robustel | Software Manual

# MG460

# Software Manual

robustOS pro

Guangzhou Robustel Co., Ltd.
www.robustel.com

**About this Document**

This document provides web interface information of the RobustOS Pro based gateway products, including gateway configuration and operation.

***Related Products***

*MG460*

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## Document History

Updates between document versions are cumulative. Therefore, the latest document version contains all updates made to previous versions.

| Date | Firmware Version | Document Version | Change Description |
|---|---|---|---|
| June 17, 2024 | 2.1.3 | 1.0.0 | Initial release. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# Contents

# Chapter 1 Initial Configuration

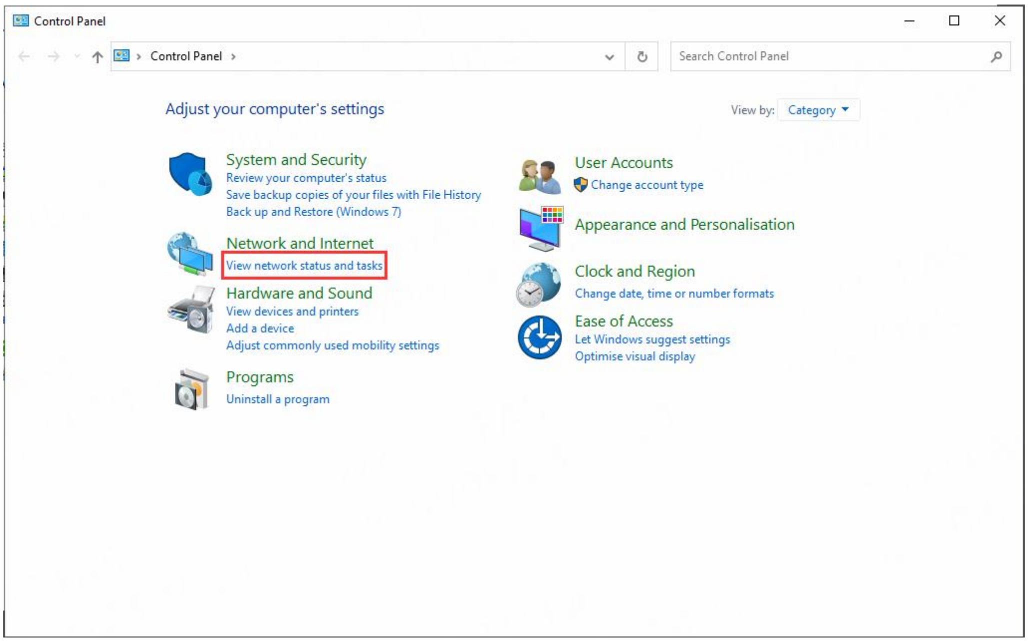
The device can be configured through your web browser that including Microsoft Edge, Chrome and Firefox, etc. A web browser is included as a standard application in the following operating systems: Linux, Mac OS, Windows. It provides an easy and user-friendly interface for configuration. There are various ways to connect the device, either through an external repeater/hub or connect directly to your PC. However, make sure that your PC has an Ethernet interface properly installed prior to connecting the device. You must configure your PC to obtain an IP address through a DHCP server or a fixed IP address that must be in the same subnet as the device. If you encounter any problems accessing the device web interface, it is advisable to uninstall your firewall program on your PC, as this tends to cause problems accessing the IP address of the device.

## 1.1. PC Configuration

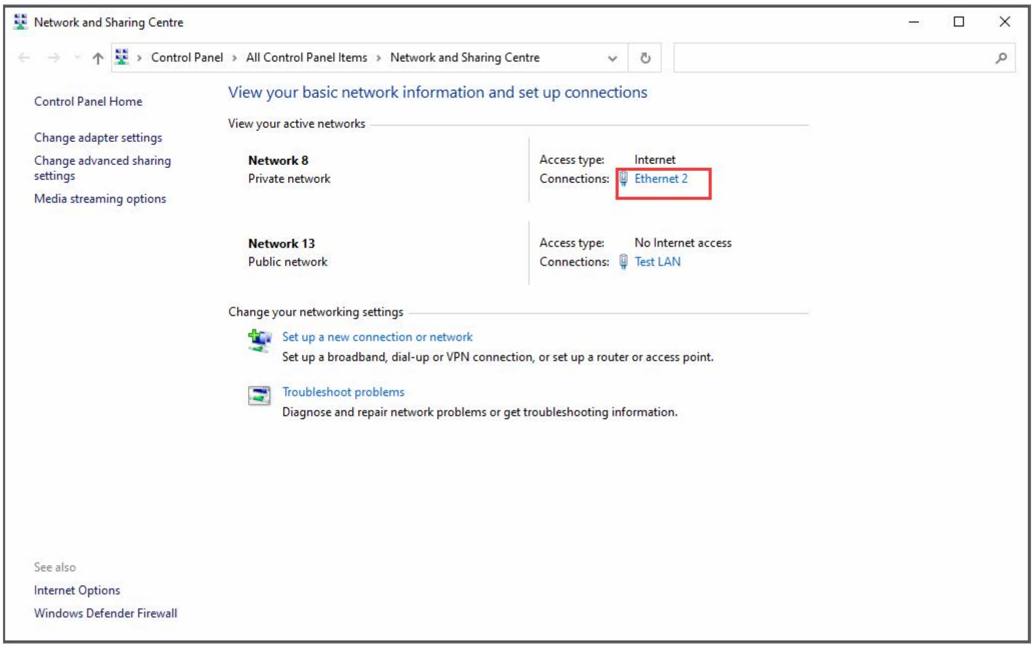
There are two ways to get an IP address for the computer. One is to obtain an IP address automatically from “Local Area Connection”, and another is to configurate a static IP address manually within the same subnet of the router. Please refer to the steps below.

Here take **Windows 10** as an example.The configuration for Windows 7 or newer is similar.

1. Right-click “**Windows LOGO**” on the taskbar, select “**Run**”, and type "**Control**" to launch the Control panel, then Click “**View network status and tasks**”.


Control Panel
Control Panel
Search Control Panel
Adjust your computer's settings
View by: Category
System and Security
Review your computer's status
Save backup copies of your files with File History
Back up and Restore (Windows 7)
Network and Internet
View network status and tasks
Hardware and Sound
View devices and printers
Add a device
Adjust commonly used mobility settings
Programs
Uninstall a program
User Accounts
Change account type
Appearance and Personalisation
Clock and Region
Change date, time or number formats
Ease of Access
Let Windows suggest settings
Optimise visual display

2. After entering “Network and Sharing Center", click "**Ethernet**" connections status.



Network and Sharing Centre

Control Panel > All Control Panel Items > Network and Sharing Centre

View your basic network information and set up connections

View your active networks

**Network 8**
Private network

Access type: Internet
Connections: Ethernet 2

**Network 13**
Public network

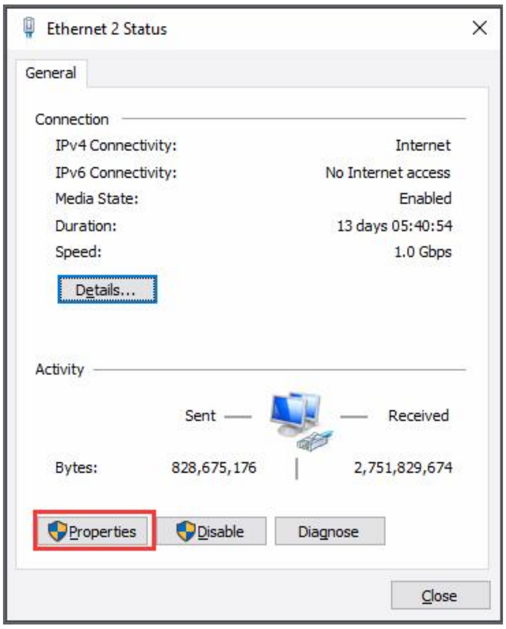
Access type: No Internet access
Connections: Test LAN

Change your networking settings

Set up a new connection or network
Set up a broadband, dial-up or VPN connection, or set up a router or access point.

Troubleshoot problems
Diagnose and repair network problems or get troubleshooting information.

3. Click **Properties** in the window of **Network Connection status**.



Ethernet 2 Status

General

Connection

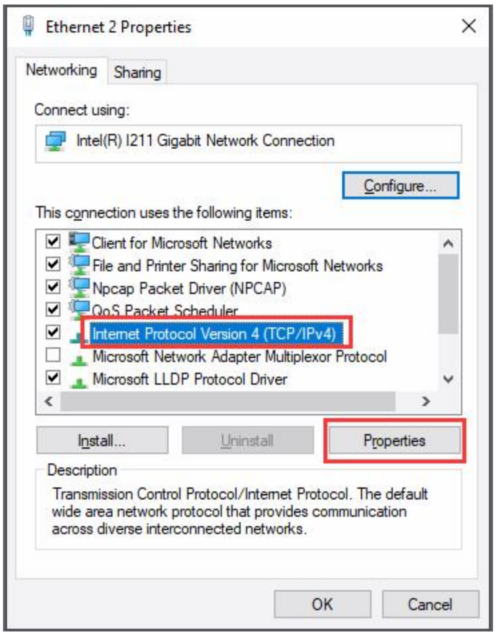
IPv4 Connectivity: Internet
IPv6 Connectivity: No Internet access
Media State: Enabled
Duration: 13 days 05:40:54
Speed: 1.0 Gbps

Activity

Sent — — Received

Bytes: 828,675,176 | 2,751,829,674

4. Choose **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.



Ethernet 2 Properties

Networking | Sharing

Connect using:

Intel(R) I211 Gigabit Network Connection

This connection uses the following items:

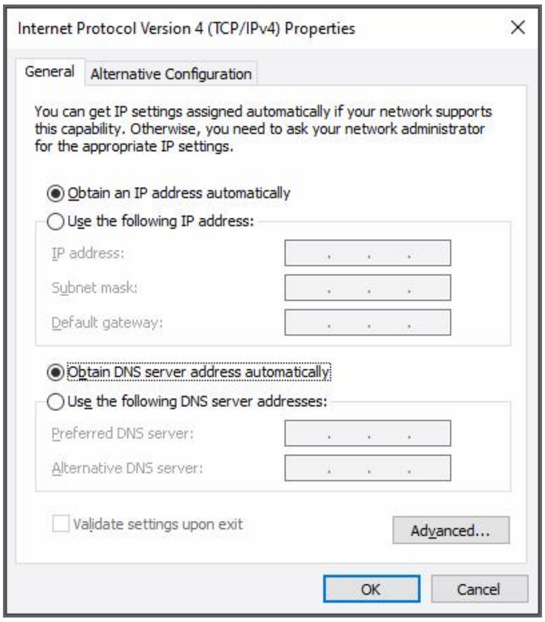
- ☑ Client for Microsoft Networks
- ☑ File and Printer Sharing for Microsoft Networks
- ☑ Npcap Packet Driver (NPCAP)
- ☑ QoS Packet Scheduler
- ☑ Internet Protocol Version 4 (TCP/IPv4)
- ☐ Microsoft Network Adapter Multiplexor Protocol
- ☑ Microsoft LLDP Protocol Driver

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

5. Two ways to configurate the IP address of the computer.

(1) Auto obtain from the DHCP server, click "**Obtain an IP address automatically".**



Internet Protocol Version 4 (TCP/IPv4) Properties

General | Alternative Configuration

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically

○ Use the following IP address:

IP address: . . .

Subnet mask: . . .

Default gateway: . . .

● Obtain DNS server address automatically

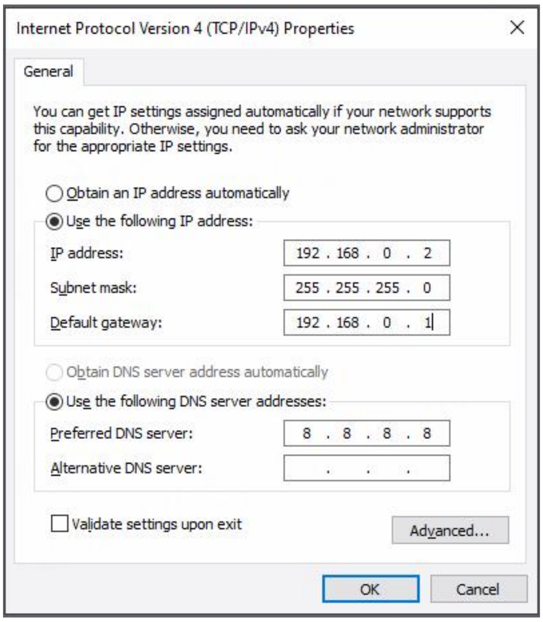
○ Use the following DNS server addresses:

Preferred DNS server: . . .

Alternative DNS server: . . .

☐ Validate settings upon exit

(2) Manually configurate the PC with a static IP address on the same subnet as the device address, click and configurate "**Use the following IP address**";



Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address: 192 . 168 . 0 . 2

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 0 . 1

○ Obtain DNS server address automatically

● Use the following DNS server addresses:

Preferred DNS server: 8 . 8 . 8 . 8

Alternative DNS server: . . .

□ Validate settings upon exit

6. Click **OK** to finish the configuration.

## 1.2. Factory Default Settings

Before configuring your device, you need to know the following default settings.

| Item | Description |
|---|---|
| Username | admin |
| Password | See the information from the product label |
| ETH0 | WAN mode |
| ETHn | 192.168.0.1/255.255.0.0, LAN mode |
| DHCP Server | Enabled |

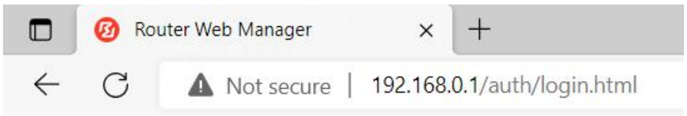
## 1.3. Factory Reset

| Function | Operation |
|---|---|
| Reboot | Press and hold the RST button for 2~5 seconds under the operating status. |
| Restore to default configuration | Press and hold the RST button for 5 ~10 seconds under the operating status. The RUN light flashes quickly, and then release the RST button, and the device will restore to the default configuration. |
| Restore to factory configuration | Once the operation of restoring the default configuration is performed twice within one minute, the device will restore to the factory default settings. |

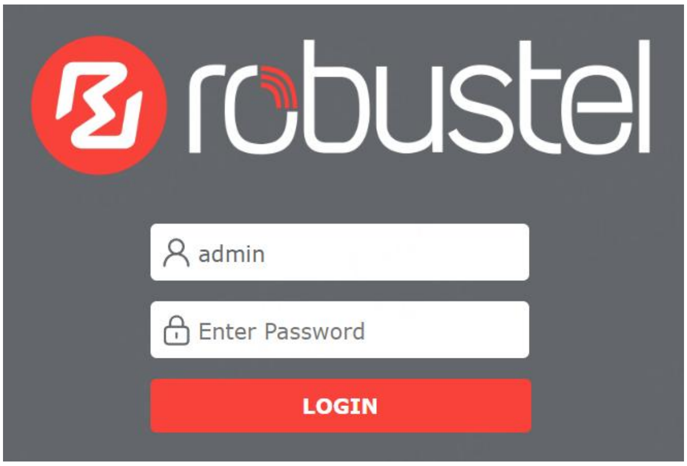
## 1.4. Log in the Device

To log in to the management page and view the configuration status of your device, please follow the steps below.

1. On your PC, open a web browser such as Microsoft Edge, Google Chrome or Firefox, etc.
2. From your web browser, type the IP address of the device into the address bar and press enter. The default IP address of the device is https://192.168.0.1/24 ,though the actual address may vary.
   **Note:** If a SIM card with a public IP address is inserted in the device , enter this corresponding public IP address in the browser's address bar to access the device wirelessly.

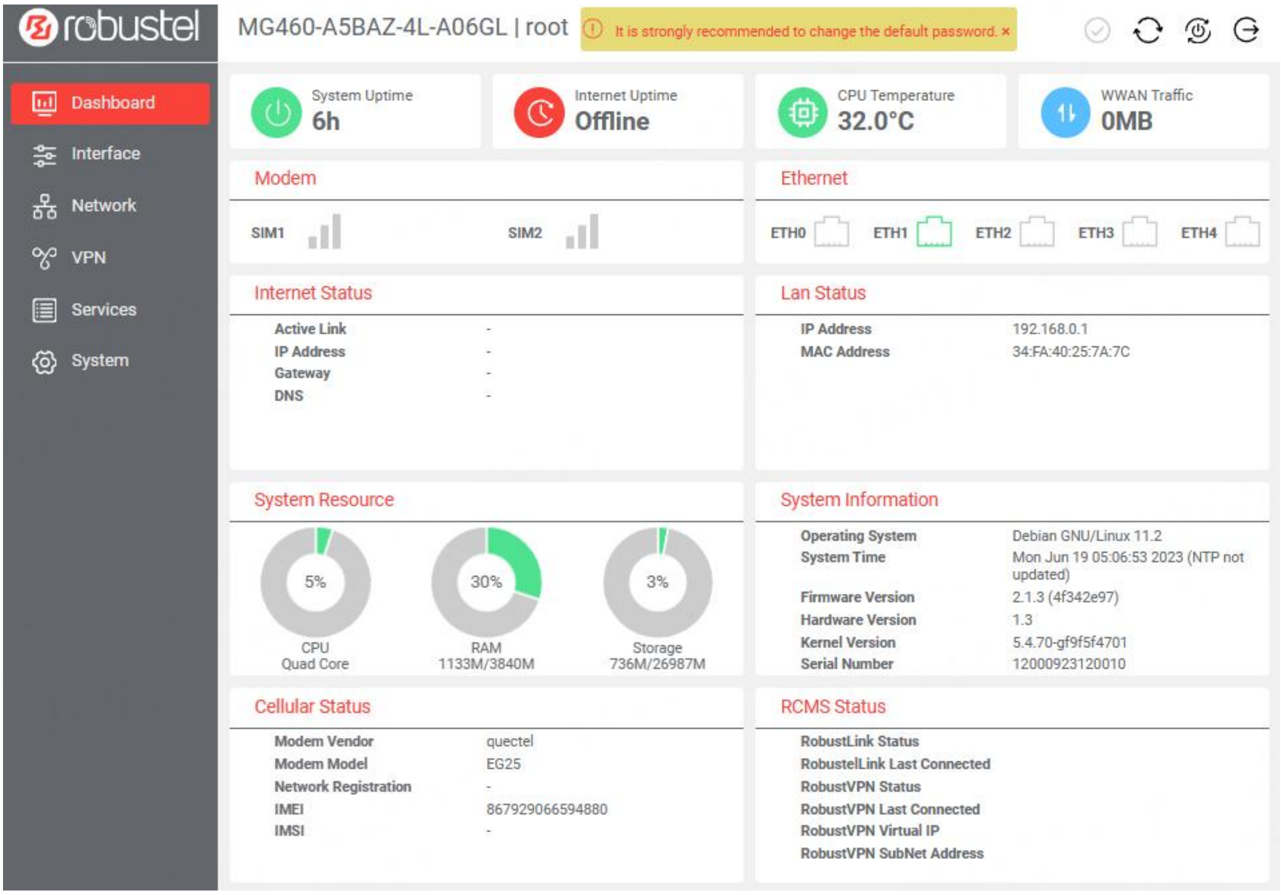


3. In the login page, enter the username and password, you can check the login information from the device's stick, and then click **LOGIN**. See the information on the product label for default username and password.
   **Note:** If enter the wrong password over 6 times, the user account will be locked for 5 minutes.



## 1.5. Control Panel

After logging in, the home page of the web interface is displayed.



Internet Status

| | |
|---|---|
| Active Link | - |
| IP Address | - |
| Gateway | - |
| DNS | - |

Lan Status

| | |
|---|---|
| IP Address | 192.168.0.1 |
| MAC Address | 34:FA:40:25:7A:7C |

System Information

| | |
|---|---|
| Operating System | Debian GNU/Linux 11.2 |
| System Time | Mon Jun 19 05:06:53 2023 (NTP not updated) |
| Firmware Version | 2.1.3 (4f342e97) |
| Hardware Version | 1.3 |
| Kernel Version | 5.4.70-gf9f5f4701 |
| Serial Number | 12000923120010 |

Cellular Status

| | |
|---|---|
| Modem Vendor | quectel |
| Modem Model | EG25 |
| Network Registration | - |
| IMEI | 867929066594880 |
| IMSI | - |

RCMS Status

RobustLink Status
RobustelLink Last Connected
RobustVPN Status
RobustVPN Last Connected
RobustVPN Virtual IP
RobustVPN SubNet Address

From the homepage, users can find the model information and perform operations such as saving the configuration, restarting the device , and logging out.

| Control Panel | | |
|---|---|---|
| **Item** | **Description** | **Icon** |
| Save & Apply | The icon is in gray by default, and will turn red if any modifications on configuration, then click to save the current configuration into device's flash and apply the modification on every configuration page, to make the modification taking effect. | ✓ or ✓ |
| Restart | Click to restart all the RobustOS Pro operating system based applications(applications controlled by  ystem are not included), then switch to the login page. | ⟳ |
| Reboot | Click to reboot the device, then switch to the login page. | ⏻ |
| Logout | Click to log the current user out safely. After logging out, it will switch to login page. Shut down web page directly without logout, the next one can login web on this browser without a password before timeout. | ↪ |

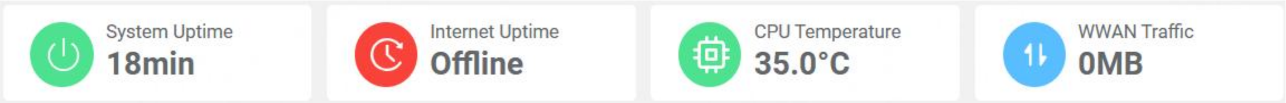
**Note:** The steps of how to modify configuration are as bellow:

1. Modify in one page;
2. Click Submit under this page;
3. Modify in another page;
4. Click Submit under this page;
5. Complete all modification;
6. Click ✓ for save and apply.

# Chapter 2 WebUI Descriptions

## 2.1Dashboard

### 2.1.1 Overview



System Uptime 18min

Internet Uptime Offline

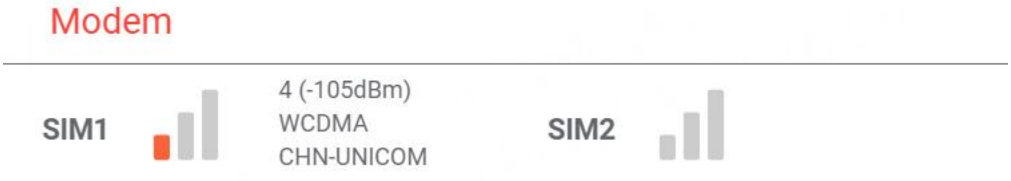
CPU Temperature 35.0°C

WWAN Traffic 0MB

| Item | Description |
|---|---|
| System Uptime | Show the current amount of time the router has been powered on. |
| Internet Uptime | Show the current amount of time the router has been connected to internet. |
| CPU Temperature | Show the CPU temperature. |
| Traffic | Show the amount of WWAN data traffic usage. |

### 2.1.2 Modem

This page shows the status of SIM card.



Modem

SIM1 4 (-105dBm) WCDMA CHN-UNICOM

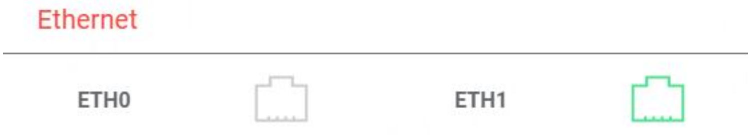
SIM2

| Item | Description |
|---|---|
| 📶 | Not connected. |

| | |
|---|---|
| 🟥 | Weak signal. |
| 🟨 | Medium signal. |
| 🟩 | Strong signal. |

## 2.1.3 Ethernet

This page shows the device’s Ethernet status



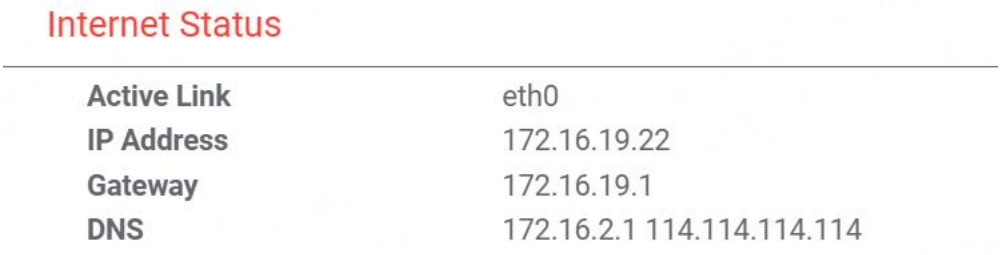
Ethernet

ETH0 □ ETH1 🟩

| Icon | Description |
|---|---|
| □ | Port disable or link down. |
| 🟩 | Link up. |

## 2.1.4 Internet Status

This page shows the device’s Internet status information.



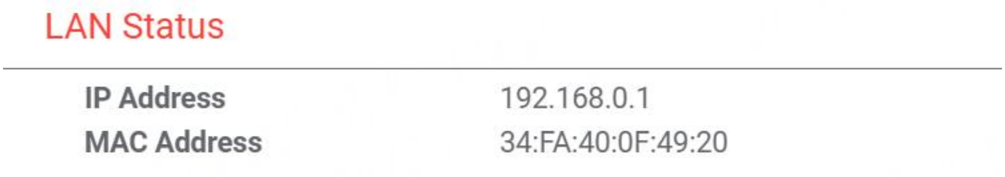
Internet Status

| | |
|---|---|
| Active Link | eth0 |
| IP Address | 172.16.19.22 |
| Gateway | 172.16.19.1 |
| DNS | 172.16.2.1 114.114.114.114 |

| Item | Description |
|---|---|
| Active Link | Show the currently online link. |
| IP Address | Show the address of current link. |
| Gateway | Show the gateway address of the current link. |
| DNS | Show the current DNS server. |

## 2.1.5 LAN Status

This page shows the device’s LAN status



LAN Status

| | |
|---|---|
| IP Address | 192.168.0.1 |
| MAC Address | 34:FA:40:0F:49:20 |

| Item | Description |
|---|---|
| IP Address | Show the IP address of the LAN. |
| MAC Address | Show the MAC address of the LAN. |

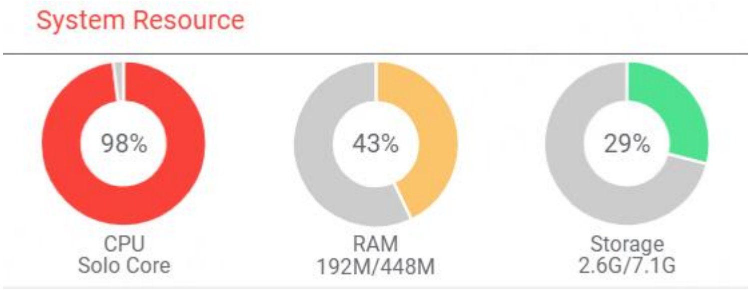
## 2.1.6 System Resource

This page shows the device’s system resources usage information.

When the usage is more than 95%, the icon will be in Red.

When the usage is between 80% and 95%, the icon will be in Yellow.

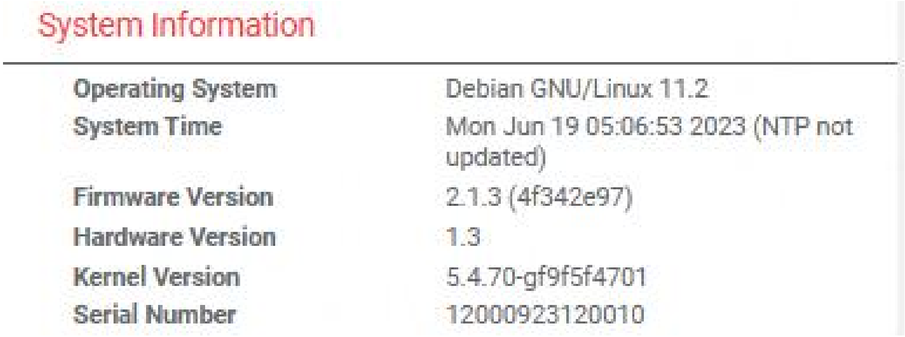
When the usage is less than 80%， the icon will be in Green.



System Resource

## 2.1.7 System Information

This page shows the device’s system information.



System Information

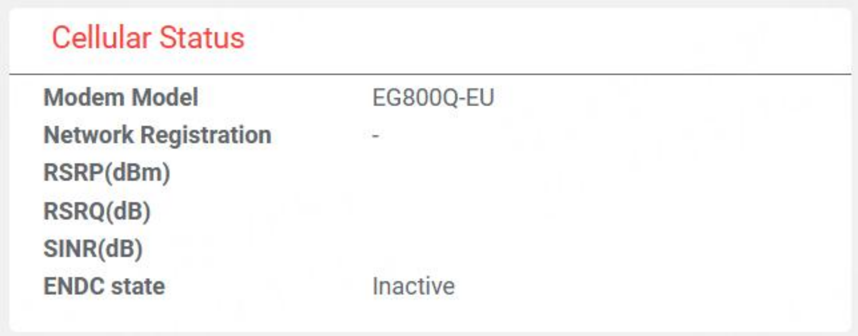
| | |
|---|---|
| Operating System | Debian GNU/Linux 11.2 |
| System Time | Mon Jun 19 05:06:53 2023 (NTP not updated) |
| Firmware Version | 2.1.3 (4f342e97) |
| Hardware Version | 1.3 |
| Kernel Version | 5.4.70-gf9f5f4701 |
| Serial Number | 12000923120010 |

| Item | Description |
|---|---|
| Operating System | Show the operating system information. |
| System Time | Show the current system time. |
| Firmware Version | Show the firmware version running on the device. |
| Hardware Version | Show the current hardware version. |
| Kernel Version | Show the current kernel version. |

| | |
|---|---|
| Serial Number | Show the serial number of your device. |

## 2.1.8 Cellular Status

This page shows the device's cellular status.



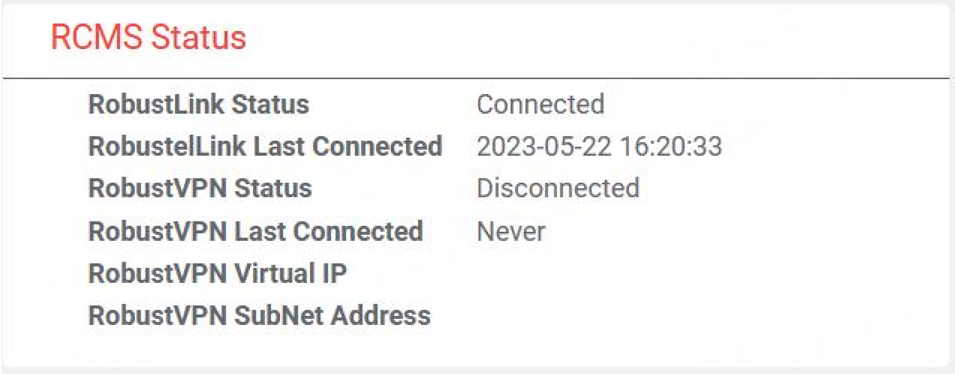
Cellular Status

| | |
|---|---|
| Modem Model | EG800Q-EU |
| Network Registration | - |
| RSRP(dBm) | |
| RSRQ(dB) | |
| SINR(dB) | |
| ENDC state | Inactive |

| Item | Description |
|---|---|
| Modem Vendor | Show the radio module vendor information. |
| Modem Model | Show the model of the radio module. |
| Network Registration | Show the current network registration information. |
| IMEI | Show the IMEI (International Mobile Equipment Identity) number of the radio module. |
| IMSI | Show the IMSI (International Mobile Subscriber Identity) number of the current SIM. |

## 2.1.9 RCMS Status

This page shows the device's RCMS status.



RCMS Status

| | |
|---|---|
| RobustLink Status | Connected |
| RobustelLink Last Connected | 2023-05-22 16:20:33 |
| RobustVPN Status | Disconnected |
| RobustVPN Last Connected | Never |
| RobustVPN Virtual IP | |
| RobustVPN SubNet Address | |

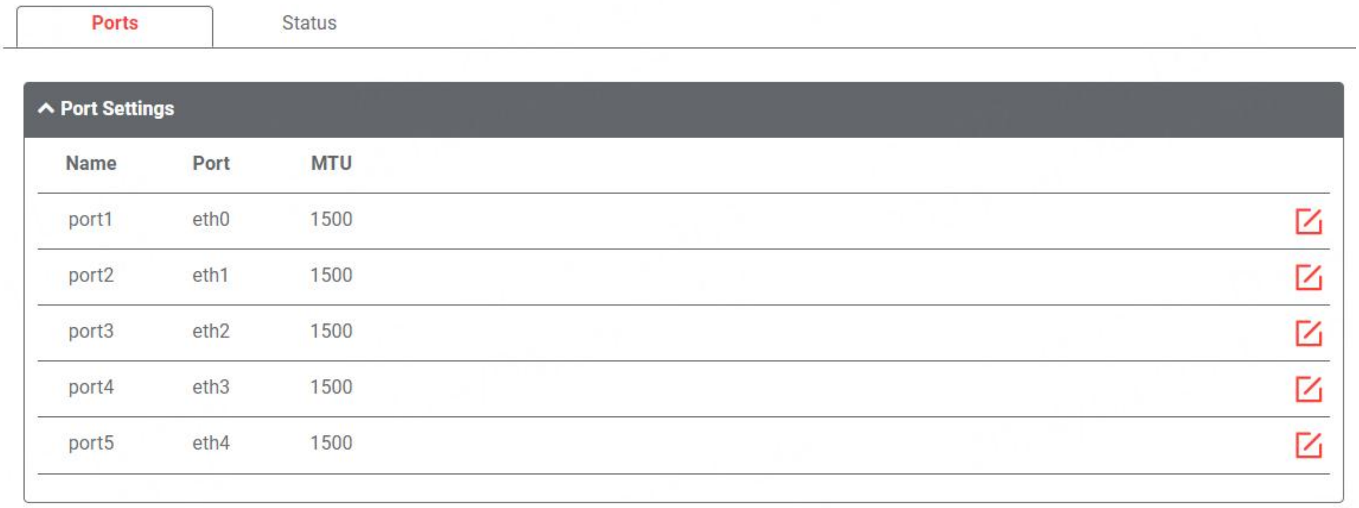
| Item | Description |
|---|---|
| RobustLink Status | Show the status of RobustLink |
| RobustelLink Last Connected | Show the last connected times of RobustLink |
| RobustVPN Status | Show the status of RobustVPN |
| RobustVPN Last Connected | Show the last connected times of RobustVPN |
| RobustVPN Virtual IP | Show the virtual IP of RobustVPN |
| RobustVPN SubNet Address | Show the subnet address of RobustVPN |

## 2.2 Interface

### 2.2.1 Ethernet

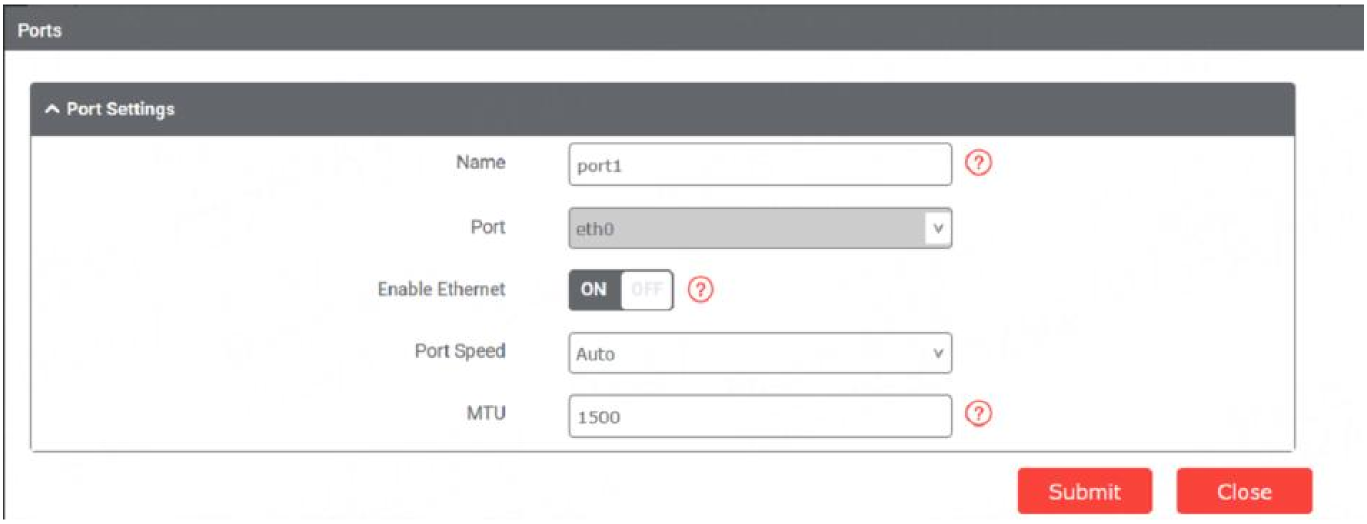
This section allows you to set the related parameters for Ethernet. There are 5 Ethernet ports in the device. The ETH0 is the WAN port, and others are the LAN port.

#### Ports



| Name | Port | MTU |
|---|---|---|
| port1 | eth0 | 1500 |
| port2 | eth1 | 1500 |
| port3 | eth2 | 1500 |
| port4 | eth3 | 1500 |
| port5 | eth4 | 1500 |

Click ✎ to configure its parameters, and modify the port assignment parameters in the pop-up window.



Name: port1

Port: eth0

Enable Ethernet: ON

Port Speed: Auto

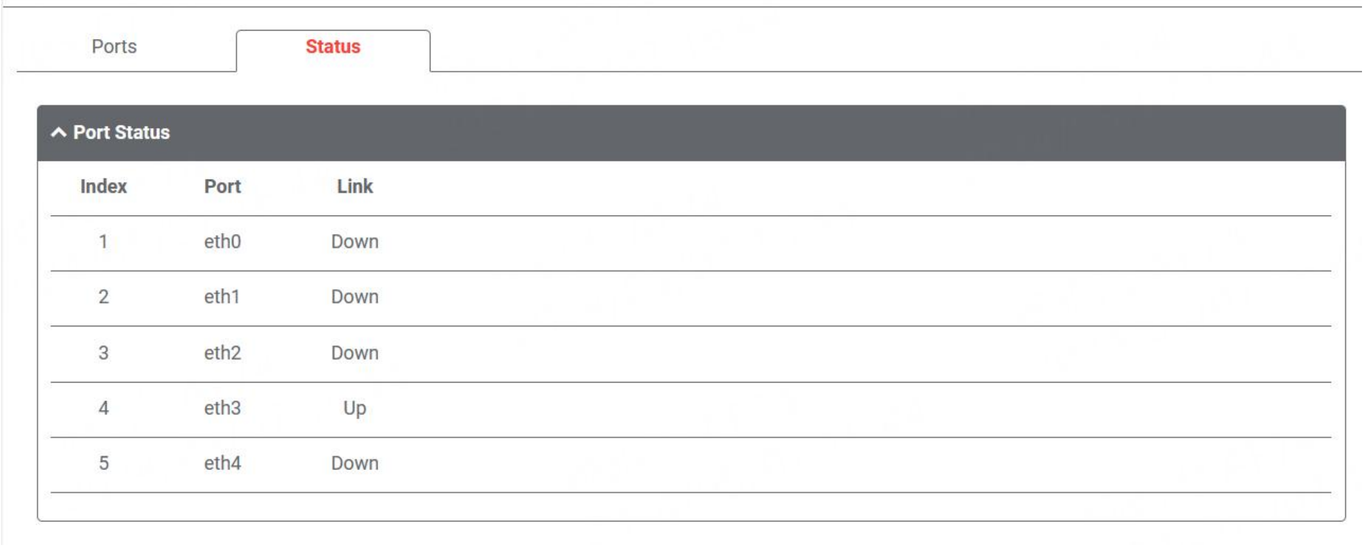
MTU: 1500

| Item | Description | Default |
|---|---|---|
| Name | Name of the port. | -- |
| Port | Show the editing port, read only. | -- |

| | | |
|---|---|---|
| Enable Ethernet | Click the toggle button to enable/disable the Ethernet port. | ON |
| Port Speed | Select from “Auto”, “10M-half”, “10M-full”,“100M-half”, “100M-full”,“1000M-half”, “1000M-full”. | Auto |
| MTU | Enter the value of the maximum transmission unit(MTU). | 1500 |

### Status

This page allows you to view the status of Ethernet port.

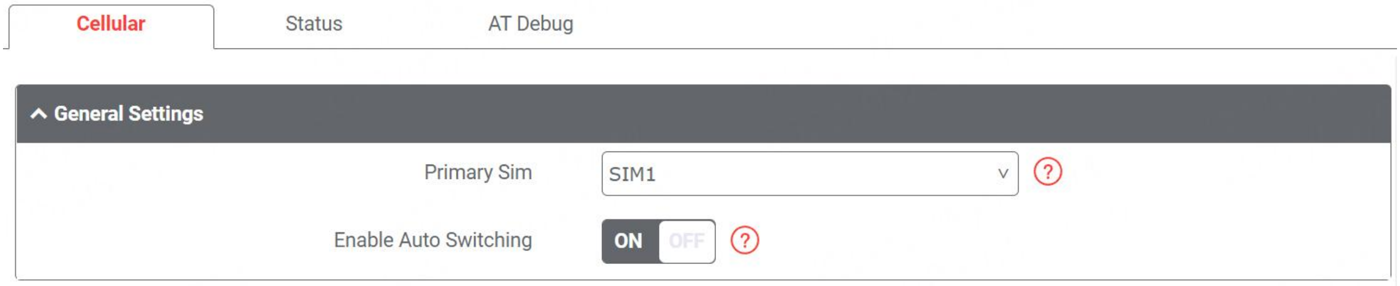


| Index | Port | Link |
|---|---|---|
| 1 | eth0 | Down |
| 2 | eth1 | Down |
| 3 | eth2 | Down |
| 4 | eth3 | Up |
| 5 | eth4 | Down |

## 2.2.2 Cellular

This section allows you to set the related parameters of Cellular. The device supports one cellular modem and two SIM slots, but only one SIM slot is activated at any time.

### Cellular

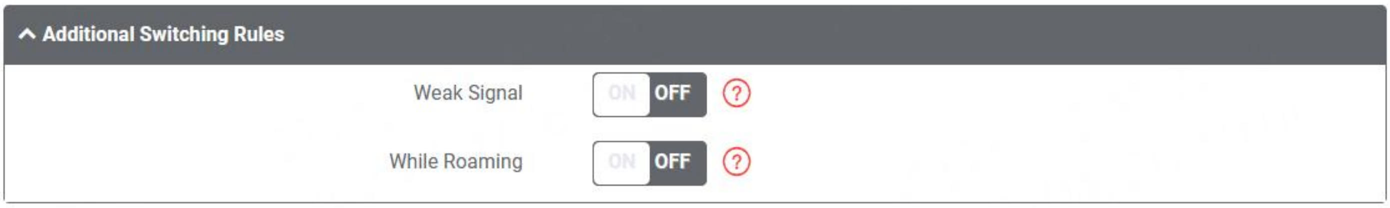


Primary Sim: SIM1

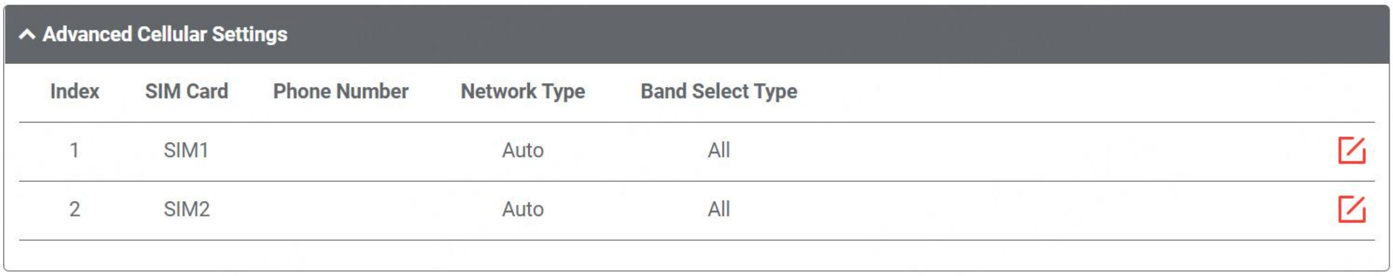
Enable Auto Switching: ON

| Item | Description | Default |
|---|---|---|
| Primary Sim | Select one Sim card as primary Sim card | SIM1 |

| | | |
|---|---|---|
| Enable Auto Switching | When auto switching is enabled, the SIM card will be automatically switched to another one when there is SIM card error or connection error or ping fails by default. | ON |

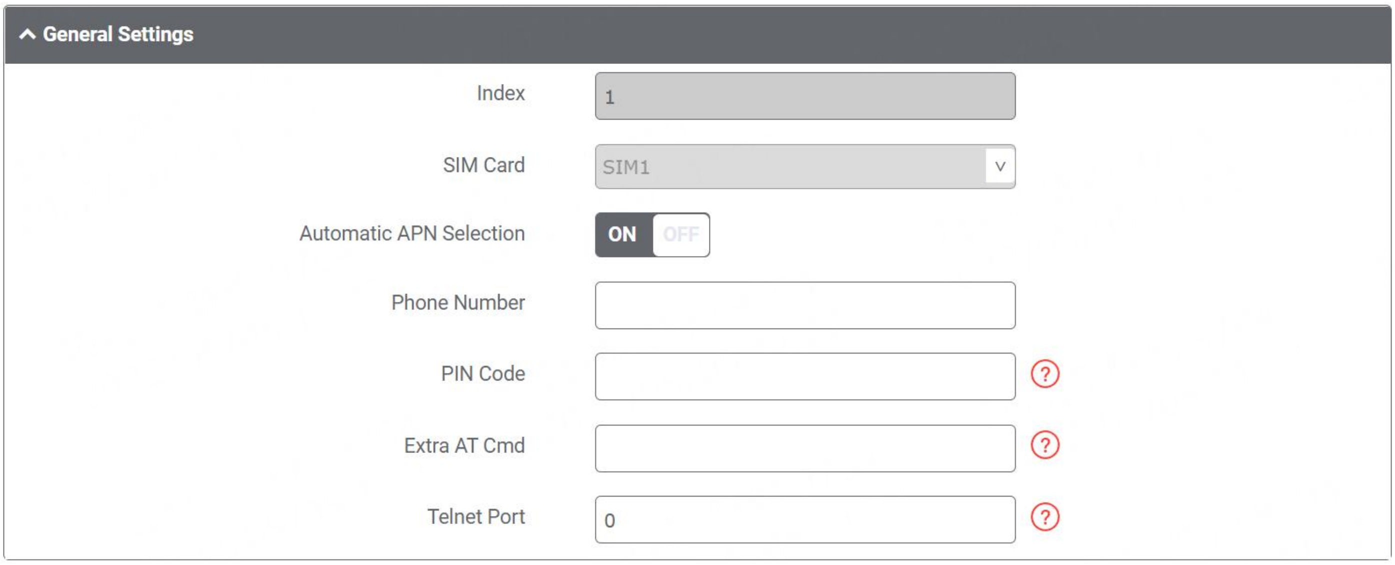


| Item | Description | Default |
|---|---|---|
| Weak Signal | Switch to another SIM card when the signal is poor, only used for dual SIM backup. | ON |
| While Roaming | Switch to another SIM card while roaming, only used for dual SIM backup. | OFF |



| Index | SIM Card | Phone Number | Network Type | Band Select Type |
|---|---|---|---|---|
| 1 | SIM1 | | Auto | All |
| 2 | SIM2 | | Auto | All |

Click ☑ to configure its parameters in the pop-up window.

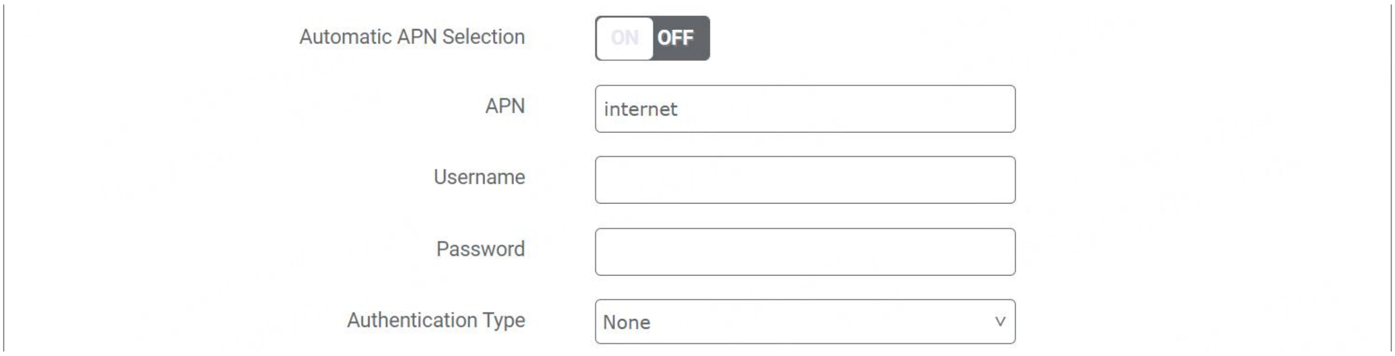


| | |
|---|---|
| Index | 1 |
| SIM Card | SIM1 |
| Automatic APN Selection | ON OFF |
| Phone Number | |
| PIN Code | |
| Extra AT Cmd | |
| Telnet Port | 0 |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| SIM Card | Show the currently editing SIM card. | -- |
| Automatic APN Selection | Click the toggle button to enable/disable the "Automatic APN Selection" option. After enabling, the device will recognize the access point name automatically. Alternatively, users can disable this option and manually | ON |

| | | |
|---|---|---|
| | add the access point name. | |
| Phone Number | Enter the phone number of the SIM card. | Null |
| PIN Code | Enter a 4-8 characters PIN code used for unlocking the SIM. | Null |
| Extra AT Cmd | Enter the AT commands used for cellular initialization. | Null |
| Telnet Port | Specify the Port listening of telnet service, used for AT over Telnet. 0 means not supported. | 0 |

When the Automatic APN Selection is off, users can specify their own APN setting.



Automatic APN Selection: ON OFF

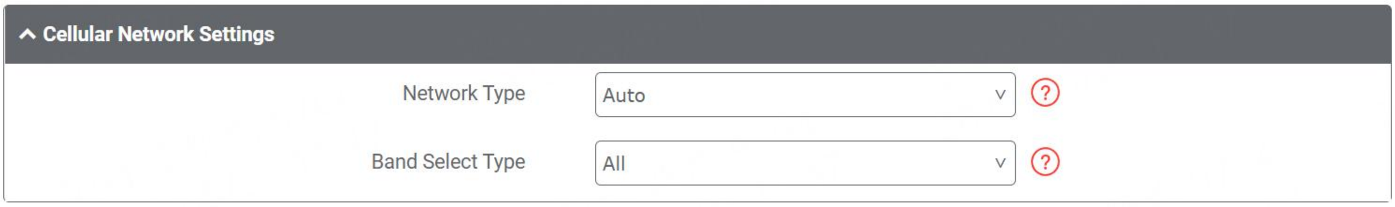
APN: internet

Username:

Password:

Authentication Type: None

| Item | Description | Default |
|---|---|---|
| APN | Enter the Access Point Name for cellular dial-up connection, provided by local ISP. | internet |
| Username | Enter the username for cellular dial-up connection, provided by local ISP. | Null |
| Password | Enter the password for cellular dial-up connection, provided by local ISP. | Null |
| Authentication Type | Select the authentication type. Select from "None", "CHAP", "PAP".<br>• None: None.<br>• CHAP: Challenge-Handshake Authentication Protocol.<br>• PAP: Password Authentication Protocol. | None |



^ Cellular Network Settings

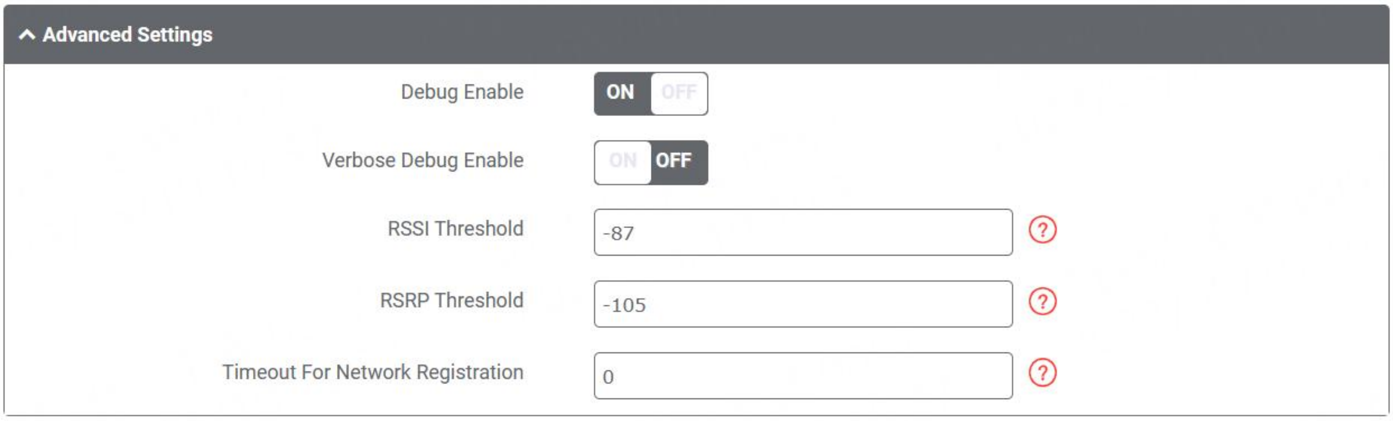
Network Type: Auto

Band Select Type: All

This page allows you to configure cellular network settings. type and network band. You can specify a specific frequency band or network type for device.

| Item | Description | Default |
|---|---|---|
| Network Type | Select the cellular network type, which is the network access order. Select from "Auto", "2G Only", "3G Only", "4G Only", "5G Only".<br>• Auto: Connect to the best signal network automatically<br>• 2G Only: Only the 2G network is connected<br>• 3G Only: Only the 3G network is connected<br>• 4G Only: Only the 4G network is connected<br>• 5G Only: Only the 5G network is connected | Auto |

| | | |
|---|---|---|
| | *Note:*<br>1) *There may be some different optional network types due to the different cellular module.* | |
| Band Select Type | Select from “All” or “Specify”. You may choose certain bands if choosing “Specify”.<br>*Note:*<br>*There may be some differences in Band Setting due to the different cellular module.* | All |



Advanced Settings

Debug Enable: ON

Verbose Debug Enable: OFF

RSSI Threshold: -87

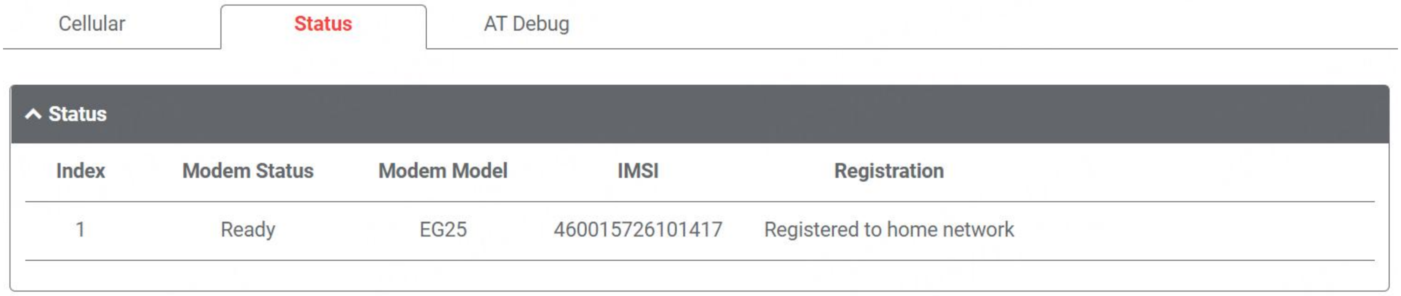
RSRP Threshold: -105

Timeout For Network Registration: 0

| Item | Description | Default |
|---|---|---|
| Debug Enable | Click the toggle button to enable/disable this option. Enable for debugging information output. | ON |
| Verbose Debug Enable | Click the toggle button to enable/disable this option. Enable for verbose debugging information output. | OFF |
| RSSI Threshold | Is used to judge whether the signal is too weak to switch SIM, unit: dbm. | -87 |
| RSRP Threshold | Is used to judge whether the signal is too weak to switch SIM, unit: dbm. | -105 |
| Timeout For Network Registration | The timeout required for the module to register to the network. Unit: seconds. 0 means the default setting is used. | 150 |

## Status

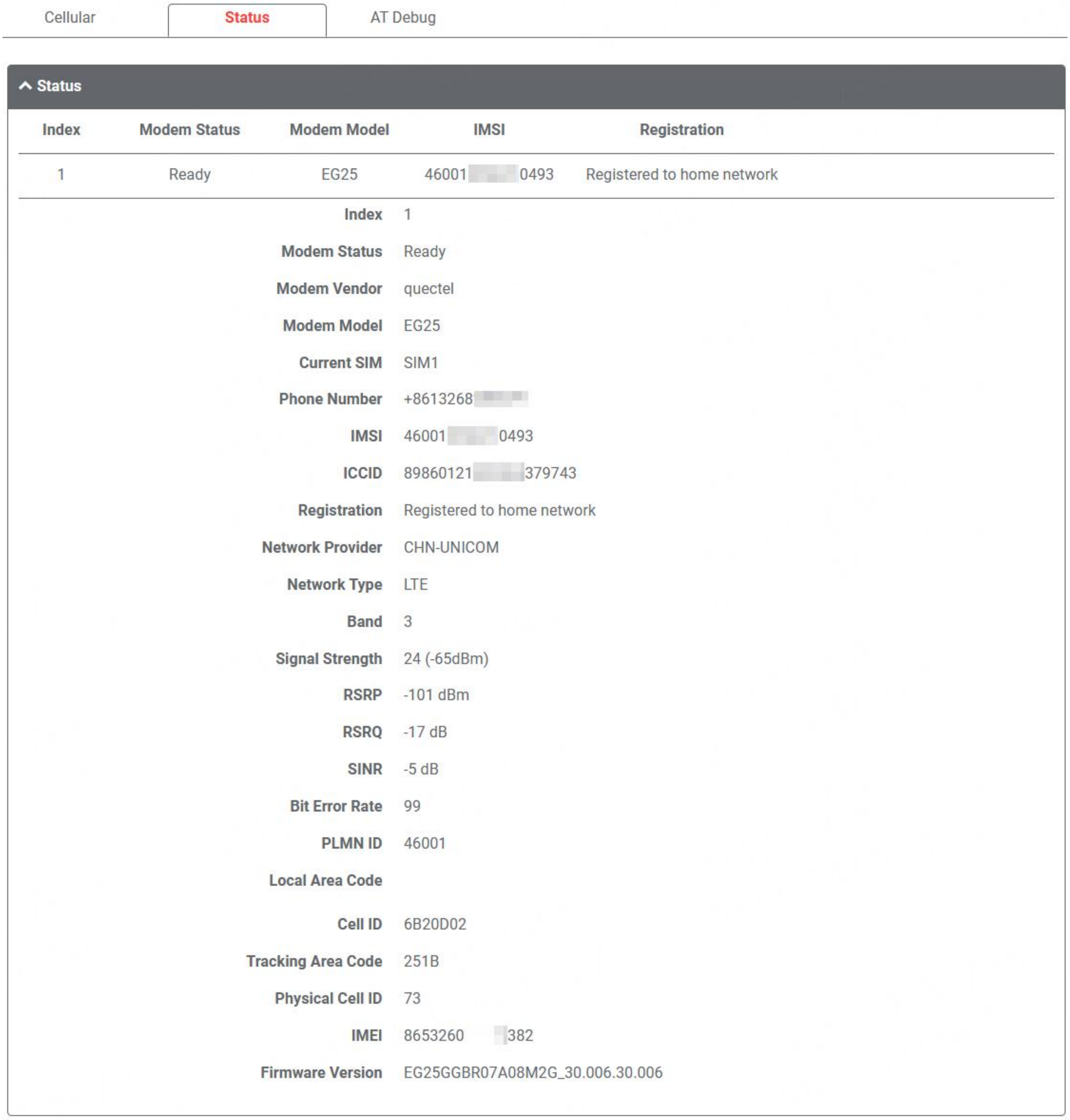
This page allows you to view the status of the cellular connection.



