Tenda

# User Guide

www. tendacn. com




Wireless N300 ADSL2+/3G Modem Router

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# About This Manual

Thank you for choosing Tenda! Please read this User Guide before you start! This User Guide instructs you to install and configure your device.

## Conventions

Unless otherwise specified, "This (this)/The (the) device", "This (this)/The (the) product" and "Device (device)", etc. mentioned herein all refer to Tenda Wireless N300 ADSL2+/3G Modem Router D303**.**

Unless otherwise specified, this User Guide is exemplified of IPv4.

## Technical Support

**Website:** http://www.tendacn.com

**TEL:** (86 755) 2765 7180

**Email:** support@tenda.com.cn

# Chapter 1 Product Overview

## 1.1 Package Contents

Unpack the package. Your box should contain the following items:

- D303
- Power Adapter
- Two Phone Cables
- Ethernet Cable
- ADSL Splitter
- Install Guide
- Resource CD

If any of the parts are incorrect, missing, or damaged, contact your dealer. Keep the carton, including the original packing materials, in case you need to return the product for repair.

## 1.2 Hardware Overview

### 1.2.1 LEDs on Front Panel




| LED | Status | Description |
|---|---|---|
| 4/iTV\|3\|2\|1/WAN | Solid | The corresponding port is connected correctly. |
| | Blinking | The corresponding port is transmitting data. |
| | Off | The corresponding port is connected improperly or malfunctioning. |
| DSL | Solid | DSL connection is established successfully. |

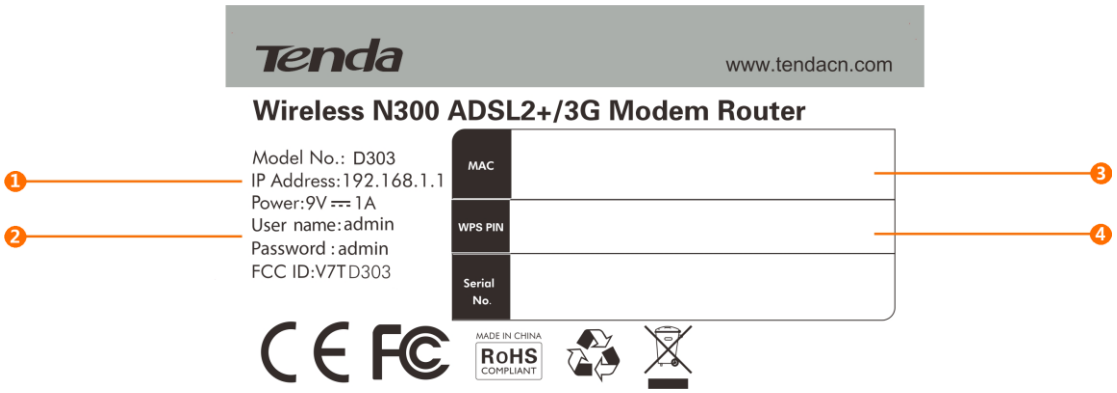
| | | |
|---|---|---|
| | Blinking | The device is negotiating with DSLAM. |
| | Off | No phone cable is connected to the DSL port or phone cable is connected improperly. |
| WLAN | Solid | Wireless radio is on. |
| | Blinking | The wireless interface is transmitting data. |
| | Off | Wireless radio is off. |
| SYS | Blinking | System is functioning properly. |
| | Solid/Off | System is malfunctioning. |
| WPS | Solid | Clients have successfully joined your wireless network using the WPS feature during the first two minutes. |
| | Blinking | WPS-PBC is enabled and your wireless network is accessible to WPS-PBC enabled clients. |
| | Off | No clients join your wireless network using the WPS feature during the first two minutes. |
| PWR | Solid | The device is receiving electrical power. |
| | Off | Electric power is not supplied to the device or the device is malfunctioning. |
| 3G/USB | Solid | The device has identified an attached USB storage device or has successfully joined a 3G network. |
| | Blinking | Connecting to 3G network... |
| | Off | The USB port is not connected or has not identified an attached USB storage device or the device fails to join a 3G network. |
| INTERNET | Solid | The device has obtained an IP address for Internet access. |
| | Off | The device fails to obtain an IP address for Internet access. |

## 1.2.2 Buttons & Ports on Back Panel




| Interface/Button | Description |
|---|---|
| DSL | For connecting to a phone cable |
| 1 | This RJ45 port is a WAN/LAN Interchangeable port. It works as a LAN port for connecting to a PC, switch and router, etc. when the device accesses the Internet via a phone cable and a WAN port for connecting to ISP when when the device accesses the Internet via an Ethernet cable.<br>**Note:** The device is preset to access the Internet via a phone cable. |
| 2\|3 | Local (LAN) Ethernet ports for cabling the device to local computers, switches, etc. |
| 4 | This port works as an IPTV/LAN interchangeable port. It works as a LAN port for cabling the device to a local computer, switch, router, etc. with IPTV disabled and as an IPTV-specific port with IPTV enabled.<br>**Note:** The IPTV feature is disabled by default. |
| USB | For connecting to a 3G modem, USB printer or storage device |
| WPS/RST | This is a WPS/RST interchangeable button.<br>➢ Pressing this button for 3 seconds enables the WPS-PBC feature on the device (The WPS LED on the device blinks and clients can join the device's wireless network with via WPS-PBC).<br>➢ Pressing this button for 10 seconds resets the device to factory default settings. |
| PWR | Power Receptacle for connecting to the included power adapter. |
| ON/OFF | For turning on/off the device |

## 1.2.3 Label




1 **IP Address:** Default Login IP address. This IP address is to be used to access the device's settings through a web browser.

2 **User name/Password:** Default Web Login user name and password

3 **MAC:** Physical address of the device's LAN port. The device's default SSID (wireless network name) is Tenda_XXXXXX (where XXXXXX is the last 6 characters of this MAC address).

4 **WPS PIN:** The device's WPS PIN code

# Chapter 2 Get Started

## 2.1 Install Considerations

The operating distance or range of your wireless connection can vary significantly, depending on the physical placement of your device. For best performance, place your device:

✧ Near the center of the area where your computers, smart phones and other devices operate, and preferably within line of sight to your wireless devices.

✧ In an elevated location such as a high shelf, keeping the number of walls and ceilings between this device and your other devices such as computers and smart phones to a minimum.

✧ Away from electrical devices that are potential sources of interference, such as ceiling fans, home security systems, microwaves or PCs.

✧ Away from any large metal surfaces, such as a solid metal door or aluminum studs.

✧ Away from other materials such as glass, insulated walls, fish tanks, mirrors, brick and concrete that can also affect your wireless signal.

## 2.2 What You Need Before You Start

Prepare the following according to how you access the Internet.

## A. To access the Internet with a phone cable:

Before you start the installation process, you need to prepare the following:

| Item | Number | Description |
|---|---|---|
| D303 | 1 | Find it in your package |
| Power Adapter | 1 | Find it in your package |
| ADSL Splitter | 1 | The ADSL Splitter is not required if you do not need to install a telephone and the device at the same time. |
| Phone cable from the incoming Internet side | 1 | Provided by ISP |

| | | |
|---|---|---|
| Ethernet Cable | 1 | Find it in your package |
| Phone Cable | 2 | Find it in your package |
| PC | 1 | With installed Web browser such as IE8 (or higher) or Google |
| Broadband Service Receipt | 1 | Including VPI/VCI (optional), Internet connection type and corresponding information (indispensable; for details, see below)<br>➢ PPPOE or PPPOA:<br>User Name_____, Password_____<br>➢ Dynamic IP/DHCP (No information required)<br>➢ Static IP or IPOA:<br>IP Address_____._____._____._____<br>Subnet Mask_____._____._____._____<br>Default Gateway_____._____._____._____<br>Preferred DNS Server IP_____._____._____._____<br>Alternate DNS Server IP (optional)_____._____._____._____ |

## B. To access the Internet with an Ethernet cable:

Before you start the installation process, you need to prepare the following:

| Item | Number | Description |
|---|---|---|
| D303 | 1 | Find it in your package |
| Power Adapter | 1 | Find it in your package |
| Ethernet cable from the incoming Internet side | 1 | Provided by ISP |
| Ethernet Cable | 1 | Find it in your package |
| PC | 1 | With installed Web browser such as IE8 (or higher) or Google |
| Broadband Service Receipt | 1 | Including Internet connection type and corresponding information (indispensable; for details, see below)<br>➢ PPPoE:<br>User Name_____, Password_____<br>➢ Dynamic IP/DHCP (No information required)<br>➢ Static IP:<br>IP Address_____._____._____._____<br>Subnet Mask_____._____._____._____ |

| | | |
|---|---|---|
| | | Default Gateway_____._____._____._____<br>Preferred DNS Server IP_____._____._____._____<br>Alternate DNS Server IP (optional)_____._____._____._____ |

## C. To access the Internet via a 3G mobile connection:

| Item | Number | Description |
|---|---|---|
| D303 | 1 | Find it in your package. |
| Power Adapter | 1 | Find it in your package. |
| 3G modem | 1 | You need to buy a 3G modem and apply 3G Internet service from your local 3G ISP. |
| Ethernet Cable | 1 | Find it in your package. |
| PC | 1 | With installed Web browser such as IE8 (or higher) or Google |

# Chapter 3 Quick Internet Setup

## 3.1 Hardware Install

Install your device according to how you access the Internet.

## A. To access the Internet with a phone cable:

**Step 1:** Connect to the Internet.

1. Connect the phone cable from the incoming Internet side to the **LINE** port of the ADSL splitter.
2. Connect the **MODEM** port of the ADSL splitter to the **DSL** port of your device with a phone cable.
3. Connect the **PHONE** port of the ADSL splitter and your telephone with another phone cable.

**Step 2:** Connect your device's port **1**, **2**, **3** or **4** and your PC's NIC port using an Ethernet cable.

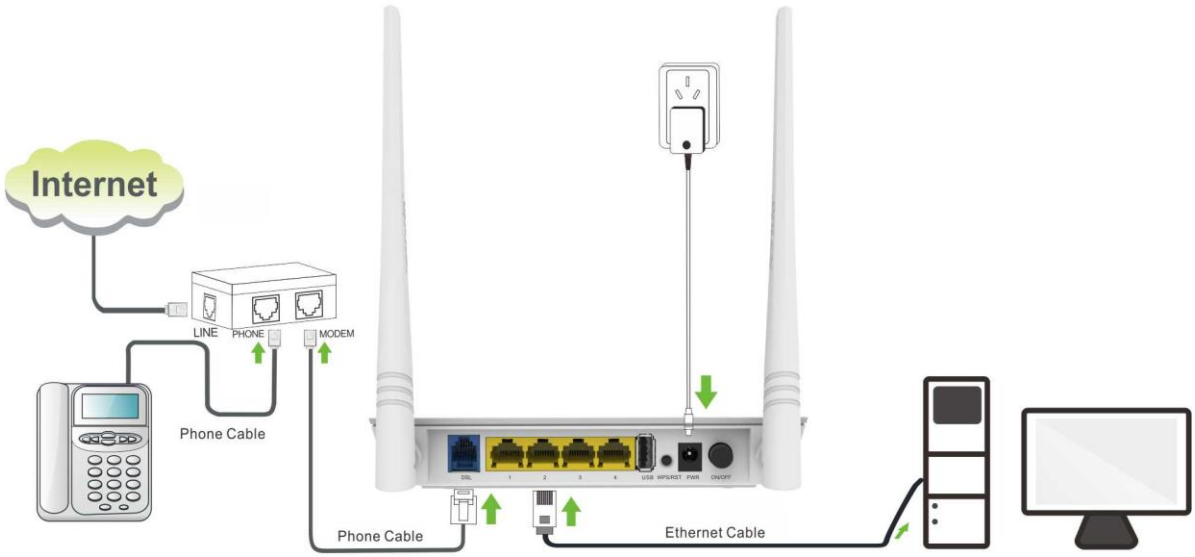
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*Tip:*

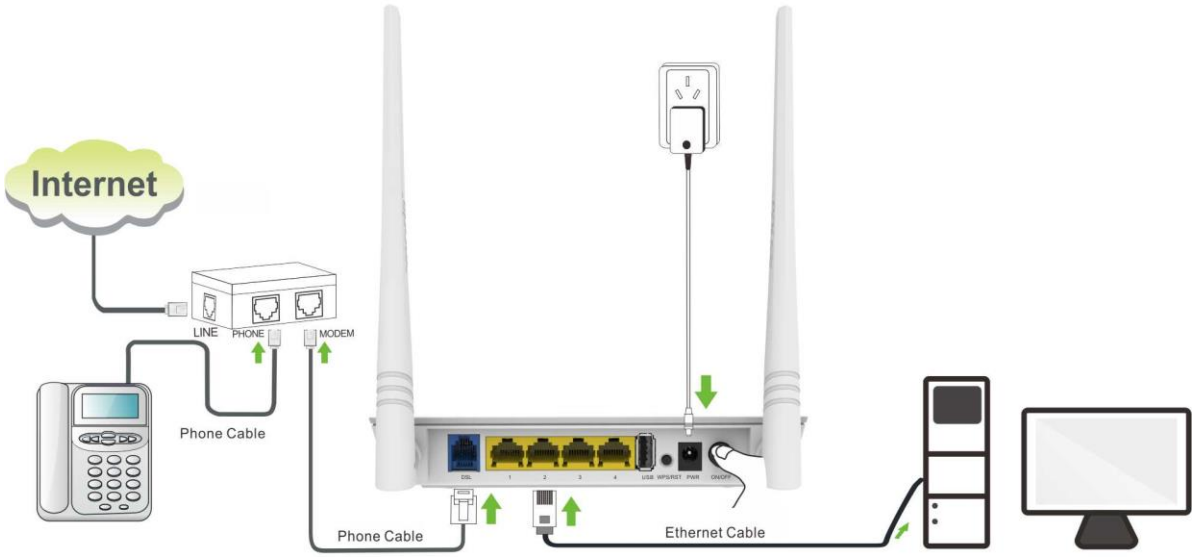
WIth IPTV enabled (By default, the IPTV feature is disabled.), port **4** can only connect to an IPTV set-top box.

---

**Step 3:** Connect the device to a power outlet.



**Step 4:** Press the **ON/OFF** button to turn on the device.




**Step 5:** Check the device's LEDs, make sure the **PWR** and **DSL** LEDs are always on, the **WLAN** LED and the LED of a corresponding port that is connected to a PC are always on or blinking.




## B. To access the Internet with an Ethernet cable

**Step 1:** Connect the Ethernet cable from the incoming Internet side to port **1** on your device.

**Step 2:** Connect your device's port **2**, **3** or **4** and your PC's NIC port using an Ethernet cable.

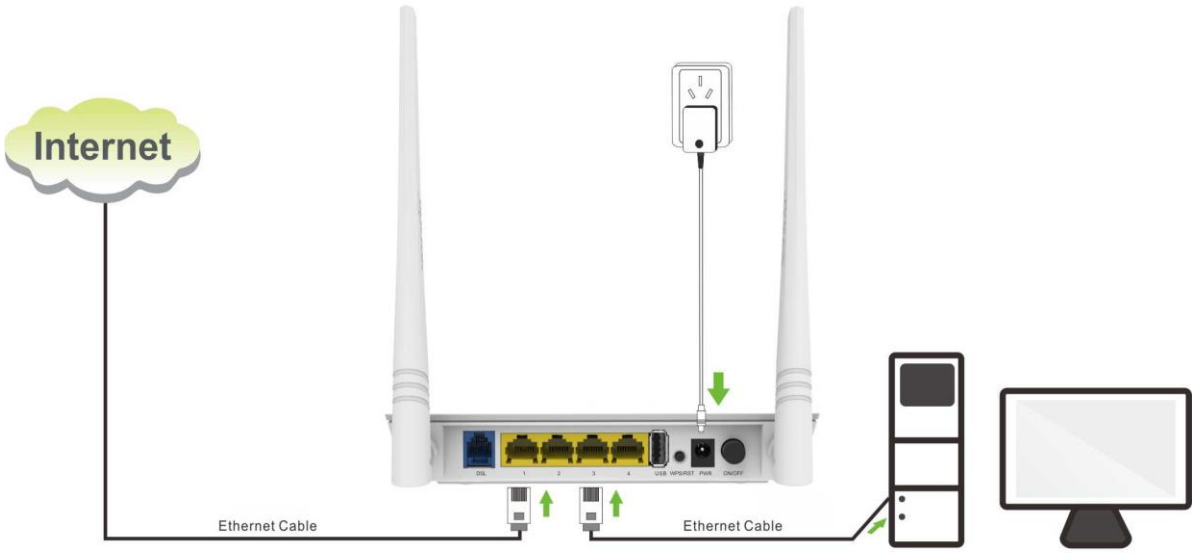
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*Tip:*

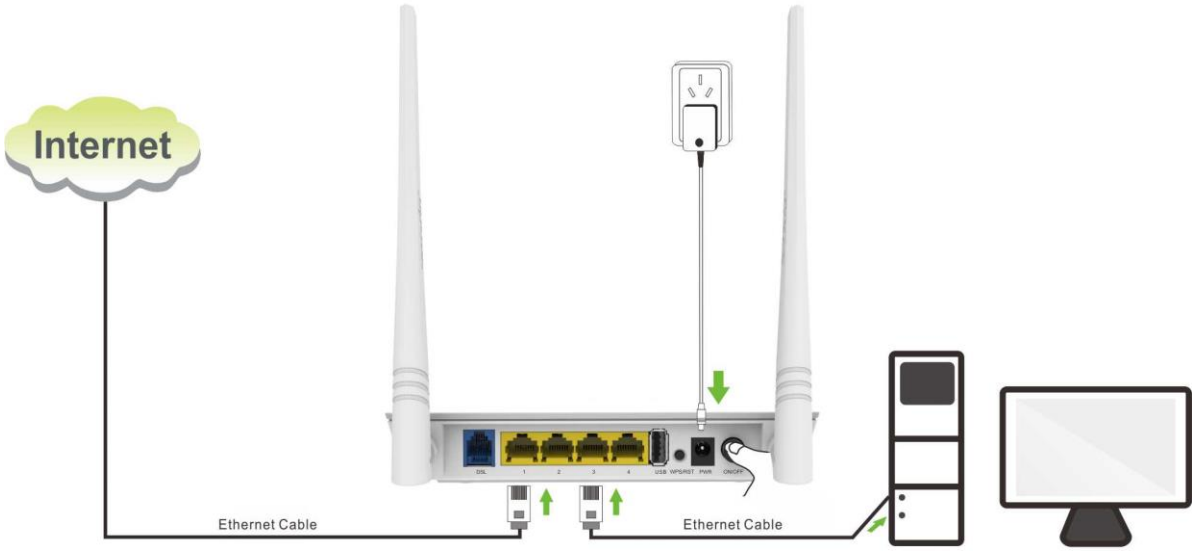
WIth IPTV enabled (By default, the IPTV feature is disabled.), port **4** can only connect to an IPTV set-top box.

---

**Step 3:** Connect the device to a power outlet.




**Step 4:** Press the **ON/OFF** button to turn on the device.




**Step 5:** Check the device's LEDs, make sure the **PWR** LED is always on, the **SYS** LED is blinking, the **WLAN** LED, the **1/WAN** LED and the LED of a corresponding port that is connected to a PC are always on or blinking.



# C. To access the Internet via a 3G mobile connection:

**Step 1:** Insert the 3G modem in the device's USB port.

**Step 2:** Connect your device's port **1**, **2**, **3** or **4** and your PC's NIC port using an Ethernet cable.

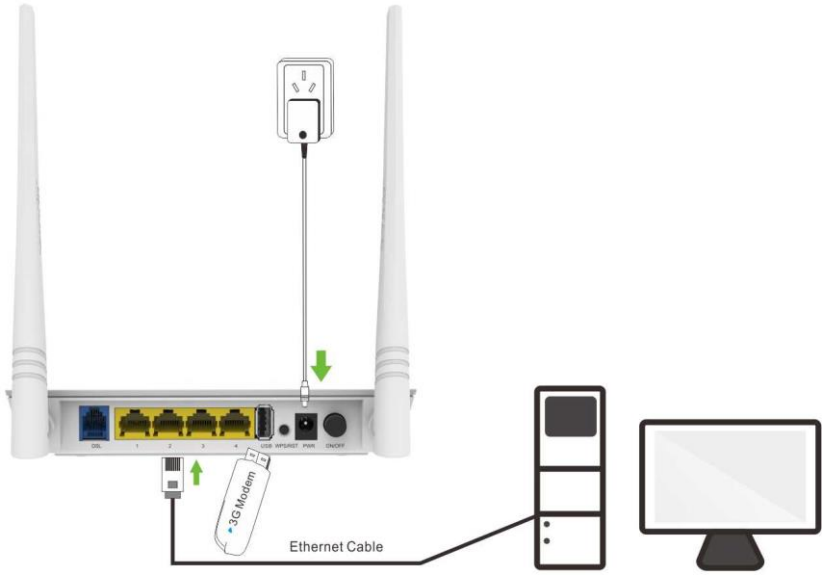
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*Tip:*

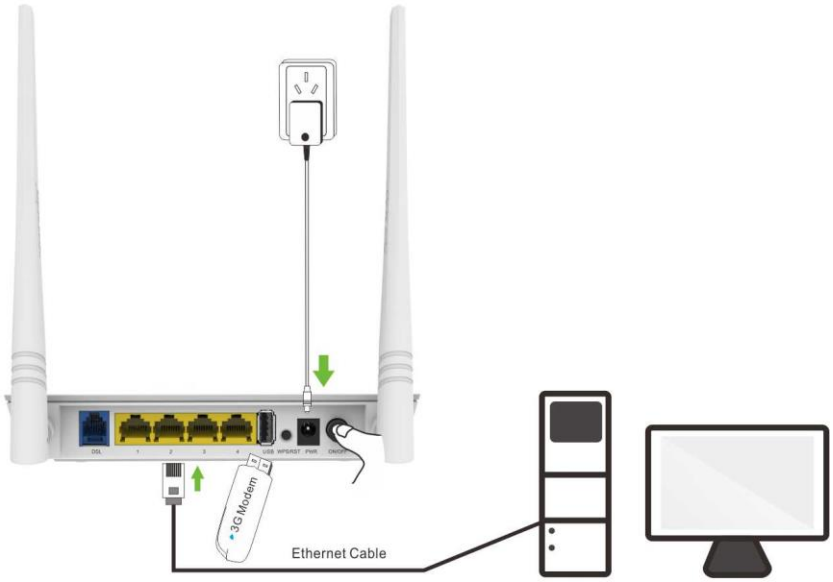
WIth IPTV enabled (By default, the IPTV feature is disabled.), port **4** can only connect to an IPTV set-top box.

---

**Step 3:** Connect the device to a power outlet.




**Step 4:** Press the **ON/OFF** button to turn on the device.



**Step 5:** Check the device's LEDs, make sure they act as below:

The **WLAN** LED, **3G/USB** LEDs and the LED of a corresponding port that is connected to a PC are always on or blink;

The **SYS** LED blinks;

The **PWR** LED is always on.




*Tip:*

If the 3G/USB LED blinks for a while and then lights off, it indicates that the device fails to join a 3G network and is automatically umounting and remounting the 3G modem for 3G connection. The device will not stop this process until it successfully joins a 3G network.

## 3.2 Connect to Your Device

If you access the Internet via a wired connection, follow instructions in **3.2.1 Configure Your PC** and then skip to **3.3 Internet Setup**.

## 3.2.1 Configure Your PC

If your computer is set to a static or fixed IP address (This is uncommon), change it to "Obtain an IP address automatically" and "Obtain DNS server address automatically" from the device. See Appendix 1 Configure Your PC if you are not clear.

## 3.2.2 Join Your Wireless Network

Follow corresponding instructions below according to your OS.

*Tip:*

- The device's SSID (wireless network) is "Tenda_XXXXXX" by default (where "XXXXXX" is the last six characters of the device's MAC address in the label).
- To join your wireless network, the PC you use must have an installed wireless network adapter. If not, install one.

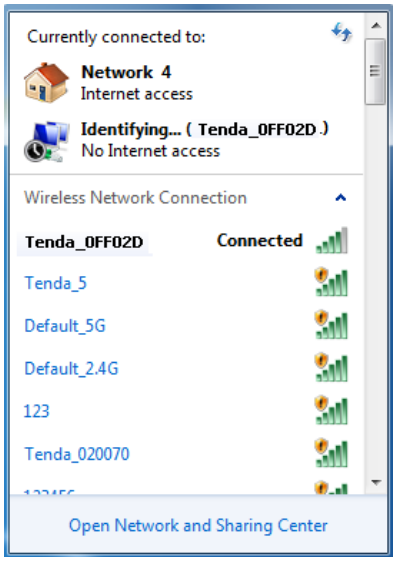
**Windows 7**

**Step 1:** Click or from the bottom right of your desktop.

**Step 2:** Double click the name of the wireless network (SSID) you wish to join and then follow onscreen instructions.

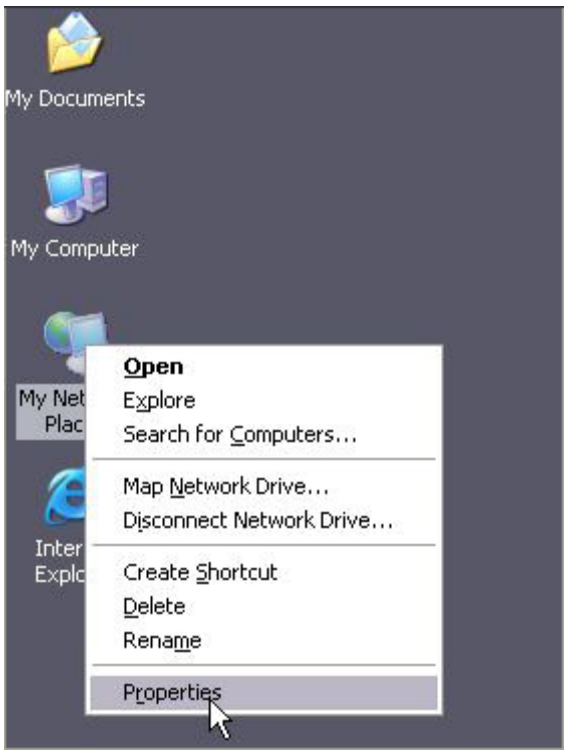



When **Connected** appears next to the selected wireless network (SSID), you have successfully connected to it.

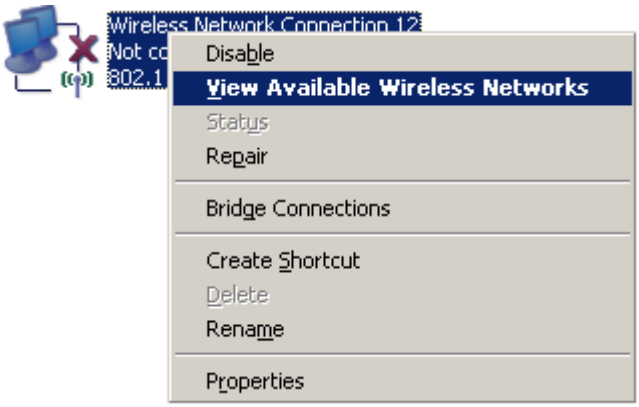


**Windows XP**

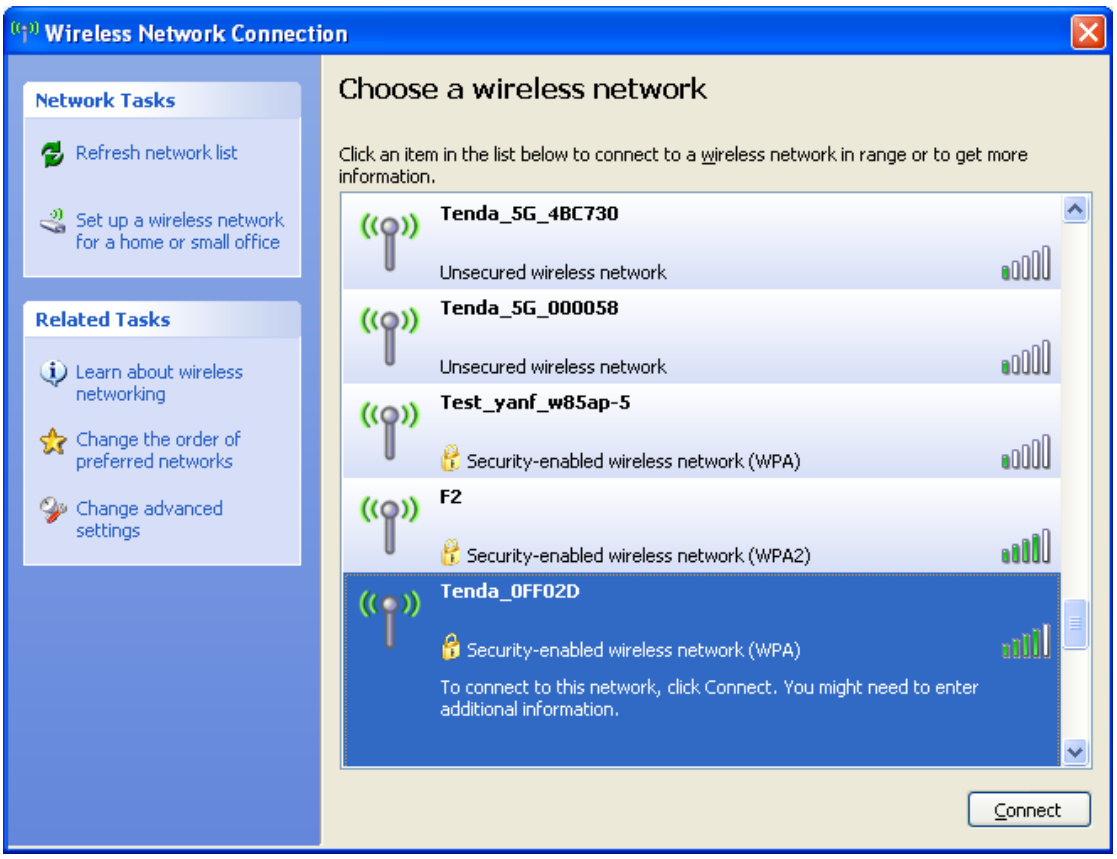
**Step 1:** Right click **My Network Places** and select **Properties**.



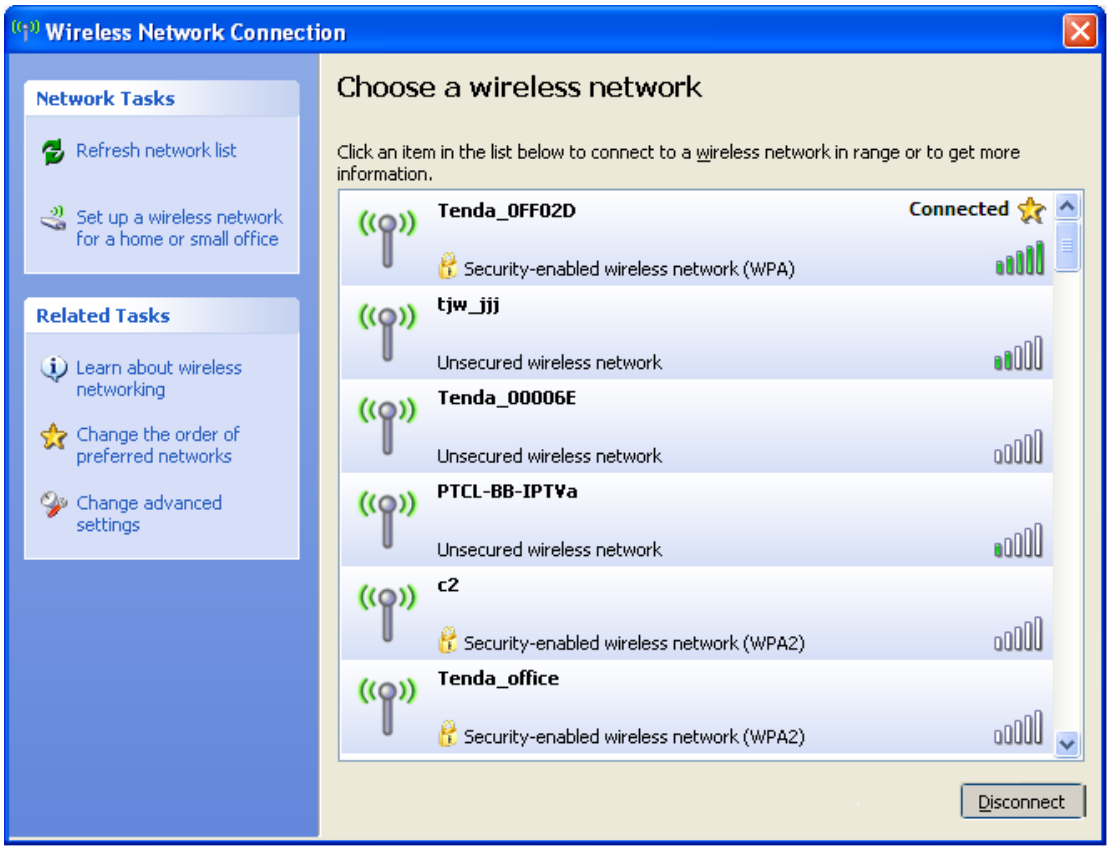

**Step 2:** Right click **Wireless Network Connection** and select **View available wireless networks**.




**Step 3:** Double click the name of the wireless network (SSID) you wish to join and then follow onscreen instructions.



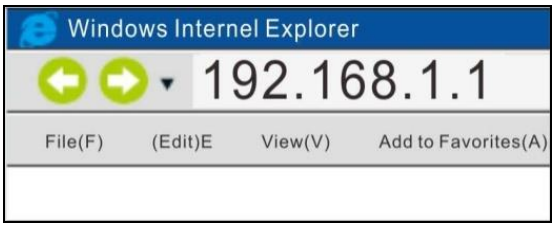

When **Connected** appears next to the selected wireless network (SSID), you have successfully connected to it.



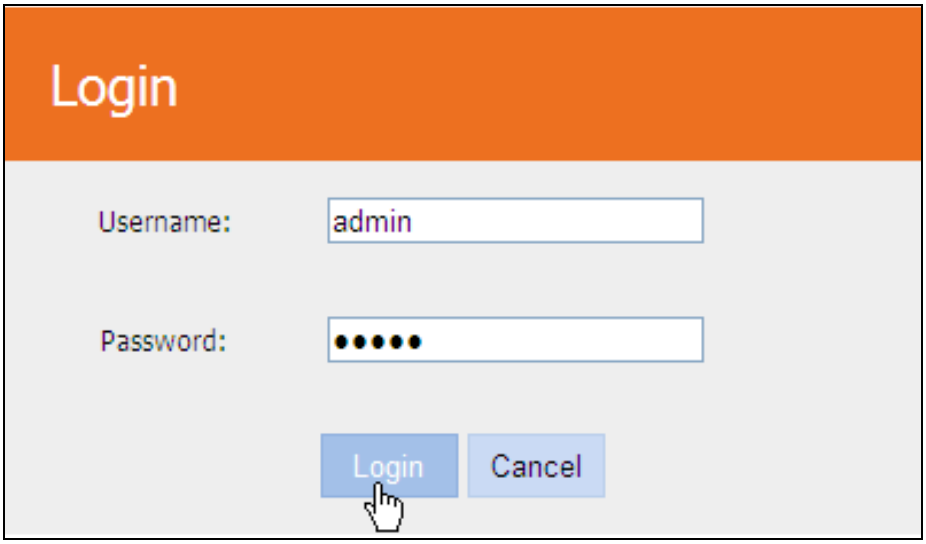
# 3.3 Internet Setup

## 3.3.1 Web Login

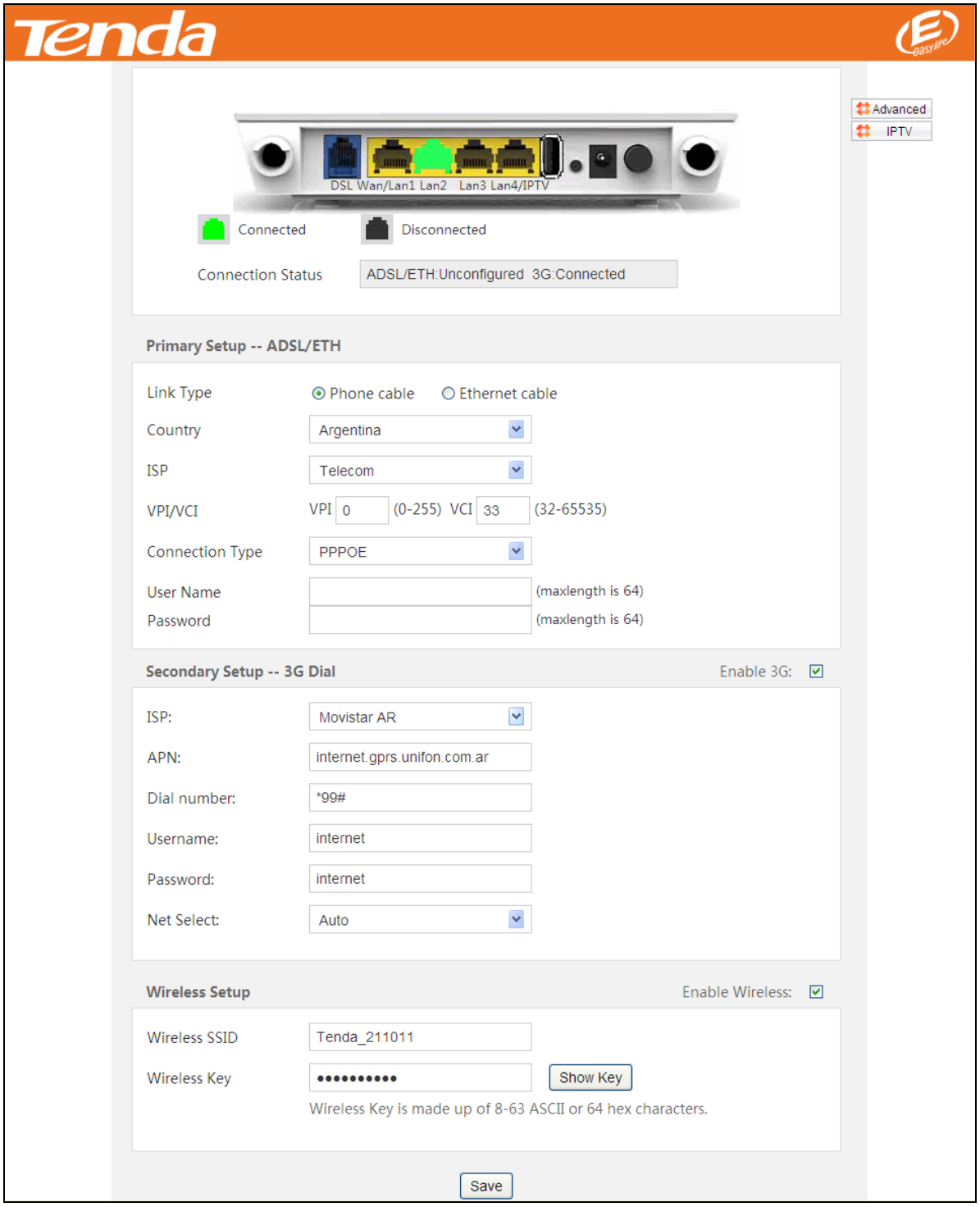
1. Launch a web browser, enter "192.168.1.1" and then press **Enter** or **Return**.




2. Enter user name and password (Both are preset to admin.) and click **Login**.

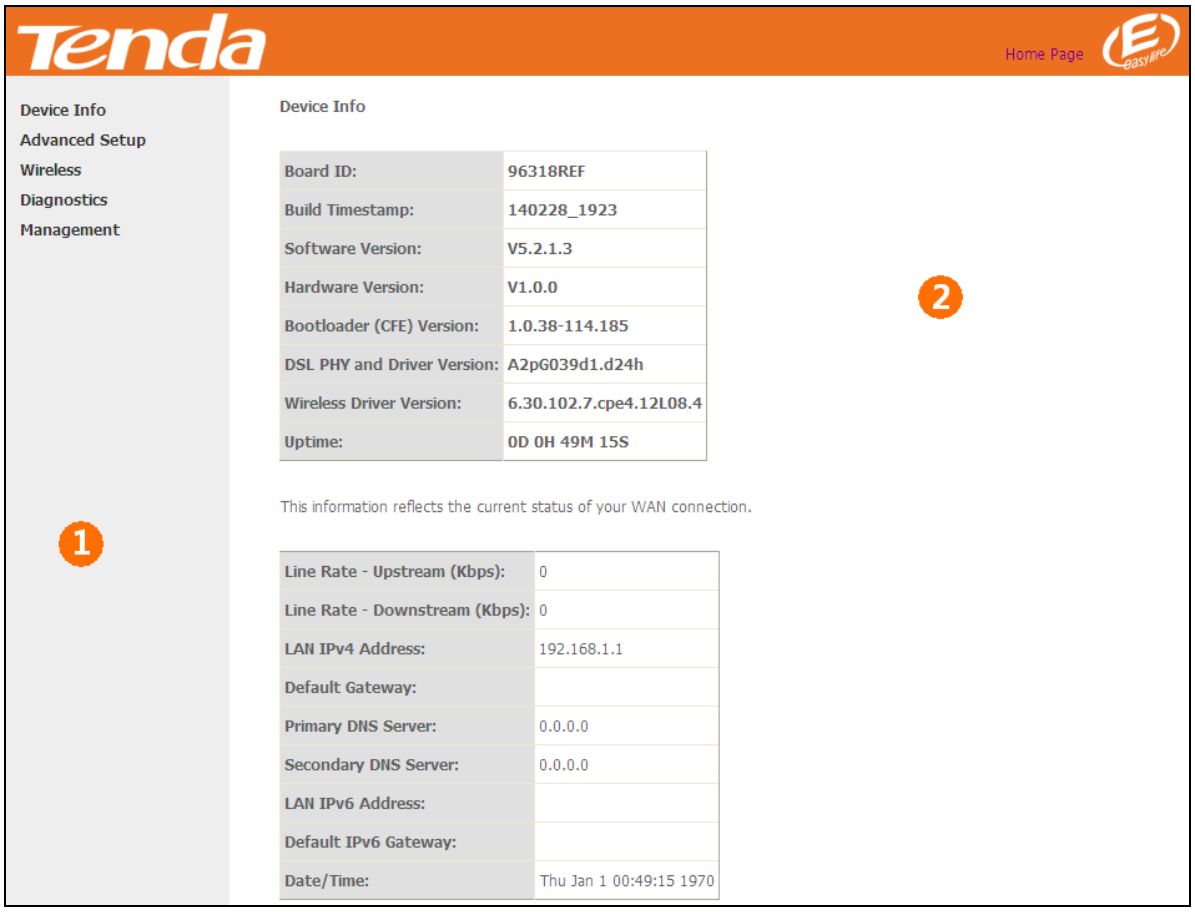



3. The home page displays.




Here you can view the connection status of each port and configure Internet and wireless settings. Also, you can click **# Advanced** to enter more configuration interfaces and click **# IPTV** to enter the IPTV configuration interface.

The following interface displays if you click **# Advanced**.




Description of the Web interface:

| ID | Area | Description |
|---|---|---|
| 1 | Navigation Bar | Includes a list of different menus of features that can selected and can be expanded to display all the components in configuration area. |
| 2 | Configuration Area | For users to configure and view parameters |

*Note:*

Unsupported features do not appear in the navigation bar of the Web page. For actualities of features, refer to the actual firmware.

Explanation of Common Components in Web Interface:

| Common Components | Description |
|---|---|
| Save Apply/Save | Activate settings in the current page. |
| Back | Return to the previous configuration interface. |
| Refresh | Refresh the current page. |
| Add | Add a configuration rule. |
| Enable | Enable a corresponding configuration rule. |
| Remove | Delete a corresponding configuration rule. |
| Show Key | Display the security key. |
| Reset Statistics | Reset (clear) statistics information. |
| umount | Unload the attached USB storage device. |
| Advanced | Click to enter more configuration interfaces. |
| IPTV | Click to enter IPTV configuration interface. |
| Home Page | Click to return to the device's home page. |

## 3.3.2 Internet Setup & Wireless Setup

Select corresponding settings according to how you access the Internet.

**A. Internet Setup (for Phone Cable) & Wireless Setup**

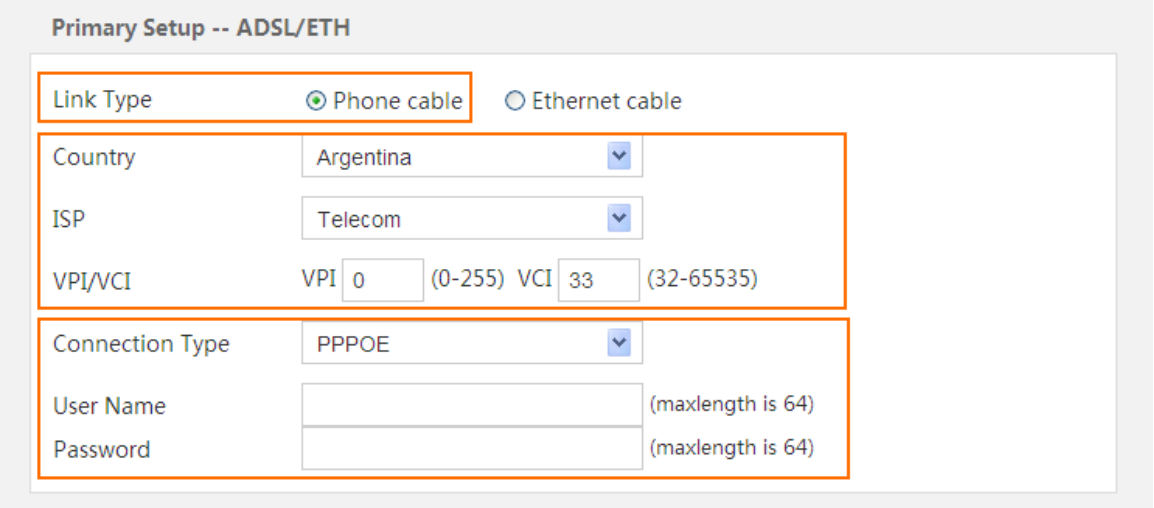
1. **Link Type:** Select **Phone Cable**.

2. **Country/ISP/VPI/VCI:** Select your country and ISP, and system will automatically generate VPI/VCI settings.

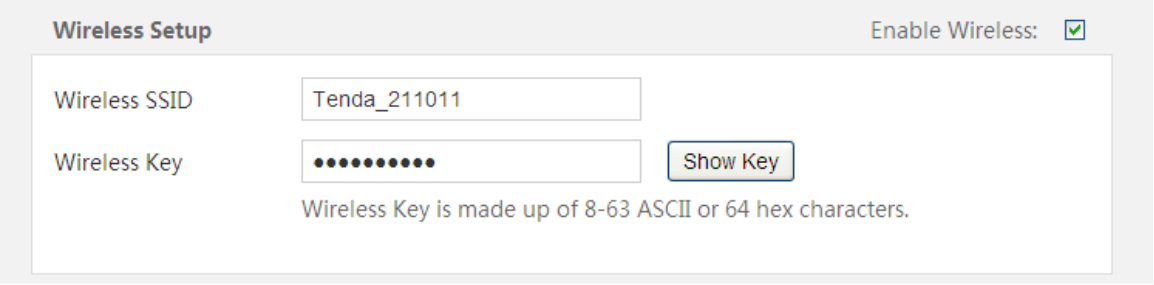
*Tip:*

If your ISP is included in the integrated list, select **Other** and then manually enter VPI and VCI settings (Consult your ISP if you don't know the VPI and VCI values.).

3. Internet Setup: Configure Internet settings according to the information in your broadband service receipt.




4. **Wireless SSID/Wireless Key:** Configure your **Wireless SSID** and **Wireless key**.




