# BiPAC 7404V(G)OX
# BiPAC 7404V(G)PX

## VoIP/(802.11g) ADSL2+ (VPN) Firewall Router

## User Manual

Version release 5.53.s5.rc3

Last Revised Date 23-10-2008

# Table of Contents

# Chapter 1: Introduction

## Introduction to your Router

Welcome to the VoIP/ (802.11g) ADSL2+(VPN) Firewall Router. The router is an “all-in-one” ADSL router, combining an ADSL modem, ADSL router and Ethernet network switch functionalities, providing everything you need to get the machines on your network connected to the Internet over your ADSL broadband connection. With features such as an ADSL Quick-Start wizard and DHCP Server, you can be online in no time at all and with a minimum of fuss and configuration, catering for first-time users to the guru requiring advanced features and control over their Internet connection and network.

## Features

### Express Internet Access

The router complies with ADSL worldwide standards. It supports downstream rate up to 12/24 Mbps with ADSL2/2+, 8Mbps with ADSL. Users enjoy not only high-speed ADSL services but also broadband multimedia applications such as interactive gaming, video streaming and real-time audio much easier and faster than ever. It is compliant with Multi-Mode standard (ANSI T1.413, Issue 2; G.dmt (ITU G.992.1); G.lite (ITU G.992.2); G.hs (ITU G994.1); G.dmt.bis (ITU G.992.3); G.dmt.bis.plus (ITU G.992.5)).

### 802.11g Wireless AP with WPA Support (Wireless Router only)

With integrated 802.11g Wireless Access Point in the router, the device offers a quick and easy access among wired network, wireless network and broadband connection (ADSL) with single device simplicity, and as a result, mobility to the users. In addition to 54 Mbps 802.11g data rate, it also interoperates backward with existing 802.11b equipment. The Wireless Protected Access (WPA-PSK and WPA2-PSK) and Wireless Encryption Protocol (WEP) supported features enhance the security level of data protection and access control via Wireless LAN.

### Fast Ethernet Switch

A 4-port 10/100Mbps fast Ethernet switch is built in with automatic switching between MDI and MDI-X for 10Base-T and 100Base-TX ports. An Ethernet straight or crossover cable can be used directly for auto detection.

### Multi-Protocol to Establish a Connection

It supports PPPoA (RFC 2364 - PPP over ATM Adaptation Layer 5), RFC 1483 encapsulation overATM (bridged or routed), PPP over Ethernet (RFC 2516), and IPoA (RFC1577) to establish a connection with the ISP. The product also supports VC-based and LLC-based multiplexing.

### Quick Installation Wizard

It supports a WEB GUI page to install this device quickly. With this wizard, end users can enter the information easily which they get from their ISP, then surf the Internet immediately.

### Universal Plug and Play (UPnP) and UPnP NAT Traversal

This protocol is used to enable simple and robust connectivity among stand-alone devices and PCs from many different vendors. It makes network simple and affordable for users. UPnP architecture leverages TCP/IP and the Web to enable seamless proximity networking in addition to control and data transfer among networked devices. With this feature enabled, users can now connect to Net meeting or MSN Messenger seamlessly.

### Network Address Translation (NAT)

Allows multi-users to access outside resources such as the Internet simultaneously with one IP address/one Internet access account. Many application layer gateway (ALG) are supported such as web browser, ICQ, FTP, Telnet, E-mail, News, Net2phone, Ping, NetMeeting, IP phone and others.

### SOHO Firewall Security with DoS and SPI

Along with the built-in NAT natural firewall feature, the router also provides advanced hacker pattern-filtering protection. It can automatically detect and block Denial of Service (DoS) attacks. The router is built with Stateful Packet Inspection (SPI) to determine if a data packet is allowed through the firewall to the private LAN.

### Domain Name System (DNS) Relay

It provides an easy way to map the domain name (a friendly name for users such as www.yahoo.com) and IP address. When a local machine sets its DNS server with this router’s IP address, every DNS conversion request packet from the PC to this router will be forwarded to the real DNS in the outside network.

### Dynamic Domain Name System (DDNS)

The Dynamic DNS service allows you to alias a dynamic IP address to a static hostname. This dynamic IP address is the WAN IP address. For example, to use the service, you must first apply for an account from a DDNS service like http://www.dyndns.org/. More than 5 DDNS servers are supported.

### Quality of Service (QoS)

QoS gives you full control over which types of outgoing data traffic should be given priority by the router, ensuring important data like gaming packets, customer information, or management information move through the router ay lightning speed, even under heavy load. The QoS features are configurable by source IP address, destination IP address, protocol, and port. You can throttle the speed at which different types of outgoing data pass through the router, to ensure P2P users don’t saturate upload bandwidth, or office browsing doesn’t bring client web serving to a halt. In addition, or alternatively, you can simply change the priority of different types of upload data and let the router sort out the actual speeds.

### Virtual Server (“port forwarding”)

Users can specify some services to be visible from outside users. The router can detect incoming service requests and forward either a single port or a range of ports to the specific local computer to handle it. For example, a user can assign a PC in the LAN acting as a WEB server inside and expose it to the outside network. Outside users can browse inside web servers directly while it is protected by NAT. A DMZ host setting is also provided to a local computer exposed to the outside network, Internet.

### Rich Packet Filtering

Not only filters the packet based on IP address, but also based on Port numbers. It will filter packets from and to the Internet, and also provides a higher level of security control.

### Dynamic Host Configuration Protocol (DHCP) Client and Server

In the WAN site, the DHCP client can get an IP address from the Internet Service Provider (ISP) automatically. In the LAN site, the DHCP server can allocate a range of client IP addresses and distribute them including IP address, subnet mask as well as DNS IP address to local computers. It provides an easy way to manage the local IP network.

### Static and RIP1/2 Routing

It has routing capability and supports easy static routing table or RIP1/2 routing protocol.

### Simple Network Management Protocol (SNMP)

It is an easy way to remotely manage the router via SNMP.

### Web based GUI

It supports web based GUI for configuration and management. It is user-friendly and comes with on-line help. It also supports remote management capability for remote users to configure and manage this product.

### Firmware Upgradeable

Device can be upgraded to the latest firmware through the WEB based GUI.

### Rich Management Interfaces

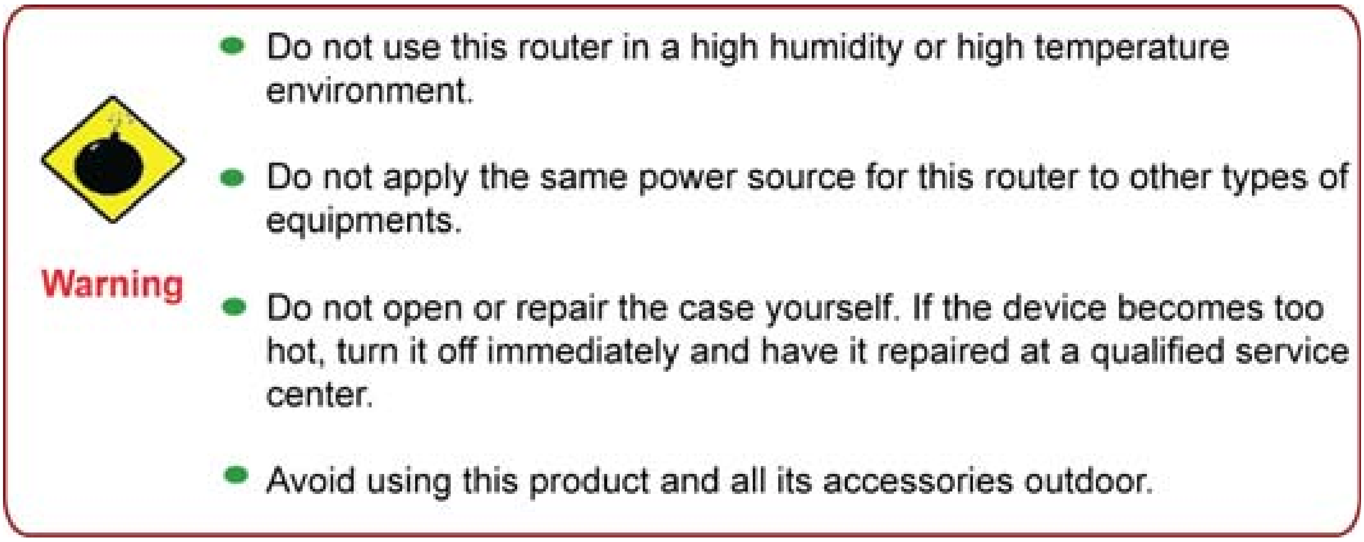
It supports flexible management interfaces with local console port, LAN port, and WAN port. Users can use terminal applications through the console port to configure and manage the device, or Telnet, WEB GUI, and SNMP through LAN or WAN ports to configure and manage the device.

### Virtual Private Network (VPN) (BiPAC 7404V(G)OX only)

It allows user to make a tunnel with a remote site directly to secure the data transmission among the connection. User can use embedded PPTP and L2TP client/server, IKE and IPSec which are supported by this router to make a VPN connection or users can run the PPTP client in PC and the router already provides IPSec and PPTP pass through function to establish a VPN connection if the user likes to run the PPTP client in his local computer.

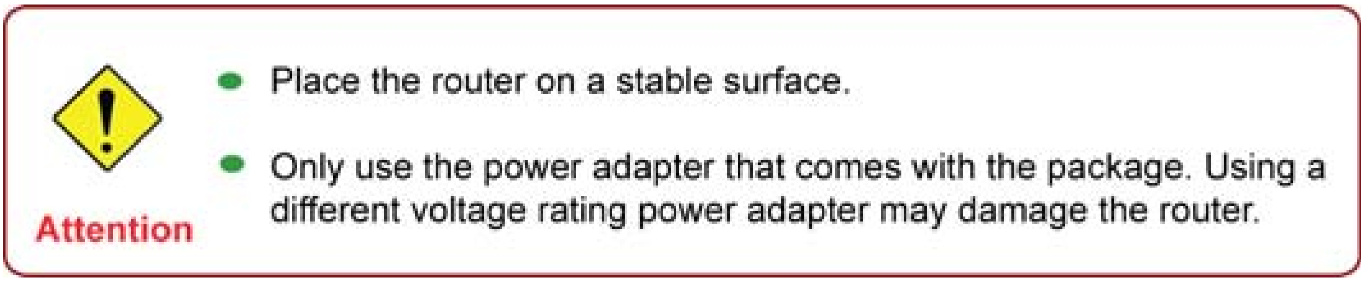
# Chapter 2: Installing the Router

## Important note for using this router



Warning

- Do not use this router in a high humidity or high temperature environment.
- Do not apply the same power source for this router to other types of equipments.
- Do not open or repair the case yourself. If the device becomes too hot, turn it off immediately and have it repaired at a qualified service center.
- Avoid using this product and all its accessories outdoor.



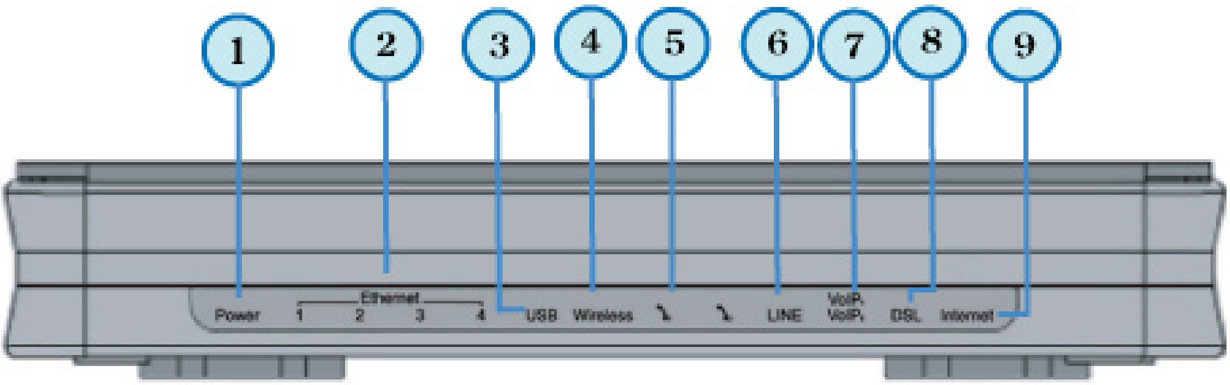
Attention

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

## Package Contents

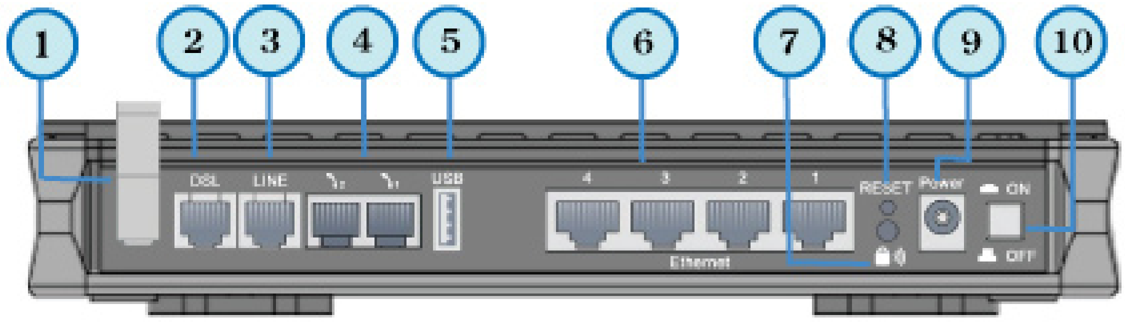
-
- **CD-ROM containing the online manual**
- **RJ-11 ADSL/telephone Cable**
- **Ethernet (CAT-5) Cable**
- **Console kit**
- **Power adapter**
- **A detachable antenna**
- **Quick Start Guide**

# The Front LEDs.



| LED | | Meaning |
|---|---|---|
| 1 | **Power** | Lit when power is ON. Lit red means system failure. Restart the device or contact Billion for support. |
| 2 | **Ethernet Port 1X — 4X** (RJ-45 connector) | Lit when one of LAN ports is connected to an Ethernet device.<br>Lit green when the speed of transmission hits 100Mbps; Lit orange when the speed of transmission hits 10Mbps.<br>Blink when data is being Transmitted / Received. |
| 3 | **USB** | Lit when the router is connected to a USB device.<br>Flash when data is received / transmitted. |
| 4 | **Wireless** | Lit green when a wireless connection is established.<br>Flash when the device is sending/receiving data. |
| 5 | **Phone 1x-2x (RJ-11 connector)** | Lit green when phone is off hook. |
| 6 | **Line** (Router with LINE port only) | Lit when the inbound and outbound calls are transmitted through PSTN. |
| 7 | **VoIP 1x-2x (RJ-11 connector)** | After SIP registration is OK, the LED will lit green whenever phone 1 is off hook but will lit orange for phone 2.<br>***Note: Orange light also means when both Phone 1 and 2 are registered OK at the same time.*** |
| 8 | **DSL** | Lit Green when the device is successfully connected to an ADSL DSLAM. ("line sync"). |
| 9 | **Internet** | Lit red when WAN port fails to get IP address.<br>Lit green when WAN port gets IP address successfully. |

## The Rear Ports



**NOTE:** Ethernet # 4 can be used as a console port. You need a special console tool which is included in the package to connect with the LAN.

| Port | | Meaning |
|---|---|---|
| 1 | **Antenna**<br>(Wireless Router only) | Connect the detachable antenna to this port. |
| 2 | **DSL** | Connect this port to the ADSL/telephone network with the RJ-11 cable (telephone) provided. |
| 3 | **Line**<br>(Router with LINE port only) | Connect this port to the telephone jack on the wall with RJ-11 cable. |
| 4 | **Phone**<br>**1X-2X** (RJ-11 connector) | Connect this port to an analog phone set with RJ-11 cable. |
| 5 | **USB** | Connect the USB cable to this port. |
| 6 | **Ethernet**<br>**1X — 4X**<br>(RJ-45 connector) | Connect a UTP Ethernet cable (Cat-5 or Cat-5e) to one of the LAN ports when connecting to a PC or an office/home network of 10Mbps or 100Mbps.<br>***Caution: Port 4 can be either a LAN or Console port at a time but not both.*** |
| 7 | **WPS** | Push WPS button to trigger Wi-Fi Protected Setup function. |
| 8 | **RESET** | To be sure the device is being turned on press RESET button for:<br>1-3 seconds: quick reset the device.<br>6 seconds and above, power off, power on the device: restore to factory default settings. (Cannot login to the router or forgot your Username/Password. Press the button for more than 6 seconds).<br>***Caution: After pressing the RESET button for more than 6 seconds, to be sure you power cycle the device again.*** |
| 9 | **Power** | Connect it with the supplied power adapter. |
| 10 | **Power Switch** | Power ON/OFF switch |

## 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.

Make sure that all devices (e.g. telephones, fax machines, analogue modems) connected to the same telephone line as your router have a line filter connected between them and the wall outlet (unless you are using a Central Splitter or Central Filter installed by a qualified and licensed electrician), and that all line filters are correctly installed in a right way. If line filter is not installed and connected properly, it may cause problem to your ADSL connection or may result in frequent disconnections.

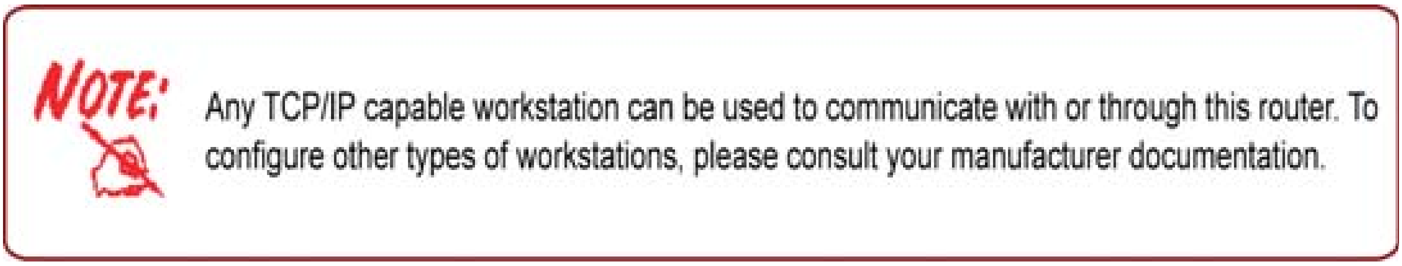
# Chapter 3: Basic Installation

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.

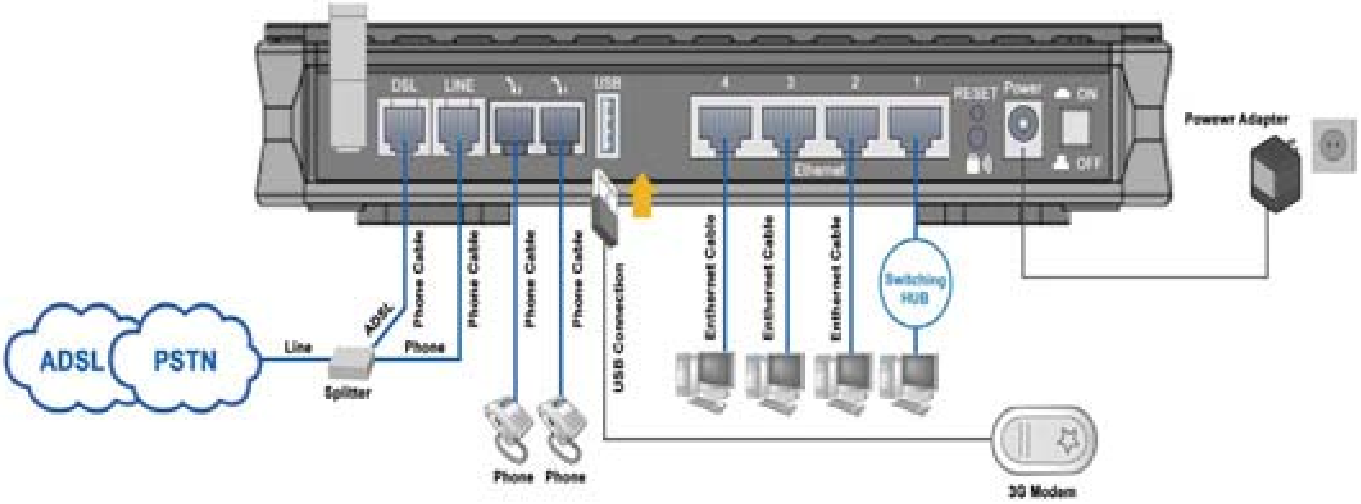
Please follow the following steps to configure your PC network environment.



NOTE: Any TCP/IP capable workstation can be used to communicate with or through this router. To configure other types of workstations, please consult your manufacturer documentation.

# Connecting Your Router

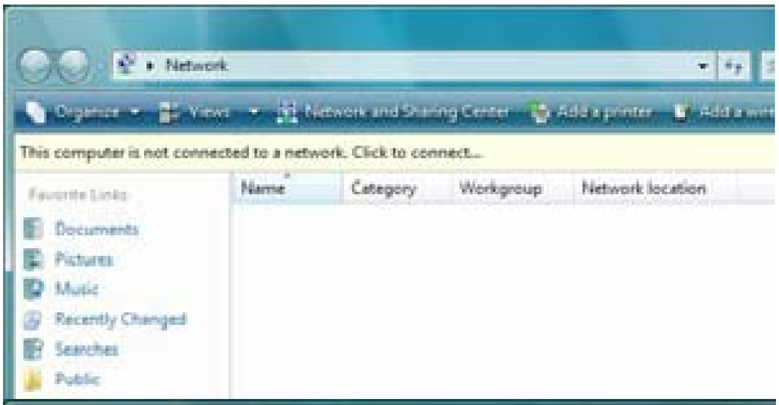
1. Connect this router to a **LAN** (Local Area Network) and the ADSL/telephone (**ADSL**) net work.
2. Power on the device.
3. Make sure the **Power LED** lit steadily and that the **LAN** LED is lit.
4. Connect your router to the telephone jack on the wall with RJ-11 cable.
5. Connect the USB 2.0 cable.



# Network Configuration

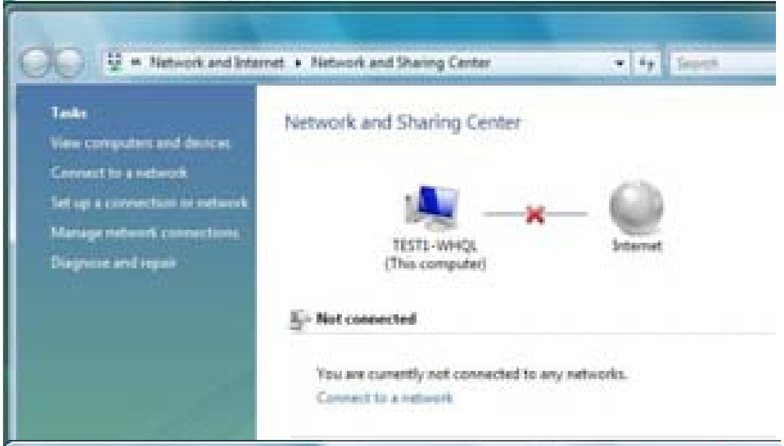
## Configuring PC in Windows Vista

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



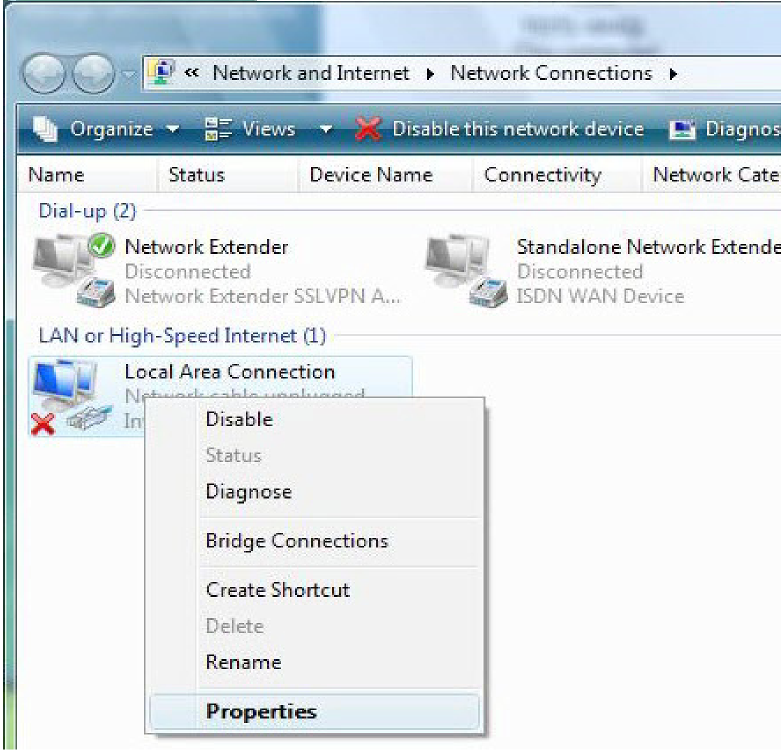
This computer is not connected to a network. Click to connect...

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

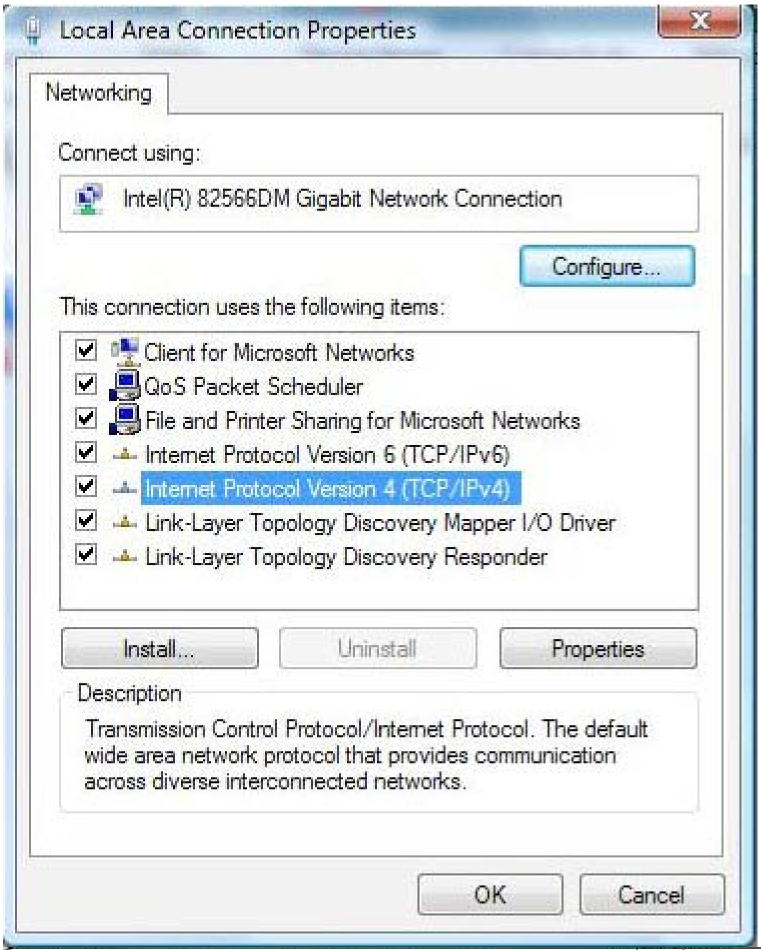


You are currently not connected to any networks.

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.



Local Area Connection Properties

Networking

Connect using:

Intel(R) 82566DM Gigabit Network Connection

This connection uses the following items:

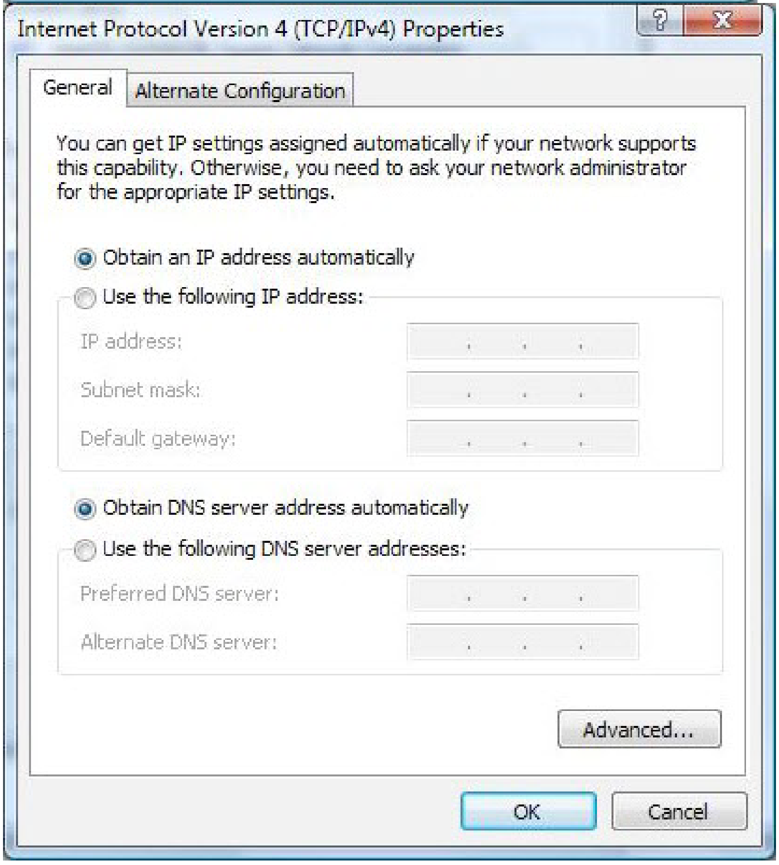
☑ Client for Microsoft Networks
☑ QoS Packet Scheduler
☑ File and Printer Sharing for Microsoft Networks
☑ Internet Protocol Version 6 (TCP/IPv6)
☑ Internet Protocol Version 4 (TCP/IPv4)
☑ Link-Layer Topology Discovery Mapper I/O Driver
☑ Link-Layer Topology Discovery Responder

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

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.



Internet Protocol Version 4 (TCP/IPv4) Properties

General | Alternate Configuration

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically
○ Use the following IP address:

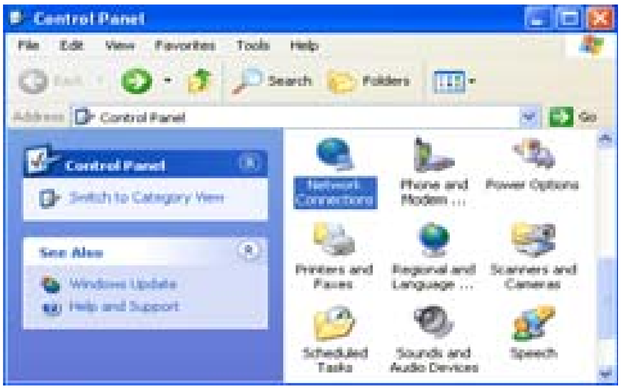
IP address: . . .
Subnet mask: . . .
Default gateway: . . .

● Obtain DNS server address automatically
○ Use the following DNS server addresses:

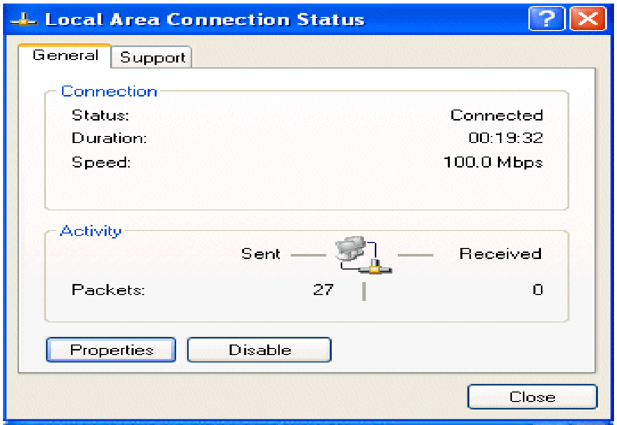
Preferred DNS server: . . .
Alternate DNS server: . . .