Status

| Index | Modem Status | Modem Model | IMSI | Registration |
|---|---|---|---|---|
| 1 | Ready | EG25 | 460015726101417 | Registered to home network |

Click the row of status, the detailed status information will be displayed under the row.



**Status**

| Index | Modem Status | Modem Model | IMSI | Registration |
|---|---|---|---|---|
| 1 | Ready | EG25 | 46001[redacted]0493 | Registered to home network |

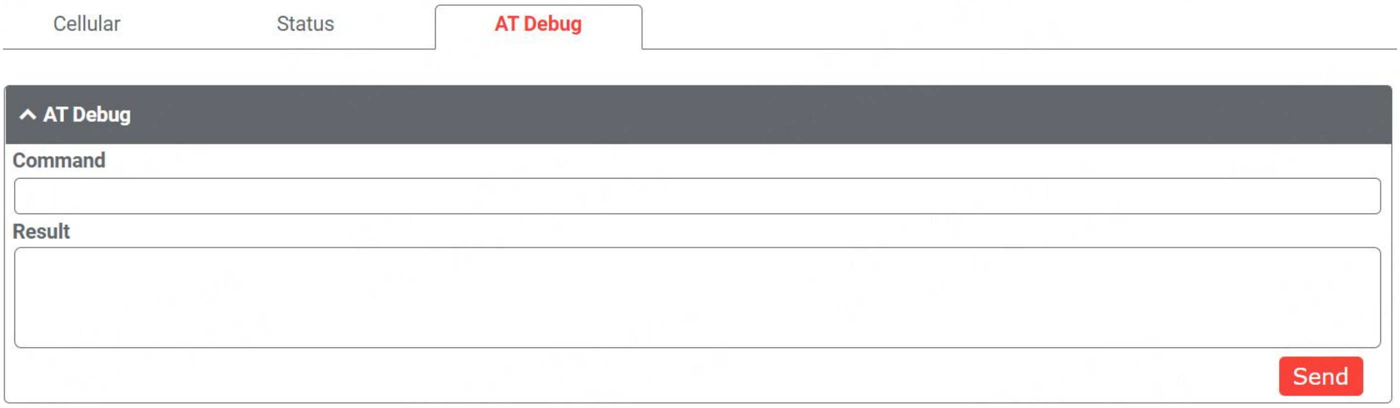
| | |
|---|---|
| Index | 1 |
| Modem Status | Ready |
| Modem Vendor | quectel |
| Modem Model | EG25 |
| Current SIM | SIM1 |
| Phone Number | +8613268[redacted] |
| IMSI | 46001[redacted]0493 |
| ICCID | 89860121[redacted]379743 |
| Registration | Registered to home network |
| Network Provider | CHN-UNICOM |
| Network Type | LTE |
| Band | 3 |
| Signal Strength | 24 (-65dBm) |
| RSRP | -101 dBm |
| RSRQ | -17 dB |
| SINR | -5 dB |
| Bit Error Rate | 99 |
| PLMN ID | 46001 |
| Local Area Code | |
| Cell ID | 6B20D02 |
| Tracking Area Code | 251B |
| Physical Cell ID | 73 |
| IMEI | 8653260 [redacted]382 |
| Firmware Version | EG25GGBR07A08M2G_30.006.30.006 |

| Item | Description |
|---|---|
| Index | Indicate the ordinal of the list. |
| Modem Status | Show the status of the radio module. |
| Modem Vendor | Show the vendor of the radio module. |
| Modem Model | Show the model of the radio module. |
| Current SIM | Show the SIM card that your router is using. |
| Phone Number | Show the phone number of the current SIM. |
| IMSI | Show the IMSI number of the current SIM. |
| ICCID | Show the ICCID number of the current SIM. |
| Registration | Show the current network status. |

| Item | Description |
|---|---|
| Network Provider | Show the name of Network Provider. |
| Network Type | Show the current network service type, e.g. WCDMA. |
| Band | Show the band information. |
| Signal Strength | Show the signal strength detected by the mobile. |
| RSRP | Show the current RSRP when you register to the 4G network. |
| RSRQ | Show the current RSRQ when you register to the 4G network. |
| SINR | Show the current SINR when you register to the 5G network. |
| Bit Error Rate | Show the current bit error rate. |
| PLMN ID | Show the current PLMN ID. |
| Local Area Code | Show the current local area code used for identifying different area. |
| Cell ID | Show the current cell ID used for locating the router. |
| Physical Cell ID | Show the current physical cell ID used for locating the router. |
| IMEI | Show the IMEI (International Mobile Equipment Identity) number of the radio module. |
| Firmware Version | Show the current firmware version of the radio module. |

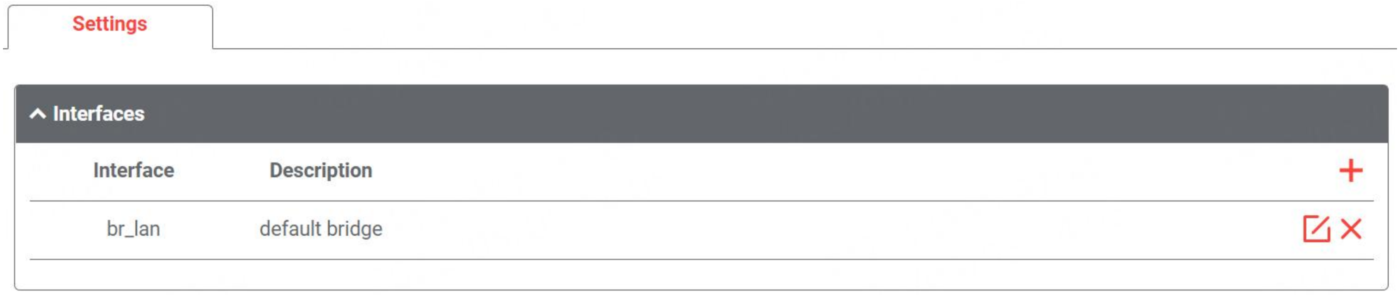
### AT Debug

This page allows you to send an AT command for device debugging.



## 2.2.3 Bridge

Bridge is used to create a single network consisting of multiple devices. The default bridge(br_lan) interface is always available.

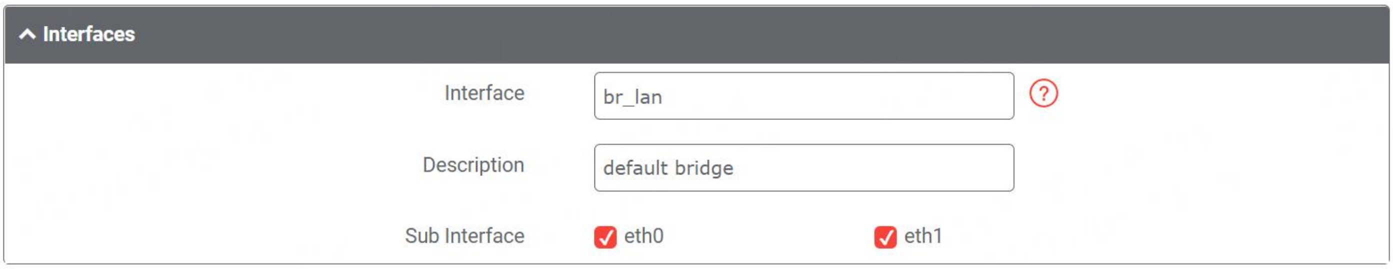


| Interface | Description |
|---|---|
| br_lan | default bridge |

Click + to add a new Bridge. The maximum count is **10.**

Click ✕ to delete the Bridge.

Click ☑ to configure the Bridge's parameters in the pop-up window.



Interface: br_lan

Description: default bridge

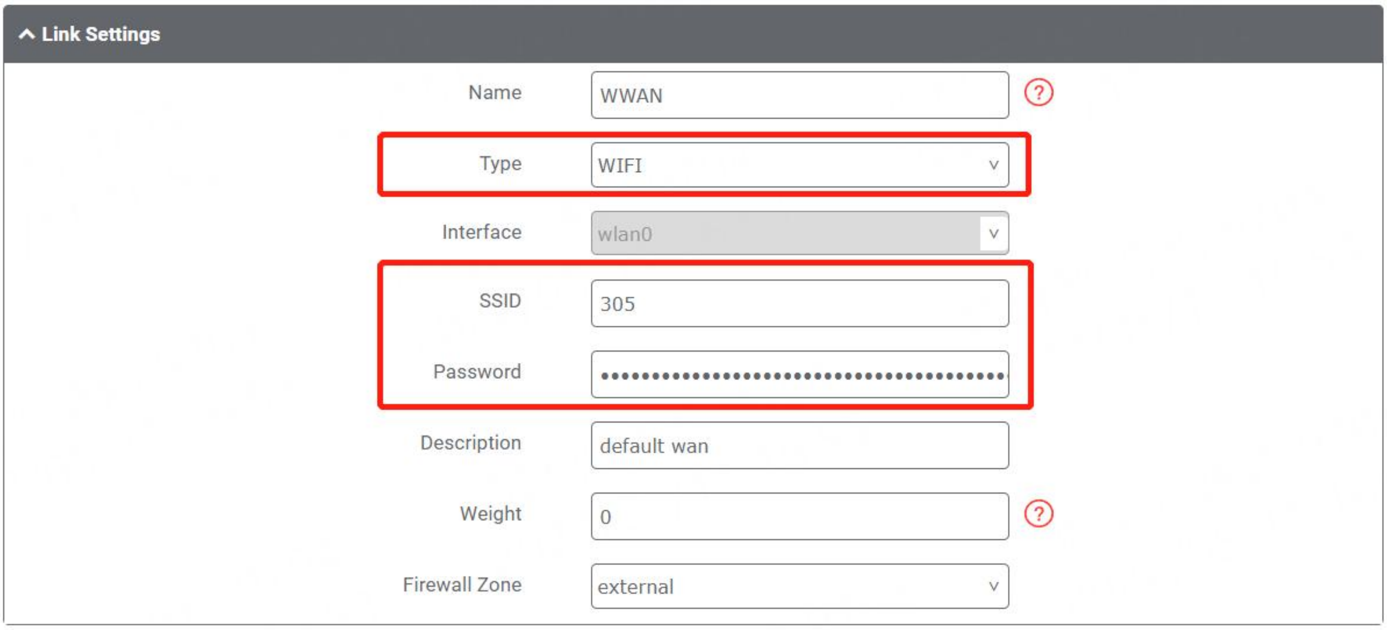
Sub Interface: ☑ eth0 ☑ eth1

| Item | Description |
|---|---|
| Interface | The interface of Bridge. |
| Description | The description of the Bridge. |
| Sub Interface | Select and enable the related Ethernet port. |

## 2.2.4 Wi-Fi

This router cannot support WiFi AP mode, User can configure the device as Wi-Fi client by following steps.

Click **"Network> WAN>Link> Setting"**, click + to add a new WAN link, then configure the related parameters.



^ Link Settings

Name: WWAN

Type: WIFI

Interface: wlan0

SSID: 305

Password: ••••••••••••••••••••••••••••••••••••••••

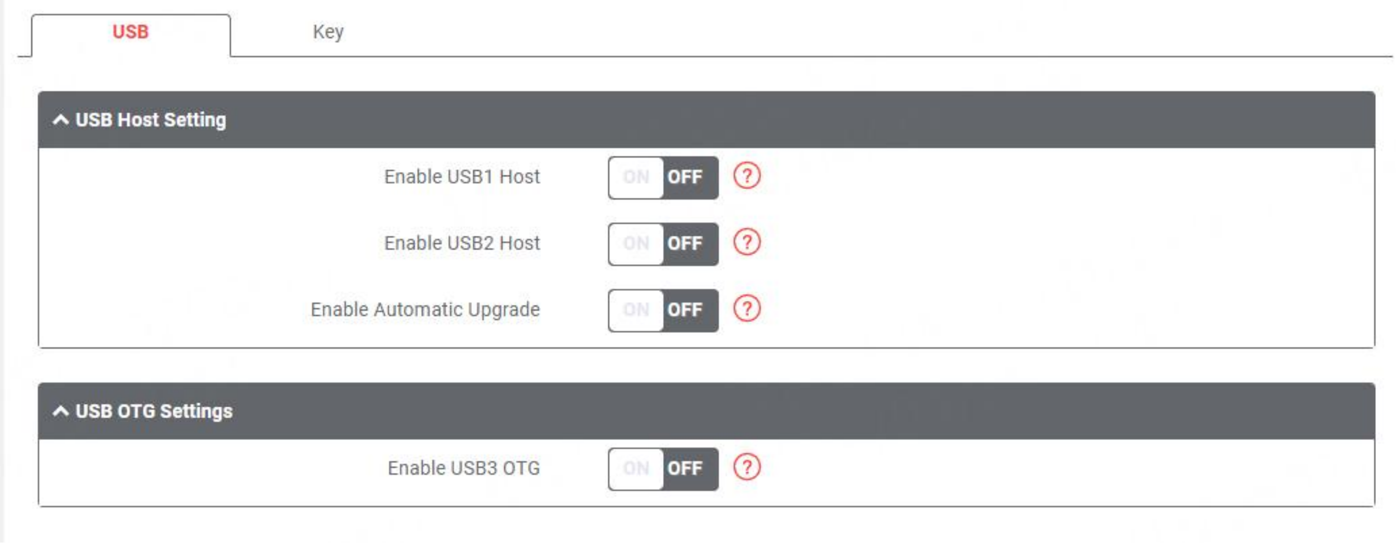
Description: default wan

Weight: 0

Firewall Zone: external

## 2.2.5 USB

This section allows you to configure the USB parameters. The router has two USB Host type A and one USB OTG type C ports available, the router's USB interface can be used to upgrade firmware and upgrade configuration. The users can disable all the USB ports for safety if needed.



^ USB Host Setting

Enable USB1 Host: ON OFF

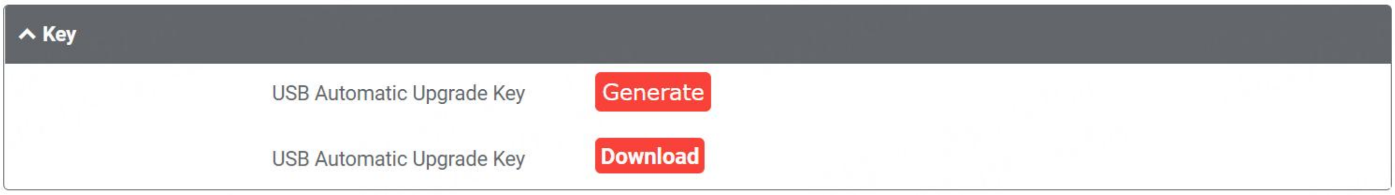
Enable USB2 Host: ON OFF

Enable Automatic Upgrade: ON OFF

^ USB OTG Settings

Enable USB3 OTG: ON OFF

| Item | Description | Default |
|---|---|---|
| Enable USB1 Host | Click the toggle button to enable/disable the USB1 Host option. | OFF |
| Enable USB2 Host | Click the toggle button to enable/disable the USB2 Host option. | OFF |
| Enable Automatic Upgrade | Click the toggle button to enable/disable this option. Enable to automatically update the firmware of the router when inserting a USB storage device with a router firmware. | OFF |
| Enable USB3 OTG | Click the toggle button to enable/disable the USB3 OTG option, to access to the microSD embedded. | OFF |



USB Automatic Upgrade Key Generate

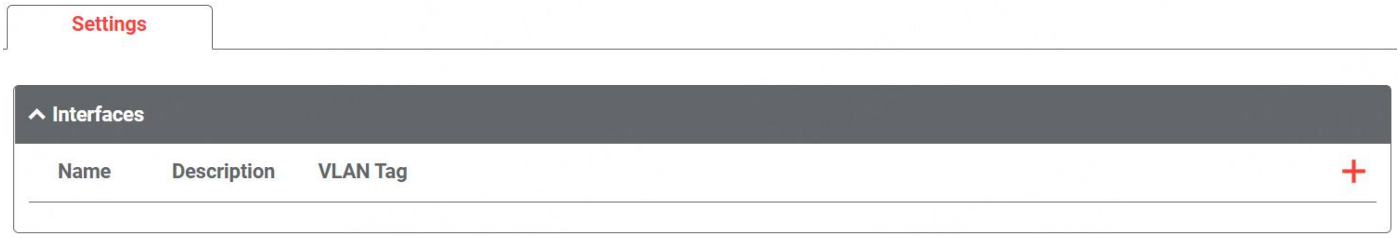
USB Automatic Upgrade Key Download

| Item | Description | Default |
|---|---|---|
| USB Automatic Upgrade Key | Click Generate to generate and click Download to download the key. | -- |

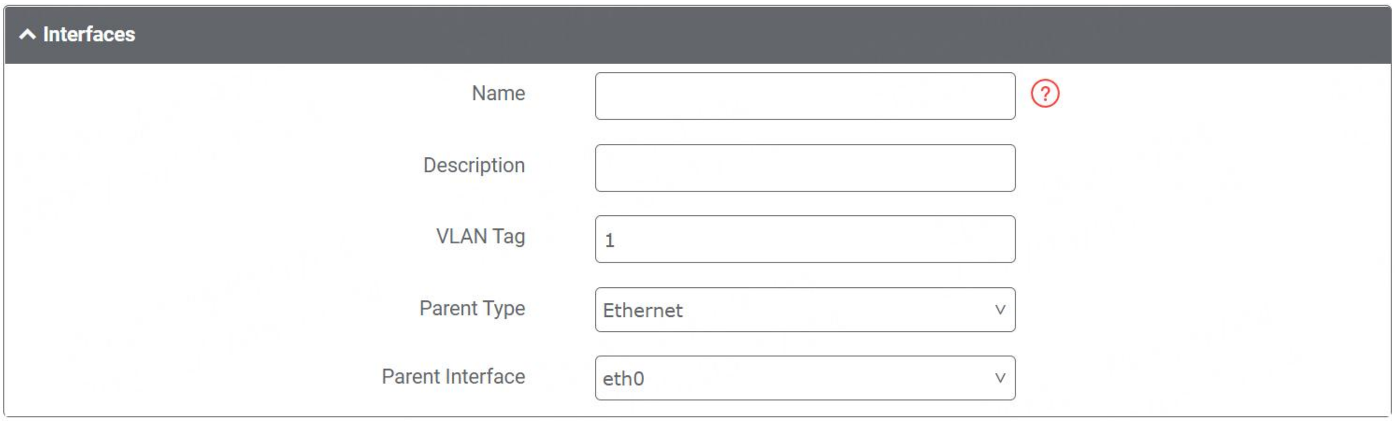
Note: when using the USB automatic upgrade function, the LEDs start blinking one by one, it means that the upgrade is in progress. When LEDs stop blinking one by one, and the USR Indicators is on, it means that the upgrade is completed. After upgrading, the device will not restart automatically. If there is no LEDs start blinking one by one all the time, it means there is an exception, and it does not enter into the automatic upgrade process.

## 2.2.6 VLAN

VLAN stands for Virtual LAN, allows splitting a single physical LAN into separate Virtual LANs, to reduce broadcast traffic on the LAN.



Click + to add a new Interface. The maximum count is **10.**



Name

Description

VLAN Tag: 1

Parent Type: Ethernet

Parent Interface: eth0

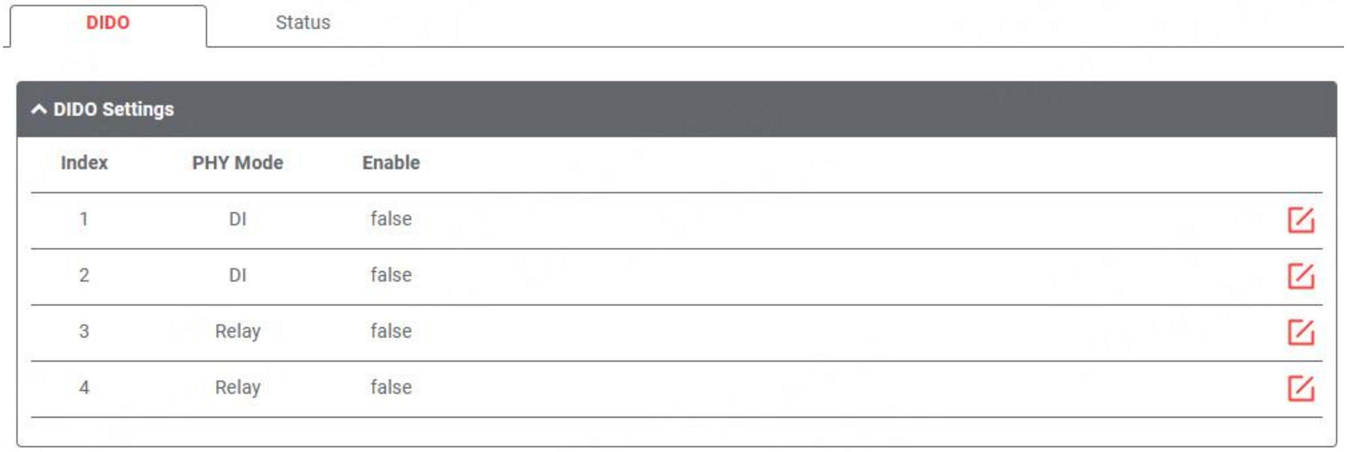
| Item | Description | Default |
|---|---|---|

| | | |
|---|---|---|
| Name | The name of VLAN. | Null |
| Description | Enter a description for this VLAN. | Null |
| VLAN Tag | Enter a tag for this VLAN. | 1 |
| Parent Type | Select from “Ethernet” or “Bridge”. | Ethernet |
| Parent Interface | Select the related parent interface. | eth0 |

## 2.2.7 DI/DO

This section allows you to set the DI/Relay output parameters.

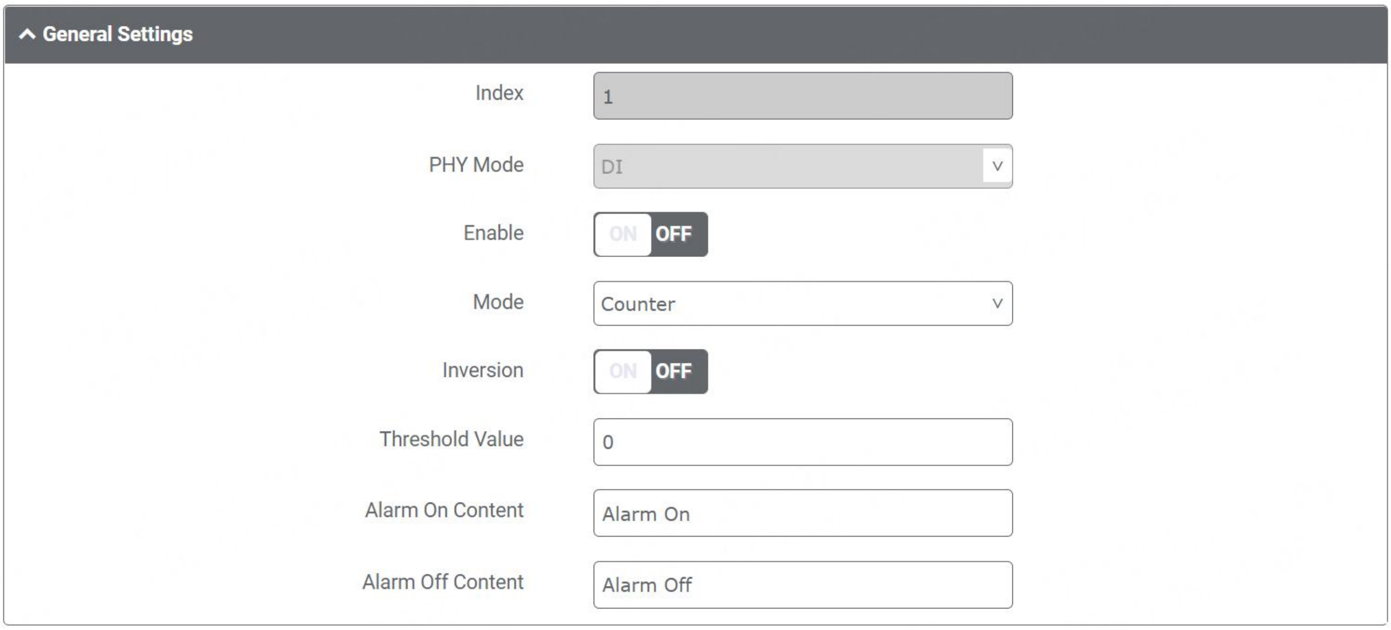
### DIDO



| Index | PHY Mode | Enable |
|---|---|---|
| 1 | DI | false |
| 2 | DI | false |
| 3 | Relay | false |
| 4 | Relay | false |

Click ☑ to configure the parameters in the pop-up window.

## DI

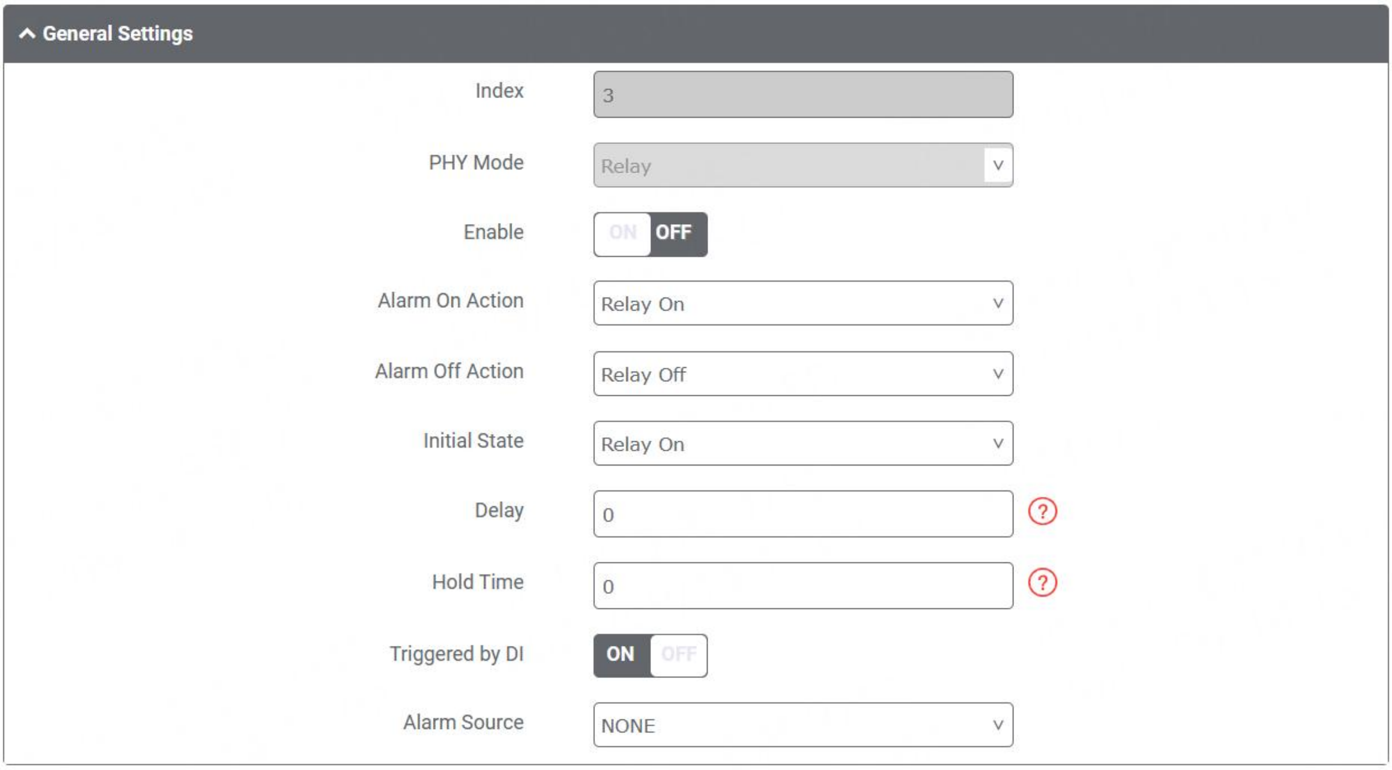


| | |
|---|---|
| Index | 1 |
| PHY Mode | DI |
| Enable | ON OFF |
| Mode | Counter |
| Inversion | ON OFF |
| Threshold Value | 0 |
| Alarm On Content | Alarm On |
| Alarm Off Content | Alarm Off |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| PHY Mode | DI, fixed, read only. | -- |
| Enable | Click the toggle button to enable/disable the digital input function. | OFF |
| Mode | Select from “ON-OFF” or “Counter”.<br>• ON-OFF: Alarm mode can be triggered at the DI access ON-OFF.<br>• Counter: Event counter mode | Counter |
| Inversion | The count is divided into a rising edge count of the level or a falling edge count. If the current rising edge count, the reverse edge is the falling edge count. | OFF |
| Threshold Value | The threshold value is a unique parameter when the mode is **Count**. Set the threshold value to trigger the DI alarm when the count value reaches the threshold value. | 0 |
| Alarm On Content | Show the content when alarm on. | Alarm On |
| Alarm Off Content | Show the content when alarm off. | Alarm Off |

**Note:** It defaults as high alarm, while turns to low alarm after enabling the “Inversion” button.

### Relay Output


General Settings

Index: 3

PHY Mode: Relay

Enable: ON OFF

Alarm On Action: Relay On

Alarm Off Action: Relay Off

Initial State: Relay On

Delay: 0

Hold Time: 0

Triggered by DI: ON OFF

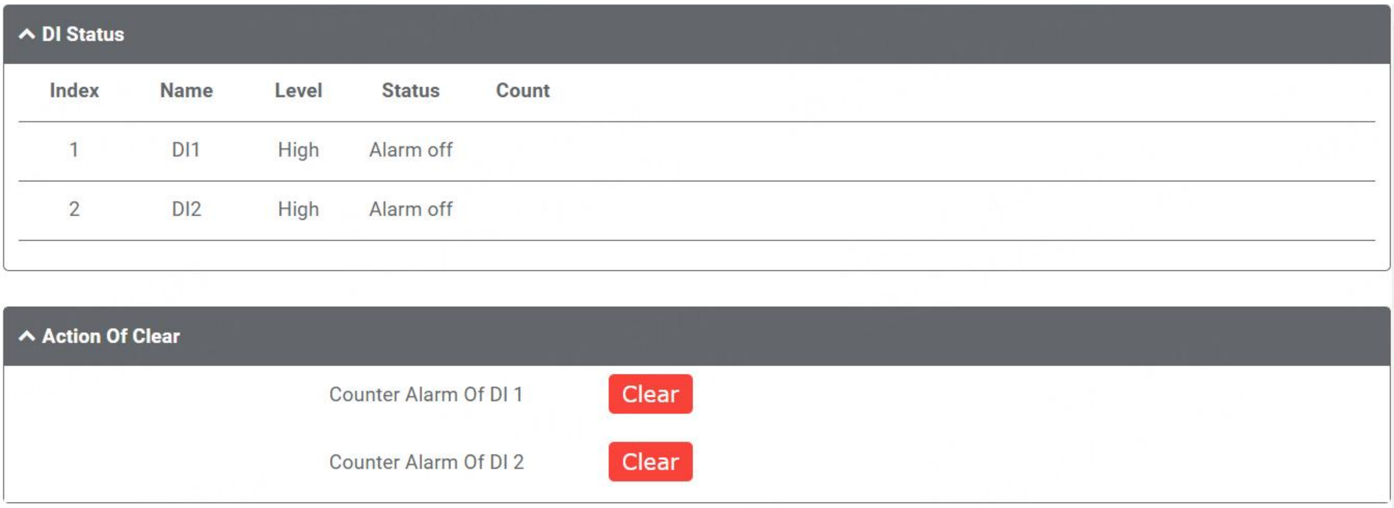
Alarm Source: NONE

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| PHY Mode | Relay only on Relay Output device | Relay |
| Enable | Click the toggle button to enable/disable this Relay Output. | OFF |
| Alarm On Action | Relay Output initiates when there is an alarm. Selected from “High”, “Low” or “Pulse”.<br>• Relay On: The relay will connect<br>• Relay Off :The relay will disconnect | Relay On |

| Item | Description | Default |
|---|---|---|
| Alarm Off Action | Relay Output initiates when alarm removed. Selected from “High”, “Low” or “Pulse”.<br>• Relay On: The relay will connect<br>• Relay Off :The relay will disconnect | Relay Off |
| Initial State | Specify the Relay Output status when powered on. Selected from “Last”, “High” or “Low”.<br>• Relay On: The relay will connect<br>• Relay Off :The relay will disconnect | Relay On |
| Delay (unit: 100ms) | Set the delay time for DO alarm start-up. The first pulse will be generated after a “Delay”. Enter from 0 to 3000 (0=generate pulse without delay). | 0 |
| Hold Time (unit: s) | Set the hold time of DO status (Alarm On Action/Alarm Off Action). When the action time reach this specified time, DO will stop the action. Enter from 0 to 3000 seconds. (0=keep on until the next action) | 0 |
| Triggered by DI | Click the toggle button to enable/disable the relay output triggered by digital input. | ON |
| Alarm Source | Digital output activation can be activated by this alarm. | None |

## Status

This window allows you to view the status of DI/DO interface. It can also clear the counter alarm of DI in here. Click the Clear button to clear DI 1 or DI 2 monthly usage statistics info for counter alarm. Click the Toggle button to switch the electrical level output.

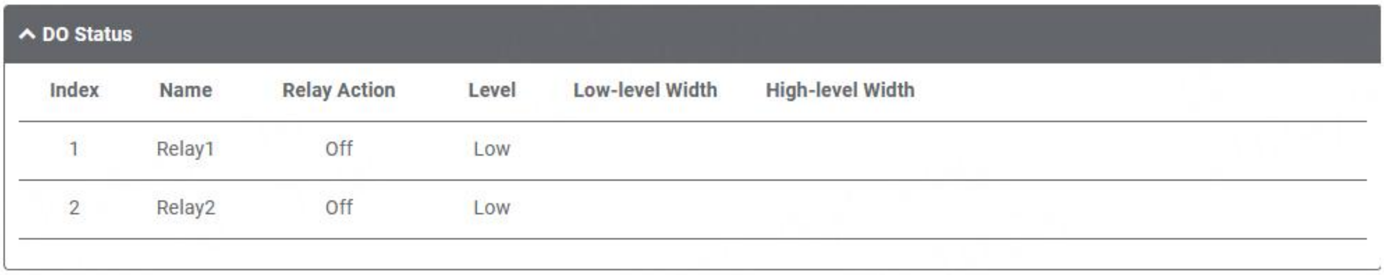

DI Status

| Index | Name | Level | Status | Count |
|---|---|---|---|---|
| 1 | DI1 | High | Alarm off | |
| 2 | DI2 | High | Alarm off | |

Action Of Clear

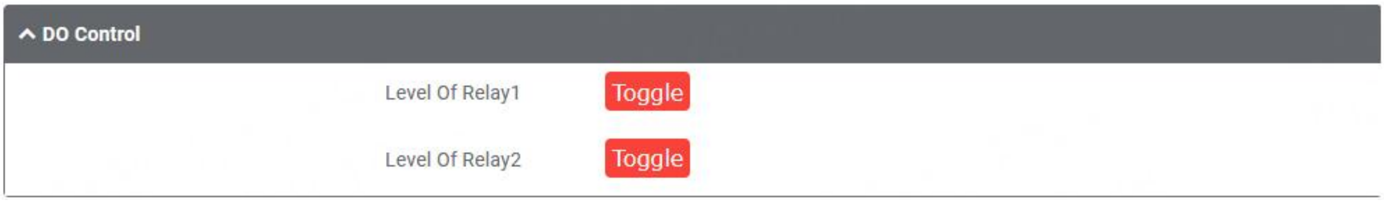
Counter Alarm Of DI 1 Clear

Counter Alarm Of DI 2 Clear



^ DO Status

| Index | Name | Relay Action | Level | Low-level Width | High-level Width |
|---|---|---|---|---|---|
| 1 | Relay1 | Off | Low | | |
| 2 | Relay2 | Off | Low | | |



^ DO Control

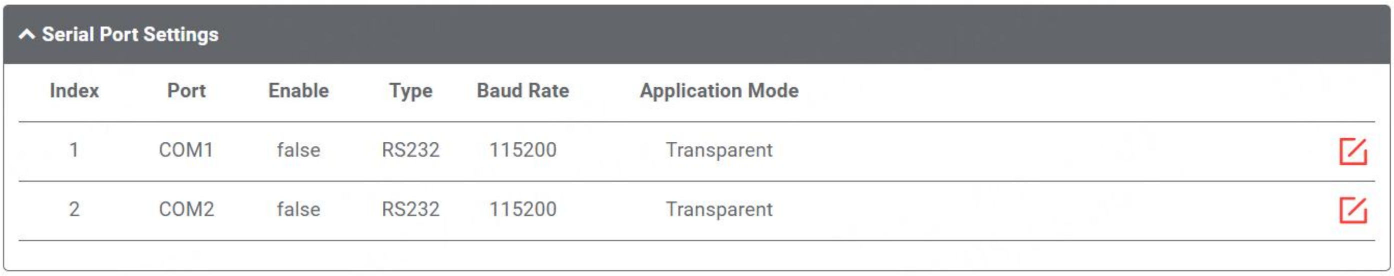
Level Of Relay1 Toggle

Level Of Relay2 Toggle

## 2.2.8 Serial Port

This section allows you to set the serial port parameters. The device supports two serial ports, which might be configured as RS232 or RS422 or RS485 according to requirements . The serial data can be converted into IP data or through IP data into serial data, and then the data can be transmitted through wired or wireless network, so as to realize the function of transparent data transmission.

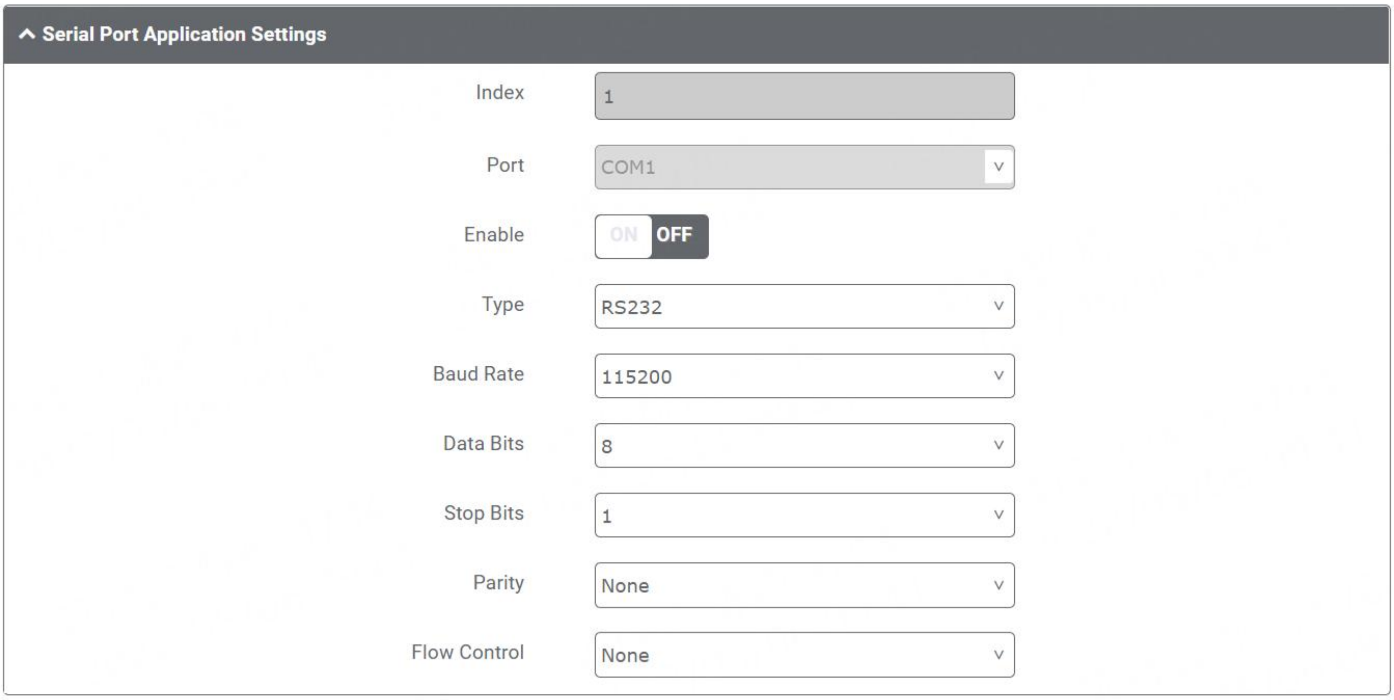
### Serial Port



^ Serial Port Settings

| Index | Port | Enable | Type | Baud Rate | Application Mode | |
|---|---|---|---|---|---|---|
| 1 | COM1 | false | RS232 | 115200 | Transparent | ✎ |
| 2 | COM2 | false | RS232 | 115200 | Transparent | ✎ |

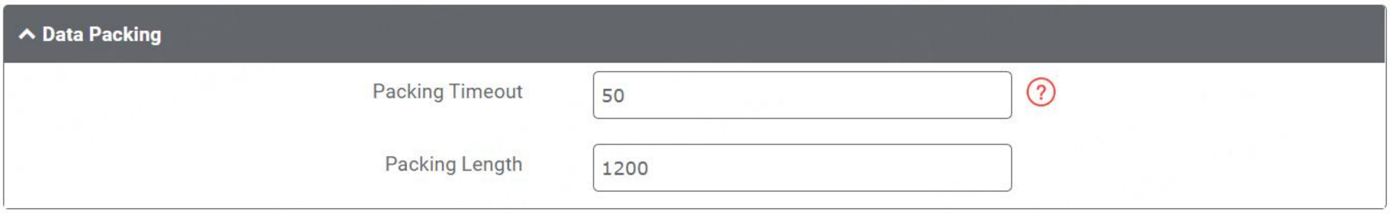
Click ✎ to configure the parameters in the pop-up window.



Serial Port Application Settings

| | |
|---|---|
| Index | 1 |
| Port | COM1 |
| Enable | ON OFF |
| Type | RS232 |
| Baud Rate | 115200 |
| Data Bits | 8 |
| Stop Bits | 1 |
| Parity | None |
| Flow Control | None |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Port | Show the current serial's name, read only. | COM1 |
| Type | Select from "RS232", "RS422" "RS485". | -- |
| Enable | Click the toggle button to enable/disable this serial port. When the status is OFF, the serial port is not available. | OFF |
| Baud Rate | Select from "300", "600", "1200", "2400", "4800", "9600", "19200", "38400", "57600" or "115200". | 115200 |
| Data Bits | Select from "7" or "8". | 8 |
| Stop Bits | Select from "1" or "2". | 1 |
| Parity | Select from "None", "Odd" or "Even". | None |
| Flow control | Select from "None", "Software" or "Hardware". | None |



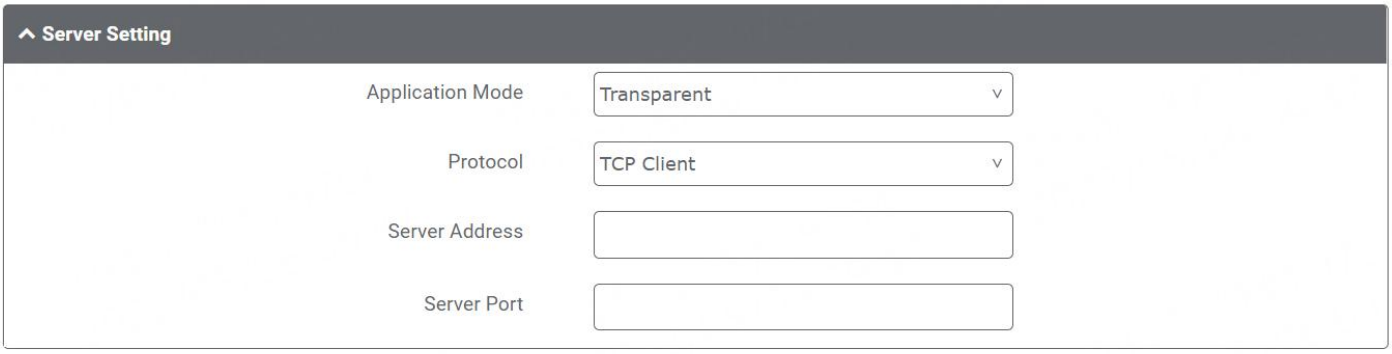
Data Packing

| | |
|---|---|
| Packing Timeout | 50 |
| Packing Length | 1200 |

| Item | Description | Default |
|---|---|---|
| Packing Timeout | Set the packing timeout. The serial port will queue the data in the buffer and send the data to the Cellular WAN/Ethernet WAN when it reaches the Interval Timeout in the field. The unit is milliseconds.<br>**Note**: Data will also be sent as specified by the packet length even when data is not reaching the interval timeout in the field. | 50 |
| Packing Length | Set the packet length. The Packet length setting refers to the maximum amount of data that is allowed to accumulate in the serial port buffer before sending. When a packet length between 1 and 3000 bytes is specified, data in the buffer will be sent as | 1200 |

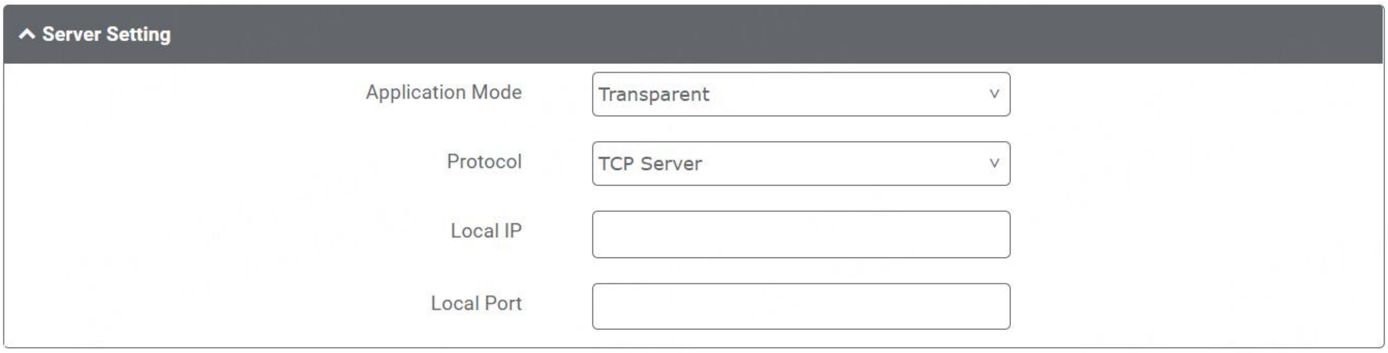
| Item | Description | Default |
|---|---|---|
| | soon it reaches the specified length. | |

In the "Server Settings" column, when "Transparent" is selected as the application mode and "TCP Client" as the protocol, the window is as follows:



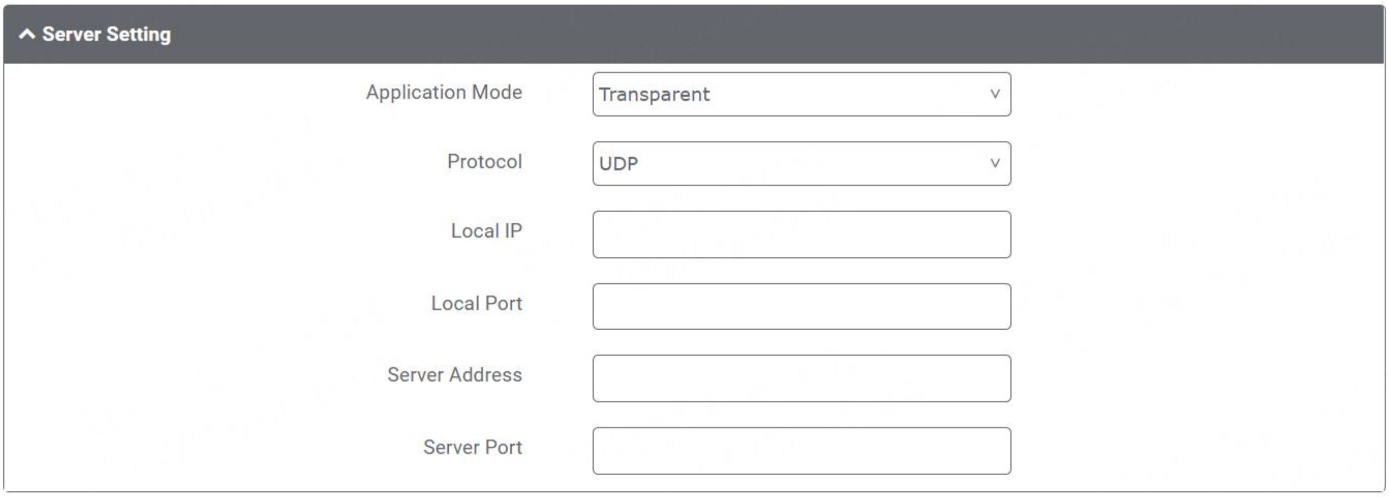
| | |
|---|---|
| Application Mode | Transparent |
| Protocol | TCP Client |
| Server Address | |
| Server Port | |

When "Transparent" is selected as the application mode and "TCP Server" as the protocol, the window is as follows:



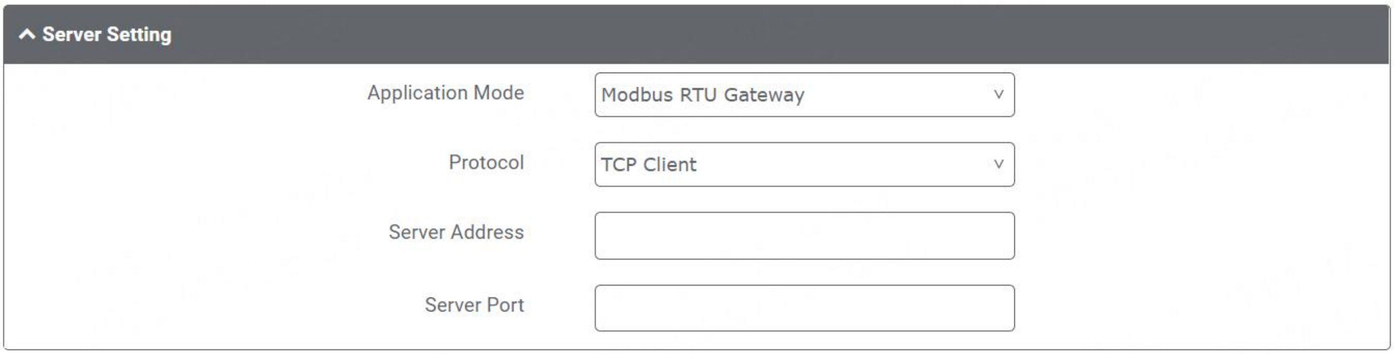
| | |
|---|---|
| Application Mode | Transparent |
| Protocol | TCP Server |
| Local IP | |
| Local Port | |

When "Transparent" is selected as the application mode and "UDP" is used as the protocol, the window is as follows:



| | |
|---|---|
| Application Mode | Transparent |
| Protocol | UDP |
| Local IP | |
| Local Port | |
| Server Address | |
| Server Port | |

When "Modbus RTU Gateway" is selected as the application mode and "TCP Client" as the protocol, the window is as follows:



Server Setting

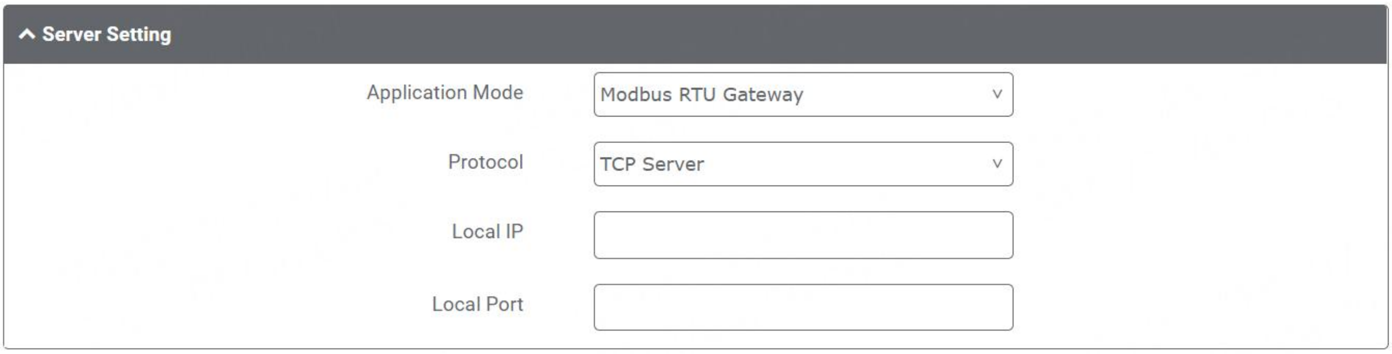
Application Mode: Modbus RTU Gateway

Protocol: TCP Client

Server Address

Server Port

When "Modbus RTU Gateway" is selected as the application mode and "TCP Server" as the protocol, the window is as follows:



Server Setting

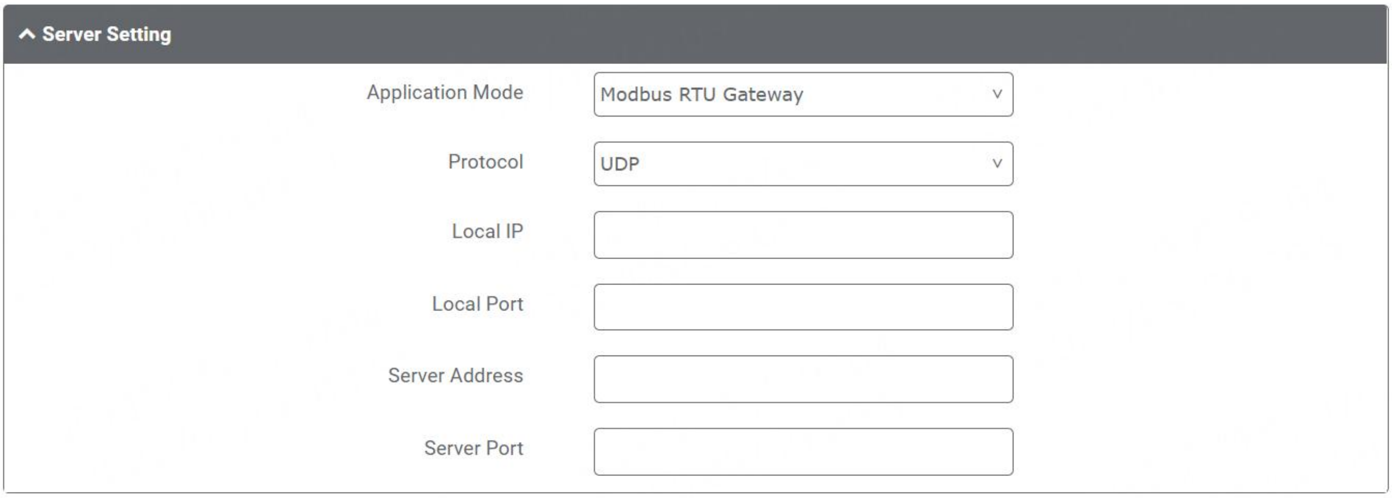
Application Mode: Modbus RTU Gateway

Protocol: TCP Server

Local IP

Local Port

When selecting "Modbus RTU Gateway" as the application mode and "UDP" as the protocol, the window is as follows:



