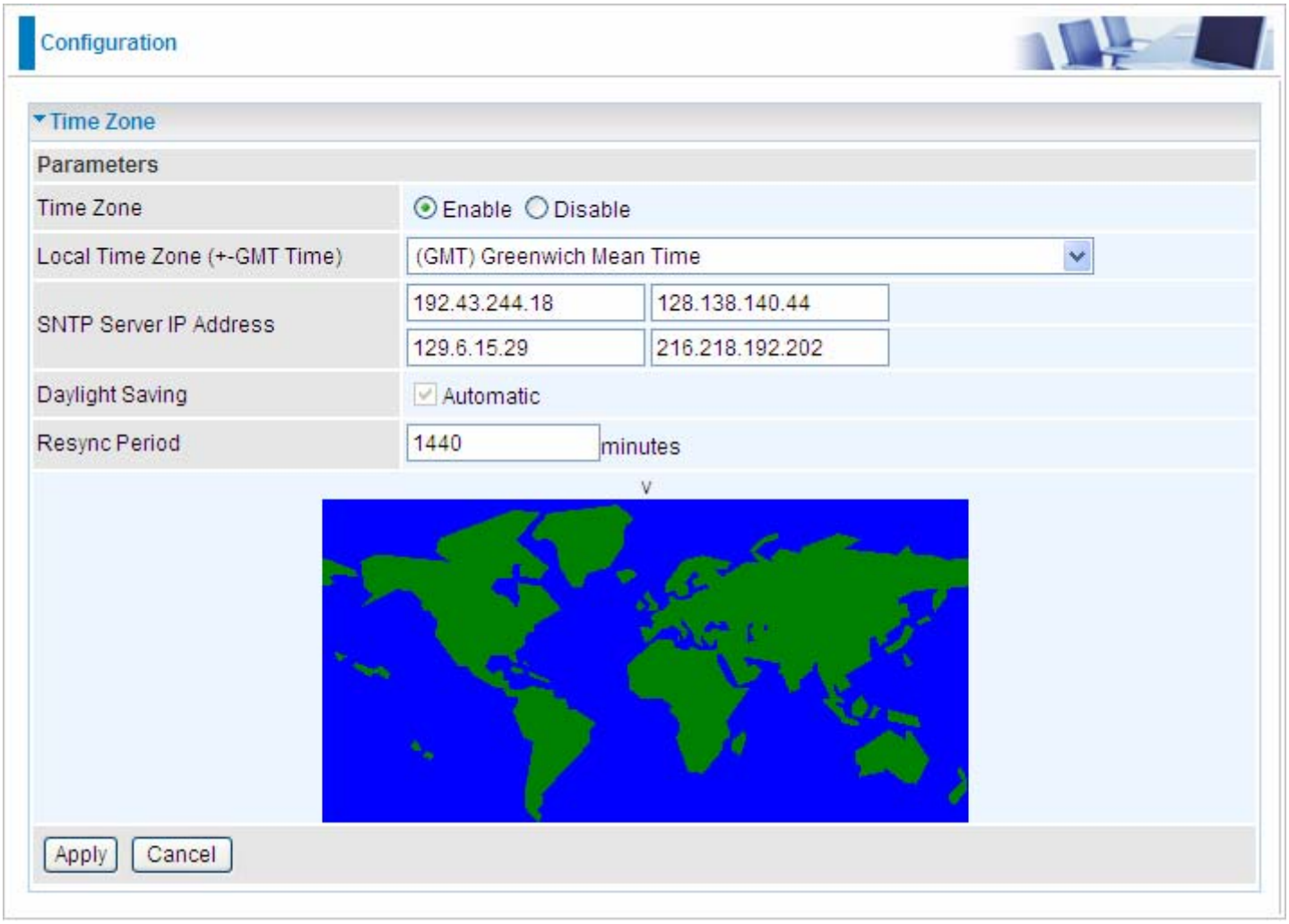
SRA: select whether to enable SRA feature. **SRA**, short for **S**eamless **R**ate **A**daptation, is a technology used to adapt the rate seamlessly without any influence to the working system, to assure of the quality of the ADSL system.

Click Apply to confirm the settings.

System

There are 5 items within the System section: **Time Zone**, **Firmware Upgrade**, **Backup/Restore**, **Restart, User Management**, **Mail Alert**, **Syslog** and **Diagnostics Tools**.

Time Zone



The router does not have a real time clock on board; instead, it uses the Simple Network Time Protocol (SNTP) to get the most current time from an SNTP server outside your network. Choose your local time zone from the drop down menu. To apply the selected local time zone, click Enable and click the Apply button. After a successful connection to the Internet, the router will retrieve the correct local time from the SNTP server you have specified. If you prefer to specify an SNTP server other than those in the drop-down list, simply enter its IP address in their appropriate blanks provided as shown above. Your ISP may also provide an SNTP server for you to use.

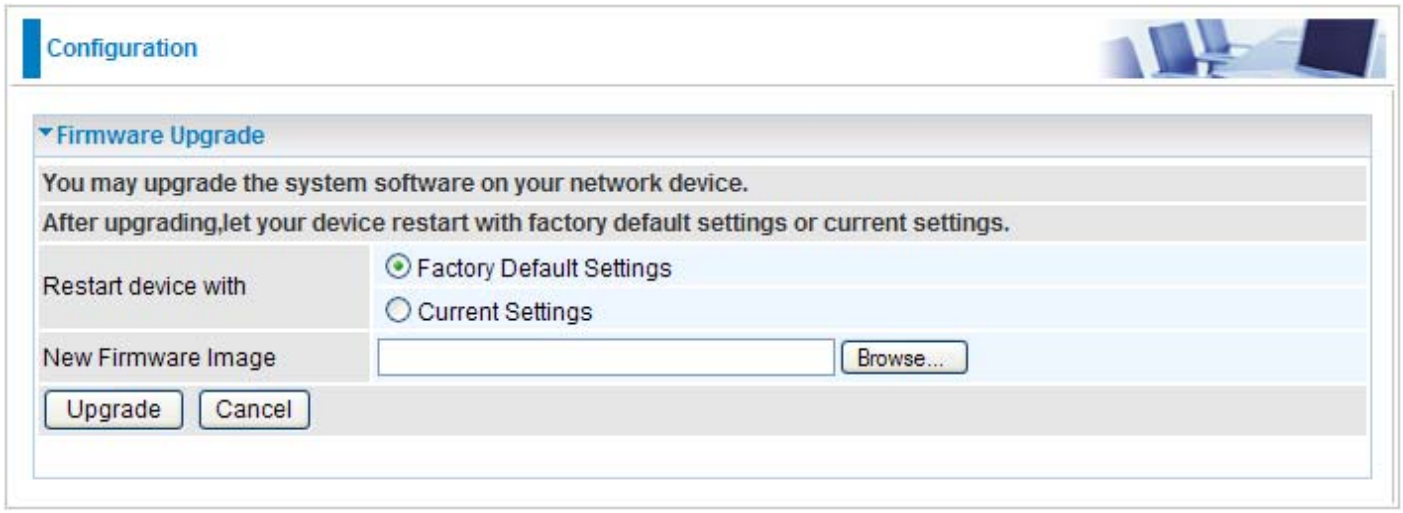
Daylight Saving is also known as Summer Time Period. Many places in the world adapt it during summer time to move one hour of daylight from morning to the evening in local standard time. Check Enable box to set your local time.

Resync Period (in minutes) is the periodic interval the router will wait before it re-synchronizes the router's time with that of the specified SNTP server. In order to avoid unnecessarily increasing the load on your specified SNTP server you should keep the poll interval as high as possible - at the absolute minimum every few hours or even days.

Click Apply to confirm the settings.

Firmware Upgrade

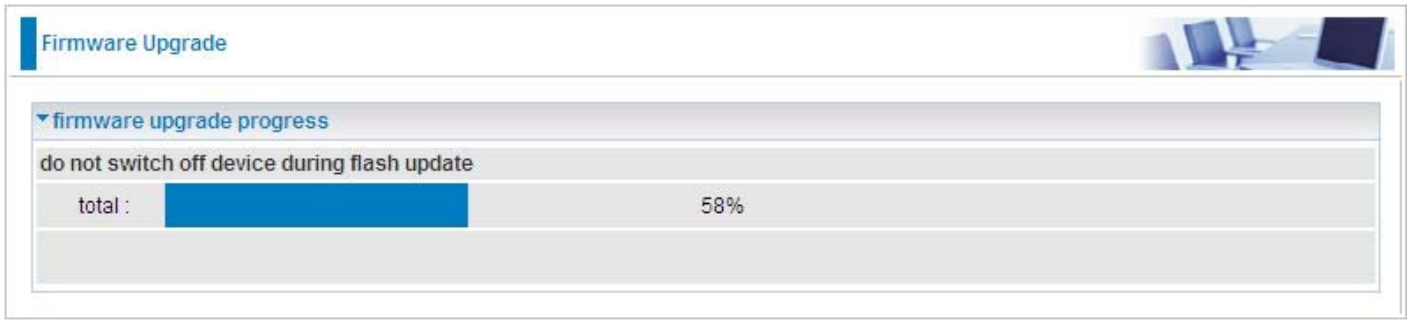
Your router's firmware is the software that enables it to operate and provides all its functionality. Think of your router as a dedicated computer, and the firmware as the software that runs in your router. Thus, by upgrading the newly improved version of the firmware allows you the advantage to use newly integrated features.

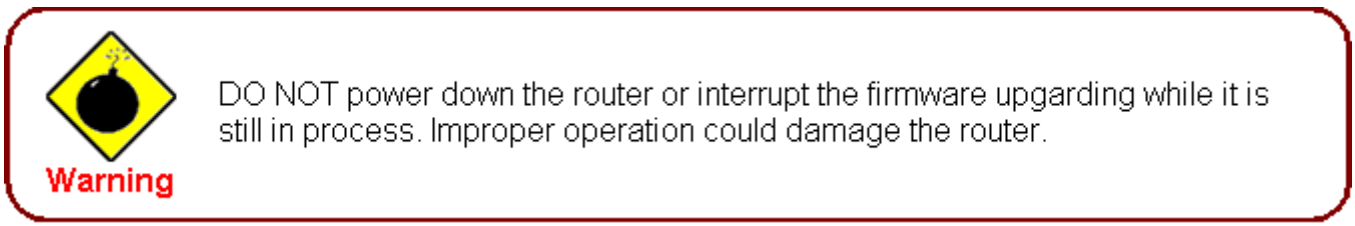


Factory Default Settings: If select this setting, the device will reboot to restore the parameters of all its applications to its default values.

Current Settings: If select this setting, the device will reboot and retain the customized settings of all applications.

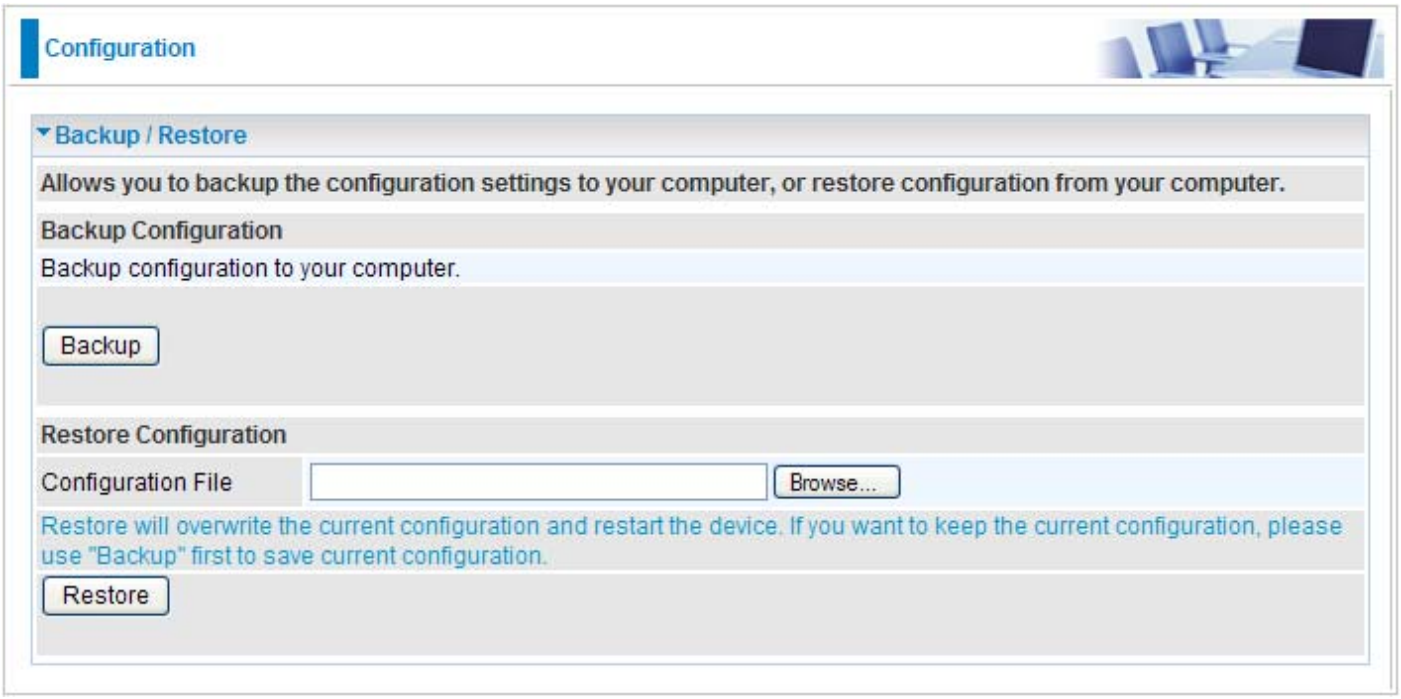
Click on Browse to select the new firmware image file you have downloaded to your PC. Once the correct file is selected, click Upgrade to update the firmware to your router.





Backup / Restore

These functions allow you to save a backup of the current configuration of your router to a defined location on your PC, or to restore a previously saved configuration. This is useful if you wish to experiment with different settings, knowing that you have a backup in hand in case any mistakes occur. It is advisable that you backup your router configuration before making any changes to your router configuration.



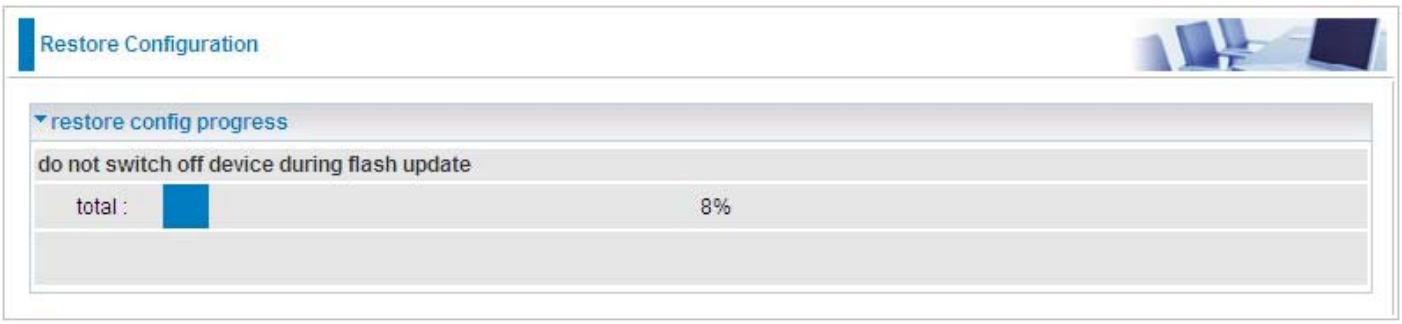
BackupConfiguration

Press Backup Settings to select where on your local PC you want to store your setting file. You may also want to change the name of the file when saving if you wish to keep multiple backups.

RestoreConfiguration

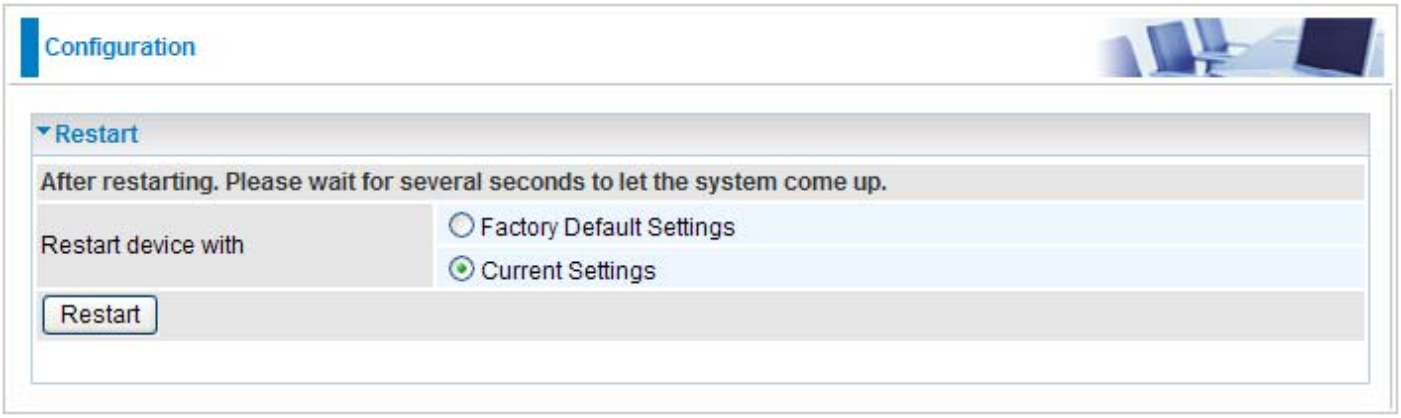
Press Browse to select a file from your PC to restore. You should only restore your router setting that has been generated by the Backup function which is created with the current version of the router firmware. Settings files saved to your PC should not be manually edited in any way.

Select the settings files you wish to use, and press Restore to load the setting into the router. Click Restore to begin restoring the configuration and wait for the router to restart before performing any actions.



Restart

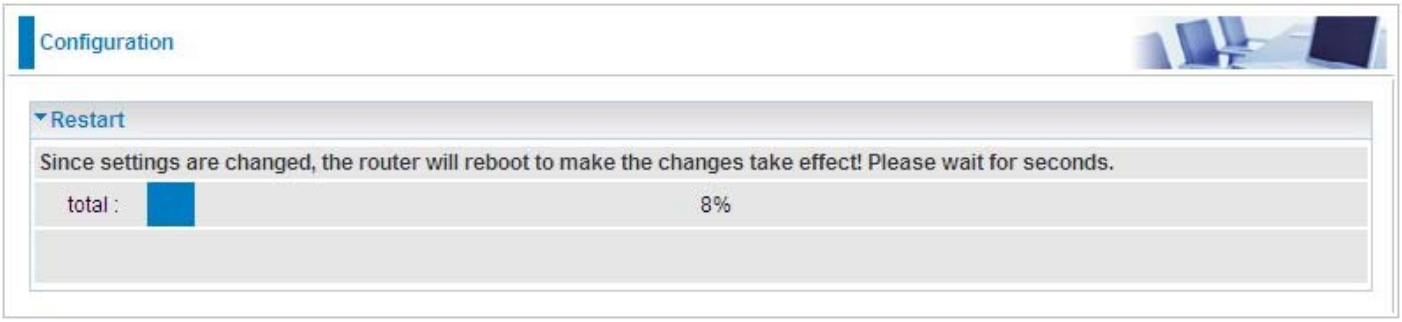
There are 2 options for you to choose from before restarting the 7800GZ(L) device. You can either choose to restart your device to restore it to the Factory Default Settings or to restart the device with your current settings applied. Restarting your device to Factory Default Setting will be useful especially after you have accidentally changed your settings that may result in undesirable outcome.



If you wish to restart the router using the factory default settings (for example, after a firmware upgrade or if you have saved an incorrect configuration), select Factory Default Settings to reset to factory default settings.

Click Restart with option Current Settings to reboot your router (and restore your last saved configuration).

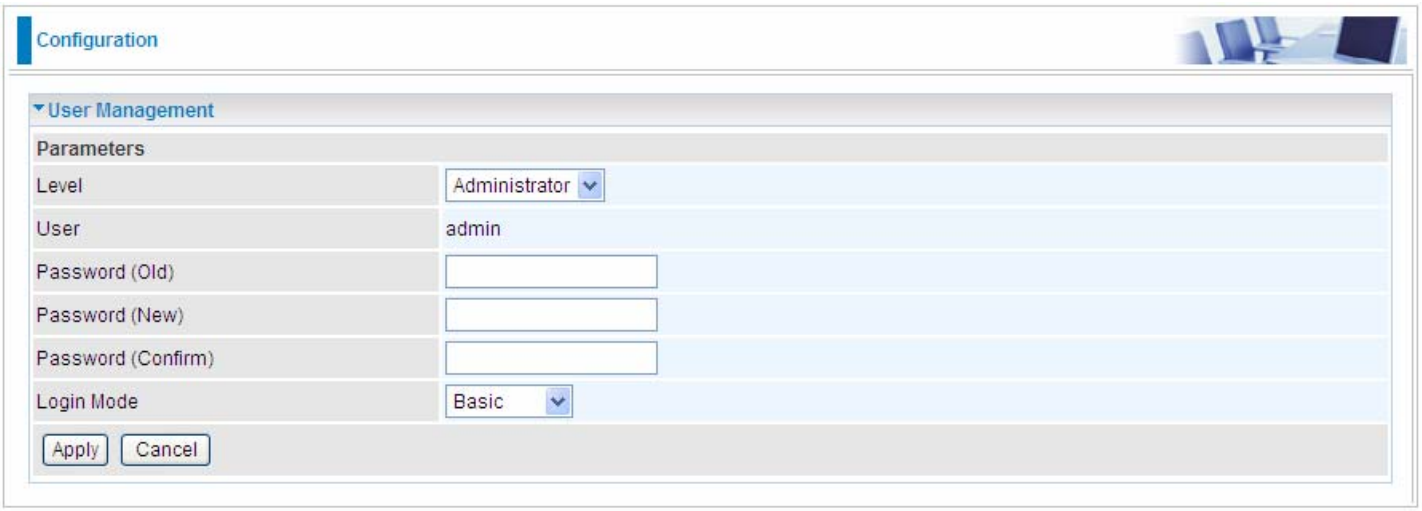
After selecting the type of setting you want the device to restart with, click the Restart button to initiate the process. After restarting, please wait several minutes to let the selected setting applied to the system.



You may also reset your router to factory settings by holding the small Reset pinhole button more than 1 second on the back of your router.

User Management

In order to prevent unauthorized access to your router configuration interface, it requires all users to login with a username and password. Three user levels are provided here. Each user level there's a default provided password. You must access the router with the appropriate username and password. Here the corresponding passwords are allowed to change. To change your password, simply enter the old password in the Old Password blank. Then enter your new password in the New Password and Confirm Password blanks provided. When this is done, press Apply to save changes.



Level: select which level you want to change password to. There are three default levels.

- **Administrator:** the root user, corresponding default username and password are admin and admin respectively.
- **Advanced:** username for the remote user to login, corresponding default username and password are support and support respectively.
- **Basic:** username for the general user, corresponding default username password are user and user respectivley.

User: display the usename.

Password (Old): Enter the old password.

Password (New): Enter the new password.

