Wireless Hotspot Router

User Guide

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Preface

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

Conventions

This user guide is applicable to the following routers. W20E is used for illustrations here unless otherwise specified. The contained images and UI screenshots are subject to the actual products.

Product model	Description
W15E	AC1200 Wireless Hotspot Router
W18E	AC1200 Gigabit Wireless Hotspot Router
W20E	AC1350 Gigabit Wireless Hotspot Router

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.

Acronym and Abbreviation

Acronym and Abbreviation	Full Spelling
AES	Advanced Encryption Standard
AH	Authentication Header
AP	Access Point
ARP	Address Resolution Protocol
ASCII	American Standard Code for Information Interchange

Acronym and Abbreviation	Full Spelling
APSD	Automatic Power Save Delivery
CPU	Central Processing Unit
DDNS	Dynamic Domain Name Server
DDoS	Distributed Denial of Service
DES	Data Encryption Standard
DHCP	Dynamic Host Configuration Protocol
DPD	Digital Pre-Distortion
DMZ	Demilitarized Zone
DNS	Domain Name System
ESP	Encapsulating Security Payload
GBK	Chinese Internal Code Specification
GMT	Greenwich Mean Time
ICMP	Internet Control Message Protocol
IKE	Internet Key Exchange
IP	Internet Protocol
ISP	Internet Service Provider
IPSec	IP Security
L2TP	Layer 2 Tunneling Protocol
LAN	Local Area Network
MAC	Medium Access Control
MD5	Message Digest 5
MGMT	Management
MTU	Maximum Transmission Unit
NAT	Network Address Translation
PFS	Perfect Forward Secrecy
PoE	Power Over Ethernet

Acronym and Abbreviation	Full Spelling
PPPoE	Point-to-Point Protocol Over Ethernet
PPTP	Point to Point Tunneling Protocol
RSSI	Received Signal Strength Indicator
SA	Security Association
SSID	Service Set Identifier
SHA	Secure Hash Algorithm
Short GI	Short Guard Interval
SMS	Short Message Service
SPI	Security Parameter Index
SYN	Synchronize
SYS	System
TCP	Transmission Control Protocol
TKIP	Temporal Key Integrity Protocol
UDP	User Datagram Protocol
UI	User Interface
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
UTF-8	8-bit Unicode Transformation Format
VPN	Virtual Private Network
WAN	Wide Area Network
WEP	Wired Equivalent Privacy
WLAN	Wireless Local Area Networks
WMM	Wi-Fi multi-media

Getting more documents

If you want to get more documents of the device, visit www.tendacn.com and search for the target product model. The related documents are listed as below:

Document	Description
Quick Installation Guide	It introduces how to set up the device quickly for internet access, the descriptions of LED indicators, ports, and buttons, FAQ, statement information, and so on.
User Guide	It introduces how to set up more functions of the device for more requirements, including all functions on the web UI of the device.
Data Sheet	It introduces the basic information of the device, including product overview, selling points, and specifications.

Technical Support

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

Hotline

Global: (86) 755-27657180

(China Time Zone)

United States: 1-800-570-5892

(Toll Free: 7 x 24 hours)

Canada: 1-888-998-8966

(Toll Free: Mon - Fri 9 am - 6 pm PST)

Hong Kong: 00852-81931998

Email

support@tenda.com.cn

Contents

1 At a glance

1.1 Overview

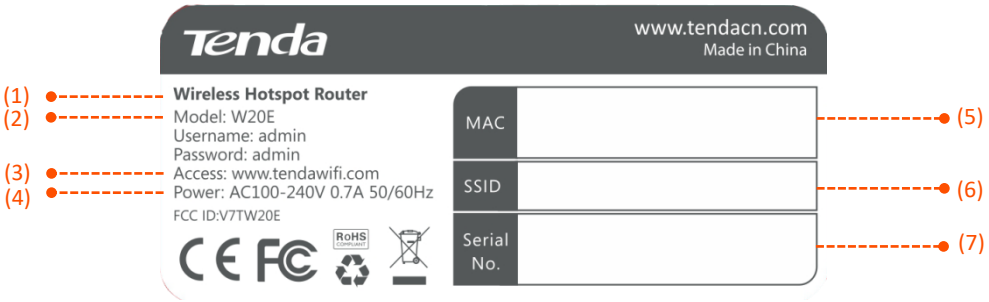
The enterprise router stands out both on hardware and software. With sleek appearance, high-gain antennas, various interfaces, as well as an intuitive web UI that allows you to manage your network to achieve your very specific deployment purpose, such as authentication using captive portal, and VPN connections. You are assured to enjoy stable network and convenient management.

1.2 Main features

- At most three 2.4 GHz wireless networks and three 5 GHz wireless networks
- High density user access
- High-gain antennas
- Supports wireless network isolation
- Supports captive portal
- Supports remote web management
- Supports smart and user-defined bandwidth control
- Supports IP/MAC/URL-based filter
- Supports PPTP/L2TP VPN server, PPTP/L2TP VPN client, and IPSec VPN connections
- Up to 3 WAN ports

1.3 Label

The label shows the **Default Access**, **MAC**, **SSID** and **Serial NO.** of the router. The following is an example of what the router label might look like:



(1) Product name of the router.

(2) **Model**: Product model of the router. You can use this model as a key word for searching related supporting materials on our official website.

(3) **Default Access**: Default domain name or IP address for logging in to the web UI of the router.

(4) **Power input**: Power specification of the router. It is suggested that you use the included power adapter to power on the router.

(5) **MAC**: MAC address of the router.

(6) **SSID**: Default wireless network name of the router.

(7) **Serial No.**: The unique serial number of the router.

2 Quick setup

This chapter introduces how to set up the router to access the internet for the first time.

Step 1 Connect your router.

1. Connect the included power adapter to the **Power** jack of the router to power it on.
2. Use an Ethernet cable to connect an Ethernet jack or a LAN port of your modem to the WAN port of the router.
3. Either connect your computer to a LAN port of the router, or connect your WiFi-enabled device, such as a smart phone, to the wireless network of the router.

TIP

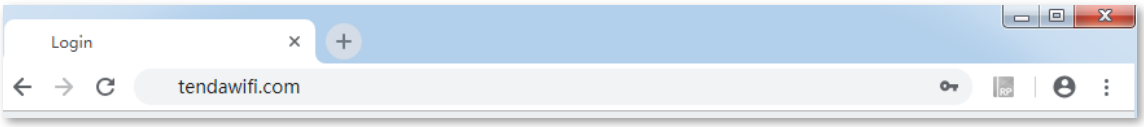
The default SSID is on the bottom Label of the router. By default, it has no WiFi password.

Step 2 Configure your router.

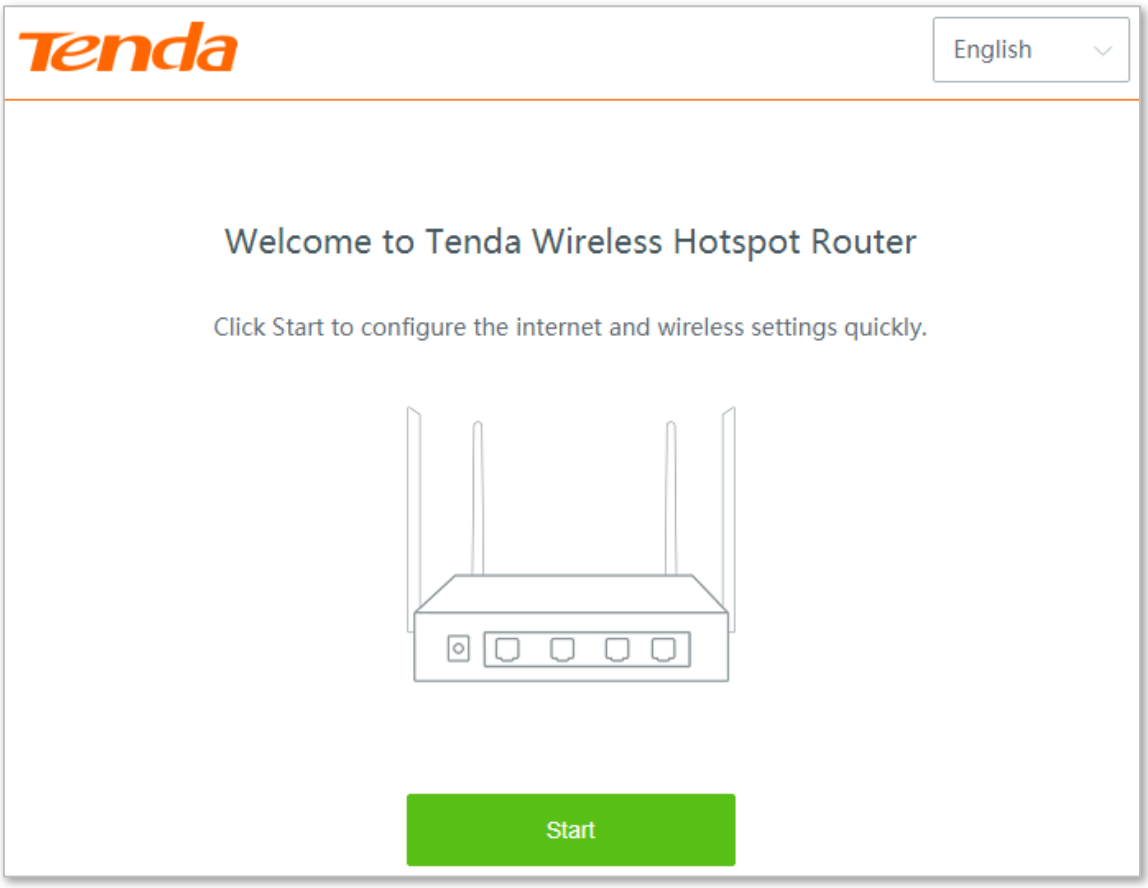
TIP

- You can perform quick setup either using a connected computer or a smart phone. The configuration process is the same. The following takes a computer for example.
- If a smart phone is used, disable its mobile or cellular network function.

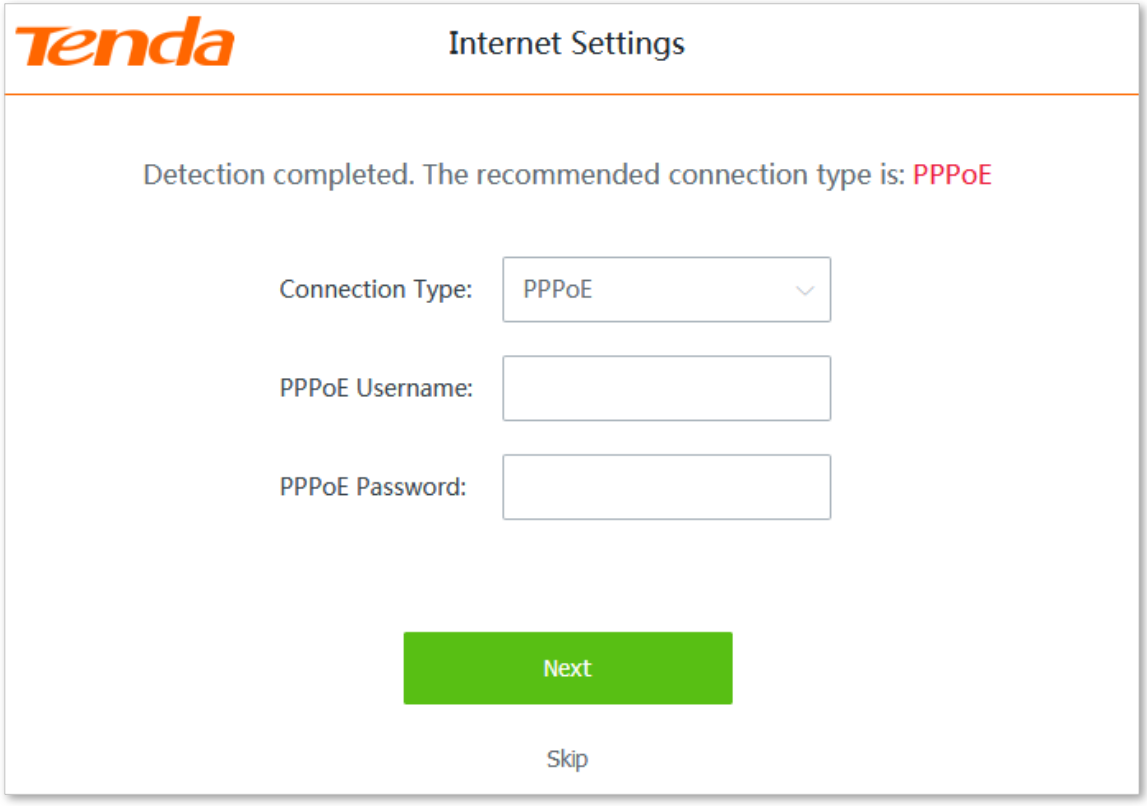
1. Start a web browser on the computer connected to the router or the wireless network of the router, and access tendawifi.com.



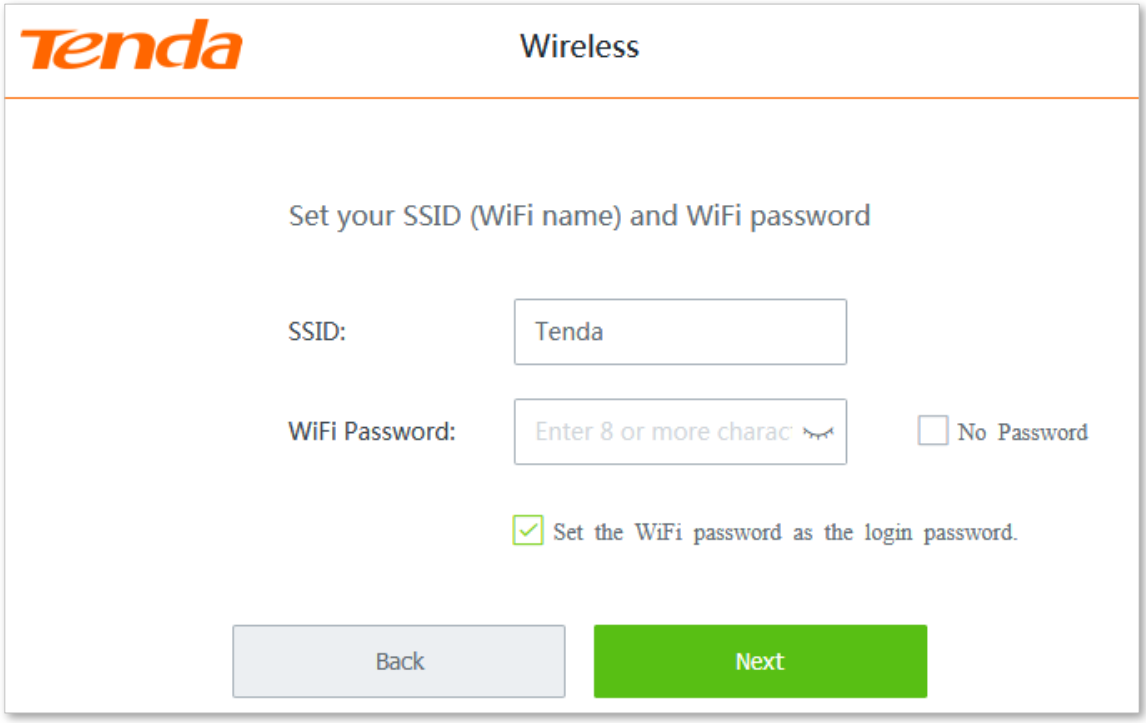
2. Click **Start**. The system automatically starts detecting your internet connection type.



3. After detection completed, just follow the on-screen instructions to set up your router. **PPPoE** is used for illustrating here. Enter the **PPPoE Username** and **PPPoE Password** provided by you ISP, and click **Next**.



4. Customize the **SSID** (wireless network name) and **WiFi password** as needed.



TIP

- By default, the **WiFi password** is set as the **Login Password**, you can deselect the checkbox and customize them separately.
- **WiFi Password** is used for connecting to your wireless network, while **Login Password** is used for logging into the web UI of the router for management.

5. Click **Next**.

---- End

To access the internet with:

- **Wireless clients**: Connect your wirelss devices to the SSID with the WiFi password you set.
- **Wired clients**: Connect the wired devices to LAN ports of the router.

3 Login

3.1 Login

TIP

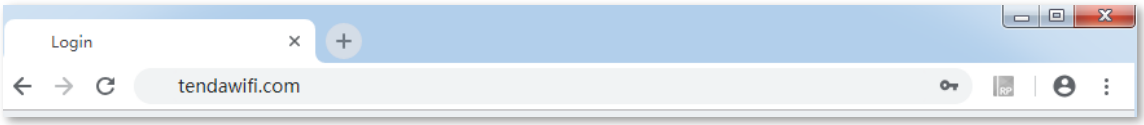
This section introduces how to log in to the web UI of the router for management. For initial use of the router, refer to Quick setup.

3.1.1 Overview

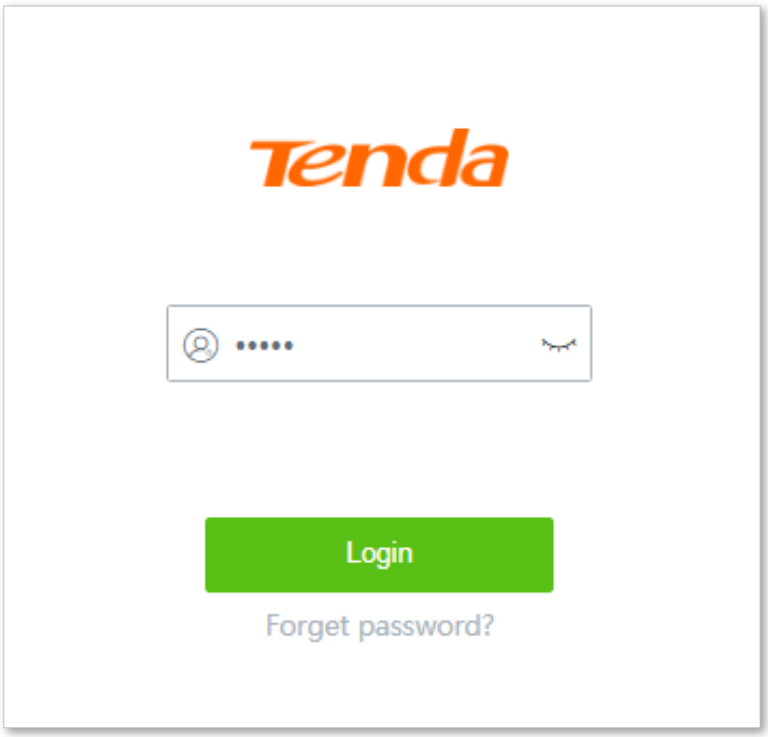
The router supports two account types: **Administrator** and **Authentication**. The **Administrator** account enjoys all access permission of the router, while the **Authentication** account only has permission for accessing **System Status** and **Authentication** modules. For detailed explanation, see Password Manager.

3.1.2 Log in to the web UI of the router

Step 1 Start a web browser on your device connected to the router, and access **tendawifi.com**.

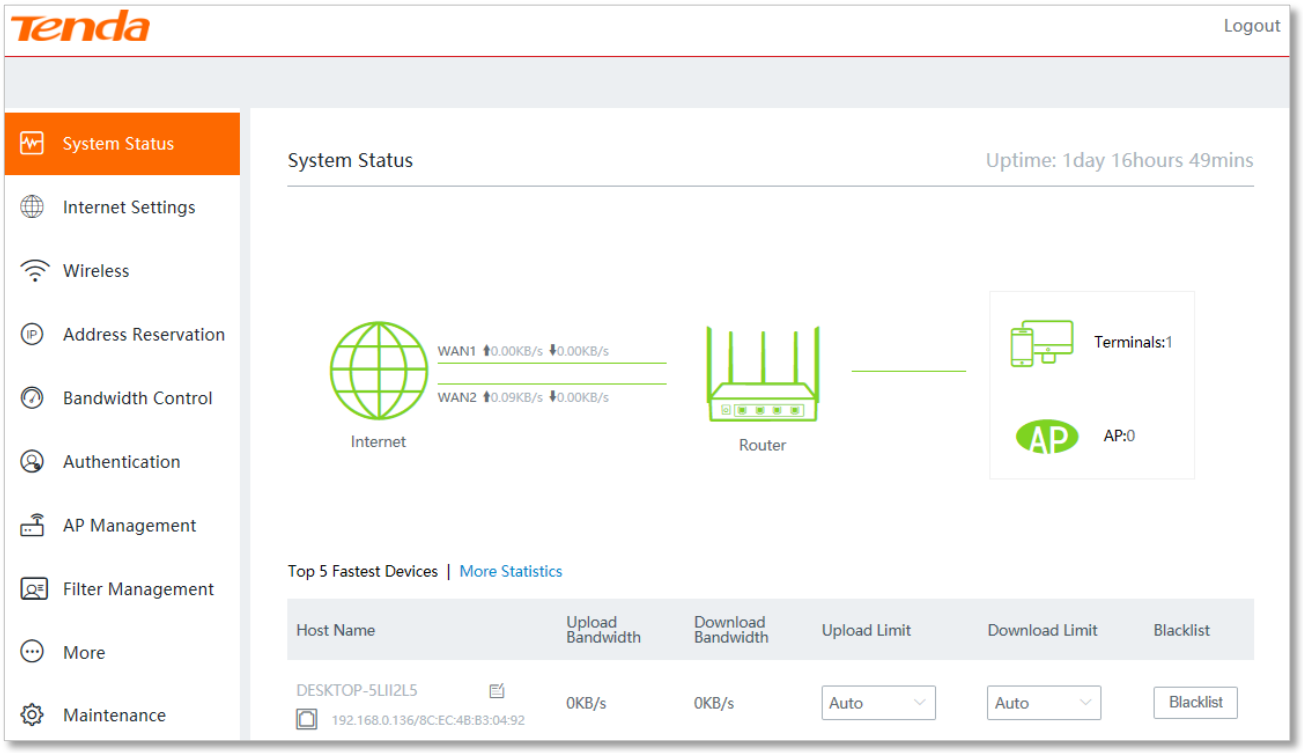


Step 2 Enter the login password of the router you set, and click **Login**.

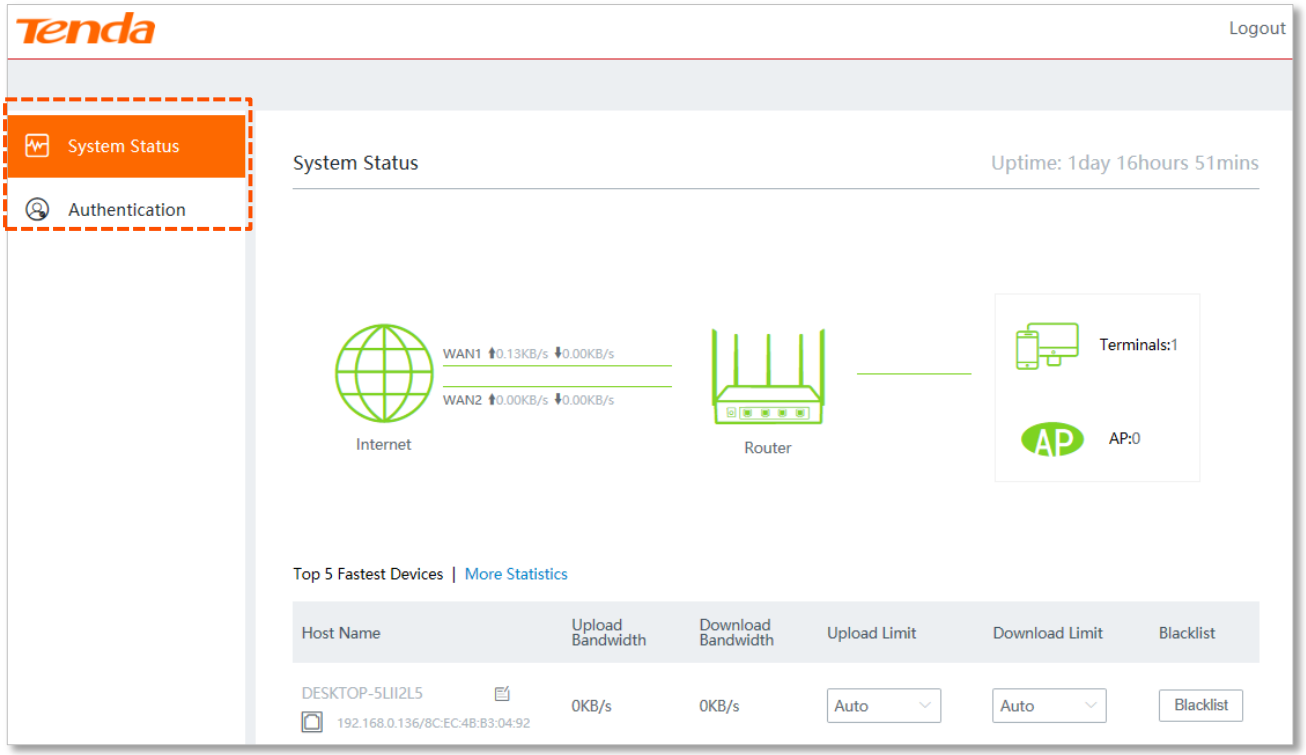


---- End

Log in to the web UI of the router using the **Administrator** account. See the following figure:



Log in to the web UI of the router using the **Authentication** account. See the following figure:



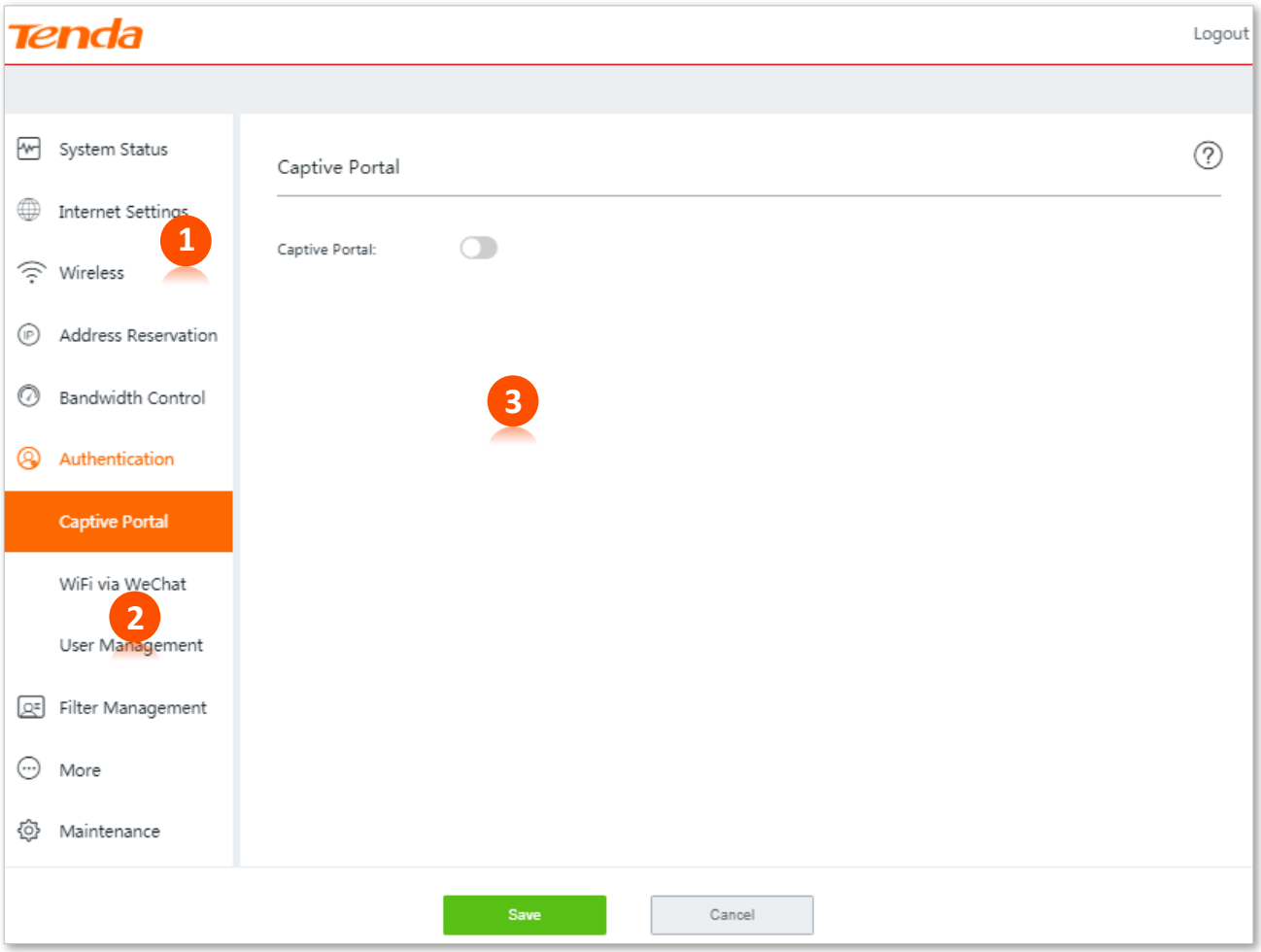
3.2 Logout

If you log into the web UI of the router and perform no operation within **20** minutes, the router logs you out automatically.

You can log out by clicking **Logout** on the upper right corner of the web UI as well.

3.3 Web UI layout

The web UI of the router consists of three sections, including the level-1, and level-2 navigation bar, and the configuration area as well. See the following figure:



SN	Name	Description
1	Level-1 navigation bar	Used to display the function menu of the router. Users can select functions in the navigation bars and the configuration appears in the configuration area.
2	Level-2 navigation bar	
3	Configuration area	Used to modify or view your configuration.

3.4 Frequently-used buttons

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

Button	Description
Save	Used to save the configuration on the current page and enable the configuration to take effect.
Cancel	Used to change the current configuration on the current page back to the original configuration.
	Used to get the online help.

4 System status

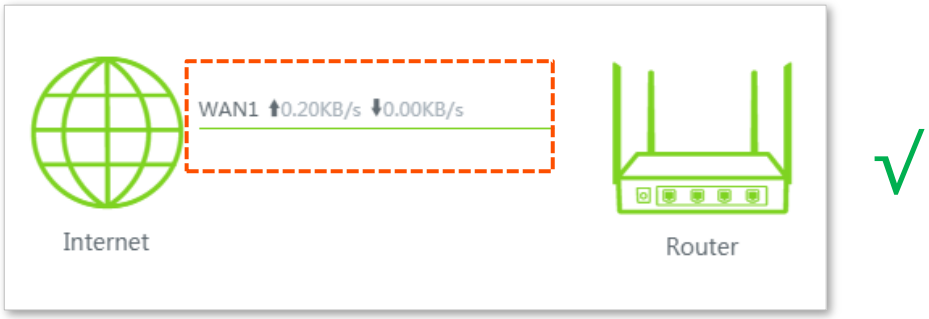
4.1 Check physical connections and system status

To enter the configuration page, choose **System Status**.

You can check if the physical connections are proper, or the router's system status here.

4.1.1 Check physical connections

The following figure indicates that the router is connected to the internet properly through the WAN1 port.



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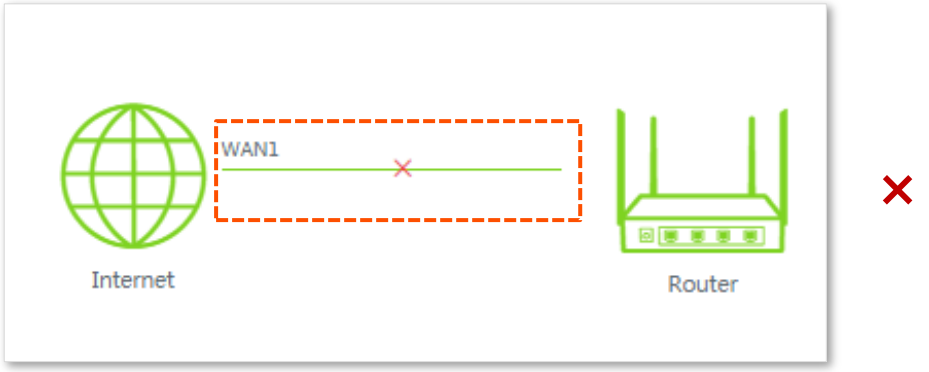
The following figure indicates that connection between the router and the internet is abnormal. Please check if the WAN 1 port of the router is properly connected to the internet, or the internet connection parameters you set are correct.



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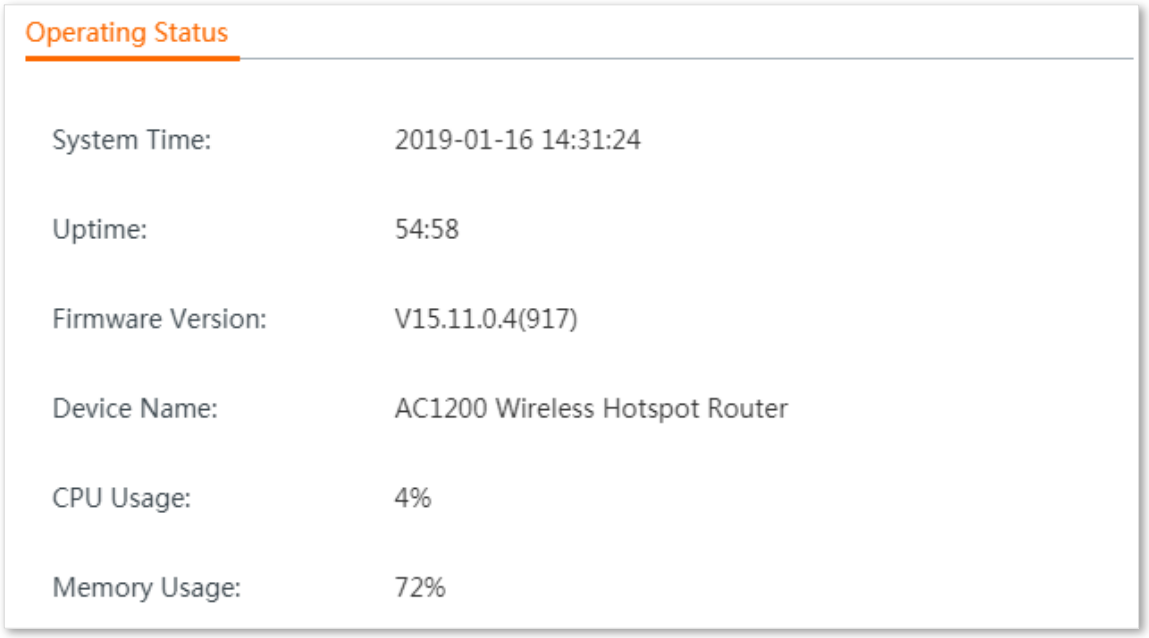
4.1.2 View system status

On **System Status** page, click the **Router** icon , the **Device Info** window pops up.

The **Device Info** window consists of three parts: Operating Status, LAN Port Status, and WAN Info.

- **Operating Status**



Parameter description

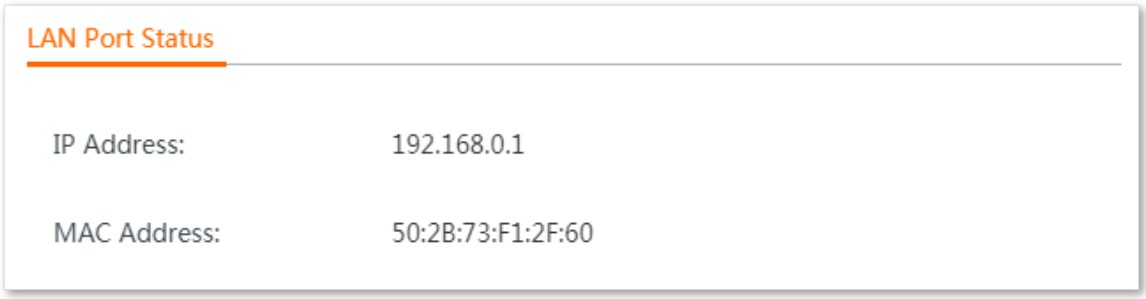
Parameter	Description
System Time	It specifies the current system time of the router. You can set system time by navigating to **Maintenance** > **System time**.
Uptime	It specifies the time that has elapsed since the router was started last time.
Firmware Version	It specifies the firmware version number of the router.
Device Name	It specifies the name of your router.
CPU Usage	It specifies the current CPU usage of the router.
Memory Usage	It specifies the current memory usage of the router.

LAN port status

This module shows the LAN IP address and the MAC address of the router.

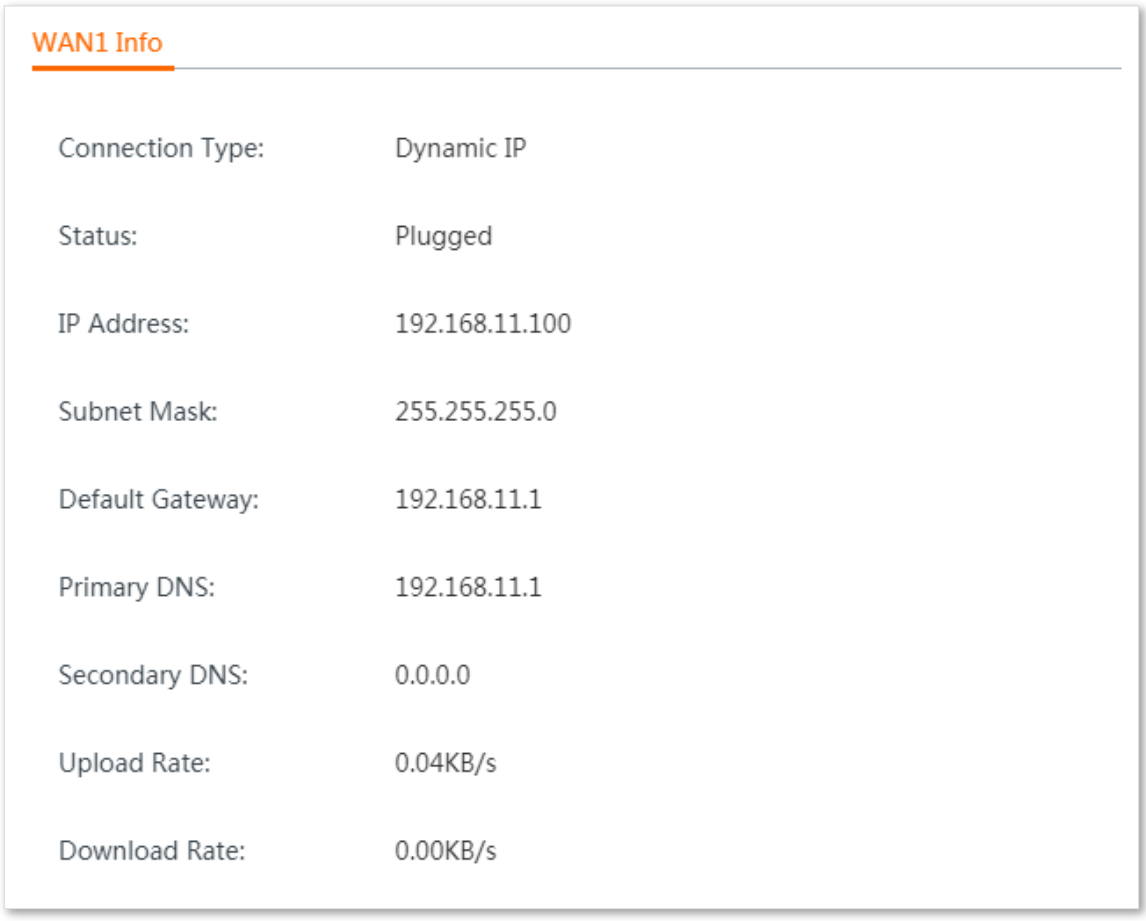
TIP

You can modify LAN settings by navigating to **More** > **LAN settings.**



WAN Info

This module displays information about all enabled WAN ports, including **Connection Type**, **Status**, **and IP Address** and so on.



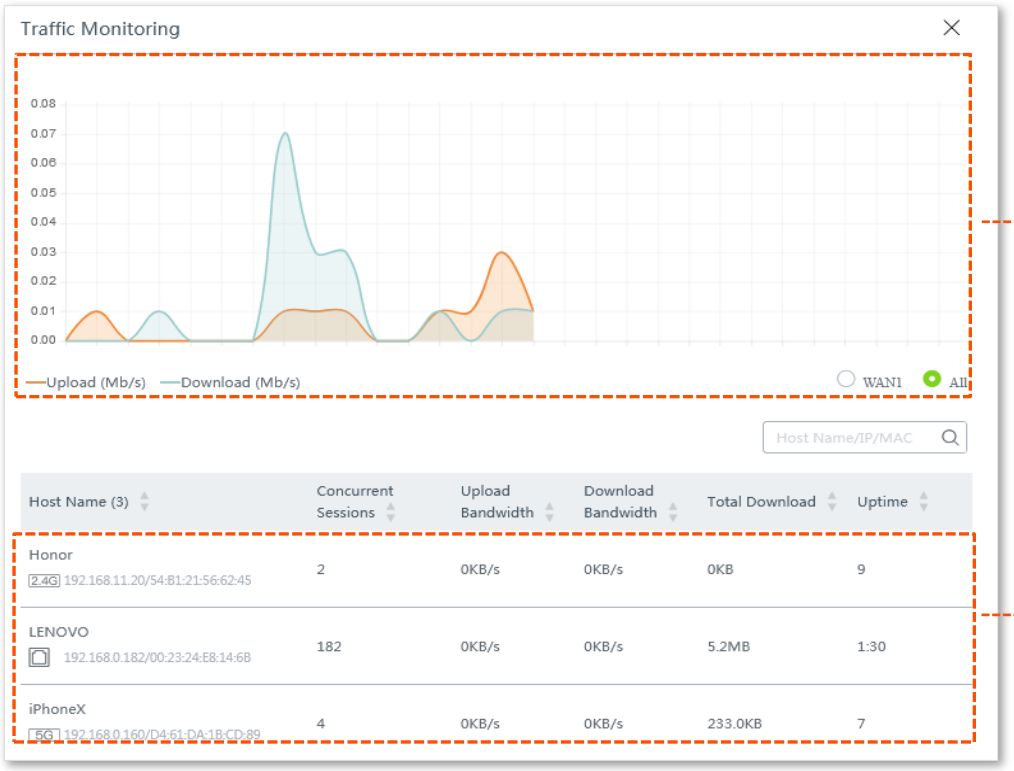
Parameter description

Parameter	Description
Connection Type	It specifies the internet connection type of the corresponding WAN port.
Status	It specifies whether or not the WAN port is plugged. If **Unplugged** appears, please check its physical connection.

Parameter	Description
IP Address	It indicates the IP address of the corresponding WAN port.
Subnet Mask	It indicates the subnet mask of the corresponding WAN port.
Default Gateway	It indicates the gateway IP address of the corresponding WAN port. Only forwarding packets through this gateway can clients access the internet.
Primary DNS	The primary/secondary DNS server address of the corresponding WAN port. The **Secondary DNS** is optional. If you do not set this parameter, it shows **0.0.0.0**.
Secondary DNS	
Upload Rate	The upload and download rate of the corresponding WAN port.
Download Rate	

4.2 Monitor traffic

The router presents the traffic usage in an intuitive way. Click **More Statistics** on **System Status** page, the **Traffic Monitoring** window appears. See the following figure:



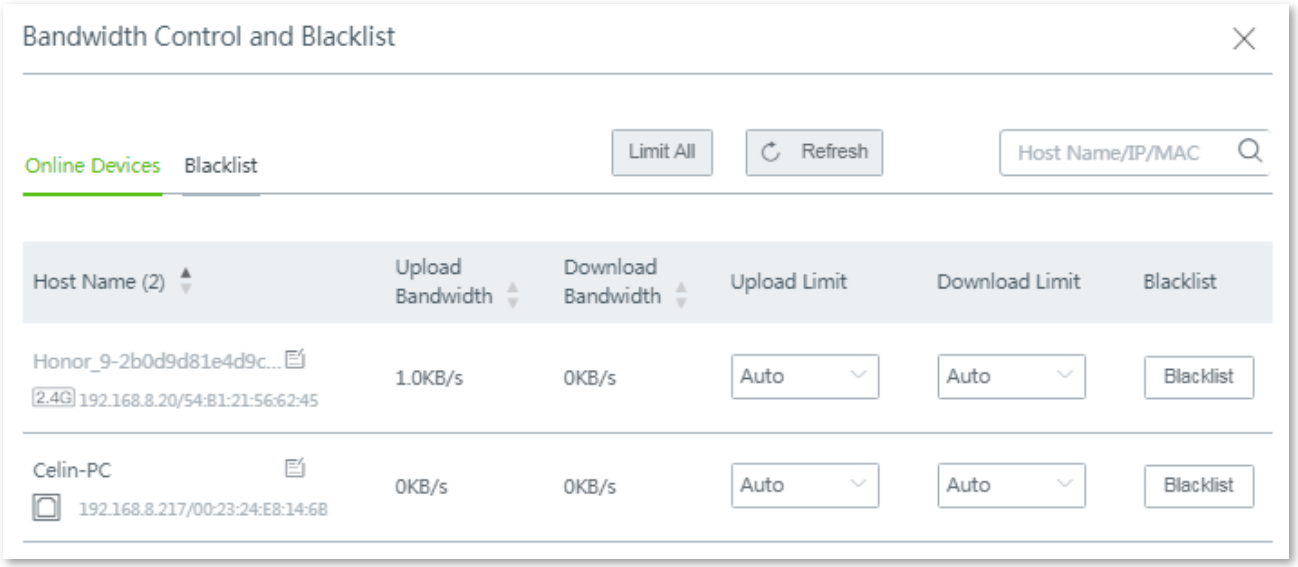
Monitoring traffic of selected WAN port(s).

Monitoring traffic of online client(s).

4.3 Manage online devices

To access the configuration page, click the **Connected Devices** icon on the **System Status** page. The **Bandwidth Control and Blacklist** window appears.

You can edit the name of connected clients, control the connected clients' upload and/or download bandwidth separately or in batch, and block a device from accessing your network.



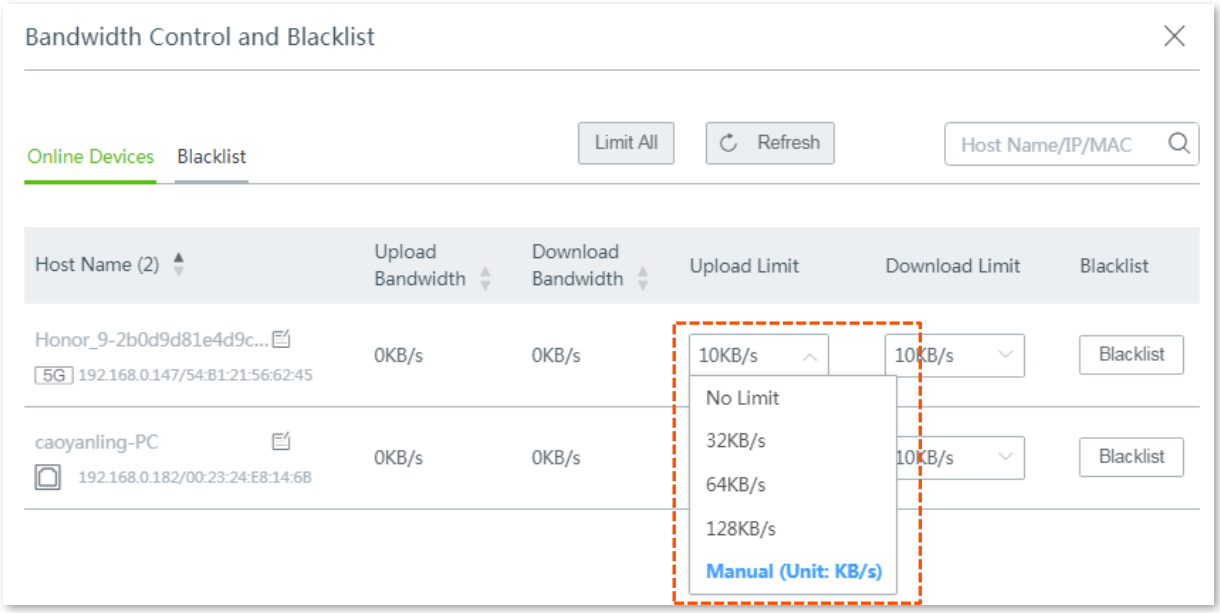
Parameter description

Parameter	Description
Host Name	It specifies the name of clients connected to the router, connection type, their IP addresses, and MAC addresses. You can click to personalize the host name for convenient management. NOTE For host name-based rules, you need to use the host name here. : The client connects to the router in a wired manner. 2.4G : The client connects to the router's 2.4 GHz wireless network. 5G : The client connects to the router's 5 GHz wireless network.
Concurrent Sessions	Concurrent sessions established of the corresponding client.
Upload Bandwidth Download Bandwidth	It indicates the real-time upload/download bandwidth of each client. You can control their maximum upload/download bandwidth manually, refer to Manage online devices.
Total Download	It specifies the total download traffic utilized by each client.
Uptime	It specifies the connection time of each client. The unit is minute.

4.3.1 Control bandwidth of online devices

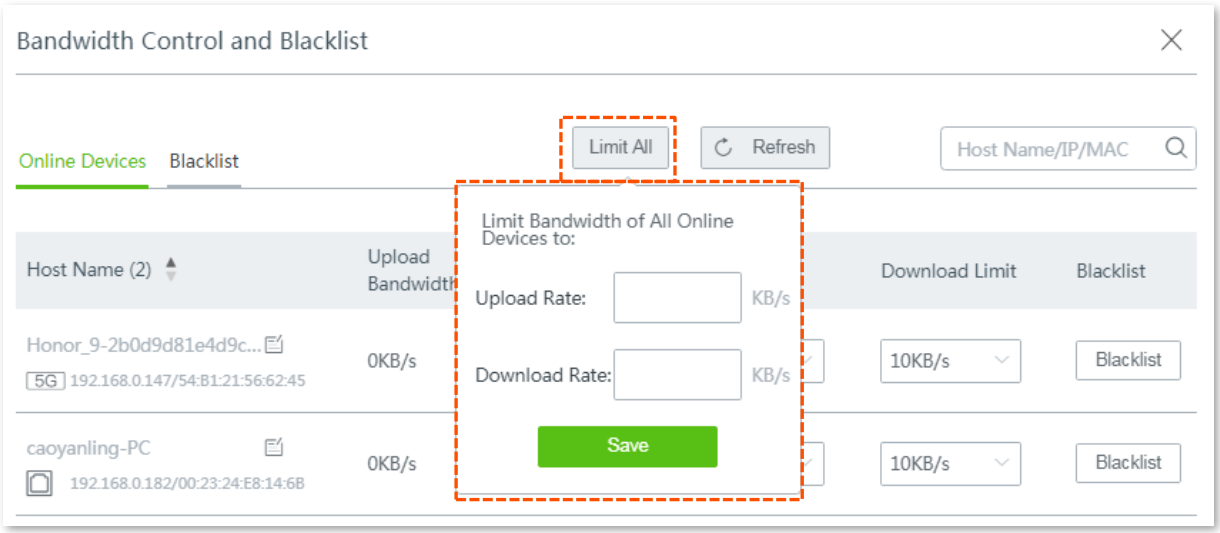
Control bandwidth of online devices separately

To limit the upload and/or download bandwidth of one or several devices, select a pre-defined value from the drop-down list menu of **Upload Limit** and/or **Download Limit**, or select **Manual** to specify a value manually.



Control bandwidth of online devices in batch

Click **Limit All**, specify the values according to your actual situation, and click **Save** to apply your settings.

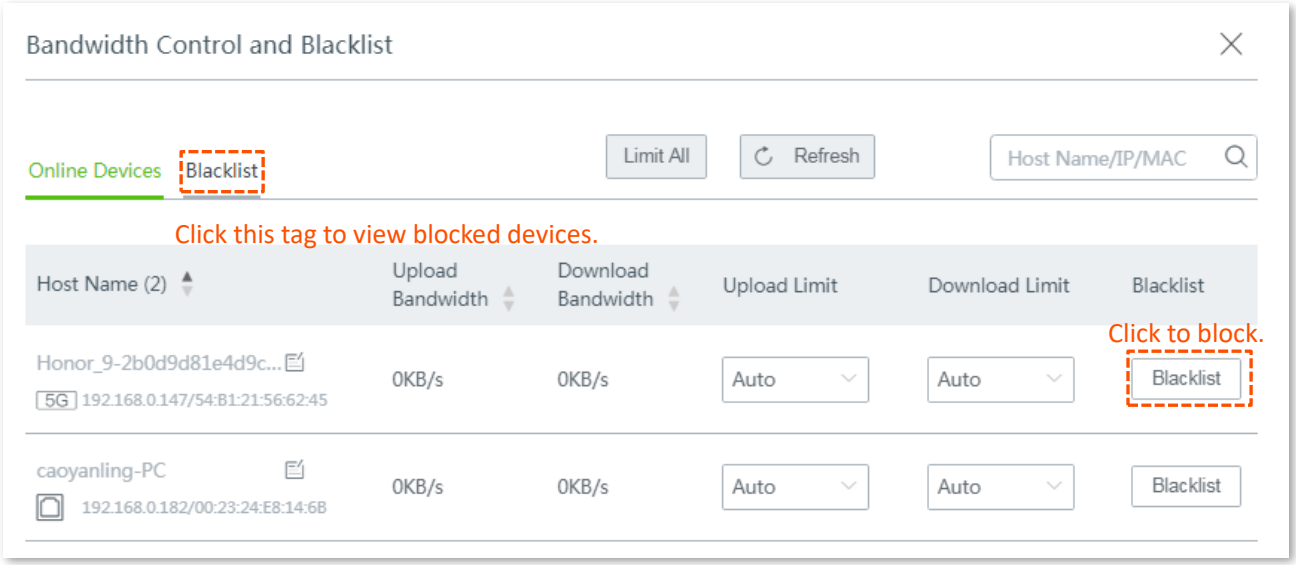


NOTE

Upload/download limits of devices that controlled by **Limit by Group** policy cannot be modified here. Refer to Limit By Group for details.

4.3.2 Add devices to blacklist

To protect your network from being accessed by unknown devices, click the **Blacklist** button to block them. The blocked devices will be moved to the **Blacklist** section, and cannot connect to your router.



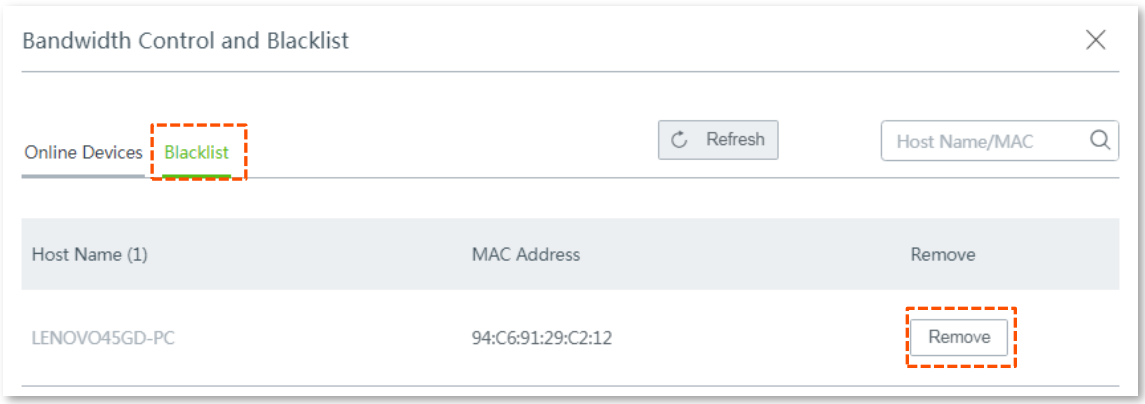
4.3.3 Remove devices from blacklist

Follow steps below to unblock devices from the blacklist.

Step 1 Click the **Connected Devices** icon on the **System Status** page. The **Bandwidth Control and Blacklist** window appears.

Step 2 Click the **Blacklist** tag.

Step 3 Click **Remove** that relates with the device you want to unblock.



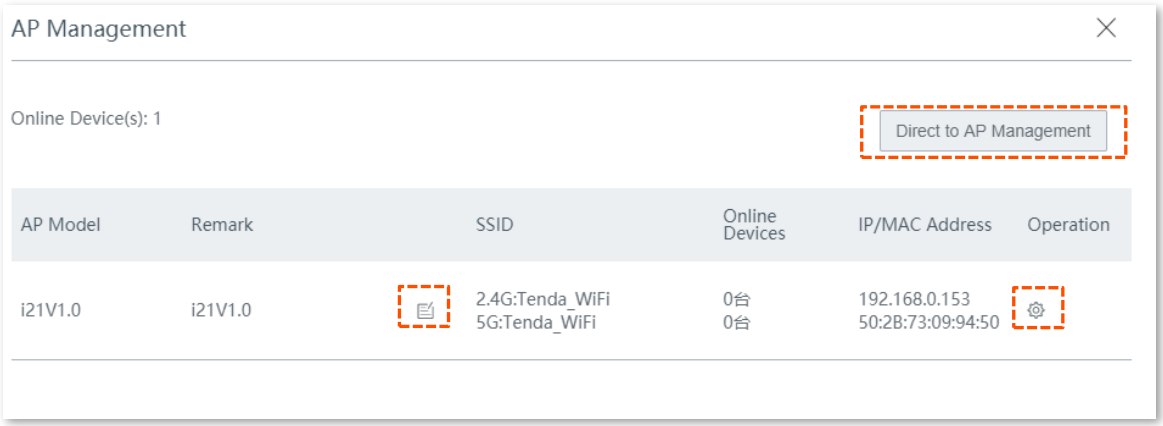
---- End

The unblocked devices can connect to your router again.

4.4 Manage APs

This page displays some basic information operations about APs connected to the router. If you want to perform further configurations concerning connected APs, please refer to AP Mnagement.

To access the configuration page, choose **System Status**, and click the **AP** icon. The AP Management window appears. See the following figure:



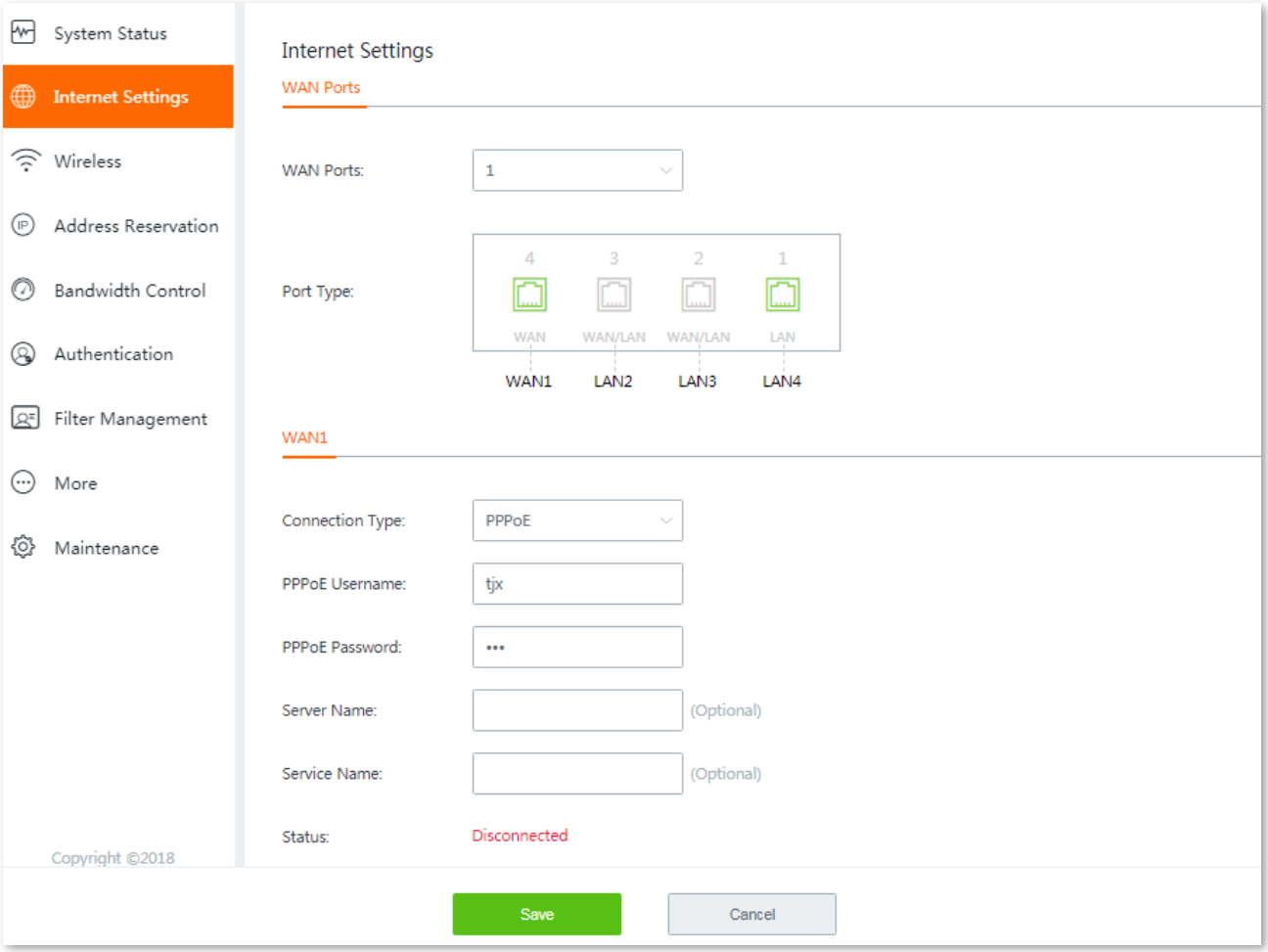
Parameter description

Parameter	Description
AP Model	It specifies the model of the corresponding AP.
Remark	It specifies the remark name that you leave for the corresponding AP.
SSID	It specifies the WiFi SSID of the corresponding AP, including 2.4G and 5G WiFi. You can change the remark for the AP by clicking
Online Devices	It specifies the number of online devices of each wireless network.
IP/MAC Address	It specifies the IP address and MAC address of the corresponding AP.
Operation	By clicking button, you are directed to the web UI of the AP.
Direct to AP Management	By clicking this button, you are directly navigate to the configuration page **Basic Setting** of the **AP Management**

5 Internet settings

5.1 Overview

To enter the configuration page, choose **Internet Settings**.



Parameter description

Parameter	Description
WAN Ports	It specifies how many WAN ports you can set on the router. By default, the router has only one WAN port (the WAN1 port), and you can set **3** WAN ports at most.
Port Type	It indicates that if the port functions as a WAN port or a LAN port, as well as if a port is connected or not. : The port is connected properly. : The port is disconnected or improperly connected.

Parameter	Description
Connection Type	It specifies in which way the router is connected to the internet. The router supports **PPPoE**, **Static IP**, and **Dynamic IP**. Refer to the table Choose your connection type for details. TIP The router supports **PPPoE Russia**, **PPTP/PPTP Russia**, and **L2TP/L2TP Russia** as well. These three connection types are only applicable to Russia and its vicinity.
PPPoE Username	These two parameters are required only when your internet connection type is PPPoE. TIP - You can find them on the receipt provided by your ISP when you subscribed broadband service. - If you cannot find them, consult your ISP.
PPPoE Password	
Server Name	(Optional) Enter these two parameters provided by your ISP. If not, leave them blank.
Service Name	
IP Address	These parameters are required only when your internet connection type is **Static IP**. The **Secondary DNS** parameter is optional. TIP - You can find them on the receipt provided by your ISP when you subscribed broadband service. - If you cannot find them, consult your ISP.
Subnet Mask	
Default Gateway	
Primary DNS	
Secondary DNS	
Status	It indicates the connection status of the corresponding WAN port. - **Authenticated Successfully/Connected**: The corresponding WAN port has been connected properly, and obtained an IP address. - **Connecting...**: The router is connecting to the internet or server. - **Disconnected**: The port is disconnected, or fails to connect to the internet or server. Please check if the physical connections are proper, or the parameters you entered are correct.

5.2 Configure multiple WAN ports

The router supports **3** WAN ports at most. The multi-WAN port feature lets you aggregate bandwidth, enjoy uninterrupted broadband service even in case of one connection malfunctions, and make ISP route selection, thus getting a better utilization of your bandwidth.

Assume that:

WAN1 internet connection type is **Static IP,** and the static IP information is as follows:

- IP Address: 192.168.97.86
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.97.1
- Primary DNS: 192.168.108.107
- Secondary DNS: 192.168.108.108

WAN2 internet connection type is **Dynamic IP.**

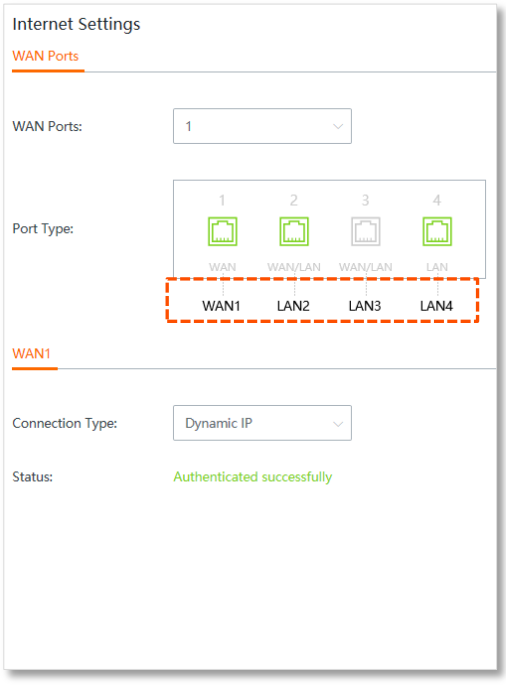
Configuration procedure:

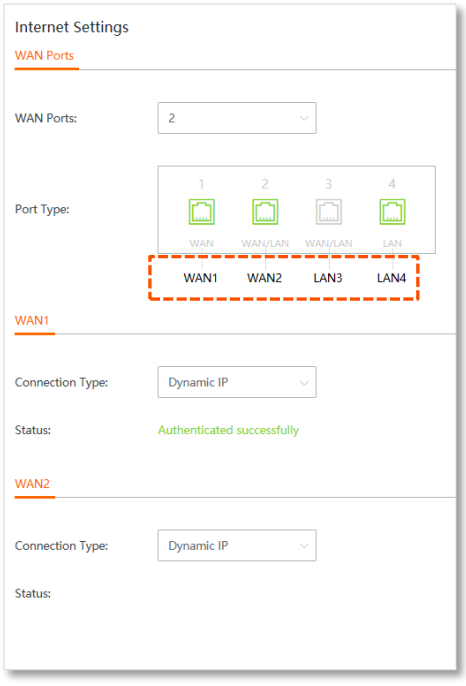
TIP

- Parameters for internet access are provided by your ISP. Refer to Choose your connection type table for detailed description. Values used here are only for examples.
- Modifying number of WAN port makes the router reboot.
- The following procedure describes how to configure 2 WAN ports. You can refer to the following steps to increase or decrease WAN ports as needed.

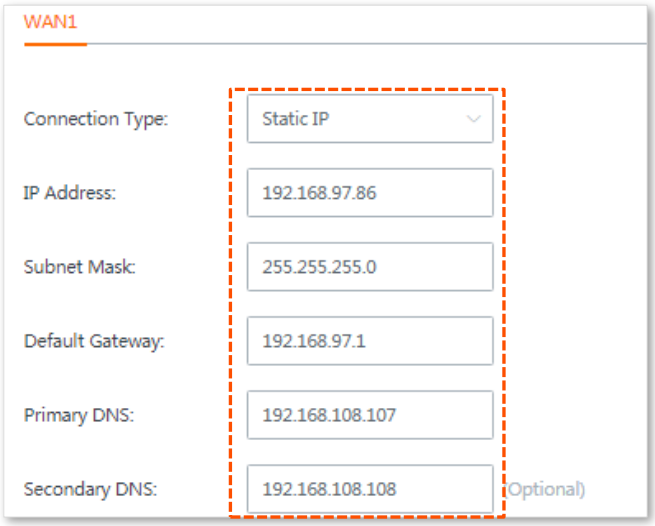
Step 1 Select the number of WAN ports from the **WAN Ports** drop-down list menu, which is **2** in this example.

The port marked with **LAN2** changes into **WAN2**, and the WAN2 configuration area appears.

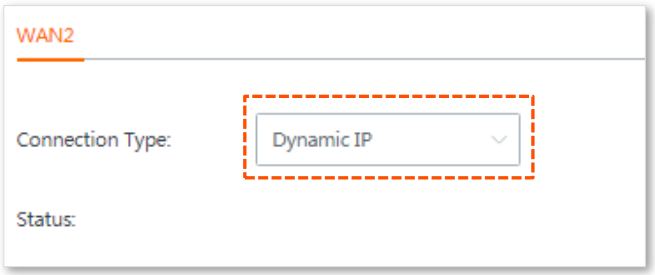




Step 2 On **WAN1** configuration area, enter the static IP information provided by your ISP. The following figure is only for example.



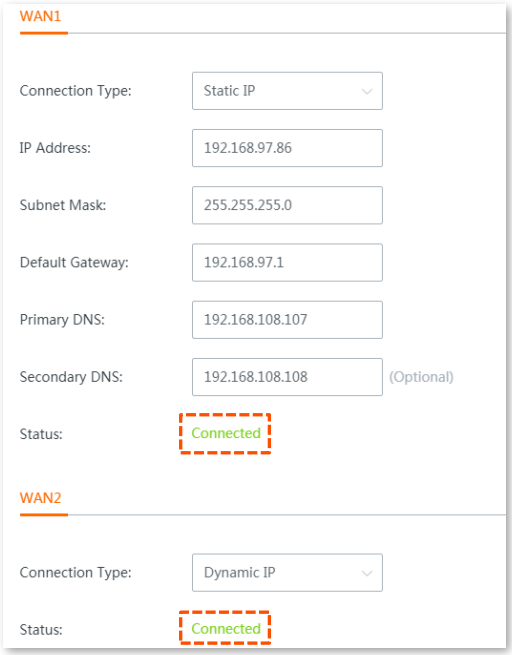
Step 3 On **WAN2** configuration area, select **Dynamic IP** from the drop-down list menu of **Connection Type.**



Step 4 Click **Save** at the bottom of the page.

---- End

Wait a moment. The router performs rebooting to apply your settings. When the status shows **Connected**, your configuration is successful. See the following figure:



5.3 Set up to access the internet

This section describes how to set up to access the internet using different connection types.

Choose the proper connection type according to your actual environment. Use the table below to help you select your internet connection type if you are uncertain about how to select one.

Choose your connection type:

Connection Type	Parameters available
PPPoE	Your ISP provided you the PPPoE username and password.
Dynamic IP	Your ISP automatically assigns you a dynamic IP address.
Static IP	Your ISP provided you IP address, subnet mask, default gateway, DNS and so on.

5.3.1 Set up to internet access with PPPoE

TIP

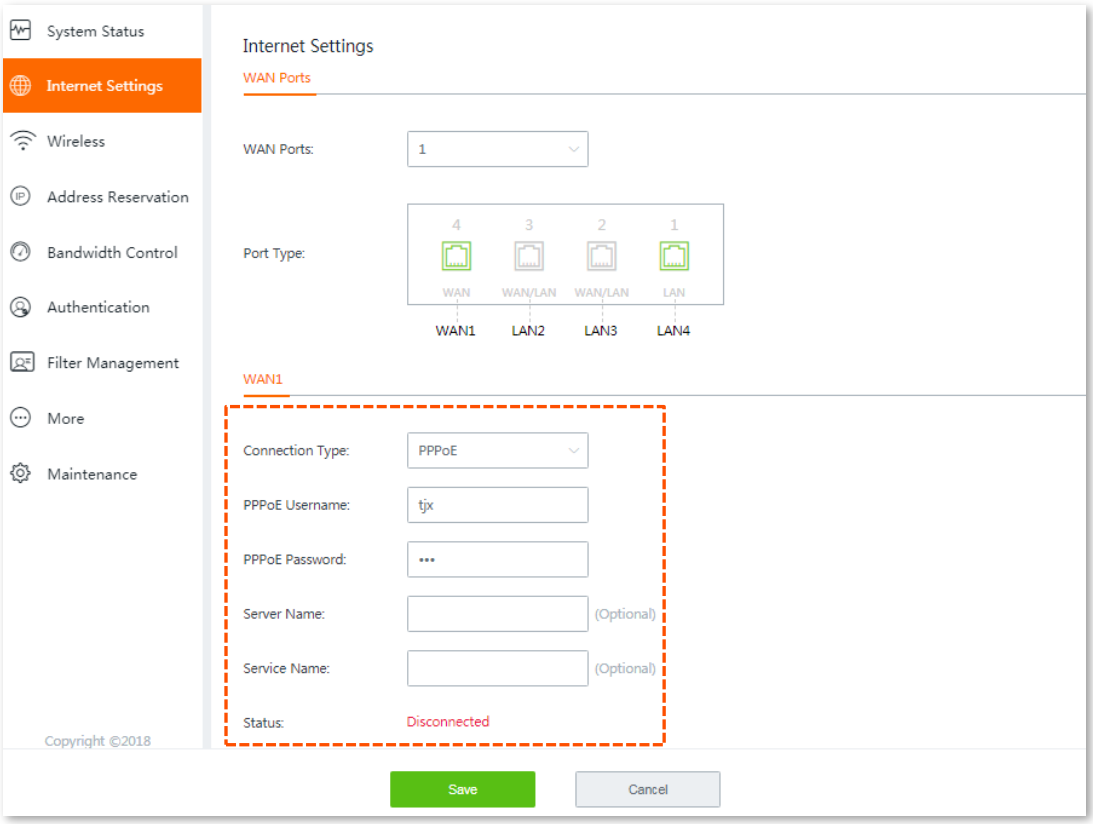
The following takes WAN1 for example.

Step 1 Choose **Internet Settings,** the configuration page appears.

Step 2 Select **PPPoE** from the drop-down list menu of **Connection Type**.

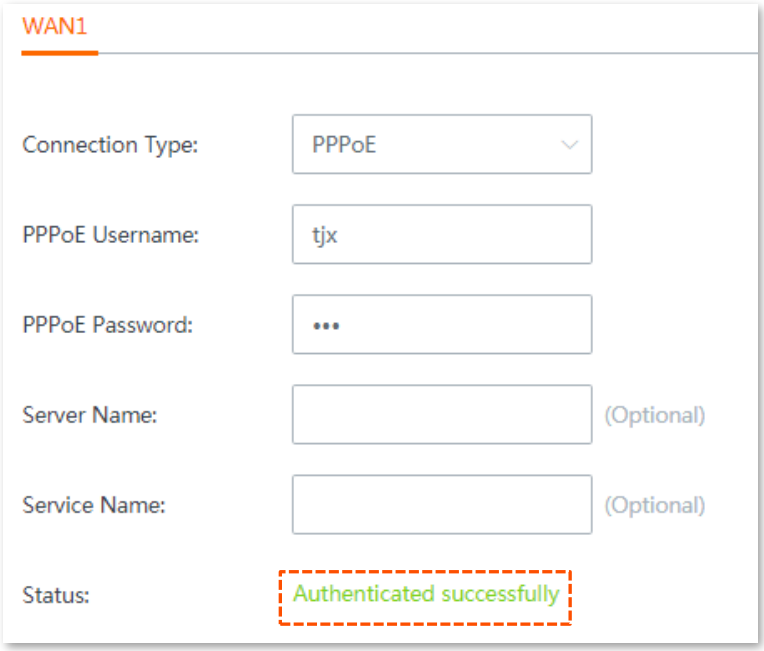
Step 3 Enter the **PPPoE Username** and **PPPoE Password** provided by your ISP.

Step 4 Click **Save** at the bottom of the page to apply your settings.



---- End

Wait for the router to complete rebooting. The router connects to the internet successfully when the **Status** shows **Authenticated successfully**. Otherwise, check if the parameters you entered are correct.

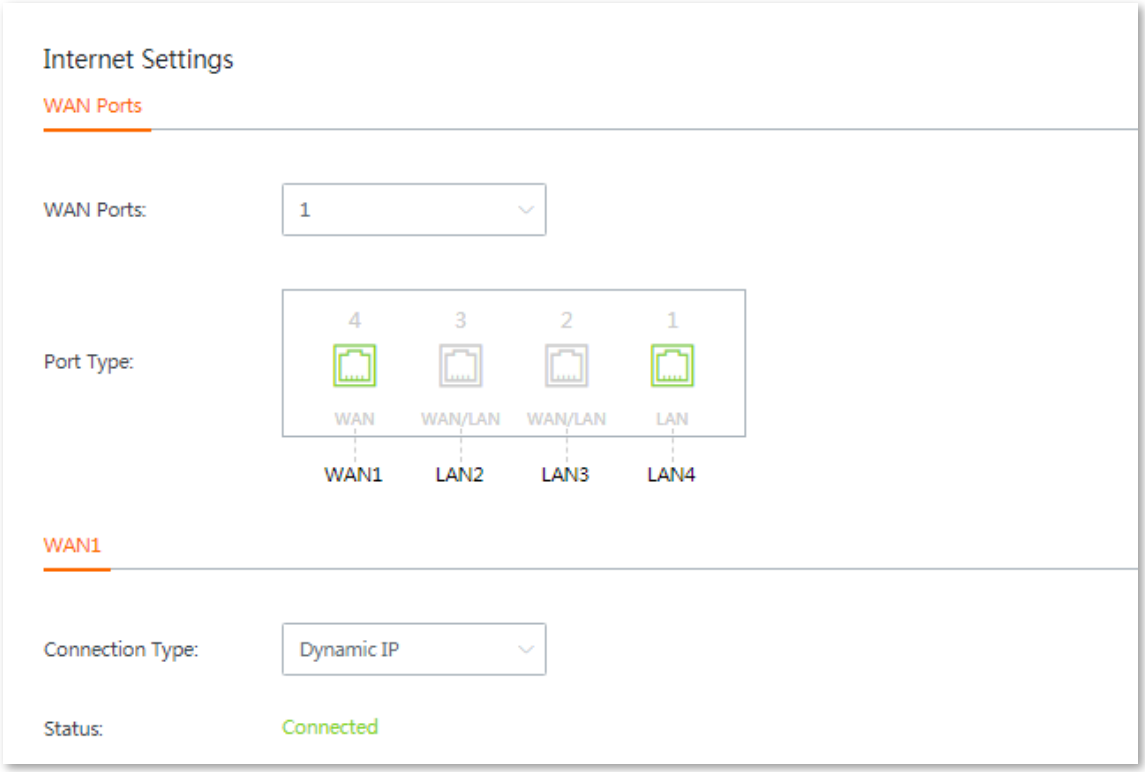


5.3.2 Set up to internet access with dynamic IP

Step 1 Click **Internet Settings**, the configuration page appears.

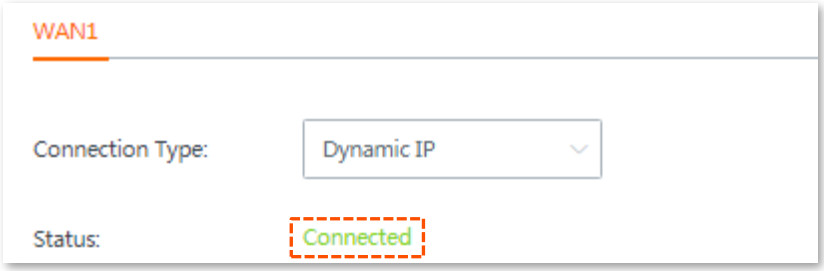
Step 2 Select **Dynamic IP** from the **Connection Type** drop-down list menu.

Step 3 Click **Save** at the bottom of the page to apply your settings.



---- End

Wait for the router to complete rebooting. The router connects to the internet successfully when the **Status** shows **Connected**. You can enjoy the internet now.



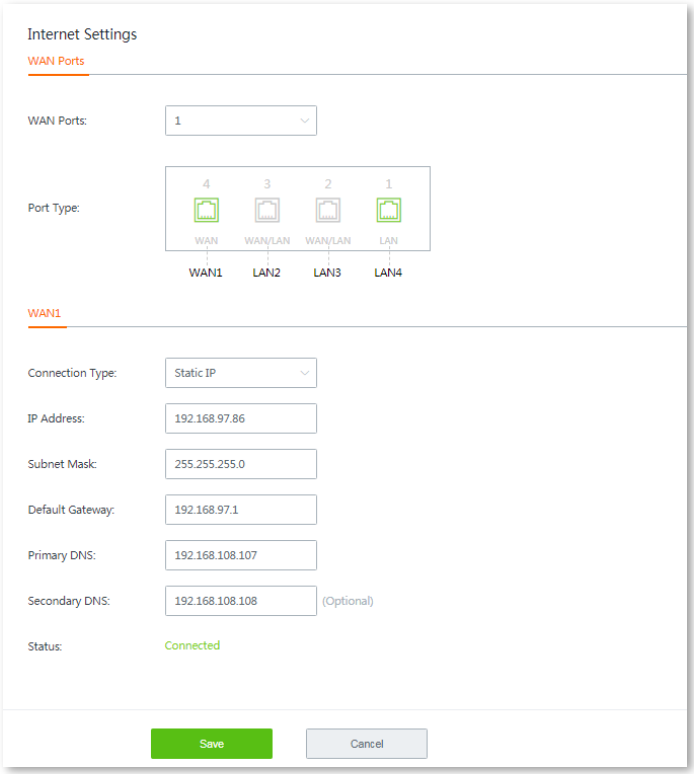
5.3.3 Set up to internet access with static IP

Step 1 Click **Internet Settings**, the configuration page appears.

Step 2 Select **Static IP** from the drop-down list menu of **Connection Type**.

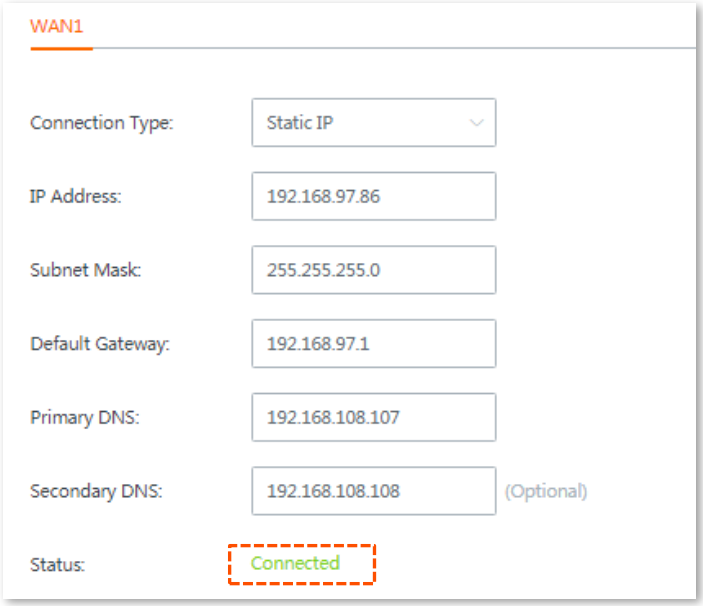
Step 3 Enter the **IP Address**, **Subnet Mask**, **Default Gateway and Primary/Secondary DNS parameters** provided by your ISP. Configurations on the following figure are only used for examples.

Step 4 Click **Save** at the bottom of the page to apply your settings.



---- End

Wait for the router to complete rebooting. The router connects to the internet successfully when the **Status** shows **Connected**. You can enjoy internet now.



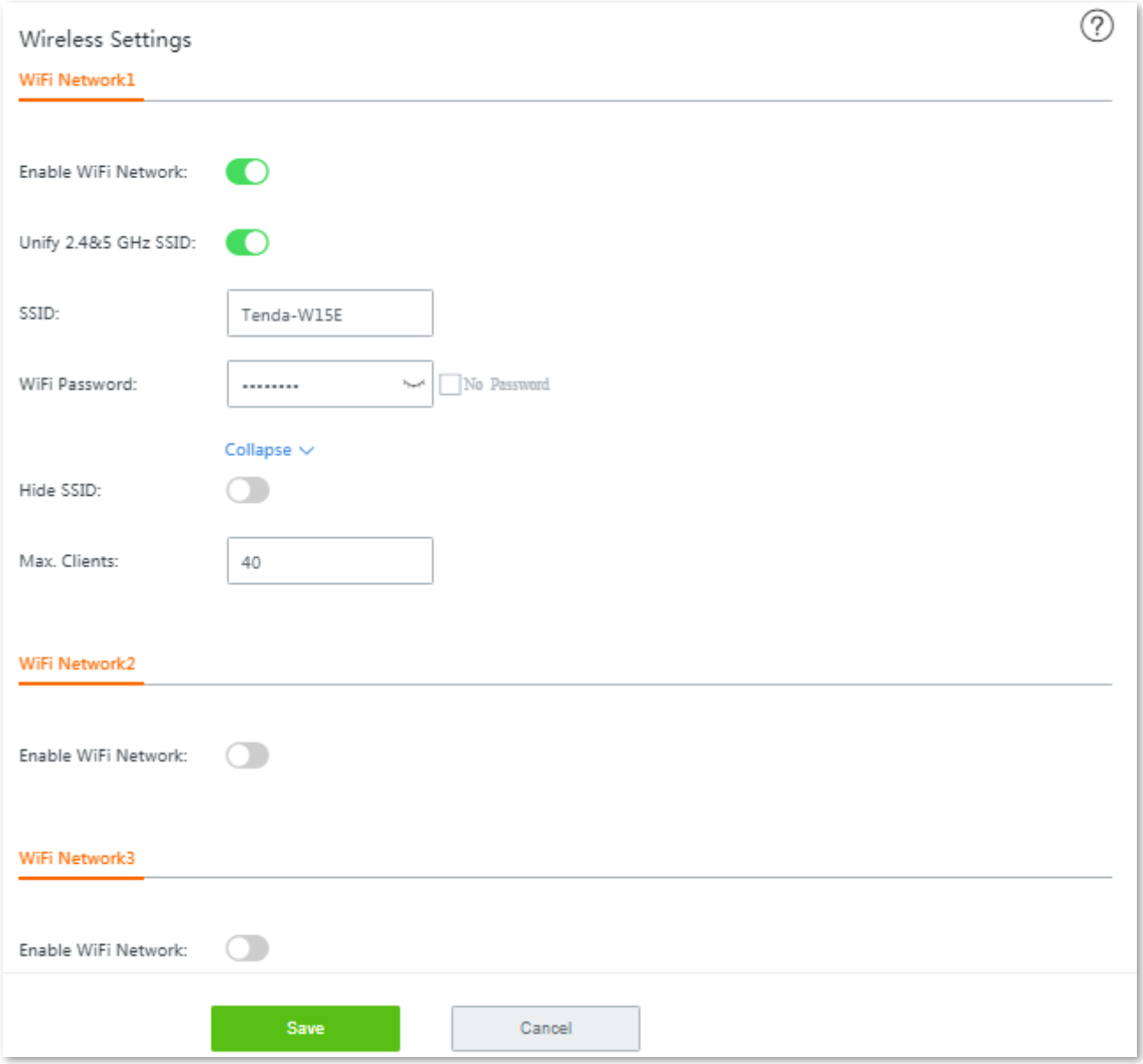
6 Wireless

6.1 Wireless settings

This dual-band router supports at most three 2.4 GHz wireless networks, and three 5 GHz wireless networks. By default, the 2.4 GHz and 5 GHz SSIDs for a wireless network are unified, and only **WiFi Network1** is enabled.