Server Setting

Application Mode: Modbus RTU Gateway

Protocol: UDP

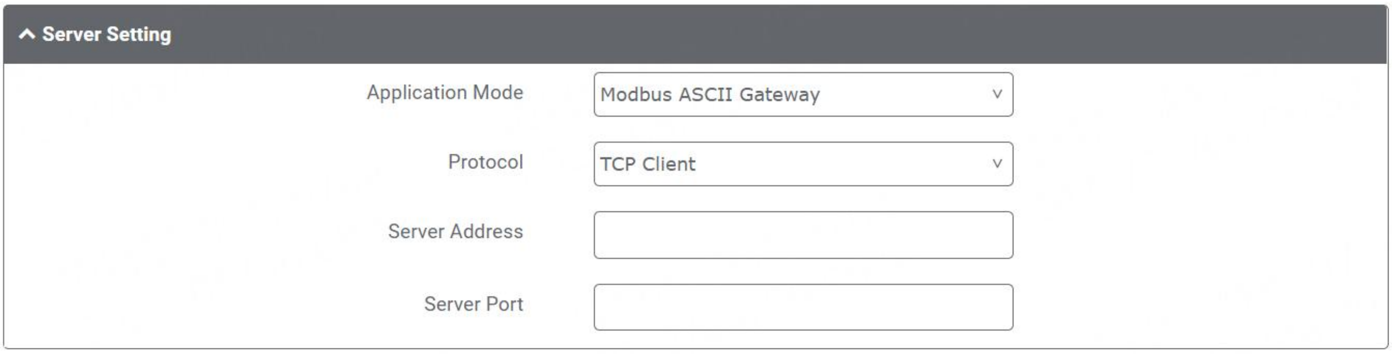
Local IP

Local Port

Server Address

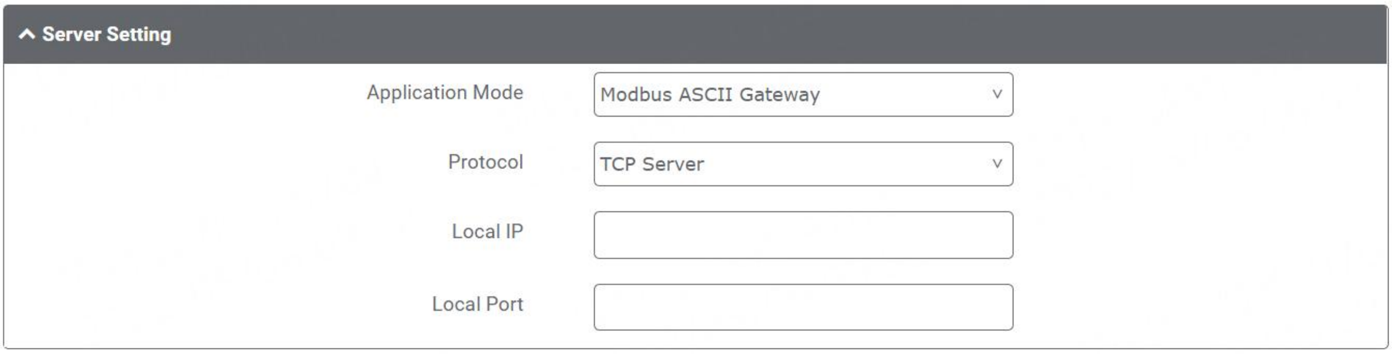
Server Port

When “Modbus ASCII Gateway” is selected as the application mode and “TCP Client” as the protocol, the window is as follows:



|  |  |
|---|---|
| Application Mode | Modbus ASCII Gateway |
| Protocol | TCP Client |
| Server Address |  |
| Server Port |  |

When selecting "Modbus ASCII Gateway" as the application mode and "TCP Server" as the protocol, the window is as follows:



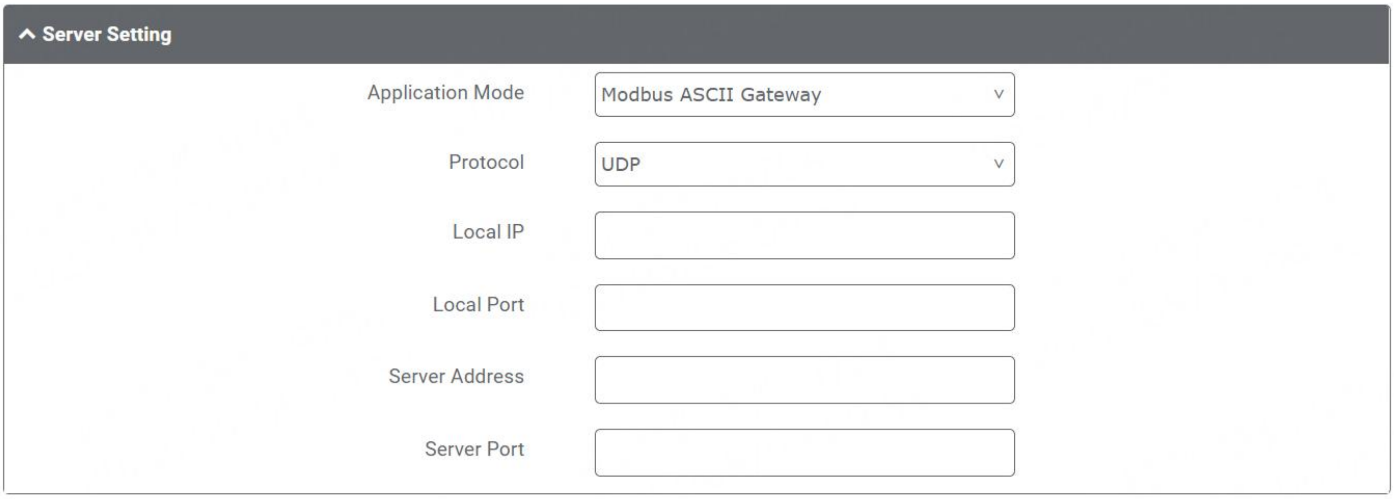
Application Mode: Modbus ASCII Gateway

Protocol: TCP Server

Local IP

Local Port

When selecting "Modbus ASCII Gateway" as the application mode and "UDP" as the protocol, the window is as follows:



Application Mode: Modbus ASCII Gateway

Protocol: UDP

Local IP

Local Port

Server Address

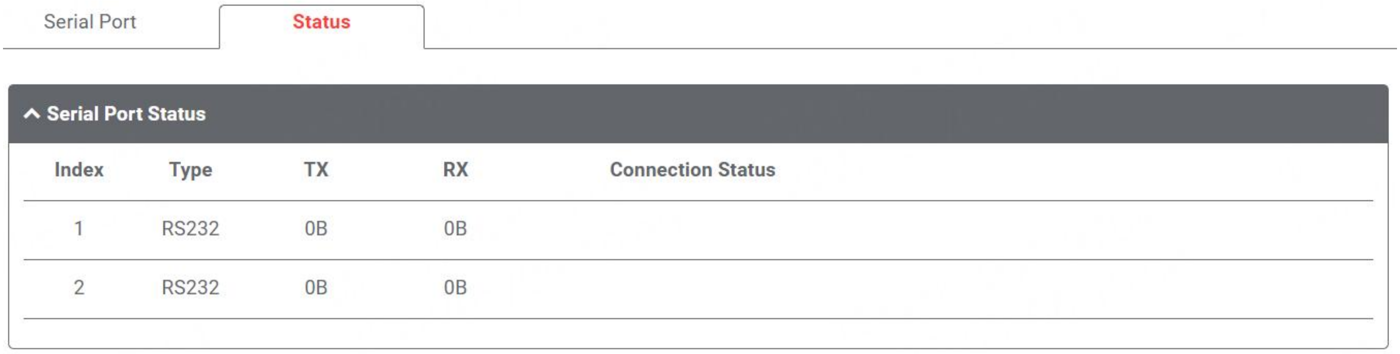
Server Port

| Item | Description | Default |
|---|---|---|
| Application Mode | Select from "Transparent", "Modbus RTU Gateway" or "Modbus ASCII Gateway".<br>• Transparent: Device will transmit the serial data transparently<br>• Modbus RTU Gateway: Device will translate the Modbus RTU data to Modbus TCP data and sent out, and vice versa<br>• Modbus ASCII Gateway: Device will translate the Modbus ASCII data to Modbus TCP data and sent out, and vice versa | Transparent |
| Protocol | Select from "TCP Client", "TCP Server", or "UDP".<br>• TCP Client: Device works as TCP client, initiate TCP connection to TCP server. Server address supports both IP and domain name<br>• TCP Server: Device works as TCP server, listening for connection request from TCP client<br>• UDP: Device works as UDP client | TCP Client |
| Server Address | Enter the address of server which will receive the data sent from device's serial port. IP address or domain name will be available. | Null |
| Server Port | Enter the specified port of server which is used for receiving the serial data. | Null |
| Local IP @ Transparent | Enter device's LAN IP which will forward to the internet port of device. | Null |

| Item | Description | Default |
|---|---|---|
| Local Port @ Transparent | Enter the port of device’s LAN IP. | Null |
| Local IP @ Modbus | Enter the local IP of under Modbus mode. | Null |
| Local Port @ Modbus | Enter the local port of under Modbus mode. | Null |

## Status

Click the "Status" column to view the current serial port type.



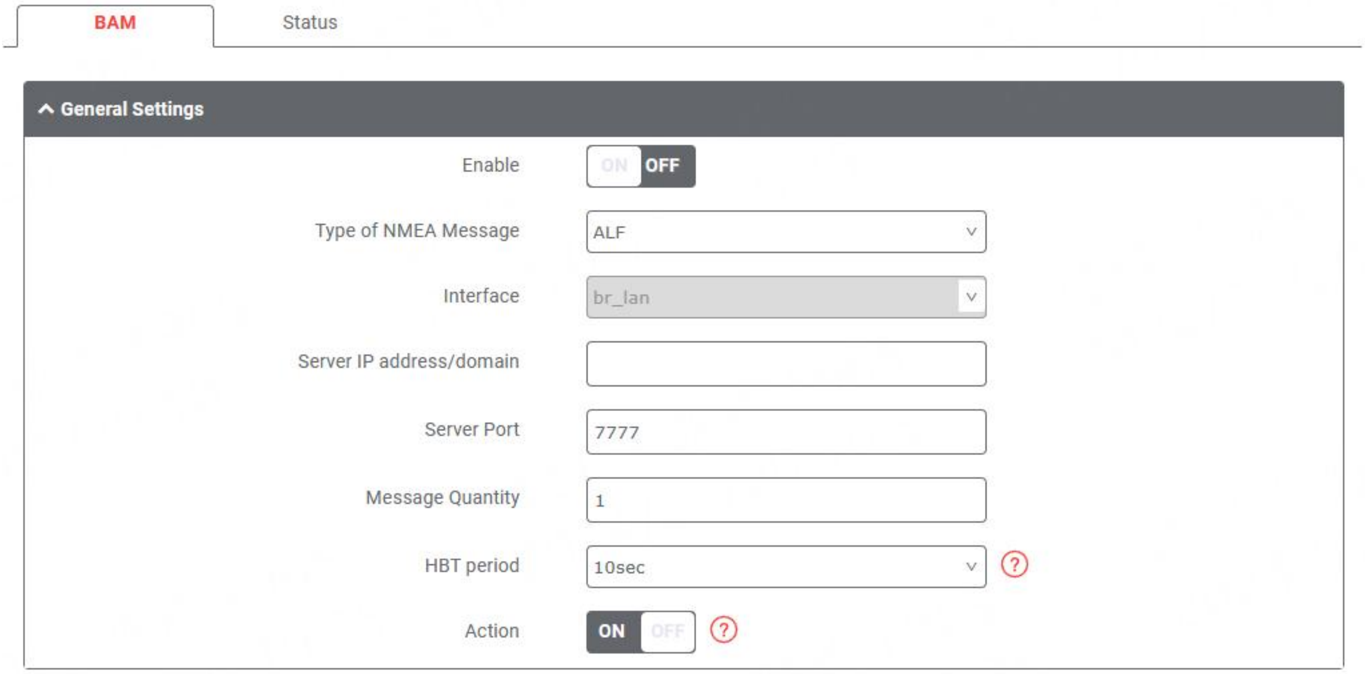
Serial Port Status

| Index | Type | TX | RX | Connection Status |
|---|---|---|---|---|
| 1 | RS232 | 0B | 0B | |
| 2 | RS232 | 0B | 0B | |

## 2.2.9 BAM

This section allows you to set the BAM(Bridge Alarm Management) parameters.

### BAM



Enable: ON OFF

Type of NMEA Message: ALF

Interface: br_lan

Server IP address/domain:

Server Port: 7777

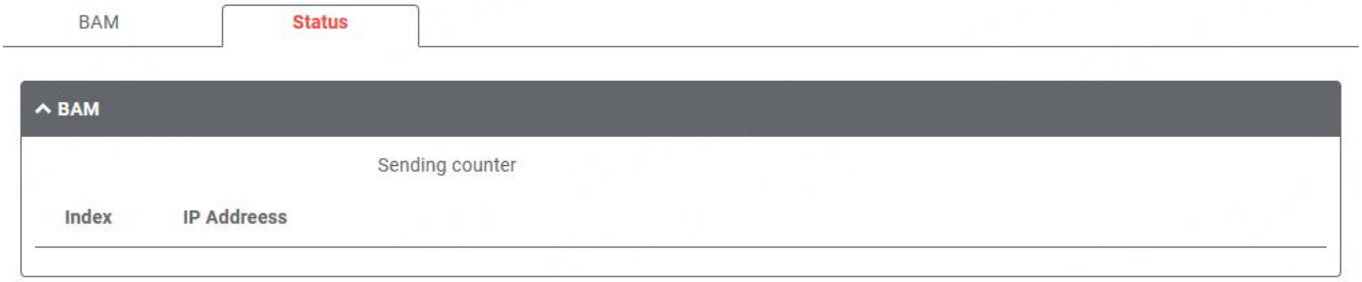
Message Quantity: 1

HBT period: 10sec

Action: ON OFF

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable or disable the function. | OFF |
| Type of NMEA Message | Select from “ALF”, “HLT” | Null |
| Interface | Set the message outgoing interface | br_lan |
| Server IP address/domain | Set the Server IP address and domain | Null |
| Server Port | Set the Server port | 7777 |
| Message Quantity | Set the message quantity | 1 |
| HBT period | Set the heart beat peride | 10sec |
| Action | Click the toggle button to enable or disable the function.<br>ON: Send ALF message when VPN session is connected.<br>OFF: Do not send ALF message. | |

## Status



| Index | IP Addreess | Sending counter |
|---|---|---|

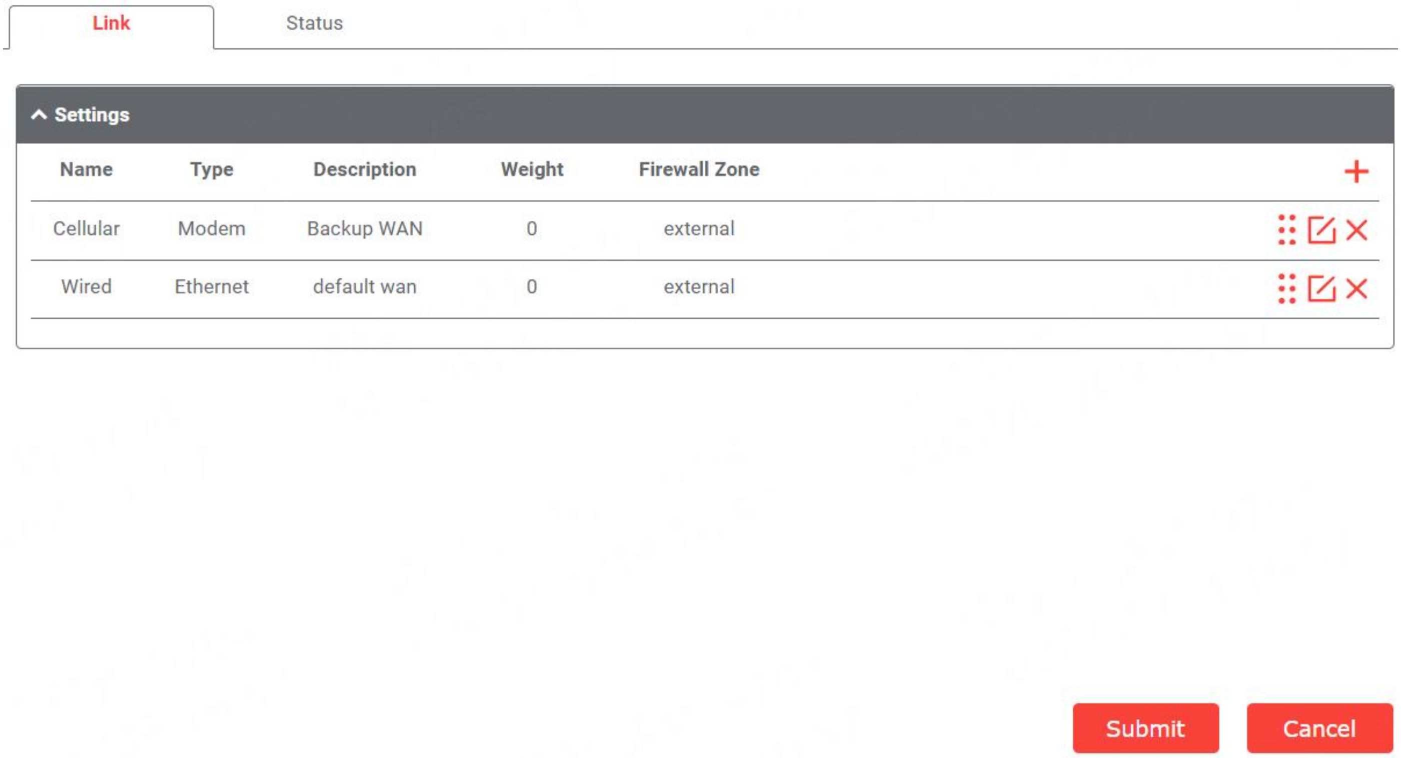
You can view detailed information here.

## 2.3 Network

### 2.3.1 WAN

WAN stands for Wide Area Network, provides connectivity to the internet. You can configure WAN based on Ethernet, Cellular modem or Wi-Fi(if supported).

#### Link



| Name | Type | Description | Weight | Firewall Zone |
|---|---|---|---|---|
| Cellular | Modem | Backup WAN | 0 | external |
| Wired | Ethernet | default wan | 0 | external |

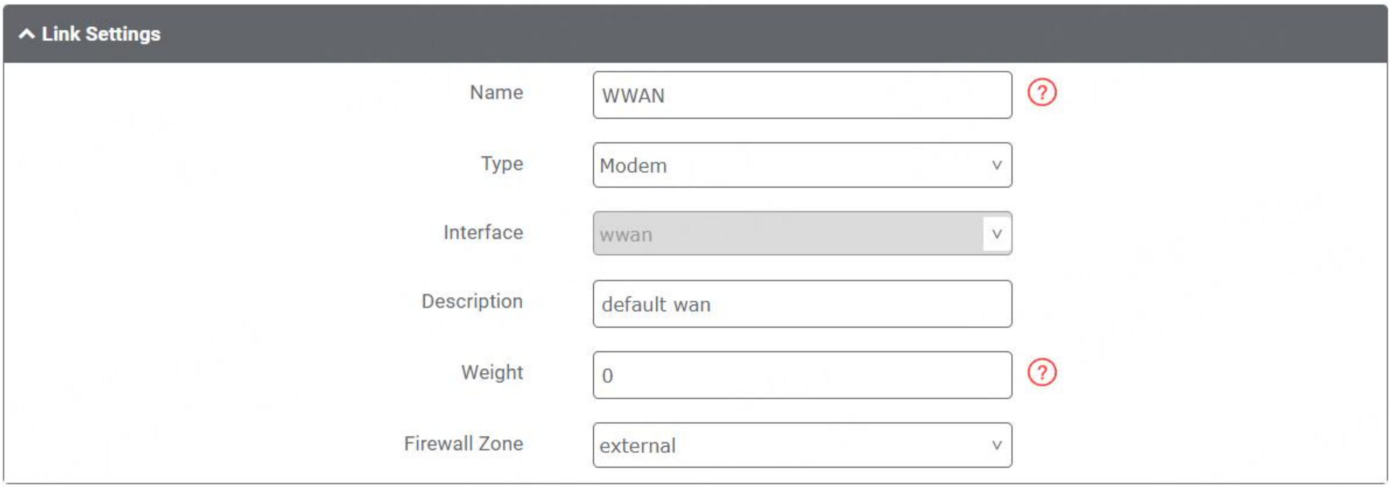
Click + to add a new WAN link.

Click ✕ to delete the link.

Press ⠿ to drag the WAN link into the required order to switch between WAN connections, the topper one has higher priority.

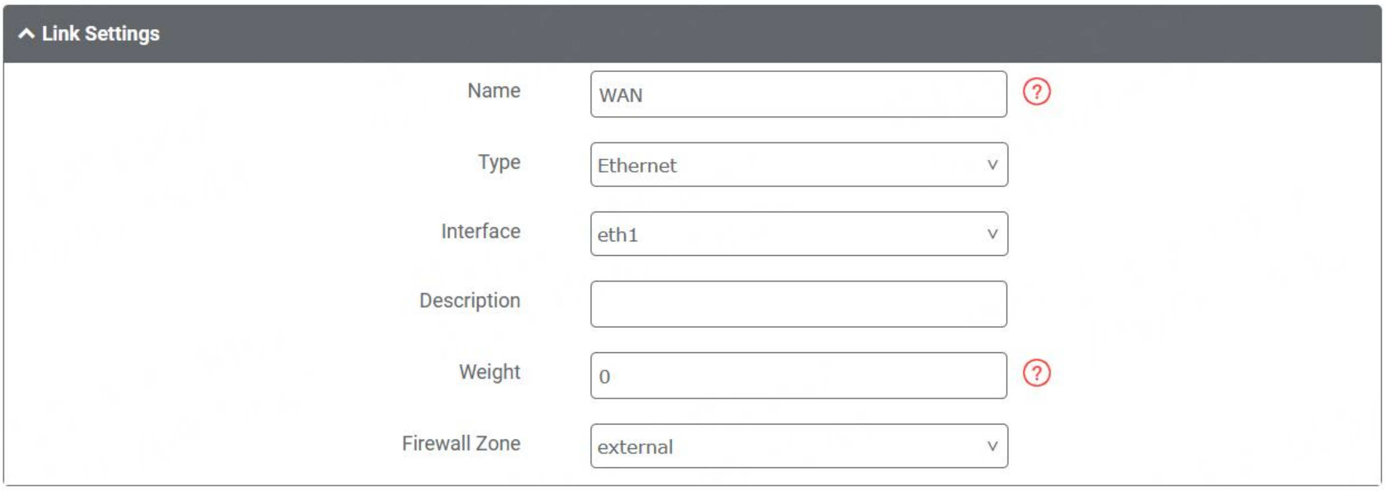
Click ✎ to edit the link.

Users can manage link connections in this section. It provides four types of connectivity interface to internet including Modem, Ethernet, VLAN and Wi-Fi.



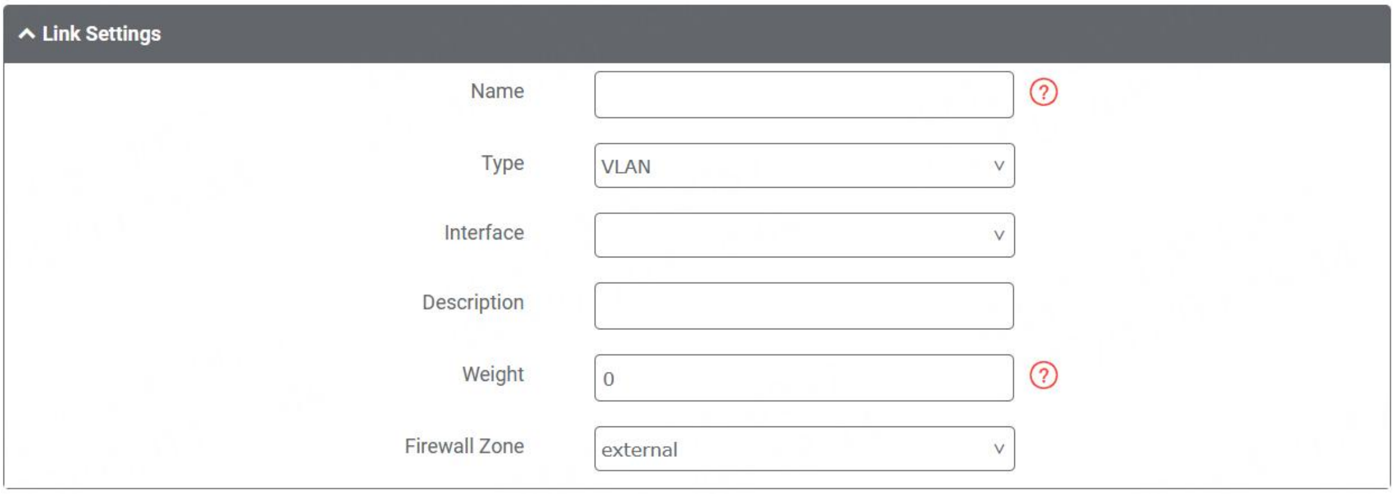
**Link Settings**

| | |
|---|---|
| Name | WWAN |
| Type | Modem |
| Interface | wwan |
| Description | default wan |
| Weight | 0 |
| Firewall Zone | external |



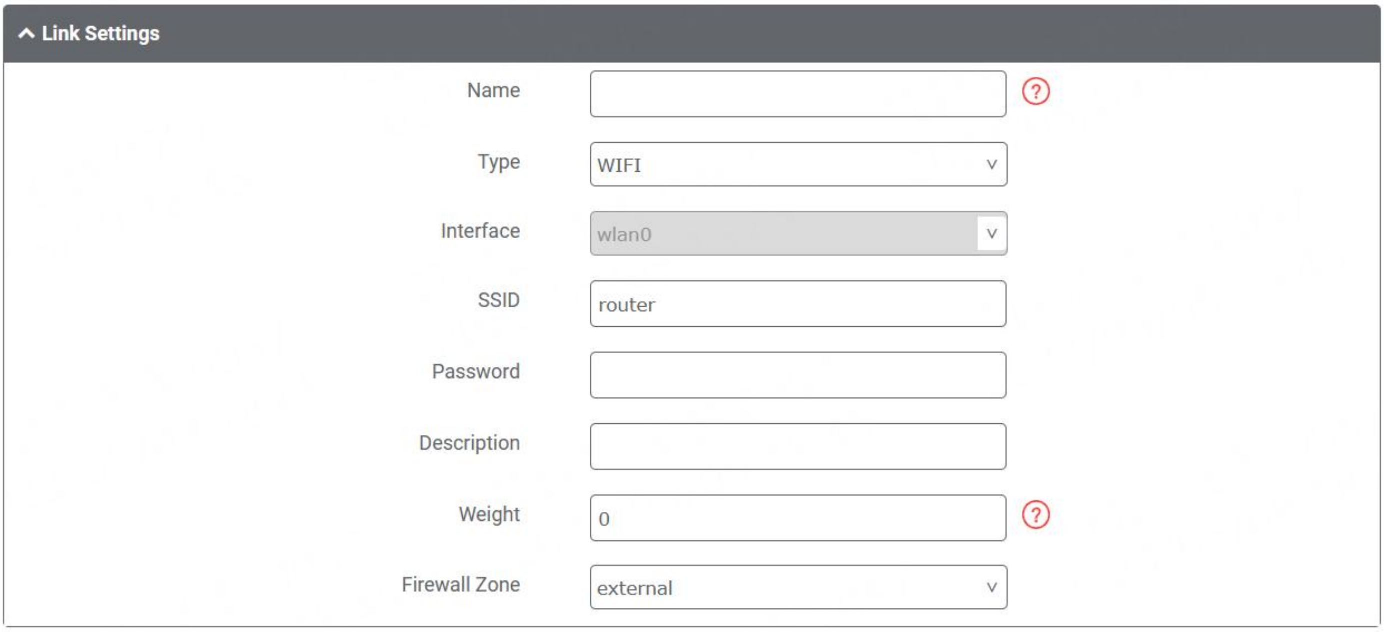
**Link Settings**

| | |
|---|---|
| Name | WAN |
| Type | Ethernet |
| Interface | eth1 |
| Description | |
| Weight | 0 |
| Firewall Zone | external |



**Link Settings**

| | |
|---|---|
| Name | |
| Type | VLAN |
| Interface | |
| Description | |
| Weight | 0 |
| Firewall Zone | external |



^ Link Settings

Name

Type: WIFI

Interface: wlan0

SSID: router

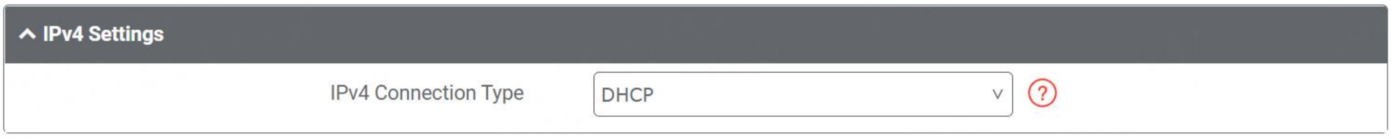
Password

Description

Weight: 0

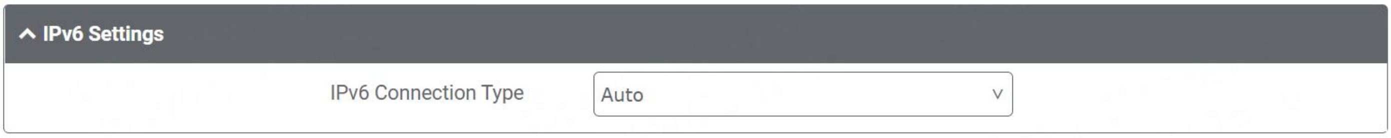
Firewall Zone: external

| Item | Description | Default |
|---|---|---|
| Name | The name of link. | -- |
| Type | The types of connectivity.<br>• Modem: connected by cellular network.<br>• Ethernet: connected by Ethernet wired network.<br>• VLAN: connected by VLAN network.<br>• Wi-Fi: connected by Wi-Fi network. | -- |
| Interface | Set the related interface.<br>If the type is Modem, please see the **4.2.2 Cellular.**<br>If the type is Ethernet, please see the **4.2.1 Ethernet.**<br>If the type is VLAN, please see the 4.2.6 VLAN. | -- |
| Description | The description of the link. | -- |
| SSID | The name of Wi-Fi network. | -- |
| Password | The Password of Wi-Fi network. | -- |
| Weight | The weight of this link among all links. 0 means not involved. | -- |
| Firewall Zone | The chosen set of firewall rules, please see the 4.3.5 Firewall. | -- |



^ IPv4 Settings

IPv4 Connection Type: DHCP

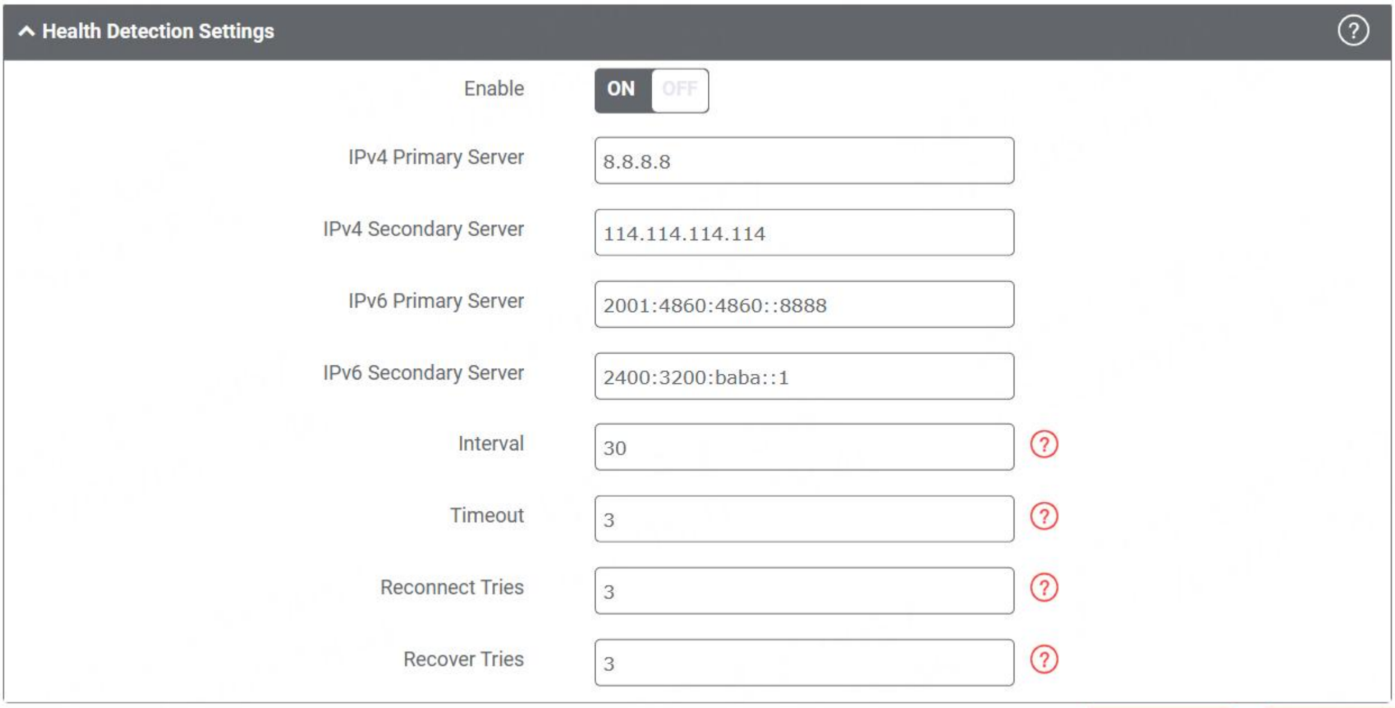


^ IPv6 Settings

IPv6 Connection Type: Auto

| Item | Description | Default |
|---|---|---|
| IPv4 Connection Type | The type of IPv4 connection. | DHCP |

| Item | Description | Default |
|---|---|---|
| | • DHCP.<br>• PPPoE.<br>• Manual.<br>• Disable.<br>Enter the parameters accordingly.<br>**Note: IPv6 over PPPoE is not supported now, so disabling IPv6 if choosing PPPoE here.* | |
| IPv6 Connection Type | The type of IPv6 connection.<br>• Auto.<br>• Manual.<br>• Disable.<br>Enter the parameters accordingly. | Auto |

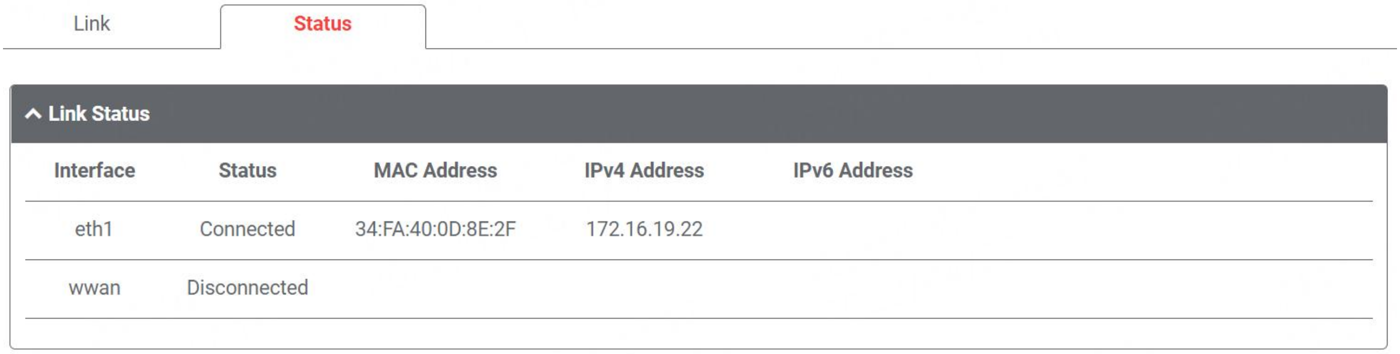


| | |
|---|---|
| Enable | ON OFF |
| IPv4 Primary Server | 8.8.8.8 |
| IPv4 Secondary Server | 114.114.114.114 |
| IPv6 Primary Server | 2001:4860:4860::8888 |
| IPv6 Secondary Server | 2400:3200:baba::1 |
| Interval | 30 |
| Timeout | 3 |
| Reconnect Tries | 3 |
| Recover Tries | 3 |

| Item | Description | Default |
|---|---|---|
| Enable | Toggle the button to enable the health detection function | ON |
| IPv4 Primary Server | IPv4 Primary Server | 8.8.8.8 |
| IPv4 Secondary Server | IPv4 Secondary Server | 114.114.114.114 |
| IPv6 Primary Server | IPv6 Primary Server | 2001:4860:4860::8888 |
| IPv6 Secondary Server | IPv6 Secondary Server | 2400:3200:baba::1 |
| Interval | Seconds to send next ping | 30 |
| Timeout | Seconds to wait for ping response | 3 |
| Reconnect Tries | Reconnect this link in case of sequential probes are unsuccessful. | 3 |
| Recover Tries | Recovery this link in case of sequential probes are successful. | 3 |

### Status

This window allows you to view the link status of device.

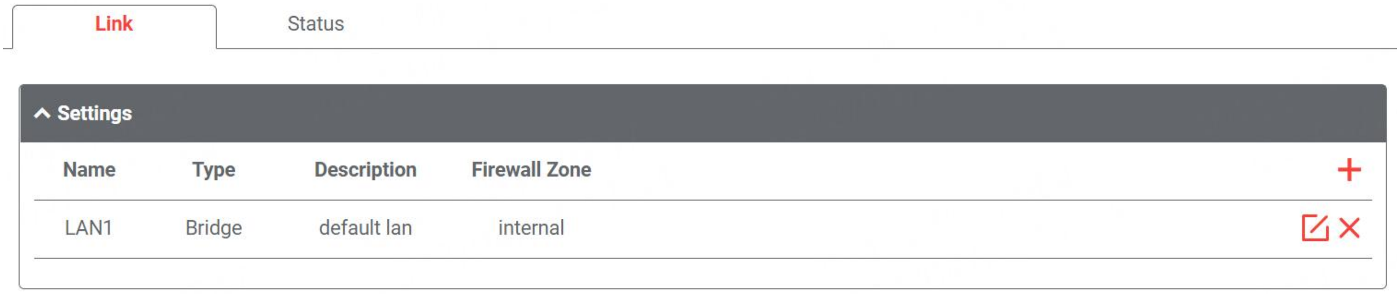


| Interface | Status | MAC Address | IPv4 Address | IPv6 Address |
|---|---|---|---|---|
| eth1 | Connected | 34:FA:40:0D:8E:2F | 172.16.19.22 | |
| wwan | Disconnected | | | |

## 2.3.2 LAN

A Local Area Network (LAN) connects network devices together, such as Ethernet or Bridge, in a logical Layer-2 network. The default link(br_lan) is always available.

### Link



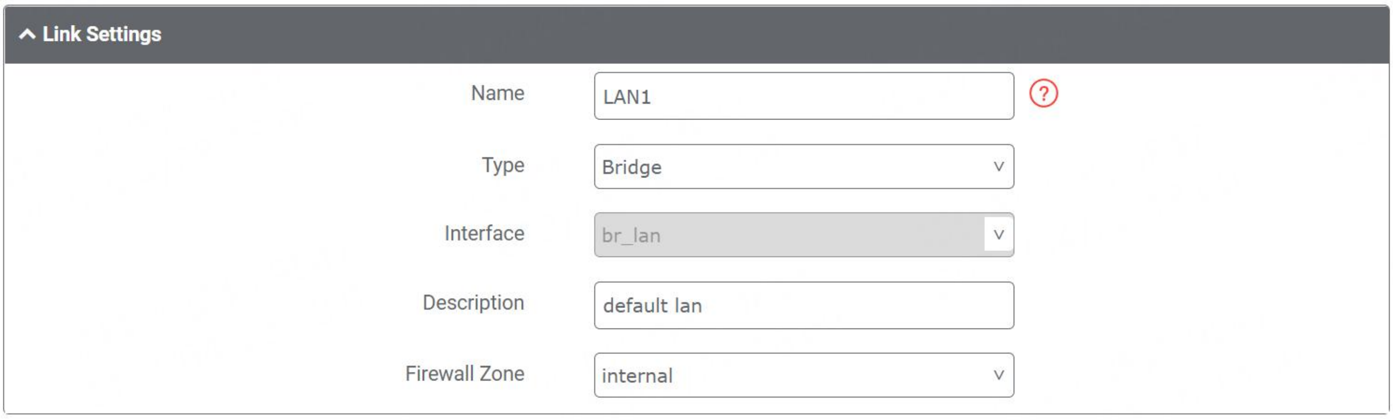
| Name | Type | Description | Firewall Zone |
|---|---|---|---|
| LAN1 | Bridge | default lan | internal |

Click + to add a new LAN link.

Click ✕ to delete the LAN link.

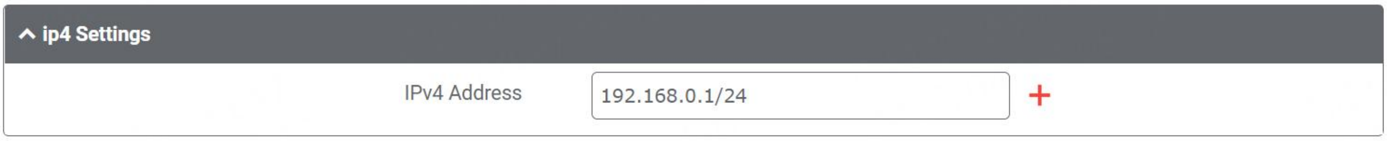
Click ✎ to edit the LAN link.

Users can manage link connections in this section. It provides three types of connectivity interface to internet including Bridge, Ethernet and VLAN.

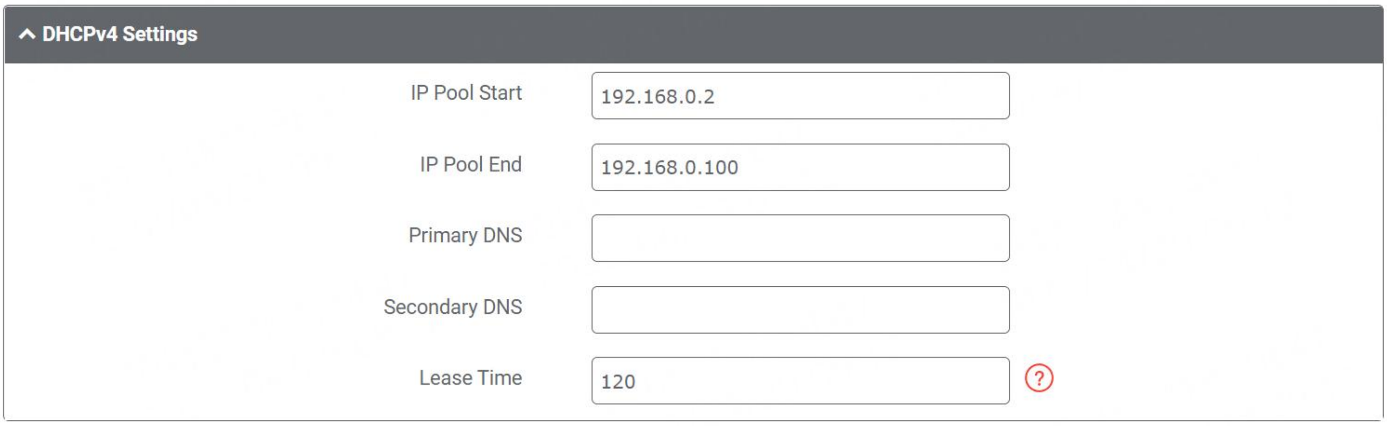


| | |
|---|---|
| Name | LAN1 |
| Type | Bridge |
| Interface | br_lan |
| Description | default lan |
| Firewall Zone | internal |

| Item | Description | Default |
|---|---|---|
| Name | The name of the LAN link. | -- |
| Type | The types of connectivity. Select from “Bridge”, “Ethernet” and “VLAN”.<br>• Bridge: connected by Bridge network.<br>• Ethernet: connected by Ethernet wired network.<br>• VLAN: connected by VLAN network. | Bridge |
| Interface | Set the related interface.<br>If the type is Bridge, please see the 4.2.3 Bridge.<br>If the type is Ethernet, please see the **4.2.1 Ethernet.**<br>If the type is VLAN, please see the 4.2.6 VLAN. | -- |
| Description | The description of the link. | -- |
| Firewall Zone | The chosen set of firewall rules, please see the 4.3.5 Firewall. | internal |



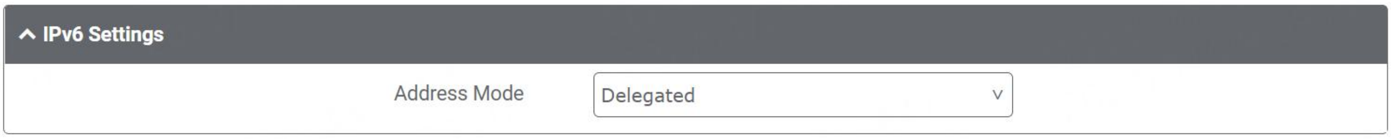
| | |
|---|---|
| IPv4 Address | 192.168.0.1/24 |



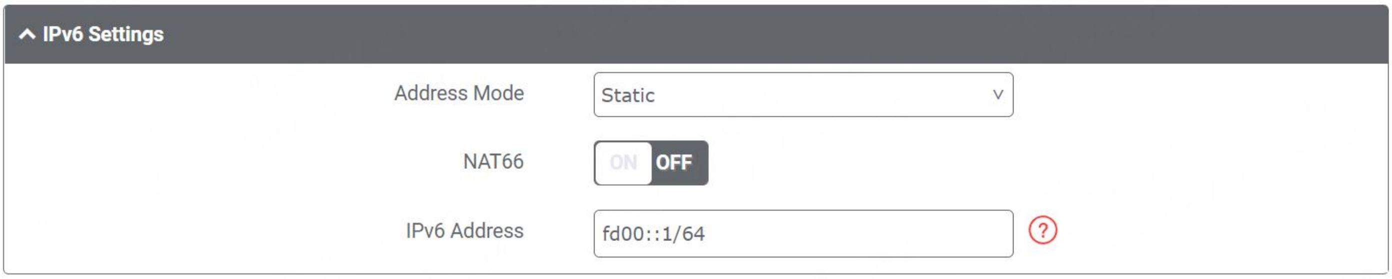
| | |
|---|---|
| IP Pool Start | 192.168.0.2 |
| IP Pool End | 192.168.0.100 |
| Primary DNS | |
| Secondary DNS | |
| Lease Time | 120 |

| Item | Description | Default |
|---|---|---|
| IPv4 Address | Enter the IPv4 address with netmask. | 192.168.0.1/24 |
| IP Pool Start | The start IP address in pool. | 192.168.0.2 |
| IP Pool End | The end IP address in pool. | 192.168.0.100 |
| Primary DNS | Enter the primary DNS. | Null |

| Item | Description | Default |
|---|---|---|
| Secondary DNS | Enter the secondary DNS. | Null |
| Lease Time | The lease time in minute. | 120 |



Address Mode: Delegated



Address Mode: Static

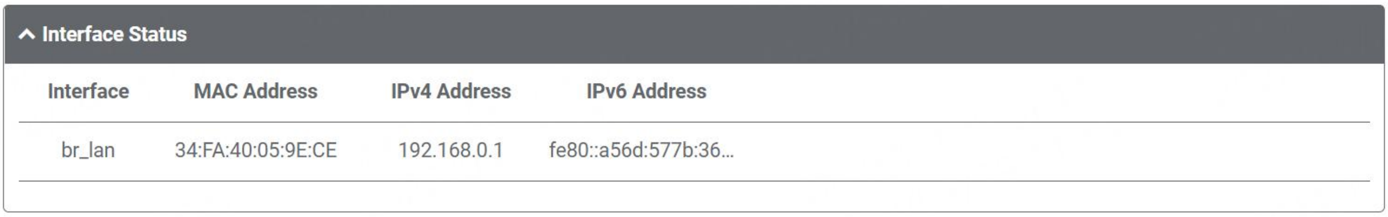
NAT66: ON OFF

IPv6 Address: fd00::1/64

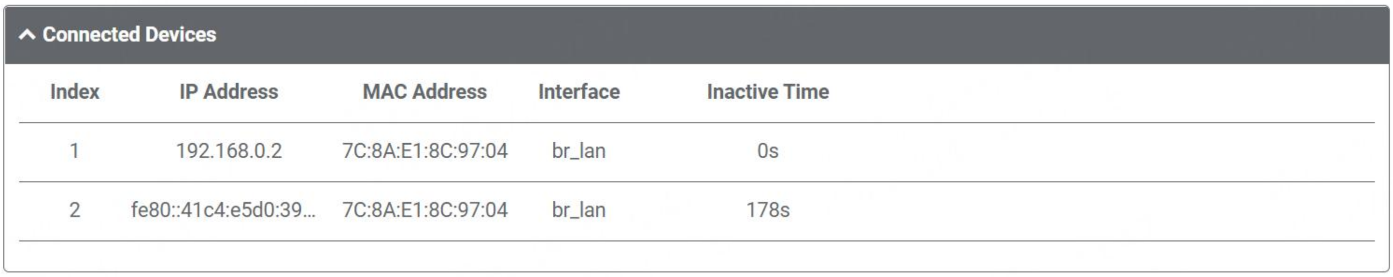
| Item | Description | Default |
|---|---|---|
| Address Mode | Delegated or Static. | Delegated |
| NAT66 | IPv6-to-IPv6 Network Address Translation. On or Off in static mode. | OFF |
| IPv6 Address | Enter the IPv6 address with 64-bit network prefix in static mode. | fd00::1/64 |

## Status

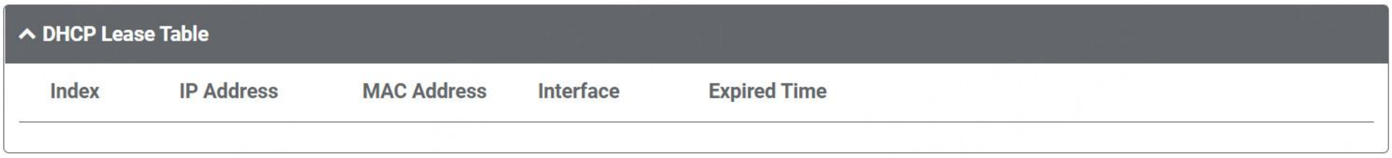
This window allows you to view the status of LAN link.


Interface Status

| Interface | MAC Address | IPv4 Address | IPv6 Address |
|---|---|---|---|
| br_lan | 34:FA:40:05:9E:CE | 192.168.0.1 | fe80::a56d:577b:36... |


Connected Devices

| Index | IP Address | MAC Address | Interface | Inactive Time |
|---|---|---|---|---|
| 1 | 192.168.0.2 | 7C:8A:E1:8C:97:04 | br_lan | 0s |
| 2 | fe80::41c4:e5d0:39... | 7C:8A:E1:8C:97:04 | br_lan | 178s |

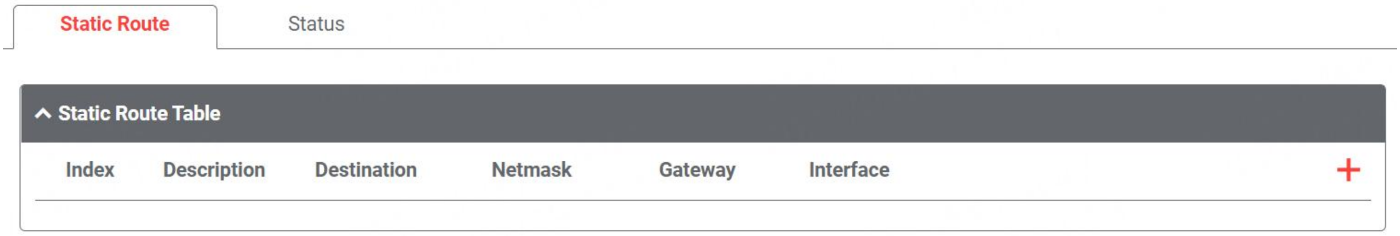

DHCP Lease Table

| Index | IP Address | MAC Address | Interface | Expired Time |
|---|---|---|---|---|

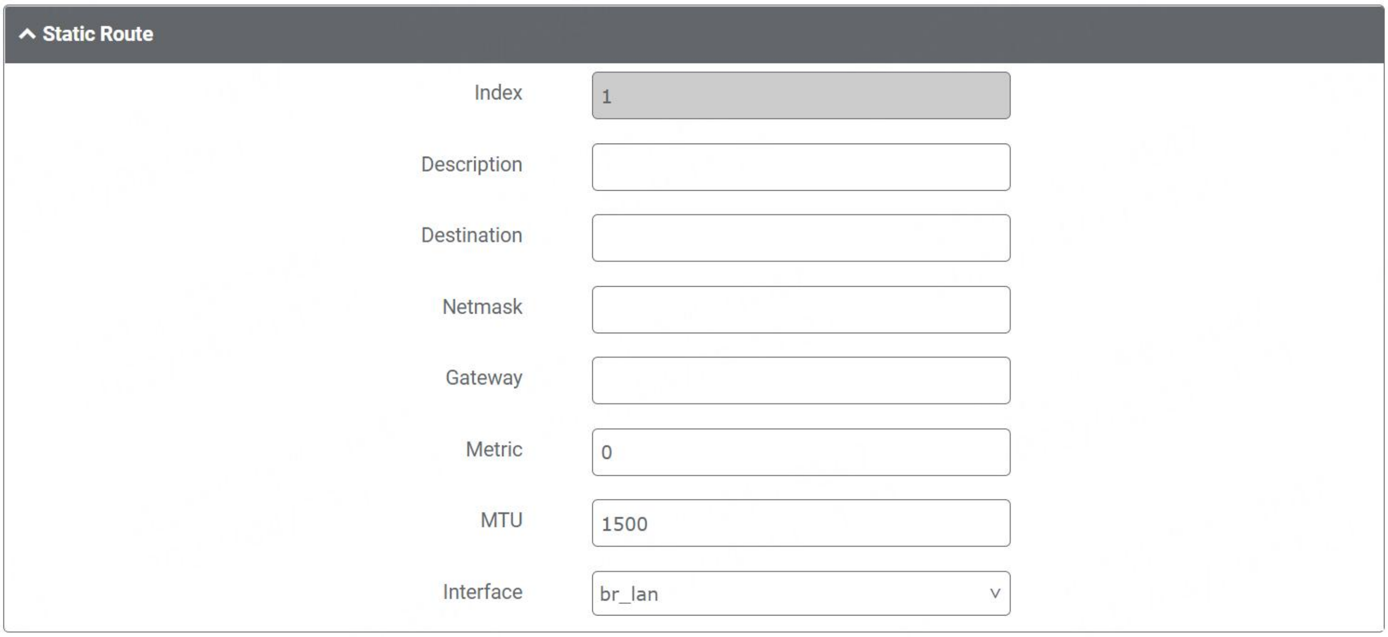
## 2.3.3 Route

Routes ensure that network traffic finds its path to a destination network. Static routes are fixed routing entries in routing table.

### Static Route



Click + to add static routes. The maximum count is 20.



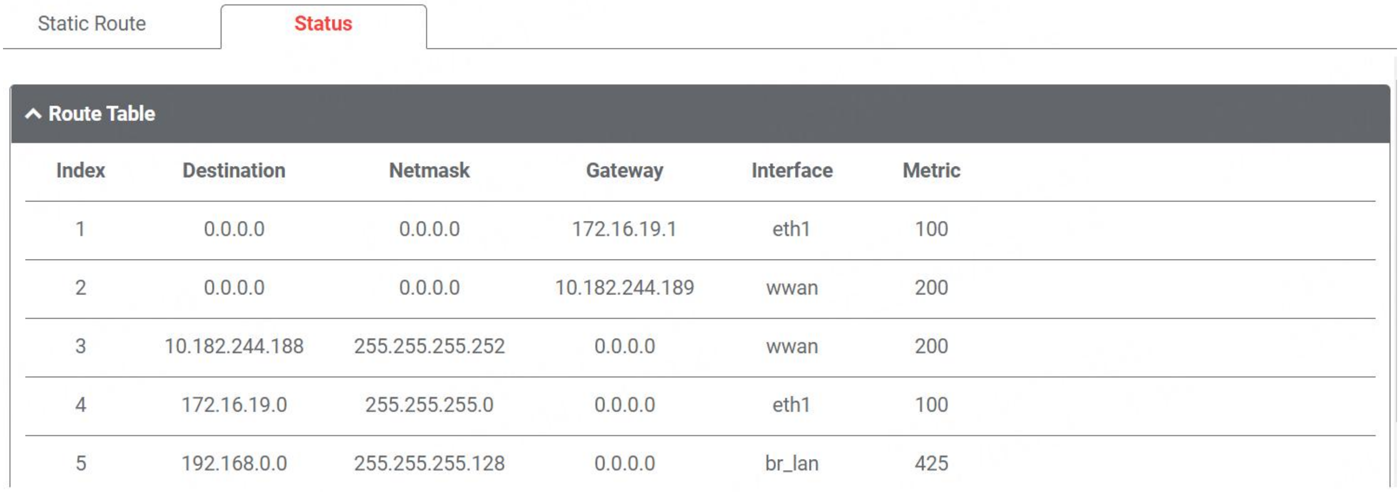
| | |
|---|---|
| Index | 1 |
| Description | |
| Destination | |
| Netmask | |
| Gateway | |
| Metric | 0 |
| MTU | 1500 |
| Interface | br_lan |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Description | Enter a description for this static route. | Null |
| Destination | Enter the IP address of destination host or destination network. | Null |
| Netmask | Enter the Netmask of destination host or destination network. | Null |
| Gateway | Define the gateway of the destination. | Null |
| Metric | Enter the Metric value. Metrics help the gateway choose the best route among multiple feasible routes to a destination. The route will go in the direction of the gateway with the lowest metric value. | 0 |
| MTU | Enter the MTU value, 1280~1500. | 1500 |

| Item | Description | Default |
|---|---|---|
| Interface | Choose the corresponding port of the link that you want to configure. | br_lan |

## Status

This window allows you to view the status of route.