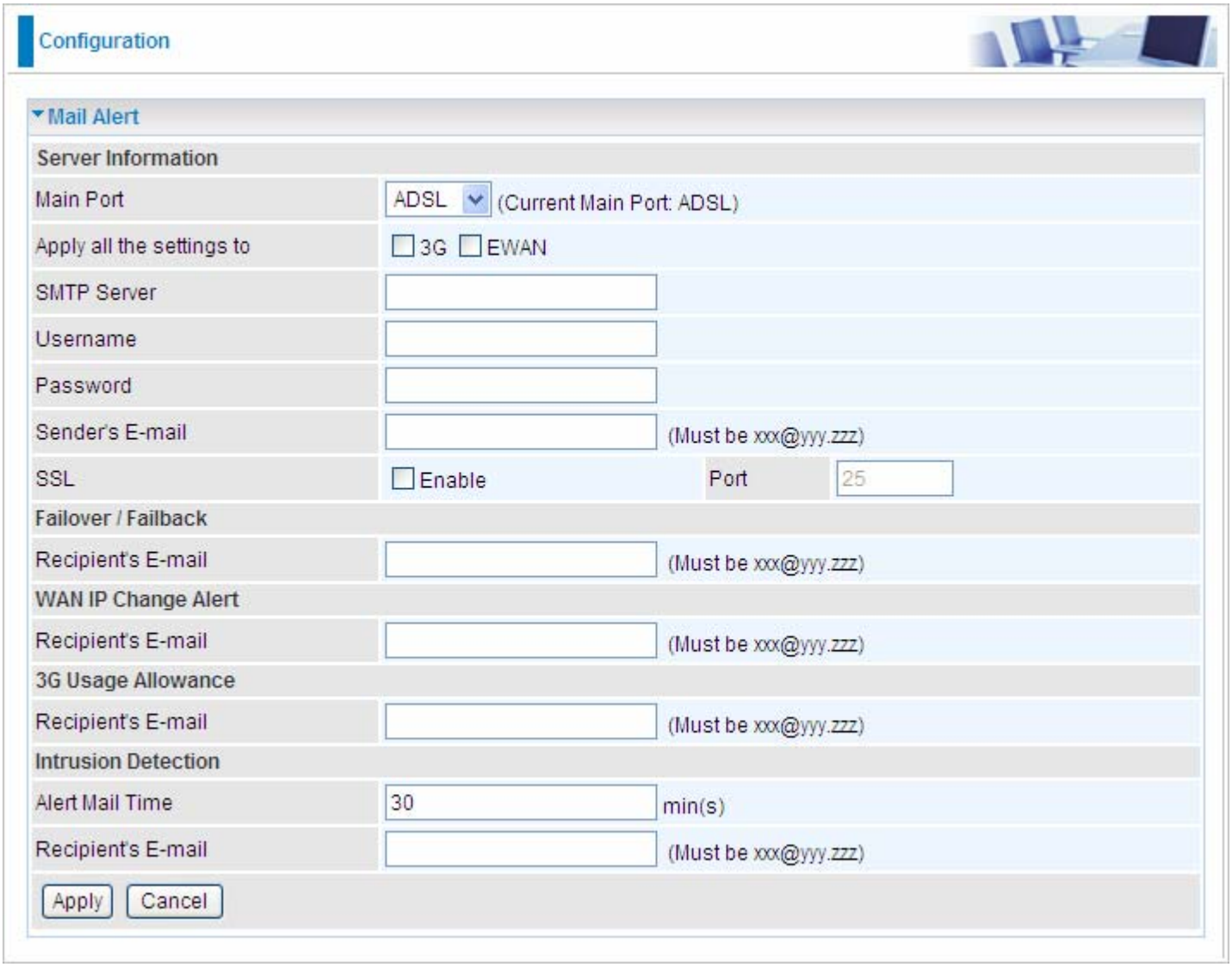
Password (Confirm): Enter again the new password to confirm.

Login Mode: choose to login to which Web GUI configuration page, Basic or Advanced. Basic will lead you to Basic configuration page, Advanced will lead you to Advanced configuration page.

Click Apply to apply your new settings.

Mail Alert

Mail alert is designed to keep system administrator or other relevant personnel alerted of any unexpected events that might have occurred to the network computers or server for monitoring efficiency. With this alert system, appropriate solutions may be tackled to fix problems that may have arisen so that the server can be properly maintained



Main Port: Choose the main port to be configured.

Apply all the settings to: Apply the settings for the current port to the other two ports.

SMTP Server: Enter the SMTP server that you would like to use for sending emails.

Username: Enter the username of your email account to be used by the SMTP server.

Password: Enter the password of your email account.

Sender's Email: Enter your email address.

SSL: Enable the option and input your port number if your email is encrypted by SSL.

Recipient's Email (Failover / Failback): Enter the email address that will receive the alert message once a computer / network server failover occurs.

Recipient's Email (WAN IP Change Alert): Enter the email address that will receive the alert

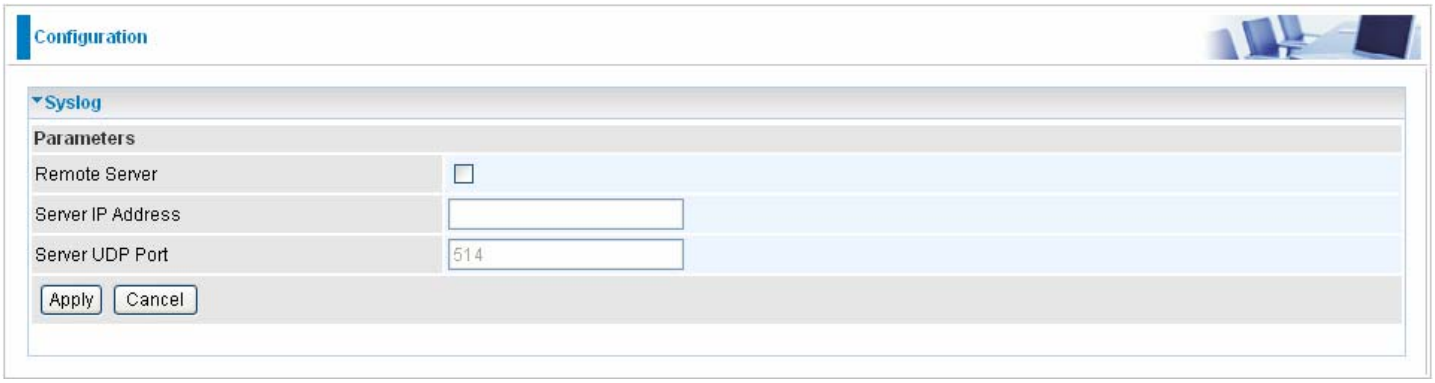
message once a WAN IP change has been detected.

Recipient's Email (3G Usage Allowance): Enter the email address that will receive the alert message once the 3G over Usage Allowance occurs.

Alert Mail Time (intrusion Detection): the interval for sending alert mail.

Recipient's Email (intrusion Detection): Enter the email address that will receive the alert message once the intrusion is detected.

Syslog

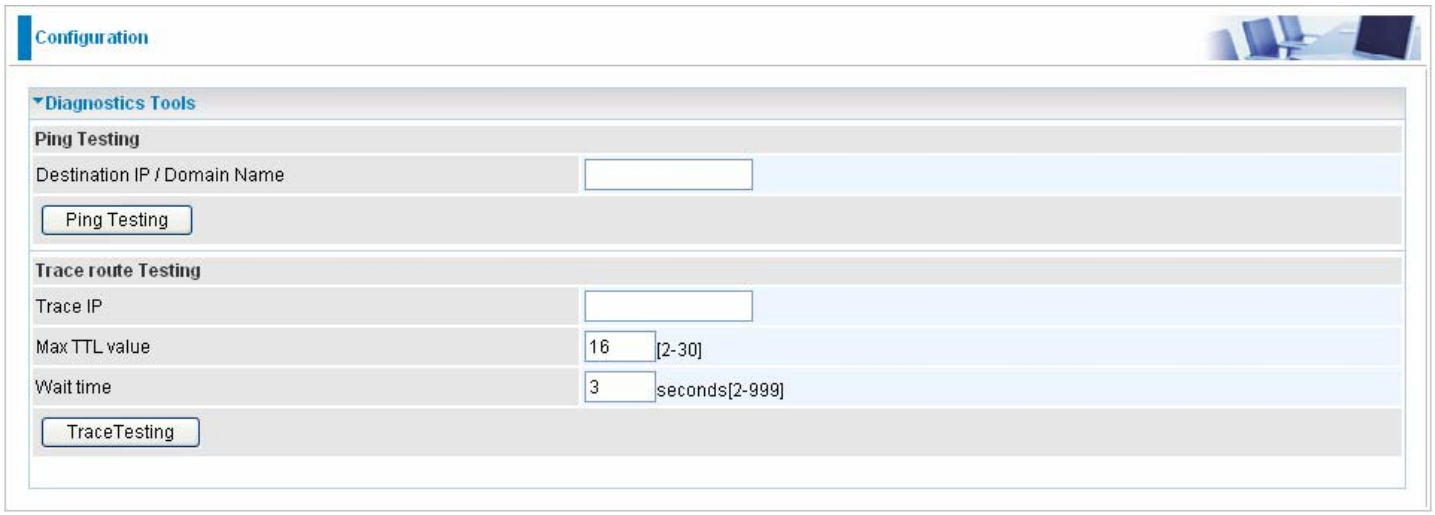


Remote Server: Specify the server that is used to save the device's syslog.

Server IP Address: The IP address of remote server.

Server UDP Port: The UDP Port of remote server.

Diagnostics Tools



Destination IP / Domain Name: Input the IP or domain name to be tested.

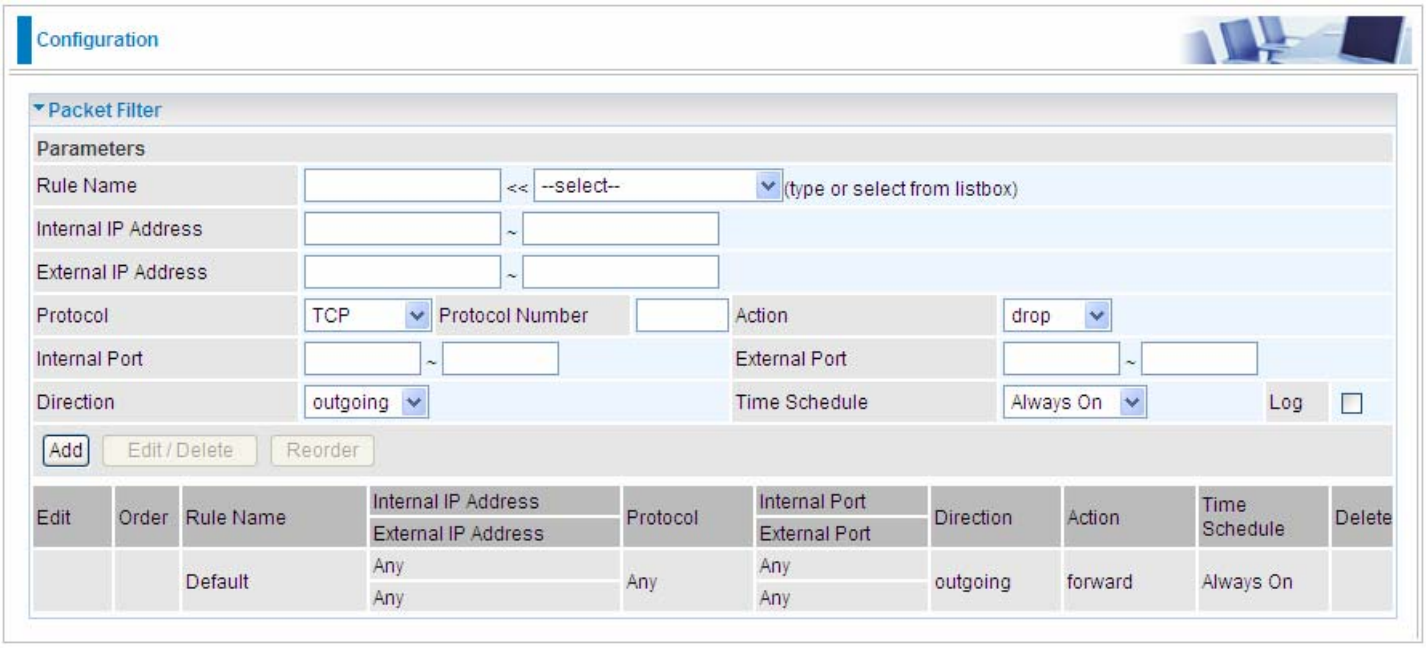
Trace IP: Input IP to be traced.

Firewall

Listed are the items under the Firewall section: **Packet Filter**, **Ethernet MAC Filter**, **Wireless MAC Filter**, **Intrusion Detection**, **Block WAN PING** and **URL Filter**.

Packet Filter

Packet filtering enables you to configure your router to block specific internal / external users (IP address) from Internet access, or disable specific service requests (Port number) to / from the Internet. This configuration program allows you to set up different filter rules for different users based on their IP addresses or their network Port number. The relationship among all filters is “or” operation, which means that the router checks these different filter rules one by one, starting from the first rule. As long as one of the rules is satisfied, the specified action will be taken.



Rule Name: User defined description for entry identification. The maximum name length is 32 characters, and then can choose an application that they want from the listbox.

Internal IP Address / External IP Address: This is the Address-Filter used to allow or block traffic to/rom particular IP address(es). Input the range you want to filter out. If you leave these four fields empty or enter 0.0.0.0, it means any IP address.

Protocol: Specify the packet type (TCP, UDP, TCP/UDP,RAW, Any) that the rule applies to. Select TCP if you wish to search for the connection-based application service on the remote server using the port number. Or select UDP if you want to search for the connectionless application service on the remote server using the port number. Only when **RAW** is selected, then you can type the protocol number to identify the protocol that you want the filter applies to. When **Any** is selected, it means the filter will applies to any protocol.

Protocol Number: when **RAW** is selected in **Protocol** field, then type the specific protocol number here.

Action: If a packet matches this filter rule, forward (allows the packets to pass) or drop (disallow the packets to pass) this packet.

Internal Port: This Port or Port Range defines the ports allowed to be used by the Remote/WAN to connect to the application. Default is set from range 1 ~ 65535. It is recommended that this option be configured by an advanced user.

External Port: This is the Port or Port Range that defines the application.

Direction: Determine whether the rule is for outgoing packets or for incoming packets.

Time Schedule: A self defined time period. You may specify a time schedule for your prioritization policy. For setup and detail, refer to Time Schedule section.

Log: Select Enable for this option if you will like to capture the logs for this Packet filter policy.

Add: Click this button to add a new packet filter rule and the added rule will appear at the bottom table.

Edit: Check Edit next to the item you wish to edit, and then change parameters as desired. Complete it by press “Edit/Delete”.

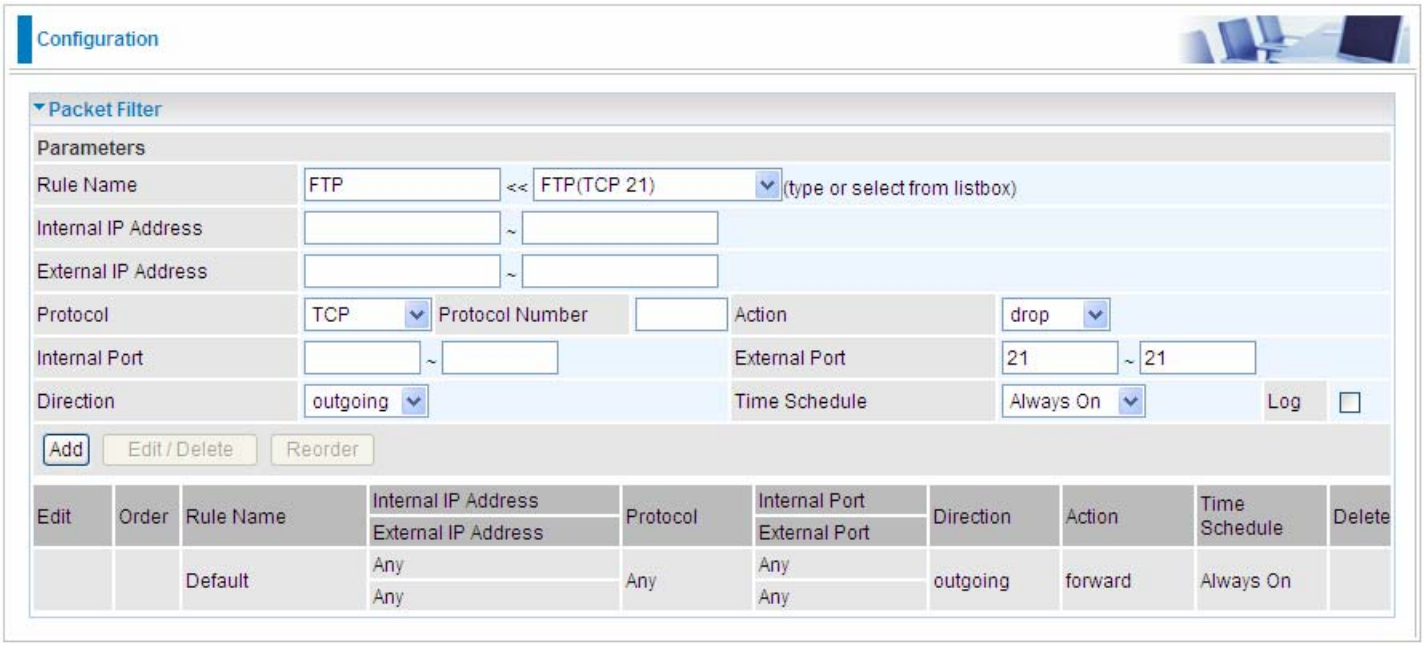
Delete: Check Delete next to the item you wish to delete, and press “Edit/Delete” to remove this rule.

Reorder: Be aware that packet filtering parameters appear in priority order i.e. the first one takes precedence over all other rules. There is a sort function next to the Rule Name column, you can move the rule to higher or lower priority by clicking the Order arrow, and press “Reorder” to save the new priority.

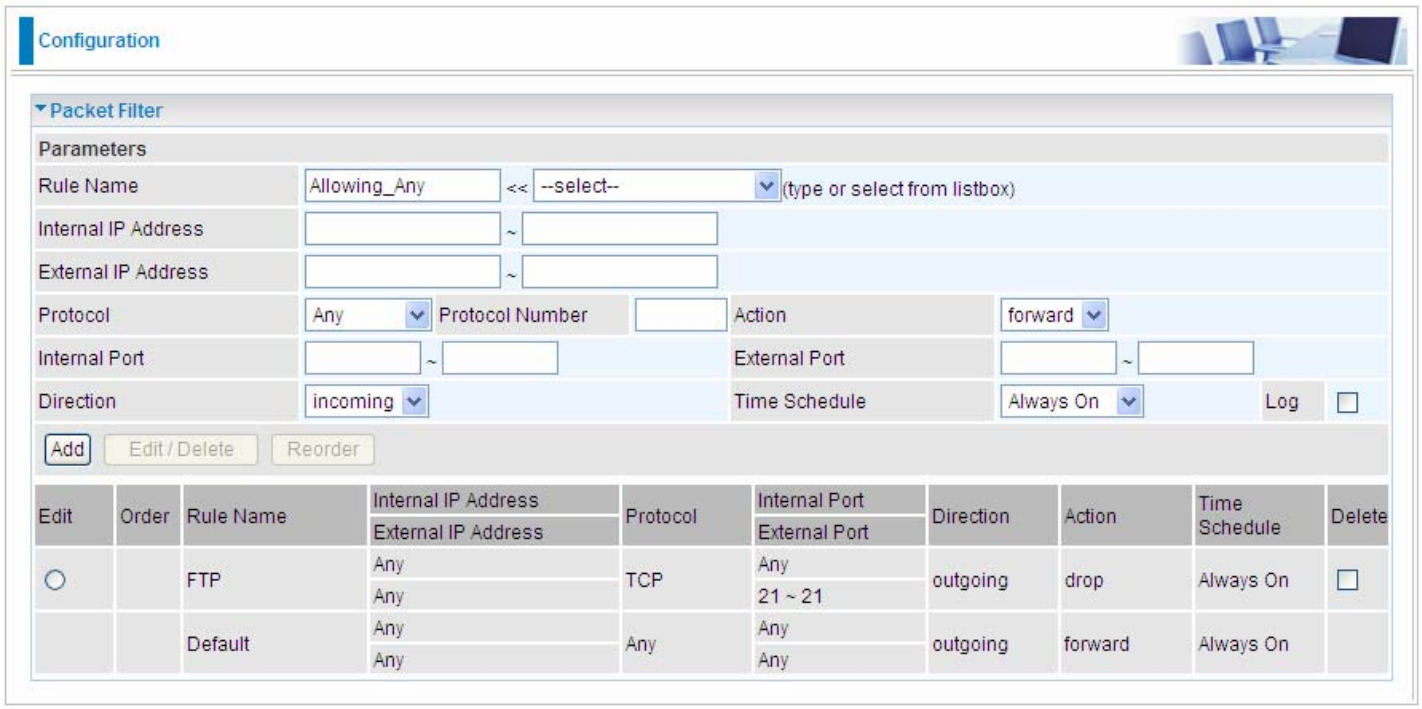
ⓘ Creating a rule

Select or type a rule name, set other parameters as needed, then press Add. (two examples as follows)

FTP:



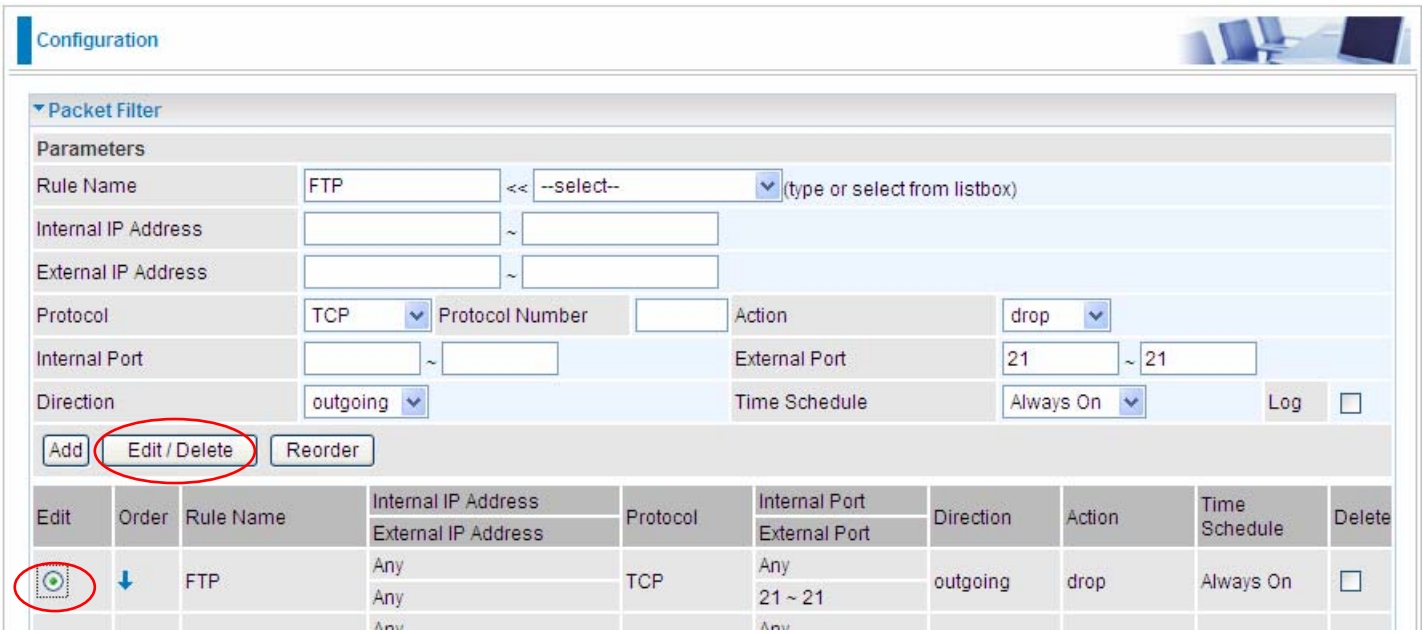
Allowing_Any (allowing any incoming packets to be forwarded in):



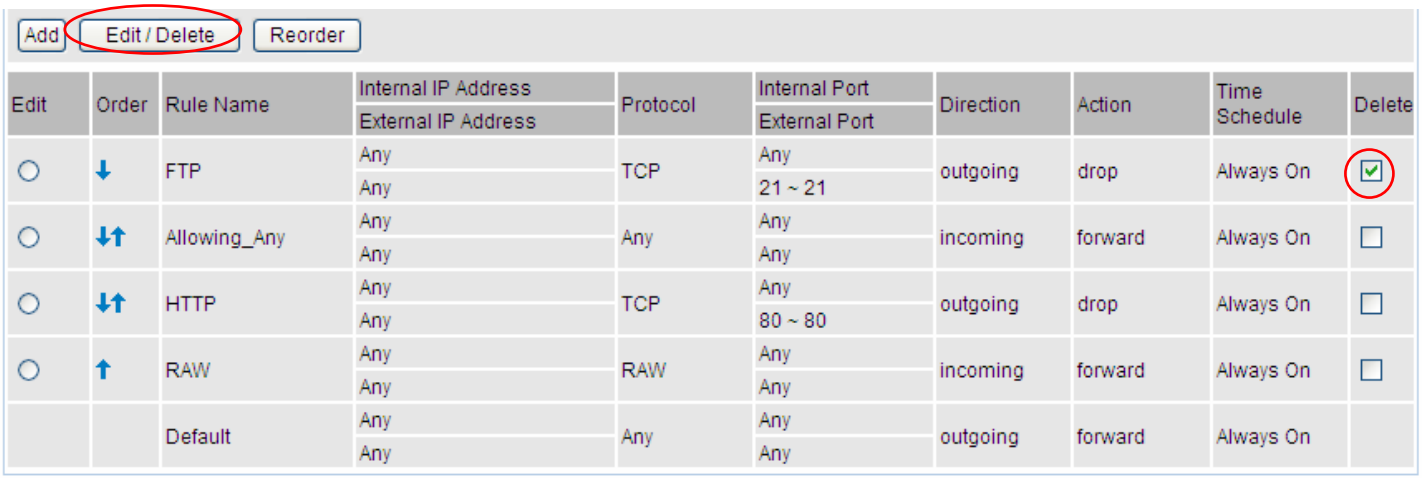
Edit	Order	Rule Name	Internal IP Address / External IP Address	Protocol	Internal Port / External Port	Direction	Action	Time Schedule	Delete
○	↓	FTP	Any / Any	TCP	Any / 21 ~ 21	outgoing	drop	Always On	☐
○	↑	Allowing_Any	Any / Any	Any	Any / Any	incoming	forward	Always On	☐
		Default	Any / Any	Any	Any / Any	outgoing	forward	Always On	

ⓘ Editing and Deleting

Editing: Press the Edit radio button beside the item, and change the parameters, then press Edit/Delete to confirm.