*Tip:*

If you click **Save** without customizing the wireless SSID and wireless key, then the wireless SSID is Tenda_XXXXXX (where "XXXXXX" is the last six characters of the device's MAC address in the label attached to the device) and wireless key is 12345678.

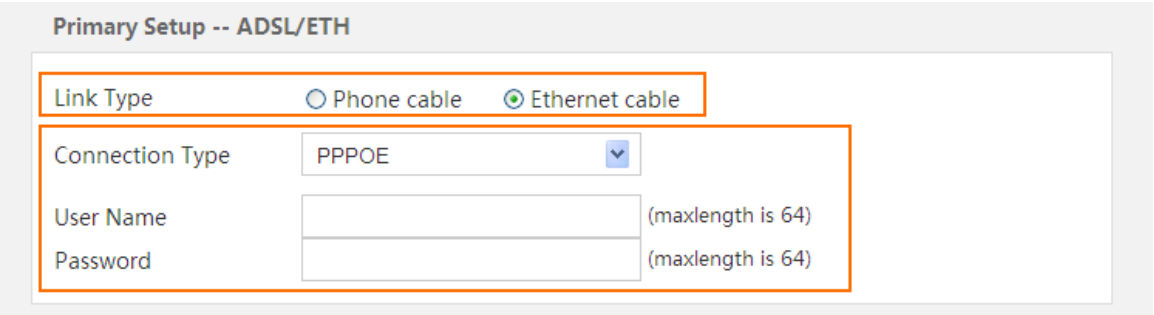
5. Click **Save**.

If you access the Internet via a wired connection, you can now access the Internet when finishing the required settings. If you access the Internet via a wireless connection, follow instructions in **Join Your Wireless Network** to reconnect to the device.

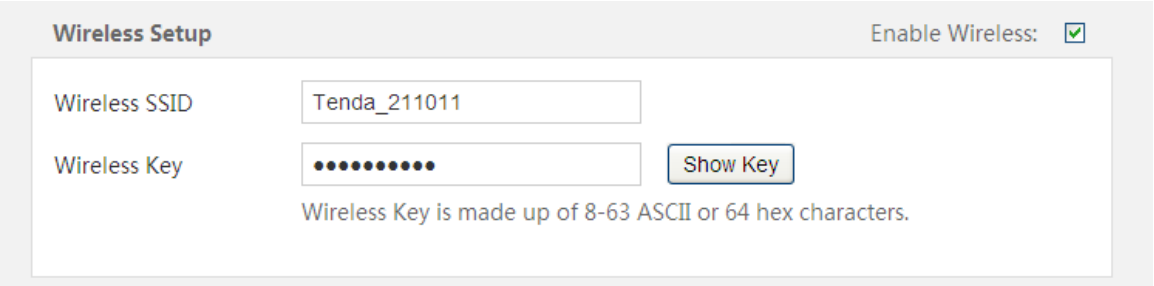
**B. Internet Setup (for Ethernet Cable) & Wireless Setup**

1. **Link Type:** Select **Ethernet Cable**.

2. Internet Setup: Configure Internet settings according to the information in your broadband service receipt.




3. **Wireless SSID/Wireless Key:** Configure your **Wireless SSID** and **Wireless key**.




*Tip:*

If you click **Save** without customizing the wireless SSID and wireless key, then the wireless SSID is Tenda_XXXXXX (where "XXXXXX" is the last six characters of the device's MAC address in the label attached to the device) and wireless key is 12345678.

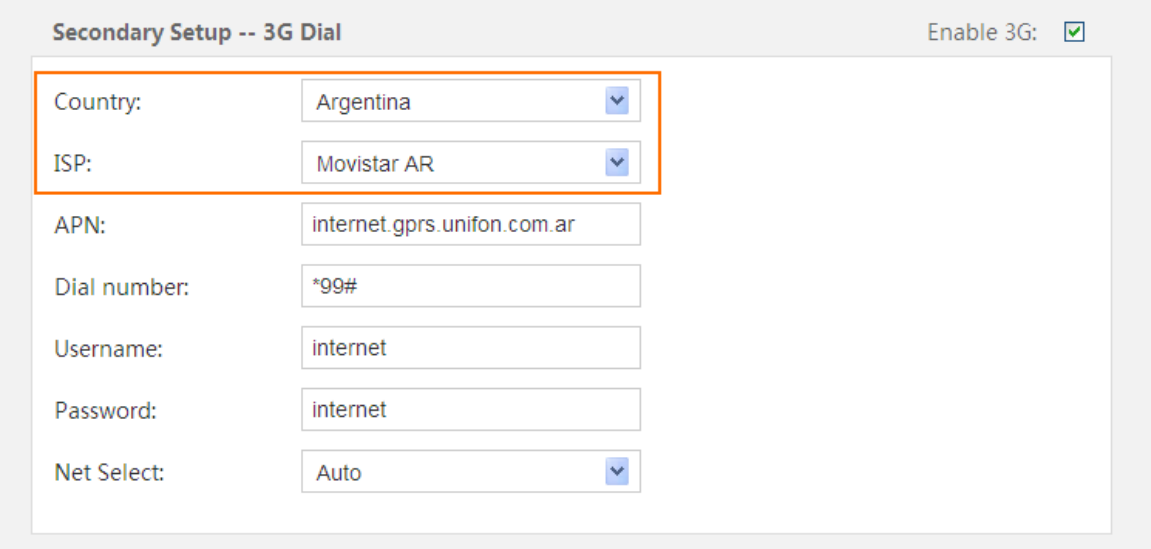
4. Click **Save**.

If you access the Internet via a wired connection, you can now access the Internet when finishing the required settings. If you access the Internet via a wireless connection, follow instructions in 3.2.2 Join Your Wireless Network to reconnect to the device.

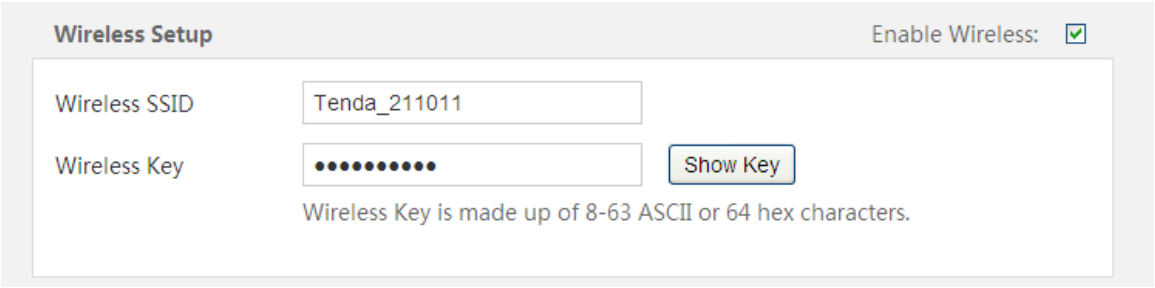
**C. 3G Internet Setup & Wireless Setup**

1. **Country:** Select your country.

2. Select your 3G ISP and system will automatically populate the relevant fields. If your ISP is not included in the integrated list, select **Other** and manually enter the required information (Consult your ISP, if you are not clear.).




3. **Wireless SSID/Wireless Key:** Configure your **Wireless SSID** and **Wireless key**.




*Tip:*

If you click **Save** without customizing the wireless SSID and wireless key, then the wireless SSID is Tenda_XXXXXX (where "XXXXXX" is the last six characters of the device's MAC address in the label attached to the device) and wireless key is 12345678.

4. Click **Save**.

If you access the Internet via a wired connection, you can now access the Internet when finishing the required settings. If you access the Internet via a wireless connection, follow instructions in 3.2.2 Join Your Wireless Network to reconnect to the device.

# Chapter 4 Advanced Settings

This chapter describes the advanced features of your router.

The information is for users with a solid understanding of networking concepts who want to configure the router for unique situations.

This chapter includes the following sections:

• Device Info

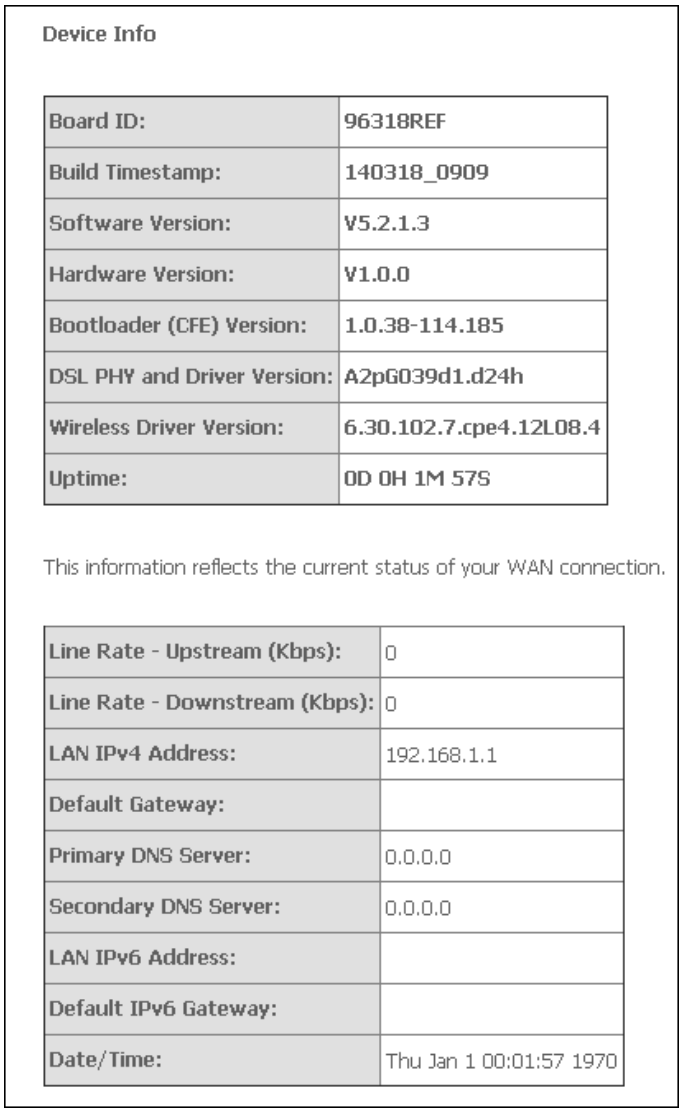
• Advanced Setup

• Wireless

• Diagnostics

• Management

Click **Advanced** on the home page to enter the screen below.



# 4.1 Device Info

This section includes the following information:

• Summary

• WAN

• Statistics

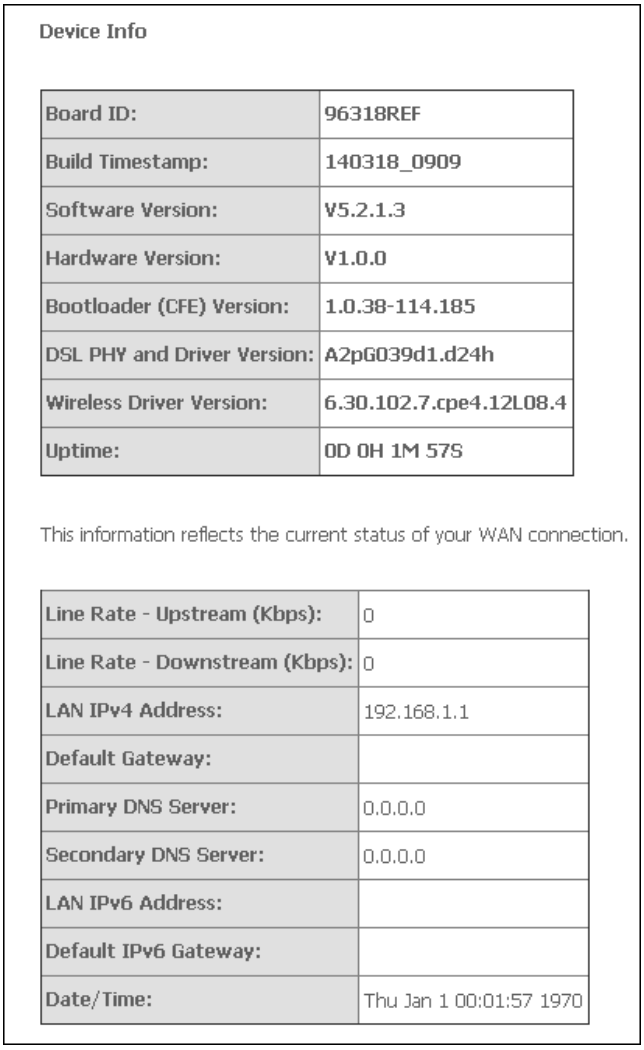
• Route

• ARP

• DHCP

## Summary

Here you can view system information and current status of your WAN connection as seen in the screenshot.



Device Info

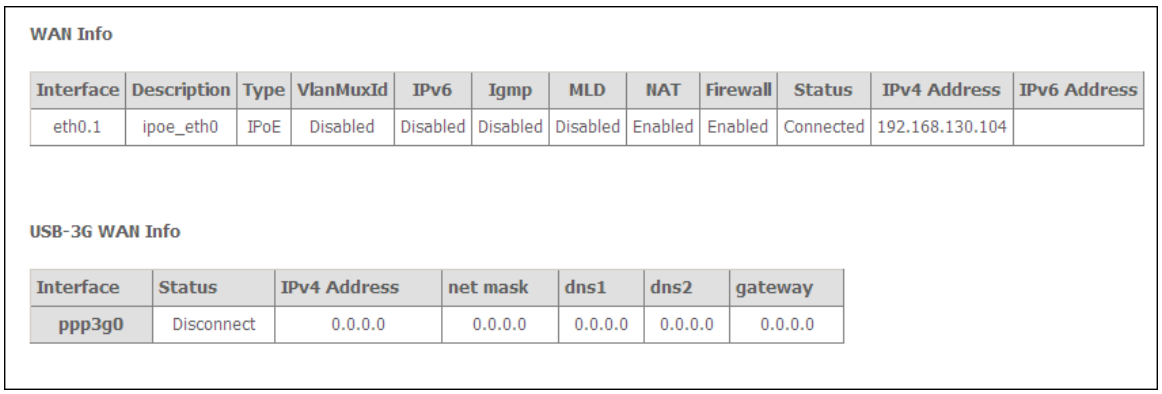
| | |
|---|---|
| Board ID: | 96318REF |
| Build Timestamp: | 140318_0909 |
| Software Version: | V5.2.1.3 |
| Hardware Version: | V1.0.0 |
| Bootloader (CFE) Version: | 1.0.38-114.185 |
| DSL PHY and Driver Version: | A2pG039d1.d24h |
| Wireless Driver Version: | 6.30.102.7.cpe4.12L08.4 |
| Uptime: | 0D 0H 1M 57S |

This information reflects the current status of your WAN connection.

| | |
|---|---|
| Line Rate - Upstream (Kbps): | 0 |
| Line Rate - Downstream (Kbps): | 0 |
| LAN IPv4 Address: | 192.168.1.1 |
| Default Gateway: | |
| Primary DNS Server: | 0.0.0.0 |
| Secondary DNS Server: | 0.0.0.0 |
| LAN IPv6 Address: | |
| Default IPv6 Gateway: | |
| Date/Time: | Thu Jan 1 00:01:57 1970 |

## WAN

Here you can view the WAN Information including Interface, Description, Type, IGMP, NAT, Firewall, Status, IPv4 Address and VLAN ID as seen in the screenshot.



WAN Info

| Interface | Description | Type | VlanMuxId | IPv6 | Igmp | MLD | NAT | Firewall | Status | IPv4 Address | IPv6 Address |
|---|---|---|---|---|---|---|---|---|---|---|---|
| eth0.1 | ipoe_eth0 | IPoE | Disabled | Disabled | Disabled | Disabled | Enabled | Enabled | Connected | 192.168.130.104 | |

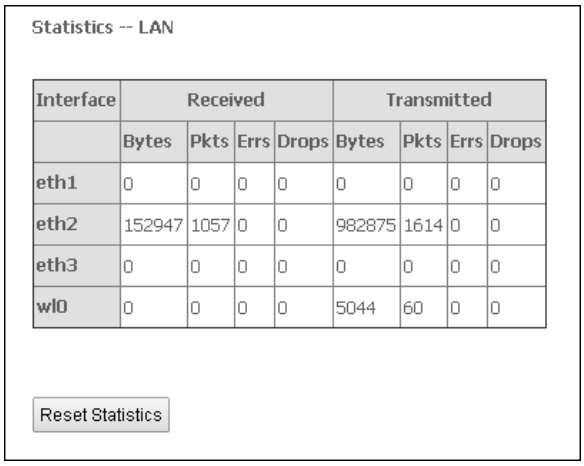
USB-3G WAN Info

| Interface | Status | IPv4 Address | net mask | dns1 | dns2 | gateway |
|---|---|---|---|---|---|---|
| ppp3g0 | Disconnect | 0.0.0.0 | 0.0.0.0 | 0.0.0.0 | 0.0.0.0 | 0.0.0.0 |

## Statistics

Here you can view the packets received and transmitted on LAN/WAN ports.

**Statistics--LAN:** Displays the packets received and transmitted on the LAN ports as seen in the screenshot below.

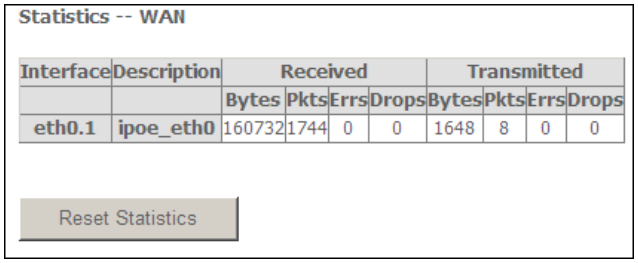


Statistics -- LAN

| Interface | Received | | | | Transmitted | | | |
|---|---|---|---|---|---|---|---|---|
| | Bytes | Pkts | Errs | Drops | Bytes | Pkts | Errs | Drops |
| eth1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| eth2 | 152947 | 1057 | 0 | 0 | 982875 | 1614 | 0 | 0 |
| eth3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| wl0 | 0 | 0 | 0 | 0 | 5044 | 60 | 0 | 0 |

Reset Statistics

**Statistics--WAN:** Displays the packets received and transmitted on the WAN ports as seen in the screenshot below.

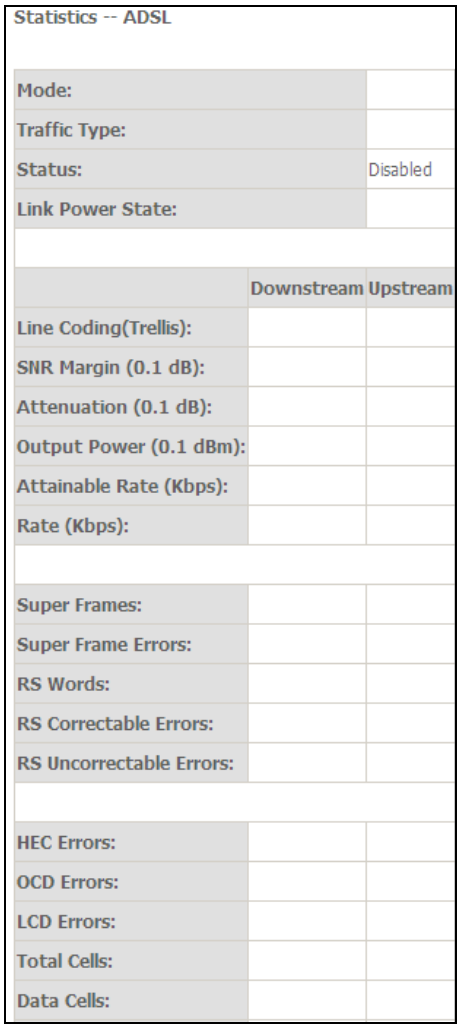


Statistics -- WAN

| Interface | Description | Received | | | | Transmitted | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Bytes | Pkts | Errs | Drops | Bytes | Pkts | Errs | Drops |
| eth0.1 | ipoe_eth0 | 160732 | 1744 | 0 | 0 | 1648 | 8 | 0 | 0 |

Reset Statistics

**Statistics--ADSL:** Displays the packets received and transmitted over the ADSL link as seen in the screenshot below.

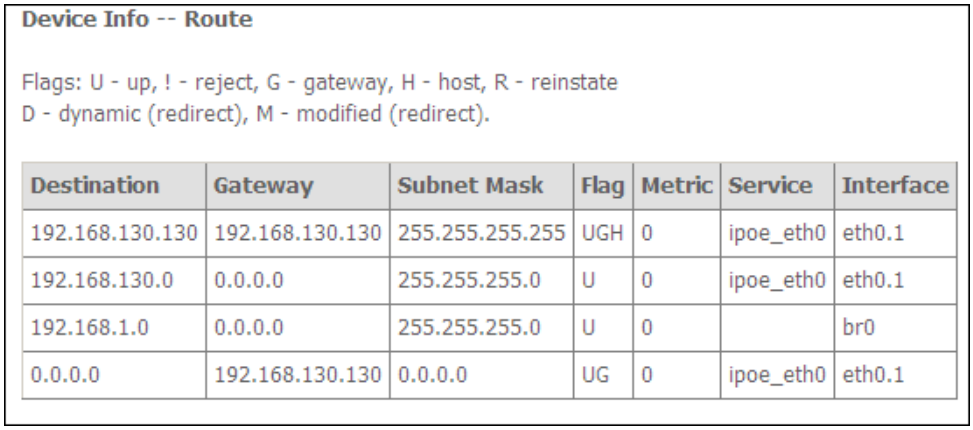


Statistics -- ADSL

| | | |
|---|---|---|
| Mode: | | |
| Traffic Type: | | |
| Status: | | Disabled |
| Link Power State: | | |
| | | |
| | Downstream | Upstream |
| Line Coding(Trellis): | | |
| SNR Margin (0.1 dB): | | |
| Attenuation (0.1 dB): | | |
| Output Power (0.1 dBm): | | |
| Attainable Rate (Kbps): | | |
| Rate (Kbps): | | |
| | | |
| Super Frames: | | |
| Super Frame Errors: | | |
| RS Words: | | |
| RS Correctable Errors: | | |
| RS Uncorrectable Errors: | | |
| | | |
| HEC Errors: | | |
| OCD Errors: | | |
| LCD Errors: | | |
| Total Cells: | | |
| Data Cells: | | |

## Route

Here you can view the route table as seen in the screenshot:



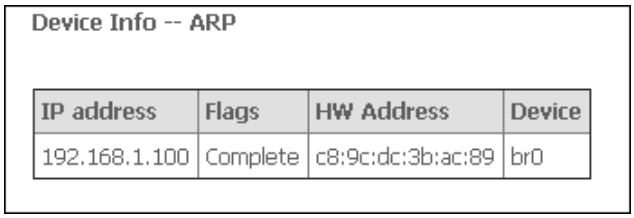
Device Info -- Route

Flags: U - up, ! - reject, G - gateway, H - host, R - reinstate
D - dynamic (redirect), M - modified (redirect).

| Destination | Gateway | Subnet Mask | Flag | Metric | Service | Interface |
|---|---|---|---|---|---|---|
| 192.168.130.130 | 192.168.130.130 | 255.255.255.255 | UGH | 0 | ipoe_eth0 | eth0.1 |
| 192.168.130.0 | 0.0.0.0 | 255.255.255.0 | U | 0 | ipoe_eth0 | eth0.1 |
| 192.168.1.0 | 0.0.0.0 | 255.255.255.0 | U | 0 | | br0 |
| 0.0.0.0 | 192.168.130.130 | 0.0.0.0 | UG | 0 | ipoe_eth0 | eth0.1 |

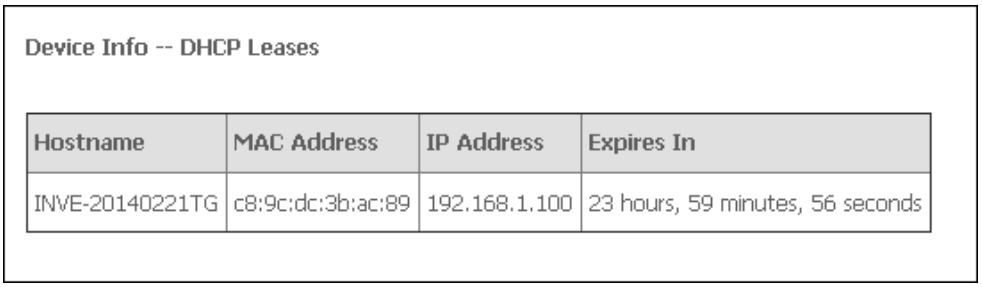
### ARP

Here you can view the IP and MAC addresses of the PCs that attach to the device either via a wired or wireless connection as seen in the screenshot:




### DHCP

Here you can view the DHCP leases, including IP and MAC addresses of the PCs, hostnames and remaining lease time as seen in the screenshot:




## 4.2 Advanced Setup

This section explains the following information:

• Layer2 Interface

• WAN Service

• USB Application

• LAN

• NAT

• Security

• Parental Control

• Quality of Service

• Routing

• DNS

- DSL
- UPnP
- Interface Grouping
- IP Tunnel
- Certificate
- Multicast
- IPTV

## 4.2.1 Layer2 Interface

Click **Advanced Setup -> Layer2 Interface** to enter the Layer2 Interface screen.

This router provides two Layer2 Interfaces:

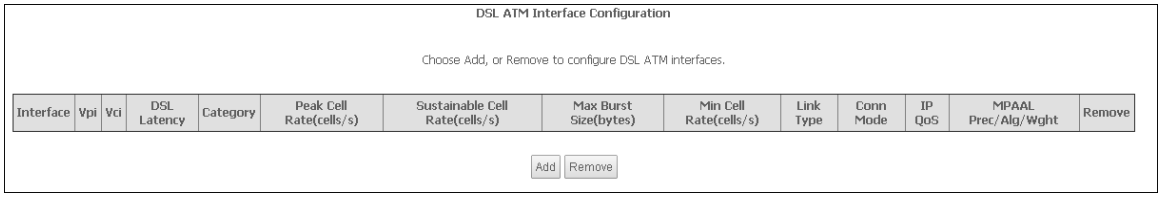
**- ATM Interface** for ADSL broadband Internet service

**- ETH Interface** for connecting to the Internet via an Ethernet cable.

By default, system applies the ATM Interface (ADSL uplink).

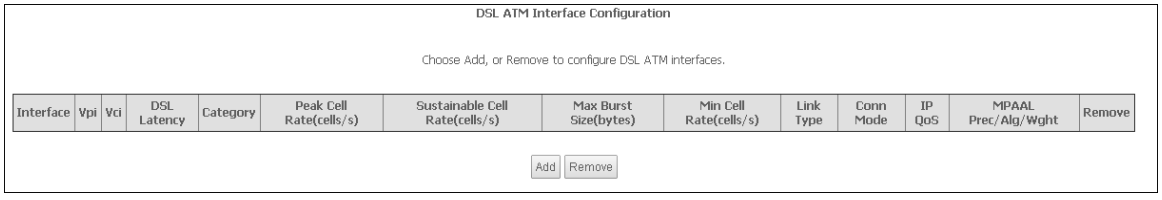
If you directly connect to the ADSL line via a phone cable, first refer to **To set up the ATM interface** and then skip to **To set up WAN Service for ATM Interface**.

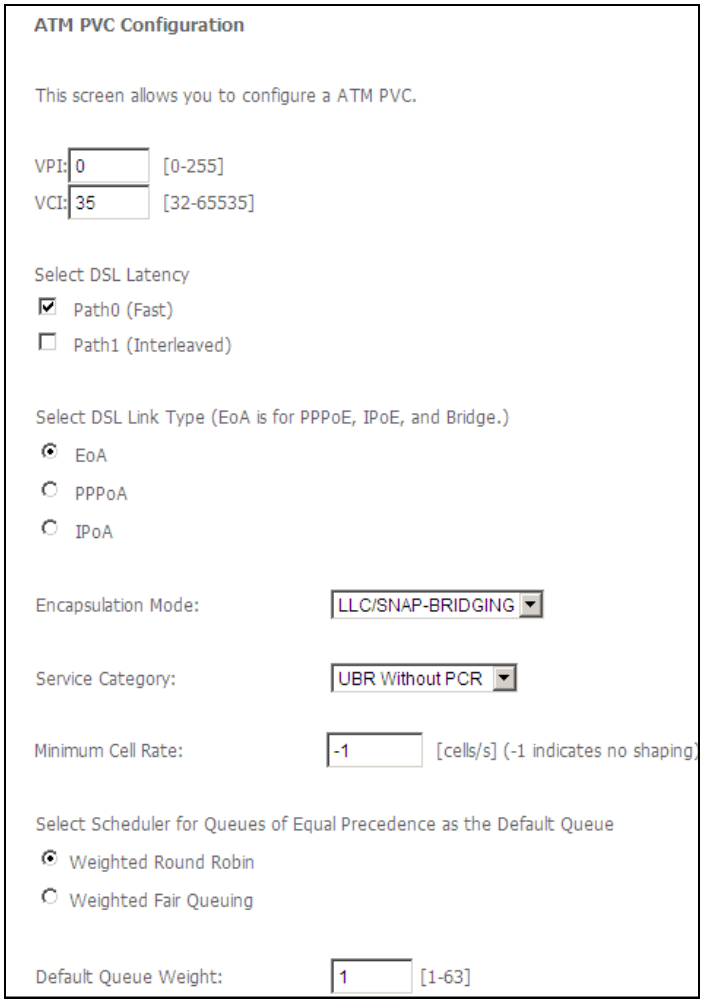
Or if you connect to the Internet via a fiber/cable modem using an Ethernet cable, first refer to **To set up the ETH interface** and then skip to **To set up WAN Service for ETH Interface**.




### To set up the ATM interface

Select **ATM Interface** and click **Add** to configure it.






Enter the VPI and VCI values, Select a DSL Link Type (Internet connection type): EoA (EoA is for PPPoE, IPoE, and Bridge.), PPPoA or IPoA, leave other options unchanged from factory defaults and click **Apply/Save** and then refer to **To set up WAN Service for ATM Interface** to configure the WAN service for the Internet access.

---

*Tip:*

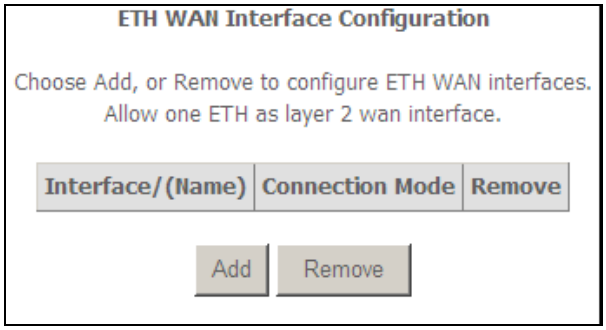
If you are unsure about the VPI/VCI parameters, see **Appendix 3 VPI/VCI List.** Or if your ISP and the VPI/VCI information is not covered there, ask your ISP to provide it.

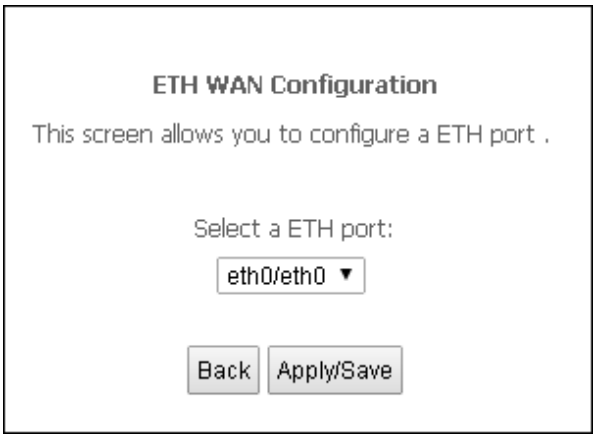
---

### To set up the ETH interface

1. Click **Add** to display the **ETH WAN Configuration** screen.
2. Select **eth0/eth0** as the ETH port.
3. Click the **Apply/Save** button and then refer to **To set up WAN Service for ETH Interface** to

configure the WAN service for Internet access.




The Ethernet port configured here is to function as a WAN port. Only eth0/eth0 can be configured as the WAN port.

## 4.2.2 WAN Service

This router provides two WAN services:

- WAN Service for ATM Interface (ADSL uplink)

- WAN Service for ETH Interface (Ethernet uplink)

### To setup WAN Service for ATM Interface

If you configured the **ATM Interface** (ADSL uplink), follow steps below to configure the WAN service: Click **Advanced Setup** -> **WAN Service** and then click the **Add** button. Select the interface you have configured

Depending on the type of connection, you will come to different screens and be prompted to enter your ISP settings accordingly. Select one connection type from the five Internet connection types as shown in the following table (If you are unsure, consult your ISP.):

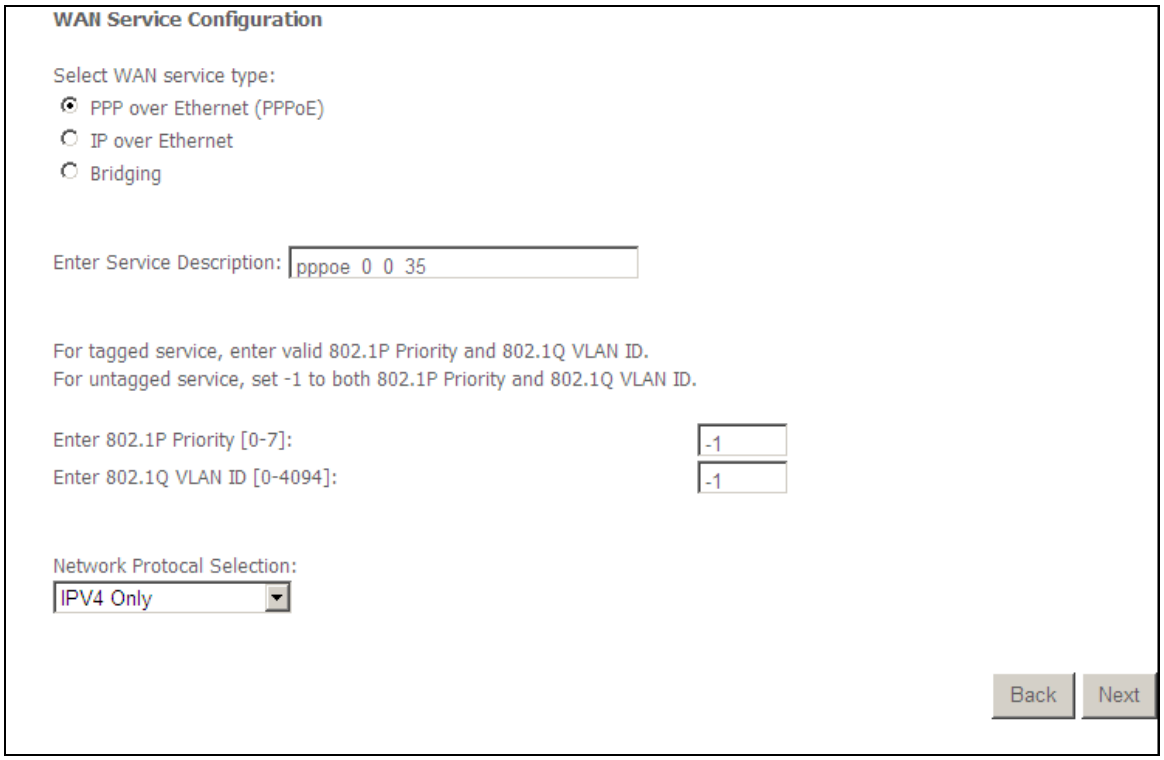
| Internet Connection Type | | ISP Information |
|---|---|---|
| PPPoE PPPoA | | Enter the ISP login user name and password. If you cannot locate this information, ask your ISP to provide it. |
| IPoE<br><br>(If your ISP uses DHCP to assign your IP address or if your ISP assigns you a static (fixed) IP address, IP subnet mask and the gateway IP address, you need to select the IP over Ethernet (IPoE). | Dynamic IP | No entries are needed. |
| | Static (Fixed) IP | Enter the assigned IP address, subnet mask, and the IP address of your ISP's primary DNS server. This information should have been provided to you by your ISP. If a secondary DNS server address is available, enter it also. |
| IPoA | Static (Fixed) IP | Enter the assigned IP address, subnet mask, and the IP address of your ISP's primary DNS server. This information should have been provided to you by your ISP. If a secondary DNS server address is available, enter it also. |
| Bridging | | If you wish to initiate a dialup directly from your PC for Internet access or enjoy the entire Internet connection (instead of sharing it with others), you can select the **Bridging** and then click **Next**. |

*Tip:*

For PPPoE, IPoE, and Bridging Internet connection types, you must first select EoA on the ATM Interface Screen, for more information, see To set up the ATM interface.

## PPP over Ethernet (PPPoE)

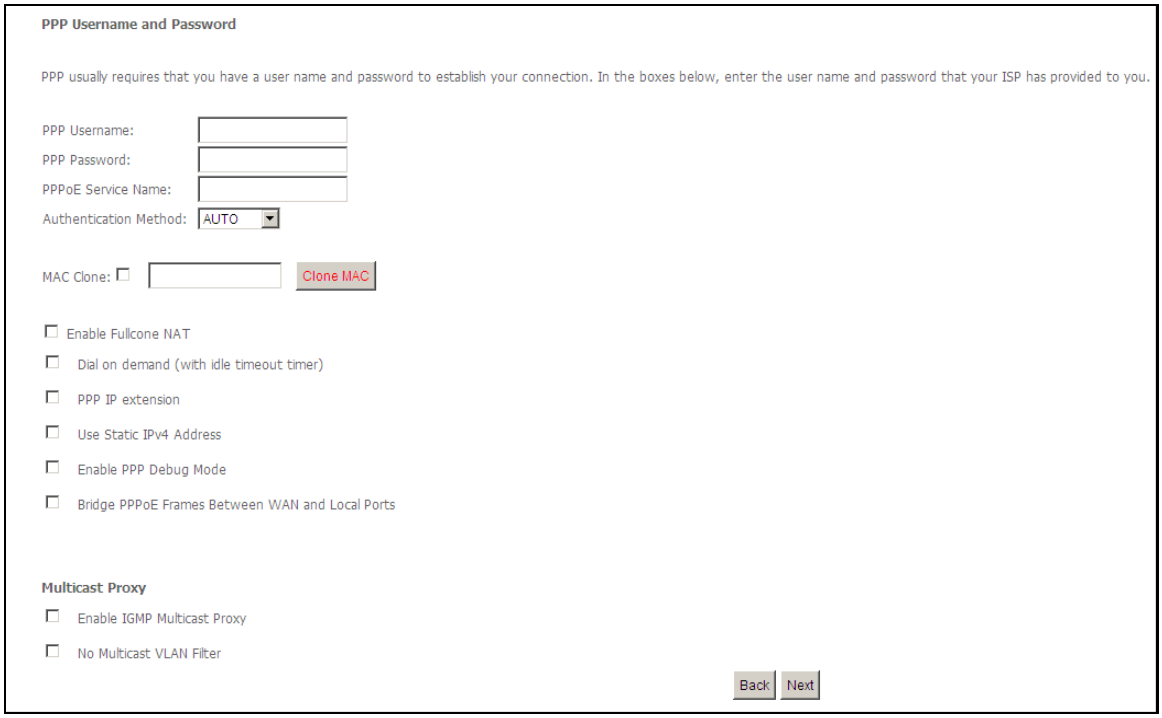
If you have selected the **EoA** from the **ATM Interface** screen in **Layer2 Interface**, you will see the screen below when you click the **WAN Service** tab, select the configured interface and click **Next**.




1. Select **PPPoE**.
2. Edit the **Enter Service Description**. This field is optional. We recommend that you keep the default.
3. Select a network protocol: IPv4, IPv6 or IPv4 & IPv6 (dual stack).
4. Click **Next**.

*Note:*

If you select IPv6 or IPv4 & IPv6 (dual stack), skip to IPv6.




✧ **PPP User Name:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.

✧ **PPP Password:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.

✧ **PPPoE Service Name:** This information is provided by your ISP. Only enter it if instructed by your ISP.

✧ **Authentication Method:** This is used by ISP to authenticate the client that attempts to connect. If you are not sure, consult your ISP or select **Auto**.

✧ **Clone MAC:** Clicking this button copies the MAC address of your PC to the router. Many broadband ISPs restrict access by allowing traffic only from the MAC address of your broadband modem, but some ISPs additionally register the MAC address of the network interface card in your computer when your account is first opened. They then accept traffic only from the MAC address of that computer. If so, configure your router to “clone” the MAC address from the authorized computer.

✧ **Dial on demand:** Connect to ISP only when there is traffic transmission. This saves your broadband Internet service bill.

✧ **PPP IP extension:** If enabled, all the IP addresses in outgoing packets including management packets on the WAN port will be changed to the device's WAN IP address. Only change the default settings if necessary.

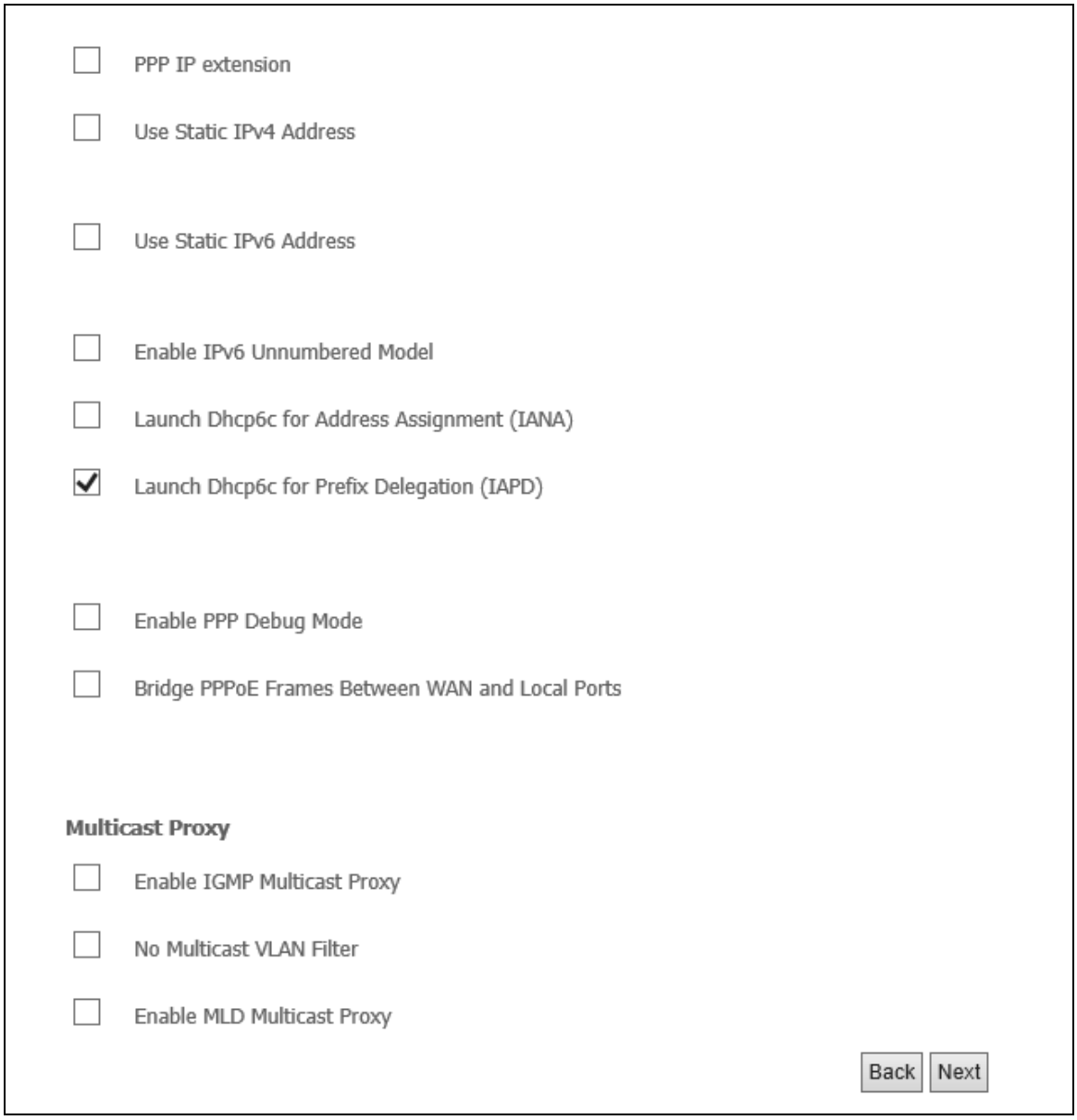
✧ **Enable PPP Debug Mode:** Only enable this feature if supported by your ISP.

✧ **Bridge PPPoE Frames Between WAN and Local Ports:** If enabled, PPPoE dialup frame from LAN side will directly egress the WAN port without modification.

✧ **Multicast Proxy:** If enabled, the router will use multicast proxy.

## IPv6

If you select IPv4 as the network protocol, skip this section.




1. Check **Launch Dhcp6c for Prefix Delegation (IAPD)**.
2. If your ISP is using stateful DHCPv6, check **Launch Dhcp6c for Address Assignment (IANA)** also. Or configure a static IP address.
3. Click **Next -> Next -> Apply/Save**.

## WAN Gateway




Here you can configure the WAN gateway address. After you configure it click **Next**. The default setting is recommended.

*Note:*

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

## WAN DNS




Here you can configure the WAN DNS address:

-Click the **Select DNS Server Interface from available WAN interfaces** option

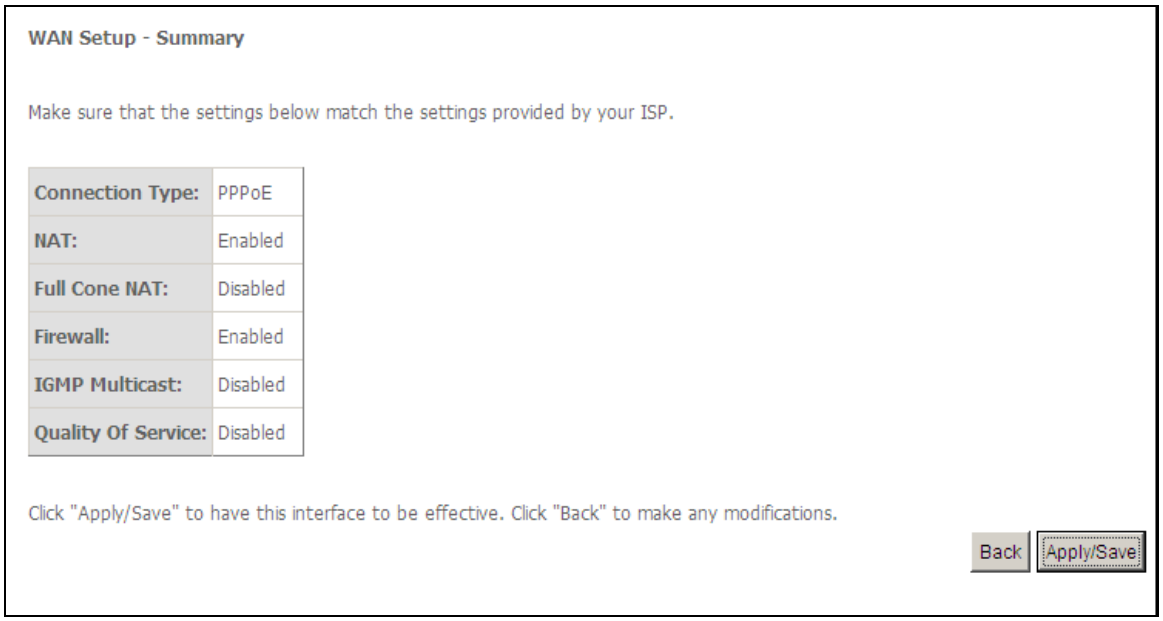
-OR select the **Use the following Static DNS IP address** option and enter static DNS server IP

addresses for the system

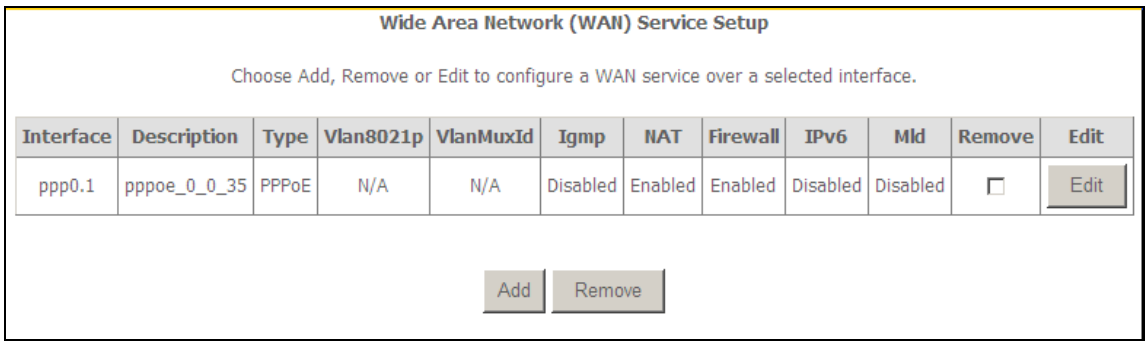
And then click **Next**.