# 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.



Connection

Status: Connected

Duration: 00:19:32

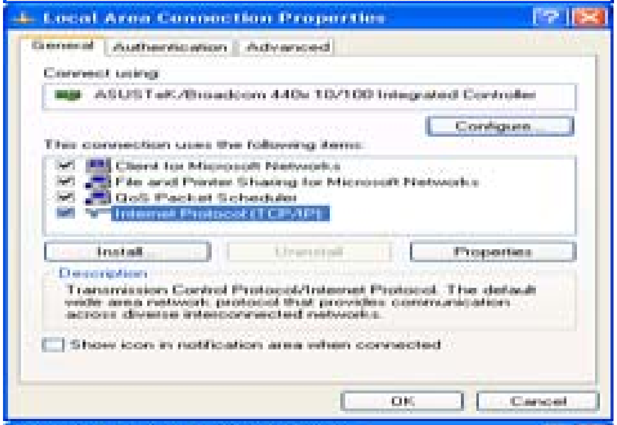
Speed: 100.0 Mbps

Activity

Sent — Received

Packets: 27 | 0

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


Local Area Connection Properties
General Authentication Advanced
Configure...
Install... Uninstall Properties
OK Cancel

Connect using:

ASUSTeK/Broadcom 440x 10/100 Integrated Controller

This connection uses the following items:

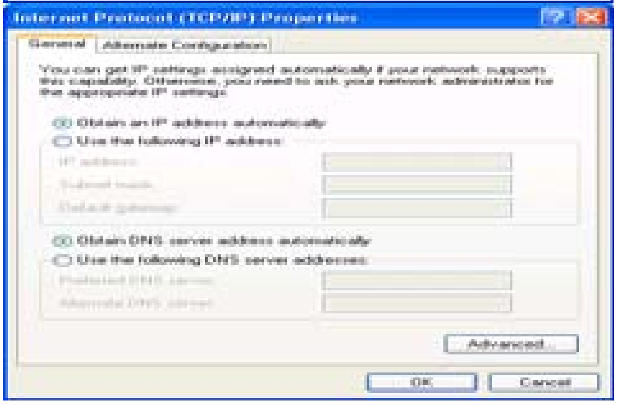
☑ Client for Microsoft Networks
☑ File and Printer Sharing for Microsoft Networks
☑ QoS Packet Scheduler
☑ Internet Protocol (TCP/IP)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

□ Show icon in notification area when connected

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


Internet Protocol (TCP/IP) Properties
General Alternate Configuration
Advanced...
OK Cancel

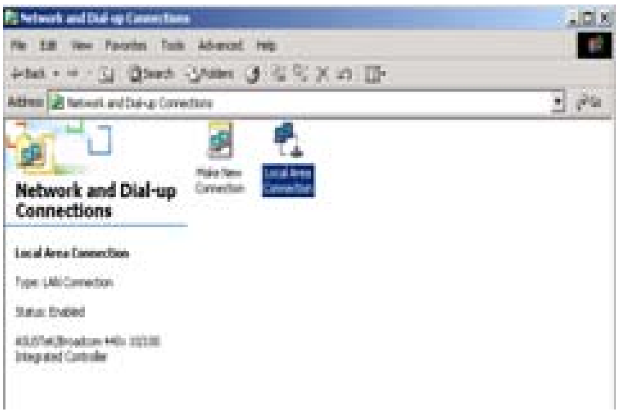
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically
○ Use the following IP address:
IP address:
Subnet mask:
Default gateway:

● Obtain DNS server address automatically
○ Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:

# 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.


Network and Dial-up Connections
File Edit View Favorites Tools Advanced Help
Back Search Folders
Address Network and Dial-up Connections
Make New Connection
Local Area Connection

Network and Dial-up Connections

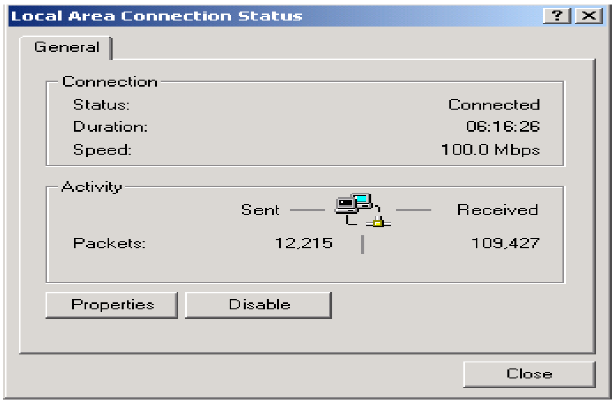
Local Area Connection

Type: LAN Connection

Status: Enabled

ASUSTeK/Broadcom 440x 10/100 Integrated Controller

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



Local Area Connection Status

Connection

Status: Connected

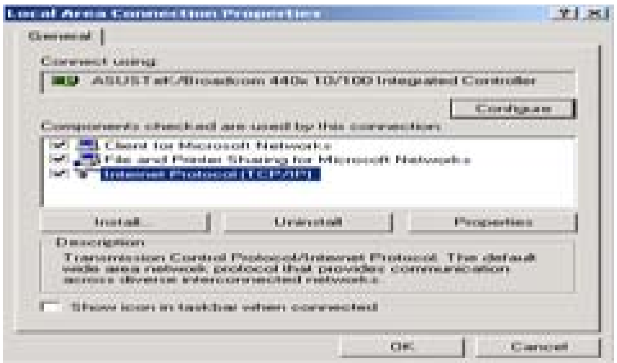
Duration: 06:16:26

Speed: 100.0 Mbps

Activity

| | Sent | Received |
|---|---|---|
| Packets: | 12,215 | 109,427 |

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



Local Area Connection Properties

Connect using:

ASUSTeK/Broadcom 440x 10/100 Integrated Controller

Components checked are used by this connection:

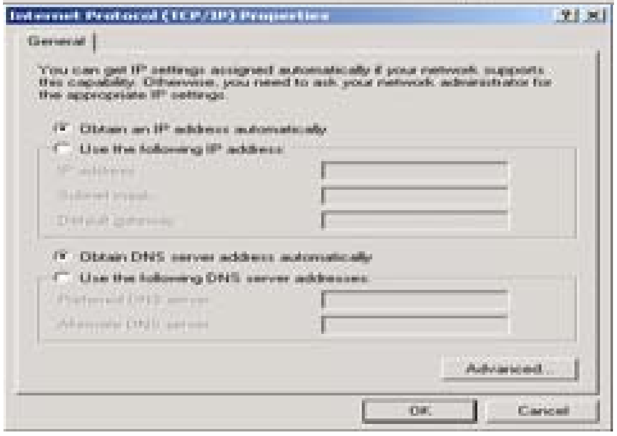
☑ Client for Microsoft Networks
☑ File and Printer Sharing for Microsoft Networks
☑ Internet Protocol (TCP/IP)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

□ Show icon in taskbar when connected

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



Internet Protocol (TCP/IP) Properties

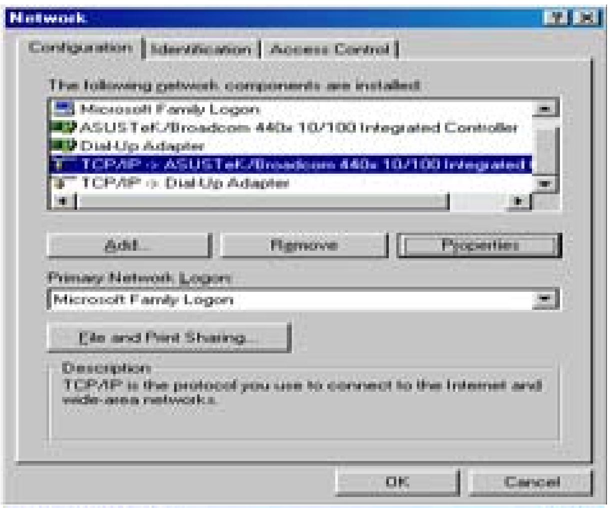
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically
○ Use the following IP address:
IP address:
Subnet mask:
Default gateway:

● Obtain DNS server address automatically
○ Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:

# 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.



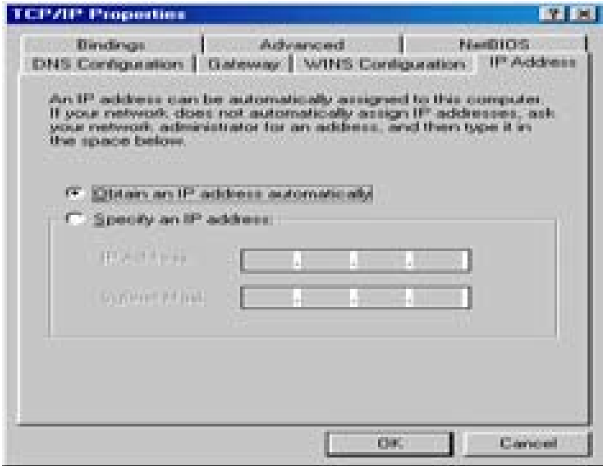
The following network components are installed:

- Microsoft Family Logon
- ASUSTeK/Broadcom 440x 10/100 Integrated Controller
- Dial-Up Adapter
- TCP/IP -> ASUSTeK/Broadcom 440x 10/100 Integrated
- TCP/IP -> Dial-Up Adapter

Primary Network Logon: Microsoft Family Logon

Description
TCP/IP is the protocol you use to connect to the Internet and wide-area networks.

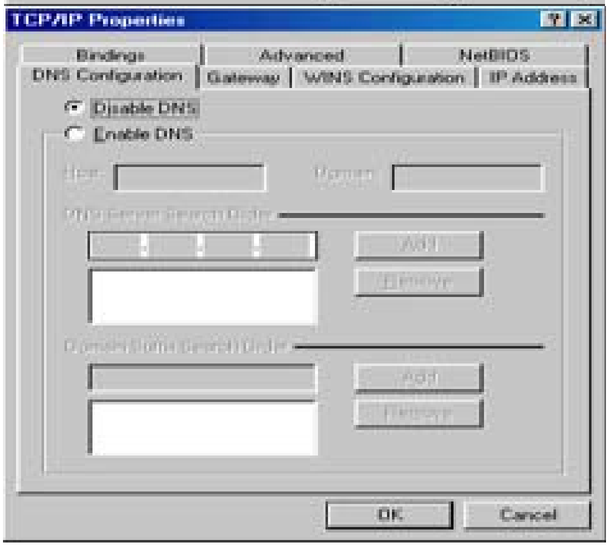
3. Select the Obtain an IP address automatically radio button.



An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.

● Obtain an IP address automatically
○ Specify an IP address:

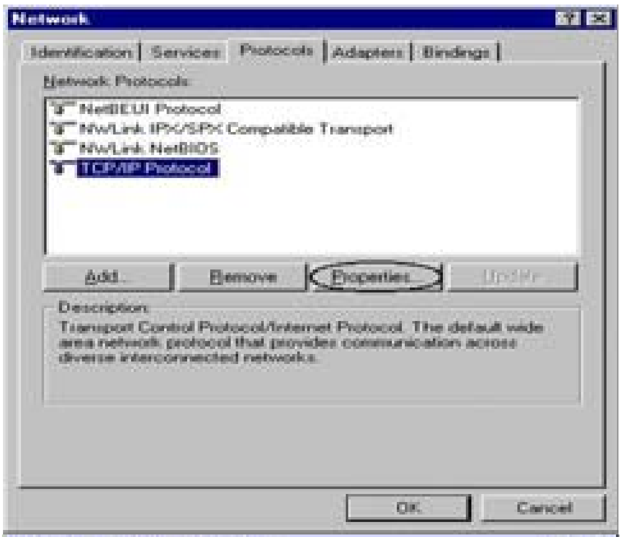
4. Then select the DNS Configurationtab.
5. Select the Disable DNS radio button and click OK to finish the configuration.



● Disable DNS
○ Enable DNS

# 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.

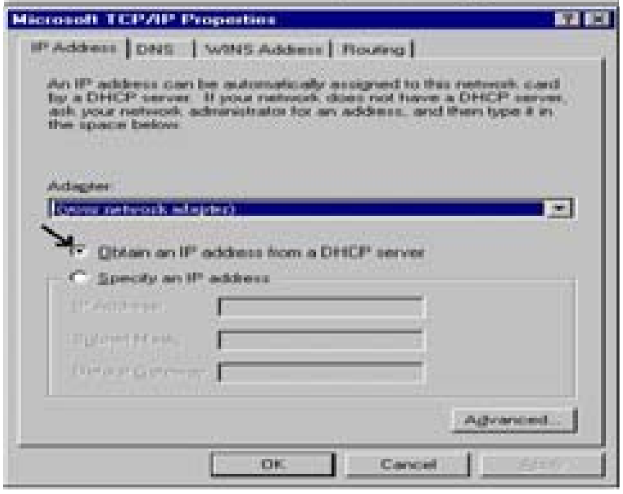


Network Protocols:

- NetBEUI Protocol
- NWLink IPX/SPX Compatible Transport
- NWLink NetBIOS
- TCP/IP Protocol

Description:
Transport Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

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



An IP address can be automatically assigned to this network card by a DHCP server. If your network does not have a DHCP server, ask your network administrator for an address, and then type it in the space below.

Adapter:
(your network adapter)

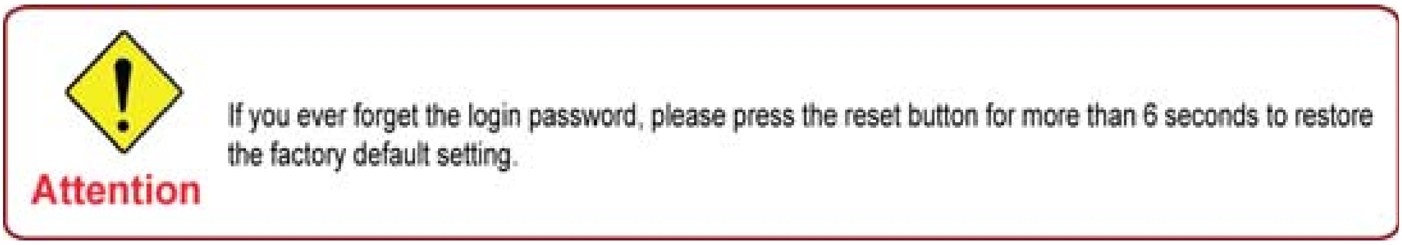
● Obtain an IP address from a DHCP server
○ Specify an IP address

# Factory Default Settings

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

### Web Interface (Username and Password)

- Username: admin
- Password: admin



Attention

If you ever forget the login password, please press the reset button for more than 6 seconds to restore the factory default setting.

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

### 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 tale.

| 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

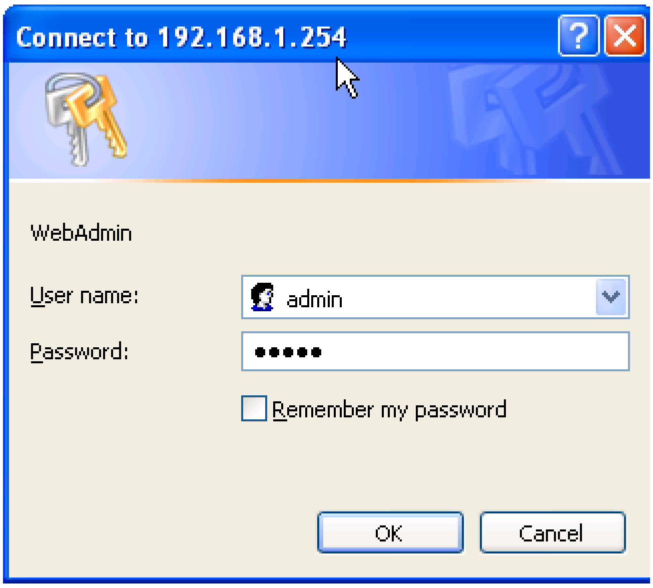
Before configuring this device, you have to check with your ISP (Internet Service Provider) to find out what kind of service is provided such as DHCP (Obtain an IP Address Automatically, Static IP (Fixed IP Address) or PPPoE.

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(RFC2684) | 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. |

# Configuring with your Web Browser

Open your web browser, enter the IP address of your router, which by default is 192.168.1.254, and click “Go”, a user name and password window prompt will appear. The default username and password are “admin” and “admin” respectively. (See Figure 3.14)



Connect to 192.168.1.254

WebAdmin

User name: admin

Password: ●●●●●

□ Remember my password

Figure 3.14: User name & Password Prompt Window

**Congratulations! You are now successfully logon to the 3G/VoIP/(802.11g) ADSL2+ (VPN) Firewall Router!**

# Chapter 4: Configuration

At the configuration homepage, the left navigation column provides you the link to each configuration page. The category of each configuration page is listed as below.

### Status

ADSL Table

ARP Table

DHCP Table

Routing Table

NAT Sessions

UpnP Portmap

PPTP Status

IPSec Status

L2TP Status

Email Status

VoIP Status

VoIP Call Log

Event Log

Error Log

Diagnostic

### Quick Start

### Configuration

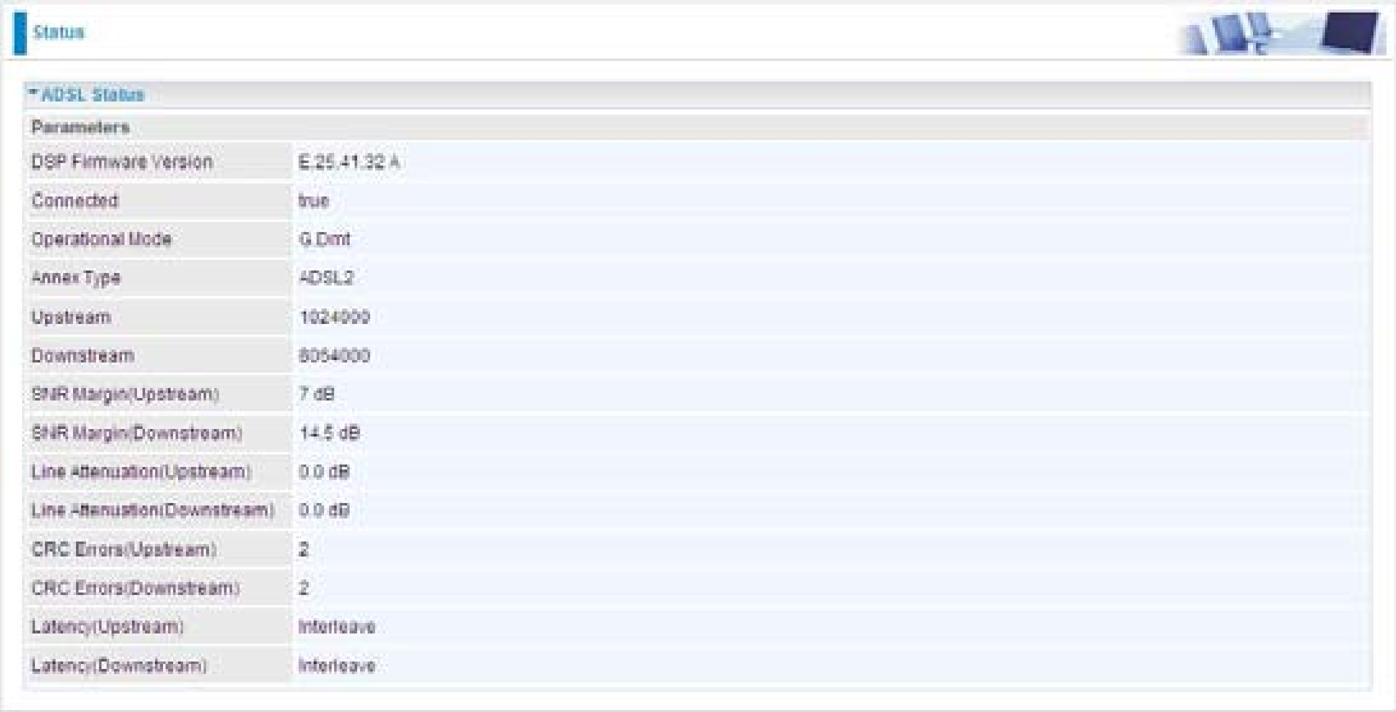
LAN
WAN
System
Firewall
VPN
VoIP
QoS
Virtual Server
Time Schedule
Advanced

### Language (provides user interface in English and French languages)

# Status

## ADSL Status

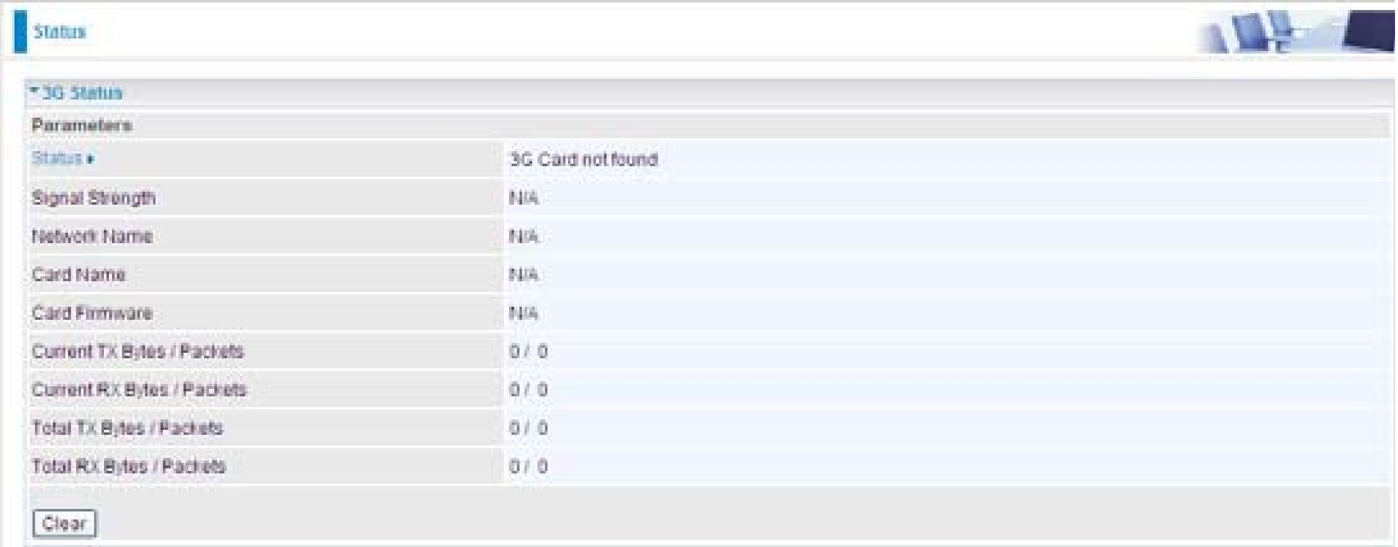
This section displays the ADSL overall status, which shows a number of helpful information such as DSP firmware version.



Status

ADSL Status

| Parameters | |
|---|---|
| DSP Firmware Version | E.25.41.32 A |
| Connected | true |
| Operational Mode | G.Dmt |
| Annex Type | ADSL2 |
| Upstream | 1024000 |
| Downstream | 8054000 |
| SNR Margin(Upstream) | 7 dB |
| SNR Margin(Downstream) | 14.5 dB |
| Line Attenuation(Upstream) | 0.0 dB |
| Line Attenuation(Downstream) | 0.0 dB |
| CRC Errors(Upstream) | 2 |
| CRC Errors(Downstream) | 2 |
| Latency(Upstream) | Interleave |
| Latency(Downstream) | Interleave |



Status

3G Status

| Parameters | |
|---|---|
| Status ▸ | 3G Card not found |
| Signal Strength | N/A |
| Network Name | N/A |
| Card Name | N/A |
| Card Firmware | N/A |
| Current TX Bytes / Packets | 0 / 0 |
| Current RX Bytes / Packets | 0 / 0 |
| Total TX Bytes / Packets | 0 / 0 |
| Total RX Bytes / Packets | 0 / 0 |

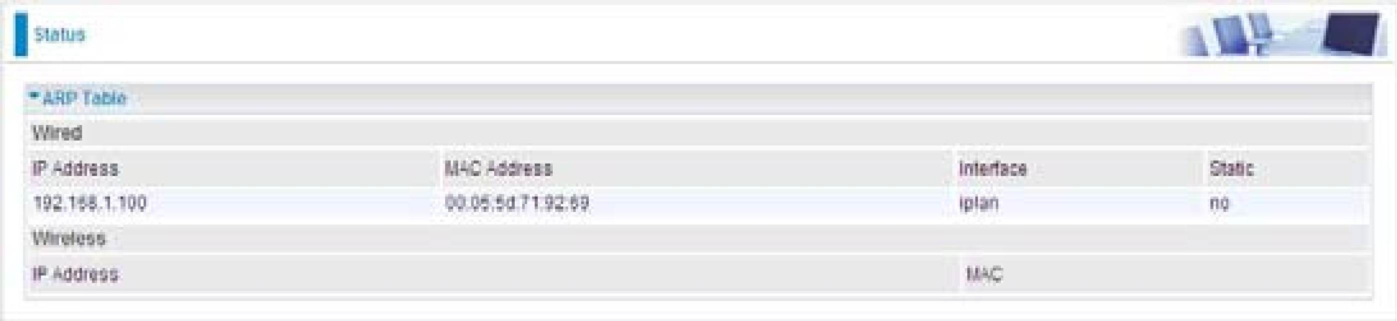
**Status:** The current status of the 3G card.

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

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

## ARP Table

This section displays the router’s ARP (Address Resolution Protocol) Table, which shows the mapping of Internet (IP) addresses to Ethernet (MAC) addresses. This is useful as a quick way of determining the MAC address of the network interface of your PCs to use with the router’s Firewall – MAC Address Filter function. See the Firewall section of this manual for more information on this feature.



Status

ARP Table

Wired

| IP Address | MAC Address | Interface | Static |
|---|---|---|---|
| 192.168.1.100 | 00:05:5d:71:92:69 | iplan | no |

Wireless

| IP Address | MAC |
|---|---|

**IP Address:** A list of IP addresses of devices on your LAN (Local Area Network).

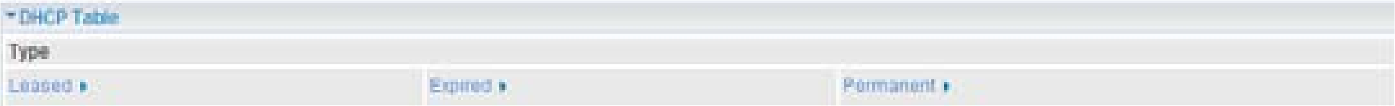
**MAC Address:** The MAC (Media Access Control) addresses for each device on your LAN.

**Interface:** The interface name (on the router) that this IP Address connects to.

**Static:** Static status of the ARP table entry:

- “**no**” for dynamically-generated ARP table entries.
- “**yes**” for static ARP table entries added by the user.

## DHCP Table



DHCP Table

Type

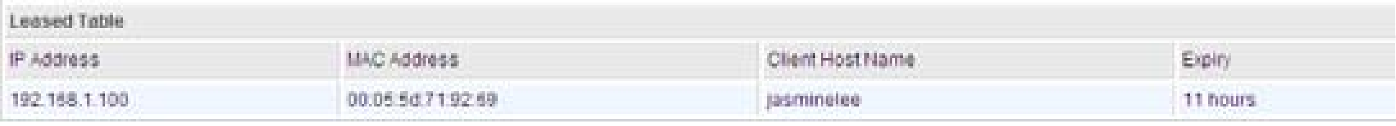
| Leased ▸ | Expired ▸ | Permanent ▸ |
|---|---|---|

**Leased:** The DHCP assigned IP addresses information.

**Expired:** The expired IP addresses information.

**Permanent:** The fixed host mapping information.

## Leased Table



Leased Table

| IP Address | MAC Address | Client Host Name | Expiry |
|---|---|---|---|
| 192.168.1.100 | 00:05:5d:71:92:69 | jasminelee | 11 hours |

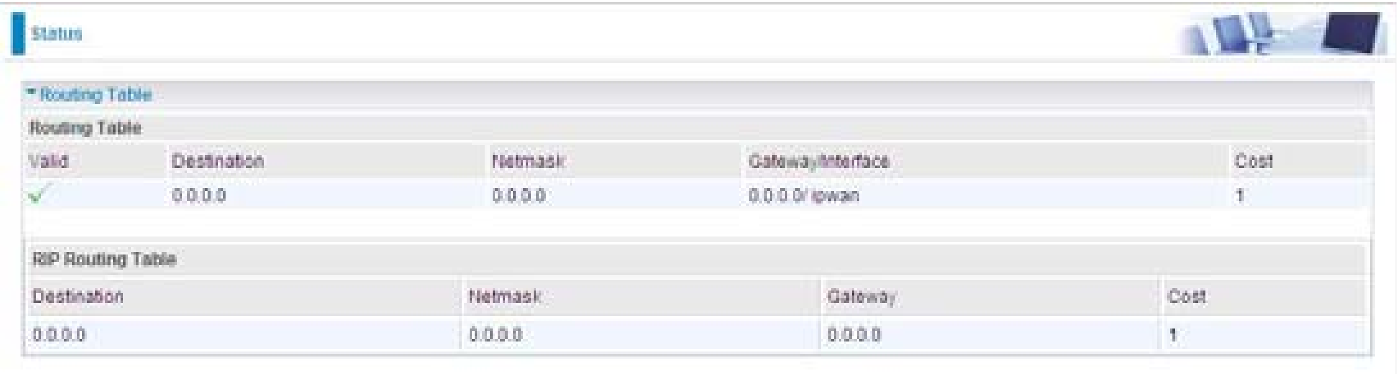
**IP Address:** The IP address that assigned to client.

**MAC Address:** The MAC address of client.

**Client Host Name:** The Host Name (Computer Name) of client.

**Expiry:** The current lease time of client.

# Routing Table



Routing Table

| Valid | Destination | Netmask | Gateway/Interface | Cost |
|---|---|---|---|---|
| ✓ | 0.0.0.0 | 0.0.0.0 | 0.0.0.0/ ipwan | 1 |

RIP Routing Table

| Destination | Netmask | Gateway | Cost |
|---|---|---|---|
| 0.0.0.0 | 0.0.0.0 | 0.0.0.0 | 1 |

## Routing Table

**Valid:** It indicates a successful routing status.

**Destination:** The IP address of the destination network.

**Netmask:** The destination Netmask address.

**Gateway/Interface:** The IP address of the gateway or existing interface that this route will use.

**Cost:** The number of hops counted as the cost of the route.

## RIP Routing Table

**Destination:** The IP address of the destination network.

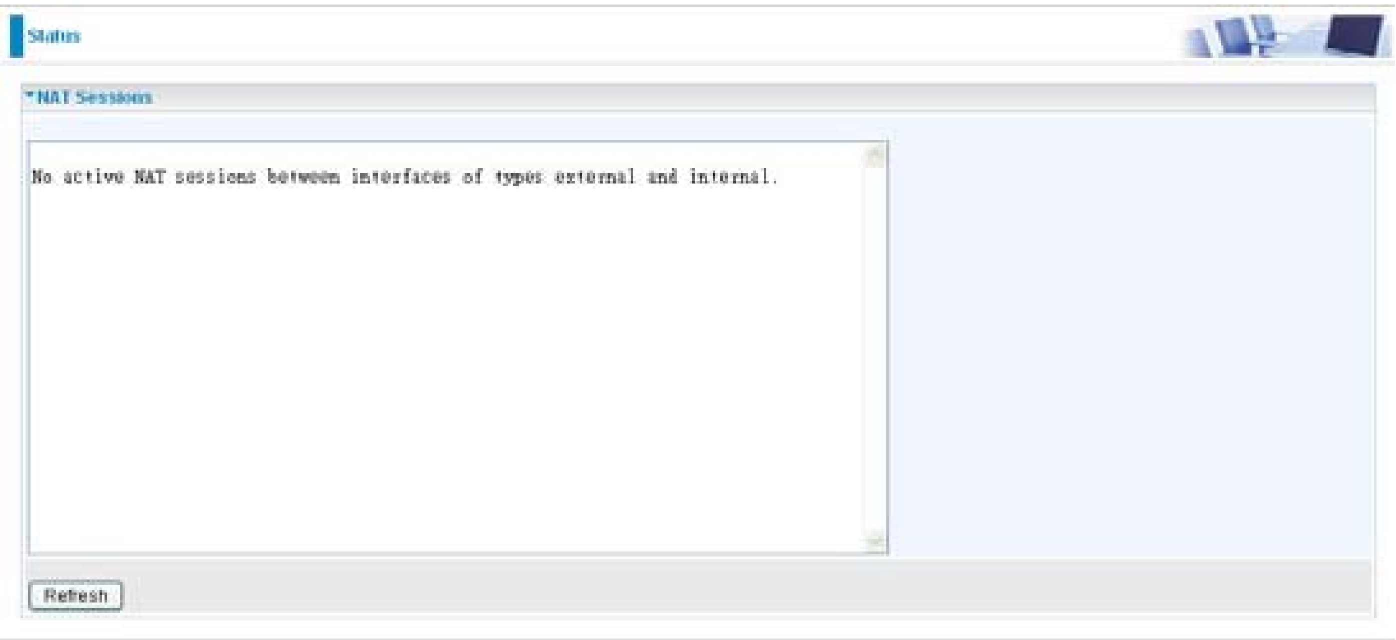
**Netmask:** The destination Netmask address.

**Gateway:** The IP address of the gateway that this route will use.

**Cost:** The number of hops counted as the cost of the route.

## NAT Sessions

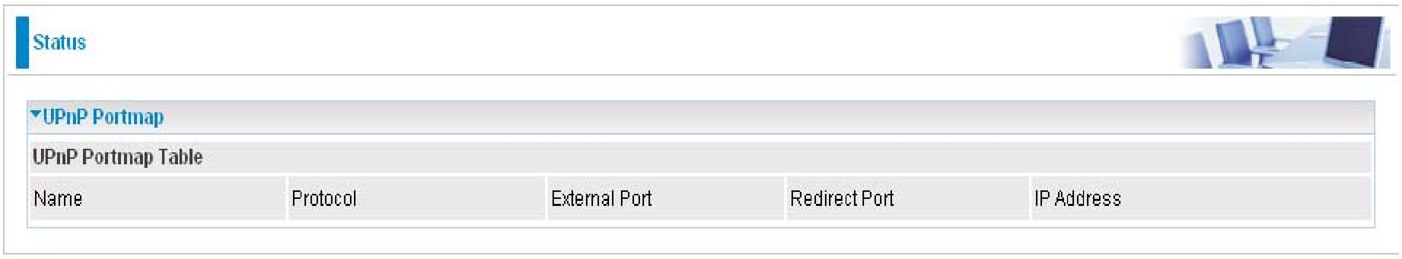
This section lists all current NAT sessions between interface of types external (WAN) and internal (LAN).



```
No active NAT sessions between interfaces of types external and internal.
```

## UPnP Portmap

The section lists all port-mapping established using UPnP (Universal Plug and Play. See Advanced section of this manual for more details on UPnP and the router’s UPnP configuration options.

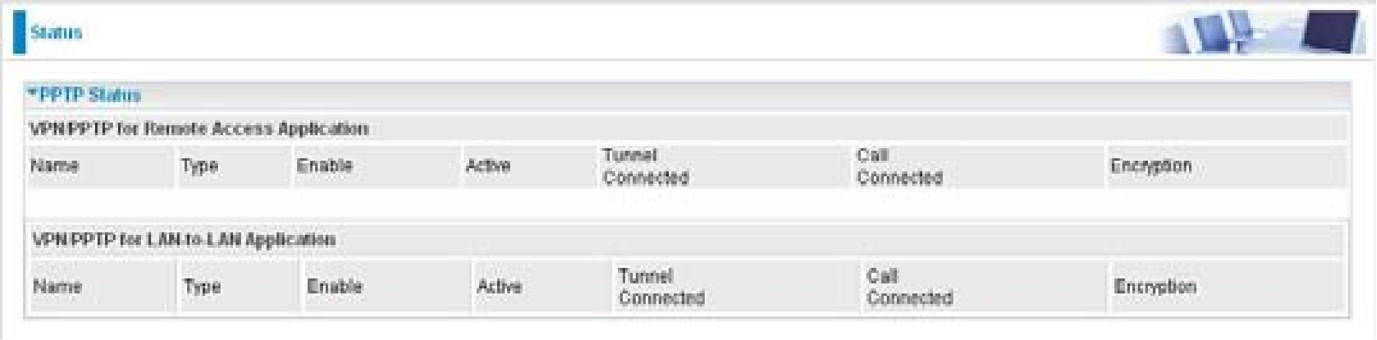


UPnP Portmap Table

| Name | Protocol | External Port | Redirect Port | IP Address |
|---|---|---|---|---|

# PPTP Status

This shows details of your configured PPTP VPN Connections.



