TEW-658BRM

300Mbps Wireless N ADSL 2/2+ Modem Router

User's Manual

Table of Contents

Chapter 1: Product Overview

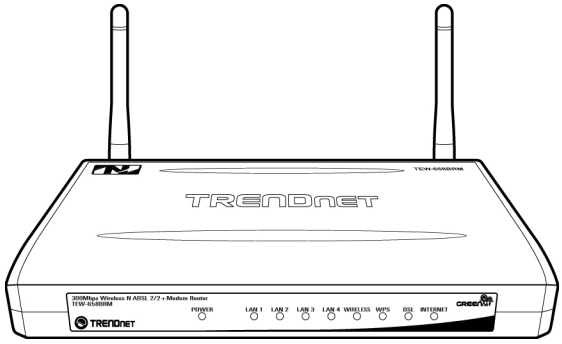
Thank you for choosing Trendnet® Wireless N ADSL2 Modem Router. This Modem Router combines the functionality of an ADSL modem and Internet gateway in one. It allows you to access the Internet and share resources such as printers, scanners, and files, via a wireless connection or through one of the Ethernet ports. The various security features, such as WPS, WPA2, SPI, and NAT, protect your data and privacy online. The web-based utility allows you to configure your Modem Router easily.

1.1 Features

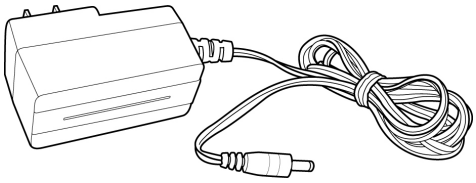
- Compliant with ADSL G.dmt (G.992.1), G.lite (G.992.2) standards
- Compliant with ADSL2 G.dmt.bis (G.992.3) and ADSL2 + G.992.5 standards
- Up to Up to 24Mbps downstream, 1.2Mbps upstream with ADSL2+ service
- IEEE 802.11b/g/n infrastructure operating modes
- Supports TR069 remote management
- Supports web-based configuration
- Supports Command Line Interface (CLI) via Telnet
- Supports NAT, DHCP
- Supports VLAN and QoS
- Supports firewall protection
- Supports up to 8 permanent virtual circuits (PVC)
- Supports Wi-Fi Multimedia (WMM)
- Supports Wi-Fi Protected Setup (WPS) for easy connection
- Supports wireless data encryption with 64/128-bit WEP standard
- Supports enhance security for WPA-TKIP, WPA2-AES, WPA, and WPA2

1.2 Package Contents

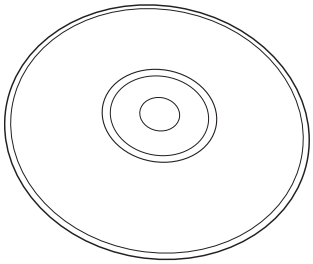
Check if your package contains the following items. If any item is missing or appears damaged, contact your dealer.



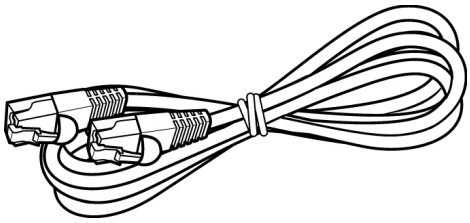
Modem Router



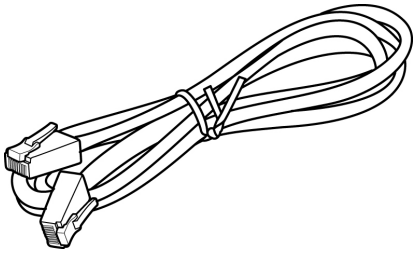
Power adapter



CD-ROM with User’s Guide



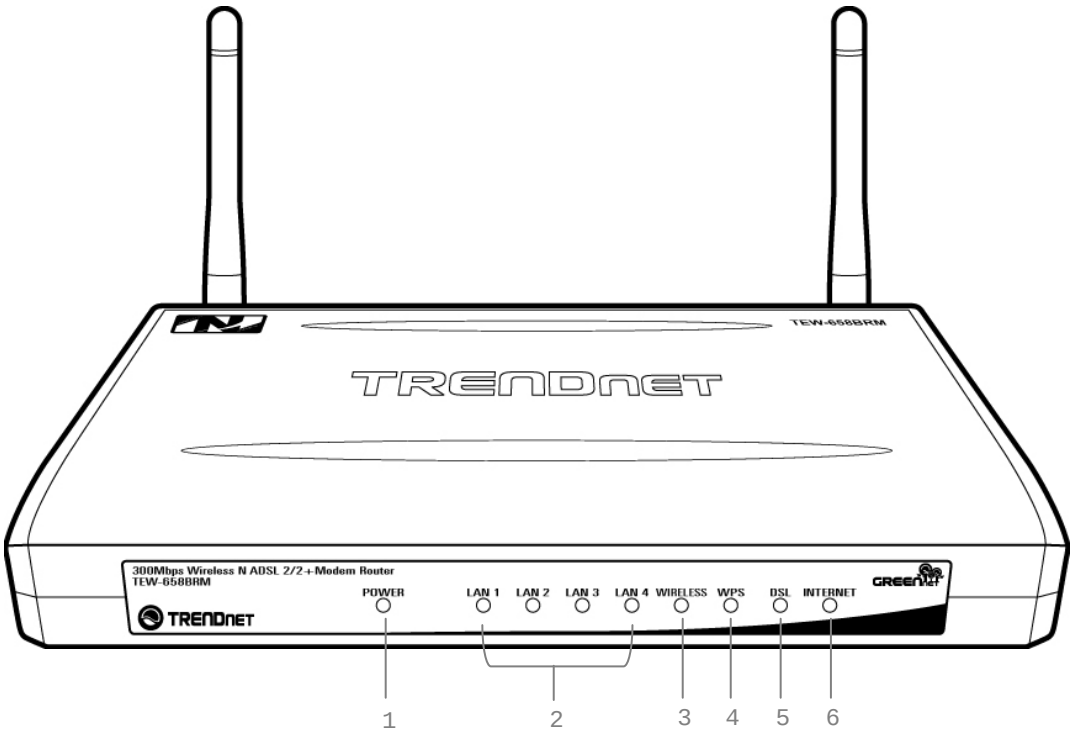
RJ-45 Ethernet cable



RJ-11 telephone cable

1.3 Hardware Overview

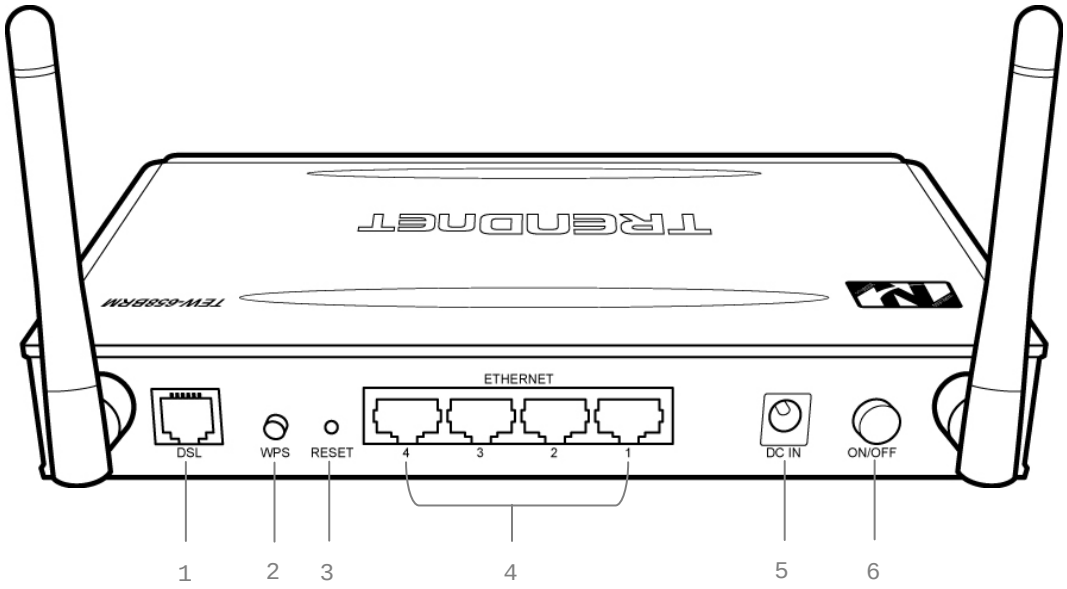
Front Panel



No.	LED	Description
1	**Power LED**	Lights up when the device is powered on. • Solid GREEN – Indicates normal operation. • Solid RED – Indicates malfunction. • Off – The device is powered off.
2	**LAN 1, 2, 3, 4**	Lights up when a computer is connected on the Ethernet ports (1~4). • Solid GREEN – Connected but no activity. • Flashing GREEN – Data transmission is in progress. • Off – No computer is connected.
3	**Wireless**	Lights up to indicate wireless connection. • Solid GREEN – Connected but no activity. • Flashing GREEN – Data transmission is in progress. • Off – Wireless connection is disabled.

No.	LED	Description
4	**WPS**	Lights up to indicate the Wireless Protected Setup (WPS) connection status. • Solid GREEN – WPS-enabled device is connected. • Flashing GREEN – Searching for WPS-enabled devices. • Solid RED – No WPS-enabled device is connected. • Off – WPS is disabled.
5	**DSL**	Lights up to indicate DSL connection status. • Flashing GREEN – Attempts to synchronize with DSL line. • Solid GREEN – DSL line is synchronized. • Off – DSL connection is not present.
6	**Internet**	Lights up to indicate Internet connection status. • Solid GREEN – Internet is connected but no activity. • Flashing GREEN – Data transmission is in progress. • Solid RED – Internet connection failed. • Off – No internet connection.

Rear Panel



No.	Ports / Buttons	Description
1	**DSL port**	Connects to the DSL line using the RJ-11 cable.
2	**WPS button**	Press to search for devices that support Wi-Fi Protected Setup (WPS).
3	**Reset button**	Press and hold this button for 5 seconds to restore your device to its original factory default setting.
4	**Ethernet port 1, 2, 3, 4**	Connects a computer and other Ethernet network devices to the Modem Router using RJ-45 cables.
5	**Power port**	Connects the power adapter.
6	**Power button**	Press to turn your device on or off.

1.4 Wireless Considerations

Connection Performance

A number of factors affect the performance of wireless connection. Consider the following guidelines to ensure high-range and stable connectivity.

1. Keep the Modem Router and other wireless devices away from obstructions, such as walls or buildings. Each obstruction can reduce the range of a wireless device.
2. Keep the Modem Router and other wireless devices away from devices that produce radio frequency (RF) noise, such as microwave ovens or radios.
3. Keep the Modem Router and other wireless devices away from any device operating on the 2.4GHz frequency, such as cordless phones or remote controls.
4. Antenna orientation affects the wireless signal. Determine the best orientation and adjust the antenna position of your device.

Security Checklist

Wireless networks are easy to install and convenient to use. However, wireless network signals can also be intercepted easily. To prevent unauthorized users from connecting to your wireless network, follow the guidelines below.

1. Change the default wireless network name.

   Your device has a default Service Set Identifier (SSID) which is the wireless network name. Change the SSID with a unique name to identify your network. The SSID can be up to 32 characters in length.

2. Change the default password.

   Your device has a default password. You have to enter this password to change your network settings. Change the password to prevent unauthorized users from hacking into your network and changing the settings.

3. Enable MAC address filtering.

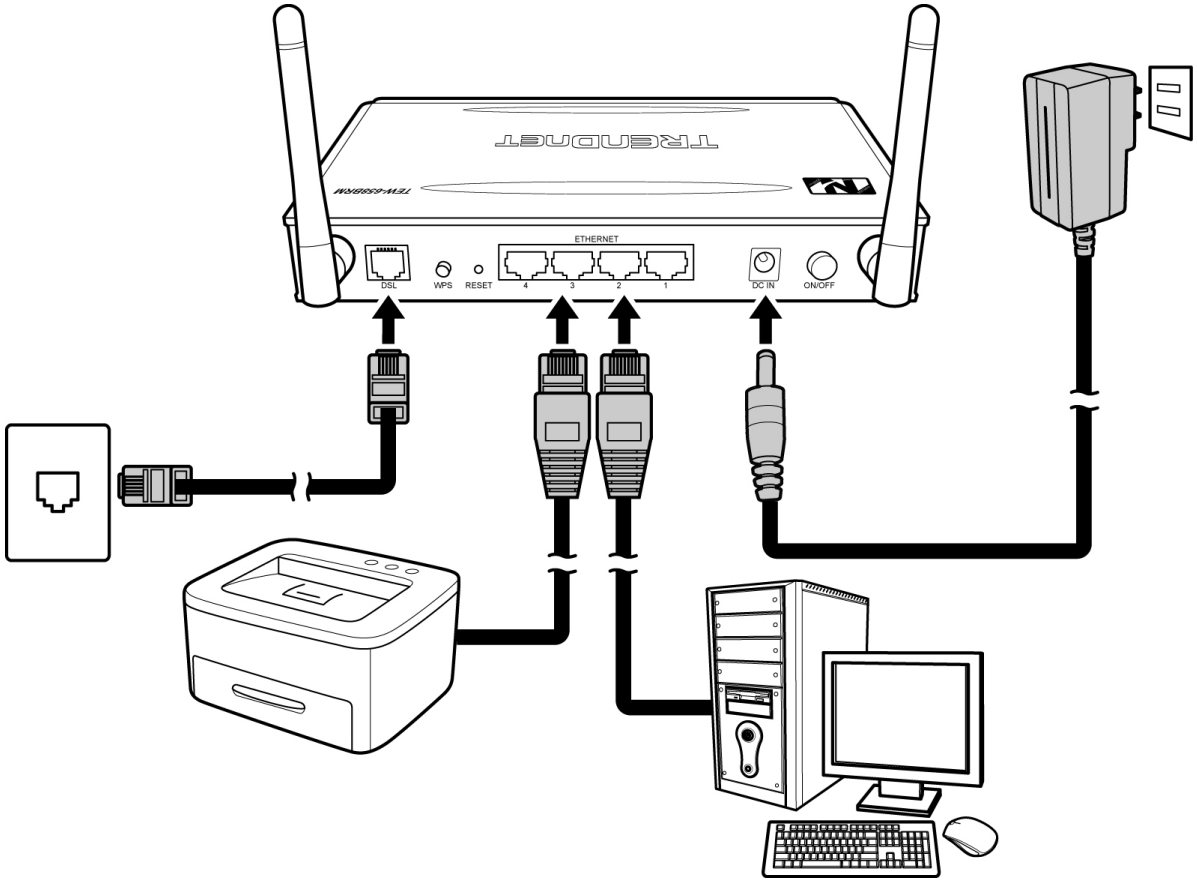
   Your device supports Media Access Control (MAC) address filtering. You can assign a MAC address on each computer that you want to connect to your wireless network. When MAC address filtering is enabled, only the computers with the specified MAC addresses are allowed access.

4. Enable encryption

Your device supports Wired Equivalent Privacy (WEP), and Wi-Fi Protected Access (WAP/WPA2) encryption. To ensure a high level of security, enable the highest security encryption and use strong passphrases, avoid using words that can be found in the dictionary.

Chapter 2: Installation

Make sure that all devices are powered off before starting installation.



Installation Diagram

2.1 Connect the Power

1. Connect the power adapter to the power port of your Modem Router.
2. Plug the power adapter to a wall outlet or a power strip.

NOTE:

- Use only the supplied power adapter. Using other power adapters may cause damage to the device.
- Connect all devices to your Modem Router before connecting the power adapter to a wall outlet.

2.2 Connect the Computer

Wired Connection

1. Connect one end of the RJ-45 cable to one of the Ethernet (1, 2, 3, 4) ports of your Modem Router.
2. Connect the other end of the RJ-45 cable to the Ethernet port of the computer.

   Repeat the above steps to connect other computers to the Modem Router via Ethernet connection.

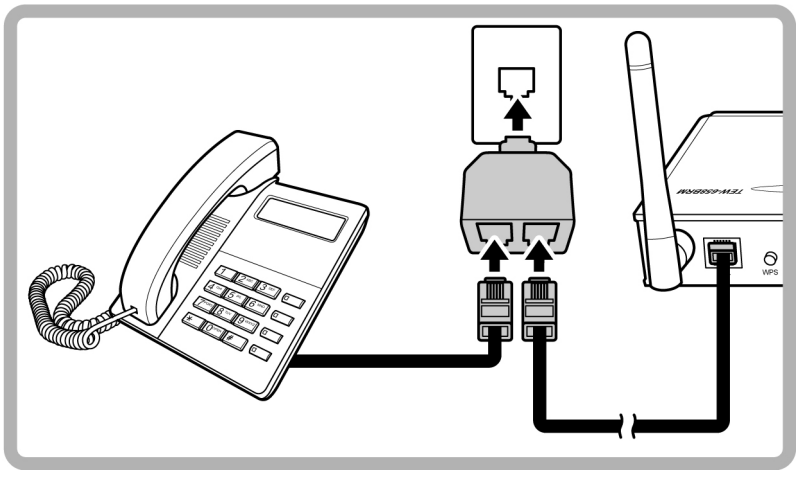
To connect more than four computers, use a hub or switch. Connect one end of an RJ-45 cable to the hub or switch and the other end to the computer.

2.3 Connect the DSL

1. Connect one end of the RJ-11 cable to the DSL port of your Modem Router.
2. Connect the other end of the RJ-11 cable to a wall jack with DSL service.

Use a Splitter

You need a splitter when connecting the Modem Router to the wall jack that also connects to a telephone.



1. Plug the splitter to the wall jack with DSL service.
2. Connect one end of the RJ-11 cable to the DSL port of your Modem Router.
3. Connect the other end of the RJ-11 cable to the MODEM port of the splitter.

4. Connect the telephone to the LINE port of the splitter using another RJ-11 cable.

2.4 Check the Installation

To ensure that all devices are properly connected, check the LED indicators on the front of your Modem Router. For basic installation, the following LED must be lit:

√ Power LED

√ LAN LED (for every computer that is connected via Ethernet connection)

√ DSL LED

The lighted LED indicators vary depending on the type of connection that you make. See “Front Panel” on page 8 for more information about the LED indicators.

Chapter 3:
Configure the Computer

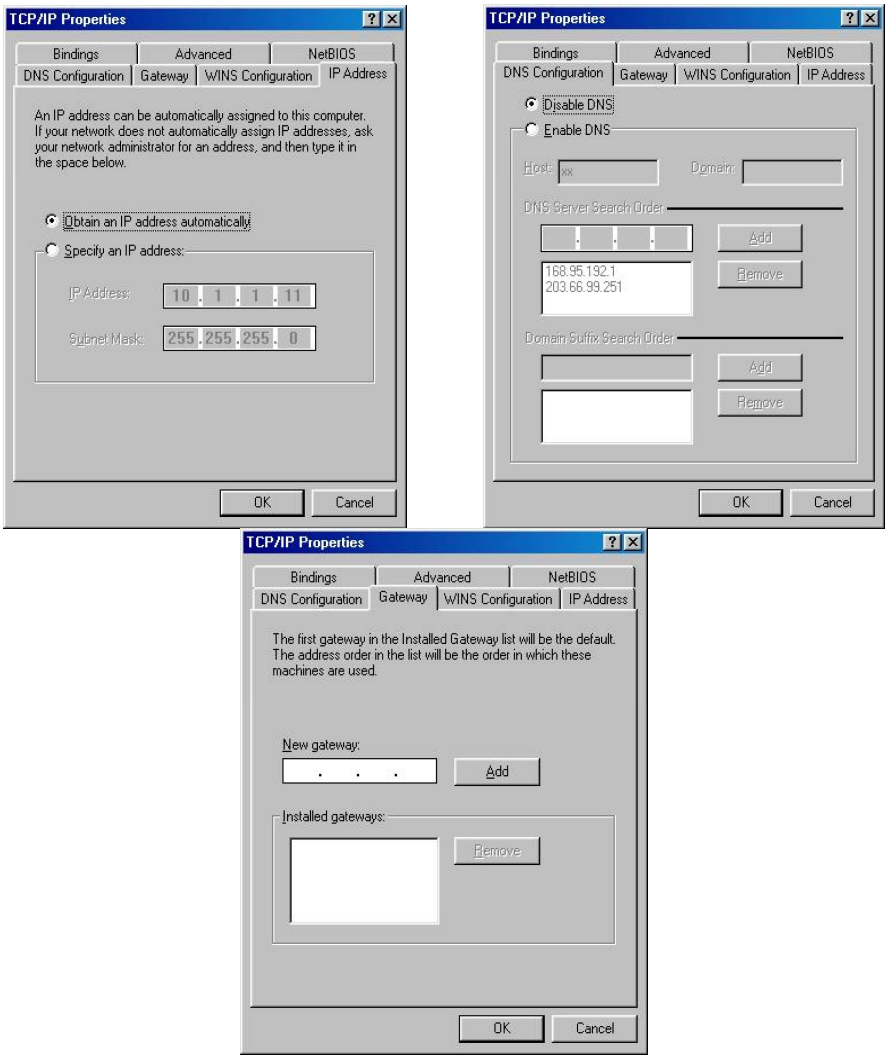
This chapter will guide you on how to configure your computer according to the operating system you are using.

- Windows® 95 / 98 / ME, see below.
- Windows® 2000, see page 17.
- Windows® XP, see page 18.
- Windows® Vista, see page 19.
- Windows® 7, see page 19.

3.1 Windows 95 / 98 / ME

If you are using Windows® 95 / 98 / ME operating system, follow the instructions below to configure your computer.

1. On the desktop, right-click **Network Neighborhood**.
2. Click **Properties**.
3. On the IP Address tab, select **Obtain an IP Address automatically**.
4. On the DNS Configuration tab, select **Disable DNS**.
5. On the Gateway tab, leave all fields blank.
6. Click **OK**.

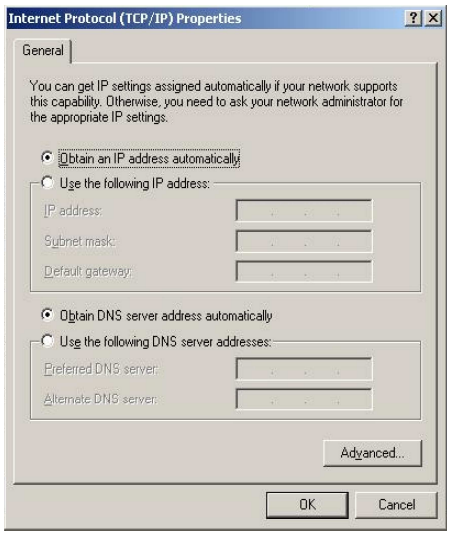


IP Address Page DNS Configuration Page Gateway Page

3.2 Windows 2000

If you are using Windows® 2000, follow the instructions below to configure your computer.

1. Click **Start** > **Settings** > **Control Panel** > **Network and Dial-up Connections**.
2. Double-click **Local Area Connection**.
3. Click **Properties**.
4. On the network components list, make sure that **Internet Protocol (TCP/IP)** is checked. If not, check it to enable the **Properties** button.
5. Select **Internet Protocol (TCP/IP)**, and then click **Properties**.
6. On the General tab, select **Obtain an IP Address automatically** and **Obtain DNS server address automatically**.
7. Click **OK**.

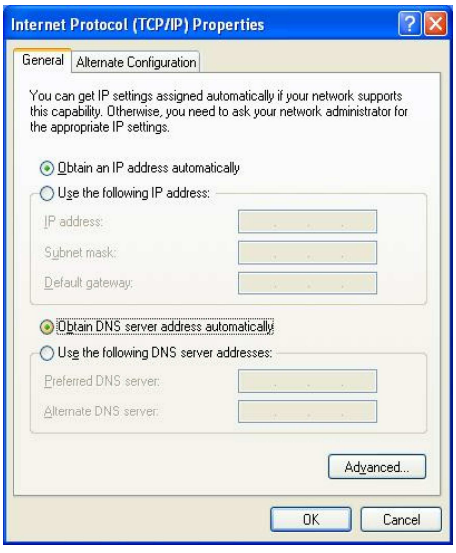


General Page

3.3 Windows XP

If you are using Windows® XP, follow the instructions below to configure your computer.

1. Click **Start** > **Control Panel** > **Network Connections**.
2. Right-click **Local Area Connection**, then click **Properties**.
3. On the network components list, make sure that **Internet Protocol (TCP/IP)** is checked. If not, check it to enable the **Properties** button.
4. Select **Internet Protocol (TCP/IP)**, and then click **Properties**.
5. On the General tab, select **Obtain an IP Address automatically** and **Obtain DNS server address automatically**.
6. Click **OK**.

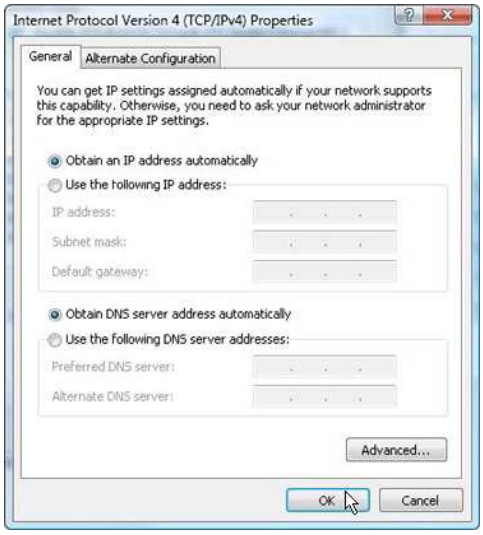


General Page

3.4 Windows Vista

If you are using Windows® Vista, follow the instructions below to configure your computer.

