Tenda

V1.0

User Guide

www.tendacn.com

Wireless Modem Router

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About This Manual

This user manual describes how to install, configure, operate, and troubleshoot the modem router in a simple and easy-to-understand way.

Chapter 1 Get to Know Your Wireless Router

This user guide applies to the following four models: D302 and D152. The D302 is used as an example throughout this user guide.

The differences between the two products are listed below:

Model	Wireless Speed	RJ45 Ports
D302	300M	2
D152	150M	2

What it does

The Wireless ADSL2+ Modem Router provides you with an easy and secure way to set up a wireless home network with fast access to the Internet over a high-speed digital subscriber line (DSL). Complete with a built-in ADSL modem, it is compatible with all major ADSL Internet service providers. It offers wireless speeds of up to 300 Mbps needed for demanding applications, such as large file transfers, streaming HD video, and multiplayer gaming. The unit comes with a wide range of premium features and applications such as IPv6, TR069, SNMP, Multicast, IP tunnel, IPTV service and parental controls, etc. Plus, with the router, you can access Internet via the ATM interface or Ethernet interface.

Product Features

- **Wireless N** speeds up to 300 Mbps for streaming HD videos and online gaming in addition to basic Internet applications.
- **All-in-one device** combines a Built-in ADSL2+ modem, wired router, wireless router and switch
- **Advanced QoS** helps prioritize media streaming and gaming applications for best entertainment experience
- **Parental Control** keeps your kids Internet experience safe using flexible and customizable filter settings
- **One-touch WPS** ensures a quick and secure network connection
- **WEP and WPA/WPA2** are supported for advanced encryptions
- **Compatibility:** Works with all major ADSL Internet service providers (ISPs); Backward compatible with 802.11b/g WiFi devices

- **Interchangeable LAN/WAN** ports to schedule the Ethernet port to function either as a LAN or a WAN port
- **Interchangeable LAN/IPTV** to schedule the Ethernet port to function either as a LAN or an IPTV port
- **Optional Ethernet and ADSL Uplinks:** Access Internet via ADSL2+ Broadband Internet Service or an interchangeable LAN/WAN RJ-45 port
- **Multiple Internet Connection Types:** Bridging, PPPoE, IPoE, PPPoA, IPoA, dynamic IP and static IP
- **IPTV Service** lets your surf Internet while watching online TV
- **6000V lightning－proof** design fits into lightning-intensive environment
- **Strong driving capability** up to 6.5Km transmission distance
- **High speed ADSL speed** up to 24Mbps downstream 1Mbps upstream
- **Built-in firewall** prevents hacker attacks
- **Channel auto-select** for optimum performance
- **FDM** technology enables telephoning, faxing and surfing activities to proceed simultaneously without mutual interference
- **Other Advanced Features:** IPv6, DDNS, virtual server, DMZ, port triggering, IP filter, MAC filter and UPnP, etc
- **Tenda Setup Wizard** for easy and fast installation and configuration
- **Tenda Green:** Use hardware Power On/Off and software WiFi On/Off buttons to turn on and off power and WiFi to save energy when not in use

Package Contents

Your box should contain the following items:

- Wireless Modem Router
- Phone cable
- Ethernet cable
- ADSL2+ filter
- Quick install guide
- Power adapter
- Resource CD

If any of the parts are incorrect, missing, or damaged, keep the carton, including the original packing materials and contact your Tenda dealer for immediate replacement.

Chapter 2 Hardware Install

If you have not already set up your new router using the Quick Install Guide that comes in the box, this chapter walks you through the hardware install. To set up your Internet connection, see **Chapter 2 Quick Internet Setup**.

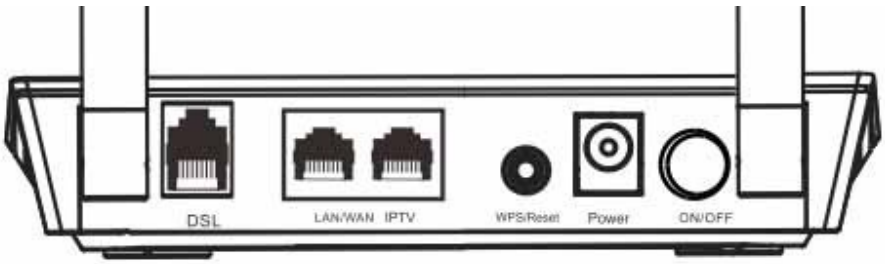
Front Panel

The LEDs on the device are described below:

LED	Status	Description
Power	Solid	Power is supplied to the device.
	Off	Power is not supplied to the device.
SYS	Blinking	System is functioning correctly.
	Solid/Off	System is functioning incorrectly.
WLAN	Blinking	Transferring data
	Off	Wireless is disabled.
	Solid	Wireless is enabled.
ADSL	Slow Blink	Physical connection failure.
	Fast Blink	Synchronizing...
	Solid	ADSL connection is established.
LAN	Off	No connection established.
	Blinking	Transferring data
	Solid	Connection is established.

WPS	Solid	Client connected successfully.
	Blinking	The WPS LED starts blinking if you pressed the WPS button on the device or interface.
	Off	If there is no wireless clients connected, the WPS LED turns off after blinking for 2 minutes.

Back Panel



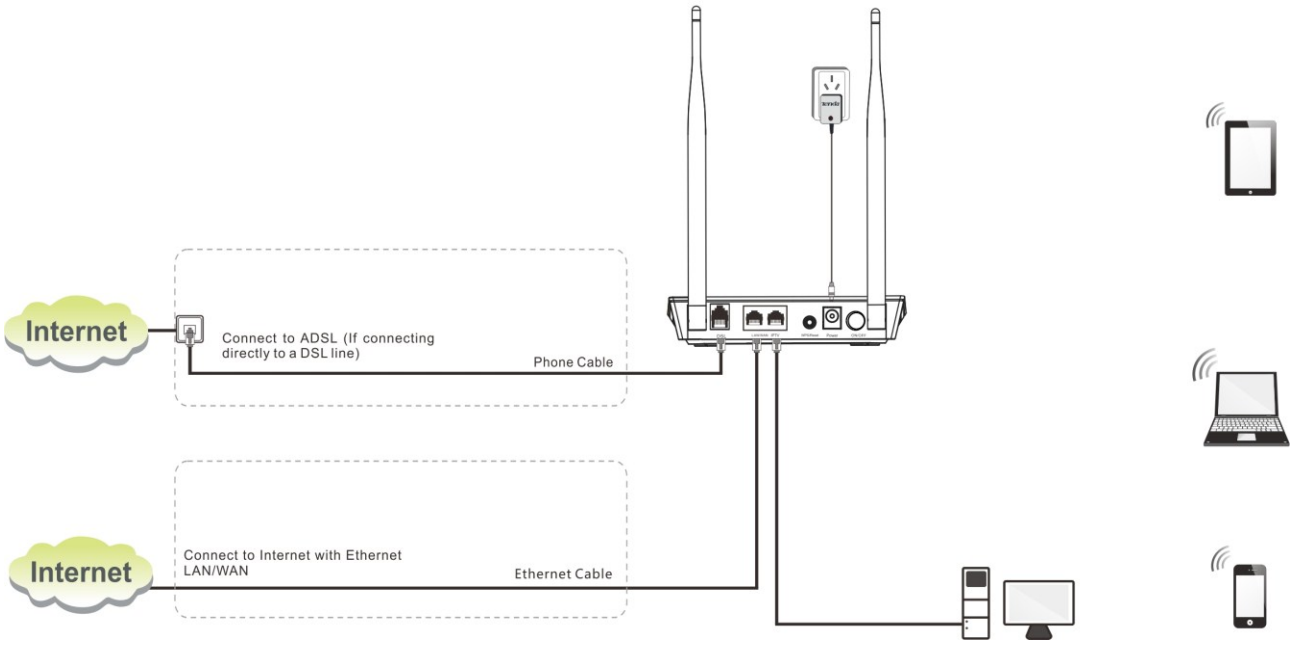
- **ON/OFF:** Power switch to turn the router on or off.

Note:

Please use the included power adapter. Use of a power adapter with different voltage rating may damage the device.

- **WPS/RESET:** Press it for 1-3 seconds to enable WPS connection or 7 seconds to restore all configurations to factory defaults.
- **LAN:** Ethernet RJ-45 LAN ports to cable the device to the local network devices such as computers.**LAN:** Ethernet RJ-45 LAN ports to cable the device to the local network devices such as computers.
- **DSL:** RJ-11 Asynchronous DSL (ADSL) port for connecting the device to a DSL line.

Follow the diagram below to install the device.



Chapter 3 Quick Internet Setup

This chapter instructs you to quickly set up your Internet connection.

The Quick Internet Setup applies only to ADSL Uplink mode. If you are not directly connecting to the ADSL line via a phone cable, please click the **Advanced** button on the home page and then select **Advanced Setup -> Layer2 Interface -> ETH Interface**. For more information, see **To set up the ETH interface** and **To setup WAN Service for ETH Interface**.

3.1 Log in to Web Manager

You can log in to the modem router's web manager with the Setup Wizard on the included CD automatically or using a web browser manually. The Setup Wizard on the auto-run CD can automatically configure your PC's TCP/IP properties and direct you to the web login window without requiring the IP address.

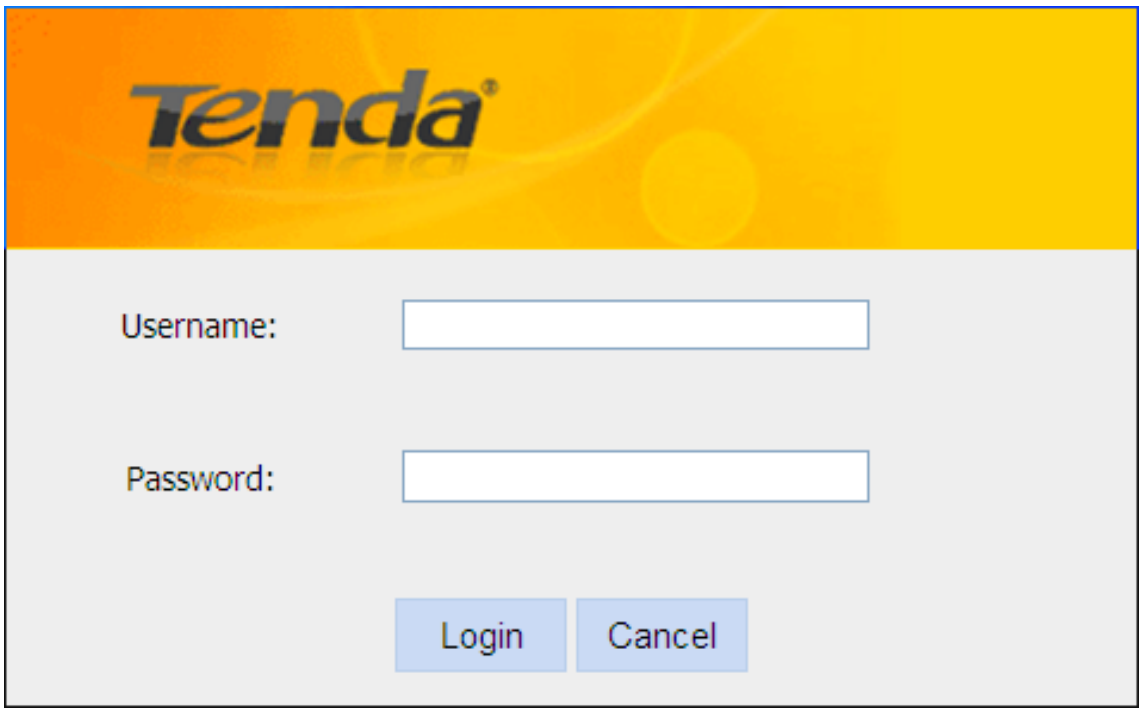
Using Setup Wizard

1. Insert the included resource CD into your computer's drive and the CD automatically runs. If the CD does not run automatically, double click . You will see the screen below.

2. Click **Run** and it will automatically configure your PC's TCP/IP properties. If your PC is successfully configured, the login window below will display.

Using Browser

1. Set your PC to **Obtain an IP address automatically**. For more information, see ***Appendix 1 Configure Your PC***.
2. Launch a web browser and enter **192.168.1.1** to display the login window.



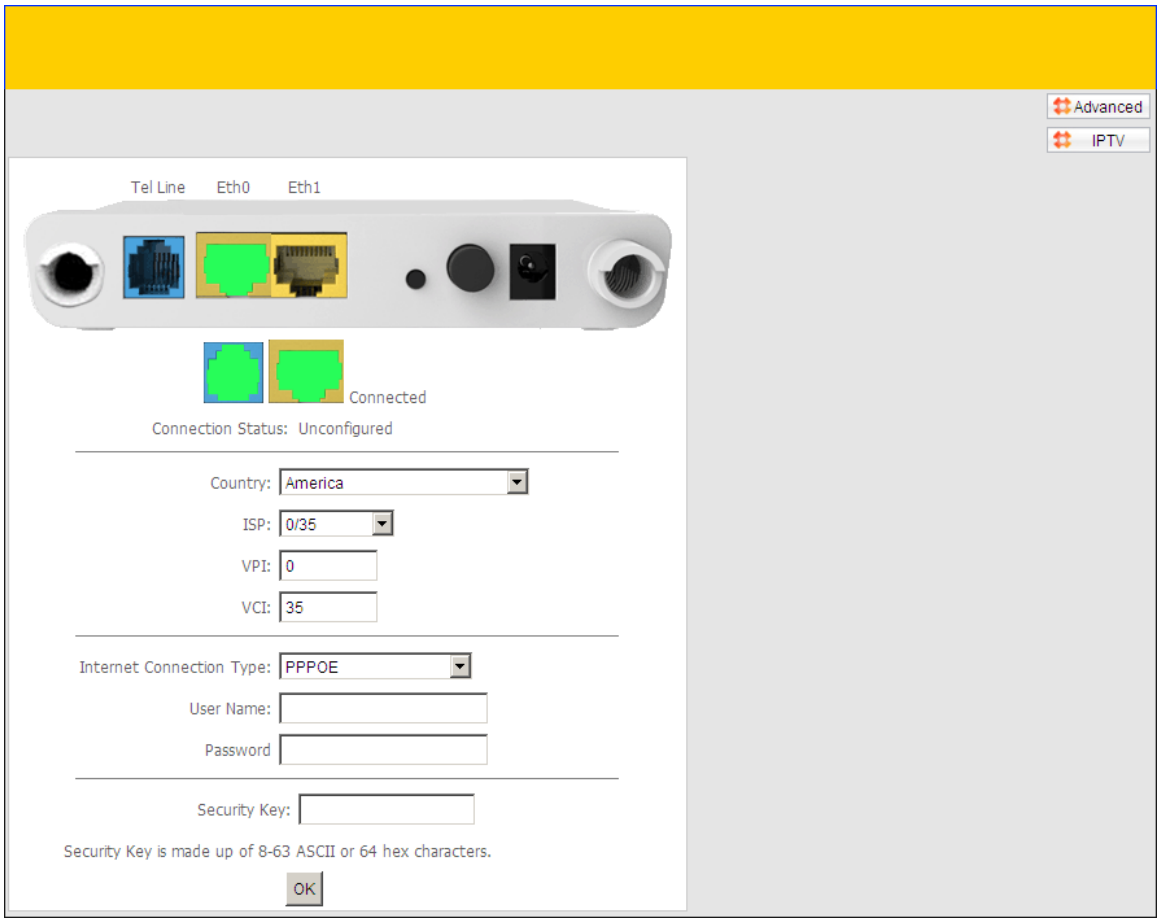
3. Enter **admin** in both the login User Name and Password boxes if you first time access the router and then click the **Login** button to enter the screen below.

Tip:

If you changed the login user name and password and forget them, press the Reset button on the device and then enter the default settings of admin.

3.2 Internet Setup

a. Select your country.
b. Select your ISP.
c. VPI and VCI fields will be populated automatically if you select a correct country and ISP.
d. Select your Internet connection type.



Depending on the type of connection, you are prompted to enter your ISP settings, as shown in the following table:

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	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.

Note:

If your country and/or your ISP are not covered on the home page, please click the *button on the home page and then select* ***Advanced Setup -> Layer2 Interface -> ATM Interface*** *and then click* ***Add*** *there to manually configure the VPI and VCI. If you cannot locate this information, refer to* **Appendix 4 VPI/VCI List** *or ask your ISP to provide it. For more information, see* **To set up the ATM interface** *and* **To setup WAN Service for ATM Interface**.

e. After you configure all the above settings, click **OK** to save and apply them.

f. Test Internet Connectivity

Launch a web browser and enter www.tendacn.com. If the webpage is opened, you are connected to Internet.

3.3 Quick Wireless Security Setup

For security purpose, we strongly recommend you to customize a new security key. Simply enter 8-63 ASCII or 64 hex characters.

Tip:

1. If you customize a new security key, write it on a sticky label and attach it to the bottom of the unit. You will need the new security key if you wish to connect to the device wirelessly in the future.
2. To join your secured wireless network, see Appendix 2 Join Your Wireless Network.

Chapter 4 Advanced Settings

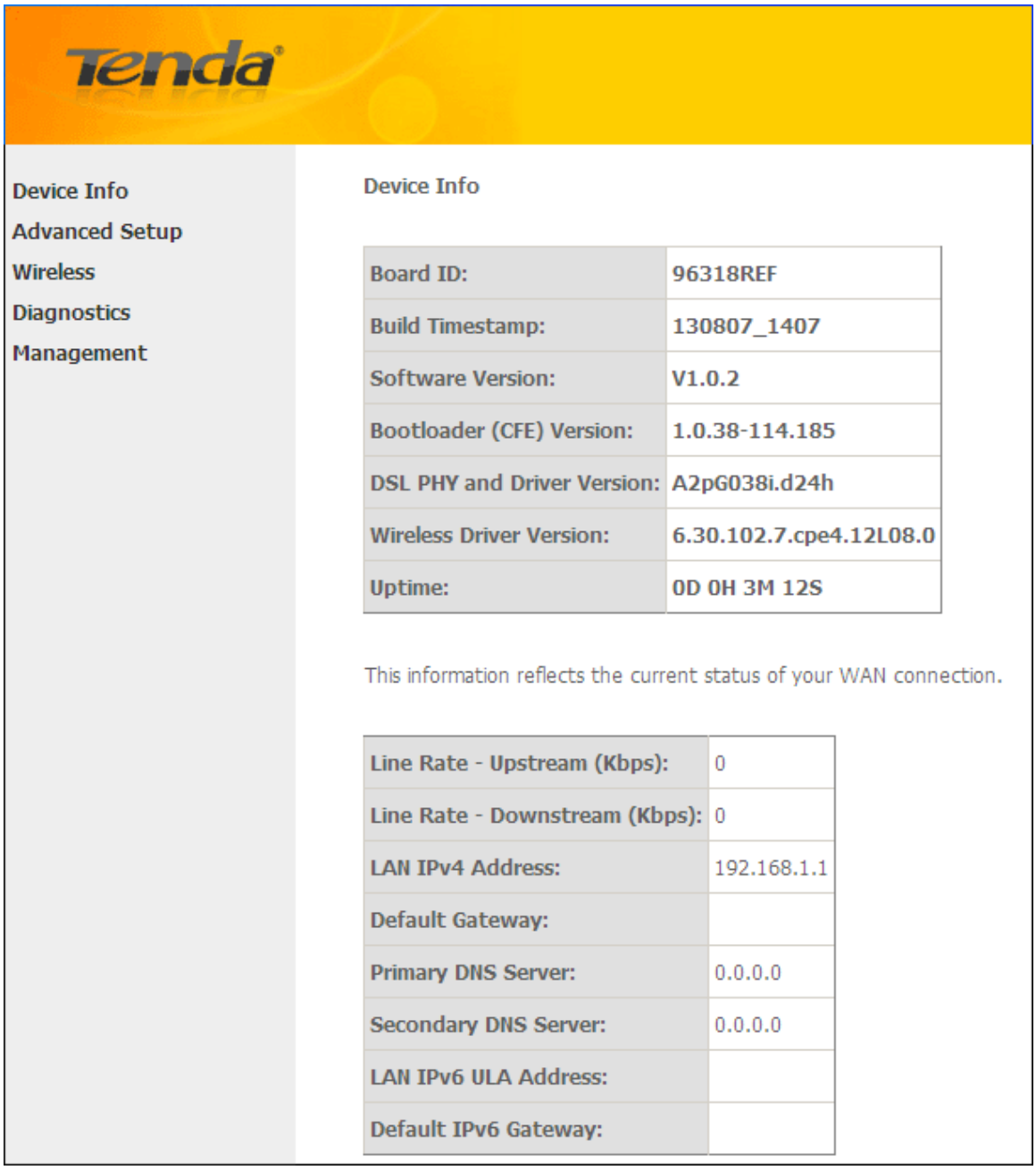
This chapter describes the advanced features of your router.

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.



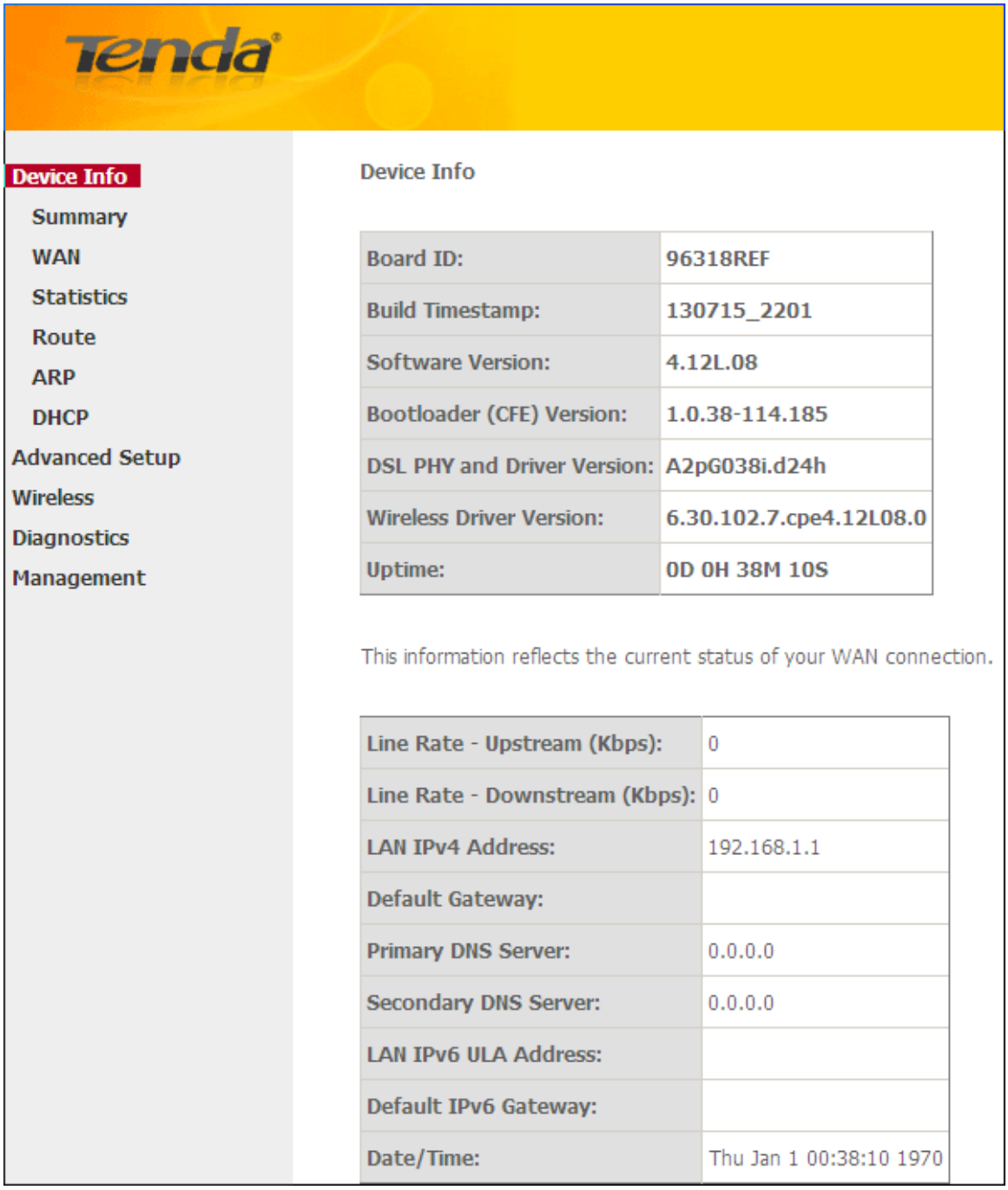
4.1 Device Info

This section includes the following information:

• Summary
• WAN
• Statistics
• Route
• ARP
• DHCP

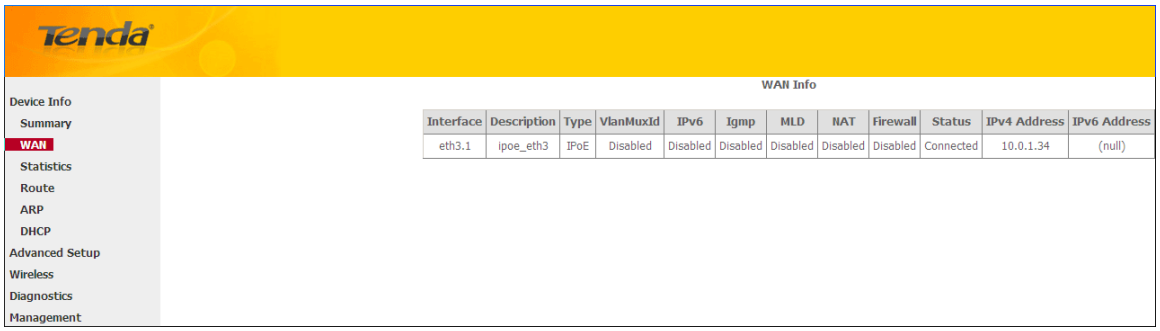
Summary

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



WAN

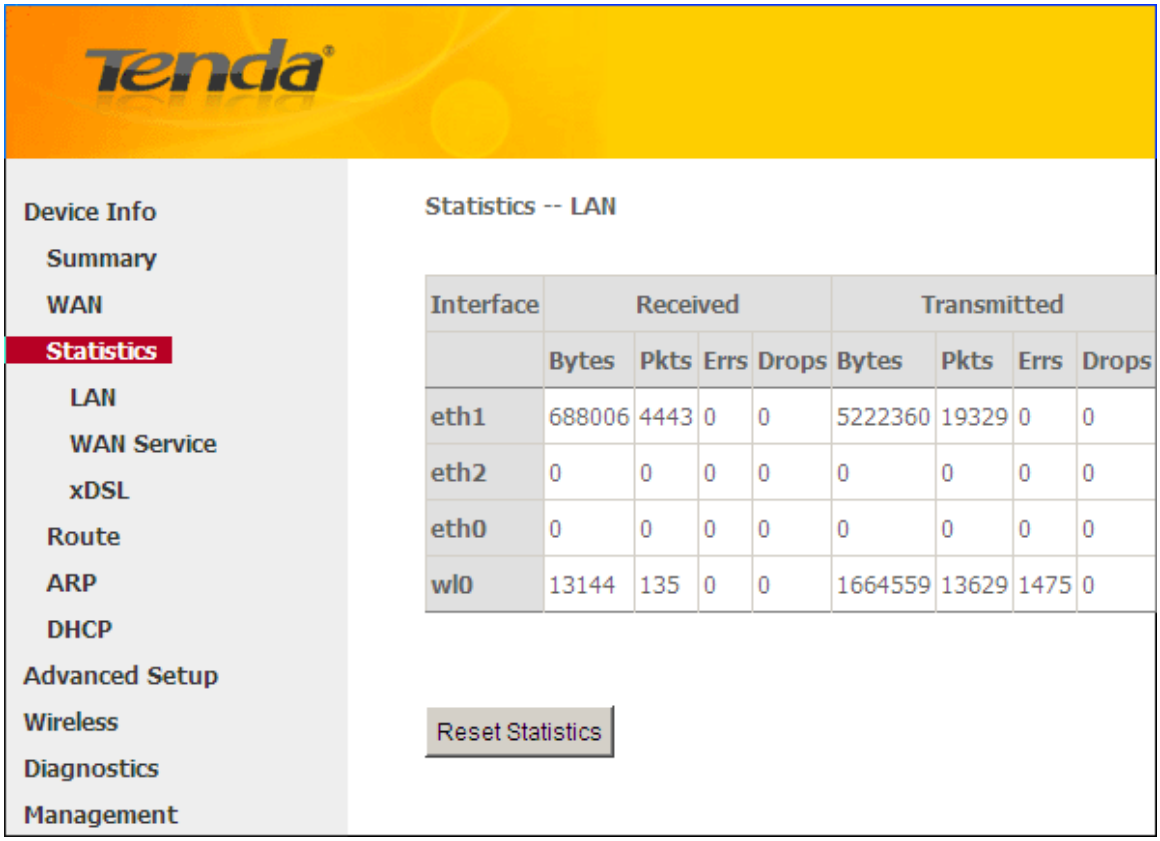
Here you can view the WAN Information including Interface, Description, Type, IGMP, NAT, Firewall, Status, IPv4 Address and VLAN ID as seen in the screenshot.



Statistics

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

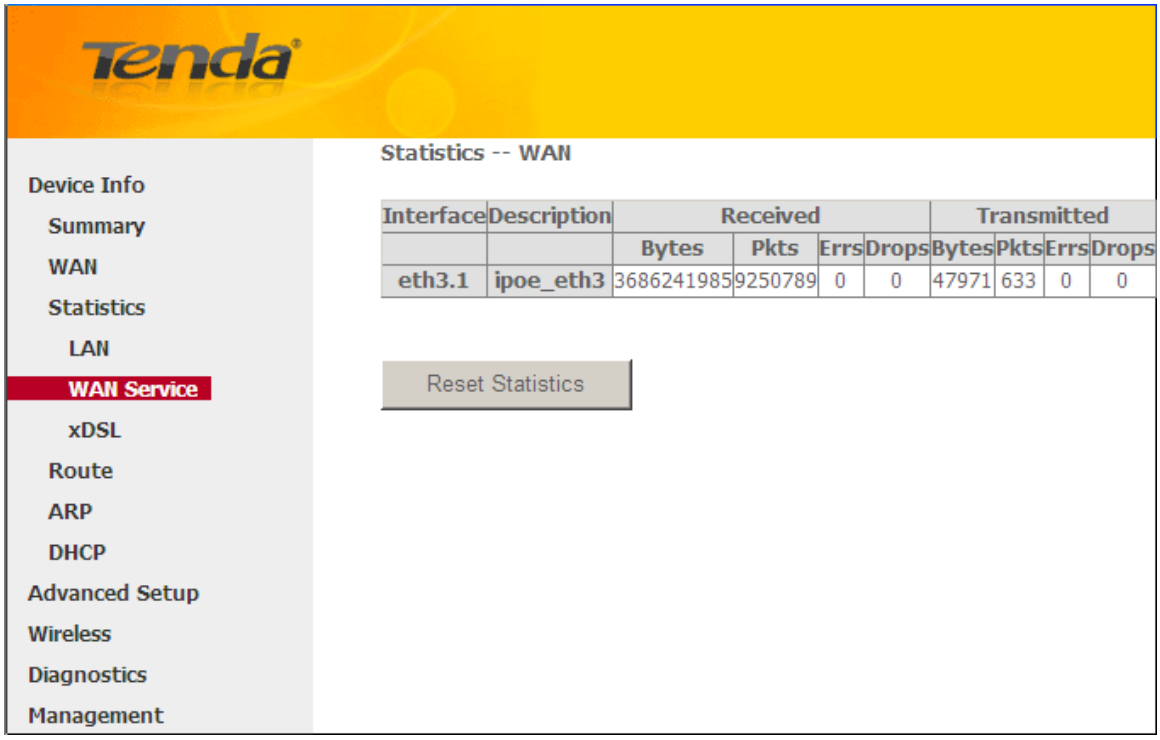
Statistics--LAN: Displays the packets received and transmitted on the LAN ports as seen in the screenshot below.



Tip:

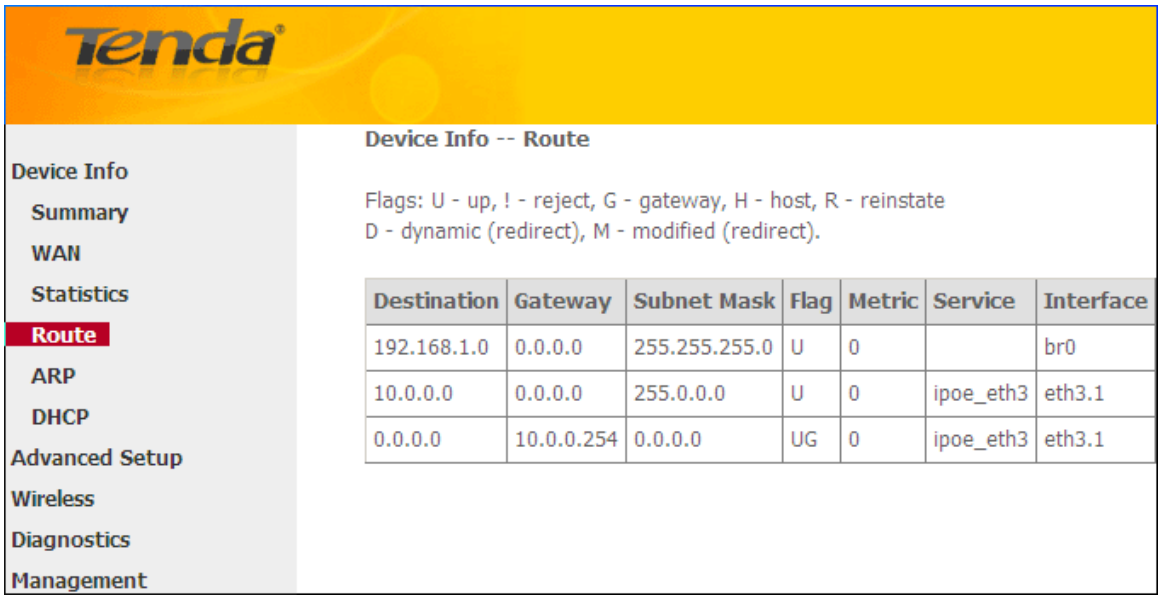
eth0, eth1, eth3 and eth3 respectively represent the LAN port1, LAN port2, LAN port3 and LAN port4 of the device.

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



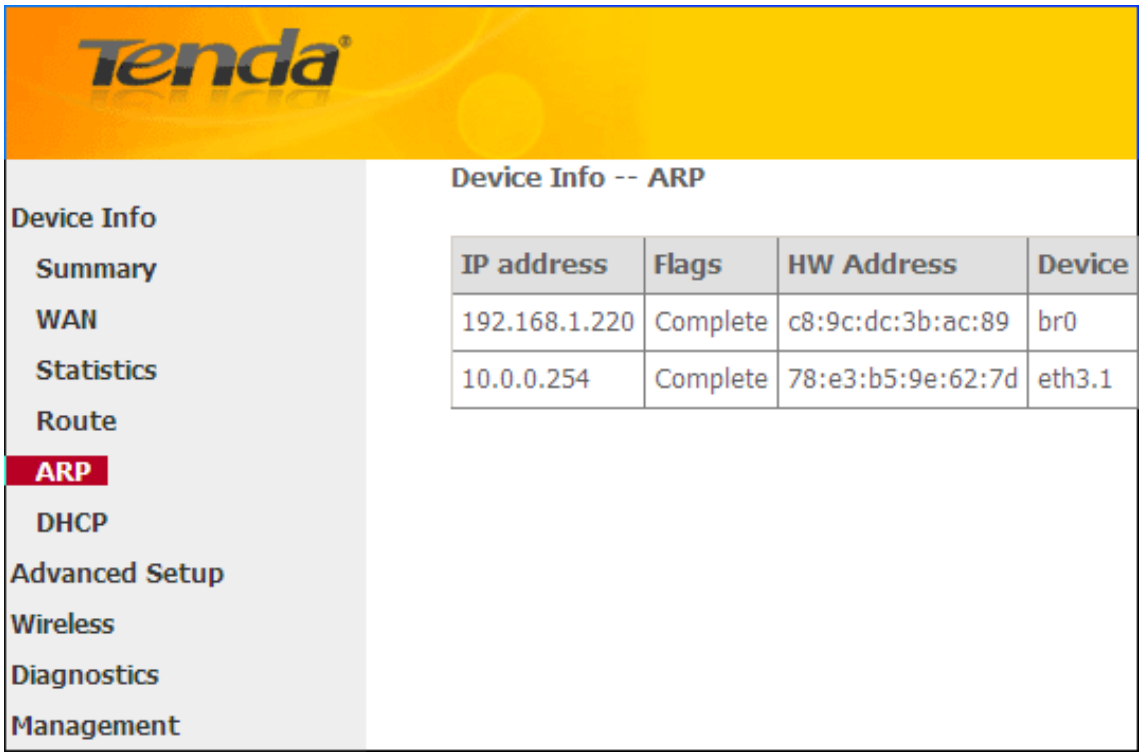
Route

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



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

• LAN

• NAT
• Security
• Parental Control
• Quality of Service
• Routing
• DNS
• DSL
• UPnP
• Print Server
• Storage Service
• 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:

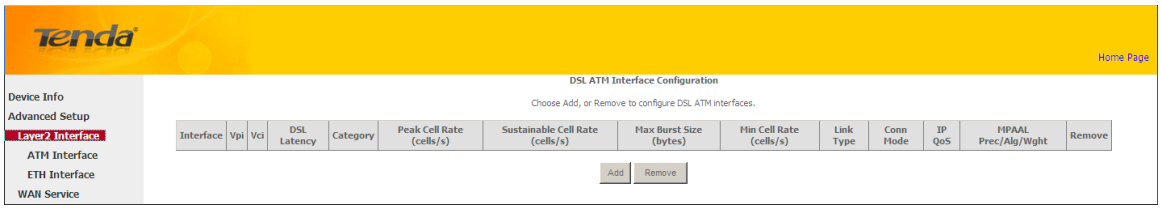
- ATM Interface for ADSL broadband Internet service

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

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

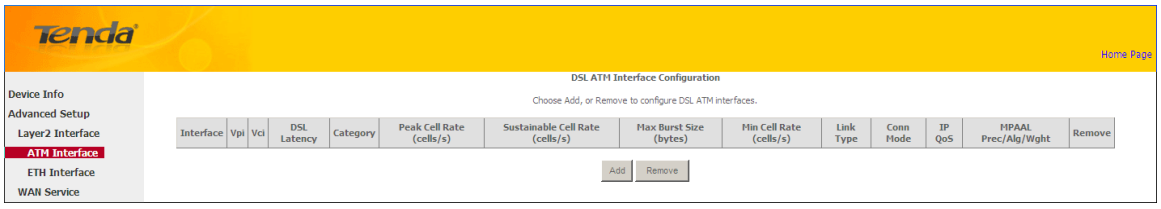
If you directly connect to the ADSL line via a phone cable, first refer to **To set up the ATM interface** and then skip to **To setup WAN Service for ATM Interface**.

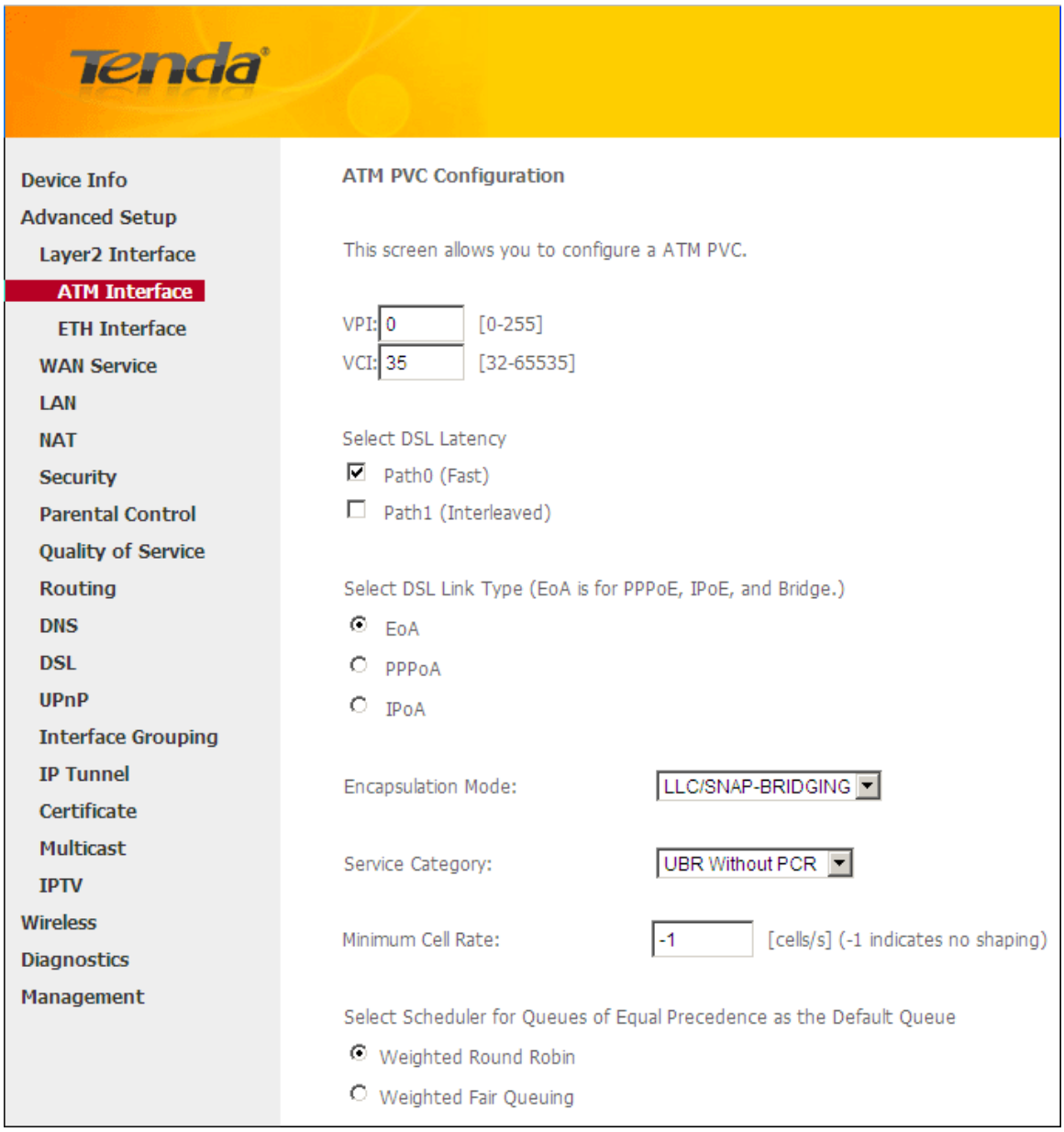
Or if you connect to Internet via a fiber/cable modem using an Ethernet cable, first refer to **To set up the ETH interface** and then skip to **To setup WAN Service for ETH Interface**.



To set up the ATM interface

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





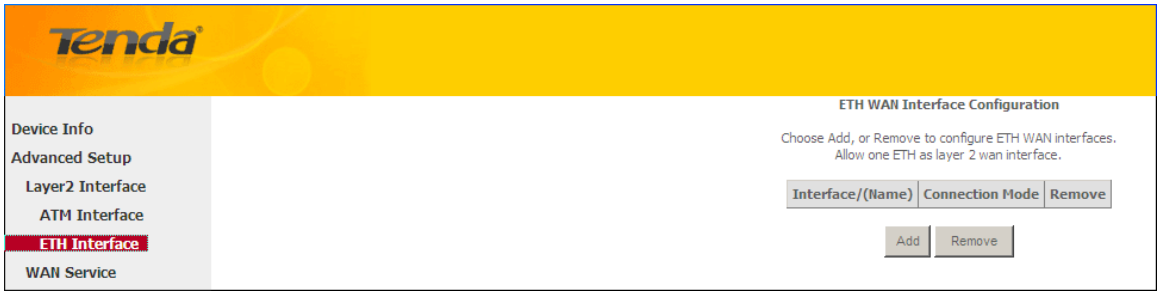
Enter the VPI and VCI values, Select a DSL Link Type (Internet connection type): EoA (EoA is for PPPoE, IPoE, and Bridge.), PPPoA or IPoA, leave other options unchanged from factory defaults and click **Apply/Save** and then refer to **To setup WAN Service for ATM Interface** to configure the WAN service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

Tip:

*If you are unsure about the VPI/VCI parameters, see **Appendix 4 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

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



The Ethernet port configured here is to function as a WAN port. Only one LAN port can be configured as the WAN port at a time. After you finish your settings, click the **Apply/Save** button and then refer to **To setup WAN Service for ETH Interface** to configure the WAN service for Internet access.

Tip:

eth0, eth1, eth3 and eth3 respectively represent the LAN port1, LAN port2, LAN port3 and LAN port4 of the device.

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.