Deleting: Check the checkbox, press Edit/Delete, then the item will be removed.

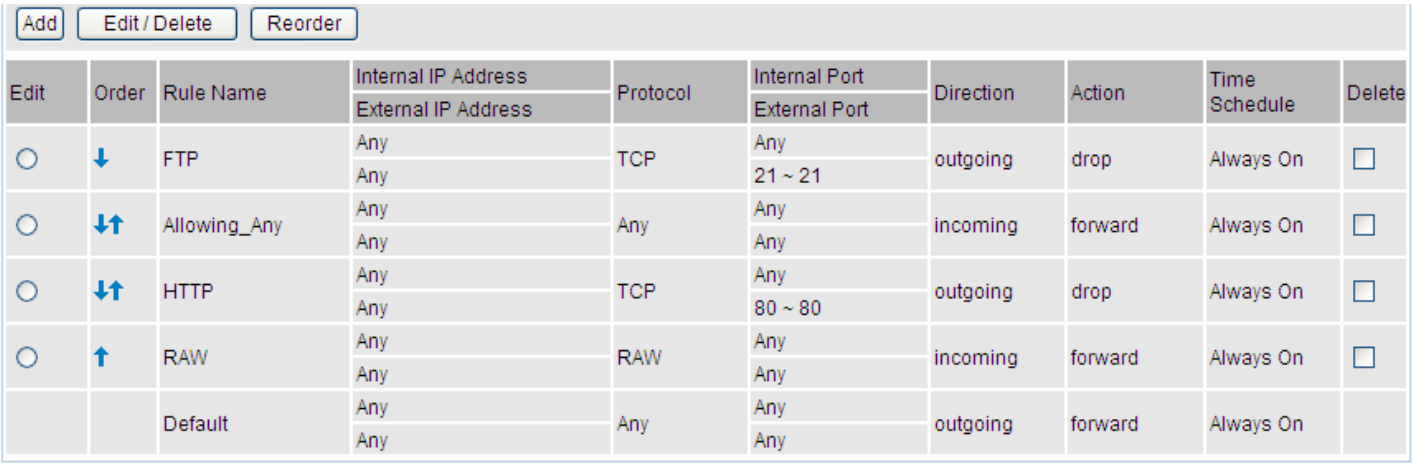


Add | Edit / Delete | Reorder

Edit	Order	Rule Name	Internal IP Address / External IP Address	Protocol	Internal Port / External Port	Direction	Action	Time Schedule	Delete
○	↓	FTP	Any / Any	TCP	Any / 21 ~ 21	outgoing	drop	Always On	☑
○	↓↑	Allowing_Any	Any / Any	Any	Any / Any	incoming	forward	Always On	☐
○	↓↑	HTTP	Any / Any	TCP	Any / 80 ~ 80	outgoing	drop	Always On	☐
○	↑	RAW	Any / Any	RAW	Any / Any	incoming	forward	Always On	☐
		Default	Any / Any	Any	Any / Any	outgoing	forward	Always On	

ⓘ Reorder

When there are more than one Filter rule, you can reorder them to the priority you want. The former is prior to the latter one.



Add | Edit / Delete | Reorder

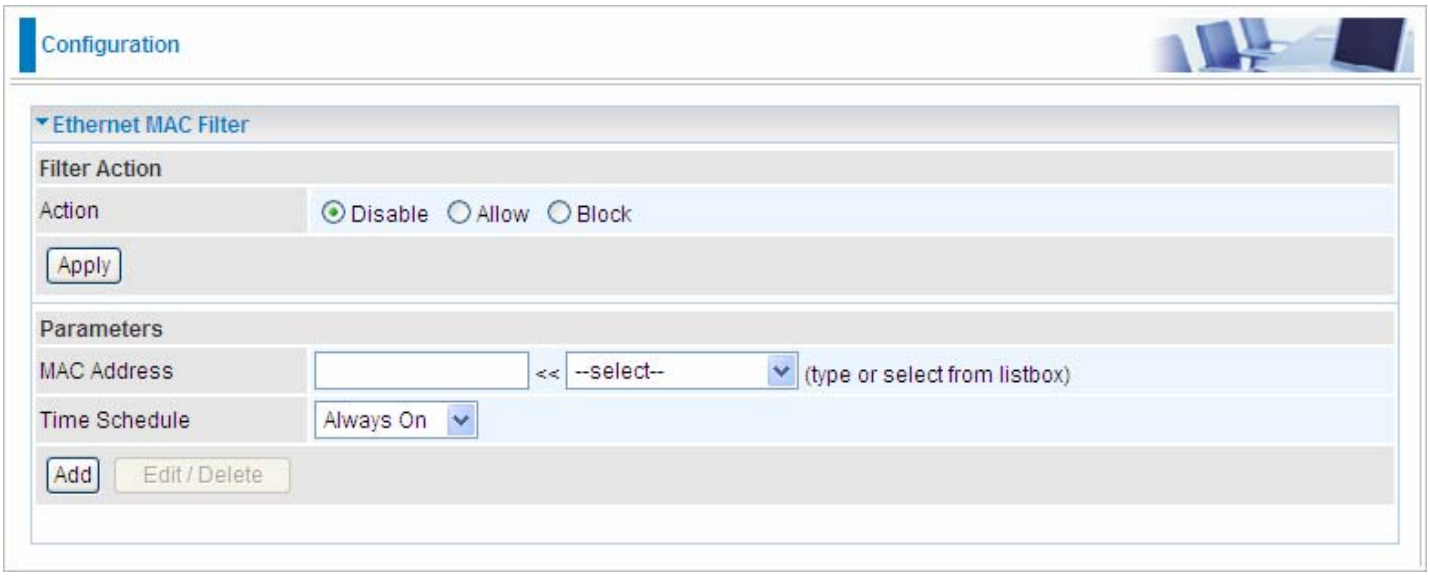
Edit	Order	Rule Name	Internal IP Address / External IP Address	Protocol	Internal Port / External Port	Direction	Action	Time Schedule	Delete
○	↓	FTP	Any / Any	TCP	Any / 21 ~ 21	outgoing	drop	Always On	☐
○	↓↑	Allowing_Any	Any / Any	Any	Any / Any	incoming	forward	Always On	☐
○	↓↑	HTTP	Any / Any	TCP	Any / 80 ~ 80	outgoing	drop	Always On	☐
○	↑	RAW	Any / Any	RAW	Any / Any	incoming	forward	Always On	☐
		Default	Any / Any	Any	Any / Any	outgoing	forward	Always On	

Click ↓ or ↑ to change the priority of the filter, then press **Reorder** to confirm.

Ethernet MAC Filter

A MAC (Media Access Control) address is the unique network hardware identifier for each PC on your network's interface (i.e. its Network Interface Card or Ethernet card). Using your router's MAC Address Filter function, you can configure the network to block specific machines from accessing your LAN.

There are no pre-defined MAC address filter rules, you can add the filter rules to you're your requirements.



The format of MAC address could be: xx:xx:xx:xx:xx:xx or xx-xx-xx-xx-xx-xx.

Filter Action

Action: Select an action for MAC Filter. This feature is disabled by default. Check Allow or Block to activate the filter.

Parameters

MAC Address: Enter the Ethernet MAC addresses you wish to have the filter rule applied.

Time Schedule: A self defined time period. You may specify a time schedule for your prioritization policy. For setup and detail, refer to Time Schedule section.

Wireless MAC Filter

A MAC (Media Access Control) address is the unique network hardware identifier for each PC on your network's interface (i.e. its Network Interface Card or Ethernet card). Using your router's MAC Address Filter function, you can configure the network to block specific machines from accessing your LAN.

There are no pre-defined MAC address filter rules, you can add the filter rules to you're your requirements.

The format of MAC address could be: xx:xx:xx:xx:xx:xx or xx-xx-xx-xx-xx-xx.

Filter Action

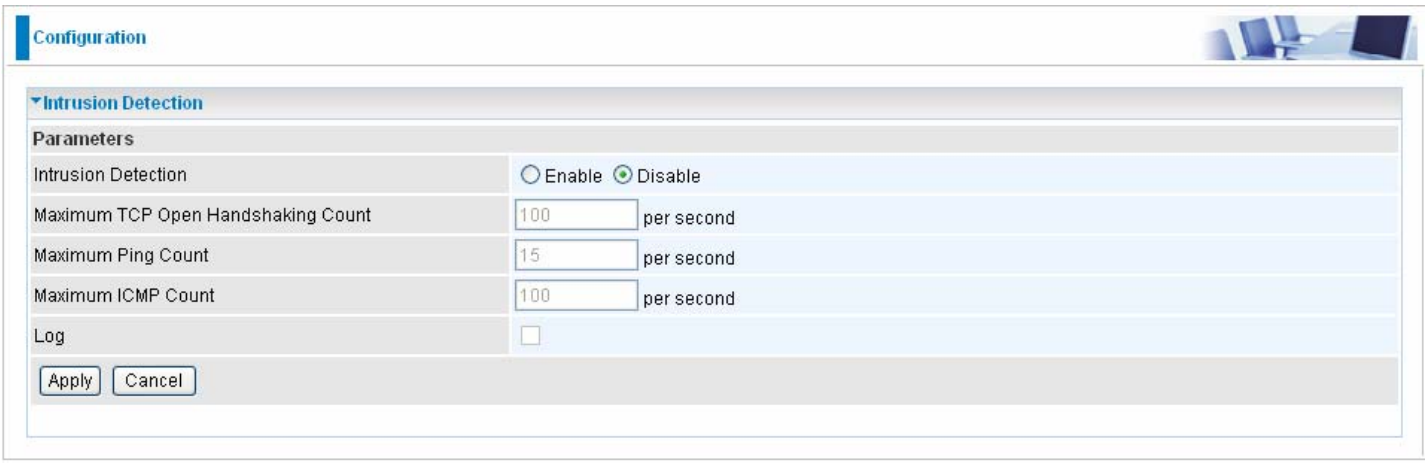
Action: Select an action for MAC Filter. This feature is disabled by default. Check Allow or Block to activate the filter.

Parameters

MAC Address: Enter the wireless MAC addresses you wish to have the filter rule applies.

Intrusion Detection

The router Intrusion Detection System (IDS) is used to detect hacker's attack and intrusion attempts from the Internet. If the IDS function of the firewall is enabled, inbound packets are filtered and blocked depending on whether they are detected as possible hacker attacks, intrusion attempts or other connections that the router determines to be suspicious.



Max TCP Open Handshaking Count: This is a threshold value to decide whether a SYN Flood attempt is occurring or not. Default value is 100 TCP SYN per seconds.

Max PING Count: This is a threshold value to decide whether an ICMP Echo Storm is occurring or not. Default value is 15 ICMP Echo Requests (PING) per second.

Max ICMP Count: This is a threshold to decide whether an ICMP flood is occurring or not. Default value is 100 ICMP packets per seconds except ICMP Echo Requests (PING).

Log: Select Enable for this option if you will like to capture the logs for this Packet filter policy.

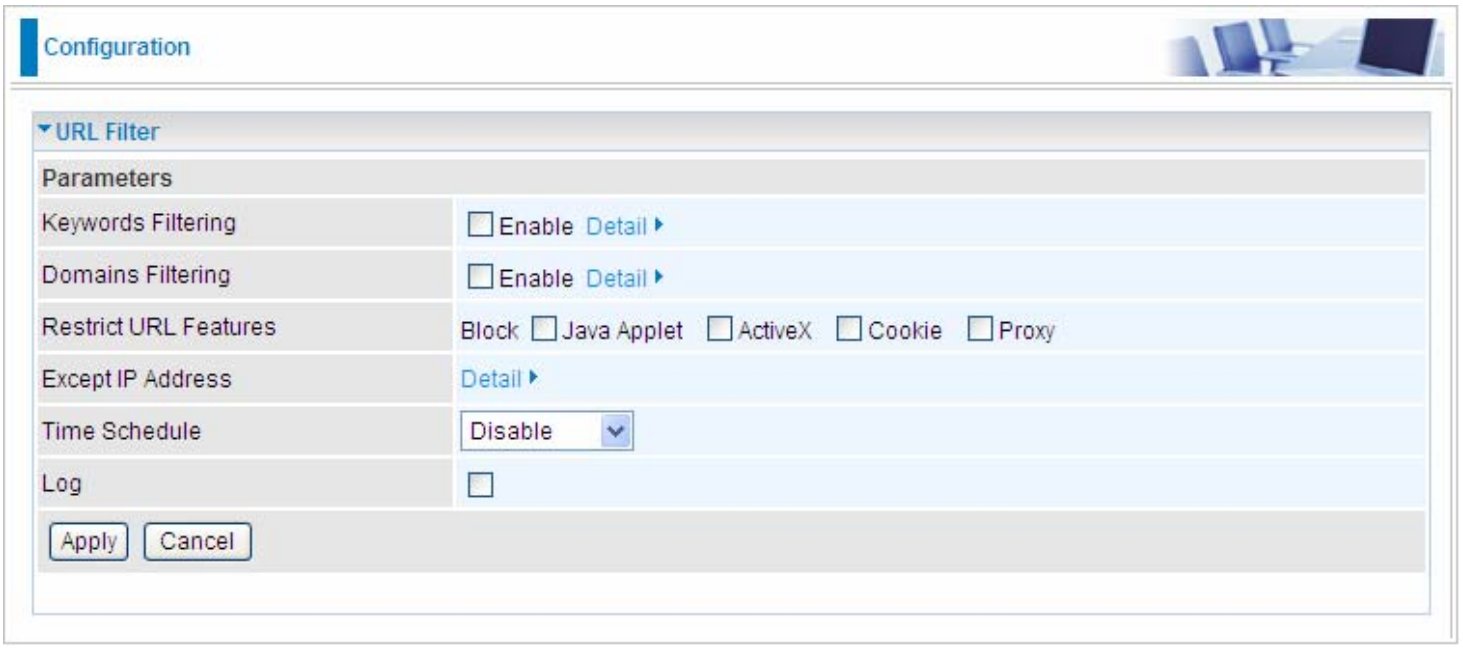
Block WAN Ping

This feature is to be enabled when you want the public WAN IP address on your router not to respond to any ping command.

This feature is disabled by default. To activate the Block WAN PING feature, check the Enable box then click the Apply button.

URL Filter

The URL Filter is a powerful tool that can be used to limit access to certain URLs on the Internet. You can block web sites based on keywords or even block out an entire domain. Certain web features can also be blocked to grant added security to your network.



Keywords Filtering: Allow blocking against specific keywords within a particular URL rather than having to specify a complete URL (e.g. to block any image called “advertisement.gif”). When enabled, your specified keywords list will be checked to see if any keywords are present in URLs accessed to determine if the connection attempt should be blocked. Please note that the URL filter blocks web browser (HTTP) connection attempts using port 80 only.

Domains Filtering: This function checks the whole URL address but not the IP address against your list of domains to block or allow. If it is matched, the URL request will either be sent (Trusted) or dropped (Forbidden).

Restrict URL Features: Click **Block Java Applet** to filter web access with Java Applet components. Click **Block ActiveX** to filter web access with ActiveX components. Click **Block Cookie** to filter web access with Cookie components. Click **Block Proxy** to filter web proxy access.

Exception List: You can input a list of IP addresses as the exception list for URL filtering.

Time Schedule: A self defined time period. You may specify a time schedule for your prioritization policy. For setup and detail, refer to Time Schedule section.

Log: Select Enable for this option if you will like to capture the logs for this URL filter policy.

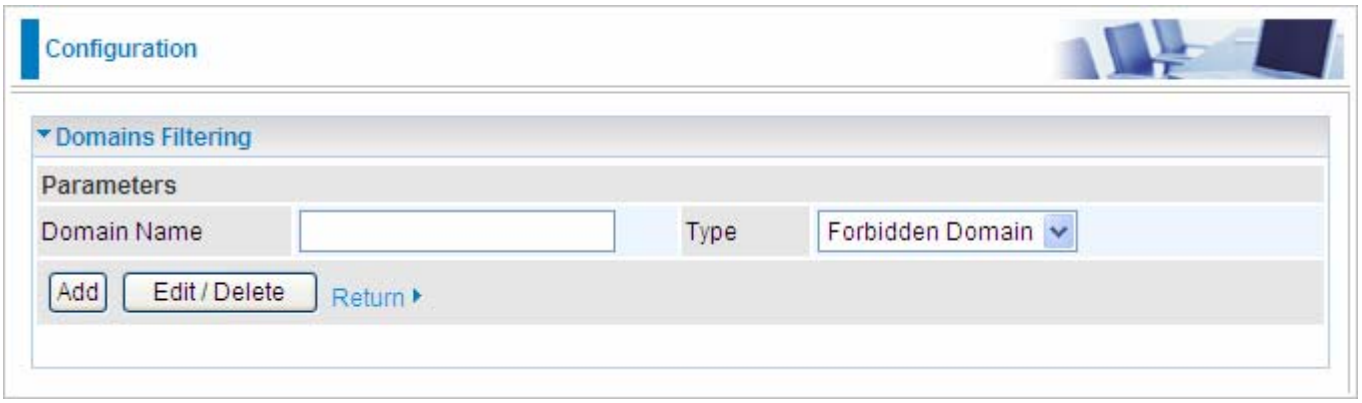
Keywords filtering

Click the checkbox to enable this feature. To edit the list of filtered keywords, click **Details.**

Enter a keyword to be filtered and click **Apply**. Your new keyword will be added to the filtered keyword listing.

Domains Filtering

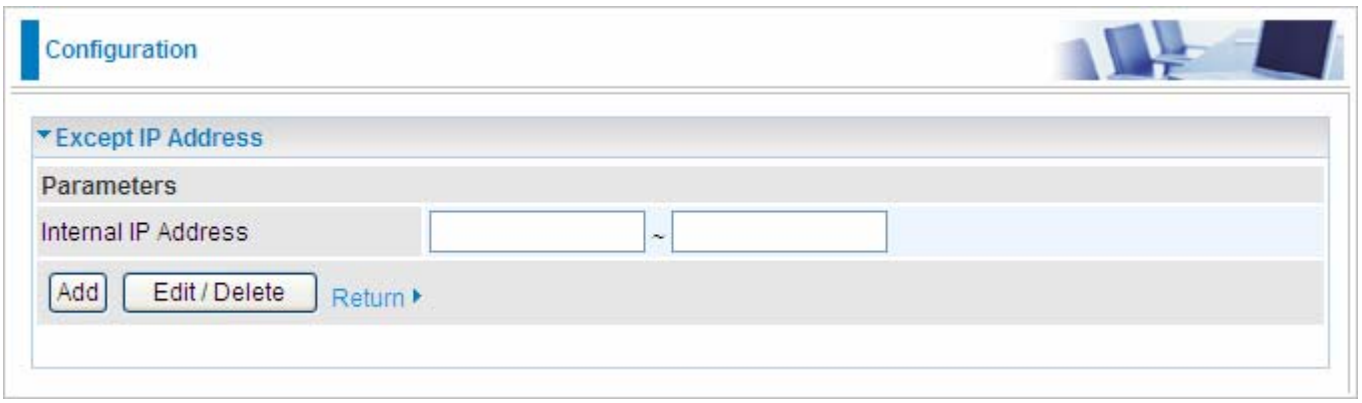
Click the top checkbox to enable this feature. To edit the list of filtered domains, click **Details.**



Enter a domain and select whether this domain is trusted or forbidden with the pull-down menu. Next, click **Apply**. Your new domain will be added to either the Trusted Domain or Forbidden Domain listing, depending on which you selected previously.

Except IP Address

You may also designate which IP addresses are to be excluded from these filters by adding them to the Exception List. To do so, click **Details**.

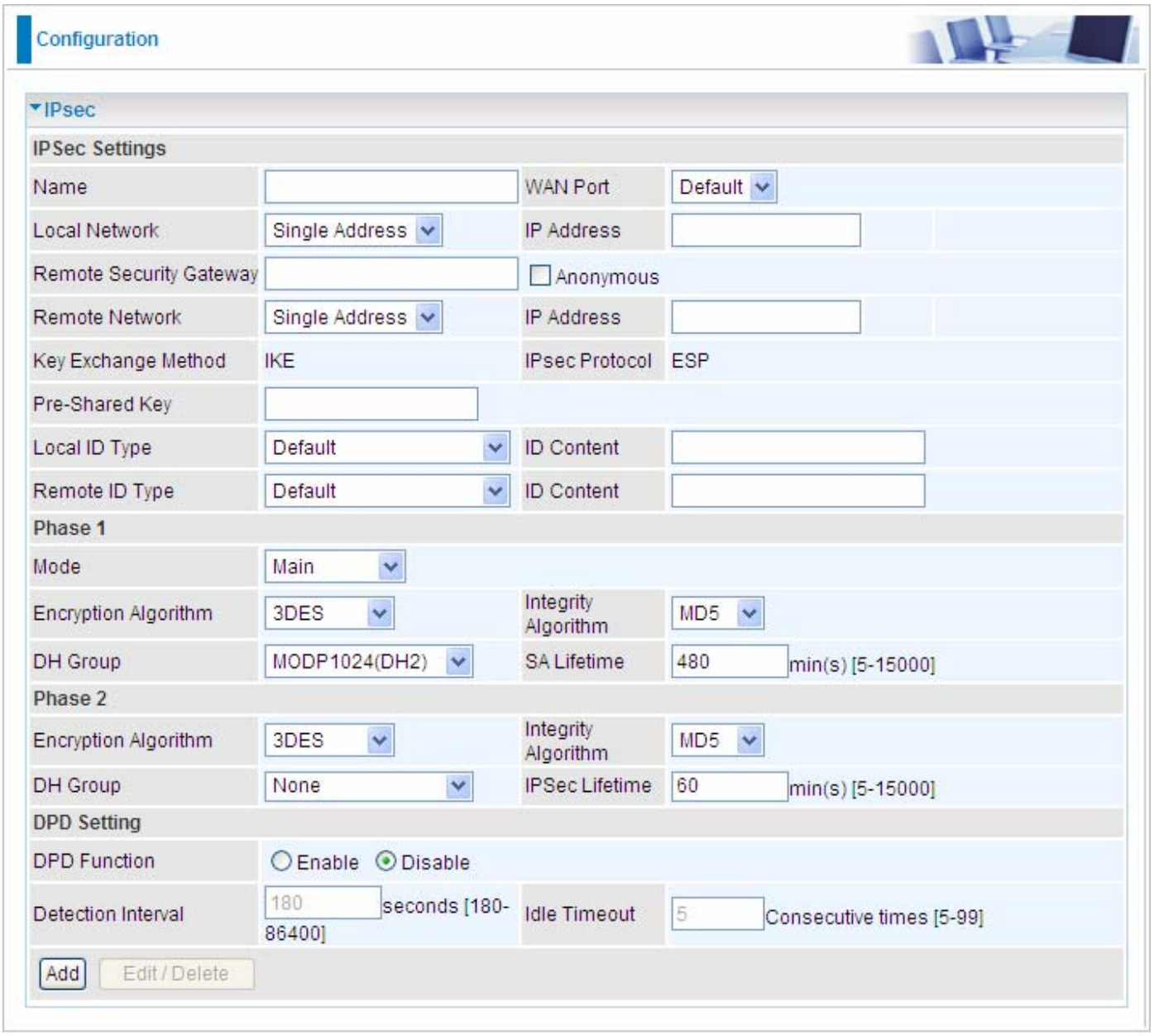


Enter the except IP address. Click **Add** to save your changes. The IP address will be entered into the Exception List, and excluded from the URL filtering rules in effect.