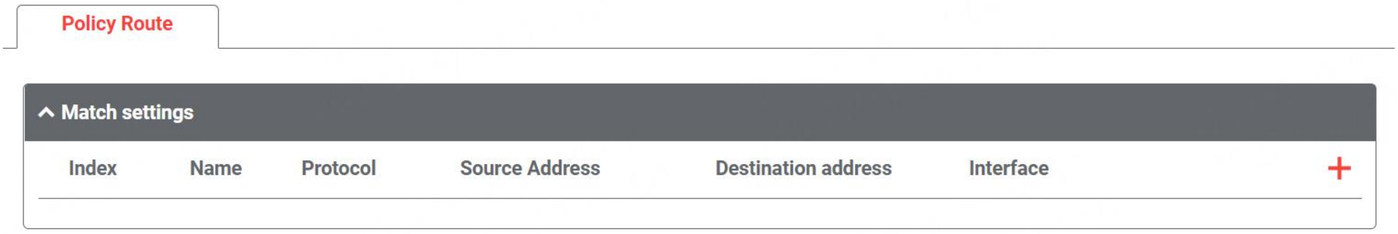


| Index | Destination | Netmask | Gateway | Interface | Metric |
|---|---|---|---|---|---|
| 1 | 0.0.0.0 | 0.0.0.0 | 172.16.19.1 | eth1 | 100 |
| 2 | 0.0.0.0 | 0.0.0.0 | 10.182.244.189 | wwan | 200 |
| 3 | 10.182.244.188 | 255.255.255.252 | 0.0.0.0 | wwan | 200 |
| 4 | 172.16.19.0 | 255.255.255.0 | 0.0.0.0 | eth1 | 100 |
| 5 | 192.168.0.0 | 255.255.255.128 | 0.0.0.0 | br_lan | 425 |

# 2.3.4 Policy Route

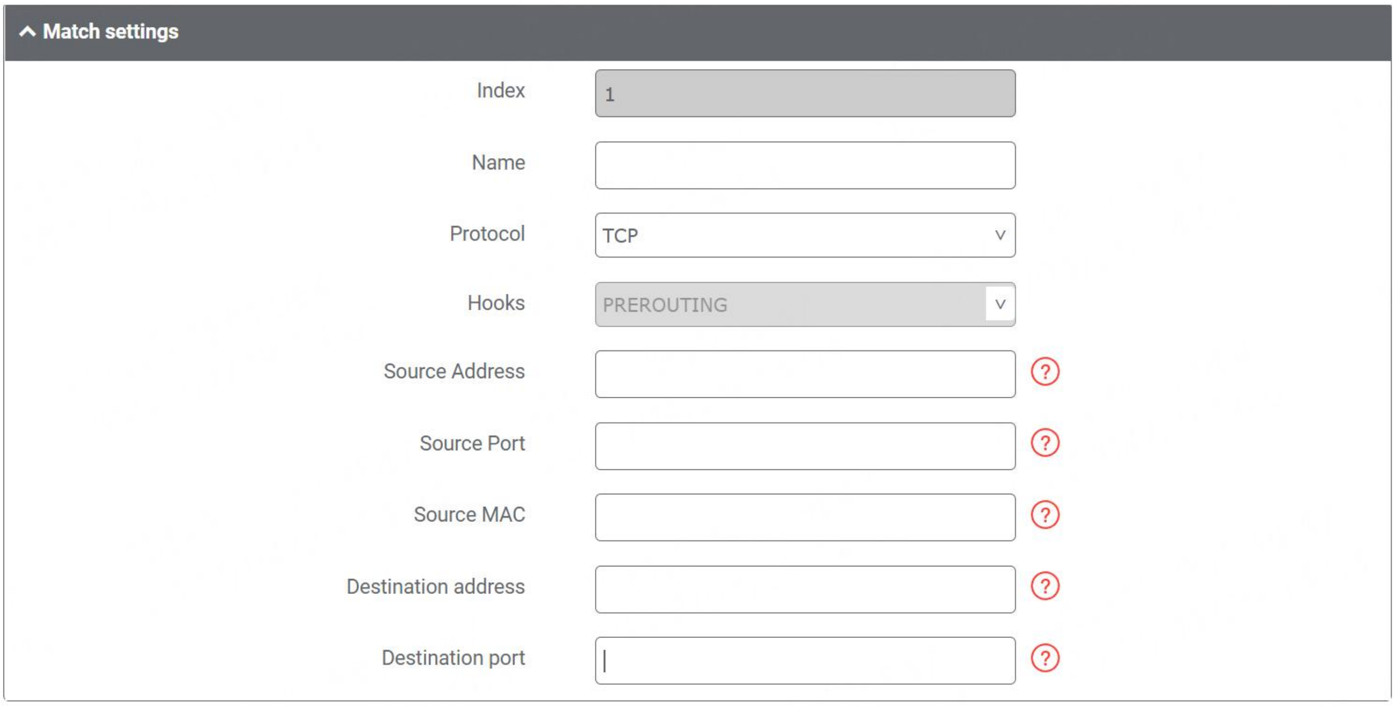
In this window, you can manage the outbound route based on the IP address, port number in the packet.

## Policy Route



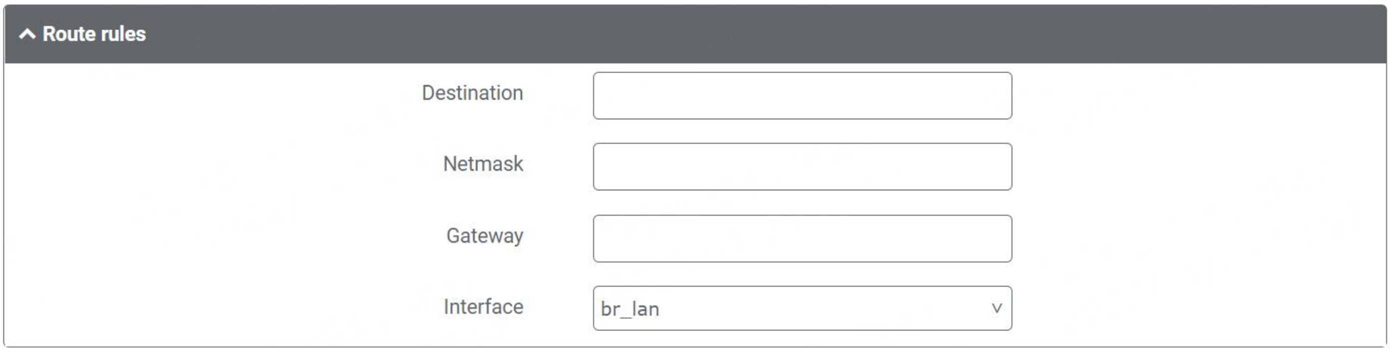
| Index | Name | Protocol | Source Address | Destination address | Interface |
|---|---|---|---|---|---|

Click + to add a policy route. The maximum count is **20.**



| | |
|---|---|
| Index | 1 |
| Name | |
| Protocol | TCP |
| Hooks | PREROUTING |
| Source Address | |
| Source Port | |
| Source MAC | |
| Destination address | |
| Destination port | |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Name | Name of Policy Route. | -- |
| Protocol | The type of network protocol. Select from "Any", "TCP","UDP","TCP-UDP","ICMP" and "IGMP". | TCP-UDP |
| Hooks | Fixed setting. | -- |
| Sources Address | Enter the source IP address. | -- |
| Source Port | Enter the source port in TCP/UDP type. | -- |
| Source MAC | Enter the source mac address. | -- |
| Destination Address | Enter the destination IP address. | -- |
| Destination Port | Enter the destination port in TCP/UDP type. | -- |



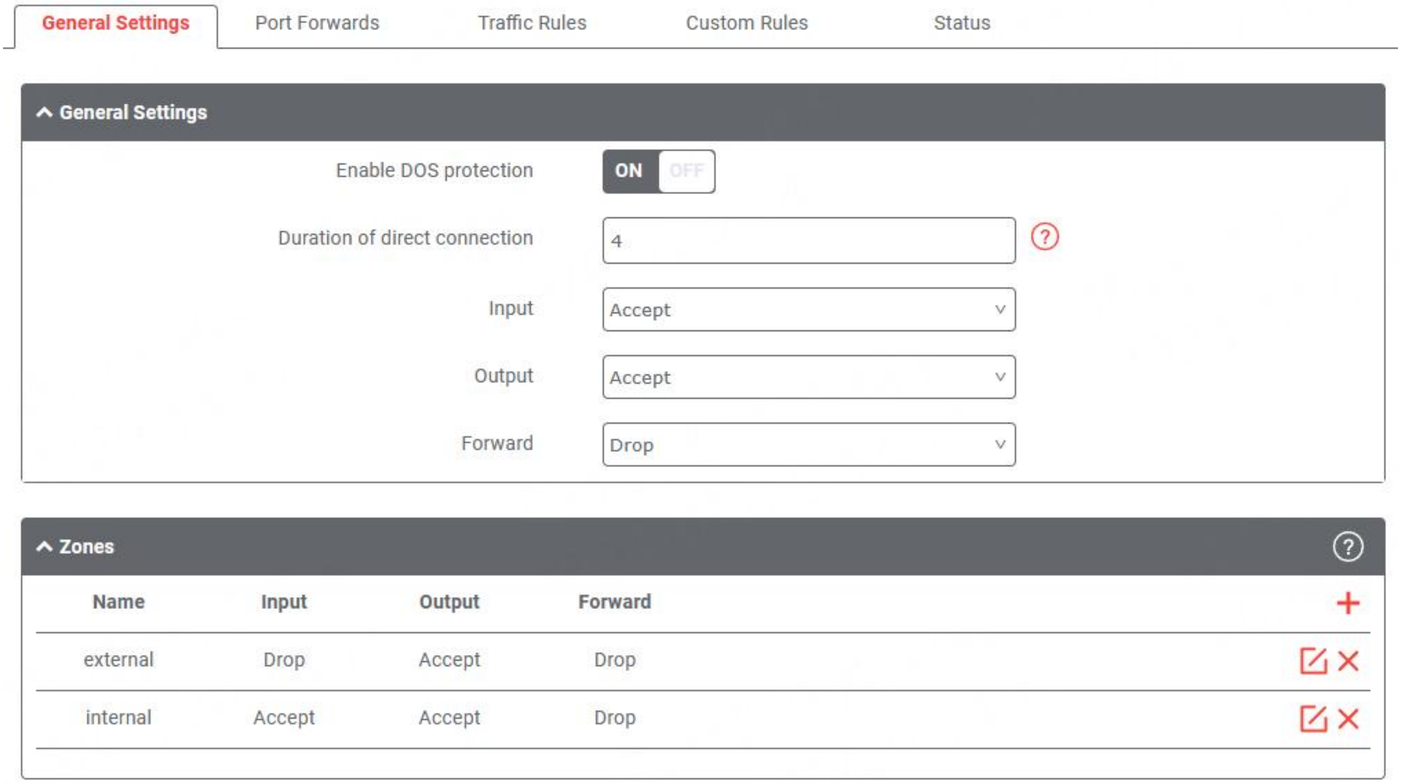
| | |
|---|---|
| Destination | |
| Netmask | |
| Gateway | |
| Interface | br_lan |

| Item | Description | Default |
|---|---|---|
| Destination | Enter the IP address of destination host or destination network. | -- |
| Netmask | Enter the Netmask of destination host or destination network. | -- |
| Gateway | Define the gateway of the destination. | -- |
| Interface | Choose the corresponding port of the link that you want to configure. | br_lan |

## 2.3.5 Firewall

Firewall makes use of Linux iptables to control inbound and outbound traffic, the router has already been configured to meet IEC61162-460 requirements.

### General Setting



Enable DOS protection: ON

Duration of direct connection: 4

Input: Accept

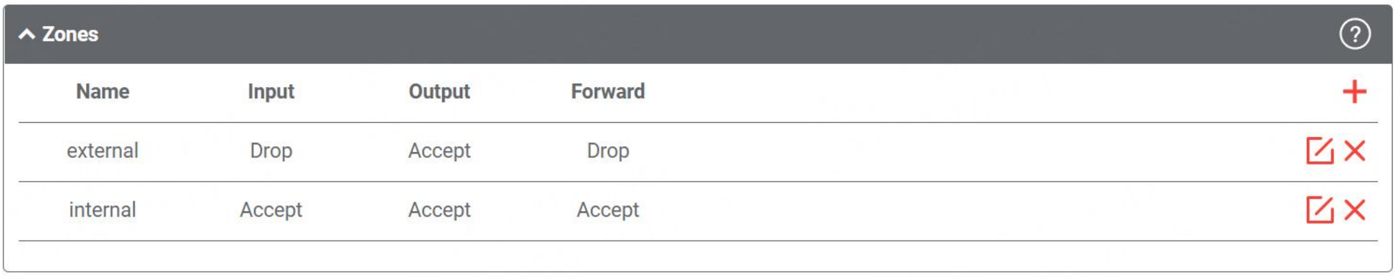
Output: Accept

Forward: Drop

| Name | Input | Output | Forward |
|---|---|---|---|
| external | Drop | Accept | Drop |
| internal | Accept | Accept | Drop |

| Item | Description | Default |
|---|---|---|
| Enable DOS protection | click the toggle button to enable/disable. | ON |
| Duration of direct connection | • The duration(hour) of direct connection<br>Each rule is valid for four hours | 4 |
| Input | Default action of the Input chain if a packet does not match any exist rule on that chain.<br>• Accept: Packet gets to continue to the next chain.<br>• Drop: Packet is stopped and deleted. | Accept |
| Output | Default action of the Output chain if a packet does not match any exist rule on that chain.<br>• Accept: Packet gets to continue to the next chain.<br>• Drop: Packet is stopped and deleted. | Accept |
| Forward | Default action of the Forward chain if a packet does not match any exist rule on that chain.<br>• Accept: Packet gets to continue to the next chain.<br>• Drop: Packet is stopped and deleted. | Drop |

*Note: The general setting is used as a default firewall setting unless specified.*

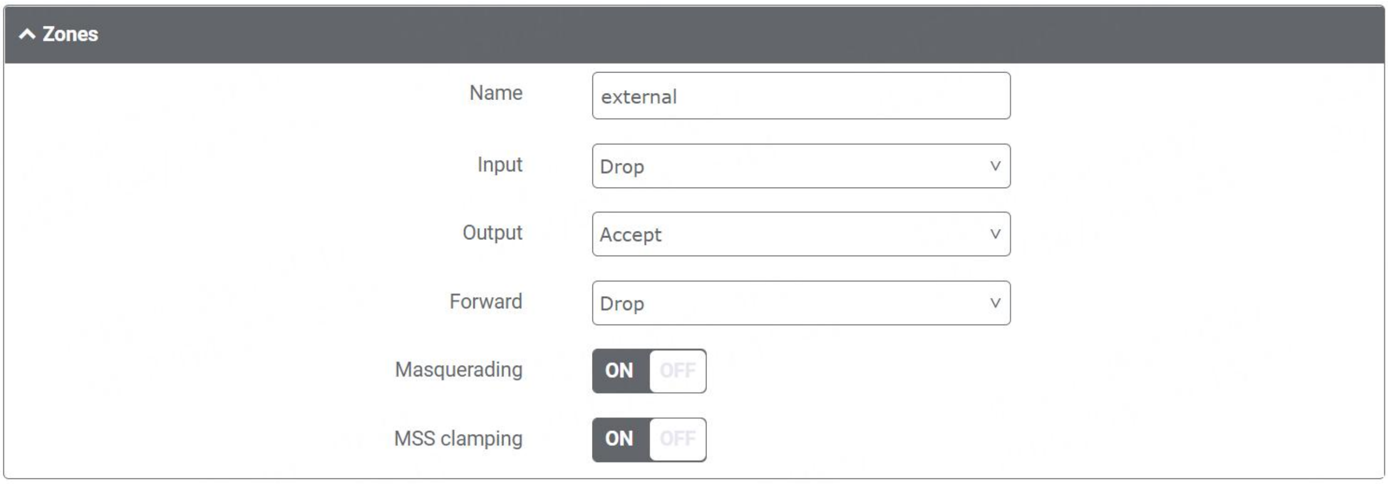


Zones

| Name | Input | Output | Forward |
|---|---|---|---|
| external | Drop | Accept | Drop |
| internal | Accept | Accept | Accept |

Zone is a set of firewall rules, users can define their own firewall zone.

Click + to add one firewall zone. The maximum count is **50**



Zones

Name: external

Input: Drop

Output: Accept

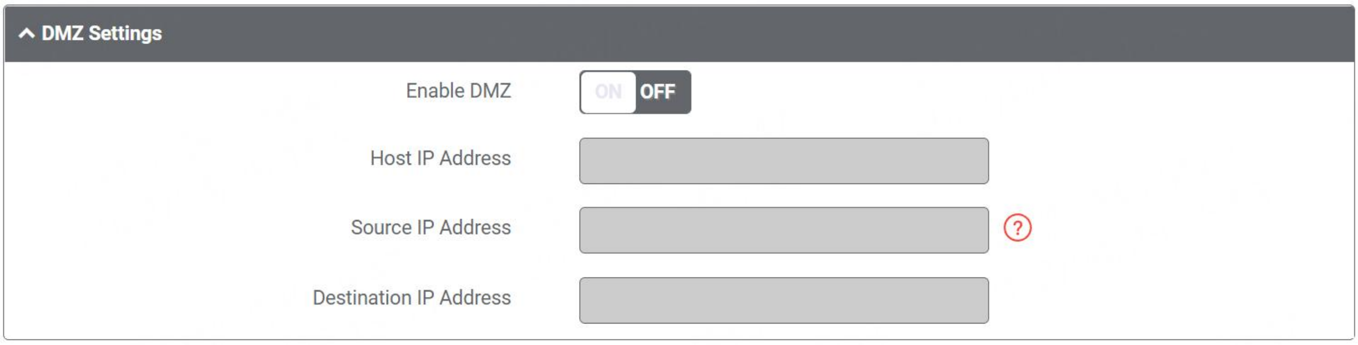
Forward: Drop

Masquerading: ON

MSS clamping: ON

| Item | Description | Default |
|---|---|---|
| Name | The name of the firewall zone. | -- |
| Input | Default action of the Input chain if a packet does not match any exist rule on that chain.<br>• Accept: Packet gets to continue to the next chain.<br>• Drop: Packet is stopped and deleted. | Drop |
| Output | Default action of the Output chain if a packet does not match any exist rule on that chain.<br>• Accept: Packet gets to continue to the next chain.<br>• Drop: Packet is stopped and deleted. | Accept |
| Forward | Default action of the Forward chain if a packet does not match any exist rule on that chain.<br>• Accept: Packet gets to continue to the next chain.<br>• Drop: Packet is stopped and deleted. | Drop |
| Masquerading | Click the toggle button to enable/disable. MASQUERADE is an iptables target that can be used instead of the SNAT (source NAT) target when the external IP of the network interface is not known at the moment of writing the rule (when the interface gets the | ON |

| | | |
|---|---|---|
| | external IP dynamically). | |
| MSS clamping | Click the toggle button to enable/disable. MSS clamping is a workaround used to change the maximum segment size (MSS) of all TCP connections passing through links with an MTU lower than the Ethernet default of 1500. | ON |



DMZ Settings

Enable DMZ: ON OFF

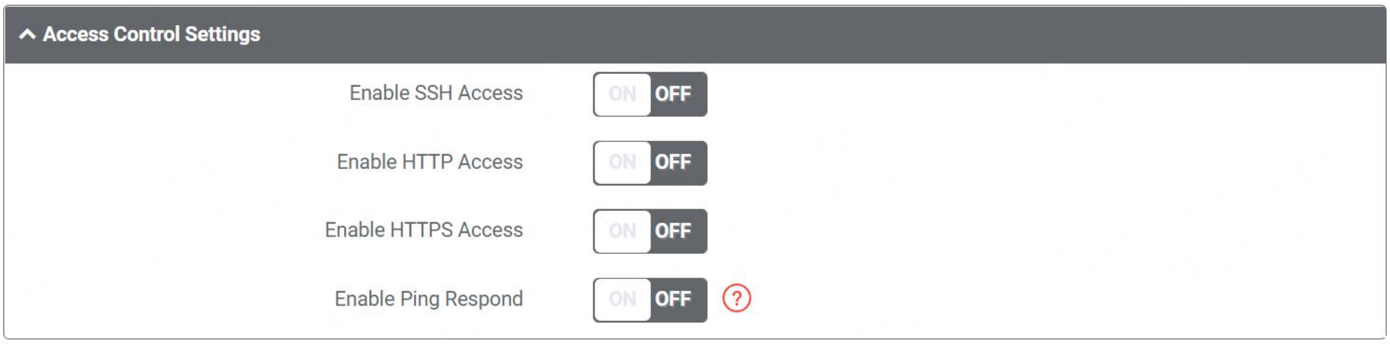
Host IP Address

Source IP Address

Destination IP Address

DMZ (Demilitarized Zone), also known as the demilitarized zone. It is a buffer between a non-secure system and a secure system that is set up to solve the problem that users who access the external network cannot access the internal network server after the firewall is installed. A DMZ host is an intranet host where all ports are open to the specified address except the ports that are occupied and forwarded.

| Item | Description | Default |
|---|---|---|
| Enable DMZ | Click the toggle button to enable/disable DMZ. DMZ host is a host on the internal network that has all ports exposed, except those ports otherwise forwarded. | OFF |
| Host IP Address | Enter the IP address of the DMZ host on your internal network. | Null |
| Source IP Address | Set the address which can talk to the DMZ host. Null means for any addresses. | Null |
| Destination IP Address | Set the address which the DMZ host can talk to . Null means for any addresses. | Null |



Access Control Settings

Enable SSH Access: ON OFF

Enable HTTP Access: ON OFF

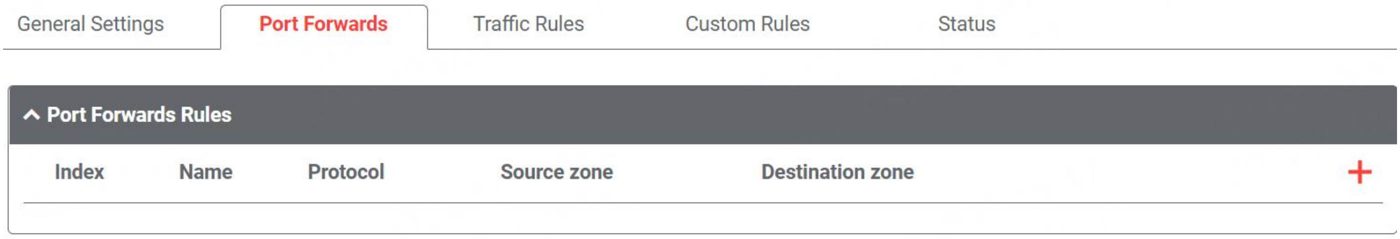
Enable HTTPS Access: ON OFF

Enable Ping Respond: ON OFF

| Item | Description | Default |
|---|---|---|
| Enable SSH Access | Click the toggle button to enable/disable this option. When enabled, the zone user can access the device via SSH. | OFF |
| Enable HTTP Access | Click the toggle button to enable/disable this option. When enabled, the zone user can access the device via HTTP. | OFF |
| Enable HTTPS Access | Click the toggle button to enable/disable this option. When enabled, the | OFF |

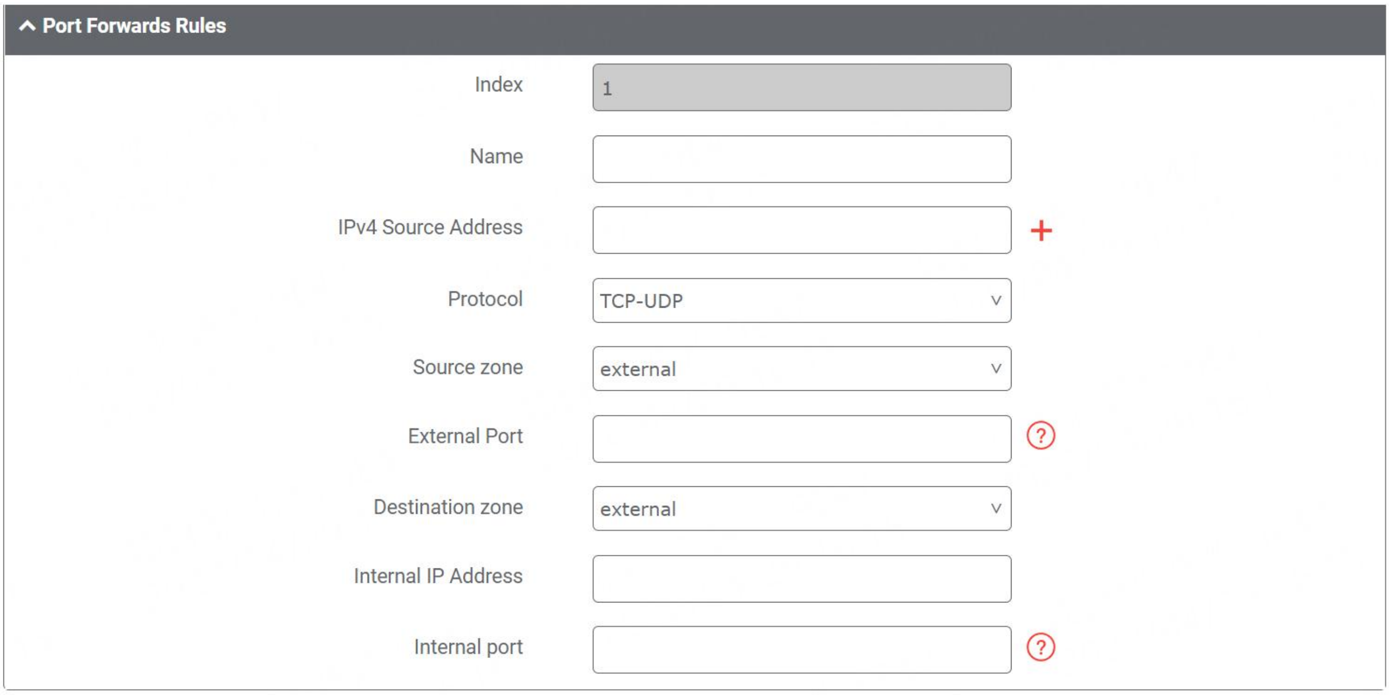
| | | |
|---|---|---|
| | zone user can access the device via HTTPS. | |
| Enable Ping Respond | Click the toggle button to enable/disable this option. When enabled, the device will reply to the Ping requests from other hosts on the zone. | OFF |

## Port Forwards



This window allows you to view the port forward rules. Port forwarding is a way of redirecting an incoming connection to another IP address, port or the combination of both.

Click + to add one.  The maximum count is **50.**

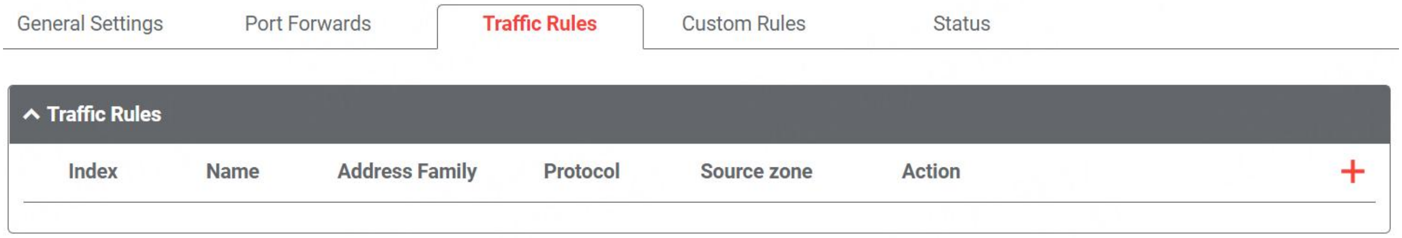


| | |
|---|---|
| Index | 1 |
| Name | |
| IPv4 Source Address | |
| Protocol | TCP-UDP |
| Source zone | external |
| External Port | |
| Destination zone | external |
| Internal IP Address | |
| Internal port | |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Name | Name of the rule. | Null |
| IPv4 Source Address | IP address or network segment used by connecting hosts.<br>The rule will apply only to hosts that connect from IP addresses specified in this field. | Null |
| Protocol | Select from "TCP", "UDP" or "TCP-UDP" as your application required. | TCP-UDP |
| Source zone | The zone to which the third party will be connecting. Select a configured zone. | external |

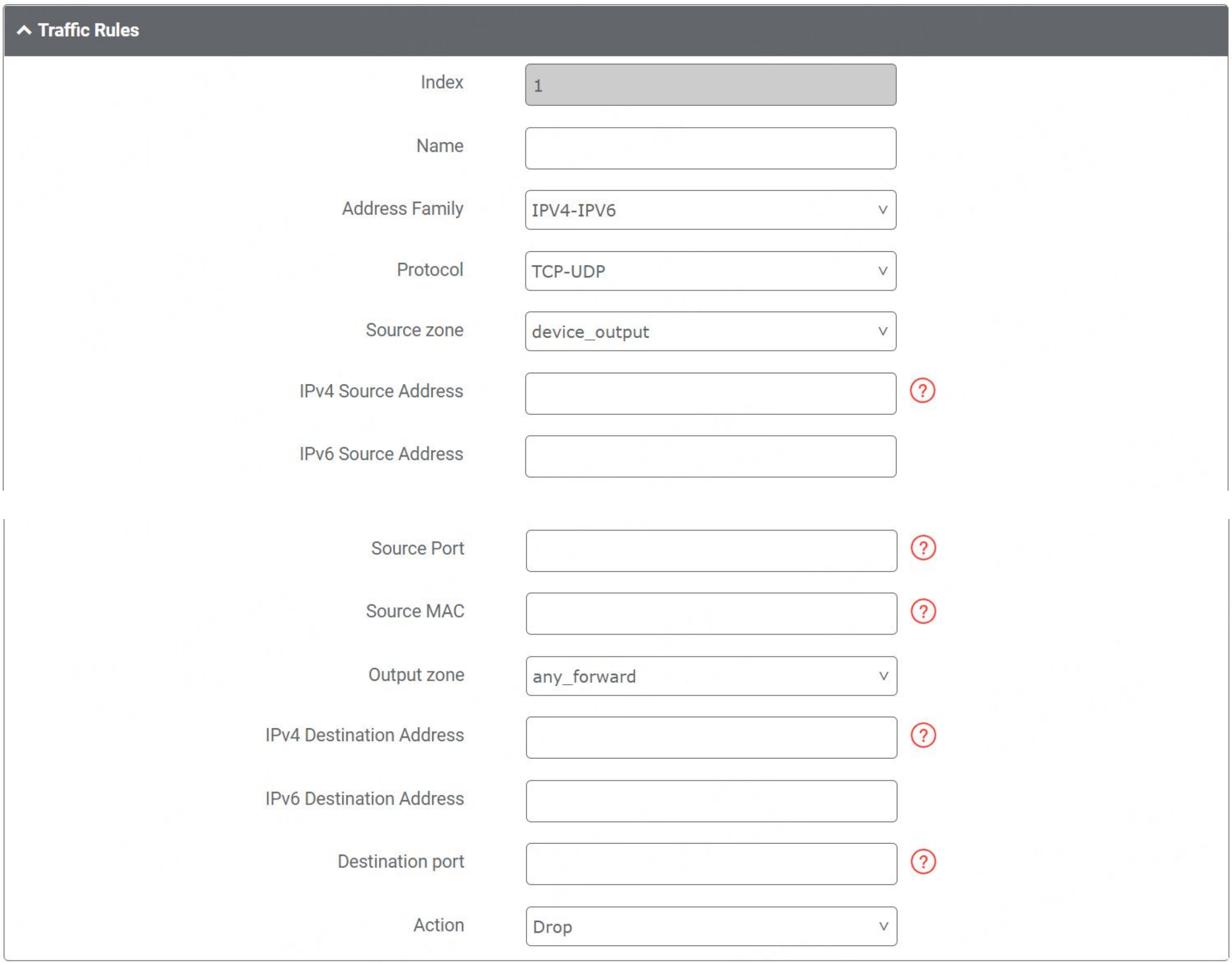
| Item | Description | Default |
|---|---|---|
| External Port | Match incoming traffic directed at the given destination port or port range on this host. Select a configured zone. | Null |
| Destination zone | The zone to which the incoming connection will be redirected. | external |
| Internal IP Address | The IP address to which the incoming connection will be redirected. | Null |
| Internal Port | The port number to which the incoming connection will be redirected. | Null |

## Traffic Rules



This window allows you to view the traffic rules.

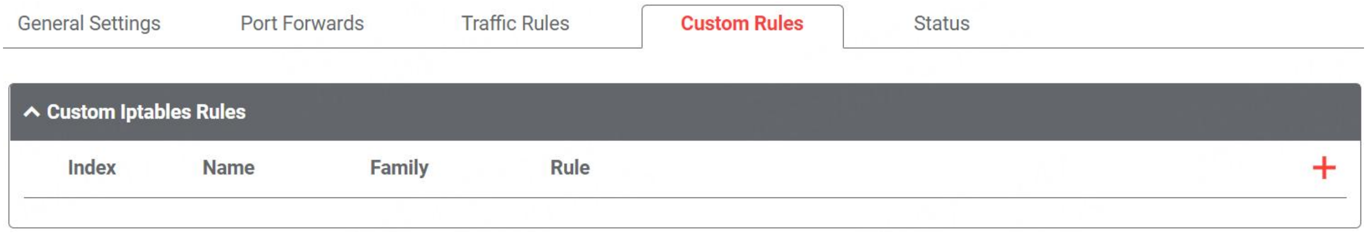
Click + to add one. The maximum count is **50.**



| | |
|---|---|
| Index | 1 |
| Name | |
| Address Family | IPV4-IPV6 |
| Protocol | TCP-UDP |
| Source zone | device_output |
| IPv4 Source Address | |
| IPv6 Source Address | |
| Source Port | |
| Source MAC | |
| Output zone | any_forward |
| IPv4 Destination Address | |
| IPv6 Destination Address | |
| Destination port | |
| Action | Drop |

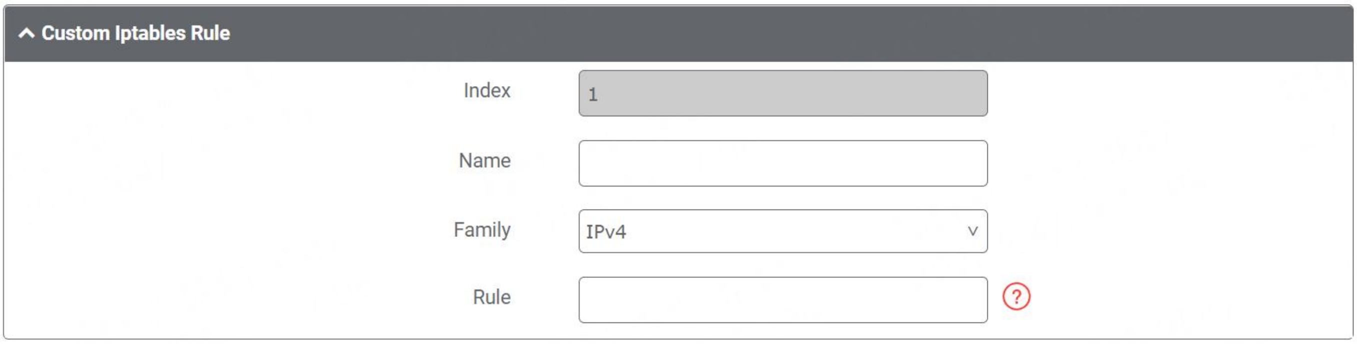
| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Name | The name of the rule. | Null |
| Address family | Select from “IPv4”, “IPv6” or “IPv4-IPv6” as your application required. | IPv4-IPv6 |
| Protocol | Select from “TCP”, “UDP” or “TCP-UDP” as your application required. | TCP-UDP |
| Source zone | The zone to which the third party will be connecting. | device_output |
| IPv4 Source Address | The IPv4 address or network segment used by connecting hosts.<br>The rule will apply only to hosts that connect from IP addresses specified in this field. | Null |
| IPv6 Source Address | The IPv6 address or network segment used by connecting hosts.<br>The rule will apply only to hosts that connect from IP addresses specified in this field. | Null |
| Source Port | Port number(s) used by the connecting host.<br>The rule will match the source port used by the connecting host with the port number(s) specified in this field. Leave empty to make the rule skip source port matching. | Null |
| Source MAC | MAC address of connecting hosts.<br>The rule will apply only to hosts that match MAC addresses specified in this field. Leave empty to make the rule skip MAC address matching. | Null |
| Output zone | The zone to which the incoming connection will be redirected. | any_forward |
| IPv4 Destination Address | The IP address to which the incoming connection will be redirected. | Null |
| IPv6 Destination Address | The IP address to which the incoming connection will be redirected. | Null |
| Destination port | The port number to which the incoming connection will be redirected. | Null |
| Action | Select from “Accept”, or “Drop” as your application required. | Null |

## Custom Rules



This window allows you to view the custom rules.

Click + to add one. The maximum count is **50.**



Index: 1

Name:

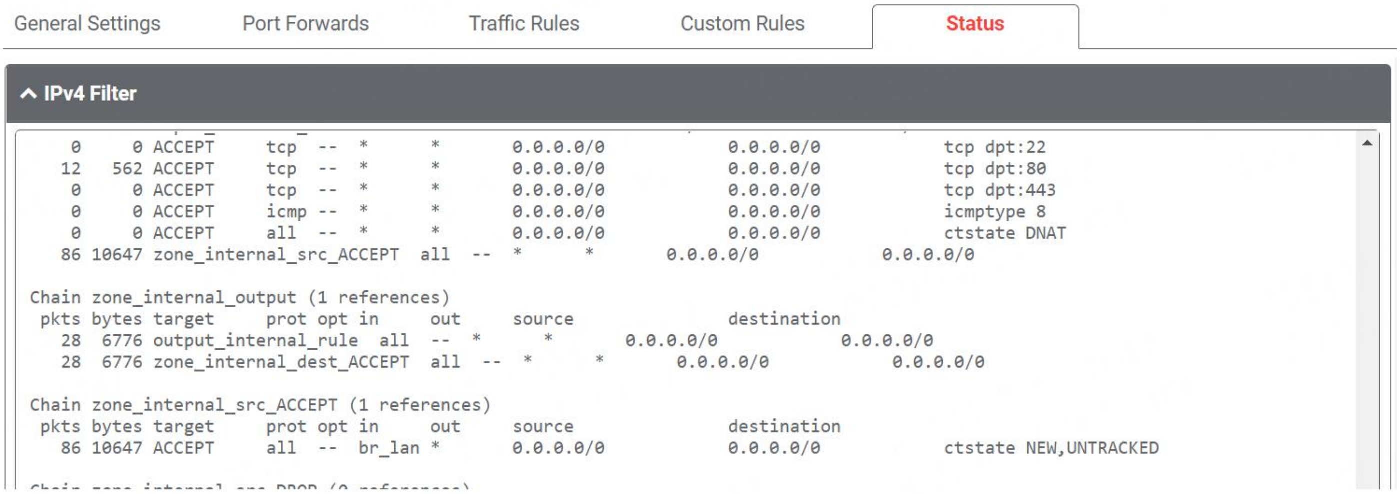
Family: IPv4

Rule:

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Name | Enter a description for this. | Null |
| Family | Select from "IPv4", "IPv6" or "IPv4-IPv6" as your application required. | IPv4 |
| Rule | Users specify their own iptables rule in required format. | Null |

## Status

This window allows you to view the status of firewall.

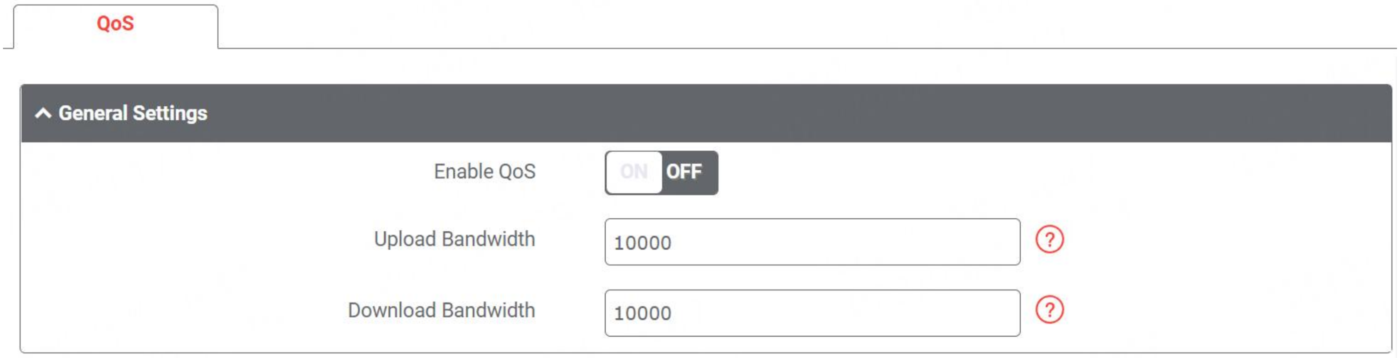


```
    0     0 ACCEPT     tcp  --  *      *       0.0.0.0/0            0.0.0.0/0            tcp dpt:22
   12   562 ACCEPT     tcp  --  *      *       0.0.0.0/0            0.0.0.0/0            tcp dpt:80
    0     0 ACCEPT     tcp  --  *      *       0.0.0.0/0            0.0.0.0/0            tcp dpt:443
    0     0 ACCEPT     icmp --  *      *       0.0.0.0/0            0.0.0.0/0            icmptype 8
    0     0 ACCEPT     all  --  *      *       0.0.0.0/0            0.0.0.0/0            ctstate DNAT
   86 10647 zone_internal_src_ACCEPT  all  --  *      *       0.0.0.0/0            0.0.0.0/0

Chain zone_internal_output (1 references)
 pkts bytes target     prot opt in     out     source               destination
   28  6776 output_internal_rule  all  --  *      *       0.0.0.0/0            0.0.0.0/0
   28  6776 zone_internal_dest_ACCEPT  all  --  *      *       0.0.0.0/0            0.0.0.0/0

Chain zone_internal_src_ACCEPT (1 references)
 pkts bytes target     prot opt in     out     source               destination
   86 10647 ACCEPT     all  --  br_lan *       0.0.0.0/0            0.0.0.0/0            ctstate NEW,UNTRACKED

Chain zone_internal_src_DROP (0 references)
```

# 2.3.6 QoS

QoS provides the possibility to prioritize network traffic based on hosts, ports or services and limit download or upload speeds on a selected interface.

## General Setting



QoS

General Settings

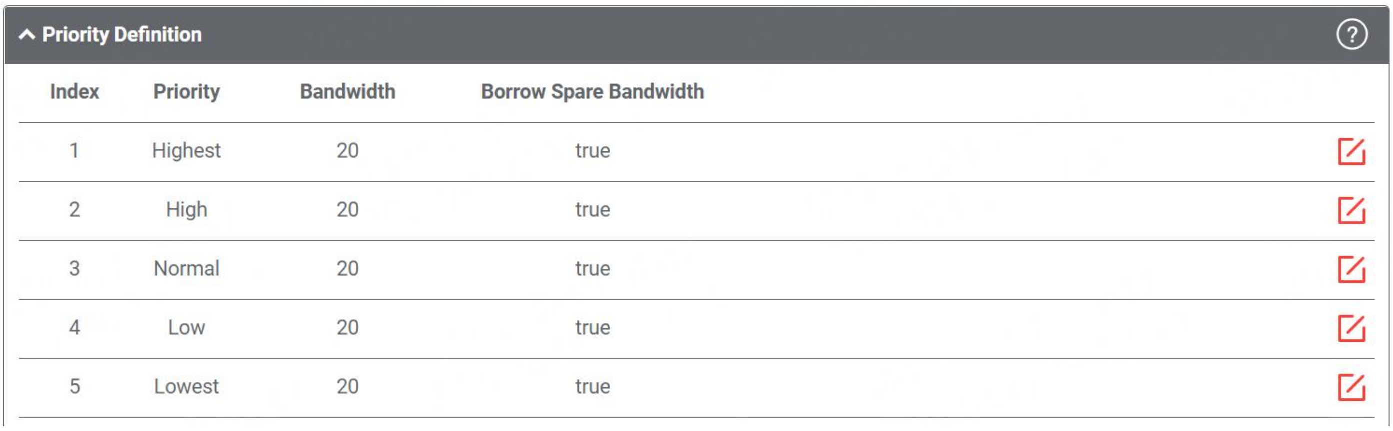
Enable QoS: ON OFF

Upload Bandwidth: 10000

Download Bandwidth: 10000

| Item | Description | Default |
|---|---|---|
| Enable QoS | Click the toggle button to enable or disable. | OFF |
| Upload Bandwidth | Enter a value for the upload bandwidth, the unit is kbit. | 10000 |
| Download Bandwidth | Enter a value for the download bandwidth, the unit is kbit. | 10000 |

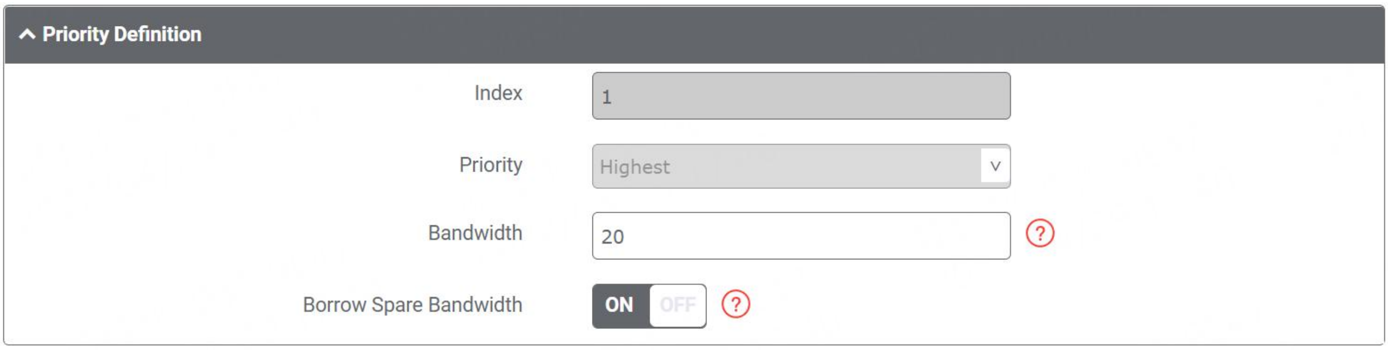
## Priority Definition



Priority Definition

| Index | Priority | Bandwidth | Borrow Spare Bandwidth | |
|---|---|---|---|---|
| 1 | Highest | 20 | true | ✎ |
| 2 | High | 20 | true | ✎ |
| 3 | Normal | 20 | true | ✎ |
| 4 | Low | 20 | true | ✎ |
| 5 | Lowest | 20 | true | ✎ |

Click ✎ to set the priority.



Priority Definition

Index: 1

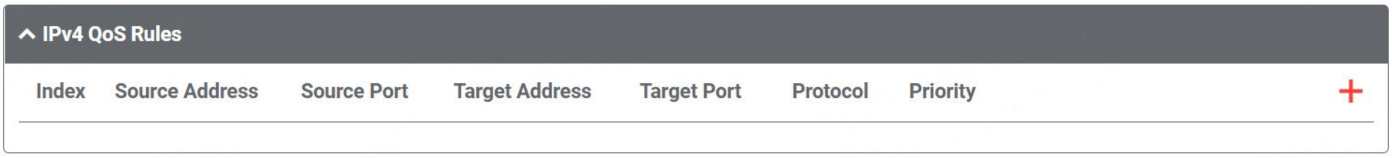
Priority: Highest

Bandwidth: 20

Borrow Spare Bandwidth: ON OFF

| Item | Description | Default |
|---|---|---|
| Bandwidth | Percentage of total bandwidth. The sum of bandwidth of all the priorities cannot be greater than 100. | 20 |
| Borrow Spare Bandwidth | The traffic associated with this priority will borrow unused bandwidth from other priorities when borrowing is enabled, and will be limited to the specified bandwidth when borrowing is disabled. | ON |

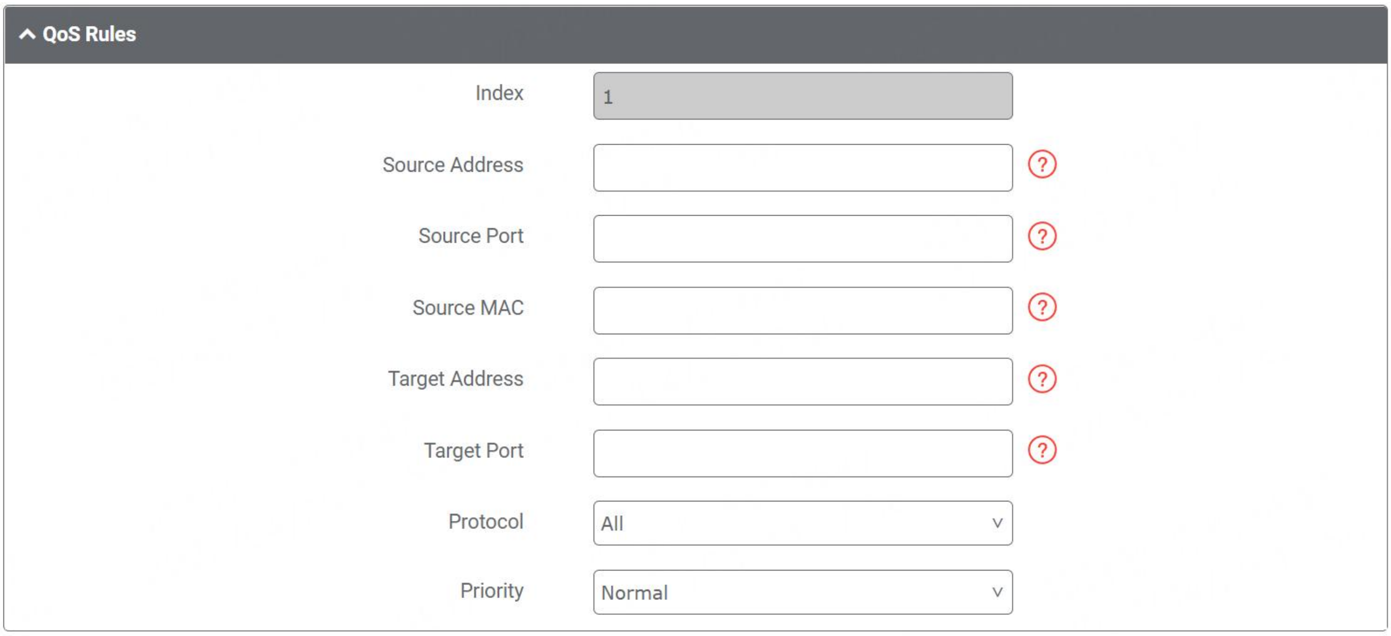
## IPv4 QoS Rules



^ IPv4 QoS Rules

| Index | Source Address | Source Port | Target Address | Target Port | Protocol | Priority | + |
|---|---|---|---|---|---|---|---|

Click + to add one. The maximum count is **10.**

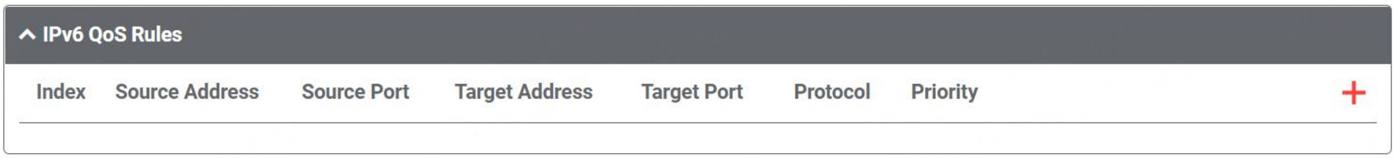


^ QoS Rules

| | |
|---|---|
| Index | 1 |
| Source Address | |
| Source Port | |
| Source MAC | |
| Target Address | |
| Target Port | |
| Protocol | All |
| Priority | Normal |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Source Address | The address of Host(s) from which data will be transmitted. | Null |
| Source Port | The port of Host(s) from which data will be transmitted. | Null |
| Source MAC | The MAC address of Host(s) from which data will be transmitted. | Null |
| Target Address | The address of Host(s) to which data will be transmitted. | Null |
| Target Port | The port of Host(s) to which data will be transmitted. | Null |
| Protocol | Select from “All”, “TCP”, “UDP” or “ICMP” as your application required. | All |
| Priority | Select from “Highest”, “High”, “Normal”, “Low” or “Lowest” as your application required. | Normal |

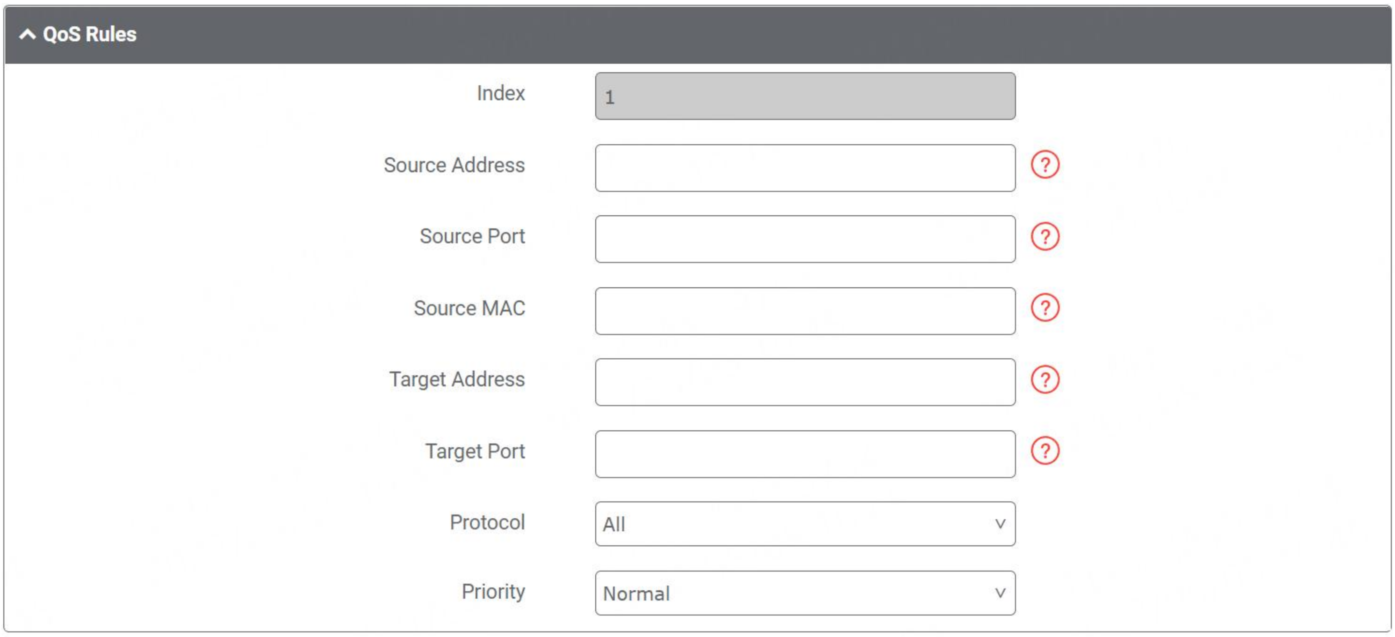
## IPv6 QoS Rules



^ IPv6 QoS Rules

| Index | Source Address | Source Port | Target Address | Target Port | Protocol | Priority |
|---|---|---|---|---|---|---|

Click + to add one. The maximum count is **10.**



^ QoS Rules

| | |
|---|---|
| Index | 1 |
| Source Address | |
| Source Port | |
| Source MAC | |
| Target Address | |
| Target Port | |
| Protocol | All |
| Priority | Normal |

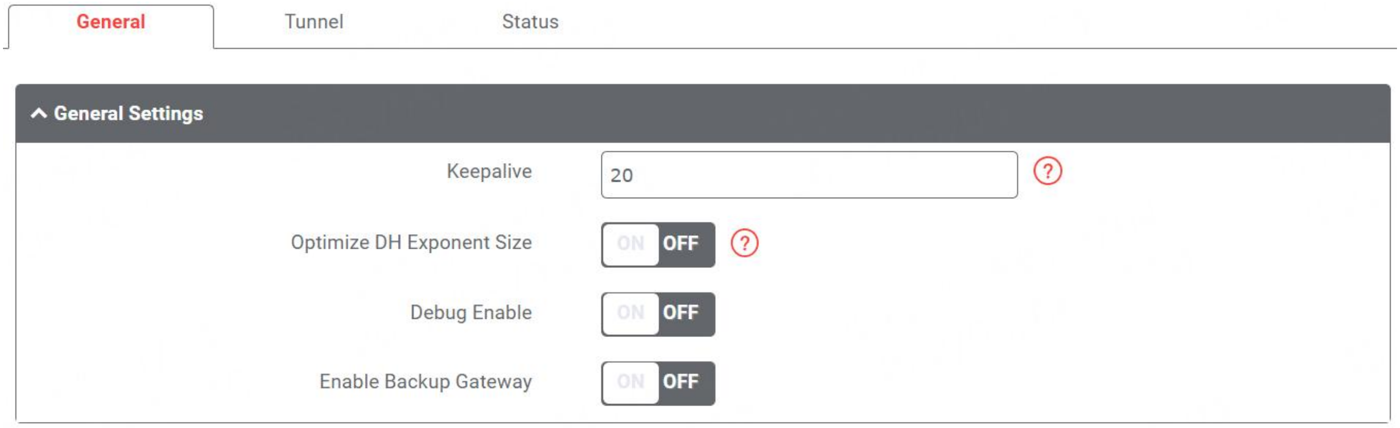
| **Item** | **Description** | **Default** |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Source Address | The address of Host(s) from which data will be transmitted. | Null |
| Source Port | The port of Host(s) from which data will be transmitted. | Null |
| Source MAC | The MAC address of Host(s) from which data will be transmitted. | Null |
| Target Address | The address of Host(s) to which data will be transmitted. | Null |
| Target Port | The port of Host(s) to which data will be transmitted. | Null |
| Protocol | Select from “All”, “TCP”, “UDP” or “ICMP” as your application required. | All |
| Priority | Select from “Highest”, “High”, “Normal”, “Low” or “Lowest” as your application required. | Normal |

## 2.4 VPN

### 2.4.1 IPsec

This section allows you to set the IPsec and the related parameters. Internet Protocol Security (IPsec) is a protocol suite for secure Internet Protocol (IP) communications that works by authenticating and encrypting each IP packet of a communication session.