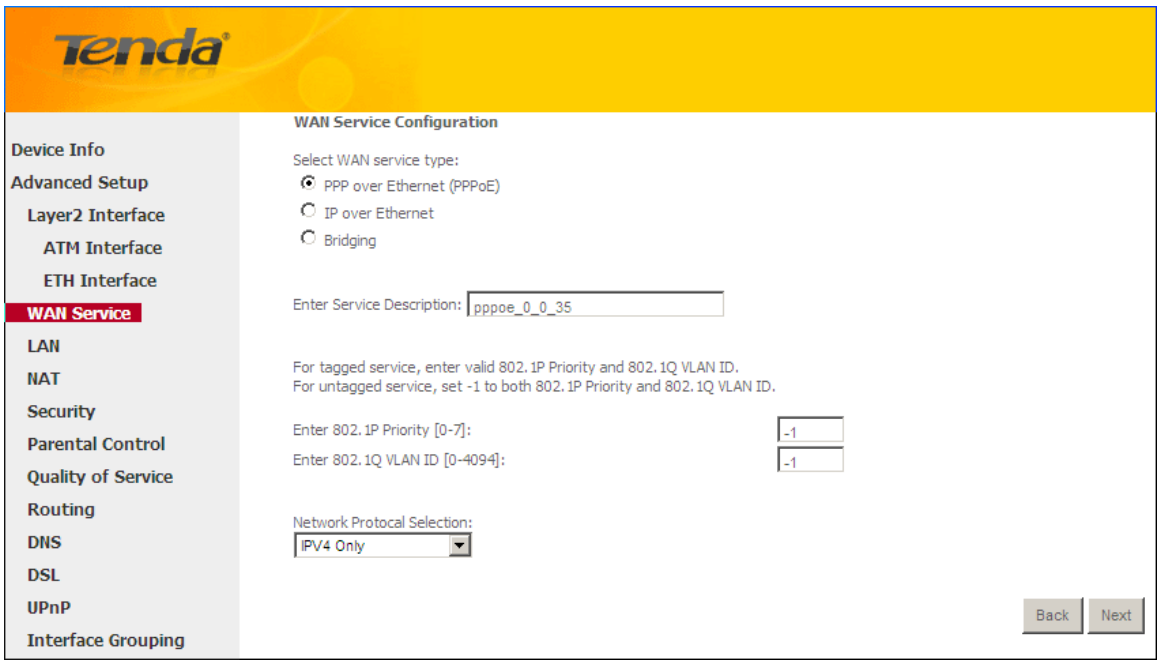
IPoE (If your ISP uses DHCP to assign your IP address or if your ISP assigns you a static (fixed) IP address, IP subnet mask and the gateway IP address, you need to select the IP over Ethernet (IPoE).	Dynamic IP	No entries are needed.
	Static (Fixed) IP	Enter the assigned IP address, subnet mask, and 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 iniate 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)

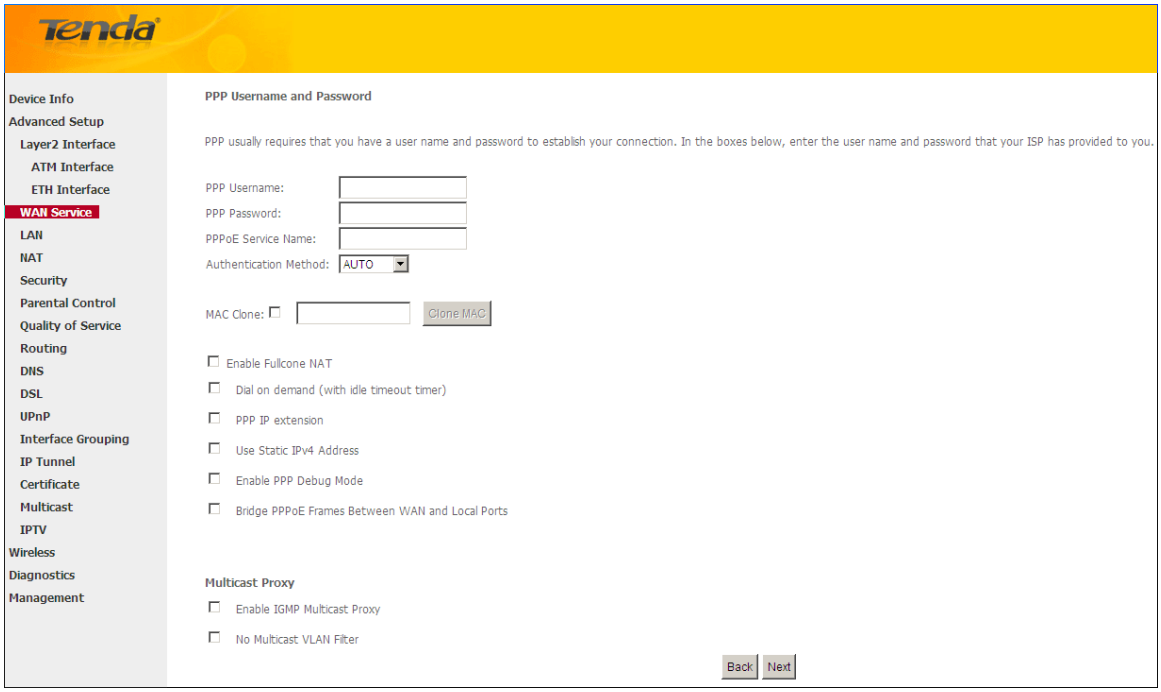
If you have selected the **EoA** from the **ATM Interface** screen in **Layer2 Interface**, you will see the screen below when you click the **WAN Service** tab, select the configured interface and click **Next**.



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.

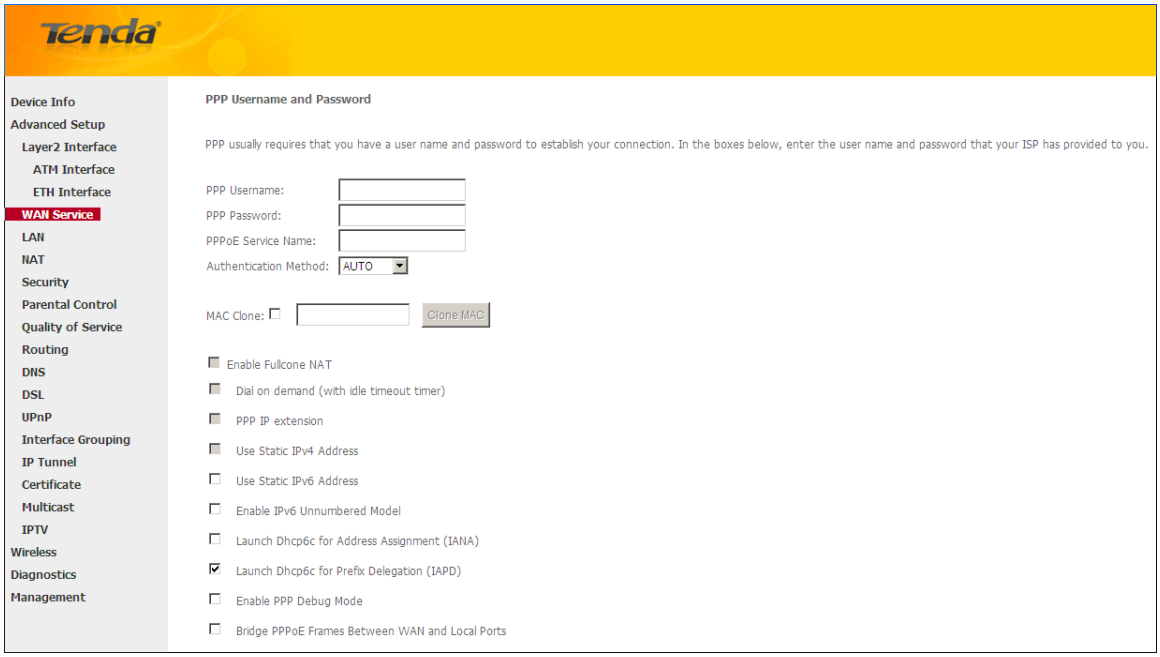


- **PPP User Name:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.
- **PPP Password:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.
- **PPPoE Service Name:** This information is provided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

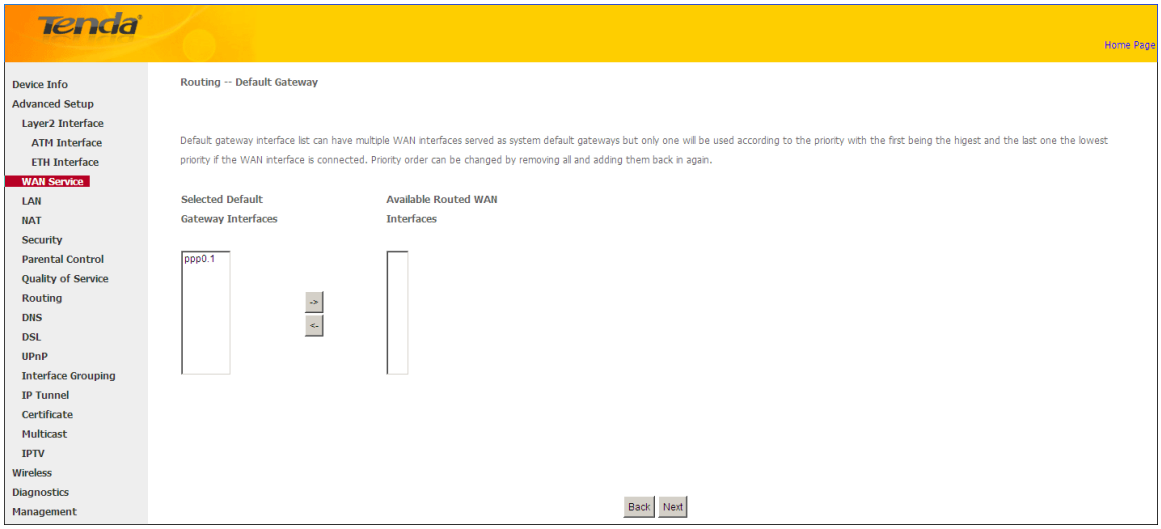
IPv6

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

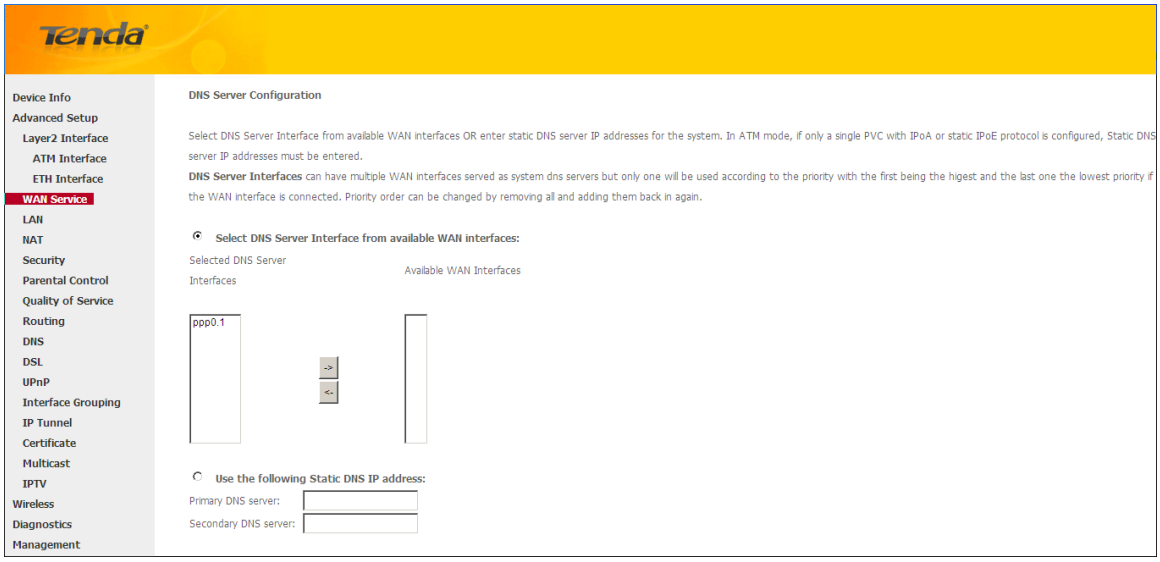


Here you can configure the WAN gateway address. After you configure it click **Next**. The default setting is recommended.

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:

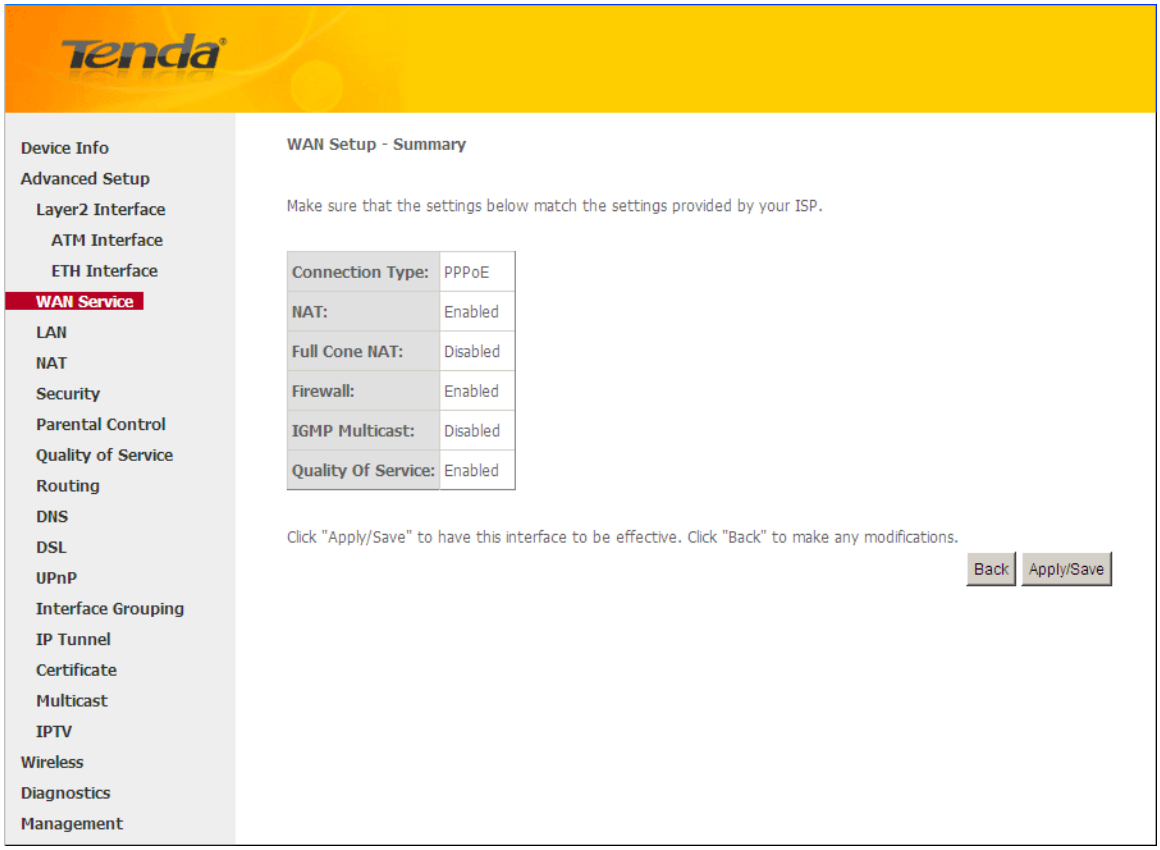
-Click the **Select DNS Server Interface from available WAN interfaces** option

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

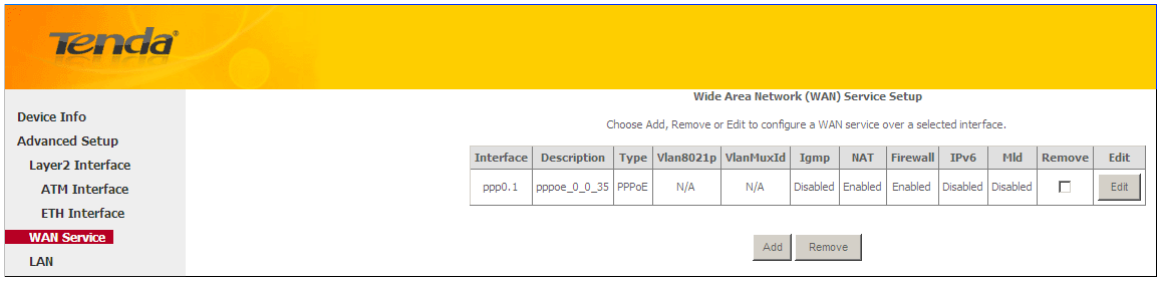
And then click **Next**.

Note:

1. *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.*
2. *In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.*
3. *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.

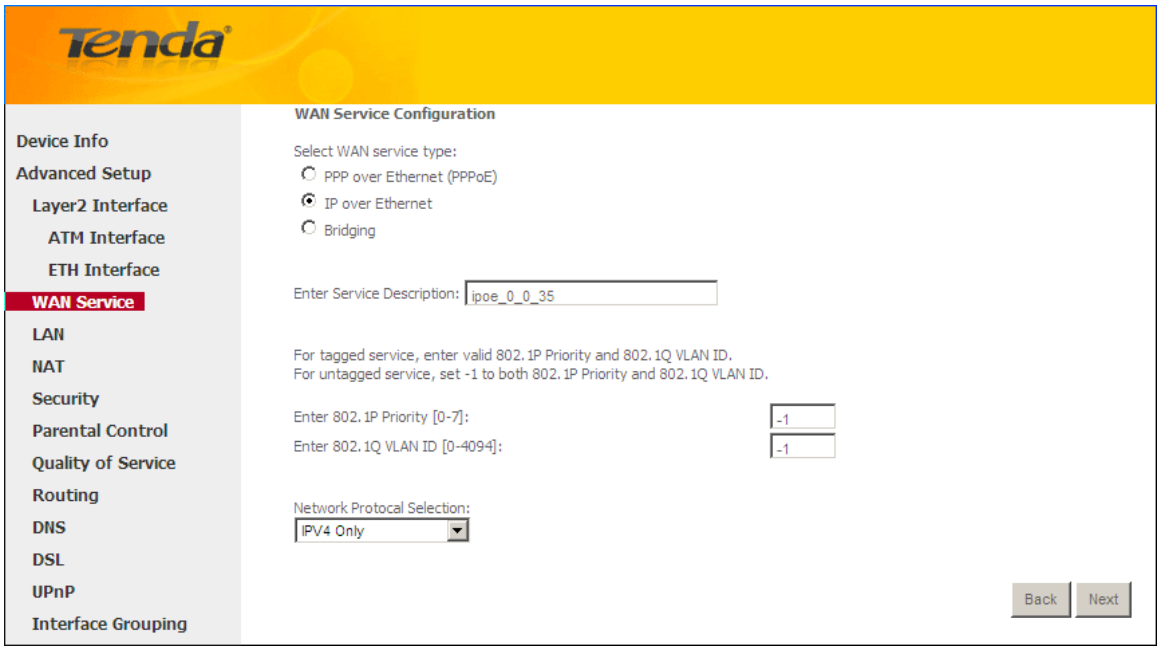


When the PPPoE connection is successful, you can access Internet.

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).

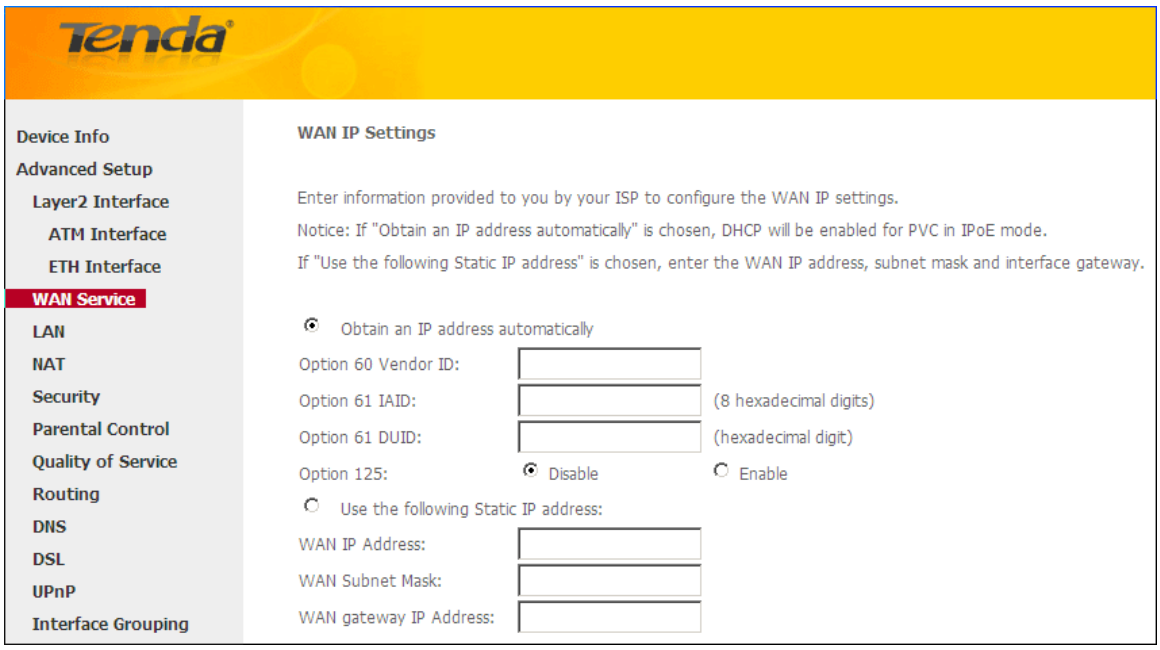
If you have selected the **EoA** from the **ATM Interface** screen in **Layer2 Interface**, you will see the screen below when you click the **WAN Service** tab, select the configured interface and click **Next**.



1. Select IPoE.
2. Edit the **Enter Service Description.** 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:

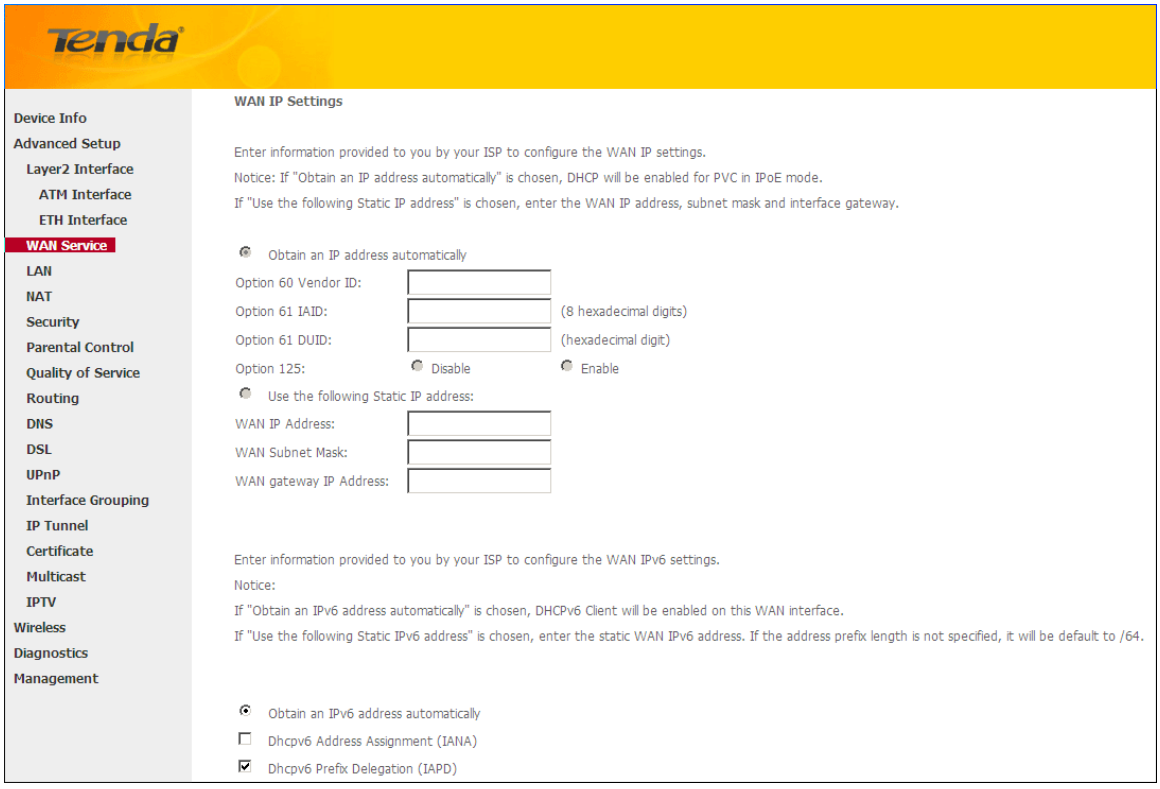
If you select IPv6 or IPv4 & IPv6 (dual stack), skip to IPv6.



- **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 Internet.
- **WAN Subnet Mask:** The subnet mask address provided by your ISP for accessing Internet.
- **WAN gateway IP Address:** The gateway IP address provided by your ISP for accessing Internet.

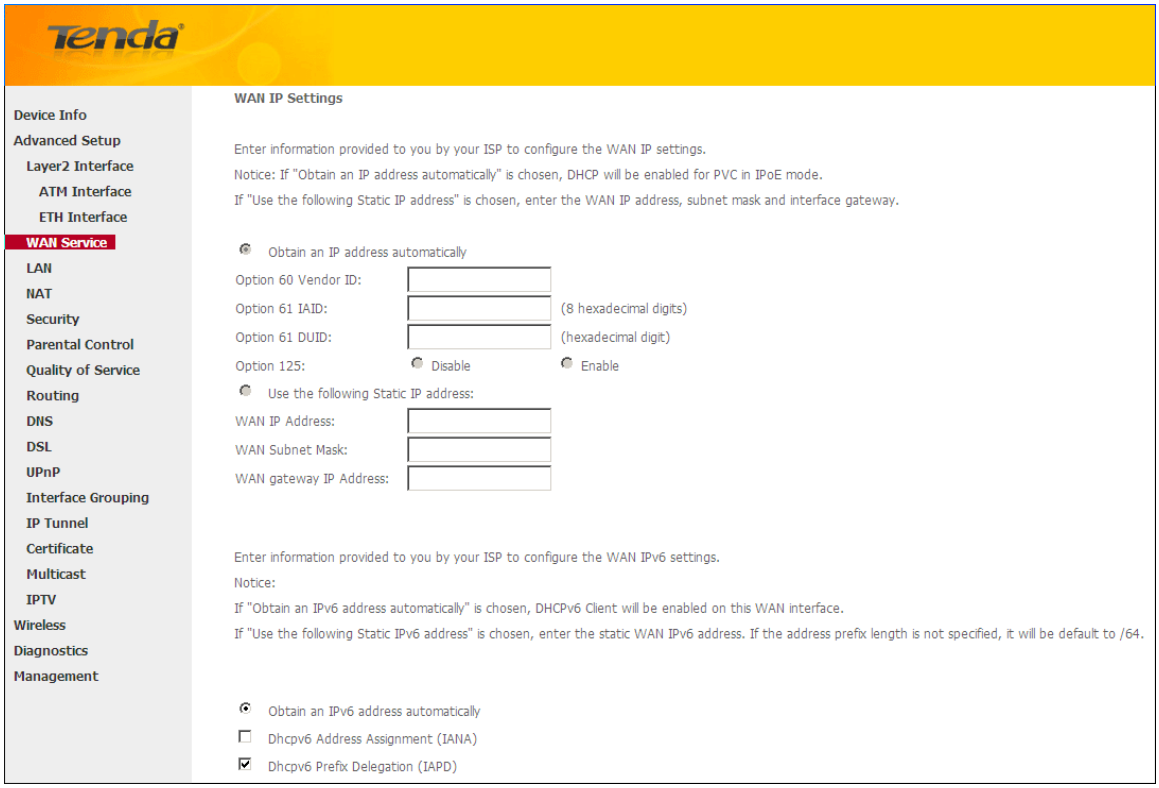
IPv6

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



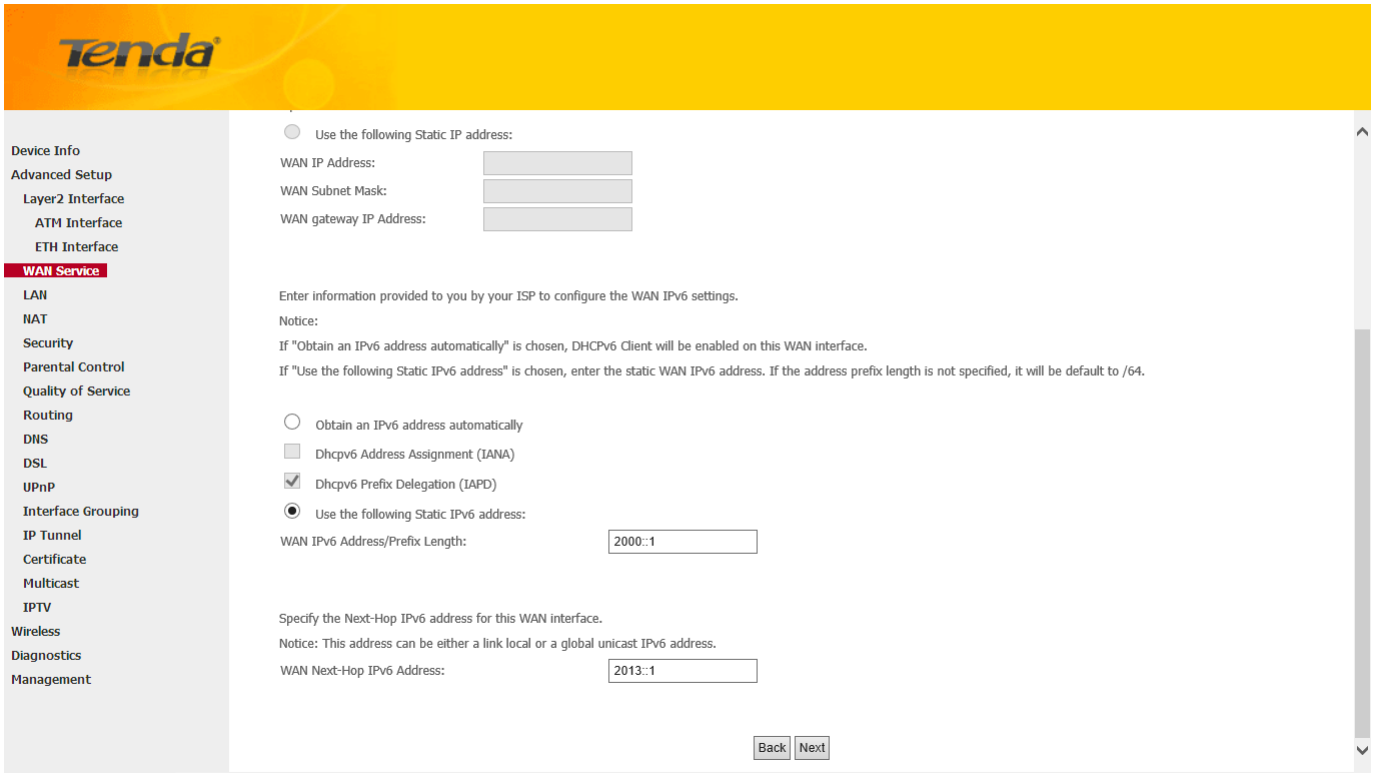
To obtain an IP address automatically:

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

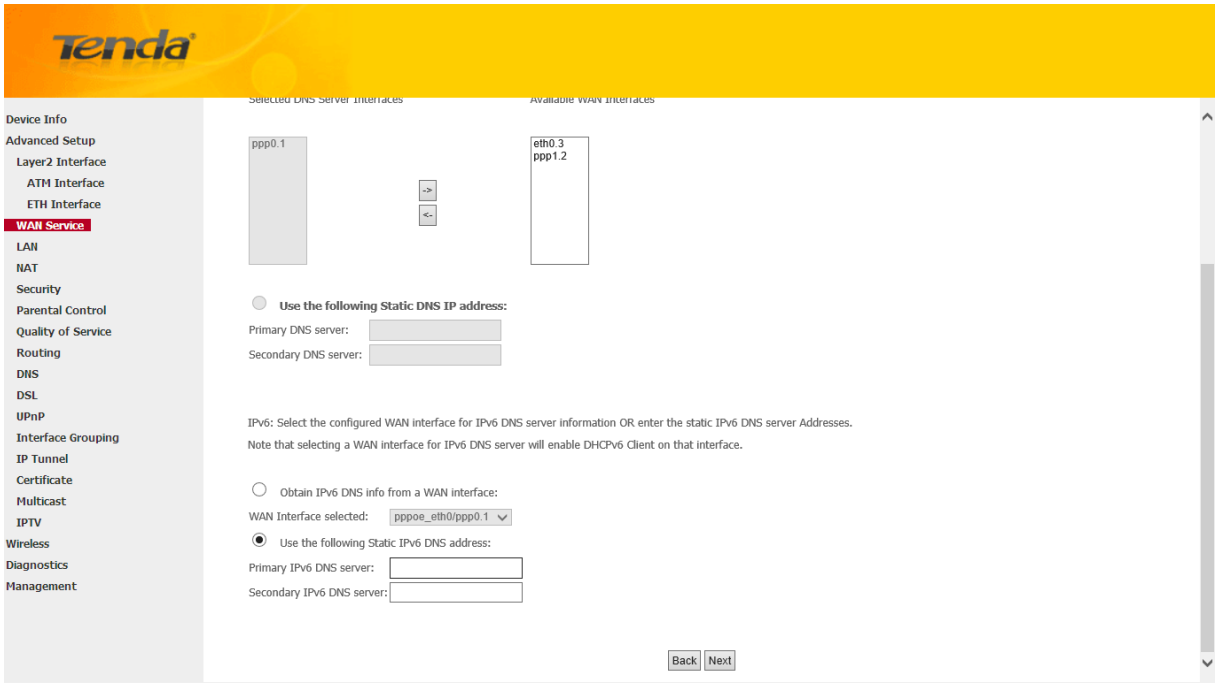


To configure a static IPv6 address

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.

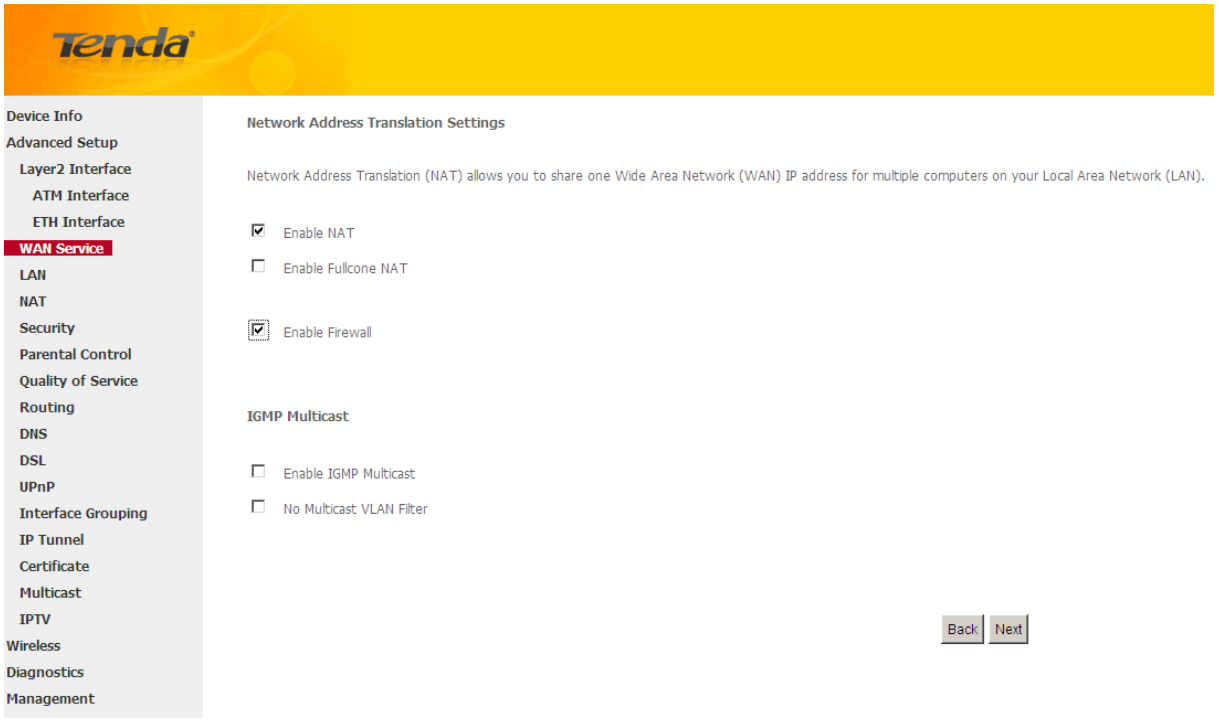


4. Select **Use the following Static IPv6 DNS address** and manually enter the DNS server address. If you have two DNS server addresses, enter the second also.

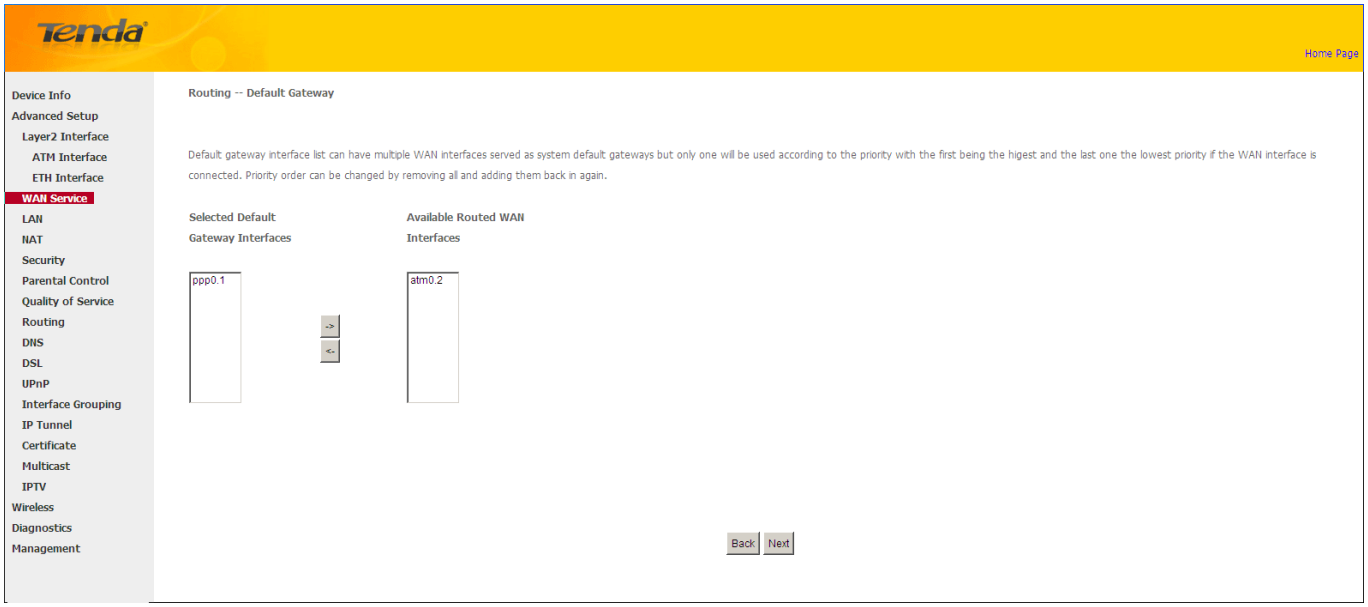
5. Click **Next -> Apply/Save**.

Note:

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

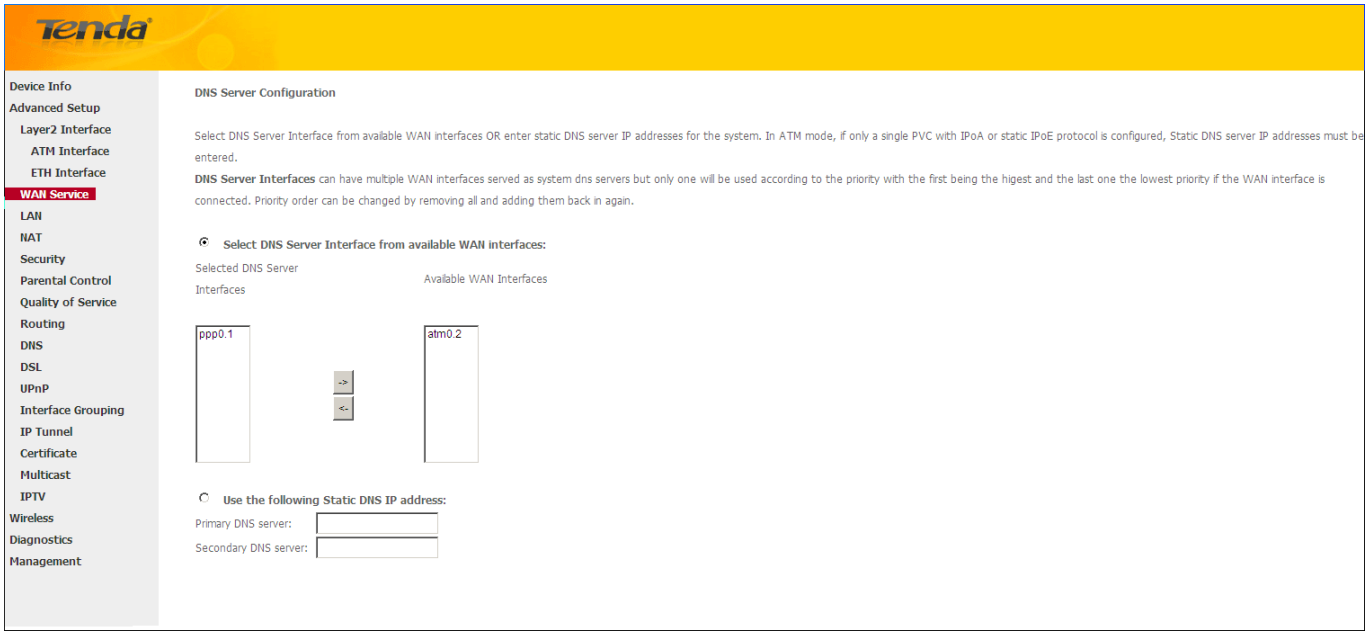


Here you can configure the NAT settings. If you are unsure about the options, please keep the default settings and then click **Next**.



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

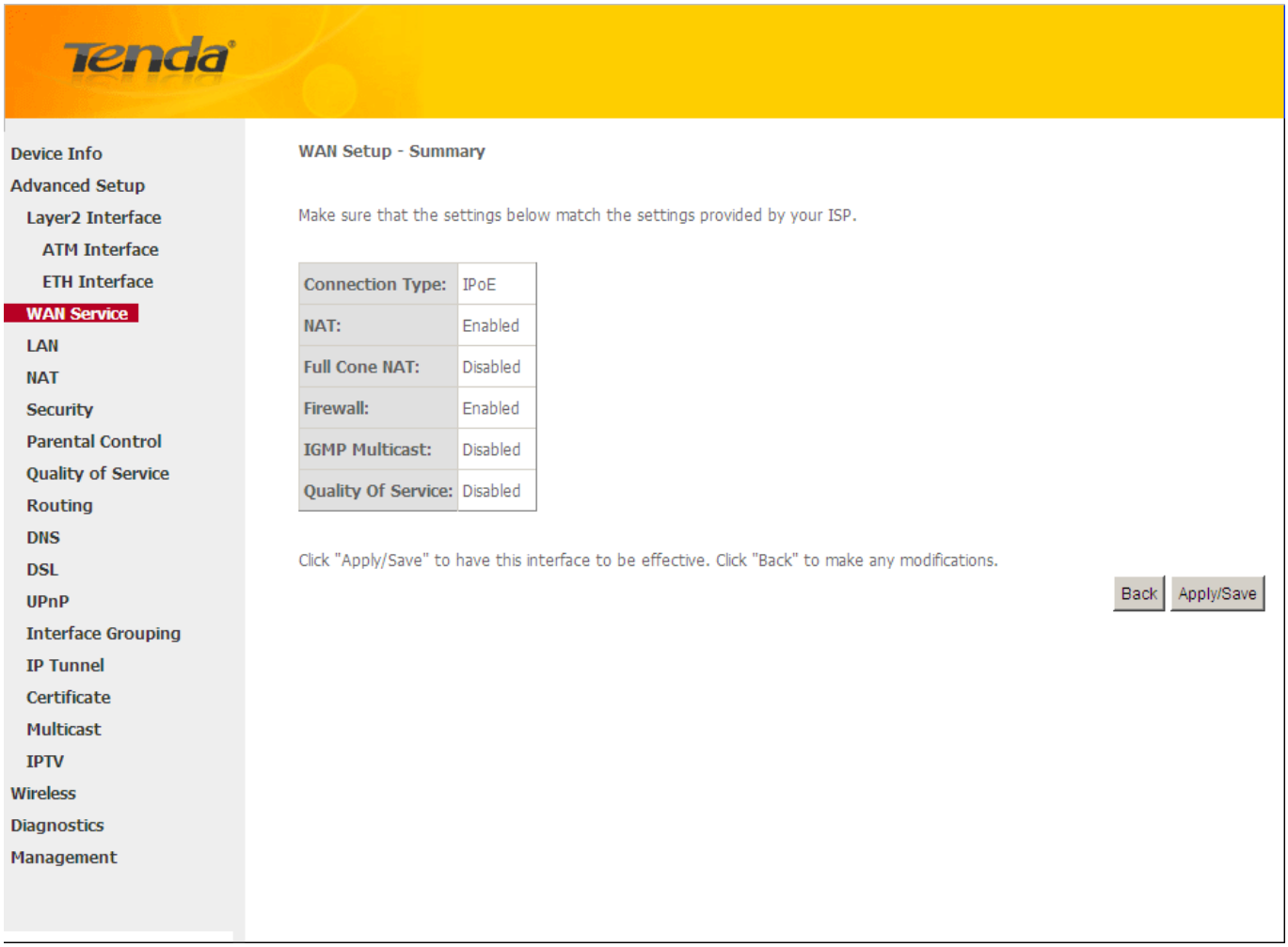
And then click **Next**.

Note:

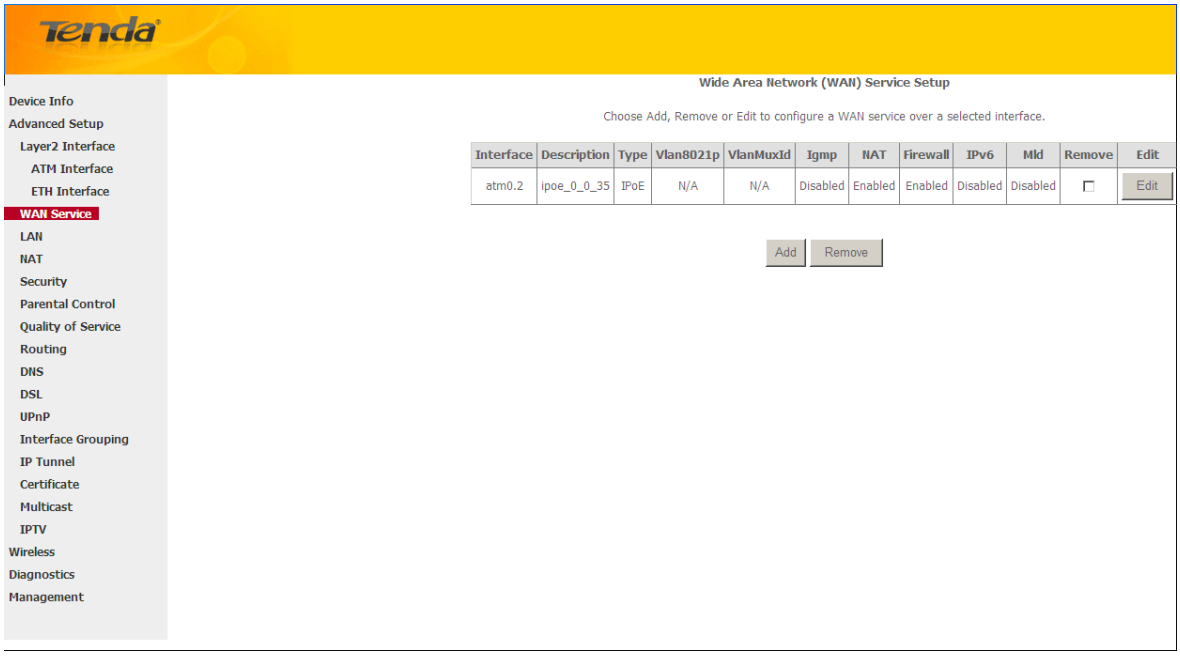
1.DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

2. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.

3. 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.