VPN

Virtual Private Networks is ways to establish secured communication tunnels to an organization's network via the Internet. Your router supports the following: **IPSec, GRE.**

IPSec



Name: A given name for the connection (e.g. "connection to office").

Local Network: Set the IP address or subnet of the local network.

Single Address: The IP address of the local host.

Subnet: The subnet of the local network. For example, IP: 192.168.1.0 with Netmask 255.255.255.0 specifies one class C subnet starting from 192.168.1.1 (i.e. 192.168.1.1 through to 192.168.1.254).

Remote Secure Gateway: The IP address of the remote VPN device that is connected and establishes a VPN tunnel.

Anonymous: Enable any IP to connect in

Remote Network: Set the IP address or subnet of the remote network.

Single Address: The IP address of the remote host.

Subnet: The subnet of the remote network. For example, IP: 192.168.1.0 with Netmask 255.255.255.0 specifies one class C subnet starting from 192.168.1.1 (i.e. 192.168.1.1 through to 192.168.1.254).

Key Exchange Method: Displays key exchange method.

Pre-Shared Key: This is for the Internet Key Exchange (IKE) protocol, a string from 4 to 128 characters. Both sides should use the same key. IKE is used to establish a shared security policy and authenticated keys for services (such as IPSec) that require a key. Before any IPSec traffic can be passed, each router must be able to verify the identity of its peer. This can be done by manually entering the pre-shared key into both sides (router or hosts).

Local ID Type and **Remote ID Type:** when the mode of phase 1 is aggressive, local and Remote ports can be identified by other IDs.

ID content: Enter ID content the name you want to identify when the Local and Remote Type are Domain Name; Enter ID content the email address you want to identify when the Local and Remote type are Email; Enter ID content IPv4 address you want to identify when the Local and Remote Type are IPv4 address.

Phase 1

Mode: Select IKE mode from the drop-down menu: Main or Aggressive. This IKE provides secured key generation and key management.

Encryption Algorithm: Select the encryption algorithm from the drop-down menu. There are several options: DES, 3DES and AES (128, 192 and 256). 3DES and AES are more powerful but increase latency.

DES: Stands for Data Encryption Standard, it uses 56 bits as an encryption method.

3DES: Stands for Triple Data Encryption Standard, it uses 168 (56*3) bits as an encryption method.

AES: Stands for Advanced Encryption Standards, you can use 128, 192 or 256 bits as encryption method.

Integrity Algorithm: Authentication establishes the integrity of the datagram and ensures it is not tampered with in transmit. There are 2 options: Message Digest 5 (MD5) and Secure Hash Algorithm (SHA1). SHA1 is more resistant to brute-force attacks than MD5. However, it is slower.

MD5: A one-way hashing algorithm that produces a 128−bit hash.

SHA1: A one-way hashing algorithm that produces a 160−bit hash.

DH Group: It is a public-key cryptography protocol that allows two parties to establish a shared secret over an unsecured communication channel (i.e. over the Internet). There are 8 modes. MODP stands for Modular Exponentiation Groups.

SA Lifetime: Specify the number of minutes that a Security Association (SA) will stay active before new encryption and authentication key will be exchanged. Enter a value to issue an initial connection request for a new VPN tunnel. Default is 3600 seconds. A short SA time increases security by forcing the two parties to update the keys. However, every time when the VPN

tunnel re-negotiates, access through the tunnel will be temporarily disconnected.

Phase 2

Encryption Algorithm: Select the encryption algorithm from the drop-down menu. There are several options: DES, 3DES and AES (128, 192 and 256). 3DES and AES are more powerful but increase latency.

DES: Stands for Data Encryption Standard, it uses 56 bits as an encryption method.

3DES: Stands for Triple Data Encryption Standard, it uses 168 (56*3) bits as an encryption method.

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DH Group: It is a public-key cryptography protocol that allows two parties to establish a shared secret over an unsecured communication channel (i.e. over the Internet). There are 8 modes. MODP stands for Modular Exponentiation Groups.

IPSec Lifetime: Specify the number of minutes that IPSec will stay active before new encryption and authentication key will be exchanged. Enter a value to negotiate and establish secure authentication. Default is 3600 seconds. A short time increases security by forcing the two parties to update the keys. However, every time when the VPN tunnel re- negotiates, access through the tunnel will be temporarily disconnected.

DPD Setting

DPD Function: Check **Enable** to enable the function.

Detection Interval: The period cycle for dead peer detection. The interval can be 180~86400 seconds.

Idle Timeout: Auto-disconnect the IPSec connection after trying several consecutive times.

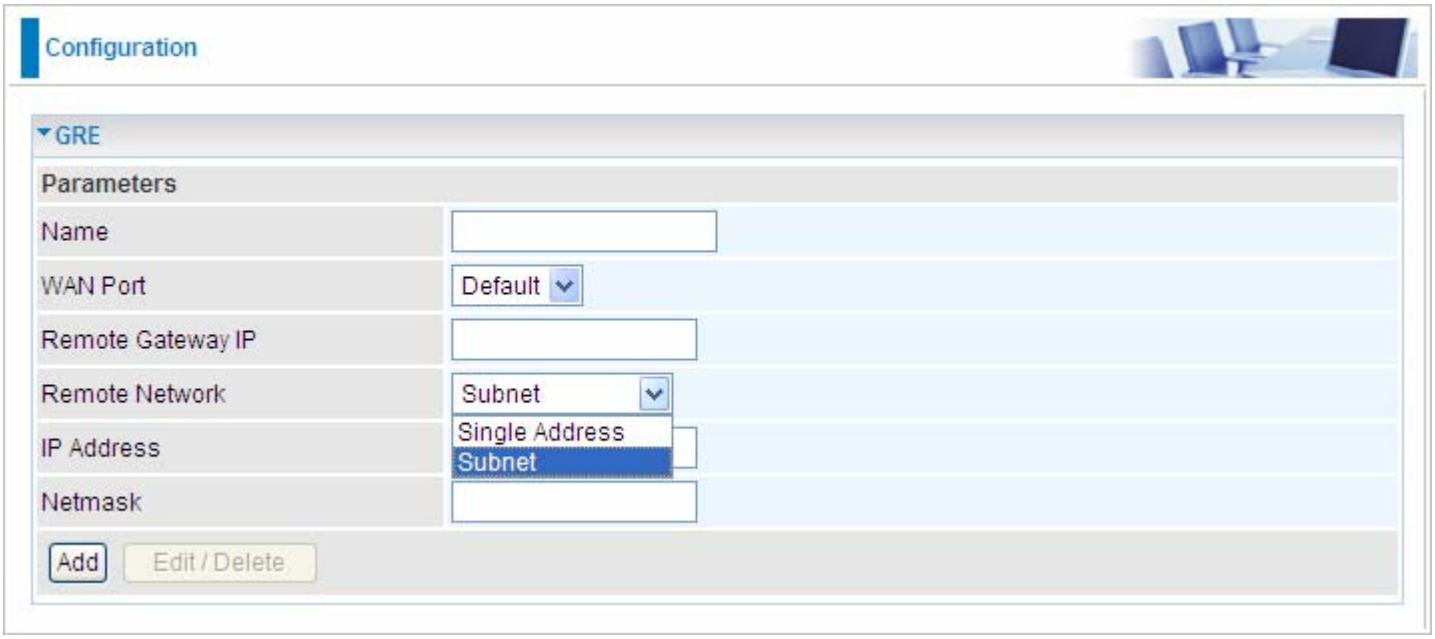
Add: Click this button to add a new IPSec entry and the added entry will appear at the bottom table.

Edit: Check Edit next to the item you wish to edit, and then change parameters as desired. Complete it by press “Edit/Delete”.

Delete: Check Delete next to the item you wish to delete, and press “Edit/Delete” to remove this entry.

GRE

Generic Routing Encapsulation (GRE) is a tunneling protocol that can encapsulate a wide variety of network layer protocol packet types inside IP tunnels, creating a virtual point-to-point link to various brands of routers at remote points over an Internet Protocol (IP) internetwork.



Name: A given name for the connection.

WAN Port: You can choose Default, ADSL, 3G or EWAN.

Remote Gateway IP: The IP address of the remote VPN device that is connected and establishes a VPN tunnel.

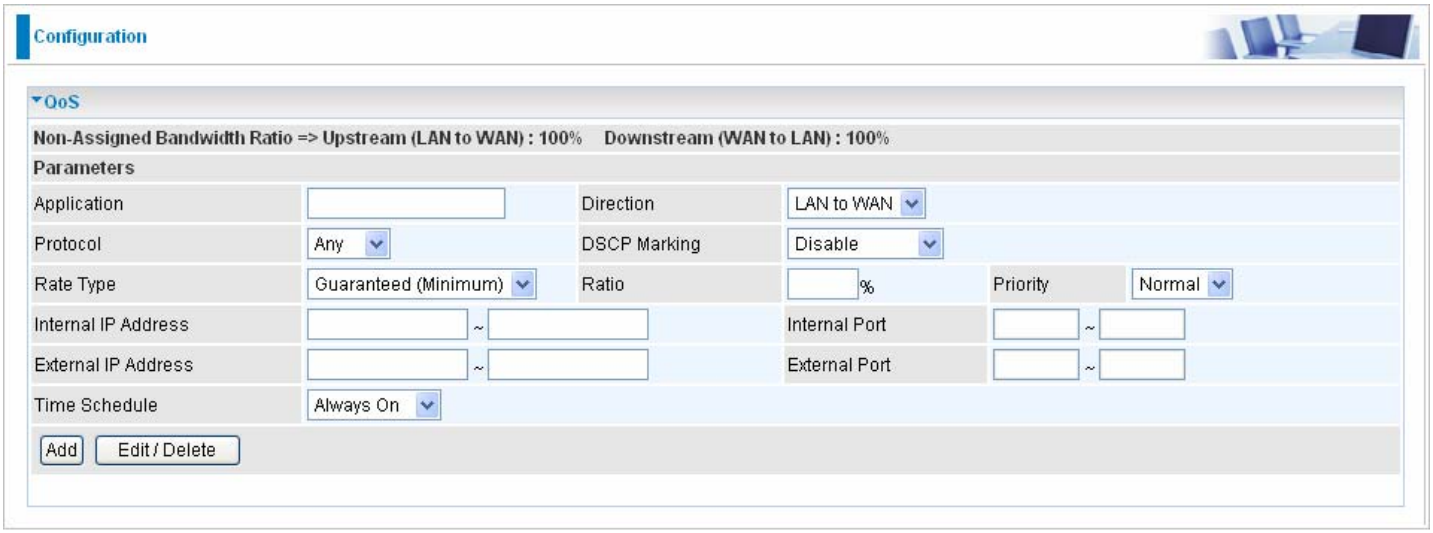
Remote Network: Set the IP address or subnet of the remote network.

IP Address: Enter the IP address of the remote network.

Netmask: Enter the netmask of the remote network.

QoS - Quality of Service

QoS helps you to control the data upload traffic of each application from LAN (Ethernet and/or Wireless) to WAN (Internet). It facilitates you the features to control the quality and speed of throughput for each application when the system is running with full upstream load.



After clicking the QoS item, you can Add/Edit/Delete a QoS policy. This page will show the brief information for policies you have added or edited. This page will also display the total available (Non-assigned) bandwidth, in percentage, can be assigned.

Application: Assign a name that identifies the new QoS application rule.

Direction: Shows the direction mode of the QoS application.

Protocol: Select the supported protocol from the drop down list.

DSCP Marking: Differentiated Services Code Point (DSCP), it is the first 6 bits in the ToS byte. DSCP Marking allows users to classify the traffic of the application to be executed according to the DSCP value.

Rate Type: You can choose Limited or Guaranteed.

Ratio: The rate percent in contrast to that on WAN interface

Priority: The priority given to each policy/application. Its default setting is set to High. You may adjust this setting to fit your policy / application.

Internal IP Address / External IP Address: This is used to classify the traffic of a specific range of internal/external IP address(es). Input the range you want to classify. If only the first IP block is filled, only that IP will be classified. If you leave these four fields empty, it means any classify IP address.

Internal Port: This is the Port Range that defines the ports allowed by the Remote/WAN to connect to the application. Default is set from range 1 ~ 65535. It is recommended that only advance user is to configure this feature.

External Port: This is the Port Range that defines the port of the application.

Time Schedule: A self defined time period. You may specify a time schedule for your QoS policy. For setup and detail, refer to Time Schedule section.

Note: Make sure that the router(s) in the network backbone are capable to execute and check the DSCP throughout the QoS network.

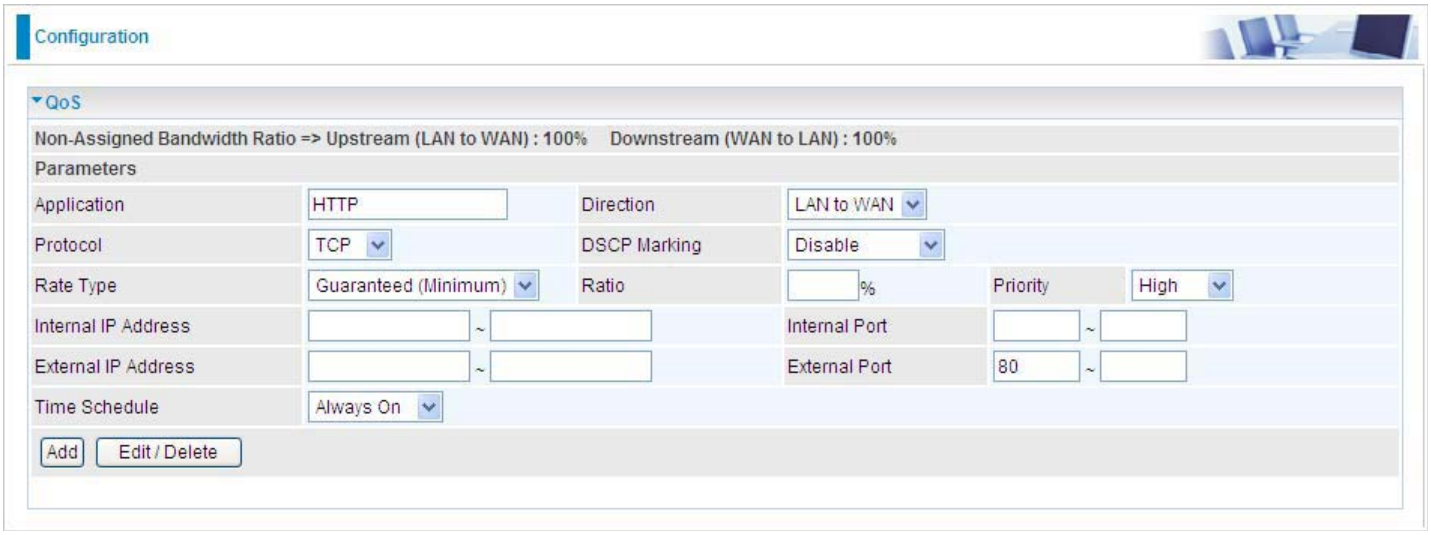
Example 1: Optimize Your Home Network with QoS

If you are actively engaged in using P2P and are afraid of slowing down internet access throughput of other users within your network, you can thus use QoS function to set different priorities for the different applications that members of your network will be using to avoid bandwidth traffic from getting overloaded.

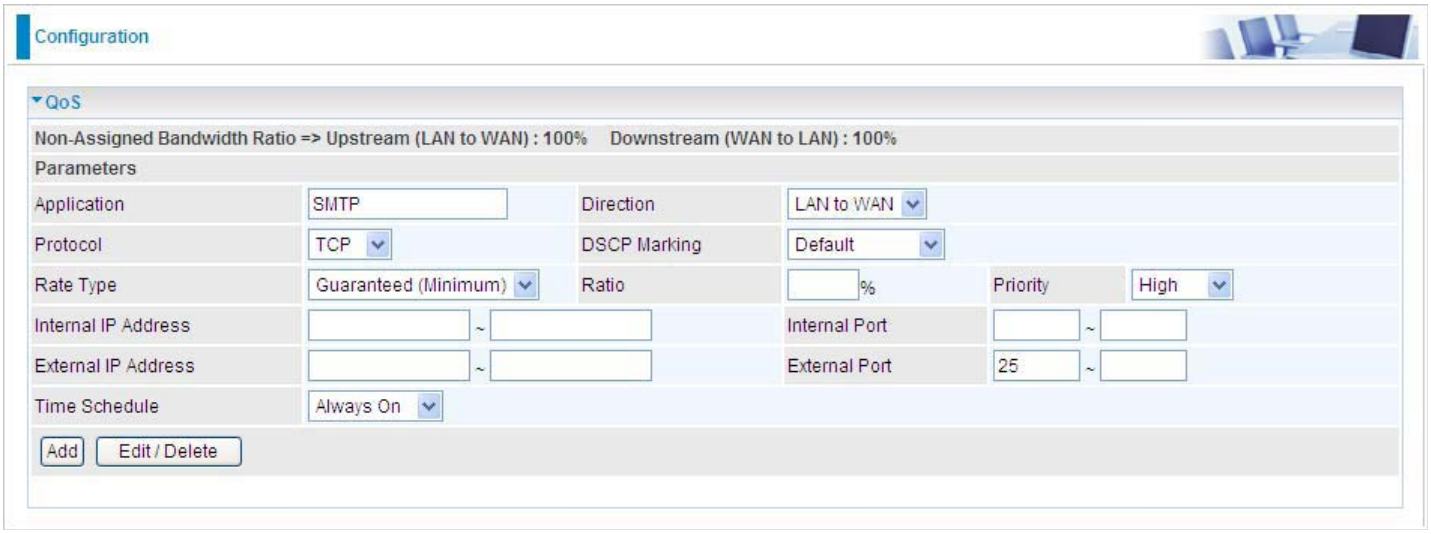
Therefore, in order to assign the priority status of each application, we must first create a new QoS rule for each application.

The figures below show the different settings for assigning a High Priority status to Web Browsing, Email send & receive.

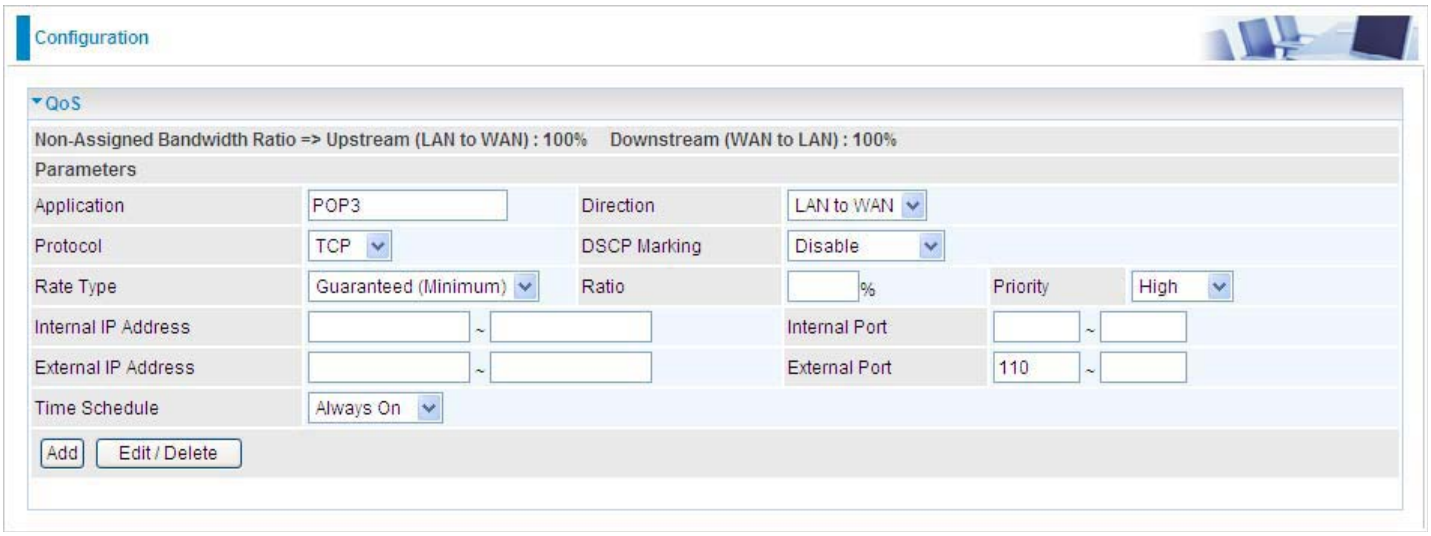
For Web Browsing



For Mail Sending



For Mail Receiving

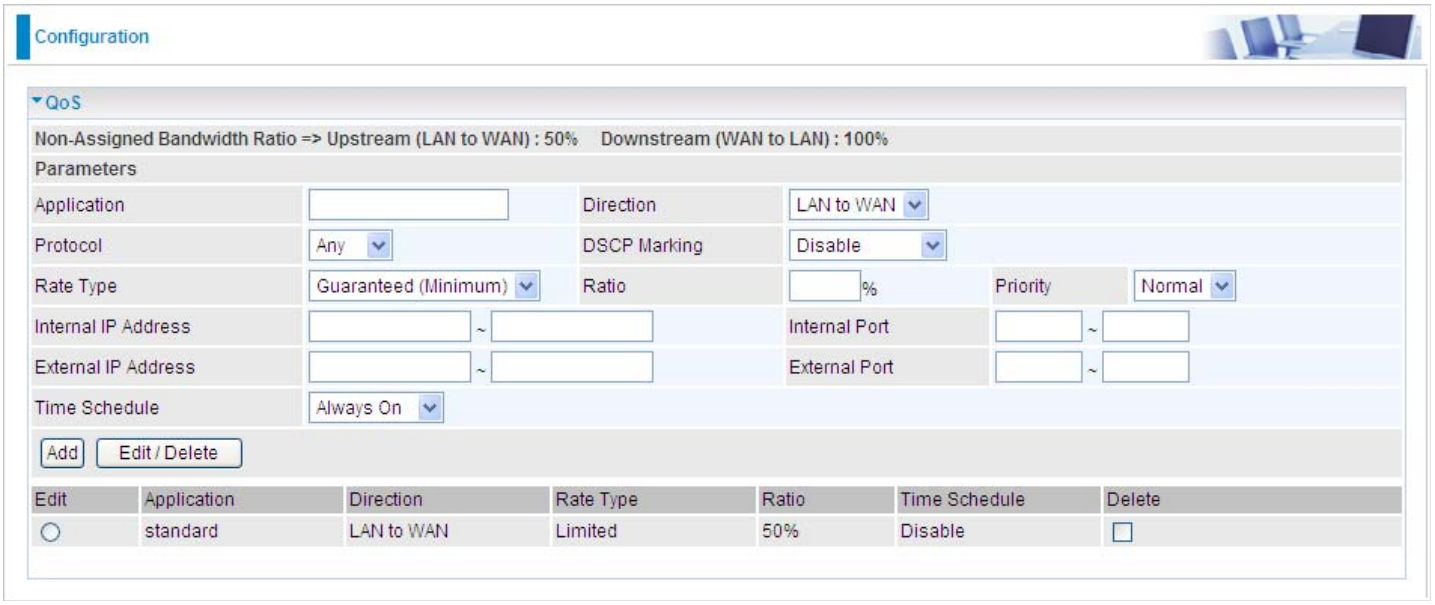


QoS Rules created

Edit	Application	Direction	Rate Type	Ratio	Time Schedule	Delete
○	HTTP	LAN to WAN	Guaranteed	50%	Always On	☐
○	SMTP	LAN to WAN	Guaranteed	30%	Always On	☐
○	POP3	LAN to WAN	Guaranteed	11%	Always On	☐

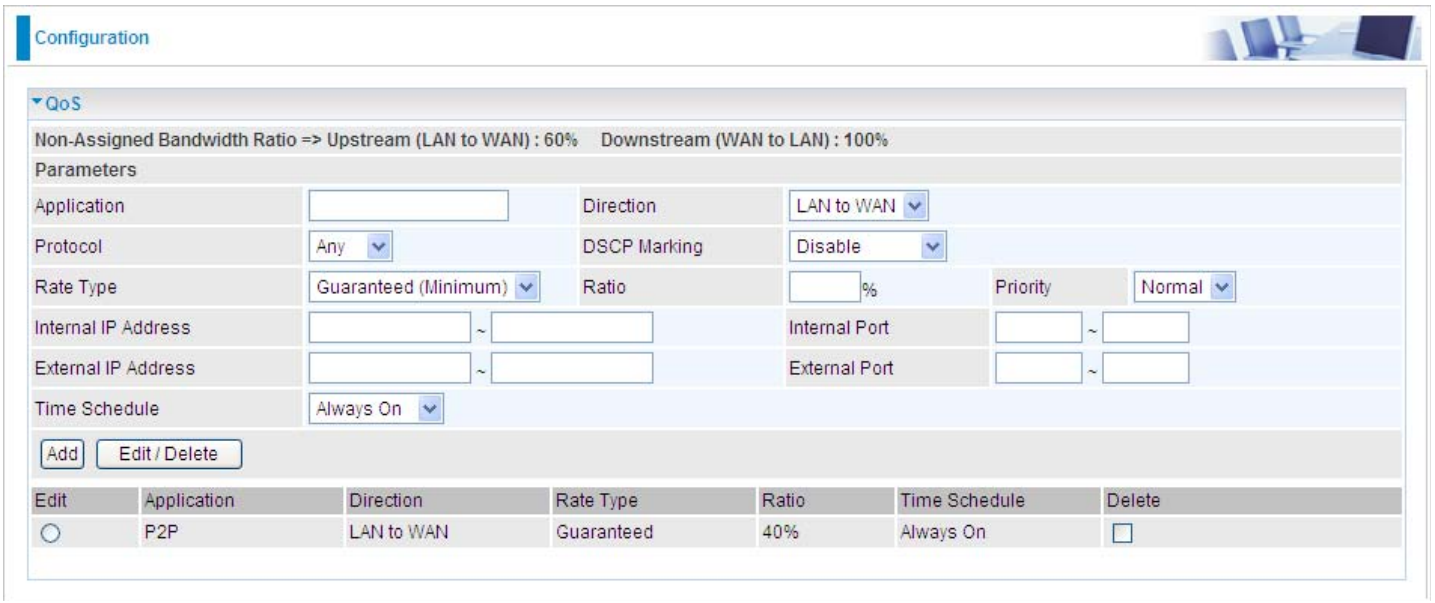
Example 2: Optimize Your Home Network with QoS

If you are running a lot of standard applications you can just create a QoS rule that has its port range set from 1 ~ 1024 and its priority set to High. This port range is defined in RFC and so it can be used by all standard applications like FTP, Telnet, and HTTPS etc.