1. Click **Start** > **Control Panel** > **Network and Internet Connections** > **Network Connections**.
2. Right-click **Local Area Connection**, then click **Properties**.
3. On the General tab, make sure that **Internet Protocol (TCP/IP)** is checked. If not, check it to enable the **Properties** button.
4. Select **Internet Protocol (TCP/IP)**, and then click **Properties**.
5. Select **Obtain an IP Address automatically** and **Obtain DNS server address automatically**.
6. Click **OK**.

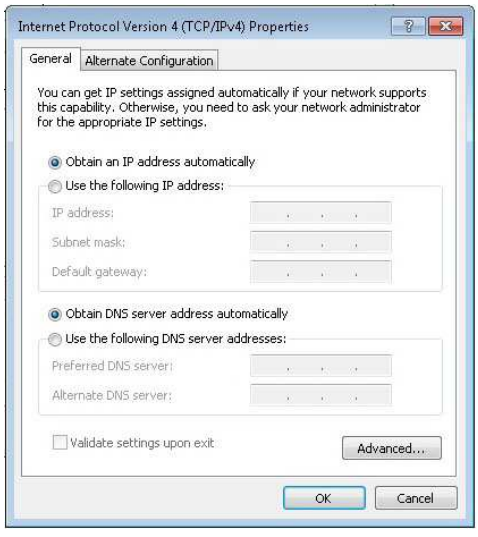


General Page

3.4 Windows 7

If you are using Windows® 7, follow the instructions below to configure your computer.

1. Click **Start** > **Control Panel** > **Network & Sharing Center**.
2. Click **Local Area Connection**.
3. Click **Properties**.
4. On the network components list, make sure that **Internet Protocol (TCP/IP)** is checked. If not, check it to enable the **Properties** button.
5. Select **Internet Protocol (TCP/IP)**, and then click **Properties**.
6. On the General tab, select **Obtain an IP Address automatically** and **Obtain DNS server address automatically**.
7. Click **OK**.



General Page

Chapter 4:
Log In to the Modem Router

Use the web-based utility to configure your Modem Router.

Note the following default settings before accessing the web-based utility.

SSID	TRENDnet658
Channel	Auto
802.11 Mode	802.11 b+g+n mixed mode
Security	Disable
IP Address	192.168.10.1
VPI/VCI for ATM	8/35
DSL Line Mode	Auto-detect
TCP/IP Address (PC)	192.168.10.x (where x is a number between 2 and 254)
Default IP Address (Modem Router)	192.168.10.1
Subnet Mask	255.255.255.0

Do the following instructions to log in to the Modem Router:

1. Launch the web browser.
2. On the address bar, enter **http://192.168.10.1**, then press **Enter**.
3. Enter the **User name** and **Password**.

   The default user name and password are “admin”. It is advised to change the user name and password, see “7.1 Password” on page 81.

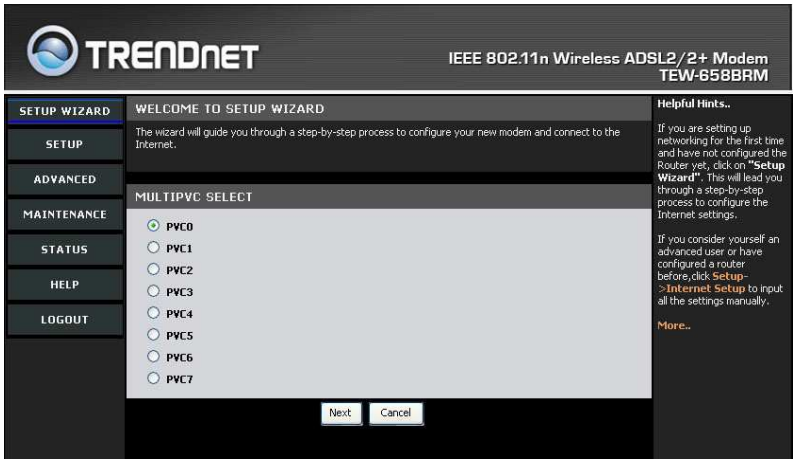

Connect to 192.168.10.1
The server 192.168.10.1 at Enter Password requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name:
Password:
Remember my password
OK
Cancel

4.1 Setup Wizard

After you log in, the Setup Wizard appears on the screen. It is recommended to follow the wizard if are setting up the network and configuring the Modem Router for the first time.

1. Select a **PVC** (Permanent Virtual Circuit), then click **Next**.

   It is recommended to use the default setting, PVC0, when setting up the Modem Router for the first time.



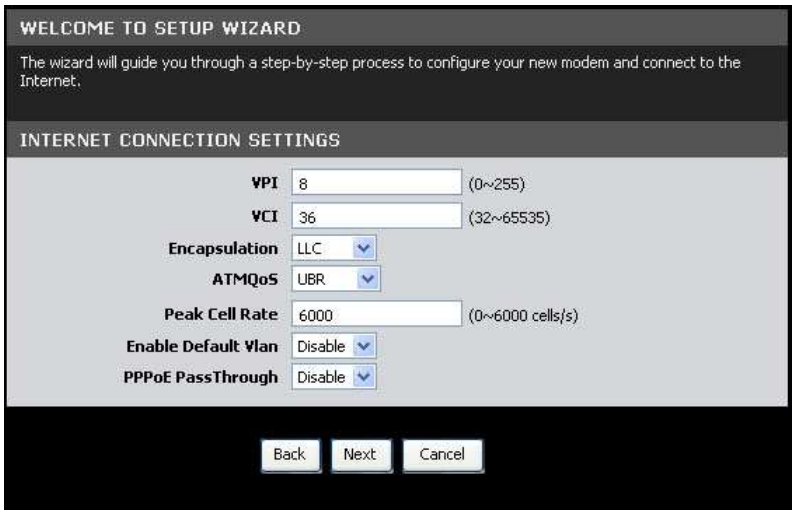
2. The information required on the page below can be obtained from your Internet service provider (ISP). Consult your ISP and do the following:

   a. Enter the Virtual Path Identifier (**VPI**) and Virtual Channel Identifier (**VCI**).

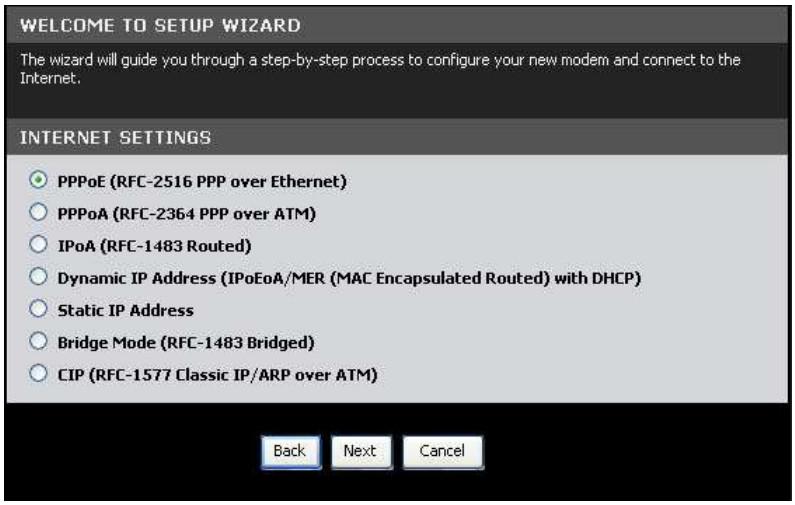
   b. Set the **Encapsulation** mode, **ATMQoS**, and **Peak Cell Rate**.

   c. Enable or disable **Default VLAN** and **PPPoE PassThrough**.

   d. Click **Next** to continue.



3. Select a network protocol. Click **Next** to continue.



The information required on the next page vary depending on the network protocol you selected here.

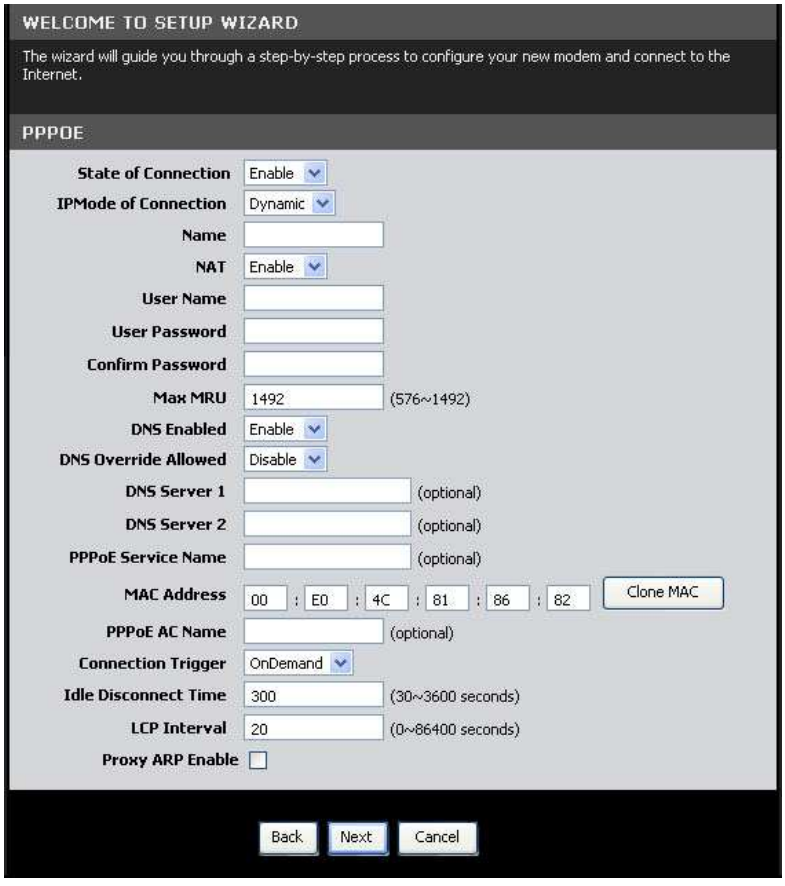
4. The following is a PPPoE example.

   a. Enter the connection **Name**, **User Name**, and **User Password**. Re-type the password in the **Confirm Password** field.

   b. Select whether to enable or disable features such as **NAT** (Network Address Translation), **DNS** (Domain Name System), and **DNS Override**.

   c. Leave the remaining fields to their default settings.

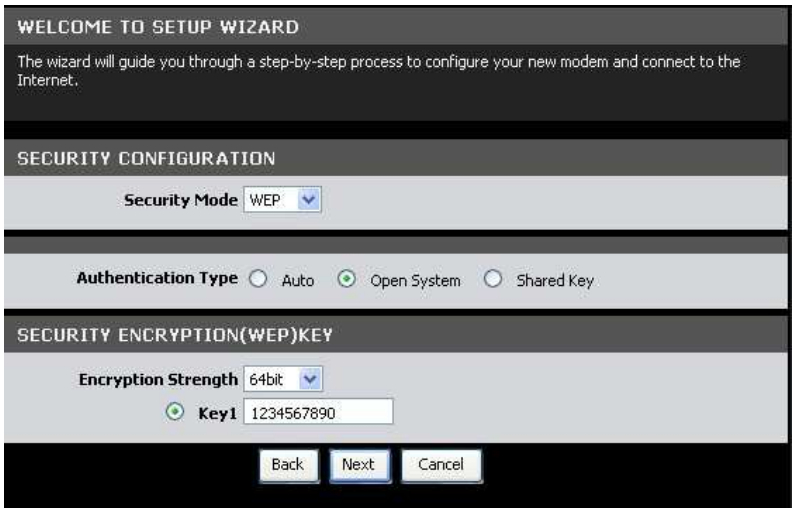
   d. Click **Next** to continue.



5. Select whether to enable or disable wireless connection. From this point, you can also change the **SSID** with a name that you can easily remember. Click **Next** to continue.

6. Select the **Security Mode**, **Authentication Type**, and **Encryption**, and enter a passkey. Click **Next** to continue.

   The screen below varies depending on the security mode you selected, below is an example of a WEP security screen.

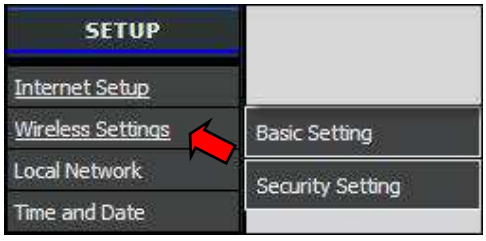


7. When prompted to reboot, click **OK**.
8. Log out from the web-based utility, then log in again to apply the configurations.

4.2 Menu

Use the main menu, located on the left panel of the screen, to manually configure your Modem Router. Click a menu item, then a submenu to display the page on the screen.

For submenus with more options, move the mouse cursor over the submenu to view the options.



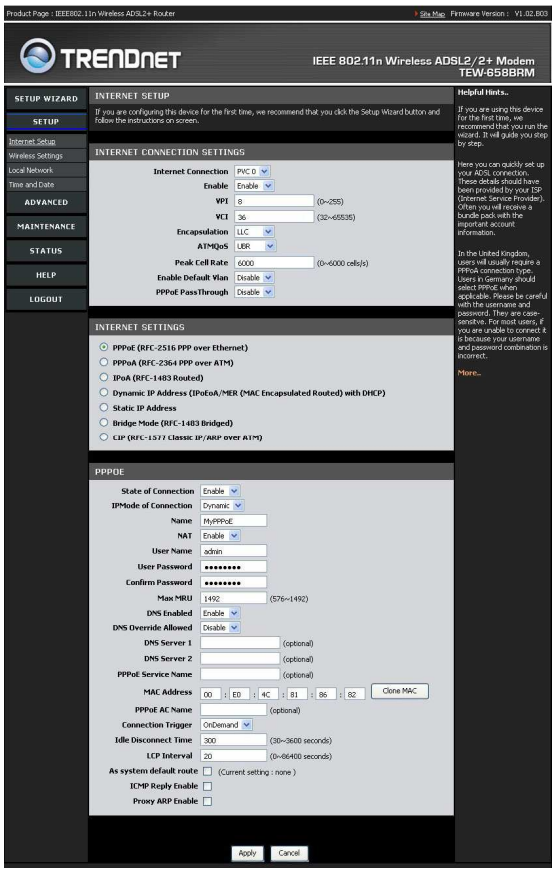
Chapter 5: Setup

The Setup menu allows you to configure the Internet connection of your Modem Router manually.

5.1 Internet Setup

The Internet Setup page is divided into three sections: **Internet Connection Settings**, **Internet Settings**, and **Protocol**.

To access the Internet Setup page, click **SETUP** > **Internet Setup**.



Internet Connection Settings

This setting configures the Modem Router to your Internet connection. The required settings should be obtained from your ISP.

Internet Connection – Select the Permanent Virtual Circuit (PVC). The Modem Router supports up to 8 PVCs.

Enable – Select whether to enable or disable the Internet connection.

VPI – Enter the Virtual Path Identifier (VPI) provided by your ISP. The default VPI is 8.

VCI – Enter the Virtual Channel Identifier (VCI)) setting provided by your ISP. The default VCI is 36.

Encapsulation – Select **LLC** (Logical Link Control) or **VCMUX** (Virtual Circuit Multiplexing), according to your ISP.

ATMQoS – Select the type of ATM Queue of Service (ATMQoS) specified by your ISP. Options are: **UBR** (Unspecified Bit Rate), **CBR** (Constant Bit Rate), **VBR-nrt** (Variable Bit Rate non-real-time), and **VBR-rt** (Variable Bit Rate real-time).

Peak Cell Rate – This is the maximum rate of cells that you can send. If provided by your ISP, enter the rate in the field. Otherwise, leave this field to its default setting.

Enable Default Vlan – Select whether to enable or disable VLAN tagging.

PPPoE PassThrough – Select whether to enable or disable PPPoE passthrough.

Internet Settings

DSL lines use different network protocols to establish Internet connection. Ask your ISP and select the protocol used by your DSL line, options are:

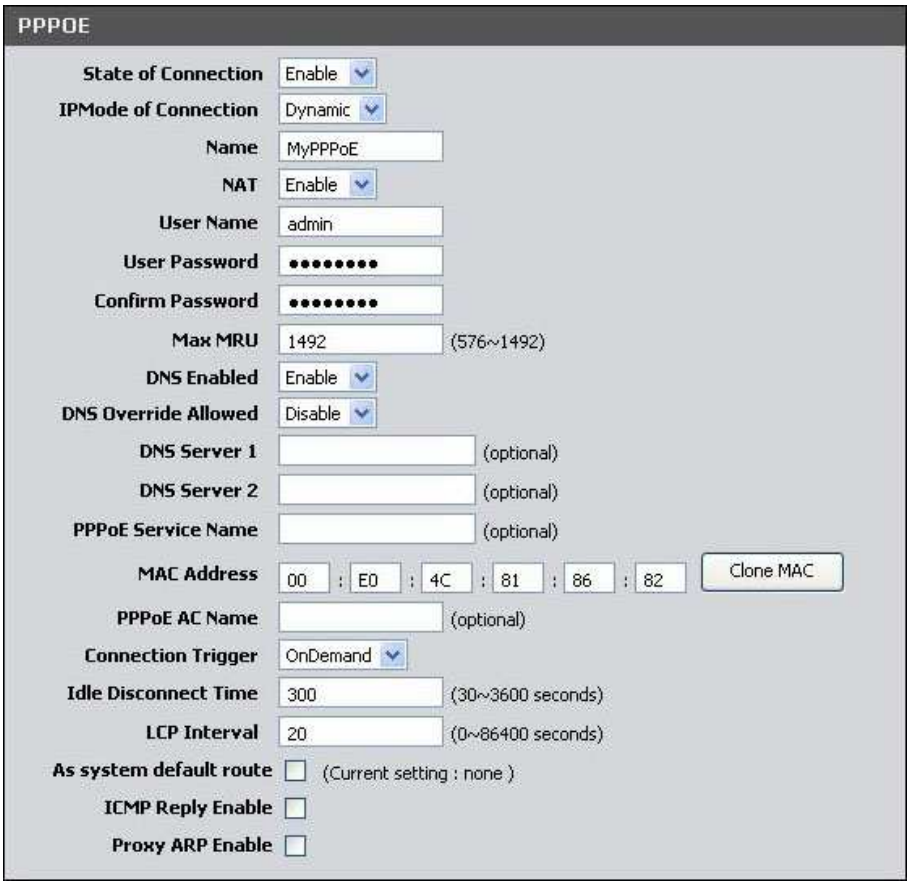
- PPPoE (RFC-2516 PPP over Ethernet)
- PPPoA (RFC-2364 PPP over ATM)
- IPoA (RFC-1483 Routed)
- Dynamic IP Address (IPoEoA/MER (MAC Encapsulated Routed) with DHCP)
- Static IP Address
- Bridge Mode (RFC-1483 Bridged)
- CIP (RFC-1577 Classic IP/ARP over ATM)

Protocol

This section varies depending on the selected network protocol.

PPPoE (RFC-2516 PPP over Ethernet)

If you select PPPoE (Point-to-Point Protocol over Ethernet), the screen below is displayed.



State of Connection – Select whether to enable or disable this connection.

IPMode of Connection – Select the connection mode, options are:

- **Dynamic**: Select Dynamic if the IP address can be automatically obtained from your ISP.
- **Static**: Select Static if you are required to use a permanent IP address to connect to the Internet. You must enter the **IP Address** and **Subnet Mask** provided by your ISP.

Name – Enter your desired connection name.

NAT – Select whether to enable or disable NAT (Network Address Translation). Enable this setting to share one WAN IP address with multiple computers on your network.

User Name – Enter the user name provided by your ISP.

User Password – Enter the password provided by your ISP. Re-enter the password in the **Confirm Password** field.

Max MRU – This is the maximum rate of cells that you can receive. If provided by your ISP, enter the rate in the field. Otherwise, leave this field to its default setting.

DNS Enabled – Select whether to enable or disable DNS (Domain Name System).

DNS Override Allowed – Select whether to enable or disable DNS override.

DNS Server 1 and **DNS Server 2** – If provided by your ISP, enter the DNS server. Otherwise, leave these fields blank.

PPPoE Service Name – Enter a PPPoE service name.

MAC Address – Displays the cloned MAC address. Click the **Clone Mac** button to clone the MAC address of your computer.

PPPoE AC Name – Enter the PPPoE account name provided by your ISP.

Connection Trigger – You can configure how you want your Modem Router to connect and terminate the Internet connection. Options are:

- **OnDemand**: Enables the Modem Router to cut off the Internet connection after being idle for a specified period of time. The Modem Router automatically re-establishes the connection when you try to access the Internet again. On the **Idle Disconnect Time** field, enter the number of seconds that you want to elapse before your Modem Router terminates the Internet connection.
- **AlwaysOn**: Enables the Modem Router to be connected to the Internet at all times. If you are disconnected, the Modem Router will automatically re-establish the connection.
- **Manual**: With this setting, you have to enter the user name and password to establish the Internet connection.

LCP Interval – Enter the number of seconds that you want to be the interval in sending LCP (Link Control Protocol) packets.

As system default route – Check this box to set the current setting as the default route.

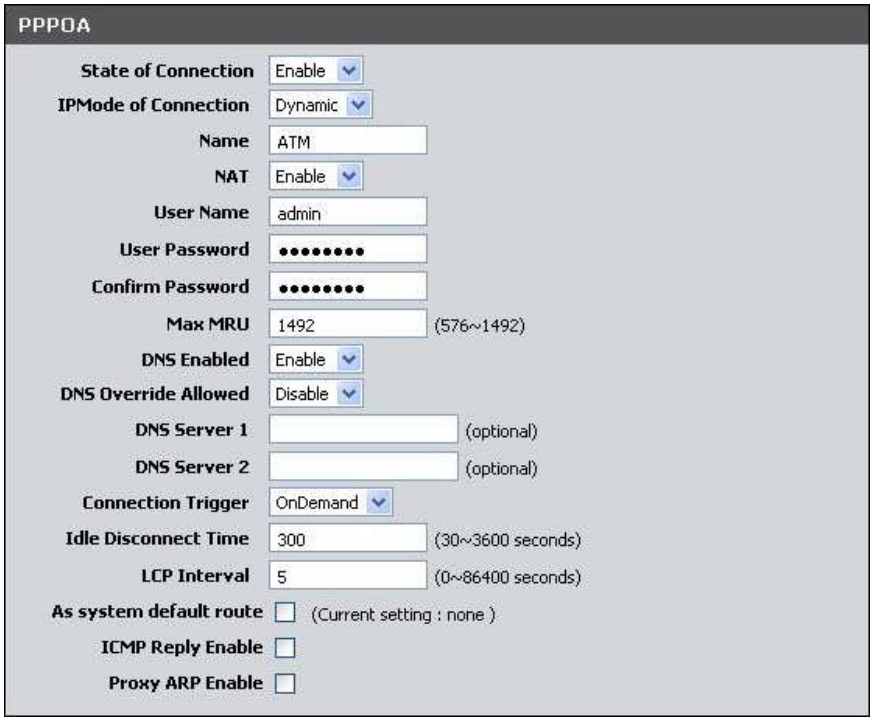
ICMP Reply Enable – Check this box to enable ICMP (Internet Control Message Protocol) messages to be sent back to the host that sent the message.

Proxy ARP Enable – Check this box to enable proxy ARP function.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

PPPoA (RFC-2364 PPP over ATM)

If you select PPPoA (Point-to-Point Protocol over ATM), the screen below is displayed.



State of Connection – Select whether to enable or disable this connection.

IPMode of Connection – Select the connection mode, options are:

- **Dynamic**: Select Dynamic if the IP address can be automatically obtained from your ISP.
- **Static**: Select Static if you are required to use a permanent IP address to connect to the Internet. You must enter the **IP Address** and **Subnet Mask** provided by your ISP.

Name – Enter your desired connection name.

NAT – Select whether to enable or disable NAT (Network Address Translation). Enable this setting to share one WAN IP address with multiple computers on your network.

User Name – Enter the user name provided by your ISP.

User Password – Enter the password provided by your ISP. Re-enter the password in the **Confirm Password** field.

Max MRU – This is the maximum rate of cells that you can receive. If provided by your ISP, enter the rate in the field. Otherwise, leave this field to its default setting.

DNS Enabled – Select whether to enable or disable DNS (Domain Name System).

DNS Override Allowed – Select whether to enable or disable DNS override.

DNS Server 1 and **DNS Server 2** – If provided by your ISP, enter the DNS server. Otherwise, leave these fields blank.

Connection Trigger – You can configure how you want your Modem Router to connect and terminate the Internet connection. Options are:

- **OnDemand**: Enables the Modem Router to cut off the Internet connection after being idle for a specified period of time. The Modem Router automatically re-establishes the connection when you try to access the Internet again. On the **Idle Disconnect Time** field, enter the number of seconds that you want to elapse before your Modem Router terminates the Internet connection.
- **AlwaysOn**: Enables the Modem Router to be connected to the Internet at all times. If you are disconnected, the Modem Router will automatically re-establish the connection.
- **Manual**: With this setting, you have to manually restore the connection if you are disconnected.

LCP Interval – Enter the number of seconds that you want to be the interval in sending LCP (Link Control Protocol) packets.

As system default route – Check this box to set the current setting as the default route.