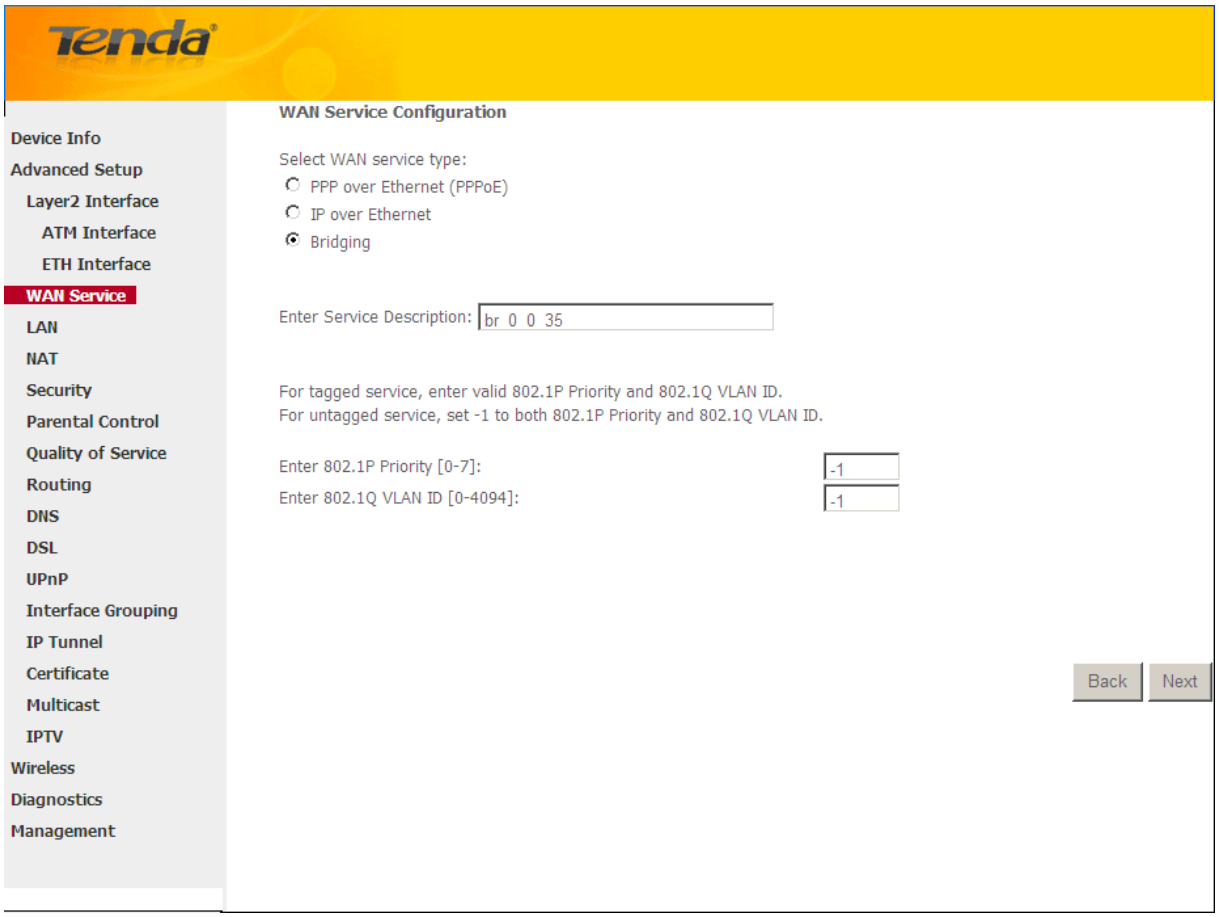


When the IPoE connection is successful, you can access Internet.

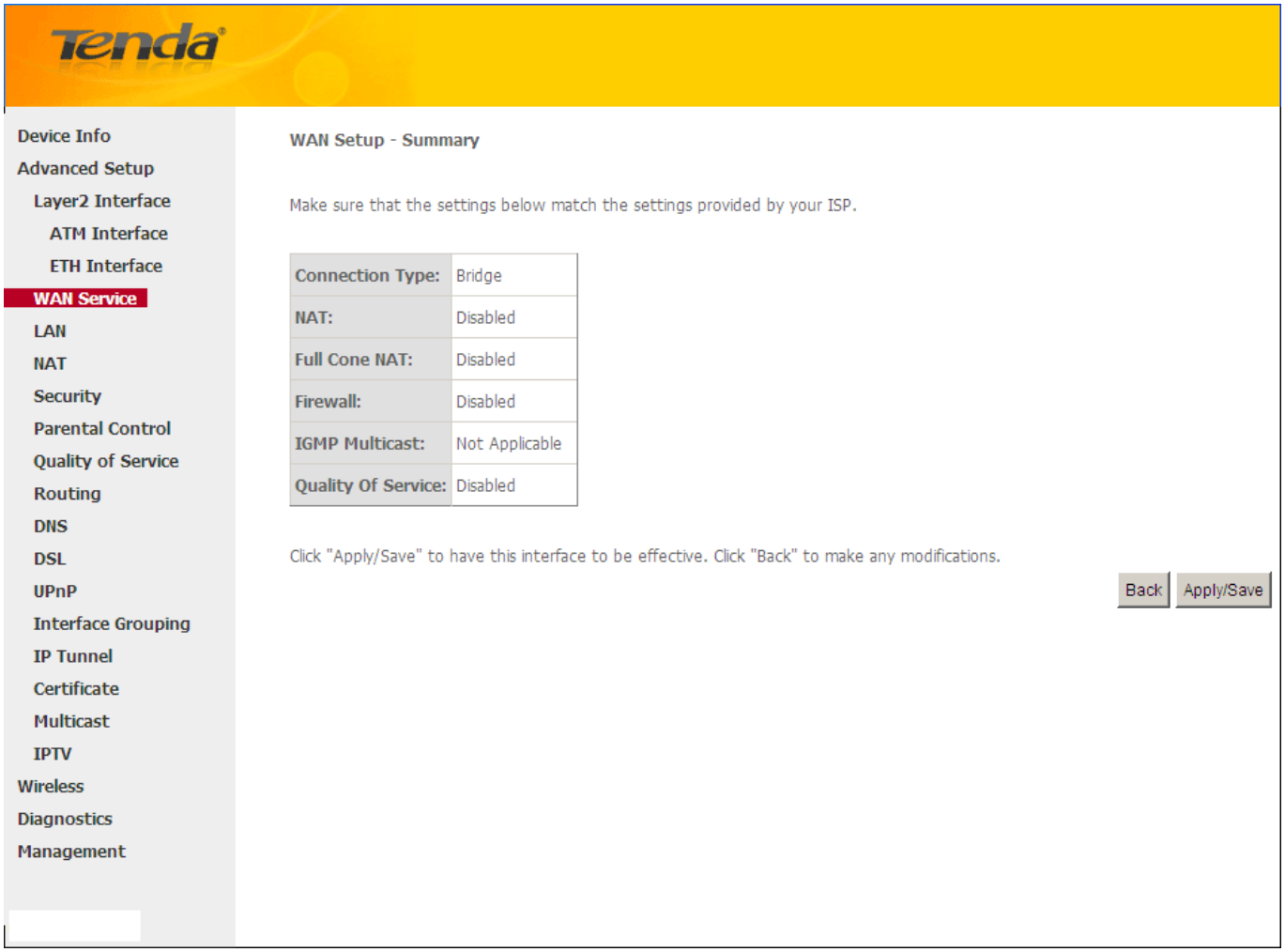
Bridging

If you wish to iniate 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.

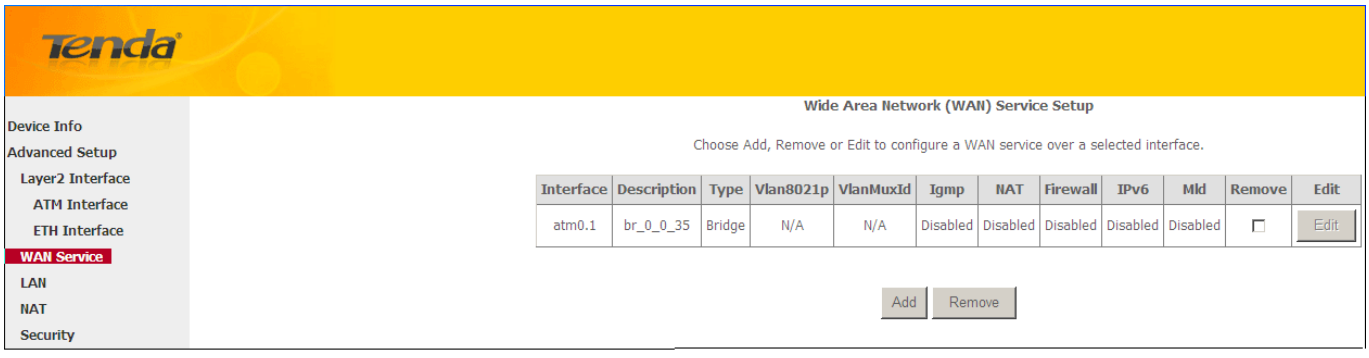
If you have selected the **EoA** from the **ATM Interface** screen in **Layer2 Interface**, you will see the screen below when you click the **WAN Service** tab, select the configured interface and click **Next**.



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.



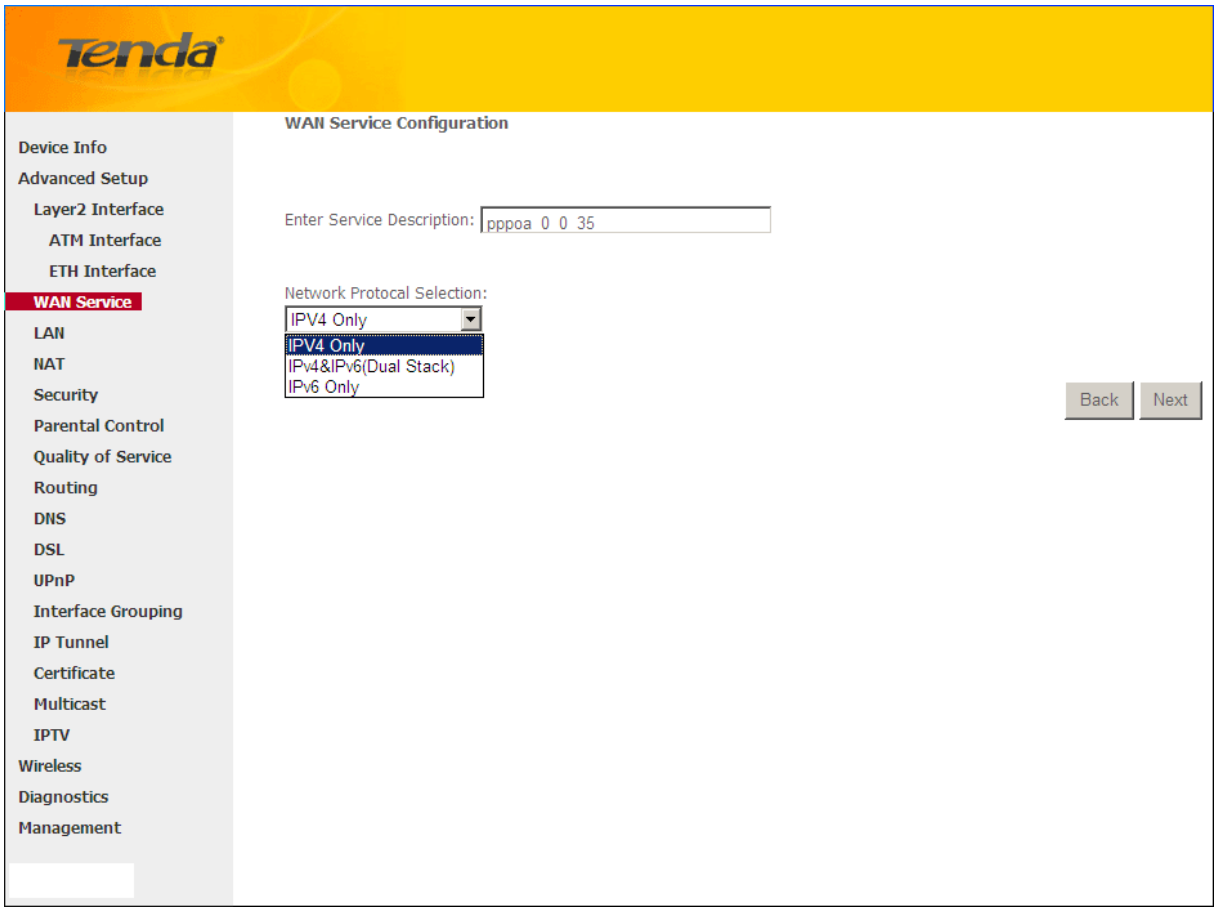
When the bridging connection is successful, you can access Internet.

Note:

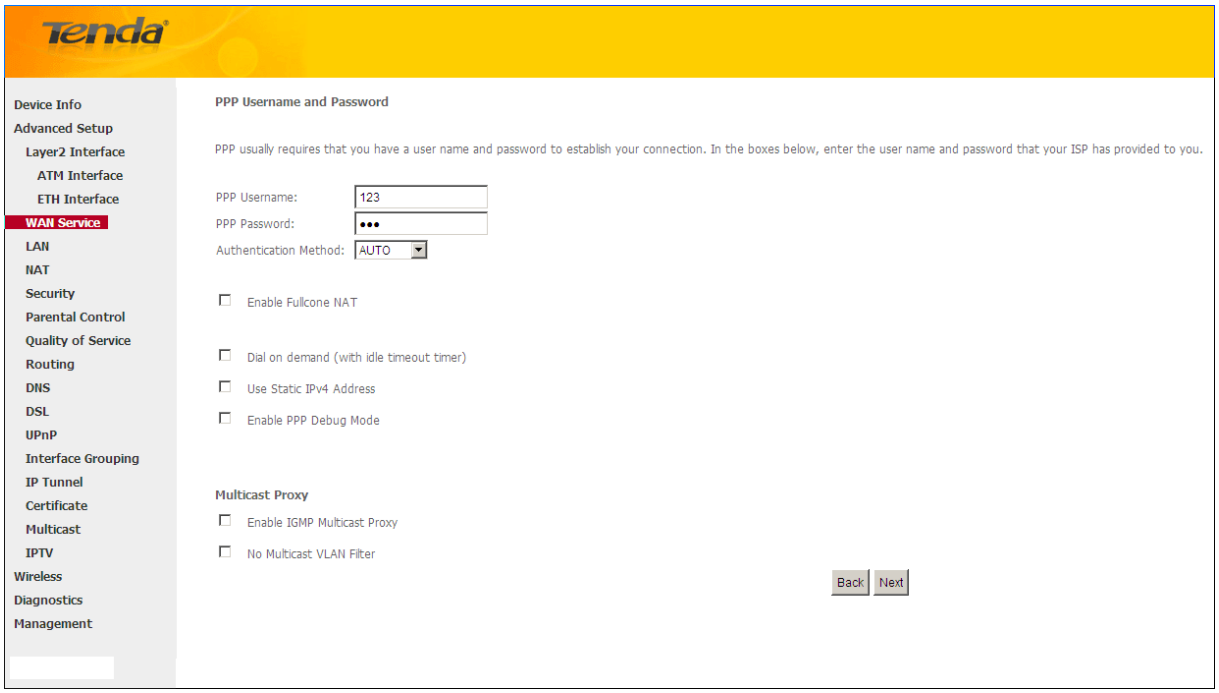
To configure multiple WAN connections, simply configure multiple ATM interfaces and then follow the instructions above.

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**.



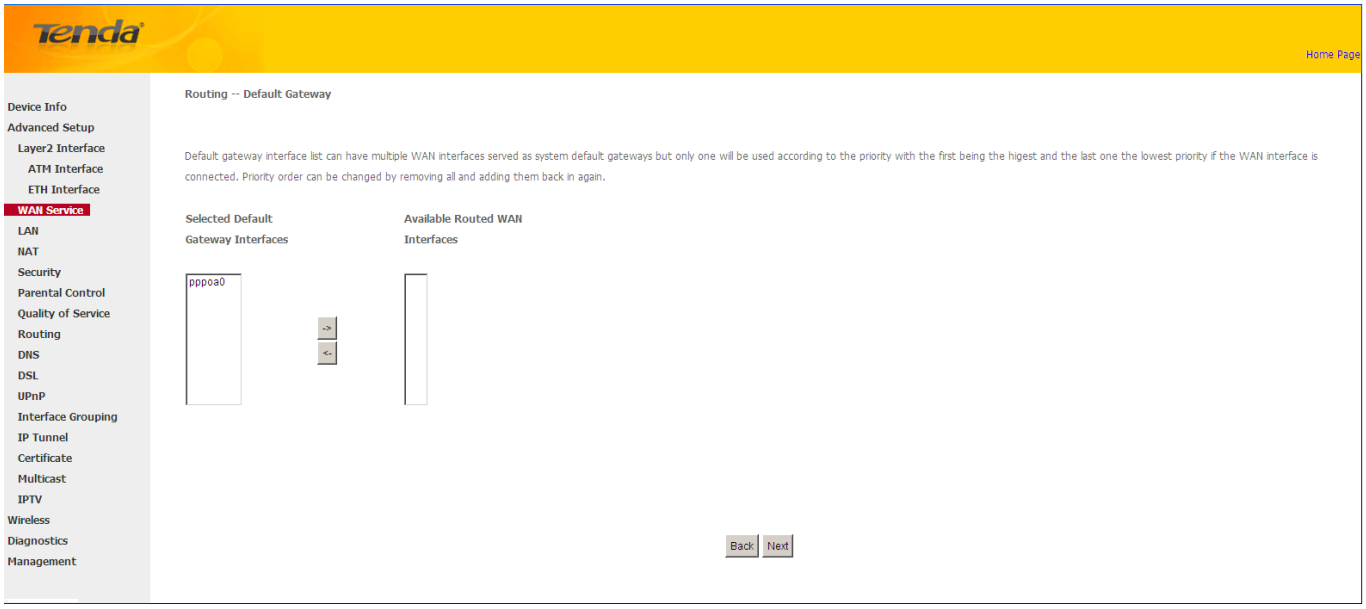
1. Edit the **Enter Service Description.** This field is optional. We recommend that you keep the default.
2. Select a network protocol: IPv4, IPv6 or IPv4 & IPv6 (dual stack).
3. Click **Next.**



- **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

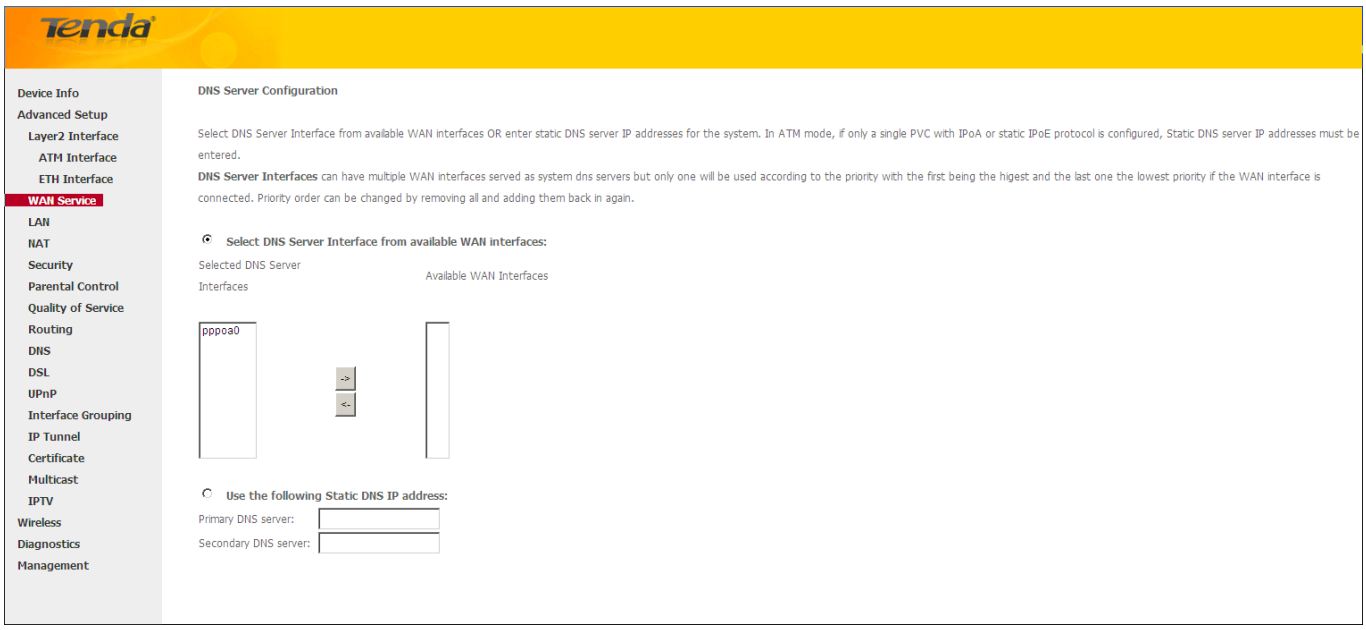


Here you can configure the WAN gateway address. After you configure it click **Next**. The default setting is recommended.

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

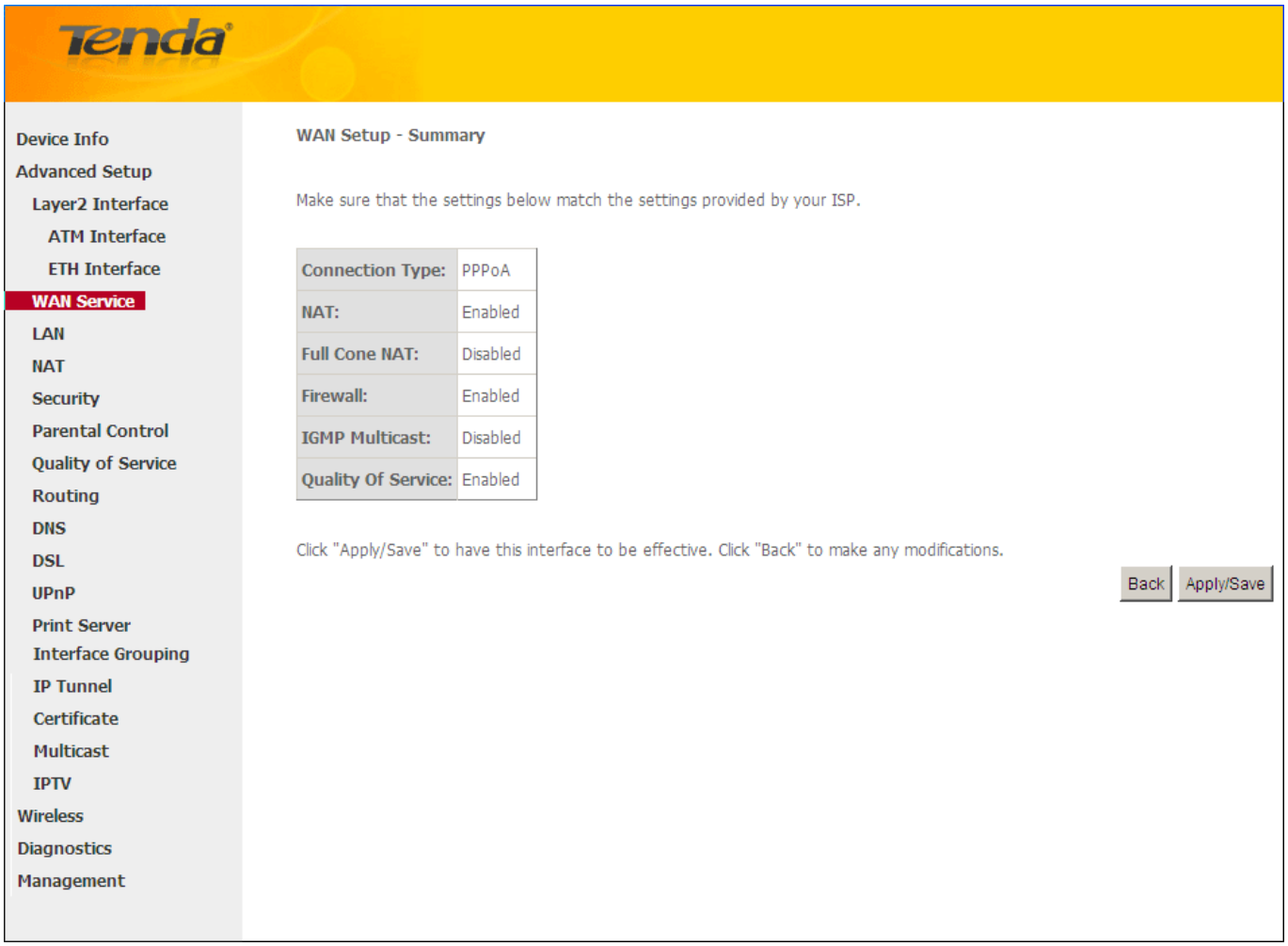
And then click **Next**.

Note:

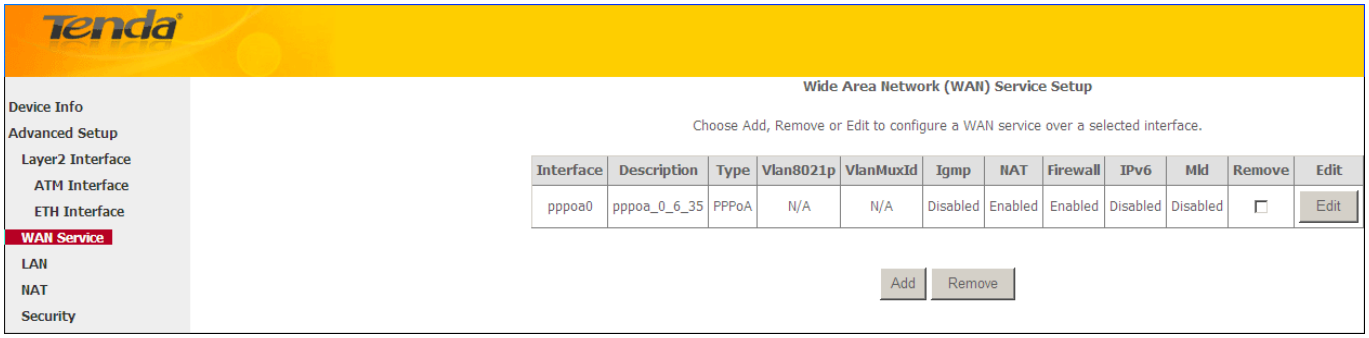
1.DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

2. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.

3. If you cannot locate the static DNS server IP information, ask your ISP to provide it.



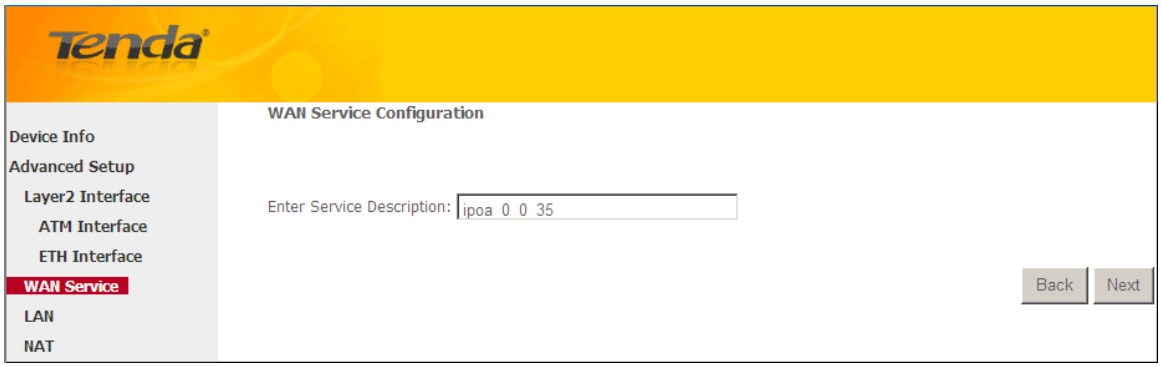
Here you can view your configurations. Click **Apply/Save** to save your settings if everything is correctly set.



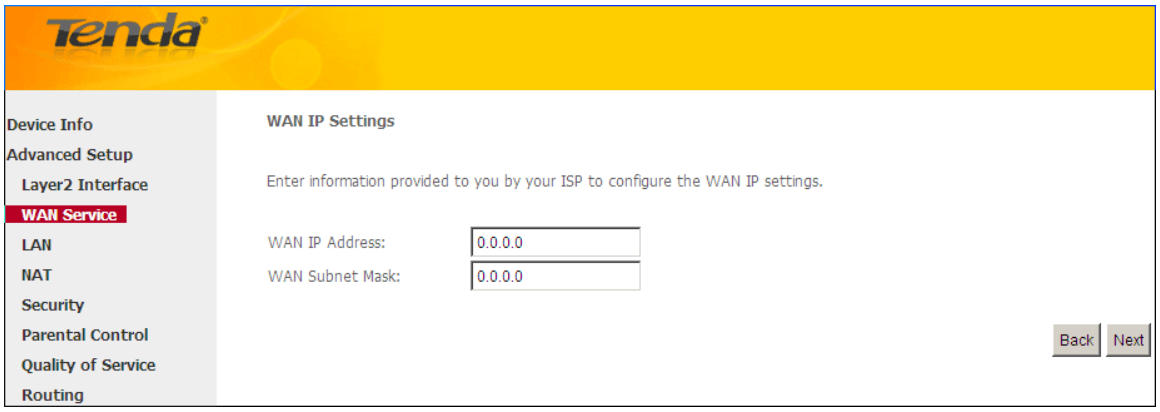
When the PPPoA connection is successful, you can access Internet.

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**.

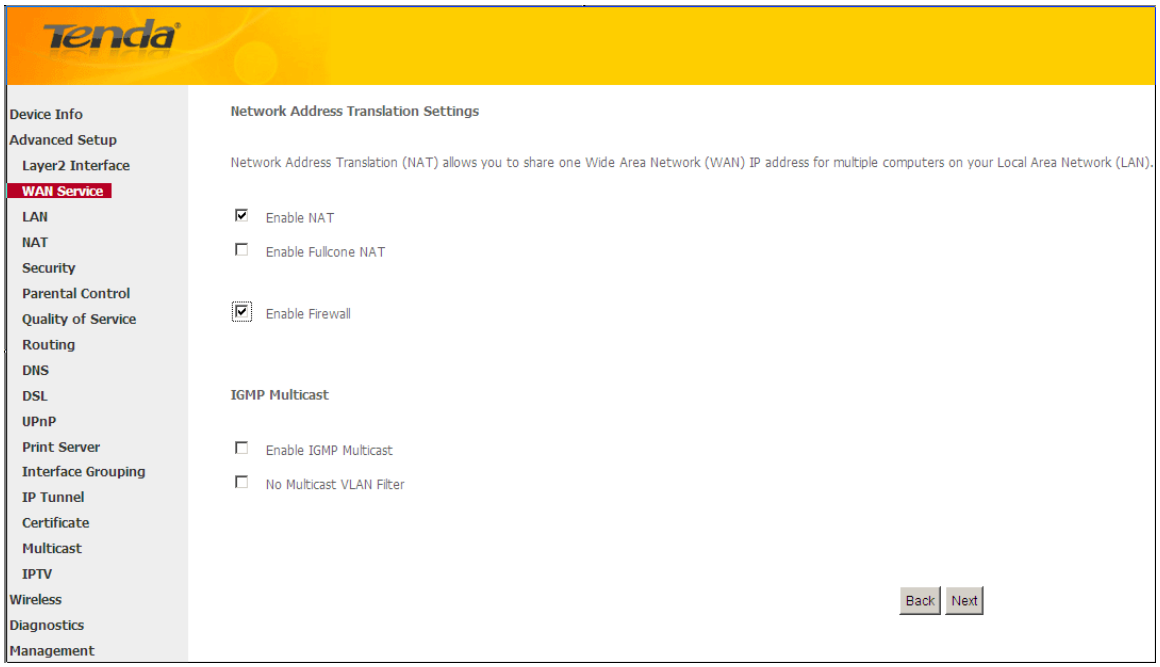


1. Edit the **Enter Service Description.** This field is optional. We recommend that you keep the default.
2. Click **Next.**

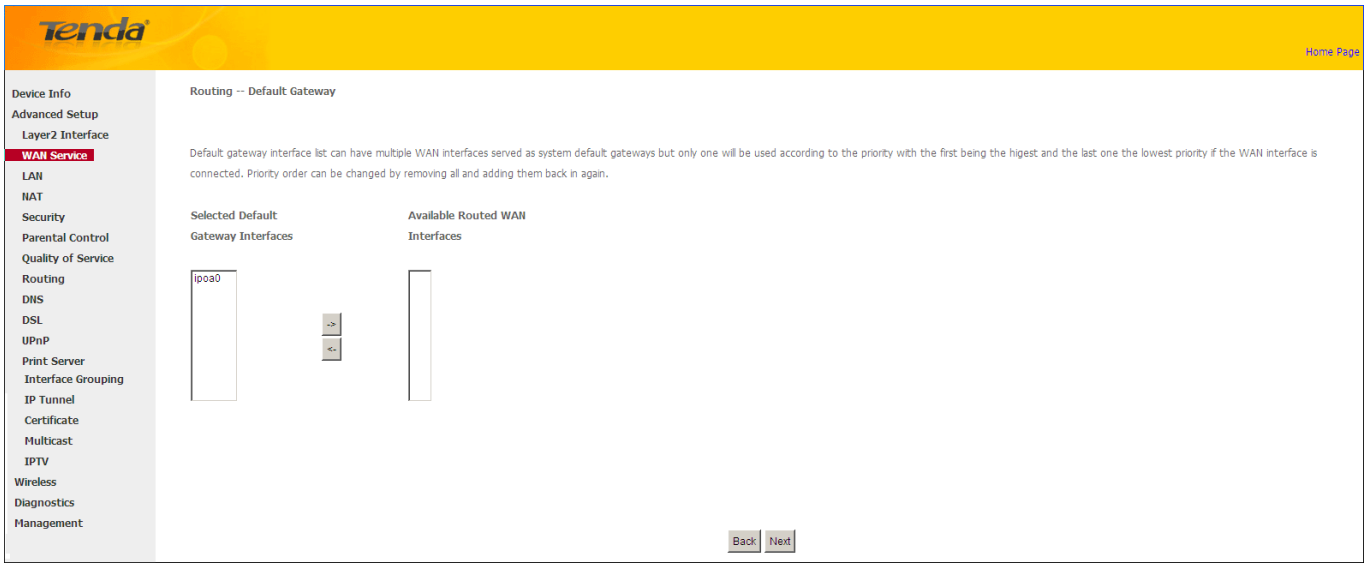


- **WAN IP Address:** The Internet IP address provided by your ISP for accessing Internet.
- **WAN Subnet Mask:** The subnet mask address provided by your ISP for accessing Internet.

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.



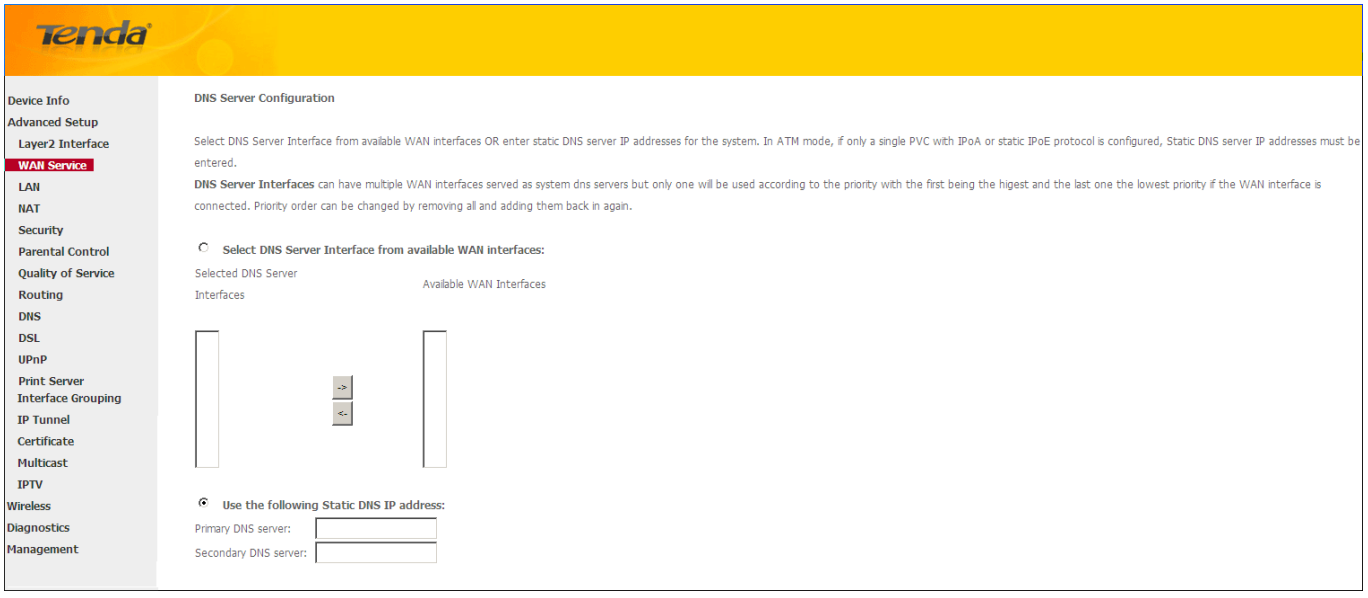
If you are unsure about the options on the screen above, keep the defaults and click **Next**.



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.

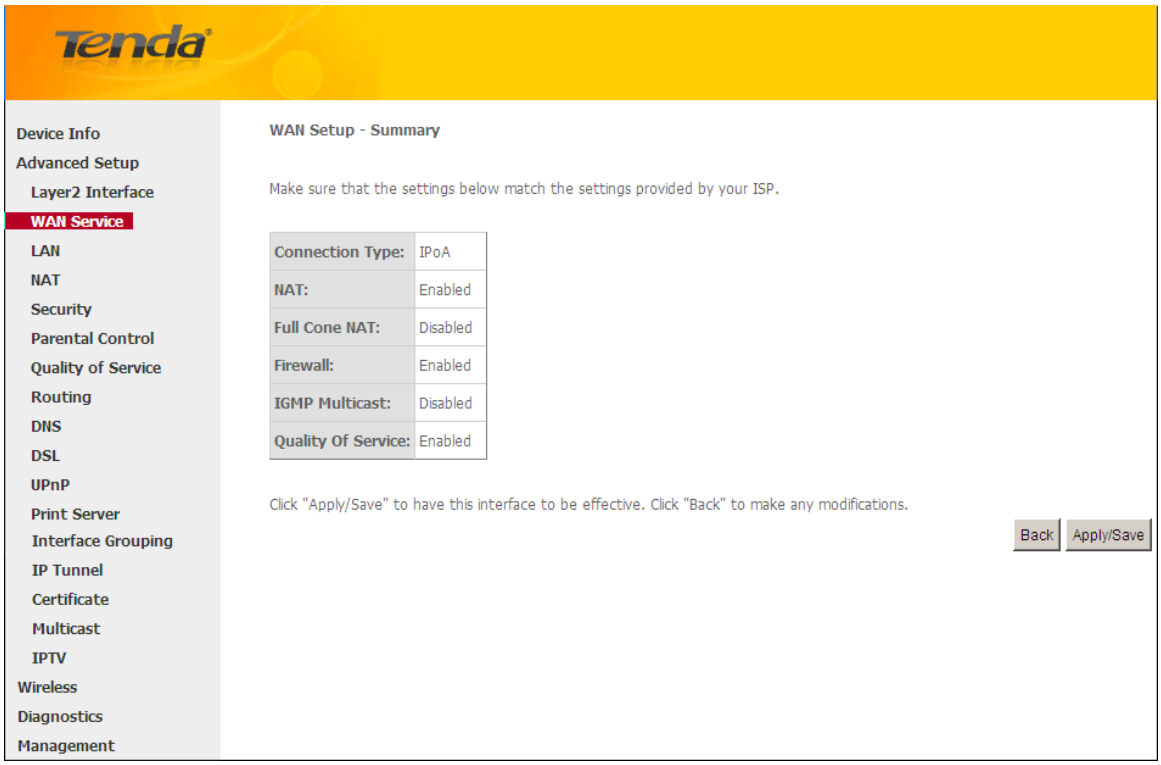


Here you can configure the WAN DNS address:

-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

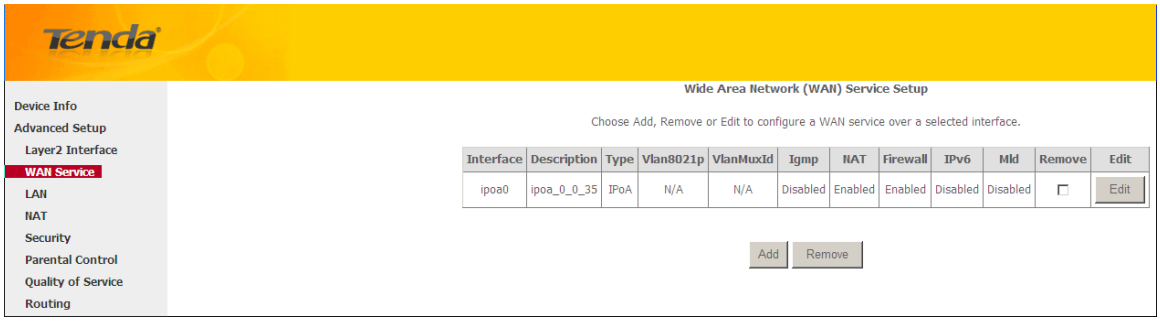
And then click **Next** to enter the following screen.



Note:

1. *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.*
2. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
3. 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

If you select and configured the **ETH Interface** (Ethernet uplink), 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

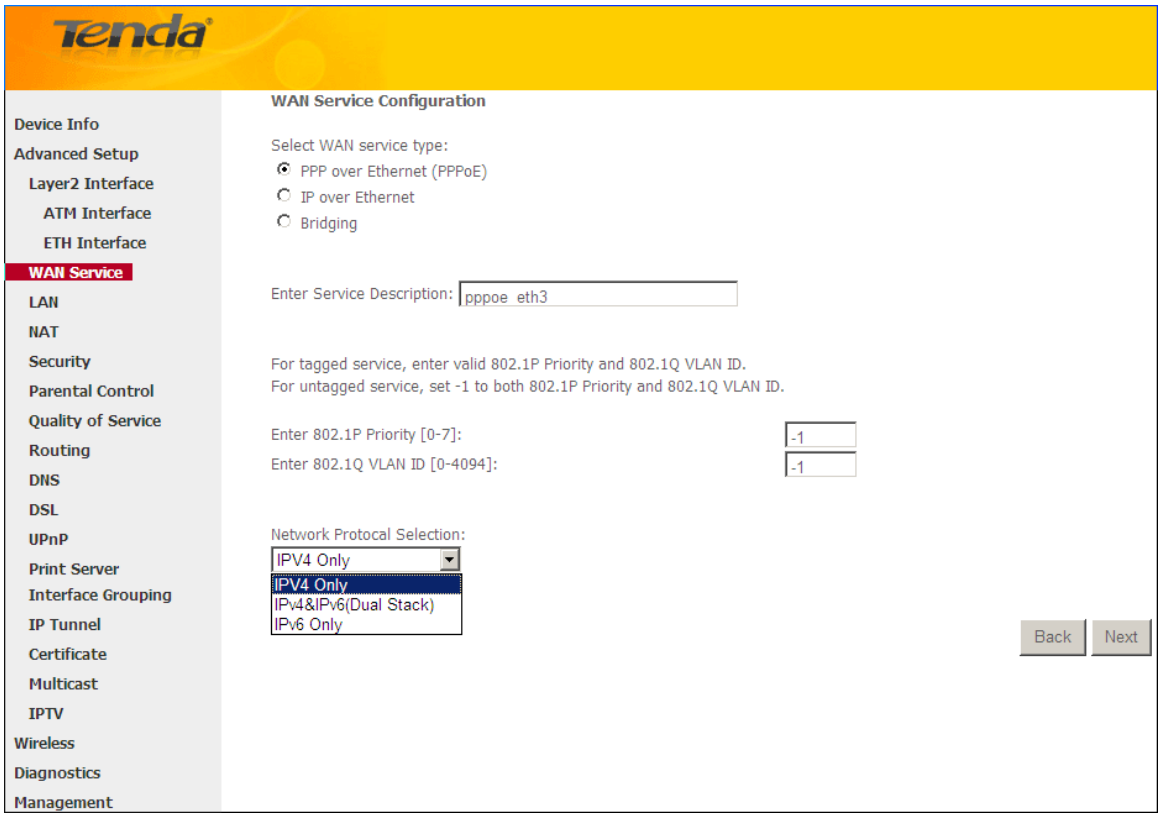
mode.

Tip:

eth0, eth1, eth3 and eth3 respectively represent the LAN port1, LAN port2, LAN port3 and LAN port4 of the device.

PPP over Ethernet (PPPoE)

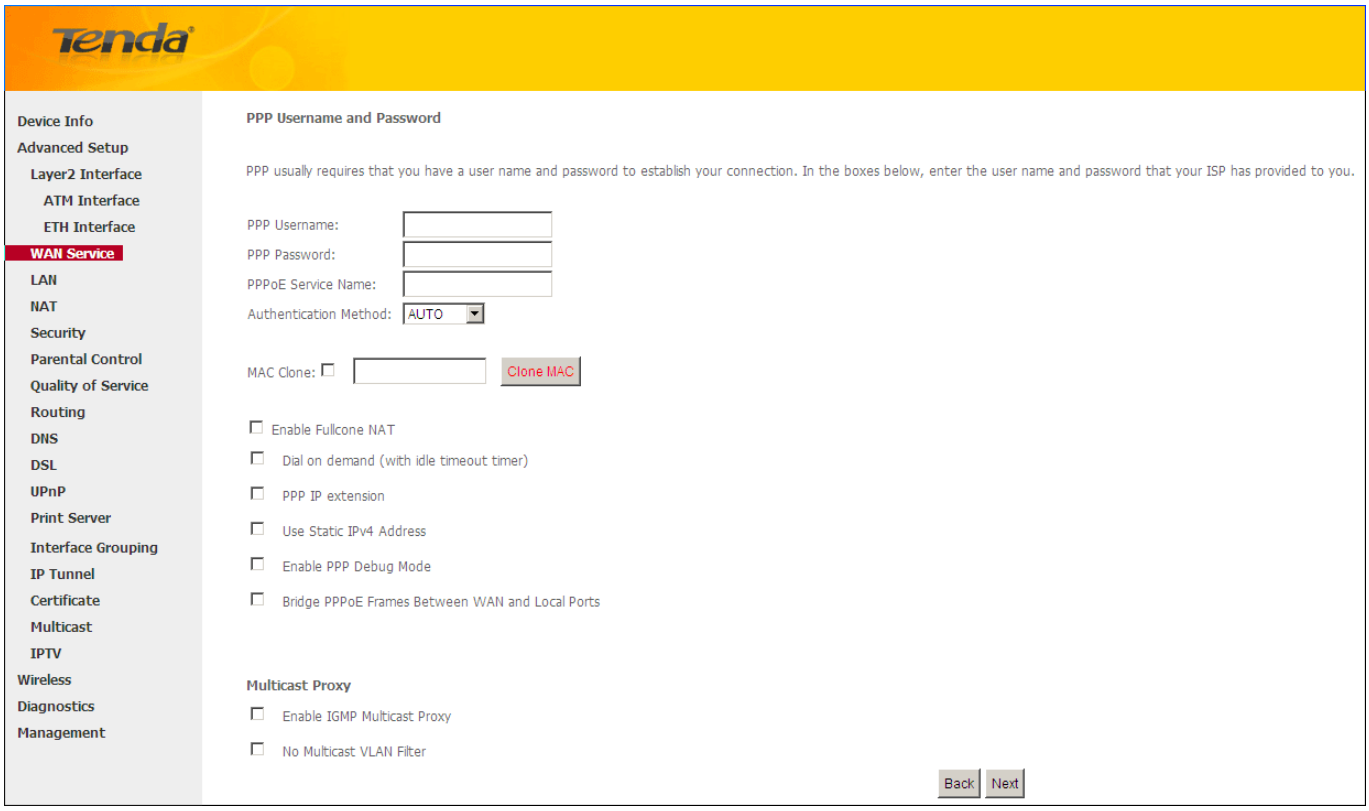
Click **Advanced Setup -> WAN Service -> Add,** select the configured interface and then click **Next** to enter the following screen.