Status

▾PPTP Status

VPN PPTP for Remote Access Application

| Name | Type | Enable | Active | Tunnel Connected | Call Connected | Encryption |
|---|---|---|---|---|---|---|

VPN PPTP for LAN-to-LAN Application

| Name | Type | Enable | Active | Tunnel Connected | Call Connected | Encryption |
|---|---|---|---|---|---|---|

**Name:** The name you assigned to the particular PPTP connection in your VPN configuration.

**Type:** The type of connection (dial-in/dial-out).

**Enable:** Whether the connection is currently enabled.

**Active:** Whether the connection is currently active.

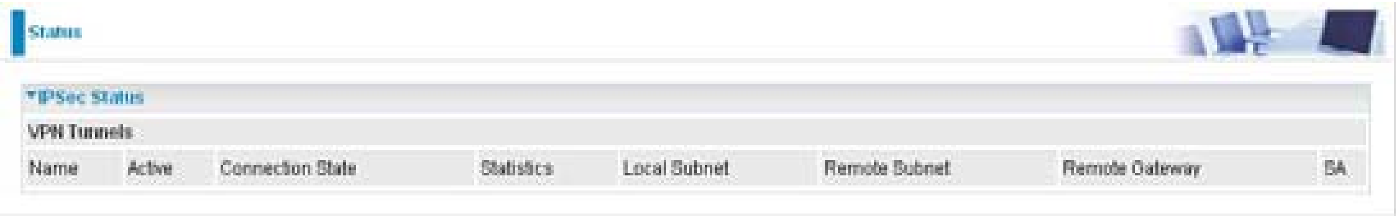
**Tunnel Connected:** Whether the VPN Tunnel is currently connected.

**Call Connected:** If the Call for this VPN entry is currently connected.

**Encryption:** The encryption type used for this VPN connection.

# IPSec Status

This shows details of your configured IPSec VPN Connections.



Status

▼IPSec Status

VPN Tunnels

| Name | Active | Connection State | Statistics | Local Subnet | Remote Subnet | Remote Gateway | SA |
|---|---|---|---|---|---|---|---|

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

**Active:** Whether the VPN Connection is currently Active.

**Connection State:** Whether the VPN is Connected or Disconnected.

**Statistics:** Statistics for this VPN Connection.

**Local Subnet:** The local IP Address or Subnet used.

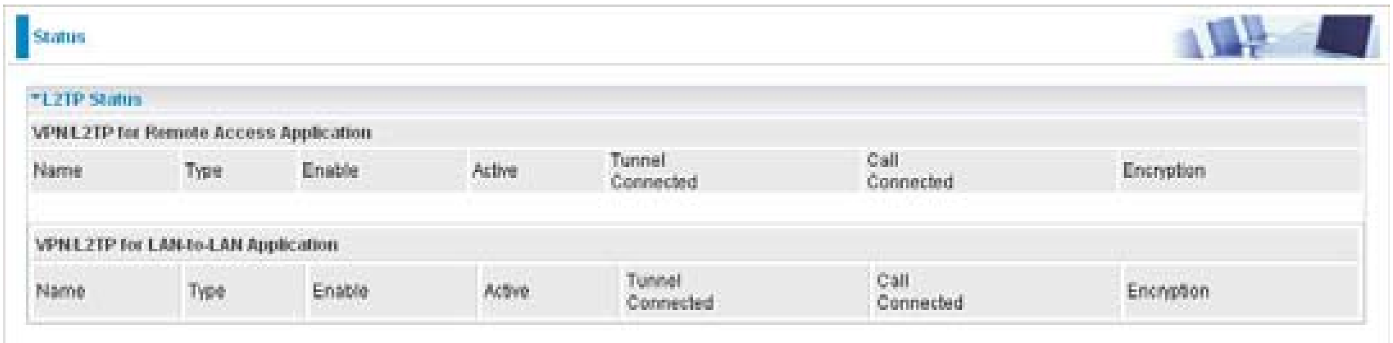
**Remote Subnet:** The Subnet of the remote site.

**Remote Gateway:** The Remote Gateway IP address.

**SA:** The Security Association for this VPN entry.

# L2TP Status

This shows details of your configured L2TP VPN Connections.



Status

▼L2TP Status

VPN L2TP for Remote Access Application

| Name | Type | Enable | Active | Tunnel Connected | Call Connected | Encryption |
|---|---|---|---|---|---|---|

VPN L2TP for LAN-to-LAN Application

| Name | Type | Enable | Active | Tunnel Connected | Call Connected | Encryption |
|---|---|---|---|---|---|---|

**Name:** The name you assigned to the particular L2TP connection in your VPN configuration.

**Type:** The type of connection (dial-in/dial-out).

**Enable:** Whether the connection is currently enabled.

**Active:** Whether the connection is currently active.

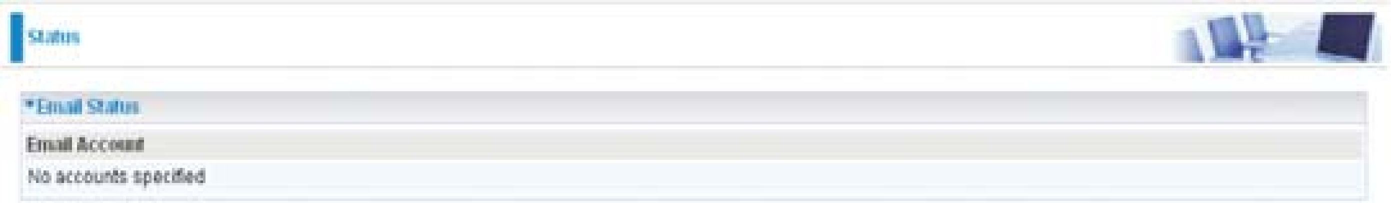
**Tunnel Connected:** Whether the VPN Tunnel is currently connected.

**Call Connected:** If the Call for this VPN entry is currently connected.

**Encryption:** The encryption type used for this VPN connection.

# Email Status

Details and status for the Email Account you have configured the router to check. Please see the Advanced section of this manual for details on this function.

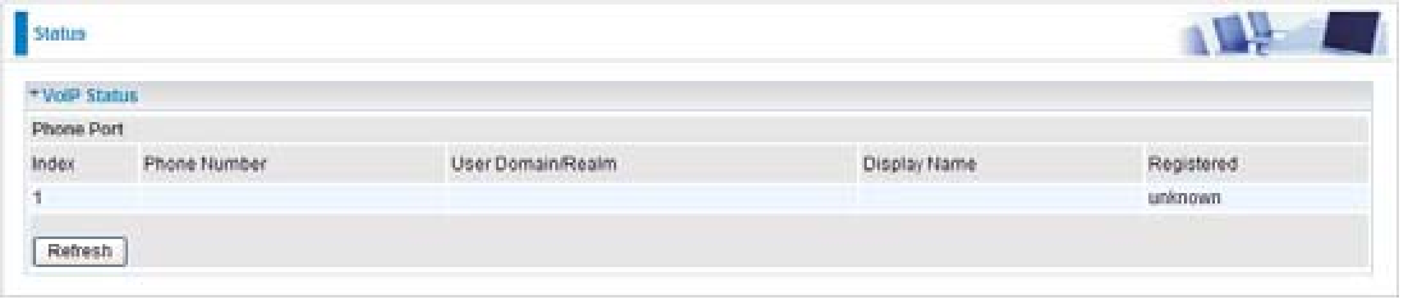


Status

▾Email Status

| Email Account |
|---|
| No accounts specified |

# VoIP Status



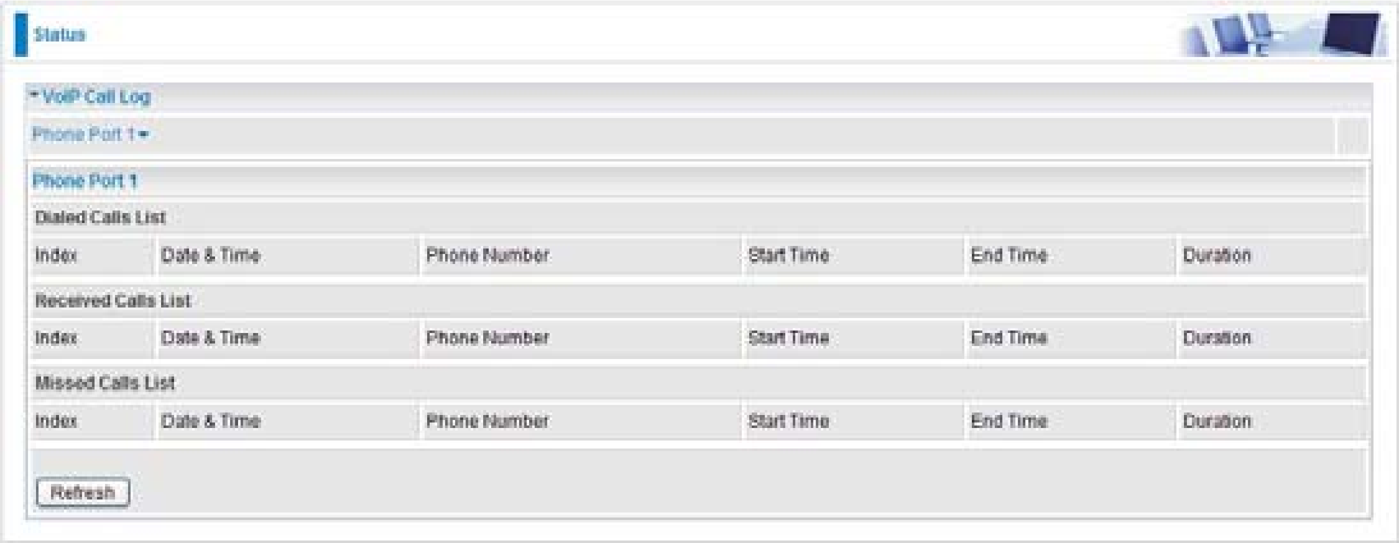
Status

▾VoIP Status

Phone Port

| Index | Phone Number | User Domain/Realm | Display Name | Registered |
|---|---|---|---|---|
| 1 | | | | unknown |

# VoIP Call Log



Status

▾VoIP Call Log

Phone Port 1▾

Phone Port 1

Dialed Calls List

| Index | Date & Time | Phone Number | Start Time | End Time | Duration |
|---|---|---|---|---|---|

Received Calls List

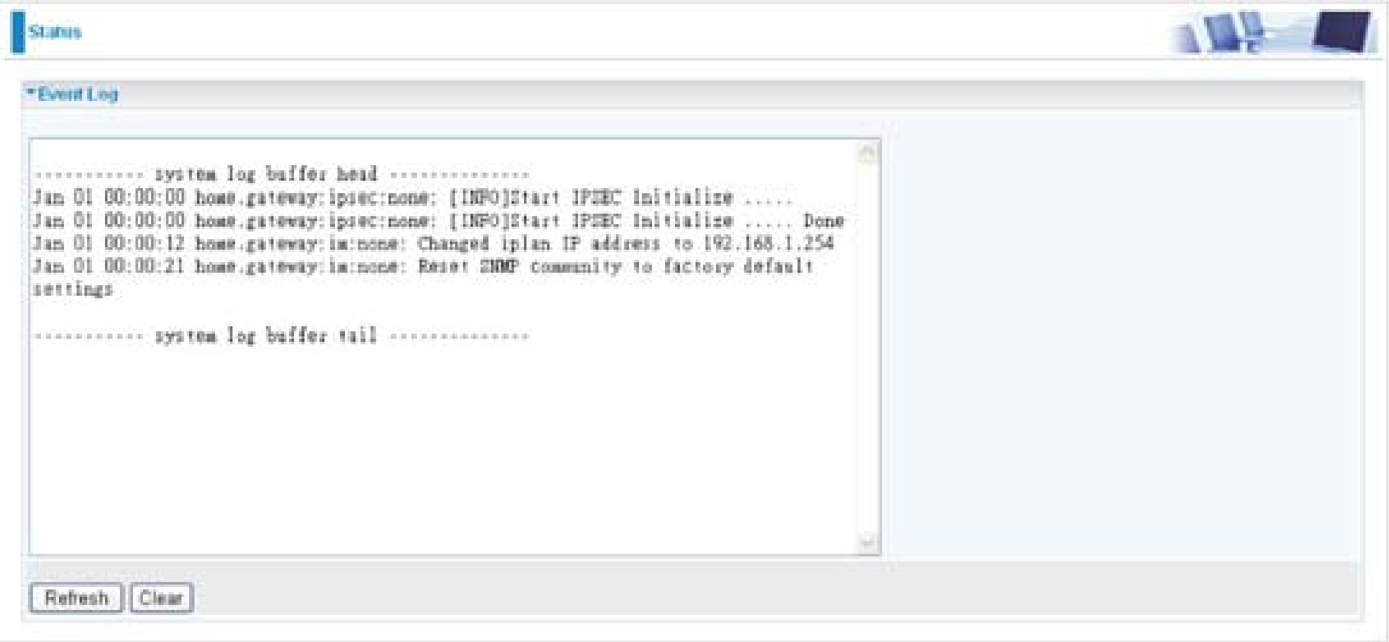
| Index | Date & Time | Phone Number | Start Time | End Time | Duration |
|---|---|---|---|---|---|

Missed Calls List

| Index | Date & Time | Phone Number | Start Time | End Time | Duration |
|---|---|---|---|---|---|

# Event Log

This page displays the router's Event Log entries. Major events are logged to this window, such as when the router's ADSL connection is disconnected, as well as Firewall events when you have enabled Intrusion or Blocking Logging 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.

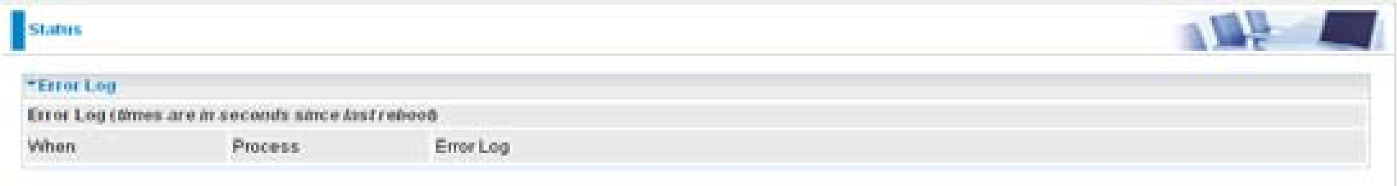


```
----------- system log buffer head -------------
Jan 01 00:00:00 home.gateway:ipsec:none: [INFO]Start IPSEC Initialize .....
Jan 01 00:00:00 home.gateway:ipsec:none: [INFO]Start IPSEC Initialize ..... Done
Jan 01 00:00:12 home.gateway:im:none: Changed iplan IP address to 192.168.1.254
Jan 01 00:00:21 home.gateway:im:none: Reset SNMP community to factory default
settings

----------- system log buffer tail -------------
```

# Error Log

Any errors encountered by the router (e.g. invalid names given to entries) are logged to this window.



Status

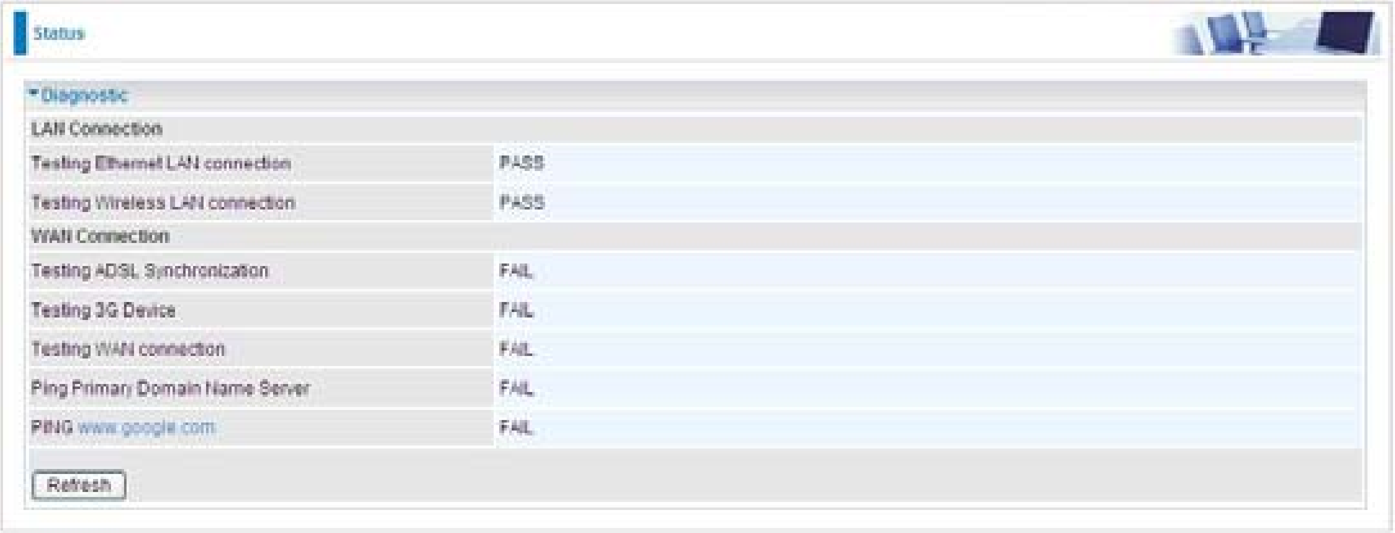
▾Error Log

Error Log (times are in seconds since last reboot)

| When | Process | Error Log |
|---|---|---|

# Diagnostic

It tests the connection to computer(s) which is connected to the LAN ports and also the WAN Internet connection. If PING **www.google.com** is shown FAIL and the rest is PASS, you ought to check your PC's DNS setting is correct.



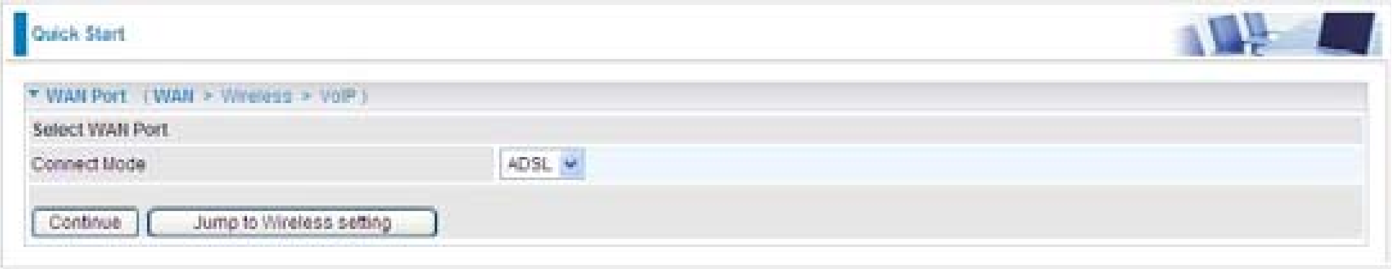
Status

▾Diagnostic

| LAN Connection | |
|---|---|
| Testing Ethernet LAN connection | PASS |
| Testing Wireless LAN connection | PASS |
| WAN Connection | |
| Testing ADSL Synchronization | FAIL |
| Testing 3G Device | FAIL |
| Testing WAN connection | FAIL |
| Ping Primary Domain Name Server | FAIL |
| PING www.google.com | FAIL |

# Quick Start

1. Click Quick Start. Select the connect mode you want. There are 2 options to choose from: ADSL or 3G. Select ADSL mode from the drop down menu and click Continue.



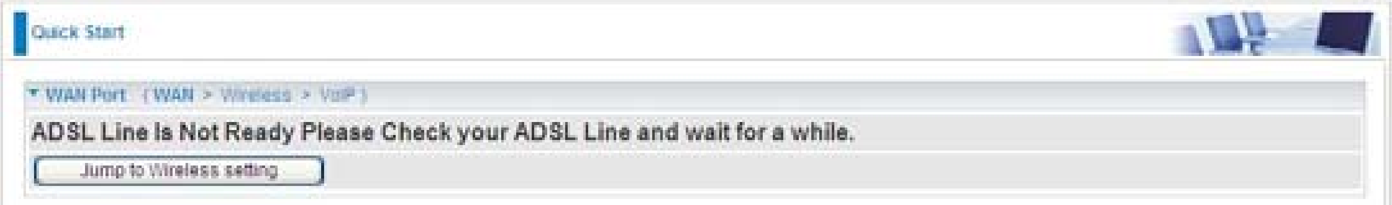
Quick Start

WAN Port (WAN > Wireless > VoIP)

Select WAN Port

Connect Mode: ADSL

2. If your ADSL line is not ready, you need to check your ADSL line has been set or not.

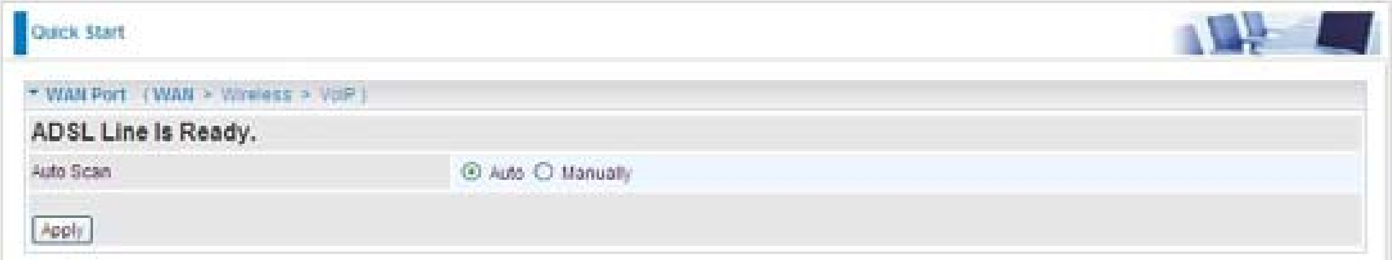


Quick Start

WAN Port (WAN > Wireless > VoIP)

ADSL Line Is Not Ready Please Check your ADSL Line and wait for a while.

3. If your ADSL line is ready, the screen appears ADSL Line is Ready. Choose Auto radio button and click Apply. It will automatically scan the recommended mode for you. Manually mode makes you to set the ADSL line by manual. (If you choose Manually, you will directly go to step 5.)

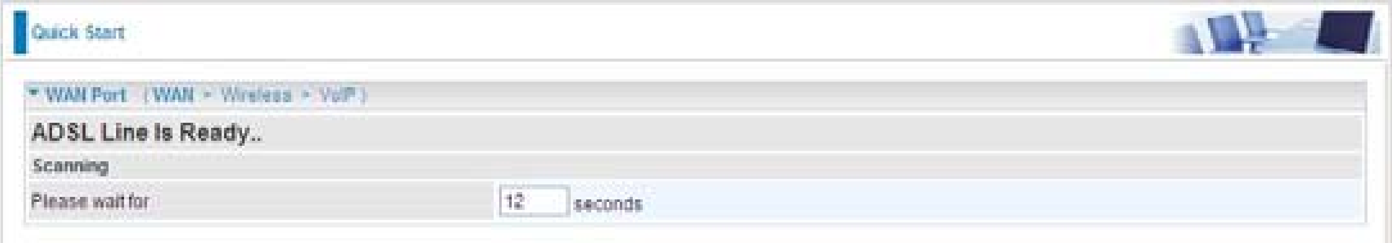


Quick Start

WAN Port (WAN > Wireless > VoIP)

ADSL Line Is Ready.

Auto Scan: ● Auto ○ Manually



Quick Start

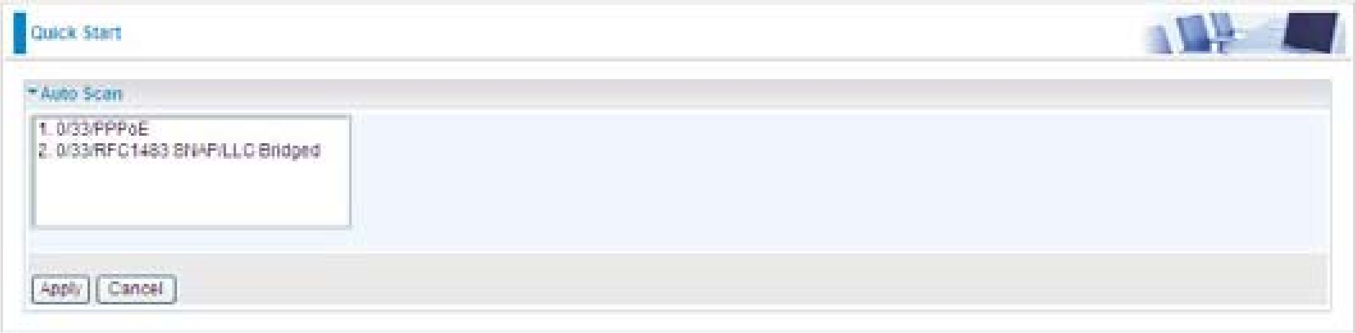
WAN Port (WAN > Wireless > VoIP)

ADSL Line Is Ready..

Scanning

Please wait for 12 seconds

4. The list below has different mode applied for your choice. Choose 0/33/PPPoE(Recommended) and click Apply.

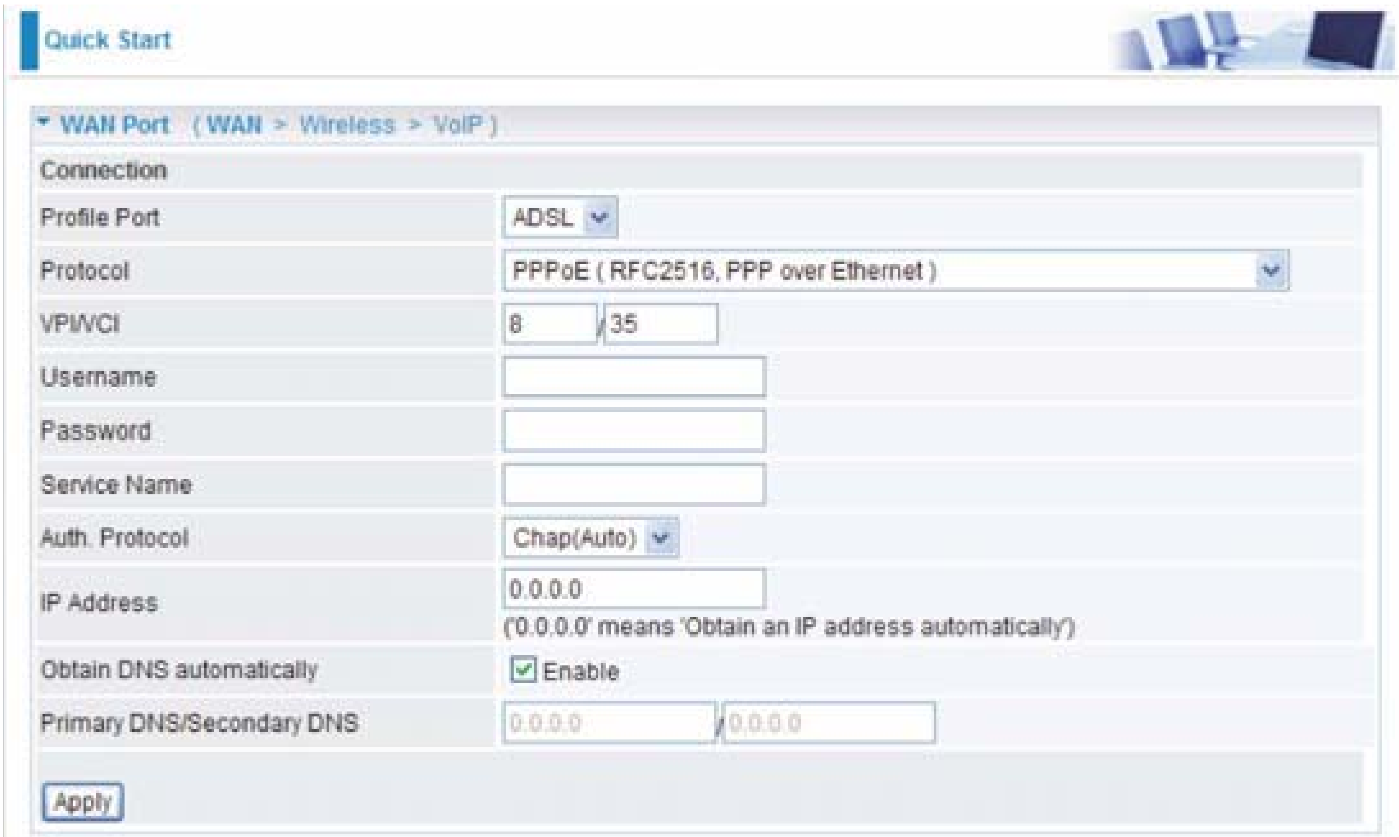


Quick Start

Auto Scan

1. 0/33/PPPoE
2. 0/33/RFC1483 SNAP/LLC Bridged

5. Please enter “Username” and “Password” as supplied by your ISP(Internet Service Provider) and click Apply to continue.



Quick Start

WAN Port (WAN > Wireless > VoIP )

| | |
|---|---|
| Connection | |
| Profile Port | ADSL |
| Protocol | PPPoE ( RFC2516, PPP over Ethernet ) |
| VPI/VCI | 8 / 35 |
| Username | |
| Password | |
| Service Name | |
| Auth. Protocol | Chap(Auto) |
| IP Address | 0.0.0.0<br>('0.0.0.0' means 'Obtain an IP address automatically') |
| Obtain DNS automatically | ☑ Enable |
| Primary DNS/Secondary DNS | 0.0.0.0 / 0.0.0.0 |

Apply

**Profile Port:** Select the connection mode.  There is ADSL**.**

**Protocol**: Select the protocol mode.  The default mode is PPPoE.

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

**Username**: Enter the username provided by your ISP.

**Password**: Enter the password provided by your ISP.

**Service Name**: This item is for identification purposes. If it is required, your ISP provides you the information.

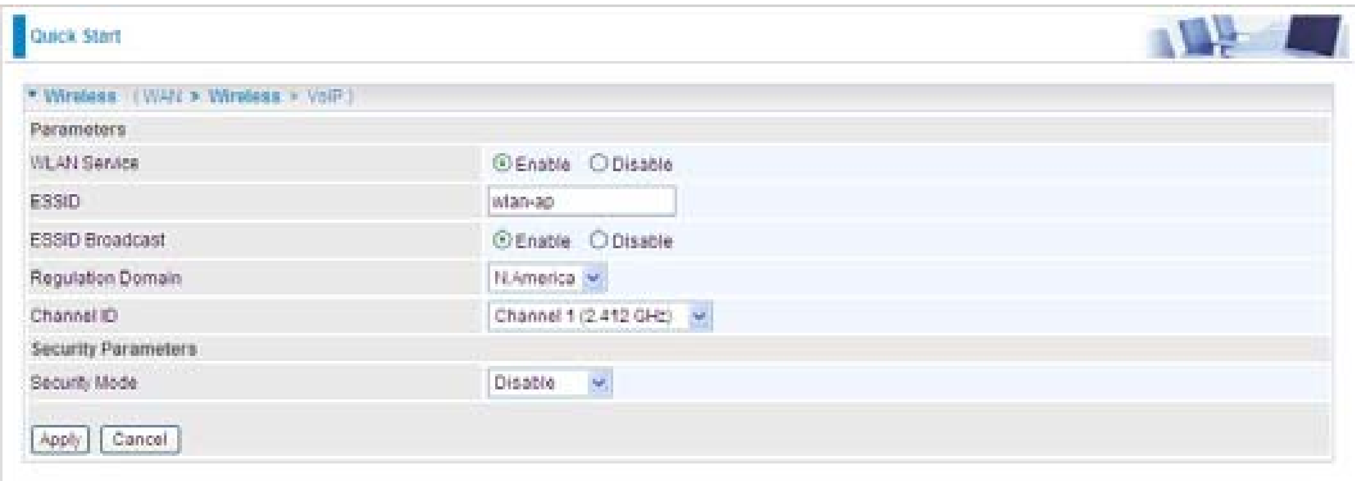
**Authentication Protocol**: Default is **Auto.** Your ISP advises on using **Chap** or **Pap.**

**IP Address:** Your WAN IP address. Leave this at 0.0.0.0 to obtain automatically an IP address from your ISP.

**Obtain DNS automatically:** Click to activate DNS and to enable the system to automatically detect 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.

6. Configure the Wireless LAN setting.



Quick Start

▾ Wireless ( WAN > Wireless > VoIP )

| | |
|---|---|
| Parameters | |
| WLAN Service | ● Enable ○ Disable |
| ESSID | wlan-ap |
| ESSID Broadcast | ● Enable ○ Disable |
| Regulation Domain | N.America |
| Channel ID | Channel 1 (2.412 GHz) |
| Security Parameters | |
| Security Mode | Disable |

**WLAN Service:** Default setting is set to Enable. If you want to use wireless, both 802.11g and 802.11b device in your network, you can select Enable.

**ESSID:** The ESSID is the unique name of a wireless access point (AP) to be distinguished from another. For security propose, change to a unique ID name to the AP which is already built-in to the router's wireless interface. It is case sensitive and must not excess 32 characters. Make sure your wireless clients have exactly the ESSID as the device, in order to get connected to your network.

**ESSID Broadcast**: It is function in which transmits its ESSID to the air so that when wireless client searches for a network, router can then be discovered and recognized. Default setting is **Enable.**

- **Enable:** When Enable is selected, you can allow anybody with a wireless client to be able to locate the Access Point (AP) of your router.