Example 3: Optimize Your Home Network with QoS

If you are only using a specific PC for the P2P application, you can create a rule that has a low priority. In this way, P2P application will not congest the data transmission rate when there are other applications present.



Virtual Server

Virtual Server allows you to direct incoming traffic from WAN side (identified by Protocol and External port) to the Internal server with private IP address on the LAN side. The Internal port is required only if the external port needs to be converted to a different port number used by the server on the LAN side.

The device can be configured as a virtual server so that remote users accessing services such as Web or FTP services via the public (WAN) IP address can be automatically redirected to local servers in the LAN network. Depending on the requested service (TCP/UDP port number), the device redirects the external service request to the appropriate server within the LAN network.

In TCP and UDP networks a port is a 16-bit number used to identify which application program (usually a server) incoming connections should be delivered to. Some ports have numbers that are pre-assigned to them by the IANA (the Internet Assigned Numbers Authority), and these are referred to as “well-known ports”. Servers follow the well-known port assignments so clients can locate them.

If you wish to run a server on your network that can be accessed from the WAN (i.e. from other machines on the Internet that are outside your local network), or any application that can accept incoming connections (e.g. Peer-to-peer/P2P software such as instant messaging applications and P2P file-sharing applications) and are using NAT (Network Address Translation), then you need to configure your router to forward these incoming connection attempts using specific ports to the PC on your network running the application. You also need to use port forwarding if you wish to host an online game server.

Example: List of some well-known and registered port numbers.

The Internet Assigned Numbers Authority (IANA) is the central coordinator for the assignment of unique parameter values for Internet protocols. Port numbers range from 1 to 65535, but only ports numbers 1 to 1023 are reserved for privileged services and are designated as “well-known ports” (Please refer to Table below). The registered ports are numbered from 1024 through 49151. The remaining ports, referred to as dynamic or private ports, are numbered from 49152 through 65535.

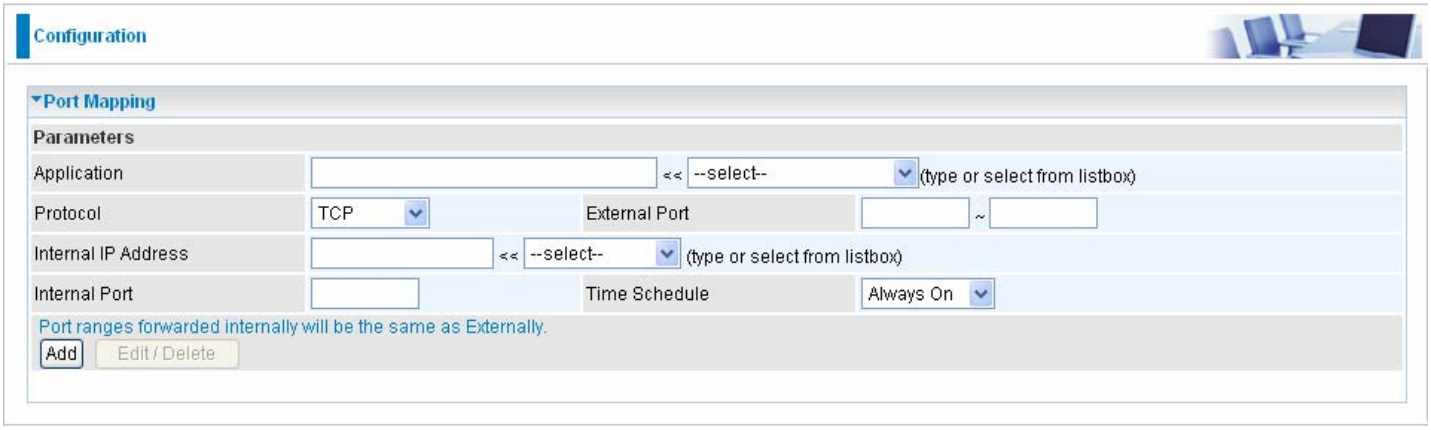
Examples of well-known and registered port numbers are shown below, for further information, please see IANA’s website at: **http://www.iana.org/assignments/port-numbers**.

For help on determining which private port numbers are used by common applications on this list, please see the FAQs (Frequently Asked Questions) at **http://www.billion.com**.

Well-known and Registered Ports

Port Number	Protocol	Description
20	TCP	FTP Data
21	TCP	FTP Control
22	TCP & UDP	SSH Remote Login Protocol
23	TCP	TElnet
25	TCP	SMTP (simple Mail Transfer Protocol)
53	TCP & UDP	DNS (Domain Name Server)
69	UDP	TFTP (Trivial File Transfer Protocol)
80	TCP	World Wide Web HTTP
110	TCP	POP3 (Post Office Protocol version 3)
119	TCP	NEWS (Network News Transfer Protocol)
123	UDP	NTP (Network Time Protocol)
161	TCP	SNMP
443	TCP & UDP	HTTPS
1503	TCP	T.120
1720	TCP	H.323
4000	TCP	ICQ
7070	UDP	Real Audio

Port Mapping



Application: Select the service you wish to configure.

Protocol: A protocol is automatically applied when an Application is selected from the listbox or you may select a protocol type which you want.

External Port & Internal Port: Enter the public port number & range you wish to configure.

Internal IP Address: Enter the IP address of a specific internal server to which requests from the specified port is forwarded.

Add: Click to add a new virtual server rule. Click again and the next figure appears.

Edit: Check the Edit radio button to display the parameter of the selected application, then after changing the parameters click the "Edit/Delete" button to apply the changes.

Delete: To remove a port mapping application, check the Delete box of the selected application then click the "Edit/Delete" button.

Time Schedule: A self defined time period. You may specify a time schedule for your port mapping. For setup and detail, refer to Time Schedule section.

Since NAT acts as a “natural” Internet firewall, your router protects your network from accessed by outside users, as all incoming connection attempts point to your router unless you specifically create Virtual Server entries to forward those ports to a PC on your network. When your router needs to allow outside users to access internal servers, e.g. a web server, FTP server, Email server or game server, the router can act as a “virtual server”. You can set up a local server with a specific port number for the service to use, e.g. web/HTTP (port 80), FTP (port 21), Telnet (port23), SMTP (port 25), or POP3 (port 110). When an incoming access request the router for a specified port is received, it is forwarded to the corresponding internal server.

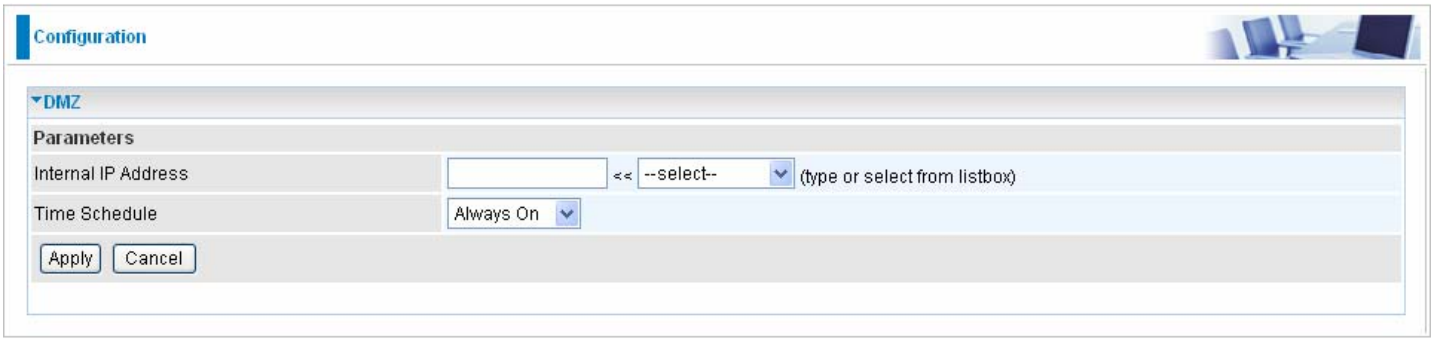
For example, if you set the port number 80 (Web/HTTP) to be mapped to the IP Address192.168.1.2, then all incoming HTTP requests from outside users are forwarded to the local server(PC) with the IP address of 192.168.1.2. If the port is not listed as a predefined application, you need to add it manually.

Edit	Application	Protocol	External Port	Internal IP Address	Internal Port	Time Schedule	Delete
○	FTP	TCP	21	192.168.1.25	21	Always On	☐
○	HTTP	TCP	80	192.168.1.2	80	TimeSlot2	☐

In addition to specifying the port number used, you also need to specify the protocol used. The protocol is determined by a particular application. Most applications use TCP or UDP, however you may also specify other protocols using the drop-down Protocol menu. Setting the protocol to “all” causes all incoming connection attempts using all protocols on all port numbers to be forwarded to the specified IP address.

DMZ

The DMZ Host is a local computer exposed to the Internet. When setting a particular internal IP address as the DMZ Host, all incoming packets that do not use a port number which is already used by any other Virtual Server entries will first be checked by the Firewall and NAT algorithms before it is passed to the DMZ host. When this is done, press Apply to save the changes.



Attention

If you have disabled the NAT option in the WAN-ISP section, the Virtual Server will hence become invalid. If the DHCP option is enabled, you have to be very careful in assigning the IP addresses of the virtual servers in order to avoid conflicts. The easiest way of configuring Virtual Servers is to manually assign static IP address to each virtual server PC, with an address that does not fall into the range of IP addresses that are to be issued by the DHCP server. You can configure the virtual server IP address manually, but it must still be in the same subnet as the router.

NOTE:

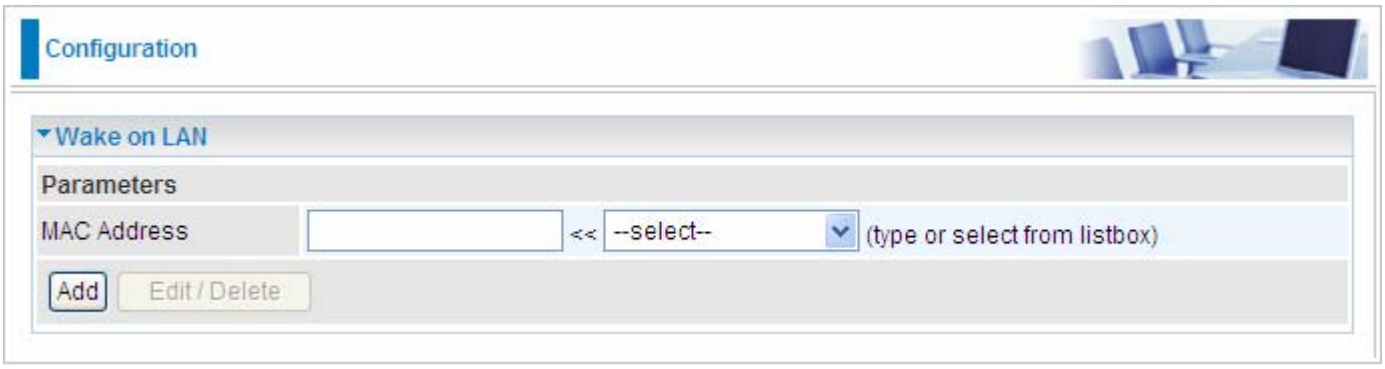
Since outside users are able to connect to the PCs on your network, port mapping utilization imposes security implications. You are therefore adviced to use specific Virtual Server entries just for those ports that your applications require.

ALG

The ALG Controls enable or disable protocols over application layer.

Wake on LAN

This feature provides greater flexibility for users to turn on / boot the computer of the network from a remotely site.



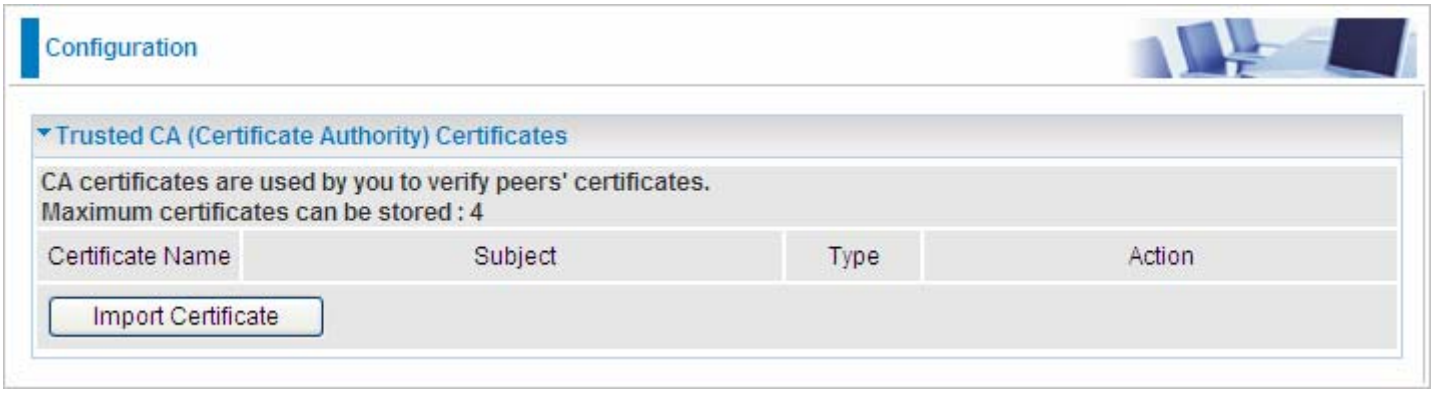
MAC Address: Enter the MAC address of the target computer or you can select the MAC address directly from the Select drop down menu on the right.

: You can select the MAC from this list.

Certificate

This feature is used for TR069 ACS Server authentication of the device used certificate, if necessary. If the imported certificate doesn't match the authorized certificate of the ACS Server, the device will have no access to the server.

Trusted CA



Certificate Name: the certificate identification name.

Subject: the certificate subject.

Type: the certificate type information. "ca", indicates that the certificate is a CA-signed certificate.

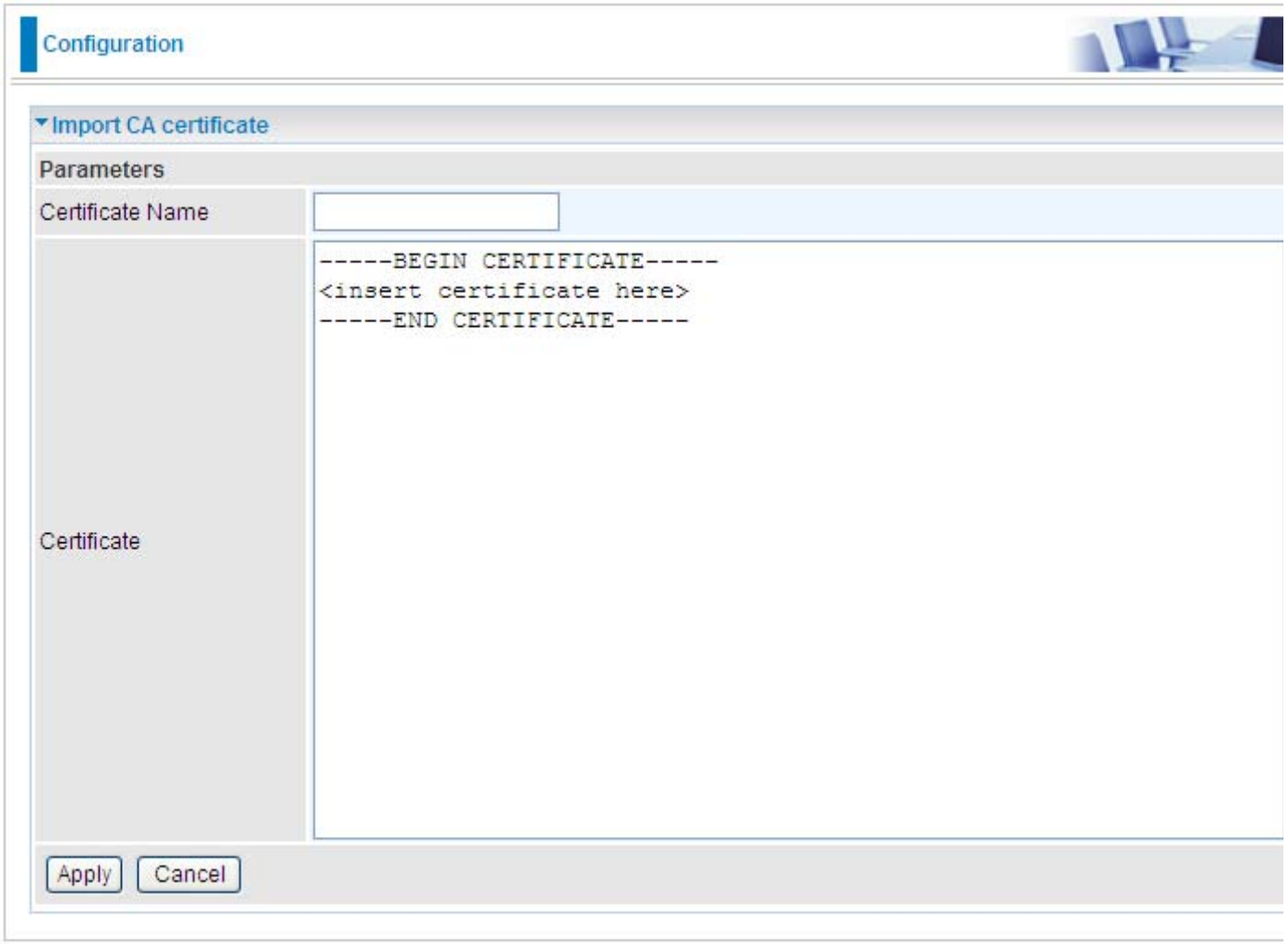
"self", indicates that the certificate is a certificate owner signed one.

"x.509", indicates the certificate is the one created and signed according to the definition of Public-Key System suggested by x.509.

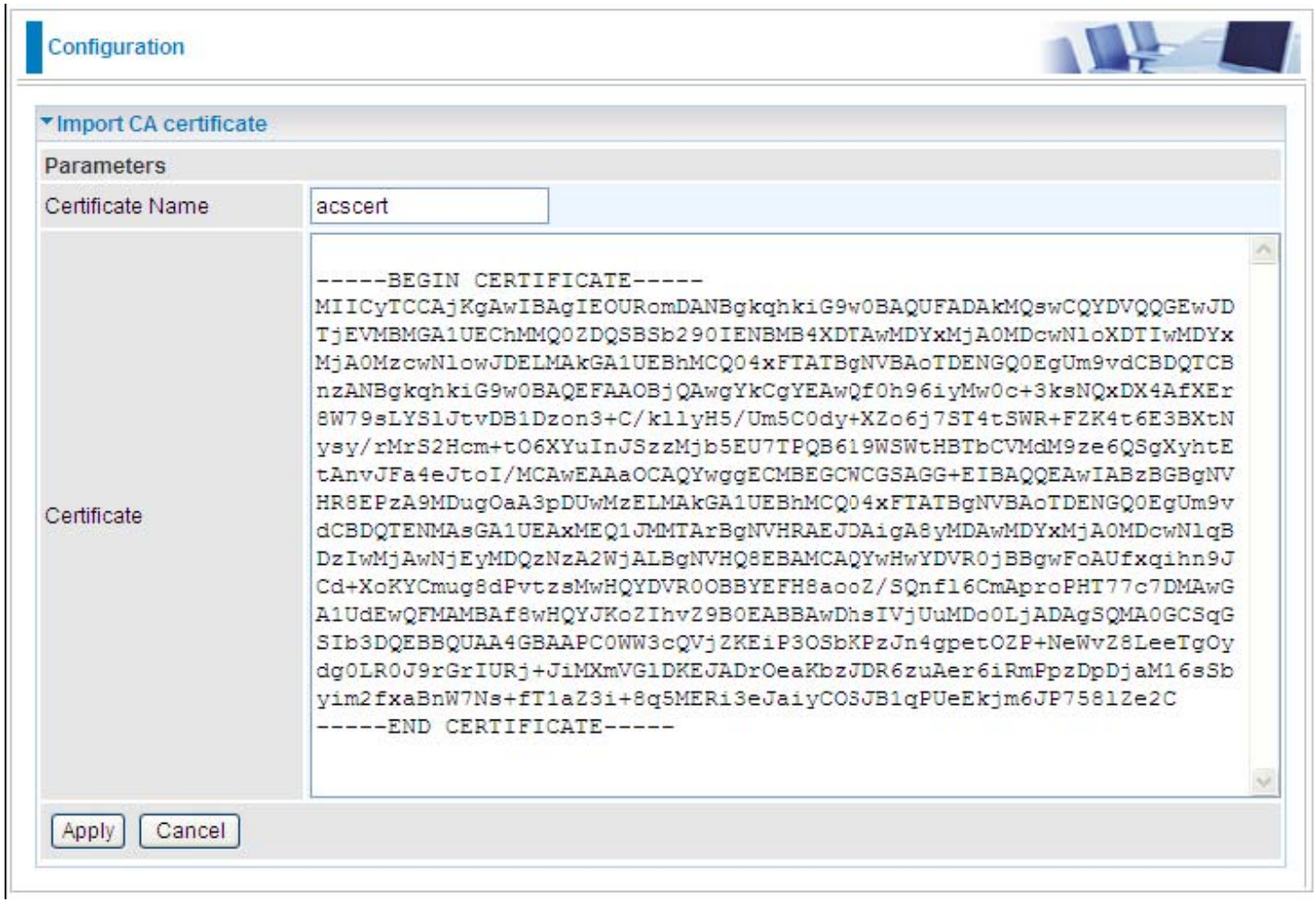
Action:

- **View:** view the certificate.
- **Remove**: remove the certificate.