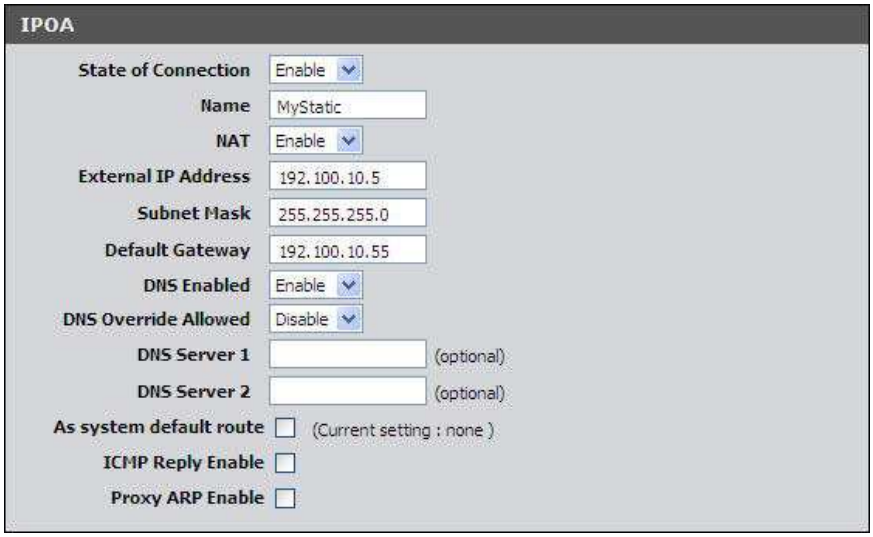
ICMP Reply Enable – Check this box to enable ICMP (Internet Control Message Protocol) messages to be sent back to the host that sent the message.

Proxy ARP Enable – Check this box to enable proxy ARP function.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

IPoA (RFC-1483 Routed)

If you select IPoA (IP over ATM), the screen below is displayed.



State of Connection – Select whether to enable or disable this connection.

Name – Enter your desired connection name.

NAT – Select whether to enable or disable NAT (Network Address Translation). Enable this setting to share one WAN IP address with multiple computers on your network.

External IP Address – Enter the IP address provided by your ISP.

Subnet Mask – Enter the subnet mask provided by your ISP.

Default Gateway – Enter the default gateway provided by your ISP.

DNS Enabled – Select whether to enable or disable DNS (Domain Name System).

DNS Override Allowed – Select whether to enable or disable DNS override.

DNS Server 1 and **DNS Server 2** – If provided by your ISP, enter the DNS server. Otherwise, leave these fields blank.

As system default route – Check this box to set the current setting as the default route.

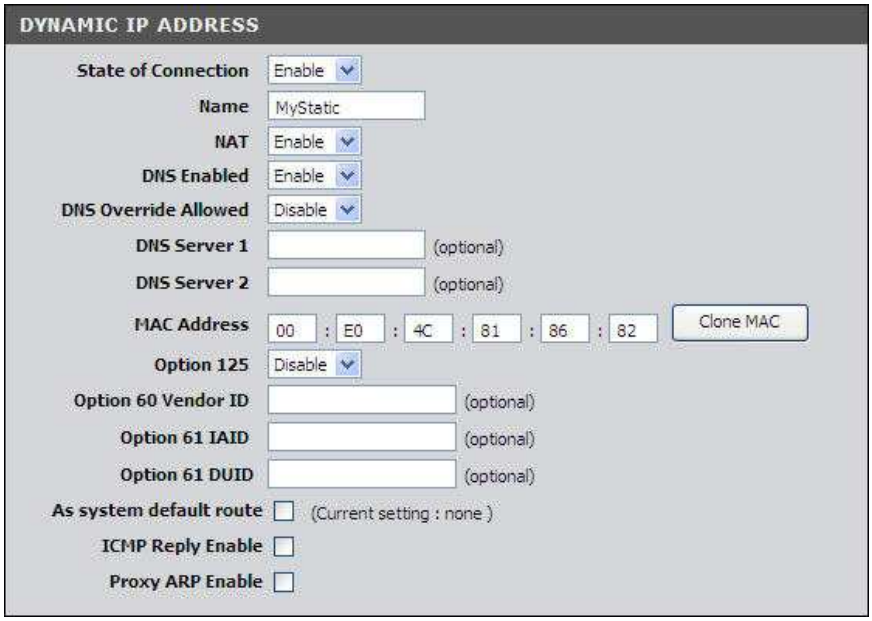
ICMP Reply Enable – Check this box to enable ICMP (Internet Control Message Protocol) messages to be sent back to the host that sent the message.

Proxy ARP Enable – Check this box to enable proxy ARP function.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

Dynamic IP Address

If you select Dynamic IP Address, the screen below is displayed.



State of Connection – Select whether to enable or disable this connection.

Name – Enter your desired connection name.

NAT – Select whether to enable or disable NAT (Network Address Translation). Enable this setting to share one WAN IP address with multiple computers on your network.

DNS Enabled – Select whether to enable or disable DNS (Domain Name System).

DNS Override Allowed – Select whether to enable or disable DNS override.

DNS Server 1 and **DNS Server 2** – If provided by your ISP, enter the DNS server. Otherwise, leave these fields blank.

MAC Address – Displays the cloned MAC address. Click the **Clone Mac** button to clone the MAC address of your computer.

Option 125 – Select whether to enable or disable Option 125.

Option 60 Vendor ID – Enter option 60 vendor ID.

Option 61 IAID – Enter option 61 IAID.

Option 61 DUID – Enter option 61 DUID.

As system default route – Check this box to set the current setting as the default route.

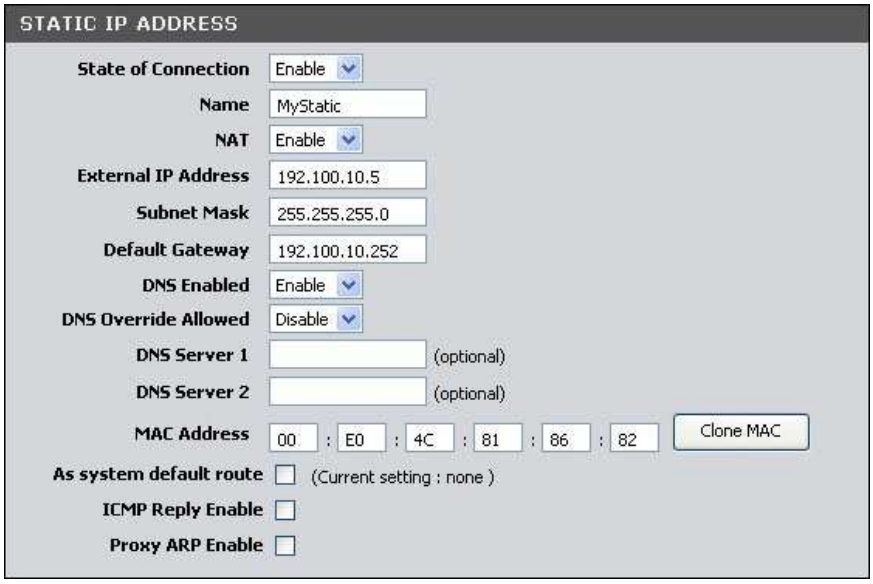
ICMP Reply Enable – Check this box to enable ICMP (Internet Control Message Protocol) messages to be sent back to the host that sent the message.

Proxy ARP Enable – Check this box to enable proxy ARP function.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

Static IP Address

If you select Static IP Address, the screen below is displayed.



State of Connection – Select whether to enable or disable this connection.

Name – Enter your desired connection name.

NAT – Select whether to enable or disable NAT (Network Address Translation). Enable this setting to share one WAN IP address with multiple computers on your network.

External IP Address – Enter the IP address provided by your ISP.

Subnet Mask – Enter the subnet mask provided by your ISP.

Default Gateway – Enter the default gateway provided by your ISP.

DNS Enabled – Select whether to enable or disable DNS (Domain Name System).

DNS Override Allowed – Select whether to enable or disable DNS override.

DNS Server 1 and **DNS Server 2** – If provided by your ISP, enter the DNS server. Otherwise, leave these fields blank.

MAC Address – Displays the cloned MAC address. Click the **Clone Mac** button to clone the MAC address of your computer.

As system default route – Check this box to set the current setting as the default route.

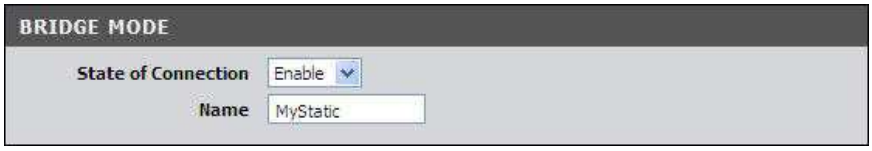
ICMP Reply Enable – Check this box to enable ICMP (Internet Control Message Protocol) messages to be sent back to the host that sent the message.

Proxy ARP Enable – Check this box to enable proxy ARP function.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

Bridge Mode

If you select Bridge mode (RFC-1483 Bridged), the screen below is displayed.

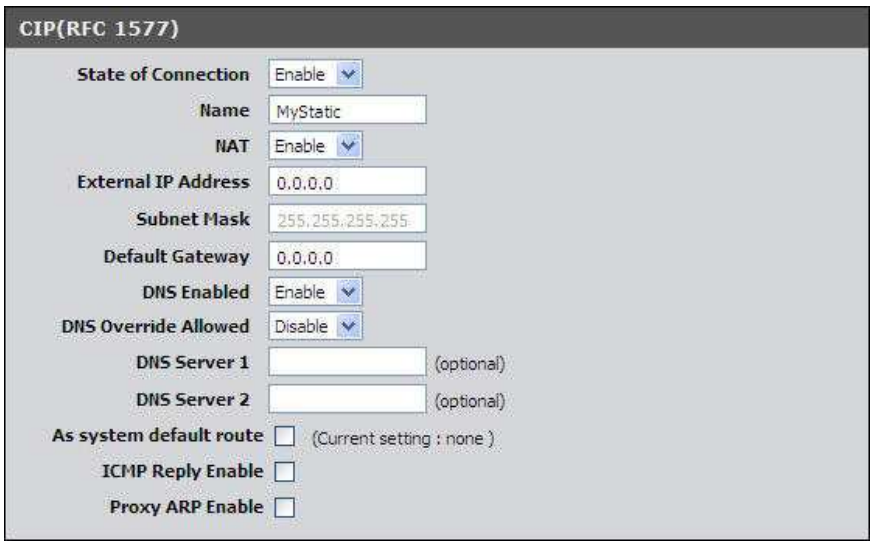


State of Connection – Select whether to enable or disable this connection.

Name – Enter your desired connection name.

CIP (RFC-1577)

If you select CIP (RFC-1577 Classic RP/ARP over ATM), the screen below is displayed.



State of Connection – Select whether to enable or disable this connection.

Name – Enter your desired connection name.

NAT – Select whether to enable or disable NAT (Network Address Translation). Enable this setting to share one WAN IP address with multiple computers on your network.

External IP Address – Enter the IP address provided by your ISP.

Subnet Mask – Enter the subnet mask provided by your ISP.

Default Gateway – Enter the default gateway provided by your ISP.

DNS Enabled – Select whether to enable or disable DNS (Domain Name System).

DNS Override Allowed – Select whether to enable or disable DNS override.

DNS Server 1 and **DNS Server 2** – If provided by your ISP, enter the DNS server. Otherwise, leave these fields blank.

As system default route – Check this box to set the current setting as the default route.

ICMP Reply Enable – Check this box to enable ICMP (Internet Control Message Protocol) messages to be sent back to the host that sent the message.

Proxy ARP Enable – Check this box to enable proxy ARP function.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

5.2 Wireless Settings

The Wireless Settings page allows you to enable and configure wireless connections.

Basic Setting

The Basic Settings page allows you to enable the wireless function of your Modem Router and set its SSID.

To access the Basics Settings page, click **SETUP** > **Wireless Settings** > **Basic Setting** or click the **Wireless Setting** button.

Device – Check this box to enable the wireless function of your Modem Router.

SSID – Enter the service set identifier (SSID) or the name of your wireless network. The SSID is case-sensitive and must not exceed 32 alphanumeric characters.

BSSID – (Basic Service Set Identifier) Displays the MAC address of your Modem Router.

Wireless Channel – Select the appropriate channel that corresponds to your network settings. You should assign different channels for each access point to avoid signal interference.

TIP: Select **Auto** for **Wireless Channel** to allow your Modem Router to select the best possible channel for your wireless

network.

Wireless Mode – Select the wireless mode to limit the type of wireless devices that can connect to the network. Options are:

- **802.11b only**: Only 802.11b wireless devices can connect to the network.
- **802.11g + 802.11b**: Only 802.11g and 802.11b wireless devices can connect to the network.
- **802.11g only**: Only 802.11g wireless devices can connect to the network.
- **802.11n + 802.11g + 802.11b**: All 802.11n, 802.11g, and 802.11b wireless devices can connect to the network.

Security Setting

It is strongly recommended to enable the security settings to secure your network from unauthorized access. Use the Security Setting page to configure the type of security and encryption of your wireless network.

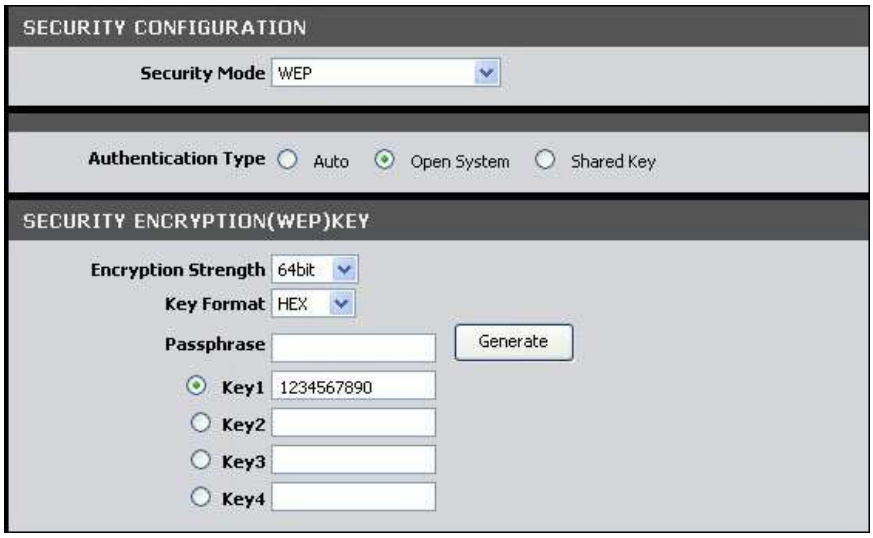
To access the Security Setting page, click **SETUP** > **Wireless Settings** > **Security Setting** or click the **Security Setting** button.

Name (SSID) – Select the wireless network to configure from the drop-down list.

Security Mode – Select the security and the encryption type to use. Select **None** if you do not want to use any security mode.

WEP

WEP (Wired Equivalent Policy) is the basic security method. With WEP security, all wireless devices must enter the same key to connect to the network.



Authentication Type – Select an authentication type. Options are:

- **Auto**: Select Auto if you are unsure which authentication is suitable for your wireless devices.
- **Open System** – Open System allows public access to the Modem Router via wireless communications.
- **Shared Key** – Requires users to enter the same WEP key to exchange data with other wireless devices.

Encryption Strength – Select **64bit** to enter or generate a 10-character key or select **128bit** to enter or generate a 26-character key.

Key Format – Select **HEX** to generate hexadecimal characters only or **ASCII** to generate ASCII characters.

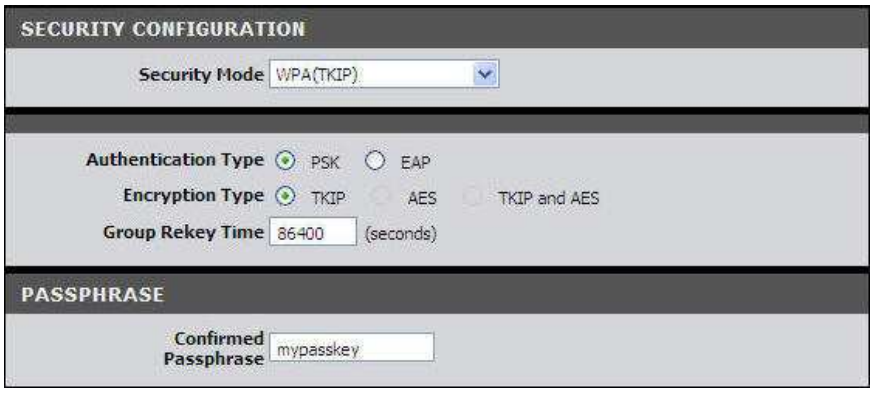
Passphrase – Enter a passphrase, then click the **Generate** button to automatically generate WEP keys.

Key 1, 2, 3, 4 – When you enter a passphrase and click the **Generate** button, these fields display the auto-generated keys. Otherwise, enter the WEP key(s) manually.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

WPA (TKIP)

Select WPA (Wi-Fi Protected Access) using TKIP (Temporal Key Integrity Protocol) for better encryption.



Authentication Type – Select an authentication type. Options are:

- **PSK**: Select to use a passphrase for authentication.

  If you select **PSK**, enter a passphrase in the **Confirmed Passphrase** field.

- **EAP** – Select to use Extensible Authentication Protocol (EAP). This should only be used when a Radius server is connected to your Modem Router.

  If you select EAP, enter the following information:

  - **Radius Server IP**: The IP address of the authentication server.
  - **Radius Server Port**: The port number used to connect to the authentication server.

- **Radius Server Key**: Enter the passphrase that matches the authentication server.

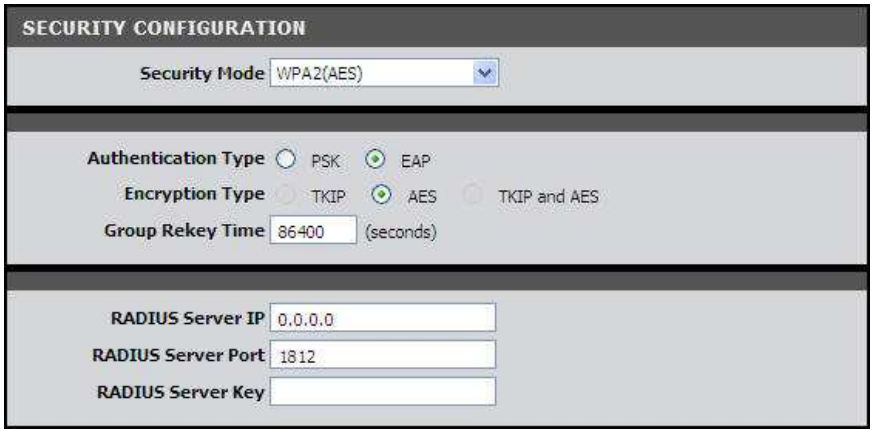
Encryption Type – Displays the encryption type you selected.

Group Rekey Time – Enter the number of seconds to elapse until the Modem Router prompts for the key again.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

WPA2 (AES)

Select WPA (Wi-Fi Protected Access) using AES (Advanced Encryption Standard) for better encryption.



Authentication Type – Select an authentication type. Options are:

- **PSK**: Select to use a passphrase for authentication.

  If you select **PSK**, enter a passphrase in the **Confirmed Passphrase** field.

- **EAP** – Select to use Extensible Authentication Protocol (EAP). This should only be used when a Radius server is connected to your Modem Router.

  If you select EAP, enter the following information:

  - **Radius Server IP**: The IP address of the authentication server.
  - **Radius Server Port**: The port number used to connect to the authentication server.
  - **Radius Server Key**: Enter the passphrase that matches the authentication server.

Encryption Type – Displays the encryption type you selected.

Group Rekey Time – Enter the number of seconds to elapse until the Modem Router prompts for the key again.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

WPA (TKIP) / WPA2 (AES)

Select this security mode if you are unsure which mode is suitable for your wireless devices.

Authentication Type – Select an authentication type. Options are:

- **PSK**: Select to use a passphrase for authentication.

  If you select **PSK**, enter a passphrase in the **Confirmed Passphrase** field.

- **EAP**: Select to use Extensible Authentication Protocol (EAP). This should only be used when a Radius server is connected to your Modem Router.

  If you select EAP, enter the following information:

  - **Radius Server IP**: The IP address of the authentication server.
  - **Radius Server Port**: The port number used to connect to the authentication server.
  - **Radius Server Key**: Enter the passphrase that matches the authentication server.

Encryption Type – Displays the encryption type you selected.

Group Rekey Time – Enter the number of seconds to elapse until the Modem Router requires the wireless devices to re-authenticate.

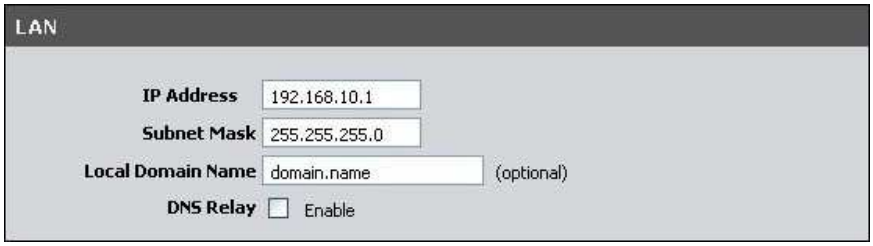
Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

5.3 Local Network

To access the Local Network page, click **SETUP** > **Local Network**.

LAN

This section contains the local settings of your network. These settings are private to your internal network and cannot be seen on the Internet. It is recommended to keep the default values.



IP Address – The default value is 192.168.10.1.

Subnet Mask – The default value is 255.255.255.0.

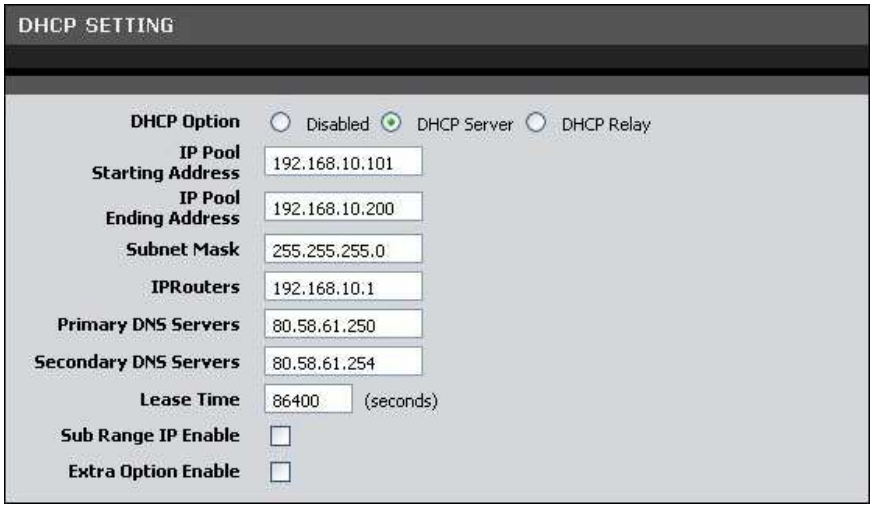
Local Domain Name – Enter a name to refer to the group of devices that will be assigned addresses from this pool.

DNS Relay – Select whether to enable or disable the DNS relay function. Check this box to request automatic assignment of a DNS, then enter the **Primary DNS Server** and the **Secondary DNS Server** in the DHCP Setting screen below.

DHCP Setting

This section allows you to configure your Modem Router to use the Dynamic Host Configuration Protocol (DHCP). You can set your Modem Router as a DHCP server or a DHCP relay agent of your network.

The information required on the DHCP Setting screen vary depending on the selected DHCP option.



DHCP Option – Select the DHCP mode of your Modem Router. Options are:

- **Disabled**: Select this setting if there is already a DHCP server on your network and all devices on your network are using static IP addresses.
- **DHCP Server**: By default, your Modem Router is set as a DHCP server. See more details below.
- **DHCP Relay**: Select this setting to set your Modem Router as a DHCP Relay agent. See description on the next page.

NOTE: If you want to set your Modem Router as a DHCP server, make sure there is no other DHCP server on your network.

DHCP Server

If you set your Modem Router as the DHCP server, your Modem Router will automatically assign an IP address to each computer on your network. By default, the fields for DHCP settings have predefined values. It is recommended to retain these values unless specified by your ISP.

IP Pool Starting Address – Enter the lowest range of IP address to assign. The default value is 192.168.10.101.

IP Pool Ending Address – Enter the highest range of IP address to assign. The default value is 192.168.10.200.

Subnet Mask – Enter the subnet mask. The default value is 255.255.255.0.

IPRouters – Enter the IP address of your Modem Router. The default value is 192.168.10.1.

Primary DNS Server and **Secondary DNS Server** – Enter a primary and a secondary DNS server if the **DNS Relay** option is enabled.

Lease Time – Enter the lease time in seconds. The lease time is the amount of time a device is allowed connection to your Modem Router using its current dynamic IP address. At the end of the lease time, the lease is either renewed or a new IP address is assigned. The default value is 86400 seconds (1 day).

Sub Range IP Enable – Check this box to set another range of IP address.

- **Vendor Class (Option 60)**: Enter a vendor class name.
- **Sub-String Match**: Check to enable the sub-string match function.
- **IP Pool Starting Address** – Enter the lowest sub range of IP address to assign.
- **IP Pool Ending Address** – Enter the highest sub range of IP address to assign.
- **Subnet Mask** – Enter the subnet mask.
- **IPRouters** – Enter the IP address of your Modem Router.
- **Primary DNS Server** and **Secondary DNS Server** – Enter a primary and a secondary DNS server of the sub range.

Extra Option Enable – Check this box to enable extra options.