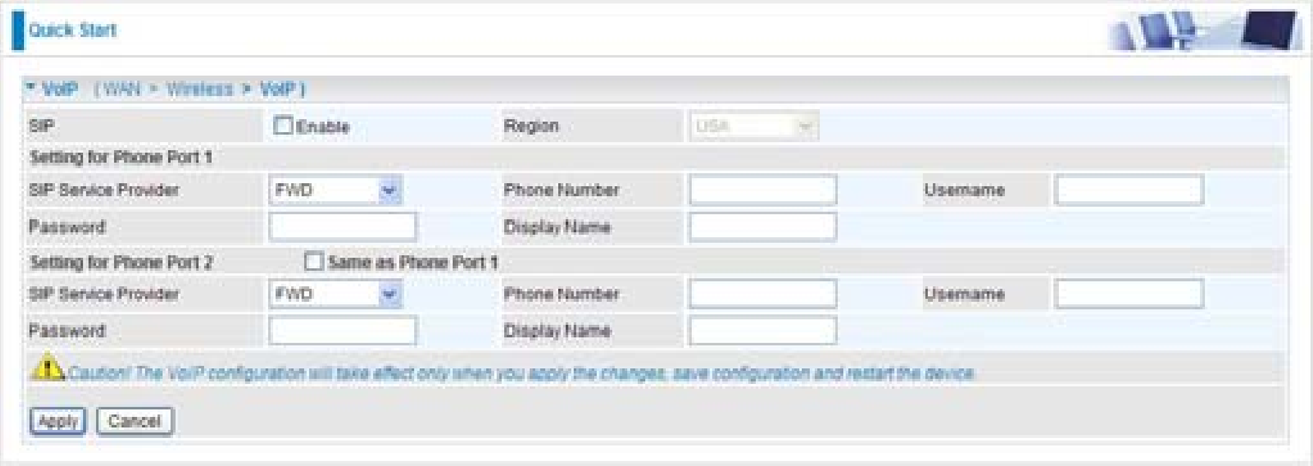
- **Disable:** Select Disable if you do not want broadcast your ESSID. When select Disable, no one will be able to locate the Access Point (AP) of your router.

**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 ID channel that you would like to use.

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

7. Set up VoIP.



Quick Start

▾ VoIP ( WAN > Wireless > VoIP )

| | | | | | |
|---|---|---|---|---|---|
| SIP | □ Enable | Region | USA | | |
| Setting for Phone Port 1 | | | | | |
| SIP Service Provider | FWD | Phone Number | | Username | |
| Password | | Display Name | | | |
| Setting for Phone Port 2 | □ Same as Phone Port 1 | | | | |
| SIP Service Provider | FWD | Phone Number | | Username | |
| Password | | Display Name | | | |

⚠ Caution! The VoIP configuration will take effect only when you apply the changes, save configuration and restart the device.

**SIP:** To use VoIP SIP as VoIP call signaling protocol. Default is set to ***Disable.***

**Region:** This selection is a drop-down box, which allows user to select the country for which the VoIP device must work. When a country is selected, the country parameters are automatically loaded.

**SIP Service Provider:** This section allows you to select the service provider. When the selection is done, respective parameters below are automatically displayed.

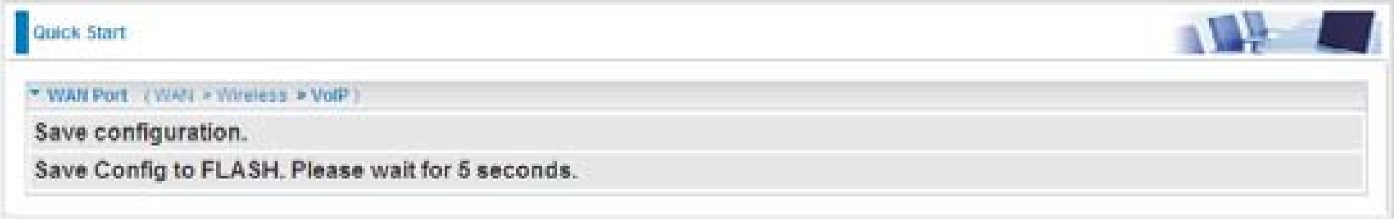
**Phone Number:** This parameter holds the registration ID of the user within the VoIP SIP registrar.

**Username:** If the username is same as the Phone Number, leave it blank.  Otherwise, fill in the space with your username given by your VoIP provider.

**Password:** This parameter holds the password used for authentication within VoIP SIP registrar.

**Display Name:** This parameter will be appeared on the Caller ID.

8. Wait for the configuration.

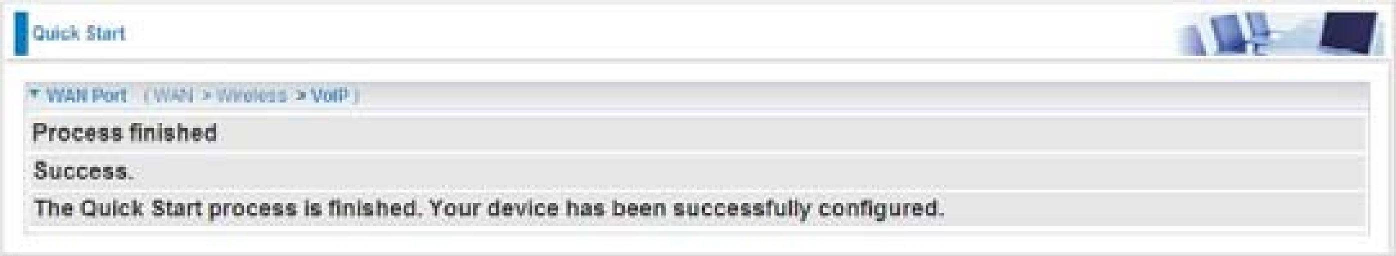


Quick Start

▾ WAN Port  ( WAN > Wireless > VoIP )

Save configuration.

Save Config to FLASH. Please wait for 5 seconds.



Quick Start

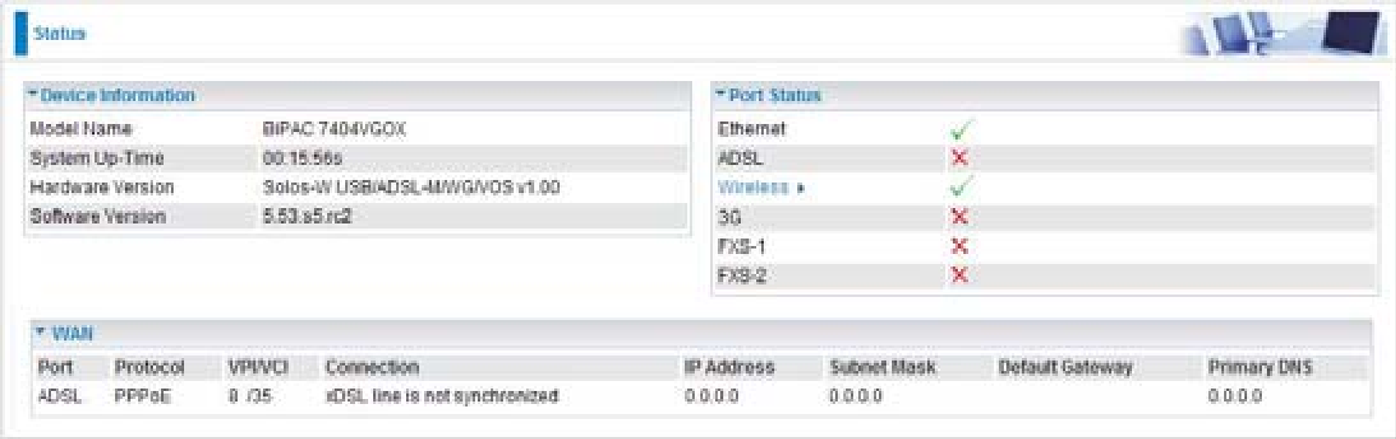
▾ WAN Port  ( WAN > Wireless > VoIP )

Process finished

Success.

The Quick Start process is finished. Your device has been successfully configured.

9. When ADSL is synchronic, it will appear “check”.



Status

▾ Device Information

| | |
|---|---|
| Model Name | BIPAC 7404VGOX |
| System Up-Time | 00:15:56s |
| Hardware Version | Solos-W USB/ADSL-M/WG/VOS v1.00 |
| Software Version | 5.53.s5.rc2 |

▾ Port Status

| | |
|---|---|
| Ethernet | ✓ |
| ADSL | ✗ |
| Wireless ▸ | ✓ |
| 3G | ✗ |
| FXS-1 | ✗ |
| FXS-2 | ✗ |

▾ WAN

| Port | Protocol | VPI/VCI | Connection | IP Address | Subnet Mask | Default Gateway | Primary DNS |
|---|---|---|---|---|---|---|---|
| ADSL | PPPoE | 8 /35 | xDSL line is not synchronized | 0.0.0.0 | 0.0.0.0 | | 0.0.0.0 |

# Configuration

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

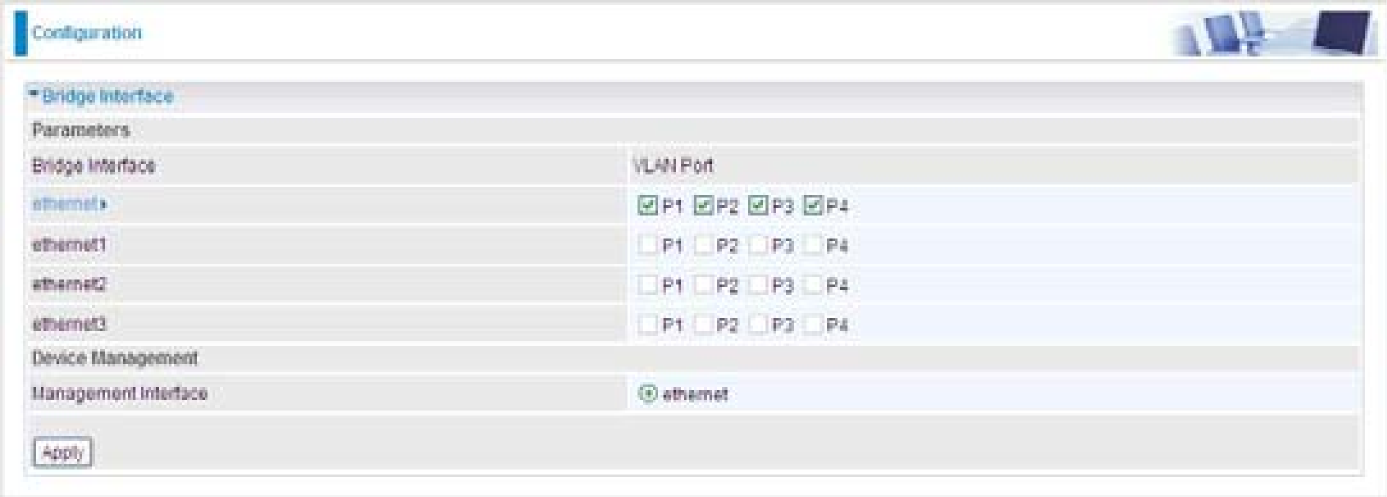
**LAN, WAN, System, Firewall, VoIP, QoS, Virtual Server, Time Schedule and Advanced**

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

# LAN - Local Area Network

Here are the items within the LAN section: **Bridge Interface, Ethernet, IP Alias, Ethernet Client Filter, Wireless, Wireless Security, Wireless Client Filter, WPS, Port Setting** and **DHCP Server.**

## Bridge Interface



Configuration

▾Bridge Interface

| Parameters | |
|---|---|
| Bridge Interface | VLAN Port |
| ethernet▸ | ☑P1 ☑P2 ☑P3 ☑P4 |
| ethernet1 | □P1 □P2 □P3 □P4 |
| ethernet2 | □P1 □P2 □P3 □P4 |
| ethernet3 | □P1 □P2 □P3 □P4 |
| Device Management | |
| Management Interface | ● ethernet |

Apply

You can setup member ports for each VLAN group under Bridge Interface section. From the example, two VLAN groups need to be created.

**Ethernet:** P1 (Port 1)

**Ethernet1:** P2, P3 and P4 (Port 2, 3, 4). Uncheck P2, P3, P4 from Ethernet VLAN port first.

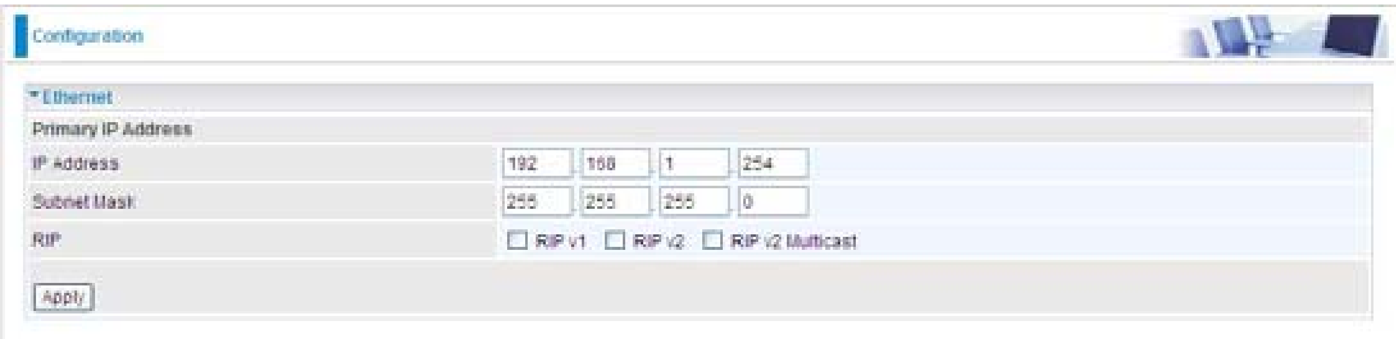
***Note: You should setup each VLAN group with caution. Each Bridge Interface is arranged in this order.***

| Bridge Interface | VLAN Port (Always starts with) |
|---|---|
| ethernet | P1 / P2 / P3 / P4 |
| ethernet1 | P2 / P3 / P4 |
| ethernet2 | P3 / P4 |
| ethernet3 | P4 |

**Management Interface:** To specify which VLAN group has possibility to do device management, like doing web management.

***Note: NAT/NAPT can be applied to management interface only.***

# Ethernet



Ethernet

Primary IP Address

| | |
|---|---|
| IP Address | 192 . 168 . 1 . 254 |
| Subnet Mask | 255 . 255 . 255 . 0 |
| RIP | □ RIP v1 □ RIP v2 □ RIP v2 Multicast |

## Primary IP Address

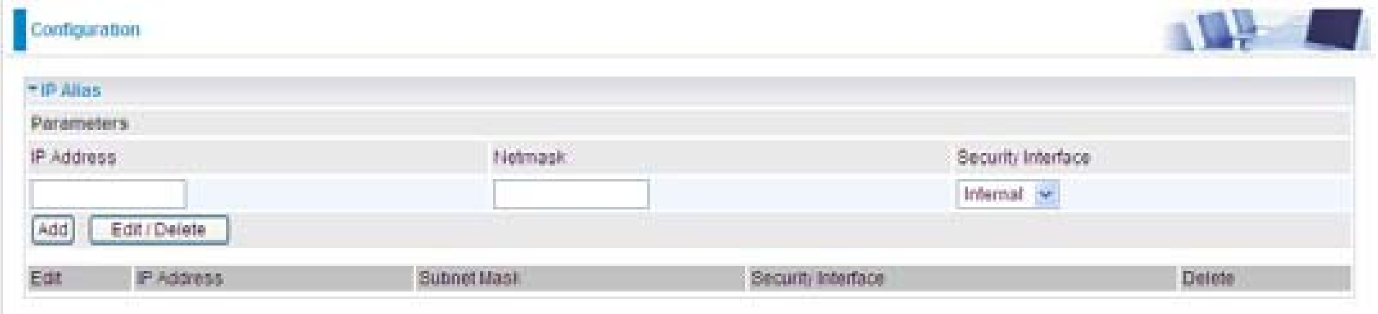
**IP Address:** The default IP on this router.

**Subnet Mask:** The default subnet mask on this router.

**RIP:** RIP v1, RIP v2, and RIP v2 Multicast.  Check to enable RIP function.

# IP Alias

This function creates multiple virtual IP interfaces on this router. It helps to connect two or more local networks to the ISP or remote node. In this case, an internal router is not required.



IP Alias

Parameters

| IP Address | Netmask | Security Interface |
|---|---|---|
| | | Internal |

| Edit | IP Address | Subnet Mask | Security Interface | Delete |
|---|---|---|---|---|

**IP Address:** Specify an IP address on this virtual interface.

**SubNetmask:** Specify a subnet mask on this virtual interface.

**Security Interface:** Specify the firewall setting on this virtual interface.

**Internal:** The network is behind NAT. All traffic will do network address translation when sending out to Internet if NAT is enabled.

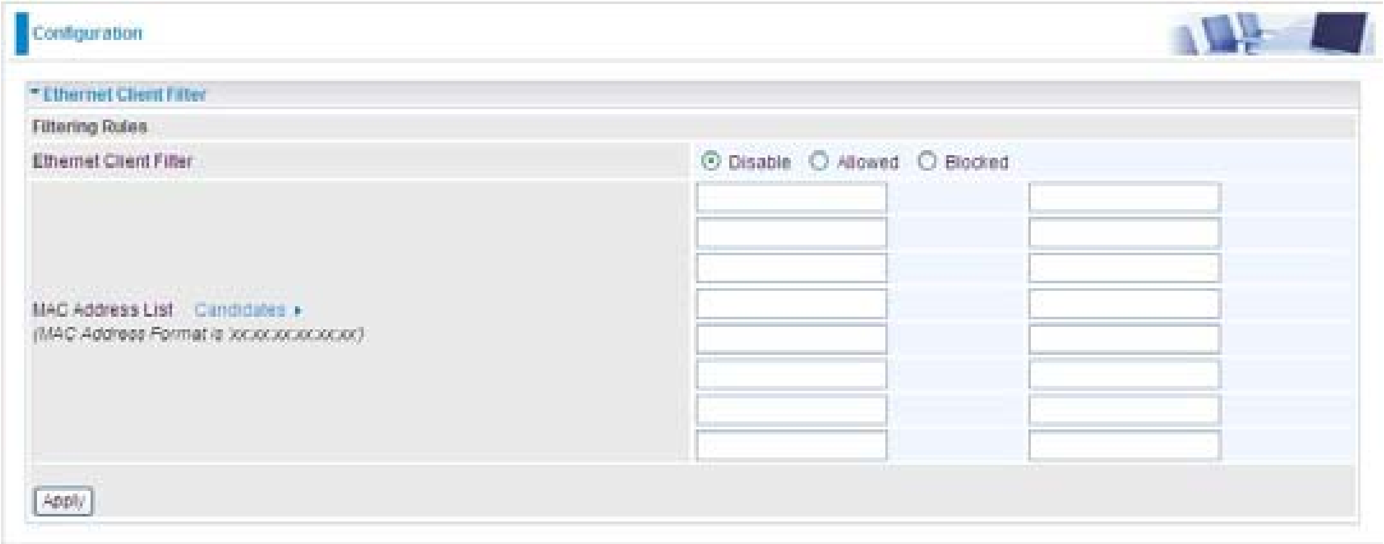
**External:** There is no NAT on this IP interface and connected to the Internet directly. Mostly it will be used when providing multiple public IP addresses by ISP. In this case, you can use public IP address in local network which gateway IP address point to the IP address on this interface.

**DMZ:** Specify this network to DMZ area. There is no NAT on this interface.

## Ethernet Client Filter

The Ethernet Client Filter supports up to 16 Ethernet network machines that helps you to manage your network control to accept traffic from specific authorized machines or can restrict unwanted machine(s) to access your LAN.

There are no pre-define Ethernet MAC address filter rules; you can add the filter rules to meet your requirements.



Configuration

▾Ethernet Client Filter

Filtering Rules

Ethernet Client Filter ● Disable ○ Allowed ○ Blocked

MAC Address List Candidates ▸
(MAC Address Format is xx:xx:xx:xx:xx:xx)

Apply

**Ethernet Client Filter:** Default setting is set **Disable**.

- **Allowed:** check to authorize specific device accessing your LAN by insert the MAC Address in the space provided or click  the Candidate button.  Make sure your PC's MAC is listed.

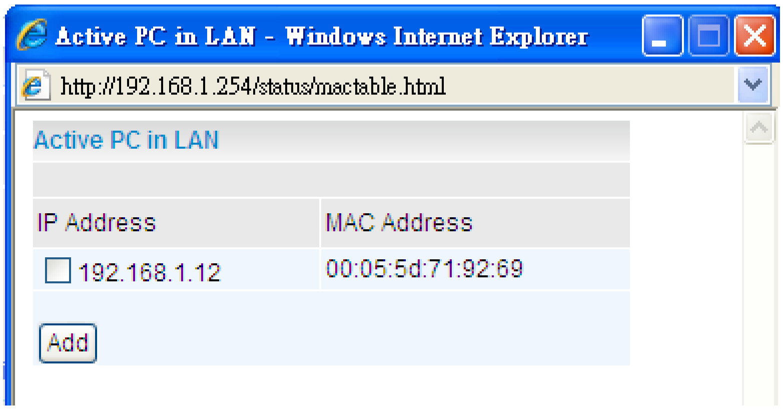
- **Blocked:** check to prevent unwanted device accessing your LAN by insert the MAC Address in the space provided or click the Candidate button. Make sure your PC's MAC is not listed.

The maximum client is 16.  The MAC addresses are 6 bytes long; they are presented only in hexadecimal characters.  The number 0 - 9 and letters a - f are acceptable.

***Note:  Follow the MAC Address Format xx:xx:xx:xx:xx:xx.  Semicolon ( : ) must be included.***

**Candidates:** automatically detects devices connected to the router through the Ethernet. .

Click the Candidate button to access the **Active PC in LAN** window.



Active PC in LAN - Windows Internet Explorer

http://192.168.1.254/status/mactable.html

Active PC in LAN

| IP Address | MAC Address |
|---|---|
| □ 192.168.1.12 | 00:05:5d:71:92:69 |

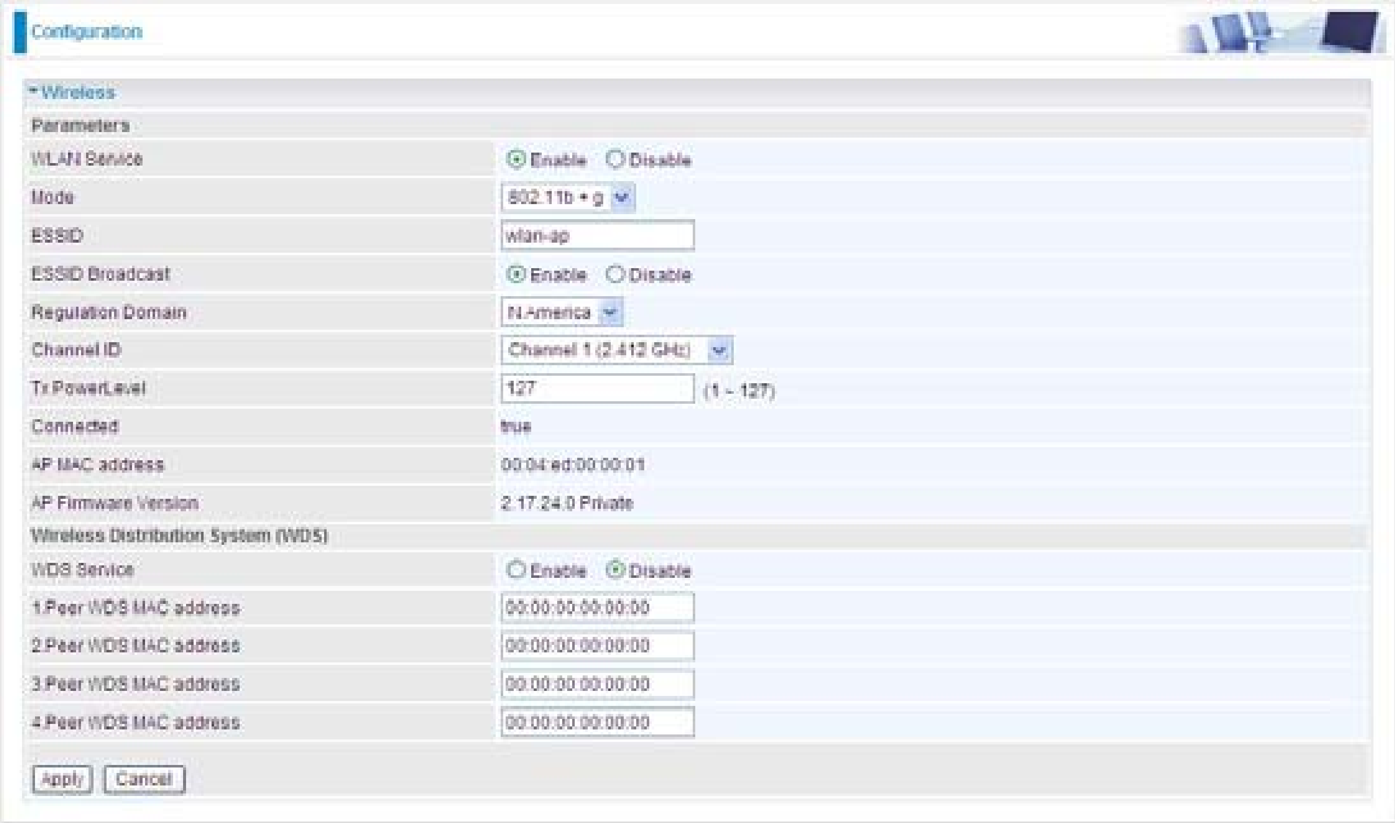
Add

**Active PC in LAN:** Active PC in LAN displays a list of individual Ethernet device's IP Address &

MAC Address which connecting to the router.

You can easily by checking the box next to the IP address to be blocked or allowed. Then, Add to insert to the Ethernet Client Filter table. The maximum Ethernet client is 16.

# Wireless



Configuration

▾Wireless

| | |
|---|---|
| Parameters | |
| WLAN Service | ● Enable ○ Disable |
| Mode | 802.11b + g |
| ESSID | wlan-ap |
| ESSID Broadcast | ● Enable ○ Disable |
| Regulation Domain | N.America |
| Channel ID | Channel 1 (2.412 GHz) |
| Tx PowerLevel | 127 (1 - 127) |
| Connected | true |
| AP MAC address | 00:04:ed:00:00:01 |
| AP Firmware Version | 2.17.24.0 Private |
| Wireless Distribution System (WDS) | |
| WDS Service | ○ Enable ● Disable |
| 1.Peer WDS MAC address | 00:00:00:00:00:00 |
| 2.Peer WDS MAC address | 00:00:00:00:00:00 |
| 3.Peer WDS MAC address | 00:00:00:00:00:00 |
| 4.Peer WDS MAC address | 00:00:00:00:00:00 |

## Parameters

**WLAN Service:** Default setting is set to Enable.  If you do not have any wireless, both 802.11g and 802.11b, device in your network, select Disable.

**Mode:** The default setting is 802.11b+g (Mixed mode). If you do not know or have both 11g and 11b devices in your network, then keep the default in mixed mode.  From the drop-down manual, you can select 802.11g if you have only 11g card.  If you have only 11b card, then select 802.11b.

**ESSID:** The ESSID is the unique name of a wireless access point (AP) to be distinguished from another.  For security purpose, change the default wlan-ap to a unique ID name to the AP already built-in to the router's wireless interface. It is case sensitive and must not excess 32 characters. Make sure your wireless clients have exactly the ESSID as the device, in order to get connected to your network.

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

**ESSID Broadcast:**  It is function in which transmits its ESSID to the air so that when wireless client searches for a network, router can then be discovered and recognized. Default setting is **Enabled.**

- **Disable:** If you do not want broadcast your ESSID.  Any client uses "any" wireless setting cannot discover the Access Point (AP) of your router.

- **Enable:** Any client that using the "any" setting can discover the Access Point (AP).

**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 ID channel that you would like to use.

***Note: Wireless performance may degrade if select ID channel 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 1 up to maximum 127.

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

**Connected:** Representing in **true** or **false**. That it is the connection status between the system and the build-in wireless card.

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

**AP Firmware Version:** The Access Point firmware version.

## Wireless Distribution System (WDS)

It is a wireless access point mode that enables wireless link and communication with other access point. It is easy to be installed simply to define peer's MAC address of the connected AP. WDS takes advantages of 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 enhances its link connection security in WEP mode, WEP key encryption 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.

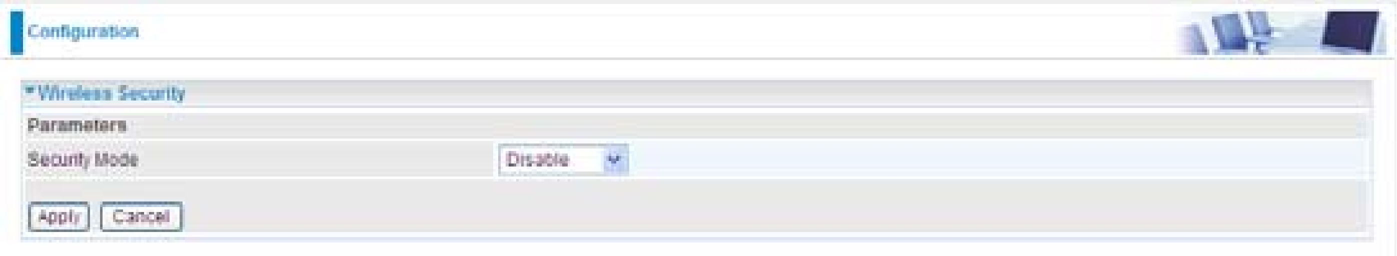
4. **Peer WDS MAC Address:** It is the fourth associated AP's MAC Address.

***Note: For MAC Address, Semicolon ( : ) must be included.***

## Wireless Security

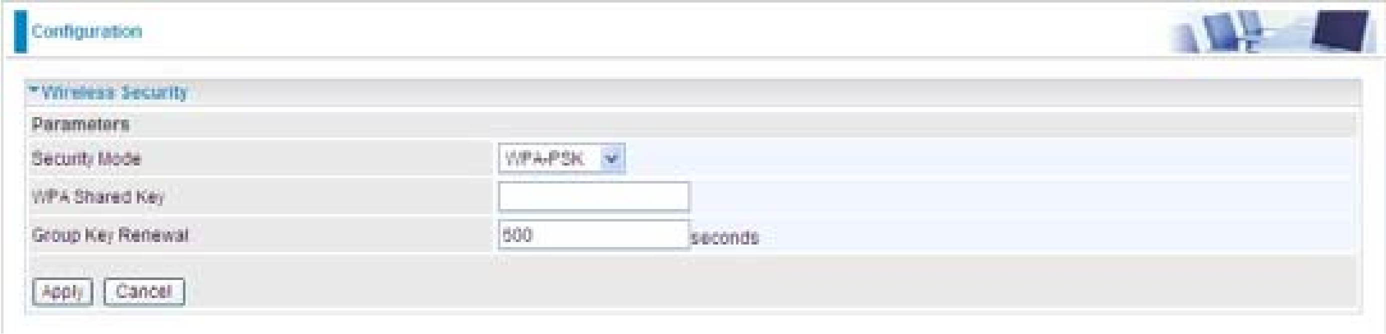
You can disable or enable with WPA or WEP for protecting wireless network.

The default mode of wireless security is disabled.



Security Mode: Disable

## WPA-PSK / WPA2-PSK



Configuration

▾Wireless Security

| | |
|---|---|
| Parameters | |
| Security Mode | WPA-PSK |
| WPA Shared Key | |
| Group Key Renewal | 600 seconds |

Apply  Cancel

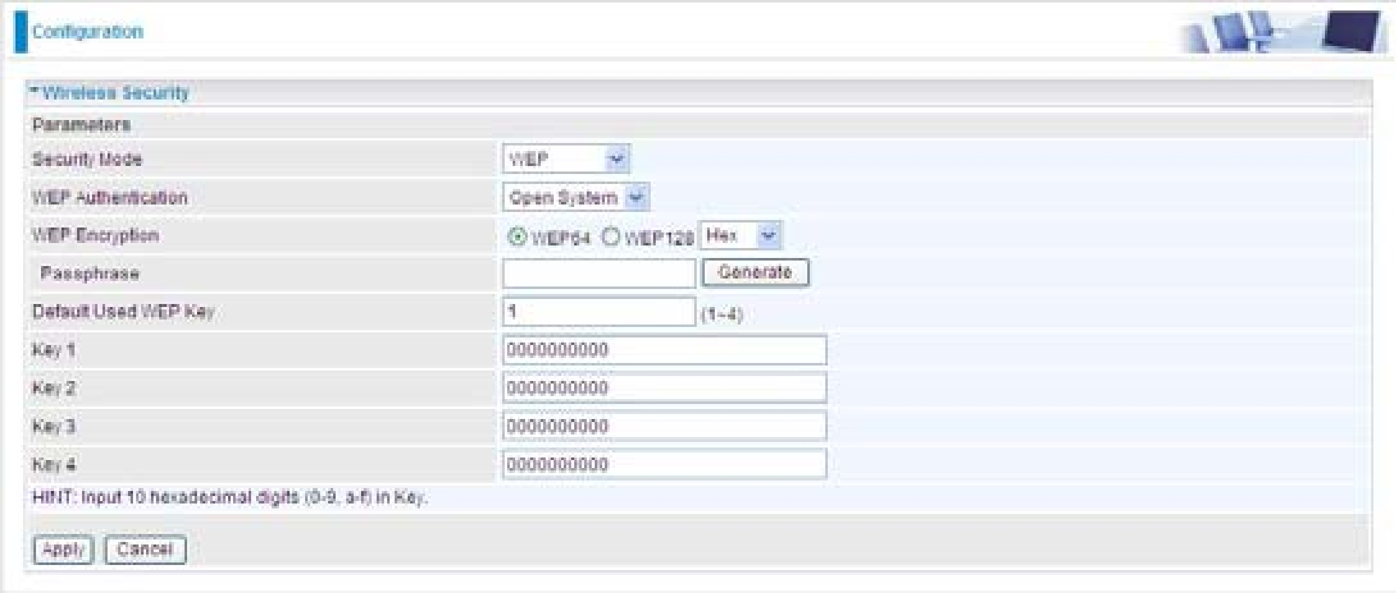
**Security Mode:** You can disable or enable with WPA or WEP for protecting wireless network. The default mode of wireless security is **Disable**.