In this module, you are allowed to set up WiFi network-related configurations, such as view and edit wireless network names (SSID), WiFi passwords, configure 2.4 GHz and 5 GHz WiFi networks separately, hide your WiFi network so that nearby wireless clients cannot detect it, and specify how many wireless clients can connect to a wireless network.

To enter the configuration page, choose **Wireless** > **Wireless Settings**. See the following figure:

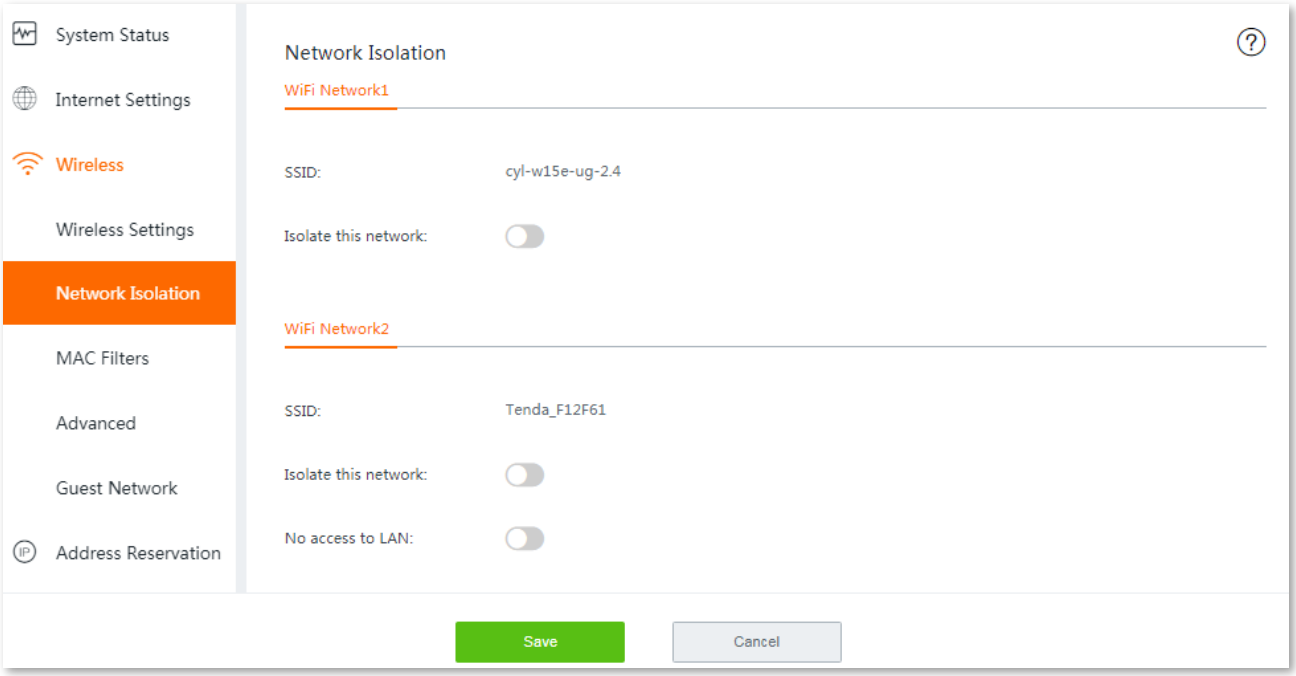


Parameter description

Parameter	Description
Enable WiFi Network	Used to enable/disable the wireless network of the router.
Unify 2.4&5 GHz SSID	Whether to unify SSIDs for 2.4 GHz and 5 GHz wireless networks.
SSID	Wireless network name of the corresponding WiFi network.
WiFi Password	Password used for wireless internet connection. You are recommended to use the combination of digits, letters and special characters for higher security. Selecting **No Password** indicates that wireless clients can connect to the wireless network without a password. Select this option only when necessary since it leads to weak network security.
Hide SSID	With this function enabled, nearby wireless clients cannot detect the SSID, and you need to manually enter the SSID on the wireless client to access the wireless network. Disable indicates that nearby wireless clients can detect the SSID. By default, this function is disabled.
Max. Clients	Maximum number of wireless clients that can be connected to the wireless network with the SSID at the same time. After the value is reached, this wireless network denies new connection requests. Clients connected to all the enabled wireless networks (including guest networks) of the router cannot exceed 128 on 2.4 GHz and 5 GHz bands respectively. If you enable multiple SSIDs, plan your maximum number of clients to each SSID first.

6.2 Network isolation

Isolating a network makes clients connected to it **cannot** communicate with clients connected to another network. To access the configuration page, choose **Wireless** > **Network Isolation**. See the following figure:



Parameter description

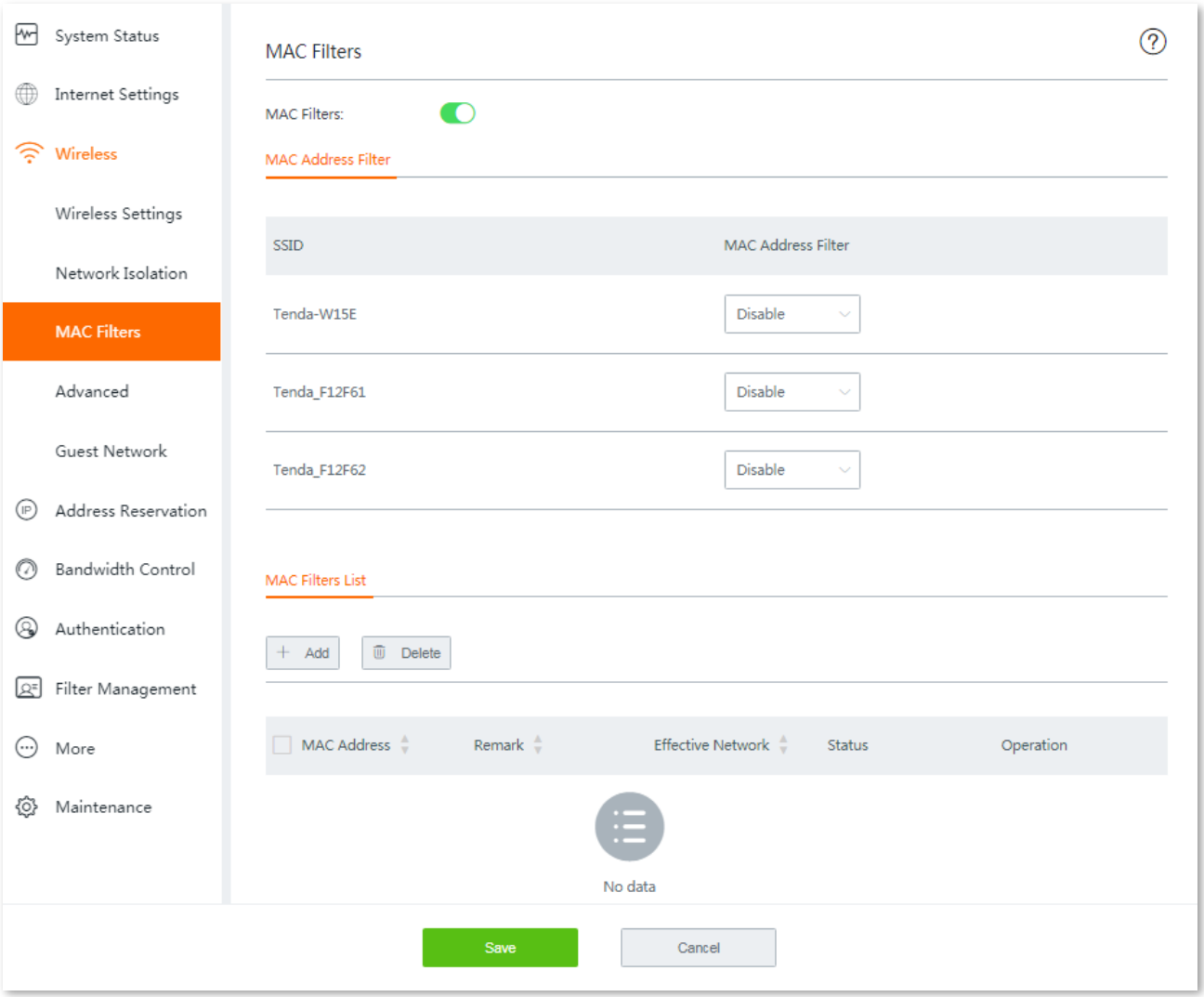
Parameter	Description
SSID	Wireless network name of the corresponding WiFi network.
Isolate this network	With this function enabled, clients connected to different wireless networks of this device cannot communicate with each other, leading to higher wireless network security. By default, this function is disabled.
No access to LAN	This function is only applicable to **WiFi Network2/3**. With this function enabled, clients connected to this wireless network cannot access the web UI and private network (LAN) of this router, protecting your LAN network security. By default, this function is disabled.

6.3 MAC filters

6.3.1 Overview

This module allows you to configure MAC address-based wireless access control rules. To enter the configuration page, choose **Wireless** > **MAC Filters**. By default, this function is disabled.

To enable this function, set the **MAC Filters** to , and click **Save** at the bottom of the page. The following configuration area appears:



Parameter description

Parameter		Description
MAC Address Filter	SSID	It lists all the **main** wireless networks that the router supports. TIP If you unify the SSIDs for 2.4 GHz and 5 GHz bands, the corresponding wireless network only displays one SSID here.
	MAC Address Filter	It specifies the modes you can perform on the corresponding wireless network. There are three modes for selection: - **Disable**: This function is disabled, and all wireless clients can connect to

Parameter		Description
		this wireless network. - **Only Allow**: Only wireless clients with the specified MAC address **can** connect to this wireless network. - **Only Forbid**: Only wireless clients with the specified MAC address **cannot** connect to this wireless network.
MAC Filters List	MAC Filters List	It specifies the wireless access control list you configured.
	MAC Address	It specifies the MAC address of the client to which the rule applies.
	Remark	(Optional) It specifies the brief description you set for the corresponding MAC address.
	Effective Network	It specifies the wireless network(s) to which the wireless client with this MAC address applies.
	Status	It specifies whether or not the rule is enabled.

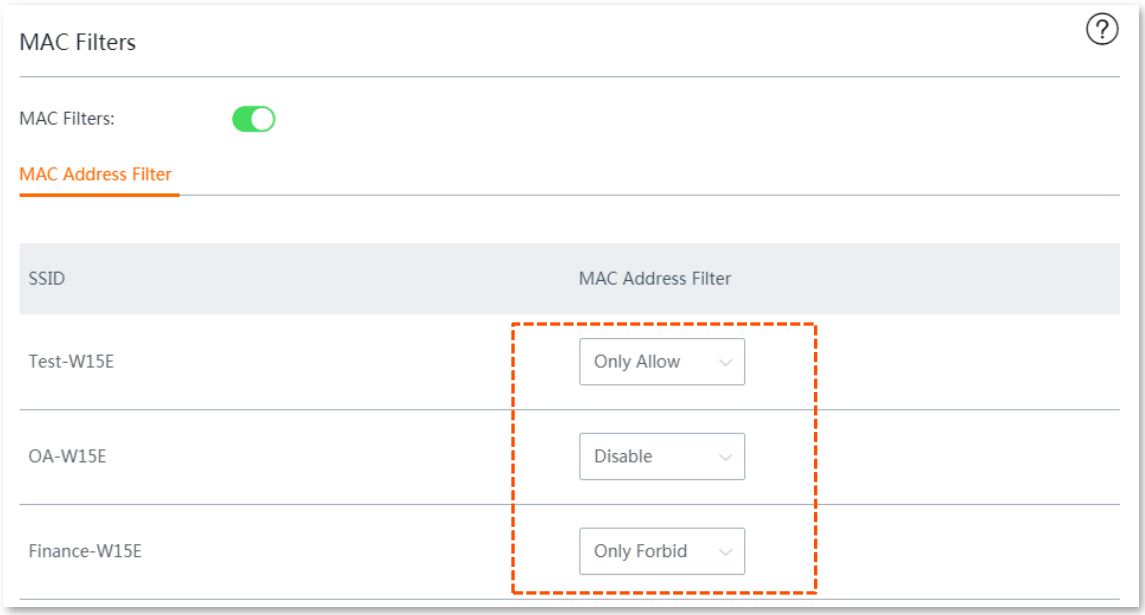
6.3.2 Configure a MAC filter rule

NOTE

- A maximum of **64** rules is allowed for each SSID, and **100** rules for each frequency band.
- The MAC filter rule will be invalidated if the SSID it maps has been changed. You are required to manually choose an enabled wireless network to apply the MAC filter rule.

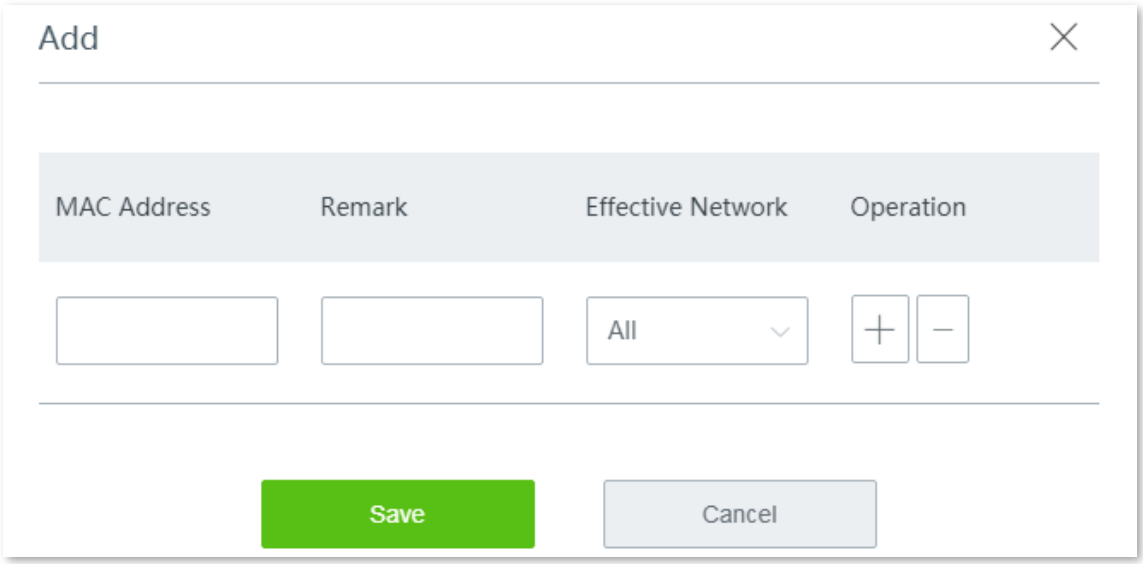
Step 1 Enable **MAC Filters**, and click **Save** at the bottom on the page.

Step 2 Configure MAC address filter mode for each SSID by selecting from the **MAC Address Filter** drop-down list menu.



Step 3 Add rule(s).

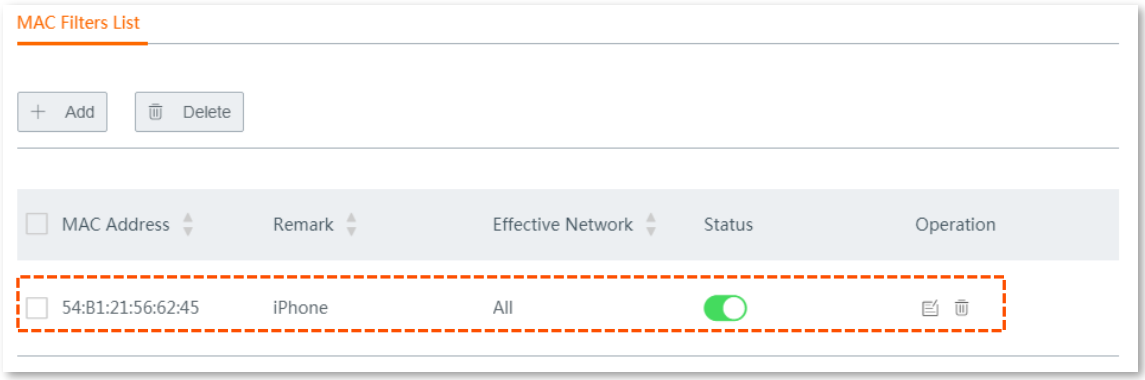
1. Click **Add**. The **Add** configuration window appears.



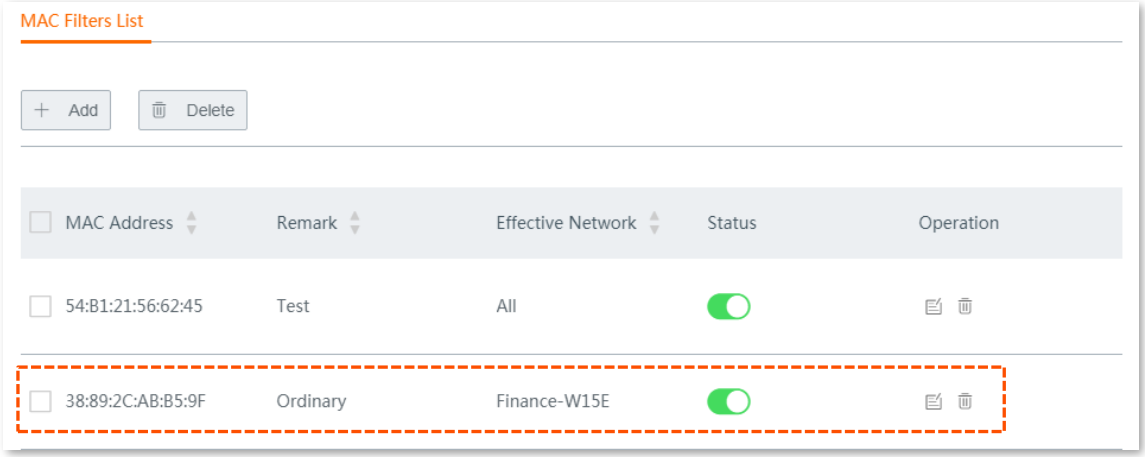
2. Enter the description of the client in **Remark**, and select the wireless network from the drop-down list menu of the **Effective Network**.
3. Click **Save**. The rule appears on the **MAC Filter List**.

TIP

Parameters on the following figure are only used for examples. Please specify them based on your actual conditions.



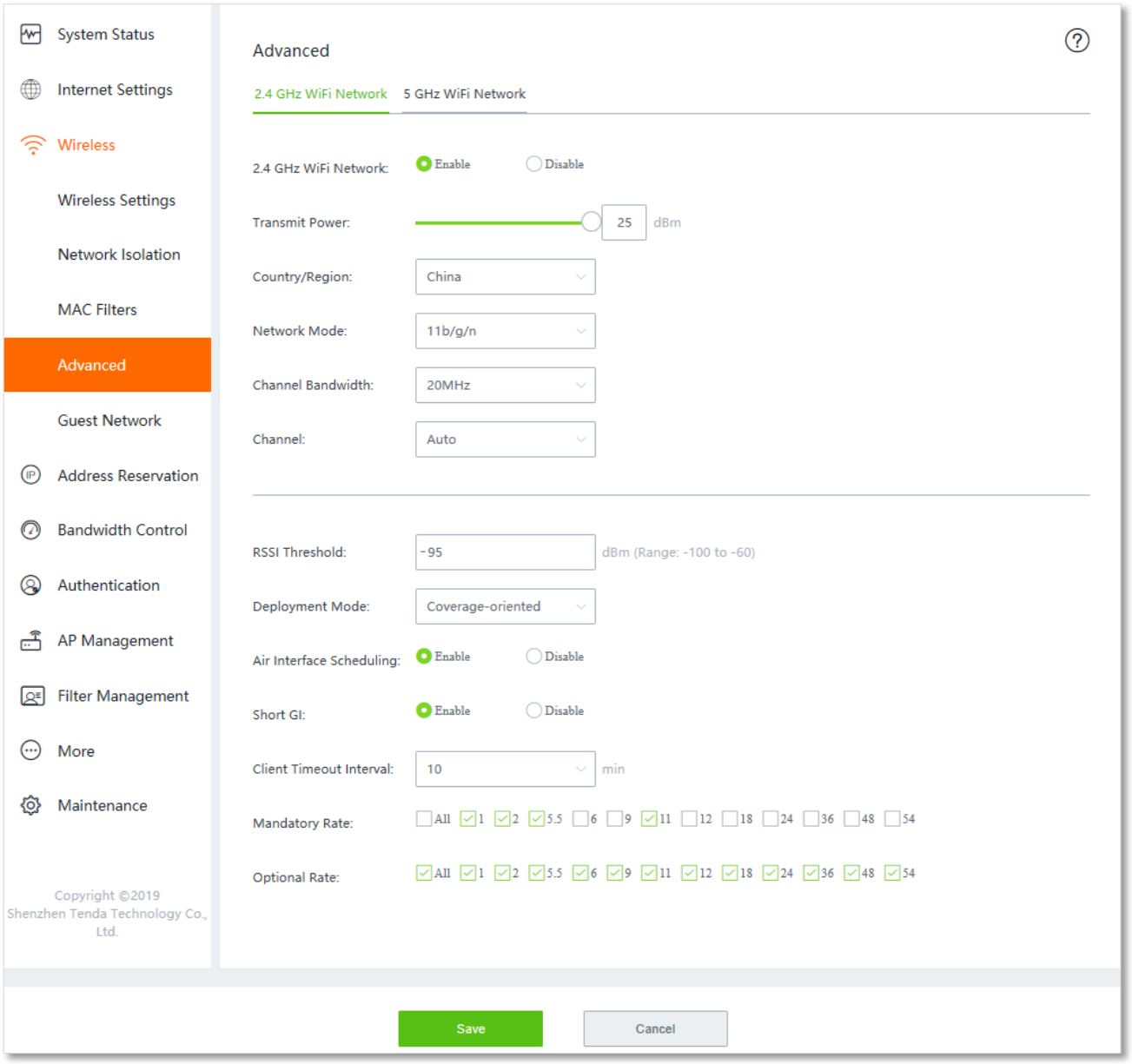
4. Repeat Add rule(s) to add other clients one by one.



---- End

6.4 Advanced settings

This section introduces wireless-related advanced settings. To enter the configuration page, choose **Wireless** > **Advanced**. See the following figure:



Parameter description

Parameter	Description
2.4 GHz WiFi Network	Used to enable or disable the 2.4 GHz wireless network of the router.
5 GHz WiFi Network	Used to enable or disable the 5 GHz wireless network of the router.
Transmit Power	Transmit power of this device. A higher value leads to wider WiFi coverage. However, decreasing the value properly increases performance and security of the wireless network.
Country/Region	It specifies the country/region that you set for the router in order to conform to the

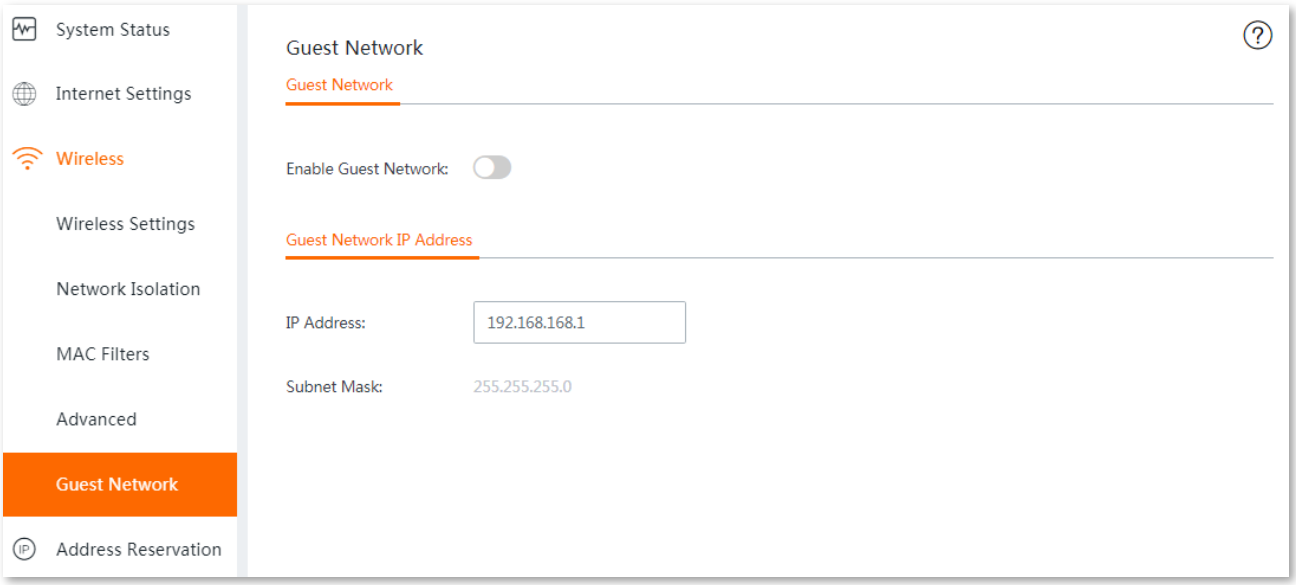
Parameter	Description
	regulations of different countries or regions concerning channels.
Network Mode	It specifies the wireless network mode (also called 802.11 mode, radio mode, or wireless mode) of the router. A proper network mode enables the clients to get the maximum transfer rate and compatibility. Available options for **2.4 GHz** band: **11b**, **11g**, **11b/g**, and **11b/g/n** (default). Available options for **5 GHz** band: **11a**, **11ac** (default), and **11a/n mixed**. You are recommended to keep the default settings.
Channel	Specify the channel in which this device operates. Select one idle channel in the ambient environment to prevent interference. **Auto** indicates that this device automatically changes to a channel rarely used in the ambient environment to prevent interference.
Channel Bandwidth	Select the channel bandwidth to accommodate higher transmission speed. Available options for **2.4 GHz** band: **20MHz** (default), **40MHz**, and **20/40MHz**. Available options for **5 GHz** band: **20MHz**, **40MHz**, and **80MHz** (default).
RSSI Threshold	It specifies the minimum wireless client signal strength acceptable to the router. A mobile client with signal strength lower than this threshold cannot connect to the router. You can set this parameter to ensure that mobile clients connect to router with strong signal strength.
Deployment Mode	It specifies the deployment mode of the router. This parameter is valid only for 2.4 GHz networks. Set this parameter based on the application scenario. The options include: - **Coverage-oriented**: Apply to scenarios with large area, multiple walls, decentralized users and less than 10 SSIDs in ambient environment. - **Capacity-oriented**: Apply to scenarios with intensive users, open and large areas, and more than 25 SSIDs in ambient environment.
Prioritize 5 GHz	It specifies that a wireless client uses the 5 GHz SSID first to connect to the device if the wireless client supports both 5 GHz and 2.4 GHz networks and the networks use the same SSID and password. NOTE - To make this function take effect, the SSID cannot contain any Chinese characters. - The default RSSI threshold to enable this function is **-80** dBm. You can adjust the threshold by customizing the **Prioritize Threshold 5 GHz** parameter.
Prioritize 5 GHz Threshold	It specifies the RSSI threshold value to trigger the **Prioritize 5 GHz** function. The default value is **-80** dBm. You are recommended to keep the default settings.
Air Interface Scheduling	It specifies whether to enable the air interface scheduling function. This function allows all clients to transmit data for the same duration. If a client transmits data at a low speed and does not finish data transmission within the duration, it can continue transmitting data only in its next data transmission

Parameter	Description
	duration. This prevents some slow clients from occupying excessive airtime resources, so as to improve the overall AP efficiency and effectively ensure AP connections for a larger number of clients and greater throughputs.
APSD	It specifies whether to enable the Automatic Power Save Delivery (APSD) mode. APSD is a WMM power saving protocol created by Wi-Fi Alliance. Enabling APSD helps reduce power consumption. By default, this mode is disabled.
Client Timeout Interval	It specifies the maximum period before a WiFi client is disconnected from the router if the client exchanges no data with the router. When data is exchanged within the period, countdown stops.
Short GI	Short guard interval for preventing data block interference. Propagation delays may occur on the receiver side due to factors such as multipath wireless signal transmission. If a data block is transmitted at an overly high speed, it may interfere with the previous data block. The short GI helps prevent such interference. Enabling the short GI can yield a 10% improvement in wireless data throughput.
Mandatory Rate	It specifies the basic rate sets that wireless clients must meet to connect to the router. Wireless clients are denied by the router if they fail to match the basic rate sets ticked here. NOTE You are recommended to keep the default settings. If you need to modify them, please do under professional guidance.
Optional Rate	It specifies that any connected wireless clients that support the data rate options ticked here may communicate with the router using that rate. NOTE You are recommended to keep the default settings. If you need to modify them, please do under professional guidance.

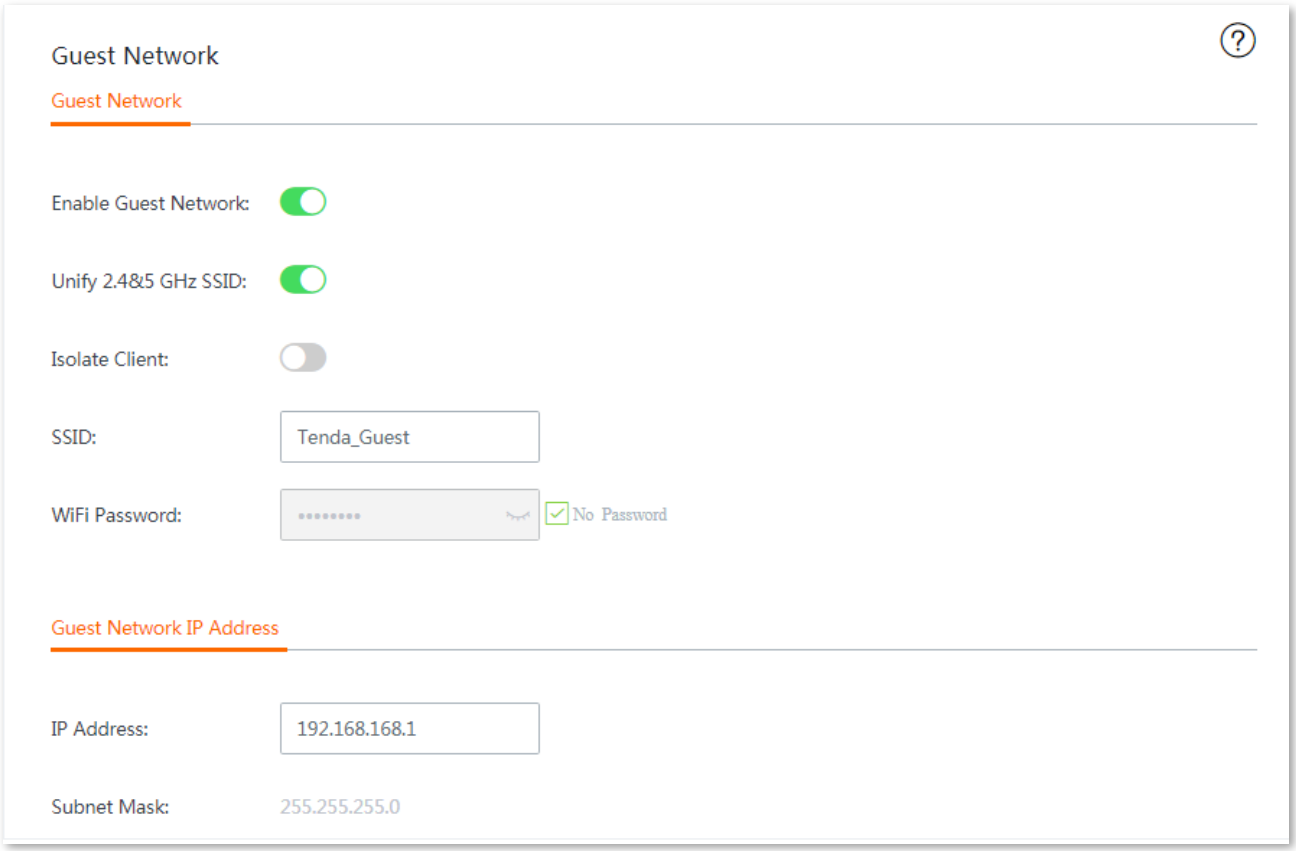
6.5 Configure guest network

This section introduces guest network. You can configure a guest network for visitors to protect the security of the main network. In addition, the router allows you to set a guest network segment different from the main network.

To access the configuration page, choose **Wireless** > **Guest Network**. See the following figure. By default, this function is disabled.



Enable this function, the following page appears:



Parameter description

Parameter		Description
Guest Network	Enable Guest Network	Used to enable or disable this function.
	Unify 2.4&5 GHz SSID	Used to unify SSIDs for 2.4 GHz and 5 GHz guest wireless networks.
	Isolate Client	With this function enabled, clients connected to the guest network cannot communicate with each other, leading to higher wireless network security.
	SSID	Wireless network name of the guest network. TIP To differentiate the main network and the guest network, you are recommended to set the SSIDs differently.
	WiFi Password	Password used for wireless internet connection. You are recommended to use the combination of digits, letters and special characters for higher security.
	No Password	Wireless clients can connect to the wireless guest network without a password. Select this option only when necessary since it leads to weak network security.
Guest Network IP Address	IP Address	It specifies the IP address (default: **192.168.168.1)** of the guest network. The router assigns 192.168.168.*X* to wireless clients connected to it. You are recommended to keep the default settings.
	Subnet Mask	Subnet mask of the guest network.

7 Address reservation

The address reservation function always allows a host, such as a computer, on LAN to receive the same IP address each time when they connect to the DHCP server. If there are some hosts on LAN that require static IP addresses, you can configure the address reservation for this purpose.

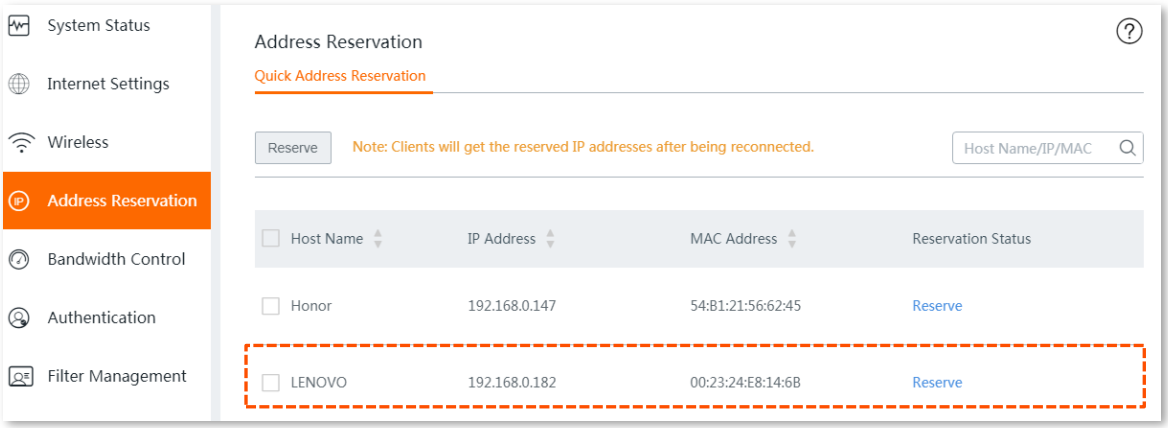
7.1 Configue on-line client-based quick address reservation

The router allows you to conveniently reserve static IP addresses for on-line hosts one by one or in batch. Choose your scenario and perform steps below.

7.1.1 Configure on-line client-based quick address reservation one by one

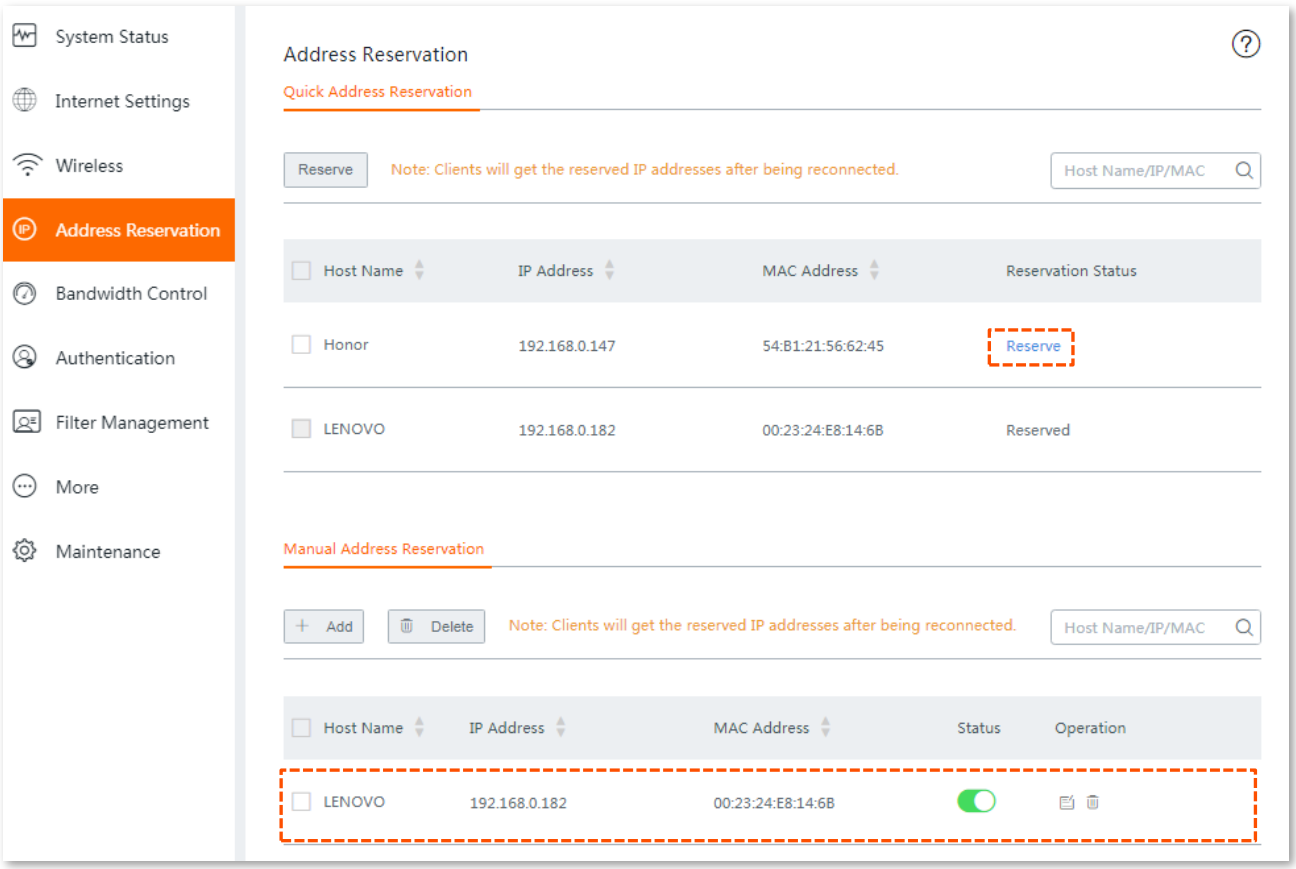
Step 1 Choose **Address Reservation** to enter the configuration page.

Step 2 Locate the host you want to reserve a static IP address, which is **LENOVO** in this example, and click **Reserve** next to it.



---- End

The **Reservation Status** of host named **LENOVO** is changed into **Reserved**, and displayed on the lower part of the page. See the following figure. Clients will get the reserved IP addresses after being reconnected.

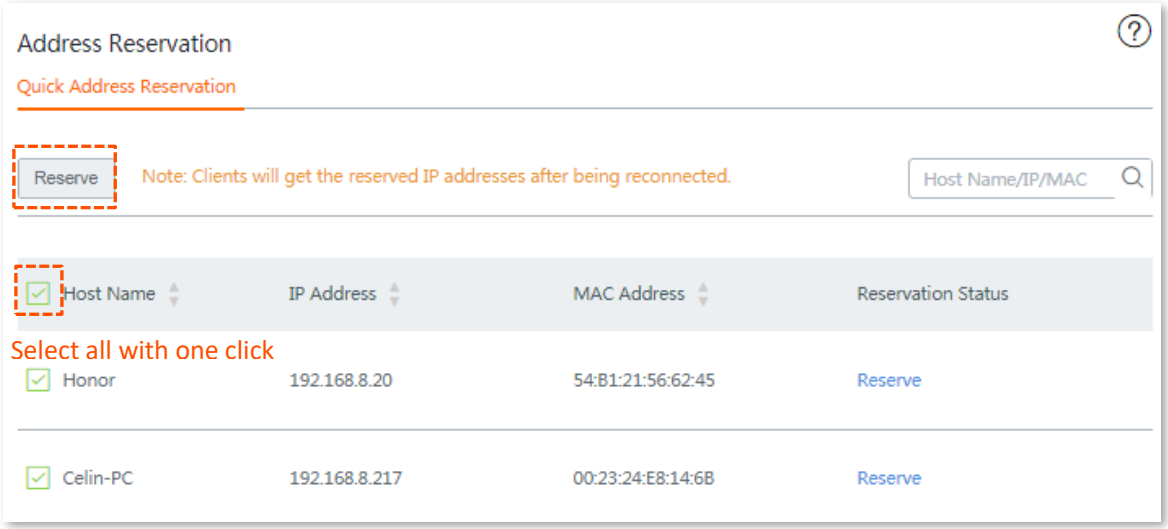


7.1.2 Configure on-line client-based quick address reservation in batch

Step 1 Choose **Address Reservation** to enter the configuration page.

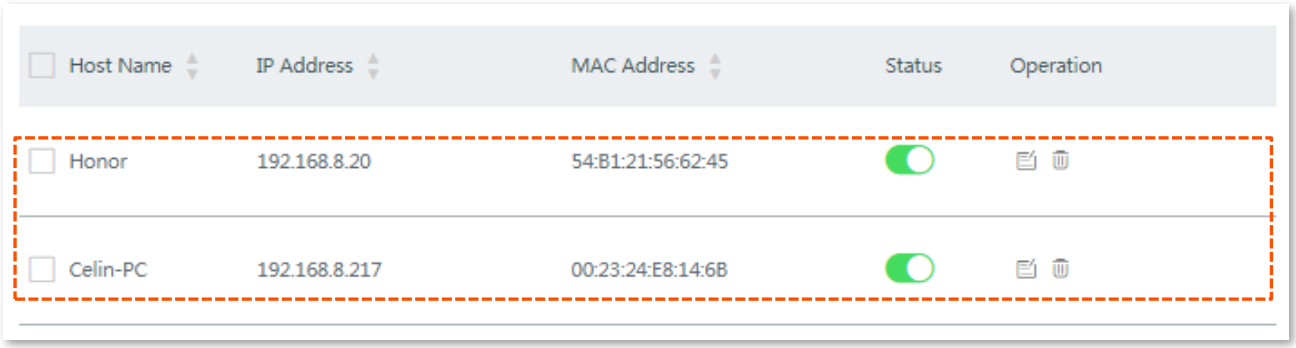
Step 2 Select hosts you want to reserve a static IP address, and click the **Reserve** button.

Or if you want to select all hosts on the list, check the checkbox next to **Host Name**.



---- End

The **Reservation Status** of hosts are changed into **Reserved**, and displayed on the lower part of the page. See the following figure:


Host Name
IP Address
MAC Address
Status
Operation
Honor
192.168.8.20
54:B1:21:56:62:45
Celin-PC
192.168.8.217
00:23:24:E8:14:6B

7.2 Configure address reservation manually

To reserve static IP addresses for hosts disconnected to the router, you can add the rule manually.

NOTE

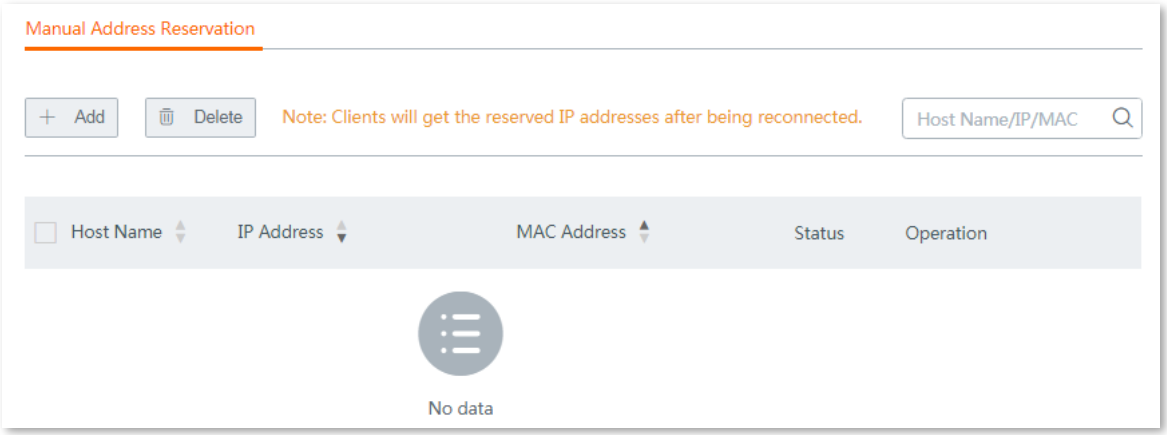
If the network segment of LAN IP of the router is modified in LAN settings, the IP address of the manually-reserved host will not change synchronously, but the rule remains effective.

Before you start

Obtain the IP addresses and MAC addresses of hosts you are going to add.

Configuration Procedure

Step 1 Choose **Address Reservation**, and move to the **Manual Address Reservation** configuration area. See the following figure.



Step 2 Click **+Add**. The **Add** configuration window appears.

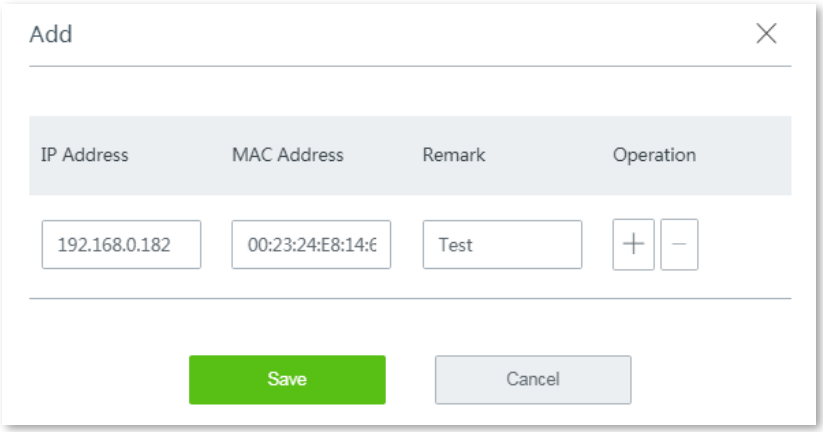
Step 3 Enter the **IP Address** and **MAC Address**, which is **192.168.0.182** and **00:23:24:E8:14:6B** in this example.

Step 4 (Optional) Add a brief description in the **Remark** filed, which is **Test** in this example.

TIP

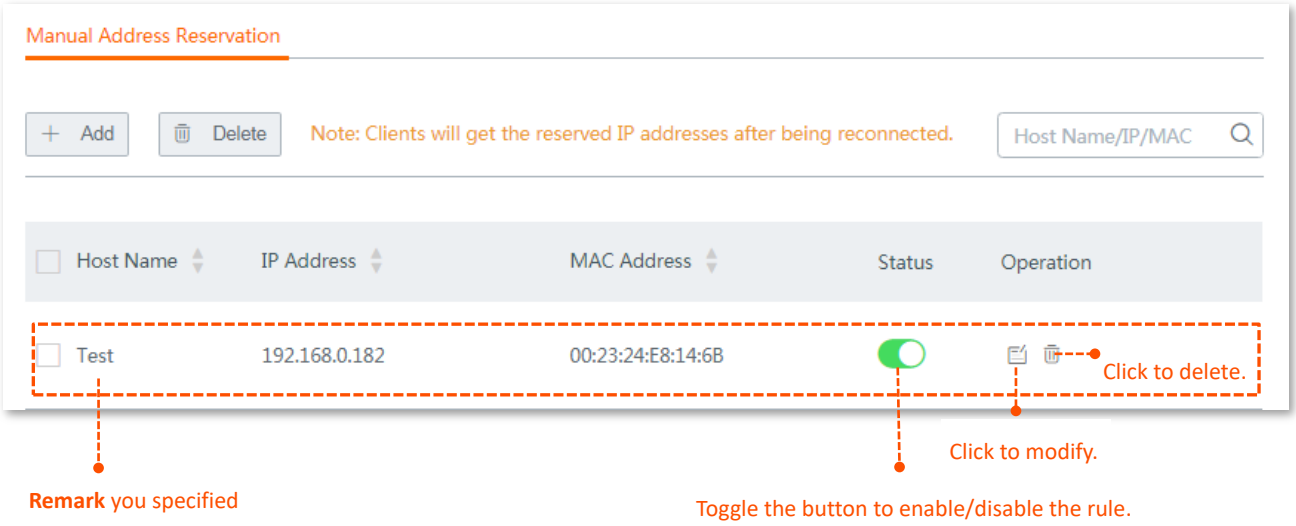
For convenient management later, you are recommended to enter a brief description to distinguish different hosts.

Step 5 Click **Save**.



---- End

The **Reservation Status** of hosts are changed into **Reserved**, and displayed on the lower part of the page. See the following figure:



7.3 Export/import your address reservation configuration

The router supports to export the current configuration you set to your local PC for backup, and import the configuration file you backed up to the router, relieving your from repeated laborious efforts for configuration.

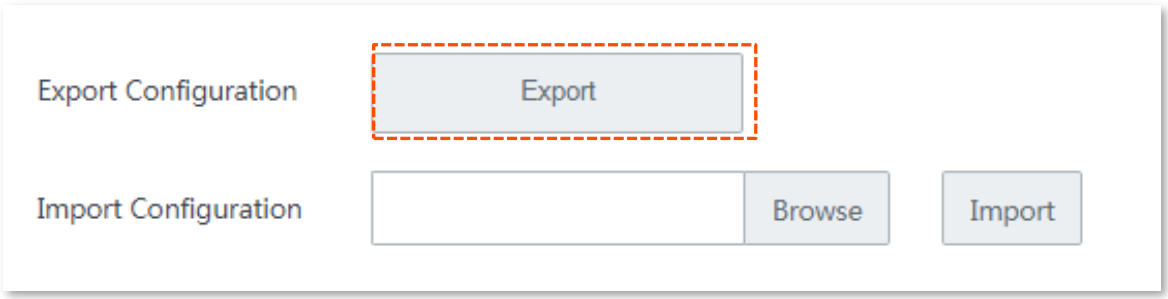
This section introduces:

- Export configuration file to your local PC.
- Import configuration file to your router.

7.3.1 Export configuration file to your local PC

Step 1 Choose **Address Reservation**, and move to the bottom of the page.

Step 2 Click the **Export** button.



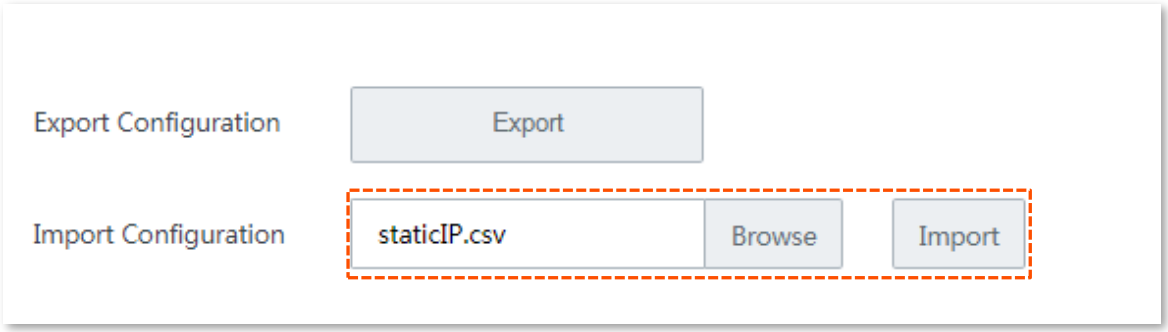
---- End

A file named **staicIP.csv** is exported to your local PC.

7.3.2 Import configuration file to your router

Step 1 On the **Address Reservation** page, click **Browse**, and upload the address reservation configuration file you have backed up to your local PC.

Step 2 Click the **Import** button.



---- End

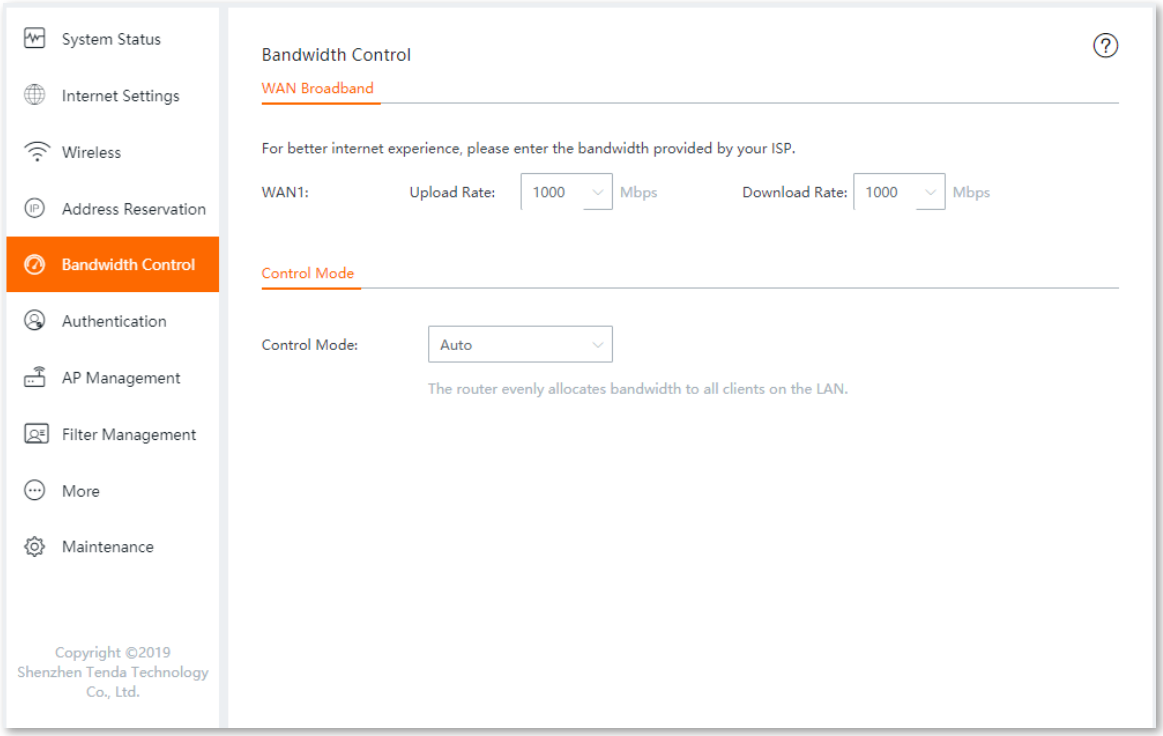
Your address reservation configurations have been imported to your router. You can check the imported configuration on this page.

8 Bandwidth control

Internet bandwidth is limited. Well-controlled traffic of users ensures that the bandwidth is properly used to effectively access resources over the internet.

8.1 Overview

To enter the configuration page, choose **Bandwidth Control**.



Parameter description

Parameter		Description
WAN Broadband	Upload Rate	Enter the bandwidth provide by your ISP for better internet experience.
	Download Rate	
Control Mode	No Limit	Clients connect to the router compete for bandwidth resources without restriction.
	Manual	The bandwidth resources of clients connecting to the router compete are configured by the network administrator. The network administrator can configure the maximum upload/download rate of online/offline devices separately or in batch. The manual mode is more flexible than limit by group mode.

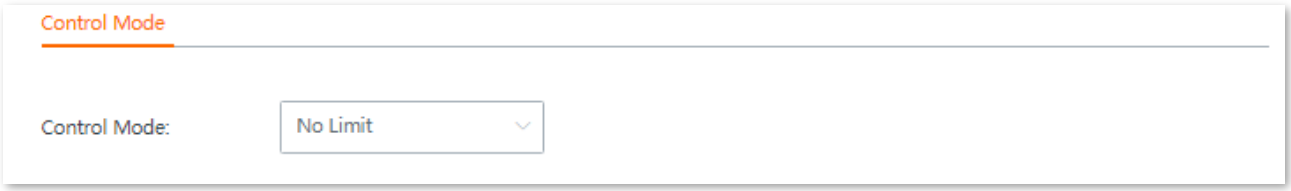
Parameter		Description
	Auto	The router evenly allocates bandwidth to all clients on the LAN.
	Limit By Group	This mode allows the network administrator to customize control rules based on IP groups and time groups. The concurrent sessions can also be configured here.

8.2 Bandwidth control mode

The router allows you to control upload and download bandwidth for both online and offline clients with four control modes, including **No Limit**, **Auto**, **Manual**, and **Limit By Group** to meet your various requirements by unleashing the potential of your WAN broadband services.

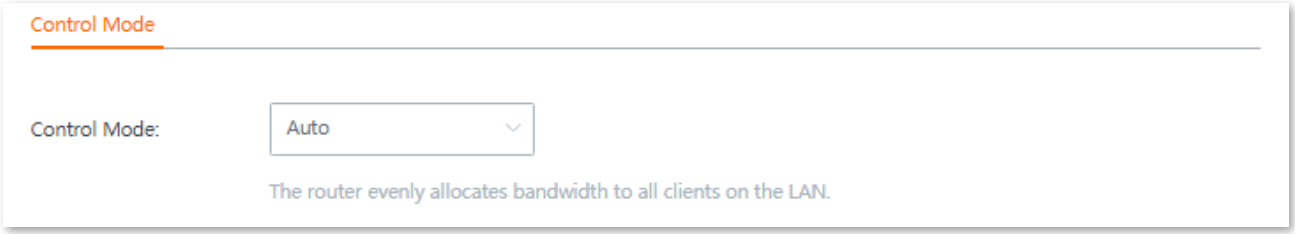
8.2.1 No limit

Select **No limit** from the **Control Mode** drop-down list menu, and clients connected to the router compete for bandwidth resources without restriction.



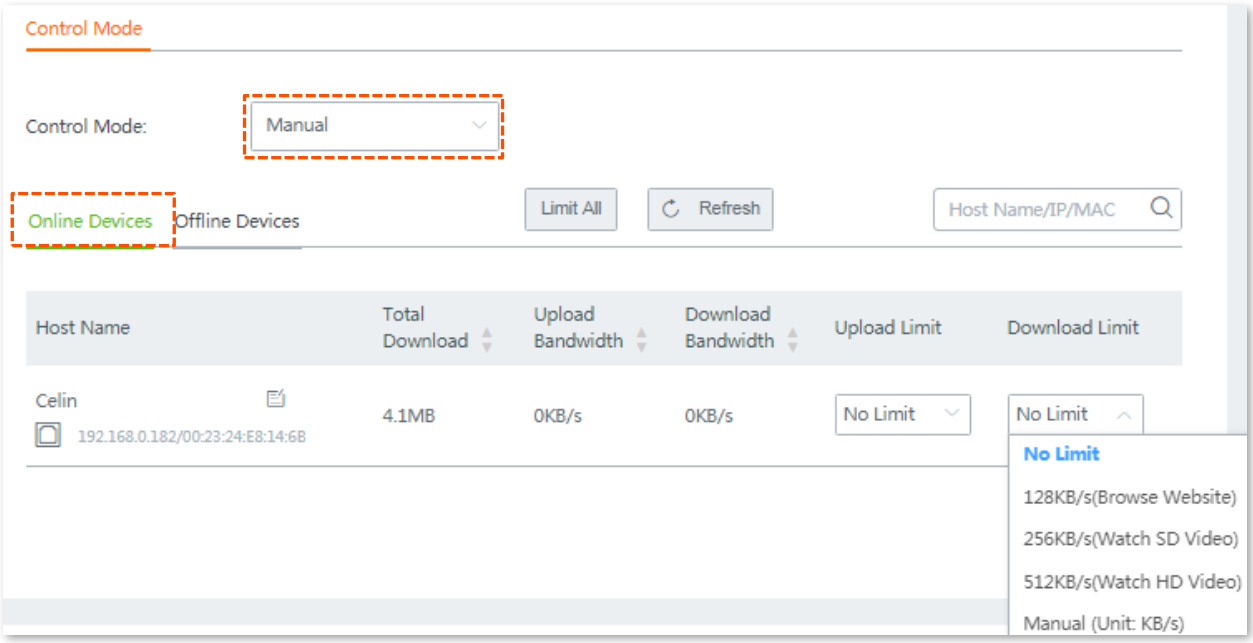
8.2.2 Auto (default)

Select **Auto (default)** from the **Control Mode** drop-down list menu, the router evenly allocates bandwidth to all clients connected to it.

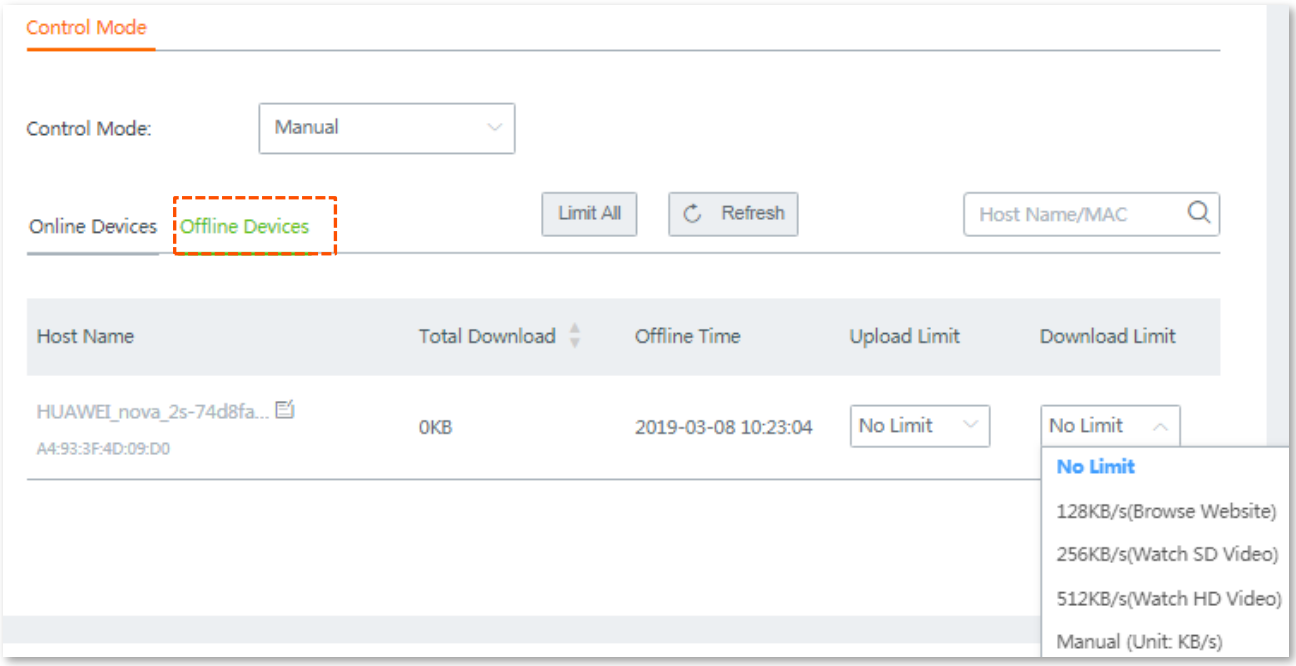


8.2.3 Manual

Select **Manual** from the **Control Mode** drop-down list menu, the configuration area appears. See the following figure:



Click **Offline Devices** tag, the following configuration area appears:

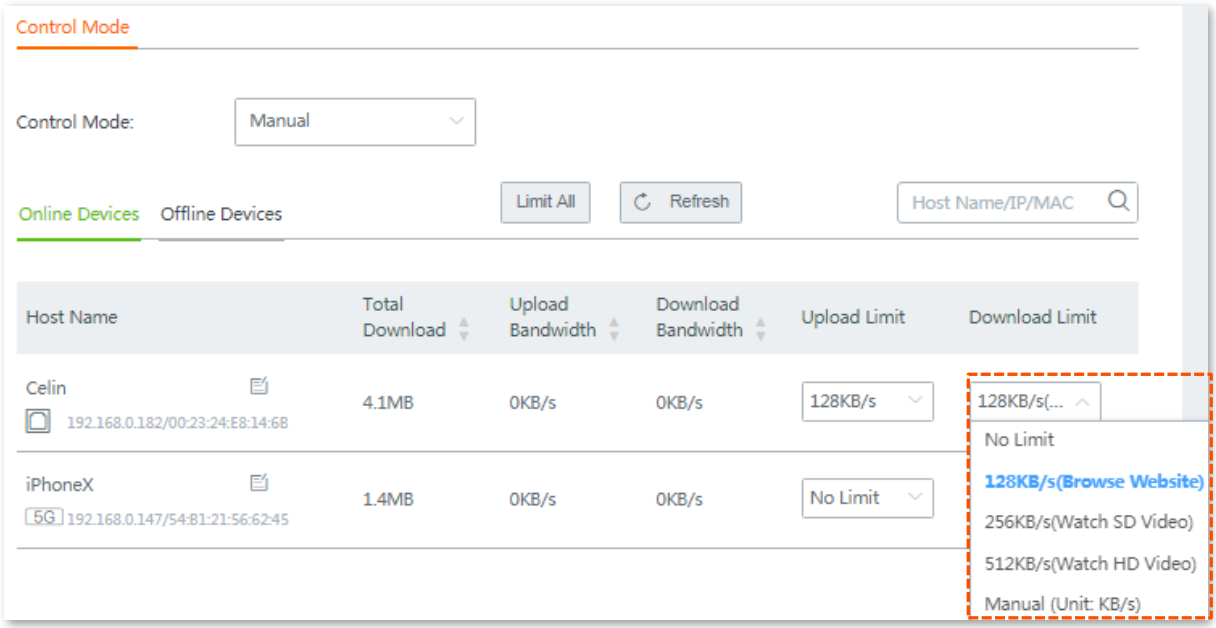


Parameter description

Parameter	Description
Host Name	It specifies the name of clients connected to the router. You can click to personalize the host name for convenient management. NOTE - Modification of host name here will be applied to the whole system. - For host name-based rules, use host name, you need to use the host name here.
Total Download	It specifies the total download traffic utilized by each client.
Offline Time	Only available for offline devices. It indicates the time when the client is disconnected.
Upload Bandwidth Download Bandwidth	It indicates the real-time upload/download bandwidth of each client. TIP 1 Mbps=128 KB/s=1024 kb/s.
Upload Limit Download Limit	The maximum upload/download rate you specified for each client. TIP 1 Mbps=128 KB/s=1024 kb/s.

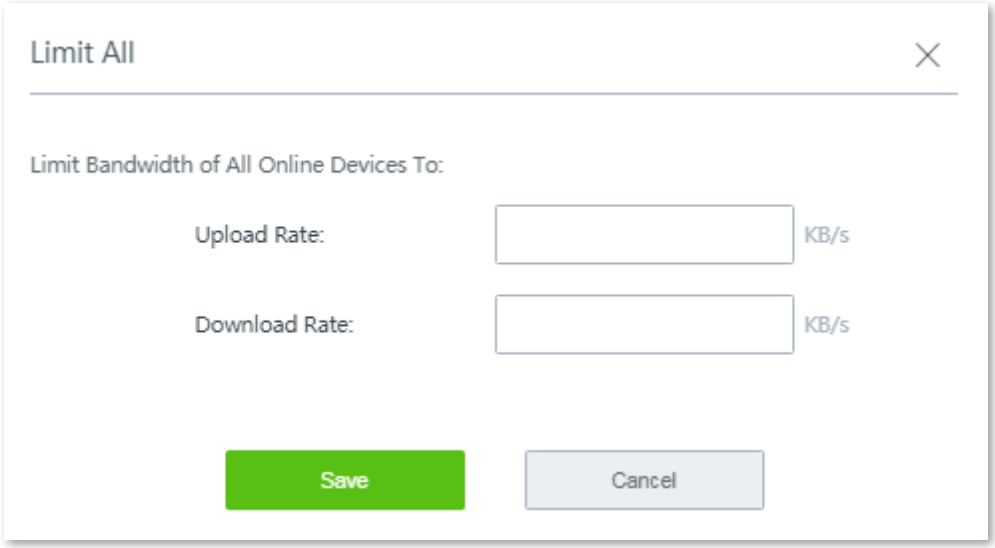
- **Control bandwidth of online/offline devices separately**

  To limit the upload and/or download bandwidth of one or several devices, select a pre-defined value from the drop-down list menu of **Upload Limit** and/or **Download Limit**, or select **Manual** to specify a value manually.



- **Control bandwidth of online/offline devices in batch**

  Click **Online Devices** or **Offline Devices**, then click **Limit All**, specify the values according to your actual situation on the configuration window, and click **Save** to apply your settings.



8.2.4 Limit by group

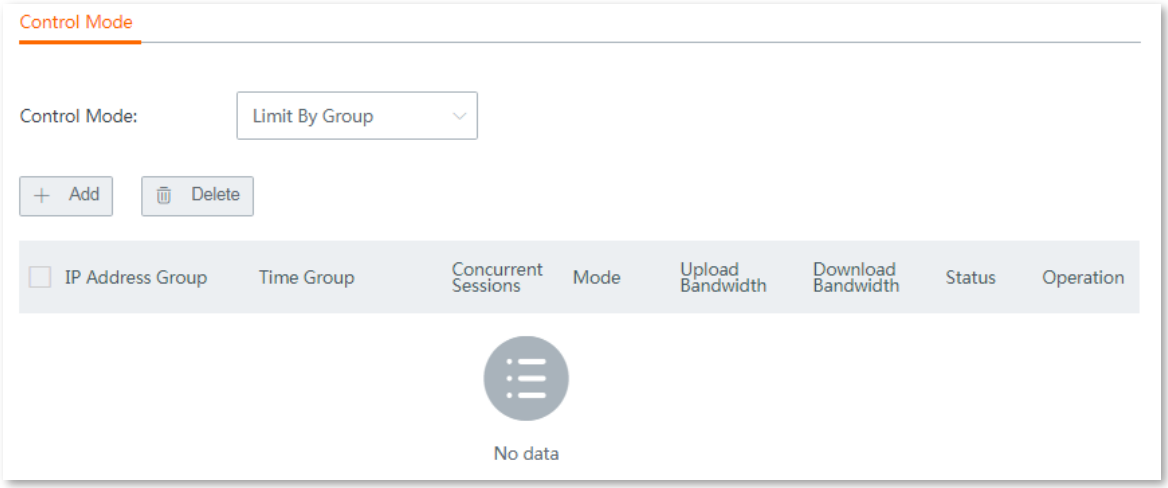
This mode allows you to customize control rules based on IP groups and time groups. The following describes the configuration procedure.

TIP

To control bandwidth based on groups, you need to configure IP group and time group first by navigating to **Filter Management** > **IP Group/Time Group**. Refer to Configure IP group and time group for detailed description.

Step 1 Choose **Bandwidth Control**, and move to the **Control Mode** configuration area.

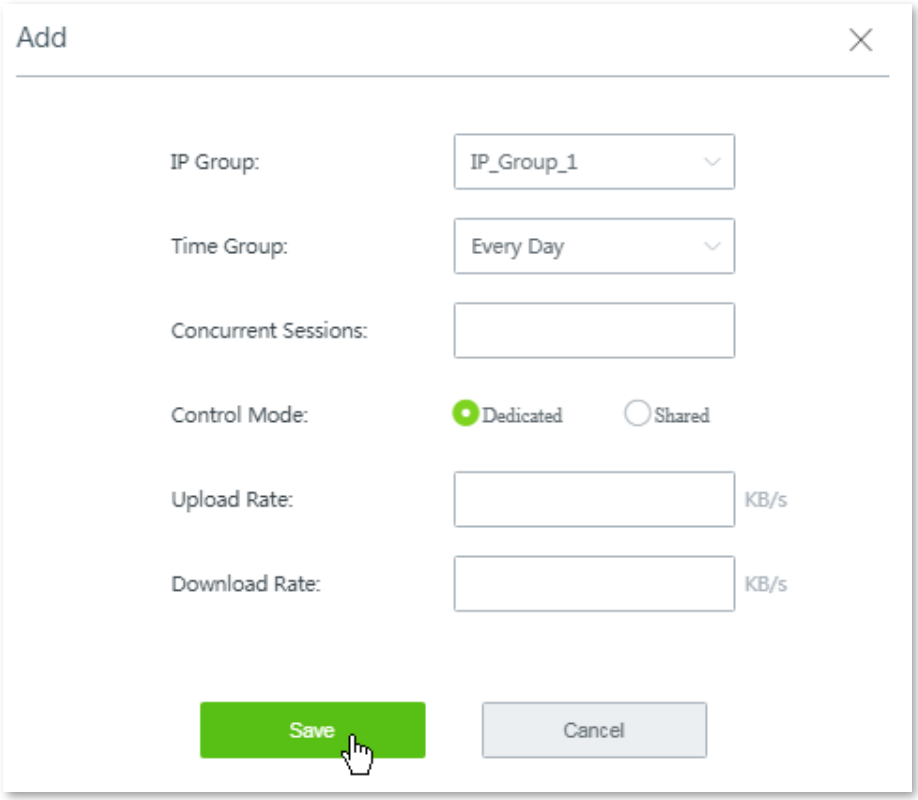
Step 2 Set **Control Mode** to **Limit By Group**, the following configuration area appears.



Step 3 Click **Save** at the bottom of the page.

Step 4 Click **+Add** to add a bandwidth control policy.

Step 5 Set required parameters.



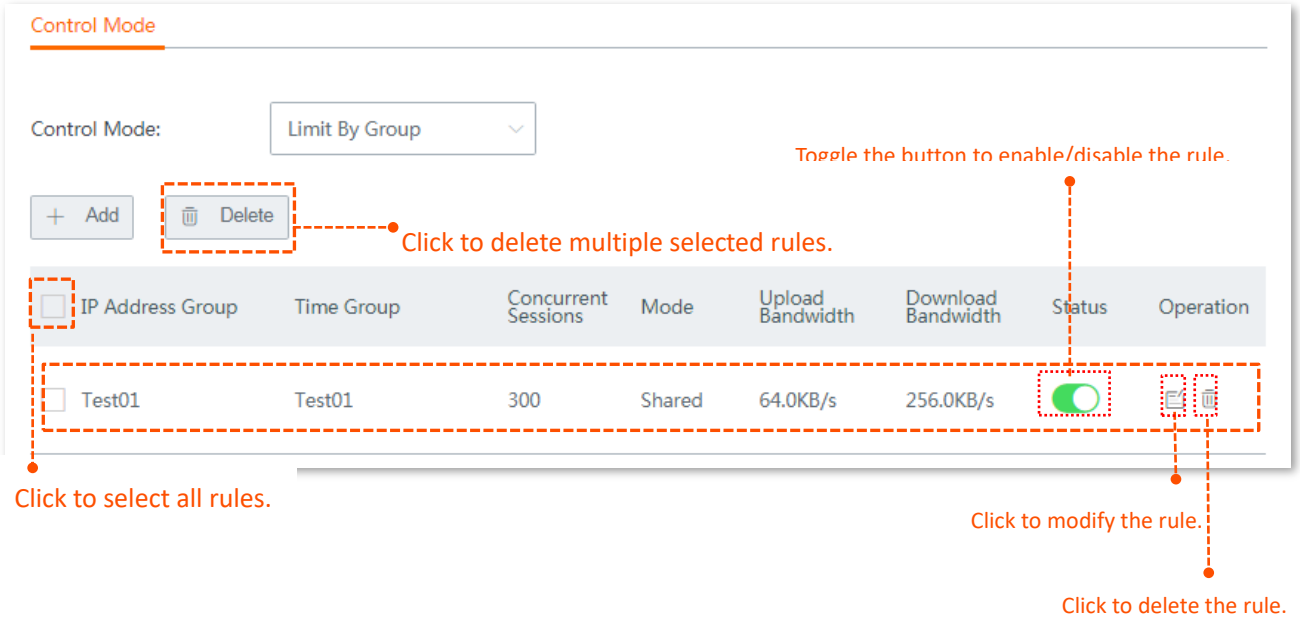
Parameter description

Parameter	Description
IP Group	Create or select the IP group to which the rule applies. To create an IP Group, choose **Filter Management** > **IP Group/Time Group**.
Time Group	Create or select the time group to which the rule applies. To create a time Group, choose **Filter Management** > **IP Group/Time Group**.
Concurrent Sessions	Maximum number of sessions of each device. Recommended value: **300**.
Control Mode	This device supports the following two control modes: - **Shared**: All clients in the controlled IP groups share the upload/download rate you configured here. In this mode, bandwidth allocated to each client may vary. - **Dedicated**: Each client in the controlled IP groups exclusively enjoys the upload/download rate you configured here. In this mode, bandwidth allocated to each client is identical.
Upload Rate	Maximum upload rate a controlled client can reach.
Download Rate	Maximum download rate a controlled client can reach.

Step 6 Click **Save**.

---- End

Added successfully. See the following figure:



8.3 Example of configuring group-based control rules

Networking requirement

An enterprise uses the router to set up a LAN to address the following requirement:

During business hours (08:30 to 18:00 on weekday), each computer with an IP address ranging from 192.168.0.2 to 192.168.0.100 is allocated 1 Mbps upload and download bandwidth, while the bandwidth allocated to the computers with an IP address ranging from 192.168.0.101 to 192.168.0.254 is not limited. See the following table:

Group name	IP range	Effective time	Upload bandwidth	Download bandwidth
IP_group_1	192.168.0.2~100	08:30~18:00 on weekday	1 Mbps	1 Mbps

Solutions

You can use the **Limit By Group** bandwidth control function of the router to meet this requirement.

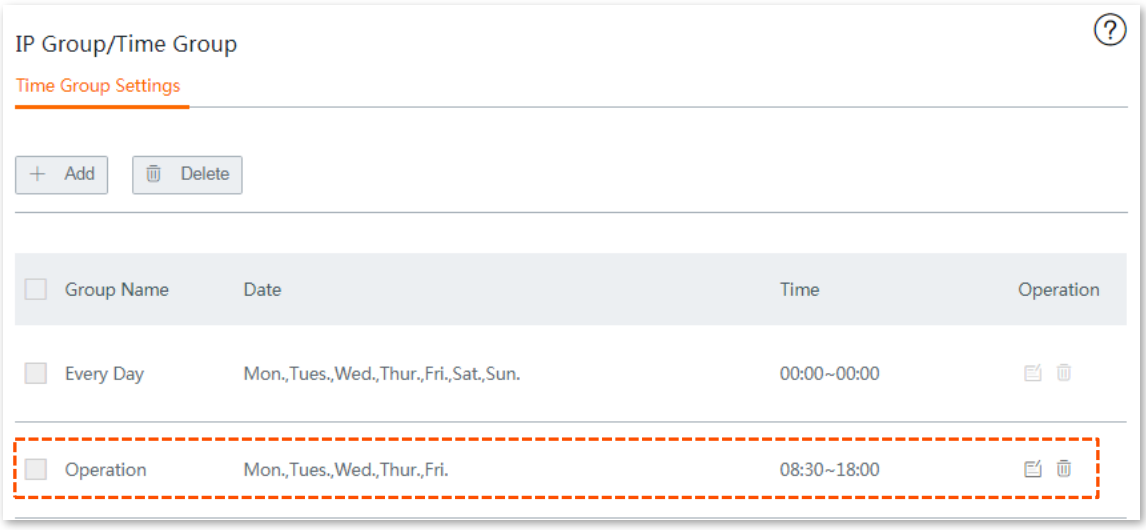
Configuration description

Step	Task	Description
1	Set a time group	Set the time group on the **Filter Management** > **IP Group/Time Group** page.
2	Set IP address group(s).	Set the IP address group on the **Filter Management** > **IP Group/Time Group** page.
3	Set bandwidth control rule(s)	Set a rule on the **Bandwidth Control** page.

Configuration procedure

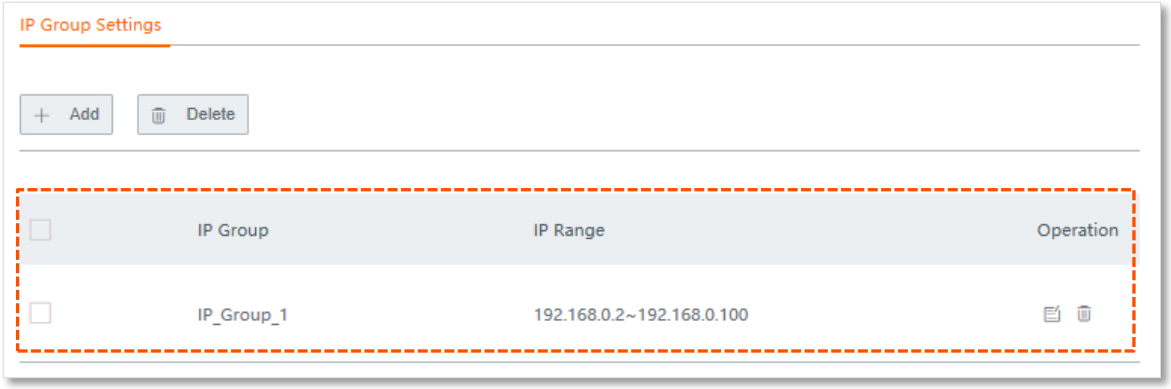
Step 1 Set a time group.

1. Choose **Filter Management** > **IP Group/Time Group**.
2. Set the time group shown in the following figure.



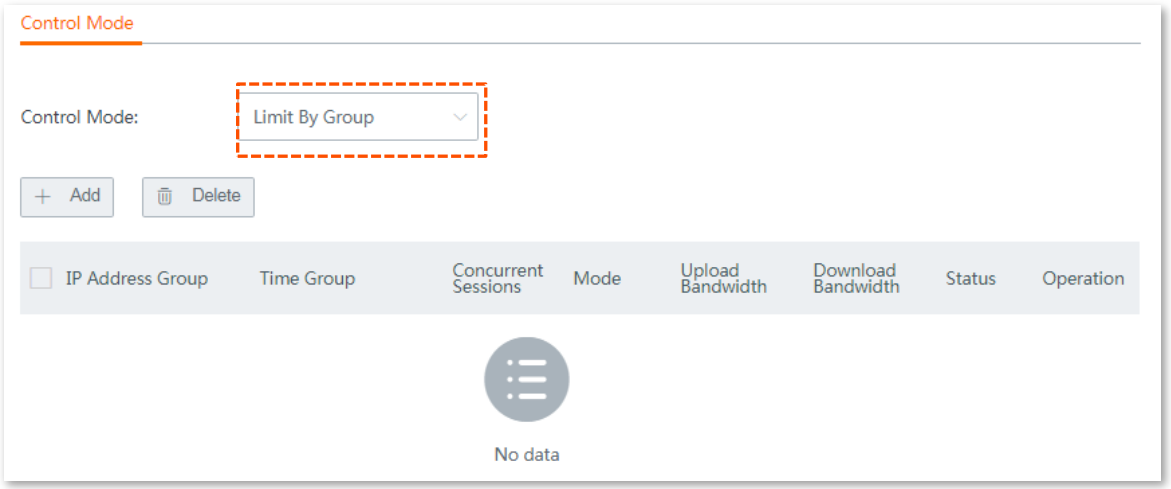
Step 2 Set IP address group(s).

1. Choose **Filter Management** > **IP Group/Time Group**.
2. Set the IP address group(s) shown in the following figure.



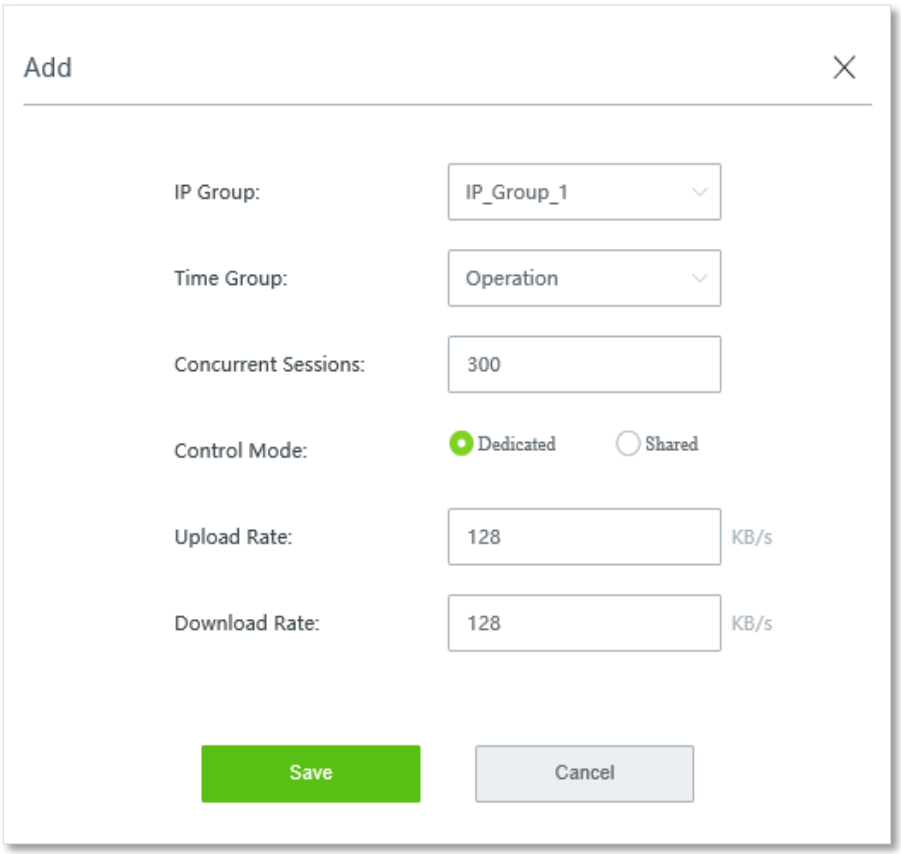
Step 3 Set bandwidth control rule(s).

1. On the **Bandwidth Control** page, set **Control Mode** to **Limit By Group**.
2. Click **Save** at the bottom of the page.