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.

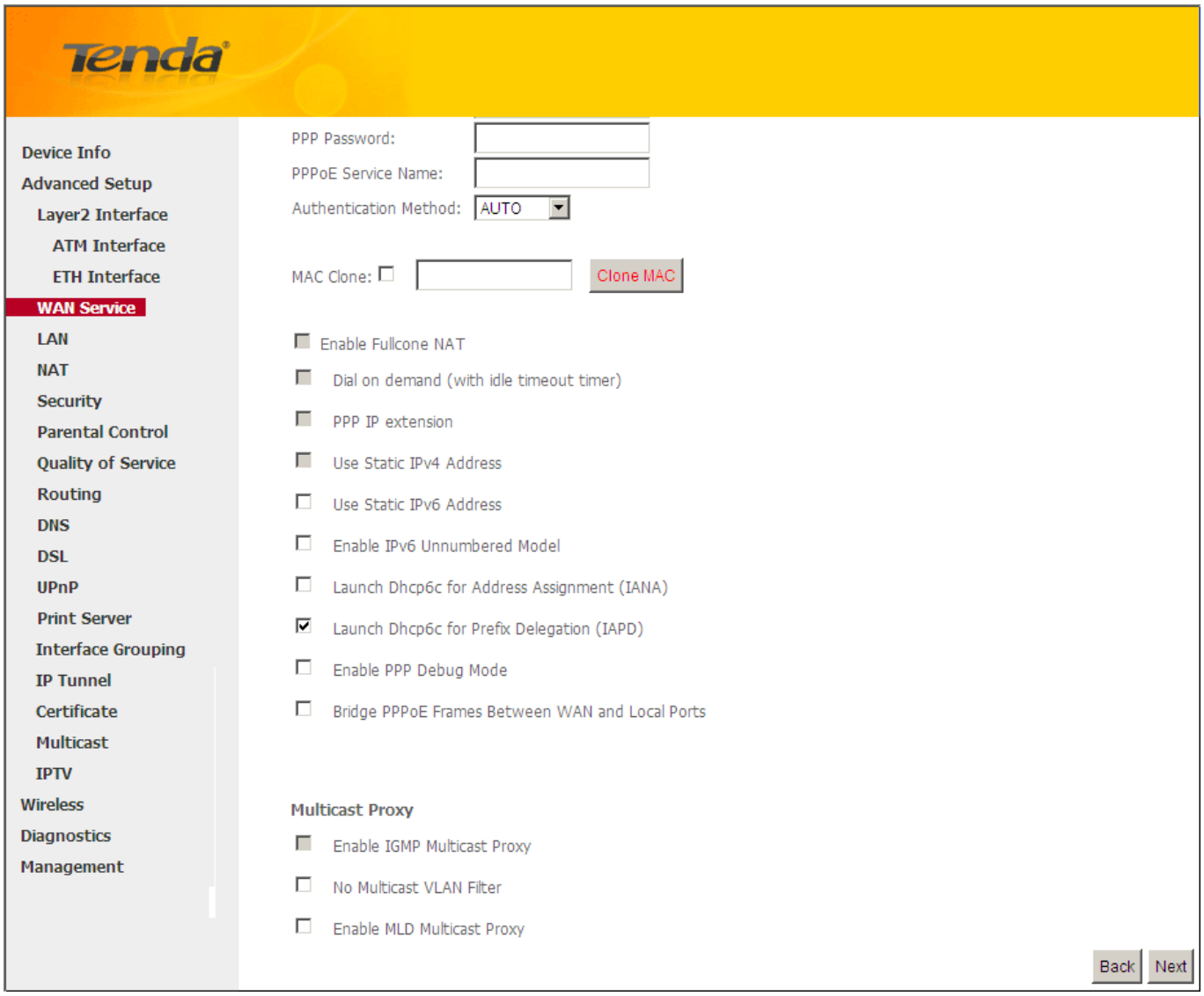


- **PPP User Name:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.
- **PPP Password:** This is for logging in to your ISP. If you cannot locate this information, ask your ISP to provide it.
- **PPPoE Service Name:** This information is provided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

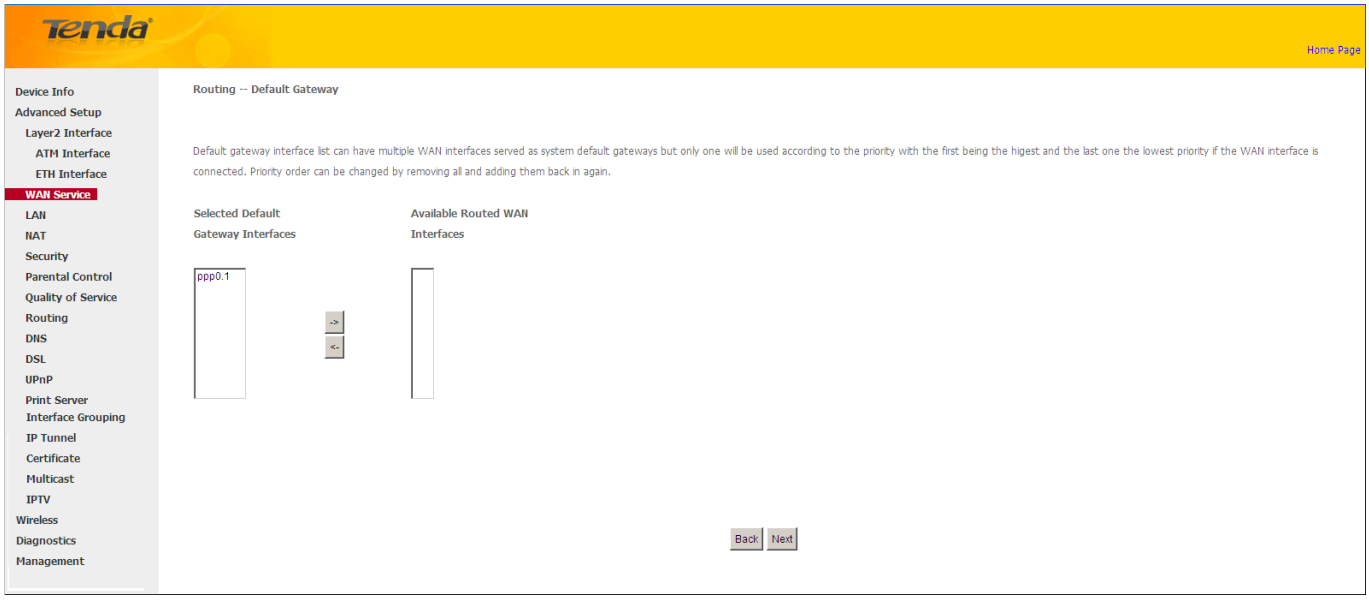
IPv6

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.**

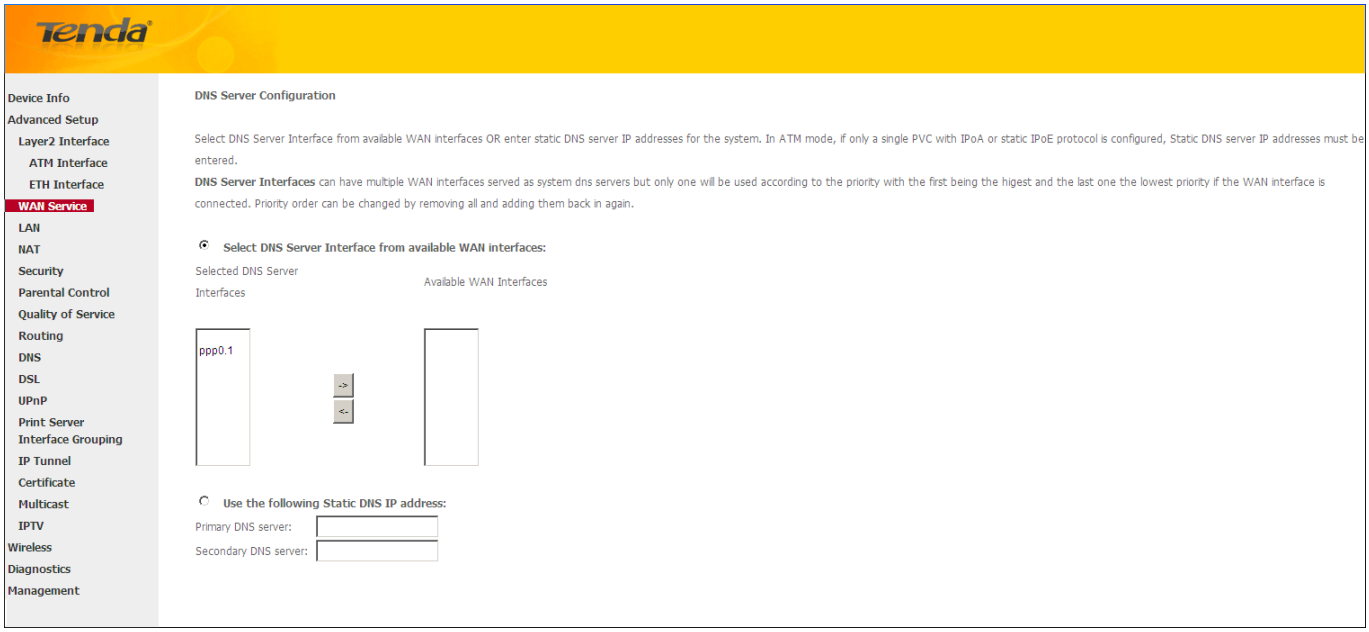
WAN Gateway



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.

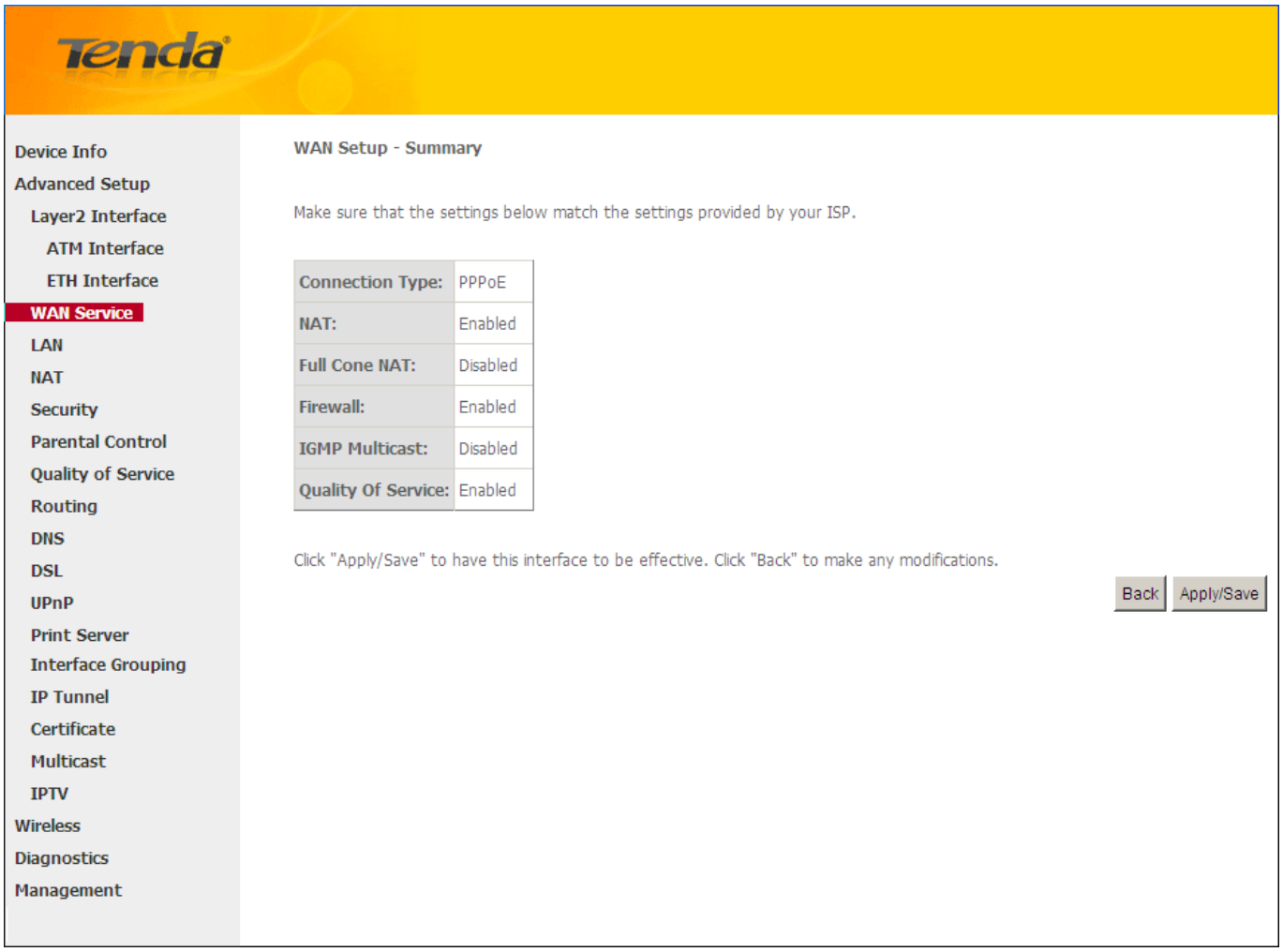


Here you can configure the WAN DNS address:

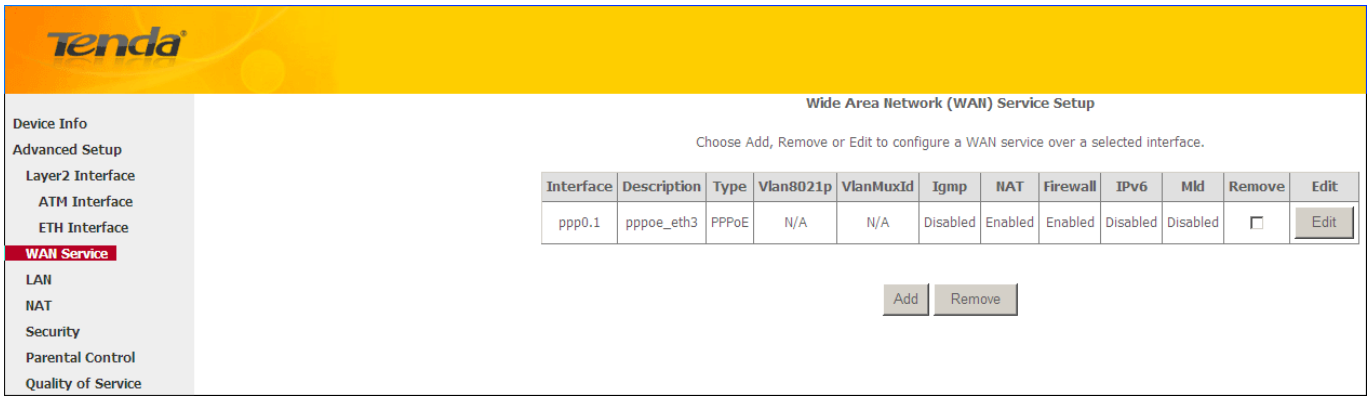
-Click the **Select DNS Server Interface from available WAN interfaces** option

-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 your configurations. Click **Apply/Save** to save your settings if everything is correctly set.

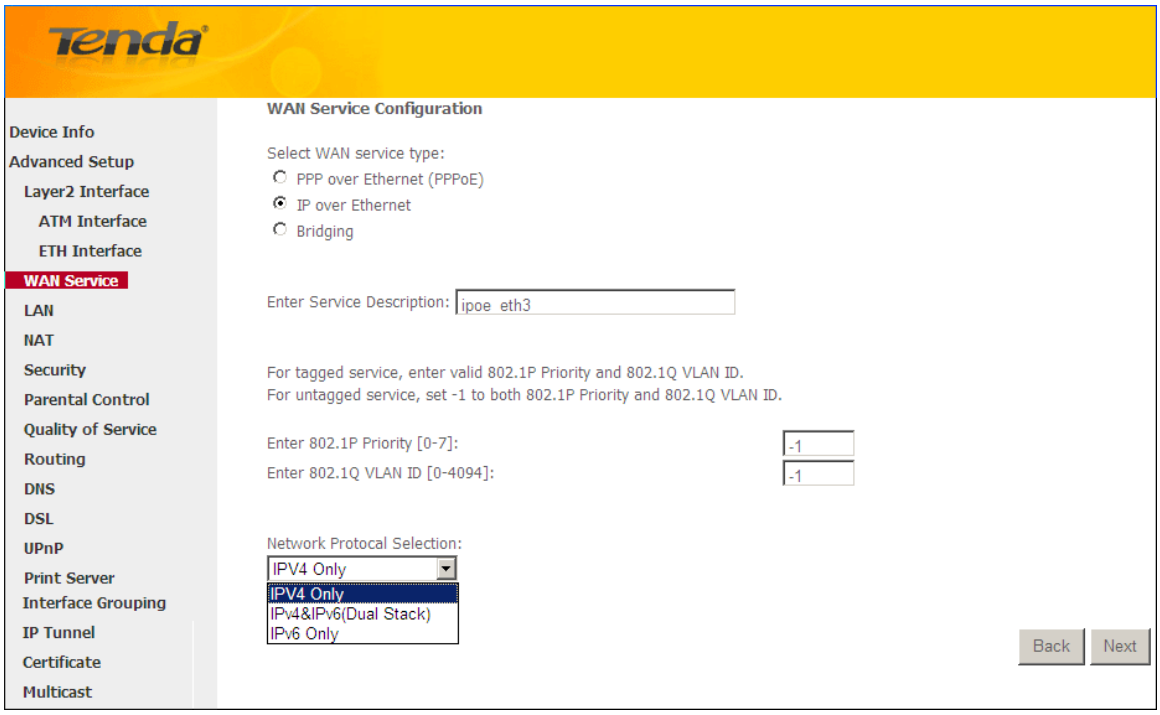


When the PPPoE connection is successful, you can access Internet.

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).

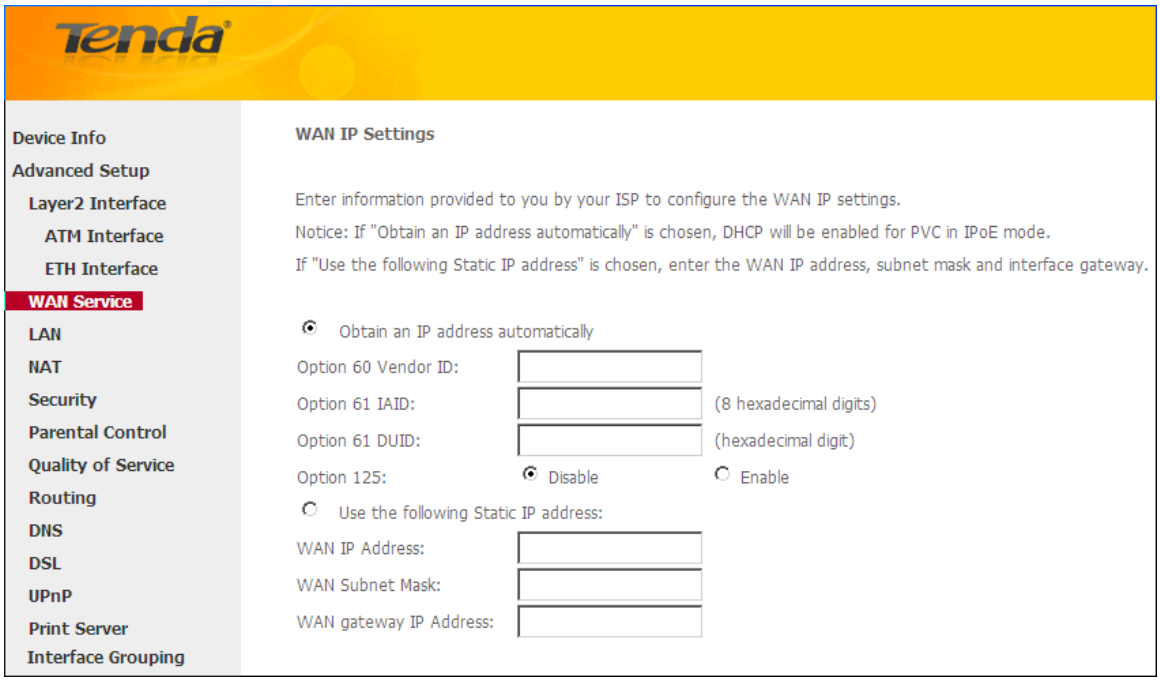
Click **Advanced Setup -> WAN Service -> Add,** select the configured interface and then click **Next** to enter the following screen.



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.



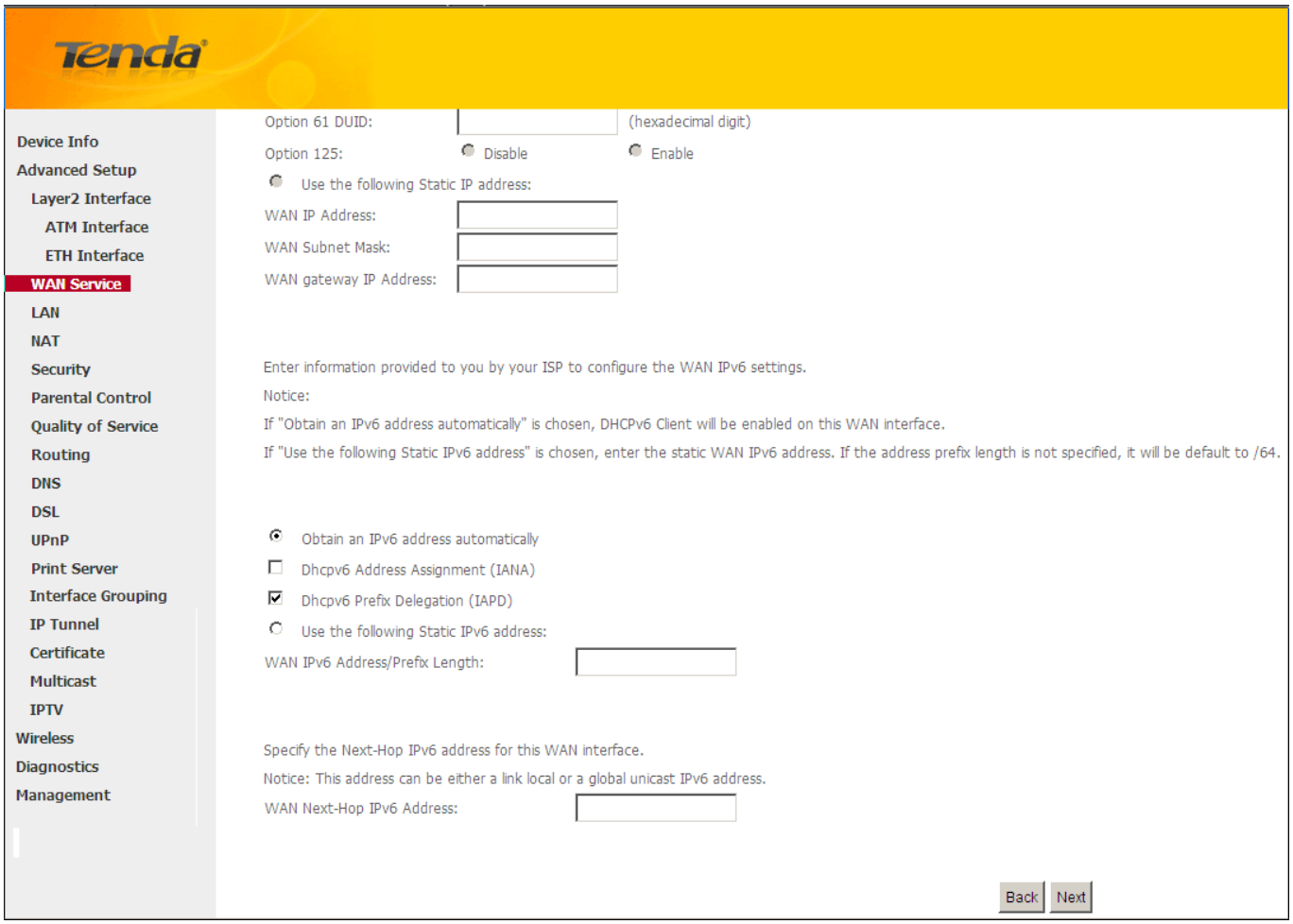
✧ **Obtain an IP address automatically:** This allows the router to automatically acquire IP information from your ISP or your existing networking equipment.

- ✧ **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 Internet.
- ✧ **WAN Subnet Mask:** The subnet mask address provided by your ISP for accessing Internet.
- ✧ **WAN gateway IP Address:** The gateway IP address provided by your ISP for accessing 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.

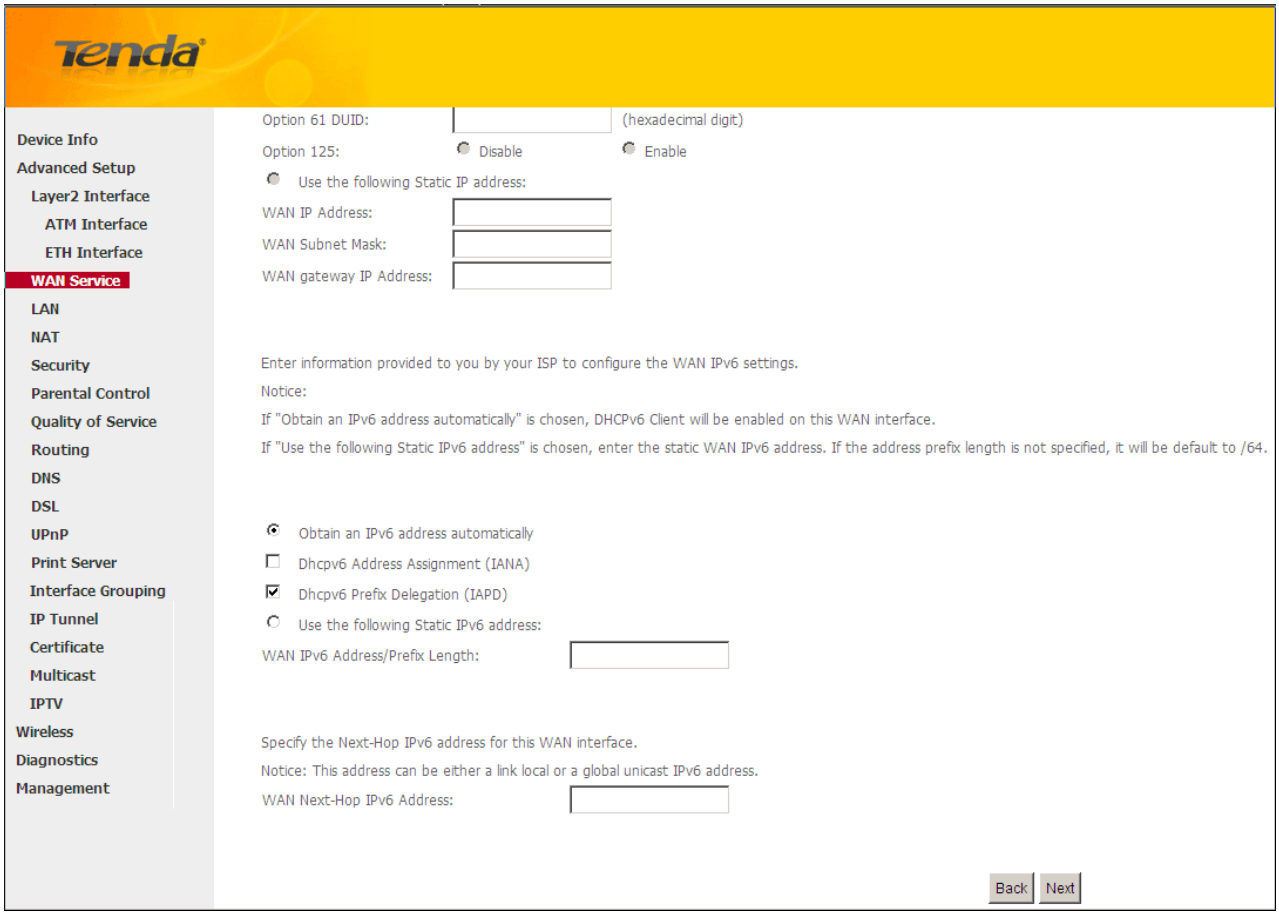
IPv6

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



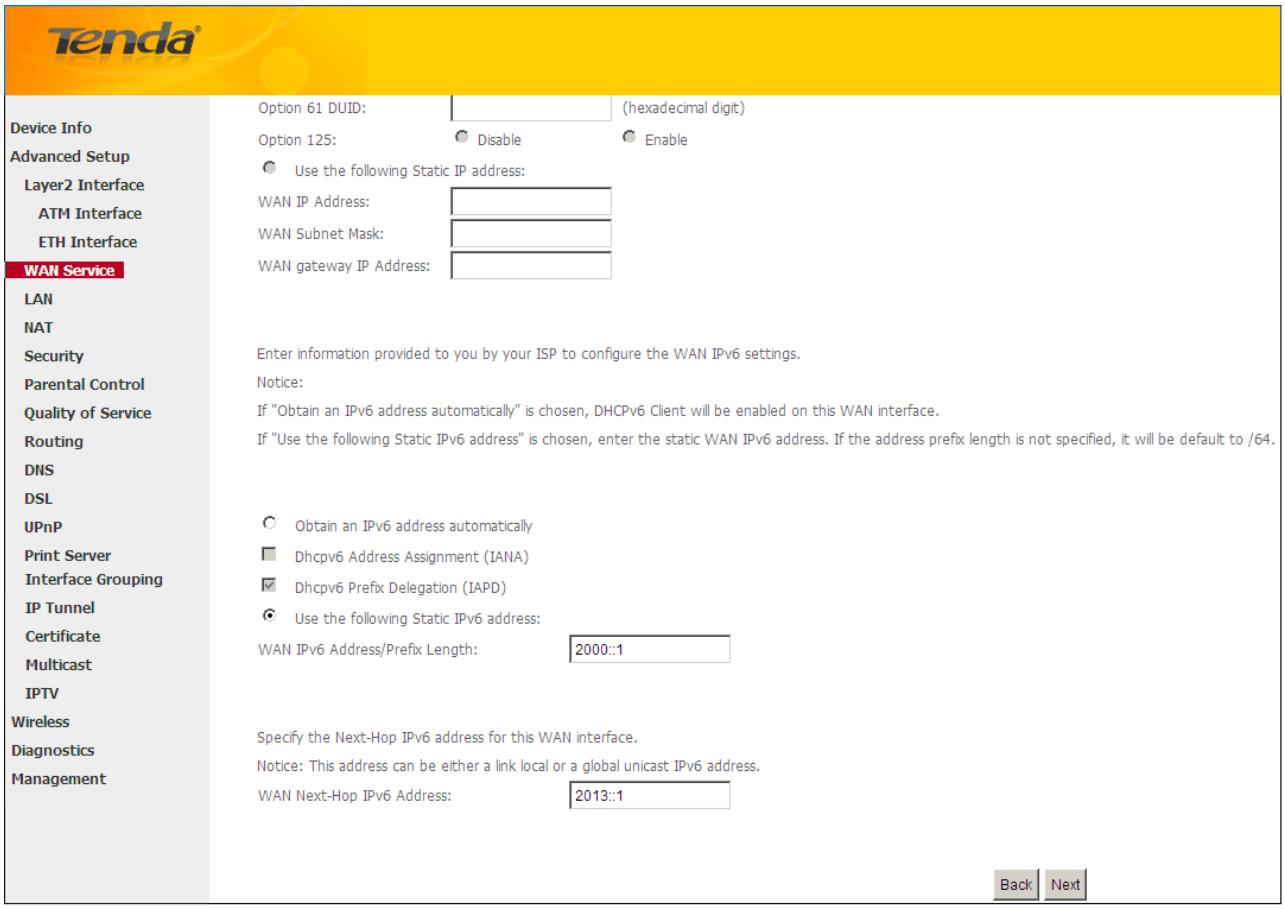
To obtain an IP address automatically:

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

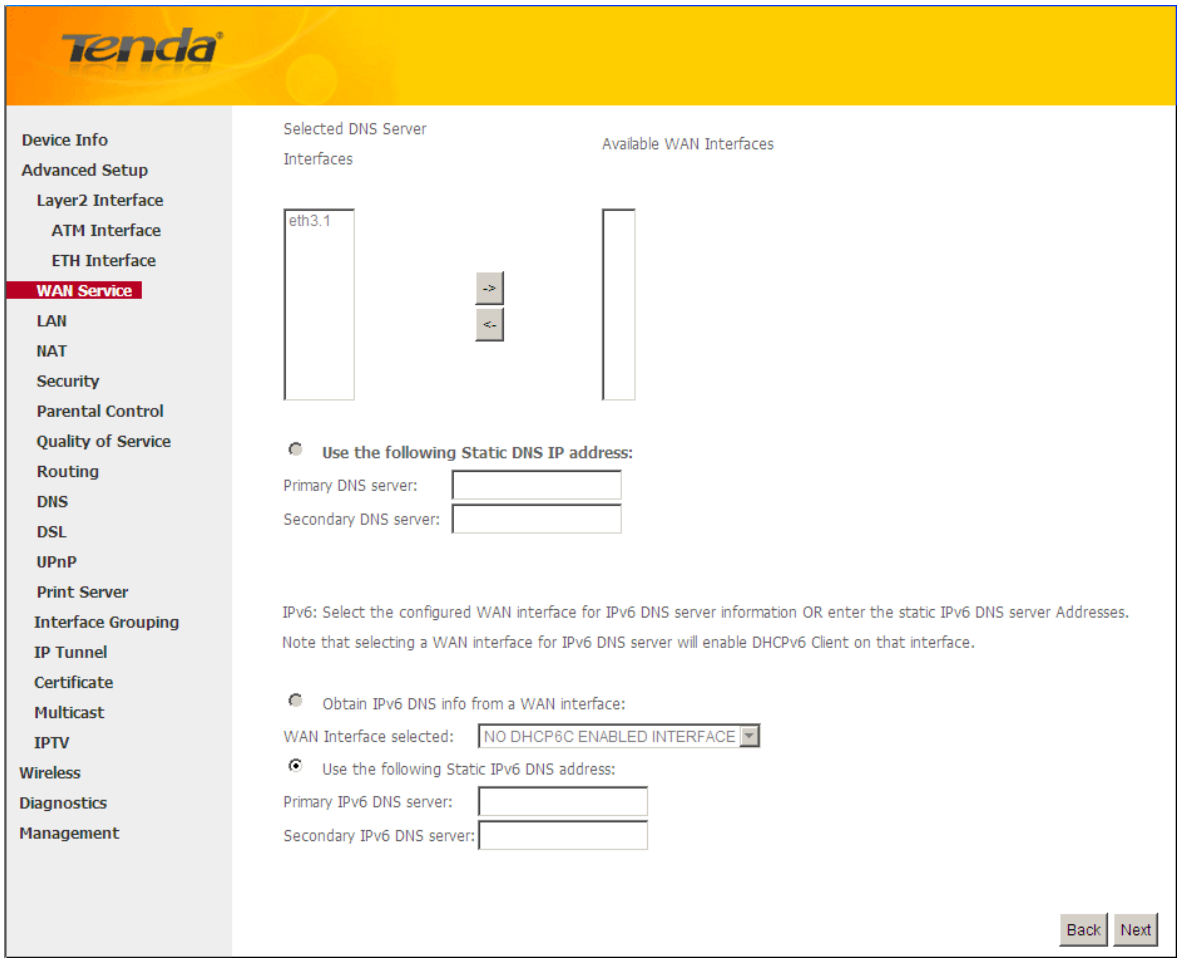


To configure a static IPv6 address

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



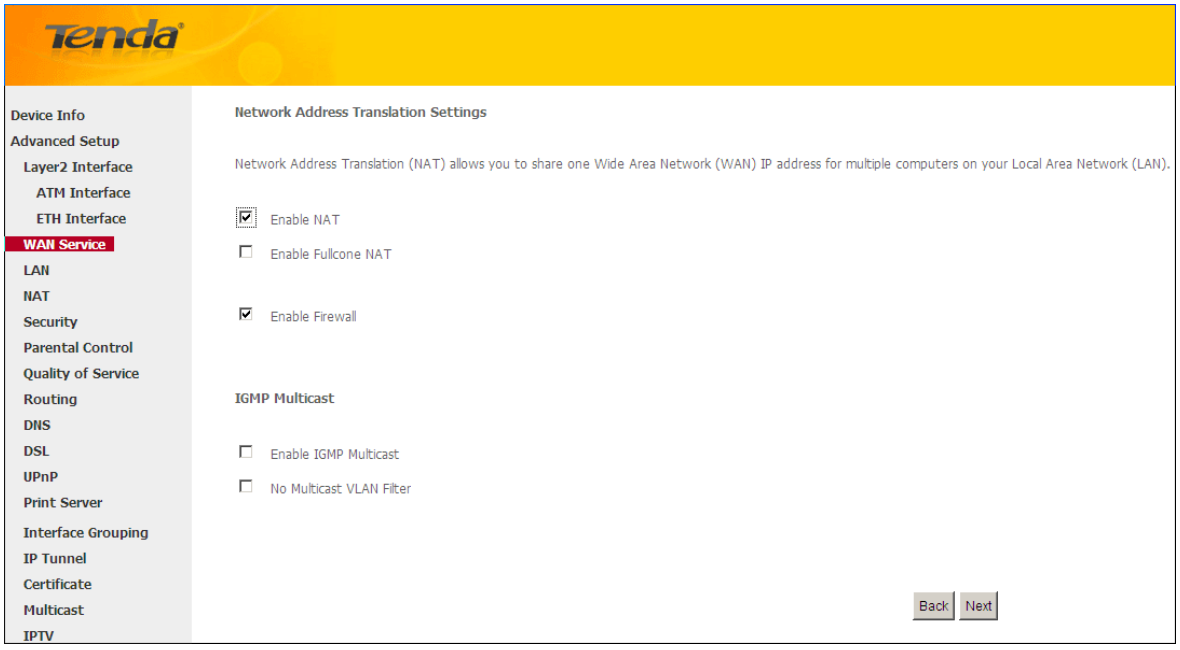
3. Click **Next -> Next** to enter the screen below.



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.

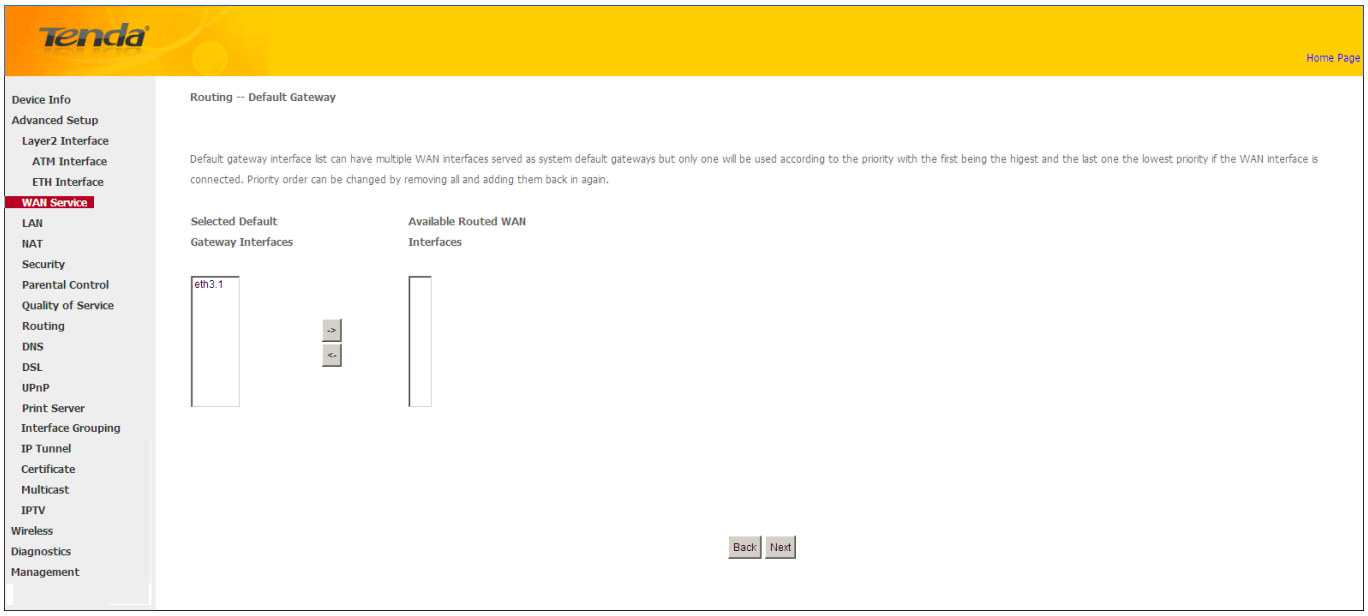
5. Click **Next -> Apply/Save**.

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**.

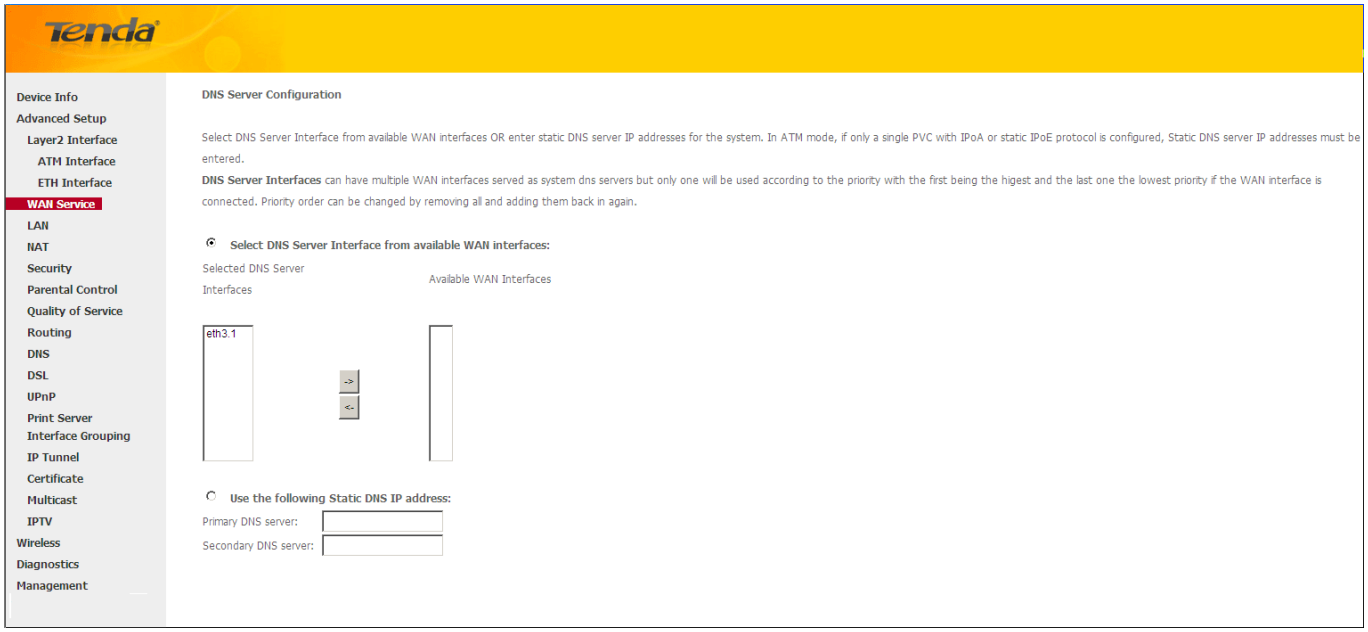
WAN Gateway



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.

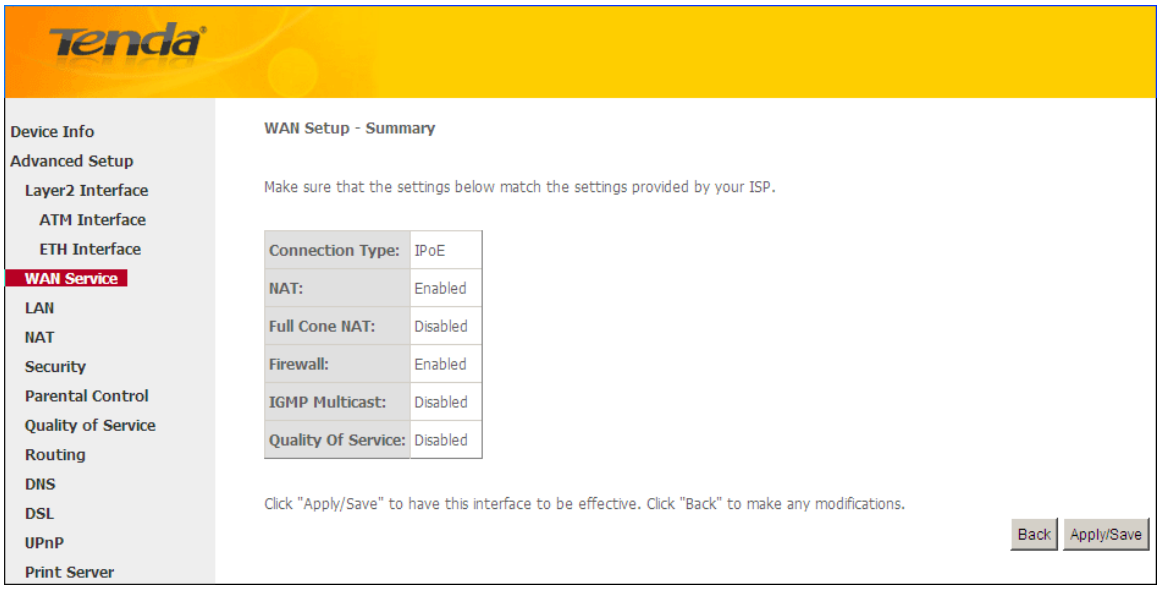


Here you can configure the WAN DNS address:

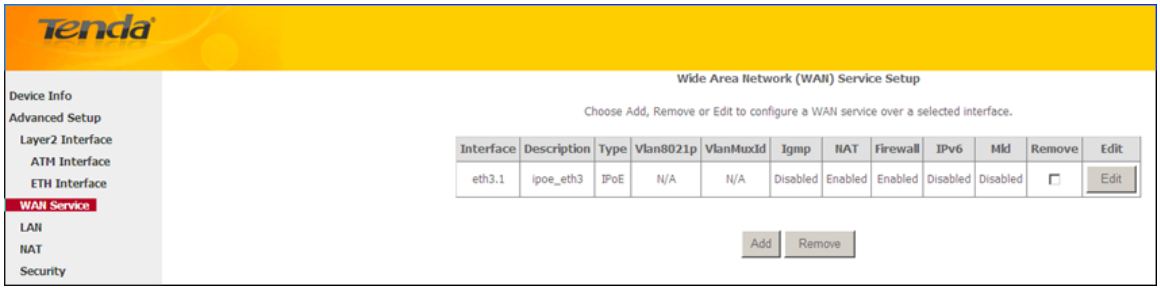
-Click the **Select DNS Server Interface from available WAN interfaces** option

-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.