- **Option 240**, **Option 241**, **Option 242**, **Option 244**, and **Option 245**: Enter a name for the corresponding option.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

DHCP Relay

Some ISPs function as the DHCP server for their clients' small office network. In this case, you can set your Modem Router to act as a DHCP relay agent. When a device on your network requests Internet access, your Modem Router contacts the ISP to obtain the IP configuration, and then forwards the information to that device.

DHCP Server IP – Enter the IP address of the DHCP server.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

DHCP Reserved Address

This section lists the DHCP reserved addresses on your network. If your Modem Router is set as the DHCP server, your Modem Router can reserve a particular IP address to a specific device. To reserve an IP address, click the **Add** button.

Enable – Check this box to enable this function.

Host Name – Enter a host name for the DHCP reserved address.

IP Address – Enter the IP address to reserve.

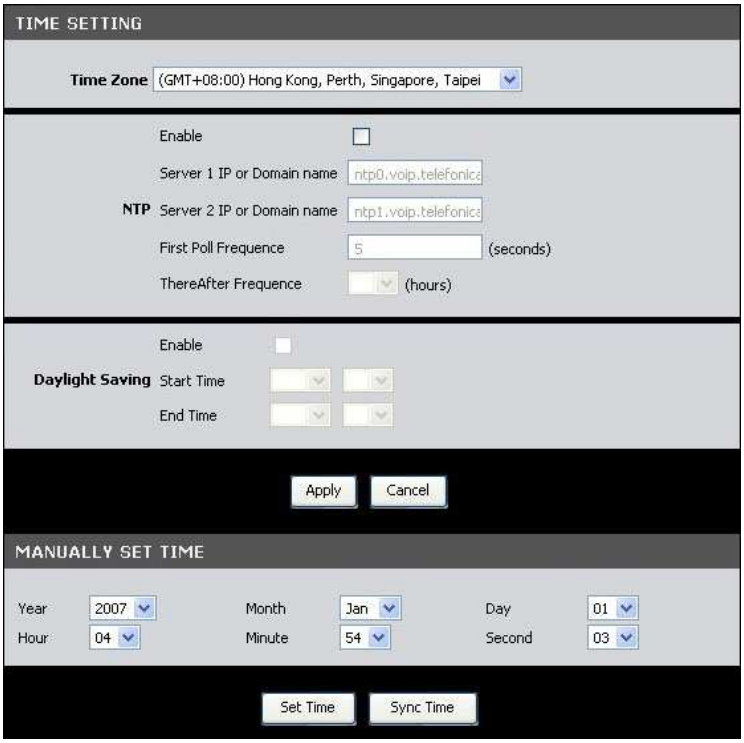
MAC Address – Enter the MAC address of the device to reserve the IP address to.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

5.4 Time and Date

The Time and Date page allows you to manually configure the time and date of your network or to synchronize with a Network Time Protocol (NTP) server.

To access the Time and Date page, click **SETUP** > **Time and Date**.



Time Zone – Select the time zone in your location. To set the network time and date according to the selected time zone, click the **Sync Time** button.

NTP (Network Time Protocol) – Check the **Enable** box to synchronize the network time and date with an NTP server.

- **Server 1 IP or Domain name**: Enter the IP address or the domain name of the NTP server to synchronize your network with.
- **Server 2 IP or Domain name**: Enter the IP address or the domain name of another NTP server to synchronize your network with in case Server 1 is not available.
- **First Poll Frequency**: Enter the number in seconds of the first poll.
- **ThereAfter Frequency**: Select the succeeding frequency from the drop-down list.

Daylight Saving – Check the **Enable** box to enable daylight saving time.

- **Start Time**: Select the month and the day to start the daylight saving time.
- **End Time**: Select the month and the day to end the daylight saving time.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

To manually set the time and date of your network, select the **Year**, **Month**, **Day**, **Hour**, **Minute**, and **Second** from their corresponding drop-down lists. Click the **Set Time** button to apply the changes.

Chapter 6: Advanced

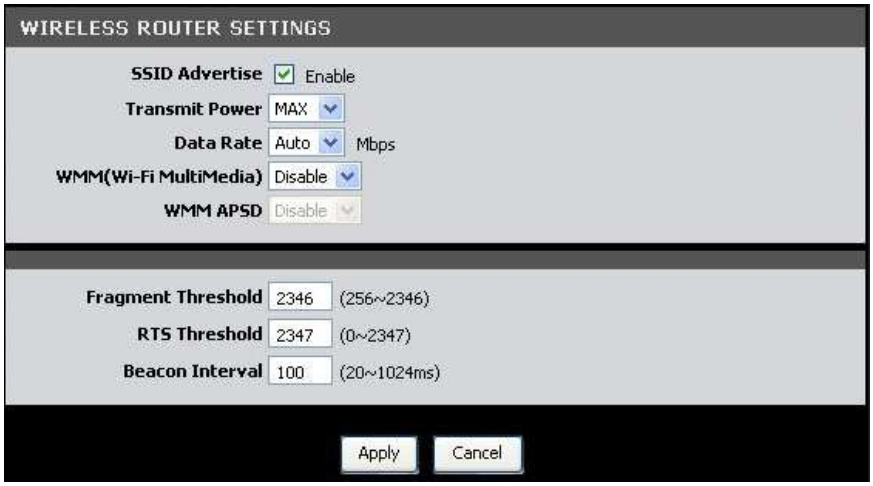
The Advanced menu configurations greatly affect the operating performance of your Modem Router. This menu is intended for advance users. It is recommended to retain the default settings if you are unsure about them.

6.1 Advanced Wireless

Wireless Router Settings

This page allows you to configure advanced wireless router settings.

Click **Advanced** > **Advanced Wireless** > **Advanced Wireless** or click the **Advanced Setting** button.



SSID Advertise –Check this box to allow wireless devices scanning the area for wireless networks to detect your Modem Router.

Transmit Power – Select the output power of the wireless LAN.

WMM (Wi-Fi Multimedia) – Select whether to enable or disable WMM. The WMM feature enhances the Quality of Service (QoS) of a network that is used by multimedia applications such as Voice-over-IP (VoIP) and video. If WMM is enabled, multimedia applications on your network have priority over regular data packets, allowing multimedia applications to run smoother and with fewer errors.

WMM APSD – If WMM is enabled, you can also select whether to enable or disable WMM APSD (Automatic Power Save Delivery). APSD manages radio usage for battery-powered devices to allow longer battery life in certain conditions.

Fragment Threshold – Fragment threshold refers to the maximum size of a packet before data is fragmented into multiple packets. The

default and recommended value is 2346 bytes. If you experience a high packet error rate, you may slightly adjust the value. Setting the fragment threshold too low may result in poor network performance.

RTS Threshold – The default and recommended value is 2347. Should you encounter inconsistent data flow, only slight modifications should be made.

Beacon Interval – Enter a value in milliseconds. A beacon is a packet that is sent out by the Modem Router to synchronize the wireless network. The beacon interval value indicates the frequency interval of the beacon. The default value is 100.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

MBSSID Settings

This page allows you to configure up to four virtual access points (VAP).

Click **Advanced** > **Advanced Wireless** > **MBSSID Setting** or click the **MBSSID Setting** button.

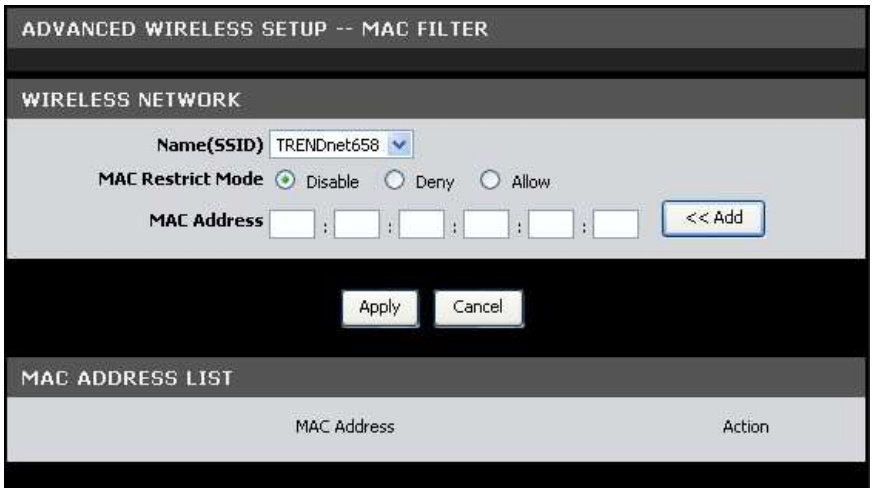
Check the **Enabled** box of the VAP to enable it. If you enable a VAP, you can modify its **SSID** and check its **SSID Advertise** box to allow wireless devices scanning for a wireless network to detect the VAP.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

Wireless MAC Filter

This page allows you to deny or allow devices to access the wireless network by filtering their MAC addresses.

Click **Advanced** > **Advanced Wireless** > **Wireless MAC Filter** or click the **MAC Filter** button.



Name (SSID) – Select the SSID from the drop-down list.

To Set MAC Filter

Do the following to deny or allow a device to access to the wireless network.

1. Select the **MAC Restrict Mode**. Options are:
   - **Disable**: No restriction.
   - **Deny**: To deny access to the wireless network.
   - **Allow**: To allow access to the wireless network.
2. On the **MAC Address** field, enter the MAC address of the device that you want to deny or allow access.
3. Click the **Add** button to add the MAC address to the MAC ADDRESS LIST.
4. Click the **Apply** button to apply the MAC filter or click the **Cancel** button to discard your changes.

To Remove MAC Filter

1. On the MAC ADDRESS LIST, click the icon to remove the restriction on the corresponding MAC filter.
2. When prompted, click **OK** to confirm.

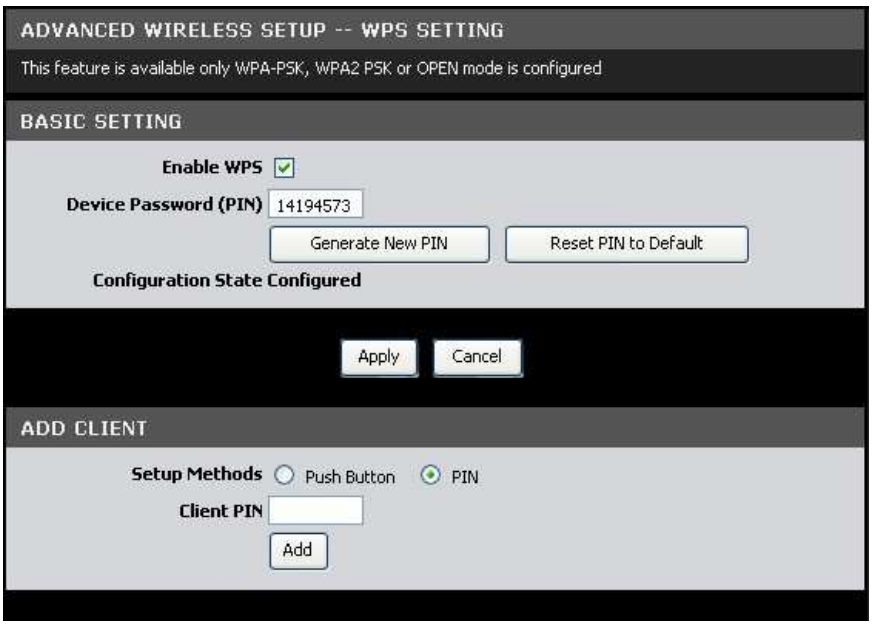
WPS Setting

Wi-Fi Protected Setup (WPS) is designed to make wireless setup easy and yet secure. Users do not need to know the network SSID and passphrases to use WPS to join the wireless network.

This page allows you to enable WPS-supported devices to connect to your Modem Router.

NOTE: This feature is available only in **WPA-PSK**, **WPA2PSK**, or **OPEN** mode.

Click **Advanced** > **Advanced Wireless** > **WPS Setting** or click the **WPS Setting** button.



Basic Setting

Enable WPS – Check this box to enable the WPS function.

Device Password (PIN) – Displays the PIN password. To generate a new PIN, click the **Generate New PIN button**. To reset the PIN to default, click the **Reset PIN to Default** button.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

Add Client

Setup Methods – Select one of the following:

- **Push Button**: Select to connect WPS-supported devices with a push of a button.
- **PIN**: Select to prompt WPS-supported devices to enter the PIN before allowing access to the wireless network.

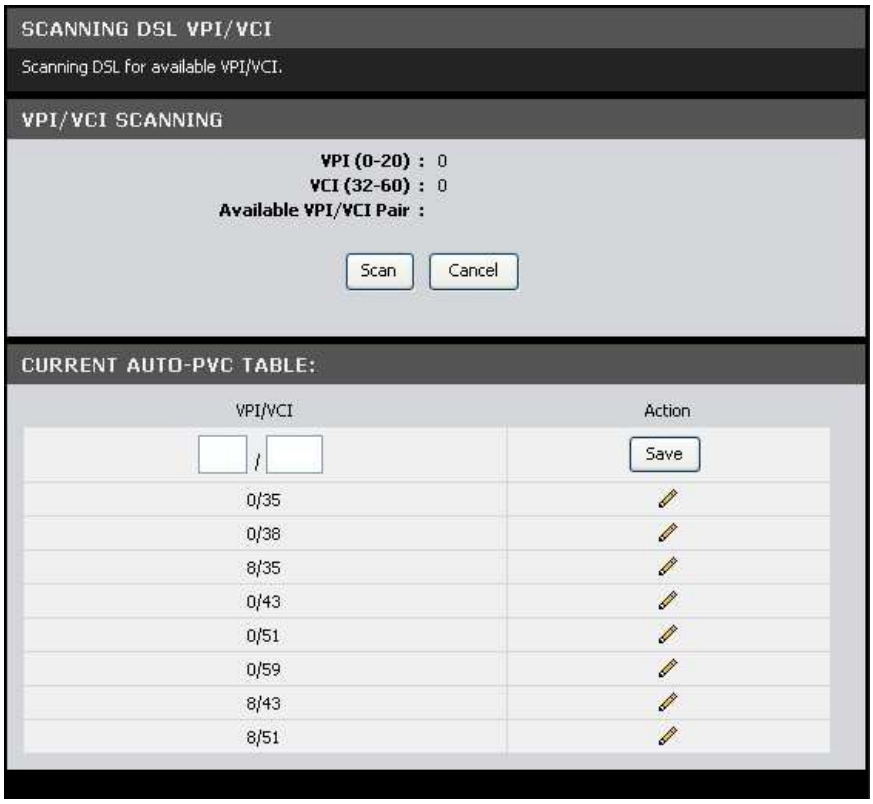
- **Client PIN**: Enter the WPS-supported device's PIN. This PIN is used to connect to your Modem Router. Click the **Add** button to apply the configuration.

6.2 Multi-WAN

DSL Auto Scan

This page allows you to scan your DSL line for available VPI/VCI.

To access the DSL Auto Scan page, click **Advanced** > **Multi-WAN** > **DSL Auto Scan** or click the **DSL Auto Scan** button.



VPI/VCI Scanning

Click the **Scan** button to start scanning your DSL line for available VPI/VCI. Scanning may take several minutes. Click the **Cancel** button to stop scanning.

Current Auto-PVC Table

Displays the current PVCs. Your Modem Router supports up to 8 PVCs.

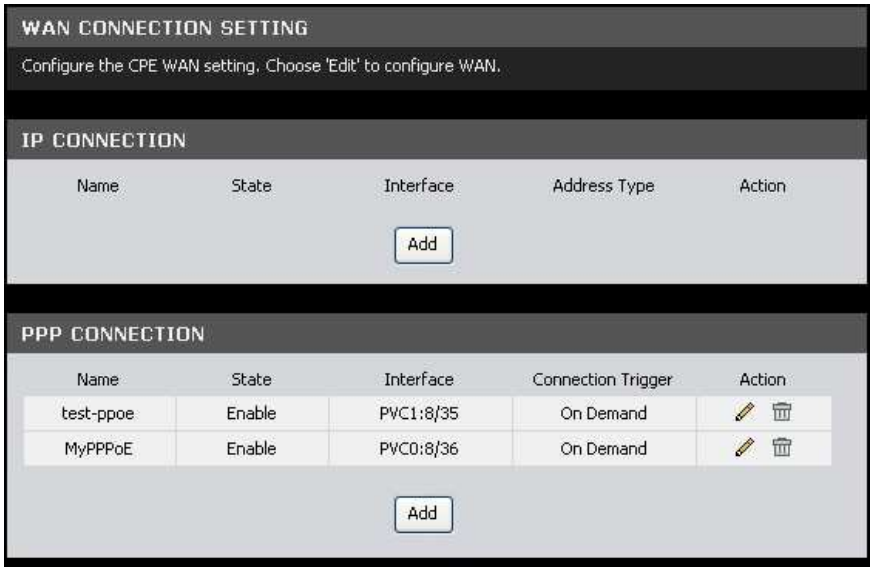
To modify an entry, do the following:

1. Click the icon. The selected entry is displayed on the editable field.
2. Enter the new VPI/VCI values.
3. Click the **Save** button.

IP/PPP Config

This page allows you to create multiple Wide Are Networks (WAN) and manually add an IP or a PPP connection.

To access the IP/PPP Config page, click **Advanced** > **Multi-WAN** > **IP/PPP Config** or click the **WAN Config** button.



To add an IP or PPP connection, do the following:

1. Click the **Add** button of the connection that you want to add.
2. On the **Interface** field, select the PVC.
3. Enter the connection settings. The screen and the required settings vary depending on the type of connection that you want to add. See “Protocol” on page 26 for more information.
4. Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

To edit an IP or PPP connection, click the corresponding icon.

To delete an IP or PPP connection, click the corresponding icon.

Default Route

This page allows you to change the default route of your Modem Router.

To access the Default Route page, click **Advanced** > **Multi-WAN** > **Default Route** or click the **Default Route** button.

Change Default Route – Select the connection to set as the default route from the drop-down list.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

6.3 Advanced-LAN

This page allows you to add multiple LAN IP addresses.

To access the Advanced-LAN page, click **Advanced** > **Advanced-LAN**.

Config Spanning Tree

Spanning Tree Enable – Check this box to enable spanning tree.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

Add IP Interface

To add an IP interface, do the following:

1. On the first record on the table, enter the **IP Address** and **Subnet Mask**.
2. Check the **Enable** box to enable the IP interface.
3. Click the **Add** button. The new entry is listed on the bottom of the list.

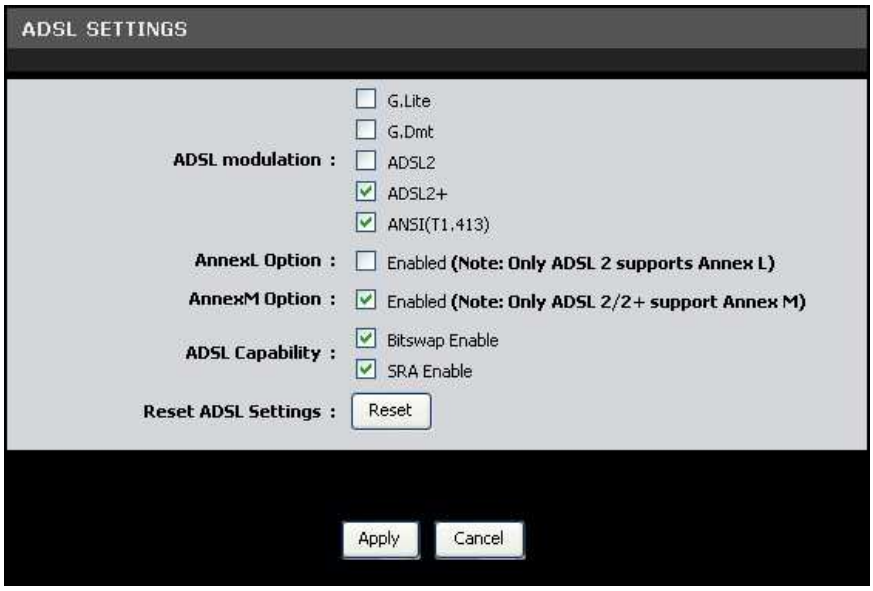
To apply the IP interface, click the corresponding **Apply** button.

To delete the IP interface, click the corresponding **Delete** button.

6.4 ADSL Settings

This page allows you to select ADSL modulations, capabilities, and other options. Consult your ISP to determine the appropriate settings.

To access the ADSL Settings page, click **Advanced** > **ADSL Settings**.



Check a corresponding box to select the option.

To reset the ADSL settings, click the **Reset** button.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

6.5 RIP Settings

A Routing Information Protocol (RIP) is an Internet protocol that is used to share routing information table with other routing devices on the local and wide area network.

To access the RIP Settings page, click **Advanced** > **RIP Settings**.

To add RIP settings, do the following:

1. Select the **Interface**.
2. On the **Receive Mode** and **Send Mode** drop-down lists, select the appropriate versions.

NOTE: The selected versions should match the versions supported by the other routers on your network.

3. Click the **Add** button.

To delete an RIP setting, click the corresponding button.

6.6 NAT

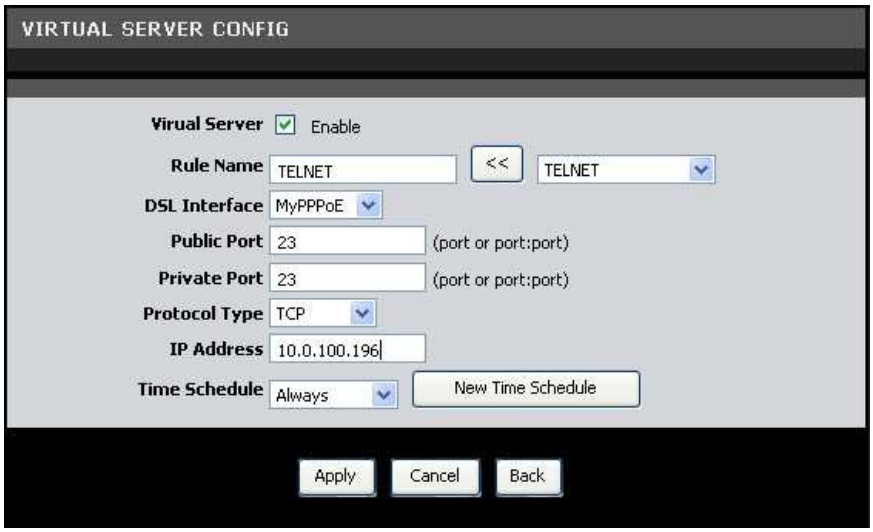
Virtual Server

A virtual server allows remote devices accessing the Web or FTP services via a public IP address be redirected to local servers in the LAN. Depending on the requested service (TCP/UDP port number), your Modem Router redirects the external service request to the appropriate server in the LAN.

To access the Virtual Server page, click **Advanced** > **NAT** > **Virtual Server** or click the **Virtual Server** button.

The table displays the virtual servers on your network. To edit an entry, click the corresponding icon. To delete an entry, click the corresponding button.

To add virtual servers, click the **Add** button. The Virtual Server Config screen is displayed.



Virtual Server – Check this box to enable the virtual server function.

Rule Name – Enter a rule name or select an application name from the drop-down list on the right, then click the **<<** button. If you select a predefined application name, the **Public Port**, **Private Port**, and **Protocol Type** are automatically configured.

DSL Interface – Select a DSL interface from the drop-down list.

Public Port – Enter the public port. This is the port seen from the WAN side.

Private Port – Enter the private port. This is the port being used by applications within your local network.

> **NOTE:** The public and private ports are usually the same.

Protocol Type – Select the protocol from the drop-down list.

IP Address – Enter the local network IP address of the system hosting the server.

Time Schedule – Select a schedule when to use the virtual server or click the **New Time Schedule** button to create a new schedule.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

Port Trigger

This page displays the port trigger settings on your network. Port triggering is a type of port forwarding where outgoing data from specific ports are sent to specific incoming ports.

To access the Port Trigger page, click **Advanced** > **NAT** > **Port Trigger** or click the **Port Trigger** button.

The table displays the port triggers on your network. To edit an entry, click the corresponding icon. To delete an entry, click the corresponding button.

To add port triggers, click the **Add** button. The Port Trigger Config screen is displayed.

Port Trigger – Check this box to enable port triggering.

Rule Name – Enter a rule name.

Use Interface – Select a DSL interface from the drop-down list.

Trigger Port – Enter the port that will trigger the device to open ports for incoming data.

Trigger Port Protocol – Select the trigger port protocol from the drop-down list.

Public Port – Enter the public port to be opened.

Public Port Protocol – Select the public port protocol.

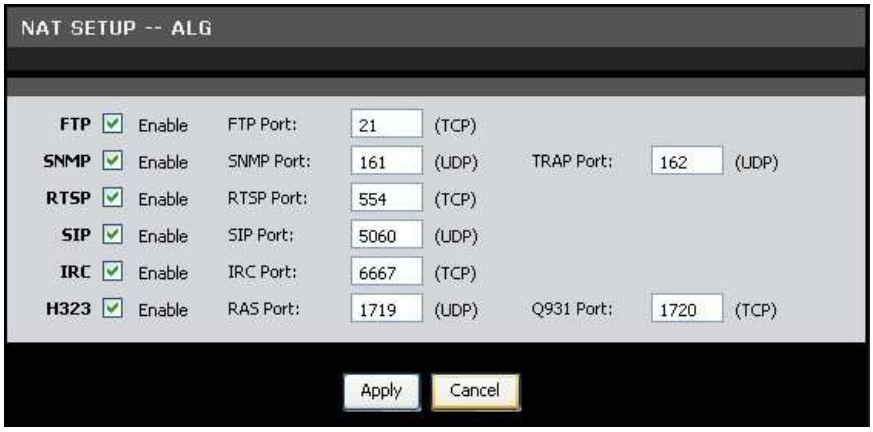
Time Schedule – Select a schedule to apply port triggering from the drop-down list or click the **New Time Schedule** button to create a new schedule.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

ALG

Application Layer Gateway (ALG) consists of a security component that augments NAT or a firewall. Your Modem Router allows NATs to support address and port translation for certain application layer protocols such as FTP, SNMP, and others.

