Tenda

User Guide

AX1500 Dualband Wi-Fi 6 Gigabit VDSL/ADSL Modem Router
V15

www.tendacn.com

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Preface

This guide describes how to configure each feature of the AX1500 Dualband Wi-Fi 6 Gigabit VDSL/ADSL Modem Router. In this guide, unless otherwise specified, all screenshots are taken from V15 V1.0.

NOTE

Features available in the modem router may vary by model and software version. Modem router availability may also vary by region or ISP. All images, steps, and descriptions in this guide are only examples and may not reflect your actual modem router experience.

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.

More information and support

Visit www.tendacn.com and search for the product model to get your questions answered and get the latest documents.

Revision history

Tenda is constantly searching for ways to improve its products and documentation. The following table indicates any changes that might have been made since this guide was first published.

Version	Date	Description
V1.0	2025-05-30	Original publication.

Contents

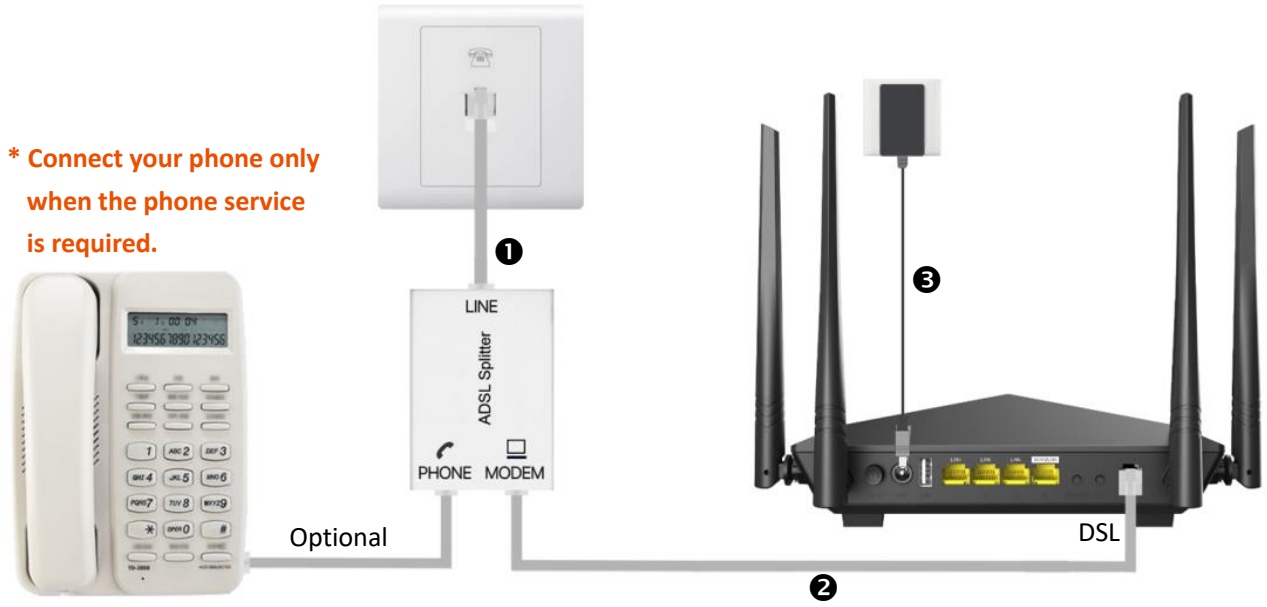
1 Connect modem router

1.1 Connect uplink devices

This modem router can be used in different typical ways, and you can select one as required.

- **Serving as a wireless DSL modem router or wireless DSL modem**

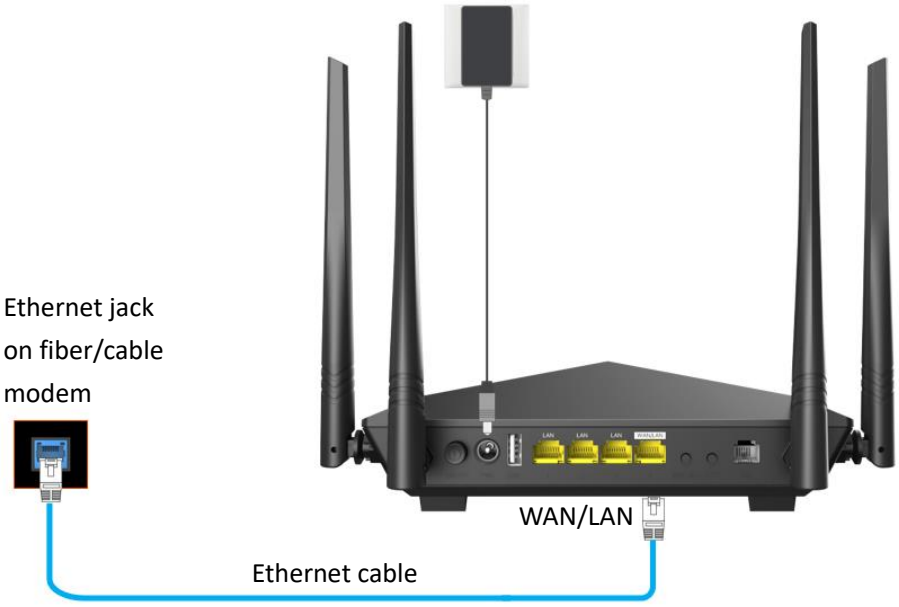
If you access the internet with a phone cable, connect the modem router as shown in the following figure.



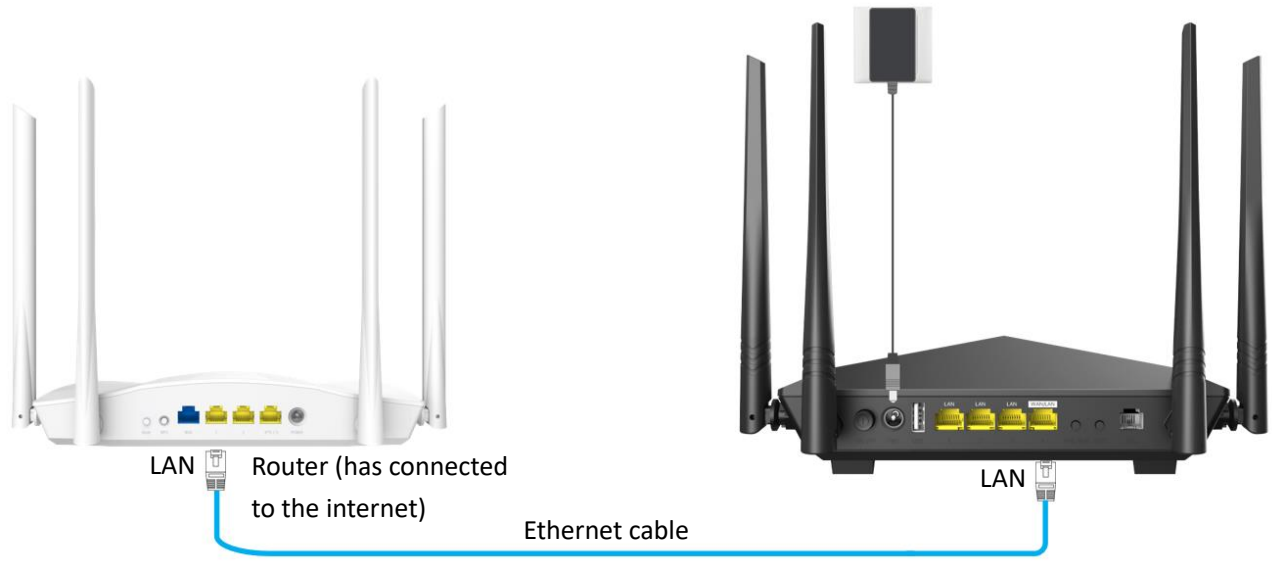
- **Serving as a wireless router**

If you access the internet with an Ethernet cable, connect the modem router as shown in the following figure.

Method 1



Method 2



1.2 Power on the modem router

1. Use the included power adapter to connect the modem router to a power source.
2. Press the **ON/OFF** button of the modem router.

----End

The system startup is complete when the **PWR** indicator remains solid green for about 10 seconds.

1.3 Connect user devices to the modem router

- **For wired devices (such as computers)**

Connect to a LAN port of the modem router using an Ethernet cable.

- **For Wi-Fi-enabled devices (such as smartphones or tablets)**

Connect to a Wi-Fi of the modem router. You can find the default **SSID** (Wi-Fi name) and **WLAN Key** (Wi-Fi password) on the bottom label of the modem router.

2 Login and logout

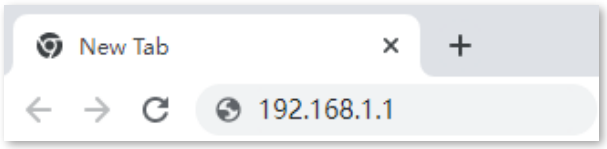
2.1 Login

1. Connect your smartphone (or tablet) to the Wi-Fi, or connect your computer to a LAN port of the modem router.

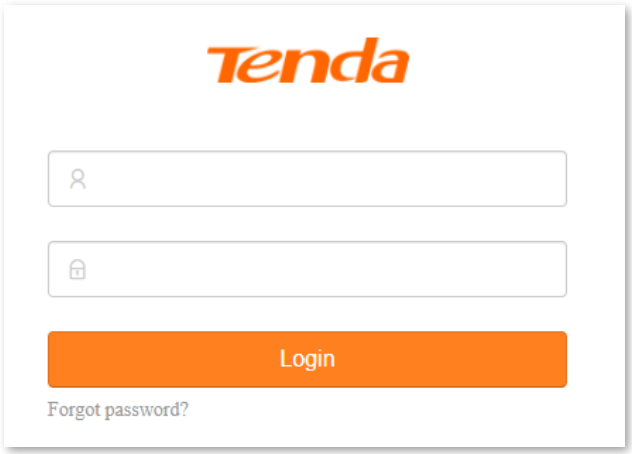
   TIP

   The default Wi-Fi information can be found on the bottom of the modem router.

2. Start a web browser on the device (computer used as an example here) connected to the modem router, enter the LAN IP address of the modem router (**192.168.1.1** by default) in the address bar, and visit it.



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



----End

TIP

If the above page does not appear, try the following solutions:

- If you are using a Wi-Fi-enabled device, such as a smartphone:
  - Verify that the device connects to the Wi-Fi of the modem router.
  - Verify that the cellular network (mobile data) of the device is disabled.
- If you are using a wired device, such as a computer:
  - Verify that the Ethernet cable between your computer and the modem router is connected properly.
  - Verify that your computer is set to **Obtain an IP address automatically**.
  - Verify that you entered the IP address of the modem router (**192.168.1.1** by default) in the address bar rather than the search bar.
  - Clear cache of your browser, or use another browser.
  - Use another computer to log in again.

If the problem persists, reset the modem router and try again.

2.2 Logout

If you log in to the web UI of the modem router and perform no operation within 5 minutes, the modem router logs you out automatically. You can also log out by clicking **Logout** in the top right corner of the web UI.

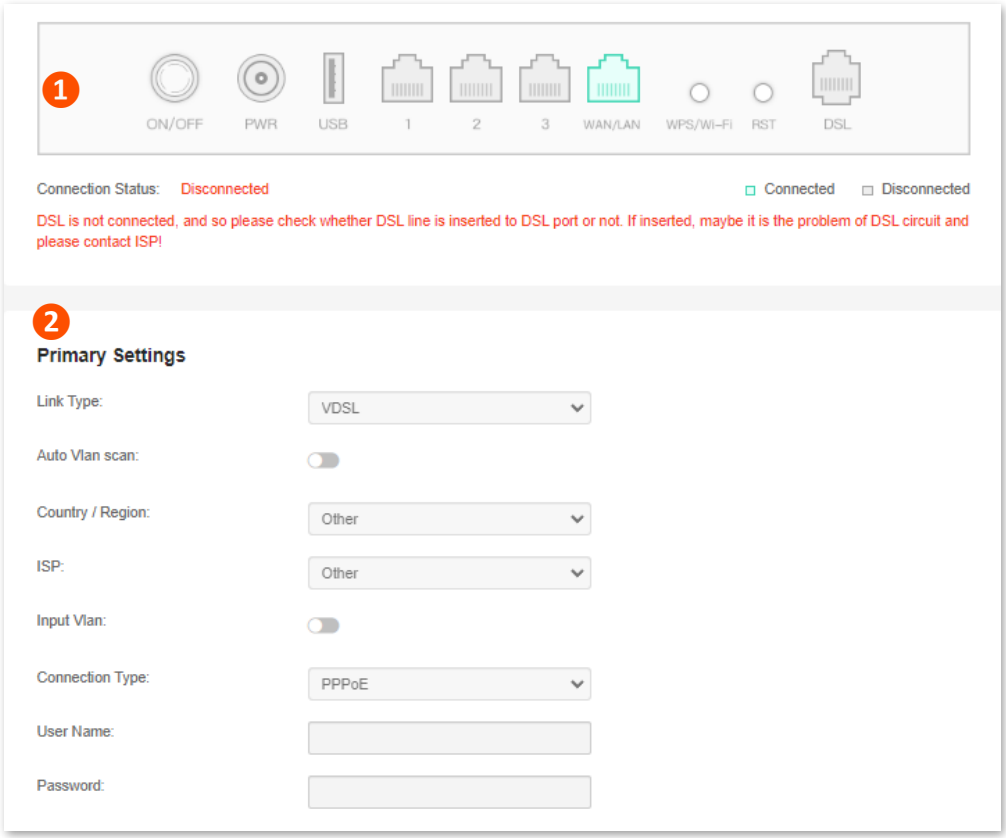
3 Web UI

3.1 Layout

The web UI of the modem router includes two main configuration pages, that is, the EasySet page and Advance page.

3.1.1 EasySet page

By default, the **EasySet** page is displayed upon your login. It is used for quick setup. It consists of two sections, including the connection status and configuration area.

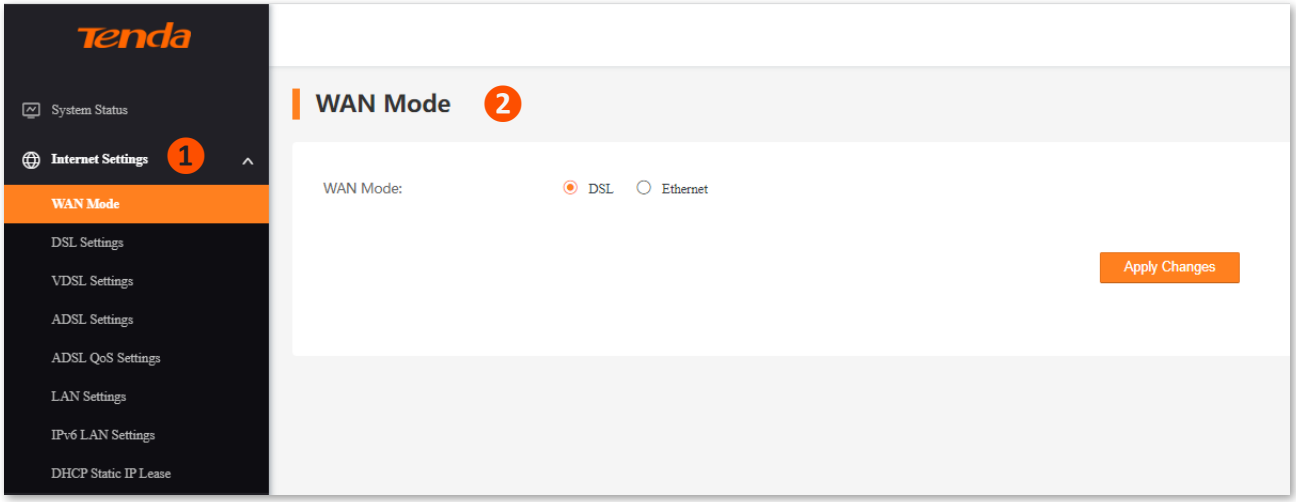


No.	Name	Description
1	Connection status	Used to display the connection status of the ports of modem router.
2	Configuration area	Used for quick setup.

3.1.2 Advance page

To access the **Advance** page, log in to the web UI of the modem router, and click **Advance** in the upper right corner of the page.

The web UI of **Advance** page consists of two sections, including the navigation bar and the configuration area. See the following figure.



No.	Name	Description
1	Navigation bar	Used to display the function menu of the modem router. Users can select functions in the navigation bars and the configuration appears in the configuration area.
2	Configuration area	Used to modify or view your configuration.

3.2 Frequently-used Buttons

The following table describes the frequently-used buttons available on the web UI of the modem router.

Button	Description
Refresh	Used to refresh the current page.
Apply Changes	Used to save the configuration on the current page and enable the configuration to take effect.
Add	Used to add a data record.
Delete	Used to delete a data record.
	Check the help information of the current page.

4 Quick setup

On the **EasySet** page, you can quickly set the network connection parameters and modify the Wi-Fi names and passwords.

4.1 Configuration procedure

4.1.1 Serving as a DSL modem router

1. Log in to the web UI of the modem router.
2. Set network connection parameters in the **Primary Settings** module.

   TIP

   – After connecting the phone cable to the modem router, the system will automatically detect the **Link Type**.
   – You can obtain the parameter values from your ISP.
3. (Optional) Modify the Wi-Fi names and passwords in the **Wireless Settings** modules.
4. Click **OK** on the bottom of the page.

----End

When **Connection Status** displays **Connected**, the modem router is connected to the internet. Now the devices connected to the LAN ports or Wi-Fi networks of the modem router can access the internet.

TIP

If you cannot access the internet after completing the quick setup, contact your ISP for help.

4.1.2 Serving as a DSL modem

1. Log in to the web UI of the modem router.
2. Set network connection parameters in the **Primary Settings** module.

   TIP

   – After connecting the phone cable to the modem router, the system will automatically detect the **Link Type**.
   – You can obtain the parameter values from your ISP.

3. (Optional) Turn off **Wireless Enable** in the **Wireless Settings** module.
4. Click **OK** on the bottom of the page.

----End

After the settings are complete, your devices can access the internet through the following ways:

- Complete network connection settings on the router connected to the modem router, and then connect your device to the router.
- Complete network connection settings on your device if no other router is used.

4.1.3 Serving as a wireless router

1. Set **WAN Mode** to **Ethernet**.
   1) Log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** **WAN Mode**.
   2) Set **WAN Mode** to **Ethernet**.
   3) Click **Apply Changes**. Wait until the system is restarted successfully.
2. Set network connection parameters and wireless parameters.
   1) Log in to the web UI of the modem router.
   2) Set network connection parameters in the **Primary Settings** module.

      TIP

      You can obtain the parameter values from your ISP.

   3) (Optional) Modify the Wi-Fi names and passwords in the **Wireless Settings** modules.

4) Click **OK** on the bottom of page.

----End

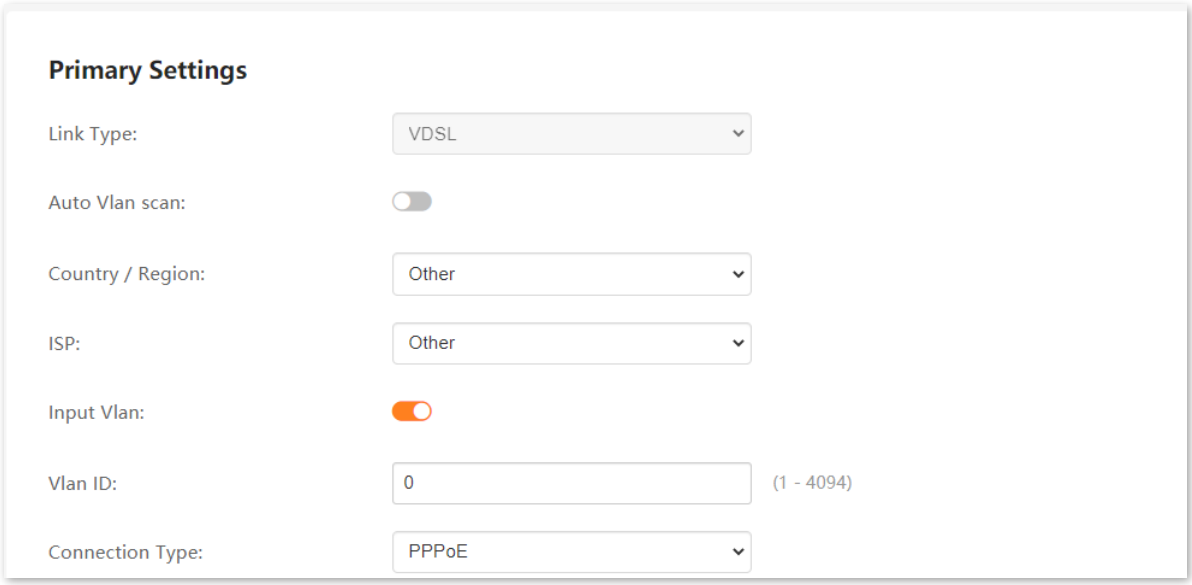
When **Connection Status** displays **Connected**, the modem router is connected to the internet. Now the devices connected to the LAN ports or Wi-Fi networks of the modem router can access the internet.

TIP

If you cannot access the internet after completing the quick setup, contact your ISP for help.

4.2 Parameter description

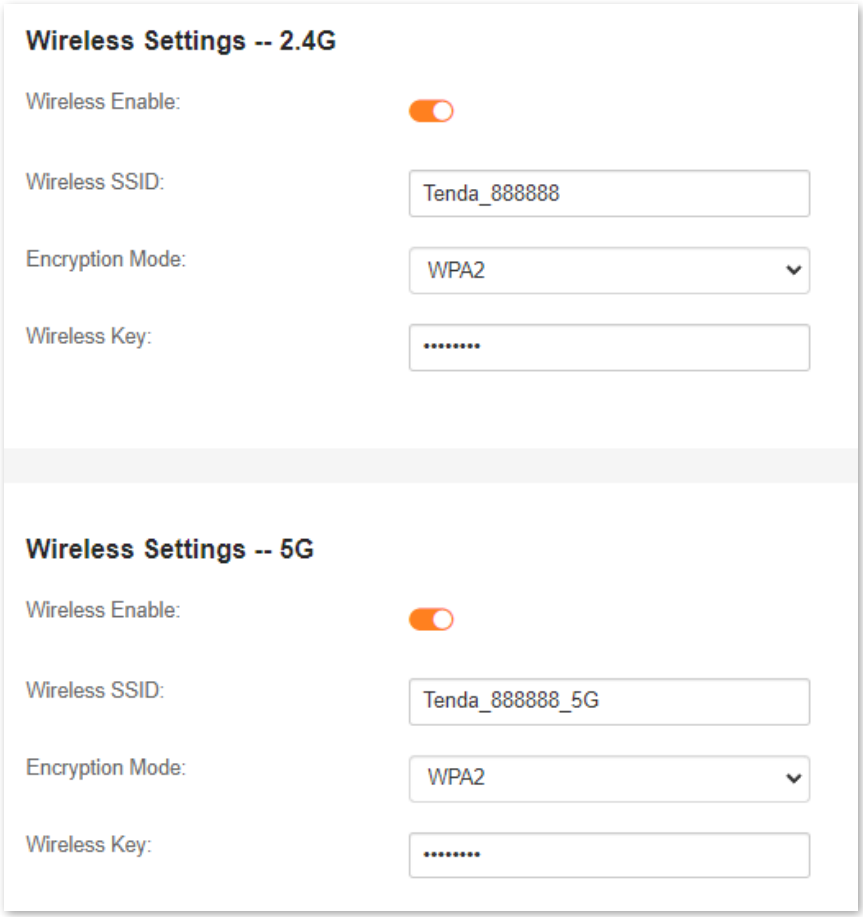
- **Primary settings**



Parameter	Description
Link Type	Specifies the link type of the modem router for internet access. - **VDSL** (Very high-speed Digital Subscriber Line): VDSL is digital subscriber line (DSL) technology providing data transmission faster than asymmetric digital subscriber line (ADSL), and VDSL is deployed over existing wiring used for analog telephone service and lower-speed DSL connections. Select this type if the link type your ISP provided to you is VDSL. - **ADSL**: ADSL is a broadband connection that works through the copper wires of existing phone lines and is mainly used for home broadband and within small businesses. Select this type if the link type your ISP provided to you is ADSL. - **Ethernet**: If you use an Ethernet cable for internet access, refer to the configuration in this part to complete your internet settings. In this case, this device only serves as a wireless router or wireless AP.
Auto Vlan scan	With this function enabled, the modem router can scan the VLAN automatically. This function is unavailable for **Bridge** connection type.
Auto PVC scan	With this function enabled, the modem router can scan the Permanent Virtual Circuit (PVC) automatically. This function is unavailable for **Bridge**, **PPPoA**, and **IPoA** connection types.
Country / Region	Used to select the country/region and ISP according to your actual situation. Select your country or region from the drop-down lists, and the Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) values will be automatically populated. If your country/region and ISP are not available in the drop-down lists, select **Other**.
ISP	
VPI/VCI	VPI and VCI are used to identify the data path for ADSL connection.
Input Vlan	Used to enable or disable the Input VLAN function.
Vlan ID	If the VLAN ID is provided, toggle on **Input Vlan**, and enter the VLAN ID in the **Vlan ID** box.

Parameter	Description
Connection Type	Specifies the connection type for internet access. In this part, the available options for VDSL connection include **Bridge**, **IPoE** and **PPPoE**. - **Bridge**: When this option is selected, the modem router is used as only a modem in the DSL Link mode and only a switch in the Ethernet mode. You can access the internet through the following ways: • Complete network connection settings on the router connected to the modem router, and then connect your device to the router. • Complete network connection settings on your device if no other router is used. - **IPoE/IPoA**: The modem router is used as a router. Select this type if your ISP does not provide any parameters for internet access or your ISP provides a static IP address, subnet mask, gateway, and Domain Name System (DNS) server address to you for internet access. If your ISP provides a static IP address and other related information to you for internet access, your connection type may be IPoA. For details, contact your ISP. IPoA only supports Static IP. - **PPPoE/PPPoA**: 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 is applicable only when **Link Type** is set to **ADSL**.
Address Mode	Specifies the mode to obtain the IP address. - **Dynamic IP**: Obtain the IP address automatically. - **Static IP**: Manually enter the IP address information.
IP Address Subnet Mask Gateway Primary DNS Secondary DNS	If **Address Mode** is set to **Static IP**, enter the IP address and related information provided by your ISP. TIP If the ISP only provides one DNS server address, you can leave the secondary DNS blank.
User Name Password	Specify the user name and password provided by your ISP for internet connection.

- **Wireless settings**



Parameter description

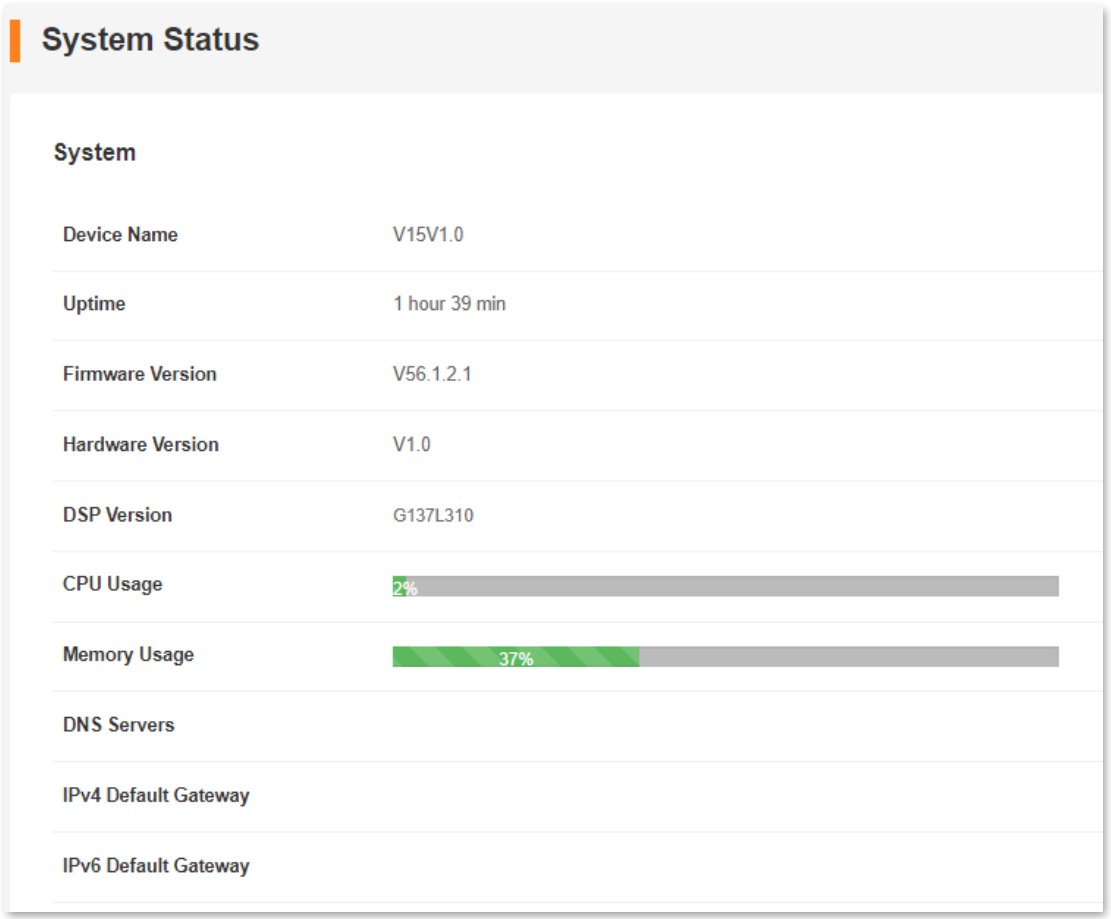
Parameter	Description
Wireless Enable	Used to enable or disable the Wi-Fi network.
Wireless SSID	Specifies the name of the Wi-Fi network.
Encryption Mode	Specifies the encryption mode of the Wi-Fi network, which includes **None**, **WPA, WPA2**, **WPA-WPA2**, **WPA3** and **WPA2-WPA3**.
Wireless Key	Specifies the password of the Wi-Fi network.

5 System status

5.1 System

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Status**.

This part displays the system status of the modem router.



Parameter description

Parameter	Description
Device Name	Specifies the model of the modem router.

Parameter	Description
Uptime	Specifies the time that has elapsed since the modem router was started.
Firmware Version	Specifies the system firmware version of the modem router.
Hardware Version	Specifies the hardware version of the modem router.
DSP Version	This field is available when the WAN mode of the modem router is set to DSL. It specifies the DSL driver version of the modem router.
CPU Usage	Specifies the Central Processing Unit (CPU) usage of the modem router.
Memory Usage	Specifies the memory usage of the modem router.
DNS Servers	Specifies the DNS server addresses of the modem router.
IPv4 Default Gateway	Specifies the IPv4 default gateway of the modem router.
IPv6 Default Gateway	Specifies the IPv6 default gateway of the modem router.

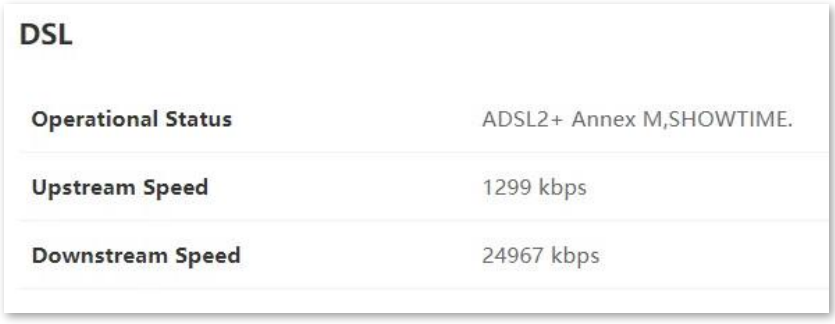
5.2 DSL

TIP

This section is available when **WAN Mode** is set to **DSL**.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Status**.

This part displays the DSL status of the modem router.



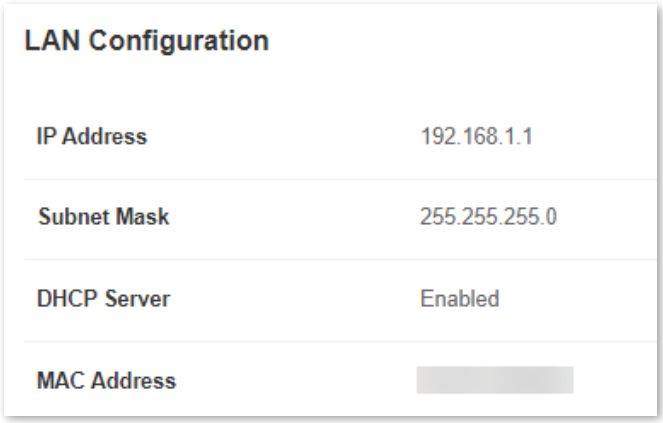
Parameter description

Parameter	Description
Operational Status	Specifies the operating status of the DSL connection.
Upstream Speed	Specify the upstream/downstream speed in the DSL connection.
Downstream Speed	

5.3 LAN configuration

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Status**.

This part displays the LAN configuration of the modem router.



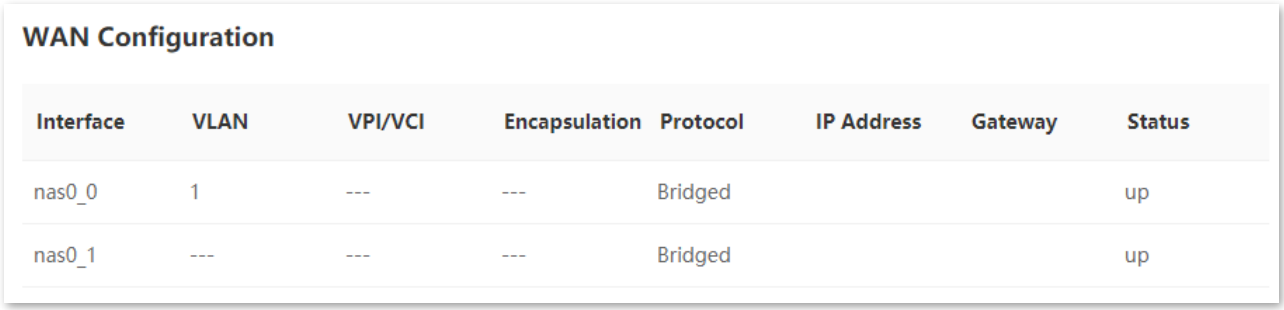
Parameter description

Parameter	Description
IP Address	Specifies the LAN IP address of the modem router. LAN users can use this IP address to log in to the web UI of the modem router.
Subnet Mask	Specifies the subnet mask of LAN IP address of the modem router.
DHCP Server	Displays whether the DHCP server is enabled.
MAC Address	Specifies the MAC address of the modem router's LAN port.

5.4 WAN configuration

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Status**.

This part displays the WAN connection information of the modem router.



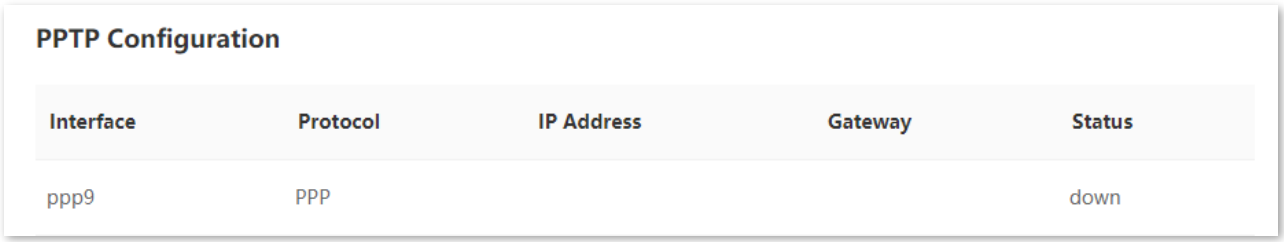
Parameter description

Parameter	Description
Interface	Specifies the interface that the WAN connection uses.
VLAN	Specifies the VLAN ID of the WAN connection.
VPI/VCI	Specifies the VPI/VCI of the WAN connection.
Encapsulation	Specifies the encapsulation method of the WAN connection.
Protocol	Specifies the protocol of the WAN connection.
IP Address	Specifies the WAN IP address.
Gateway	Specifies the gateway address of the WAN connection.
Status	Specifies the WAN connection status.