*Note:*

- DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.
- In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
- If you cannot locate the static DNS server IP information, ask your ISP to provide it.




Here you can view your configurations. Click **Apply/Save** to save your settings if everything is correctly set.

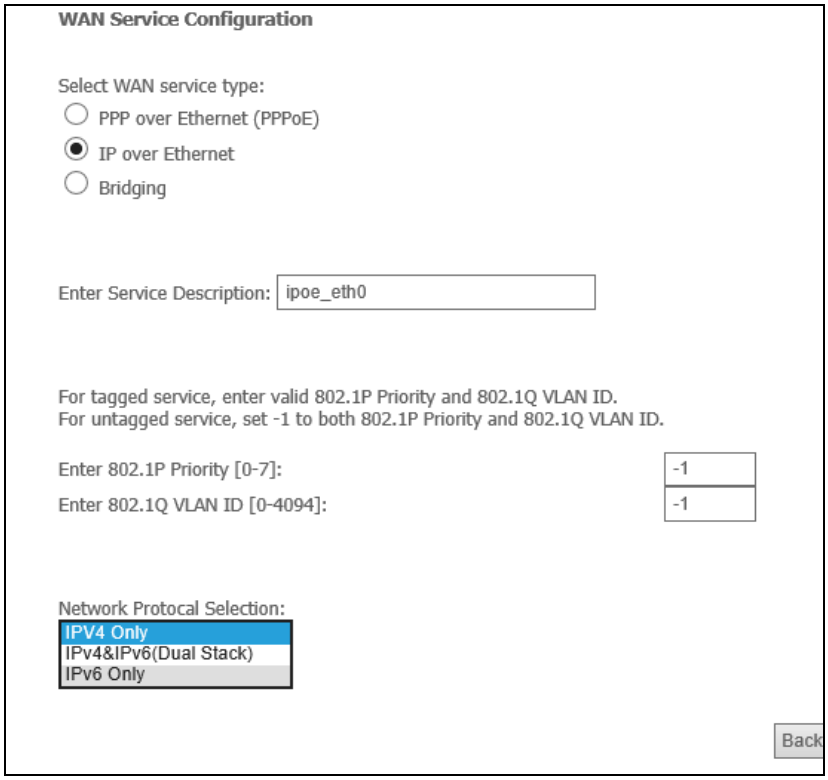



When the PPPoE connection is successful, you can access the Internet.

## IP over Ethernet (IPoE)

If your ISP uses DHCP to assign your IP address or if your ISP assigns you a static (fixed) IP address, IP subnet mask and the gateway IP address, you need to select the IP over Ethernet (IPoE).

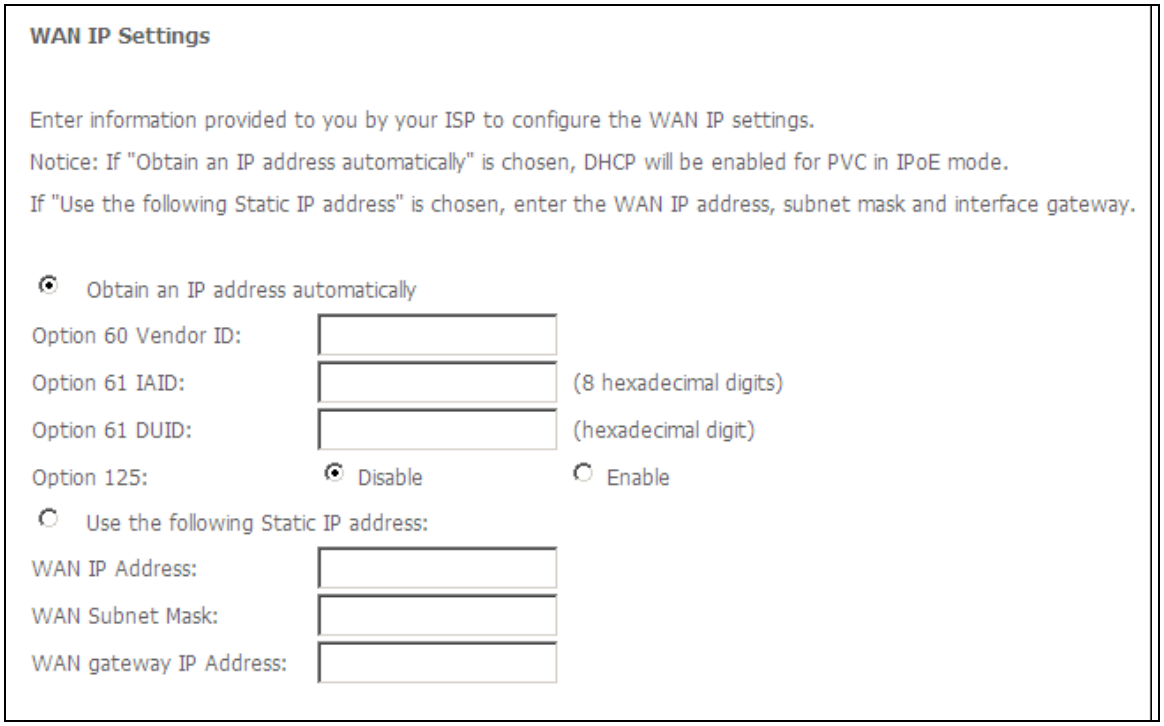
If you have selected the **EoA** from the **ATM Interface** screen in **Layer2 Interface**, you will see the screen below when you click the **WAN Service** tab, select the configured interface and click **Next**.




1. Select IPoE.
2. Edit the **Enter Service Description** (optional). We recommend that you keep the default.
3. Select a network protocol: IPv4, IPv6 or IPv4 & IPv6 (dual stack).
4. Click **Next**.

*Note:*

If you select IPv6 or IPv4 & IPv6 (dual stack), skip to IPv6.




✧ **Obtain an IP address automatically:** This allows the router to automatically acquire IP information from your ISP or your existing networking equipment.

✧ **Use the following Static IP address:** This allows you to specify the Static IP information provided by your ISP or that corresponds with your existing networking equipment.

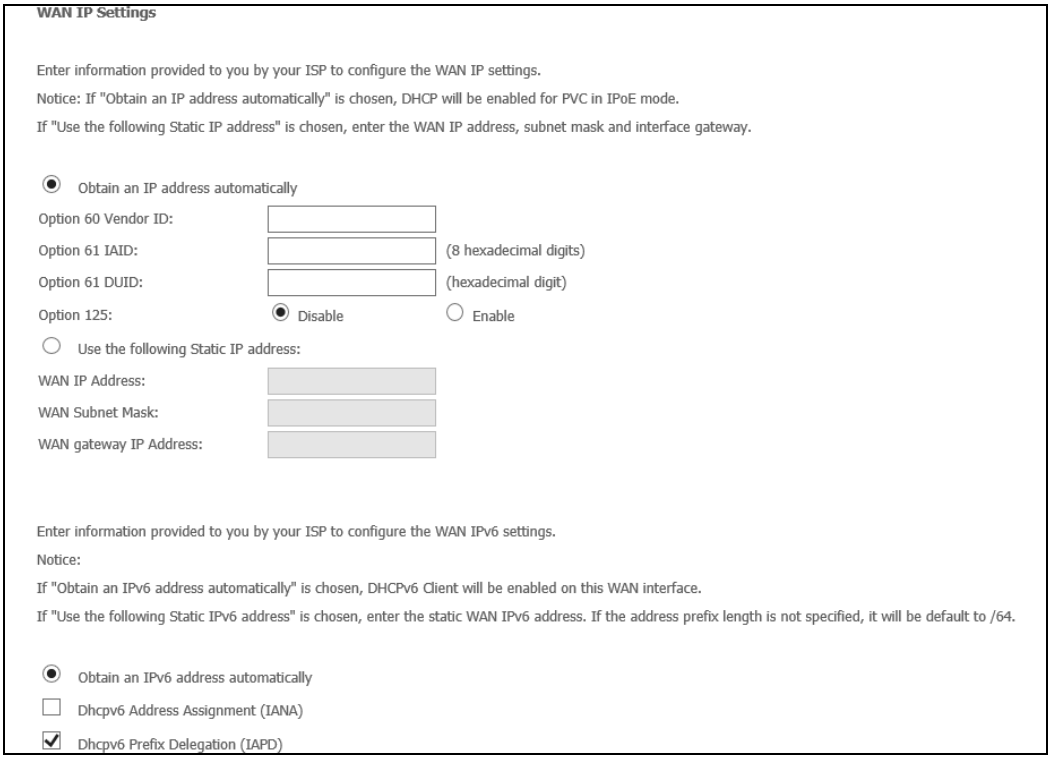
✧ **WAN IP Address:** The Internet IP address provided by your ISP for accessing the Internet.

✧ **WAN Subnet Mask:** The subnet mask address provided by your ISP for accessing the Internet.

✧ **WAN gateway IP Address:** The gateway IP address provided by your ISP for accessing the Internet.

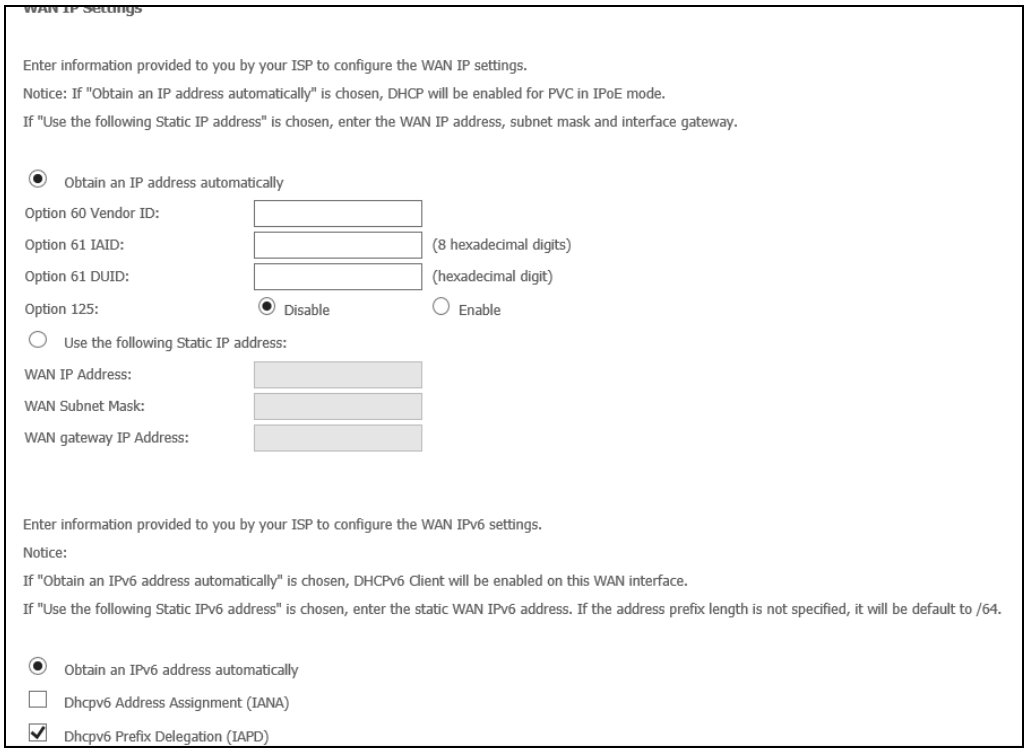
## IPv6

If you select IPv4 as the network protocol, skip this section.



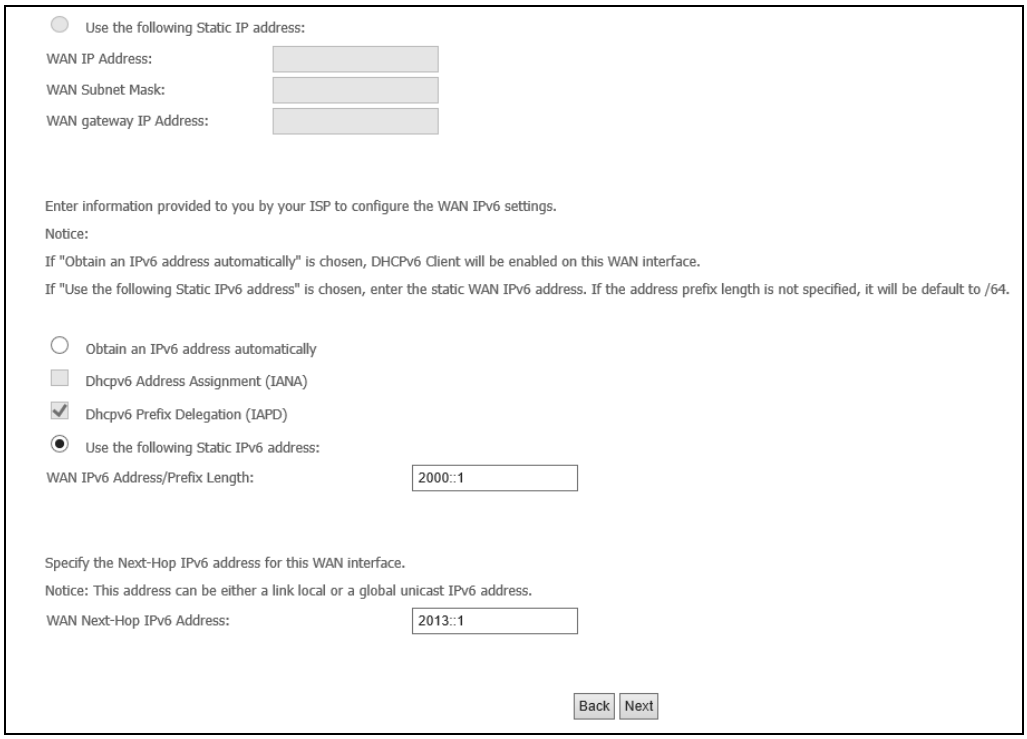

**To obtain an IP address automatically:**

1. Select **Obtain an IP address automatically**.
2. Check **Launch Dhcp6c for Prefix Delegation (IAPD)**.
3. If your ISP is using stateful DHCPv6, check **Launch Dhcp6c for Address Assignment (IANA)**.
4. Click **Next -> Next -> Apply/Save**.

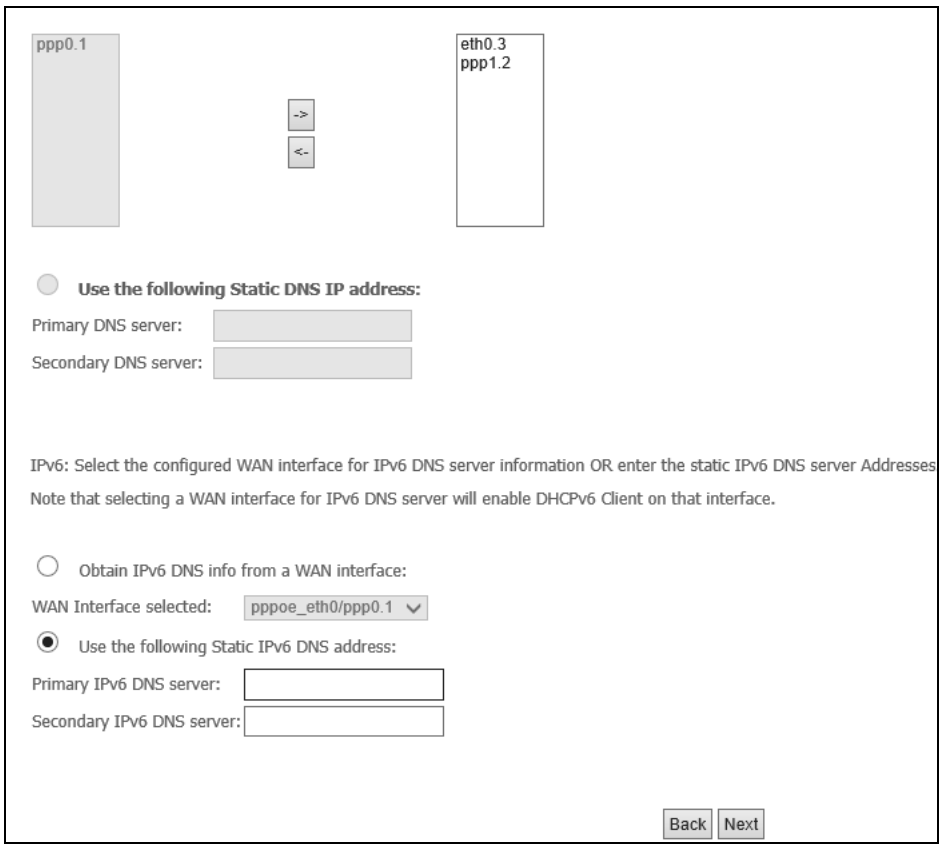


**To configure a static IPv6 address**

1. Select **Use the following Static IPv6 address**.
2. Configure **WAN IPv6 Address/Prefix Length** and **WAN Next-Hop IPv6 Address**.




3. Click **Next -> Next** to enter the screen below.



4. Select **Use the following Static IPv6 DNS address** and manually enter the DNS server address. If you have two DNS server addresses, enter the second also.

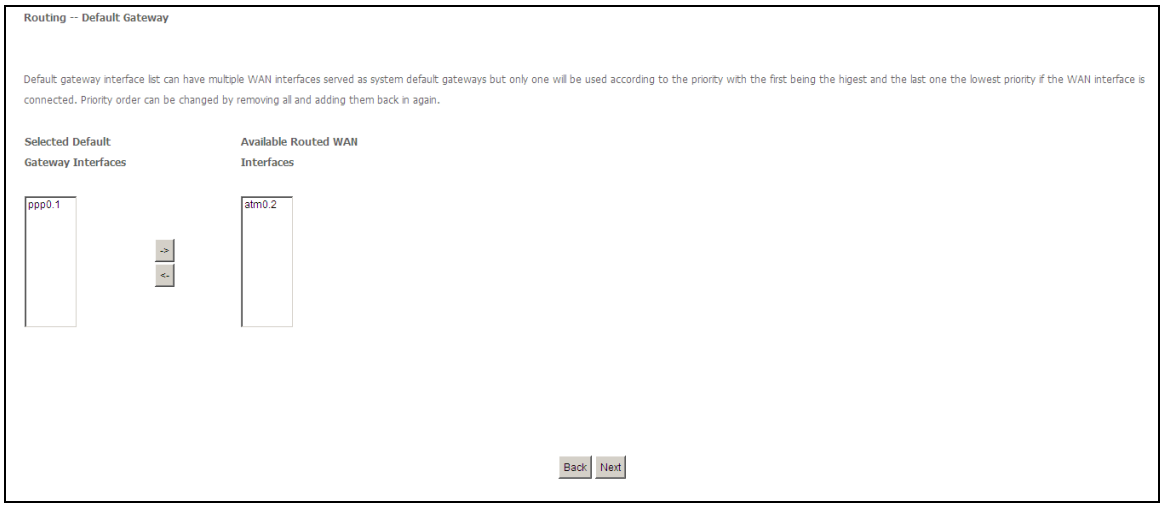
5. Click **Next -> Apply/Save**.

*Note:*

If "Obtain an IP address automatically" is chosen, DHCP will be enabled for PVC in IPoE mode.



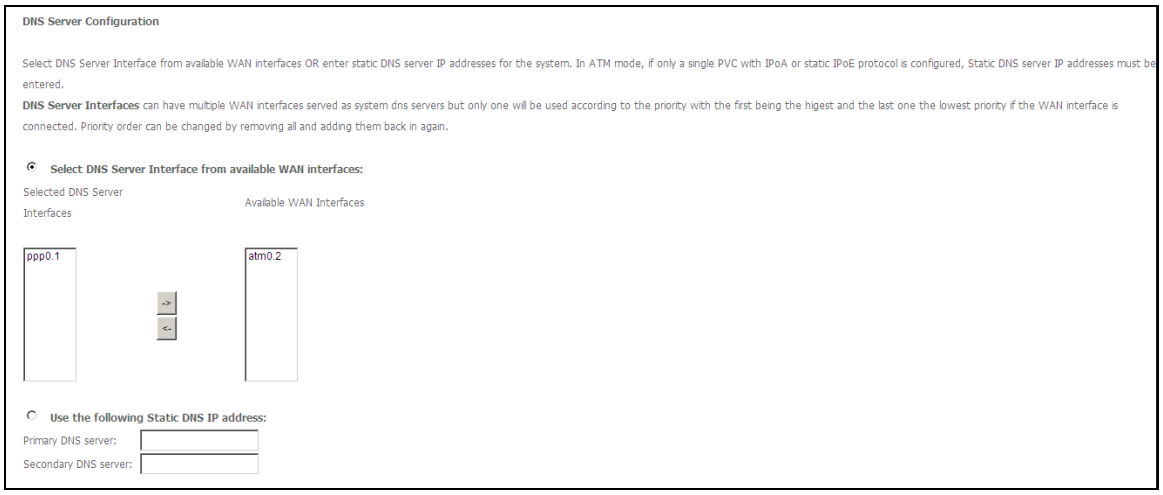

Here you can configure the NAT settings. If you are unsure about the options, please keep the default settings and then click **Next**.




Here you can configure the WAN gateway address. Default gateway interface list can have multiple

WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

If you are unsure about the options, please keep the default settings and then click **Next**.




Here you can configure the WAN DNS address:

-Click the **Select DNS Server Interface from available WAN interfaces** option

-OR select the **Use the following Static DNS IP address** option and enter static DNS server IP addresses for the system

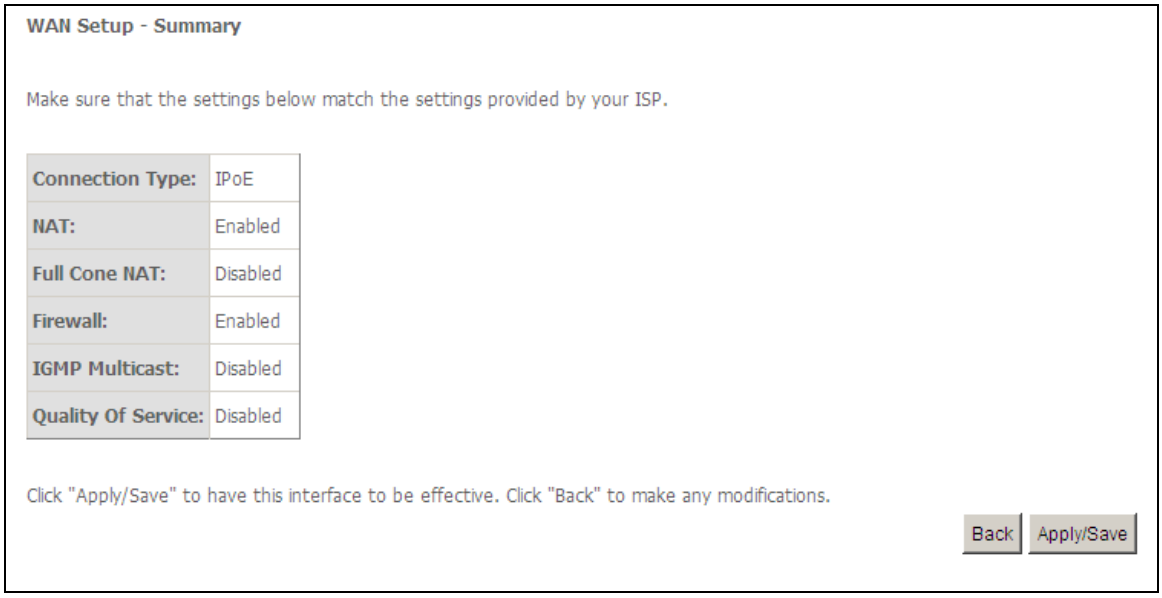
And then click **Next**.

---

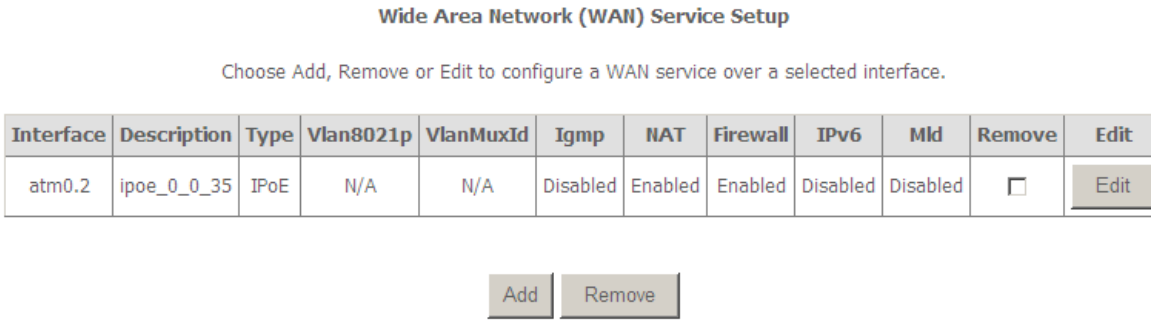
*Note:*

- DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.
- In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
- If you cannot locate the static DNS server IP information, ask your ISP to provide it.

---




Here you can view your configurations. Click **Apply/Save** to save your settings if everything is correctly set.

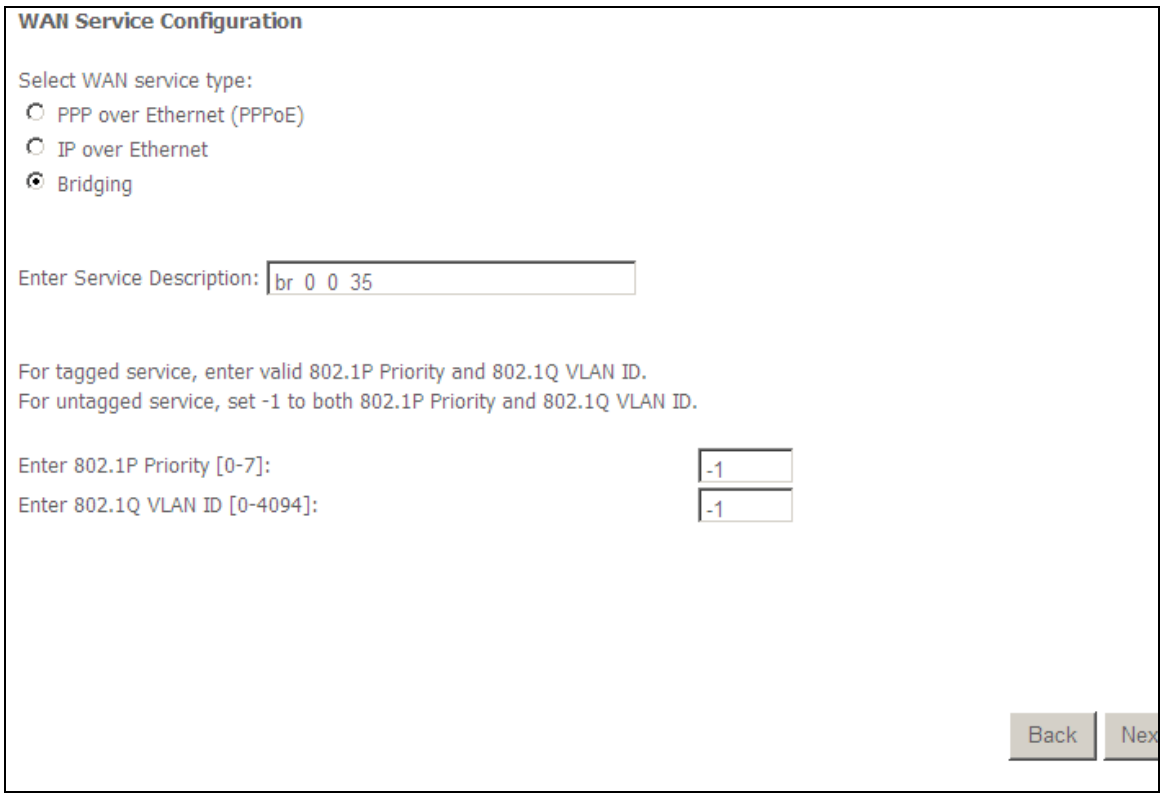



When the IPoE connection is successful, you can access the Internet.

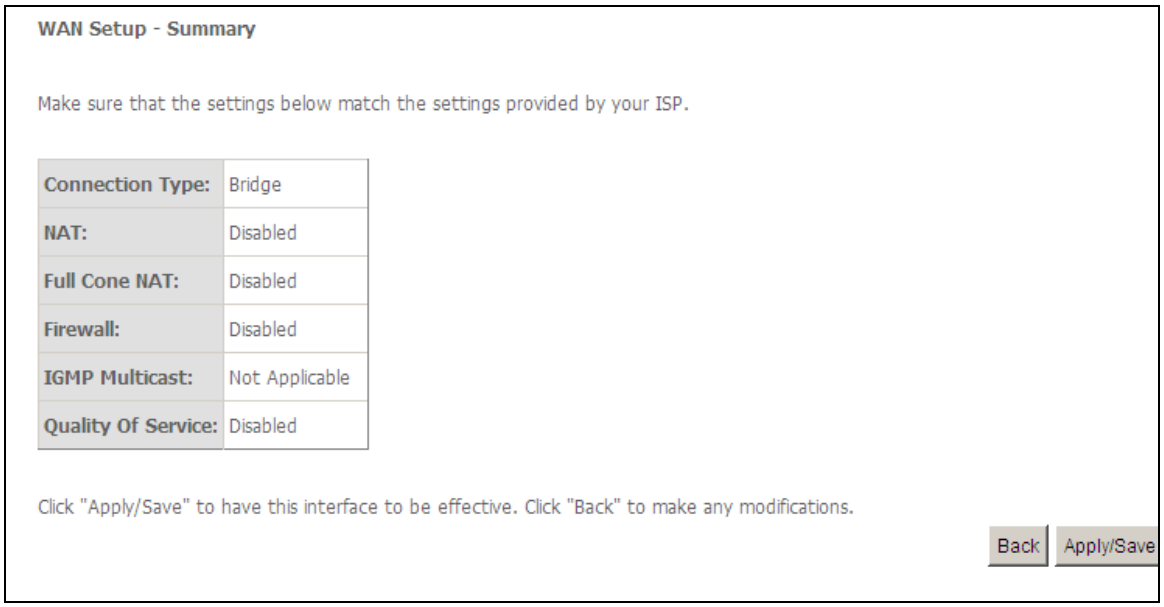
## Bridging

If you wish to initiate a dialup directly from your PC for Internet access or enjoy the entire Internet connection (instead of sharing it with others), you can use the Bridging DSL link type and create a dialup program on your PC.

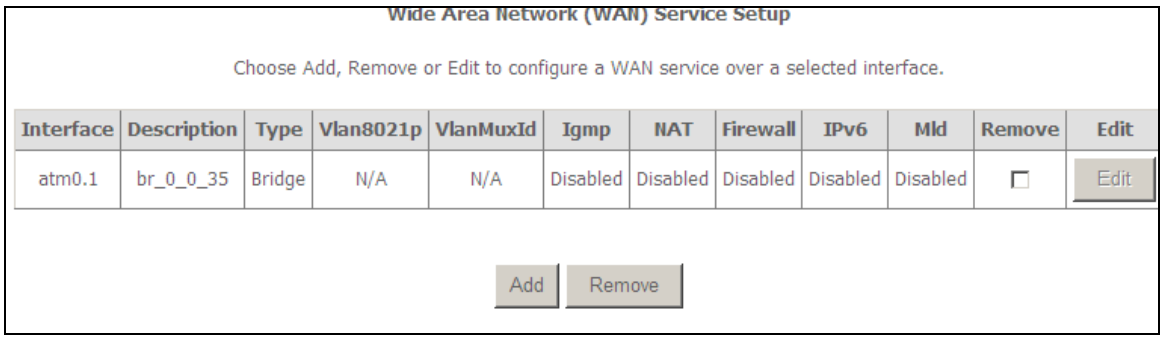
If you have selected the **EoA** from the **ATM Interface** screen in **Layer2 Interface**, you will see the screen below when you click the **WAN Service** tab, select the configured interface and click **Next**.




The **Enter Service Description** field is optional. We recommend that you keep it unchanged from default and click **Next**.




Here you can view your configurations. Click **Apply/Save** to save your settings if everything is correctly set.



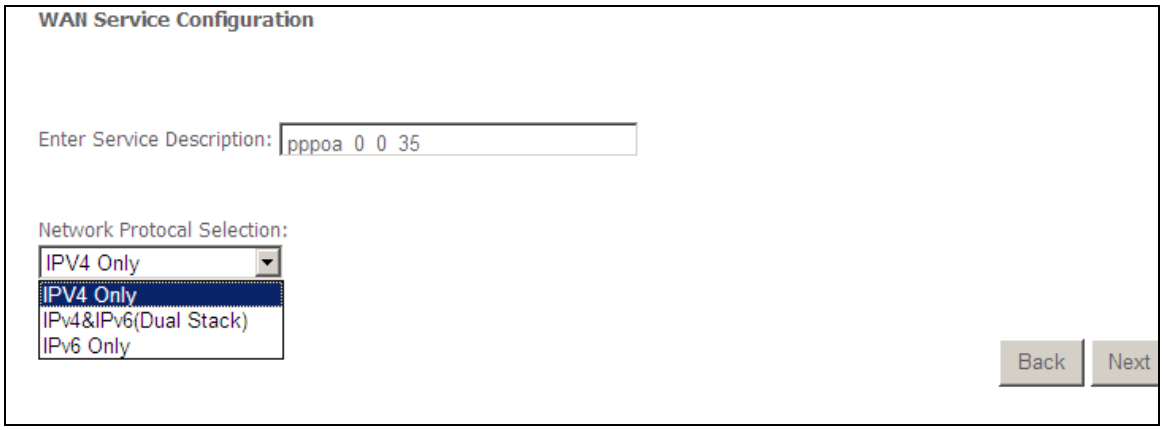

When the bridging connection is successful, you can access the Internet.

*Note:*

To configure multiple WAN connections, simply configure multiple ATM interfaces and then follow the instructions above.

## PPPoA

If you have selected the **PPPoA** from the **ATM Interface** screen in **Layer2 Interface**, you will see the screen below when you click the **WAN Service** tab, select the configured interface and click **Next**.




1. Edit the **Enter Service Description**. This field is optional. We recommend that you keep the default.
2. Select a network protocol: IPv4, IPv6 or IPv4 & IPv6 (dual stack).
3. Click **Next**.




✧ **PPP User Name:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.

✧ **PPP Password:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.

✧ **Authentication Method:** This is used by ISP to authenticate the client that attempts to connect. If you are not sure, consult your ISP or select **Auto**.

✧ **Dial on demand:** Connect to ISP only when there is traffic transmission. This saves your broadband Internet service bill.

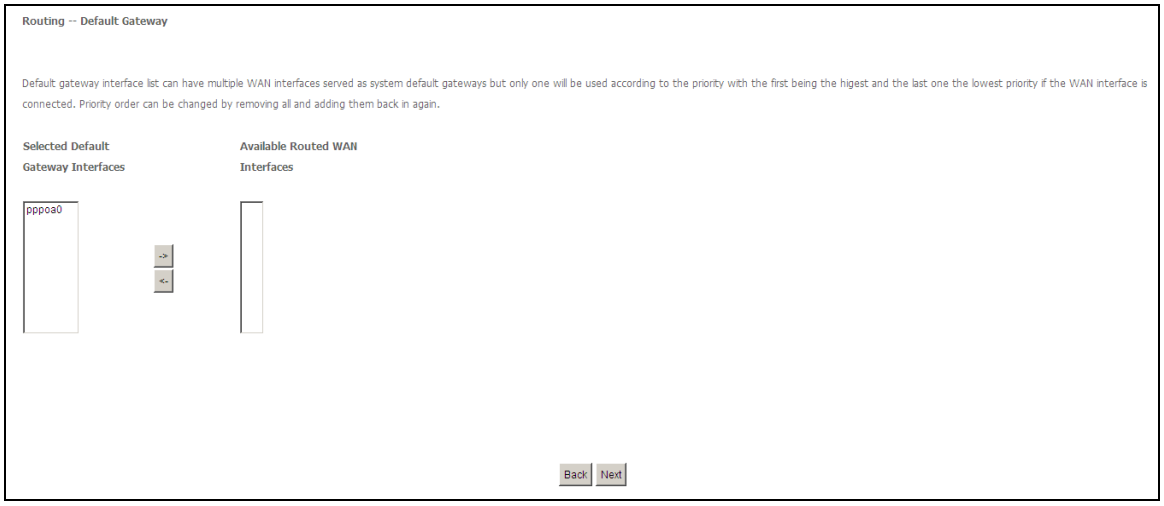
✧ **Enable PPP Debug Mode:** Only enable this feature if supported by your ISP.

✧ **Bridge PPPoE Frames Between WAN and Local Ports:** If enabled, PPPoE dialup frame from LAN side will directly egress the WAN port without modification.

✧ **Multicast Proxy:** If enabled, the router will use multicast proxy.

If you are not sure about the options on this screen, simply enter your ISP user name and password and leave the other options unchanged from defaults. Click **Next** to enter the following screen.

## WAN gateway

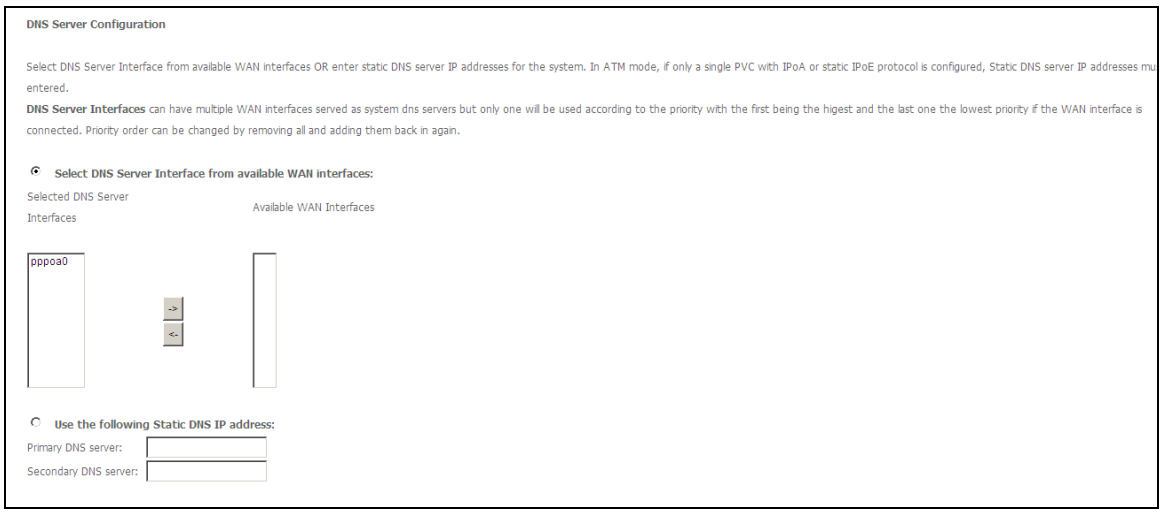



Here you can configure the WAN gateway address. After you configure it click **Next**. The default setting is recommended.

*Note:*

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

## WAN DNS




Here you can configure the WAN DNS address:

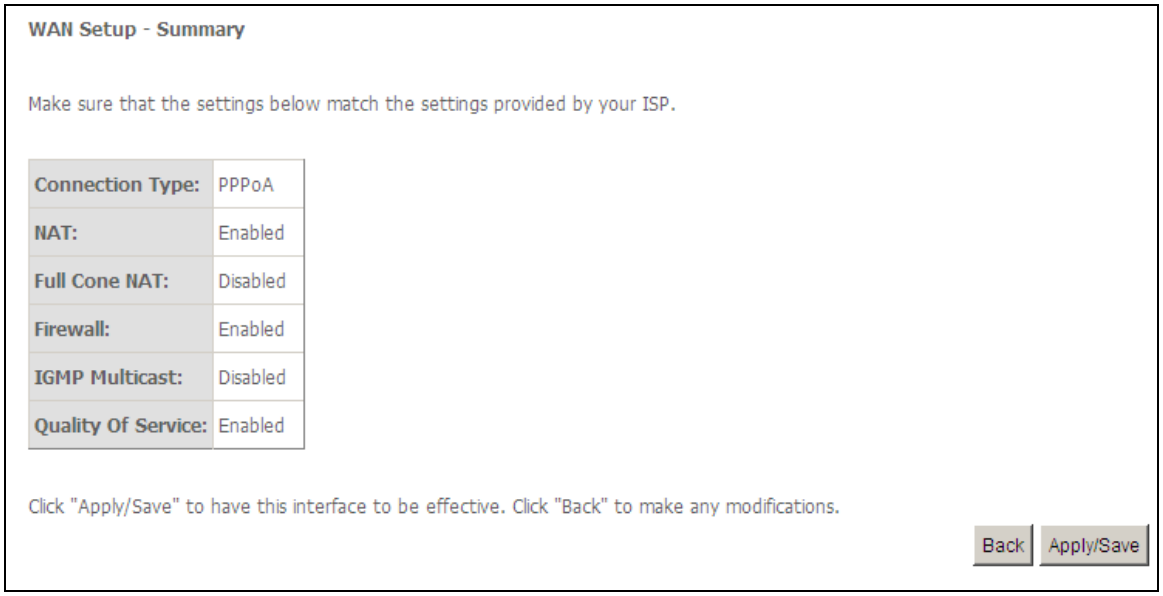
-Click the **Select DNS Server Interface from available WAN interfaces** option

-OR select the **Use the following Static DNS IP address** option and enter static DNS server IP addresses for the system

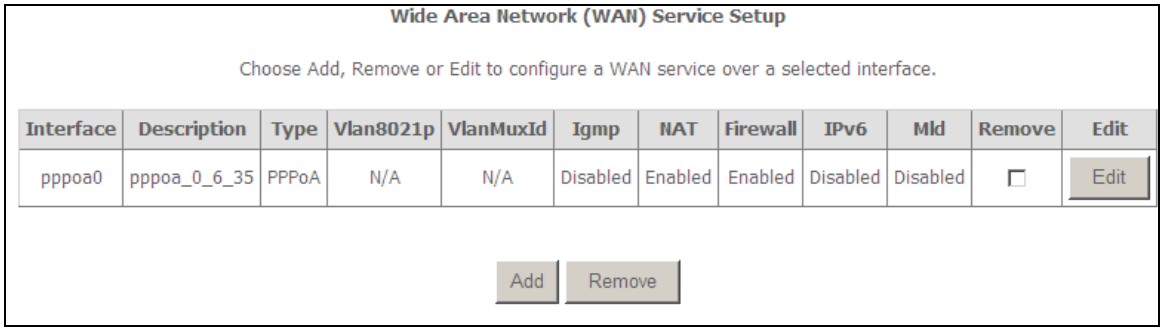
And then click **Next**.

*Note:*

- DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.
- In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
- If you cannot locate the static DNS server IP information, ask your ISP to provide it.



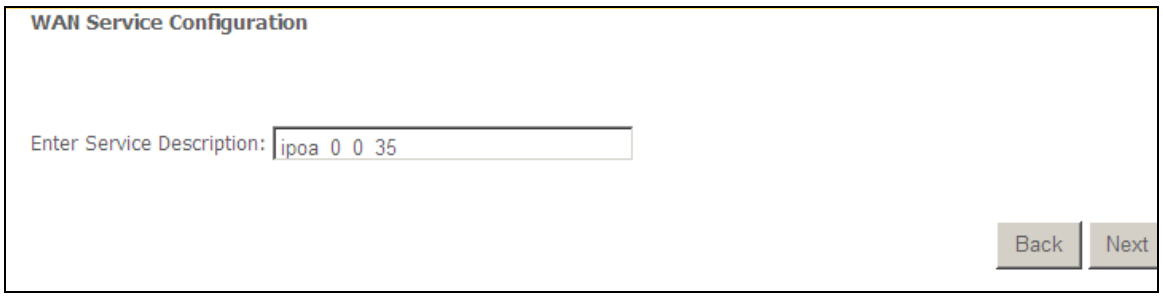

Here you can view your configurations. Click **Apply/Save** to save your settings if everything is correctly set.



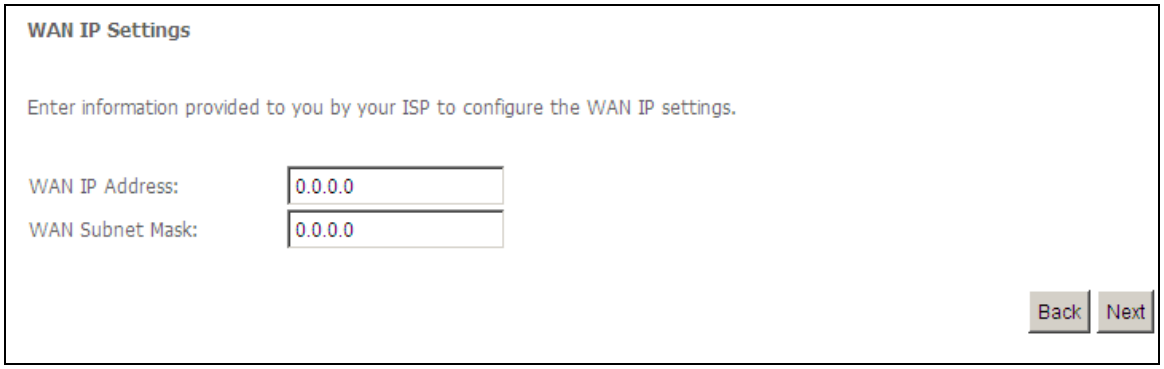

When the PPPoA connection is successful, you can access the Internet.

# IPoA

If you have selected the **IPoA** from the **ATM Interface** screen in **Layer2 Interface**, you will see the screen above when you click the **WAN Service** tab, select the configured interface and click **Next**.