### General



Keepalive: 20

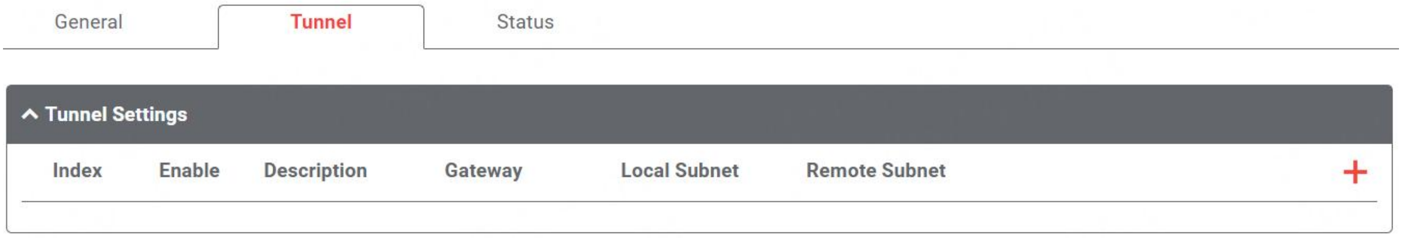
Optimize DH Exponent Size: ON OFF

Debug Enable: ON OFF

Enable Backup Gateway: ON OFF

| Item | Description | Default |
|---|---|---|
| Keepalive | Set the time to live in seconds. The router sends keep-alive packets to the NAT (Network Address Translation) server at regular intervals to prevent the records on the NAT table from disappearing. | 20 |
| Optimize DH Size | Click the toggle button to enable/disable this option. When enabled, when using dhgroup17 or dhgroup18, it helps to shorten the time to generate the dh key. | OFF |
| Debug Enable | Click the toggle button to enable/disable this option. Enable for IPsec VPN information output to the debug port. | OFF |
| Enable Backup Gateway | Click the toggle button to enable/disable this option. | OFF |

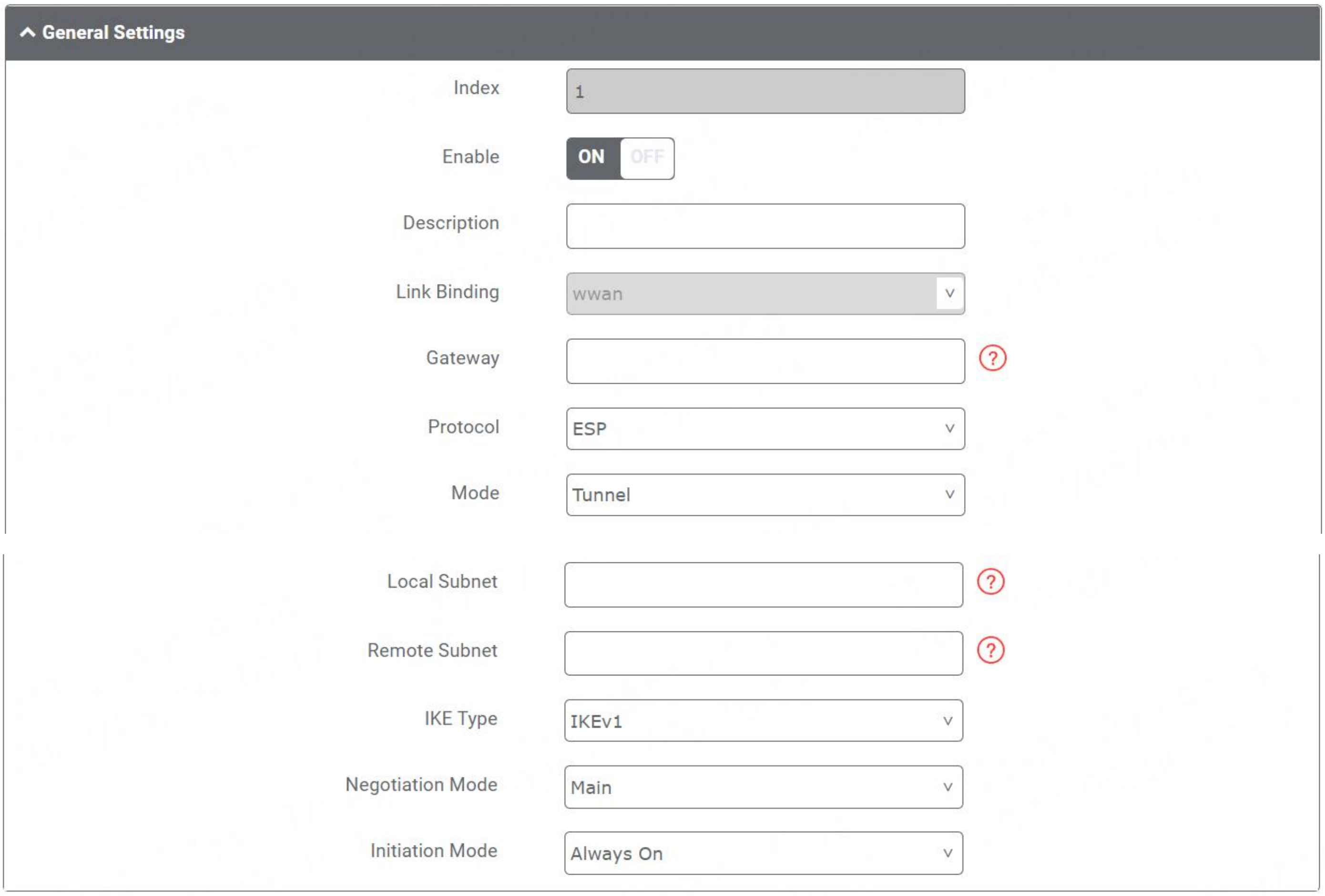
### Tunnel



| Index | Enable | Description | Gateway | Local Subnet | Remote Subnet |
|---|---|---|---|---|---|

Click + to add IPsec tunnel settings. The maximum count is **6**.

## General Setting



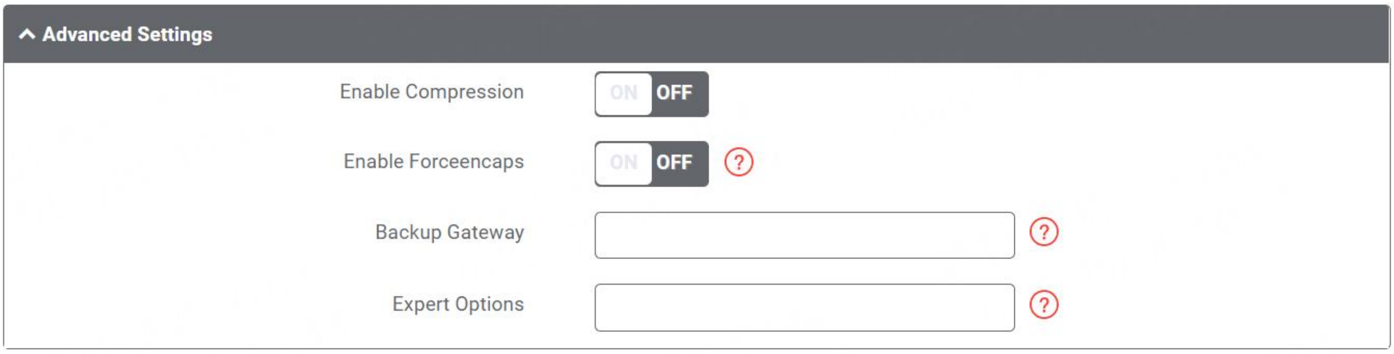
General Settings

| | |
|---|---|
| Index | 1 |
| Enable | ON OFF |
| Description | |
| Link Binding | wwan |
| Gateway | |
| Protocol | ESP |
| Mode | Tunnel |
| Local Subnet | |
| Remote Subnet | |
| IKE Type | IKEv1 |
| Negotiation Mode | Main |
| Initiation Mode | Always On |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Enable | Click the toggle button to enable/disable this IPsec tunnel. | ON |
| Description | Enter a description for this IPsec tunnel. | Null |
| Link binding | Select the link to build IPSec. | Unbound |
| Gateway | Enter the address of remote side IPsec VPN server. 0.0.0.0 represents for any address. | Null |
| Mode | Select from “Tunnel” and “Transport”.<br>• Tunnel: Commonly used between routers, or at an end-station to a router, the router acting as a proxy for the hosts behind it<br>• Transport: Used between end-stations or between an end-station and a router, if the router is being treated as a host-for example, an encrypted Telnet session from a workstation to a router, in which the router is the actual destination | Tunnel |
| Protocol | Select the security protocols from “ESP” and “AH”. | ESP |

| | | |
|---|---|---|
| | • ESP: Use the ESP protocol<br>• AH: Use the AH protocol | |
| Local Subnet | Enter the local subnet's address with mask protected by IPsec, e.g. 192.168.1.0/24 | Null |
| Remote Subnet | Enter the remote subnet's address with mask protected by IPsec, e.g. 10.8.0.0/24 | Null |
| IKE Type | Select from "IKEv1" and "IKEv2". | IKEv1 |
| Negotiation Mode | Select from "Main" and "Aggressive" for the IKE negotiation mode in phase 1. If the IP address of one end of an IPsec tunnel is obtained dynamically, the IKE negotiation mode must be aggressive. In this case, SAs can be established as long as the username and password are correct. | Main |
| Initial Mode | Select from "Always On" and "On Demand". | Always On |

## Advanced Setting



Advanced Settings

Enable Compression ON OFF

Enable Forceencaps ON OFF

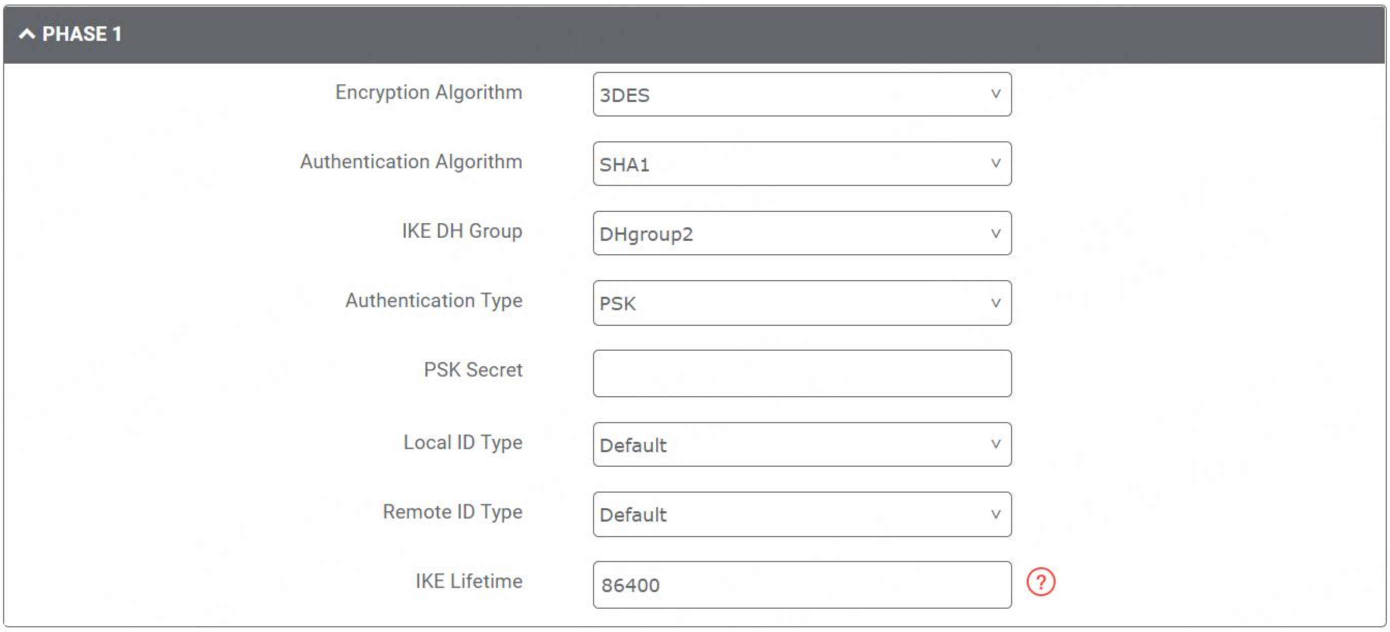
Backup Gateway

Expert Options

| Item | Description | Default |
|---|---|---|
| Enable Compression | Click the toggle button to enable/disable this option. Enable to compress the inner headers of IP packets. | OFF |
| Enable Forceencaps | Force UDP encapsulation for ESP packets even if no NAT situation is detected.This may help to surmount restrictive firewalls. | OFF |
| Backup Gateway | Backup Address of remote peer to initiate connection, empty means disable. | Null |
| Expert Options | Add more PPP configuration options here, format: config-desc; config-desc, e.g. protostack=netkey; plutodebug=none | Null |

## PHASE 1

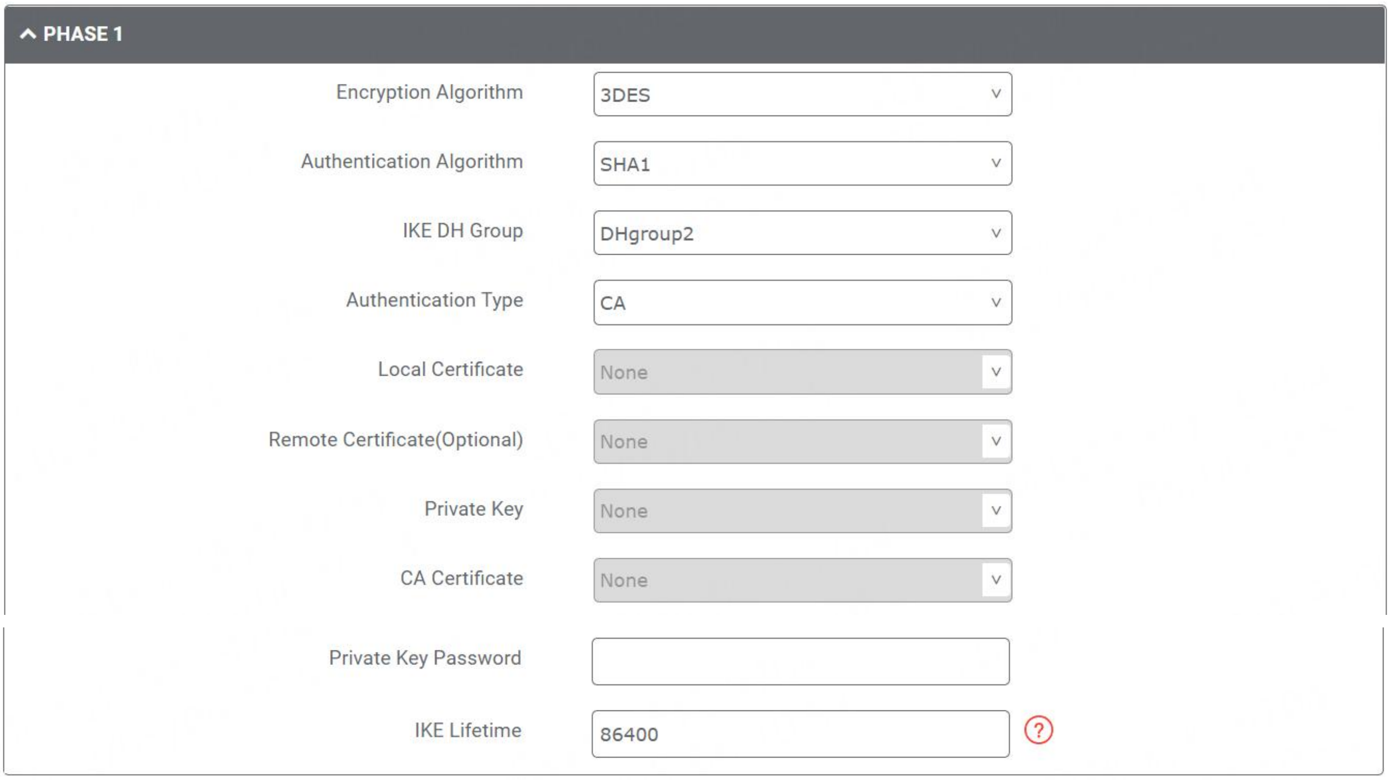
The window is displayed as below when choosing "PSK" as the authentication type.



PHASE 1

| | |
|---|---|
| Encryption Algorithm | 3DES |
| Authentication Algorithm | SHA1 |
| IKE DH Group | DHgroup2 |
| Authentication Type | PSK |
| PSK Secret | |
| Local ID Type | Default |
| Remote ID Type | Default |
| IKE Lifetime | 86400 |

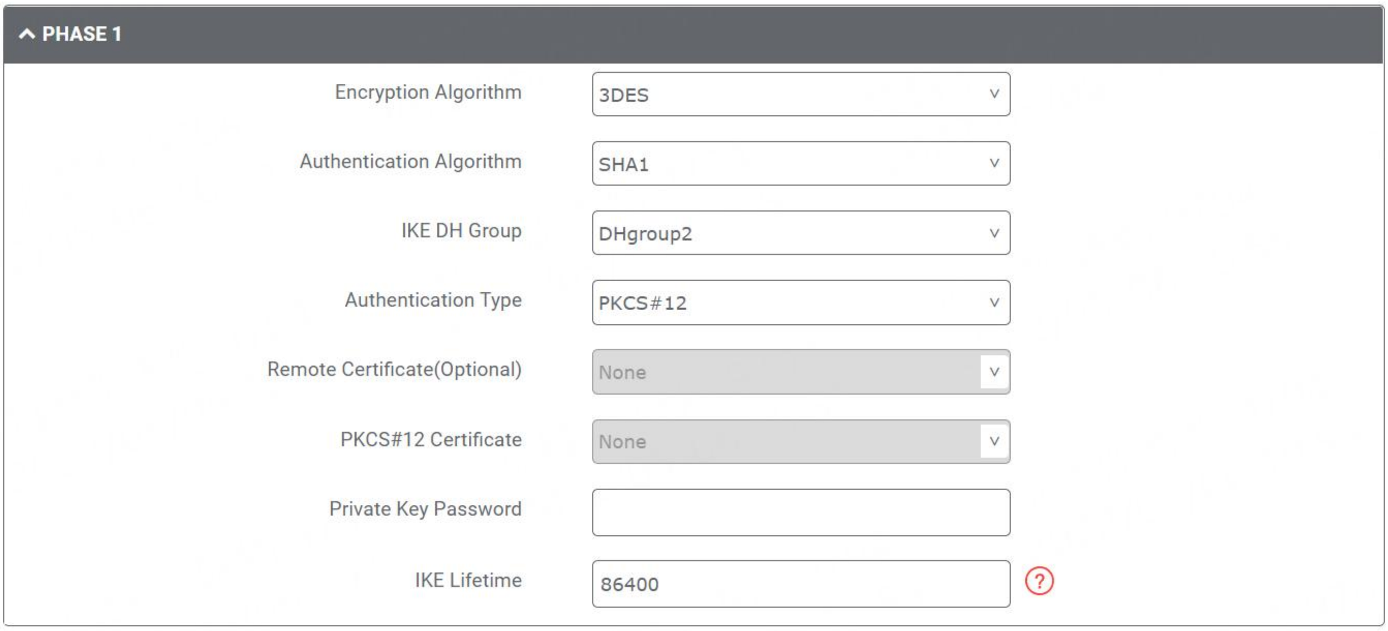
The window is displayed as below when choosing “CA” as the authentication type.



PHASE 1

| | |
|---|---|
| Encryption Algorithm | 3DES |
| Authentication Algorithm | SHA1 |
| IKE DH Group | DHgroup2 |
| Authentication Type | CA |
| Local Certificate | None |
| Remote Certificate(Optional) | None |
| Private Key | None |
| CA Certificate | None |
| Private Key Password | |
| IKE Lifetime | 86400 |

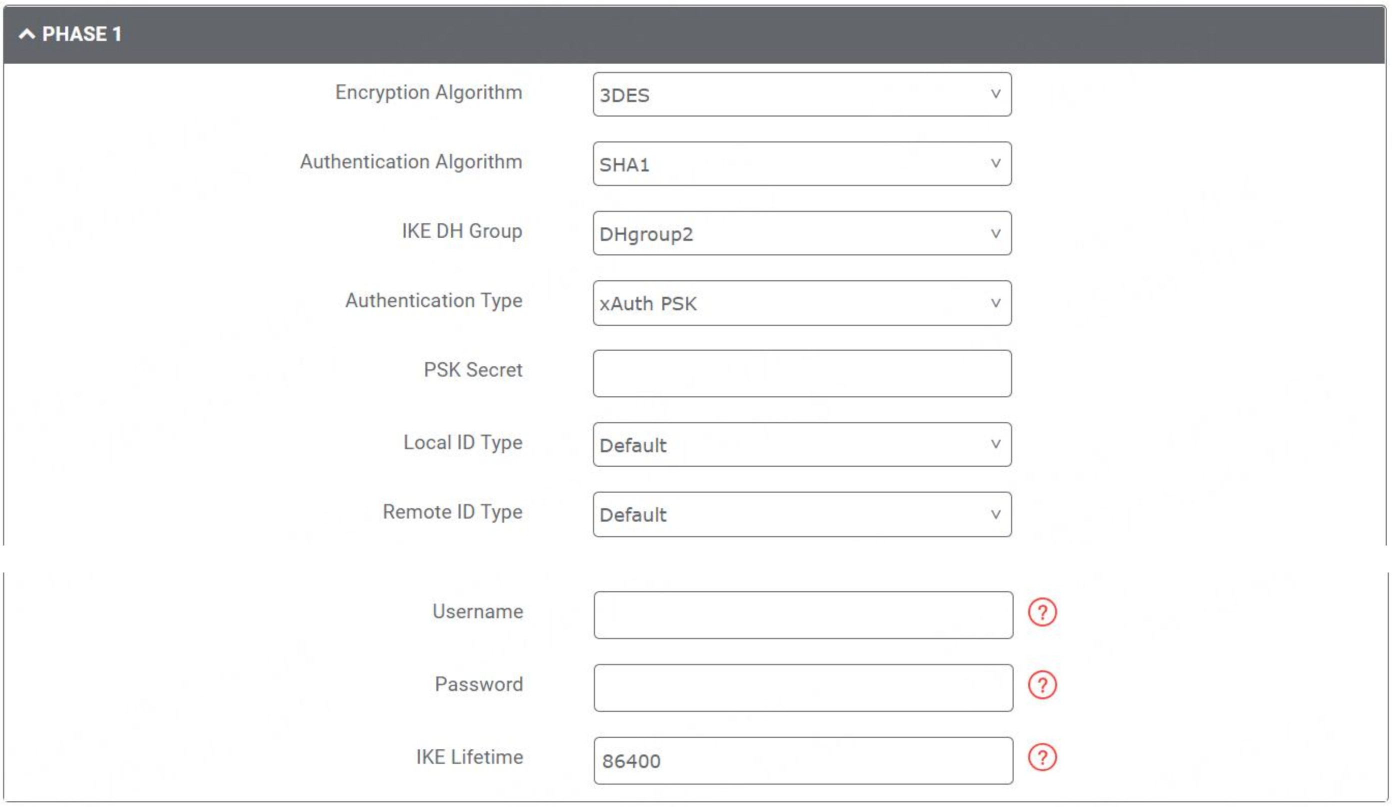
The window is displayed as below when choosing “PKCS#12” as the authentication type.



**^ PHASE 1**

| | |
|---|---|
| Encryption Algorithm | 3DES |
| Authentication Algorithm | SHA1 |
| IKE DH Group | DHgroup2 |
| Authentication Type | PKCS#12 |
| Remote Certificate(Optional) | None |
| PKCS#12 Certificate | None |
| Private Key Password | |
| IKE Lifetime | 86400 |

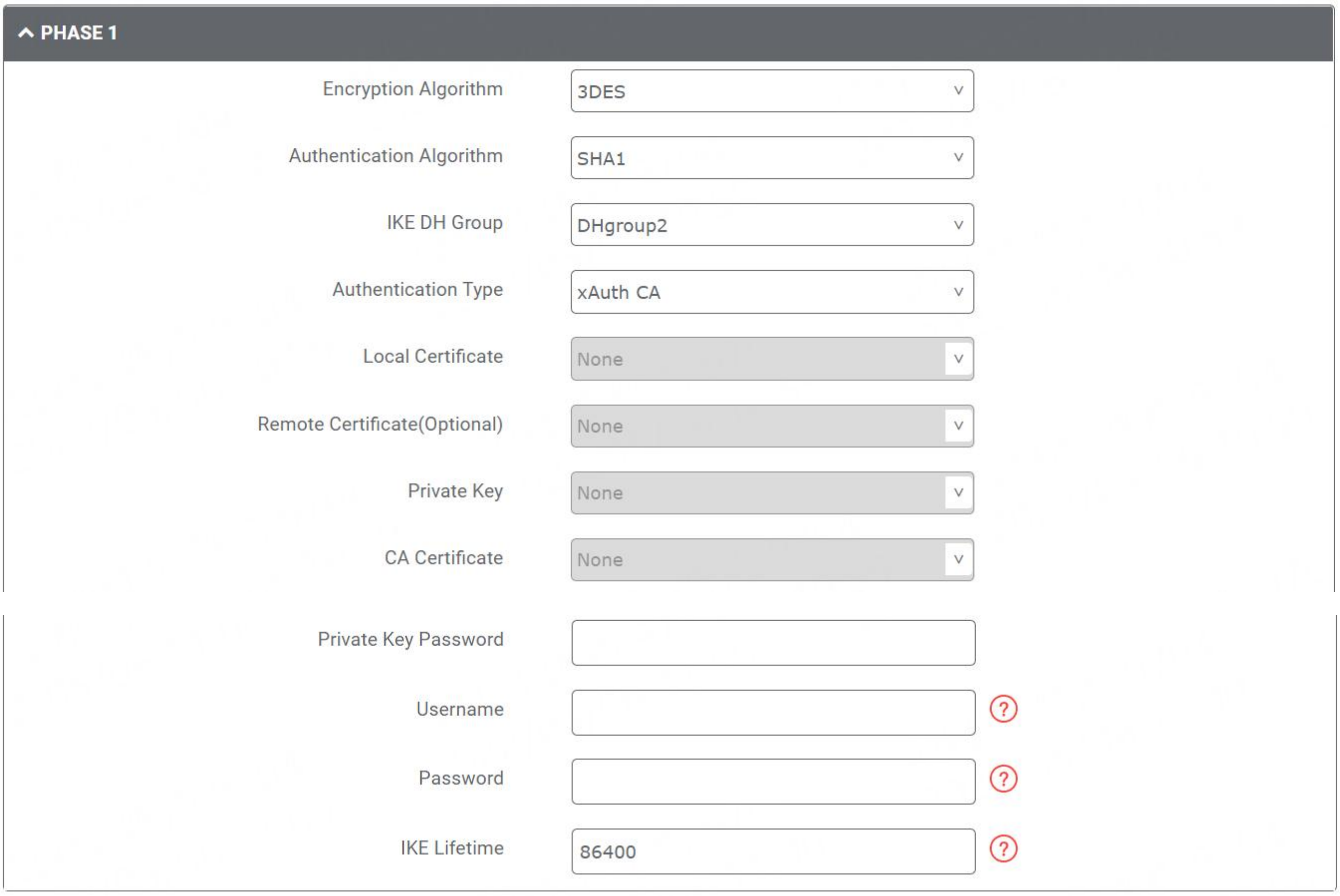
The window is displayed as below when choosing "xAuth PSK" as the authentication type.



**^ PHASE 1**

| | |
|---|---|
| Encryption Algorithm | 3DES |
| Authentication Algorithm | SHA1 |
| IKE DH Group | DHgroup2 |
| Authentication Type | xAuth PSK |
| PSK Secret | |
| Local ID Type | Default |
| Remote ID Type | Default |
| Username | |
| Password | |
| IKE Lifetime | 86400 |

The window is displayed as below when choosing "xAuth CA" as the authentication type.



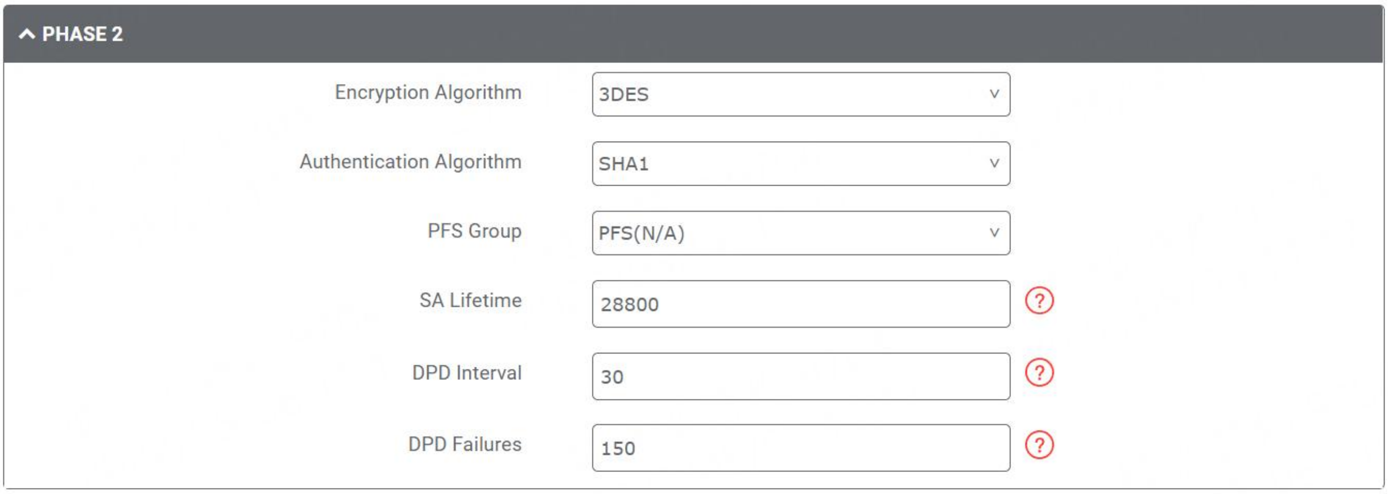
PHASE 1

| | |
|---|---|
| Encryption Algorithm | 3DES |
| Authentication Algorithm | SHA1 |
| IKE DH Group | DHgroup2 |
| Authentication Type | xAuth CA |
| Local Certificate | None |
| Remote Certificate(Optional) | None |
| Private Key | None |
| CA Certificate | None |
| Private Key Password | |
| Username | |
| Password | |
| IKE Lifetime | 86400 |

| Item | Description | Default |
|---|---|---|
| Encrypt Algorithm | Select from “3DES”, “AES128”, “AES192”and “AES256”.<br>• 3DES: Use 168-bit 3DES encryption algorithm in CBC mode<br>• AES128: Use 128-bit AES encryption algorithm in CBC mode<br>• AES128: Use 192-bit AES encryption algorithm in CBC mode<br>• AES256: Use 256-bit AES encryption algorithm in CBC mode | 3DES |
| Authentication Algorithm | Select from “MD5”, “SHA1”, “SHA2 256”,“SHA2 384” or “SHA2 512” . | MD5 |
| IKE DH Group | Select from “DHgroup1”,“DHgroup2”, “DHgroup5”, “DHgroup14”, “DHgroup15”, “DHgroup16”, “DHgroup17” or “DHgroup18” . | DHgroup2 |
| Authentication Type | Select from “PSK”, “CA”, “xAuth PSK” ,”PKCS#12”and “xAuth CA” to be used in IKE negotiation.<br>• PSK: Pre-shared Key<br>• CA: Certification Authority<br>• xAuth: Extended Authentication to AAA server<br>• PKCS#12: Exchange digital certificate authentication | PSK |
| PSK Secret | Enter the pre-shared key. | Null |
| Local ID Type | Select from “Default”, “Address”, “FQDN” and “User FQDN” .<br>• Default: Uses an IP address as the ID in IKE negotiation<br>• FQDN: Uses an FQDN type as the ID in IKE negotiation. If this option is selected, type a name without any at sign (@) for the local security | Default |

| Item | Description | Default |
|---|---|---|
| | router, e.g., test.robustel.com<br>• User FQDN: Uses a user FQDN type as the ID in IKE negotiation. If this option is selected, type a name string with a sign "@" for the local security router, e.g., test@robustel.com | |
| Remote ID Type | Select from "Default", "FQDN" and "User FQDN" for IKE negotiation.<br>• Default: Uses an IP address as the ID in IKE negotiation<br>• FQDN: Uses an FQDN type as the ID in IKE negotiation. If this option is selected, type a name without any at sign (@) for the local security router, e.g., test.robustel.com<br>• User FQDN: Uses a user FQDN type as the ID in IKE negotiation. If this option is selected, type a name string with a sign "@" for the local security router, e.g., test@robustel.com | Default |
| IKE Lifetime | Set the lifetime in IKE negotiation. Before an SA expires, IKE negotiates a new SA. As soon as the new SA is set up, it takes effect immediately and the old one will be cleared automatically when it expires. | 86400 |
| Private Key Password | Enter the private key under the "CA" and "xAuth CA" authentication types. | Null |
| Username | Enter the username used for the "xAuth PSK" and "xAuth CA" authentication types. | Null |
| Password | Enter the password used for the "xAuth PSK" and "xAuth CA" authentication types. | Null |

## PHASE 2



Encryption Algorithm: 3DES

Authentication Algorithm: SHA1

PFS Group: PFS(N/A)

SA Lifetime: 28800

DPD Interval: 30

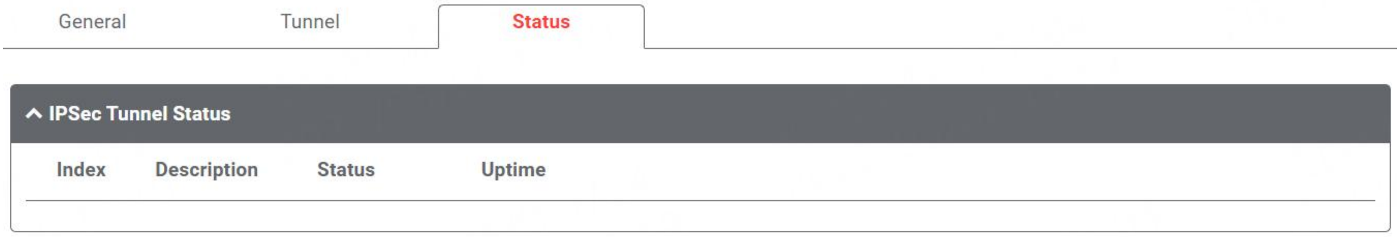
DPD Failures: 150

| Item | Description | Default |
|---|---|---|
| Encrypt Algorithm | Select from "3DES", "AES128", "AES192"or "AES256" when you select "ESP" in "Protocol". Higher security means more complex implementation and lower speed. DES is enough to meet general requirements. Use 3DES when high confidentiality and security are required. | 3DES |
| Authentication Algorithm | Select from "MD5", "SHA1", "SHA2 256" or "SHA2 512" to be used in SA negotiation. | MD5 |
| PFS Group | Select from "PFS(N/A)", "DHgroup1","DHgroup2", "DHgroup5", | DHgroup2 |

| Item | Description | Default |
|---|---|---|
| | “DHgroup14”, “DHgroup15”, “DHgroup16”, “DHgroup17” or “DHgroup18” to be used in SA negotiation. | |
| SA Lifetime | Set the IPsec SA lifetime. When negotiating to set up IPsec SAs, IKE uses the smaller one between the lifetime set locally and the lifetime proposed by the peer. | 28800 |
| DPD Interval | Set the interval after which DPD is triggered if no IPsec protected packets is received from the peer. DPD is a Dead peer detection. DPD irregularly detects dead IKE peers. When the local end sends an IPsec packet, DPD checks the time the last IPsec packet was received from the peer. If the time exceeds the DPD interval, it sends a DPD hello to the peer. If the local end receives no DPD acknowledgment within the DPD packet retransmission interval, it retransmits the DPD hello. If the local end still receives no DPD acknowledgment after having made the maximum number of retransmission attempts, it considers the peer already dead, and clears the IKE SA and the IPsec SAs based on the IKE SA. | 30 |
| DPD Failures | Set the timeout of DPD (Dead Peer Detection) packets. | 150 |

### Status

This section allows you to view the status of the IPsec tunnel.

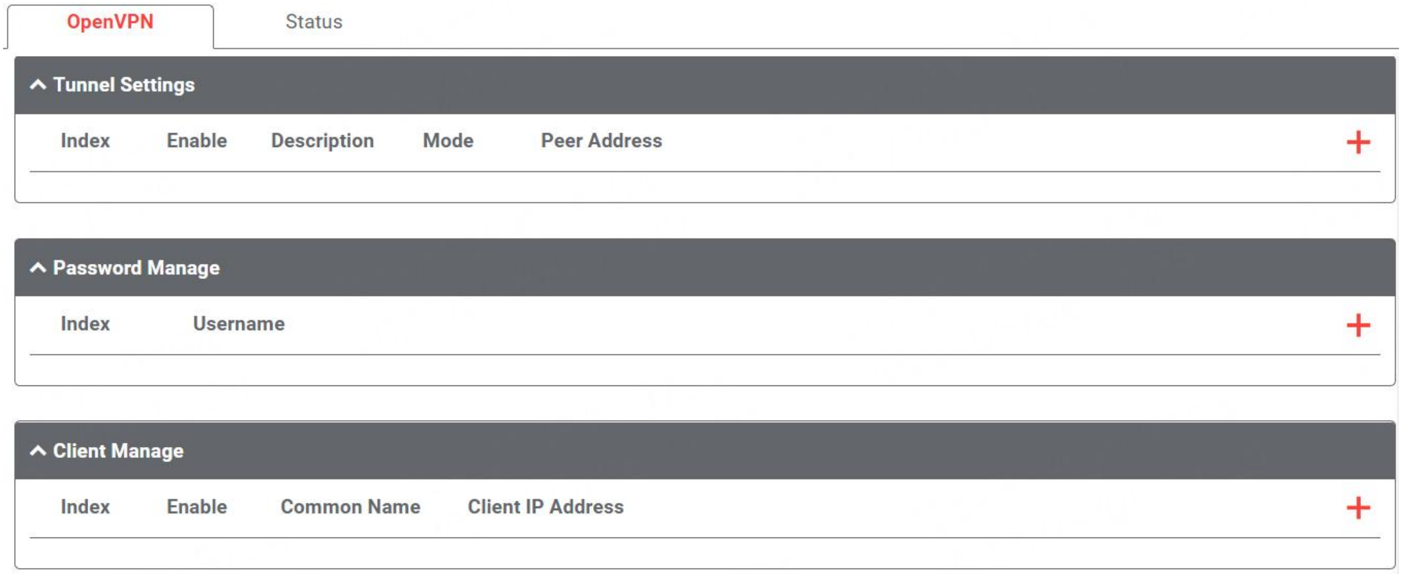


| Index | Description | Status | Uptime |
|---|---|---|---|

## 2.4.2 OpenVPN

This section allows you to set the OpenVPN and the related parameters. OpenVPN is an open-source software application that creates secures point-to-point or site-to-site connections.

## OpenVPN



| Index | Enable | Description | Mode | Peer Address |
|---|---|---|---|---|

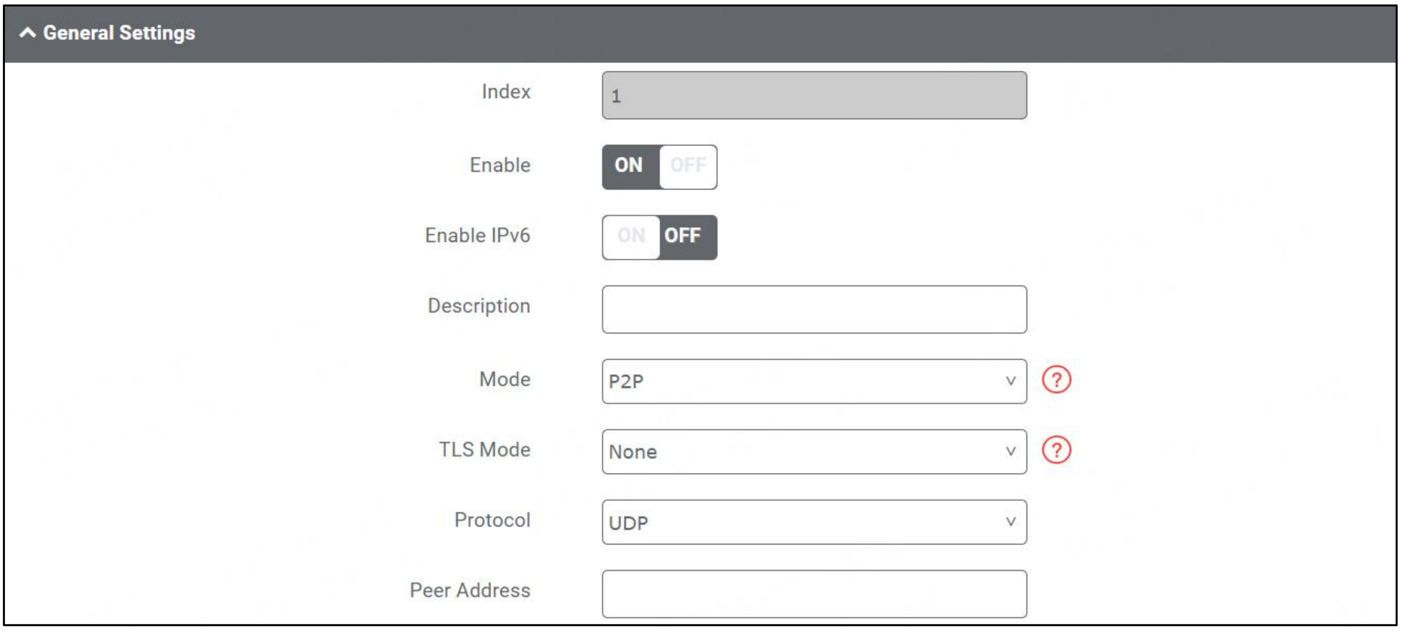
| Index | Username |
|---|---|

| Index | Enable | Common Name | Client IP Address |
|---|---|---|---|

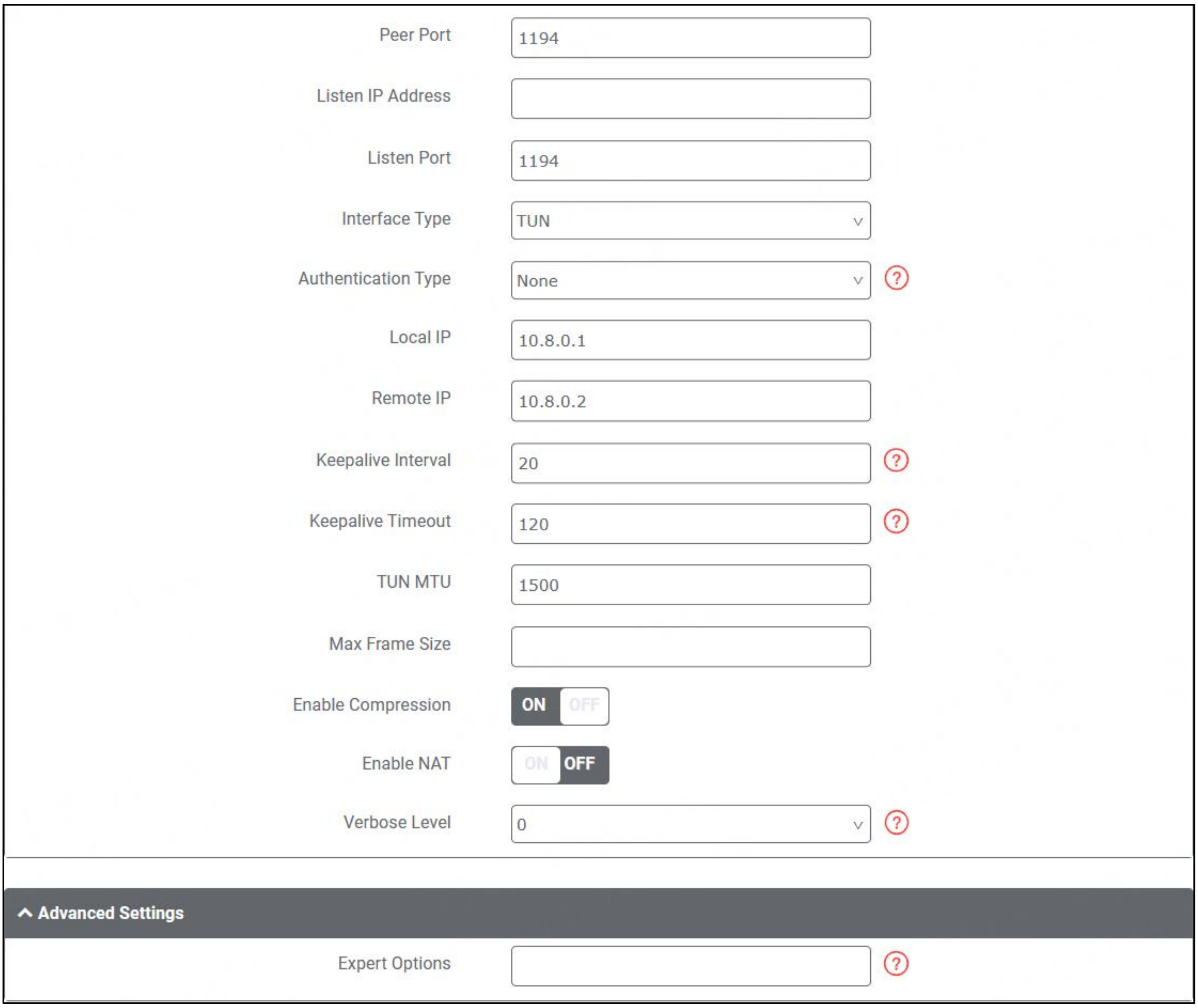
### Tunnel Setting

Click + to add an OpenVPN tunnel settings. The maximum count is 5. The configure page might vary when choosing different mode, and the **Authentication Type** might be fixed for using on specific mode.

By default, the mode is “P2P”. The window is displayed as below when choosing “P2P” as the mode.



| | |
|---|---|
| Index | 1 |
| Enable | ON OFF |
| Enable IPv6 | ON OFF |
| Description | |
| Mode | P2P ? |
| TLS Mode | None ? |
| Protocol | UDP |
| Peer Address | |

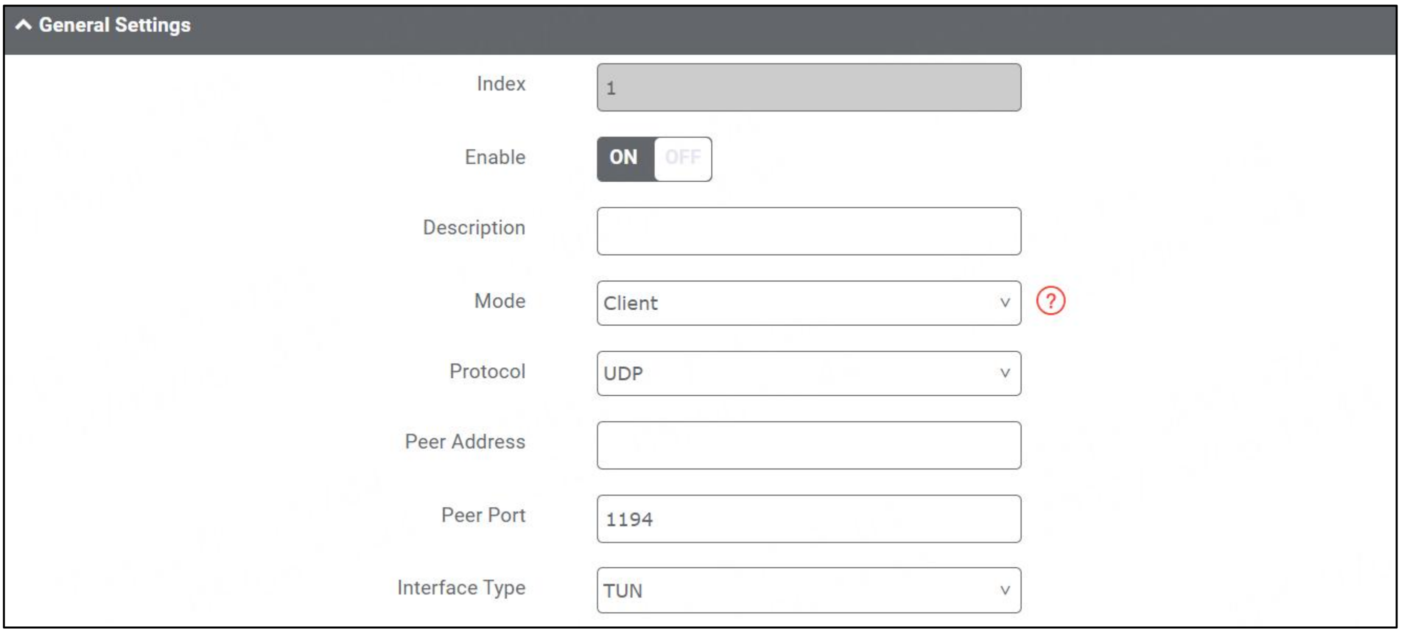


| | |
|---|---|
| Peer Port | 1194 |
| Listen IP Address | |
| Listen Port | 1194 |
| Interface Type | TUN |
| Authentication Type | None |
| Local IP | 10.8.0.1 |
| Remote IP | 10.8.0.2 |
| Keepalive Interval | 20 |
| Keepalive Timeout | 120 |
| TUN MTU | 1500 |
| Max Frame Size | |
| Enable Compression | [✓ ON] OFF |
| Enable NAT | ON [✓ OFF] |
| Verbose Level | 0 |

**Advanced Settings**

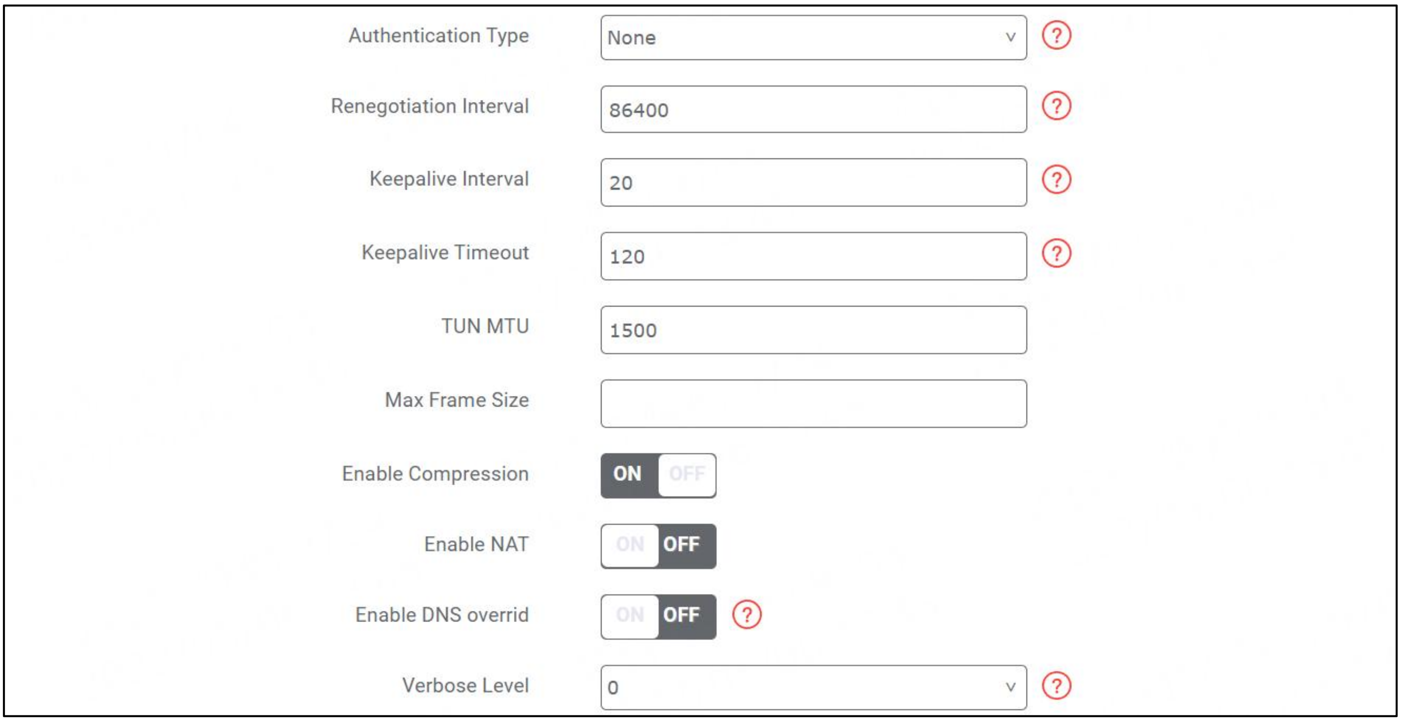
| | |
|---|---|
| Expert Options | |

The window is displayed as below when choosing “Client” as the mode.



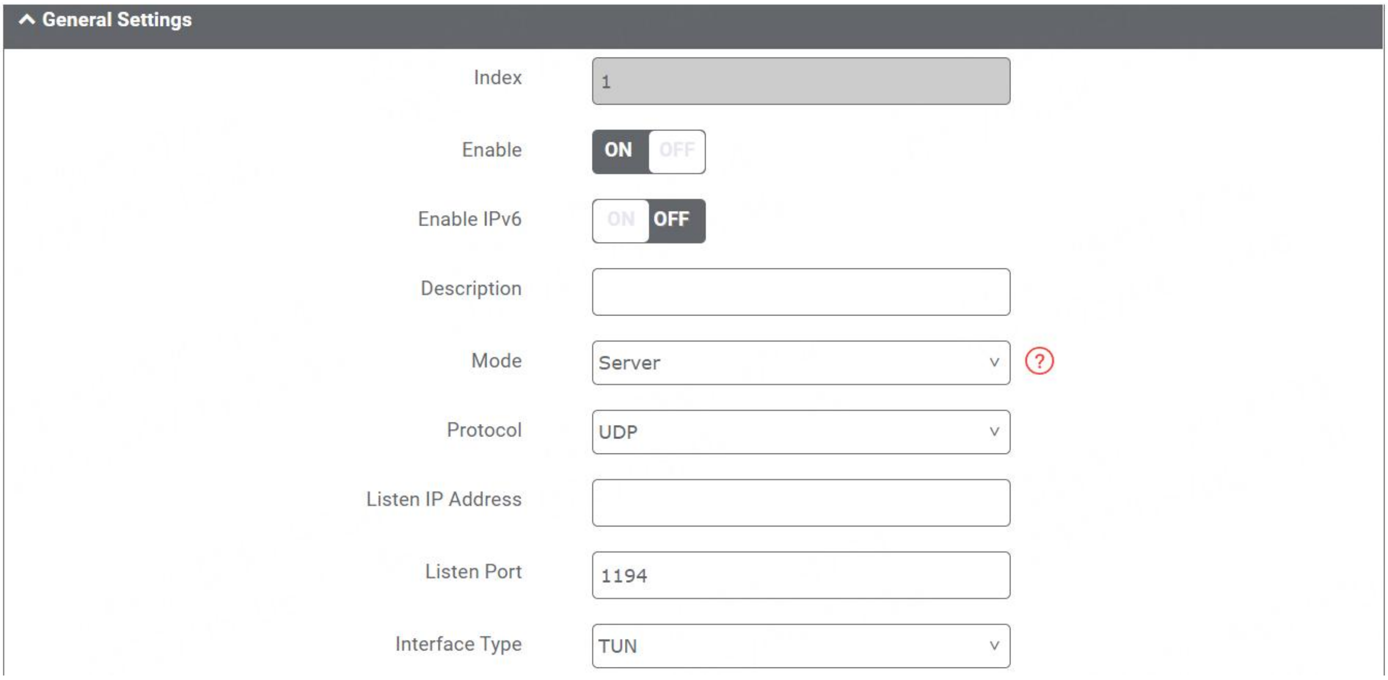
**General Settings**

| | |
|---|---|
| Index | 1 |
| Enable | [✓ ON] OFF |
| Description | |
| Mode | Client |
| Protocol | UDP |
| Peer Address | |
| Peer Port | 1194 |
| Interface Type | TUN |



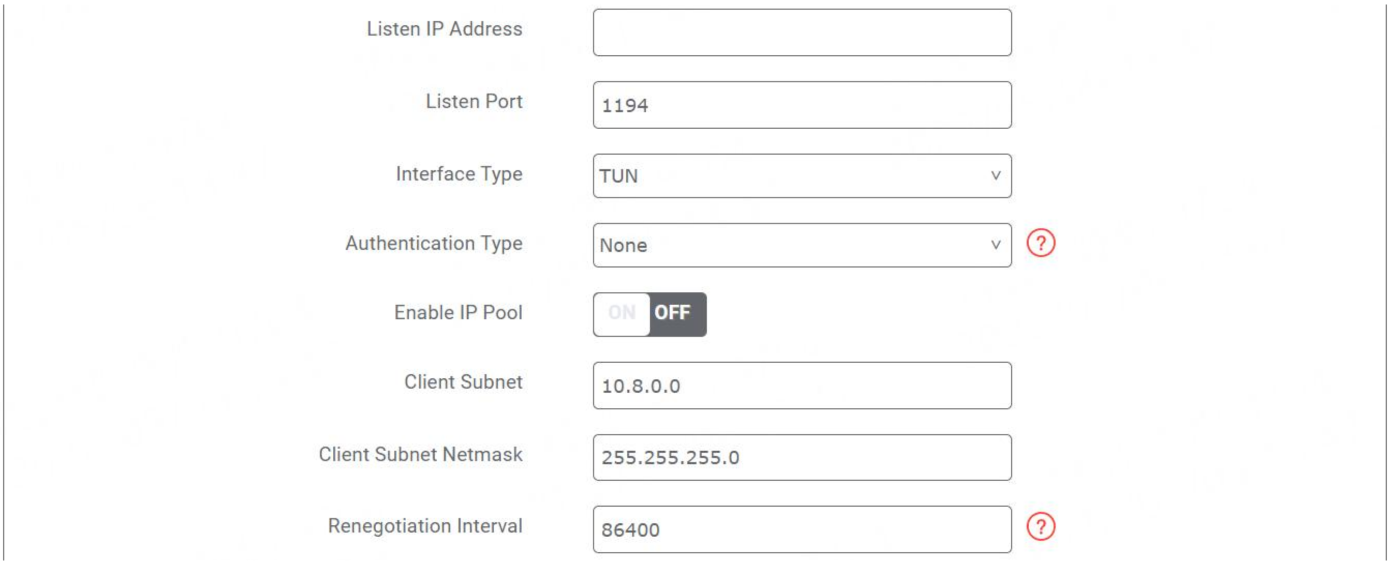
| | |
|---|---|
| Authentication Type | None |
| Renegotiation Interval | 86400 |
| Keepalive Interval | 20 |
| Keepalive Timeout | 120 |
| TUN MTU | 1500 |
| Max Frame Size | |
| Enable Compression | ON |
| Enable NAT | OFF |
| Enable DNS overrid | OFF |
| Verbose Level | 0 |

The window is displayed as below when choosing "Server" as the mode.