3. Click **+Add**. The **Add** configuration window appears.

4. Create a rule shown in the following figure, and click **Save**.

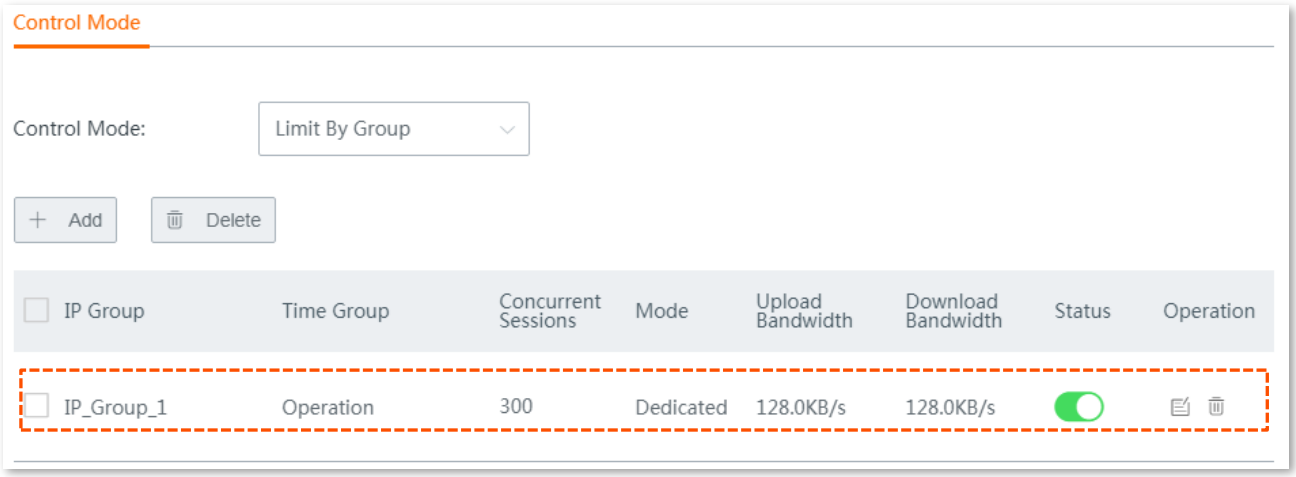


TIP

1 Mbps = 128 KB/s

---- End

Added successfully. See the following figure:



Verification

During business hours from 08:30 to 18:00 on weekday, each computer with an IP address ranging from 192.168.0.1 to 192.168.0.100 is allocated 1 Mbps (128 KB/s) upload and download bandwidth, while the bandwidth allocated to the computers with an IP address ranging from 192.168.0.101 to 192.168.0.254 is not limited.

9 Authentication

9.1 Overview

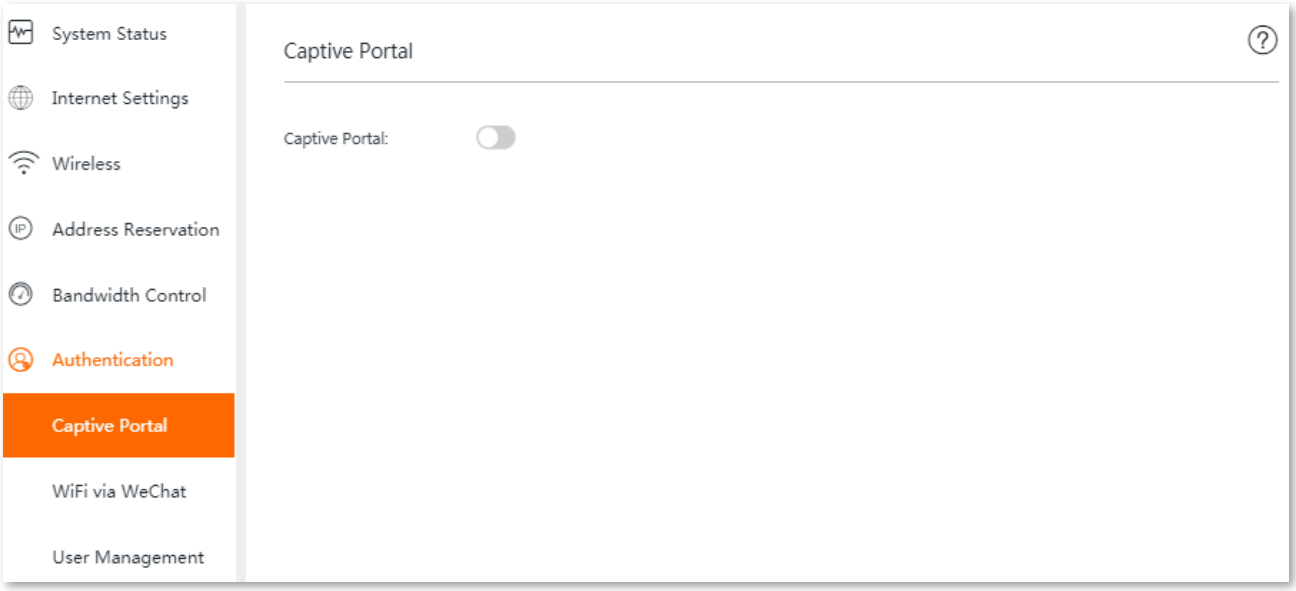
The router supports captive portal. Captive portal can promote your brand visibility and attract more fans.

9.2 Configure captive portal

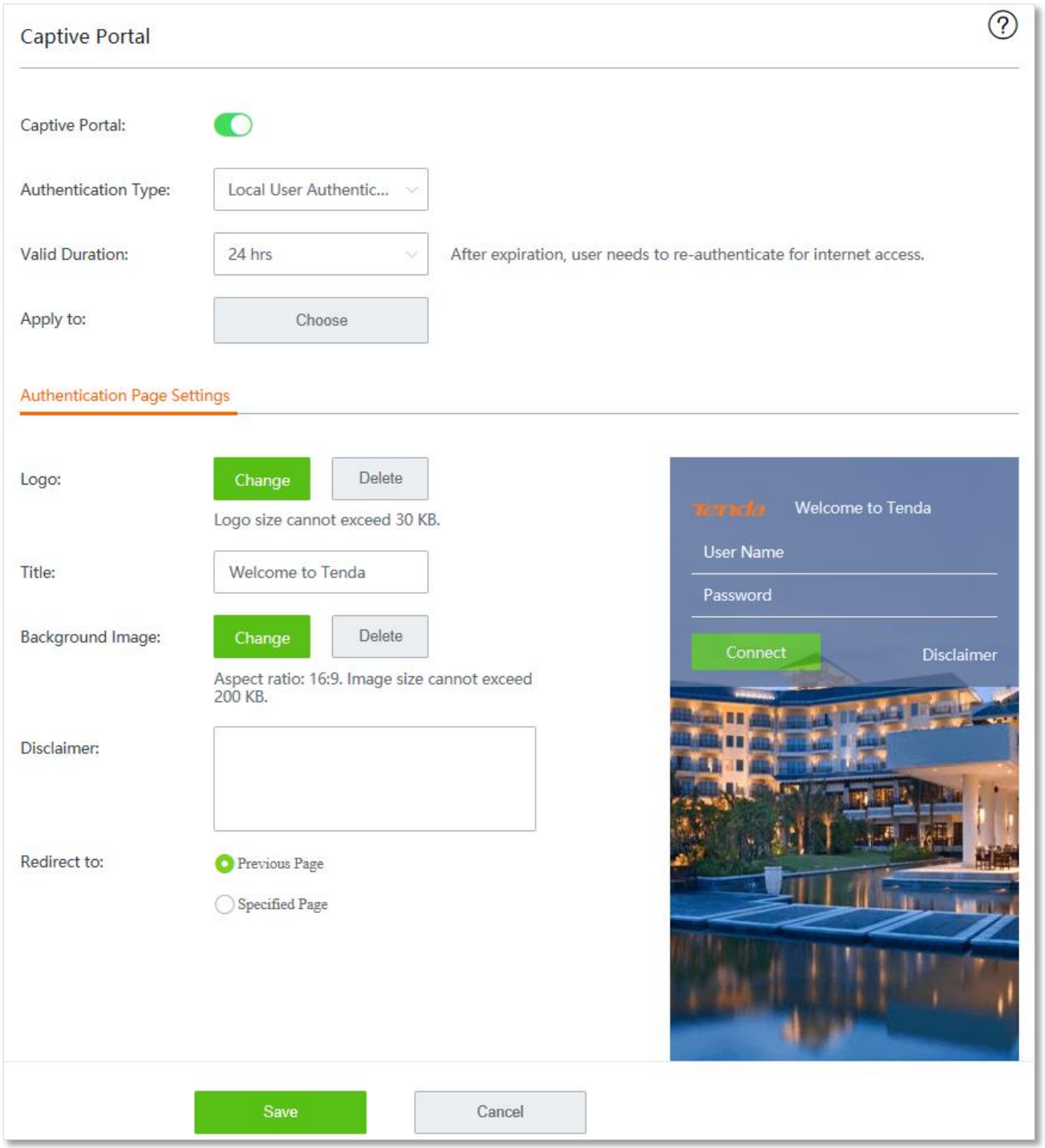
This section introduces how to configure captive portal.

9.2.1 Overview

To access the configuration page, choose **Authentication** > **Captive Portal**. By default, this function is disabled. See the following figure:



Enable Captive Portal, the configuration page is shown as below.



Parameter description

Parameter	Description
Captive Portal	It specifies whether or not to enable the captive portal function of the router.
Authentication Type	It specifies the type of the captive portal. - **Local User Authentication**: It allows a user to access the internet with a username and password on the authentication web page. The username and password should be added on **Authentication > User Management** page. - **One-key authentication**: It allows a user to access the internet by clicking **Connect** when receiving an authentication web page.

Parameter	Description
	- **WiFi via SMS:** It allows a user to access the internet with a verification code sent by SMS when receiving an authentication web page. To enable this authentication type, you need to configure **SMS Provider Settings** first. The router supports **Jixintong** and **NEXMO**, and allows you to **customize HTTP interconnection** yourself as well. - **Email Authentication**: It allows a user to access the internet with a verification code sent through email when receiving an authentication web page. To enable this authentication type, you need to configure **Email Server Settings** first.
Valid Duration	It specifies the authentication validity period. A user must be re-authenticated for accessing the internet after the period expires.
Apply to	**Wired network**: It specifies that the authentication rule will be applied to the devices connected to the router through the selected ports. **Wireless network**: It specifies that the authentication rule will be applied to the wireless devices connected to the router through the selected WiFi networks. TIP - To make this function work properly, the WiFi networks to be applied should **not** be encrypted. Navigate to **Wireless** > **Wireless Settings**, select the **No Password** checkbox beside the applied WiFi networks and click **Save**. - If the WiFi network name of a WiFi network you selected is modified, the WiFi network will be automatically deselected here. To make the WiFi network effective, you have to re-select the WiFi network name with the new SSID here manually.
Logo	It allows you to modify the logo displayed on the authentication web page.
Title	It allows you to modify the title displayed on the authentication web page. It is **Welcome to Tenda** by default.
Background Image	It allows you to modify the background image displayed on the authentication web page.
Change	Click it to change the image.
Delete	Click it to delete the image.
Disclaimer	It allows you to configure the disclaimer information. A maximum of **256** characters is allowed.
Redirected To	It specifies the website that the client automatically redirects to after passing authentication: - **Previous Page**: When the captive portal is passed, the page would redirect to the previous page the user visited. For example, if a user is visiting Google search page before authentication, the user will stay on Google search page after passing the authentication. - **Specified Page**: It specifies the website redirected to after passing the captive portal.

9.2.2 Configure SMS authentication

Configuration description

Step	Task	Description
1	Configure basic settings.	Set authentication type, valid duration, and choose networks to be applied, as well as SMS provider settings.
2	Configure authentication page settings.	Configure the authentication page received by users.

Before you start

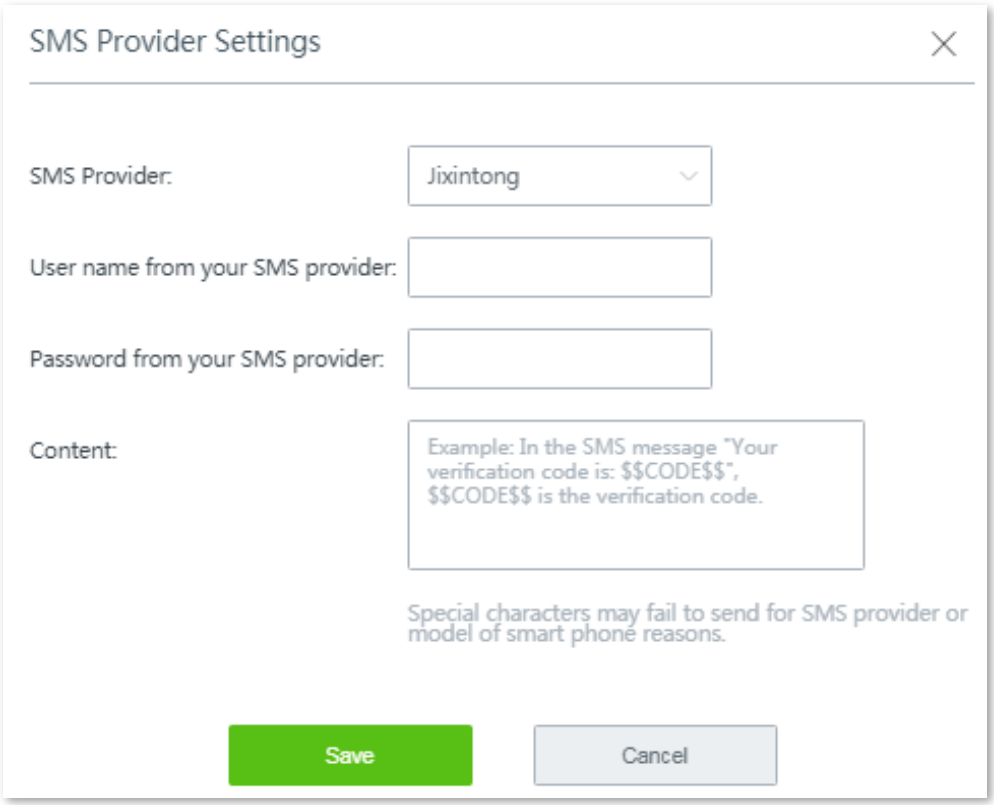
Obtain required information from your SMS provider first.

- Jixintong: **User Name** and **Password** you applied on the Jixintong platform.
- NEXMO: **api_key** and **api_secret** you applied on the NEXMO platform.
- Custom HTTP Interconnection: SMS gateway URL interface format defined by your SMS provider, and SMS error code from your SMS provider.

Configuration procedure

Step 1 Configure basic settings.

1. Choose **Authentication** > **Captive Portal**, and enable this function.
2. Select **WiFi via SMS** from the **Authentication Type** drop-down list menu.
3. Click **SMS Provider Settings**, the configuration window appears.



Parameter description

Parameter		Description
Jixintong	User name from your SMS provider	Enter the user name and password you've applied on the Jixintong platform.
	Password from your SMS provider	
	Content	Customize the short message sent to users. TIP The verification code format is **$$CODE$$**, which cannot be modified.
NEXMO	api_key	Enter the **api_key** you've applied on the NEXMO platform.
	api_secret	Enter the **api_secret** you've applied on the NEXMO platform.
	Content	Customize the short message sent to users. TIP The verification code format is **$$CODE$$**, which cannot be modified.
Customize HTTP Interconnection	Encoding	It specifies the character encoding format. Select the encoding format that your SMS provider supports. Available options include: - **GBK/GB2312:** GBK (GB abbreviates Guojia Biaozhun, which means national standard in Chinese, while K stands for Extension) is an extension of the GB2312 character set for simplified Chinese characters. - **UTF-8:** 8-bit Unicode Transformation Format.
	Content	Customize the short message sent to users. TIP The verification code format is **$$CODE$$**, which cannot be modified.
	SMS Gateway URL Interface	Enter the SMS gateway URL interface in the format defined by your SMS provider.
	SMS Error Code	It indicates the error code that tells the router a short message is unsent, and you can use this error code to consult your SMS provider for troubleshooting. You can consult your SMS provider to learn the specific content.

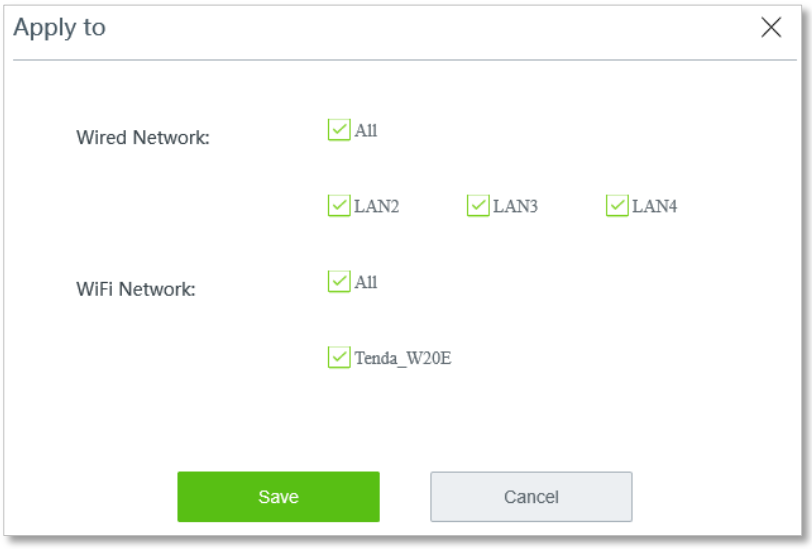
4. Set the required parameters, and click **Save.**

   TIP

   You can click **Validity Test** to test if your SMS service provider configuration is correct.

5. Set **Valid Duration**.

6. Click **Choose**, and choose the network(s) to be applied, and click **Save**.

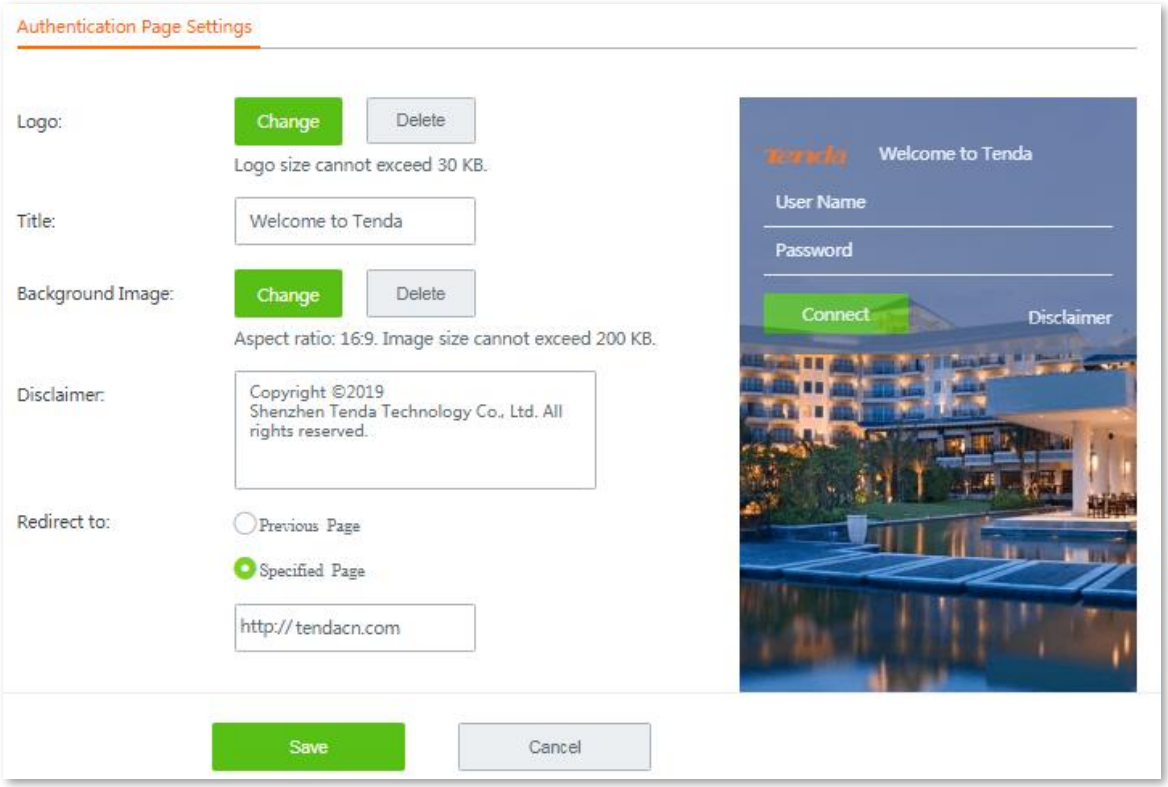


TIP

If the WiFi network name you selected is modified, it will be automatically deselected here. To make the WiFi network effective, you have to re-select the WiFi network with the new SSID here manually.

Step 2 Configure authentication page settings.

1. Set required parameters for the authentication page by following the on-screen instructions. Configurations on the following figure are only used for examples.



2. Click **Save** at the bottom on the page.

---- End

9.2.3 Configure authentication with local user authentication

Configuration description

Step	Task	Description
1	Configure basic settings.	Set authentication type, valid duration, and choose networks to be applied, as well as the required authentication page.
2	Configure authentication page settings.	Configure the authentication page received by users.

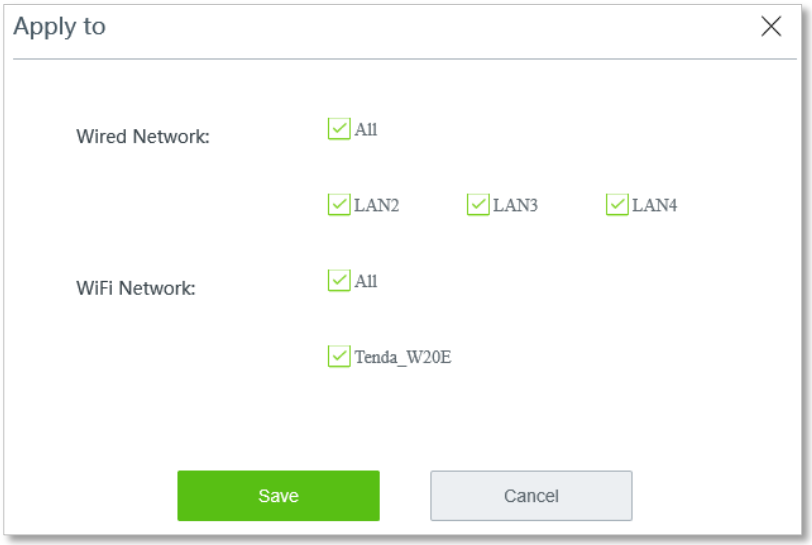
Configuration procedure

Step 1 Configure basic settings.

1. Choose **Authentication** > **Captive Portal**, and enable this function.
2. Set **Authentication Type** to **Local User Authentication**..
3. Set **Valid Duration** to **No Limit**.
4. Click **Choose**, and choose the network(s) to be applied, and click **Save**.

NOTE

The selected wireless network(s) cannot be encrypted. Otherwise the user cannot access the authentication page.

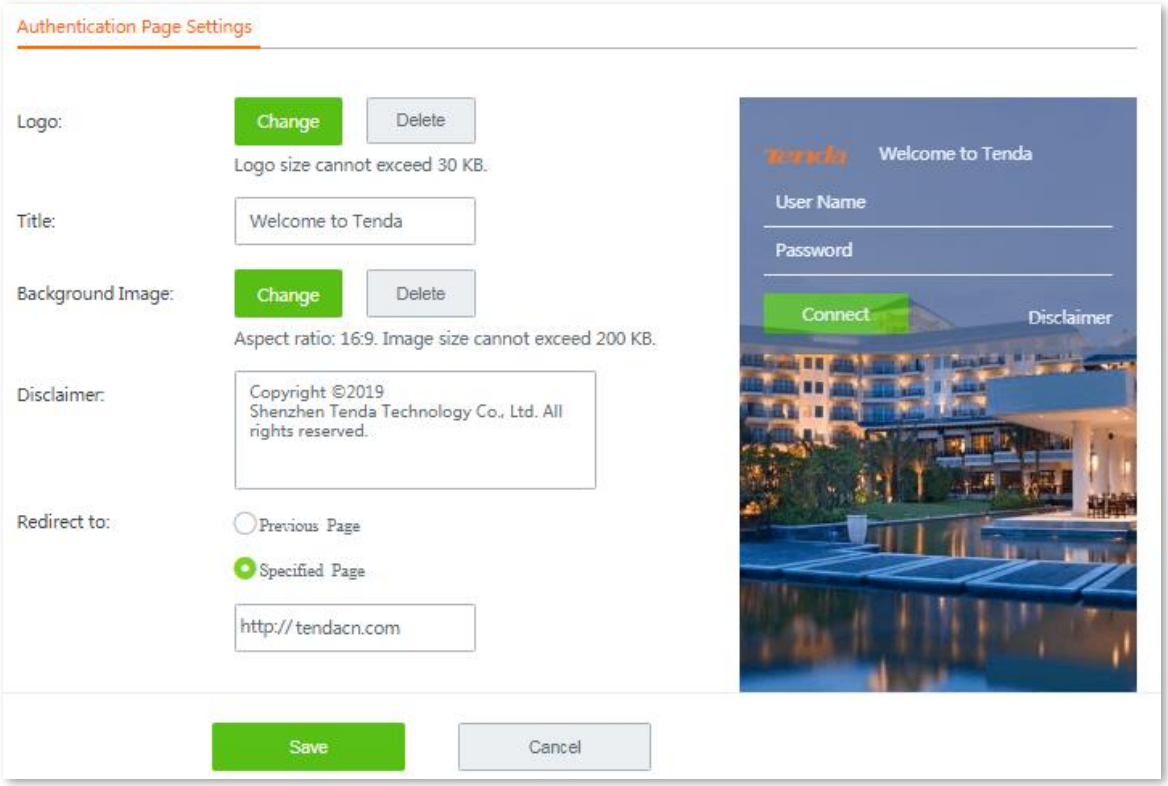


TIP

If the WiFi network name you selected is modified, it will be automatically deselected here. To make the WiFi network effective, you have to re-select the WiFi network with the new SSID here manually.

Step 2 Configure authentication page settings.

1. Set required parameters for the authentication page by following the on-screen instructions. Configurations on the following figure are only used for examples.



2. Click **Save** at the bottom on the page.

---- End

9.2.4 Configure email authentication

Configuration description

Step	Task	Description
1	Configure basic settings	Set authentication type and valid duration, choose networks to be applied, and set the maximum number of people sharing the same authentication mode.
2	Configure email server settings	Configure the Email used to send authentication code, including **Email Address**, **Email Password**, **SMTP Server**, **SMTP Server Port** and **Account for Test**.
3	Configure authentication page settings	Configure the authentication page received by users.

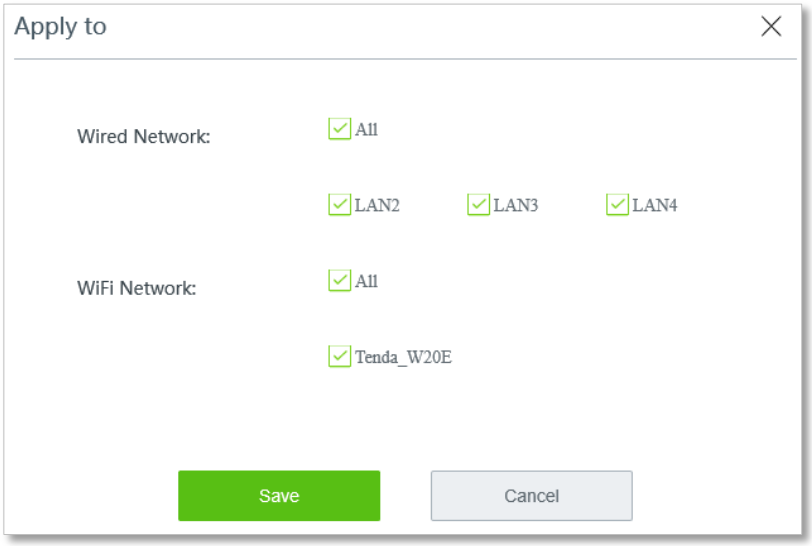
Configuration procedure

Step 1 Configure basic settings

1. Choose **Authentication** > **Captive Portal**, and enable this function.
2. Select **Email Authentication** from the **Authentication Type** drop-down list menu.
3. Set **Valid Duration**.
4. Click **Choose**, choose the network(s) to be applied, and click **Save**.

NOTE

The selected wireless network(s) cannot be encrypted. Otherwise the user cannot access the authentication page.



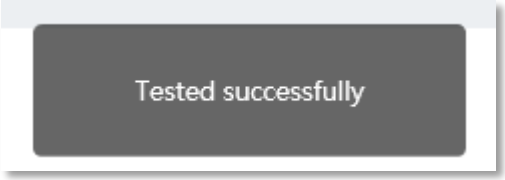
TIP

If the WiFi network name you selected is modified, it will be automatically deselected here. To make the WiFi network effective, you have to re-select the WiFi network with the new SSID here manually.

5. Set a number for **People Shared with**.

Step 2 Configure email server settings.

1. Enter the **Email Address** and **Email Password** of the email account used to send authentication emails.
2. Enter the **SMTP Server** and **SMTP Server Port** of the email account, select **SSL**.
3. Enter another email address in **Account for Test** box,and click **Test**. The configurations are correct when you receive a notification as follows:

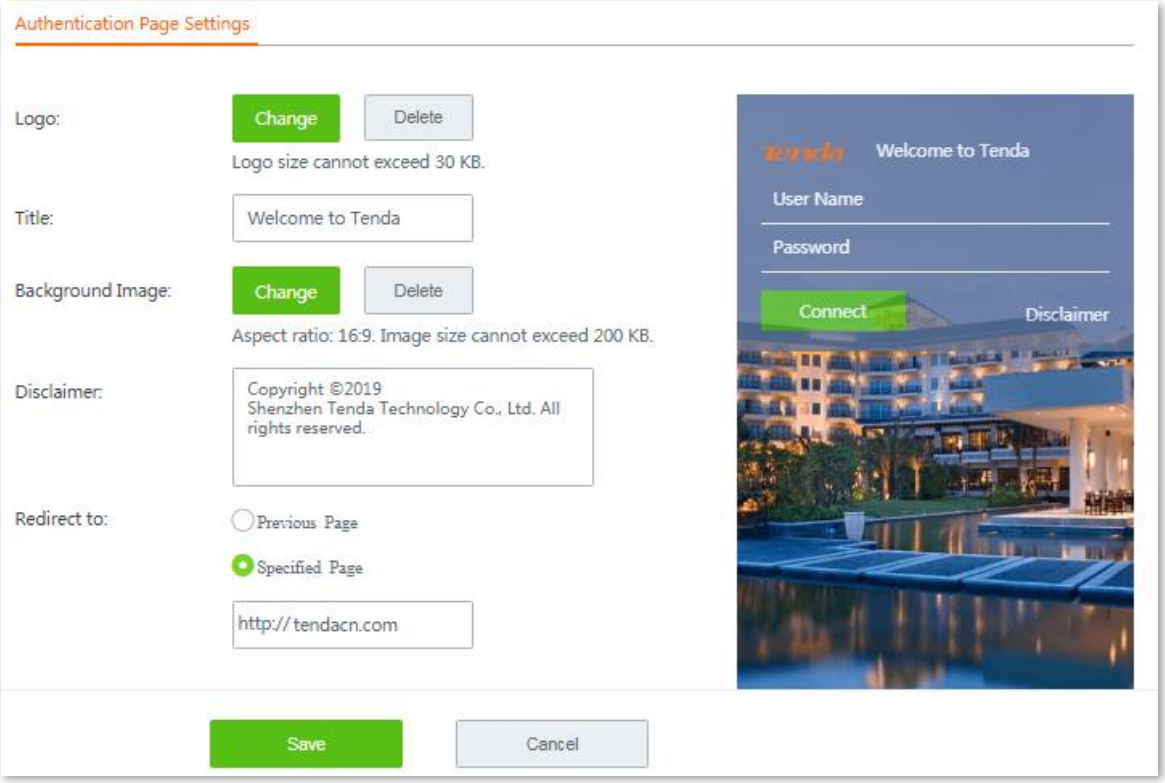


NOTE

- If you failed to send test email, please check the SMTP Server of the email account for sending test email.
- The default **SMTP Server Port** is **25**. If you select SSL, the server port will change. Please contact your email service provider for the information.

Step 3 Configure authentication page settings.

1. Set required parameters for the authentication page by following the on-screen instructions. Configurations on the following figure are only used for examples.



2. Click **Save** at the bottom on the page.

---- End

9.2.5 Configure one-key authentication

Configuration description

Step	Task	Description
1	Configure basic settings.	Set authentication type, valid duration, and choose networks to be applied.
2	Configure authentication page settings	Configure the page received by users.

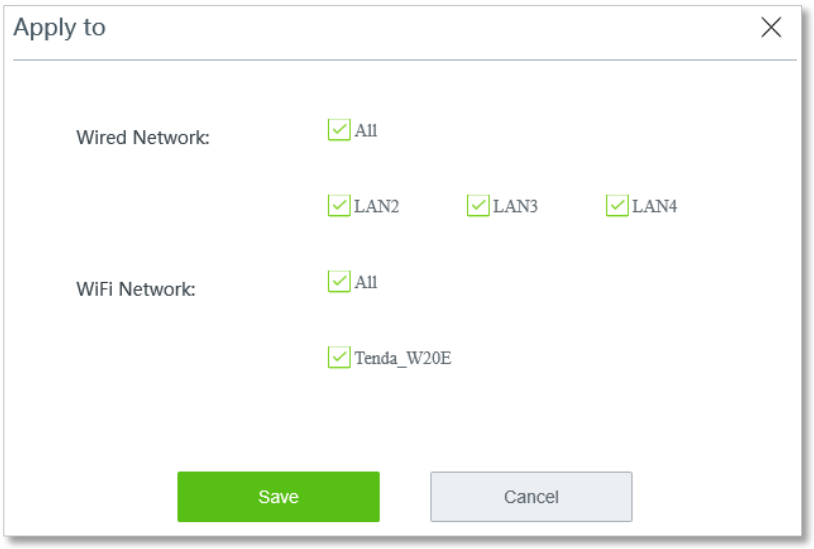
Configuration procedure

Step 1 Configure basic settings.

1. Choose **Authentication** > **Captive Portal**, and enable this function.
2. Select **One-key authentication** from the **Authentication Type** drop-down list menu.
3. Set **Valid Duration**.
4. Click **Choose**, choose the network(s) to be applied, and click **Save**.

NOTE

The selected wireless network(s) cannot be encrypted. Otherwise the user cannot access the authentication page.

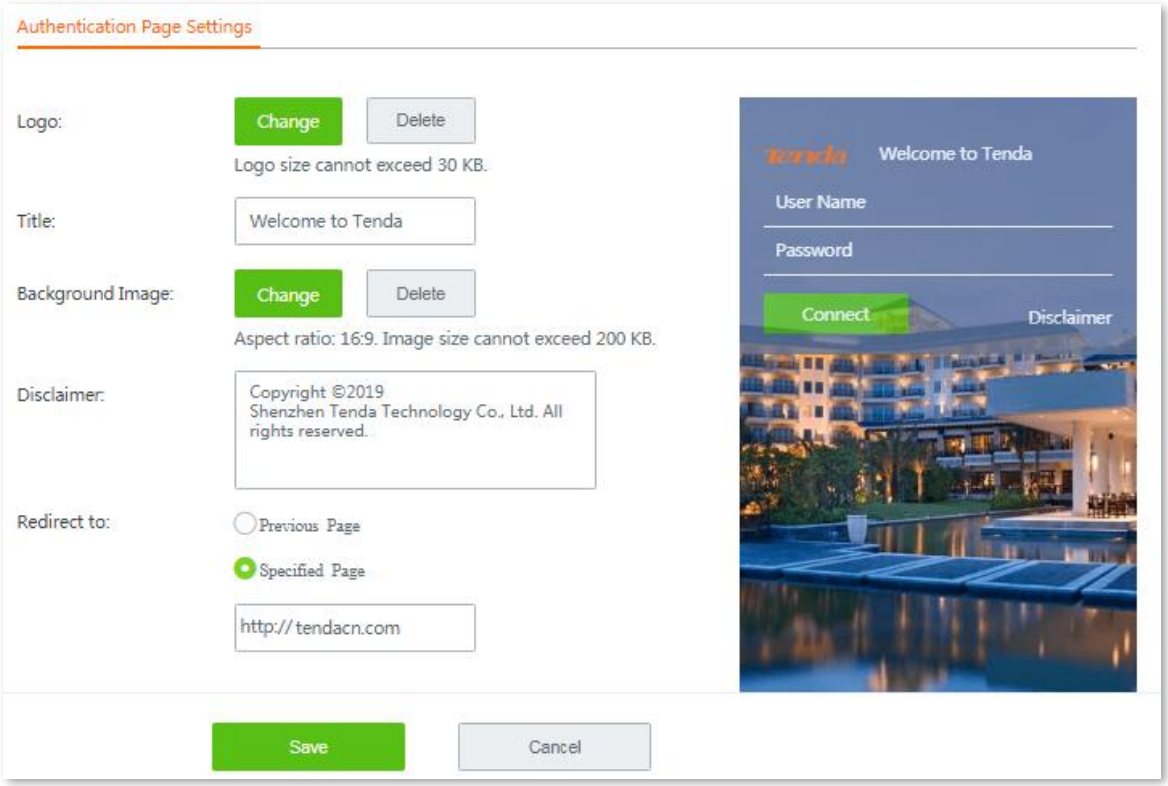


TIP

If the WiFi network name you selected is modified, it will be automatically deselected here. To make the WiFi network effective, you have to re-select the WiFi network with the new SSID here manually.

Step 2 Configure authentication page settings.

1. Set required parameters for the authentication page by following the on-screen instructions. Configurations on the following figure are only used for examples.



2. Click **Save** at the bottom on the page.

---- End

9.3 Examples of captive portal

9.3.1 Example of configuring SMS authentication

Networking requirement

An enterprise wants to establish a network and regulate the use of the network with the router. The requirements include:

- SMS authentication is required for employees who want to access the internet through the LAN port of the router or the wireless network **Tenda_W20E**.
- Employees are directed to www.tenda.com.cn after being authenticated.
- The network administrator is free from authentication when accessing the internet.

The requirement can be met with SMS authentication.

Assume that:

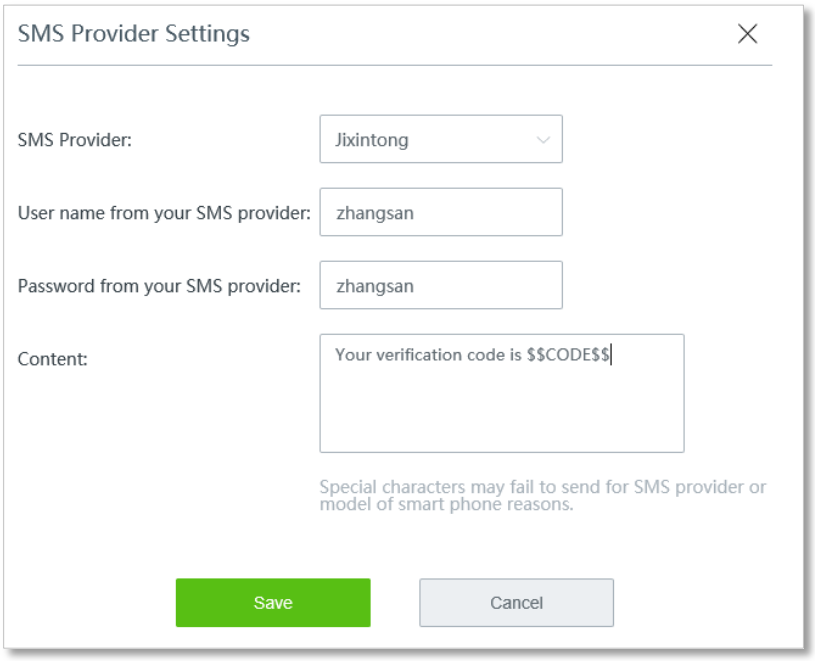
- The MAC address of the network administrator's computer is **44:37:E6:12:34:56**.
- The enterprise has registered on **Jixintong** for the account "**zhangsan**" and password "**zhangsan**".

Configuration procedure

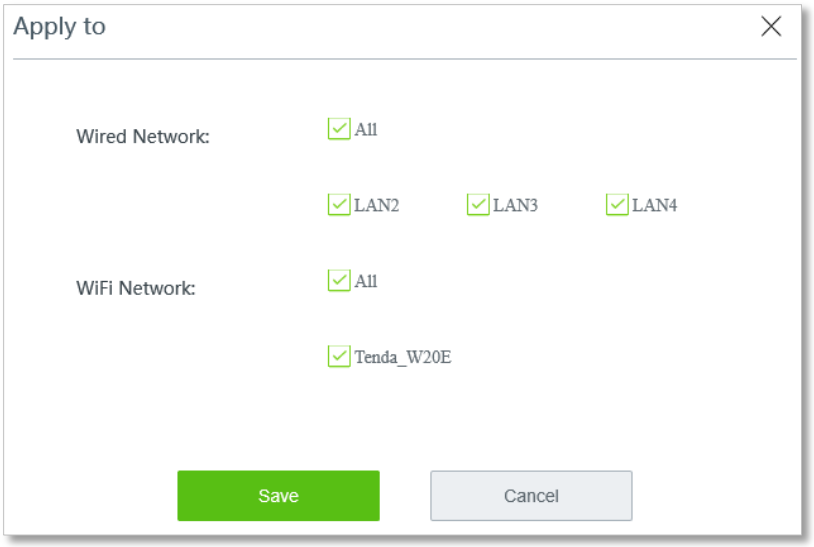
Step 1 Configure SMS authentication settings.

1. Choose **Authentication** > **Captive Portal**.
2. Enable **Captive Portal**.
3. Select **WiFi via SMS** in the **Authentication Type** drop-down list.
4. Click **SMS Provider Settings**.
5. Configure SMS provider settings.
   (1) Enter the **User name from your SMS provider**, which is **zhangsan** in this example.
   (2) **Password from your SMS provider**, which is **zhangsan** in this example.
   (3) Enter the your customised SMS **Content**. For example "**Your verification code is $$CODE$$**".

(4) Click **Save**.



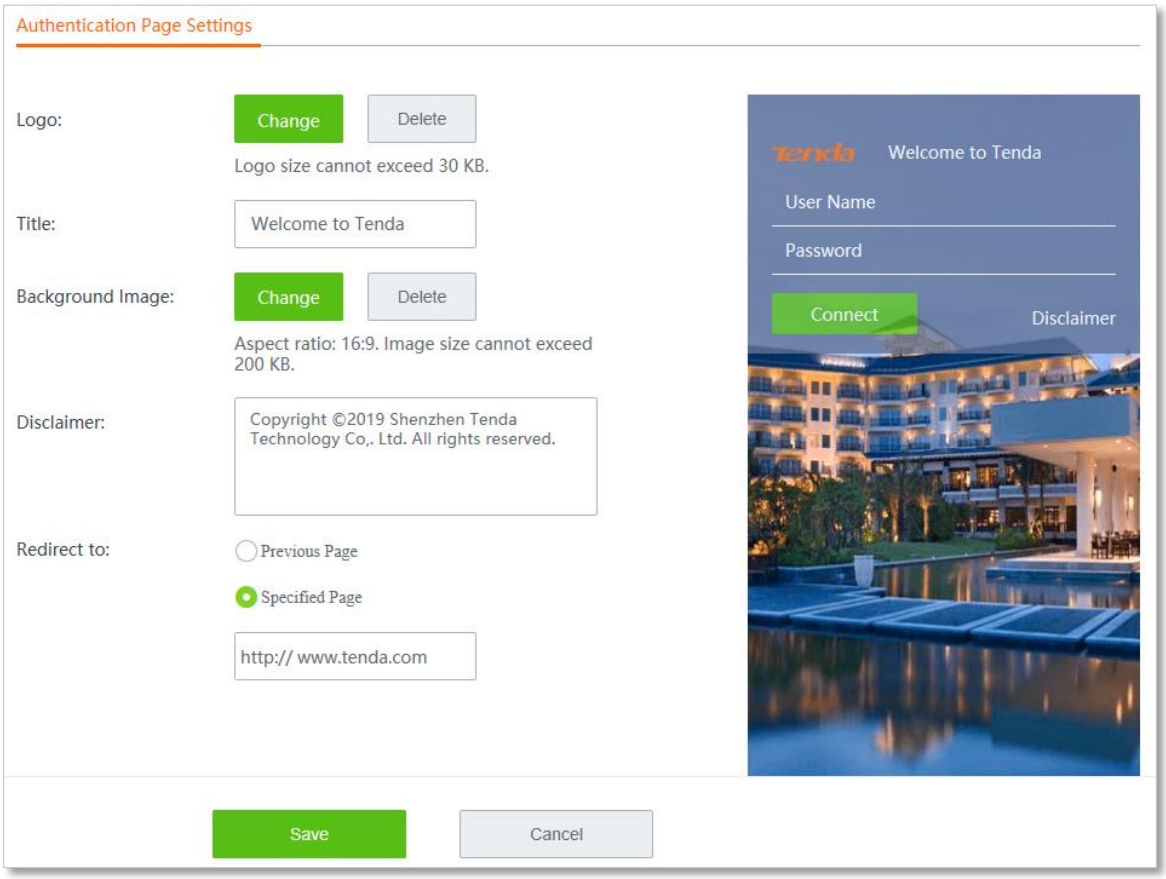
6. Set **Valid Duration**, such as **24 hours**.
7. Select **Choose**, choose the networks that the SMS authentication is applied to, and click **Save**.



Step 2 Configure authentication page.

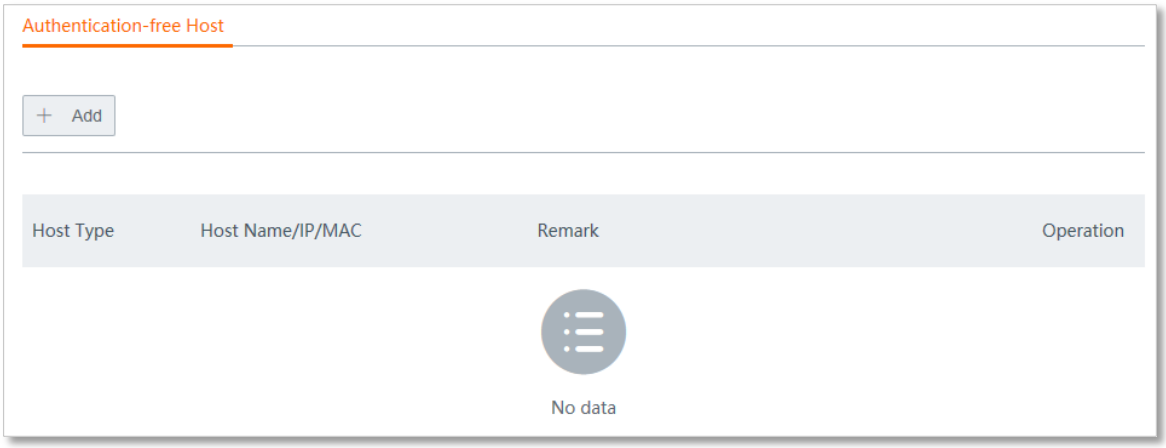
1. Click **Change** to upload a logo image.
2. Customize the **Title** of the authentication page.
3. Click **Change** to upload a background image.
4. Customize a **Disclaimer** for the enterprise, such as "**Copyright ©2019 Shenzhen Tenda Technology Co,. Ltd. All rights reserved.**"
5. Select **Specified Page**, enter www.tenda.com.cn.

6. Click **Save**.



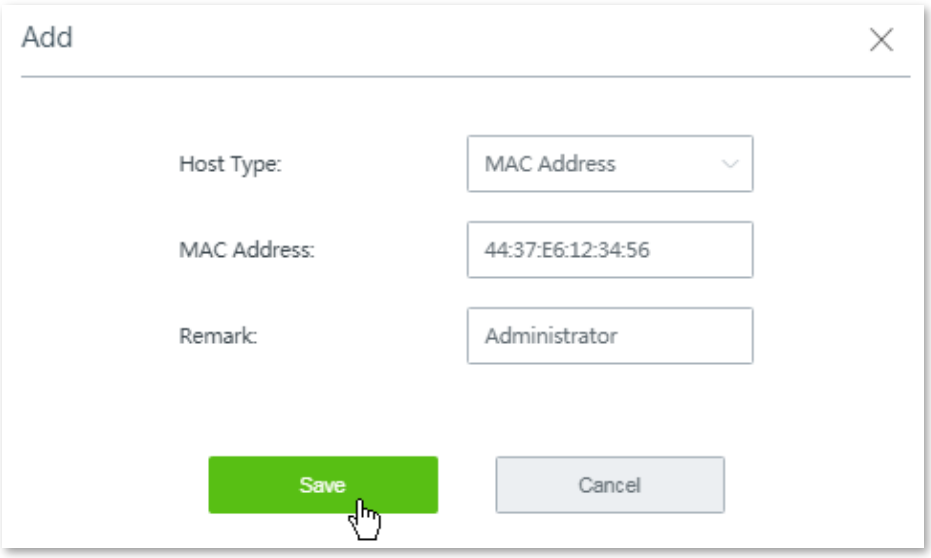
Step 3 Add authentication-free host.

1. Choose **Authentication** > **User Management**.
2. Navigate to **Authentication-free Host** configuration area, click **+Add**.



3. Select **MAC Address** for **Host Type**, enter a **MAC Address**, which is **44:37:E6:12:34:56** in this example.
4. Customize a **Remark** for the host, such as **Administrator.**

5. Click **Save**.



---- End

Verification

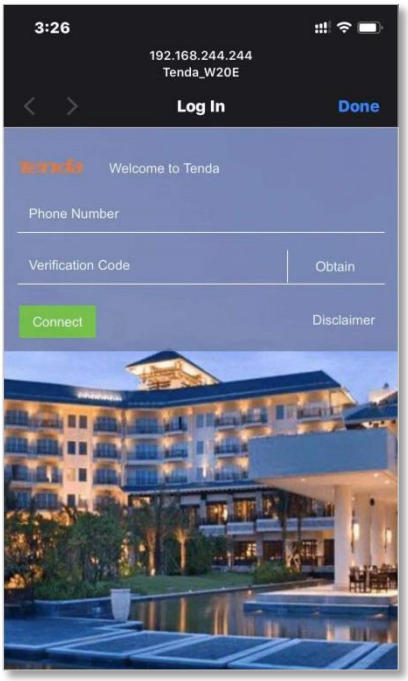
The network administrator can access the internet without authentication. Other employees have to perform SMS authentication as follows:

Step 1 Start a web browser on a smart phone, and visit any website. The authentication page appears.

Step 2 Enter a valid phone number and tap **Obtain**.

Step 3 Enter the **Verification Code** in the SMS received.

Step 4 Tap **Connect**.



After successful authentication, the browser will navigate to www.tenda.com.cn.

9.3.2 Example of configuring local user authentication

Networking requirement

An enterprise wants to establish a network and regulate the use of the network with the router. The requirements include:

- Local user authentication with user name and password is required for employees who want to access the internet through the LAN port of the router or the wireless network **Tenda_W20E**.
- No upload or download rate limit is specified for employees.
- Employees are directed to www.tenda.com.cn after being authenticated.
- The network administrator is free from authentication when accessing the internet.

The requirement can be met with SMS authentication.

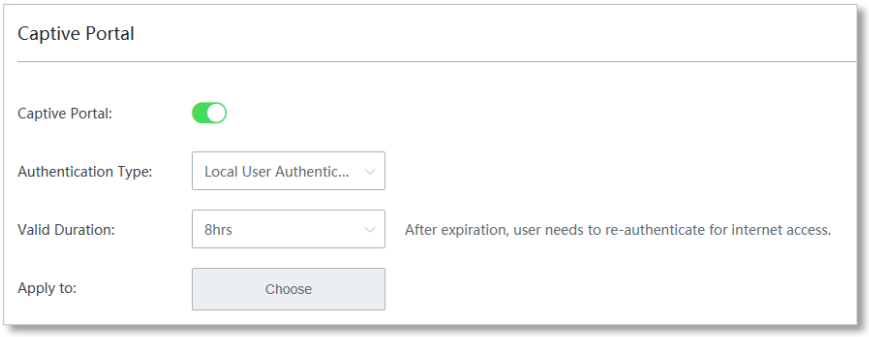
Assume that:

- The MAC address of the network administrator's computer is 44:37:E6:12:34:56.

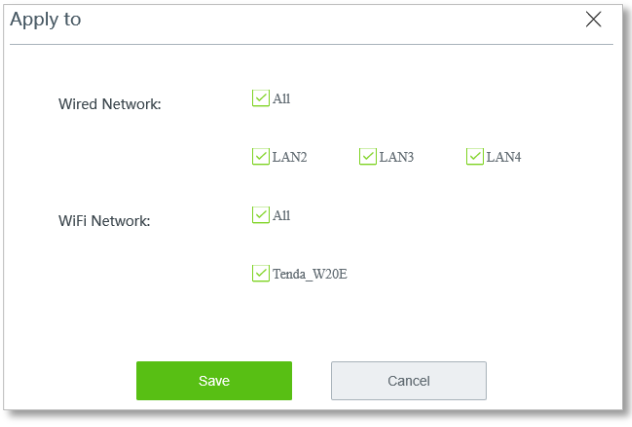
Configuration procedure

Step 1 Configure local user authentication.

1. Choose **Authentication** > **Captive Portal**.
2. Enable **Captive Portal**.
3. Select **Local User Authentication** in the **Authentication Type** drop-down list.
4. Select **Valid Duration**, such as **8 hours**.
5. Select **Choose**.

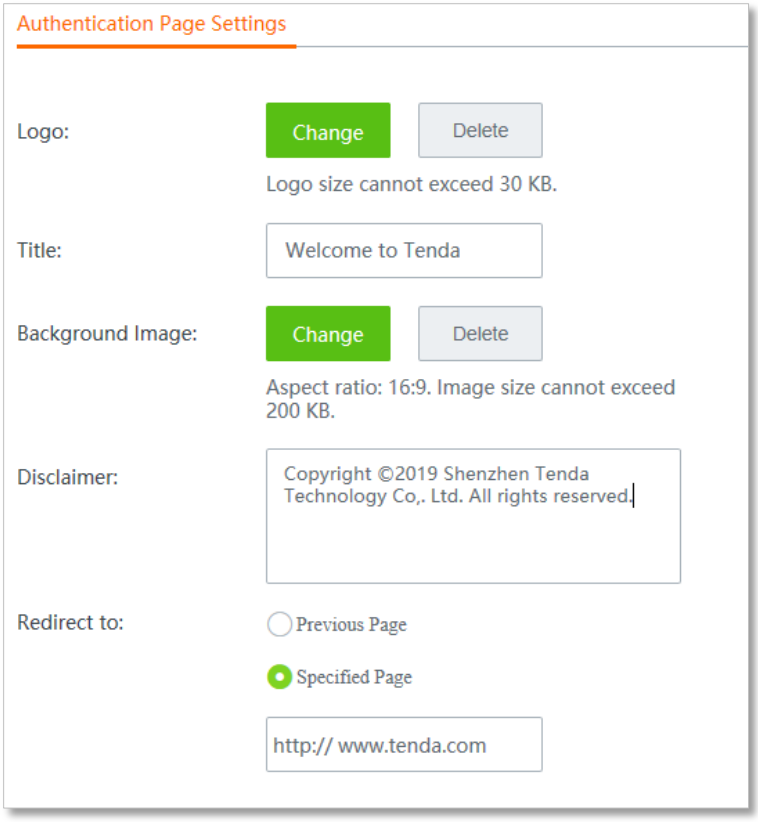


6. Choose the networks that the local user authentication is applied to, amd click **Save**



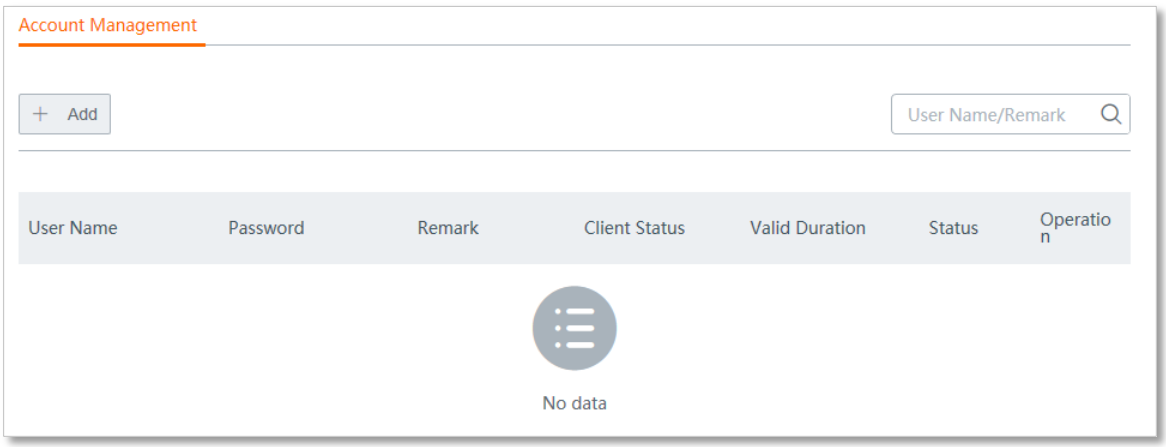
Step 2 Configure authentication page.

1. Click **Change** to upload a logo image.
2. Customize the **Title** of the authentication page.
3. Click **Change** to upload a background image.
4. Customize a **Disclaimer** for the enterprise, such as "**Copyright ©2019 Shenzhen Tenda Technology Co,. Ltd. All rights reserved**."
5. Select **Specified Page**, enter www.tenda.com.cn.
6. Click **Save**.



Step 3 Add local user authentication account (s).

1. Choose **Authentication** > **User Management**, and locate the **Account Management** configuration area.
2. Click **+Add**.



3. Fill the required parameters.

   (1) Set **User name** and **Password**, such as **zhangsan/zhangsan**,

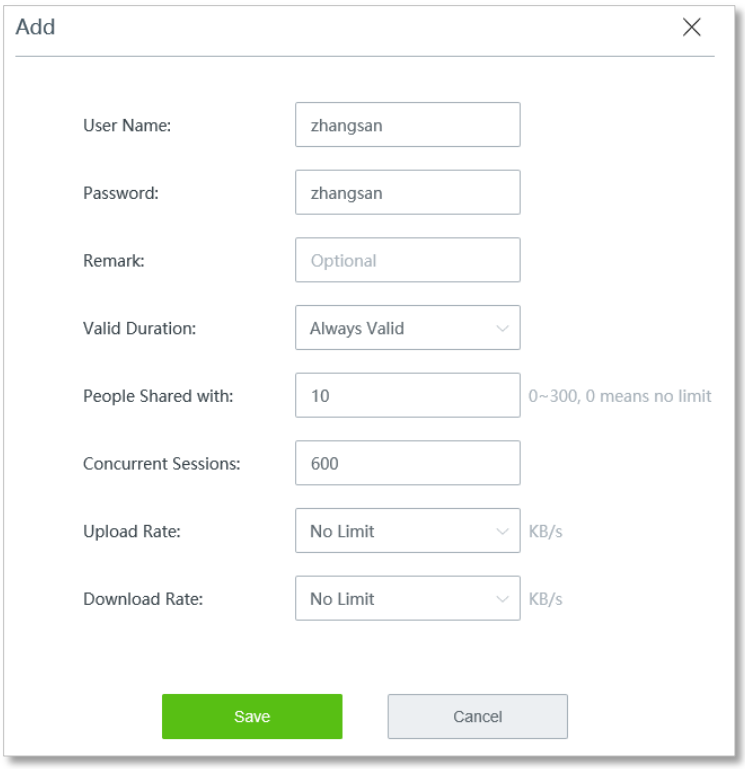
   (2) Set **Valid Duration** to **Always valid**,

   (3) Set **People Shared with** to **10**,

   (4) Set **Current Sessions** to **600**,

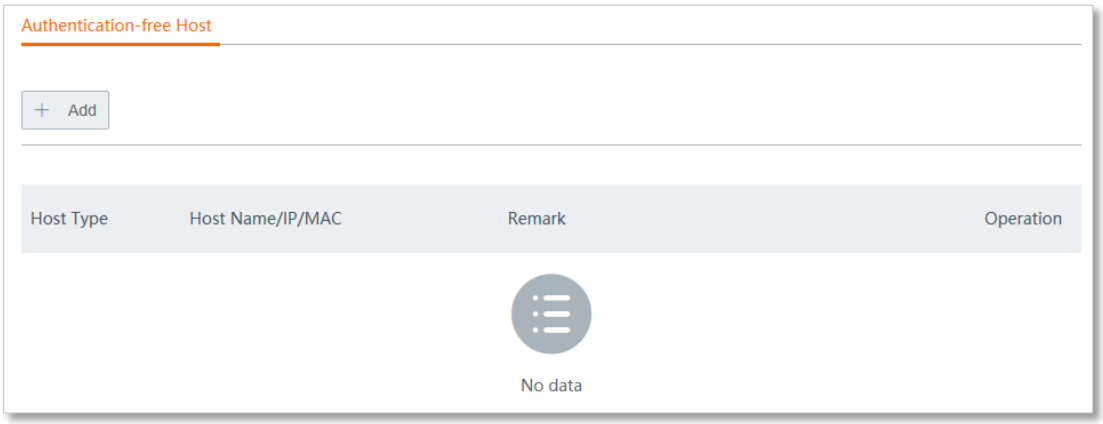
   (5) Set **Upload Rate** and **Download Rate** to **No Limit**.

   (6) Click **Save.**



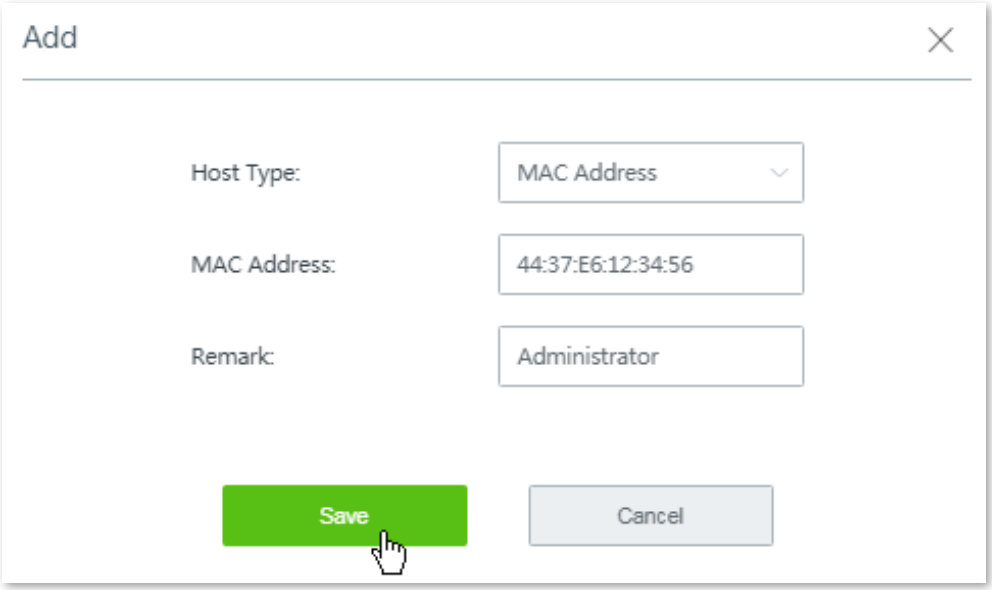
Step 4 Add authentication-free host.

1. Choose **Authentication** > **User Management**.
2. Navigate to **Authentication-free Host** configuration area, click **+Add**.



3. Select **MAC Address** for **Host Type**, enter a **MAC Address**, which is **44:37:E6:12:34:56** in this example.
4. Customize a **Remark** for the host, such as **Administrator.**

5. Click **Save**.



---- End

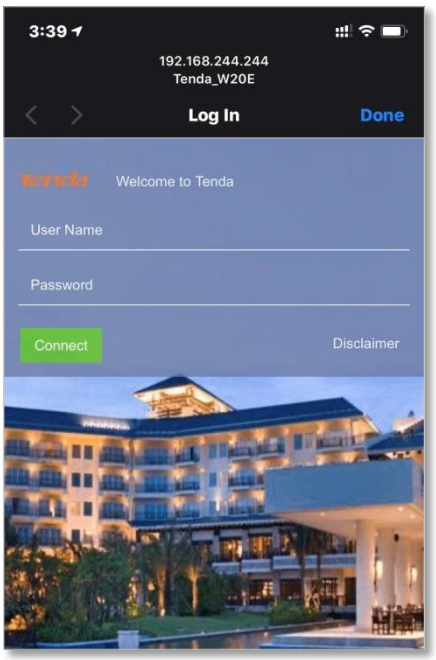
Verification

The network administrator can access the internet without authentication. Other employees have to perform local user authentication as follows:

Step 1 Start a web browser on a smart phone, and visit any website. The authentication page appears.

Step 2 Enter the correct **User Name** and **Password**.

Step 3 Tap **Connect**.



After successful authentication, the browser will navigate to www.tenda.com.cn.

9.3.3 Example of configuring email authentication

Networking requirement

An enterprise wants to establish a network and regulate the use of the network with the router. The requirements include:

- Email authentication is required for employees who want to access the internet through the LAN port of the router or the wireless network **Tenda_W20E**.
- No upload or download rate limit is specified for employees.
- Employees are directed to www.tenda.com.cn after being authenticated.
- The network administrator is free from authentication when accessing the internet.

Solution

The requirement can be met with email authentication.

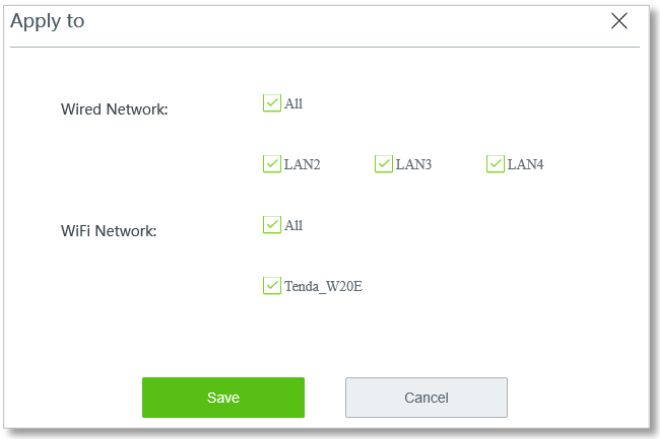
Assume the MAC address of the network administrator's computer is 44:37:E6:12:34:56, and the parameters of the email server are as follows:

- Email address: zhangsan@163.com
- Email password: abc123456
- SMTP server: smtp.163.com
- SMTP server port: 465
- Account for test: lisi@163.com

Configuration procedure

Step 1 Configure local user authentication.

1. Choose **Authentication** > **Captive Portal**.
2. Enable **Captive Portal**.
3. Select **Email Authentication** in the **Authentication Type** drop-down list.
4. Set **Valid Duration**, such as **8 hours**.
5. Select **Choose**, choose the networks that the local user authentication is applied to, and click **Save**



Step 2 Configure email server settings.

1. Fill **zhangsan@163.com** in **Email Address**.
2. Fill **abc123456** in **Email Password**.
3. Fill **smtp.163.com** in **SMTP Server**.
4. Select **SSL**.
5. Fill **465** in **SMTP Server Port**.
6. Enter another email address in **Account for Test**, which is **lisi@163.com** in this example.

7. Click **Test** to ckeck if the configurations are correct.

TIP

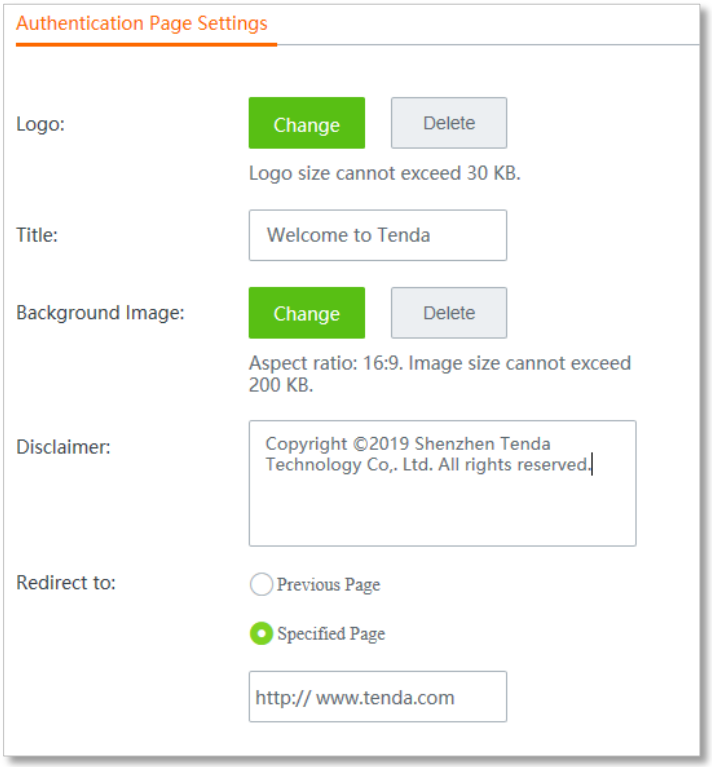
If the test fails, try the following solutions:

- Check if the SMTP service is enabled for the **Email Address**.
- Check if the **Account for Test** is valid.
- Change the email content.

Step 3 Configure authentication page.

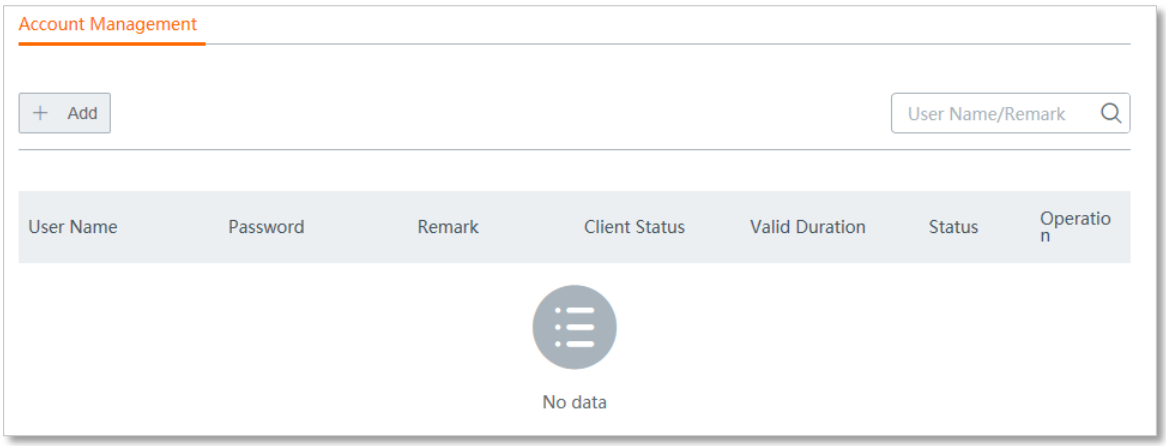
1. Click **Change** to upload a logo image.
2. Customize the **Title** of the authentication page.
3. Click **Change** to upload a background image.
4. Customize a **Disclaimer** for the enterprise, such as "**Copyright ©2019 Shenzhen Tenda Technology Co,. Ltd. All rights reserved.**"

5. Select **Specified Page**, enter www.tenda.com.cn.
6. Click **Save**.



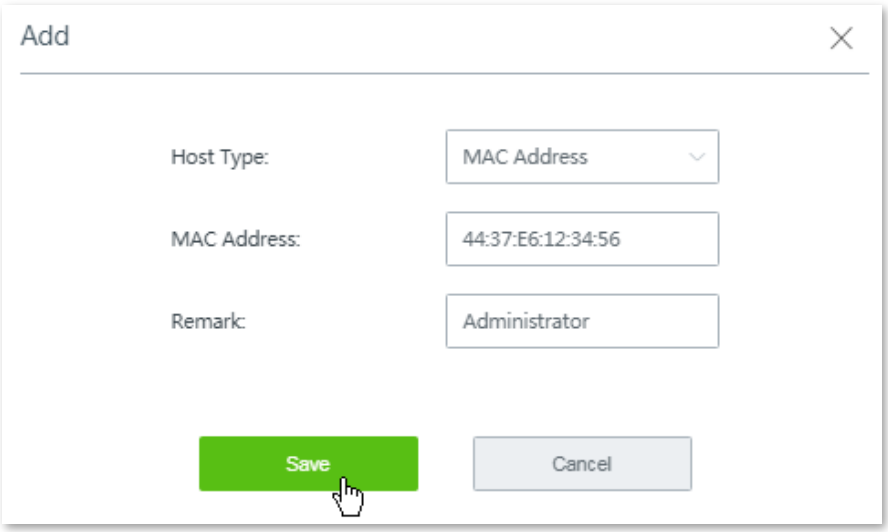
Step 4 Add authentication-free host.

1. Choose **Authentication** > **User Management**.
2. Navigate to **Authentication-free Host** configuration area, click **+Add**



3. Select **MAC Address** for **Host Type**, enter a **MAC Address**, which is **44:37:E6:12:34:56** in this example.
4. Customize a **Remark** for the host, such as **Administrator.**

5. Click **Save**.



---- End

Verification

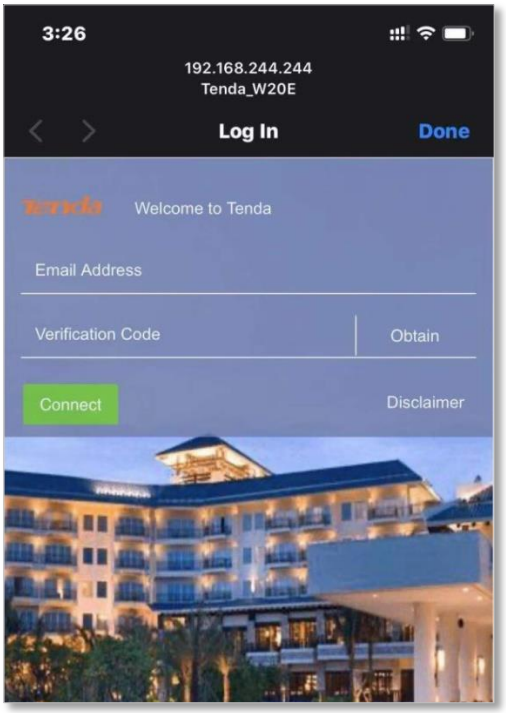
The network administrator can access the internet without authentication. Other employees have to perform email authentication as follows:

Step 1 Start a web browser on a smart phone, and visit any website. The authentication page appears.

Step 2 Enter a valid email address in the **Email** box and tap **Obtain**.

Step 3 Enter the **Verification Code** in the email received.

Step 4 Tap **Connect**.



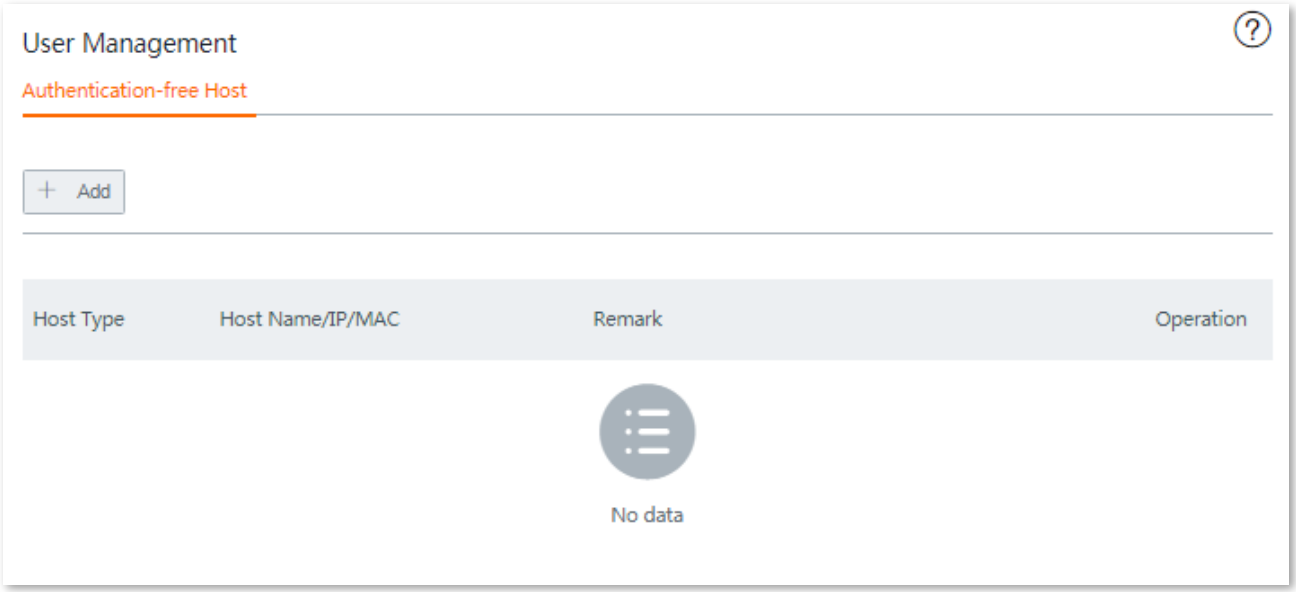
After successful authentication, the browser will navigate to www.tenda.com.cn.

9.4 User management

9.4.1 Overview

To manage users connected to the network of the router, choose **Authentication** > **User Management**. See the following figure.

In this page you are able to add authentication-free host, add user accounts used for local user authentication and import or export account data of authenticated accounts.

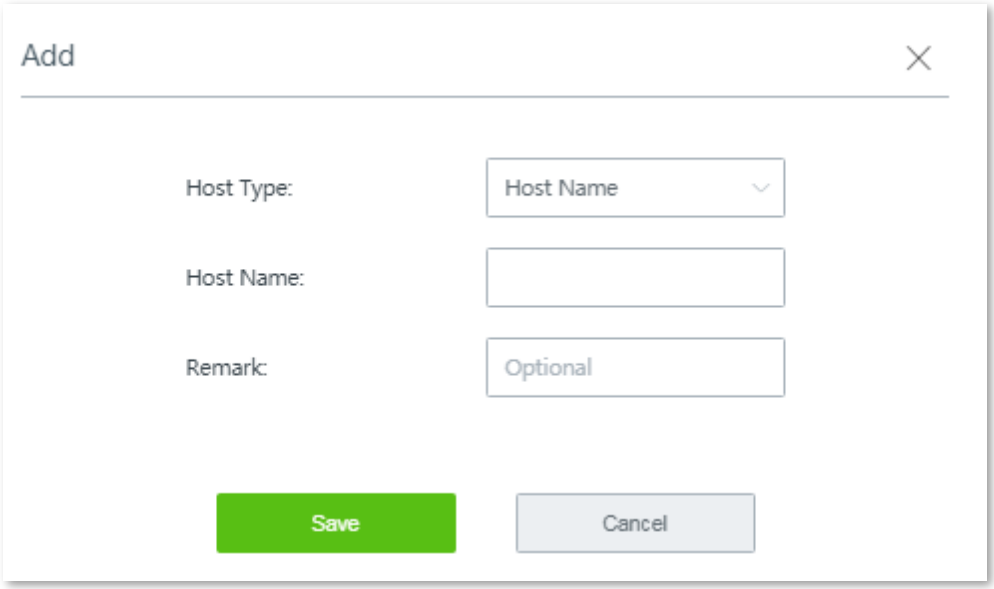


9.4.2 Add authentication-free host

Configuration procedure

Step 1 Click **+Add**.

Step 2 Set the required parameters.



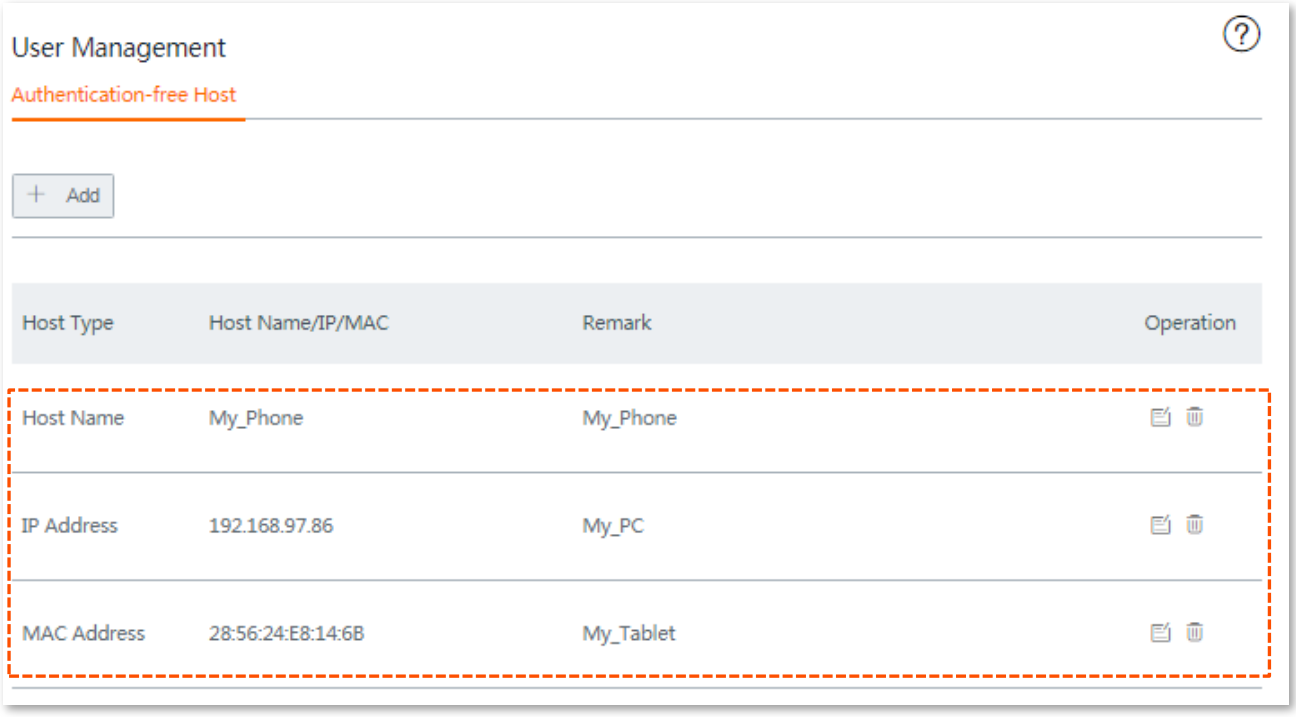
Parameter description

Parameter	Description
Host Type	It allows you to set a device without authentication based on host name, IP address or MAC address.
Host Name	When the **Host Type** is set as **Host Name**, input the host name of the authentication-free device. To get the host name of the device, navigate to **System Status** > **Online Devices**. TIP Once the host name is modified, the authentication-free rule will be disabled. To make such a rule effective, manually edit the **Host Name** here simultaneously.
IP Address	When **Host Type** is set as **IP Address**, input the IP address of the authentication-free device.
MAC Address	When **Host Type** is set as **MAC Address**, input the MAC address of the authentication-free device.
Remark	(Optional) It specifies a brief description of an authentication-free host.

Step 3 Click **Save**.

---- End

The **User Management** page appears, showing the added hosts. See the following figure:



9.4.3 Add user accounts used for local user authentication

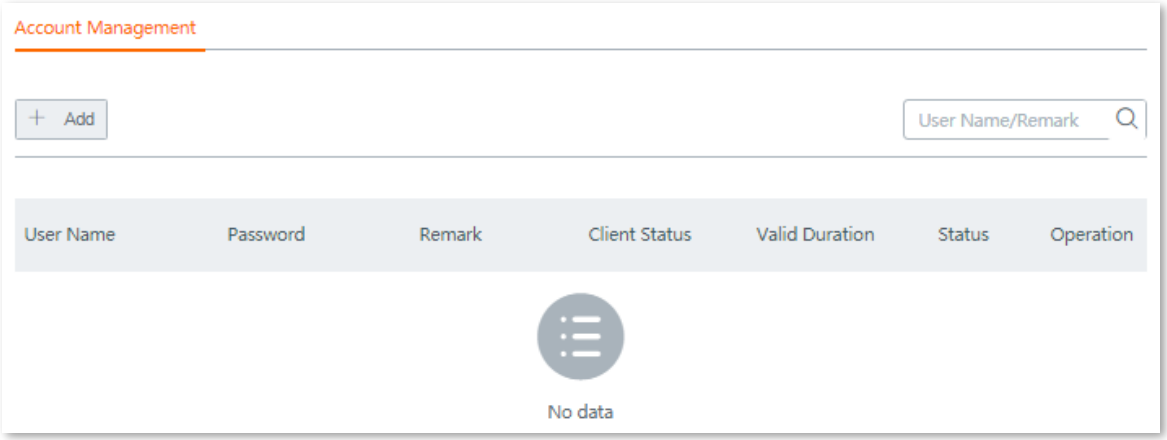
You can add user accounts in this page and use it for local user authentication.

NOTE

You are allowed to create a maximum of **300** accounts.

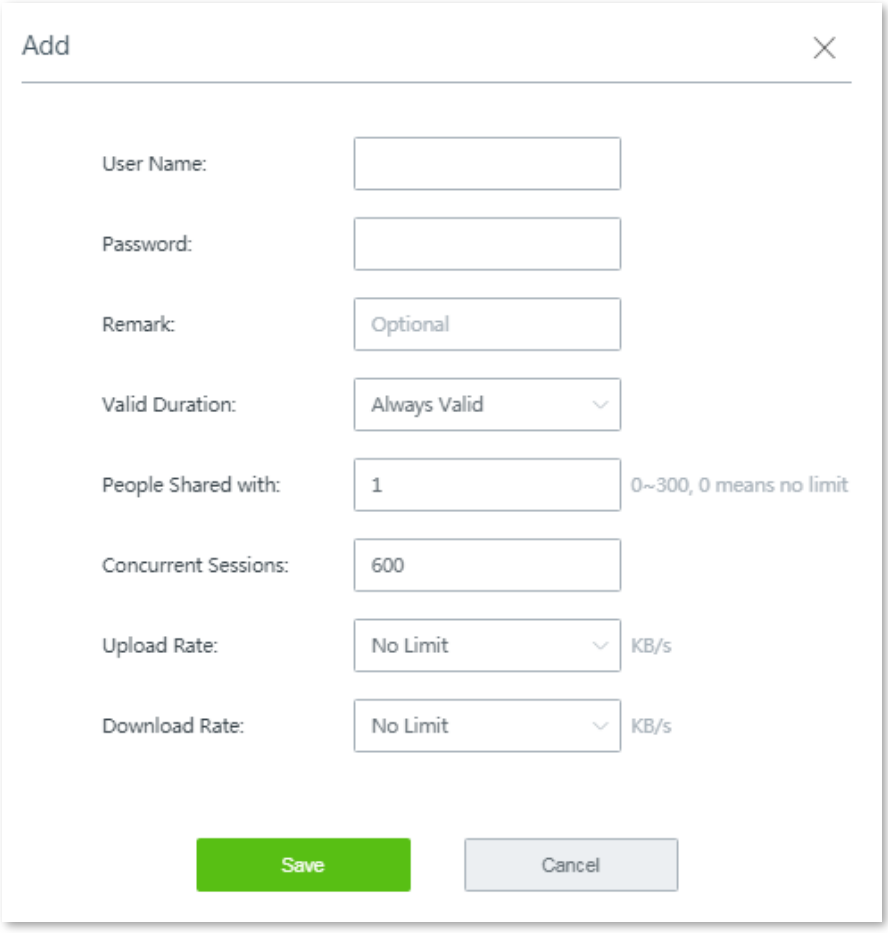
Configuration procedure

Step 1 Choose **Authentication** > **User Management**, and locate the **Account Management** configuration area.



Step 2 Click **+Add**.

Step 3 Set required parameters.