5.5 PPTP configuration

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Status**.

This part displays the PPTP configuration when the modem router is connected to the PPTP server.



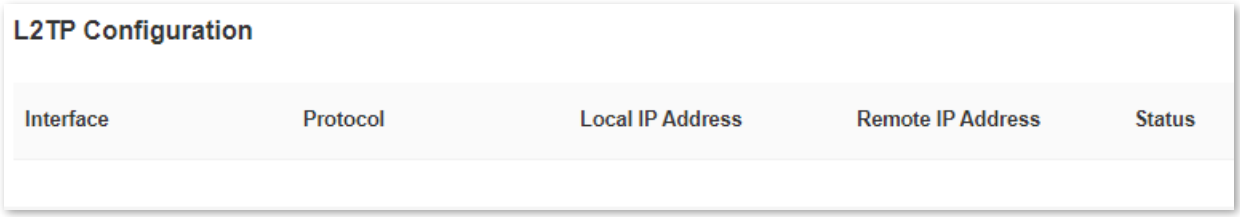
Parameter description

Parameter	Description
Interface	Specifies the interface that the connection uses.
Protocol	Specifies the protocol used for the connection.
IP Address	Specifies the IP address of the connected server.
Gateway	Specifies the gateway of the peer side for the connection.
Status	Specifies the connection status.

5.6 L2TP configuration

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Status**.

This part displays the L2TP configuration when the modem router is connected to the L2TP server.



Parameter description

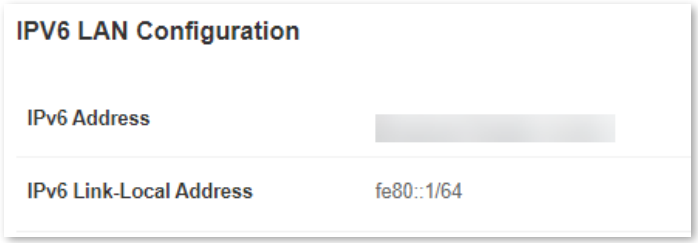
Parameter	Description
Interface	Specifies the interface that the connection uses.
Protocol	Specifies the protocol used for the connection.
Local IP Address	Specifies the IP address of the server to be connected.

Parameter	Description
Remote IP Address	Specifies the gateway address of the connection.
Status	Specifies the connection status.

5.7 IPv6 LAN configuration

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Status**.

This part displays the IPv6 LAN configuration of the modem router.



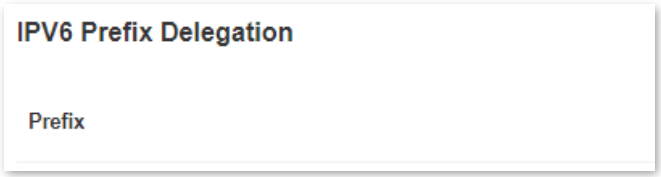
Parameter description

Parameter	Description
IPv6 Address	Specifies the LAN IPv6 address, which is an aggregate global unicast address.
IPv6 Link-Local Address	Specifies the LAN IPv6 link-local address.

5.8 IPv6 prefix delegation

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Status**.

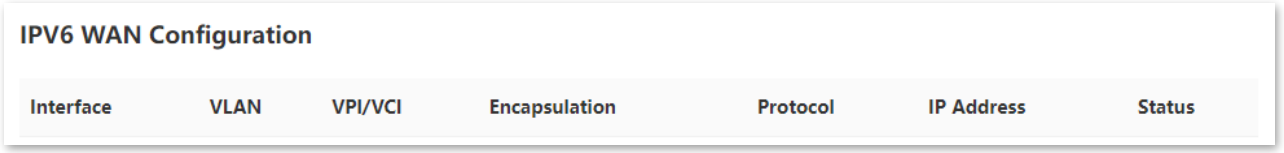
This part displays the IPv6 prefix if you have enabled DHCPv6 for requesting the IPv6 prefix.



5.9 IPv6 WAN configuration

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Status**.

This part displays the IPv6 WAN configuration of the modem router if you have configured IPv6 settings.



Parameter description

Parameter	Description
Interface	Specifies the interface that the connection uses.
VLAN	Specifies the VLAN ID of the IPv6 WAN connection.
VPI/VCI	Specifies the VPI/VCI for IPv6 WAN connection.
Encapsulation	Specifies the encapsulation method for IPv6 WAN connection.
Protocol	Specifies the protocol for IPv6 WAN connection.
IP Address	Specifies the IPv6 WAN IP address.
Status	Specifies the IPv6 WAN connection status.

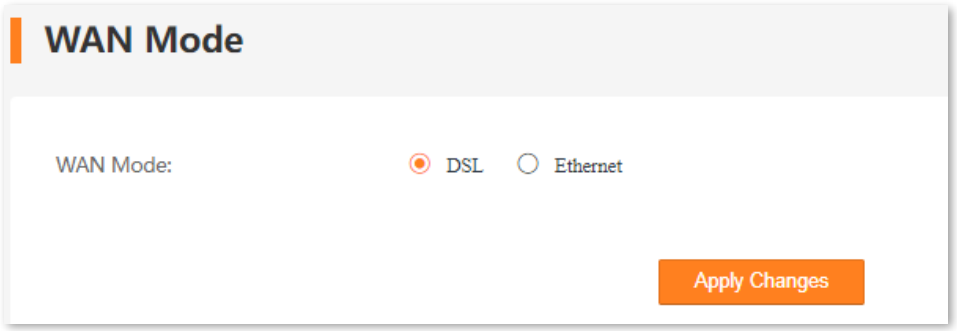
6 Internet settings

6.1 WAN mode

This section allows you to configure the WAN mode either to DSL mode or to Ethernet mode for internet connection.

- **DSL**: The modem router uses the DSL port for DSL connection.
- **Ethernet**: The modem router uses the WAN port for Ethernet connection. In Ethernet WAN mode, the port 4 can only serve as a WAN port connected to the Ethernet jack for internet access.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **WAN Mode**.



6.2 DSL settings

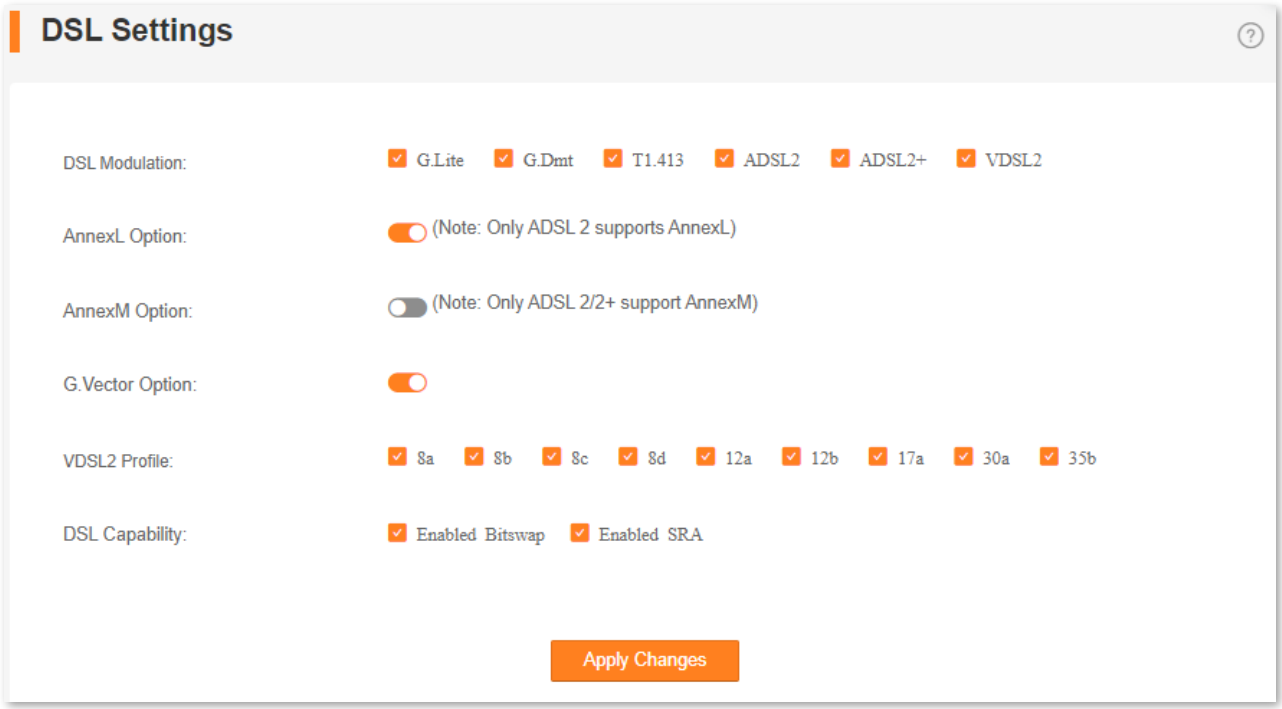
TIP

This section is available when **WAN Mode** is set to **DSL**.

This page allows you to configure DSL parameters based on the parameters of the upstream device. Wrong configurations may lead to internet access failure.

Change them only when you are instructed by your ISP or technical staff if your modem router fails to negotiate with the ISP in DSL mode.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **DSL Settings**.



Parameter description

Connection Type		Description
DSL Modulation	G.Lite	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.
	G.Dmt	Specifies G992.1. The maximum uploading/downloading rate is 1.3 Mbps/8 Mbps. When it is used, POTS splitter is required for clients.
	T1.413	Specifies ANSI_T1.413. Based on discrete multitone modulation (DMT) standard, the maximum uploading/downloading rate is 1.5 Mbps/15 Mbps. When it is used, POTS splitter is required for clients.
	ADSL2	Specifies G992.3. The maximum uploading/downloading rate is 1 Mbps/12 Mbps.
	ADSL2+	Specifies G992.5. The maximum uploading/downloading rate is 1 Mbps/24 Mbps.
	VDSL2	Specifies G993.2. The maximum uploading/downloading rate is 50 Mbps/80 Mbps.

Connection Type		Description
AnnexL Option		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.
AnnexM Option		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+ DSL modulation mode is selected.
G.Vector Option		Specifies G993.5. The maximum uploading/downloading rate is 16 Mbps/52 Mbps.
VDSL2 Profile	8a/8b/8c/8d/ 12a/12b/17a/30a/35b	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.
DSL Capability	Enabled Bitswap	Bitswap can improve the ADSL adaptation capacity and the stability of ADSL line in the dynamic environment.
	Enabled SRA	Seamless Rate Adaptation (SRA) is a dynamic rate adaptation protocol achieving ADSL rate adaptation. It dynamically adjusts bit and power assignment to make sure that the noise margin of the line falls within a suitable range when the ADSL line changes in running process, ensuring the stability of the line.

6.3 VDSL settings

TIP

This section is available when **WAN Mode** is set to **DSL**.

6.3.1 Overview

You can set up a VDSL connection using the information provided by your ISP. If the information is unclear, consult your ISP.

Change them only when you are instructed by your ISP or technical staff if your modem router fails to negotiate with the ISP in VDSL mode.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **VDSL Settings**.

You can use the following channel modes for VDSL connection.

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

6.3.2 Edit or create a VDSL link

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **VDSL Settings**.
2. Select the interface from the drop-down list or select **new link** to create an interface.
3. Select **Channel Mode** and other required parameters as required.
4. Click **Apply Changes** and wait for the parameters to take effect.

----End

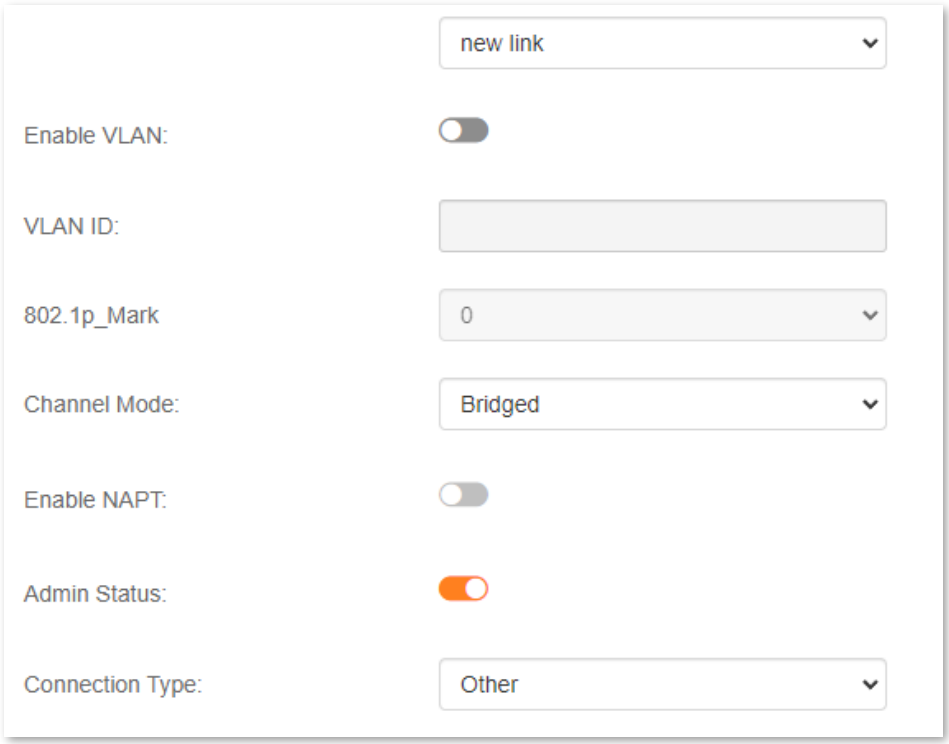
6.3.3 Delete a VDSL link

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **VDSL Settings**.
2. Select the link to be deleted from the drop-down list.
3. Click **Delete**.
4. Click **OK** in the pop-up dialog box.

----End

6.3.4 Parameter description

General parameters

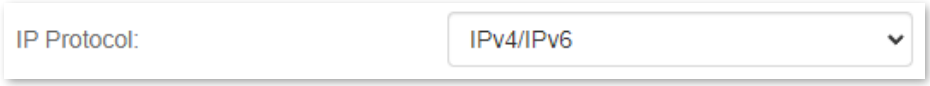


Parameter description

Parameter	Description
new link	Used to create an interface.
Enable VLAN	If your ISP provides you with the VLAN ID, select **Enable VLAN** and enter the **VLAN ID** provided by your ISP. If not, keep the default settings.
VLAN ID	
802.1p_Mark	This parameter is available only when the **Enable VLAN** function is enabled. It specifies the 802.1P priority. Data with a larger priority value takes a higher priority to be processed.
Channel Mode	Specifies the channel mode for VDSL connection, including **Bridged**, **IPoE**, and **PPPoE**. See Overview for details.

Parameter	Description
Enable NAPT	It applies to the **IPoE** and **PPPoE** channel modes. Network Address Port Translation (NAPT) enables the port number and private IP address to be mapped from the internal host to one public IP address. When the NAPT function is enabled, the devices in the LAN of the modem router can access the internet. Otherwise, only the modem router can access the internet.
Admin Status	Used to enable or disable this WAN interface.
Connection Type	Specifies the connection type for the VDSL link. - When **Channel Mode** is set to **Bridged**, **INTERNET** and **Other** are available. For common internet access, select **INTERNET**. - When **Channel Mode** is set to **IPoE** or **PPPoE**, **TR069**, **INTERNET**, **INTERNET_TR069** and **Other** are available. For common internet access, select **INTERNET**.
MTU	Maximum transmission unit. It specifies the largest packet that the modem router transits. MTU varies across connection types. TIP Keep the default value unless you are sure modification is necessary for your ISP connection.
Enable IGMP-Proxy	It applies to the **IPoE** and **PPPoE** channel modes. IGMP Proxy is used to manage multicast data and reduce traffic replication. IGMP proxy enables a device to issue IGMP host messages on behalf of its users, reduces IGMP messages and the load for uplink device.
Enable MLD-Proxy	It applies to the **IPoE** and **PPPoE** channel modes. MLD proxy functions enable the modem router to learn proxy group membership information and forward membership report messages through the upstream interface.
MAC Clone	It applies to the **IPoE** and **PPPoE** channel modes. When you cannot access the internet after finishing other settings here except this option, consider whether it's the matter of the MAC address of your computer. Enable **MAC Clone** to clone the MAC address of your computer that can access the internet before using the modem router or the WAN MAC address of the original router.
MAC Address	This parameter is available only when the **MAC Clone** function is enabled in the **IPoE** or **PPPoE** channel mode. It specifies the MAC address that the modem router cloned.

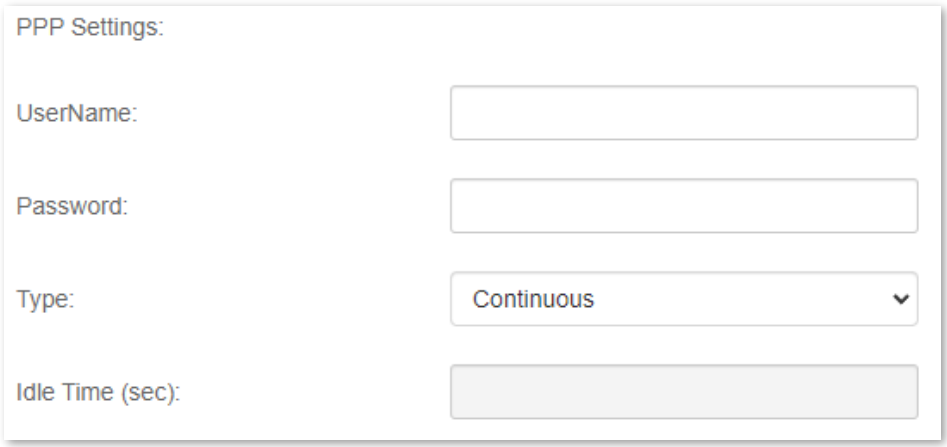
IP protocol



Parameter description

Parameter	Description
IP Protocol	Specifies the internet protocol type used by the modem router. - **IPv4**: Select this type if IPv4 is used for communication. - **IPv6**: Select this type if IPv6 is used for communication. - **IPv4/IPv6**: Select this type if both IPv4 and IPv6 are used for communication.

PPP settings

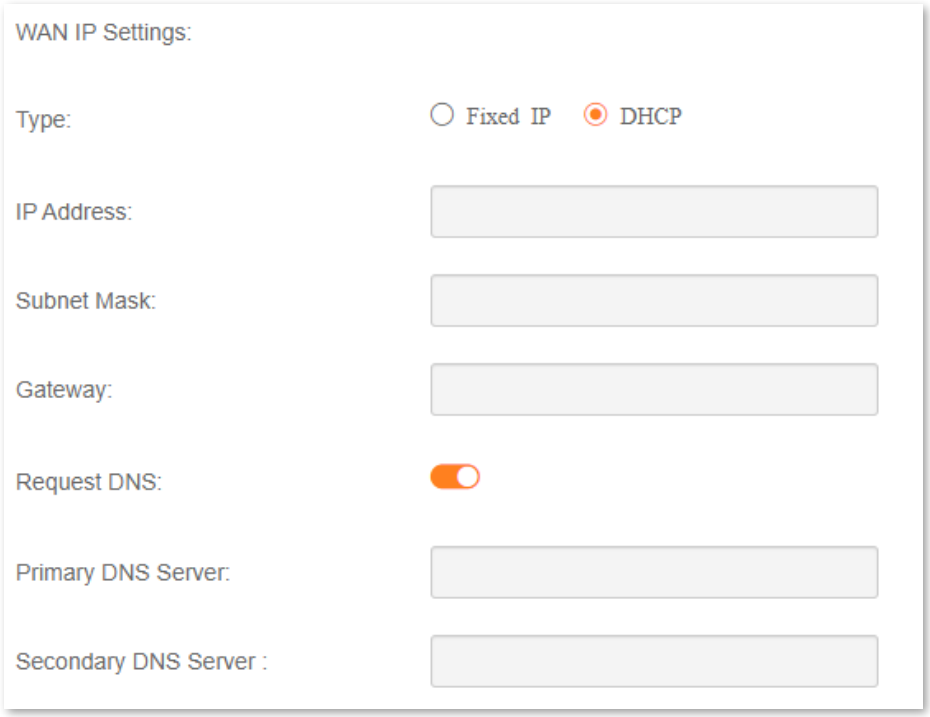


Parameter description

Parameter	Description
UserName	Specify the PPPoE user name/password provided by your ISP for internet connection.
Password	
Type	Specifies the type of connection functions. - **Continuous**: After the network connection is established, it remains on. - **Connect on Demand**: The network connection terminates when the **Idle Time** expires. - **Manual**: Users should manually connect and disconnect the network connection.

Parameter	Description
Idle Time (sec)	This parameter is available only when **Connect on Demand** is selected. The idle timeout indicates how long the network connection keeps on when no device is using the network.

WAN IP settings

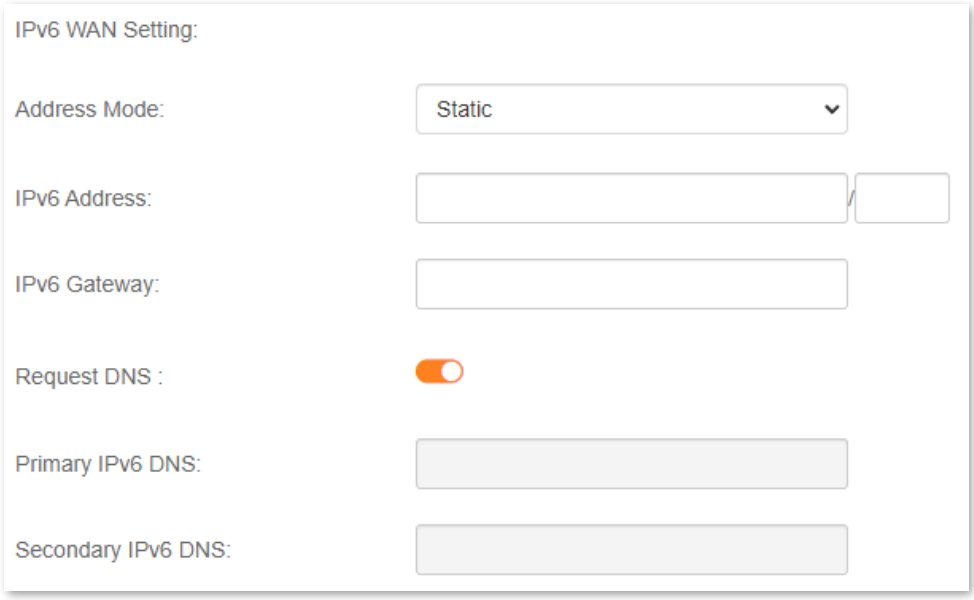


Parameter description

Parameter	Description
Type	Specifies the method to obtain WAN IP address. - **Fixed IP**: The IP address and related information provided by your ISP should be entered manually. - **DHCP**: The IP address is assigned by DHCP server from your ISP automatically.
IP Address	If you select **Fixed IP** for **Type**, enter the IP address and related information provided by your ISP.
Subnet Mask	
Gateway	

Parameter	Description
Request DNS	If the IP address is obtained through DHCP, you can select **Request DNS** to obtain DNS server address automatically.
Primary DNS Server	If the IP address obtaining type is **Fixed IP** or the **Request DNS** function is disabled when the IP address obtaining type is **DHCP**, enter the DNS server address provided by your ISP.
Secondary DNS Server	TIP If the ISP provides only one DNS server address, you can leave the secondary DNS blank.

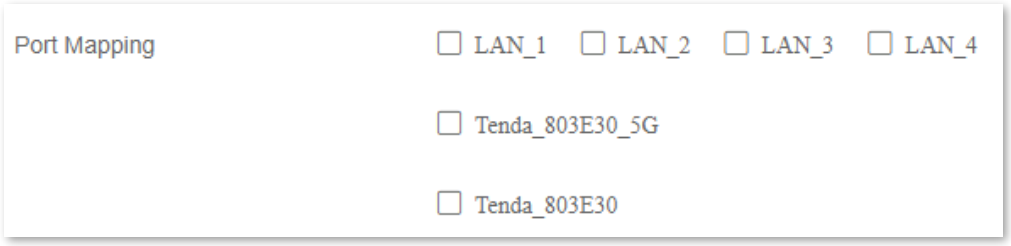
IPv6 WAN settings



Parameter description

Parameter	Description
Address Mode	Specifies the method to obtain IPv6 WAN IP address. - **Stateless DHCPV6 (SLAAC)**: Stateless address autoconfiguration. With **Stateless DHCPV6 (SLAAC)**, the IPv6 address can be configured automatically without a server. - **Static**: IP address and related network configuration information should be entered manually. - **Stateful DHCPv6:** The DHCPv6 server assigns IPv6 addresses to all DHCPv6 clients while keeping track of what IPv6 address has been assigned to what client. In IPv6, only routers sending router advertisement messages can provide a default gateway address dynamically. - **Auto Detect Mode:** Network hosts get configured with IPv6 addresses automatically.
IPv6 Address IPv6 Gateway Primary IPv6 DNS Secondary IPv6 DNS	If **Address Mode** is set to **Static**, enter the IP address and related information provided by your ISP. TIP If the ISP only provides one IPv6 DNS server address, you can leave the secondary IPv6 DNS blank.
Request DNS	Used to select **Request DNS** to obtain DNS server address automatically.
Request Options	With this function enabled, the modem router can request prefix as a DHCPv6 client. **Request Prefix**: The modem router obtains the IPv6 prefix from the DHCPv6 server, and delivers it to its LAN ports.

Port mapping



Parameter description

Parameter	Description
Port Mapping	Specifies the port or Wi-Fi network for IPTV service.

6.4 ADSL settings

TIP

This section is available when **WAN Mode** is set to **DSL**.

6.4.1 Overview

You can set up an ADSL connection and view related information. To set up an ADSL connection, you should use the information provided by your ISP. If the information is unclear, consult your ISP.

Change them only when you are instructed by your ISP or technical staff if your modem router fails to negotiate with the ISP in ADSL mode.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **ADSL Settings**.

You can use the following channel modes for ADSL connection.

Channel Mode		Description
PPPoE (PPP over Ethernet), PPPoA (PPP over ATM)		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.
IPoE (IP over Ethernet)	Dynamic IP (DHCP)	Select this type if your ISP does not provide any parameters to you for internet access.
IPoE (IP over Ethernet), IPoA (IP over ATM)	Static IP (Fixed 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.
Bridged		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.

6.4.2 Create an ADSL link

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **ADSL Settings**.
2. Click **Add**.
3. Enter **VPI** and **VCI** provided by your ISP.

4. Select the **Encapsulation** and **Channel Mode** provided by your ISP.
5. Set **Connection Type** and other parameters as required.

   See Parameter description for details.
6. Click **Add**.

----End

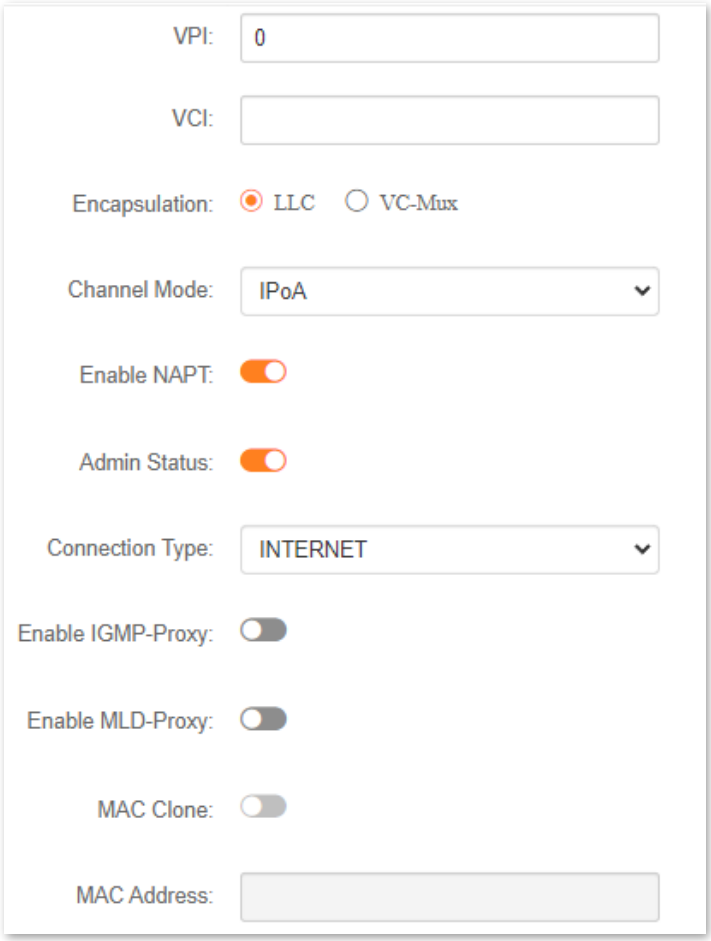
6.4.3 Delete an ADSL link

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **ADSL Settings**.
2. Locate the ADSL link to be deleted in **Current ATM VC Table** and click at the end of the link.
3. Click **OK** in the pop-up dialog box.

----End

6.4.4 Parameter description

General parameters



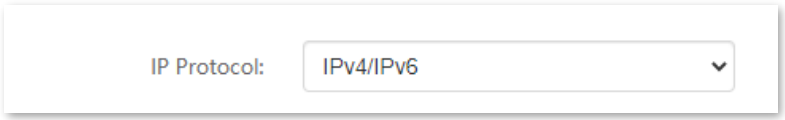
Parameter description

Parameter	Description
VPI	VPI and VCI are used to identify the data path for ADSL link. Their values are provided by your ISP.
VCI	

Parameter	Description
Encapsulation	Specifies the data encapsulation type in the ATM network. You can obtain the parameter value from your ISP. - **LLC**: In LLC encapsulation, the host uses a single virtual circuit for multiple protocols. This has the advantage of allowing all traffic over the same circuit, but the disadvantage of requiring each packet to contain octets that identify the protocol type, which adds overhead. The scheme also has the disadvantage that packets from all protocols travel with the same delay and priority. - **VC-Mux**: In VC Multiplexing (VC-MUX), the host agrees on the high-level protocol for a given circuit. It has the advantage of not requiring additional information in a packet, which minimizes the overhead.
Channel Mode	Specifies the channel mode for ADSL connection, including **Bridged**, **IPoE**, **PPPoE**, **PPPoA**, and **IPoA**.
Enable NAPT	It applies to the **IPoE**, **PPPoE**, **PPPoA**, and **IPoA** channel modes. NAPT enables the port number and private IP address to be mapped from the internal host to one public IP address. When the NAPT function is enabled, the devices in the LAN of the modem router can access the internet. Otherwise, only the modem router can access the internet.
Admin Status	Used to enable or disable this WAN interface.
Connection Type	Specifies the connection type for the ADSL connection. - When **Channel Mode** is set to **Bridged**, **INTERNET** and **Other** are available. For common internet access, select **INTERNET**. - When **Channel Mode** is set to **IPoE**, **PPPoE**, **PPPoA**, or **IPoA**, **TR069**, **INTERNET**, **INTERNET_TR069** and **Other** are available. For common internet access, select **INTERNET**.
Enable IGMP-Proxy	It applies to the **IPoE**, **PPPoE**, **PPPoA**, and **IPoA** channel modes. IGMP Proxy is used to manage multicast data and reduce traffic replication. IGMP proxy enables a device to issue IGMP host messages on behalf of its users, reduces IGMP messages and the load for uplink devices.
Enable MLD-Proxy	It applies to the **IPoE**, **PPPoE**, **PPPoA**, and **IPoA** channel modes. MLD proxy functions enable the modem router to learn proxy group membership information and forward membership report messages through the upstream interface.
MAC Clone	Used to enable or disable the **MAC Clone** function and applies to the **IPoE** and **PPPoE** channel modes. When you cannot access the internet after finishing other settings here except this option, consider whether it's the matter of the MAC address of your computer. Enable **MAC Clone** to clone the MAC address of your computer that can access the internet before using the modem router or the WAN MAC address of the original router.

Parameter	Description
MAC Address	This parameter is available only when the **MAC Clone** function is enabled in the **IPoE** or **PPPoE** channel mode. It specifies the MAC address that the modem router cloned.

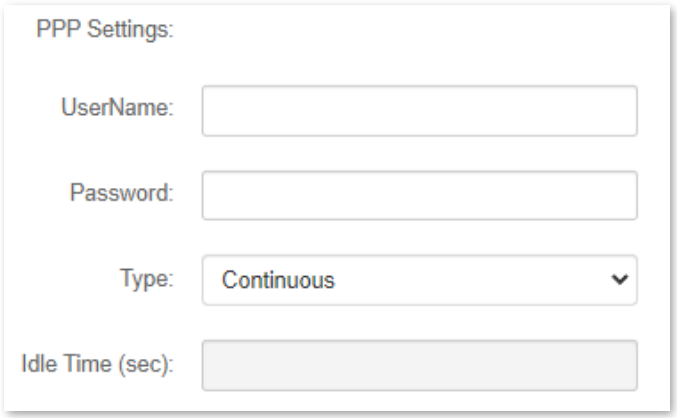
IP protocol



Parameter description

Parameter	Description
IP Protocol	Specifies the internet protocol type used by the modem router. - **IPv4**: Select this type if IPv4 is used for communication. - **IPv6**: Select this type if IPv6 is used for communication. - **IPv4/IPv6**: Select this type if both IPv4 and IPv6 are used for communication.

PPP settings

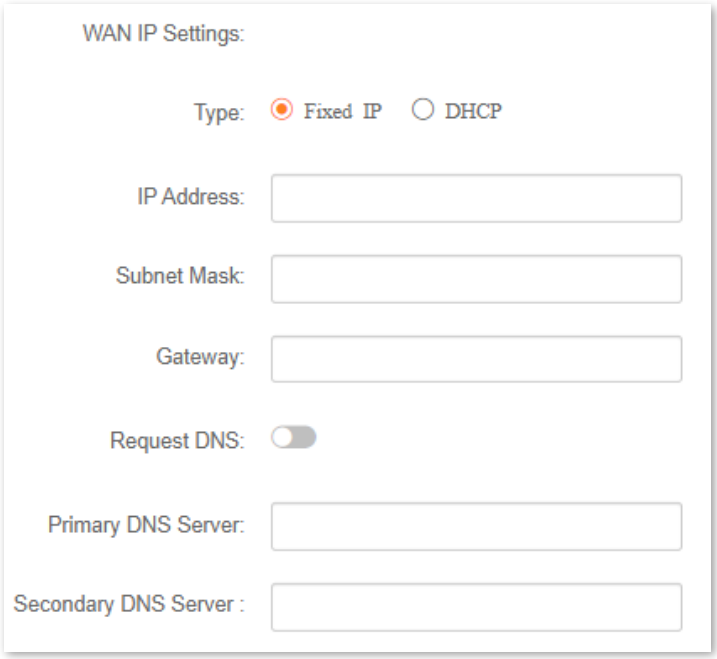


Parameter description

Parameter	Description
UserName	Specify the PPPoE user name/password provided by your ISP for network connection.
Password	

Parameter	Description
Type	Specifies the type of how the connection functions. - **Continuous**: After the internet connection is established, it remains on. - **Connect on Demand**: The internet connection terminates when the **Idle Time** expires. - **Manual**: Users should manually connect and disconnect the internet connection.
Idle Time (sec)	This parameter is available only when **Connect on Demand** is selected. The idle timeout indicates how long the internet connection keeps on when no device is using the internet connection.