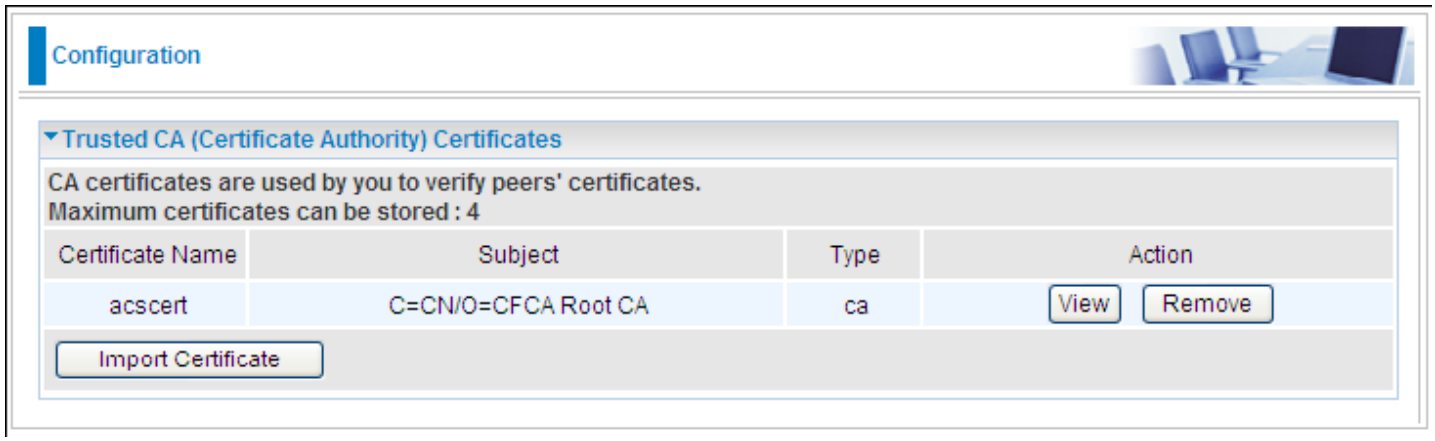
Click **Import Certificate** button to import your certificate.



Enter the certificate name and insert the certificate.



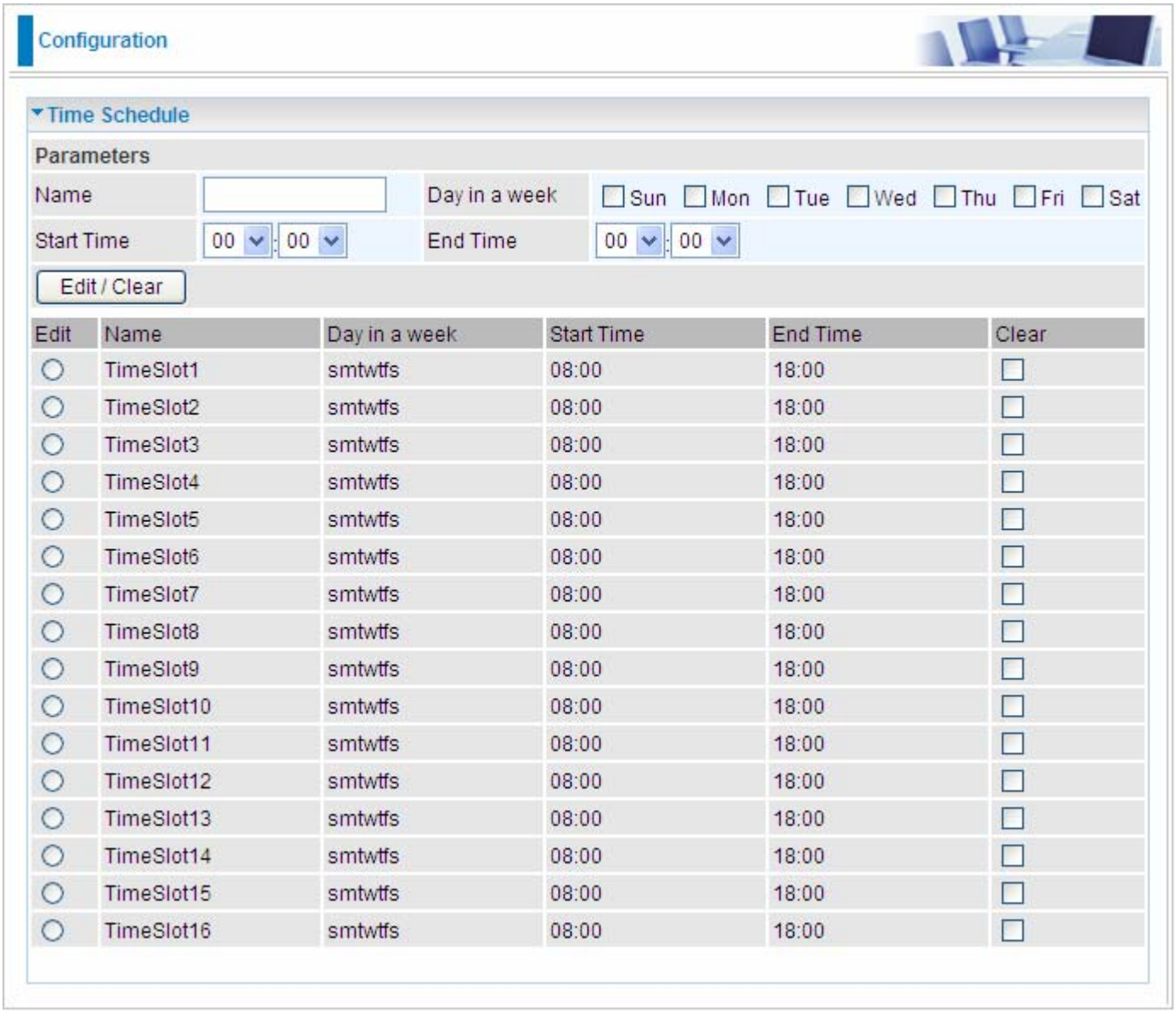
Click Apply to confirm your settings.



Time Schedule

The Time Schedule supports up to 16 time slots which helps you to manage your Internet connection. In each time profile, you may schedule specific day(s) i.e. Monday through Sunday to restrict or allow the use of the Internet by users or applications.

Time Schedule correlates closely with router time. Since router does not have a real time clock on board, it uses the Simple Network Time Protocol (SNTP) to get the current time from an SNTP server. Refer to Time Zone for details. Your router time should correspond with your local time. If the time is not set correctly, your Time Schedule will not function properly.



Advanced

Configuration options within the Advanced section are for users who wish to take advantage of the more advanced features of the router. Users who do not understand the features should not attempt to reconfigure their router, unless advised to do so by support staff.

Here are the items within the Advanced section: **Static Route**, **Static ARP**, **Dynamic DNS**, **VLAN**, **Device Management**, **IGMP**, **TR-069 client** and **Remote Access**.

Static Route

With static route feature, you are equipped with the capability to control the routing of the all the traffic across your network. With each routing rule created, you can specifically assign the destination where the traffic will be routed to.

Destination: Enter the destination IP where the traffic is to be forwarded.

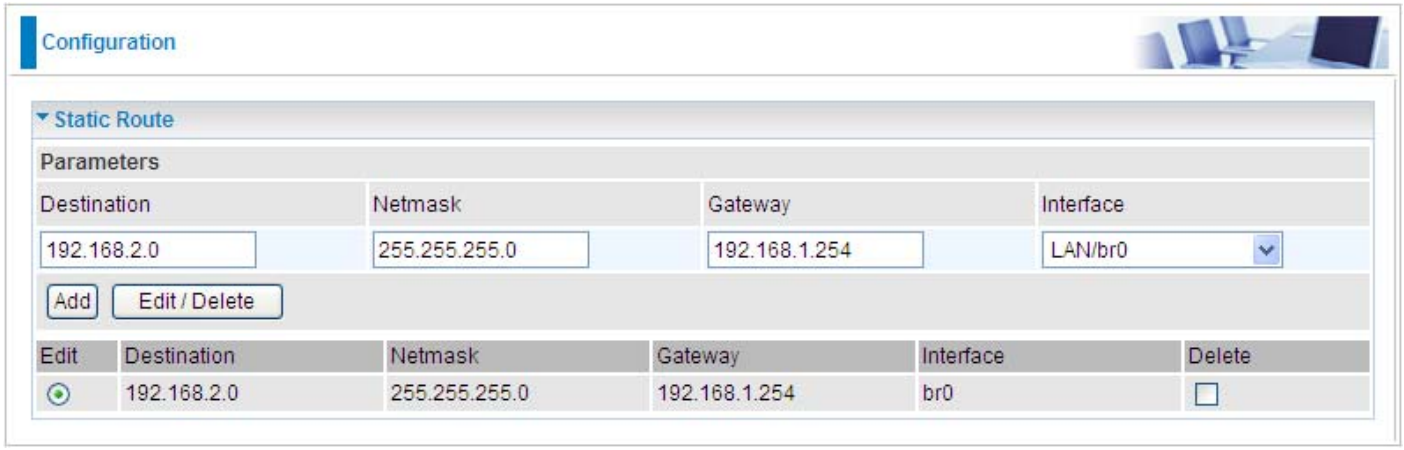
Netmask: Enter the Netmask of the destination.

Gateway: Enter the gateway address for the traffic.

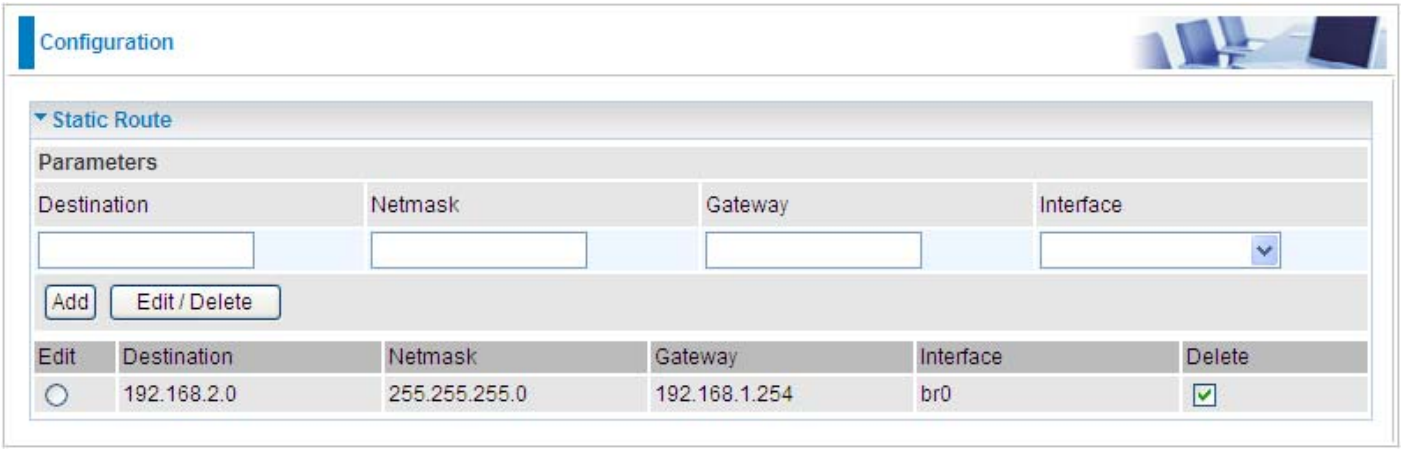
Interface: Select an appropriate interface for the new routing rule from the drop down menu.

Click Add to confirm the settings.

Edit: Check the Edit radio button to display the parameter of the selected application, then after changing the parameters click the "Edit/Delete" button to apply the changes.



Delete: To remove a static route entry, check the Delete box of the selected entry then click the "Edit/Delete" button.



Static ARP

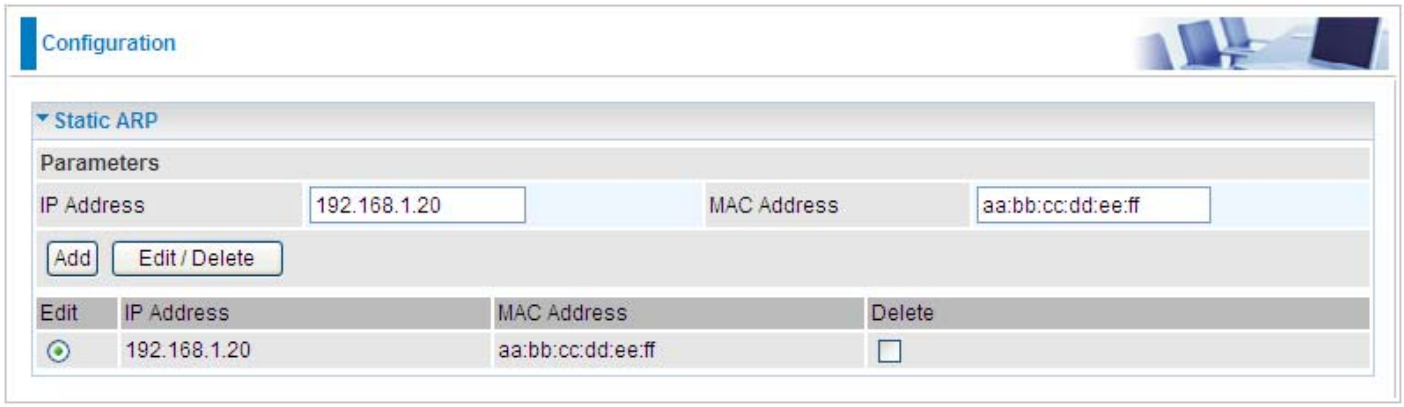
This feature allows you to map the layer-2 MAC (Media Access Control) address that corresponds to the layer-3 IP address of the device.

IP Address: Enter the IP of the device that the corresponding MAC address will be mapped to.

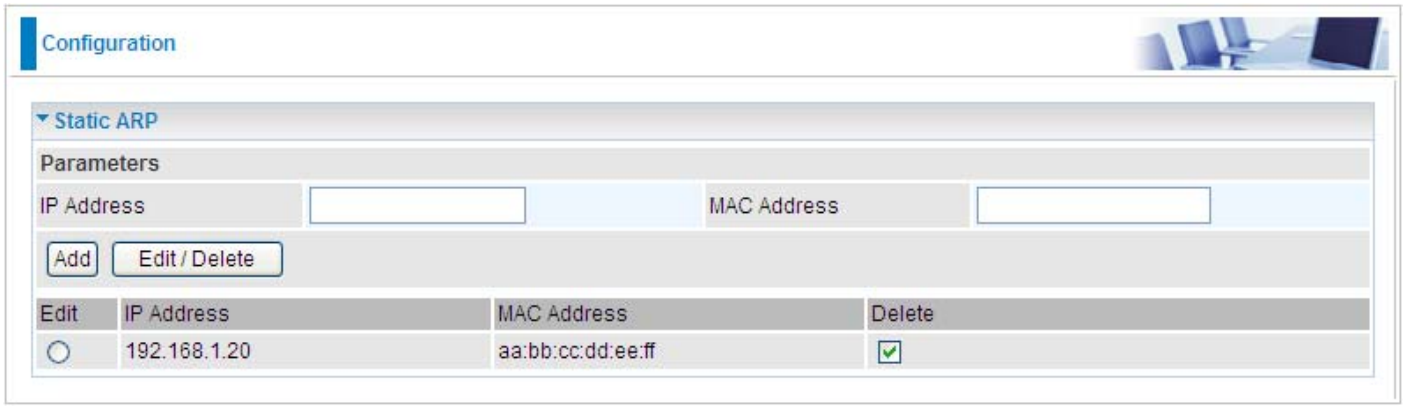
MAC Address: Enter the MAC address that corresponds to the IP address of the device.

Click Add to confirm the settings.

Edit: Check the Edit radio button to display the parameter of the selected application, then after changing the parameters click the "Edit/Delete" button to apply the changes.



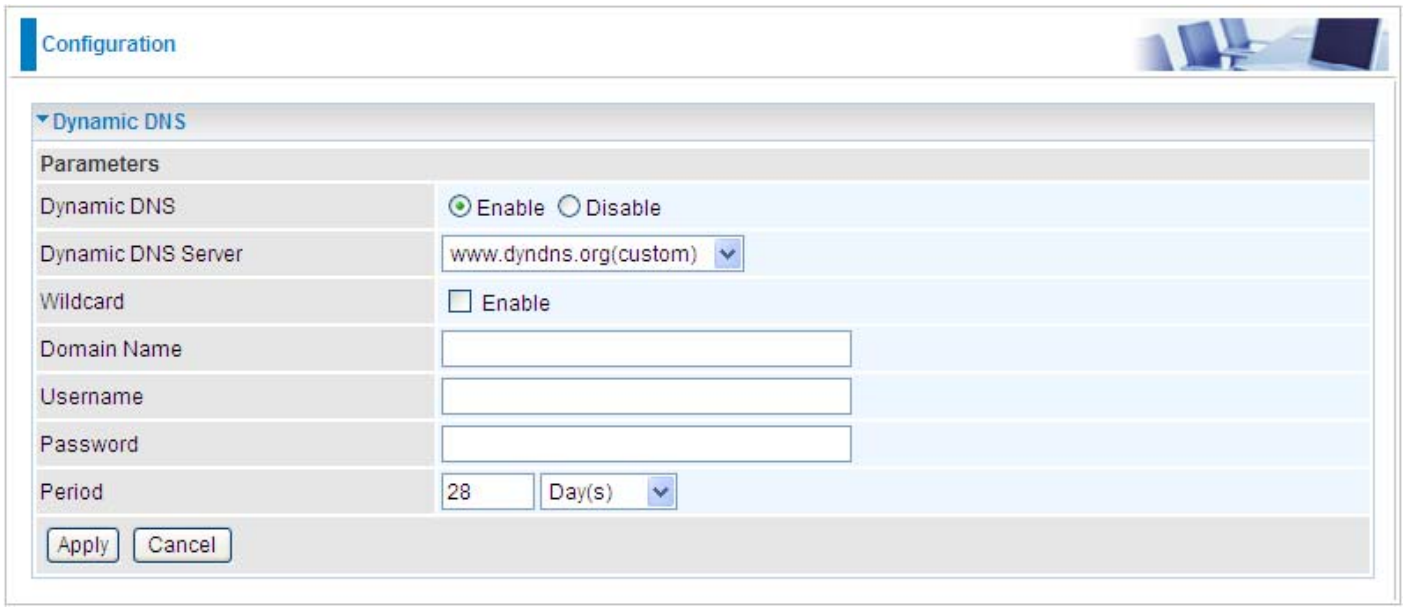
Delete: To remove a static ARP entry, check the Delete box of the selected entry then click the "Edit/Delete" button.



Dynamic DNS

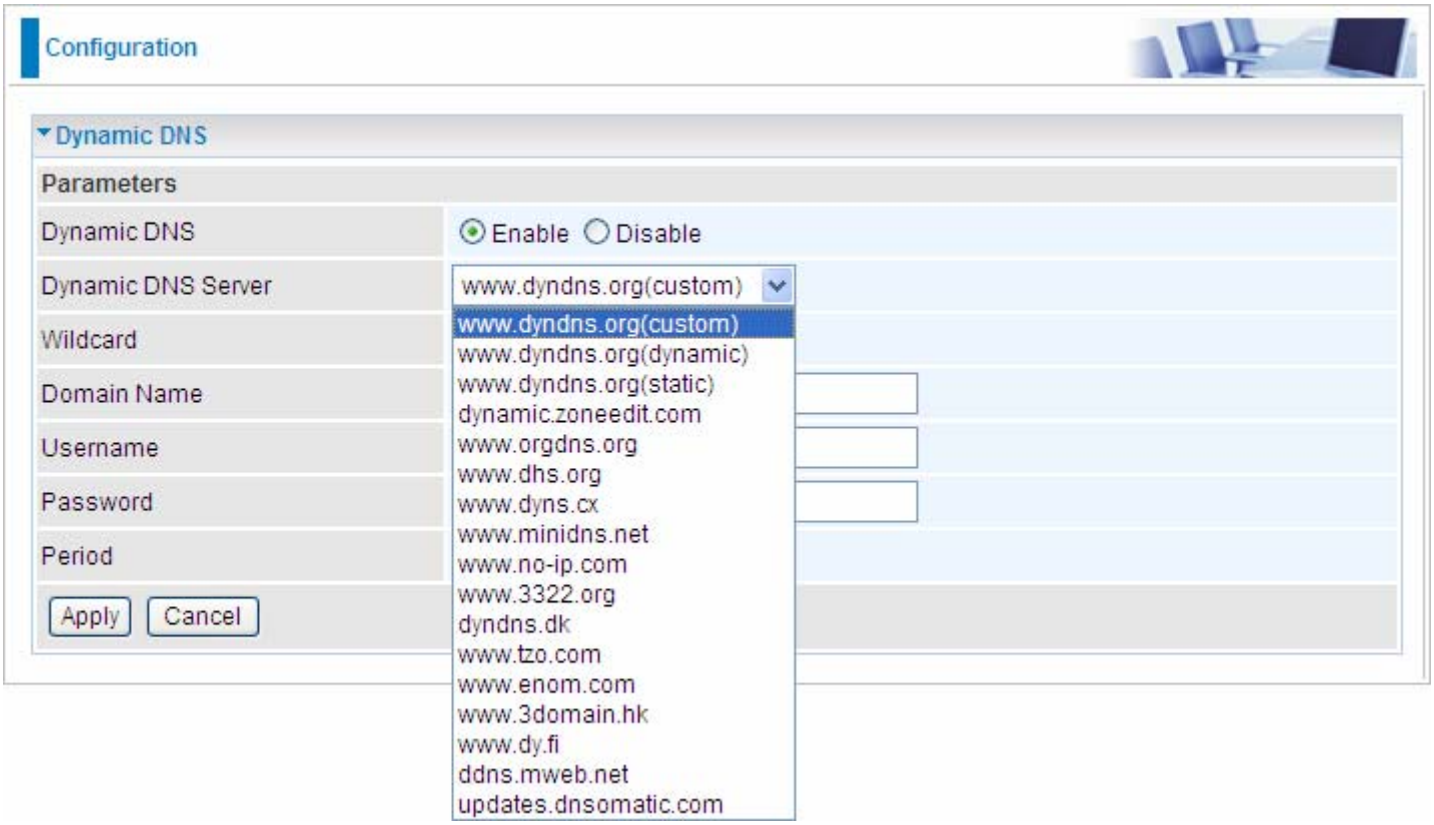
The Dynamic DNS function lets you alias a dynamic IP address to a static hostname, so if your ISP does not assign you a static IP address you can still use a domain name. This is especially useful when hosting servers via your ADSL connection, so that anyone wishing to connect to you may use your domain name, rather than the dynamic IP address which is assigned to you by ISP.

You need to first register and establish an account with the Dynamic DNS provider using their website, for example **http://www.dyndns.org/**.



Dynamic DNS: Default is disabled. Check Enable to enable the Dynamic DNS function and the following fields will be activated and required.

Dynamic DNS Server: Select the DDNS service you have registered an account with.



Wildcard: When enabled, you allow the system to lookup on domain names that do not exist to have MX records synthesized for them.