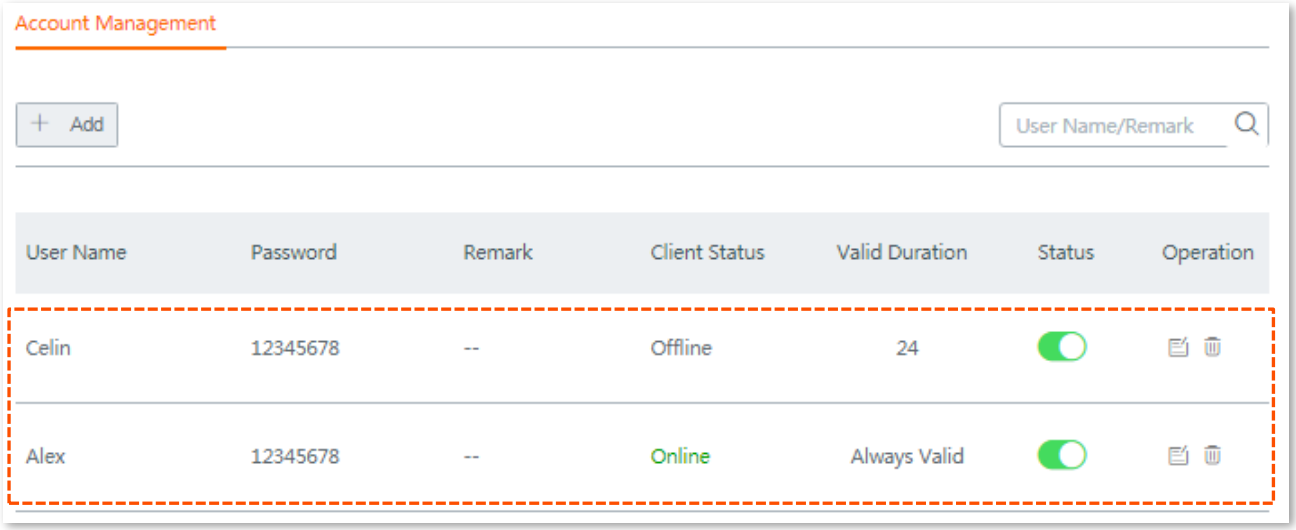
Parameter description

Parameter	Description
User Name	**User Name** specifies a user name for captive portal. **Password** specifies a password for captive portal. If captive portal is enabled, a user must be authenticated with a correct user name and password before accessing the internet.
Password	
Remark	(Optional). It specifies the description of a user account.
Valid Duration	It specifies the validity of a user account. **Valid Time**: Specify the validity time by hours. **Valid Date**: Specify the date before the account expires.
People Shared with	It specifies the number of users that the account is allowed for being authenticated.
Concurrent Sessions	It specifies the maximum number of connections that can be set up on each computer covered by the corresponding rule.
Upload Rate	It specifies the device's maximum upload/download rate covered by the corresponding rule. TIP 1 Mbps=128 KB/s
Download Rate	

Step 4 Click **Save**.

---- End

The **User Management** page appears, showing the added user accounts. See the following figure.



TIP

Client Status includes:

- **Offline**: The account is not in use.
- **Online**: The account is in use.

9.4.4 Export accounts data

Step 1 Choose **Authentication** > **User Management**, and move to the bottom of the page.

Step 2 Click **Export**.

----End

A file named ***auth_user.csv*** will be downloaded to your local computer.

9.4.5 Import accounts data

NOTE

A maximum of **300** account data is allowed for importing at one time.

Step 1 Choose **Authentication** > **User Management**, and move to the bottom of the page.

Step 2 Click **Browse**, select and upload a file that you've backed up.

TIP

A proper file name may be indicated by **auth_user.csv**.

Step 3 Click **Import**.

----End

You can view the imported accounts information on the **Account Management** configuration area.

10 AP mangement

The AP management function of the router enables you to manage Tenda APs centrally.

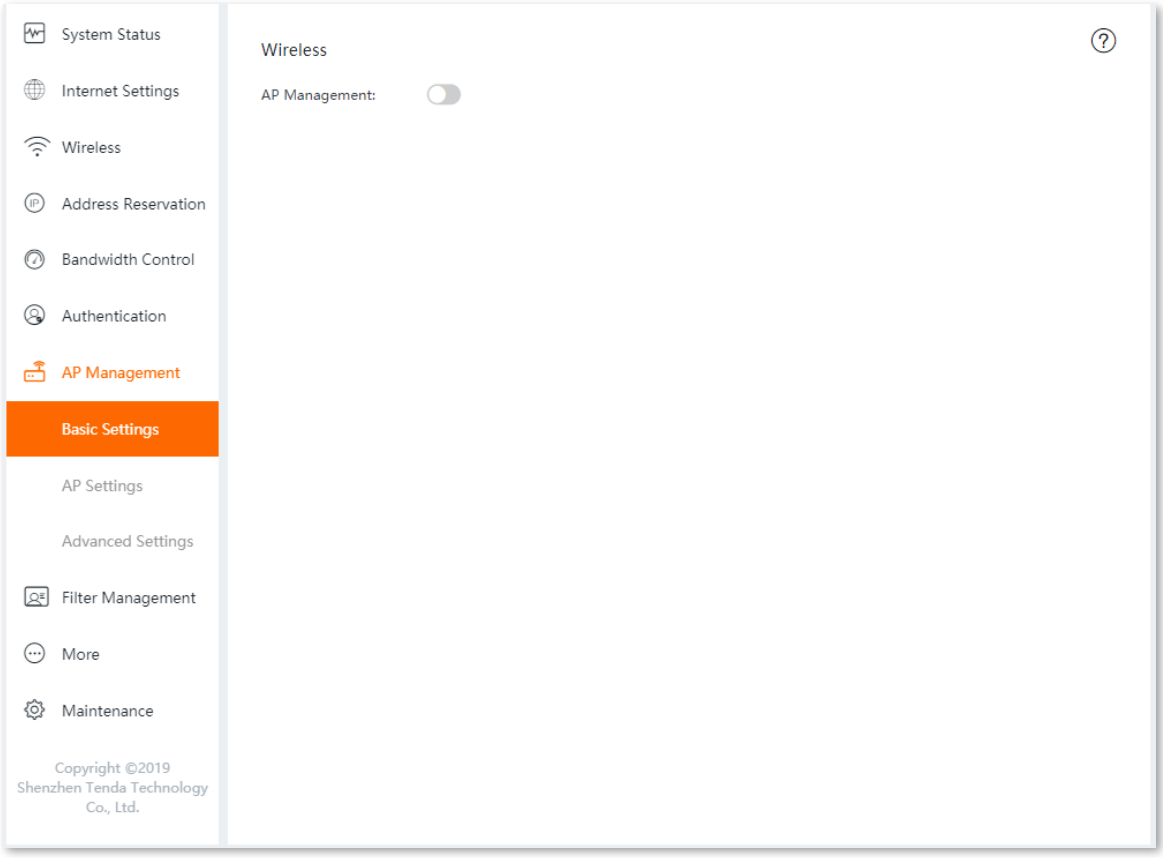
TIP

The router can only manage Tenda APs.

10.1 Basic settings

10.1.1 Overview

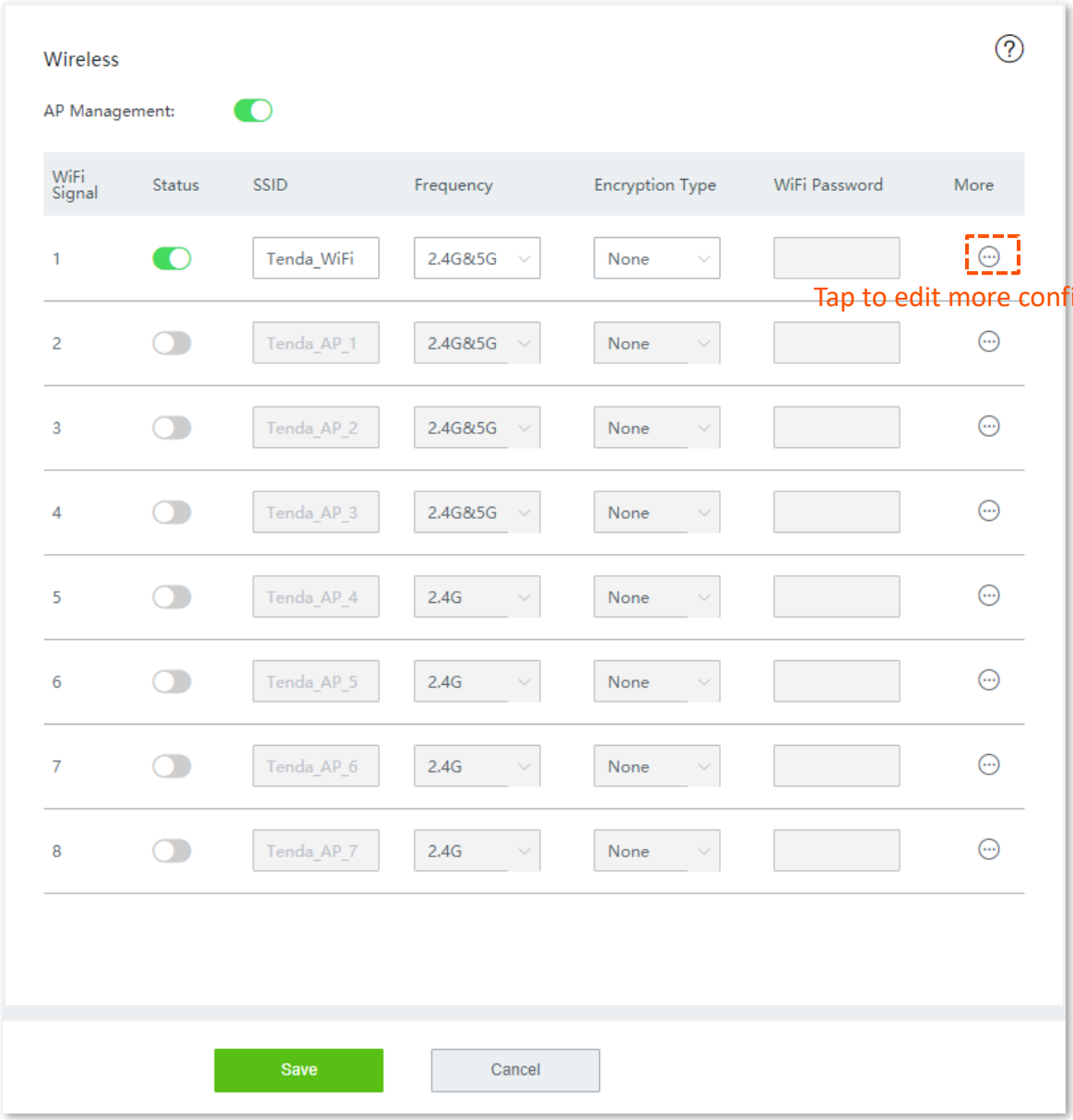
To access the configuration page, choose **AP Management** > **Basic Settings**. By default, this function is disabled. See the following figure:



After the **AP Management** function is enabled, the following configuration page appears. On the page, you are allowed to centrally set up WiFi network-related configurations of APs in your local area network, such as viewing and editing wireless network names (SSID), WiFi passwords, configuring 2.4 GHz and 5 GHz WiFi networks, hiding your WiFi network so that nearby wireless clients cannot detect it, and specifying how many wireless clients can connect to a wireless network at most.

The wireless configuration you configured here will be automatically delivered to the Tenda APs

within the LAN of the router.



Parameter description

Parameter	Description
WiFi Signal	Serial number of the wireless policies. - 1 to 4 policies: Used to apply to 1 to 4 wireless networks of APs - 5 to 8 policies: Used to apply to 5 to 8 wireless networks of APs.
Status	Used to enable or disable the wireless policy.
SSID	Used to change the wireless network name.
Frequency	Select a band used by the wireless policy which will be delivered to APs. - **2.4G:** The wireless policy will be applied to the 2.4 GHz wireless networks of APs. - **5G:** The wireless policy will be applied to the 2.4 GHz wireless networks of APs. - 2.4G&5G: The wireless policy will be applied to the 5 GHz wireless networks of

Parameter	Description
	APs. TIP If a single band is selected in policies 1 to 4, the wireless networks at the other band will be disabled after the policy is delivered to APs.
Encryption Type	Encryption type of the wireless network. - **None:** Open wireless network. No password is required when a client connects to the wireless network. To secure the network, this option is not recommended. - **WPA_PSK:** The wireless network adopts the WPA-PSK authentication method (AES encryption rule). - **WPA2-PSK:** The wireless network adopts the WPA2-PSK authentication method (AES encryption rule).
WiFi Password	It specifies the pre-shared password for WPA_PSK and WPA2_PSK, as well as the password required for connecting to the wireless network.
More settings	For more settings, tap the icon and navigate to the configuration page: - **Isolate Client**: With this function enabled, clients connected to the wireless network cannot communicate with each other, improving the security of the wireless network. By default, this function is disabled. - **Hide SSID**: With this function enabled, nearby wireless clients cannot detect the SSID, and you need to manually enter the SSID on the wireless client to access the wireless network. Disable indicates that nearby wireless clients can detect the SSID. By default, this function is disabled. - **Max. Users**: Maximum number of wireless clients that can be connected to the wireless network with the SSID. After the value is reached, this wireless network denies new connection requests. Clients connected to all the enabled wireless networks (including guest networks) of the router cannot exceed 128 on 2.4 GHz and 5 GHz bands respectively. - **VLAN ID**: Not supported in this version.

10.1.2 Distribute wireless policies to APs

NOTE

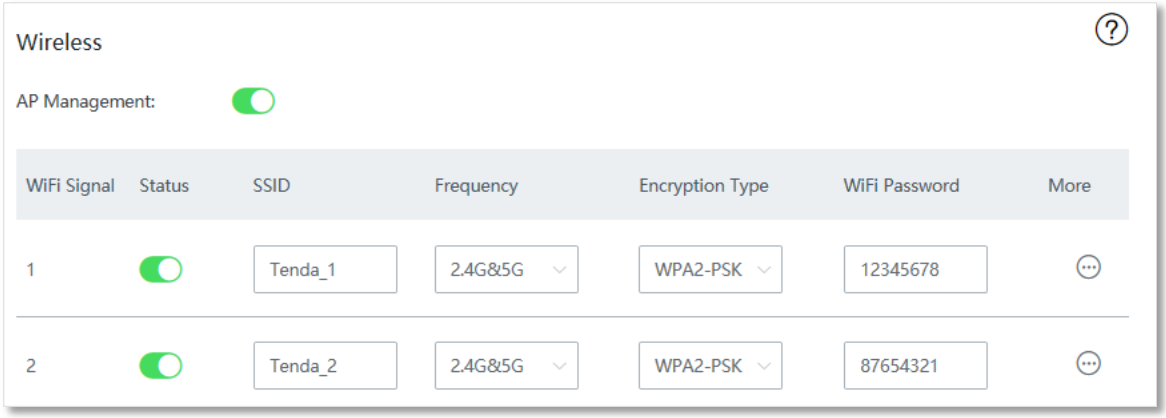
When wireless policies are distributed to APs that do not support part of the functions, these unsupported policies will still be received but will not take effect.

For example, when policies concerning 5G network are distributed to APs that do not support 5G, these policies will be received but will not take effect in these APs.

Step 1 Choose **AP Management** > **Basic Settings**.

Step 2 Change wireless configurations.

Step 3 Click **Save** at the bottom of the page.



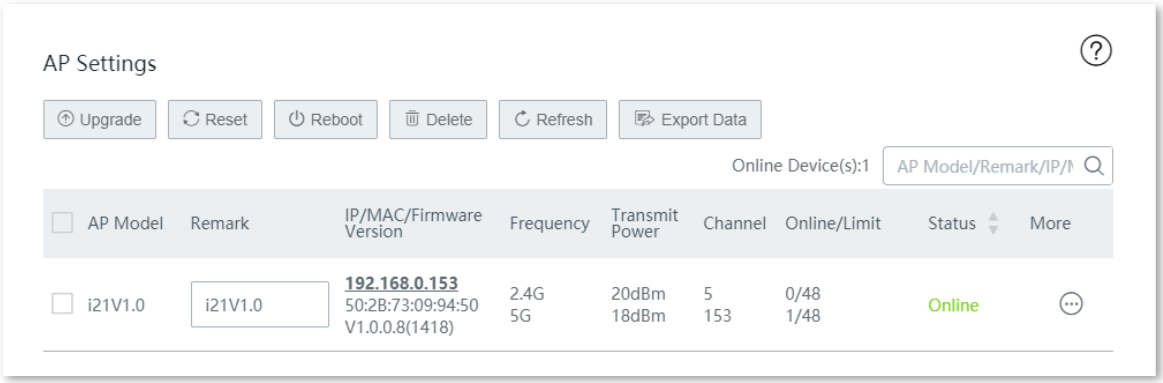
----End

10.2 AP settings

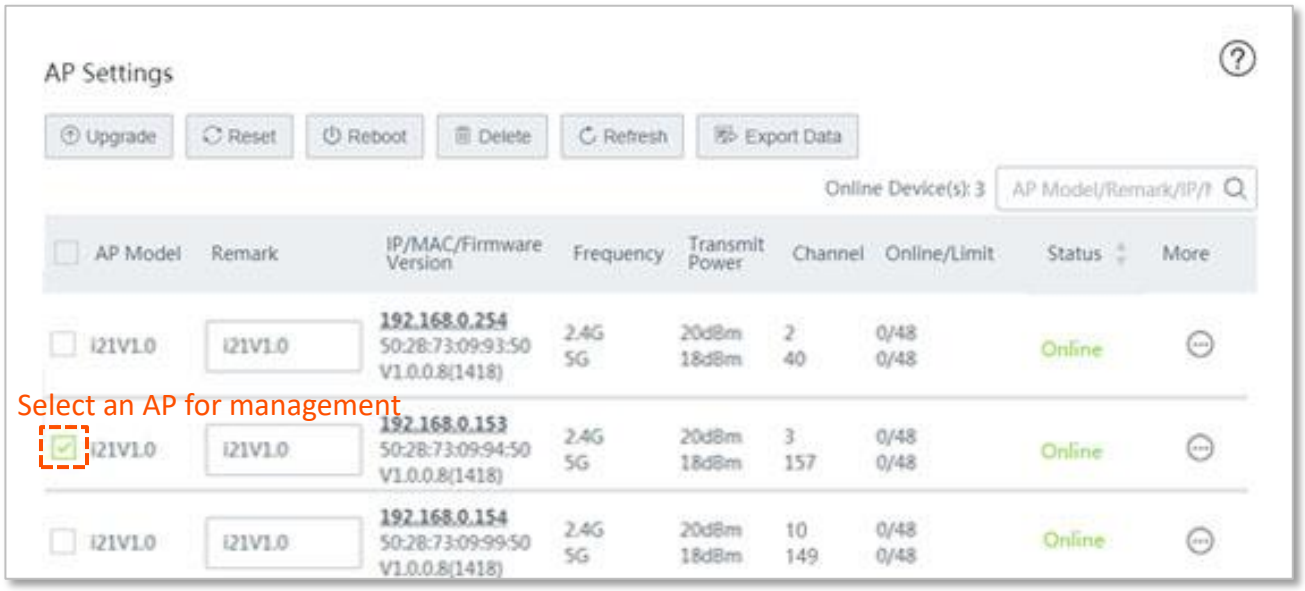
TIP

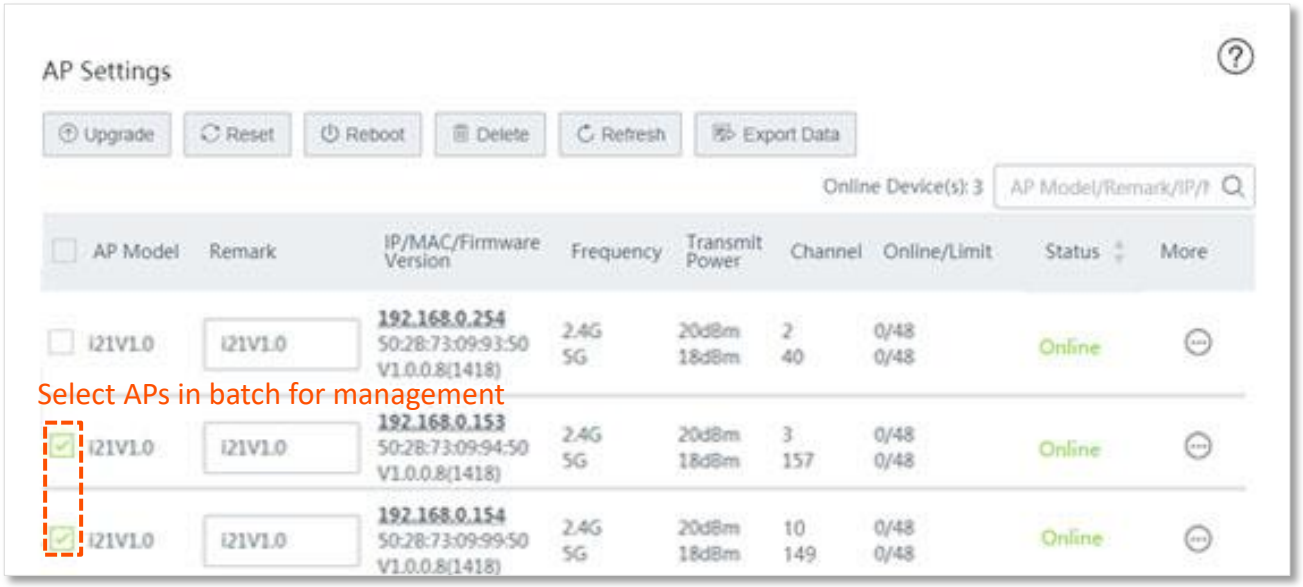
This function is available only when the AP Management function is enabled on the **AP Management** > **Basic Settings** page.

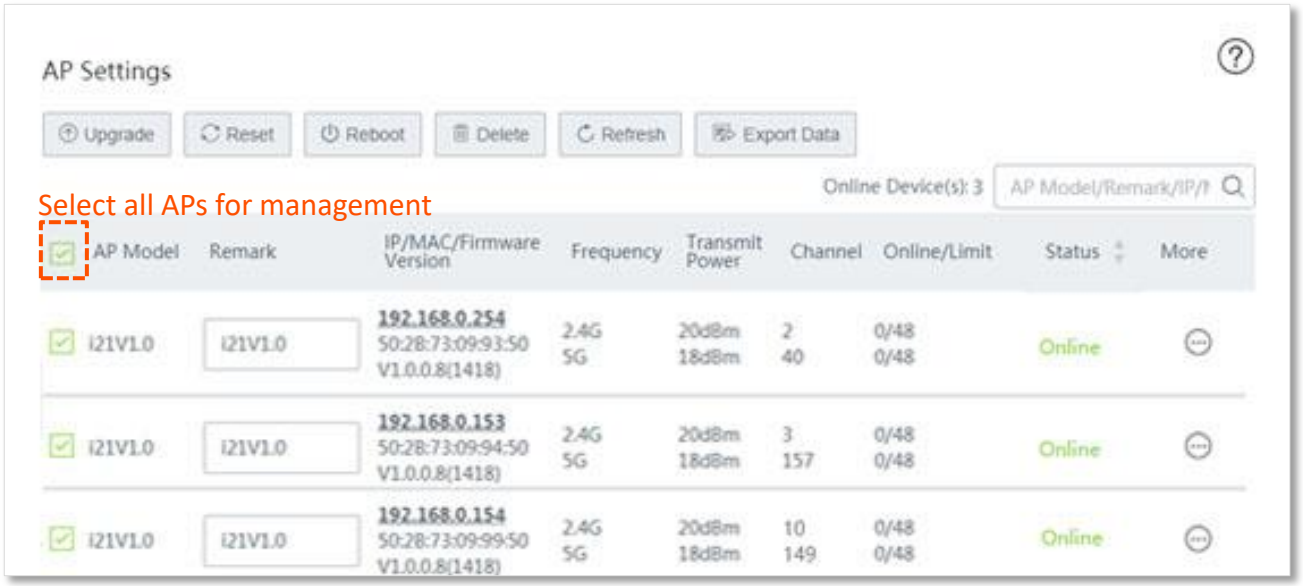
To access the configuration page, choose **AP Management** > **AP Settings**.



You can configure online APs separately, or upgrade, reset, or reboot APs centrally. The first figure below shows how to configure APs separately, while the other figures show how to configure your APs in batch.







10.2.1 Upgrade

NOTE

To avoid data loss and device damage, DO NOT remove the power of APs and the router during the upgrade.

Step 1 Download the latest firmware of the AP to your local computer.

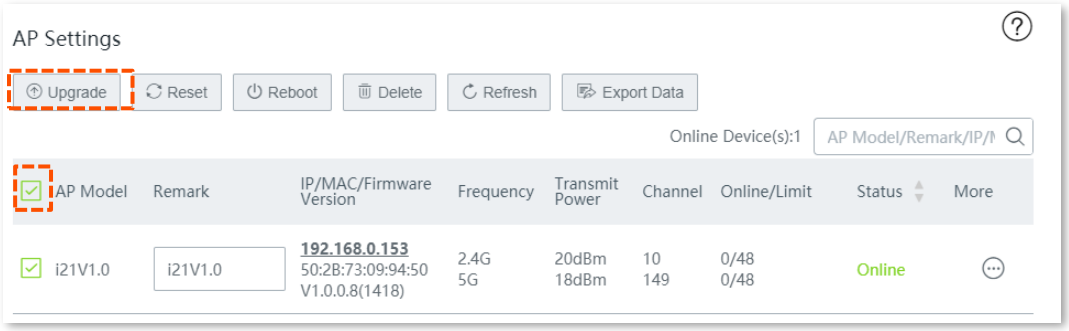
1. Visit www.tendacn.com, searching the AP model in the searching bar to enter the product details page.
2. Locate the latest firmware, download it to your computer, and unzip it.

Step 2 Click **AP Management > AP Settings** to access the configuration page.

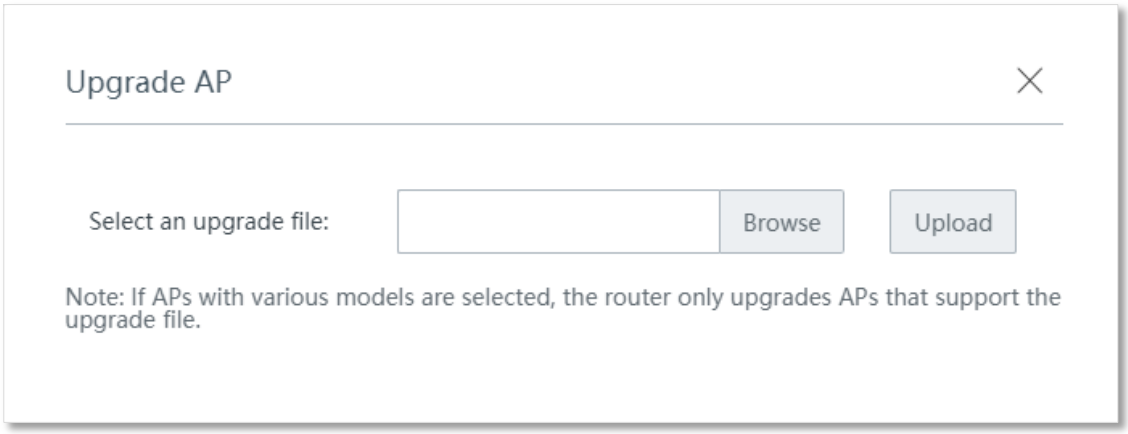
Step 3 Select APs you want to upgrade. You can upgrade APs one by one, or select them in batch. Click the **Upgrade** button.

TIP

Only APs of the same model can be upgraded in batch.



Step 4 Click **Browse** on the pop-up window, select and upload the firmware that has been downloaded to your computer.



Step 5 Click **Upload**. Wait until the progress bar completes.

---- End

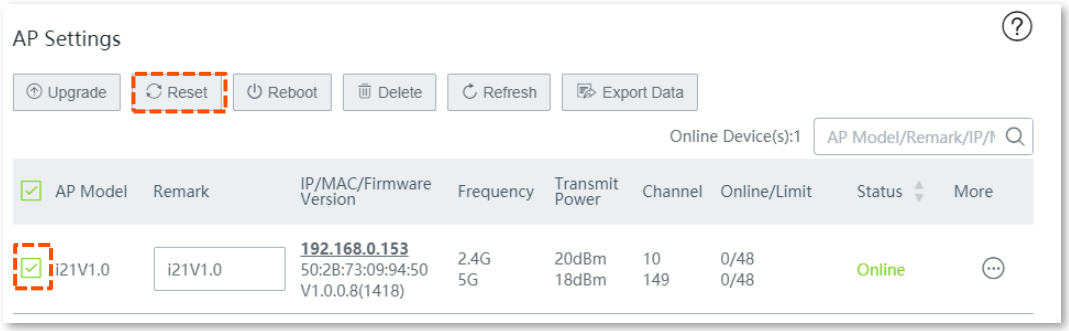
10.2.2 Reset the APs

TIP

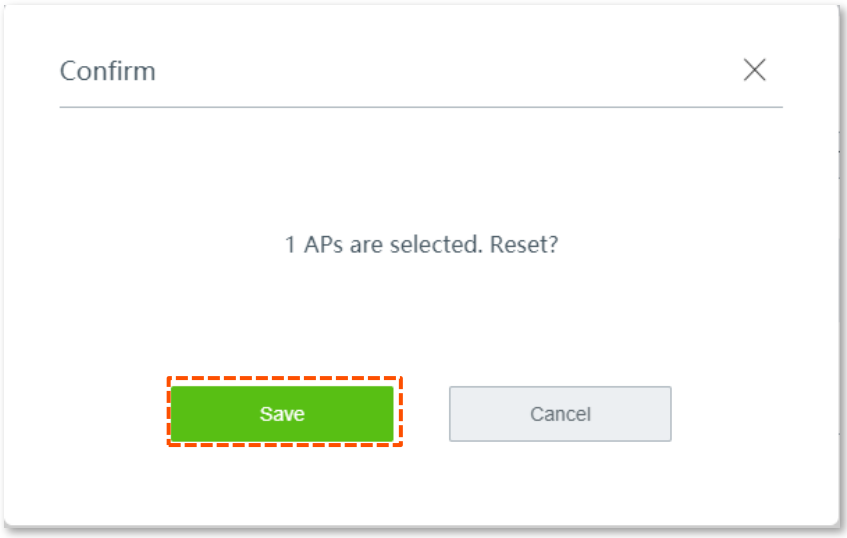
When resetting, do not power off the AP.

Step 1 Click **AP Management > AP Settings** to access the configuration page.

Step 2 Select APs you want to reset. You can reset APs one by one, or select multiple APs to reset them in batch. Click the **Reset** button.



Step 3 Click **Save** on the pop-up window. Wait until the progress bar completes.

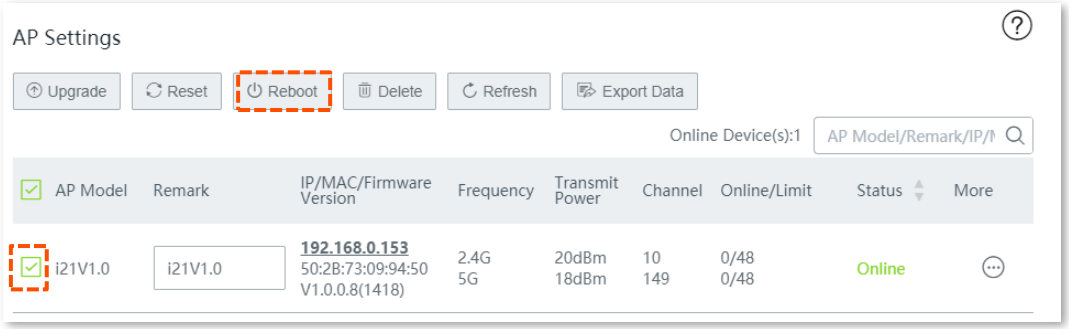


---- End

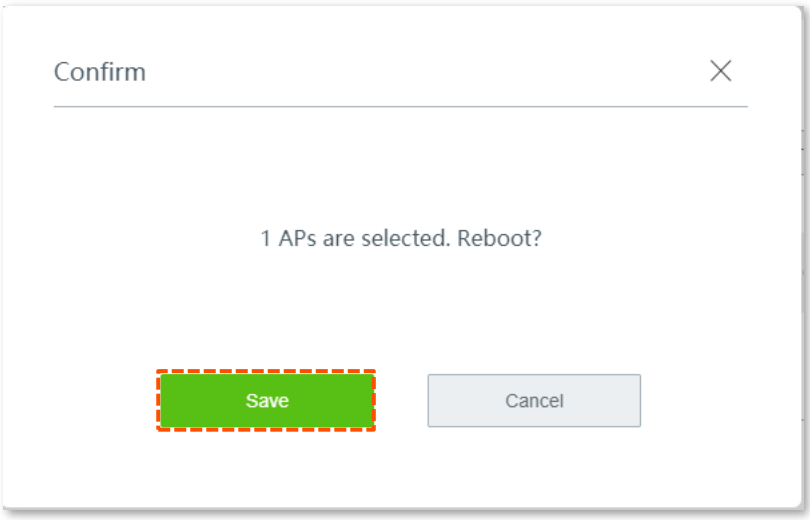
10.2.3 Reboot the APs

Step 1 Click **AP Management** >**AP Settings** to access the configuration page.

Step 2 Select APs you want to reboot. You can reboot APs one by one, or select multiple APs to reset them in batch. Click the Reboot button.



Step 3 Click **Save** on the pop-up window. Wait until the progress bar completes.

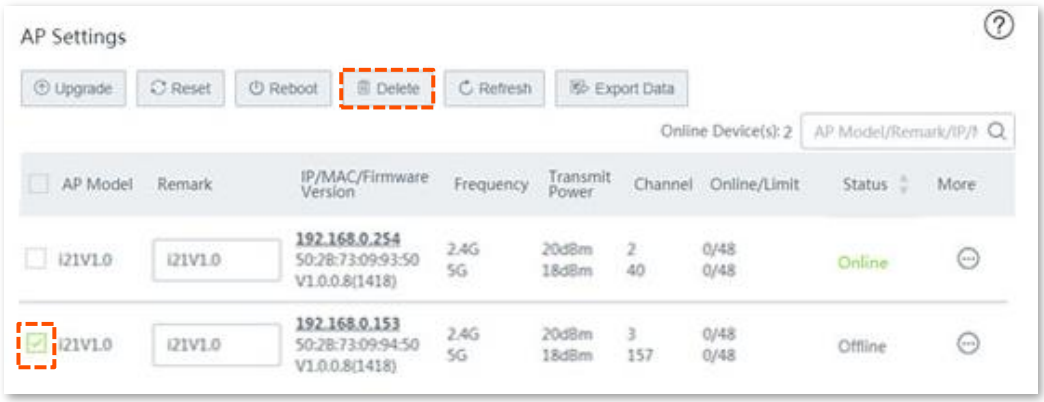


---- End

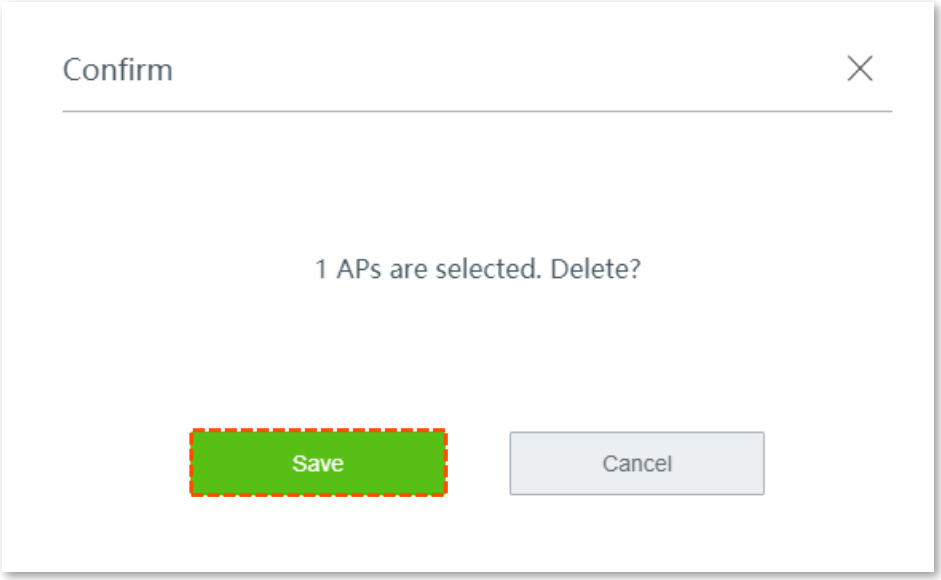
10.2.4 Delete the APs

Step 1 Click **AP Management** >**AP Settings** to access the configuration page.

Step 2 Select APs you want to delete. You can delete APs one by one, or select multiple APs to delete them in batch. Click the **Delete** button.



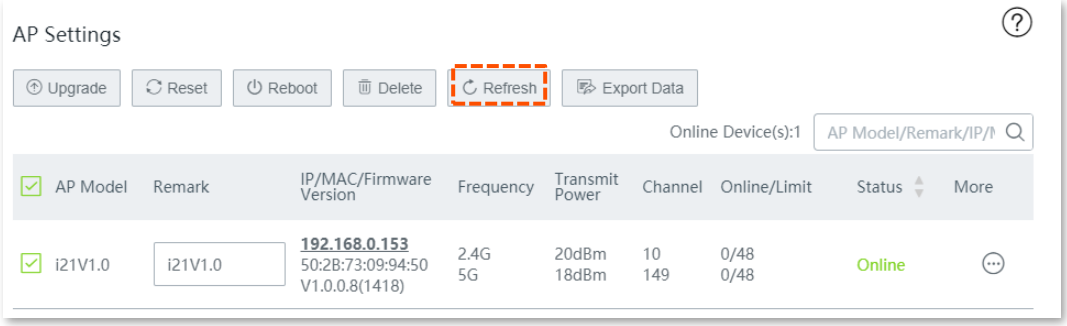
Step 3 Click **Save** on the pop-up window. Wait until the progress bar completes.



---- End

10.2.5 Refresh the page

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

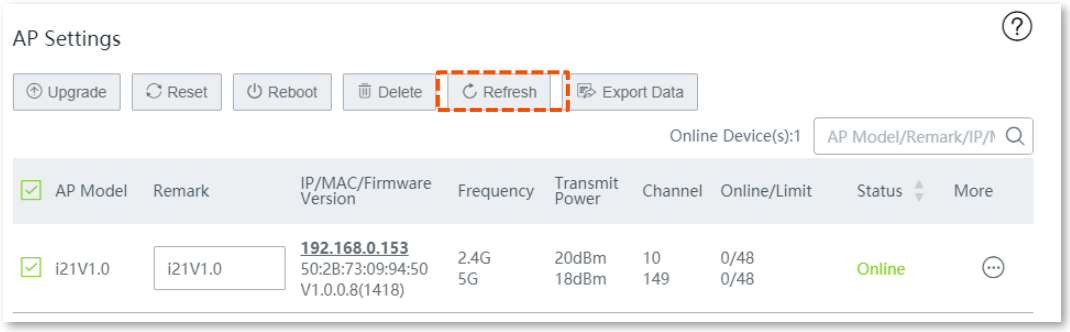


10.2.6 Export data

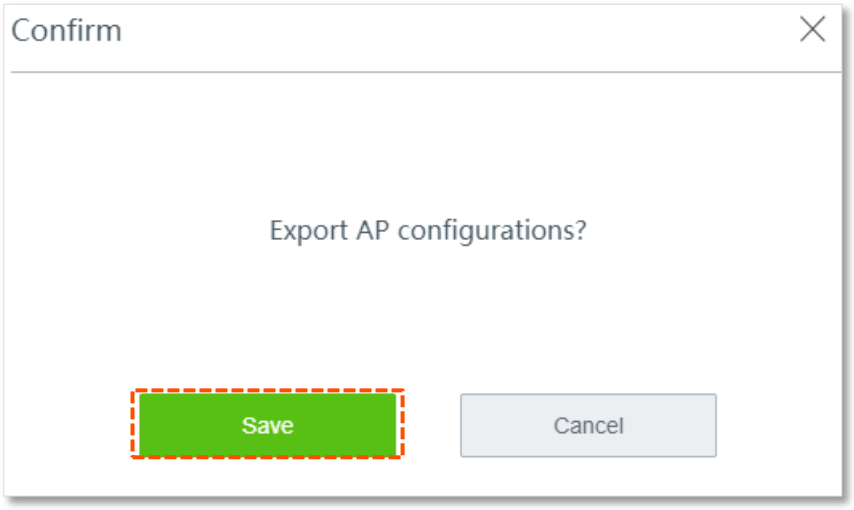
Use **Export Data** button if you want to download your APs' information displayed on the **AP Setting** page as an Excel document to your local computer.

Step 1 Click **AP Management** >**AP Settings** to access the configuration page.

Step 2 Click the **Export Data** button.



Step 3 Click **Save** button on the confirm page appears, and then an EXCEL file will be downloaded to your local computer.



---- End

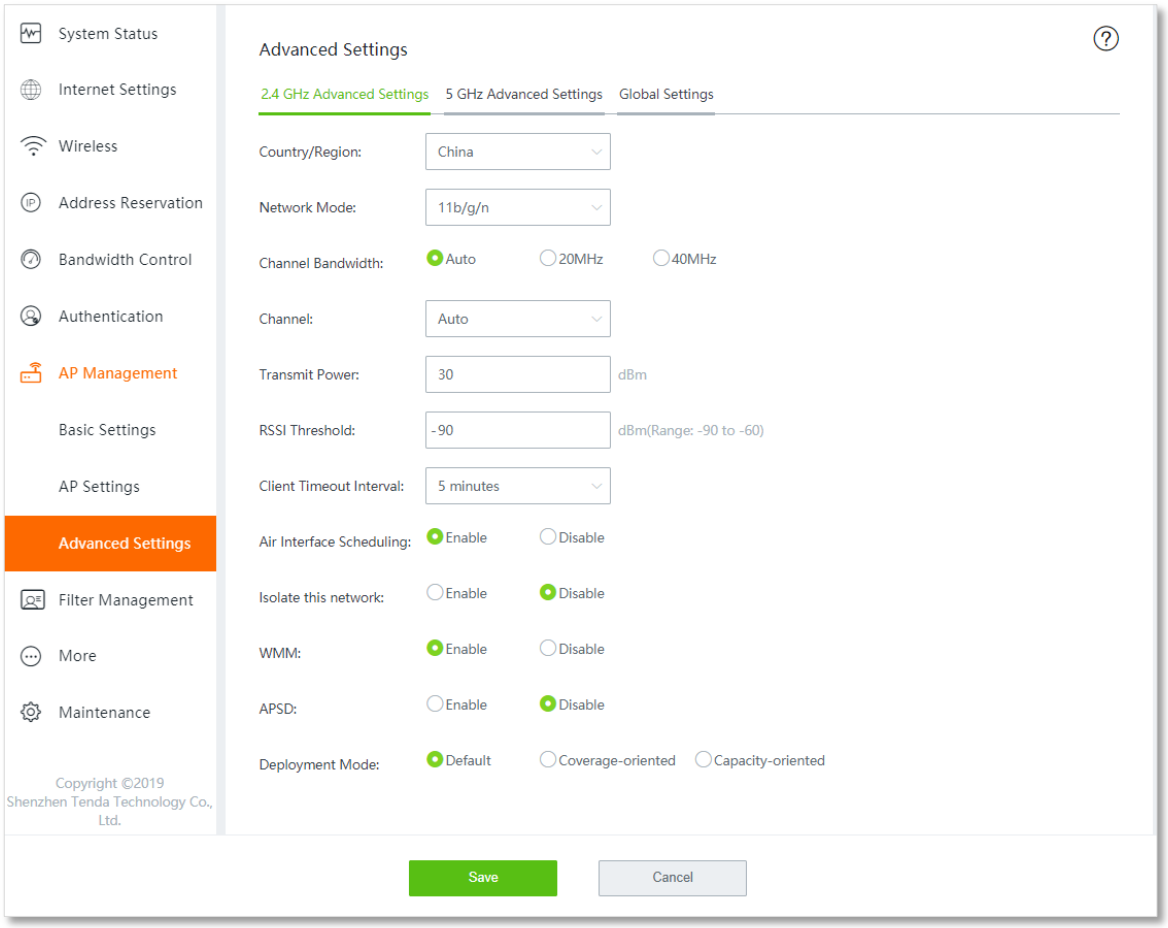
10.3 Advanced settings

TIP

This function is available only when the AP Management function is enabled on the **AP Management** > **Basic Settings** page.

In this section, you can set up advanced settings for the APs.

To access the configuration page, choose **AP Management** > **Advanced Settings**. See the following figure:



Parameter description

2.4 GHz Advanced Settings / 5 GHz Advanced Settings

Parameter	Description
Country/Region	Country or region where this device is located. You can select the country or region to ensure that this device complies with the local regulations.
Network Mode	Specify the channel in which the AP operates. Select one idle channel for less interference. **Auto** indicates that this device automatically changes to a channel rarely used in the ambient environment to prevent interference. Available options for **2.4 GHz** band: 802.**11b**, 802.**11g**, 802.**11b/g**, and 802.**11b/g/n** (default). Available options for **5 GHz** band: 802.**11a**, 802.**11ac** (default), and 802.**11a/n mixed**.

Parameter	Description
	You are recommended to keep the default settings.
Channel Bandwidth	Select the channel bandwidth for the AP. Available options for **2.4 GHz** band: **Auto** (default), **20MHz**, and **40MHz**. Available options for **5 GHz** band: **20MHz**, **40MHz**, and **80MHz** (default). You are recommended to keep the default settings.
Channel	Specify the channel in which the AP operates. Select one idle channel for less interference. **Auto** indicates that this device automatically changes to a channel rarely used in the ambient environment to prevent interference.
Transmit Power	Transmit power of the AP. If the specified transmit power exceeds the limit power of an AP, the actual power is equal to the limit power. For example, if the specified power is greater than the maximum power of an AP, the actual power of the AP is the maximum power after the wireless policy is delivered, and vice versa.
RSSI Threshold	Used to set the minimum received signal strength threshold of wireless clients connected to the AP. After this function is enabled, wireless clients whose received signal strength is lower than this threshold cannot connect to the AP. An appropriate threshold ensures the connection quality of clients.
Client Timeout Interval	If a wireless client does not exchange data with the AP in the specified period, the AP disconnects the client. Available options: **1 minutes, 5 minutes** (default), **10 minutes**, and 1**5 minutes.**
Prioritize 5 GHz	It specifies that a wireless client that compliant with dual-band wireless firstly connects to the 5 GHz band of the device if the corresponding wireless network uses the same SSID and password for both 2.4 GHz and 5 GHz. This function takes effect when: - The encryption mode is set to WPA-PSK, WPA2-PSK, or WPA-PSK&WPA2-PSK. - The SSID does not contain Chinese characters. By default, this function is enabled.
Air Interface Scheduling:	Air interface scheduling allocates equal download data transmission time for each client. In this way, high-speed clients can transmit more data packets and the AP has a higher throughput and client capacity. By default, this function is enabled.
Isolate this network	Whether to disable communications among the clients connected to different wireless networks of this device. This function increases wireless network security. By default, this function is disabled.
WMM	After WMM is enabled, voice and video packets are transmitted with top priority. You are recommended to enable this function for better transmission of

Parameter	Description
	multimedia packets. By default, this function is enabled.
APSD	It specifies whether to enable the Automatic Power Save Delivery (APSD) mode. APSD is a WMM power saving protocol created by Wi-Fi Alliance. Enabling APSD helps reduce power consumption. By default, this mode is disabled.
Deployment Mode	It specifies the deployment mode of the router. This parameter is valid only for 2.4 GHz networks. Select a mode that conforms to your application scenario. Available options: - **Default**: This option is a balance between Coverage-oriented and Capacity-oriented. - **Coverage-oriented**: This mode applies to scenarios that the network environment is complex, users are scattered, and the interference is weak. - **Capacity-oriented**: This mode applies to scenarios that the area is open and crowded with users and the interference is strong.

Global Settings

Parameter	Description
Ethernet Mode	Select the Ethernet mode for the PoE port of the AP. Available options: - **Standard (default)**: This mode features a high data rate but short transmission distance. - **10 Mbps Full Half Duplex**: This mode features long transmission distance but low data rate. Generally, the negotiated speed is 10 Mbps. If the Ethernet connecting the LAN port of the AP to the peer device is longer than 100 meters, this mode is recommended. In this case, ensure that the peer device adopts auto negotiation mode.
LED Indicator	Used to turn on/off the LED indicators of this device.
Reboot Schedule	Select the reboot schedule mode for the AP. Available options: - **Disable** (default). - **Reboot Schedule**: the AP reboots at the specified date and time. - **Reboot Interval**: the AP reboots every interval.

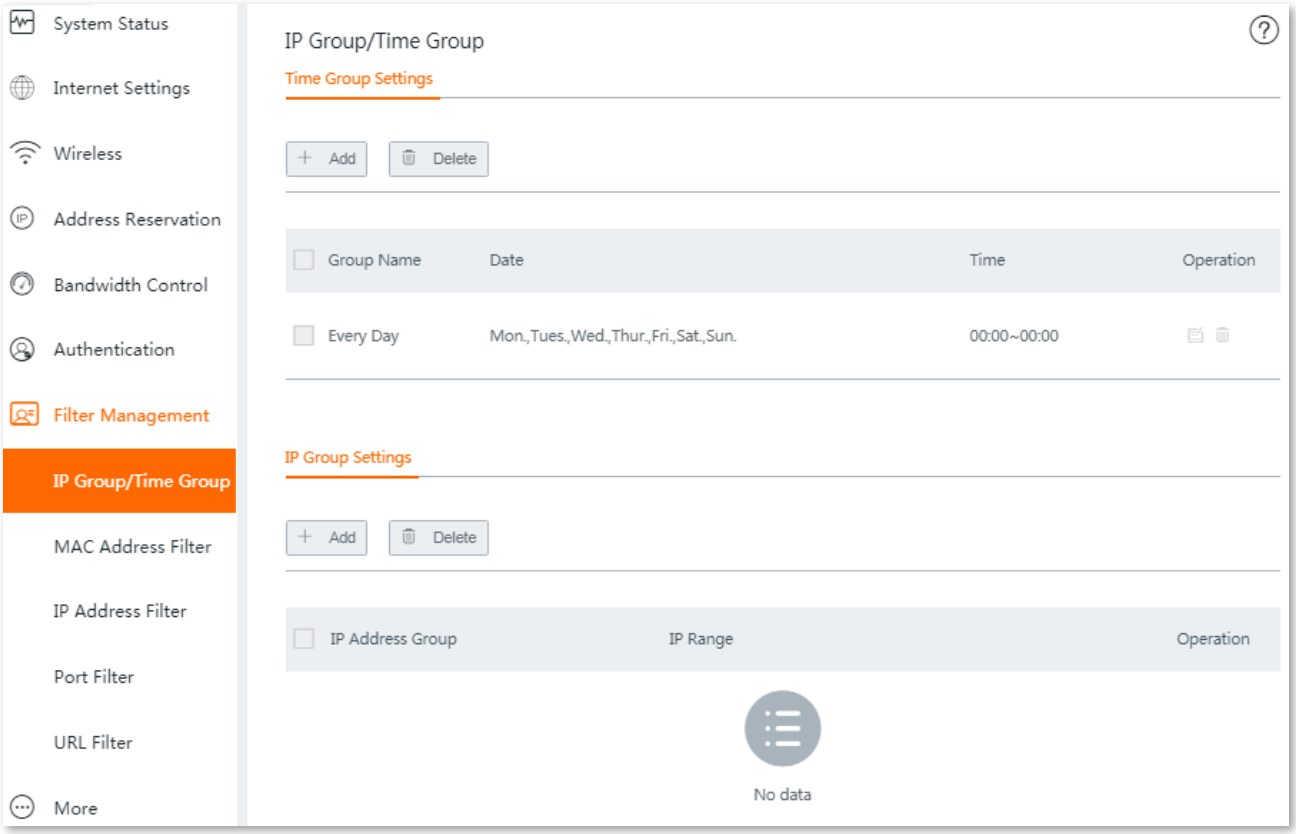
11 Filter management

11.1 Overview

The router allows you to configure MAC address-based, port-based, and URL-based filter rules to control the access of certain clients to specified pages.

11.2 Configure IP group and time group

To access the page for setting IP address groups and time groups, choose **Filter Management** > **IP Group/Time Group**. See the following figure.



11.2.1 Configure time groups

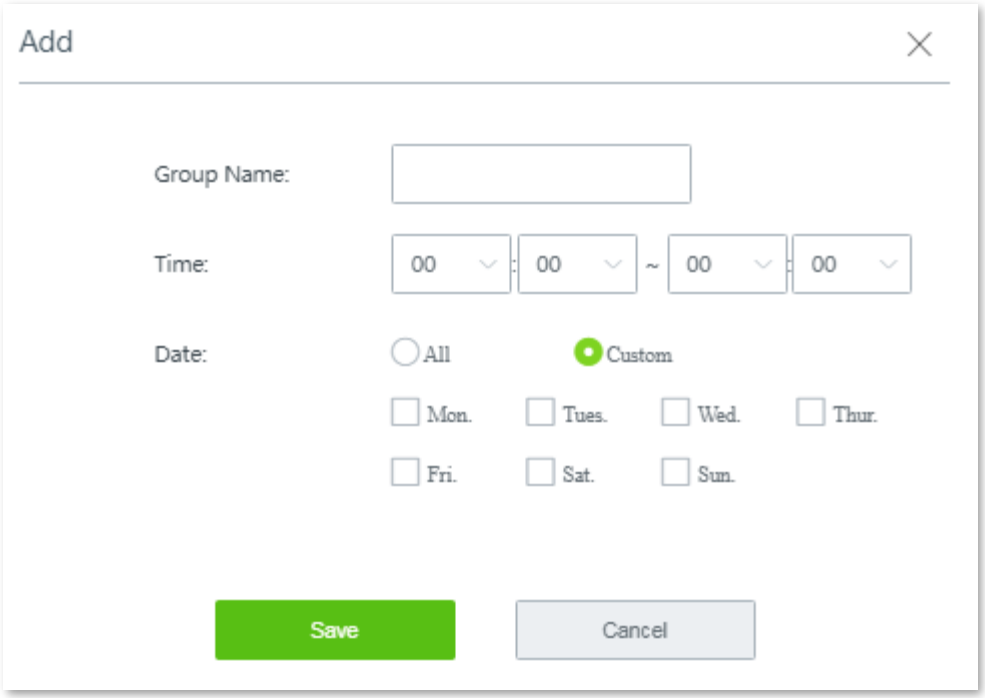
TIP

- By default, there is a time rule named **Every Day** which cannot be edited or deleted.
- A time group that has been referenced cannot be deleted.

Step 1 Choose **Filter Management** > **IP Group/Time Group** page, and locate the **Time Group**

Settings configuration area.

Step 2 Click **+Add**. The **Add** configuration window appears.



Step 3 Set the required parameters.

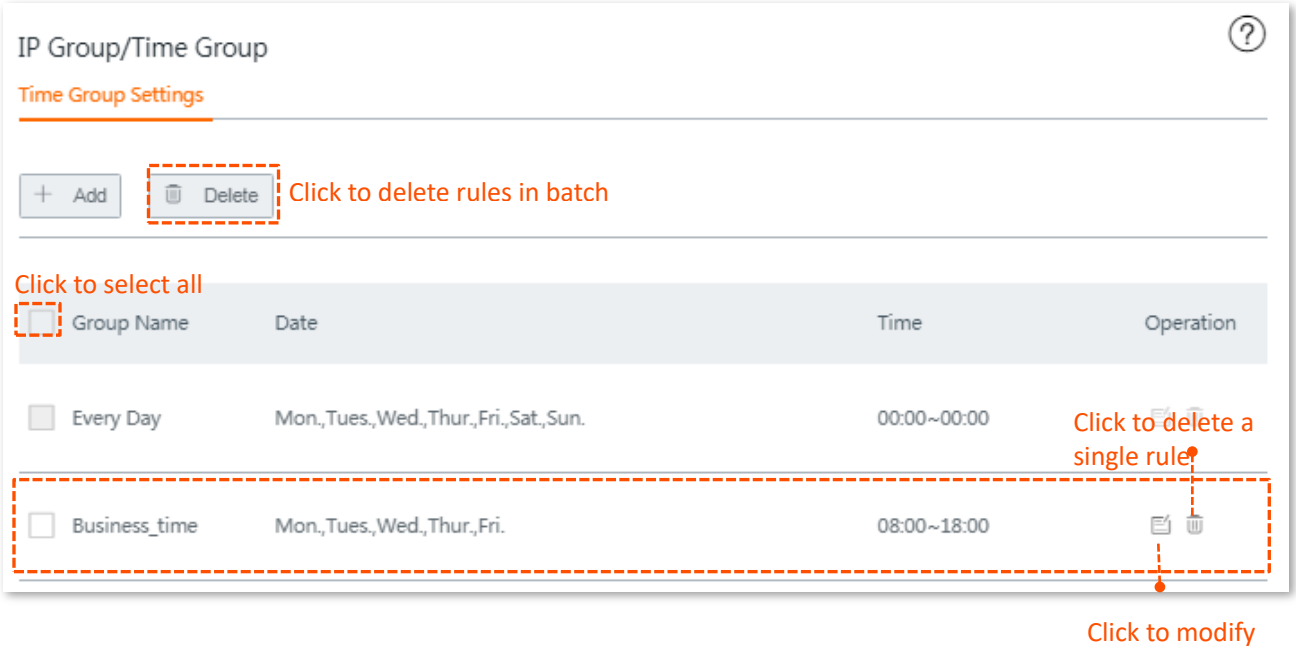
TIP

- Duplicate group names are **not** allowed.
- **00:00~00:00** indicates a whole day.

Step 4 Click **Save**.

---- End

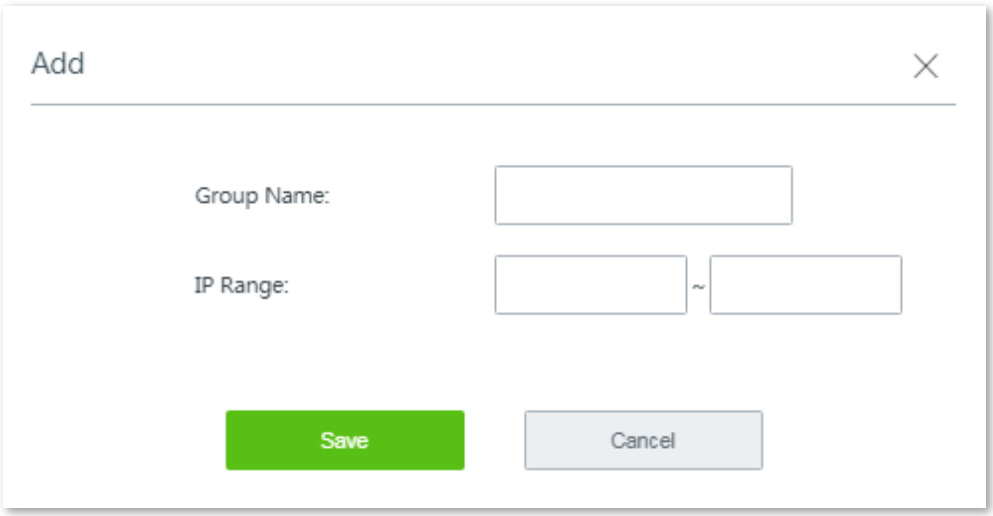
Added successfully. See the following figure.



11.2.2 Configure IP groups

Step 1 Choose **Filter Management** > **IP Group/Time Group**, and locate the **IP Group Settings** configuration area.

Step 2 Click **+Add**. The **Add** configuration window appears.



Step 3 Set the required parameters.

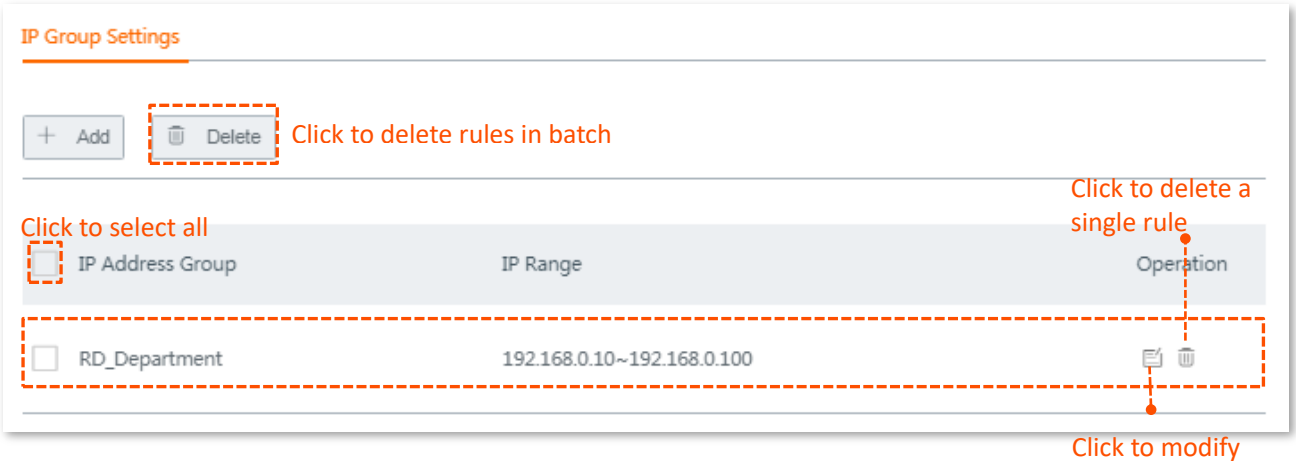
TIP

Duplicate group names are **not** allowed.

Step 4 Click **Save**.

---- End

Added successfully. See the following figure.



TIP

An IP address group that is in use cannot be deleted.

11.3 MAC address filter

This is a time group-related function. You can create MAC address-based rules to decide whether or not clients can access the internet through the router on what time.

11.3.1 Configure the MAC address filter

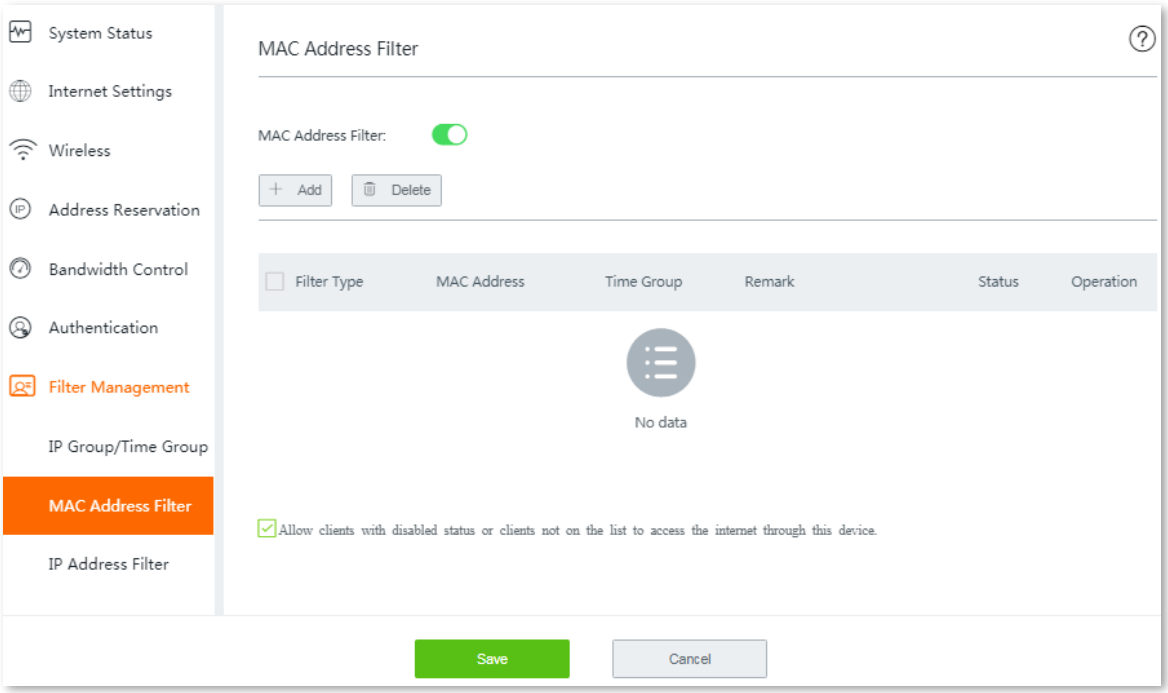
Before you start

Set up at least one time group rule. The default time group name is **Every Day**.

Configuration procedure

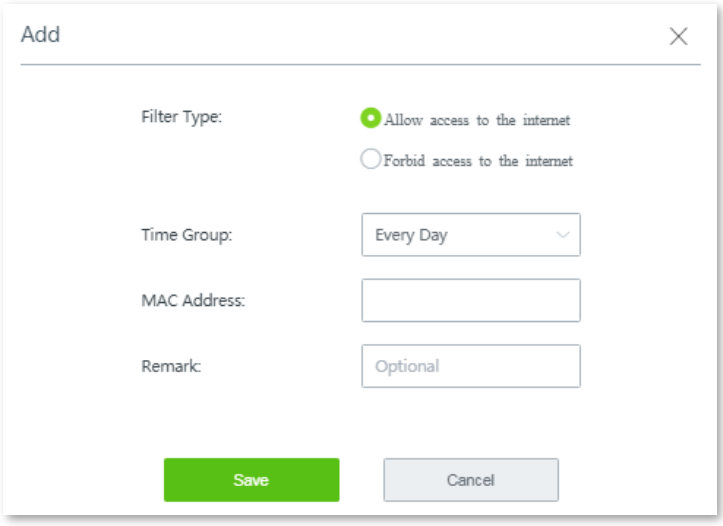
Step 1 Choose **Filter Management** > **MAC Address Filter**.

Step 2 Enable this function, and click **Save**.



Step 3 Configuring MAC address filter rule(s).

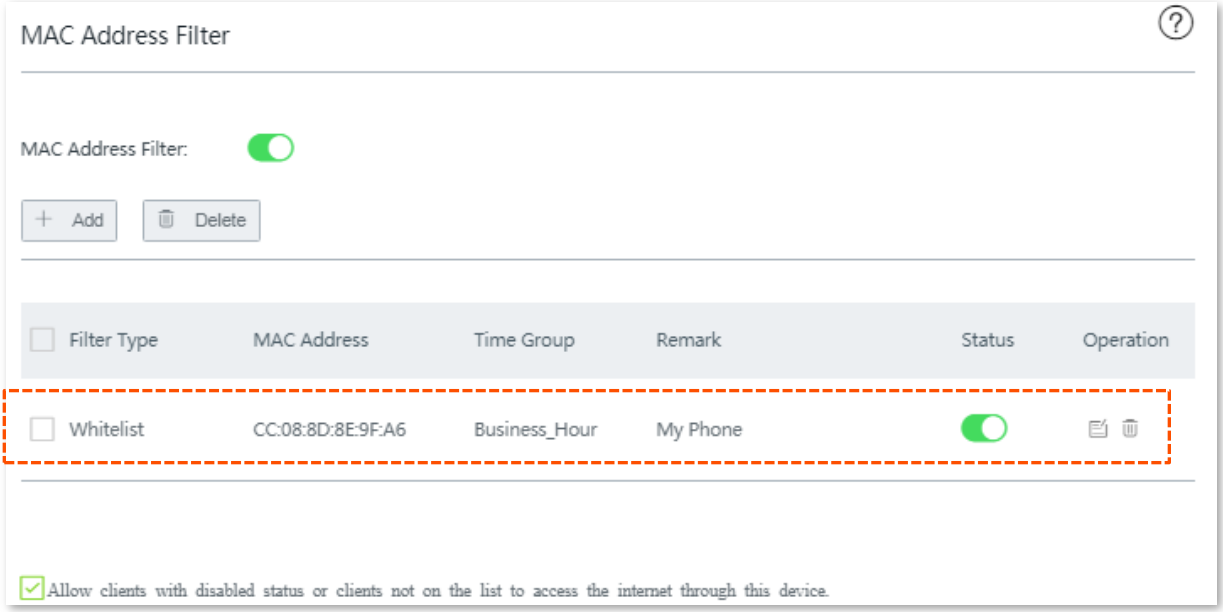
1. Click **+Add**. The **Add** configuration window appears.



2. Set the required parameters.
3. Click **Save**.

---- End

Added successfully. See the following figure:



11.3.2 Example of configuring MAC address filter rule(s)

Networking requirement

An enterprise uses the router to set up a LAN to address the following requirement:

During business hours (08:00 to 18:00 on weekday), only the purchaser is allowed to access the internet. Assume that the MAC address of the purchaser's computer is CC:3A:61:71:1B:6E.

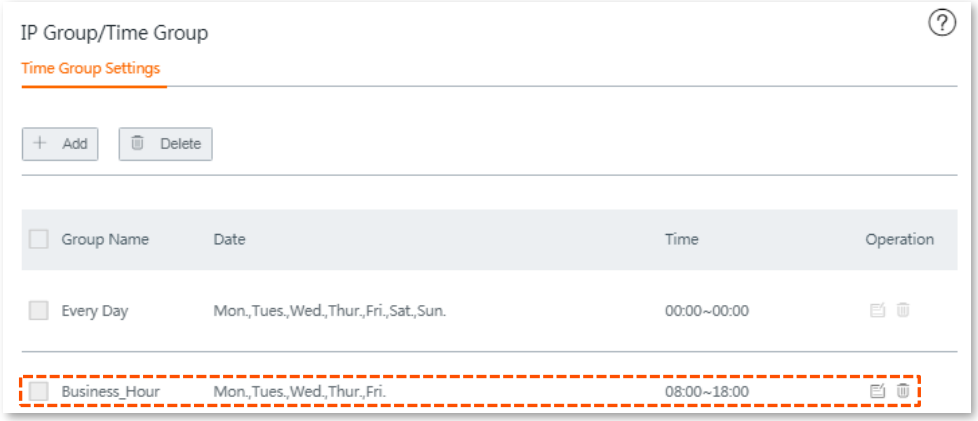
Solutions

The MAC address filter can meet this requirement.

Configuration procedure

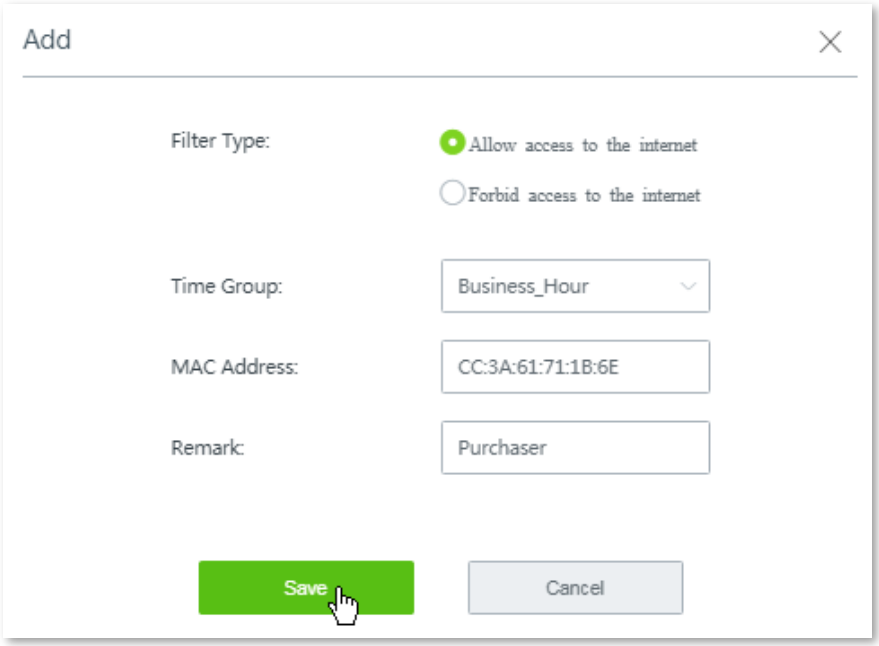
Step 1 Set up a time group.

1. Choose **Filter Management** > **IP Group/Time Group**.
2. Set a time group shown in the following figure.



Step 2 Set an MAC address filter rule.

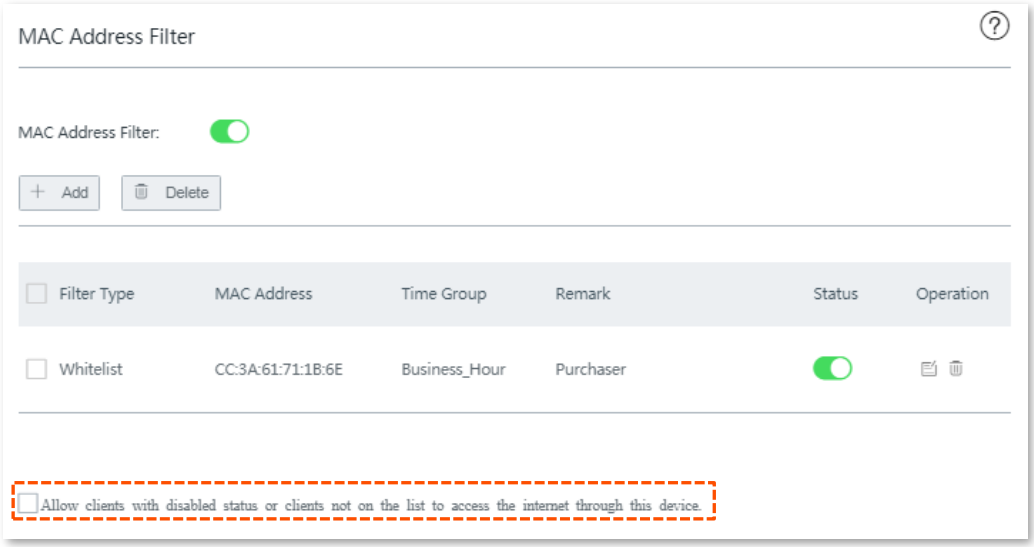
1. Choose **Filter Management** > **MAC Address Filter**, enable this function, and click **Save**.
2. Click **+Add**. The **Add** window appears.
3. Set the required parameter, and click **Save**. See the following figure.



TIP

You are recommended to enter a brief description on the rule in **Remark** field for later management.

4. Deselect **Allow clients with disabled status or clients not on the list to access the internet through this device**.



5. Click **Save** at the bottom of the page to apply your settings.

---- End

Verification

During 08:00 to 18:00 on weekdays, only the purchaser's computer can access the internet.

11.4 IP address filter

This is a time group-related function. You can create IP address-based rules to decide whether or not clients can access the internet through the router during certain period of time.

11.4.1 Configure the IP address filter

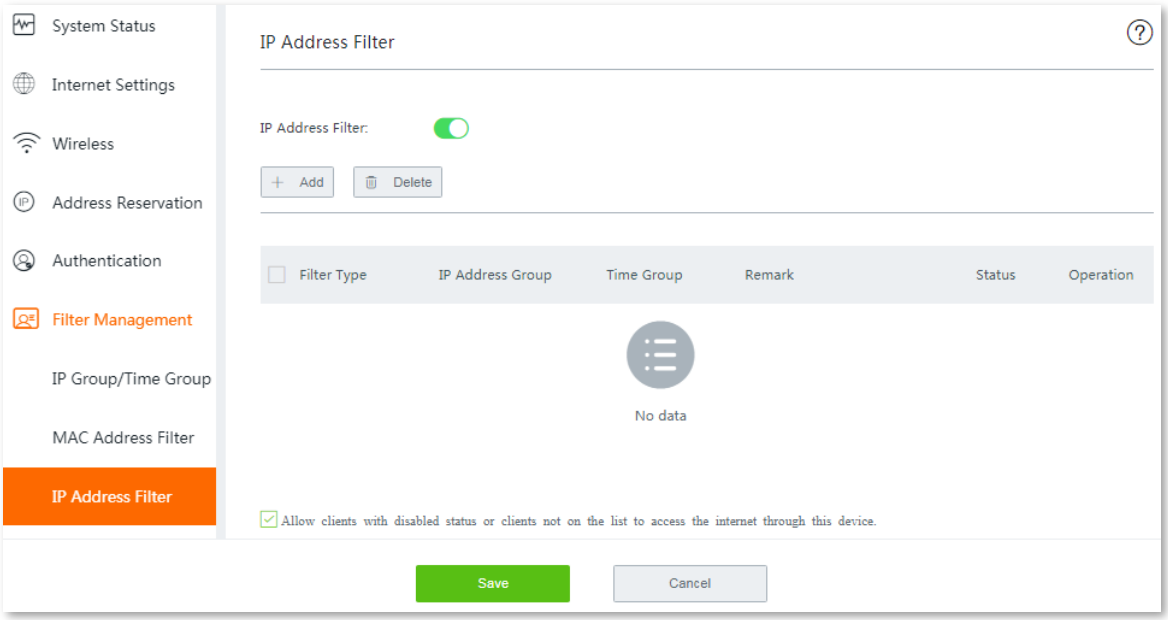
Before you start

- Set up at least one time group rule.
- Set up at least one IP group rule.
- To make IP address-based filter rules always take effect, specify a static IP address for the clients.

Configuration procedure

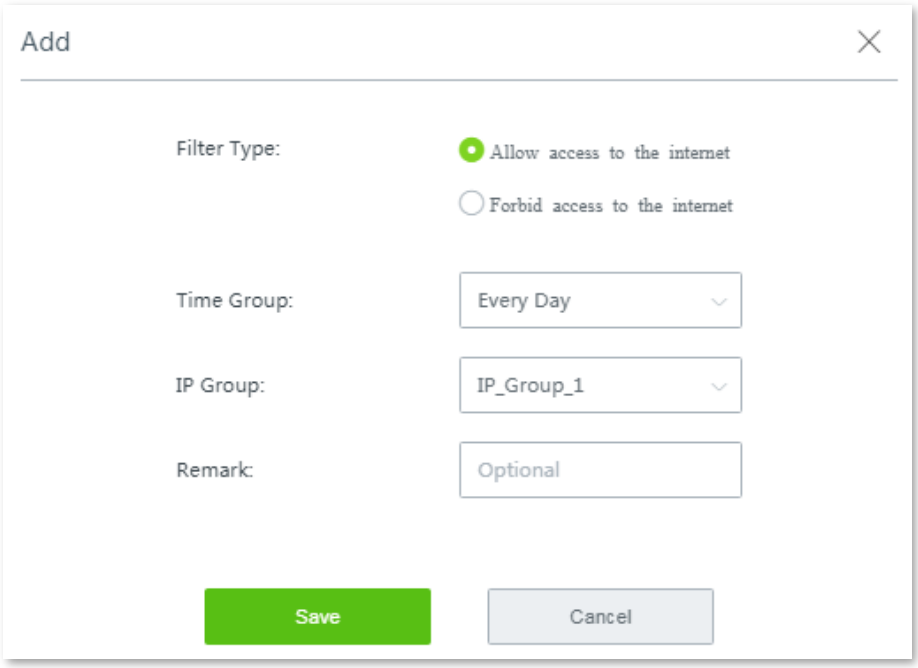
Step 1 Choose **Filter Management** > **IP Address Filter**.

Step 2 Enable this function, and click **Save**.



Step 3 Configure IP address filter rule(s).

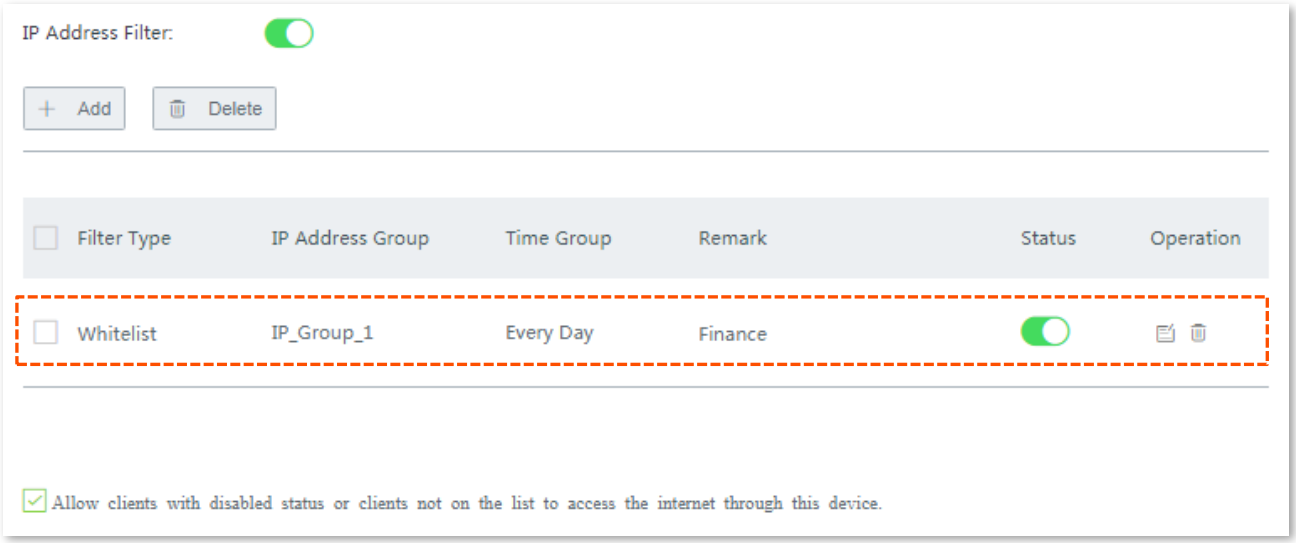
1. Click **+Add**. The **Add** configuration window appears.



2. Set the required parameters.
3. Click **Save**.

---- End

Added successfully. See the following figure:



11.4.2 Example of configuring IP address filter rule(s)

Networking requirement

An enterprise uses the router to set up a LAN to address the following requirement:

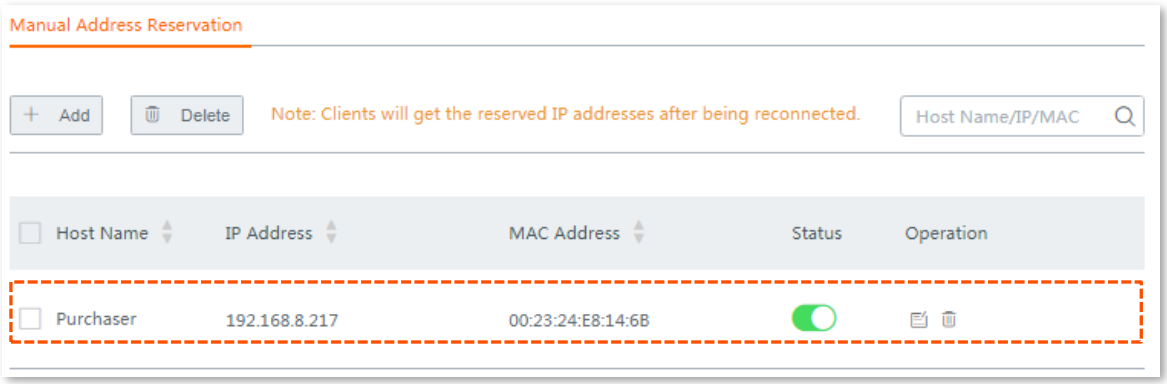
During business hours (08:00 to 18:00 on weekday), only the purchaser is allowed to access the internet. Assume that the IP address of the purchaser's computer is 192.168.8.217.

Solution

The IP address filter can meet this requirement.

Configuration procedure

Step 1 Specify a static IP address for the purchaser's computer, which is **192.168.8.217** in this example.

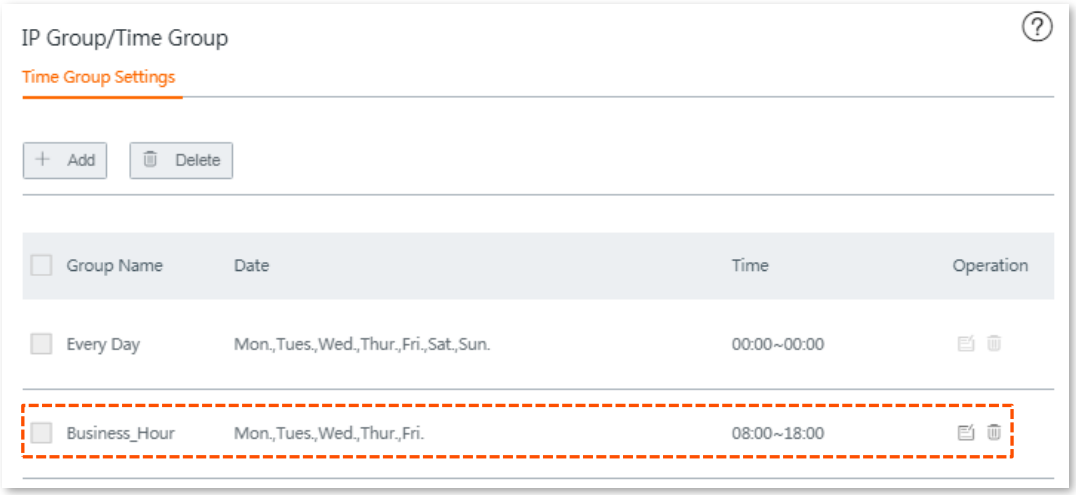


TIP

Refer to Address reservation for detailed description of configuration procedure.

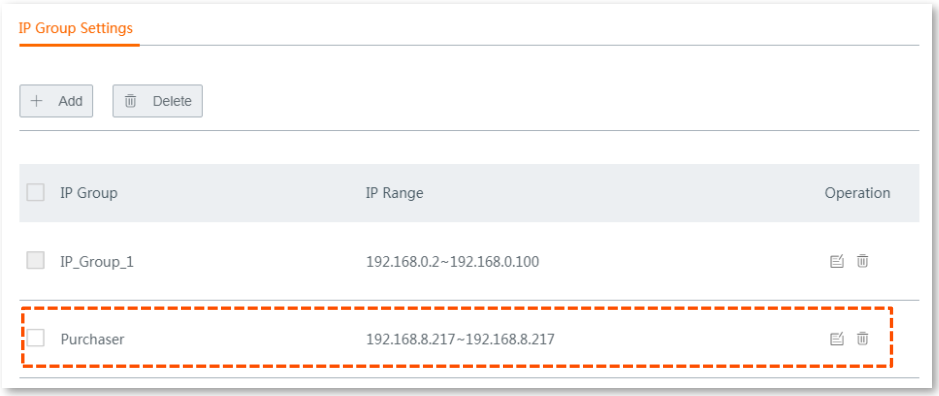
Step 2 Set up a time group.