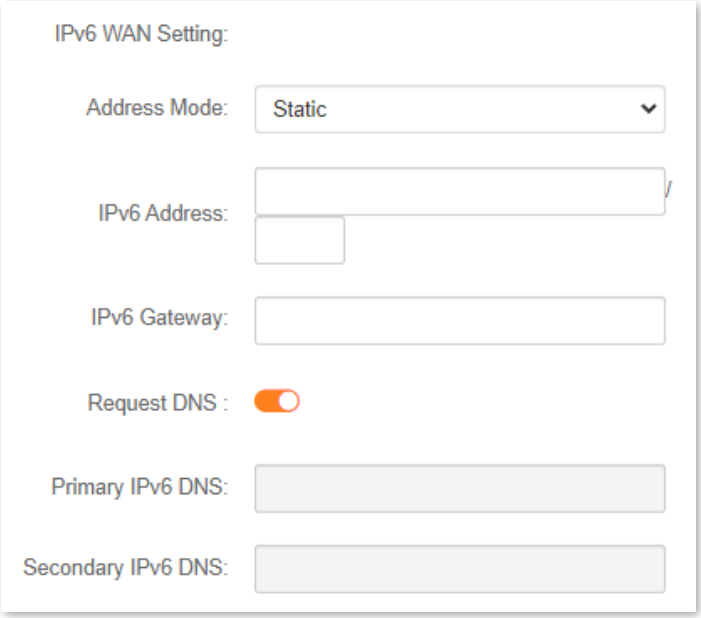
WAN IP settings



Parameter description

Parameter	Description
Type	Specifies the method to obtain WAN IP address. - **Fixed IP**: The IP address and related information provided by your ISP should be entered manually. - **DHCP**: The IP address is assigned by DHCP server from your ISP automatically. TIP When **Channel Mode** is set to **IPoA**, this parameter can be set to **Fixed IP** only.
IP Address Subnet Mask Gateway	If **Type** is set to **Fixed IP**, enter the IP address and related information provided by your ISP. TIP When **Channel Mode** is set to **IPoA**, **Subnet Mask** is not applicable here.
Request DNS	If the IP address is obtained through DHCP, you can select **Request DNS** to obtain DNS server address automatically.
Primary DNS Server	If the IP address obtaining type is **Fixed IP** or **Request DNS** function is disabled when the IP address obtaining type is **DHCP**, enter the DNS server address provided by your ISP.
Secondary DNS Server	TIP If the ISP only provides one DNS server address, you can leave the secondary DNS blank.

IPv6 WAN settings

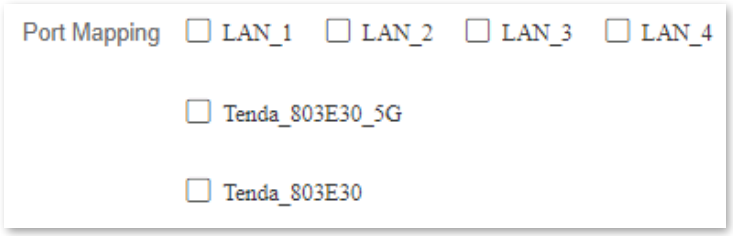


Parameter description

Parameter	Description
Address Mode	Specifies the method to obtain IPv6 WAN IP address. - **Stateless DHCPV6 (SLAAC):** Stateless address autoconfiguration. With **Stateless DHCPV6 (SLAAC)**, the IPv6 address can be configured automatically without a server. - **Static:** IP address and related network configuration information should be entered manually. - **Stateful DHCPv6:** The DHCPv6 server assigns IPv6 addresses to all DHCPv6 clients while keeping track of what IPv6 address has been assigned to what client. In IPv6, only routers sending router advertisement messages can provide a default gateway address dynamically. - **Auto Detect Mode:** Network hosts get configured with IPv6 addresses automatically.
IPv6 Address IPv6 Gateway Primary IPv6 DNS Secondary IPv6 DNS	If **Address Mode** is set to **Static**, enter the IP address and related information provided by your ISP. TIP If the ISP only provides one IPv6 DNS server address, you can leave the secondary IPv6 DNS blank.
Request DNS	Used to select **Request DNS** to obtain DNS server address automatically.

Parameter	Description
Request Options	With this function enabled, the modem router can request prefix as a DHCPv6 client. **Request Prefix**: The modem router obtains the IPv6 prefix from the DHCPv6 server, and delivers it to its LAN ports.

Port mapping



Parameter description

Parameter	Description
Port Mapping	Specifies the port or Wi-Fi network for IPTV service.

6.5 ADSL QoS settings

TIP

This section is available when **WAN Mode** is set to **DSL**.

With wider application of new services, such as video conference, remote education, Video-on-Demand (VoD) and video telephone, the network requirements are also higher, especially in bandwidth, delay and jitter. Quality of Service (QoS) is a technology to meet the above demands and improve the quality of service in the network.

This modem router supports the following four ATM service categories for QoS configuration.

- **CBR**

Constant Bit Rate. The CBR service supports real-time applications and is used for connections that transport traffic at a constant bit rate. It requires low cell delay and cell loss, supporting such applications as video conferencing, telephony (voice services) or any type of on-demand service.

- **rt_VBR**

Real-Time Variable Bit Rate. The rt-VBR service supports real-time applications and is used for connections that transport traffic at variable rates. It requires low cell delay and cell loss, supporting such applications as compressed voice over IP (VoIP) and video conferencing. Compared to CBR, VBR-rt makes better use of bandwidth if the traffic is bursty.

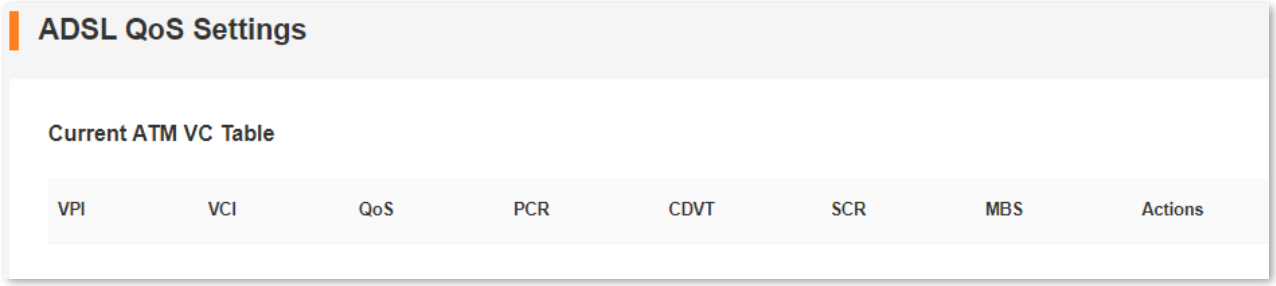
- **nrt_VBR**

Non Real-Time Variable Bit Rate. The nrt-VBR service supports non-real-time applications and is used for connections that transport traffic at variable rates. It has no reliance on time synchronization, but requires low cell loss.

- **UBR**

Unspecified bit rate. The UBR service supports non-real-time applications and is used for connections that transport variable bit rate traffic. It does not guarantee the traffic delay and service quality, so it is used for applications that are very tolerant of delay and cell loss. It is usually used for data transmission.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **ADSL QoS Settings**. You can modify the QoS settings for each ADSL connection as required.



Parameter description

Parameter	Description
VPI	VPI and VCI are used to identify the data path for ADSL connection.
VCI	
QoS	Specifies the ATM services for QoS configuration, including **UBR**, **CBR**, **nrt_VBR** and **rt_VBR**.
PCR	Peak Cell Rate. It specifies the maximum allowable rate at which cells can be transported along a connection in the ATM network. PCR applies to CBR and VBR and UBR services.

Parameter	Description
CDVT	Cell Delay Variation Tolerance. It specifies the level of jitter that is tolerable.
SCR	Sustainable Cell Rate. It specifies the calculation of the average allowable, long-term cell transfer rate on a specific connection. SCR applies to the VBR service.
MBS	Maximum Burst Size. It specifies the minimum number of cells that can be transported along an ATM connection. MBS applies to the VBR service.

6.6 Ethernet settings

TIP

This section is available when **WAN Mode** is set to **Ethernet**.

6.6.1 Overview

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **Ethernet Settings**.

Ethernet settings support 3 connection types: **Bridged**, **IPoE**, and **PPPoE**.

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

6.6.2 Edit or create an Ethernet Link

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **Ethernet Settings**.

2. Select the interface from the drop-down list or select **new link** to create an interface.
3. Set **Channel Mode**, **Connection Type**, and other required parameters as required.

   See Parameter description for details.
4. Click **Apply Changes** and wait for the parameters to take effect.

   ----End

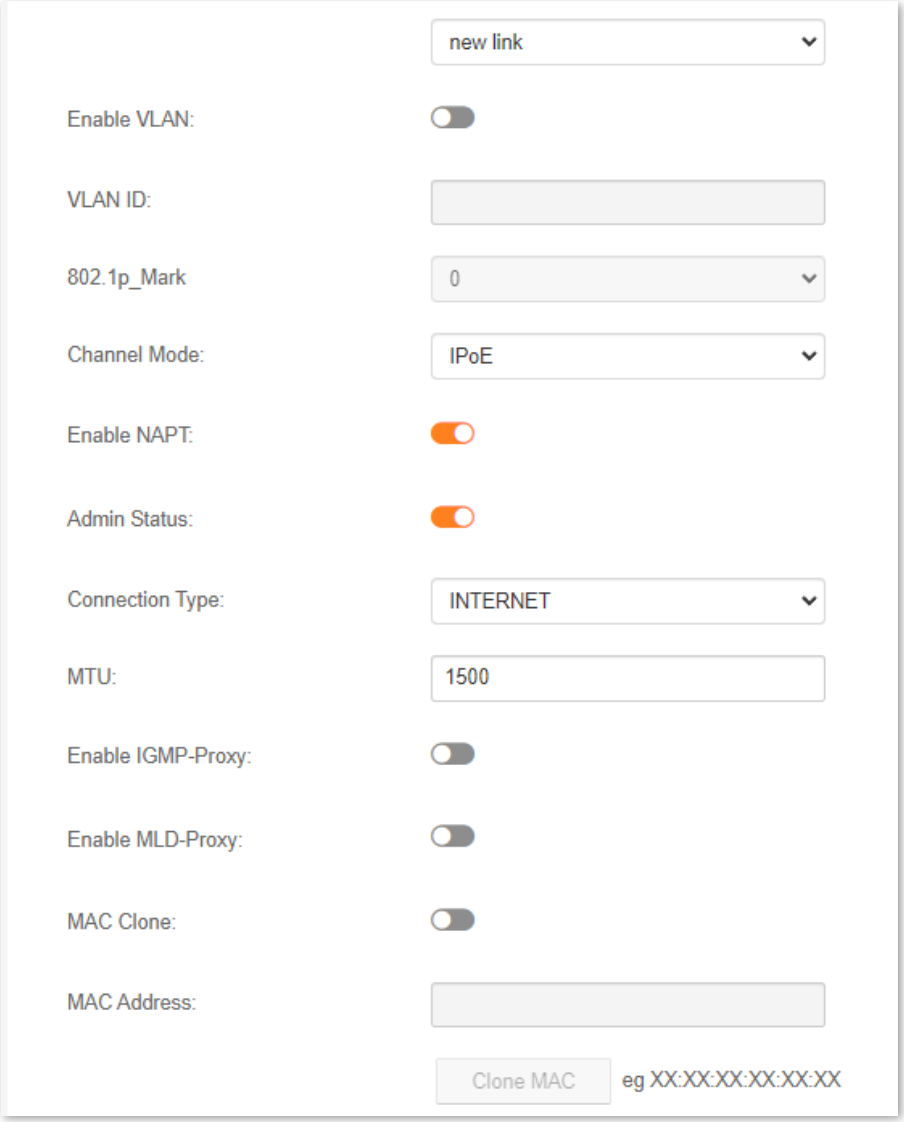
6.6.3 Delete an Ethernet Link

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **Ethernet Settings**.
2. Select the link to be deleted from the drop-down list.
3. Click **Delete**.
4. Click **OK** in the pop-up dialog box.

   ----End

6.6.4 Parameter description

General parameters



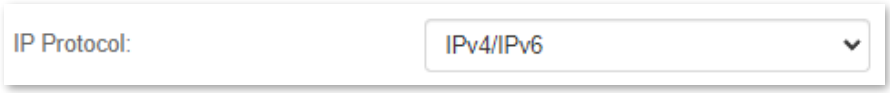
Parameter description

Parameter	Description
new link	Used to create an interface.
Enable VLAN	If your ISP provides you with the VLAN ID, select **Enable VLAN** and enter the **VLAN ID** provided by your ISP. If not, keep the default settings.
VLAN ID	

Parameter	Description
802.1p_Mark	This parameter is available only when the **Enable VLAN** function is selected. It specifies the 802.1P priority. Data with a larger priority value takes a higher priority to be processed.
Channel Mode	Specifies the channel mode for the link, including **Bridged**, **IPoE**, and **PPPoE** See Overview for details.
Enable NAPT	It applies to the **IPoE** and **PPPoE** channel modes**.** NAPT enables the port number and private IP address to be mapped from the internal host to one public IP address. When the NAPT function is enabled, the devices in the LAN of the modem router can access the internet. Otherwise, only the modem router can access the internet.
Admin Status	Used to enable or disable this WAN interface.
Connection Type	Specifies the connection type for this link. - When **Channel Mode** is set to **Bridged**, **INTERNET** and **Other** are available. For common internet access, select **INTERNET**. - When **Channel Mode** is set to **IPoE** or **PPPoE**, **TR069**, **INTERNET**, **INTERNET_TR069** and **Other** are available. For common internet access, select **INTERNET**.
MTU	Maximum transmission unit. It specifies the largest packet that the modem router transits. MTU varies across connection types. TIP Keep the default value unless you are sure modification is necessary for your ISP connection.
Enable IGMP-Proxy	It applies to the **IPoE** and **PPPoE** channel modes. IGMP Proxy is used to manage multicast data and reduce traffic replication. IGMP proxy enables a device to issue IGMP host messages on behalf of its users, reduces IGMP messages and the load for uplink devices.
Enable MLD-Proxy	It applies to the **IPoE** and **PPPoE** channel modes. MLD proxy functions enable the modem router to learn proxy group membership information and forward membership report messages through the upstream interface.
MAC Clone	It applies to the **IPoE** and **PPPoE** channel modes. When you cannot access the internet after finishing other settings here except this option, consider whether it's the matter of the MAC address of your modem router. Enable **MAC Clone** to clone the MAC address of your computer that can access the internet before using the modem router or the WAN MAC address of the original router.

Parameter	Description
MAC Address	This parameter is available only when the **MAC Clone** function is enabled in the **IPoE** or **PPPoE** channel mode. It specifies the MAC address that the modem router cloned.

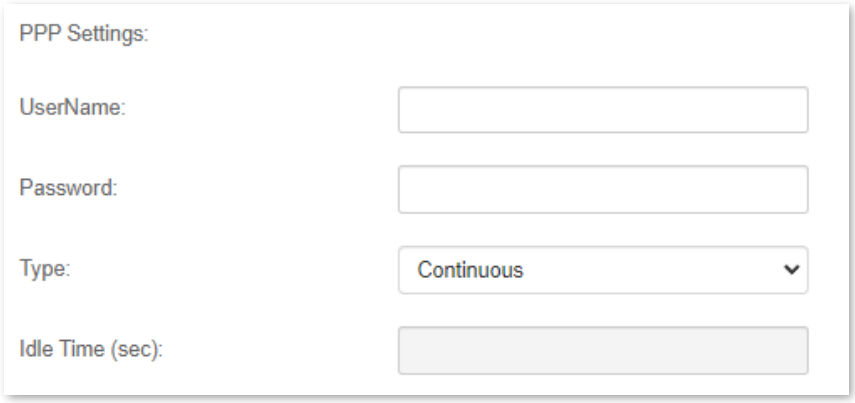
IP protocol



Parameter description

Parameter	Description
IP Protocol	Specifies the internet protocol type used by the modem router. - **IPv4**: Select this type if IPv4 is used for communication. - **IPv6**: Select this type if IPv6 is used for communication. - **IPv4/IPv6**: Select this type if both IPv4 and IPv6 are used for communication.

PPP settings

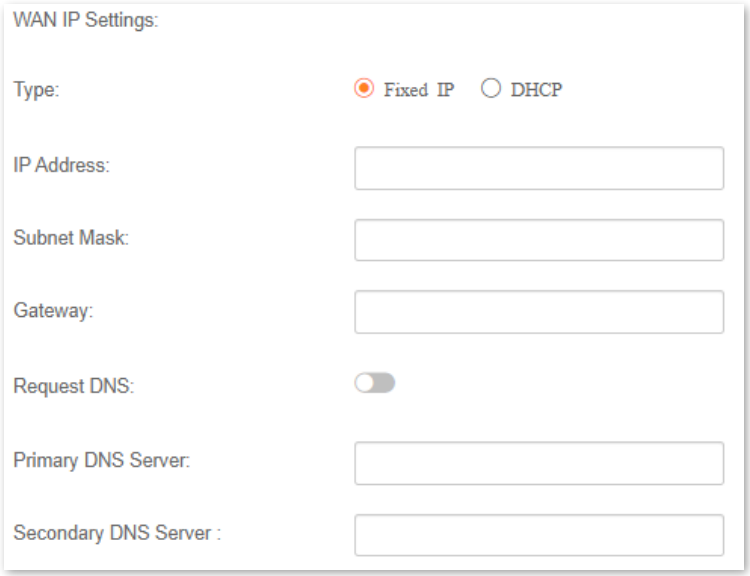


Parameter description

Parameter	Description
UserName	Specify the PPPoE user name/password provided by your ISP for network connection.
Password	

Parameter	Description
Type	Specifies the type of how the connection functions. - **Continuous**: After the network connection is established, it remains on. - **Connect on Demand**: The network connection terminates when the **Idle Time** expires. - **Manual**: Users should manually connect and disconnect the network connection.
Idle Time (sec)	This parameter is available only when **Connect on Demand** is selected. The idle timeout indicates how long the network connection keeps on when no device is using the network.

WAN IP settings

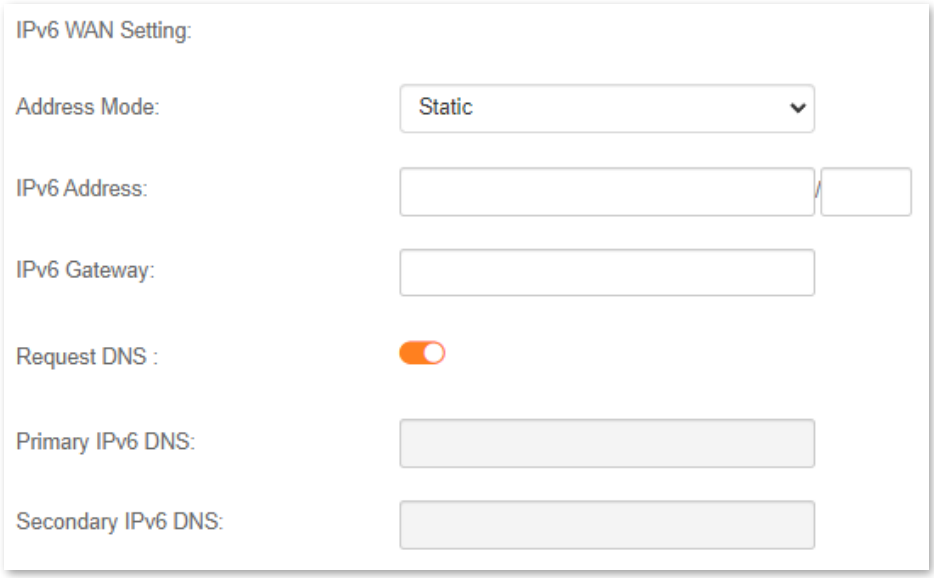


Parameter description

Parameter	Description
Type	Specifies the method to obtain WAN IP address. - **Fixed IP**: The IP address and related information provided by your ISP should be entered manually. - **DHCP**: The IP address is assigned by DHCP server from your ISP automatically.
IP Address	If **Type** is set to **Fixed IP**, enter the IP address and related information provided by your ISP.
Subnet Mask	
Gateway	

Parameter	Description
Request DNS	If the IP address is obtained through DHCP, you can select **Request DNS** to obtain the DNS server address automatically.
Primary DNS Server	If the IP address obtaining type is **Fixed IP** or **Request DNS** function is disabled when the IP address obtaining type is **DHCP**, enter the DNS server address provided by your ISP.
Secondary DNS Server	TIP If the ISP only provides one DNS server address, you can leave the secondary DNS blank.

IPv6 WAN setting



Parameter description

Parameter	Description
Address Mode	Specifies the method to obtain IPv6 WAN IP address. - **Stateless DHCPV6 (SLAAC):** Stateless address autoconfiguration. With **Stateless DHCPV6 (SLAAC)**, the IPv6 address can be configured automatically without a server. - **Static:** IP address and related network configuration information should be entered manually. - **Stateful DHCPv6:** The DHCPv6 server assigns IPv6 addresses to all DHCPv6 clients while keeping track of what IPv6 address has been assigned to what client. In IPv6, only routers sending router advertisement messages can provide a default gateway address dynamically. - **Auto Detect Mode:** Network hosts get configured with IPv6 addresses automatically.

Parameter	Description
IPv6 Address	If **Address Mode** is set to **Static**, enter the IP address and related information provided by your ISP. TIP If the ISP only provides one IPv6 DNS server address, you can leave the secondary IPv6 DNS blank.
IPv6 Gateway	
Primary IPv6 DNS	
Secondary IPv6 DNS	
Request DNS	Used to select **Request DNS** to obtain DNS server address automatically.
Request Options	With this function enabled, the modem router can request prefix as a DHCPv6 client. **Request Prefix**: The modem router obtains the IPv6 prefix from the DHCPv6 server, and delivers it to its LAN ports.

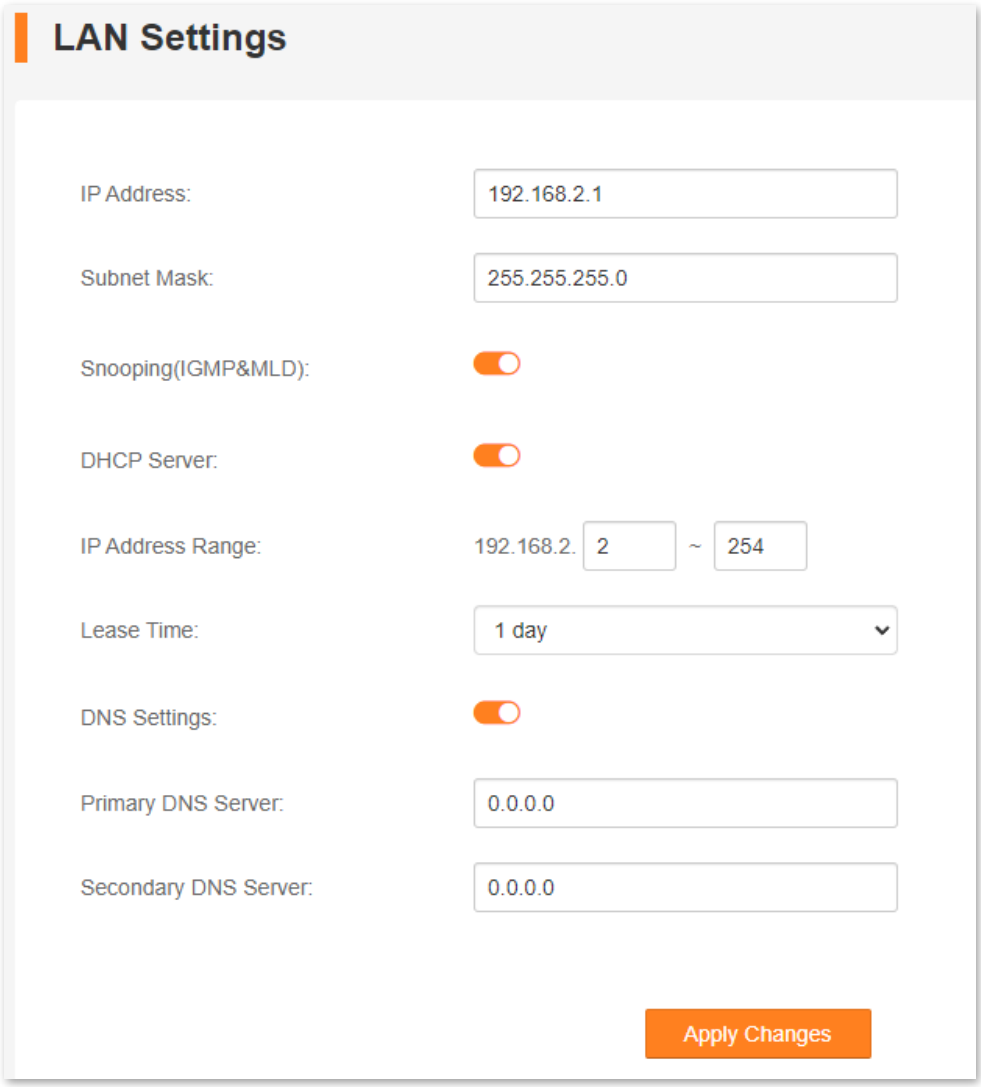
Port mapping

Parameter description

Parameter	Description
Port Mapping	Specifies the port or Wi-Fi network for IPTV service.

6.7 LAN settings

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **LAN Settings**. You can configure the LAN settings for the modem router.



Parameter description

Parameter	Description
IP Address	Specifies the LAN IP address of the modem router, which is the login address of the web UI of the modem router.
Subnet Mask	Specifies the LAN subnet mask of the LAN port.
Snooping (IGMP&MLD)	Used to enable or disable the IGMP and MLD Snooping function. With this function enabled, the specified multicast data of multicast groups can be forwarded to the specified port.

Parameter	Description
DHCP Server	Used to enable or disable the DHCP Server. With this function enabled, the modem router can assign IP addresses to connected devices.
IP Address Range	Specifies the IP address range assigned to connected devices. With the DHCP Server function enabled, you need to enter the start IP address and end IP address of the IP address pool.
Lease Time	Specifies the validity period of one IP address assigned to a device by the modem router.
DNS Settings	With the DNS Settings function enabled, you can enter the primary DNS IP address and secondary DNS IP address assigned to connected devices.
Primary DNS server	
Secondary DNS server	

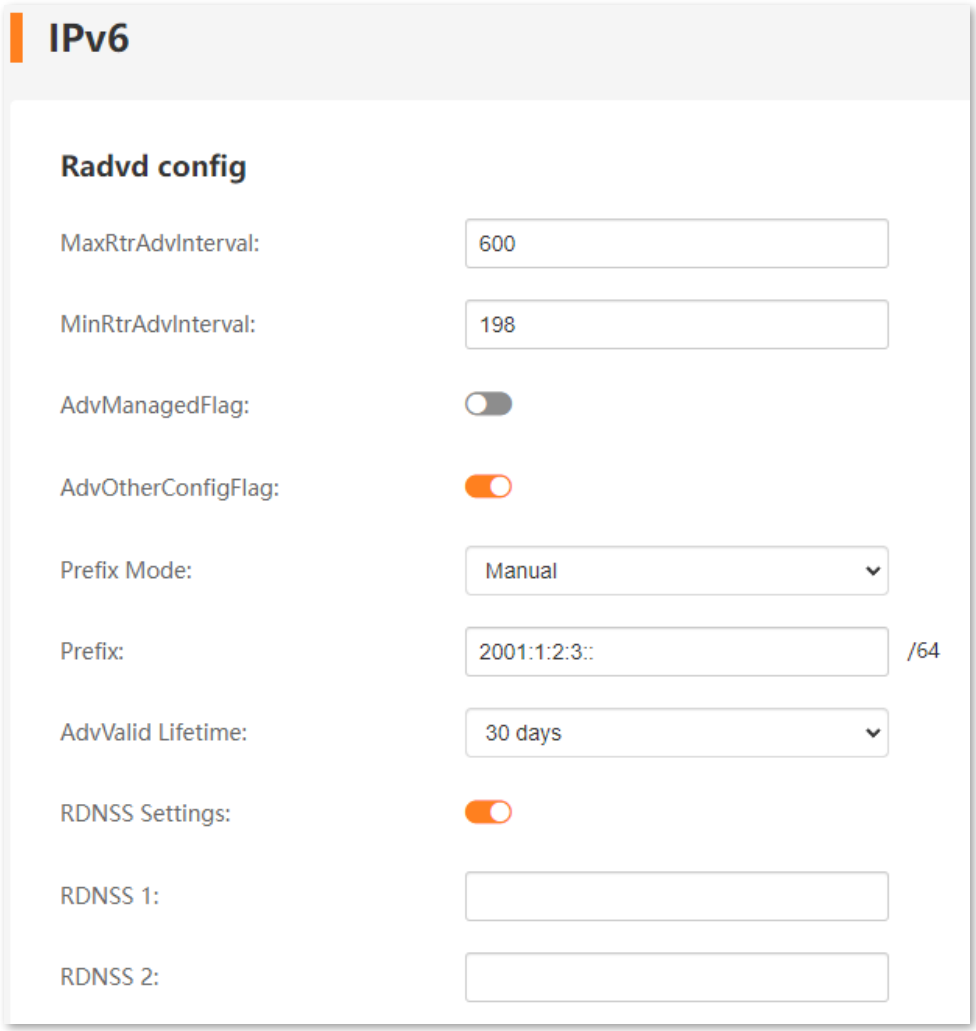
6.8 IPv6 LAN settings

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **IPv6 LAN Settings**.

You can configure the IPv6 LAN settings for the modem router.

6.8.1 RADVD

The Router Advertisement Daemon (RADVD) 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 IPv6 networks.



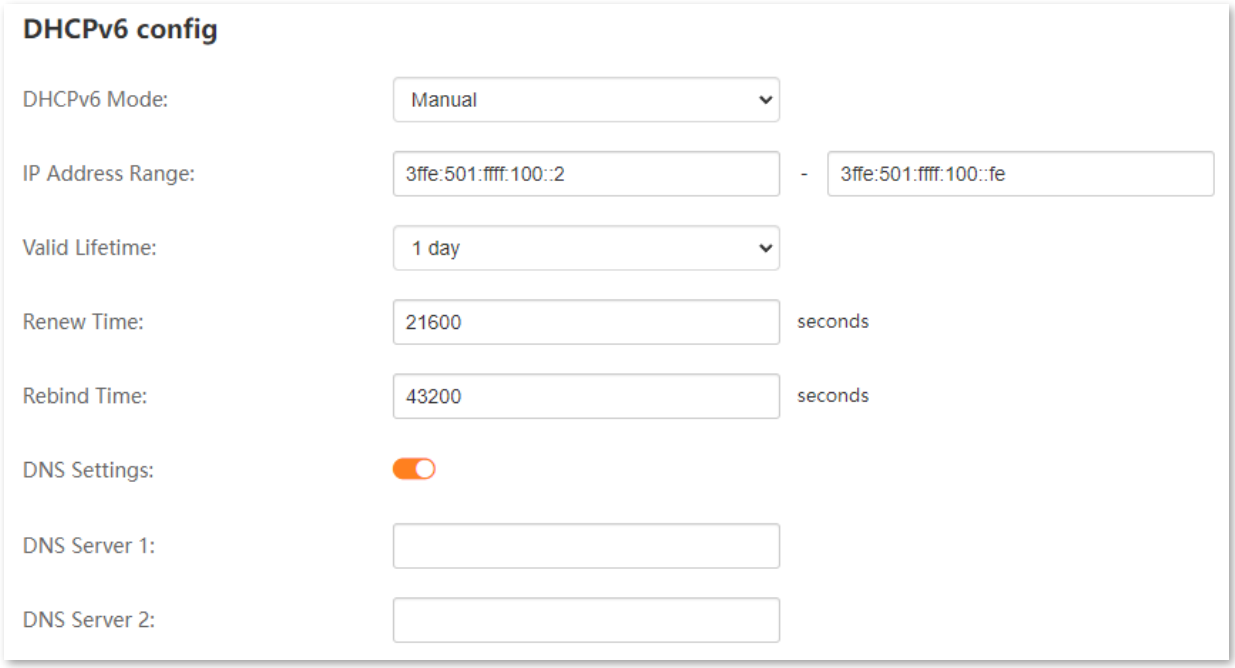
Parameter description

Parameter	Description
MaxRtrAdvInterval	Specifies the maximum interval to transmit advertisements.
MinRtrAdvInterval	Specifies the minimum interval to transmit advertisements.
AdvManagedFlag	Used to enable or disable the AdvManagedFlag.
AdvOtherConfigFlag	Used to enable or disable the AdvOtherConfigFlag.
Prefix Mode	This modem router supports two modes to obtain the prefix. - **Auto**: The prefix is generated by the modem router automatically. - **Manual**: Set the prefix manually.

Parameter	Description
Prefix	If you select **Manual** as the Prefix mode, enter the prefix and set related parameters manually.
AdvValid Lifetime	Specifies the validity period of the prefix. If the lifetime of the prefix has expired, the client no longer uses the corresponding IPv6 address.
RDNSS Settings	Used to enable the Recursive DNS Server (RDNSS) function.
RDNSS 1	Specifies the primary RDNSS address.
RDNSS 2	Specifies the alternative RDNSS address.

6.8.2 DHCPv6 config

Dynamic Host Configuration Protocol for IPv6 (DHCPv6) is used to assign IP addresses and prefixes to IPv6 hosts on a network. You can configure the DHCPv6 settings in this section.



Parameter description

Parameter	Description
DHCPv6 Mode	Specifies the assignment type of DHCPv6 address for the clients connected to the modem router.

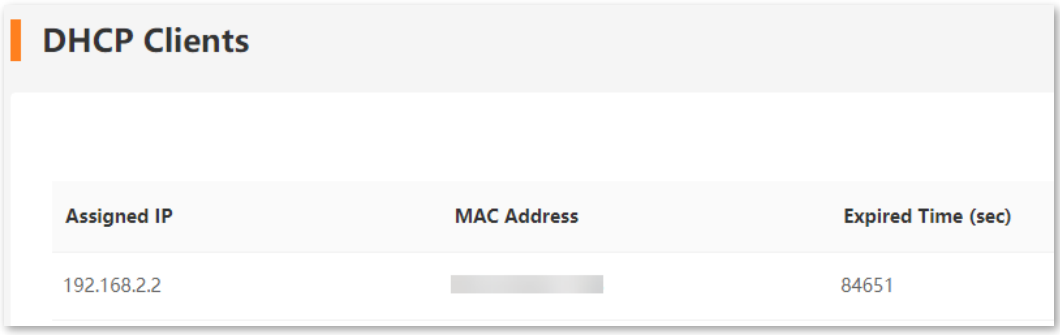
Parameter	Description
	- **Auto**: DHCPv6 stateless configuration. Clients obtain their IPv6 address through Router Advertisement (Stateless Auto Address Configuration) and other parameters are allocated by the DHCPv6 server. - **Manual**: DHCPv6 stateful configuration. The DHCPv6 server automatically assigns IPv6 addresses/prefixes and other network configuration parameters (for example, DNS server addresses) to clients. The user needs to manually configure the IP address range.
IP Address Range	Specifies the IP address range assigned to connected devices.
Valid Lifetime	Specifies the valid lifetime of the IP addresses. When the time is out, the address is invalid.
Renew Time	Specifies the time before expiration when the host is expected to contact the DHCPv6 server that did the assignment to renew the lifetimes of the addresses assigned to the client.
Rebind Time	Specifies the new valid time after the IPv6 address is renewed.
DNS Settings	Used to enable or disable the DNS settings function for DHCPv6.
DNS Server 1	Specifies the primary DNS IP addresses assigned to connected devices.
DNS Server 2	Specifies the secondary DNS IP addresses assigned to connected devices.