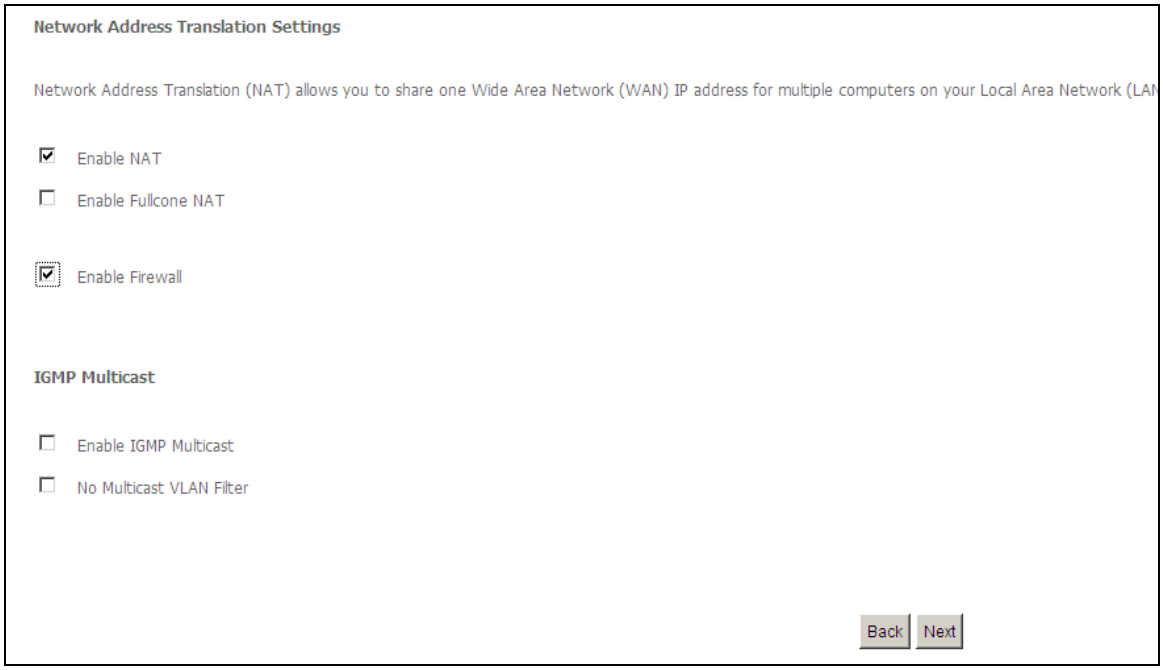

1. Edit the **Enter Service Description**. This field is optional. We recommend that you keep the default.
2. Click **Next**.



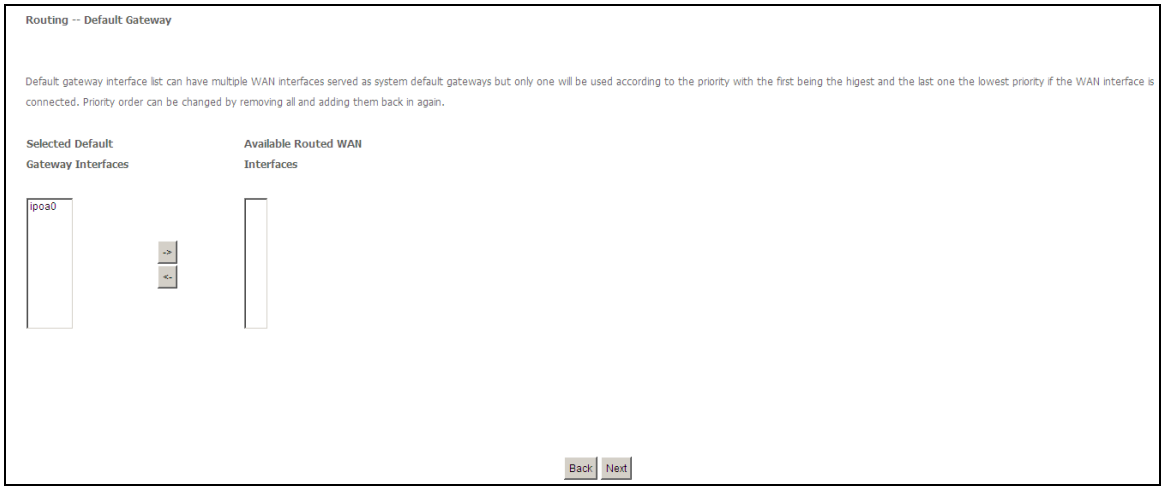

✧ **WAN IP Address:** The Internet IP address provided by your ISP for accessing the Internet.

✧ **WAN Subnet Mask:** The subnet mask address provided by your ISP for accessing the Internet.

Enter the WAN IP address and subnet mask assigned by your ISP. This information should have been provided to you by your ISP. If you cannot locate this information, ask your ISP to provide it. And then click **Next** to enter the following screen.



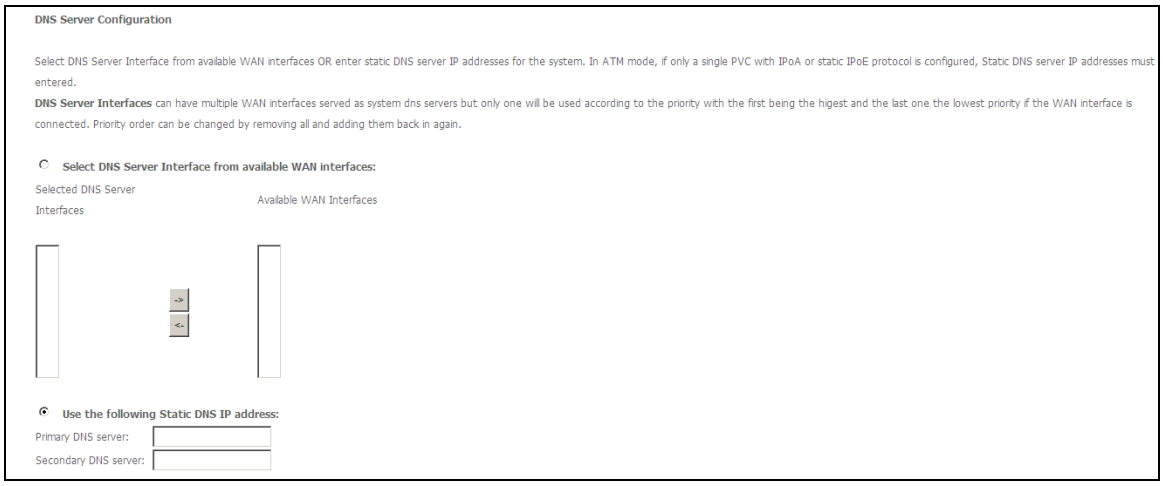

If you are unsure about the options on the screen above, keep the defaults and click **Next**.




Here you can configure the WAN gateway address. After you configure it click **Next**. The default setting is recommended.

*Note:*

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

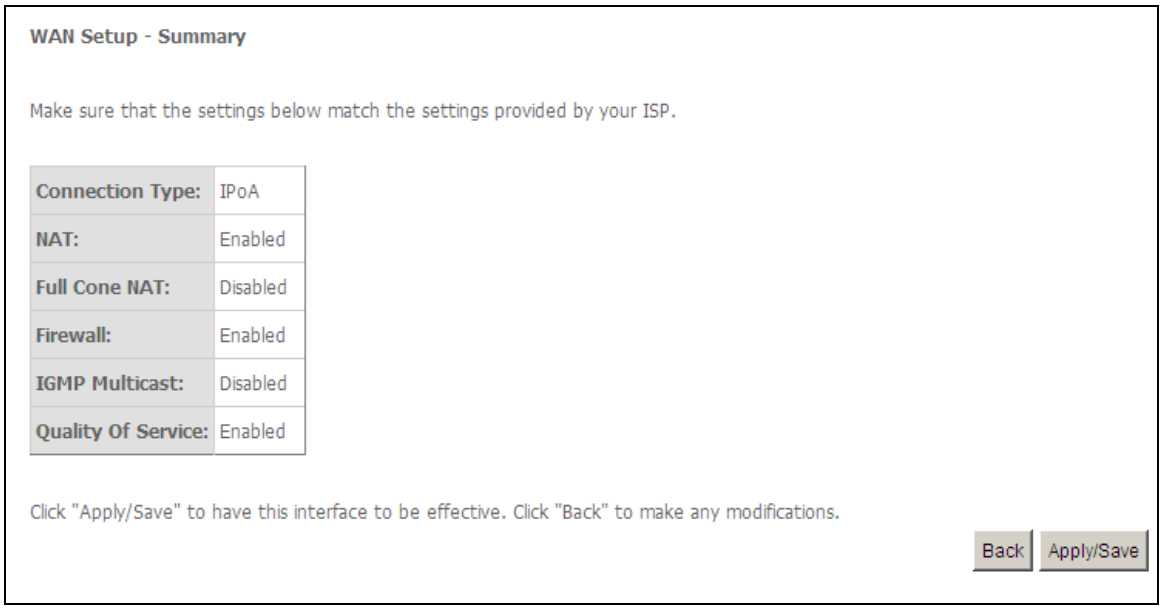



Here you can configure the WAN DNS address:

-Click the **Select DNS Server Interface from available WAN interfaces** option

-OR select the **Use the following Static DNS IP address** option and enter static DNS server IP addresses for the system

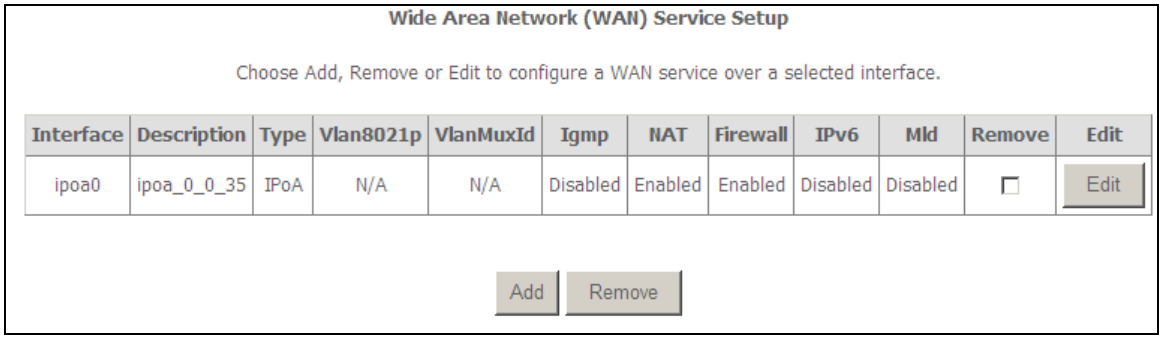
And then click **Next** to enter the following screen.




*Note:*

- DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.
- In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
- If you cannot locate the static DNS server IP information, ask your ISP to provide it.

Confirm your settings and then click Apply/Save to apply and save your settings. Your settings will then be displayed on the screen below:

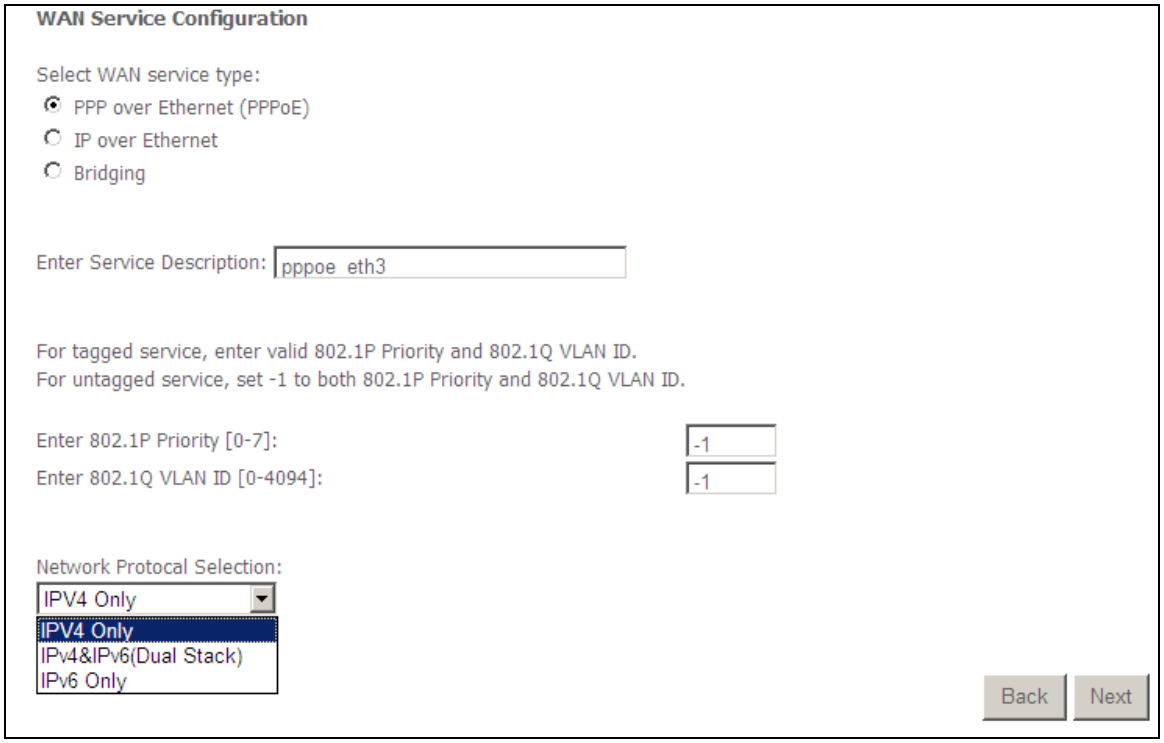



## To setup WAN Service for ETH Interface

After you configured the **ETH Interface** (eth0/eth0), follow steps below to configure the WAN service. Two Internet connections: PPP over Ethernet (PPPoE) and IP over Ethernet (IPoE) are available in the Ethernet uplink mode.

## PPP over Ethernet (PPPoE)

Click **Advanced Setup -> WAN Service -> Add**, select the configured interface and then click **Next** to enter the following screen.




1. Select PPPoE.

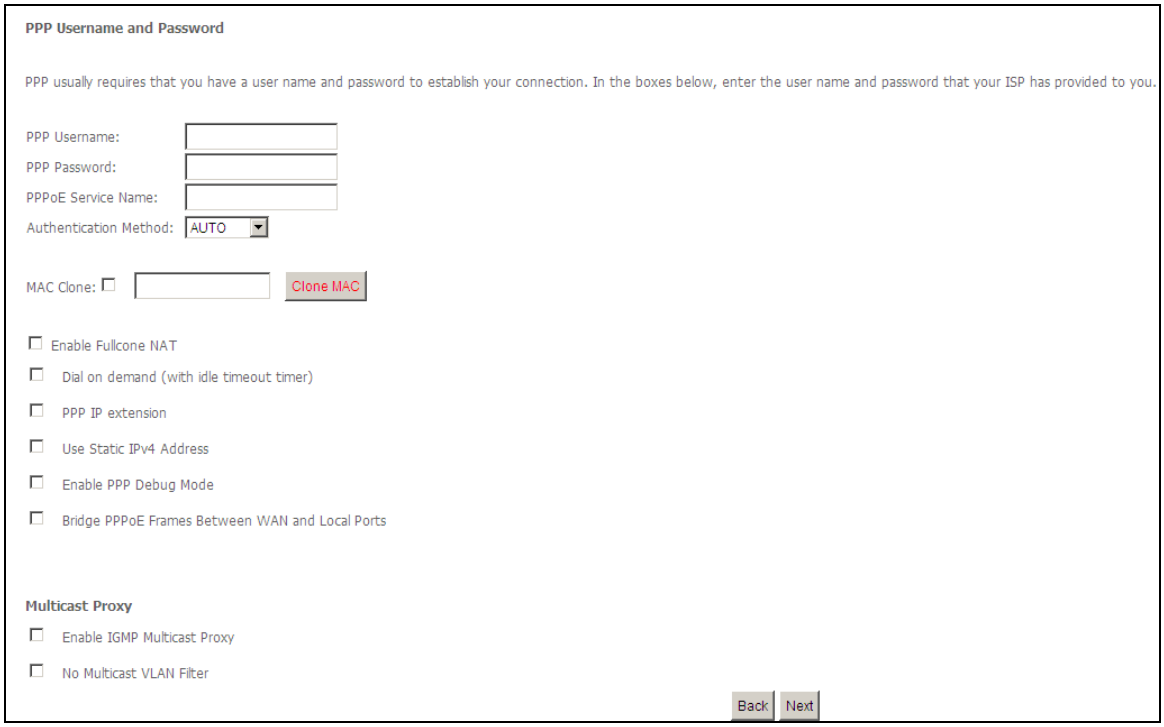
2. Edit the **Enter Service Description**. This field is optional. We recommend that you keep the default.

3. Select a network protocol: IPv4, IPv6 or IPv4 & IPv6 (dual stack).

4. Click **Next**.

*Note:*

If you select IPv6 or IPv4 & IPv6 (dual stack), skip to IPv6.




✧ **PPP User Name:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.

✧ **PPP Password:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.

✧ **PPPoE Service Name:** This information is provided by your ISP. Only enter it if instructed by your ISP.

✧ **Authentication Method:** This is used by ISP to authenticate the client that attempts to connect. If you are not sure, consult your ISP or select **Auto**.

✧ **Clone MAC:** Clicking this button copies the MAC address of your PC to the router. Many broadband ISPs restrict access by allowing traffic only from the MAC address of your broadband modem, but some ISPs additionally register the MAC address of the network interface card in your

computer when your account is first opened. They then accept traffic only from the MAC address of that computer. If so, configure your router to “clone” the MAC address from the authorized computer.

✧ **Dial on demand:** Connect to ISP only when there is traffic transmission. This saves your broadband Internet service bill.

✧ **PPP IP extension:** If enabled, all the IP addresses in outgoing packets including management packets on the WAN port will be changed to the device's WAN IP address. Only change the default settings if necessary.

✧ **Enable PPP Debug Mode:** Only enable this feature if supported by your ISP.

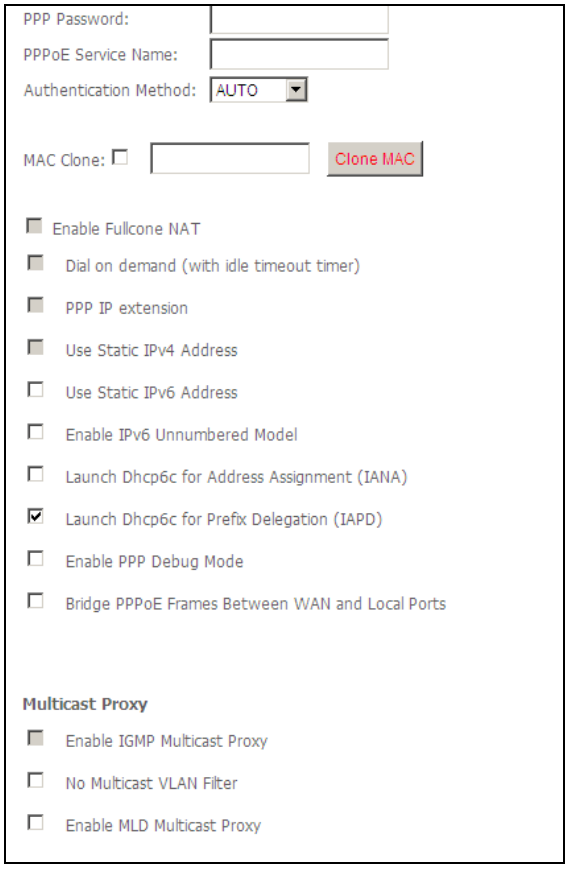
✧ **Bridge PPPoE Frames Between WAN and Local Ports:** If enabled, PPPoE dialup frame from LAN side will directly egress the WAN port without modification.

✧ **Multicast Proxy:** If enabled, the router will use multicast proxy.

If you are not sure about the options on this screen, simply enter your ISP user name and password and leave the other options unchanged from defaults. Click **Next**.

## IPv6

If you select IPv4 as the network protocol, skip this section.



1. Check **Launch Dhcp6c for Prefix Delegation (IAPD)**.

2. If your ISP is using stateful DHCPv6, check **Launch Dhcp6c for Address Assignment (IANA)** also. Or configure a static IP address.

3. Click **Next -> Next -> Apply/Save**.

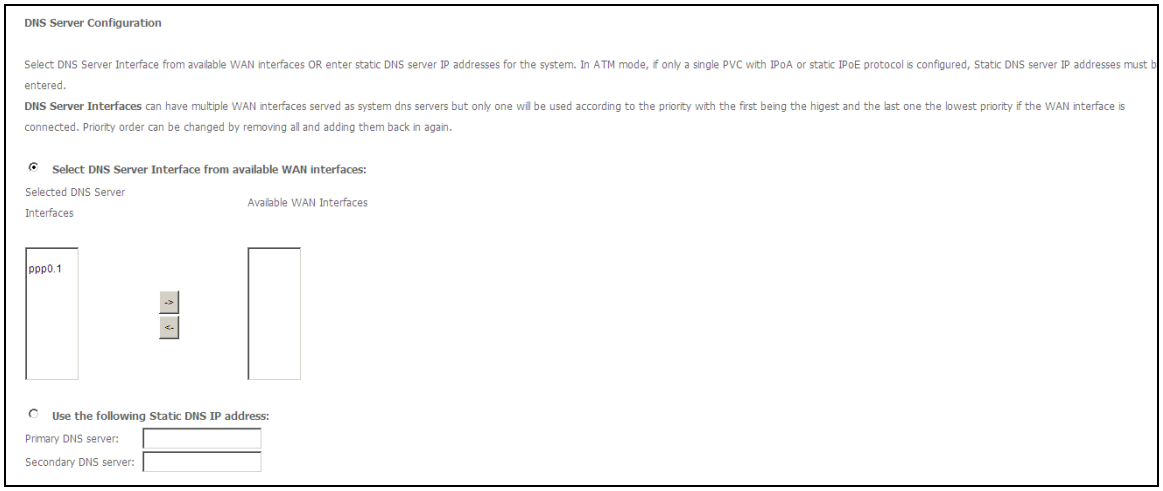
## WAN Gateway




Here you can configure the WAN gateway address. After you configure it click **Next**. The default setting is recommended.

## WAN DNS

Here you can configure the WAN DNS address. After you configure it click **Next**. The default setting is recommended if you cannot locate this information.



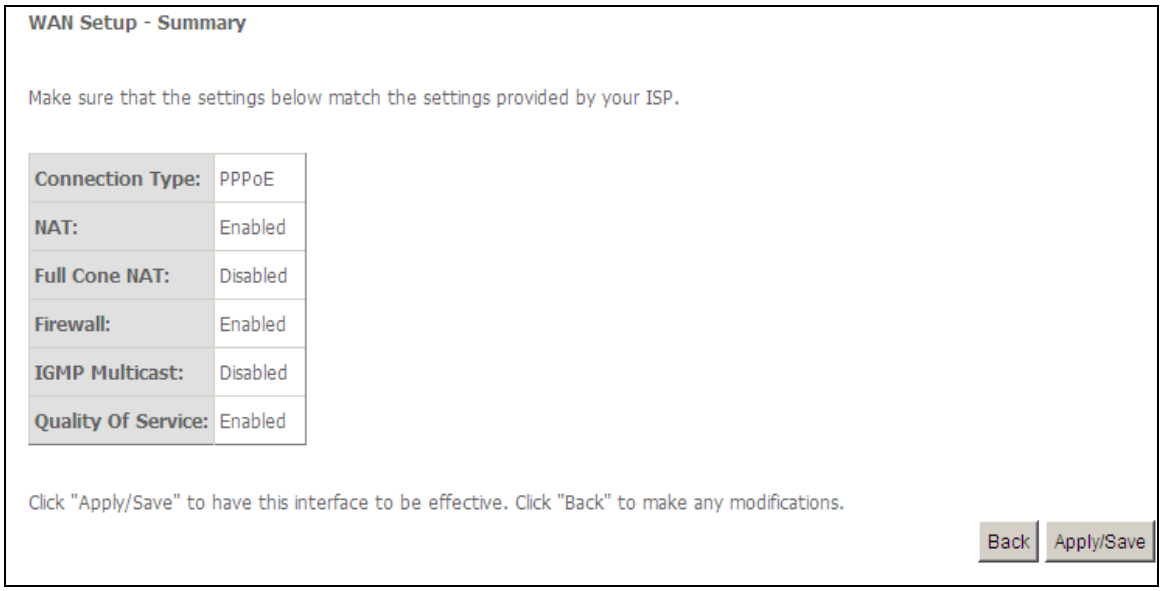

Here you can configure the WAN DNS address:

-Click the **Select DNS Server Interface from available WAN interfaces** option

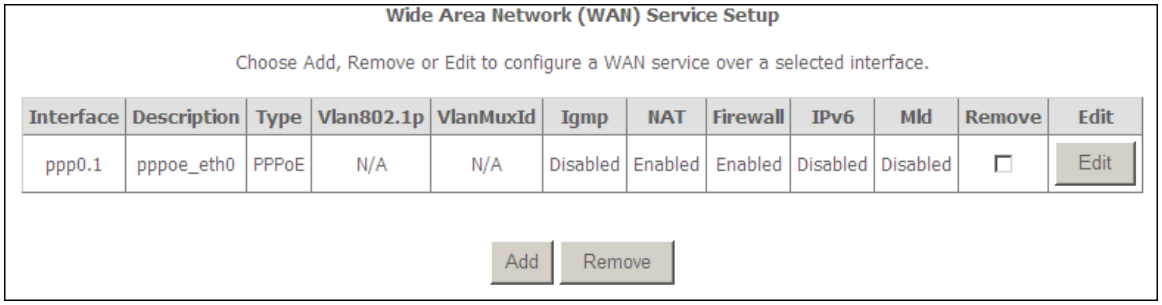
-OR select the **Use the following Static DNS IP address** option and enter static DNS server IP

addresses for the system

And then click **Next**.




Here you can view configurations. Click **Apply/Save** to save your settings if everything is correctly set.

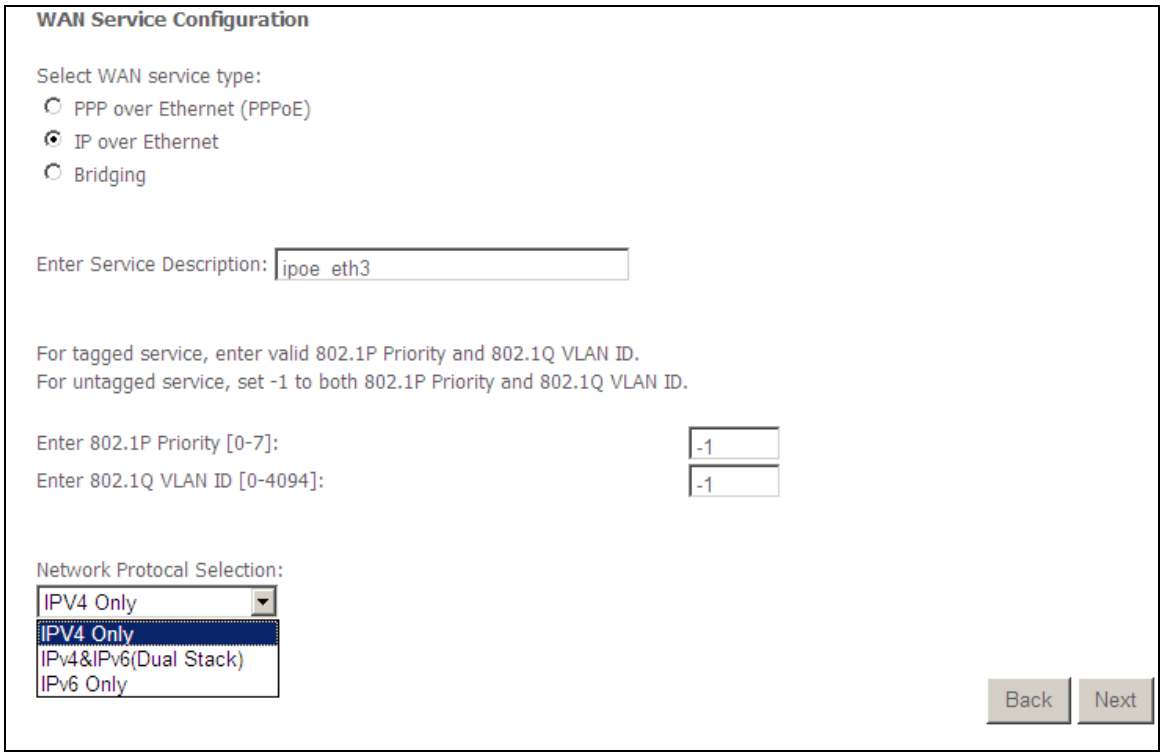



When the PPPoE connection is successful, you can access the Internet.

## IP over Ethernet (IPoE)

If your ISP uses DHCP to assign your IP address or if your ISP assigns you a static (fixed) IP address, IP subnet mask and the gateway IP address, you need to select the IP over Ethernet (IPoE).

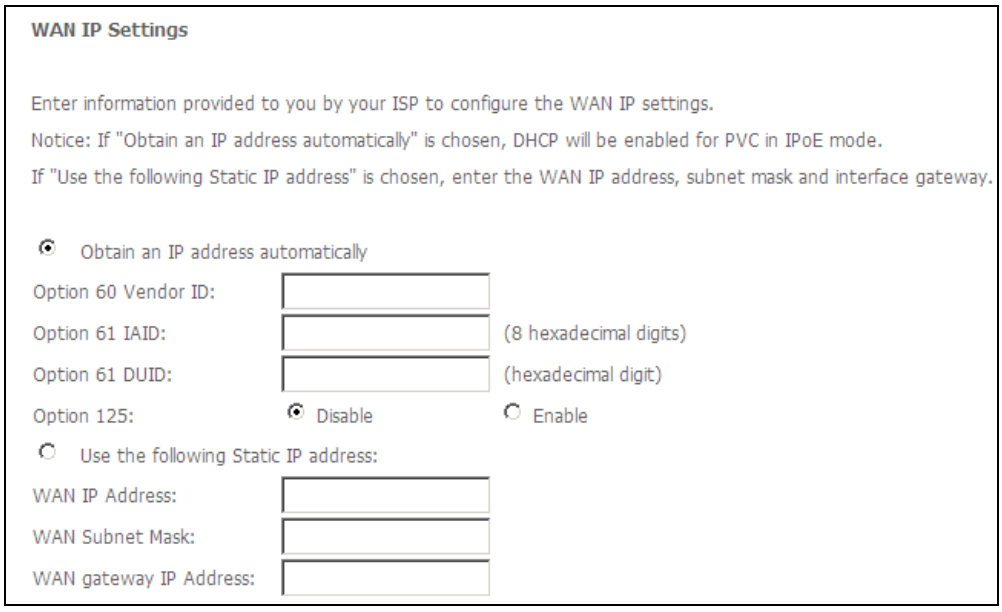
Click **Advanced Setup -> WAN Service -> Add**, select the configured interface and then click **Next** to enter the following screen.




1. Select IPoE.
2. Edit the **Enter Service Description**. This field is optional. We recommend that you keep the default.
3. Select a network protocol: IPv4, IPv6 or IPv4 & IPv6 (dual stack).
4. Click **Next**.

*Note:*

If you select IPv6 or IPv4 & IPv6 (dual stack), skip to IPv6.



✧ **Obtain an IP address automatically:** This allows the router to automatically acquire IP information from your ISP or your existing networking equipment.

✧ **Use the following Static IP address:** This allows you to specify the Static IP information provided by your ISP or that corresponds with your existing networking equipment.

✧ **WAN IP Address:** The Internet IP address provided by your ISP for accessing the Internet.

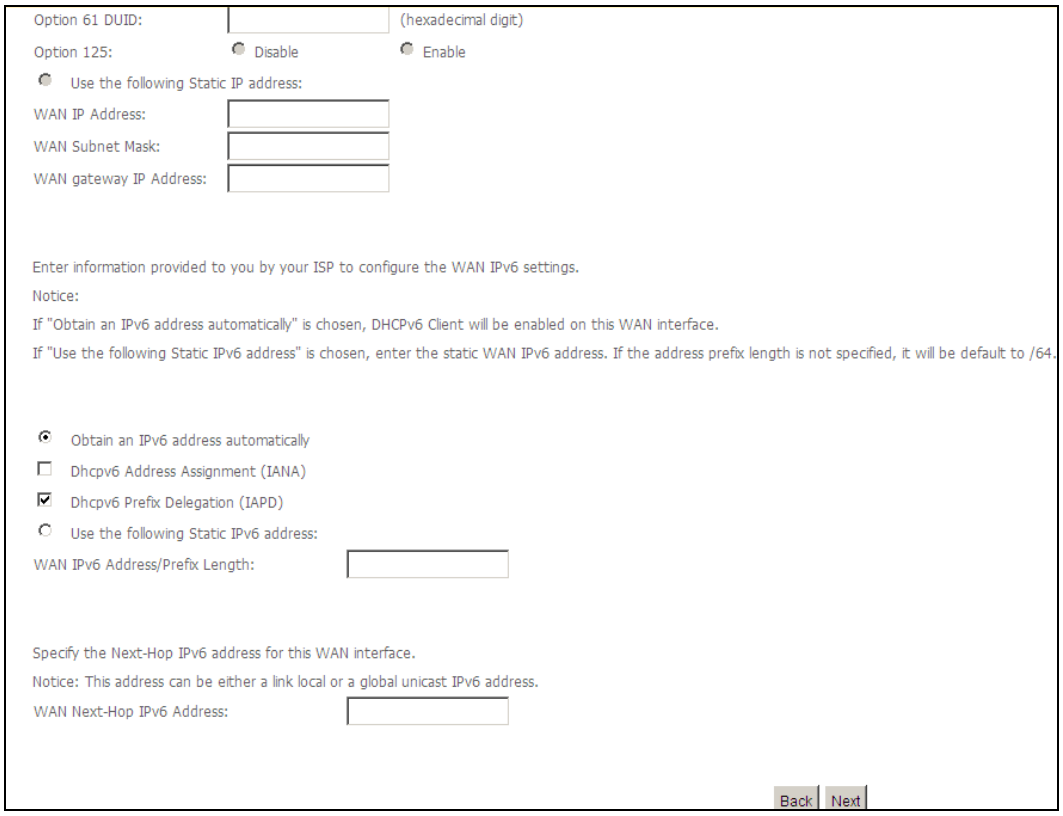
✧ **WAN Subnet Mask:** The subnet mask address provided by your ISP for accessing the Internet.

✧ **WAN gateway IP Address:** The gateway IP address provided by your ISP for accessing the Internet.

Enter the IP address/ subnet mask/gateway IP address provided by your ISP or select **Obtain an IP address automatically** and then click the **Next** button.

## IPv6

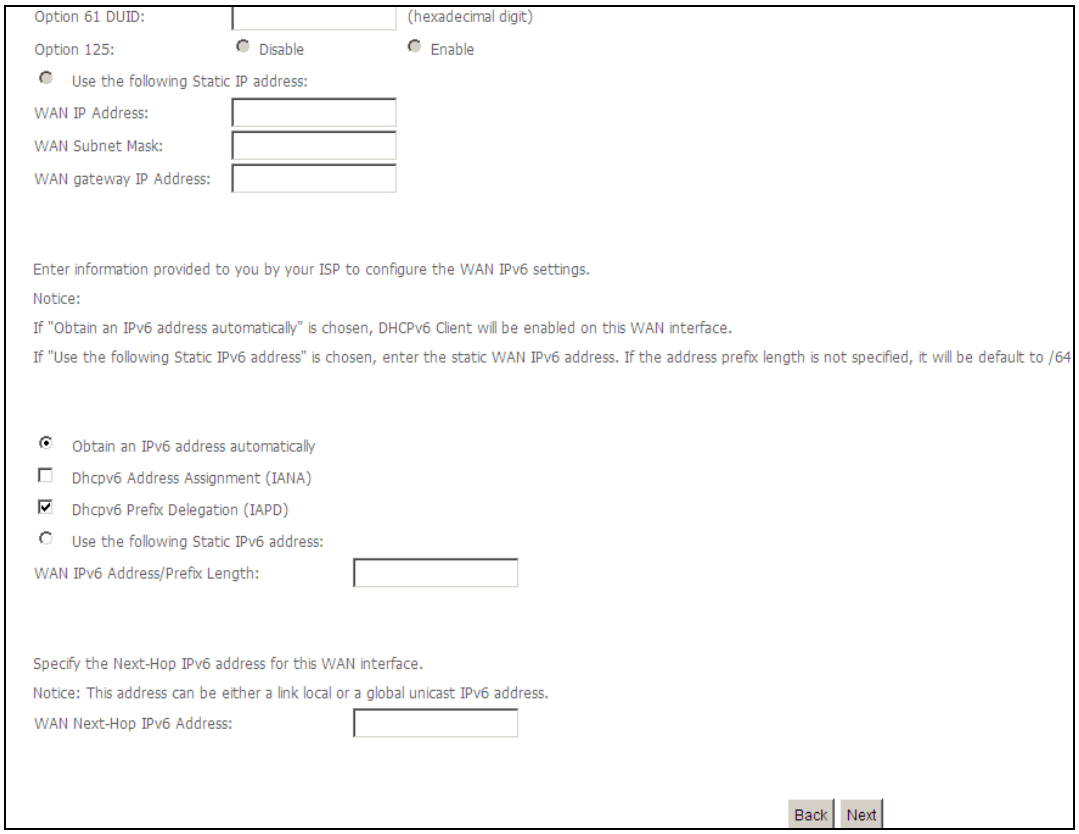
If you select IPv4 as the network protocol, skip this section.




**To obtain an IP address automatically:**

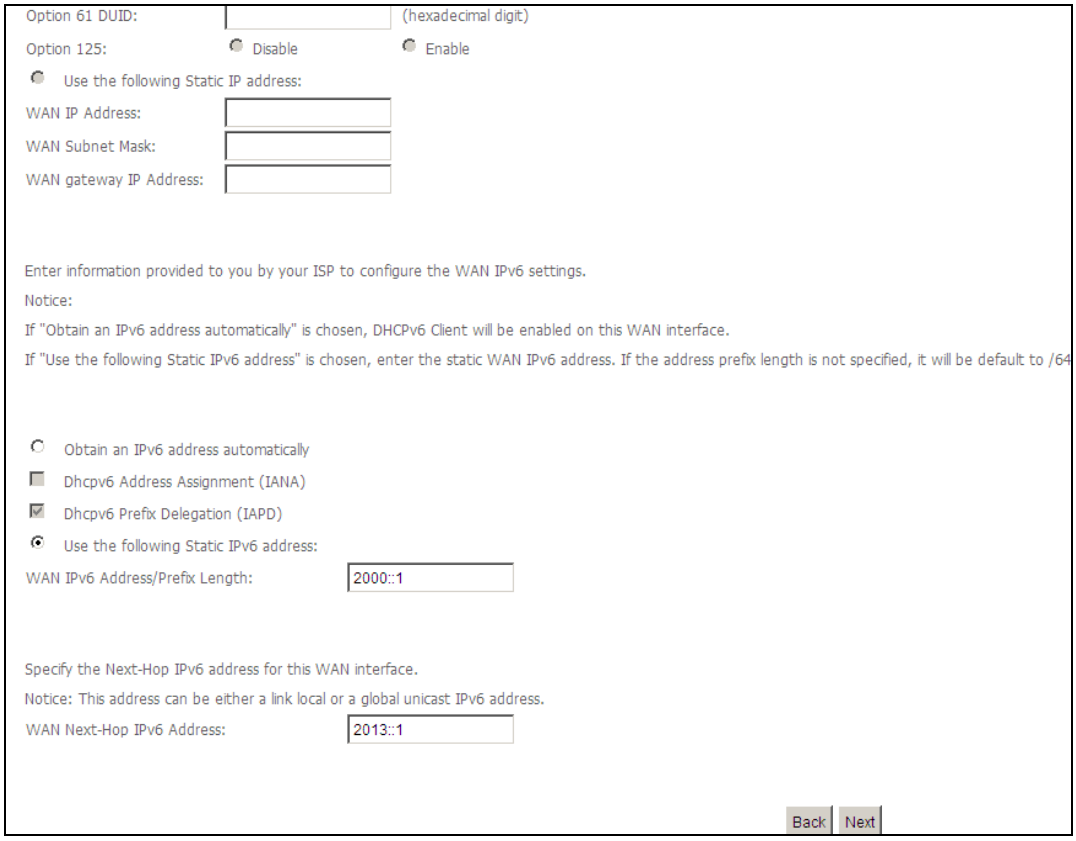
1. Select **Obtain an IP address automatically**.
2. Check **Launch Dhcp6c for Prefix Delegation (IAPD)**.
3. If your ISP is using stateful DHCPv6, check **Launch Dhcp6c for Address Assignment (IANA)**.

4. Click **Next -> Next -> Apply/Save**.

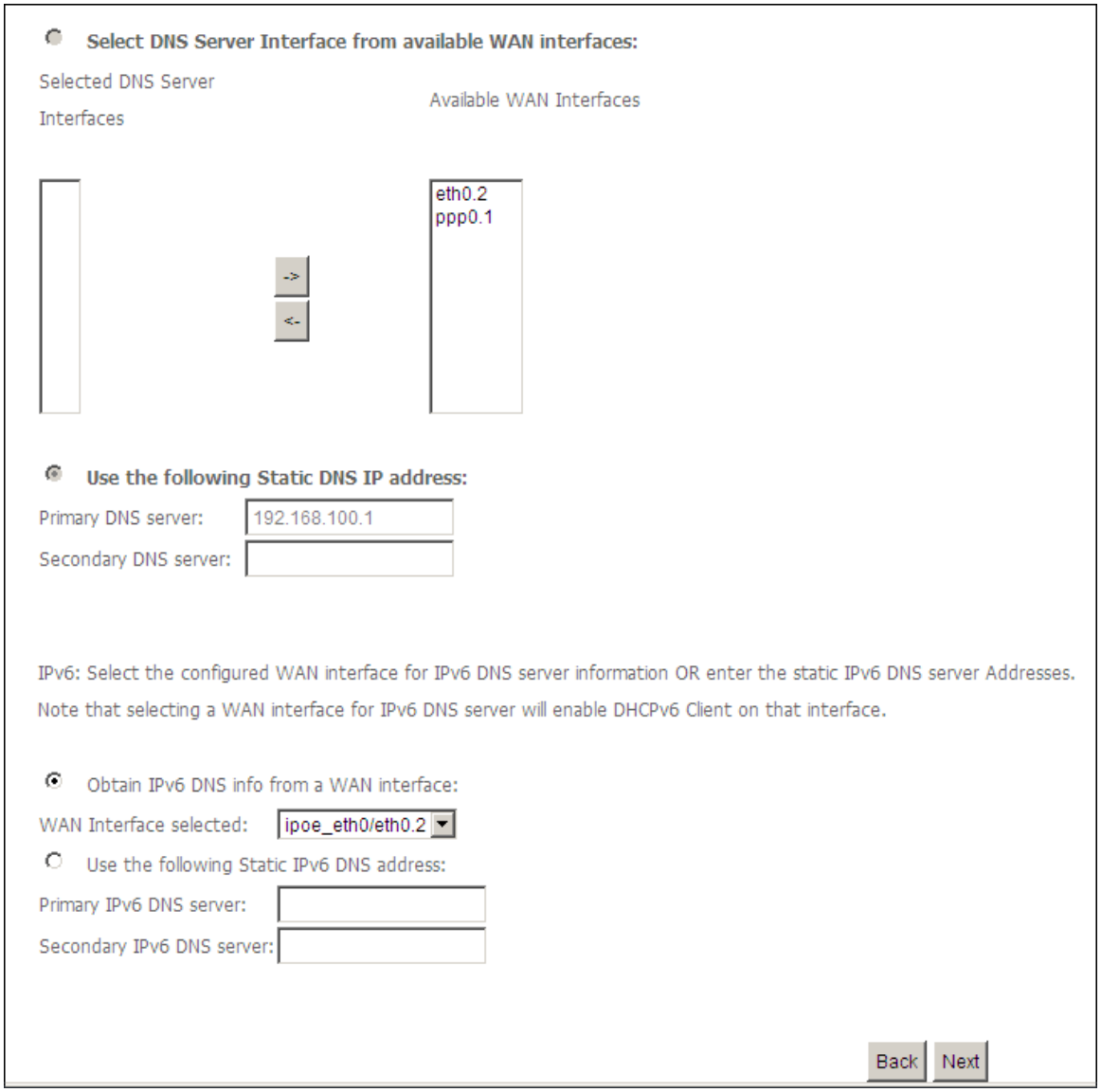



**To configure a static IPv6 address**

1. Select **Use the following Static IPv6 address**.
2. Configure **WAN IPv6 Address/Prefix Length** and **WAN Next-Hop IPv6 Address**.




3. Click **Next -> Next** to enter the screen below.




4. Select **Use the following Static IPv6 DNS address** and manually enter the DNS server address. If you have two DNS server addresses, enter the second also.

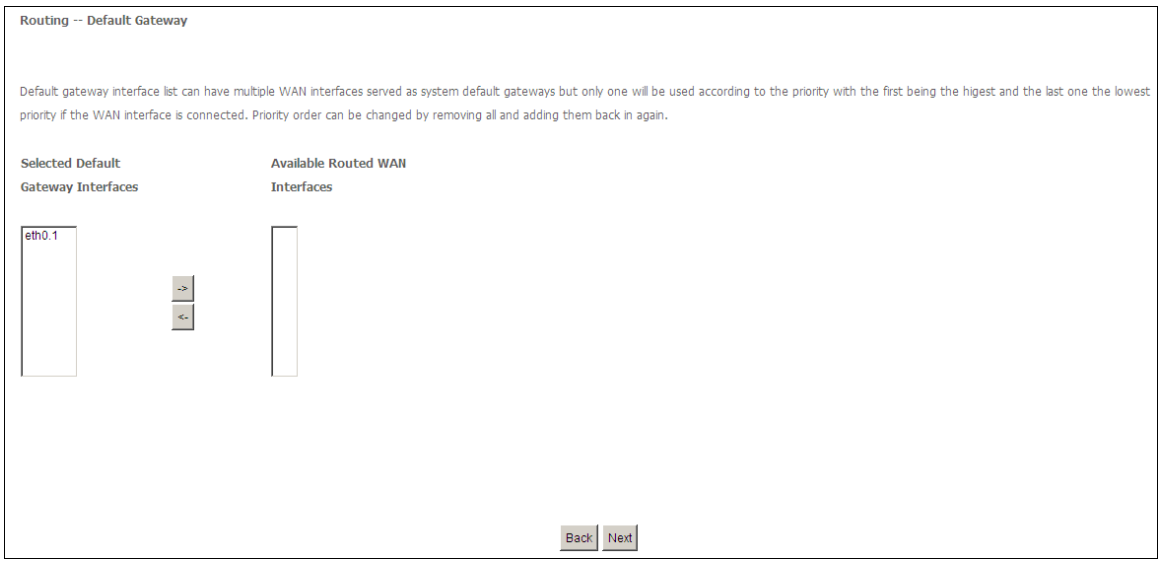
5. Click **Next -> Apply/Save**.

## NAT




Here you can configure the NAT. If you are not an advanced user we recommend you to keep the default settings and then click **Next**.

## WAN Gateway

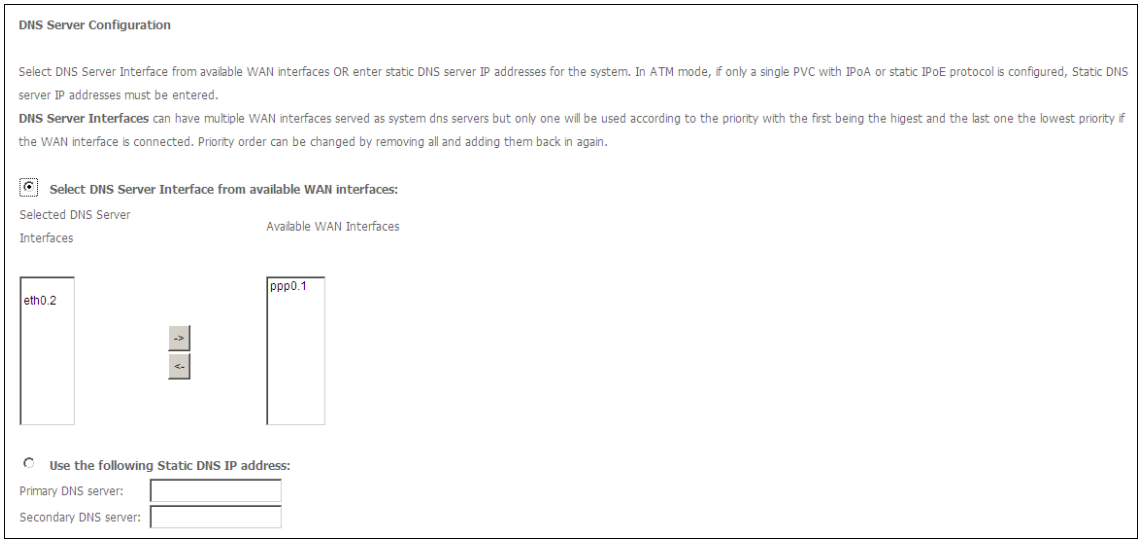



Here you can configure the WAN gateway address. After you configure it click **Next**. The default setting is recommended.