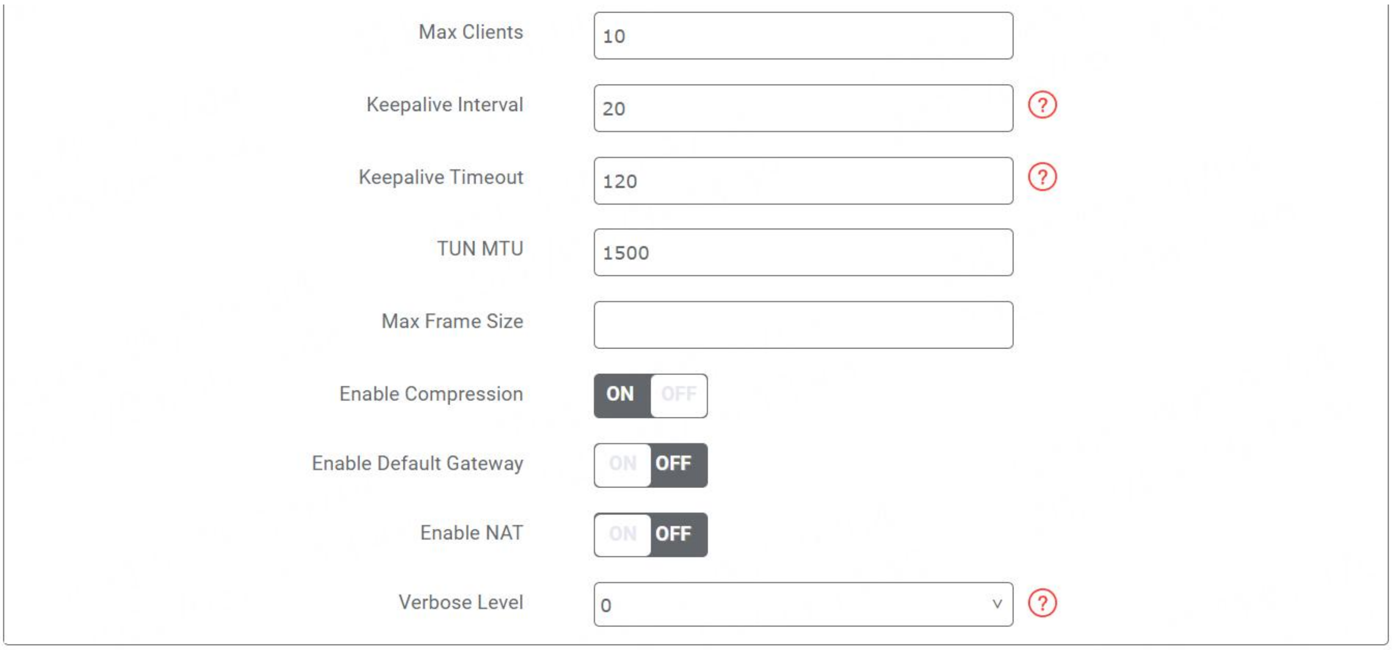


General Settings

| | |
|---|---|
| Index | 1 |
| Enable | ON |
| Enable IPv6 | OFF |
| Description | |
| Mode | Server |
| Protocol | UDP |
| Listen IP Address | |
| Listen Port | 1194 |
| Interface Type | TUN |

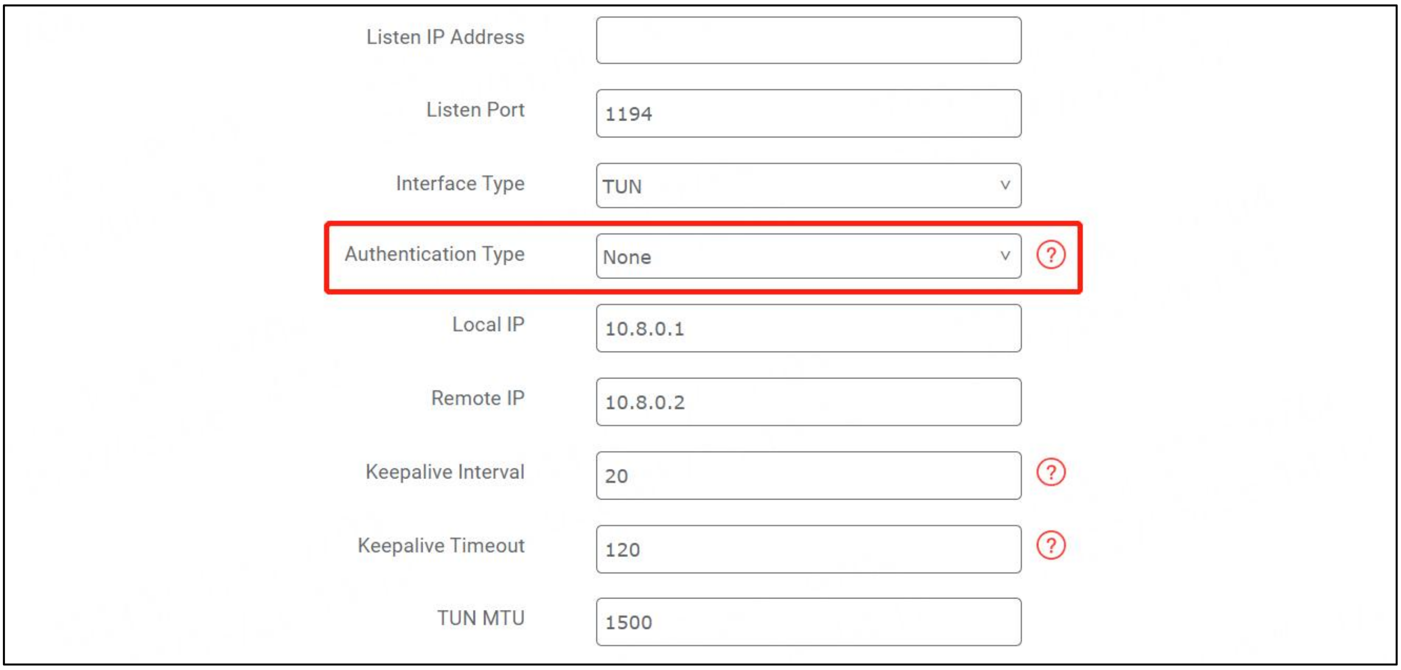


| | |
|---|---|
| Listen IP Address | |
| Listen Port | 1194 |
| Interface Type | TUN |
| Authentication Type | None |
| Enable IP Pool | OFF |
| Client Subnet | 10.8.0.0 |
| Client Subnet Netmask | 255.255.255.0 |
| Renegotiation Interval | 86400 |



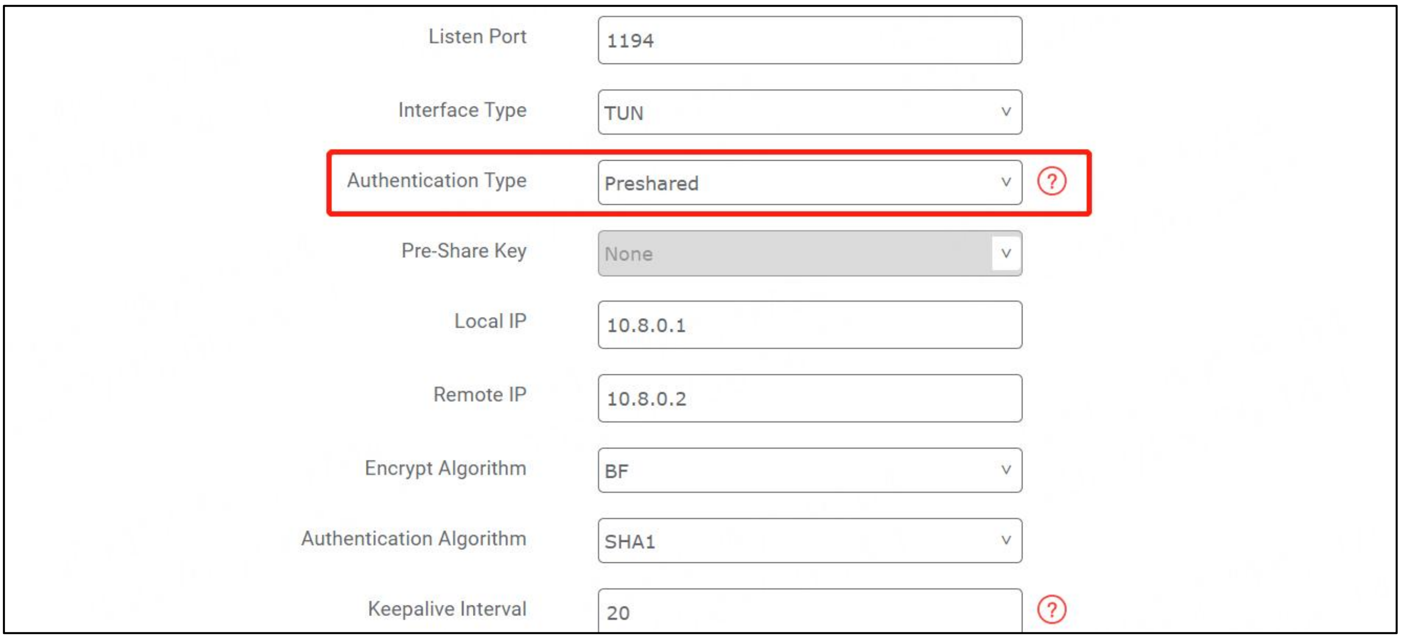
| | |
|---|---|
| Max Clients | 10 |
| Keepalive Interval | 20 |
| Keepalive Timeout | 120 |
| TUN MTU | 1500 |
| Max Frame Size | |
| Enable Compression | ON |
| Enable Default Gateway | OFF |
| Enable NAT | OFF |
| Verbose Level | 0 |

The window is displayed as below when choosing “None” as the authentication type.



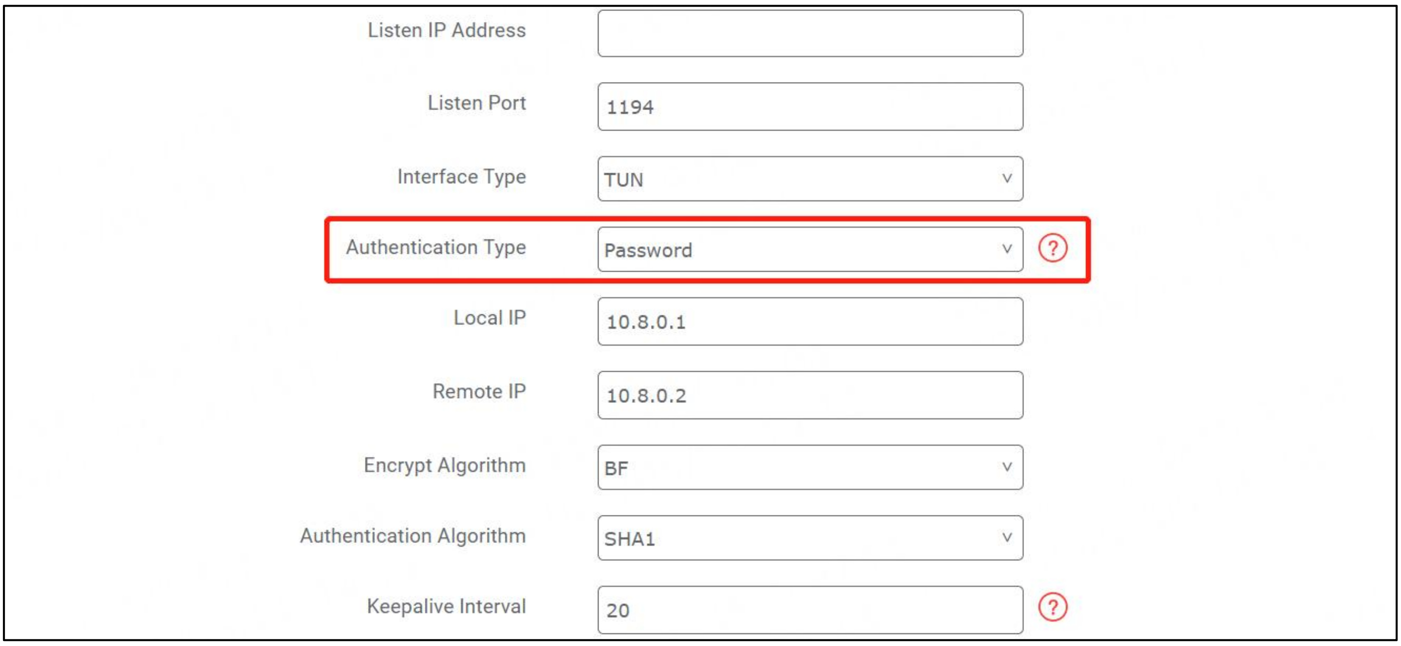
| | |
|---|---|
| Listen IP Address | |
| Listen Port | 1194 |
| Interface Type | TUN |
| Authentication Type | None |
| Local IP | 10.8.0.1 |
| Remote IP | 10.8.0.2 |
| Keepalive Interval | 20 |
| Keepalive Timeout | 120 |
| TUN MTU | 1500 |

The window is displayed as below when choosing “Preshared” as the authentication type.



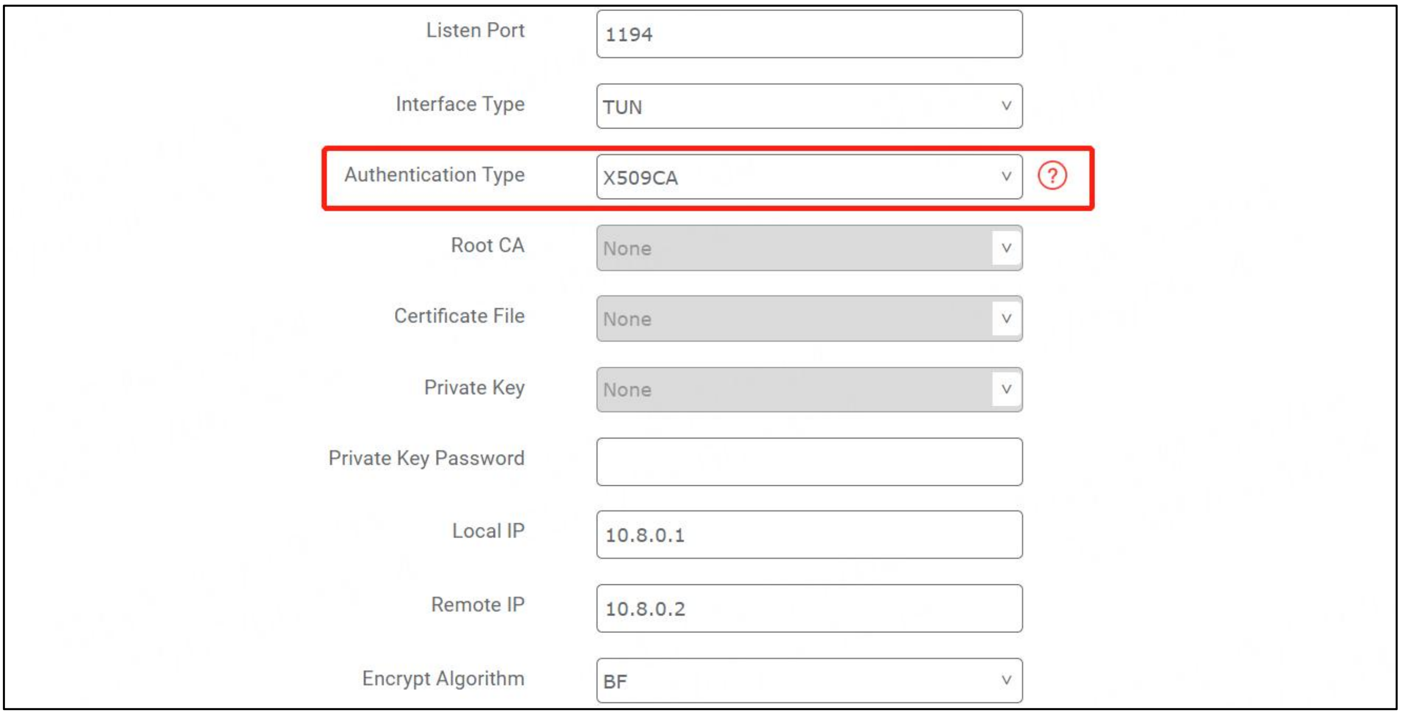
| | |
|---|---|
| Listen Port | 1194 |
| Interface Type | TUN |
| Authentication Type | Preshared |
| Pre-Share Key | None |
| Local IP | 10.8.0.1 |
| Remote IP | 10.8.0.2 |
| Encrypt Algorithm | BF |
| Authentication Algorithm | SHA1 |
| Keepalive Interval | 20 |

The window is displayed as below when choosing “Password” as the authentication type.



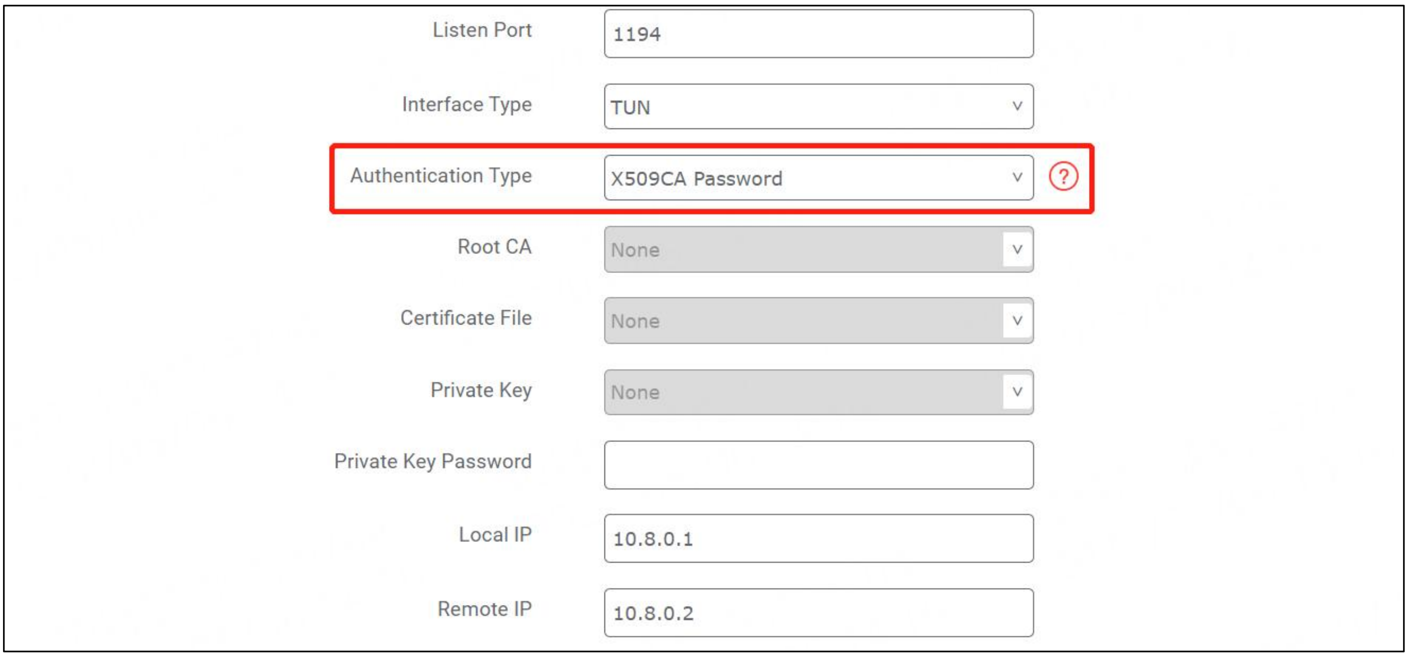
| | |
|---|---|
| Listen IP Address | |
| Listen Port | 1194 |
| Interface Type | TUN |
| Authentication Type | Password |
| Local IP | 10.8.0.1 |
| Remote IP | 10.8.0.2 |
| Encrypt Algorithm | BF |
| Authentication Algorithm | SHA1 |
| Keepalive Interval | 20 |

The window is displayed as below when choosing “X509CA” as the authentication type.



| | |
|---|---|
| Listen Port | 1194 |
| Interface Type | TUN |
| Authentication Type | X509CA |
| Root CA | None |
| Certificate File | None |
| Private Key | None |
| Private Key Password | |
| Local IP | 10.8.0.1 |
| Remote IP | 10.8.0.2 |
| Encrypt Algorithm | BF |

The window is displayed as below when choosing “X509CA Password” as the authentication type.



Listen Port: 1194

Interface Type: TUN

Authentication Type: X509CA Password

Root CA: None

Certificate File: None

Private Key: None

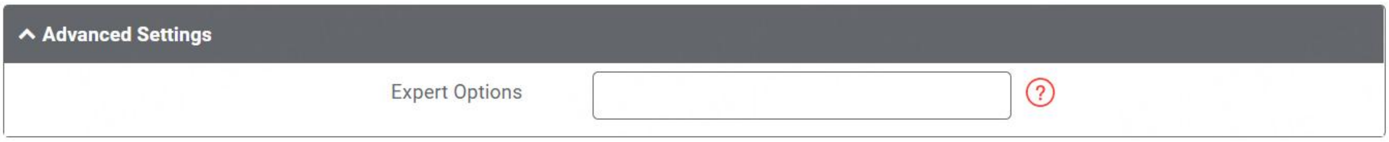
Private Key Password:

Local IP: 10.8.0.1

Remote IP: 10.8.0.2

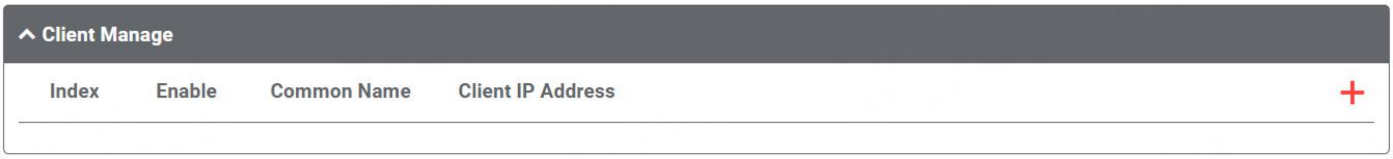
| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Enable | Click the toggle button to enable/disable this OpenVPN tunnel. | ON |
| Enable IPv6 | Click the toggle button to enable/disable IPv6. | OFF |
| Description | Enter a description for this OpenVPN tunnel. | Null |
| Mode | Select from “P2P”, “Client” or “Server”. | P2P |
| TLS Mode | Select from “None”, “Client” or “Server”. | None |
| Protocol | Select from “UDP”, “TCP-Client” or “TCP-Server”. | UDP |
| Peer Address | Enter the end-to-end IP address or the domain of the remote OpenVPN server. | Null |
| Peer Port | Enter the end-to-end listener port or the listener port of the OpenVPN server. | 1194 |
| Listen IP Address | Enter the IP address or domain name. | Null |
| Listen Port | Enter the listener port at this end. | 1194 |
| Interface Type | Select from “TUN”, “TAP” which are two different kinds of device interface for OpenVPN. The difference between TUN and TAP device is that a TUN device is a point-to-point virtual device on network while a TAP device is a virtual device on Ethernet. | TUN |
| Authentication Type | Select from “None”, “Preshared”, “Password”, “X509CA”, “X509CA password”.<br>Note:None and Preshared types only used for P2P mode. It must to add account from the User Management, when using server mode with password authentication. | Null |
| Private Key Password | Enter the private key password under "X509CA" and "X509CA password" authentication. | Null |
| Local IP | Enter the local virtual IP. | 10.8.0.1 |
| Remote IP | Enter the remote virtual IP. | 10.8.0.2 |

| Item | Description | Default |
|---|---|---|
| Encrypt Algorithm | Select from “BF”, “DES”, “DES-EDE3”, “AES-128”, “AES-192” and “AES-256”.<br>• BF: Use 128-bit BF encryption algorithm in CBC mode<br>• DES: Use 64-bit DES encryption algorithm in CBC mode<br>• DES-EDE3: Use 192-bit 3DES encryption algorithm in CBC mode<br>• AES128: Use 128-bit AES encryption algorithm in CBC mode<br>• AES192: Use 192-bit AES encryption algorithm in CBC mode<br>• AES256: Use 256-bit AES encryption algorithm in CBC mode | BF |
| Authentication Algorithm | Select from "MD5", "SHA1", "SHA256" or "SHA512". | SHA1 |
| Keepalive Interval | Set keepalive (ping) interval to check if the tunnel is active. | 20 |
| Keepalive Timeout | Set the keepalive timeout. Trigger OpenVPN restart after n seconds pass without reception of a ping or other packet from remote. | 120 |
| TUN MTU | Set the MTU for the tunnel. | 1500 |
| Max Frame Size | Sets the shard size of the data to be transmitted through the tunnel. | Null |
| Enable Compression | Click the switch button to enable/disable this option. When enabled, this feature compresses the header of the IP packet. | ON |
| Enable NAT | Click the toggle button to enable/disable the NAT option. When enabled, the source IP address of host behind router will be disguised before accessing the remote OpenVPN client. | OFF |
| Verbose Level | Select the level of the output log and values from 0 to 11.<br>• 0: No output except fatal errors<br>• 1~4: Normal usage range<br>• 5: Output R and W characters to the console for each packet read and write<br>• 6~11: Debug info range | 0 |

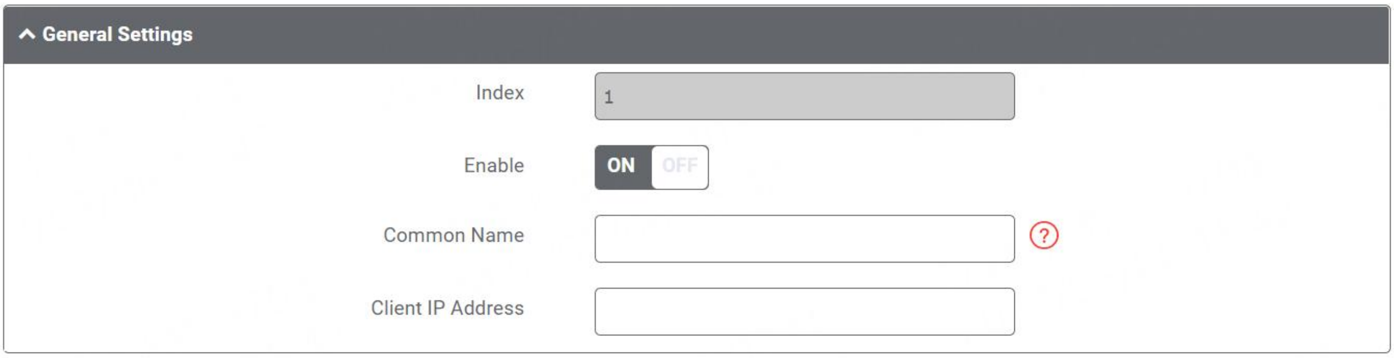


| Item | Description | Default |
|---|---|---|
| Expert Options | Enter some other options of OpenVPN in this field. Each expression can be separated by a ‘;’. | Null |

## Client Management



Click + to add client information. The maximum count is **20.**



Index 1

Enable ON OFF

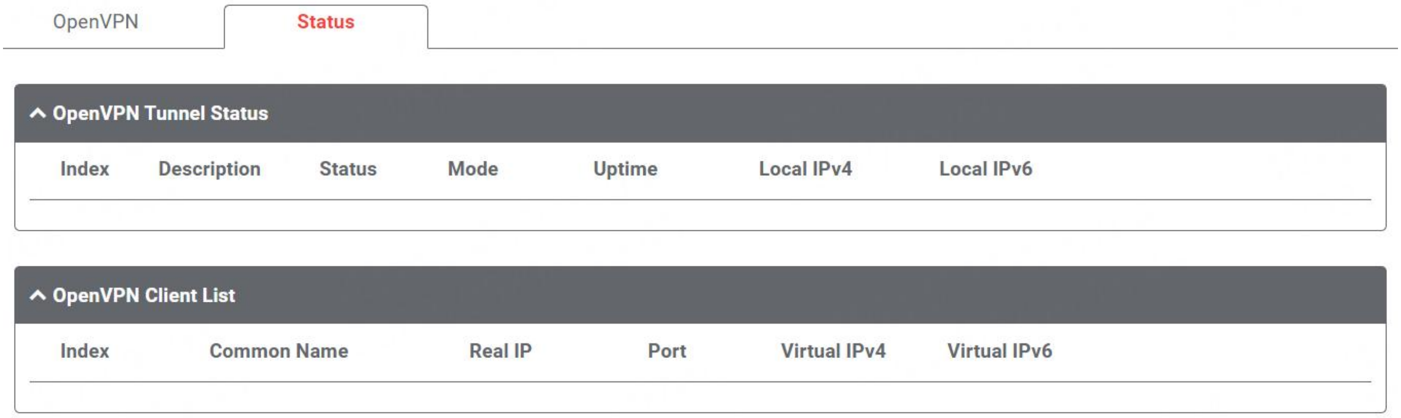
Common Name

Client IP Address

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Enable | Click the switch button to enable/disable this option. | ON |
| Common Name | Specify a common name for the client. | Null |
| Client IP Address | Specify the client's virtual IP address. | Null |

### Status

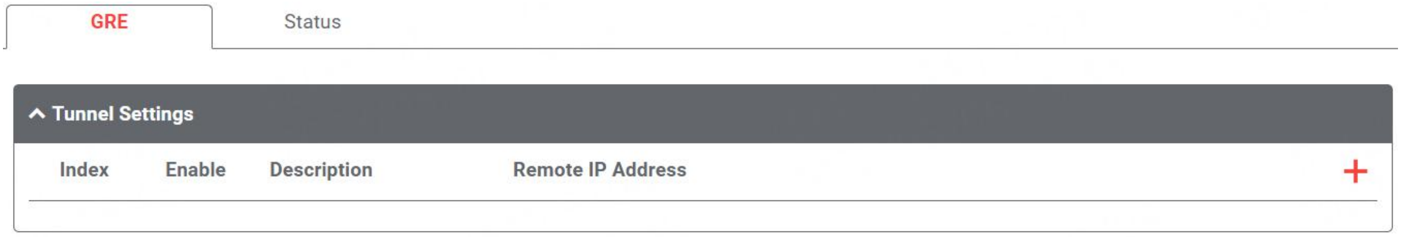
This section allows you to view the status of the OpenVPN tunnel.



## 2.4.3 GRE

This section allows you to set the GRE and the related parameters. Generic Routing Encapsulation (GRE) is a tunneling protocol that can encapsulate a wide variety of network layer protocols inside virtual point-to-point links over an Internet Protocol network. There are two main uses of GRE protocol: internal protocol encapsulation and private address encapsulation.

## GRE

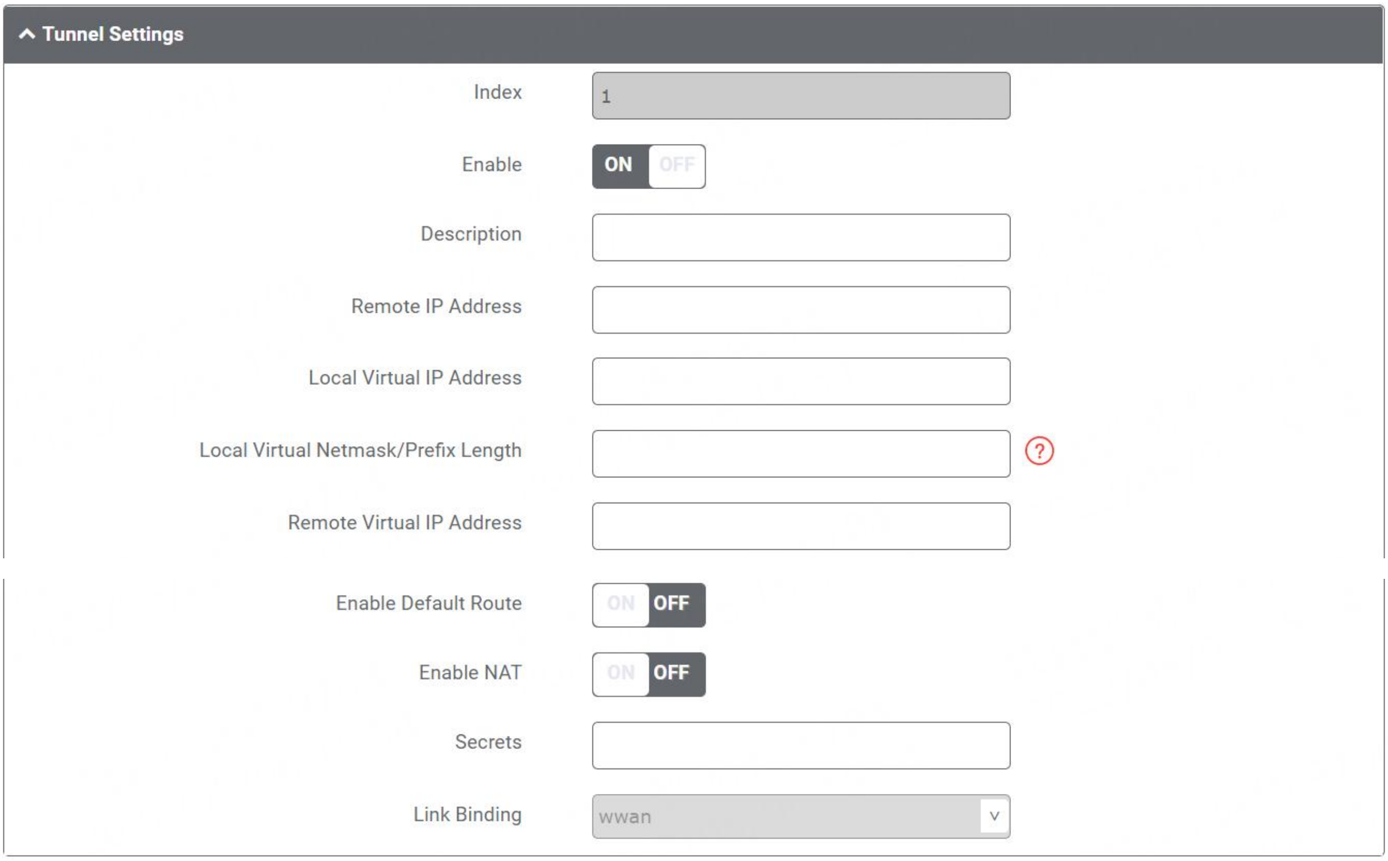


GRE | Status

^ Tunnel Settings

| Index | Enable | Description | Remote IP Address | + |
|---|---|---|---|---|

Click + to add tunnel settings. The maximum count is **5**.



^ Tunnel Settings

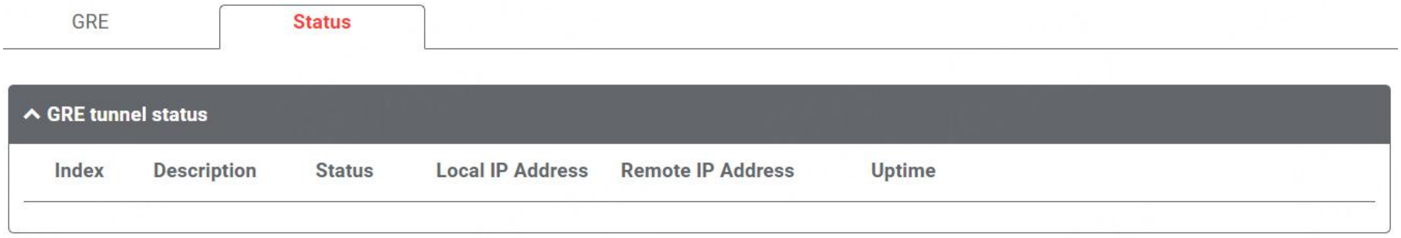
| | |
|---|---|
| Index | 1 |
| Enable | ON |
| Description | |
| Remote IP Address | |
| Local Virtual IP Address | |
| Local Virtual Netmask/Prefix Length | |
| Remote Virtual IP Address | |
| Enable Default Route | OFF |
| Enable NAT | OFF |
| Secrets | |
| Link Binding | wwan |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Enable | Click the toggle button to enable/disable this GRE tunnel. GRE (Generic Routing Encapsulation) is a protocol that encapsulates data packets so that it can route packets of other protocols in an IP network. | ON |
| Description | Enter a description for this GRE tunnel. | Null |
| Remote IP Address | Set the remote real IP address of the GRE tunnel. | Null |
| Local Virtual IP Address | Set the local virtual IP address of the GRE tunnel. | Null |
| Local Virtual Netmask/Prefix | Set the local virtual Netmask of the GRE tunnel. | Null |
| Remote Virtual IP Address | Set the remote virtual IP Address of the GRE tunnel. | Null |
| Enable Default Route | Click the toggle button to enable/disable this option. When enabled, all the traffics of the router will go through the GRE VPN. | OFF |
| Enable NAT | Click the toggle button to enable/disable this option. This option must | OFF |

| | | |
|---|---|---|
| | be enabled when router under NAT environment. | |
| Secrets | Set the key of the GRE tunnel. | Null |
| Link Binding | Set the specified interface of the GRE Tunnel | wwan |

## Status

This section allows you to view the GRE tunnel status.



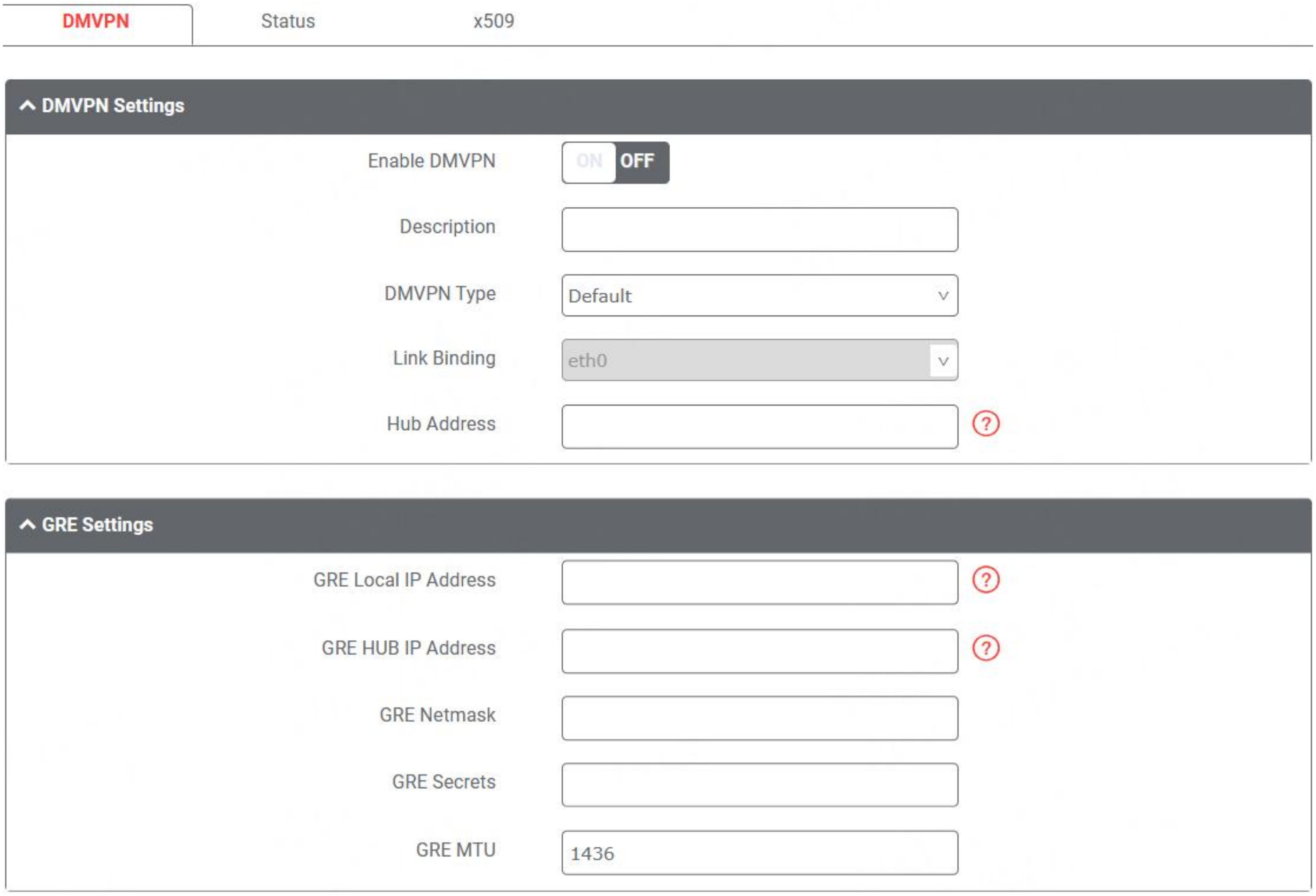
^ GRE tunnel status

| Index | Description | Status | Local IP Address | Remote IP Address | Uptime |
|---|---|---|---|---|---|

# 2.4.4 DMVPN

DMVPN is a routing technique we can use to build a VPN network with multiple sites without having to statically configure all devices. It is a hub and spoke network, where the spokes will be able to communicate with each other directly without having to go through the hub.

## DMVPN



Enable DMVPN: ON OFF

Description:

DMVPN Type: Default

Link Binding: eth0

Hub Address:

GRE Local IP Address:

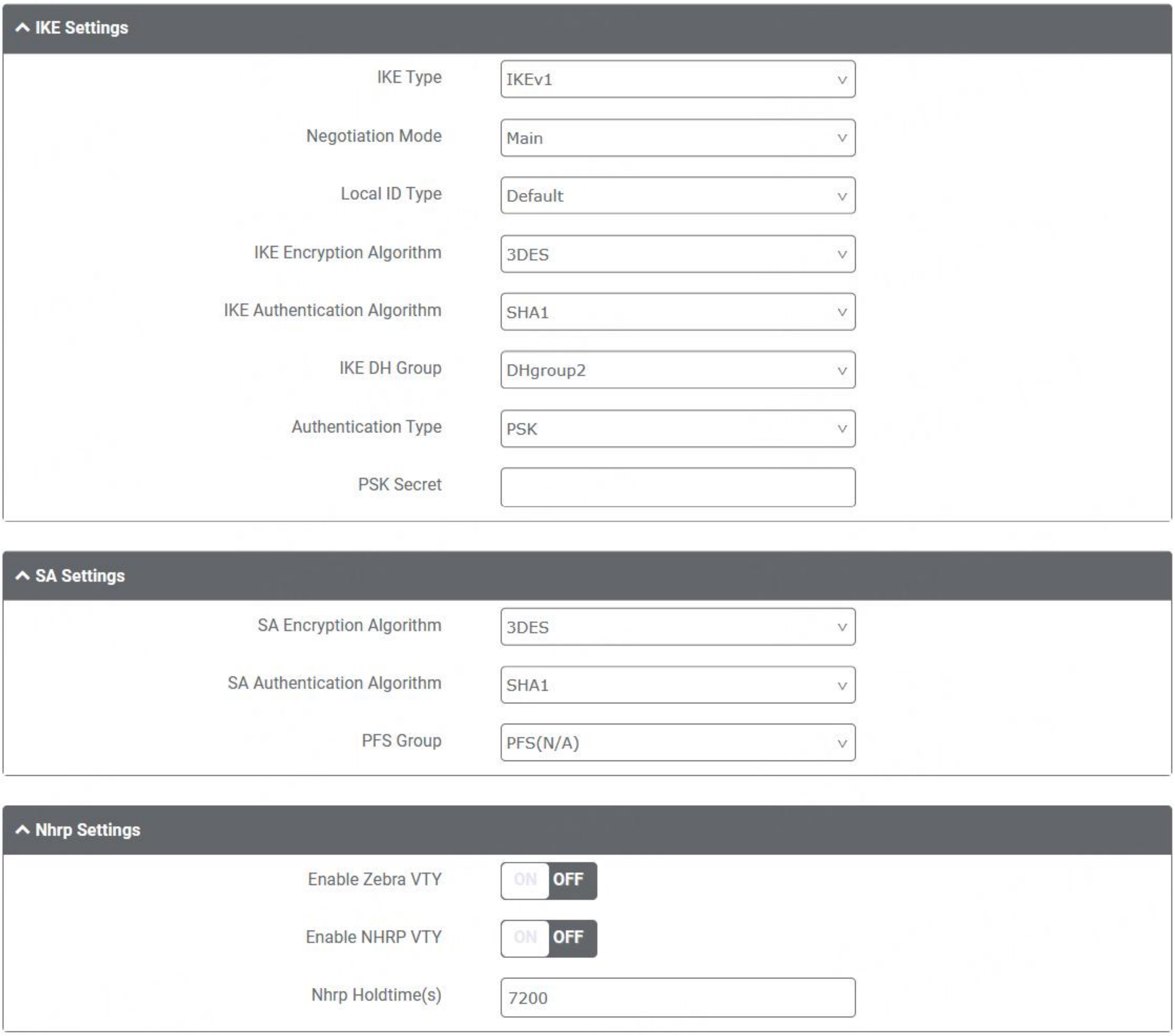
GRE HUB IP Address:

GRE Netmask:

GRE Secrets:

GRE MTU: 1436

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable the DMVPN client. | OFF |
| Description | Enter a description for DMVPN client. | Null |
| DMVPN Type | Select DMVPN Type<br>Default: Single hub mode<br>Dual-hub: Dual hub mode | Default |
| Link Binding | Select a link binding with DMVPN | Null |
| Hub Address | Enter the DMVPN hub address. e.g. 172.16.8.198 | Null |
| GRE Local IP Address | Enter local tunnel address, e.g. 182.16.0.1 | Null |
| GRE HUB IP Address | Enter hub tunnel address, e.g. 182.16.0.100 | Null |
| GRE Netmask | Enter tunnel netmask. | Null |
| GRE Secrets | Enter GRE tunnel secret key. | Null |
| GRE MTU | Enter the maximum transmission unit. | 1436 |



IKE Settings

IKE Type: IKEv1

Negotiation Mode: Main

Local ID Type: Default

IKE Encryption Algorithm: 3DES

IKE Authentication Algorithm: SHA1

IKE DH Group: DHgroup2

Authentication Type: PSK

PSK Secret:

SA Settings

SA Encryption Algorithm: 3DES

SA Authentication Algorithm: SHA1

PFS Group: PFS(N/A)

Nhrp Settings

Enable Zebra VTY: ON OFF

Enable NHRP VTY: ON OFF

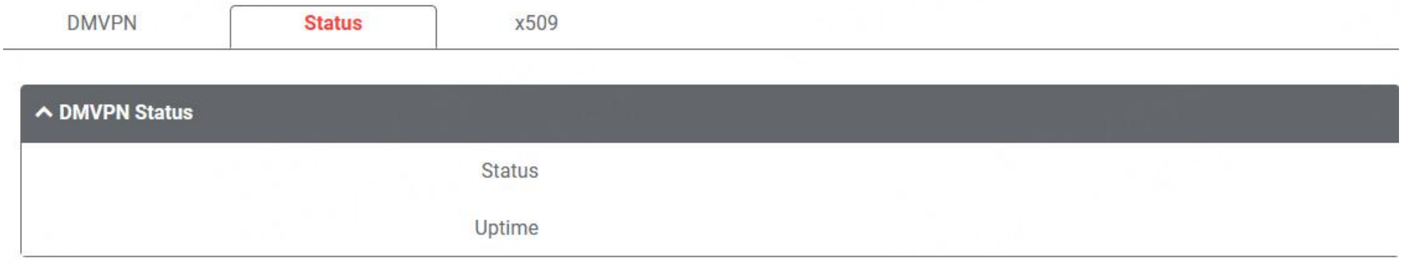
Nhrp Holdtime(s): 7200

| Item | Description | Default |
|---|---|---|
| IKE Type | Select IKE Type | IKEv1 |
| Negotiation Mode | Select from “Main” and “aggressive” for the IKE negotiation mode in phase 1. If the IP address of one end of an IPSec tunnel is obtained dynamically, the IKE negotiation mode must be aggressive. In this case, SAs can be established as long as the username and password are correct. | Main |
| Local ID Type | Select from “ID”, “FQDN” and “User FQDN” for IKE negotiation. “Default” stands for “Router’s extern IP”.<br>ID: Uses custom string as the ID in IKE negotiation.<br>FQDN: Uses an FQDN type as the ID in IKE negotiation. If this option is selected, type a name without any at sign (@) for the local security gateway, e.g., test.robustel.com.<br>User FQDN: Uses a user FQDN type as the ID in IKE negotiation. If this option is selected, type a name string with an sign “@” for the local | Default |

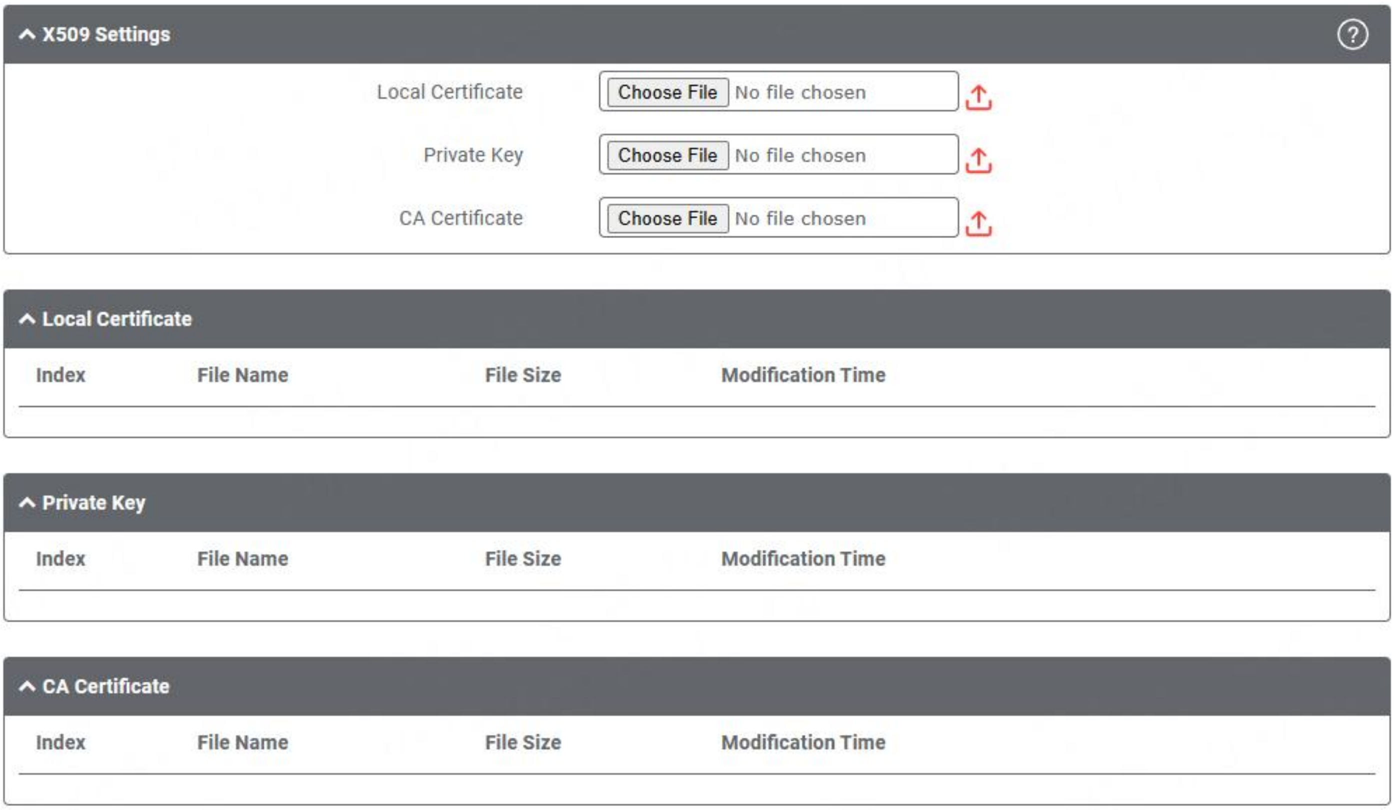
| Item | Description | Default |
|---|---|---|
| | security gateway, e.g., test@robustel.com. | |
| IKE Encryption Algorithm | Select from "DES", "3DES" and "AES128" to be used in IKE negotiation.<br>DES: Uses the DES algorithm in CBC mode and 56-bit key.<br>3DES: Uses the 3DES algorithm in CBC mode and 168-bit key.<br>AES128: Uses the AES algorithm in CBC mode and 128-bit key. | 3DES |
| IKE Authen Algorithm | Select from "MD5" and "SHA1"to be used in IKE negotiation.<br>MD5: Uses HMAC-SHA1.<br>SHA1: Uses HMAC-MD5. | MD5 |
| IKE DH Group | Select from "MODP768_1", "MODP1024_2" and "MODP1536_5"to be used in key negotiation phase 1.<br>MODP768_1: Uses the 768-bit Diffie-Hellman group.<br>MODP1024_2: Uses the 1024-bit Diffie-Hellman group.<br>MODP1536_5: Uses the 1536-bit Diffie-Hellman group. | MODP1024_2 |
| Authentication Type | Select Authentication Type | PSK |
| PSK Secrets | Enter PSK secret key. | Null |
| SA Encryption Algorithm | Select the SA Encryption Algorithm from "DES", "3DES", "AES 128", "AES 192", "AES 256". | 3DES |
| SA Authentication Algorithm | Select the SA Authentication Algorithm from "MD5", "SHA1", "SHA2 256", "SHA2 512". | SHA1 |
| PFS Group | Select the PFS Group. | PFS(N/A) |

## Status

The status bar allows to view DMVPN connection status.



### X509



X509 Settings

Local Certificate: Choose File No file chosen

Private Key: Choose File No file chosen

CA Certificate: Choose File No file chosen

Local Certificate

| Index | File Name | File Size | Modification Time |
|---|---|---|---|

Private Key

| Index | File Name | File Size | Modification Time |
|---|---|---|---|

CA Certificate

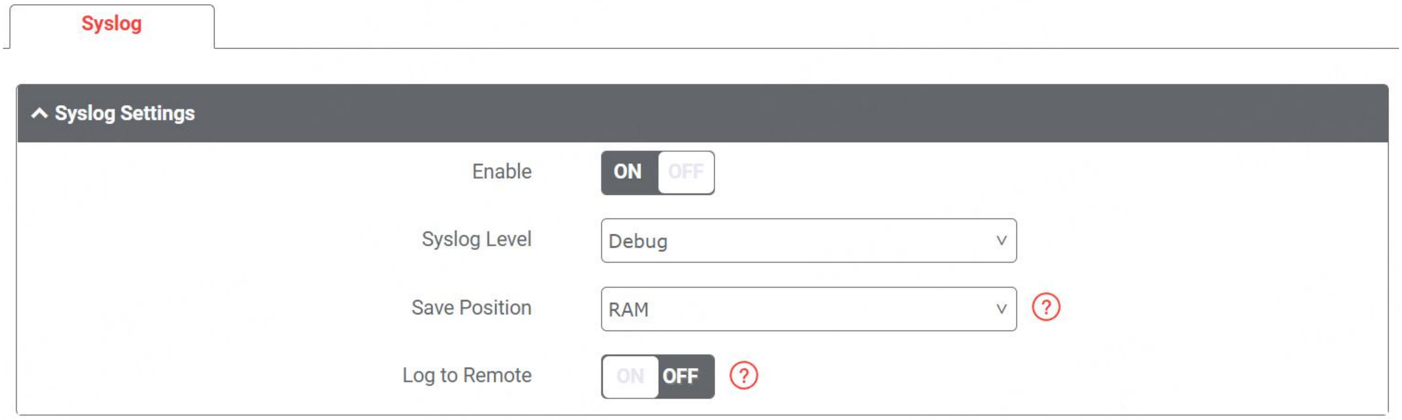
| Index | File Name | File Size | Modification Time |
|---|---|---|---|

| x509 | | |
|---|---|---|
| **Item** | **Description** | **Default** |
| **X509 Settings** | | |
| Root CA | Click “Choose File” to locate Root CA file and then import this file into your device. | -- |
| Certificate File | Click “Choose File” to locate Certificate file, and then import this file into your device. | -- |
| Private Key | Click “Choose File” to locate Private Key file, and then import this file into your device. | -- |
| **Certificate Files** | | |
| Index | Indicate ordinal of list. | -- |
| Filename | Show imported certificate’s name. | Null |
| File Size | Show size of certificate file. | Null |
| Modification Time | Show timestamp of that the last time to modify the certificate file. | Null |

## 2.5 Services

### 2.5.1 Syslog

This section allows you to set the syslog parameters. The system log of the router can be saved in the local, also supports to be sent to remote log server and specified application debugging. By default, the “Log to Remote” option is disabled.