6.9 DHCP static IP lease

6.9.1 DHCP clients

If the DHCP server function is enabled, this module shows detailed information about devices that obtain IP addresses from the DHCP server, including assigned IP addresses, MAC addresses, and expired time.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **DHCP Static IP Lease**.



Parameter description

Parameter	Description
Assigned IP	Specifies the IP address assigned by the DHCP server.
MAC Address	Specifies the MAC address of the DHCP client.
Expired Time (sec)	Specifies the valid time of the IP addresses assigned by the DHCP server of the modem router to the DHCP client.

6.9.2 Address reservations

Scenario: You have an FTP server at home under the LAN of the modem router.

Requirement: You want to visit resources on the FTP server when you are not at home and avoid instability of services resulted from the dynamic IP address assigned by the modem router.

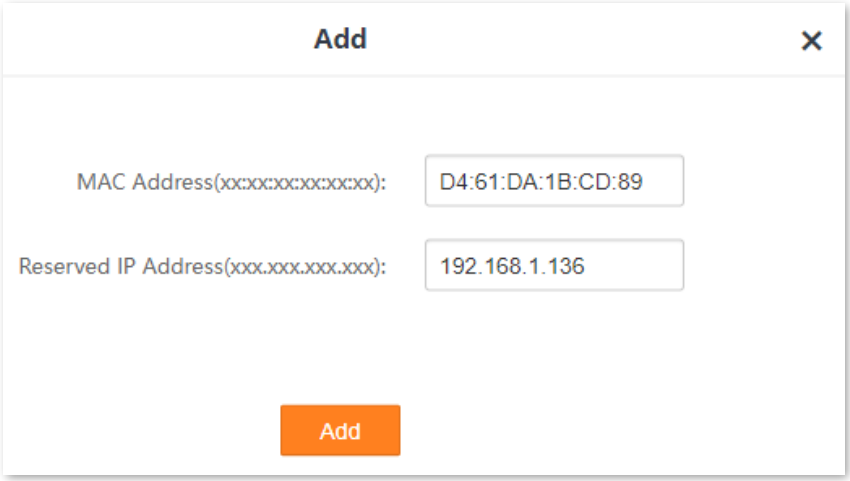
Solution: You can reserve a fixed IP address for the FTP server to reach the goal.

Assume that:

- Fixed IP address reserved for the FTP server: 192.168.1.136
- MAC address of the FTP server host: D4:61:DA:1B:CD:89

Configuring procedure:

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Internet Settings** > **DHCP Static IP Lease**.
2. Click **Add** under **Address Reservations**.
3. Set **MAC Address** in the format of **D4:61:DA:1B:CD:89**.
4. Enter **192.168.1.136** in **Reserved IP Address**.
5. Click **Add**.



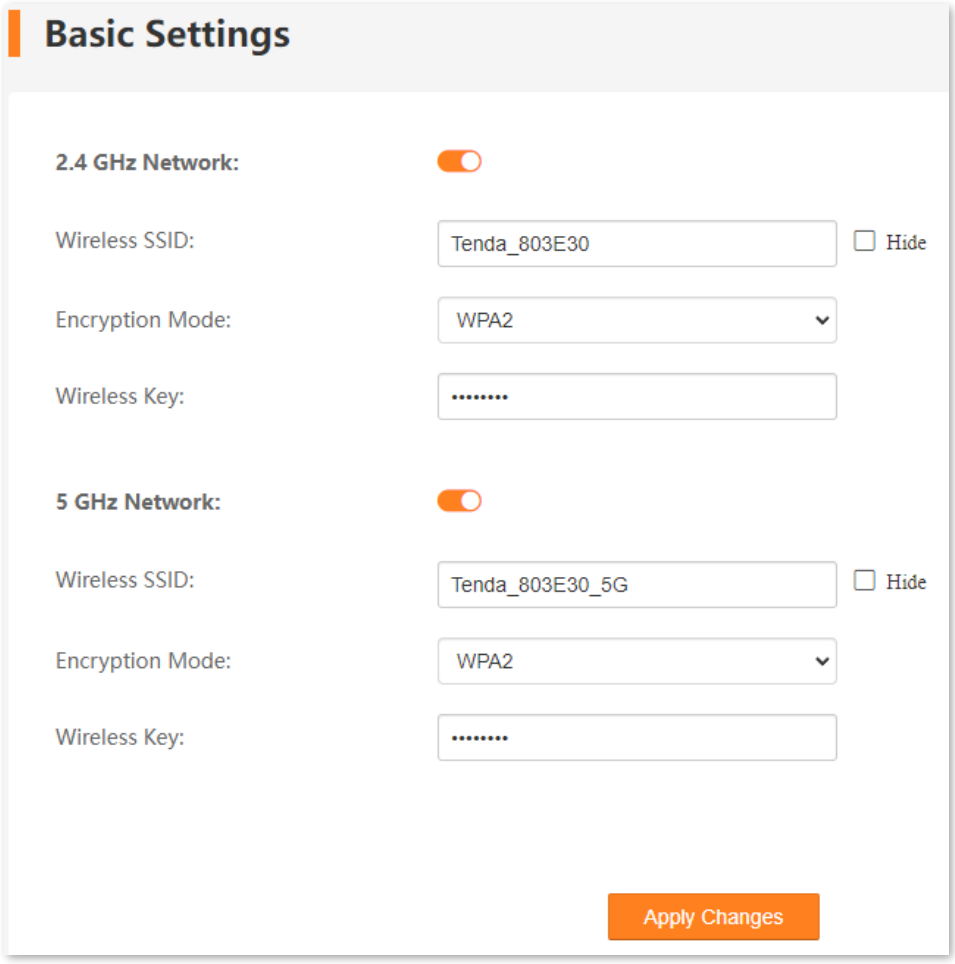
----End

Now you can access resources on the FTP server free from the influence of the dynamic IP address.

7 Wi-Fi settings

7.1 Basic settings

This section allows you to configure the basic parameters of the wireless networks of the modem router. To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Wi-Fi Settings** > **Basic Settings**.

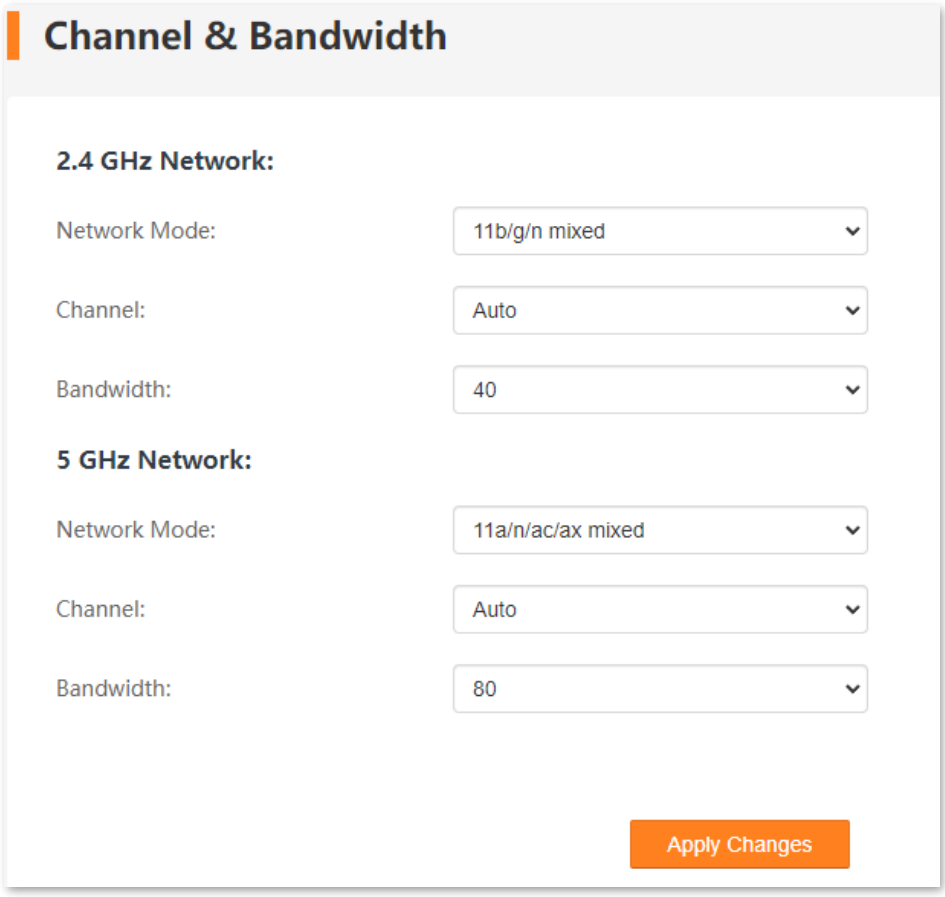


Parameter description

Parameter	Description
2.4/5 GHz Network	Used to enable or disable the 2.4 GHz or 5 GHz network.
Wireless SSID	Specifies the name of the Wi-Fi network.
Hide	Hide the Wi-Fi name. With this function enabled, the Wi-Fi name cannot be scanned automatically by the wireless clients, and users must manually enter the Wi-Fi name on the wireless clients to connect to the Wi-Fi network.
Encryption Mode	Specifies the encryption mode of the Wi-Fi network. - **None**: The Wi-Fi network is not encrypted. This option is not recommended as it leads to low network security. - **WPA**: The Wi-Fi network is encrypted using WPA-PSK/AES. - **WPA2**: The Wi-Fi network is encrypted using WPA2-PSK/AES. - **WPA-WPA2**: Compatible with WPA and WPA2. At this time, Wi-Fi-enabled devices can connect to the corresponding Wi-Fi network using both WPA and WPA2. - **WPA3**: The Wi-Fi network adopts the WPA3 security mode, which is an upgraded version of WPA2. - **WPA2-WPA3**: Compatible with WPA2 and WPA3. At this time, wireless devices can connect to the corresponding Wi-Fi network using both WPA2 and WPA3.
Wireless Key	Specifies the password of the Wi-Fi network.

7.2 Channel & Bandwidth

This section allows you to configure the channel and bandwidth for the 2.4 GHz wireless network and 5 GHz wireless network. To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Wi-Fi Settings** > **Channel & Bandwidth**.



Parameter description

Parameter	Description
Network Mode	Specifies the wireless network mode of the modem router. In the 2.4 GHz network, the following network modes are supported: - **11b**: If 802.11b is selected, only 11b Wi-Fi-enabled devices can connect to the wireless network. - **11g**: If 802.11g is selected, only 11g Wi-Fi-enabled devices can connect to the wireless network. - **11n**: If 802.11n is selected, only 11n Wi-Fi-enabled devices can connect to the wireless network. - **11b/g mixed**: If 802.11b/g Mixed is selected, only 11b or 11g Wi-Fi-enabled devices can connect to the wireless network. - **11g/n mixed**: If 802.11g/n Mixed is selected, only 11g or 11n Wi-Fi-enabled devices can connect to the wireless network.

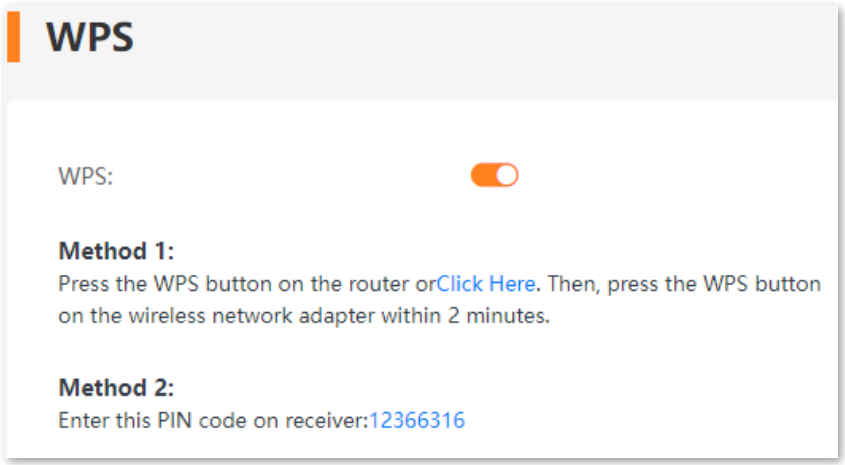
Parameter	Description
	- **11b/g/n mixed**: If 802.11b/g/n Mixed is selected, 11b, 11g or 11n Wi-Fi-enabled devices can connect to the wireless network. In the 5 GHz network, the following network modes are supported: - **11a**: If 802.11a is selected, only 11a Wi-Fi-enabled devices can connect to the wireless network. - **11n**: If 802.11n is selected, only 11n Wi-Fi-enabled devices can connect to the wireless network. - **11ac**: If 802.11ac is selected, only 11ac Wi-Fi-enabled devices can connect to the wireless network. - **11ax**: If 802.11ax is selected, only 11ax Wi-Fi-enabled devices can connect to the wireless network. - **11a/n mixed**: If 802.11a/n Mixed is selected, 11a or 11n Wi-Fi-enabled devices can connect to the wireless network. - **11ac/n mixed**: If 802.11ac/n Mixed is selected, 11ac or 11n Wi-Fi-enabled devices can connect to the wireless network. - **11a/n/ac mixed**: If 802.11a/n/ac Mixed is selected, 11a, 11n or 11ac Wi-Fi-enabled devices can connect to the wireless network. - **11a/n/ac/ax mixed**: If 802.11a/n/ac/ax Mixed is selected, 11a, 11n, 11ac or 11ax Wi-Fi-enabled devices can connect to the wireless network.
Channel	Specifies the operating channel of modem router. If you select **Auto/Auto(DFS)**, the modem router automatically adjusts its operating channel according to the ambient environment. DFS: Dynamic Frequency Selection. With this function, the modem router will automatically detect the frequency of the radar system. When the modem router detects radar signals in the same frequency with the modem router itself, the modem router will automatically switch to another frequency to avoid interference with the radar system.
Bandwidth	Specifies the channel bandwidth of the modem router. - **20**: It indicates that the channel bandwidth used by the modem router is 20 MHz. - **40**: It indicates that the channel bandwidth used by the modem router is 40 MHz. - **20/40**: It specifies that the modem router can switch its channel bandwidth between 20 MHz and 40 MHz based on the ambient environment. - **80**: It indicates that the channel bandwidth used by the modem router is 80 MHz. This option is available only at 5 GHz. - **20/40/80**: It specifies that the modem router can switch its channel bandwidth among 20 MHz, 40 MHz, and 80 MHz based on the ambient environment. This option is available only at 5 GHz.

7.3 WPS

7.3.1 Overview

Wi-Fi Protected Setup (WPS) 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. Users can set up network connections simply by entering a PIN code or pressing the WPS button.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Wi-Fi Settings** > **WPS**. Select **WPS** to enable the WPS function.



7.3.2 Connect the Wi-Fi networking using PBC negotiation

Use the WPS button on the modem router to connect clients to the modem router.

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Wi-Fi Settings** > **WPS**.
2. Turn on **WPS**.
3. Press the **WPS** button on the modem router for 1 - 2 seconds and then release it, or click **Click Here** under **Method 1** on the web UI. The **WPS** indicator starts blinking, indicating the devices are negotiating.
4. Within 2 minutes, enable the WPS negotiation function on your Wi-Fi-enabled device.

----End

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

7.3.3 Connect the Wi-Fi networking using PIN code

Use the PIN code of the modem router to connect clients to the modem router.

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Wi-Fi Settings** > **WPS**.
2. Turn on **WPS**.
3. Check the PIN code of the modem router and enter it on your Wi-Fi-enabled device.

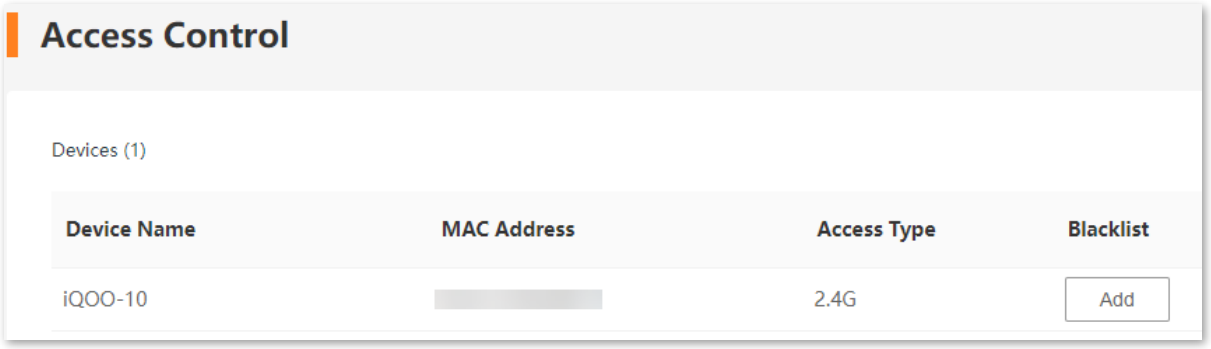
----End

Wait a moment until the WPS negotiation is completed, and the Wi-Fi-enabled device is connected to the Wi-Fi network.

7.4 Access control

This section allows you to block or allow clients to access the network.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Wi-Fi Settings** > **Access Control**.



Parameter description

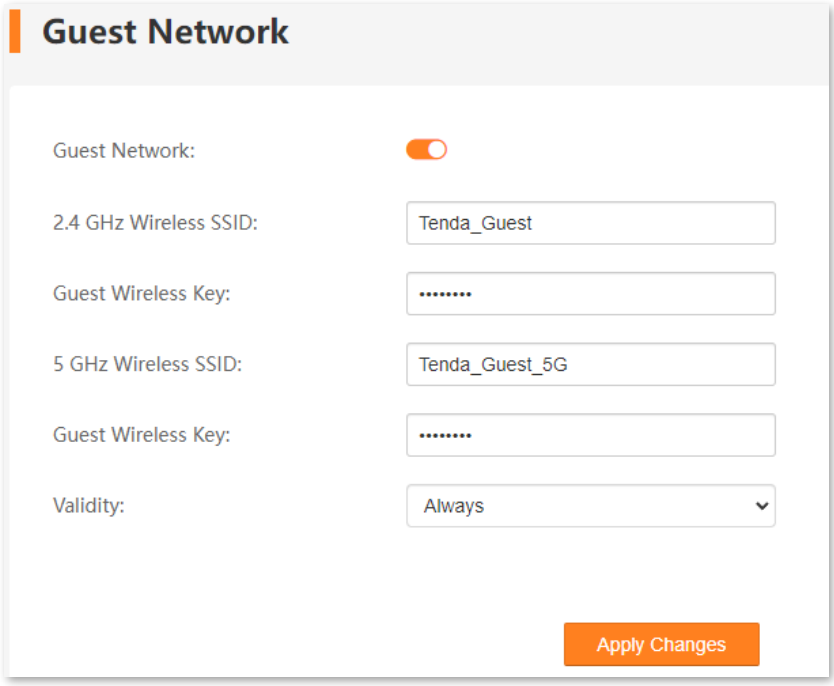
Parameter	Description
Device Name	Specifies the name of the connected device.
MAC Address	Specifies the MAC address of the connected device.
Access Type	Specifies the way by which the client connects to the modem router.
Blacklist	Used to add/remove the client to/from the blacklist. If a client is added to the blacklist, it cannot connect to the corresponding wireless network of the modem router.

7.5 Guest network

7.5.1 Overview

This section allows you to configure the Guest Network function and change the guest network's Wi-Fi name and password. Devices connected to the guest network can access the internet and communicate with each other, but cannot access the modem router's web UI or the master network. This function not only enables guests to access the internet but also ensures the security of the master network.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Wi-Fi Settings** > **Guest Network**.



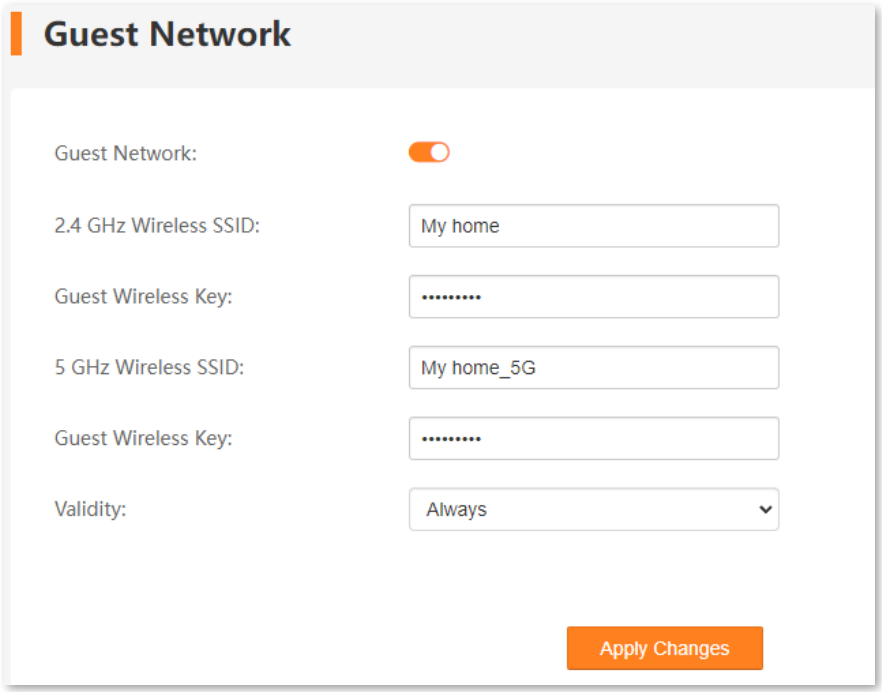
Parameter description

Parameter	Description
Guest Network	Used to enable or disable the guest network function. By default, this function is disabled.
2.4/5 GHz Wireless SSID	Specify the Wi-Fi names and password of the modem router's guest network.
Guest Wireless Key	

Parameter	Description
Validity	Specifies the validity of the guest networks. The Guest Network function will be disabled automatically out of the specified time so Wi-Fi-enabled devices cannot search it. Please set the validity as required.

7.5.2 Configure the guest network

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Wi-Fi Settings** > **Guest Network**.
2. Turn on **Guest Network**.
3. Configure **2.4 GHz Wireless SSID** and **5 GHz Wireless SSID**, which are **My home** and **My home_5G** in this example.
4. Configure **Guest Wireless Key**, which is **MyHome123** in this example.
5. Set **Validity**, which is **Always** in this example.
6. Click **Apply Changes**.



----End

8 Mesh

8.1 Overview

TIP

Currently, this modem router can be used as the primary node to network with devices that support the Tenda Mesh protocol.

The modem router support Mesh networking. Mesh networking has such advantages as automatic networking, self-repair, multi-skip cascade, unified management network, node self-management, which can greatly reduce the cost and complexity of network deployment.

The modem router supports the following three Mesh networking modes. You can choose the Mesh networking mode as required.

- **MESH button networking**

The networking button (WPS/Wi-Fi) on the modem router body can be used to network with other routers without entering the management page.

- **Wired networking**

Connect the LAN port of an existed modem router to a new router through an Ethernet cable for automatic networking. The wired network has good stability and small delay. If Ethernet cables have been deployed at home, you can use this mode.

8.2 Set up as an add-on node

TIP

- If there are more than two secondary nodes, place the primary node in the key area and ensure that no more than one node is between the primary node and the secondary node.
- Before using a new router to extend the network, ensure that the existing modem router (primary node) has been connected to the internet and the new router (secondary node) is restored to the factory settings.
- The modem router can be networked with other routers that support the XMESH protocol. If the router fails to be added to an existing network, contact Tenda customer service for help. The following uses V15 (primary mode) and MX12 (secondary node) as an example.

8.2.1 MESH button networking

1. Add to the existed network.

   1) Power on the existing modem router (V15) and connect it to the internet properly.

   2) Place the new router (MX12) near the existing router and power on. Wait until the startup of the new router is complete. The indicator blinks green slowly.

   3) Press (1 to 3 seconds) the networking button (MESH) of the new router. The indicator blinks green fast.

   4) Press (1 to 2 seconds) the networking button (WPS/Wi-Fi) on the existing modem router.

      When the indicator of the new router turns solid green, the networking is successful. The MX12 becomes a secondary node in the network.

2. Select an appropriate position for the new router.

   1) For a better internet experience, you can relocate the wireless router by referring to the following relocation tips:

      - Place the new router within the wireless coverage range of the existing modem router.
      - Keep your nodes away from electronics with strong interference, such as microwave ovens, induction cookers, and refrigerators.
      - Place the nodes in a high position with few obstacles.

   2) Power on the new router, and wait until the indicator blinks green slowly.

TIP

- The indicators of the new router may vary with device models. Please refer to the product you purchased.
- If the indicator of the new router is still blink green slowly after 3 minutes. Please adjust the new router closer to the existing router.

Observe the indicator of the new router until it changes to one of the following status:

Solid green	Networking succeeds. Excellent connection quality.
Solid yellow	Networking succeeds. Fair connection quality.
Solid red	Networking succeeds. Poor connection quality.

3) If the indicator of the new router is solid red, select a new location by referring to substep 1 of step 2 in this section to obtain the better connection quality.

---End

To access the internet with:

- **Wired devices:** Connect to a LAN port of the modem router using an Ethernet cable.
- **Wi-Fi-enabled devices:** Connect to the Wi-Fi network using the **SSID** (Wi-Fi name) and **WLAN Key** (Wi-Fi password) you set.

Repeat this section to add other routers.

8.2.2 Wired networking

Assume that the Ethernet cable has been deployed in advance between the living room and the bedroom in the home, the existing modem router V15 (primary node) placed in the living room has been connected to the internet, and now you need to deploy a new router MX12 (planned as a secondary node) in the bedroom to extend the Wi-Fi network.

Configuration procedure

1. Power on the existing modem router (V15) and connect it to the internet properly.
2. Place the new router (MX12) where you want to deploy it, which is **bedroom** in this example. Power on the new router. Wait until the startup of the new router is complete (the indicator blinks green slowly).

3. Connect the LAN port (LAN, WAN/LAN) of the existing modem router to the LAN port of the new router using an Ethernet cable.

---End

Wait about 1 minute. When the indicator of the new router turns solid green, the networking is successful. The MX12 becomes a secondary node in the network.

To access the internet with:

- **Wired devices:** Connect to a LAN port of the modem router using an Ethernet cable.
- **Wi-Fi-enabled devices:** Connect to the Wi-Fi network using the **SSID** (Wi-Fi name) and **WLAN Key** (Wi-Fi password) you set.

TIP

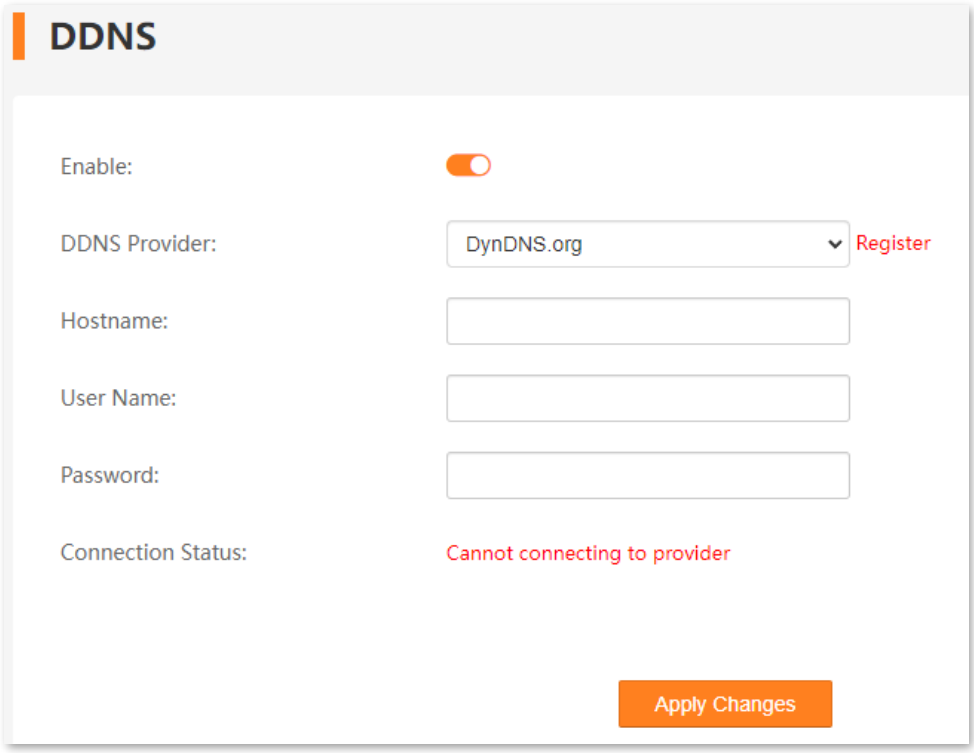
- To obtain better internet access experience, go to select an appropriate position for the new router.
- If there is still a router to network, repeat this section.
- To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Mesh**, you can view and configure the added node.

9 Services

9.1 DDNS

9.1.1 Overview

If your ISP provides you with a static public IP address, you can register a domain name and have that name associated with your IP address by public DNS servers. However, if your ISP provides you with a dynamic public IP address, the address can change frequently. In this case, you can use the Dynamic DNS service, which can map the dynamic WAN IP address of the modem router to a domain name for dynamic domain name resolution, helping internet users (WAN side) access the modem router by a static domain name.



Parameter description

Parameter	Description
Enable	Used to enable or disable the DDNS function.
DDNS Provider	Specifies the DDNS provider. This modem router supports two providers: **DynDNS.org** and **NO-IP.com**.
Hostname	Specifies the DDNS domain name registered with your DDNS service provider.
User Name	Specify the user name/password registered with your DDNS service provider.
Password	
Connection Status	Specifies whether the modem router connects to the DDNS provider.

9.1.2 Configure DDNS

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Services** > **DDNS**.
2. Turn on **Enable**.
3. Select a DDNS provider from the drop-down list.

   TIP

   If you do not have a DDNS account, select a service provider and click **Register** to have one on the website of the service provider.
4. Set the **Hostname** to the DDNS domain name registered from the DDNS service provider.
5. Enter the **User Name** and **Password** applied from the DDNS service provider for logging in to the DDNS service.
6. Click **Apply Changes**.

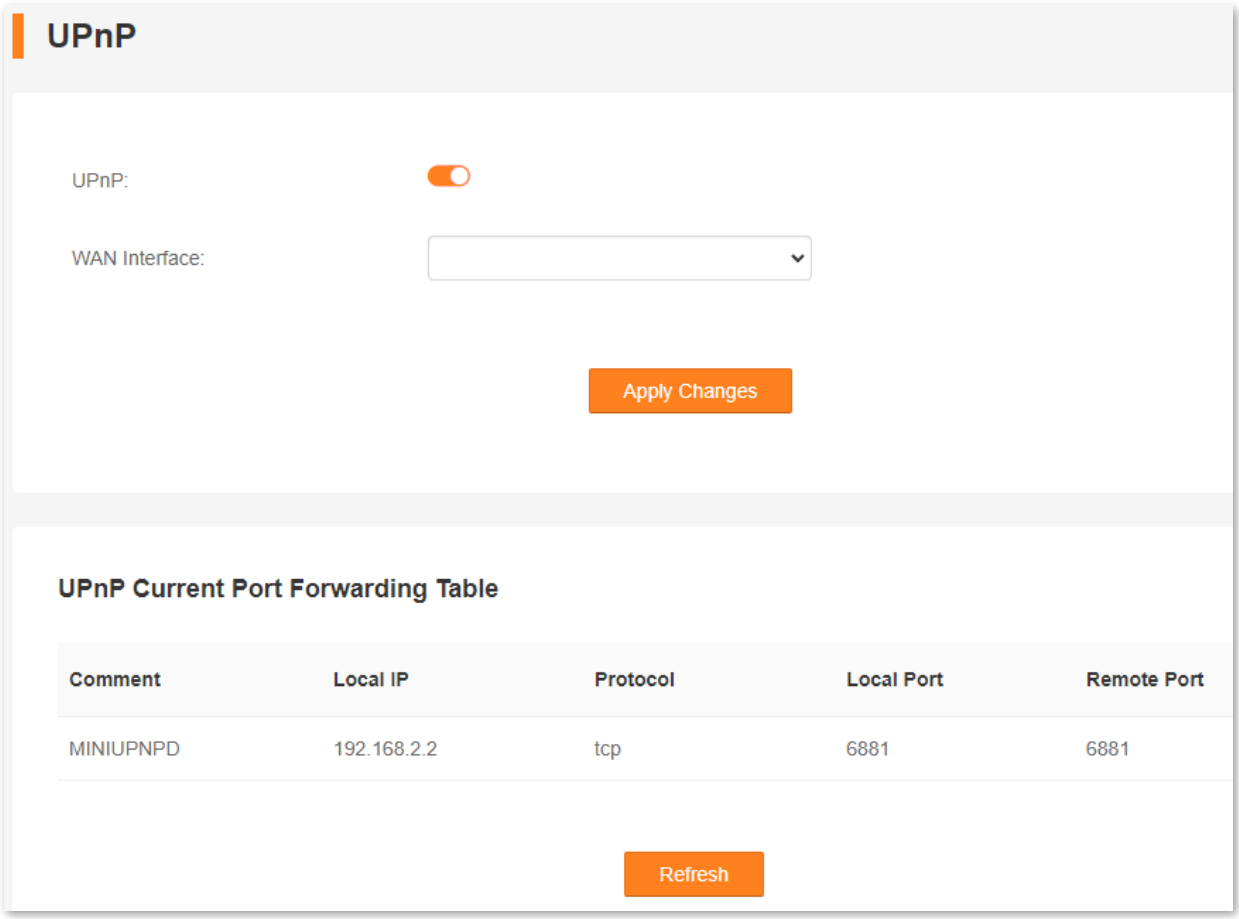
----End

9.2 UPnP

UPnP is short for Universal Plug and Play. This function enables the modem router to open ports automatically for UPnP-based programs. It is generally used for P2P programs, such as BitComet and AnyChat, and helps increase the download speed.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Services** > **UPnP**.

If the UPnP function is enabled, when UPnP-based programs, such as BitComet and AnyChat, are running on the local network, the external and internal mapping relationships are displayed on the page.

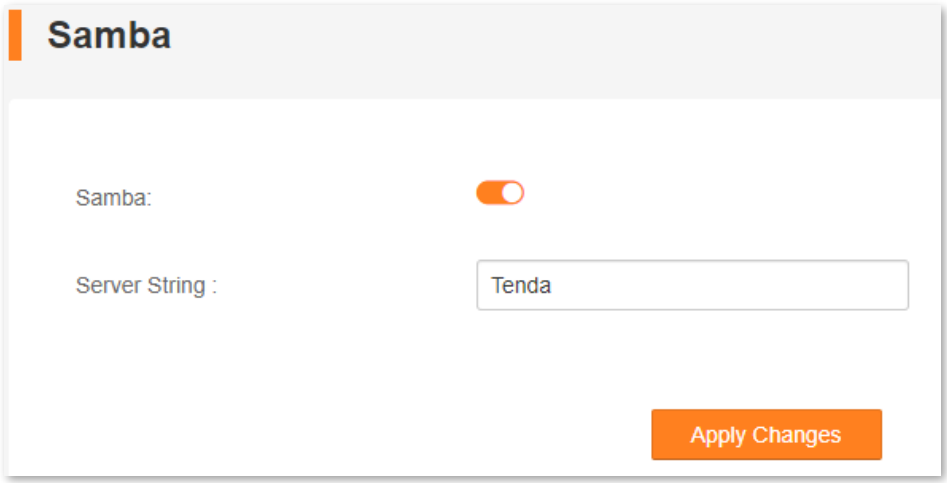


9.3 Samba

9.3.1 Overview

The modem router supports data sharing with a USB storage device over the LAN through Samba.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Services** > **Samba**.