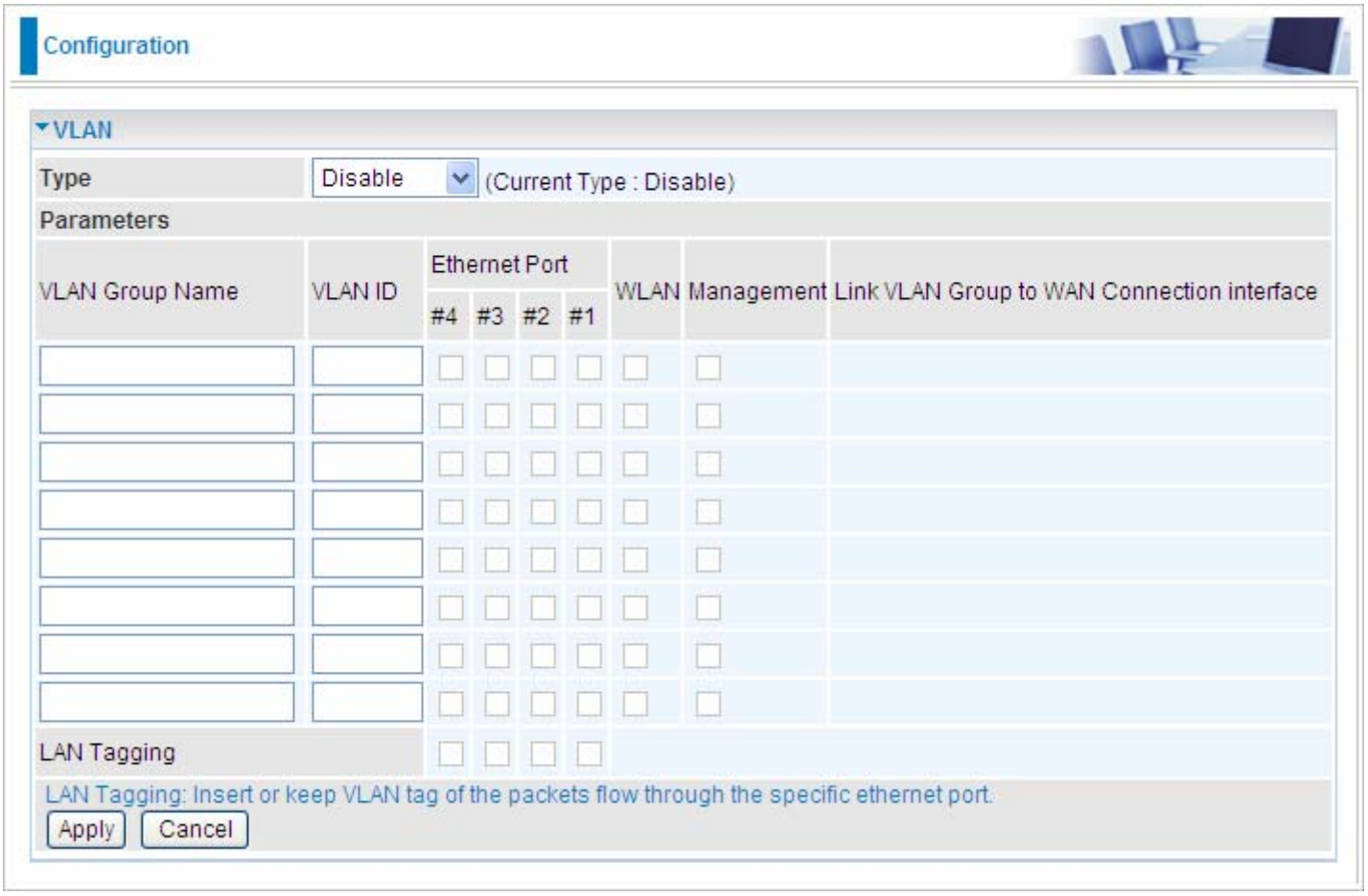
Domain Name, **Username** and **Password:** Enter your registered domain name and your username and password for this service.

Period: Enter the length of the period in the blank; you can set the period unit in day, hour or minute.

Click Apply to confirm the settings.

VLAN

VLAN (Virtual Local Area Network) is a group of devices on different physical LAN segments that can communicate with each other as if they were all on the same physical LAN segment.



Type: Select the VLAN type from the drop-down menu. There are two options: Tag Based and Disable.

Then enter the parameters in the fields of the table.

Click Apply to confirm the settings.

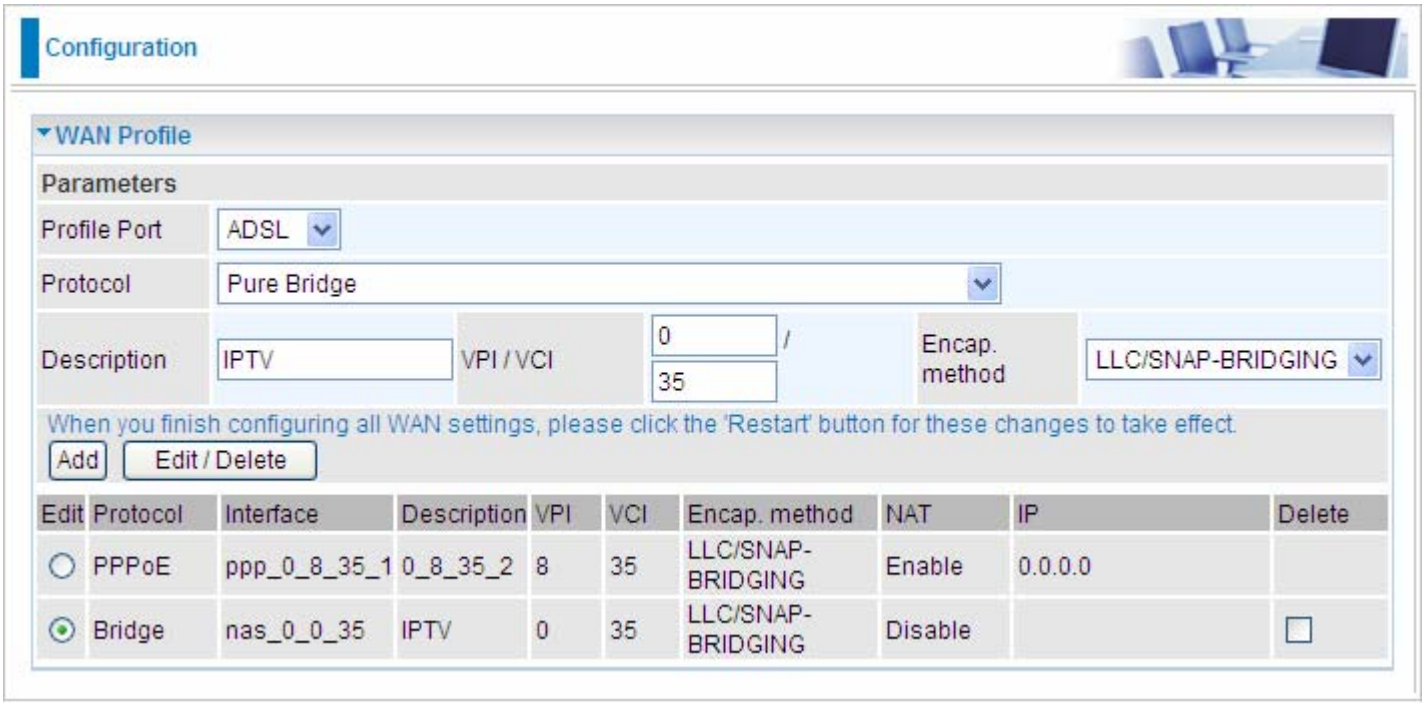
Example: IPTV Service Setting

Attention

This example is only to illustrate how to connect an Ethernet port to STB (Set Top Box) in a way to avoid IPTV traffic from affecting your home network. Nevertheless, the actual IPTV service setting still depends on the one offered by your local service provider.

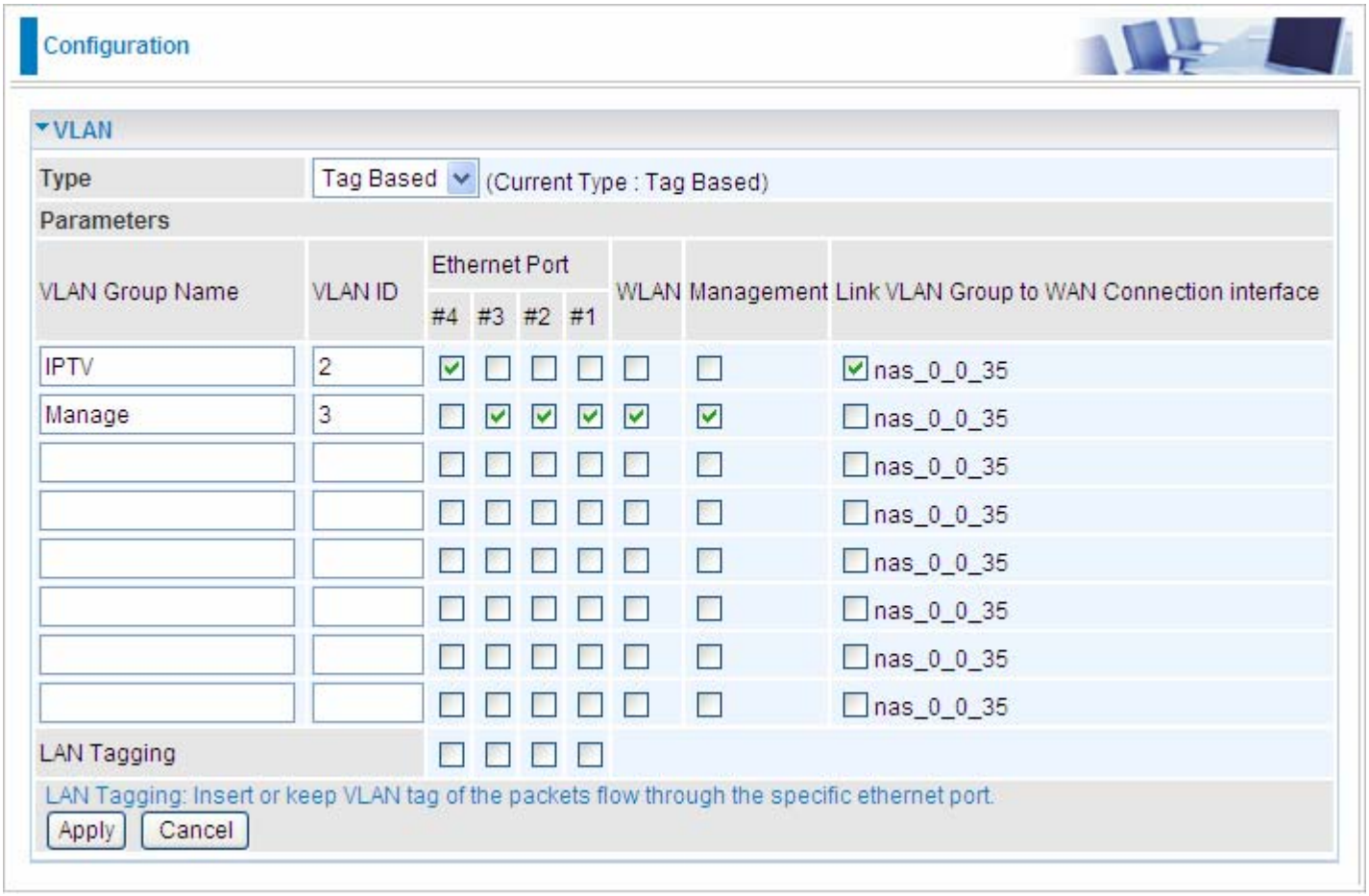
Go to Advanced mode > Configuration > WAN > WAN Profile. Add a new WAN profile using the Pure Bridge protocol. Information should be provided by your local service provider.

Note: Description name should not contain any space.



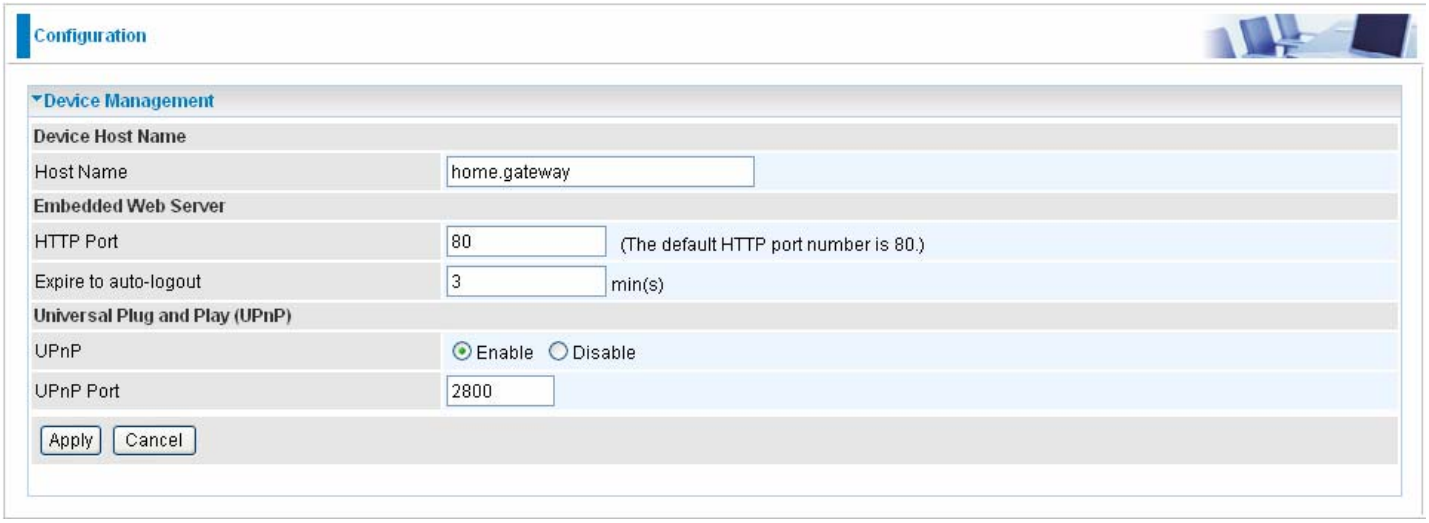
Then go to Advanced mode > Configuration > Advanced > VLAN. Then configure a port that will use the IPTV application. The example below is a setting that illustrates that only Ethernet port #4 can connect to STB and use IPTV.

Note: The VLAN setting illustrated bridges both WAN Profile and the Ethernet Port 4 so that the Ethernet port can connect to STB and get the IP directly from the IPTV Service Network. Thus, Ethernet port 4 can no longer be used for internet access and WEB management.



Device Management

The Device Management advanced configuration settings allow you to control your router's security options and device monitoring features.



Device Host Name

Host Name: Assign it a name**.**

HTTP Port: The default HTTP port number is 80, you can change it to another one**.**

(The Host Name cannot be used with one word only. There are two words should be connected with a '.' at least.
Example:
Host Name: homegateway ==> Incorrect
Host Name: home.gateway or my.home.gateway ==> Correct)

Expire to auto-logout: Specify a duration for the system to log the user out of the configuration session automatically.

Universal Plug and Play (UPnP)

UPnP offers peer-to-peer network connectivity for PCs and other network devices, along with the feature to control data transfer between devices. UPnP offers many advantages for users running NAT routers through UPnP NAT Traversal, and on supported systems. By letting the application control the required settings and removing the need for the user to control the advanced configuration of their device will make tasks such as port forwarding become easier.

Both user's Operating System and its relevant applications must support UPnP in addition to the router. Windows XP and Windows Me have a native built-in support for UPnP (when the component is installed). Windows 98 users may have to install the Internet Connection Sharing client from Windows XP in order to support UpnP feature. Windows 2000 does not support UPnP.

Disable: Check to inactivate the router's UPnP functionality.

Enable: Check to activate the router's UPnP functionality.

UPnP Port: Default setting is 2800. It is highly recommended for users to use this port value. If this value conflicts with other ports that have been used, you are allowed to change the port number.

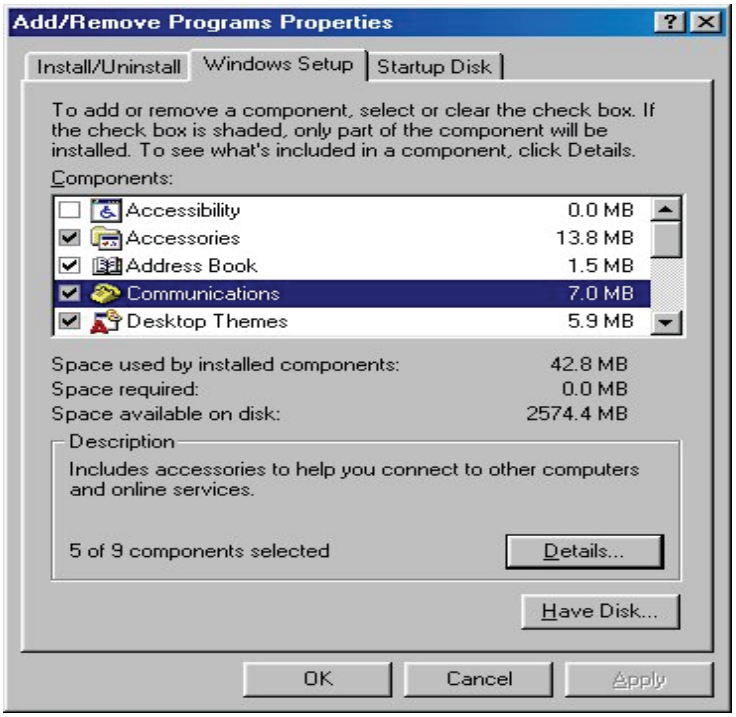
Click Apply to confirm the settings.

Installing UPnP in Windows Example

Follow the steps below to install the UPnP in Windows Me.

Step 1: Click Start and Control Panel. Double-click Add/Remove Programs.

Step 2: Click on the Windows Setup tab and select Communication in the Components selection box. Click Details.



Step 3: In the Communications window, select the Universal Plug and Play check box in the Components selection box.

Step 4: Click OK to go back to the Add/Remove Programs Properties window. Click Next.

Step 5: Restart the computer when prompted.

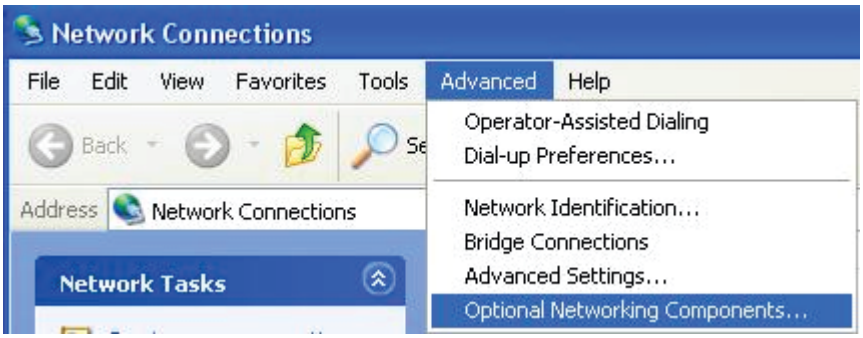
Follow the steps below to install the UPnP in Windows XP.

Step 1: Click Start and Control Panel.

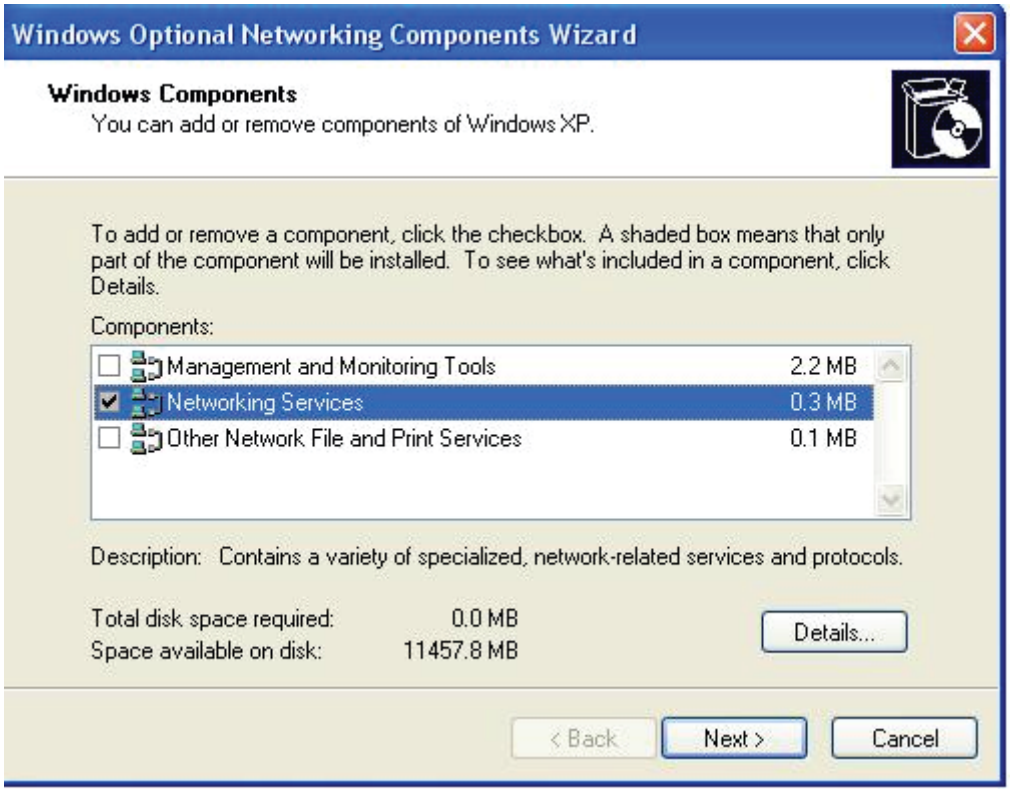
Step 2: Double-click Network Connections.

Step 3: In the Network Connections window, click Advanced in the main menu and select Optional Networking Components ….

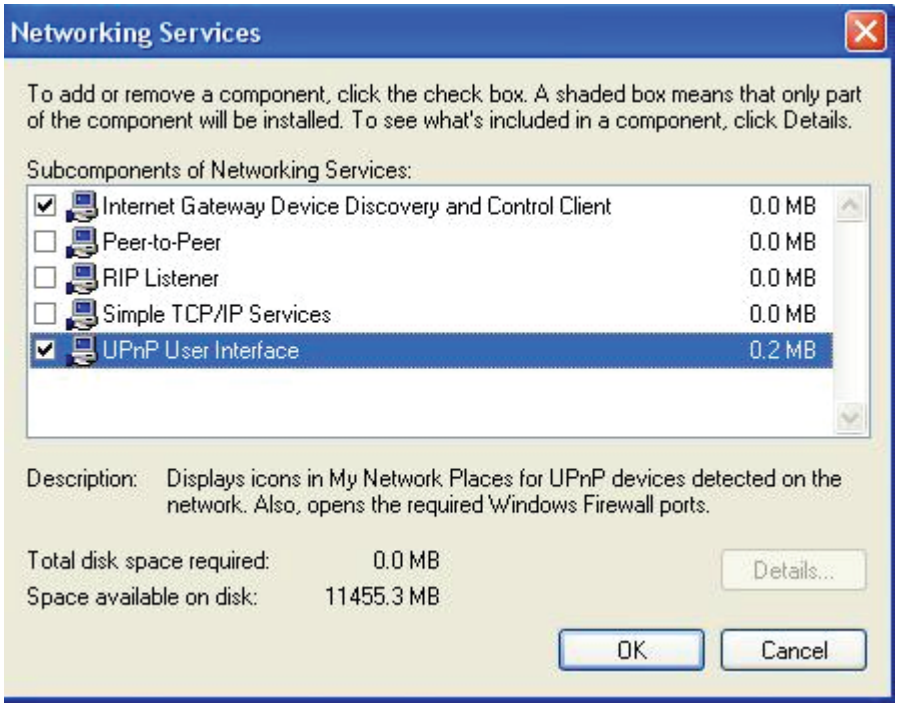
Step 4: When the Windows Optional Networking Components Wizard window appears, select Networking Service in the Components selection box and click Details.



Step 5: In the Networking Services window, select the Universal Plug and Play check box.



Step 6: Click OK to go back to the Windows Optional Networking Component Wizard window and click Next.