To access the ALG page, click **Advanced** > **NAT** > **ALG** or click the **ALG Setting** button.



FTP – File Transfer Protocol (FTP) is used to transfer files between computers on a TCP/IP based network, such as the Internet. Check this box to enable this function to work through your Modem Router.

SNMP – Simple Network Management Protocol (SNMP) is a network protocol used to monitor the devices connected to a network. Check this box to enable this function to work through your Modem Router.

RTSP – Real Time Streaming Protocol (RTSP) is a network protocol used for entertainment and communication systems to control streaming media sessions. Check this box to enable this function to work through your Modem Router.

SIP – Session Initiation Protocol (SIP) is a signaling protocol used to control multimedia communication sessions such as voice and video calls over Internet Protocol (IP). Check this box to enable this function to work through your Modem Router.

IRC – Internet Relay Chat (IRC) is a real-time Internet chatting protocol designed for group communications. Check this box to enable this function to work through your Modem Router.

H323 – H.323 is a standard that provides audio-visual communication sessions on a network. It is widely implemented in voice and video conferencing equipments and is used within various Internet real-time applications such as NetMeeting. Check this box to enable this function to work through your Modem Router.

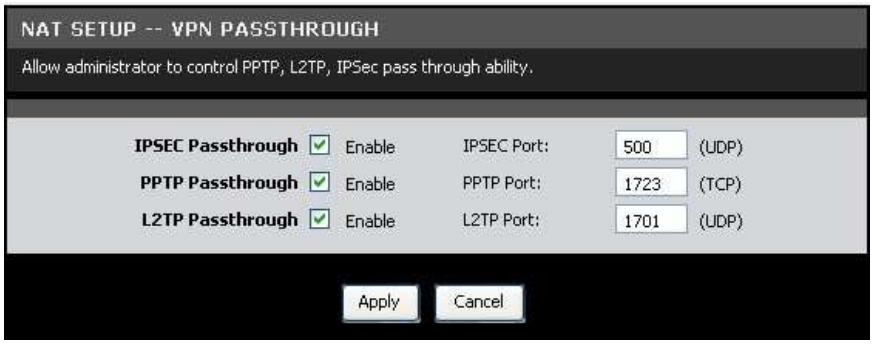
It is recommended to retain the default ports of these protocols.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

VPN Passthrough

This page allows you to control VPN tunnels using IPSEC, PPTP, and L2TP protocols to pass through your Modem Router.

To access the VPN Passthrough page, click **Advanced** > **NAT** > **VPN Passthrough** or click the **VPN Setting** button.



IPSEC Passthrough – Internet Protocol Security (IPSec) is a protocol suite used to secure IP communications by authenticating and encrypting IP packets. Check this box to enable this function to work through your Modem Router.

PPTP Passthrough – Point-to-Point Tunneling Protocol (PPTP) allows Point-to-Point protocol (PPP) to be tunneled through a network. Check this box to enable this function to work through your Modem Router.

L2TP Passthrough – Layer 2 Tunneling Protocol (L2TP) is an extension to the PPP protocol that enables ISPs to operate VPNs. Check this box to enable this function to work through your Modem Router.

It is recommended to retain the default ports of these protocols.

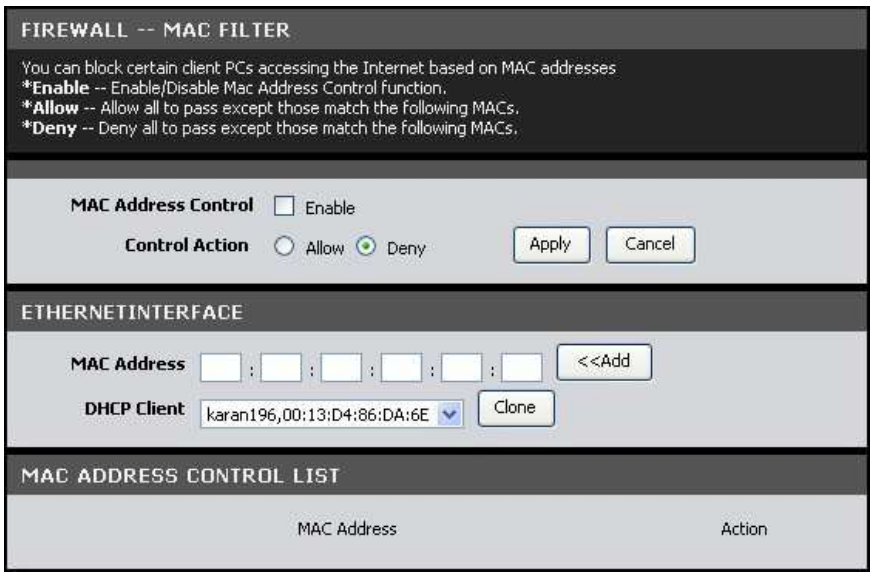
Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

6.7 Firewall

MAC Filter

This page allows you to set up a list of MAC addresses which will be allowed or restricted to access the Internet.

To access the MAC Filter page, click **ADVANCED** > **Firewall** > **MAC Filter** or click the **MAC Filter** button.



MAC Address Control – Check this box to enable the MAC filter function.

Control Action – Select **Allow** to allow a specified MAC address to access the Internet or **Deny** to restrict a specified MAC address access to the Internet.

Click the **Apply** button to save and activate the MAC filter or click the **Cancel** button to discard your changes.

MAC Address – Enter the MAC address of the device you want to allow or deny access to the Internet. To use the MAC address of the DHCP client, click the **Clone** button. The MAC address is automatically copied to the MAC address field. Click the **Add** button to add the MAC address to the filter list.

The MAC ADDRESS CONTROL LIST displays the MAC address of the devices that are either allowed or denied access to the Internet. To remove an entry from the list, click the corresponding button.

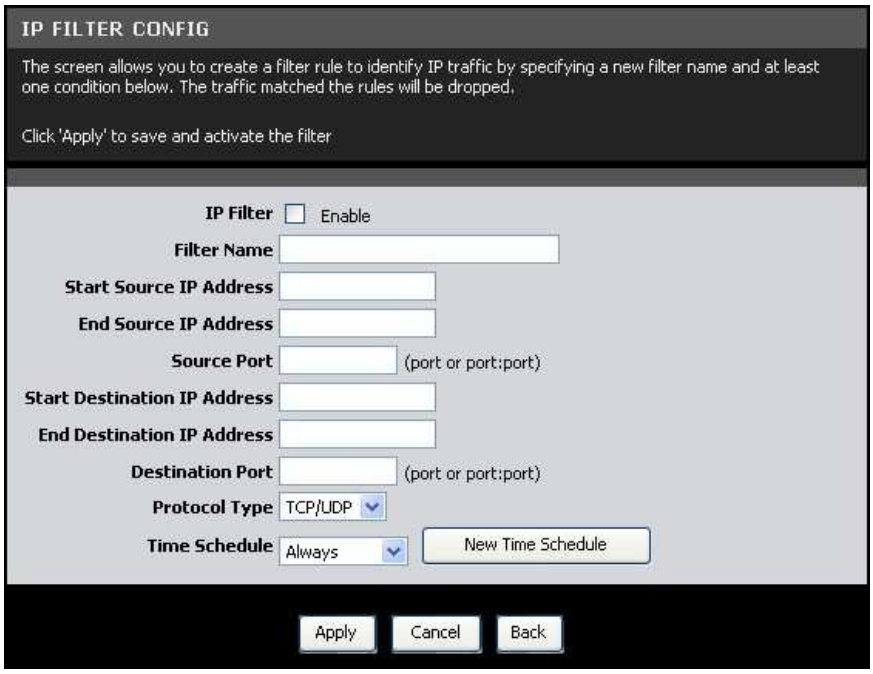
IP Filter

This page allows you to create filter rules to control outgoing traffic to the Internet based on a range of IP addresses and their protocols.

To access the IP Filter page, click **ADVANCED** > **Firewall** > **IP Filter** or click the **IP Filter** button.

The table lists the existing filter rules. To edit an entry, click the corresponding icon. To delete a entry, click the corresponding button.

To add a filter, click the **Add** button. The IP Filter Config screen is displayed.



IP Filter – Check this box to enable IP filtering.

Filter Name – Enter a filter rule name.

Start Source IP Address – Enter the starting point of the source IP address.

End Source IP Address – Enter the ending point of the source IP address.

Source Port – Enter the source port number.

Start Destination IP Address – Enter the starting point of the destination IP address.

End Destination IP Address – Enter the ending point of the destination IP address.

Destination Port – Enter the destination port number.

Protocol Type – Select the protocol from the drop-down list.

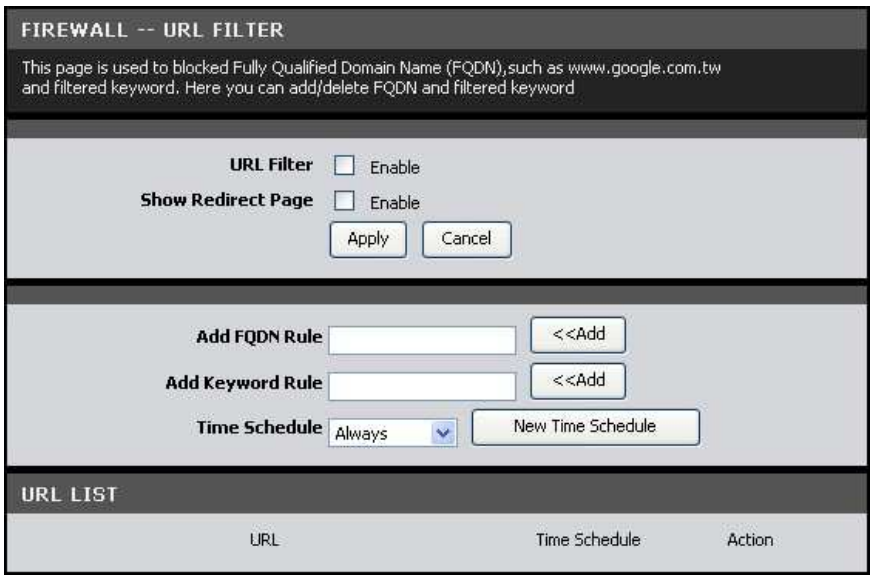
Time Schedule – Select the time to implement the IP filter or click the **New Time Schedule** button to create a new schedule.

Click the **Apply** button to save and activate the filter or click the **Cancel** button to discard your changes.

URL Filter

This page allows you to deny network devices to access specific URLs or URLs that contain specific keywords.

To access the URL Filter page, click **ADVANCED** > **Firewall** > **URL Filter** or click the **URL Filter** button.



URL Filter – Check this box to enable URL filtering.

Show Redirect Page – Check this box to redirect devices to another website when the website they are trying to access is blocked.

Click the **Apply** button to save and activate the filter or click the **Cancel** button to discard your changes.

To Filter a URL

1. On the **Add FQDN Rule** field, enter a Fully Qualified Domain Name (FQDN) that you want to block.

NOTE: For example, if you block www.google.com, all websites with google.com, such as mail.google.com, are also blocked.

2. Select the time to implement the URL filter or click the **New Time Schedule** button to create a new schedule.
3. Click the **Add** button of the Add FQDN Rule. The entry is listed on the URL LIST table.

To Filter Keyword

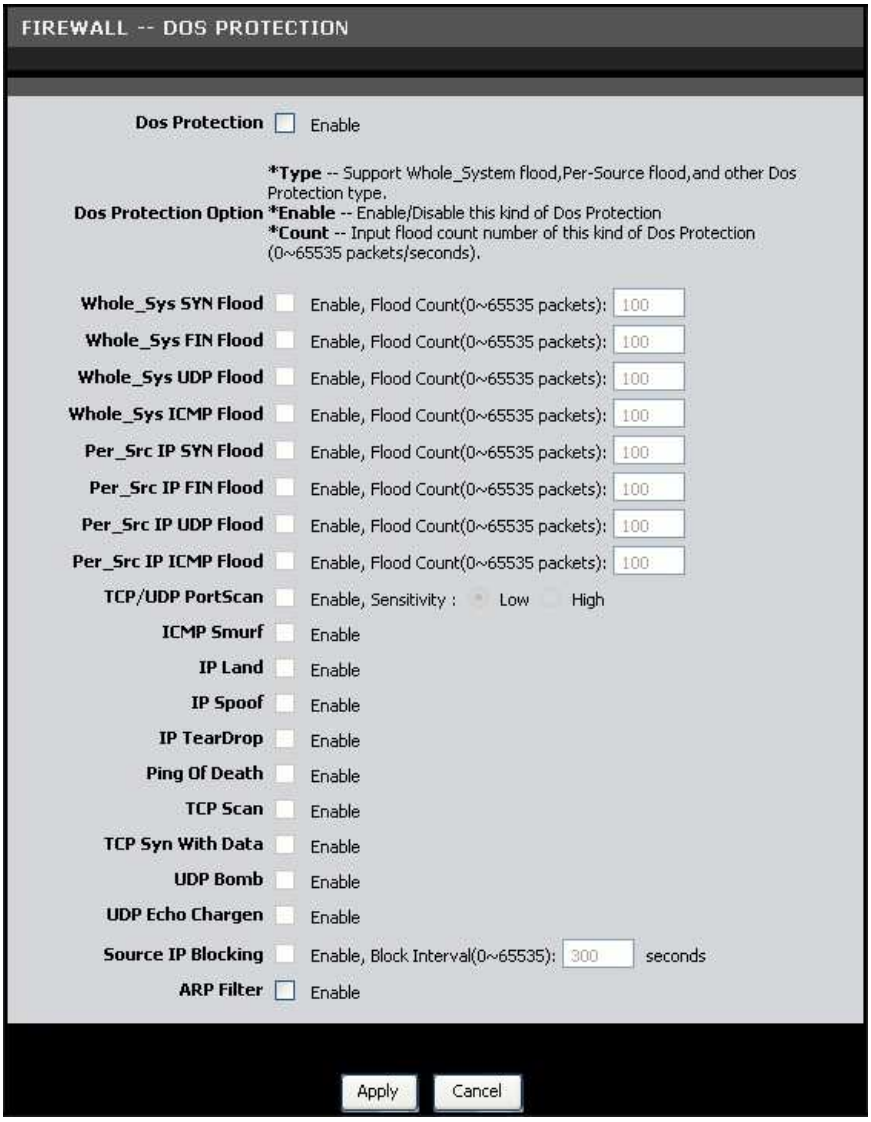
1. On the **Add Keyword Rule** field, enter a keyword. If a part of the URL contains this keyword, the website will not be accessible.
2. Select the time to implement the URL filter or click the **New Time Schedule** button to create a new schedule.
3. Click the **Add** button of the Add Keyword Rule. The entry is listed on the URL LIST table.

To delete an entry, click the corresponding button.

DOS Protection

This page allows you to protect your network from hackers to run Denial of Service (DoS) attacks.

To access the DOS Protection page, click **ADVANCED** > **Firewall** > **DOS Protection** or click the **DOS Protection** button.



Dos Protection – Check this box to enable DoS protection.

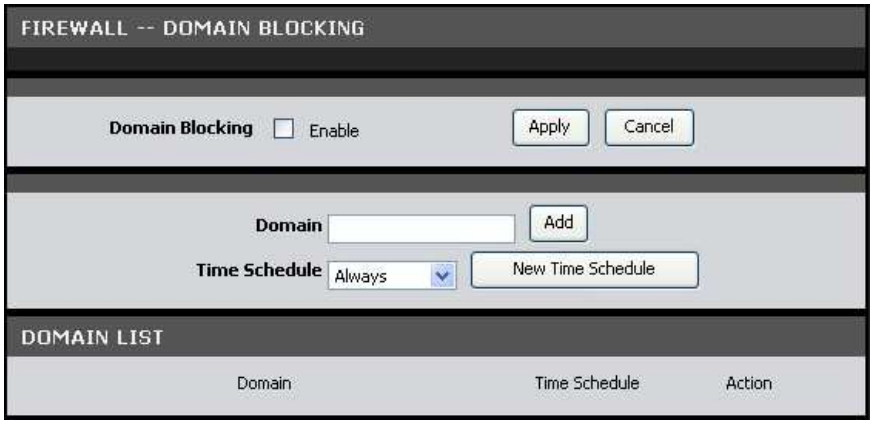
Dos Protection Option – Check the appropriate boxes to enable protection from SYN flood, FIN flood, UDP flood, ICMP flood, SMURF, IP spoofing, and others. Enter the flood count numbers or retain the default values if you are unsure about them.

Check the **Apply** button to save and activate DoS protection or click the **Cancel** button to discard your changes.

Domain Blocking

This page allows you to deny network devices to access specific domains such as an http and an ftp.

To access the Domain Blocking page, click **ADVANCED** > **Firewall** > **Domain Blocking** or click the **Domain Blocking** button.



Domain Blocking – Check this box to enable domain blocking. Click the **Apply** button to activate domain blocking.

To Block Domains

1. On the **Domain** field, enter the domain name to block.
2. Select the time to implement the domain blocking or click the **New Time Schedule** button to create a new schedule.
3. Click the **Add** button to add the domain. The entry is listed on the DOMAIN LIST table.

To delete an entry, click the corresponding icon.

DMZ

A DMZ (Demilitarized Zone) sets a single computer, called a DMZ host, on your network to have unrestricted Internet access. This function is useful for gaming purposes or when a computer on your network cannot access the Internet properly. However, this places the DMZ host outside the firewall and exposes it to security risks.

To access the DMZ page, click **ADVANCED** > **Firewall** > **DMZ** or click the **DMZ** button.

DMZ – Check this box to enable DMZ.

DSL Interface – Select the DSL interface to activate DMZ from the drop-down list.

DMZ Host IP Address – Enter the IP address of the computer to set as the DMZ host.

Check the **Apply** button to save and activate DMZ.

SPI Settings

SPI (Stateful Packet Inspection) filters more kinds of attacks by closely examining packet data structures.

To access the SPI Settings page, click **ADVANCED** > **Firewall** > **SPI Settings** or click the **SPI Settings** button.

SPI Enable – Select whether to enable or disable the SPI function.

Endpoint Filter – Select an endpoint filter option:

- **Independent**: Forwards all incoming traffic from an open port to the application that opened the port.
- **Restrict**: Incoming traffic must match the IP address of the outgoing connection.

Log Dropped Packet Enabled – Select whether to enable or disable logging of dropped packets from your network or the Internet.

Click the **Apply** button to save and activate the SPI settings.

6.8 Packet Filter

Filters & Rules

This page allows you to create packet filters and rules. These filters are used to check each data that passes within your network. If the packet data does not meet the requirements, the packet is either dropped or rejected.

To access the Filters & Rules page, click **ADVANCED** > **Packet Filter** > **Filters & Rules** or click the **Filters & Rules** button.

Filters

Click the **Add** button to create a new filter.

Name – Enter desired filter name.

> **NOTE:** The filter name cannot contain spaces.

Interface – Select the interface to implement the filter.

Type – Select **In** to filter incoming packets or select **Out** to filter outgoing packets.

Default Action – Select **Drop** to drop the packets or select **Permit** to allow packets to pass through if the rule requirement is met.

Click the **Apply** button to save the filter or click the **Cancel** button to discard your changes.

The new entry is listed on the FILTERS table. An **Index** and **Key** are automatically assigned to each filter that you create. The **Key** is used to identify the filter when assigning rules.

To edit a filter, click the corresponding icon. To delete a filter, click the corresponding icon.

Rules

After creating filters, click the **Add** button to set the rules on how to implement the filters.

Filter Key – Select the filter to assign the rule.

Enable – Check this box to enable this rule.

Protocol – Select a protocol from the drop-down list. Options are **TCP**, **UDP**, or **ICMP**.

Action – Select the action to execute when the rule requirement is met. Options are:

- **Drop**: Select to drop the packets if the rule requirement is met.
- **Permit**: Select to allow packets to pass through if the rule requirement is met.
- **Reject**: Select to reject the packets if the rule requirement is met. Select the **Reject Type** from the drop-down list.

Depending on the selected protocol and the selected action, the fields below may or may not be displayed on the screen.

Origin IP Address – Enter the IP address of the origin of the packets.

Origin Mask – Enter the subnet mask of the origin of the packets.

Destination IP Address – Enter the IP address of the destination of the packets.

Destination Mask – Enter the subnet mask of the destination of the packets.

Origin Start Port and **Origin End Port** – Enter the starting and ending port range of the origin of the packets.

Destination Start Port and **Destination End Port** – Enter the starting and ending port range of the destination of the packets.

ICMP Type – Select an ICMP type from the drop-down list. If the selected type is met, the filter is implemented.

Click the **Apply** button to save and activate the rule or click the **Cancel** button to discard your changes.

Statistics

This page displays the filter and rule statistics.

To access the Statistics page, click **ADVANCED** > **Packet Filter** > **Statistics** or click the **Statistics** button.

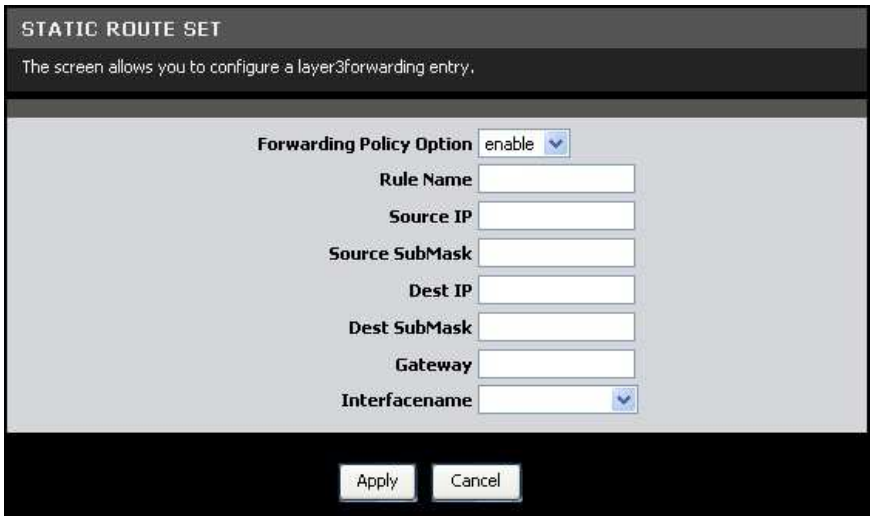
Click the **Refresh** button to refresh the list.

6.9 Static Route

This page allows you to create routing tables.

To access the Static Route page, click **ADVANCED** > **Static Route**.

Click the **Add** button to create a static route.



Forwarding Policy Option – Select whether to enable or disable routing.

Rule Name – Enter desired rule name.

Source IP – Enter the source IP address.

Source SubMask – Enter the source subnet mask.

Dest IP – Enter the destination IP address.

Dest SubMask – Enter the destination subnet mask.

Gateway – Enter the gateway.

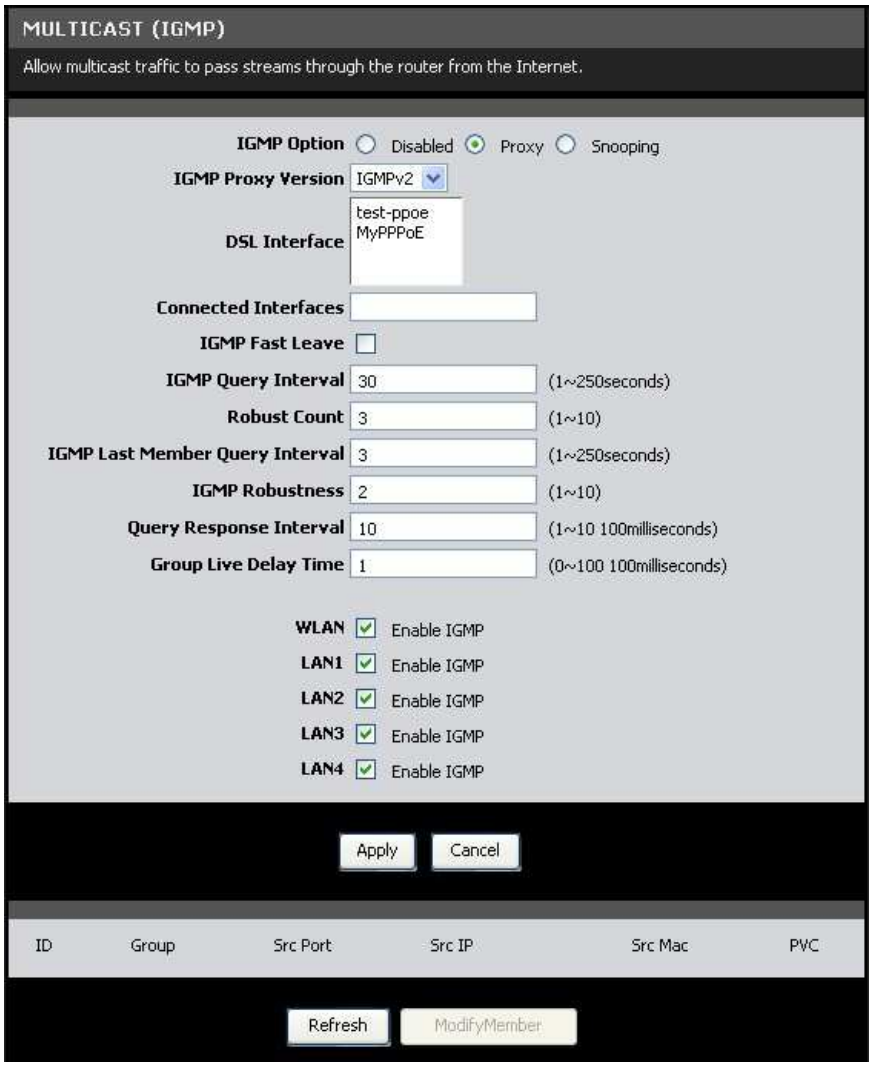
Interface name – Select the interface to implement the routing.