9.3.2 Example of configuring the storage service function

Network requirements

A V15 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 Samba.

Solution

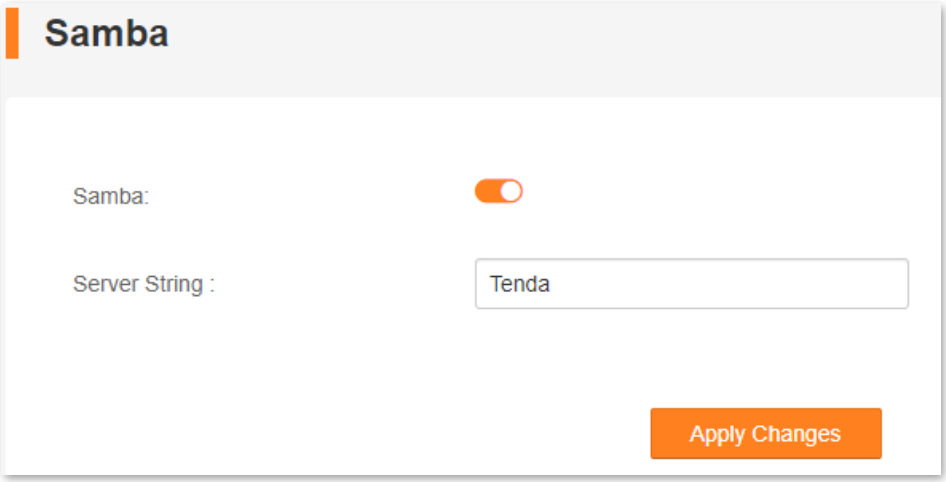
Connect a USB storage device with the pictures and videos to the USB port of the modem router. The modem router can function as a file server.

Assume that:

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

Configuration procedure

1. Insert the USB storage device (compliant with USBV2.0 port) to the USB port of the modem router.
2. Log in to the web UI of the modem router, and navigate to **Advance** > **Services** > **Samba**.
3. Turn on **Samba**.
4. Set **Server Name**, which is **Tenda** in this example.
5. Click **Apply Changes**.

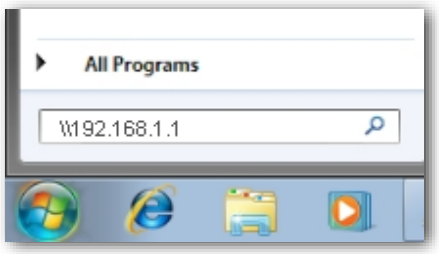


----End

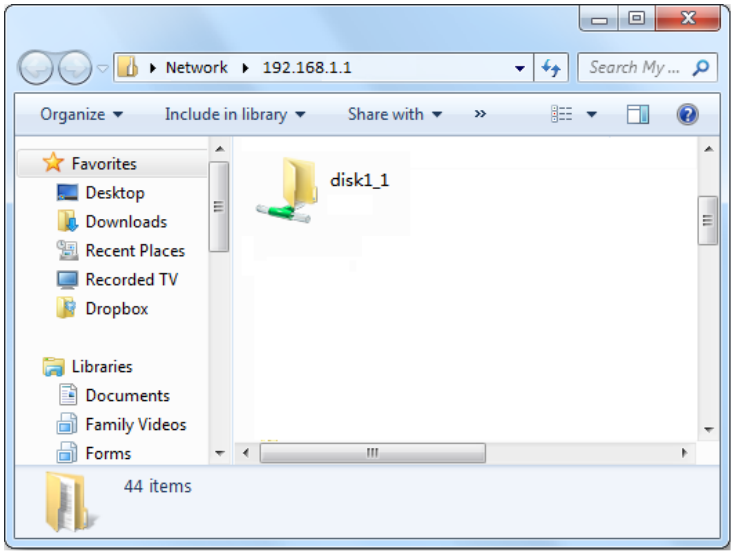
Verification

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

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



2. Press **Enter** on the keyboard.
3. Double-click the **disk1_1** folder.

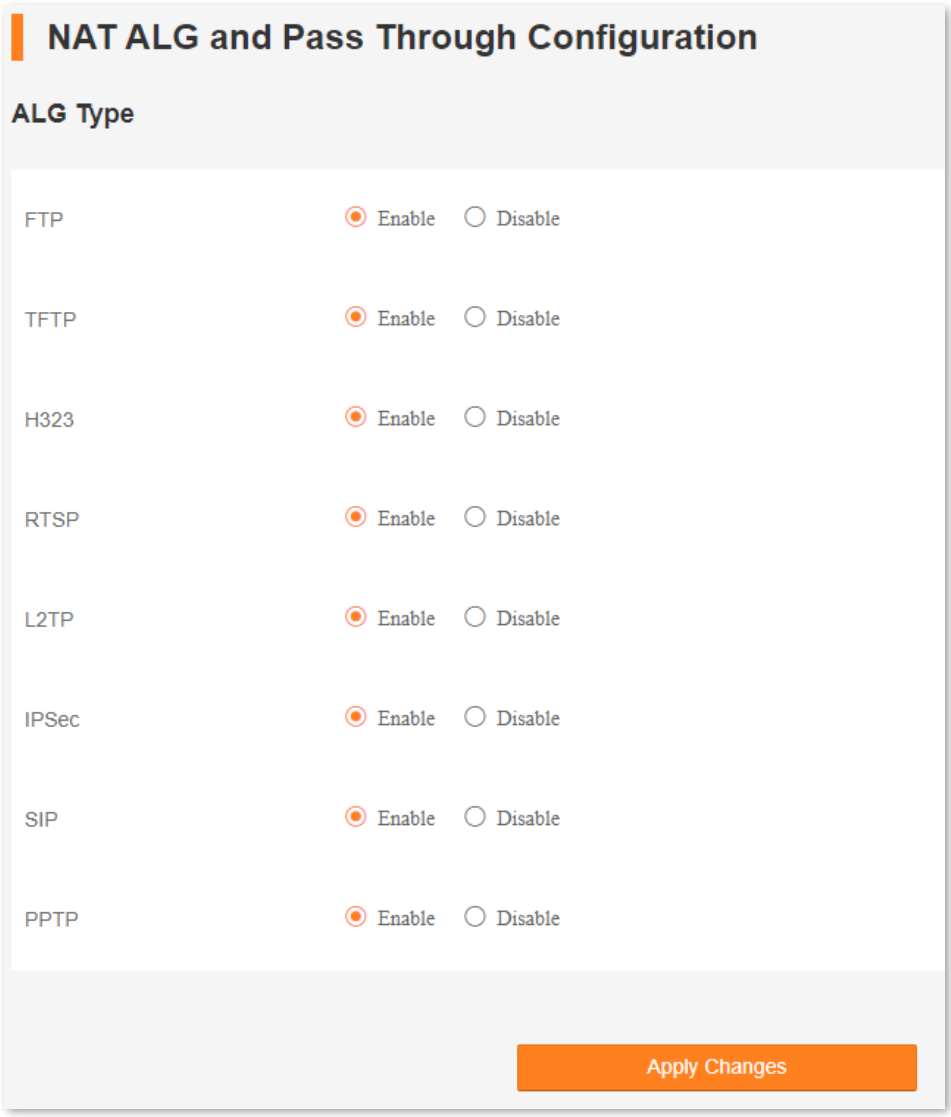


----End

9.4 ALG

Application Layer Gateway (ALG) allows you to enable/disable FTP, H323, RTSP, SIP functions and VPN pass through as required.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Services** > **ALG**.



Parameter description

Parameter	Description
FTP	The users on LAN can share resources on the FTP server on WAN only when it is selected.
TFTP	It is a simple protocol used for files transfer. The TFTP ALG processes TFTP packets that initiate the request and creates pinholes to allow return packets from the reverse direction.
H323	The IP phone and network conference function can be used on the computers connected to the modem router only when it is selected.
RTSP	The users on LAN can view video on demand when it is selected.

Parameter	Description
L2TP	If you select L2TP protocol when you create a VPN connection on your computer in the LAN of the modem router, it takes effect only when this checkbox is selected.
IPSec	If you select IPsec protocol when you create a VPN connection on your computer in the LAN of the modem router, it takes effect only when this checkbox is selected.
SIP	The IP phone function can be used on the computers connected to the modem router only when it is selected.
PPTP	If you select PPTP protocol when you create a VPN connection on your computer in the LAN of the modem router, it takes effect only when this checkbox is selected.

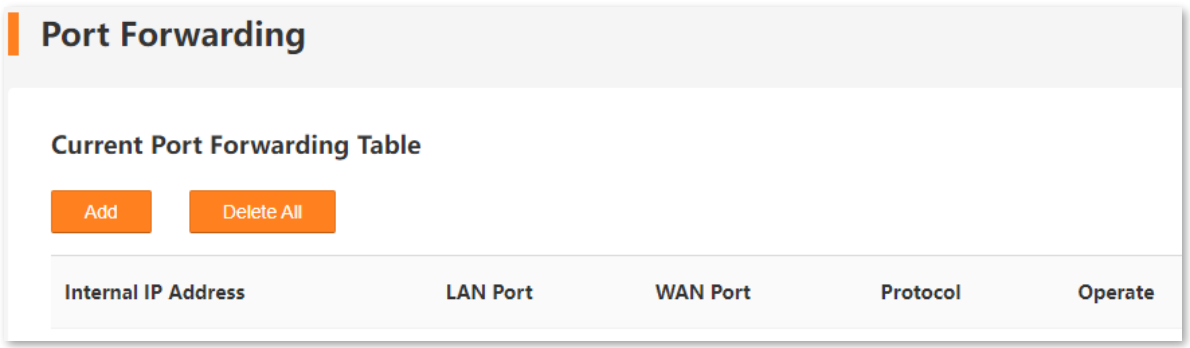
9.5 Port forwarding

9.5.1 Overview

By default, internet users cannot actively access the LAN of the modem router.

The port forwarding function opens a port of the modem router, and binds the LAN server to the port using the server's IP address and intranet service port. All access requests to the WAN port of the modem router will be directed to the server. Therefore, the server within the LAN can be accessed by internet users and the LAN can be free from attacks from the internet.

For example, the port forwarding function enables internet users to access web servers within the LAN.



9.5.2 Example of configuring port forwarding

Network requirements

A V15 modem router is used to set up a LAN in an apartment, and you have set up an FTP server within the LAN. You want to open the FTP server to internet users and enable family members to access the resources of the FTP server when they are not at home.

Solution

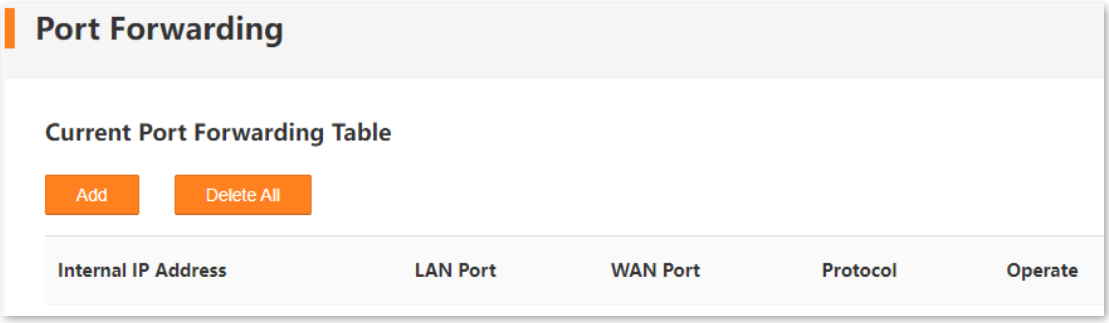
You can configure the port forwarding function to reach the goal.

Assume that:

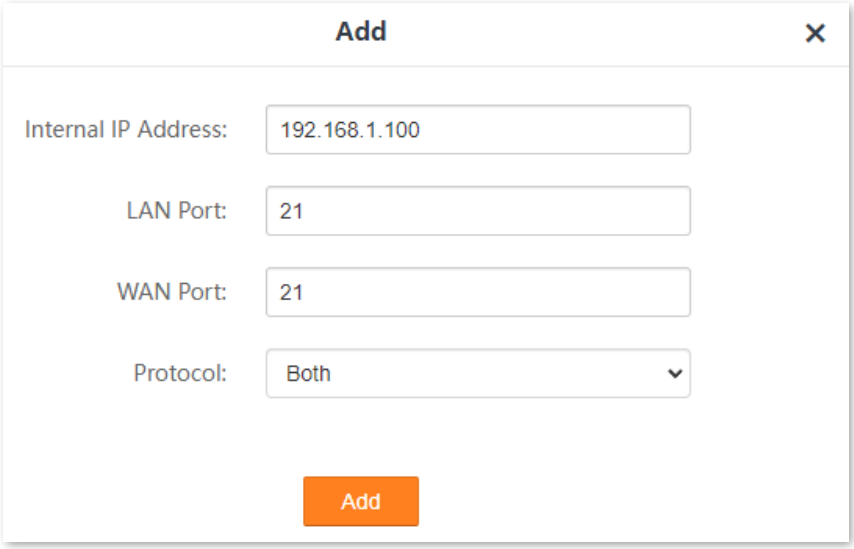
- IP Address of the FTP server: 192.168.1.100
- Service port of the FTP server in LAN: 21
- External port that this device enables for internet devices: 21
- WAN IP Address of the device: 202.105.11.22

Configuration procedure

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Services** > **Port Forwarding**.
2. Click **Add**.



3. Enter the **Internal IP Address**, which is **192.168.1.100** in this example.
4. Set **LAN port** and **WAN port**, which are both **21** in this example.
5. Select **Protocol** from the drop-down list, which is **Both** in this example.
6. Click **Add**.



----End

Parameter description

Parameter	Description
Internal IP Address	Specifies the IP address of a server that resides on the LAN.
LAN Port	Specifies the service port number of the internal server.
WAN Port	Specifies the service port number for internet users to access a specified service.
Protocol	Specifies the protocol that specified service uses, including **TCP**, **UDP**, and **Both**. **Both** indicates that both TCP and UDP are used. If you are uncertain about it, **Both** is recommended.

Verification

Enter **Protocol name**://**WAN port IP address**:**External port** in the address bar of a web browser on a computer over the internet to access the resources on the FTP server. In this example, enter **ftp://202.105.11.22:21**.

TIP

If internet users still cannot visit the FTP server in LAN after the configuration, try the following solutions:

- Ensure that the WAN IP address of the modem router is public, and the internal port you entered is correct.
- Security software, antivirus software, and the built-in OS firewall of the Server may cause port forwarding function failures. Disable them and try again.

9.6 DMZ

9.6.1 Overview

A Demilitarized Zone (DMZ) host on a LAN is free from restrictions when communicating with the internet. It is useful for getting a better and smoother experience in video conferences and online games. You can also set the host of a server within the LAN as a DMZ host when you need to access the server from the internet.

NOTE

- A DMZ host is not protected by the firewall of the modem router. A hacker may leverage the DMZ host to attack your LAN. Therefore, enable the DMZ function only when necessary.
- Hackers may leverage the DMZ host to attack the local network. Do not use the DMZ host function randomly.
- Security software, antivirus software, and the built-in OS firewall of the computer (DMZ host) 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.

9.6.2 Example of configuring DMZ

Network requirements

A V15 modem router is used to set up a LAN in an apartment. You want your friends to visit the resources on the web server in the LAN.

Solution

You can use the DMZ Host function to meet the requirement.

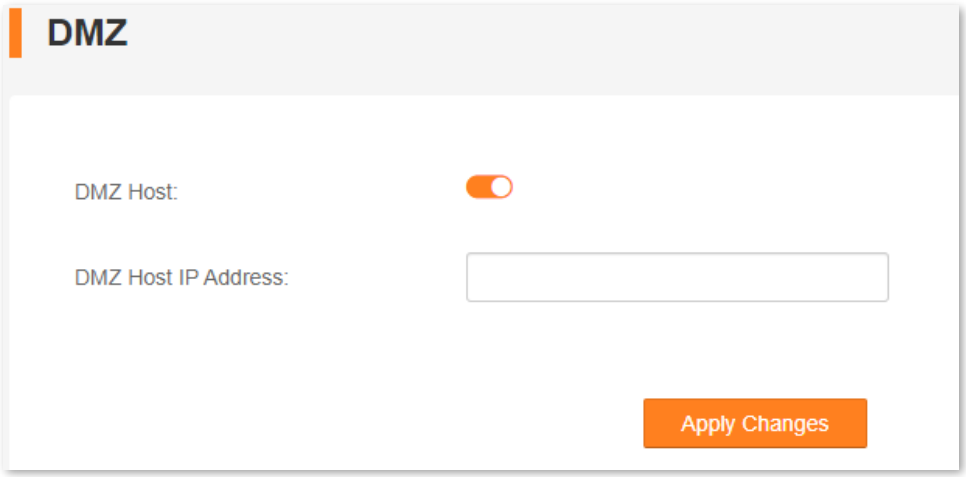
Assume that:

- WAN IP address of the device: 202.105.11.22
- IP address of the internal web server: 192.168.1.100
- Service port of the web server: 80

Configuration procedure

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Services** > **DMZ**.
2. Turn on **DMZ Host**.

3. Set **DMZ Host IP Address**, which is **192.168.1.100** in this example.
4. Click **Apply Changes**.



----End

Parameter description

Parameter	Description
DMZ Host	Used to enable or disable the DMZ function. If DMZ is enabled for a LAN host, the host is exposed over the internet for unlimited two-way communication.
DMZ Host IP Address	Specifies the IP address of the host that is to be set as the DMZ host.

Verification

Enter **Protocol name**://**WAN IP address**:**port number** in the address bar of a web browser on a computer over the internet to access the resources on the web server. In this example, enter **http://202.105.11.22:80**.

If the DDNS function is enabled, you can visit an address in the form of **Protocol name**://**domain name:port number**.

TIP

If the internet user still cannot visit the web server in LAN after the configuration, try the following solutions:

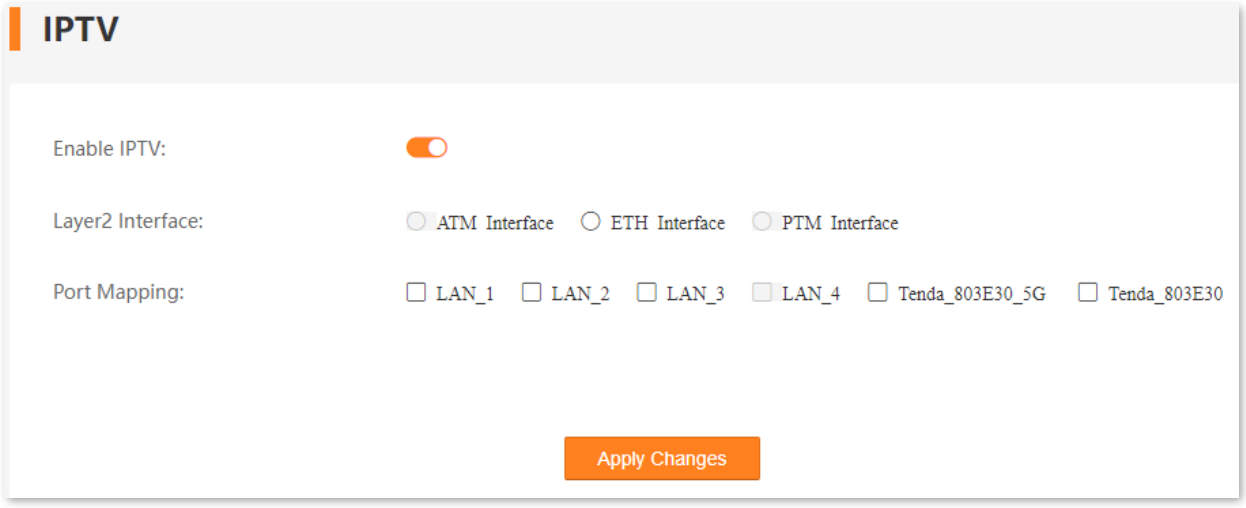
- Ensure that the WAN IP address is public. A private WAN IP address may invalidate the port forwarding function. Common IPv4 IP addresses include A, B, and C types: A type ranges from 10.0.0.0 to 10.255.255.255; B type ranges from 172.16.0.0 to 172.31.255.255; C type ranges from 192.168.0.0 to 192.168.255.255.
- Security software, antivirus software, and the built-in OS firewall of the DMZ host may cause port forwarding function failures. Disable them and try again.
- Assign a static IP address to the DMZ host in case of service interruption caused by the dynamic IP address.

9.7 IPTV

9.7.1 Overview

If the IPTV service is included in the broadband service you purchased, you can enable the IPTV function to enjoy both internet access and IPTV programs through the modem router at the same time.

To access the page, log in to the web UI of the modem router, and navigate to **IPTV** on the upper right corner of the **EasySet** page or navigate to **Advance** > **Services** > **IPTV**.



Parameter description

Parameter	Description
Enable IPTV	Used to enable or disable the IPTV function.
Layer2 Interface	It is required when the IPTV function is enabled. The modem router provides the following three interfaces: - **ATM Interface**: Used for ADSL broadband internet service. - **ETH Interface**: Used for connecting to the internet with an Ethernet cable. - **PTM Interface**: Used for accessing VDSL broadband internet service.
Port Mapping	Specifies the port or Wi-Fi network used for connecting an IPTV set-top-box (STB). After the configuration is complete, the port selected can be connected to the IPTV STB only.
VPI	Specify the VPI and VCI of the ISP, which should be provided by your ISP.
VCI	
Enter 802.1P Priority	Specifies a priority level between 0 and 7. **0** and **7** indicate lowest and highest levels, respectively. The value of this parameter is provided by your ISP.
Enter 802.1Q VLAN ID	Specifies a VLAN ID number. The value of this parameter is provided by your ISP.

9.7.2 Example of configuring the IPTV function

Network requirements

The IPTV service is included in your VDSL broadband service. You want to watch IPTV programs through the modem router.

Solution

You can configure the IPTV function to meet the requirement.

Assume that:

- Layer 2 interface: PTM interface
- 802.1P Priority for IPTV service: 5
- 802.1Q VLAN ID for IPTV service: 2000

Configuration procedure

1. Configure your modem router.

   1) Log in to the web UI of the modem router, and navigate to **Advance** > **Services** > **IPTV**.

   2) Turn on **Enable IPTV**.

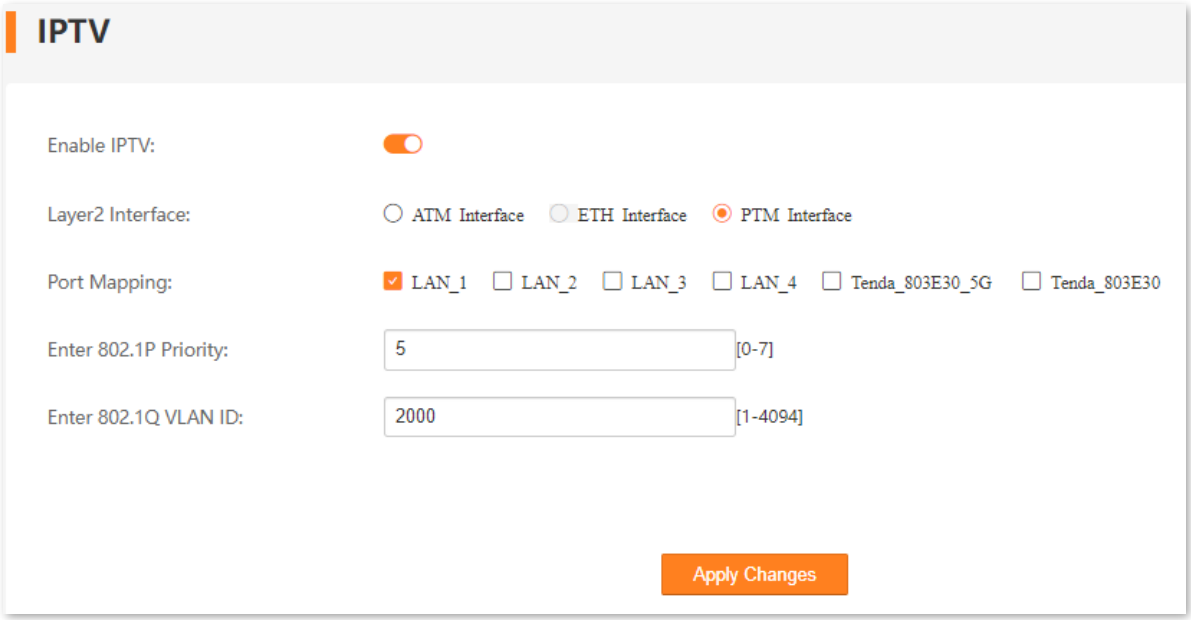
   3) Select **PTM Interface**.

   4) Select a port to serve as an IPTV port for connection, which is **LAN_1** in this example.

   5) Set **Enter 802.1P Priority**, which is **5** in this example.

   6) Set **Enter 802.1Q VLAN ID**, which is **2000** in this example.

   7) Click **Apply Changes**.



2. Connect your IPTV STB to port 1 of the modem router, and configure your IPTV STB.

   ----End

Verification

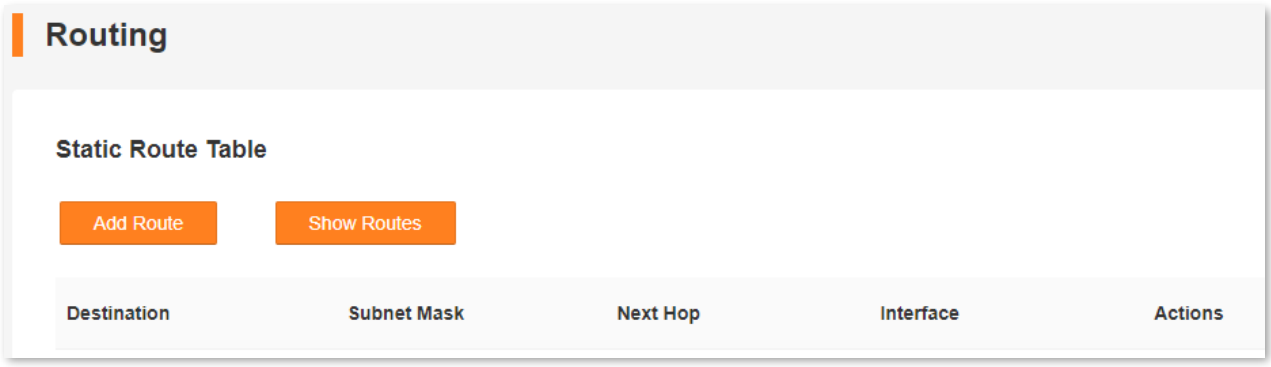
When completing the configurations, you can watch IPTV programs on your TV.

10 Advanced

10.1 Routing

This section allows you to view and configure routes for the modem router.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Advanced** > **Routing**.



Parameter description

Parameter	Description
Destination	Specifies the IP address of the target host or network.
Subnet Mask	Specifies the subnet mask of the destination address.
Next Hop	Specifies the ingress IP address of the next hop route after the data packet exits from the interface of the modem router.
Interface	Specifies the interface for the outgoing data. **Any** indicates that the system automatically uses one of the WAN interfaces that can access the internet for the outgoing data.
Add Route	Used to add a route.
Show Routes	Used to display the commonly used routes of the modem router.

TIP

When **Destination** and **Subnet Mask** are both **0.0.0.0**, it indicates that this is the default route. When the route of packets cannot be found in the routing table, the modem router will forward the packets using the default route.

10.2 SNMP

10.2.1 Overview

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 receiving network event alarms.

SNMP allows automatic management of devices from various vendors regardless of physical differences among the devices.

SNMP Management Framework

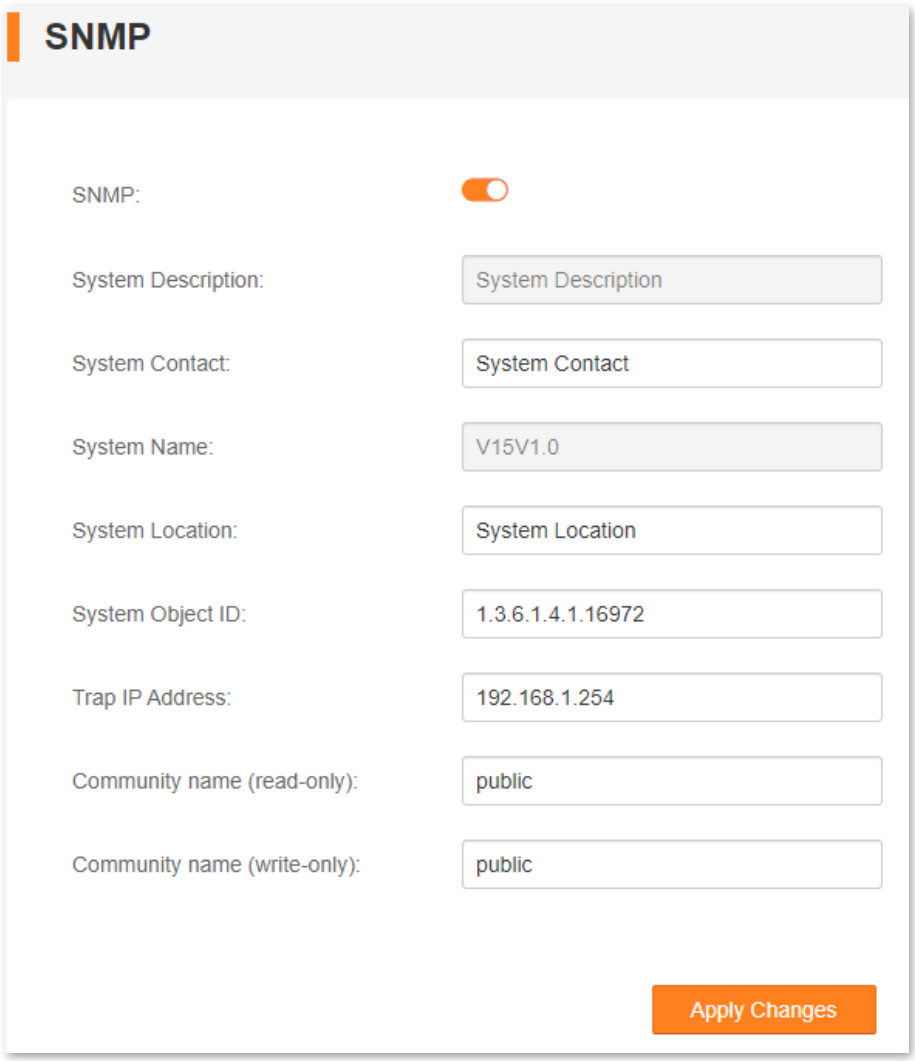
The SNMP management framework consists of the SNMP manager, SNMP agent, and Management Information Base (MIB).

- 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.

The modem router is compatible with SNMP V1 and SNMP V2C and adopts the community authentication mechanism.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Advanced** > **SNMP**.



Parameter description

Parameter	Description
SNMP	Used to enable or disable the SNMP function.
System Description	Specifies the description of the modem router.
System Contact	Specifies the contact information of the modem router.
System Name	Specifies the device name of the modem router.
System Location	Specifies the location where the modem router is used.

Parameter	Description
System Object ID	Specifies the object ID of the modem router, which can be used by the SNMP manager to identify and manage the modem router.
Trap IP Address	Specifies the IP address of the server or terminal where alarm information is sent to.
Community name (read-only)	Specifies the read password shared between SNMP managers and this SNMP agent. The default value is public.
Community name (write-only)	Specifies the write password shared between SNMP managers and this SNMP agent. The default value is public.

10.2.2 Example of configuring SNMP

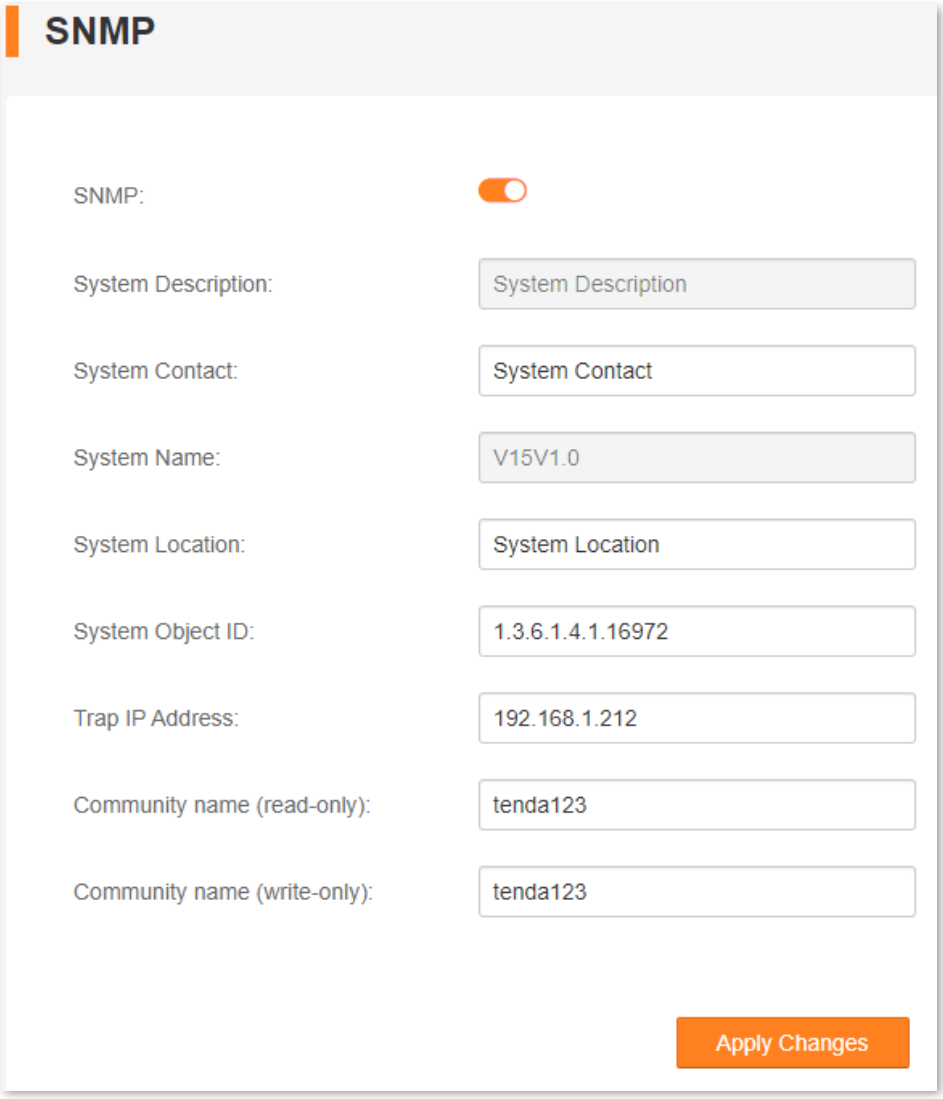
Network requirements

- The modem router connects to an NMS over a LAN. The network address of the modem router is 192.168.1.1/24 and the network IP address of the NMS is 192.168.1.212/24.
- The NMS uses SNMP V1 or SNMP V2C to monitor and manage the modem router.
- Assume that Read/Write Community is tenda123.

Configuration procedure

1. Configure the modem router.
   1) Log in to the web UI of the modem router, and navigate to **Advance** > **Advanced** > **SNMP**.
   2) Turn on **SNMP**.
   3) Set **System Description**, **System Contact**, **System Name** and **System Location** of the modem router.
   4) Set **System Object ID** as required.
   5) Set **Trap IP Address** to the IP address of the Trap Manager, which is **192.168.1.212** in this example.
   6) Set **Community name (read-only)** to the password for reading data, which is **tenda123** in this example.
   7) Set **Community name (write-only)** to the password for writing data, which is **tenda123** in this example.

8) Click **Apply Changes**.