## WAN DNS

Here you can configure the WAN DNS address. After you configure it click **Next**. The default setting is

recommended if you cannot locate this information.

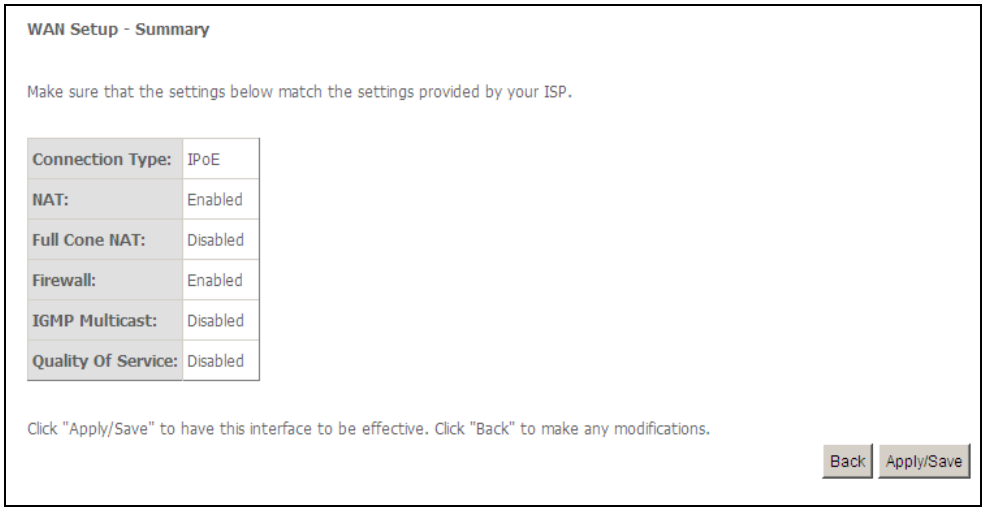



Here you can configure the WAN DNS address:

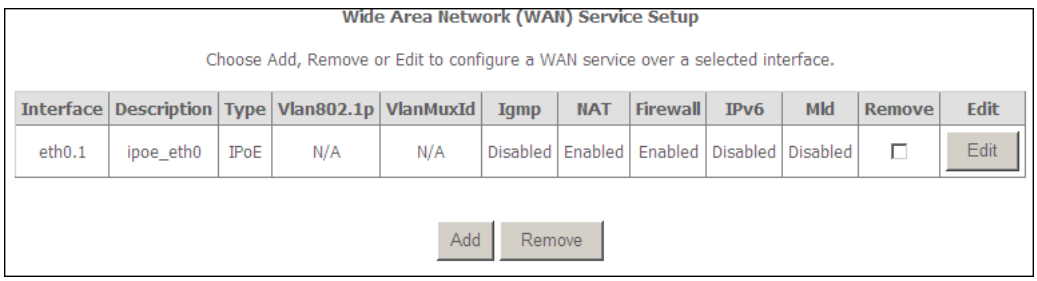
-Click the **Select DNS Server Interface from available WAN interfaces** option

-OR select the **Use the following Static DNS IP address** option and enter static DNS server IP addresses for the system

And then click **Next**.




Here you can view your configurations. Click **Apply/Save** to save your settings if everything is correctly set.

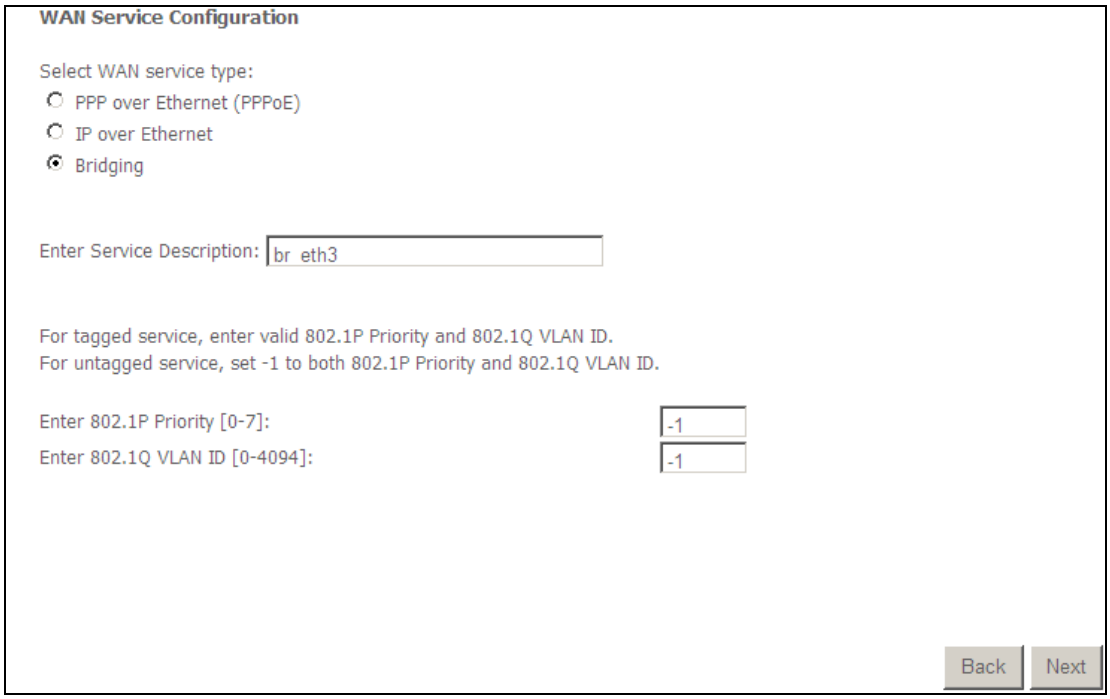


When the IPoE connection is successful, you can access the Internet.

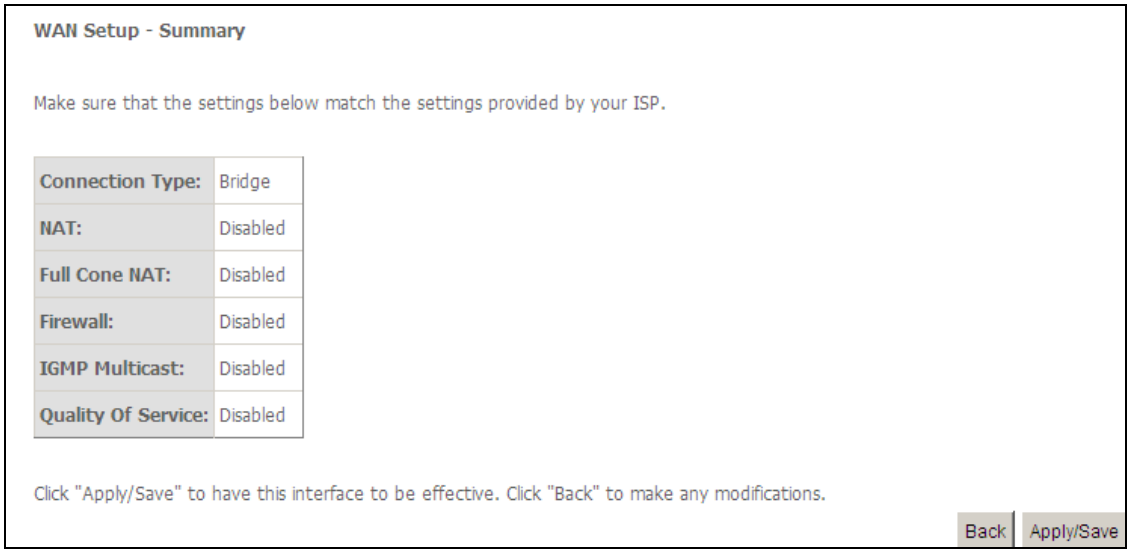
**Bridging**

If you wish to initiate a dialup directly from your PC for Internet access or enjoy the entire Internet connection (instead of sharing it with others), you can select the Bridging and create a dialup program on your PC.

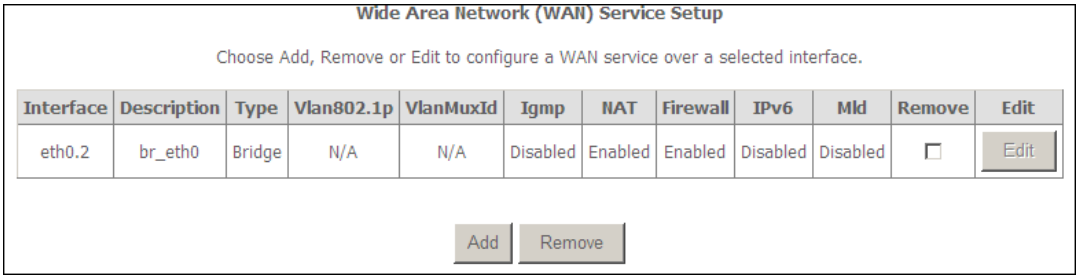
Click **Advanced Setup -> WAN Service -> Add**, select the configured interface and then click **Next** to enter the following screen.




Edit the **Service Description**, which is optional. And then click **Next**.



Here you can view your configurations. Click **Apply/Save** to save your settings if everything is correctly set.

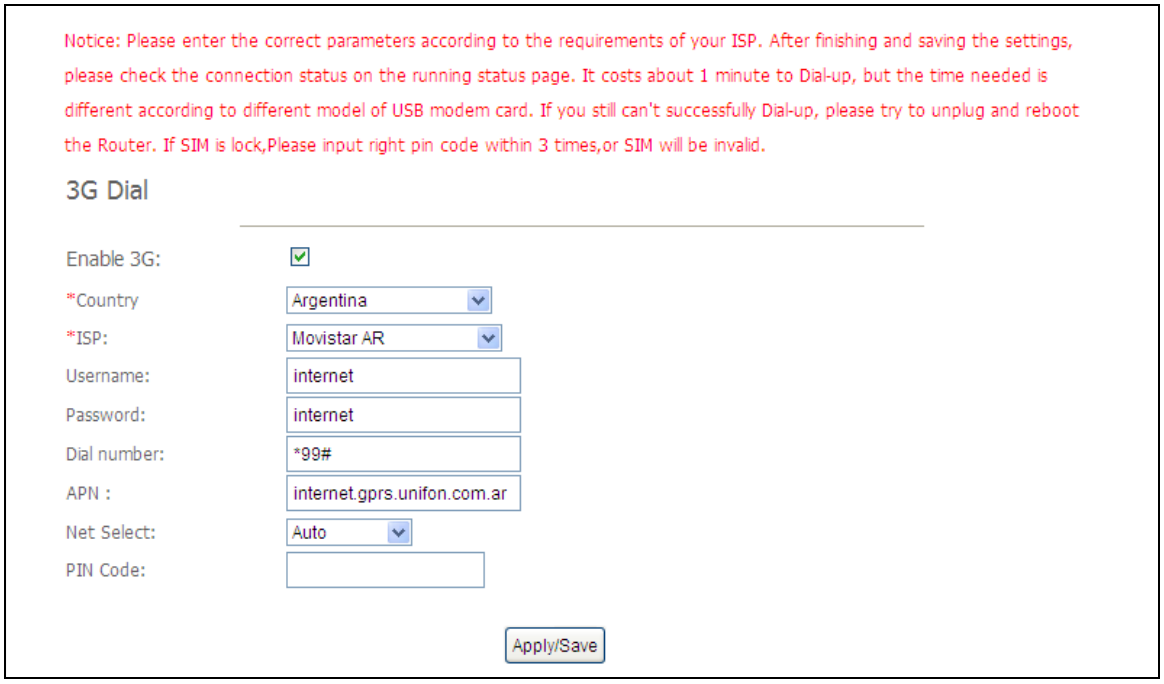



When the connection is successful, you can access the Internet.

## 4.2.3 USB Application

### USB – 3G WAN Service

This device supports 3G Internet access which can be shared by PCs on LAN. Click **Advanced Setup -> USB Application** to enter the configuration interface.




**Configuration Procedures:**

1. Insert the 3G modem (with an activated SIM card) to the device's USB port.
2. **Country:** Select your country.
3. **ISP:** Select your 3G ISP.
4. Click **Apply/Save**.

✧ **APN/Dial number/Username/Password:** This information is provided by your 3G ISP. Normally,

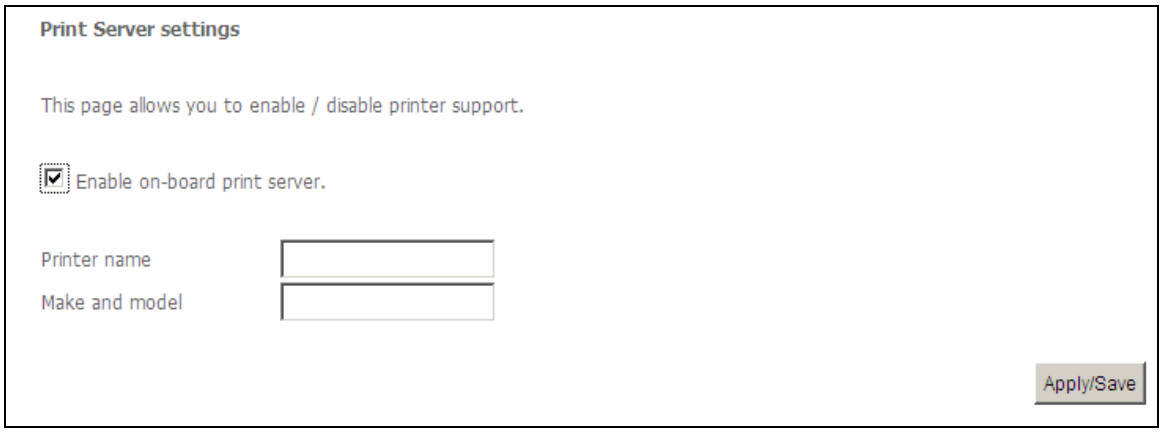
there is no need for manual configuration, as system will automatically match the right settings according to the country and ISP you select.

✧ **Net Select:** Select the right 3G network protocol for your 3G service. If you are not clear, simply select **Auto**.

PIN Code: You need to enter the SIM card's PIN code here if you have enabled it in your 3G modem. Note that your SIM card will be locked after 3 consecutive entries of wrong PIN codes.

## Print Server

This page allows you to enable/disable printer support.




✧ **Enable on-board print server:** Check/uncheck to enable / disable the printer support.

✧ **Printer name:** Enter a descriptive name of your printer.

✧ **Make and model:** Enter the make and model of your printer.

✧ **Apply/Save:** Click to apply and save your settings.

## Storage Service

The storage service allows you to use Storage devices with the modem router to be more easily accessed.

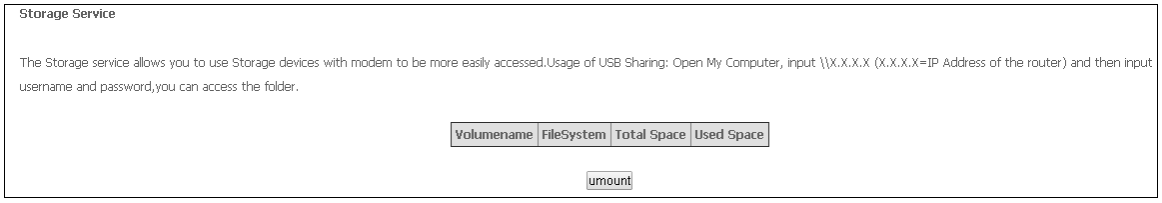
**This section explains the following:**

• Storage Device Info

• User Account

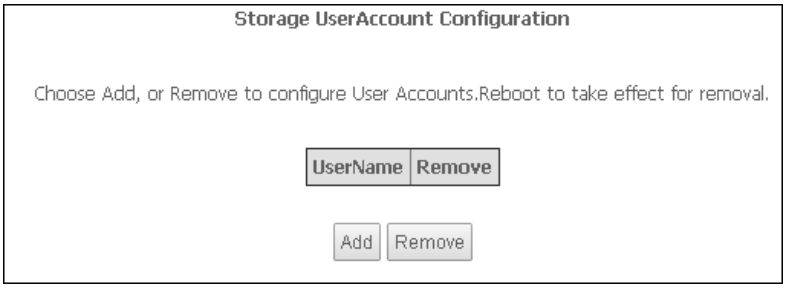
### Storage Device Info

This screen displays the information of the storage device as seen on the screenshot below.



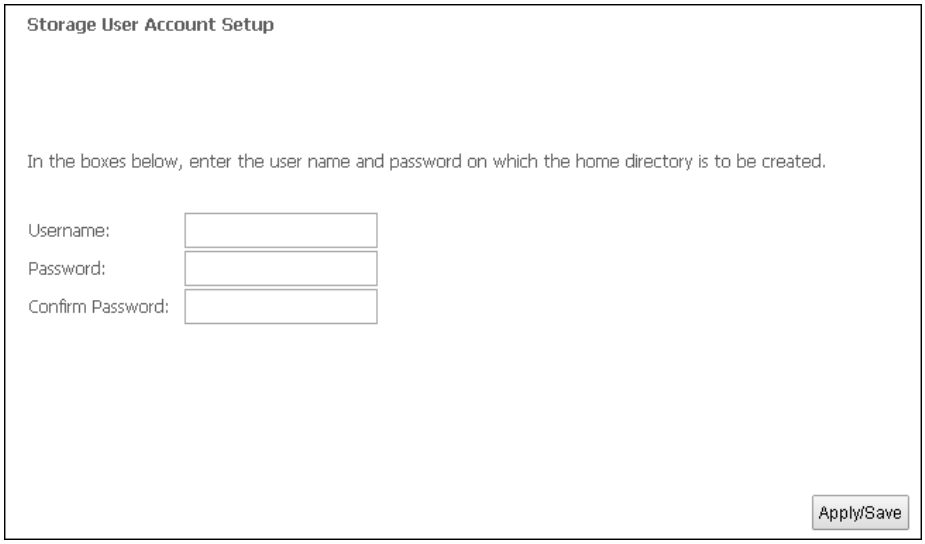

### User Account

This section allows you to Add, or Remove User Accounts.




To add a user account:

1. Click **Add** to enter the following screen:




2. Enter the user name, password and volume name on which the home directory is to be created.
3. Click **Apply/Save** to apply and save your settings.

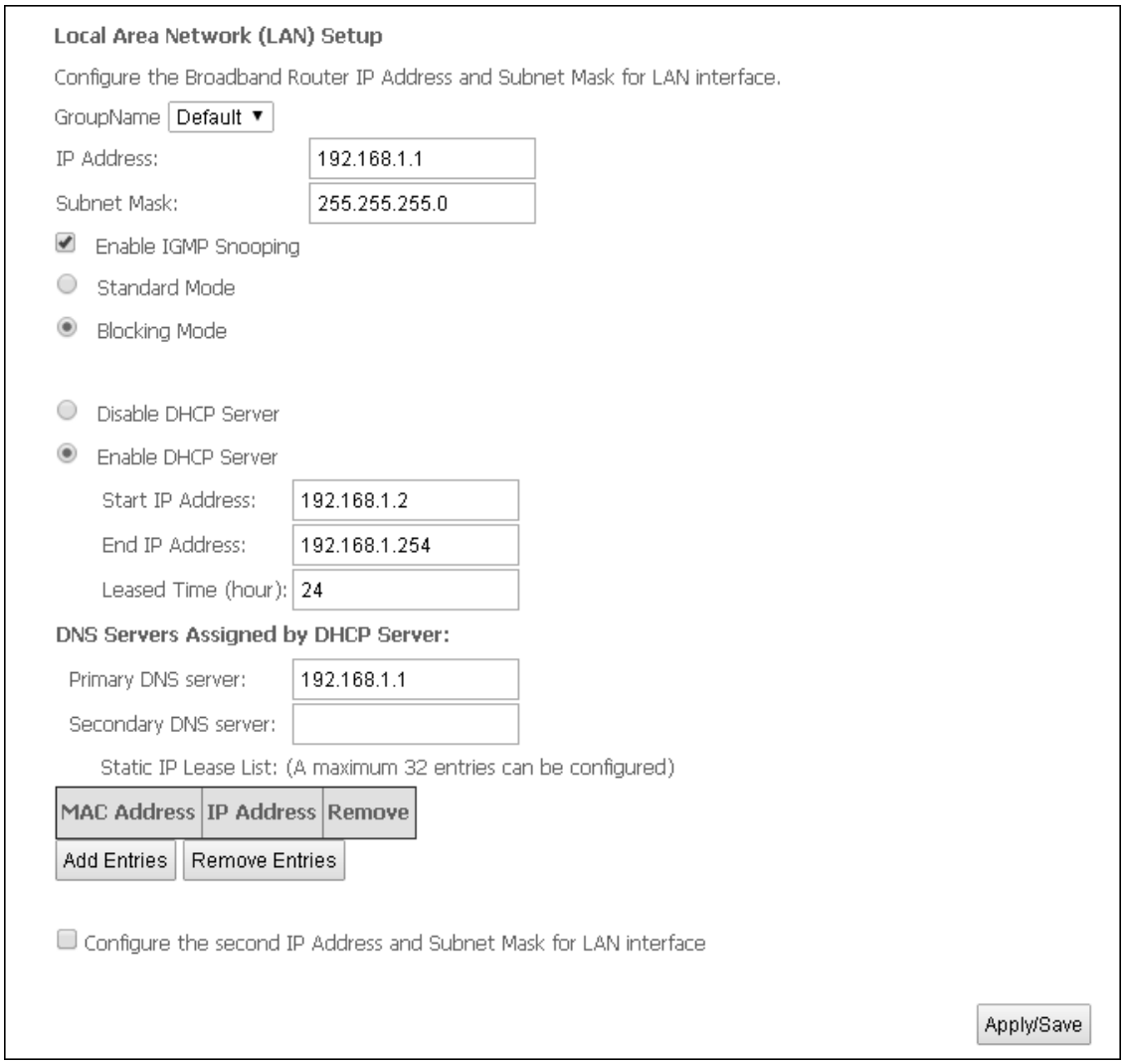
**To remove an existing user account:**

1. Check **Remove** next to the user account.
2. Click the **Remove** button.

## 4.2.4 LAN Setup

Here you can configure the LAN IP Address and Subnet Mask. This IP address is to be used to access the device's settings through a web browser. Be sure to make a note of any changes you apply to this page.

## IPv4




✧ **IP Address:** The device's LAN IP address. The default setting is 192.168.1.1.

✧ **Subnet Mask:** The LAN subnet mask of the device. Combined with the IP address, the IP Subnet Mask allows a device to know which other addresses are local to it, and which must be reached through a gateway or modem router. You can change the subnet mask to fit your network.

✧ **Enable IGMP Snooping**: Check to enable the IGMP Snooping feature and select either of the following two modes:

✧ **Configure the second IP Address and Subnet Mask for LAN interface:** If you want to configure two IP addresses for the LAN interface, you can check this option and enter the second IP Address and Subnet Mask manually.

✧ **Disable DHCP Server:** Click to disable the DHCP Server.

✧ **Enable DHCP Server:** Click to enable the DHCP Server.

✧ **Start IP Address:** Specify the start of the range for the pool of IP addresses in the same subnet as the router.

✧ **End IP Address:** Specify the end of the range for the pool of IP addresses in the same subnet as the router.

✧ **Leased Time:** The lease time is a time length that the IP address is assigned to each device before it is refreshed.

✧ **Static IP Lease List:** Displays a list of devices with reserved static IP addresses.

✧ **Add Entries:** Click to add a static IP lease entry. A maximum 32 entries can be configured.

✧ **Remove Entries:** Click to remove a static IP lease entry.

✧ **Apply/Save:** After you configure all the needed settings, click this button to apply and save them.

---

*Tip:*

DHCP (Dynamic Host Configuration Protocol) assigns an IP address to each device on the LAN/private network. When you enable the DHCP Server, the DHCP Server will automatically allocate an unused IP address from the IP address pool specified in this screen to the requesting device as long as the device is set to "Obtain an IP Address Automatically". By default, the router functions as a DHCP server.

---

# IPv6 Autoconfig




## Static LAN IPv6 Address Configuration

✧ **Interface Address (prefix length is required):** Enter the interface address.

*Note:*

- IPv6 address can only be Aggregatable Global Unicast Addresses and Unique Local Address. Link-Local Unicast Addresses and Multicast Addresses are not permitted.
- The IPv6 address must be entered with a prefix length.

## IPv6 LAN Applications

✧ **Enable DHCPv6 Server：** Check to enable the DHCPv6 Server.

- **Stateless:** If selected, IPv6 clients will generate IPv6 addresses automatically based on the Prefix Delegation's IPv6 prefix and their own MAC addresses.

- **Stateful:** Stateful DHCPv6 is supported based on the assumption of prefix length less than 64. Select this option and configure the start/end interface ID and leased time. The router will automatically assign IPv6 addresses to IPv6 clients.

- **Leased Time (hour):** The lease time is a time length that the IP address is assigned to each device before it is refreshed.

- **Start interface ID/End interface ID:** Specify the start/end interface ID Interface ID does NOT

support ZERO COMPRESSION "::". Please enter the complete information. For exampe: Please enter "0:0:0:2" instead of "::2".

✧ **Enable RADVD:** The RADVD (Router Advertisement Daemon) implements link-local advertisements of IPv6 router addresses and IPv6 routing prefixes using the Neighbor Discovery Protocol (NDP) and is used by system administrators in stateless autoconfiguration methods of network hosts on Internet Protocol version 6 networks. Check the checkbox to enable the RADVD.

- **Enable ULA Prefix Advertisement:** If enabled, the router will advertise ULA prefix periodically.
- **Randomly Generate:** If selected, address prefix can be automatically generated.
- **Statically Configure:** If you select this option, you need to manually configure the address prefix and life time.
- **Prefix:** Specify the prefix.
- **Preferred Life Time (hour):** Specify the preferred life time in hour.
- **Valid Life Time (hour):** Specify the valid life time in hour.

✧ **Enable MLD Snooping:** MLD is used by IPv6 routers for discovering multicast listeners on a directly attached link. If disabled on layer2 devices, IPv6 multicast data packets will be broadcast on the entire layer2; if enabled, these packets will be multicast to only specified recipient instead of being broadcast on the entire layer2.

---

*Tip:*

If you change the LAN IP address of the device, you will lose your connection to the device. You must type the new IP address into your browser address field to log in to the device and set all gateway addresses of the LAN PCs to this new address to access the Internet. Be sure to write the new address on a sticky label and attach it to the bottom of the unit. You will need the new address to log in to the device in the future.

---

## 4.2.5 NAT

This section explais the following:

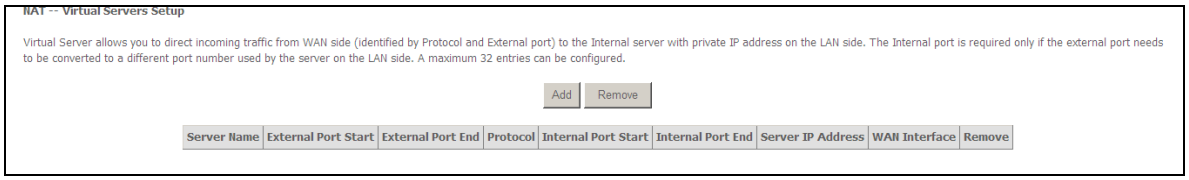
• Virtual Server

• Port Triggering

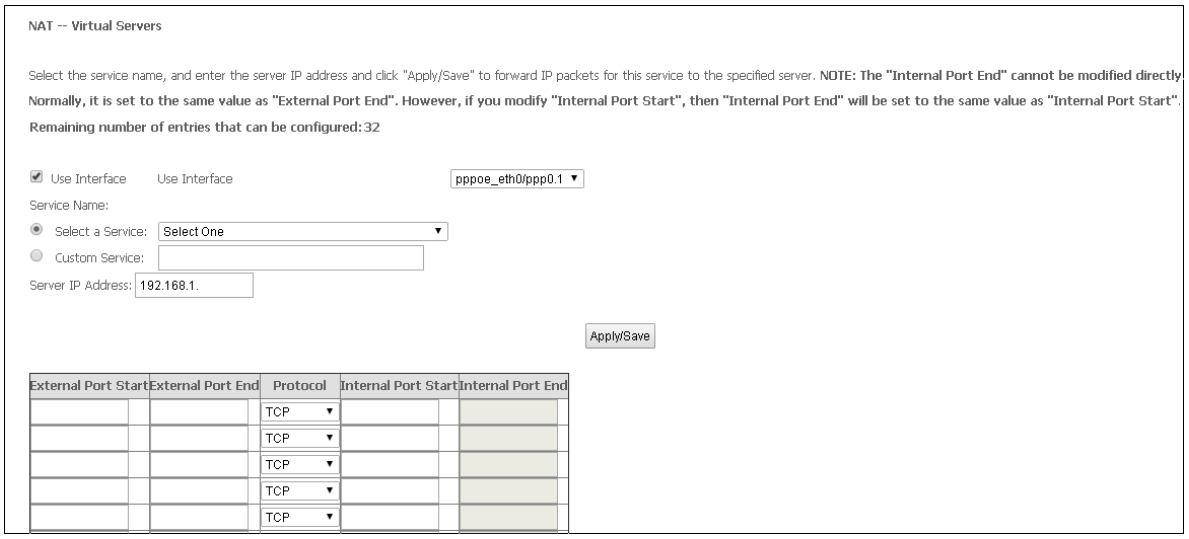
• DMZ Host

## Virtual Server

The Virtual Server is useful for web servers, ftp servers, e-mail servers, gaming and other specialized Internet applications. When you enable the Virtual Server, the communication requests from the Internet to your router's WAN port will be forwarded to the specified LAN IP address.




To enter the virtual server screen, click **NAT -> Virtual Server** and then click the **Add** button to add rules.




✧ **Use Interface:** Select a WAN connection to which you wish to apply the rules. When there is only one WAN connection available, the rules will be automatically applied to it.

✧ **Service Name:**

**- Select a Service option:** Allows you to select an existing service from the drop-down list.

**- Custom Service:** Allows you to customize a service.

✧ **Server IP Address:** Enter the IP address of your local computer that will provide this service.

✧ **External Starting Port and External Ending Port:** These are the starting number and ending number for the public ports at the Internet interface.

✧ **Protocol:** Select the protocol from the Protocol drop-down list. If you are unsure, select TCP/UDP.

✧ **Internal Starting Port and Internal Ending Port:** These are the starting number and ending number for the ports of a computer on the router's local area network (LAN).

*Note:*

If you have enabled the UPnP functionality on both the router and your PC that is attached to one of the LAN port on the router, you will be prompted on the Virtual Server page that the UPnP interface is being used.

**Application Example:**

You have set up two servers on your LAN side:

- An FTP server (using the default port number of 21) at the IP address of 192.168.1.100

- A web server (using the default port number of 80) at the IP address of 192.168.1.110

And want your friends on Internet to access the FTP server and web server on default ports. To access your FTP or web server from the Internet, a remote user has to know the Internet IP address or Internet name of your router, such as www.tendacn.com. In this example, we assume the Internet IP address of your router is 183.37.227.201. Then follow instructions below:

**To configure the router to make your local FTP server public:**

1. Click **NAT -> Virtual Server** to enter it and then click the **Add** button.

2. - Select FTP that you wish to host on your network from the **Select a Service** drop-down list. The port number (21) used by this service will then be automatically populated.

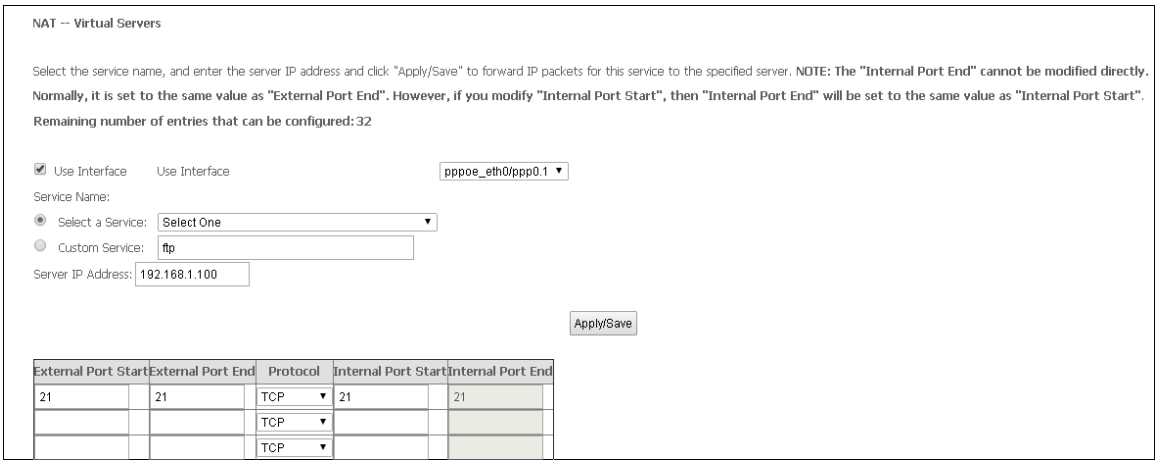
- Or if you wish to define the service yourself, enter a descriptive name in the **Custom Service**, say My FTP, and then manully enter the port number (21) used by this service in the **Internal Starting Port**, **Internal Ending Port**, **External Starting Port and External Ending Port fields**.

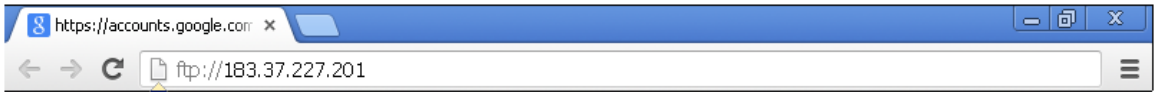
3. Select a protocol from the **Protocol** drop-down list. If you are unsure, select **TCP/UDP**.

4. In the **Server IP Address** field, enter the last digit of the IP address of your local computer that offers this service. Here in this example, we enter 192.168.1.100.

5. Click the **Apply/Save** button.

6. Your friends on Internet will then be able to access your FTP server simply by entering "ftp://183.37.227.201" in his browser.




**To configure your router to make your local web server public:**

1. Click **NAT -> Virtual Server** to enter it and then click the **Add** button.

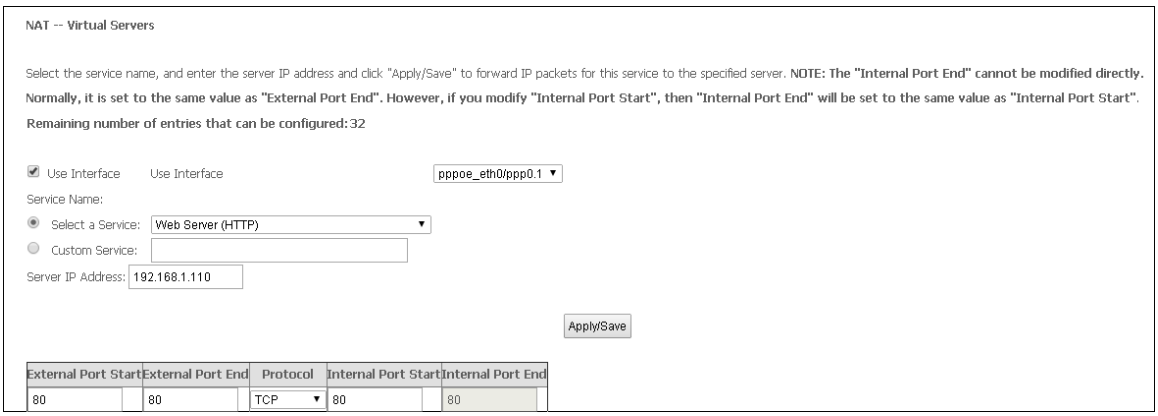
2. - Select **Web Server (HTTP)** that you wish to host on your network from the **Select a Service** drop-down list. The port number (80) used by this service will then be automatically populated.

- Or if you wish to define the service yourself, enter a descriptive name in the **Custom Service**, say My Web Server (HTTP), and then manully enter the port number (80) used by this service in the **Internal Starting Port**, **Internal Ending Port**, **External Starting Port and External Ending Port fields**.

3. Select a protocol from the **Protocol** drop-down list. If you are unsure, select **TCP/UDP**.

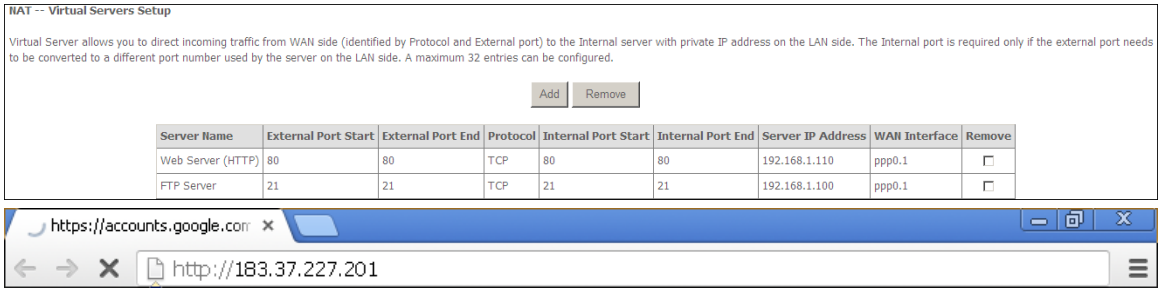
4. In the **Server IP Address** field, enter the last digit of the IP address of your local computer that offers this service. Here in this example, we enter 192.168.1.110.

5. Click the **Apply/Save** button.




6. Now you can view your configurations as seen in the screenshot below. Your friends on Internet

will then be able to access the web server simply by entering "http://183.37.227.201" in his browser.




*Note:*

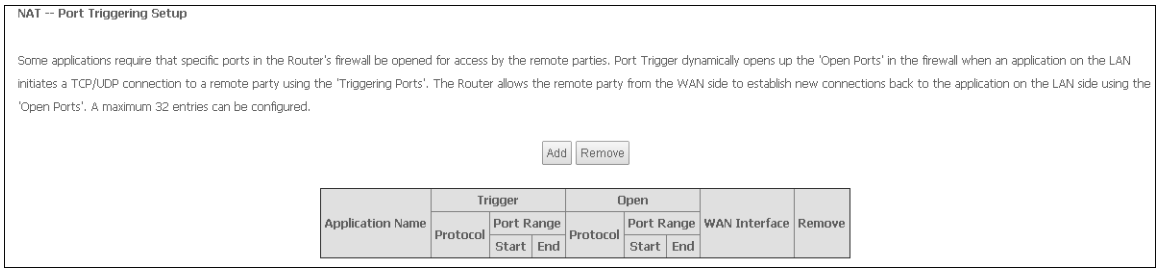
The "Internal Port End" cannot be modified directly. Normally, it is set to the same value as "External Port End". However, if you modify "Internal Port Start", then "Internal Port End" will be set to the same value as "Internal Port Start".

***Tip:***

If the service or game you wish to host on your network is not included in the list, manually add it in the Custom Service field and then add the port number used by it to the **Internal Starting Port**, **Internal Ending Port**, **External Starting Port and External Ending Port fields**.

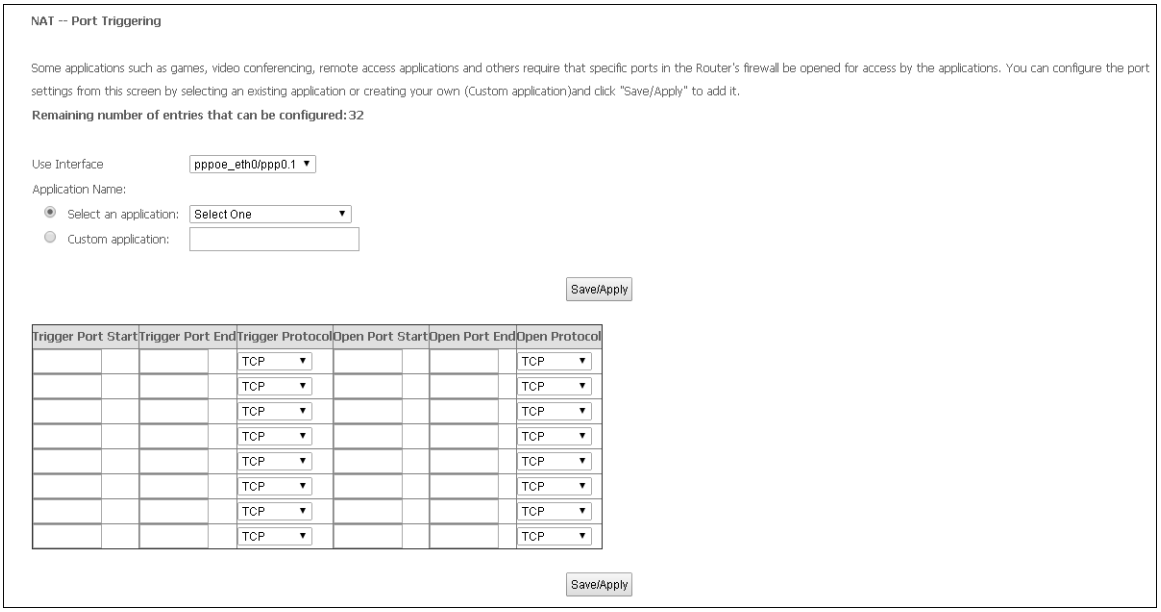
## Port Triggering

Some applications such as games, video conferencing, remote access applications and others require that specific ports in the Router's firewall be opened for access by the applications. Port Trigger dynamically opens up the 'Open Ports' in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the 'Triggering Ports'. The Router allows the remote party from the WAN side to establish new connections back to the application on the LAN side using the Open Ports.




To enter the Port Triggering screen, click **NAT -> Port Triggering** and then click the **Add** button to add rules.

You can configure the port settings from this screen by selecting an existing application or creating your own (Custom application) and click "Save/Apply" to add it.




✧ **Use Interface:** Select a WAN connection to which you wish to apply the rules. When there is only one WAN connection available, the rules will be automatically applied to it.

✧ **Application Name:** Two options are available:

- Select an application

- Custom application

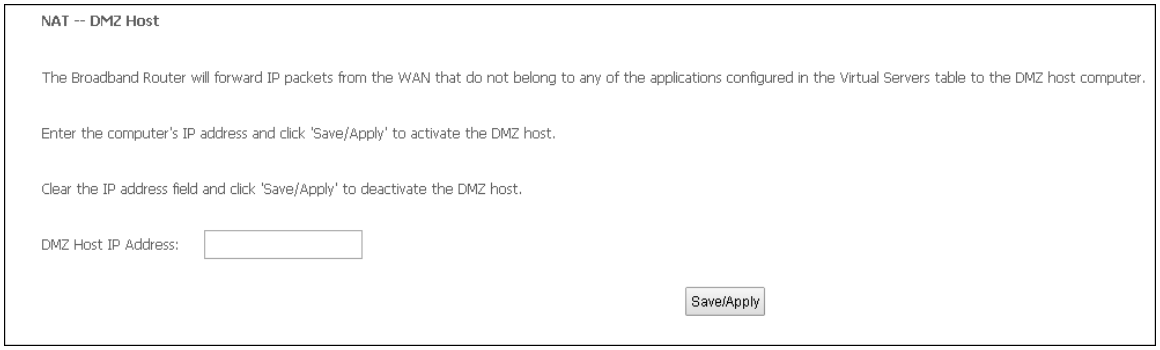
✧ **Trigger Port Start/Trigger Port End:** The port range for an application to initiate connections.

✧ **Trigger Protocol:** Select the protocol from the drop-down list. If you are unsure, select TCP/UDP.

✧ **Open Port Start/ Open Port End:** These are the starting number and ending number for the ports that will be automatically opened by the built-in firewall when connections initiated by an application are established.

## DMZ Host

The default DMZ (De-Militarized Zone) host feature is helpful when you are using some online games and videoconferencing applications that are not compatible with NAT (Network Address Translation).




✧ **DMZ Host IP Address:** The IP Address of the device for which the router's firewall will be disabled. Be sure to assign a static IP Address to that device. The DMZ host should be connected to a LAN port of the device. Be sure to assign a static IP address to that DMZ host.




**Warning!**

DMZ servers pose a security risk. A computer designated as the DMZ server loses much of the protection of the firewall and is exposed to exploits from the Internet.

## 4.2.6 Security

This section explains the following information:

• IP Filtering

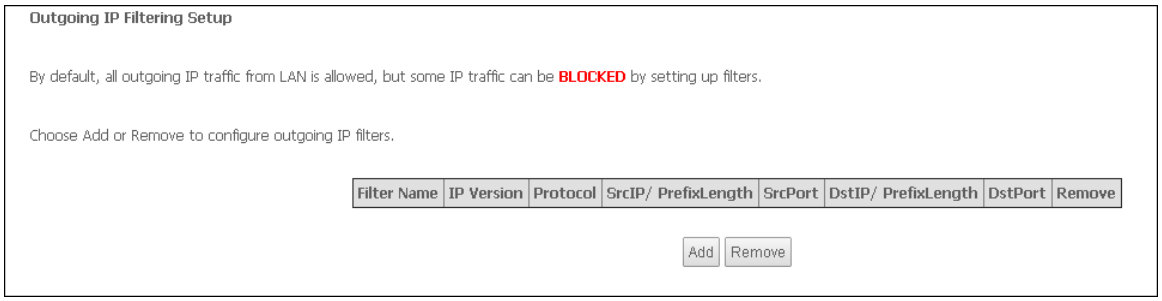
• MAC Filtering

### IP Filtering

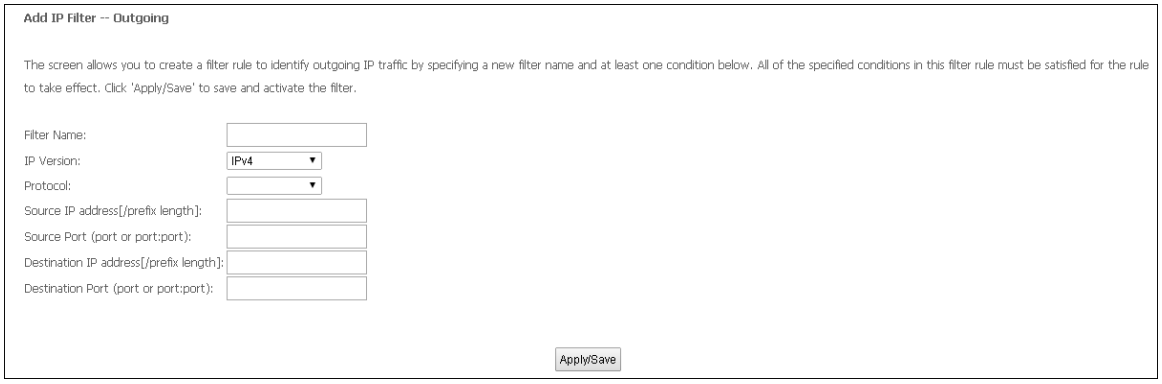
#### Outgoing IP Filtering Setup

By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be BLOCKED by setting up filters.

Choose Add or Remove to configure outgoing IP filters.




Choose **Add** to enter the following screen:




This screen allows you to create a filter rule to identify outgoing IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click 'Apply/Save' to save and activate the filter.

✧ **Filter Name:** Enter a descriptive filtering name.

✧ **IP Version:** Select either IPv4 or IPv6.