**WPA Algorithms:** There are two types of the WPA-PSK, WPA-PSK and WPA2-PSK.  The WPA-PSK adapts the TKIP (Temporal Key Integrity Protocol) encrypted algorithms, which incorporates Message Integrity Code (MIC) to provide protection against hackers. The WPA2-PSK adapts CCMP (Cipher Block Chaining Message Authentication Code Protocol) of the AES (Advanced Encryption Security) algorithms.

**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 **600** seconds.

## WEP



Configuration

▾Wireless Security

| | |
|---|---|
| Parameters | |
| Security Mode | WEP |
| WEP Authentication | Open System |
| WEP Encryption | ● WEP64 ○ WEP128 Hex |
| Passphrase | Generate |
| Default Used WEP Key | 1 (1~4) |
| Key 1 | 0000000000 |
| Key 2 | 0000000000 |
| Key 3 | 0000000000 |
| Key 4 | 0000000000 |

HINT: Input 10 hexadecimal digits (0-9, a-f) in Key.

Apply  Cancel

**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 two options to select from: **Open System, Share key**.

**WEP Encryption:** To prevent unauthorized wireless stations from accessing data transmitted over the network, the router offers highly secure data encryption, known as WEP. If you require high security for transmissions, there are two alternatives to select from: **WEP 64 and WEP 128**. WEP 128 will offer increased security over WEP 64.

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

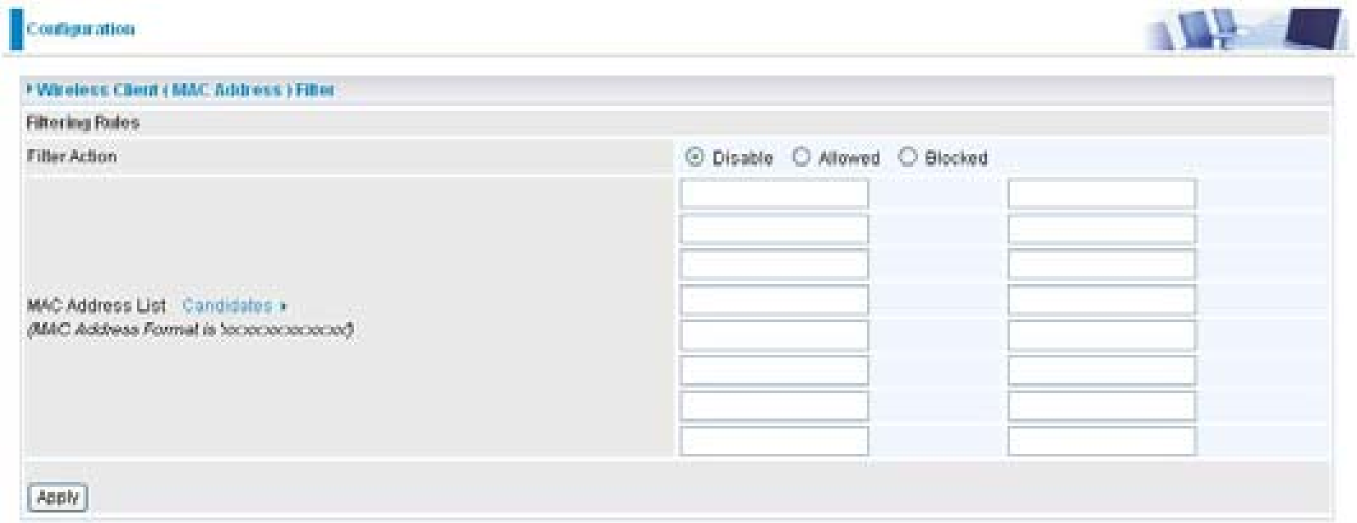
**Default Used WEP Key:** Select the encryption key ID; please refer to **Key (1~4)** below.

**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 is in HEX style, 10 and 26 HEX codes are required for WEP64 and WEP128 respectively.

# Wireless Client / MAC Address Filter

The MAC Address supports up to 16 wireless network machines and helps you manage your network control to accept traffic from specific authorized machines or to restrict unwanted machine(s) to access your LAN.

There are no pre-define MAC Address filter rules; you can add the filter rules to meet your requirements.



Configuration

Wireless Client ( MAC Address ) Filter

Filtering Rules

Filter Action ◉ Disable ○ Allowed ○ Blocked

MAC Address List Candidates
(MAC Address Format is xx:xx:xx:xx:xx:xx)

**Wireless Client Filter:** Default setting is set to **Disable**.

- **Allowed:** To authorize specific device accessing your LAN by insert the MAC Address in the space provided or click the Candidate button. Make sure your PC's MAC is listed.

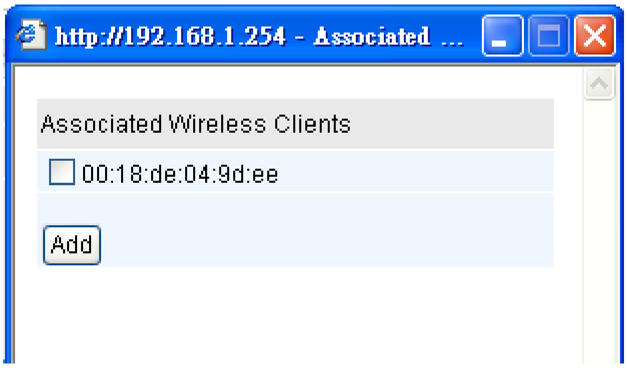
- **Blocked:** To prevent unwanted device accessing the LAN by insert the MAC Address in the space provided or click the Candidate button. Make sure your PC's MAC is not listed.

The maximum client is 16. The MAC addresses are 6 bytes long; they are presented only in hexadecimal characters. The number **0** - **9** and letters **a** - **f** are acceptable.

***Note: Follow the MAC Address Format xx:xx:xx:xx:xx:xx. Semicolon ( : ) must be included.***

**Candidates:** It automatically detects devices connected to the router through the Wireless feature.

Click the Candidate button to access the **Associated Wireless Client** window.



Associated Wireless Clients

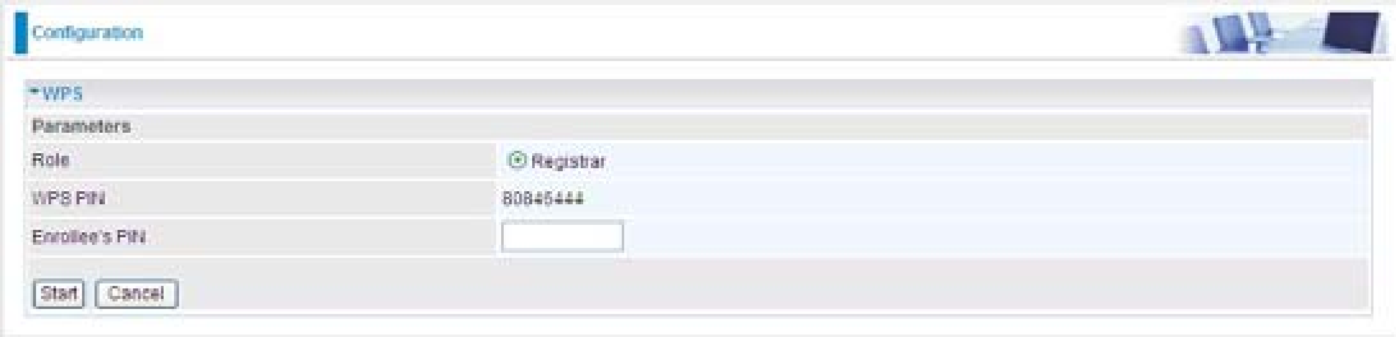
□ 00:18:de:04:9d:ee

**Associate Wireless Client:** Displays a list of individual wireless device's MAC Address that currently connects to the router.

You can easily by checking the box next to the MAC address to be blocked or allowed. Then, Add to insert to the Wireless Client (MAC Address) Filter table.  The maximum Wireless client is 16.

## WPS

WPS feature is follow Wi-Fi Alliance WPS standard and it easily set up security-enabled Wi-Fi networks in the home and small office environment. It is reduced by half the user steps to configure a network and supports two methods that are familiar to most consumers to configure a network and enable security.



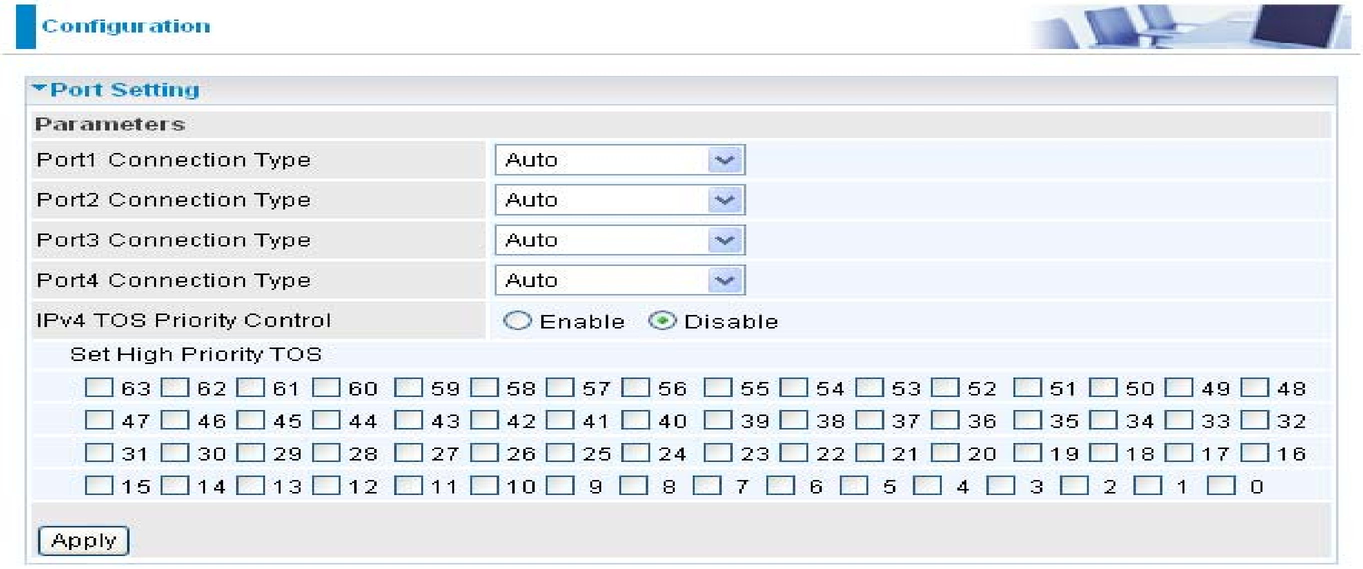
Configuration

WPS

| Parameters | |
|---|---|
| Role | ● Registrar |
| WPS PIN | 80845444 |
| Enrollee's PIN | |

## Port Setting

This section allows you to configure the settings for the router's Ethernet ports to solve some of the compatibility problems that may be encountered while connecting to the Internet, as well allowing users to tweak the performance of their network.



Configuration

Port Setting

| Parameters | |
|---|---|
| Port1 Connection Type | Auto |
| Port2 Connection Type | Auto |
| Port3 Connection Type | Auto |
| Port4 Connection Type | Auto |
| IPv4 TOS Priority Control | ○ Enable ● Disable |

Set High Priority TOS

□ 63 □ 62 □ 61 □ 60 □ 59 □ 58 □ 57 □ 56 □ 55 □ 54 □ 53 □ 52 □ 51 □ 50 □ 49 □ 48
□ 47 □ 46 □ 45 □ 44 □ 43 □ 42 □ 41 □ 40 □ 39 □ 38 □ 37 □ 36 □ 35 □ 34 □ 33 □ 32
□ 31 □ 30 □ 29 □ 28 □ 27 □ 26 □ 25 □ 24 □ 23 □ 22 □ 21 □ 20 □ 19 □ 18 □ 17 □ 16
□ 15 □ 14 □ 13 □ 12 □ 11 □ 10 □ 9 □ 8 □ 7 □ 6 □ 5 □ 4 □ 3 □ 2 □ 1 □ 0

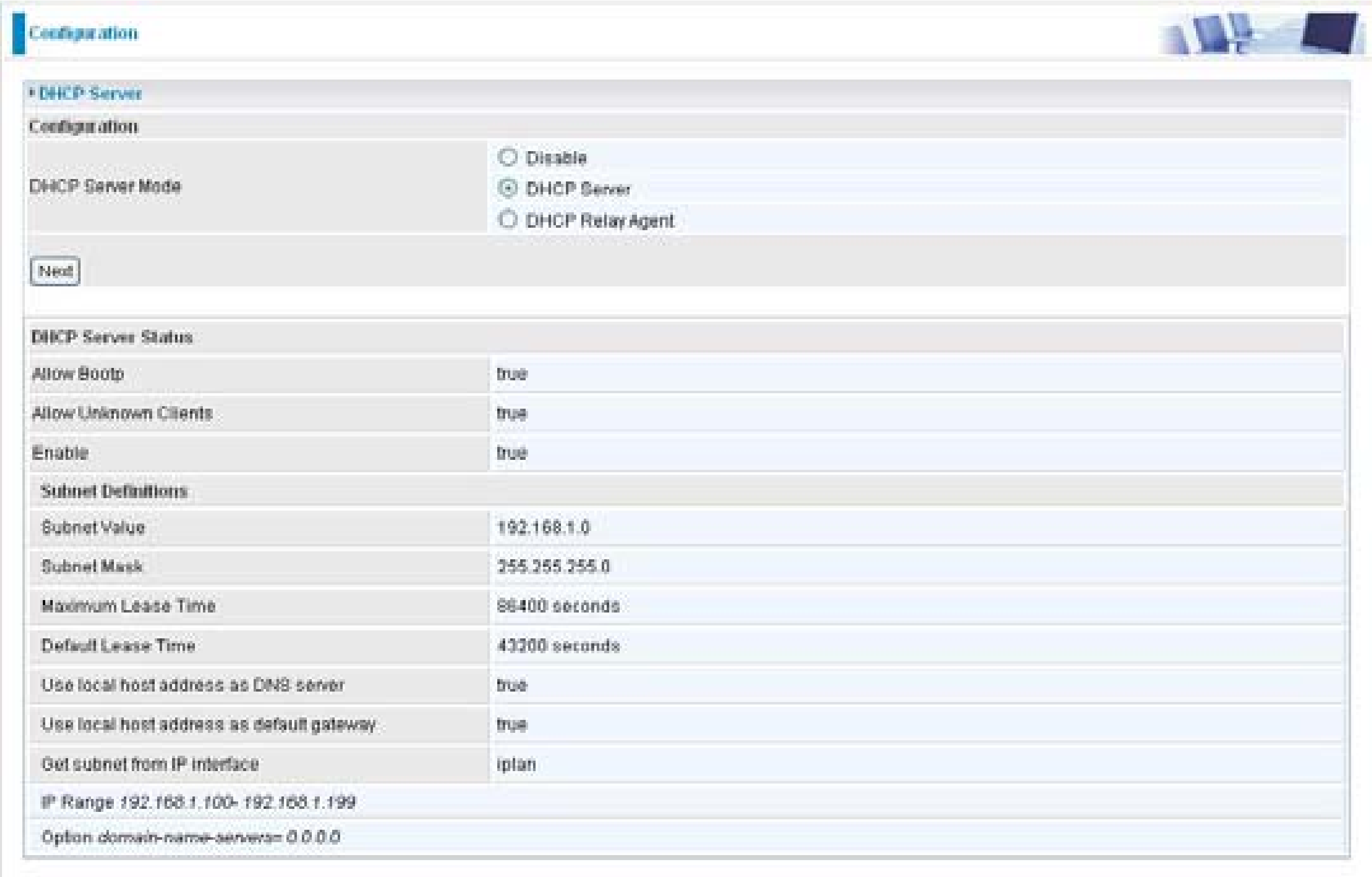
**Port # Connection Type:** There are Six options to choose from: Auto, disable, 10M half-duplex, 10M full-duplex, 100M half-duplex, 100M full-duplex and Disable. Sometimes, there are Ethernet compatibility problems with legacy Ethernet devices, and you can configure different types to solve compatibility issues. The default is Auto, which users should keep unless there are specific problems with PCs not being able to access your LAN.

**IPv4 TOS priority Control (Advanced users):** TOS, Type of Services, is the 2nd octet of an IP packet. Bits 6-7 of this octet are reserved and bit 0-5 are used to specify the priority of the packet.

This feature uses bits 0-5 to classify the packet's priority. If the packet is high priority, it will flow first and will not be constrained by the Rate Limit.  Therefore, when this feature is enabled, the router's Ethernet switch will check the 2nd octet of each IP packet. If the value in the TOS field matches the checked values in the table (0 to 63), this packet will be treated as high priority.

## DHCP Server

You can disable or enable the DHCP (Dynamic Host Configuration Protocol) server or enable the router's DHCP relay functions. The DHCP protocol allows your router to dynamically assign IP addresses to PCs on your network if they are configured to obtain IP addresses automatically.



Configuration

▸ DHCP Server

Configuration

| | |
|---|---|
| DHCP Server Mode | ○ Disable<br>● DHCP Server<br>○ DHCP Relay Agent |

DHCP Server Status

| | |
|---|---|
| Allow Bootp | true |
| Allow Unknown Clients | true |
| Enable | true |
| Subnet Definitions | |
| Subnet Value | 192.168.1.0 |
| Subnet Mask | 255.255.255.0 |
| Maximum Lease Time | 86400 seconds |
| Default Lease Time | 43200 seconds |
| Use local host address as DNS server | true |
| Use local host address as default gateway | true |
| Get subnet from IP interface | iplan |

IP Range *192.168.1.100- 192.168.1.199*

Option *domain-name-servers= 0.0.0.0*

To disable the router's DHCP Server, check Disabled and click Next, then click Apply. When the DHCP Server is disabled you will need to manually assign a fixed IP address to each PCs on your network, and set the default gateway for each PCs to the IP address of the router (by default this is 192.168.1.254).

To configure the router's DHCP Server, check DHCP Server and click Next. You can then configure parameters of the DHCP Server including the 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. Click Apply to enable this function. 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).

If you check DHCP Relay Agent and click Next, then you will have to enter the IP address of the DHCP server which will assign an IP address back 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.

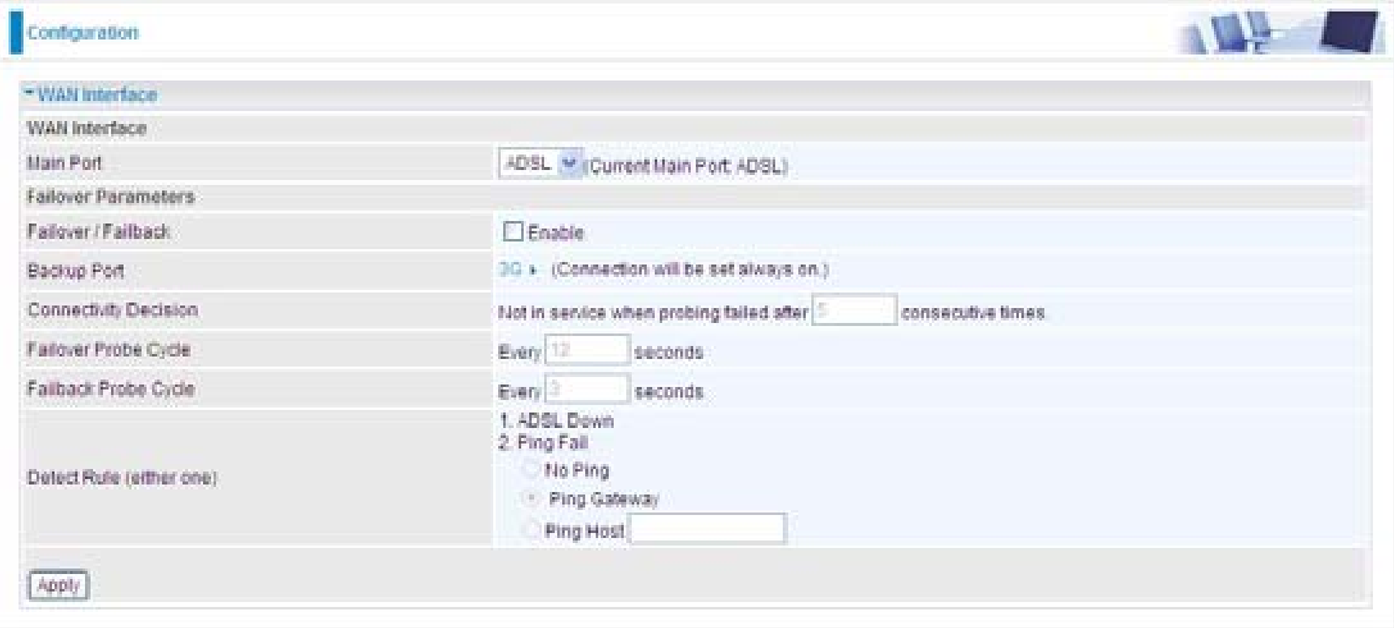
# WAN - Wide Area Network

WAN refers to your Wide Area Network connection, i.e. your router's connection to your ISP and the Internet. Here are the items within the WAN section: **WAN Interface, WAN Profile** and **ADSL Mode.**

## WAN Interface

### WAN Connection-ADSL Mode

The default setting for Connection Mode is ADSL and for Protocol is PPPoE.



Configuration

▾ WAN Interface

| | |
|---|---|
| WAN Interface | |
| Main Port | ADSL (Current Main Port: ADSL) |
| Failover Parameters | |
| Failover / Failback | □ Enable |
| Backup Port | 3G ▸ (Connection will be set always on.) |
| Connectivity Decision | Not in service when probing failed after 5 consecutive times |
| Failover Probe Cycle | Every 12 seconds |
| Failback Probe Cycle | Every 3 seconds |
| Detect Rule (either one) | 1. ADSL Down<br>2. Ping Fail<br>○ No Ping<br>● Ping Gateway<br>○ Ping Host |

**Main Port:** User can select either ADSL or 3G mode.

**Failover / Failback:** Set Enable to trigger ADLS / 3G failover / failback function ready.

**Backup Port:** It links to backup port configuration page. It is necessary to configure it when Failover/Failback be set.

**Connectivity Decision:** Set how many times of 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.

***Note: The time set is for each probe cycle, but the decision to change to the backup port is determined by Probe Cycle duration multiplied by connection Decision amount (e.g. From the image above it will be 12 seconds multiplied by 5 consecutive 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 is communicating again.

***Note: The time set is for each probe cycle, but the decision to change to the backup port is determined by Probe Cycle duration multiplied by Connection Decision amount (e.g. From ge above it will be 3 seconds multiplied by 5 consecutive fails).***

**Detect Rule:**

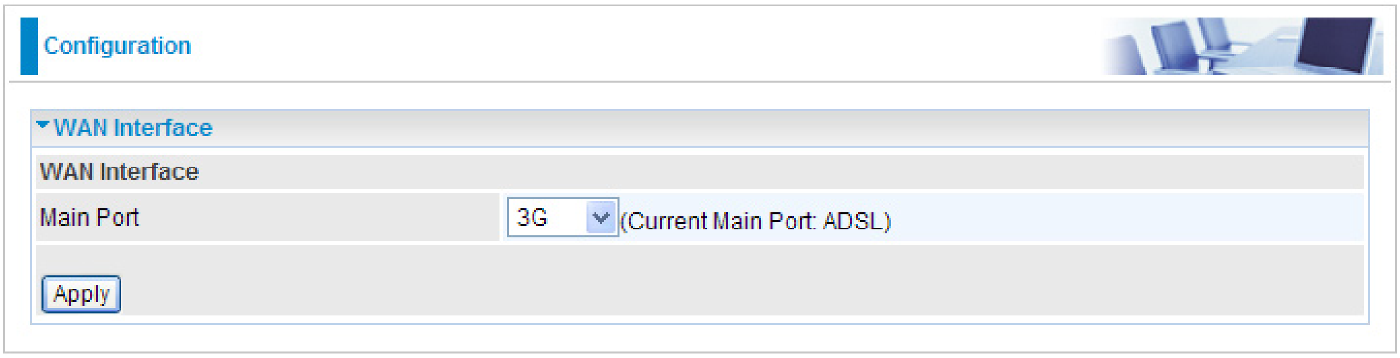
**Rule 1. ADSL Down**

**Rule 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.

## WAN Connection-3G Mode

In ADSL mode, as the ADSL is not available (failover/failback), it will switch to 3G mode for WAN Connection support.  However, in 3G Mode ADSL cannot support WAN Connection when 3G Mode is unavailable.



Configuration

▾WAN Interface

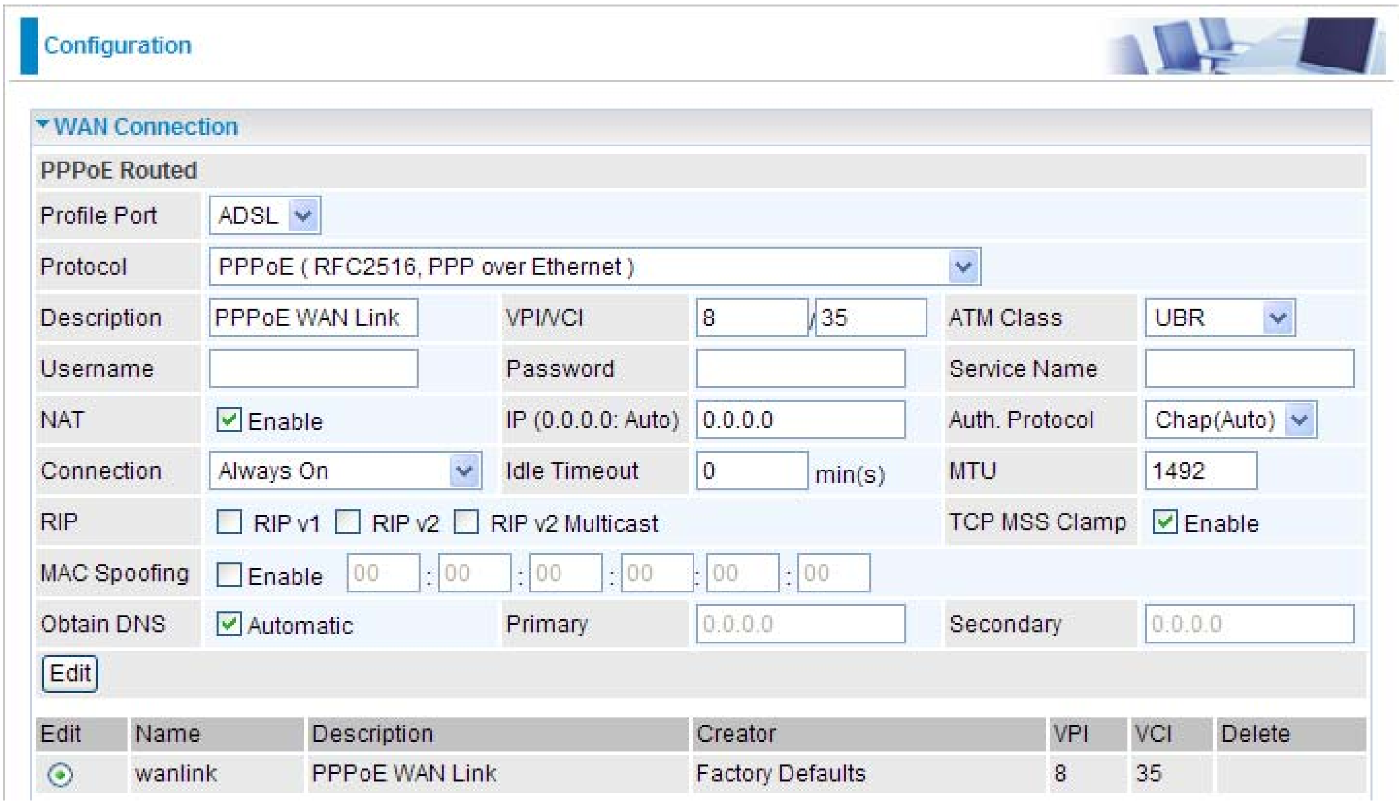
WAN Interface

Main Port: 3G (Current Main Port: ADSL)

# WAN Profile

## PPPoE Connection

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



Configuration

WAN Connection

PPPoE Routed

| | | | | | |
|---|---|---|---|---|---|
| Profile Port | ADSL | | | | |
| Protocol | PPPoE ( RFC2516, PPP over Ethernet ) | | | | |
| Description | PPPoE WAN Link | VPI/VCI | 8 / 35 | ATM Class | UBR |
| Username | | Password | | Service Name | |
| NAT | ☑ Enable | IP (0.0.0.0: Auto) | 0.0.0.0 | Auth. Protocol | Chap(Auto) |
| Connection | Always On | Idle Timeout | 0 min(s) | MTU | 1492 |
| RIP | □ RIP v1 □ RIP v2 □ RIP v2 Multicast | | | TCP MSS Clamp | ☑ Enable |
| MAC Spoofing | □ Enable 00 : 00 : 00 : 00 : 00 : 00 | | | | |
| Obtain DNS | ☑ Automatic | Primary | 0.0.0.0 | Secondary | 0.0.0.0 |

Edit

| Edit | Name | Description | Creator | VPI | VCI | Delete |
|---|---|---|---|---|---|---|
| ● | wanlink | PPPoE WAN Link | Factory Defaults | 8 | 35 | |

**Profile Port:** Select the profile port as ADSL.

**Protocol:** The ATM protocol will be used in the device.

**Description:** A given name for the connection.

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

**ATM Class:** The Quality of Service for ATM layer.

**Username:** Enter the username provided by your ISP. You can input up to 128 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 128 alphanumeric characters (case sensitive).

**Service Name:** This item is for identification purposes. If it is required, your ISP provides you the information. Maximum input is 15 alphanumeric characters.

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

**IP (0.0.0.0:Auto):** Your WAN IP address. Leave this at 0.0.0.0 to obtain automatically an IP address from your ISP.

**Auth. Protocol:** Default is Auto. Your ISP should advise you on whether to use Chap or Pap.

**Connection:**

- **Always on:** If you want the router to establish a PPPoA session when starting up and to automatically re-establish the PPPoA session when disconnected by the ISP.

- **Connect on Demand:** If you want to establish a PPPoA session only when there is a packet requesting access to the Internet (i.e. when a program on your computer attempts to access the Internet).

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

- **Detail:** You can define the destination port and packet type (TCP/UDP) without checking by timer. It allows you to set which outgoing traffic will not trigger and reset the idle timer.

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

**RIP:** RIP v1, RIP v2, and RIP v2 Multicast. Check to enable RIP function.

**TCP MSS Clamp:** This option helps to discover the optimal MTU size automatically. Default is enabled.

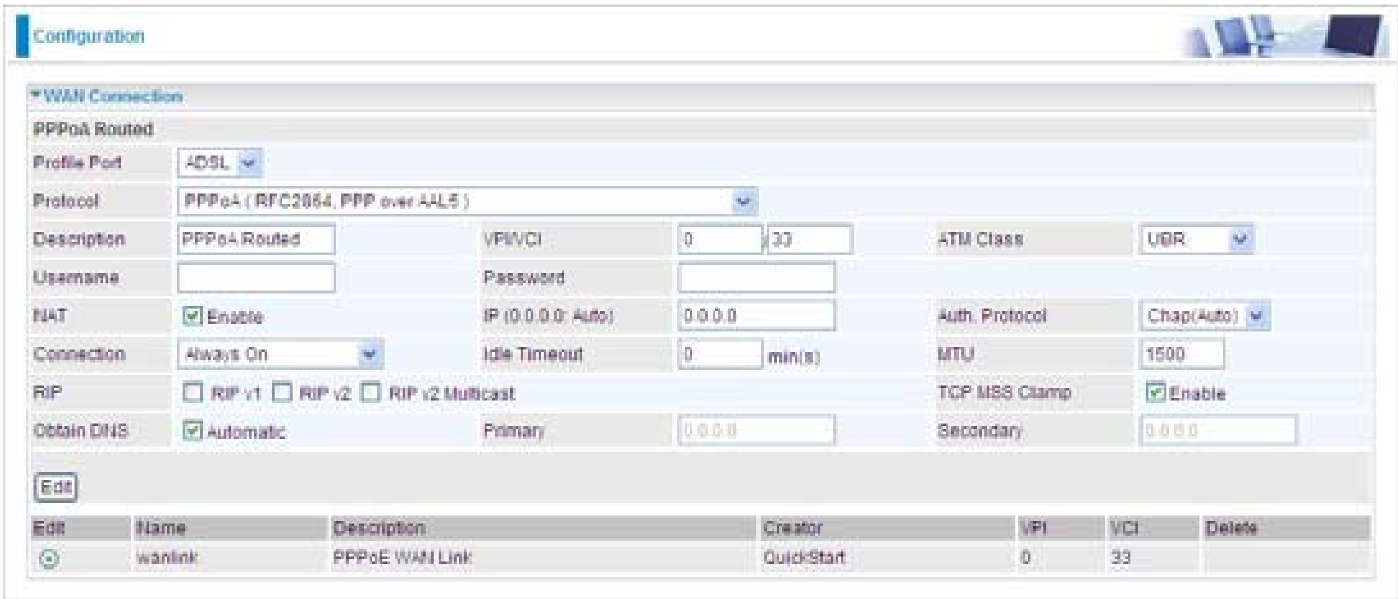
**MAC Spoofing:** Some service providers require the configuring of this option. You must fill in the MAC address that specify by service provider when it is required. Default is disabled.

**Obtain DNS:** 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 obtain DNS automatically.

**Primary DNS:** Enter the primary DNS.

**Secondary DNS:** Enter the secondary DNS

## PPPoA Connection



Configuration

▾WAN Connection

PPPoA Routed

| | | | | | |
|---|---|---|---|---|---|
| Profile Port | ADSL | | | | |
| Protocol | PPPoA ( RFC2364, PPP over AAL5 ) | | | | |
| Description | PPPoA Routed | VPI/VCI | 0 / 33 | ATM Class | UBR |
| Username | | Password | | | |
| NAT | ☑ Enable | IP (0.0.0.0: Auto) | 0.0.0.0 | Auth. Protocol | Chap(Auto) |
| Connection | Always On | Idle Timeout | 0 min(s) | MTU | 1500 |
| RIP | □ RIP v1 □ RIP v2 □ RIP v2 Multicast | | | TCP MSS Clamp | ☑ Enable |
| Obtain DNS | ☑ Automatic | Primary | 0.0.0.0 | Secondary | 0.0.0.0 |

| Edit | Name | Description | Creator | VPI | VCI | Delete |
|---|---|---|---|---|---|---|
| ○ | wanlink | PPPoE WAN Link | QuickStart | 0 | 33 | |

**Profile Port:** Select the profile port as ADSL.

**Protocol:** The ATM protocol will be used in the device..

**Description:** A given name for the connection.

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

**ATM Class:** The Quality of Service for ATM layer.

**Username:** Enter the username provided by your ISP. You can input up to 128 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 128 alphanumeric characters (case sensitive).