2. Configure the NMS.

On an NMS that uses SNMP V1 or SNMP V2C, set the read community to **tenda123** and read/write community to **tenda123**. For details about how to configure the NMS, refer to the configuration guide for the NMS.

----End

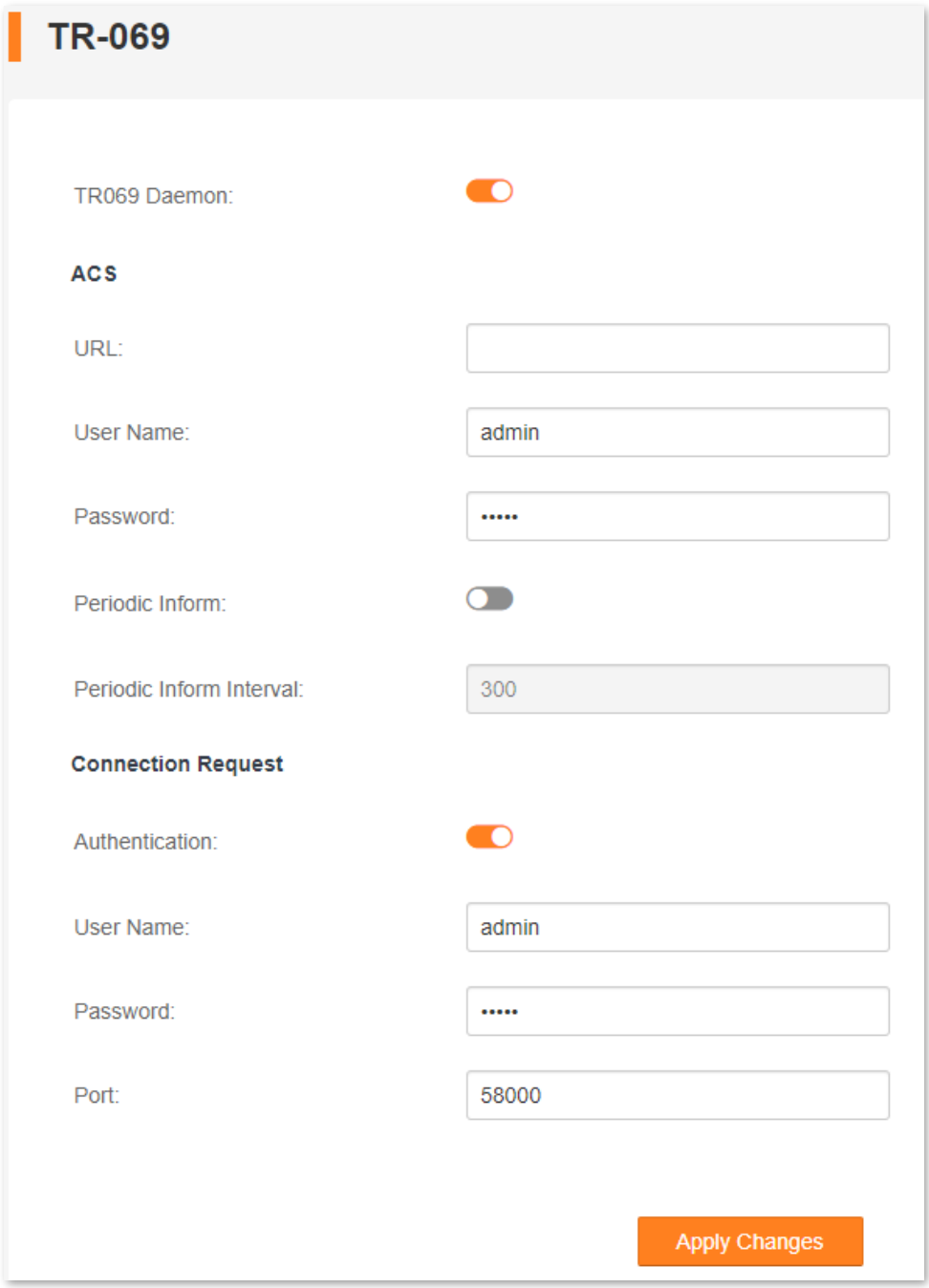
Verification

After the configuration, the NMS can connect to the SNMP agent of the modem router and you can query and set some parameters on the SNMP agent through the MIB.

10.3 TR069

The CPE WAN Management Protocol (TR-069) allows an Auto-Configuration Server (ACS) from the internet to perform auto-configuration, provision, collection, and diagnostics to the modem router.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Advanced** > **TR069**.



Parameter description

Parameter		Description
TR069 Daemon		Used to enable or disable the TR069 function.
ACS	URL	Specifies the domain name of the ACS.
	User Name	Specifies the user name used to authenticate the modem router when the modem router connects to the ACS using the CPE WAN management protocol.
	Password	Specifies the password used to authenticate the modem router when the modem router connects to the ACS using the CPE WAN management protocol.
	Periodic Inform	Used to enable/disable the modem router to periodically inform ACS.
	Periodic Inform Interval	Specifies the interval at which the modem router sends messages to inform ACS.
Connection Request	Authentication	Specifies whether authentication is required for the ACS to connect the modem router.
	User Name	Specifies the user name used to authenticate the ACS when it sends the connection request to the modem router.
	Password	Specifies the password used to authenticate the ACS when it sends the connection request to the modem router.
	Port	Specifies the port used to receive the connection request sent by the ACS.

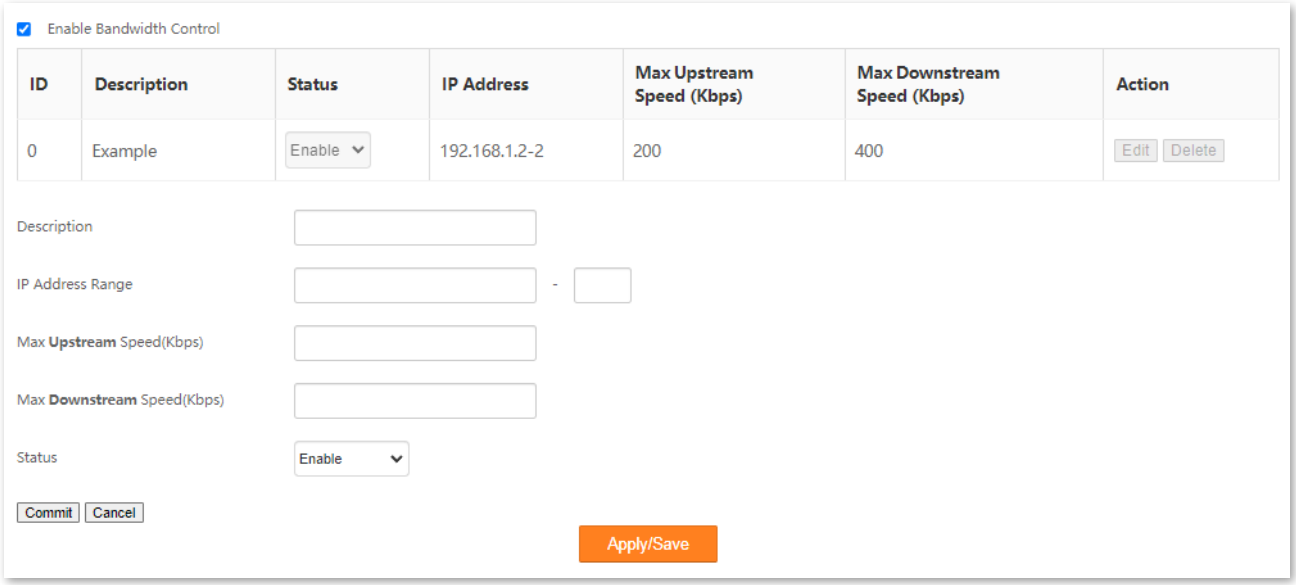
10.4 Bandwidth control

This page allows you to manage the bandwidth of a specified IP segment.

ID-0 serves as an example for reference. You can add details in the fields below the list. To limit the bandwidth of a single IP address, such as 192.168.1.2, ensure that the start and end IP addresses are the same. For instance, enter 192.168.1.2-2 in the **IP Address Range** field.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Advanced** > **Bandwidth Control**.

This function is disabled by default. When it is enabled, the page is shown as below.



Parameter description

Parameter	Description
Description	Specifies the description of the bandwidth control policy.
IP Address Range	Specifies the IP address range of the bandwidth control policy.
Max Upstream Speed(Kbps)	Specify the maximum upstream and downstream speed of the bandwidth.
Max Downstream Speed(Kbps)	
Status	Specifies the status of the bandwidth control policy, including **Enable** and **Disable**.
Commit	Used to submit the bandwidth control policy. You can add up to 16 entries.

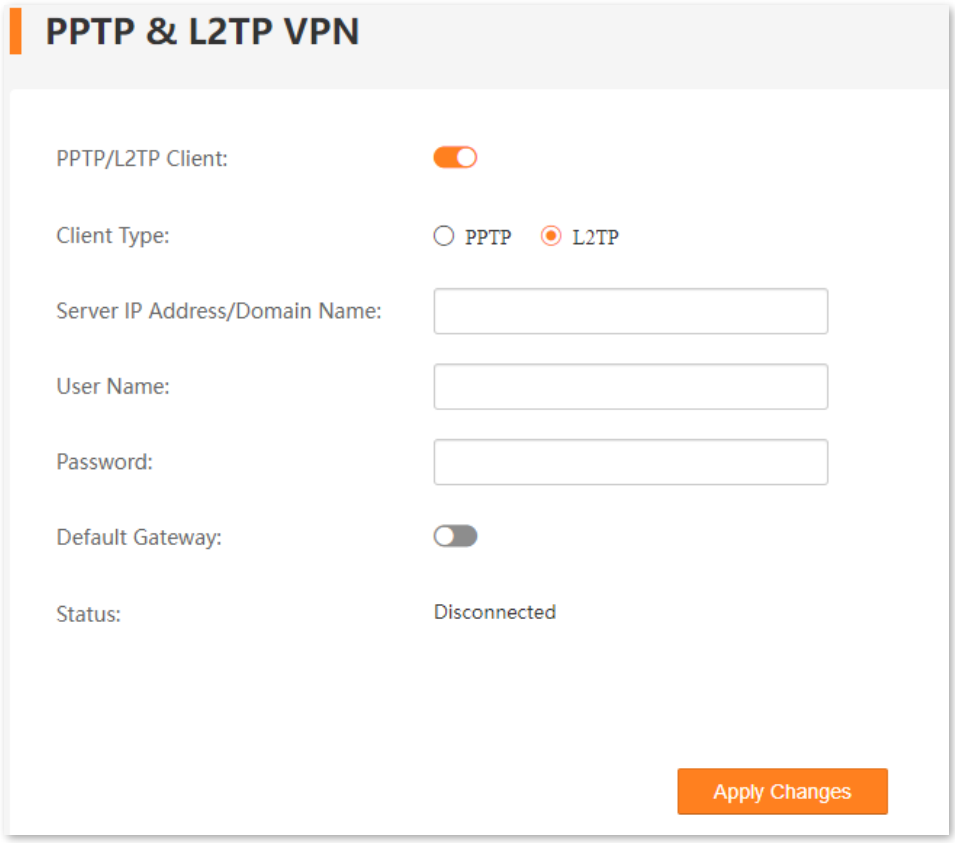
11 VPN

11.1 PPTP & L2TP VPN

11.1.1 Overview

A Virtual Private Network (VPN) is a private network built on a public network (usually the internet). This private network exists only logically and has no actual physical lines. VPN technology is widely used in corporate networks to share resources between corporate branches and headquarters, while ensuring that these resources are not exposed to other users on the internet.

This modem router can function as two kinds of VPN clients: Point to Point Tunneling Protocol (PPTP) or Layer 2 Tunneling Protocol (L2TP) client. The following section describes how to configure the modem router as a PPTP/L2TP client. If you set up a PPTP/L2TP server, you can enable the PPTP/L2TP client function to help you visit the PPTP/L2TP server.



Parameter description

Parameter	Description
PPTP/L2TP Client	Used to enable or disable the PPTP/L2TP Client function. This function allows the modem router to work as a VPN (PPTP/L2TP) client to establish a VPN connection with a VPN server.
Client Type	Specifies the client type that the modem router serves as, including either **PPTP** or **L2TP**.
Server IP Address/Domain Name	Specifies the IP address or domain name of the VPN server to be connected.
User Name	Specify the user name/password that the PPTP/L2TP server assigns to the PPTP/L2TP clients.
Password	
Default Gateway	With this function enabled, the modem router uses this VPN tunnel to transfer all data.
Status	Specifies the connection status of the VPN connection.

11.1.2 Example of configuring PPTP client

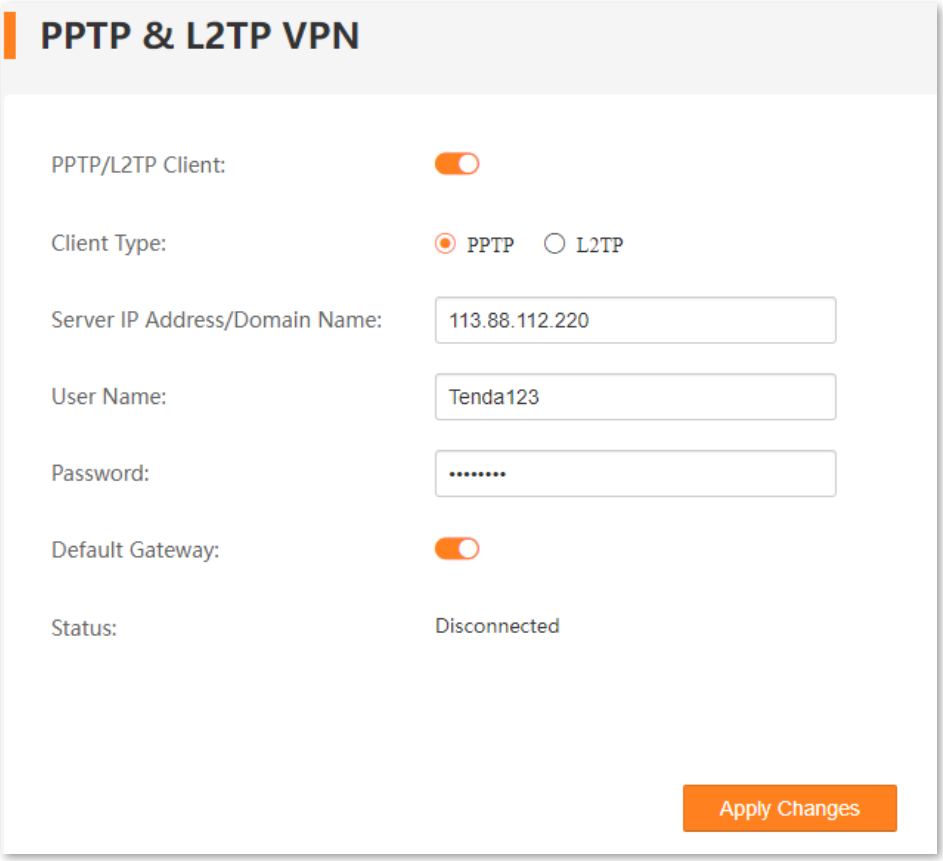
Network requirements

You have subscribed to the PPTP VPN service when purchasing the broadband service from your ISP. You can configure the PPTP/L2TP client function for your PPTP VPN service. Assume that:

- The IP address of the PPTP server is **113.88.112.220**.
- The user name and password assigned by the PPTP server are both **Tenda123**.

Configuration procedure

1. Log in to the web UI of the modem router, and navigate to **Advance** > **VPN** > **PPTP & L2TP VPN**.
2. Turn on **PPTP/L2TP Client**.
3. Select **PPTP** for **Client Type**.
4. Set **Server IP Address/Domain Name**, which is **113.88.112.220** in this example**.**
5. Set **User Name** and **Password**, which are both **Tenda123** in this example.
6. Select **Default Gateway** as required.
7. Click **Connect**.



----End

Verification

When **Connected** is shown in **Status**, you can access the VPN resources of your ISP.

11.2 IPsec VPN

11.2.1 Overview

IPsec, abbreviated for Internet Protocol Security, is a protocol suite for transmitting data over the internet in a secure and encrypted manner. The following terms will be used in this document to describe IPsec configurations.

- **Encapsulation Mode**

The modem router uses either Tunnel mode or Transport mode to encapsulate IP packets.

- Tunnel Mode: It is most commonly used between security gateways.
- Transport Mode: It is mainly used for end-to-end communications.

- **Security gateway**

It refers to a gateway (secure and encrypted router) with the IPsec functionality. IPsec is used to protect data exchanged between such gateways from being tampered and peeped.

- **IPsec peer**

The two IPsec terminals are called IPsec peers. The two peers (security gateways) can securely exchange data only after a Security Association (SA) is set up between them.

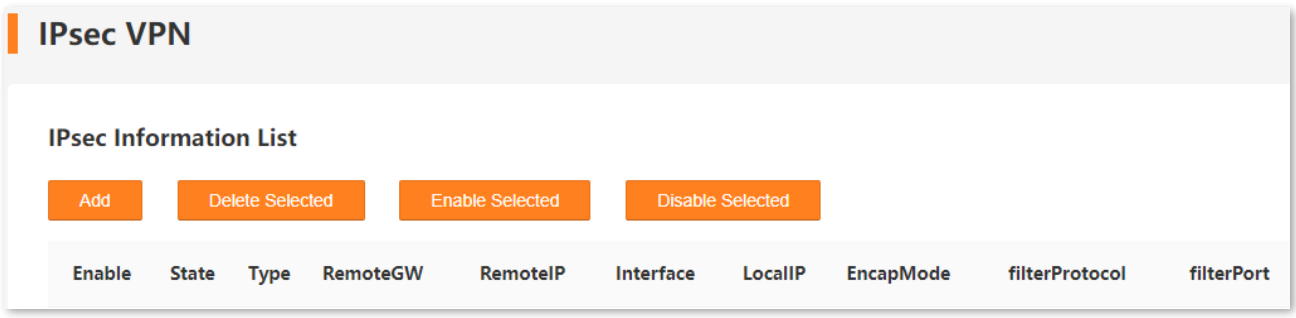
- **SA**

SA specifies some elements of the peers, such as the base protocol (AH, ESP, or both), encapsulation mode (transport or tunnel), cryptographic algorithm (DES, 3DES, or AES), shared key for data protection in specified flows, and life cycle of the key. SA has the following features:

- A triplet {SPI, Destination IP address, Security protocol identifier} is used as a unique ID.
- An SA specifies the protocol, algorithm, and key for processing packets.
- Each IPsec SA is unidirectional with a life cycle.
- An SA can be created manually or generated automatically using Internet Key Exchange (IKE).

11.2.2 Configure an IPsec VPN

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **VPN** > **IPsec VPN**.



The following operations are available:

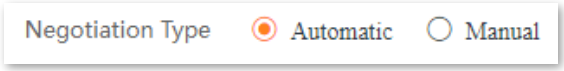
- **Add**: Used to add an IPsec VPN.

- **Delete Selected**: Used to delete selected IPsec VPNs.
- **Enable Selected**: Used to enable selected IPsec VPNs.
- **Disable Selected**: Used to disable selected IPsec VPNs.

11.2.3 Parameter description

General parameters

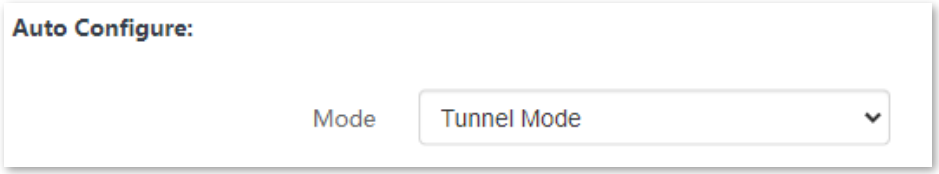
Negotiation Type



Parameter description

Parameter	Description
Negotiation Type	Specifies the key negotiation type for the IPsec connection. - **Automatic**: It indicates that an SA is set up, maintained, and deleted automatically using IKE. This reduces configuration complexity and simplifies IPsec usage and management. Such an SA has a life cycle and is updated regularly, leading to higher security. - **Manual**: It indicates that an SA is set up by manually specifying encryption and authentication algorithms and keys. Such an SA does not have a life cycle, and therefore it remains valid unless being manually deleted, leading to security risks. Generally, this mode is used only for commissioning.

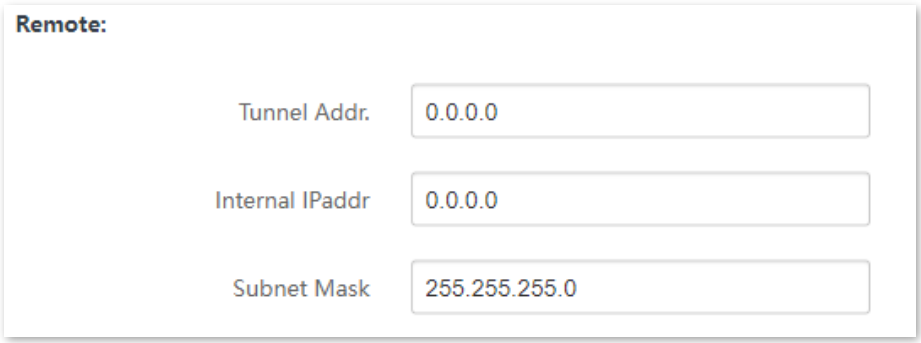
Auto/Manual Configure



Parameter description

Parameter	Description
Mode	Specifies the encapsulation mode to encapsulate IP packets, including Tunnel Mode and Transport Mode.

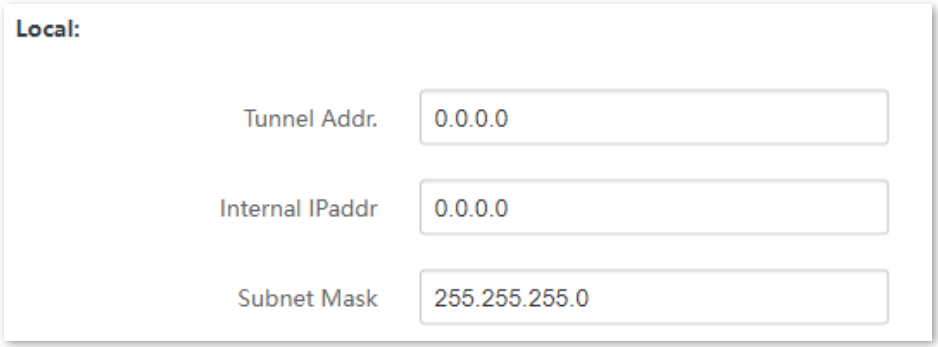
Remote



Parameter description

Parameter	Description
Tunnel Addr.	Specifies the tunnel address of the remote side.
Internal IPaddr	Specifies the internal IP address on LAN of the remote side.
Subnet Mask	Specifies the subnet mask of the remote side.

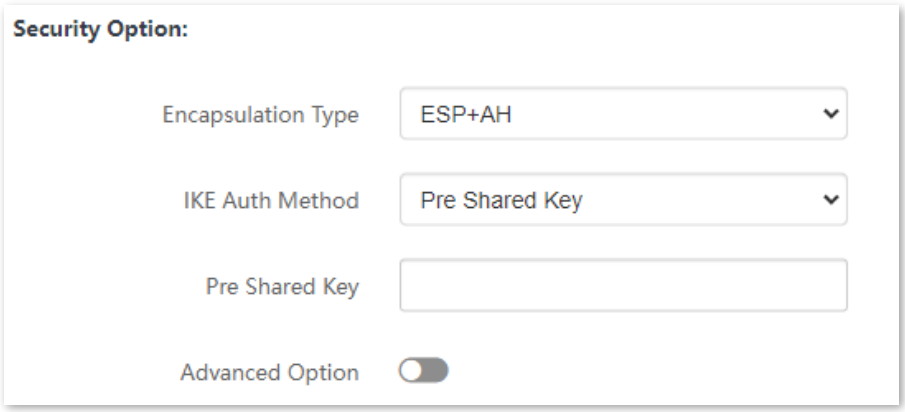
Local



Parameter description

Parameter	Description
Tunnel Addr.	Specifies the tunnel address of the local side.
Internal IPaddr	Specifies the internal IP address on LAN of the local side.
Subnet Mask	Specifies the subnet mask of the local side.

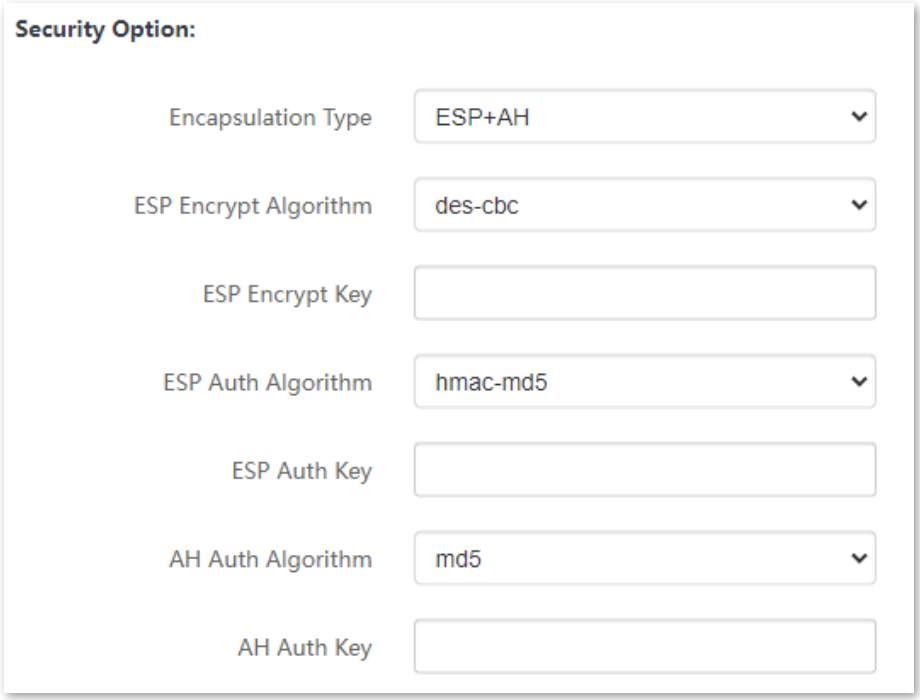
Security Option - Automatic Negotiation Type



Parameter description

Parameter	Description
Encapsulation Type	Specifies the encapsulation type for the IPsec connection. - **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 the 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. - **ESP+AH**: It specifies Encapsulating Security Payload and Authentication Header.
IKE Auth Method	Specifies the authentication method, which is **Pre Shared Key**. Only authorized users can access the private network.
Pre shared key	Specifies an encryption key, which must be set to the same one for both communication sides.
Advanced Option	Refer to Advanced Option.

Security Option - Manual Negotiation Type

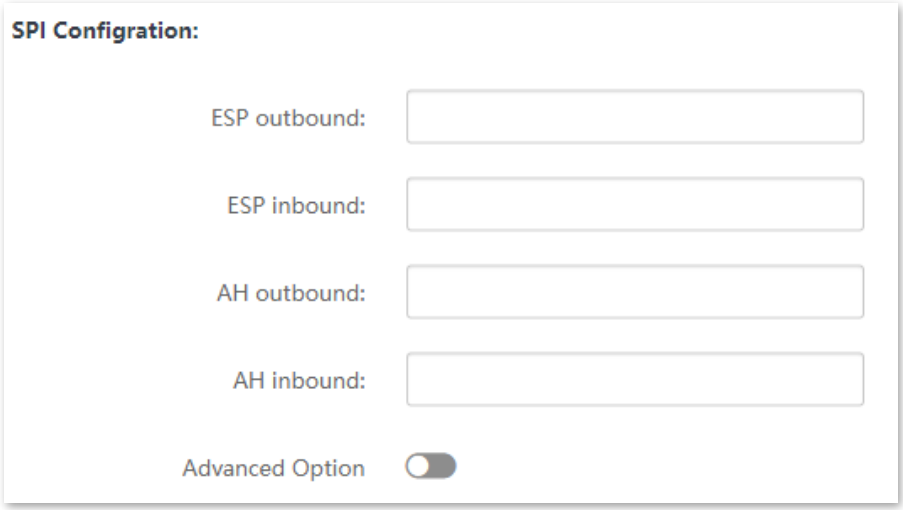


Parameter description

Parameter	Description
Encapsulation Type	Specifies the encapsulation type for the IPsec connection. - **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 the 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. - **ESP+AH**: It specifies Encapsulating Security Payload and Authentication Header.
ESP Encrypt Algorithm	When the **Encapsulation Type** is set to **ESP** or **ESP+AH**, the modem router supports the following ESP encryption algorithms. - **des-cbc**: It specifies Data Encryption Standard. A 56-bit key is used to encrypt 64-bit data. The last 8 bits of the 64-bit data are used for parity check. - **3des-cbc**: It specifies Triple DES. Three 56-bit keys are used for encryption. - **aes-cbc**: It specifies Advanced Encryption Standard. AES 128/192/256 indicates that 128/192/256-bit keys are used for encryption respectively.

Parameter	Description
ESP Encrypt Key	Specifies the encryption key for ESP, which must be set to the same one for both communication sides.
ESP Auth Algorithm	The modem router supports the following algorithms to check ESP key integrity. - **hmac-md5**: It specifies Hash-based Message Authentication Code-Message Digest Algorithm. A 128-bit message digest is generated to prevent message tampering. - **hmac-sha1**: It specifies Hash-based Message Authentication Code-Secure Hash Algorithm. A 160-bit message digest is generated to prevent message tampering, leading to higher security than MD5.
ESP Auth Key	Specifies the authentication key for ESP. Both communication sides should set it to the same one.
AH Auth Algorithm	When **Encapsulation Type** is set to **AH** or **ESP+AH**, the modem router supports the following algorithms to check integrity: - **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 160-bit message digest for a message, leading to higher security than MD5.
AH Auth Key	Specifies the authentication key for **AH**, which must be set to the same one for both communication sides.

SPI Configuration



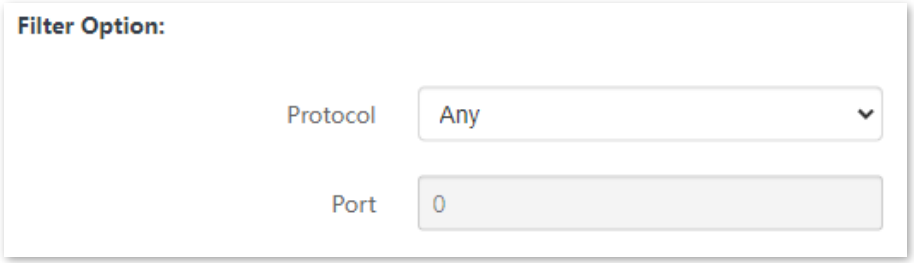
Parameter description

Parameter	Description
ESP/AH outbound	Specify the SPI parameter. These fields are available when the **Negotiation Type** is **Manual**. SPI 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. The outbound parameter should be the same for the inbound parameter of the IPSec peer side. This inbound parameter should be the same for outbound parameter of the IPSec peer side.
ESP/AH inbound	
Advanced Option	Refer to Advanced Option.

Advanced Option

When you select **Advance Option**, the following page appears.

Filter Option



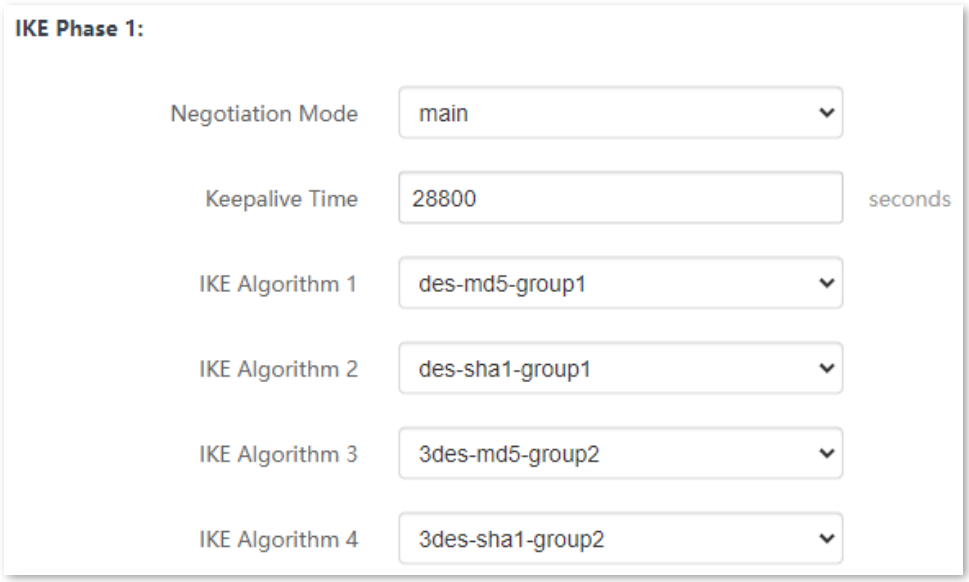
Parameter description

Parameter	Description
Protocol	Specifies the protocol to be filtered, which supports **TCP**, **UDP**, **ICMP**, and **Any**.
Port	Specifies the port to be filtered.

IKE Phase 1

TIP

This section is available when **Negotiation Type** is set to **Automatic**.



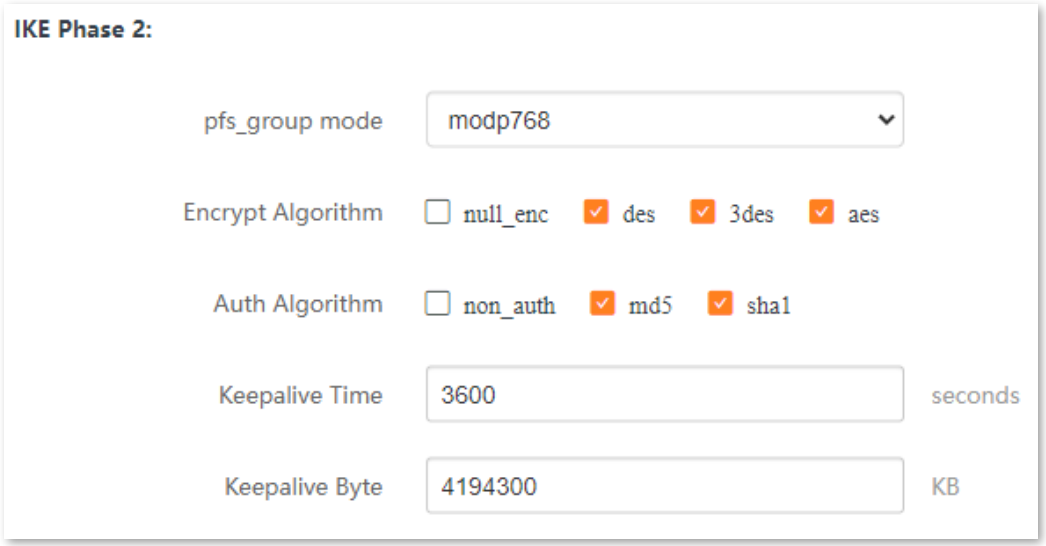
Parameter description

Parameter	Description
Negotiation Mode	Specifies the mode that IPsec ends use to exchange information in phrase 1. The mode should be set to the same one as that of the peer device. - **main**: This mode provides identity protection, and applies to high requirement situations for identity protection. - **aggressive**: This mode does not provide identity protection, and applies to situations with low requirements for identity protection.
Keepalive Time	Specifies the life cycle of IKE SA for phrase 1.
IKE Algorithm 1 IKE Algorithm 2 IKE Algorithm 3 IKE Algorithm 4	Specify the encryption algorithms and integrity verification algorithms supported by the modem router. - **des-md5-group1**: It specifies Data Encryption Standard and Message Digest Algorithm. - **des-sha1-group1**: It specifies Data Encryption Standard and Secure Hash Algorithm. - **3des-md5-group2**: It specifies Triple DES and Message Digest. - **3des-sha1-group2:** It specifies Triple DES and Secure Hash Algorithm. - ----------: It specifies no algorithm is selected.