✧ **Protocol:** TCP/UDP, TCP, UDP and ICMP are available for your option.

✧ **Source IP address [/prefix length]:** Enter the LAN IP address to be filtered.

✧ **Source Port (port or port: port):** Specify a port number or a range of ports used by LAN PCs to access the Internet. If you are unsure, leave it blank.

✧ **Destination IP address [/prefix length]:** Specify the external network IP address to be accessed by specified LAN PCs.

✧ **Destination Port** (port or port:port)**:** Specify a port number or a range of ports used by LAN PCs to access external network.

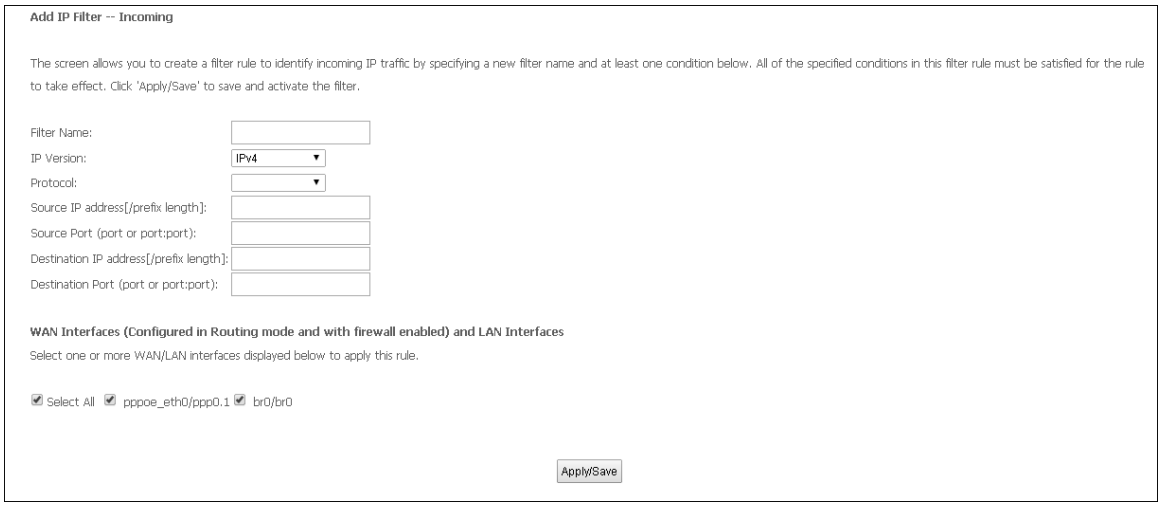
**Incoming IP Filtering Setup**

When the firewall is enabled on a WAN or LAN interface, all incoming IP traffic is BLOCKED. However, some IP traffic can be **ACCEPTED** by setting up filters.

Choose **Add** or Remove to configure incoming IP filters.




Click **Add** to enter the following screen:




This screen allows you to create a filter rule to identify incoming IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click Apply/Save to save and activate the filter.

✧ **IP Version:** Select either IPv4 or IPv6.

✧ **Protocol:** TCP/UDP, TCP, UDP and ICMP are available for your option.

✧ **Source IP address [/prefix length]:** Enter the Internal IP address [/prefix length] to be filtered.

✧ **Source Port (port or port: port):** Specify a port number or a range of ports used by PCs from external network to access your internal network.

✧ **Destination IP address [/prefix length]:** Specify the internal network IP address [/prefix length] to be accessed by the specified PCs from external network.

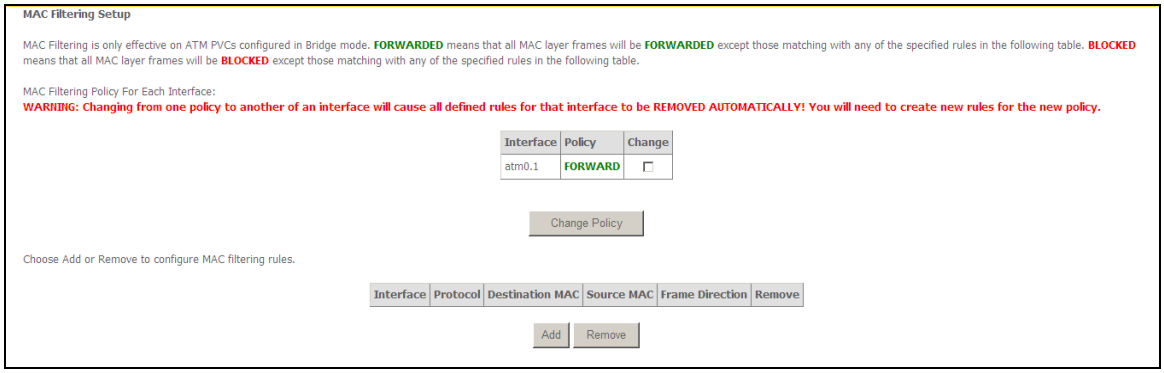
✧ **Destination Port (port or port:port):** Specify a port number or a range of ports used by PCs from external network to access your internal network.

## MAC Filtering

A bridge WAN service is needed to configure this service.

MAC Filtering is only effective on ATM PVCs configured in Bridge mode. **FORWARDED** means that all MAC layer frames will be FORWARDED except those matching with any of the specified rules in the following table. **BLOCKED** means that all MAC layer frames will be BLOCKED except those matching with any of the specified rules in the following table.

Choose Add or Remove to configure MAC filtering rules.




**Warning!**

Changing from one policy to another of an interface will cause all defined rules for that interface to be REMOVED AUTOMATICALLY! You will need to create new rules for the new policy.

Click **Add** to enter the following screen:




Here you can create a filter to identify the MAC layer frames by specifying at least one condition below. If multiple conditions are specified, all of them take effect. Click **Save/Apply** to save and activate the filter.

✧ **Protocol Type:** Select a protocol type from the drop-down list.

✧ **Destination MAC Address:** Enter the destination MAC address apply the MAC filtering rule to which you wish to apply the MAC filtering rule.

✧ **Source MAC Address:** Enter the source MAC address to which you wish to apply the MAC filtering rule.

✧ **Frame Direction:** Select a frame direction from the drop-down list.

✧ **WAN Interfaces:** Select a WAN interface from the drop-down list.

## 4.2.7 Parental Control

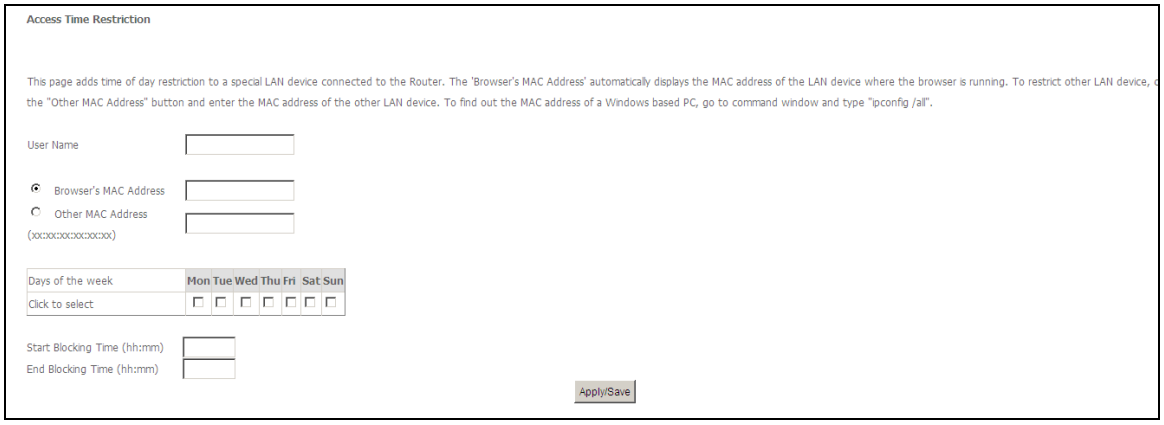
This section explains the following information:

• Time Restriction

• URL Filter

### Time Restriction

Click **Parental Control -> Time Restriction -> Add** to enter the following screen.




Here you can add time of day restriction that an attached LAN device can access the Internet.

The 'Browser's MAC Address' automatically displays the MAC address of the LAN device where the browser is running. To restrict other LAN device, click the "Other MAC Address" button and enter the MAC address of the other LAN device.

✧ **User Name:** Enter a user name.

✧ **Browser's MAC Address:** Automatically adds the MAC address of the attached LAN device where the browser is running.

✧ **Other MAC Address:** Specify the MAC address of the computer that you want to apply Internet access restriction.

✧ **Days of the week:** Click to select the days of the week during which you wish to restrict Internet

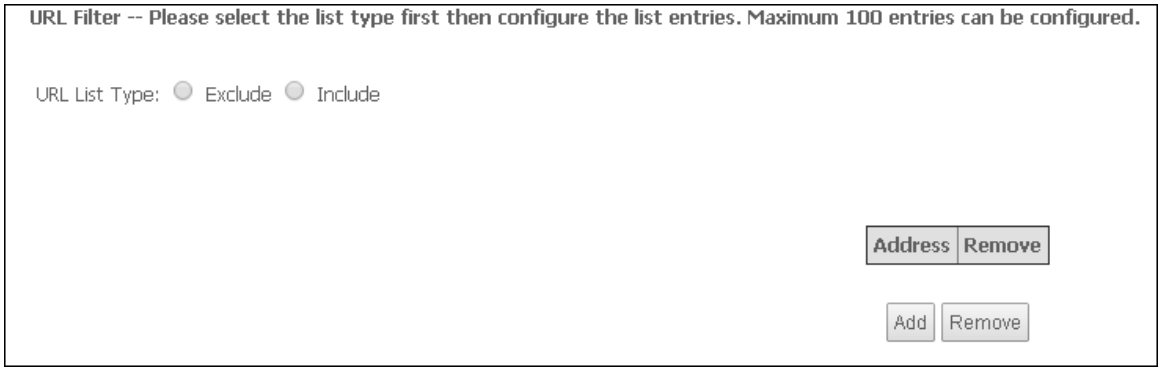
access.

✧ **Start Blocking Time/ End Blocking Time:** Specify time of day restriction to an attached LAN device. Within this specified time length of the day, this LAN device will be blocked from the Internet.

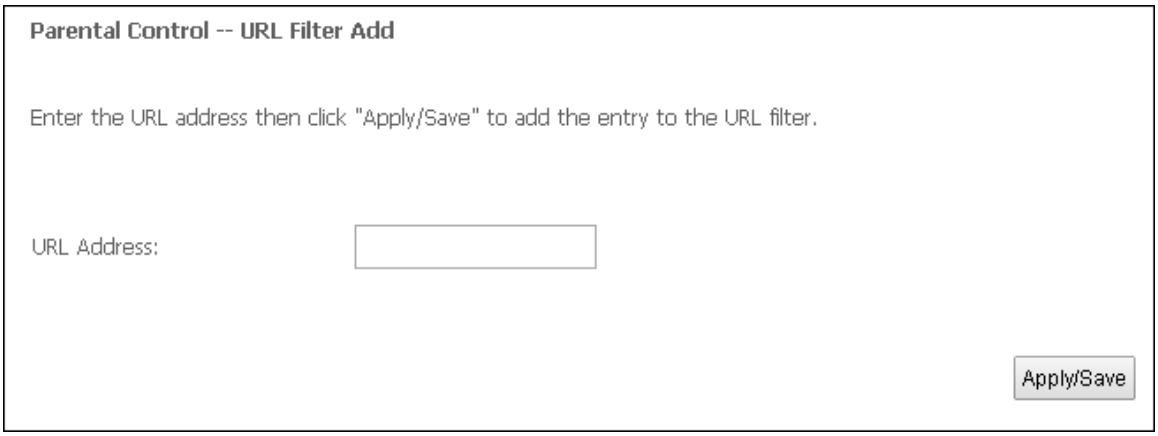
✧ **Apply/Save:** Click to Apply/Save your settings.

## URL Filter

Here you can add URL access restriction to specific LAN PCs




First select **Exclude** or **Include** and then click **Add** to enter the screen below for configuring the list entries. Maximum 100 entries can be configured.




✧ **URL Address:** Enter the URLs that a specific LAN PC cannot access.

Enter the URL address and then click "Apply/Save" to add the entry to the URL filter.

---

*Note:*

If you have accessed the URL before you include it in a URL filter rule, you must reboot the router and erase it from your PC to activate this URL filter rule. To erase the domain name from your PC, click **Start -> Run**, enter **cmd** and then type **ipconfig /flushdns**.

---

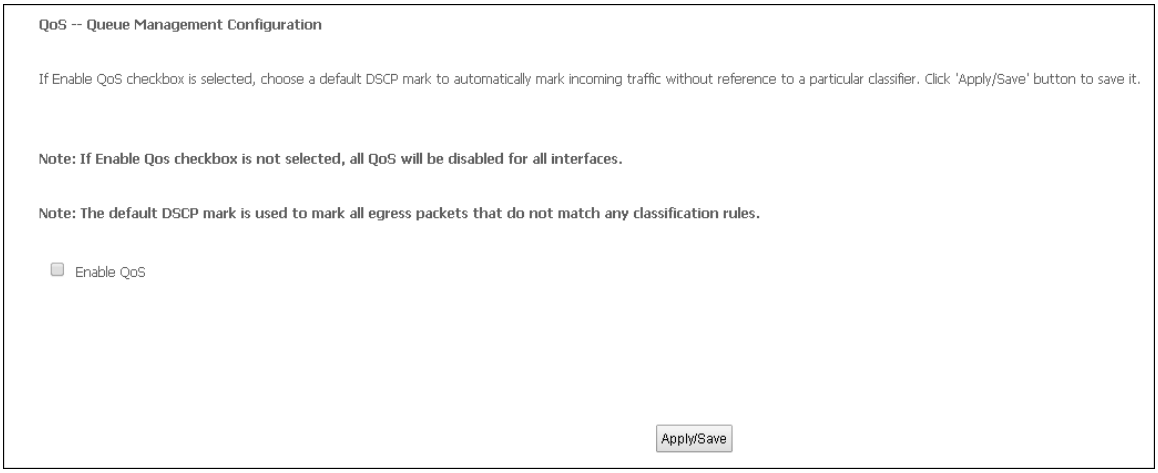
## 4.2.8 Quality of Service

This section explains the following:

• QoS Queue

• QoS Classification

If **Enable QoS** checkbox is selected, choose a default DSCP mark to automatically mark incoming traffic without reference to a particular classifier. Click **Apply/Save** button to save it.




**Enable QoS:** Check/uncheck to enable/disable the QoS feature.

*Note:*

- If Enable Qos checkbox is not selected, all QoS will be disabled for all interfaces.
- The default DSCP mark is used to mark all egress packets that do not match any classification rules.

### QoS Queue

In ATM mode, maximum 8 queues can be configured.

In PTM mode, maximum 8 queues can be configured.

For each Ethernet interface, maximum 4 queues can be configured.

For each Ethernet WAN interface, maximum 4 queues can be configured.

To add a queue, click the **Add** button.

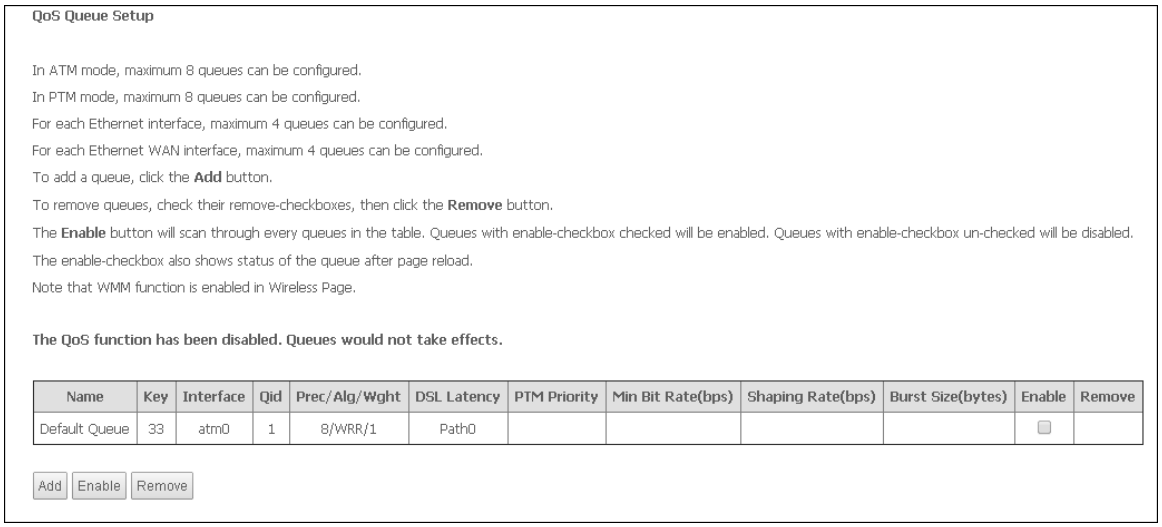
To remove queues, check their remove-checkboxes and then click the **Remove** button.

The **Enable** button will scan through every queue in the table. Queues with enable-checkbox checked

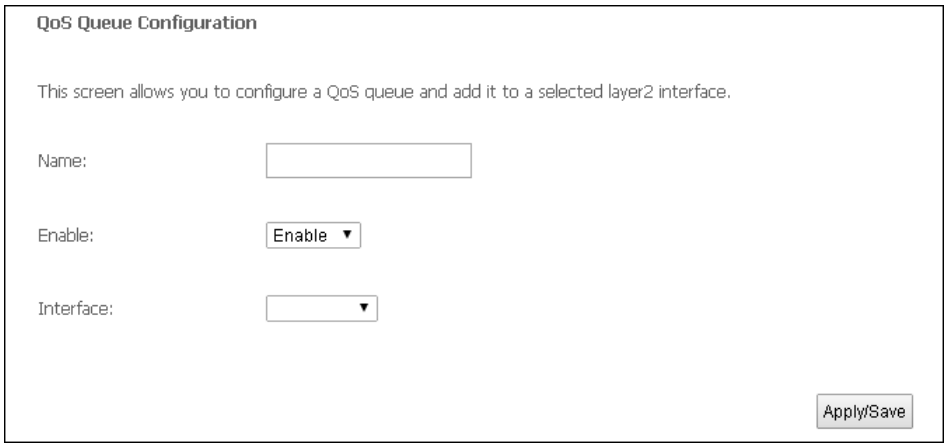
will be enabled. Queues with enable-checkbox un-checked will be disabled.

The enable-checkbox also shows status of the queue after page reload.

Note that if WMM function is disabled in Wireless Page, queues related to wireless will not take effects.




To add a queue, click the **Add** button to enter the following screen.




Here you can configure a QoS queue and add it to a selected layer2 interface.

## QoS Classification

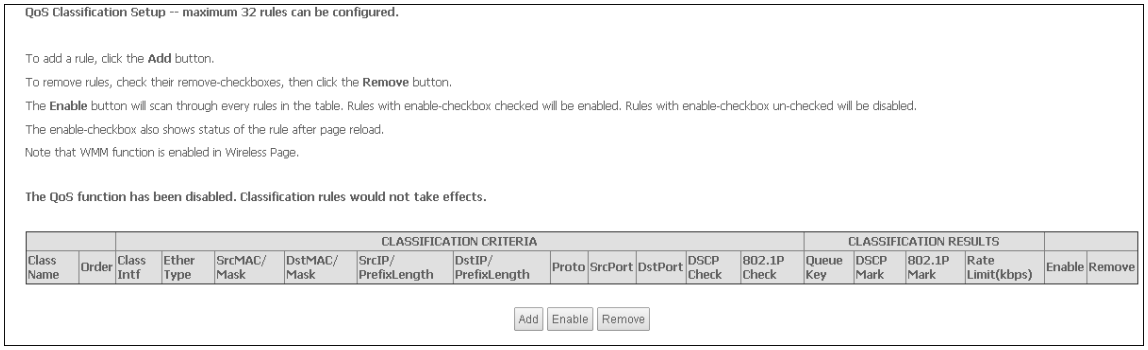
To add a rule, click the **Add** button.

To remove rules, check their remove-checkboxes and then click the **Remove** button.

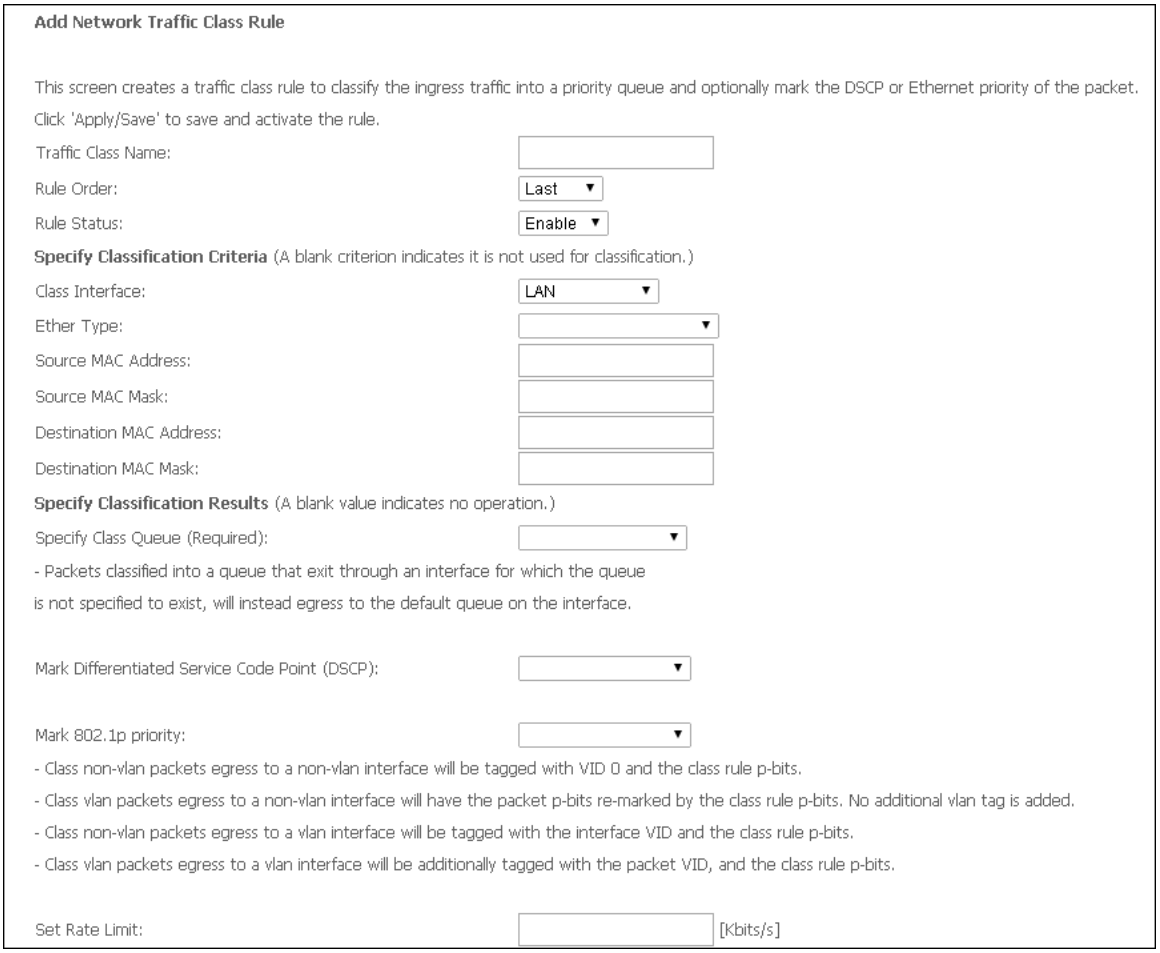
The **Enable** button will scan through every rule in the table. Rules with enable-checkbox checked will be enabled. Rules with enable-checkbox un-checked will be disabled.

The enable-checkbox also shows status of the rule after page reload.

If you disable WMM function in Wireless Page, classification related to wireless will not take effects.




To add a rule, click the **Add** button to enter the following screen.




Here you can create a traffic class rule to classify the ingress traffic into a priority queue and optionally mark the DSCP or Ethernet priority of the packet.

Click **Apply/Save** to save and activate the rule.

## 4.2.9 Routing

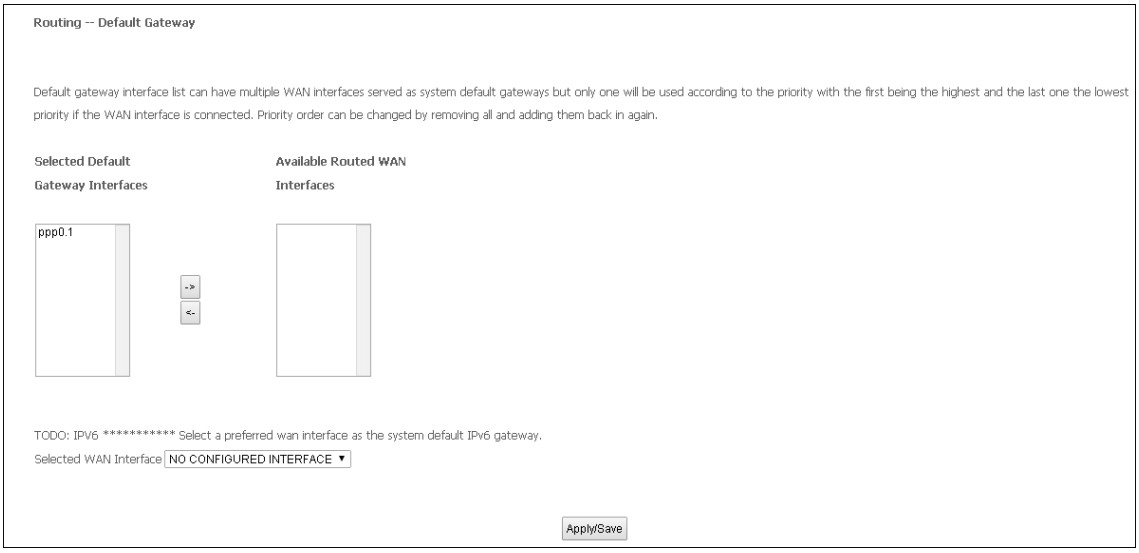
This section explains the following:

• Default Gateway

• Static Route

## Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the highest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.



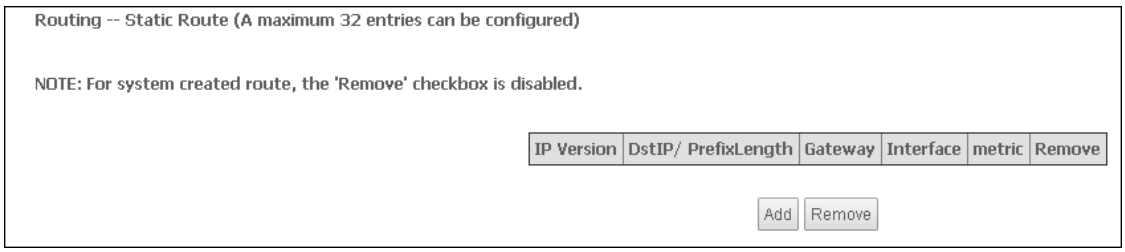

✧ **Selected Default Gateway Interfaces:** Displays the selected dfault gteway iterfaces. Select a WAN interface and click the -> button to move it to the **Available Routed WAN Interfaces** box.

✧ **Available Routed WAN Interfaces:** Displays the available routed WAN interfaces. Select a WAN interface and click the <- button to add it to the **Selected Default Gateway Interfaces** box.

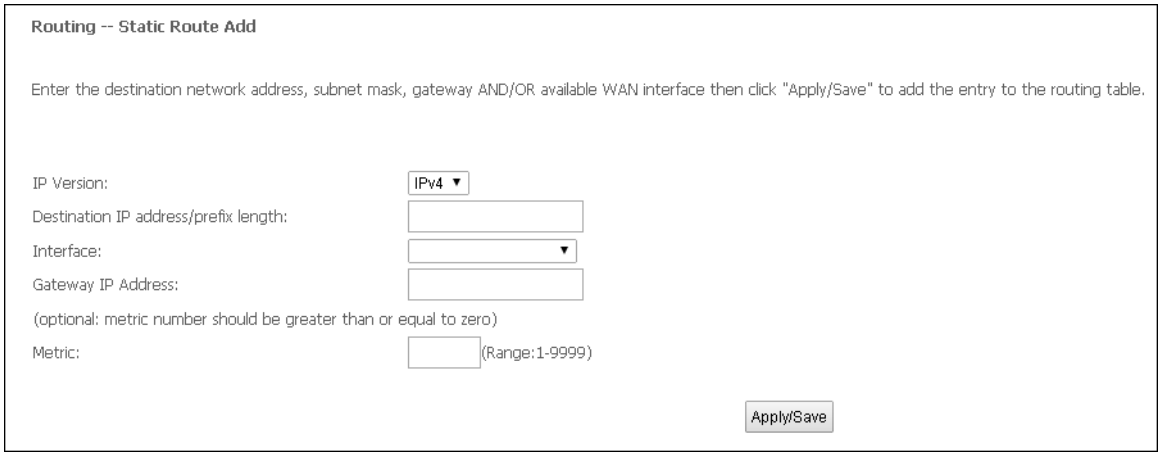
✧ **Apply/Save:** Click to save and activate your settings.

## Static Route

Static routes provide additional routing information to your router. Typically, you do not need to add static routes. However, when there are several routers in the network, you may want to set up static routing. Static routing determines the path of the data in your network. You can use this feature to allow users on different IP domains to access the Internet via this device. It is not recommended to use this setting unless you are familiar with static routing. In most cases, dynamic routing is recommended, because this feature allows the router to detect the physical changes of the network layout automatically. If you want to use static routing, make sure the router's DHCP function is disabled.




Click **Add** to enter the following screen:




✧ **IP Version:** Select either IPv4 or IPv6.

✧ **Destination IP address/prefix length:** Enter the destination IP address and prefix length of the final destination.

✧ **Interface:** Select an interface from the drop-down list.

✧ **Gateway IP address:** Enter the gateway IP address, which must be a router on the same LAN segment as the router.

✧ **Metric:** Enter a number in the Metric field. This stands for the number of routers between your network and the destination.

✧ **Apply /Save:** Click to apply and save your settings.

---

*Note:*

- Destination IP address cannot be on the same IP segment as WAN or LAN segment as the router.
- Only configure additional static routes for unusual cases such as multiple routers or multiple IP subnets located on your network. Wrong static routes may lead to network failure.
- For system created route, the 'Remove' checkbox is disabled.

---

## 4.2.10 DNS

### DNS Server (Static DNS)

The DNS server translates domain names to numeric IP addresses. It is used to look up site addresses based on their names.

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system.

Here you can configure the WAN DNS address:

**For IPv4:**

-Click the **Select DNS Server Interface from available WAN interfaces** option

-OR select the **Use the following Static DNS IP address** option and enter static DNS server IP addresses for the system

And then click **Apply/Save**.

**For IPv6:**

-Select **Obtain IPv6 DNS info from a WAN interface** and Select a configured WAN interface for the IPv6 DNS server information.

-Select **Use the following Static IPv6 DNS address** and enter the static IPv6 DNS server Addresses.

And then click **Apply/Save**.



*Note:*

- DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.
- In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
- If you cannot locate the static DNS server IP information, ask your ISP to provide it.
- The default settings are recommended if you are unsure about the DNS server addresses. If a wrong DNS server address is configured, webpages may not be open.

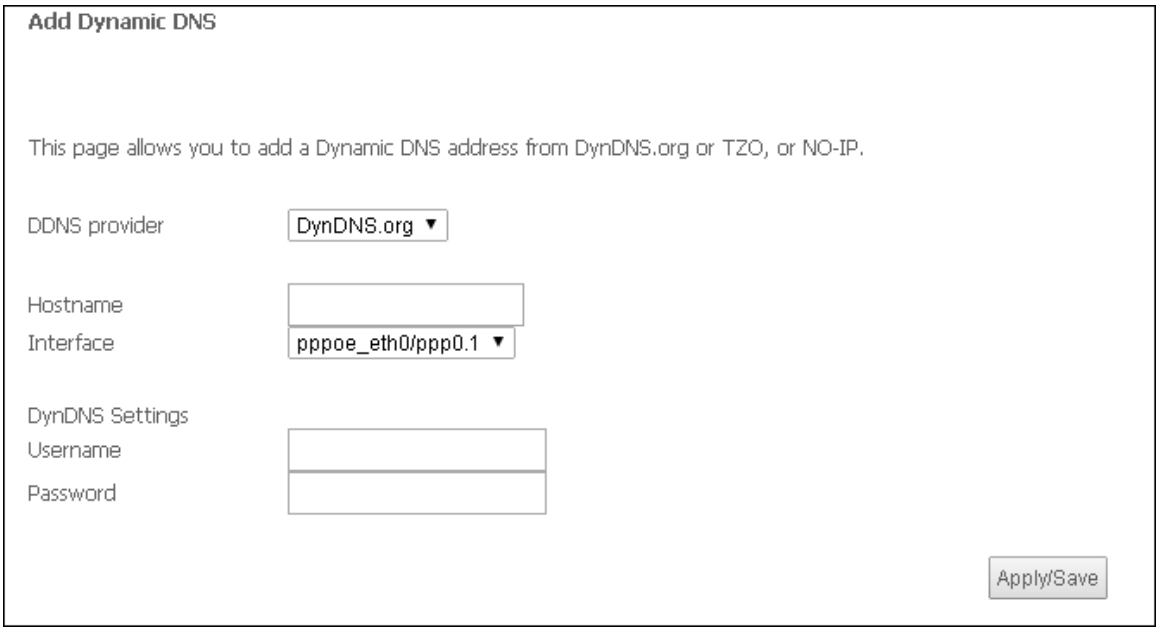
## Dynamic DNS (DDNS)

If your Internet service provider (ISP) gave you a static (fixed) public IP address, you can register a domain name and have that name associated with your IP address by public Domain Name Servers (DNS). However, if your ISP gave you a dynamic (changing) public IP address, you cannot predict what your IP address will be, and the address can change frequently. In this case, you can use a commercial Dynamic DNS service. It lets you register your domain to their IP address and forwards traffic directed at your domain to your frequently changing IP address.If your ISP assigns a private WAN IP address (such as 192.168.x.x or 10.x.x.x), the Dynamic DNS service does not work because private addresses are not routed on the Internet.

Click **Advanced Setup -> DNS -> Dynamic DNS** to enter the Dynamic DNS screen.

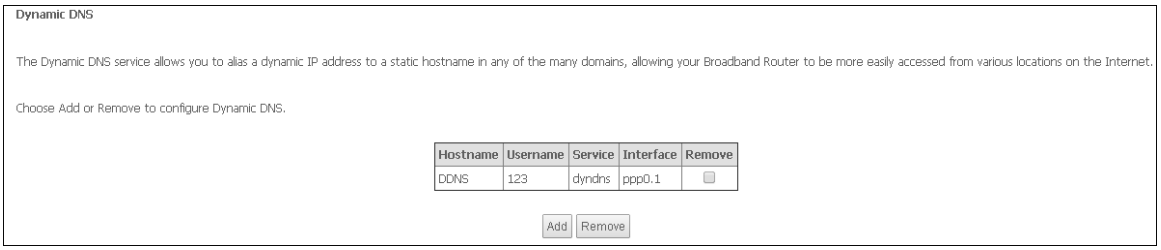



Click the **Add** button to configure the DDNS settings.




- **D-DNS Provider:** Select your DDNS service provider from the drop-down menu.
- **Hostname:** Enter the DDNS domain name registered with your DDNS service provider.
- **Interface:** Specify a WAN connection interface.
- **User Name:** Enter the DDNS user name registered with your DDNS service provider.
- **Password:** Enter the DDNS Password registered with your DDNS service provider.

Click **Apply/Save** to save your settings.



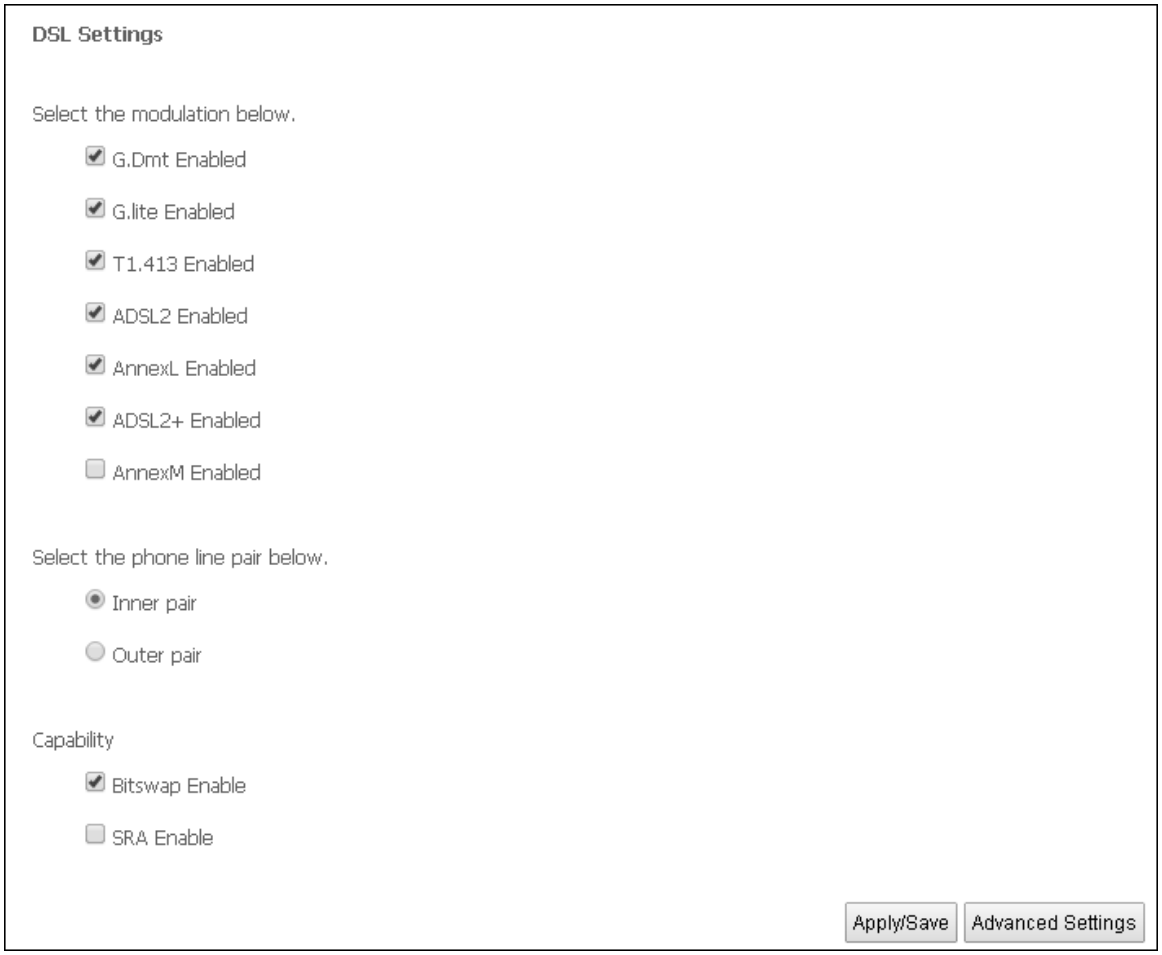

## 4.2.11 DSL

This screen provides multiple ASDL modulation modes to meet diversified environments. You can also select phone line pair and Capability.

DSL parameter configurations must be supported by ISP to take effect. Actual parameters (see Statistics-xDSL) resulted from the negotiation between your router and ISP. Wrong configurations may fail your Internet access.

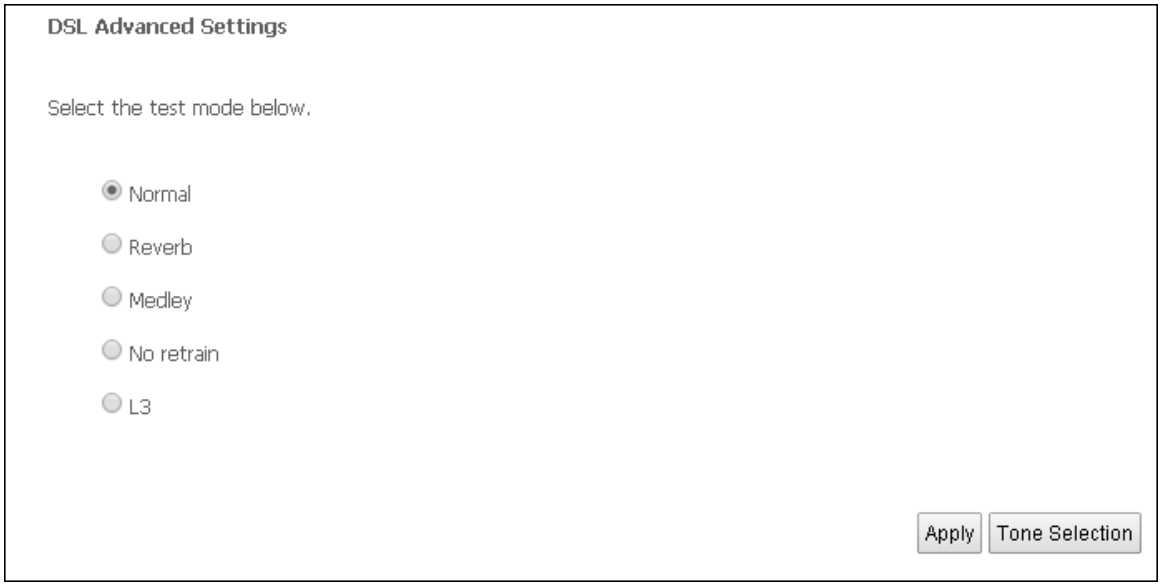
The best DSL configurations are the factory defaults. Only change them if you are instructed by your ISP or our technical staff when your router fails to negotiate with ISP in DSL (ATM) mode. Usually,

this failure can be identified and confirmed if the ADSL LED on the device keeps displaying a slow or quick blinking light.




Check the checkbox next to a modulation to enable it and then click **Apply/Save**.

✧ **Advanced Settings:** Click to enter the screen below.




Here you can select the test mode and tone.

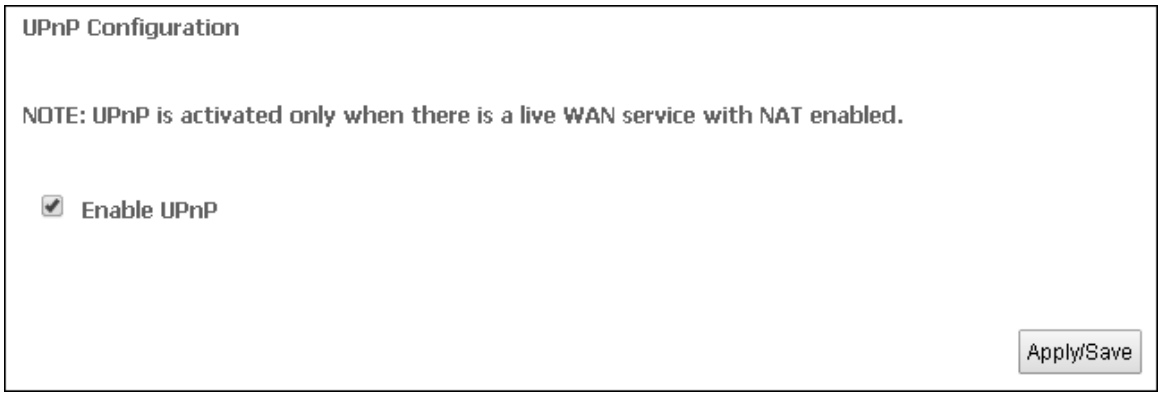
*Tip:*

If you are unsure about the ADSL parameters, please apply the factory default settings.Wrong configurations may fail your Internet access.

## 4.2.12 UPnP

UPnP (Universal Plug and Play) allows Windows based systems to configure the device for various Internet applications automatically. UPnP devices can automatically discover the services from other registered UPnP devices on the network.

If you use applications such as multiplayer gaming, peer-to-peer connections, or real-time communications, such as instant messaging or remote assistance (a feature in Windows XP), you should enable UPnP.



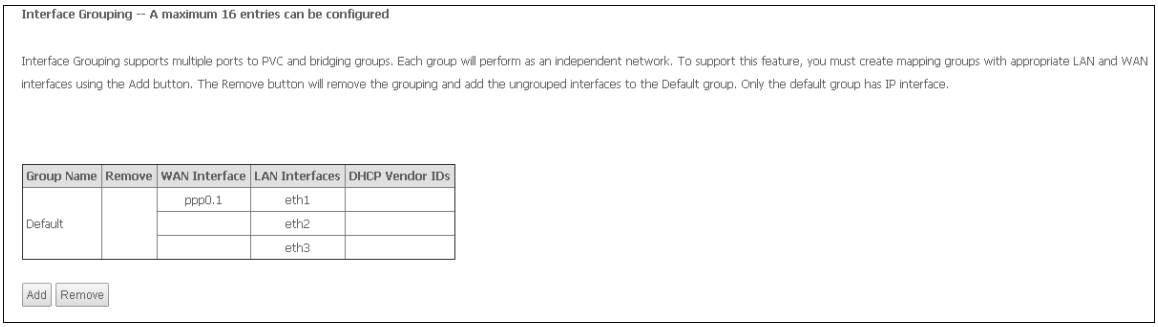

✧ **Enable UPnP:** Check/uncheck to enable/disable the UPnP feature.

*Note:*

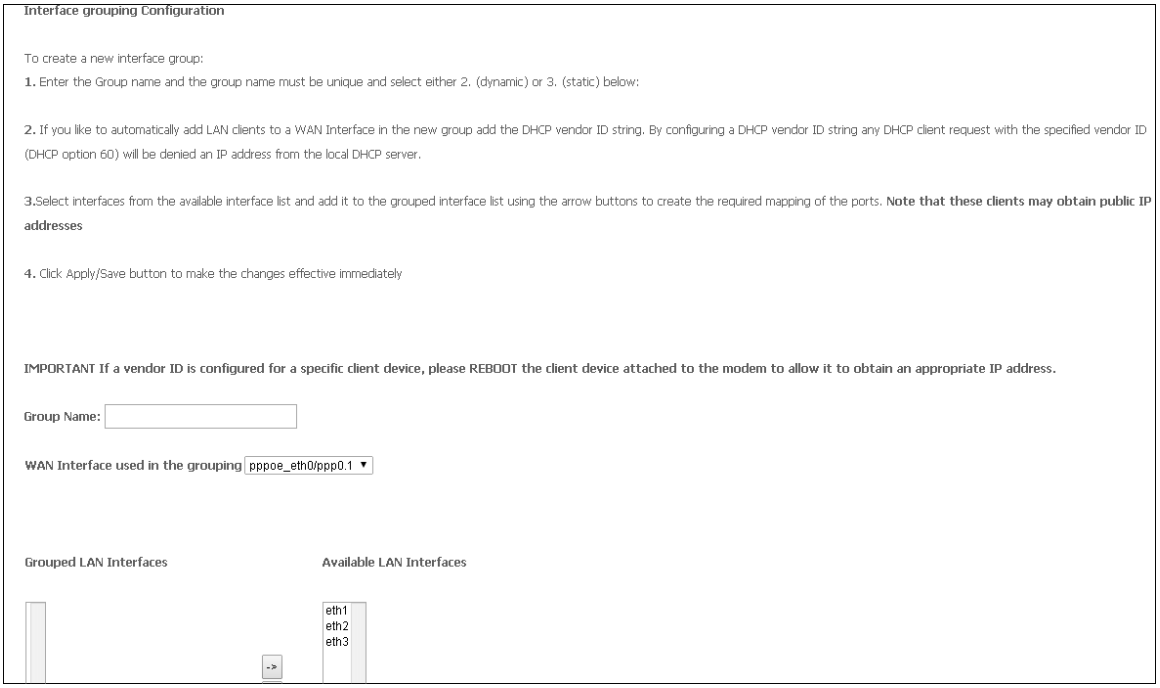
UPnP is activated only when there is a live WAN service with NAT enabled.