Click the **Apply** button to save and activate the static route or click the button to discard your changes.

6.10 Multicast

Internet Group Management Protocol (IGMP) manages members of groups of devices, called IP multicast groups. IGMP is used by IP hosts and adjacent multicast routers to establish multicast group membership. It is an integral part of the IP multicast specification, like ICMP for unicast connections. IGMP is used for online video and gaming, and allows more efficient use of resources that support these applications.

To access the Multicast page, click **ADVANCED** > **Multicast**.



IGMP Option – Select an IGMP option. Options are: Disabled, Proxy, and Snooping.

IGMP Fast Leave – Check this box to enable IGMP fast leave.

IGMP Proxy

IGMP proxy enables your Modem Router to forward multicasts traffics between LAN and WAN networks. Select **IGMP Proxy Version** and **DSL Interface**. Enter values for **IGMP Query Interval**, **Robust Count**, **IGMP Last Member Query Interval**, **IGMP Robustness**, **Query**

Response Interval, and **Group Live Delay Time**. If you are unsure about them, leave the default values.

IGMP Snooping

With IGMP snooping, your Modem Router can make intelligent multicast forwarding to connections that have group members attached. As a result, IGMP snooping prevents or reduces traffic on the interface that is not registered as a receiver of a specific multicast group.

Select **IGMP Proxy Version**. Enter values for **IGMP Query Interval**, **Robust Count**, **IGMP Last Member Query Interval**, **IGMP Robustness**, **Query Response Interval**, and **Group Live Delay Time**.

Check the boxes to enable IGMP for **WLAN**, **LAN1**, **LAN2**, **LAN3**, and **LAN4**.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

6.11 Dynamic DNS

Each time your Modem Router connects to the Internet, your ISP assigns a different IP address to your device. In order to access your device from the WAN side, you need to manually track the IP that is currently used. The Dynamic DNS (DDNS) feature allows you to register your device with a DNS server and use the same host name to access your device.

To access the Dynamic DNS page, click **ADVANCED** > **Dynamic DNS**.

The table lists the current DDNS. To edit an entry, click the corresponding icon. To delet an entry, click the corresponding icon.

To add DDNS, click the **Add** button.

Connection Name – Select a connection from the drop-down list.

Use Dynamic DNS Service – Check this box to register this account to the DNS server.

Service Provider – Select a service provider from the drop-down list.

> **NOTE:** Additional charges may be incurred depending on the selected service provider.

Host Name – Enter a domain name to be registered to the DNS server.

User Name – Enter the user name of your DNS account assigned by the service provider.

Password – Enter the password of your DNS account assigned by the service provider. Re-enter the password on the **Confirm Password** field.

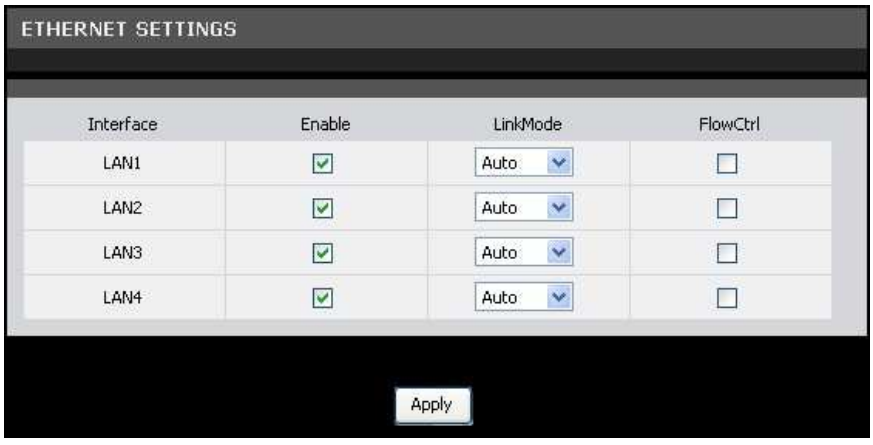
Use Wildcards – Check this box to enable searching with wildcards.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

6.12 Ethernet Setting

This page allows you to set the link mode and enable flow control for each of the four LAN ports of your Modem Router.

To access the Ethernet Setting page, click **ADVANCED** > **Ethernet Setting**.



Check the **Enable** box of the LAN interface to enable the port.

Select the **LinkMode** from the drop-down list. Options are: **Auto**, **10Half**, **10Full**, **100Half**, and **100Full**.

Check the **FlowCntrl** box of the LAN interface to enable flow control.

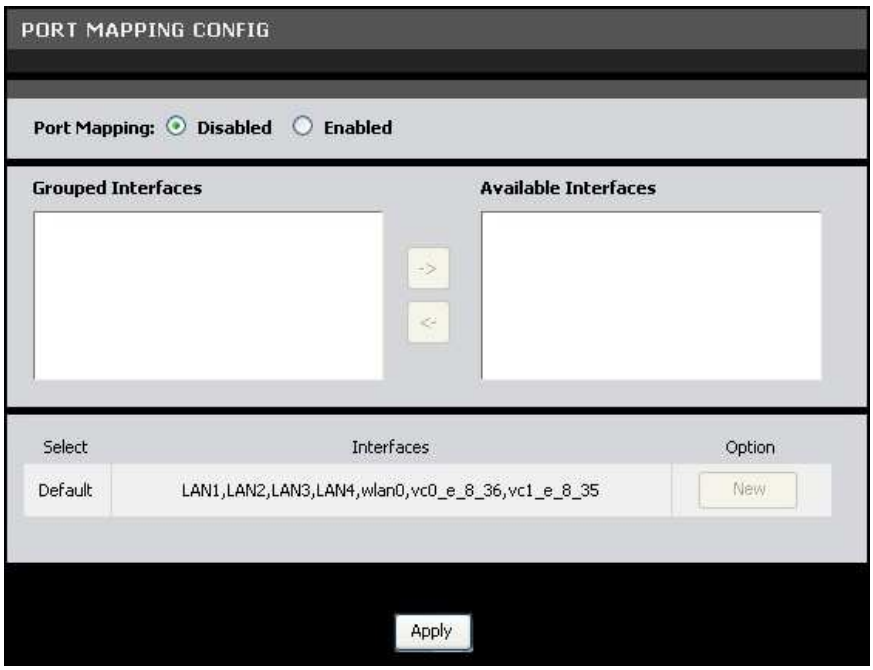
Click the **Apply** button to save your changes.

6.13 Port Mapping

Port mapping allows you to group interfaces for traffic control. Traffic is isolated from group to group. Therefore, traffic coming from an interface of a group can only be flowed to the interfaces in the same group.

By default, all interfaces belong to the **Default** group. You can create new groups and move interfaces to other groups. However, an interface can only be a member of one group.

To access the Port Mapping page, click **ADVANCED** > **Port Mapping**.



Port Mapping – Check this box to enable port mapping.

To Create New Groups

1. Click the **New** button. An empty group appears on the table.
2. Click the radio button to select the empty group.
3. Add members to the group. To do so, select an interface from the **Available Interfaces** panel. Then click the **<-** button to add the selected interface to the **Grouped Interfaces** panel.
4. Repeat step 3 to add more members to the group.
5. Click the **Apply** button to save your changes.

To Modify Groups

1. Click the radio button to select the group to modify.
2. To add a group member or remove a member from the group, select the interface, then click the <- or -> buttons.

3. Click the **Apply** button to save your changes.

To Delete Groups

Click the corresponding **Delete** button of the group to delete. The members of that group automatically revert back to the **Default** group.

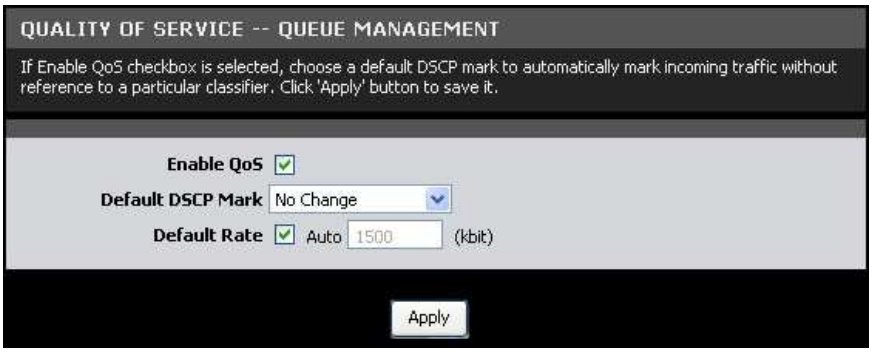
6.14 Quality of Service (QoS)

Quality of Service (QoS) is a network standard that assigns the priorities of traffic that passes through your Modem Router. This ensures that demanding real-time applications, such as video streaming, are given priority over other data.

Queue Management

This page allows you to enable QoS and choose Differentiated Services Code Point (DSCP) markings to automatically mark incoming traffic without reference to a particular classifier.

To access the **Queue Management** page, click **ADVANCED** > **Quality of Service** > **Queue Management** or click the **Queue Management** button.



Enable QoS – Check this box to enable the QoS feature.

Default DSCP Mark – Select a DSCP mark from the drop-down list. The DSCP mark is used to classify and prioritize types of packets.

NOTE: If the drop-down list does not contain the DSCP marking that you want, select either **Private DSCP value** or **Public DSCP value**.

Default Rate – Check the **Auto** box to set the rate to its auto default or uncheck the box to enter the QoS rate manually.

Click the **Apply** button to save and apply the QoS settings.

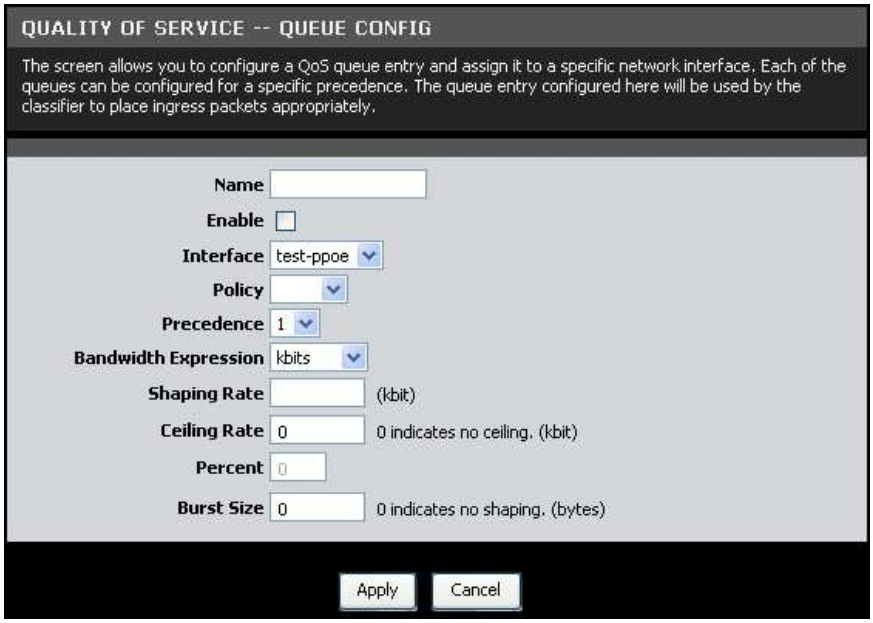
Queue Config

This page allows you to configure a QoS queue entry and assign it to a specific network interface. Each of the queues can be configured for a specific precedence. The queue configuration will be used in Queue Classification to place ingress packets appropriately.

To access the **Queue Config** page, click **ADVANCED** > **Quality of Service** > **Queue Config** or click the **Queue Config** button.

The table displays QoS queue configurations. To edit an entry, click the corresponding icon. To delete an entry, click the corresponding icon.

To configure QoS queue entries, click the **Add** button.



Name – Enter a QoS queue entry name.

Enable – Check this box to enable this queue.

Interface – Select the interface to implement this QoS queue.

Policy – Select the queue policy. Options are:

- **SP**: In Strict Priority (SP), packets with a high priority are processed first. Not until the first queue is empty will another queue be processed.
- **WFQ**: In Weighted Fair Queuing (WFQ), each queue can be given a different priority level. Each traffic is assigned to a class and each class is given its own queue.

Precedence – Select the precedence from the drop-down list.

Bandwidth Expression – Select one of the following options:

- **Kbits**: Enter the **Shaping Rate** and **Ceiling Rate**.
- **Percent**: Enter the **Percent**.

Burst Size – Enter burst size.

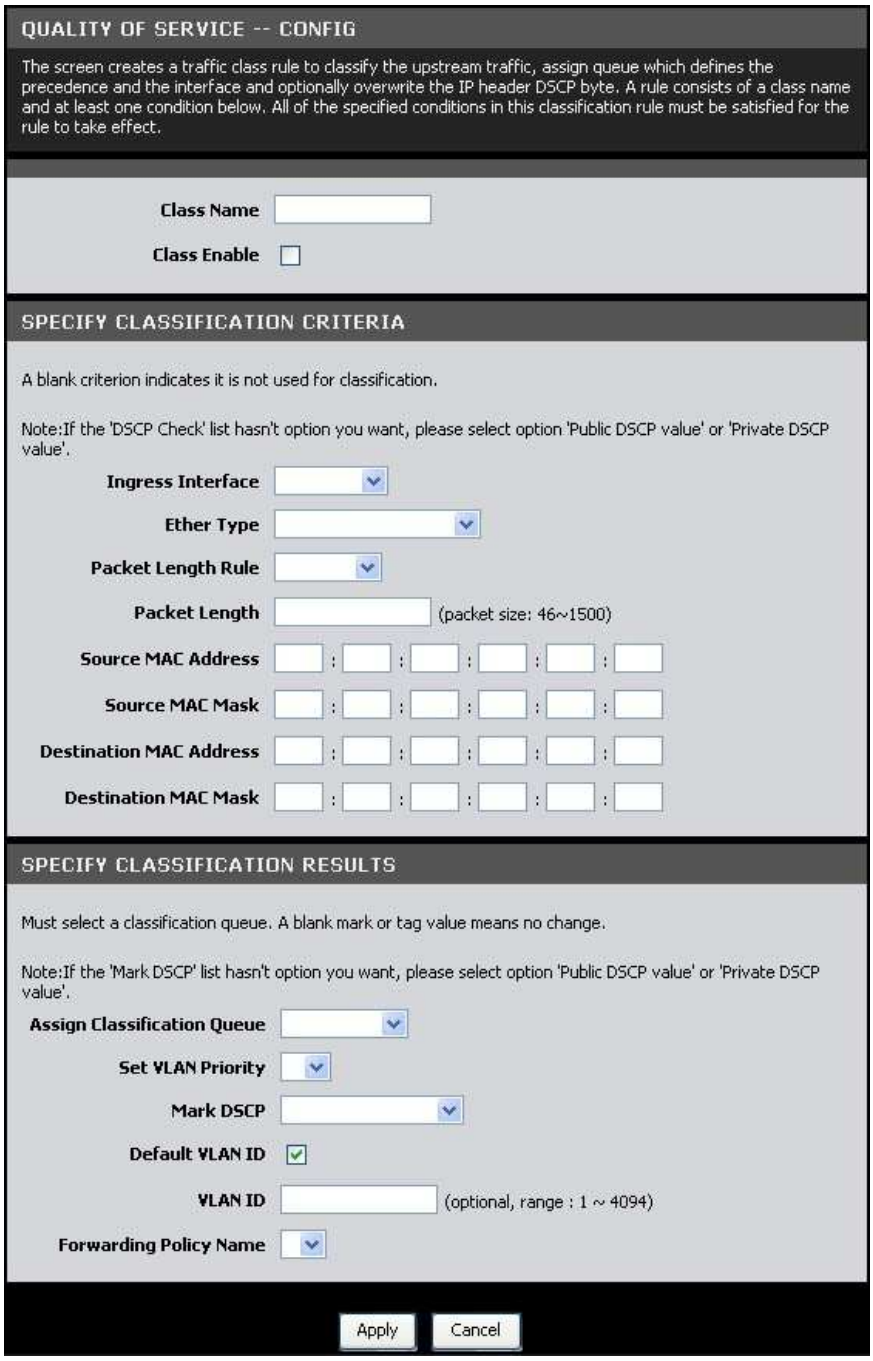
Click the **Apply** button to save the queue configuration or click the **Cancel** button to discard your changes.

Queue Classification

This page allows you to configure classification rules to classify upstream traffic and assign queues which define the precedence, interface, and optionally overwrite the IP header DSCP byte. A rule consists of a class name and at least one condition. All the specified conditions in the classification rule must be satisfied for the rule to take effect.

To access the **Queue Classification** page, click **ADVANCED** > **Quality of Service** > **Queue Classification** or click the **QoS Classification** button.

The table displays QoS queue classification rules. To edit an entry, click the corresponding  icon. To delete an entry, click the corresponding  icon.



Class Name – Enter a class name.

Class Enable – Check this box to enable the class.

Specify Classification Criteria

You can classify traffic based on ingress interface, Ether type, packet length, source or destination MAC address/ MAC Mask, or a combination of them. Select an option or enter the values on the fields that you want to use for the criteria. Otherwise, leave the fields empty.

Depending on the selected **Ether Type**, the succeeding required information may vary.

If packet length is used as a criteria, select the **Packet Length Rule** from the drop-down list and enter the **Packet Length**.

Specify Classification Results

Some fields may not be applicable; if so, leave inapplicable fields empty.

Assign Classification Queue – Select the classification queue from the drop-down list. Only enabled classification queues from the Queue Classification page are listed here.

Set VLAN Priority – To set the VLAN priority, select a priority from the drop-down list

Mark DSCP – Select the DSCP mark from the drop-down list. If the DSCP mark that you want is not listed, select either **Public DSCP value** or **Private DSCP value**.

Default VLAN ID – Check this box to use the default VLAN ID.

VLAN ID – If **Default VLAN ID** is not checked, enter preferred VLAN ID.

Forwarding Policy Name – Select the forwarding policy name from the drop-down list.

Click the **Apply** button to save and apply the settings or click the **Cancel** button to discard your changes.

QoS Status

This page allows you to view the QoS status.

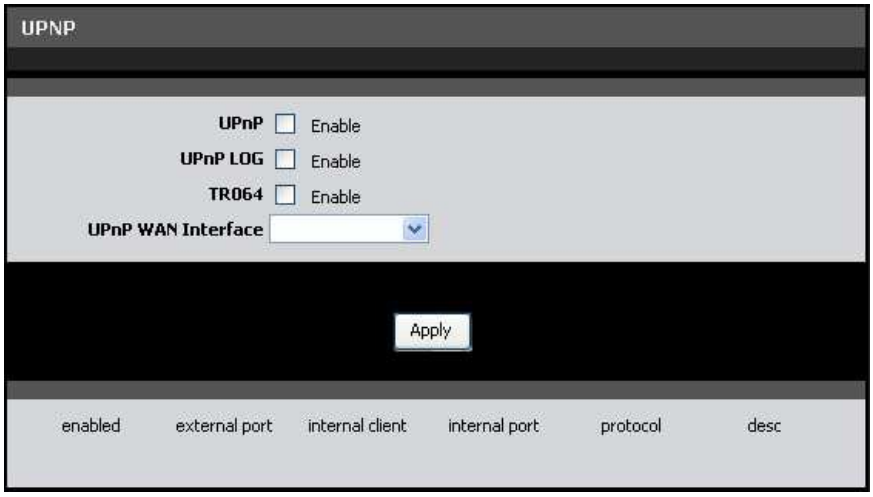
To access the **QoS Status** page, click **ADVANCED** > **Quality of Service** > **QoS Status** or click the **QoS Status** button.

Click the **Refresh** button to refresh the table.

6.15 UPnP

Universal Plug and Play (UPnP) allows automatic discovery and control of services available on the network from other devices without user intervention. This feature is commonly used for gaming and video streaming. If you feel that UPnP is a security concern, disable this feature.

To access the UPnP page, click **ADVANCED** > **UPnP**.



UPnP – Check this box to enable the UPnP feature.

UPnP LOG – Check this box to log UPnP status.

TR064 – Check this box to enable TR064.

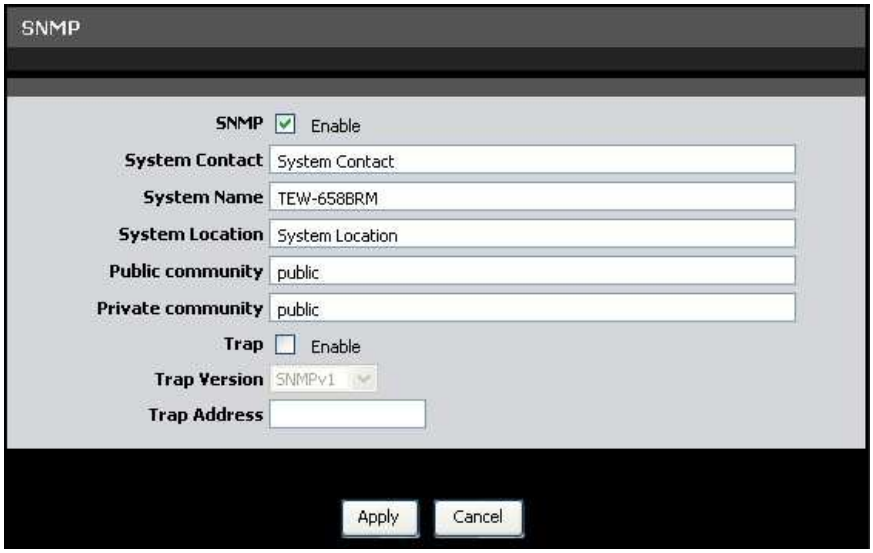
UPnP WAN Interface – Select the interface to implement UPnP.

Click the **Apply** button to save and apply the settings.

6.16 SNMP

Simplified Network Management Protocol (SNMP) is a troubleshooting and management protocol that is used to monitor the status and change the configurations of your Modem Router locally or remotely. It also allows configuring and receiving of trap messages from network devices that are configured for SNMP.

To access the SNMP page, click **ADVANCED** > **SNMP**.



SNMP – Check this box to enable SNMP.

System Contact – Enter the contact person or contact information for your Modem Router.

System Name – Enter an assigned name for your Modem Router.

System Location – Enter an assigned location for your Modem Router.

Public Community and **Private Community** – Enter a public and private community name.

Trap – Check this box to enable the Trap function, then provide the following information:

- **Trap Version**: Select an SNMP trap version from the drop-down list.
- **Trap Address**: Enter the destination IP address of the SNMP trap.

Click the **Apply** button to save and apply changes or click the **Cancel** button to discard your changes.

Chapter 7: Maintenance

The Maintenance menu allows you to configure the web-based utility settings, such as password, remote management, backup/restore options, firmware upgrades, and others.

7.1 Password

By default, the log in user name and password are “admin”. For security reasons, it is strongly recommended to change the password.

To access the Password page, click **MAINTENANCE** > **Password**.

User Name – Select the user account: **admin** or **user**.

Current Password – Enter the current password.

New Password – Enter desired password.

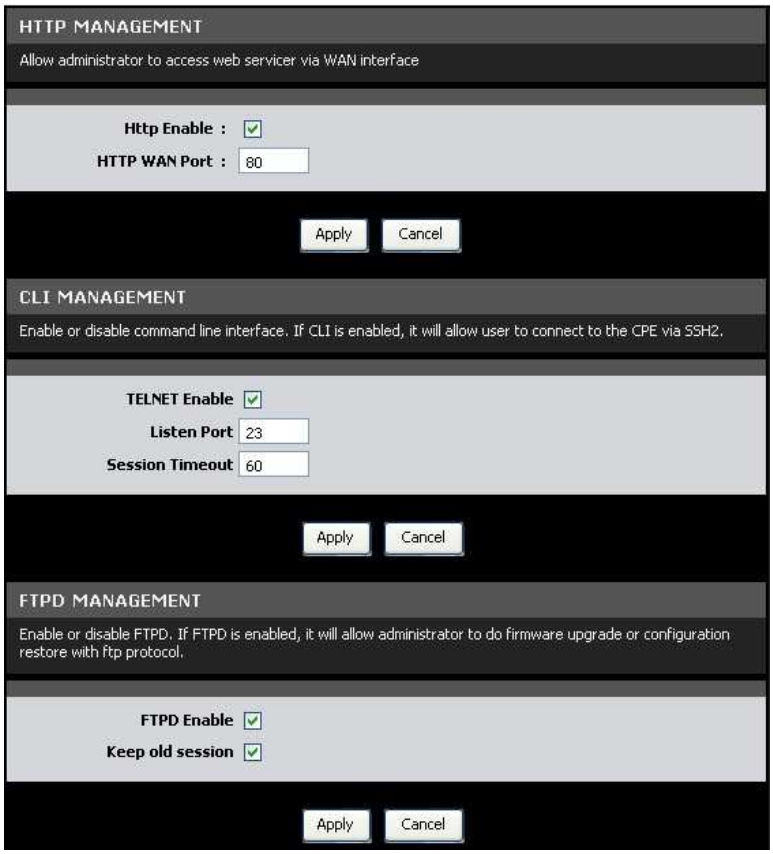
Confirm Password – Re-enter the new password.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

7.2 Remote Management

This page allows you to enable remote devices to manage your Modem Router using the Hypertext Transfer Protocol (HTTP), Command-Line Interface (CLI), and File Transfer Protocol Daemon (FTPD).

To access the Remote Management page, click **MAINTENANCE** > **Remote Management**.



HTTP Management

Check the **Http Enable** box to allow network administrators to remotely access the web-based utility via WAN interface. Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

CLI Management

Check the **TELNET Enable** box to allow network administrators to use the command-line interface.

Listen Port – Enter the Listen port.

Session Timeout – Enter the time wherein the session will automatically timeout after being idle for the specified time.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

FTPD Management

Check the **FTPD Enable** box to allow network administrators to upgrade the firmware or restore configurations using the FTP.

Keep old session – Check to retain the old session.

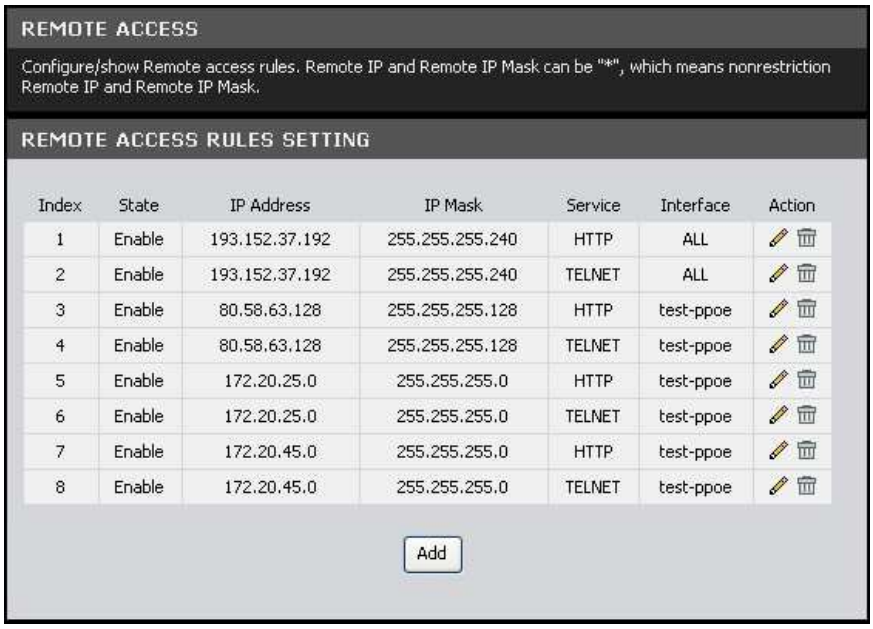
Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

7.3 Remote Access

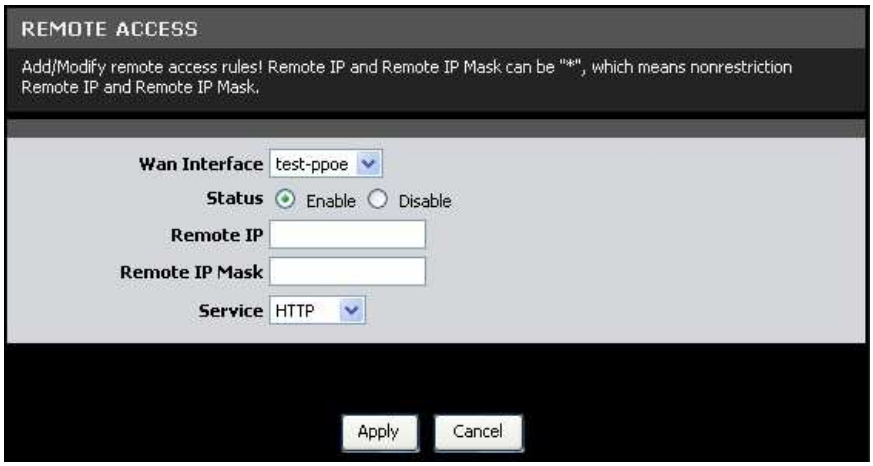
This page allows you to create and edit remote access rules. You can specify the IP address or the subnet mask of devices that are allowed or denied to remotely access your Modem Router and set the type of management service that they can access.

To access the Remote Access page, click **MAINTENANCE** > **Remote Accesss**.

The table lists the remote access rules. To edit an entry, click the corresponding icon. To delete a entry, click the corresponding icon.



To create remote access rules, click the **Add** button.



Wan Interface – Select the interface from the drop-down list.

Status – Select whether to enable or disable remote access of the device.

Remote IP – Enter the IP address of the remote device.

Remote IP Mask – Enter the IP mask of the remote device.

NOTE: To allow or deny all devices to remotely access your Modem Router, enter **"*"** on the **Remote IP** and **Remote IP Mask** fields.

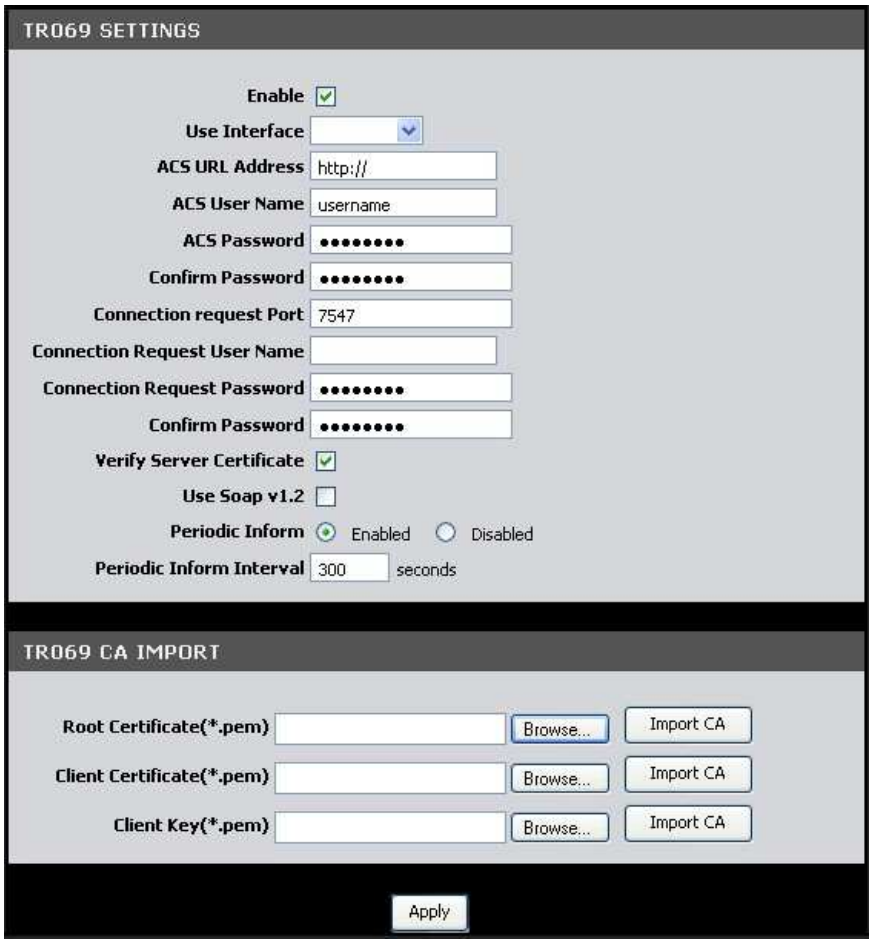
Service – Select the type of remote management service that the device can or cannot access.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

7.4 TR069 Setting

TR069 is a protocol that provides communication between customer-premises equipments (CPE) such as telephones, routers, or set-top boxes, and an Auto-Configuration Server (ACS).

To access the TR069 Setting page, click **MAINTENANCE** > **TR069 Setting**.



TR069 Settings

Enable – Check this box to enable TR069.

Use Interface – Select the interface to implement TR069.

ACS URL Address – Enter the URL of the Auto-Configuration Server (ACS)

ACS User Name – Enter the user name of your Modem Router when connecting to the ACS.

ACS Password – Enter the password that your Modem Router should use when connecting to the ACS. Re-enter the password on the **Confirm Password** field.

Connection Request Port –Enter the port that issues the request.

Connection Request User Name – Enter the connection request user name.

Connection Request Password – Enter the connection request password. Re-enter the password on the **Confirm Password** field.

Verify Server Certificate – Check this box to verify server certificates.

Use Soap v1.2 – Check this box to enable the SOAP protocol.

Periodic Inform – When enabled, your Modem Router will send remote procedure calls (RPC) to the ACS server at system startup and will continue sending RPCs periodically. When disabled, your Modem Router will send RPCs to the ACS server at system startup only.

Periodic Inform Interval – Enter the interval time of sending RPCs.

TR069 CA IMPORT

To import certificates, do the following:

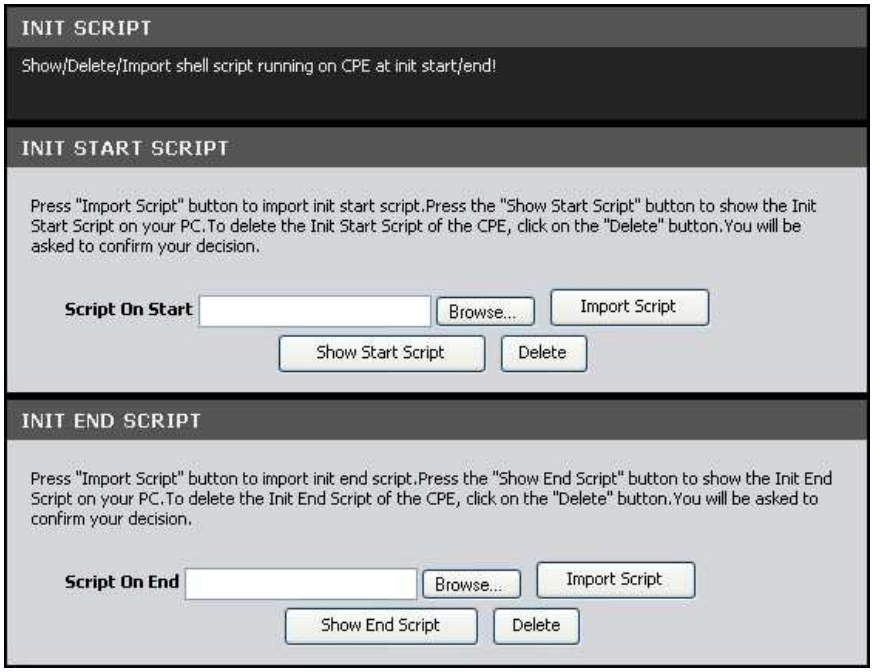
1. Click the **Browse** button.
2. Browse for the certificate, then click the **Open** button.
3. The file is displayed on the field. Click the **Import CA** button to import.

Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

7.5 Init Script

This page allows you to show, delete, and import initialization scripts running on customer-premises equipment (CPE), such as telephones, routers, or set-top boxes, during system startup or shutdown.

To access the Init Script page, click **MAINTENANCE** > **Init Script**.



Init start scripts are scripts that run before the system starts up. Init end scripts are scripts that run before the system shuts down.

To import scripts, do the following:

1. Click the **Browse** button.
2. Browse for the file, then click the **Open** button.
3. Click the **Import Script** button.

To show the scripts on your computer, click the **Show Start/End Script** button.

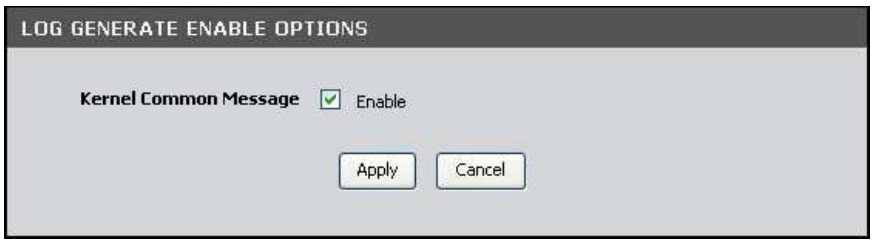
To delete the scripts on your computer, click the **Delete** button.

7.6 SysLog

This page allows you to enable and configure system logs such as device status, events, and activities. Logs can be sent to the network administrator via e-mail.

To access the SysLog page, click **MAINTENANCE** > **SysLog**.

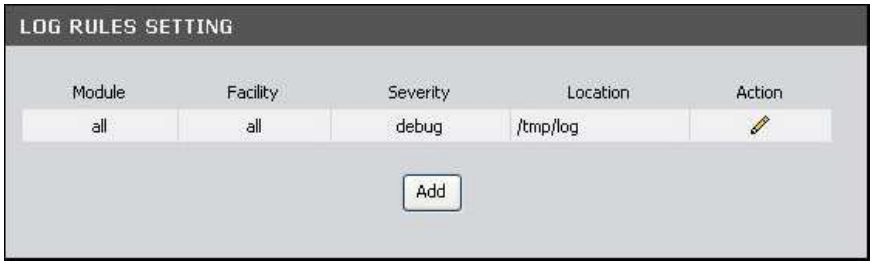
Log Generate Enable Options



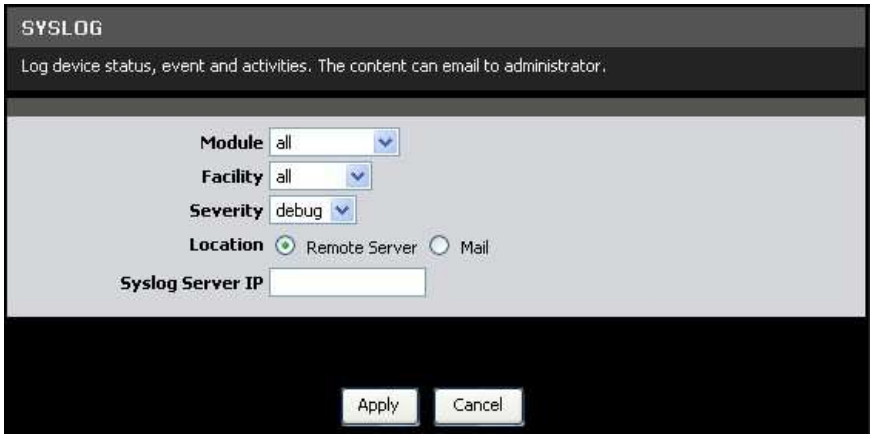
Kernel Common Message – Check this box to generate logs. Click the **Apply** button to save and apply the setting.

Log Rules Setting

The table displays current log rules. To edit an entry, click the corresponding icon.



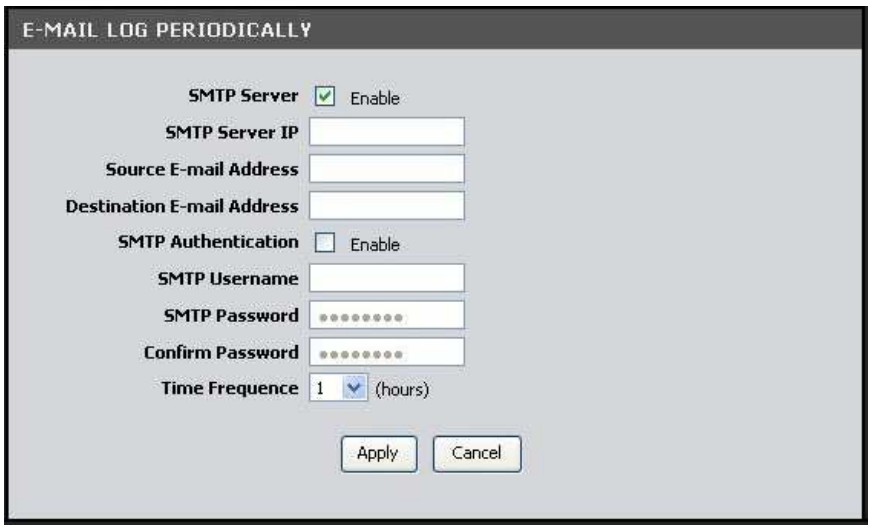
To create log rules, click the **Add** button. The screen below is displayed.



1. Select **Module** and **Facility**.
2. Select **Severity** level. **emerg** is the highest level while **debug** is the lowest level.

3. Select **Location**: **Remote Server** or **Mail**.
4. The succeeding fields may vary depending on the selected location. Enter the necessary information accordingly.
5. Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

E-mail Log Periodically



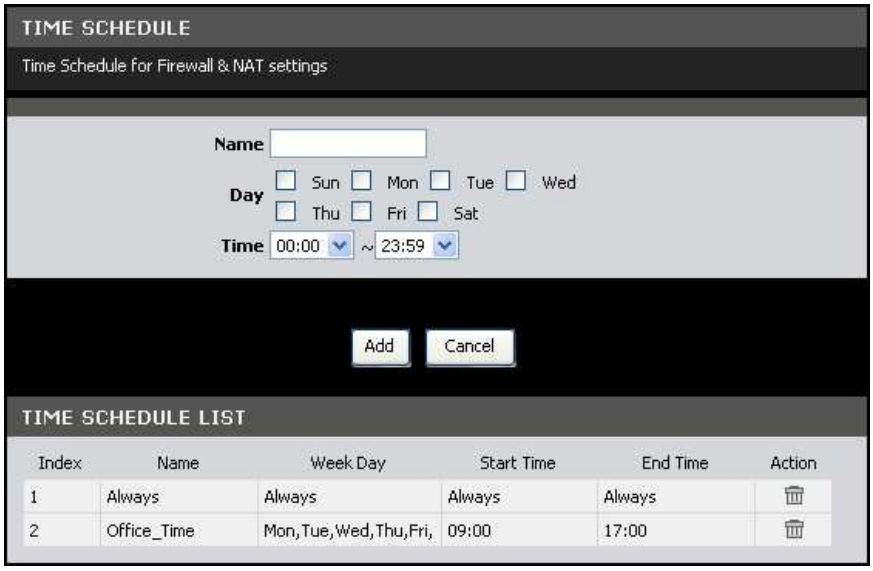
To log e-mails periodically, do the following:

1. Check the **SMTP Server** box to enable logging of e-mails periodically.
2. Enter the **SMTP Server IP**, **Source E-mail Address**, and **Destination E-mail Address**.
3. If **SMTP Authentication** is enabled, enter the **SMTP Username** and **SMTP Password**. Re-enter the password in the **Confirm Password** field.
4. Select the **Frequency** of logging e-mails.
5. Click the **Apply** button to save your changes or click the **Cancel** button to discard your changes.

7.7 Time Schedule

This page allows you create desired time schedule.

To access the Time Schedule page, click **MAINTENANCE** > **Time Schedule**.



To create a new schedule, do the following:

1. On the **Name** field, enter desired schedule name.
2. Check the days to implement the schedule and select the time period.
3. Click the **Add** button to save the schedule. The new entry is listed on the TIME SCHEDULE LIST.

To delete a schedule, click the corresponding icon.

7.8 Firmware Upgrade

This page displays the current firmware version of your Modem Router and allows you to install the upgrade.

To access the Firmware Upgrade page, click **MAINTENANCE** > **Firmware Upgrade**.

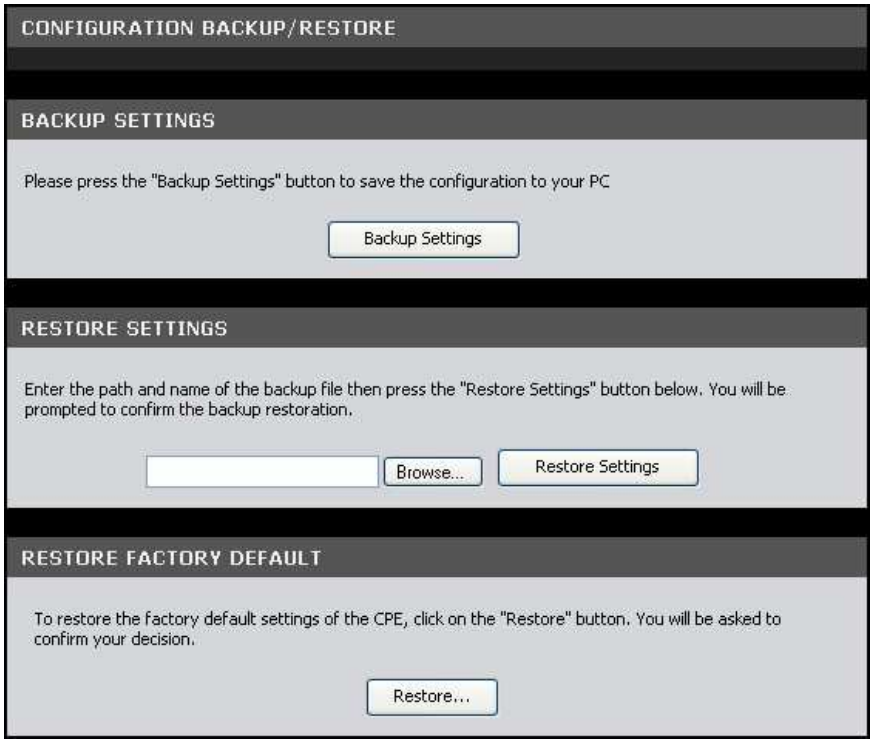
Click the **Browse** button and browse for the file. Click the **Apply** button to start firmware upgrade.

NOTE: Do not turn off or press the Reset button on your Modem Router while firmware upgrade is in progress. This may cause the system to crash.

7.9 Configuration Backup/Restore

This page allows you to save a backup of your current settings, revert settings to a backup point, or restore the default factory settings.

To access the Configuration Backup/Restore page, click **MAINTENANCE > Configuration Backup/Restore**.



To backup the current settings, click the **Backup Settings** button.

To restore settings from a backup point, do the following:

1. Click the **Browse** button.
2. Browse for the backup file, and then click the **Open** button.
3. Click the **Restore Settings** button to restore.

You can restore the Modem Router to its factory defaults. However, doing so will delete all your settings. To restore the factory defaults, do the following:

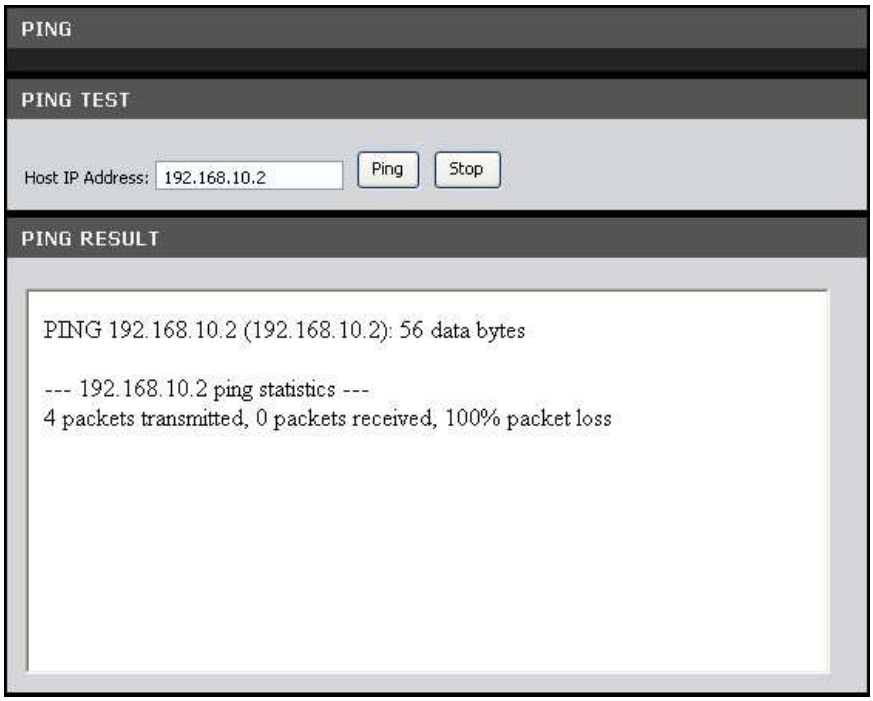
1. Click the **Restore** button.
2. When prompted, click the **OK** button.
3. A warning message appears, click the **OK** button to continue.

NOTE: Restoring to factory defaults may take some time. Do not turn off your Modem Router.

7.10 Ping

Once you have configured your Modem Router, it is recommended to ping the network devices to verify their connection. When you execute a ping test, a series of packets are sent to a specific computer. When the computer receives the packets, it will respond with an acknowledgment that it received the packets.

To access the Ping page, click **MAINTENANCE** > **Ping**.

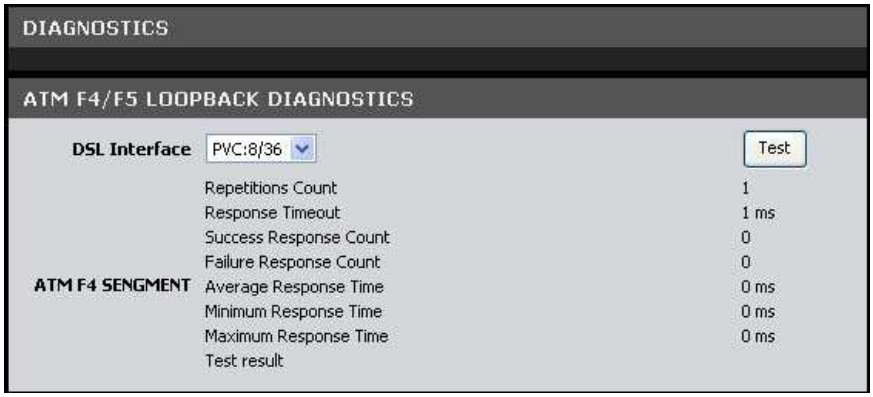


Host IP Address – Enter the IP address of the network device that you want to ping. Click the **Ping** button to start ping. The results are displayed on the PING RESULT screen.