1. Choose **Filter Management** > **IP Group/Time Group**.
2. Set a time group shown in the following figure.



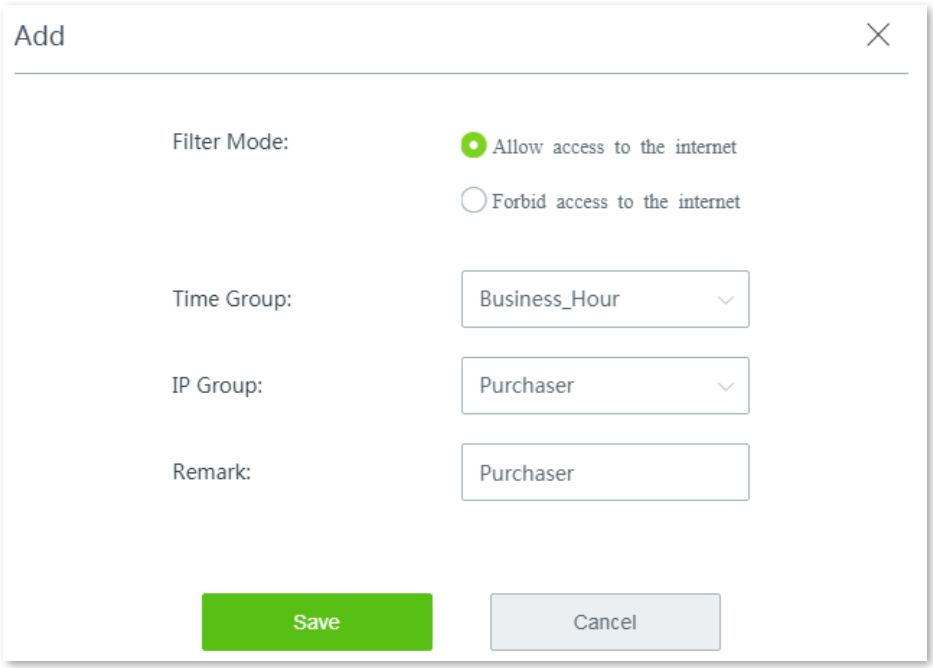
Step 3 Set up an IP group.

1. Choose **Filter Management** > **IP Group/Time Group**, and locate the **IP Address Settings**.
2. Set an IP group shown in the following figure.

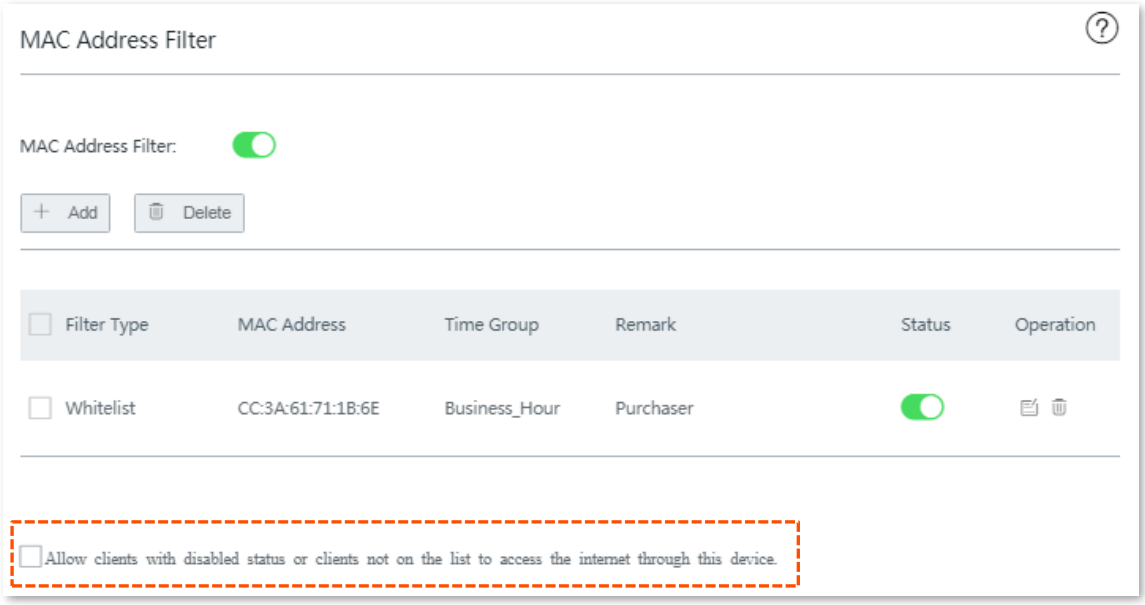


Step 4 Set IP address filter rule(s).

1. Choose **Filter Management** > **IP Address Filter**.
2. Enable this function, and click **Save**.
3. Click **+Add**. The **Add** window appears.
4. Set required parameter, and click **Save**.



5. Deselect **Allow clients with disabled status or clients not on the list to access the internet through this device**.



6. Click **Save** at the bottom of the page to apply your settings.

---- End

Verification

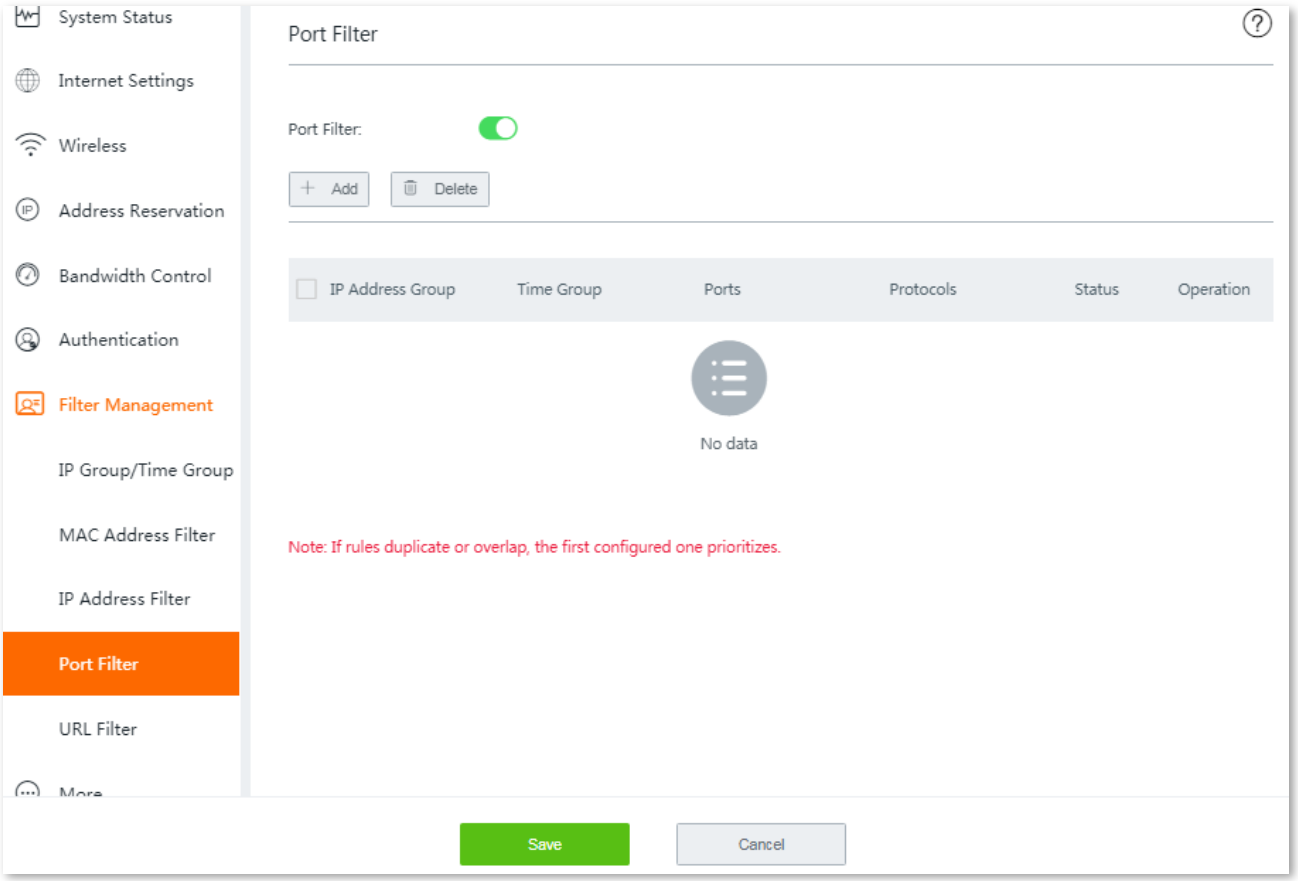
During 08:00 to 18:00 on weekdays, only the purchaser's computer can access the internet.

11.5 Port filter

The protocols of various services available over the internet use dedicated port numbers. The common service port numbers range from 0 to 1023 and are generally assigned to specific services.

A port filter prevents LAN users from accessing certain internet services by disabling the users to access the port numbers of the services.

To access the page for setting the port filter, choose **Filter Management** > **Port Filter**. By default, this function is disabled. Once it is enabled, the following page appears.



11.5.1 Configure port filtering rules

Before you start

- Set up at least one time group rule.
- Set up at least one IP group rule.

Configuration procedure

Step 1 Choose **Filter Management** > **Port Filter**.

Step 2 Enable this function, and click **Save**.

Step 3 Click **+Add**. The **Add** window appears.

Step 4 Set the required parameters.

- **To add a single port number:**

Repeat the port number in the second box.

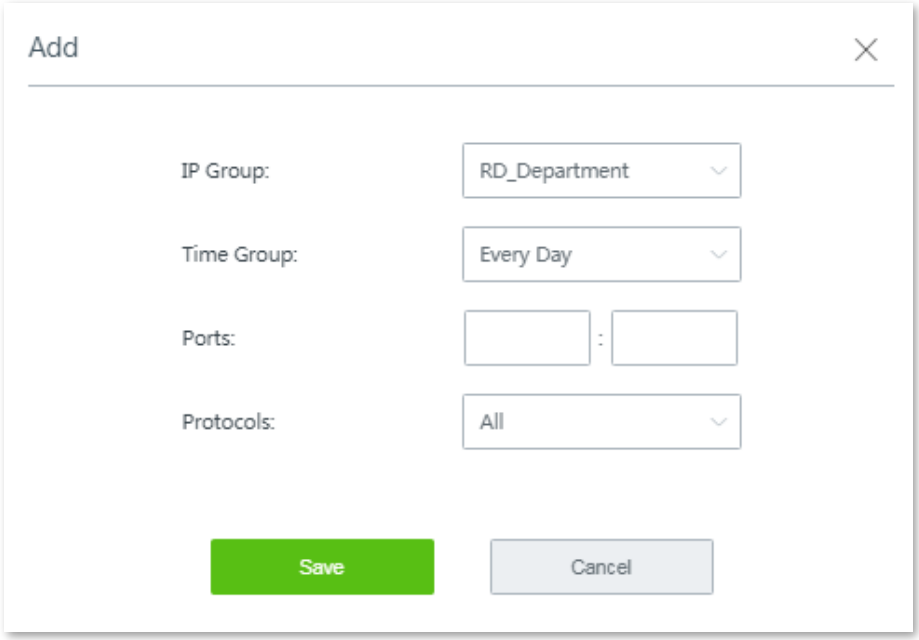
For example, to add the port number 80, enter 80 in the first box. Then repeat it in the second box.

- **To add consecutive port numbers**:

  Enter the start port number in the first box, and the end port number in the second box. The start port number cannot be greater than the end port number.

- **To add inconsecutive port numbers**:

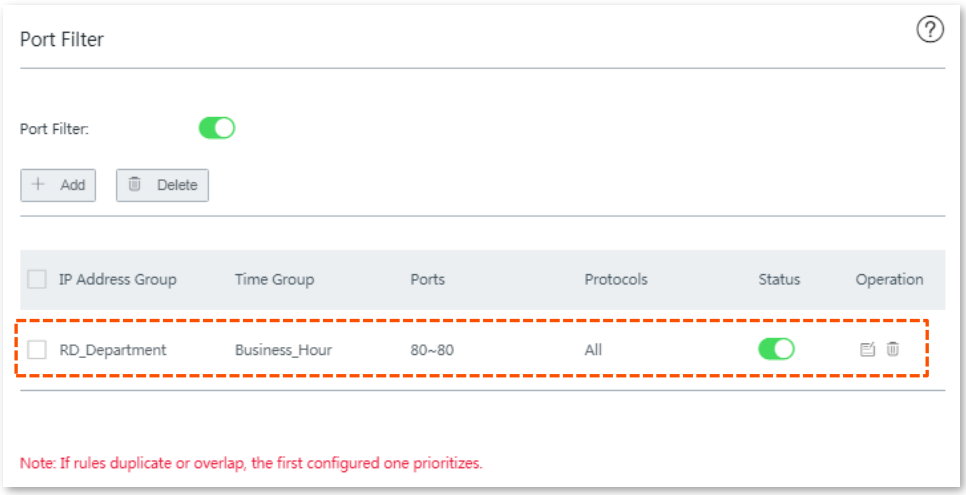
  The router does not support adding inconsecutive port numbers with one rule. Therefore, to add inconsecutive port numbers, add multiple port number rules that meet your requirements.



Step 5 Click **Save**.

---- End

Added successfully. See the following figure:



11.5.2 Example of configuring port filter rules

Networking requirement

An enterprise uses the router to set up a LAN to address the following requirement:

During business hours (08:00 to 18:00 on weekday), computers with IP addresses ranging from 192.168.0.2 to 192.168.0.100 are not allowed to browse web pages. The default port number of the web service is 80.

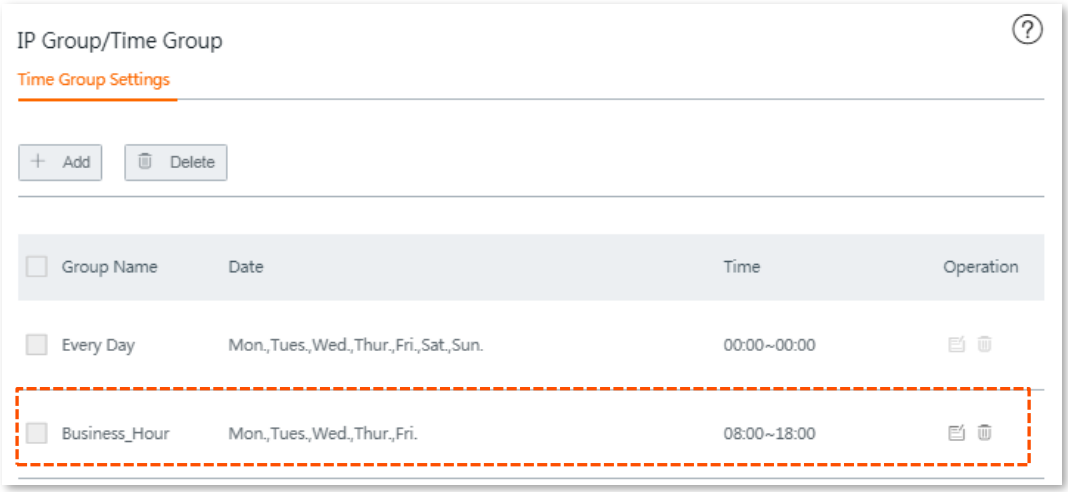
Solutions

The port filter function of the router can meet this requirement.

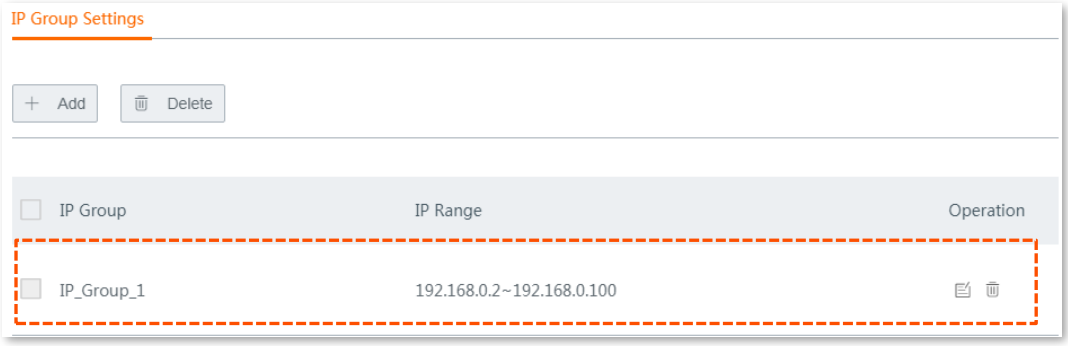
Configuration procedure

Step 1 Set up a time group.

1. Choose **Filter Management** > **IP Group/Time Group**.
2. Set a time group shown in the following figure.



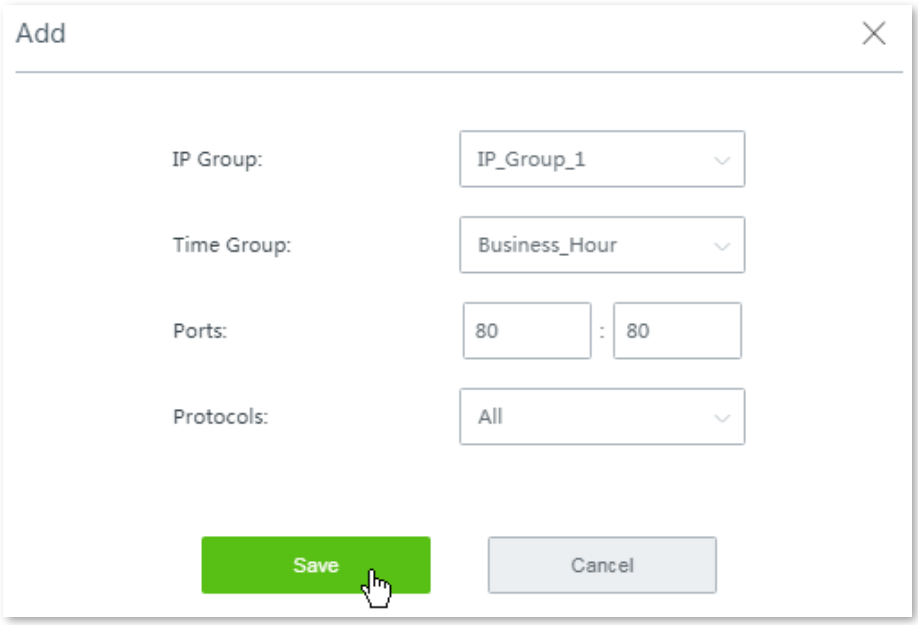
Step 2 Create an IP group for clients that are disallowed to use web service, which is **192.168.0.2** to **192.168.0.100** in this example.



Step 3 Set port filter rules.

1. Choose **Filter Management** > **Port Filter**.
2. Enable this function, and click **Save** at the bottom of the page.
3. Click **+Add**. The **Add** window appears.
4. Set the required parameters. Configurations on the following figure are only used for

examples:



TIP

- To add consecutive port numbers, enter the start port number in the first box, and the end port number in the second box. The start port number cannot be greater than the end port number.
- The router does not support to add inconsecutive port numbers with one rule. Therefore, to add inconsecutive port numbers, add multiple port number rules that include your requirement.

5. Click **Save**.

---- End

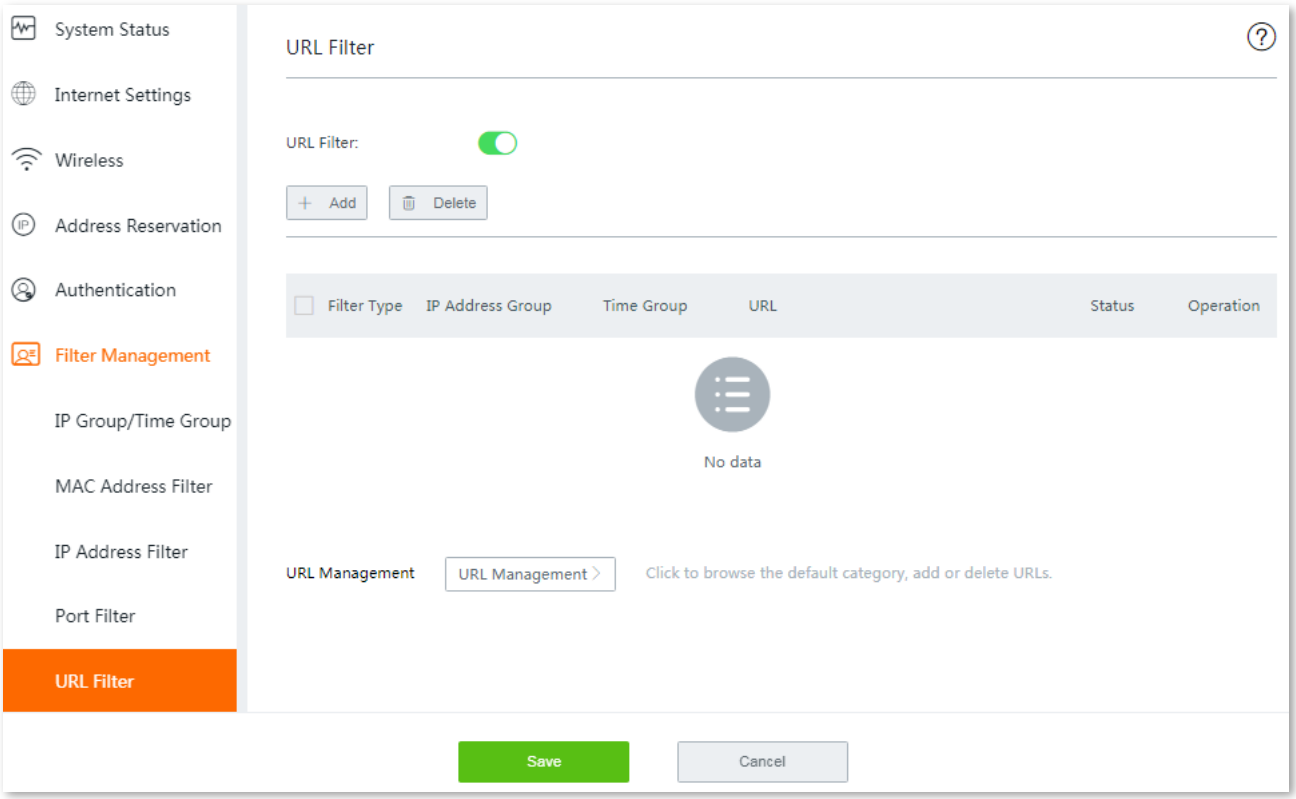
Verification

During 08:00 to 18:00 on weekdays, verify that the computers with IP addresses ranging from 192.168.0.2 to 192.168.0.100 cannot browse web pages.

11.6 URL filter

An URL filter prevents LAN users from accessing specified types of website and controls internet accessibility of LAN users so that they will not spend time on websites irrelevant to their duties. Before you add web filter rules, add web categories.

To access the following page, choose **Filter Management** > **URL Filter**. By default, this function is disabled. Once it is enabled, the following page appears.



11.6.1 Configure URL filter

Before you start

- Set up at least one time group rule.
- Set up at least one IP group rule.

Configuration procedure

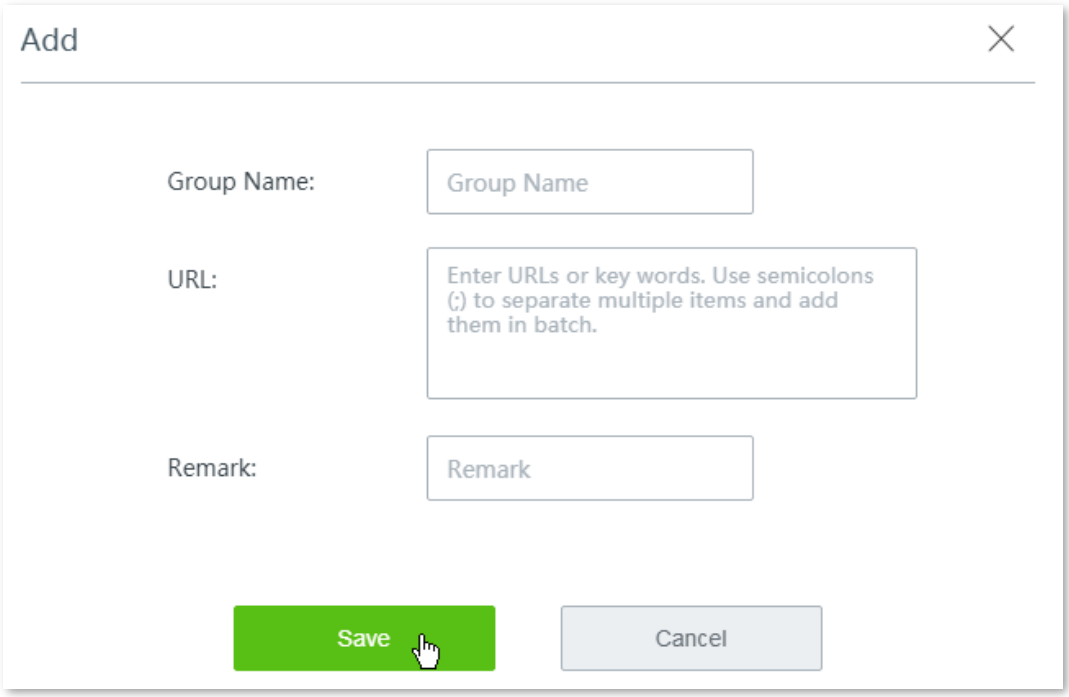
Step 1 Enable URL Filter.

1. Choose **Filter Management** > **URL Filter**.
2. Enable this function, and click **Save**.

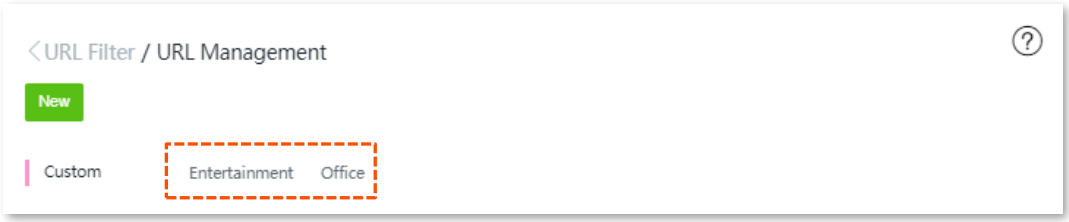
Step 2 Customize URL library.

1. Click the **URL Management** button. The **URL Management** configuration page appears.

2. Click **New**. The **Add** window appears.

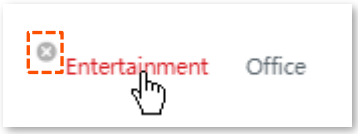


3. Set the required parameters by following the on-screen instructions, and click **Save**. The added URL groups are shown as follows:



TIP

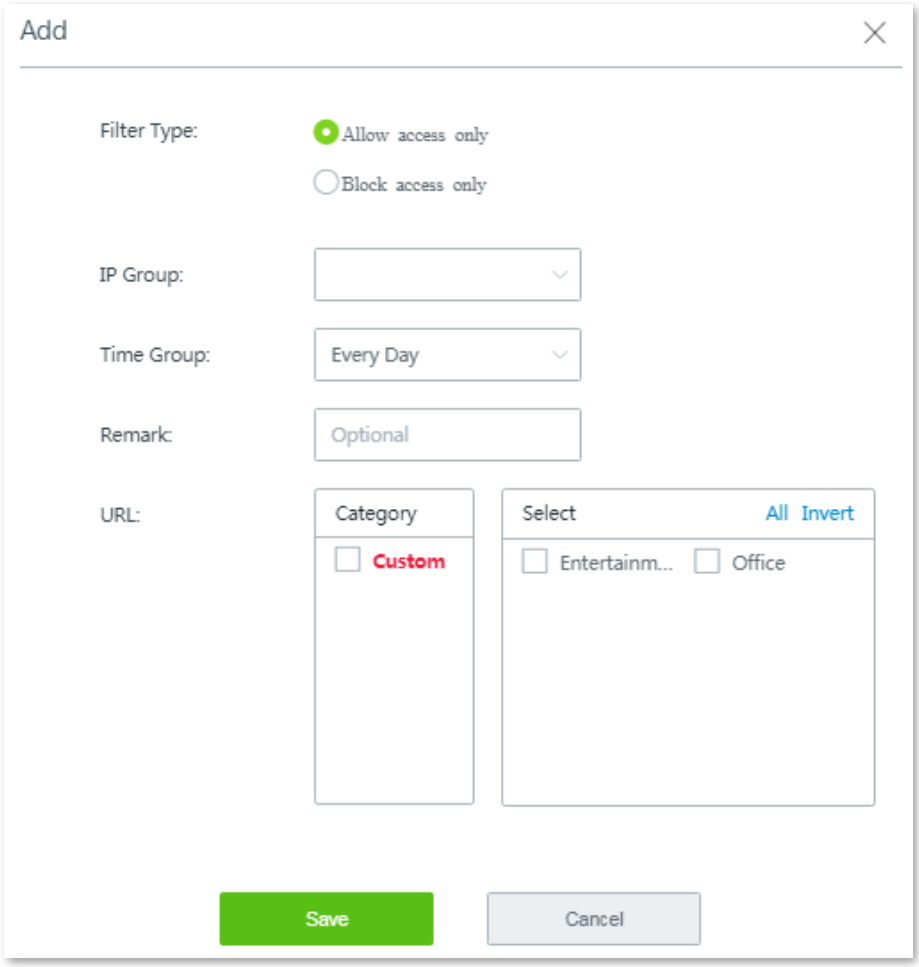
- To delete an URL group, move the mouse pointer to it, and click the ⊗ on the upper left corner.



- A rule in use cannot be deleted.

Step 3 Configure an URL filter rule.

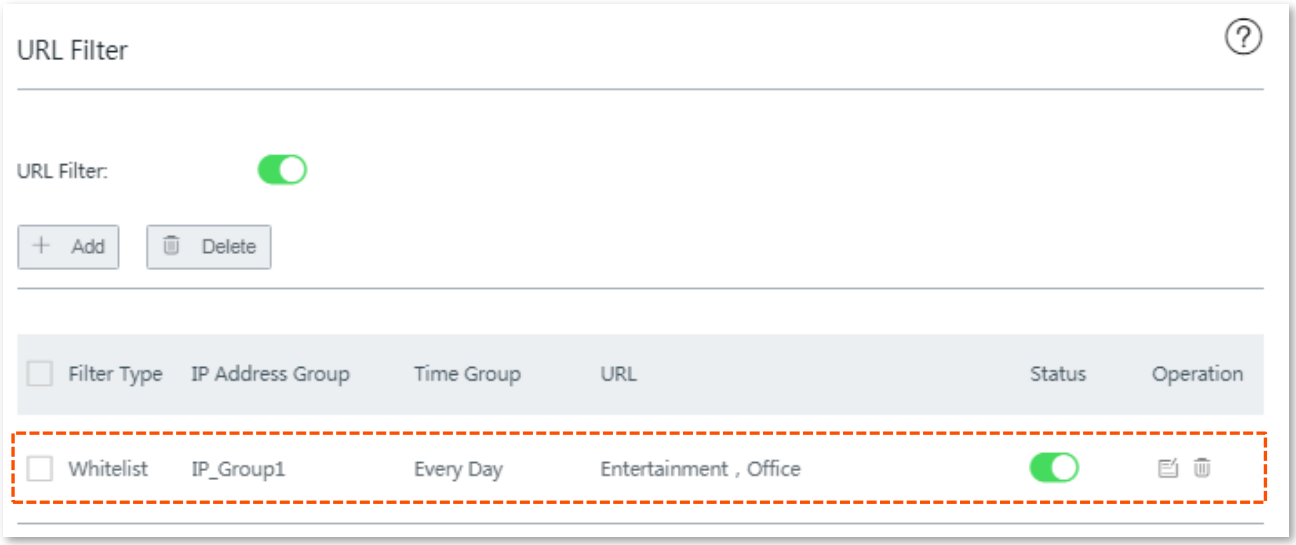
1. Click **+Add**. The **Add** window appears.



2. Set the required parameters, and click **Save**.

---- End

Added successfully. See the following figure:



11.6.2 Example of configuring URL filter

Networking requirement

An enterprise uses the router to set up a LAN to address the following requirement:

During business hours (08:00 to 18:00 on weekday), staffs are not allowed to access social medias including Facebook, YouTube, and Tumblr.

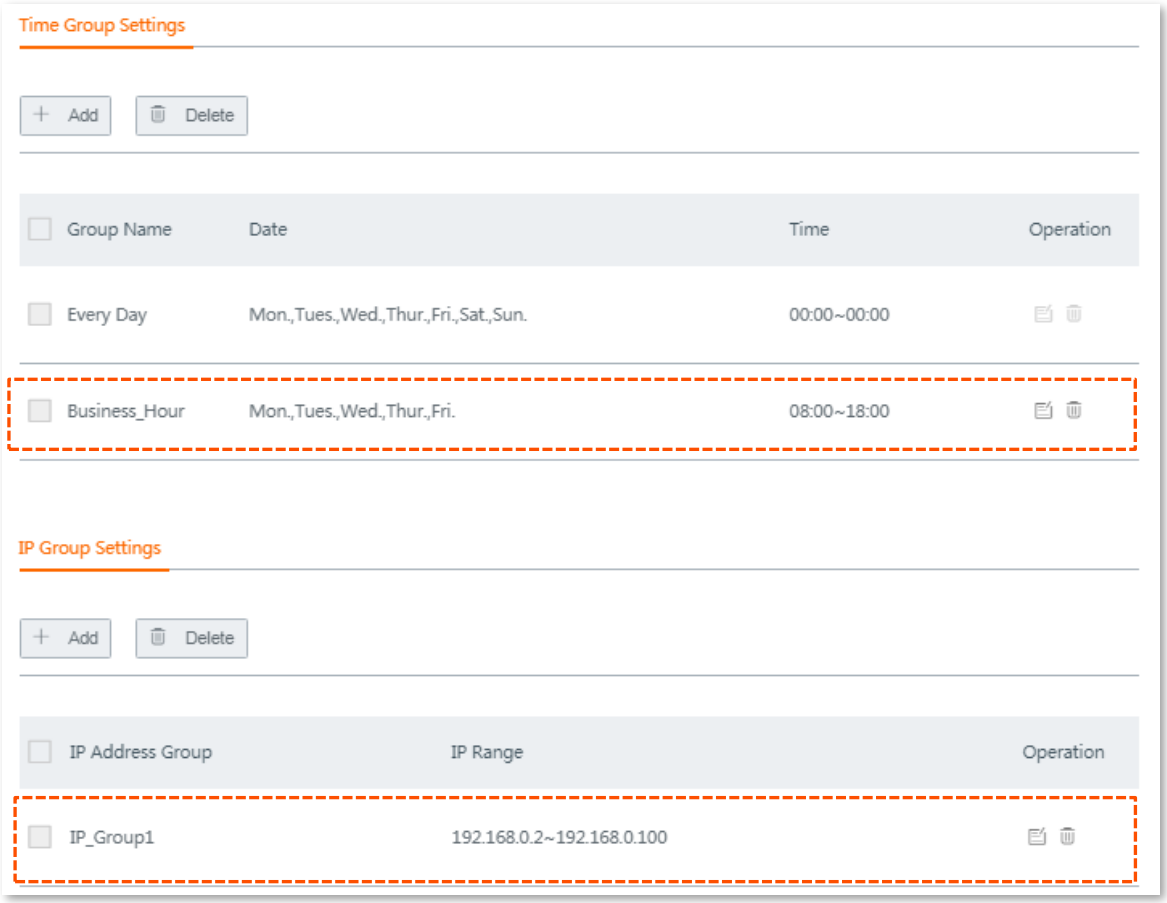
Solutions

The URL filter can meet this requirement.

Configuration procedure

Step 1 Set up time groups and IP groups.

1. Choose **Filter Management** > **IP Group/Time Group**.
2. Set up a time group from **08:00** to **18:00** on weekday, and an IP groups ranging from **192.168.0.2** to **192.168.0.100**. See the following figure:



TIP

For detailed configuration steps, refer to Configure IP group and time group.

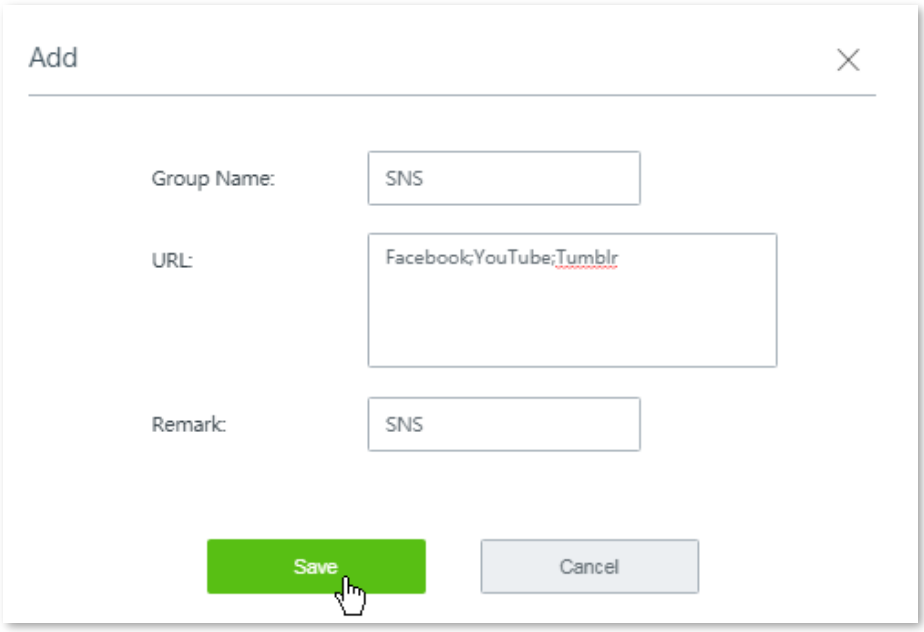
Step 2 Enable URL Filter.

1. Choose **Filter Management** > **URL Filter**.
2. Enable this function, and click **Save**.

Step 3 Customize URL library.

1. Click the **URL Management** button. The **URL Management** configuration page appears.
2. Click **New**. The **Add** window appears.

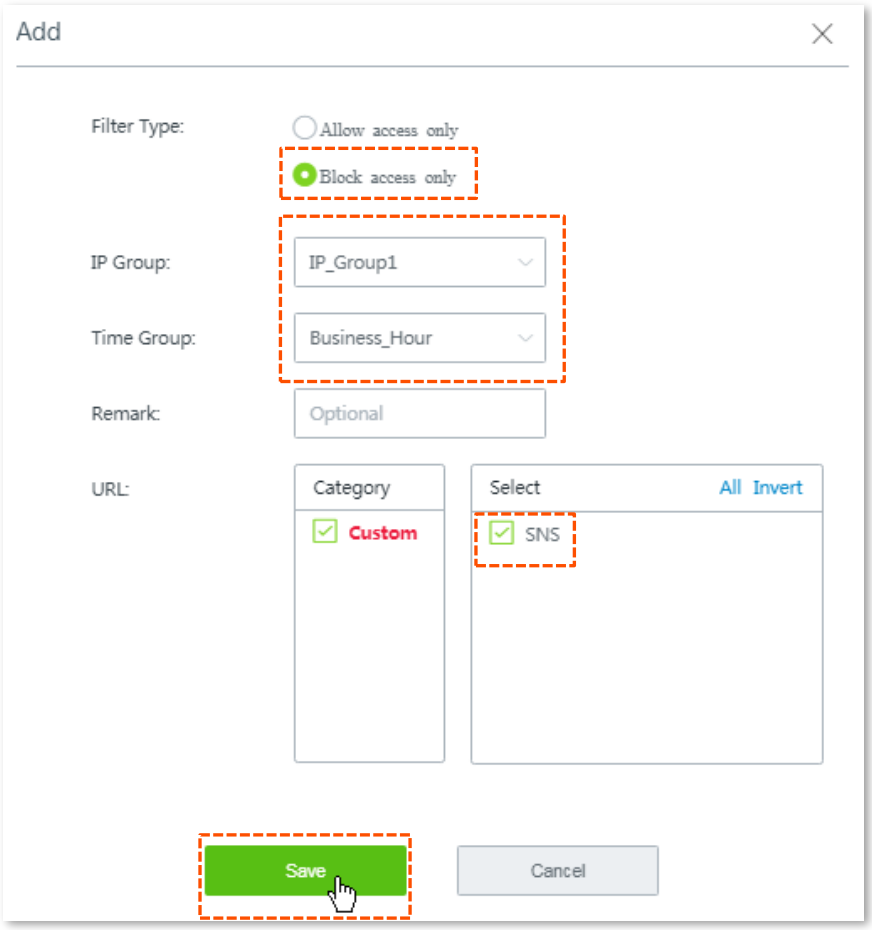
3. Set the required parameters. See the following figure.



4. Click **Save**.

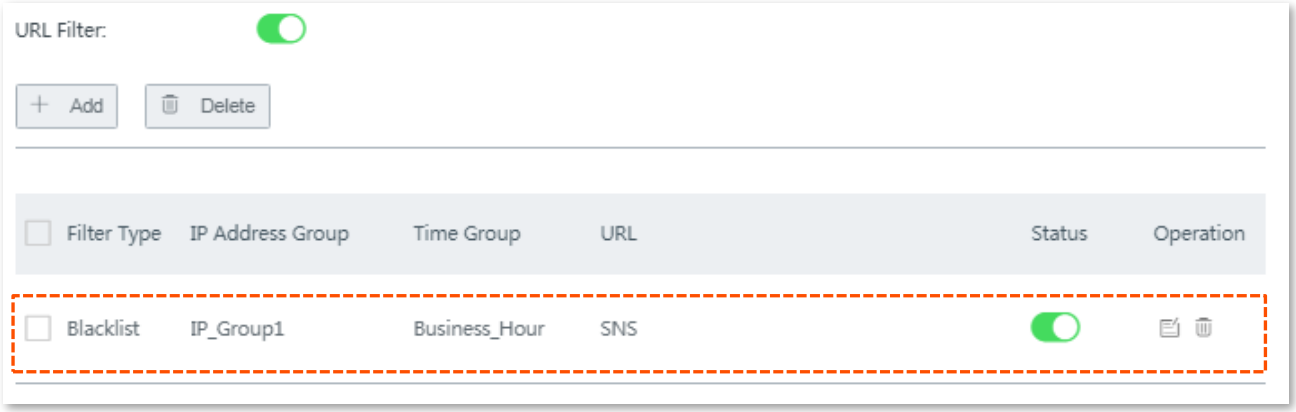
Step 4 Configure the URL filter rule.

1. Back to the URL filter configuration page, click **+Add**. The **Add** window appears.
2. Set the required parameters, and click **Save**.



---- End

Added successfully. See the following figure:



Verification

During 08:00 to 18:00 on weekdays, clients with the IP address ranging from 192.168.0.2 to 192.168.0.100 cannot access Facebook, YouTube, and Tumblr.

12 More settings

This chapter describes how to modify LAN settings and WAN parameters, how to configure static router, port mirroring, DDNS, port forwarding, UPnP, DMZ host, and how to establish VPN connections.

12.1 LAN settings

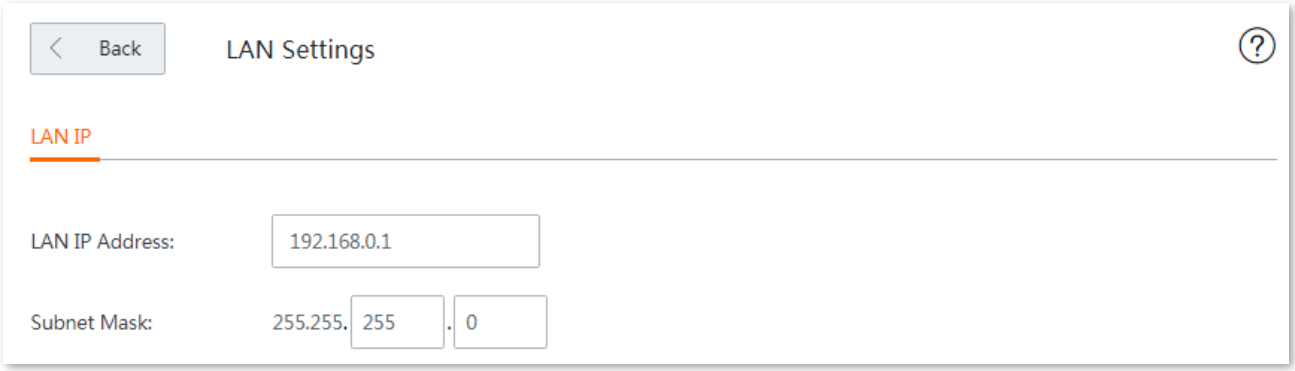
You can view and modify the LAN IP address of the router, and configure DHCP server here.

To enter the configuration page, choose **More** > **LAN Settings**.

12.1.1 Modify LAN IP address of the router

The LAN IP address is also the login IP address of the router. The default LAN IP address is **192.168.0.1**.

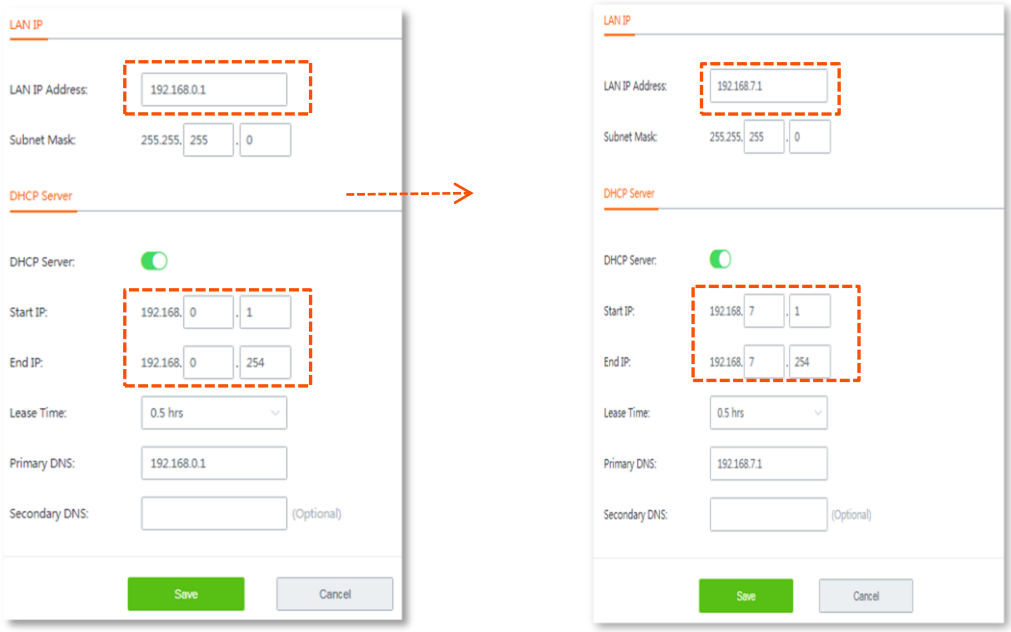
Generally, you do not need to modify the LAN IP address of the router, unless an IP conflict happens on the router. An IP conflict happens when the WAN IP address and LAN IP address of the router are in the same network segment, or IP address of another device in the LAN is **192.168.0.1** too.



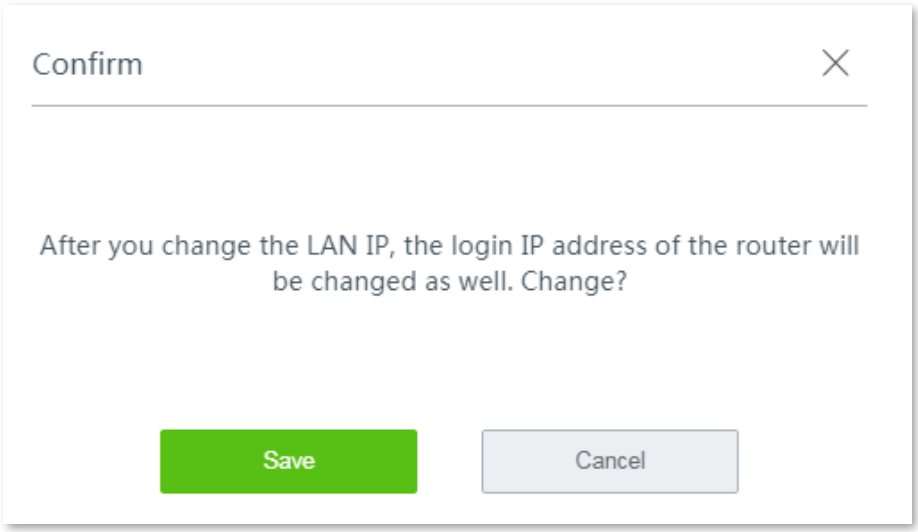
Configuration procedure:

Step 1 Modify the LAN IP address, which is **192.168.7.1** in this example.

Since the network segment of the new LAN IP address is different from the original one, the router modifies the network segment of the DHCP server automatically. See the following figure:



Step 2 Click **Save**, the following message appears.



Step 3 Click **Save**.

---- End

Wait until the progress bar completes. You will be redirected to the login page.

Use the new LAN IP address to log in to the web UI of router later.

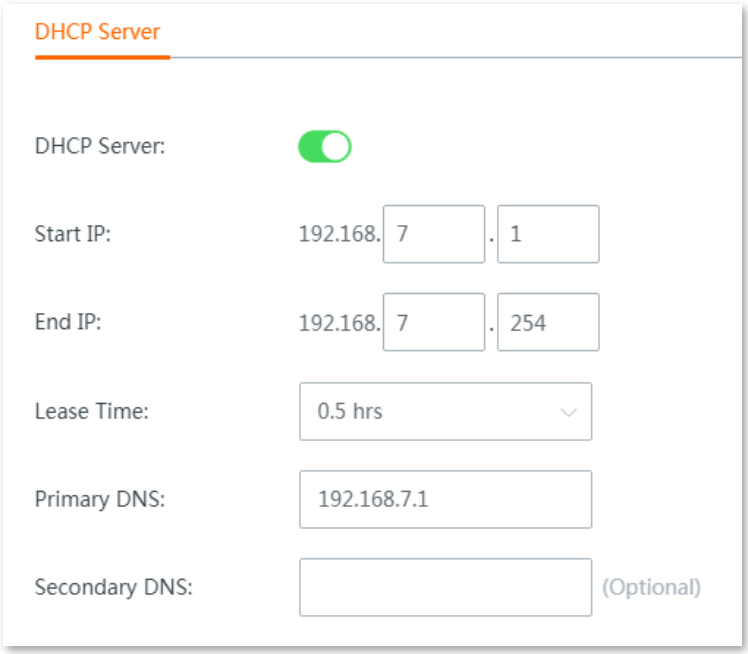
12.1.2 Modify DHCP server

DHCP server can automatically assign IP addresses, subnet mask, gateway and other internet parameters to devices connected to the router. If this function is disabled, you have to manually set IP address settings for your connected devices for internet access. Therefore, you are recommended to keep the DHCP server enabled.

To modify DHCP server information, modify the parameters as required and click **Save** to apply your settings.

TIP

With this function enabled, IP address-based functions, such as port forwarding and IP address filter may be affected.

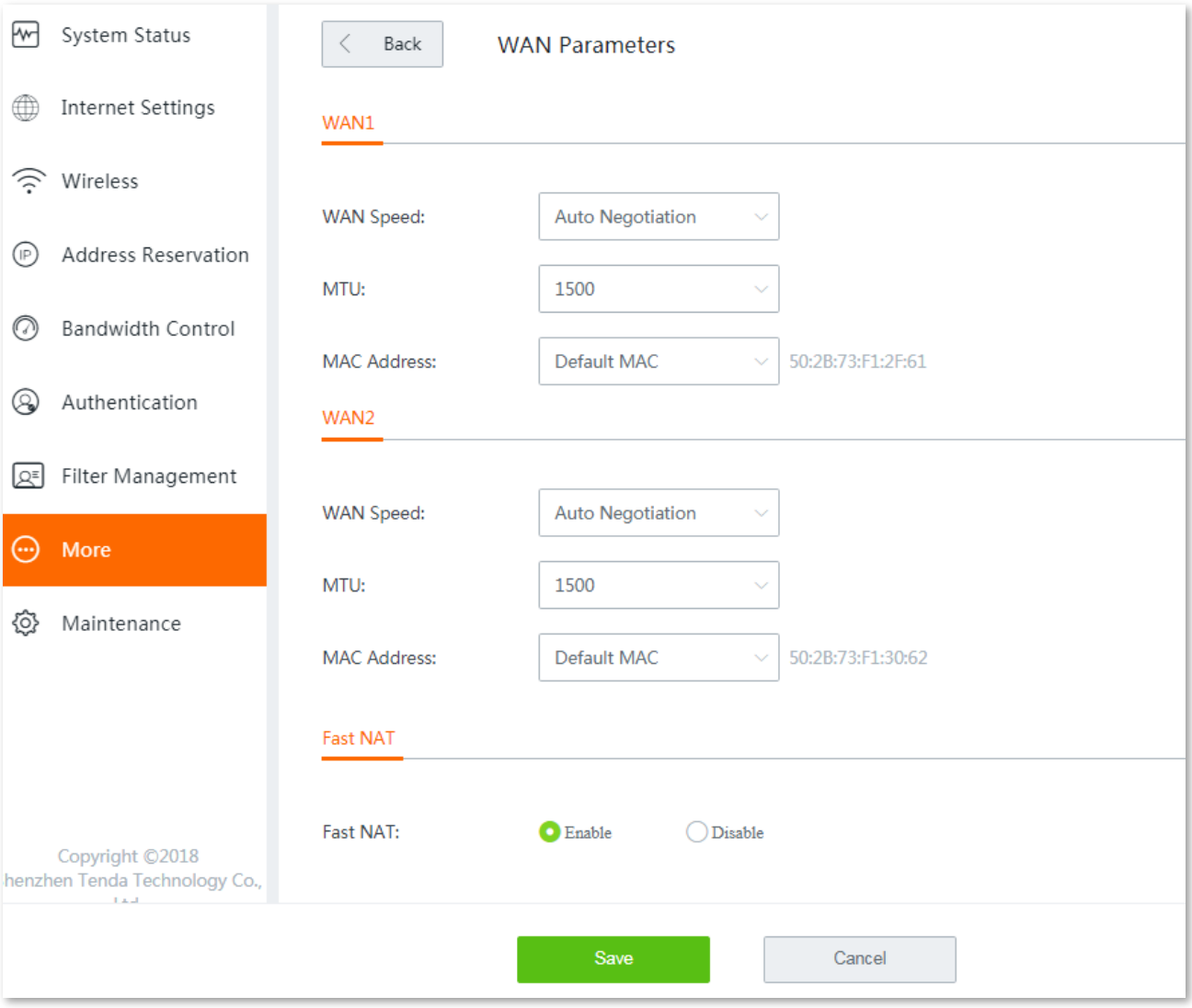


12.2 WAN parameters

12.2.1 Overview

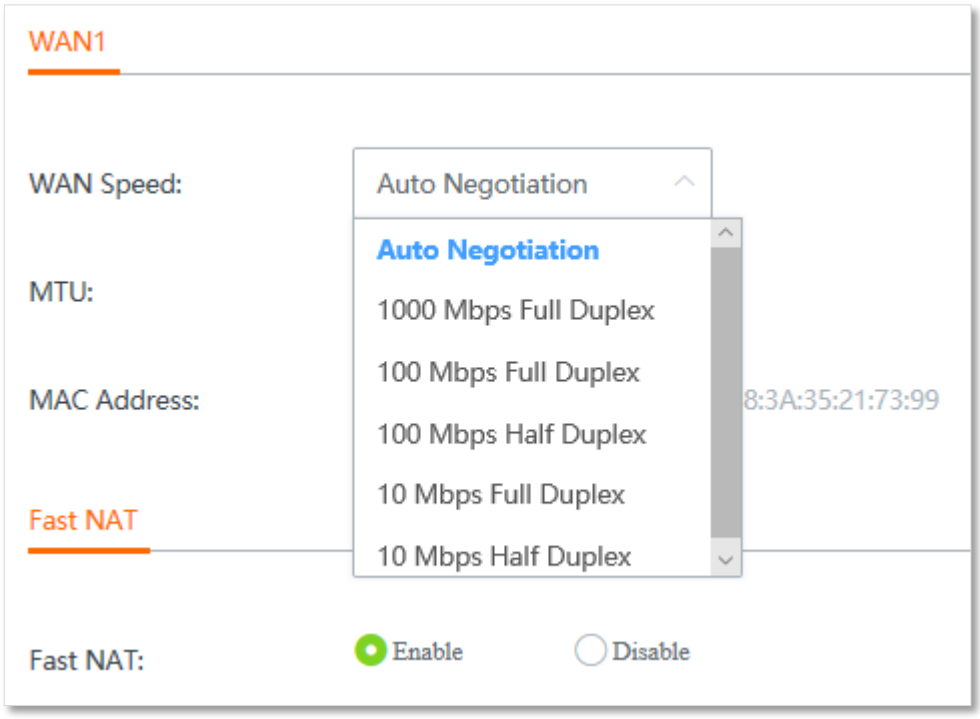
If you have set internet connection parameters but your LAN devices cannot access the internet, try modifying WAN port parameters here.

To access the configuration page, choose **More** > **WAN Parameters**.



12.2.2 WAN speed

The speed of an Ethernet physical port is determined through negotiation with its peer device. The negotiated speed can be any speed within the interface capability. You can try to modify the speed and duplex mode when network connection issues occur.



Duplex modes supported by the router and their scenarios:

Speed and Duplex	Applicable scenario
Auto Negotiation	The duplex mode of the port is determined through auto negotiation between the router and its peer device. You are recommended to keep the default settings since auto negotiation is the default option for most of Ethernet network devices. If the router uses auto negotiation, while its peer uses non-auto negotiation, the negotiated duplex mode is half duplex.
10/100/1000 Mbps Full Duplex	The interface can receive and send packets simultaneously, leading to low latency and high efficiency. **10/100/1000 Mbps** indicates the maximum link speed that both ends can negotiate. Only W18E and W20E support **1000 Mbps Full Duplex**. NOTE You are recommended to use the same speed link and duplex modes for both ends. Otherwise, network connection issues may occur.
10/100 Mbps Half Duplex	The interface can either receive or send packets at a time. **10/100Mbps** indicates the maximum link speed that both ends can negotiate. NOTE You are recommended to use the same speed link and duplex modes for both ends. Otherwise, network connection issues may occur.

12.2.3 MTU

MTU is abbreviated for Maximum Transmission Unit. It specifies the maximum size of a packet that can be transmitted by a network device. Either larger or smaller MTU value affects the network performance. Do not modify the default settings unless the following situations happen:

- Some websites are inaccessible, or secure websites cannot be displayed properly, such as online banking websites, or PayPal.
- Email service suspends, or servers, such as FTP/POP servers, are inaccessible.

Commonly-used MTU value in different scenarios:

MTU (Bytes)	Scenario
1500	It is the most common value for non-PPPoE connections and non-VPN connections.
1492	It is used for PPPoE connections.
1480	It is the maximum value for the pinging function. (If a greater value is used, packets are split.)
1450	It is used for DHCP, which assigns dynamic IP addresses to connected devices.
1400	It is used for VPNs or PPTP.

12.2.4 Clone MAC address

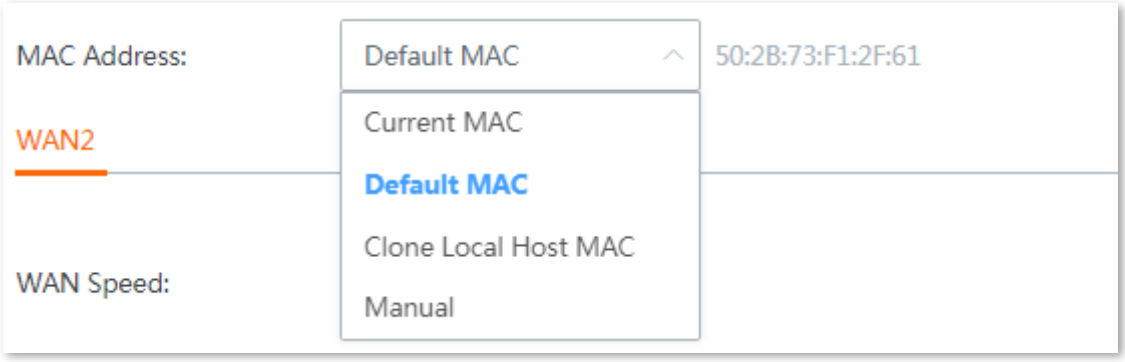
Overview

Some ISPs allow only a single or a certain number of computers to use the broadband service you subscribed, and register the MAC address of your computer when you first use their cable modem for internet access. Therefore, you may find yourself in the following situations after setting up the router:

- Only one computer can access the internet normally.
- No internet connection at all.

The reason why such a problem happens is that your ISP does not accept MAC addresses other than the registered one. To resolve this, you need to clone the MAC address of the registered computer to the router to pretend that the router has the same MAC address as the registered one.

The cloning MAC address function is designed for this purpose. Click **More > WAN Parameters** to enter the configuration page.



Parameter description

Parameter	Description
Current MAC	It specifies the MAC address the router currently used.
Default MAC	It specifies the MAC address of the router itself. TIP - You can view the MAC address of the router on LAN port status page, or the Label on the bottom of your router. - If you clone the local host MAC, the MAC address of the router is changed to the MAC address you cloned.
Clone Local Host MAC	It specifies the MAC address of the computer that can access the internet normally. TIP To use this option, you need to keep the computer with internet connectivity connected to the router and disconnect all the other computers. Otherwise, find the correct MAC address, and enter it manually. You can consult your ISP as well.
Manual	It allows you to manually specify a MAC address.

Clone MAC address

Step 1 Click **More** > **WAN Parameters**, and locate the corresponding WAN port.

Step 2 Select one option, or manually specify the MAC address according to your actual situation.

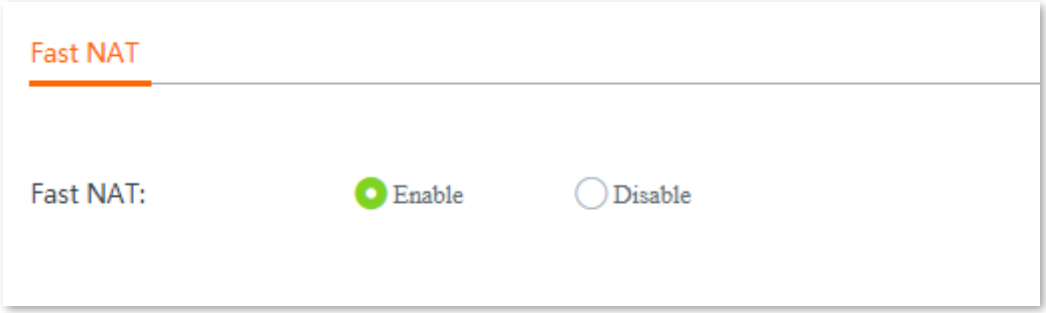
Step 3 Click **Save** to apply your settings.

---- End

12.2.5 Fast NAT

NAT (Network Address Translation) translates private addresses in intranet to global (public) addresses to achieve communication between the intranet and the internet. While fast NAT enables the router forward the traffic from the specific LAN to the chosen WAN directly. This function reduces the CPU loading and speed up the performance of the NAT sessions.

You are recommended to keep fast NAT enabled.



12.3 Configure static route

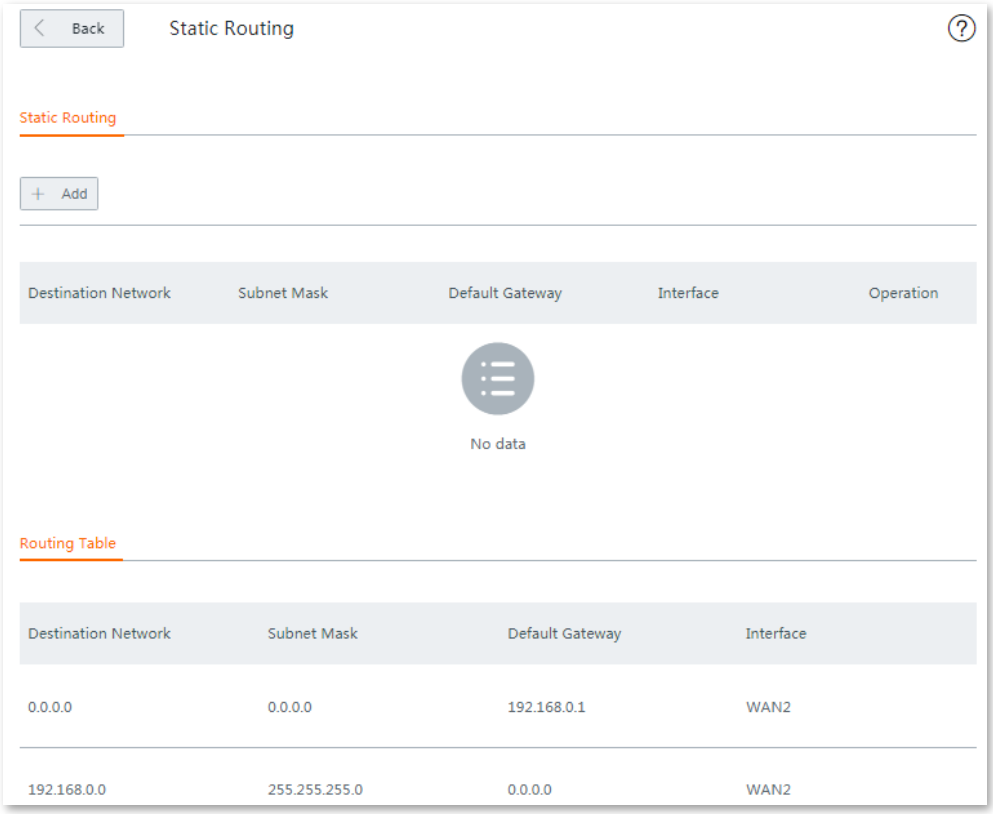
12.3.1 Overview

Routing is an operation to select the optimal route for delivering data from a source to a destination. A static route is a special route configured manually, which is simple, efficient, and reliable. Proper static routes help reduce route selection issues and prevent overload caused by route selection data flows, accelerating packet forwarding.

To define a static route, specify the network segment and subnet mask used to identify a destination network or host, the gateway IP address, and the router WAN port for forwarding packets. After a static route is defined, all the packets indented for the destination of the static route are directly forwarded through the WAN port of the router to the gateway IP address.

> TIP
>
> If only static routes are used in a large-scale complex network, destinations may be unreachable in case of a network fault or topology change, which results in network interruption. If the problem occurs, manually modify the static routes.

To enter the configuration page, choose **More** > **Static Routing**.



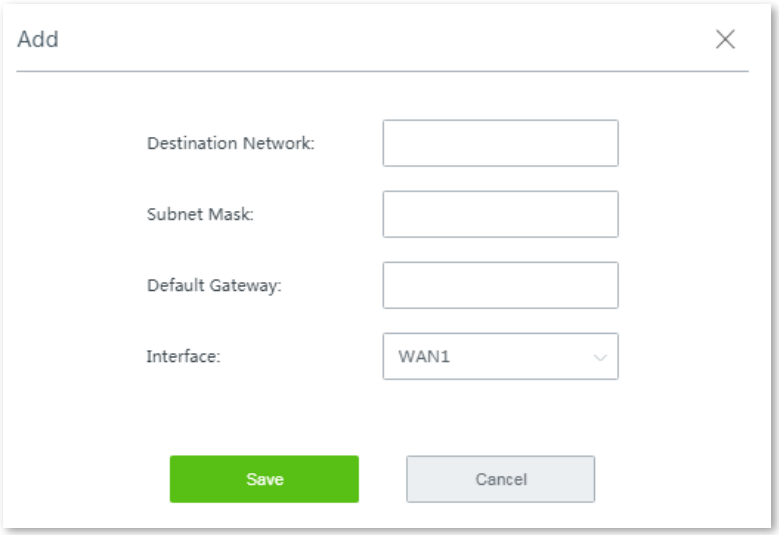
Parameter description

Parameter	Description
Destination Network	Destination network of packets.
Subnet Mask	Subnet mask of the destination network.
Default Gateway	IP address of the next hop to the final destination of packets.

Parameter	Description
Interface	Port through which packets are forwarded.

12.3.2 Configure a static routing rule

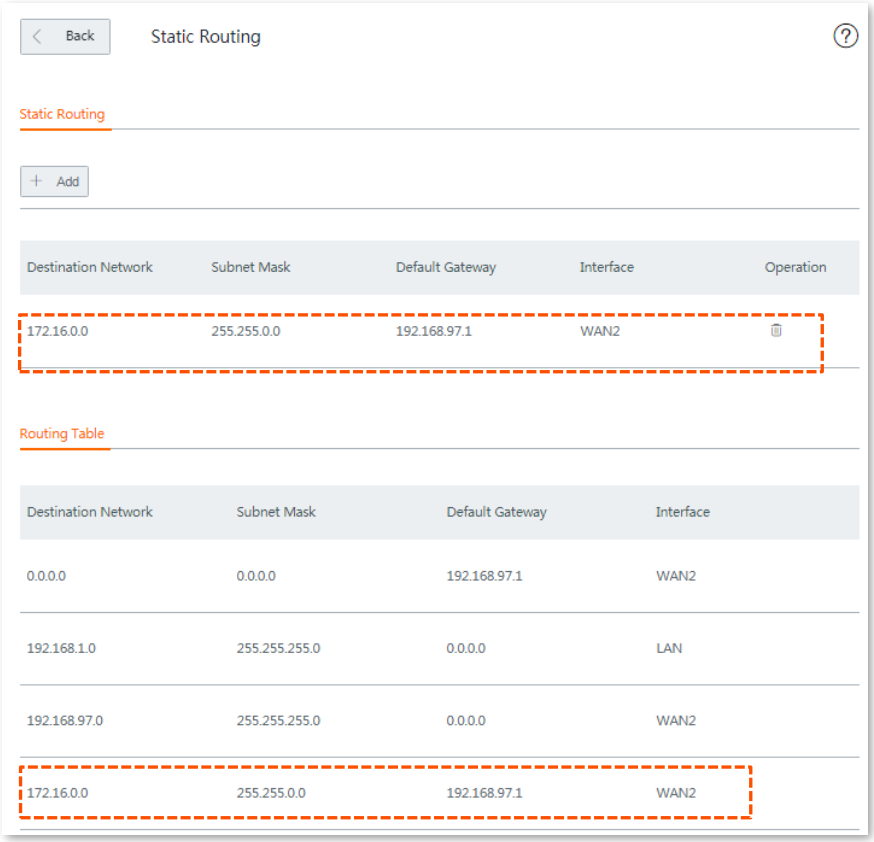
Step 1 Choose **More** > **Static Routing** and click **+Add**. The **Add** configuration window appears.



Step 2 Set the parameters and click **Save**.

Step 3 Choose **More** > **Static Routing** and view the added static route.

The available static routes are displayed on the static routing page. See the following figure.



---- End

In the route table, the record where **Destination Network** and **Subnet Mask** are **0.0.0.0** indicates the default route of the router. If no route exactly matching the destination address of a packet is found in the route table, the router uses the default route to forward the packet. The route containing the gateway IP address **0.0.0.0** is a direct route, which means that the destination network is directly connected to the router using the port specified in the route.

TIP

If a static route conflicts with a user-defined multi-WAN policy, the static route prioritizes.

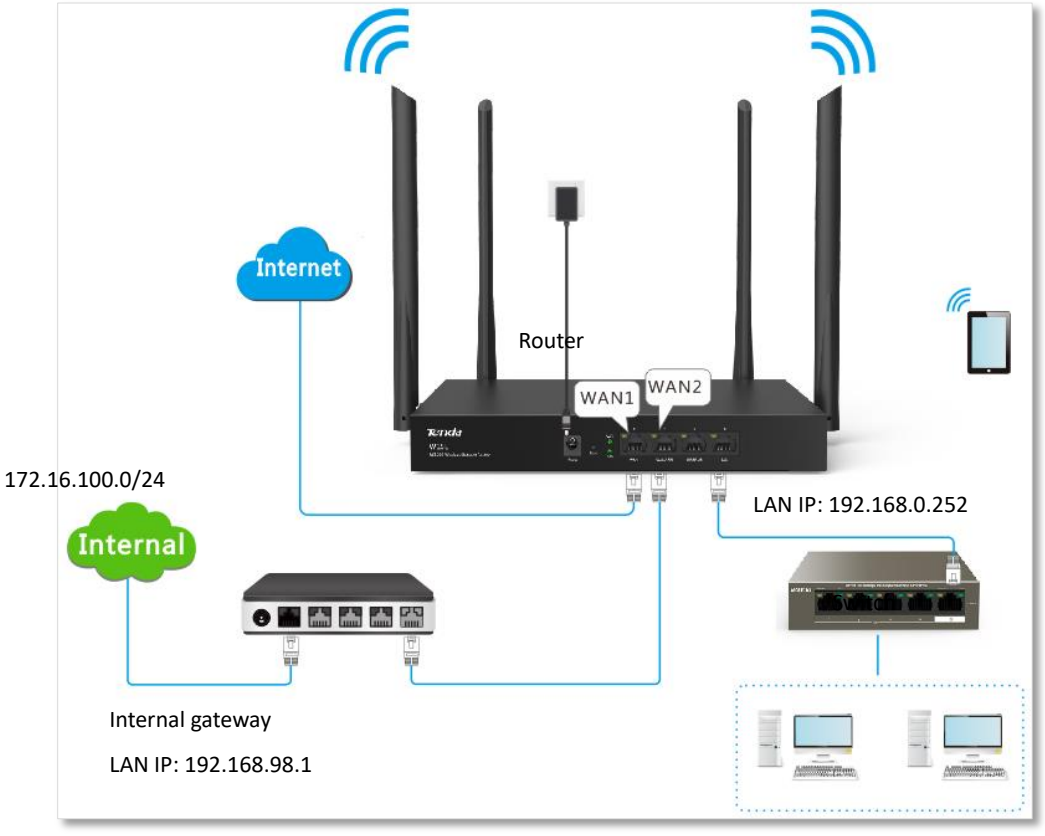
12.3.3 Example of configuring static route

Network requirement

An enterprise uses the router for network construction. The internet is inaccessible to the enterprise LAN. The WAN1 port of the router accesses the internet using a PPPoE connection and the WAN2 port of the router accesses the enterprise LAN using a dynamic IP address. Users on the router LAN are allowed to access both the internet and enterprise LAN. Assume that the PPPoE user name and password are **tenda**/**tenda**.

Solutions

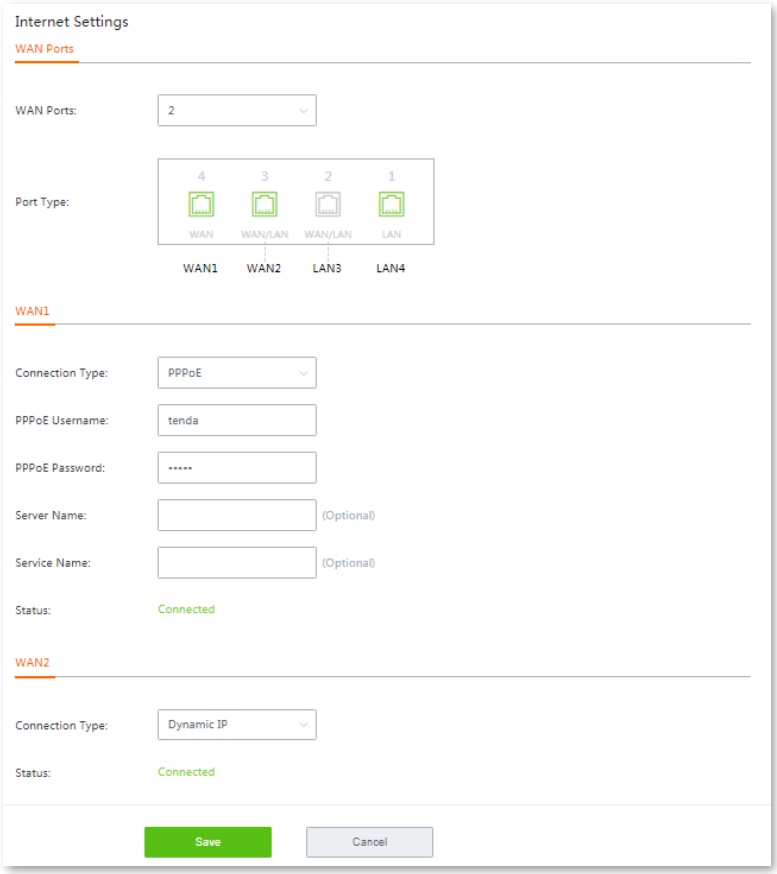
The static routing function can address this requirement.



Configuration procedure

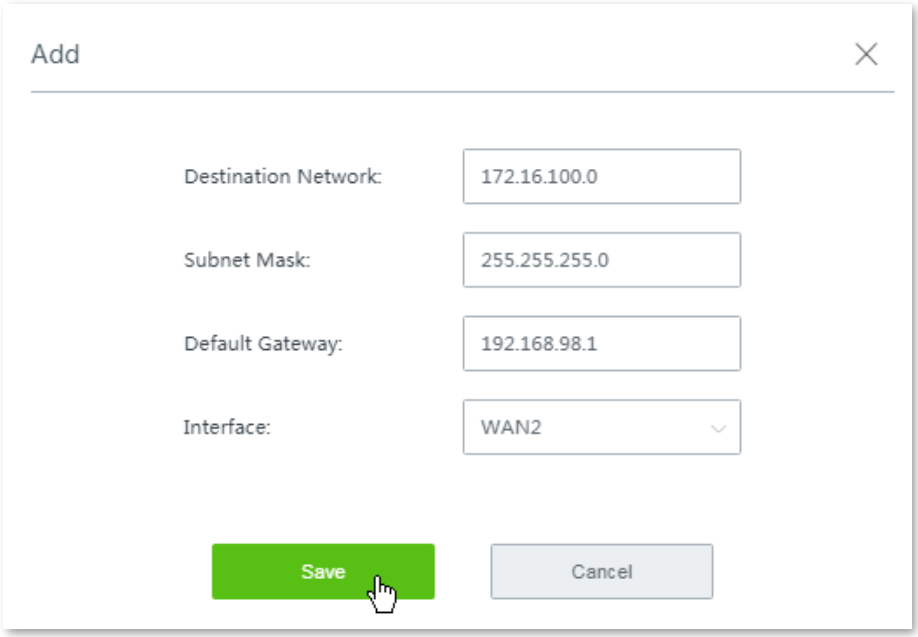
Step 1 Configuring multiple WAN ports.

Refer to Configure multiple WAN ports to configure the **WAN1** port to **PPPoE** and **WAN2** port to **Dynamic IP**. See the following figure:



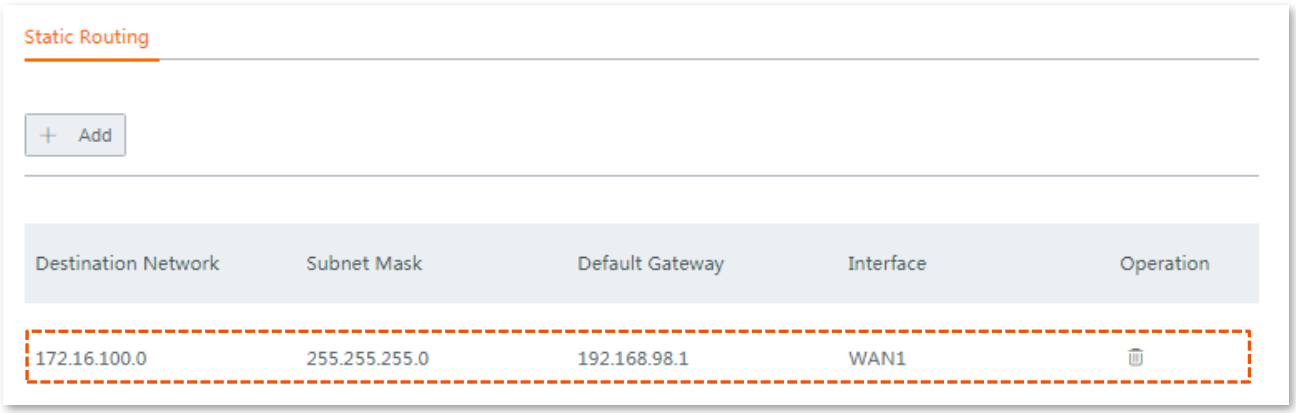
Step 2 Configuring static routing rules.

1. Navigate to **System Status** to view the default gateway of WAN2 port, which is **192.168.98.1** in this example.
2. Click **More** > **Static Routing**, and click **+Add**. The **Add** configuration window appears.
3. Set the parameters and click **Save**.



---- End

Added successfully. See the following figure:



Verification

Computers in the LAN can access the internet and the intranet simultaneously.

TIP

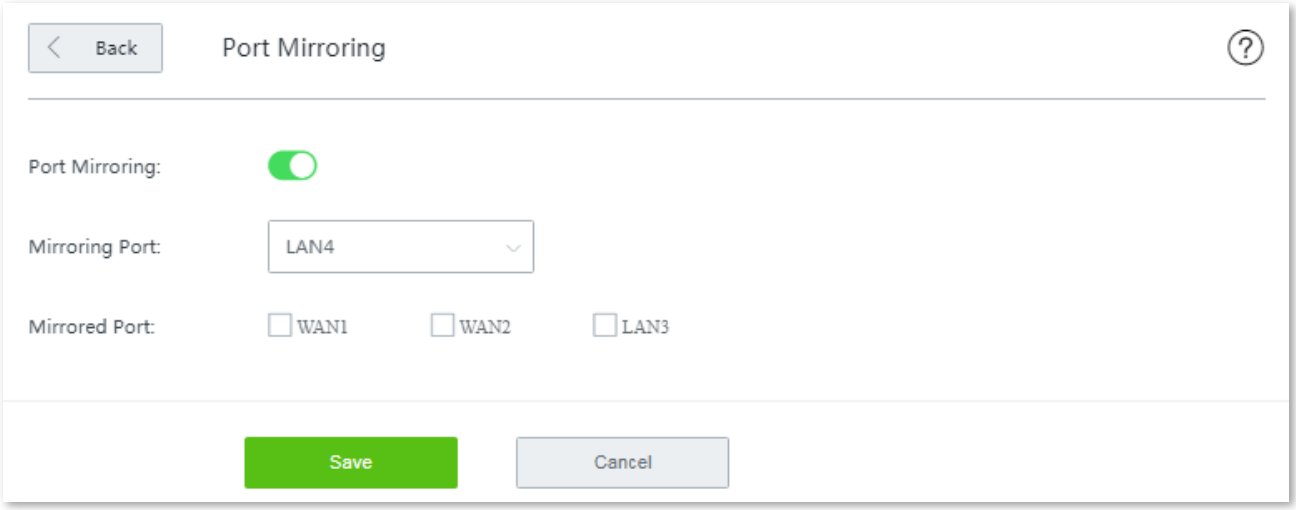
- If the enterprise LAN is connected to the internet, the router may point its default route to the other router, resulting in incorrect routing. In this case, navigate to **Bandwidth Control** and set **Upload/Download Rate** of the **WAN2** port to a value far smaller than the value of the **WAN1** port.
- If the preceding case occurs, it is recommended that you disable the smart load balancing function of the router and use a user-defined multi-WAN policy to ensure that all LAN users access the internet through the WAN1 port of the router.

12.4 Port mirroring

12.4.1 Overview

Port mirroring function forwards a copy of data of one or more mirrored ports to the specified mirroring port. The network administrator uses data monitoring devices to monitor traffic, analyze performance and perform network diagnose.

By default, this function is disabled. Choose **More** > **Port Mirroring**, and enable this function, the following configuration page appears:



Parameter description

Parameter	Description
Port Mirroring	It is used to enable or disable the port mirroring function. The default option is **Disable**.
Mirroring Port	It indicates the monitoring port. A piece of monitoring software must be installed on the computer with this port to perform monitoring. The default mirroring port is **LAN4**.
Mirrored Port	It specifies the monitored ports. After the port mirroring function is enabled, packets of the mirrored ports are replicated to the mirroring port for monitoring.

12.4.2 Configure port mirroring

Step 1 Choose **More** > **Port Mirroring** to access the configuration page.

Step 2 Set **Port Mirroring** to **Enable**.

Step 3 Choose **Mirroring Port** and **Mirrored Port** as required.

Step 4 Click **Save** to apply your settings.

---- End

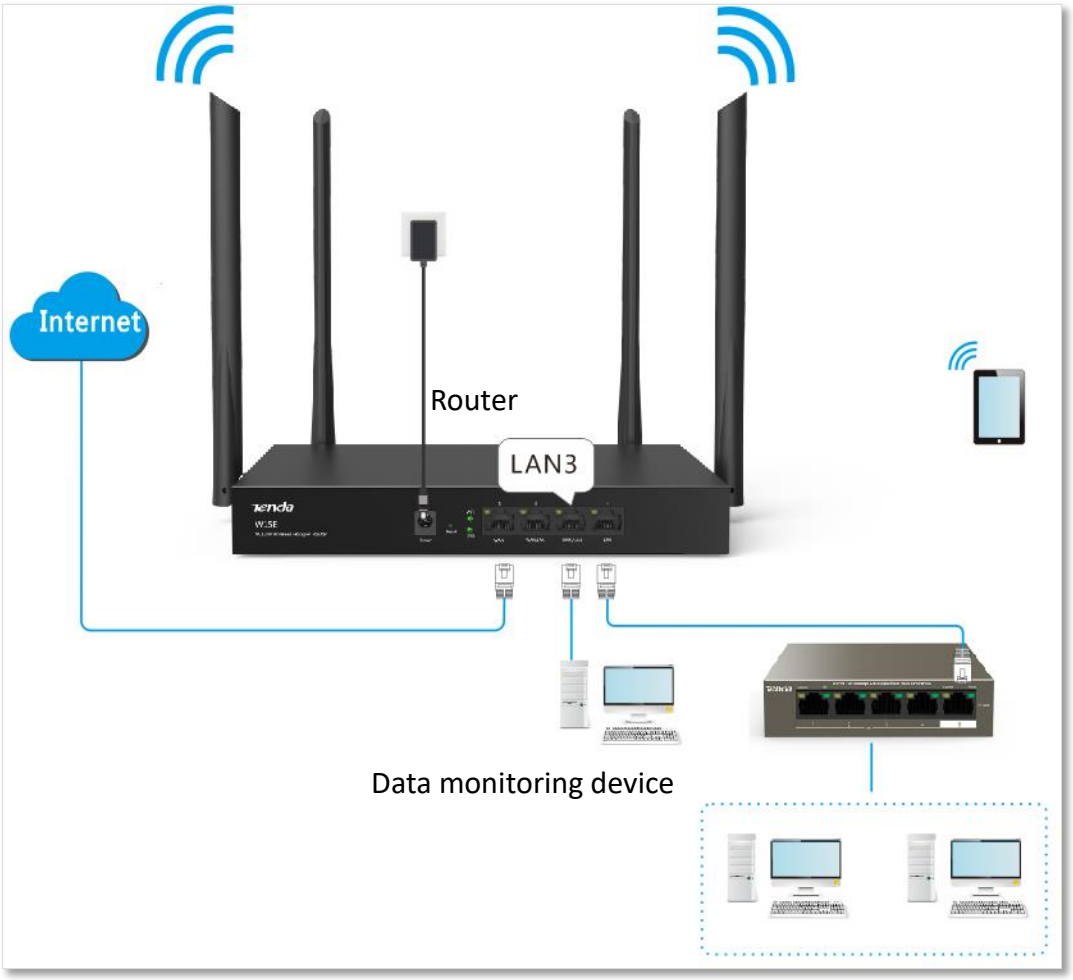
12.4.3 Example of configuring port mirroring

Networking requirement

An enterprise has used the router to set up a LAN. Recently, internet access failures occur frequently and the network administrator needs to capture data packets from the WAN and LAN ports of the router for analysis.

Solutions

The port mirroring function of the router can meet this requirement.



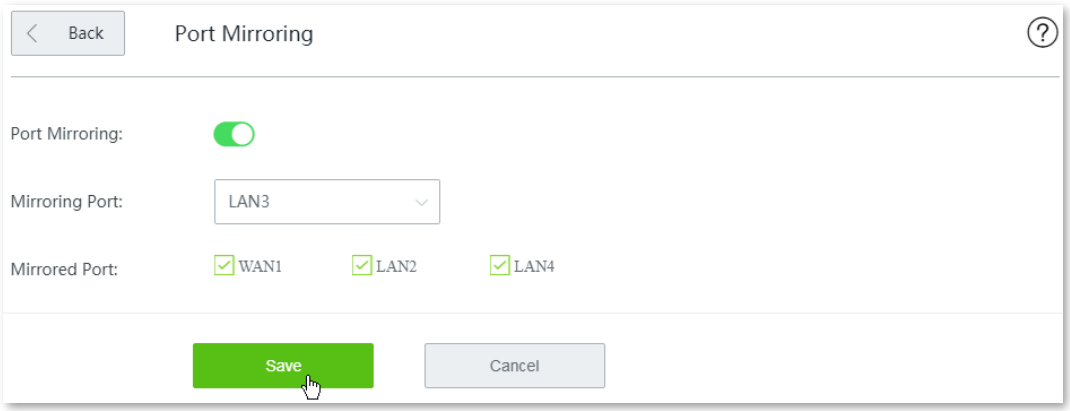
Configuration procedure

Step 1 Choose **More** > **Port Mirroring** to access the configuration page.

Step 2 Set **Port Mirroring** to **Enable**.

Step 3 Choose **Mirroring Port** and **Mirrored Port** as required.

Step 4 Click **Save** to apply your settings.



---- End

Verification

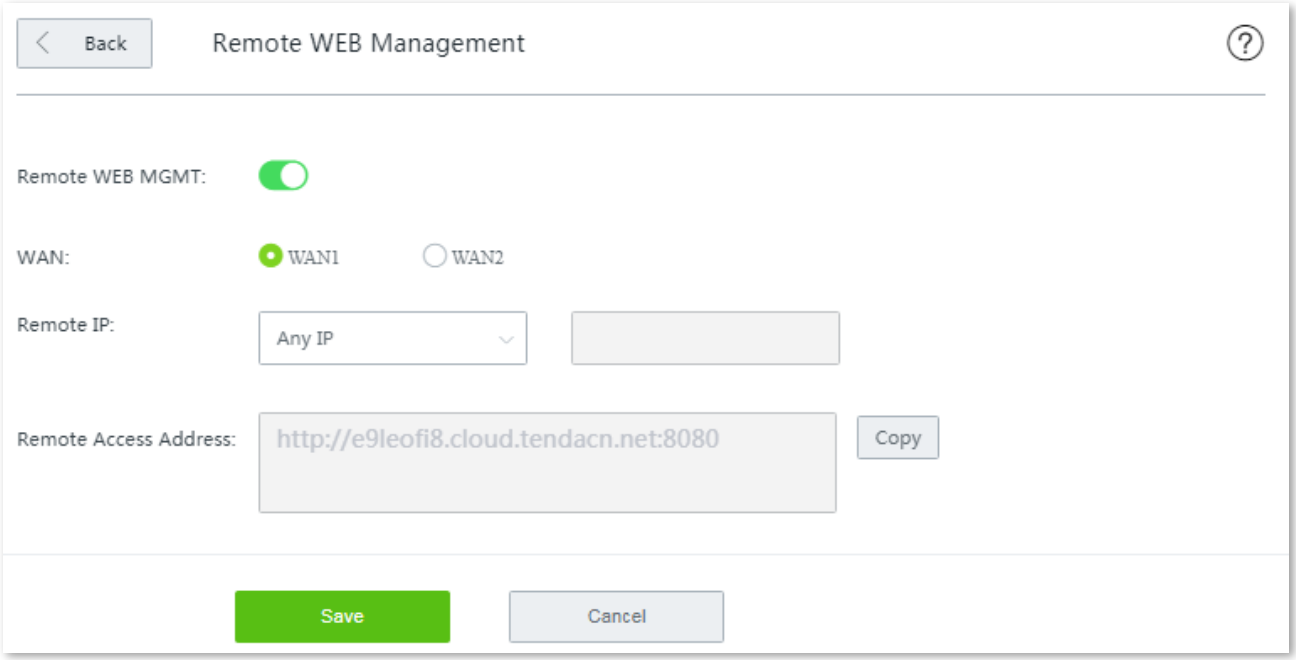
Run monitoring software such as Wireshark on the monitoring computer to verify the software can capture data packets from the mirrored ports.

12.5 Manage your router remotely using web UI

12.5.1 Overview

Generally, the web UI of the router can only be accessed on devices that are connected to the router in wired or wireless manner. This costs in case of seeking technician to fix network problems. The remote web management function is designed to address such requirement. When you encounter network faulty, you can ask technician far away to diagnose and fix your problems, improving efficiency and reducing costs and efforts.

Choose **More** > **Remote WEB Management**, and enable this function, the configuration page appears. See the following figure:



Parameter description

Parameter	Description
Remote IP	IP address of the computer that can access the router remotely. - **Any IP**: Any computers can access the router over the internet. Choose this option only when necessary since it lowers network security. - **Specified IP**: Only a computer with the specified IP address can access the router over the internet. If the computer is on a LAN, enter the WAN port IP address of the gateway of the computer.
Remote Access Address	With this function enabled, the router automatically generates one unique domain name that can be used to manage the router remotely.

12.5.2 Conifgure remote web management

Step 1 Click **More** > **Remote WEB Management**, and enable this function.

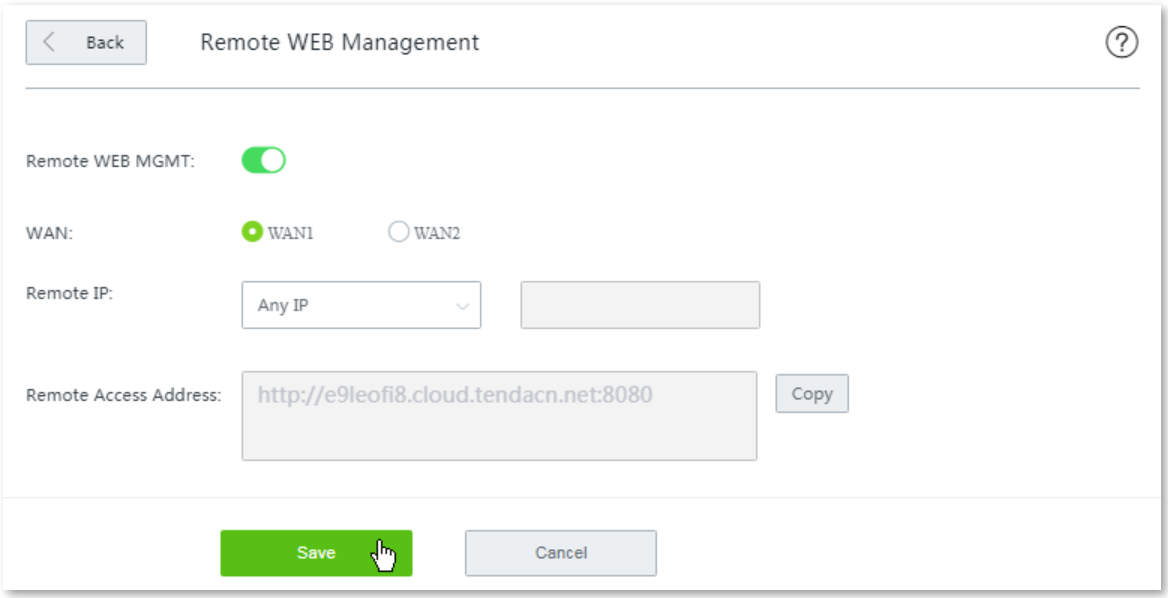
Step 2 Select the **WAN** port for remote access.

Step 3 Set the **Remote IP** to either of **Any IP** or **Specified IP**.

TIP

- **Any IP**: It indicates that all internet users can access the web UI of the router with the **Remote Access Address** here. For security of your network, select this option only when necessary.
- **Specified IP**: It indicates that only the host with the specified public IP address is allowed to access the web UI of router remotely.
- If the computer for remote access is in an intranet, enter the public IP address of the computer's gateway here.

Step 4 Click **Save** to apply your settings.



---- End

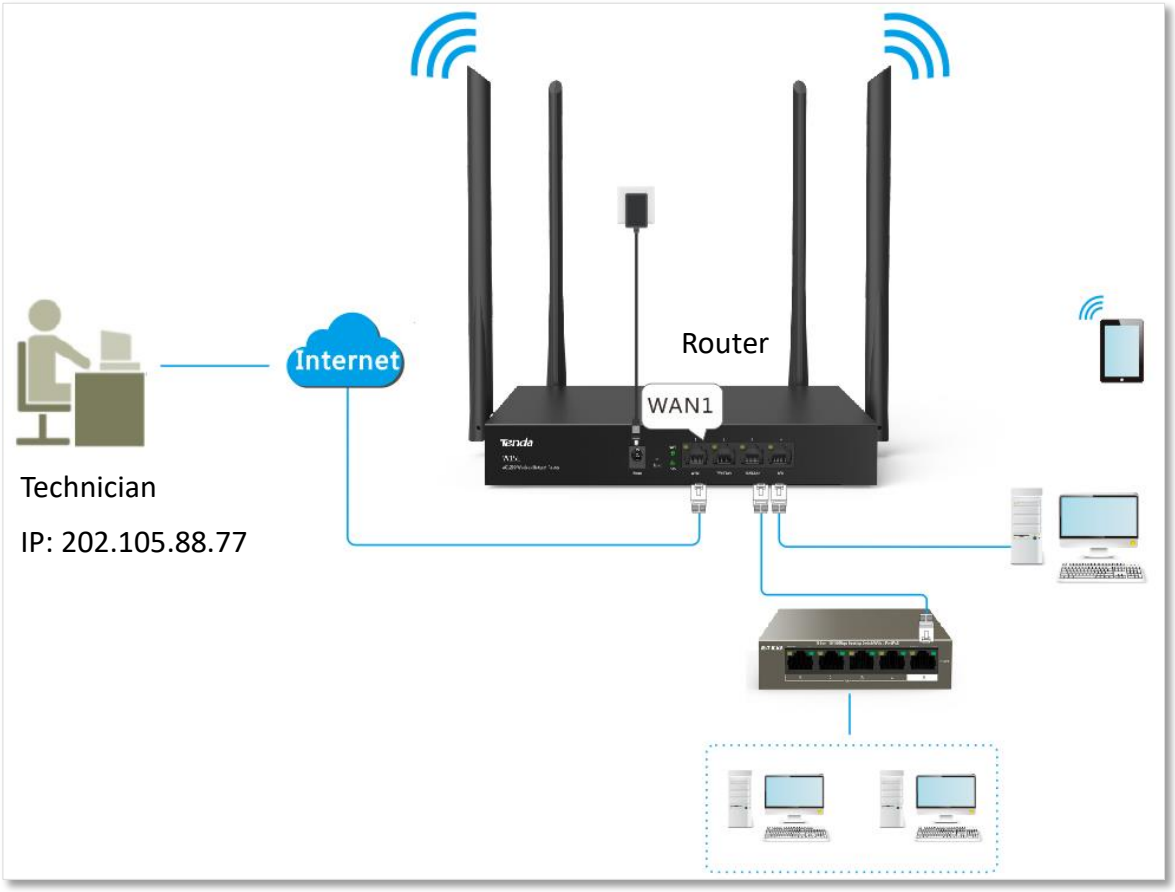
12.5.3 Example of conifguring remote web management

Networking requirement

An enterprise uses the router to deploy its network. And its network administrator needs to seek a Tenda technician to solve a problem remotely.

Solutions

Remote web management function can meet this requirement.



Configuration procedure

Step 1 Click **More** > **Remote WEB Management**, and enable this function.

Step 2 Select the **WAN** port for remote access, which is **WAN2** in this example.

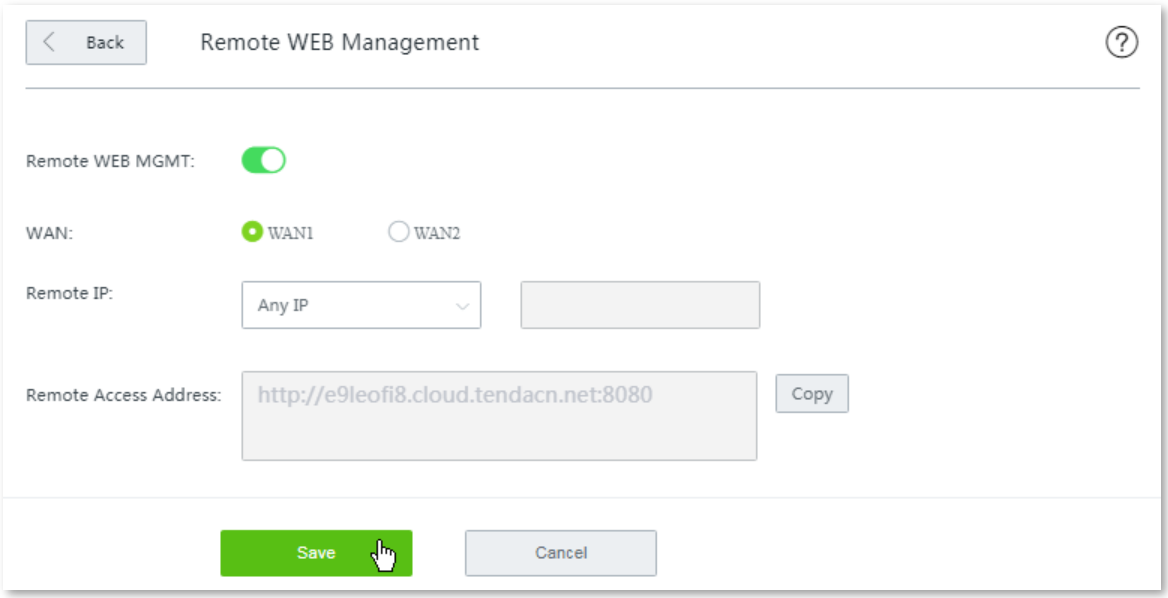
Step 3 Enter the IP address of the technician's computer, which is **202.105.88.77** in this example.

TIP

If the technician' computer is in a remote LAN network, set the WAN IP address of his router as the **Specified IP**.

Step 4 Click **Save** to apply your settings.

Step 5 Click **Copy** and send the **Remote Access Address** to the Tenda technician.



---- End

Verification

Tenda technician with a computer IP address 202.105.88.77 can use http://e9leofi8.cloud.tendacn.net:8080 to access the web UI of the router remotely.

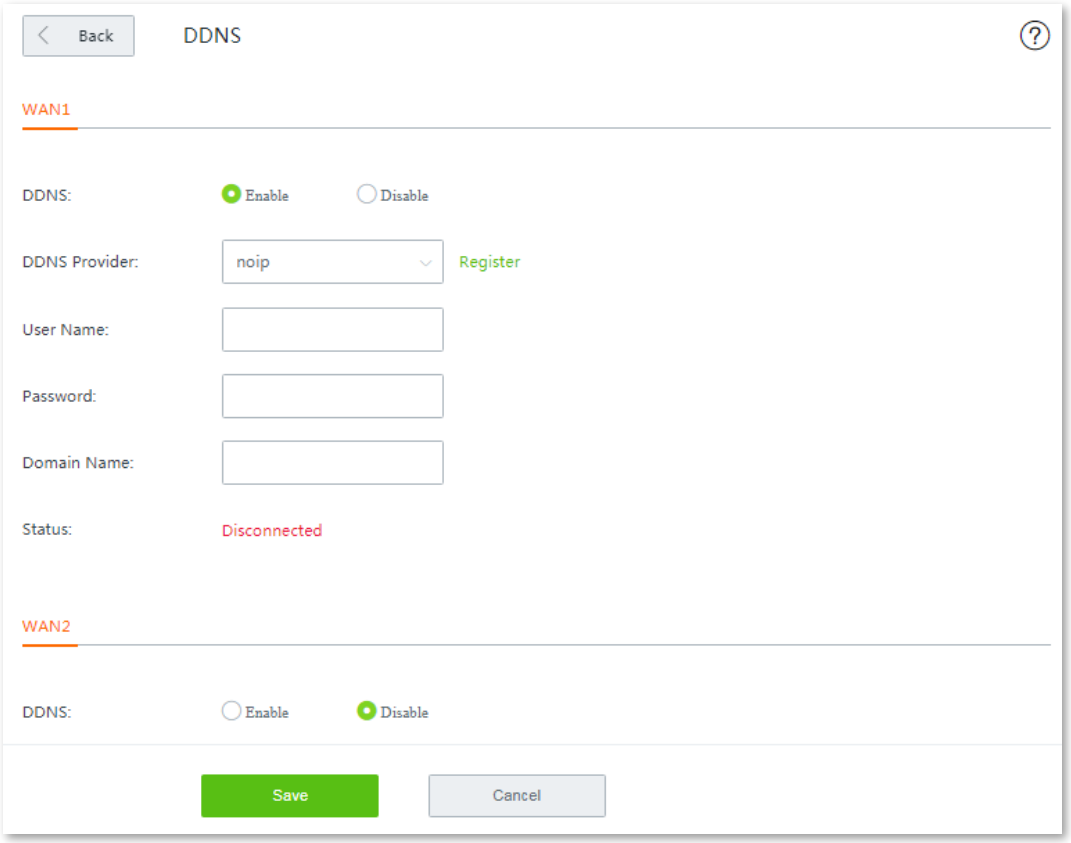
12.6 DDNS

12.6.1 Overview

DDNS is short for Dynamic Domain Name Server. It detects when your IP address changes and maps your dynamic IP address to a static domain name. When the service is running, the DDNS client on the router sends its current WAN port IP address to the DDNS server. Then the server updates the mapping between the domain name and the IP address in the database to implement dynamic domain name resolution. If you enable this function, the router sends its WAN IP address to the specified DDNS server when the WAN IP address is changed and the DDNS server maps the changed WAN IP address to a specified static domain name. This enables internet users to access services on your LAN through the static domain name instead of the changeable WAN IP address.

This function always interworks with other functions, such as Port Forwarding, DMZ Host and Remote Web Management.

Choose **More** > **DDNS**, and enable this function, the configuration page appears. See the following figure:



Parameter description

Parameter	Description
DDNS	Used to enable or disable the function.
DDNS Provider	The router supports four DDNS providers: **noip**, **dyndns**, **oray**, and **gnway**.
User Name	It specifies the user name used to log in to a DDNS provider. It is registered on the website of the provider.

Parameter	Description
Password	It specifies the password used to log in to a DDNS provider.
Domain Name	It specifies the domain name obtained from a DDNS provider.
Status	It specifies the DDNS service status.

12.6.2 Configure DDNS

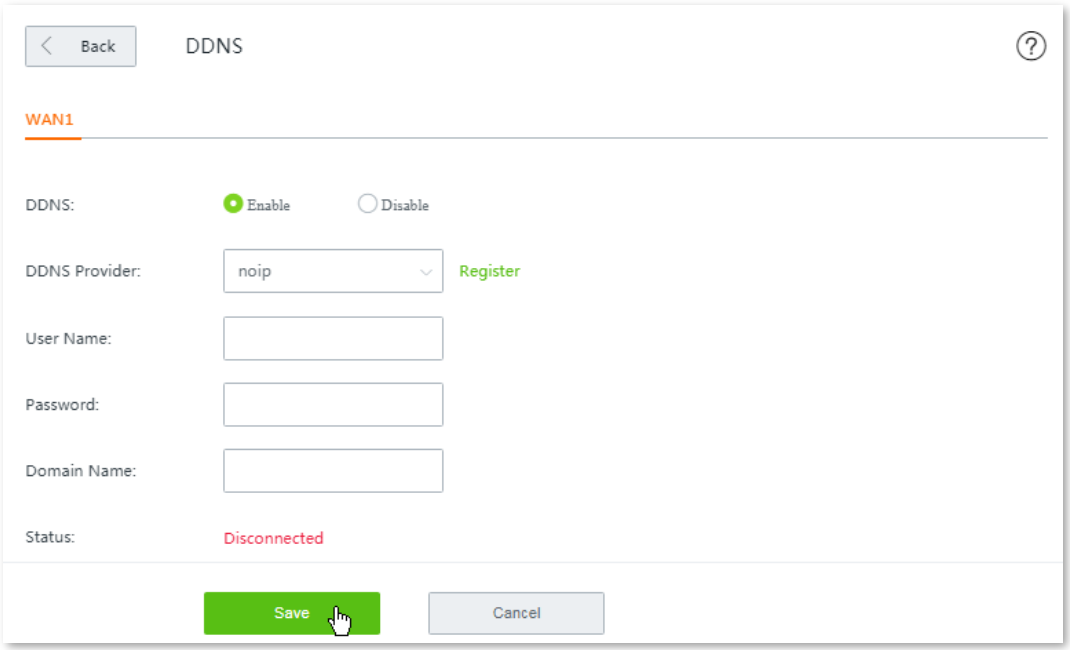
NOTE

- A dynamic IP address will disable the port forwarding rule. To use this function and make the rule always effective, set a static IP address for the specified local host.
- Some programs, such as firewall, antivirus software, and security guard, may hinder internet users to access the local service. Disable them when necessary.

Step 1 Choose **More** > **DDNS**, locate the WAN port and enable the function.

Step 2 Set required parameters.

Step 3 Click **Save** to apply your settings.



---- End

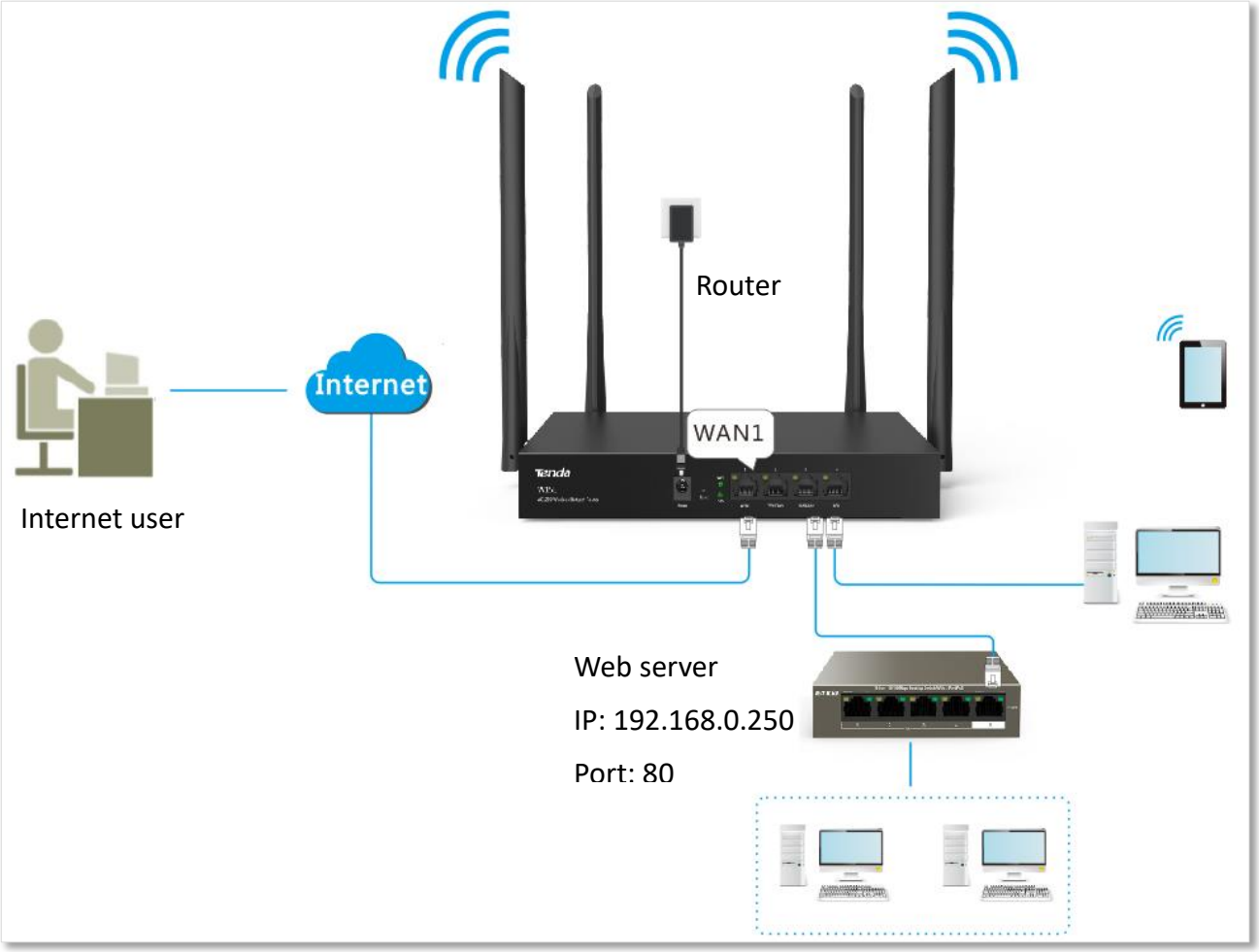
12.6.3 Example of configuring DDNS

Networking requirement

An enterprise uses the router to deploy its WLAN network. The router is connected to the internet. Now the enterprise establishes a web server and wants to be accessed by internet users. Thus when employees are not in the enterprise, they can also access the web server. Assume that the external port is 80.

Solutions

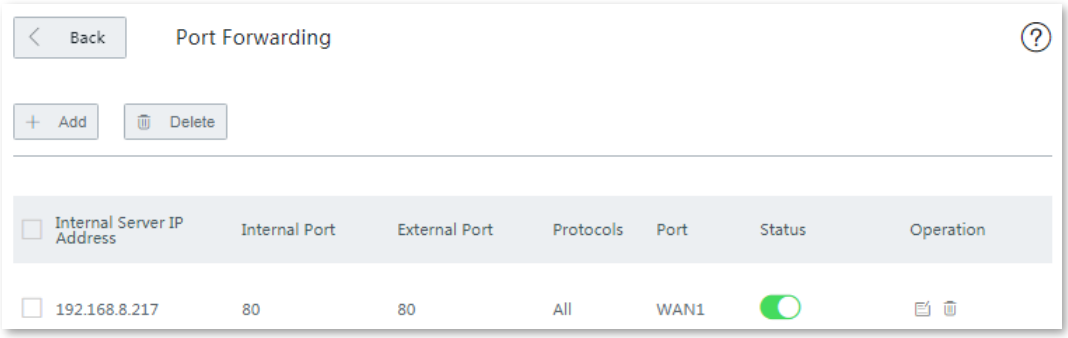
You can use Port Forwarding and DDNS function to meet this requirement.



Configuration procedure

Step 1 Configuring port forwarding.

Navigate to **More** > **Port Forwarding**, and add a rule. See Port forwarding for detailed configuration procedure.



Step 2 Configuring DDNS.

1. Register a domain name.

   Select the DDNS provider from the drop-down list menu, which is **noip** in this example, and click **Register** next to the menu to register a domain name.

2. Set DDNS parameters.

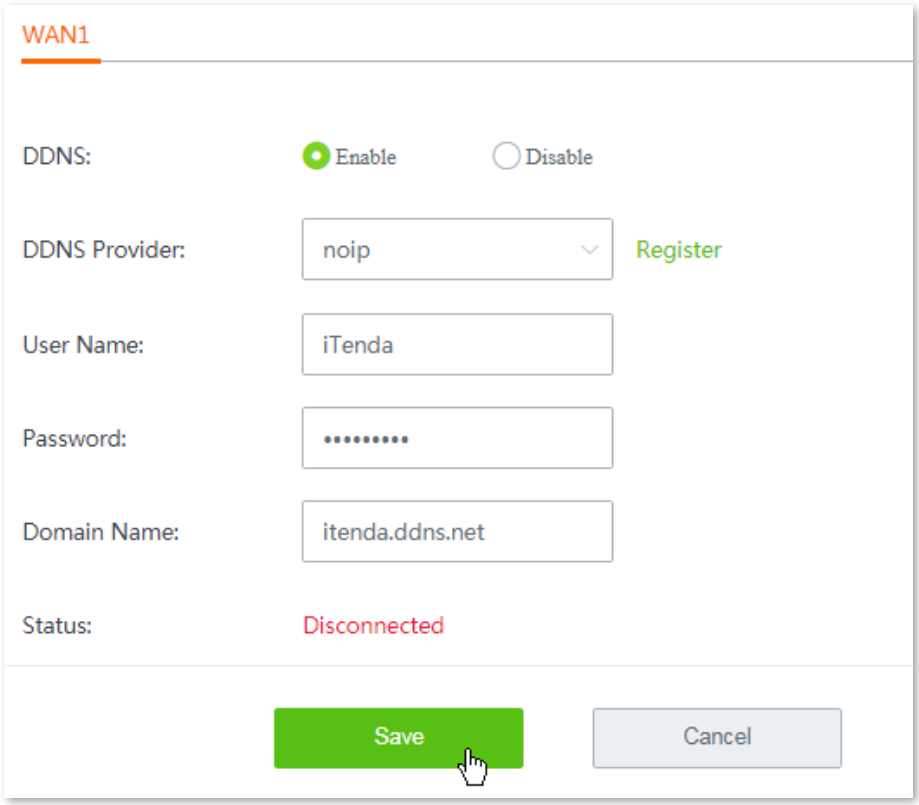
   (1) Log in to the web UI of the router, navigate to **More** > **DDNS**, and enable **WAN1** port's DDNS function.

   (2) Enter the DDNS-related parameters you registered on your DDNS provider's website.

   Assume that you DDNS-related information are:

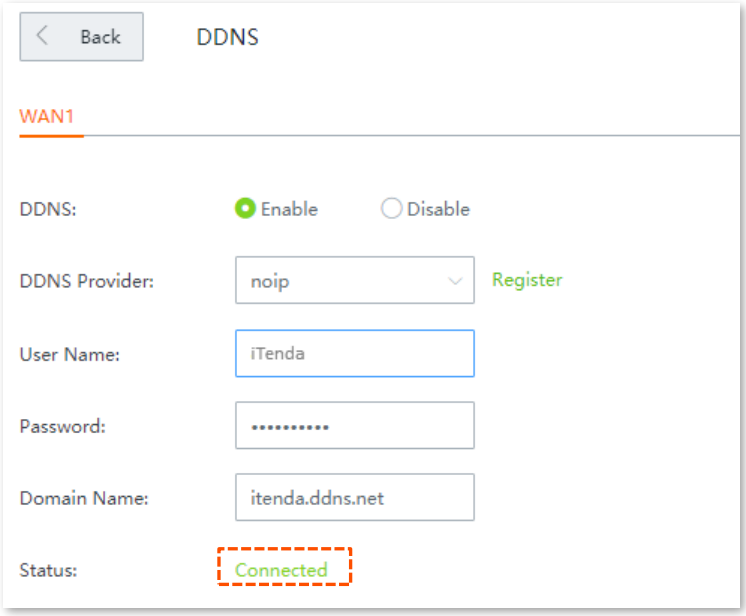
   - User Name for DDNS: **iTenda**
   - Password for DDNS: **itenda123**
   - Domain Name for DDNS: **itenda.ddns.net**.

   (3) Click **Save** to apply your settings.



---- End

Wait a moment, and refresh the page. When the **Status** shows **Connected**, the configuration completes successfully.



Verification

Internet users can use http://itenda.ddns.net:80 to access the web server. Among which:

- **http** indicates intranet service protocol name.
- **itenda.ddny.net** is the domain name you registered on your DDNS provider's website.
- **80** is the external port number.

TIP

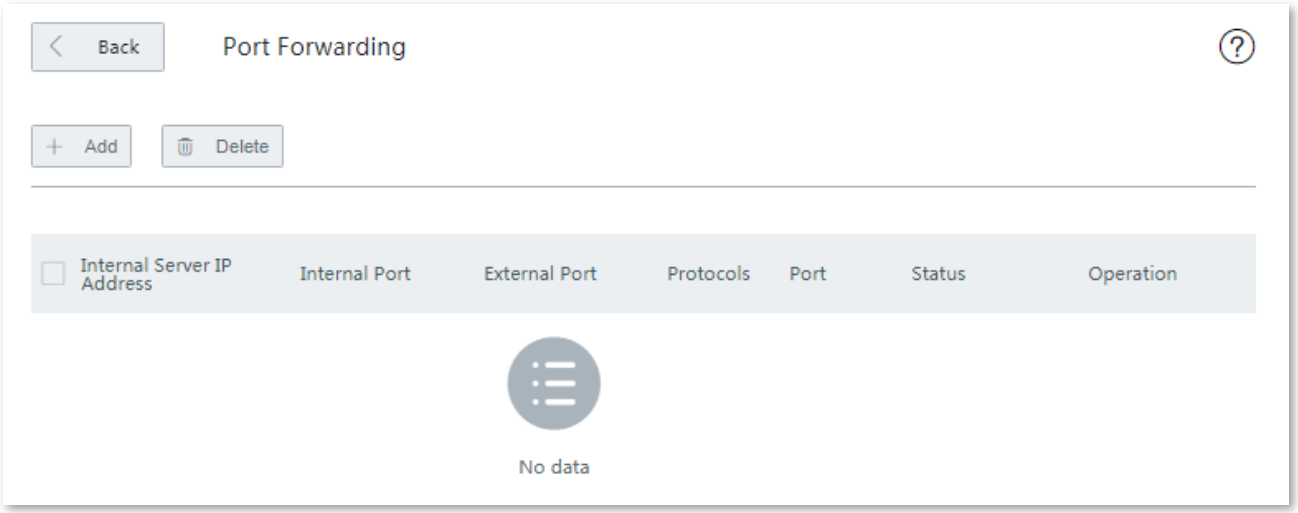
- If you cannot access the web server, try the following methods to resolve the problem:
- Make sure that the WAN IP address of the router is a public IP address.
- Make sure that the intranet port number is the service port number on the local host.

12.7 Port forwarding

12.7.1 Overview

By default, internet users cannot access any service on any of your local hosts. If you want to enable internet users to access a particular service on a local host, enable this function and specify the IP address and service port of the local host. This can also prevent local network from being attacked.

To access the configuration page, choose **More** > **Port forwarding**. See the following figure:



Parameter description

Parameter	Description
Internal Server IP Address	It specifies the IP address of a local computer that runs a specified service.
Internal Port	It specifies the service port of a server on a local computer.
External Port	It specifies the port for internet users to access a specified service.
Protocols	It specifies the protocol that a specified service uses. **All** indicates that both TCP and UDP are supported. If you are not familiar with the protocols, select **All**.
Port	It specifies the physical WAN port that internet users use to access the specified service.
Status	It specifies whether the rule is enabled or not.

12.7.2 Configure a port forwarding rule

NOTE

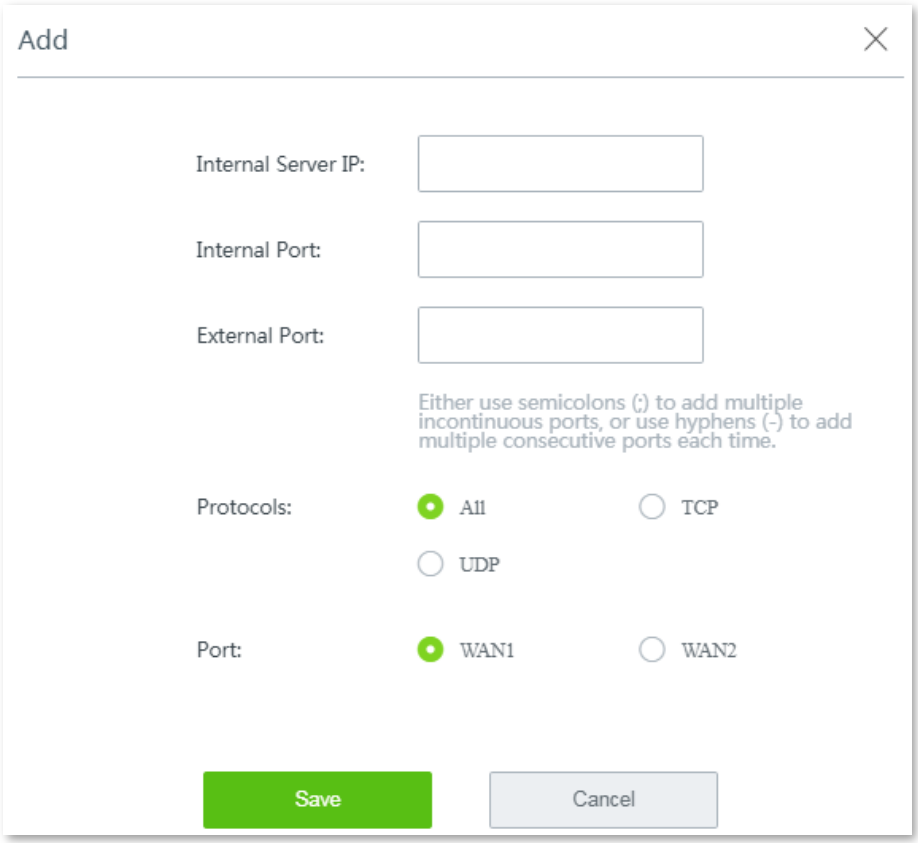
- A dynamic IP address will disable the port forwarding rule. To use this function and make the rule always effective, set a static IP address for the specified local host.
- Some programs, such as firewall, antivirus software, and security guard, may hinder internet users to access the local service. Disable them when necessary.

Step 1 Choose **More** > **Port Forwarding** to enter the configuration page.

Step 2 Click **+Add**. The **Add** configuration window appears.

Step 3 Set required parameters.

Step 4 Click **Save** to apply your settings.



---- End

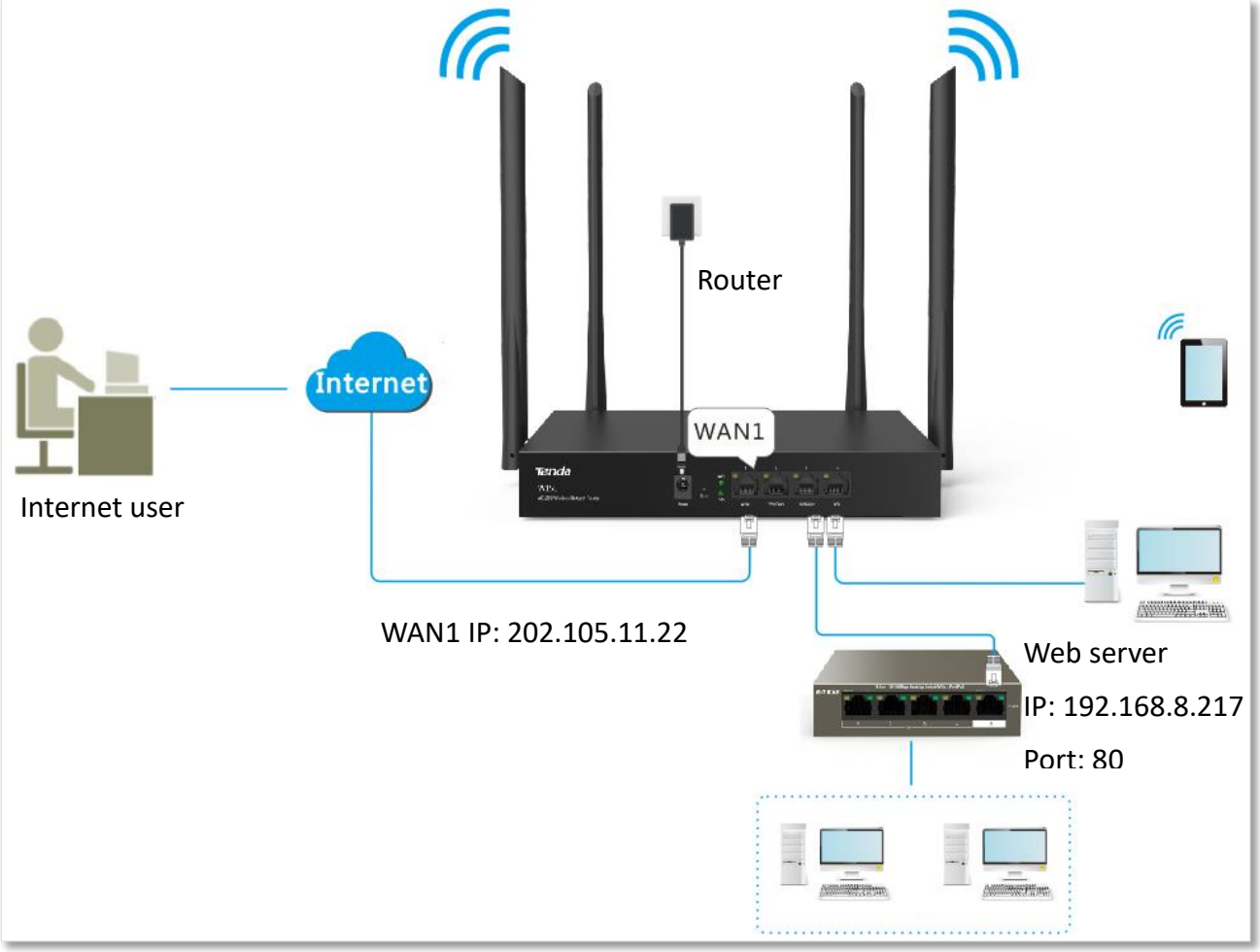
12.7.3 Example of configuring a port forwarding rule

Networking requirement

An enterprise uses the router to deploy its WLAN network. The router is connected to the internet. Now the enterprise establishes a web server and wants to enable its employees to access the web server through the internet.

Solutions

You can use the port forwarding function to meet this requirement.



Configuration procedure

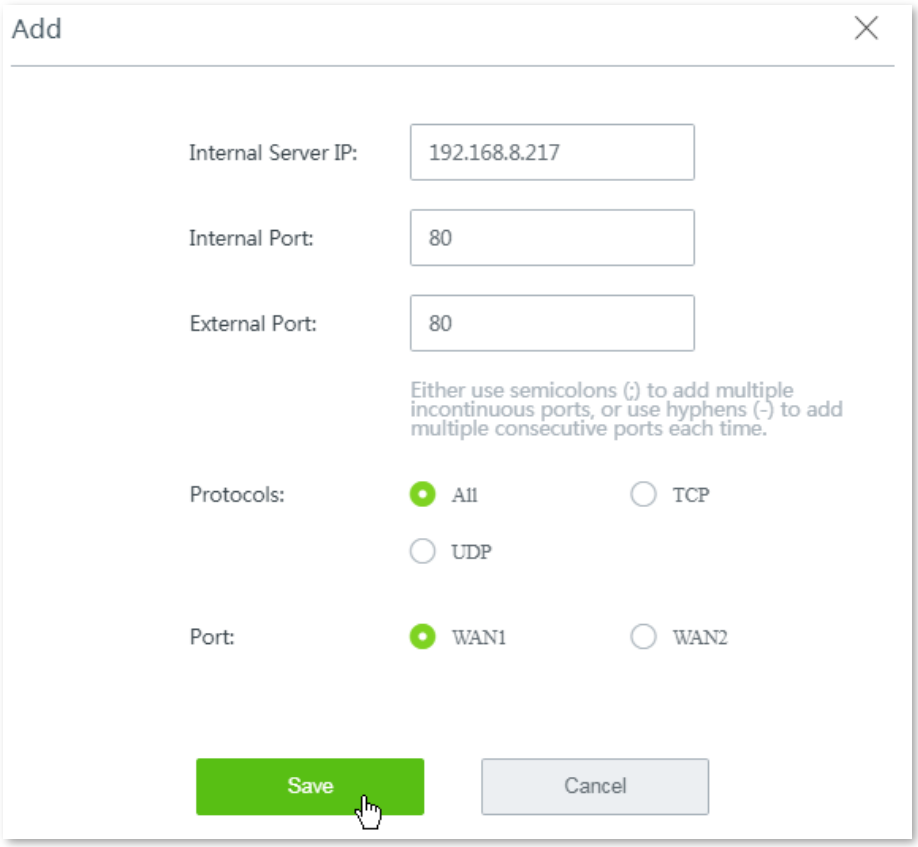
Step 1 Choose **More** > **Port Forwarding** to enter the configuration page.

Step 2 Click **+Add**. The **Add** configuration window appears.

Step 3 Set required parameters. In this example, the parameters are as follows:

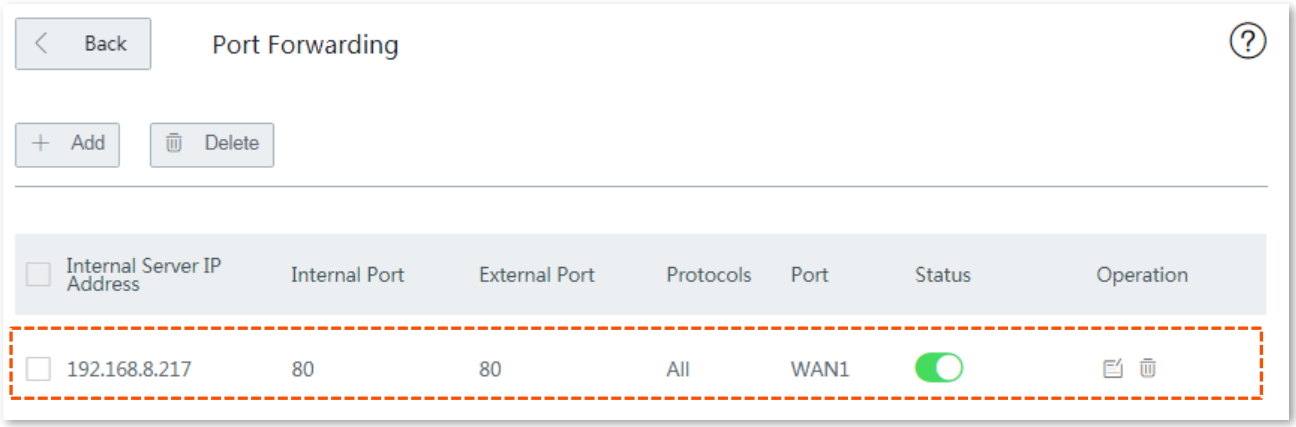
- Internal Server IP: **192.168.8.217**
- Internal Port: **80**
- External Port: **80**
- Protocols: **All**
- Port: **WAN1**

Step 4 Click **Save** to apply your settings.



---- End

Added successfully. See the following figure:



Verification

Internet users can use http://202.105.11.22:80 to access the web server. Among which:

- **http** indicates intranet service protocol name.
- **202.105.11.22** is the WAN1 IP address.
- **80** is the external port number.

In addition, If the corresponding WAN port is configured with DDNS, you can use **intranet service protocol name://domain name:external port** to access the web server.

TIP

If you cannot access the web server, try the following methods to resolve the problem:

- Make sure that the WAN IP address of the router is a public IP address.
- Make sure that the intranet port number is the service port number on the local host.

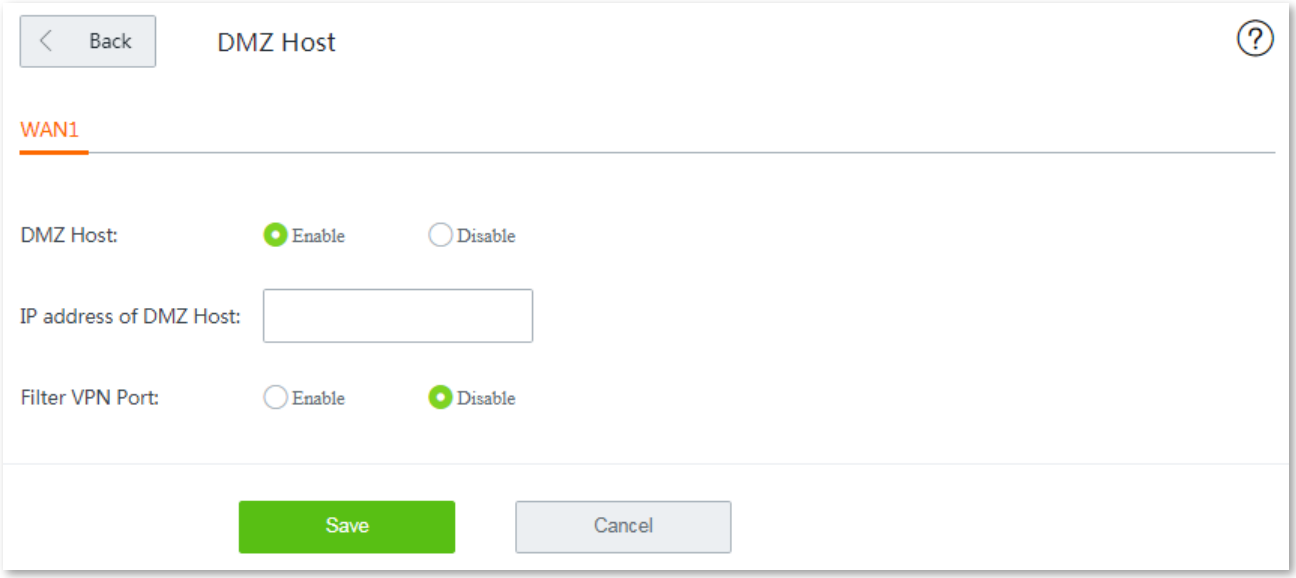
12.8 DMZ host

12.8.1 Overview

By default, internet users cannot access any service on any local host. If you want internet users to access all services on a local host, enable this function. It is especially used for video conferences and online games. You can set a local computer running these programs to be a DMZ host for better video conferencing and online gaming experience.

> NOTE
>
> If you set a local computer as a DMZ host, the computer is not protected by the firewall of the router and may be easily attacked by internet users. Therefore, enable the DMZ host function only when necessary.

Choose **More** > **DMZ Host**, and enable this function, the following configuration page appears.



Parameter description

Parameter	Description
DMZ Host	Used to enable or disable the function.
IP Address of DMZ Host	It specifies the IP address of the would-be DMZ host.
Filter VPN Port	It used to specify whether to filter the VPN port if DMZ is enabled for a host. By default, it is disabled. - **Enable**: The router filters the VPN port and responds to VPN requests from internet. - **Disable**: The router does not filter the VPN port and the VPN function of the router is disabled. VPN requests from internet users are responded by the DMZ host.

12.8.2 Configure DMZ host

NOTE

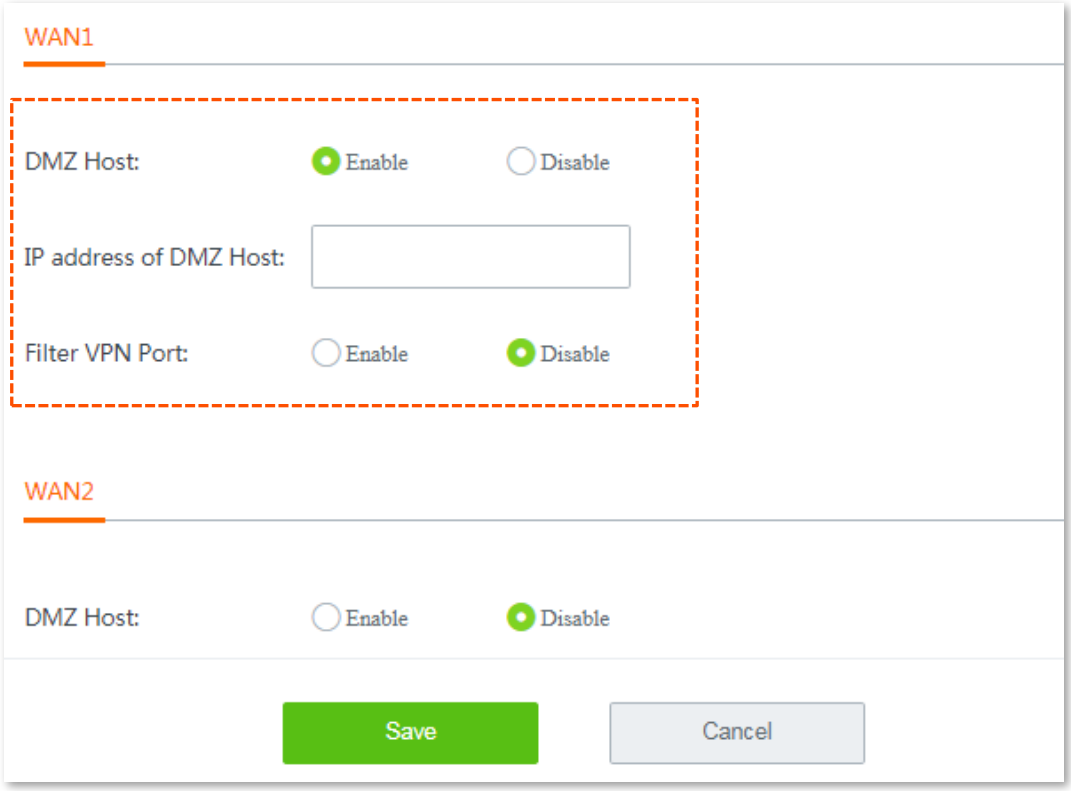
- A dynamic IP address will disable the port forwarding rule. To use this function and make the rule always effective, set a static IP address for the specified local host.
- Some programs, such as firewall, antivirus software, and security guard, may hinder internet users to access the local service. Disable them when necessary.

Step 1 Choose **More** > **DMZ Host**, and enable this function of the corresponding WAN port.

Step 2 Enter the **IP address of the DMZ Host**.

Step 3 Enable **Filter VPN Port** as required.

Step 4 Click **Save** to apply your settings.



---- End

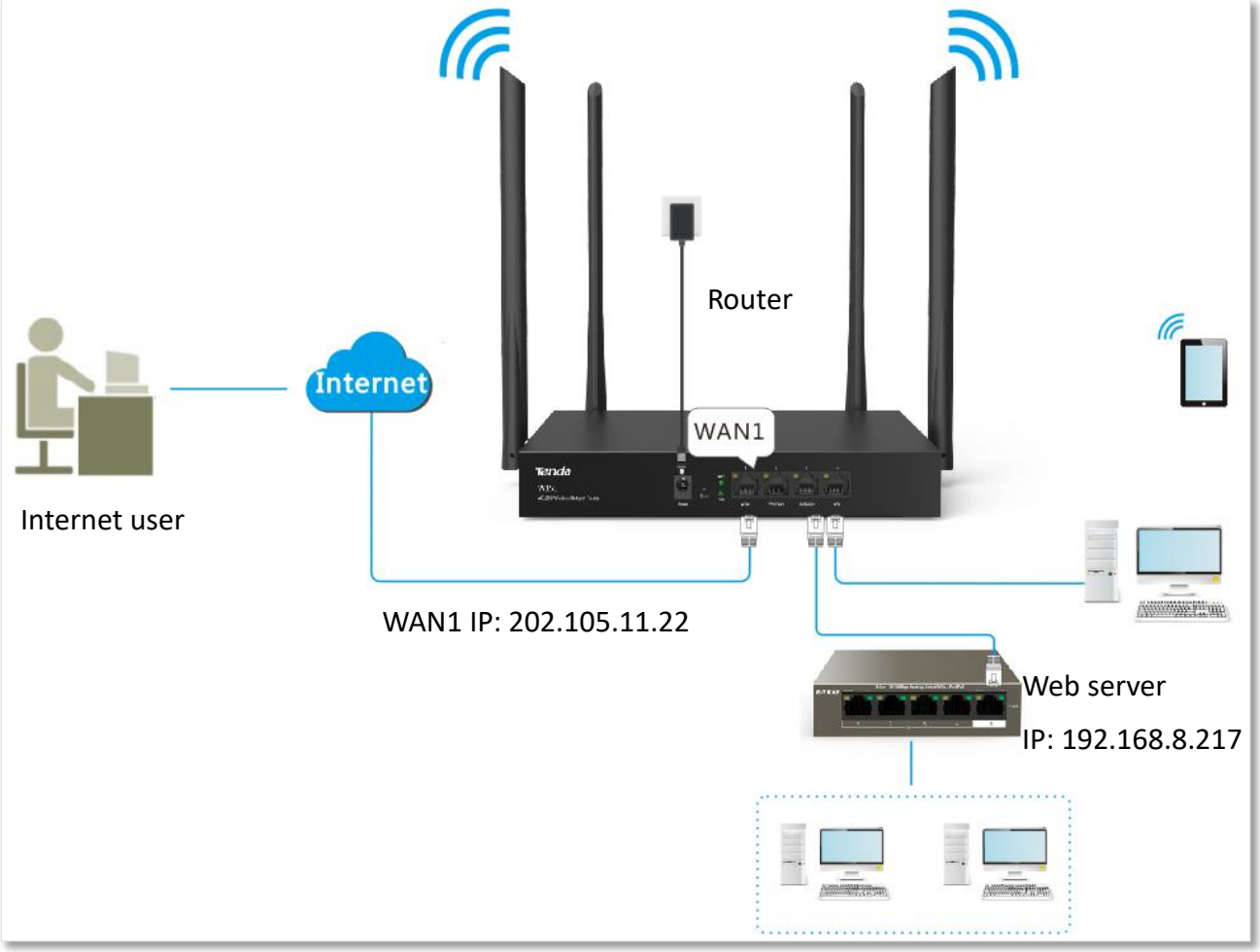
12.8.3 Example of configuring DMZ host

Networking requirement

An enterprise uses the router to deploy its WLAN network. The router is connected to the internet. Now the enterprise establishes a web server and wants to enable its employees to access the web server through the internet.

Solutions

You can use the DMZ function to meet this requirement.



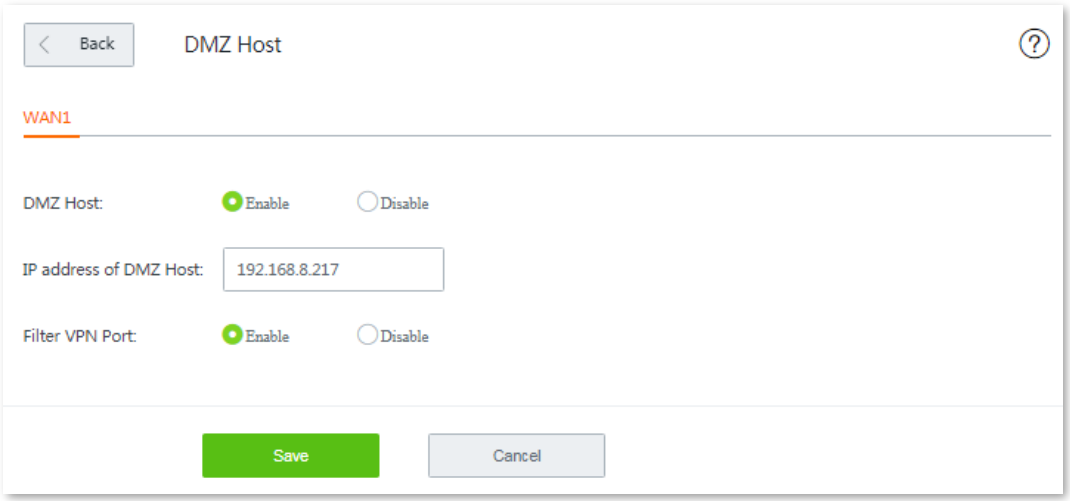
Configuration procedure

Step 1 Choose **More** > **DMZ Host**, and enable this function of the corresponding WAN port.

Step 2 Enter the **IP address of the DMZ Host**.

Step 3 Enable **Filter VPN Port** as required.

Step 4 Click **Save** to apply your settings.



---- End

Verification

Internet users can use http://202.105.11.22:80 to access the web server. Among which:

- **http** indicates intranet service protocol name.
- **202.105.11.22** is the WAN1 IP address.
- **80** is the external port number.

In addition, If the corresponding WAN port is configured with DDNS, you can use intranet service protocol name://domain name:external port to access the web server.

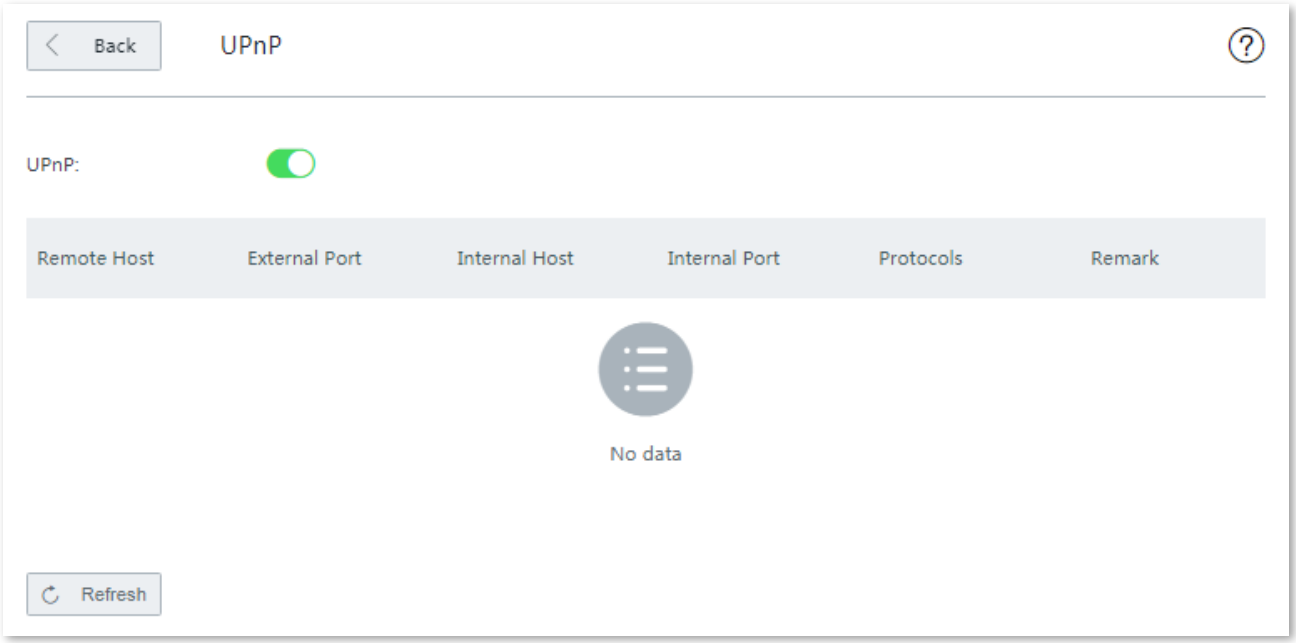
TIP

- If you cannot access the web server, try the following methods to resolve the problem:
- Make sure that the WAN IP address of the router is a public IP address.
- Make sure that the intranet port number is the service port number on the local host.

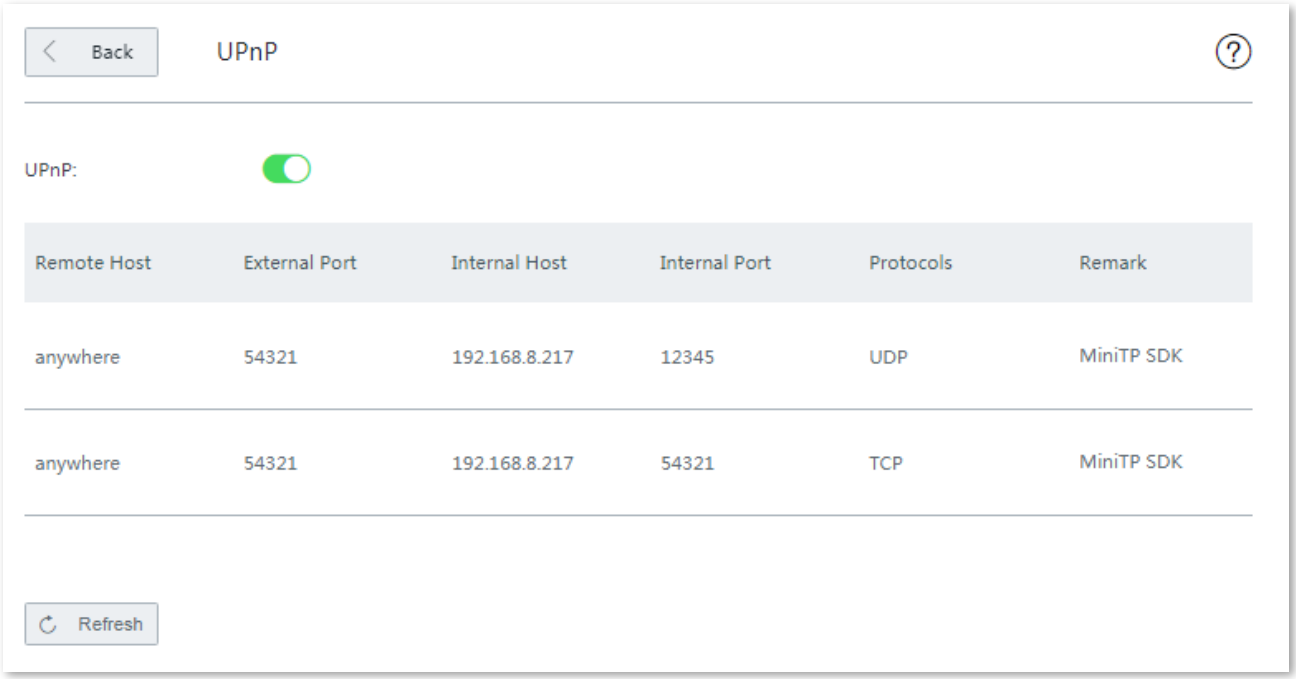
12.9 UPnP

UPnP is short for Universal Plug and Play. After you enable this function, the router can detect UPnP-based application programs on local computers and map onto the ports of the programs automatically. In this way, internet users can access these programs. It is generally used for P2P programs, such as BitComet and AnyChat, and helps to increase the download speed.

By default, this function is disabled. Choose **More** > **UPnP**, and enable this function, the following figure appears.



If you enable the UPnP function, 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.

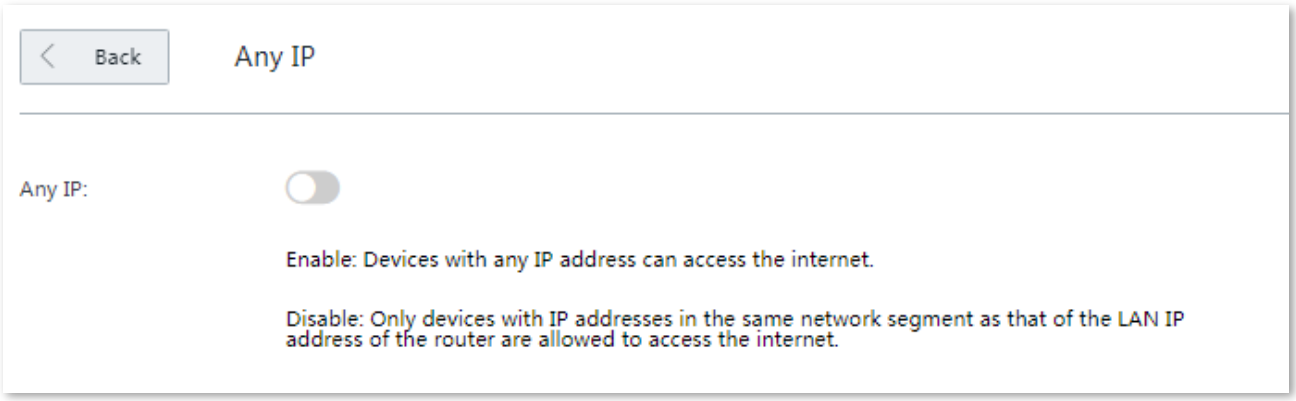


12.10 Any IP

This function is typically used in public spaces, such as at a hotel. With this function enabled, devices with any IP address can access the internet through the router.

NOTE

This function cannot be enabled if **Captive Portal** is configured.

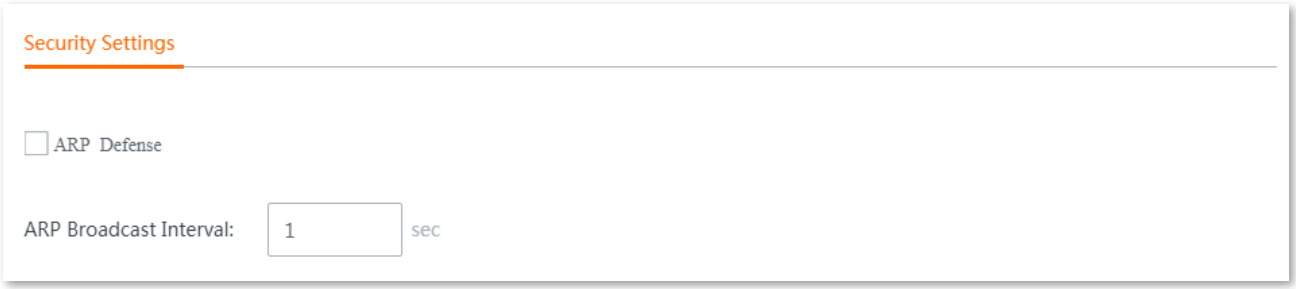


12.11 Security settings

The router supports ARP defense

DDoS defense, IP attack defense, and Block WAN ping.

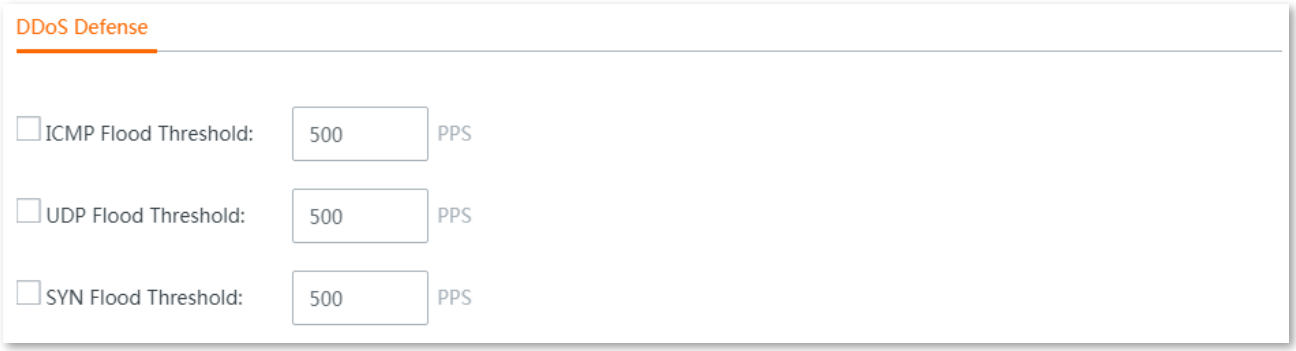
ARP defense



Parameter description

Parameter	Description
ARP Defense	It is used to efficiently prevent the ARP attack from the local network.
ARP Broadcast Interval	It specifies the interval for sending ARP inquiry messages. Default: **1** second.

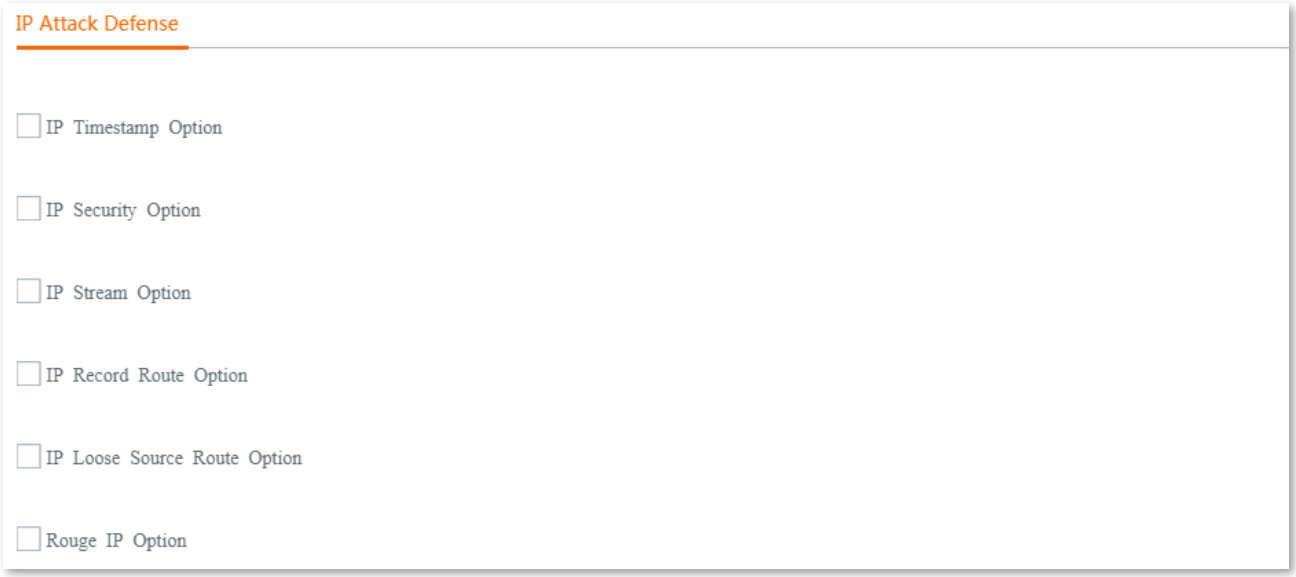
DDoS defense



Parameter description

Parameter	Description
ICMP Flood Threshold	If ICMP request packets exceed the threshold within 1 second, the router suffers ICMP flood attack.
UDP Flood Threshold	If UDP request packets exceed the threshold within 1 second, the router suffers UDP flood attack.
SYN Flood Threshold	If SYN request packets exceed the threshold within 1 second, the router suffers SYN flood attack.

IP attack defense



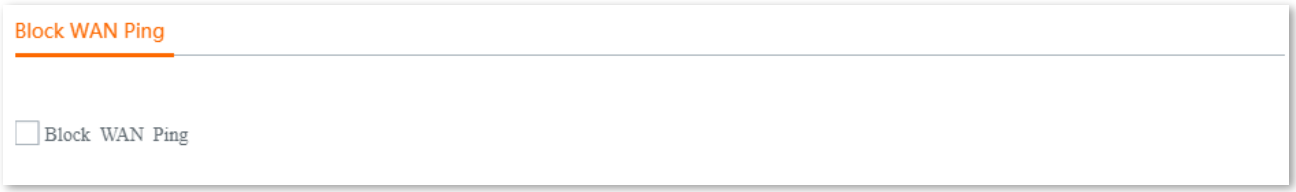
Parameter description

Parameter	Description
IP Timestamp Option	It is used to block IP packets that contain the Internet Timestamp option.
IP Security Option	It is used to block IP packets that contain the Security option.
IP Stream Option	It is used to block IP packets that contain the Stream ID option.
IP Record Route Option	It is used to block IP packets that contain the Record Route option.
IP Loose Source Route Option	It is used to block IP packets that contain the Loose Source Route option.
Rouge IP Option	It is used to block IP packets that fail to pass integrity and correctness check.

NOTE

Packets meeting the above features may not be used for malicious attack. Therefore, enable attack defense as required.

Block WAN ping

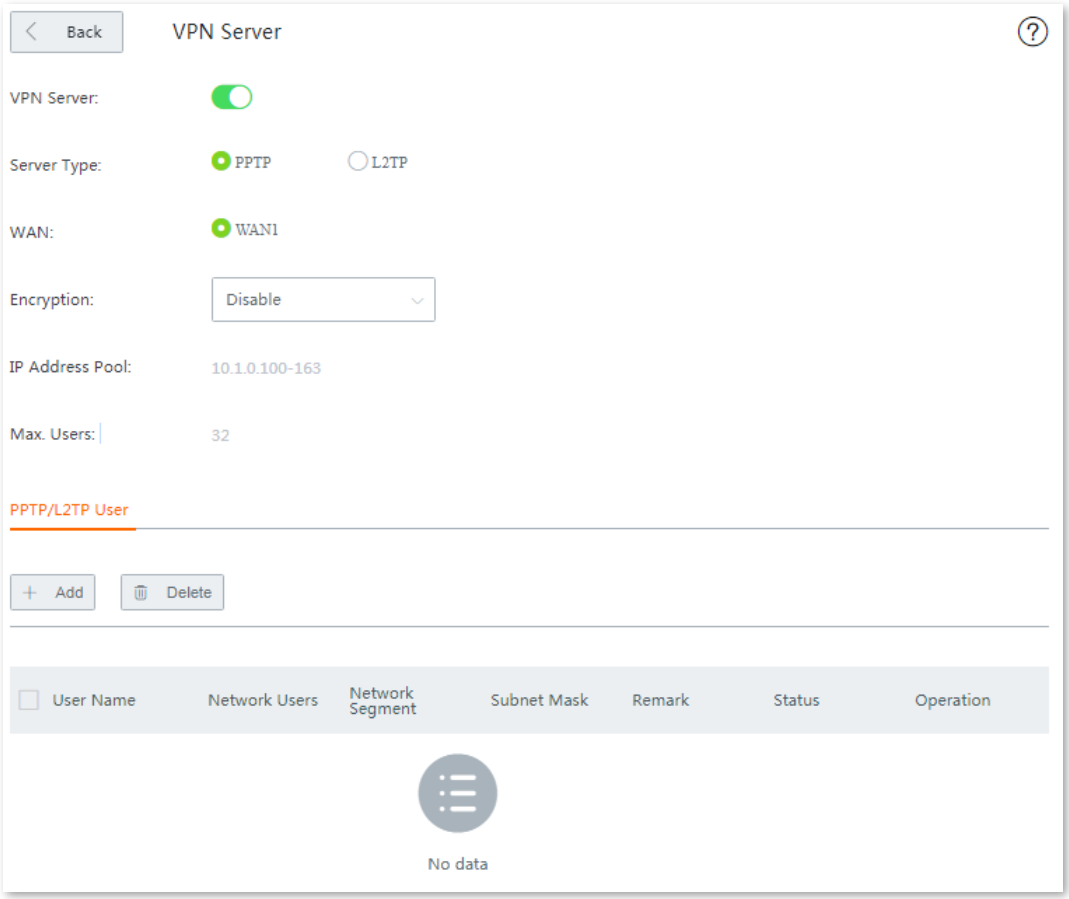


With this function enabled, users cannot ping the WAN IP address of the router over the internet.

12.12 VPN server

12.12.1 Overview

The router supports PPTP server and L2TP server. To enter the configuration page, choose **More** > **VPN Server**. See the following figure.



Parameter description

Parameter	Description
VPN Server	It is used to enable or disable the PPTP/L2TP VPN server function.
Server Type	It specifies the VPN server type that the router supports, including: - **PPTP:** The Point to Point Tunneling Protocol. If PPTP is selected, the peer VPN client should be set to PPTP client. - **L2TP:** Layer 2 Tunneling Protocol. If L2TP is selected, the peer VPN client should be set to L2TP client.
WAN	It specifies the WAN port of the router for setting up a VPN connection.
Encryption	It specifies whether to enable 128-bit data encryption. This parameter only appears when PPTP is selected. The value of this parameter must be consistent with that of the client. Otherwise, the client is unable to communicate with the server.
IP Address Pool	It specifies IP address range that the PPTP/L2TP clients can obtain from the VPN server to be connected.

Parameter	Description
Max. Users	It specifies the maximum number of VPN clients allowed to be connected to the PPTP/L2TP server. The value is fixed to **32**.
User Name	It specifies the user name and password used to dial in a PPTP/L2TP VPN connection.
Password	
Network Users	It specifies the password for the user name used to dial in PPTP/L2TP VPN connection.
Network Segment	It specifies whether a VPN client is a network. - **Yes**: The network segment and subnet mask of the VPN client are required. - **No**: The VPN client is a computer.
Subnet Mask	It specifies subnet mask of the LAN of a VPN client in case that the client is a network.
Remark	It specifies a short description about the corresponding account. You are recommended to add a remark to your VPN account for later management.
Status	It specifies whether or the corresponding rule is enabled.

12.12.2 Configure the router as a PPTP/L2TP VPN server

TIP

To establish a VPN connection, the VPN server and VPN client should be configured consistently on **Client Type**, **WAN** and **Encryption**.

Step 1 Enable the PPTP/L2TP server function.

1. Choose **More** > **VPN Server**, enable **VPN Server**, and click **Save**.
2. Set the VPN server to **PPTP** or **L2TP** as required.

TIP

The peer VPN client should use the same type.

3. Select the egress WAN port of the tunnel between a PPTP/L2TP server and PPTP/L2TP clients.

TIP

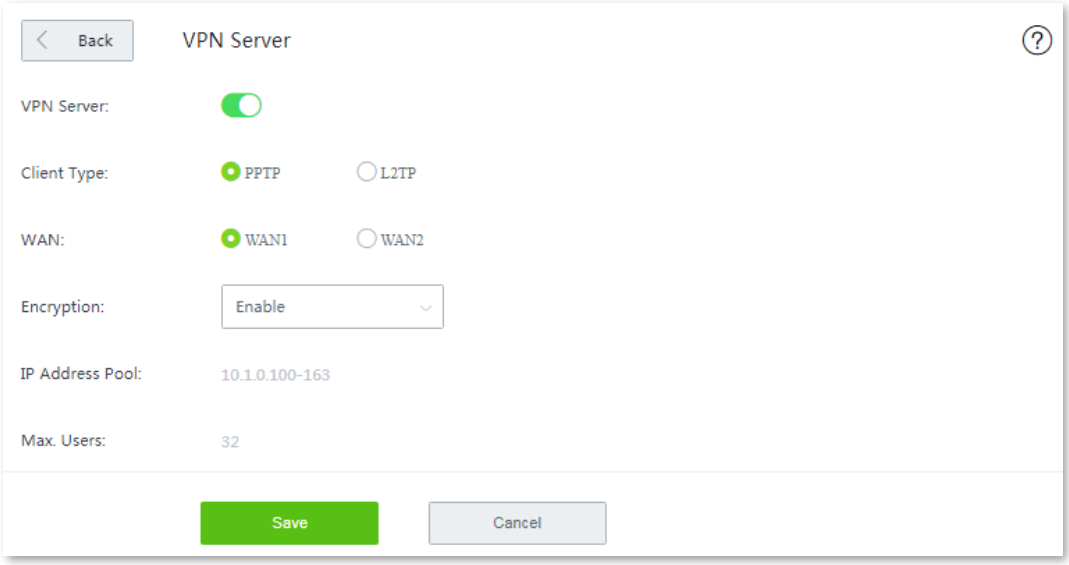
- If the egress WAN port you selected is set to a DMZ host, enable the port's **Filter VPN Port** first by navigating to **More** > **DMZ Host**.
- The IP address of the egress WAN port must be a public IP address. The following lists private IP address range of IPv4. IP addresses that are not in the range are public IP addresses.

  Category A: 10.0.0.0-10.255.255.255

  Category B: 172.16.0.0—172.31.255.255

  Category C: 192.168.0.0-192.168.255.255

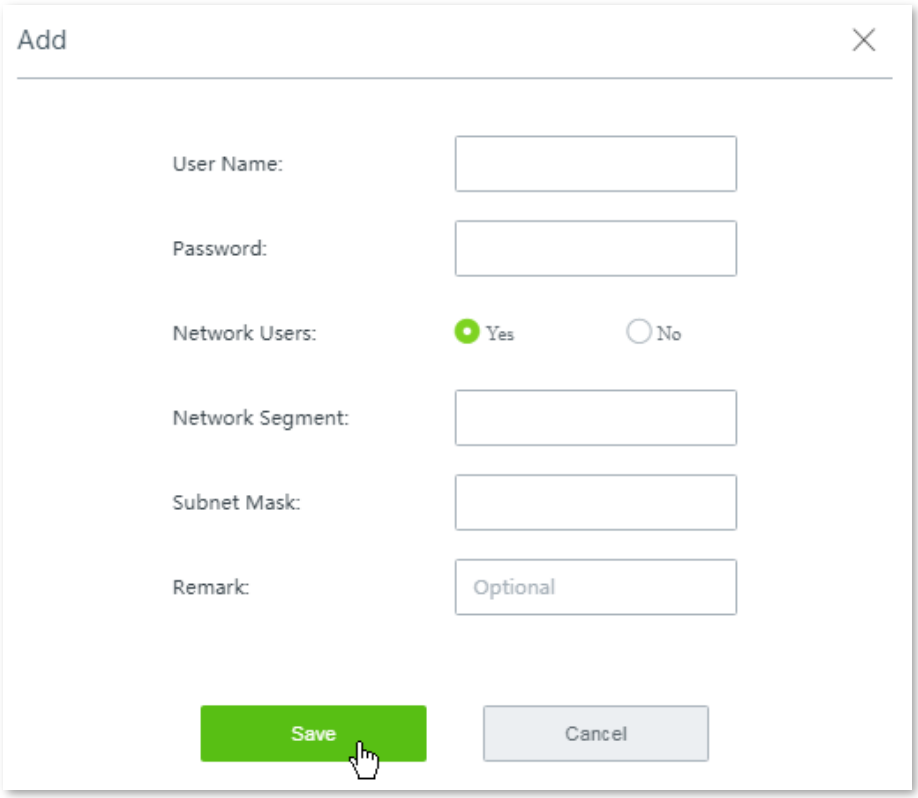
4. Click **Save** to apply your settings.



Step 2 Add a PPTP/L2TP user.

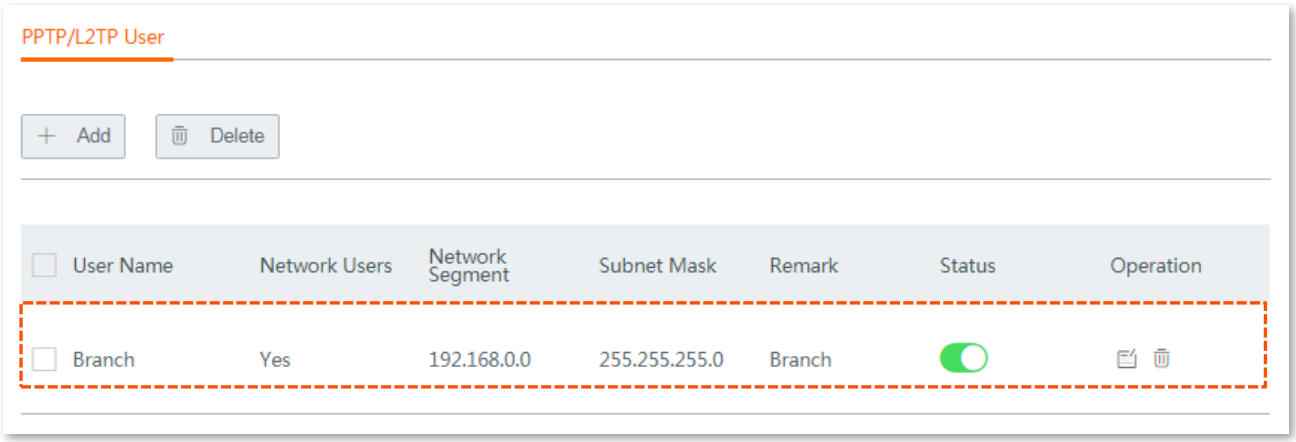
1. Choose **More** > **VPN Server**, and go to the **PPTP/L2TP User** module.
2. Click **+Add**. The **Add** page appears.

3. Set required parameters, and click **Save**.



---- End

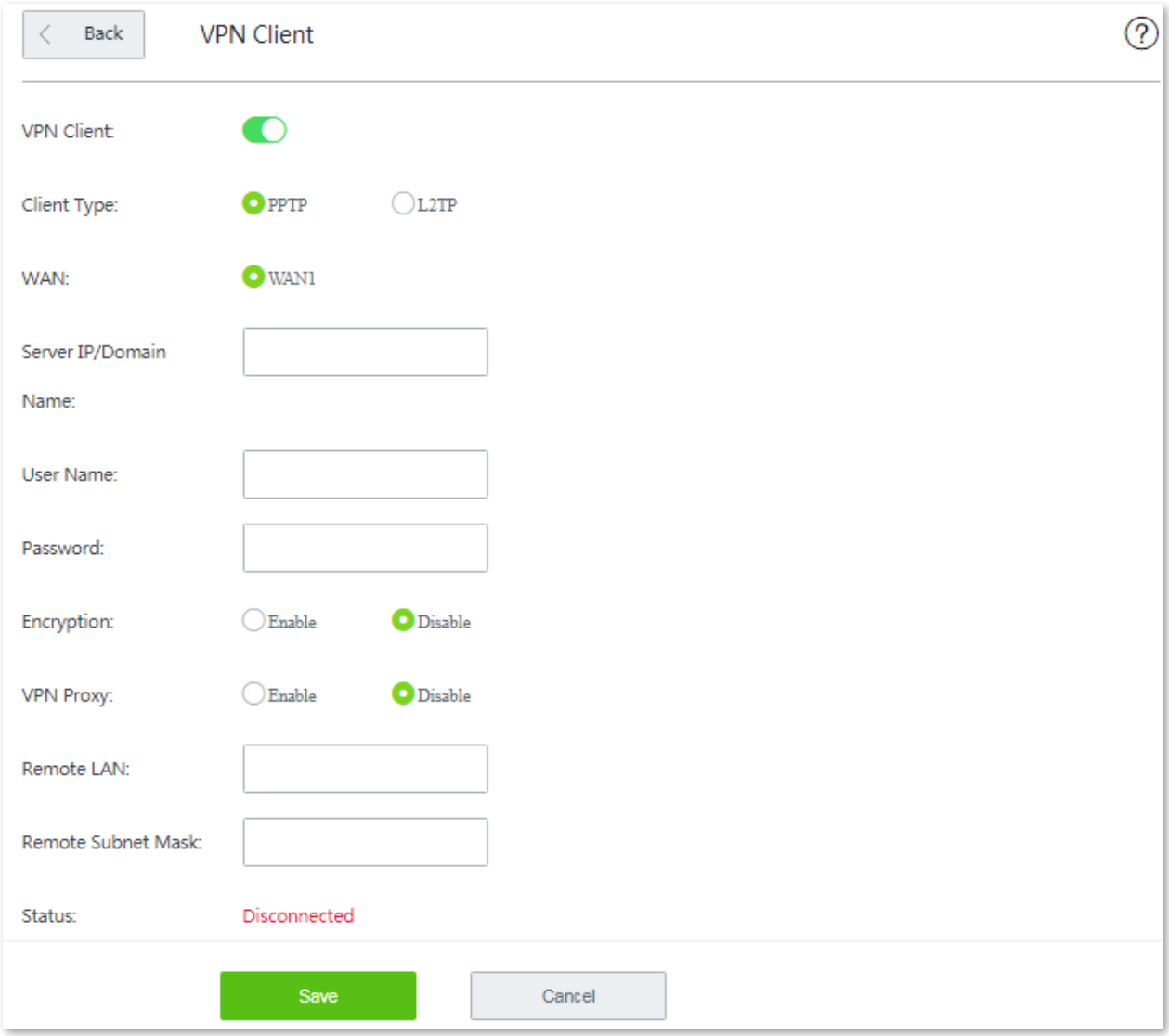
Added successfully. See the following figure:



12.13 VPN client

12.13.1 Overview

To enter the configuration page, choose **More** > **VPN Client**. By default, this function is disabled. After you enable the function, the following page appears.



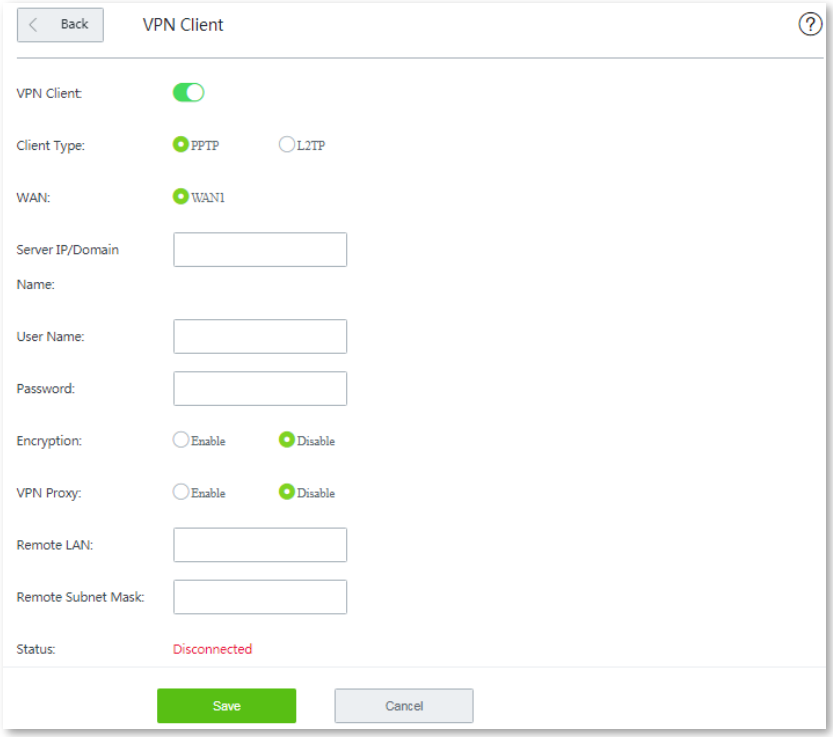
Parameter description

Parameter	Description
VPN Client	It is used to enable or disable the PPTP/L2TP VPN client function.
Client Type	It specifies the VPN client type that the router supports, including: - **PPTP:** The Point to Point Tunneling Protocol. If PPTP is selected, the peer VPN server should be set to PPTP client. - **L2TP:** Layer 2 Tunneling Protocol. If L2TP is selected, the peer VPN server should be set to L2TP client.
WAN	It specifies the WAN port of the router for setting up a VPN connection.
Server IP/Domain Name	It specifies the IP address or domain name of the peer VPN server.

Parameter	Description
User Name	It specifies the user name and password used to dial in a PPTP/L2TP VPN connection.
Password	
Encryption	It specifies whether to enable 128-bit data encryption. This parameter only appears when PPTP is selected. The value of this parameter must be consistent with that of the client. Otherwise, the client is unable to communicate with the server.
VPN Proxy	With this function enabled, clients access the internet through the peer router that has established a VPN server.
Remote LAN	It specifies the network segment of the LAN of the PPTP/L2TP server.
Remote Subnet Mask	It specifies the subnet mask of the LAN of the PPTP/L2TP server.
Status	It specifies whether or the corresponding rule is enabled.

12.13.2 Configure the router as a PPTP/L2TP VPN client

Step 1 Choose **More** > **VPN Client**, and enable the function. The following configuration page appears:



Step 2 Set required parameters.

TIP

- **Client Type**, **WAN**, and **Encryption** should be identical with its peer VPN server.
- Click ⓘ on the upper-right corner on the page to get the detailed explanation to the parameters here.

Step 3 Click **Save** to apply your settings.

---- End

12.14 IPSec

12.14.1 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 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 tampering and peeping.

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).

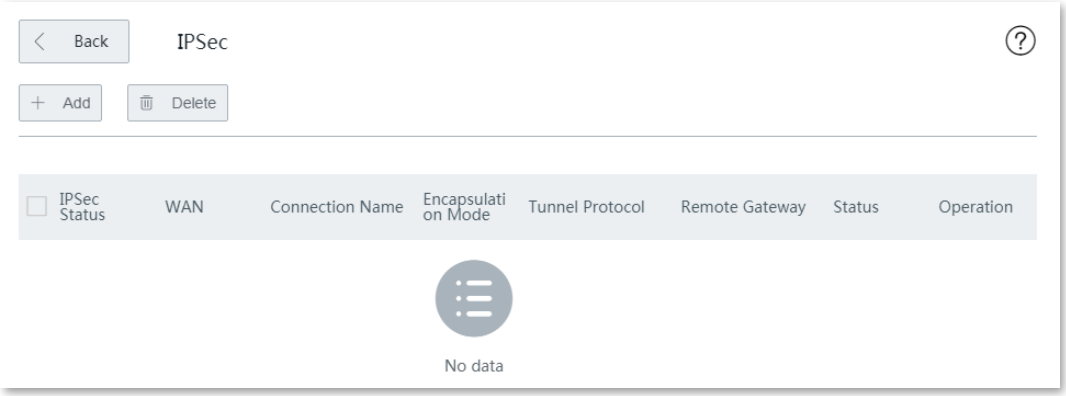
12.14.2 Create IPSec connection

This section walks you through:

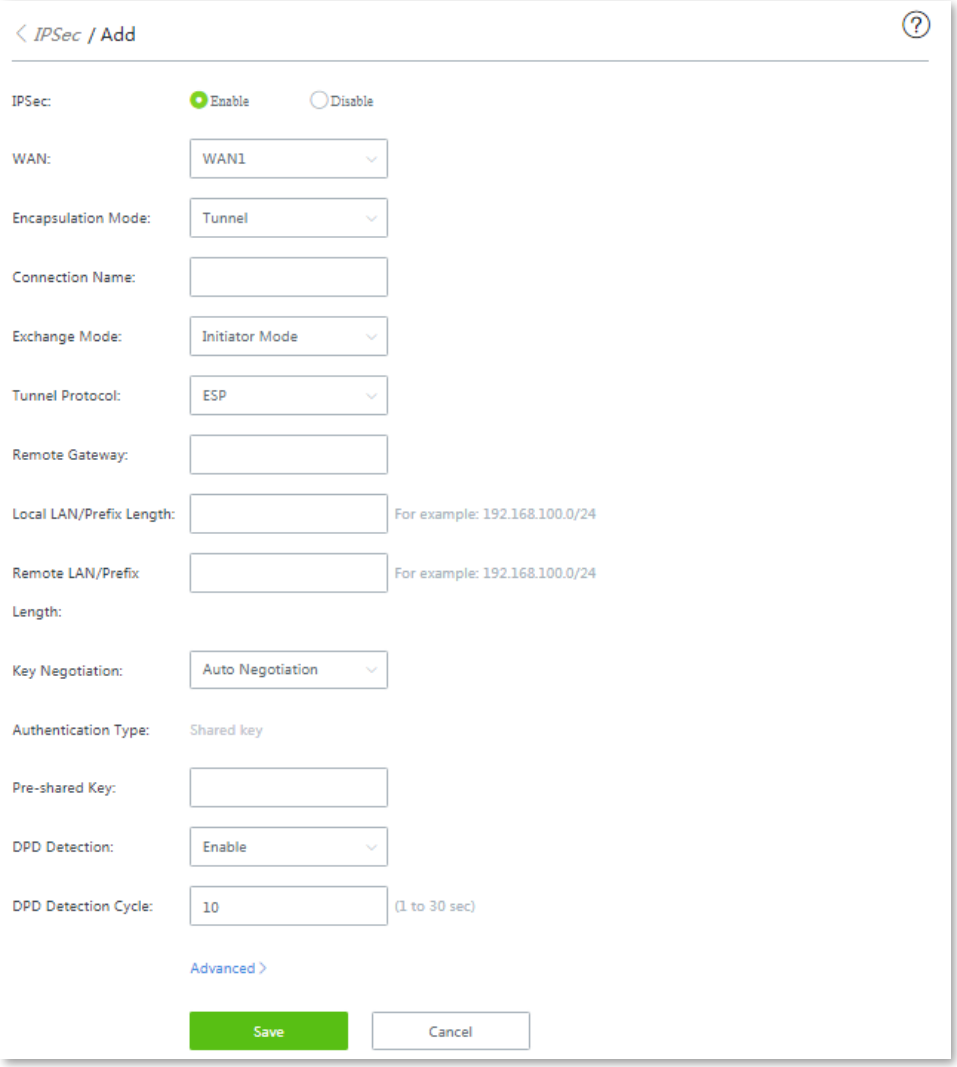
- Configuring Tunnel mode.
- Configuring transport mode.

Configuring Tunnel mode

Step 1 Choose **More** > **IPSec**. The following page appears.



Step 2 Click **+ Add**. The configuration page appears.



Step 3 Tick **Enable** beside the **IPSec** option.

Step 4 Select the WAN port.

Step 5 Select **Tunnel** from the **Encapsulation Mode** drop-down list menu.

Step 6 Set required parameters, and click **Save** to apply your settings.

---- End

Parameter description

Parameter	Description
IPSec	It is used to enable or disable the IPSec function.
WAN	It specifies the WAN port of the IPSec connection on this end. The remote gateway of the IPSec peer should be the IP address of the WAN port you specified here.
Encapsulation Mode	The router uses either of the following 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.
Connection Name	It specifies the name of the IPSec tunnel.
Exchange Mode	It specifies whether the device is an imitator that starts the VPN request, or a responder that answers the request. - **Initiator mode**: It indicates the device that starts the VPN attempt. - **Responder mode**: It indicates the device that answers the Initiator's request. NOTE IPSec peers cannot be set to **Responder** mode at the time. Otherwise, IPSec connection fails.
Tunnel Protocol	The router supports ESP and AH protocols, as well as the mix of the two. - **ESP**: It indicates the Encapsulating Security Payload protocol for verifying data integrity and encrypting data. If a packet processed using this protocol is intercepted during transmission, it is difficult for the intercepting party to obtain the real information contained in the packet. This compatible protocol is widely used in gateway products. - **AH**: It indicates the Authentication Header protocol used for verifying data integrity. If a packet is tampered during transmission, the receiver discards it during data integrity verification. - **AH+ESP**: It indicates that the router uses both AH and ESP protocols.
Remote Gateway	IP address or domain name of the specified WAN port of the IPSec peer.
Local LAN/Prefix Length	It specifies the network segment and subnet mask of LAN network of this device. For example: Assume that the LAN IP address and subnet mask of this device are 192.168.0.252 and 255.255.255.0 respectively, you can enter 192.168.0.0/24.
Remote LAN/Prefix Length	It specifies the LAN network segment and subnet mask of the IPSec peer. If the remote gateway is a single host, enter its IP address and subnet mask, such as 192.168.100.1/32.
Key Negotiation	The key negotiation method to establish an IPSec tunnel. - **Auto** (default): It indicates that an SA is set up, maintained, and deleted automatically using IKE (Internet Key Exchange). This reduces configuration complexity and simplifies IPSec usage and management. Such an SA (Security Association) 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 a security risks. Generally, this mode is used only for commissioning.

- **Key negotiation: Auto Negotiation**

To protect information confidentiality when using auto negotiation, IKE is in place to negotiate keys for secure communication between IPSec peers. The IKE protocol is a hybrid of three other protocols:

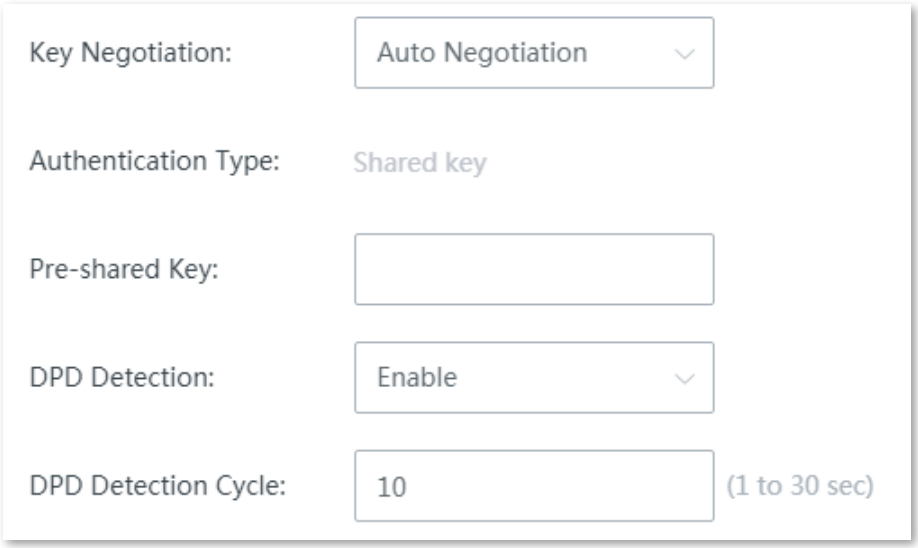
- **ISAKMP**: Internet Security Association and Key Management Protocol. It defines the procedures for authenticating a communicating peer, creation and management of Security Associations, key generation techniques, and threat mitigation.
- **Oakley**: Oakley Key Determination Protocol. It defines the specific key negotiation mechanism.
- **SKEME**: A secure and versatile key exchange protocol for key management over internet is presented.

IKE negotiation can be broke down into two periods.

Period 1: Period 1 is used to negotiate the parameters and key required to establish IKE Security Association (SA) between two IPSec peers.

Period 2: Period 2 then uses the Security Associations (SAs) negotiated in Period 1 to protect future IKE communication.

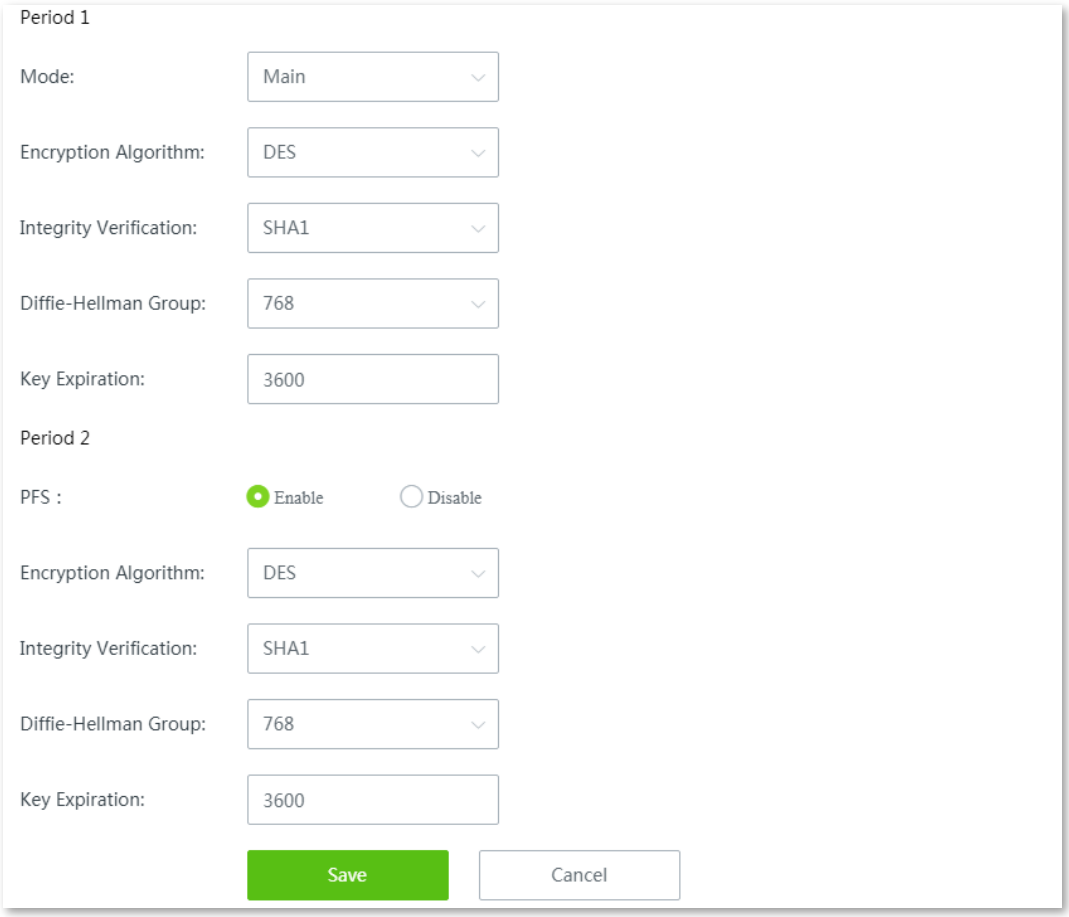
When **Auto Negotiation** is selected, the following page appears.



Parameter description

Parameter	Description
Authentication Type	The router supports IPSec authentication with **Shared Key**. Only authorized users can access the private network.
Pre-shared Key	It is used to encrypt Phase1 authentication information. A pre-shared key contains a maximum of 128 characters. This must be the same at both ends.
DPD Detection	Dead Peer Detection. It is used to detect the liveliness of its IIKE peer.
DPD Detection Cycle	It is used to configure the router to detect the liveliness of its IKE peer at regular intervals.

Clicking **Advanced** loads the following configuration area:



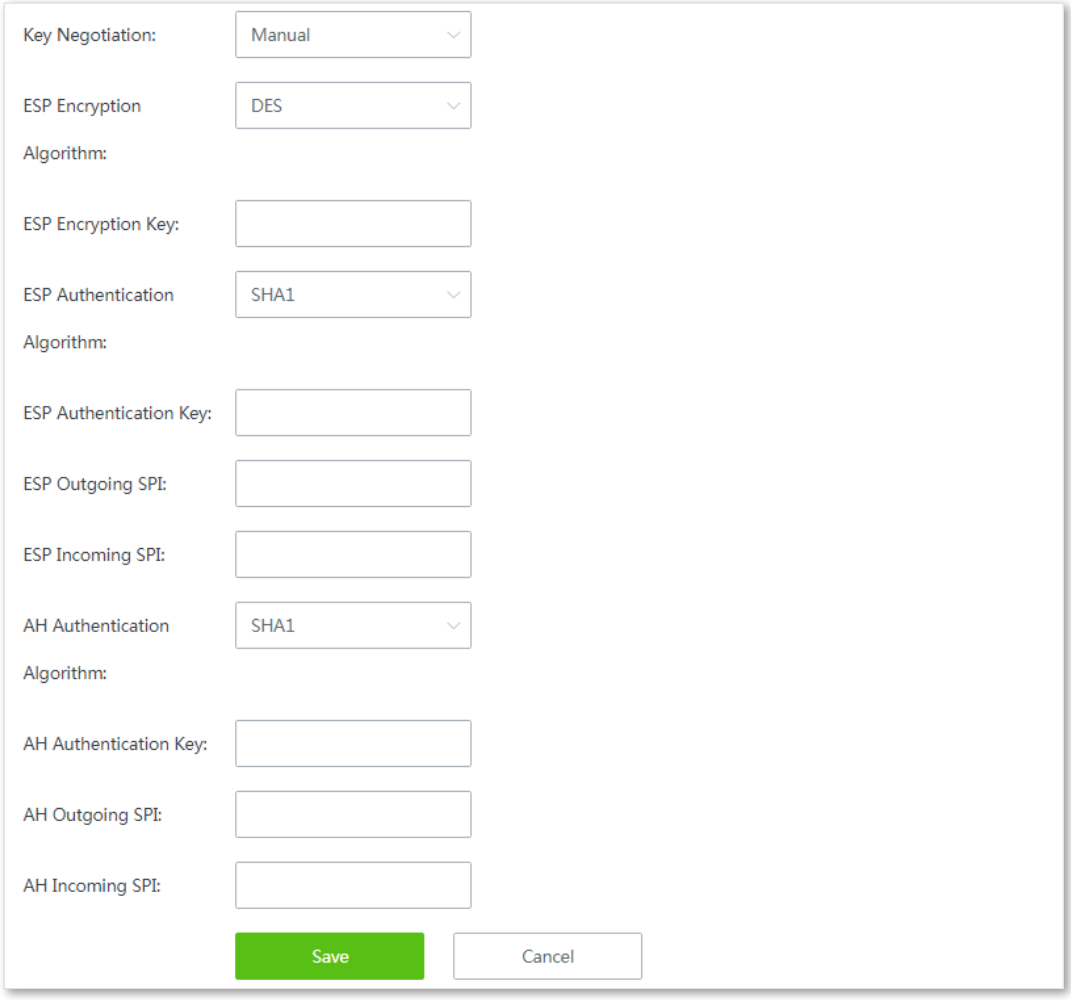
Parameter description

Parameter	Description
Period 1/2	It specifies the two periods that the IKE SA (IKE Security Association that is broken down. NOTE The router does not support IKEV2.0.
Mode	It specifies the mode that IPSec ends use to exchange information in Period 1. - **Main**: This mode requires double messages to be exchanged in Period 1, which provides higher security but lower efficiency. - **Aggressive**: This mode requires half of messages to be exchanged in Period 1, which provide lower security but higher efficiency.
Encryption Algorithm	The router supports the following algorithms: - **DES** (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**: Three 56-bit keys are used for encryption. - **AES** (Advanced Encryption Standard): AES 128/192/256 indicates that 128/192/256-bit keys are used for encryption respectively.
Integrity Verification	The router supports the following algorithms to check key integrity: - **MD5** (Message Digest Algorithm): A 128-bit message digest is generated to prevent message tampering. - **SHA1** (Secure Hash Algorithm): A 160-bit message digest is generated to prevent

Parameter	Description
	message tampering, leading to higher security than MD5.
Diffle-Hellman Group	Group information for the Diffie-Hellman algorithm for generating a session key used to encrypt an IKE tunnel. The information should be the same as that of the remote gateway.
Key Expiration	It specifies the life cycle of IKE SA. The default time is 3600 seconds. The minimum time is 600 seconds. When 540 seconds are left, IKE SA will be negotiated again.
PFS	It indicates Perfect Forward Secrecy that improves security by forcing a new Diffie-Hellman exchange whenever key expires.

- **Key negotiation: Manual**

The following configuration area appears in case that the **Tunnel Protocol** is set to **AH+ESP**.



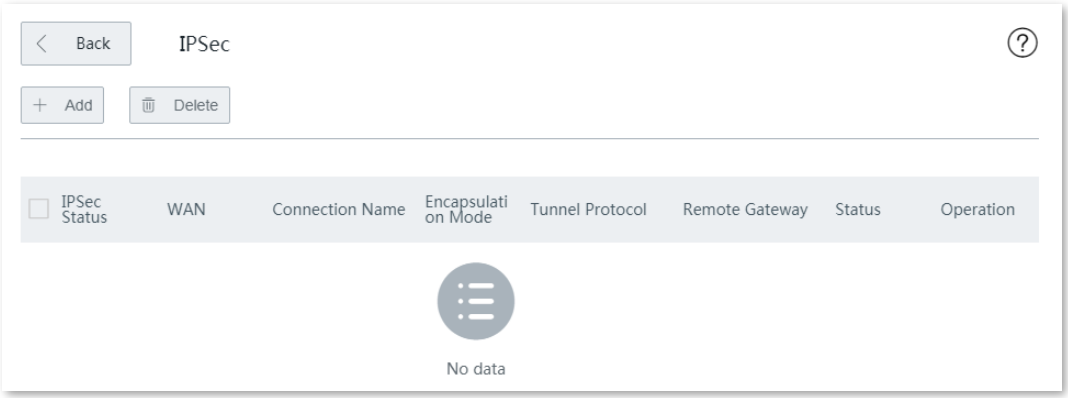
Parameter description

Parameter	Description
ESP Encryption Algorithm	The router supports the following ESP encryption algorithms: - **3DES** (default): Three 56-bit keys are used for encryption. A key of 24 ASCII characters or 48 hexadecimal characters is required. - **DES**: 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. A key of 8 ASCII characters or 16 hexadecimal characters is required. - **AES-128:** A 128-bit key is used for encryption. A key of 16 ASCII characters or 32

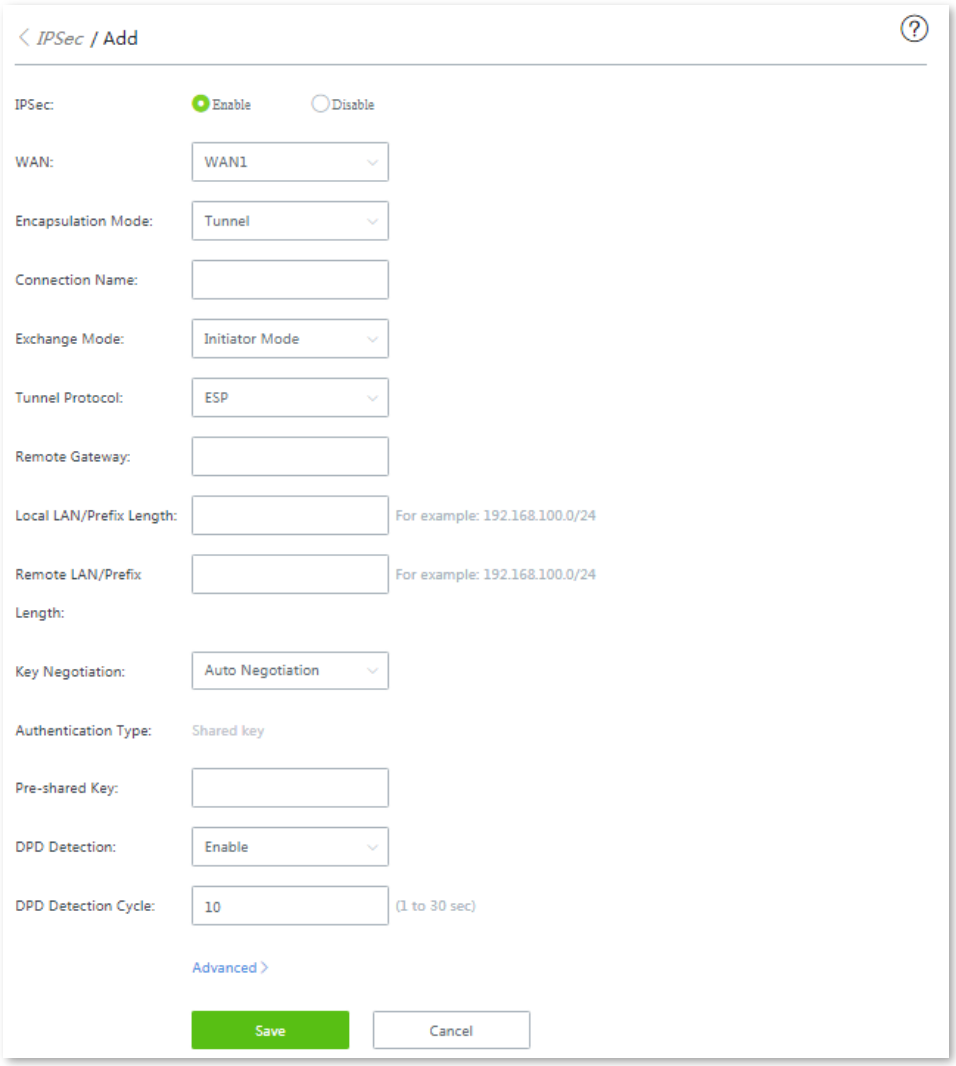
Parameter	Description
	hexadecimal characters is required. - **AES-192**: A 192-bit key is used for encryption. A key of 24 ASCII characters or 48 hexadecimal characters is required. - **AES-256**: A 256-bit key is used for encryption. A key of 32 ASCII characters or 64 hexadecimal characters is required.
ESP Encryption Key	This parameter should be the same for IPSec peers.
ESP Authentication Algorithm	Optional service to ensure the integrity of data packets. - **MD5**: A 128-bit message digest is generated to prevent message tampering. The authentication key must be 16 ASCII characters or 32 hexadecimal characters. - **SHA1**: A 160-bit message digest is generated to prevent message tampering. The authentication key must be 20 ASCII characters or 40 hexadecimal characters.
ESP Authentication Key	This parameter should be the same for IPSec peers.
ESP Outgoing SPI	SPI is used to identify an IPSec SA with the IP address and security protocol of the remote gateway. This parameter should be the same for IPSec peers.
ESP Incoming SPI	This parameter should be the same for IPSec peers.
AH Authentication Algorithm	Optional service to ensure the integrity of data packets. - **MD5**: A 128-bit message digest is generated to prevent message tampering. The authentication key must be 16 ASCII characters or 32 hexadecimal characters. - **SHA1**: A 160-bit message digest is generated to prevent message tampering. The authentication key must be 20 ASCII characters or 40 hexadecimal characters.
AH Authentication Key	This parameter should be the same for IPSec peers.
AH Outgoing SPI	This parameter should be the same for IPSec peers.
AH Incoming SPI	This parameter should be the same for IPSec peers.

Configuring transport mode

Step 1 Choose **More** > **IPSec**. The following page appears.



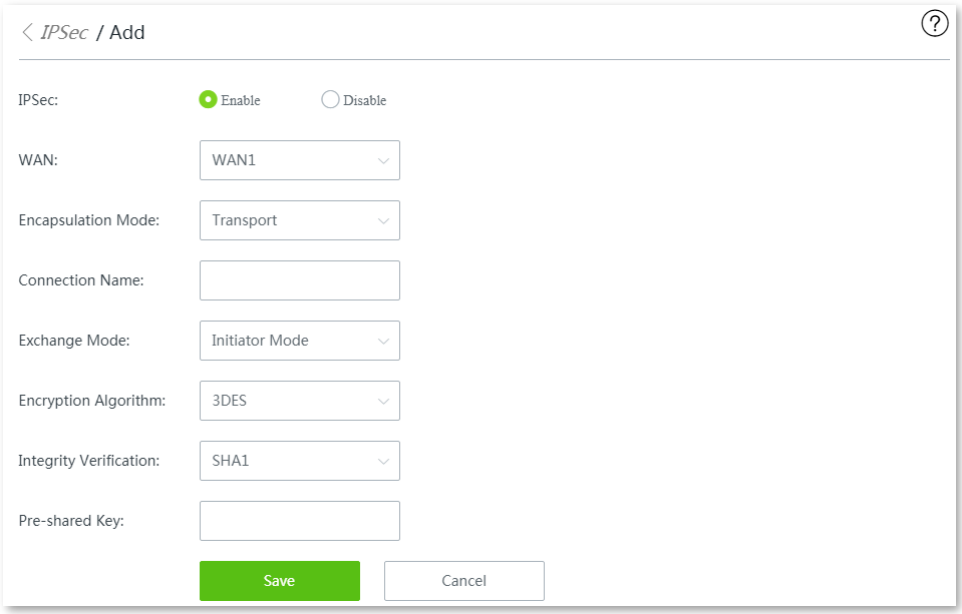
Step 2 Click **+ Add**. The configuration page appears.



Step 3 Tick **Enable** beside the IPSec option.

Step 4 Select the **WAN** port.

Step 5 Select **Transport** from the **Encapsulation Mode** drop-down list menu. The following page appears.



Step 6 Set required parameters, and click **Save** to apply your settings.

---- End

Parameter description

Parameter	Description
IPSec	It is used to enable or disable the IPSec function.
WAN	It specifies the local WAN port assigned to the IPSec function. The IP address of the WAN port must be set as the value of Remote Gateway of the IPSec peer.
Encapsulation Mode	The router supports two modes: - **Tunnel Mode**: It is most commonly used between gateways. - **Transport Mode**: It is mainly used for end-to-end communications.
Connection Name	It specifies the name of the IPSec tunnel.
Exchange Mode	It specifies whether the device is an imitator that starts the VPN request, or a responder that answers the request. - **Initiator mode**: It specifies the device that starts the VPN attempt. - **Responder mode**: It specifies the device that answers the Initiator's request.
Encryption Algorithm	It specifies the IKE session encryption algorithm. - **DES** (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**: Three 56-bit keys are used for encryption. - **AES** (Advanced Encryption Standard): AES 128/192/256 indicates that 128/192/256-bit keys are used for encryption respectively.
Integrity Verification	The router supports the following algorithms to check key integrity: - **MD5** (Message Digest Algorithm): A 128-bit message digest is generated to prevent message tampering. - **SHA1** (Secure Hash Algorithm): A 160-bit message digest is generated to prevent message tampering, leading to higher security than MD5.
Pre-shared Key	This must be the same at both ends.

12.15 Example of configuring VPN conenctions

12.15.1 Example of configuring a PPTP/L2TP VPN

Networking requirement

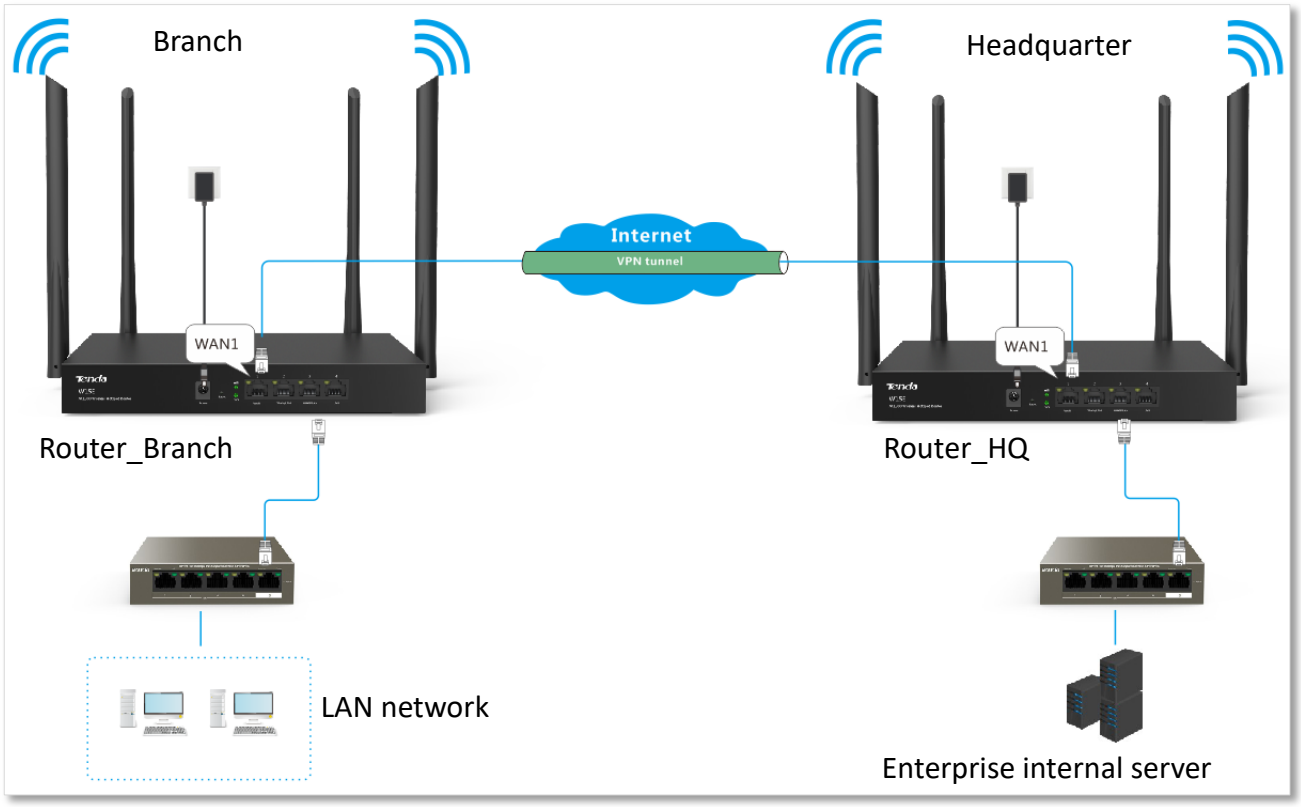
An enterprise has used the router to set up a LAN and access the internet. Branch employees need to access the HQ's internal resources through the internet, such as internal data, OA, ERP, CRM, project management systems.

Solutions

PPTP/L2TP VPNs of the router can address this requirement.

The following uses PPTP to illustrate the setup procedure. Set up the L2TP VPN in the same way.

Network topology



Configuration description

Step	Task	Description
1	Configure Router_HQ as a VPN server	Enable VPN server on the router, configure **Client Type**, specify the egress **WAN** port, and enable the **Encryption**.
2	Configure a PPTP/L2TP user on Router_HQ	Set a user name and password for connecting to VPN. Clarify whether or not the client is a network user. If yes, enter a proper network segment and subnet mask.
3	Configuring Router_Branch as a VPN client	Enable VPN client on the router, set related parameters by following the on-screen instructions.

Step	Task	Description
4	Verify the connectivity between the VPN server and VPN client	Check if VPN connection is established and access HQ LAN resources using VPN.

Configuration procedure

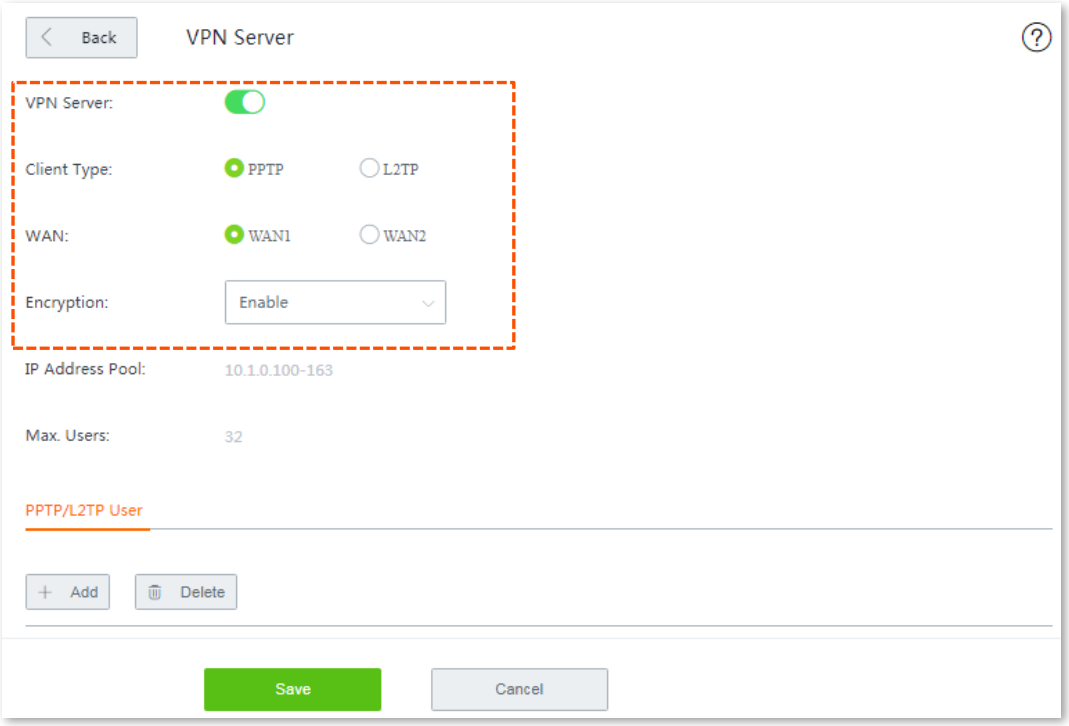
Step 1 Configure Router_HQ as a VPN server.

1. On Router_HQ, choose **More** > **VPN Server**, enable this function, and click **Save**.
2. Set **Client Type** to **PPTP**.
3. Set the egress port of the VPN server for setting up a tunnel with the VPN client, which is **WAN1** in this example.
4. Set **Encryption** to **Enable**.

   TIP

   The peer VPN client should use the same configuration.

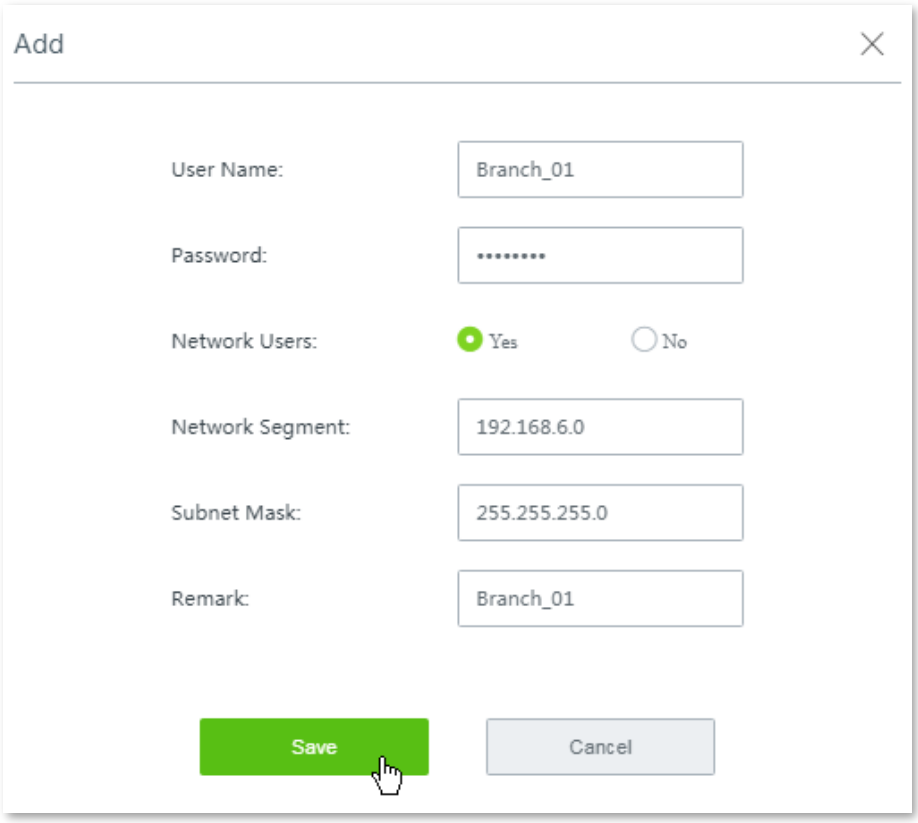
5. Click **Save**.



Step 2 Configure a PPTP/L2TP user on Router_HQ.

1. On Router_HQ, choose **More** > **VPN Server**, and move to the **PPTP/L2TP User** module.
2. Click **+Add**. The **Add** configuration window appears.

3. Set the required parameters. The following shows the examples:

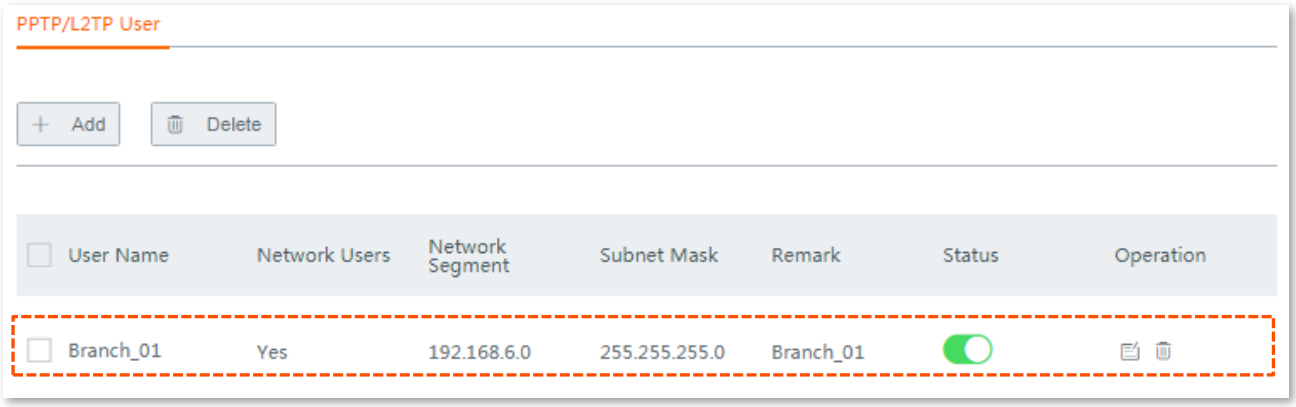


TIP

Remark is optional. However, you are recommended to add a brief description of the rule for convenient management later, which is **Branch_01** in this example.

4. Click **Save**.

Added successfully. See the following figure:

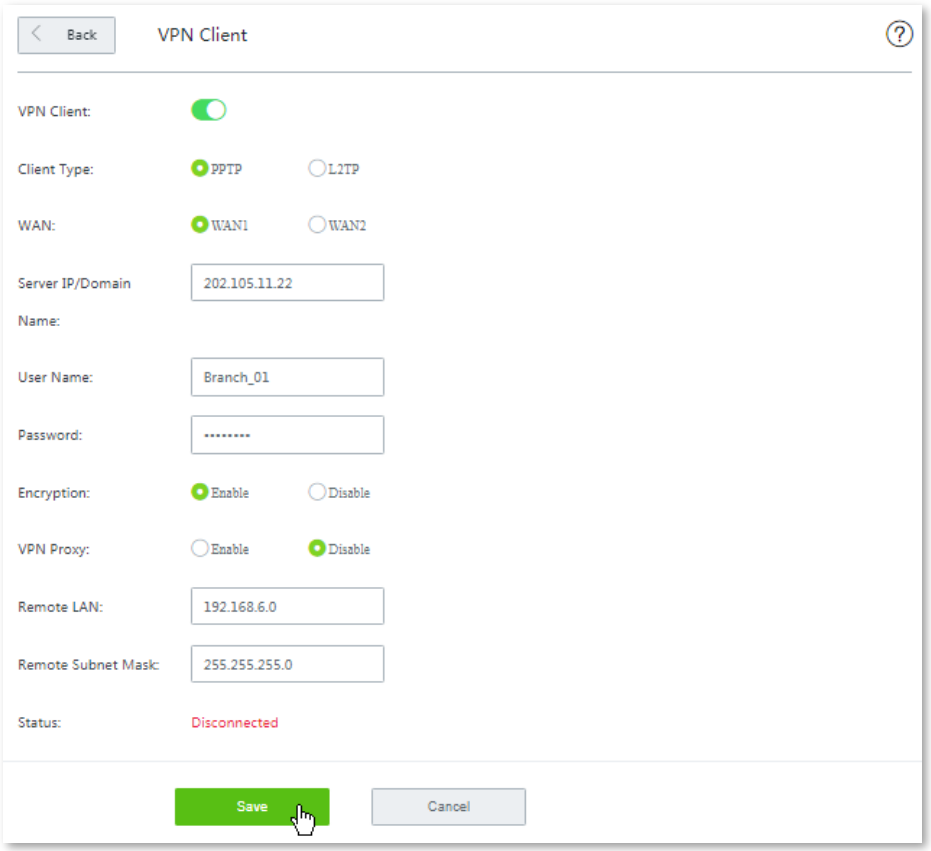


Step 3 Configure Router_Branch as a VPN client.

1. On Router_Branch, choose **More** > **VPN Client,** and enable this function.
2. Set required parameters. The parameters should keep consistent with the VPN server.
   - Client Type: **PPTP Client**
   - WAN: **WAN1**
   - Server IP Address/Domain Name: **202.105.11.22**

- User name/Password: **Branch_HQ/12345678**
- Remote LAN: **192.168.6.0**
- Remote Subnet Mask: **255.255.255.0**

3. Disable **VPN Proxy**.
4. Click **Save** to apply your settings.



---- End

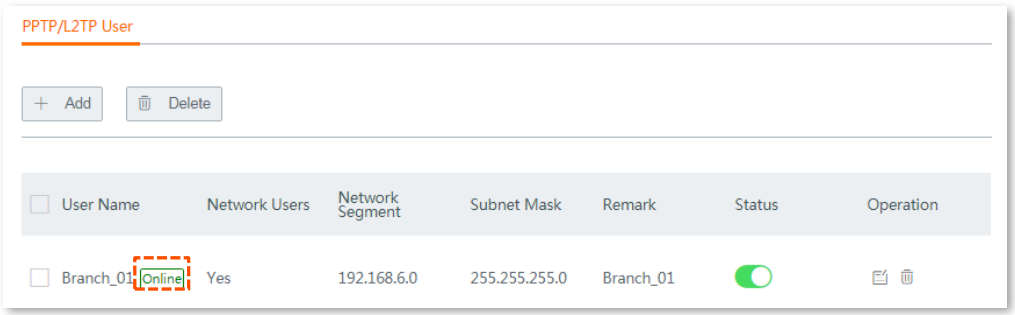
Verification

Step 1 Check if the VPN connection is established.

There are two methods for checking whether or not the VPN connection is established.

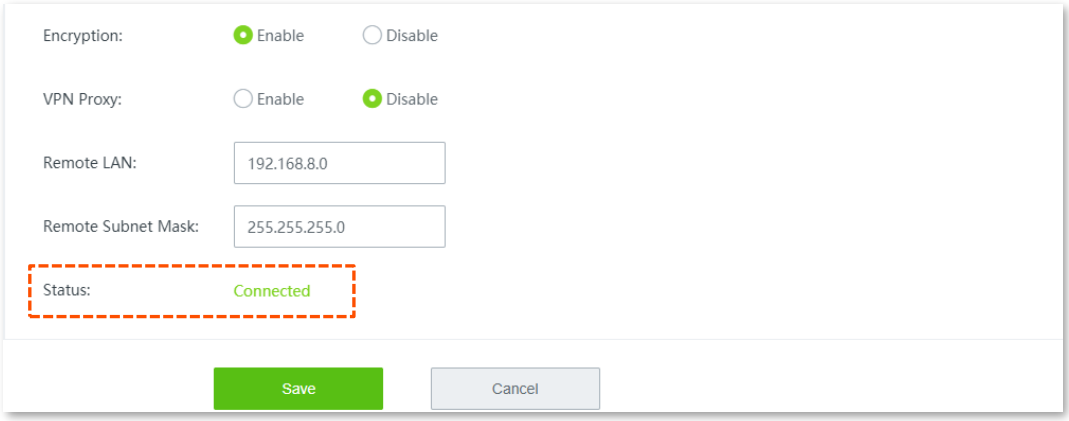
- **Method 1:**

Log in to the web UI of Router_HQ, choose **More** > **VPN Sever**, and move to the **PPTP/L2TP User** module, there is a squared tip **Online** next to the user name, indicating the VPN connection is established.



- **Method 2:**

Log in to the web UI of Router_Branch, choose **More** > **VPN Client**, the **Status** changes into **Connected**, indicating the VPN connection is established.



Step 2 Access HQ LAN resources remotely.

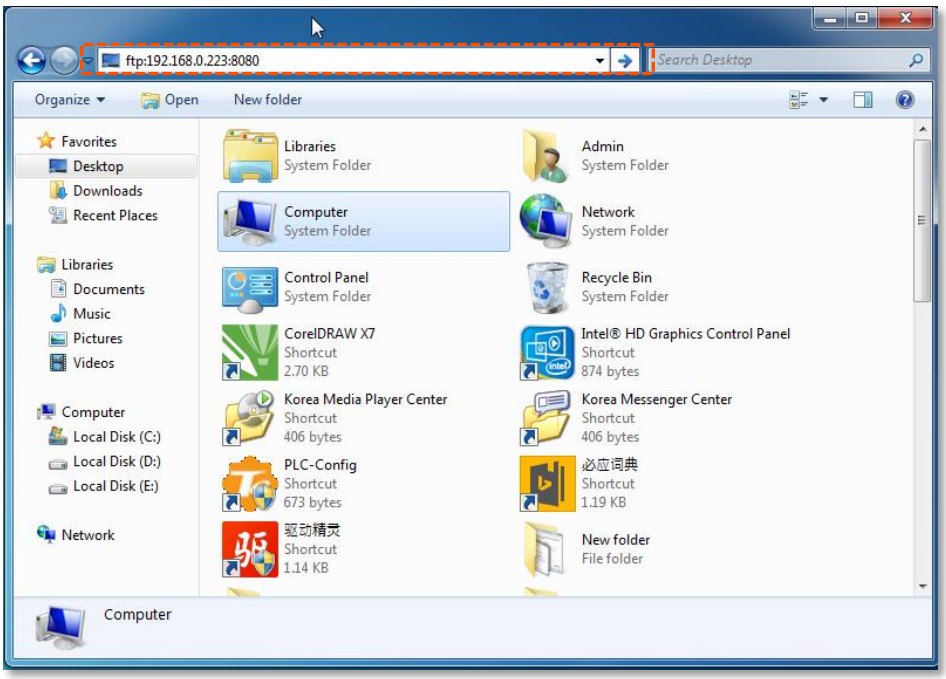
---- End

After the preceding configuration, employees at the branch and HQ can remotely access resources on the branch and HQ LANs through the internet in a secure manner. The following is an example of how the employees at branch access the FTP server at the headquarters. The HQ project data is placed on the FTP server. Assume that the server information is as follows:

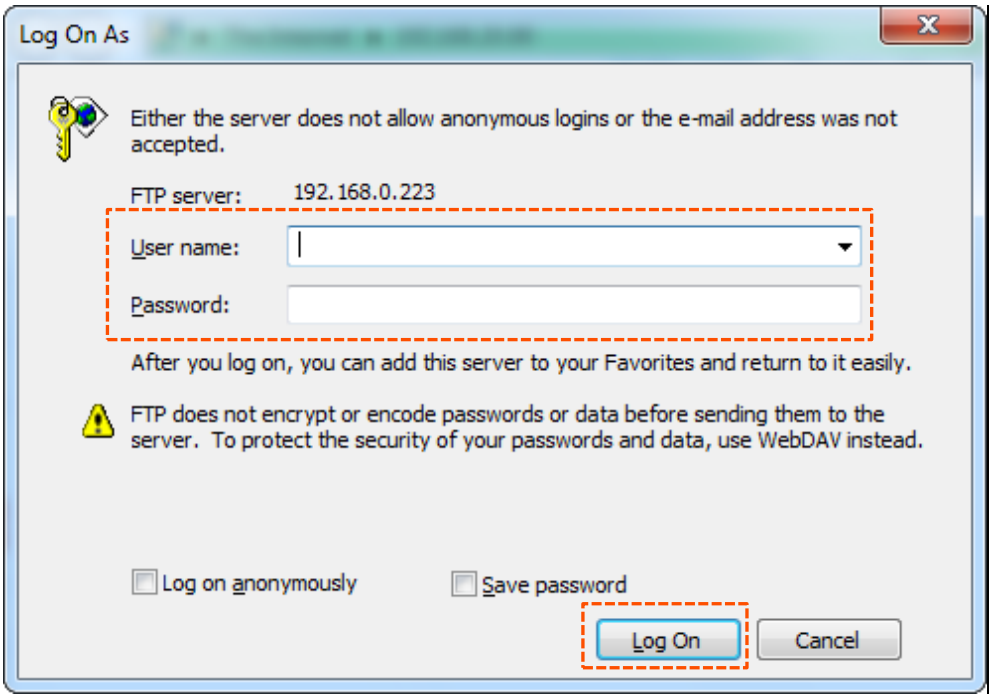
- IP address of the FTP server: **192.168.0.223**
- Server port: **8080**
- Login username and password: **admin/admin**

The procedures for employees at the branch access the HQ project data are as follow:

Step 1 Access the link ftp://server IP address:server port on a computer, which is ftp://192.168.0.223:8080 in this example.

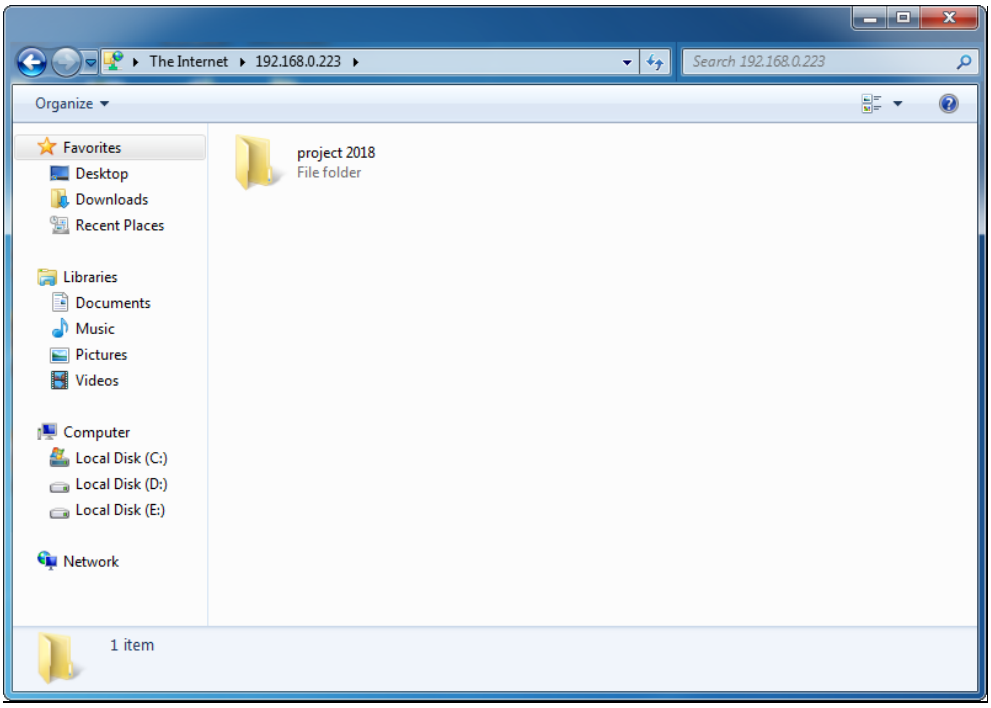


Step 2 In the popup window, enter login **User name** and **Password**, which are both **admin** in this example, and click **Log On**.



---- End

Access the HQ LAN resources successfully.



12.15.2 Example of configuring an IPSec VPN

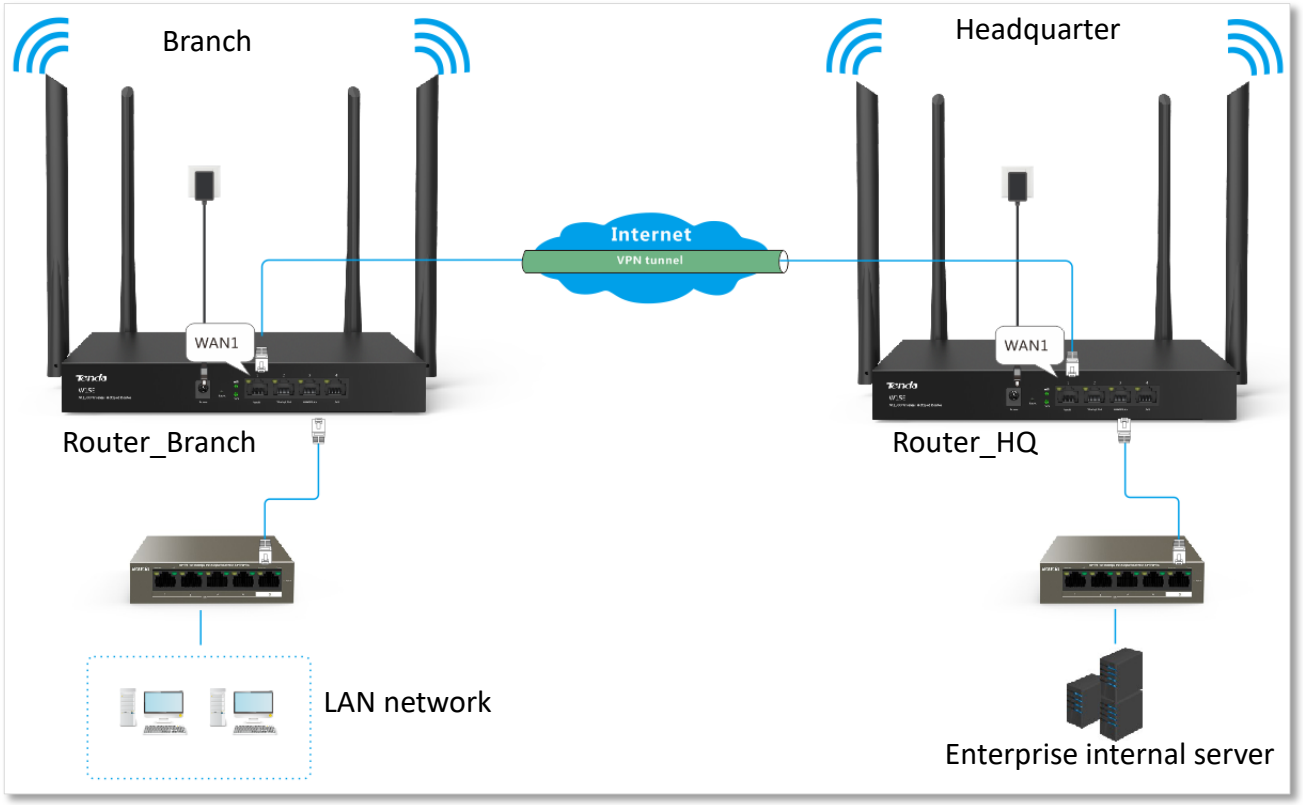
Networking requirement

An enterprise has used the router to set up a LAN and access the internet. Branch employees need to access the HQ's internal resources through the internet, such as internal data, OA, ERP, CRM, project management systems.

Solutions

You can set up an IPSec VPN using the router to meet this requirement.

Network topology



Assume that:

WAN port enabled with IPSec: WAN1

WAN1 IP: 202.105.88.77

LAN network segment/subnet mask:

192.168.1.0/24

Assume that:

WAN port enabled with IPSec: WAN1

WAN1 IP: 202.105.11.22

LAN network segment/subnet mask:

192.168.0.0/24

Configuration procedure

TIP

Security software, such as firewall, may fail the configuration. Therefore, you are recommended disable them.

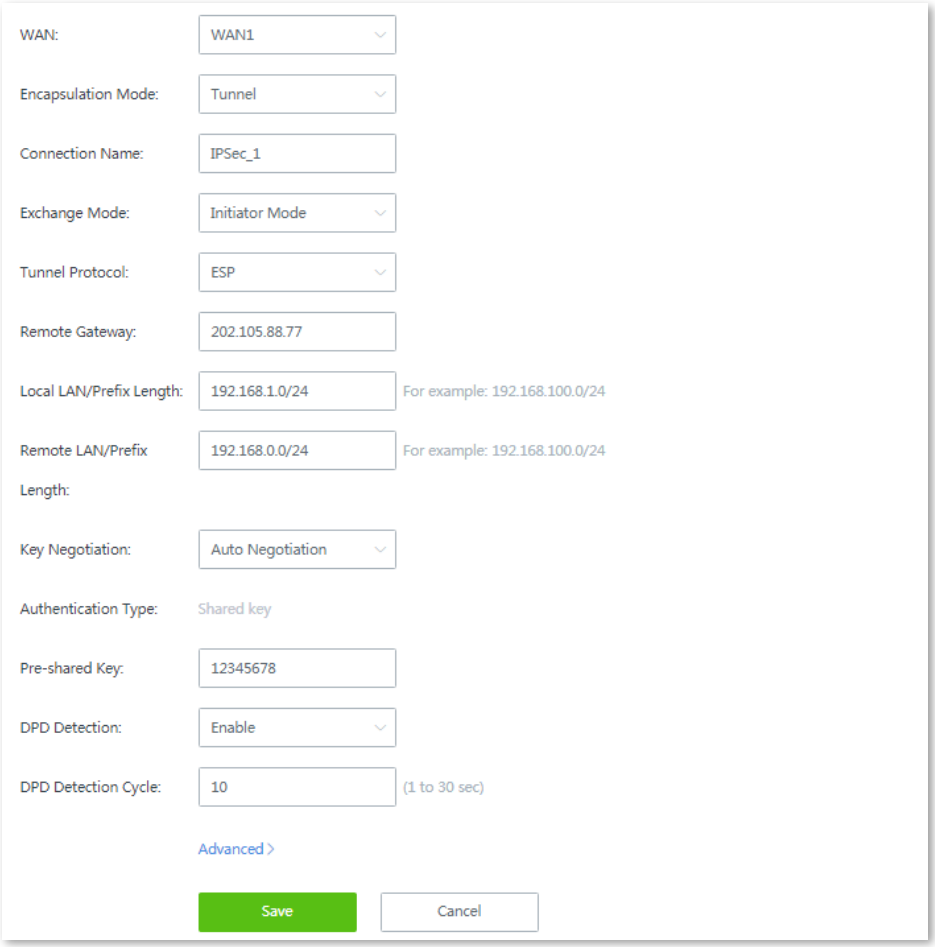
Assume that the two routers share the following basic IPSec tunnel information:

- Encapsulation Mode: **Tunnel**

- Key negotiation method: **Auto Negotiation**
- Pre-shared key: **12345678**

Step 1 Configure Router_HQ the IPSec connection.

1. Choose **More** > **IPsec**, and click **+Add**, the configuration page appears.
2. Set required parameters.
   (1) Select the WAN port enabled with IPSec, which is **WAN1** in this example.
   (2) Select **Tunnel** from the **Encapsulation Mode** drop-down list menu.
   (3) Customize a **Connection Name**, which is **IPSec_1** in this example.
   (4) **Remote Gateway**: Enter the WAN IP address of its peer Router_Branch, which is **202.105.88.77** in this example.
   (5) **Local LAN/Prefix Length**: Enter the LAN network segment/subnet mask of Router_HQ in the defined format, which is **192.168.1.0/24** in this example.
   (6) **Remote LAN/Prefix Length**: Enter the LAN network segment/subnet mask of its peer Router_Branch in the defined format, which is **192.168.0.0/24** in this example.
   (7) Select **Auto negotiation** from the **Key Negotiation** drop-down list menu, and customize the **Pre-shared Key**, which is **12345678** in this example.
3. Click **Save**.

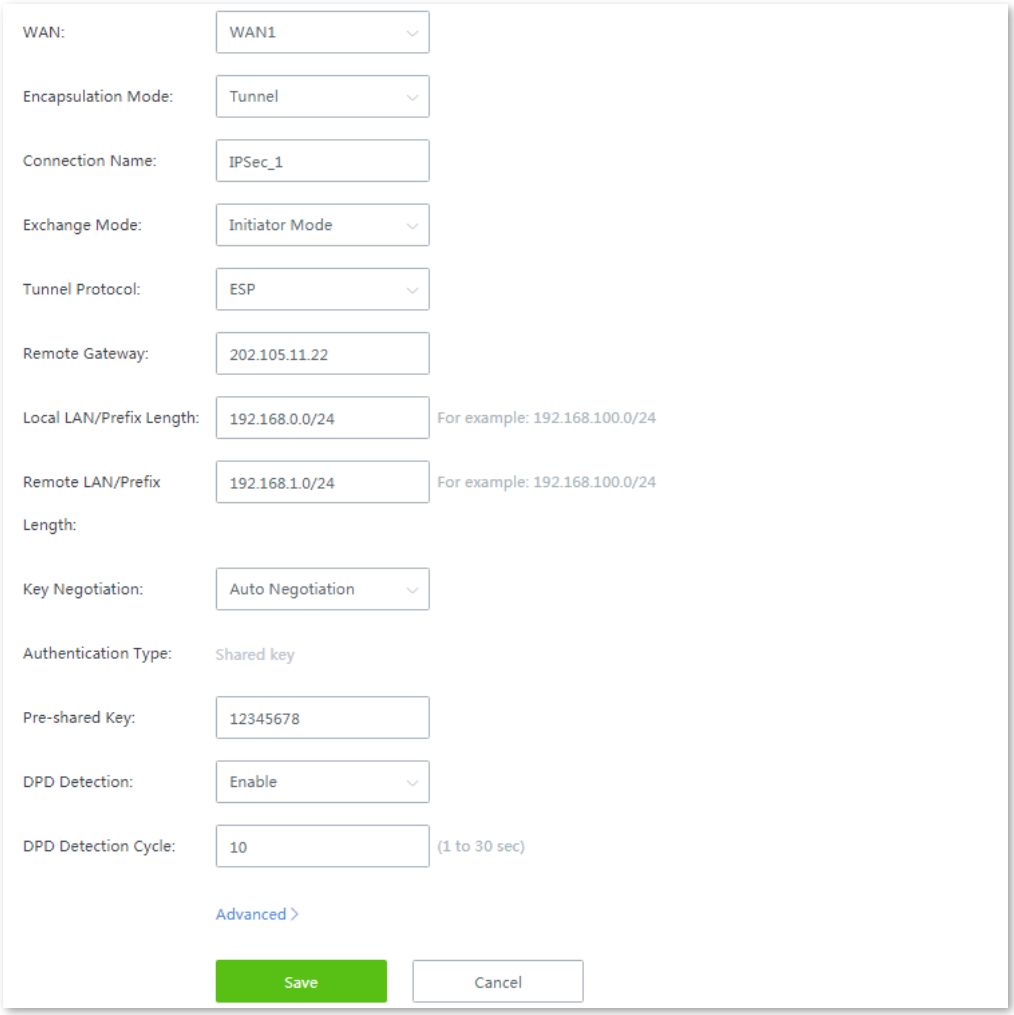


TIP

To configure advanced settings, click **Advanced**. And use the same configurations to set the peer device.

Step 2 Configure Router_Branch.

1. Log in to the web UI of the router Router_Branch.
2. Choose **More** > **IPsec**, and click **+Add.** The **Add** configuration page appears.
3. Set required parameters.
   (1) Select the WAN port enabled with IPSec, which is **WAN1** in this example.
   (2) Keep **Encapsulation Mode**, **Connection Name**, **Tunnel Protocol**, **Key Negotiation**, and **Pre-shared Key** identical with its peer Router_HQ.
   (3) **Remote Gateway**: Enter the WAN IP address of its peer Router_HQ, which is **202.105.11.22** in this example.
   (4) **Local LAN/Prefix Length**: Enter the LAN network segment/subnet mask of Router_Branch in the defined format, which is **192.168.0.0/24** in this example.
   (5) **Remote LAN/Prefix Length**: Enter the LAN network segment/subnet mask of Router_HQ in the defined format, which is **192.168.1.0/24** in this example.
4. Click **Save**.



---- End

Added successfully. See the following figure.

Verification

When the **IPSec Status** of both ends shows **Connected**, the IPSec VPN is established successfully.

Then, employees at the branch and HQ can remotely access LAN resources on the other side through the internet in a secure manner.

12.15.3 Example of configuring a L2TP over IPSec VPN

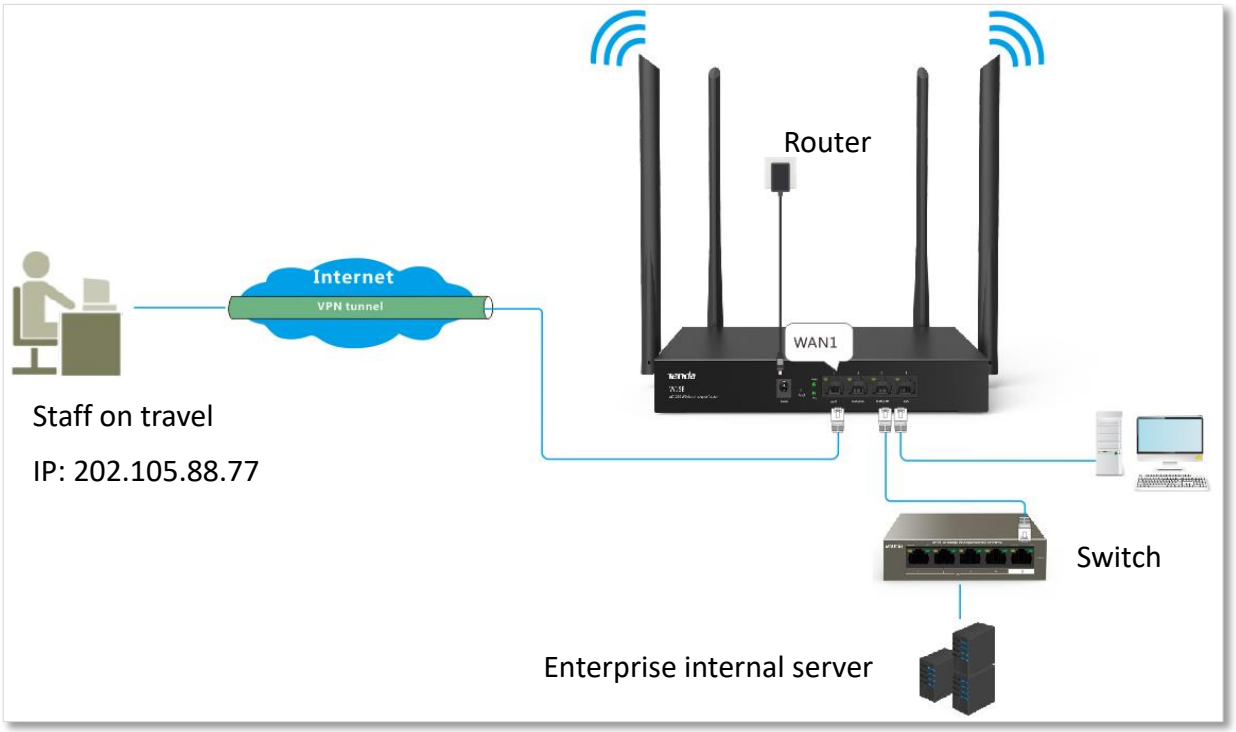
Networking requirement

An enterprise has used the router to set up a LAN and access the internet. Employees of its branch must be allowed to access, through the internet, the HQ's resources over the HQ LAN in a secure manner, including internal resources as well as the OA, ERP, CRM, and project management systems.

Solutions

You can set up an L2TP over IPSec VPN using the router to meet this requirement.

Network topology



Configuration description

Step	Task	Description
1	Configure IPSec connection.	Configure basic IPSec parameters.
2	Configure L2TP server.	Set the router as a L2TP VPN server.
3	Add L2TP users	Create an account for connecting.

Configuration procedure

Assume that the two routers share the following basic IPSec information:

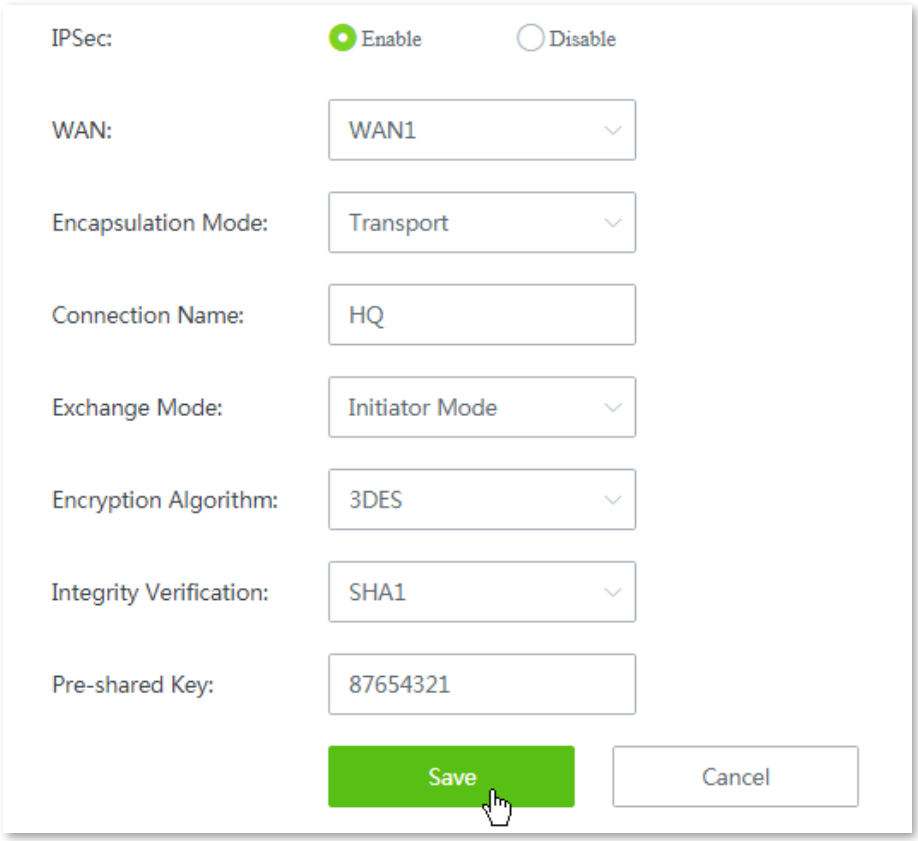
- **Encapsulation Mode**: Transport
- **Key negotiation Method**: Auto Negotiation

- **Pre-shared Key**: 87654321

Step 1 Configure IPSec connection.

1. Choose **More** > **IPsec**, and click **+Add**. The **Add** configuration page appears.
2. Set required parameters.

   Configurations on the following figure are only used for examples.



   (1) Set **IPSec** to **Enable**.

   (2) Set **Encapsulation Mode** to **Transport**.

   (3) Set **WAN** to the WAN port bound to the IPSec tunnel, which is **WAN1** in this example.

   (4) Set **Connection Name** to the name of the IPSec tunnel, which is **HQ** in this example.

   (5) Set **Pre-shared Key** to **87654321**.

   (6) Click **OK**.

Step 2 Configure L2TP server.

1. Choose **VPN** > **VPN Server**.
2. Set required parameters.

   (1) Set **VPN Server** to **Enable**.

   (2) Set **Client Type** to **L2TP**.

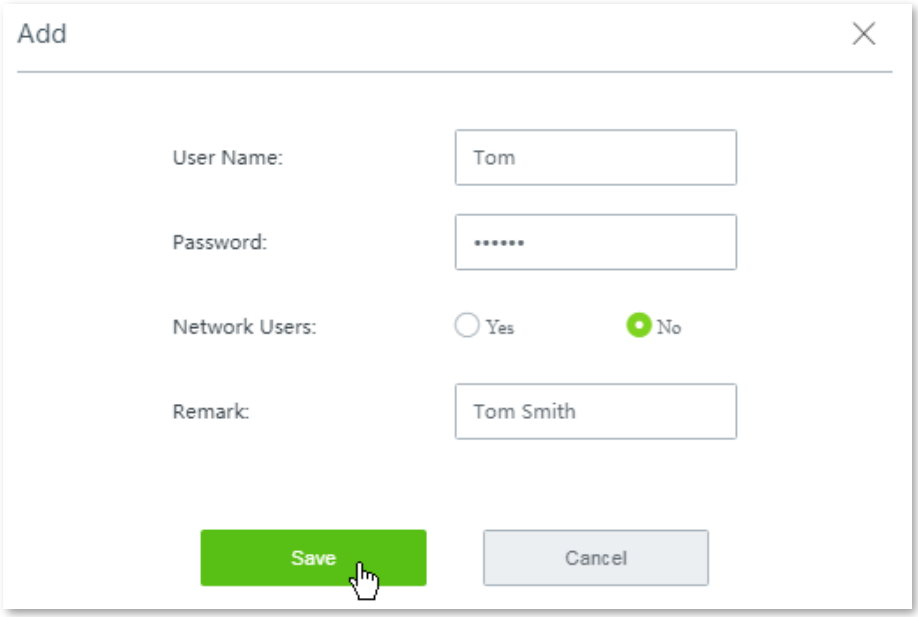
   (3) Set **WAN** to the WAN port bound to the IPSec tunnel, which is **WAN1** in this example.

   (4) Set **IPSec Encryption** to **HQ**.
3. Click **Save.**

Step 3 Add L2TP users.

1. Choose **VPN** > **PPTP/L2TP Server**, locate **PPTP/L2TP User** module.

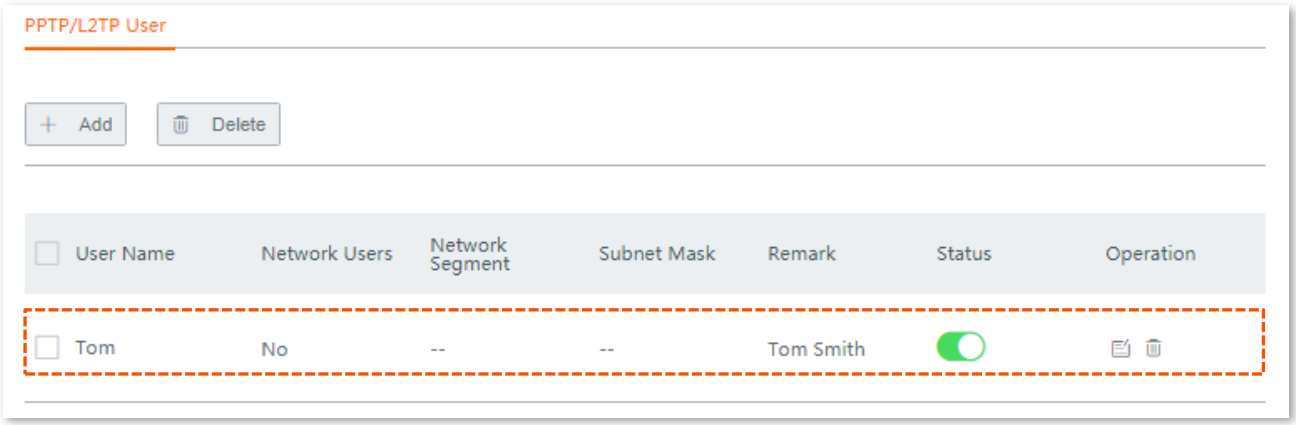
2. Click **+Add**. The **Add** configuration window appears.
3. Set required parameters. Configurations on the following figure are only used for examples.



4. Click **Save**.

---- End

Added successfully. See the following figure.



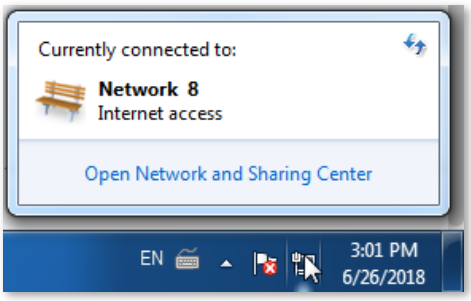
Verification

To access the HQ LAN resources, you have to configure your client. The document introduces how to create VPN dialing on Windows 7 and iOS. Choose the scenario according to your actual situations.

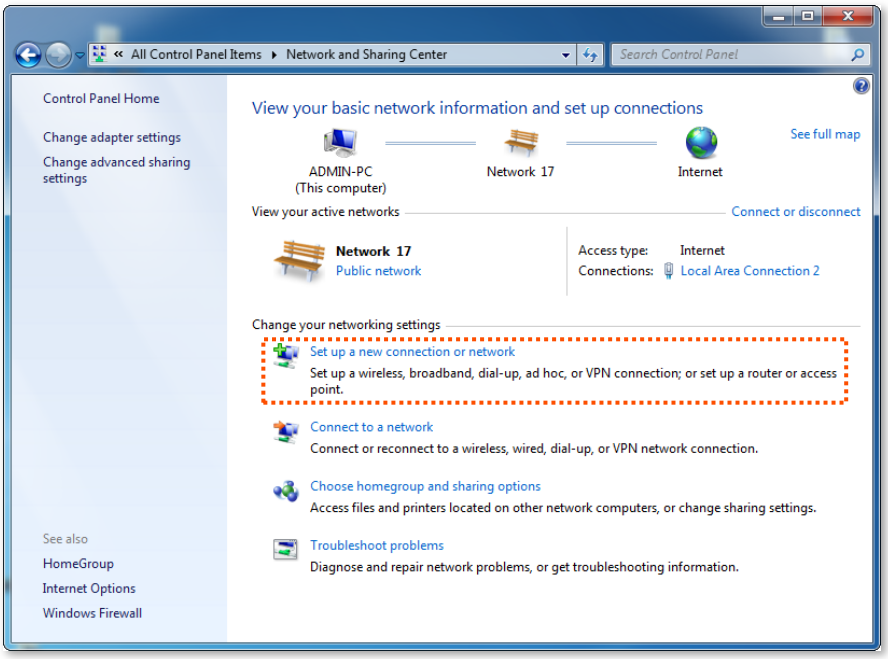
- **Create VPN connection on Windows 7**.