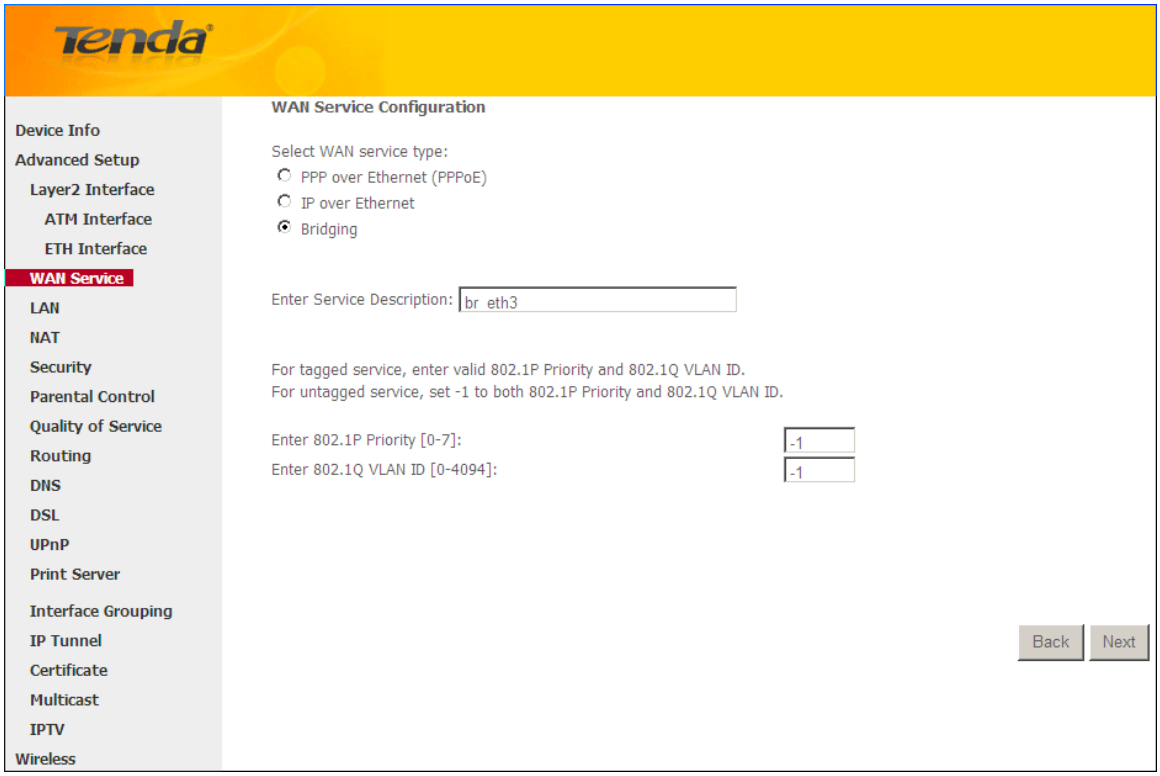


When the IPoE connection is successful, you can access Internet.

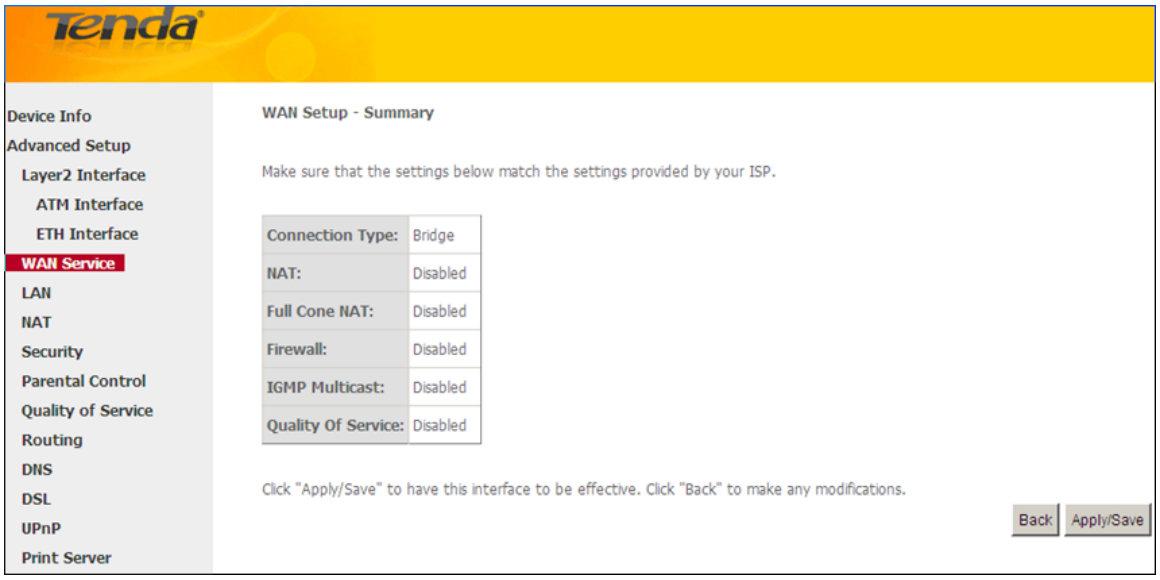
Bridging

If you wish to iniate 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.

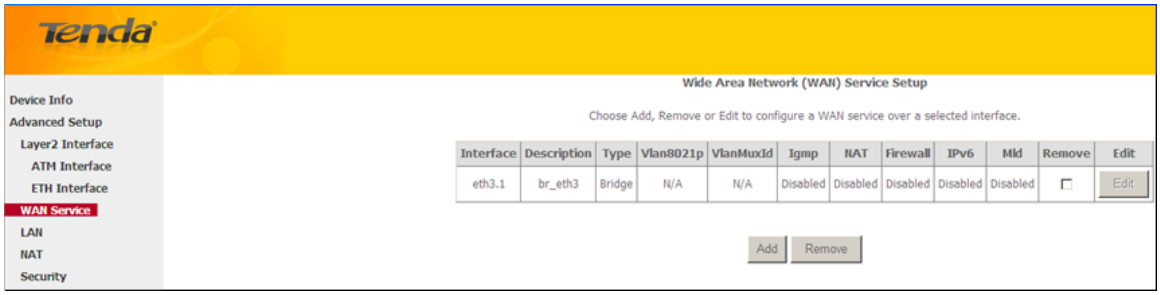
Click **Advanced Setup -> WAN Service -> Add,** select the configured interface and then click **Next** to enter the following screen.



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.

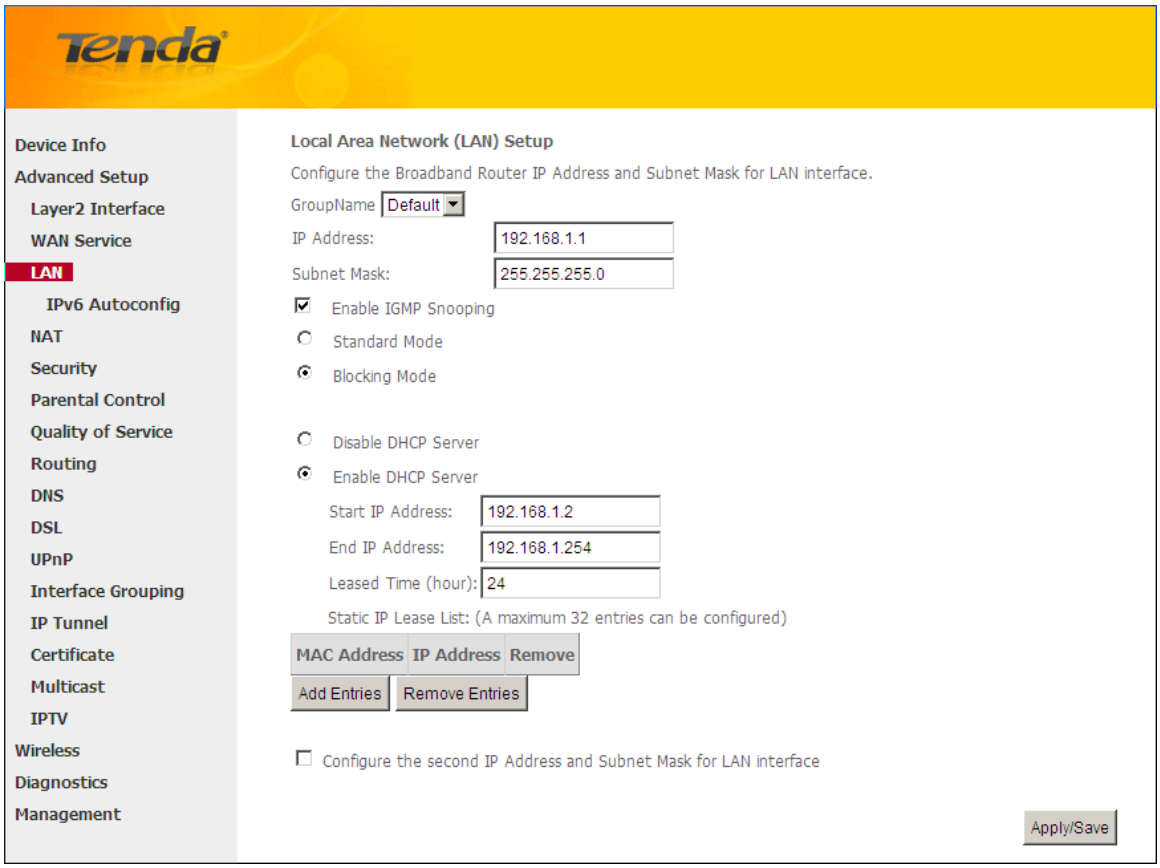


When the connection is successful, you can access Internet.

4.2.3 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



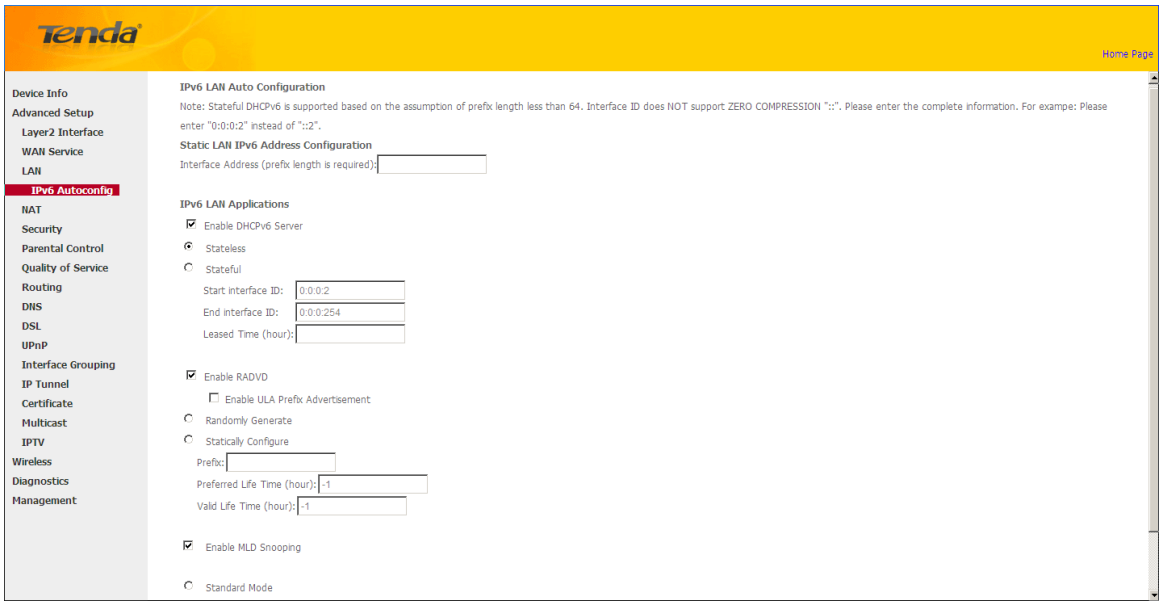
- **IP Address:** The device's LAN IP address. The default setting is 192.168.1.1.
- **Subnet Mask:** The LAN subnet mask of the device. Combined with the IP address, the IP Subnet Mask allows a device to know which other addresses are local to it, and which must be reached through a gateway or modem 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 odes:
- **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:

1. IPv6 address can only be Aggregatable Global Unicast Addresses and Unique Local Address. Link-Local Unicast Addresses and Multicast Addresses are not permitted.

2. 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 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.

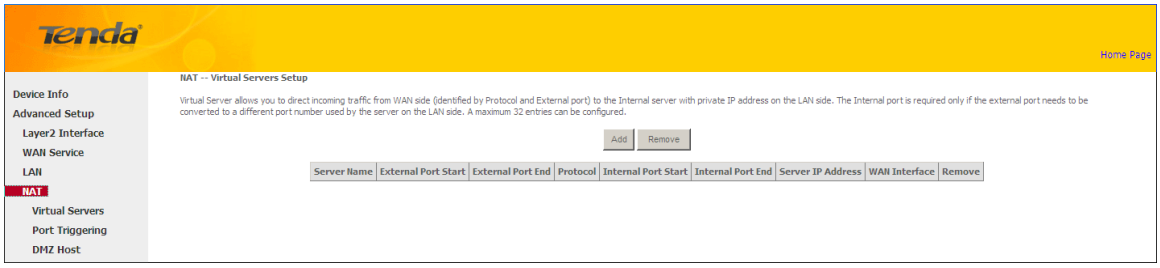
4.2.4 NAT

This section explais the following:

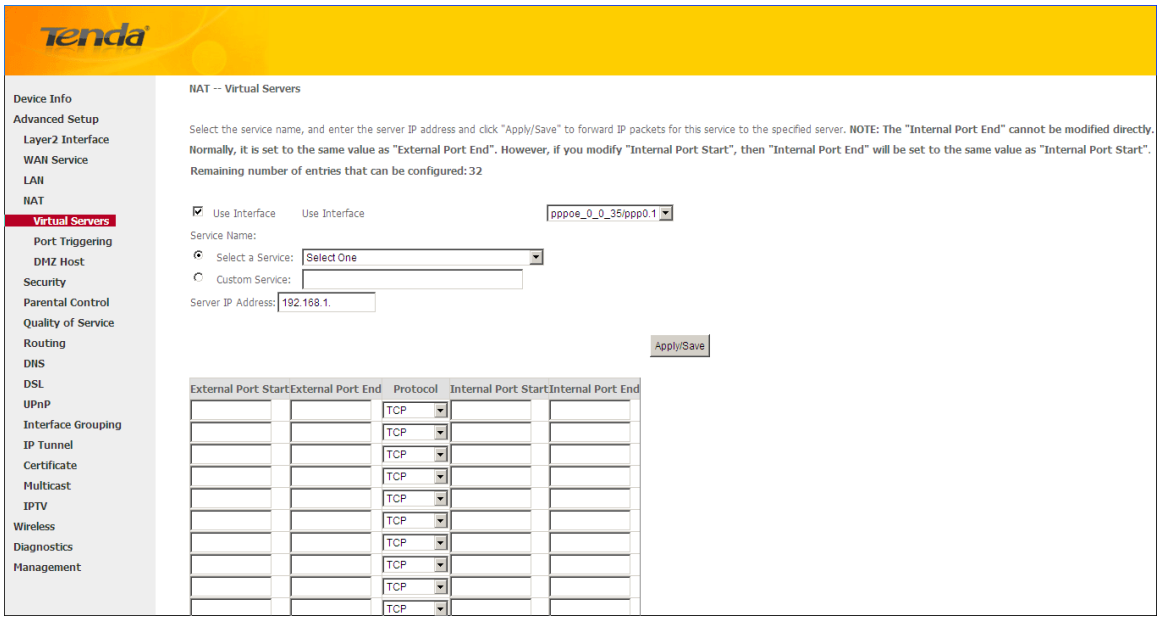
• Virtual Server
• Port Triggering
• DMZ Host

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:

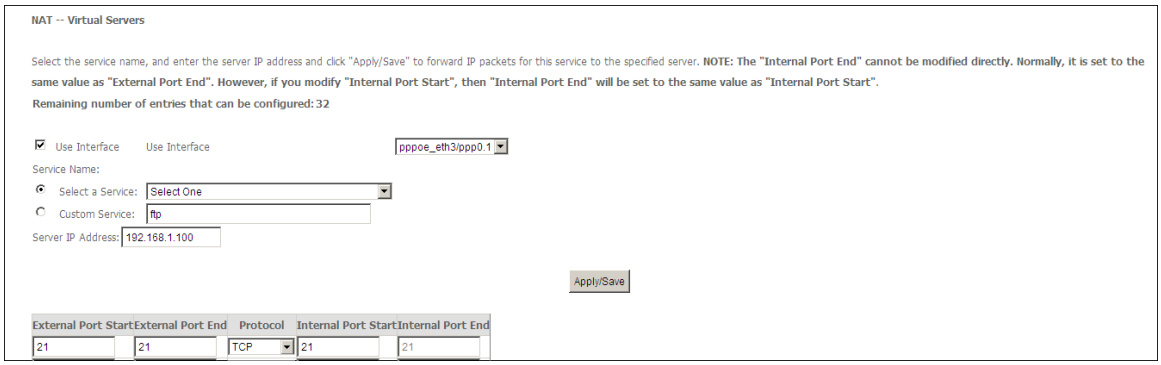
- An FTP server (using the default port number of 21) at the IP address of 192.168.1.100
- A web server (using the default port number of 80) at the IP address of 192.168.1.110

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.

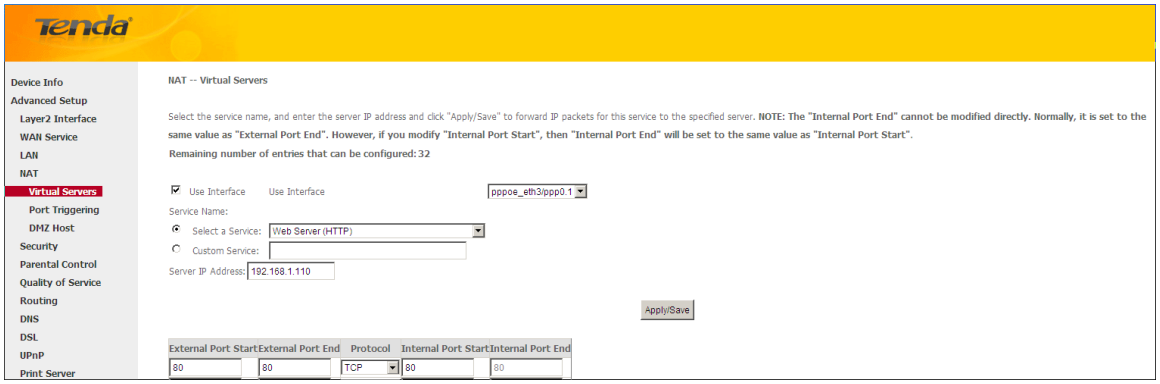
   - Or if you wish to define the service yourself, enter a descriptive name in the **Custom Service,** say My FTP, and then manully enter the port number (21) used by this service in the **Internal Starting Port, Internal Ending Port, External Starting Port and External Ending Port fields**.
3. Select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



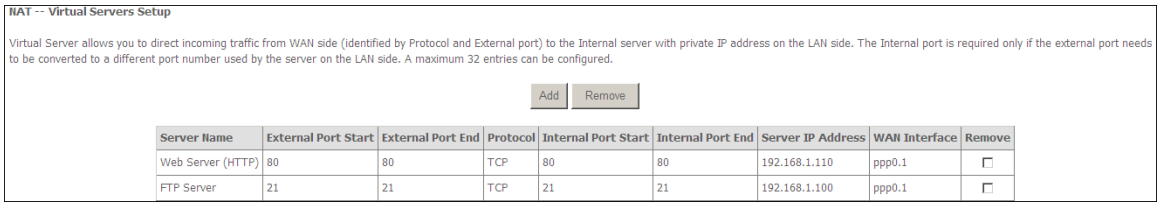
To configure your router to make your local web server public:

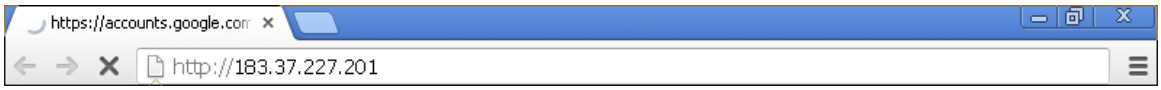
1. Click **NAT -> Virtual Server** to enter it and then click the **Add** button.
2. - Select **Web Server (HTTP)** that you wish to host on your network from the **Select a Service** drop-down list. The port number (80) used by this service will then be automatically populated.

   - 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:

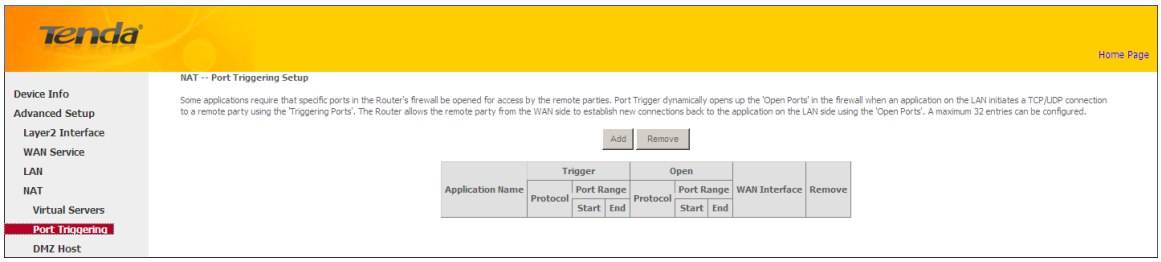
The "Internal Port End" cannot be modified directly. Normally, it is set to the same value as "External Port End". However, if you modify "Internal Port Start", then "Internal Port End" will be set to the same value as "Internal Port Start".

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**.

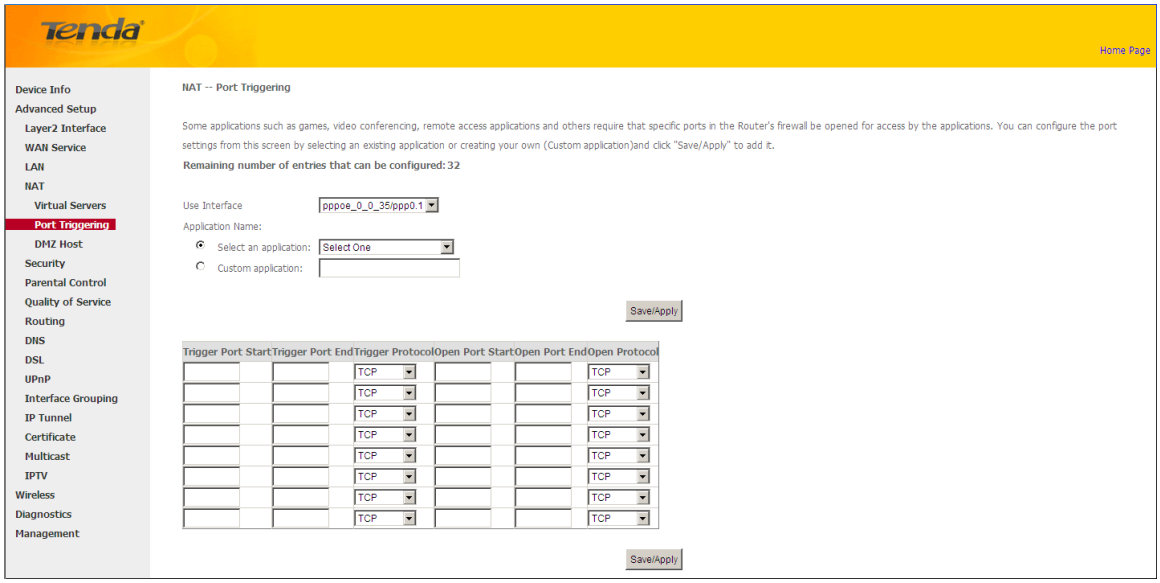
Port Triggering

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.

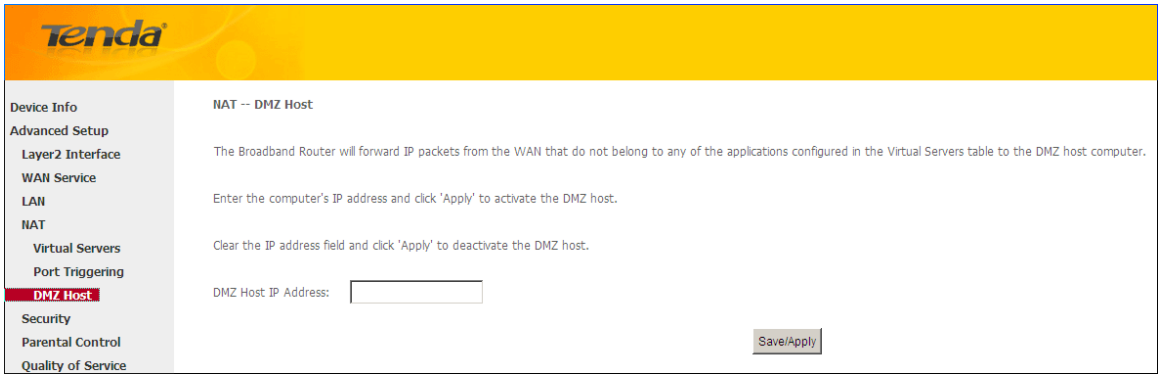
You can configure the port settings from this screen by selecting an existing application or creating your own (Custom application) and click "Save/Apply" to add it.



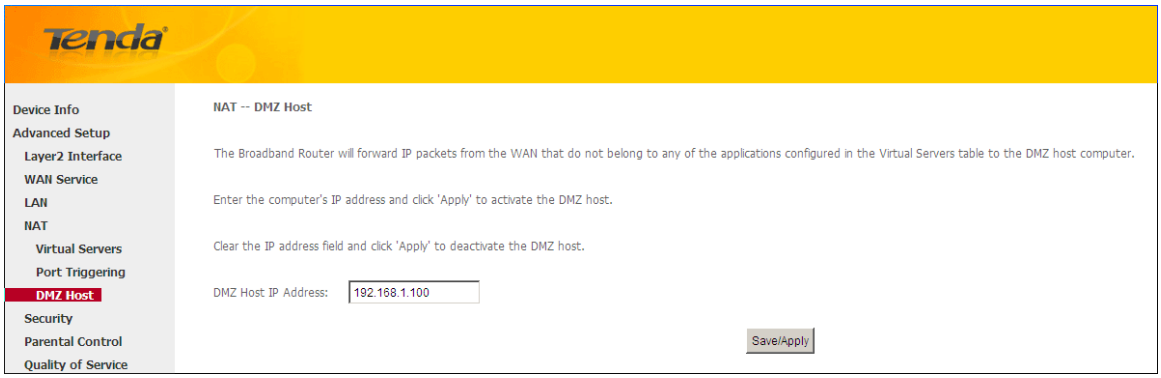
- ✧ **Use Interface:** Select a WAN connection to which you wish to apply the rules. When there is only one WAN connection available, the rules will be automatically applied to it.
- ✧ **Application Name:** Two options are available:
  - Select an application
  - Custom application
- ✧ **Trigger Port 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.

4.2.5 Security

This section explains the following information:

• IP Filtering

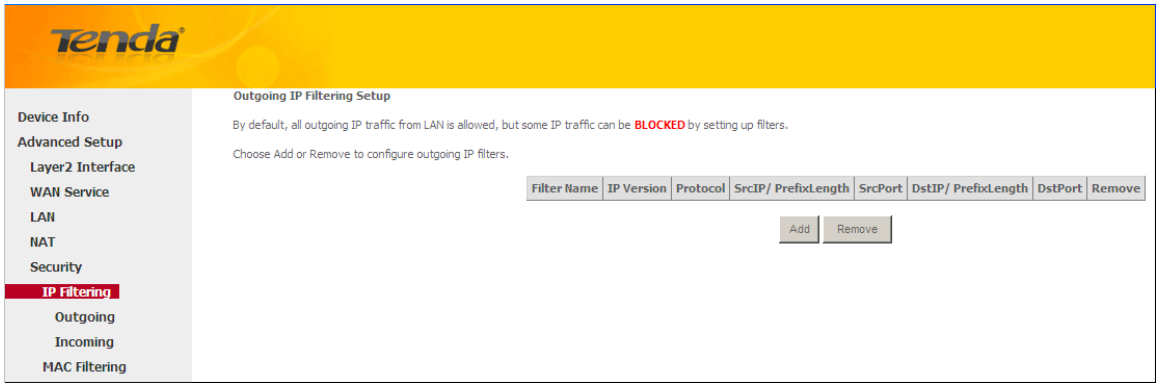
• MAC Filtering

IP Filtering

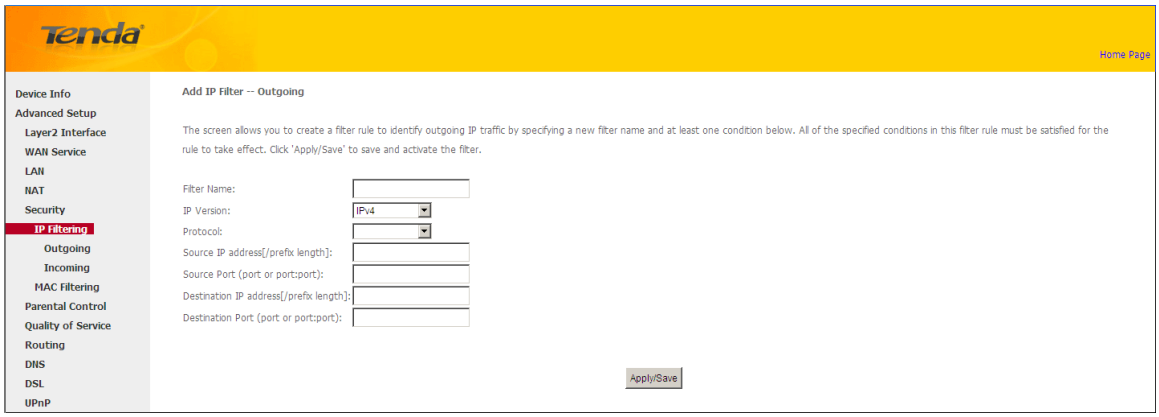
Outgoing IP Filtering Setup

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:



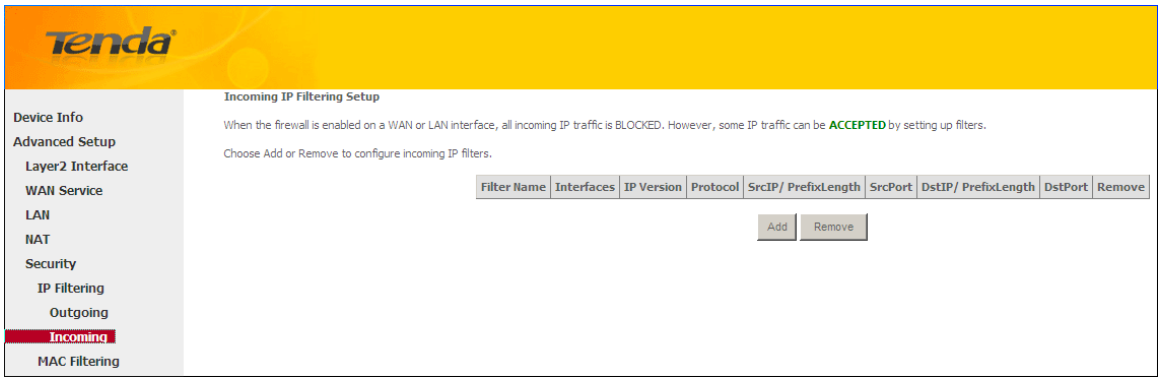
This screen allows you to create a filter rule to identify outgoing IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click 'Apply/Save' to save and activate the filter.

- **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 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.

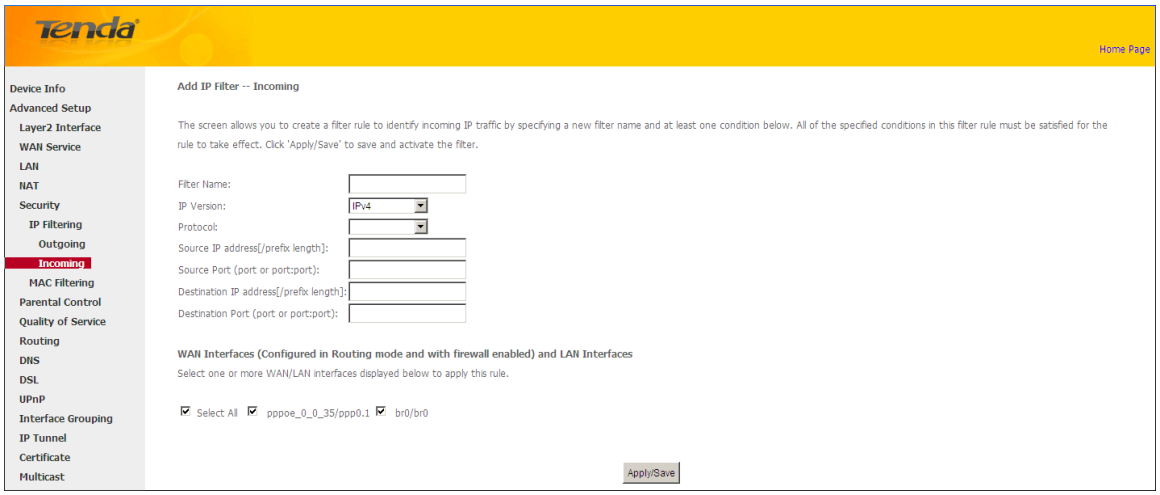
Incoming IP Filtering Setup

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.

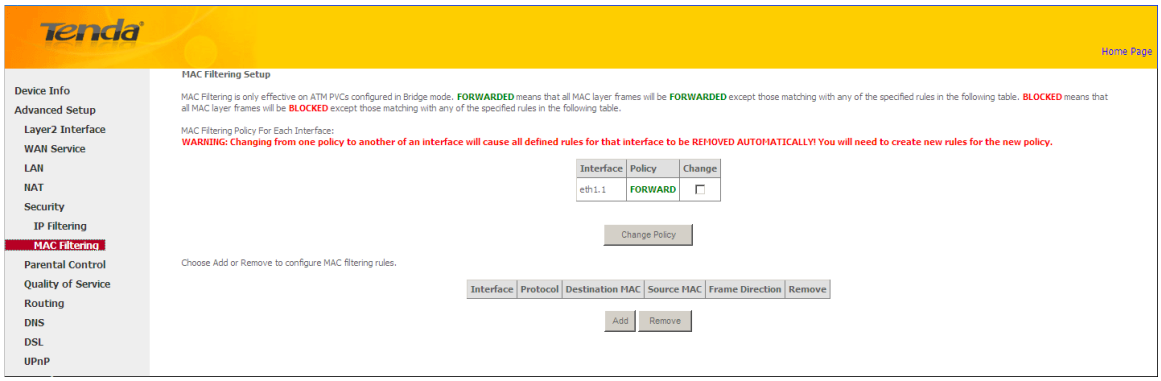
- **IP Version:** Select either IPv4 or IPv6.
- **Protocol:** TCP/UDP, TCP, UDP and ICMP are available for your option.
- **Source IP address [/prefix length]:** Enter the Internal IP address [/prefix length] to be filtered.
- **Source Port (port or port: port):** Specify a port number or a range of 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.

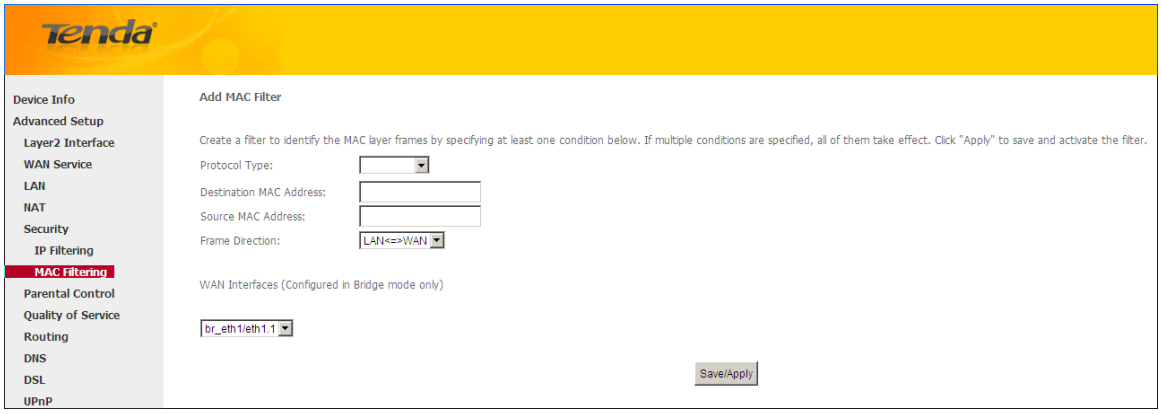
Choose Add or Remove to configure MAC filtering rules.



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.

4.2.6 Parental Control

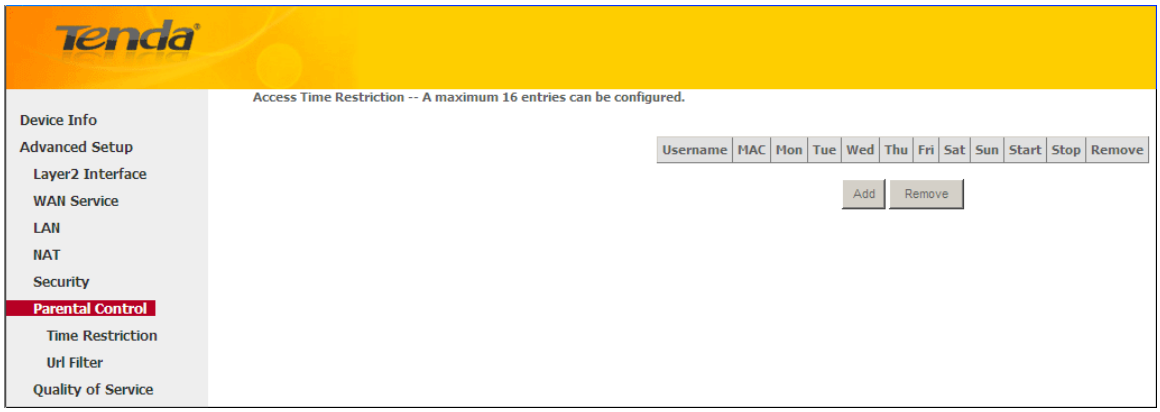
This section explains the following information:

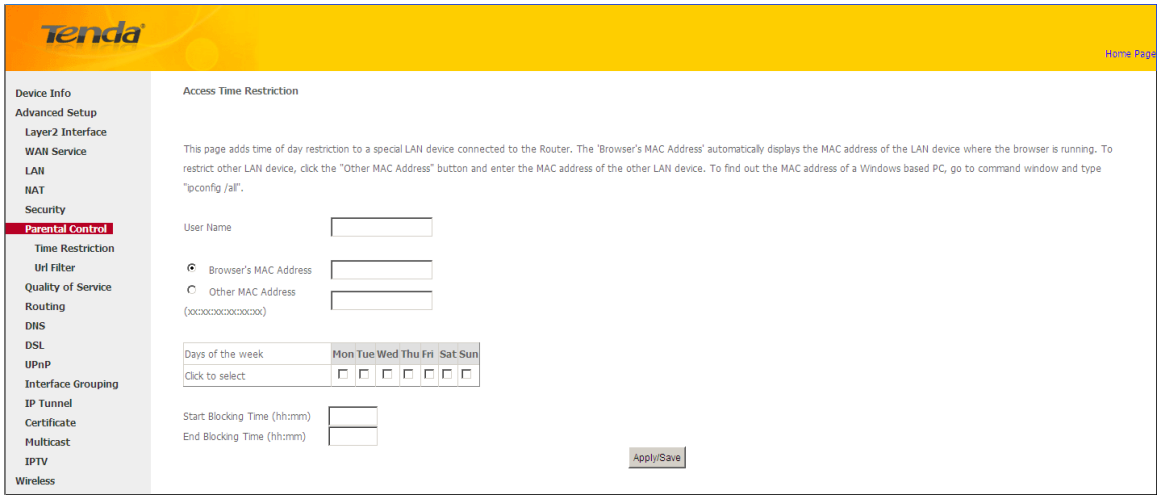
• Time Restriction

• URL Filter

Time Restriction

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





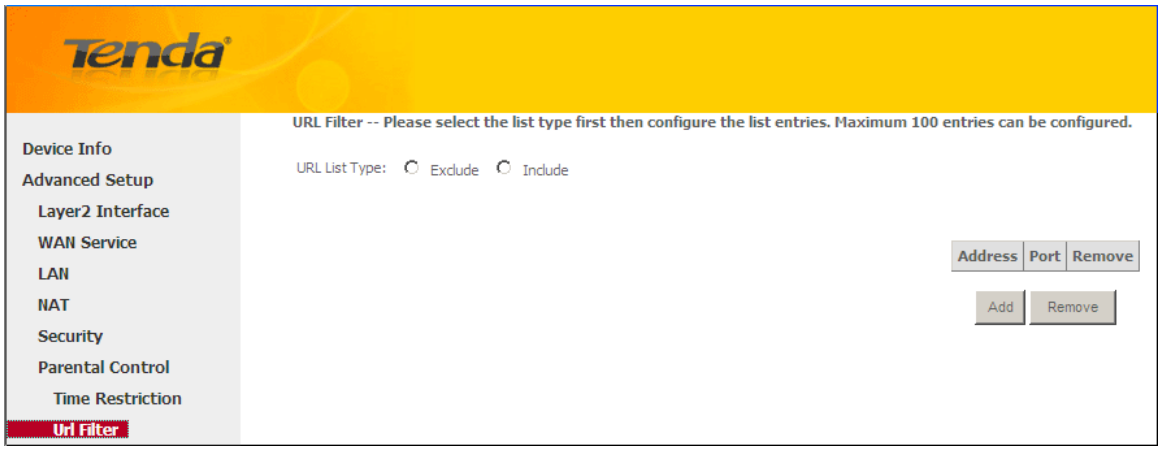
Here you can add time of day restriction that an attached LAN device can access Internet.

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.

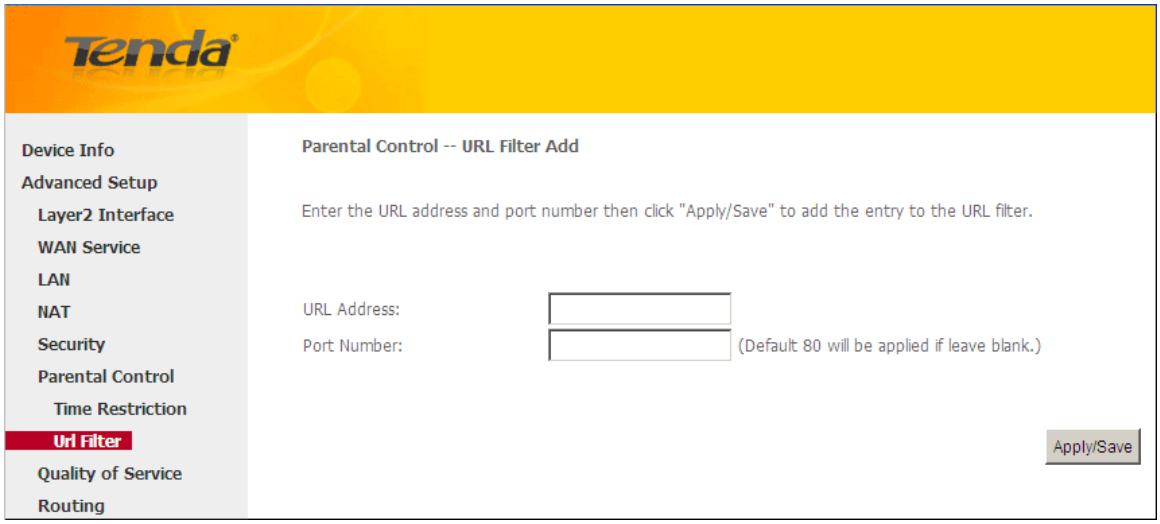
- **User Name:** Enter a user name.
- **Browser's MAC Address:** Automatically adds the MAC address of the attached LAN device where the browser is running.
- **Other MAC Address:** Specify the MAC address of the computer that you want to apply Internet access restriction.
- **Days of the week:** Click 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 Internet.
- **Apply/Save:** Click to Apply/Save your settings.

URL Filter

Here you can add URL access restriction to specific LAN PCs.



Select the **URL List Type** (Exclude or Include) first 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.

Port Number: Specify the port number used by the web server. The default is 80, which is the standard protocol for web servers.

Enter the URL address and port number 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**.*

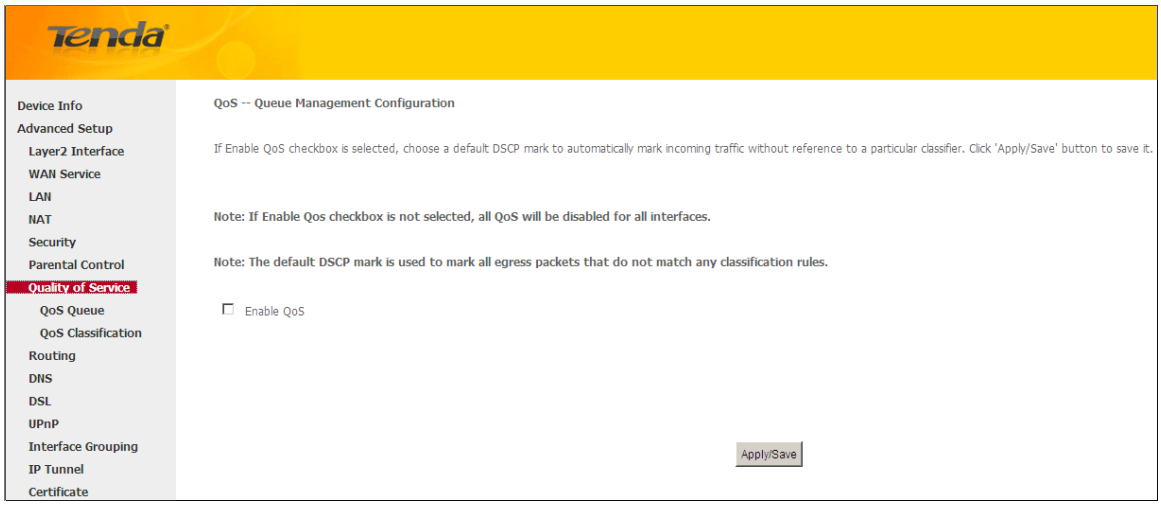
4.2.7 Quality of Service

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.

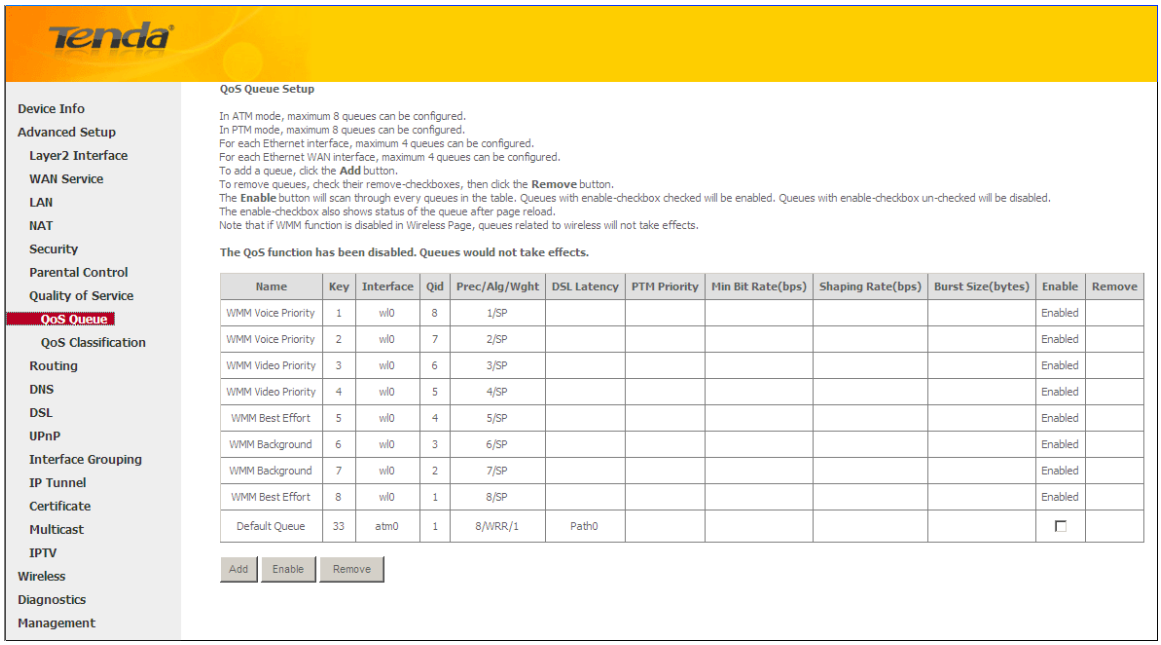
Note:

1. If Enable Qos checkbox is not selected, all QoS will be disabled for all interfaces.

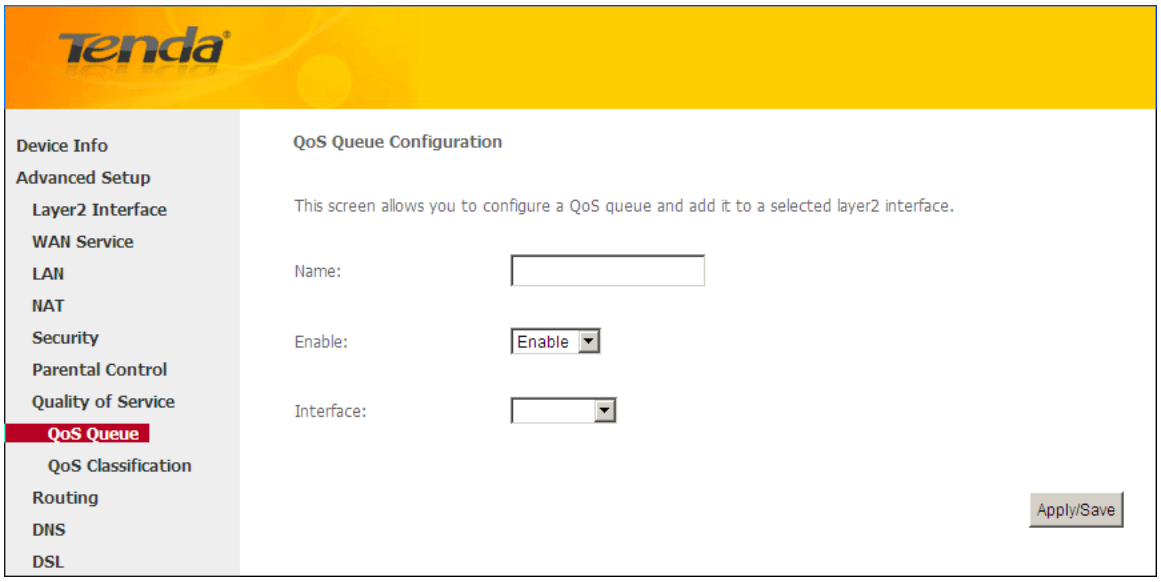
2. The default DSCP mark is used to mark all egress packets that do not match any classification rules.

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, then click the **Remove** button.
The **Enable** button will scan through every queues 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

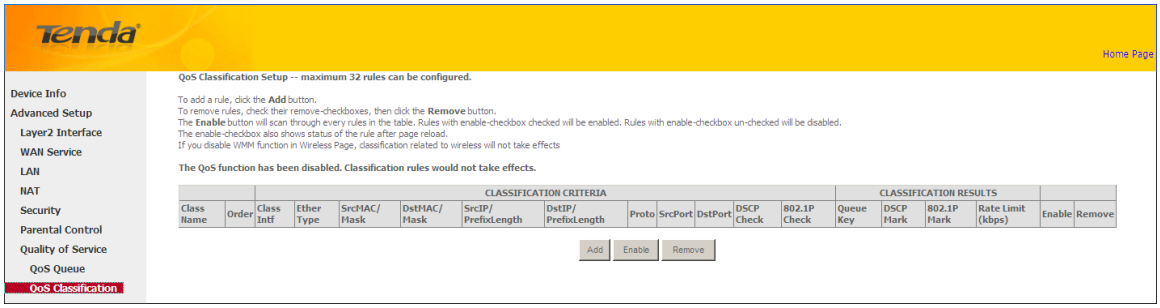
To add a rule, click the **Add** button.

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

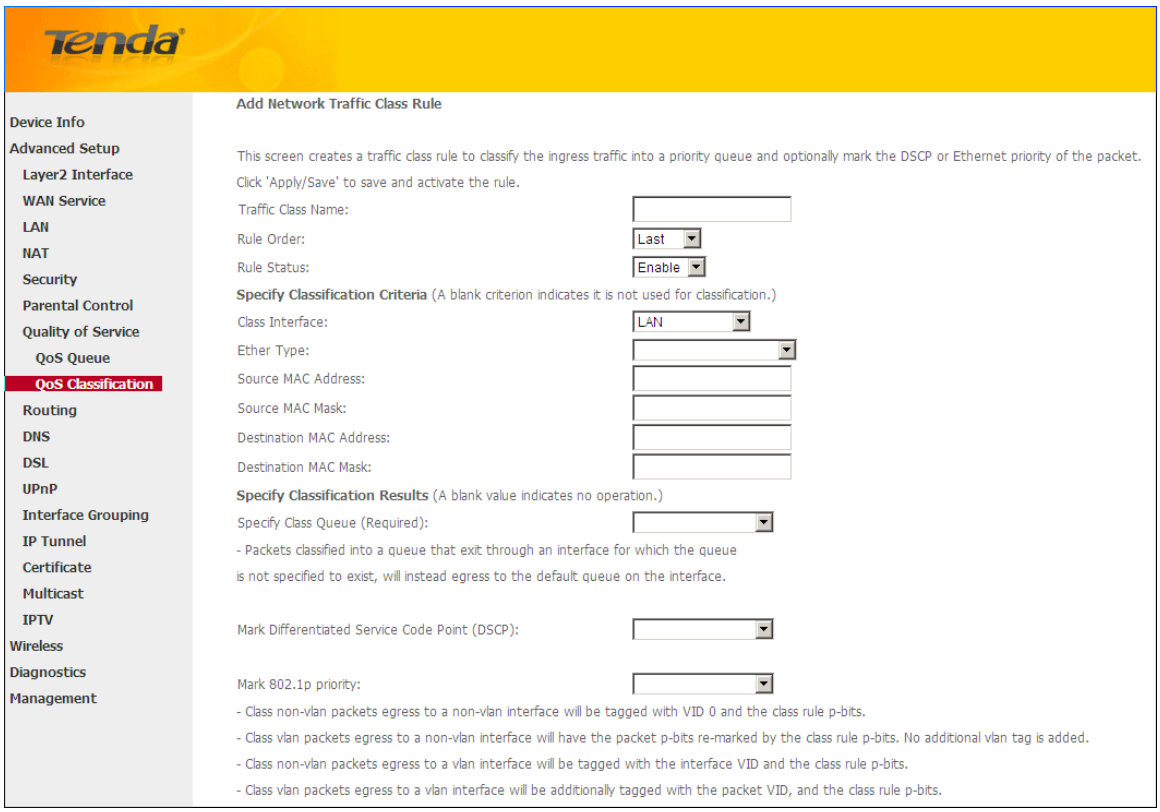
The **Enable** button will scan through every rules in the table. Rules with enable-checkbox checked will be enabled. Rules with enable-checkbox un-checked will be disabled.

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.

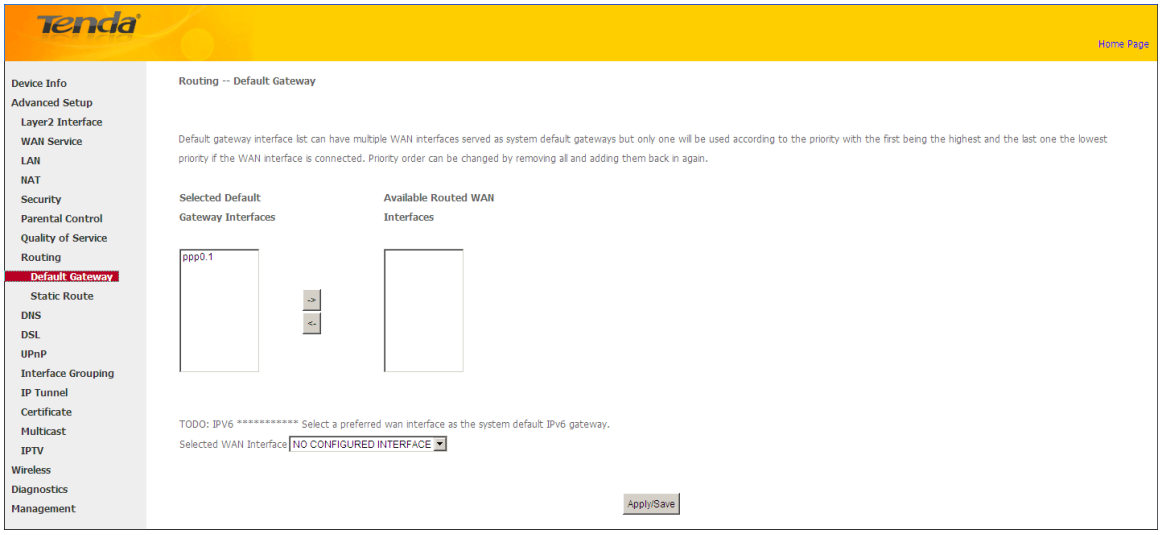
4.2.8 Routing

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.



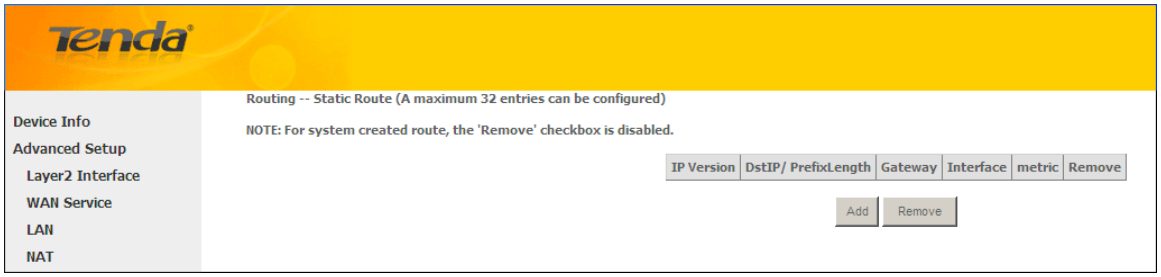
✧ **Selected Default Gateway Interfaces:** Displays the selected dfault gteway iterfaces. Select a WAN interface and click the -> button to move it to the **Available Routed WAN Interfaces** box.

✧ **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.

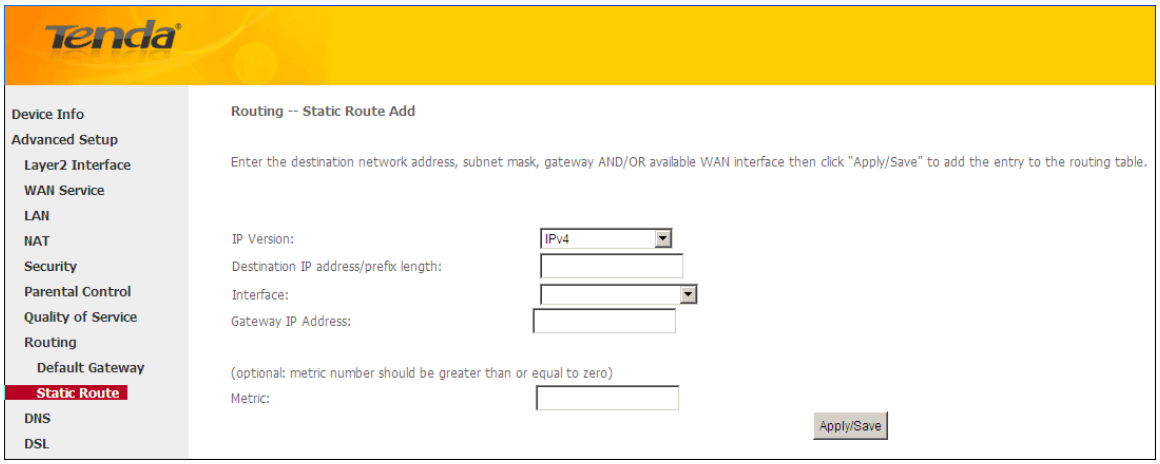
✧ **Apply/Save:** Click to save and activate your settings.

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:

1. Destination IP address cannot be on the same IP segment as WAN or LAN segment as the router.

2. 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.

3. For system created route, the 'Remove' checkbox is disabled.

4.2.9 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

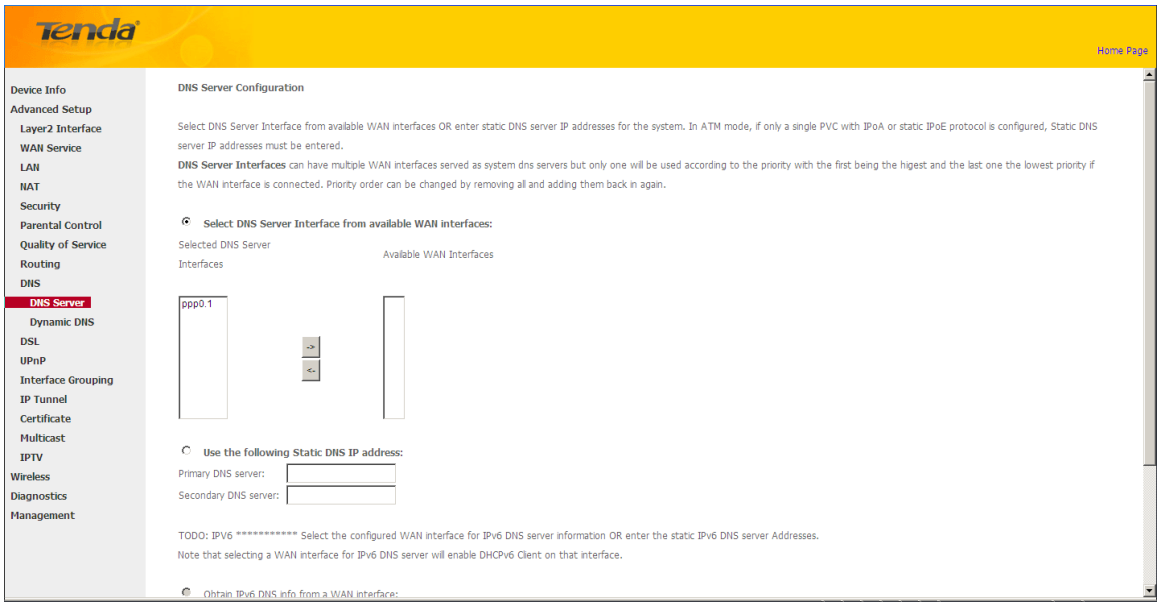
-OR select the **Use the following Static DNS IP address** option and enter static DNS server IP addresses for the system

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:

1.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.

2. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.

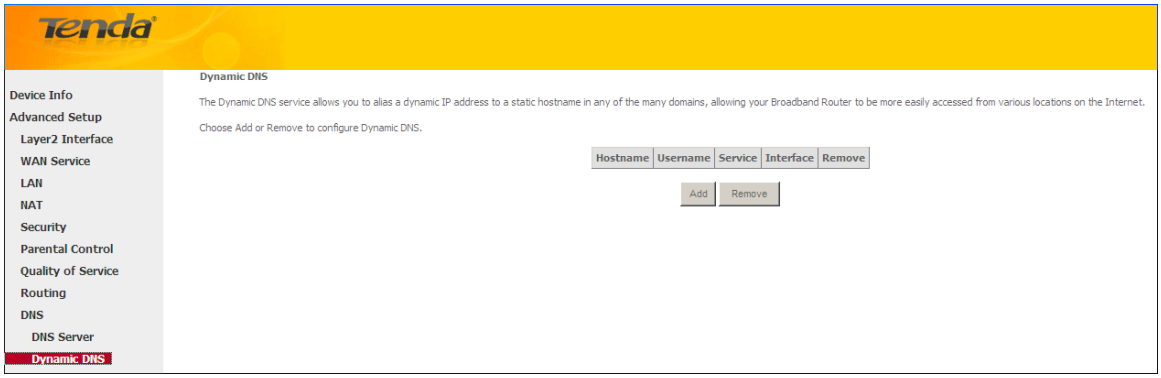
3. If you cannot locate the static DNS server IP information, ask your ISP to provide it.

4. 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.

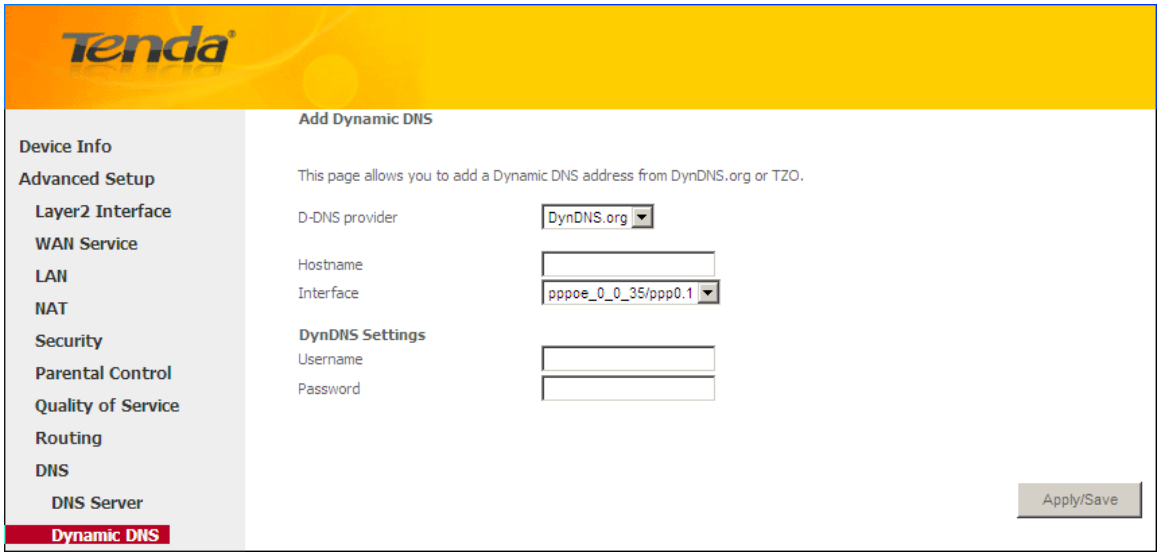
Dynamic DNS (DDNS)

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.

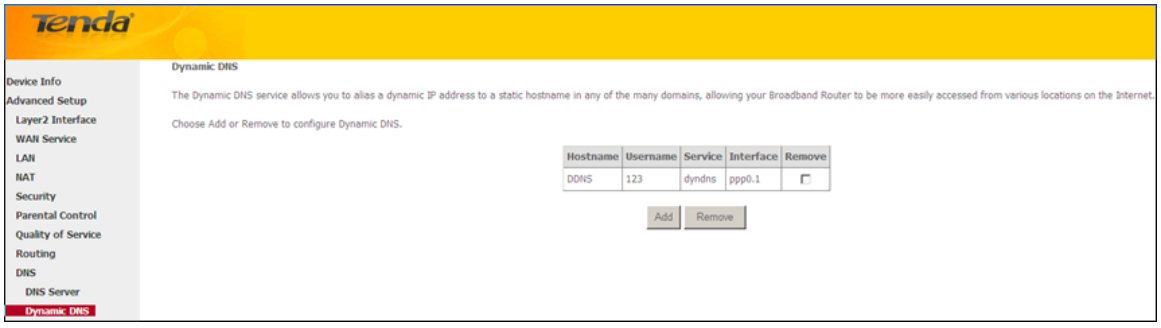
Hostname: Enter the DDNS domain name registered with your DDNS service provider.

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.



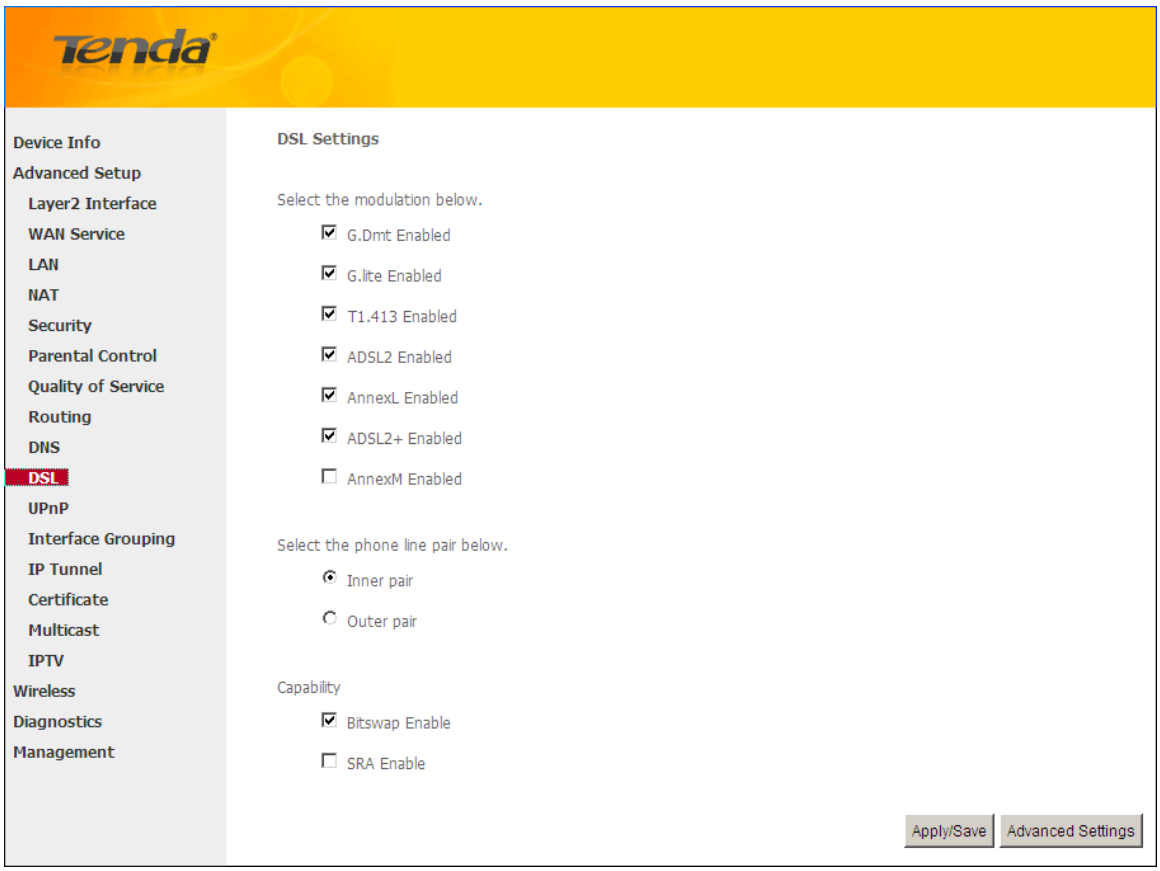
4.2.10 DSL

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

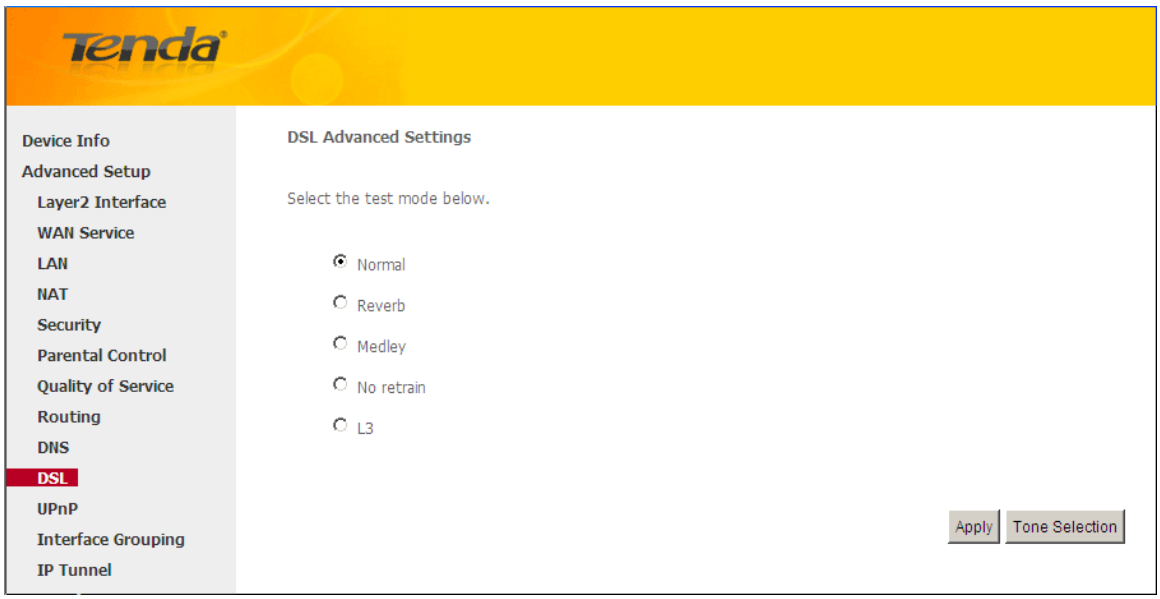
from the negotiation between your router and ISP. Wrong configurations may fail your Internet access.

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 Advanced Settings screen as below.



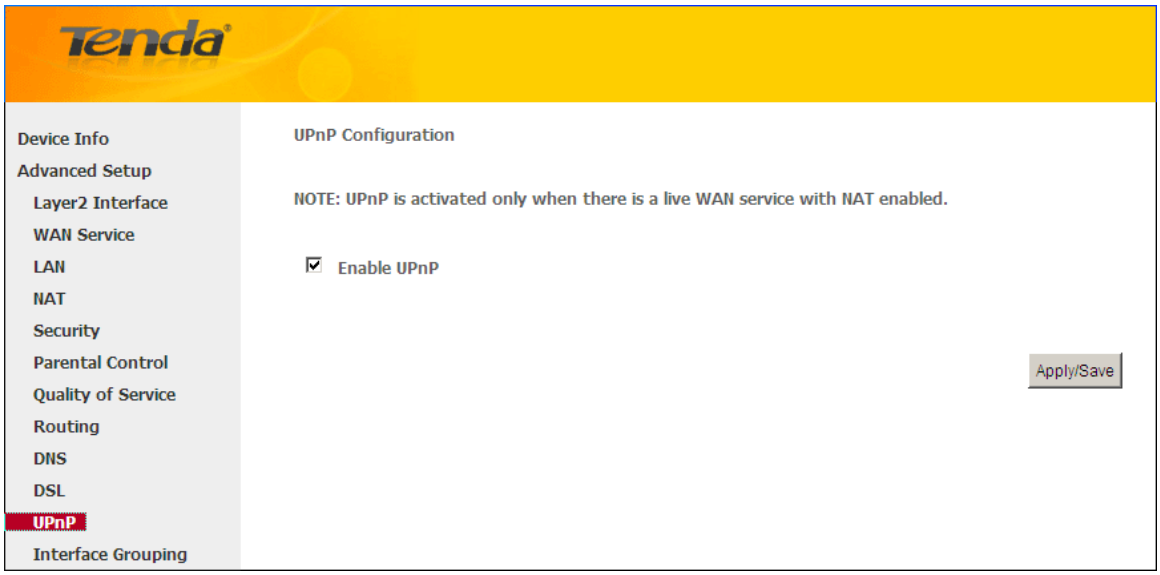
Here you can select the test mode and tone.

Tip:

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

4.2.11 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.



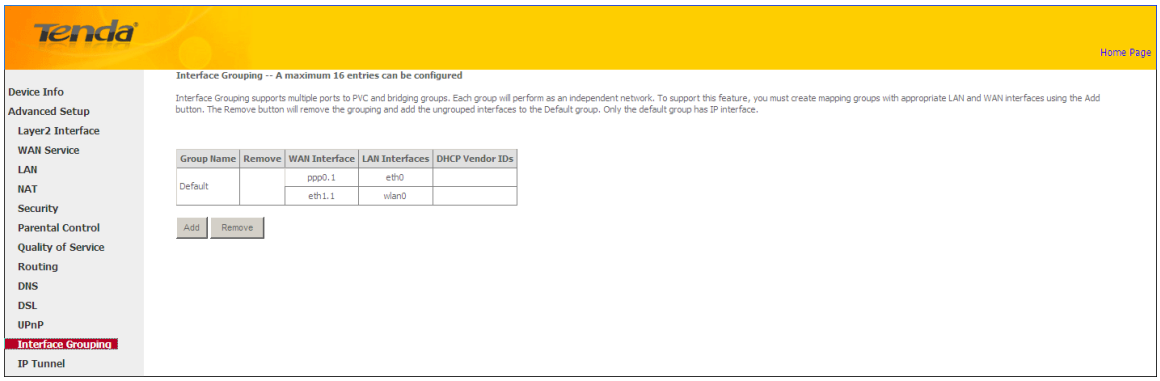
Enable UPnP: Check/uncheck to enable/disable the UPnP feature.

Note:

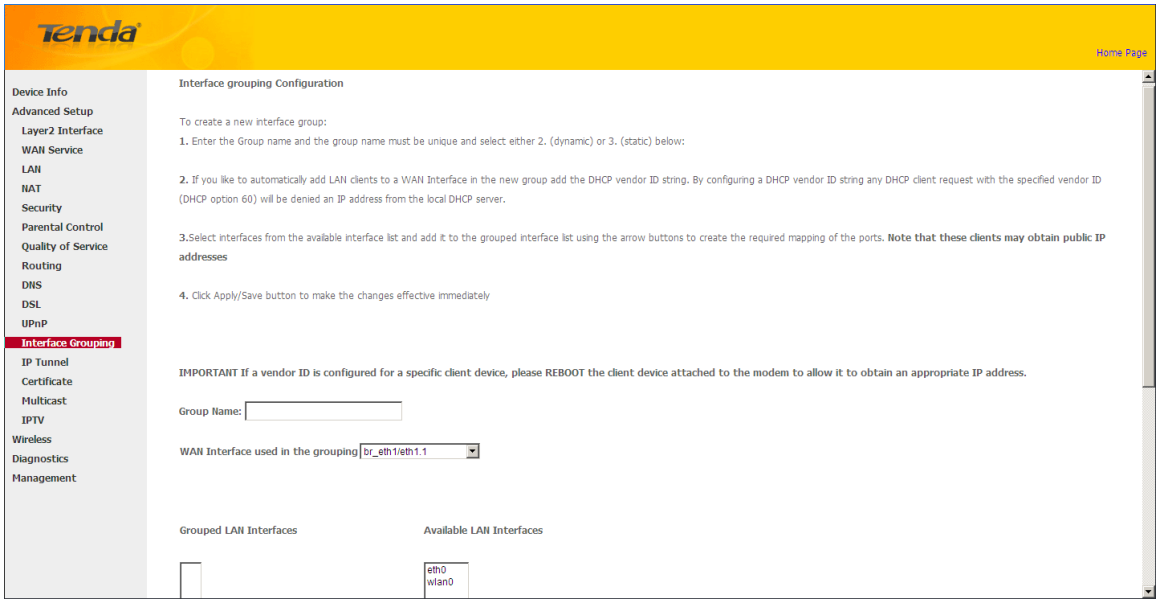
UPnP is activated only when there is a live WAN service with NAT enabled.

4.1.12 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.
   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.
3. 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.

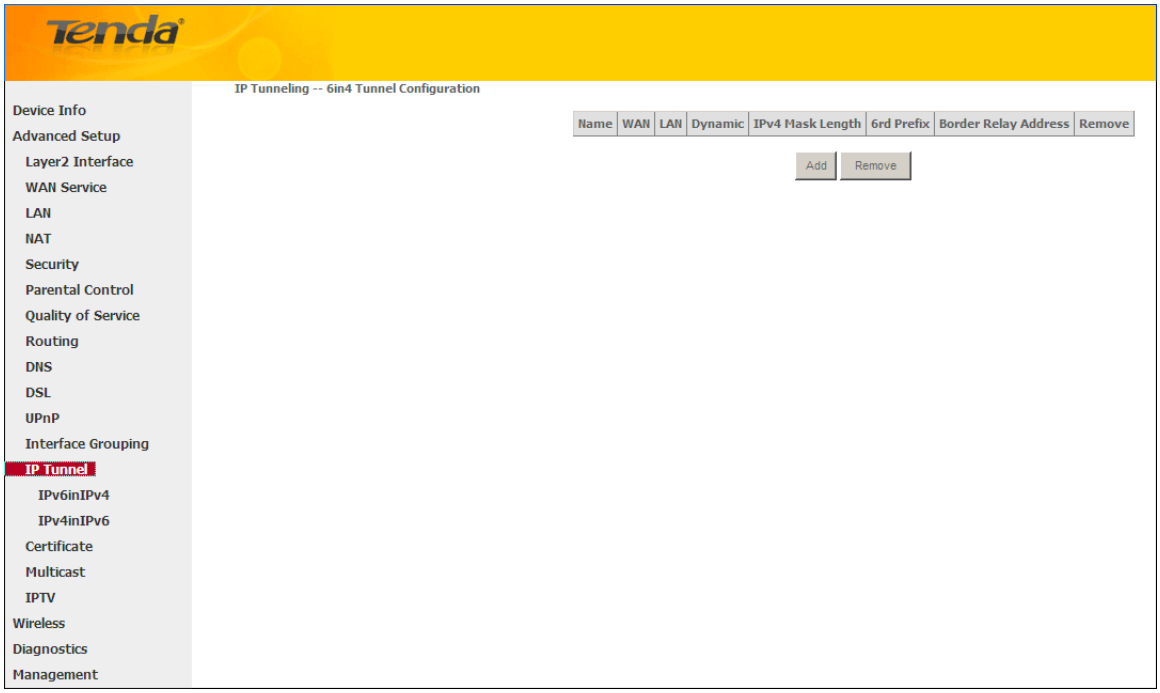
4.1.13 IP Tunnel

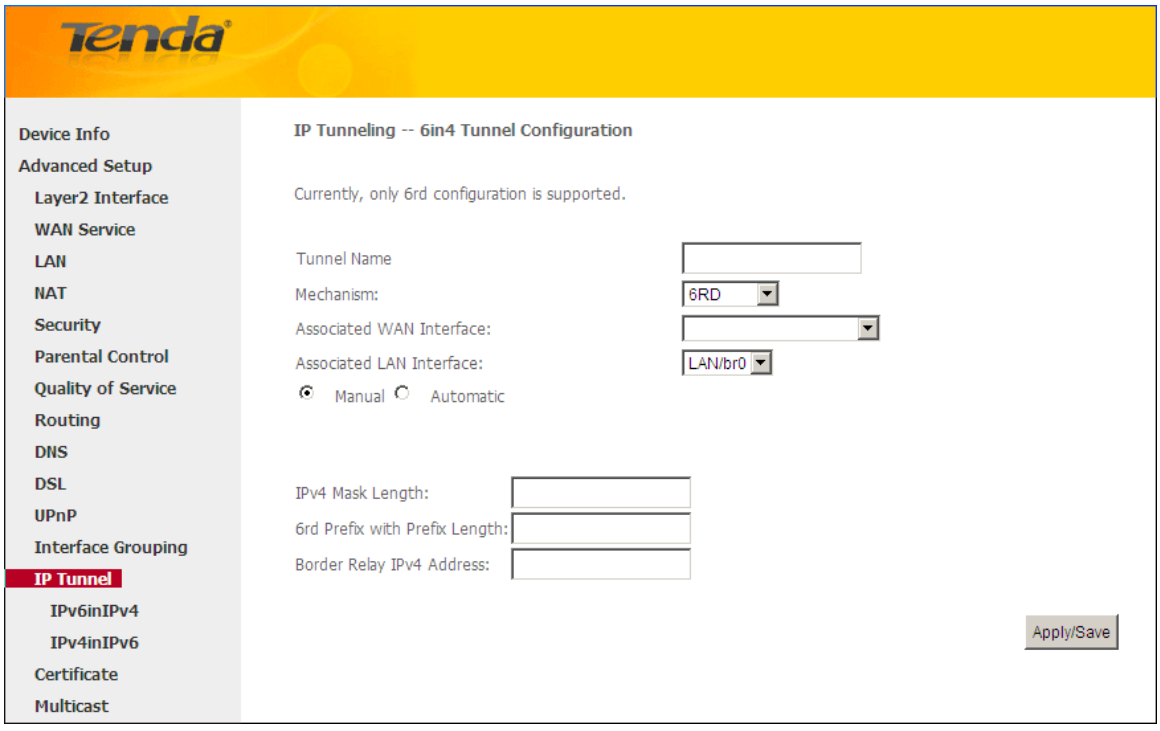
This section explains the following information:

• IPv6inIPv4
• IPv4inIPv6

IPv6inIPv4

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



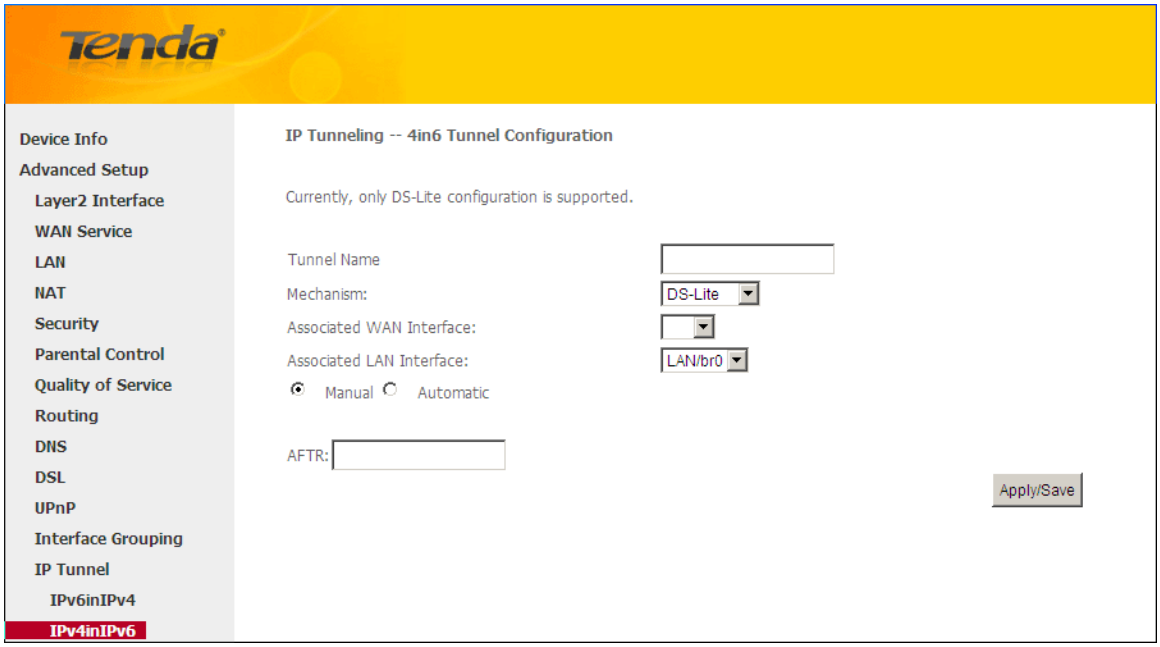


- **Tunnel Name:** Specify the name of the tunnel.
- **Mechanism:** Currently, only DS-Lite configuration is supported..

- **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.

4.1.14 Certificate

This section explains the following information:

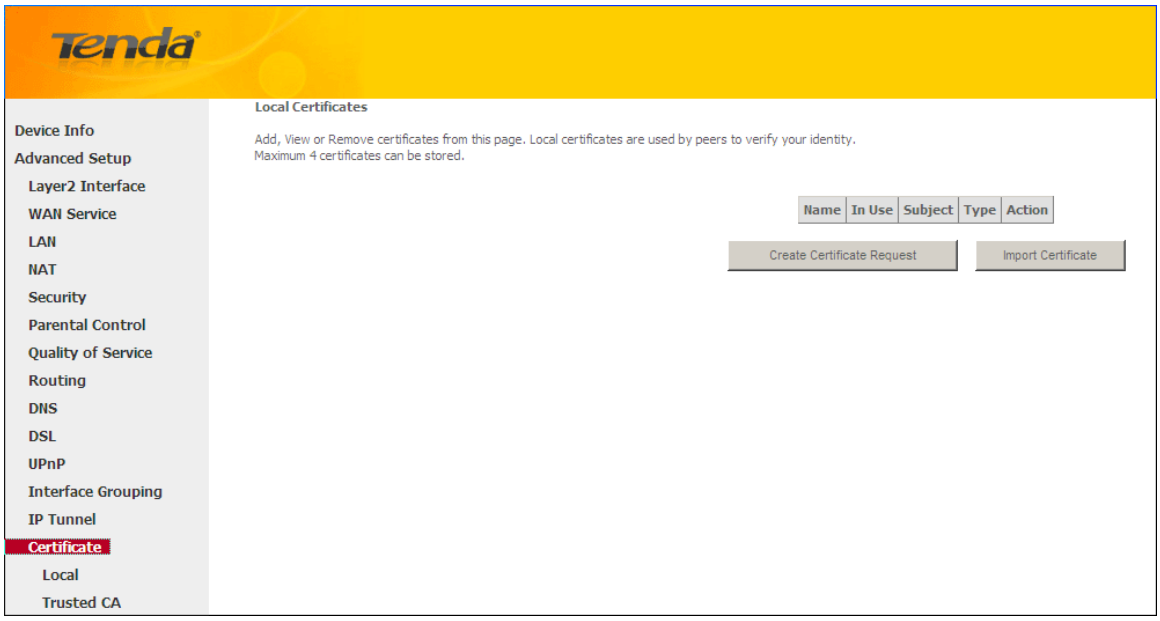
• Local Certificates

• Trusted CA (Certificate Authority) Certificates

Local Certificates

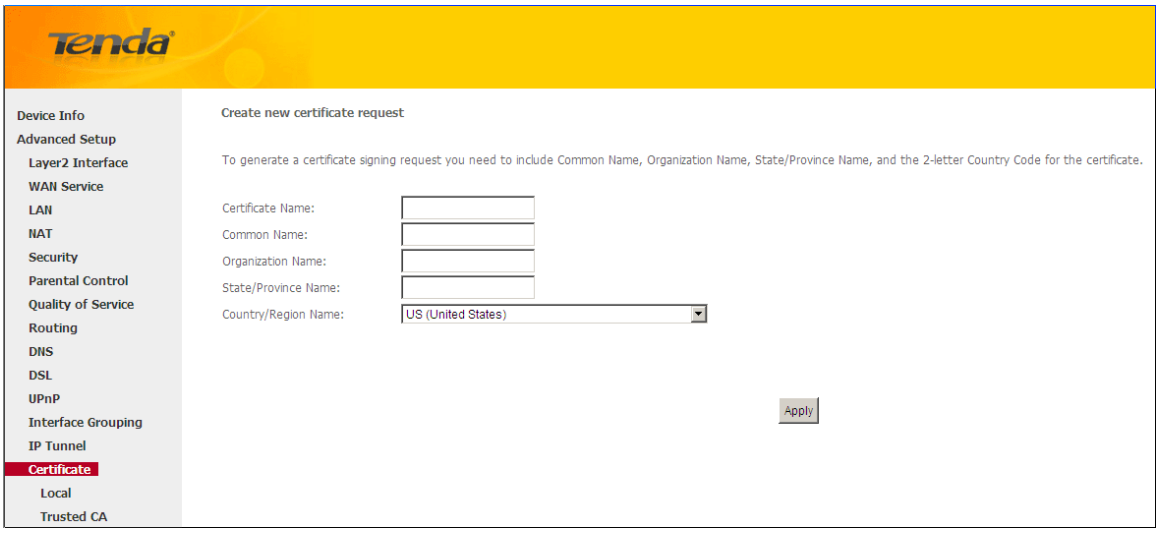
Here you can Add, View or Remove certificates. Local certificates are used by peers to verify your identity. Maximum 4

certificates can be stored.



To generate generate a certificate signing request:

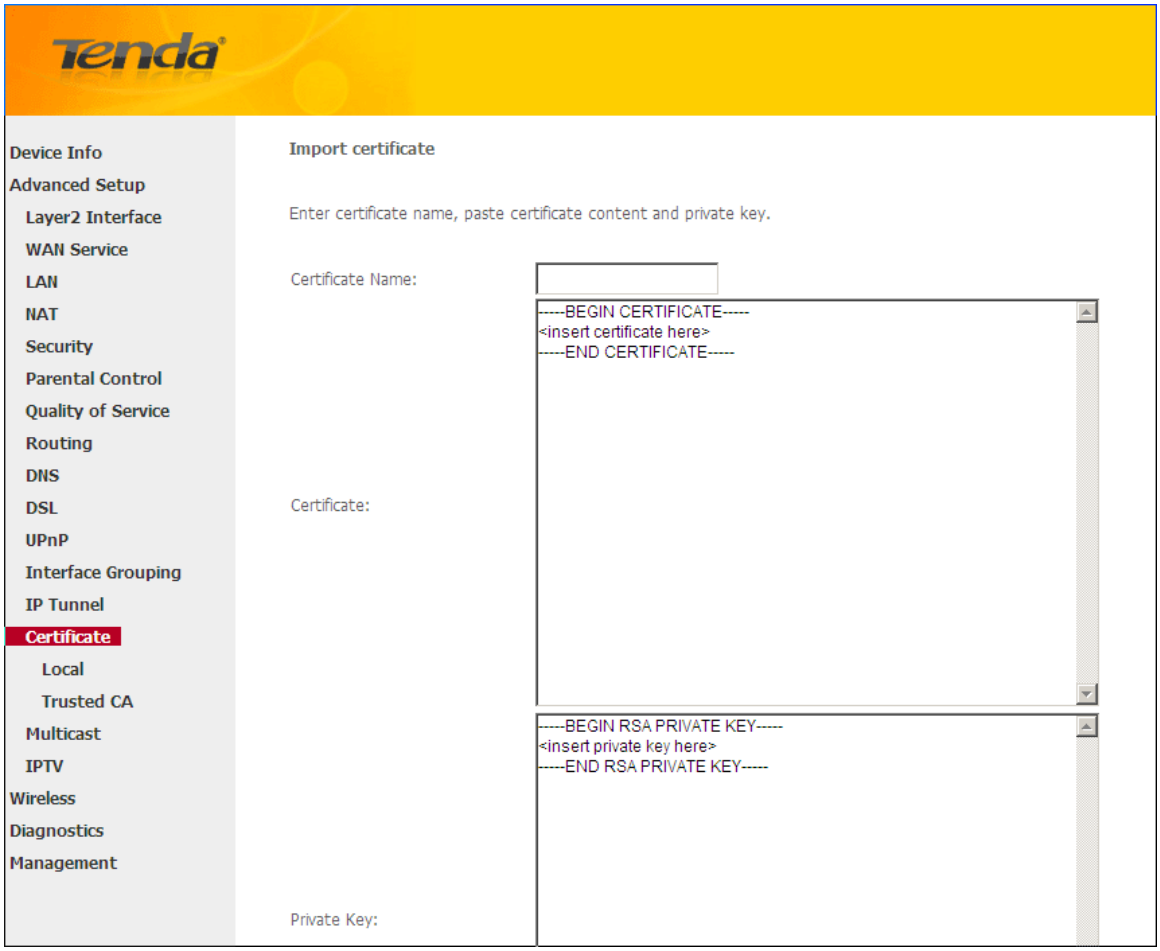
1. Click the **Create Certificate Request** button to enter the page below.



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：

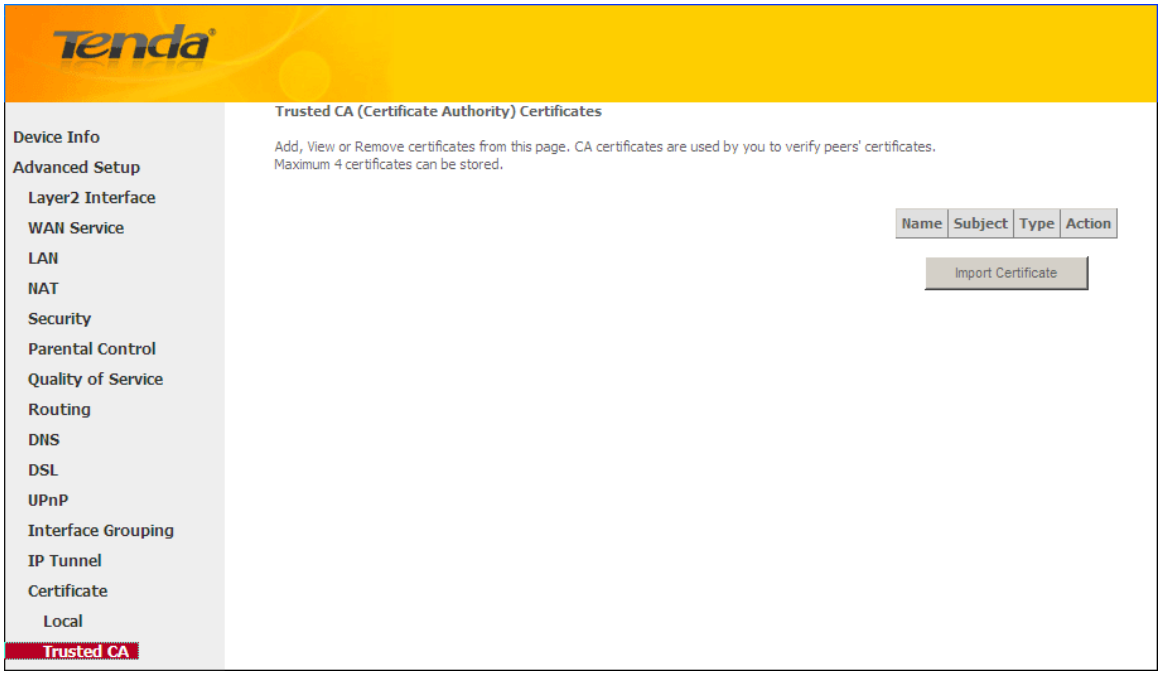
1. Click the **Import Certificate** button on the local certificates page to enter the page below.



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

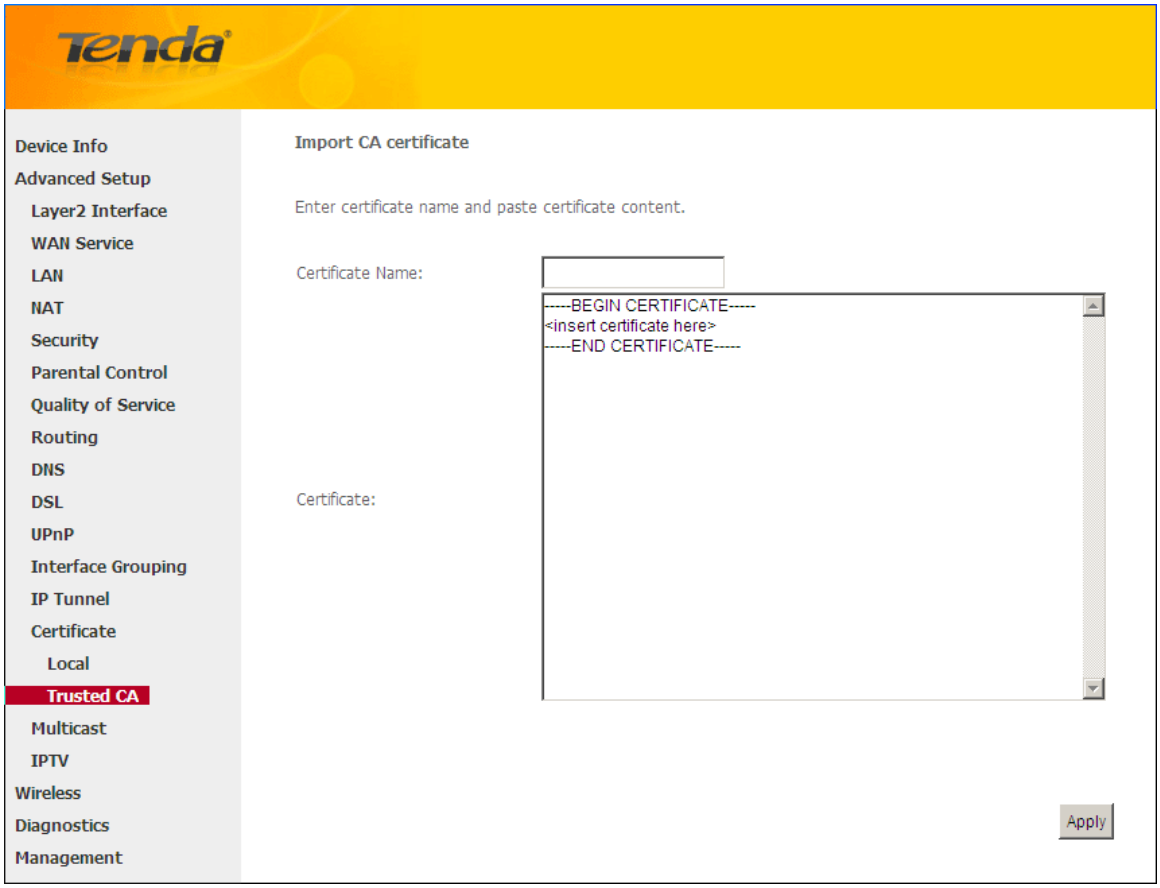
Trusted CA (Certificate Authority) Certificates

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.



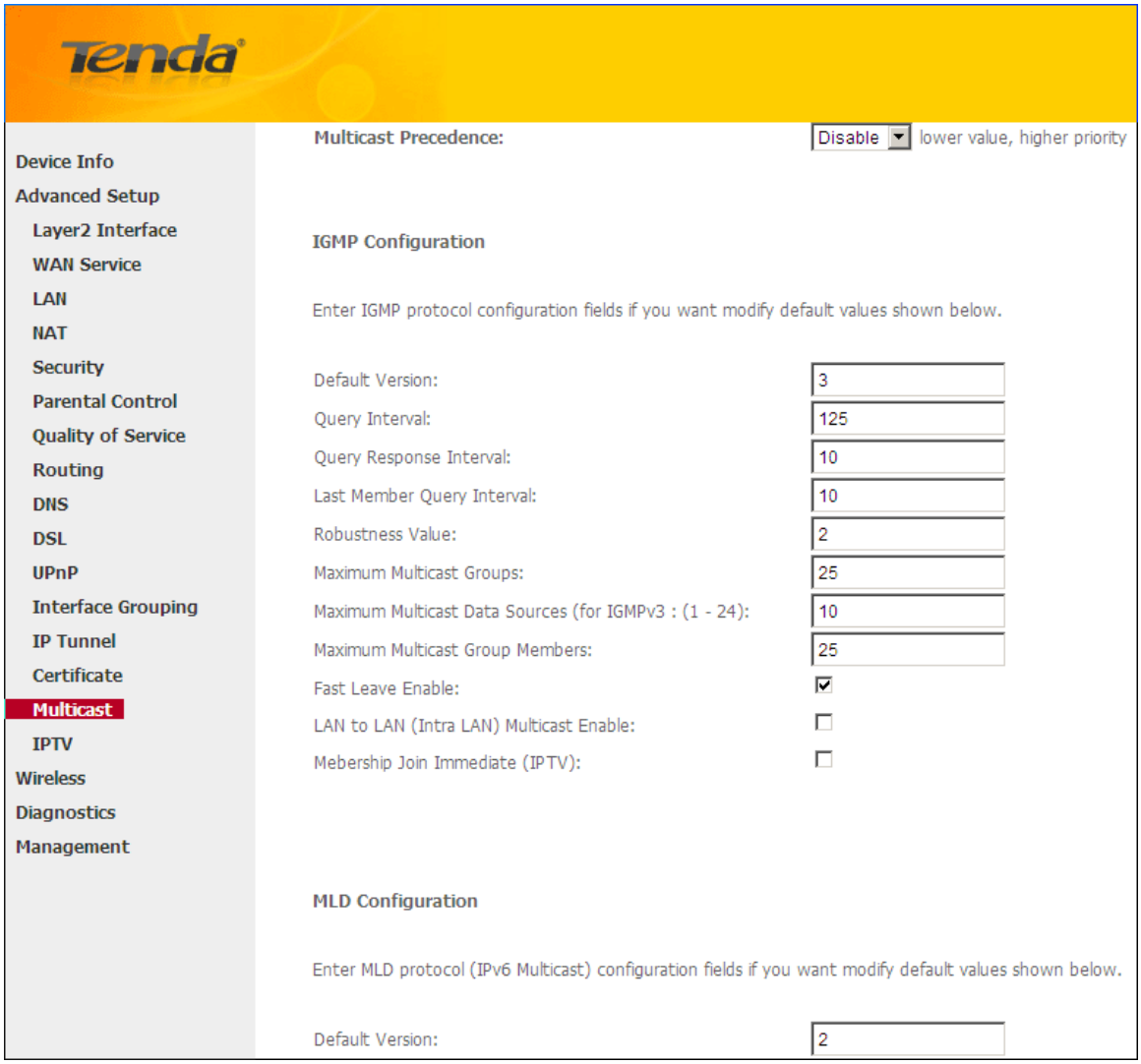
2. Enter the certificate name.
3. Paste the certificate content.
4. Click **Apply** to apply your settings.

4.1.15 Multicast

Here you can configure the multicast feature.

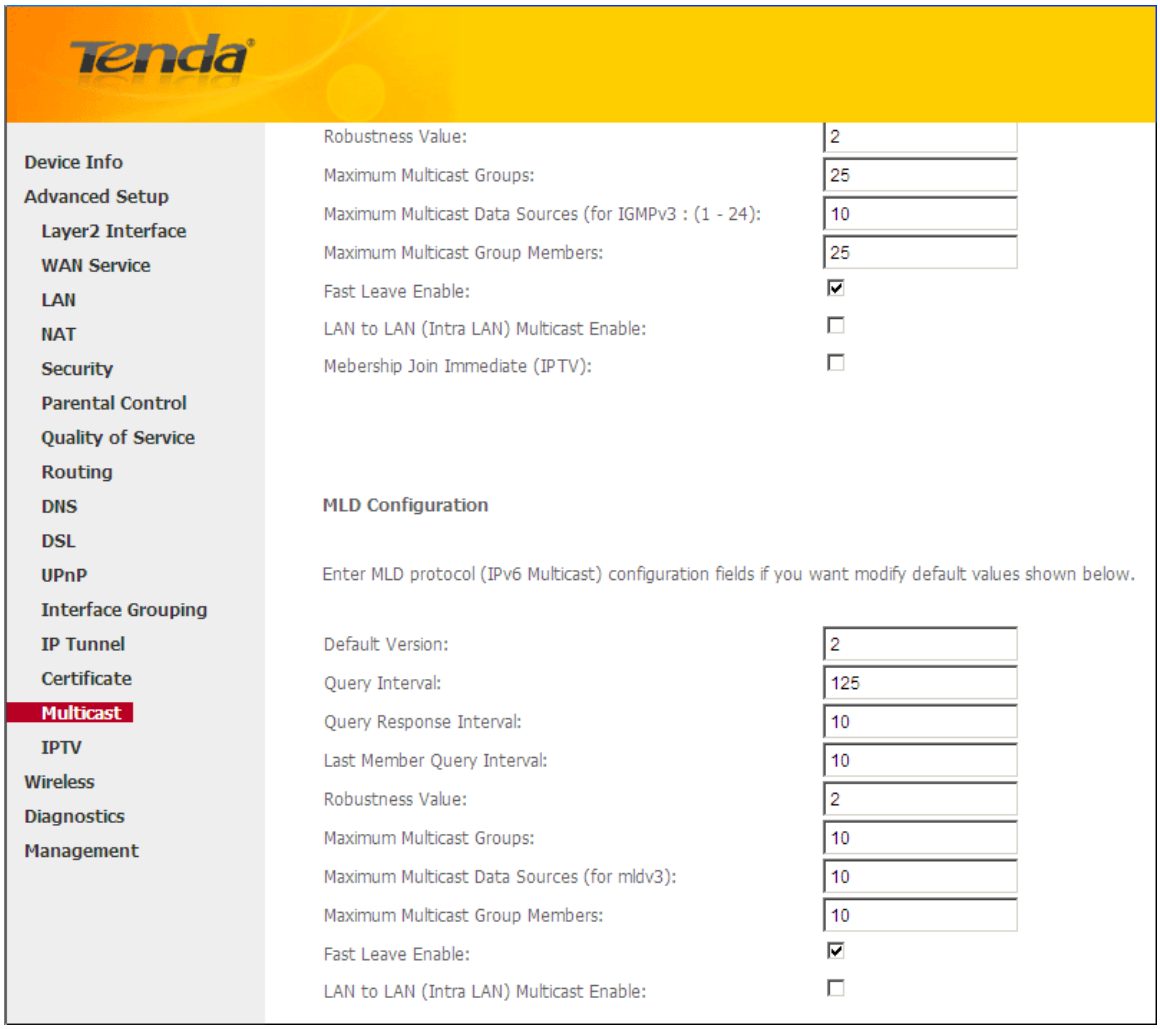
To configure IGMP for IPv4

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

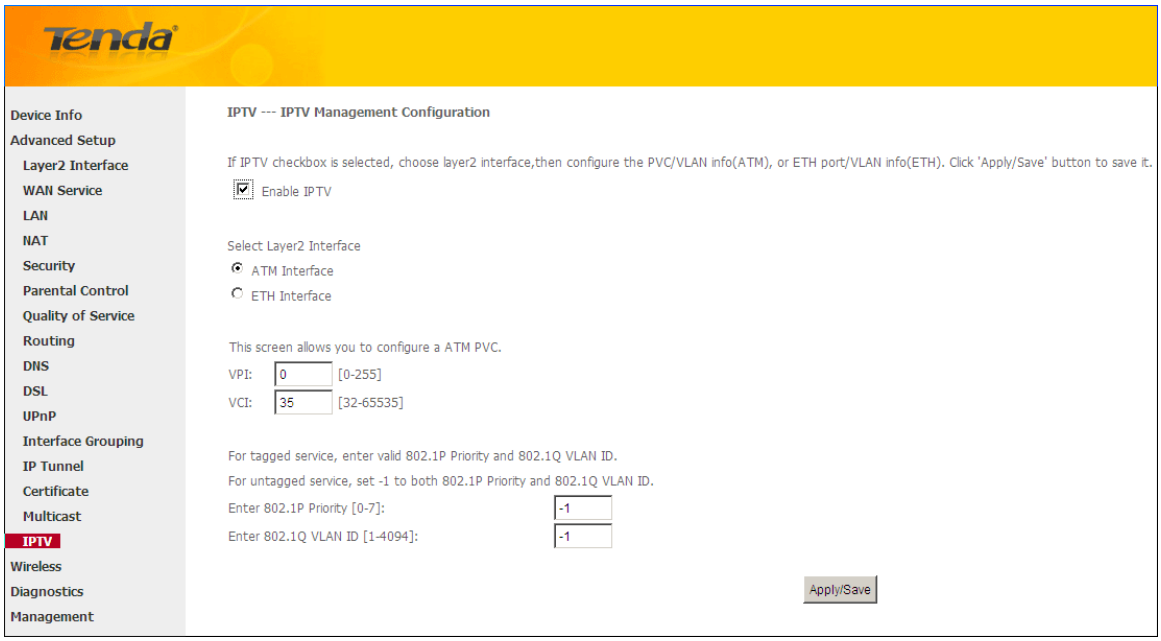
1. Check the **LAN to LAN (Intra LAN) Multicast Enable** box.
2. Keep other options unchanged from factory defaults if you are not an advanced user. This is strongly recommended.



4.1.16 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

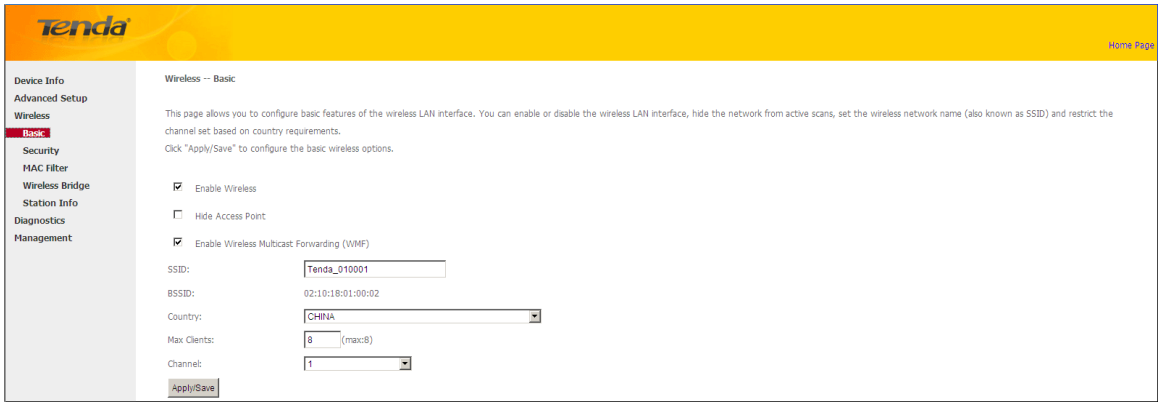
• Wireless Bridge

• 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.

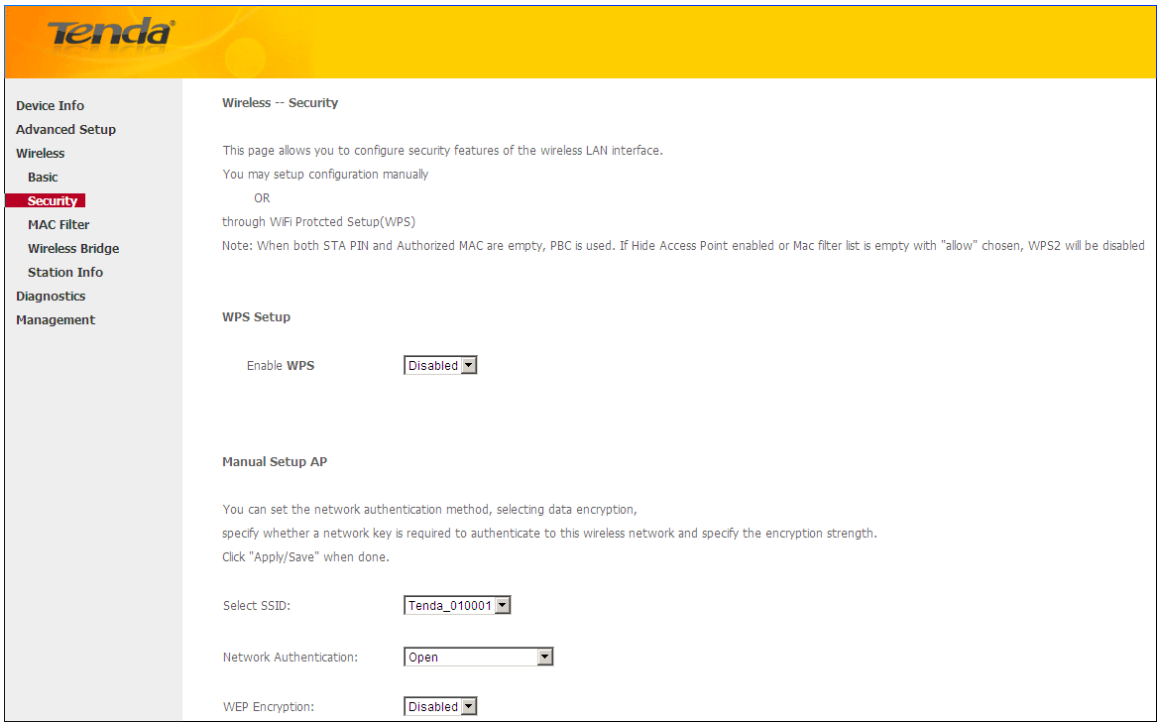
Country: Select your country.

Max Clients: The max wireless clients your wireless network can accept. Up to 8 clients can join your wireless network at a time. The default setting is 8.

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:

1. To use the WPS security, the wireless client must be also WPS-capable.

2. 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.

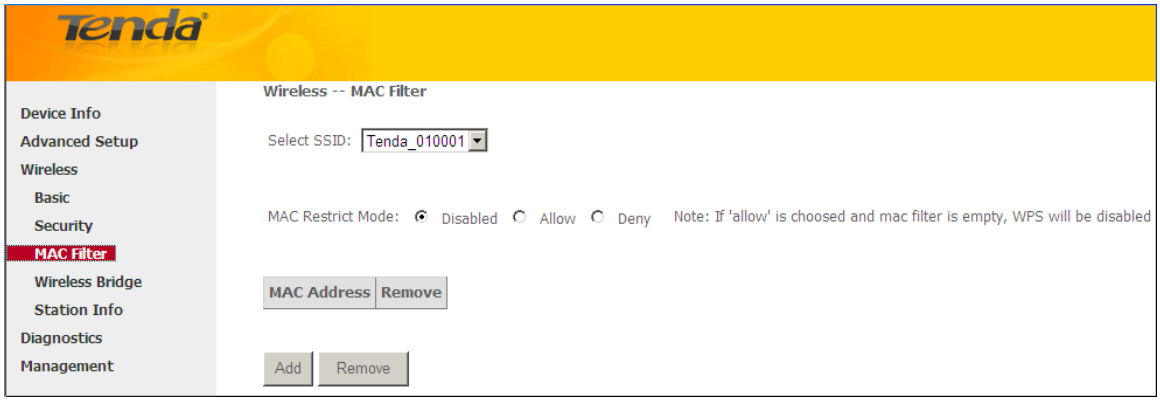
WPA/WAPI passphrase: Enter a WPA/WAPI network key.

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.

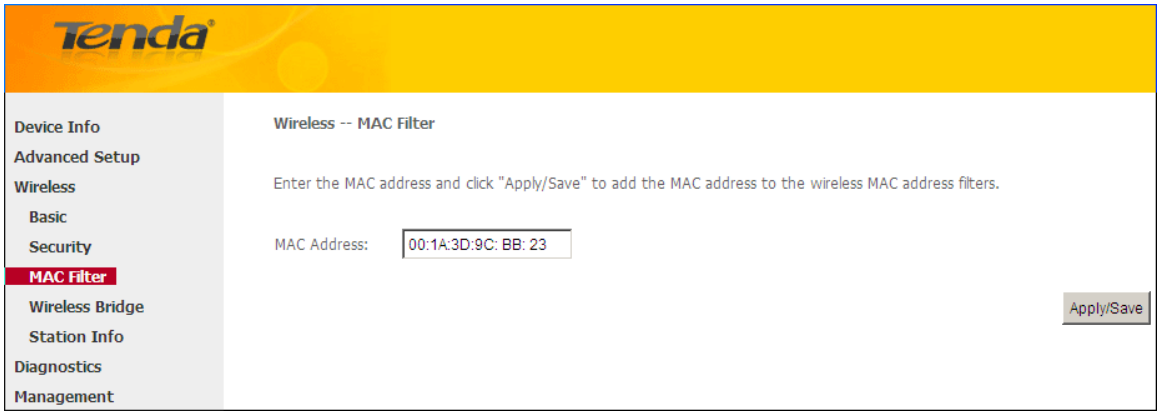
Disable: Disable this feature.

Add: Click to add a MAC address.

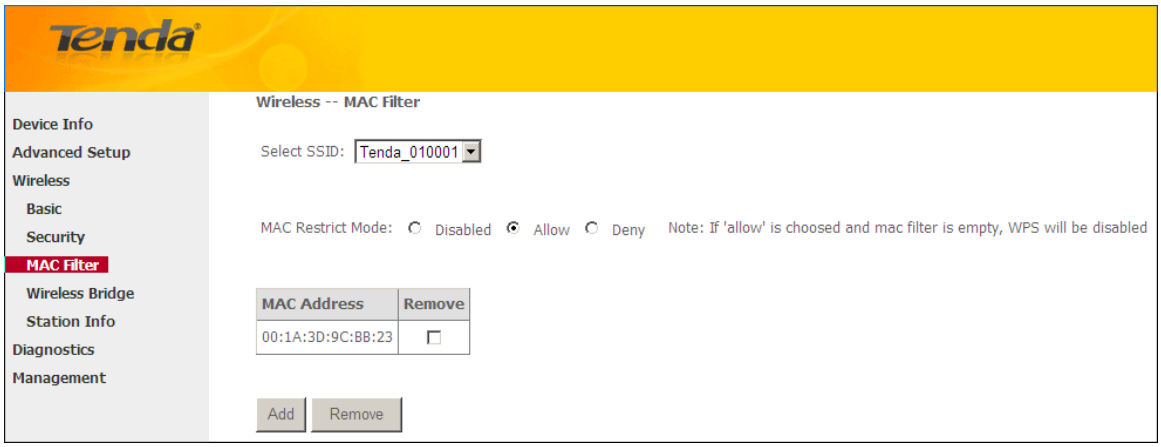
To delete an existing MAC address, first check the **Remove** box next to the MAC address in list and then click the **Remove** button.

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.



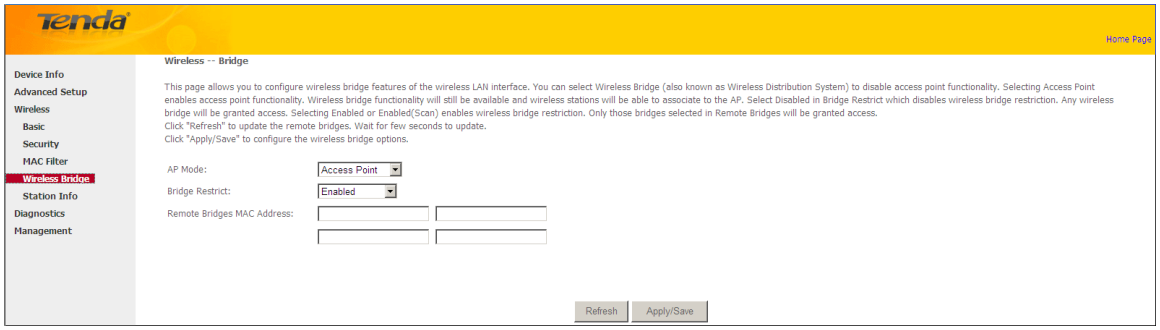
Note:

If "allow" is choosed 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.

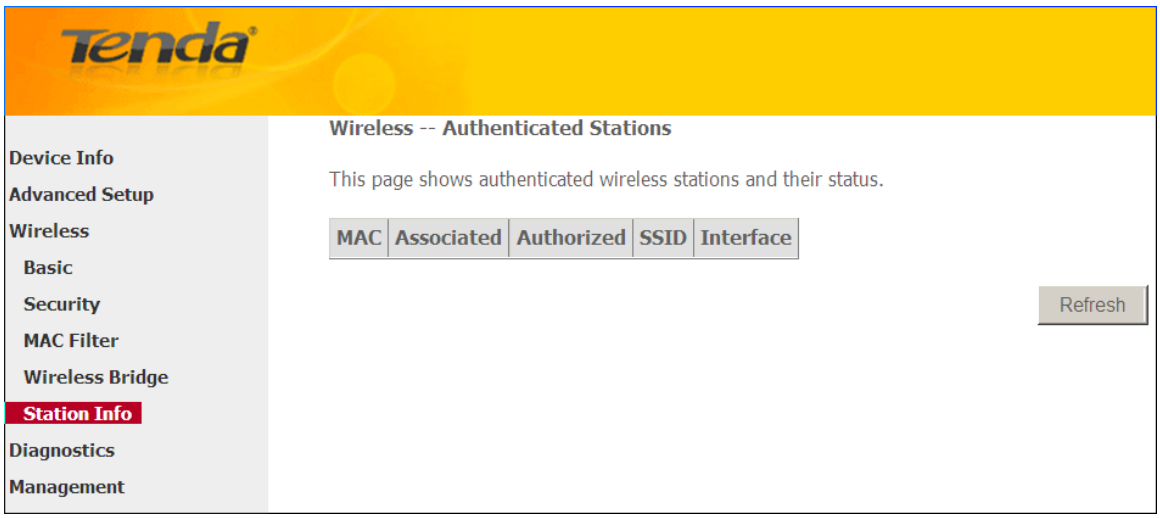
Refresh: Click to update the remote bridges. Wait for few seconds to update.
Apply/Save: Click to apply and save the settings.

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.

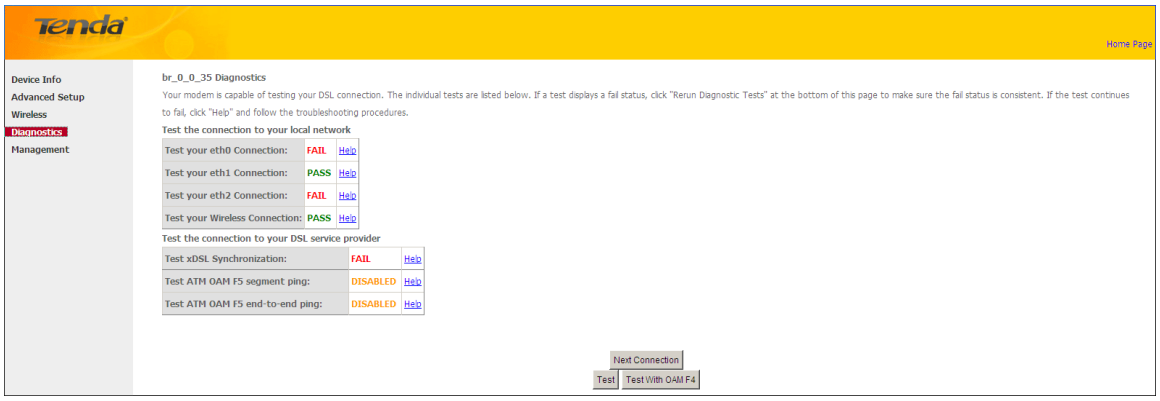
4.3.5 Station Info

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
- Security Log
- SNMP Agent
- TR-069 Client
- Internet Time
- Access Control
- Update Software
- Reboot

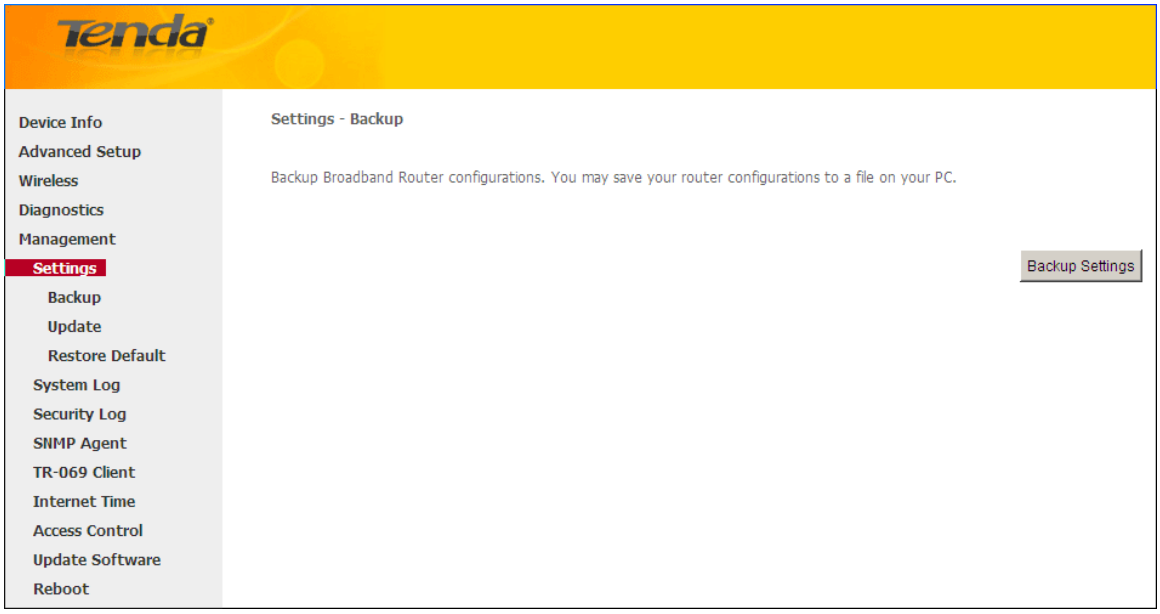
4.5.1 Settings

This section explains the following information:

- Backup
- Update
- Restore Default

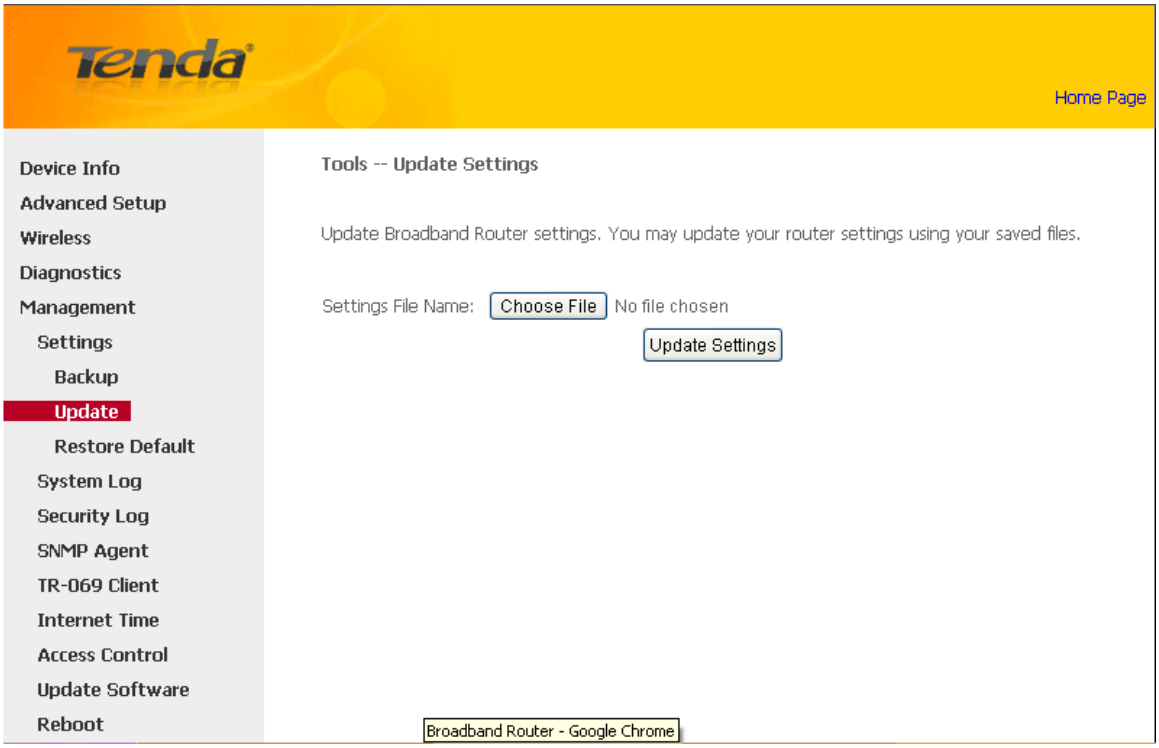
Backup

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.



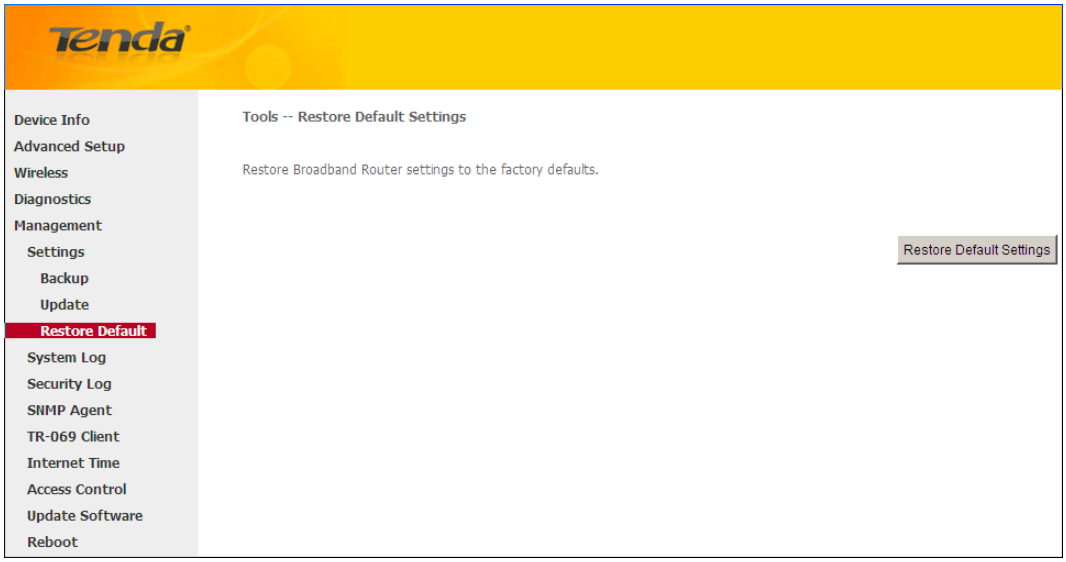
Update

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



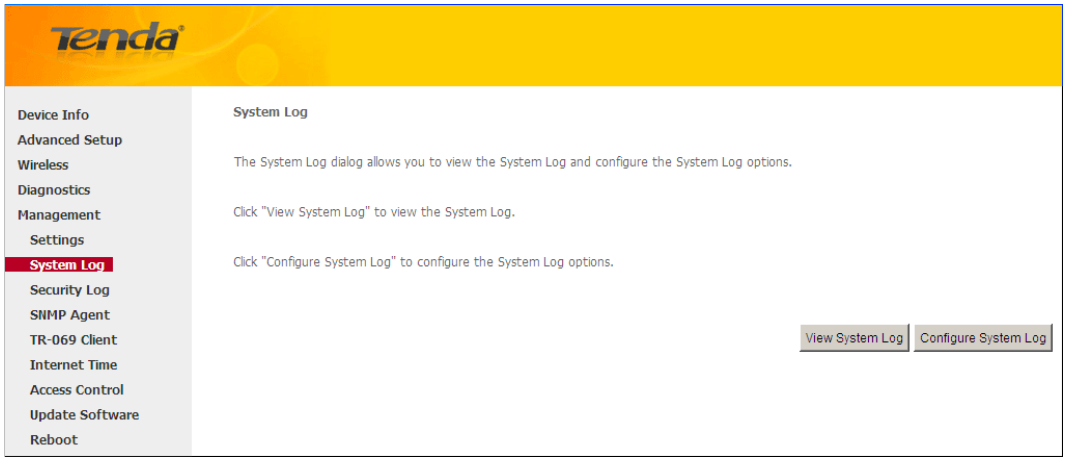
Restore Default

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.

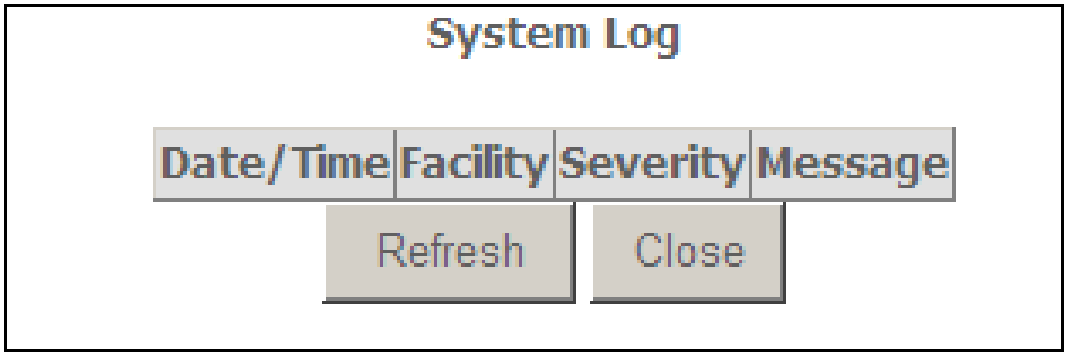


4.5.2 System Logs

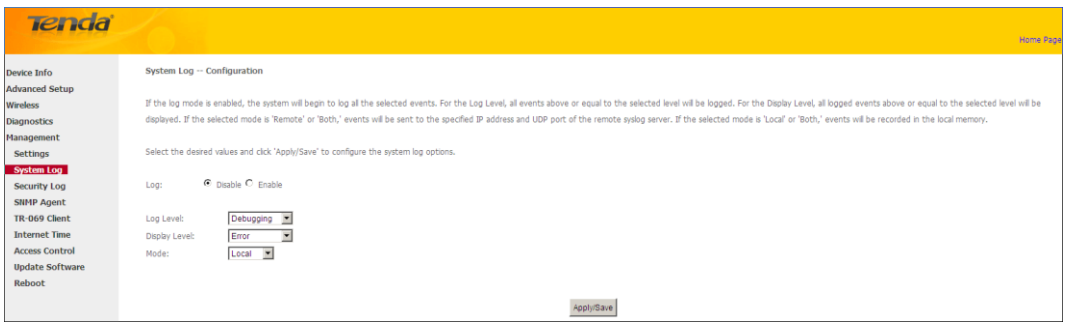
The System Log dialog allows you to view the System Log and configure the System Log options.



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.

Mode: If the selected mode is 'Remote' or 'Both,' events will be sent to the specified IP address and UDP port of the remote syslog server. If the selected mode is 'Local' or 'Both,' events will be recorded in the local memory.

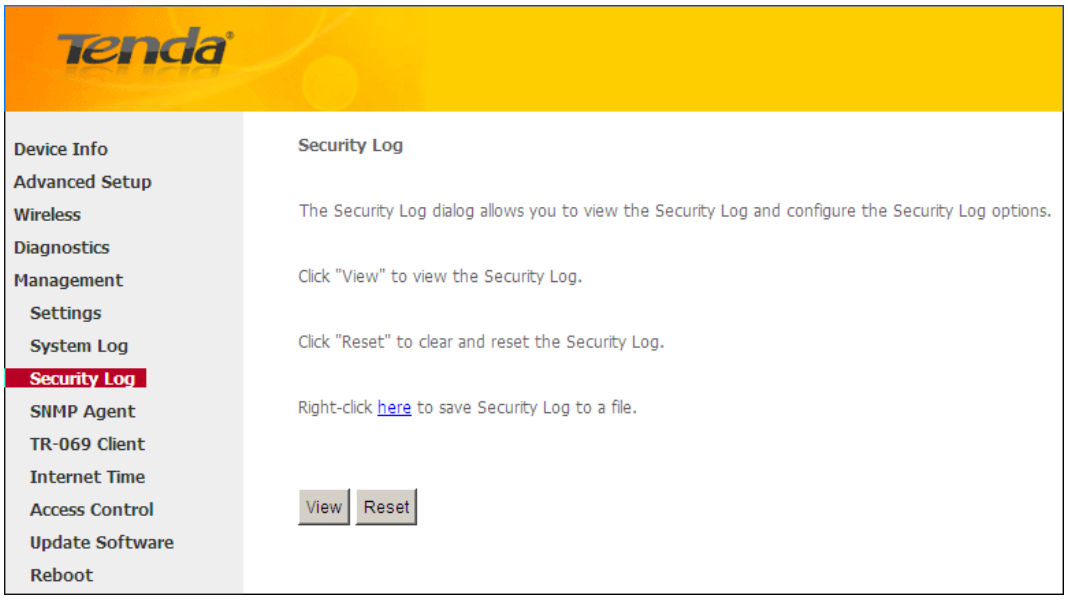
Server IP Address: Specify the IP address of the remote syslog server.

Server UDP Port: Specify the UDP port of the remote syslog server.

Apply/Save: click to apply and save the system log settings.

4.5.3 Security Log

The Security Log page allows you to view the Security Log and configure the Security Log options. You can also save Security Log to a file.

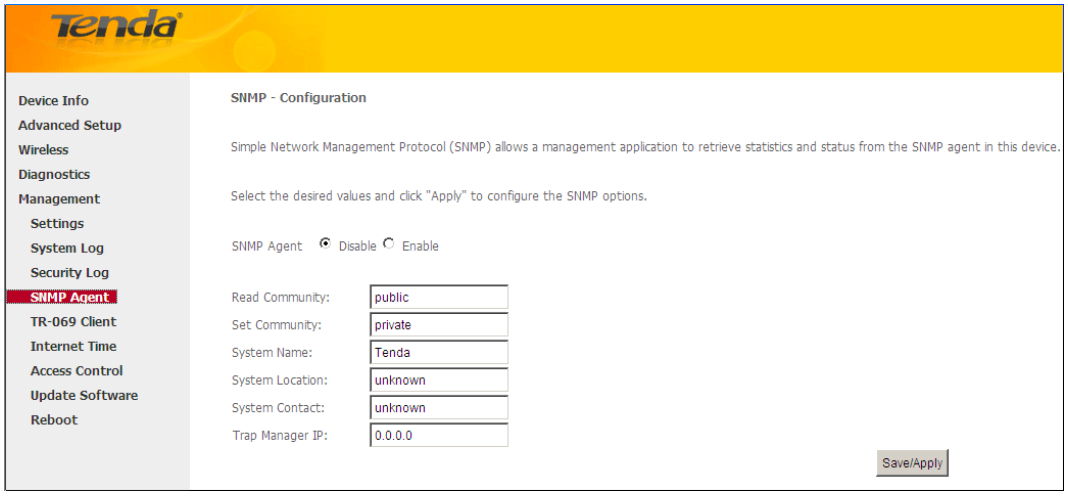


View: Click to view the Security Log.

Reset: Click to clear and reset the Security Log.

4.5.4 SNMP Agent

Simple Network Management Protocol (SNMP) allows a management application to retrieve statistics and status from the SNMP agent in this device.



SNMP Agent： Select “Enable” to activate the SNMP Agent feature or “Disable” to deactivate it.

Read Community: Specify a Read Community string. The default is public.

Set Community: Specify a Set Community string. The default is private.

System Name: Specify a descriptive system name.

System Location: Specify a system location.

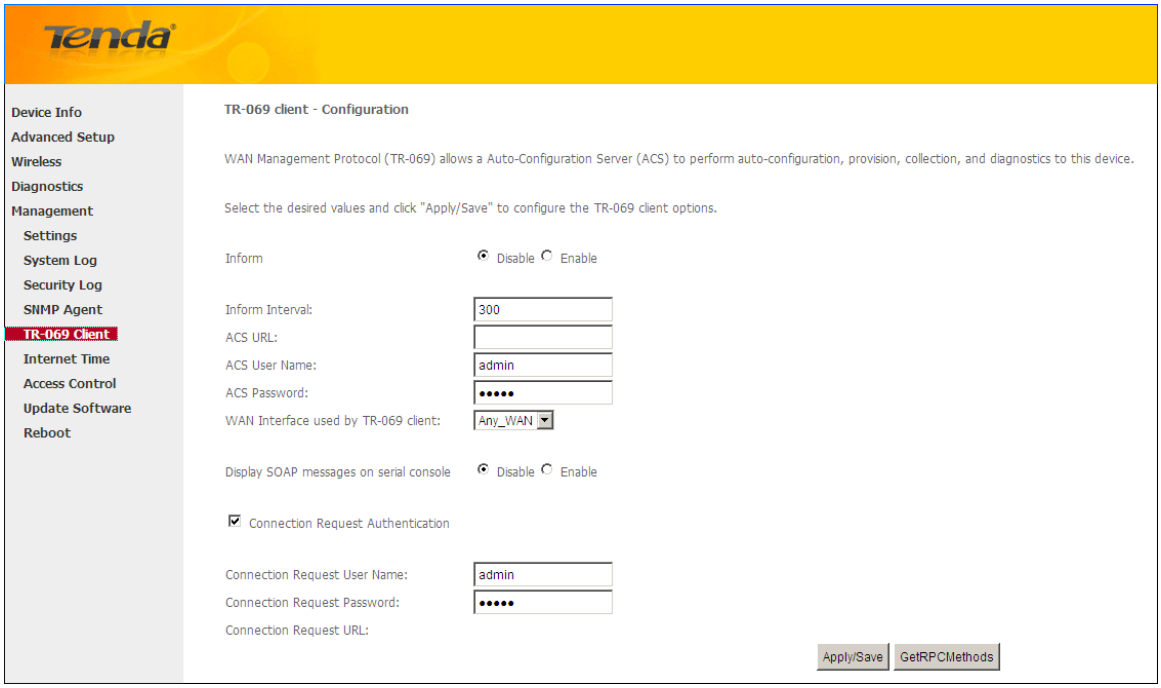
System Contact: Specify a system contact.

Trap Manager IP: Specify the IP address of the Trap Manager.

4.5.5 TR-069 Client

WAN Management Protocol (TR-069) allows a 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.

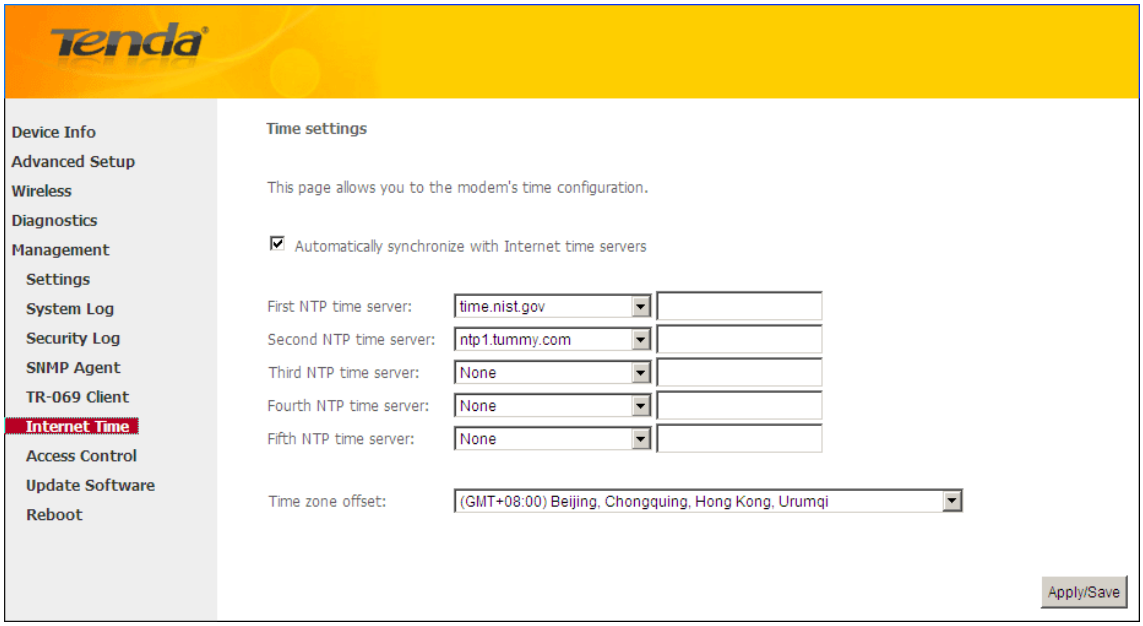
Connection Request User Name: Enter the cnnection request user name.

Connection Request Password: Enter the cnnection request password.

Connection Request URL: Specify the connection request URL.

4.5.6 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.

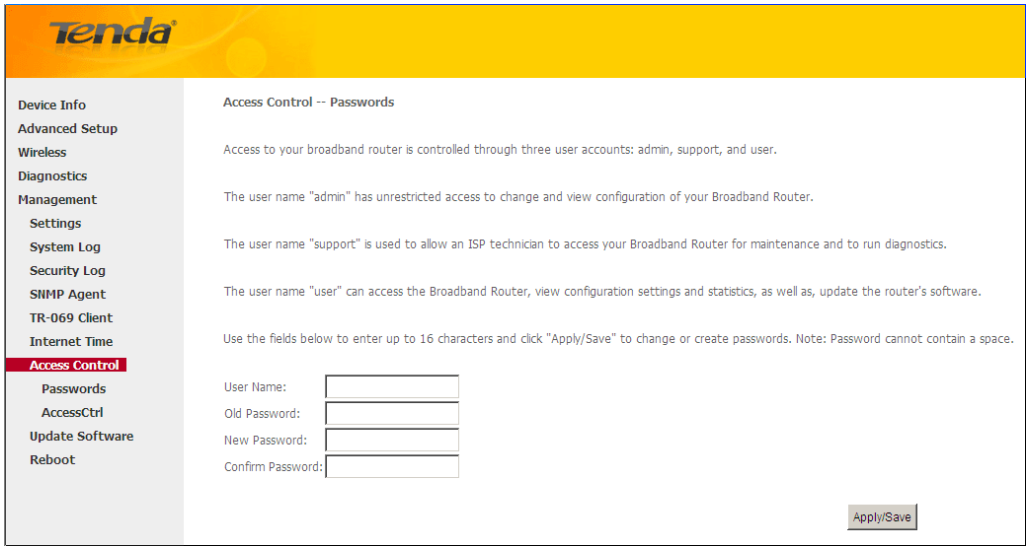
4.5.7 Access Control

This section explains the following information:

• Password
• AccessControl - Service

Password

Access to your broadband router is controlled through three user accounts: admin, support, and user.
The user name "admin" has unrestricted access to change and view configuration of your Broadband Router.
The user name "support" is used to allow an ISP technician to access your Broadband Router for maintenance and to run diagnostics.
The user name "user" can access the Broadband Router, view configuration settings and statistics, as well as, update the router's software.



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.

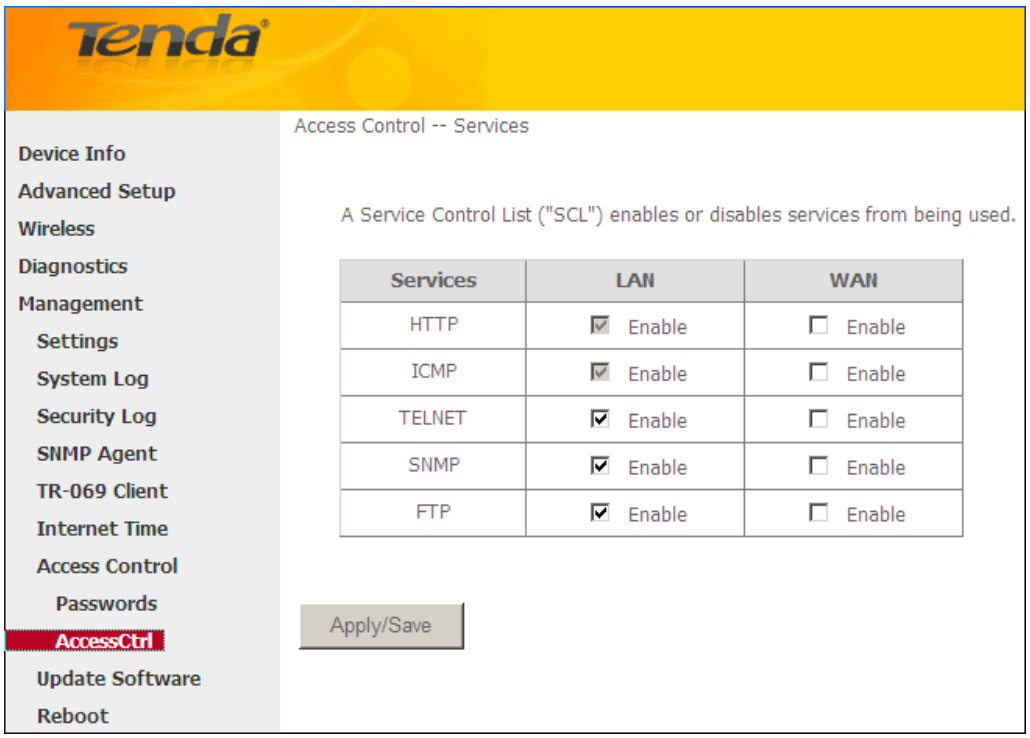
Apply/Save: Click to change or create passwords.

Note:

Password cannot contain a space.

AccessControl - Service

Here you can manage the device either from LAN or WAN side using HTTP, ICMP, TELNET, SNMP and FTP.

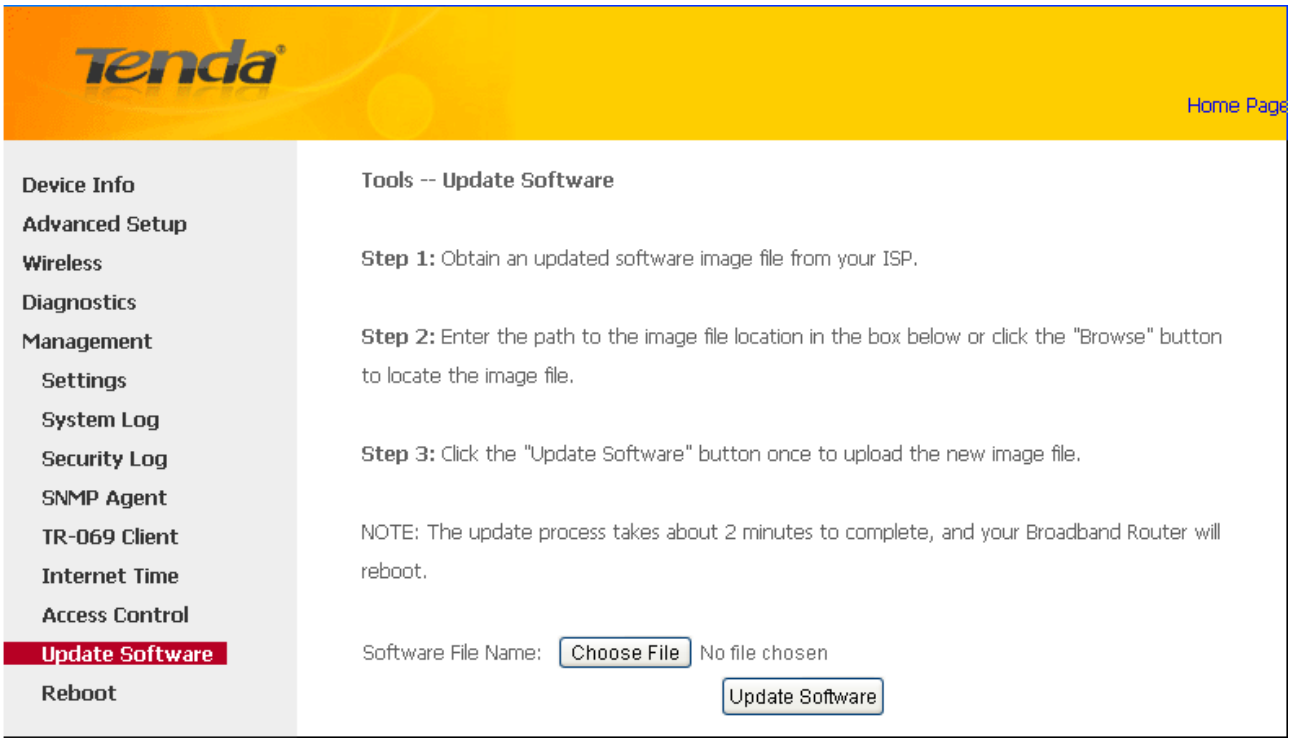


Note:

1. *If you are not an advanced user, we suggest you keep the default settings.*
2. *To access the device from the LAN side, you must use the LAN IP address and log in as "admin" or "user"; to access the device from the WAN side, you must use the WAN IP address and log in as "support".*

4.5.8 Update Software

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.

4.5.9 Reboot

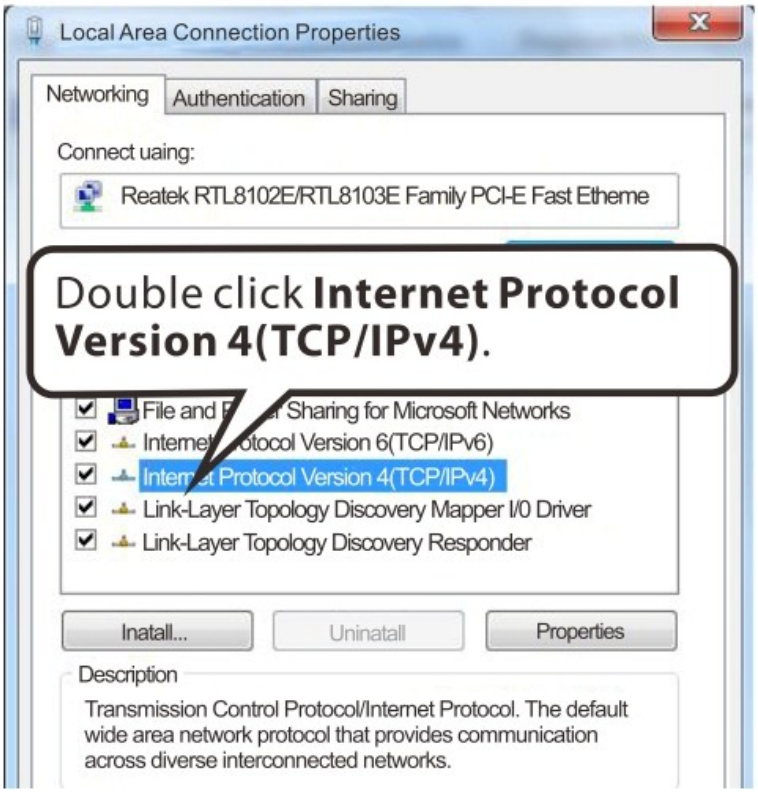
Click the Reboot button to reboot the router.

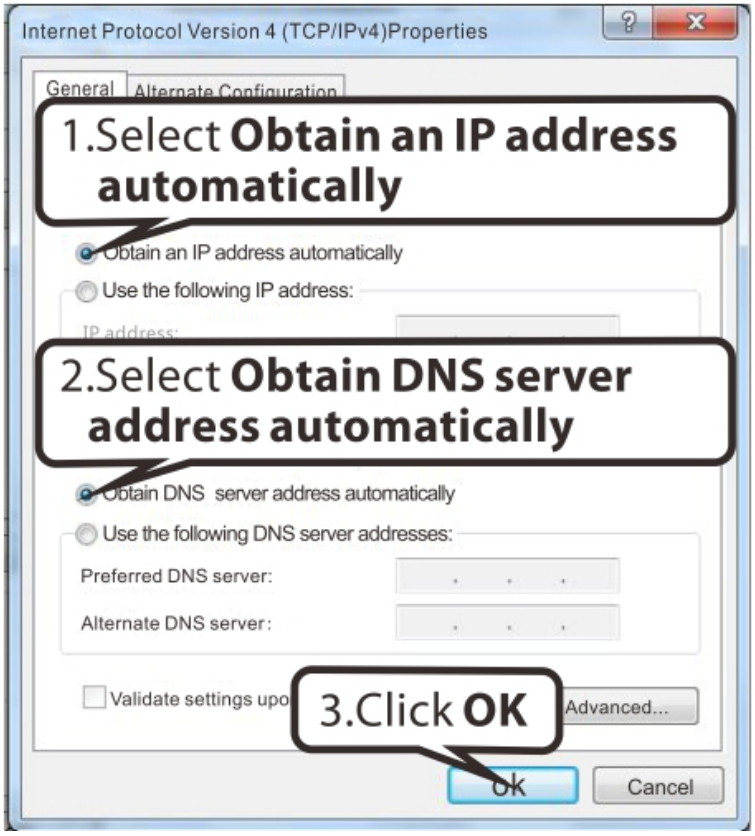
Appendix 1 Configure Your PC

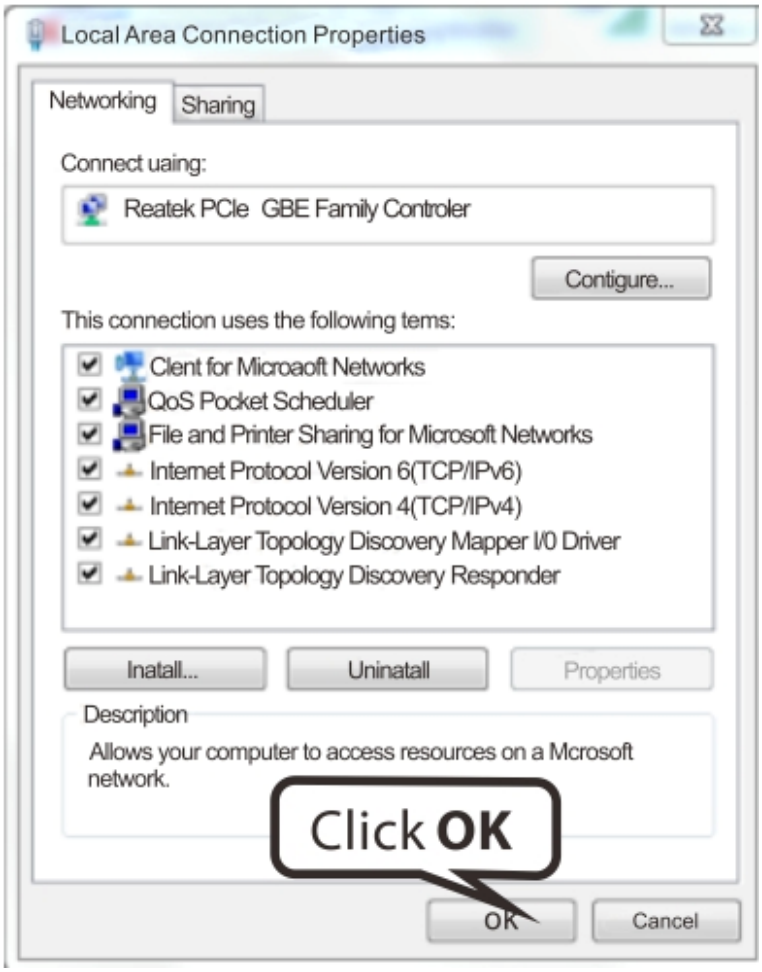
Screens to configure TCP/IP properties in other Operating Systems are similar to those below.

Windows 7

Click **Start-> Control Panel-> Network and Sharing Center-> Change adapter settings**, select a desired **Local Area Connection** and select **Properties.**





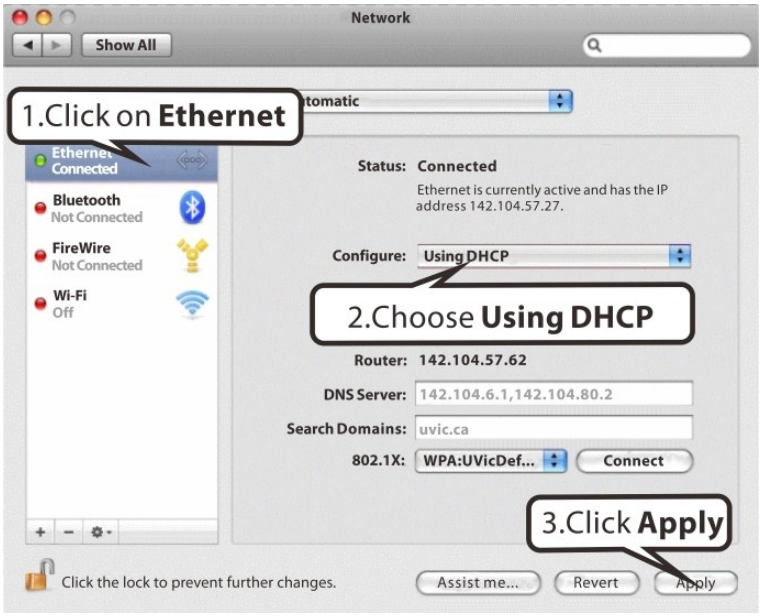


MAC

Click on the **Apple** icon from the top-left corner and select **System Preferences**.

Finder File Edit View
About This Mac
Software Update...
Mac OS X Software...
System Preferences...
Dock
Location
Recent Items
Force Quit Finder

Show All
Personal
Appearance
Desktop & Screen Saver
Dock
Expose & Spaces
Hardware
Bluetooth
CDs & DVDs
Displays
Energy Saver
Click Network
MobileMe
Network
QuickTime
Sharing
System
Accounts
Date & Time
Parental Controls
Software Update

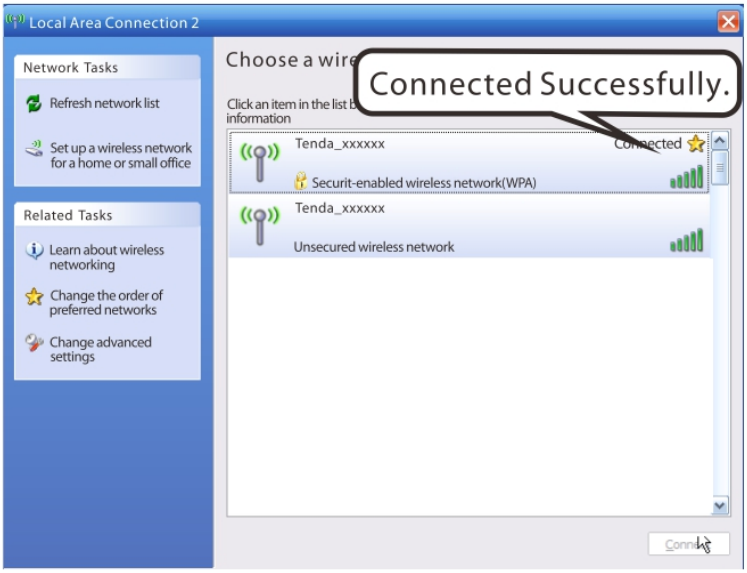

Network
Show All
1.Click on Ethernet
Ethernet
Connected
Bluetooth
Not Connected
FireWire
Not Connected
Wi-Fi
Off
Status: Connected
Ethernet is currently active and has the IP address 142.104.57.27.
Configure: Using DHCP
2.Choose Using DHCP
Router: 142.104.57.62
DNS Server: 142.104.6.1,142.104.80.2
Search Domains: uvic.ca
802.1X: WPA:UVicDef...
Connect
3.Click Apply
Click the lock to prevent further changes.
Assist me...
Revert
Apply

Appendix 2 Join Your Wireless Network

Windows XP

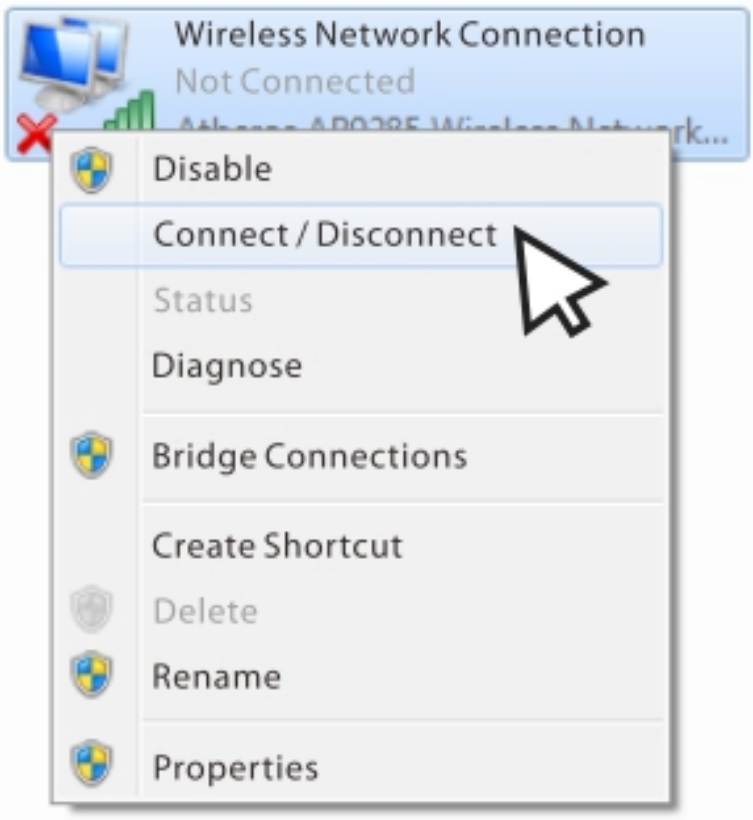
a). Click **Start-> Settings -> Control Panel**;
b). Double click **Network Connections**, select the desired wireless network connection and then click **View Available Wireless Networks**.

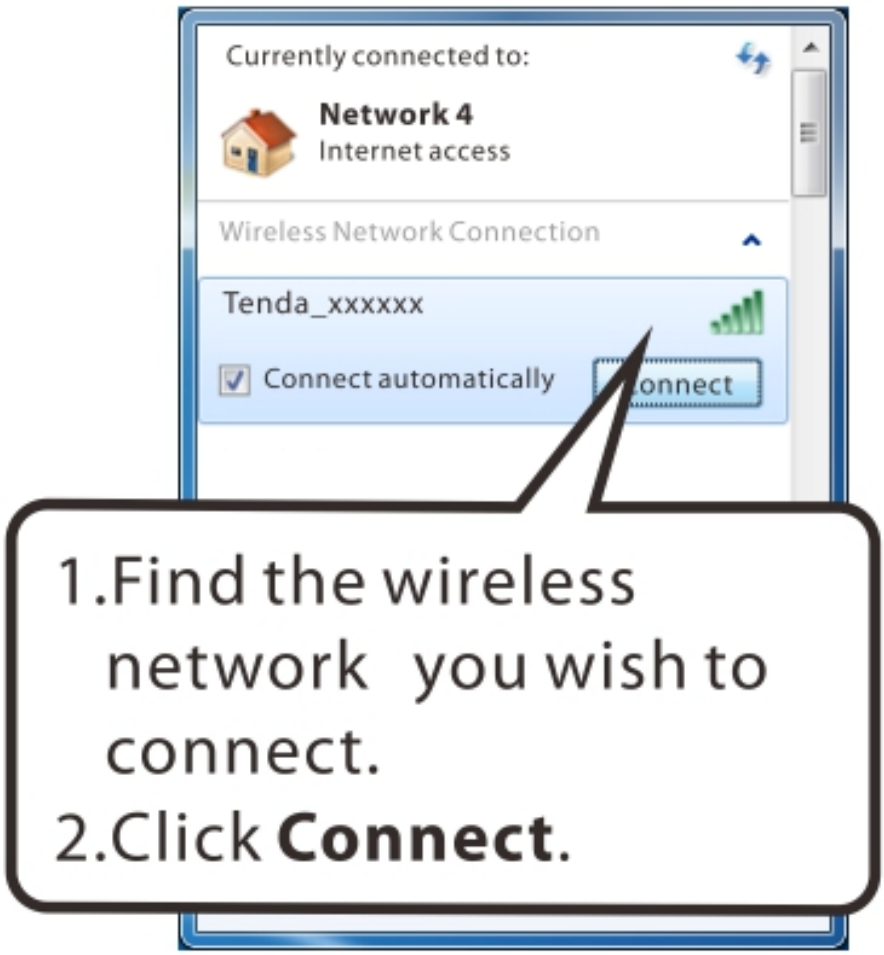
When you see **Connected** displayed next to the wireless network you selected, you have connected to the wireless network successfully.



Windows 7

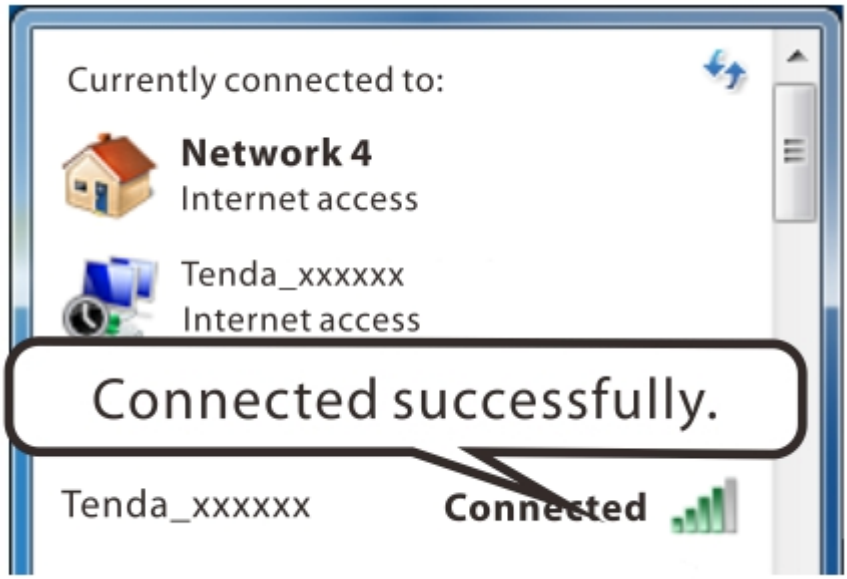
Click **Start-> Control Panel-> Network and Sharing Center-> Change adapter settings**, select a desired wireless connection and click **Connect/Disconnect**.




Currently connected to:
Network 4
Internet access
Wireless Network Connection
Tenda_xxxxxx
Connect automatically
Connect
1.Find the wireless network you wish to connect.
2.Click Connect.

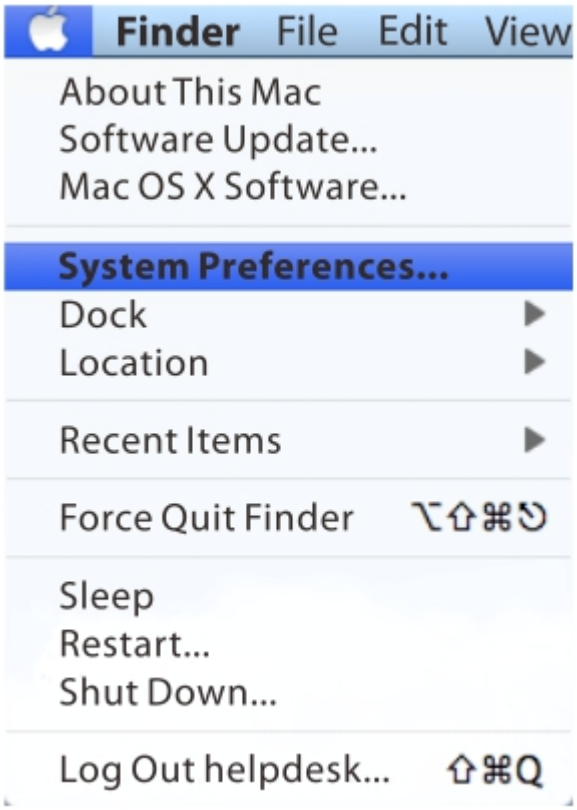
Connect to a Network
1.Enter the security key.
Security key:
Hide characters
2.Click OK.
OK
Cancel

When you see **Connected** displayed next to the wireless network you selected, you have connected to the wireless network successfully.

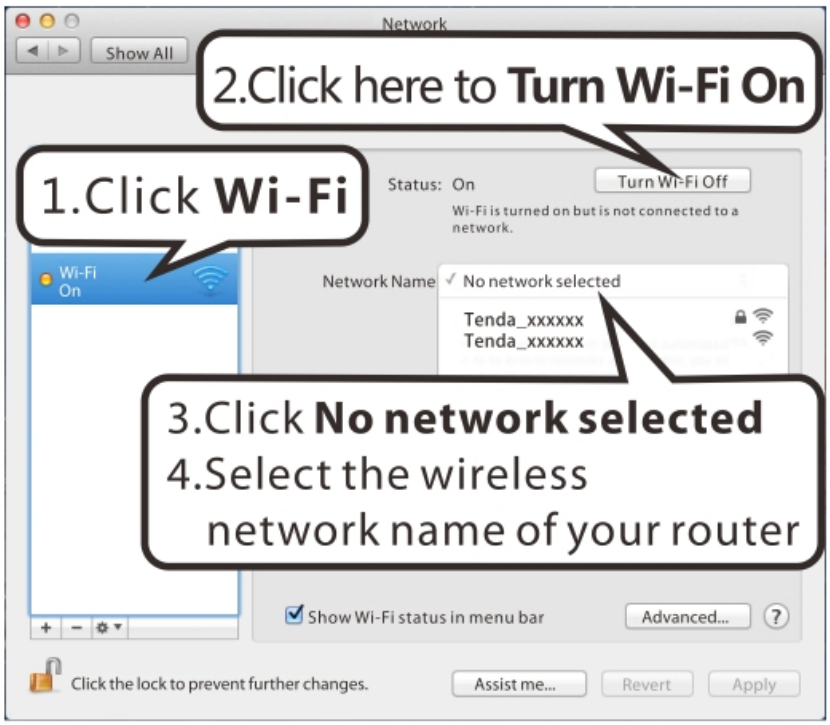


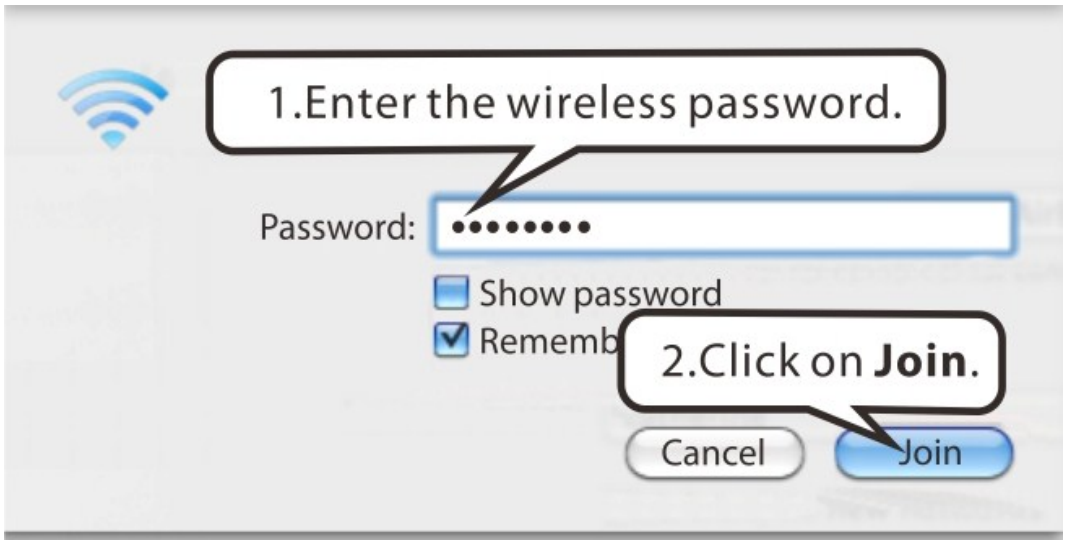
MAC

Click ->**System Preferences.**

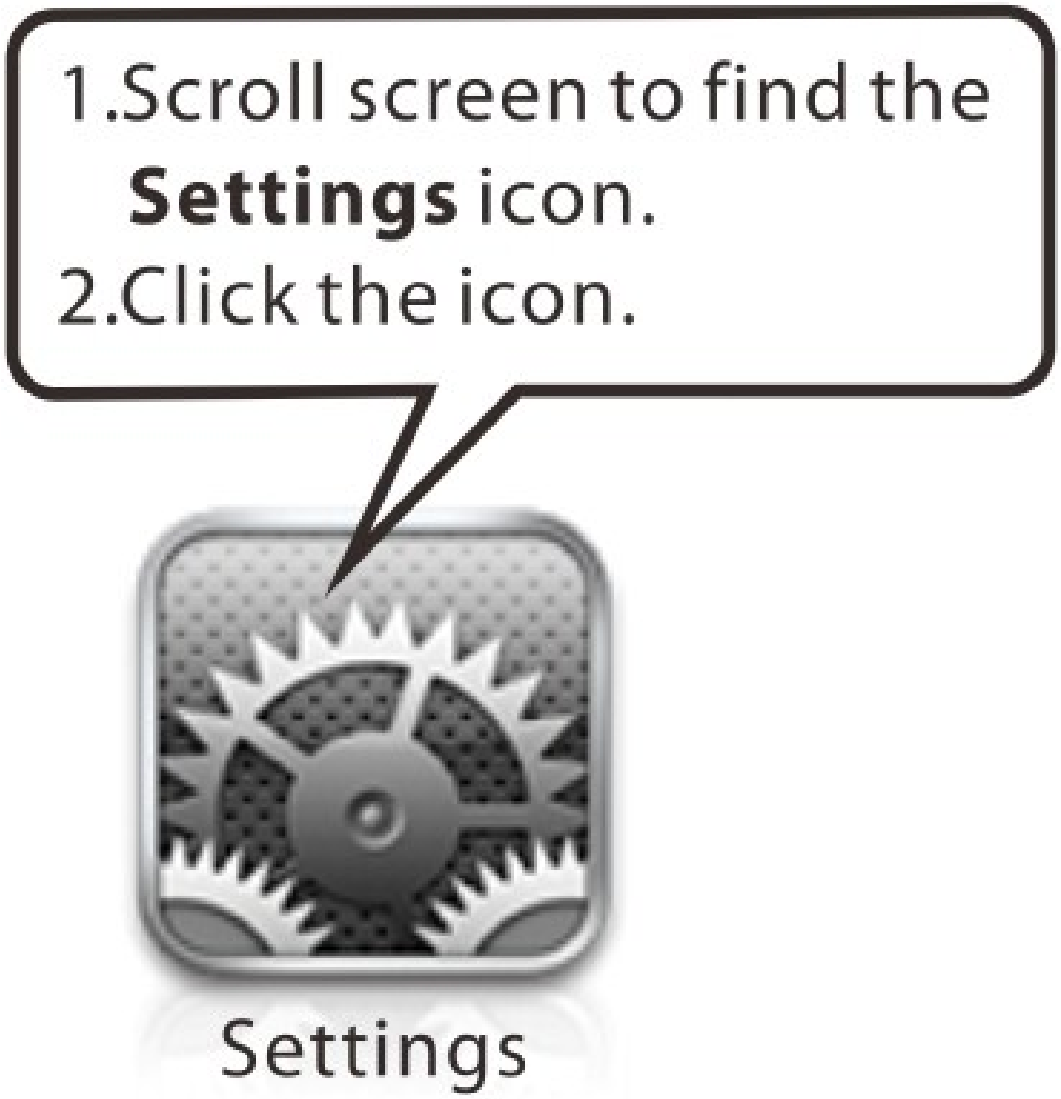


Show All
Personal
Appearance
Desktop & Screen Saver
Dock
Expose & Spaces
Select Network from Internet & Network.
Internet & Network
MobileMe
Network
QuickTime
Sharing
System
Accounts
Date & Time
Parental Controls
Software Update


Network
Show All
2.Click here to Turn Wi-Fi On
1.Click Wi-Fi
Status: On
Turn Wi-Fi Off
Wi-Fi is turned on but is not connected to a network.
Wi-Fi On
Network Name
No network selected
Tenda_xxxxxx
Tenda_xxxxxx
3.Click No network selected
4.Select the wireless network name of your router
Show Wi-Fi status in menu bar
Advanced...
Click the lock to prevent further changes.
Assist me...
Revert
Apply


1.Enter the wireless password.
Password:
Show password
Rememb
2.Click on Join.
Cancel
Join

iPhone/iPad


1.Scroll screen to find the
Settings icon.
2.Click the icon.
Settings

1.Click Wi-Fi.
2.Click here to open Wi-Fi
Airplane Mode OFF
Wi-Fi Disconnected
Bluetooth Off
Do Not Disturb OFF
Notifications
General
Sounds
Brightness & W
Picture Frame
Privacy
iCloud
Mail, Contacts, Calendars
Notes
Reminders
Wi-Fi ON
Choose a Network...
Tenda_xxxxxx
Tenda_xxxxxx
Tenda_xxxxxx
3.Find the name of the wireless network you wish to connect
4.Click on it.
Other...
Ask to Join Networks ON
Known networks will be joined automatically. If no known networks are available, you will be asked before joining a new network.

2.Click here to join the wireless network.
Enter the password for "dianshang"
Cancel
Enter Password
Join
Password
1.Enter a security key.

iPad
0:20
46%
Settings
Airplane Mode
OFF
Wi-Fi
Tenda_xxxxxx
Bluetooth
Off
Do Not Disturb
OFF
Notifications
General
Sounds
Brightness & Wallpaper
Picture Frame
Privacy
iCloud
Mail, Contacts, Calendars
Notes
Reminders
Wi-Fi
Wi-Fi
ON
Choose a Network...
ChinaNet-YJ3M
Tenda_xxxxxx
dianshang
Connected successfully
Other...
Ask to Join Networks
ON
Known networks will be joined automatically. If no known networks are available, you will be asked before joining a new network.

Appendix 3 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 DSL 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 **Hardware Install** hereof.

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

3. Press the **Reset** 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. I forget the wireless security key. What should I do? (How do I configure or change the security key?)

1. Try the default security key, which can be seen from the label attached to the device bottom.

2. If step 1 that works, access the device web manager and customize a new security key.

3. If step 1 does not work, press the **Reset** button on the device to restore factory default settings. And then log in to the device web manager to customize a new security key.

4. 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).

From the desktop, right-click on the **My Computer** icon and select **Manage**. Select **Services and Applications**, double click **Services** and view the status of **Wireless Zero Configuration**. If **Status** dose not display **Started**, right click the **Wireless Zero Configuration** and select **Start**; if **Startup Type** displays **Disabled**, right click the **Wireless Zero Configuration**, select **Properties**; from the **Startup Type** drop-down list box, select **Automatic** and then click **Star**t in **Service Status**.

5. Why cannot I connect to the searched wireless network?

1. Verify that you entered 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.

6. 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 machine, refrigerator and microwaves to avoid electronic interference.

Appendix 4 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
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
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

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 Communications	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
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 «Megaline»	0	40	LLC/SNAP Bridging
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
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
Iran	[Shatel] 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] 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 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 Telkomnet		8	81	PPPoE LLC

Appendix 5 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