IKE Phase 2

TIP

This section is available when **Negotiation Type** is set to **Automatic**.



Parameter description

Parameter	Description
pfs_group mode	Specifies Diffie-Hellman group for key establishment. Two groups are supported: **modp768** and **modp1024**.
Encrypt Algorithm	Specifies the encryption algorithm for phrase 2, which supports **null_enc**, **des**, **3des**, and **aes**.
Auth Algorithm	Specifies the authentication algorithm for phrase 2, which supports **non_auth**, **md5**, and **sha1**.
Keepalive Time	Specifies the life cycle of IKE SA for phrase 2.
Keepalive Byte	Specifies the valid bytes within a life circle.

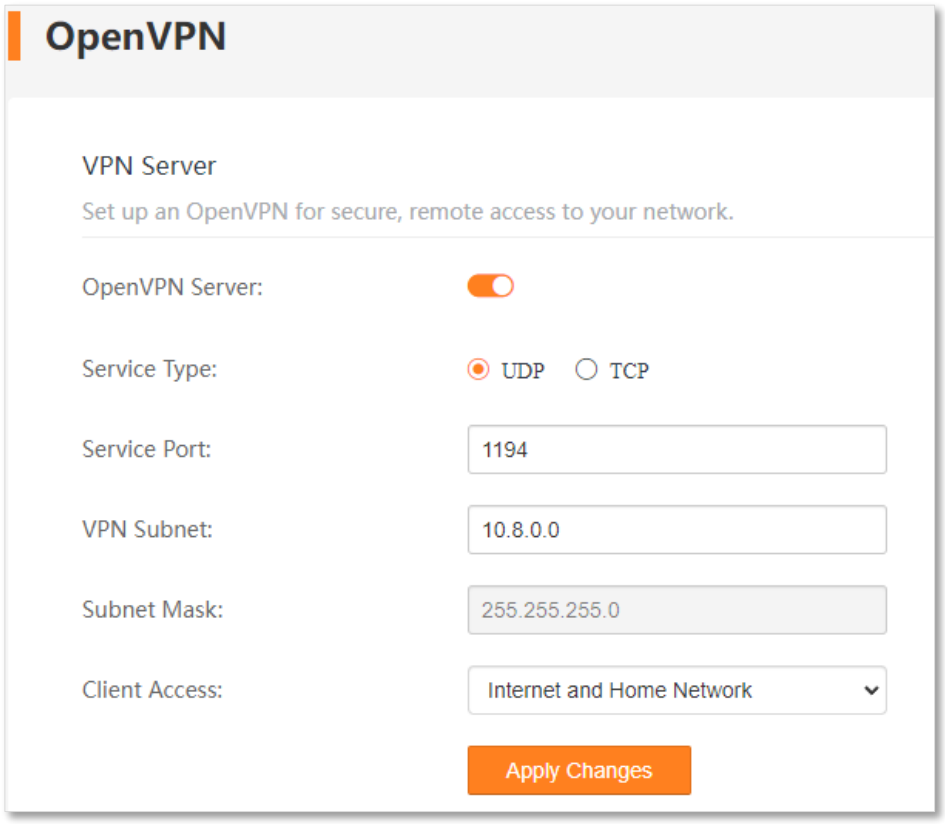
11.3 OpenVPN

11.3.1 Overview

OpenVPN is a free virtual private network service that enables you to remotely access your internet or home network from anywhere with an open internet service, and access devices and services in use through your router.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **VPN** > **OpenVpn**.

This function is disabled by default. When it is enabled, the page is shown as below.



Parameter description

Parameter	Description
OpenVPN Server	Used to enable or disable the OpenVPN server.
Service Type	Specifies the service type, including **UDP** and **TCP**.

Parameter	Description
Service Port	Specifies the service port to be customized. The value range is 1025 - 65535.
VPN Subnet/Netmask	Specifies the VPN subnet IP address.
Subnet Mask	Specifies the subnet mask which is cannot be changed.
Client Access	Specifies the type of the client access, including **Internet and Home Network** and **Home Network Only**. - **Internet and Home Network**: The client can access the home network, internet sites or services with a geographic limitation when you are abroad. The client's default route will be changed. - **Home Network Only**: The client can only access the home network, and the client's default route will not be changed.

11.3.2 Example of configuring OpenVPN server

Scenario: Enterprise employees need to remotely access the internal network resources of the Enterprise, such as internal websites, file shares or databases.

Requirement: Setting up an OpenVPN can connect to the internal network of the Enterprise through a public network (such as the internet), avoiding the risk of exposing the internal resources to the public network.

Solution: You can configure the OpenVPN server function to reach the requirements.

Assume that:

- Service type: UDP
- Server port: 1194
- VPN subnet: 10.8.0.0
- Subnet Mask: 255.255.255.0
- Client access: Internet and Home Network

Configuration procedure

I. Configure the modem router

1. Log in to the web UI of the modem router.
2. Enable the OpenVPN server function, and set the relative parameters as required.

1) Navigate to **Advance** > **VPN** > **OpenVpn**.

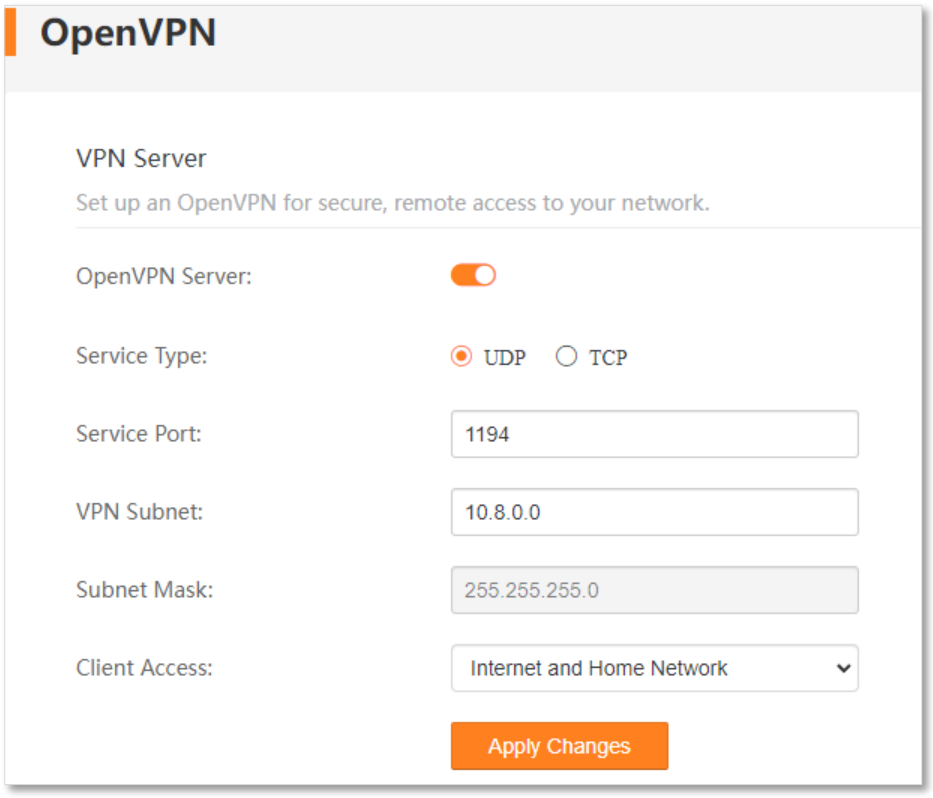
2) Enable the **OpenVPN Server** function.

3) Set **Service Type** and **Service Port**, which are **UDP** and **1194** respectively in this example.

4) Set **VPN Subnet** and **Subnet Mask**, which are **10.8.0.0** and **255.255.255.0** in this example.

5) Set **Client Access**, which is **Internet and Home Network** in this example.

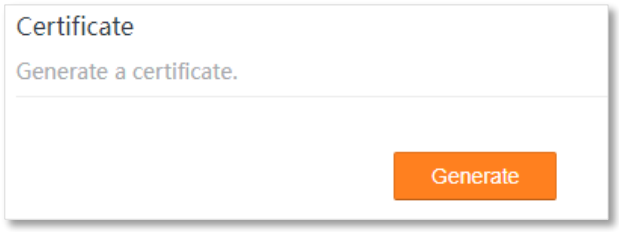
6) Click **Apply Changes**.



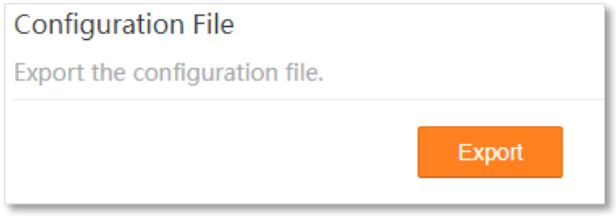
3. Click **Generate** in the **Certificate** module to generate a certificate.

TIP

If the WAN dial-up connection changes, the certificate must be regenerated, as it is only valid for the current WAN IP.

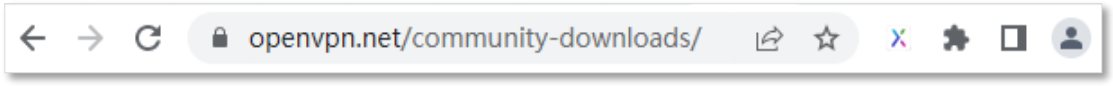


4. Click **Export** in the **Configuration File** module to download the configuration file to your computer.



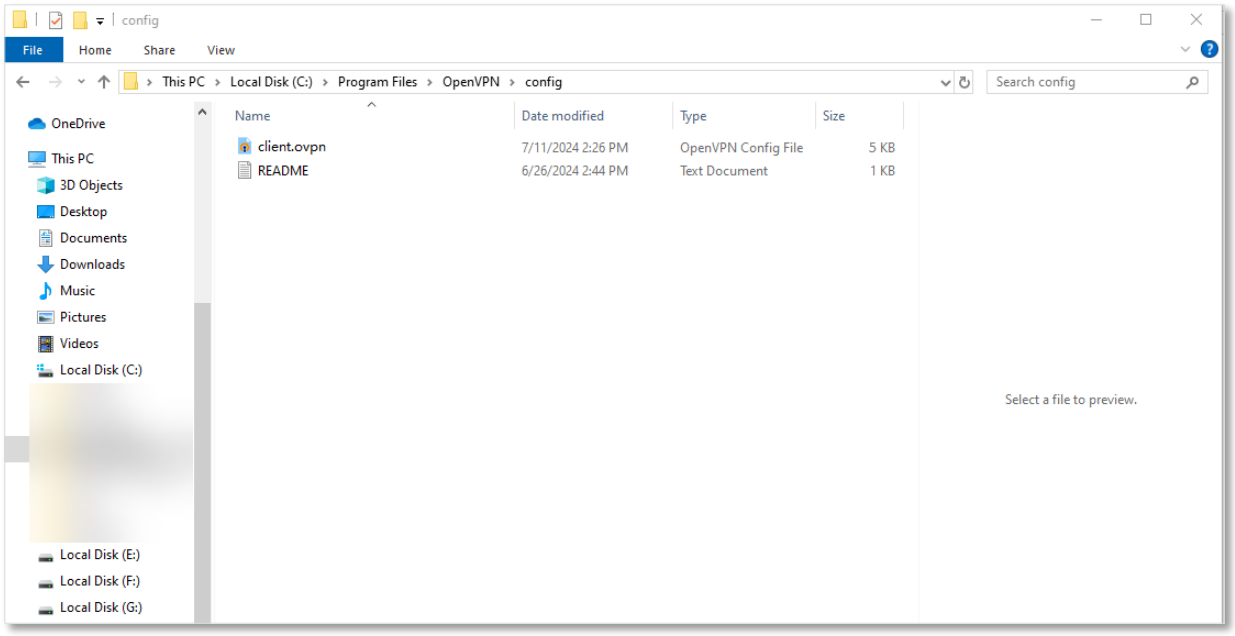
II. Connect the OpenVPN server

1. Start your browser, and enter https://openvpn.net/community-downloads/ in the address bar.



2. Select a version of OpenVPN as required, and click the link corresponding to the Windows version.

3. Download and run the OpenVPN client.
4. Find the Certificate in your download folder, copy the file, and paste the config file into the **config** folder located in the OpenVPN directory. The following figure is for reference only.



5. Launch the OpenVPN client. Right-click  in the bottom right corner of the desktop and choose **Connect.**

---End

Wait for the icon to change to  . You are now connected to the internet and home network through the VPN. To verify, you can view the VPN connections in the **OpenVPN connection** module on the web UI of the modem router.

12 Firewall

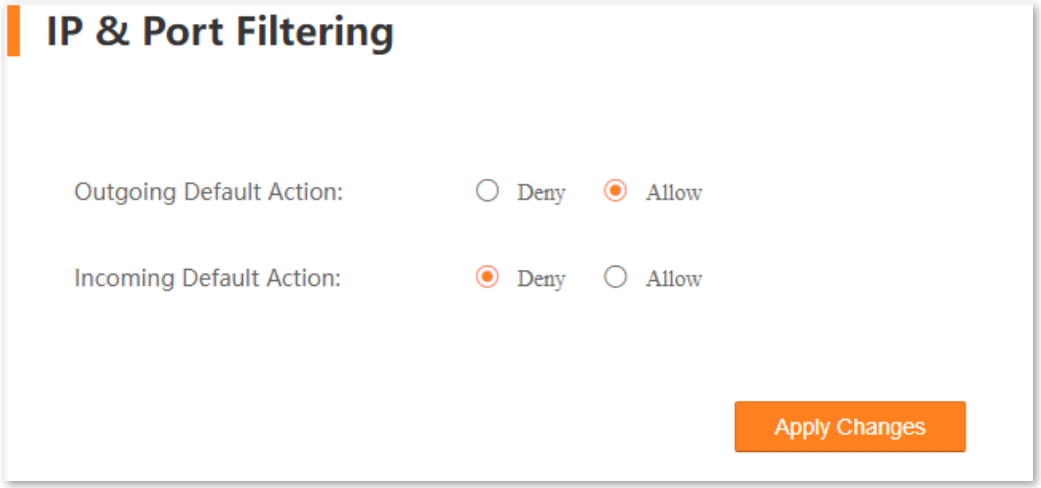
12.1 IP & port filtering

12.1.1 Overview

In this section, you can configure filtering rules to restrict certain types of data packets from passing through the modem router. The use of such filters can be helpful in securing or restricting your local network.

- Outgoing: By default, all outgoing traffic from LAN is allowed, but some can be blocked by setting up filtering rules. Outgoing filtering rules can block outgoing traffic by specifying some conditions.
- Incoming: By default, all incoming traffic is blocked. However, some traffic can access by setting up filtering rules. The incoming filtering rules allow traffic to come in by specifying some conditions.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Firewall** > **IP & Port Filtering**.

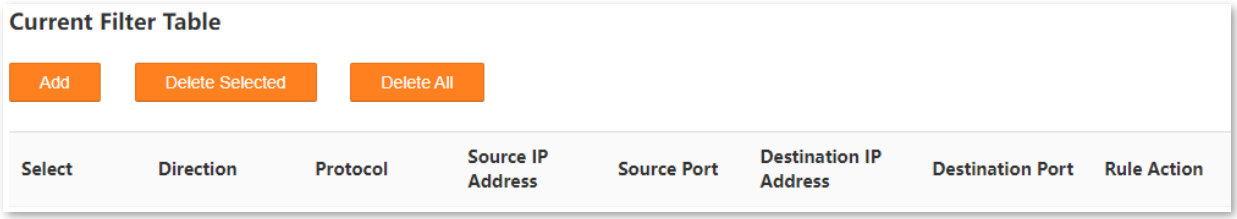


Parameter description

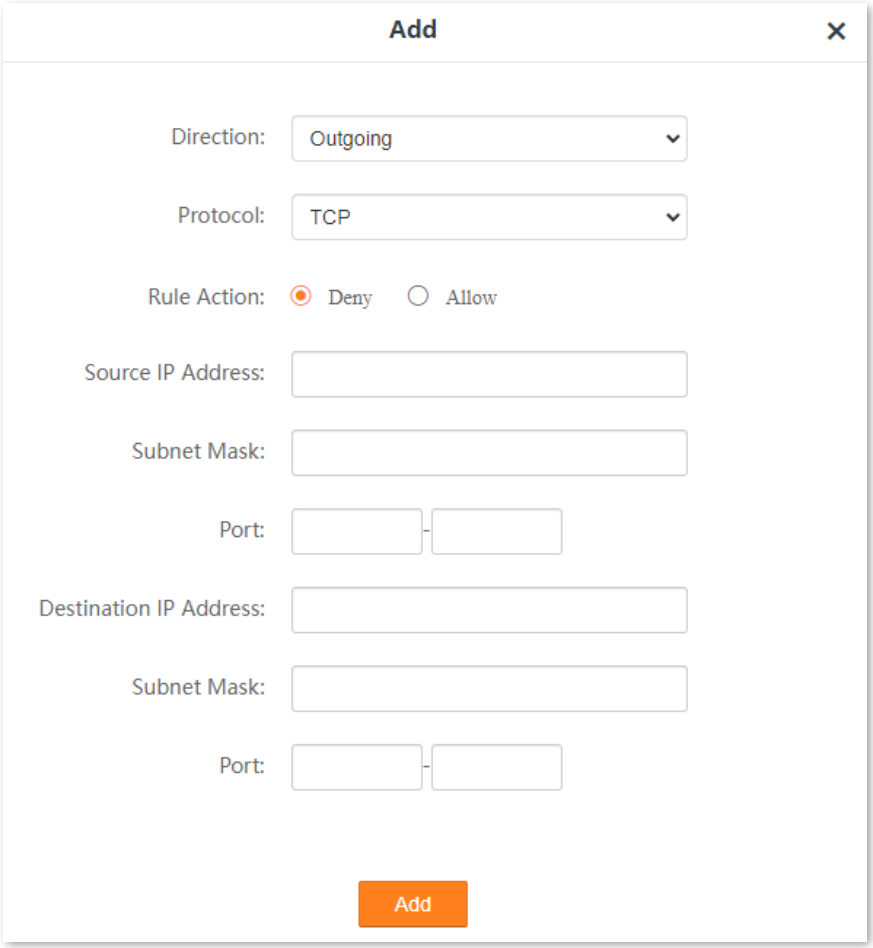
Parameter	Description
Outgoing Default Action	Specifies the default action for the outgoing data. - **Deny**: Deny outgoing traffic which does not match the outgoing filter rule in the **Current Filter Table**. - **Allow**: Allow outgoing traffic which does not match the outgoing filter rule in the **Current Filter Table**.
Incoming Default Action	Specifies the default action of the incoming data. - **Deny**: Deny incoming traffic which does not match the incoming filter rule in the **Current Filter Table**. - **Allow**: Allow incoming traffic which does not match the incoming filter rule in the **Current Filter Table**.

12.1.2 Configure a filter rule

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Firewall** > **IP & Port Filtering**.
2. Click **Add**.



3. Select the **Direction** and **Protocol** for the data to be filtered.
4. Select **Deny** or **Allow** for **Rule Action**.
5. Set the required parameters.
6. Click **Add**.



----End

Parameter description

Parameter	Description
Direction	Specifies the direction of the data, including **Outgoing** and **Incoming**.
Protocol	Specifies the protocol for the filtering rule, including **TCP**, **UDP** and **ICMP**.
Rule Action	Specifies whether to deny or allow the data to pass through.

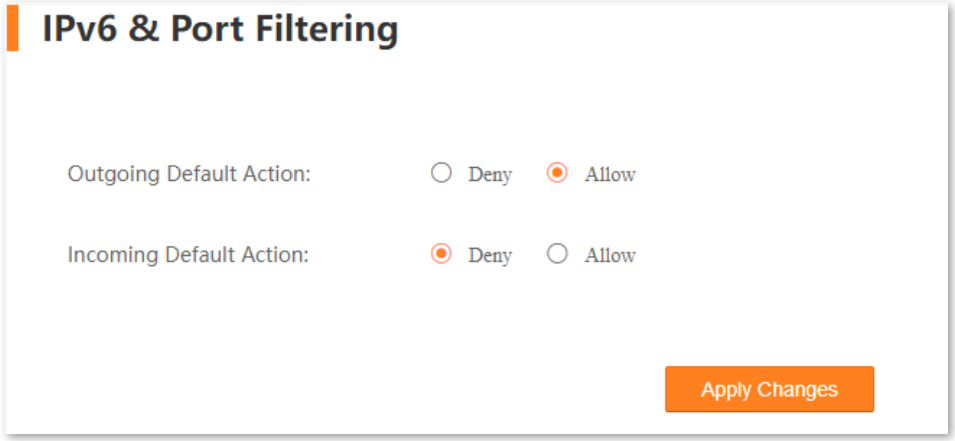
Parameter	Description
Source IP Address	Specifies the source IP address of the packets. The settings of **Source IP Address** and **Subnet Mask** determine which computers are affected by this rule. - When **Direction** is set to **Outgoing**, this parameter specifies the LAN computer's IP address to be affected. - When **Direction** is set to **Incoming**, this parameter specifies the internet computer's IP address to be affected. - Leave it blank: All IP addresses are covered.
Subnet Mask	Specifies the subnet mask of the source IP address.
Port	Specifies the source port of the packets. Source port is only for TCP/UDP protocol. If protocol ICMP is selected, this field is not required. TIP Since the source port of the data packet is changeable, it is recommended that the port be set to 1 to 65535 or left blank.
Destination IP Address	Specifies the destination IP address of the packets. The settings of **Destination IP Address** and **Subnet Mask** determine which servers are affected by this rule. - When **Direction** is set to **Outgoing**, this parameter specifies the internet server's IP address to be affected. - When **Direction** is set to **Incoming**, this parameter specifies the LAN server's IP address to be affected. - Leave it blank: All IP addresses are covered.
Subnet Mask	Specifies the subnet mask of the destination IP address.
Port	Specifies the destination port of the packets. Its setting determines which services are affected by this rule. The destination port is only for TCP/UDP protocol.

12.2 IPv6/Port filtering

12.2.1 Overview

In this section, you can configure IPv6 filtering rules to restrict certain types of data packets through the gateway. The use of such filters can be helpful in securing or restricting your local network.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Firewall** > **IPv6 & Port Filtering**.

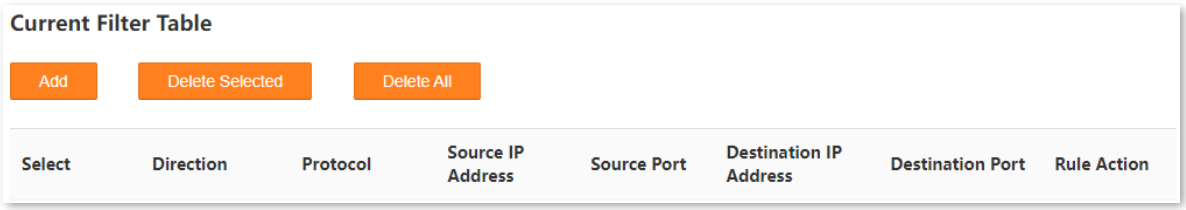


Parameter description

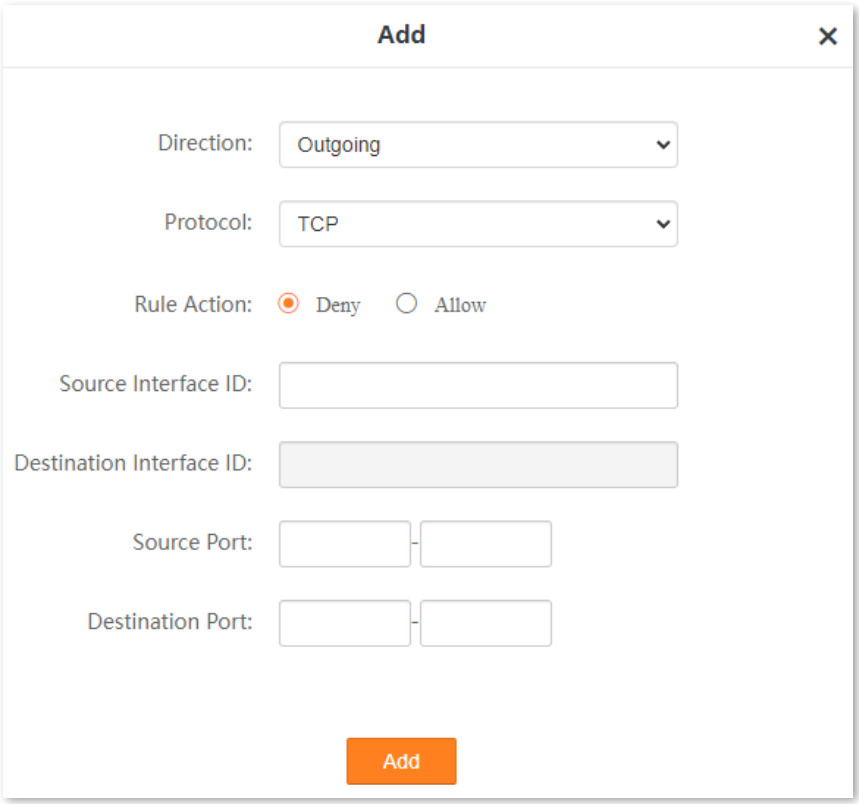
Parameter	Description
Outgoing Default Action	Specifies the default action of the outgoing data. - **Deny**: Deny outgoing traffic which does not match the outgoing filter rule in the **Current Filter Table**. - **Allow**: Allow outgoing traffic which does not match the outgoing filter rule in the **Current Filter Table**.
Incoming Default Action	Specifies the default action of the incoming data. - **Deny**: Deny incoming traffic which does not match the incoming filter rule in the **Current Filter Table**. - **Allow**: Allow incoming traffic which does not match the incoming filter rule in the **Current Filter Table**.

12.2.2 Configure an IPv6 filter rule

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Firewall** > **IPv6 & Port Filtering**.
2. Click **Add**.



3. Select the **Direction** and **Protocol** for the data to be filtered.
4. Select **Deny** or **Allow** for **Rule Action**.
5. Set the required parameters.
6. Click **Add**.



----End

Parameter description

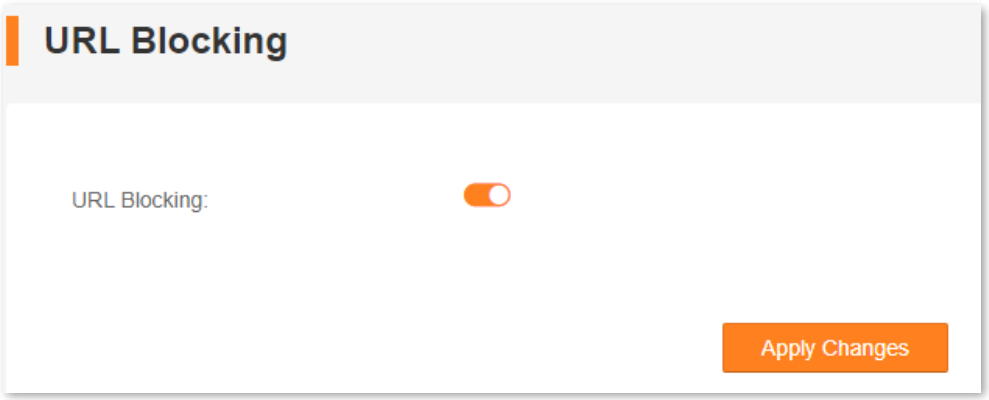
Parameter	Description
Direction	Specifies the direction of the data, including **Outgoing** and **Incoming**.
Protocol	Specifies the protocol for the filtering rule, including **TCP**, **UDP** and **ICMPv6**.
Rule Action	Specifies whether to deny or allow the data to pass through.
Source Interface ID	It is available only when **Direction** is set to **Outgoing**. It specifies the source IPv6 address of the packets. Its setting determines which computer is affected by this rule. When it is left blank, all IPv6 addresses are covered.
Destination Interface ID	It is available only when **Direction** is set to **Incoming**. It specifies the destination IPv6 address of the packets. Its setting determines which server is affected by this rule. When it is left blank, all IPv6 addresses are covered.
Source Port	Specifies the source port of the packets. It is only for the TCP/UDP protocol. TIP Since the source port of the data packet is changeable, it is recommended that the port be set to 1 to 65535 or left blank.
Destination Port	Specifies the destination port of the packets. Its setting determines which services are affected by this rule. The destination port is only for TCP/UDP protocol.

12.3 URL blocking

You can use the URL blocking function to restrict access to websites.

12.3.1 Configure URL blocking

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Firewall** > **URL Blocking**.
2. Enable the **URL Blocking** function, and click **Apply Changes**.

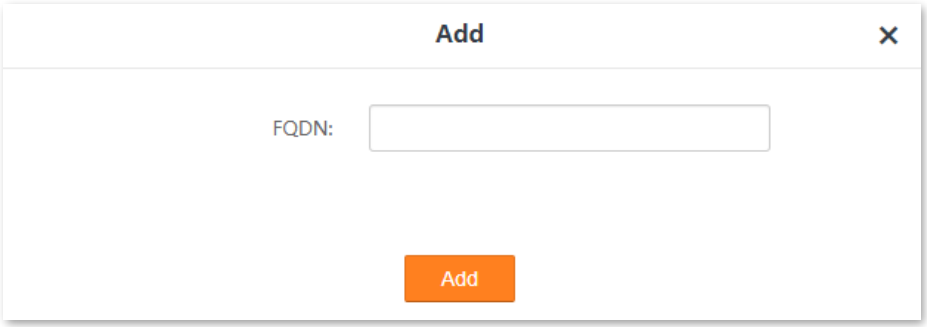


3. Add the blocking URL.

   1) In the **URL Blocking Table** module, click **Add**.

   2) Enter an **FQDN** (Fully Qualified Domain Name), which is **www.google.com** in this example.

   3) Click **Add**.

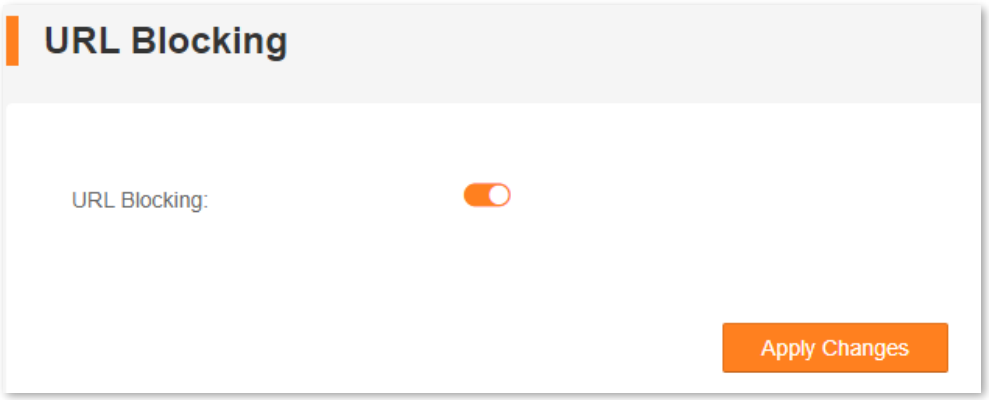


----End

Open a browser, enter **www.google.com** in the address bar, and press **Enter**. Now you cannot access **www.google.com** if the preceding configuration is successful.

12.3.2 Configure keyword filtering

1. Log in to the web UI of the modem router, and navigate to **Advance** > **Firewall** > **URL Blocking**.
2. Enable the **URL Blocking** function, and click **Apply Changes**.

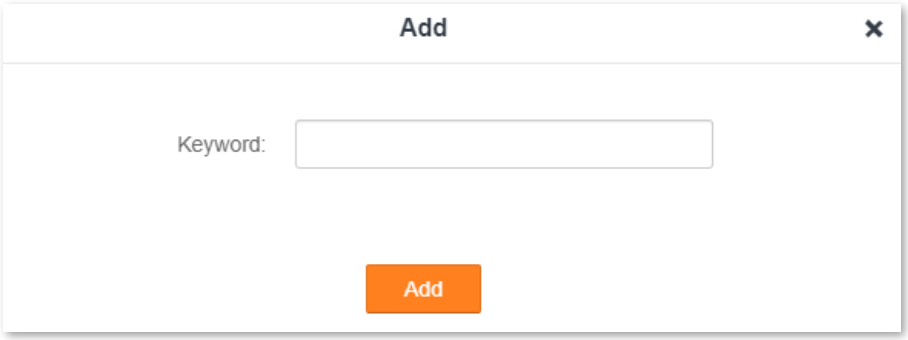


3. Add keywords to block URLs.

   1) In the **Keyword Filtering Table** module, click **Add**.

   2) Enter a **Keyword**, which is **.com** in this example.

   3) Click **Add**.



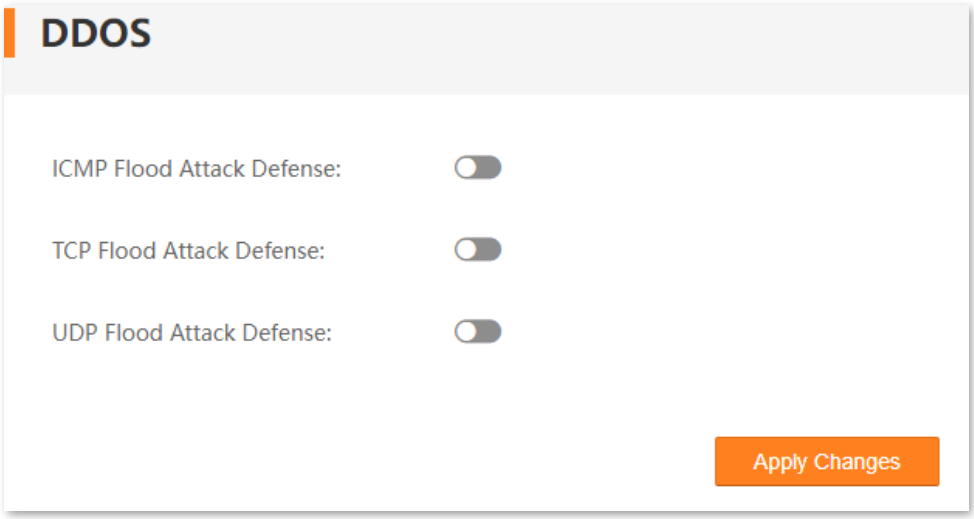
----End

Now you cannot access URLs containing **.com** if the preceding configuration is successful.

12.4 DDOS

This section allows the modem router to defend against ICMP flood attacks, TCP flood attacks, and UDP flood attacks.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** >**Firewall** > **DDOS**.



Parameter description

Parameter	Description
ICMP Flood Attack Defense	Used to enable or disable the ICMP flood attack defense. The ICMP flood attack means that, to implement attacks on the target host, the attacker sends a large number of ICMP Echo messages to the target host, which causes the target host to spend a lot of time and resources on processing ICMP Echo messages, but cannot process normal requests or responses.
TCP Flood Attack Defense	Used to enable or disable the TCP flood attack defense. The TCP flood attack means that, to implement attacks on the target host, the attacker quickly initiates a large number of TCP connection requests in a short period, and then suspends in a semi-connected state, thereby occupying a large number of server resources until the server denies any services.
UDP Flood Attack Defense	Used to enable or disable the UDP flood attack defense. The UDP flood attack is implemented similarly with ICMP flood attack, during which the attacker sends a large number of UDP packets to the target host, causing the target host to be busy processing these UDP packets, but unable to process normal packet requests or responses.

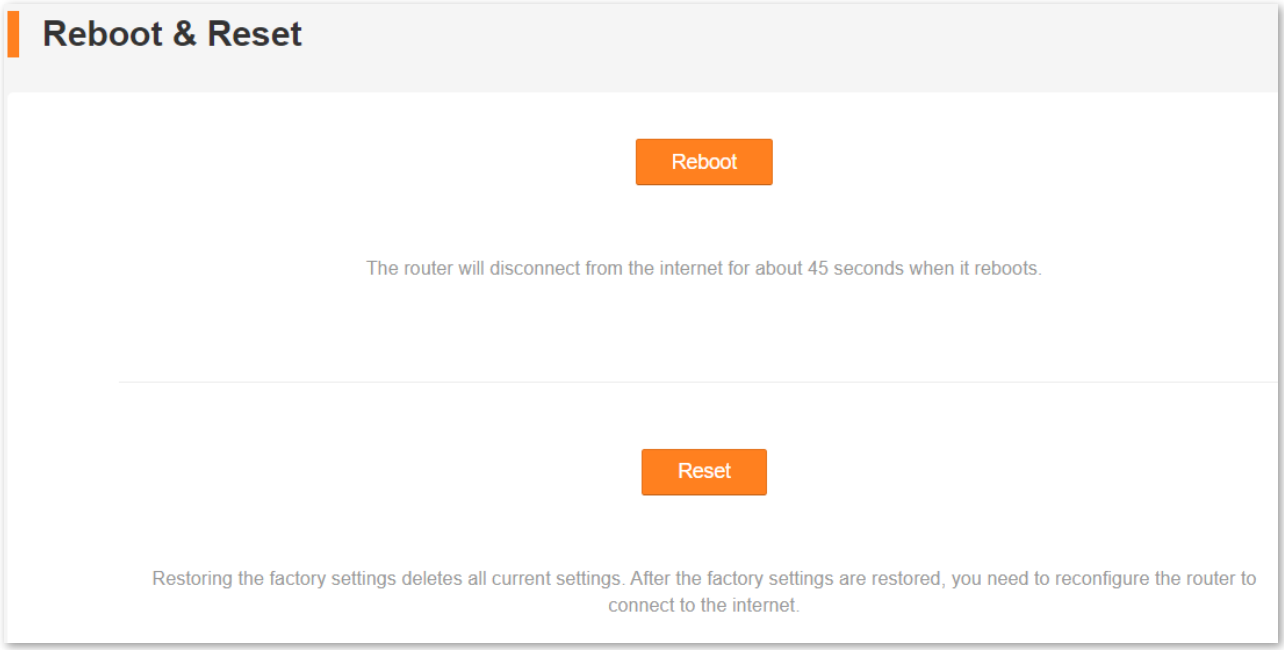
13 System settings

13.1 Reboot & reset

This section allows you to reboot or restore the modem router to factory settings on the web UI.

- **Reboot**: Used to restart the modem router.
- **Reset**: Used to restore the modem router to default settings. After the modem router is reset, you need to configure the modem router again for internet access.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Reboot & Reset**.

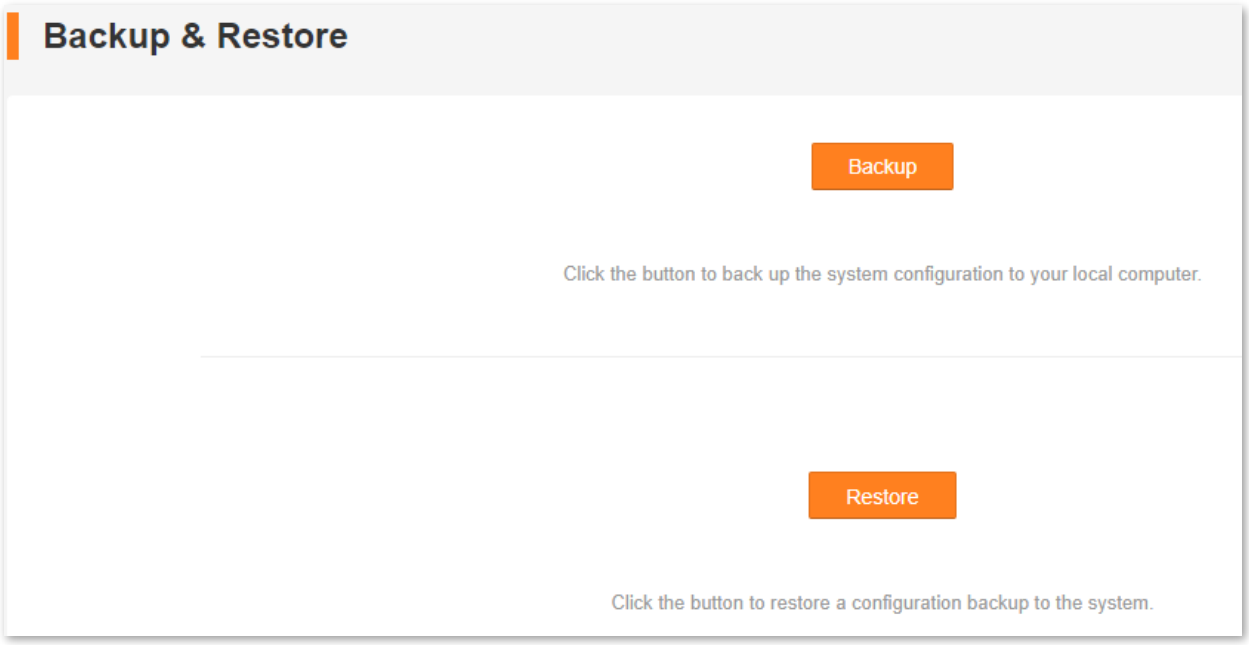


13.2 Backup & restore

13.2.1 Overview

This section allows you to back up or restore the configuration to the modem router on the web UI.

- **Backup**: Used to back up the current system configuration to your local computer, so that you can restore to the current settings if required in the future.
- **Restore**: Used to restore to the previous backup configuration if required.



13.2.2 Back up the configuration

1. Log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Backup & Restore**.
2. Click **Backup**.

----End

A file named **config.xml** is downloaded.

13.2.3 Restore the configuration

1. Log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Backup & Restore**.
2. Click **Restore.**
3. Select the configuration file (suffixed with **.xml**) you want to restore, and click **Open**.

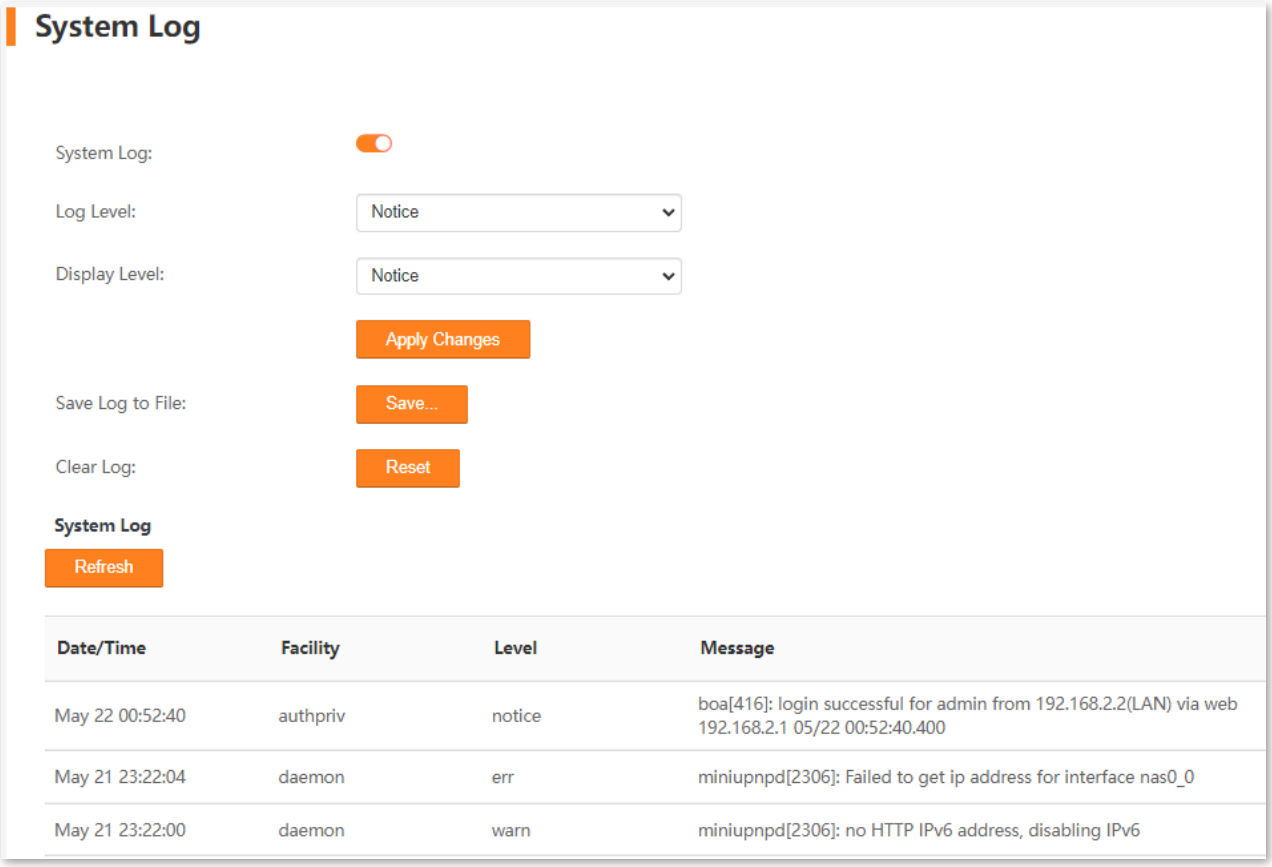
----End

Wait until the system completes rebooting, and the modem router restores previous settings.

13.3 System log

This section allows you to view and export system logs, which helps you understand the operating conditions of the device.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **System Log**.



Parameter description

Parameter	Description
System Log	Used to enable or disable the system log function.
Log Level	Specifies the log levels according to log importance, which include **Emergency**, **Alert**, **Critical**, **Error**, **Warning**, **Notice**, **Informational** and **Debugging**.
Display Level	Specifies the log level range that is displayed on the system log table. For example, if you select **Notice**, the logs from **Emergency** level to **Notice** level are displayed on the table.
Save Log to File	Used to save the logs in a file. A log file named **messages** will be downloaded.
Clear Log	Used to clear all system logs.
Date/Time	Specifies date and time of the log.
Facility	Specifies the facility that generates the log.
Level	Specifies the level of the log.
Message	Specifies the message of the log.

13.4 Password

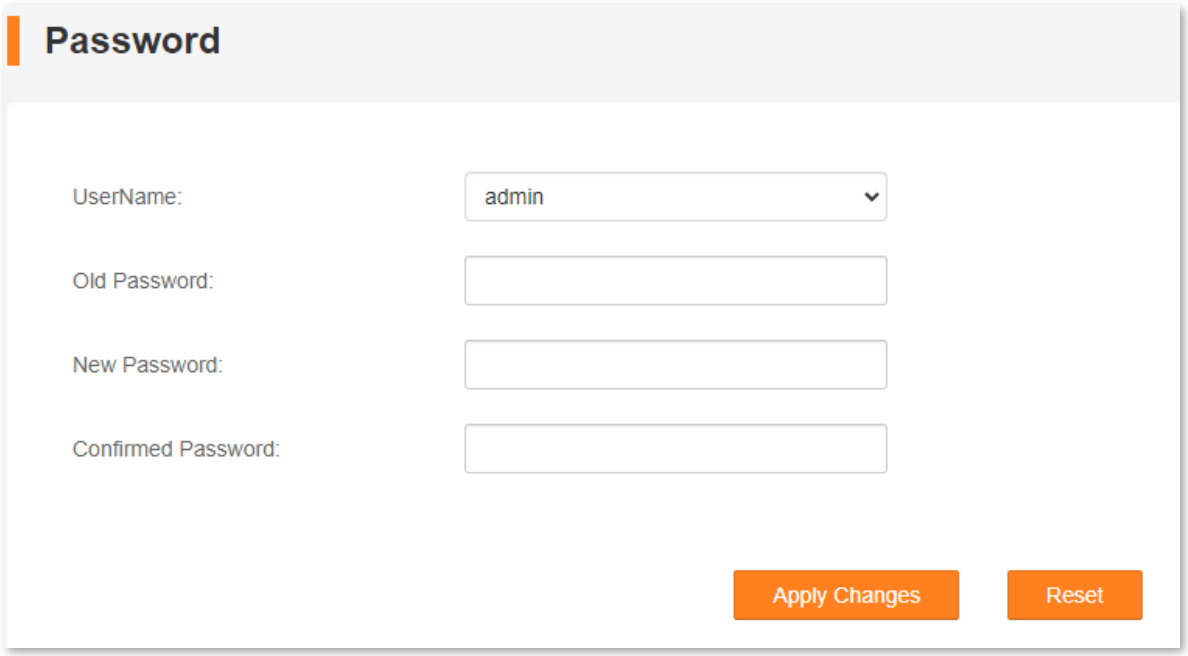
This section allows you to change the login password of the modem router.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Password**.

NOTE

For initial setup or after a reset, set the new login password and Wi-Fi password to ensure privacy and security. The longer the password, the higher the security.

- Login password: 1-20 characters.
- Wi-Fi password: 8-63 characters.



13.5 Firmware upgrade

This section allows you to upgrade the firmware of the modem router on the web UI.

Firmware upgrade is released periodically to improve the functionality of your modem router and also to add new features. If you run into a problem with a specific feature of the modem router, access our website (www.tendacn.com) to download the latest firmware to update your modem router.

Configuration procedure:

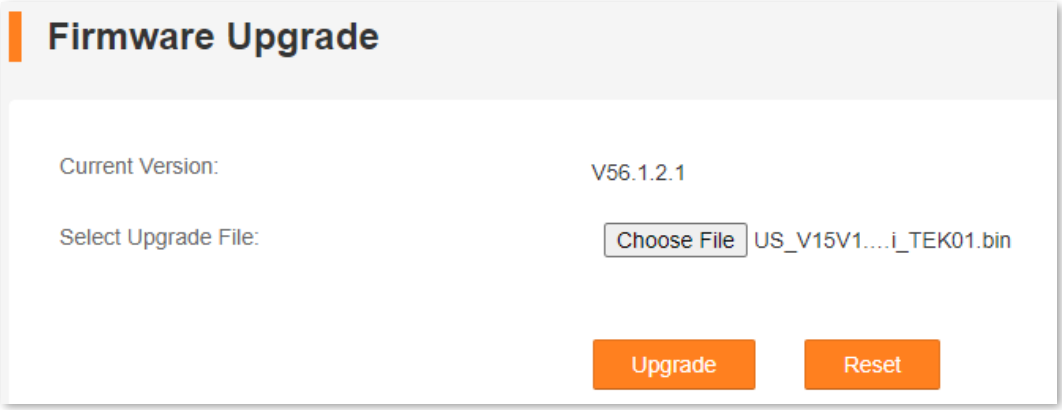
NOTE

To prevent the modem router from being damaged:

- Ensure that the firmware is applicable to the modem router.
- It is recommended to upgrade the firmware by connecting a LAN port to a computer and performing the upgrade on the web UI.
- Do not power off the modem router during firmware upgrade.

1. Go to www.tendacn.com. Download an applicable firmware of the modem router to your local computer and unzip it.
2. Log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Firmware Upgrade**.

3. Click **Choose File** and select the upgrade file (suffixed with **.bin**). Then click **Open**.
4. Click **Upgrade**.



5. Confirm the question on the pop-up window, and click **OK**.

----End

Wait until the progress bar is complete. Log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Firmware Upgrade** and check whether the upgrade is successful based on **Current Version**.

13.6 Time zone

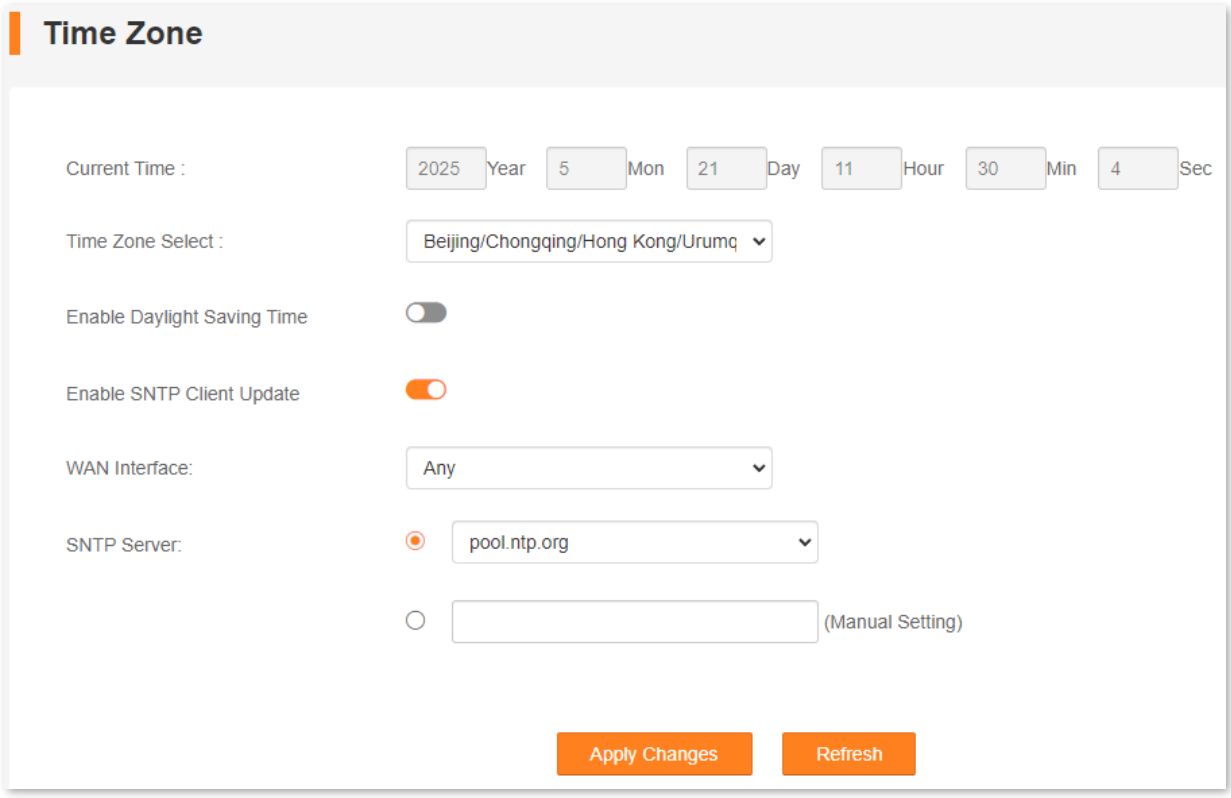
13.6.1 Overview

This section allows you to calibrate the system time by synchronizing with the time server over the internet.

TIP

Ensure that the modem router can access the internet before synchronizing time with the internet time server.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Time Zone**.



Parameter description

Parameter	Description
Current Time	Displays the current date and time of the modem router.
Time Zone Select	Select your time zone for time synchronization.
Enable Daylight Saving Time	If you are in an area with daylight saving time, you can enable this function.
Enable SNTP Client Update	With this option enabled, the modem router automatically updates the time with the Simple Network Time Protocol (SNTP) server.
WAN Interface	Specifies the WAN interface for time synchronization. **Any** indicates that the system automatically uses one of the WAN interfaces that can access the internet for time synchronization. TIP To successfully synchronize time, please select the interface that can access the internet.
SNTP Server	Specifies the SNTP server used for time synchronization. You can select it from the drop-down list or enter it manually.

13.6.2 Synchronizing the system time with the internet

1. Log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Time Zone**.
2. Select the time zone that the modem router locates from the **Time Zone Select** drop-down list.
3. (Optional) If the modem router locates in an area with daylight saving time, turn on **Enable Daylight Saving Time**.
4. Select the WAN interface for calibration.
5. Select or enter an SNTP server address.
6. Click **Apply Changes**.

----End

After calibration, you can check whether the time is calibrated properly by checking **Current Time**.

13.6.3 Manually configure the time

1. Log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Time Zone**.
2. Select the time zone that the modem router locates from the **Time Zone Select** drop-down list.
3. Turn off **Enable SNTP Client Update**.
4. Input the date and time in **Current Time**.
5. Click **Apply Changes**.

----End

13.7 Diagnostics

13.7.1 Overview

The modem router supports two diagnosis methods: Ping diagnostics and ADSL connection diagnostics.

- Ping and Ping (IPv6) diagnostics can help test whether a host is reachable.

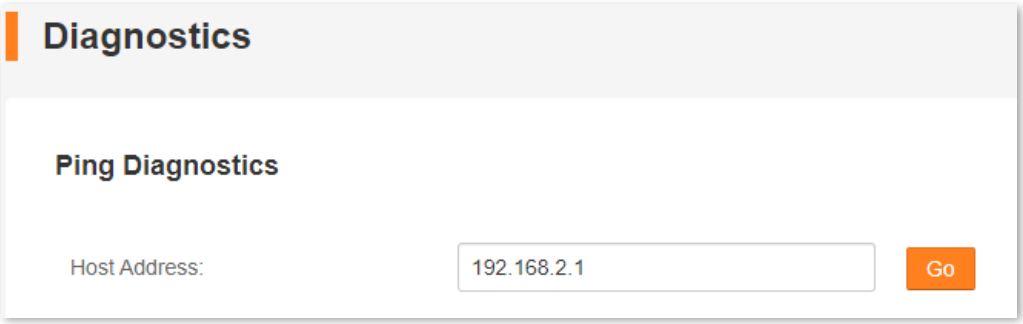
- ADSL connection diagnostics can help check your ADSL connection.

13.7.2 Ping and Ping IPv6 diagnostics

TIP

Ping diagnostics is used for example in this section. The operations for Ping and Ping IPv6 diagnostics are similar.

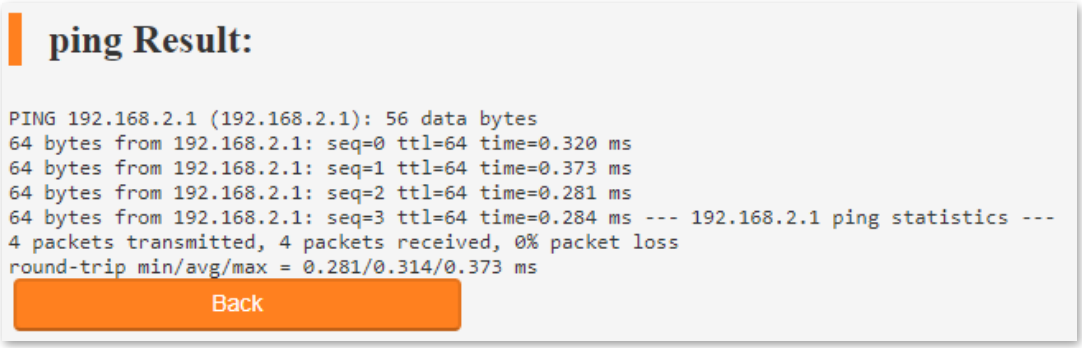
1. Log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Diagnostics**.
2. Enter the destination address to be pinged, which is **192.168.2.1** in this example.



3. Click **Go**.

----End

The diagnosis results are as shown below.



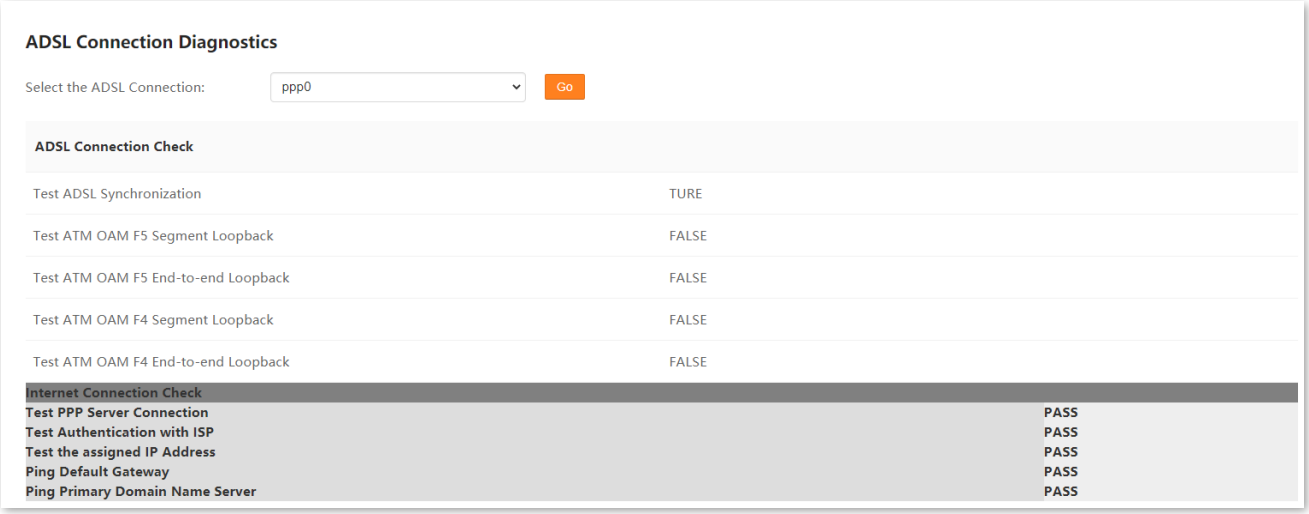
13.7.3 ADSL connection diagnostics

1. Log in to the web UI of the modem router, and navigate to **Advance** > **System Settings** > **Diagnostics**.
2. Select the ADSL connection to be tested.

3. Click **Go**.

----End

The diagnosis results are as shown below.

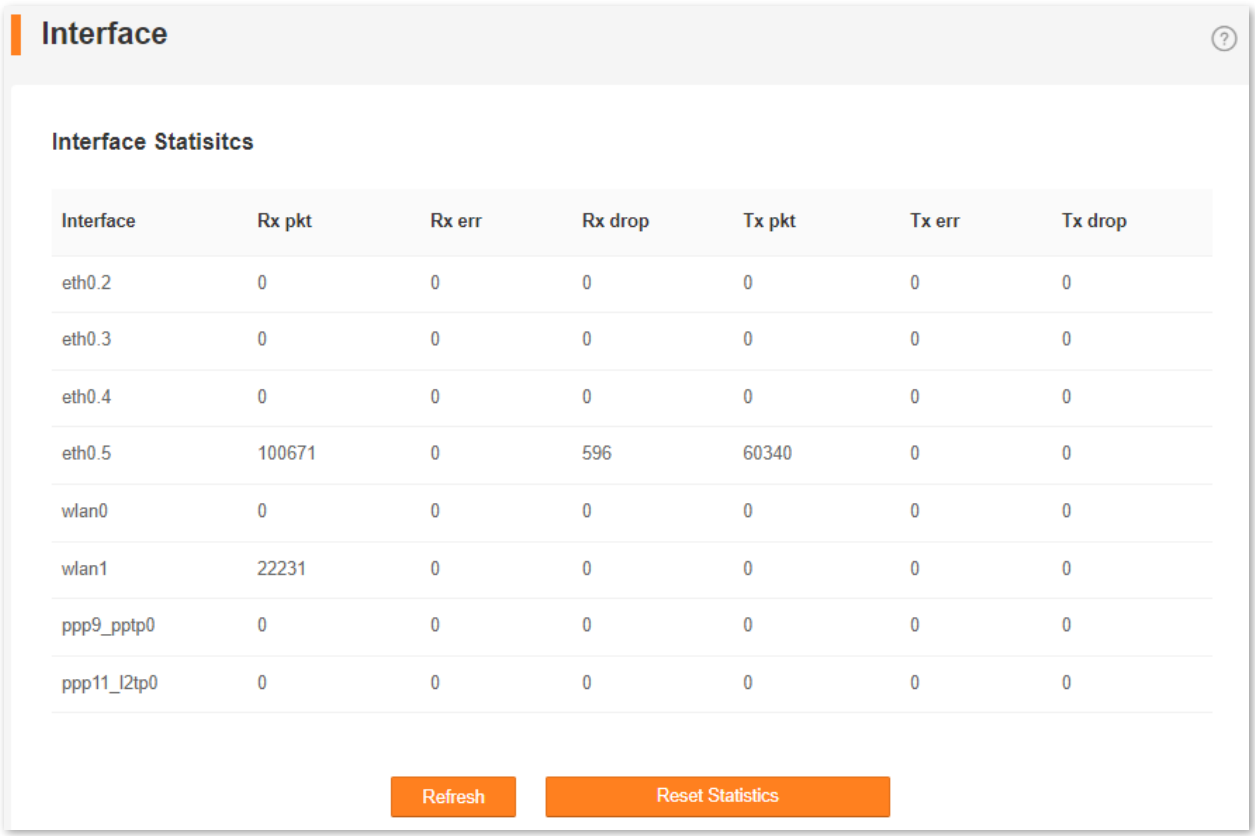


14 Statistics

14.1 Interface

Here you can view the information of packets received and transmitted by each interface.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Statistics** > **Interface**.



Parameter description

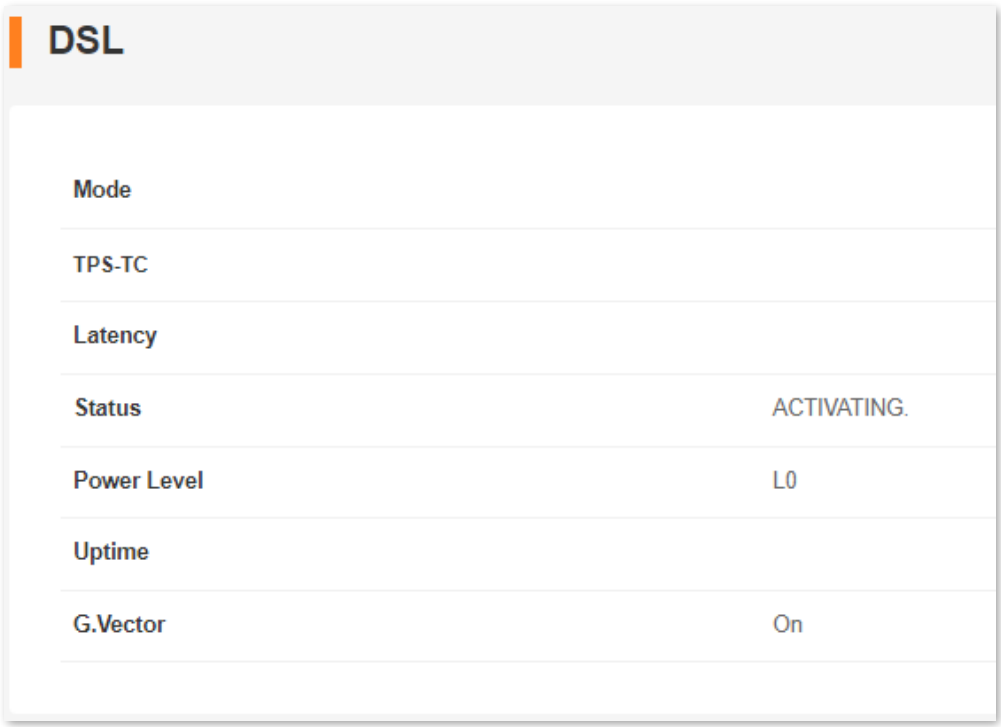
Parameter	Description
Interface	Specifies the interface name.
Rx pkt	Specifies the number of packets received by the interface.

Parameter	Description
Rx err	Specifies the number of error packets received by the interface.
Rx drop	Specifies the number of received packets discarded by the interface.
Tx pkt	Specifies the number of packets transmitted by the interface.
Tx err	Specifies the number of error packets transmitted by the interface.
Tx drop	Specifies the number of transmitted packets discarded by the interface.

14.2 DSL

Here you can view the DSL link information.

To access the page, log in to the web UI of the modem router, and navigate to **Advance** > **Statistics** > **DSL**.



	Downstream	Upstream
Trellis	Off	Off
SNR Margin (dB)	0.0	0.0
Attenuation (dB)	0.0	0.0
Output Power (dBm)	0.0	0.0
Attainable Rate (Kbps)	0	0
G.INP	Off	Off
Rate (Kbps)	0	0
R (number of check bytes in RS code word)	0	
N (RS codeword size)	0	0
L (number of bits in DMT frame)	0	0
S (RS code word size in DMT frame)	0.00	
D (interleaver depth)	0	
Delay (msec)	0.00	
INP (DMT frame)	0.000	0.000
FEC errors	0	0
OH Frame	0	0
OH Frame errors	0	0
Total ES	0	0
Total SES	0	0
Total UAS	18107	0
Total LOSS	--	--
Last Link Rate	0	0
Full Init	0	
Failed Full Init	0	
Synchronized time(Second)		
Synchronized number	0	

Appendix

Acronym or Abbreviation	Full Spelling
ACL	Access Control List
ACS	Auto-Configuration Server
ADSL	Asymmetric Digital Subscriber Line
AES	Advanced Encryption Standard
AFTR	Address Family Transition Router
AH	Authentication Header
ALG	Application Layer Gateway
ATM	Asynchronous Transfer Mode
CBR	Constant bitrate
CDVT	Cell delay variation tolerance
CPU	Central processing unit
DDNS	Dynamic Domain Name System
DDOS	Distributed denial-of-service
DES	Data Encryption Standard
DFS	Dynamic Frequency Selection
DHCP	Dynamic Host Configuration Protocol
DMT	Discrete multitone modulation
DMZ	Demilitarized zone
DNS	Domain Name System
DSL	Digital subscriber line
DSP	Digital signal processor
ESP	Encapsulating Security Payload

Acronym or Abbreviation	Full Spelling
FQDN	Fully qualified domain name
FTP	File Transfer Protocol
ICMP	Internet Control Message Protocol
IGMP	Internet Group Management Protocol
IKE	Internet Key Exchange
IP	Internet Protocol
IPsec	Internet Protocol Security
IPoA	IP over ATM
IPoE	IP over Ethernet
IPTV	Internet Protocol television
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
ISP	Internet service provider
L2TP	Layer 2 Tunneling Protocol
LAN	Local Area Network
LED	Light-emitting diode
LLC	Logical link control
MAC	Medium access control
MBS	Maximum burst size
MD5	Message-digest algorithm
MIB	Management information base
MLD	Multicast Listener Discovery
MTU	Maximum transmission unit
NMS	Network management system
NAPT	Network address port translation

Acronym or Abbreviation	Full Spelling
NDP	Neighbor Discovery Protocol
NMS	Network management system
PCR	Peak cell rate
PIN	Personal identification number
POTS	Plain Old Telephone Service
PPP	Point to Point Protocol
PPPoA	PPP over ATM
PPPoE	Point-to-Point Protocol over Ethernet
PPTP	Point to Point Tunneling Protocol
PVC	Permanent virtual circuit
QoS	Quality of service
RADVD	Router Advertisement Daemon
RDNSS	Recursive DNS Server
RTSP	Real Time Streaming Protocol
SA	Security Association
SCR	Sustainable Cell Rate
SHA	Secure Hash Algorithm
SIP	Session Initiation Protocol
SNMP	Simple Network Management Protocol
SNTP	Simple Network Time Protocol
SPI	Security Parameter Index
SRA	Seamless Rate Adaptation
SSID	Service set identifier
TCP	Transmission Control Protocol
TR069	Technical Report - 069

Acronym or Abbreviation	Full Spelling
UBR	Unspecified bit rate
UDP	User Datagram Protocol
UI	User interface
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
USB	Universal serial bus
VBR	Variable Bit Rate
VCI	Virtual Channel Identifier
VDSL	Very high-speed digital subscriber line
VLAN	Virtual Local Area Network
VoD	Video on demand
VoIP	Voice over IP
VPI	Virtual path identifier
VPN	Virtual private network
WAN	Wide Area Network
WDS	Wireless Distribution System
WLAN	Wireless local area network
WPA	Wi-Fi Protected Access
WPA-PSK	Wi-Fi Protected Access Pre-Shared Key
WPS	Wi-Fi Protected Setup