7.11 Diagnostics

This page allows you to test the connectivity of the physical and protocol layers on the WAN side.

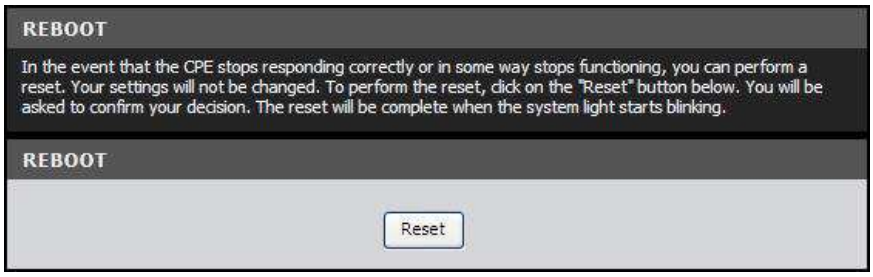
To access the Diagnostics page, click **MAINTENANCE** > **Diagnostics**.



To start the test, select the **DSL Interface** from the drop-down list, and then click the **Test** button.

7.12 Reboot Device

In the event that your device does not respond correctly or stops responding, reset your device. All your settings will be retained.



1. Click the **Reset** button.
2. Click **OK** to confirm.
3. When prompted, click **OK**.

NOTE: Resetting your Modem Router may take some time. Do not turn off the power until the reset is completed.

Chapter 8: Status

The Status menu provides the current status and settings of your Modem Router.

8.1 Summary

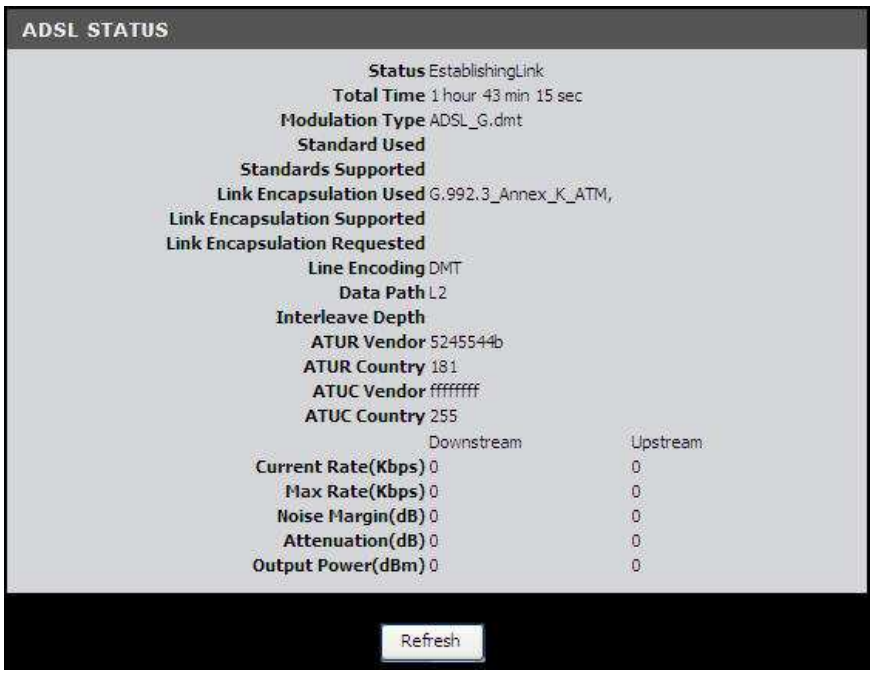
This page displays the summary of the system, DSL link, ATM PVC, Internet connection, LAN, and wireless ports status.

To access the Summary page, click **STATUS** > **Summary**.

8.2 ADSL Info

This page displays the status of your DSL line.

To access the ADSL Info page, click **STATUS** > **ADSL Info**.

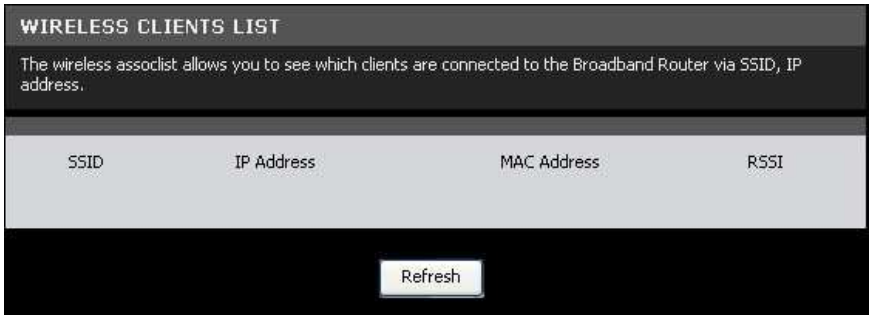


Click the **Refresh** button to refresh the information.

8.3 Wireless Clients

This page displays the clients connected on your network via wireless connection.

To access the Wireless Clients page, click **STATUS** > **Wireless Clients**.

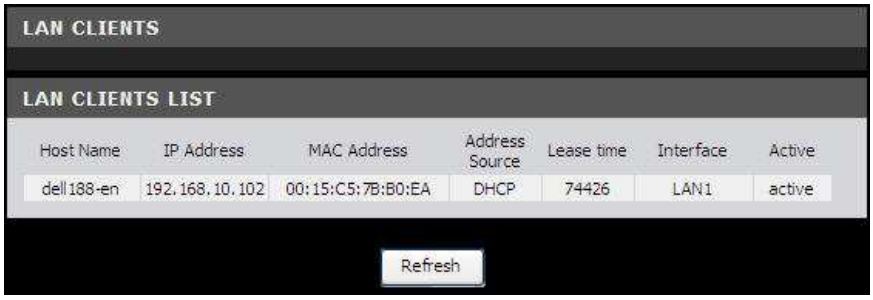


Click the **Refresh** button to refresh the information.

8.4 LAN Clients

This page displays the clients connected on your network.

To access the LAN Clients page, click **STATUS** > **LAN Clients**.

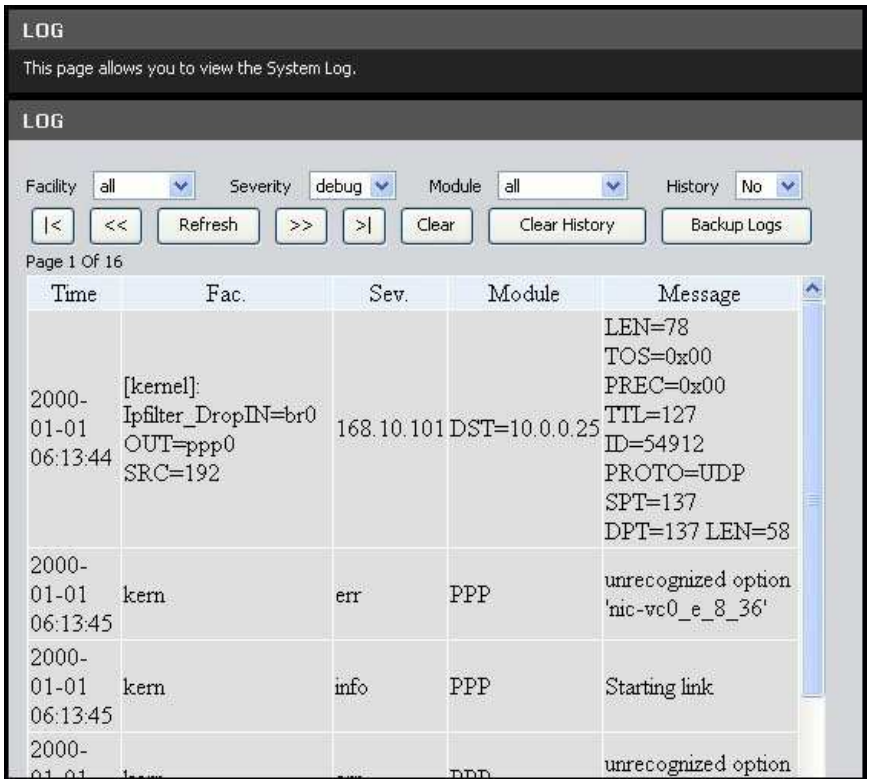


Click the **Refresh** button to refresh the information.

8.5 Logs

This page allows you to view, clear, and backup system logs.

To access the Logs page, click **STATUS** > **Logs**.



You can filter the list by selecting a particular **Facility**, **Severity**, **Module**, or **History** from the drop-down lists.

Click the **Clear History** button to delete old logs.

Click the **Backup Logs** button to save a backup of the logs.

Click the **|< << >> >|** buttons to scroll through the logs.

Click the **Refresh** button to refresh the information.

8.6 Routing Table

This page displays the destination routes commonly accessed by your network.

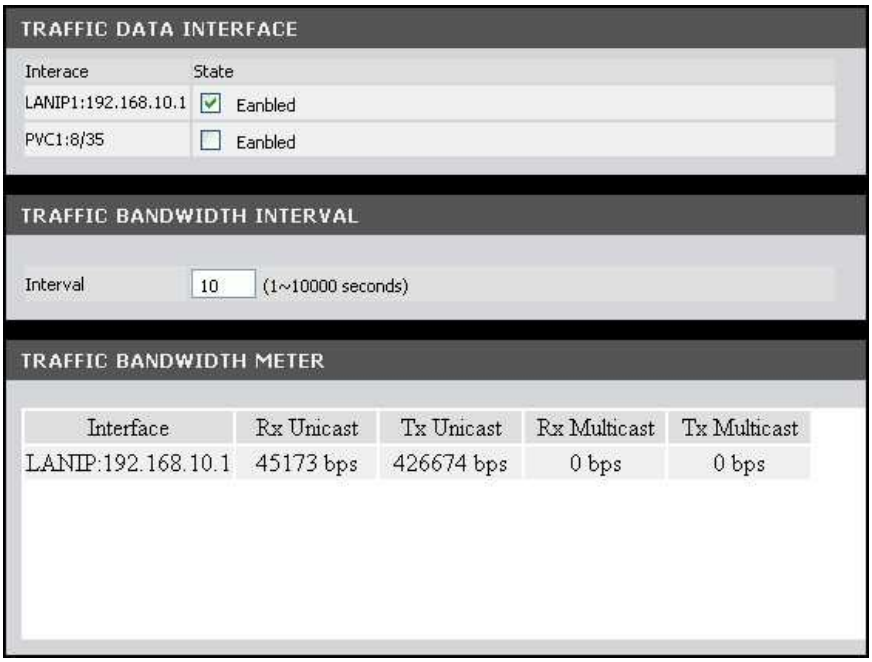
To access the Routing Table page, click **STATUS** > **Routing Tables**.

Click the **Refresh** button to refresh the information.

8.7 Traffic Meter

This page displays the transmission and reception statistics of packets that pass through the specified interface.

To access the Traffic Meter page, click **STATUS** > **Traffic Meter**.



Traffic Data Interface

The table lists the available interfaces on your network. Check the **State** box of the interface to view its traffic. You may check more than one interface.

Traffic Bandwidth Interval

Interval – Enter the interval of refreshing the traffic bandwidth.

Traffic Bandwidth Meter

This table lists the current traffic.

8.8 Driver Version

This page displays the current kernel, Wi-Fi, and DSL driver versions.

To access the Driver Version page, click **STATUS** > **Driver Version**.

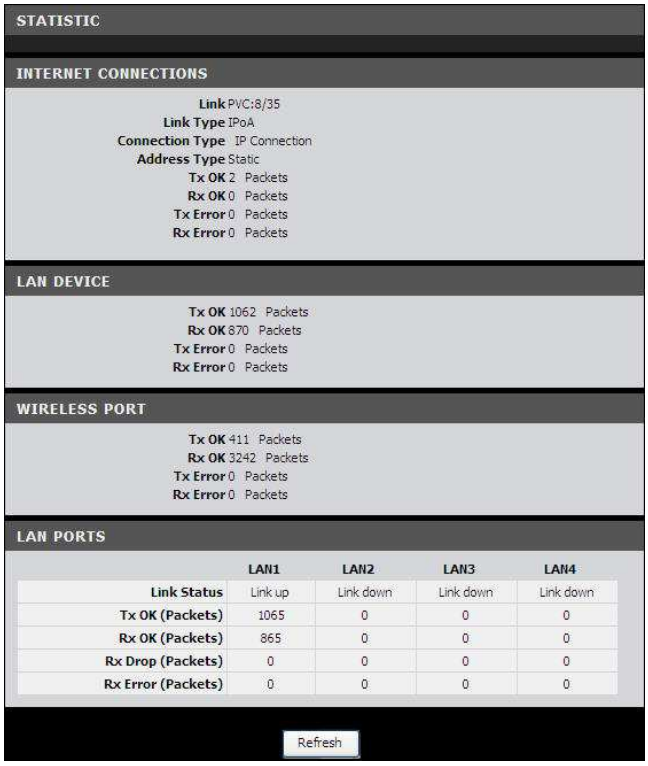
8.9 Statistics

Basic Statistics

This page displays the transmission and reception statistics of the Internet connection, LAN device, wireless port, and the LAN ports.

To access the Basic Statistics page, click **STATUS** > **Statistics** > **Basic Statistics** or click the **Basic Statistics** button.

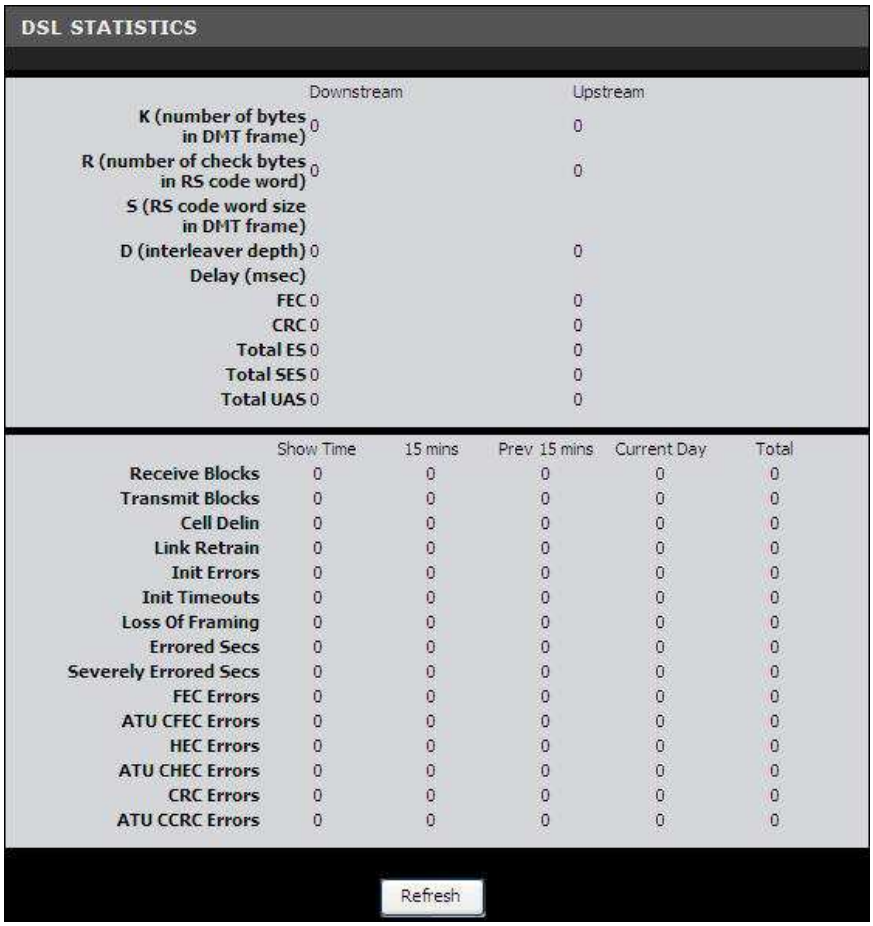
Click the **Refresh** button to refresh the information.



Statistics > DSL Statistics

This page displays the transmission and reception statistics of the DSL line.

To access the DSL Statistics page, click **STATUS** > **Statistics** > **DSL Statistics** or click the **DSL Statistics** button.



Click the **Refresh** button to refresh the information.

Appendix

A. Regulatory & Safety Information

Wireless LAN, Health and Authorization

Radio frequency electromagnetic energy is emitted from Wireless LAN devices. The energy levels of these emissions however are far much less than the electromagnetic energy emissions from wireless devices like for example mobile phones. Wireless LAN devices are safe for use frequency safety standards and recommendations. The use of Wireless LAN devices may be restricted in some situations or environments for example:

- Onboard airplanes, or
- In an explosive environment, or
- In case the interference risk to other devices or services is perceived or identified as harmful

In case the policy regarding the use of Wireless LAN devices in specific organizations or environments (e.g. airports, hospitals, chemical/oil/gas industrial plants, private buildings etc.) is not clear, please ask for authorization to use these devices prior to operating the equipment.

Disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user’s authority to operate the equipment. The Manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, of the substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

FCC (Federal Communications Commission) Statement

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that my cause undesired operation of this device.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

PART 68 statement

This equipment complies with Part 68 of FCC Rules and the requirements adopted by the ACTA.. On the bass unit of this equipment is a label that contains, among other information, a product identifier in the format US: CAMDL02BDSLR2001N

. If requested, this number must be provided to the telephone company. The REN for this product is part of the product identifier that has the format US: TI1DL02BTEW658BRM

. The digits represented by 02 are the REN without a decimal point.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have those devices ring when your telephone number is called. In most, but not all areas, the sum of the REN of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

If your equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. If advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC. Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact the following address and phone number for information on obtaining service or repairs:

The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

Contact information for service center in case of problems as below:

Company: TRENDnet, Inc.

Address: 20675 Manhattan Place, Torrance, CA90501 U.S.A

Tel: (310)961-5500 Fax: (310)961-5511

CE statement

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

EN60950-1: 2006

Safety of Information Technology Equipment

EN 50385: 2002

Product standard to demonstrate the compliance of radio base stations and fixed terminal stations for wireless telecommunication systems with the basic restrictions or the reference levels related to human exposure to radio frequency electromagnetic fields (110MHz - 40 GHz) - General public

EN 300 328 V1.7.1 (2006-10)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

EN 301 489-1 V1.8.1 (2008-04)

Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

EN 301 489-17 V2.1.1(2009-05)

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems , 5 GHz high performance RLAN equipment and 5,8GHz Broadband Data Transmitting Systems.

This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.

This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.

Česky [Czech]	*TRENDnet* tímto prohlašuje, že tento *DSLR-2001N* je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede *TRENDnet* erklærer herved, at følgende udstyr *DSLR-2001N* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklärt *TRENDnet* , dass sich das Gerät *DSLR-2001N* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Eesti [Estonian]	Käesolevaga kinnitab *TRENDnet* seadme *DSLR-2001N* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, *TRENDnet* , declares that this *DSLR-2001N* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente *TRENDnet* declara que el *DSLR-2001N* cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ *TRENDnet* ΔΗΛΩΝΕΙ ΟΤΙ*DSLR-2001N* ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Français [French]	Par la présente *TRENDnet* déclare que l'appareil *DSLR-2001N* est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente *TRENDnet* dichiara che questo *DSLR-2001N* è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo *TRENDnet* deklarē, ka *DSLR-2001N* atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo *TRENDnet* deklaruoja, kad šis *DSLR-2001N* atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart *TRENDnet* dat het toestel *DSLR-2001N* in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, *TRENDnet* , jiddikjara li dan *DSLR-2001N* jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, *TRENDnet* nyilatkozom, hogy a *DSLR-2001N* megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Polski [Polish]	Niniejszym *TRENDnet* oświadcza, że *DSLR-2001N* jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese]	*TRENDnet* declara que este *DSLR-2001N* está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	*TRENDnet* izjavlja, da je ta *DSLR-2001N* v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky	*TRENDnet* týmto vyhlasuje, že *DSLR-2001N* spĺňa základné požiadavky a

[Slovak]	všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	*TRENDnet* vakuuttaa täten että *DSLR-2001N* tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar *TRENDnet* att denna *DSLR-2001N* står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

B. Specifications

General	
Standards	Compliant with ADSL standards: ANSI T1.413 Issue2, G.992.1 (G.dmt, Annex A), G.992.2 (G.lite) Compliant with ADSL2 standard: G.992.3 (G.dmt.bis) Compliant with ADSL2+ standard: G.992.5 Annex A IEEE 802.11b & 802.11g & 802.11n Wireless LAN IEEE 802.3u 10/100Base TX Fast Ethernet
Protocol	WLAN: CSMA/CA with ACK ATM & PPP: VC and LLC Multiplexing, Bridged/Routed Ethernet over ATM (RFC1483/2684), OAM F4/F5 loop-back, PPP over ATM (RFC2364), PPP over Ethernet (RFC2516), ATM TrafficShaping QoS(UBR, CBR, rt-VBR, nrt-VBR) LAN/WAN Network: TCP/IP, NAT, HTTP, DHCP Server/Relay/Client, DDNS, DNS Proxy
Modulation Schemes	DBPSK/DQPSK/CCK/OFDM, BPSK/QPSK/16-QAM/64-QAM
Transmission Rate	802.11n mode: up to 300Mbps 802.11g mode: up to 54Mbps 802.11b mode: up to 11Mbps Ethernet: 10Mbps (half duplex), 20Mbps (full-duplex) Fast Ethernet: 100Mbps (half duplex), 200Mbps (full- duplex)
Receiver Sensitivity	802.11n: -64dBm typical @ 300Mbps 802.11g: -65dBm typical @ 54Mbps 802.11b: -80dBm typical @ 11Mbps
TX Power (Average power)	27dBm
Frequency Range	2412 ~ 2484 MHz ISM band (channels 1~14)
Modulation Schemes	DBPSK/DQPSK/CCK/OFDM

Security	64/128-bits WEP Encryption; WPA, WPA2, WPA-TKIP, WPA2-AES, WPS, MAC address filtering
Firewall Security	NAT firewall, Stateful Packet Inspection (SPI), Packet Filtering (IP, MAC Domain, Keyword), Management Access Control for LAN/WAN
Management	Web-based Configuration, Command Line Interface (CLI) via Telnet, TR-069 Remote Management, IGMP v1/v2 Support, SW upgrade
Channels	USA : Channel 1~11 Europe : Channel 1~13 Japan : Channel 1 ~14
Memory	FLASH: 4MB DDR SDRAM: 32MB
Antenna	2 x 2dBi external dipole antenna
Range Coverage	Indoor: up to 100 meters Outdoor: up to 300 meters
Physical and Environmental	
Number of Ports	LAN: 4 x 10/100Mbps Auto-MDIX Fast Ethernet ports WAN: 1 x RJ11Port Power Jack
LED Indicator	Power, LAN 1~4 (Link/ACT), WLAN (Link/ACT), WPS, ADSL, Internet
DC inputs	12VDC 1A
Power Consumption	8.4watts (max)
Temperature	Operating: 0°C ~ 40° C Storage: -10°c ~ 70°C
Humidity	Operating: 10% ~ 95%, RH, no condensation
Dimensions	201 x 115.8 x 37 mm (without antenna)
Certification	FCC part 15, CE

C. Limited Warranty

TRENDnet warrants its products against defects in material and workmanship, under normal use and service, for the following lengths of time from the date of purchase.

TEW-658BRM – 3 Years Warranty

AC/DC Power Adapter, Cooling Fan, and Power Supply carry 1 year warranty.

If a product does not operate as warranted during the applicable warranty period, TRENDnet shall reserve the right, at its expense, to repair or replace the defective product or part and deliver an equivalent product or part to the customer. The repair/replacement unit's warranty continues from the original date of purchase. All products that are replaced become the property of TRENDnet. Replacement products may be new or reconditioned. TRENDnet does not issue refunds or credit. Please contact the point-of-purchase for their return policies.

TRENDnet shall not be responsible for any software, firmware, information, or memory data of customer contained in, stored on, or integrated with any products returned to TRENDnet pursuant to any warranty.

There are no user serviceable parts inside the product. Do not remove or attempt to service the product by any unauthorized service center. This warranty is voided if (i) the product has been modified or repaired by any unauthorized service center, (ii) the product was subject to accident, abuse, or improper use (iii) the product was subject to conditions more severe than those specified in the manual.

Warranty service may be obtained by contacting TRENDnet within the applicable warranty period and providing a copy of the dated proof of the purchase. Upon proper submission of required documentation a Return Material Authorization (RMA) number will be issued. An RMA number is required in order to initiate warranty service support for all TRENDnet products. Products that are sent to TRENDnet for RMA service must have the RMA number marked on the outside of return packages and sent to TRENDnet prepaid, insured and packaged appropriately for safe shipment. Customers shipping from outside of the USA and Canada are responsible for return shipping fees. Customers shipping from outside of the USA are responsible for custom charges, including but not limited to, duty, tax, and other fees.

WARRANTIES EXCLUSIVE: IF THE TRENDNET PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, THE CUSTOMER'S SOLE REMEDY SHALL BE, AT TRENDNET'S OPTION, REPAIR OR REPLACE. THE FOREGOING WARRANTIES AND REMEDIES ARE

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