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

**IP (0.0.0.0:Auto):** Your WAN IP address. Leave this at 0.0.0.0 to obtain automatically an IP address from your ISP.

**Auth. Protocol:** Default is Auto. Your ISP should advises you on whether to use Chap or Pap.

**Connection:**

- **Always on:** If you want the router to establish a PPPoA session when starting up and to automatically re-establish the PPPoA session when disconnected by the ISP.

- **Connect on Demand:** If you want to establish a PPPoA session only when there is a packet requesting access to the Internet (i.e. when a program on your computer attempts to access the Internet).

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

- **Detail:** You can define the destination port and packet type (TCP/UDP) without checking by timer. It allows you to set which outgoing traffic will not trigger and reset the idle timer.

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

**RIP:** RIP v1, RIP v2, and RIP v2 Multicast. Check to enable RIP function.

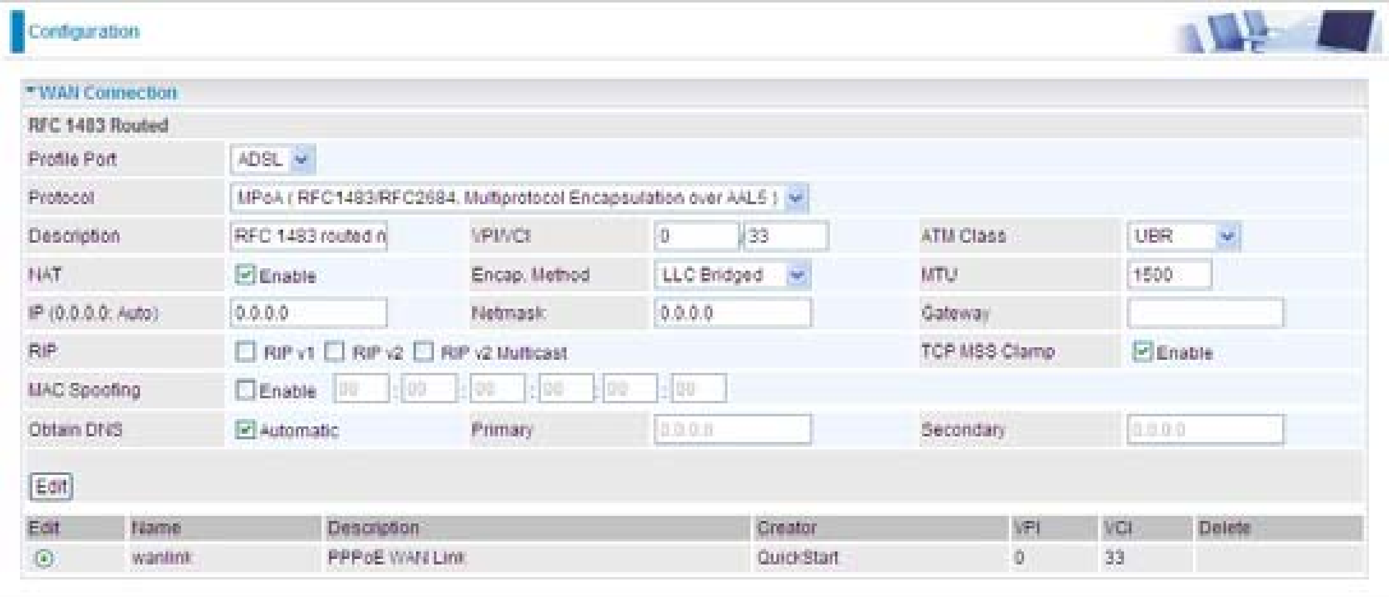
**TCP MSS Clamp:** This option helps to discover the optimal MTU size automatically. Default is enabled.

**Obtain DNS:** 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 obtain DNS automatically.

**Primary DNS:** Enter the primary DNS.

**Secondary DNS:** Enter the secondary DNS.

## MPoA Connection



Configuration

▾ WAN Connection

RFC 1483 Routed

| | | | | | |
|---|---|---|---|---|---|
| Profile Port | ADSL | | | | |
| Protocol | MPoA ( RFC1483/RFC2684, Multiprotocol Encapsulation over AAL5 ) | | | | |
| Description | RFC 1483 routed n | VPI/VCI | 0 / 33 | ATM Class | UBR |
| NAT | ☑ Enable | Encap. Method | LLC Bridged | MTU | 1500 |
| IP (0.0.0.0: Auto) | 0.0.0.0 | Netmask | 0.0.0.0 | Gateway | |
| RIP | □ RIP v1 □ RIP v2 □ RIP v2 Multicast | | | TCP MSS Clamp | ☑ Enable |
| MAC Spoofing | □ Enable 00 : 00 : 00 : 00 : 00 : 00 | | | | |
| Obtain DNS | ☑ Automatic | Primary | 0.0.0.0 | Secondary | 0.0.0.0 |

Edit

| Edit | Name | Description | Creator | VPI | VCI | Delete |
|---|---|---|---|---|---|---|
| ● | wanlink | PPPoE WAN Link | QuickStart | 0 | 33 | |

**Profile Port:** Select the profile port as ADSL.

**Protocol:** The ATM protocol will be used in the device.

**Description:** A given name for the connection.

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

**ATM Class:** The Quality of Service for ATM layer.

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

**Encap. mode:** Choose whether you want the packets in WAN interface as bridged packet or routed packet.

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

**IP (0.0.0.0:Auto):** Specify an IP address allowed to logon and access the router's web server.

***Note: IP 0.0.0.0 indicates all users who are connected to this router are allowed to logon the device and modify data.***

**Netmask:** The default is 255.255.255.0. User can change it to other such as 255.255.255.128. Type the subnet mask assigned to you by your ISP (if given).

**Gateway:** Enter the IP address of the default gateway (if given).

**RIP:** RIP v1, RIP v2, and RIP v2 Multicast. Check to enable RIP function.

**TCP MSS Clamp:** This option helps to discover the optimal MTU size automatically. Default is enabled.

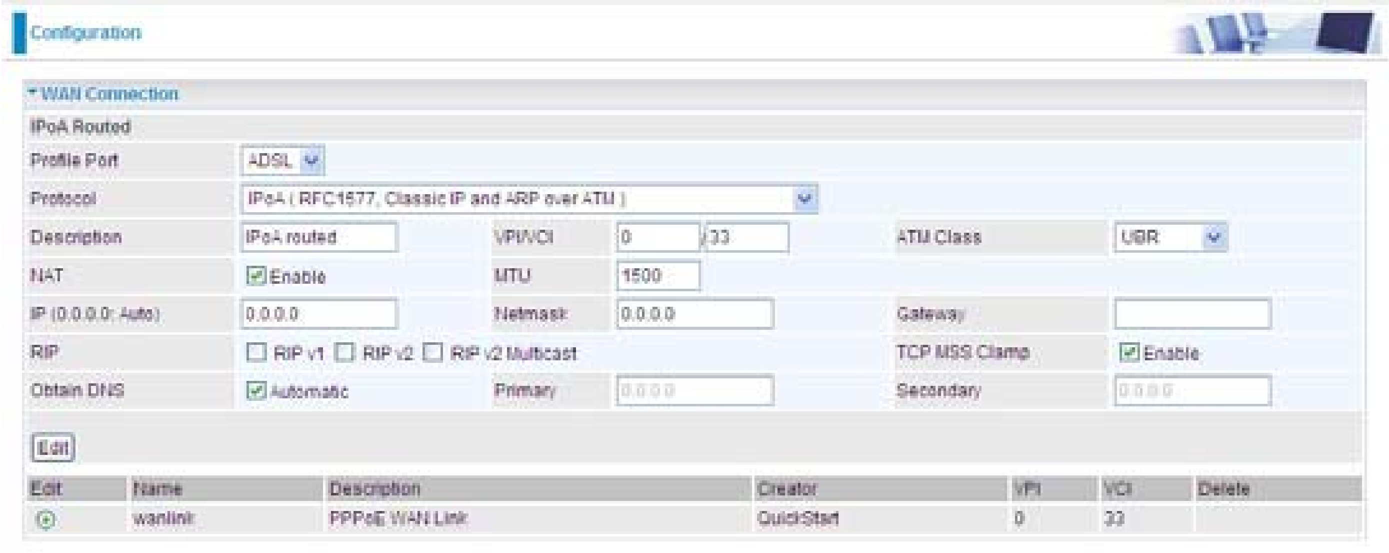
**MAC Spoofing:** Some service providers require the configuring of this option. You must fill in the MAC address that specify by service provider when it is required. Default is disabled.

**Obtain DNS:** 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 obtain DNS automatically.

**Primary DNS:** Enter the primary DNS.

**Secondary DNS:** Enter the secondary DNS.

## IPoA Routed Connection



Configuration

▾ WAN Connection

IPoA Routed

| | | | | | |
|---|---|---|---|---|---|
| Profile Port | ADSL | | | | |
| Protocol | IPoA ( RFC1577, Classic IP and ARP over ATM ) | | | | |
| Description | IPoA routed | VPI/VCI | 0 / 33 | ATM Class | UBR |
| NAT | ☑ Enable | MTU | 1500 | | |
| IP (0.0.0.0: Auto) | 0.0.0.0 | Netmask | 0.0.0.0 | Gateway | |
| RIP | □ RIP v1 □ RIP v2 □ RIP v2 Multicast | | | TCP MSS Clamp | ☑ Enable |
| Obtain DNS | ☑ Automatic | Primary | 0.0.0.0 | Secondary | 0.0.0.0 |

Edit

| Edit | Name | Description | Creator | VPI | VCI | Delete |
|---|---|---|---|---|---|---|
| ⊙ | wanlink | PPPoE WAN Link | QuickStart | 0 | 33 | |

**Profile Port**: Select the profile port as ADSL.

**Protocol:** The ATM protocol will be used in the device.

**Description:** A given name for the connection.

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

**ATM Class:** The Quality of Service for ATM layer.

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

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

**IP (0.0.0.0:Auto):** Specify an IP address allowed to logon and access the router's web server.

***Note: IP 0.0.0.0 indicates all users who are connected to this router are allowed to logon the device and modify data.***

**Netmask:** The default is 255.255.255.0. User can change it to other such as 255.255.255.128. Type the subnet mask assigned to you by your ISP (if given).

**Gateway**: Enter the IP address of the default gateway (if given).

**RIP:** RIP v1, RIP v2, and RIP v2 Multicast. Check to enable RIP function.

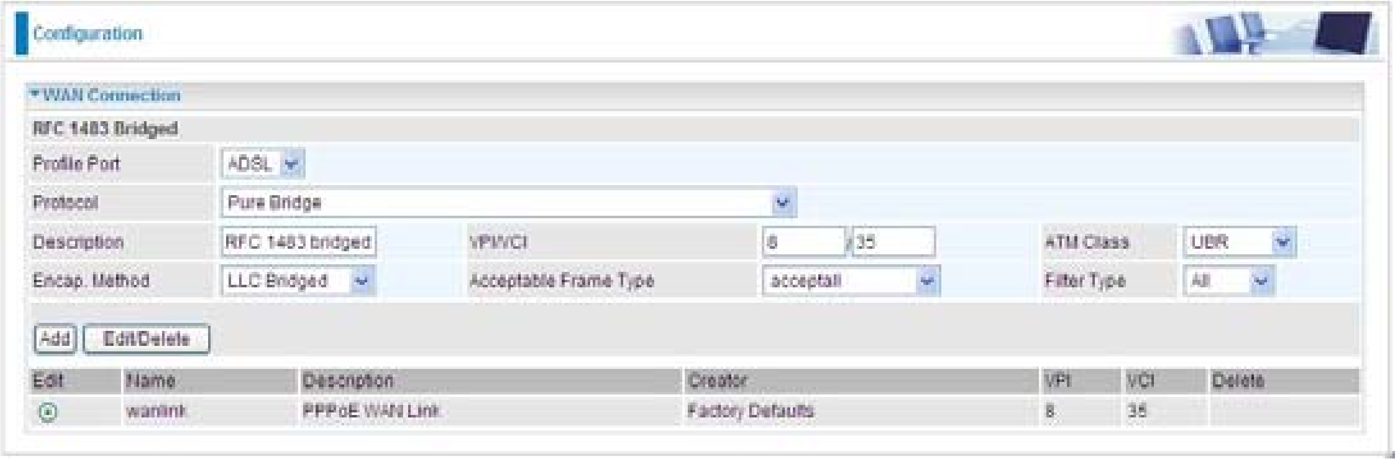
**TCP MSS Clamp:** This option helps to discover the optimal MTU size automatically. Default is enabled.

**Obtain DNS:** 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 obtain DNS automatically.

**Primary DNS:** Enter the primary DNS.

**Secondary DNS:** Enter the secondary DNS.

## Pure Bridge



RFC 1483 Bridged

| | | | | | |
|---|---|---|---|---|---|
| Profile Port | ADSL | | | | |
| Protocol | Pure Bridge | | | | |
| Description | RFC 1483 bridged | VPI/VCI | 8 / 35 | ATM Class | UBR |
| Encap. Method | LLC Bridged | Acceptable Frame Type | acceptall | Filter Type | All |

| Edit | Name | Description | Creator | VPI | VCI | Delete |
|---|---|---|---|---|---|---|
| ○ | wanlink | PPPoE WAN Link | Factory Defaults | 8 | 35 | |

**Profile Port:** Select the profile port as ADSL.

**Protocol:** The ATM protocol will be used in the device.

**Description:** A given name for this connection.

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

**ATM Class:** The Quality of Service for ATM layer.

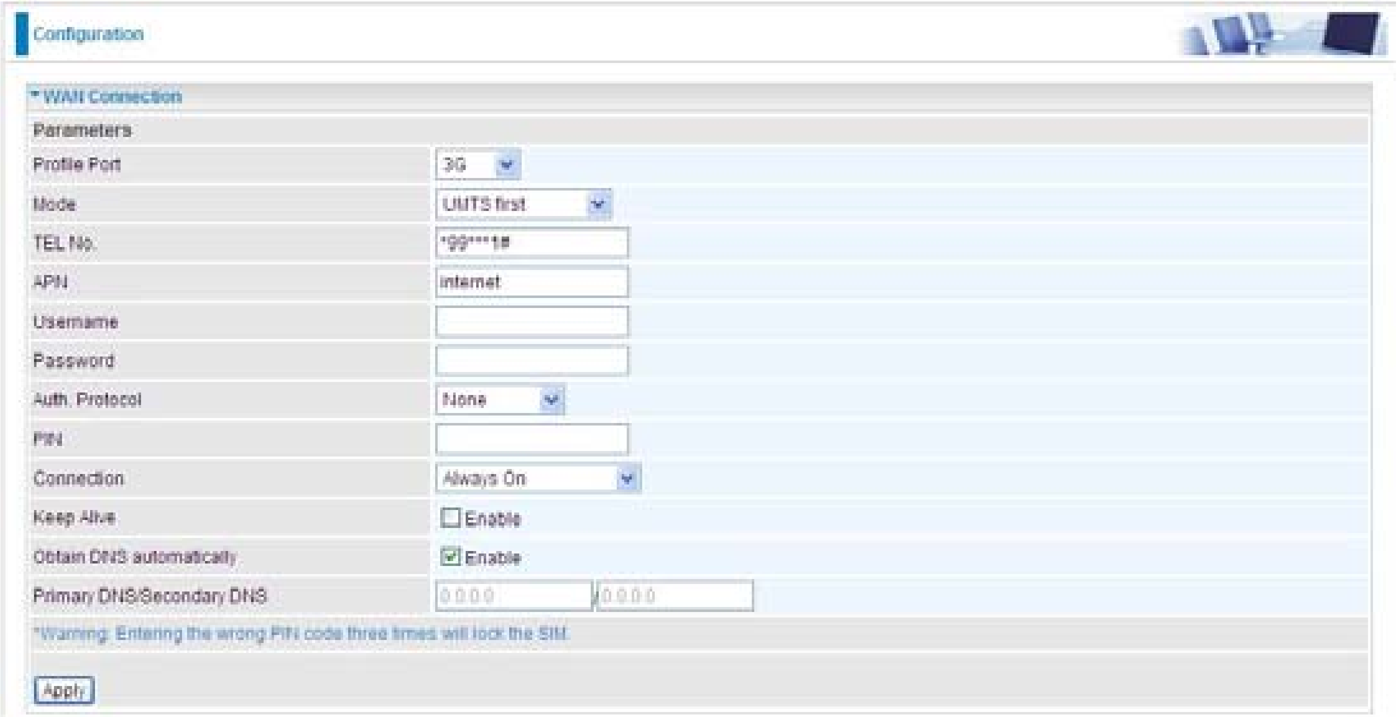
**Encap. mode:** Choose whether you want the packets in WAN interface as bridged packet or routed packet.

**Acceptable Frame Type:** Specify which kind of traffic goes through this connection, all traffic or only VLAN tagged.

**Filter Type:** Specify the type of ethernet filtering performed by the named bridge interface.

| | |
|---|---|
| **All** | Allows all types of ethernet packets through the port. |
| **Ip** | Allows only IP/ARP types of ethernet packets through the port. |
| **Pppoe** | Allows only PPPoE types of ethernet packets through the port. |

## 3G



Configuration

▾ WAN Connection

| Parameters | |
|---|---|
| Profile Port | 3G |
| Mode | UMTS first |
| TEL No. | *99***1# |
| APN | internet |
| Username | |
| Password | |
| Auth. Protocol | None |
| PIN | |
| Connection | Always On |
| Keep Alive | ☐ Enable |
| Obtain DNS automatically | ☑ Enable |
| Primary DNS/Secondary DNS | 0.0.0.0 / 0.0.0.0 |

*Warning: Entering the wrong PIN code three times will lock the SIM.

**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 APN's to be assigned varies between different service providers. Most service providers have an internet portal which they connect a DHCP Server to, giving you access to the internet i.e. Some 3G operators use the APN 'internet' for their portal. The default value of APN is "internet".

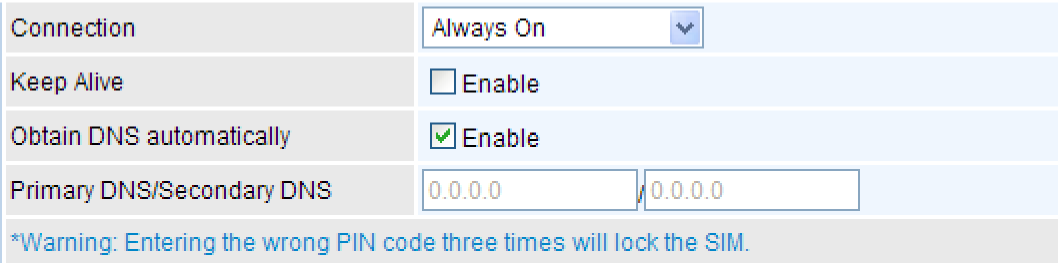
**Username:** Enter the username provided by your service provider.

**Password:** Enter the password provided by your service provider.

**Authentication Type:** Default is None. Manually specify CHAP (Challenge Handshake Authentication Protocol) or PAP (Password Authentication Protocol) if you know which type the server is using (when acting as a client), or else the authentication type you want clients connecting to you to use (when acting as a server). When using PAP, the password is sent unencrypted, whilst CHAP encrypts the password before sending, and also allows for challenges at different periods to ensure that an intruder has not replaced the client.

**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.

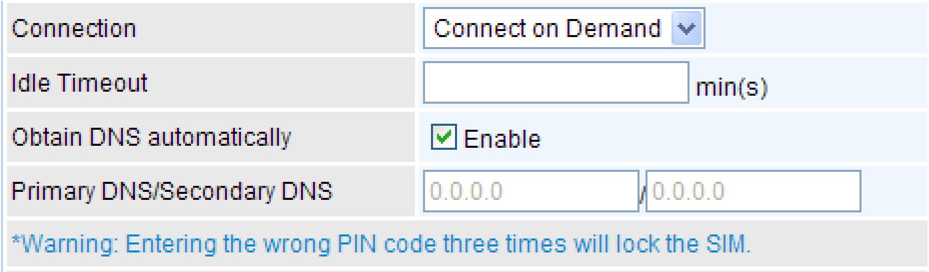
**Connection:**



| | |
|---|---|
| Connection | Always On |
| Keep Alive | □ Enable |
| Obtain DNS automatically | ☑ Enable |
| Primary DNS/Secondary DNS | 0.0.0.0 / 0.0.0.0 |
| *Warning: Entering the wrong PIN code three times will lock the SIM. | |

- **Always On:** The router will make UMTS/GPRS call when starting up. Enabling Always On, will give you an option of Keep Alive.

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



| | |
|---|---|
| Connection | Connect on Demand |
| Idle Timeout | min(s) |
| Obtain DNS automatically | ☑ Enable |
| Primary DNS/Secondary DNS | 0.0.0.0 / 0.0.0.0 |
| *Warning: Entering the wrong PIN code three times will lock the SIM. | |

- **Connect to 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. Enabling Connect on Demand will give you an option of Idle Timeout.

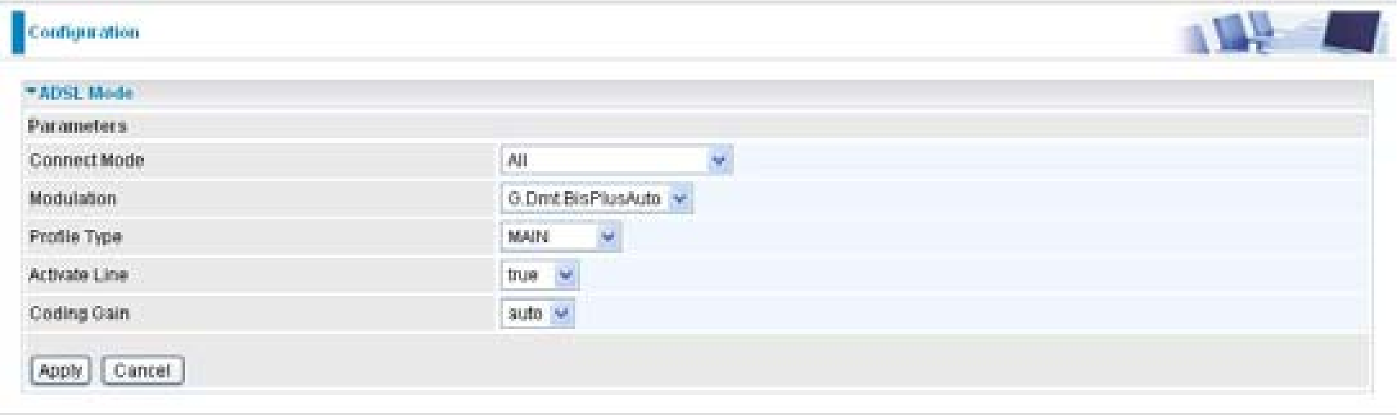
- **Idle Timeout:** Auto-disconnect the connection when there is no activity on this call for a predetermined period of time. The default value is 10 seconds.

**Obtain DNS Automatically:** Select this check box to use 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 subnet mask.

***Note: If you don't know how to set these values and please keep them untouched.***

## ADSL Mode



Parameters

| | |
|---|---|
| Connect Mode | All |
| Modulation | G.Dmt.BisPlusAuto |
| Profile Type | MAIN |
| Activate Line | true |
| Coding Gain | auto |

**Connect Mode:** This mode will automatically detect your ADSL line code, ADSL2+, ADSL2, AnnexM2 and AnnexM2+, ADSL, All. Please keep the factory setting unless ADSL is detected as the symptom of synchronization problem.

**Modulation:** It will automatically detect capability of your ADSL line mode. Please keep the factory setting unless ADSL is detected as the symptom of synchronization problem.

**Profile Type:** Please keep the factory settings unless ADSL is detected as the symptom of low link rate or unstable problems. You may need to change the profile setting to reach the best ADSL line rate, it depends on the different DSLAM and location.

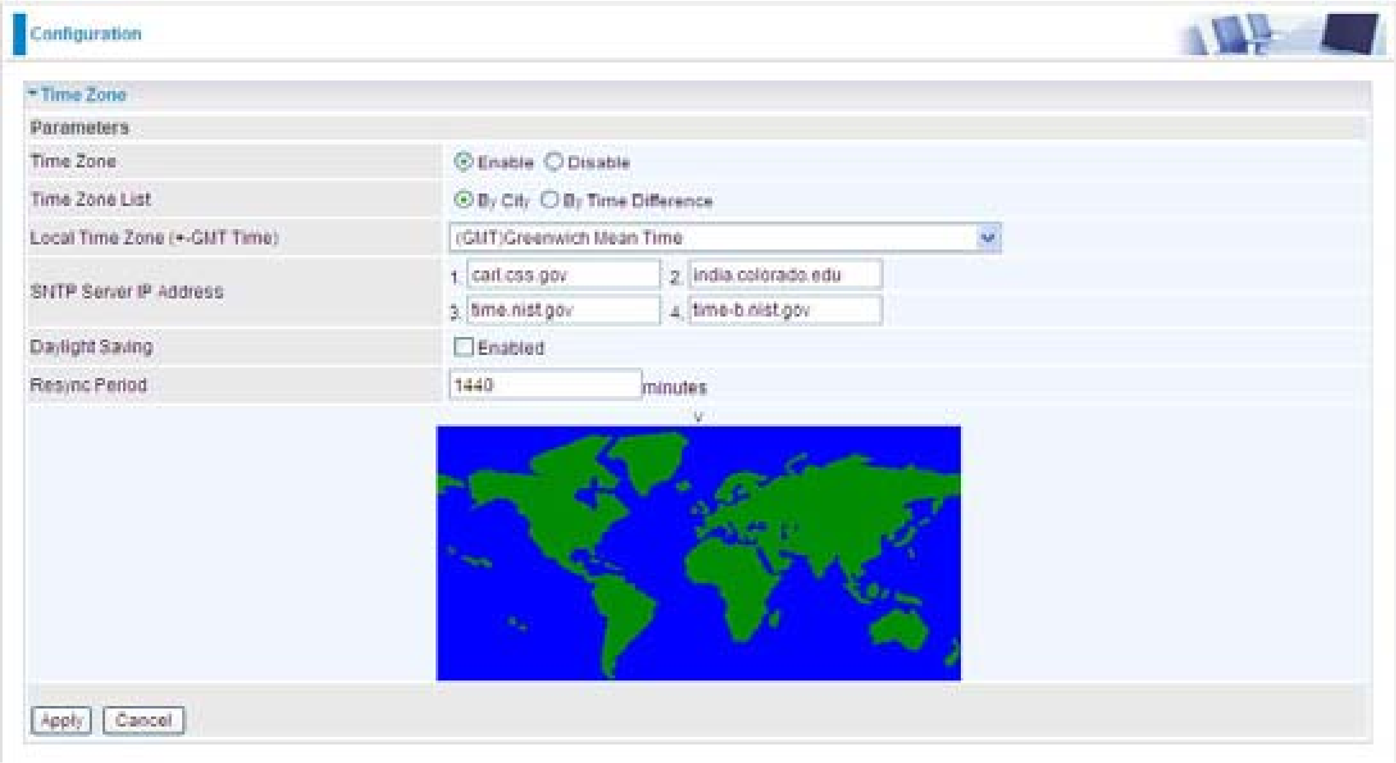
**Activate Line:** Aborting (false) your ADSL line and making it active (true) again for taking effect with setting of Connect Mode.

**Coding Gain:** It reduces router's transmit power which will effect to router's downstream performance. Higher the gain will increase the downstream rate but it sometimes causes unstable ADSL line. The configurable ADSL coding gain is from 0 dB to 7dB, or automatic.

# System

Here are the items within the System section: **Time Zone, Remote Access, Firmware Upgrade, Backup/Restore, Restart** and **User Management.**

## Time Zone



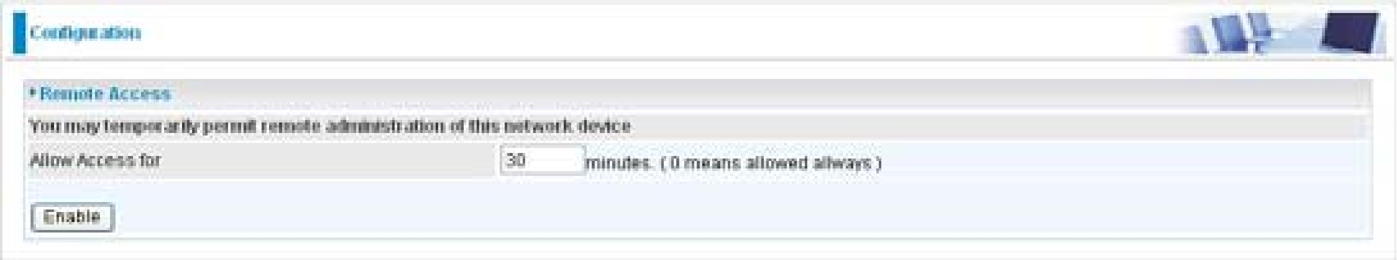
| Parameters | |
|---|---|
| Time Zone | ● Enable ○ Disable |
| Time Zone List | ● By City ○ By Time Difference |
| Local Time Zone (+-GMT Time) | (GMT)Greenwich Mean Time |
| SNTP Server IP Address | 1. carl.css.gov 2. india.colorado.edu<br>3. time.nist.gov 4. time-b.nist.gov |
| Daylight Saving | □ Enabled |
| Resync Period | 1440 minutes |

The router does not have a real time clock on board; instead, it uses the Simple Network Time Protocol (SNTP) to get the current time from an SNTP server outside your network. Choose your 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 list, simply enter its IP address as shown above. Your ISP may 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.

## Remote Access



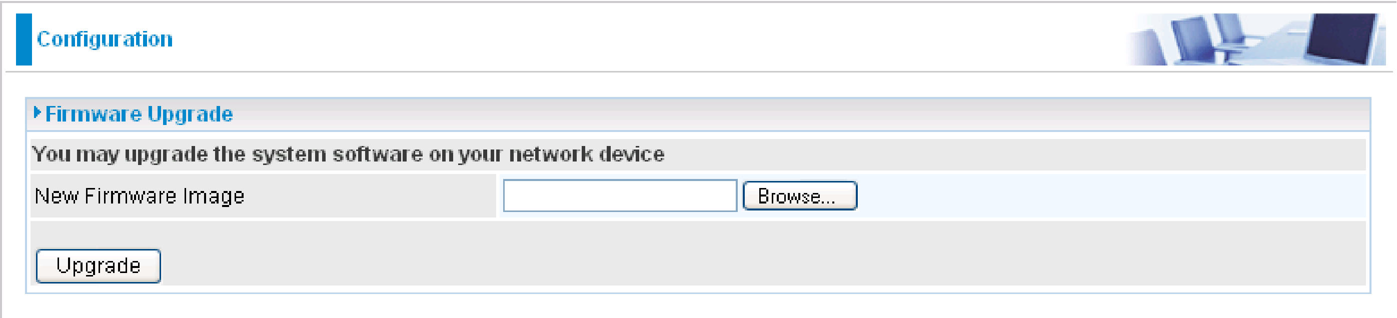
You may temporarily permit remote administration of this network device

Allow Access for: 30 minutes. ( 0 means allowed allways )

To temporarily permit remote administration of the router (i.e. from outside your LAN), select a time period the router will permit remote access for and click Enable. You may change other configuration options for the web administration interface using Device Management options in the Advanced section of the GUI.

If you wish to permanently enable remote access, choose a time period of 0 minute.

## Firmware Upgrade



You may upgrade the system software on your network device

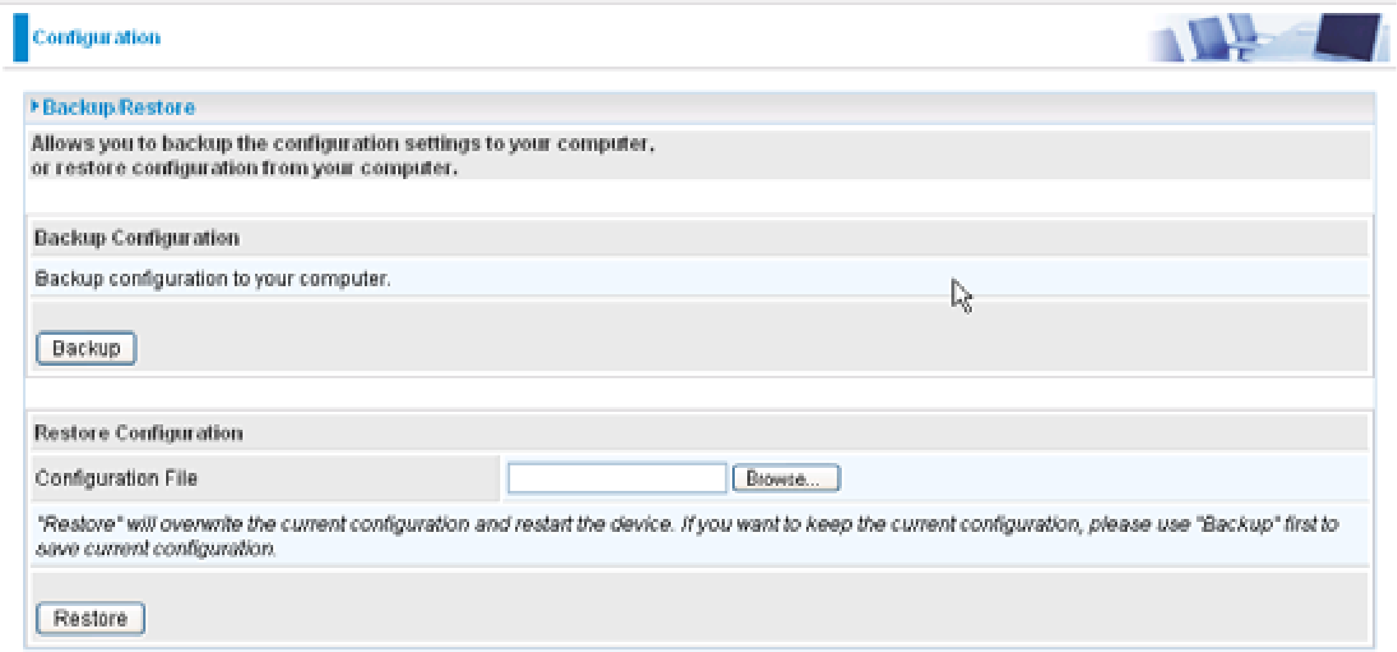
New Firmware Image:

Your router's "firmware" is the software that allows it to operate and provides all its functionality. Think of your router as a dedicated computer, and the firmware as the software it runs. Over time this software may be improved and revised, and your router allows you to upgrade the software it runs to take advantage of these changes.

Clicking on Browse will allow you 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 in your router.

**DO NOT power down the router or interrupt the firmware upgrading while it is still in process. Improper operation could damage the router.**

# Backup / Restore



▸Backup/Restore

Allows you to backup the configuration settings to your computer,
or restore configuration from your computer.

**Backup Configuration**

Backup configuration to your computer.

**Restore Configuration**

Configuration File

*"Restore" will overwrite the current configuration and restart the device. If you want to keep the current configuration, please use "Backup" first to save current configuration.*

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

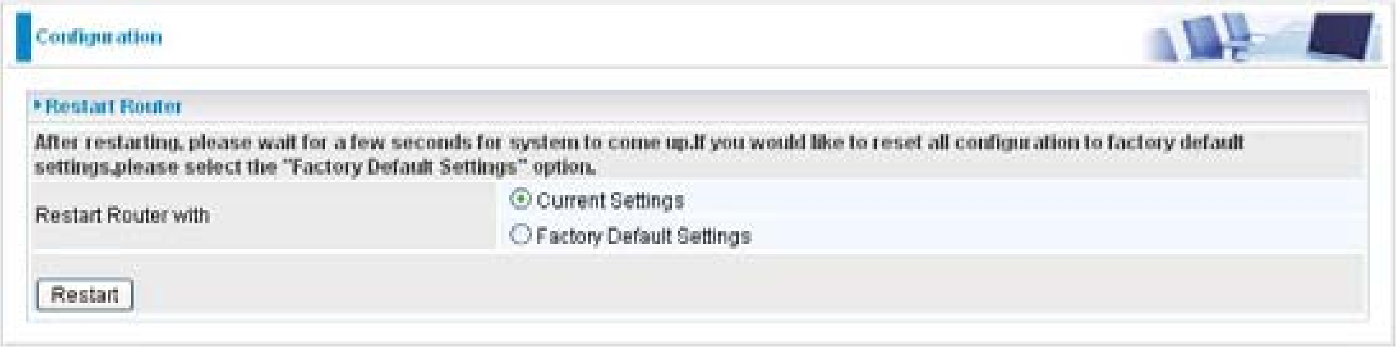
Press Backup to select where on your local PC to save the settings file. You may also change the name of the file when saving if you wish to keep multiple backups.

Press Browse to select a file from your PC to restore. You should only restore settings files that have been generated by the Backup function, and that were created when using the current version of the router's firmware. Settings files saved to your PC should not be manually edited in any way.

After selecting the settings file you wish to use, pressing Restore will load those settings into the router.

## Restart Router

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



▸Restart Router

After restarting, please wait for a few seconds for system to come up.If you would like to reset all configuration to factory default settings,please select the "Factory Default Settings" option.

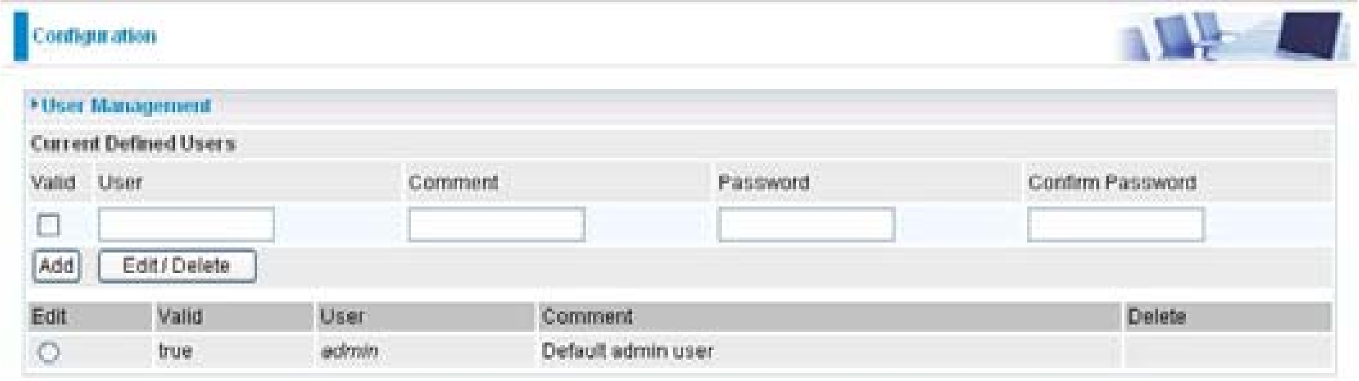
Restart Router with ● Current Settings ○ Factory Default Settings

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.

You may also reset your router to factory settings by holding the small Reset pinhole button more than 6 seconds on the back of your router.

***Caution: After pressing the RESET button for more than 6 seconds, to be sure you power cycle the device again.***

## User Management



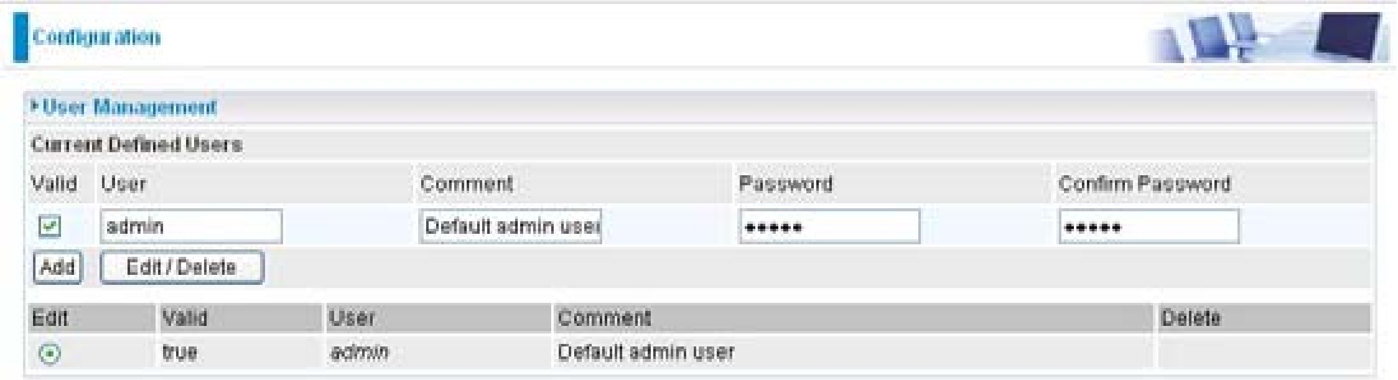
Current Defined Users

| Valid | User | Comment | Password | Confirm Password |
|---|---|---|---|---|
| ☐ | | | | |

| Edit | Valid | User | Comment | Delete |
|---|---|---|---|---|
| ○ | true | admin | Default admin user | |

In order to prevent unauthorized access to your router's configuration interface, it requires all users to login with a password. You can set up multiple user accounts, each with their own password.

You are able to Edit existing users and Add new users who are able to access the device's configuration interface. Once you have clicked on Edit, you are shown the following options:

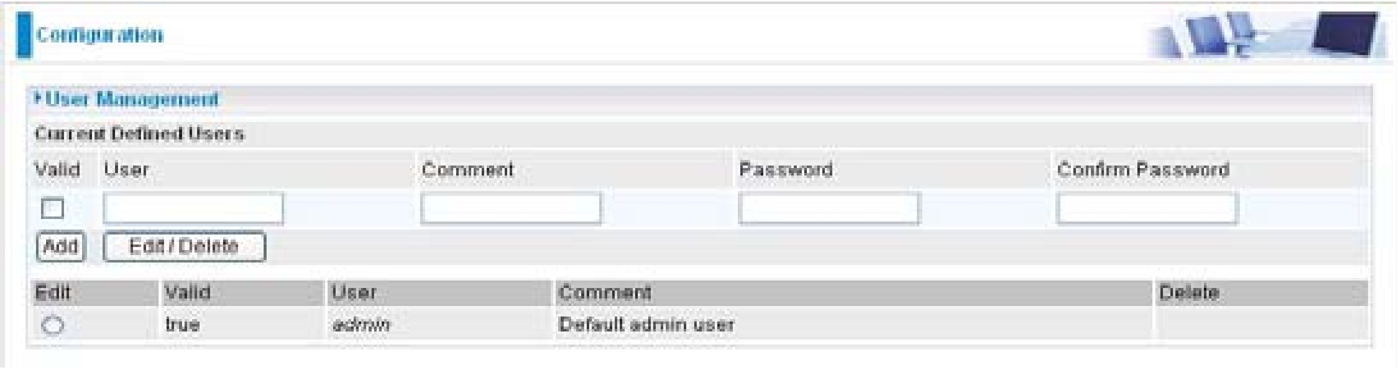


Current Defined Users

| Valid | User | Comment | Password | Confirm Password |
|---|---|---|---|---|
| ☑ | admin | Default admin usei | ●●●●● | ●●●●● |

| Edit | Valid | User | Comment | Delete |
|---|---|---|---|---|
| ● | true | admin | Default admin user | |

You can change the user's password, whether their account is active and valid, as well as add a comment to each user account. Click Edit/Delete button to save your revise. You cannot delete the default admin account, if you do you will be log out. However, you can delete any other created accounts by clicking Delete when editing the user. You are strongly advised to change the password on the default "admin" account when you receive your router, and any time you reset your configuration to Factory Defaults.

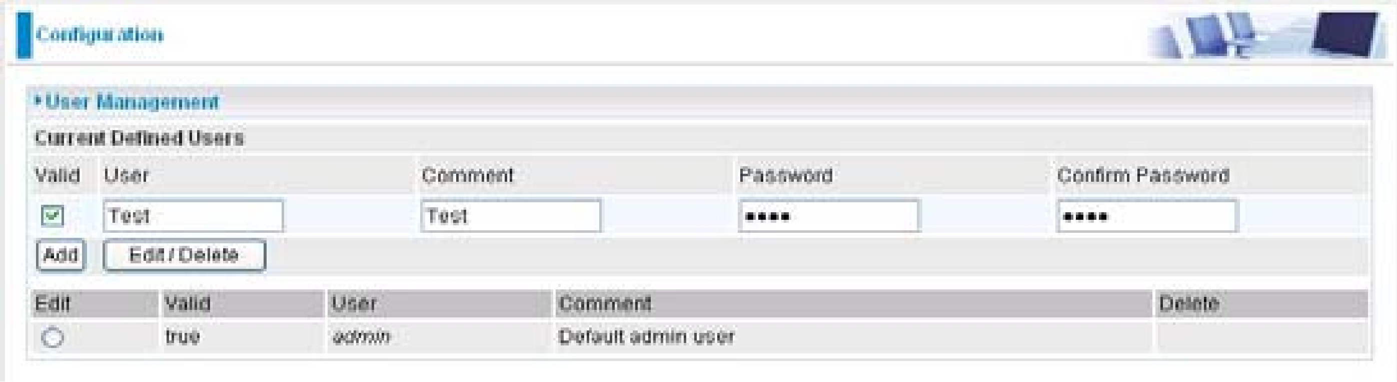


Current Defined Users

| Valid | User | Comment | Password | Confirm Password |
|---|---|---|---|---|
| ☐ | | | | |

| Edit | Valid | User | Comment | Delete |
|---|---|---|---|---|
| ○ | true | admin | Default admin user | |

When you create a user account, check Valid box and fill in the respective information for User, Comment, Password and Confirm Password in the blanks provided.  Then click the Add button to add your new user account.



Configuration

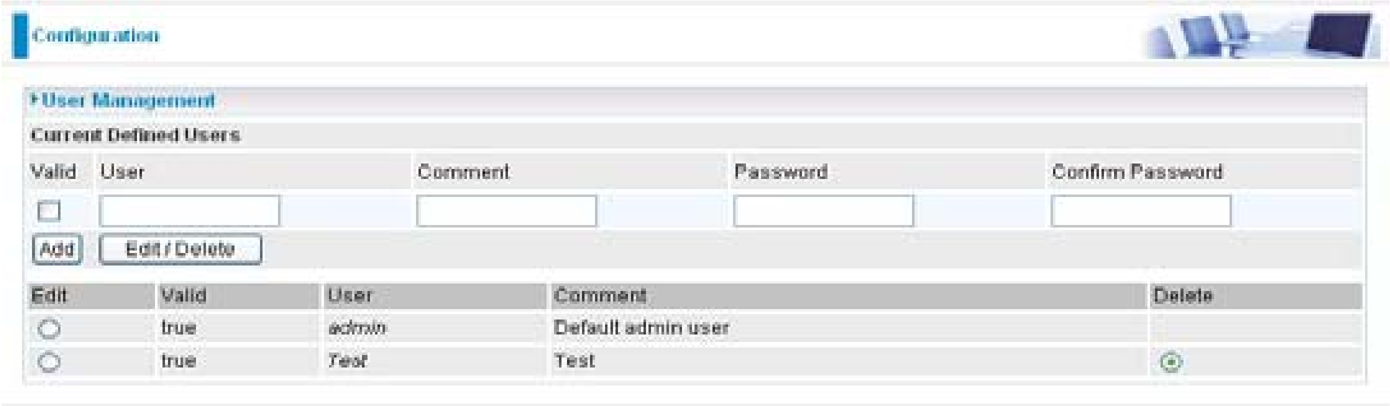
User Management

Current Defined Users

| Valid | User | Comment | Password | Confirm Password |
|---|---|---|---|---|
| ☑ | Test | Test | •••• | •••• |

| Edit | Valid | User | Comment | Delete |
|---|---|---|---|---|
| ○ | true | *admin* | Default admin user | |

To delete a user account, click on the Delete radio button on the right column of the account you wish to delete and then click the Edit/Delete button on the top to confirm your deletion.



Configuration

User Management

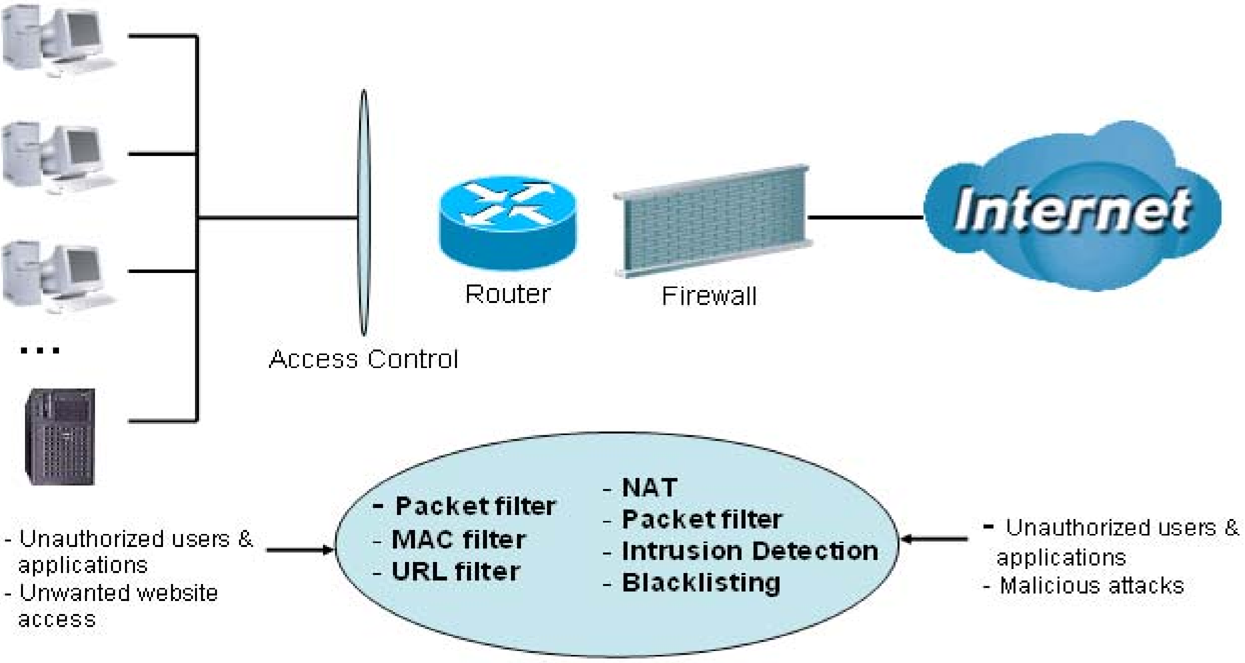
Current Defined Users

| Valid | User | Comment | Password | Confirm Password |
|---|---|---|---|---|
| □ | | | | |

| Edit | Valid | User | Comment | Delete |
|---|---|---|---|---|
| ○ | true | *admin* | Default admin user | |
| ○ | true | *Test* | Test | ● |

# Firewall and Access Control

Your router includes a full SPI (Stateful Packet Inspection) firewall for controlling Internet access from your LAN, as well as helping to prevent attacks from hackers. Besides, when using NAT, the router acts as a "natural" Internet firewall, as all PCs on your LAN will use private IP addresses that cannot be directly accessed from the Internet.



**Firewall & Filter**

**Firewall:** Prevent outsiders from accessing your local network. The router provides three levels of security support:

**NOTE:** When using Virtual Servers your PCs will be exposed to the degree specified in your Virtual Server settings provided the ports specified are opened in your firewall packet filter settings.

**NAT natural firewall:** This masks LAN users' IP addresses which are invisible to users on the Internet, thus making it more difficult for a hacker to target a machine on your network. This natural firewall is turned on when NAT function is enabled.

**Firewall Security and Policy (General Settings):** Inbound direction of Packet Filter rules to prevent unauthorized computers or applications to access your local network from the Internet.

**Intrusion Detection:** Enable Intrusion Detection to detect, prevent and log malicious attacks.

**Access Control:** Prevent access from PCs on your local network:

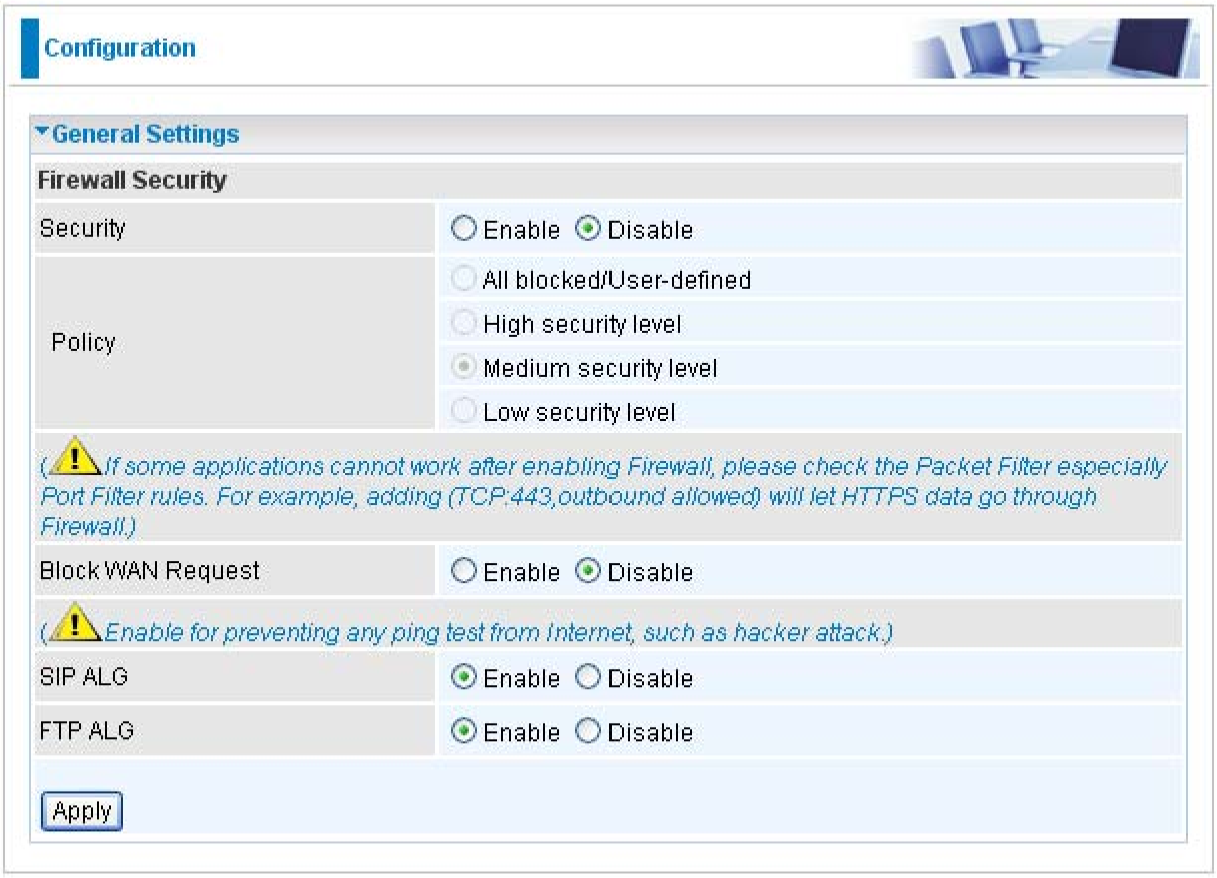
**Firewall Security and Policy (General Settings):** Outbound direction of Packet Filter rules to prevent unauthorized computers or applications from accessing the Internet.

**URL Filter:** To block PCs on your local network from unwanted websites.

Listed are the items under the Firewall section: **General Settings, Packet Filter, Intrusion Detection, URL Filter, IM/P2P Blocking** and **Firewall Log.**

## General Settings

You can choose not to enable Firewall and still able to access to URL Filter and IM/P2P Blocking or enable the Firewall using preset filter rules and modify the port filter rules as required. The Packet Filter is used to filter packets based-on Applications (Port) or IP addresses.



Configuration

General Settings

Firewall Security

| | |
|---|---|
| Security | ○ Enable ● Disable |
| Policy | ○ All blocked/User-defined<br>○ High security level<br>● Medium security level<br>○ Low security level |

(⚠ *If some applications cannot work after enabling Firewall, please check the Packet Filter especially Port Filter rules. For example, adding (TCP:443,outbound allowed) will let HTTPS data go through Firewall.)*

| | |
|---|---|
| Block WAN Request | ○ Enable ● Disable |

(⚠ *Enable for preventing any ping test from Internet, such as hacker attack.)*

| | |
|---|---|
| SIP ALG | ● Enable ○ Disable |
| FTP ALG | ● Enable ○ Disable |

Apply

There are four options when you enable the Firewall, they are:

- **All blocked/User-defined:** no pre-defined port or address filter rules by default, meaning that all inbound (Internet to LAN) and outbound (LAN to Internet) packets will be blocked. Users have to add their own filter rules for further access to the Internet.

- **High/Medium/Low security level:** the predefined port filter rules for High, Medium and Low security are displayed in Port Filters of Packet Filter.

Select either High, Medium or Low security level to enable the Firewall. The only difference between these three security levels is the preset port filter rules in the Packet Filter. Firewall functionality is the same for all levels; it is only the list of preset port filters that changes between each setting. For more detailed on level of preset port filter information, refer to Table 1: Predefined Port Filter.

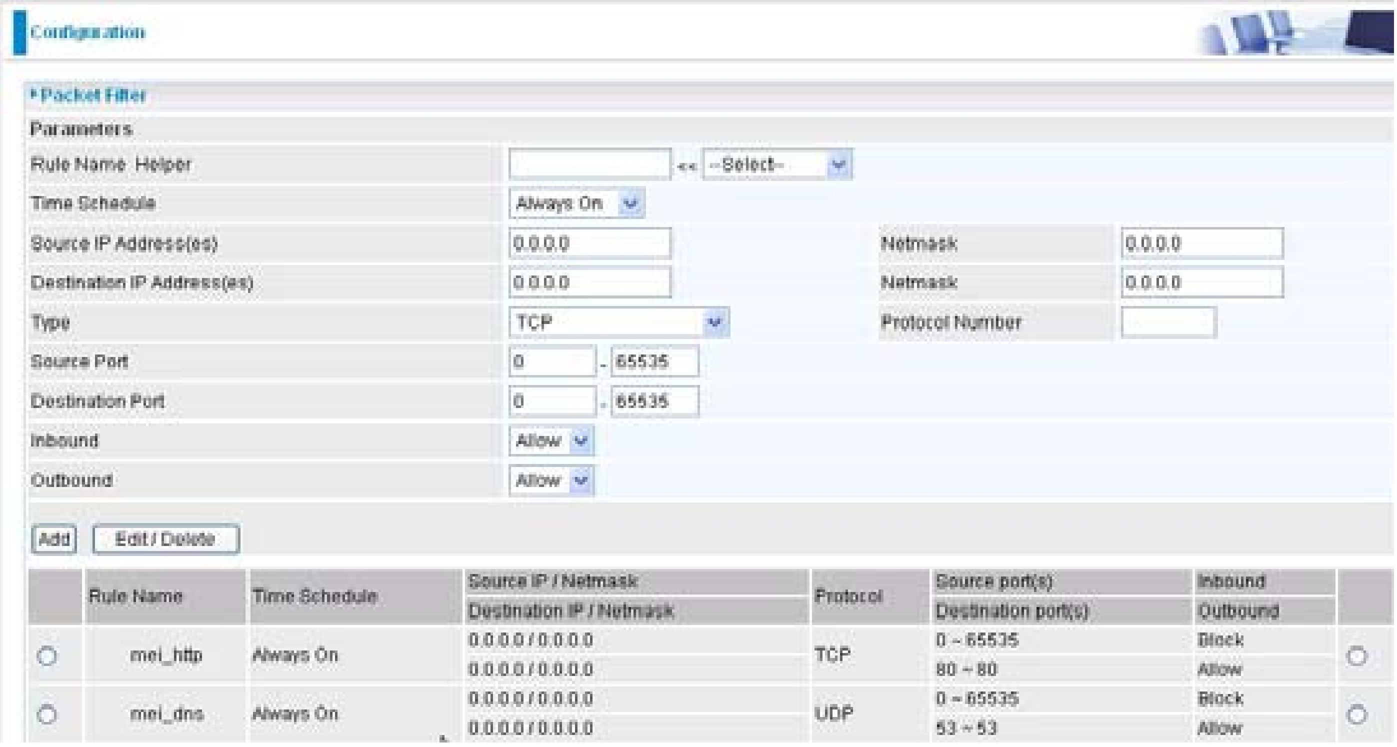
If you choose of the preset security levels and add custom filters, this level of filter rules will be saved even and do not need to re-configure the rules again if you disable or switch to other firewall level.

The “Block WAN Request” is a stand-alone function and not relate to whether security enable or disable. Mostly it is for preventing any scan tools from WAN site by hacker.

NOTE: Any remote user attempting to perform this action may result in blocking all accesses to configure and manage the device from the Internet.

## Packet Filter

This function is only available when the Firewall is enabled and one of these four security levels is chosen (All blocked, High, Medium and Low). The preset port filter rules in the Packet Filter must modify accordingly to the level of Firewall, which is selected. See Table1: Predefined Port Filter for more detail information.



▸Packet Filter

Parameters

| | | | |
|---|---|---|---|
| Rule Name Helper | << --Select-- | | |
| Time Schedule | Always On | | |
| Source IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Destination IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Type | TCP | Protocol Number | |
| Source Port | 0 - 65535 | | |
| Destination Port | 0 - 65535 | | |
| Inbound | Allow | | |
| Outbound | Allow | | |

| | Rule Name | Time Schedule | Source IP / Netmask | Protocol | Source port(s) | Inbound | |
|---|---|---|---|---|---|---|---|
| | | | Destination IP / Netmask | | Destination port(s) | Outbound | |
| ○ | mei_http | Always On | 0.0.0.0 / 0.0.0.0 | TCP | 0 ~ 65535 | Block | ○ |
| | | | 0.0.0.0 / 0.0.0.0 | | 80 ~ 80 | Allow | |
| ○ | mei_dns | Always On | 0.0.0.0 / 0.0.0.0 | UDP | 0 ~ 65535 | Block | ○ |
| | | | 0.0.0.0 / 0.0.0.0 | | 53 ~ 53 | Allow | |

**Example:** Predefined Port Filters Rules

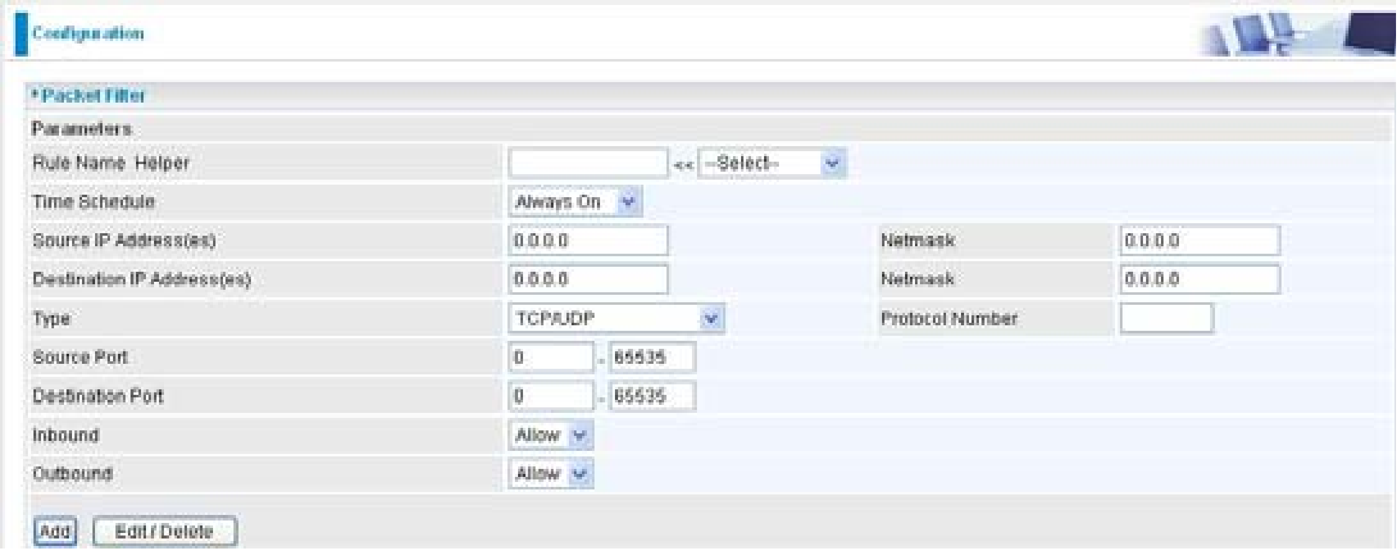
The predefined port filter rules for High, Medium and Low security levels are listed. See Table 1.

***Note: Firewall – All Blocked/User-defined, you must define and create the port filter rules yourself. No predefined rule is being preconfigured.***

| **Table 1: Predefined Port Filter Application** | **Protocol** | **Port Number** | | **Firewall - Low** | | **Firewall - Medium** | | **Firewall – High** | |
|---|---|---|---|---|---|---|---|---|---|
| | | Start | End | Inbound | Outbound | Inbound | Outbound | Inbound | Outbound |
| HTTP(80) | TCP(6) | 80 | 80 | NO | YES | NO | YES | NO | YES |
| DNS (53) | UDP(17) | 53 | 53 | NO | YES | NO | YES | NO | YES |
| DNS (53) | TCP(6) | 53 | 53 | NO | YES | NO | YES | NO | YES |
| FTP(21) | TCP(6) | 21 | 21 | NO | YES | NO | YES | NO | NO |
| Telnet(23) | TCP(6) | 23 | 23 | NO | YES | NO | YES | NO | NO |
| SMTP(25) | TCP(6) | 25 | 25 | NO | YES | NO | YES | NO | YES |
| POP3(110) | TCP(6) | 110 | 110 | NO | YES | NO | YES | NO | YES |
| NEWS(NNTP) (Network News Transfer Protocol) | TCP(6) | 119 | 119 | NO | YES | NO | YES | NO | NO |
| RealAudio/ RealVideo (7070) | UDP(17) | 7070 | 7070 | YES | YES | YES | YES | NO | NO |
| PING | ICMP(1) | N/A | N/A | NO | YES | NO | YES | NO | YES |
| H.323(1720) | TCP(6) | 1720 | 1720 | YES | YES | NO | YES | NO | NO |
| T.120(1503) | TCP(6) | 1503 | 1503 | YES | YES | NO | YES | NO | NO |
| SSH(22) | TCP(6) | 22 | 22 | NO | YES | NO | YES | NO | NO |
| NTP /SNTP | UDP(17) | 123 | 123 | NO | YES | NO | YES | NO | YES |
| HTTP/HTTP Proxy (8080) | TCP(6) | 8080 | 8080 | NO | YES | NO | NO | NO | NO |
| HTTPS(443) | TCP(6) | 443 | 443 | NO | YES | NO | YES | N/A | N/A |
| ICQ (5190) | TCP(6) | 5190 | 5190 | YES | YES | N/A | N/A | N/A | N/A |
| MSN (1863) | TCP(6) | 1863 | 1863 | YES | YES | N/A | N/A | N/A | N/A |
| MSN (7001) | UDP(17) | 7001 | 7001 | YES | YES | N/A | N/A | N/A | N/A |
| MSN VEDIO (9000) | TCP(6) | 9000 | 9000 | NO | YES | N/A | N/A | N/A | N/A |

**Inbound:** Internet to LAN
**Outbound:** LAN to Internet
**YES:** Allowed
**NO:** Blocked
**N/A:** Not Applicable

## Packet Filter – Add TCP/UDP Filter



Configuration

*Packet Filter

Parameters

| | | | |
|---|---|---|---|
| Rule Name Helper | << -Select- | | |
| Time Schedule | Always On | | |
| Source IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Destination IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Type | TCP/UDP | Protocol Number | |
| Source Port | 0 - 65535 | | |
| Destination Port | 0 - 65535 | | |
| Inbound | Allow | | |
| Outbound | Allow | | |

**Rule Name Helper:** Users-define description to identify this entry or click “Select” drop-down menu to select existing predefined rules. The maximum name length is 32 characters.