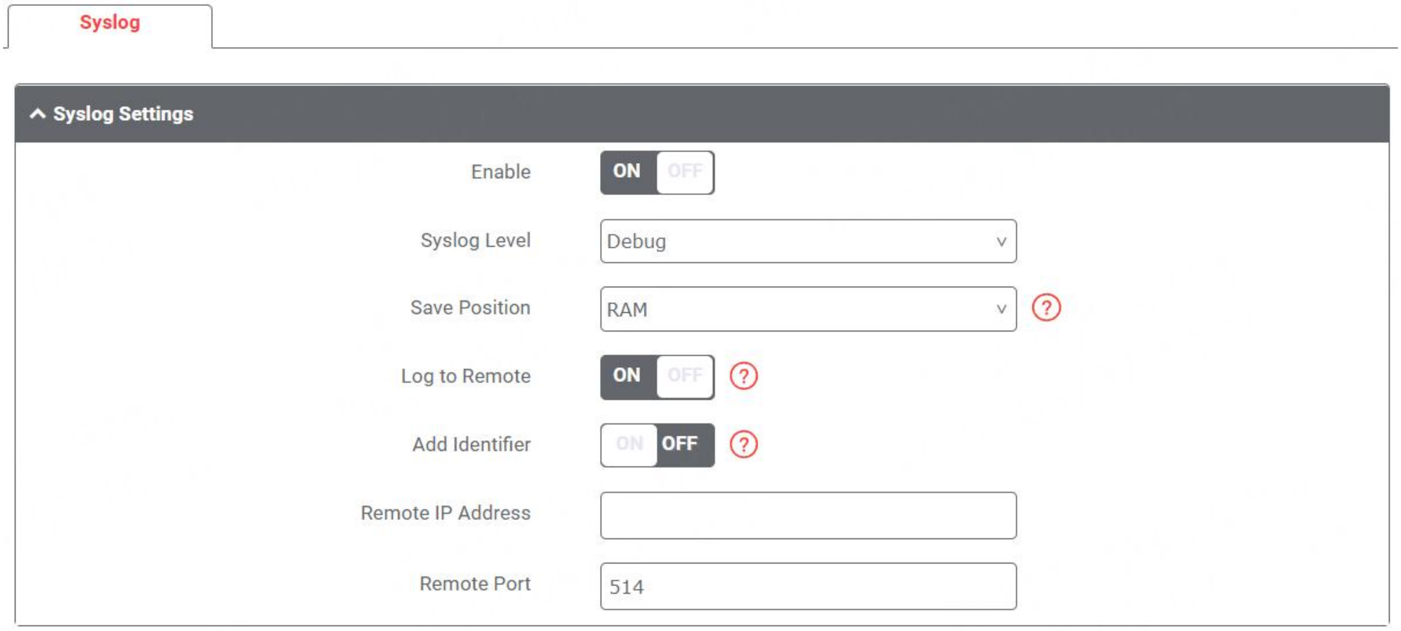
Enable: ON

Syslog Level: Debug

Save Position: RAM

Log to Remote: OFF

The window is displayed as below when enabling the “Log to Remote” option.



Enable: ON

Syslog Level: Debug

Save Position: RAM

Log to Remote: ON

Add Identifier: OFF

Remote IP Address:

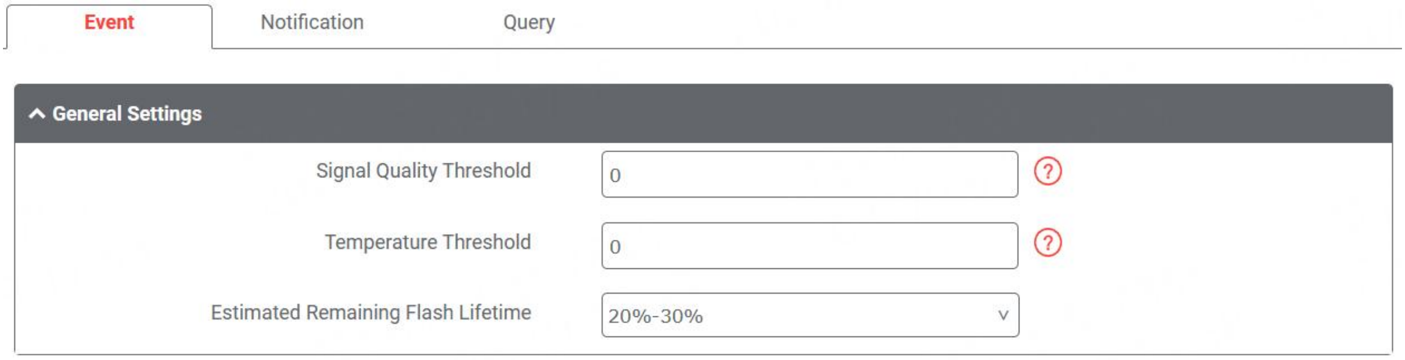
Remote Port: 514

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable the Syslog settings option. | ON |
| Syslog Level | Select from “Debug”, “Info”, “Notice”, “Warning” or “Error”, which from low to high. The lower level will output more syslog in details. | Debug |
| Save Position | Select the save position from “RAM”, “NVM” or “Console”. The data will be cleared after reboot when choose “RAM”.<br>**Note**: It's not recommended that you save syslog to NVM (Non-Volatile Memory) for a long time. | NVM |
| Log to Remote | Click the toggle button to enable/disable this option. Enable to allow router sending syslog to the remote syslog server. You need to enter the IP and Port of the syslog server. | ON |
| Add Identifier | Click the toggle button to enable/disable this option. When enabled, you can add serial number to syslog message which used for loading Syslog to RCMS. | OFF |
| Remote IP Address | Enter the IP address of syslog server when enabling the “Log to Remote” option. | Null |
| Remote Port | Enter the port of syslog server when enabling the “Log to Remote” option. | 514 |

## 2.5.2 Event

This section allows you to set the event parameters. Event feature provides an ability to send alerts by SMS or Email when certain system events occur.

### Event



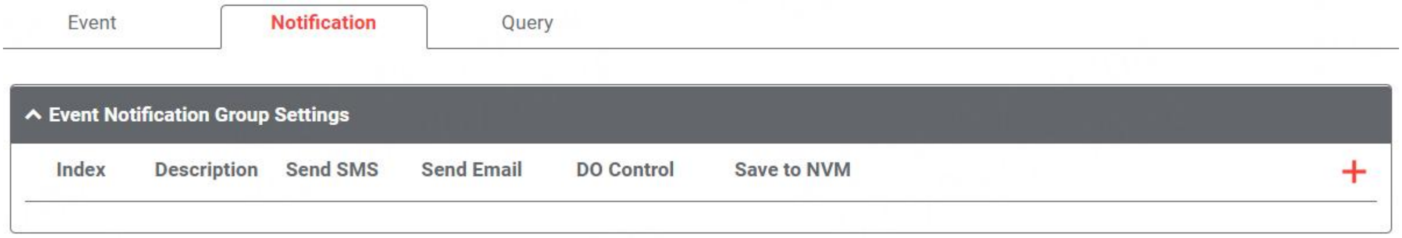
Signal Quality Threshold: 0

Temperature Threshold: 0

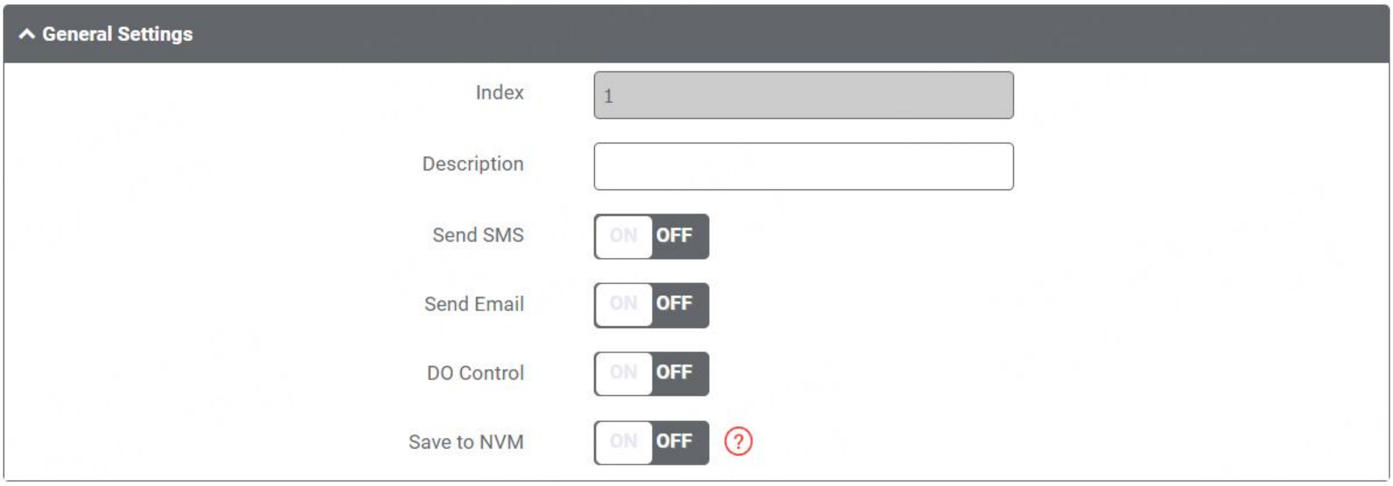
Estimated Remaining Flash Lifetime: 20%-30%

| Item | Description | Default |
|---|---|---|
| Signal Quality Threshold | Set the threshold for signal quality. Device will generate a log event when the actual threshold is less than the specified threshold. 0 means disable this option. | 0 |
| Temperature Threshold | Set the threshold for temperature. Device will generate a log event when the actual threshold is less than the specified threshold. 0 means disable this option. | 0 |
| Estimate Remaining Flash Lifetime | Set the estimate of EMMC life. Device will generate a log event when the actual estimate is in the specified parameter range. | 20%-30% |

### Notification



Click + button to add an Event parameters.



General Settings

Index: 1

Description:

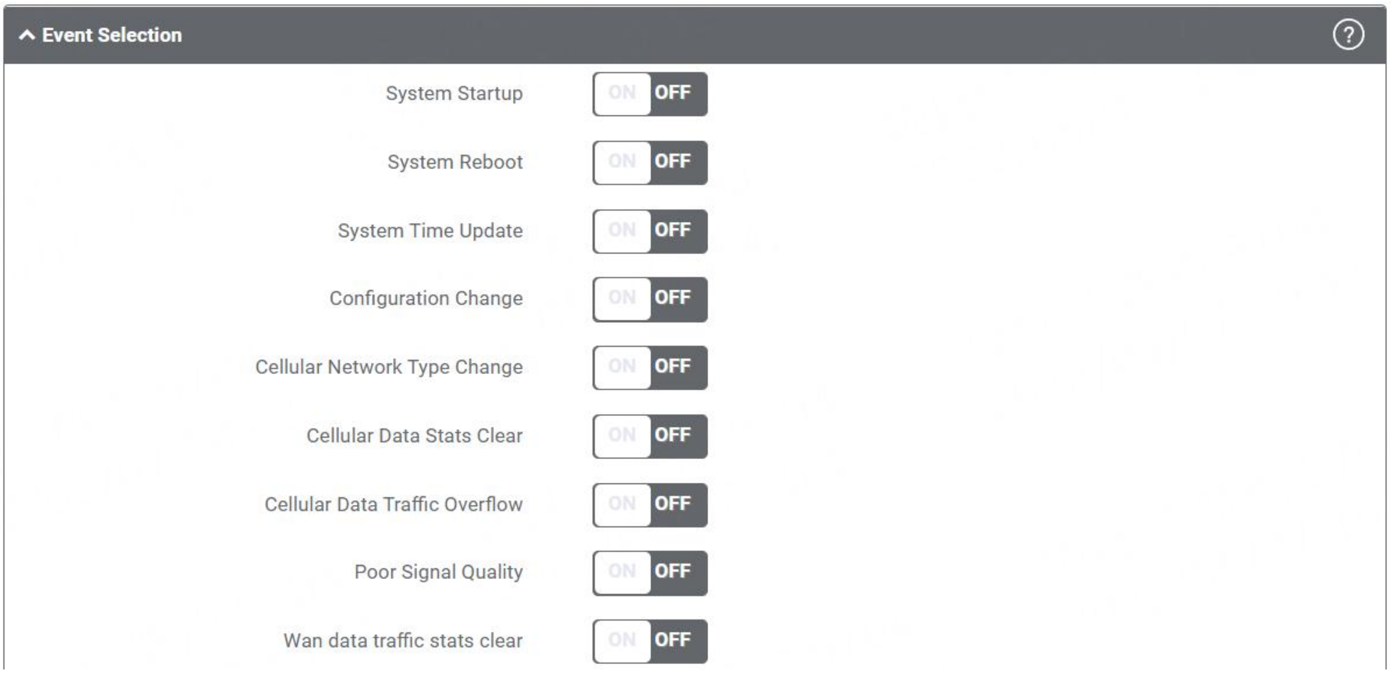
Send SMS: ON OFF

Send Email: ON OFF

DO Control: ON OFF

Save to NVM: ON OFF

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Description | Enter a description for this group. | Null |
| Sent SMS | Click the toggle button to enable/disable this option. When enabled, the router will send notification to the specified phone numbers via SMS if event occurs. Set the related phone number in “3.21 Services > Email”, and use ‘;’to separate each number. | OFF |
| Send Email | Click the toggle button to enable/disable this option. When enabled, the router will send notification to the specified email box via Email if event occurs. Set the related email address in “3.21 Services > Email”. | OFF |
| DO Control | Click the toggle button to enable / disable this option. After it is turned on, the event router will send it to the corresponding DO in the form of Low / High level. | OFF |
| Save to NVM | Click the toggle button to enable/disable this option. Enable to save event to nonvolatile memory. | OFF |



Event Selection

System Startup: ON OFF

System Reboot: ON OFF

System Time Update: ON OFF

Configuration Change: ON OFF

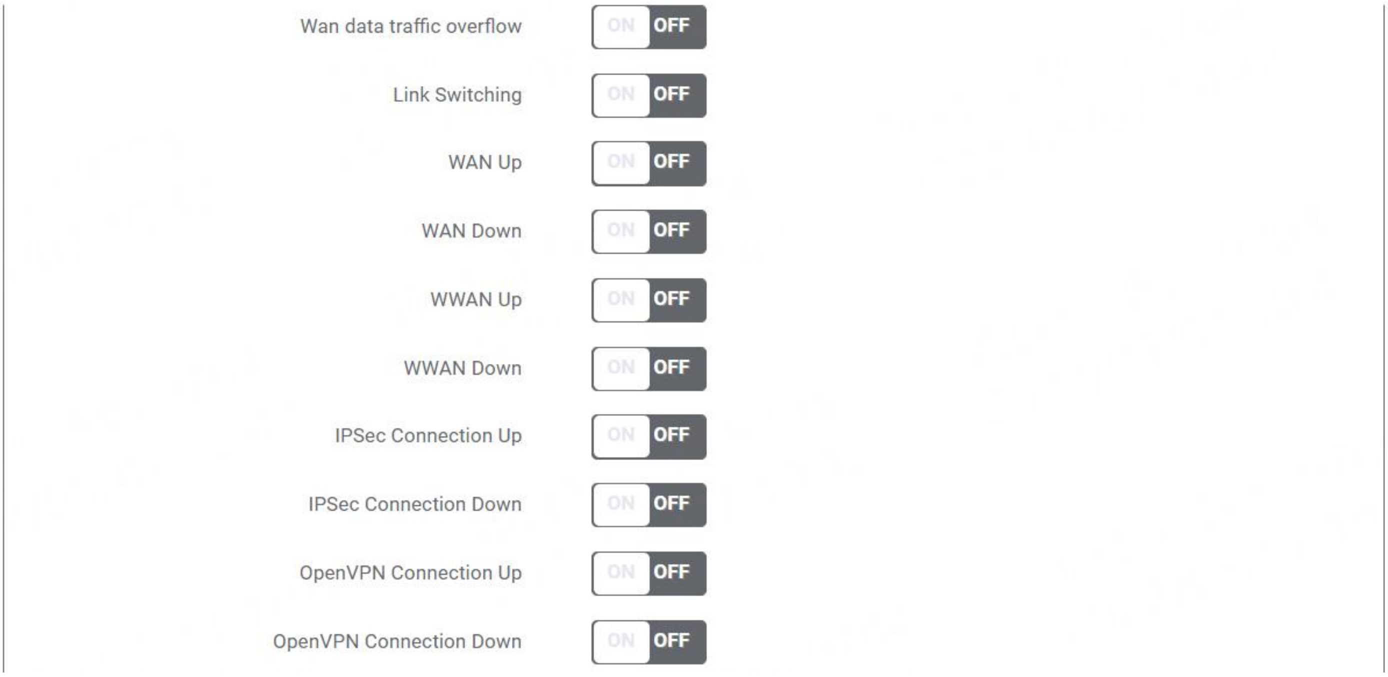
Cellular Network Type Change: ON OFF

Cellular Data Stats Clear: ON OFF

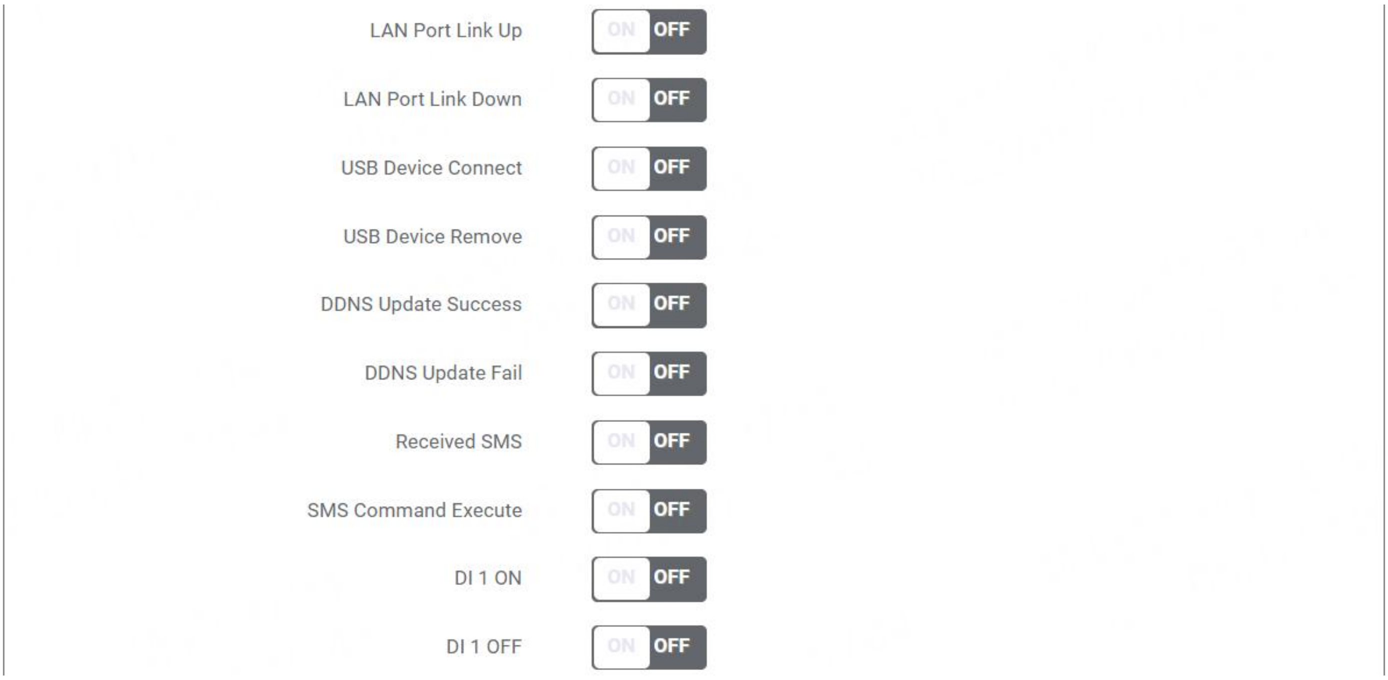
Cellular Data Traffic Overflow: ON OFF

Poor Signal Quality: ON OFF

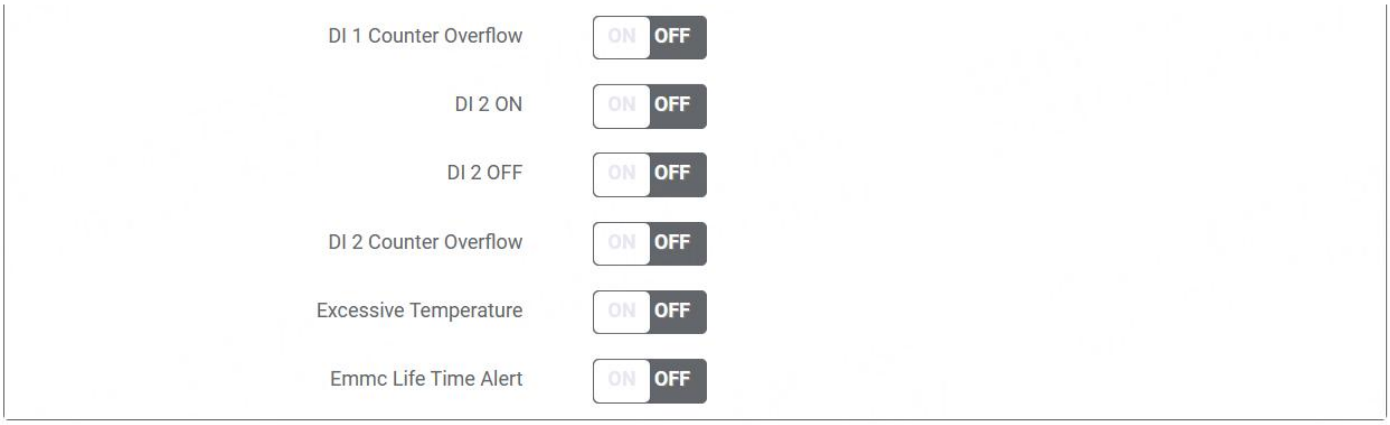
Wan data traffic stats clear: ON OFF



| | |
|---|---|
| Wan data traffic overflow | ON OFF |
| Link Switching | ON OFF |
| WAN Up | ON OFF |
| WAN Down | ON OFF |
| WWAN Up | ON OFF |
| WWAN Down | ON OFF |
| IPSec Connection Up | ON OFF |
| IPSec Connection Down | ON OFF |
| OpenVPN Connection Up | ON OFF |
| OpenVPN Connection Down | ON OFF |



| | |
|---|---|
| LAN Port Link Up | ON OFF |
| LAN Port Link Down | ON OFF |
| USB Device Connect | ON OFF |
| USB Device Remove | ON OFF |
| DDNS Update Success | ON OFF |
| DDNS Update Fail | ON OFF |
| Received SMS | ON OFF |
| SMS Command Execute | ON OFF |
| DI 1 ON | ON OFF |
| DI 1 OFF | ON OFF |

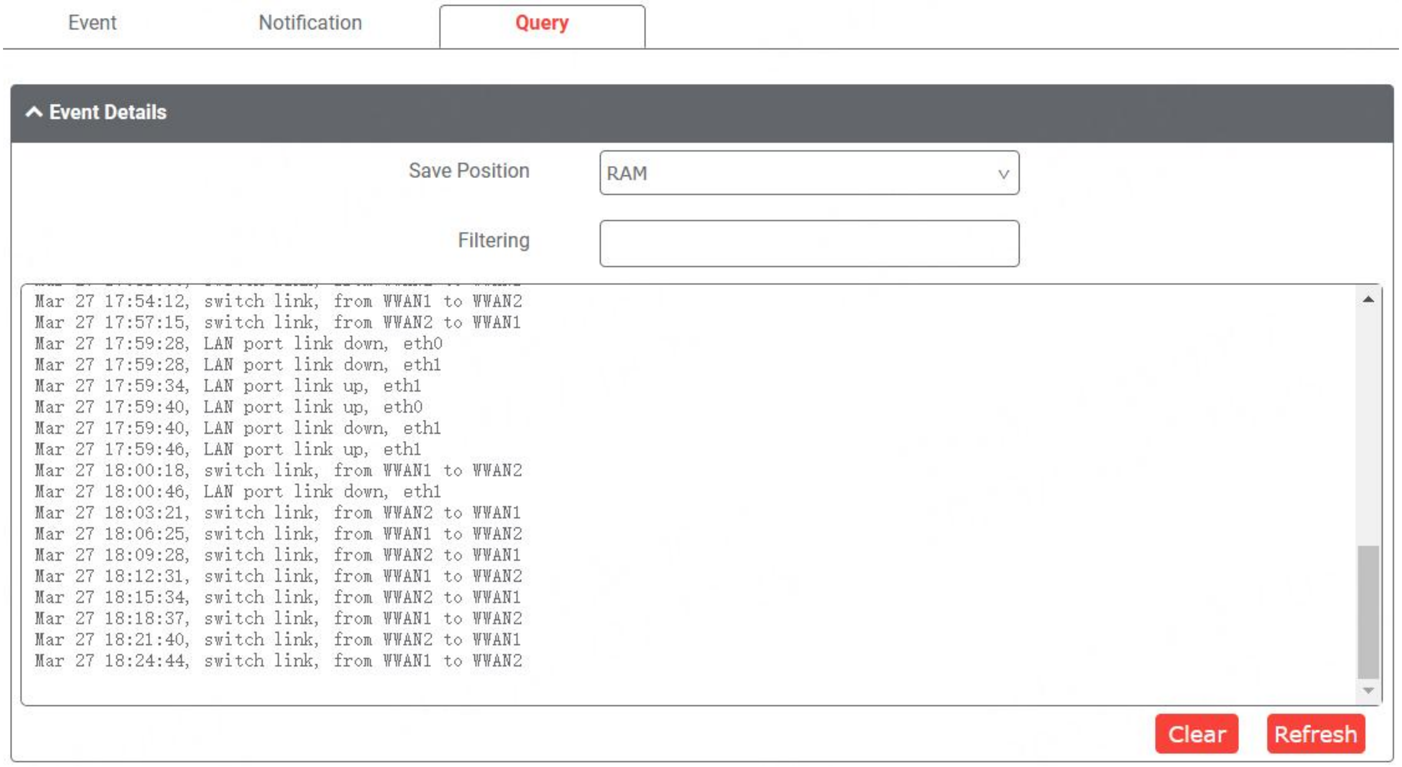


| | |
|---|---|
| DI 1 Counter Overflow | ON OFF |
| DI 2 ON | ON OFF |
| DI 2 OFF | ON OFF |
| DI 2 Counter Overflow | ON OFF |
| Excessive Temperature | ON OFF |
| Emmc Life Time Alert | ON OFF |

| Item | Description | Default |
|---|---|---|
| Event | Click the toggle button to enable this option to generate a log. | OFF |

## Query

In the following window you can query various types of events record. Click Refresh to query filtered events while click Clear to clear the event records in the window.



Save Position: RAM

Filtering:

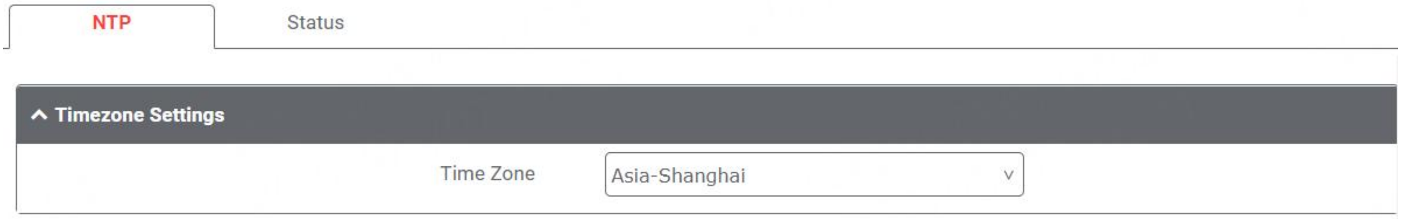
```
Mar 27 17:54:12, switch link, from WWAN1 to WWAN2
Mar 27 17:57:15, switch link, from WWAN2 to WWAN1
Mar 27 17:59:28, LAN port link down, eth0
Mar 27 17:59:28, LAN port link down, eth1
Mar 27 17:59:34, LAN port link up, eth1
Mar 27 17:59:40, LAN port link up, eth0
Mar 27 17:59:40, LAN port link down, eth1
Mar 27 17:59:46, LAN port link up, eth1
Mar 27 18:00:18, switch link, from WWAN1 to WWAN2
Mar 27 18:00:46, LAN port link down, eth1
Mar 27 18:03:21, switch link, from WWAN2 to WWAN1
Mar 27 18:06:25, switch link, from WWAN1 to WWAN2
Mar 27 18:09:28, switch link, from WWAN2 to WWAN1
Mar 27 18:12:31, switch link, from WWAN1 to WWAN2
Mar 27 18:15:34, switch link, from WWAN2 to WWAN1
Mar 27 18:18:37, switch link, from WWAN1 to WWAN2
Mar 27 18:21:40, switch link, from WWAN2 to WWAN1
Mar 27 18:24:44, switch link, from WWAN1 to WWAN2
```

| Item | Description | Default |
|---|---|---|
| Save Position | Select the events' save position from "RAM" or "NVM".<br>• RAM: Random-access memory<br>• NVM: Non-Volatile Memory | NVM |
| Filtering | Enter the filtering message based on the keywords set by users. Click the "Refresh" button, the filtered event will be displayed in the follow box. Use "&" to separate more than one filter message, such as message1&message2. | Null |

## 2.5.3 NTP

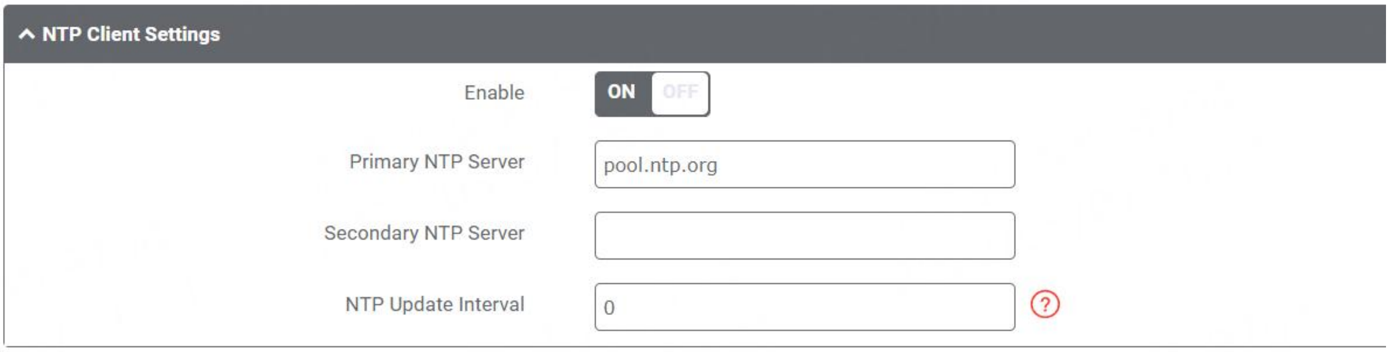
This section allows you to set the related NTP (Network Time Protocol) parameters.

## NTP



Time Zone: Asia-Shanghai

| Item | Description | Default |
|---|---|---|
| Time Zone | Click the drop down list to select the time zone you are in. | UTC +08:00 |



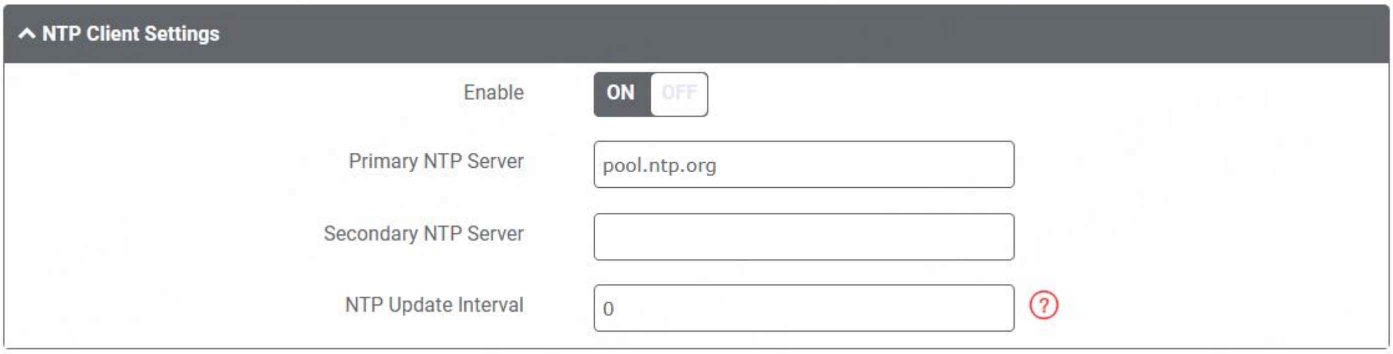
Enable: ON

Primary NTP Server: pool.ntp.org

Secondary NTP Server:

NTP Update Interval: 0

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable this option. Enable to synchronize time with the NTP server. | ON |
| Primary NTP Server | Enter primary NTP Server's IP address or domain name. | pool.ntp.org |
| Secondary NTP Server | Enter secondary NTP Server's IP address or domain name. | Null |
| NTP Update interval | Enter the interval (minutes) synchronizing the NTP client time with the NTP server's. Minutes wait for next update, and 0 means update only once. | 0 |



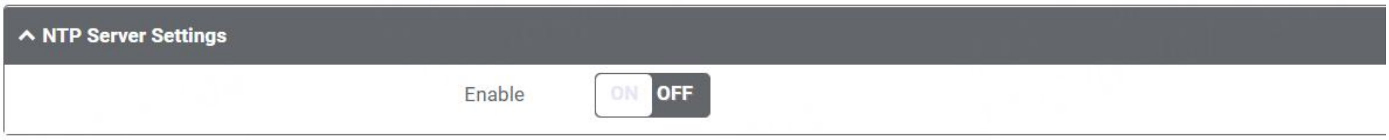
Enable: ON

Primary NTP Server: pool.ntp.org

Secondary NTP Server:

NTP Update Interval: 0

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable the NTP server option. | OFF |
| Primary NTP Server | Enter the primary NTP server | pool.ntp.org |
| Secondary NTP Server | Enter the secondary NTP server | Null |
| NTP Update Interval | Enter the NTP update interval, 0 means update only once. | 0 |

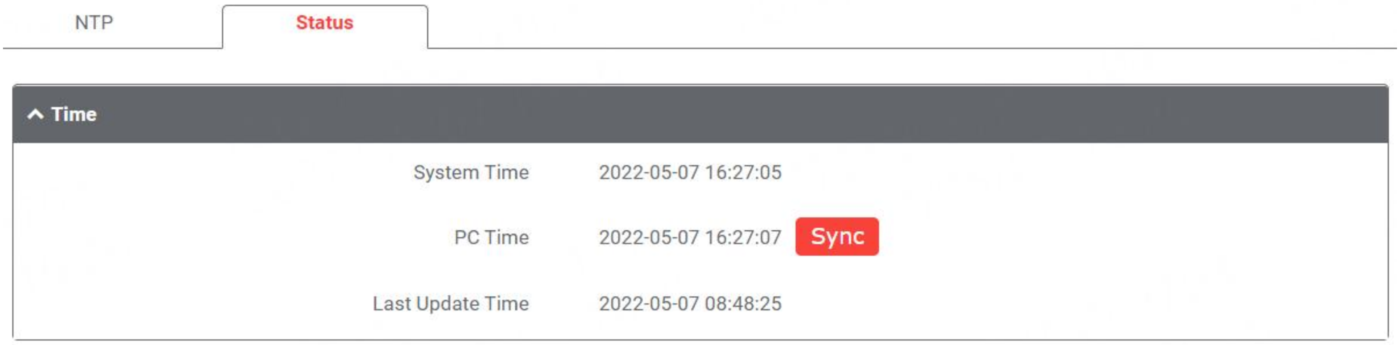


Enable: ON OFF (OFF)

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable the NTP server option. | OFF |

## Status

This window allows you to view the current time of router and also synchronize the router time. Click Sync button to synchronize the router time with the PC's time.



System Time 2022-05-07 16:27:05

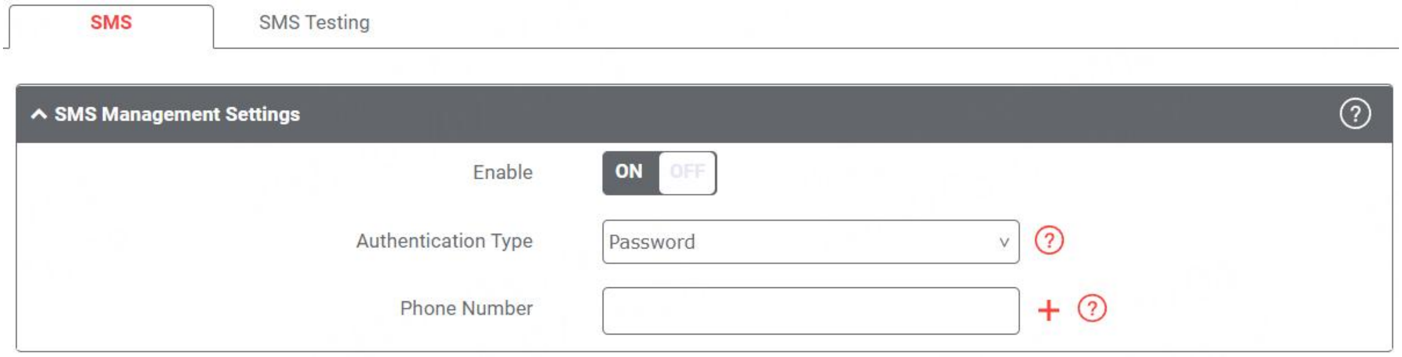
PC Time 2022-05-07 16:27:07

Last Update Time 2022-05-07 08:48:25

## 2.5.4 SMS

This section allows you to set SMS parameters. Device supports SMS management, and user can control and configure their devices by sending SMS. For more details about SMS control, refer to **4.1.2 SMS Remote Control.**

### SMS



Enable: ON OFF (ON)

Authentication Type: Password

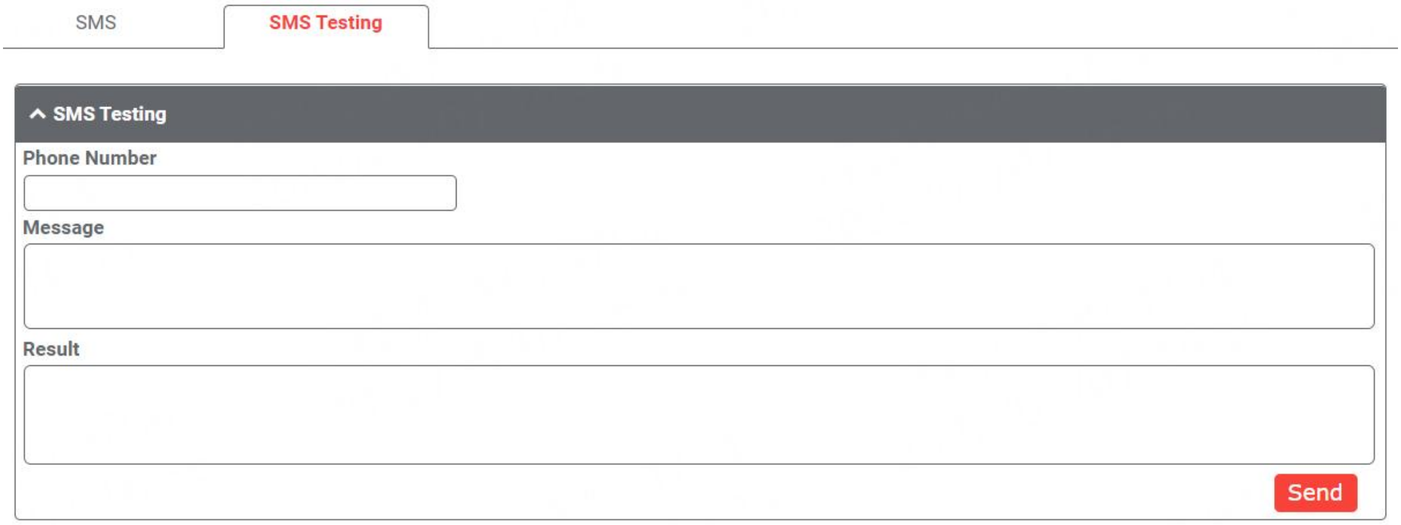
Phone Number:

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable the SMS Management option.<br>**Note**: If this option is disabled, the SMS configuration is invalid. | ON |
| Authentication Type | Select Authentication Type from "Password", "Phonenum" or "Both". | Password |

| | | |
|---|---|---|
| | Password: Use the same username and password as WEB manager for authentication. For example, the format of the SMS should be “username: password; cmd1; cmd2; …”<br>Note: Set the WEB manager password in System > User Management section.<br>Phonenum: Use the Phone number for authentication, and user should set the Phone Number that is allowed for SMS management. The format of the SMS should be “cmd1; cmd2; …”<br>Both: Use both the “Password” and “Phonenum” for authentication. User should set the Phone Number that is allowed for SMS management. The format of the SMS should be “username: password; cmd1; cmd2; …” | |
| Phone Number | Set the phone number used for SMS management, and click + to add new phone number.<br>***Note:*** *It can be null when choose “Password” as the authentication type.* | Null |

### SMS Testing

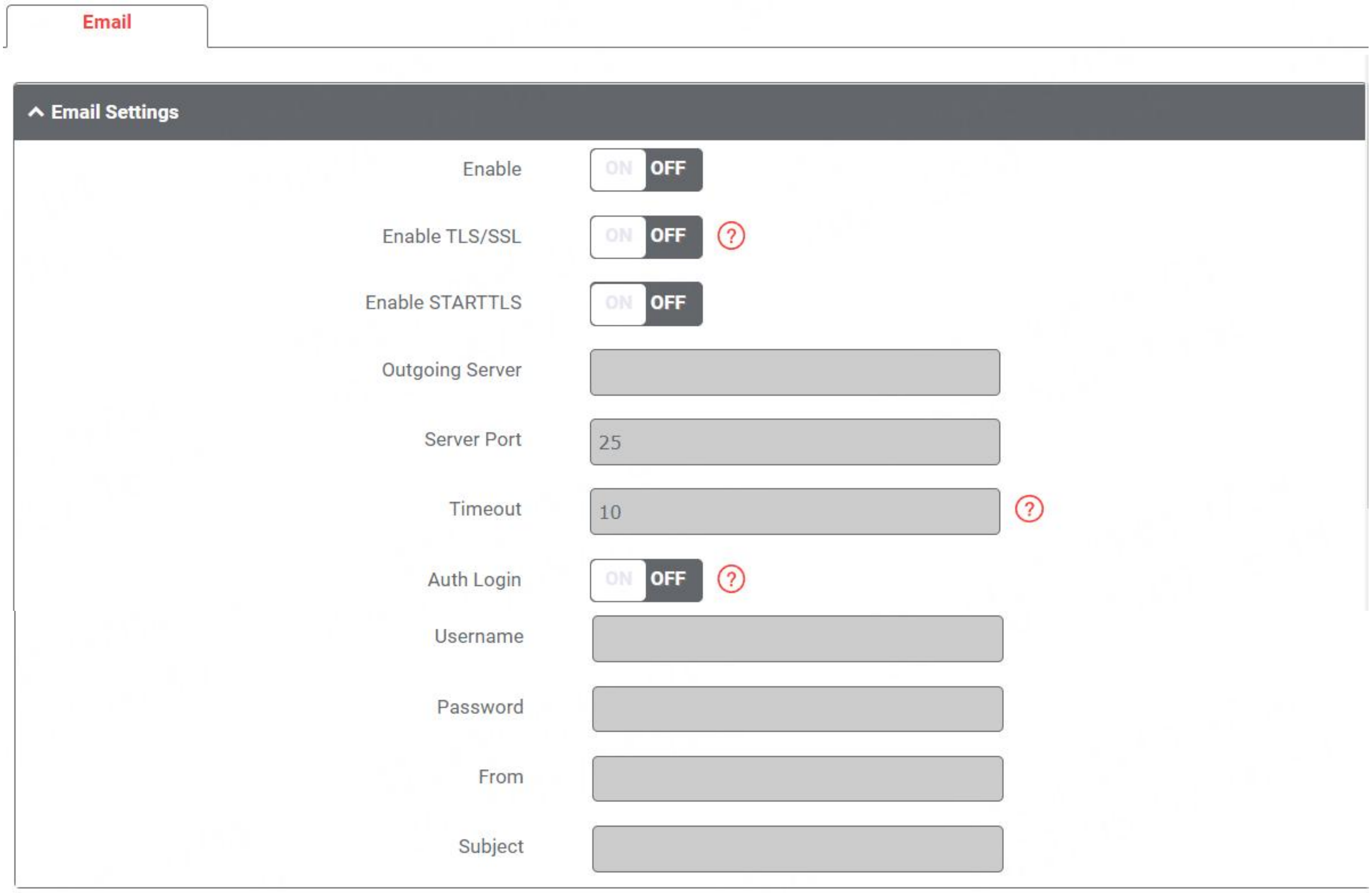
User can test the current SMS service whether it is available in this section.



| Item | Description | Default |
|---|---|---|
| Phone Number | Enter the specified phone number which can receive the SMS from router. | Null |
| Message | Enter the message that router will send it to the specified phone number. | Null |
| Result | The result of the SMS test will be displayed in the result box. | Null |
| Send | Click the button to send the test message. | -- |

## 2.5.5 Email

Email function supports to send the event notifications to the specified recipient by ways of email.



Email

Email Settings

Enable: ON OFF

Enable TLS/SSL: ON OFF

Enable STARTTLS: ON OFF

Outgoing Server:

Server Port: 25

Timeout: 10

Auth Login: ON OFF

Username:

Password:

From:

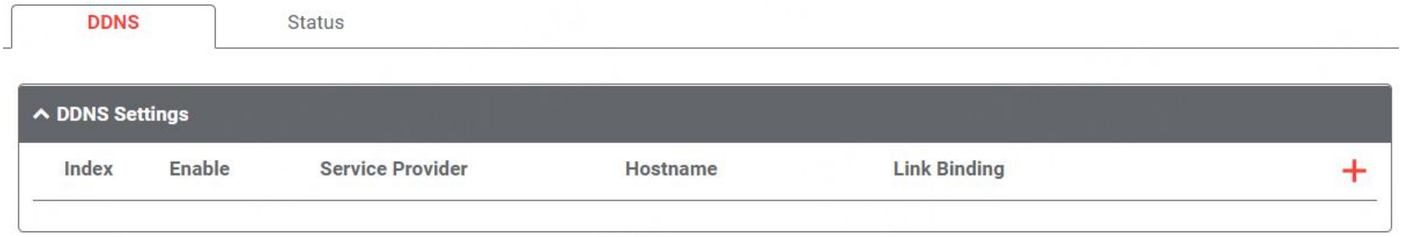
Subject:

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable the Email option. | OFF |
| Enable TLS/SSL | Click the toggle button to enable/disable the TLS/SSL option. | OFF |
| Enable STARTTLS | Click the toggle button to enable / disable STARTTLS encryption. | OFF |
| Outgoing server | Enter the SMTP server IP Address or domain name. | Null |
| Server port | Enter the SMTP server port. | 25 |
| Timeout | Set the max time for sending email to SMTP server. When the server doesn’t receive the email over this time, it will try to resend. | 10 |
| Auth Login | If the mail server supports AUTH login, you must enable this button and set a username and password. | OFF |
| Username | Enter the username which has been registered from SMTP server. | Null |
| Password | Enter the password of the username above. | Null |
| From | Enter the source address of the email. | Null |
| Subject | Enter the subject of this email. | Null |

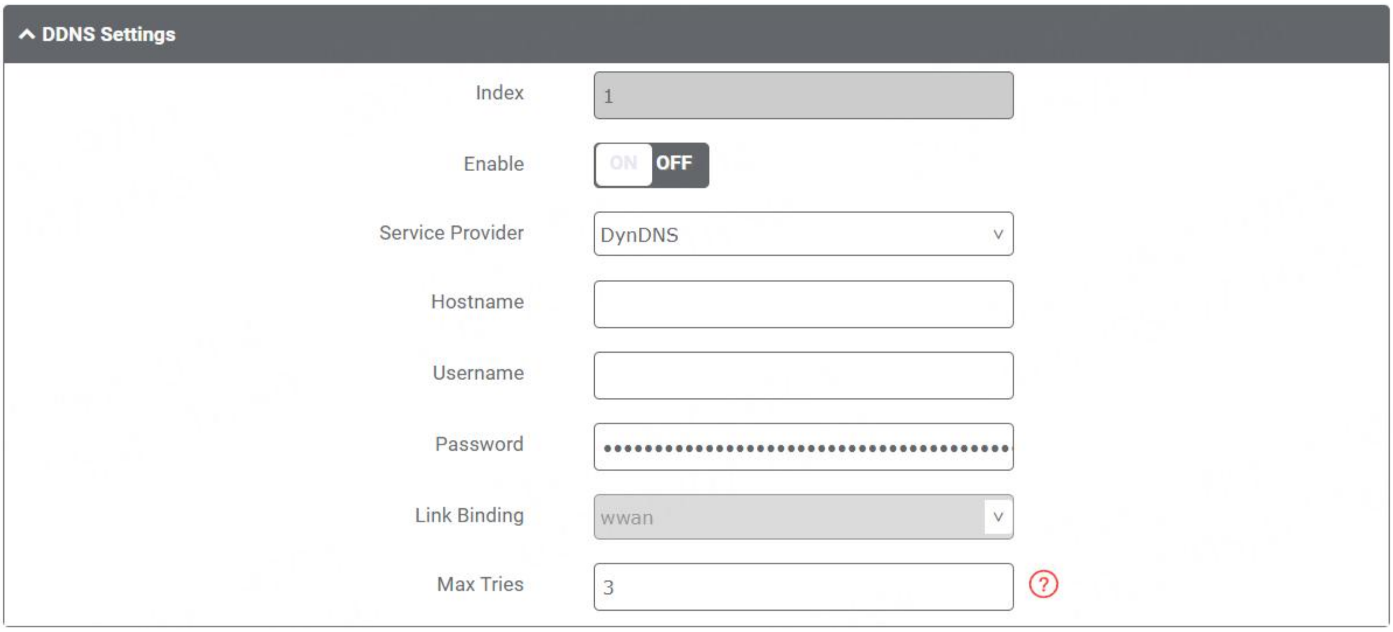
## 2.5.6 DDNS

This section allows you to set the DDNS parameters. The Dynamic DNS function allows you to alias a dynamic IP address to a static domain name, allows you whose ISP does not assign them a static IP address to use a domain name. This is especially useful for hosting servers via your connection, so that anyone wishing to connect to you may use your domain name, rather than having to use your dynamic IP address, which changes from time to time. This dynamic IP address is the WAN IP address of the router, which is assigned to you by your ISP. The service provider defaults to “DynDNS”, as shown below.

## DDNS

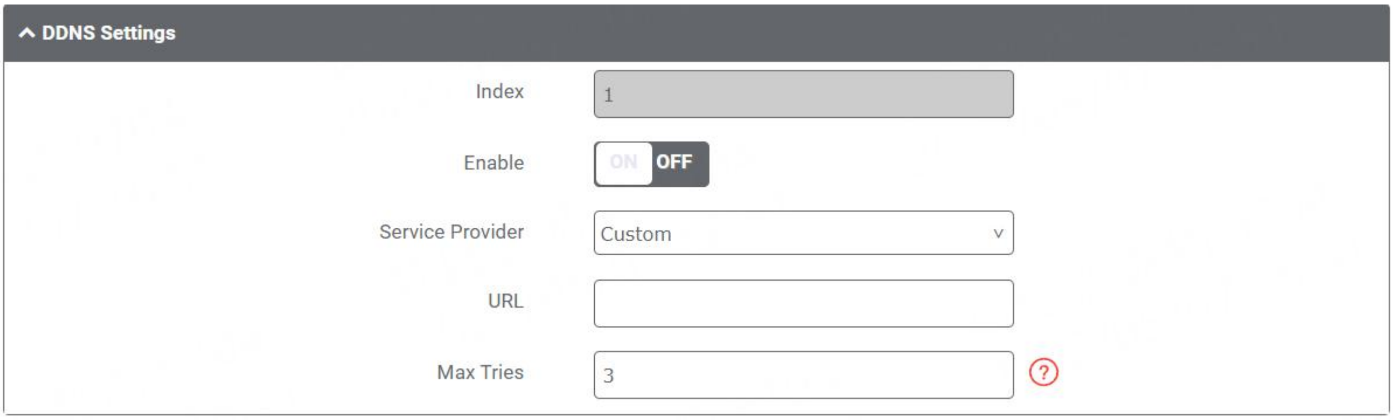


Click + to add a new Dynamic Domain Name Server.


DDNS Settings

| | |
|---|---|
| Index | 1 |
| Enable | ON OFF |
| Service Provider | DynDNS |
| Hostname | |
| Username | |
| Password | •••••••••••••••••••••••••••••••••••••••• |
| Link Binding | wwan |
| Max Tries | 3 |

When “Custom” service provider chosen, the window is displayed as below.


DDNS Settings

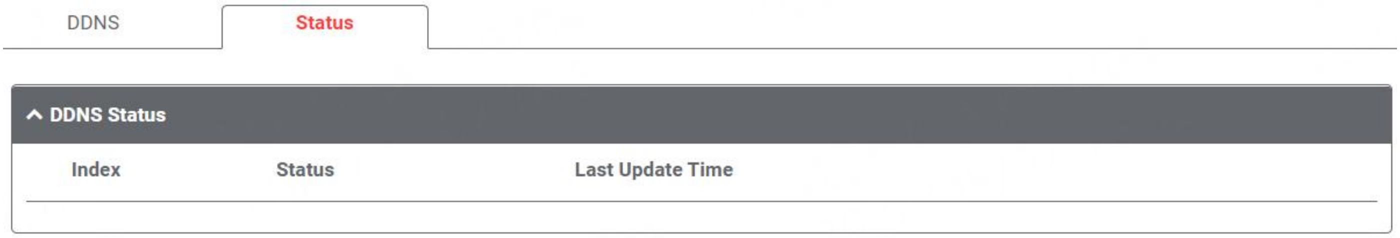
| | |
|---|---|
| Index | 1 |
| Enable | ON OFF |
| Service Provider | Custom |
| URL | |
| Max Tries | 3 |

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable the DDNS option. | OFF |

| | | |
|---|---|---|
| Service Provider | Select the DDNS service from “DynDNS”, “NO-IP”, “3322” or “Custom”.<br>**Note:** The DDNS service only can be used after registered by Corresponding service provider. | DynDNS |
| Hostname | Enter the hostname provided by the DDNS server. | Null |
| Username | Enter the username provided by the DDNS server. | Null |
| Password | Enter the password provided by the DDNS server. | Null |
| URL | Enter the URL customized by user. | Null |
| Max tries | Enter the maximum tries times | 3 |

### Status

The status bar allows to view DDNS connection status.



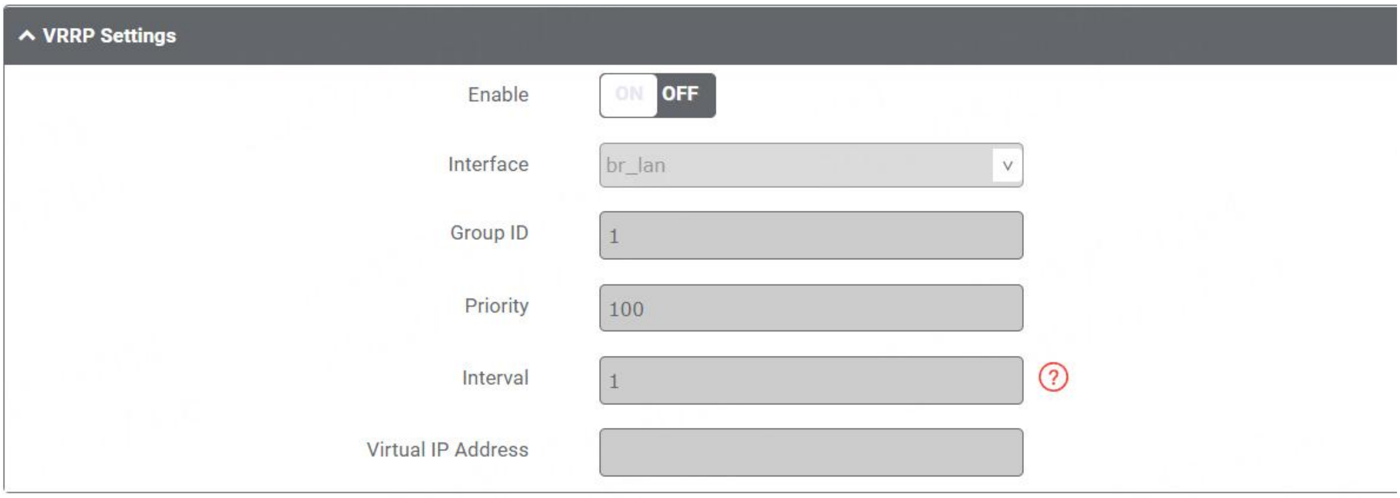
| Index | Status | Last Update Time |
|---|---|---|

| Item | Description |
|---|---|
| Status | Display the current status of the DDNS. |
| Last Update Time | Display the date and time for the DDNS was last updated successfully. |

## 2.5.7 VRRP

This section allows you to set the VRRP parameters. VRRP stands for Virtual Router Redundancy Protocol, is a standard for device redundancy and failover that creates a virtual router with a floating IP address.