## 4.2.13 Interface Grouping

Interface Grouping supports multiple ports to PVC and bridging groups. Each group will perform as an independent network. To support this feature, you must create mapping groups with appropriate LAN and WAN interfaces using the Add button. The Remove button will remove the grouping and add the ungrouped interfaces to the Default group. Only the default group has IP interface.




Click **Add** to enter the screen below:




✧ **Group Name:** The name of a configured rule.

✧ **WAN Interface used in the grouping:** WAN connection to which the interface grouping rules apply.

✧ **Available LAN Interfaces:** LAN interfaces that can be used for interface grouping.

✧ **Grouped LAN Interfaces:** LAN interfaces that use specified WAN interface.

To create a new interface group:

**1.** Enter the Group name and the group name must be unique and select either 2. (dynamic) or 3. (static) below:

**2.** If you like to automatically add LAN clients to a WAN Interface in the new group add the DHCP vendor ID string. By configuring a DHCP vendor ID string any DHCP client request with the specified vendor ID (DHCP option 60) will be denied an IP address from the local DHCP server.

**3.** Select interfaces from the available interface list and add it to the grouped interface list using the

arrow buttons to create the required mapping of the ports. Note that these clients may obtain public IP addresses.

4. Click **Apply/Save** button to make the changes effective immediately.

*Note:*

If a vendor ID is configured for a specific client device, please REBOOT the client device attached to the modem to allow it to obtain an appropriate IP address.

## 4.2.14 IP Tunnel

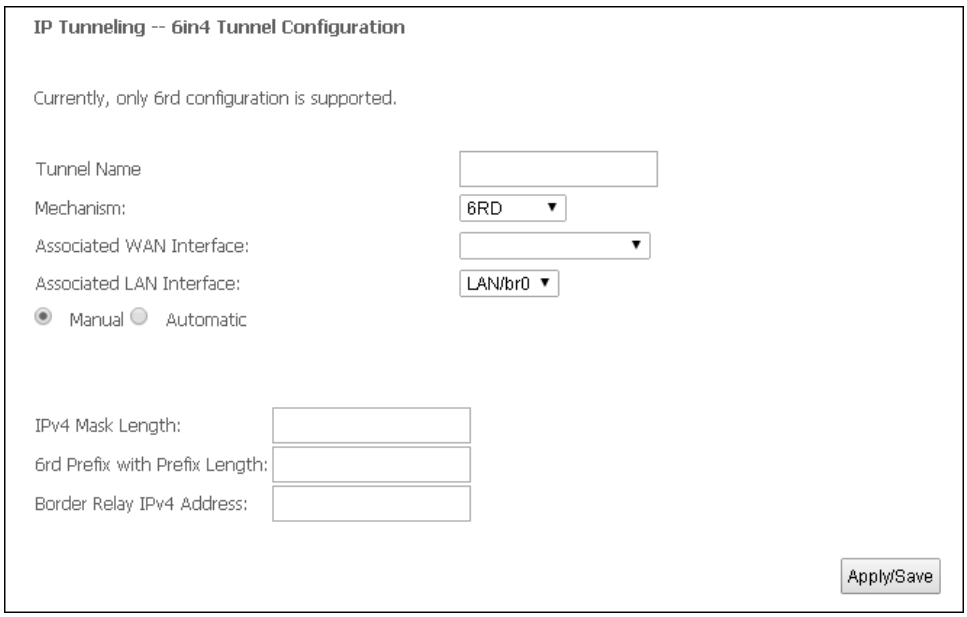
This section explains the following information:

• IPv6inIPv4

• IPv4inIPv6

### IPv6inIPv4

Click **IPv6inIPv4** and **Add** to enter the following screen:




✧ **Tunnel Name:** Specify the name of the tunnel.

✧ **Mechanism:** Currently, only DS-Lite configuration is supported.

✧ **Associated WAN Interface:** Specify the WAN iterface of the tunnel.

✧ **Associated LAN Interface:** Specify the LAN iterface of the tunnel.

✧ **Manual:** If you select Manual, configure the following settings also:

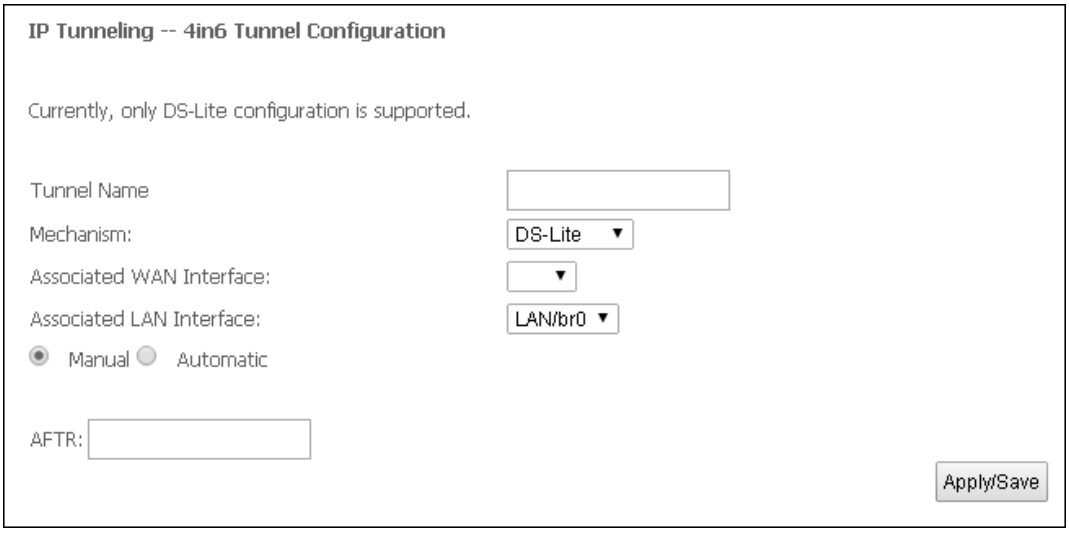
- **IPv4 Mask Length:** Specify the IPv4 Mask Length.
- **6rd Prefix with Prefix Length:** Specify the 6rd Prefix with Prefix Length.
- **Border Relay IPv4 Address:** Specify the Border Relay IPv4 Address.

✧ **Automatic:** If Automatic is selected, no configurations are required.

✧ **Apply/Save:** Click to apply and save your settings.

### IPv4inIPv6

Click **IPv4inIPv6** and **Add** to enter the following screen:




✧ **Tunnel Name:** Specify the name of the tunnel.

✧ **Mechanism:** Currently, only 6rd configuration is supported.

✧ **Associated WAN Interface:** Specify the WAN iterface of the tunnel.

✧ **Associated LAN Interface:** Specify the LAN iterface of the tunnel.

✧ **Manual:** If you select Manual, enter the AFTR information also:

✧ **Automatic:** If Automatic is selected, no configurations are required.

✧ **Apply/Save:** Click to apply and save your settings.

## 4.2.15 Certificate

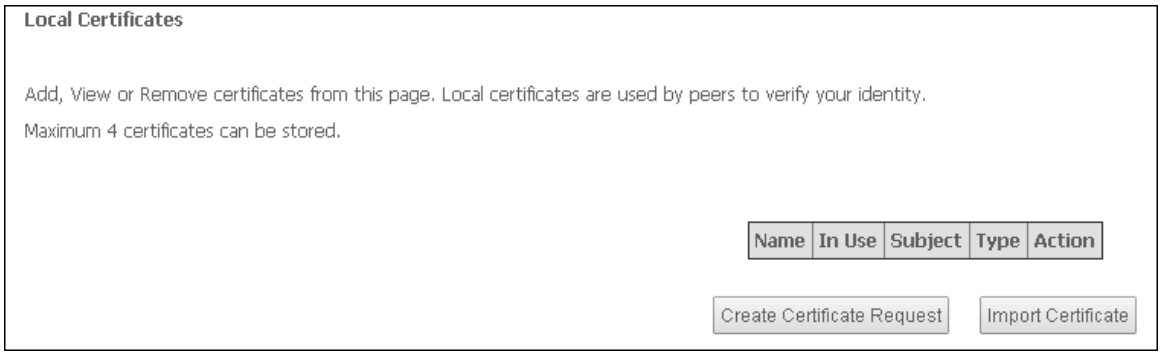
This section explains the following information:

• Local Certificates

• Trusted CA (Certificate Authority) Certificates

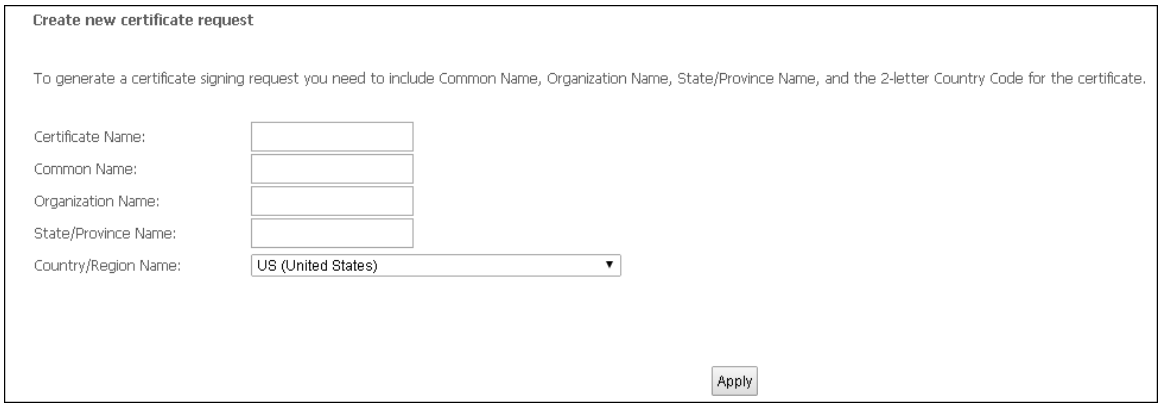
## Local Certificates

Here you can Add, View or Remove certificates. Local certificates are used by peers to verify your identity. Maximum 4 certificates can be stored.




To generate generate a certificate signing request:

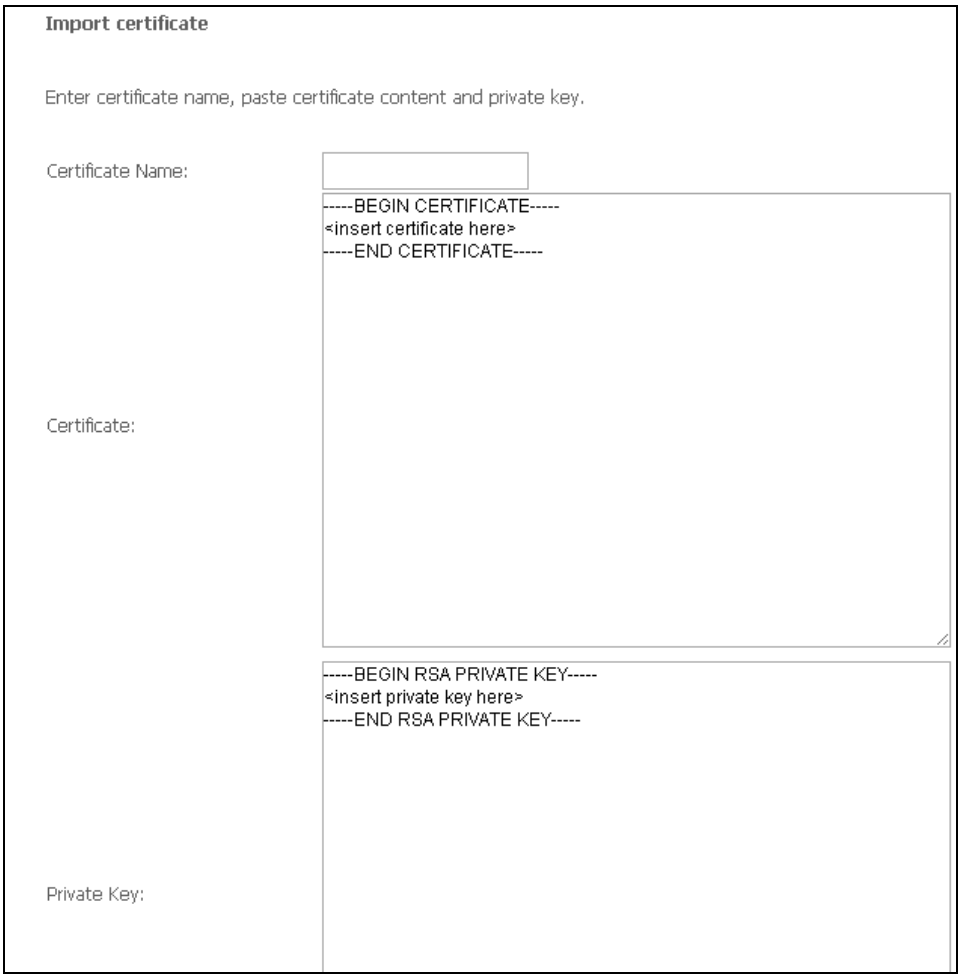
1. Click the **Create Certificate Request** button to enter the page below.




2. Specify the Common Name, Organization Name and State/Province Name
3. Enter the 2-letter Country Code for the certificate.
4. Click **Apply** to apply your settings.

To Import certificate：

1. Click the **Import Certificate** button on the local certificates page to enter the page below.




2. Enter the certificate name.
3. Paste the certificate content and private key.
4. Click **Apply** to apply your settings.

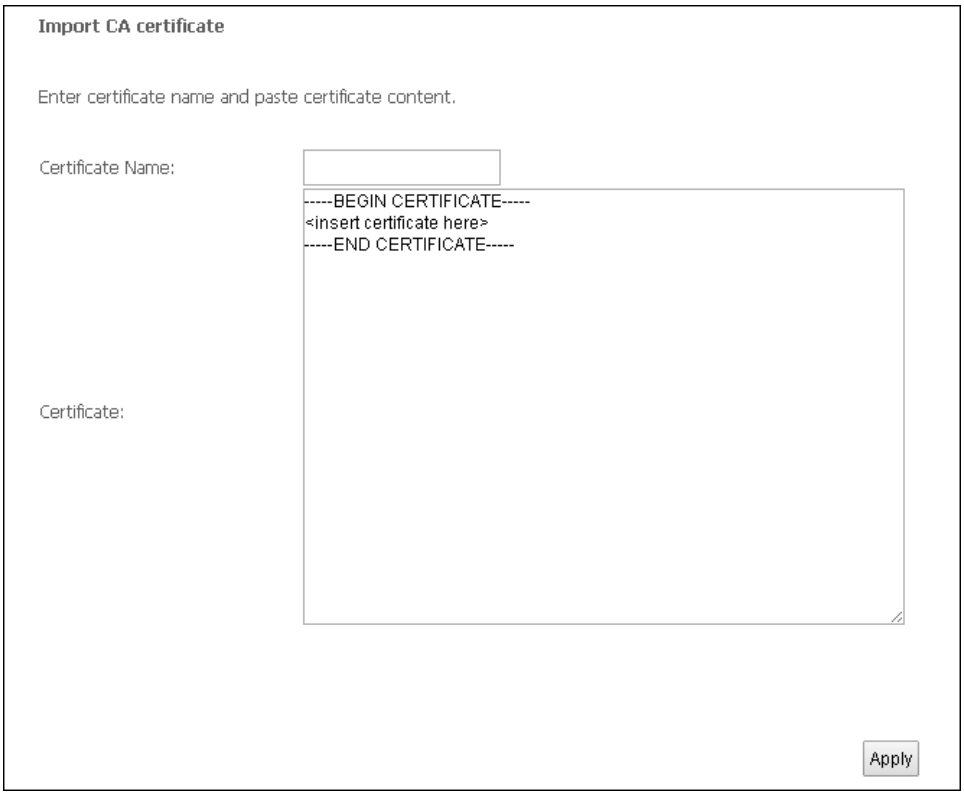
## Trusted CA (Certificate Authority) Certificates

Here you can Add, View or Remove CA certificates. CA certificates are used by you to verify peers' certificates. Maximum 4 certificates can be stored.



To Import certificate：

1. Click the **Import Certificate** button to enter the page below.



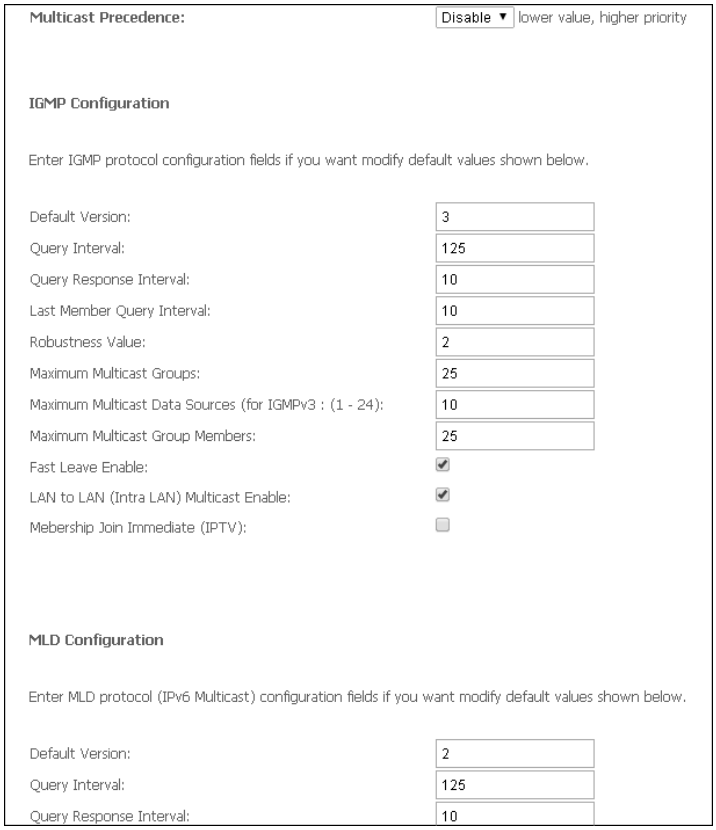

2. Enter the certificate name.
3. Paste the certificate content.
4. Click **Apply** to apply your settings.

## 4.2.16 Multicast

Here you can configure the multicast feature.

To configure IGMP for IPv4

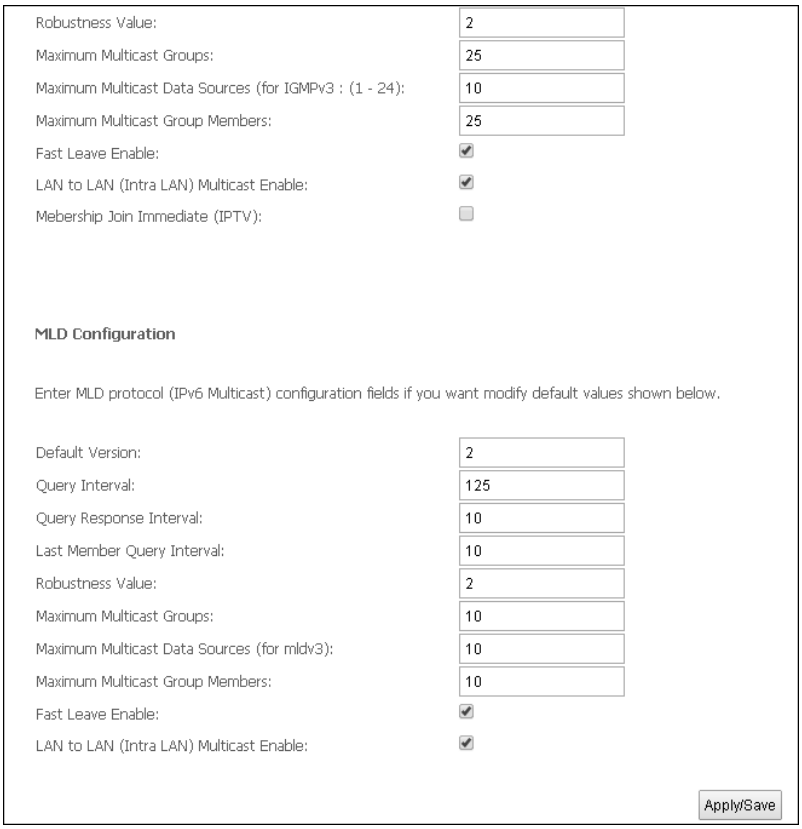
1. Check the **LAN to LAN (Intra LAN) Multicast Enable** box.
2. Check the **Mebership Join Immediate (IPTV)** box. This is only required for IPTV.
3. Keep other options unchanged from factory defaults if you are not an advanced user. This is strongly recommended.




To configure IGMP for IPv6

1. Check the **LAN to LAN (Intra LAN) Multicast Enable** box.

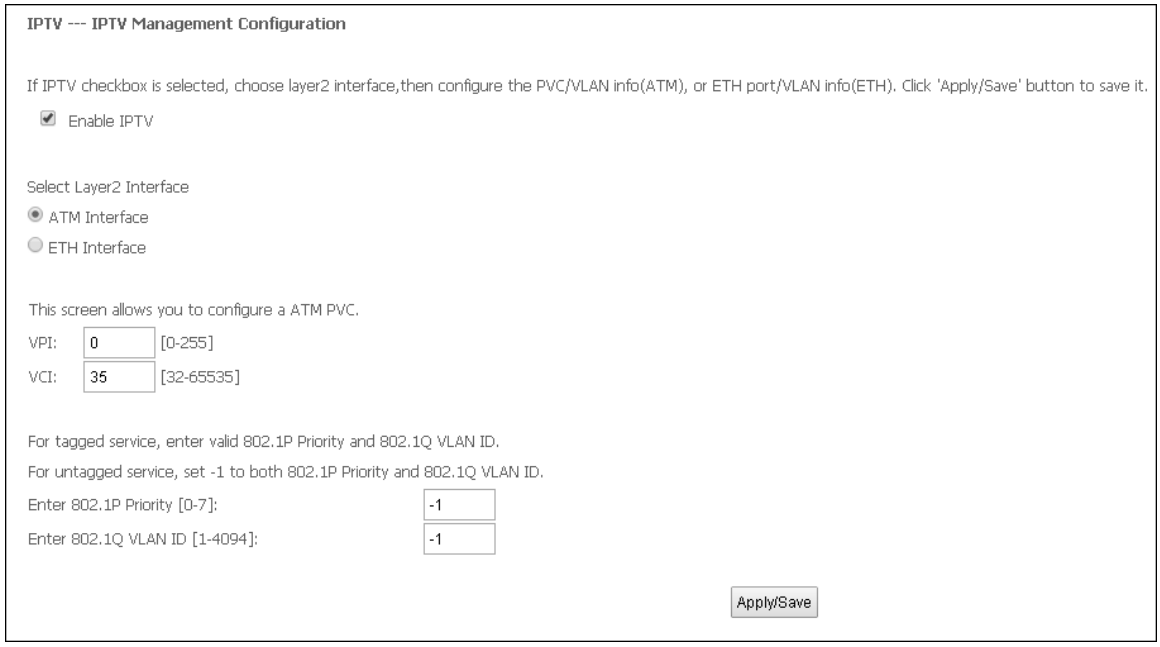
2. Keep other options unchanged from factory defaults if you are not an advanced user. This is strongly recommended.



### 4.2.17 IPTV

If you check the **Enable IPTV** checkbox, you must choose a layer2 interface, and then configure the PVC/VLAN info (ATM), or ETH port/VLAN info (ETH). Click **Apply/Save** button to save it.

**Enable IPTV:** Check/uncheck to enable/disable the IPTV service.




*Tip:*

- For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID.
- For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID.

## 4.3 Wireless

This section explains the following information:

• Basic

• Security

• MAC Filter

• Wireless Bridge

• Station Info

## 4.3.1 Basic

This page allows you to configure basic features of the wireless LAN interface. You can enable or disable the wireless LAN interface, hide the network from active scans, set the wireless network name (also known as SSID) and restrict the channel set based on country requirements.

Click **Apply/Save** to configure the basic wireless options.




✧ **Enable Wireless:** check/uncheck to enable/disable the wireless feature.

✧ **SSID:** This is thepublic name of your wireless network.

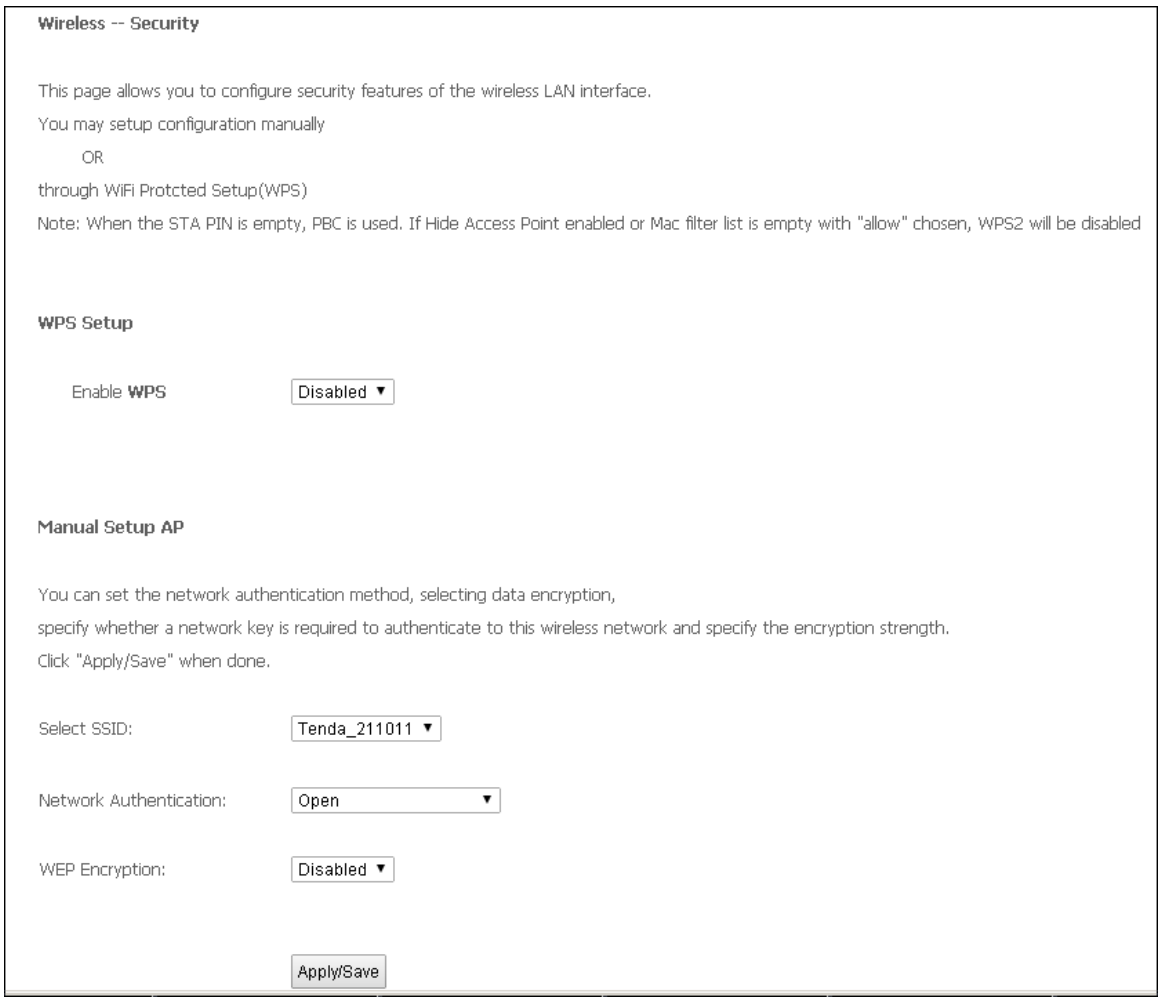
✧ **Hide SSID (Hide Access Point):** This option allows you to have your network names (SSID) publicly broadcast or if you choose to enable it, the SSID will be hidden.

✧ **BSSID：** Display the BSSID.

✧ **Channel:** Select a channel or select **Auto** to let system automatically select one for your wireless network to operate on if you are unsure. The best selection is a channel that is the least used by neighboring networks.

## 4.3.2 Security

This page allows you to configure security features of the wireless LAN interface. You may setup configuration manually or through WiFi Protcted Setup (WPS).




## WPS Setup

Wi-Fi Protected Setup makes it easy for home users who know little of wireless security to establish a home network, as well as to add new devices to an existing network without entering long passphrases or configuring complicated settings. Simply enter a PIN code on the device web interface or press hardware WPS button (on the back panel of the device) and a secure wireless connection is established.

✧ **WPS Button:** Press the hardware WPS button on the device for 1 second and the WPS LED will keep blinking for about 2 minutes. Within the 2 minutes, press the WPS button on your wireless computer or other device. When the WPS displays a solid light, the device has joined your wireless network.

✧ **PIN:** To use this option, you must know the PIN code from the wireless client and enter it in the corresponding field on your device while using the same PIN code on client side for such connection.

✧ **Enable WPS:** Check/uncheck to enable/disable the WPS function. It is enabled by default.

*Note:*

- To use the WPS security, the wireless client must be also WPS-capable.
- When both STA PIN and Authorized MAC are empty, PBC is used. If Hide Access Point enabled or Mac filter list is empty with "allow" chosen, WPS2 will be disabled.

**Manual Setup AP**

You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.

Click "Apply/Save" when done.

✧ **Network Authentication:** Select Open, Shared, WPA-PSK, WPA2-PSK or Mixed WPA/ WPA2-PSK from the drop-down list to encrypt your wireless network.

✧ Depending on the type of network authentication you select, you will be prompted to enter corresponding settings.

✧ **WEP Encryption:** Select Enabled or Disabled.

✧ **Encryption Strength:** Select 128-bit or 64-bit.

✧ **Current Network Key:** Select a network key to be active.

✧ **Network Key 1/2/3/4:** Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys; enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys.

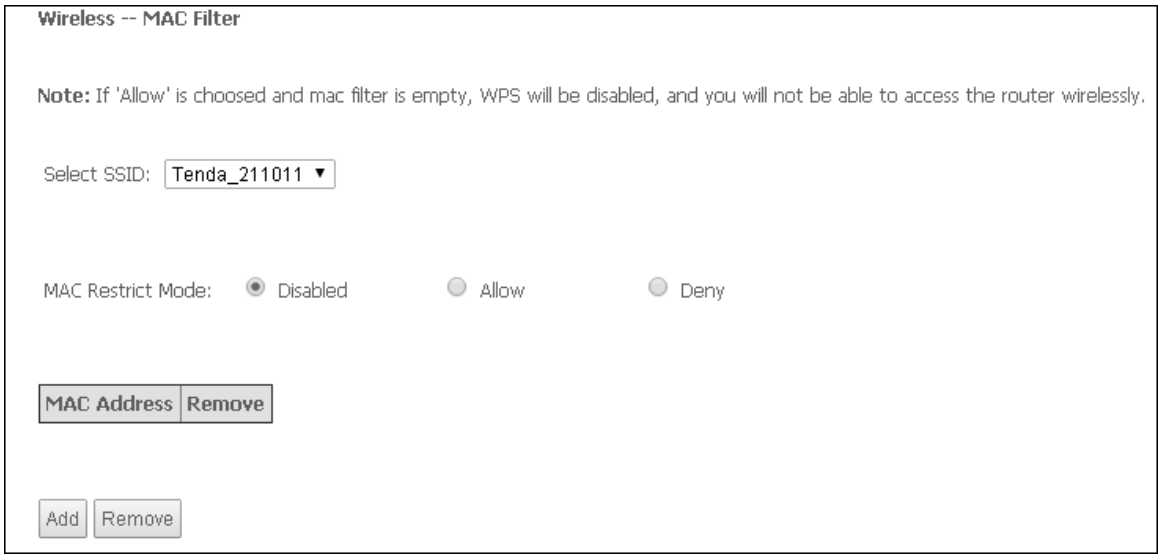
✧ **WPA/WAPI passphrase:** Enter a WPA/WAPI network key.

✧ **WPA Group Rekey Interval:** Specify a key update interval.

✧ **WPA/WAPI Encryption:** Select AES or TKIP+AES.

## 4.3.3 MAC Filter

The MAC-based Wireless Access Control feature can be used to allow or disallow clients to connect to your wireless network.




✧ **Allow:** Only allow PCs at specified MAC addresses (in the list) to connect to your wireless network.

✧ **Deny:** Block only PCs at specified MAC addresses from connecting to your wireless network.

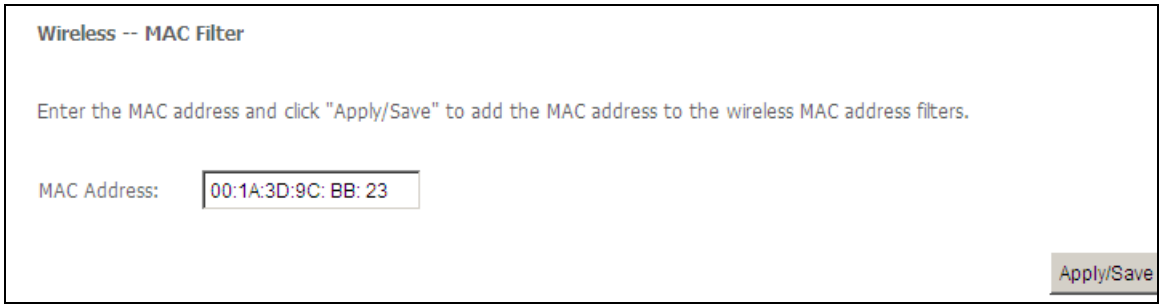
✧ **Disable:** Disable this feature.

✧ **Add:** Click to add a MAC address.

✧ To delete an existing MAC address, first check the **Remove** box next to the MAC address in list and then click the **Remove** button.

Example 1: To allow only the PC at the MAC address of 00:1A:3D:9C:BB:23 to connect to your wireless network, do as follows:

1. Select **Allow**.
2. Click the **Add** button.
3. Enter **00:1A:3D:9C:BB:23** in the MAC address box as shown in the figure below:




4. Click **Apply/Save**.



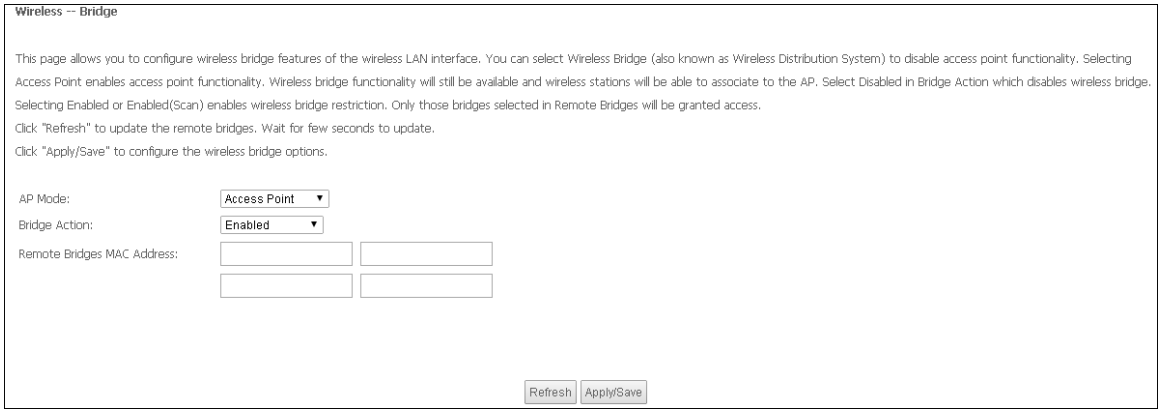

*Note:*

If **allow** is chose and mac filter is empty, WPS will be disabled.

## 4.3.4 Wireless Bridge

This page allows you to configure wireless bridge (also known as Wireless Distribution System) features of the wireless LAN interface.

Wireless distribution system (WDS) is a system enabling the wireless interconnection of access points in an IEEE 802.11 network. It allows a wireless network to be expanded using multiple access points without the traditional requirement for a wired backbone to link them.




✧ **AP Mode:** You can select Wireless Bridge (also known as Wireless Distribution System) to disable access point functionality. Selecting Access Point enables access point functionality. Wireless bridge functionality will still be available and wireless stations will be able to associate to the AP.

✧ **Bridge Restrict:** There are three options available: Enabled, Enabled (Scan) and Disabled. Select Disabled in Bridge Restrict which disables wireless bridge restriction. Any wireless bridge will be

granted access. Selecting Enabled or Enabled (Scan) enables wireless bridge restriction. Only those bridges selected in Remote Bridges will be granted access. The Enabled (Scan) enables wireless bridge restriction and automatically scans the remote bridges.

✧ **Remote Bridges MAC Address:** Specify the MAC address of the remote bridge. If you select the Enabled (Scan) option in Bridge Restrict, system automatically scans the remote bridges and you only need to select those bridges and their MAC addresses will be added to automatically.

✧ **Refresh:** Click to update the remote bridges. Wait for few seconds to update.

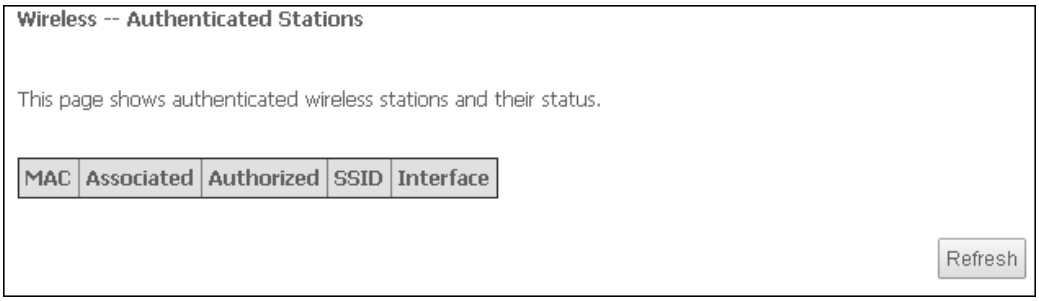
✧ **Apply/Save:** Click to apply and save the settings.

*Note:*

The WDS feature (also known as Wireless Bridge) can only be implemented between 2 WDS-capable wireless devices. Plus, SSID, channel, security settings and security key must be exactly the same on both such devices.

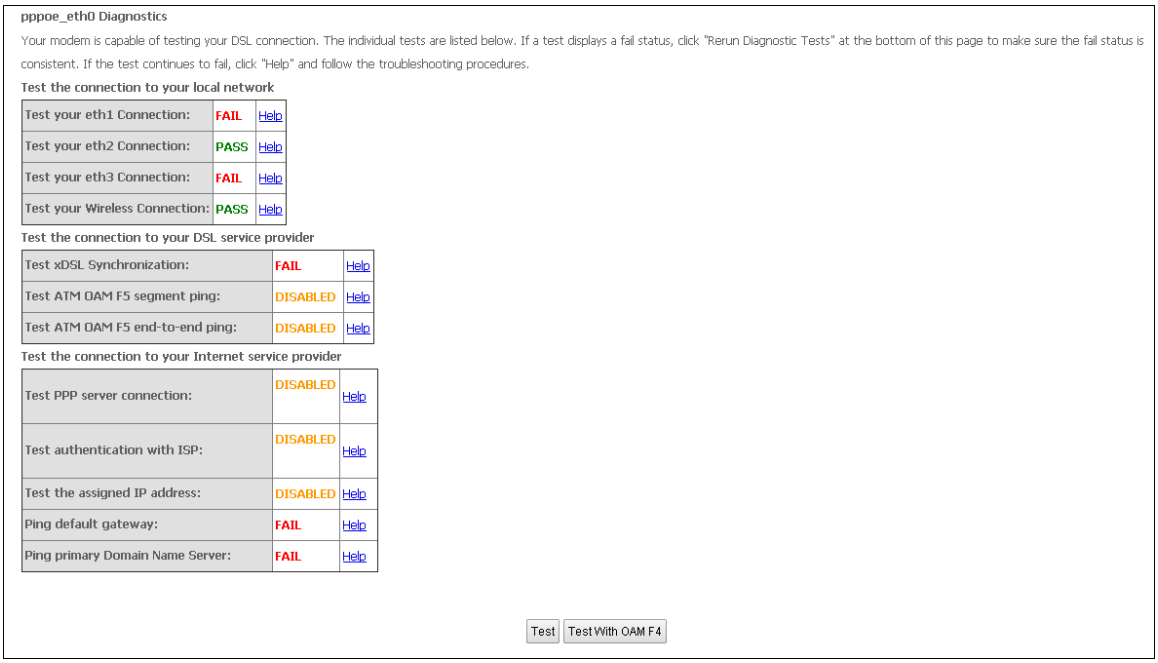
### 4.3.5 Station Info

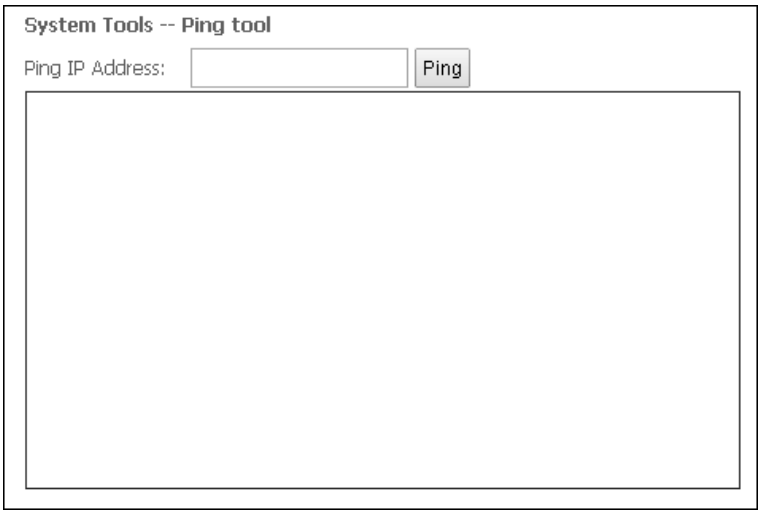
This page shows authenticated wireless stations and their status.




## 4.4 Diagnostics

The modem router is capable of testing the connection to your DSL service provider, the connection to your Internet service provider and the connection to your local network. If a test displays a fail status, click "Rerun Diagnostic Tests" at the bottom of this page to make sure the fail status is consistent. If the test continues to fail, click "Help" and follow the troubleshooting procedures.




# 4.5 Management

This section explains the following information:

• Settings

• System Logs

• TR-069 Client

• Internet Time

• Access Control

• Update Firmware

• Reboot

## 4.5.1 Settings

This section explains the following information:

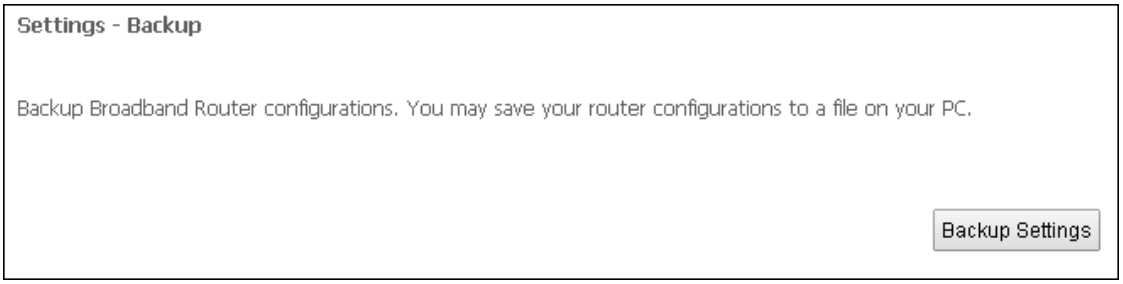
• Backup

• Restore Backup

• Restore Default

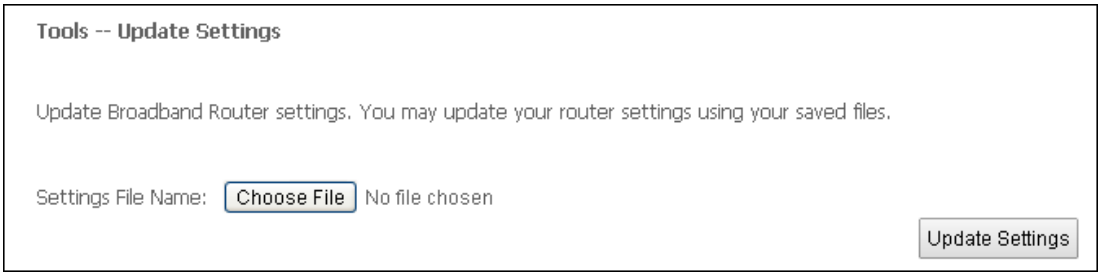
### Backup

Here you can save a copy of your device's configurations to your computer. Once you have configured the device, you can save these settings to a configuration file on your local hard drive. The configuration file can later be imported to your device in case the device is reset to factory default settings.



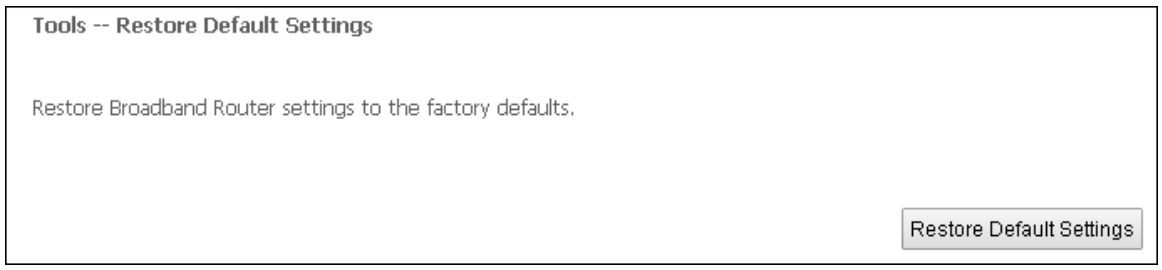

### Restore Backup

Here you can restore the configuration from a file saved on your PC.



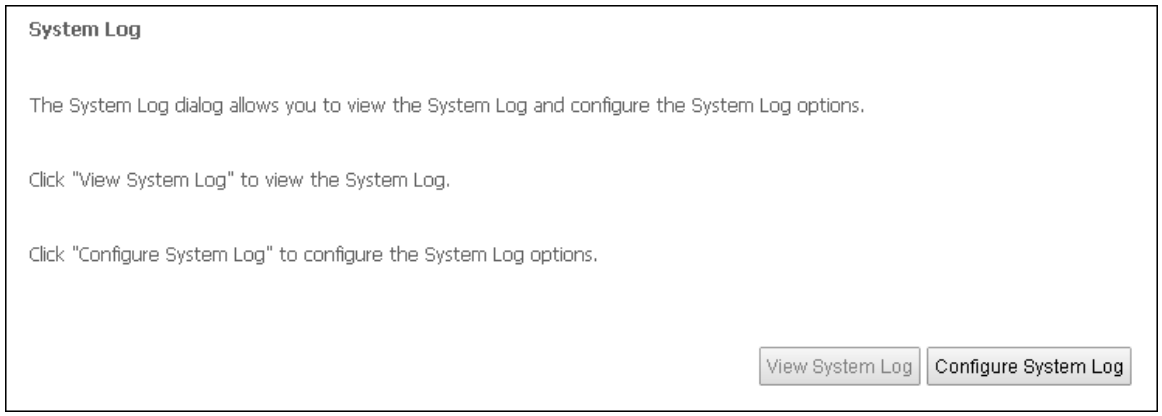

### Restore Default

Under some circumstances (for example, join a different network or unfortunately forgetting the login password), you may need to remove the existing configuration and restore the factory default settings.