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

**Source IP Address(es) / Destination IP Address(es):** This is the Address-Filter used to allow or block traffic to/from particular IP address(es).  Selecting the Subnet Mask of the IP address range you wish to allow/block the traffic to or form; set IP address and Subnet Mask to 0.0.0.0 to inactive the Address-Filter rule.

**Tip:** To block access, to/from a single IP address, enter that IP address as the Host IP Address and use a Host Subnet Mask of “255.255.255.255”.

**Type:** It is the packet protocol type used by the application, select TCP, UDP or both TCP/UDP.

**Protocol Number:** Insert the port number.

**Source Port:** This Port or Port Ranges defines the port allowed to be used by the Remote/WAN to connect to the application. Default is set from range 0 ~ 65535. It is recommended that this option be configured by an advanced user.

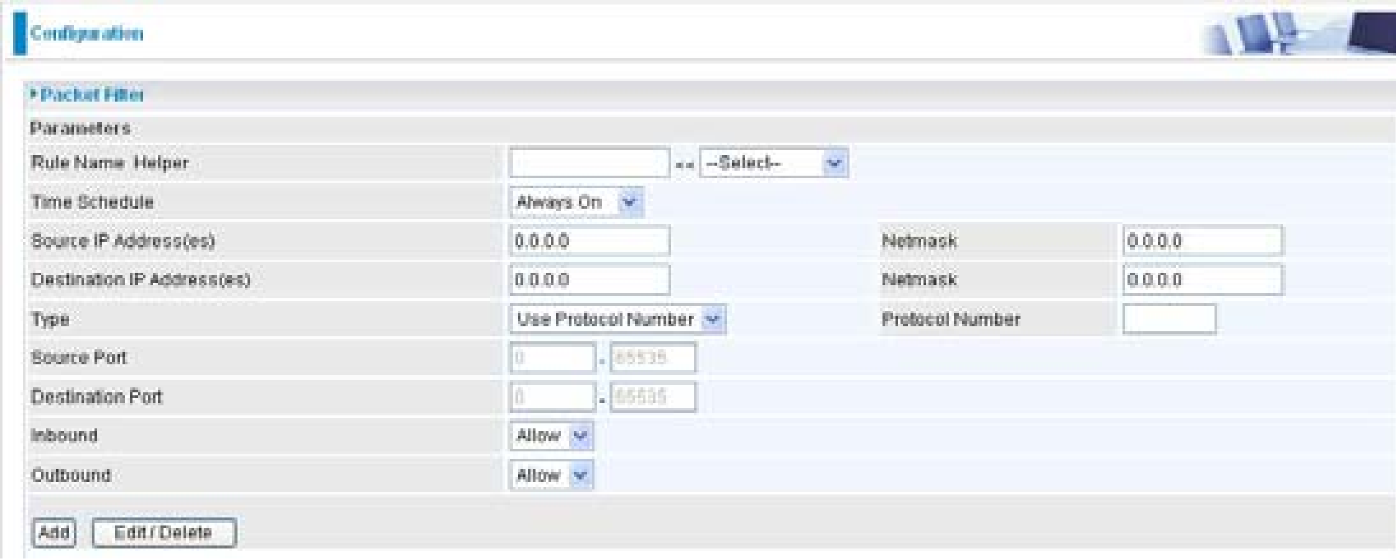
**Destination Port:** This is the Port or Port Ranges that defines the application.

**Inbound / Outbound:** Select Allow or Block the access to the Internet (“Outbound”) or from the Internet (“Inbound”).

Click Add button to apply your changes.

## Packet Filter – Add Raw IP Filter

Go to “Type” drop-down menu, select “Use Protocol Number”.



Configuration

▸ Packet Filter

Parameters

| | | | |
|---|---|---|---|
| Rule Name Helper | << --Select-- | | |
| Time Schedule | Always On | | |
| Source IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Destination IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Type | Use Protocol Number | Protocol Number | |
| Source Port | 0 - 65535 | | |
| Destination Port | 0 - 65535 | | |
| Inbound | Allow | | |
| Outbound | Allow | | |

**Rule Name Helper:** Users-define description to identify this entry or choosing “Select” drop-down menu to select existing predefined rules.

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

**Source IP Address(es) / Destination IP Address(es):** This is the Address-Filter used to allow or block traffic to/from particular IP address(es).  Selecting the Subnet Mask of the IP address range you wish to allow/block the traffic to or form; set IP address and Subnet Mask to 0.0.0.0 to inactive the Address-Filter rule.

***Tip: To block access, to/from a single IP address, enter that IP address as the Host IP Address and use a Host Subnet Mask of “255.255.255.255”.***

**Type:** It is the packet protocol type used by the application, select TCP, UDP or both TCP/UDP.

**Protocol Number:** Insert the port number, i.e. GRE 47.

**Source Port:** This Port or Port Ranges defines the port allowed to be used by the Remote/WAN to connect to the application. Default is set from range 0 ~ 65535. It is recommended that this option be configured by an advanced user.

**Destination Port:** This is the Port or Port Ranges that defines the application.

**Inbound / Outbound:** Select Allow or Block the access to the Internet (“Outbound”) or from the Internet (“Inbound”).

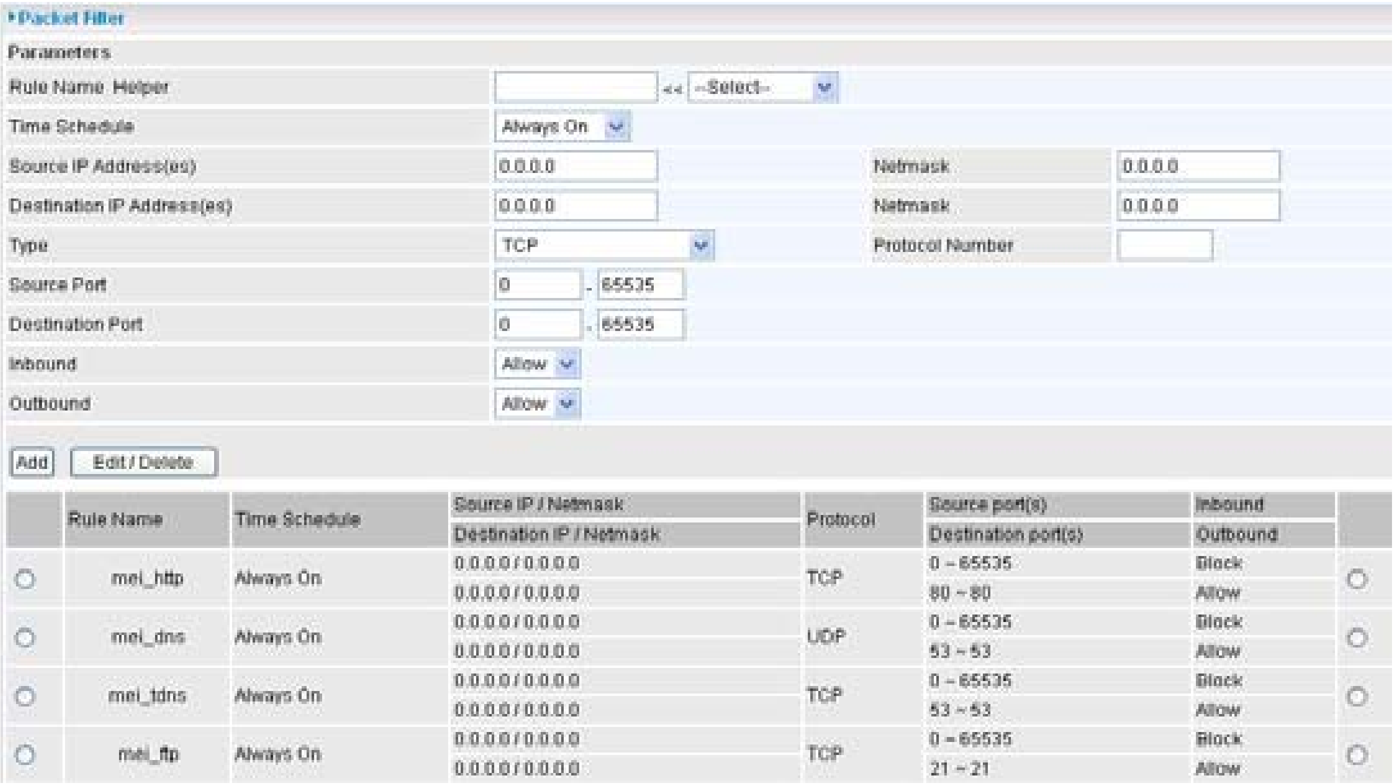
Click the Add button to apply your changes.

**Example:** Configuring your firewall to allow a publicly accessible web server on your LAN

The predefined port filter rule for HTTP (TCP port 80) is the same no matter whether the firewall is set to a high, medium or low security level. To setup a web server located on the local network when the firewall is enabled, you have to configure the Port Filters setting for HTTP.

As you can see from the diagram below, when the firewall is enabled with one of the three presets (Low/Medium/High), inbound HTTP access is not allowed which means remote access through HTTP to your router is not allowed.

***Note: Inbound indicates accessing from Internet to LAN and Outbound is from LAN to the Internet.***



▸Packet Filter

Parameters

| | | | |
|---|---|---|---|
| Rule Name Helper | << --Select-- | | |
| Time Schedule | Always On | | |
| Source IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Destination IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Type | TCP | Protocol Number | |
| Source Port | 0 - 65535 | | |
| Destination Port | 0 - 65535 | | |
| Inbound | Allow | | |
| Outbound | Allow | | |

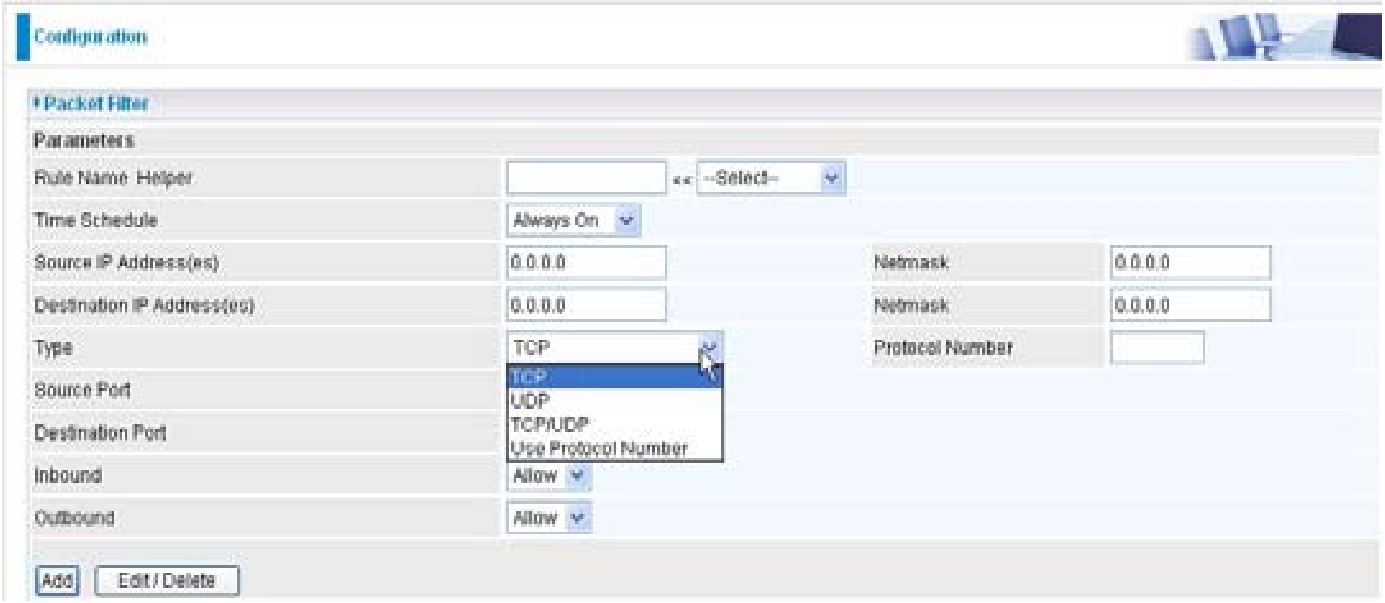
Add | Edit / Delete

| | Rule Name | Time Schedule | Source IP / Netmask | Protocol | Source port(s) | Inbound | |
|---|---|---|---|---|---|---|---|
| | | | Destination IP / Netmask | | Destination port(s) | Outbound | |
| ○ | mei_http | Always On | 0.0.0.0 / 0.0.0.0 | TCP | 0 ~ 65535 | Block | ○ |
| | | | 0.0.0.0 / 0.0.0.0 | | 80 ~ 80 | Allow | |
| ○ | mei_dns | Always On | 0.0.0.0 / 0.0.0.0 | UDP | 0 ~ 65535 | Block | ○ |
| | | | 0.0.0.0 / 0.0.0.0 | | 53 ~ 53 | Allow | |
| ○ | mei_tdns | Always On | 0.0.0.0 / 0.0.0.0 | TCP | 0 ~ 65535 | Block | ○ |
| | | | 0.0.0.0 / 0.0.0.0 | | 53 ~ 53 | Allow | |
| ○ | mei_ftp | Always On | 0.0.0.0 / 0.0.0.0 | TCP | 0 ~ 65535 | Block | ○ |
| | | | 0.0.0.0 / 0.0.0.0 | | 21 ~ 21 | Allow | |

## Configuring Packet Filter:

1. Click Packet Filters. You will then be presented with the predefined port filter rules screen (in this case for the low security level), shown below:

***Note: You may click Edit the predefined rule instead of Delete it. This is an example to show to how you add a filter on your own.***

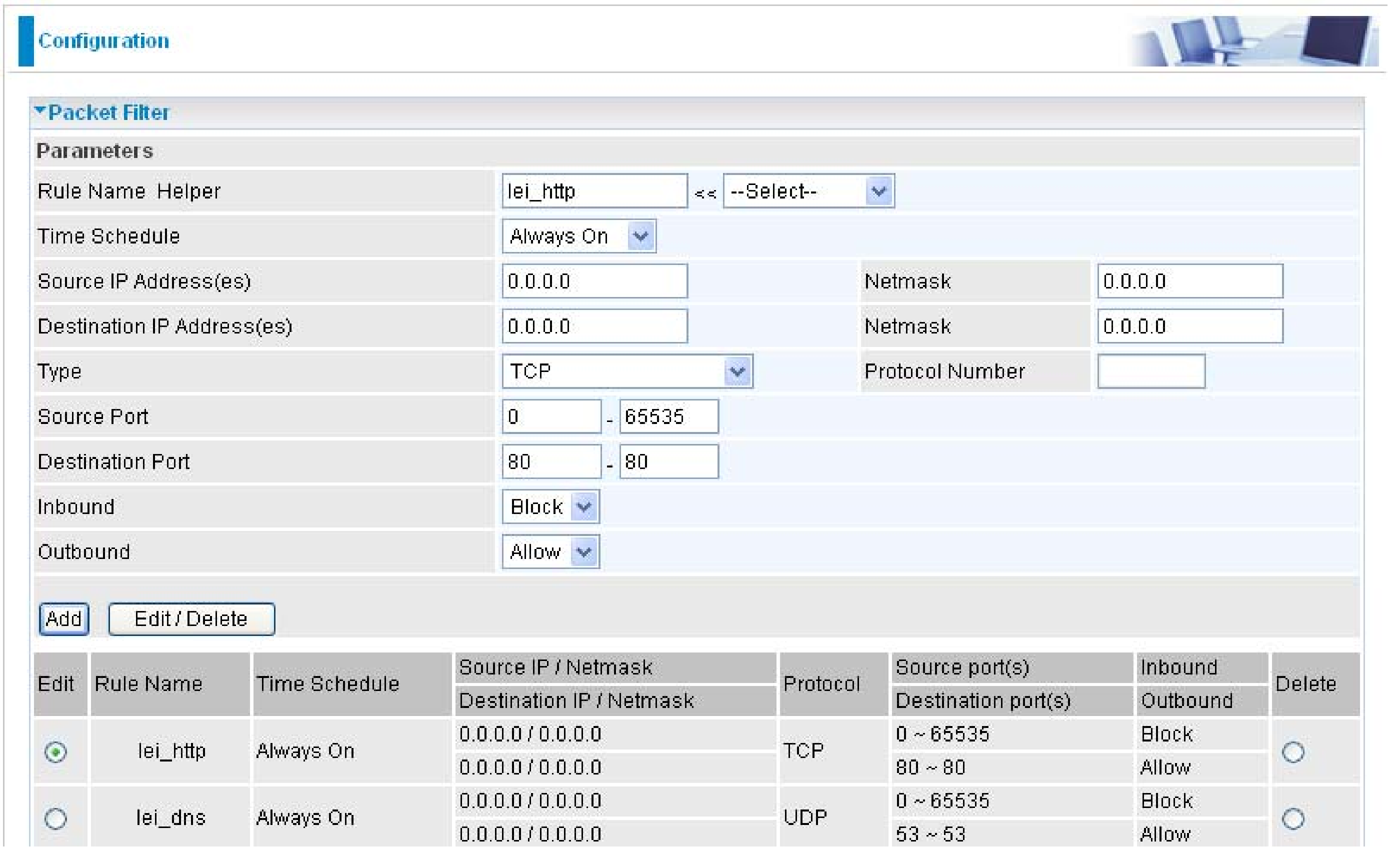


Configuration

Packet Filter

| Parameters | | | |
|---|---|---|---|
| Rule Name Helper | << --Select-- | | |
| Time Schedule | Always On | | |
| Source IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Destination IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Type | TCP | Protocol Number | |
| Source Port | | | |
| Destination Port | | | |
| Inbound | Allow | | |
| Outbound | Allow | | |

2. Choose the radio button you want to delete the existing HTTP rule. Click Edit/Delete button to delete the existing HTTP rule.



Configuration

Packet Filter

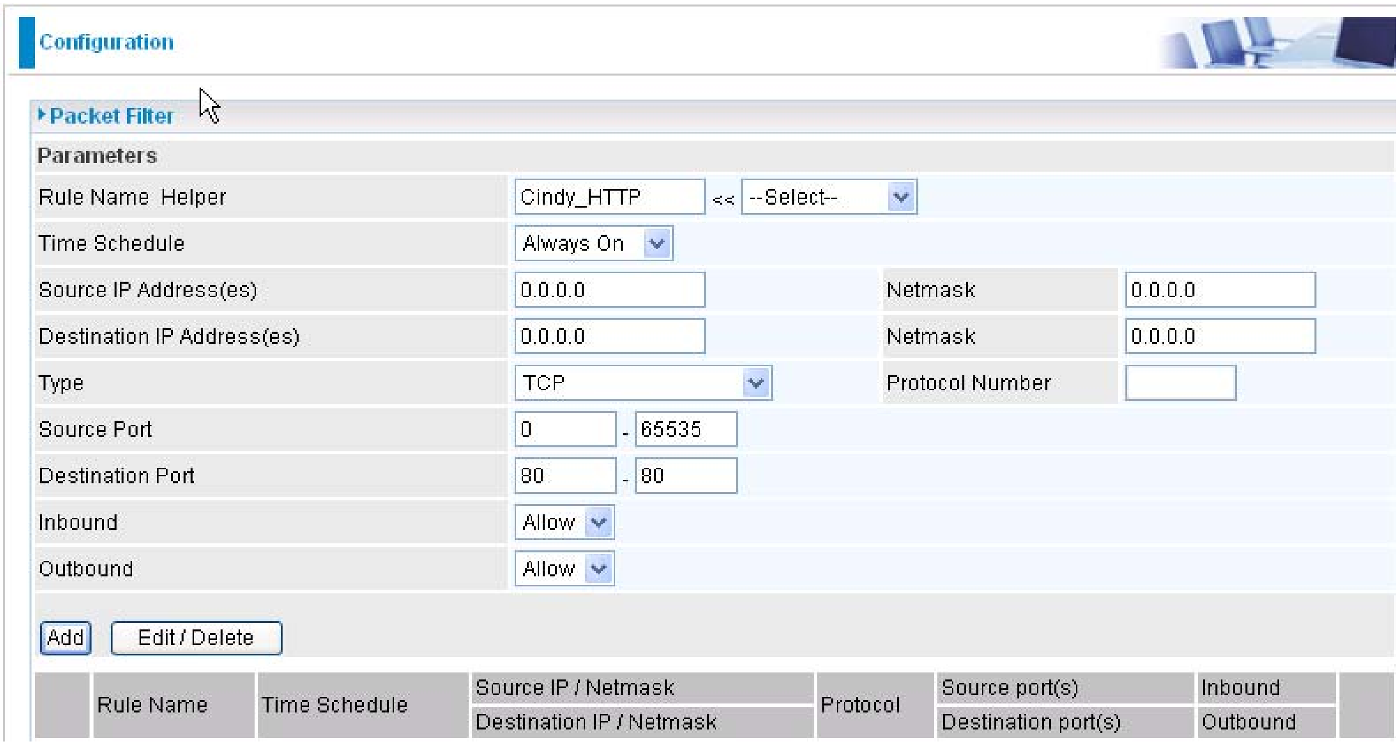
| Parameters | | | |
|---|---|---|---|
| Rule Name Helper | lei_http << --Select-- | | |
| Time Schedule | Always On | | |
| Source IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Destination IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Type | TCP | Protocol Number | |
| Source Port | 0 - 65535 | | |
| Destination Port | 80 - 80 | | |
| Inbound | Block | | |
| Outbound | Allow | | |

| Edit | Rule Name | Time Schedule | Source IP / Netmask<br>Destination IP / Netmask | Protocol | Source port(s)<br>Destination port(s) | Inbound<br>Outbound | Delete |
|---|---|---|---|---|---|---|---|
| ● | lei_http | Always On | 0.0.0.0 / 0.0.0.0<br>0.0.0.0 / 0.0.0.0 | TCP | 0 ~ 65535<br>80 ~ 80 | Block<br>Allow | ○ |
| ○ | lei_dns | Always On | 0.0.0.0 / 0.0.0.0<br>0.0.0.0 / 0.0.0.0 | UDP | 0 ~ 65535<br>53 ~ 53 | Block<br>Allow | ○ |

3. Input the Rule Name, Time Schedule, Source/Destination IP, Type, Source/Destination Port, Inbound and Outbound.

**Example:**

Application: Cindy_HTTP
Time Schedule: Always On
Source / Destination IP Address(es): 0.0.0.0 (I do not wish to active the address-filter, instead I use the port-filter)
Type: TCP (Please refer to Table1: Predefined Port Filter)
Source Port: 0-65535 (I allow all ports to connect with the application))
Redirect Port: 80-80 (This is Port defined for HTTP)
Inbound / Outbound: Allow



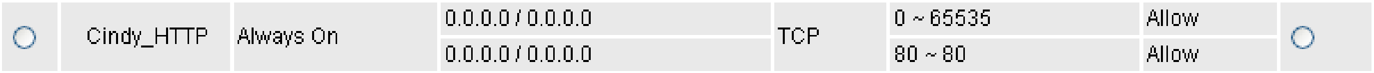
Configuration

▸Packet Filter

| Parameters | | | |
|---|---|---|---|
| Rule Name Helper | Cindy_HTTP << --Select-- | | |
| Time Schedule | Always On | | |
| Source IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Destination IP Address(es) | 0.0.0.0 | Netmask | 0.0.0.0 |
| Type | TCP | Protocol Number | |
| Source Port | 0 - 65535 | | |
| Destination Port | 80 - 80 | | |
| Inbound | Allow | | |
| Outbound | Allow | | |

| | Rule Name | Time Schedule | Source IP / Netmask<br>Destination IP / Netmask | Protocol | Source port(s)<br>Destination port(s) | Inbound<br>Outbound | |
|---|---|---|---|---|---|---|---|

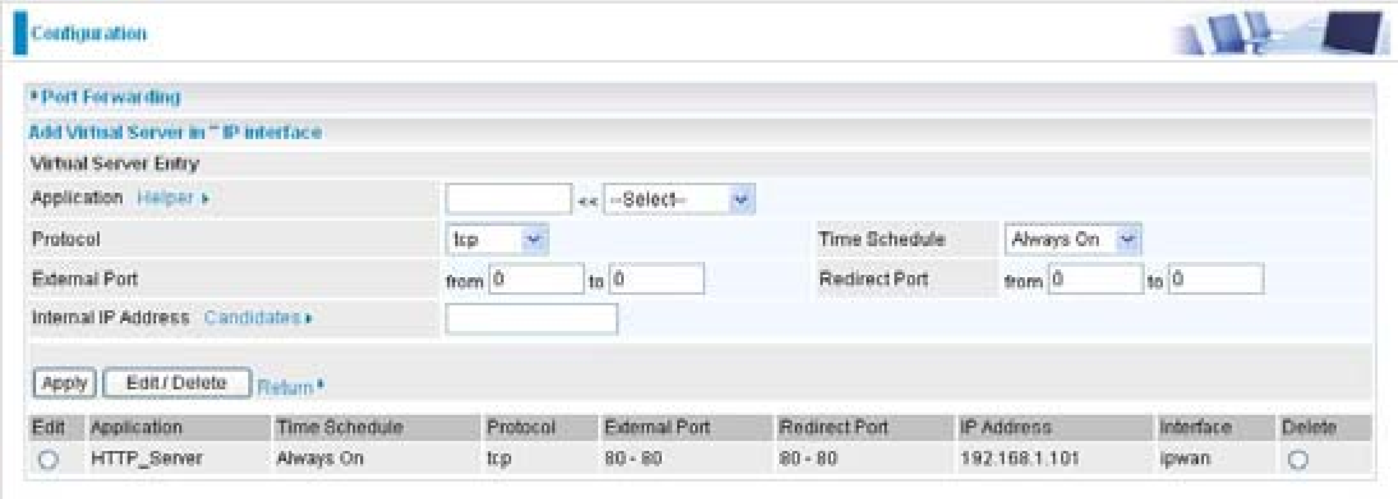
1. The new port filter rule for HTTP is shown below:



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ○ | Cindy_HTTP | Always On | 0.0.0.0 / 0.0.0.0<br>0.0.0.0 / 0.0.0.0 | TCP | 0 ~ 65535<br>80 ~ 80 | Allow<br>Allow | ○ |

2. Configure your Virtual Server ("port forwarding") settings so that incoming HTTP requests on port 80 will be forwarded to the PC running your web server:

NOTE: For how to configure the HTTP in Virtual Server, please refer to the Add Virtual Server sub-section under the Virtual Server section for detail.



Configuration

• Port Forwarding

Add Virtual Server in " IP interface

Virtual Server Entry

Application Helper ▸ [ ] << --Select--

Protocol tcp

Time Schedule Always On

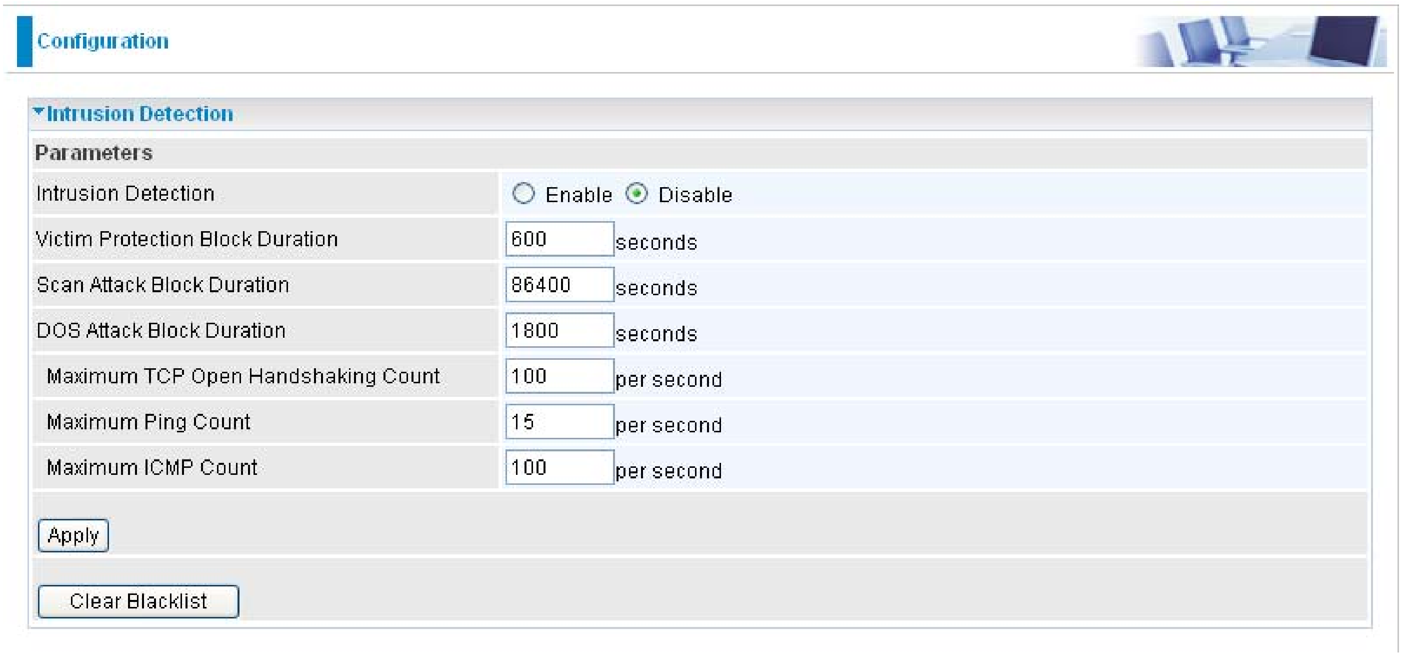
External Port from 0 to 0

Redirect Port from 0 to 0

Internal IP Address Candidates ▸ [ ]

| Edit | Application | Time Schedule | Protocol | External Port | Redirect Port | IP Address | Interface | Delete |
|---|---|---|---|---|---|---|---|---|
| ○ | HTTP_Server | Always On | tcp | 80 - 80 | 80 - 80 | 192.168.1.101 | ipwan | ○ |

## Intrusion Detection



Parameters

| | |
|---|---|
| Intrusion Detection | ○ Enable ● Disable |
| Victim Protection Block Duration | 600 seconds |
| Scan Attack Block Duration | 86400 seconds |
| DOS Attack Block Duration | 1800 seconds |
| Maximum TCP Open Handshaking Count | 100 per second |
| Maximum Ping Count | 15 per second |
| Maximum ICMP Count | 100 per second |

The router's Intrusion Detection System (IDS) is used to detect hacker attacks 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.

**Blacklist:** If the router detects a possible attack, the source IP or destination IP address will be added to the Blacklist. Any further attempts using this IP address will be blocked for the time period specified as the Block Duration. The default setting for this function is false (disabled). Some attack types are denied immediately without using the Blacklist function, such as Land attack and Echo/CharGen scan.

**Intrusion Detection**: If enabled, IDS will block Smurf attack attempts. Default is false.

**Block Duration:**

- **Victim Protection Block Duration**: This is the duration for blocking *Smurf* attacks. Default value is 600 seconds.
- **Scan Attack Block Duration**: This is the duration for blocking hosts that attempt a possible Scan attack. Scan attack types include *X'mas scan, IMAP SYN/FIN scan* and similar attempts. Default value is 86400 seconds.
- **DoS Attack Block Duration**: This is the duration for blocking hosts that attempt a possible Denial of Service (DoS) attack. Possible DoS attacks this attempts to block include *Ascend Kill* and *WinNuke*. Default value is 1800 seconds.

**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).

For SYN Flood, ICMP Echo Storm and ICMP flood, IDS will just warn the user in the Event Log. It cannot protect against such attacks.

**Table 2: Hacker attack types recognized by the IDS**

| Intrusion Name | Detect Parameter | Blacklist | Type of Block Duration | Drop Packet | Show Log |
|---|---|---|---|---|---|
| **Ascend Kill** | Ascend Kill data | Src IP | DoS | Yes | Yes |
| **WinNuke** | TCP<br>Port 135, 137~139, Flag: URG | Src IP | DoS | Yes | Yes |
| **Smurf** | ICMP type 8<br>Des IP is broadcast | Dst IP | Victim Protection | Yes | Yes |
| **Land attack** | SrcIP = DstIP | | | Yes | Yes |
| **Echo/CharGen Scan** | UDP Echo Port and CharGen Port | | | Yes | Yes |
| **Echo Scan** | UDP Dst Port = Echo(7) | Src IP | Scan | Yes | Yes |
| **CharGen Scan** | UDP Dst Port = CharGen(19) | Src IP | Scan | Yes | Yes |
| **X'mas Tree Scan** | TCP Flag: X'mas | Src IP | Scan | Yes | Yes |
| **IMAP SYN/FIN Scan** | TCP Flag: SYN/FIN<br>DstPort: IMAP(143)<br>SrcPort: 0 or 65535 | Src IP | Scan | Yes | Yes |
| **SYN/FIN/RST/ACK Scan** | TCP,<br>No Existing session And Scan Hosts more than five. | Src IP | Scan | Yes | Yes |
| **Net Bus Scan** | TCP<br>No Existing session<br>DstPort = Net Bus 12345,12346, 3456 | SrcIP | Scan | Yes | Yes |
| **Back Orifice Scan** | UDP, DstPort = Orifice Port (31337) | SrcIP | Scan | Yes | Yes |
| **SYN Flood** | Max TCP Open Handshaking Count (Default 100 c/sec) | | | | Yes |

| | | | | | |
|---|---|---|---|---|---|
| **ICMP Flood** | Max ICMP Count (Default 100 c/sec) | | | | Yes |
| **ICMP Echo** | Max PING Count (Default 15 c/sec) | | | | Yes |

**Src IP**: Source IP
**Src Port**: Source Port
**Dst Port**: Destination Port
**Dst IP**: Destination IP