Step 1 Create VPN connections.

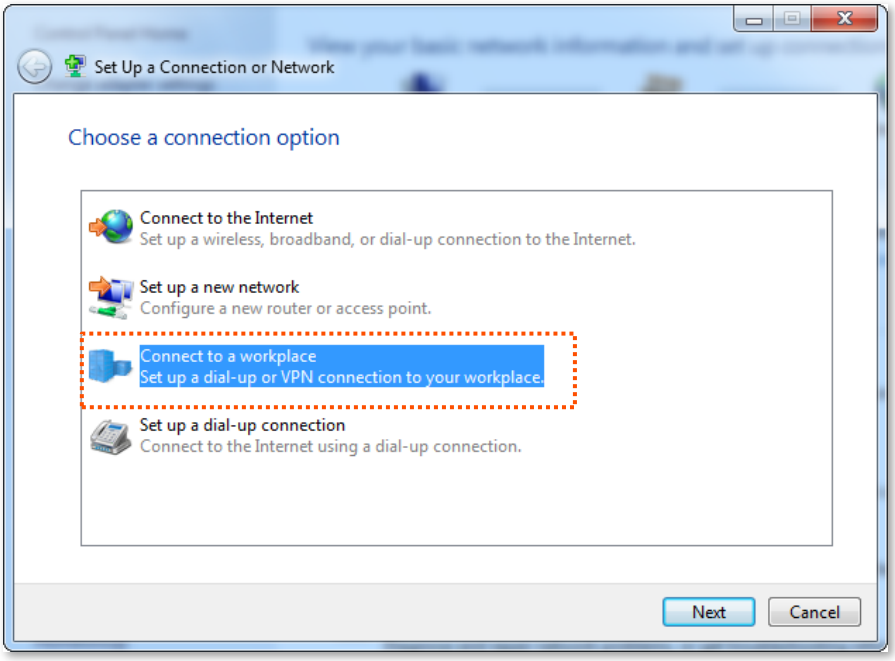
1. Click in the lower right corner of the desktop, click **Open Network and Sharing Center.**



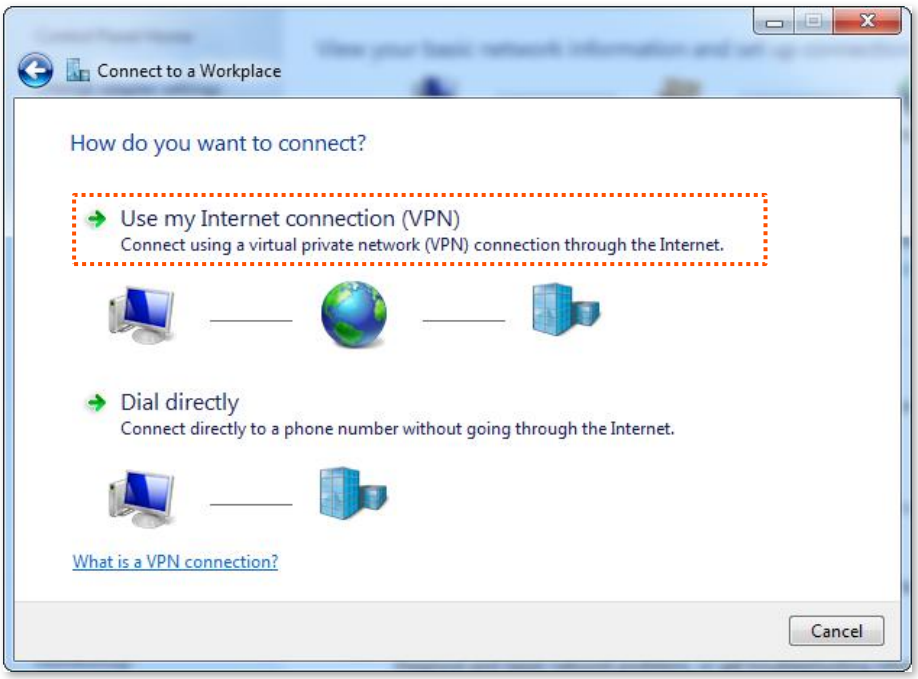
2. Click **Set up a new connection or network**.



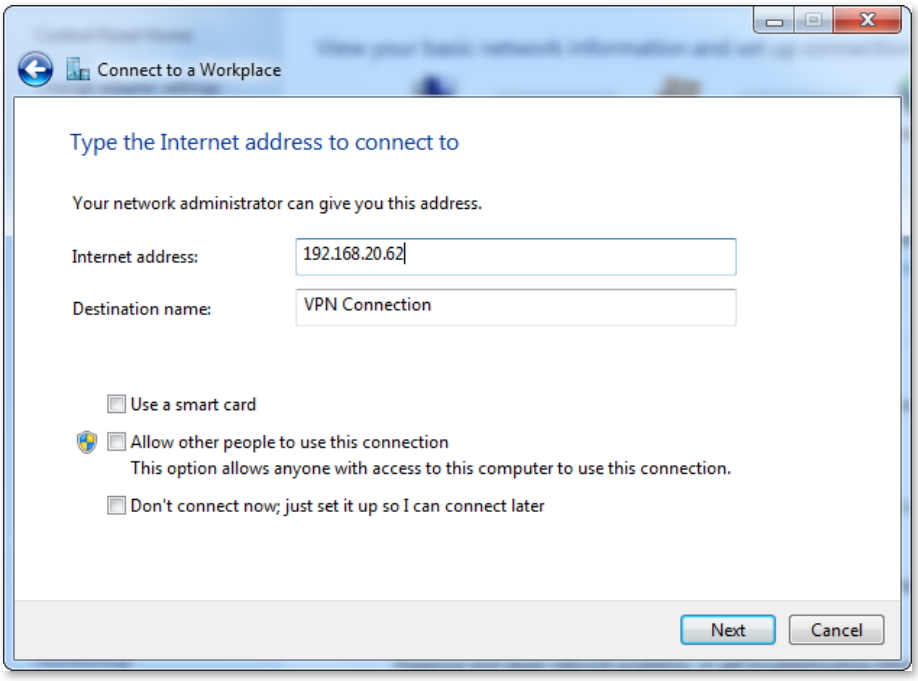
3. Click **Connect to a workplace**, then click **Next**.



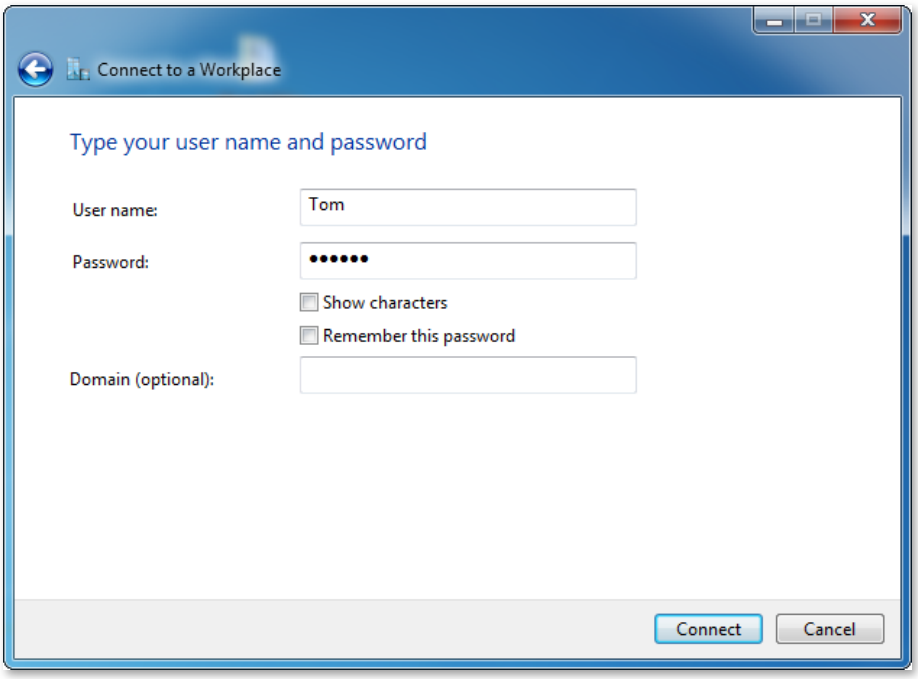
4. Click **Use my internet connection (VPN)**. If any other window pop up, follow the on-screen instructions.



5. Set the IP address of the L2TP server, which is **192.168.20.62** in this example. Then click **Next.**



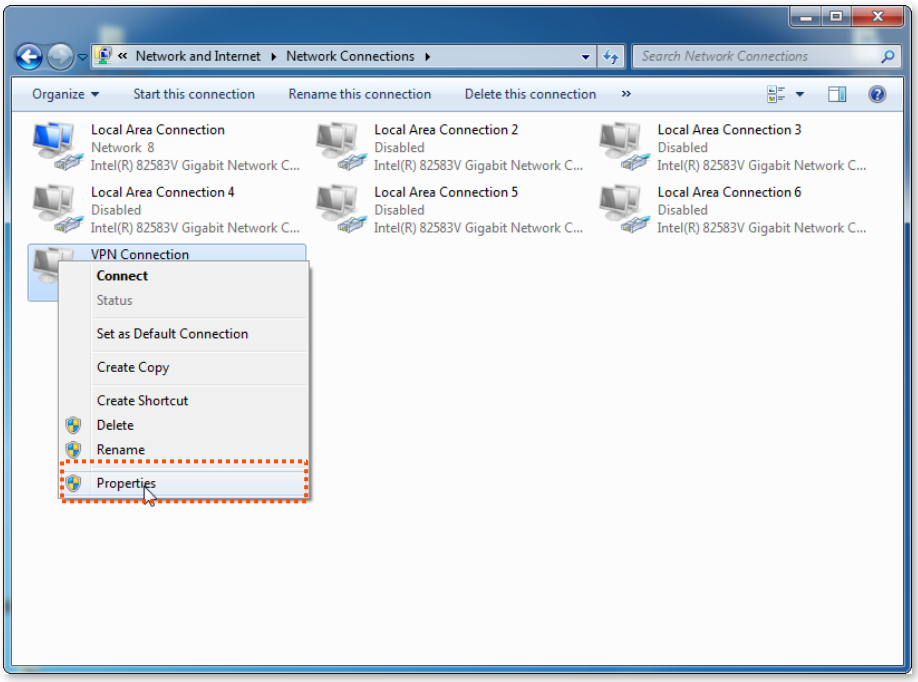
6. Set the **User name** to **Tom**, and **password** to **Tom123**. Then click **Connect.**



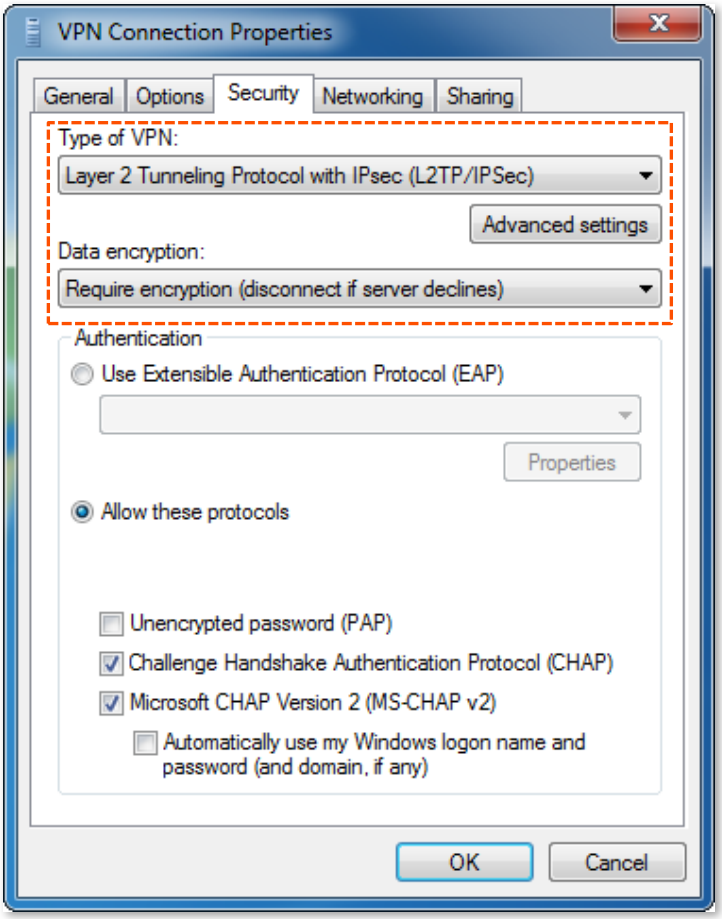
7. Wait for a moment to establish a connection.

Step 2 Set VPN connection parameters.

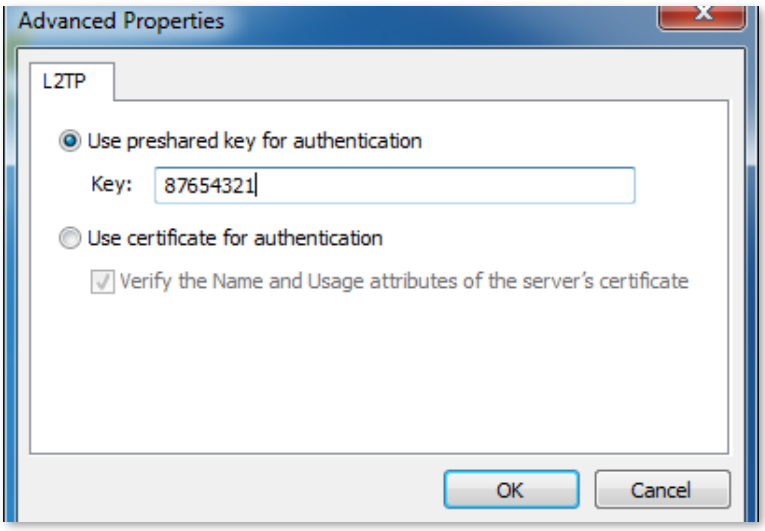
1. Click in the lower right corner of the desktop, choose **Open Network and Sharing Center,** click **Change adapter settings,** right click on **VPN connection,** and choose **Properties.**



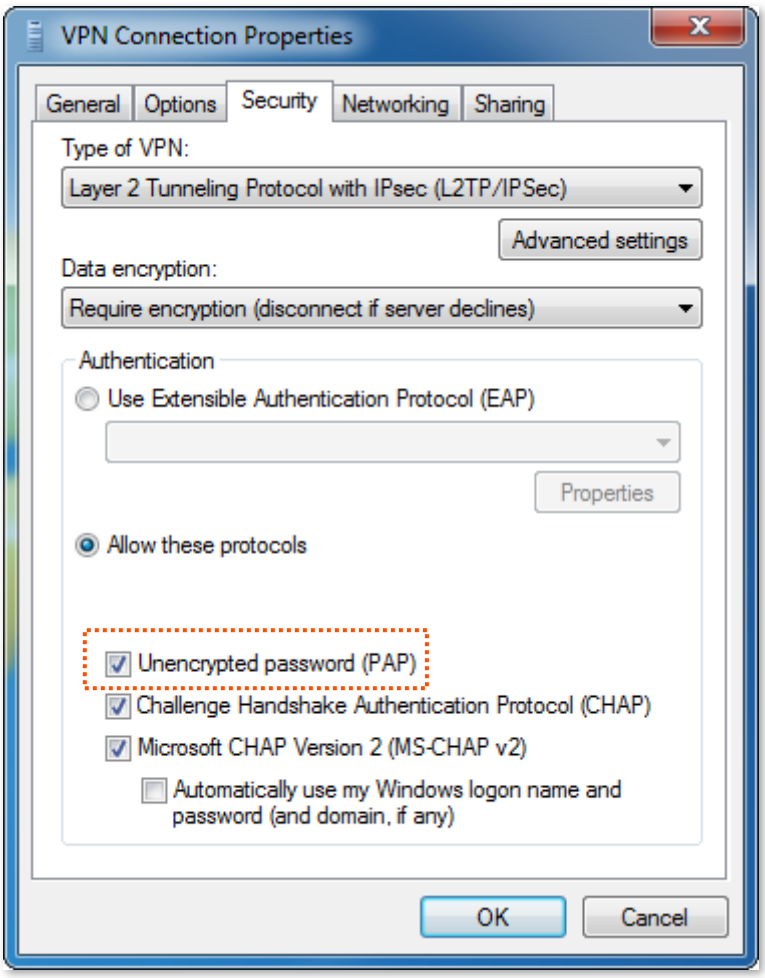
2. Click **Security tab**, in the **Type of VPN section**, choose **Layer 2 Tunneling Protocol with IPsec (L2TP/IPSec)** and click **Advanced settings**.



3. Click **Use preshared key for authentication**, and set the **Key** to **87654321**.
4. Click **OK**.

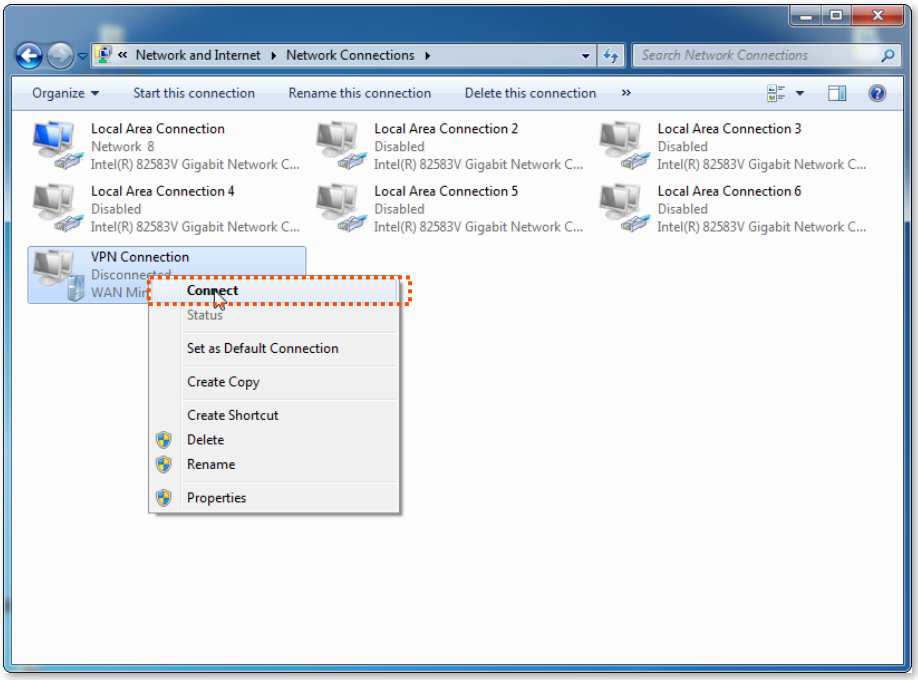


5. It redirects to the properties page of VPN Connection, tick **Unencrypted password (PAP)**. Then click **OK**.

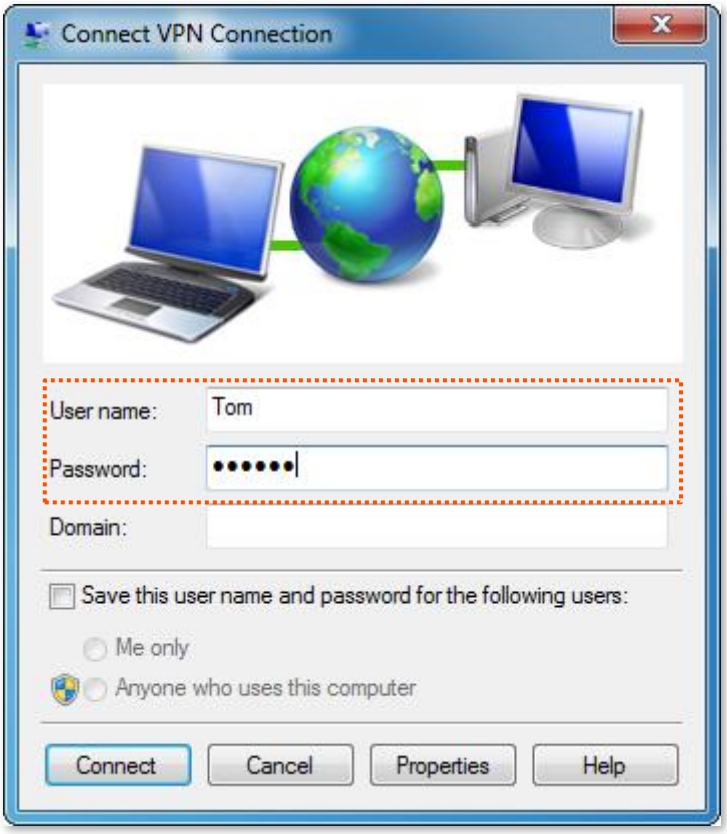


Step 3 Create VPN dialing.

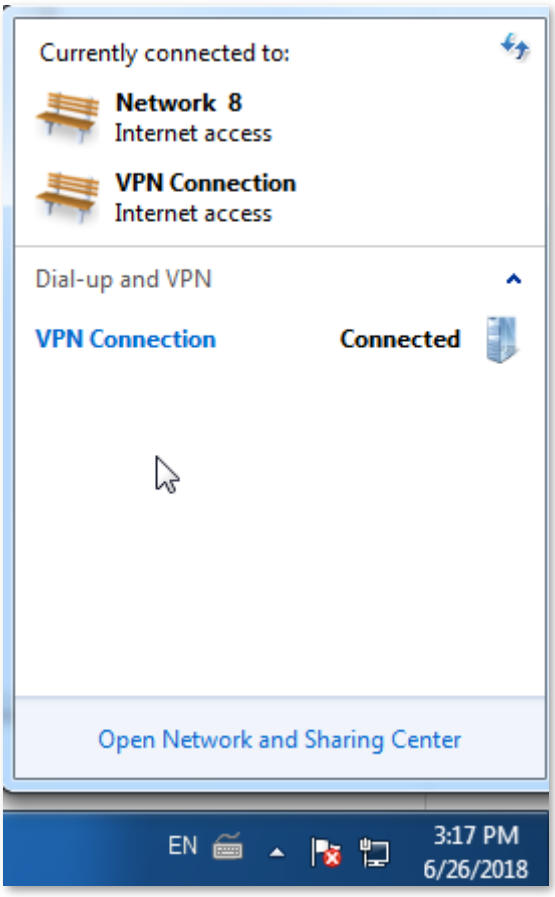
1. Go to Network and Sharing Center page, right click **VPN Connection**, and click **Connect**.



2. Enter **User name** to **Tom**, **Password** to **Tom123**, and click Connect.



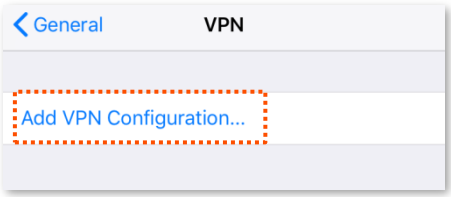
Wait for a moment to establish a connection.



Step 4 Create VPN connection on a mobile device (Example: iOS).

1. Tap on the **Settings** page.
2. Tap **VPN.**

3. Tap **Add VPN Configuration**.



4. Set required parameters.

   (1) Set **Type** to **L2TP.**

   (2) Set **Description** to the name of the VPN connection, which is **HQ** in this example.

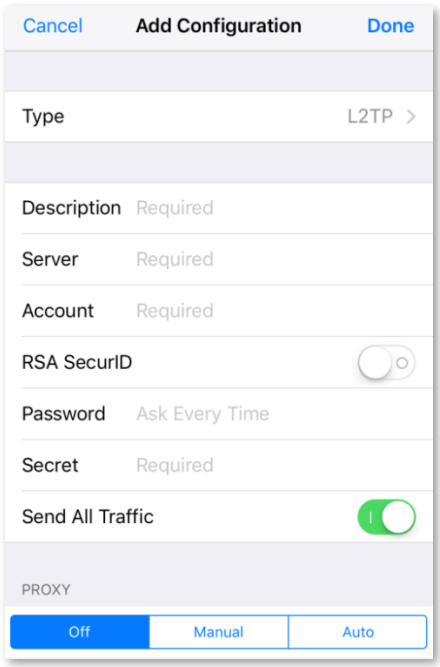
   (3) Set **Server** to the IP address of L2TP server, which is **192.168.20.62** in this example.

   (4) Set **Account** to the user name used to connect the VPN client to the VPN server, which is **Tom** in this example.

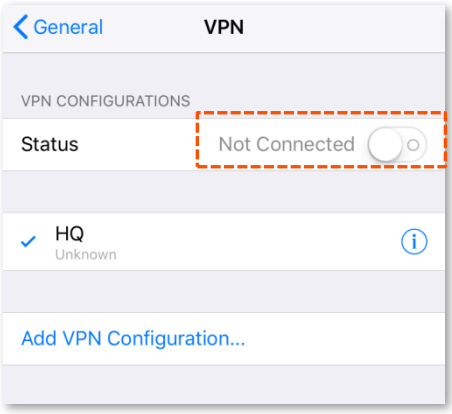
   (5) Set **Password** to the password for the user name, which is **Tom123** in this example.

   (6) Set **Secret** to the **Pre-shared Key** set in IPsec connection, which is **87654321** in this example.

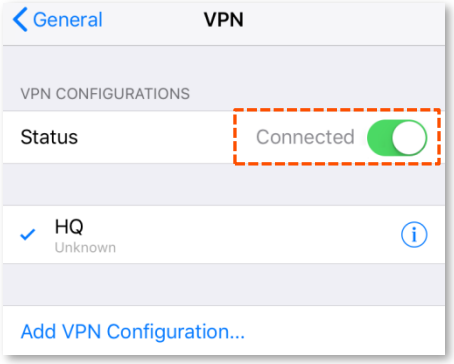
   (7) Tap **Done.**



5. Tap  .



Wait for a moment. When the **Status** turns to **Connected** , the IPSec connection is created successfully.

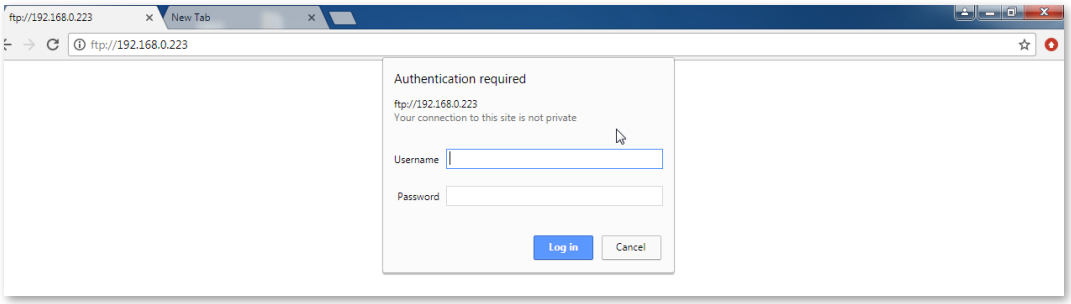


Step 5 Accessing HQ data for employees on business trip.

Here takes accessing web server of HQ as an example. The project data of the HQ is stored on the FTP server. Assume that the server information is as follows:

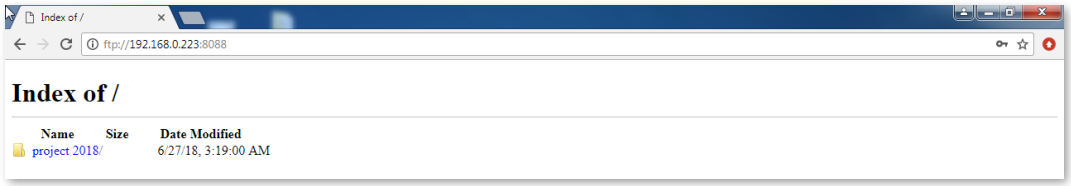
- FTP server IP address: **192.168.0.223**
- Server port: **8080**

1. Open a web browser, access the website ftp://192.168.0.223:8080.



2. Enter the **Username** and **Password** you set, which is Tom/Tom123 in this example.

Accessed successfully. See the following figure:



TIP

To access the FTP server on a mobile device (smartphone, tablet, etc.), the mobile device needs to install an FTP client.

12.16 Multi-WAN policy

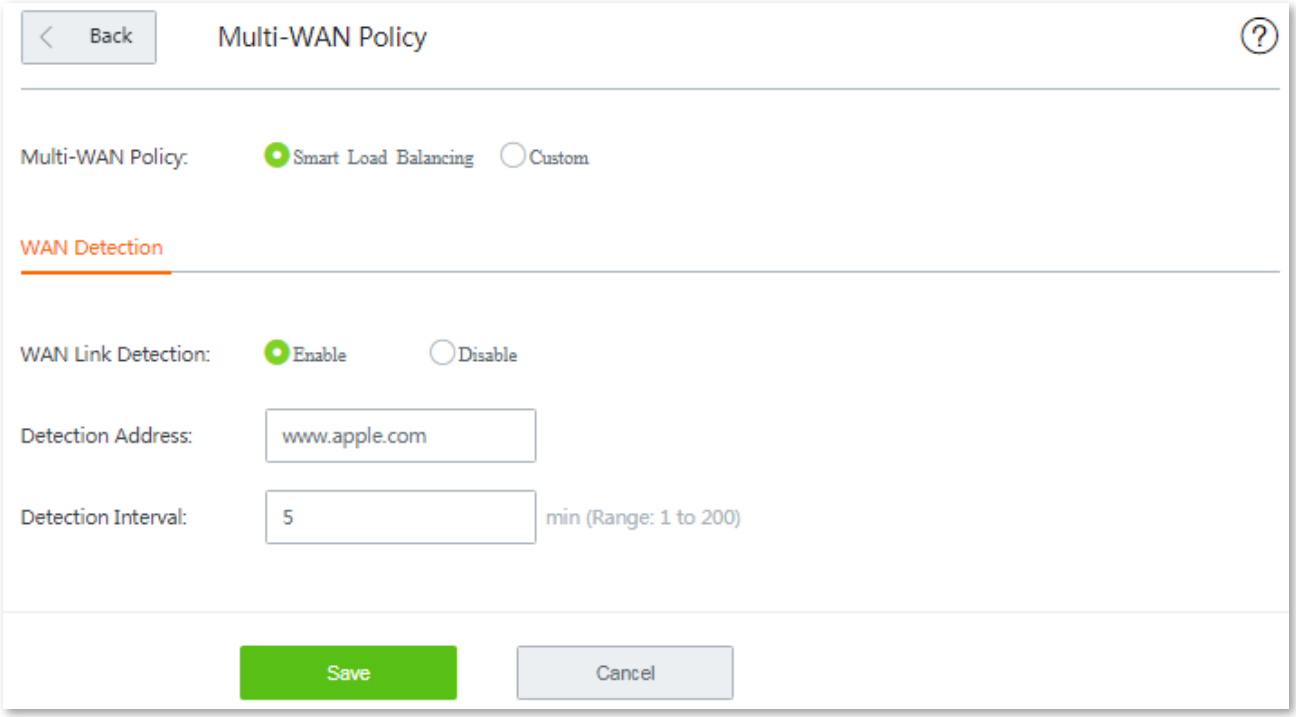
12.16.1 Overview

The router has 1 WAN port by default but allows a maximum of 3 WAN ports. When multiple WAN ports are operating at the same time, an appropriate multi-WAN policy can greatly improve the bandwidth usage of the router. The router supports the following types of multi-WAN policy:

- **Smart load balancing** (default): If such a policy is applied, the router automatically distributes traffic based on the bandwidth on the **Bandwidth Control** page through the WAN ports to achieve load balancing.
- **Custom:** Such a policy is configured by an administrator to distribute data of specified IP address groups to specified WAN ports.

12.16.2 Set multi-WAN policies

To access the configuration page, choose **More** > **Multi-WAN Policy**. By default, the **WAN Detection** is disabled. The following page appears when the **WAN Detection** is enabled.



Parameter description

Parameter	Description
Mutil-WAN Policy	It specifies the policy through the WAN ports. - **Smart Load Balancing**: The system automatically distributes traffic through the WAN ports with the smallest amount of traffic. - **Custom**: It enables you to assign WAN ports to source IP addresses as required.
WAN Detection	The router regularly detects the connection status between the WAN ports and

Parameter	Description
	detection address. - **Detection Address:** The IP address or domain name to detect. - **Detection Interval:** The interval of detection, it is 5 minutes by default.

12.16.3 Customize a multi-WAN policy

Before you start

Configure the following parameters first:

- **IP group(s):** Choose **Filter Management** > **Time group/IP group** for settings.
- **Bandwidth upload/download rate**: Choose **Bandwidth Control**, and locate the corresponding WAN port for settings.

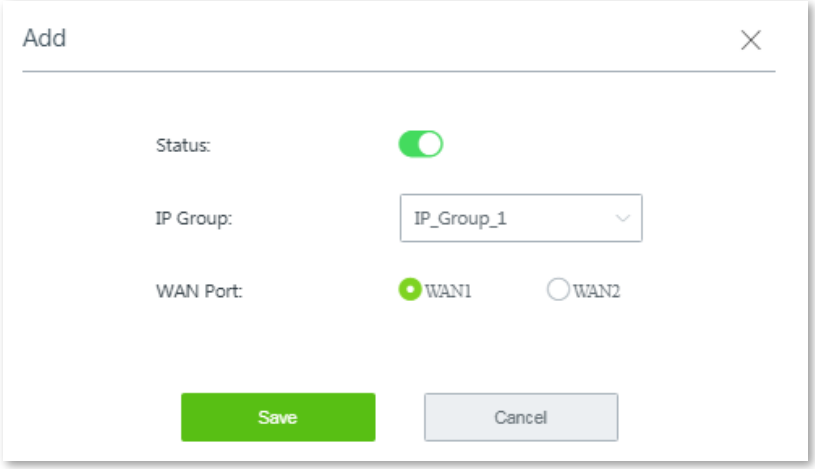
Configuration procedure

Step 1 Choose **More** > **Multi-WAN Policy**, and click **+Add**.

Step 2 Select the **IP Group** you set on **Filter Management** > **Time group/IP group** page.

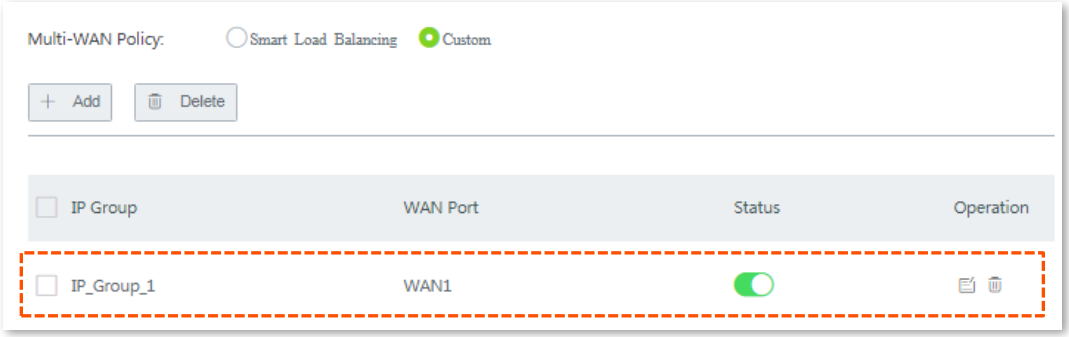
Step 3 Select the WAN port to which the policy applies.

Step 4 Click **Save**.



---- End

The policy is added successfully. See the following figure:



12.16.4 Example of customizing a multi-WAN policy

Networking requirement

An enterprise has used the router to set up a LAN. To meet its internet access requirement, the enterprise has set up two broadband connections with two different ISPs and can now access the internet properly. To achieve load balancing, the enterprise raises the following LAN requirements:

- The computers with IP addresses ranging from 192.168.0.2 to 192.168.0.100 access the Internal through the fixed-line broadband connection with ISP A.
- The computers with IP addresses ranging from 192.168.0.101 to 192.168.0.250 access the Internal through the mobile broadband connection with ISP B.

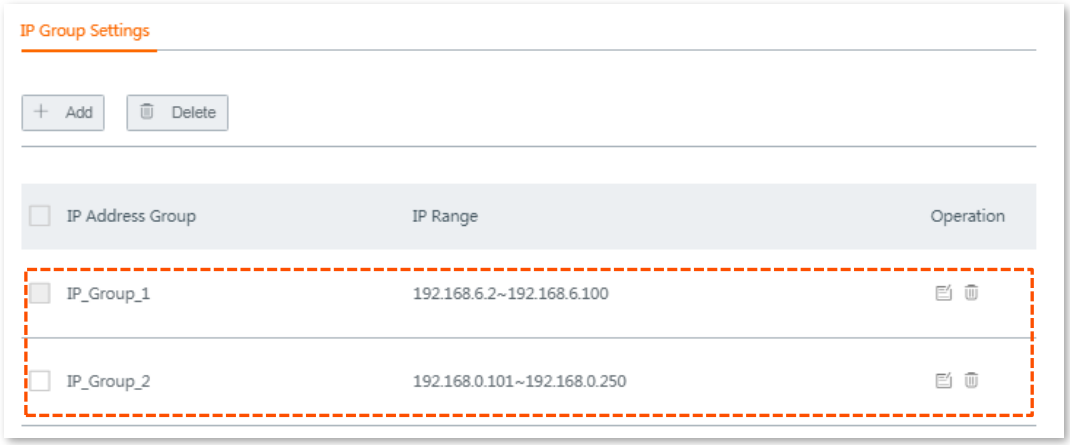
Solutions

You can use the multi-WAN policy function of the router to meet this requirement.

Configuration procedure

Step 1 Set IP address groups.

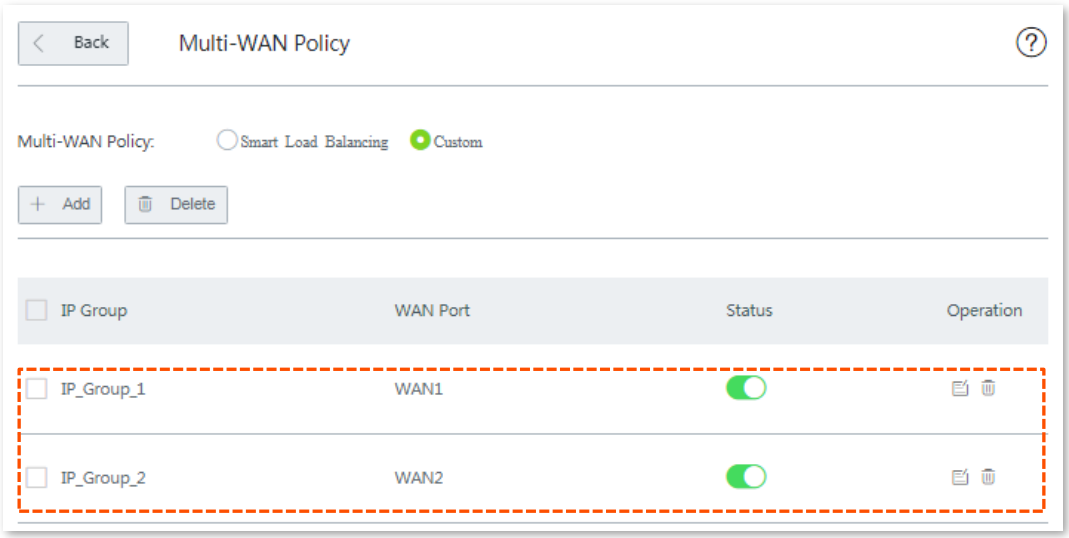
1. Choose **Filter Management** > **IP Group/Time Group**, and move to the **IP Group** configuration area.
2. Set the IP address group shown in the following figure.



Step 2 Customize multi-WAN policies.

1. Choose **More** > **Multi-WAN Policy**.
2. Select **Custom**, and click **Save**.

3. Click **+Add**, and set the rules shown in the following figure.



---- End

Verification

The computers with IP addresses ranging from 192.168.0.2 to 192.168.0.100 can access the Internal through the fixed-line broadband connection with ISP A.

The computers with IP addresses ranging from 192.168.0.101 to 192.168.0.250 can access the Internal through the mobile broadband connection with ISP B.

13 Maintenance

This chapter describes how to reboot, reset, and upgrade the router, how to modify the login password, how to back up your current configuration and restore the router to previous configuration, how to view the system logs and functions that are enabled or disabled, how to set up system time, and how to use the Ping and Traceroute commands.

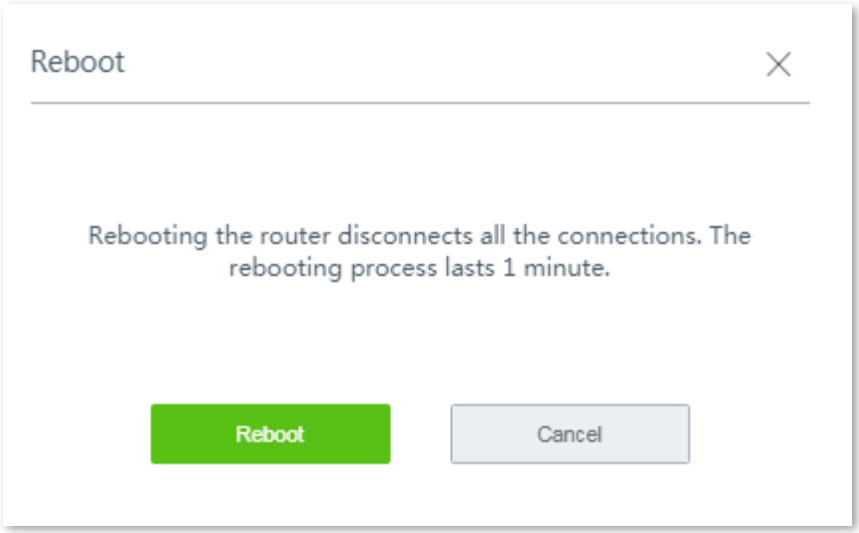
13.1 Reboot the router

13.1.1 Overview

If a parameter does not take effect or the router does not work properly, you can try rebooting the router to resolve the problem.

13.1.2 Reboot the router manually

Choose **Maintenance > Reboot**, and follow the on-screen instruction to reboot the device.



13.1.3 Reboot the router on schedule

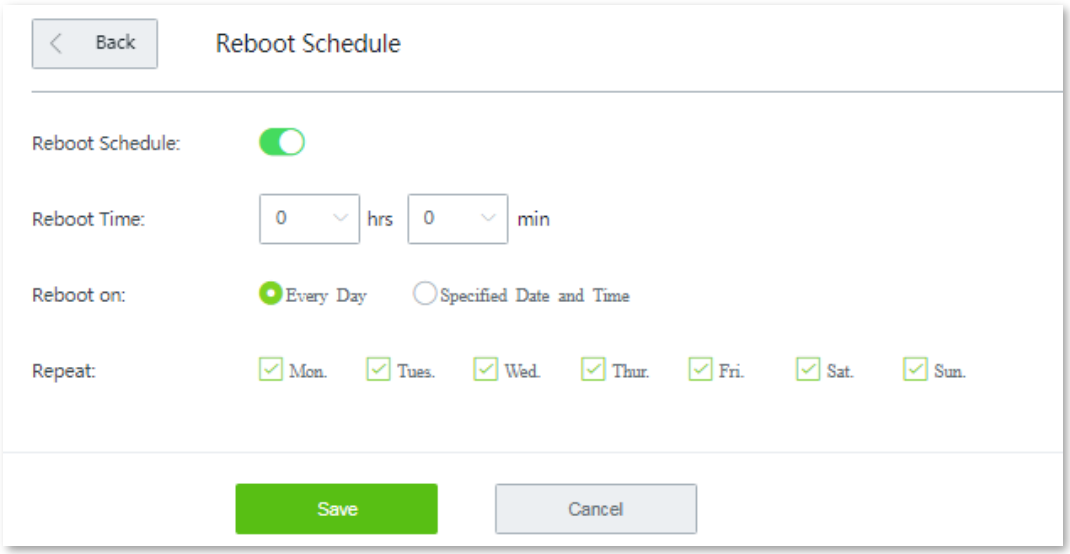
TIP

To enable reboot schedule function to work properly, ensure that the **Model** of your router is correct.

Step 1 Choose **Maintenance** > **Reboot Schedule** to enter the configuration page, and enable this function.

Step 2 Set the time and date when the router performs rebooting.

Step 3 Click **Save** to apply your settings.



---- End

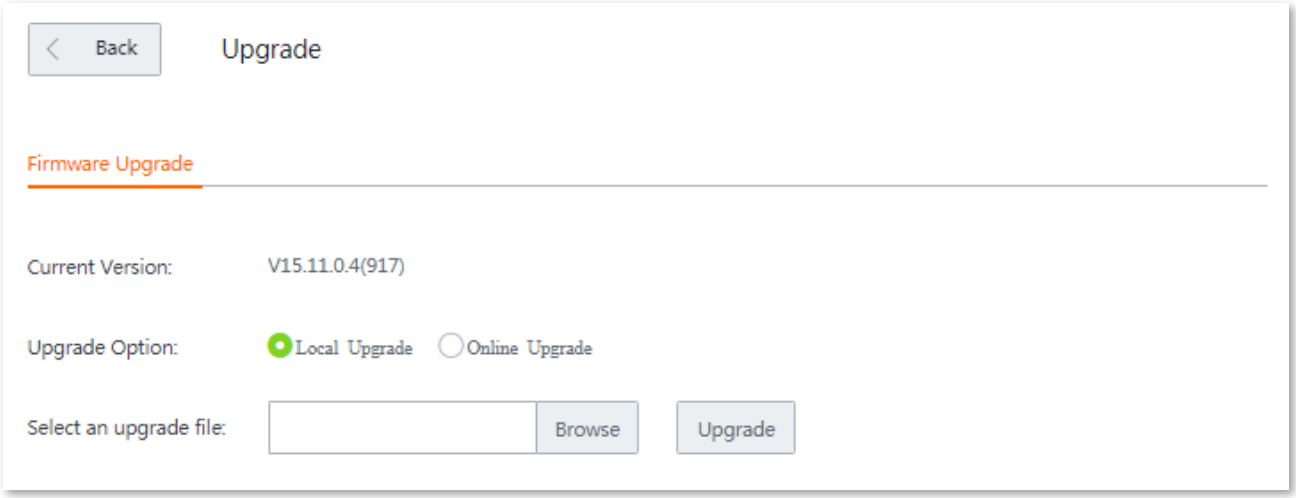
The router performs rebooting regularly on the time and date you set here.

13.2 Upgrade

13.2.1 Overview

The router supports **local** and **online** upgrades.

Choose **Maintenance** > **Upgrade** to enter the configuration page. See the following figure:



13.2.2 Upgrad the rotuer manually

TIP

- To enable your router to work properly after an upgrade, ensure that the firmware used to upgrade complies with your Model.
- When upgrading, do not power off the router.

Step 1 Download the upgrade file to your local computer.

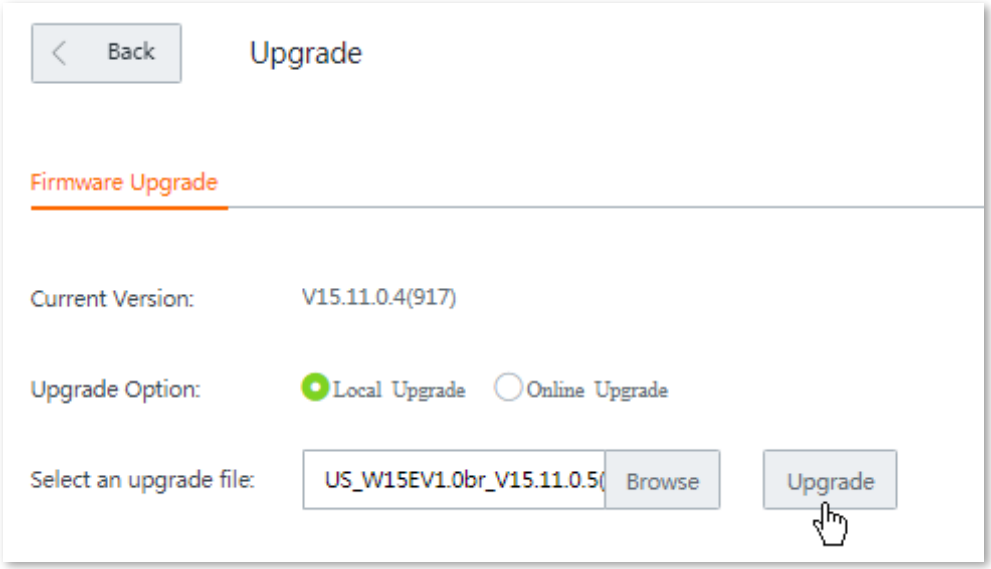
1. Visit www.tendacn.com, searching the **Model** in the searching bar to enter the product details page.
2. Locate the latest firmware, download it to your computer, and unzip it.

Step 2 Log in to the web UI of your router, click **Maintenance** > **Upgrade** to enter the configuration page.

Step 3 Set **Upgrade Option** to **Local Upgrade**.

Step 4 Click **Browse**, select and upload the firmware that has been downloaded to your computer.

Step 5 Click **Upgrade**. Wait until the progress bar completes.



NOTE

If upgrade does not apply, reset the router. Back up your configurations properly before reset.

13.2.3 Upgrad the rotuer automatically

When the router is connected to the internet, it checks whether there is a later firmware version, and displays the detected information on the page. You can choose whether to upgrade the firmware with the latest version. If you want to upgrade the firmware, click **Upgrade**. Then the system will download the firmware and the router upgrades the firmware automatically.

13.3 Reset

13.3.1 Overview

If the internet is inaccessible for unknown reasons, or you forget the login password, you can reset the router to resolve the problems.

The router supports two resetting methods:

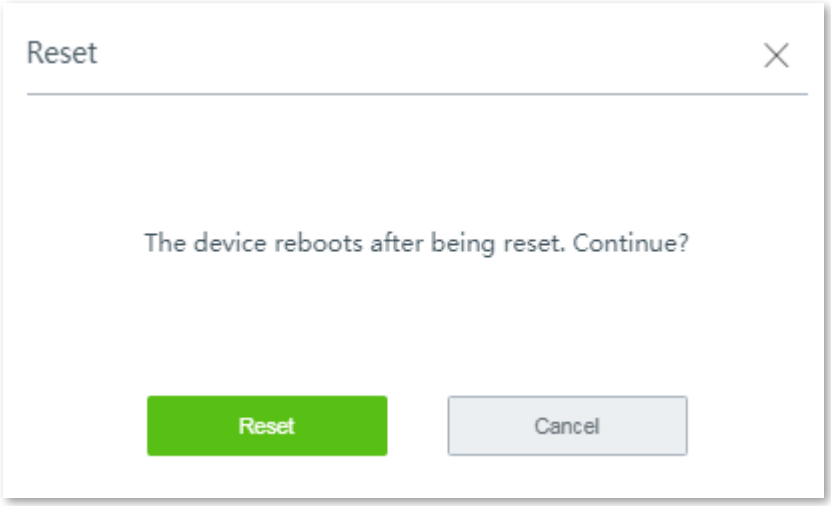
- Reset the router using web UI.
- Reset the router using the reset button.

13.3.2 Reset the router using web UI

TIP

- Resetting the router deletes all your current configurations and you need to reconfigure the router to access the internet.
- If it is necessary to reset the router, Back up your current configuration first.
- When resetting, do not power off the router.

Choose **Maintenance > Reset**, and follow the on-screen instruction to reset the device.



13.3.3 Reset the router using the reset button

With the SYS LED indicator blinking, hold down the **Reset** button using a paper clip for about 8 seconds, and then release it. When all LED indicators light up, the router is reset to the factory settings successfully.

13.4 Password manager

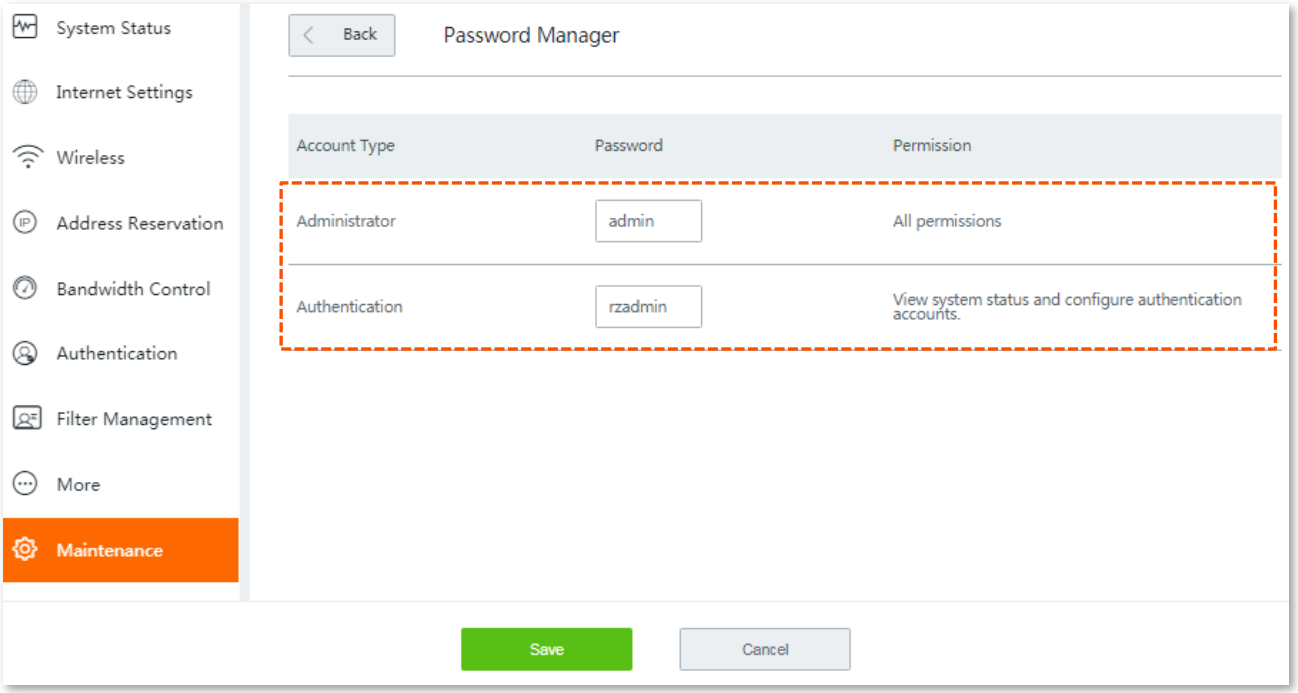
13.4.1 Overview

The router supports two account types: **Administrator** and **Authentication**. The difference between them is their access permission.

The **Administrator** account enjoys all access permission. Password for **Administrator** account is the login password you set during initial setup. You can view and modify it here.

The **Authentication** account only has permission for accessing **System Status** and **Authentication** modules. The default password for this account is **rzadmin**. You can view and modify it here.

To enter the configuration page, choose **Maintenance > Password Manager**.



13.4.2 Modify login password

Step 1 Click **Maintenance > Password Manager** to enter the configuration page.

Step 2 Locate the account type and modify the password.

Step 3 Click **Save** on the bottom of the page to apply your settings.

---- End

Then you will be redirected to the login page. Enter the password corresponding to the administrator account you set just now, and click **Login** to log in to the router.

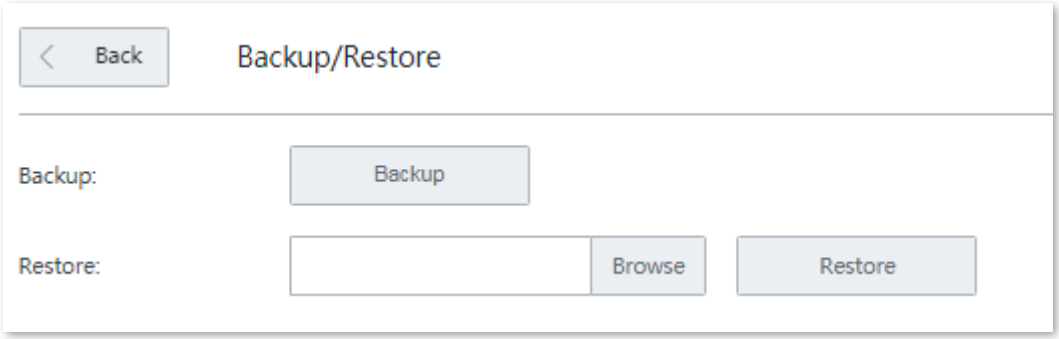
13.5 Backup/Restore

13.5.1 Overview

The **backup** function is used to export the current configuration of the router to your computer. The **restore** function is used to import a configuration file to the router.

You are recommended to back up the configuration after it is significantly changed. When the performance of your router decreases because of an improper configuration, or after you restore the router to factory settings, you can use this function to restore a configuration that has been backed up.

To access the configuration page, choose **Maintenance** > **Backup/Restore**.



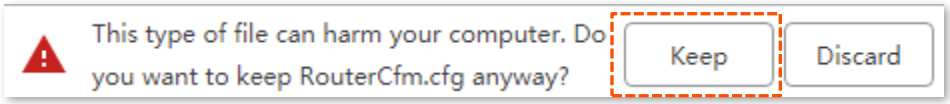
13.5.2 Back up your current configuration

Step 1 Click **Maintenance** > **Backup/Restore** to enter the configuration page.

Step 2 Click **Backup**. The system exports the configuration file to your local computer.

TIP

If the following warning message appears, click **Keep**.



---- End

13.5.3 Restore your previous configuraiton

Step 1 Click **Maintenance** > **Backup/Restore** to enter the configuration page.

Step 2 Click **Browse**, and upload the configuration file ending with **.cfg**.

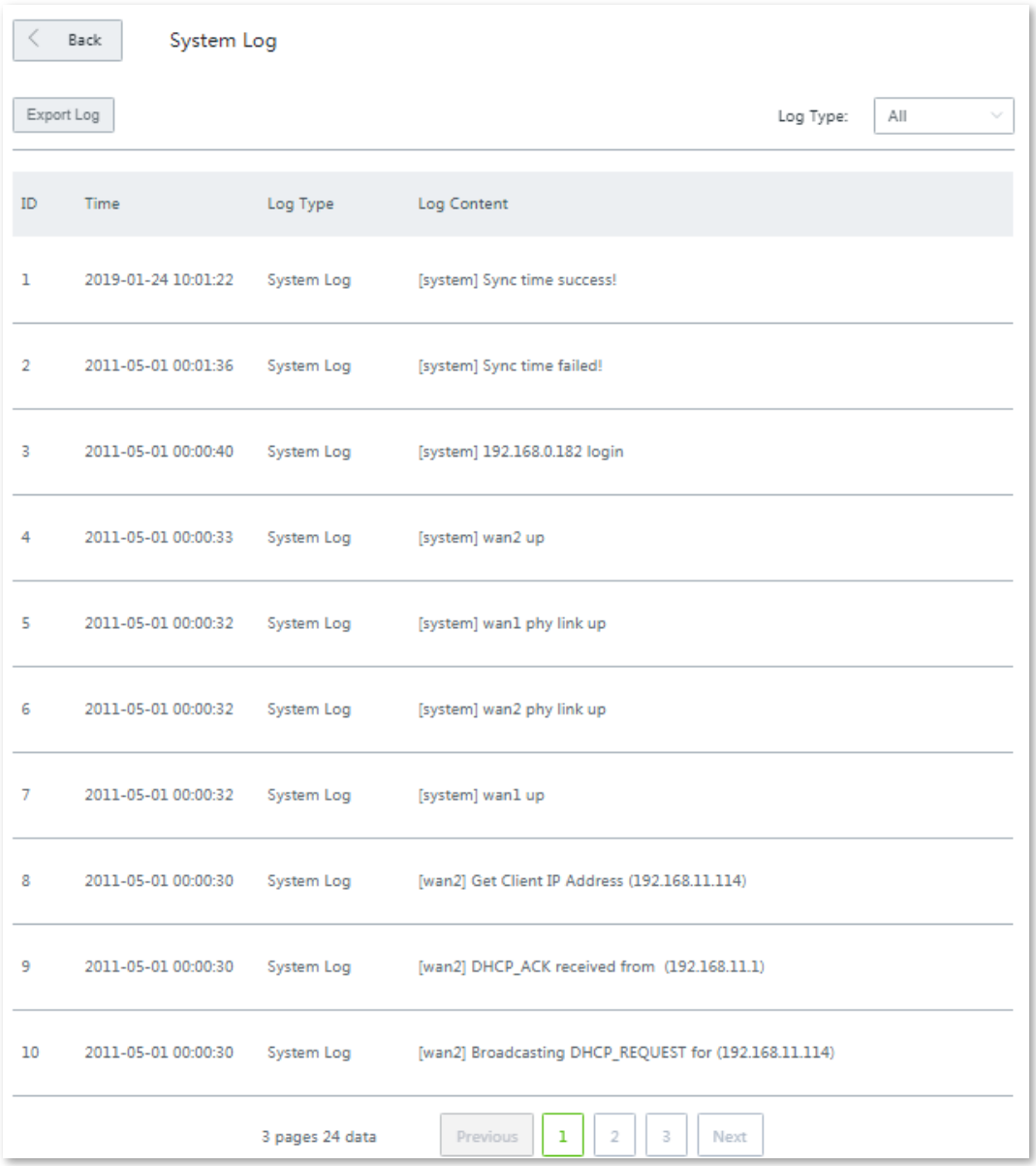
Step 3 Click **Restore** and follow the on-screen instruction to restore the configuration.

---- End

13.6 System log

System logs record information about system running status and the operation you performed on it. When system malfunctions occur, you can use system log for troubleshooting.

To enter the configuration page, click **Maintenance** > **System Log**.

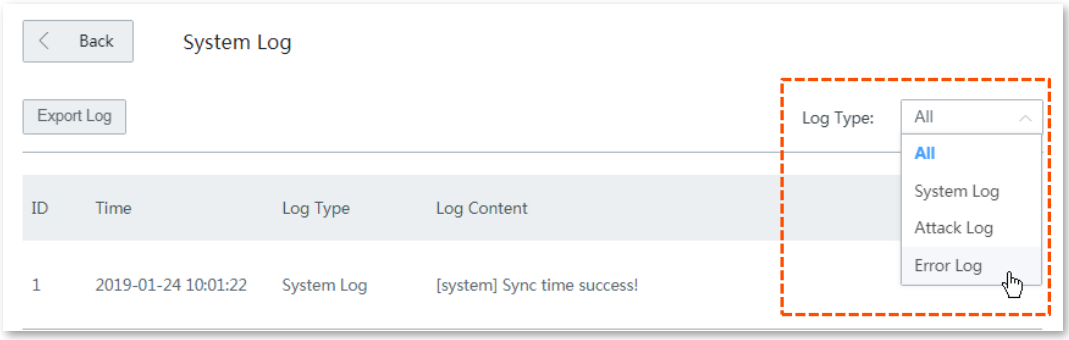


13.6.1 View system log

TIP

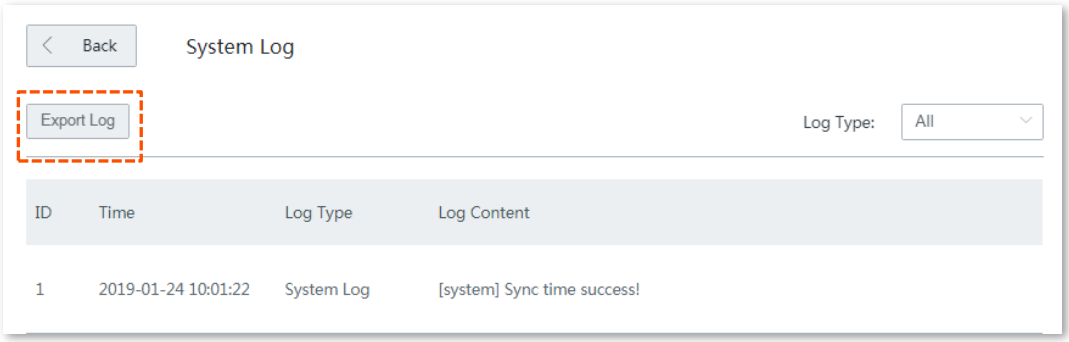
- System logs will be cleared each time the router reboots or resets.
- A maximum of **300** logs will be recorded.
- The system only keeps 300 logs that are generated the most recently.

The router records three log types: **System Log**, **Attack Log**, and **Error Log**. You can view all logs or filter the logs to view as needed.



13.6.2 Export system log

Click **Export Log**, the log file will be downloaded to your local computer.



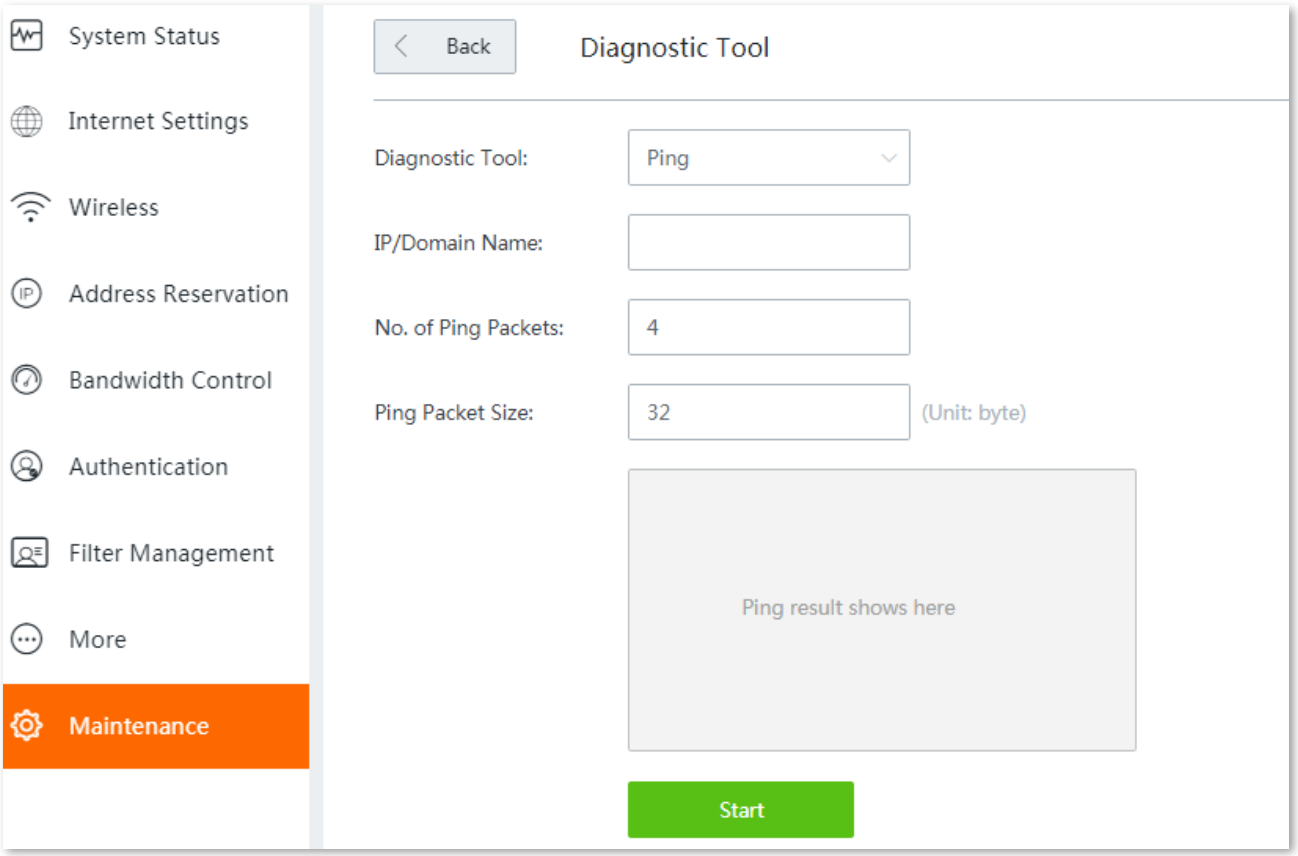
13.7 Diagnostic tool

13.7.1 Overview

You can execute Ping/Traceroute command on this page.

- **Ping**: Used to check whether the connection is correct and the connection quality.
- **Traceroute**: Used to detect the route from the bridge to the destination IP address or domain name.

To access the configuration page, click **Maintenance** > **Diagnosis Tool**.



13.7.2 Execute Ping command to detect connection quality

Assume that:

You need to detect the connectivity between the router and the **Bing** website.

Step 1 Click **Maintenance** > **Diagnosis Tool** to enter the configuration page.

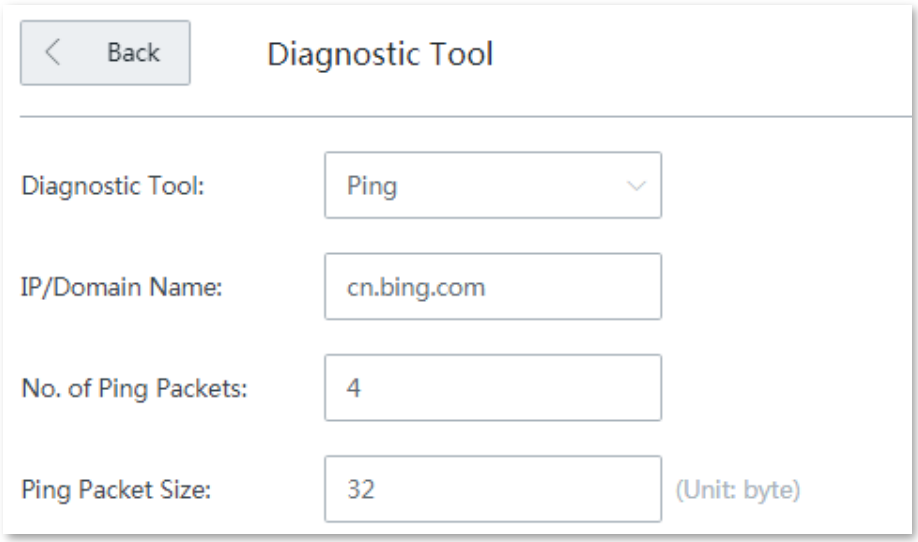
Step 2 Select **Ping** from the drop-down list menu of the **Tools**.

Step 3 Enter the IP address or domain name of the ping target, which is **cn.bing.com** in this example.

Step 4 Set **Number of Ping Packets** as required.

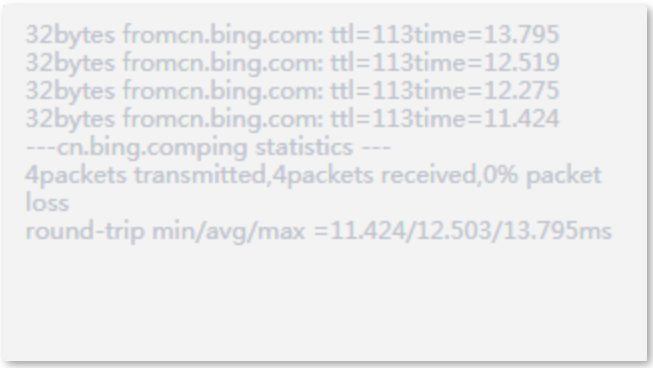
Step 5 Set **Ping Packet Size** as required.

Step 6 Click **Start**.



---- End

Wait a moment. The ping result will be displayed in the result box. See the following figure:



13.7.3 Execute Traceroute command to detect the route selection

Assume that:

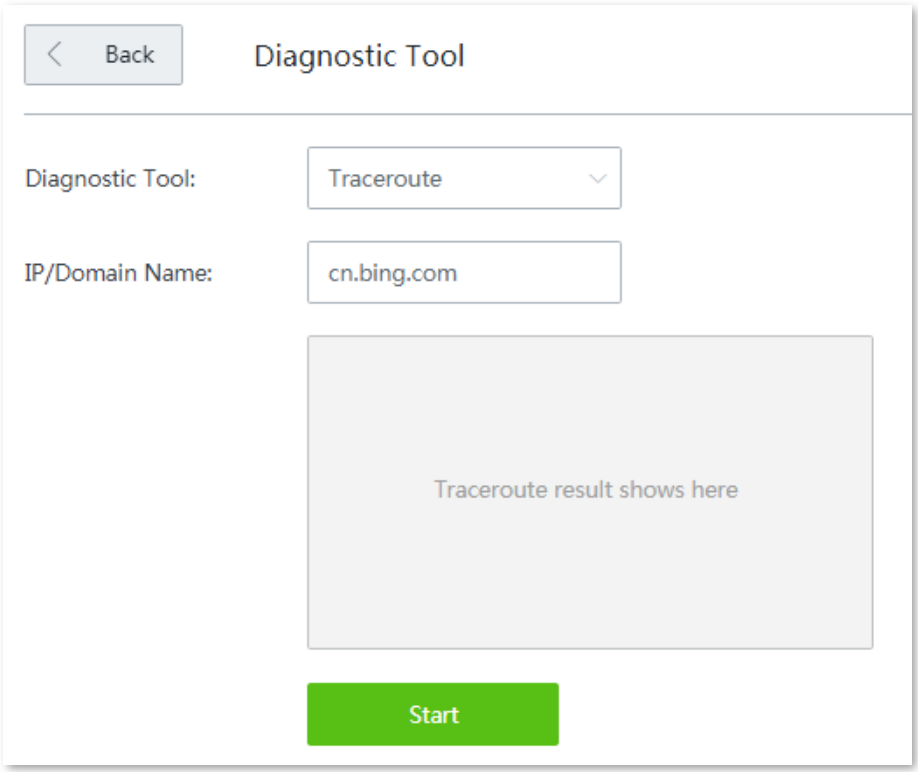
You need to detect the path from the router to **Bing** website.

Step 1 Click **Maintenance** > **Diagnosis Tool** to enter the configuration page.

Step 2 Select **Traceroute** from the drop-down list menu of the **Tools** menu.

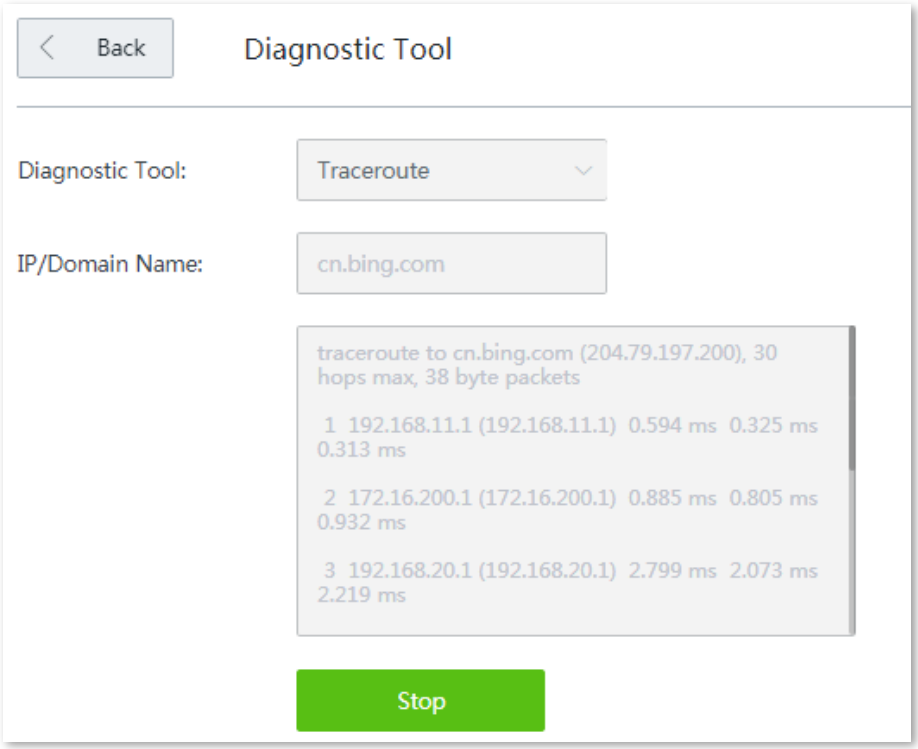
Step 3 Enter the IP address or domain name of the traceroute target, which is **cn.bing.com** in this example.

Step 4 Click **Start**.



---- End

Wait a moment. The traceroute result will be displayed in the result box. See the following figure:



Click **Stop** to end the process as needed.

13.8 System time

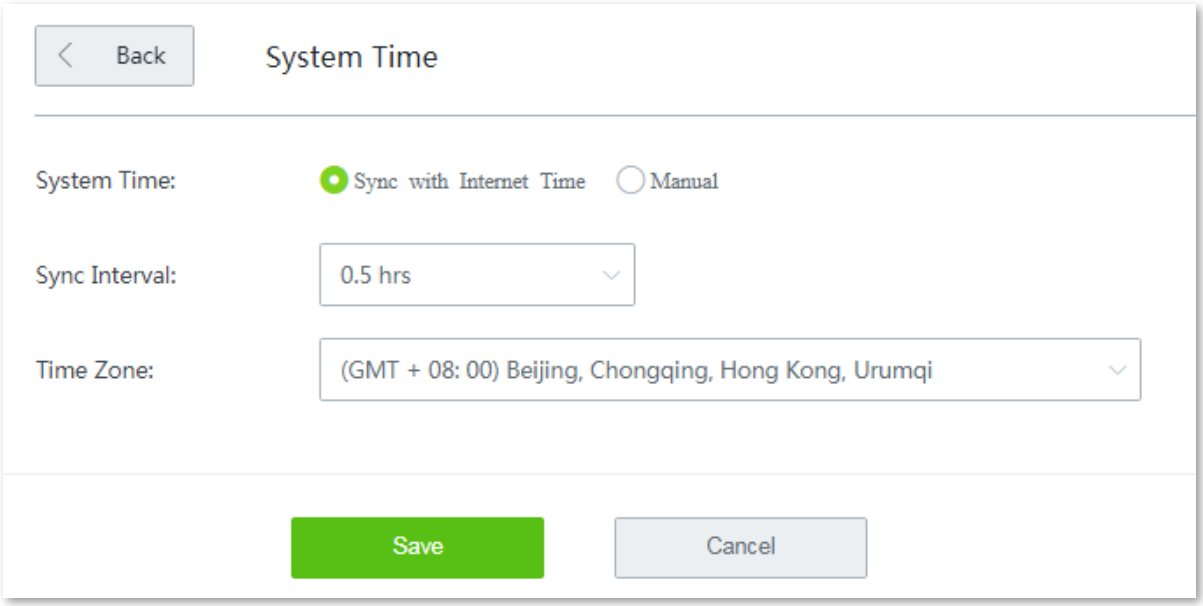
13.8.1 Overview

This function is used to set the system time of your router. To make the time-related functions effective, ensure that the system time of the router is set correctly.

The router supports:

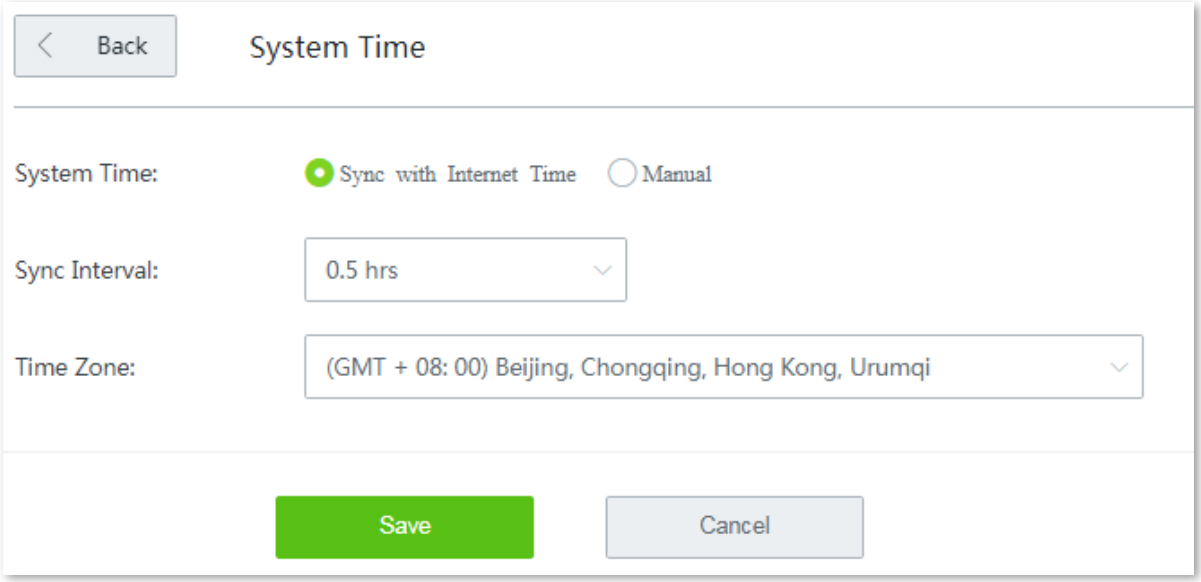
- Synchronize with internet time (default)
- Set system time manually

To access the configuration page, click **Maintenance** > **System Time**. See the following figure:



13.8.2 Synchronize with internet time

With this method, the router automatically synchronizes its system time with the network time server (NTS). As long as the router is connecting to the internet, the system time is correct.



Parameter description

Parameter	Description
Sync Interval	It specifies an interval at which the router synchronizes its system time with the time server on the internet. By default, the router performs synchronization every **0.5** hours.
Time Zone	It specifies the time zone where the router is deployed.

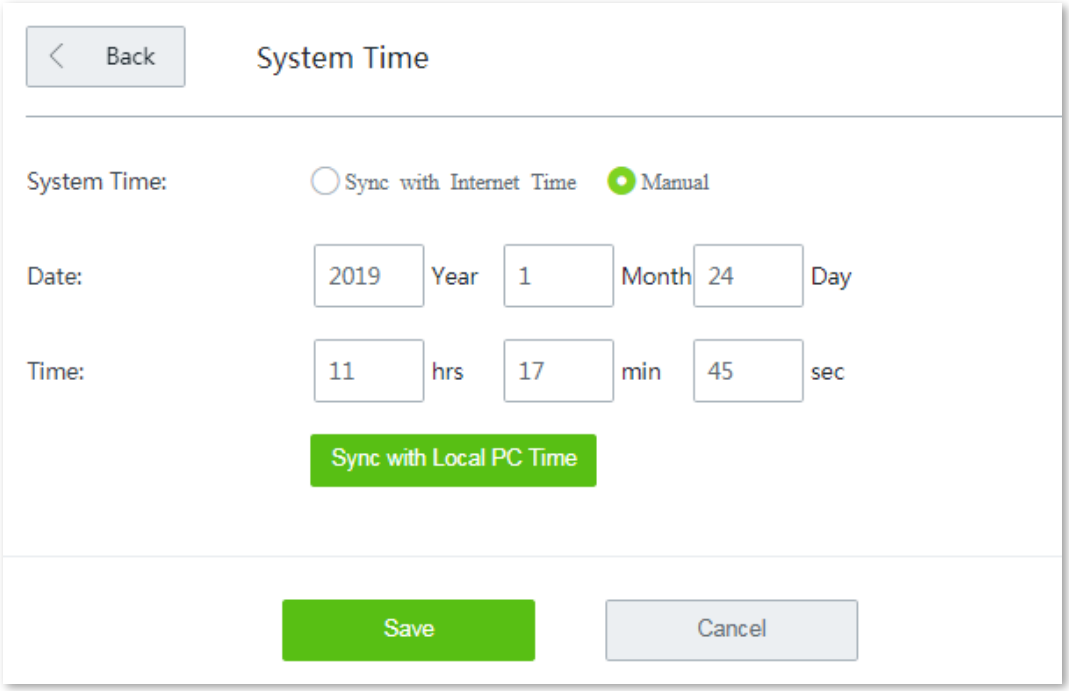
After configuration, navigate to the System status page to check whether it is synchronized.

13.8.3 Set system time manually

With this method, you can manually specify a system time for the router. When **Manual** option is selected**,** the related parameters are shown as follows.

TIP

With this method, you need to manually reconfigure the system time each time the router reboots.



Parameter description

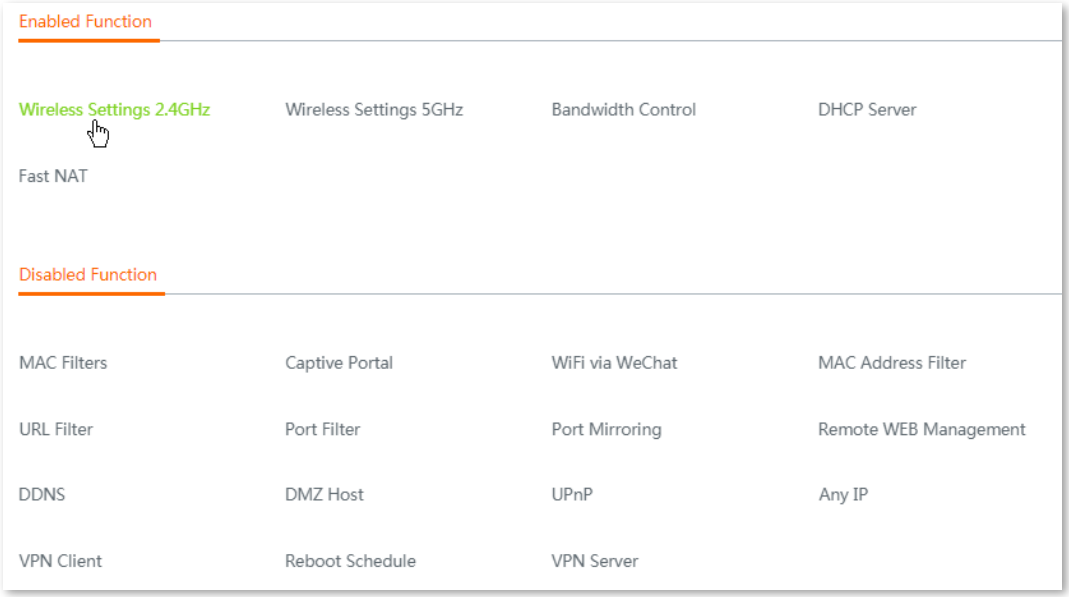
Parameter	Description
Date	Manually enter the date and time as needed.
Time	
Sync with Local PC Time	It allows you to synchronize the system time of the router with the system time of the management computer. Click this button, the router auto-fills the system time of your management computer.

After configuration, navigate to the System status page to check whether it is synchronized.

13.9 Function center

The function center groups all functions of the router into **Enabled Function** and **Disabled Function**, giving you a clearly insight into the functions that are enabled or disabled.

In addition, move the mouse pointer to a specific function and click it, you will be taken to the corresponding configuration page.



Appendix

Default parameters

Parameter			Default
Login information	IP address of the management page		192.168.0.1
	Administrator		/
	Authentication management	User name	rzadmin
		Password	rzadmin
LAN setting	IP address		192.168.0.1
	Subnet mask		255.255.255.0
DHCP server	DHCP server		On
	Start IP address		192.168.0.100
	End IP address		192.168.0.200
	Lease time		30 minutes
	Primary DNS		192.168.0.1
Wireless settings	SSID	2.4/5GHz	Support three SSIDs, which can be named as Tenda_*XXXXXX*. *XXXXXX* indicates the last six characters of the MAC address which can be found on the device.
	WiFi password		No password
	Guest network		Off
Any IP	Off		
System time	Sync with Internet time		