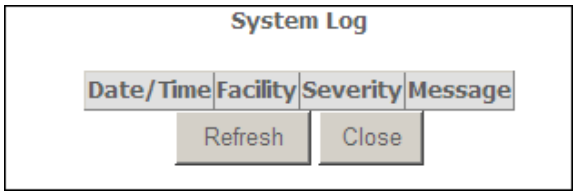



## 4.5.2 System Logs

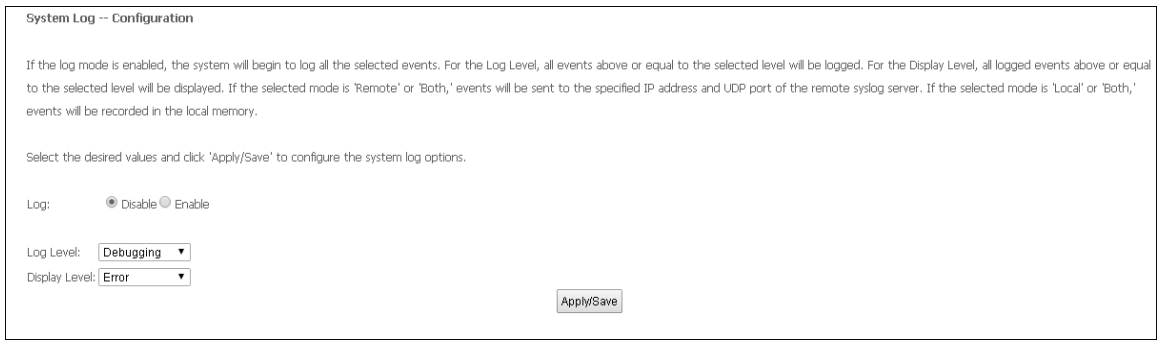
The System Log dialog allows you to view the System Log and configure the System Log options.




To view the System Log, simply click **View System Log**.




To configure the System Log options, click **Configure System Log**.

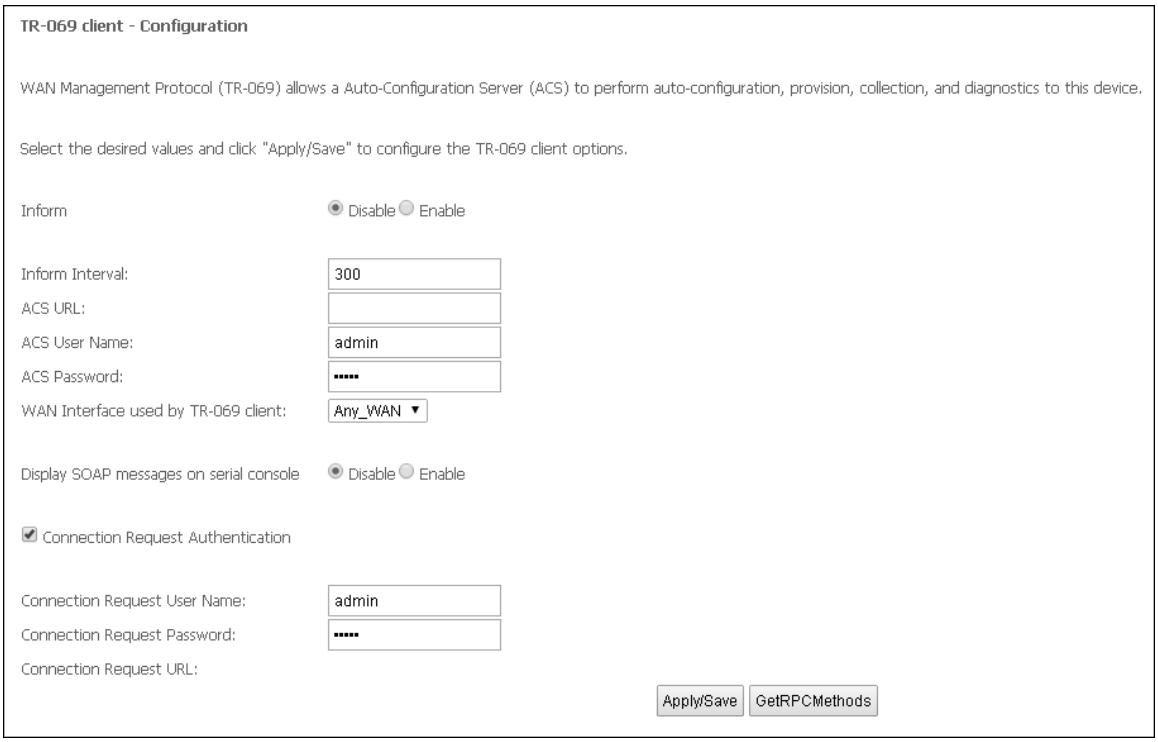



- **Log:** If Enable is selected, the system will begin to log all the selected events.
- **Log Level:** All events above or equal to the selected level will be logged.
- **Display Level:** All logged events above or equal to the selected level will be displayed.
- **Apply/Save:** click to apply and save the system log settings.

## 4.5.3 TR-069 Client

WAN Management Protocol (TR-069) allows an Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device.

Click the **TR-069 Client** tab to enter the TR-069 Client configuration screen as seen below:




✧ **Inform：** Select **Enable/Disable** to enable/disable the **TR-069 Client** function. By default, it is disabled.

✧ **Inform Interval:** Specify the inform interval.

✧ **ACS URL:** Enter the ACS (Auto-Configuration Server) URL address.

✧ **ACS User Name:** Enter the ACS (Auto-Configuration Server) user name.

✧ **ACS Password:** Enter the ACS (Auto-Configuration Server) password.

✧ **WAN Interface used by TR-069 client:** Select the WAN interface used by the TR-069 client from the drop-down list.

✧ **Display SOAP messages on serial console:** If **Enable** is selected, SOAP messages will be displayed on serial console; if **Disable** is selected, SOAP messages will not be displayed on serial console.

✧ **Connection Request Authentication:** Check/uncheck to enable/disable the cnnection request authentication.

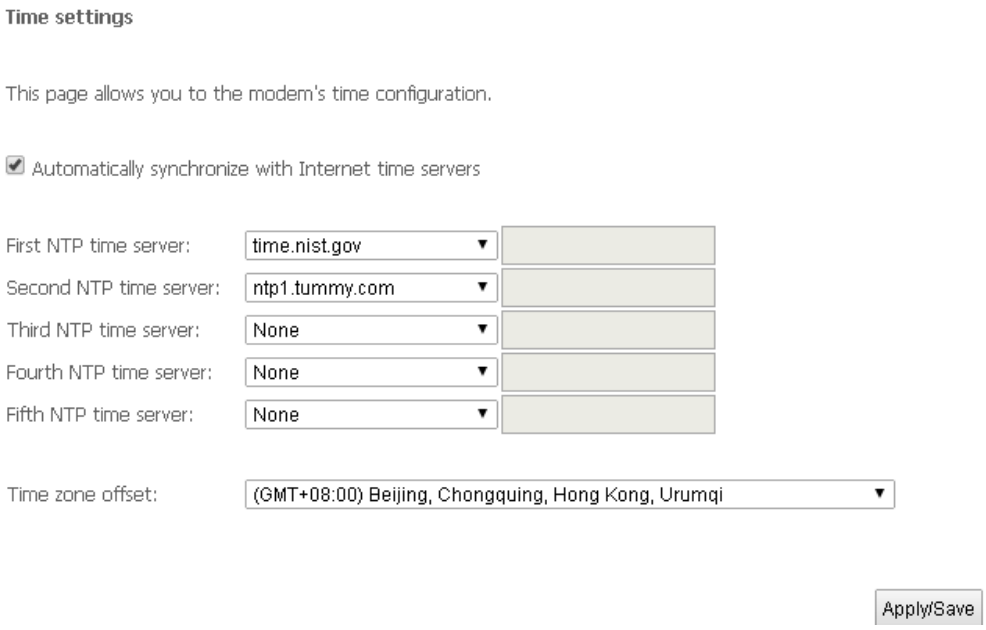
✧ **Connection Request User Name:** Enter the cnnection request user name.

✧ **Connection Request Password:** Enter the cnnection request password.

✧ **Connection Request URL:** Specify the connection request URL.

## 4.5.4 Internet Time

This page is used to set the router's system time. If **Automatically synchronize with Internet time servers** is checked, the system will automatically connect to NTP server to synchronize the time.




✧ **First/Second/Third/Fourth/Fifth NTP time server:** Select a NTP time server from the drop-down list. If the NTP time server you are looking for is not included in the list, select **Other** and then enter it manually in the box.

✧ **Time zone offset:** Select your time zone from the drop-down list.

## 4.5.5 Access Control

This section explains the following information:

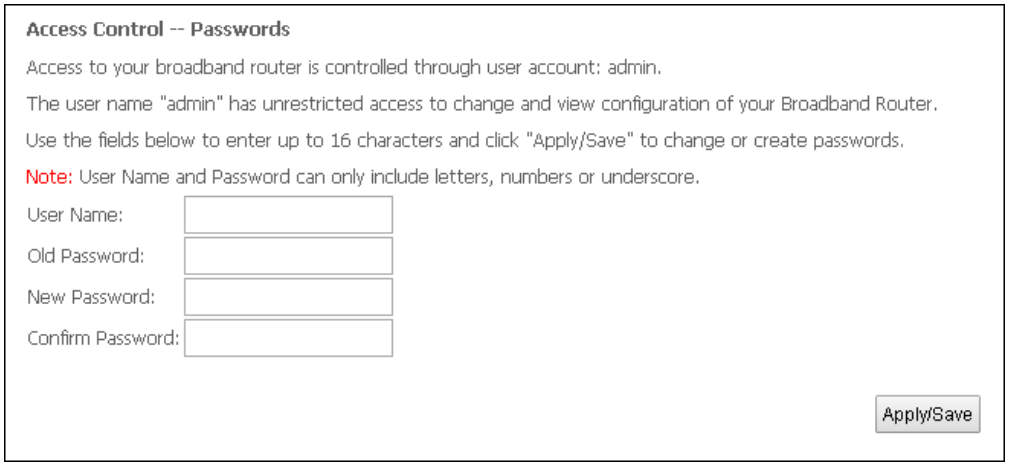
• Password

• AccessControl - Service

### Password

Access to your broadband router is controlled through the user account: admin.

The user name "admin" has unrestricted access to change and view configuration of your Router.




✧ **User Name:** Enter the user name of up to 16 characters.

✧ **Old Password:** Enter the old password of up to 16 characters.

✧ **New Password:** Enter a new password of up to 16 characters.

✧ **Confirm Password:** Re-enter to confirm the new password.

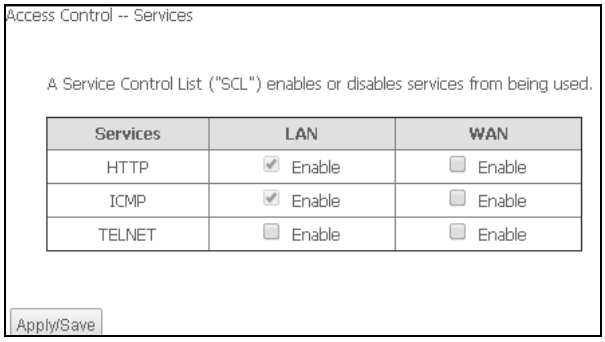
✧ **Apply/Save:** Click to change or create passwords.

*Note:*

The device's user name and password are respectively preset to admin. Please change the password for better security. The password can be up to 16 characters without any space.

## AccessControl - Service

Here you can manage the device either from LAN or WAN side using HTTP, ICMP and TELNET. Click **Management -> Access Control -> AccessCtr** to enter the configuration interface.




✧ **HTTP:** If enabled, the device can be configured via a Web browser from the specified side (LAN or WAN). This is configuration method is simple and thus suitable for most users.

✧ **ICMP:** If enabled, you can run a ping command from the specified side (LAN or WAN) to test the reachability of a host on an Internet Protocol (IP) network.

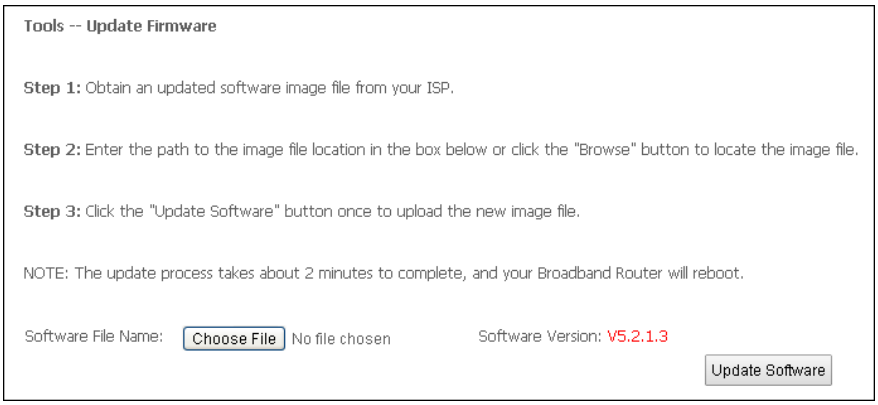
✧ **TELNET:** If enabled, you can access the device using Telnet from the specified side (LAN or WAN) to view detailed settings. This can be used by network administrators, technicians or people with solid understanding of network concepts for troubleshooting network problems.

*Tip:*

- If you are not an advanced user, we suggest you keep the default settings.
- To manage the device from LAN side, use the device's current LAN IP address and log in as "admin"; to manage the device from WAN side, use the device's current WAN IP address and log in as "admin".

## 4.5.6 Update Firmware

Firmware upgrade is released periodically to improve the functionality of your device and add any new features. If you run into a problem with a specific feature of the device you could log in to our website (www.tendacn.com) to download the latest firmware to update your device.




To update software, do as follows:

1. Obtain an updated software image file from our website: www.tendacn.com.
2. Enter the path to the image file location in the box below or click the "Browse" button to locate the image file.
3. Click the "Update Software" button once to upload the new image file.

*Note:*

The update process takes about 2 minutes to complete, and your Broadband Router will reboot.

## 4.5.7 Reboot

Click the Reboot button to reboot the router.

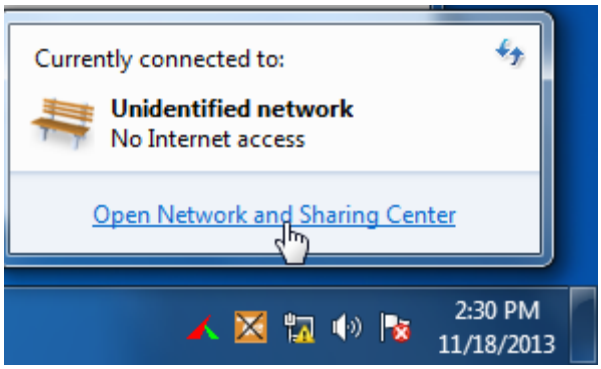


# Appendix 1 Configure Your PC

## Windows 7

**Step 1:** Click the icon  on the bottom right corner of your desktop.

**Step 2:** Click **Open Network and Sharing Center**.



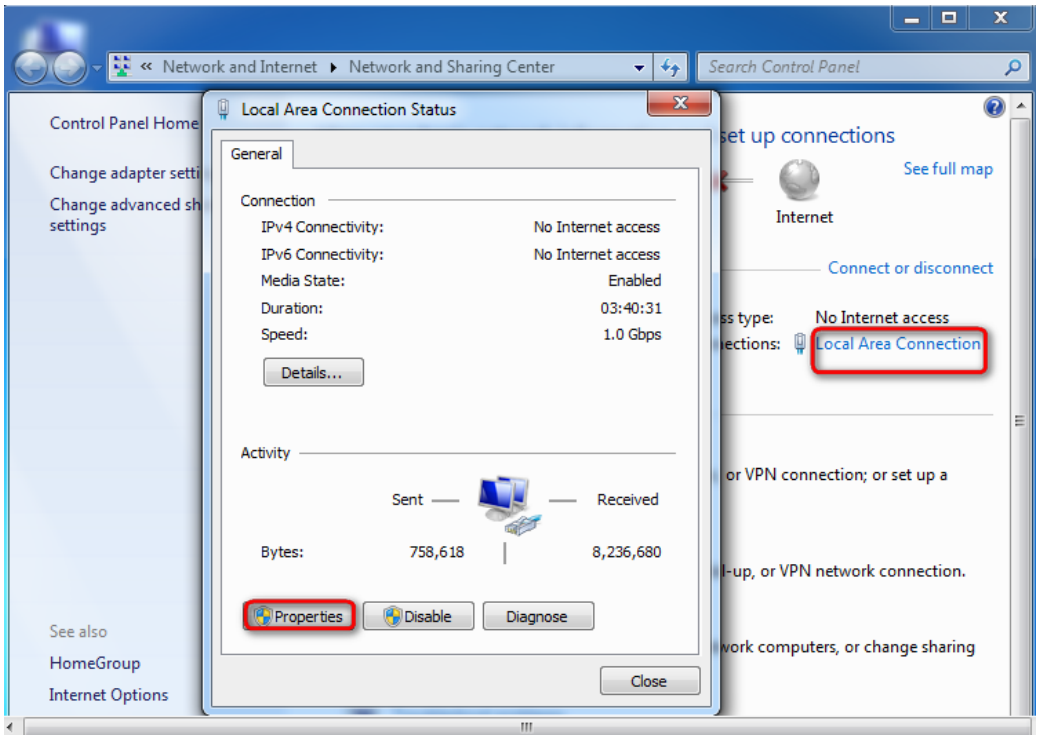

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*Tip:*

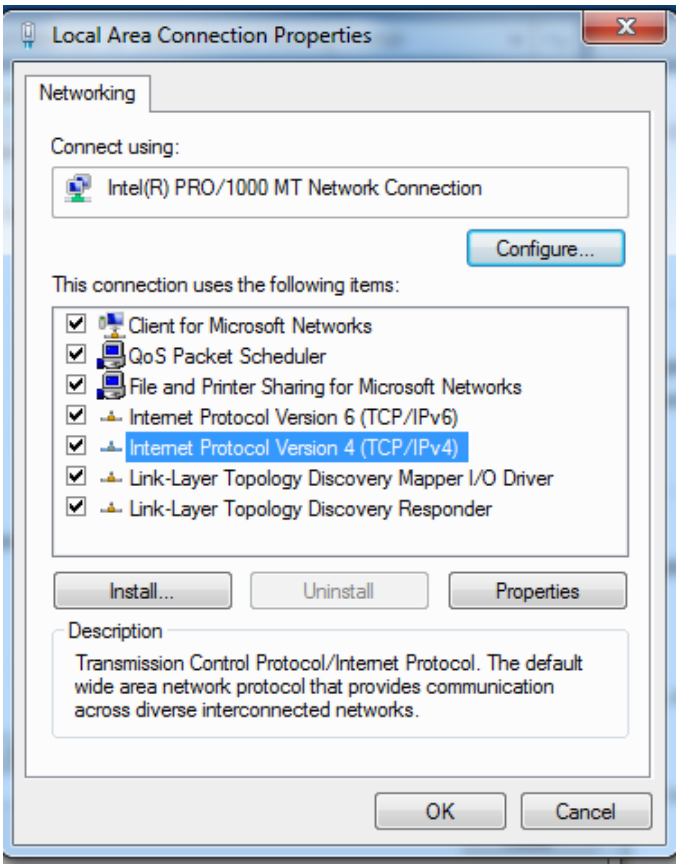
If you cannot find the icon  on the right bottom corner of your desktop, follow steps below: Click **Start -> Control Panel -> Network and Internet -> Network and Sharing Center**.

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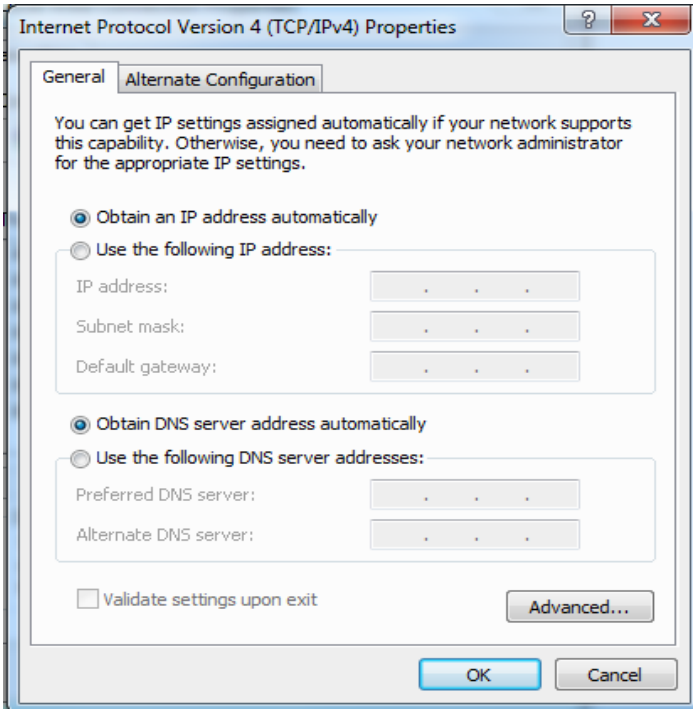
**Step 3:** Click **Local Area Connection -> Properties**.



**Step 4:** Find and double click **Internet Protocol Version 4(TCP/IPv4)**.




**Step 5:** Select **Obtain an IP address automatically** and **Obtain DNS server address automatically** and click **OK**.



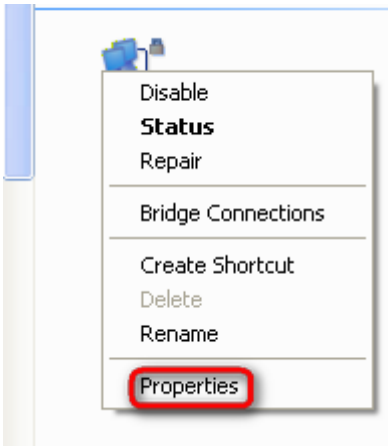

**Step 6:** Click **OK** on the **Local Area Connection Properties** window (see **Step 4** for the screenshot).

# Windows XP

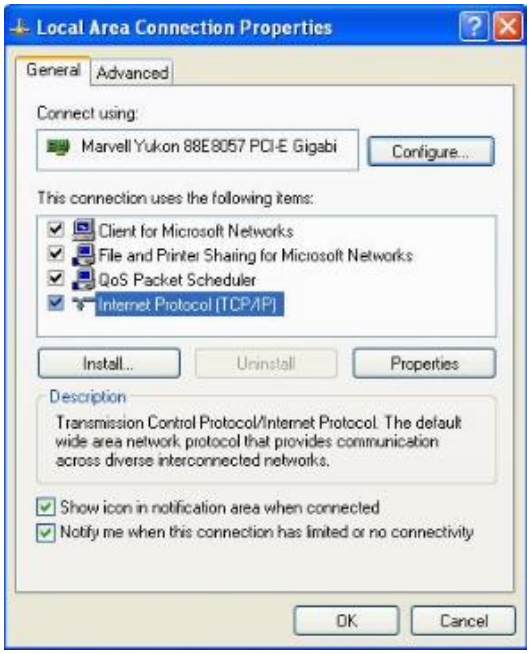
**Step 1:** Right click **My Network Places** on your desktop and select **Properties**.



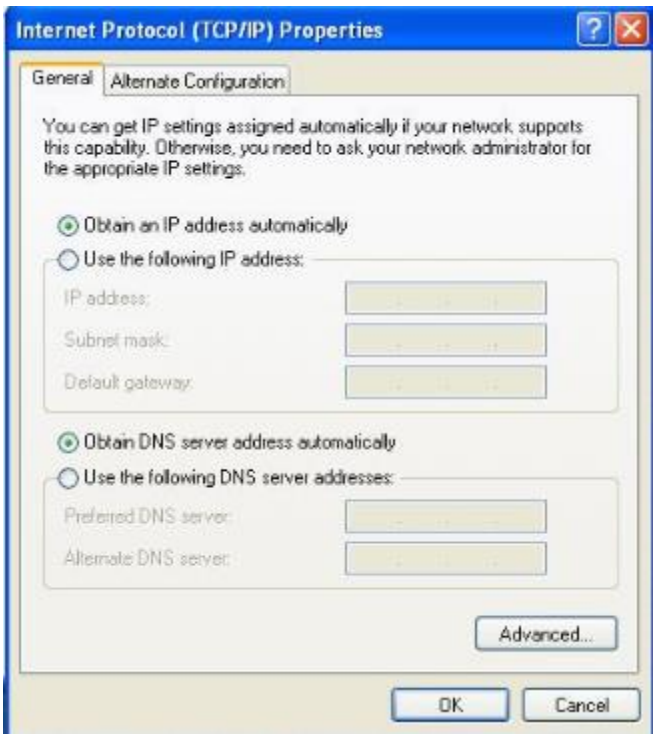

**Step 2:** Right click **Local Area Connection** and select **Properties**.




**Step 3:** Scroll down to find and double click **Internet Protocol (TCP/IP)**.



**Step 4:** Select **Obtain an IP address automatically** and **Obtain DNS server address automatically** and click **OK**.




**Step 5:** Click **OK** on the **Local Area Connection Properties** window (see **Step 3** for the screenshot).

# Appendix 2 FAQs

**1. What information should I have to access Internet via the ADSL uplink?**

If you have DSL broadband service, you might need the following information to set up your modem router.

• Active Internet service provided by an ADSL account

• The ISP configuration information for your ADSL account

- ISP login name and password

- Fixed or static IP address

Depending on how your ISP set up your Internet account, you could need to know the Virtual path identifier (VPI) and virtual channel identifier (VCI) parameters for a manual setup.

**2. I cannot access the device's management interface. What should I do?**

1. Verify the physical connection (namely, the Ethernet cable) between your PC and the device. For details, see **3.1 Hardware Install** hereof.

2. Double check the TCP/IP settings on your PC. For details, see **Appendix 1 Configure Your PC** hereof.

3. Press the **WPS/RST** button on the device and then re-access the management interface.

4. Change the Ethernet cable that connects your PC and the device.

5. Try accessing device management interface from other PCs, smart phones or iPads.

6. Connect your PC alone to one of the LAN ports on the device.

**3. My notebook is unable to search wireless networks, what should I do?**

1. Verify that wireless service is enabled on your notebook by checking the wireless hardware or software button on your notebook. The hardware button is usually located on the side of your notebook. Note that some notebooks may not have such hardware button. Software button can be implemented by pressing Fn+. **Fn** is situated on the bottom left corner of your keyboard,may be any key between **F1-F12** depending on what type of keyboard you are using.

2. Log in to the device, select **Advanced**-> **Wireless**-> **Basic** and change the wireless network name

(SSID). Then search again.

3. Follow below steps to verify that wireless service is enabled on your notebook (for Windows XP OS only).

a) Right click on the **My Computer** icon and select **Manage**.

b) Select **Services and Applications**, double click **Services** and view the status of **Wireless Zero Configuration**.

c) If **Status** dose not display **Started**, right click the **Wireless Zero Configuration** and select **Start**.

d) If **Startup Type** displays **Disabled**, right click the **Wireless Zero Configuration** and select **Properties**.

e) Select **Automatic** from the **Startup Type** drop-down list box and then click **Star**t in **Service Status**.

**4. Why cannot I connect to the searched wireless network?**

1. Verify that you enter a correct security key.

2. Log in to the device, select **Advanced**-> **Wireless** and change the wireless network name (SSID). Then connect again.

3. Log in to the device, select **Advanced**-> **Wireless**-> **Security** and change the security settings. Then connect again.

**5. Where should I place the wireless device for optimum performance?**

1. Place it in the center to extend wireless coverage as far as possible.

2. Never place the device near to metal objects or in direct sunshine.

3. Keep it far away from devices that use the 2.4 GHz radio wave frequency to transmit and receive data, such as 802.11g/n wireless network devices, electronic devices such as cell phones, radio transmitters, blue tooth, cordless phones, fax machines, refrigerators and microwaves to avoid electronic interference.

**6. I cannot find my wireless network in the scan list. What should I do?**

1. Verify that you have switched on wireless on your notebook.
2. Verify that your wireless adapter's driver is successfully installed and the adapter is enabled.
3. Make sure that wireless service is enabled on your notebook.

4. Verify that you have enabled the wireless feature and SSID broadcast on your device.

5. Move closer to your wireless device to avoid potential signal attenuation caused by multiple obstacles and then search again.

6. Try searching for your wireless network from other wireless network adapters. If this fails too, reset your device to factory default settings.

**7. I connect to the Internet via an Ethernet cable and my PC fails to obtain an IP address of 192.168.1.X (X represents any integer between 2 and 254). What should I do?**

**Step 1:** Set your PC to Use the following IP address and manually configure below settings (Refer to Appendix 1 Configure Your PC **)**:

**IP address:** 192.168.1.x (where x can be any number between 2~254)

**Subnet Mask:** 255.255.255.0

**Default gateway** and **Preferred DNS server:** 192.168.1.1

And then click **OK** twice to save your settings and to exit

**Step 2:** Enter your device's Web interface to configure Internet and wireless security settings.

# Appendix 3 VPI/VCI List

The following table lists common ISPs and their VPI and VCI numbers. If you cannot locate your ISP and their VPI and VCI information here, ask your ISP to provide it.

| Country | ISP | VPI | VCI | Encapsulation |
|---|---|---|---|---|
| Australia | Telstra | 8 | 35 | PPPoA LLC |
| Australia | GoldenIT | 8 | 35 | _PPPOA_VCMUX |
| Australia | Telstra Bigpond | 8 | 35 | PPPOE_LLC |
| Australia | OptusNET | 8 | 35 | PPPOE_VCMUX |
| Australia | AAPT | 8 | 35 | PPPOE_VCMUX |
| Australia | ADSL Direct | 8 | 35 | PPPOE_LLC |
| Australia | Ausie Broadband | 8 | 35 | PPPOE_LLC |
| Australia | Australia On Line | 8 | 35 | PPPOA_VCMUX |
| Australia | Connexus | 8 | 35 | PPPOE_LLC |
| Australia | Dodo | 8 | 35 | PPPOE_LLC |
| Australia | Gotalk | 8 | 35 | PPPOE_VCMUX |
| Australia | Internode | 8 | 35 | PPPOE_VCMUX |
| Australia | iPrimus | 8 | 35 | PPPOA_VCMUX |
| Australia | Netspace | 8 | 35 | PPPOE_VCMUX |
| Australia | Southern Cross Telco | 8 | 35 | PPPOE_LLC |
| Australia | TPG Internet | 8 | 35 | PPPOE_LLC |
| Argentina | Telecom | 0 | 33 | PPPoE LLC |
| Argentina | Telefonica | 8 | 35 | PPPoE LLC |
| Argentina | | 1 | 33 | PPPoA VC-MUX |
| Belgium | ADSL Office | 8 | 35 | 1483 Routed IP LLC |
| Belgium | Turboline | 8 | 35 | PPPoA LLC |
| Bolivia | | 0 | 34 | 1483 Routed IP LLC |
| Brazil | Brasil Telcom | 0 | 35 | PPPoE LLC |

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|---|---|---|---|---|
| Brazil | Telefonica | 8 | 35 | PPPoE LLC |
| Brazil | Telmar | 0 | 33 | PPPoE LLC |
| Brazil | South Region | 1 | 32 | PPPoE LLC |
| Colombia | EMCALI | 0 | 33 | PPPoA VC-MUX |
| Columbia | ETB | 0 | 33 | PPPoE LLC |
| Costa Rica | ICE | 1 | 50 | 1483 Routed IP LLC |
| Denmark | Cybercity, Tiscali | 0 | 35 | PPPoA VC-MUX |
| France (1) | Orange | 8 | 35 | PPPoE LLC |
| France (2) | | 8 | 67 | PPPoE LLC |
| France (3) | SFR | 8 | 35 | PPPoA VC-MUX |
| Germany | | 1 | 32 | PPPoE LLC |
| Hungary | Sci-Network | 0 | 35 | PPPoE LLC |
| Iceland | Islandssimi | 0 | 35 | PPPoA VC-MUX |
| Iceland | Siminn | 8 | 48 | PPPoA VC-MUX |
| Israel | | 8 | 35 | PPPoA VC-MUX |
| Italy | | 8 | 35 | PPPoA VC-MUX |
| Iran (1) | | 0 | 35 | PPPoE LLC |
| Iran (2) | | 8 | 81 | PPPoE LLC |
| Israel(1) | | 8 | 48 | PPPoA VC-MUX |
| Jamaica (1) | | 8 | 35 | PPPoA VC-MUX |
| Jamaica (2) | | 0 | 35 | PPPoA VC-MUX |
| Jamaica (3) | | 8 | 35 | 1483 Bridged IP LLC SNAP |
| Jamaica (4) | | 0 | 35 | 1483 Bridged IP LLC SNAP |
| Kazakhstan | | 0 | 33 | PPPoA VC-MUX |
| Malaysia | | 0 | 35 | PPPoE LLC |
| Mexico | Telmex (1) | 8 | 81 | PPPoE LLC |
| Mexico | Telmex (2) | 8 | 35 | PPPoE LLC |
| Mexico | Telmex (3) | 0 | 81 | PPPoE LLC |
| Mexico | Telmex (4) | 0 | 35 | PPPoE LLC |

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|---|---|---|---|---|
| Netherlands | BBNED | 0 | 35 | PPPoA VC-MUX |
| Netherlands | MX Stream | 8 | 48 | PPPoA VC-MUX |
| New Zealand | Xtra | 0 | 35 | PPPoA VC-MUX |
| New Zealand | Slingshot | 0 | 100 | PPPoA VC-MUX |
| Pakistan (cyber net) | | 8 | 35 | PPPoE LLC |
| Pakistan (linkDotnet) | | 0 | 35 | PPPoA LLC |
| Pakistan(PTCL) | | 8 | 81 | PPPoE LLc |
| Portugal | | 0 | 35 | PPPoE LLC |
| Puerto Rico | Coqui.net | 0 | 35 | PPPoA LLC |
| Saudi Arabia (1) | | 0 | 33 | PPPoE LLC |
| Saudi Arabia (2) | | 0 | 35 | PPPoE LLC |
| Saudi Arabia (3) | | 0 | 33 | 1483 Bridged IP LLC |
| Saudi Arabia (4) | | 0 | 33 | 1483 Routed IP LLC |
| Saudi Arabia (5) | | 0 | 35 | 1483 Bridged IP LLC |
| Saudi Arabia (6) | | 0 | 35 | 1483 Routed IP LLC |
| Spain | Albura, Tiscali | 1 | 32 | PPPoA VC-MUX |
| Spain | Colt Telecom, Ola Internet | 0 | 35 | PPPoA VC-MUX |
| Spain | EresMas, Retevision | 8 | 35 | PPPoA VC-MUX |
| Spain | Telefonica (1) | 8 | 32 | PPPoE LLC |
| Spain | Telefonica (2), Terra | 8 | 32 | 1483 Routed IP LLC |
| Spain | Wanadoo (1) | 8 | 35 | PPPoA VC-MUX |
| Spain | Wanadoo (2) | 8 | 32 | PPPoE LLC |
| Spain | Wanadoo (3) | 8 | 32 | 1483 Routed IP LLC |
| Sweden | Telenordia | 8 | 35 | PPPoE |
| Sweden | Telia | 8 | 35 | 1483 Routed IP LLC |
| Switzerland | | 8 | 35 | PPPoE LLC |
| Trinidad & Tobago | TSTT | 0 | 35 | PPPoA VC-MUX |

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|---|---|---|---|---|
| Turkey (1) | | 8 | 35 | PPPoE LLC |
| Turkey (2) | | 8 | 35 | PPPoA VC-MUX |
| Thailand | TRUE | 0 | 100 | PPPoE LLC |
| Thailand | TOT | 1 | 32 | PPPoE LLC |
| Thailand | 3BB | 0 | 33 | PPPoE LLC |
| Thailand | Cat Telecom | 0 | 35 | PPPoE LLC |
| Thailand | BuddyBB | 0 | 35 | PPPoE LLC |
| United States | 4DV.Net | 0 | 32 | PPPoA VC-MUX |
| United States | All Tel (1) | 0 | 35 | PPPoE LLC |
| United States | All Tel (2) | 0 | 35 | 1483 Bridged IP LLC |
| United States | Ameritech | 8 | 35 | PPPoA LLC |
| United States | AT&T (1) | 0 | 35 | PPPoE LLC |
| United States | AT&T (2) | 8 | 35 | 1483 Bridged IP LLC |
| United States | AT&T (3) | 0 | 35 | 1483 Bridged IP LLC |
| United States | August.net (1) | 0 | 35 | 1483 Bridged IP LLC |
| United States | August.net (2) | 8 | 35 | 1483 Bridged IP LLC |
| United States | BellSouth | 8 | 35 | PPPoE LLC |
| United States | Casstle.Net | 0 | 96 | 1483 Bridged IP LLC |
| United States | CenturyTel (1) | 8 | 35 | PPPoE LLC |
| United States | CenturyTel (2) | 8 | 35 | 1483 Bridged IP LLC |
| United States | Coqui.net | 0 | 35 | PPPoA LLC |
| United States | Covad | 0 | 35 | PPPoE LLC |
| United States | Earthlink (1) | 0 | 35 | PPPoE LLC |
| United States | Earthlink (2) | 8 | 35 | PPPoE LLC |
| United States | Earthlink (3) | 8 | 35 | PPPoE VC-MUX |
| United States | Earthlink (4) | 0 | 32 | PPPoA LLC |
| United States | Eastex | 0 | 100 | PPPoA LLC |
| United States | Embarq | 8 | 35 | 1483 Bridged IP LLC |
| United States | Frontier | 0 | 35 | PPPoE LLC |

| | | | | |
|---|---|---|---|---|
| United States | Grande ommunications | 1 | 34 | PPPoE LLC |
| United States | GWI | 0 | 35 | 1483 Bridged IP LLC |
| United States | Hotwire | 0 | 35 | 1483 Bridged IP LLC |
| United States | Internet Junction | 0 | 35 | 1484 Bridged IP LLC |
| United States | PVT | 0 | 35 | 1485 Bridged IP LLC |
| United States | QWest (1) | 0 | 32 | PPPoALLC |
| United States | QWest (2) | 0 | 32 | PPPoA VC-MUX |
| United States | QWest (3) | 0 | 32 | 1483 Bridged IP LLC |
| United States | QWest (4) | 0 | 32 | PPPoE LLC |
| United States | SBC (1) | 0 | 35 | PPPoE LLC |
| United States | SBC (2) | 0 | 35 | 1483 Bridged IP LLC |
| United States | SBC (3) | 8 | 35 | 1483 Bridged IP LLC |
| United States | Sonic | 0 | 35 | 1484 Bridged IP LLC |
| United States | SouthWestern Bell | 0 | 35 | 1483 Bridged IP LLC |
| United States | Sprint (1) | 0 | 35 | PPPoALLC |
| United States | Sprint (2) | 8 | 35 | PPPoE LLC |
| United States | Sprint Territory | 0 | 35 | PPPoE LLC |
| United States | SureWest Communications(1) | 0 | 34 | 1483 Bridged LLC Snap |
| United States | SureWest Communications(2) | 0 | 32 | PPPoE LLC |
| United States | SureWest Communications(3) | 0 | 32 | PPPoA LLC |
| United States | Toast.Net | 0 | 35 | PPPoE LLC |
| United States | Uniserv | 0 | 33 | 1483 Bridged IP LLC |
| United States | US West | 0 | 32 | PPPoA VC-MUX |
| United States | Verizon (1) | 0 | 35 | PPPoE LLC |
| United States | Verizon (2) | 0 | 35 | 1483 Bridged IP LLC |
| United States | Windstream | 0 | 35 | PPPoE LLC |

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|---|---|---|---|---|
| Canada | Primus Canada | 0 | 35 | PPPoE LLC |
| Canada | Rogers Canada (1) | 0 | 35 | PPPoE LLC |
| Canada | Rogers Canada (2) | 8 | 35 | 1483 Bridged IP LLC |
| Canada | Rogers Canada (3) | 0 | 35 | 1484 Bridged IP LLC |
| Canada | BellSouth(1) Canada | 8 | 35 | PPPoE LLC |
| Canada | BellSouth(2) Canada | 0 | 35 | PPPoE LLC |
| Canada | Sprint (1) Canada | 0 | 35 | PPPoA LLC |
| Canada | Sprint (2) Canada | 8 | 35 | PPPoE LLC |
| Canada | Verizon (1) Canada | 0 | 35 | PPPoE LLC |
| Canada | Verizon (2) Canada | 0 | 35 | 1483 Bridged IP LLC |
| United States | Verizon (2) | 0 | 35 | 1483 Bridged IP LLC |
| United Kingdom (1) | | 0 | 38 | PPPoA VC-MUX |
| United Kingdom (2) | | 0 | 38 | PPPoE LLC |
| United Kingdom | AOL | 0 | 38 | PPPoE VC-MUX |
| United Kingdom | Karoo | 1 | 50 | PPPoA LLC |
| Venezuela | CANTV | 0 | 33 | 1483 Routed IP LLC |
| Vietnam | | 0 | 35 | PPPoE LLC |
| Vietnam | VDC | 8 | 35 | PPPoE LLC |
| Vietnam | Viettel | 8 | 35 | PPPoE LLC |
| Vietnam | FPT | 0 | 33 | PPPoE LLC |
| Russia | Rostel | 0 | 35 | PPPoE LLC |
| Russia | Port telecom | 0 | 35 | PPPoE LLC |
| Russia | VNTC | 8 | 35 | PPPoE LLC |
| Uzbekistan | Sharq Stream | 8 | 35 | PPPoE LLC |
| Uzbekistan | Sarkor | 0 | 33 | PPPoE LLC |
| Uzbekistan | TShTT | 0 | 35 | PPPoE LLC |
| Kazakhstan | Kazakhtelecom | 0 | 40 | LLC/SNAP Bridging |

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|---|---|---|---|---|
| | Megaline | | | |
| Spain | Arrakis | 0 | 35 | 1483 Bridged IP VC-MUX |
| Spain | Auna | 8 | 35 | 1483 Bridged IP VC-MUX |
| Spain | Comunitel | 0 | 33 | 1483 Bridged IP VC-MUX |
| Spain | Eresmas | 8 | 35 | 1483 Bridged IP VC-MUX |
| Spain | Jazztel | 8 | 35 | IPOE VC-MUX |
| Spain | Jazztel ADSL2+ / Desagregado | 8 | 35 | 1483 Bridged IP LLC-BRIDGING |
| Spain | OpenforYou | 8 | 32 | 1483 Bridged IP VC-MUX |
| Spain | Tele2 | 8 | 35 | 1483 Bridged IP VC-MUX |
| Spain | Telefónica (España) | 8 | 32 | 1483 Bridged IP LLC/SNAP |
| Telefónica (Argentina) | | 8 | 35 | 1483 Bridged IP LLC-based |
| Telefónica (Perú) | | 8 | 48 | 1483 Bridged IP VC-MUX |
| Spain | Terra | 8 | 32 | 1483 Bridged IP LLC/SNAP |
| Spain | Terra | 8 | 32 | 1483 Bridged IP LLC/SNAP |
| Spain | Uni2 | 1 | 33 | 1483 Bridged IP VC-MUX |
| Spain | Orange | 8 | 35 | 1483 Bridged IP VC-MUX |
| Spain | Orange 20 Megas | 8 | 35 | LLC-BRIDGING |
| Spain | Orange | 8 | 32 | 1483 Bridged IP LLC/SNAP |
| Spain | Ya.com | 8 | 32 | 1483 Bridged IP VC - MUX |
| Spain | Ya.com | 8 | 32 | 1483 Bridged IP LLC/SNAP |
| France | Free | 8 | 36 | LLC |
| Netherlands | MXSTREAM | 8 | 48 | 1483 Bridged IP LLC |
| Netherlands | BBNED | 0 | 35 | 1483 Bridged IP LLC |
| Belgium | Turboline | 8 | 35 | 1483 Bridged IP LLC |
| Belgium | ADSL Office | 8 | 35 | 1483 Bridged IP LLC |

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|---|---|---|---|---|
| UK | | 0 | 38 | 1483 Bridged IP LLC |
| Italy | | 8 | 35 | 1483 Bridged IP LLC |
| Switzerland | | 8 | 35 | 1483 Bridged IP LLC |
| SpainWanadoo | | 8 | 32 | 1483 Bridged IP LLC |
| Czech Republic | | 8 | 48 | 1483 Bridged IP LLC |
| Dubai | | 0 | 50 | 1483 Bridged IP LLC |
| UAE (Al sahmil) | | 0 | 50 | 1483 Bridged IP LLC |
| Egypt: | TE-data | 0 | 35 | 1483 Bridged IP LLC |
| Egypt: | Linkdsl | 0 | 35 | 1483 Bridged IP LLC |
| Egypt: | Vodafone | 8 | 35 | 1483 Bridged IP LLC |
| kuwait unitednetwork | | 0 | 33 | 1483 Bridged IP LLC |
| Pakistan (PALESTINE) | | 8 | 35 | 1483 Bridged IP LLC |
| Dominican Republic | | 0 | 33 | 1483 Bridged IP LLC |
| Orange Nyumbani (Kenya) | | 0 | 35 | PPPoE LLC |
| Pakistan for PTCL | | 0 | 103 | 1483 Bridged IP LLC |
| Sri Lanka Telecom-(SLT) | | 8 | 35 | PPPOE LLC |
| Philippines(1) | | 0 | 35 | 1483 Bridged IP LLC |
| Philippines(2) | | 0 | 100 | 1483 Bridged IP LLC |
| RomTelecom Romania: | | 0 | 35 | 1483 Bridged IP LLC |
| Finland | Saunalahti | 0 | 100 | 1483 Bridged IP LLC |
| Finland | Elisa | 0 | 100 | 1483 Bridged IP LLC |
| Finland | DNA | 0 | 100 | 1483 Bridged IP LLC |
| Finland | Sonera | 0 | 35 | 1483 Bridged IP LLC |

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|---|---|---|---|---|
| Iran | Shatel<br>Aria-Rasaneh-Tadbir | 0 | 35 | PPPOE LLC |
| Iran | Asia-Tech | 0 | 35 | PPPOE LLC |
| Iran | Pars-Online (Tehran) | 0 | 35 | PPPOE LLC |
| Iran | Pars-Online (Provinces) | 0 | 59 | PPPOE LLC |
| Iran | Saba-Net<br>Neda-Gostar-Saba | 0 | 35 | PPPOE LLC |
| Iran | Pishgaman-Tose | 0 | 35 | PPPOE LLC |
| Iran | Fan-Ava | 8 | 35 | PPPOE LLC |
| Iran | Datak | 0 | 35 | PPPOE LLC |
| Iran | Laser (General) | 0 | 35 | PPPOE LLC |
| Iran | Laser (Privates) | 0 | 32 | PPPOE LLC |
| Iran | Asr-Enteghal-Dadeha | 8 | 35 | PPPOE LLC |
| Iran | Kara-Amin-Ertebat | 0 | 33 | PPPOE LLC |
| Iran | ITC | 0 | 35 | PPPOE LLC |
| Iran | Dadegostar Asre Novin | 0 | 33 | PPPOE LLC |
| India | Airtel | 1 | 32 | 1483 Bridged IP LLC |
| India | BSNL | 0 | 35 | 1483 Bridged IP LLC |
| India | MTNL | 0 | 35 | 1483 Bridged IP LLC |
| India | RELIANCE<br>COMMUNICATION | 0 | 35 | PPPOE LLC |
| India | TATA INDICOM | 0 | 32 | PPPOE LLC |
| India | CONNECT | 1 | 32 | PPPOE LLC |
| morocco | IAM | 8 | 35 | PPPOE |
| Malaysia | Streamyx | 0 | 35 | PPPOE LLC |
| Indonesia Speedy<br>Telkomnet | | 8 | 81 | PPPoE LLC |

# Appendix 4 Regulatory Compliance Information



**CE Mark Warning**

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.This device complies with EU 1999/5/EC.

NOTE: (1) The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. (2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable.



**FCC Statement**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.

**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.

**NOTE:** (1) The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. (2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable.