AC1200 Dual-Band Wireless VDSL2/ADSL2+ Modem Router

User Guide

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Preface

Thank you for choosing Tenda! Please read this user guide before you start with V1200.

Conventions

The typographical elements that may be found in this document are defined as follows.

Item	Presentation	Example
Cascading menus	>	**System > Live Users**
Parameter and value	Bold	Set **User Name** to **Tom**.
Variable	Italic	Format: XX:XX:XX:XX:XX:XX
UI control	Bold	On the **Policy** page, click the **OK** button.
Message	“ ”	The “Success” message appears.

The symbols that may be found in this document are defined as follows.

Symbol	Meaning
NOTE	This format is used to highlight information of importance or special interest. Ignoring this type of note may result in ineffective configurations, loss of data or damage to device.
TIP	This format is used to highlight a procedure that will save time or resources.

Acronyms and Abbreviations

Acronym or Abbreviation	Full Spelling
ADSL	Asymmetric Digital Subscriber Line
ARP	Address Resolution Protocol
ATM	Asynchronous Transfer Mode
DDNS	Dynamic Domain Name Server
DHCP	Dynamic Host Configuration Protocol
DSL	Digital Subscriber Line
DMZ	Demilitarized Zone

Acronym or Abbreviation	Full Spelling
DNS	Domain Name Server
IEEE	Institute of Electrical and Electronics Engineers
IP	Internet Protocol
IPTV	Internet Protocol Television
ISP	Internet Service Provider
LAN	Local Area Network
L2TP	Layer 2 Tunneling Protocol
PPP	Point to Point Protocol
PPPoE	Point-to-Point Protocol over Ethernet
PPTP	Point to Point Tunneling Protocol
RIP	Routing Information Protocol
SIP	Session Initiation Protocol
SSID	Service Set Identifier
URL	Uniform Resource Locator
VLAN	Virtual Local Area Network
VPN	Virtual Private Network
WPS	WiFi Protected Setup

Additional Information

For more information, search this product model on our website at http://www.tendacn.com.

Technical Support

If you need more help, contact us by any of the following means. We will be glad to assist you as soon as possible.

Hotline	Global: (86) 755-27657180 United States: 1-800-570-5892 Canada: 1-888-998-8966 Hong Kong: 00852-81931998	**Email**	support@tenda.cn
Website	http://www.tendacn.com		

Contents

1 Product overview

1.1 Introduction

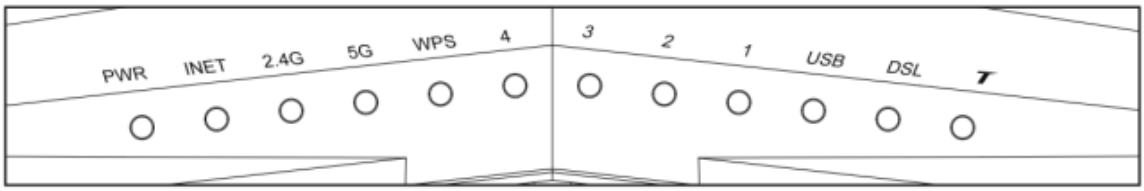
Compatible with VDSL2 Profile 17a, Tenda V1200 offers a VDSL broadband access speed as high as of 100 Mbps, 5x faster than ADSL2+. With DSL modem and WiFi router in one, it features an integrated DSL port that supports all standard DSL connections, including VDSL2, ADSL2+, ADSL2, and ADSL.

1.2 Features

- All-in-one device combines a VDSL2/ADSL2+ modem, wired router, wireless router and switch.
- Ethernet and VDSL uplinks: Access the internet via DSL port or WAN port (RJ45 port).
- Multiple internet connection types: Bridging, PPPoE, IPoE, PPPoA, and IPoA.
- Up to 1200 Mbps wireless transmission speed for excellent HD video streaming and online gaming.
- Compatible with IEEE 802.11b/g/n/ac Wireless devices.
- One-key WPS ensures quick and secure wireless network connection.
- USB port makes you access and share files through an attached USB storage device.
- Port 4 can function either as a LAN or a WAN port.
- The IPTV feature is supported.
- QoS feature helps prioritize media streaming and gaming applications for best entertainment experience.
- Parental Control controls internet access of children using flexible and customizable filter settings.
- 6 kV lightning - proof design fits into lightning-intensive environment.
- Advanced Features: IPv6, DDNS, virtual server, DMZ, port triggering, IP filter, MAC filter, UPnP, and so on.

1.3 Appearance

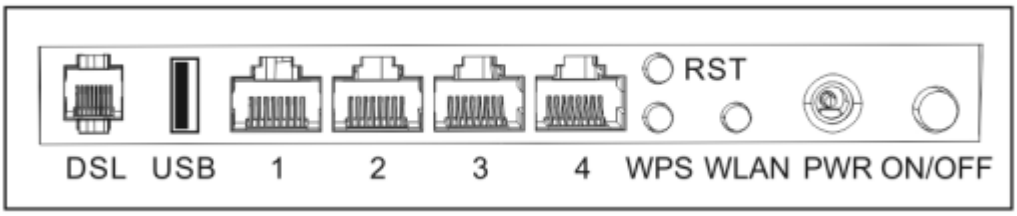
1.3.1 LED indicators



LED Indicator	Color	Status	Description
PWR	Red	Solid on	The modem router is starting.
		Blinking	The modem router is upgrading.
	Green	Solid on	The modem router is working properly.
INET	Green	Solid on	The modem router is connected to the internet successfully.
		Blinking	Data is being transmitted.
	Red	Blinking	The modem router fails to connect to the internet.
2.4G	Green	Solid on	2.4 GHz WiFi network is enabled.
		Blinking	Data is being transmitted over 2.4 GHz WiFi network.
	/	Off	2.4 GHz WiFi network is disabled.
5G	Green	Solid on	5 GHz WiFi network is enabled.
		Blinking	Data is being transmitted over 5 GHz WiFi network.
	/	Off	5 GHz WiFi network is disabled.
WPS	Green	Solid on for 2 mins->Off	A WPS connection is established.
		Blinking	The modem router is performing WPS negotiation.

LED Indicator	Color	Status	Description
	/	Off	The WPS feature is disabled, or the WPS feature is enabled but the modem router does not perform WPS negotiation.
1-4	Green	Solid on	This port is connected properly.
		Blinking	Data is being transmitted over the port.
	/	Off	The port is disconnected, or not connected properly.
USB	Green	Solid on	A USB device is properly connected and ready.
		Blinking	Data is being transmitted.
	/	Off	No USB device is detected, or the USB device is ejected safely.
DSL	Green	Solid on	The DSL negotiation succeeds.
		Blinking	The modem router is performing DSL negotiation.
	/	Off	The port is disconnected, or not connected properly.
			This LED is reserved.

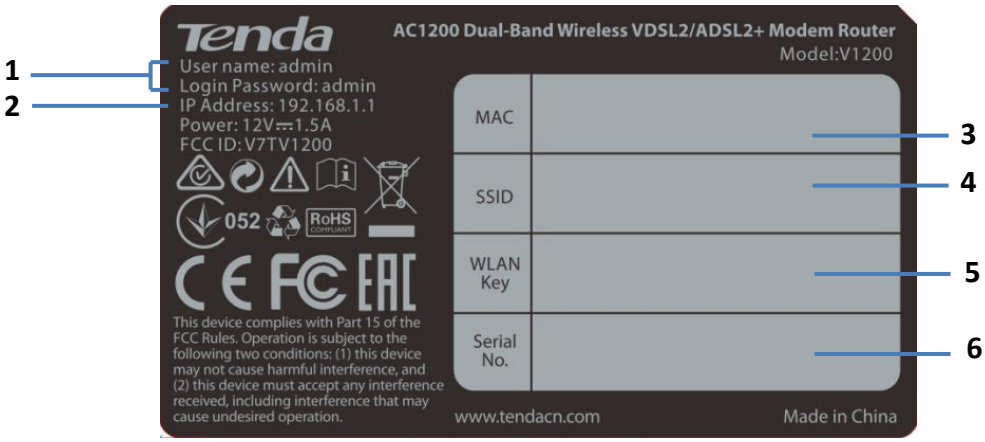
1.3.2 Ports and buttons



Button/Port	Description
ON/OFF	This button is used to turn on/off the modem router.
PWR	The power jack is used to connect to the included power adapter for power supply. To prevent device damage, use the included power adapter for power supply.

Button/Port	Description
WLAN	This button is used to enable or disable both 2.4 GHz and 5 GHz WiFi networks.
WPS	Enable the WPS function on the web UI of the modem router. Press this button for about 3 seconds and then release it to perform the WPS negotiation process. Within 2 minutes after pressing the button, enable the wireless device's WPS feature to establish WPS connection.
RST	Hold down this button for about 6 seconds to restore factory settings.
1/2/3	LAN Ports. Used to connect to computers, switches, and so on.
4	WAN/LAN port. When the modem router serves as a router only, port 4 can be used as a WAN port connected to an Ethernet jack. Otherwise, it serves as a LAN port.
USB	USBV2.0 port. Used to connect to a USB device. Warning: The output current of the USB 2.0 port should not exceed 0.5 A.
DSL	RJ11 port. Used to connect to a phone jack for internet access.

1.3.3 Label



1: Default login user name and password.

2: Default login IP address of the modem router.

3: MAC address of the modem router.

4: Default wireless network name of the modem router.

5: Default wireless password for the default wireless network.

6: The serial number of the modem router.

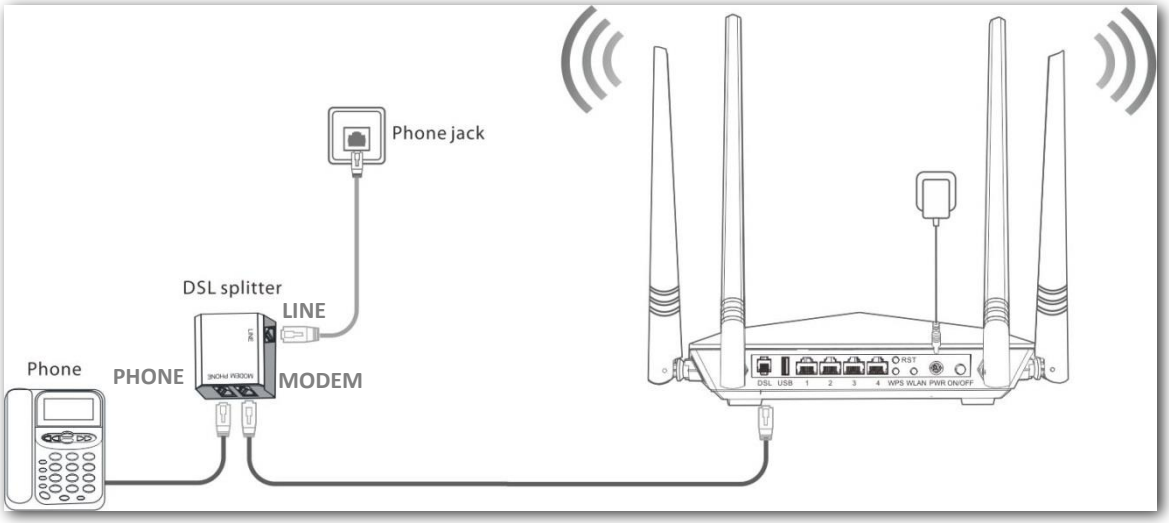
2 Quick setup

2.1 Connecting the device to the internet

The modem router supports phone cable connection, Ethernet cable connection, and 3G/4G data card. Select a connection type to follow according to your internet service.

Phone cable connection

If you access the internet with a phone cable, connect the modem router as follows:



Step 1 Connect the **LINE** port of the included splitter to the internet.

Step 2 (Optional) If you do not need to use the phone service, skip this step. Connect the **PHONE** port of the splitter to your telephone.

Step 3 Connect the **MODEM** port of the splitter to the **DSL** port of the modem router.

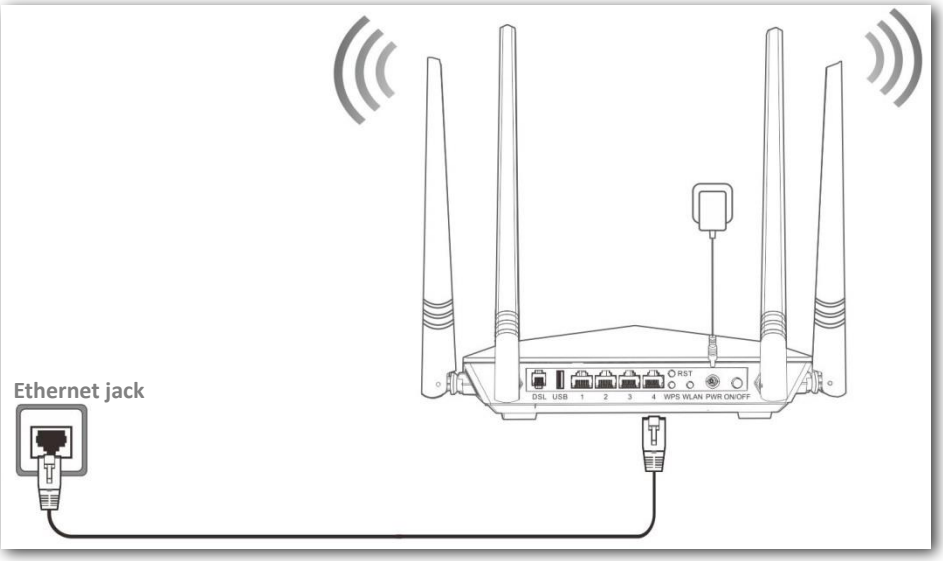
Step 4 Use the included power adapter to connect the modem router to a power supply.

Step 5 Turn the modem router on.

----End

Ethernet cable connection

If you access the internet with an Ethernet cable, connect the modem router as follows:



Step 1 Connect port 4 of the modem router to the internet.

Step 2 Use the included power adapter to connect the modem router to a power supply.

Step 3 Turn the modem router on.

----End

3G/4G data card

If you access the internet with a 3G/4G dongle, perform the following steps:

Step 1 Use the included power adapter to connect the modem router to a power supply.

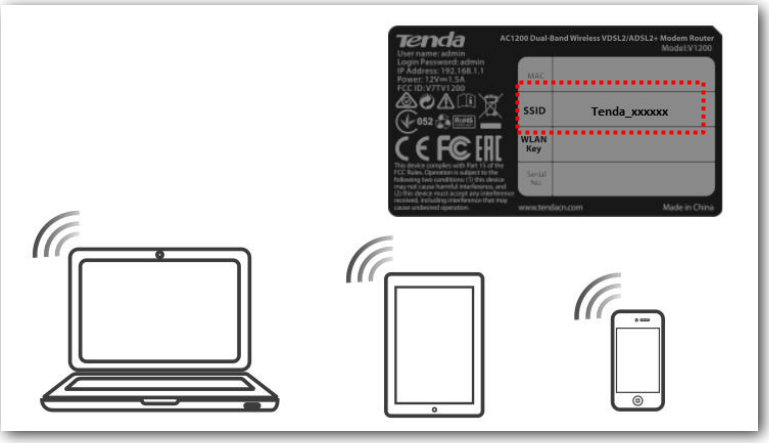
Step 2 Turn the modem router on.

Step 3 Insert a 3G/4G dongle provided by your ISP into USB port of the modem router for internet access.

----End

2.2 Connecting a client to the modem router for setup

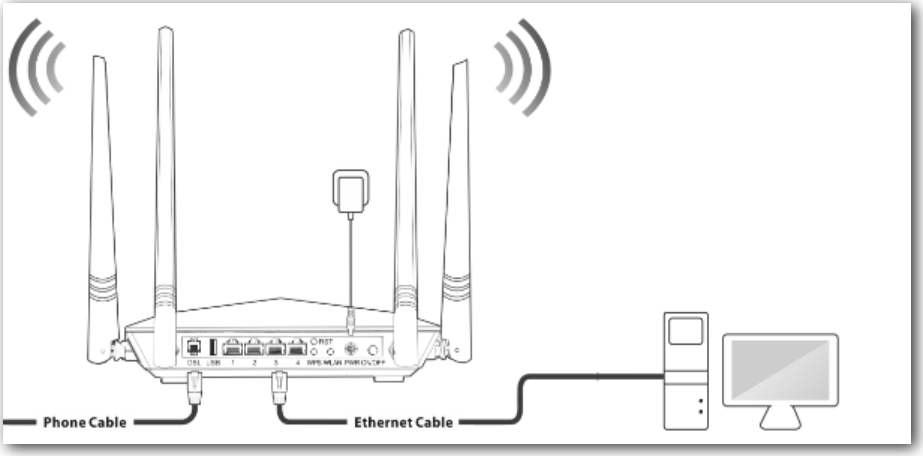
Connecting a wireless client to the modem router



Use your smart device to search and connect to the default SSID (WiFi name) of the modem router. The default SSID is specified on the product label. This label is on the bottom of the modem router. And by default, there is no WLAN key (WiFi password).

If either the SSID or WLAN key is changed, the wireless device is required to connect to the modem router again.

Connecting a wired client to the modem router



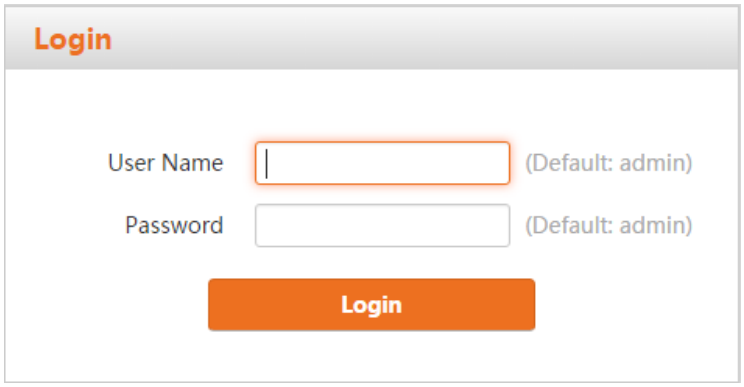
Connect your computer to an available LAN port (port 1, 2, 3, or 4) of the modem router.

2.3 Setting up an internet connection

2.3.1 Login

Step 1 Start a web browser on the client connected to the modem router, and visit **192.168.1.1**.

Step 2 Enter the default login user name and password (both are **admin**), and click **Login**.



TIP

To prevent an unauthorized user from changing the settings of the mode router, you'd better change the default login user name and password. Refer to Passwords for details.

----End

2.3.2 Setting up the internet settings

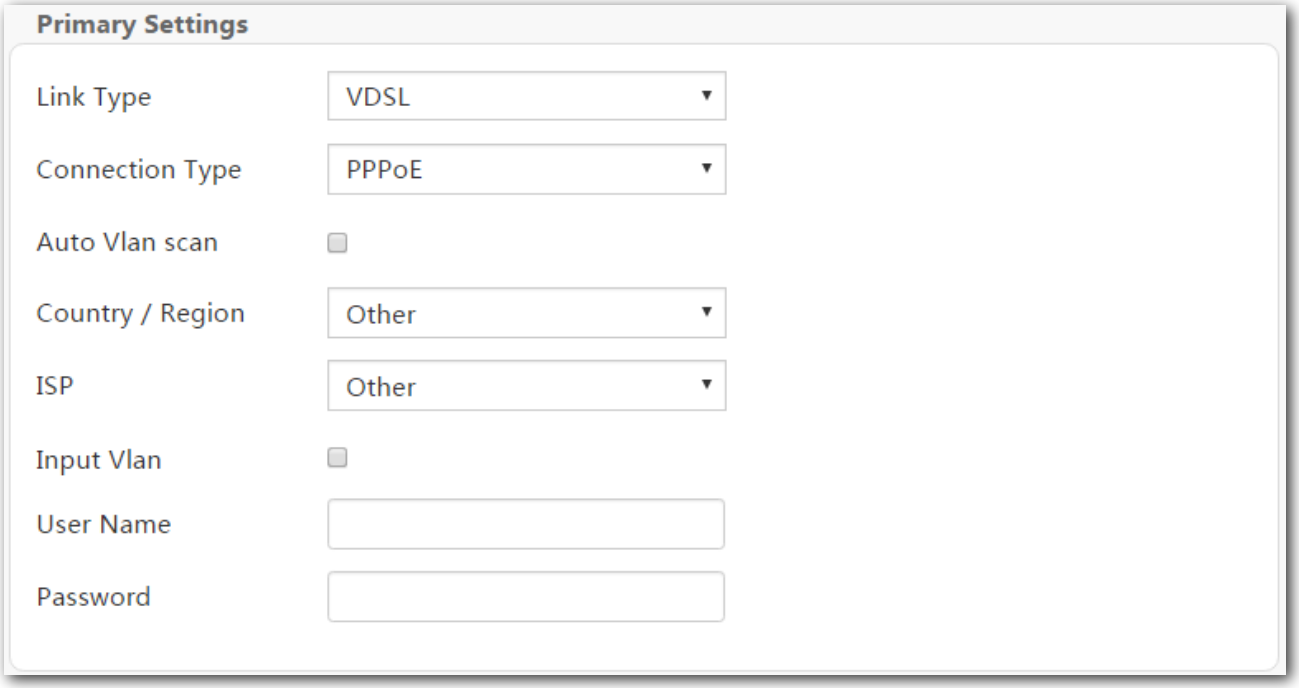
Select one to follow according to your internet connection type.

Phone cable connection

If you connect the modem router to the internet via a phone cable, refer to the configuration in this part to complete your internet settings.

VDSL

If the link type your internet service provider (ISP) provided to you is **VDSL**, follow the procedure below:



Step 1 Enter the **Home** page.

Step 2 **Link Type**: Select **VDSL**.

Step 3 **Connection Type**: Select a connection type according to the instructions in the table below, and enter the related internet parameters.

Connection Type		Description
PPPoE		Select this type if your ISP provides a user name and password to you for internet access.
IPoE	Dynamic IP	Select this type if your ISP does not provide any parameters to you for internet access.
	Static IP	Select this type if your ISP provides a static IP address and other related information to you for internet access.
Bridge		Select this type when this device only serves as a modem, and you want to set up a dial-up connection or enter other internet parameters directly on your computer for internet access.

Step 4 **Auto Vlan scan**: If the VLAN ID is provided, set both the **Country/Region** and **ISP** to **Other**, select **Input Vlan**, and enter the VLAN ID in the **Vlan ID** box. If the VLAN ID is not provided, select your country or region, the VLAN ID will be automatically populated. Or select **Auto Vlan scan**, the modem router will try accessing the upstream device using the parameters in the **VLAN List** form in A.3.

If you are uncertain about the VLAN ID, keep the default.

Step 5 Click **OK** on the bottom of the page to apply the settings.

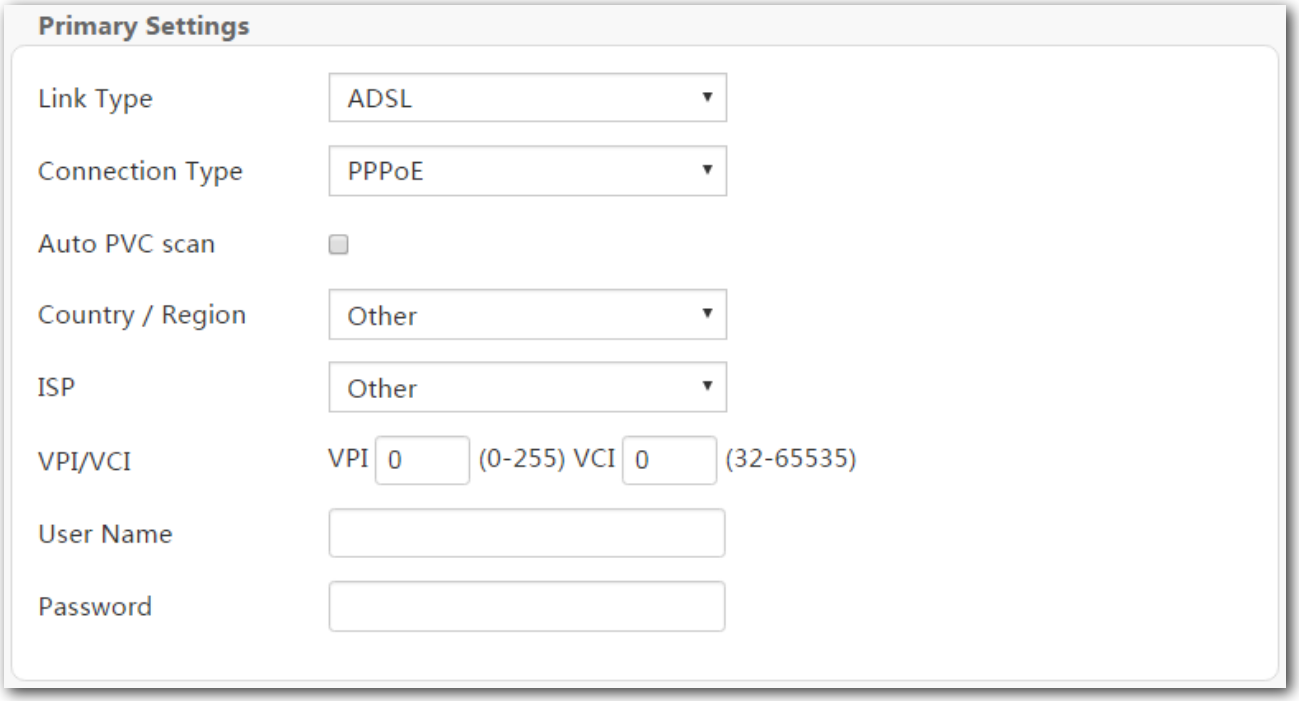
TIP

If you cannot access the internet after completing the primary settings, contact your ISP for help.

----End

ADSL

If the link type your ISP provided to you is **ADSL**, follow the procedures below:



Step 1 Enter the **Home** page.

Step 2 **Link Type**: Select **ADSL**.

Step 3 **Connection Type**: Select a connection type according to the instructions in the table below.

Connection Type		Description
PPPoE		If your ISP provides a user name and password to you for internet access, your connection type may be PPPoE or PPPoA. Contact your ISP for details.
PPPoA		
IPoE	Dynamic IP	Select this type if your ISP does not provide any parameters to you for internet access.
	Static IP	If your ISP provides a static IP address and other related information to you for internet access, your connection type may be IPoE or IPoA, contact your ISP for details.
IPoA	Static IP	
Bridge		Select this type when this device only serves as a modem, and you want to set up a dial-up connection or enter other internet parameters directly on your computer for internet access.

Step 4 **Country/Region**: Select your country or region.

Step 5 **ISP**: Select your ISP.

Step 6 **Auto PVC scan**: Select your country or region from the drop-down list, and the VPI and VCI values will be automatically populated.
If your country/region and ISP are not available in the drop-down list or the VPI and VCI values are incorrect, select **Other** both from the **Country/Region** and **ISP** lists, and enter the **VPI** and **VCI** values manually.
If you are uncertain about the VPI and VCI, select **Auto PVC scan**.

Step 7 Enter other internet parameters provided by your ISP (if any).

Step 8 Click **OK** on the bottom of the page to apply the settings.

TIP

If you cannot access the internet after completing the primary settings, contact your ISP for help.

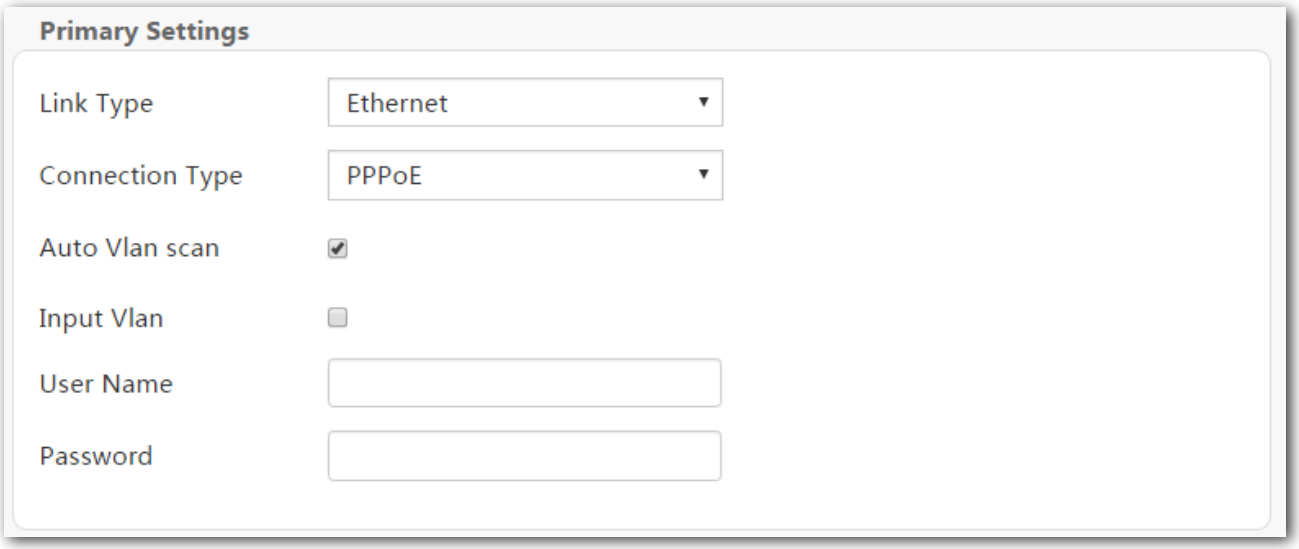
----End

Ethernet cable connection

If you connect the modem router to the internet with an Ethernet cable, refer to the configuration in this part to complete your internet settings. In this case, this device only serves as a wireless router.

PPPoE

Use this type if you can access the internet only after setting up a dial-up connection on the computer using a user name and password provided by your ISP.



Step 1 Enter the **Home** page.

Step 2 **Link Type**: Select **Ethernet**.

Step 3 **Connection Type**: Select **PPPoE**.

Step 4 **Auto Vlan scan**: If the VLAN ID is provided, deselect **Auto Vlan scan**, and select your country or region. The VLAN ID will be automatically populated. If it is incorrect, change the value in the **Vlan ID** box.
If you cannot find your country or region in the drop-down list, set both the **Country/Region** and **ISP** to **Other**, select **input Vlan**, and enter the VLAN ID in the **Vlan ID** box.
If you are uncertain about the VLAN ID, keep the default.

Step 5 Enter the user name and password provided by your ISP.

Step 6 Click **OK** on the bottom of the page to apply the settings.

----End

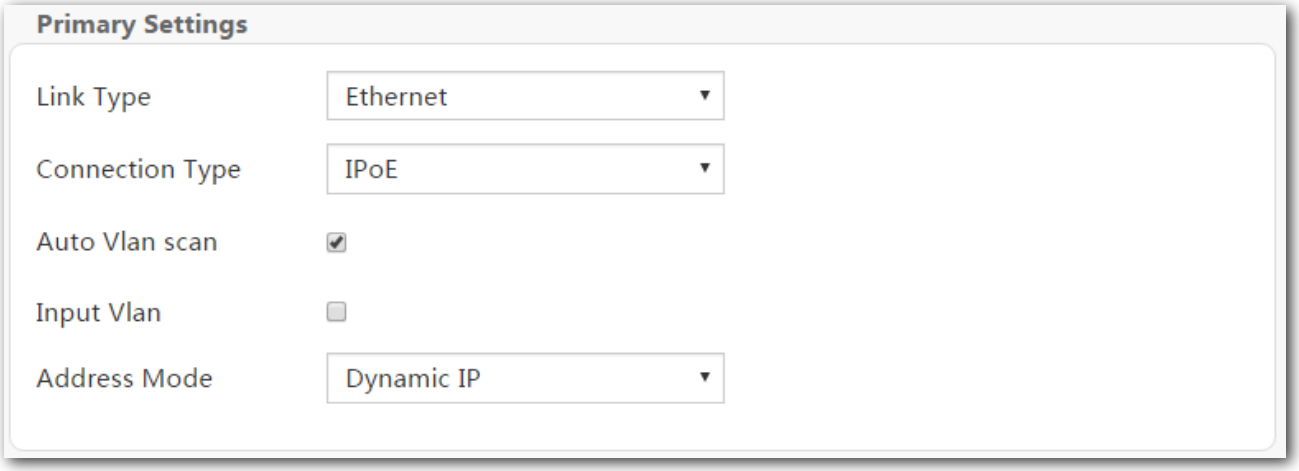
TIP

If you cannot access the internet after completing the primary settings, contact your ISP for help.

IPoE

- **Dynamic IP**

Use this type if you can access the internet without setting any information on your computer.



Step 1 Enter the **Home** page.

Step 2 **Link Type**: Select **Ethernet**.

Step 3 **Connection Type**: Select **IPoE**.

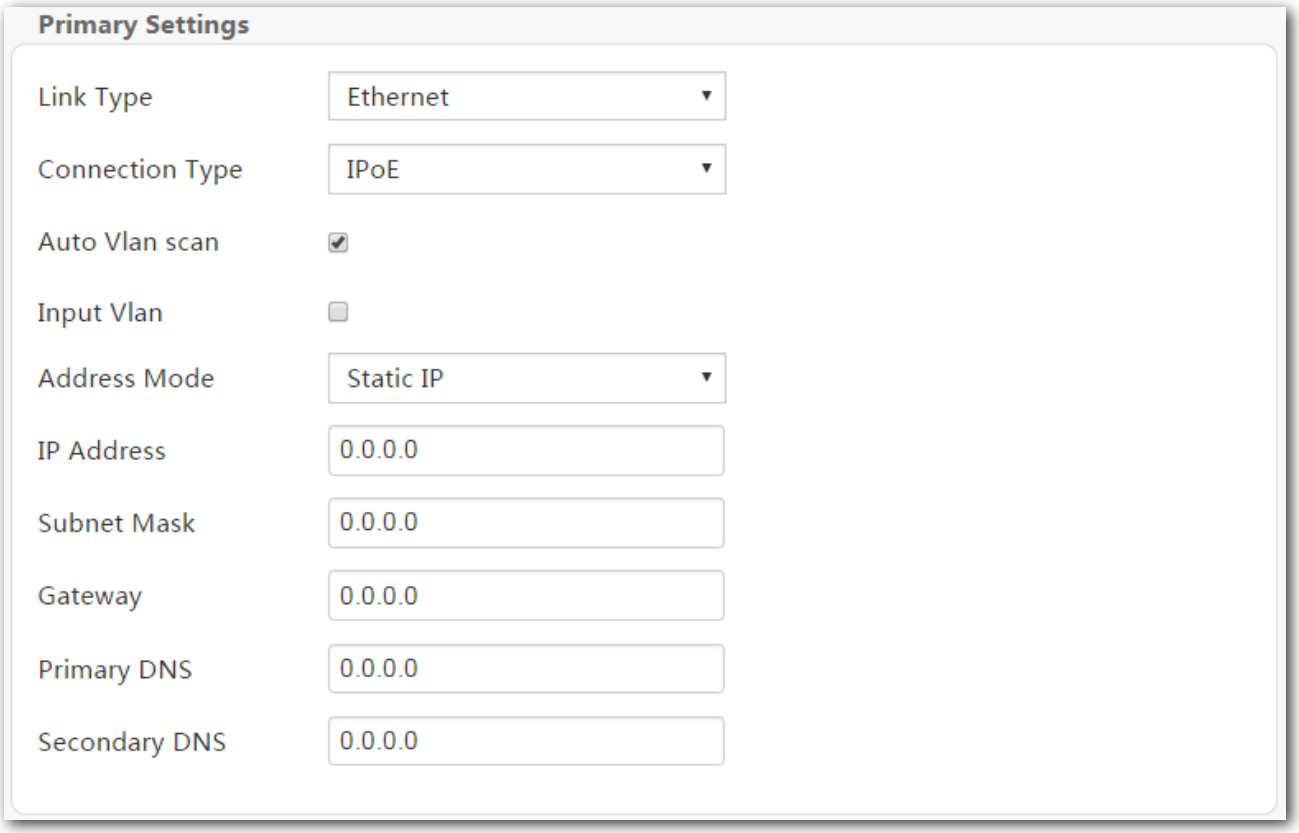
Step 4 **Address Mode**: Select **Dynamic IP**.

Step 5 Click **OK** on the bottom of the page to apply the settings.

----End

- **Static IP**

Use this type if you can access the internet only after setting a static IP address and other related information on your computer.



Step 1 Log in to the web UI and enter the **Home** page.

Step 2 **Link Type**: Select **Ethernet**.

Step 3 **Connection Type**: Select **IPoE**.

Step 4 **Address Mode**: Select **Static IP**.

Step 5 Enter the static IP address, and other related parameters.

Step 6 Click **OK** on the bottom of the page to apply the settings.

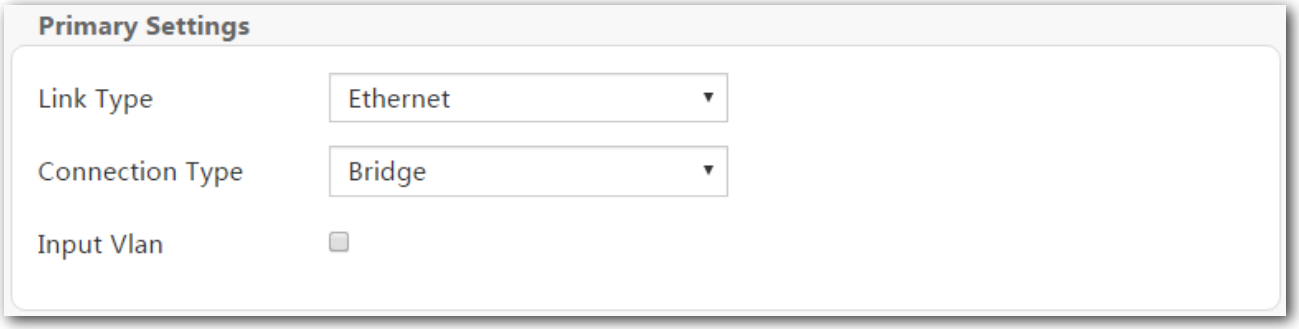
----End

TIP

If you cannot access the internet after completing the primary settings, contact your ISP for help.

Bridge

Select this type when this device only serves as a switch, and you want to set up a dial-up connection or enter other internet parameters directly on your computer for internet access.



Step 1 Enter the **Home** page.

Step 2 **Link Type**: Select **Ethernet**.

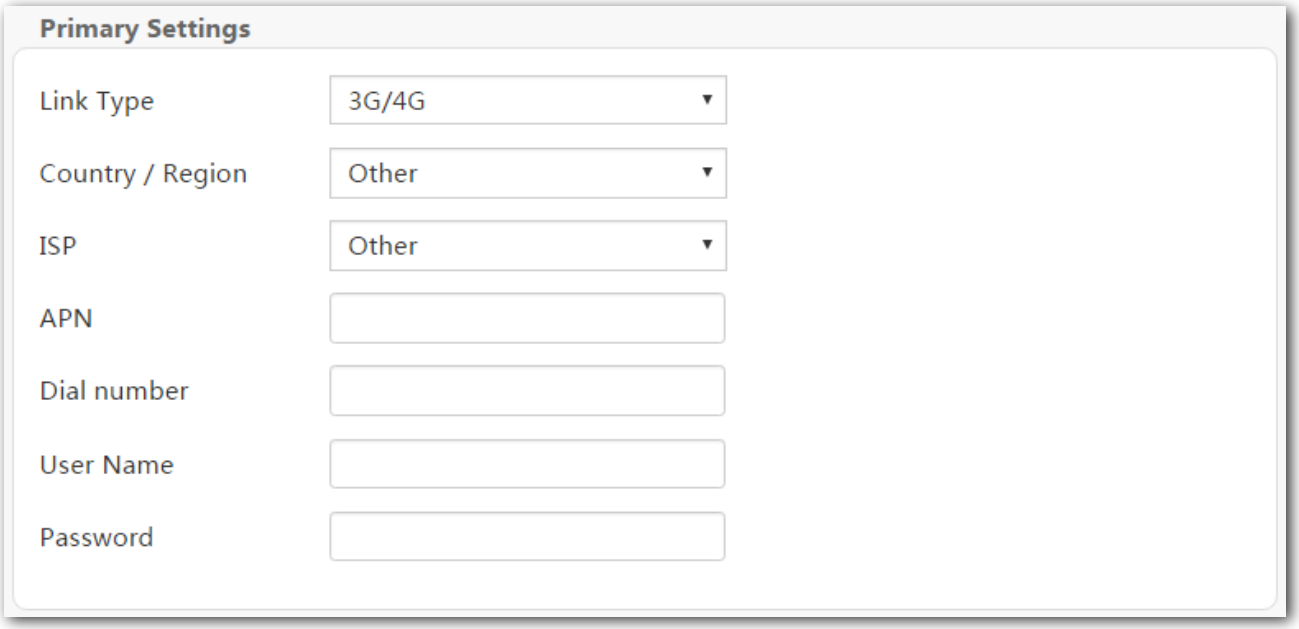
Step 3 **Connection Type**: Select **Bridge**.

Step 4 Click **OK** on the bottom of the page to apply the settings.

----End

3G/4G dongle

If you connect the modem router to the internet via a 3G/4G dongle, refer to the configuration in this part to complete your internet settings.



Step 1 Log in to the web UI and enter the **Home** page.

Step 2 **Link Type**: Select **3G/4G**.

Step 3 **Country / Region**: Select your country or region.

Step 4 **ISP**: Select your ISP.

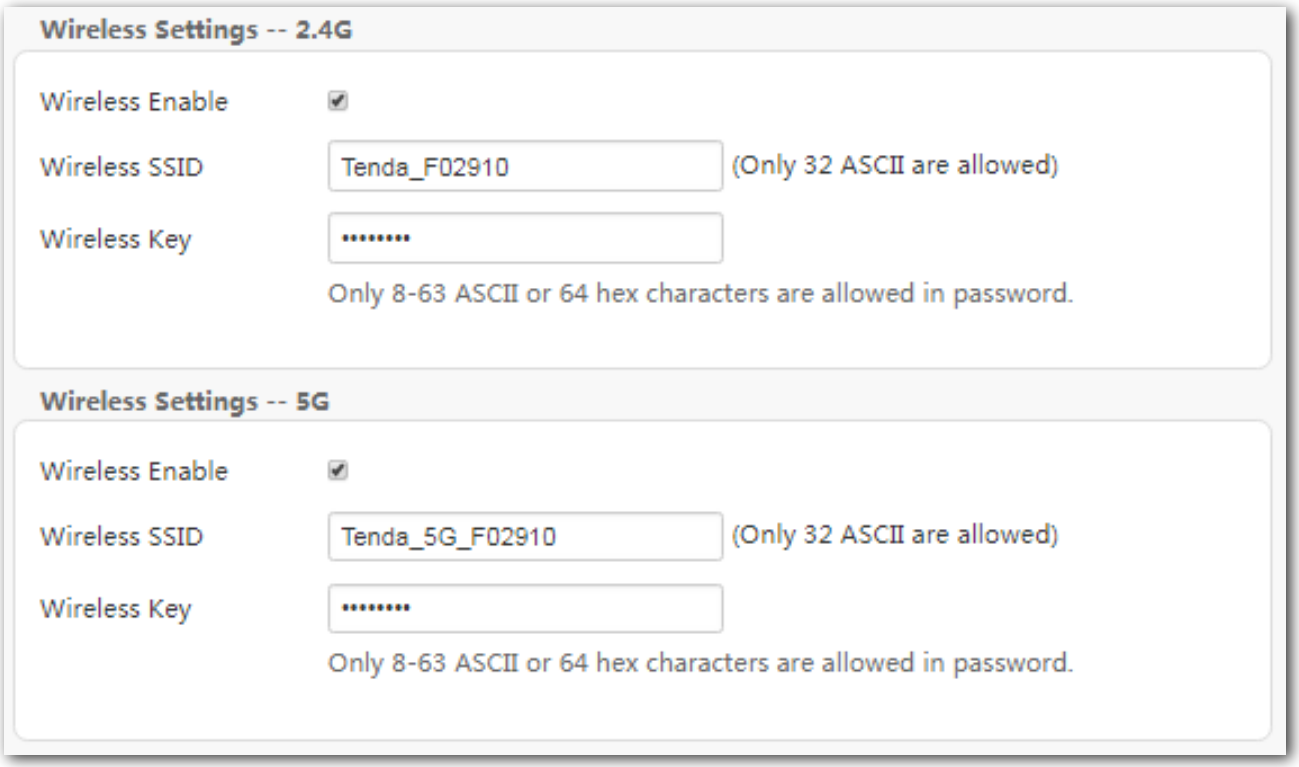
Step 5 **(Optional) APN/Dial number/Username/Password**: Generally, if you select a correct country/region and ISP, the necessary parameters can be automatically filled in. If not, enter them manually according to the internet parameters your ISP provided.

Step 6 Click **OK** on the bottom of the page to apply the settings.

----End

2.4 Wireless setup

The wireless feature is enabled by default. The default SSID for 2.4 GHz wireless network is Tenda_*XXXXXX*, and for 5 GHz wireless network is Tenda_5G_*XXXXXX*, where XXXXXX is the last six characters of the MAC address of the modem router. There is no Wireless Key (WiFi password) by default. But there is a preset WiFi password **12345678** in the **Wireless Key** box for both 2.4 GHz and 5 GHz wireless networks. It takes effects when the **OK** button on the bottom of the page is clicked.



To customize a WiFi name and password:

Step 1 Enter the **Home** page.

Step 2 **Wireless SSID:** Enter new WiFi names for 2.4 GHz and 5 GHz wireless networks.

Step 3 **Wireless Key:** Enter new WiFi passwords for 2.4 GHz and 5 GHz wireless networks.

Step 4 Click **OK** to apply the settings.

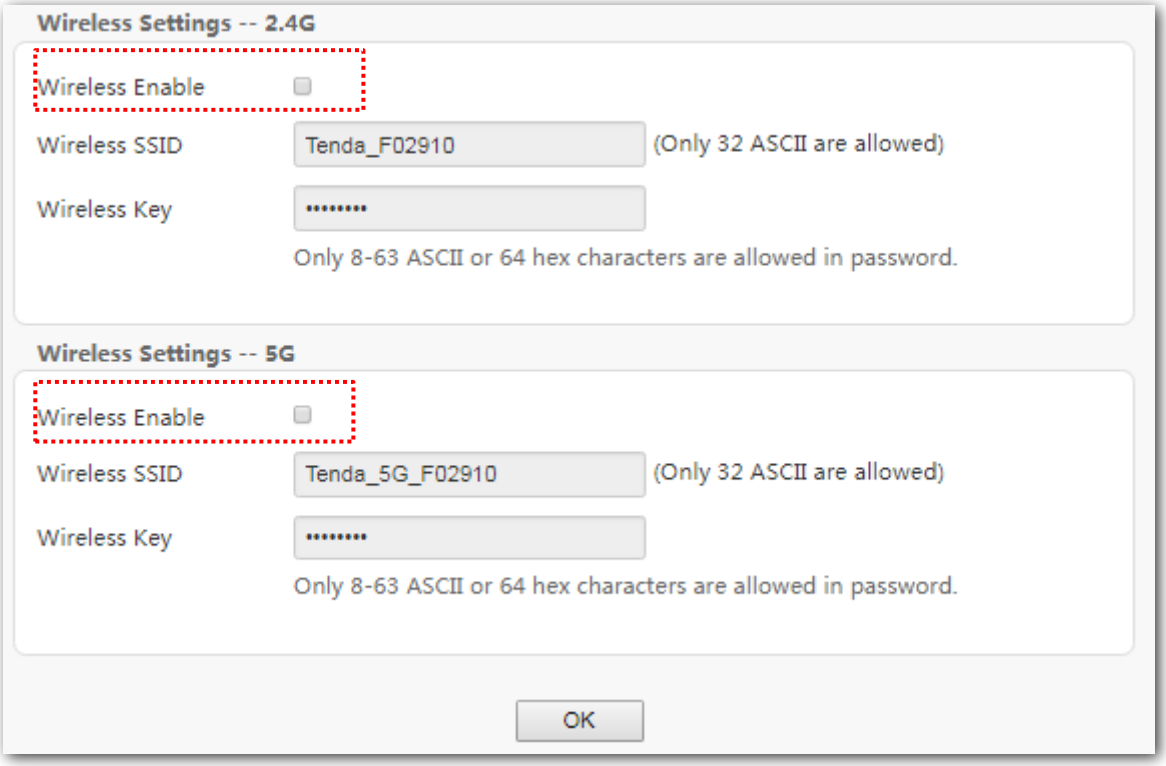
----End

To disable wireless function:

Step 1 Enter the **Home** page.

Step 2 Deselect the **Wireless Enable** option for 2.4 GHz or 5 GHz wireless networks.

Step 3 Click **OK**.



----End

When the wireless feature is disabled, wireless devices cannot connect to the modem router wirelessly.

2.5 Connecting to the modem router for internet access

To access the internet with:

Wireless devices: connect your wireless devices to the WiFi networks of the modem router using the SSIDs and wireless keys you set.

Wired devices: connect the wired devices to ports 1, 2, 3 or 4 (if available) of the modem router.

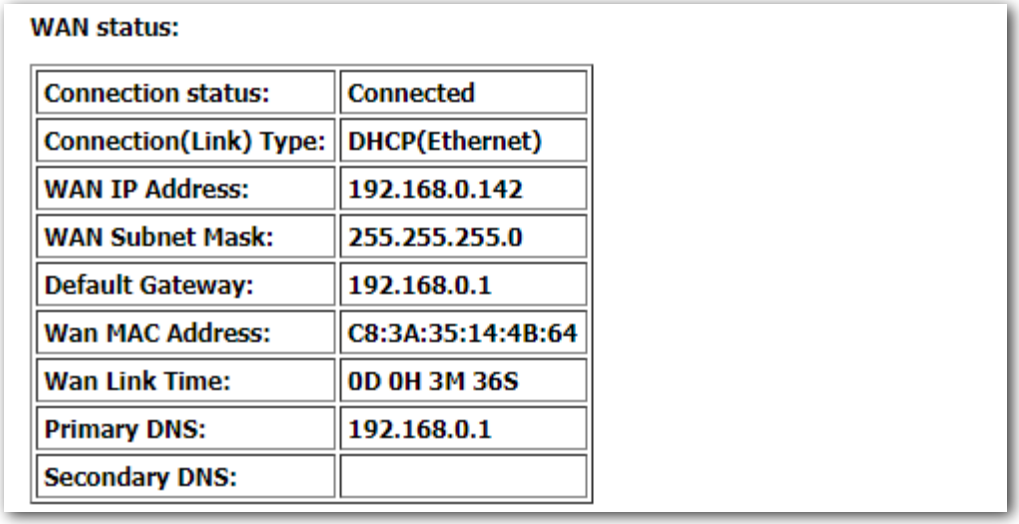
3 Device info

3.1 Summary

Here you can view WAN status, xDSL information, and the device information.

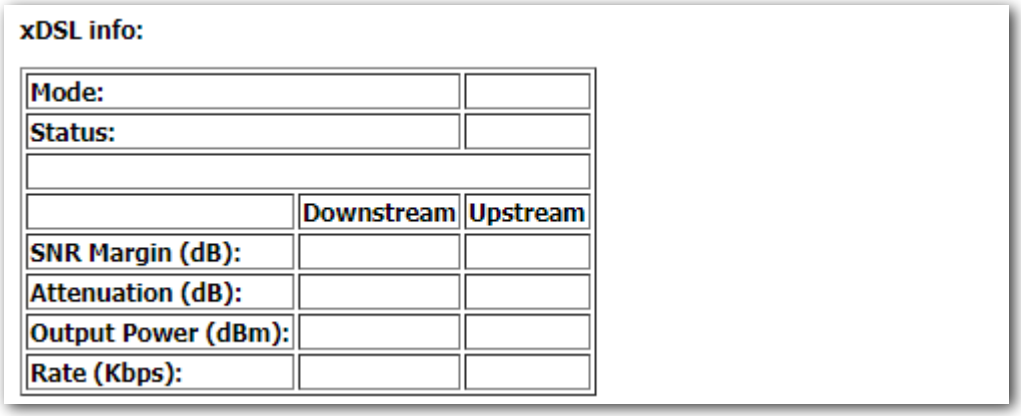
3.1.1 WAN status

If a WAN connection is established, you can check the WAN status here, including connection status, connection type, link type, WAN IP address, gateway, WAN MAC address, WAN link time, and DNS server information.



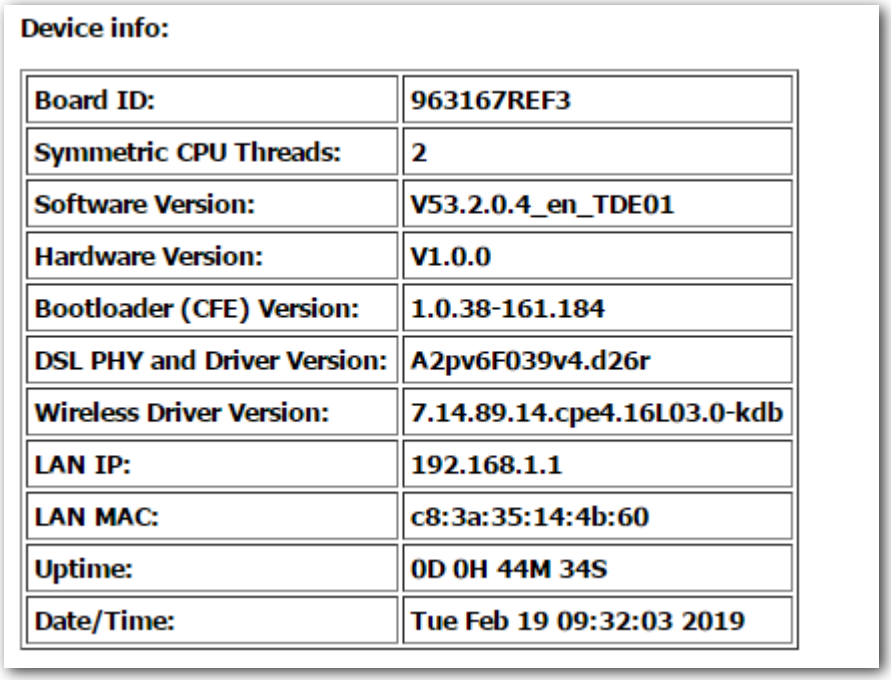
3.1.2 xDSL info

If an ADSL/VDSL connection is established, you can check the ADSL/VDSL connection information here.



3.1.3 Device info

You can check the basic information of the modem router here.

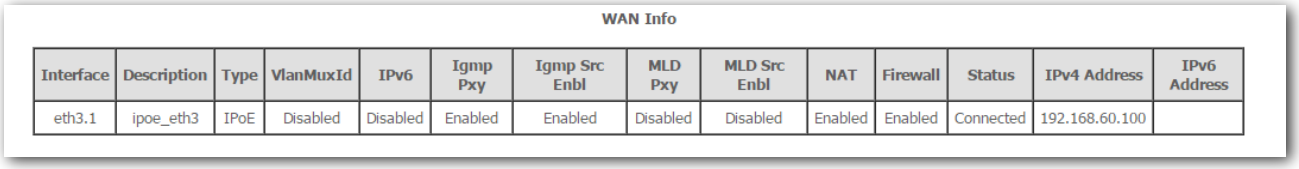


Parameter description

Parameter	Description
Board ID	It specifies the model of the main chip.
Symmetric CPU Threads	It specifies the number of symmetric CPU threads of the modem router.
Software Version	It specifies the software version of the modem router.
Hardware Version	It specifies the hardware version of the modem router.
Bootloader (CFE) Version	It specifies the bootloader version of the modem router.
DSL PHY and Driver Version	It specifies the DSL physic and driver version of the modem router.
Wireless Driver Version	It specifies the wireless driver version of the modem router.
LAN IP	It specifies the LAN IP address of the modem router.
LAN MAC	It specifies the LAN MAC address of the modem router.
Uptime	It specifies the total time the modem router has been running since the latest reboot.
Date/Time	It speifies the current systemdate and time of the modem router.

3.2 WAN

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



WAN Info

Interface	Description	Type	VlanMuxId	IPv6	Igmp Pxy	Igmp Src Enbl	MLD Pxy	MLD Src Enbl	NAT	Firewall	Status	IPv4 Address	IPv6 Address
eth3.1	ipoe_eth3	IPoE	Disabled	Disabled	Enabled	Enabled	Disabled	Disabled	Enabled	Enabled	Connected	192.168.60.100	

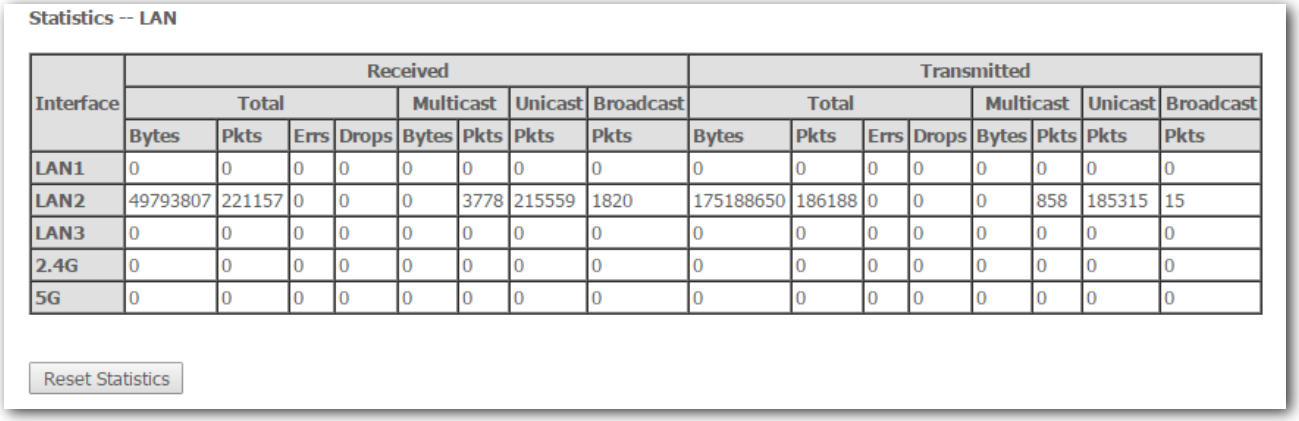
Parameter description

Parameter	Description
Interface	It specifies the interface that the WAN connection uses.
Description	It specifies the description of the WAN connection.
Type	It specifies the connection type of the WAN connection.
VlanMuxId	It specifies the VLAN ID value of the WAN connection.
IPv6	It specifies the IPv6 configuration information of the WAN connection.
Igmp Pxy	It specifies whether the IGMP Multicast Proxy is enabled.
Igmp Src Enbl	It specifies whether the IGMP Multicast Source is enabled.
MLD Pxy	It specifies whether the MLD Multicast Proxy is enabled.
MLD Src Enbl	It specifies whether the MLD Multicast Source is enabled.
NAT	It specifies whether the NAT feature is enabled.
Firewall	It specifies whether firewall is enabled.
Status	It specifies the WAN connection status.
IPv4 Address	It specifies the obtained IPv4 address.
IPv6 Address	It specifies the obtained IPv6 address.

3.3 Statistics

Here you can view the packets received and transmitted on LAN ports, WAN port, DSL port, and USB port.

Statistics--LAN: Displays the received and transmitted packets on the LAN ports. Click **Reset Statistics** to clear the current statistics.

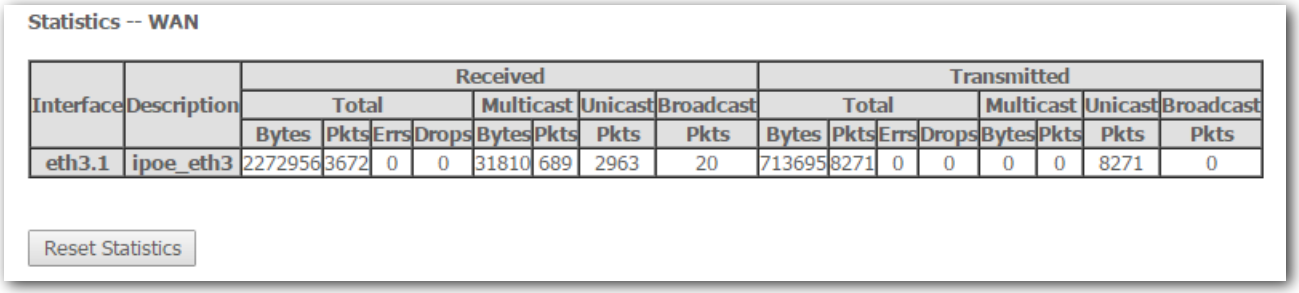


Statistics -- LAN

Interface	Received								Transmitted							
	Total				Multicast		Unicast	Broadcast	Total				Multicast		Unicast	Broadcast
	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Pkts	Pkts	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Pkts	Pkts
LAN1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAN2	49793807	221157	0	0	0	3778	215559	1820	175188650	186188	0	0	0	858	185315	15
LAN3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Reset Statistics

Statistics--WAN: Displays the received and transmitted packets on the WAN port. Click **Reset Statistics** to clear the current statistics.

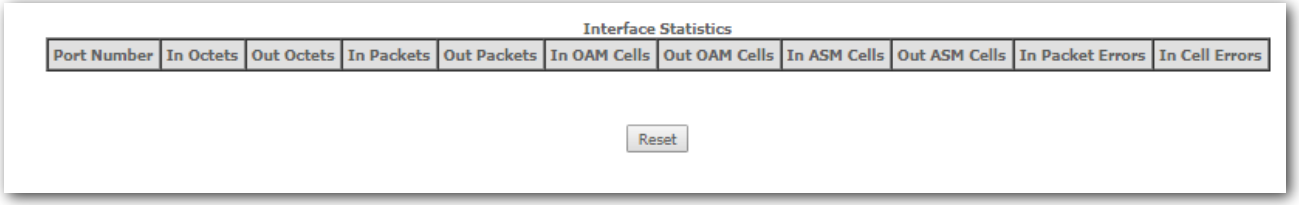


Statistics -- WAN

Interface	Description	Received								Transmitted							
		Total				Multicast		Unicast	Broadcast	Total				Multicast		Unicast	Broadcast
		Bytes	Pkts	Errs	Drops	Bytes	Pkts	Pkts	Pkts	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Pkts	Pkts
eth3.1	ipoe_eth3	2272956	3672	0	0	31810	689	2963	20	713695	8271	0	0	0	0	8271	0

Reset Statistics

Statistics—Interface Statistics: Displays the statistics of each interface. Click **Reset** to clear the current statistics.

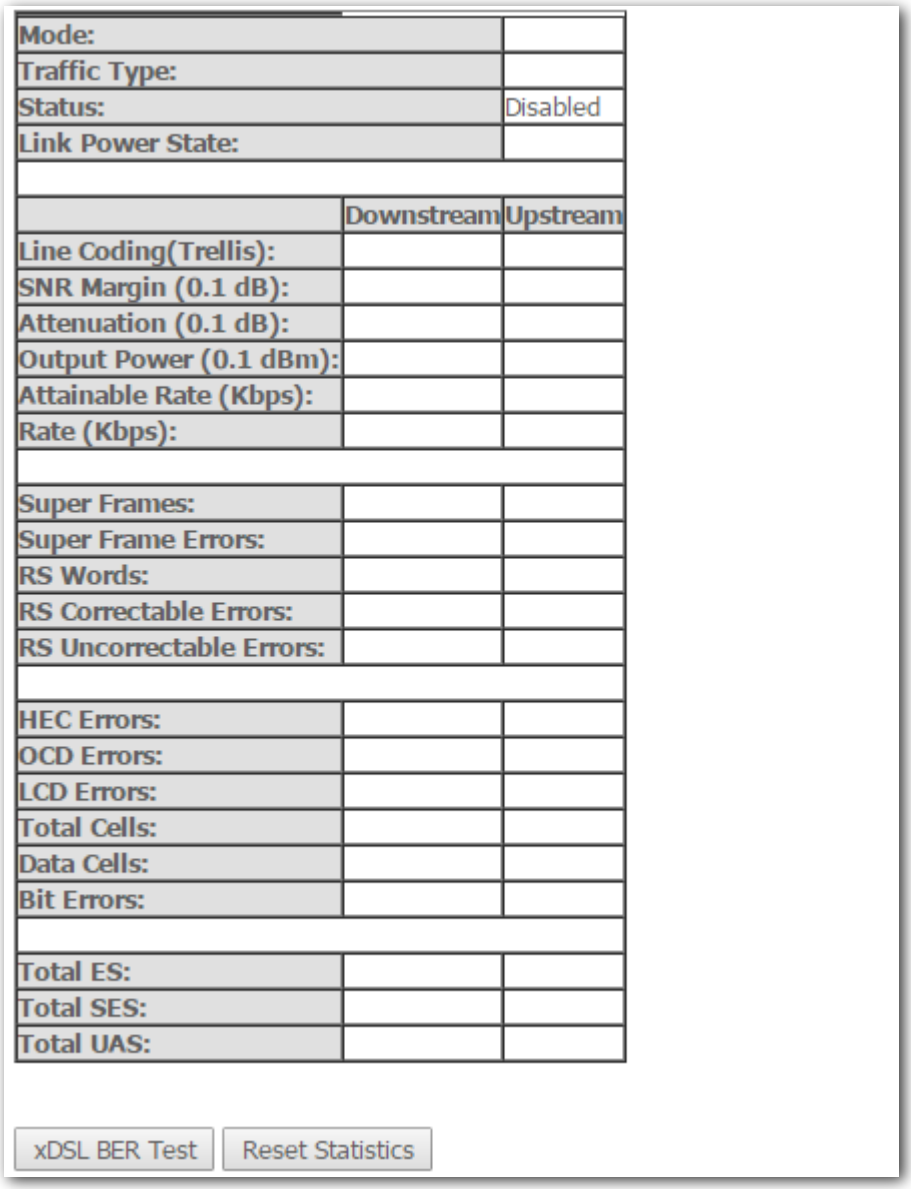


Interface Statistics

Port Number	In Octets	Out Octets	In Packets	Out Packets	In OAM Cells	Out OAM Cells	In ASM Cells	Out ASM Cells	In Packet Errors	In Cell Errors

Reset

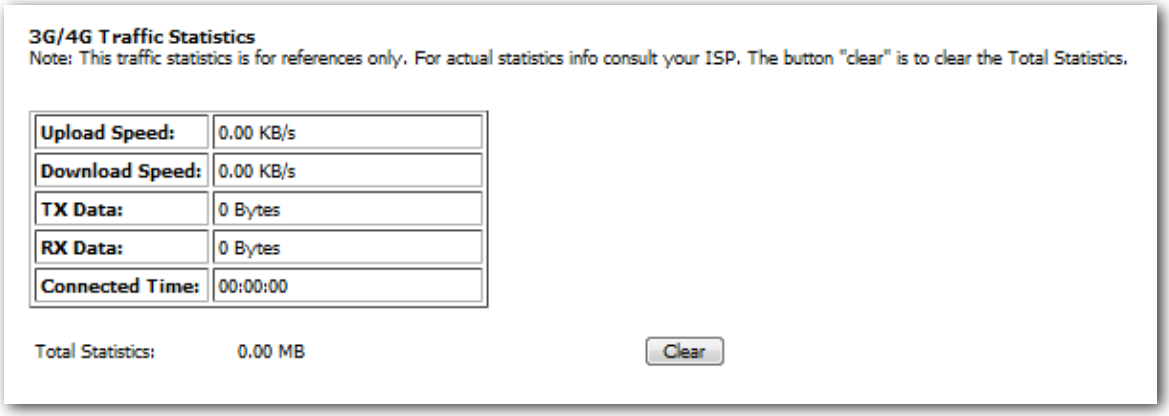
Statistics--xDSL: Displays the received and transmitted packets on the DSL port. Click **Reset Statistics** to clear the current statistics.



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

xDSL BER Test Reset Statistics

Statistics—3G/4G: Displays the packets received and transmitted on the USB port. Click **Clear** to clear the current statistics.



3G/4G Traffic Statistics

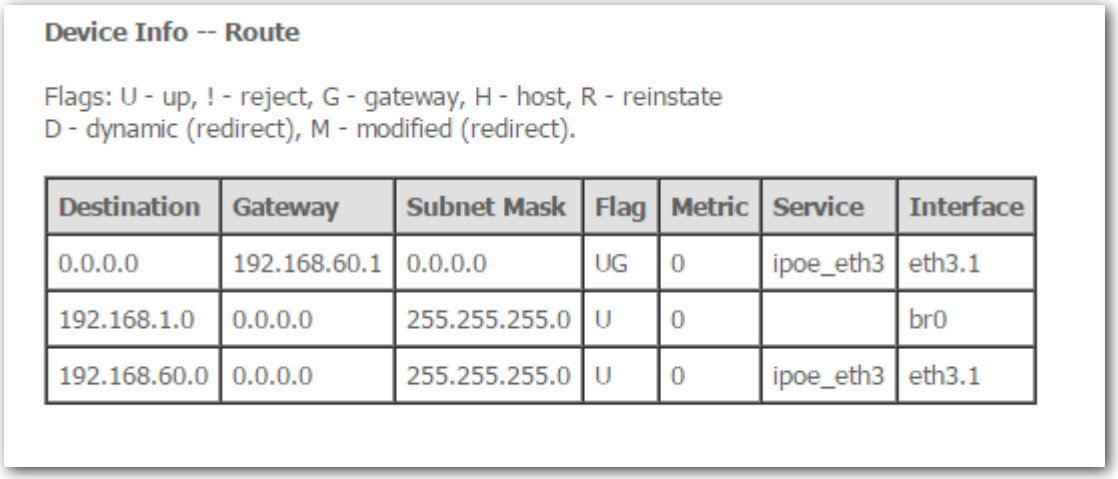
Note: This traffic statistics is for references only. For actual statistics info consult your ISP. The button "clear" is to clear the Total Statistics.

Upload Speed:	0.00 KB/s
Download Speed:	0.00 KB/s
TX Data:	0 Bytes
RX Data:	0 Bytes
Connected Time:	00:00:00

Total Statistics: 0.00 MB Clear

3.4 Route

Here you can view the route table of the modem router. If the modem router fails to access the internet, you can check the route table to find the problem.



Device Info -- Route

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

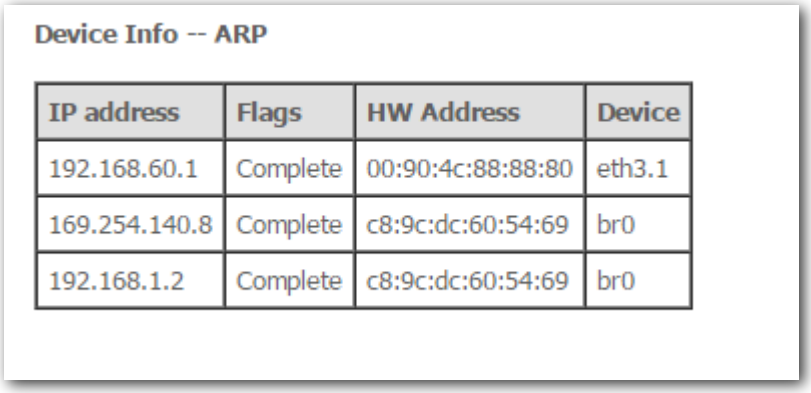
Destination	Gateway	Subnet Mask	Flag	Metric	Service	Interface
0.0.0.0	192.168.60.1	0.0.0.0	UG	0	ipoe_eth3	eth3.1
192.168.1.0	0.0.0.0	255.255.255.0	U	0		br0
192.168.60.0	0.0.0.0	255.255.255.0	U	0	ipoe_eth3	eth3.1

Parameter description

Parameter	Description
Destination	It specifies the destination IP address of the route.
Gateway	It specifies the gateway address of the route.
Subnet Mask	It specifies the subnet mask corresponding to the destination IP address.
Flag	It specifies the status of the corresponding route.
Metric	It specifies a number of hops the route has.
Service	It specifies the WAN connection the route uses.
Interface	It specifies the interface that the route uses.

3.5 ARP

Here you can view the ARP list of the device. According to the information in the list, you can identify whether there is ARP attack in your network.

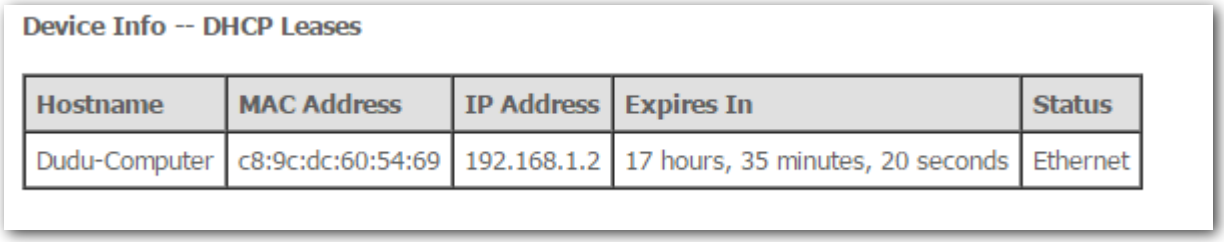


Parameter description

Parameter	Description
IP address	It specifies the IP address of the connected device.
Flags	It specifies the status of the connection between the device and the modem router.
HW Address	It specifies the MAC address of the connected device.
Device	It specifies the interface the device uses to connect to the mode router.

3.6 DHCP

Here you can view the devices whose IP addresses are assigned by the DHCP server of the modem router. You can check the IP address, MAC address and hostname of the corresponding device and remaining lease time of the IP address.



Parameter description

Parameter	Description
Hostname	It specifies the name of the connected device.
MAC Address	It specifies the MAC address of the connected device.
IP Address	It specifies the IP address that assigned to the connected device.
Expires In	It specifies the remaining lease time of the IP address that assigned to the connected device.
Status	It specifies the connection type the connected device uses to connect to the modem router.

4 Advanced setup

4.1 Internet settings

In this module, it allows you to set up multiple internet connections or set detailed parameters for internet access.

To set up an internet connection:

Step 1 Create an interface.

Step 2 Set up an internet connection.

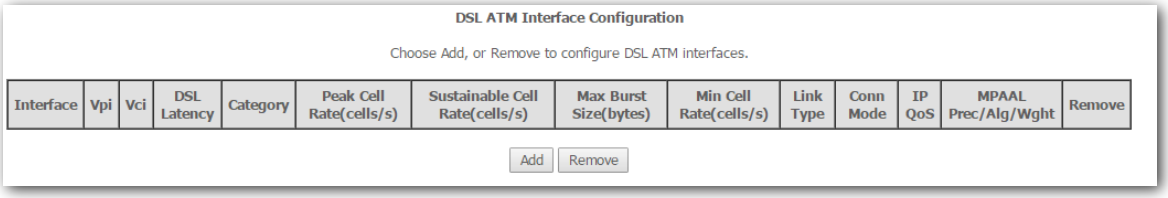
This modem router provides three types of Layer2 Interface:

- ATM interface for accessing ADSL broadband internet service
- PTM interface for accessing VDSL broadband internet service
- ETH interface for connecting to the internet via an Ethernet cable

4.1.1 Setting the ATM connection

4.1.1.1 Creating an ATM interface.

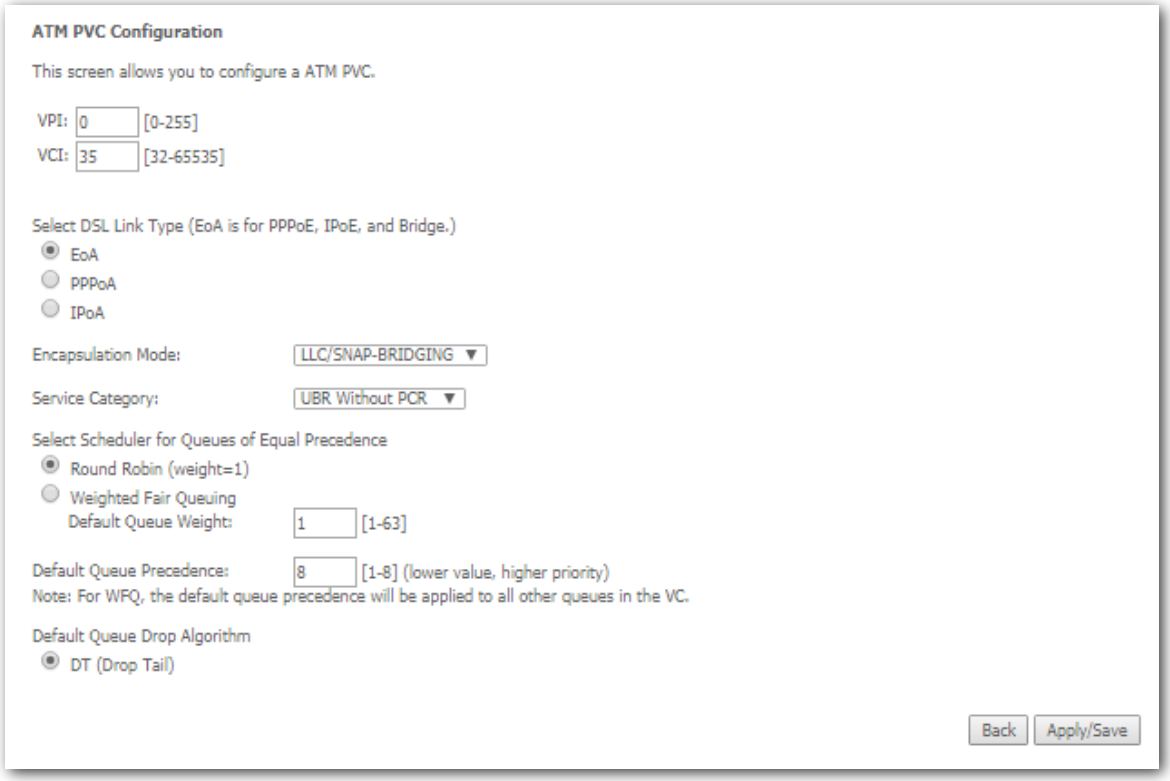
Step 1 Choose **Advanced Setup** > **Layer2 Interface** > **ATM Interface** to enter the following page, and click **Add**.



Step 2 Enter the **VPI** and **VCI** values provided by your ISP.

Step 3 Select a DSL Link Type according to the instructions in the table below, and leave other options unchanged. Select **EoA** when your link type is PPPoE, IPoE, or Bridge.

Step 4 Click **Apply/Save** on the bottom of the page.



----End

Parameter description

Parameter	Description
Connection Type	• PPPoE (PPP over Ethernet), PPPoA (PPP over ATM): If your ISP (ISP) provides a user name and password to you for internet access, your connection type may be PPPoE or PPPoA, contact your ISP for details. • IPoE (IP over Ethernet) - Dynamic IP: Select this type if your ISP does not provide any parameters to you for internet access. • IPoE (IP over Ethernet) - Static IP, IPoA (IP over ATM) - Static IP:If your ISP provides a static IP address and other related information to you for internet access, your connection type may be IPoE or IPoA, contact your ISP for details. • Bridge: Select this type when this device only serves as a modem, and you want to set up a dial-up connection or enter other internet parameters directly on your computer for internet access.
Encapsulation Mode	It specifies the data encapsulation type in the ATM network. LLC and VC/MUX are supported. The default is recommended.
Service Category	It specifies the ATM QoS type assigned by the ISP. The default is recommended.

Select Scheduler for Queues of Equal Precedence	Select the default scheduler for the queues with equal precedence. • Round Robin：It assigns different weights for different kinds of packets and provides the packets with different bandwidths based on the weights. • Weighted Fair Queuing：It divides groups into different queues based on the service streaming, IP precedence, and Hash algorithm, and fairly assigns the bandwidth to the services with low precedence according to the weights while ensuring the performance of services with high precedence.
Default Queue	It specifies to set up the weight of the default queue.
Default Queue	It specifies to set up the precedenceof the default queue.
Default Queue Drop	It specifies the default queue drop algorithm. It cannot be changed.

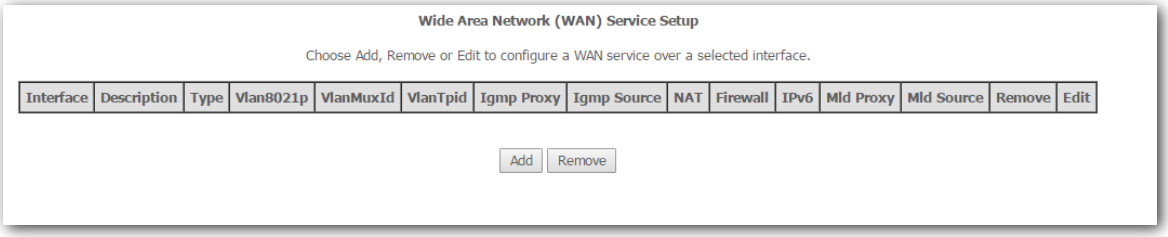
4.1.1.2 Setting up a WAN Service for the ATM Interface

PPPoE

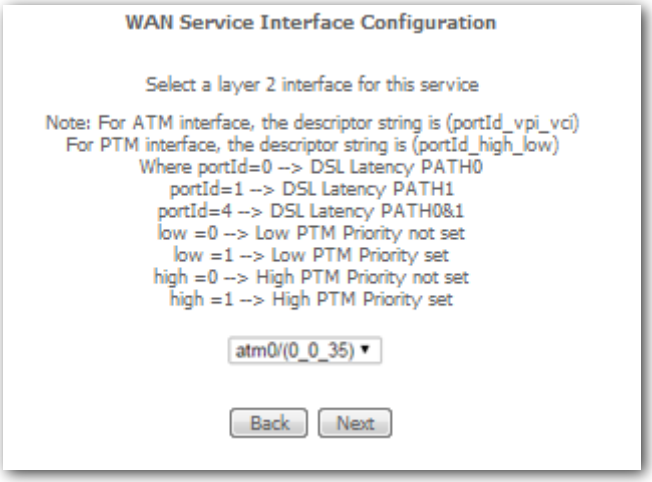
Choose the corresponding procedure to follow according to your IP address type: IPv4 PPPoE, IPv4&IPv6 PPPoE, and IPv6 PPPoE.

IPv4 PPPoE

Step 1 Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



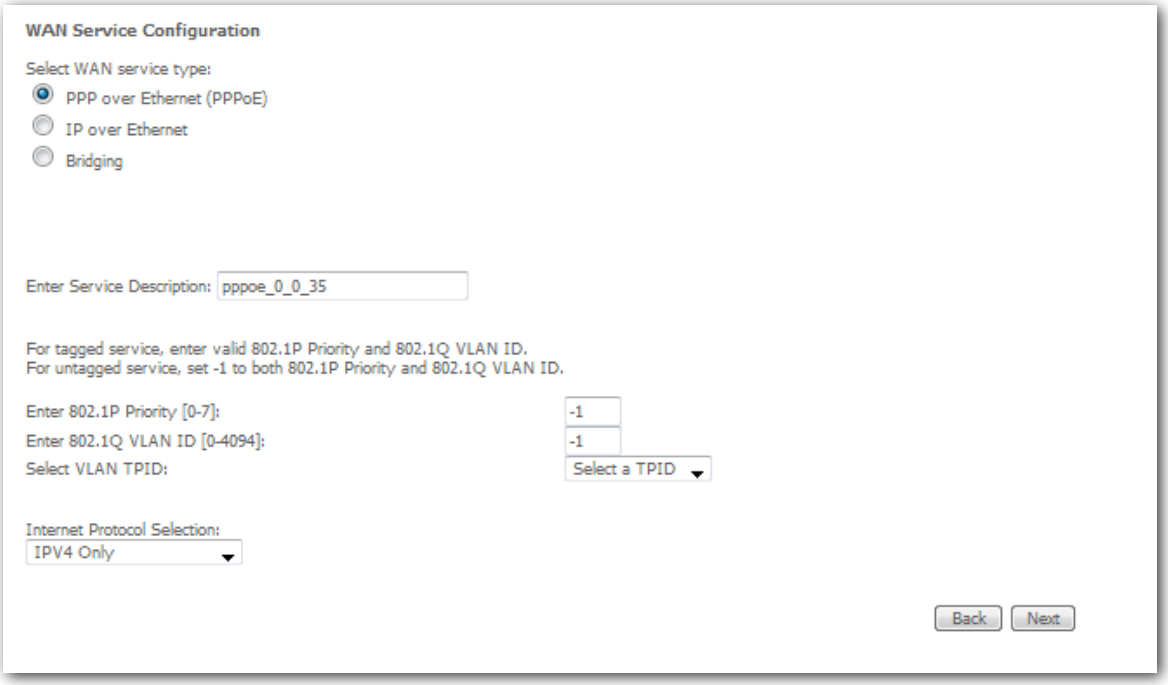
Step 2 Select ATM interface you create on the Layer2 Interface page, which is **atm0/(0_0_35)** in this example, and click **Next**.



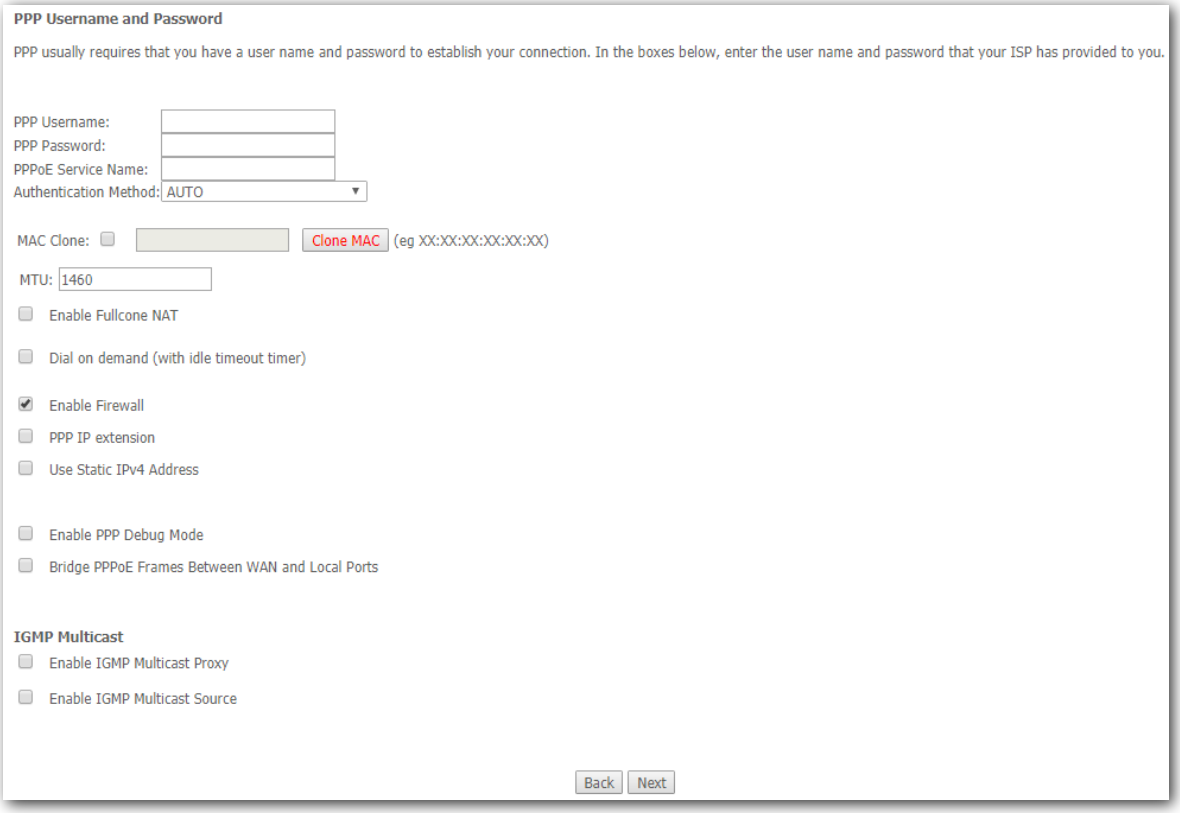
Step 3 Select **PPP over Ethernet (PPPoE)**.

Step 4 Enter the **802.1P Priority** and **802.1Q VLAN ID**, and select the **VLAN TPID** according to the VLAN parameters provided by your ISP.

Step 5 Select **IPv4 Only** and click **Next**.



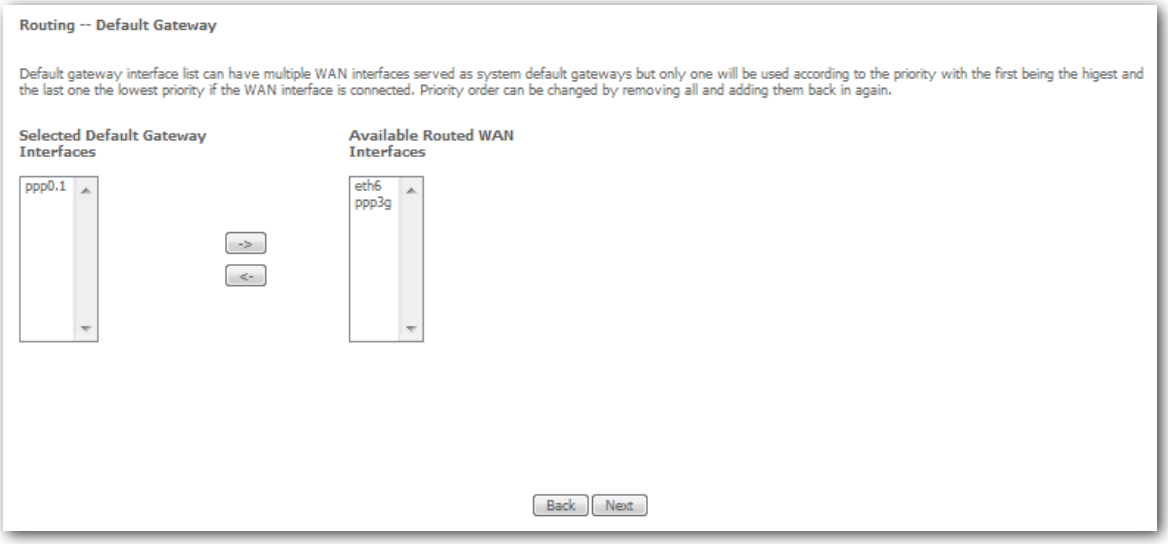
Step 6 Enter the PPPoE user name and password provided by your ISP, and set other parameters as required.



Parameter description

Parameter	Description
PPPoE Service Name	If your ISP provides this name, enter it here. Otherwise, leave it blank.
Authentication Method	It specifies the authentication method the ISP-side uses to authenticate the client. If you do not certain about it, select AUTO.
MAC Clone	If you can only access the internet via a specified computer, it may indicate that your ISP binds the internet service to the MAC address of the computer to restrict access. In this case, you need to clone the MAC address of this computer to the modem router for internet access.
MTU	It specifies the maximum size of packet that the router can transmit. MTU varies across connection types.
Enable Fullcone NAT	Data transmitted by a computer in LAN through the UDP port A will be forwarded to the UDP port B in WAN. And data received by the UDP port B in WAN will be forwarded to the UDP port A of the corresponding computer in LAN.
Dial on demand (with idle timeout timer)	When there is no data exchange within the specified time, the device disconnects the connection between its WAN port and the ISP. Flow-based charging users can select this option to save cost. Month-based charging users do not need to select the option.
Enable Firewall	Check this option to enable the firewall of the modem router.
PPP IP extension	If this option is selected: • The NAT and firewall functions are disabled. • Only a computer in LAN can obtain the IP address which is the same as that of the WAN port to access the internet. Other compurters cannot obatin IP addresses to access the internet.
Use Static IPv4 Address	It is used to set up the IP address assigned by the ISP after the PPPoE dial-up succeeds. Do not set up it if you are not a professional.
Enable PPP Debug Mode	If it is enabled, you can check the PPPoE dial-up information on the System Log page. It is used to diagnose dial-up malfunctions.
Bridge PPPoE Frames Between WAN and Local Ports	If it is enabled, computers in LAN can share the WAN connection for internet access, use multiple active PPPoE accounts to access the internet (if any).
Enable IGMP Multicast Proxy	If it is enabled, the modem router can forward the multicast data to the users in LAN. If you requires multicast applications, such as VOD or AOD, you can

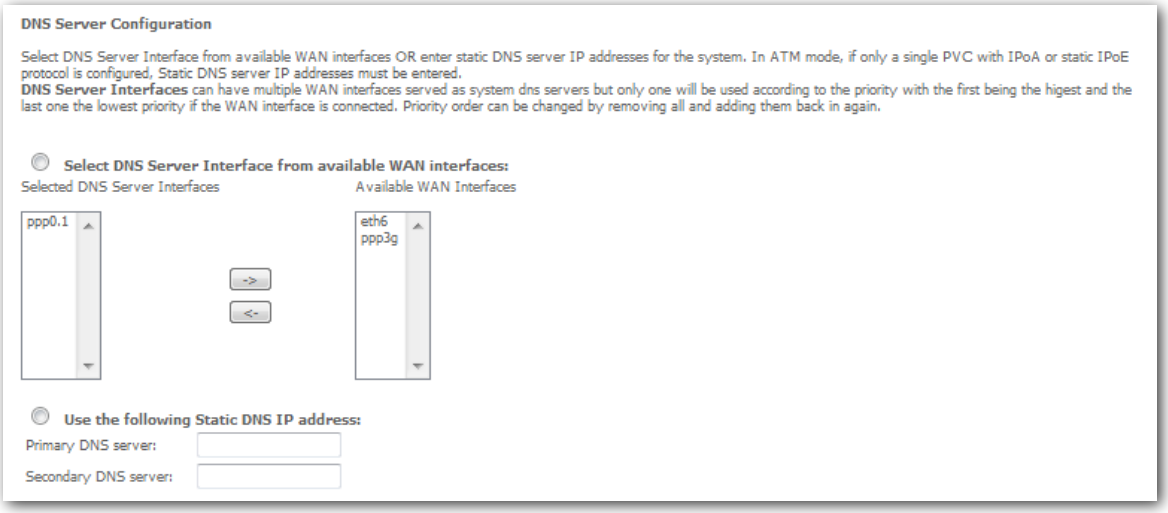
Step 7 Leave the configuration unchanged on **Routing - Default Gateway** page, and click **Next**.



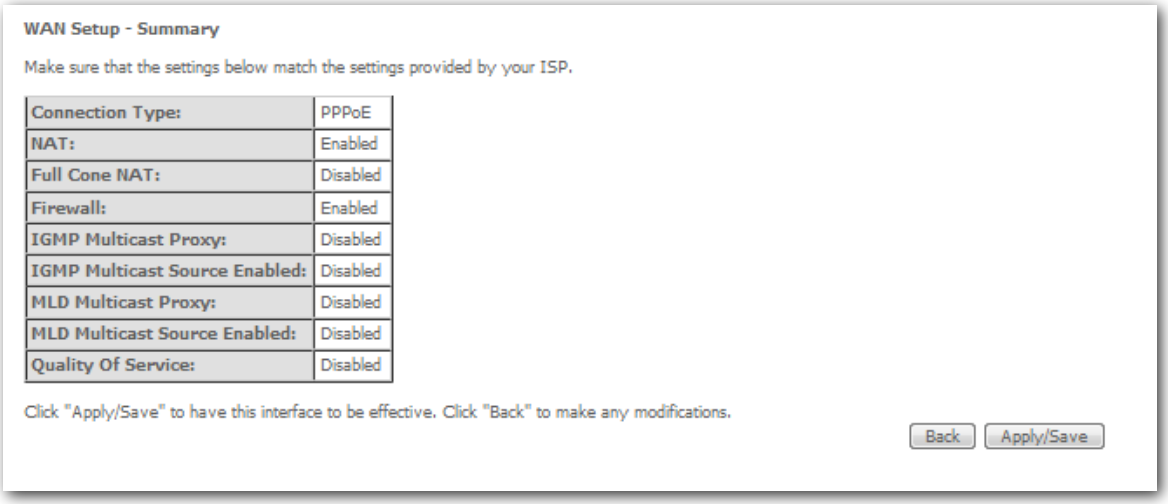
TIP

Default gateway interface list can contain multiple WAN interfaces serving as system default gateways.

Step 8 If your ISP provides you with the DNS IP addresses, select **Use the following Static DNS IP address**, and enter the DNS IP addresses information. If not, select the option **Select DNS Server Interface from available WAN interfaces**, and click **Next**.



Step 9 Check the parameters you select or set, and click **Apply/Save**.

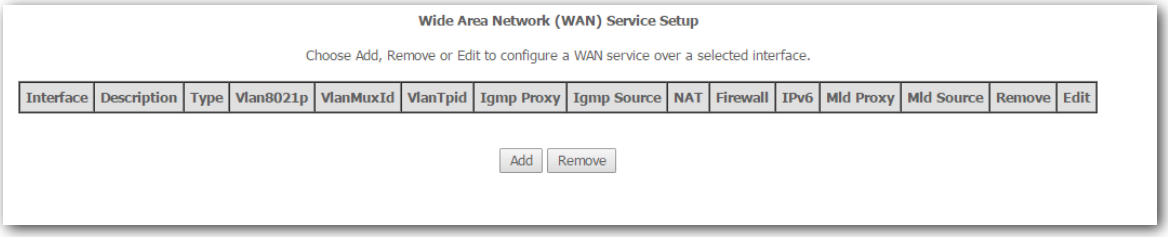


----End

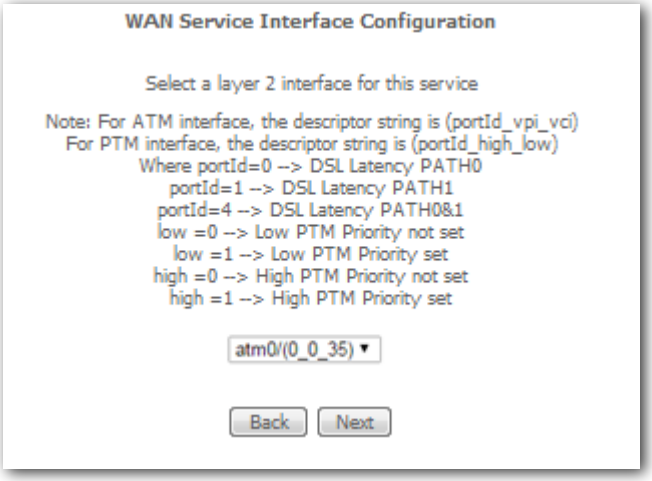
The WAN service you set is shown on the **WAN Service** page.

IPv4&IPv6 PPPoE

Step 1 Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



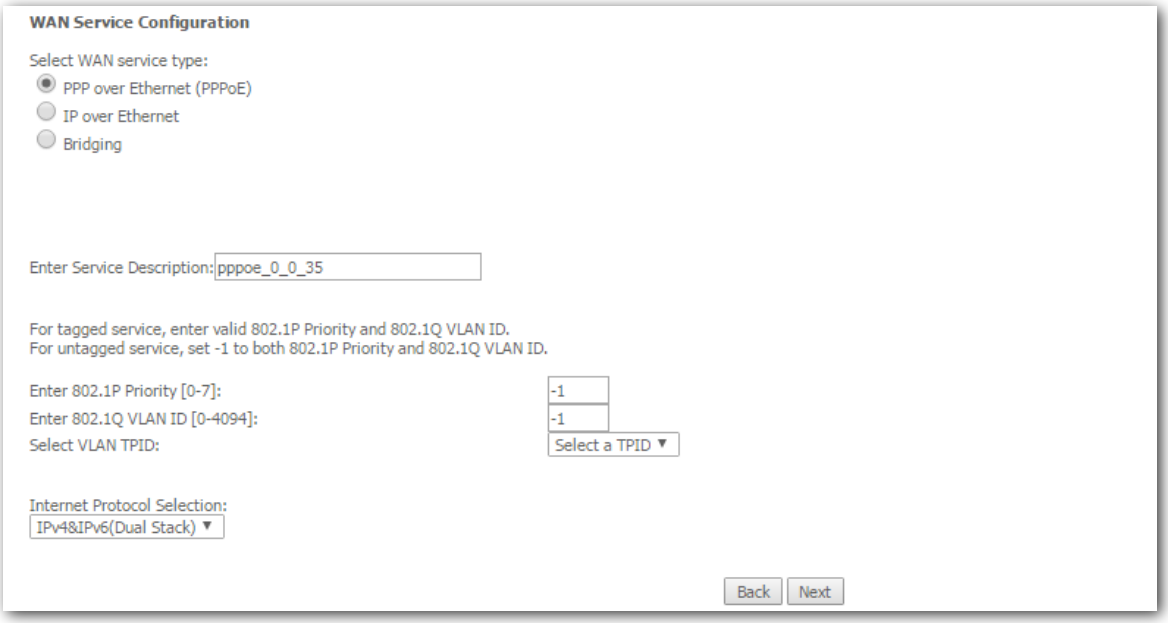
Step 2 Select ATM interface you create on the Layer2 Interface page, which is **atm0/(0_0_35)** in this example, and click **Next**.



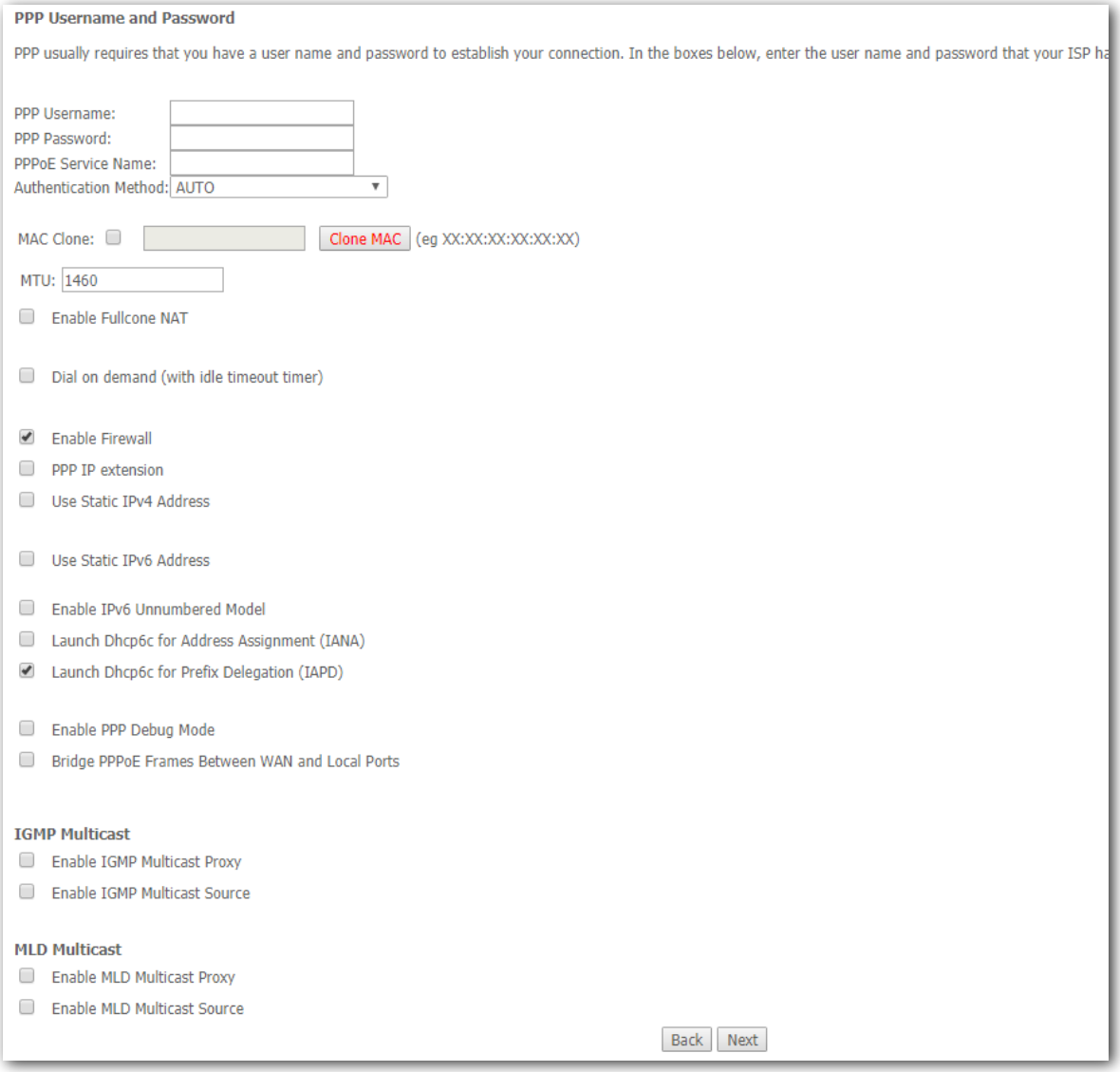
Step 3 Select **PPP over Ethernet (PPPoE)**.

Step 4 Enter the **802.1P Priority** and **802.1Q VLAN ID**, and select the **VLAN TPID** according to the VLAN parameters provided by your ISP.

Step 5 Select **IPv4&IPv6(Dual Stack)** and click **Next**.



Step 6 Enter the PPPoE user name and password provided by your ISP, and set other parameters as required.

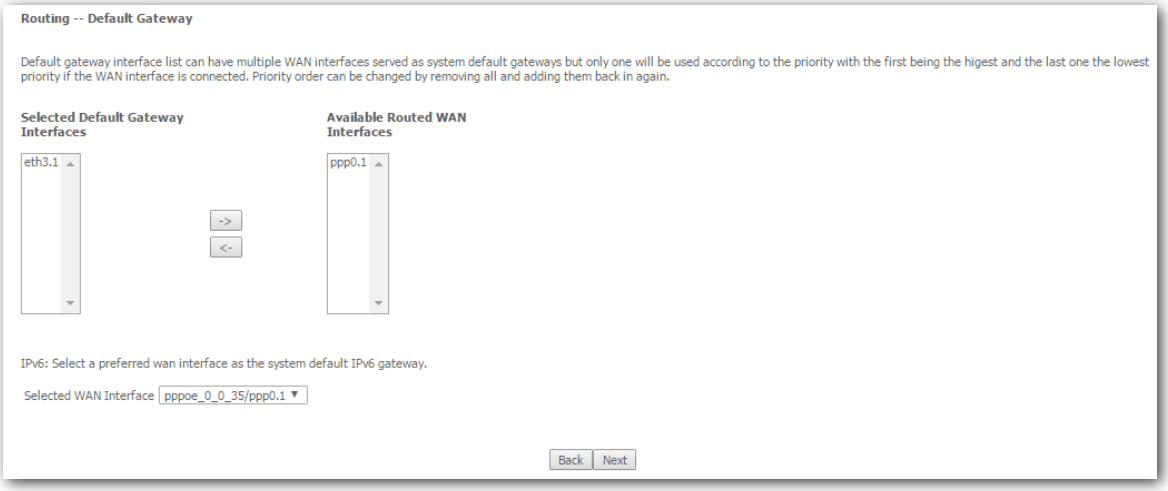


Parameter description

Parameter	Description
PPPoE Service Name	If your ISP provides this name, enter it here. Otherwise, leave it blank.
Authentication Method	It specifies the authentication method the ISP-side uses to authenticate the client. If you do not certain about it, select AUTO.
MAC Clone	If you can only access the internet via a specified computer, it may indicate that your ISP binds the internet service to the MAC address of the computer to restrict access. In this case, you need to clone the MAC address of this computer to the modem router for internet access.
MTU	It specifies the maximum size of packet that the router can transmit. MTU varies across connection types.

Parameter	Description
Enable Fullcone NAT	Data transmitted by a computer in LAN through the UDP port A will be forwarded to the UDP port B in WAN. And data received by the UDP port B in WAN will be forwarded to the UDP port A of the corresponding computer in LAN.
Dial on demand (with idle timeout timer)	When there is no data exchange within the specified time, the device disconnects the connection between its WAN port and the ISP. Flow-based charging users can select this option to save cost. Month-based charging users do not need to select the option.
Enable Firewall	Check this option to enable the firewall of the modem router.
PPP IP extension	If this option is selected: • The NAT and firewall functions are disabled. • Only a computer in LAN can obtain the IP address which is the same as that of the WAN port to access the internet. Other compurters cannot obatin IP addresses to access the internet.
Use Static IPv4 Address	It is used to set up the IPv4 IP address assigned by the ISP after the PPPoE dial-up succeeds. Do not set up it if you are not instructed by a professional.
Use Static IPv6 Address	It is used to set up the IP address assigned by the ISP after the PPPoE dial-up succeeds. Do not set up it if you are not instructed by a professional.
Enable IPv6 Unnumbered Model	It is used to enable the IPv6 unnumbered model. If your ISP is not required to select it, keep the default.
Launch Dhcp6c for Address Assignment (IANA)	If it is enabled, the device obtains the IPv6 WAN address using the stateful DHCPv6 type.
Launch Dhcp6c for Prefix Delegation (IAPD)	If it is enabled, the device gets the IPv6 prefix form the DHCPv6 server, and delivers it to its LAN ports.
Enable PPP Debug Mode	If it is enabled, you can check the PPPoE dial-up information on the System Log page. It is used to diagnose dial-up malfunctions.
Bridge PPPoE Frames Between WAN and Local Ports	If it is enabled, computers in LAN can share the WAN connection for internet access, use multiple active PPPoE accounts to access the internet (if any).
Enable IGMP Multicast Proxy	If it is enabled, the modem router can forward the multicast data to the users in LAN. If you requires multicast applications, such as VOD or AOD, you can
Enable MLD Multicast Proxy	It is used to enable the MLD multicast proxy.

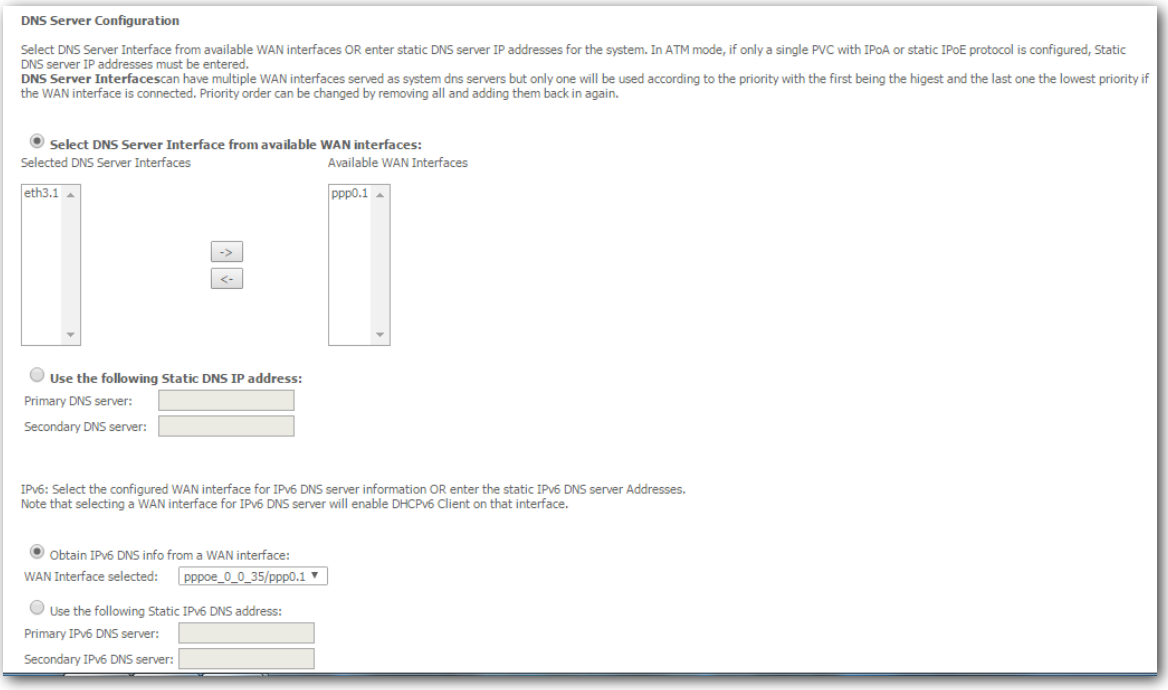
Step 7 Leave the configuration unchanged on **Routing - Default Gateway** page, and click **Next**.



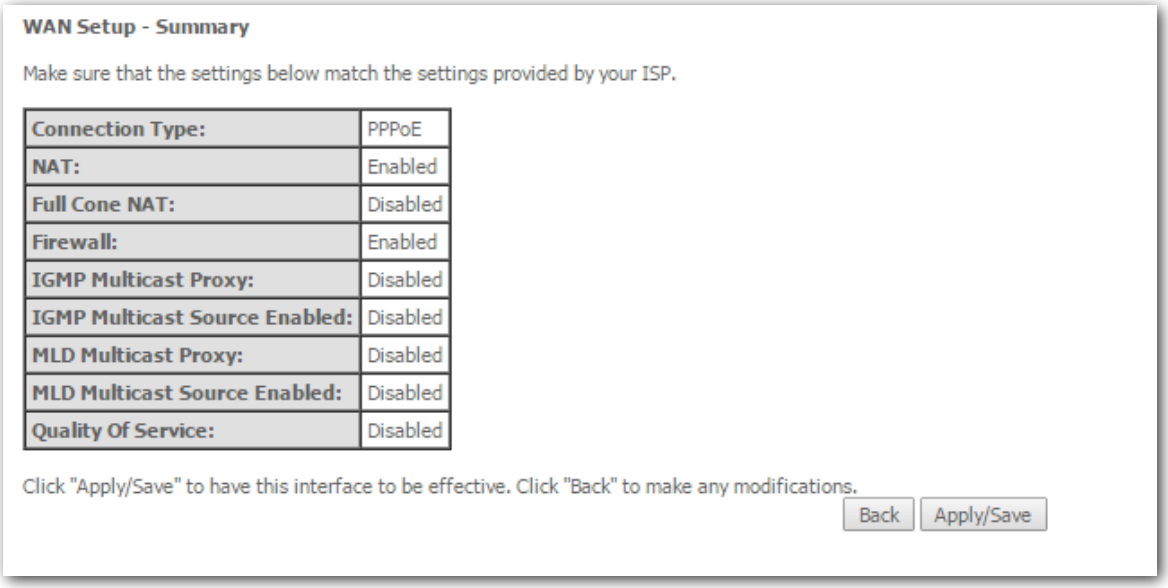
TIP

Default gateway interface list can contain multiple WAN interfaces serving as system default gateways.

Step 8 If your ISP provides you with the DNS IP addresses, select **Use the following Static DNS IP address/Use the following Static IPv6 DNS IP address**, and enter the DNS IP addresses. If not, select the option **Select DNS Server Interface from available WAN interfaces/Obtain IPv6 DNS info from a WAN interface**, and click **Next**.

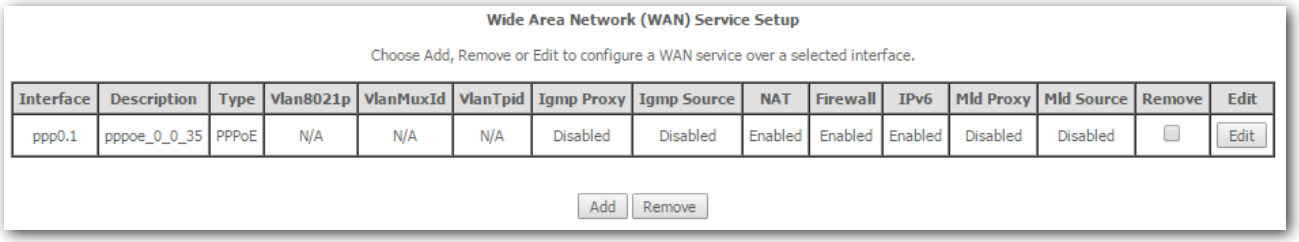


Step 9 Check the parameters you select or set, and click **Apply/Save**.



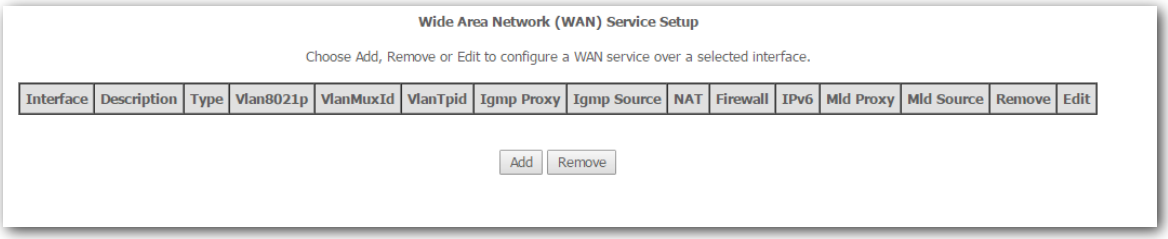
----End

The WAN service you set is shown on the **WAN Service** page.

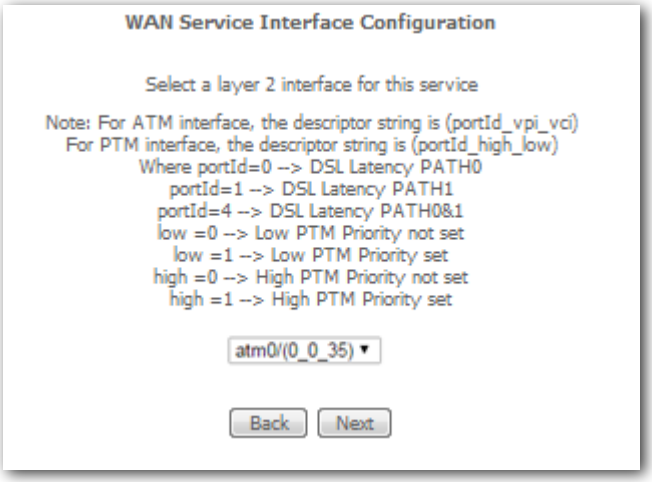


IPv6 PPPoE

Step 1 Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



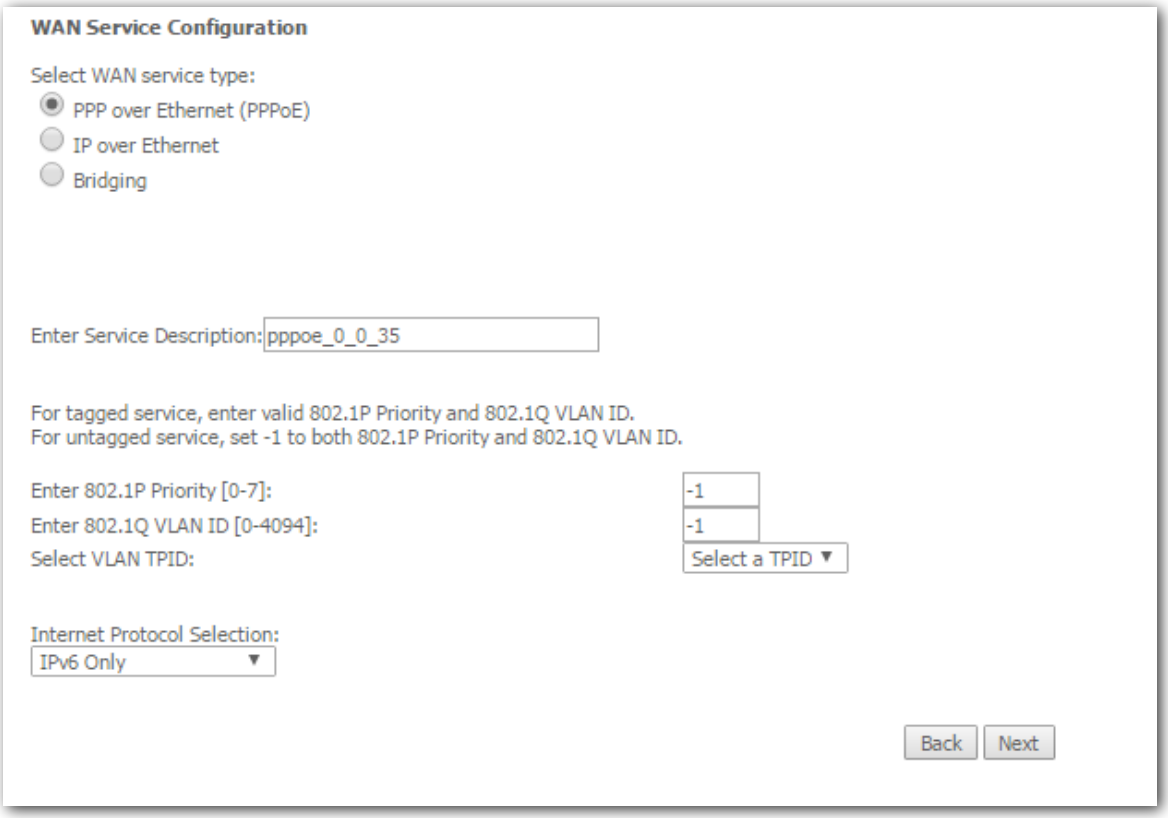
Step 2 Select ATM interface you create on the Layer2 Interface page, which is **atm0/(0_0_35)** in this example, and click **Next**.



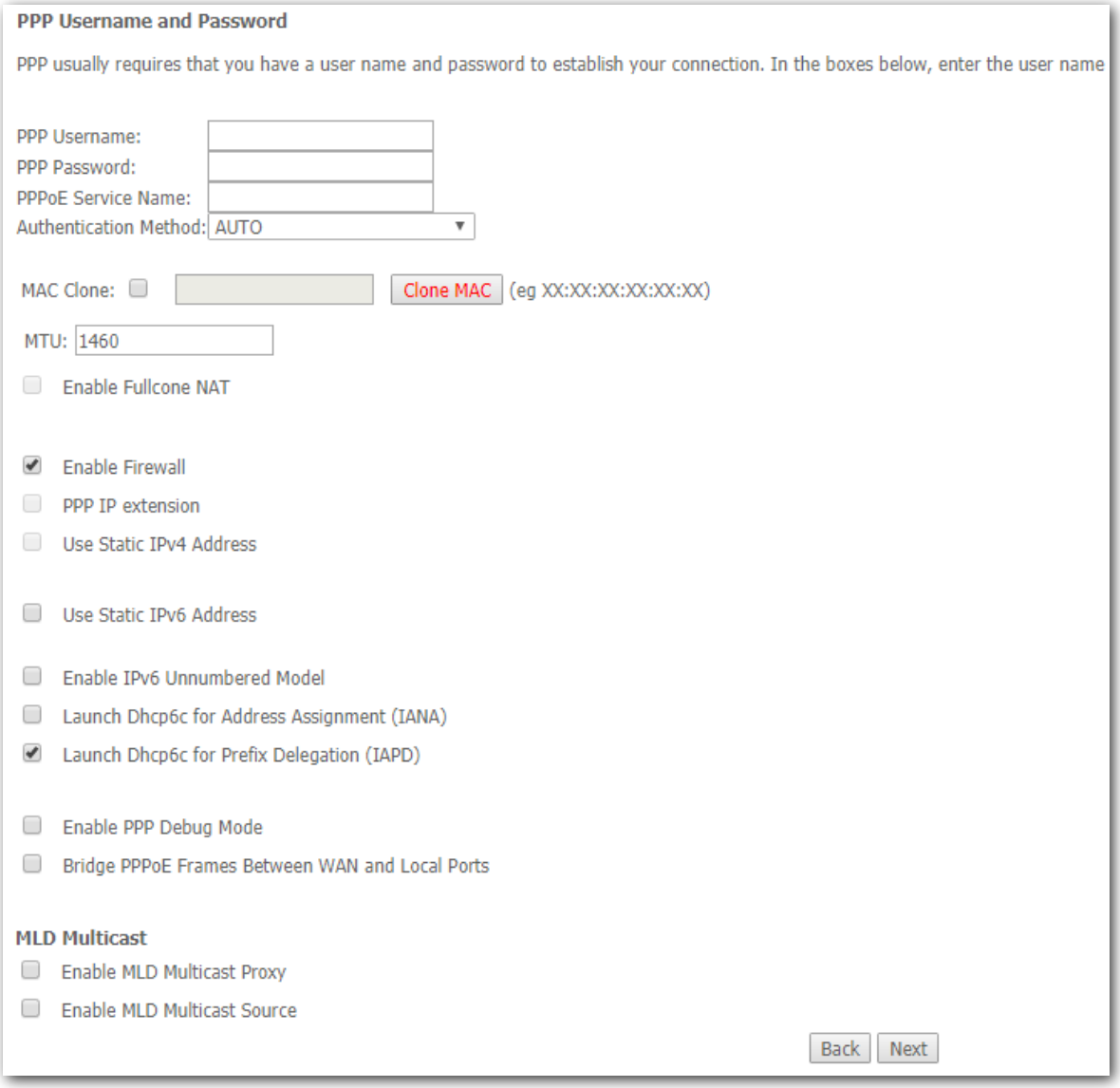
Step 3 Select **PPP over Ethernet (PPPoE)**.

Step 4 Enter the **802.1P Priority** and **802.1Q VLAN ID**, and select the **VLAN TPID** according to the VLAN parameters provided by your ISP.

Step 5 Select **IPv6 Only** and click **Next**.



Step 6 Enter the PPPoE user name and password provided by your ISP, and set other parameters as required.

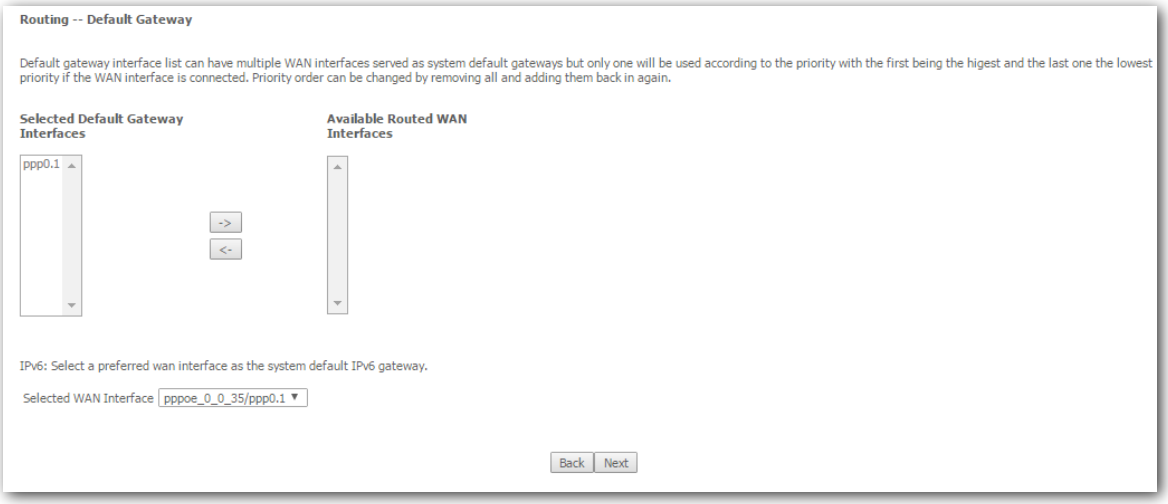


Parameter description

Parameter	Description
PPPoE Service Name	If your ISP provides this name, enter it here. Otherwise, leave it blank.
Authentication Method	It specifies the authentication method the ISP-side uses to authenticate the client. If you do not certain about it, select AUTO.
MAC Clone	If you can only access the internet via a specified computer, it may indicate that your ISP binds the internet service to the MAC address of the computer to restrict access. In this case, you need to clone the MAC address of this computer to the modem router for internet access.
MTU	It specifies the maximum size of packet that the router can transmit. MTU varies across connection types.
Enable Fullcone NAT	Data transmitted by a computer in LAN through the UDP port A will be forwarded to the UDP port B in WAN. And data received by the UDP port B in WAN will be forwarded to the UDP port A of the corresponding computer in LAN.

Parameter	Description
Dial on demand (with idle timeout timer)	When there is no data exchange within the specified time, the device disconnects the connection between its WAN port and the ISP. Flow-based charging users can select this option to save cost. Month-based charging users do not need to select the option.
Enable Firewall	Check this option to enable the firewall of the modem router.
PPP IP extension	If this option is selected: • The NAT and firewall functions are disabled. • Only a computer in LAN can obtain the IP address which is the same as that of the WAN port to access the internet. Other compurters cannot obatin IP addresses to access the internet.
Use Static IPv4 Address	It is used to set up the IPv4 IP address assigned by the ISP after the PPPoE dial-up succeeds. Do not set up it if you are not instructed by a professional.
Use Static Ipv6 Address	It is used to set up the IP address assigned by the ISP after the PPPoE dial-up succeeds. Do not set up it if you are not instructed by a professional.
Enable IPv6 Unnumbered Model	It is used to enable the IPv6 unnumbered model. If your ISP is not required to select it, keep the default.
Launch Dhcp6c for Address Assignment (IANA)	If it is enabled, the device obtains the IPv6 WAN address using the stateful DHCPv6 type.
Launch Dhcp6c for Prefix Delegation (IAPD)	If it is enabled, the device gets the IPv6 prefix form the DHCPv6 server, and delivers it to its LAN ports.
Enable PPP Debug Mode	If it is enabled, you can check the PPPoE dial-up information on the System Log page. It is used to diagnose dial-up malfunctions.
Bridge PPPoE Frames Between WAN and Local Ports	If it is enabled, computers in LAN can share the WAN connection for internet access, use multiple active PPPoE accounts to access the internet (if any).
Enable MLD Multicast Proxy	It is used to enable the MLD multicast proxy.

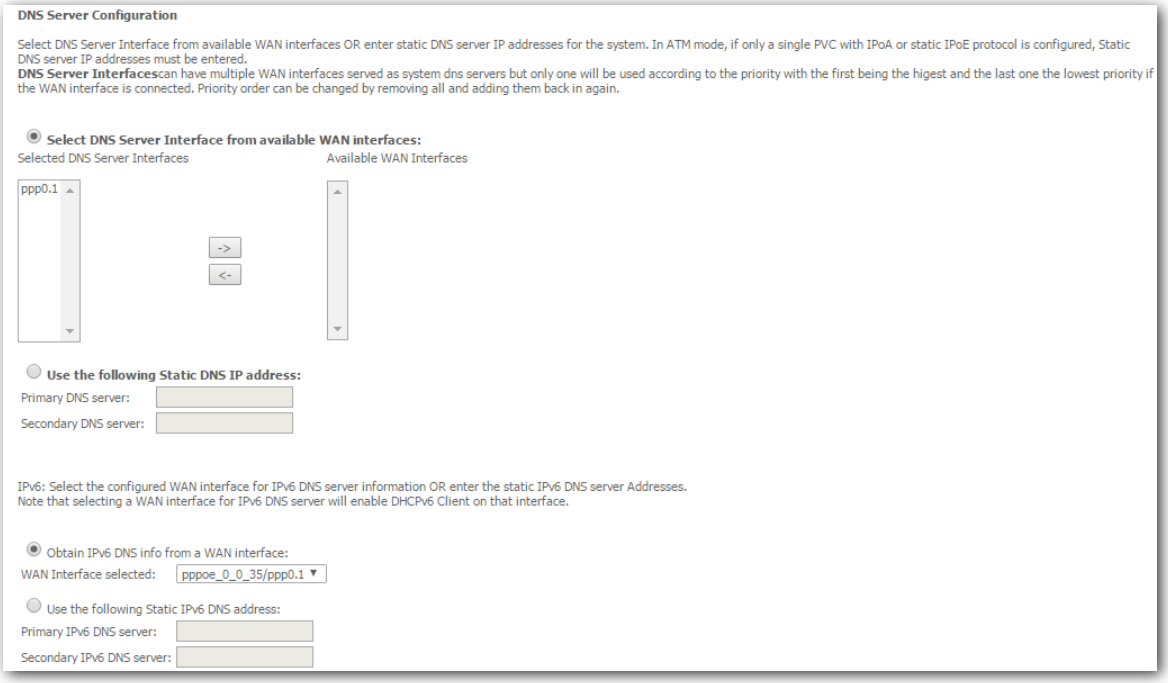
Step 7 Leave the configuration unchanged on **Routing - Default Gateway** page, and click **Next**.



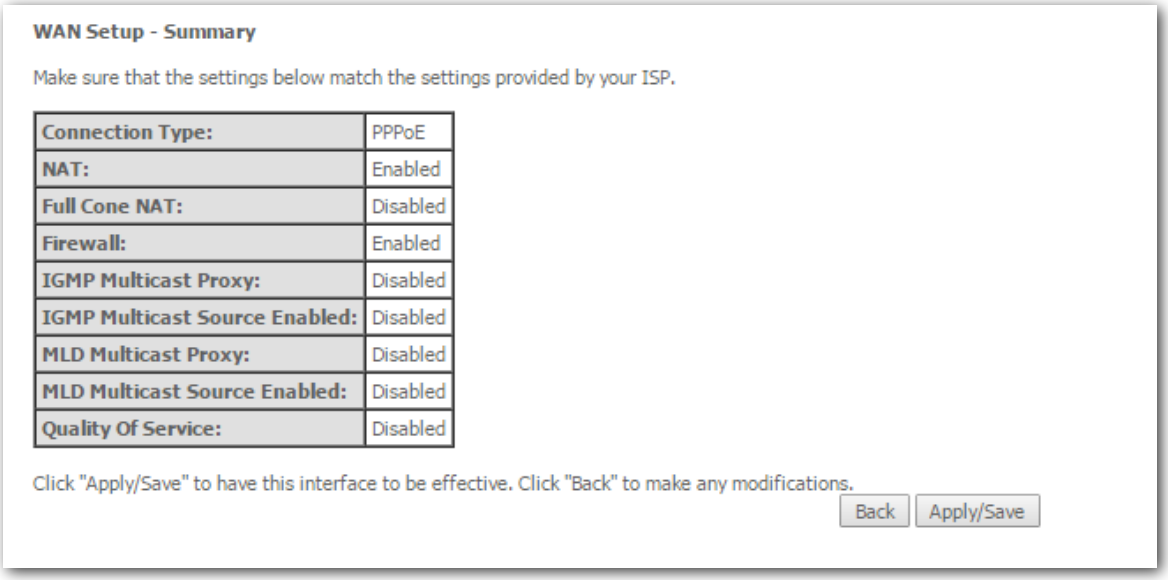
TIP

Default gateway interface list can contain multiple WAN interfaces serving as system default gateways.

Step 8 If your ISP provides you with the DNS IP addresses, select **Use the following Static IPv6 DNS IP address**, and enter the DNS IP addresses. If not, select the option **Obtain IPv6 DNS info from a WAN interface**, and click **Next**.

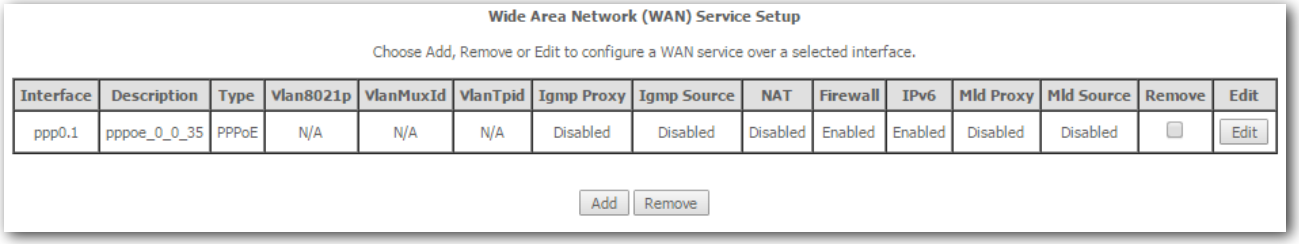


Step 9 Check the parameters you select or set, and click **Apply/Save**.



----End

The WAN service you set is shown on the **WAN Service** page.

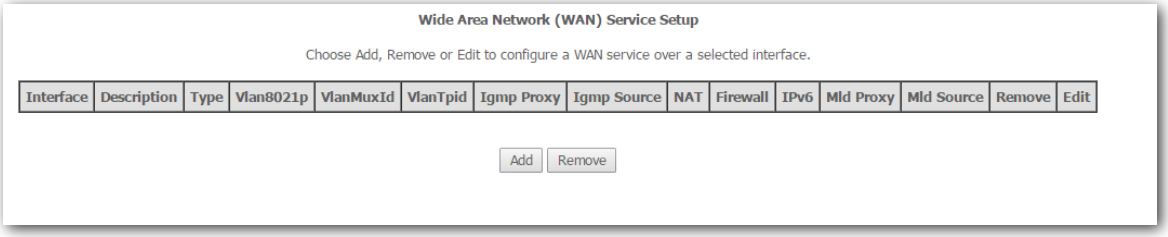


IPoE

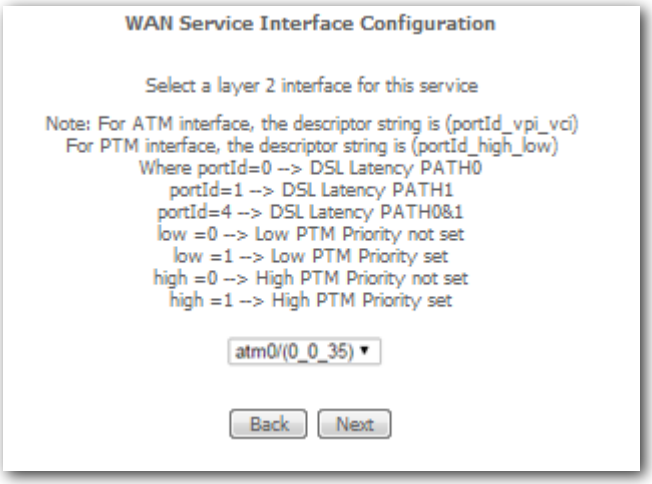
Choose the corresponding procedure to follow according to your IP address type: IPv4 IPoE, IPv4&IPv6 IPoE, and IPv6 IPoE.

IPv4 IPoE

Step 1 Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



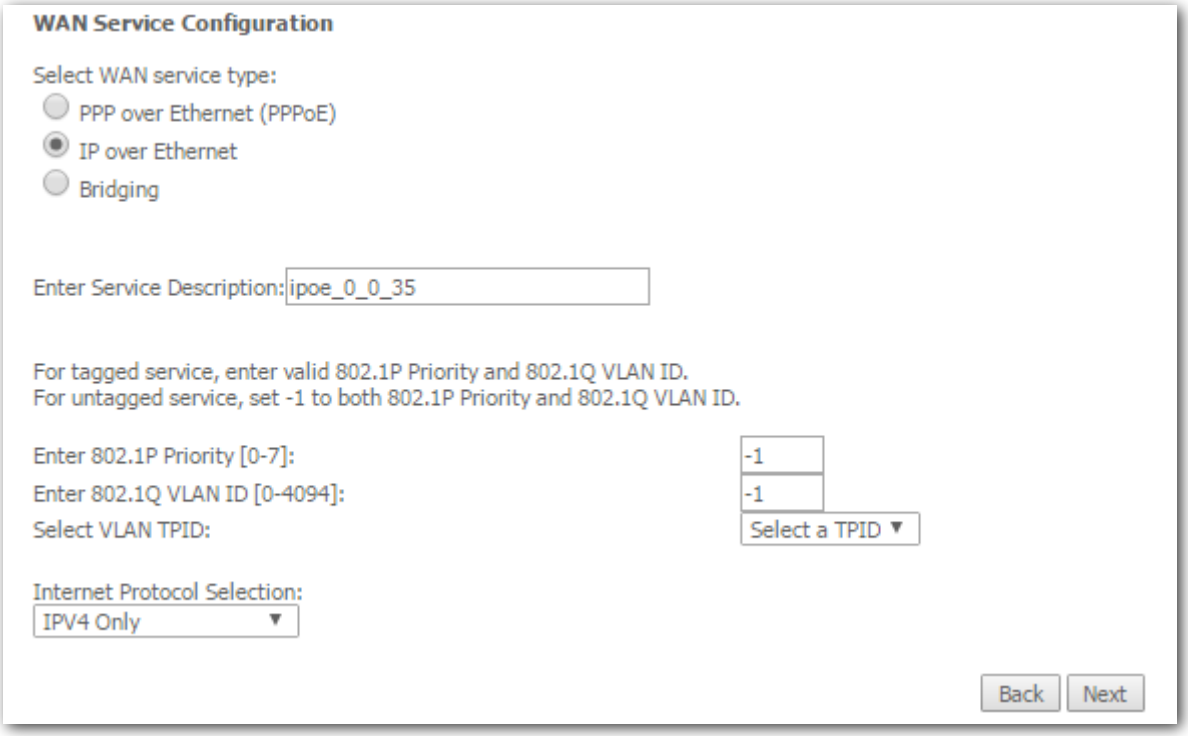
Step 2 Select ATM interface you create on the Layer2 Interface page, which is **atm0/(0_0_35)** in this example, and click **Next**.



Step 3 Select **IP over Ethernet**.

Step 4 Enter the **802.1P Priority** and **802.1Q VLAN ID**, and select the **VLAN TPID** according to the VLAN parameters provided by your ISP.

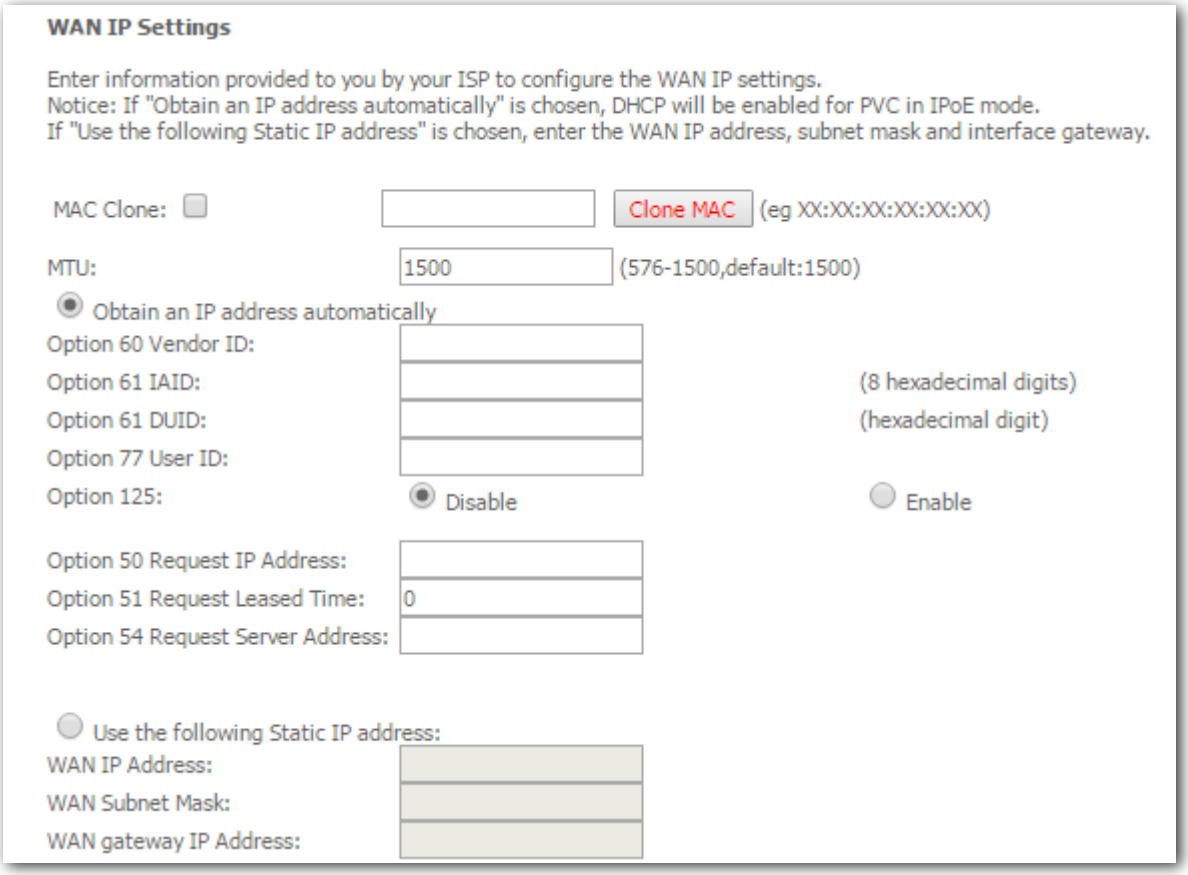
Step 5 Select **IPv4 Only** and click **Next**.



Step 6 Set the WAN IP address.

- **Obtain an IP address automatically**: If your ISP does NOT provide you with the IP address information, select this option.
- **Use the following Static IP address**: If your ISP provides you with the IP address information, select this option and enter them.

Step 7 Set other parameters as required, and click **Next**.

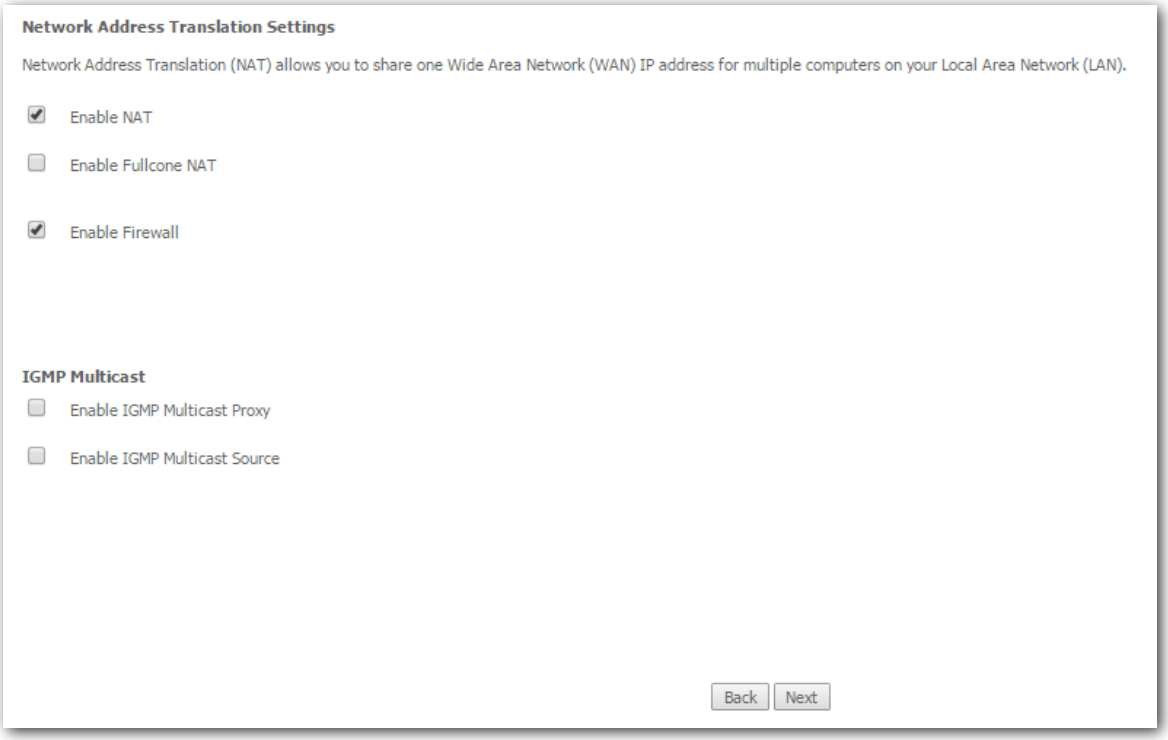


Parameter description

Parameter	Description
MAC Clone	If you can only access the internet via a specified computer, it may indicate that your ISP binds the internet service to the MAC address of the computer to restrict access. In this case, you need to clone the MAC address of this computer to the modem router for internet access.
MTU	It specifies the maximum size of packet that the router can transmit. MTU varies across connection types.
Option 60 Vendor ID	It is used by the client to report its manufactory and configuration information.
Option 61 IAID	It is used to specify the IAID value of DHCP option 61 client-indentifier.
Option 61 DUID	It is used to specify the DUID value of DHCP option 61.
Option 77 User ID	It is used to specify the User ID of DHCP option 77.
Option 125	It specifies the vendor-Identifying Vendor option. If you are not instructed by a professional, the default is recommended.
Option 50 Request IP Address	It is used to specify the request IP address of DHCP option 50.

Parameter	Description
Option 51 Request Leased Time	It is used to specify the request leased of DHCP option 51.
Option 54 Request Server Address	It is used to specify the request server address of DHCP option 54.

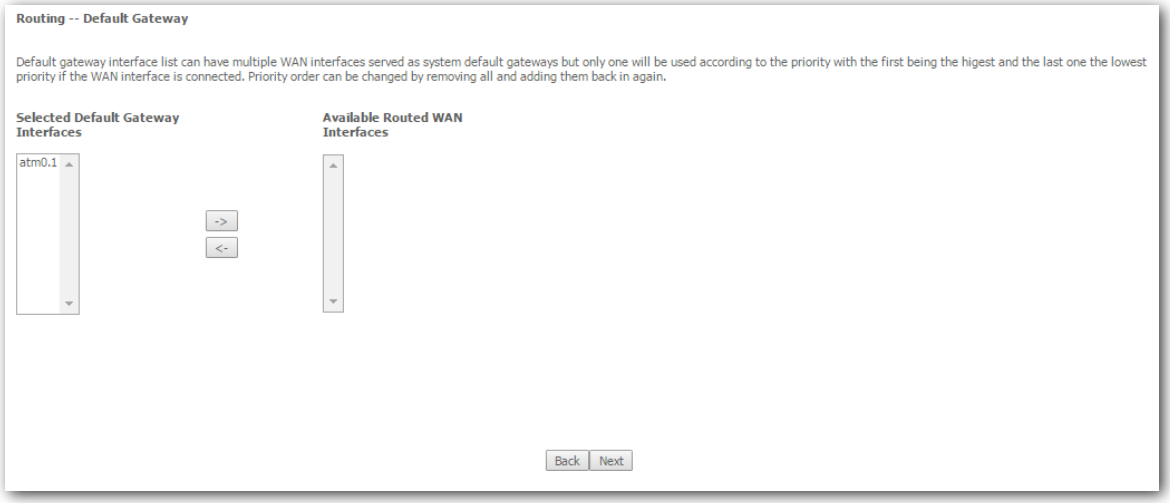
Step 8 Select the options as required based on the parameter description form below.



Parameter description

Parameter	Description
Enable NAT	It is used to enable the NAT.
Enable Fullcone NAT	Data transmitted by a computer in LAN through the UDP port A will be forwarded to the UDP port B in WAN. And data received by the UDP port B in WAN will be forwarded to the UDP port A of the corresponding computer in LAN.
Enable Firewall	Check this option to enable the firewall of the modem router.
Enable IGMP Multicast Proxy	If it is enabled, the modem router can forward the multicast data to the users in LAN. If you requires multicast applications, such as VOD or AOD, you can enable this option.

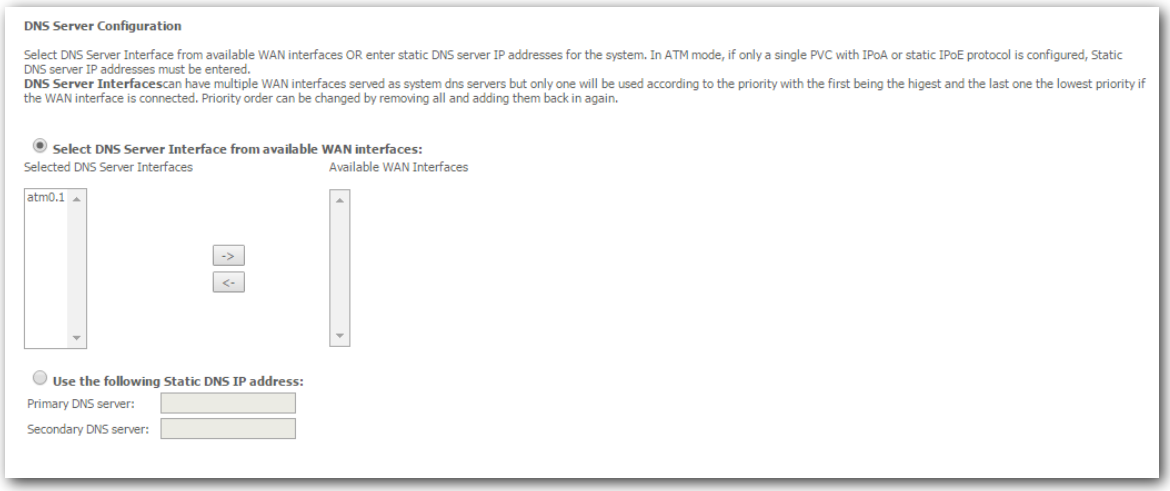
Step 9 Leave the configuration unchanged on **Routing - Default Gateway** page, and click **Next**.



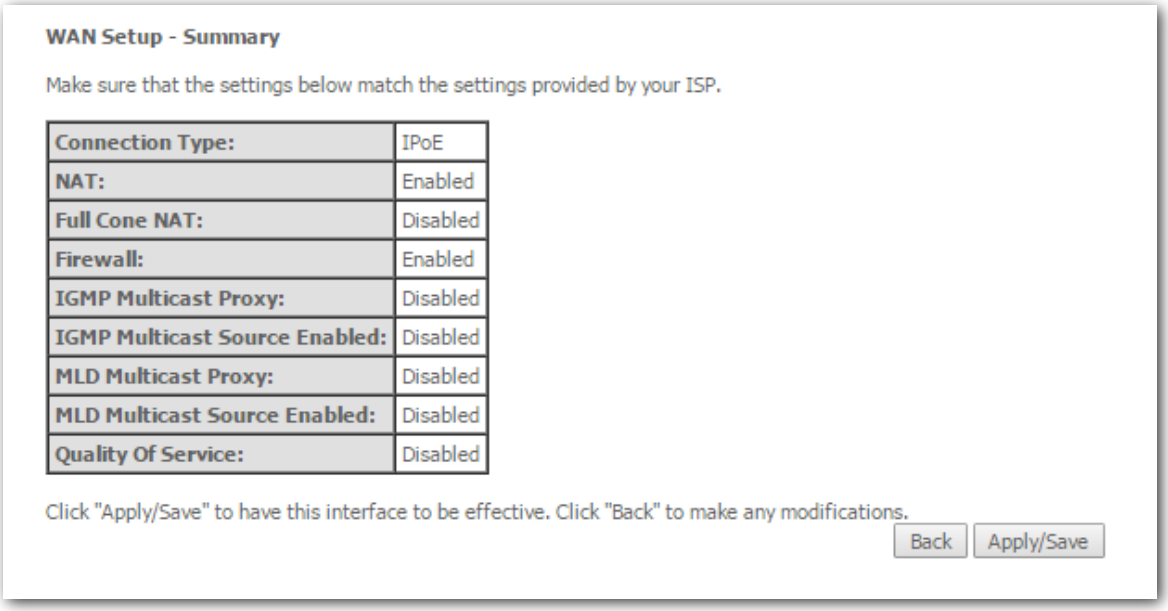
TIP

Default gateway interface list can contain multiple WAN interfaces serving as system default gateways.

Step 10 If your ISP provides you with the DNS IP addresses, select **Use the following Static DNS IP address**, and enter the DNS IP addresses information. If not, select the option **Select DNS Server Interface from available WAN interfaces**, and click **Next**.

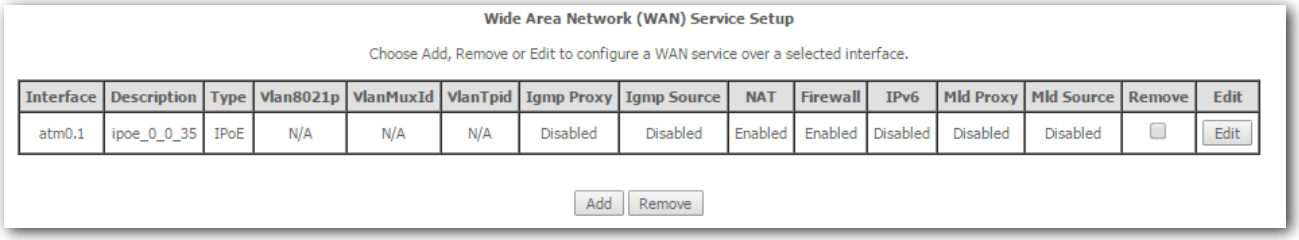


Step 11 Check the parameters you select or set, and click **Apply/Save**.



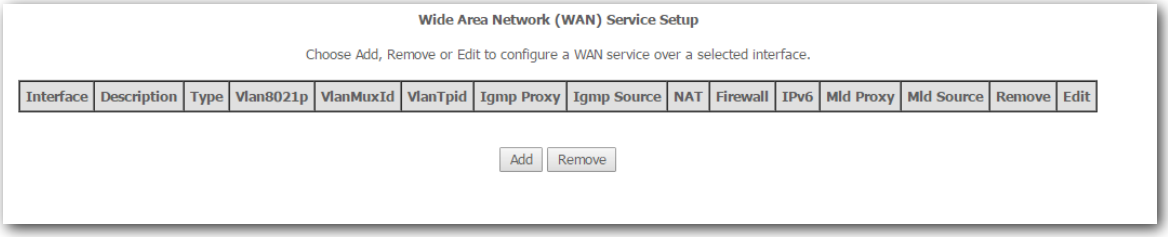
----End

The WAN service you set is shown on the **WAN Service** page.

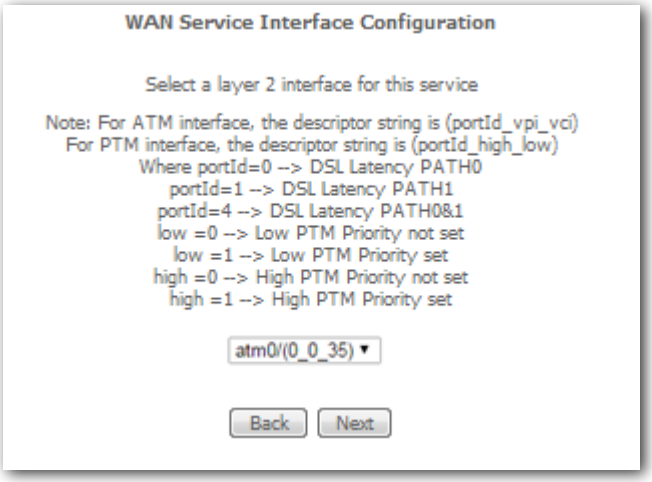


IPv4&IPv6 IPoE

Step 1 Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



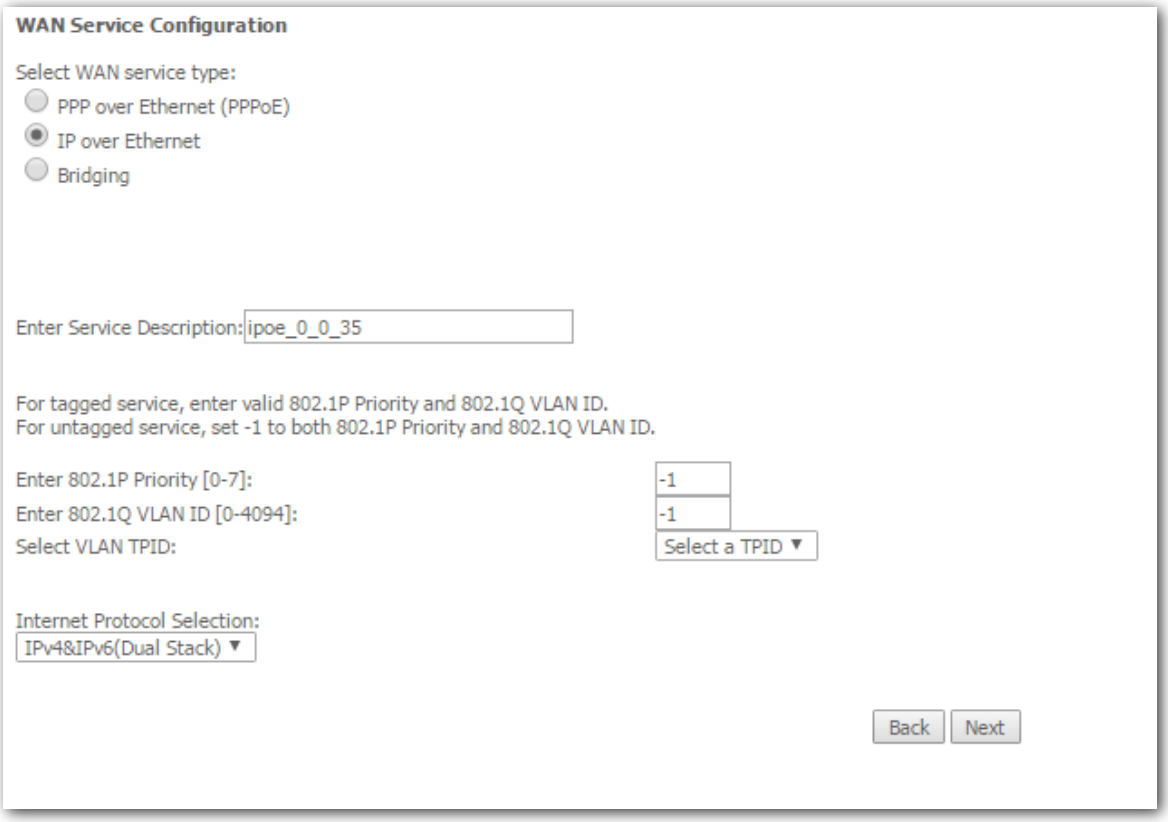
Step 2 Select ATM interface you create on the Layer2 Interface page, which is **atm0/(0_0_35)** in this example, and click **Next**.



Step 3 Select **IP over Ethernet**.

Step 4 Enter the **802.1P Priority** and **802.1Q VLAN ID**, and select the **VLAN TPID** according to the VLAN parameters provided by your ISP.

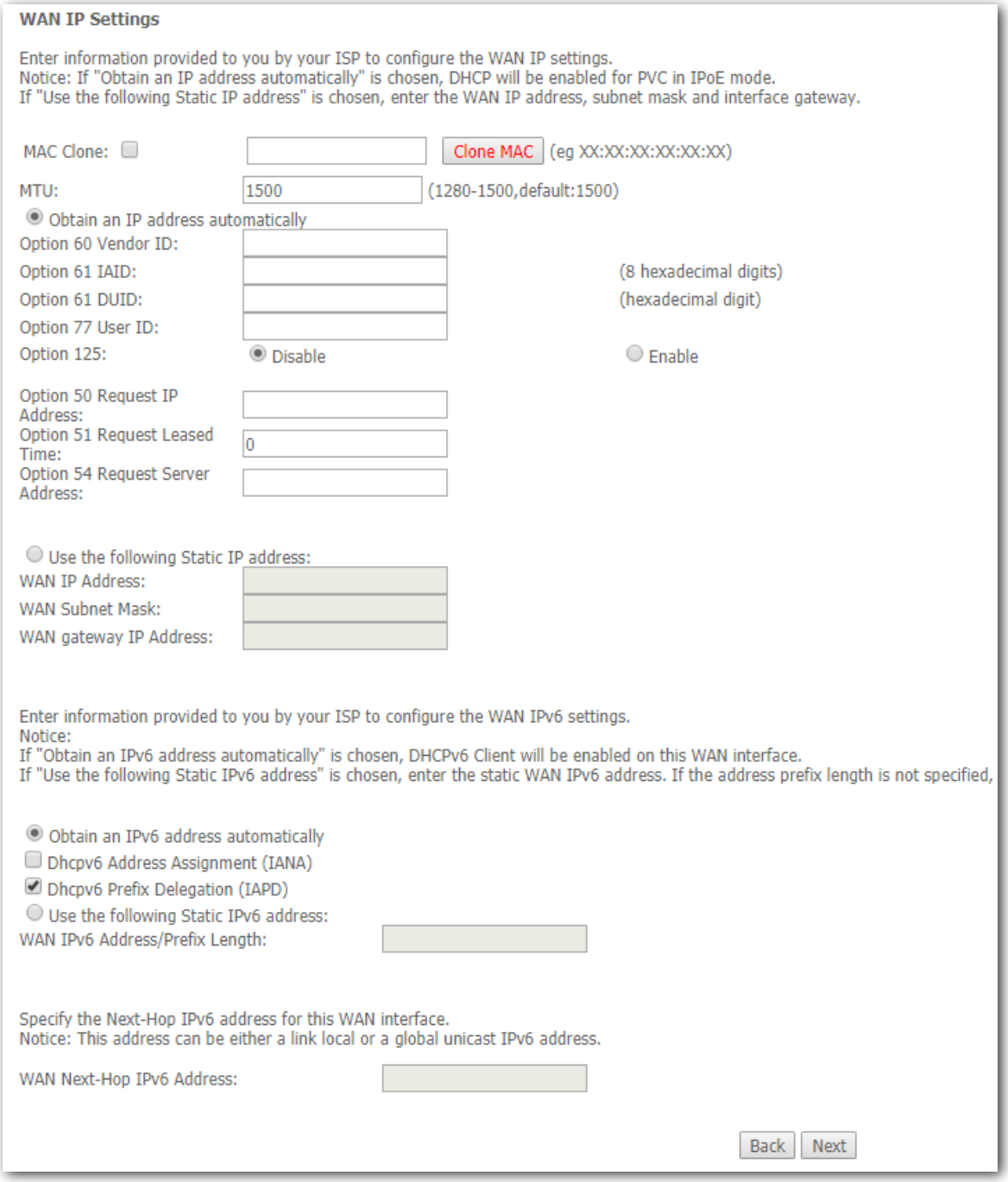
Step 5 Select **IPv4&IPv6(Dual Stack)** and click **Next**.



Step 6 Set the WAN IP address.

- **Obtain an IP address automatically**: If your ISP does NOT provide you with the IP address information, select this option.
- **Use the following Static IP address**: If your ISP provides you with the IP address information, select this option and enter them.

Step 7 Set other parameters as required, and click **Next**.

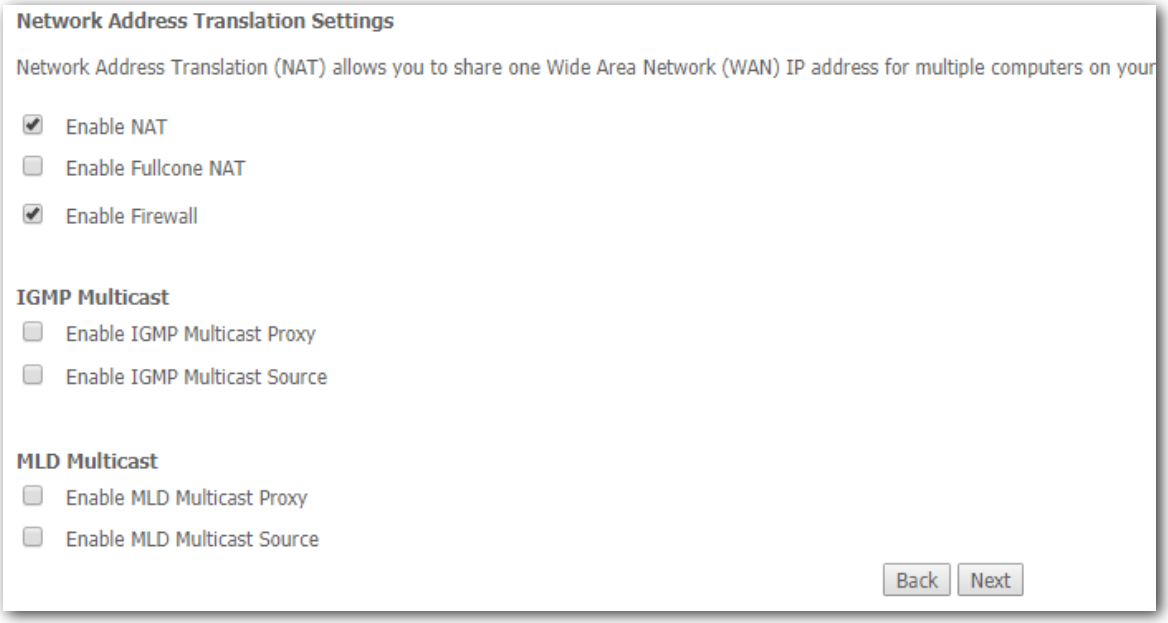


Parameter description

Parameter	Description
MAC Clone	If you can only access the internet via a specified computer, it may indicate that your ISP binds the internet service to the MAC address of the computer to restrict access. In this case, you need to clone the MAC address of this computer to the modem router for internet access.
MTU	It specifies the maximum size of packet that the router can transmit. MTU varies across connection types.
Option 60 Vendor ID	It is used by the client to report its manufactory and configuration information.

Parameter	Description
Option 61 IAID	It is used to specify the IAID value of DHCP option 61 client-indentifier.
Option 61 DUID	It is used to specify the DUID value of DHCP option 61.
Option 77 User ID	It is used to specify the User ID of DHCP option 77.
Option 125	It specifies the vendor-Identifying Vendor option. If you are not instructed by a professional, the default is recommended.
Option 50 Request IP Address	It is used to specify the request IP address of DHCP option 50.
Option 51 Request Leased Time	It is used to specify the request leased of DHCP option 51.
Option 54 Request Server Address	It is used to specify the request server address of DHCP option 54.
Obtain an IPv6 address automatically	If your ISP does not provide you with IP address information, select this option to obtain the IP address and other parameters from upstream device.
Dhcpv6 Address Assignment (IANA)	If it is enabled, the device obtains the IPv6 WAN address using the stateful DHCPv6 type.
Dhcpv6 Prefix Delegation (IAPD)	If it is enabled, the device gets the IPv6 prefix form the DHCPv6 server, and delivers it to its LAN ports.
Use the following Static IPv6 address	If your ISP provides you with IP address information, select this option to enter the IP address and other parameters.
WAN Next-Hop IPv6 Address	It specifies the gateway address by default.

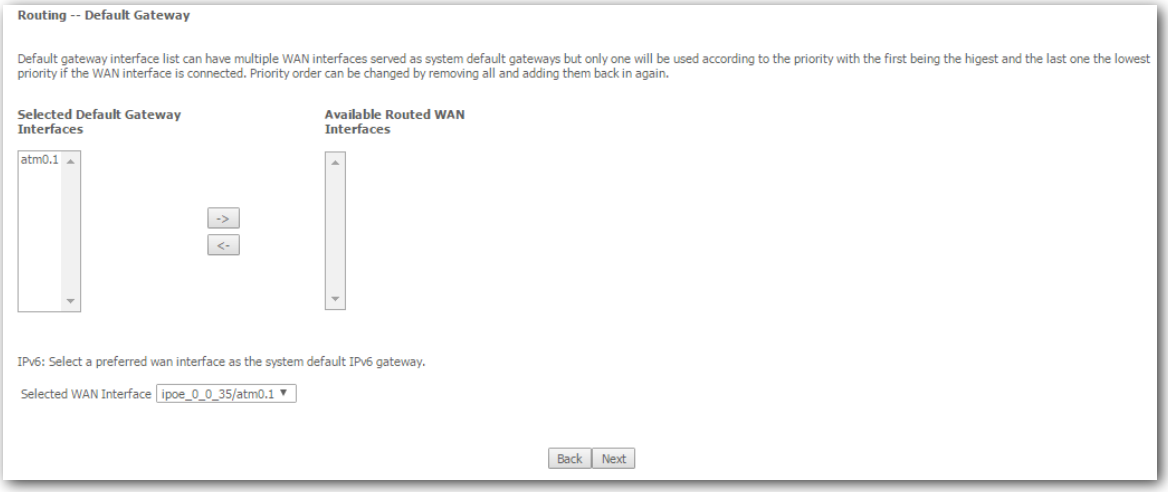
Step 8 Select the options as required based on the parameter description form below.



Parameter description

Parameter	Description
Enable NAT	It is used to enable the NAT.
Enable Fullcone NAT	Data transmitted by a computer in LAN through the UDP port A will be forwarded to the UDP port B in WAN. And data received by the UDP port B in WAN will be forwarded to the UDP port A of the corresponding computer in LAN.
Enable Firewall	Check this option to enable the firewall of the modem router.
Enable IGMP Multicast Proxy	If it is enabled, the modem router can forward the multicast data to the users in LAN. If you requires multicast applications, such as VOD or AOD, you can enable this option.
Enable MLD Multicast Proxy	It is used to enable the MLD multicast proxy.

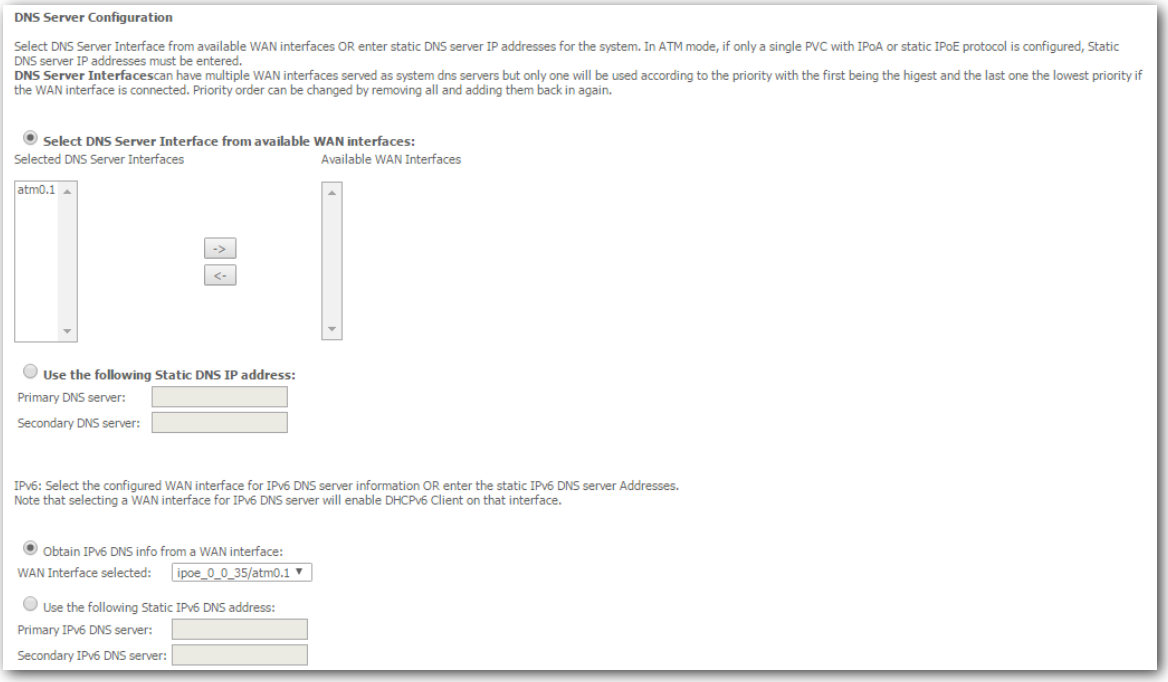
Step 9 Leave the configuration unchanged on **Routing - Default Gateway** page, and click **Next**.



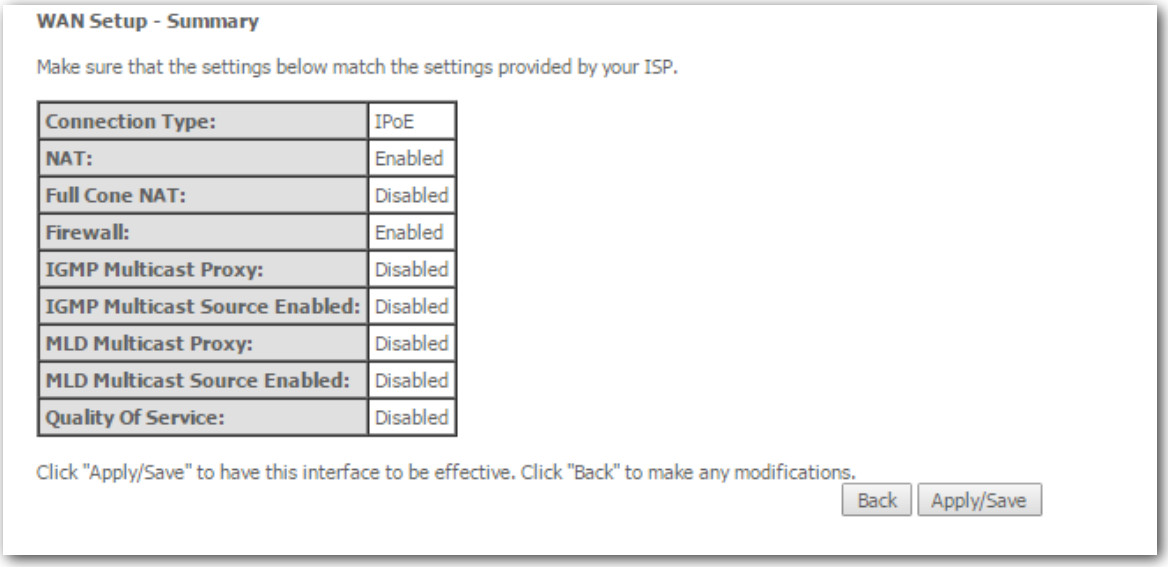
TIP

Default gateway interface list can contain multiple WAN interfaces serving as system default gateways.

Step 10 If your ISP provides you with the DNS IP addresses, select **Use the following Static DNS IP address/Use the following Static IPv6 DNS IP address**, and enter the DNS IP addresses. If not, select the option **Select DNS Server Interface from available WAN interfaces/Obtain IPv6 DNS info from a WAN interface**, and click **Next**.



Step 11 Check the parameters you select or set, and click **Apply/Save**.



WAN Setup - Summary

Make sure that the settings below match the settings provided by your ISP.

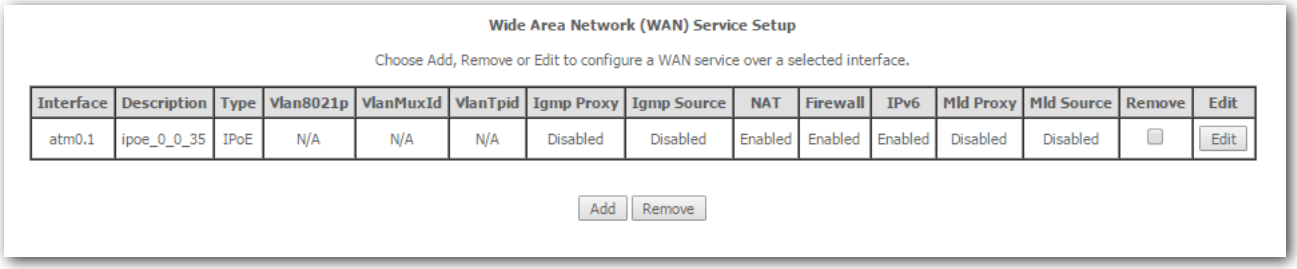
Connection Type:	IPoE
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Enabled
IGMP Multicast Proxy:	Disabled
IGMP Multicast Source Enabled:	Disabled
MLD Multicast Proxy:	Disabled
MLD Multicast Source Enabled:	Disabled
Quality Of Service:	Disabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

Back Apply/Save

----End

The WAN service you set is shown on the **WAN Service** page.



Wide Area Network (WAN) Service Setup

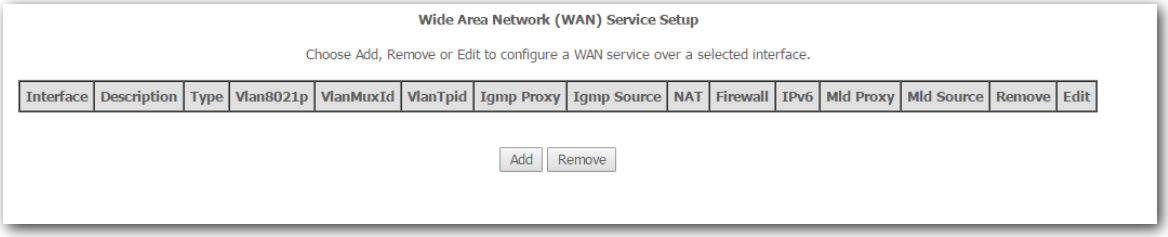
Choose Add, Remove or Edit to configure a WAN service over a selected interface.

Interface	Description	Type	Vlan8021p	VlanMuxId	VlanTpid	Igmp Proxy	Igmp Source	NAT	Firewall	IPv6	Mld Proxy	Mld Source	Remove	Edit
atm0.1	ipoe_0_0_35	IPoE	N/A	N/A	N/A	Disabled	Disabled	Enabled	Enabled	Enabled	Disabled	Disabled	☐	Edit

Add Remove

IPv6 IPoE

Step 1 Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



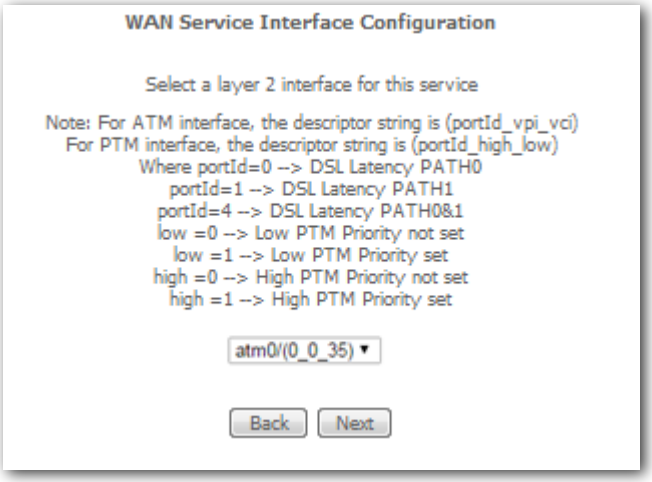
Wide Area Network (WAN) Service Setup

Choose Add, Remove or Edit to configure a WAN service over a selected interface.

Interface	Description	Type	Vlan8021p	VlanMuxId	VlanTpid	Igmp Proxy	Igmp Source	NAT	Firewall	IPv6	Mld Proxy	Mld Source	Remove	Edit

Add Remove

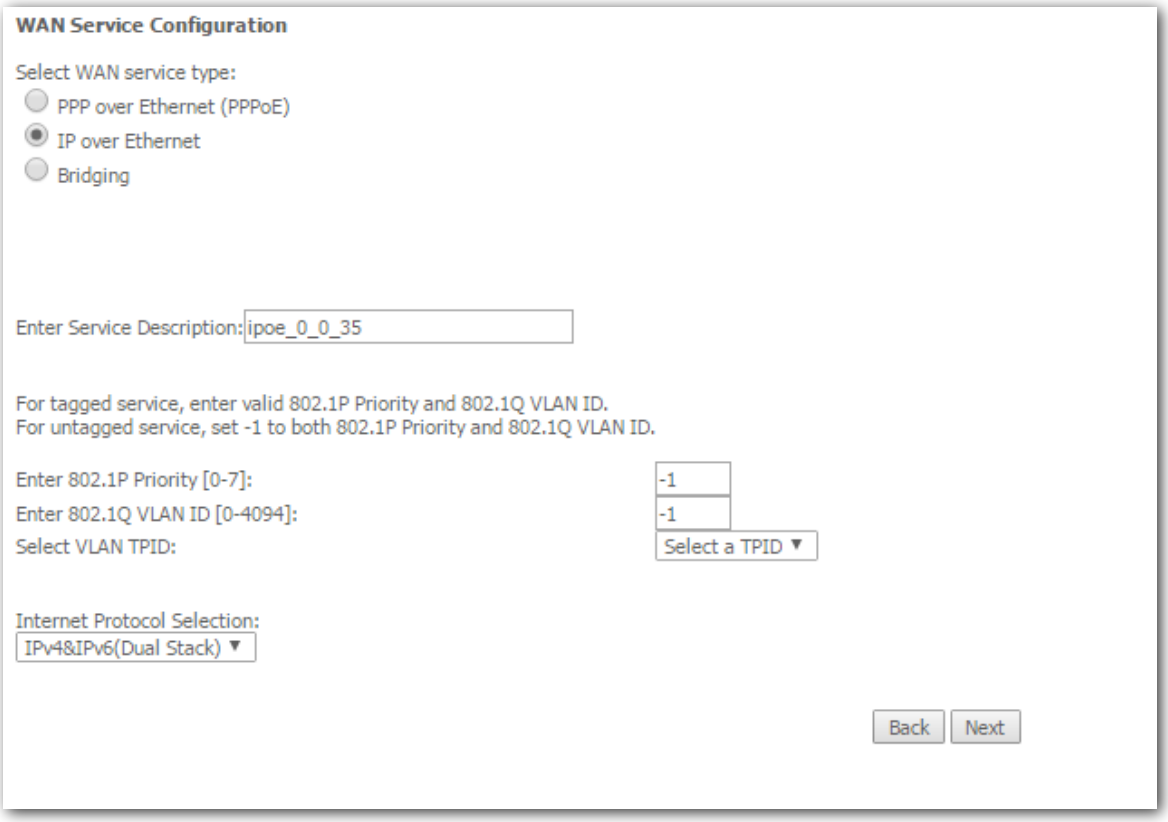
Step 2 Select ATM interface you create on the Layer2 Interface page, which is **atm0/(0_0_35)** in this example, and click **Next**.



Step 3 Select **IP over Ethernet**.

Step 4 Enter the **802.1P Priority** and **802.1Q VLAN ID**, and select the **VLAN TPID** according to the VLAN parameters provided by your ISP.

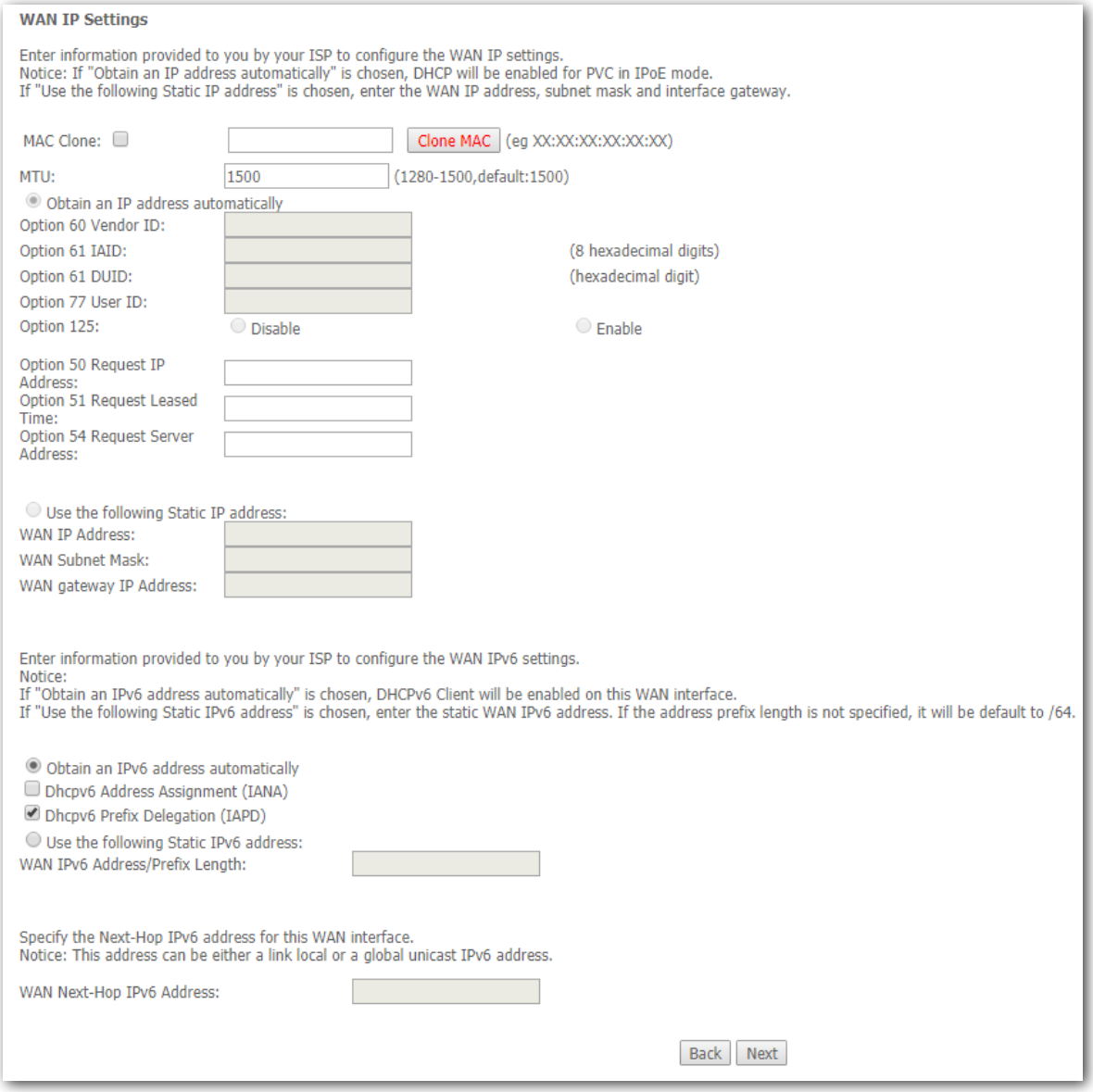
Step 5 Select **IPv6 Only** and click **Next**.



Step 6 Set the WAN IP address.

- **Obtain an IP address automatically**: If your ISP does NOT provide you with the IP address information, select this option.
- **Use the following Static IP address**: If your ISP provides you with the IP address information, select this option and enter them.

Step 7 Set other parameters as required, and click **Next**.

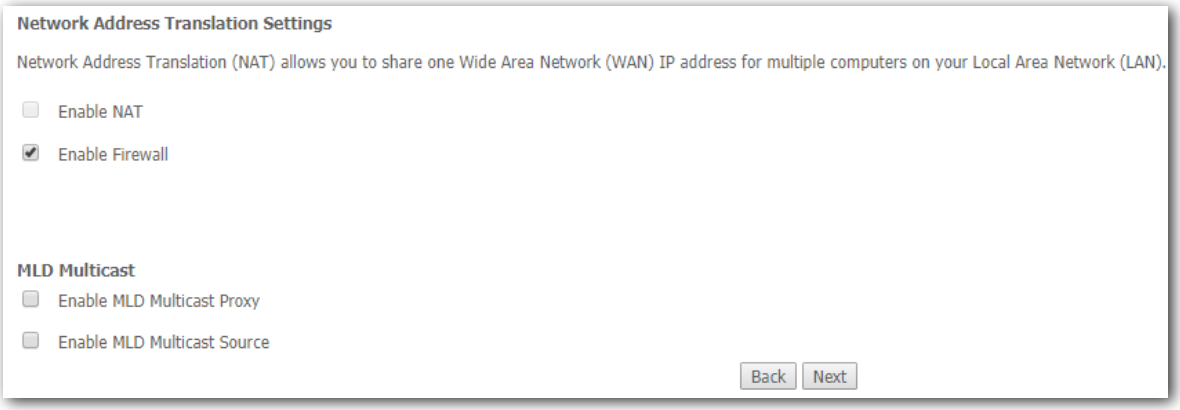


Parameter description

Parameter	Description
MAC Clone	If you can only access the internet via a specified computer, it may indicate that your ISP binds the internet service to the MAC address of the computer to restrict access. In this case, you need to clone the MAC address of this computer to the modem router for internet access.
MTU	It specifies the maximum size of packet that the router can transmit. MTU varies across connection types.
Option 60 Vendor ID	It is used by the client to report its manufactory and configuration information.
Option 61 IAID	It is used to specify the IAID value of DHCP option 61 client-indentifier.
Option 61 DUID	It is used to specify the DUID value of DHCP option 61.

Parameter	Description
Option 77 User ID	It is used to specify the User ID of DHCP option 77.
Option 125	It specifies the vendor-Identifying Vendor option. If you are not instructed by a professional, the default is recommended.
Option 50 Request IP Address	It is used to specify the request IP address of DHCP option 50.
Option 51 Request Leased Time	It is used to specify the request leased of DHCP option 51.
Option 54 Request Server Address	It is used to specify the request server address of DHCP option 54.
Obtain an IPv6 address automatically	If your ISP does not provide you with IP address information, select this option to obtain the IP address and other parameters from upstream device.
Dhcpv6 Address Assignment (IANA)	If it is enabled, the device obtains the IPv6 WAN address using the stateful DHCPv6 type.
Dhcpv6 Prefix Delegation (IAPD)	If it is enabled, the device gets the IPv6 prefix form the DHCPv6 server, and delivers it to its LAN ports.
Use the following Static IPv6 address	If your ISP provides you with IP address information, select this option to enter the IP address and other parameters.
WAN Next-Hop IPv6 Address	It specifies the gateway address by default.

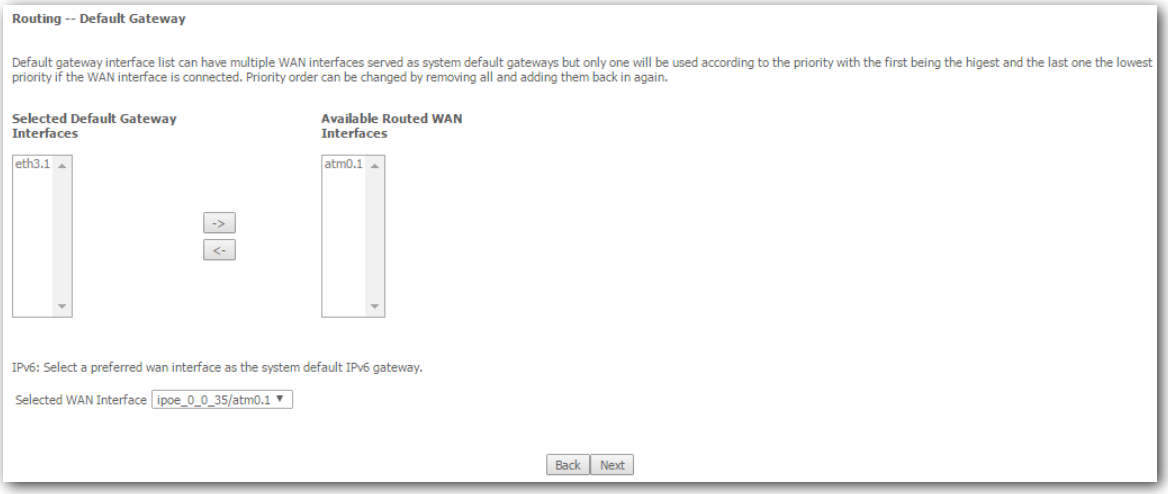
Step 8 Select the options as required based on the parameter description form below.



Parameter description

Parameter	Description
Enable NAT	It is used to enable the NAT.
Enable MLD Multicast Proxy	It is used to enable the MLD multicast proxy.

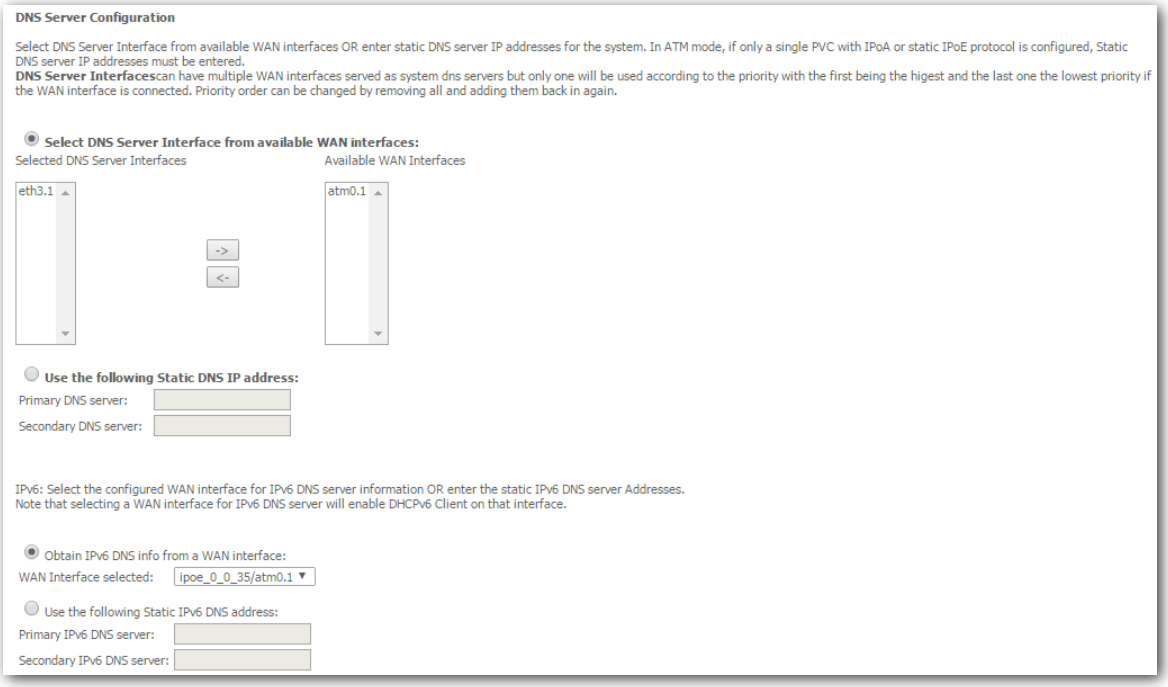
Step 9 Leave the configuration unchanged on **Routing - Default Gateway** page, and click **Next**.



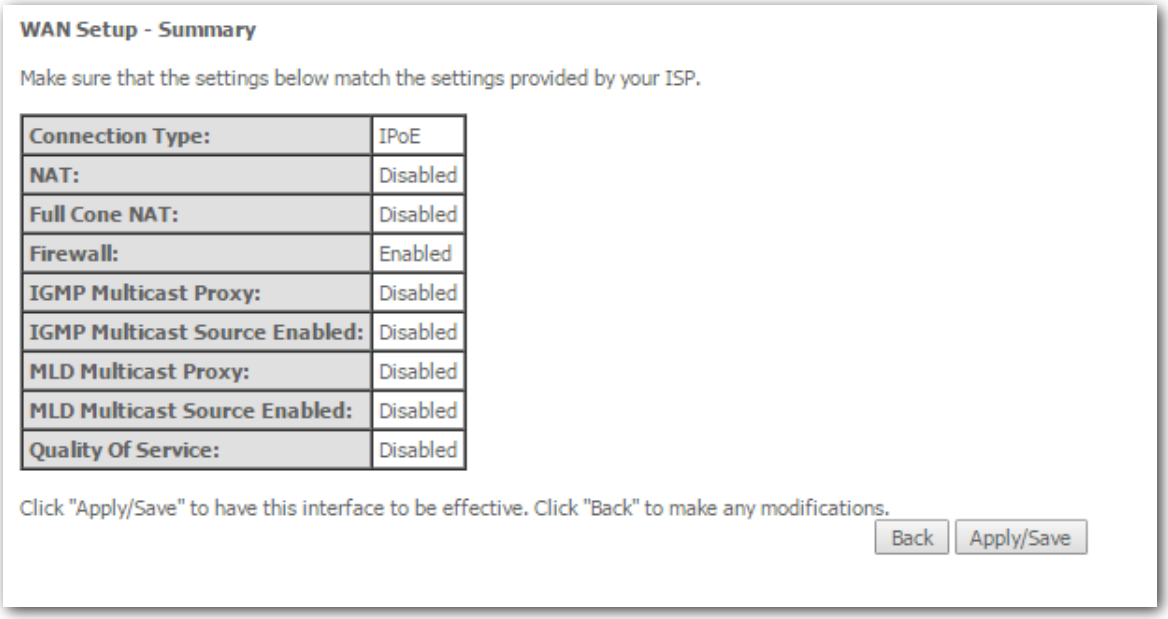
TIP

Default gateway interface list can contain multiple WAN interfaces serving as system default gateways.

Step 10 If your ISP provides you with the DNS IP addresses, select **Use the following Static DNS IP address/Use the following Static IPv6 DNS IP address**, and enter the DNS IP addresses. If not, select the option **Select DNS Server Interface from available WAN interfaces/Obtain IPv6 DNS info from a WAN interface**, and click **Next**.

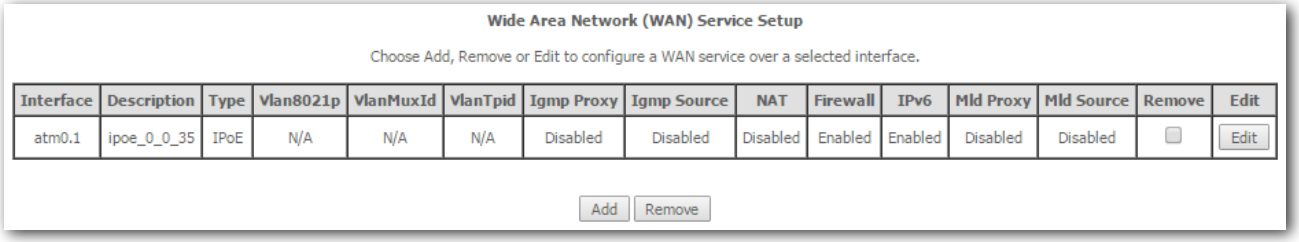


Step 11 Check the parameters you select or set, and click **Apply/Save**.



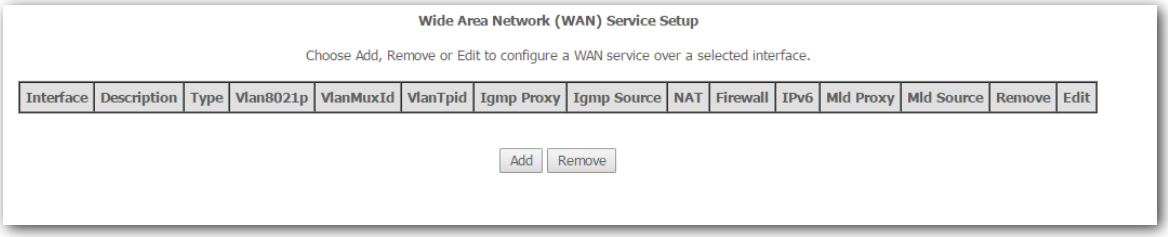
----End

The WAN service you set is shown on the **WAN Service** page.

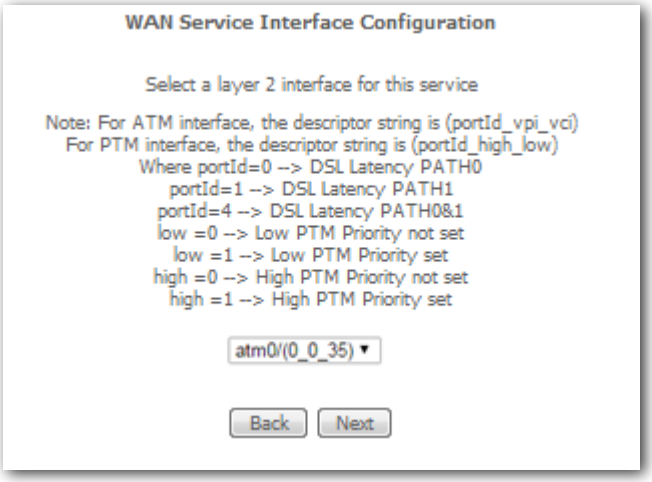


Bridge

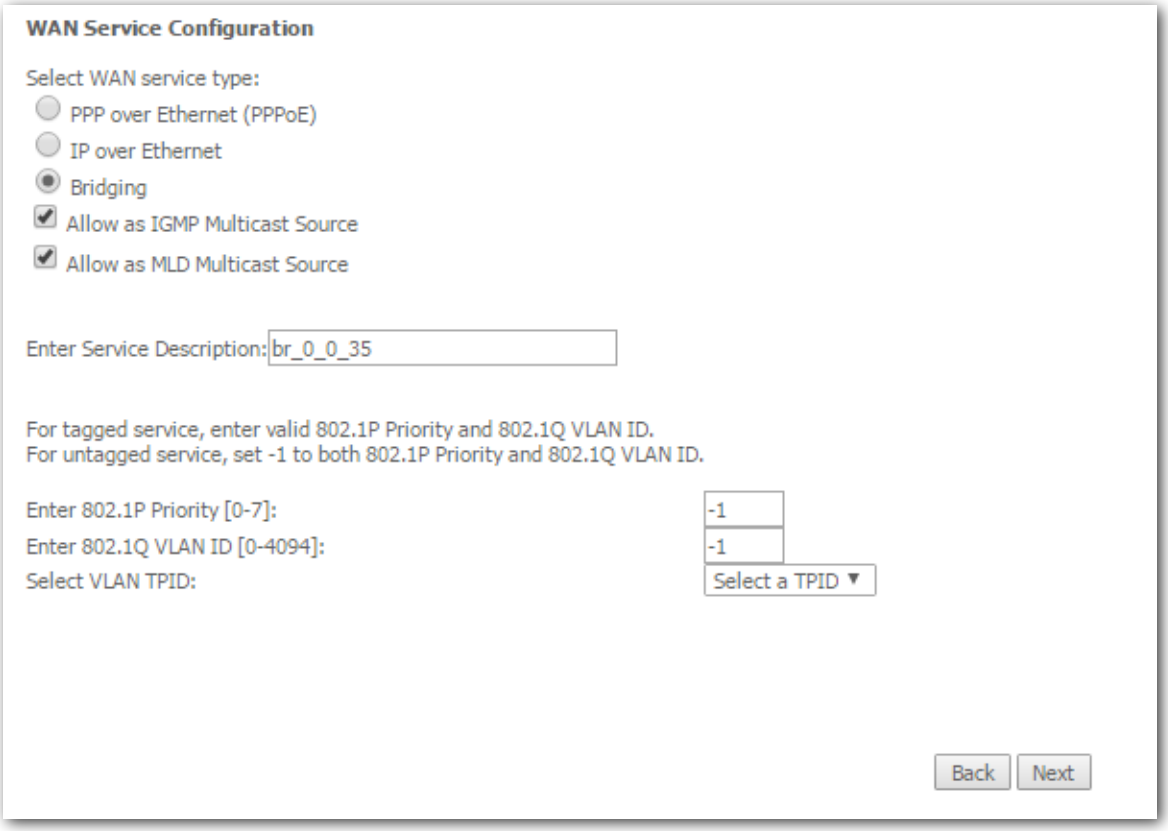
Step 1 Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



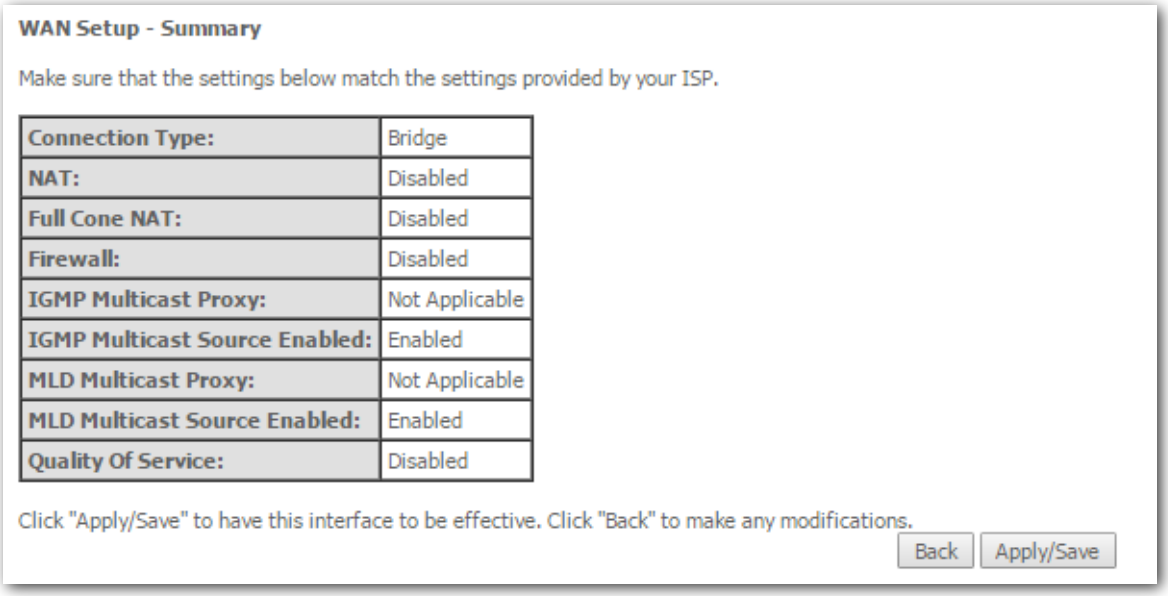
Step 2 Select ATM interface you create on the Layer2 Interface page, which is **atm0/(0_0_35)** in this example, and click **Next**.



Step 3 Select **Bridging**, set other parameters as required, and click **Next**.



Step 4 Check the parameters you select or set, and click **Apply/Save**.



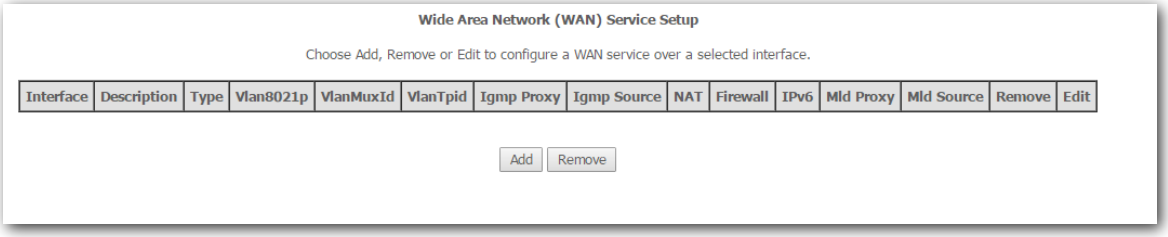
----End

After the settings take effect, you need to set the internet settings on the devices connected to the modem router for internet access.

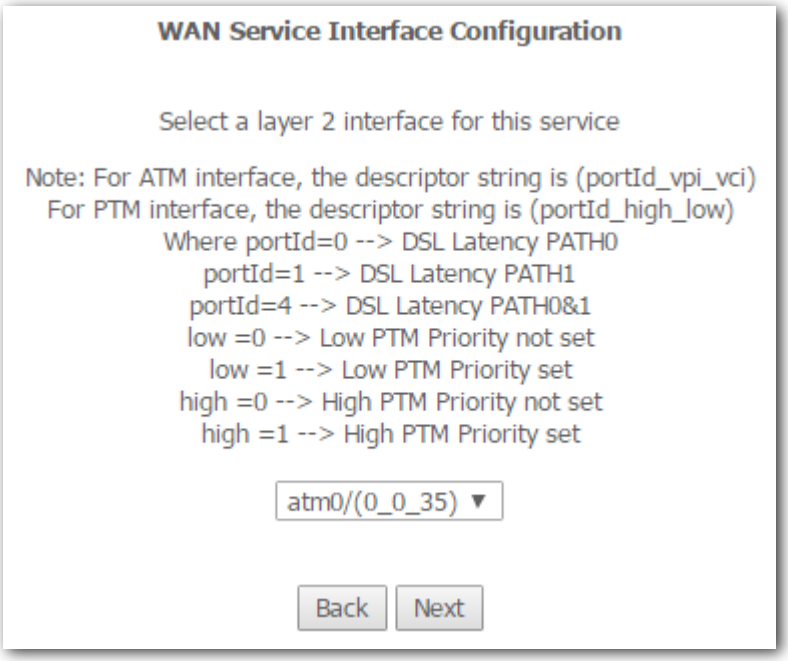
PPPoA (Only for internet access through phone cable)

If the DSL Link Type is set to PPPoA when you create an ATM interface, refer to the following procedure.

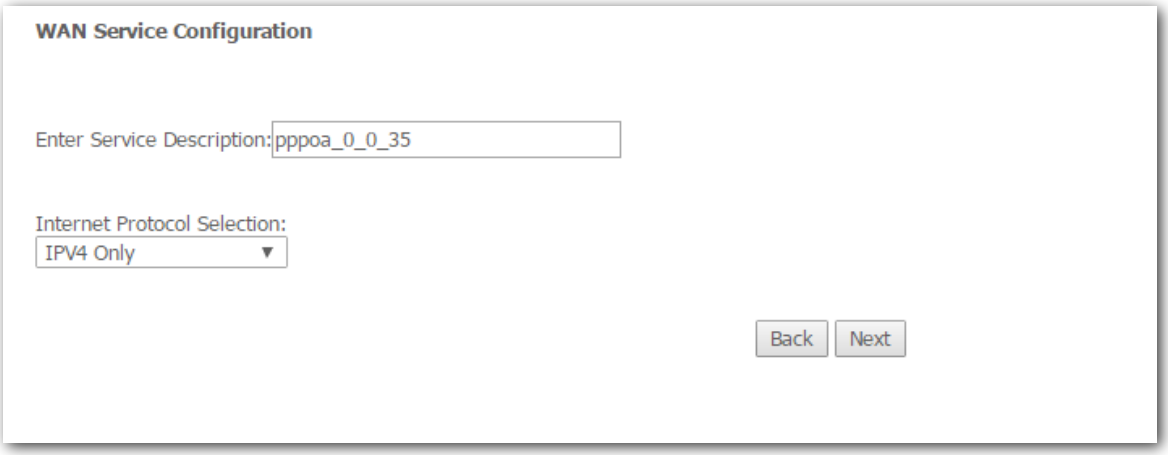
Step 1 Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



Step 2 Select ATM interface you create on the Layer2 Interface page, which is **atm0/(0_0_35)** in this example, and click **Next**.

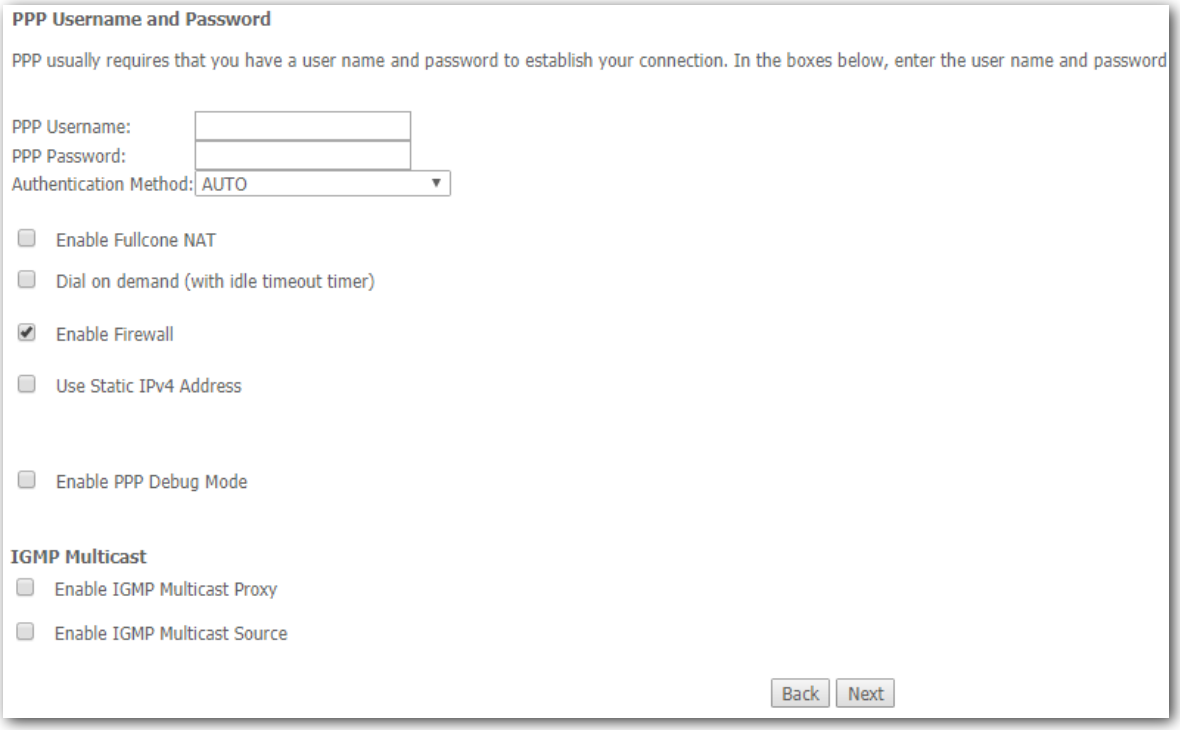


Step 3 Select your internet protocol, and click **Next**. IPv4 is used to illustrate here.



Step 4 Enter the user name and password provided by your ISP, set other parameters as required,

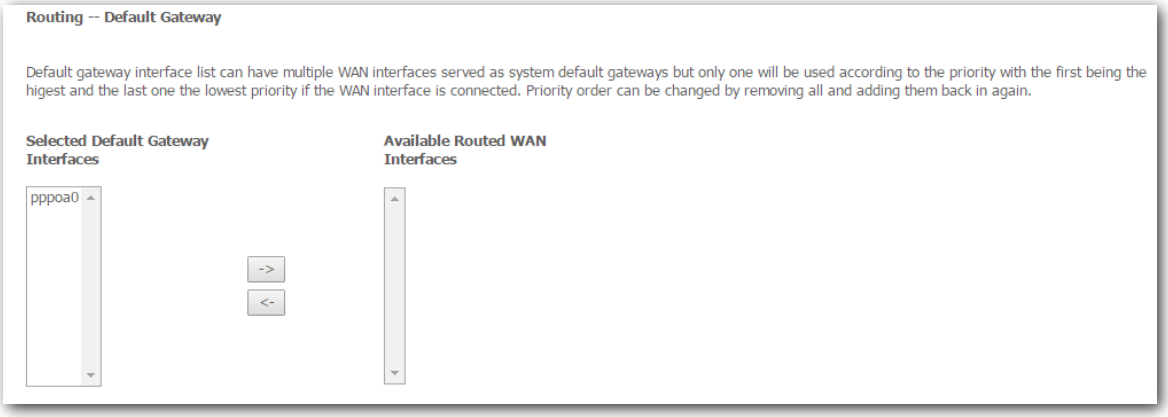
and click **Next**.



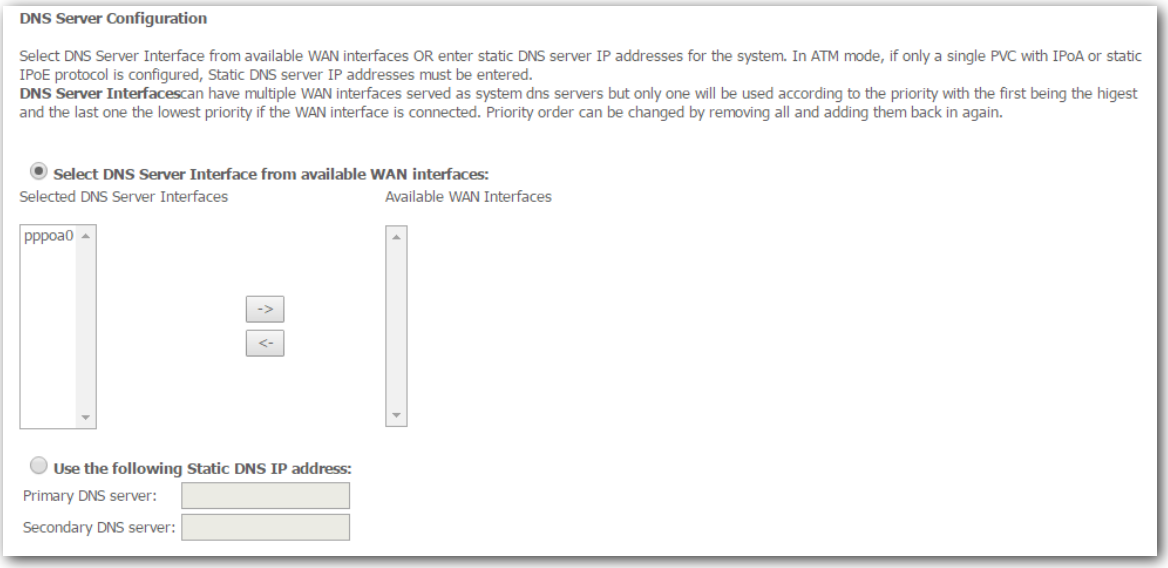
Parameter description

Parameter	Description
Authentication Method	It specifies the authentication method the ISP-side uses to authenticate the client. If you do not certain about it, select AUTO.
Enable Fullcone NAT	Data transmitted by a computer in LAN through the UDP port A will be forwarded to the UDP port B in WAN. And data received by the UDP port B in WAN will be forwarded to the UDP port A of the corresponding computer in LAN.
Dial on demand (with idle timeout timer)	When there is no data exchange within the specified time, the device disconnects the connection between its WAN port and the ISP. Flow-based charging users can select this option to save cost. Month-based charging users do not need to select the option.
Enable Firewall	Check this option to enable the firewall of the modem router.
Use Static IPv4 Address	It is used to set up the IP address assigned by the ISP after the PPPoE dial-up succeeds. Do not set up it if you are not a professional.
Enable PPP Debug Mode	If it is enabled, you can check the PPPoE dial-up information on the System Log page. It is used to diagnose dial-up malfunctions.
Enable IGMP Multicast Proxy	If it is enabled, the modem router can forward the multicast data to the users in LAN. If you requires multicast applications, such as VOD or AOD, you can

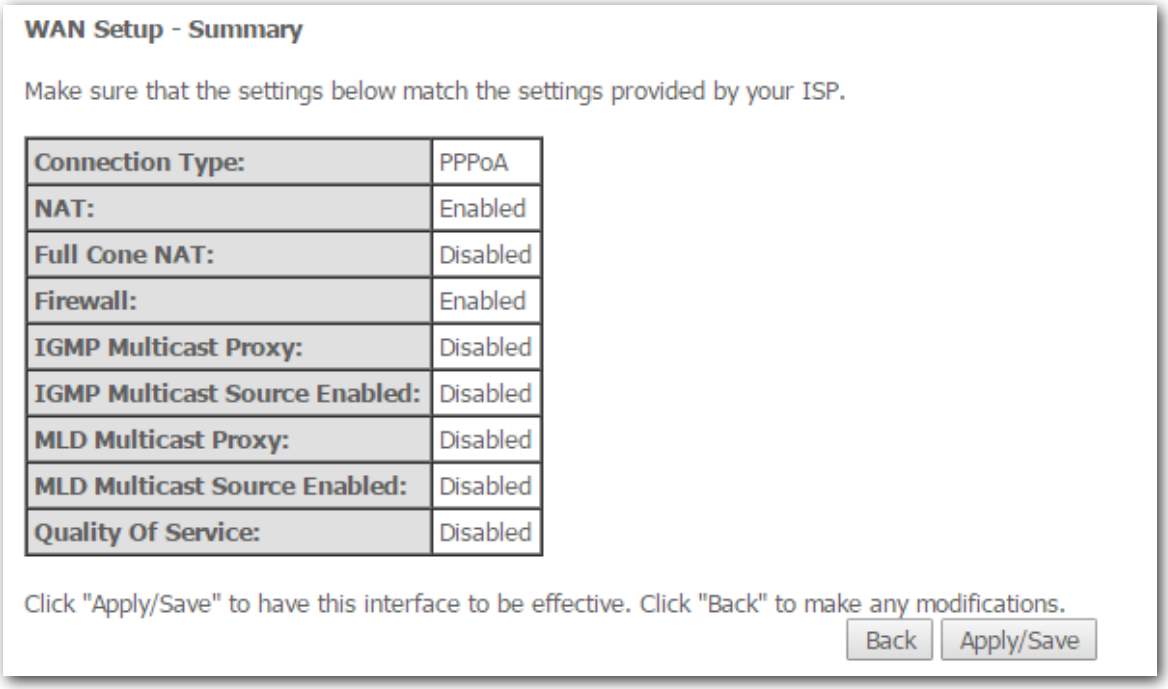
Step 5 Leave the configuration unchanged on **Routing - Default Gateway** page, and click **Next**.



Step 6 If your ISP provides you with the DNS IP addresses, select **Use the following Static DNS IP address**, and enter the DNS IP addresses. If not, select the option **Select DNS Server Interface from available WAN interfaces**, and click **Next**.

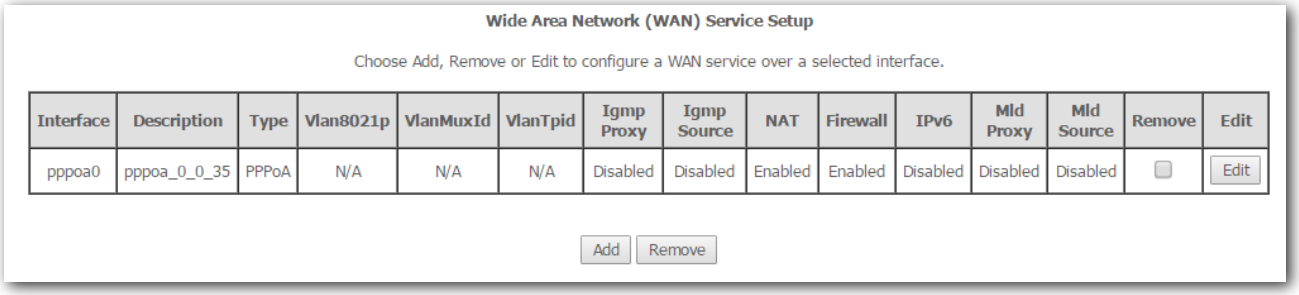


Step 7 Check the parameters you select or set, and click **Apply/Save**.



----End

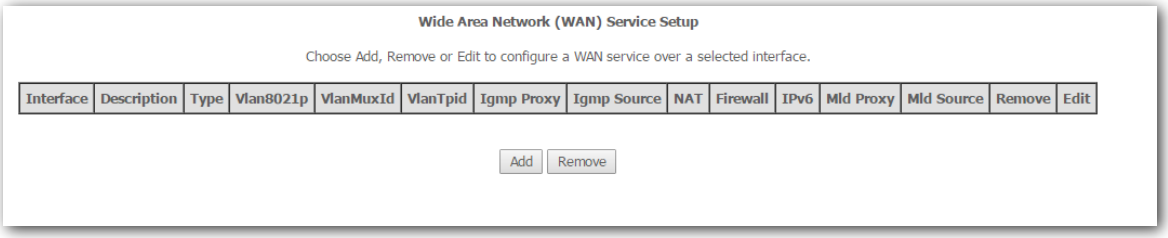
The WAN service you set is shown on the **WAN Service** page.



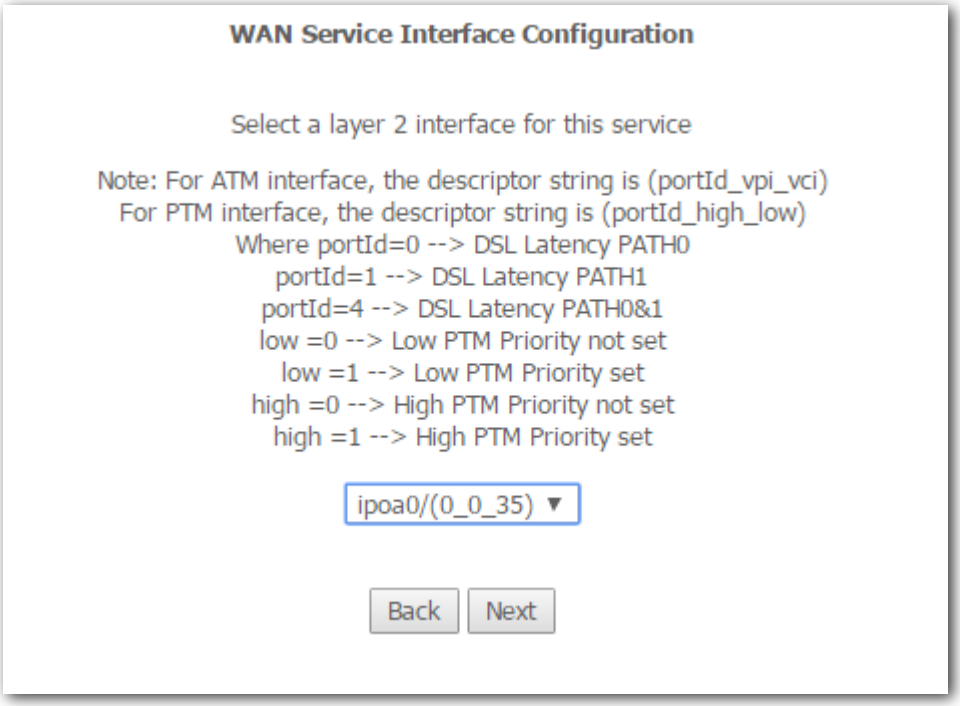
IPoA (Only for internet access through phone cable)

If the DSL Link Type is set to IPoA when you create an ATM interface, refer to the following procedure.

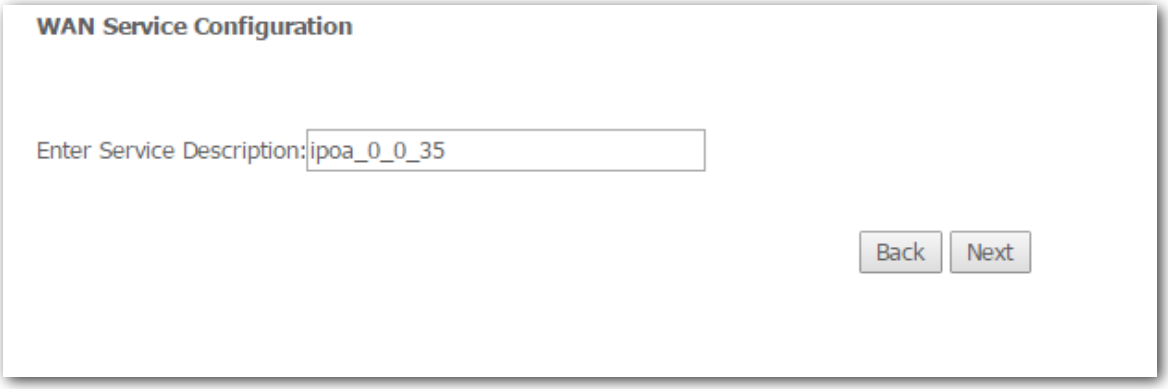
Step 1 Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



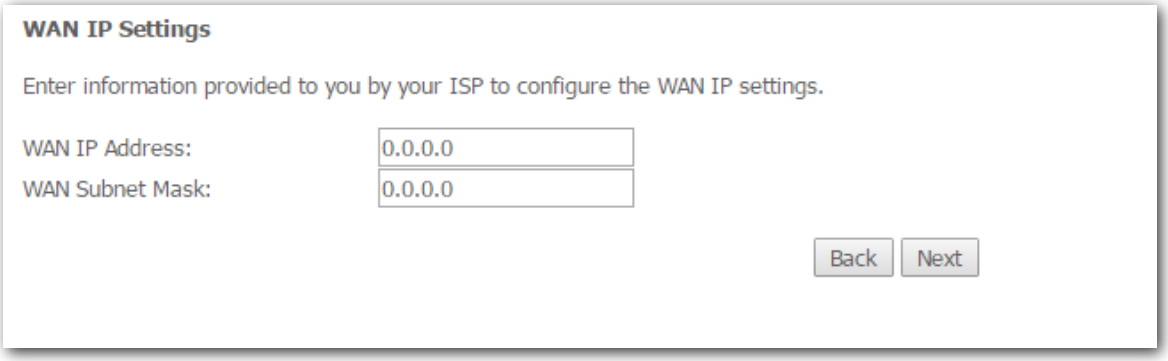
Step 2 Select ATM interface you create on the Layer2 Interface page, which is **atm0/(0_0_35)** in this example, and click **Next**.



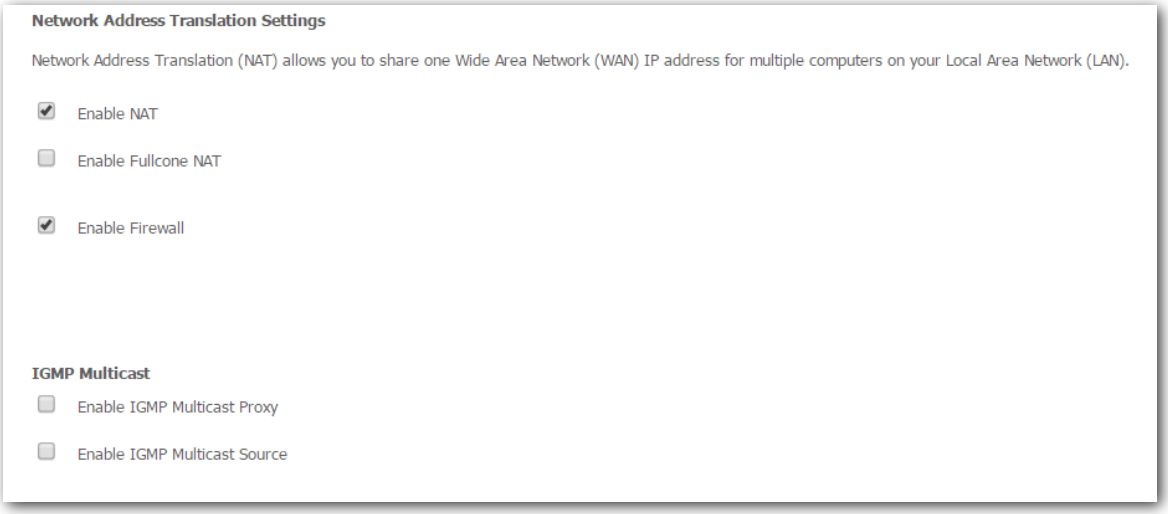
Step 3 Change the service description if required, and click **Next**.



Step 4 Enter the WAN IP address and subnet mask provided by your ISP, and click **Next**.



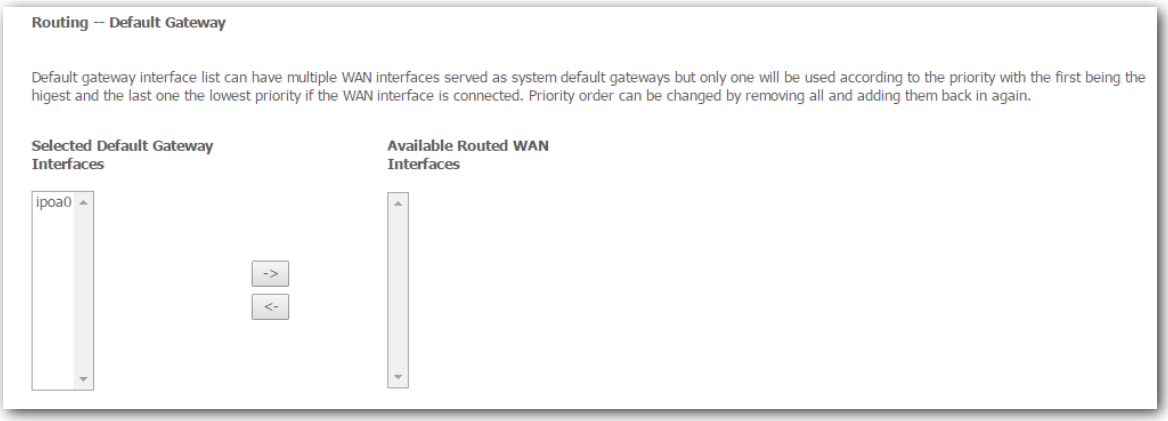
Step 5 Set other parameters as required, and click **Next**.



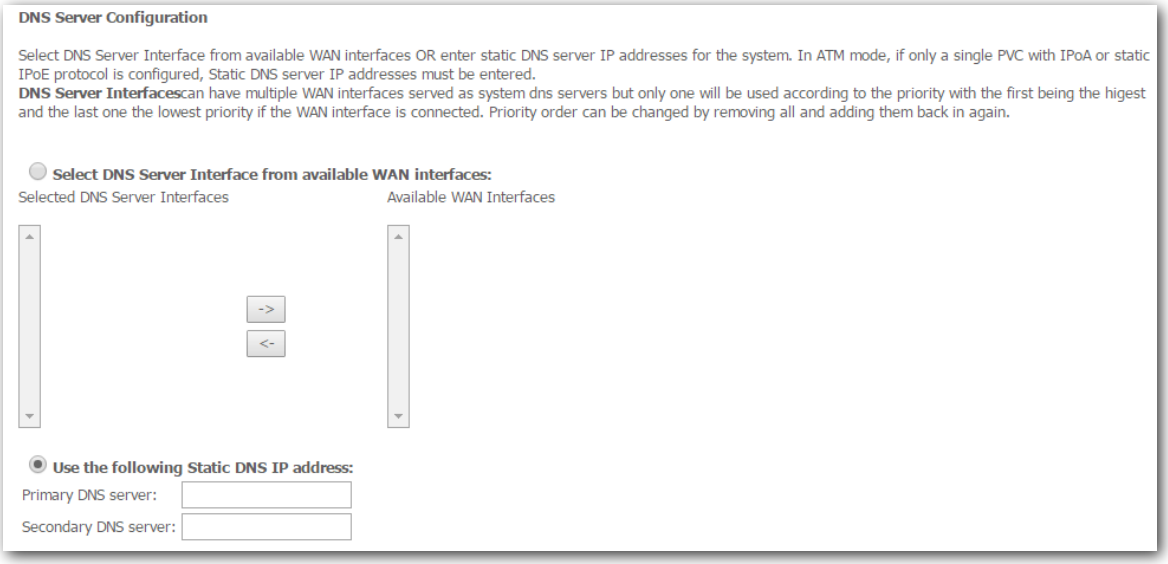
Parameter description

Parameter	Description
Enable NAT	It is used to enable the NAT.
Enable Fullcone NAT	Data transmitted by a computer in LAN through the UDP port A will be forwarded to the UDP port B in WAN. And data received by the UDP port B in WAN will be forwarded to the UDP port A of the corresponding computer in LAN.
Enable Firewall	Check this option to enable the firewall of the modem router.
Enable IGMP Multicast Proxy	If it is enabled, the modem router can forward the multicast data to the users in LAN. If you requires multicast applications, such as VOD or AOD, you can enable this option.

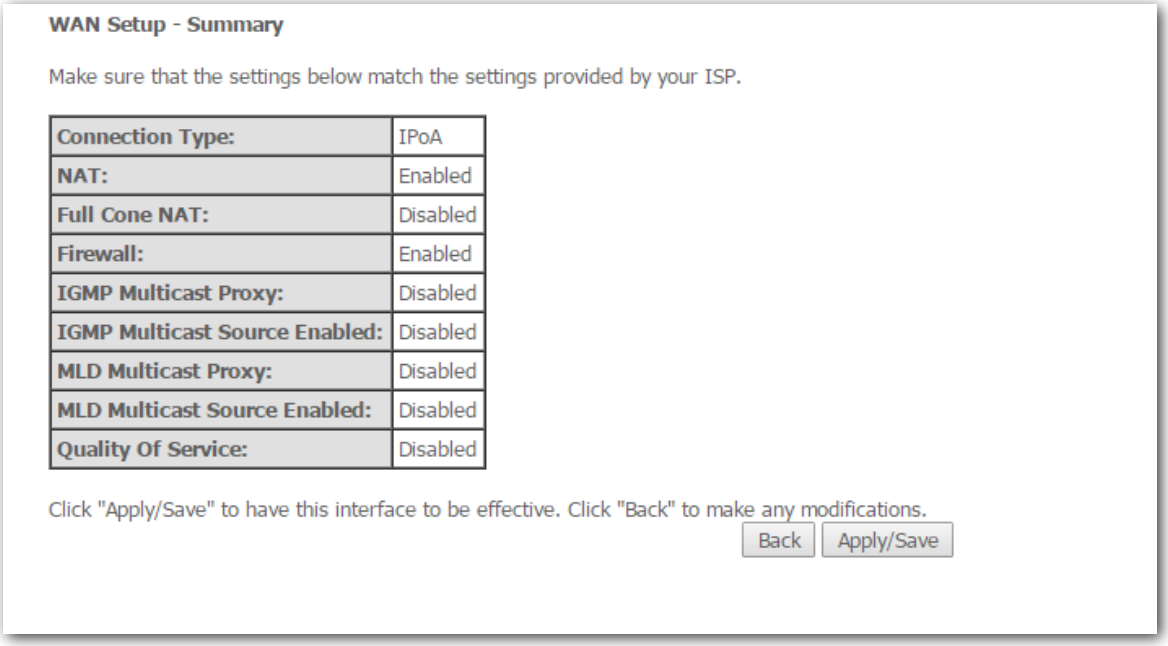
Step 6 Leave the configuration unchanged on **Routing - Default Gateway** page, and click **Next**.



Step 7 If your ISP provides you with the DNS IP addresses, select **Use the following Static DNS IP address**, and enter the DNS IP addresses. If not, select the option **Select DNS Server Interface from available WAN interfaces**, and click **Next**.

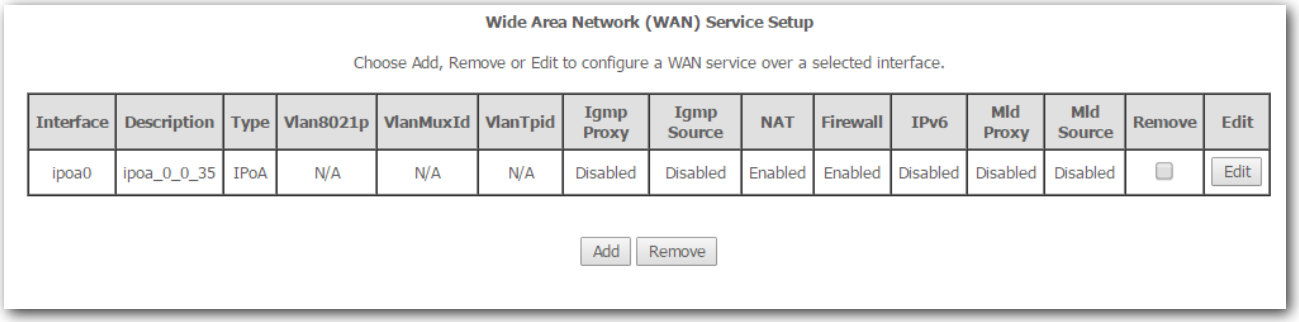


Step 8 Check the parameters you select or set, and click **Apply/Save**.



----End

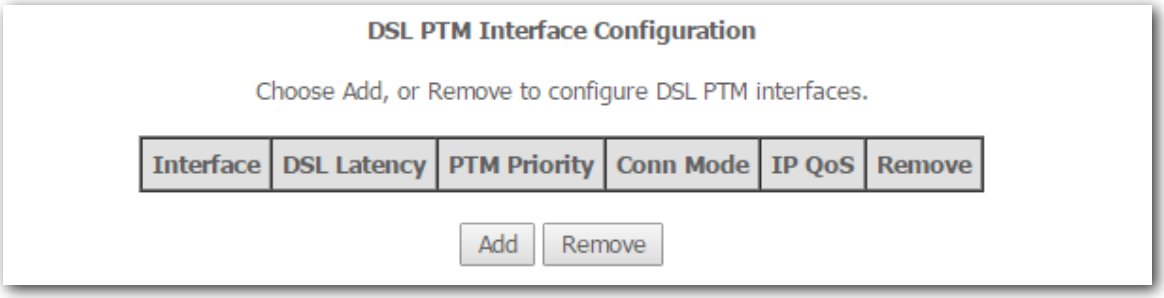
The WAN service you set is shown on the **WAN Service** page.



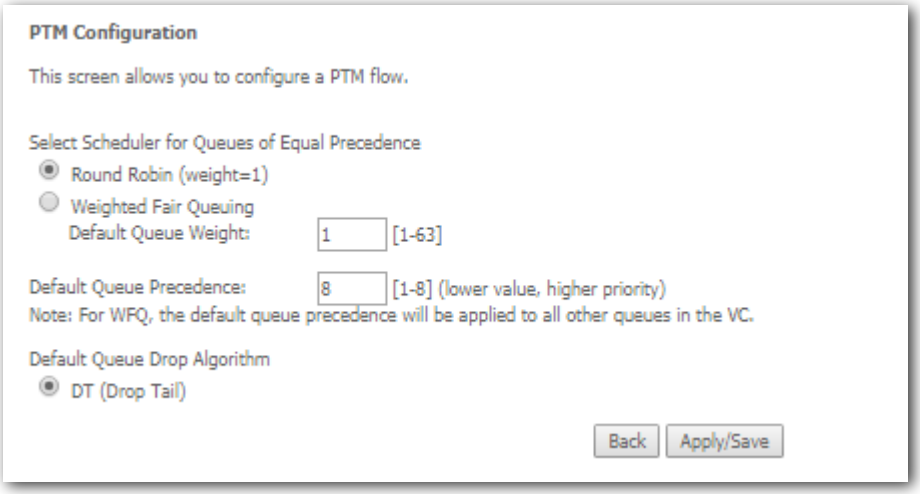
4.1.2 Setting the PTM connection

Step 1 Create a PTM interface.

1. Choose **Advanced Setup** > **Layer2 Interface** > **PTM Interface** to enter the following page, and click **Add**.



2. Leave the parameters for queue parameters unchanged, and click **Apply/Save**.

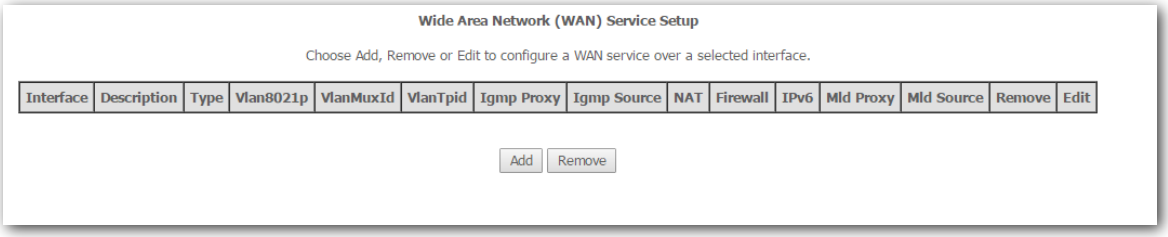


Parameter description

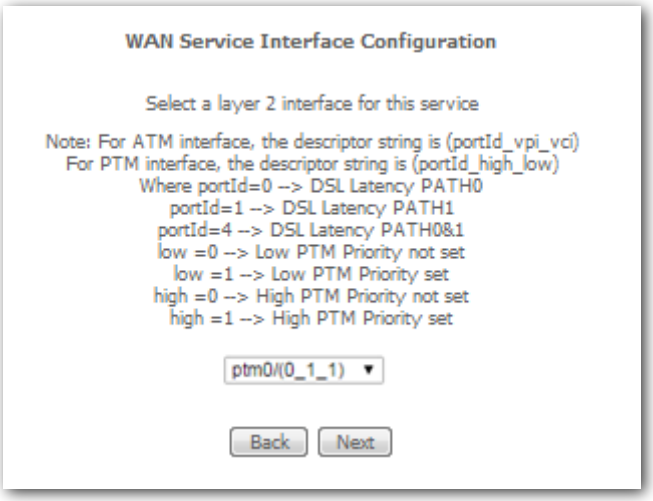
Parameter	Description
Select Scheduler for Queues of Equal Precedence	Select the default scheduler for the queues with equal precedence.
Round Robin	It specifies a QoS packet scheduling algorithm. It assigns different weights for different kinds of packets and provides the packets with different bandwidths based on the weights.
Weighted Fair Queuing	It specifies a QoS packet scheduling algorithm. It divides groups into different queues based on the service streaming, IP precedence, and Hash algorithm, and fairly assigns the bandwidth to the services with low precedence according to the weights while ensuring the performance of services with high precedence.
Default Queue Weight	It specifies to set up the weight of the default queue.
Default Queue Precedence	It specifies to set up the precedenceof the default queue.
Default Queue Drop Algorithm	It specifies the default queue drop algorithm. It cannot be changed.

Step 2 Set up a WAN service for the PTM interface.

1. Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.



2. Select the interface you create in Layer2 Interface, which is **ptm0/(0_1_1)** in this example, and click **Next**.

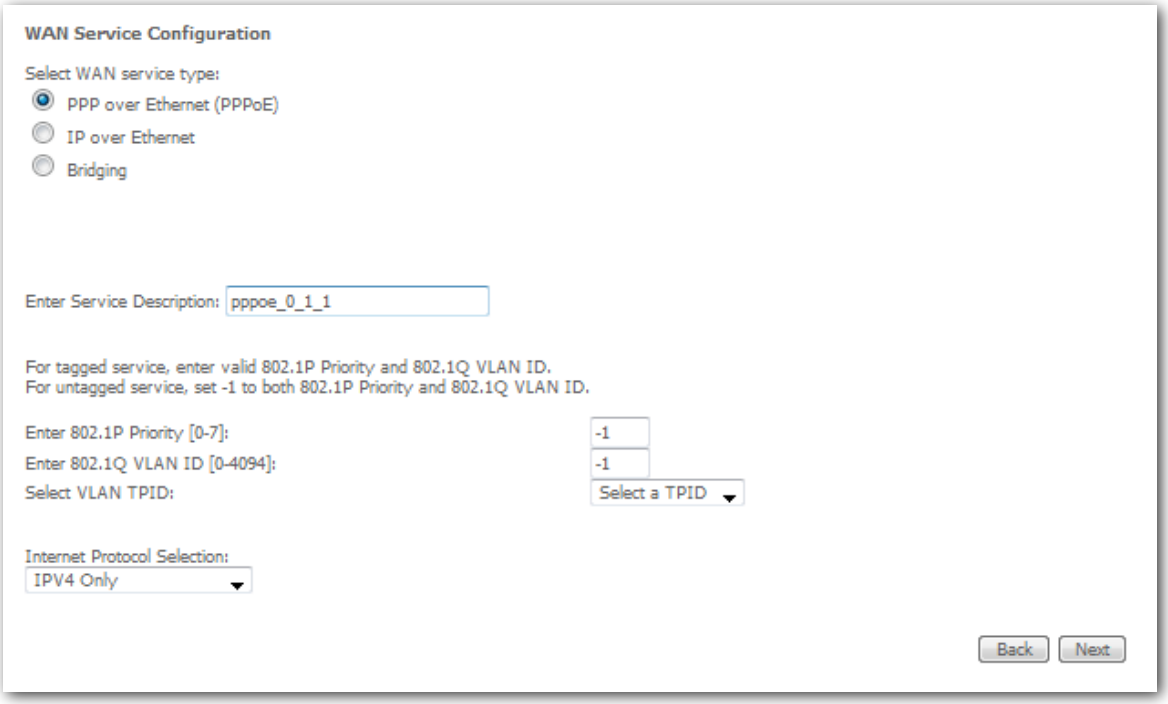


3. Select a WAN service type according to the instructions in the table below. Here takes **PPPoE** as an example.
4. Enter the 802.1P priority and 802.1Q VLAN ID parameters provided by your ISP.

TIP

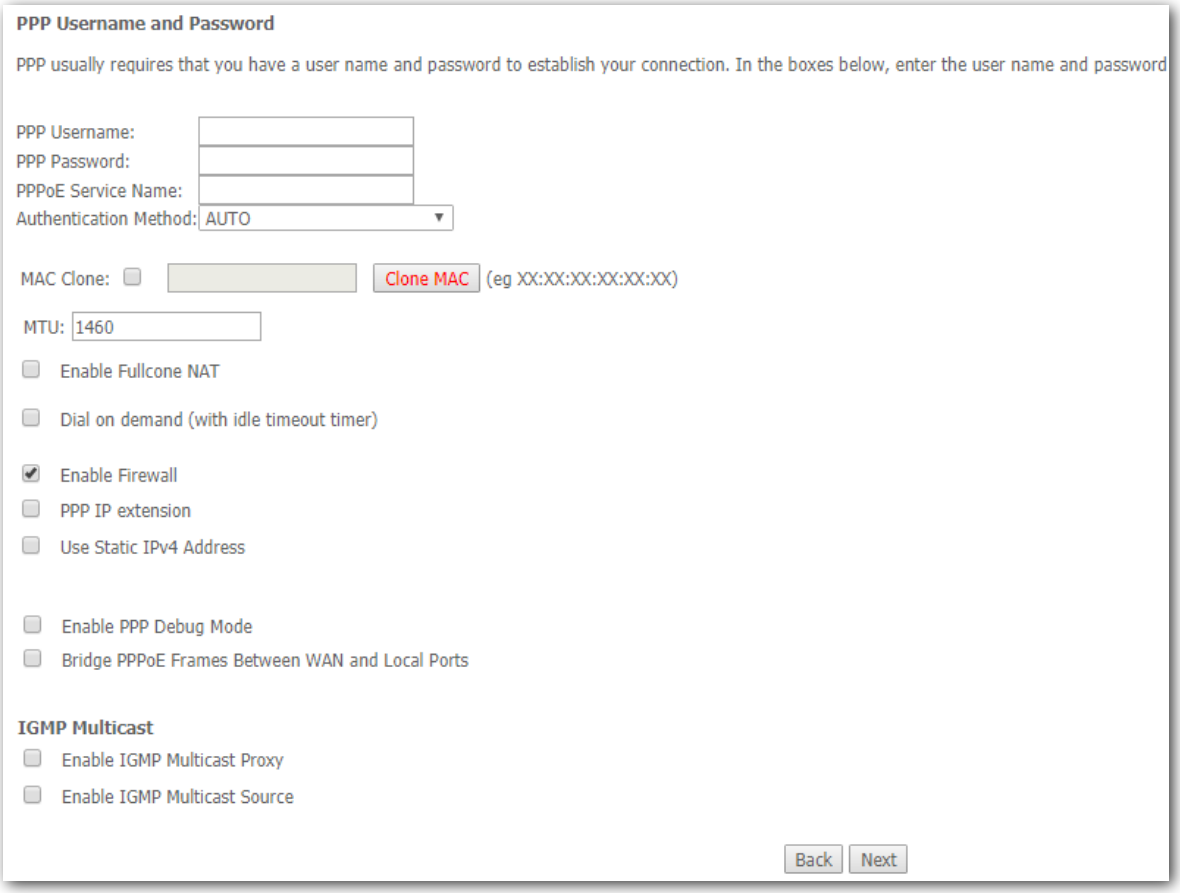
If you are unsure about the 802.1P priority and 802.1Q VLAN ID parameters, refer to Appendix A.3 VLAN List. If the parameters are not available, ask your ISP to provide it.

5. Select your network protocol type as required, and click **Next**. IPv4 is used to illustrate here. Refer to Setting up a WAN Service for the ATM Interface for the instruction of other network protocols.



Connection Type		Description
PPP over Ethernet (PPPoE)		Select this type if your ISP (ISP) provides a user name and password to you for internet access.
IP over Ethernet	Dynamic IP	Select this type if your ISP does not provide any parameters to you for internet access.
	Static IP	Select this type if your ISP provides a static IP address and other related information to you for internet access.
Bridging		Select this type when this device only serves as a modem, and you want to set up a dial-up connection or enter other internet parameters directly on your computer for internet access.

6. Enter the user name and password provided by your ISP, set other parameters as required according to the parameter description form, and click **Next**.

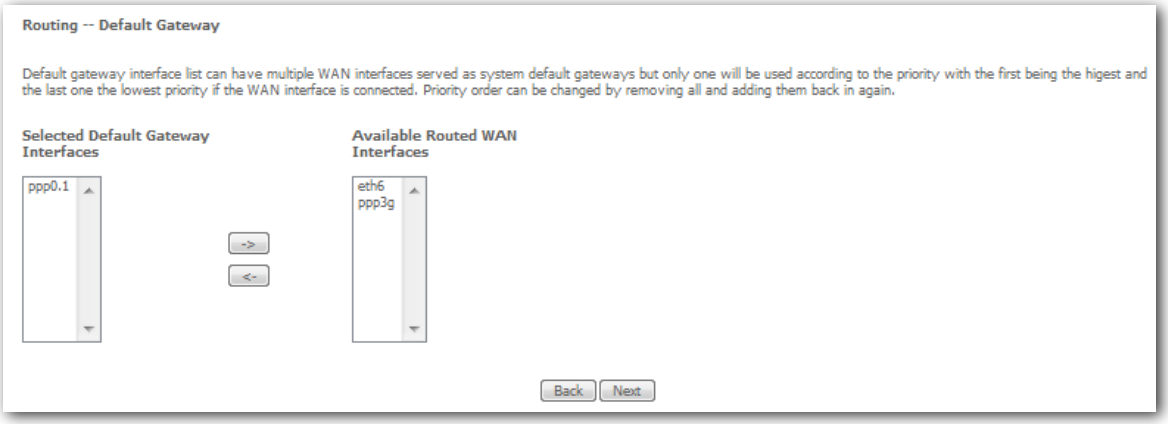


Parameter description

Parameter	Description
PPPoE Service Name	If your ISP provides this name, enter it here. Otherwise, leave it blank.
Authentication Method	It specifies the authentication method the ISP-side uses to authenticate the client. If you do not certain about it, select AUTO.
MAC Clone	If you can only access the internet via a specified computer, it may indicate that your ISP binds the internet service to the MAC address of the computer to restrict access. In this case, you need to clone the MAC address of this computer to the modem router for internet access.
MTU	It specifies the maximum size of packet that the router can transmit. MTU varies across connection types.
Enable Fullcone NAT	Data transmitted by a computer in LAN through the UDP port A will be forwarded to the UDP port B in WAN. And data received by the UDP port B in WAN will be forwarded to the UDP port A of the corresponding computer in LAN.
Dial on demand (with idle timeout timer)	When there is no data exchange within the specified time, the device disconnects the connection between its WAN port and the ISP. Flow-based charging users can select this option to save cost. Month-based charging users do not need to select the option.
Enable Firewall	Check this option to enable the firewall of the modem router.

Parameter	Description
PPP IP extension	If this option is selected: • The NAT and firewall functions are disabled. • Only a computer in LAN can obtain the IP address which is the same as that of the WAN port to access the internet. Other compurters cannot obatin IP addresses to access the internet.
Use Static IPv4 Address	It is used to set up the IP address assigned by the ISP after the PPPoE dial-up succeeds. Do not set up it if you are not a professional.
Enable PPP Debug Mode	If it is enabled, you can check the PPPoE dial-up information on the System Log page. It is used to diagnose dial-up malfunctions.
Bridge PPPoE Frames Between WAN and Local Ports	If it is enabled, computers in LAN can share the WAN connection for internet access, use multiple active PPPoE accounts to access the internet (if any).
Enable IGMP Multicast Proxy	If it is enabled, the modem router can forward the multicast data to the users in LAN. If you requires multicast applications, such as VOD or AOD, you can

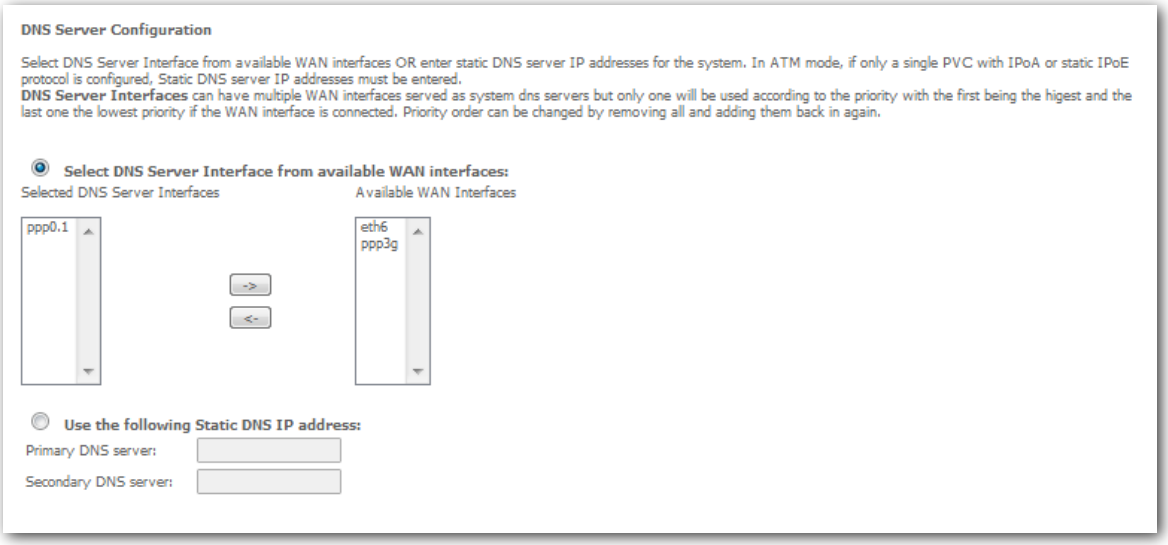
7. Enter the PPPoE user name and password, set other parameters as required based on the parameter description above, and click **Next**.
8. Leave the configuration unchanged on **Routing - Default Gateway** page, and click **Next**.



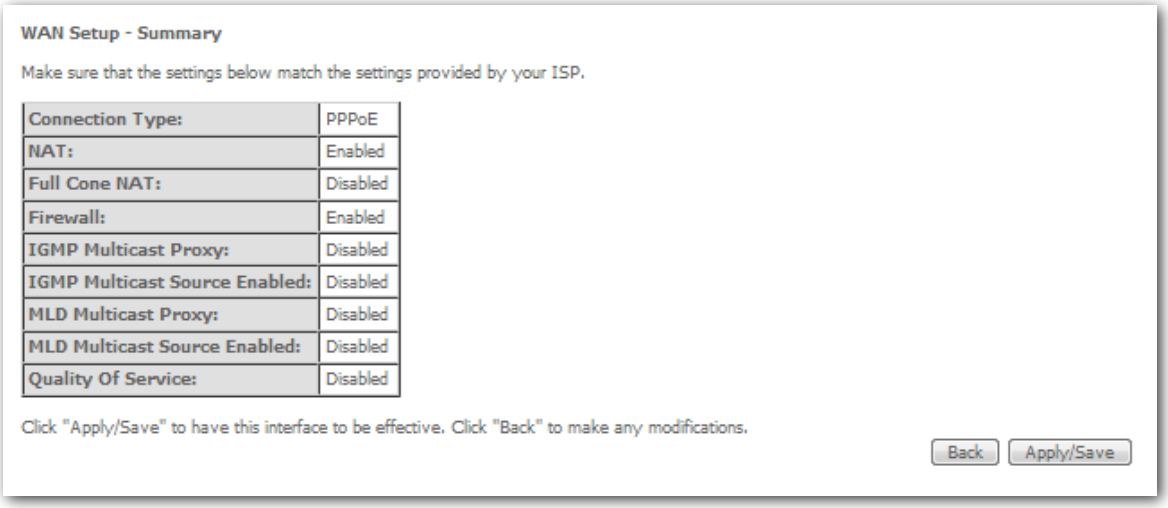
TIP

Default gateway interface list can contain multiple WAN interfaces serving as system default gateways. The first WAN interface has the highest priority.

9. If your ISP provides you DNS IP addresses, select **Use the following Static DNS IP address**, and enter the DNS IP addresses information. If not, select **Select DNS Server Interface from available WAN interfaces**, and click **Next**

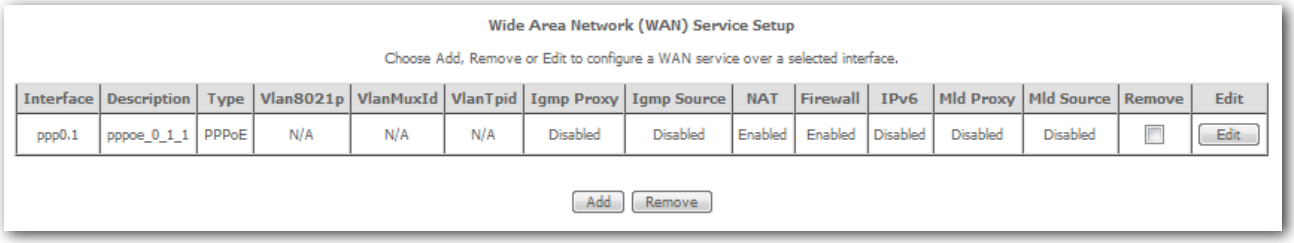


10. Check the parameters you select or set, and click **Apply/Save**.



----End

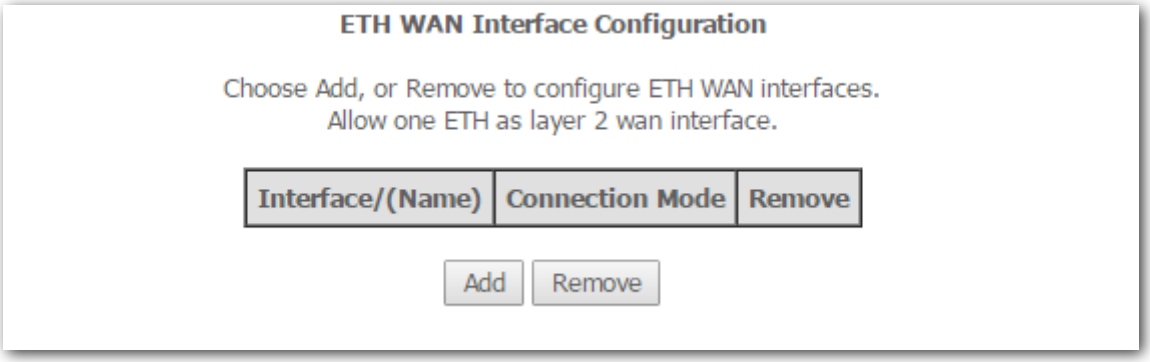
The WAN service you set is shown on the **WAN Service** page.



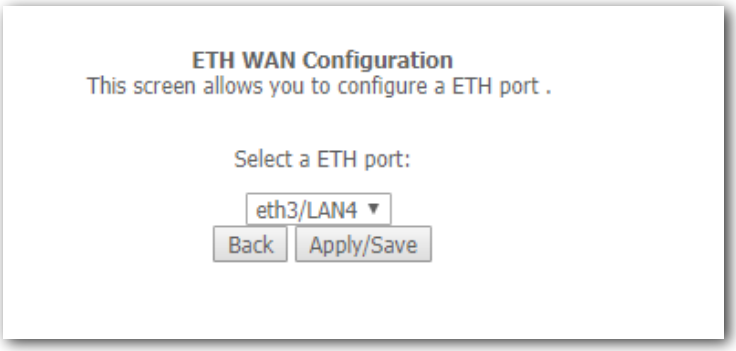
4.1.3 Setting the Ethernet connection

Step 1 Create an Ethernet interface.

1. Choose **Advanced Setup** > **Layer2 Interface** > **ETH Interface** to enter the following page, and click **Add**.

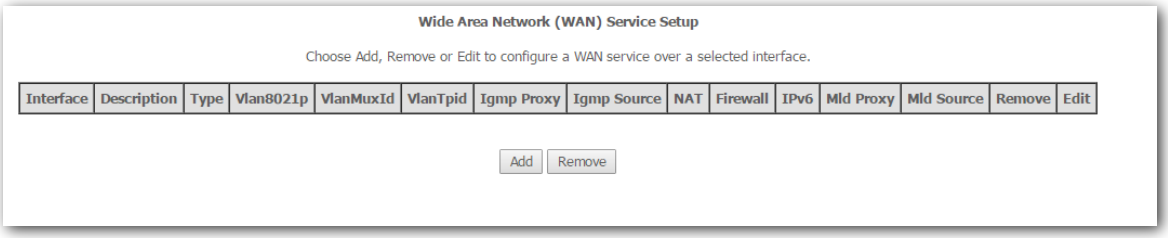


2. Click **Apply/Save**.

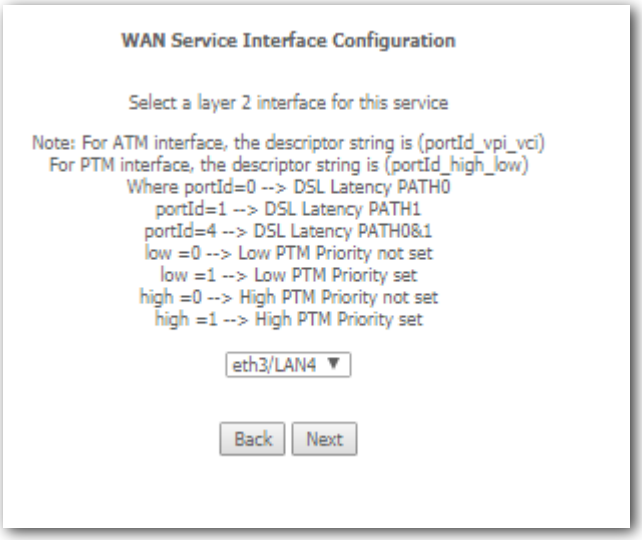


Step 2 Set up a WAN service for the Ethernet interface.

1. Choose **Advanced Setup** > **WAN Service** to enter the following page, and click **Add**.

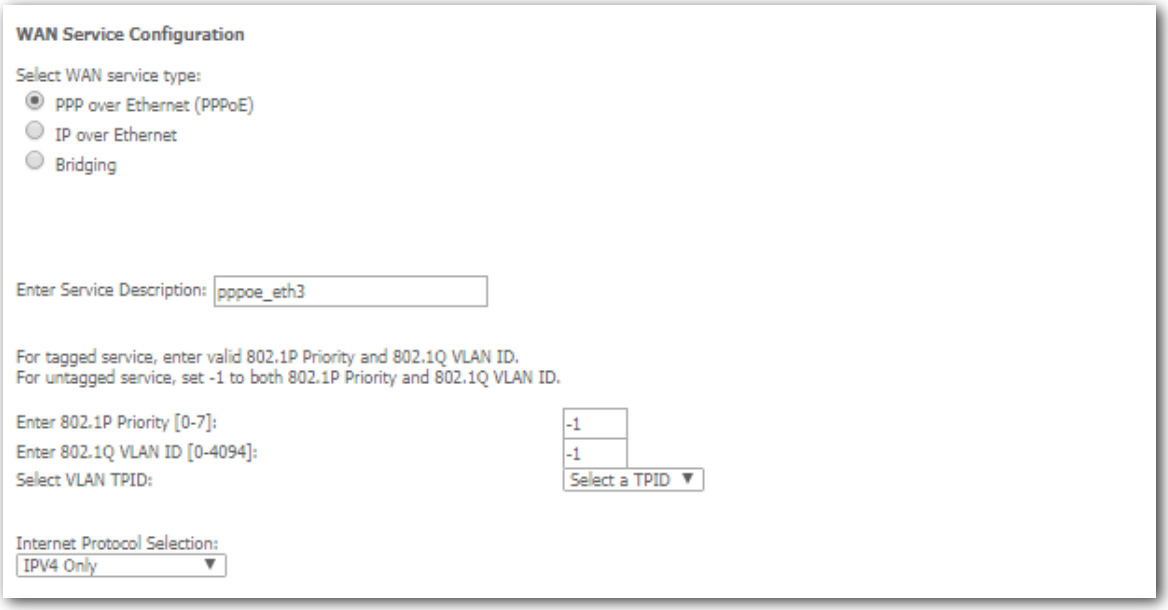


2. Select the interface you create in Layer2 Interface, which is **eth3/LAN4** in this example, and click **Next**.



3. Select a WAN service type according to the instructions in the table below. Here takes **PPPoE** as an example.

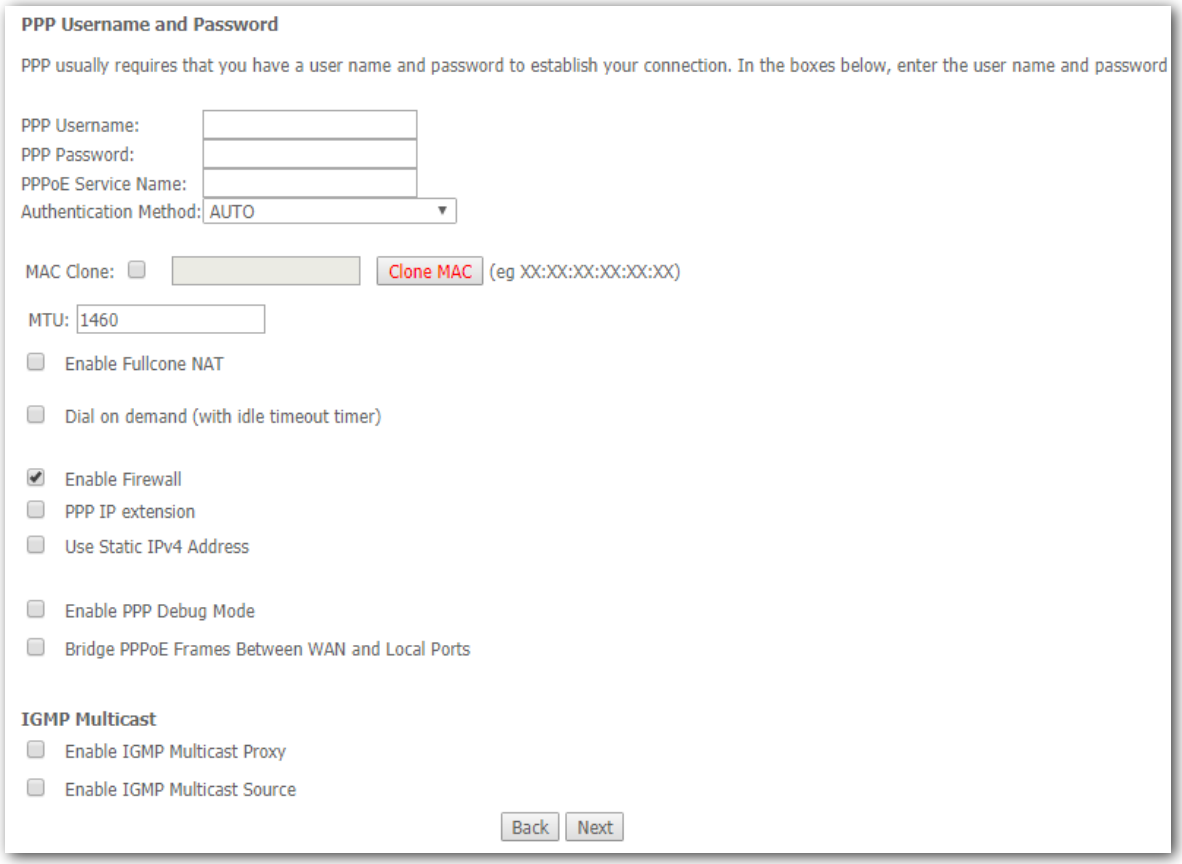
4. Select your network protocol type as required, and click **Next**. IPv4 is used to illustrate here. Refer to Setting up a WAN Service for the ATM Interface for the instruction of other network protocols.



Connection Type		Description
PPP over Ethernet (PPPoE)		Select this type if your ISP provides a user name and password to you for internet access.
IP over Ethernet	Dynamic IP	Select this type if your ISP does not provide any parameters to you for internet access.
	Static IP	Select this type if your ISP provides a static IP address and other related information to you for internet access.

Connection Type	Description
Bridging	Select this type when this device only serves as a modem, and you want to set up a dial-up connection or enter other internet parameters directly on your computer for internet access.

5. Enter the user name and password provided by your ISP, set other parameters as required according to the parameter description form, and click **Next**.

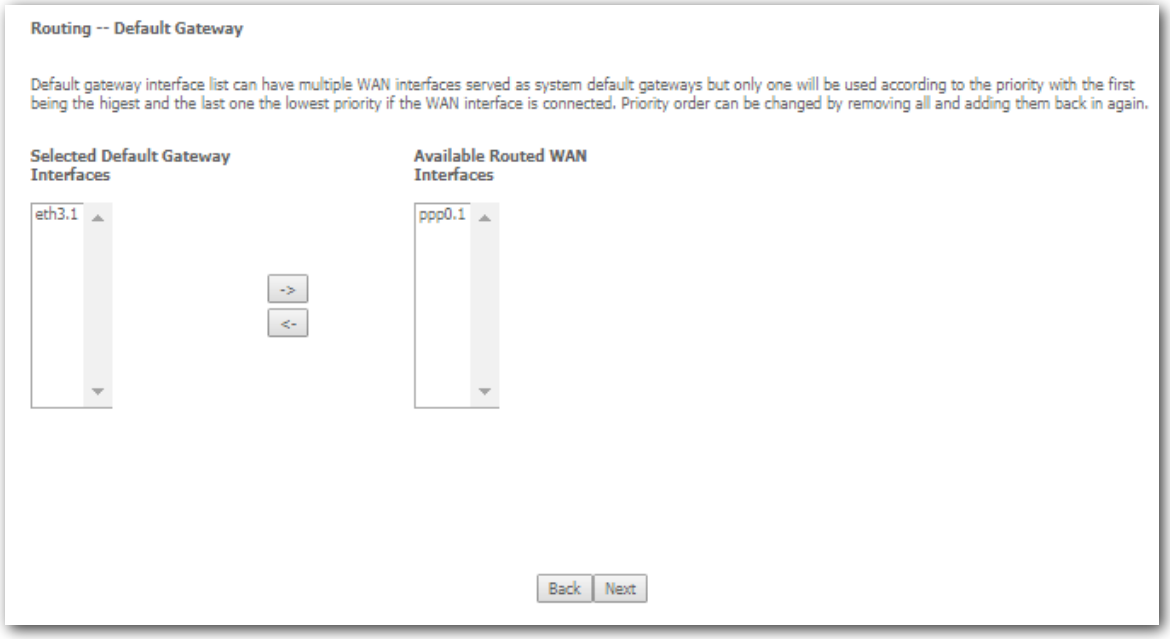


Parameter description

Parameter	Description
PPPoE Service Name	If your ISP provides this name, enter it here. Otherwise, leave it blank.
Authentication Method	It specifies the authentication method the ISP-side uses to authenticate the client. If you do not certain about it, select AUTO.
MAC Clone	If you can only access the internet via a specified computer, it may indicate that your ISP binds the internet service to the MAC address of the computer to restrict access. In this case, you need to clone the MAC address of this computer to the modem router for internet access.
MTU	It specifies the maximum size of packet that the router can transmit. MTU varies across connection types.

Parameter	Description
Enable Fullcone NAT	Data transmitted by a computer in LAN through the UDP port A will be forwarded to the UDP port B in WAN. And data received by the UDP port B in WAN will be forwarded to the UDP port A of the corresponding computer in LAN.
Dial on demand (with idle timeout timer)	When there is no data exchange within the specified time, the device disconnects the connection between its WAN port and the ISP. Flow-based charging users can select this option to save cost. Month-based charging users do not need to select the option.
Enable Firewall	Check this option to enable the firewall of the modem router.
PPP IP extension	If this option is selected: • The NAT and firewall functions are disabled. • Only a computer in LAN can obtain the IP address which is the same as that of the WAN port to access the internet. Other compurters cannot obatin IP addresses to access the internet.
Use Static IPv4 Address	It is used to set up the IP address assigned by the ISP after the PPPoE dial-up succeeds. Do not set up it if you are not a professional.
Enable PPP Debug Mode	If it is enabled, you can check the PPPoE dial-up information on the System Log page. It is used to diagnose dial-up malfunctions.
Bridge PPPoE Frames Between WAN and Local Ports	If it is enabled, computers in LAN can share the WAN connection for internet access, use multiple active PPPoE accounts to access the internet (if any).
Enable IGMP Multicast Proxy	If it is enabled, the modem router can forward the multicast data to the users in LAN. If you requires multicast applications, such as VOD or AOD, you can

6. Enter the PPPoE user name and password, set other parameters as required based on the parameter description above, and click **Next**.
7. Leave the configuration unchanged, and click **Next**.

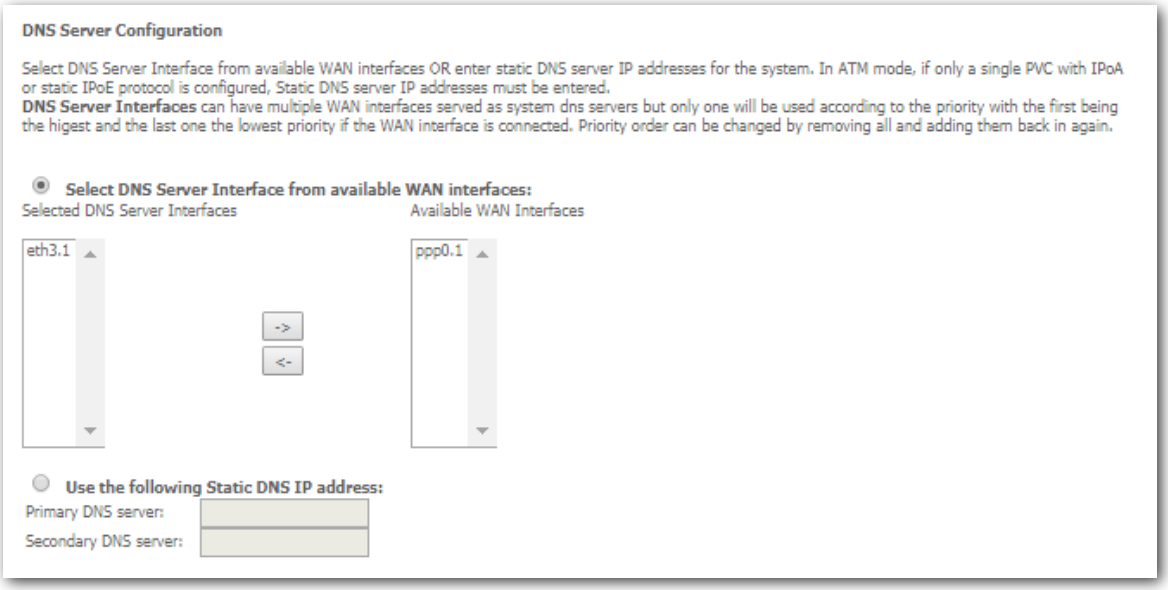


TIP

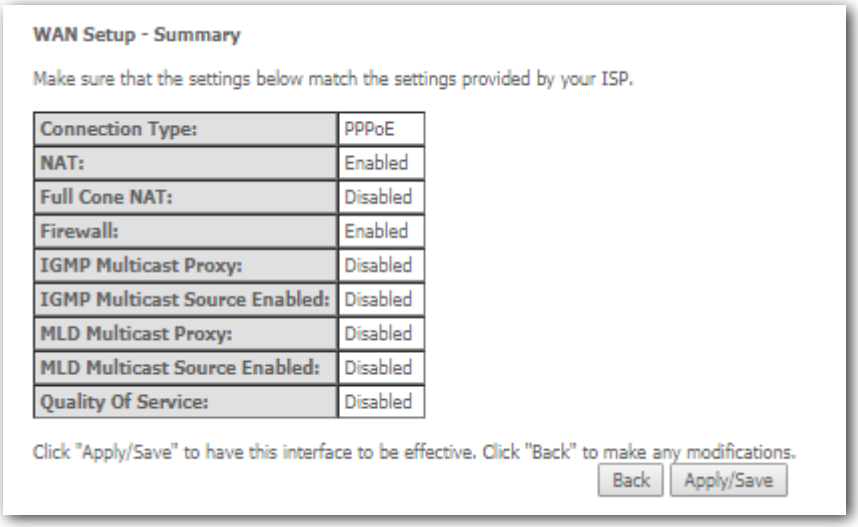
Default gateway interface list can contain multiple WAN interfaces serving as system default gateways. The first WAN interface has the highest priority.

8. Enter the DNS IP addresses information if they are provided by your ISP. If not, leave then blank.

9. Click **Next**.

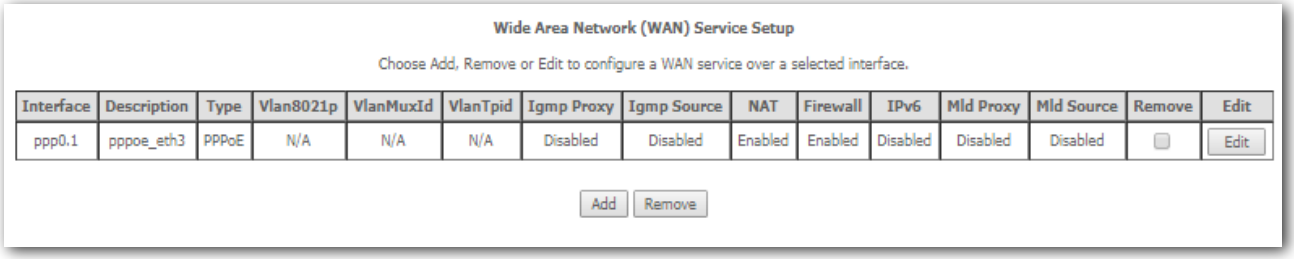


10. Check the parameters you select or set, and click **Apply/Save**.



----End

The WAN service you set is shown on the **WAN Service** page.


Wide Area Network (WAN) Service Setup
Choose Add, Remove or Edit to configure a WAN service over a selected interface.
Interface
Description
Type
Vlan8021p
VlanMuxId
VlanTpid
Igmp Proxy
Igmp Source
NAT
Firewall
IPv6
Mld Proxy
Mld Source
Remove
Edit
ppp0.1
pppoe_eth3
PPPoE
N/A
N/A
N/A
Disabled
Disabled
Enabled
Enabled
Disabled
Disabled
Disabled
Edit
Add
Remove

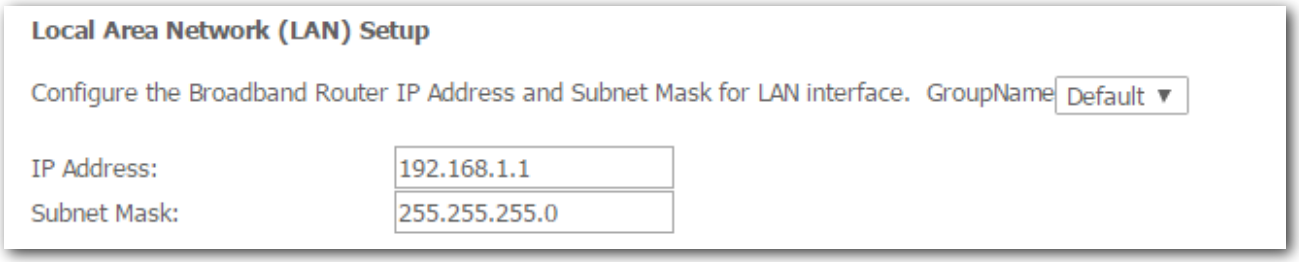
4.2 LAN

Here you can configure the LAN settings. Choose **Advanced Setup** > **LAN** to enter the configuration page.

It allows you to modify the LAN IP of the modem router, configure the DHCP server settings, and DNS server settings.

4.2.1 Local Area Network (LAN) Setup

4.2.1.1 Primary lan ip address



Parameter description

Parameter	Description
IP Address	It specifies the LAN IP address of the modem router, that is, the login address of the web UI of the modem router.
Subnet Mask	The LAN subnet mask of the LAN port. It specifies the network segment of the LAN IP address.

TIP

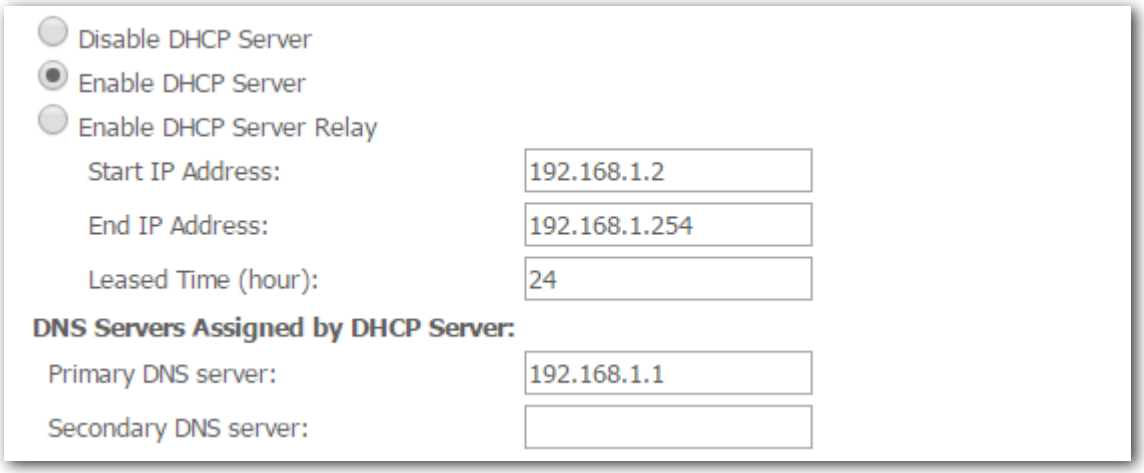
After the LAN IP address is changed, the computers in LAN need release their IP addresses and obtain them again to ensure gateway of the computers is the new LAN IP address.

4.2.1.2 IGMP snooping

Parameter description

Parameter	Description
Enable IGMP Snooping	IGMP snooping is an IPv4 layer-2 multicast constraint mechanism, which is used to manage and control IPv4 multicast groups. If it is enabled, the specified multicast data of IPv4 multicast groups can be forwarded to the specified LAN port.
Standard Mode	If a multicast group has no member, data of the group will be broadcast. If a multicast group has members, data of the group will be forwarded to the LAN port the members use.
Blocking Mode	If a multicast group has no member, data of the group will be discarded. If a multicast group has members, data of the group will be forwarded to the LAN port the members use.

4.2.1.3 DHCP server



Parameter description

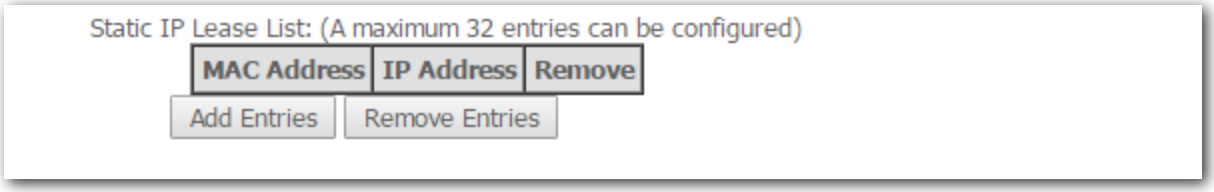
Parameter	Description
Disable DHCP Server	If this option is selected, the DHCP server of this modem router is disabled. In this case, this modem router does not assign IP addresses and related parameters to its clients.
Enable DHCP Server	It indicates that the modem router can assign IP addresses to connected devices. • **Start IP Address**: It specifies the start IP address of the IP address pool of the DHCP server. • **End IP Address**: It specifies the end IP address of the IP address pool of the DHCP server.
Enable DHCP Server Relay	If this option is selected, the modem router works as a DHCP relay. The DHCP requests from local computers will forward to the DHCP server runs on WAN side.
Leased Time (hour)	It specifies the validity period of one IP address assigned to a device by the modem

Parameter	Description
	router.
Primary DNS server	It specifies the primary DNS IP addresses assigned to connected devices.
Secondary DNS server	It specifies the secondary DNS IP addresses assigned to connected devices.

4.2.1.4 DHCP reservation

Overview

Generally, IP addresses assigned by the modem router to devices are changeable. Some functions require static device IP addresses, such as DMZ Host and virtual server. In this case you can use the DHCP reservation function to bind IP addresses with the devices involved in the functions.



Parameter description

Parameter	Description
Static IP Lease List	It 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 added.
Remove Entries	Click to remove a static IP lease entry.

To bind an IP address to a specified device

Step 1 Choose **Advanced Setup** > **LAN** to enter the configuration page.

Step 2 Click **Add Entries**.

Step 3 Enter the MAC address of the specified device in the **MAC Address** box.

Step 4 Enter an IP address included in the DHCP pool of the device. Assume that the IP address of the device is **192.168.1.1**. You can enter **192.168.1.*X*** (*X* ranges from 2 to 253).

Step 5 Click **Apply/Save**.

----End

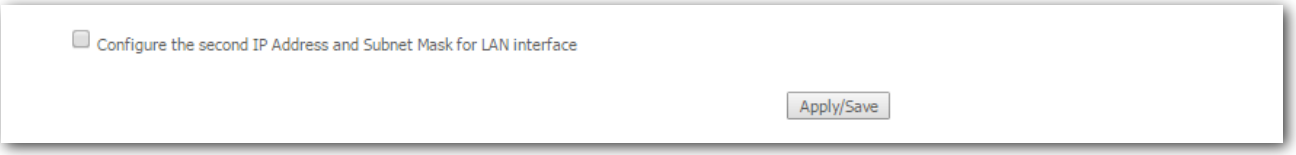
The added entry displays in the following table.

The IP address specified in the table will be always assigned to the device with the specified MAC address in the table after the rule takes effect.

4.2.1.5 Secondary lan ip address

Overview

By default, there is only one LAN IP address for the modem router, and you can access the web UI of the modem router by this IP address. And the modem router allows you to set up a second LAN IP address for the modem router.



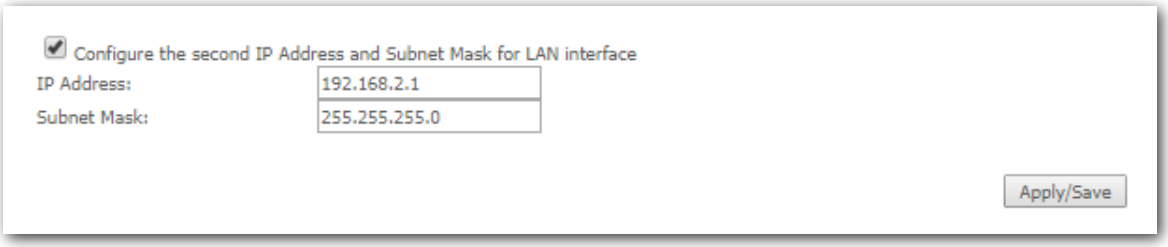
To set up a second LAN IP address

Step 1 Check the **Configure the second IP Address and Subnet Mask for LAN interface** option.

Step 2 Specify an IP address that belongs to a different network segment of the first IP address, such as **192.168.2.1**.

Step 3 Specify a subnet mask that fits the network segment, such as **255.255.255.0**.

Step 4 Click **Apply/Save**.



----End

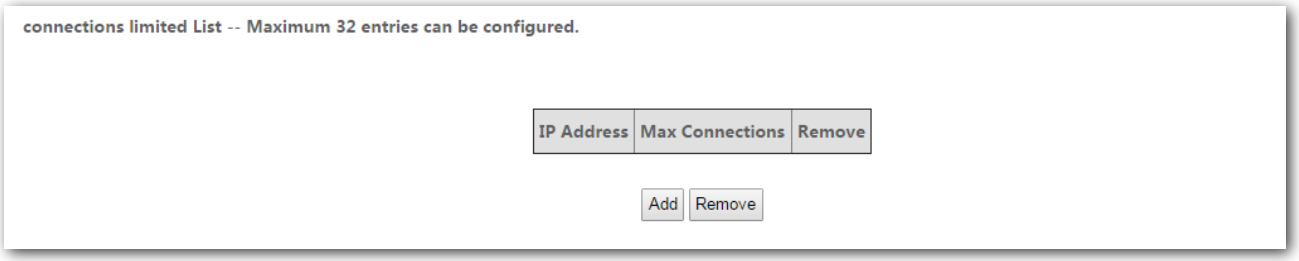
TIP

The second LAN IP address can also be used to log in to the web UI of the modem router.

4.2.2 Connections limited

4.2.2.1 Overview

This function allows you to specify the maximum connections between the modem router and a specified IP address or IP network segment.



Parameter description

Parameter	Description
IP Address	It specifies the IP address or IP network segment of the clients.
Max Connections	It specifies the maximum number of point-to-point connections that the modem router can handle at the same time.

4.2.2.2 To add a connection limited rule

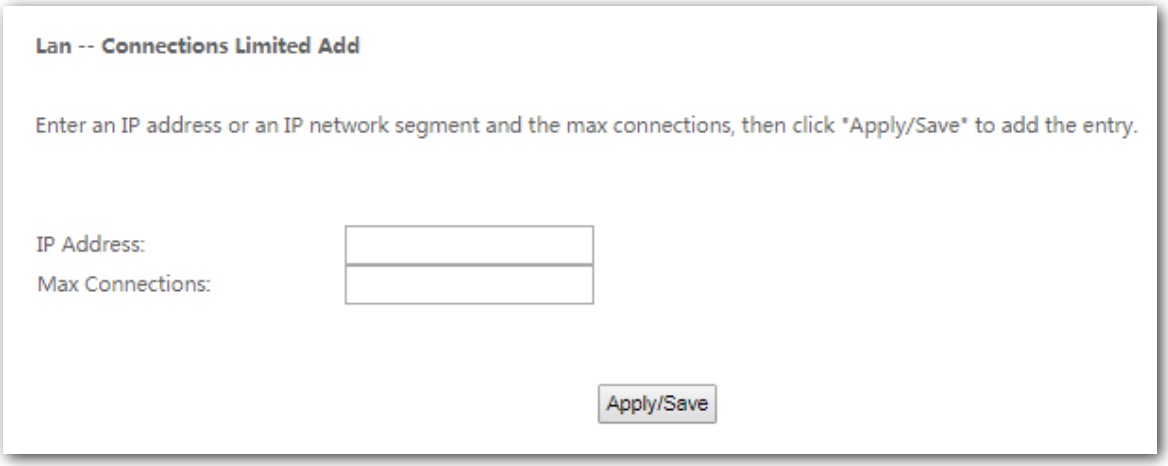
Step 1 Choose **Advanced Setup** > **LAN > Connections Limited** to enter the configuration page.

Step 2 Click **Add.**

Step 3 Enter an IP address or an IP network segment.

Step 4 Enter the number of the maximum connections.

Step 5 Click **Apply/Save**.



----End

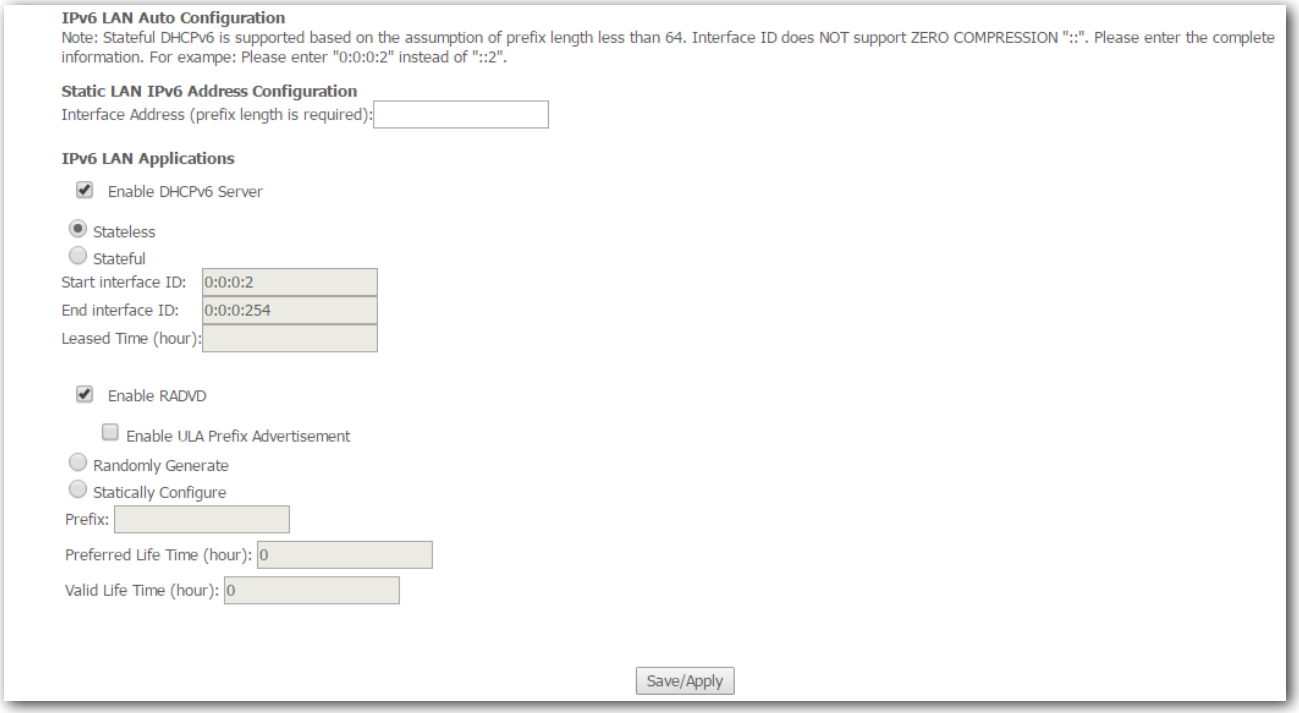
4.2.3 IPv6 autoconfig

This section allows you to set up an IPv6 internet connection through auto configuration, including the following 2 parts:

Static LAN IPv6 Address Configuration: Setting up an IPv6 global unicast address for the LAN port.

IPv6 LAN Applications: Setting up the DHCPv6 server to assign IPv6 addresses to the computers in LAN.

Choose **Advanced Setup** > **LAN** > **IPv6 Autoconfig** to enter the configuration page.



4.2.3.1 Static LAN IPv6 Address Configuration

Overview

This part allows you to set up an IPv6 address for the LAN port, which is an aggregate global unicast address.

Configuration procedure

Step 1 Choose **Advanced Setup** > **LAN** > **IPv6 Autoconfig** to enter the configuration page.

Step 2 Enter an IPv6 address and the prefix length.

Step 3 Click **Save/Apply**.

----End

The computers in LAN can visit this address to log in to the web UI of the modem router. For example, if the address is set to **2000::1/64**, enter **http://[2000::1]** in the address bar to access the web UI.

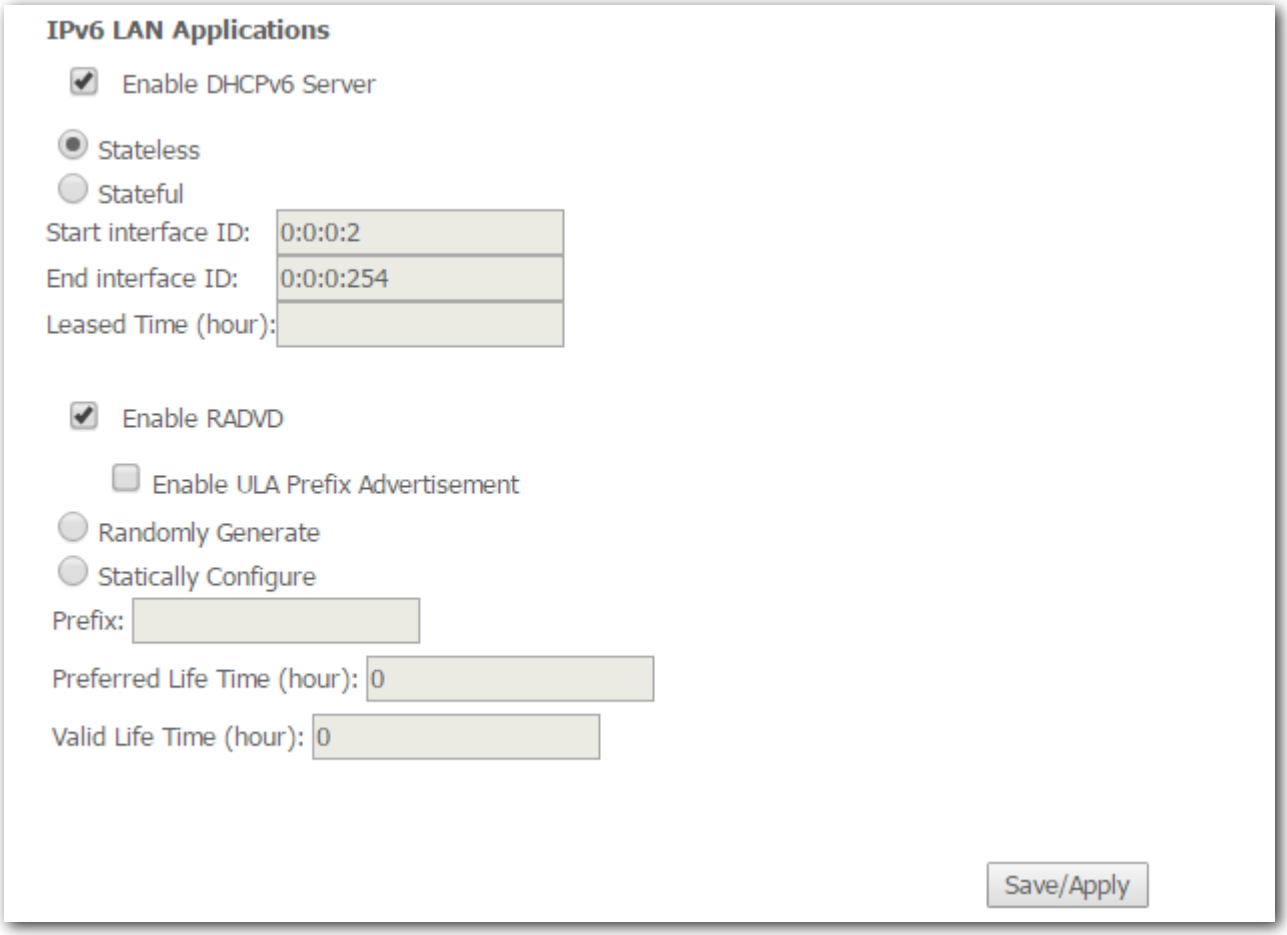
4.2.3.2 IPv6 LAN Applications

The Modem router supports two IPv6 address auto-configuration types: Stateless Address Auto Configuration and Stateful Address Auto Configuration. Select one to follow as required.

Stateless address auto configuration

- **Overview**

The computers in LAN only obtain prefix and DNS information from the modem router. The interface ID is generated based on its MAC address automatically.



Parameter description

Parameter	Description
Enable DHCPv6 Server	It specifies whether to enable the DHCPv6 Server.
Stateless	The computers in LAN only obtain prefix and DNS information from the modem router. The interface ID is generated based on its MAC address automatically.

Parameter	Description
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 for stateless auto configuration of network hosts on Internet Protocol version 6 networks. Select the checkbox to enable the RADVD.
Enable ULA Prefix Advertisement	If enabled, the modem router will advertise ULA prefix periodically. The ULA prefix can be generated by the modem router, or be set up manually.
Randomly Generate	If this option is selected, the ULA prefix can be automatically generated.
Statically Configure	If this option is selected, you need to manually set up the ULA prefix and validity period.
Prefix	It specifies the prefix of the IPv6 address.
Preferred Life Time (hour)	It specifies the preferred life time in hour. When the time is out, the computer can continue to use the address in initiated communications, but cannot use it in new initiated communications.
Valid Life Time (hour)	It specifies the valid life time of the IP address in hour. When the time is out, the address is invalid.

- **Configuration procedure**

Step 1 Choose **Advanced Setup** > **LAN** > **IPv6 Autoconfig** to enter the configuration page.

Step 2 Select **Enable DHCPv6 Server**.

Step 3 Select **Stateless**.

Step 4 Select **Enable RADVD**.

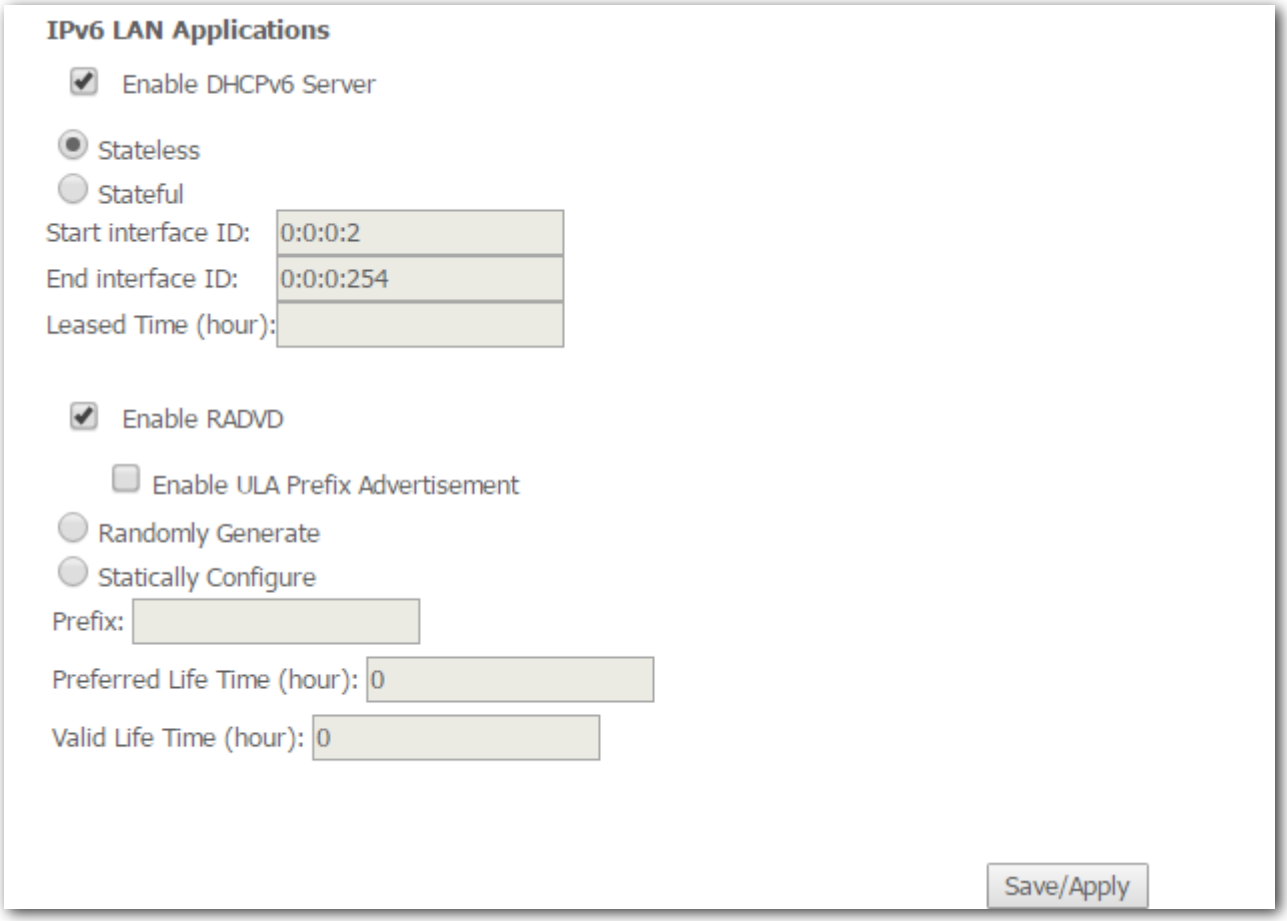
Step 5 Click **Save/Apply**.

----End

Stateful address auto configuration

- **Overview**

The computers in LAN obtain all IPv6 address information from the modem router.



Parameter description

Parameter	Description
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 lease time. The modem router will automatically assign IPv6 addresses to IPv6 clients.
Start interface ID/End interface ID	It specifies the start/end interface ID. Interface ID does NOT support ZERO COMPRESSION "::". Please enter the complete information. For example: Please enter "0:0:0:2" instead of "::2".
Leased Time (hour)	It specifies the validity period of one IP address assigned to a device connected to the modem router.
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 for stateless auto configuration of network hosts on Internet Protocol version 6 networks. Select the checkbox to enable the RADVD.
Enable ULA Prefix Advertisement	If enabled, the modem router will advertise ULA prefix periodically.
Randomly Generate	If this option is selected, address prefix can be automatically generated.

Parameter	Description
Statically Configure	If this option is selected, you need to manually configure the address prefix and validity period.
Prefix	It specifies the prefix of the IPv6 address.
Preferred Life Time (hour)	It specifies the preferred life time in hour. When the time is out, the computer can continue to use the address in initiated communications, but cannot use it in new initiated communications.
Valid Life Time (hour)	It specifies the valid life time of the IP address in hour. When the time is out, the address is invalid.

- **Configuration procedure**

Step 1 Choose **Advanced Setup** > **LAN** > **IPv6 Autoconfig** to enter the configuration page.

Step 2 Select **Enable DHCPv6 Server**.

Step 3 Select **Stateful**.

Step 4 **Start/End interface ID**: Enter a start/end interface ID.

Step 5 **Lease Time**: Enter the valid time of an IPv6 address .

Step 6 Select **Enable RADVD**.

Step 7 Click **Save/Apply**.

----End

4.3 VPN

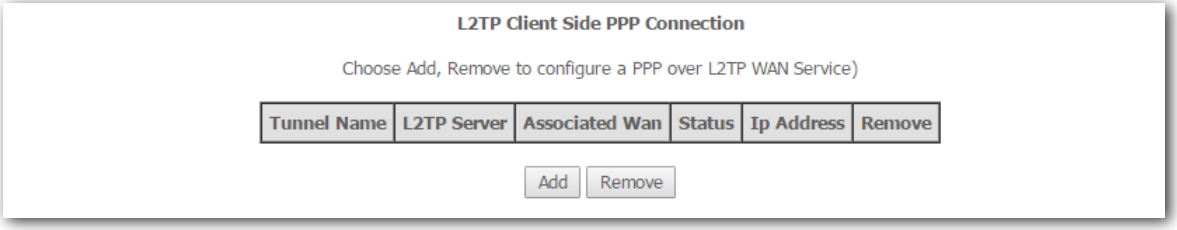
4.3.1 Overview

A VPN is a virtual private network set up over a public network (usually the internet).

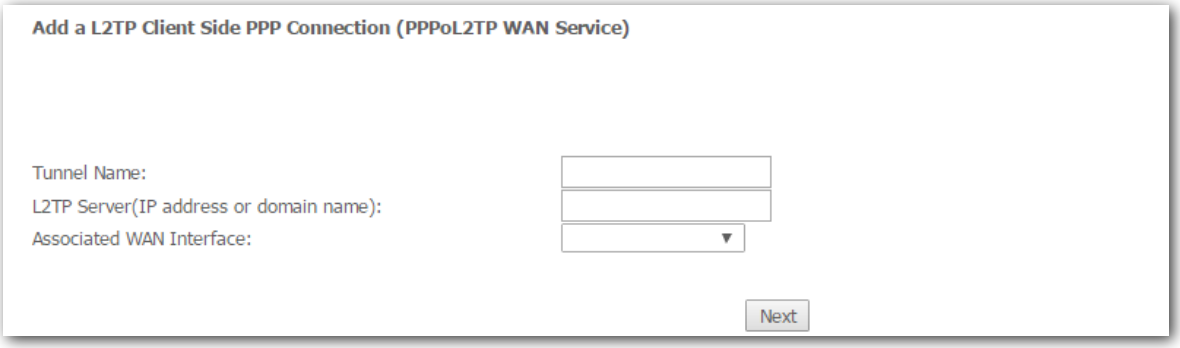
This modem router can function as two kinds of VPN clients: PPTP or L2TP client. The following section describes how to configure the router as a PPTP/L2TP client. If you set up a PPTP/L2TP server, you can enable PPTP/L2TP client function to help you visit the PPTP/L2TP server.

4.3.2 Configuring modem router as a L2TP client

Step 1 Choose **Advanced Setup** > **VPN** > **L2TP Client** to enter the configuration page, and click **Add**.

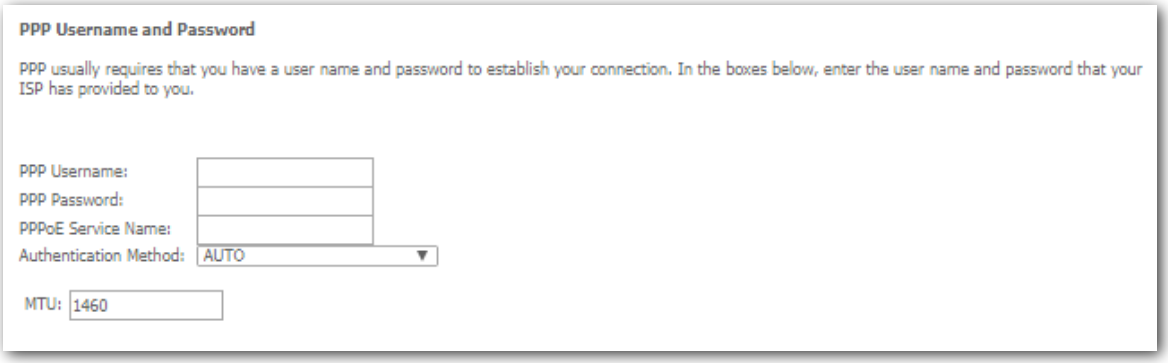


Step 2 Set **Tunnel Name** and **L2TP Server(IP address/domain name)** based on the information set on the L2TP server, and select an **Associated WAN Interface**, and click **Next**.



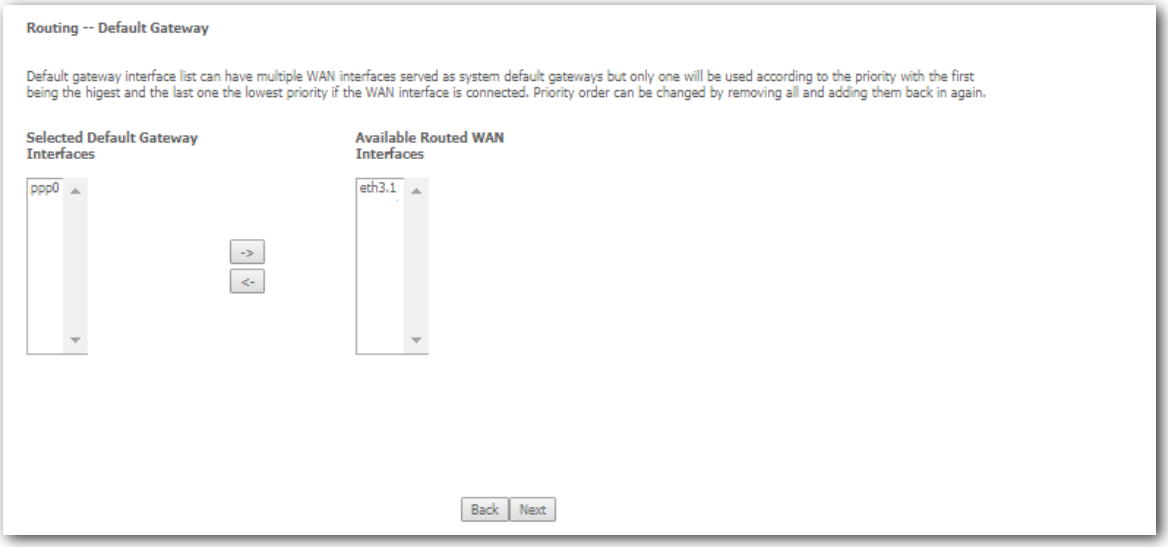
Parameter	Description
Tunnel Name	It specifies the name of the L2TP connection to be set up.
L2TP Server(IP address or domain name)	It specifies the IP address or domain name of the L2TP VPN server to be connected. Generally, it refers to the IP address or domain name of the WAN port of the peer VPN router that functions as the L2TP server.
Associated WAN Interface	It specifies the WAN port of the router for setting up a VPN connection.

Step 3 Set **PPP Username**, **PPP Password**, and **PPPoE Service Name** based on the information set on the L2TP server, and click **Next**.

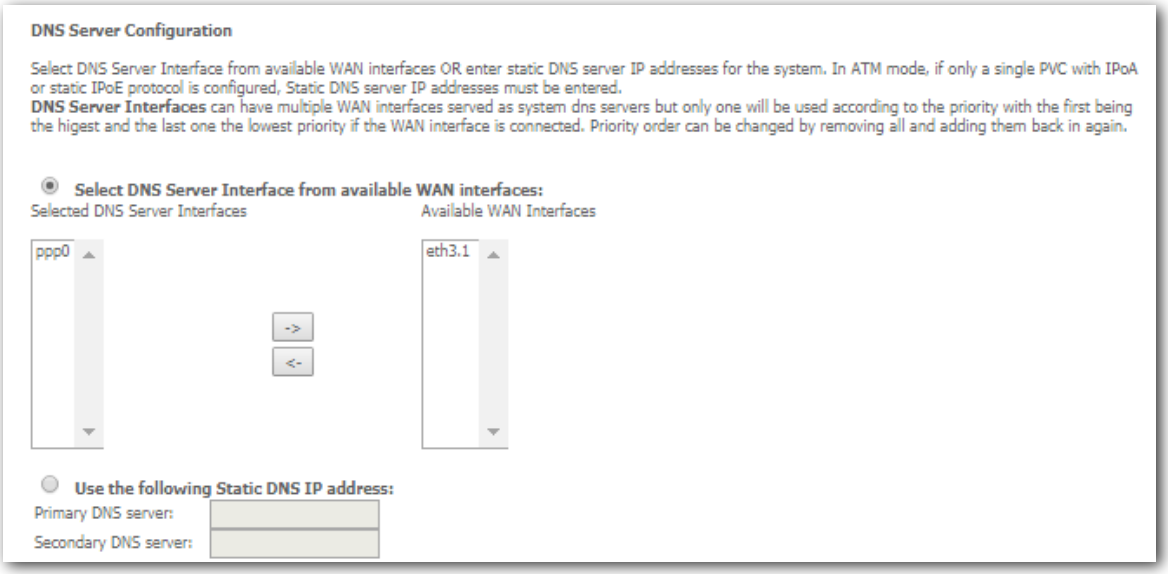


Parameter	Description
PPP Username	It specifies the user name and password assigned by peer L2TP server.
PPP Password	
PPPoE Service Name	Optional. If a special service name is specified on peer L2TP server, it can be entered here. If not, leave it blank.
Authentication Method	It specifies the authentication method of the L2TP VPN connection.
MTU	It specifies the maximum transmission unit size. The default setting is recommended.

Step 4 Select default gateway interfaces from the **Available Routed WAN Interfaces**, and click <- to move it to the **Select Default Gateway Interfaces** box, and then click **Next**.

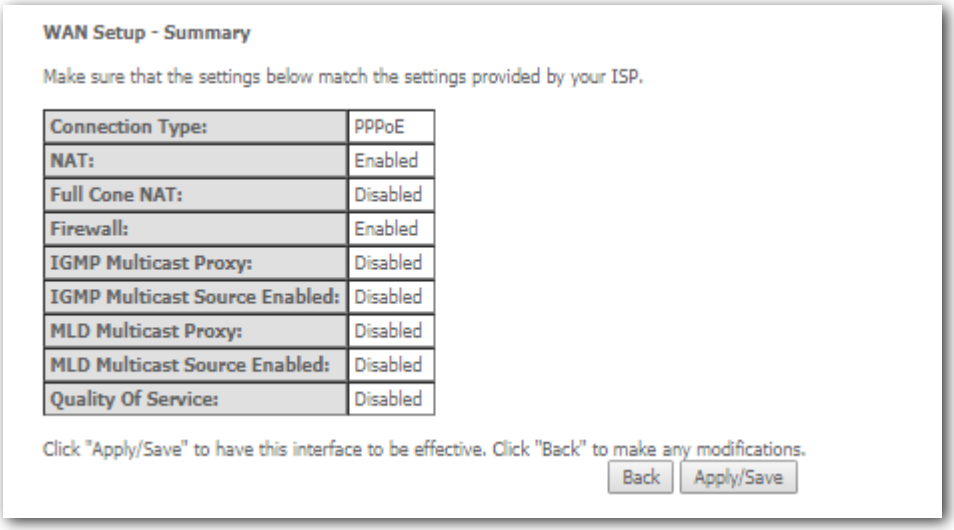


Step 5 Select DNS server interfaces from the **Available WAN Interfaces**, and click <- to move it to the **Select DNS Server Interfaces** box.
If your ISP provides DNS address(es), select **Use the following Static DNS IP address**, and enter it/them.



Parameter	Description
Select DNS Server Interface from available WAN Interfaces	You can select this option to automatically get DNS server information from the selected WAN interface.
Use the following Static DNS IP address	You can select this option to manually enter the primary/secondary DNS server IP addresses.
Primary DNS server	The primary/secondary DNS server IP addresses.
Second DNS server	

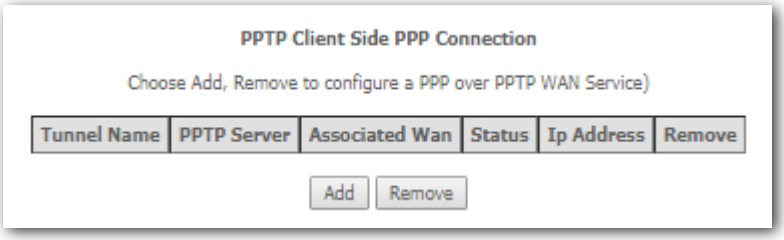
Step 6 Check the parameters you select or set, and click **Apply/Save**.



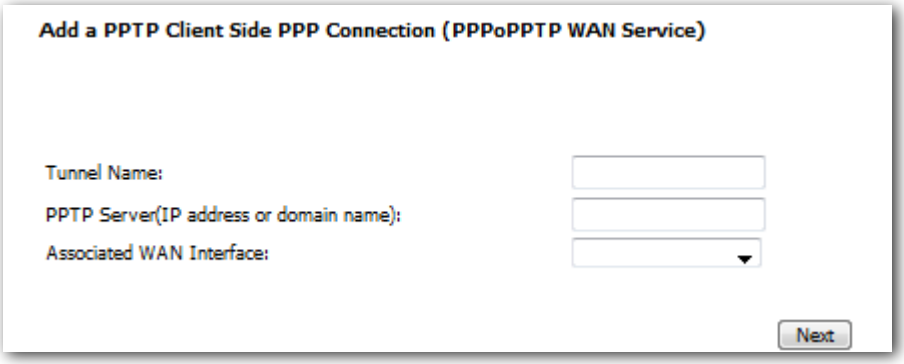
----End

4.3.3 Configuring modem router as a PPTP client

Step 1 Choose **Advanced Setup** > **VPN** > **PPTP Client** to enter the configuration page, and click **Add**.

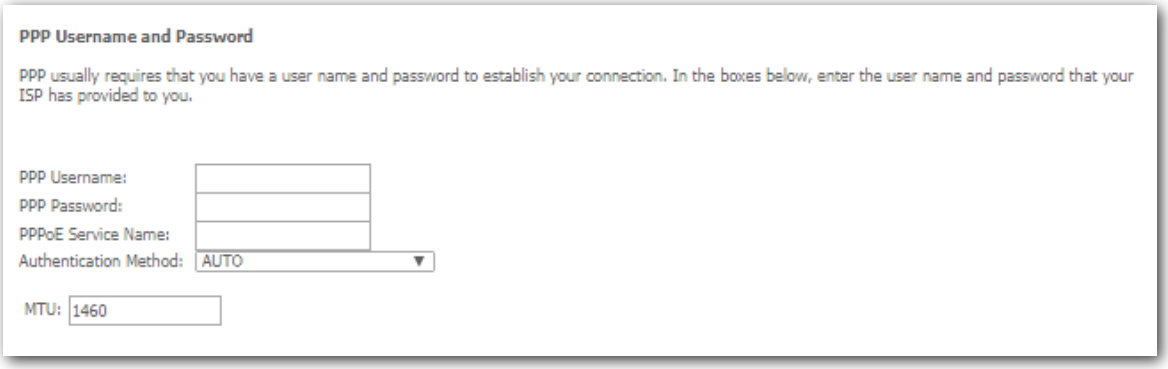


Step 2 Set **Tunnel Name** and **PPTP Server(IP address/domain name)** based on the information set on the PPTP server, select an **Associated WAN Interface**, and click **Next**.



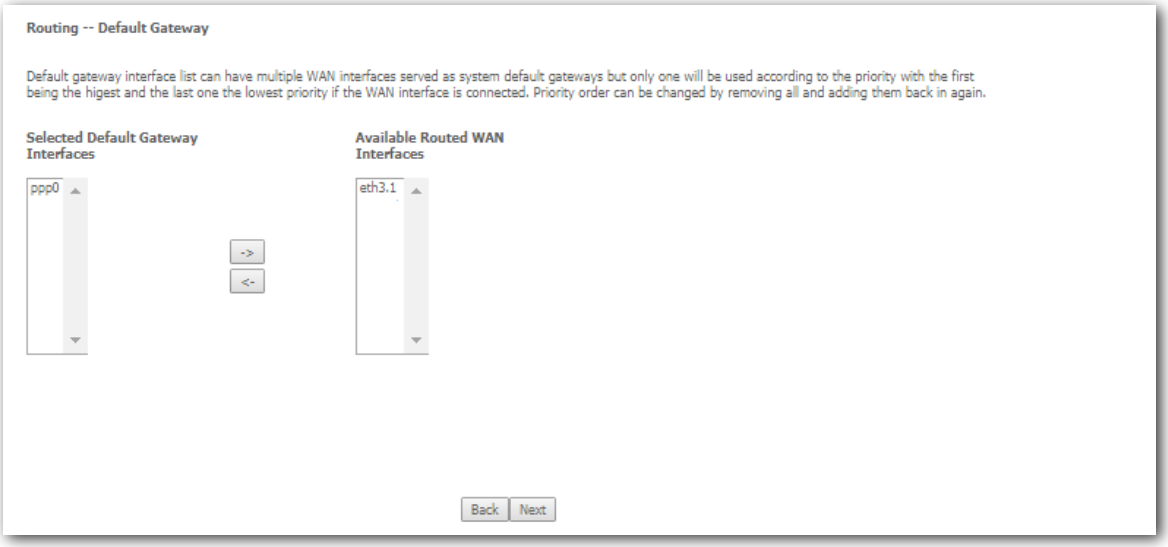
Parameter	Description
Tunnel Name	It specifies the name of the PPTP connection to be set up.
PPTP Server(IP address or domain name)	It specifies the IP address or domain name of the PPTP VPN server to be connected. Generally, it refers to the IP address or domain name of the WAN port of the peer VPN router that functions as the PPTP server.
Associated WAN Interface	It specifies the WAN port of the router for setting up a PPTP VPN connection.

Step 3 Set **PPP Username**, **PPP Password**, and **PPPoE Service Name** based on the information set on the PPTP server, and click **Next**.



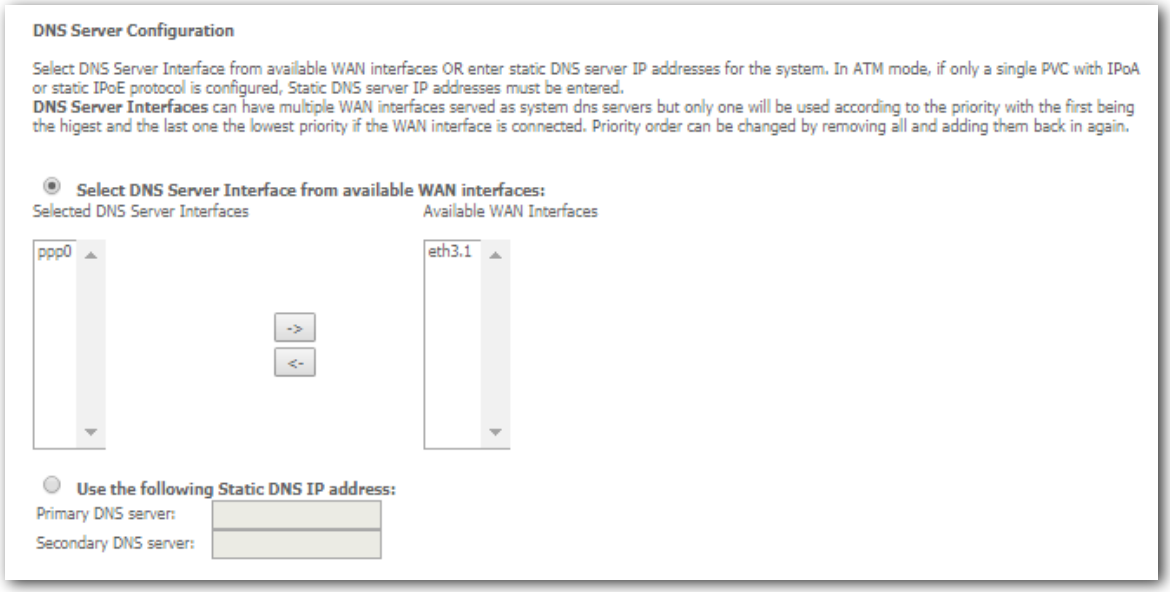
Parameter	Description
PPP Username	It specifies the user name and password assigned by peer PPTP server.
PPP Password	
PPPoE Service Name	Optional. If a special service name is specified on peer PPTP server, it can be entered here. If not, leave it blank.
Authentication Method	It specifies the authentication method of the VPN connection.
MTU	It specifies the maximum transmission unit size. The default is not recommended.

Step 4 Select default gateway interfaces from the **Available Routed WAN Interfaces**, and click <- to move it to the **Select Default Gateway Interfaces** box, and click **Next**.



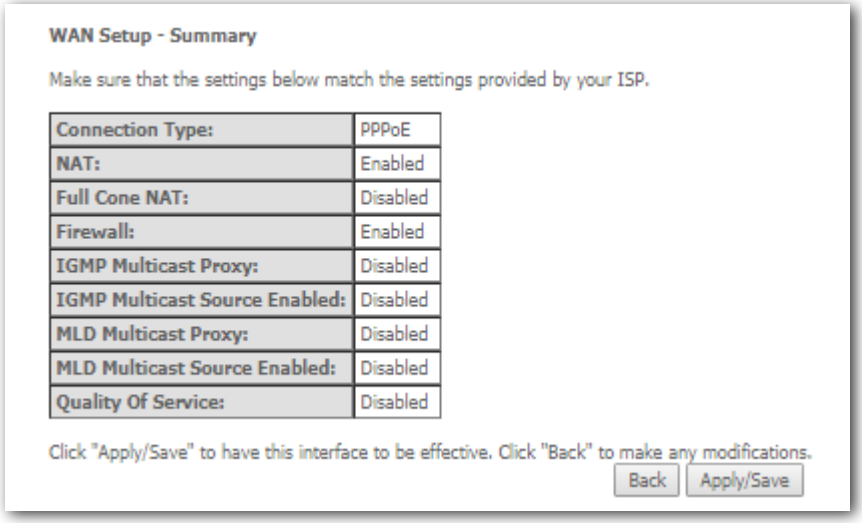
Step 5 Select DNS server interfaces from the **Available WAN Interfaces**, and click <- to move it to the **Select DNS Server Interfaces** box.

If your ISP provides DNS address(es), select **Use the following Static DNS IP address**, and enter it/them.



Parameter	Description
Select DNS Server Interface from available WAN Interfaces	You can select this option to automatically get DNS server information from the selected WAN interface.
Use the following Static DNS IP address	You can select this option to manually enter the primary/ secondary DNS server IP addresses provided by your ISP.
Primary DNS server	The primary/secondary DNS server IP addresses provided by your ISP.
Second DNS server	

Step 6 Check the parameters you select or set, and click **Apply/Save**.



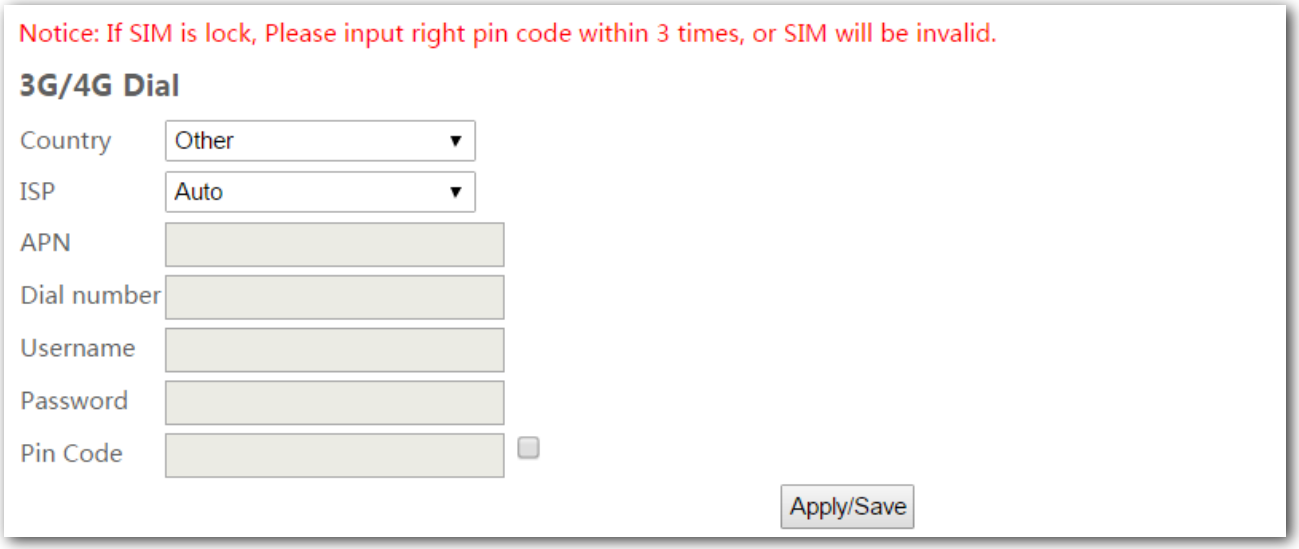
----End

4.4 WAN 3G/4G

4.4.1 Overview

If you connect the modem router to the internet via a 3G/4G dongle, and do not complete the internet settings in **Quick Setup**, you can refer to the configuration in this part.

Choose **Advanced Setup** > **WAN 3G/4G** to enter the configuration page.



Parameter	Description
Country	It specifies the country/region where the modem router is used.
ISP	It specifies the 3G/4G service provider.
APN	Access point Name. It will be auto populated after you select your country/region and ISP. If it is incorrect, you can change it manually.
Dial number	The number to set up a connection. It will be auto populated after you select your country/region and ISP. If it is incorrect, you can change it manually.
Username	Enter the user name and password for your 3G/4G internet service. It will be auto populated after you select your country/region and ISP. If it is incorrect, you can change it manually.
Password	
Pin Code	It specifies the pin number of the SIM card.

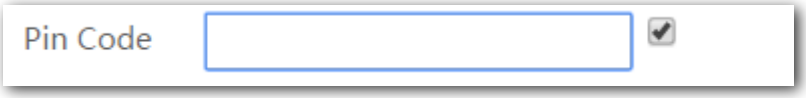
4.4.2 Configuration procedure

Step 1 Choose **Advanced Setup** > **WAN 3G/4G** to enter the configuration page.

Step 2 Select your country/region and ISP.

Step 3 **APN/Dial number/Username/Password:** Generally, if you select correct country/region and ISP, the necessary parameters can be automatically filled in. If not, set them manually based on the internet parameters provided by your ISP.

Step 4 **PIN Code**: If the PIN code is provided, check the option box on the right of the input box of Pin Code, and enter the Pin code in the input box.



Step 5 Click **Apply/Save**.

----End

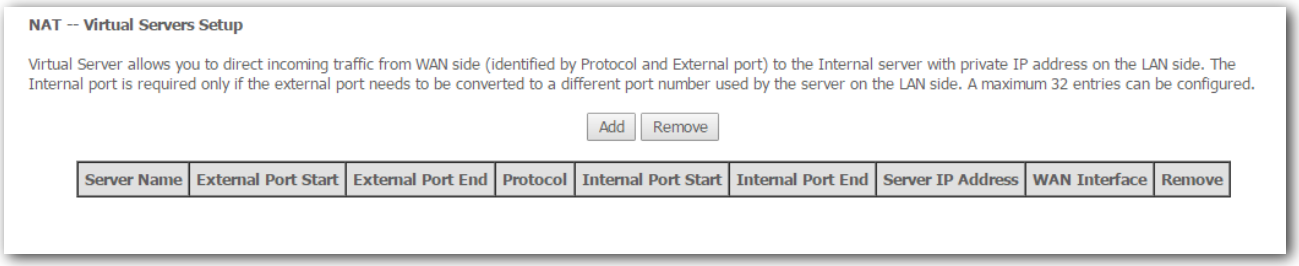
4.5 NAT

4.5.1 Virtual server

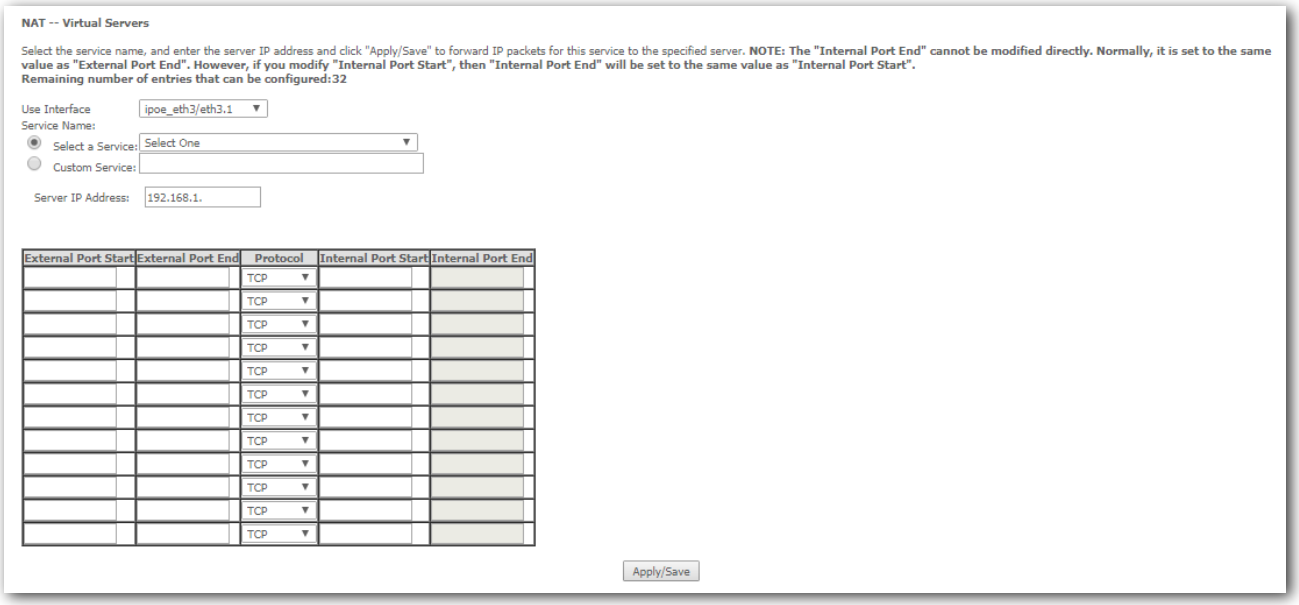
4.5.1.1 Overview

If computers are connected to the modem router to form a LAN and access the internet through the modem router, internet users cannot access the hosts on the LAN. Therefore, the servers, such as web servers, email servers, and FTP servers, on the LAN are inaccessible to internet users. To enable internet users to access a LAN server, enable the virtual server function of the modem router, and map one service port of the virtual server to the IP address of the LAN server. This enables the modem router to forward the requests arriving at the port from the internet to the LAN server.

Choose **Advanced Setup** > **NAT** > **Virtual Server** to enter the configuration page.



Click **Add** to configure the function.



Parameter description

Parameter	Description
Use Interface	Select a WAN connection to which the rules apply. When there is only one WAN connection available, the rules will be automatically applied to it.

Parameter	Description
Service Name	• **Select a Service**: 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 provides this service.
External Port Start and External Port End	These are the start number and end number for the public ports at the internet interface.
Protocol	Select a protocol from the Protocol drop-down list. If you are unsure, select **TCP/UDP**.
Internal Port Start and Internal Port End	These are the start number and end number for the service ports of a server on the LAN of the modem router.

4.5.1.2 Example of configuring virtual server

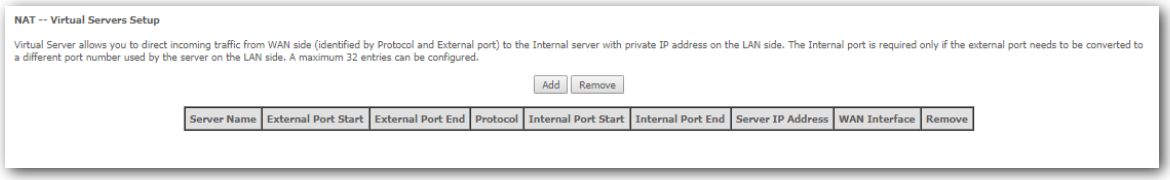
You have set up an FTP server on your LAN:

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

And want your friends to access the FTP server on default port over the internet. To access your FTP server from the Internet, a remote user has to know the Internet IP address or domain name of the modem router. In this example, assume that the WAN IP address of your router is **183.37.227.201**. Follow instructions below:

To configure the router to make your local FTP server accessible over the internet:

Step 1 Choose **Advanced Setup** > **NAT** > **Virtual Servers** to enter the configuration page, and click **Add**.



Step 2 Select a use interface from the drop-down box.

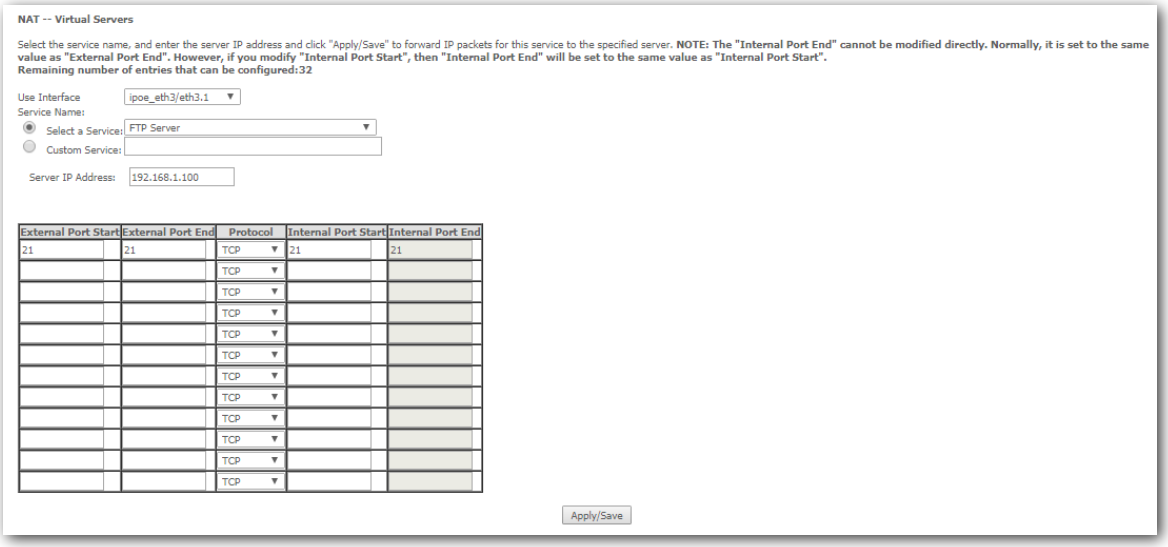
Step 3 Select **FTP Server** in the drop-down box for service.

Step 4 If you want to define the service yourself, enter a descriptive name in the **Custom Service**, such as **My FTP**, and then manually set the port number (21) used by this service in the **Internal Port Start**, **Internal Port End**, **External Port Start** and **External Port End**.

Step 5 Select a protocol from the **Protocol** drop-down list. If you are unsure about which protocol is required, select **TCP/UDP**.

Step 6 In the **Server IP Address** field, enter the IP address of your local computer that offers this service, which is **192.168.1.100** in this example.

Step 7 Click the **Apply/Save**.



----End

Remote access:

Your friends from the internet can access your FTP server by entering ftp://183.37.227.201:21 in the address bar of a web browser.

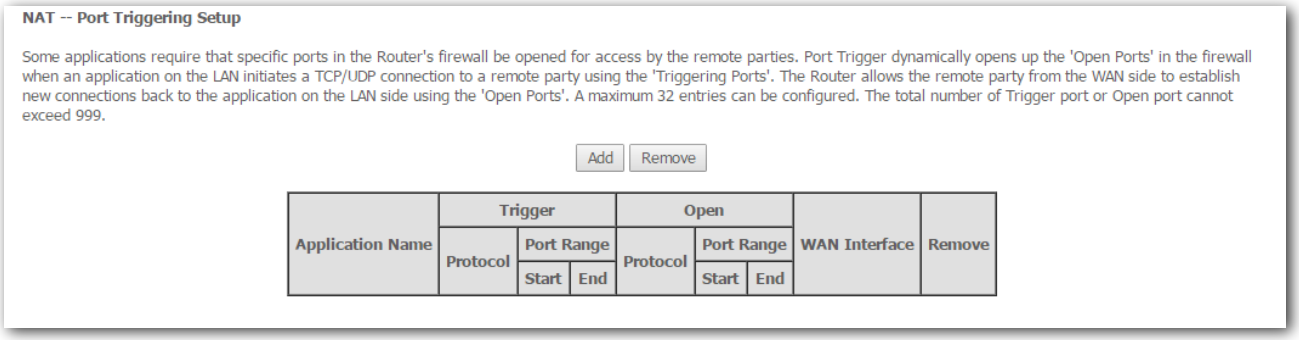
NOTE

As the WAN ip address changes dynamically, to ensure the stability of this function, it is recommended to use this function together with DDNS function to allow internet users to access the service through domain names.

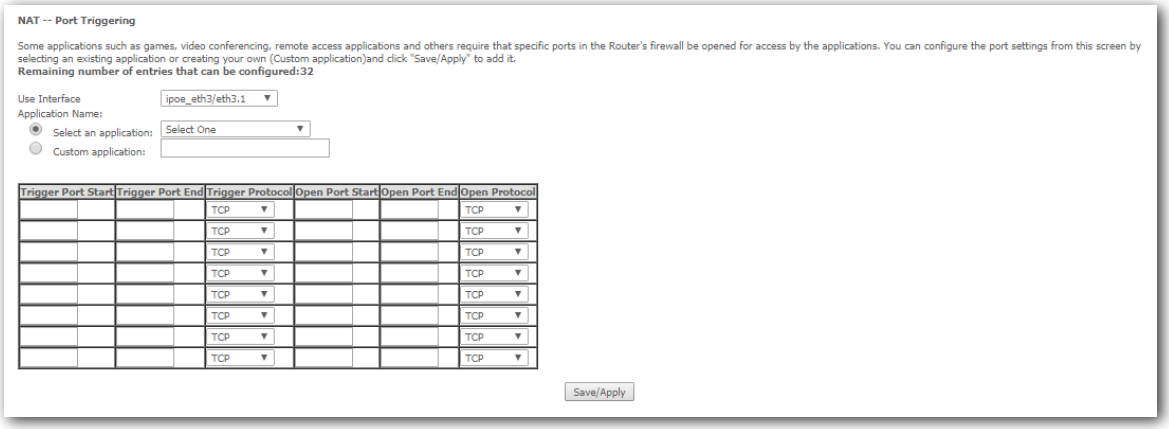
4.5.2 Port triggering

Some applications, such as games, video conferencing, and remote access, require that specific ports in the router's firewall be opened for access by the applications. Port triggering opens an incoming port when the user's computer is using a specified outgoing port for specific traffic. This allows computers behind a NAT-enabled router on a local network to provide services. Port triggering triggers can open an incoming port when a client on the local network makes an outgoing connection on a predetermined port or range of ports.

Choose **Advanced Setup** > **NAT** > **Port Triggering** to enter the configuration page.



Click **Add** to configure the function.



Parameter description

Parameter	Description
Use Interface	Select a WAN connection to which the rules apply. When there is only one WAN connection available, the rules will be automatically applied to it.
Application Name	• **Select an application**: Allows you to select an existing service from the drop-down list. • **Custom application**: Allows you to customize a service.
Trigger Port Start/Trigger Port End	The port range for an application to initiate connections.

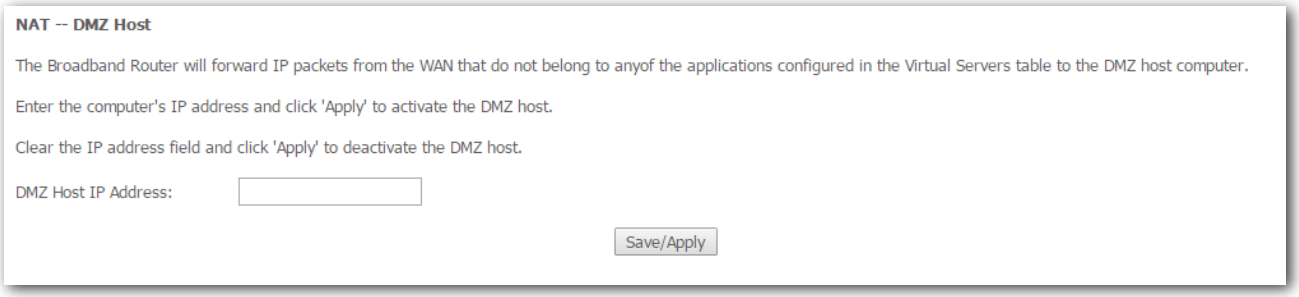
Parameter	Description
Trigger Protocol	Select the protocol from the drop-down list. If you are unsure, select **TCP/UDP**.
Open Port Start/ Open Port End	These are the starting number and ending number for the ports that are automatically opened by the built-in firewall when connections initiated by an application are established.
Open Protocol	The protocol to be used by the built-in firewall when connections are initiated.

4.5.3 DMZ host

4.5.3.1 Overview

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

Choose **Advanced Setup** > **NAT** > **DMZ Host** to enter the configuration page.



DMZ Host IP Address: The IP Address of the device for which the firewall of the modem router is disabled. Ensure that the IP address is a static IP address. The DMZ host should be connected to a LAN port of the modem router.

NOTE

- A DMZ host is not protected by the firewall of the router. A hacker may leverage the DMZ host to attack your LAN. Therefore, enable the DMZ function only when necessary.
- Manually set the IP address of the LAN computer that functions as a DMZ host, to prevent IP address changes, which lead to DMZ function failures.
- Security software, antivirus software, and the built-in OS firewall of the computer may cause DMZ function failures. Disable them when using the DMZ function. If the DMZ function is not required, it is recommended that you disable it and enable your firewall, security, and antivirus software.

4.5.3.2 Configuring the DMZ host function

Step 1 Choose **Advanced Setup** > **NAT** > **DMZ Host** to access the configuration page.

Step 2 Set **DMZ Host IP Address** to the IP address of the DMZ host.

Step 3 Click **Save/Apply**.

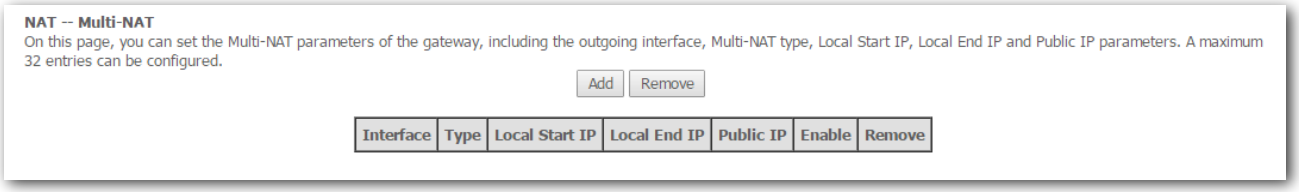
----End

4.5.4 Multi-NAT

4.5.4.1 Overview

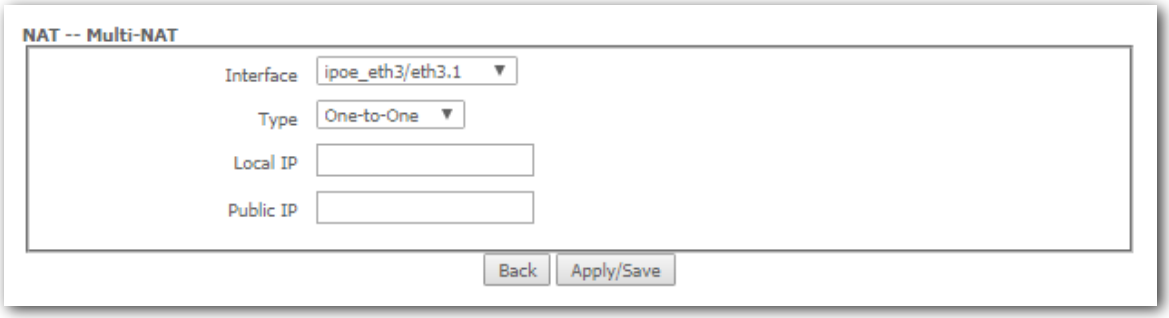
Multi-NAT is a network function whereby one network address is rewritten (translated) to another address: Network Address Translation is frequently used to allow multiple network nodes (computers or inter-networked devices) to share a single public (or local network) IP address. Multi-NAT can work in one-to-one or many-to-one mode.

Choose **Advanced Setup** > **NAT** > **Multi-NAT** to enter the configuration page.

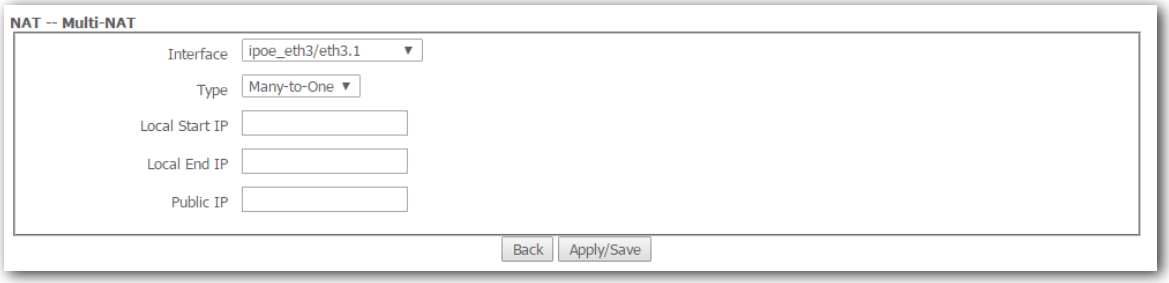


Click **Add** to configure the function.

- **One-to-One**



- **Many-to-One**



Parameter description

Parameter	Description
Interface	Select a WAN interface that the function uses.
Type	• **One-to-One**: Set a route from a local IP address to a public IP address. • **Many-to-One**: Set a route from many local IP addresses to a public IP address.

Local IP	It specifies a local IP address.
Public IP	It specifies a public IP address.

4.5.4.2 Configuring the Multi-NAT function

Step 1 Choose **Advanced Setup** > **NAT** > **Multi-NAT** to enter the configuration page, and click **Add**.

Step 2 Select an interface from the drop-down list.

Step 3 Select a type. If you only need to set a route for a local IP address, select **One-to-One**. If you need to set multiple routes for a local network, select **Many-to-One**.

Step 4 If you select **One-to-One**, specify a local IP address. If you select **Many-to-One**, specify the **Local Start IP** and **Local End IP**.

Step 5 Set **Public IP** to a public IP address.

Step 6 Click **Apply/Save**.

----End

TIP

The local IP and Public IP you set should be static IP addresses.

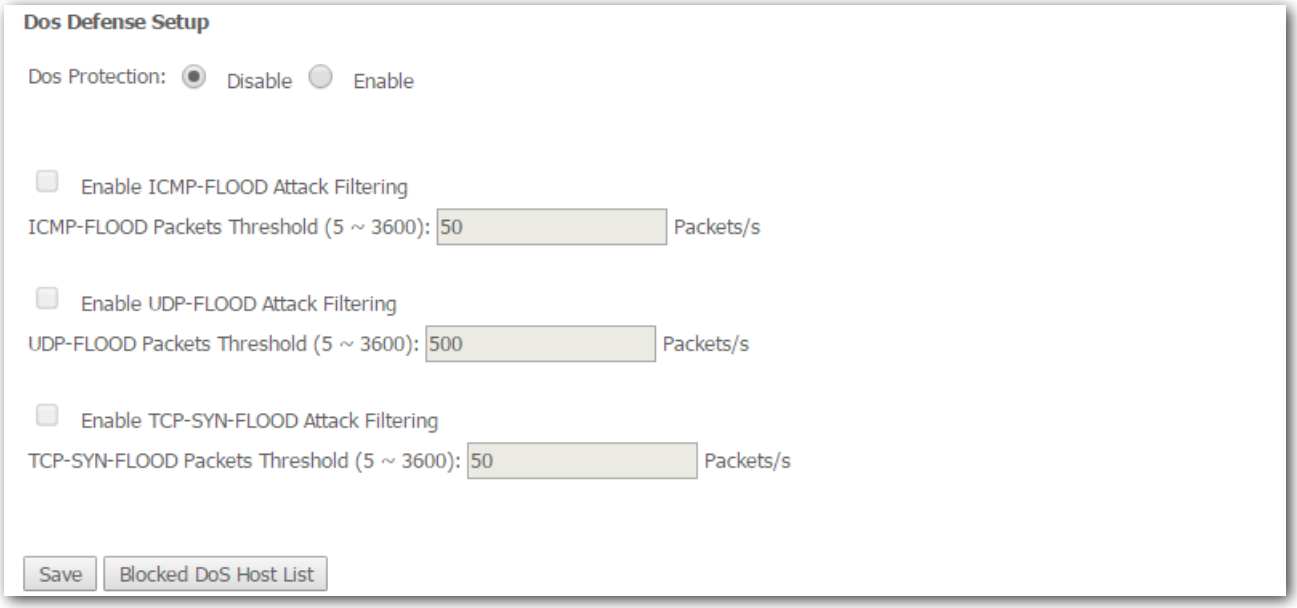
4.6 Security

4.6.1 DoS defence

4.6.1.1 Overview

This function allows you to enable ICMP-FLOOD Attack Filtering, UDP-FLOOD Attack Filtering, and TCP-SYN-FLOOD Attack Filtering to defend the modem router against ICMP-FLOOD attack, UDP-FLOOD attack, and TCP-SYN-FLOOD attacks.

Choose **Advanced Setup** > **Security** > **Dos Defense** to enter the configuration page.



Parameter description

Parameter	Description
Dos Protection	It specifies whether to enable Dos protection function.
Enable ICMP-FLOOD Attack Filtering	It specifies whether to enable ICMP-FLOOD attack filtering.
ICMP-FLOOD Packets Threshold (5 ~ 3600)	It specifies the maximum number of incoming ICMP packets allowed in one second. If the threshold is exceeded, it is inferred that the modem router is under ICMP Flood attack.
Enable UDP-FLOOD Attack Filtering	It specifies whether to enable UDP-FLOOD attack filtering.
UDP-FLOOD Packets Threshold (5 ~ 3600)	It specifies the maximum number of incoming UDP packets allowed in one second. If the threshold is exceeded, it is inferred that the modem router is under UDP Flood attack.

Parameter	Description
Enable TCP-SYN-FLOOD Attack Filtering	It specifies whether to enable TCP-SYN-FLOOD attack filtering.
TCP-SYN-FLOOD Packets Threshold (5 ~ 3600)	It specifies the maximum number of incoming TCP SYN packets allowed in one second. If the threshold is exceeded, it is inferred that the modem router is under SYN Flood attack.

4.6.1.2 Enabling the Dos Defense function

Step 1 Choose **Advanced Setup** > **Security** > **Dos Defense** to enter the configuration page.

Step 2 Select the **Enable** option of Dos Protection.

Step 3 Select the corresponding attack filtering.

Step 4 Click **Save**.

----End

Click **Blocked DoS Host List** to check the attacks the modem router blocks.

4.6.2 IP filtering

This function can forbid the LAN devices to access the internet or allow WAN devices to visit the LAN devices.

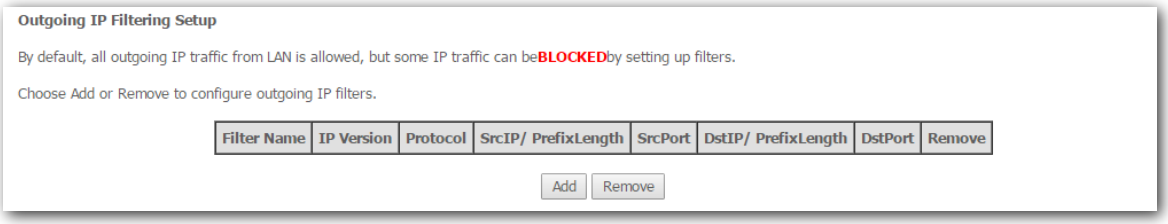
4.6.2.1 Outgoing

Overview

By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be BLOCKED by setting up filtering rules. Outgoing IP Filtering function allows you to create a filter rule to identify outgoing IP traffic by specifying a new filter name and at least one condition.

Configuring the Outgoing IP Filtering function

Step 1 Choose **Advanced Setup > Security > IP Filtering > Outgoing** to enter the configuration page, and click **Add**.



Step 2 **Filter Name:** Enter a descriptive filtering name.

Step 3 **IP Version:** Select your IP protocol which can be IPv4 or IPv6.

Step 4 **Protocol:** Select a protocol for the filter rule.

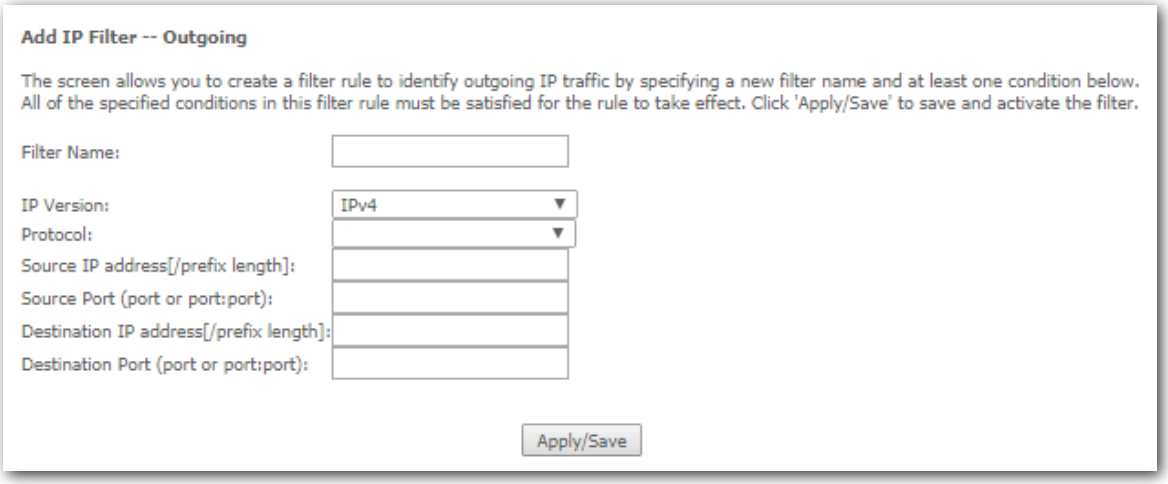
Step 5 **Source IP address[/prefix length]:** Enter the LAN IP address to be filtered.

Step 6 **Source Port (port or port:port):** Enter a port number or a port range used by LAN computers to access the internet. If you are not sure, leave it blank.

Step 7 **Destination IP address[/prefix length]:** Enter the external network IP address to be accessed by specified LAN computers.

Step 8 **Destination Port (port or port: port):** Enter a port number or a port range that the internet service you restrict uses.

Step 9 Click **Apply/Save**.



----End

Parameter description

Parameter	Description
Filter Name	It specifies the name of a rule.
IP Version	It allows you to select an IP protocol, IPv4, or IPv6.
Protocol	It allows you to select a protocol for the filter rule.
Source IP address[/prefix length]	It specifies the LAN IP address to be filtered.
Source Port (port or port:port)	It specifies the source port used by packets. Source port is for TCP/UDP protocol. If protocol ICMP is selected, this field is not required. Since the source port of the data packet is changeable, you'd better set the port to 1:65535 or leave it blank.
Destination IP address[/prefix length]	It specifies the external network IP address to be accessed by specified LAN computers.
Destination Port (port or port:port)	It specifies the port number used by the internet service to be restricted. Destination port is for TCP/UDP protocol. If protocol ICMP is selected, this field is not required.

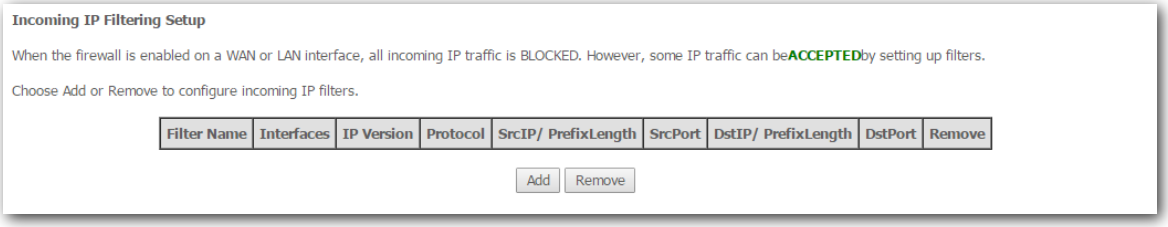
4.6.2.2 Incoming

Overview

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 filtering rules. The Incoming IP Filtering function allows you to create a filter rule to identify incoming IP traffic by specifying a new filter name and at least one condition.

Configuring the Ingoing IP Filtering function

Step 1 Choose **Advanced Setup > Security > IP Filtering > Incoming** to enter the configuration page, and click **Add**.



Step 2 **Filter Name:** Enter a descriptive filtering name.

Step 3 **IP Version:** Select your IP protocol which can be IPv4 or IPv6.

Step 4 **Protocol:** Select a protocol for the filter rule.

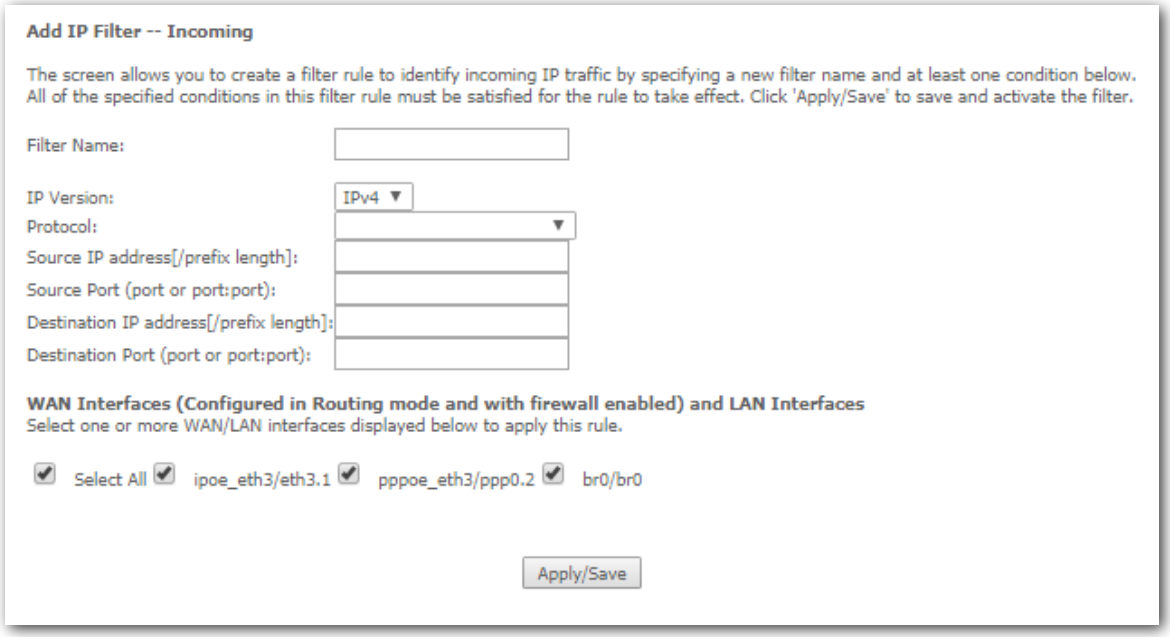
Step 5 **Source IP address[/prefix length]:** Enter the internal IP address to be filtered.

Step 6 **Source Port (port or port:port):** Enter a port number or a range of ports used by computers from external network to access your internal network.

Step 7 **Destination IP address[/prefix length]:** Enter the internal network IP address [eg: IP/Mask] to be accessed by the specified computers from external network.

Step 8 **Destination Port (port or port:port):** Enter the port used by the internet service to be restricted.

Step 9 Click **Apply/Save**.



----End

Parameter description

Parameter	Description
Filter Name	It specifies the name of a rule.
IP Version	It allows you to select an IP protocol, IPv4, or IPv6.
Protocol	It allows you to select a protocol for the filter rule.
Source IP address[/prefix length]	It specifies the IP address and its prefix length of the computer from the internet which is allowed to access the LAN service.
Source Port (port or port:port)	It specifies the source port used by packets. Source port is for TCP/UDP protocol. If protocol ICMP is selected, this field is not required. Since the source port of the data packet is changeable, you'd better set the port to 1:65535 or leave it blank.
Destination IP address[/prefix length]	It specifies the IP address and its prefix length of the LAN server which allows the internet users to access.
Destination Port (port or port:port)	It specifies the port number used by the LAN service which allows the internet users to access.

4.6.3 MAC filtering

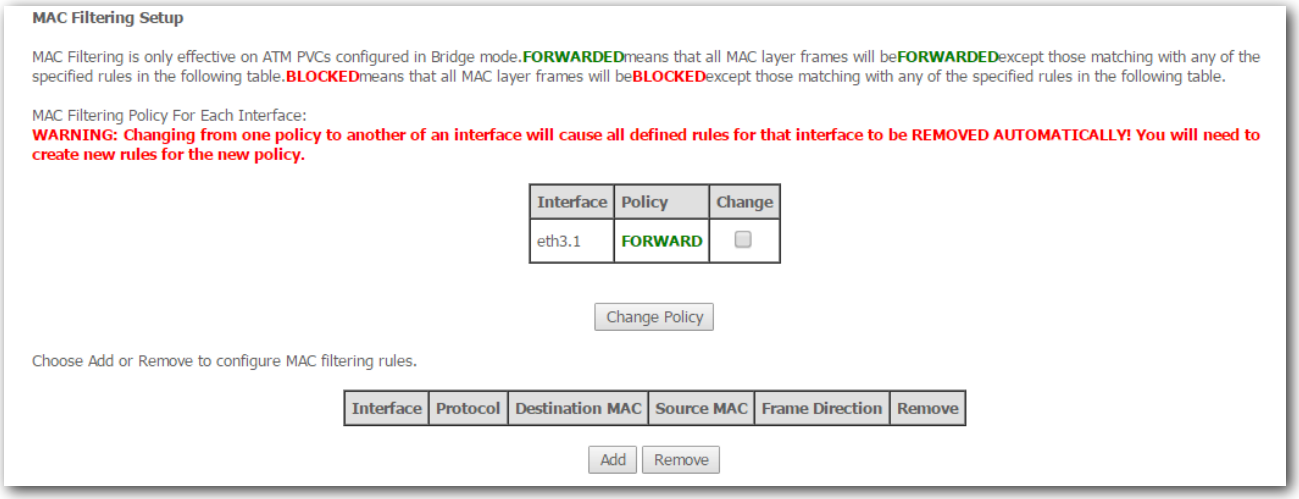
4.6.3.1 Overview

The MAC filtering is effective only when you set the **WAN service** to **bridging**. There are two policies of the function:

FORWARDED indicates that all MAC layer frames will be FORWARDED except those matching the rules you specify.
BLOCKED indicates that all MAC layer frames will be BLOCKED except those matching the rules you specify.

4.6.3.2 Adding a frame forwarding rule

Step 1 Choose **Advanced Setup** > **Security** > **MAC Filtering** to enter the configuration page, and click Add.



Step 2 **Protocol Type:** Select a protocol type from the drop-down list.

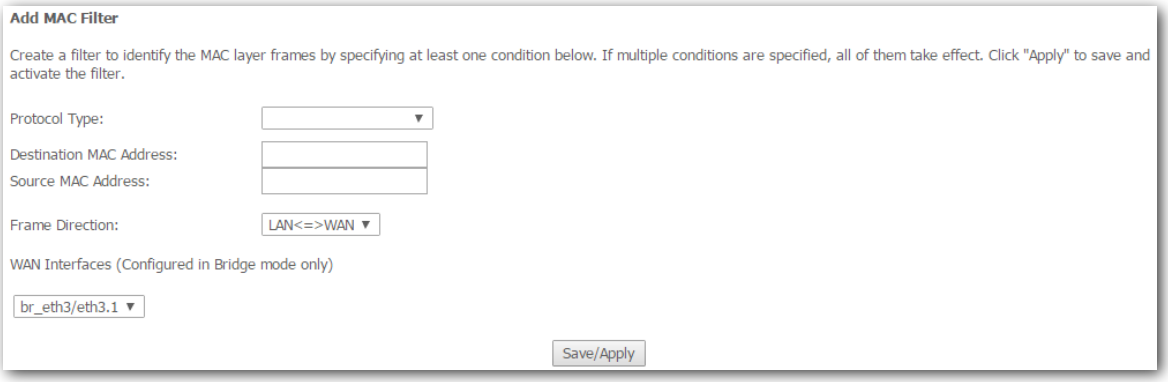
Step 3 **Destination MAC Address:** Enter the destination MAC address to which you want to apply the MAC filtering rule.

Step 4 **Source MAC Address:** Enter the source MAC address to which you want to apply the MAC filtering rule.

Step 5 **Frame Direction:** Select a frame direction from the drop-down list.

Step 6 **WAN Interfaces:** Select a WAN interface from the drop-down list.

Step 7 Click **Save/Apply**.



----End

Parameter description

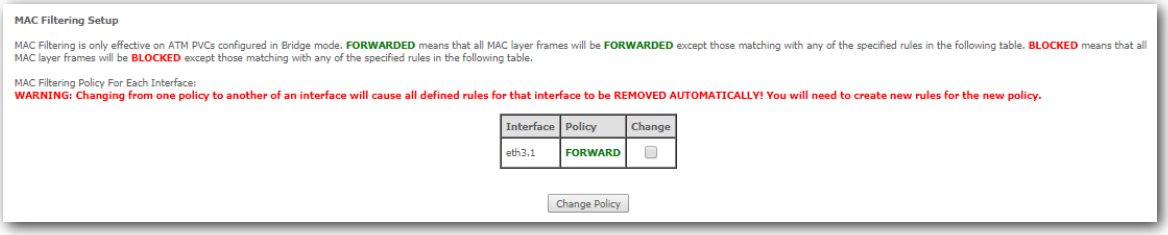
Parameter	Description
Protocol Type	It allows you to select the protocol type from the drop-down list.
Destination MAC Address	It specifies the destination MAC address to which the MAC filter rule applies.
Source MAC Address	It specifies the source MAC address to which the MAC filter rule applies.
Frame Direction	It specifies the direction the frame that you want to restrict.

4.6.3.3 Changing the policy from FORWARDED to BLOCKED

Step 1 Choose **Advanced Setup** > **Security** > **MAC Filtering** to enter the configuration page.

Step 2 Select **Change** checkbox.

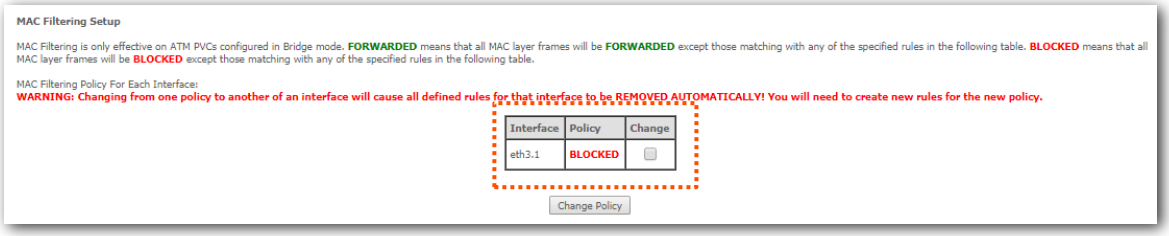
Step 3 Click **Change Policy**.



----End

Verification

The policy is change to **BLOCKED**.



4.6.3.4 Adding a frame blocking rule

Step 1 Choose **Advanced Setup** > **Security** > **MAC Filtering** to enter the configuration page.

Step 2 Change the policy to **BLOCKED**. Refer to To change the policy from FORWARDED to BLOCKED.

Step 3 Click **Add**.

Step 4 **Protocol Type:** Select a protocol type from the drop-down list.

Step 5 **Destination MAC Address:** Enter the destination MAC address apply the MAC filtering rule

to which you want to apply the MAC filtering rule.

Step 6 **Source MAC Address:** Enter the source MAC address to which you want to apply the MAC filtering rule.

Step 7 **Frame Direction:** Select a frame direction from the drop-down list.

Step 8 **WAN Interfaces:** Select a WAN interface from the drop-down list.

Step 9 Click **Save/Apply**.

----End

4.7 Parental control

This function enables you to control internet connectivity availability and content accessibility for devices connected to the router.

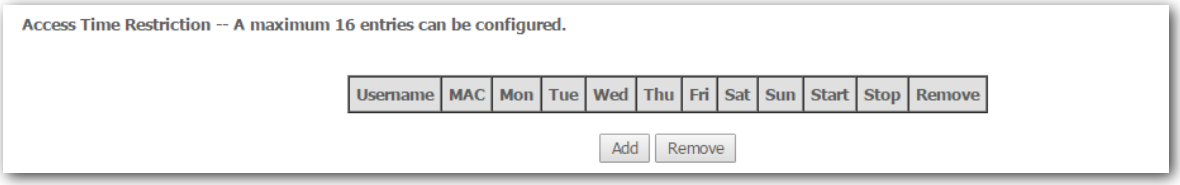
4.7.1 Time restriction

4.7.1.1 Overview

Time Restriction allows you to forbid a LAN device to access the internet during the specified time.

4.7.1.2 Adding a time restriction rule

Step 1 Choose **Advanced Setup > Parental Control >Time Restriction** to enter the configuration page, and click **Add**.



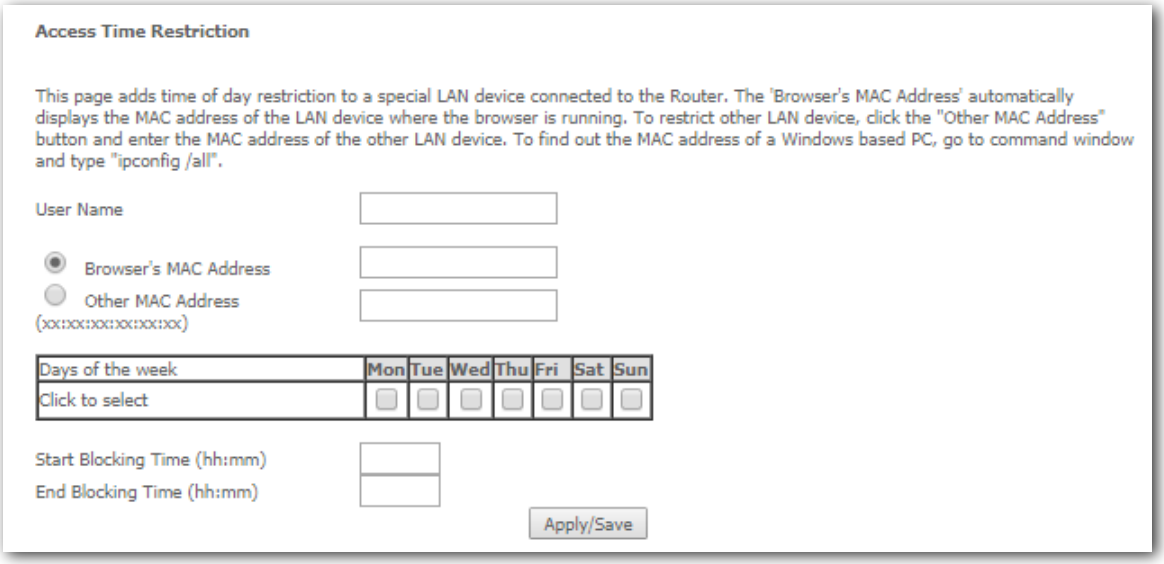
Step 2 **User Name**: Enter a user name for this rule. It must be 1-32 characters, and space is not allowed.

Step 3 Select **Browser's MAC Address** if the rule is applied to the computer where the current browser is running (the browser used to log in to the web UI of the modem router). If not, select **Other MAC Address**, and enter the MAC address of a computer to which the rule is applied.

Step 4 **Days of the week**: Select the days of week during which the rule takes effect.

Step 5 **Start Blocking Time (hh:mm)/End Blocking Time (hh:mm)**: Enter the time period of day restriction for the rule. Within this specified period of the day, this LAN device cannot access the internet. For example, if you set **start Blocking Time** to **23:00**, and **End Blocking Time** to **06:00**, the device to which this rule is applied cannot access the internet during 23:00~06:00.

Step 6 Click **Apply/Save**.



----End

Parameter description

Parameter	Description
User Name	It specifies the description of the rule.
Browser's MAC Address/Other MAC Address	It specifies the MAC address of the computer where the current browser is running (the browser used to log in to the web UI of the modem router). If the rule needs to apply to this device, select this option. Otherwise, select Other MAC Address, and enter the MAC address of the device to which the rule is applied.
Days of the week	It specifies the dates on which the rule takes effect.
Start Blocking Time (hh:mm)	It specifies the start time of period in which the rule takes effect.
End Blocking Time (hh:mm)	It specifies the end time of period in which the rule takes effect.

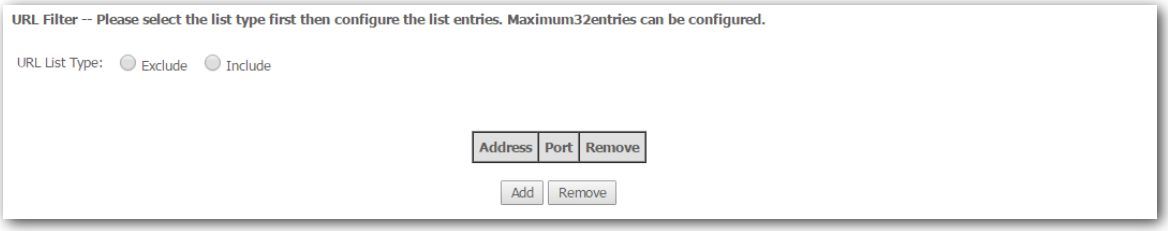
4.7.2 URL filter

4.7.2.1 Overview

URL Filter allows you to specify URLs can or cannot be accessed.

4.7.2.2 Adding a URL Filter rule

Step 1 Choose **Advanced Setup > Parental Control >URL Filter** to enter the configuration page.



Step 2 Select **URL List Type**.

Exclude indicates that the URLs added to the list cannot be accessed.

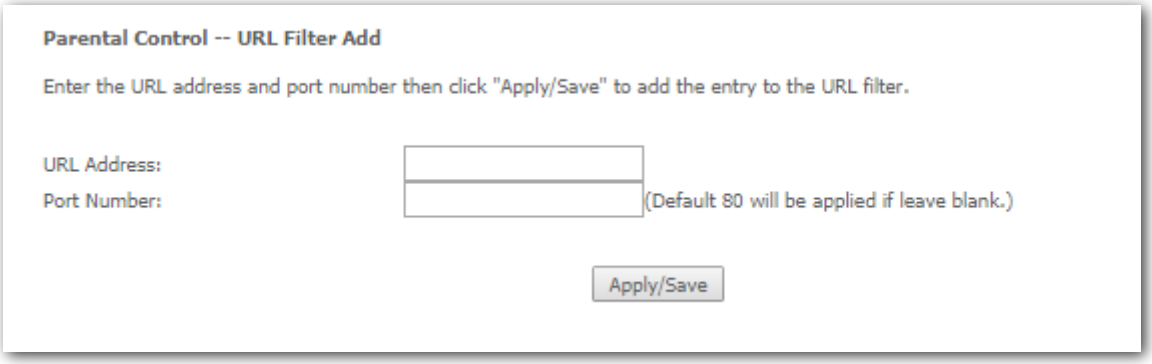
Include indicates that only the URLs added to the list can be accessed.

Step 3 Click **Add**.

Step 4 Enter a URL. For example, Set **URL Address** to www.google.com.

Step 5 Specify a port number based on the URL you entered.

Step 6 Click **Apply/Save**.



----End

4.7.3 Example of configuring parental control

4.7.3.1 Networking requirement

Assume that a wireless network whose SSID is **Home** has been set up at your home. You want to disallow your children, Lily and Tom, to visit YouTube from 18:00 to 20:00 on weekdays. The MAC addresses of their computers are C8:3A:35:00:00:11 and C8:3A:35:00:00:12.

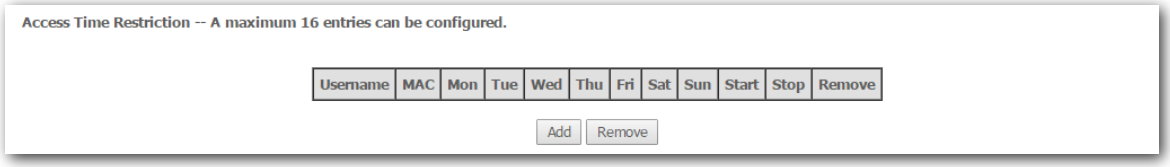
4.7.3.2 Solution

Set up time restriction and URL filter rules.

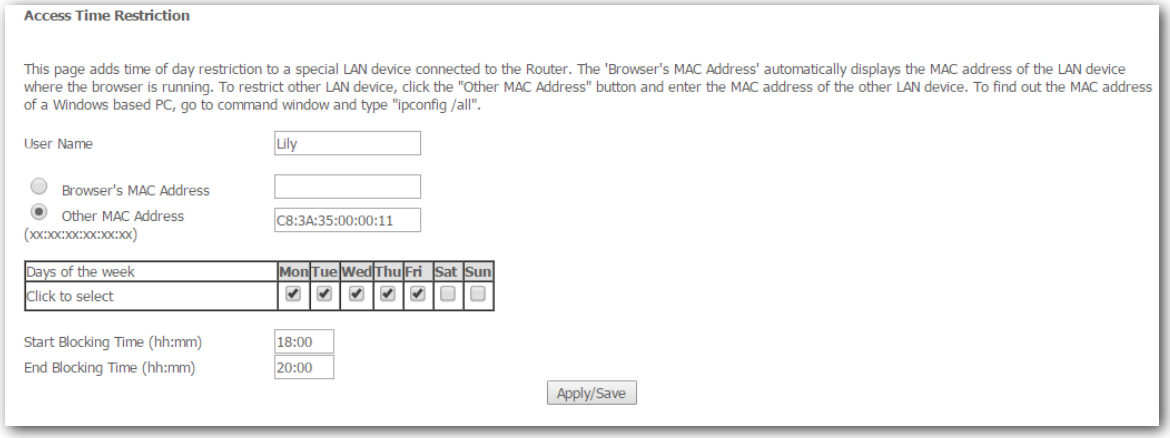
4.7.3.3 Configuration procedure

Step 1 Add time restriction rules.

1. Choose **Advanced Setup > Parental Control >Time Restriction** to enter the configuration page, and click **Add**.

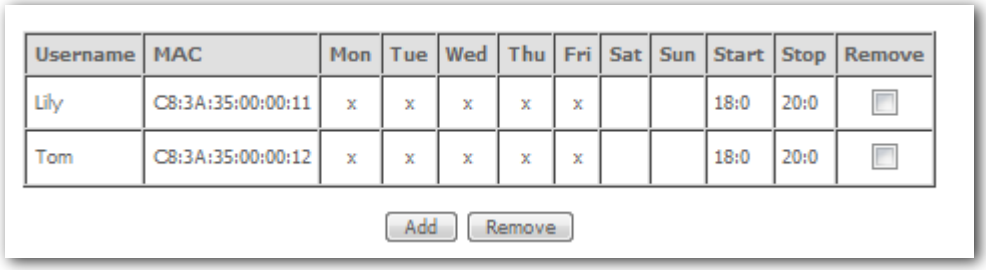


2. Set the **User Name** to **Lily**.
3. Select **Other MAC Address**, and enter **C8:3A:35:00:00:11**.
4. Select **Mon** to **Fri**.
5. Set the **Start Blocking Time** and **End Blocking Time** to **18:00** and **20:00** respectively.
6. Click **Apply/Save**.



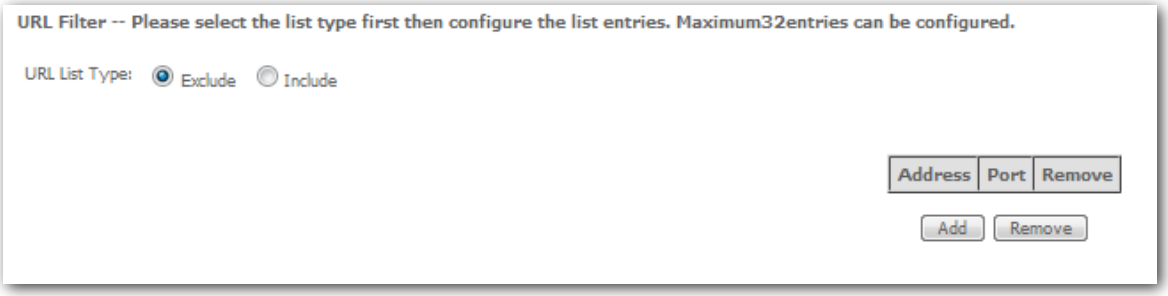
7. Perform step 2 to 6 to add the other rule **Tom**.

The added rules are shown in the following table.



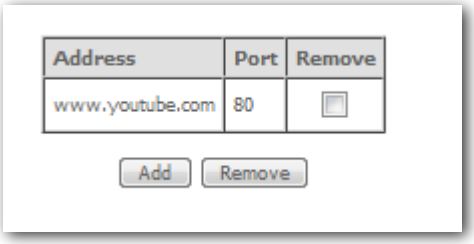
Step 2 Set a URL filter rule.

1. Choose Advanced Setup > Parental Control >URL Filter to enter the configuration page.
2. Select **URL List Type** to **Exclude**, and click **Add**.



3. Enter **www.youtube.com** in the **URL Address** box.
4. Enter **80** in the **Port Number** box.
5. Click **Apply/Save**.

The added rule is shown in the following table.



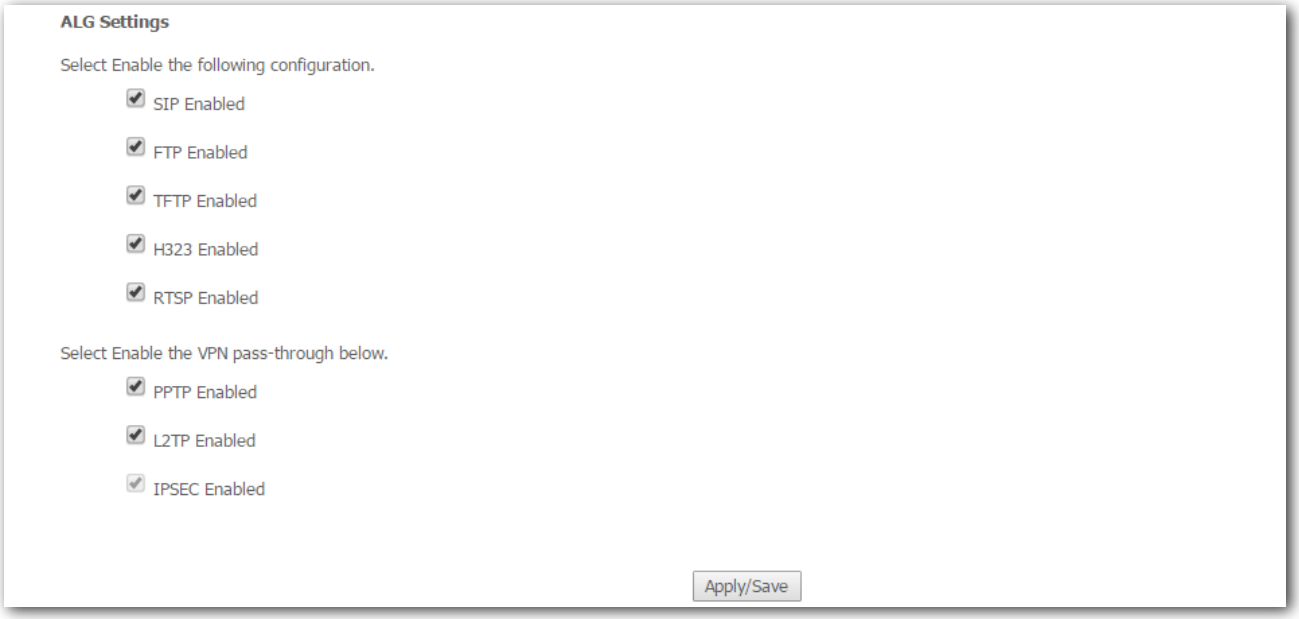
----End

4.7.3.4 Verification

During 18:00 to 20:00 on weekdays, the computers with MAC address C8:3A:35:00:00:11 and C8:3A:35:00:00:12 are not allowed to visit YouTube.

4.8 ALG

ALG allows you to enable SIP, FTP, TFTP, H323, RTSP functions, and VPN pass through as required.

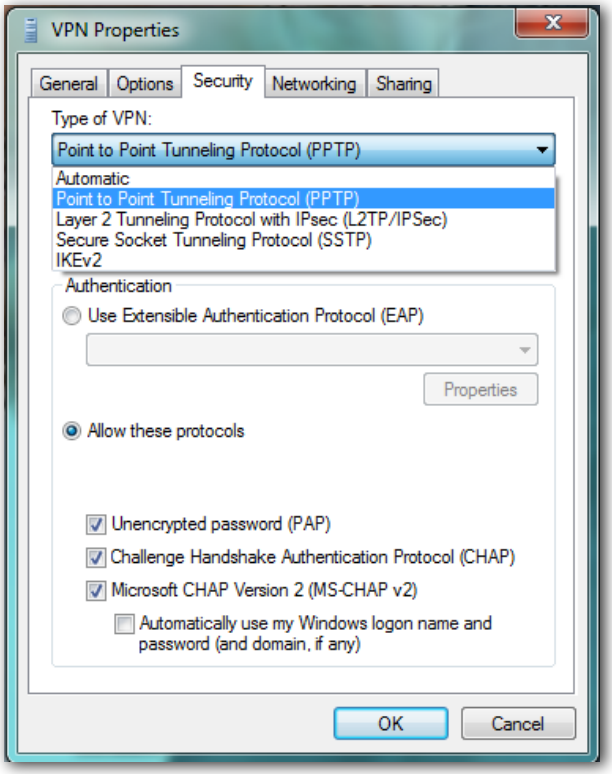


Parameter description

Parameter	Description
SIP Enabled	The IP phone function can be used on the computers connected to the modem router only when it is selected.
FTP Enabled	The users on LAN can share resources on the FTP server on WAN only when it is selected.
TFTP Enabled	The users on LAN can share resources on the TFTP server on WAN only when it is selected.
H323 Enabled	The IP phone and network conference function can be used on the computers connected to the modem router only when it is selected.
RTSP Enabled	The users on LAN can view video on demand when it is selected.

VPN pass-through

- **PPTP Enabled**: If you select PPTP protocol when you create a VPN connection on your computer, it takes effect only when this checkbox is selected.
- **L2TP/IPSEC Enabled**: If you select L2TP or IPSEC protocol when you create a VPN connection on your computer, it takes effect only when this checkbox is selected.



4.9 Bandwidth control

4.9.1 Overview

If multiple devices access the internet through the modem router, bandwidth control is recommended, so that high-speed file download by a device does not reduce the internet access speed of the other devices.

4.9.2 Adding a bandwidth control rule

Step 1 Choose **Advanced** > **Advanced Setup** > **Bandwidth Control** to enter the configuration page.

Step 2 Select **Enable Bandwidth Control**.

Step 3 Specify a name for the rule.

Step 4 Specify an IP address, or an IP address range.

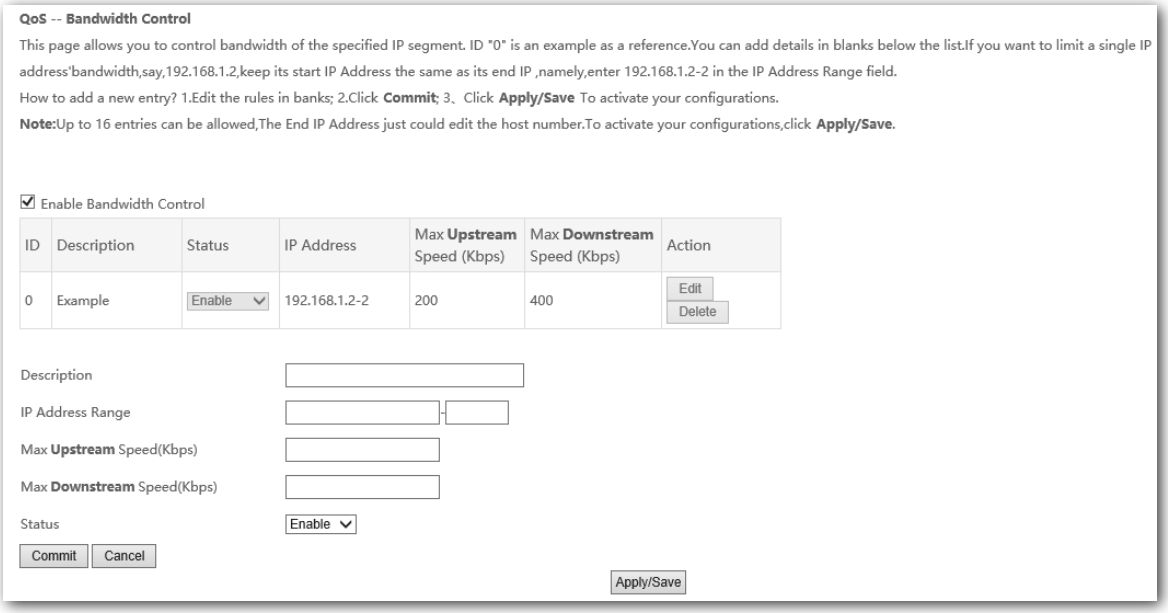
Step 5 Specify a maximum upstream and downstream speed.

Step 6 Select the status for the rule.

- **Enable**: When **Enable** is selected, the rule takes effect.
- **Disable**: When **Disable** is selected, the rule does not take effect.

Step 7 Click **Commit** to add the rule to the list.

Step 8 Click **Apply/Save** to apply the settings.

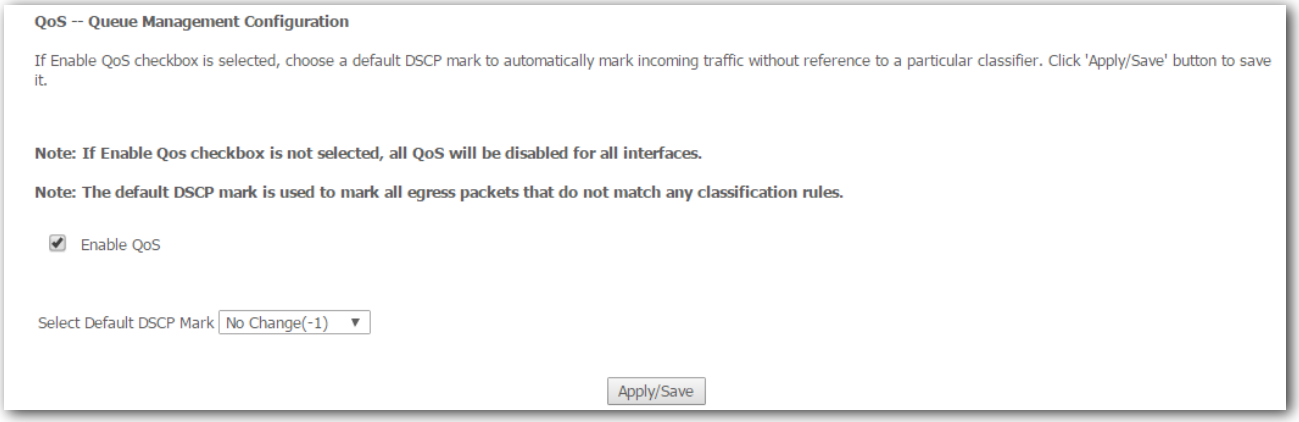


----End

4.10 Quality of service

QoS helps to prioritize data. By attaching special identification marks or headers to incoming packets, QoS determines queue of packets based on priority. It is useful when there are certain types of data you want to give higher priority, such as voice data packets give higher priority than Web data packets. This function provides better service of selected network traffic over various technologies.

Choose **Advanced Setup** > **Quality of Service** to enter the configuration page.



If **Enable QoS** checkbox is selected, choose a default DSCP mark to automatically mark incoming traffic without reference to a particular classifier.

- **Enable QoS**: Select it to enable the QoS feature of the modem feature.
- **Select Default DSCP Mark**: Select a DSCP mark for the packets not matching the created QoS classification rules.
- **No Change (-1)**: Do not add DSCP mark, and keep the original packets.
- **Auto Marking (-2)**: Randomly select a mark from the following mark list to tag the packets.
- **Default (000000)**: Default PHB (Per-Hop Behaviors). It specifies the best-effort internet service.
- **EF (101110)**: EF (Expedited Forwarding PHB). It specifies the highest priority of the internet service.

- **Class-Selector PHB**: It specifies that the DSCP mark is **XXX000** where **X** can be **0** or **1**. The class of service of Class-Selector PHB is the same as that of IP Precedence used in the current internet. When the **XXX** are all **0**, it is the default PHB.
- **Assured Forwarding PHB**: RFC2597. It is applicable to video service, VPN service, and so on. AF PHB has four service classes which require the corresponding bandwidths and caches. Each service class has three packet-loss priorities.

Packet-loss Priority	AF1	AF2	AF3	AF4
Low (1)	001010	010010	011010	100010
Medium (2)	001100	010100	011100	100100
High (3)	001110	010110	011110	100110

NOTE

- If **Enable QoS** checkbox is not selected, the QoS Queue and QoS Classification are not available.
- The default DSCP mark is used to mark all egress packets that do not match any classification rules.

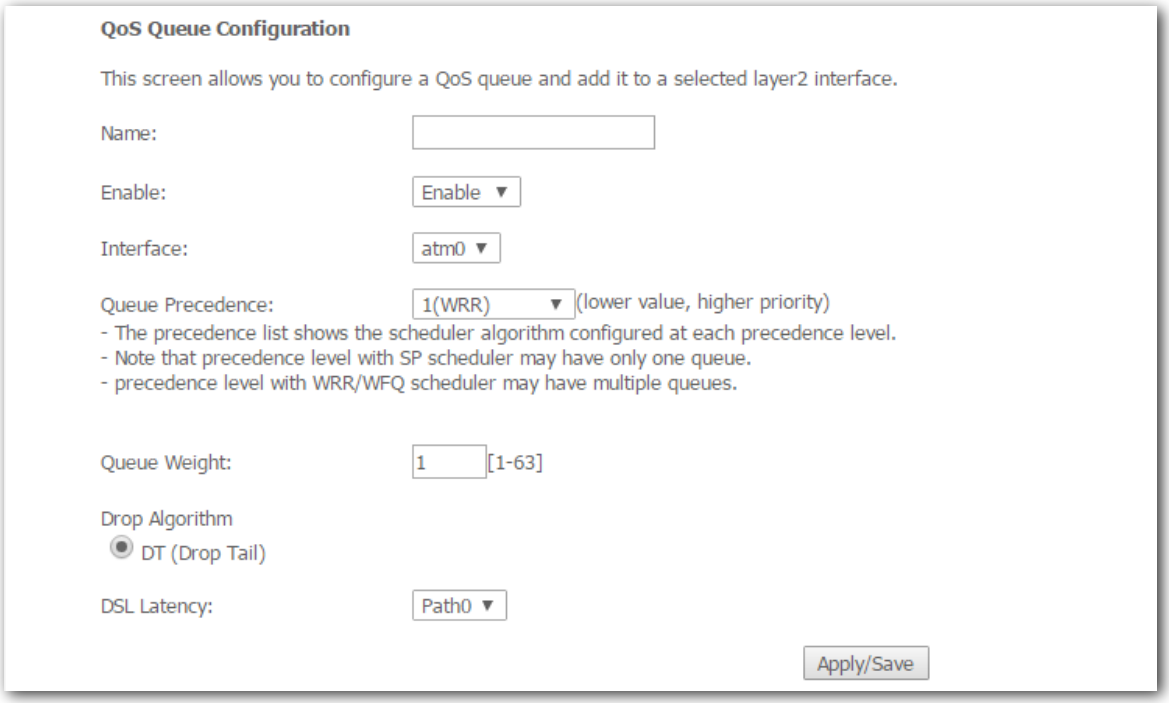
4.10.1 QoS queue

The QoS queue part includes QoS configuration and WLAN queue.

4.10.1.1 QoS configuration

Overview

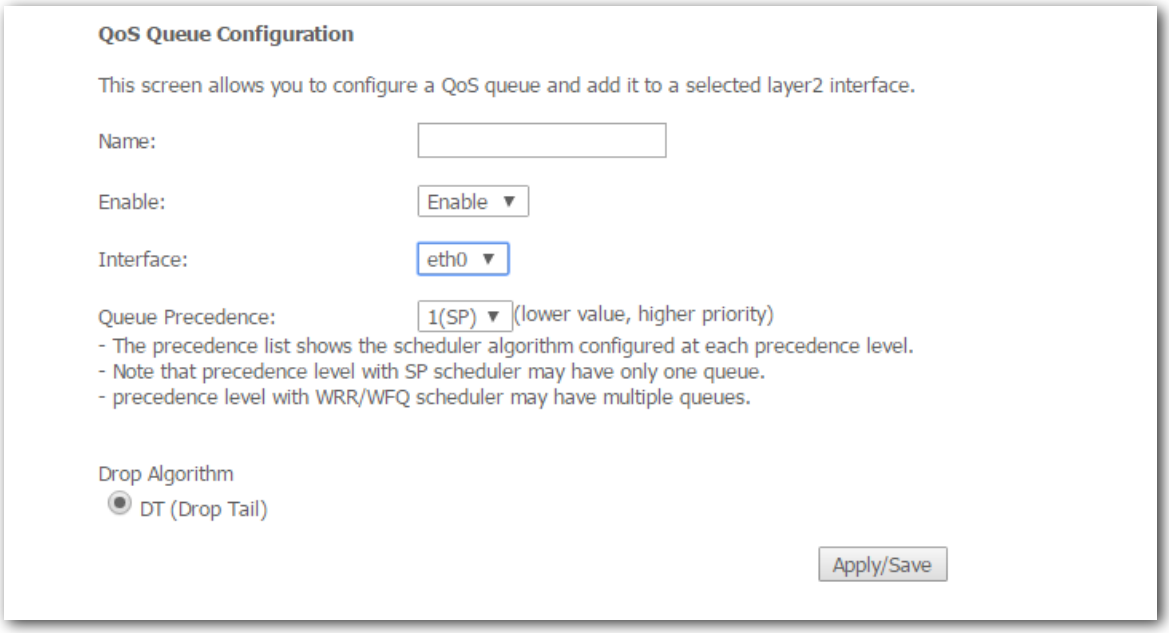
- **ATM interface**



Parameter description

Parameter	Description
Name	It specifies the description of the QoS queue rule.
Enable	It specifies whether to enable the QoS queue rule.
Interface	It specifies the interface to which the QoS queue rule applies.
Queue Precedence	It specifies the precedence value of the queue. • Queues with the same precedence: It is scheduled using WRR and WFQ, and the device assigns the bandwidth based on the queue weight. • Queues with different precedence: It is scheduled according to the precedence value.
Queue Weight	It specifies the weight of the queue. You can specify the queue weight for the queues with the same precedence.
Drop Algorithm	It specifies the default queue drop algorithm. It cannot be changed.
DSL Latency	It specifies the DSL latency mode of the ATM interface.

- **Ethernet interface**

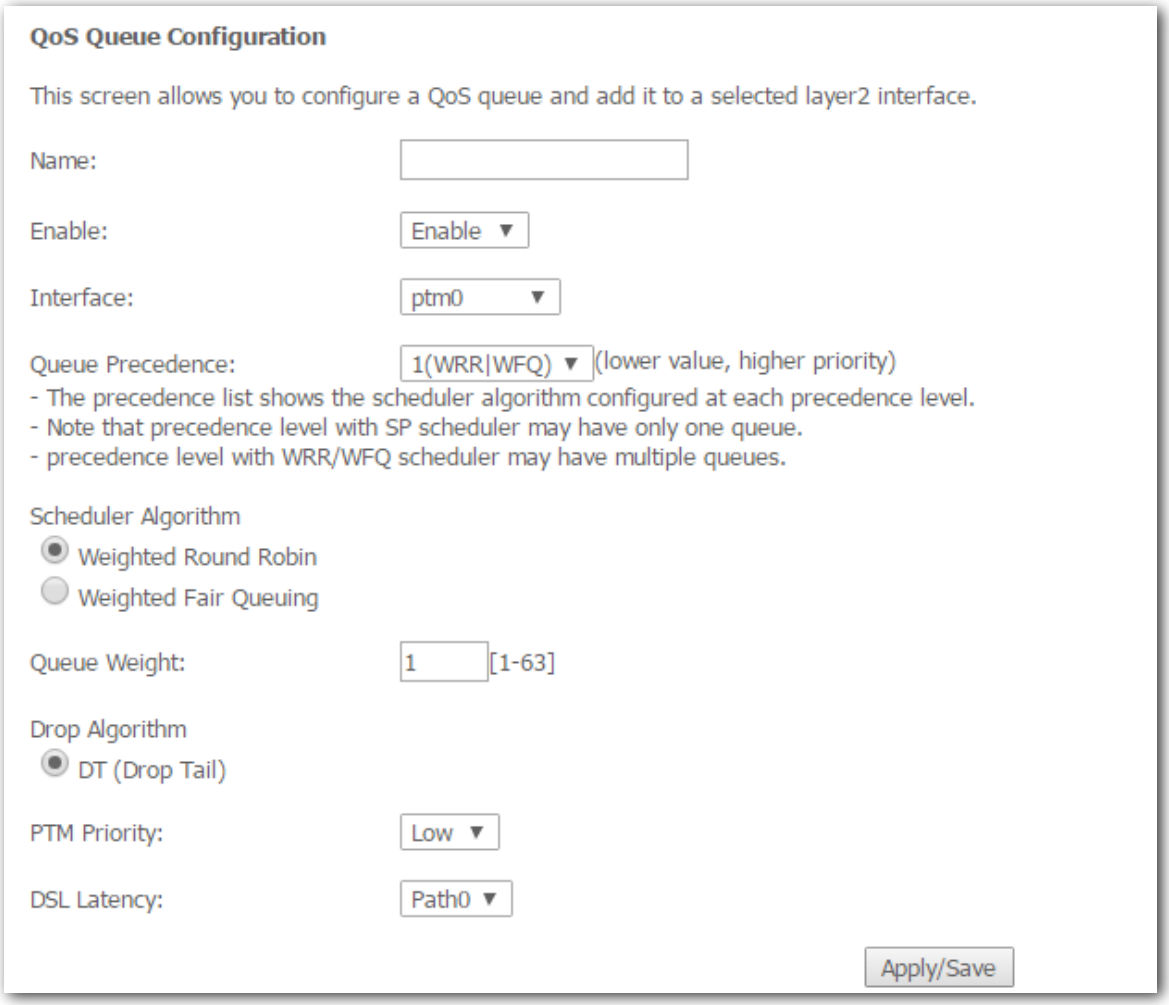


Parameter description

Parameter	Description
Name	It specifies the description of the QoS queue rule.
Enable	It specifies whether to enable the QoS queue rule.

Parameter	Description
Interface	It specifies the interface to which the QoS queue rule applies.
Queue Precedence	It specifies the precedence value of the queue. • Queues with the same precedence: It is scheduled using WRR and WFQ, and the device assigns the bandwidth based on the queue weight. • Queues with different precedence: It is scheduled according to the precedence value.
Drop Algorithm	It specifies the default queue drop algorithm. It cannot be changed.

- **PTM interface**



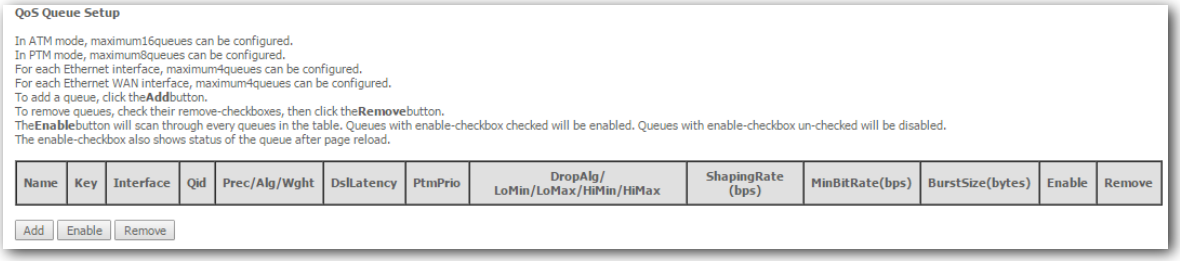
Parameter description

Parameter	Description
Name	It specifies the description of the QoS queue rule.
Enable	It specifies whether to enable the QoS queue rule.

Parameter	Description
Interface	It specifies the interface to which the QoS queue rule applies.
Queue Precedence	It specifies the precedence value of the queue. • **Queues with the same precedence**: It is scheduled using WRR and WFQ, and the device assigns the bandwidth based on the queue weight. • **Queues with different precedence**: It is scheduled according to the precedence value.
Scheduler Algorithm	• **Weighted Round Robin**: It specifies a QoS packet scheduling algorithm. It assigns different weights for different kinds of packets and provides the packets with different bandwidths based on the weights. • **Weighted Fair Queuing**: It specifies a QoS packet scheduling algorithm. It divides groups into different queues based on the service streaming, IP precedence, and Hash algorithm, and fairly assigns the bandwidth to the services with low precedence according to the weights while ensuring the performance of services with high precedence.
Queue Weight	It specifies the weight of the queue. You can specify the queue weight for the queues with the same precedence.
Drop Algorithm	It specifies the default queue drop algorithm. It cannot be changed.
DSL Latency	It specifies the DSL latency mode of the ATM interface.

Creating a QoS Queue

Step 1 Choose **Advanced Setup > Quality of Service > QoS Queue > QoS Configuration** to enter the configuration page, and click **Add**.

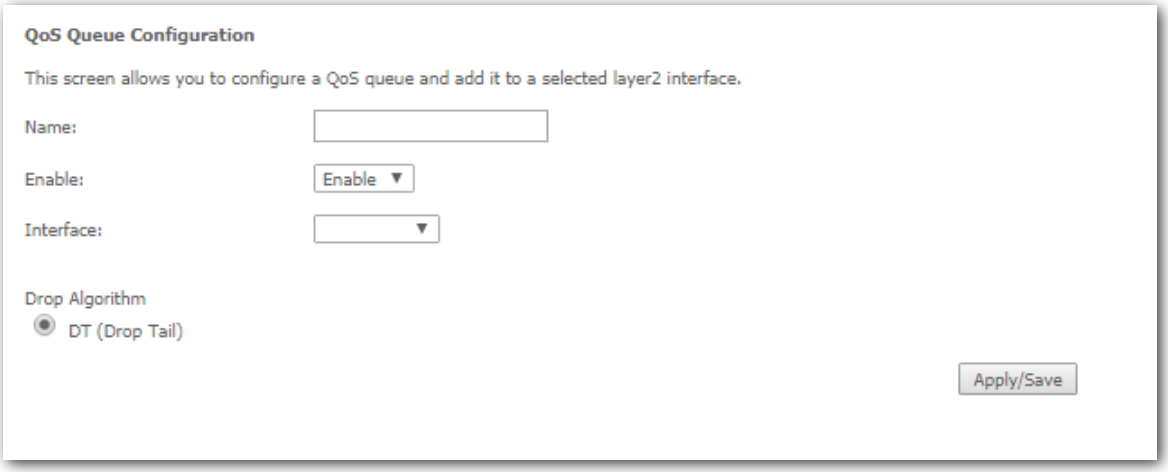


Step 2 **Name**: Enter a name for the queue.

Step 3 **Enable**: Select it to enable or disable the queue.

Step 4 **Interface**: Select an interface for the queue.

Step 5 Click **Apply/Save**.



----End

4.10.1.2 Wlan queue

It displays the QoS rules of wireless networks.

QoS Wlan Queue Setup

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

Name	Key	Interface	Qid	Prec/Alg/Wght	Enable
WMM Voice Priority	1	wl0	8	1/SP	Enabled
WMM Voice Priority	2	wl0	7	2/SP	Enabled
WMM Video Priority	3	wl0	6	3/SP	Enabled
WMM Video Priority	4	wl0	5	4/SP	Enabled
WMM Best Effort	5	wl0	4	5/SP	Enabled
WMM Background	6	wl0	3	6/SP	Enabled
WMM Background	7	wl0	2	7/SP	Enabled
WMM Best Effort	8	wl0	1	8/SP	Enabled
WMM Voice Priority	33	wl1	8	1/SP	Enabled
WMM Voice Priority	34	wl1	7	2/SP	Enabled
WMM Video Priority	35	wl1	6	3/SP	Enabled
WMM Video Priority	36	wl1	5	4/SP	Enabled
WMM Best Effort	37	wl1	4	5/SP	Enabled
WMM Background	38	wl1	3	6/SP	Enabled
WMM Background	39	wl1	2	7/SP	Enabled

Parameter description

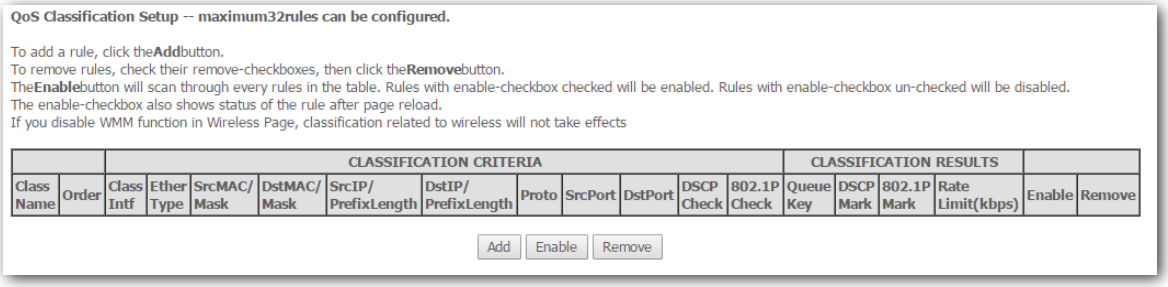
Parameter	Description
Name	It specifies the description of the QoS queue rule.

Key	It specifies the key number of the QoS queue rule.
Interface	It specifies the wireless interface the QoS queue rule applies.
Qid	It specifies the value the QoS queue rule.
Prec/Alg/Wght	It specifies the priority level of the QoS queue rule. A lower value indicates a higher priority.
Enable	It specifies the status of the QoS queue rule.

4.10.2 QoS classification

To add a QoS classification rule:

Step 1 Choose **Advanced Setup > Quality of Service > QoS Classification** to enter the configuration page, and click **Add**.



Step 2 **Traffic Class Name**: Enter a name for the rule.

Step 3 **Rule Order**: Keep the default value **Last**.

Step 4 **Rule Status**: Select **Enable** to enable the rule.

Step 5 Set the required parameters of specify classification criteria.

1. **Ingress Interface**: Select an interface from which the data traffic comes.
2. **Ether Type**: Select an Ether type of the Ethernet packets.
3. **Source/Destination MAC Address**: Enter the source/destination MAC addresses.
4. **Source/Destination MAC Mask**: Leave them blank.

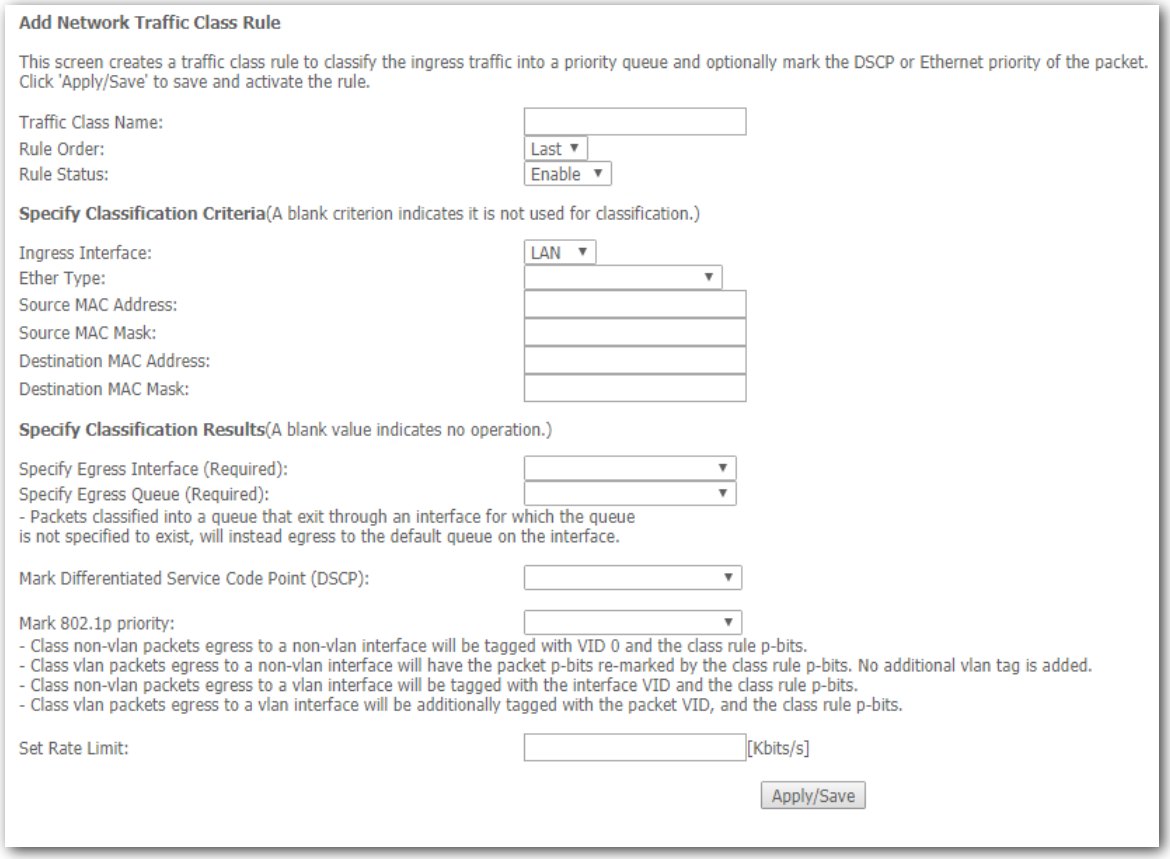
   When the **Ether Type** is set to **IP (0x800)** or **IPv6 (0x86DD)**, the following parameters need to be specified.

   - **Source/Destination IP Address[/Mask]**: If you do not specify the source/destination MAC address, you need to specify the source/destination IP Address for the classification.
   - **Differentiated Service Code Point (DSCP) Check**: Select a DSCP mark for the data streaming.
   - **Protocol**: Select a protocol.
   - **UDP/TCP Source/Destination Port**: Enter the port information for the data streaming.

Step 6 Set the required parameters of specify the classification results.

1. Specify Egress Interface (Required): Select an interface.
2. **Specify Egress Queue (Required)**: Select a queue to which packets are distributed (The queue should be set in **Advanced Setup** >**Quality of Service** > **QoS Queue** > **QoS Configuration** in advance.)
3. **Mark Differentiated Service Code Point (DSCP)**: Select a mark for the queue when the queue exits.
4. **Mark 802.1p priority**: Select an 802.1p priority mark for the data stream.
5. **Set Rate Limit**: Set the maximum transmission speed of the queue.

Step 7 Click **Apply/Save**.



----End

4.10.3 Example of configuring QoS

Network requirement

Company A has three kinds of network service: video conference, IP phone and online video business, and FTP/Web/Email service. To ensure the quality of these services, the QoS function is required.

Assume that:

- The company accesses the internet through phone cable.
- UDP ports for video conference: 1718, 1719, and 1720.

- UDP port for IP phone: 65060.
- Online video uses PPlive. UDP port for PPlive: 7100 and 7101.

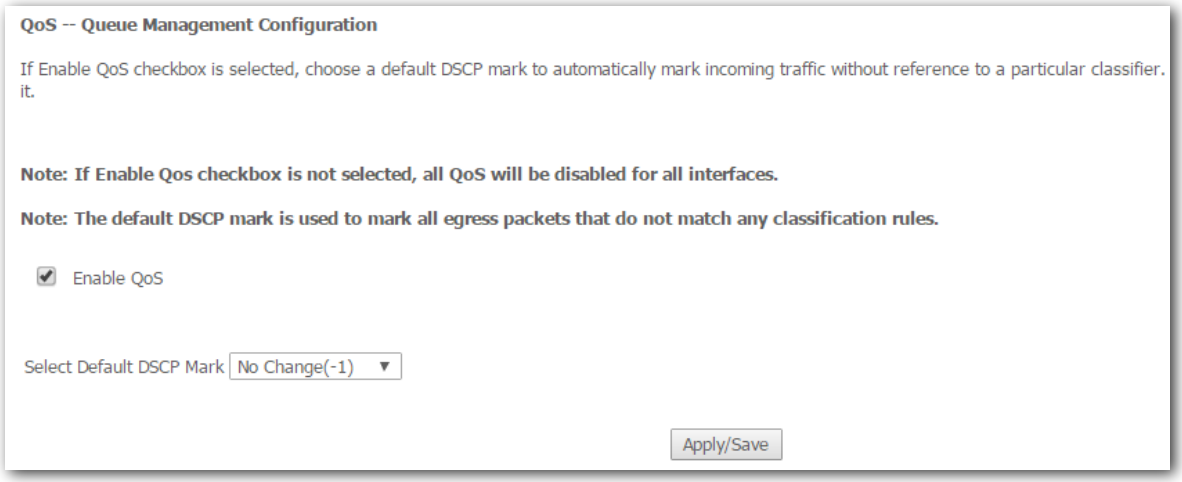
Solution

- Video Conference: High priority is required. We set the priority to 1.
- IP Phone and Online Video: Average priority is required. We set the priority to 2. The queue weight of IP phone (weight 20) should be higher than that of online video (weight 10).
- FTP/Web/Email Service: The priority is not required. We set the priority to 3. The queue weight of web service (weight 20) should be higher than that of FTP and Email service (weight 10).
- These services all use DT algorithm.
- Use WFQ algorithm for equitable scheduling.

Configuration procedure

Step 1 Enable QoS function.

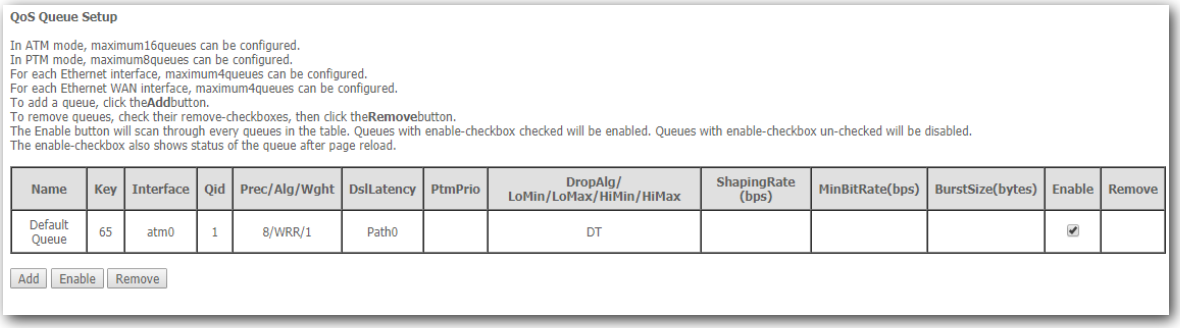
1. Choose **Advanced Setup** > **Quality of Service** to enter the configuration page.
2. Select **Enable QoS.**
3. Click **Apply/Save**.



Step 2 Configure QoS Queues.

1. Choose **Advanced Setup** > **Quality of Service** > **QoS Queue** > **Queue Configuration** to enter the configuration page.
2. Add a Video Conference queue.

   (1) Click **Add**.



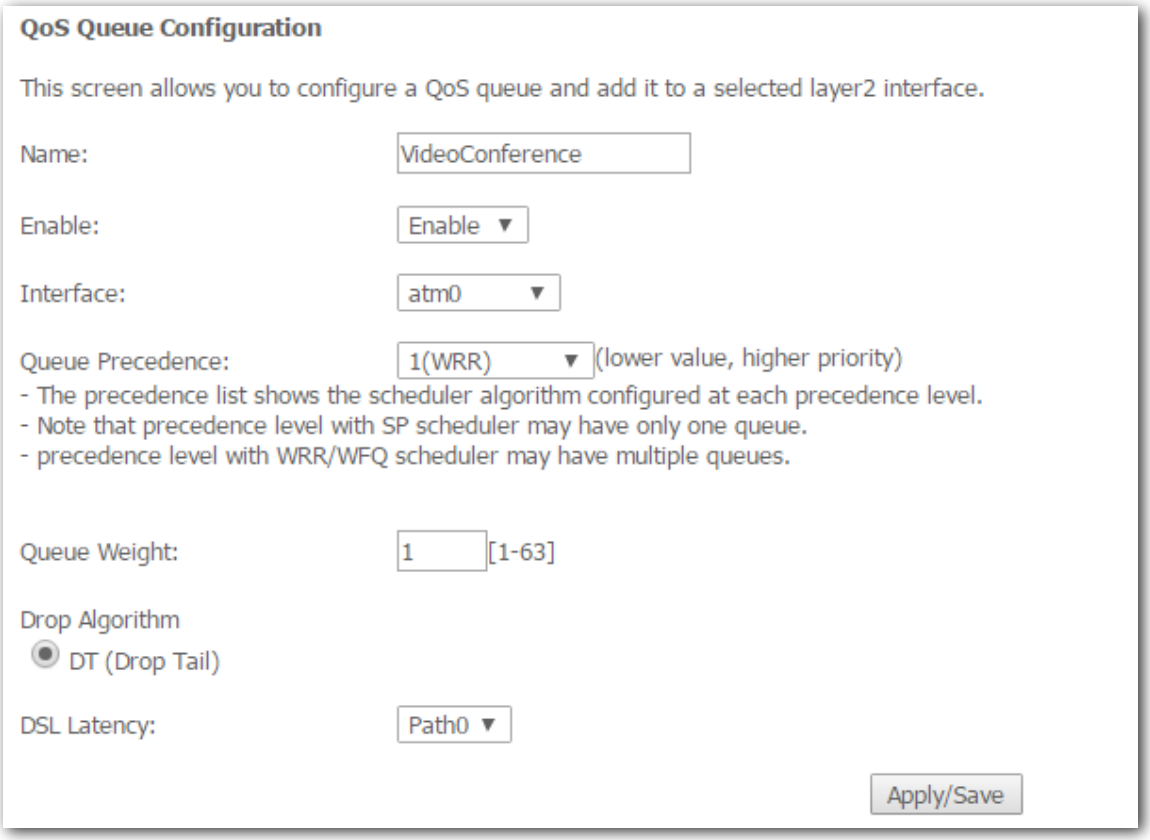
(2) **Name**: Enter a name for the queue.

(3) **Enable**: Select **Enable**.

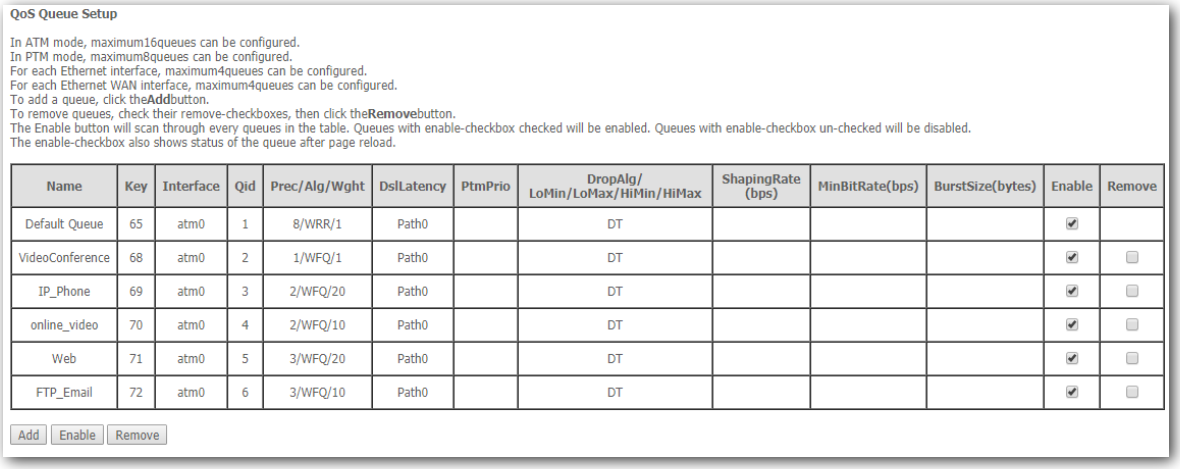
(4) **Interface**: Select **atm0**.

(5) **Queue Precedence**: Select **1 (WRR)**.

(6) Click **Apply/Save**.

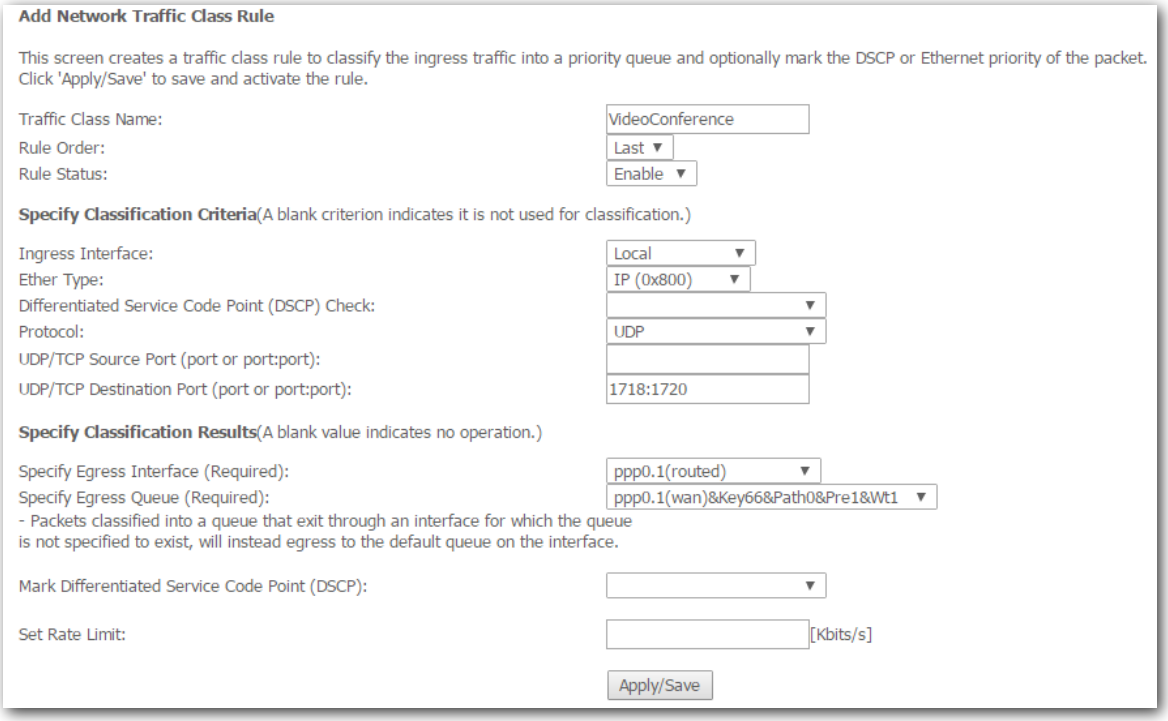


3. Perform the procedure in Step 2 to add IP phone, online video, web, FTP and Email queues.

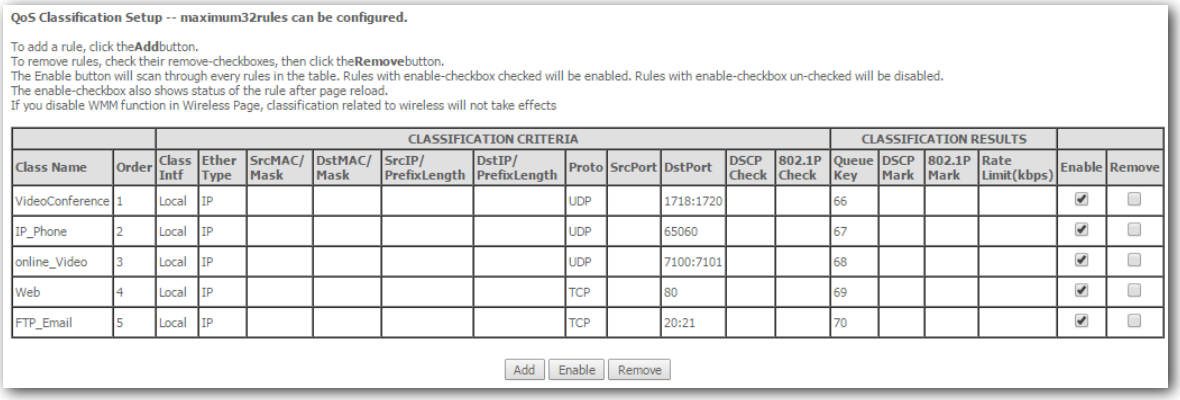


Step 3 Configure QoS classification.

1. Choose **Advanced Setup** > **Quality of Service** > **QoS Classification** to enter the configuration page, and click **Add**.
2. **Traffic Class Name**: Enter a name for the classification, which is **VideoConference** in this example.
3. **Rule Order/Rule Status**: Keep the default values.
4. **Ingress Interface**: Select **Local**.
5. **Ether Type**: Select **IP (0x800)**.
6. **Protocol/UDP/TCP Destination Port**: Select **UDP**, and set the **UDP/TCP Destination Port** to **1718:1720**.
7. **Specify Egress Interface (Required)**: Select the egress interface for the queue form the drop-down list.
8. **Specify Egress Queue (Required)**: Select the egress queue from the drop-down list.
9. Click **Apply/Save**.



Step 4 Perform the procedure in **Step 3** to add classifications for IP phone, online video, web, FTP and Email services.



----End

Verification

The network services of the company can be identified by the modem router. Video conference is higher than IP phone and online video. FTP/Web/Email service has the lowest priority. It ensures the efficient operation of the network when the network overload or congestion.

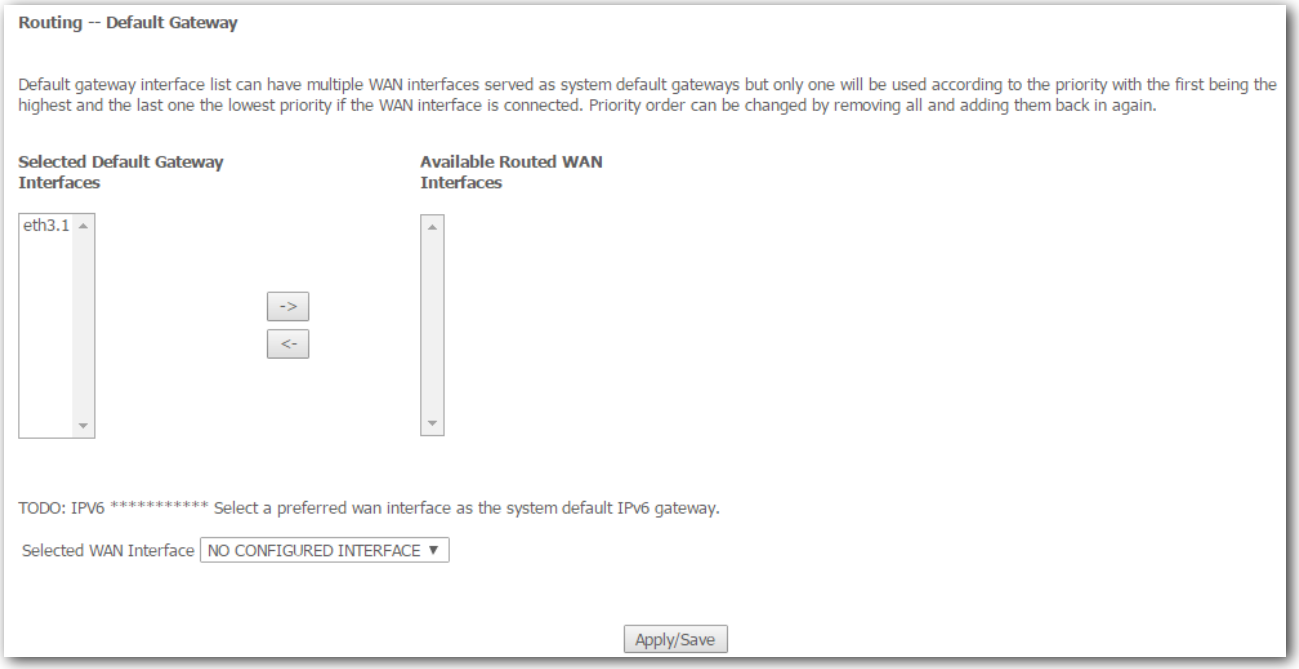
4.11 Routing

The Routing part includes default gateway and static route.

4.11.1 Default gateway

Default gateway interface list can contain multiple WAN interfaces serving as system default gateways.

Choose **Advanced Setup** > **Routing** > **Default Gateway** to enter the configuration page.



Selected Default Gateway Interfaces: It specifies the current effective default IPv4 gateway interface. If there are many interfaces in the list, the first one always takes effect.

Select a WAN interface and click the  button to move it to the Available Routed WAN Interfaces box.

Available Routed WAN Interfaces: It Specifies the current alternative default IPv4 gateway interface. Select a WAN interface and click the  button to add it to the **Selected Default Gateway Interfaces** box.

Selected WAN Interface: Select the current IPv6 gateway interface in effect from the drop-down list.

4.11.2 Static route

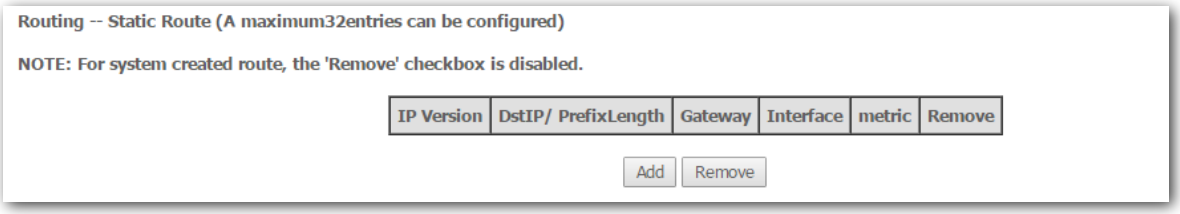
4.11.2.1 Overview

Static Route is used to select the best route for delivering data from a source address to a destination address. A static route is a manually configured route, which is simple, efficient, and

reliable. Appropriate static routes help reduce the number of route selection problems and reduce route selection load, increasing the packet forwarding speed.

4.11.2.2 Adding a static route

Step 1 Choose **Advanced Setup** > **Routing** > **Static Route** to enter the configuration page, and click **Add**.



Step 2 **IP Version**: Select an IP protocol version for the static route, IPv4 or IPv6.

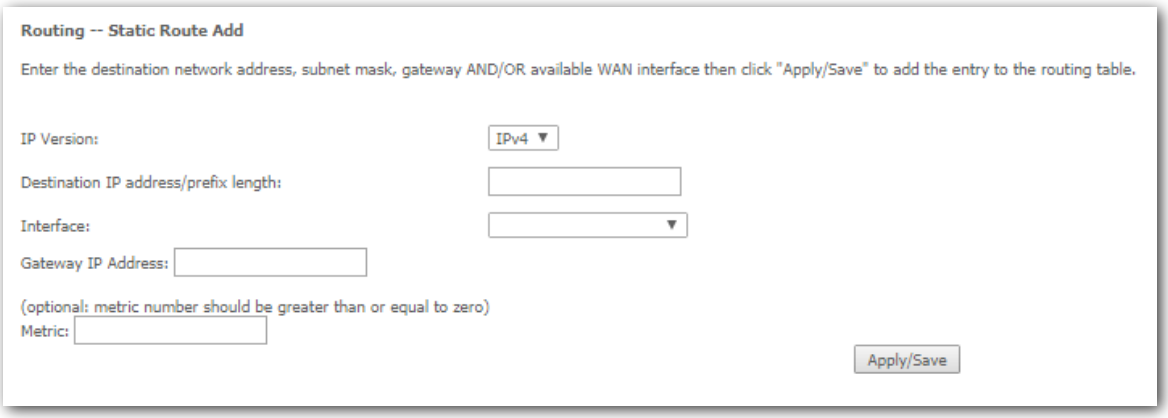
Step 3 **Destination IP address/prefix length**: Set an IP address of a specified host or a specified network.

For example, if you want to set the **Destination IP address/prefix length** to a specified host, assume that the IP address of the host is **1.2.3.4**, you can set it to **1.2.3.4/32**. If you want to set the **Destination IP address/prefix length** to all hosts in a specified network, assume that the network is **2.2.3.3/255.255.0.0**, you can set it to **2.2.0.0/16** which represents all hosts whose IP address start with **2.2**.

Step 4 **Interface**: Select an interface for the outgoing data.

Step 5 **Gateway IP Address**: set the gateway IP address to the IP address of the next-hop router.

Step 6 (**Optional: metric number should be greater than or equal to zero**) **Metric**: Set a metric value for the static route. A smaller number indicates a higher priority.



----End

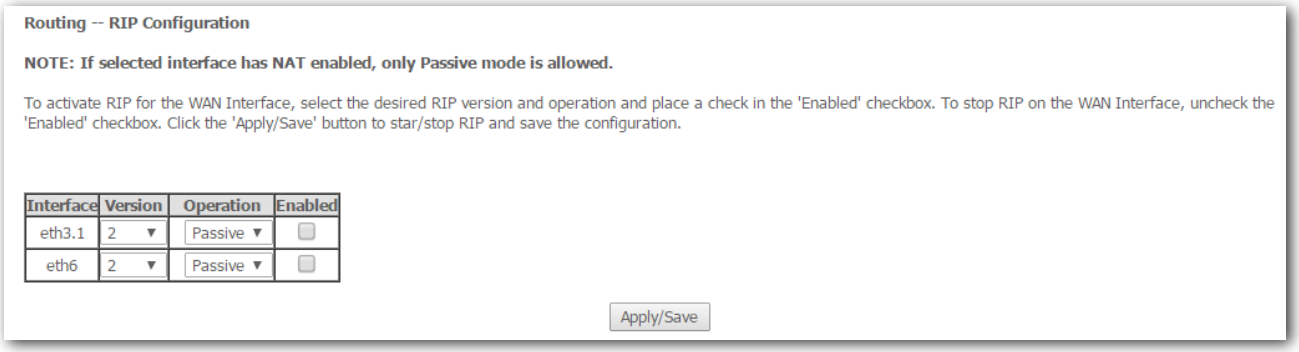
TIP

- Destination IP address cannot be in the same IP network segment as that of WAN or LAN IP address of the modem router.
- When the interface is set to a WAN interface, the gateway IP address should be in the same network segment as that of that of WAN port. When the interface is set to a LAN interface, the gateway IP address should be in the same network segment as that of the LAN port.
- If you are not familiar with static IP, you'd better not configure this function. Inappropriate static routes may cause fault to the network.

4.11.3 RIP

RIP (Routing Information Protocol) is one of the oldest distance-vector routing protocols which employ the hop count as a routing metric. RIP prevents routing loops by implementing a limit on the number of hops allowed in a path from source to destination. The maximum number of hops allowed for RIP is 15, which limits the size of networks that RIP can support. A hop count of 16 is considered an infinite distance and the route is considered unreachable.

Choose **Advanced Setup** > **Routing** > **RIP** to enter the configuration page.



Parameter description

Parameter	Description
Interface	It specifies the WAN interfaces you add in a WAN service with NAT disabled.
Version	It specifies two RIP versions the modem router supports: RIPv1 and RIPv2. **RIP 1**: The periodic routing updates do not carry subnet information. **RIP 2**: The periodic routing updates carry subnet information.
Operation	**Active**: The WAN interface sends and receives RIP packets. **Passive**: The WAN interface only receives RIP packets.
Enable	Select to enable the RIP function of this WAN interface.

Apply/Save	Click this button to apply the settings.

NOTE

- Only the WAN service with NAT disabled is displayed in the list.
- After configuration, reboot the modem router for the settings to take effect.

4.12 DNS

The DNS part includes DNS server and Dynamic DNS.

4.12.1 DNS server

4.12.1.1 Overview

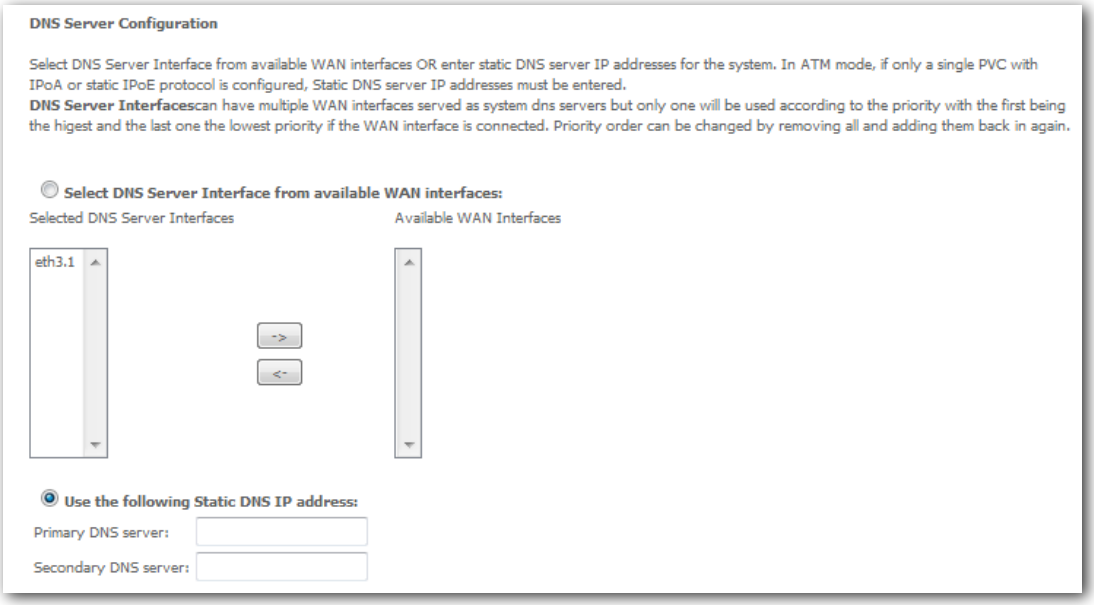
The DNS server translates domain names to IP addresses. It is used to look up site addresses based on their names. It allows you to set the DNS server information manually.

4.12.1.2 Configuring IPv4 DNS server manually

Step 1 Choose **Advanced Setup > DNS > DNS Server** to enter the configuration page.

Step 2 Select the **Use the following Static DNS IP address** checkbox and enter static DNS server IP addresses for the system.

Step 3 Click **Apply/Save**.



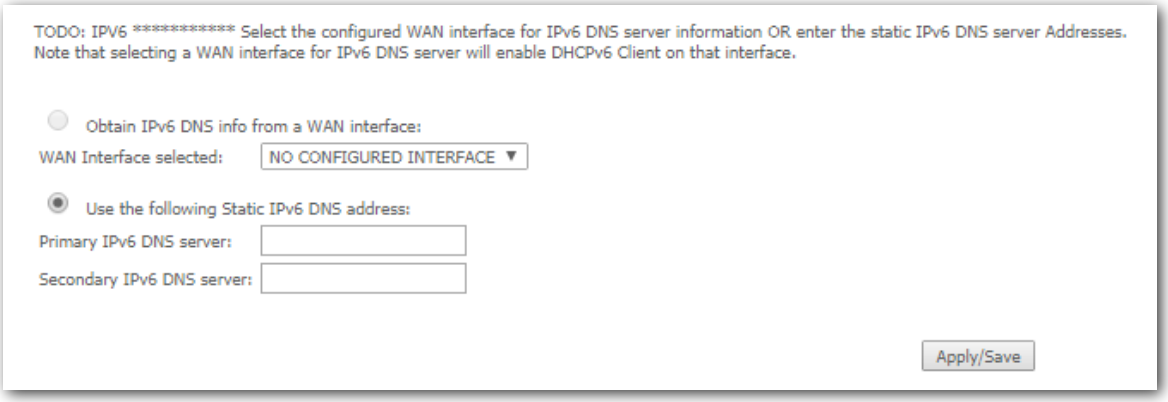
----End

4.12.1.3 Configuring IPv6 DNS server manually

Step 1 Choose **Advanced Setup > DNS > DNS Server** to enter the configuration page.

Step 2 Select **Use the following Static IPv6 DNS address** and enter the static IPv6 DNS server Addresses.

Step 3 Click **Apply/Save**.



----End

NOTE

- In ATM mode, static DNS server IP addresses must be entered if only single PVC with IPoA or static IPoE protocol is configured.
- If a wrong DNS server address is configured, webpages may not be accessible.

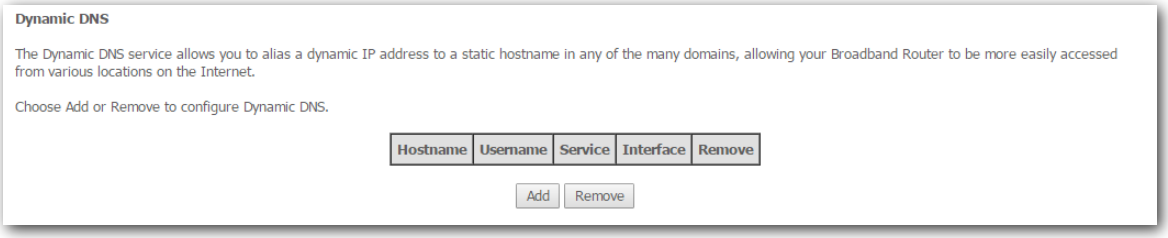
4.12.2 Dynamic DNS

4.12.2.1 Overview

DDNS maps the WAN IP address (changeable public IP address) of the router to a domain name for dynamic domain name resolution. This ensures proper operation of functions that involve the WAN IP address of the modem router, such as the remote management and virtual server functions.

4.12.2.2 Configuring the DDNS function

Step 1 Choose **Advanced Setup > DNS > Dynamic DNS** to enter the configuration page, and click **Add**.



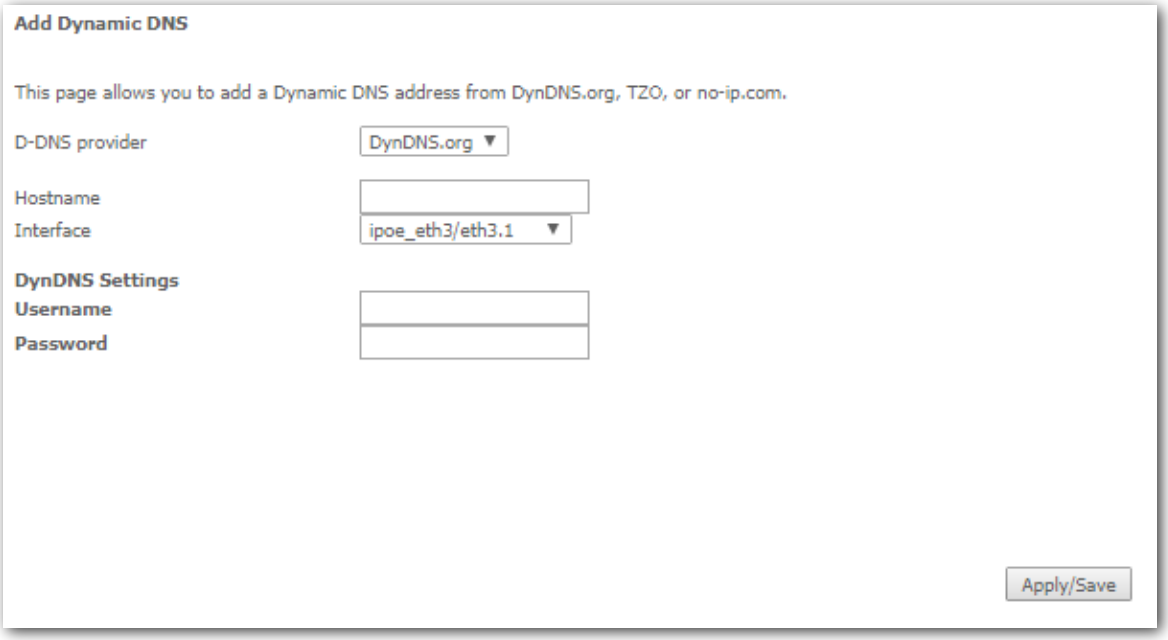
Step 2 **D-DNS provider**: Select a DDNS service provider. The supported service providers include dyn.com, TZO, and NO-IP.

Step 3 **Hostname**: Set the DDNS domain name registered on a DDNS service provider's website.

Step 4 **Interface**: Select a WAN service.

Step 5 **Username/Password**: Set the user name and password registered on a DDNS service provider's website for logging in to the DDNS service.

Step 6 Click **Apply/Save**.



----End

Parameter description

Parameter	Description
D-DNS provider	It specifies a DDNS provider that can map changeable IP addresses to one static domain name. The modem router supports the DynDNS.org, TZO and no-ip.com DDNS providers.
Hostname	It specifies the domain name of the DNS server registered on a DDNS service provider's website.
Interface	It specifies the interface of the WAN service.
Username	It specifies the login user name of a DDNS provider. You can sign up on a DDNS provider’s website to obtain a login user name.
Password	It specifies the login password for a user name assigned by a DDNS provider. You are asked to set a login password when you sign up with the provider.

4.12.2.3 Example of configuring the DDNS function

Networking requirement

An enterprise uses V1200 to deploy its WLAN network. The modem router is connected to the internet. Now the enterprise establishes a web server and wants to be accessed by internet users. Thus when employees are not in the enterprise, they can also access the web server.

Solution

You can use virtual servers function to meet this requirement. In addition, to enable internet users to access the web server using a static domain name instead of a changeable IP address, enable the DDNS function.

Assume that:

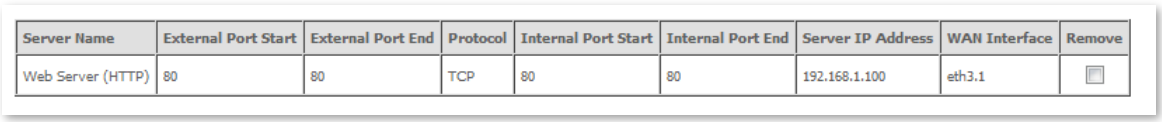
- External port is 80.
- IP address of the web server is 192.168.1.100.
- Your DDNS provider: no-ip
- Registered domain name: tenda.ddns.net
- Registered user name/Password: tenda/tenda

Configuration procedure

Step 1 Configure the virtual servers function.

1. Choose **Advanced Setup > NAT > Virtual Servers** to access the configuration page, and click **Add**.
2. Select an interface, which is **ipoe_eth3/eth3.1** in this example.
3. **Select a Service**: Select **Web Server (HTTP)** from the drop-down list.
4. Set **Server IP Address** to **192.168.1.100**.

5. Set **Internal Port Start** to **80**.
6. Set **External Port Start** to **80**.
7. Set **Protocol** to **TCP/UDP.**



Server Name	External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Server IP Address	WAN Interface	Remove
Web Server (HTTP)	80	80	TCP	80	80	192.168.1.100	eth3.1	☐

8. Click **Apply/Save**.

Step 2 Configure the DDNS function.

1. Choose **Advanced Setup > DNS > Dynamic DNS** to enter the configuration page, and click **Add**.
2. **D-DNS provider**: Select a DDNS service provider, which is **no-ip** in this example.
3. Hostname: Set the DDNS domain name registered on a DDNS service provider's website, which is **tenda.ddns.net**.
4. Interface: Select a WAN service, which is **ipoe_eth3/eth3.1** in this example. It should be the same as the interface set in the virtual servers function.
5. Username/Password: Set the user name and password registered on a DDNS service provider's website for logging in to the DDNS service.
6. Click **Apply/Save**.

Hostname	Username	Service	Interface	Remove
tenda.ddns.net	tenda	noip	eth3.1	☐

Add Remove

----End

Verification

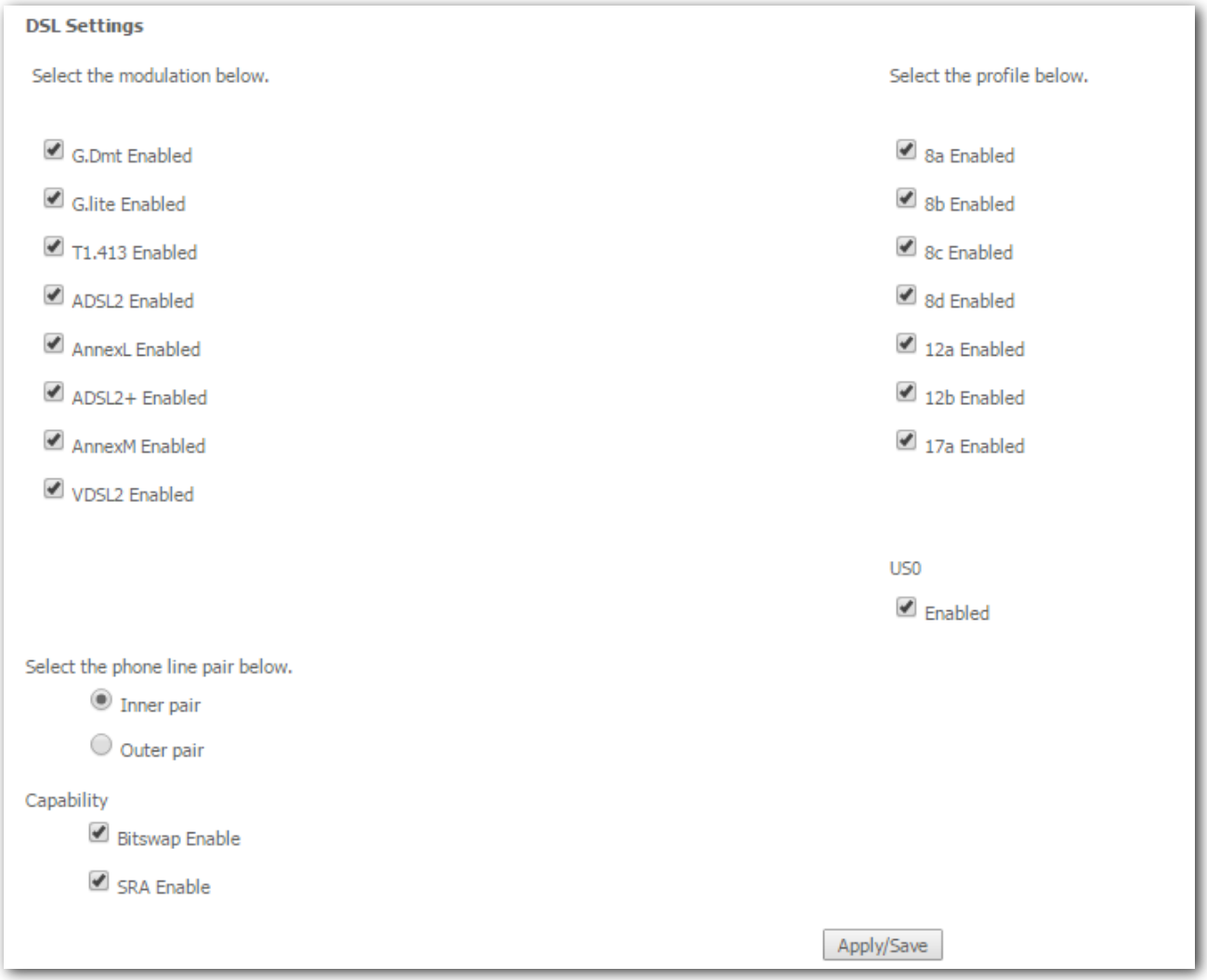
Verify that internet users can access the local web server at http://tenda.ddns.net:80.

4.13 DSL

This page allows you to configure DSL parameters. DSL parameters configuration should be based on the parameters of the upstream device. Final parameters can be checked on Statistics-xDSL page. Wrong configurations may fail your Internet access.

Change them only when you are instructed by your ISP or our technical staff when your modem router fails to negotiate with ISP in DSL (ATM) mode. If the DSL LED indicator of the device keeps blinking, DSL negotiation may fail.

Choose **Advanced Setup** > **DSL** to enter the configuration page.



Parameter description

Parameter	Description
G.Dmt	It specifies G992.1. The maximum uploading/downloading rate is 1.3 Mbps/8 Mbps. When it is used, POTS splitter is required for clients.
G.lite	It specifies G992.2. The maximum uploading/downloading rate is 512 Kbps/1.5 Mbps. When it is used, POTS splitter is NOT required for clients.

Parameter	Description
T1.413	It specifies ANSI_T1.413. Based on DMT standard, the maximum uploading/downloading rate is 1.5 Mbps/15 Mbps. When it is used, POTS splitter is required for clients.
ADSL2	It specifies G992.3. The maximum uploading/downloading rate is 1 Mbps/12 Mbps.
AnnexL	It specifies reach Extended ADSL2. When the clients are far away from the modem router, this mode can improve the coverage. The maximum uploading/downloading rate is 1.5 Mbps/15 Mbps.
ADSL2+	It specifies G992.5. The maximum uploading/downloading rate is 1 Mbps/24 Mbps.
AnnexM	This mode is compatible with the upstreaming bandwidth extension mode and implemented based on G992.3 ADSL2 and G992.5 ADSL2+. In this mode, the upload rate of ADSL2+ is increased from 1 Mbps to 2.5 Mbps. AnnexM takes effect only when ADSL2, AnnexL or ADSL2+ is selected.
VDSL2	It specifies G993.2. The maximum uploading/downloading transmission rate of this device is 50 Mbps/80 Mbps.
Phone Line Pair	The phone line pair is used to work with the DSLAM. The default is recommended.
Bitswap	Bitswap can improve the ADSL adaptation capacity and the stability of ADSL line in the dynamic environment.
SRA	SRA (Seamless Rate Adaptation) is a dynamic rate adaptation protocol, really achieving ADSL rate adaptation. It dynamically adjust bit and power assignment to make the noise margin of the line within a suitable range when the ADSL line changes in running process, ensuring the stability of the line.
8a/8b/8c/8d/12a/12b/17a	These profiles are defined by the VDSL2 standard which enables the modem router to support CO, FTTC applications and so on, reducing the complexity and cost of the product development.
US0	It specifies a DSL frequency spectrum used to improve the negotiation rate.

4.14 UPnP

4.14.1 Overview

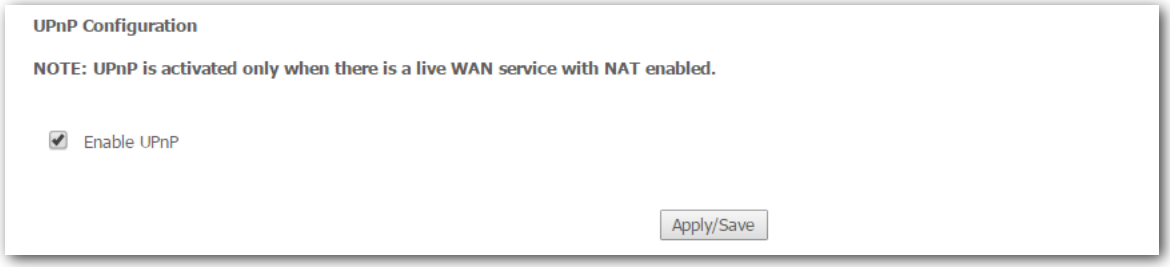
After the UPnP function is enabled, it can automatically enable ports for UPnP-supported programs, such as P2P and gaming software, in the internal network to improve your network experience.

4.14.2 Configuring the UPnP function

Step 1 Choose **Advanced Setup** > **UPnP** to enter the configuration page.

Step 2 Check the **Enable UPnP** option.

Step 3 Click **Apply/Save.**



----End

4.15 Storage service

4.15.1 Overview

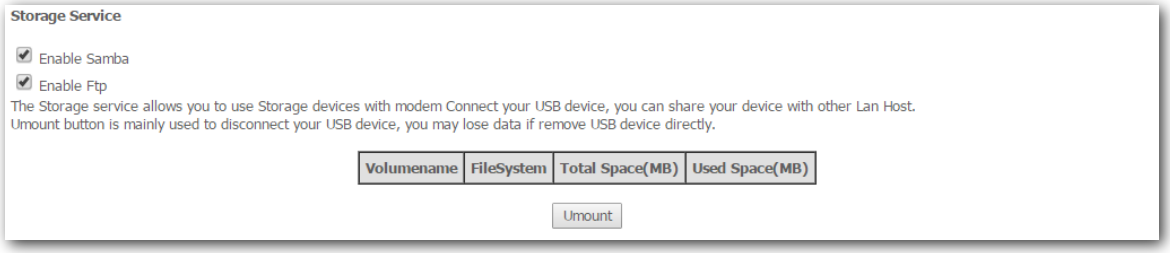
The modem router can automatically recognize a USB storage device connected to the USB port of the modem router. The device can be accessed over the LAN through FTP or Samba.

4.15.2 Enabling the Samba and FTP servers

Step 1 Choose **Advanced Setup** > **Storage Service** to enter the configuration page.

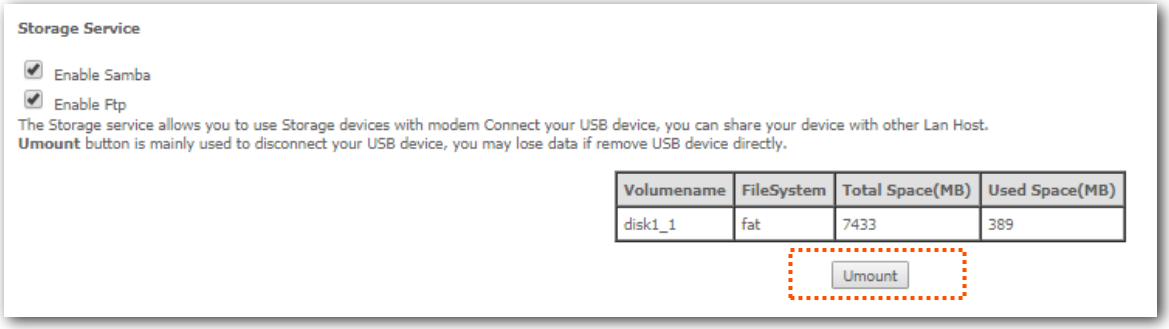
Step 2 Select **Enable Samba**.

Step 3 Select **Enable FTP**.



----End

Before you physically disconnect a USB device from the USB port on the modem router, please click **Umount** to safely remove USB device.



4.15.3 Example of configuring the storage service function

4.15.3.1 Network requirement

A V1200 modem router is used to set up a LAN in an apartment. Users in the apartment need to share some pictures and videos over the LAN through FTP or Samba.

4.15.3.2 Solution

Connect a USB storage device with the pictures and videos to the USB port of the modem router. The modem router can function as a file server.

Assume that:
The server address is **192.168.1.1** (the LAN IP address of the modem router).

4.15.3.3 Configuration procedure

Step 1 Insert the USB storage device (compliant with USBV2.0 port) to the USB port of the modem router.

Step 2 Choose **Advanced Setup** > **Storage Service** to enter the configuration page.

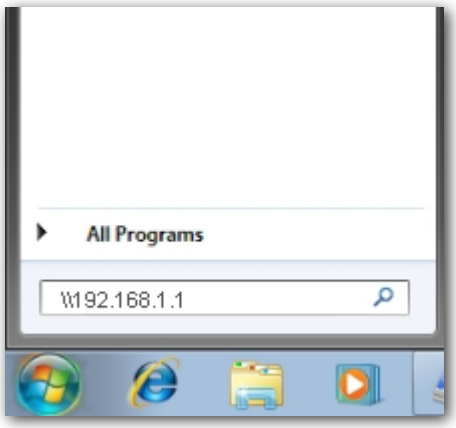
Step 3 Check the **Enable Samba** and **Enable Ftp** options.

----End

4.15.3.4 Verification

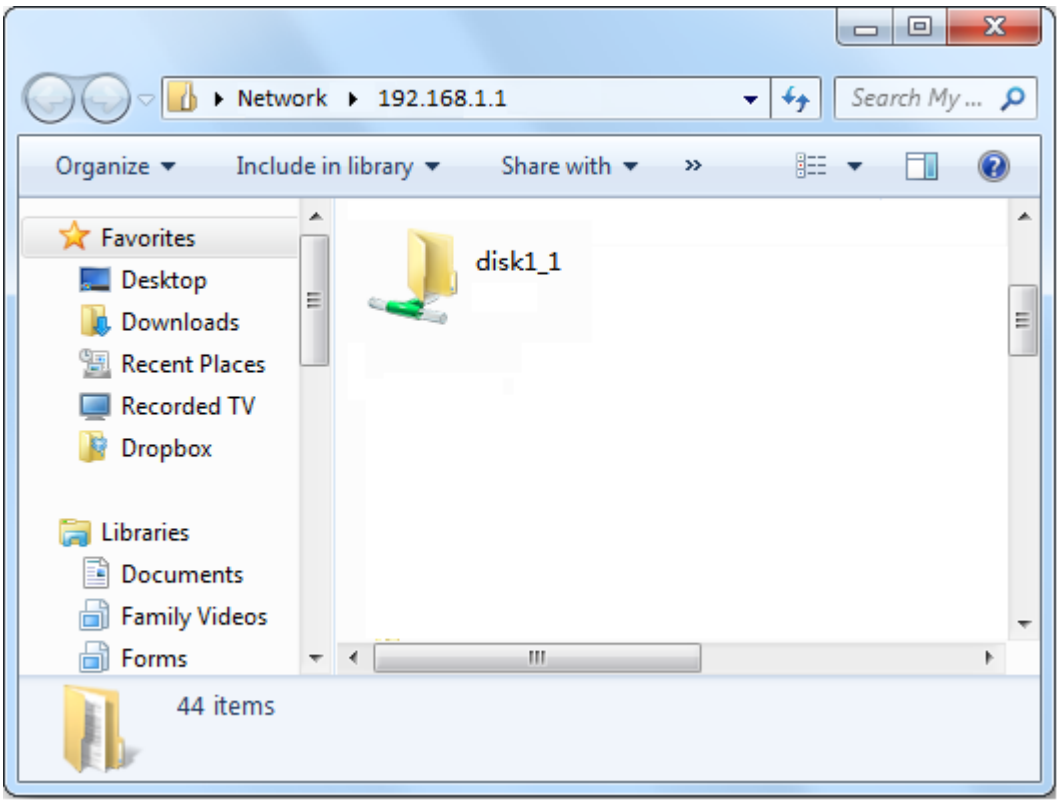
To access the USB storage device over the LAN through Samba, perform the following procedure: (OS example: Windows 7)

Step 1 Click  and enter **\\192.168.1.1**.



Step 2 Press **Enter** on the keyboard.

Step 3 Double-click the **disk1_1** folder.

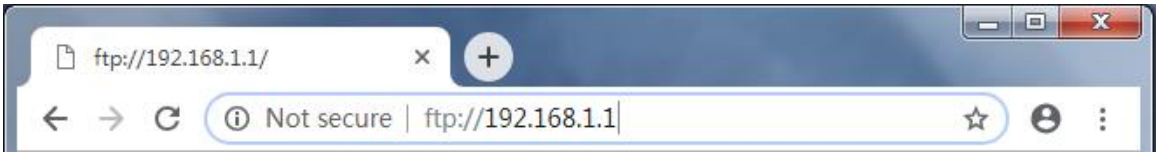


----End

To access the USB storage device over the LAN through FTP, perform the following procedure: (Browser example: Google Chrome)

Step 1 Start the Google Chrome, enter **ftp://192.168.1.1** in the address bar.

Step 2 Press **Enter** on the keyboard.



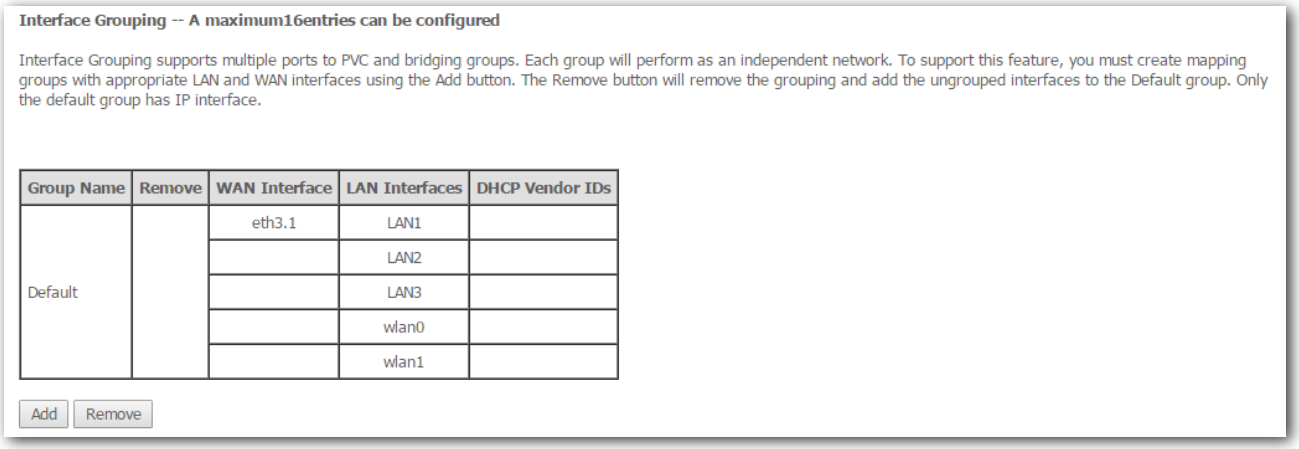
----End

4.16 Interface grouping

4.16.1 Overview

If you create multiple WAN services (PPPoE and other WAN service types), and want a LAN or WLAN to use a WAN service exclusively, you can use this function to map the LAN or WLAN onto the WAN service. Each group forms an independent network.

Choose **Advanced Setup** > **Interface Grouping** to enter the configuration page.



4.16.2 Example of configuring interface grouping

Assume that:

- The modem router accesses the internet through port 4 using an Ethernet cable.
- You create two WAN services:
  WAN1: WAN service type is set to **Bridging.**
  WAN2: WAN IP settings are set to **IP over Ethernet** and **Obtain an IP address automatically.**
- You want all wireless devices to use **IP over Ethernet** WAN service, and all wired device use **bridging** WAN service.

To create an interface group, perform the following procedure:

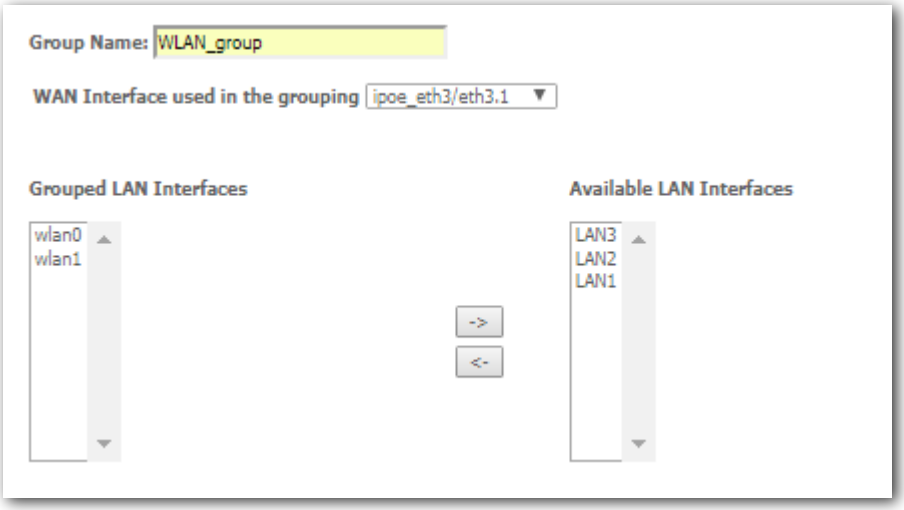
Step 1 Choose **Advanced Setup** > **Interface Grouping** to enter the configuration page, and click **Add**.

Step 2 Enter a group name, which is **WLAN_group** in this example.

Step 3 Select a WAN service you create, which is **ipoe_LAN3/eth3.1** in this example.

Step 4 Select an interface in **Available LAN Interfaces** list and click 

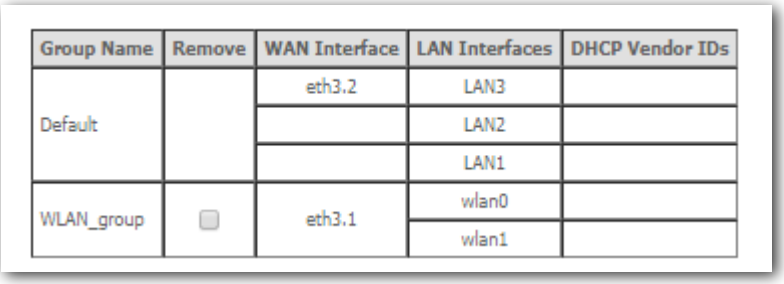
button to move it to **Grouped LAN Interfaces** list. In this example, all wireless interfaces are moved to **Grouped LAN Interfaces** list.



Step 5 Click **Apply/Save**.

----End

After the configuration takes effect, all wireless interfaces belong to **WLAN_group**, and use the WAN service **IP over Ethernet** (eth3.1). All wired interfaces (port 1, 2, and 3) belong to the default group, and use the WAN service **Bridging** (eth3.2).



Group Name	Remove	WAN Interface	LAN Interfaces	DHCP Vendor IDs
Default		eth3.2	LAN3	
			LAN2	
			LAN1	
WLAN_group	☐	eth3.1	wlan0	
			wlan1	

TIP

- If you create many groups, the LAN IP address used by the Default group members is 192.168.1.1, the LAN IP address of the second group member is 192.168.2.1, and so on.
- If the IPTV function is enabled, the modem router automatically creates an interface group named IPTV. If it is deleted, the IPTV function is not available.

4.17 IP tunnel

An IP tunnel is an Internet Protocol (IP) network communications channel between two networks. It is used to transport another network protocol by encapsulating one IP packet in another IP packet. To encapsulate an IP packet in another IP packet, an outer header is added with source IP, the entry point of the tunnel and the destination point, the exit point of the tunnel. While doing this, the inner packet is unmodified.

The modem router provides two IP tunnels: IPv6inIPv4 and IPv4inIPv6.

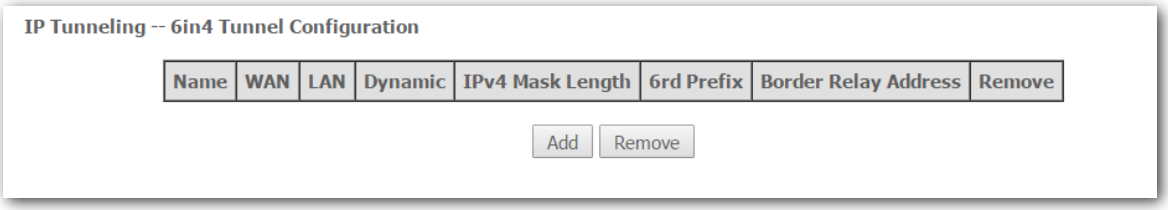
4.17.1 IPv6inIPv4

4.17.1.1 Overview

IPv6inIPv4 is an internet transition mechanism for migrating from Internet Protocol version 4 (IPv4) to IPv6. IPv6inIPv4 uses tunneling to encapsulate IPv6 traffic over explicitly-configured IPv4 links.

4.17.1.2 Configuring the IPv6inIPv4 tunnel

Step 1 Choose **Advanced Setup > IP Tunnel > IPv6inIPv4** to enter the configuration page, and click **Add**.



Step 2 **Tunnel Name**: Specify a name for the tunnel you set up.

Step 3 **Mechanism**: Set the 6in4 tunnel implement mechanism. The modem router only supports 6RD.

Step 4 **Associated WAN Interface**: Select an associated WAN interface for the 6in4 tunnel. The WAN interface is required to use IPv4 protocol only.

Step 5 **Associated LAN Interface**: Select the LAN interface uses IPv6.

Step 6 Select a type of obtaining border relay address.

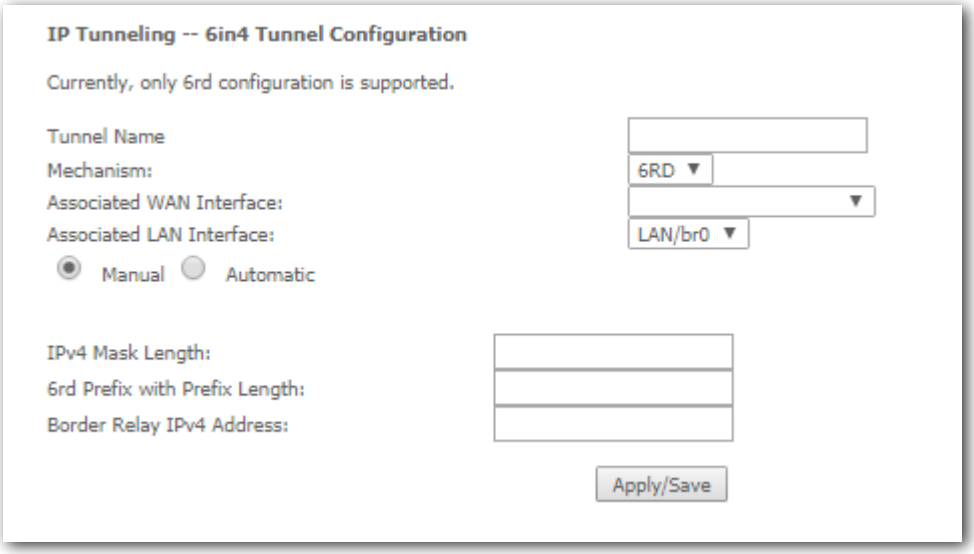
- **Manual**: Manually set a 6RD-BR address.
- **Automatic**: Automatically obtain a 6RD-BR address from BR. If you select **Automatic**, skip step 7 to 9.

Step 7 **IPv4 Mask Length**: Enter the IPv4 mask length.

Step 8 **6rd Prefix with Prefix Length**: Enter the 6RD prefix with prefix length.

Step 9 **Border Relay IPv4 Address**: Enter the border relay IPv4 address of WAN interface.

Step 10 Click **Apply/Save**.



----End

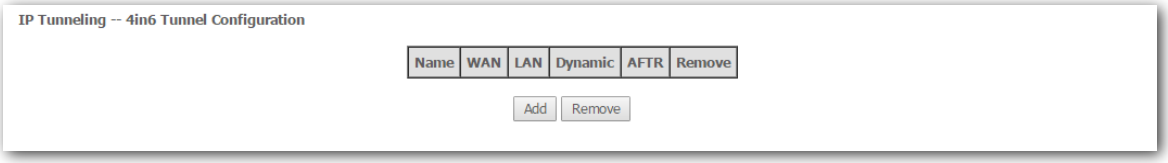
4.17.2 IPv4inIPv6

4.17.2.1 Overview

IPv4inIPv6 is an Internet interoperation mechanism allowing Internet Protocol version 4 (IPv4) to be used in an IPv6 only network. 4in6 uses tunneling to encapsulate IPv4 traffic over configured IPv6 tunnels.

4.17.2.2 Configuring the IPv4inIPv6 tunnel

Step 1 Choose **Advanced Setup > IP Tunnel > IPv4inIPv6** to enter the configuration page, and click **Add**.



Step 2 **Tunnel Name**: Enter a tunnel name.

Step 3 **Mechanism**: Select the 4in6 tunnel implement mechanism. The modem router only supports DS-Lite.

Step 4 **Associated WAN Interface**: Select an associated WAN interface for the 4in6 tunnel. The WAN interface is required to use IPv6 protocol only.

Step 5 **Associated LAN Interface**: Select the LAN interface uses IPv4.

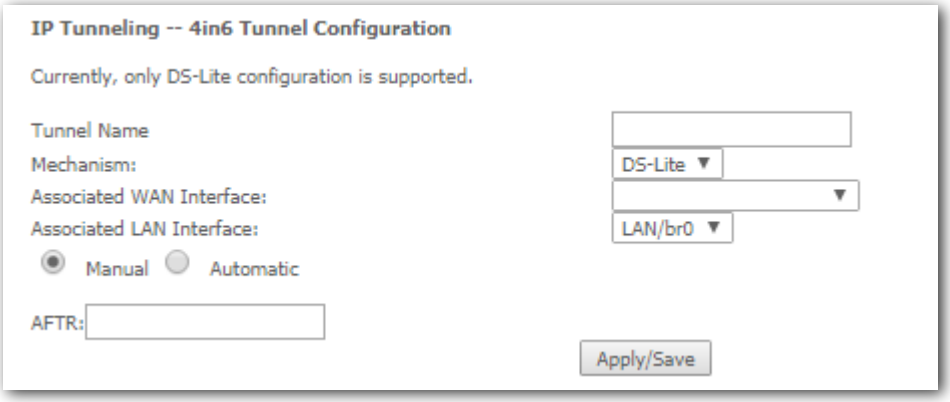
Step 6 Select a type of obtaining AFTR IPv6 address.

- **Manual**: Manually set an AFTR IPv6 address.

- **Automatic**: The modem router obtains the AFTR name through DHCPv6 option, and translates the AFTR name to specific IPv6 IP address through DNS. If you select **Automatic**, skip step 7.

Step 7 **AFTR**: Set the IPv6 AFTR address.

Step 8 Click **Apply/Save**.



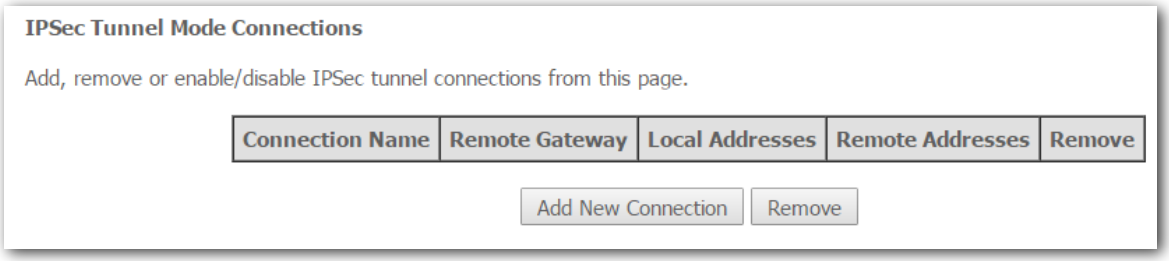
----End

4.18 IPSec

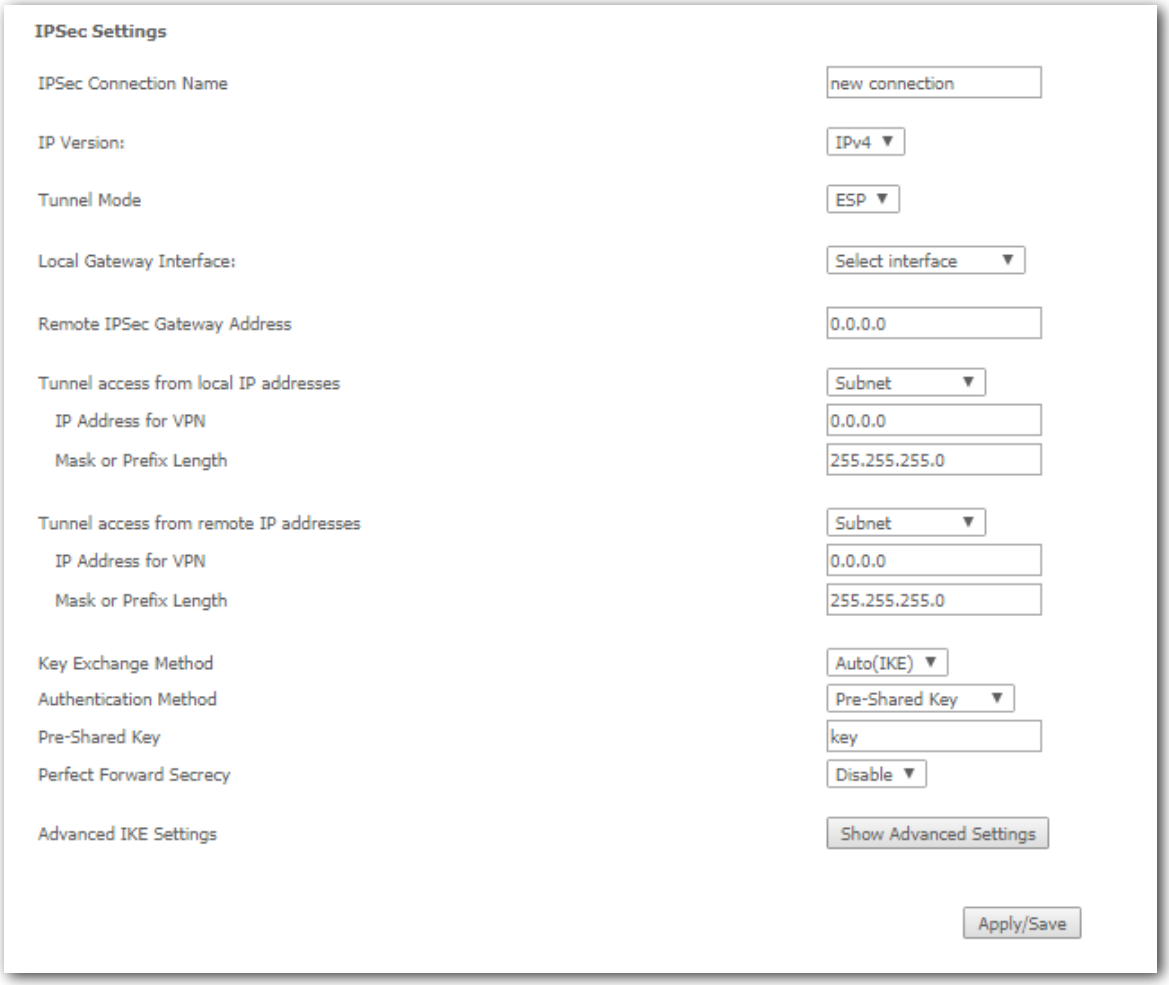
4.18.1 Overview

Internet Protocol Security (IPSec) is a network protocol suite that authenticates and encrypts the packets of data sent over a network. IPsec can protect data flows between a pair of hosts (host-to-host), between a pair of security gateways (network-to-network), or between a security gateway and a host (network-to-host). IPsec uses cryptographic security services to protect communications over Internet Protocol (IP) networks.

Choose **Advanced Setup** > **IPSec** to enter the configuration page.



Click **Add New Connection** to create a new connection.



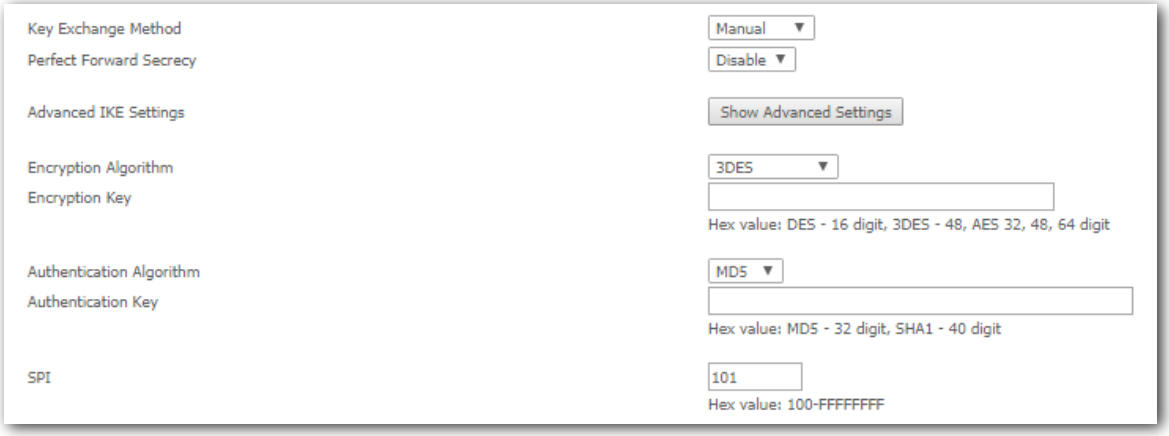
Parameter description

Parameter	Description
IPSec Connection Name	It specifies a name for the IPSec connection.
IP Version	Select an IP version to which the rule applies.
Tunnel Mode	It specifies tunnel protocol the rule uses. • **ESP**: It specifies Encapsulating Security Payload. This protocol is used to test data integrity and encryption. Even the encrypted packet is intercepted, the third party also cannot obtain correct message. • **AH**: It specifies Authentication Header. This protocol is used to test data integrity. If a packet is tampered during transmission, the receiver discards the packet when it performs data integrity test.
Local Gateway Interface	Select a WAN service for the rule.
Remote IPSec Gateway Address	It specifies the WAN IP address or domain name of the peer device enabled IPSec function.
Tunnel access from local IP addresses	• **Subnet**: When **Subnet** is selected, you can specify any network address on LAN and the corresponding subnet mask. • **Single Address**: When **Single Address** is selected, you can only specify an IP address of a local host.
IP Address for VPN	It specifies the IP address of a local host.
Mask or Prefix Length	It specifies the subnet mask of the LAN you specified in **IP Address for VPN**.
Tunnel access from remote IP addresses	• **Subnet**: When **Subnet** is selected, you can specify all hosts on the peer network. • **Single Address**: When **Single Address** is selected, you can only specify one host on the peer network.
IP Address for VPN	It specifies IP address of a host on peer network.
Mask or Prefix Length	It specifies LAN IP network segment of the peer router.
Key Exchange Method	It specifies the key negotiation method. • **Auto(IKE)**: When **Auto(IKE)** is selected, the negotiation process is divided into two stages: **Stage 1**: Both communication sides exchange verification algorithm, encryption algorithm and so on security protocols, and establish an ISAKMP (Internet Security Association and Key Management Protocol) SA (Security Association) which is used to exchange more information in stage 2.

Parameter	Description
	Stage 2: Both communication sides take ISAKMP SA as IPSec security protocol parameters, and create IPSec SA which is used to secure data transmission. • **Manual**: Refer to Key Exchange Method-Manual.

Key Exchange Method-Manual

When **Manual** is selected, the following parameters appear.



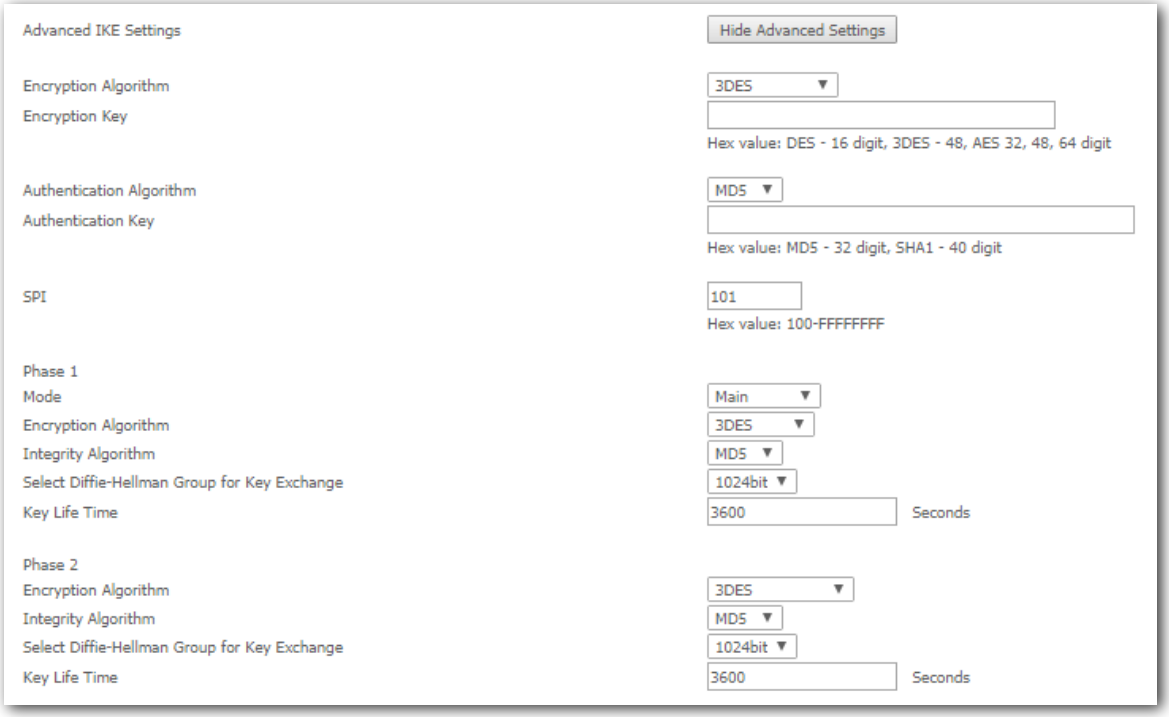
Parameter description

Parameter	Description
Perfect Forward Secrecy	It specifies the property that ensures that a session key derived from a set of long-term public and private keys will not be compromised if one of the (long-term) private keys is compromised in the future. Select Enable or Disable according to your needs. It is disabled by default.
Advanced IKE Settings	Refer to Advanced IKE Settings.
Encryption Algorithm	When the Tunnel Mode is set to ESP, you can configure ESP encryption algorithm. The modem router supports the following encryption algorithm: • **DES**: It specifies Data Encryption Standard. • **3DES**: It specifies Triple DES. • **AES(aes-cbc)**: It specifies Advanced Encryption Standard.
Encryption Key	It specifies an encryption key. Both communication sides should set it to the same one.
Authentication Algorithm	When the Tunnel Mode is set to AH, you can configure AH authentication algorithm. The modem router supports the following authentication algorithm: • **MD5**: It specifies Message Digest Algorithm. The system generates a 128 bit

Parameter	Description
	message digest for a message. • **SHA1**: It specifies Secure Hash Algorithm. The system generates a 128 bit message digest for a message.
Authentication Key	It specifies an authentication key. Both communication sides should set it to the same one.
SPI	It specifies Security Parameter Index. It is an identification tag added to the header while using IPsec for tunneling the IP traffic. This tag helps the kernel discern between two traffic streams where different encryption rules and algorithms may be in use.

Advanced IKE Settings

When the Show Advanced Settings button is clicked, the following parameters appear.



Parameter description

Parameter	Description
Mode	The mode should be set to the same one as that of the peer device. • **Main**: This mode provides identity protection, and is applicable to high requirement situation for identity protection. • **Aggressive**: This mode does not provide identity protection, and is applicable to not high requirement situation for identity protection.

Parameter	Description
Encryption Algorithm	• **DES**: It specifies Data Encryption Standard. • **3DES**: It specifies Triple DES. • **AES**: It specifies Advanced Encryption Standard. AES - 128/192/256 indicates that the key length is 128/192/256 bit.
Integrity Algorithm	• **MD5**: It specifies Message Digest Algorithm. The system generates a 128 bit message digest for a message. • **SHA1**: It specifies Secure Hash Algorithm. The system generates a 128 bit message digest for a message.
Select Diffie-Hellman Group for Key Exchange	It specifies the group information of Diffie-Hellman algorithm. It is used to generate session key encrypted IKE tunnel.
Key Life Time	It specifies the life time of IPSec SA.

4.18.2 Configuring the IPSec function

Step 1 Choose **Advanced Setup** > **IPSec** to enter the configuration page, and click **Add New Connection**.

Step 2 Enter an IPSec connection name, which is **IPSec_1** in this example.

Step 3 Enter the IP version, which is **IPv4** in this example.

Step 4 Select a local gateway interface, which is **ipoe_LAN1/eth3.1** in this example.

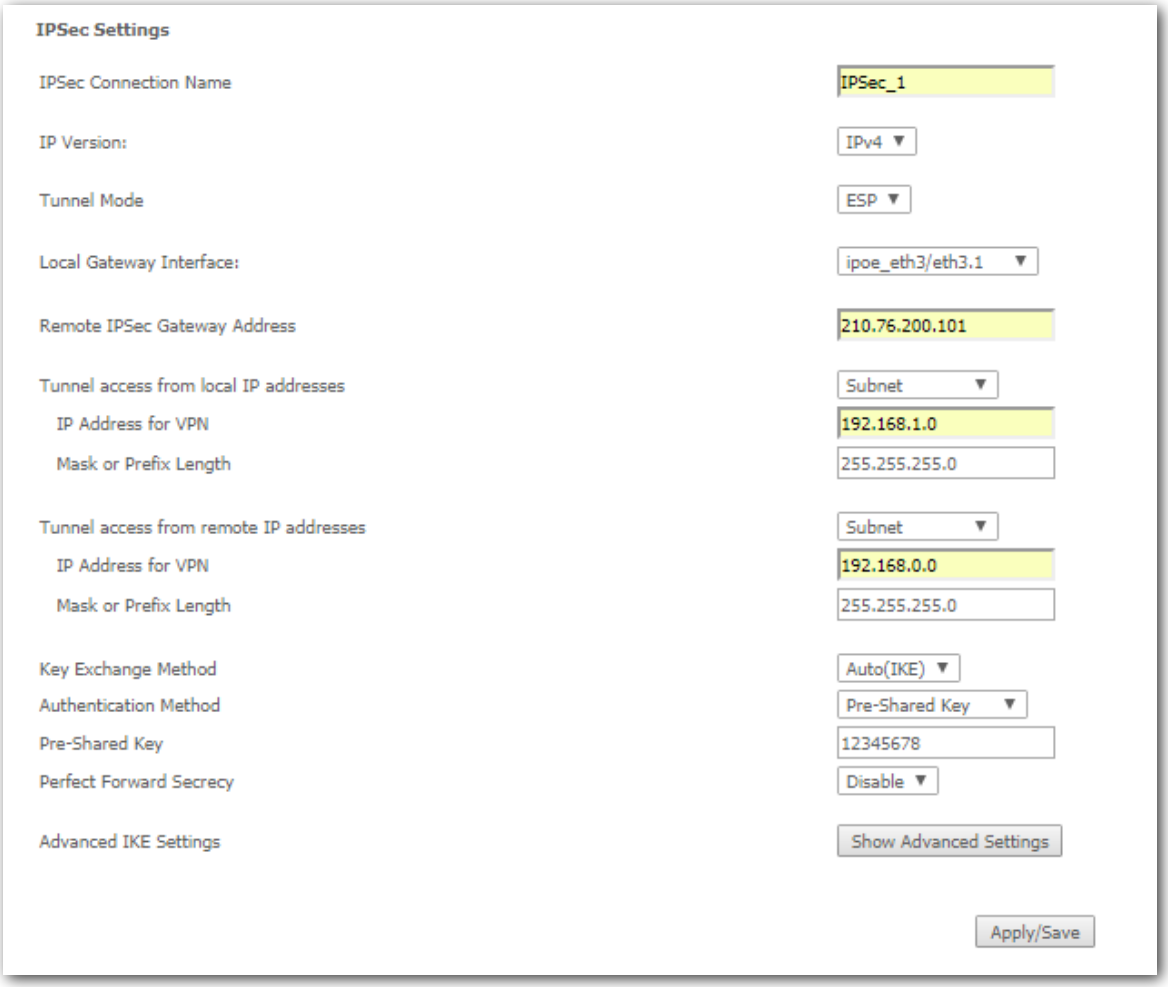
Step 5 Enter a remote IPSec gateway address, which is **210.76.200.101** in this example.

Step 6 Set Tunnel access from local IP address to Subnet, and set a local network segment which is **192.168.1.0** and **255.255.255.0** in this example.

Step 7 Set Tunnel access from remote IP address to Subnet, and set a local network segment of the peer router which is **192.168.0.0** and **255.255.255.0** in this example.

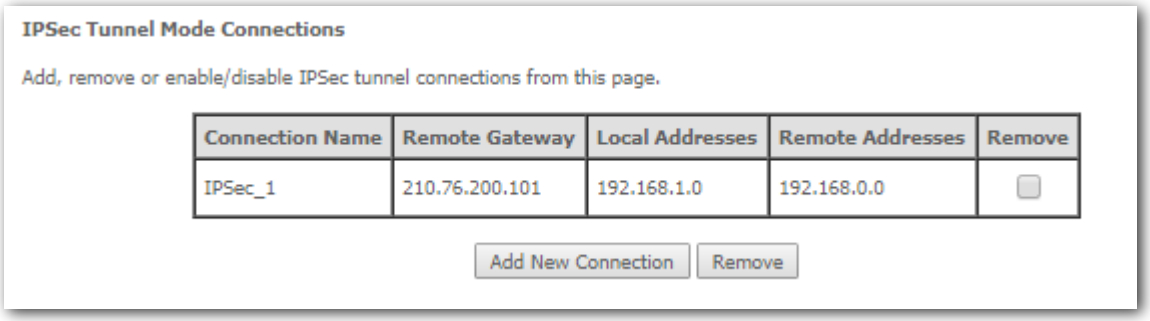
Step 8 Enter a Pre-Shared key which is **12345678** in this example. And leave other parameters unchanged.

Step 9 Click **Apply/Save**.



----End

The rule is displayed in the list shown as below.



4.19 Certificate

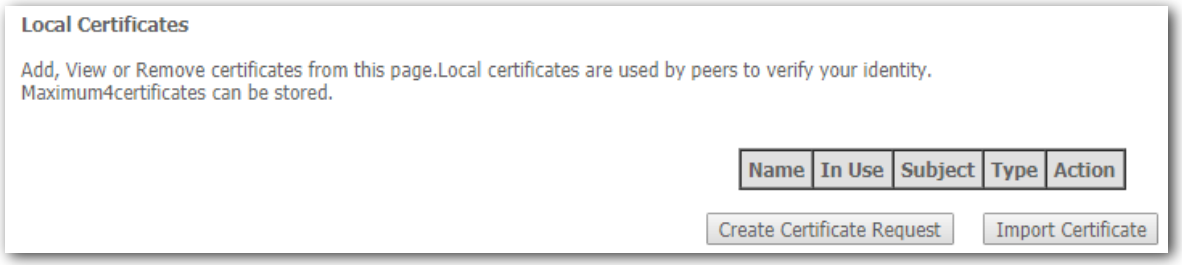
4.19.1 Local

4.19.1.1 Overview

Local certificate is used by peers to verify your identity.

4.19.1.2 Importing a certificate

Step 1 Choose **Advanced Setup > Certificate > Local** to enter the configuration page, and click **Import Certificate**.

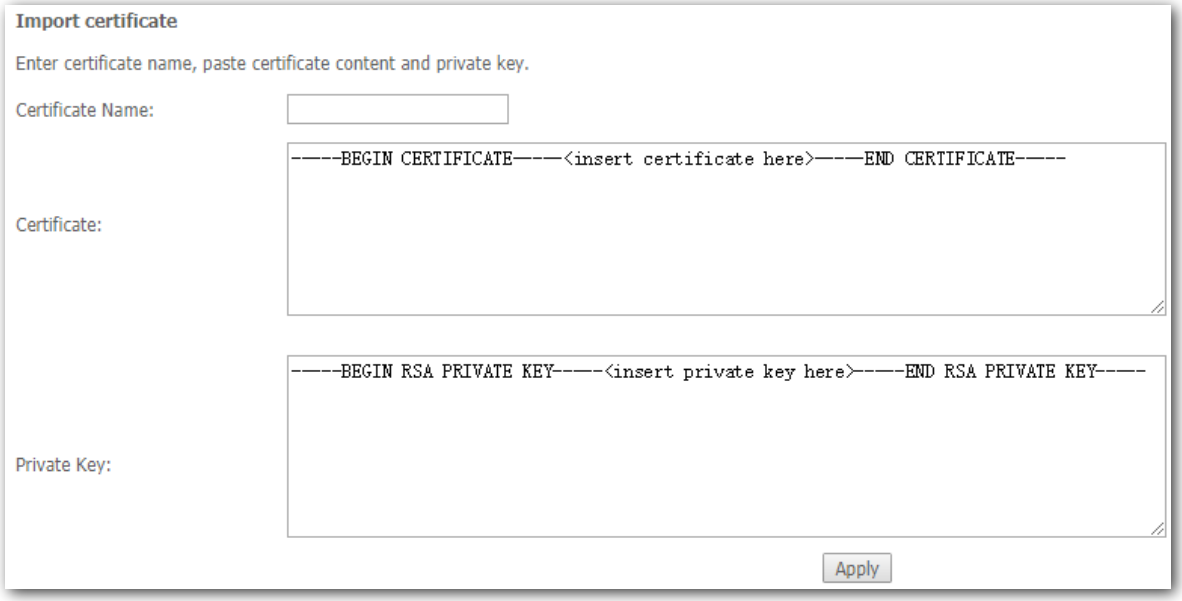


Step 2 **Certificate Name**: Enter the name of applied certificate.

Step 3 **Certificate**: Open the certified certificate with notepad.exe, and copy the content to the text box.

Step 4 **Private Key**: Copy the private key information which is generated when you apply the certificate to the box.

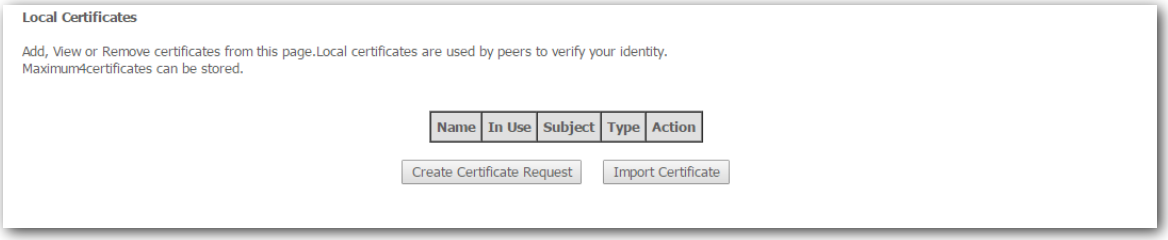
Step 5 Click **Apply**.



----End

4.19.1.3 Creating a new certificate

Step 1 Choose **Advanced Setup > Certificate > Local** to enter the configuration page, and click **Create Certificate Request**.



Step 2 **Certificate Name**: Enter a name for the certificate, such as **mycertificate**.

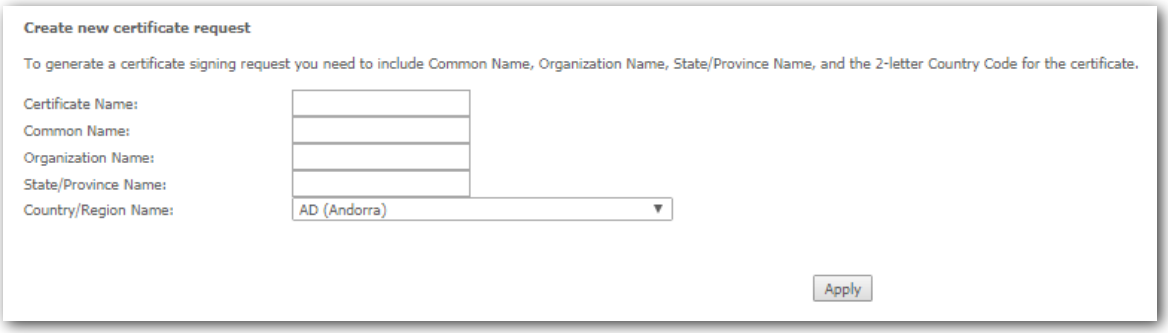
Step 3 **Common Name**: Enter the website domain name, company name or name of the applicant, such as **Tendacn.com**, **Tenda** or **Lucy**.

Step 4 **Organization Name**: Enter the name of an organization/company, such as **Tenda**.

Step 5 **State/Province Name**: Enter the state or province where the certificate is to be used.

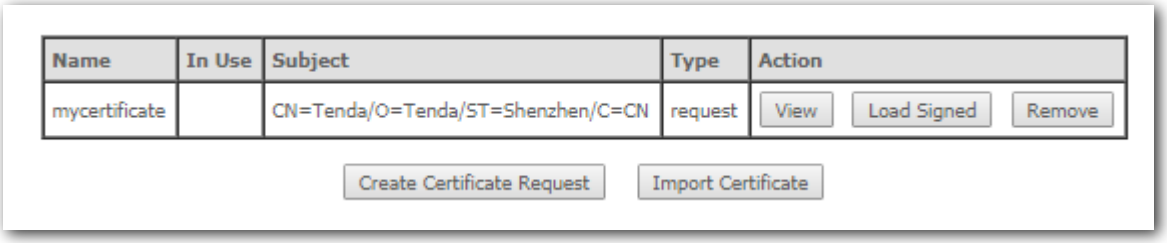
Step 6 **Country/Region Name**: Select the country/region where the certificate is to be used.

Step 7 Click **Apply**.



----End

Then wait for the CA to deal with the application, sign and load the signature certificate to the modem router.



- **View:** Views the details of the certificate.
- **Load Signed**: To import and apply the certificate.
- **Remove**: To delete the certificate.

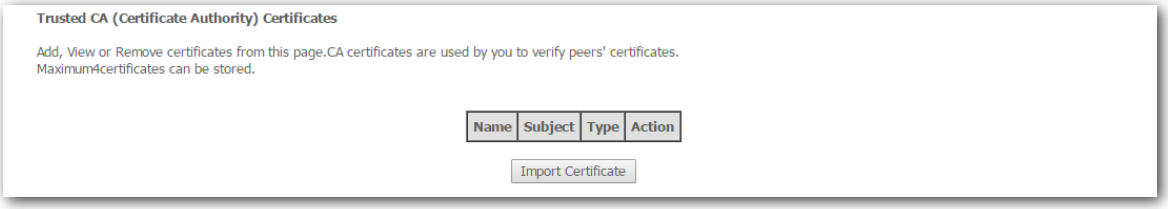
4.19.2 Trusted CA

4.19.2.1 Overview

CA certificates are used by user to verify peers' certificates.

4.19.2.2 Importing a certificate

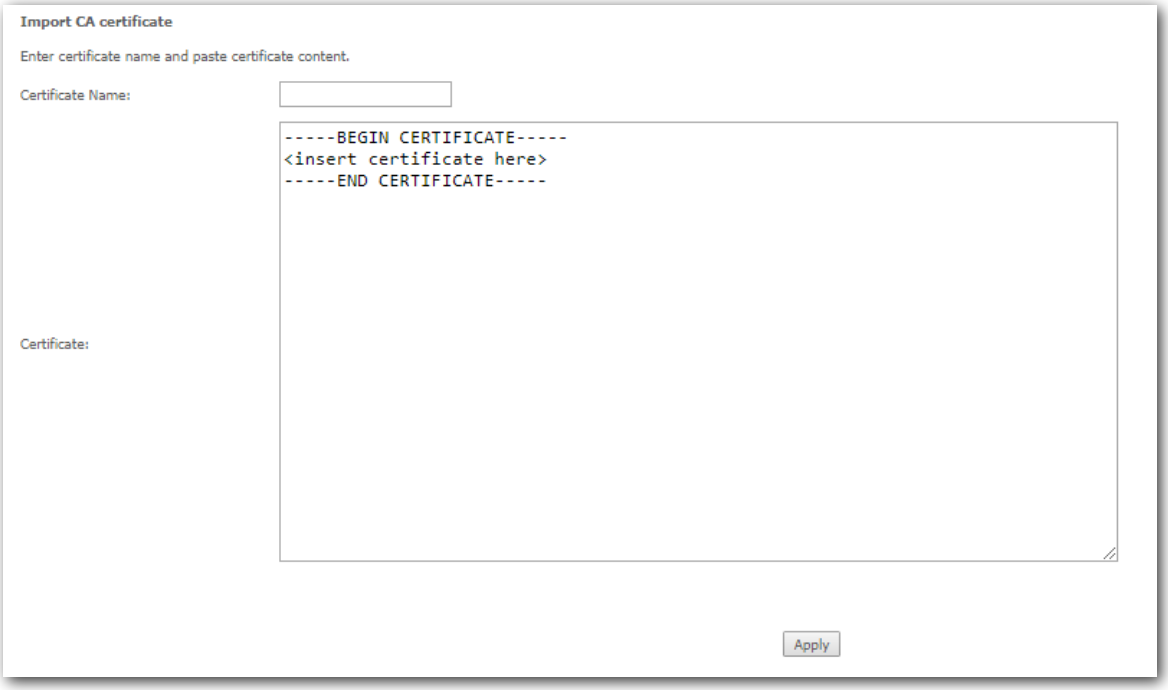
Step 1 Choose **Advanced Setup > Certificate > Trusted CA** to enter the configuration page, and click **Import Certificate**.



Step 2 **Certificate Name**: Enter the name of the certificate.

Step 3 **Certificate:** Enter the content of the certificate.

Step 4 Click **Apply**.



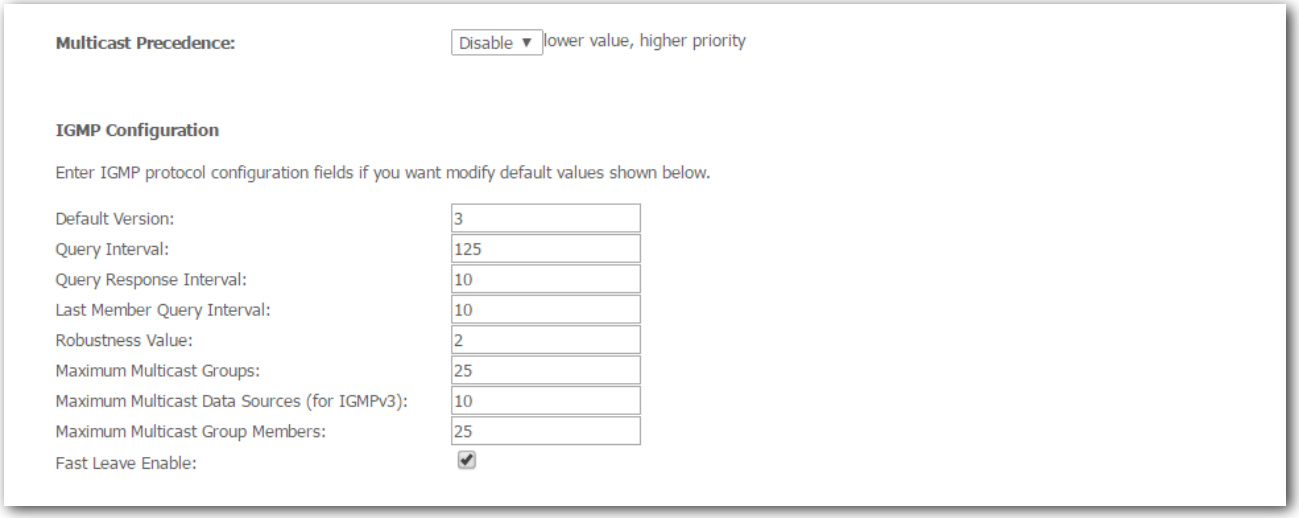
----End

4.20 Multicast

Multicast (one-to-many or many-to-many distribution) is the group communication where information is addressed to a group of destination computers simultaneously. Multicast can be used for one-to-many networking applications such as online streaming video and gaming, and allows more efficient use of resources when supporting these types of applications.

To configure multicast function, choose **Advanced Setup** > **Multicast**.

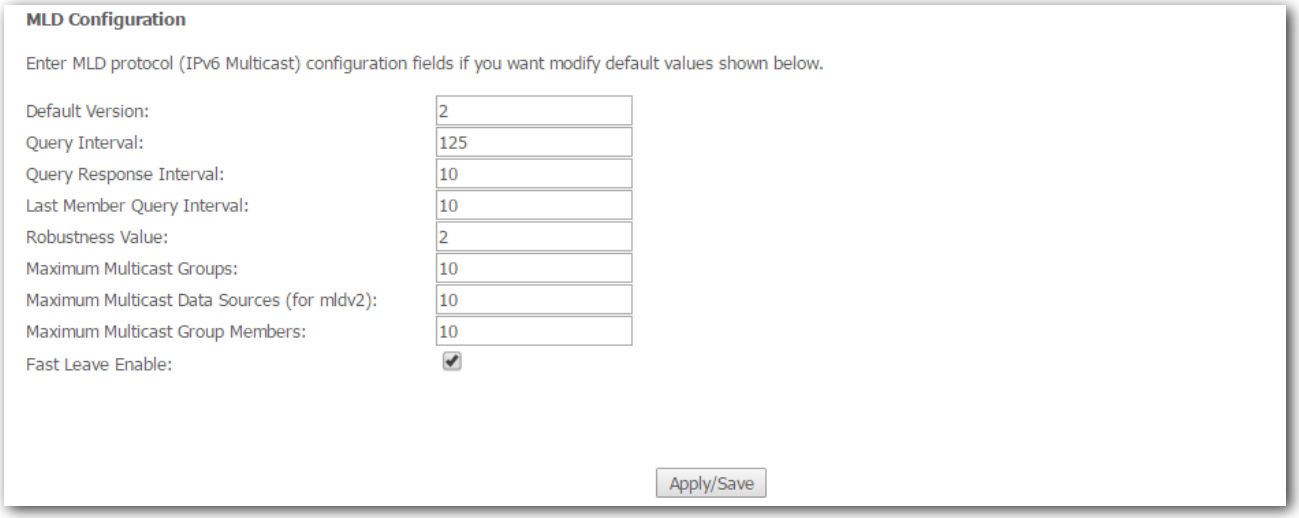
Multicast Precedence: Set the priority for the multicast data. A smaller value indicates a higher priority.



Parameter description

Parameter	Description
Default Version	It specifies the IGMP version for WAN. The default is IGMPv3.
Query Interval	It specifies the interval for sending IGMP query message. The default is **125**. The value range is 1 to 999. The unit is second.
Query Response Interval	It specifies the response interval for the query message. The default is **10**. The value range is 1 to 999. The unit is “second”.
Last Member Query Interval	It specifies the interval for sending query message of specified group. The default is **10**. The value range is 1 to 999. The unit is second.
Robustness Value	It specifies the robustness value of IGMP querier. The default is **2**. The value range is 1 to 999.
Maximum Multicast Groups	It specifies the maximum number of multicast groups for each interface. The default is **25**. The value range is 1 to 32.
Maximum Multicast Data Sources (for IGMPv3)	It specifies the maximum number of multicast data sources. The default is **10**. The value range is 1 to 24.

Parameter	Description
Maximum Multicast Group Members	It specifies the maximum number of multicast group members. The default is 25. The value range is 1 to 32.
Fast Leave Enable	If the function is enabled, the modem router does not send group specific-queries when it receives a leave message.



Parameter description

Parameter	Description
Default Version	It specifies the MLD version for WAN. The default is MLDv2.
Query Interval	It specifies the interval for sending MLD query message. The default is **125**. The value range is 1 to 999. The unit is second.
Query Response Interval	It specifies the response interval for the query message. The default is **10**. The value range is 1 to 999. The unit is “second”.
Last Member Query Interval	It specifies the interval for sending query message of specified group. The default is **10**. The value range is 1 to 999. The unit is second.
Robustness Value	It specifies the robustness value of MLD querier. The default is **2**. The value range is 1 to 999.
Maximum Multicast Groups	It specifies the maximum number of multicast groups for each interface. The default is 10. The value range is 1 to 16.
Maximum Multicast Data Sources (for mldv2)	It specifies the maximum number of multicast data sources. The default is **10**. The value range is 1 to 16.
Maximum Multicast Group Members	It specifies the maximum number of multicast group members. The default is 10. The value range is 1 to 16.

Parameter	Description
Fast Leave Enable	If the function is enabled, the modem router does not send group specific-queries when it receives a leave message.

4.21 IPTV

If your ISP provides IPTV service, this function enables you to watch IPTV programs through TV and the network set-top box while surfing the internet

4.21.1 ATM interface

If your layer 2 interface is **ATM Interface**, perform the following procedure:

Step 1 Choose **Advanced Setup** > **IPTV** to enter the configuration page.

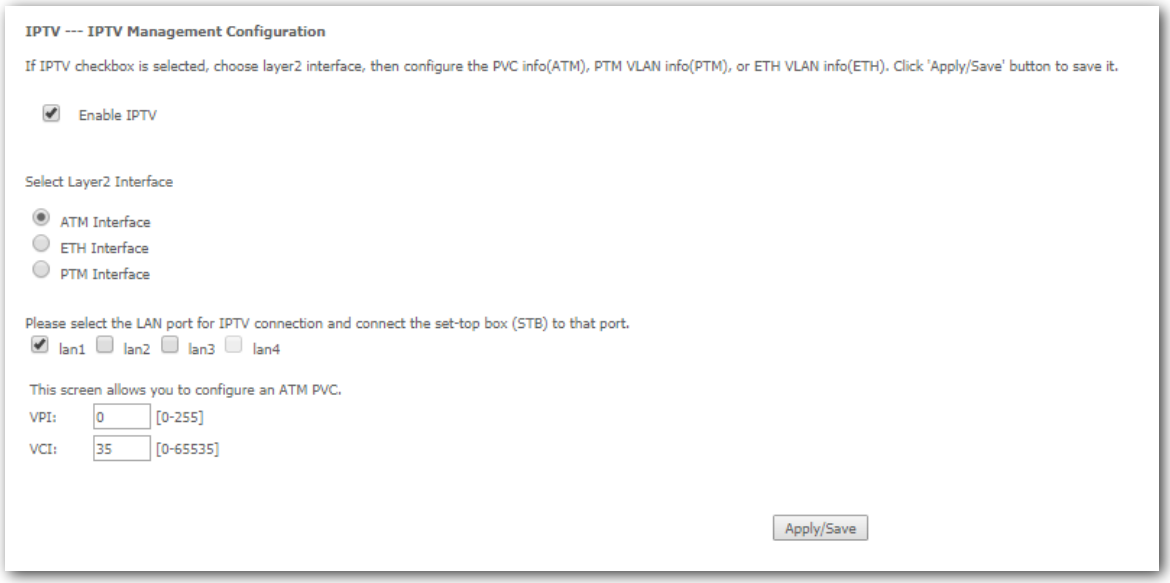
Step 2 Select **Enable IPTV** option.

Step 3 Select **ATM Interface**.

Step 4 Select a LAN port to serves as an IPTV port for connecting to the set-top box. The default IPTV port is **lan1** (port 1).

Step 5 Enter the VPI/VCI value provided by your ISP.

Step 6 Click **Apply/Save**.



----End

4.21.2 ETH interface

If your layer 2 interface is **Ethernet Interface**, perform the following procedure:

Step 1 Choose **Advanced Setup** > **IPTV** to enter the configuration page.

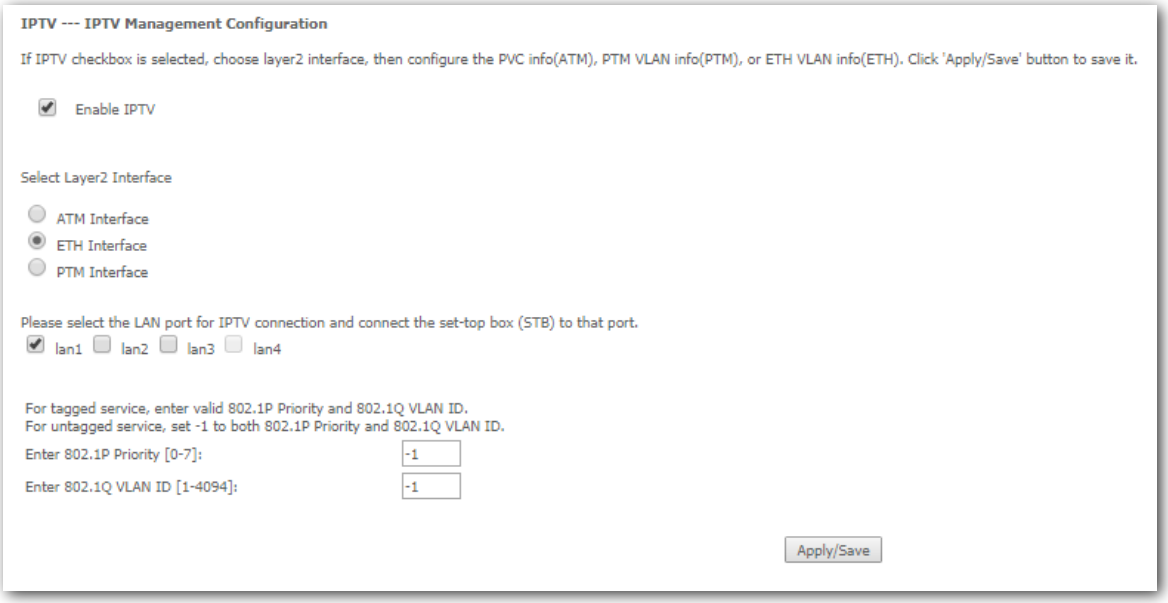
Step 2 Select **Enable IPTV** option.

Step 3 Select **Ethernet Interface**.

Step 4 Select a LAN port to serves as an IPTV port for connecting to the set-top box. The default IPTV port is **lan1** (port 1).

Step 5 Enter the 802.1P priority and 802.1Q VLAN ID values provided by your ISP.

Step 6 Click **Apply/Save**.



----End

4.21.3 PTM interface

If your layer2 interface is **PTM Interface**, perform the following procedure:

Step 1 Choose **Advanced Setup** > **IPTV** to enter the configuration page.

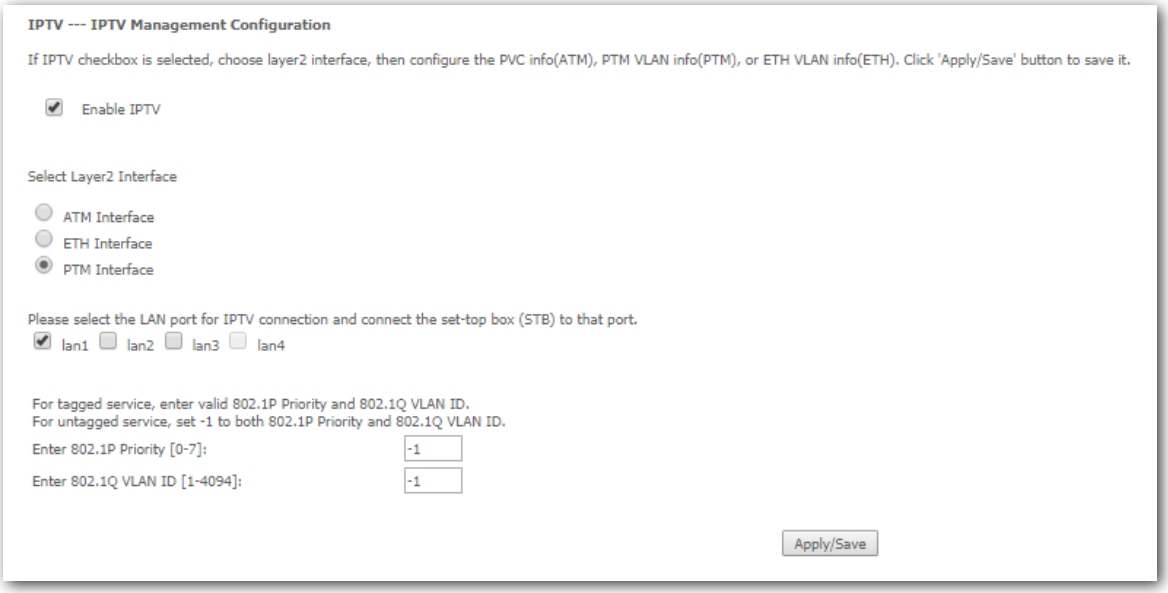
Step 2 Select **Enable IPTV** option.

Step 3 Select **PTM Interface** you create in Layer2 Interface.

Step 4 Select a LAN port to serves as an IPTV port for connecting to the set-top box. The default IPTV port is **lan1** (port 1).

Step 5 Enter the 802.1P priority and 802.1Q VLAN ID values provided by your ISP. This VLAN ID is NOT the same as that of the WAN connection.

Step 6 Click **Apply/Save**.


IPTV --- IPTV Management Configuration
If IPTV checkbox is selected, choose layer2 interface, then configure the PVC info(ATM), PTM VLAN info(PTM), or ETH VLAN info(ETH). Click 'Apply/Save' button to save it.
Enable IPTV
Select Layer2 Interface
ATM Interface
ETH Interface
PTM Interface
Please select the LAN port for IPTV connection and connect the set-top box (STB) to that port.
lan1 lan2 lan3 lan4
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.
Enter 802.1P Priority [0-7]:
-1
Enter 802.1Q VLAN ID [1-4094]:
-1
Apply/Save

----End

5 Wireless

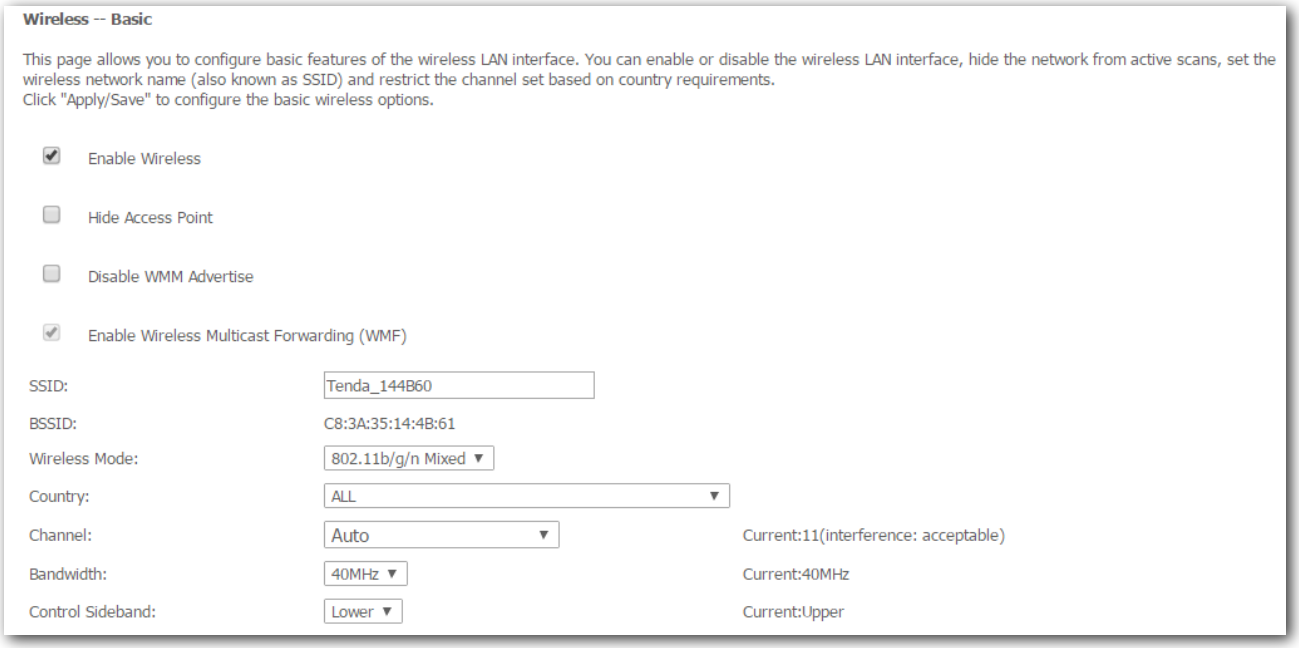
5.1 2.4G

5.1.1 Basic

5.1.1.1 Overview

This section allows you to configure basic features of the 2.4 GHz wireless network.

Choose **Wireless** > **2.4G** > **Basic** to enter the configuration page.



Parameter description

Parameter	Description
Enable Wireless	Select the option to enable the wireless function.
Hide Access Point	Select the option to hide the SSID of the modem router. In this case, wireless clients cannot find the SSID (wireless network name) of the modem route. The SSID must be manually entered on the wireless clients for connecting the clients to the modem router.
Disable WMM Advertise	Select the option to disable WMM advertise of the modem router. WMM optimizes the communication experience of end-users, providing high-quality network connectivity performance for data, voice, music, and video applications in a complex network

Parameter	Description
	environment and communications environment.
Enable Wireless Multicast Forwarding (WMF)	Select the option to enable WMF of the modem router. Wireless multicast forwarding is a network data transmission method, which improves the efficiency of data transmission to effectively save network bandwidth and reduce network load.
SSID	Wireless network name of the modem router.
BSSID	MAC address of the wireless network.
Wireless Mode	• If 802.11b is selected, only 11b wireless devices can connect to the wireless network. The maximum wireless rate supported in this mode is 11 Mbps. • If 802.11g is selected, only 11g wireless devices can connect to the wireless network. The maximum of 54 Mbps wireless rate is supported in this mode. • If 802.11n is selected, only 11n wireless devices can connect to the wireless network. The maximum of 300 Mbps wireless rate is supported in this mode. • If 802.11b/g Mixed is selected, only 11b or 11g wireless devices can connect to the wireless network. The maximum of 54 Mbps wireless rate is supported in this mode. • If 802.11b/g/n Mixed is selected, 11b, 11g or 11n wireless devices can connect to the wireless network. The maximum of 300 Mbps wireless rate is supported in this mode.
Country	Select your country or region.
Channel	Select a channel in which the modem router works. Auto indicates that the modem router automatically changes to a channel rarely used in the ambient environment to prevent interference.
Bandwidth	Select a frequency band of the channel of the modem router.
Control Sideband	It specifies the channel extension direction. When the bandwidth is set to 40MHz, you can choose upper or lower to define the direction of channel extension.

5.1.1.2 Enabling multiple SSIDs

By setting up multiple SSIDs on a wireless modem router, the modem router can be deployed to multiple wireless networks, and users can connect to different wireless LANs to avoid interference with each other.

To enable multiple SSIDs:

Step 1 choose **Wireless > 2.4G** > **Basic** to enter the configuration page.

Step 2 Select **Enable** option to enable the corresponding SSID.

Step 3 Customize the wireless network name for the SSID if you want.

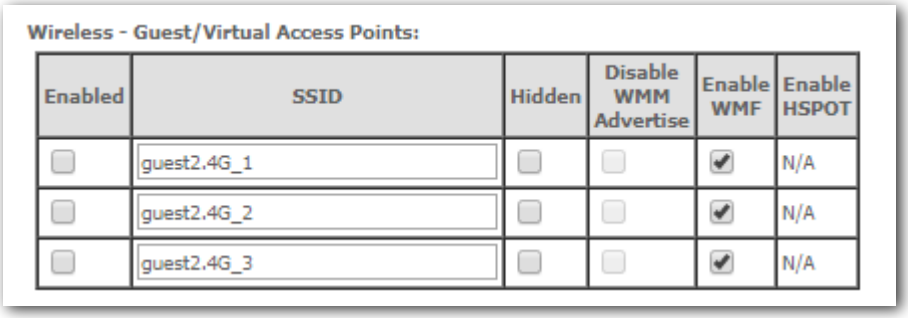
Step 4 **Hidden:** It specifies whether to hide the SSID. If the option is selected, wireless devices cannot find the SSID.

Step 5 **Disable WMM Advertise:** WMM (Wi-Fi Multimedia) is a Wi-Fi Alliance interoperability

certification based on the IEEE 802.11e standard. Select it if you need to disable WMM advertise.

Step 6 **Enable WMF:** It specifies whether to forward multicast packets through unicast tunnels. Generally, multicast packets are transmitted at the lowest rate, such as 1 Mbps, leading to poor transmission efficiency. WMF leverages the auto-negotiated high rate, reliable feedback mechanism, and other advantages of unicast packets to address multicast problems such as video playback stalls caused by packet loss and long delays over a wireless network.

Step 7 Click **Apply/Save**.

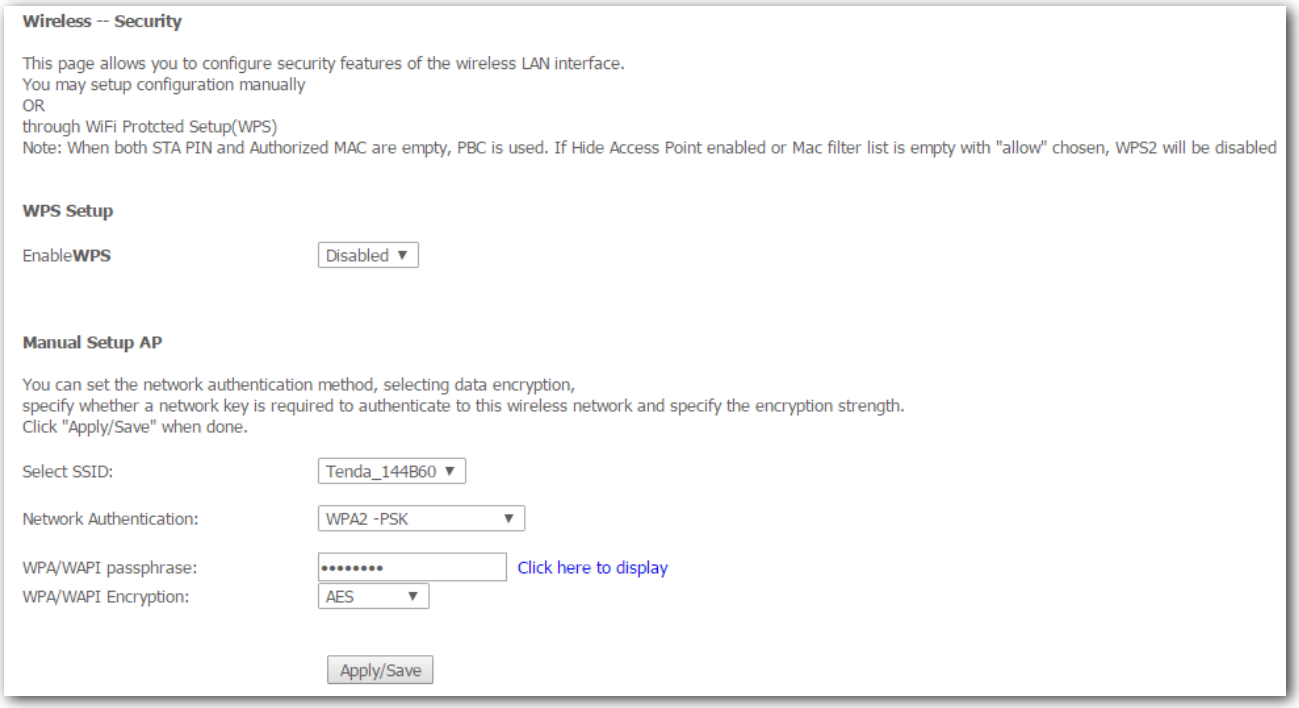


----End

5.1.2 Security

This section allows you to configure security features of the wireless network.

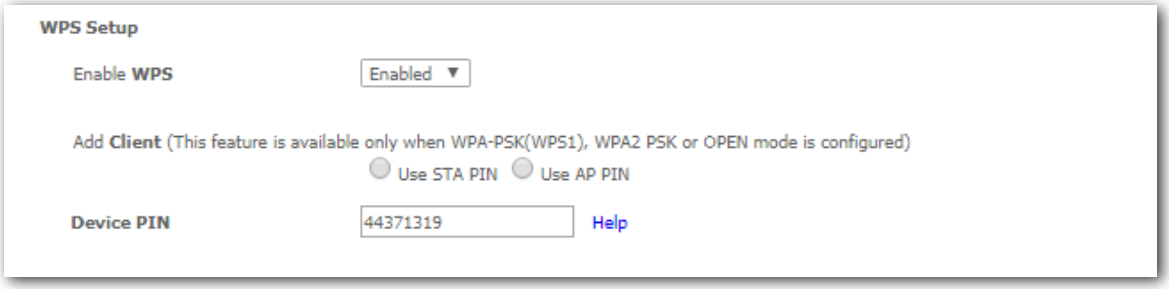
Choose **Wireless** > **2.4G > Security** to enter the configuration page.



5.1.2.1 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. They can set up network connections simply by entering a PIN code on the device web interface or pressing hardware WPS button (on the back panel of the device).

Select **Enabled** to enable the WPS function.



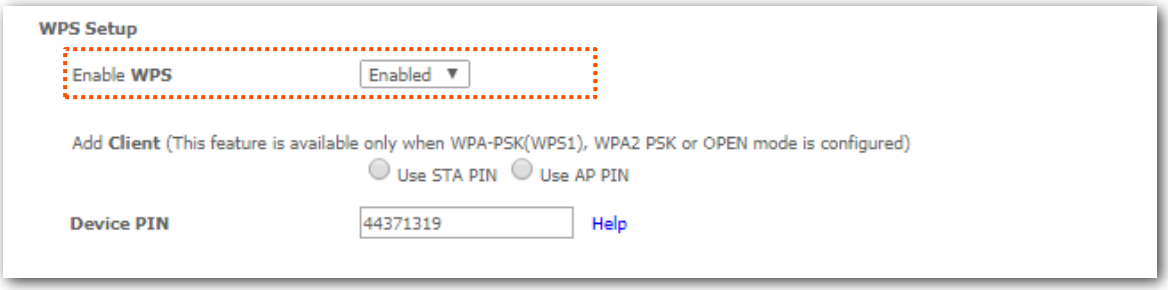
If the wireless network of the modem router is not encrypted, or the wireless network is encrypted but you forget or do not want to enter the complicated password, you can use WPS function to encrypt or connect clients to it quickly. There are three options for you:

Option 1: PBC negotiation

Step 1 Choose **Wireless** > **2.4G > Security** to enter the configuration page.

Step 2 Select **Enabled** to enable the function.

Step 3 Click **Apply/Save** on the bottom of this page.



Step 4 Press the WPS hardware button on the rear panel of the modem router for 3 seconds, and then release it. (The WPS LED indicator starts blinking)

Step 5 Within 2 minutes, enable the WPS negotiation function on your wireless device.

----End

When the WPS LED turns to solid green, it indicates that the PBC negotiation is successful. The wireless device is connected to the modem router, and the wireless network is encrypted.

Option 2: Using the WPS PIN code of the wireless device

Step 1 Log in to the web UI of the modem router, choose **Wireless** > **2.4G** > **Security** to enter the

configuration page.

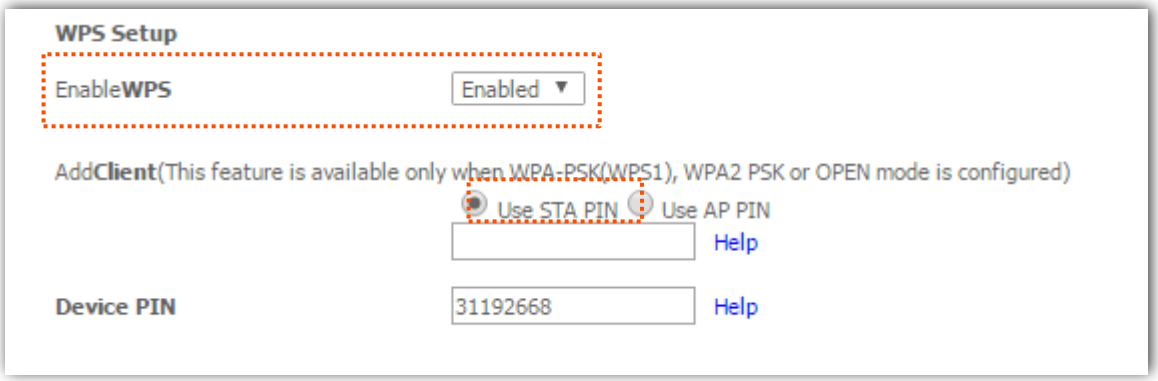
Step 2 Select **Enabled** to enable the function.

Step 3 Click **Apply/Save** on the bottom of this page.

Step 4 Select **Enter STA PIN**.

Step 5 Check the WPS PIN code on your wireless device and enter it to the blank box on the WPS Setup page of the web UI.

Step 6 Click **Apply/Save**.



----End

The WPS LED indicator blinks for about 2 minutes, and then turns to solid green. It indicates that the wireless device is connected to the modem router, and the wireless network is encrypted.

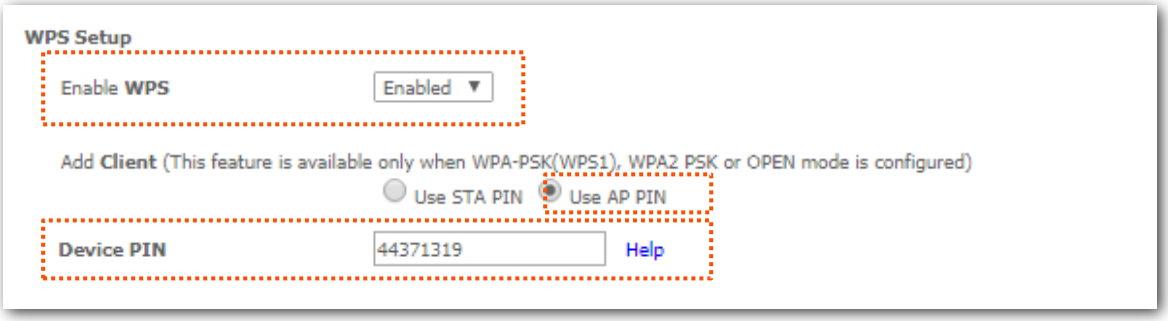
Option 3: Using the WPS PIN code of the modem router

Step 1 Log in to the web UI of the modem router, choose **Wireless** > **2.4G** > **Security** to enter the configuration page.

Step 2 Select **Enabled** to enable the function.

Step 3 Click **Apply/Save** on the bottom of this page.

Step 4 Select **Use AP PIN**.



Step 5 Enter the **Device PIN** on your wireless device.

----End

When the WPS LED turns to solid on, the negotiation process is successful and the SSID and password are changed to random ones.

5.1.2.2 Manual setup AP

Overview

This part allows you to manually configure the encryption settings for the wireless network.

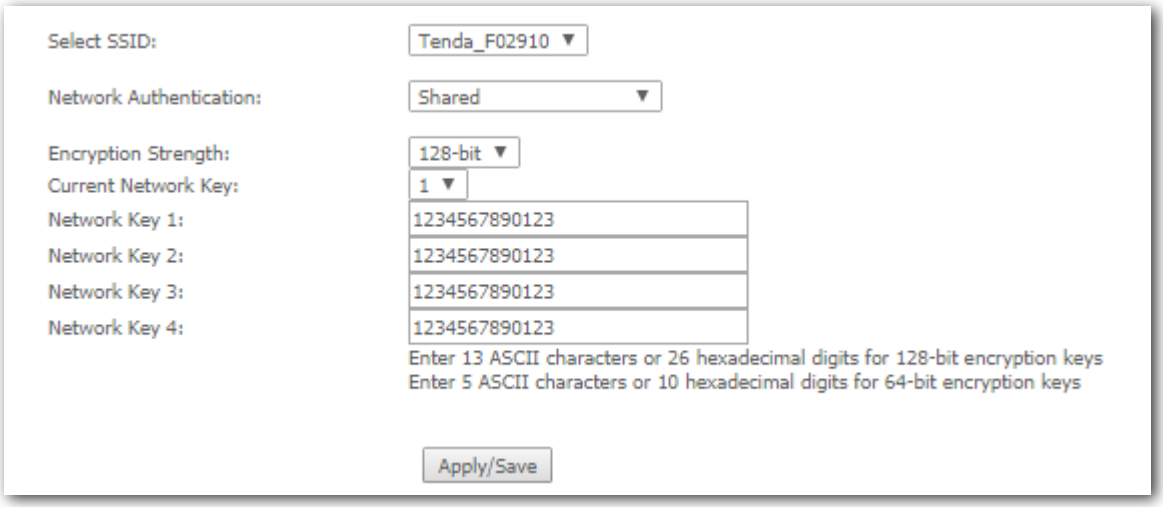
A wireless network uses radio, which is open to the public, as its data transmission medium. If the wireless network is not protected by necessary measures, any client can connect to the network to use the resources of the network or access unprotected data over the network. To ensure communication security, transmission links of wireless networks must be encrypted for protection.

The modem router supports various security modes for network encryption, including **Open**, **Shared**, **WPA-PSK**, **WPA2-PSK**, **Mixed WPA/WPA2-PSK**, and **WPA2 Enterprise**.

- **Open/Shared**

Open/Shared supports WEP encryption.

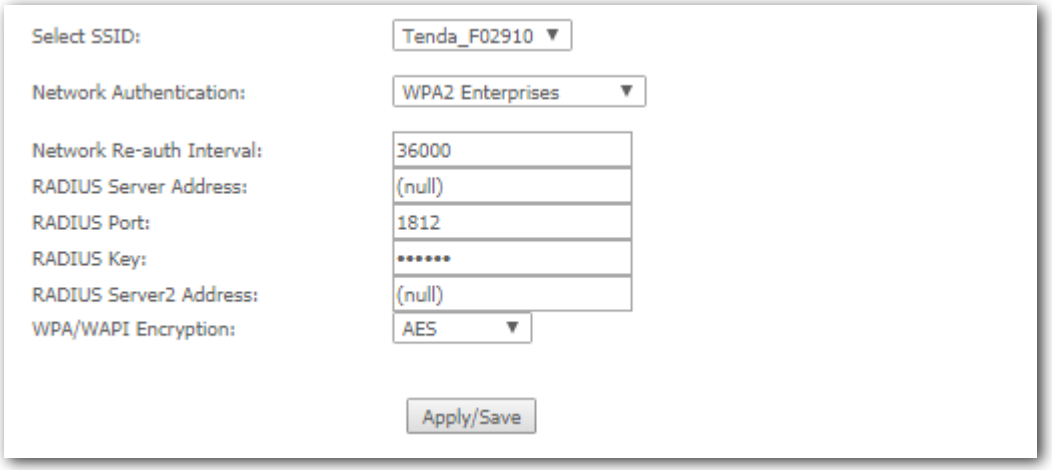
WEP is a security mode for data exchange between two devices. Wireless speed can reach 54Mbps if WEP is used.



Parameter description

Parameter	Description
Encryption Strength	Select 128-bit or 64-bit according to your needs.
Current Network Key	Select a network key to be used.
Network Key 1/2/3/4	Enter 13 ASCII characters or 26 hexadecimal digits as a 128-bit encryption key; enter 5 ASCII characters or 10 hexadecimal digits as a 64-bit encryption keys.

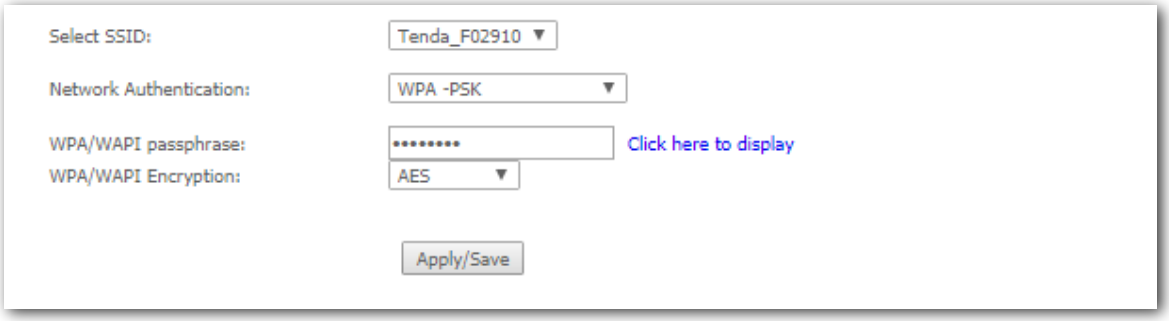
WPA2 Enterprise



Parameter description

Parameter	Description
WPA2 Enterprise	Security modes implemented based on the IEEE 802.1x, which requires the third-party RADIUS server for authentication.
Network Re-auth Interval	It specifies an interval at which a WPA key is updated. A shorter interval leads to higher security. The value 0 indicates that no key update is performed.
RADIUS Server Address	It specifies the IP address of the RADIUS server for authentication.
RADIUS Port	It specifies the authentication port of the RADIUS server. The default port number is 1812.
RADIUS Key	It specifies a shared password of the RADIUS server, which consists of 1 to 64 ASCII characters.
RADIUS Server2 Address	It specifies the IP address of the secondary RADIUS server for authentication.
WPA/WAPI Encryption	It specifies an algorithm for WPA2 enterprise encryption. • **AES**: If selected, AES enabled wireless clients can join your wireless network. • **TKIP+AES**: If selected, both AES and TKIP enabled wireless clients can join your wireless network.

- **WPA-PSK/WPA2-PSK/Mixed WPA2/WPA-PSK**



Parameter description

Parameter	Description
WPA-PSK/WPA2-PSK/Mixed WPA2/WPA-PSK	They specify the security modes implemented based on a shared key.
WPA/WAPI Passphrase	It specifies the password of the wireless network.
WPA/WAPI Encryption	It specifies an algorithm for WPA encryption. • AES: If selected, the maximum wireless speed can reach 300Mbps. • TKIP+AES: If selected, both AES and TKIP enabled wireless clients can join your wireless network.

Changing the encryption settings of an SSID

Step 1 Choose **Wireless** > **2.4G** > **Security** to enter the configuration page.

Step 2 Select a SSID to be configured from the drop-down list.

Step 3 Select the network authentication type and set the related parameters as required.

Step 4 Click **Apply/Save.**

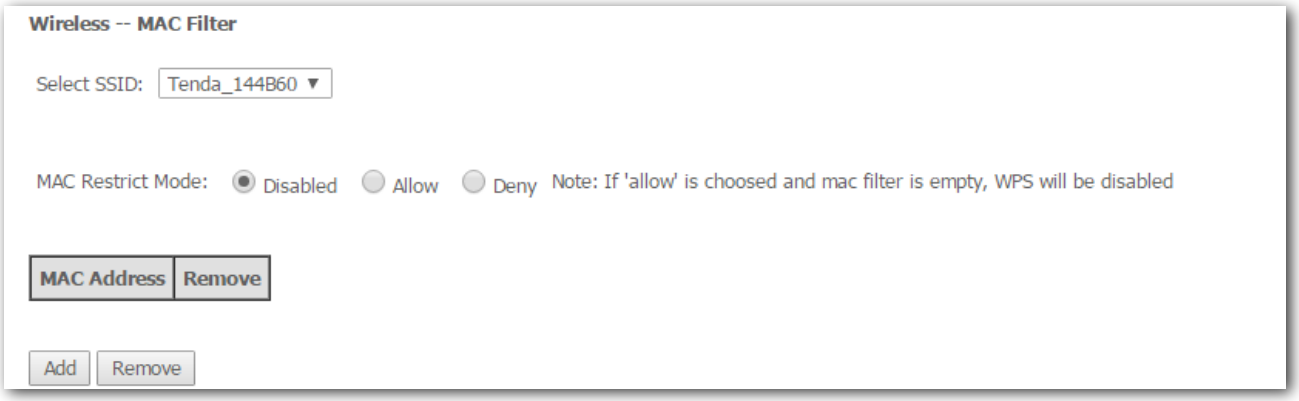
----End

5.1.3 MAC filter

5.1.3.1 Overview

The MAC-based wireless access control feature can be used to allow or disallow clients to connect to your 2.4 GHz wireless networks.

Choose **Wireless** > **2.4G > MAC Filter** to enter the configuration page.



Parameter description

Parameter	Description
Select SSID	Select a SSID to which the rule is applied. The rule is only applicable to the devices connected to the modem router wirelessly.
MAC Restrict Mode	**Disabled**: Disable this feature.
	Allow: To allow only devices with specified MAC addresses (in the list) to connect to your wireless network.
	Deny: To disallow only devices with specified MAC addresses (in the list) to connect to your wireless network.
MAC Address	The MAC address of a device to which a MAC filter rule is applied.
Add	Used to add a rule.
Remove	Used to remove the rule.

5.1.3.2 Adding a MAC filter rule

Step 1 Choose **Wireless** > **2.4G** > **MAC Filter** to enter the configuration page.

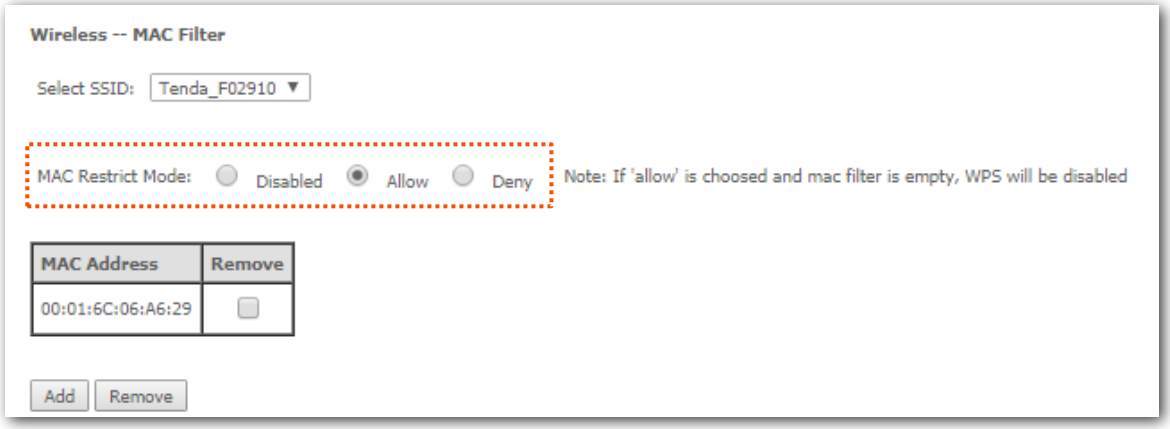
Step 2 Select a SSID to apply the rule if you enable multiple SSIDs.

Step 3 Click **Add**.

Step 4 Enter the MAC address of the device to which the rule applies.

Step 5 Click **Apply/Save**.

Step 6 Select **Allow** or **Deny** according to your needs.



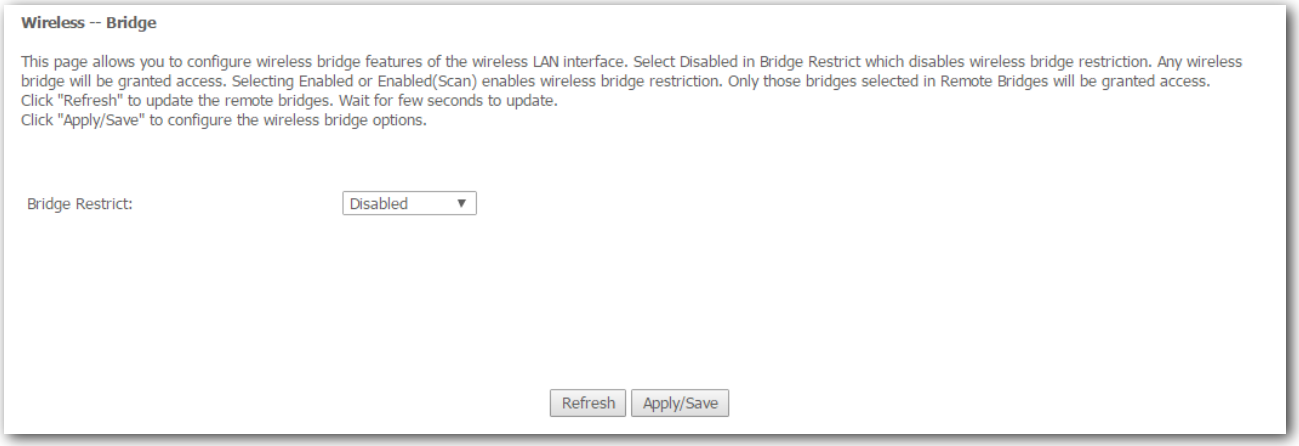
----End

5.1.4 Wireless bridge

5.1.4.1 Overview

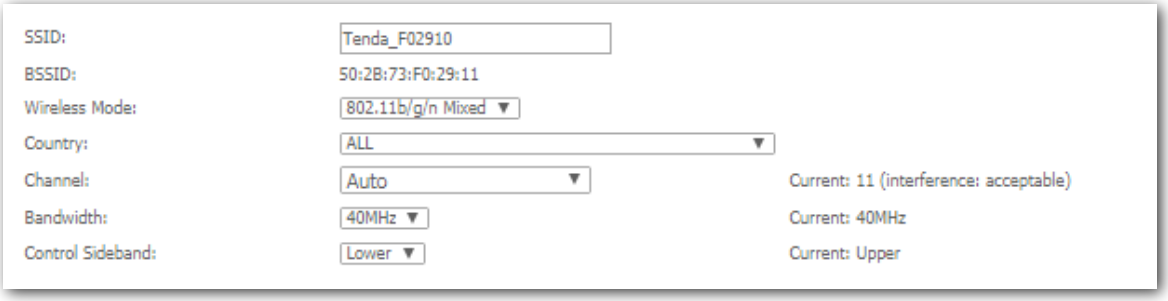
This section allows you to configure wireless bridge (also known as Wireless Distribution System) functions of the modem router. The function requires that the upstream wireless router supports wireless bridge as well.

Choose **Wireless** > **2.4G > Wireless Bridge** to enter the configuration page.

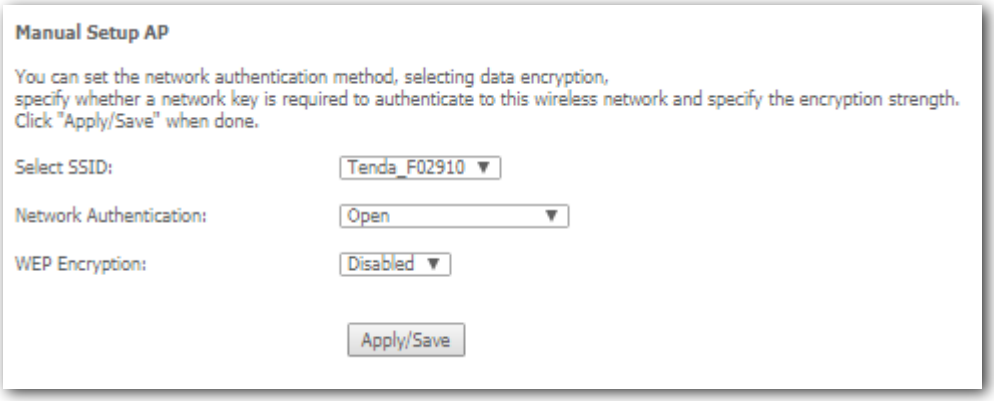


5.1.4.2 Configuration procedure

Step 1 Login to the web UI of V1200, choose **Wireless > 2.4G > Basic** to enter the configuration page to set the channel and bandwidth to the same with the upstream router.

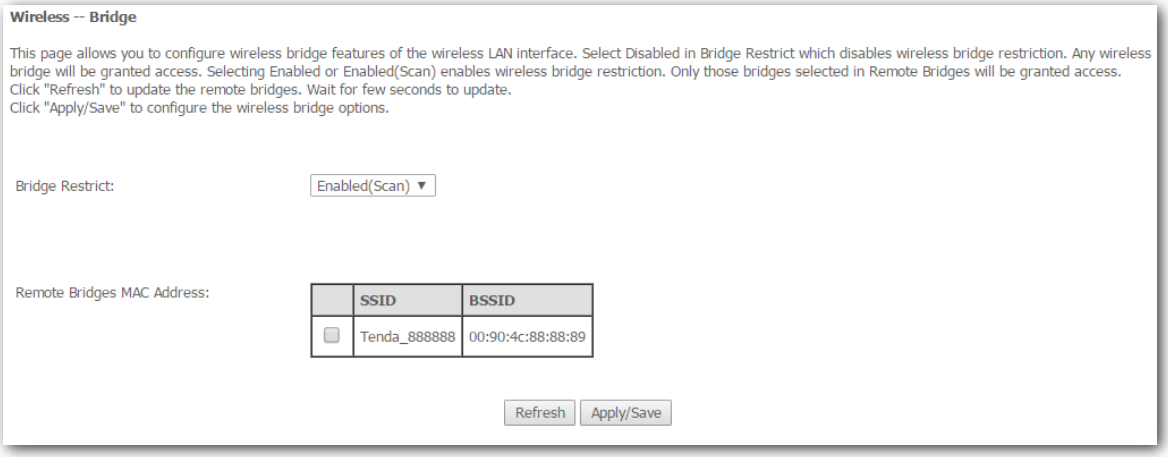


Step 2 Choose **Wireless > 2.4G > Security** to set up the network authentication type and security key (if required) to the same with the upstream router.

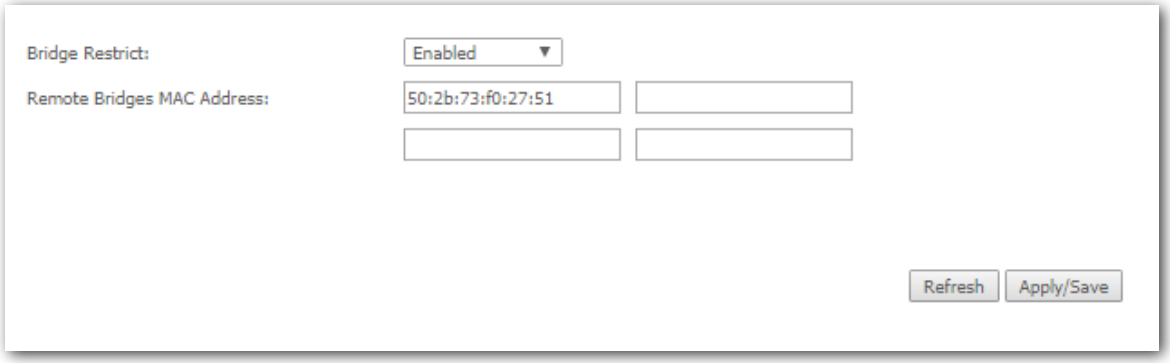


Step 3 Choose **Wireless > 2.4G > Wireless Bridge** to access the configuration page set up wireless bridge.

1. **Bridge Restrict**: Select **Enabled(Scan)**. It displays the available WiFi network list automatically.



2. Select the SSID you want to bridge, and click **Apply/Save.**



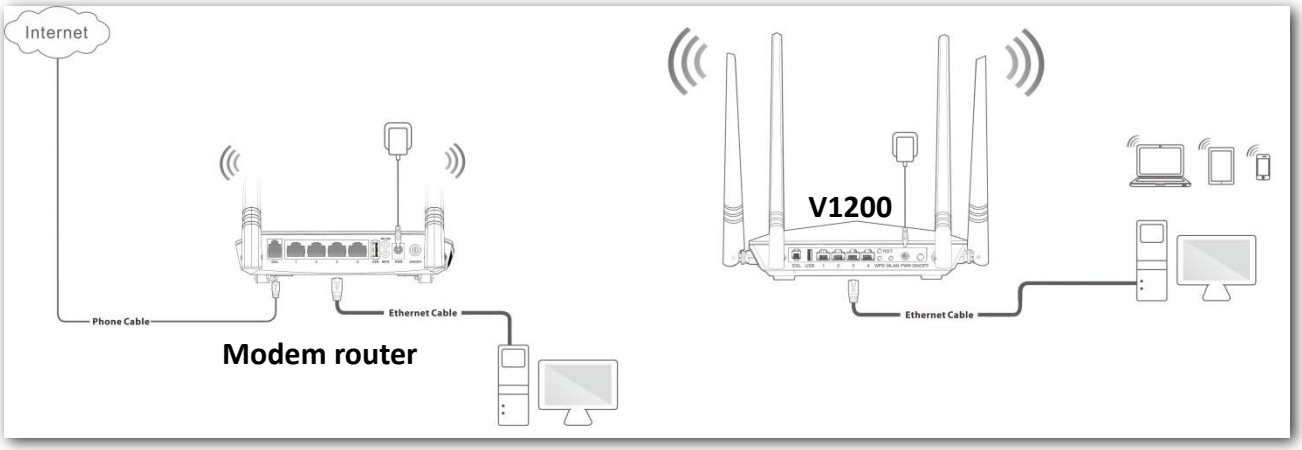
----End

TIP

Ensure both the channel and bandwidth are the same with the router you want to bridge. Otherwise, the SSID will not be shown in the list.

When you set up wireless bridge successfully, it can extend the wireless network of the upstream wireless router to provide both wired and wireless internet connection.

Network topology:



NOTE

The WDS function (access point and wireless bridge) requires that the wireless channel, encryption type, and wireless network password of the modem router must be the same as those of the upstream router.

5.1.4.3 Example of configuring the wireless bridge function

Network requirement

User A purchases a wireless router for wireless coverage in his apartment. The router (Router A) is placed in the living room. The WiFi signals are strong in the living room, but too weak in the bedroom and study room. Now user A want to improve internet connectivity in the bedroom and study room.

Solution

To improve internet connectivity in the bedroom and study room, the user can add a V1200 modem router and configure the wireless bridge function of the router to extend the 2.4 GHz WiFi network coverage. That will eliminate blind areas in the apartment, enabling the user to access the internet anywhere in the apartment.

Assume that:

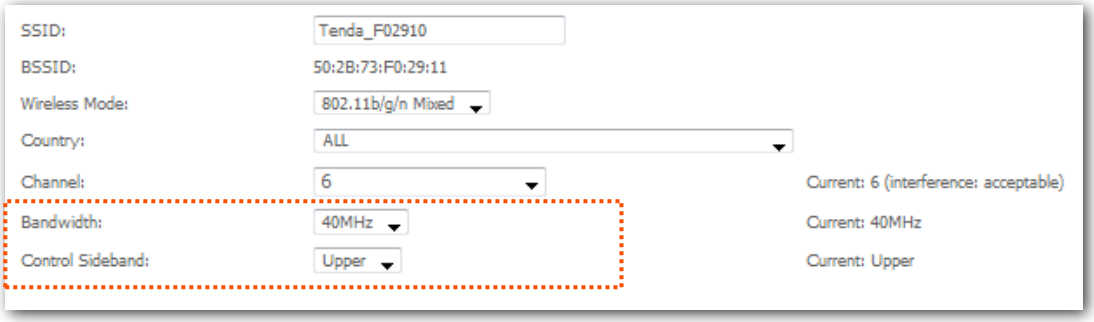
The upstream wireless router uses the following wireless settings for 2.4 GHz.

Parameter	Description
Wireless Network Name	Tenda_123456
Wireless Network Password	12345678
Wireless Encryption	Mixed WPA2/WPA-PSK, AES
Wireless Channel	6
Bandwidth	40MHz
LAN IP	192.168.1.10

Configuration procedure

Step 1 Configure V1200.

1. Change the wireless channel, encryption, and password to the same as those of the upstream router.
   (1) Choose **Wireless** > **2.4G** > **Basic** to enter the configuration page.
   (2) Set **Channel** to **6**.
   (3) Set **Bandwidth** to **40MHz**.
   (4) Click **Apply/Save** on the bottom of this page.



(5) Choose **Wireless** > **2.4G > Security** to enter the configuration page.

(6) Set the **Network Authentication**, **WPA/WAPI Passphrase**, and **WPA/WAPI Encryption** to **Mixed WPA2/WPA-PSK**, **12345678**, and **AES** respectively.

(7) Click **Apply/Save** on the bottom of this page.

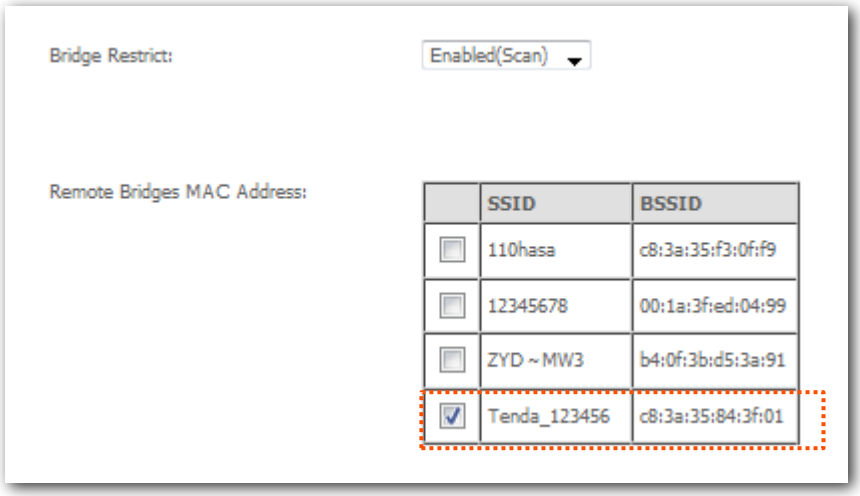
2 Configure the wireless bridge function.

(1) Choose **Wireless** > **2.4G > Wireless Bridge** to enter the configuration page.

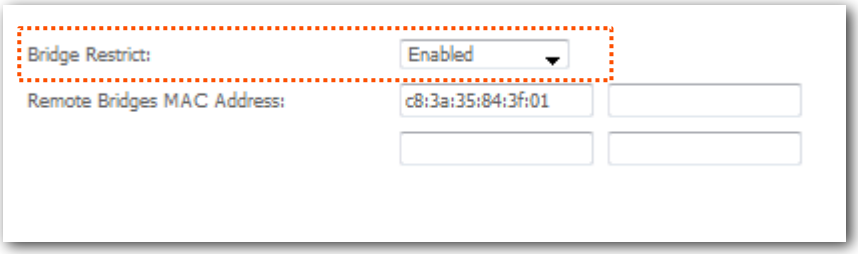
(2) Set the **Bridge Restrict** to **Enabled(Scan)**.

(3) Select the SSID (wireless network name) of the upstream router which is **Tenda_123456** in this example.

(4) Click **Apply/Save**.



(5) Click **Apply/Save. Bridge Restrict** turns to **Enabled**.



(6) Click **Apply/Save**.

Step 2 Configure the upstream router. Perform the steps in procedure 2.

----End

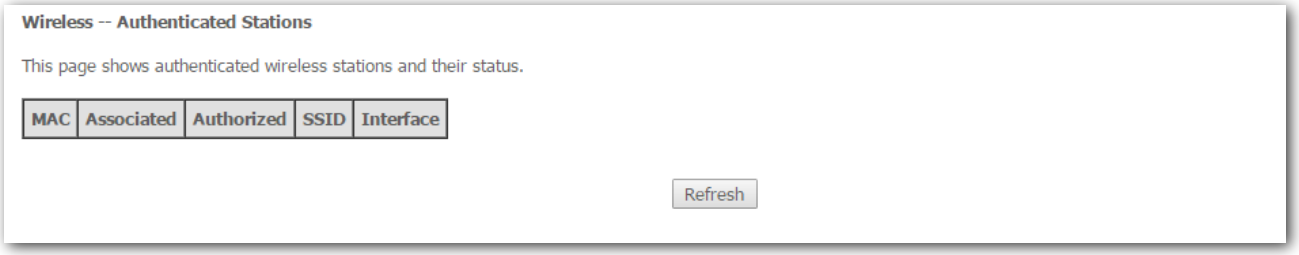
Verification

Connect your wireless devices to the WiFi network of the modem router, or connect your wired devices to ports 1, 2 or 3 of the modem router, and try accessing the internet in the bedroom and study room.

5.1.5 Station info

This section allows you to check the information of wireless clients connected to the 2.4 GHz wireless networks of the modem router.

Choose **Wireless > 2.4G > Station Info** to enter this page.



Click **Refresh** to view the latest wireless stations and their status.

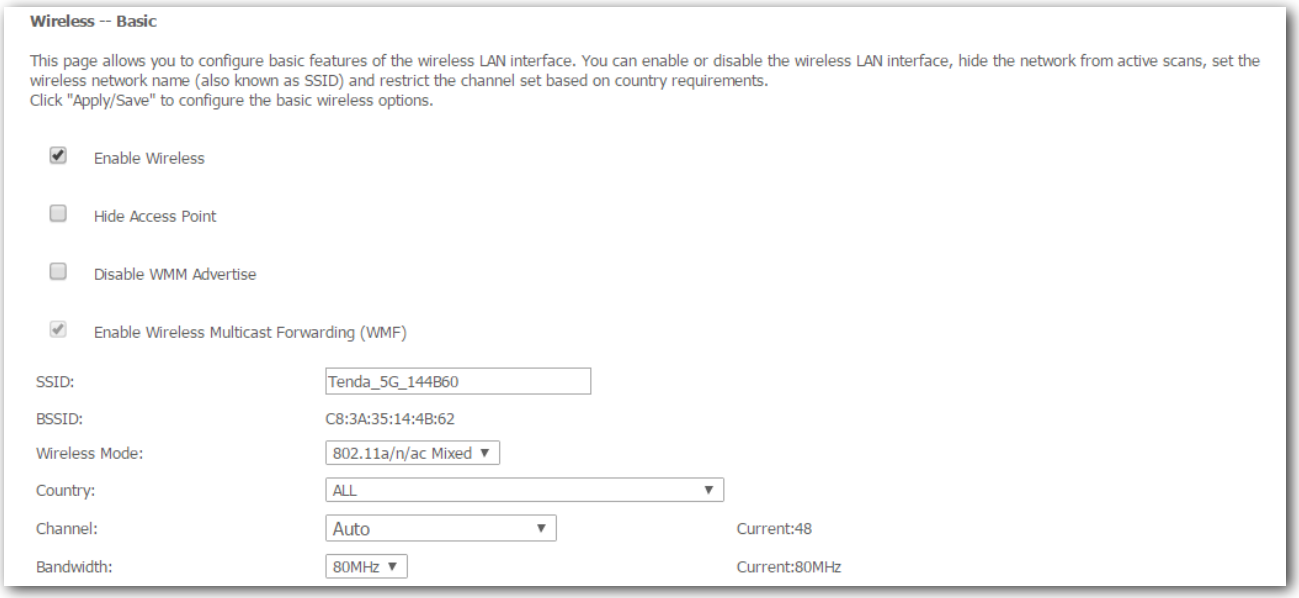
5.2 5G

5.2.1 Basic

5.2.1.1 Overview

This section allows you to configure basic features of the wireless network of 5 GHz.

Choose **Wireless** > **5G** > **Basic** to enter the configuration page.



Parameter description

Parameter	Description
Enable Wireless	Select the option to enable the wireless function.
Hide Access Point	Select the option to hide the SSID of the modem router. In this case, wireless clients cannot find the SSID (wireless network name) of the modem route. The SSID must be manually entered on the wireless clients for connecting the clients to the modem router.
Disable WMM Advertise	Select the option to disable WMM advertise of the modem router. WMM optimizes the communication experience of end-users, providing high-quality network connectivity performance for data, voice, music, and video applications in a complex network environment and communications environment.
Enable Wireless Multicast Forwarding (WMF)	Select the option to enable WMF of the modem router. Wireless multicast forwarding is a network data transmission method, which improves the efficiency of data transmission to effectively save network bandwidth and reduce network load.
SSID	Wireless network name of the modem router.

Parameter	Description
BSSID	MAC address of the wireless network.
Wireless Mode	• **802.11ac**: If 802.11ac is selected, only 11ac wireless devices can connect to the wireless network. The maximum of 866 Mbps wireless rate is supported in this mode. • **802.11a/n/ac Mixed**: If 802.11a/n/ac Mixed is selected, 11a, 11n or 11ac wireless devices can connect to the wireless network. The maximum of 866 Mbps wireless rate is supported in this mode.
Country	Select your country or region.
Channel	Select a channel in which the modem router works. Auto indicates that the modem router automatically changes to a channel rarely used in the ambient environment to prevent interference.
Bandwidth	Select a frequency band of the channel of the modem router.

5.2.1.2 Enabling multiple SSIDs

By setting up multiple SSIDs on a wireless modem router, the modem router can be deployed to multiple wireless networks, and users can connect to different wireless LANs to avoid interference with each other.

To enable multiple SSIDs:

Step 1 Choose **Wireless** > **5G** > **Basic** to enter the configuration page.

Step 2 Select **Enable** option to enable the corresponding SSID.

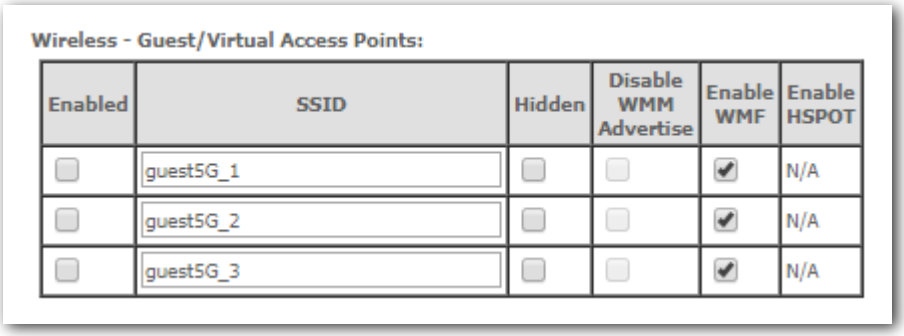
Step 3 Customize the name for the SSID if you want.

Step 4 **Hidden:** It specifies whether to hide the SSID. If the option is selected, wireless devices cannot find the SSID.

Step 5 **Disable WMM Advertise:** WMM (Wi-Fi Multimedia) is a Wi-Fi Alliance interoperability certification based on the IEEE 802.11e standard. Select it if you need to disable WMM advertise.

Step 6 **WMF:** It specifies whether to forward multicast packets through unicast tunnels. Generally, multicast packets are transmitted at the lowest rate, such as 1 Mbps, leading to poor transmission efficiency. WMF leverages the auto-negotiated high rate, reliable feedback mechanism, and other advantages of unicast packets to address multicast problems such as video playback stalls caused by packet loss and long delays over a wireless network.

Step 7 Click **Apply/Save**.

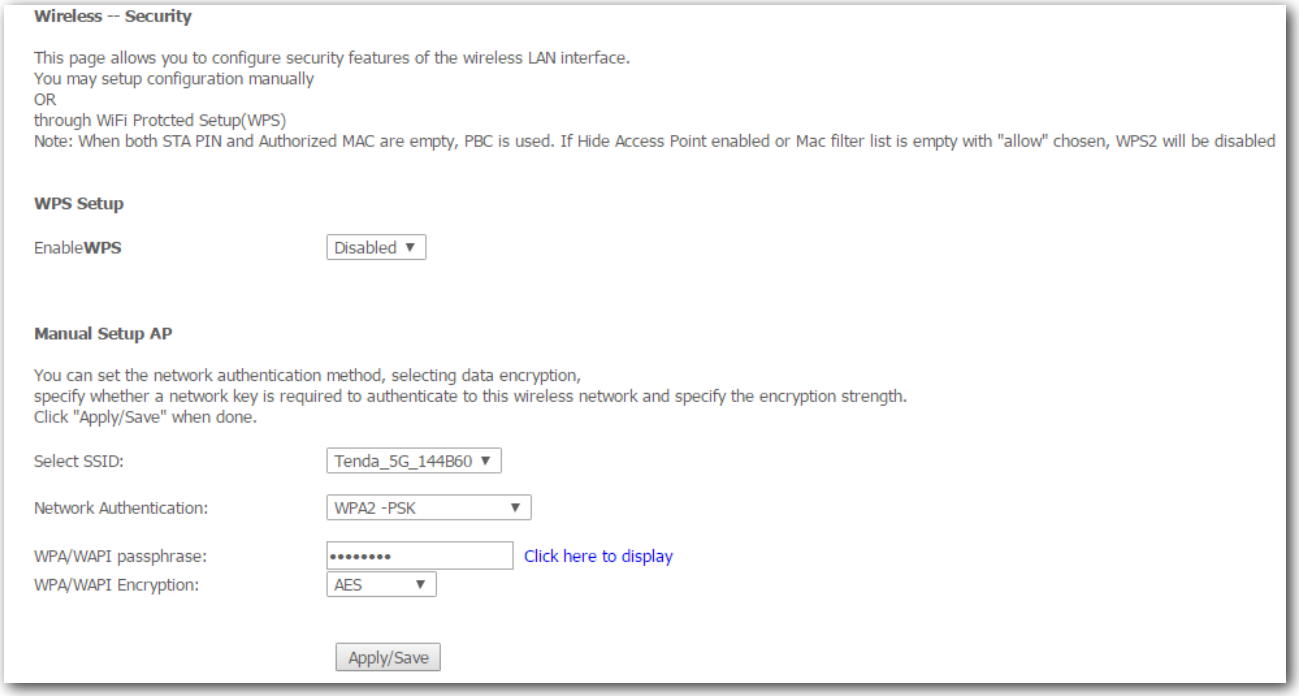


----End

5.2.2 Security

This section allows you to configure security features of the wireless network.

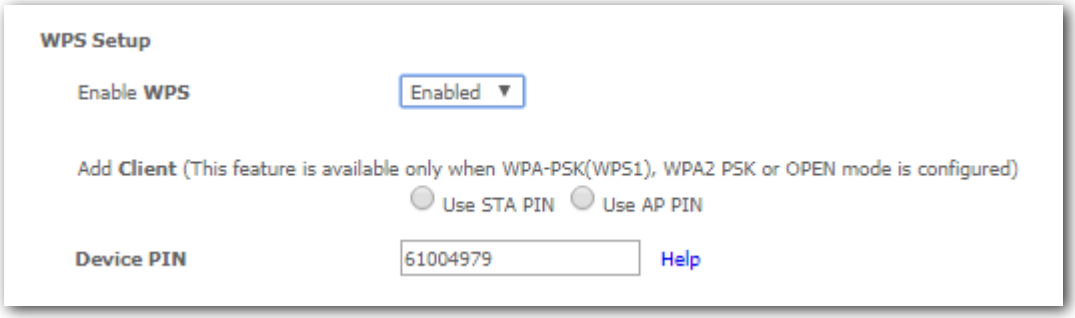
Choose **Wireless** > **5G > Security** to enter the configuration page.



5.2.2.1 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. They can set up network connections simply by entering a PIN code on the device web interface or pressing hardware WPS button (on the back panel of the device).

Select **Enabled** to enable the WPS function.



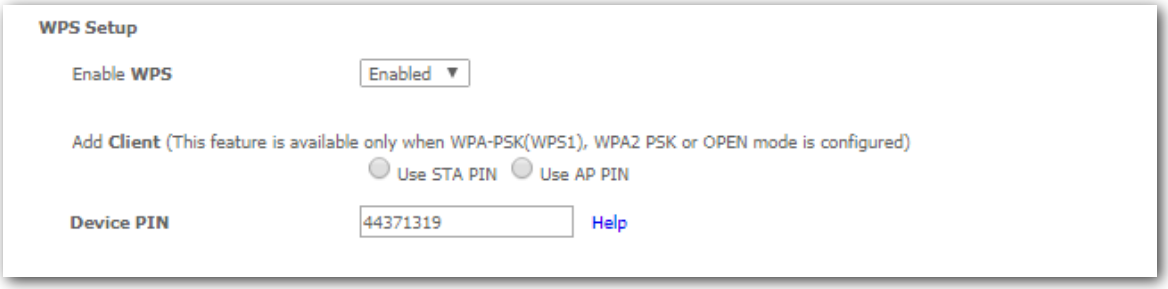
If the wireless network of the modem router is not encrypted, or the wireless network is encrypted but you forget or do not want to enter the complicated password, you can use WPS function to encrypt or connect clients to it quickly. There are three options for you:

Option 1: PBC negotiation

Step 1 Choose **Wireless** > **5G > Security** to enter the configuration page.

Step 2 Select **Enabled** to enable the function.

Step 3 Click **Apply/Save** on the bottom of this page.



Step 4 Press the WPS hardware button on the rear panel of the modem router for 3 seconds, and then release it. (The WPS LED indicator starts blinking)

Step 5 Within 2 minutes, enable the WPS negotiation function on your wireless device.

----End

When the WPS LED turns to solid green, it indicates that the PBC negotiation is successful. The wireless device is connected to the modem router, and the wireless network is encrypted.

Option 2: Using the WPS PIN code of the wireless device

Step 1 Log in to the web UI of the modem router, choose **Wireless** > **5G** > **Security** to enter the configuration page.

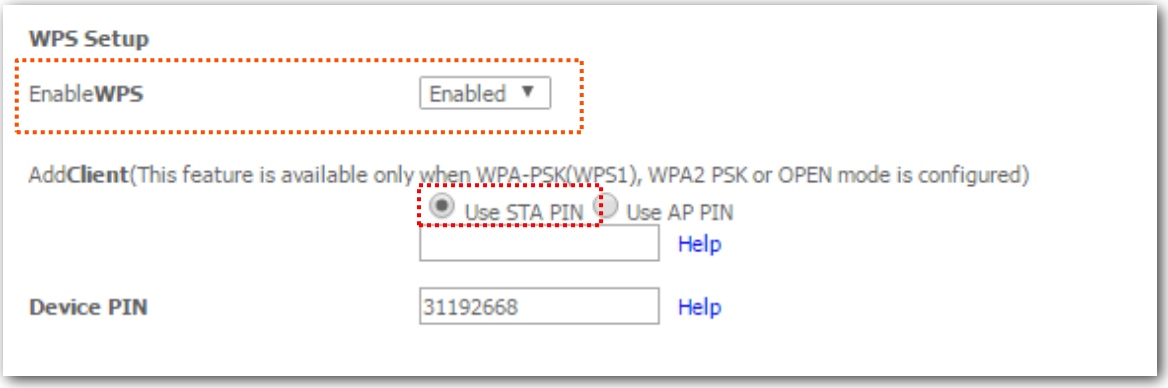
Step 2 Select **Enabled** to enable the function.

Step 3 Click **Apply/Save** on the bottom of this page.

Step 4 Select Enter STA PIN.

Step 5 Check the WPS PIN code on your wireless device and enter it to the blank box on the WPS Setup page of the web UI.

Step 6 Click **Apply/Save**.



----End

The WPS LED indicator blinks for about 2 minutes, and then turns to solid green. It indicates that the wireless device is connected to the modem router, and the wireless network is encrypted.

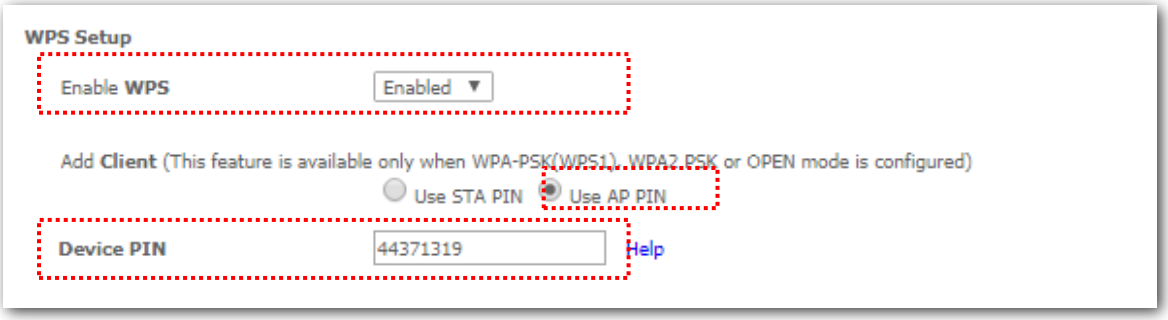
Option 3: Using the WPS PIN code of the modem router

Step 1 Log in to the web UI of the modem router, choose **Wireless** > **5G** > **Security** to enter the configuration page.

Step 2 Select **Enabled** to enable the function.

Step 3 Click **Apply/Save** on the bottom of this page.

Step 4 Select **Use AP PIN**.



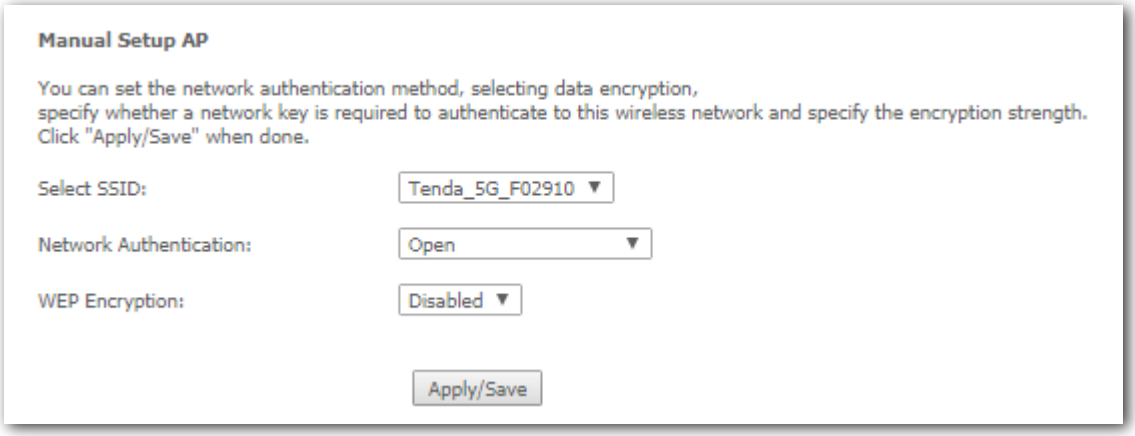
Step 5 Enter the **Device PIN** on your wireless device.

----End

When the WPS LED turns to solid on, the negotiation process is successful and the SSID and password are changed to random ones.

5.2.2.2 Manual setup AP

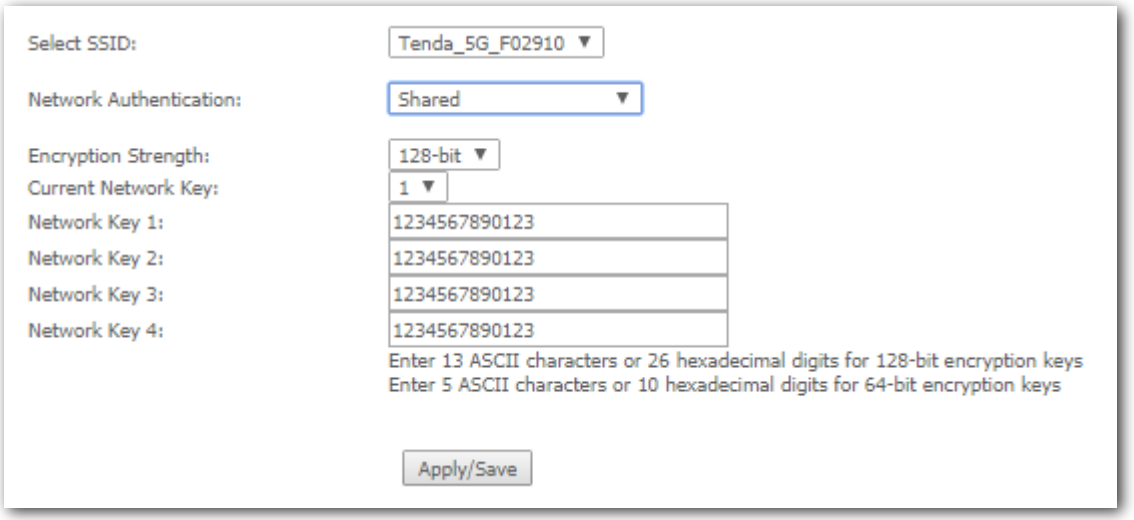
This part allows you to manually configure the encryption settings for the wireless network.



Open/Shared

Open/Shared supports WEP encryption.

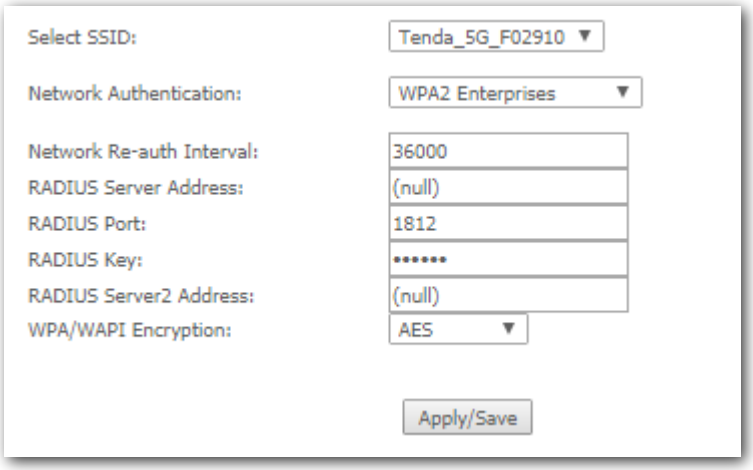
WEP is a security mode for data exchange between two devices. Wireless speed can reach 54Mbps if WEP is used.



Parameter description

Parameter	Description
Encryption Strength	Select 128-bit or 64-bit according to your needs.
Current Network Key	Select a network key to be used.
Network Key 1/2/3/4	Enter 13 ASCII characters or 26 hexadecimal digits as a 128-bit encryption key; enter 5 ASCII characters or 10 hexadecimal digits as a 64-bit encryption keys.

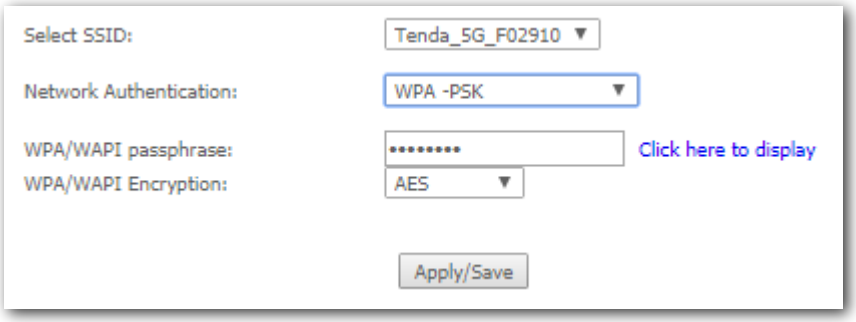
WPA2 Enterprise



Parameter description

Parameter	Description
WPA2 Enterprise	Security modes implemented based on the IEEE 802.1x, which requires the third-party RADIUS server for authentication.
Network Re-auth Interval	It specifies an interval at which a WPA key is updated. A shorter interval leads to higher security. The value 0 indicates that no key update is performed.
RADIUS Server Address	It specifies the IP address of the RADIUS server for authentication.
RADIUS Port	It specifies the authentication port of the RADIUS server. The default port number is **1812**.
RADIUS Key	It specifies a shared password of the RADIUS server, which consists of 1 to 64 ASCII characters.
RADIUS Server2 Address	It specifies the IP address of the secondary RADIUS server for authentication.
WPA/WAPI Encryption	It specifies an algorithm for WPA2 enterprise encryption. • **AES**: If it is selected, AES enabled wireless clients can join your wireless network. • **TKIP+AES**: If it is selected, both AES and TKIP enabled wireless clients can join your wireless network.

WPA-PSK/WPA2-PSK/Mixed WPA-PSK/WPA2-PSK



Parameter description

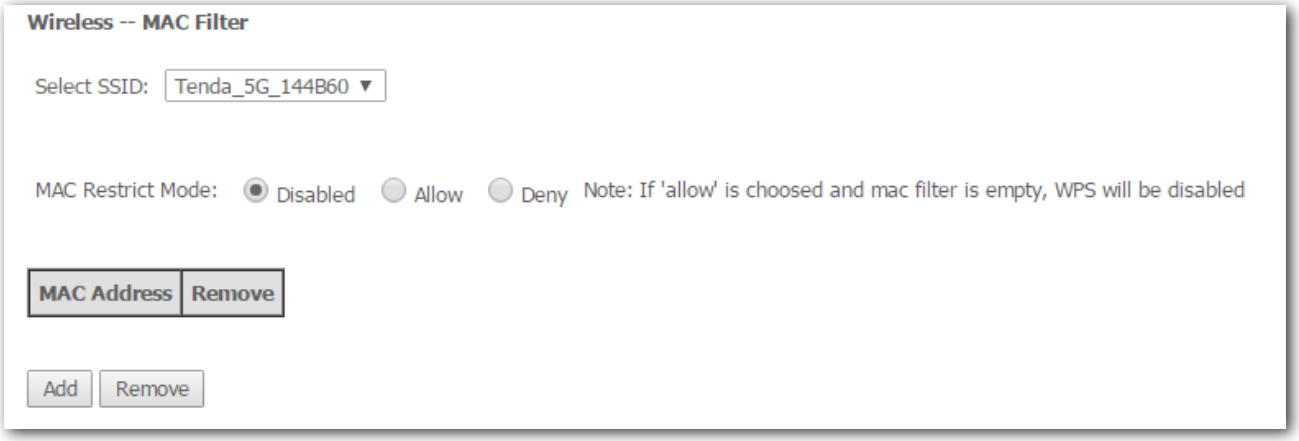
Parameter	Description
WPA-PSK/WPA2-PSK/ Mixed WPA-PSK/WPA2-PSK	They specify the security modes implemented based on a shared key.
WPA/WAPI Passphrase	It specifies the password of the wireless network.
WPA/WAPI Encryption	It specifies an algorithm for WPA encryption. • **AES**: If it is selected, the maximum wireless speed can reach 300Mbps. • **TKIP+AES**: If it is selected, both AES and TKIP enabled wireless clients can join your wireless network.

5.2.3 MAC filter

5.2.3.1 Overview

The MAC-based wireless access control feature can be used to allow or disallow clients to connect to your 5 GHz wireless networks.

Choose **Wireless** > **5G > MAC Filter** to enter the configuration page.



Parameter description

Parameter	Description
Select SSID	Select a SSID to which the rule is applied. The rule is only applicable to the devices connected to the modem router wirelessly.
MAC Restrict Mode	**Disabled**: Disable this feature.
	Allow: To allow only devices with specified MAC addresses (in the list) to connect to your wireless network.
	Deny: To disallow only devices with specified MAC addresses (in the list) to connect to your wireless network.
MAC Address	The MAC address of a device to which a MAC filter rule is applied.
Add	Used to add a rule.
Remove	Used to remove the rule.

5.2.3.2 Adding a MAC filter rule

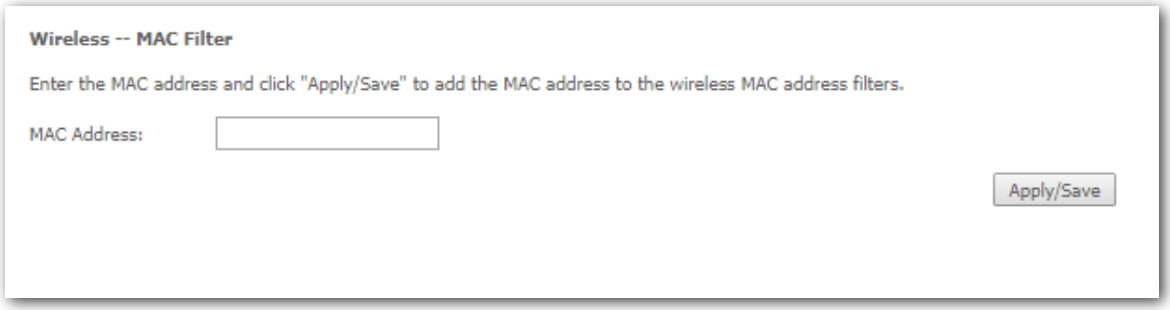
Step 1 Choose **Wireless** > **5G** > **MAC Filter** to enter the configuration page.

Step 2 Select a SSID to apply the rule if you enable multiple SSIDs.

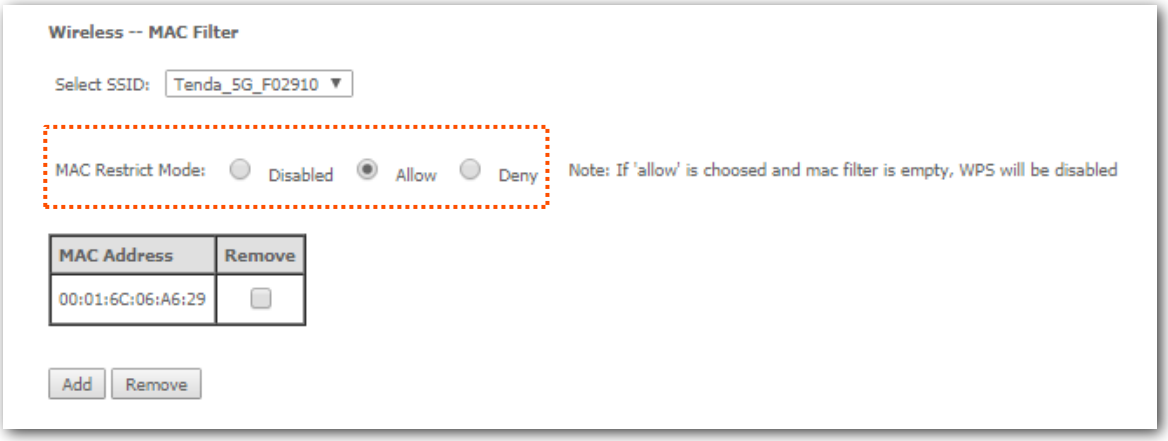
Step 3 Click **Add**.

Step 4 Enter the MAC address of the device to which the rule applies.

Step 5 Click **Apply/Save**.



Step 6 Select **Allow** or **Deny** according to your needs.



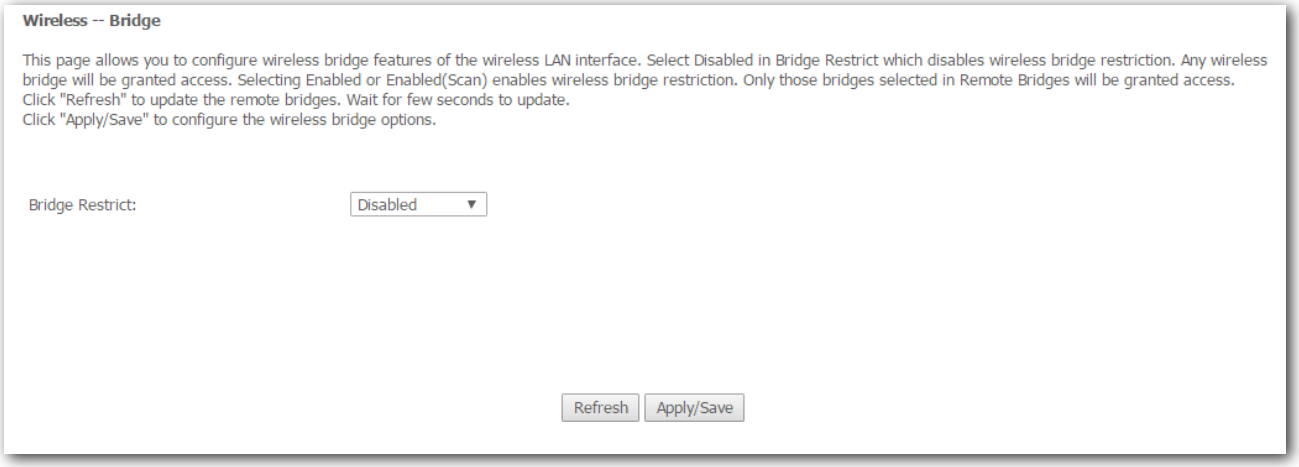
----End

5.2.4 Wireless bridge

5.2.4.1 Overview

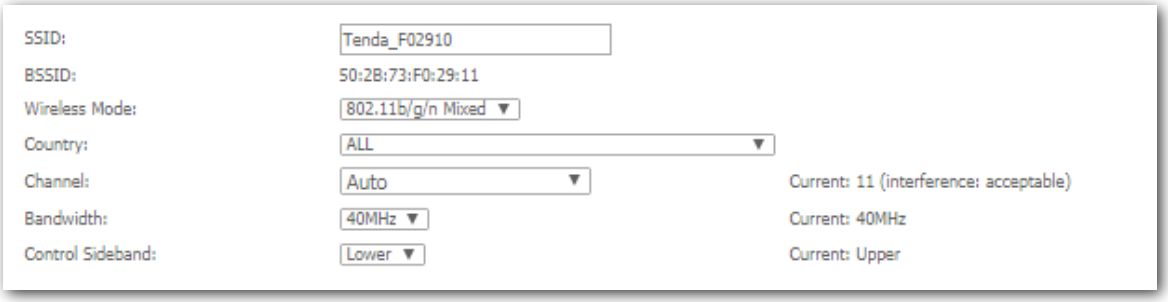
This section allows you to configure wireless bridge function of the modem router for 5 GHz. The function requires that the upstream wireless router supports wireless bridge for 5 GHz as well.

Choose **Wireless** > **5G > Wireless Bridge** to enter the configuration page.

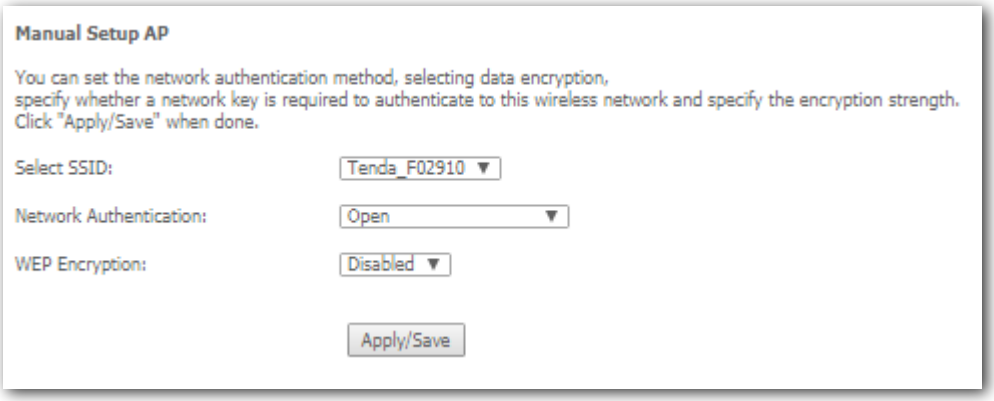


5.2.4.2 Configuration procedure

Step 1 Login to the web UI of V1200, choose **Wireless > 5G > Basic** to enter the configuration page, and set channel and bandwidth to the same with the upstream router.

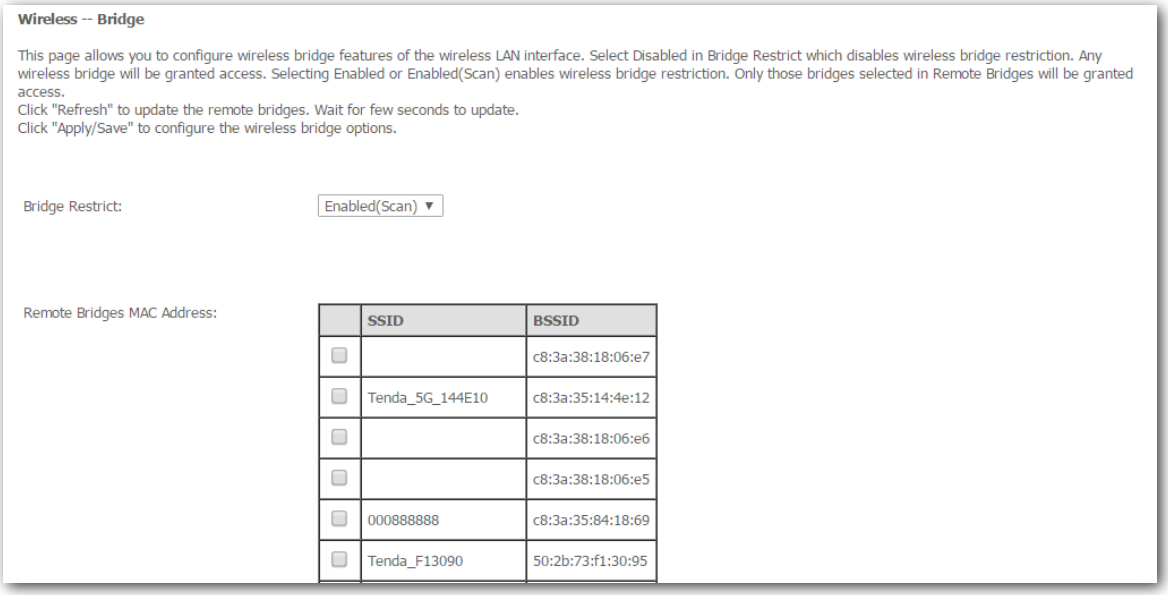


Step 2 Choose **Wireless > 5G > Security** to set up the security information, and set the network authentication type to the same with the upstream router.

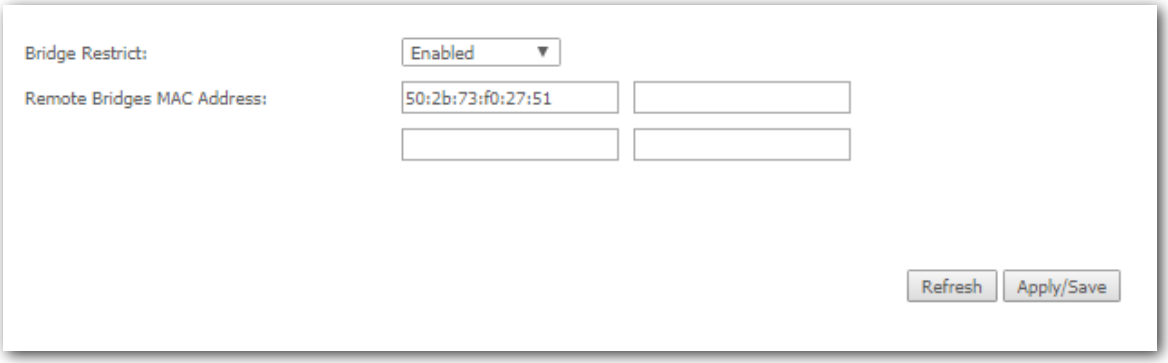


Step 3 Choose **Wireless > 5G > Wireless Bridge** to access the configuration page set up wireless bridge.

1. **Bridge Restrict**: Select **Enabled(Scan)**. It displays the available WiFi network list automatically.



2. Select the SSID you want to bridge, and click **Apply/Save.**



3. **Bridge Restrict** turns to **Enabled** automatically, click **Apply/Save**.

----End

TIP

Ensure the channel and bandwidth are the same with the router you want to bridge. Otherwise, the SSID (wireless network name) will not show in the list.

5.2.4.3 Example of configuring the wireless bridge function

Network requirement

User A purchases a wireless router for wireless coverage in his apartment. The router (Router A) is placed in the living room. The WiFi signals are strong in the living room, but too weak in the bedroom and study room. Now user A want to improve internet connectivity in the bedroom and study room.

Solution

To improve internet connectivity in the bedroom and study room, the user can add a V1200 modem router and configure the wireless bridge function of the router to extend the 5 GHz WiFi network coverage. That will eliminate blind areas in the apartment, enabling the user to access the internet anywhere in the apartment.

Assume that:

The upstream wireless router uses the following wireless settings for 5 GHz.

Parameter	Description
Wireless Network Name	Tenda_5G_123456
Wireless Network Password	12345678
Wireless Encryption	Mixed WPA2/WPA-PSK, AES
Wireless Channel	149

Parameter	Description
Bandwidth	80MHz
LAN IP	192.168.1.10

Configuration procedure

Step 1 Configure V1200.

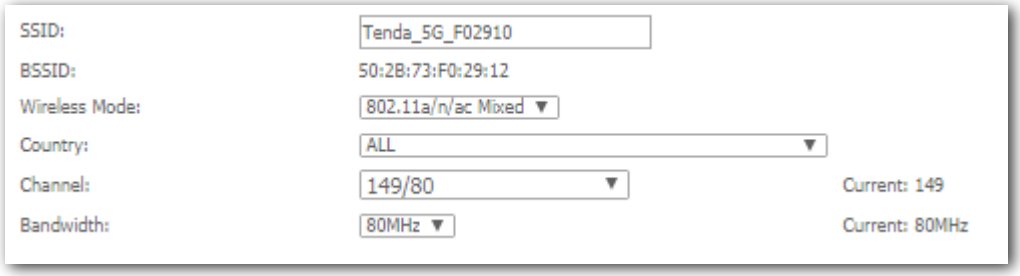
1. Change the wireless channel, encryption, and password to the same as those of the upstream router.

   (1) Choose **Wireless** > **5G** > **Basic** to enter the configuration page.

   (2) Set **Channel** to **149**.

   (3) Set **Bandwidth** to **80MHz**.

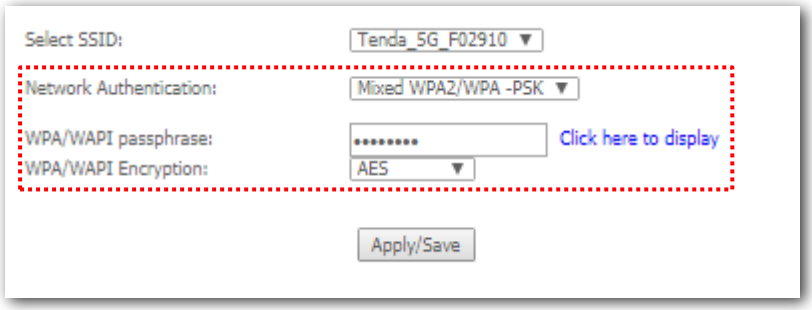
   (4) Click **Apply/Save** on the bottom of this page.



   (5) Choose **Wireless** > **5G > Security** to enter the configuration page.

   (6) Set the **Network Authentication**, **WPA/WAPI Passphrase**, and **WPA/WAPI Encryption** to **Mixed WPA2/WPA-PSK**, **12345678**, and **AES** respectively.

   (7) Click **Apply/Save** on the bottom of this page.

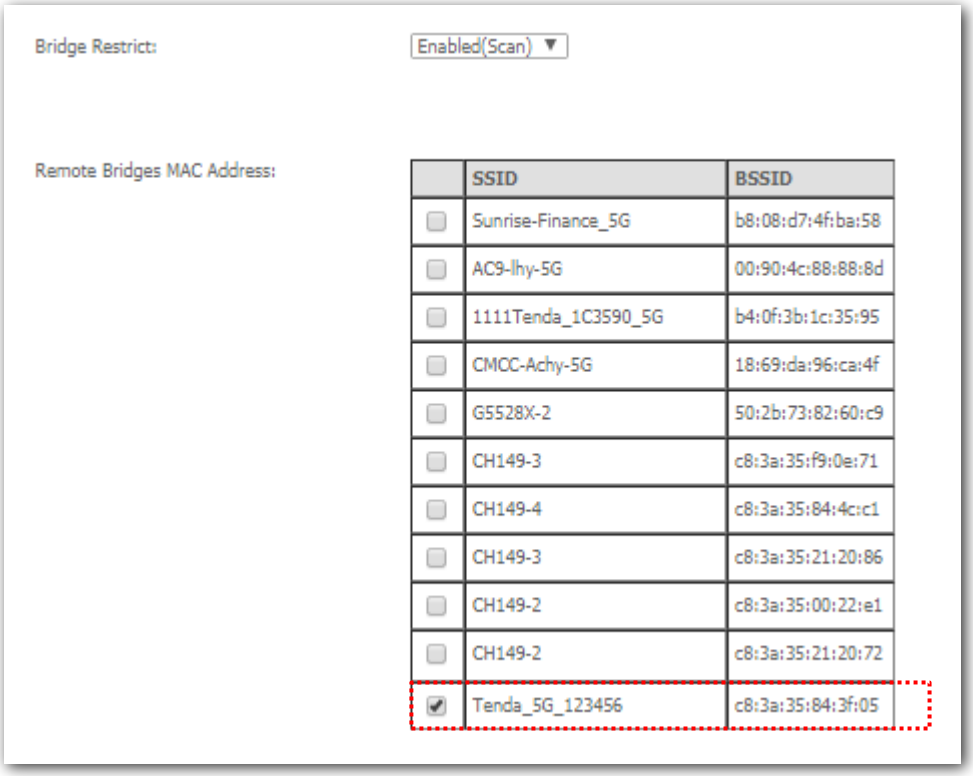


2. Configure the wireless bridge function.

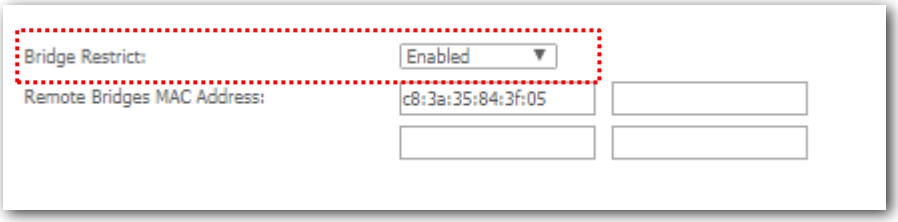
   (1) Choose **Wireless > 5G > Wireless Bridge** to enter the configuration page.

   (2) Set the **Bridge Restrict** to **Enabled(Scan)**.

   (3) Select the SSID (wireless network name) of the upstream router which is **Tenda_5G_123456** in this example.



(4) Click **Apply/Save**, **Bridge Restrict** turns to **Enabled** automatically**.**



(5) Click **Apply/Save**.

Step 2 Configure the upstream router. Perform the steps in procedure 2.

----End

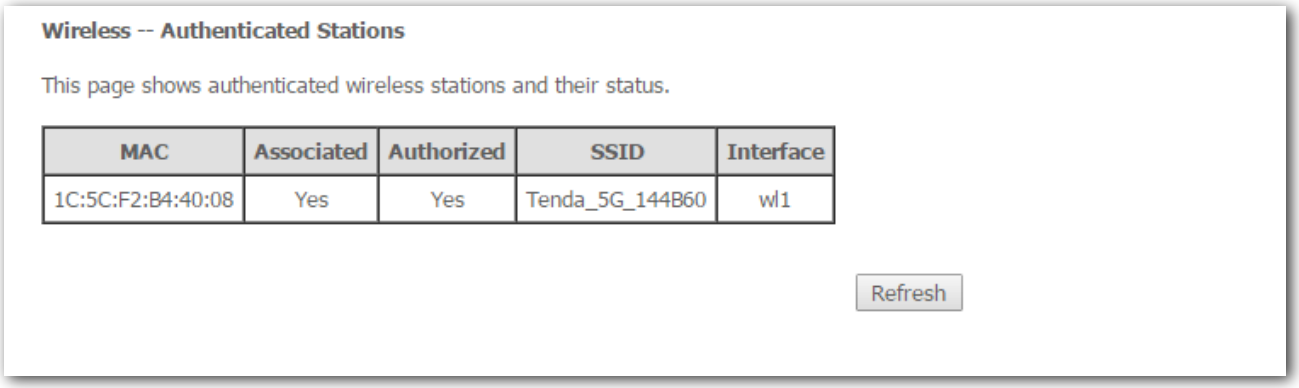
Verification

Connect your wireless devices to the WiFi network of the modem router, or connect your wired devices to ports 1, 2 or 3 of the modem router, and try accessing the internet in the bedroom and study room.

5.2.5 Station info

This section allows you to check the information of wireless clients connected to the 5 GHz wireless networks of the modem router.

Choose **Wireless > 5G > Station Info** to enter this page.



Click **Refresh** to view the latest wireless stations and their status.

6 Diagnostics

6.1 Ping

Ping test can help test whether a host or the internet is reachable.

To perform the ping test:

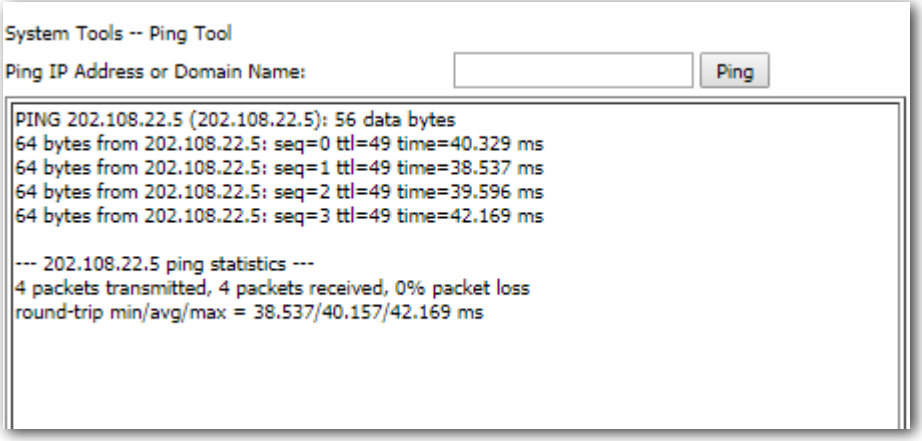
Step 1 Choose **Diagnostics** > **Ping** to enter the configuration page.

Step 2 Enter the IP address or domain name of the host in the **Ping IP Address or Domain Name** field.

Step 3 Click **Ping**.

----End

If you get a similar screenshot shown as below, it indicates that the host is reachable from the modem router.



6.2 Traceroute

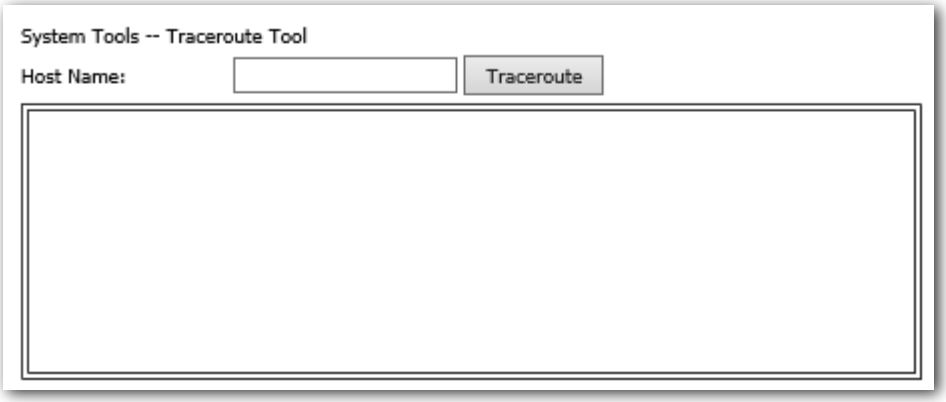
Traceroute helps you check the specific routes to a host.

To perform the traceroute:

Step 1 Choose **Diagnostics** > **Traceroute** to enter the configuration page.

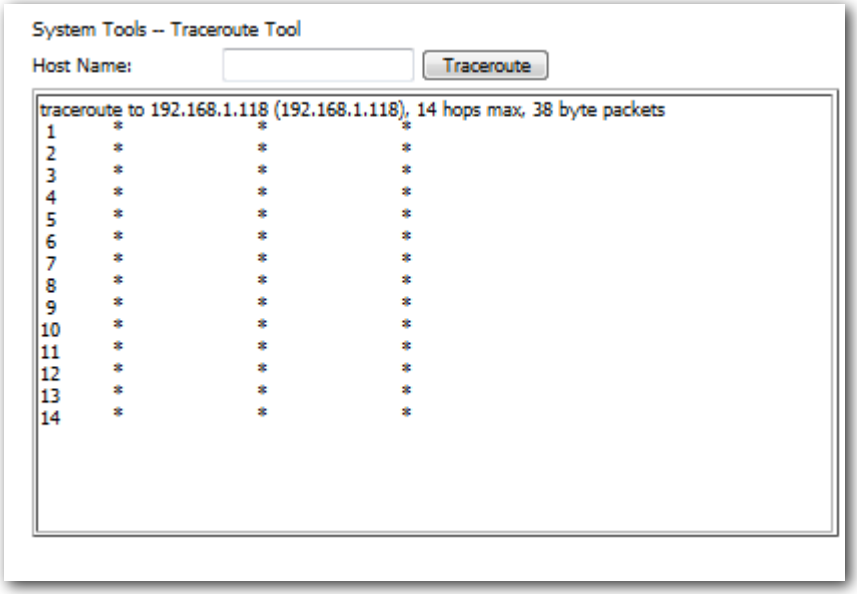
Step 2 Enter the IP address or domain name of the host in the **Host Name** field.

Step 3 Click **Traceroute**.



----End

Then you can check the result. The following route table displays the traceroute to the host whose IP address is **192.168.1.118**.



TIP

If the host is unreachable, the route table is blank.

6.3 Nslookup

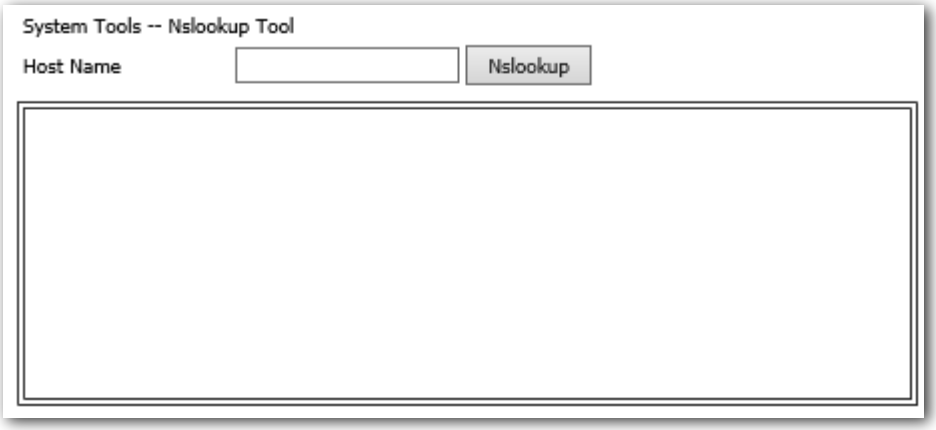
Nslookup helps you translate the domain name to a specific IP address.

To translate a domain name:

Step 1 Choose **Diagnostics** > **Nslookup** to enter the configuration page.

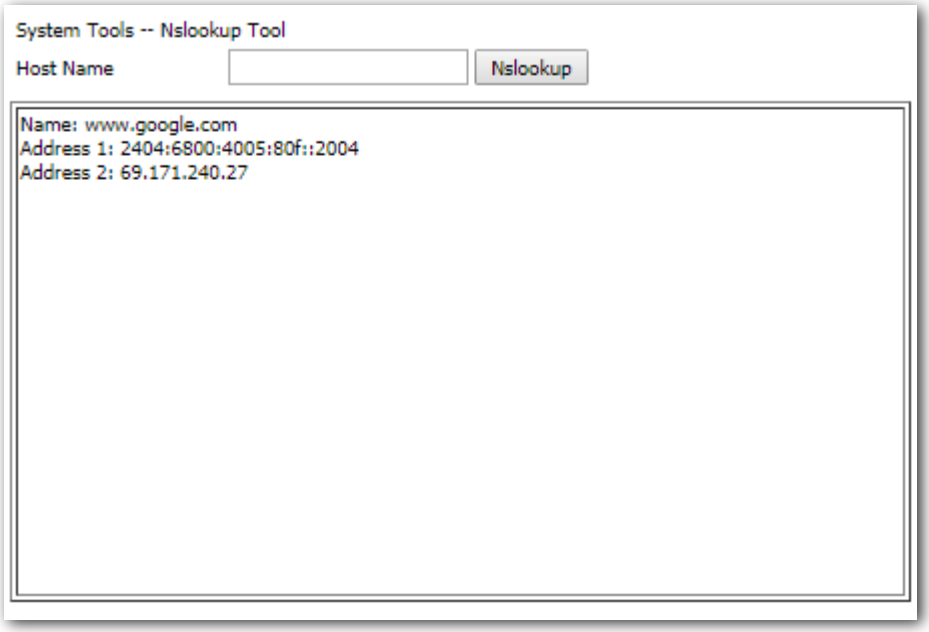
Step 2 Enter a domain name in the **Host Name** field.

Step 3 Click **Nslookup**.



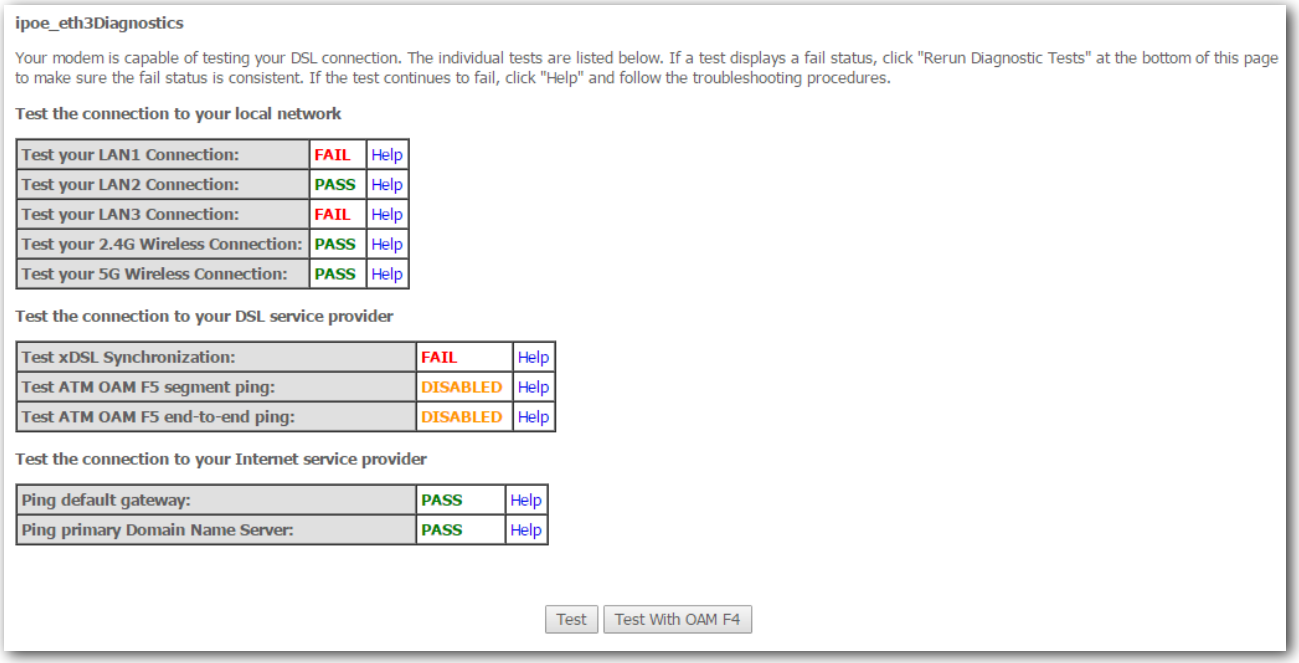
----End

Then you can check the result. The following screenshot displays the IP address of the domain name **www.google.com**.



6.4 Diagnostics

The device is capable of testing the connection to your DSL service provider, the connection to your ISP and the connection to your local network. If a test fails, click **Help** and check the troubleshooting procedures to solve the problem.



ipoe_eth3Diagnostics

Your modem is capable of testing your DSL connection. The individual tests are listed below. 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.

Test the connection to your local network

Test your LAN1 Connection:	FAIL	Help
Test your LAN2 Connection:	PASS	Help
Test your LAN3 Connection:	FAIL	Help
Test your 2.4G Wireless Connection:	PASS	Help
Test your 5G Wireless Connection:	PASS	Help

Test the connection to your DSL service provider

Test xDSL Synchronization:	FAIL	Help
Test ATM OAM F5 segment ping:	DISABLED	Help
Test ATM OAM F5 end-to-end ping:	DISABLED	Help

Test the connection to your Internet service provider

Ping default gateway:	PASS	Help
Ping primary Domain Name Server:	PASS	Help

Test | Test With OAM F4

7 Management

7.1 Settings

Here you can back up the current settings, restore earlier settings, and restore the factory settings of the device.

7.1.1 Backup

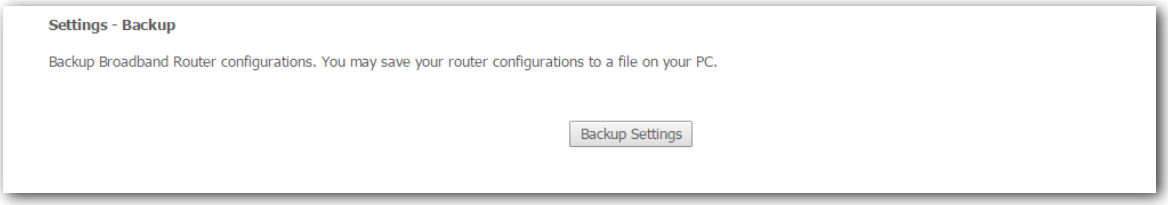
7.1.1.1 Overview

This function allows you to 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 computer. The configuration file can later be imported to your device in case the device is reset.

7.1.1.2 Backing up the settings

Step 1 Choose **Management** > **Settings** > **Backup** to access the configuration page.

Step 2 Click **Backup Settings**.



----End

7.1.2 Restore backup

7.1.2.1 Overview

This function allows you to restore the settings saved in a configuration file on your computer.

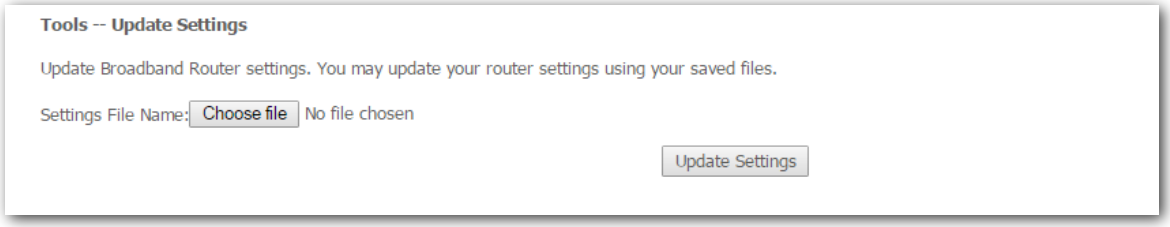
7.1.2.2 Restoring the settings

Step 1 Choose **Management** > **Settings** > **Restore Backup** to access the configuration page.

Step 2 Click **Choose File**.

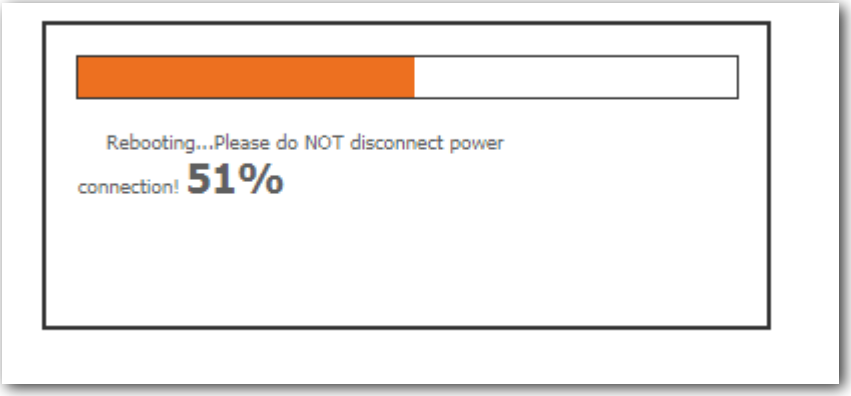
Step 3 Select a configuration file on your computer.

Step 4 Click **Update Settings**.



----End

Wait until the progress bar elapses.



7.1.3 Restore default

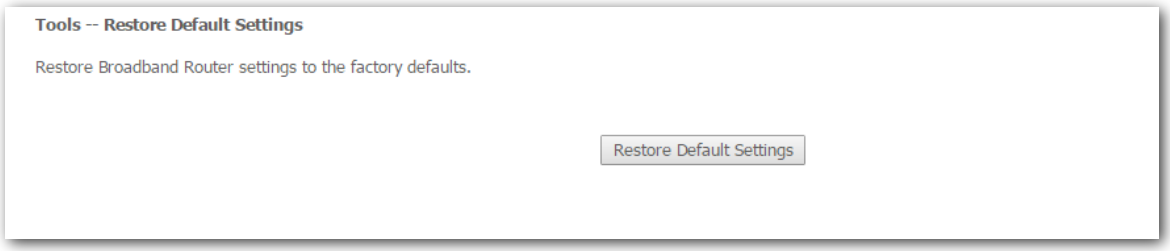
7.1.3.1 Overview

This function allows you to restore the factory settings of the device.

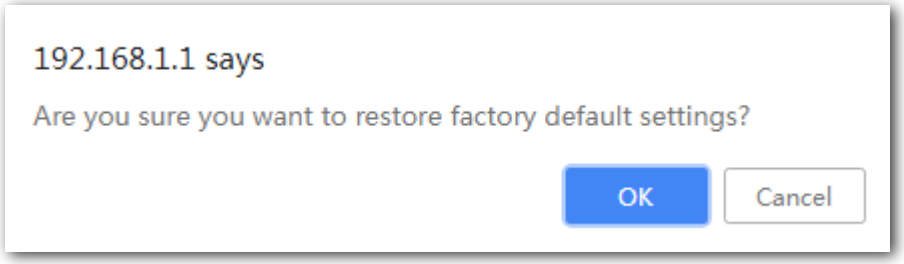
7.1.3.2 Restoring default settings

Step 1 Choose **Management** > **Setting** > **Restore Default** to access the configuration page.

Step 2 Click **Restore Default Settings**.



Step 3 Click **OK**.


192.168.1.1 says
Are you sure you want to restore factory default settings?
OK
Cancel

----End

7.2 System log

7.2.1 Overview

This function allows you to configure, view, and export system logs, which helps you understand the operating conditions of the device.

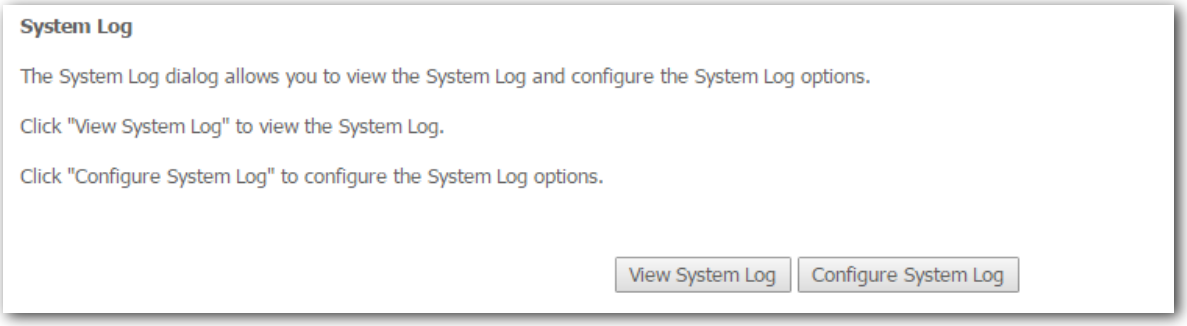
7.2.2 Viewing system logs

NOTE

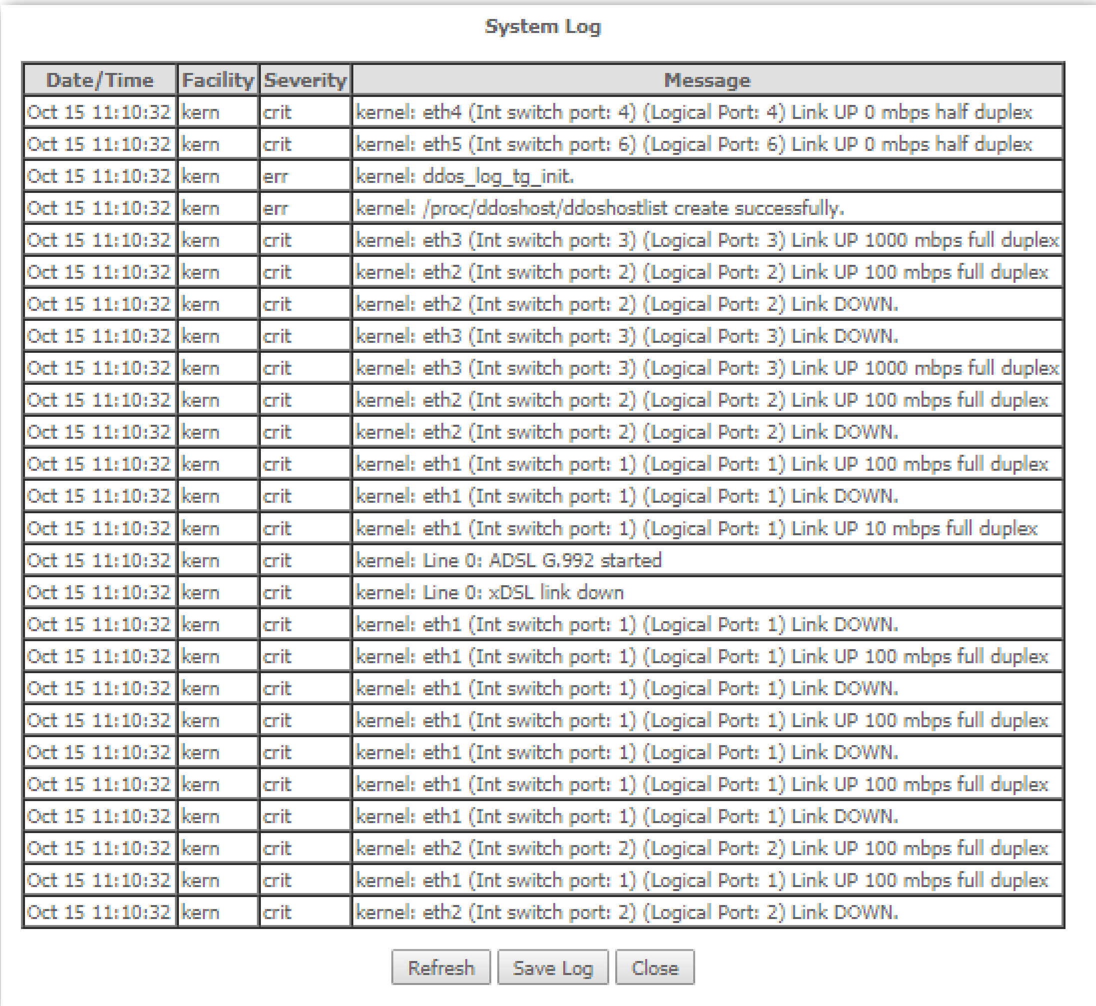
You can view system logs only after enabling the logging function. For details, see section 7.3.2 Configuring System Logs.

Step 1 Choose **Management** > **System Log** to enter the configuration page.

Step 2 Click **View System Log**.



----End



System Log

Date/Time	Facility	Severity	Message
Oct 15 11:10:32	kern	crit	kernel: eth4 (Int switch port: 4) (Logical Port: 4) Link UP 0 mbps half duplex
Oct 15 11:10:32	kern	crit	kernel: eth5 (Int switch port: 6) (Logical Port: 6) Link UP 0 mbps half duplex
Oct 15 11:10:32	kern	err	kernel: ddos_log_tg_init.
Oct 15 11:10:32	kern	err	kernel: /proc/ddoshost/ddoshostlist create successfully.
Oct 15 11:10:32	kern	crit	kernel: eth3 (Int switch port: 3) (Logical Port: 3) Link UP 1000 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth2 (Int switch port: 2) (Logical Port: 2) Link UP 100 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth2 (Int switch port: 2) (Logical Port: 2) Link DOWN.
Oct 15 11:10:32	kern	crit	kernel: eth3 (Int switch port: 3) (Logical Port: 3) Link DOWN.
Oct 15 11:10:32	kern	crit	kernel: eth3 (Int switch port: 3) (Logical Port: 3) Link UP 1000 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth2 (Int switch port: 2) (Logical Port: 2) Link UP 100 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth2 (Int switch port: 2) (Logical Port: 2) Link DOWN.
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link UP 100 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link DOWN.
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link UP 10 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: Line 0: ADSL G.992 started
Oct 15 11:10:32	kern	crit	kernel: Line 0: xDSL link down
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link DOWN.
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link UP 100 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link DOWN.
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link UP 100 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link DOWN.
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link UP 100 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link DOWN.
Oct 15 11:10:32	kern	crit	kernel: eth2 (Int switch port: 2) (Logical Port: 2) Link UP 100 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth1 (Int switch port: 1) (Logical Port: 1) Link UP 100 mbps full duplex
Oct 15 11:10:32	kern	crit	kernel: eth2 (Int switch port: 2) (Logical Port: 2) Link DOWN.

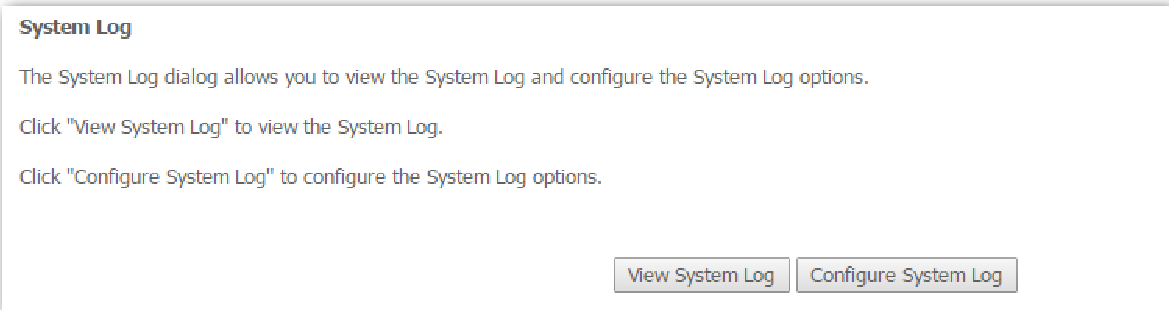
On the page that appears:

- To update the system logs, click **Refresh**.
- To export the system logs, click **Save Log** and follow the onscreen instructions to save the system logs to a file on your computer.

7.2.3 Configuring system logs

Step 1 Choose **Management > System Log** to access the configuration page.

Step 2 Click **Configure System Log**.

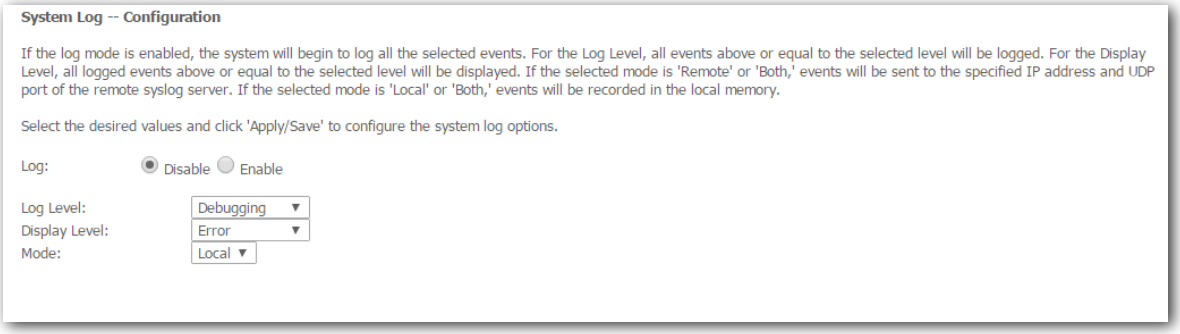


Step 3 Set **Log** to **Enable**.

Step 4 Select a logging level from the Log Level drop-down list box. All the system events at or above the selected level are logged.

Step 5 Select a log display level from the **Display Level** drop-down list box. Only the logs at or above the selected level can be viewed.

Step 6 Click **Apply/Save**.



----End

Choose **Management** > **System Log** > **View System Log** to check the logs.

7.3 Passwords

7.3.1 Overview

This function allows you to change the login password of the device.

7.3.2 Changing the login password

Step 1 Choose **Management** > **Passwords** to access the configuration page.

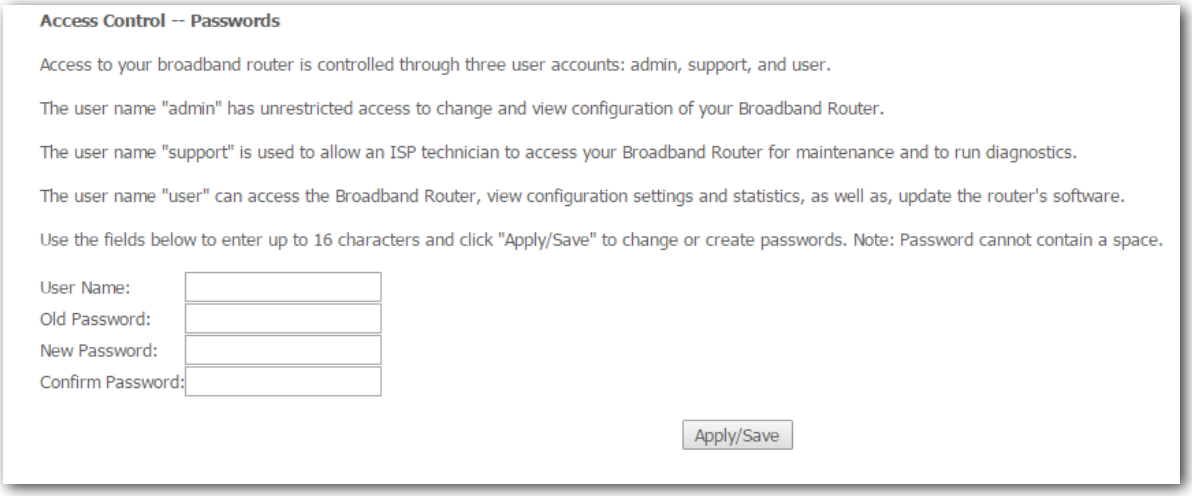
Step 2 Set **User Name** to the current user name, such as the user name **admin**.

Step 3 Set **Old Password** to the current password, such as the default password of the administrator account **admin**.

Step 4 Set **New Password** to the new password consisting of 1 to 16 letters, digits, or underscores, such as **admin1**.

Step 5 Set Confirm Password to the same value as New Password.

Step 6 Click **Apply/Save**.



----End

7.4 SNMP agent

7.4.1 Overview

The Simple Network Management Protocol (SNMP) is the most widely used network management protocol in TCP/IP networks. SNMP enables you to remotely manage all your network devices compliant with this protocol, such as monitoring the network status, changing network device settings, and receive network event alarms.

SNMP allows automatic management of devices from various vendors regardless of physical differences among the devices.

SNMP Management Framework

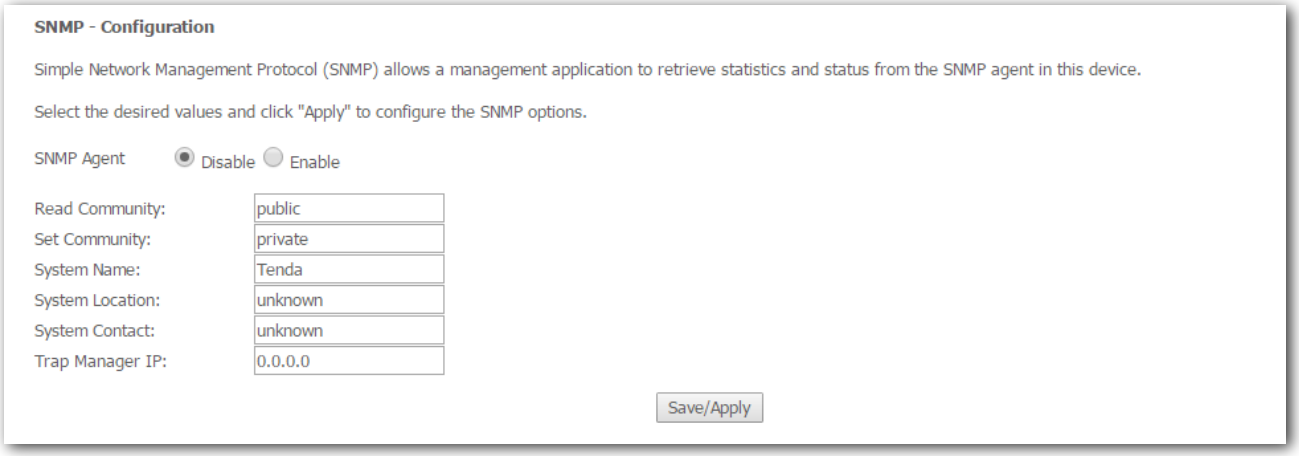
The SNMP management framework consists of SNMP manager, SNMP agent, and Management Information Base (MIB).

- SNMP manager: It is a system that controls and monitors network nodes using the SNMP protocol. The SNMP manager most widely used in network environments is Network Management System (NMS).An NMS can be a dedicated network management server, or an application that implements management functions in a network device.
- SNMP agent: It is a software module in a managed device. The module is used to manage data about the device and report the management data to an SNMP manager.
- MIB: It is a collection of managed objects. It defines a series of attributes of managed objects, including names, access permissions, and data types of objects. Each SNMP agent has its MIB. An SNMP manager can read and/or write objects in the MIB based on the permissions assigned to the SNMP manager.

An SNMP manager manages SNMP agents in an SNMP network. The SNMP manager exchanges management information with the SNMP agents using the SNMP protocol.

Parameter description

Choose **Management** > **SNMP Agent** to enter the configuration page.



Parameter	Description
SNMP Agent	It specifies whether to enable the SNMP agent function of the modem router. By default, it is disabled.
Read Community	It specifies the read password shared between SNMP managers and this SNMP agent. The default password is **public**.
Set Community	It specifies the set password shared between SNMP managers and this SNMP agent. The default password is **private**.
System Name	It specifies the device name of the modem router. The default system name is the brand of the modem router.
System Location	It specifies the location where the modem router is used. The default location is **unknown**.
System Contact	It specifies the contact information of the modem router. The default location is **unknown.**
Trap Manager IP	It specifies the IP address of the server or terminal where alarm information is sent to.

7.4.2 Configuring the SNMP agent

Step 1 Choose **Management** > **SNMP Agent** to access the configuration page.

Step 2 Set **SNMP Agent** to **Enable**.

Step 3 Set **Read Community** to the password for reading data. The default value is public.

Step 4 Set **Set Community** to the password for writing data. The default value is private.

Step 5 Set **System Name** to the name of the modem router.

Step 6 Set **System Location** to the location of the modem router.

Step 7 Set **System Contact** to the contact information of the modem router.

Step 8 Set **Trap Manager IP** to the IP address of the Trap Manager.

Step 9 Click **Apply/Save**.

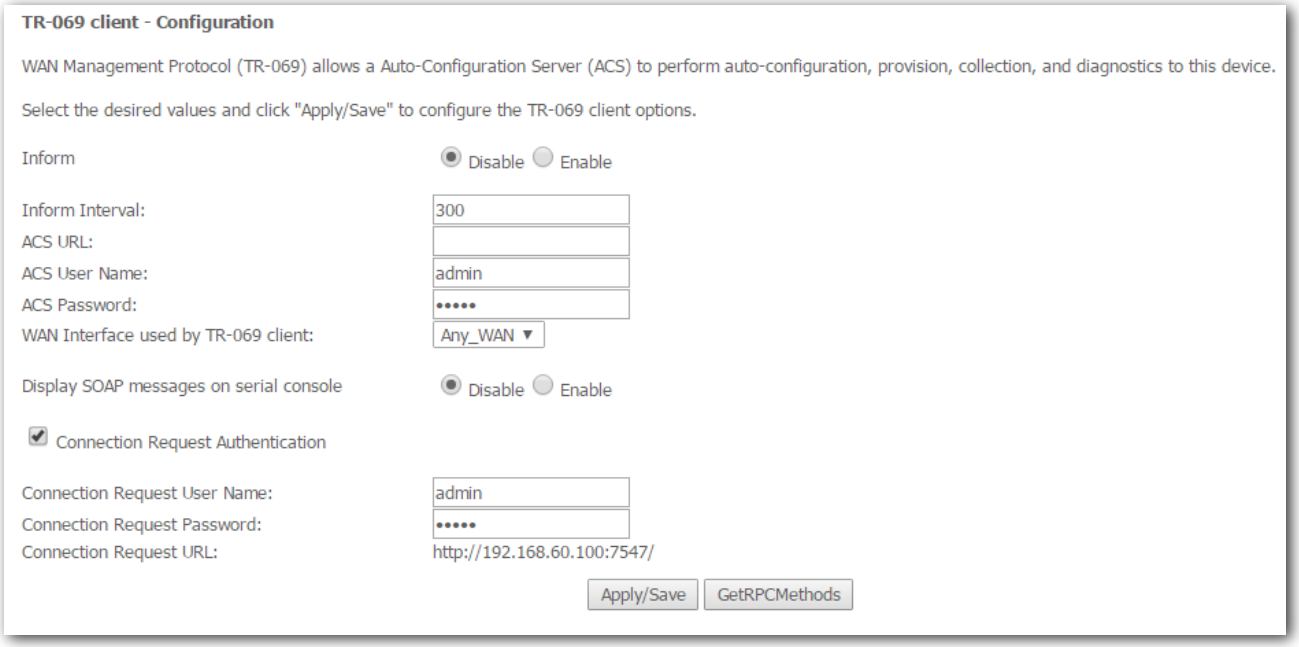
----End

7.5 TR-069 client

7.5.1 Overview

The WAN Management Protocol (TR-069) allows an Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to the modem router from the internet.

Choose **Management** > **TR-069 Client** to enter the configuration page.



Parameter description

Parameter	Description
Inform Interval	It specifies the interval at which the CPE uses the inform method to send messages to the ACS.
ACS URL	It specifies the domain name of the ACS.
ACS User Name	It specifies the user name used to authenticate the CPE when the CPE connects to the ACS using the TR-069 protocol.
ACS Password	It specifies the password used to authenticate the CPE when the CPE connects to the ACS using the TR-069 protocol.
WAN Interface used by TR-069 client	It specifies the interface used by the TR-069 client in WAN side.
Display SOAP messages on serial console	It specifies whether to display the TR-069 SOAP messages on the serial port. This function is generally used to debug by professionals. After it is enabled, some memory will be consumed which causes performance degradation. So generally it is disabled.

Parameter	Description
Connection Request Authentication	It specifies whether to authenticate the connection request sent by the ACS.
Connection Request User Name	It specifies the user name used to authenticate the ACS when it sends the connection request to the CPE.
Connection Request Password	It specifies the password used to authenticate the ACS when it sends the connection request to the CPE.
Connection Request URL	It specifies the domain name used by the ACS when it sends the connection request to the CPE. After the WAN port used by the TR-069 client is selected, this domain name will be generated automatically.

7.5.2 Configuring the TR-069 Client

Step 1 Choose **Management** > **TR-069 Client** to enter the configuration page.

Step 2 Set **Inform** to **Enable**. By default, it is disabled.

Step 3 Set **Inform Interval** to the interval at which inform packets are sent.

Step 4 Set **ACS URL** to the URL of the ACS.

Step 5 Set **ACS User Name** to the user name of the ACS.

Step 6 Set **ACS Password** to the password of the ACS.

Step 7 Select the WAN port used by the TR-069 client from the **WAN Interface used by TR-069 client** drop-down list box.

Step 8 Set **Display SOAP messages on serial console** to **Enable** if SOAP messages must be displayed on the serial console, or to disabled if SOAP messages do not need to be displayed on the serial console.

Step 9 Select **Connection Request Authentication** if connection request authentication is required.

If it is selected, perform the following steps:

1. Set **Connection Request User Name** to the user name for connection request authentication.
2. Set **Connection Request Password** to the password for connection request authentication.
3. The **Connection Request URL** will be automatically generated after the WAN interface used by the TR-069 client is selected.

Step 10 Click **Apply/Save**.

----End

NOTE

To learn about the methods supported by the ACS, click **GetRPCMethods**.

7.6 Internet time

7.6.1 Overview

This function allows you to synchronize the time of the device with the internet time.

7.6.2 Synchronizing the system time with the internet

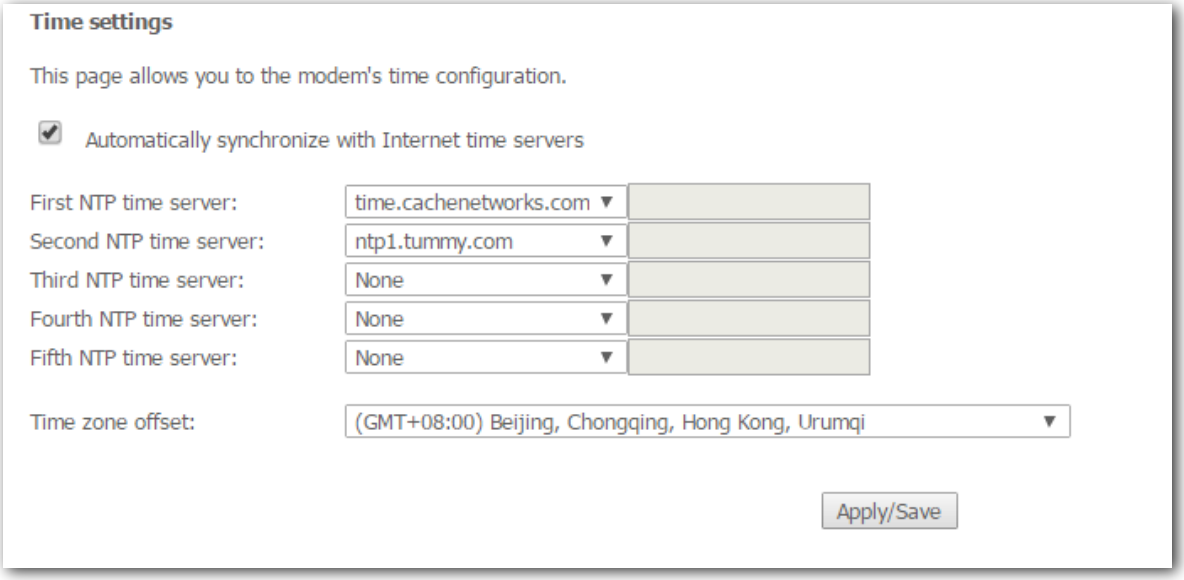
Step 1 Choose **Management** > **Internet Time** to access the configuration page.

Step 2 Select **Automatically synchronize with Internet time servers**.

Step 3 Set **First/Second/Third/Fourth/Fifth NTP time server** to the first/second/third/fourth/fifth time server with which the device time is synchronized.

Step 4 Select your time zone from the **Time zone offset** drop-down list box.

Step 5 Click **Apply/Save**.

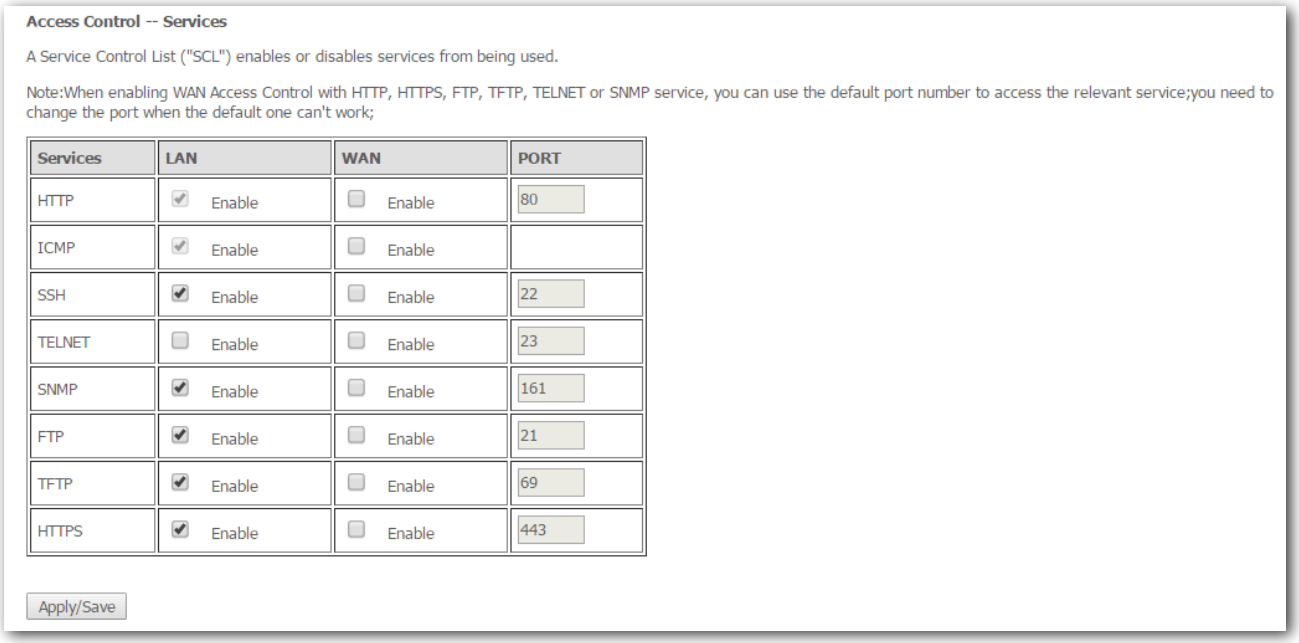


----End

7.7 Access control

This function allows you to use the HTTP, ICMP, SSH, TELNET, SNMP, FTP, TFTP and HTTPS to manage the modem router from LAN or WAN side.

Choose **Management** > **Access Control** to enter the configuration page.



Parameter description

Parameter	Description
HTTP	After it is enabled, users can manage the modem router using HTTP protocol through the browser from the corresponding sides (LAN or WAN). This method is acceptable for most users.
ICMP	After it is enabled, it allows users to ping the modem router from the corresponding sides (LAN or WAN) for connectivity diagnosis.
SSH	After it is enabled, users can manage the modem router through the Secure Shell connection (SSH).
TELNET	After it is enabled, users can use TELNET to establish a connection with the device, and visit the command-line interface of the device from the corresponding sides (LAN or WAN).
SNMP	After it is enabled, the SNMP management software can establish a connection with the device, and check some parameters of the device through MIB nodes from the corresponding sides (LAN or WAN).
FTP	After it is enabled, the modem router servers as a server and users can use FTP protocol to check, upload, or download files of the device from the corresponding sides (LAN or WAN).

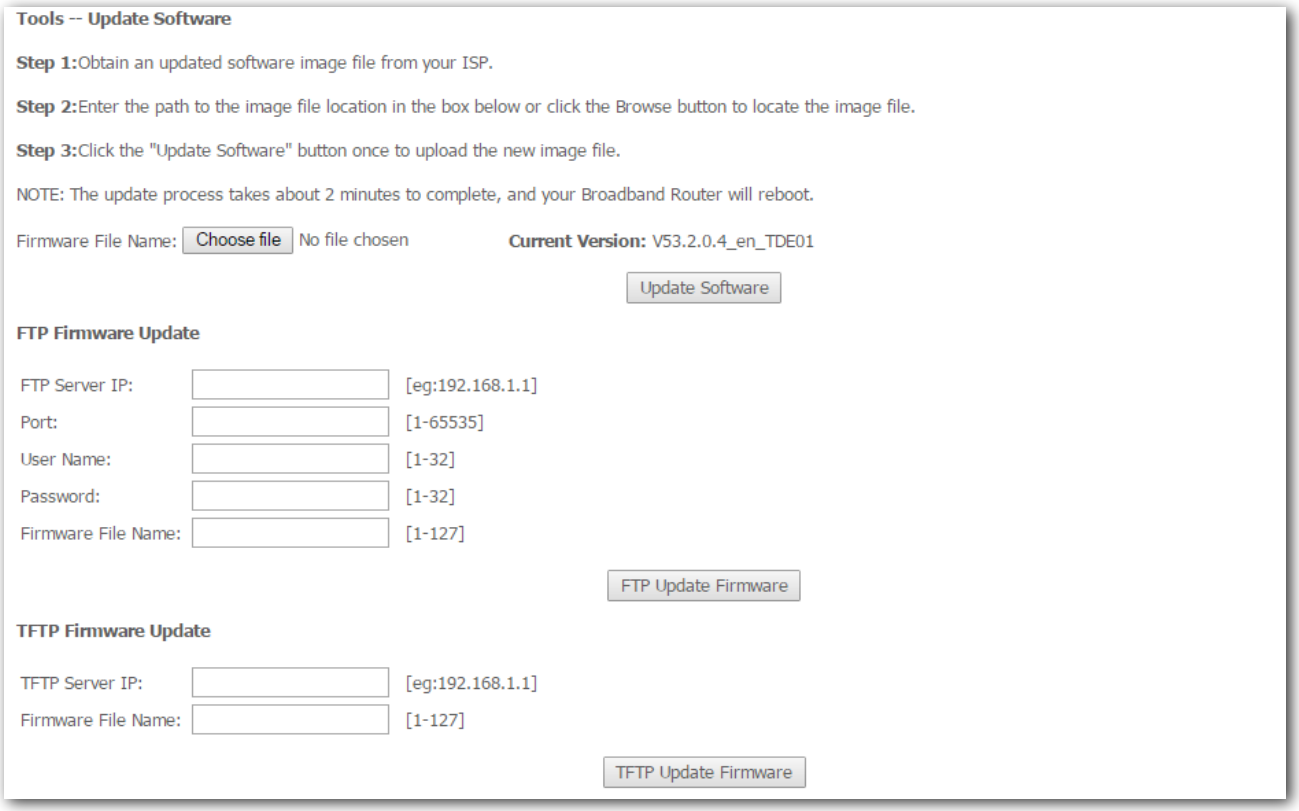
Parameter	Description
TFTP	After it is enabled, the devise servers as a server and users can use TFTP protocol to check, upload, or download files of the device from the corresponding sides (LAN or WAN).
HTTPS	After it is enabled, users can manage the device using HTTPS protocol through the browser from the corresponding sides (LAN or WAN).

7.8 Update software

7.8.1 Overview

This function allows you to upgrade the firmware of the device locally, using FTP, or using TFTP for better and more stable performance.

Choose **Management** > **Update Software** to enter the configuration page.



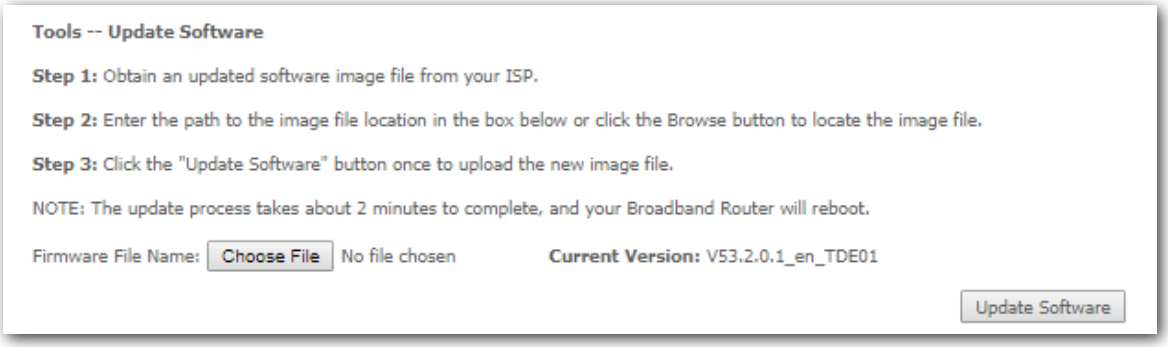
7.8.2 Upgrading the firmware locally

Step 1 Choose **Management** > **Update Software** to access the configuration page.

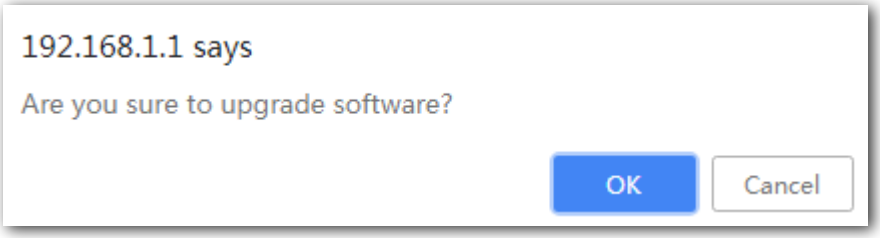
Step 2 Click **Choose File**.

Step 3 Select the firmware downloaded from the Tenda official website to your computer.

Step 4 Click **Update Firmware**.



Step 5 Click **OK.**



----End

7.8.3 Upgrading the firmware using FTP server

Step 1 Choose **Management > Update Software** to access the configuration page.

Step 2 Set **FTP Server IP** to the IP address of the FTP server where the target firmware resides.

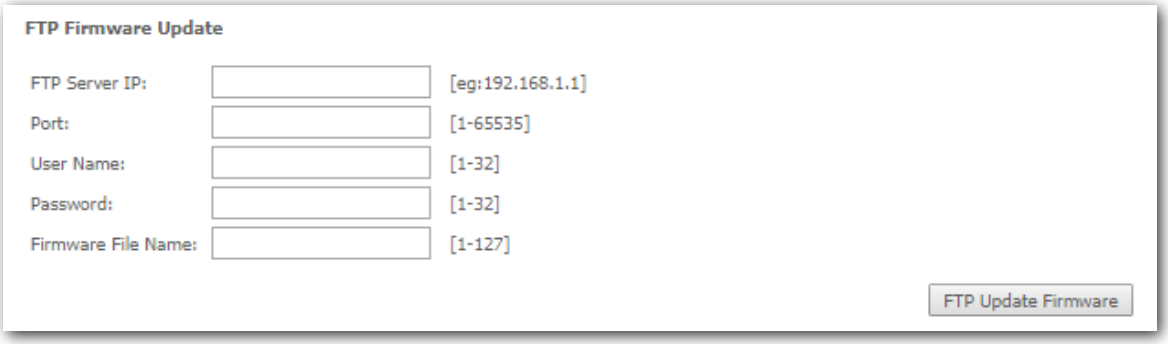
Step 3 Set **Port** to the port number of the FTP server.

Step 4 Set **User Name** to the user name for logging in to the FTP server.

Step 5 Set **Password** to the password for logging in to the FTP server.

Step 6 Set **Firmware File Name** to the file name of the target firmware.

Step 7 Click **FTP Update Firmware**.



----End

TIP

Ensure that the route between the modem router and the FTP server is reachable.

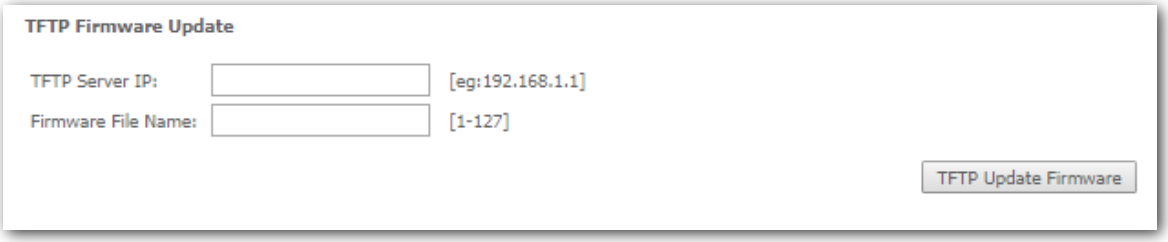
7.8.4 Upgrading the firmware using TFTP server

Step 1 Choose **Management** > **Update Software** to access the configuration page.

Step 2 Set **TFTP Server IP** to the IP address of the TFTP server where the target firmware resides.

Step 3 Set **Firmware File Name** to the file name of the target firmware.

Step 4 Click **TFTP Update Firmware**.



----End

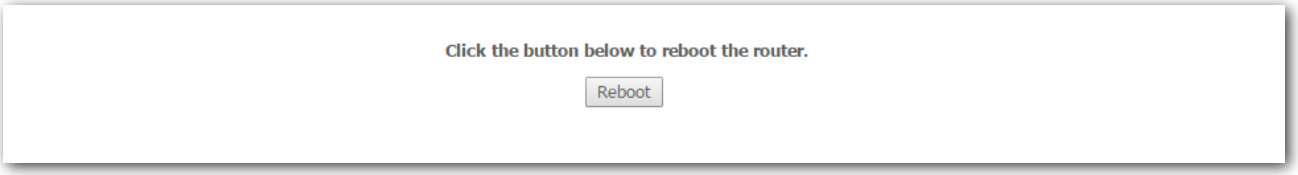
TIP

Ensure that the route between the modem router and the TFTP server is reachable.

7.9 Reboot

This function allows you to manually reboot the device on the web UI.

Choose **Management** > **Reboot** to enter the configuration page.



To manually reboot the device, click **Reboot**, and then wait for the modem router to restart.

Appendix

A.1 FAQ

Q1: I cannot log in to the web UI of the modem router. What should I do?

A1: Use the following method to troubleshoot the fault, and then try again.

- Ensure that the Ethernet cable between your computer and the modem router is connected properly.
- Ensure that your computer is set to **Obtain an IP address automatically**.
- Ensure that the login IP address (192.168.1.1) you entered is correct.
- Clear cache of your browser, or change another browser.
- Use another computer, smart phone or tablet to log in to the web UI.
- Hold down the **RST** button for about 6 seconds to restore to factory settings.

Q2: I cannot access the internet after completing the configuration, what should I do?

A2: Use the following method to troubleshoot the fault.

- Observe the **DSL** LED indicator. If it doesn't light up, check whether the connection between the DSL port and Phone jack is proper.

  If you access the internet via the WAN port (port 4) of the modem router, check whether the connection between port 4 and the upstream device or Ethernet jack is proper.
- Observe the **INET** LED indicator. If it lights red, check whether the parameters you entered for internet access are correct, and the connection status on the web UI of the modem router is connected.
- Check whether your computers are set to **Obtain an IP address automatically**.
- Contact your internet service provider for help.

Q3: I forget my WiFi password, what should I do?

A3: Use the following method to troubleshoot the fault.

- Log in to the web UI of the modem router, and check it on the **Wireless Settings** part.
- If you forget the login password of the web UI as well, reset the modem router. By default, there is no WiFi password.

Q4: How to reset the modem router?

A4: When the **PWR** LED indicator is solid green, hold down the **RST** button for 6 seconds.

A.2 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/Region	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

Country/Region	ISP	VPI	VCI	Encapsulation
Belgium	Turboline	8	35	PPPoA LLC
Belgium	Turboline	8	35	1483 Bridged IP LLC
Belgium	ADSL Office	8	35	1483 Bridged IP 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
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
Colombia	EMCALI	0	33	PPPoA VC-MUX
Columbia	ETB	0	33	PPPoE LLC
Costa Rica	ICE	1	50	1483 Routed IP LLC
Czech Republic		8	48	1483 Bridged IP LLC
Denmark	Cybercity, Tiscali	0	35	PPPoA VC-MUX
Dominican Republic		0	33	1483 Bridged IP LLC

Country/Region	ISP	VPI	VCI	Encapsulation
Dubai		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
Finland	Sauna Lahti	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
France	Free	8	36	LLC
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
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
Indonesia Speedy Telkomnet		8	81	PPPoE LLC

Country/Region	ISP	VPI	VCI	Encapsulation
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 (1)		0	35	PPPoE LLC
Iran (2)		8	81	PPPoE LLC
Iran	Dadegostar Asre Novin	0	33	PPPOE LLC
Israel		8	35	PPPoA VC-MUX
Israel(1)		8	48	PPPoA VC-MUX
Italy		8	35	1483 Bridged IP LLC
Italy		8	35	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

Country/Region	ISP	VPI	VCI	Encapsulation
Jamaica (4)		0	35	1483 Bridged IP LLC SNAP
Kazakhstan	Kazakhtelecom «Megaline»	0	40	LLC/SNAP Bridging
Kazakhstan		0	33	PPPoA VC-MUX
kuwait unitednetwork		0	33	1483 Bridged IP LLC
Malaysia	Streamyx	0	35	PPPOE LLC
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
morocco	IAM	8	35	PPPOE
Netherlands	BBNED	0	35	PPPoA VC-MUX
Netherlands	MXSTREAM	8	48	1483 Bridged IP LLC
Netherlands	BBNED	0	35	1483 Bridged IP LLC
Netherlands	MX Stream	8	48	PPPoA VC-MUX
New Zealand	Xtra	0	35	PPPoA VC-MUX
New Zealand	Slingshot	0	100	PPPoA VC-MUX
Orange Nyumbani (Kenya)		0	35	PPPoE LLC
Pakistan (PALESTINE)		8	35	1483 Bridged IP LLC
Pakistan for PTCL		0	103	1483 Bridged IP LLC
Pakistan (cyber net)		8	35	PPPoE LLC
Pakistan (linkDotnet)		0	35	PPPoA LLC

Country/Region	ISP	VPI	VCI	Encapsulation
Pakistan(PTCL)		8	81	PPPoE LLc
Philippines(1)		0	35	1483 Bridged IP LLC
Philippines(2)		0	100	1483 Bridged IP LLC
Portugal		0	35	PPPoE LLC
Puerto Rico	Coqui.net	0	35	PPPoA LLC
RomTelecom Romania:		0	35	1483 Bridged IP LLC
Russia	Rostel	0	35	PPPoE LLC
Russia	Port telecom	0	35	PPPoE LLC
Russia	VNTC	8	35	PPPoE 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	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

Country/Region	ISP	VPI	VCI	Encapsulation
Spain	Telefónica (España)	8	32	1483 Bridged IP LLC/SNAP
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	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
Spain	Wanadoo (3)	8	32	1483 Routed IP LLC
SpainWanadoo		8	32	1483 Bridged IP LLC
Sri Lanka Telecom-(SLT)		8	35	PPPOE LLC
Sweden	Telenordia	8	35	PPPoE
Sweden	Telia	8	35	1483 Routed IP LLC
Switzerland		8	35	1483 Bridged IP LLC
Switzerland		8	35	PPPoE LLC

Country/Region	ISP	VPI	VCI	Encapsulation
Telefónica (Argentina)		8	35	1483 Bridged IP LLC-based
Telefónica (Perú)		8	48	1483 Bridged IP 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
Trinidad & Tobago	TSTT	0	35	PPPoA VC-MUX
Turkey (1)		8	35	PPPoE LLC
Turkey (2)		8	35	PPPoA VC-MUX
UAE (Al sahmil)		0	50	1483 Bridged IP 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

Country/Region	ISP	VPI	VCI	Encapsulation
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

Country/Region	ISP	VPI	VCI	Encapsulation
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
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
UK		0	38	1483 Bridged IP LLC
Uzbekistan	Sharq Stream	8	35	PPPoE LLC
Uzbekistan	Sarkor	0	33	PPPoE LLC
Uzbekistan	TShTT	0	35	PPPoE LLC

Country/Region	ISP	VPI	VCI	Encapsulation
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

A.3 VLAN List

Country/Region	ISP	VLANID	Protocol
Albania	VDSL	101	PPPoE
	Other		
Algeria	VDSL	Disabled	PPPoE
	Other		
Argentina	Telecom	150	PPPoE
	Telefonica	20	PPPoE
	Other		
Australia	TransAct	10	PPPoE
	NetSpeed	10	PPPoE
	CBIT Internet	10	PPPoE
	EveryNet	10	PPPoE
	IINET	10	PPPoE
	Infinite	10	PPPoE
	Officelink	10	PPPoE
	Velocitynet	10	PPPoE

Country/Region	ISP	VLANID	Protocol
	Other		
Austria	Telekom	7	PPPoE
	Other		
Bahrain	VDSL	Disabled	PPPoE
	Other		
Balize	VDSL	Disabled	PPPoE
	Other		
Belgium	VDSL	Disabled	PPPoE
	Other		
Bengal	VDSL	Disabled	PPPoE
	Other		
Bolivia	VDSL	Disabled	PPPoE
	Other		
Brazil	VDSL	Disabled	PPPoE
	Other		
Cameroon	VDSL	Disabled	PPPoE
	Other		
Canada	VDSL	Disabled	PPPoE
	Other		
Chile	VDSL	Disabled	PPPoE
	Other		
Colombia	VDSL	Disabled	PPPoE
	Other		
Costa Rica	VDSL	Disabled	PPPoE

Country/Region	ISP	VLANID	Protocol
	Other		
Czech Republic	VDSL	Disabled	PPPoE
	Other		
Denmark	VDSL	Disabled	PPPoE
	Other		
Dominican Republic	VDSL	Disabled	PPPoE
	Other		
Egypt	VDSL	Disabled	PPPoE
	Other		
Fiji	VDSL	Disabled	PPPoE
	Other		
Finland	VDSL	Disabled	PPPoE
	Other		
France	Orange	835	PPPoE
	Sfr(1) PPPoE	835	PPPoE
	Sfr(1) Dynamic IP	835	Dynamic IP
	Sfr(2) PPPoE	836	PPPoE
	Sfr(2) Dynamic IP	836	Dynamic IP
	Free	836	PPPoE
	Bouygues Telecom	200	PPPoE
	Numericable	200	PPPoE
	Ovh PPPoE	835	PPPoE
	Ovh Dynamic IP	835	Dynamic IP
	Nordnet PPPoE	835	PPPoE

Country/Region	ISP	VLANID	Protocol
	Nordnet Dynamic IP	835	Dynamic IP
	Other		
Georgia	VDSL	200	Dynamic IP
	Other		
Germany	1&1	7	PPPoE
	Alice(1)	11	PPPoE
	Alice(2)	7	PPPoE
	Congstar	7	PPPoE
	Easybell	7	PPPoE
	EncoLine	142	Dynamic IP
	EWE TEL	2019	PPPoE
	GMX	7	PPPoE
	KielNET	7	PPPoE
	M-Net	40	PPPoE
	Osnatel	2019	PPPoE
	O2(1)	11	PPPoE
	O2(2)	7	PPPoE
	NetCologne/NetAachen(1)	10	PPPoE
	NetCologne/NetAachen(2)	7	PPPoE
	QSC/Q-DSL	7	PPPoE
	Telekom	7	PPPoE
	Swb(1)	Disabled	PPPoE
	Swb(2)	7	PPPoE
	Versatel	7	PPPoE

Country/Region	ISP	VLANID	Protocol
	Vodafone/Arcor(1)	132	PPPoE
	Vodafone/Arcor(2)	7	PPPoE
	Wilhelm.tel	7	PPPoE
	Willy.tel	2511	PPPoE
	Other		
Greece	CYTA	835	PPPoE
	Forthnet	1102	PPPoE
	Hellas Online	835	PPPoE
	OTE	835	PPPoE
	WIND	835	PPPoE
	Other		
Guatemala	VDSL	835	PPPoE
	Other		
Honduras	VDSL	835	PPPoE
	Other		
Hong Kong	Hutchison PPPoE	Disabled	PPPoE
	Hutchison Dynamic IP	Disabled	Dynamic IP
	Hutchison Static IP	Disabled	Static IP
	WharfT&T PPPoE	Disabled	PPPoE
	WharfT&T Dynamic IP	Disabled	Dynamic IP
	WharfT&T Static IP	Disabled	Static IP
	Other		
Hungary	VDSL	Disabled	PPPoE
	Other		

Country/Region	ISP	VLANID	Protocol
Iceland	VDSL	Disabled	PPPoE
	Other		
India	VDSL	Disabled	PPPoE
	Other		
Indonesia	VDSL	Disabled	PPPoE
	Other		
Iran	VDSL	Disabled	PPPoE
	Other		
Ireland	Eircom	10	PPPoE
	Bbnet	10	PPPoE
	Other		
Israel	BEZEQ	Disabled	PPPoE
	Other		
Italy	VDSL	Disabled	PPPoE
	Other		
Jamaica	VDSL	Disabled	PPPoE
	Other		
Jordan	VDSL	Disabled	PPPoE
	Other		
Kazakhstan	VDSL	Disabled	PPPoE
	Other		
Kenya	VDSL	Disabled	PPPoE
	Other		
Korea	VDSL	Disabled	PPPoE

Country/Region	ISP	VLANID	Protocol
	Other		
kuwait	VDSL	Disabled	PPPoE
	Other		
Lebanon	VDSL	Disabled	PPPoE
	Other		
Lesotho	VDSL	Disabled	PPPoE
	Other		
Macau	VDSL	Disabled	PPPoE
	Other		
Malaysia	VDSL	Disabled	PPPoE
	Other		
Mexico	VDSL	Disabled	PPPoE
	Other		
Morocco	VDSL	Disabled	PPPoE
	Other		
Nepal	VDSL	Disabled	PPPoE
	Other		
Netherlands	KPN PPPoE	6	PPPoE
	KPN Dynamic IP	6	Dynamic IP
	Telfort PPPoE	34	PPPoE
	Telfort Dynamic IP	34	Dynamic IP
	Voiceworks	101	Dynamic IP
	XS4ALL PPPoE	6	PPPoE
	XS4ALL Dynamic IP	6	Dynamic IP

Country/Region	ISP	VLANID	Protocol
	Other		
New Zealand	Spark/Telecom	10	PPPoE
	KiwiLink	10	PPPoE
	Slingshot	10	PPPoE
	Vodafone NZ	10	PPPoE
	Snap	10	PPPoE
	Myrepublic	10	PPPoE
	Callplus PPPoE	10	PPPoE
	Other		
Norway	VDSL	Disabled	PPPoE
	Other		
Oman	VDSL	Disabled	PPPoE
	Other		
Pakistan	VDSL	Disabled	PPPoE
	Other		
Palestine	VDSL	Disabled	PPPoE
	Other		
Panama	VDSL	Disabled	PPPoE
	Other		
Peru	VDSL	Disabled	PPPoE
	Other		
Paraguay	VDSL	Disabled	PPPoE
	Other		
Philippines	VDSL	Disabled	PPPoE

Country/Region	ISP	VLANID	Protocol
	Other		
Poland	Orange	Disabled	PPPoE
	Netia	Disabled	PPPoE
	Other		
Portugal	VDSL	Disabled	PPPoE
	Other		
Puerto Rico	VDSL	Disabled	PPPoE
	Other		
Qatar	Q-Tel/Ooreedo	8	PPPoE
	Other		
Romania	VDSL	Disabled	PPPoE
	Other		
Russia	Rostelecom	Disabled	PPPoE
	Other		
Saudi Arabia	VDSL	Disabled	PPPoE
	Other		
Singapore	VDSL	Disabled	PPPoE
	Other		
Slovakia	T-COM	2510	PPPoE
	Orange	2510	PPPoE
	AMIS	Disabled	PPPoE
	Other		
South Africa	VDSL	Disabled	PPPoE
	Other		

Country/Region	ISP	VLANID	Protocol
Spain	Telefonica	6	PPPoE
	Vodafone	100	PPPoE
	Jazztel	1074	PPPoE
	Other		
Sri Lanka	VDSL	Disabled	PPPoE
	Other		
Sweden	VDSL	Disabled	PPPoE
	Other		
Switzerland	Swisscom	10	PPPoE
	Other		
Syria	SAMA-Net	10	PPPoE
	Other		
Taiwan	VDSL	Disabled	PPPoE
	Other		
Thailand	VDSL	Disabled	PPPoE
	Other		
Tonga	VDSL	Disabled	PPPoE
	Other		
Trinidad and Tobago	VDSL	Disabled	PPPoE
	Other		
Turkey	Turktelekom	35	PPPoE
	Superonline	35	PPPoE
	Vodafone	35	PPPoE
	Turknet	35	PPPoE

Country/Region	ISP	VLANID	Protocol
	D-Smart	35	PPPoE
	Other		
Ukraine	VDSL	Disabled	PPPoE
	Other		
United Arab Emirates	VDSL	Disabled	PPPoE
	Other		
United Kingdom	AAISP	101	PPPoE
	BT	101	PPPoE
	Claranet	101	PPPoE
	EE	101	PPPoE
	Idnet	101	PPPoE
	Plusnet	101	PPPoE
	TalkTalk	101	Dynamic IP
	Vispa	101	PPPoE
	Zen	101	PPPoE
	Other		
United States	VDSL	Disabled	PPPoE
	Other		
Uraguay	VDSL	Disabled	PPPoE
	Other		
Uzbekistan	VDSL	Disabled	PPPoE
	Other		
Venezuela	VDSL	Disabled	PPPoE
	Other		

Country/Region	ISP	VLANID	Protocol
Vietnam	VDSL	Disabled	PPPoE
	Other		
Yemen	VDSL	Disabled	PPPoE
	Other		
Zimbabwe	VDSL	Disabled	PPPoE
	Other		

A.4 Factory settings

Parameter		Default Setting
Login Information	Login Method	HTTP (web UI)
	Login IP	192.168.1.1
	Login User name/Password	admin/admin
	Web Logout	3 minutes
Network Settings	Link Type	VDSL
	Connection Type	PPPoE
	IP Address Type	IPv4
	Firewall	Enabled
	NAT	Enabled
	IGMP Multicast Proxy	Disabled
	802.1P Priority	-1 (indicates disabled)
	802.1Q VLAN ID	-1 (indicates disabled)
DSL Settings	DSL Link Type	EoA (include PPPoE, IPoE, and Bridge)
	Encapsulation Mode for EoA	LLC/SNAP-BRIDGING
	Encapsulation Mode for PPPoA	VC/MUX
	Encapsulation Mode for IPoA	LLC/SNAP-ROUTING
	Scheduler for Queues of Equal Precedence	Round Robin
Wireless Settings	Wireless feature	Enabled
	Hide Access Point	Disabled
	SSID	2.4GHz: Tenda_*XXXXXX* 5GHz: Tenda_5G_*XXXXXX* *XXXXXX* is the last six characters of the MAC address of the modem router.

Parameter		Default Setting
	BSSID	2.4GHz: The MAC address on the product label + 1. 5GHz: The MAC address on the product label + 2.
	WMF	Enabled
	Channel	Auto
	Network Authentication	Open
	WPS Setup	Disabled
	MAC Filter	Disabled
	Wireless Bridge	Disabled
LAN Settings	IP Address	192.168.1.1
	Subnet Mask	255.255.255.0
	Primary DNS server	192.168.1.1
DHCP Setting	Status	Enabled
	Start IP	192.168.1.2
	End IP	192.168.1.254
	Lease Time	24 hours
Management	TR-069 client	Disabled
	Login User Name/Password	Administrator account: admin/admin Support account: support/support User account: user/user
	Access Control-Services	HTTP (LAN), ICMP (LAN), SSH (LAN), SNMP (LAN), FTP (LAN), TFTP (LAN) and HTTPS (LAN)
	Time settings	Automatically synchronize with Internet time servers (GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi
Others	Parental Control	Disabled
	Quality of Service	Enabled

Parameter		Default Setting
	Virtual Servers	Disabled
	Port Triggering	Disabled
	DMZ Host	Disabled
	UPnP	Enabled
	Storage Service	Enabled
	IPTV	Disabled