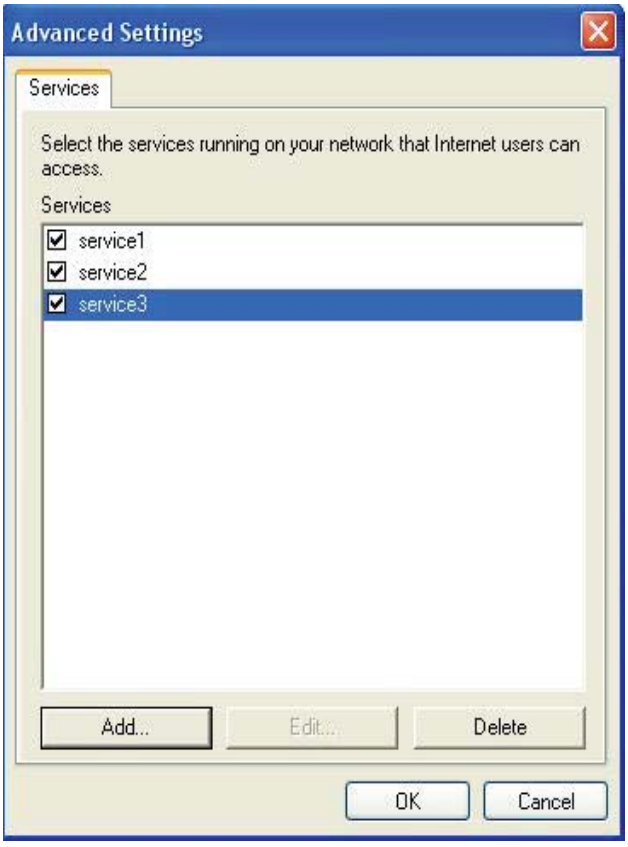
Auto-discover Your UPnP-enabled Network Device

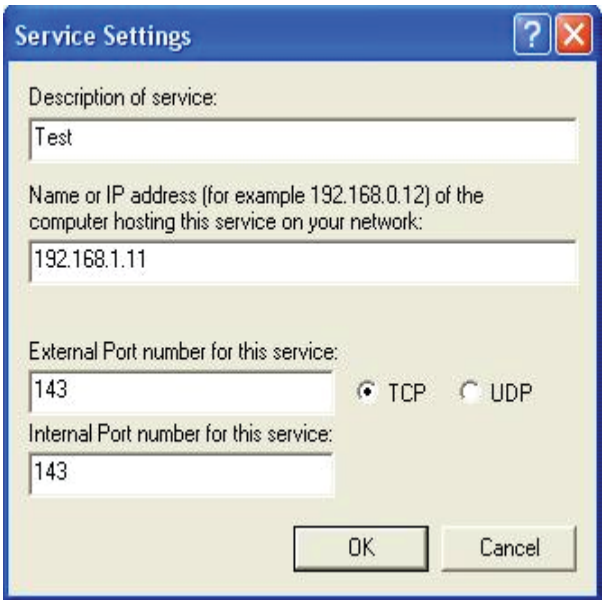
Step 1: Click start and Control Panel. Double-click Network Connections. An icon displays under Internet Gateway.

Step 2: Right-click the icon and select Properties.

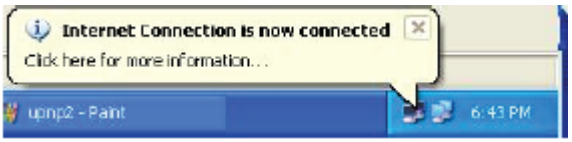
Step 3: In the Internet Connection Properties window, click Settings to see the port mappings that were automatically created.

Step 4: You may edit or delete the port mappings or click Add to manually add port mappings.

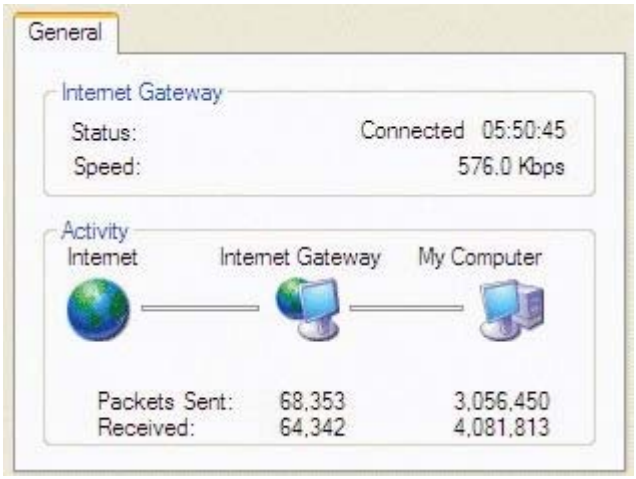




Step 5: Select Show icon in notification area when connected option and click OK. An icon displays in the system tray.



Step 6: Double-click on the icon to display your current Internet connection status.



Web Configurator Easy Access

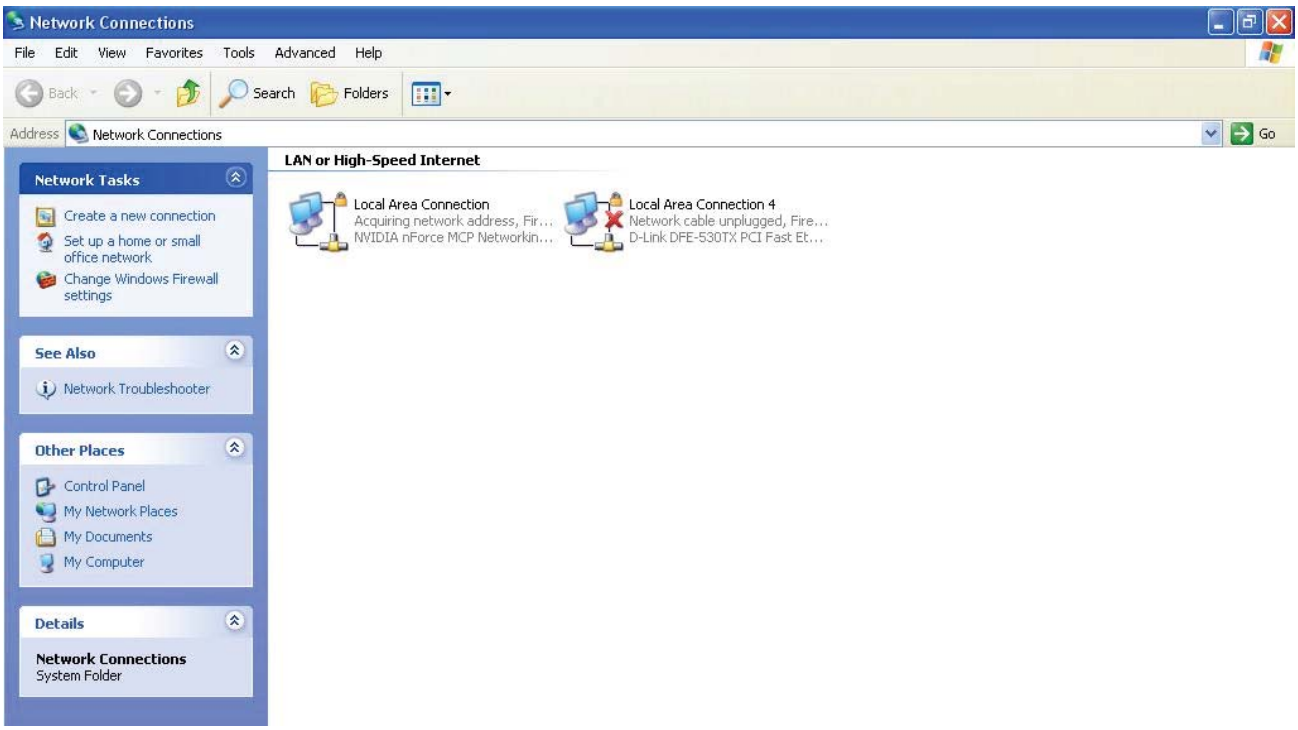
With UPnP, you can access web-based configuration for the BiPAC 7800GZ(L) without first finding out the IP address of the router. This helps if you do not know the router's IP address.

Follow the steps below to access web configuration.

Step 1: Click Start and then Control Panel.

Step 2: Double-click Network Connections.

Step 3: Select My Network Places under Other Places.



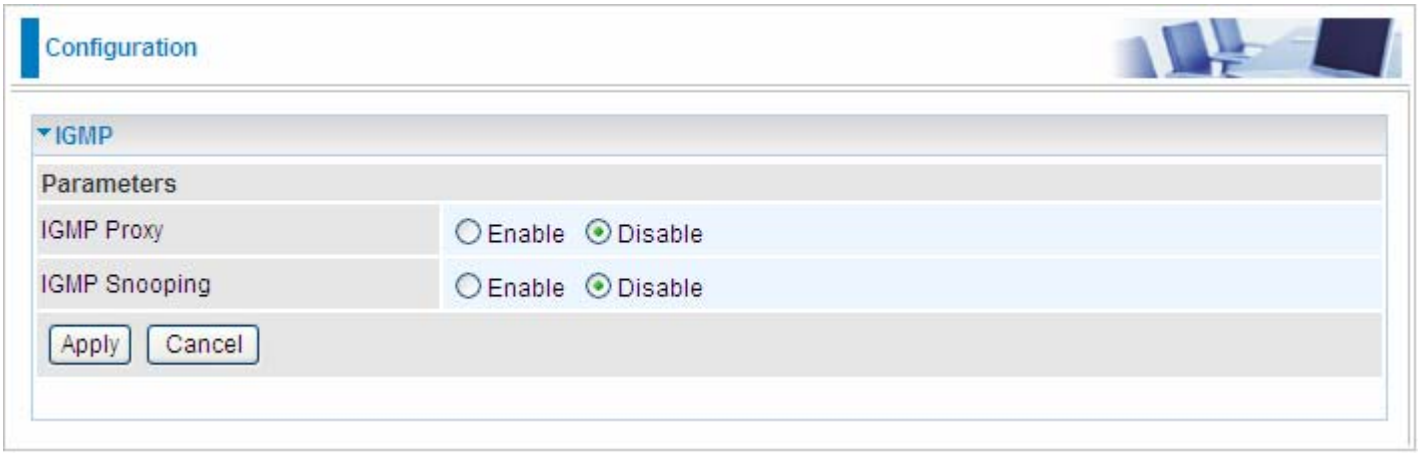
Step 4: An icon describing each UPnP-enabled device shows under Local Network.

Step 5: Right-click on the icon of your BiPAC 7800GZ(L) and select Invoke. The web configuration login screen displays.

Step 6: Right-click on the icon of your BiPAC 7800GZ(L) and select Properties. A properties window displays basic information about the BiPAC 7800GZ(L).

IGMP

IGMP, known as Internet Group Management Protocol, is used to manage hosts from multicast group.



IGMP Proxy: IGMP proxy enables the system to issue IGMP host messages on behalf of the hosts that the system has discovered through standard IGMP interfaces. The system acts as a proxy for its hosts. Default is set to Disable.

IGMP Snooping: Allows a layer 2 switch to manage the transmission of any incoming IGMP multicast packet groups between the host and the router. Default is set to Disable.

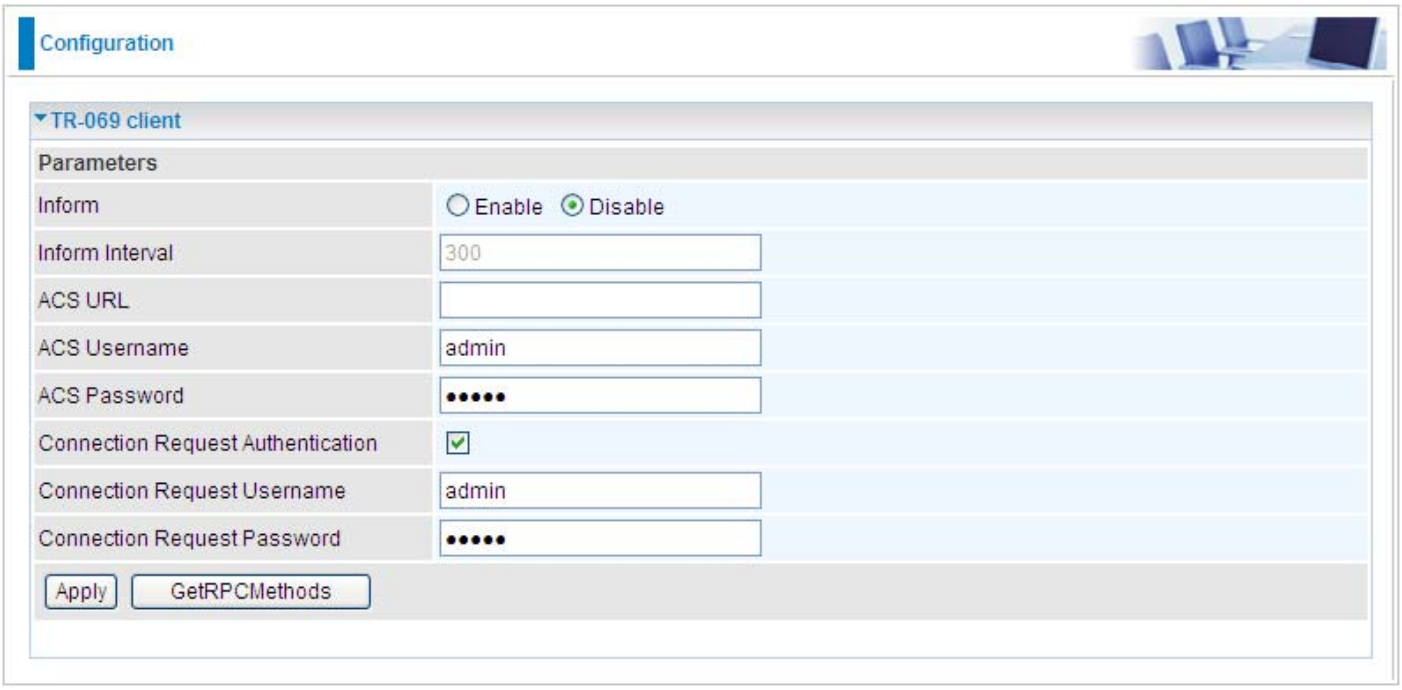
Click Apply to confirm the settings.

Example:

When IGMP snooping is enabled, the feature will analyze all incoming IGMP packets between the hosts that are connected to the switch and the multicast routers in the network. When the layer 2 switch receives an IGMP report from a host requesting for a given multicast group, the switch will add the host's port number to the multicast list for that multicast group to be forwarded to. And, when the layer 2 switch has detected that an IGMP has left, it will remove the host's port from the table entry.

TR-069 Client

Please contact your ISP for the information of TR069.



Inform: You may enable or disable the periodic inform feature.

Inform Interval: Enter the length of the periodic inform interval (unit: seconds).

ACS URL: Enter the ACS URL address.

ACS Username: Enter the ACS server login name.

ACS Password: Enter the ACS server login password.

Connection Request Authentication: Check to enable connection request authentication feature.

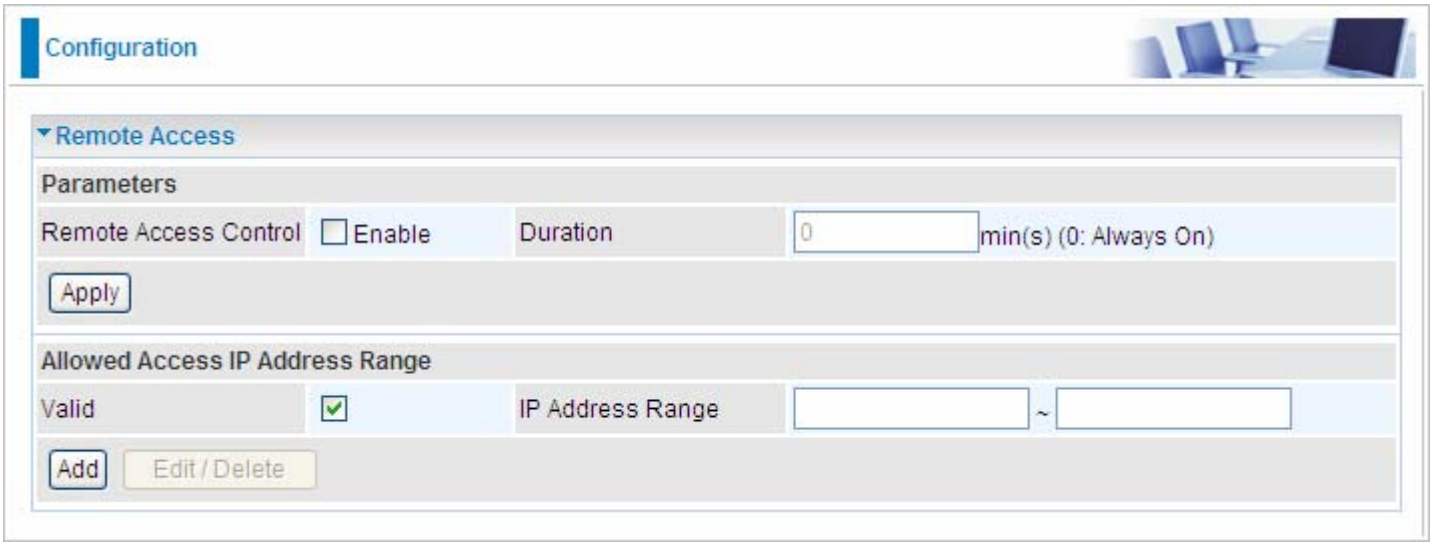
Connection Request Username: Enter the username for ACS server to make connection request.

Connection Request Password: Enter the password for ACS server to make connection request.

GetRPCMethods: Detect the types of methods that ACS supports and is in communication with.

Click Apply to confirm the settings.

Remote Access



Remote Access Control: Select Enable to allow management access from remote side (mostly from internet).

"Allowed Access IP Address Range" was used to restrict which IP address could login to access system web GUI.

Valid: means to enable the IP address Range limitation.

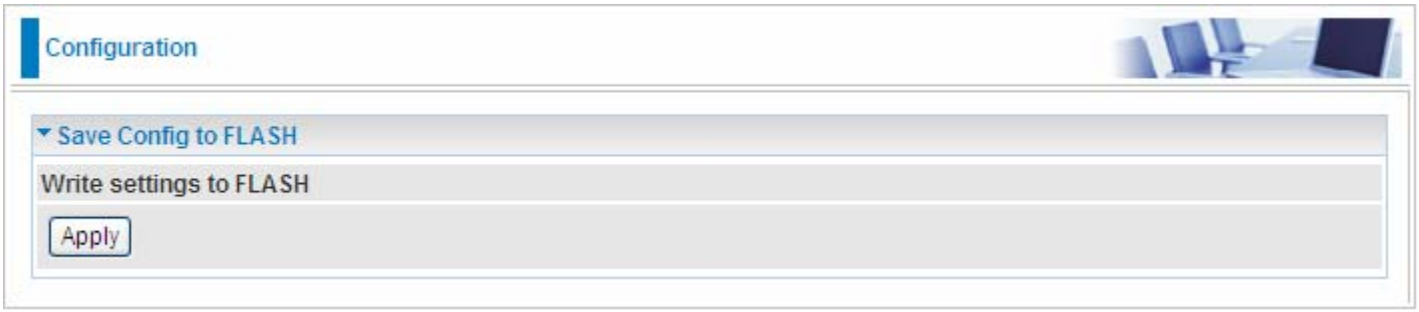
IP Address Range: specify the IP address Range.

Click **Apply** to confirm Remote Access Control setting.

Click **Add** to add an IP Range to allow remote access.

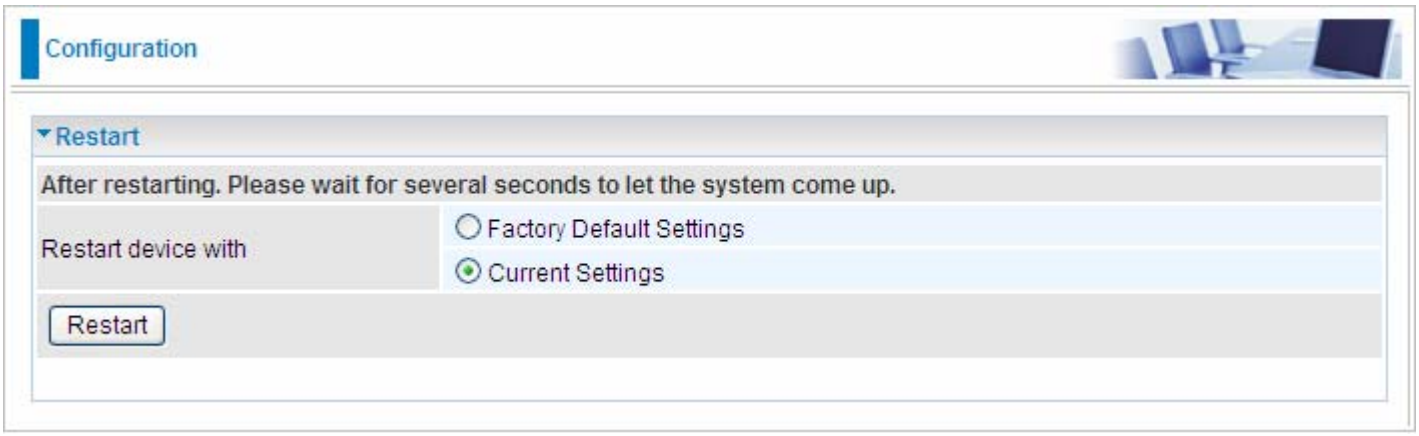
Save Configuration to Flash

After changing the router's configuration settings, you must save all of the configuration parameters to FLASH to avoid losing them after turning off or resetting your router. Click "Save Config" and click "Apply" to write your new configuration to FLASH.



Restart

Click “Restart” with option Current Settings to reboot your router (and restore your last saved configuration).



If you wish to restart the router using the factory default settings (for example, after a firmware upgrade or if you have saved an incorrect configuration), select Factory Default Settings to reset to factory default settings.

Logout

To exit the router web interface, choose Logout. Please save your configuration setting before logging out of the system.

Be aware that the router configuration interface can only be accessed by one PC at a time. Therefore when a PC has logged into the system interface, the other users cannot access the system interface until the current user has logged out of the system. If the previous user forgets to logout, the second PC can only access the router web interface after a user-defined auto logout period which is by default 3 minutes. You can however modify the value of the auto logout period using the Advanced > Device Management section of the router web interface. Please see the Advanced section of this manual for more information.

Chapter 5: Troubleshooting

If your router is not functioning properly, please refer to the suggested solutions provided in this chapter. If your problems persist or the suggested solutions do not meet your needs, please kindly contact your service provider or Billion for support.

Problems with the router

Problem	Suggested Action
None of the LEDs lit when the router is turned on	Check the connection between the router and the adapter. If the problem persists, most likely it is due to the malfunction of your hardware. Please contact your service provider or Billion for technical support.
You have forgotten your login username or password	Try the default username "admin" and password "admin". If this fails, you can restore your router to its factory settings by holding the Reset button on the back of your router more than 6 seconds.

Problems with WAN interface

Problem	Suggested Action
Frequent loss of ADSL linesync (disconnections)	Ensure that all other devices connected to the same telephone line as your router (e.g. telephones, fax machines, analogue modems) have a line filter connected between them and the wall socket (unless you are using a Central Splitter or Central Filter installed by a qualified and licensed electrician), and ensure that all line filters are correctly installed and the right way around. Missing line filters or line filters installed the wrong way around can cause problems with your ADSL connection, including causing frequent disconnections. If you have a back-to-base alarm system you should contact your security provider for a technician to make any necessary changes.
Either 3G or wireless performance is limited	Make sure you install the right antennae on the right jacks as mentioned in the package contents, hardware overview and hardware installation. If it remains occur, please refer to User manual or consult your service provider.

Problem with LAN interface

Problem	Suggested Action
Cannot PING any PC on LAN	Check the Ethernet LEDs on the front panel. The LED should be on for the port that has a PC connected. If it does not lit, check to see if the cable between your router and the PC is properly connected. Make sure you have first uninstalled your firewall program before troubleshooting.
	Verify that the IP address and the subnet mask are consistent for both the router and the workstations.

Appendix: Product Support & Contact

If you come across any problems please contact the dealer from where you purchased your product.

Contact Billion

Worldwide:

http://www.billion.com

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