## VRRP Settings



^ VRRP Settings

Enable: ON OFF

Interface: br_lan

Group ID: 1

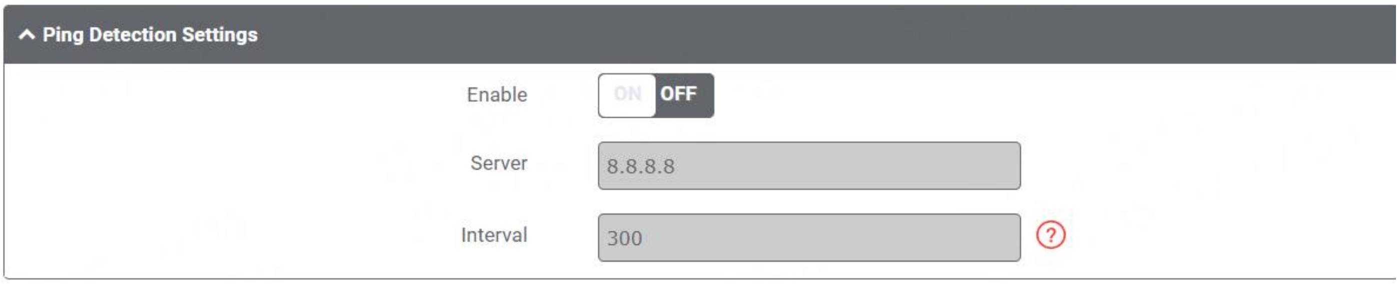
Priority: 100

Interval: 1

Virtual IP Address:

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable the VRRP option. | OFF |
| Interface | Selects which interface VRRP will operate on. | -- |
| Group ID | The Virtual Router Identifier. Routers with identical IDs will be grouped in the same VRRP cluster. | 1 |
| Priority | VRRP priority of the virtual router. Higher values equal higher priority. | 100 |
| Interval | Interval value in second, must be the same for all routing platforms in the VRRP group. | 1 |
| Virtual IP Address | Virtual IP address for the router's VRRP cluster. | Null |

## Ping Detection Settings



^ Ping Detection Settings

Enable: ON OFF

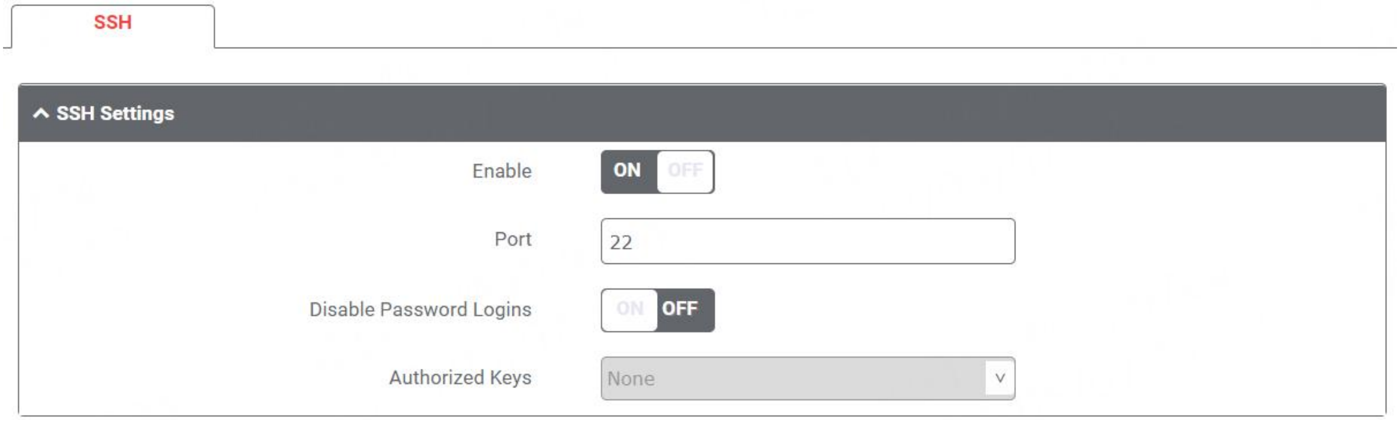
Server: 8.8.8.8

Interval: 300

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable the option. | OFF |
| Server | The ping detection sever address. | 8.8.8.8 |
| Interval | Interval value for ping detection in second. | 300 |

## 2.5.8 SSH

Device supports SSH password access and secret-key access.



SSH

SSH Settings

Enable ON

Port 22

Disable Password Logins OFF

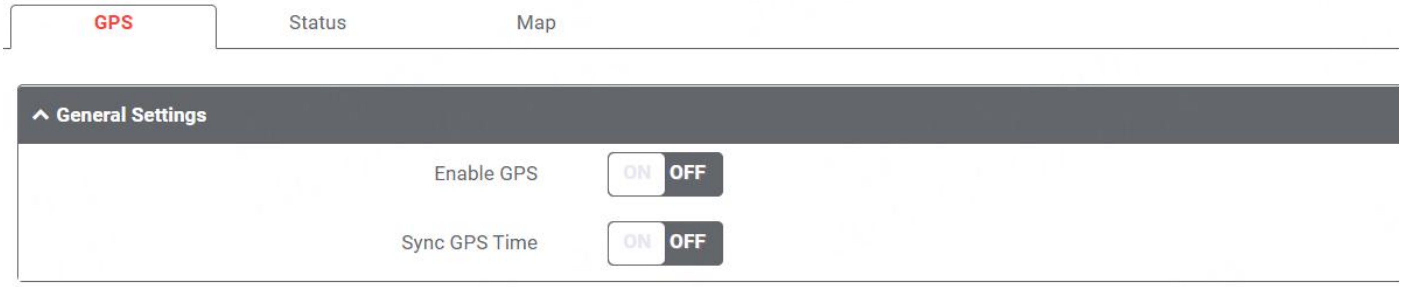
Authorized Keys None

| Item | Description | Default |
|---|---|---|
| Enable | Click the toggle button to enable/disable this option. When enabled, you can access the router via SSH. | ON |
| Port | Set the port of the SSH access. | 22 |
| Disable Password Logins | Click the toggle button to enable/disable this option. When enabled, you cannot use username and password to access the router via SSH. In this case, only the key can be used for login. | OFF |

## 2.5.9 GPS

This section is used to configure the parameters of GPS. The GPS function of device can locate and acquire the location information of the device and report it to the designated server.

### GPS

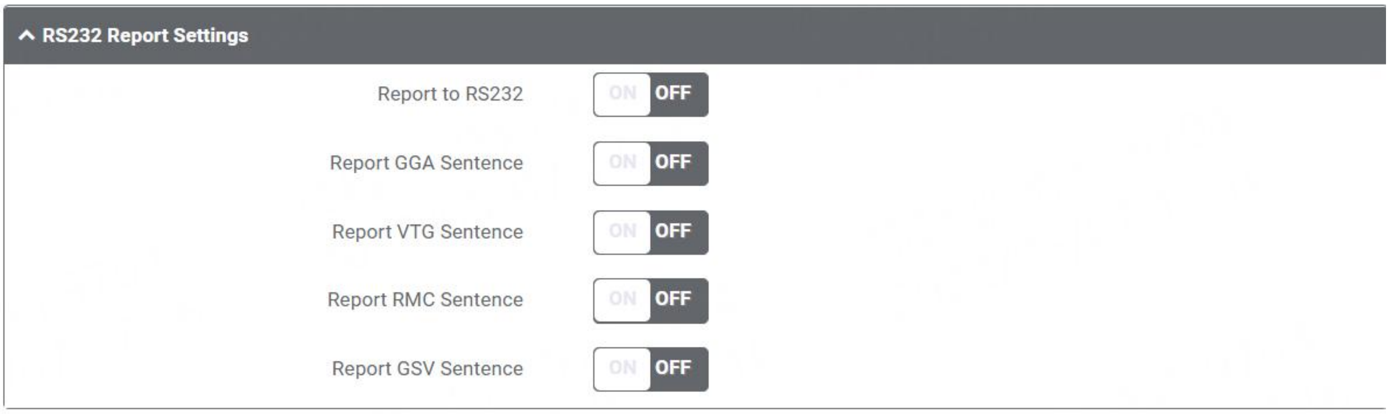


GPS Status Map

General Settings

Enable GPS OFF

Sync GPS Time OFF



RS232 Report Settings

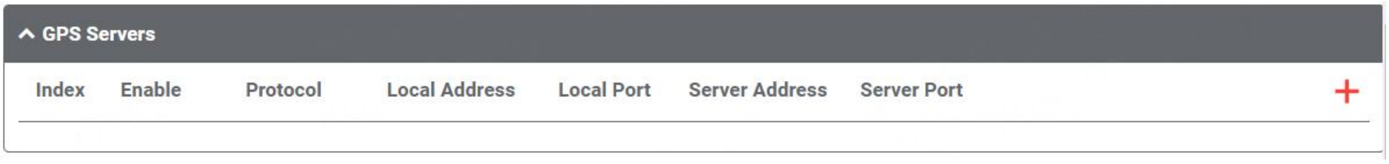
Report to RS232: ON OFF

Report GGA Sentence: ON OFF

Report VTG Sentence: ON OFF

Report RMC Sentence: ON OFF

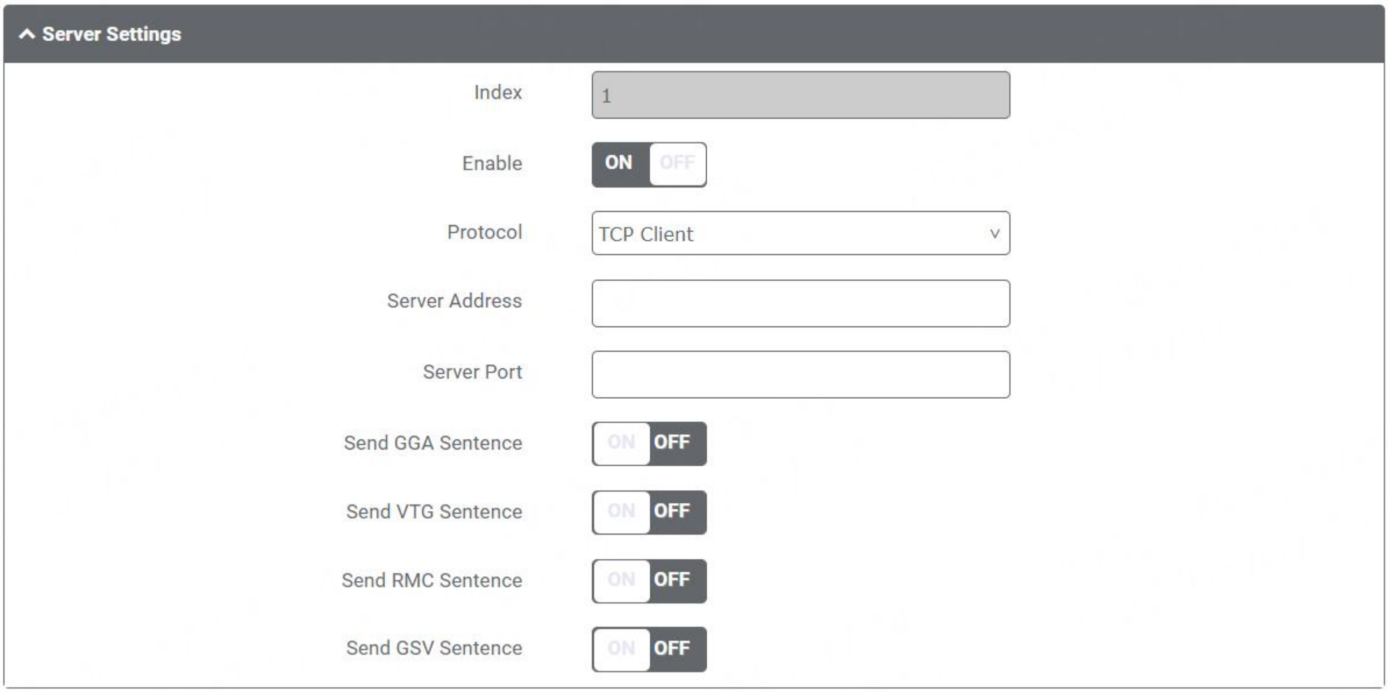
Report GSV Sentence: ON OFF



GPS Servers

| Index | Enable | Protocol | Local Address | Local Port | Server Address | Server Port | + |
|---|---|---|---|---|---|---|---|

Click + to add a new GPS Server. The maximum count is **5.**



Server Settings

Index: 1

Enable: ON OFF

Protocol: TCP Client

Server Address:

Server Port:

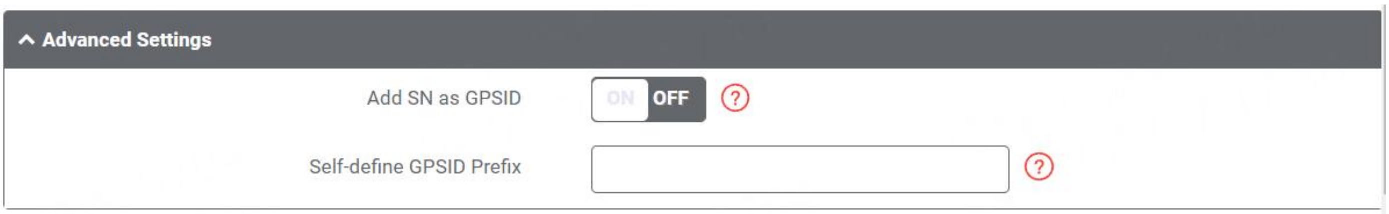
Send GGA Sentence: ON OFF

Send VTG Sentence: ON OFF

Send RMC Sentence: ON OFF

Send GSV Sentence: ON OFF

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Enable | Click the toggle button to enable/disable the server. | ON |
| Protocol | Select from “TCP Client”, “TCP Server”, “UDP”. | TCP Client |
| Server/Local Address | Server or local IP address. | Null |
| Server/Local Port | Server or local IP port. | Null |
| Send GGA Sentence | Click the toggle button to enable/disable this option. | OFF |
| Send VTG Sentence | Click the toggle button to enable/disable this option. | OFF |
| Send RMC Sentence | Click the toggle button to enable/disable this option. | OFF |
| Send GSV Sentence | Click the toggle button to enable/disable this option. | OFF |



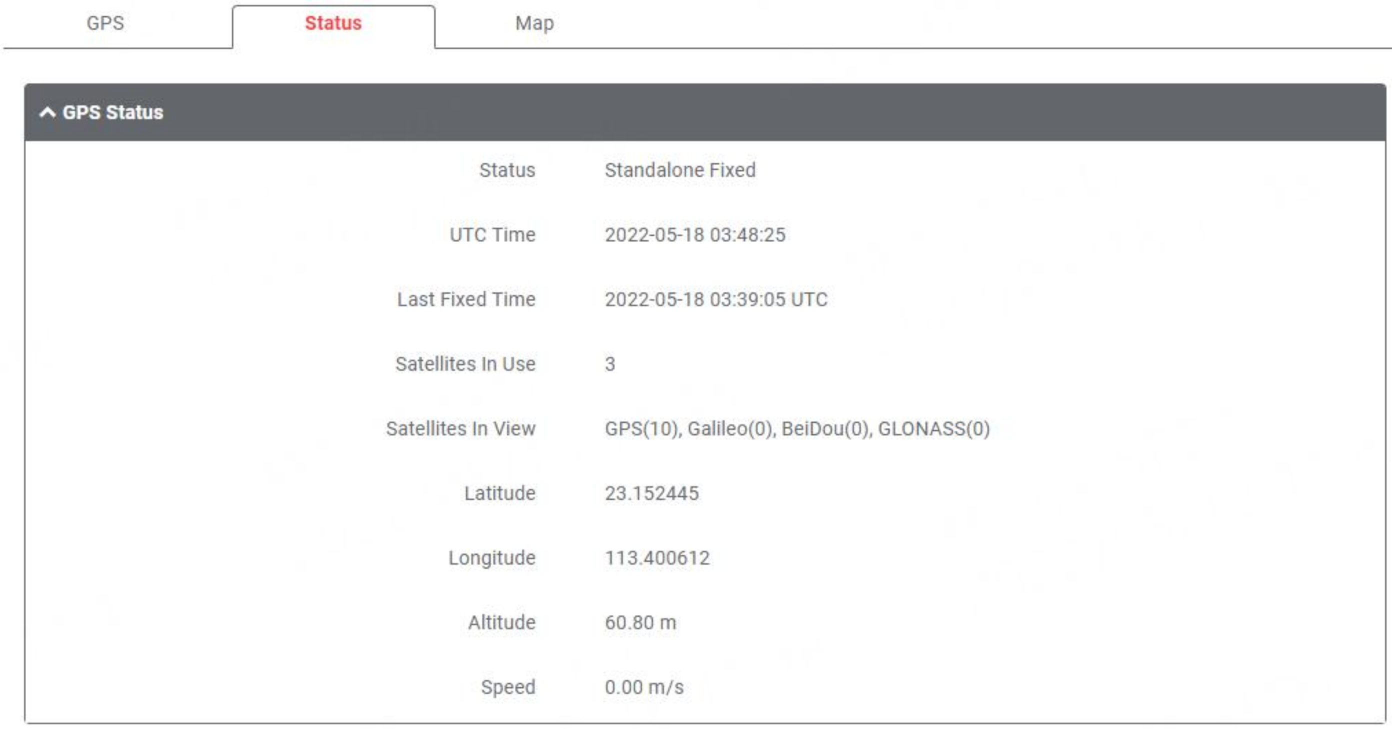
^ Advanced Settings

Add SN as GPSID: ON OFF

Self-define GPSID Prefix:

| Item | Description | Default |
|---|---|---|
| Add SN as GPSID | Click the toggle button to enable/disable this option. | OFF |
| Self-define GPSID Prefix | Self-define GPSIS Prefix, four upper case. | Null |

## Status



^ GPS Status

Status: Standalone Fixed

UTC Time: 2022-05-18 03:48:25

Last Fixed Time: 2022-05-18 03:39:05 UTC

Satellites In Use: 3

Satellites In View: GPS(10), Galileo(0), BeiDou(0), GLONASS(0)

Latitude: 23.152445

Longitude: 113.400612

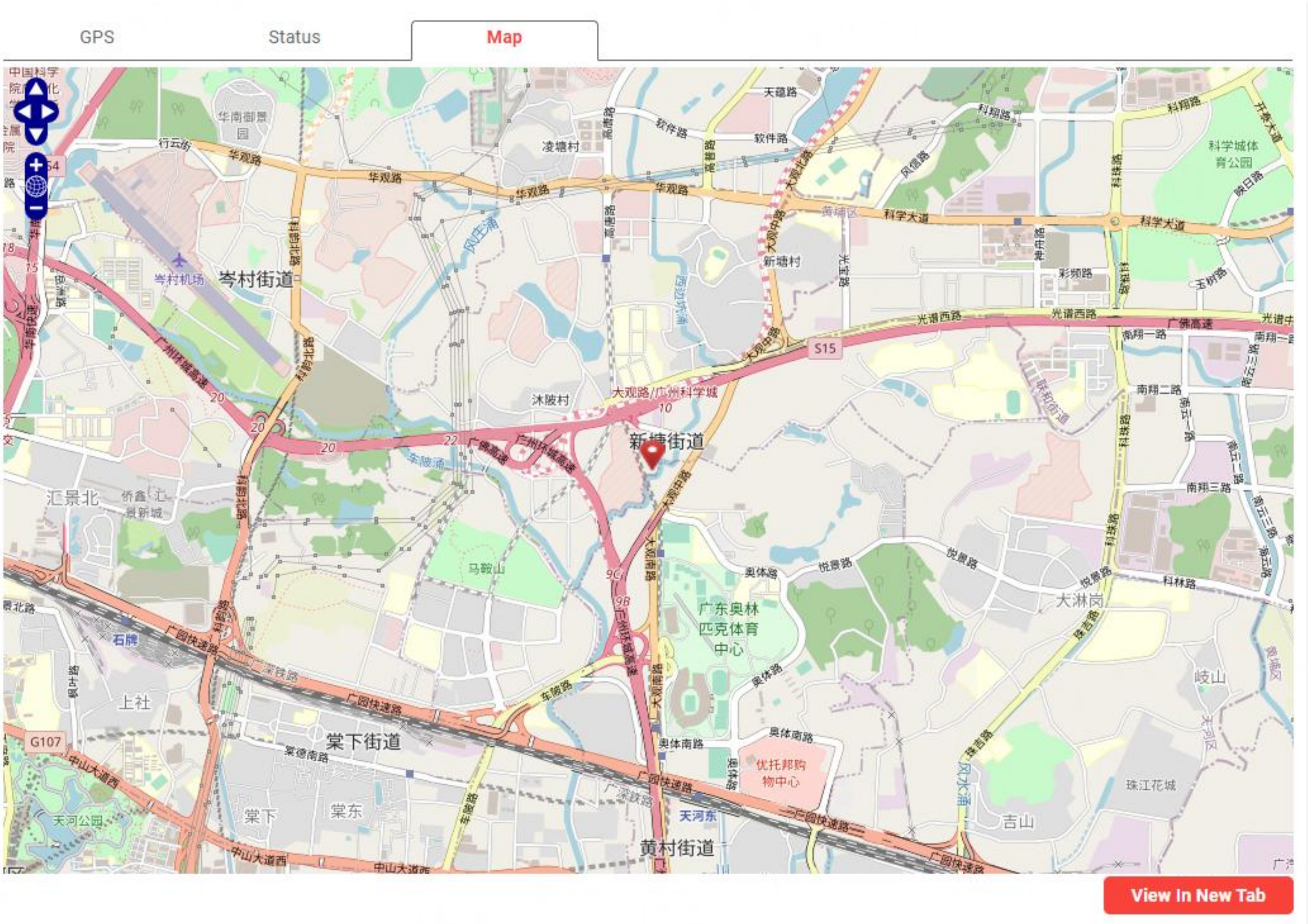
Altitude: 60.80 m

Speed: 0.00 m/s

| Item | Description |
|---|---|
| Status | Shows the current GPS status of the router. |
| UTC Time | Shows the UTC of satellite.<br>***Note:*** *UTC is the world's unified time, not local time.* |
| Last Fixed Time | The time of the last successful positioning. |
| Satellites In Use | Number of satellites used |
| Satellites In View | Number of visible satellites |
| Latitude | Shows the Latitude information of the router. |
| Longitude | Shows the longitude information of the router. |
| Altitude | Shows the height information of the router. |
| Speed | Shows the speed information of the router. |

## Map

The Map page displays the device's current coordinates and position on the map. To see the device's location on the map, make sure to attach the GPS antenna on the device and enable GPS in the GPS page.

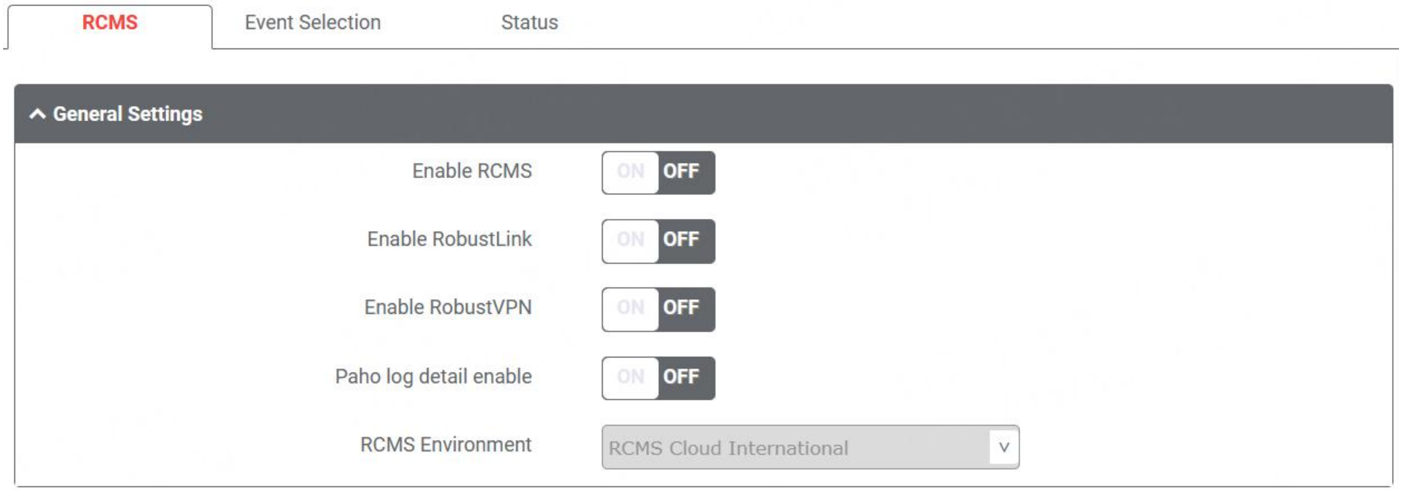


Click the View In New Tab button to view in a new tab.

## 2.5.10 RCMS

This section allows you to set the RCMS parameters. Robustel Cloud Manager Service (RCMS) is a modular IoT cloud software platform compatible with all Robustel products.

### RCMS



Enable RCMS: ON OFF

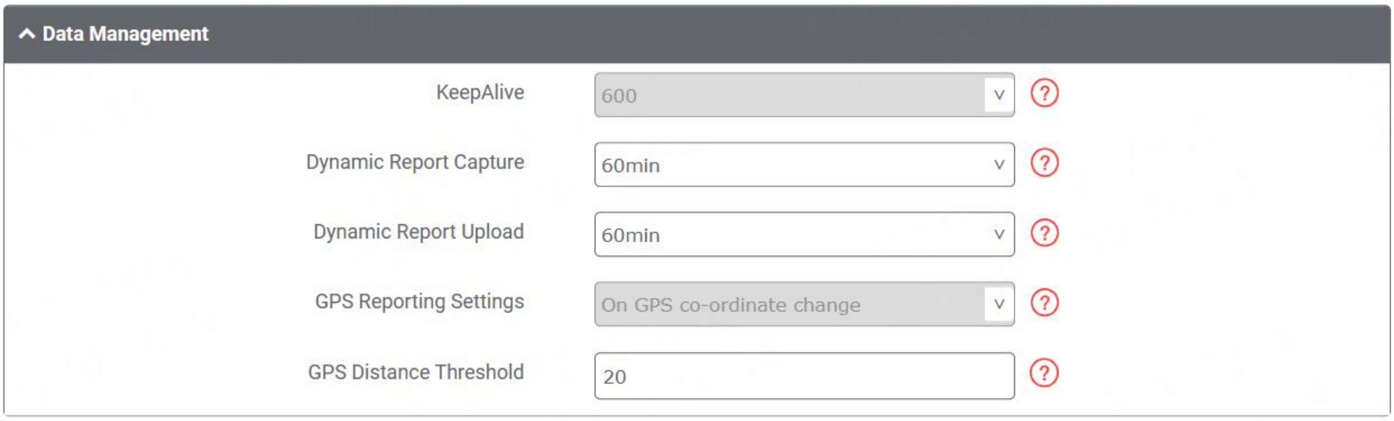
Enable RobustLink: ON OFF

Enable RobustVPN: ON OFF

Paho log detail enable: ON OFF

RCMS Environment: RCMS Cloud International

| Item | Description | Default |
|---|---|---|
| Enable RCMS | Click the toggle button to enable/disable this option. | OFF |
| Enable RobustLink | Click the toggle button to enable/disable this option. | OFF |
| Enable RobustVPN | Click the toggle button to enable/disable this option. | OFF |
| Paho log detail enable | Click the toggle button to enable/disable this option. | OFF |
| RCMS Environment | Select RCMS Environment | RCMS Cloud International |



KeepAlive: 600

Dynamic Report Capture: 60min

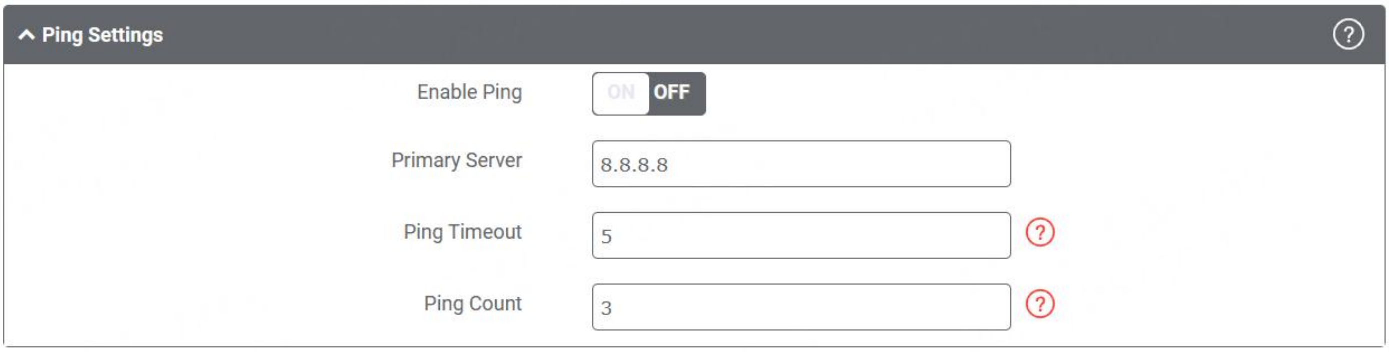
Dynamic Report Upload: 60min

GPS Reporting Settings: On GPS co-ordinate change

GPS Distance Threshold: 20

| Item | Description | Default |
|---|---|---|
| KeepAlive | KeepAlive determines how long your device checks in with RCMS. A shorter KeepAlive will update RCMS more frequently but consume more data. | 600 |

| | | |
|---|---|---|
| Dynamic Report Capture | Select the capture period of dynamic data is logged in the device | 60min |
| Dynamic Report Upload | Select the upload period of dynamic data is update in the device | 60min |
| GPS Reporting Settings | Select GPS Reporting way:<br>- On GPS co-ordinate change - Report when GPS is updated<br>- Only with Dynamic Report - Collect and report in sync with the Data Collection Interval and Data Reporting Frequency | On GPS co-ordinate change |
| GPS Distance Threshold | GPS data will be updated when the current position exceeds this value; Unit:meters<br>Valid Range:10-10000 | 20 |



Enable Ping: ON OFF

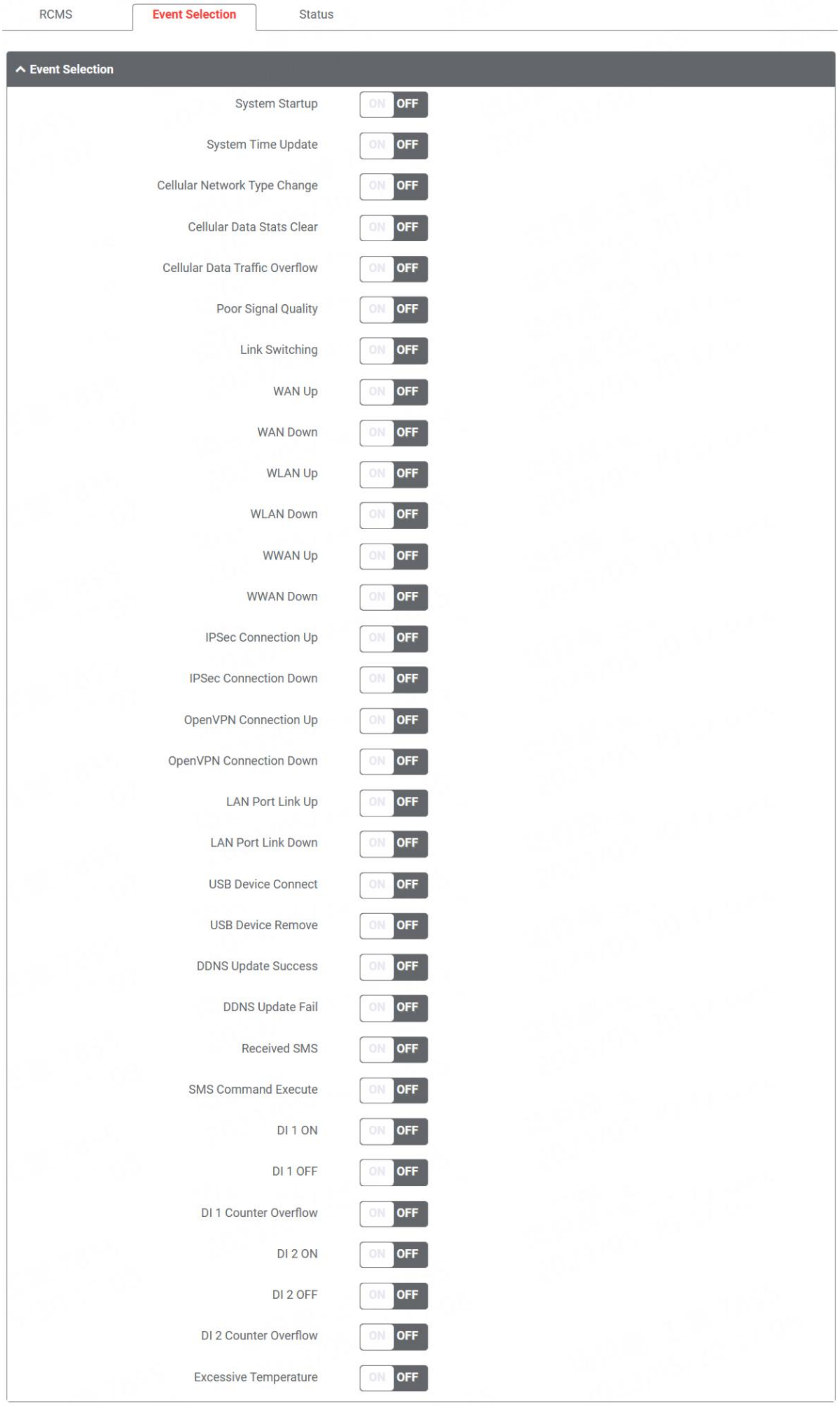
Primary Server: 8.8.8.8

Ping Timeout: 5

Ping Count: 3

| Item | Description | Default |
|---|---|---|
| Enable Ping | Click the toggle button to enable/disable this option. | OFF |
| Primary Server | Enter the ping server. | 8.8.8.8 |
| Ping Timeout | Enter the time of waiting for a ping response. Unit: seconds | 5 |
| Ping Count | Enter the number of pings conducted to calculate average. | 3 |

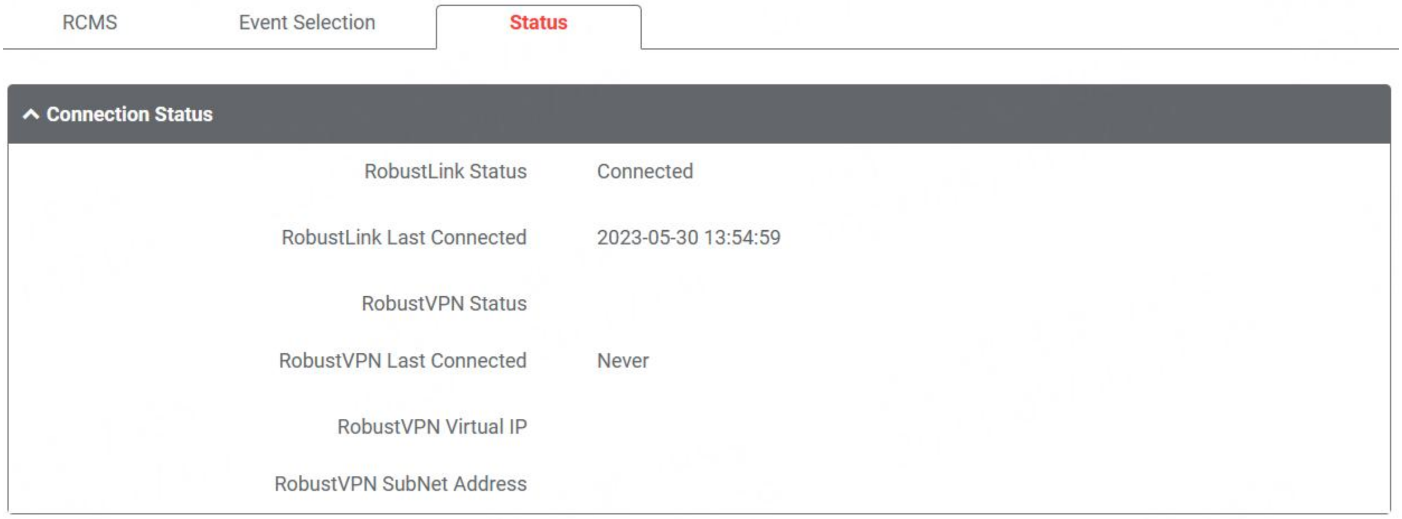
## Event Selection



^ Event Selection

| | |
|---|---|
| System Startup | ON OFF |
| System Time Update | ON OFF |
| Cellular Network Type Change | ON OFF |
| Cellular Data Stats Clear | ON OFF |
| Cellular Data Traffic Overflow | ON OFF |
| Poor Signal Quality | ON OFF |
| Link Switching | ON OFF |
| WAN Up | ON OFF |
| WAN Down | ON OFF |
| WLAN Up | ON OFF |
| WLAN Down | ON OFF |
| WWAN Up | ON OFF |
| WWAN Down | ON OFF |
| IPSec Connection Up | ON OFF |
| IPSec Connection Down | ON OFF |
| OpenVPN Connection Up | ON OFF |
| OpenVPN Connection Down | ON OFF |
| LAN Port Link Up | ON OFF |
| LAN Port Link Down | ON OFF |
| USB Device Connect | ON OFF |
| USB Device Remove | ON OFF |
| DDNS Update Success | ON OFF |
| DDNS Update Fail | ON OFF |
| Received SMS | ON OFF |
| SMS Command Execute | ON OFF |
| DI 1 ON | ON OFF |
| DI 1 OFF | ON OFF |
| DI 1 Counter Overflow | ON OFF |
| DI 2 ON | ON OFF |
| DI 2 OFF | ON OFF |
| DI 2 Counter Overflow | ON OFF |
| Excessive Temperature | ON OFF |

## Status



RobustLink Status Connected

RobustLink Last Connected 2023-05-30 13:54:59

RobustVPN Status

RobustVPN Last Connected Never

RobustVPN Virtual IP

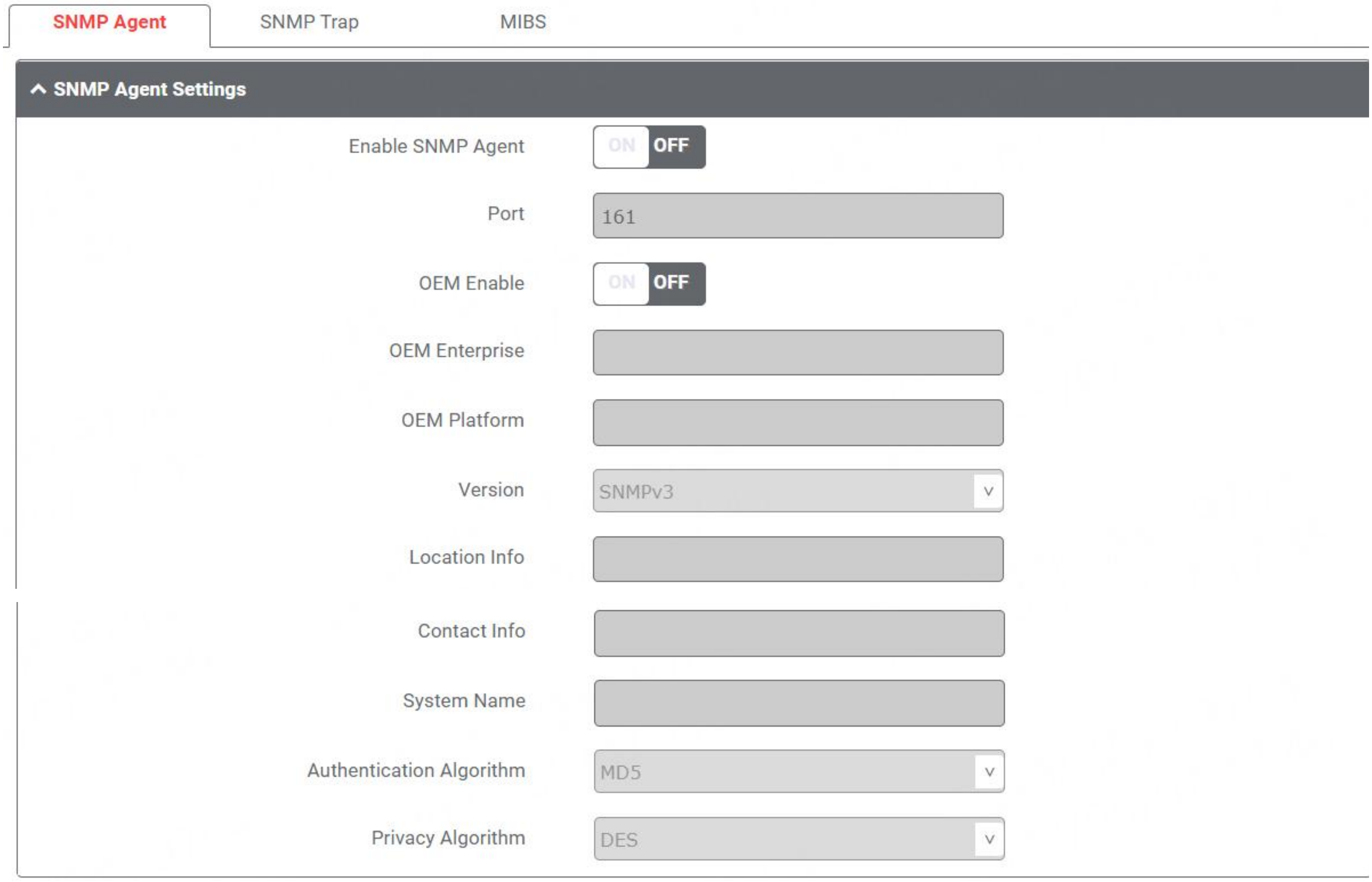
RobustVPN SubNet Address

| Item | Description |
|---|---|
| RobustLink Status | Show the status of RobustLink |
| RobustelLink Last Connected | Show the last connected times of RobustLink |
| RobustVPN Status | Show the status of RobustVPN |
| RobustVPN Last Connected | Show the last connected times of RobustVPN |
| RobustVPN Virtual IP | Show the virtual IP of RobustVPN |
| RobustVPN SubNet Address | Show the subnet address of RobustVPN |

## 2.5.11 SNMP

This section allows you to set the SNMP parameters. Simple Network Management Protocol is a network management protocol used for collecting information and configuring network devices.

## SNMP Agent



Enable SNMP Agent: ON OFF

Port: 161

OEM Enable: ON OFF

OEM Enterprise:

OEM Platform:

Version: SNMPv3

Location Info:

Contact Info:

System Name:

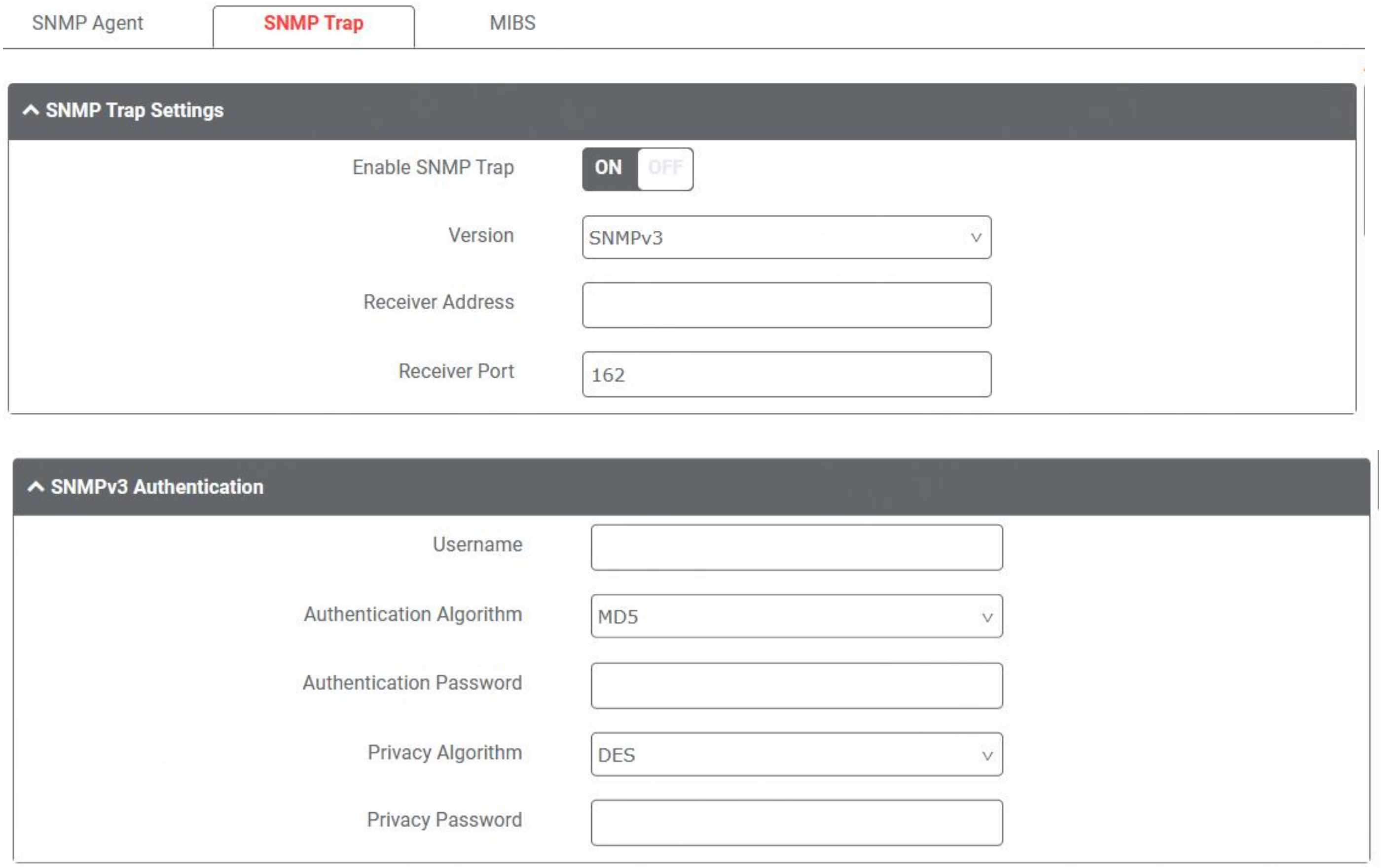
Authentication Algorithm: MD5

Privacy Algorithm: DES

| Item | Description | Default |
|---|---|---|
| Enable SNMP Agent | Click the toggle button to enable/disable this option. | OFF |
| Port | SNMP service's port. | 161 |
| OEM Enable | Click the toggle button to enable/disable this option. | OFF |
| OEM Enterprise | OEM enterprise information. | Null |
| OEM Platform | OEM platform information. | Null |
| Version | The SNMP version, select from “SNMPv3” or “SNMPv1v2v3”. | SNMPv3 |
| Location Info | System location information. | Null |
| Contact Info | System contact information. | Null |
| System Name | System name. | Null |
| Readonly Community Name | Access mode for current community. | Null |
| Readwrite Community Name | Access mode for current community. | Null |
| Authentication Algorithm | Select from “MD5”, “SHA”. | MD5 |
| Privacy Algorithm | Select from “DES”, “AES”. | DES |

## SNMP Trap

SNMP Trap Rules are alerts that trigger when certain user-specified events occur. When the trigger event happens, the trap will notify known SNMP hosts.



SNMP Trap Settings

Enable SNMP Trap: ON

Version: SNMPv3

Receiver Address:

Receiver Port: 162

SNMPv3 Authentication

Username:

Authentication Algorithm: MD5

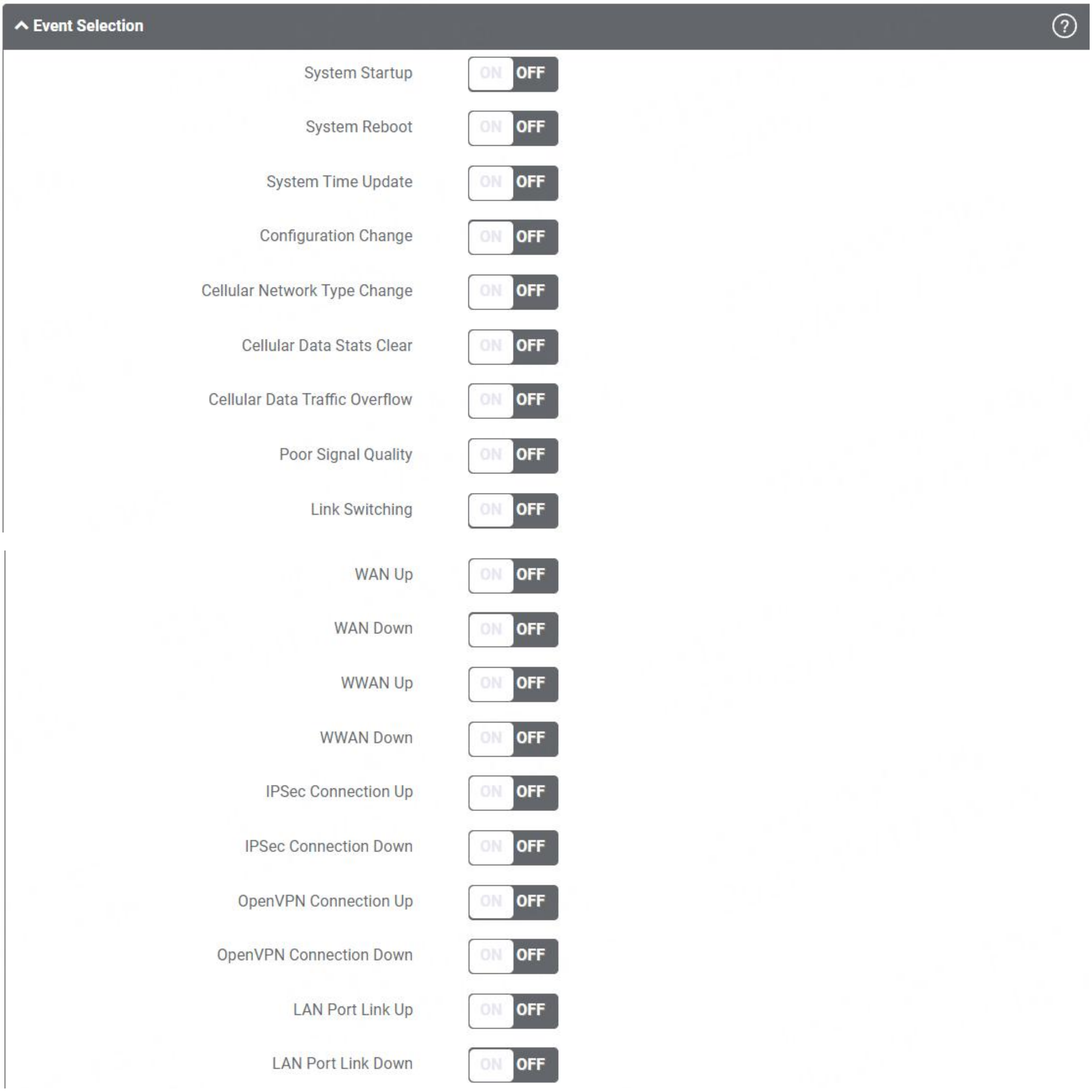
Authentication Password:

Privacy Algorithm: DES

Privacy Password:

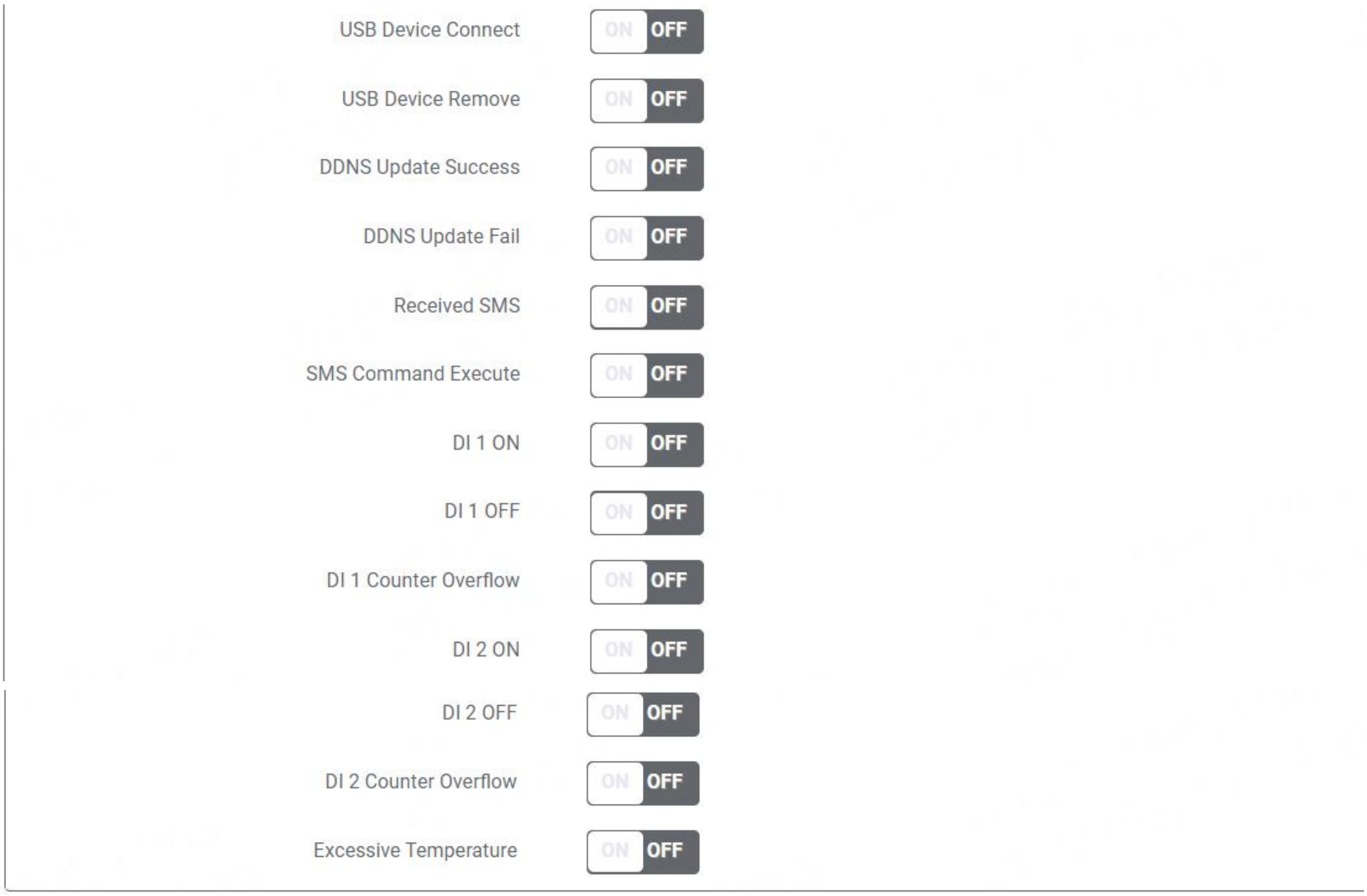
| Item | Description | Default |
|---|---|---|
| Enable SNMP Agent | Click the toggle button to enable/disable this option. | OFF |
| Receiver Address | Host name or IP address to transfer SNMP traffic to. | Null |
| Receiver Port | Trap host's port number. | 162 |
| User name | The user name access to SNMP. | Null |
| Authentication Algorithm | Select from “MD5”, “SHA”. | MD5 |
| Authentication Password | Enter the authentication password. | Null |
| Privacy Algorithm | Select from “DES”, “AES”. | DES |
| Privacy Password | Enter the privacy password. | Null |

Click the toggle button the enable or disable the related event.



^ Event Selection

| | |
|---|---|
| System Startup | ON OFF |
| System Reboot | ON OFF |
| System Time Update | ON OFF |
| Configuration Change | ON OFF |
| Cellular Network Type Change | ON OFF |
| Cellular Data Stats Clear | ON OFF |
| Cellular Data Traffic Overflow | ON OFF |
| Poor Signal Quality | ON OFF |
| Link Switching | ON OFF |
| WAN Up | ON OFF |
| WAN Down | ON OFF |
| WWAN Up | ON OFF |
| WWAN Down | ON OFF |
| IPSec Connection Up | ON OFF |
| IPSec Connection Down | ON OFF |
| OpenVPN Connection Up | ON OFF |
| OpenVPN Connection Down | ON OFF |
| LAN Port Link Up | ON OFF |
| LAN Port Link Down | ON OFF |



USB Device Connect: ON [✓ OFF]

USB Device Remove: ON [✓ OFF]

DDNS Update Success: ON [✓ OFF]

DDNS Update Fail: ON [✓ OFF]

Received SMS: ON [✓ OFF]

SMS Command Execute: ON [✓ OFF]

DI 1 ON: ON [✓ OFF]

DI 1 OFF: ON [✓ OFF]

DI 1 Counter Overflow: ON [✓ OFF]

DI 2 ON: ON [✓ OFF]

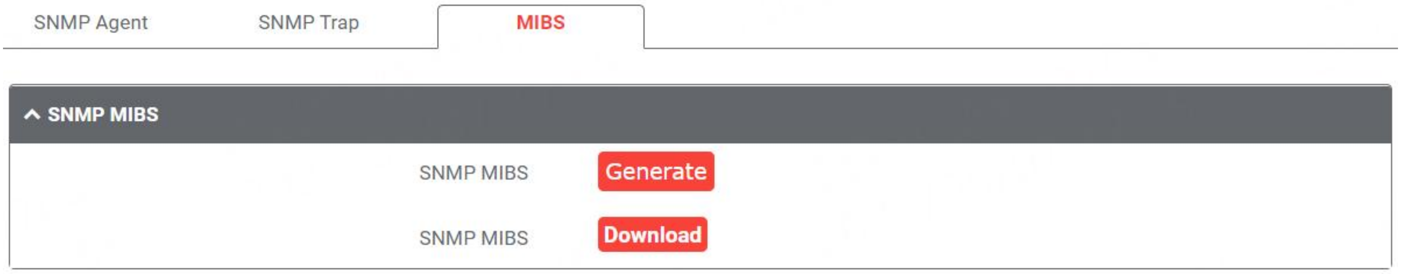
DI 2 OFF: ON [✓ OFF]

DI 2 Counter Overflow: ON [✓ OFF]

Excessive Temperature: ON [✓ OFF]

## MIBS

MIB stands for Management Information Base, a MIB contains the variables that the managed device maintains and can be queried or set by the agent. The MIB defines the attributes of the managed device, including the name, status, access rights, and data type.



^ SNMP MIBS

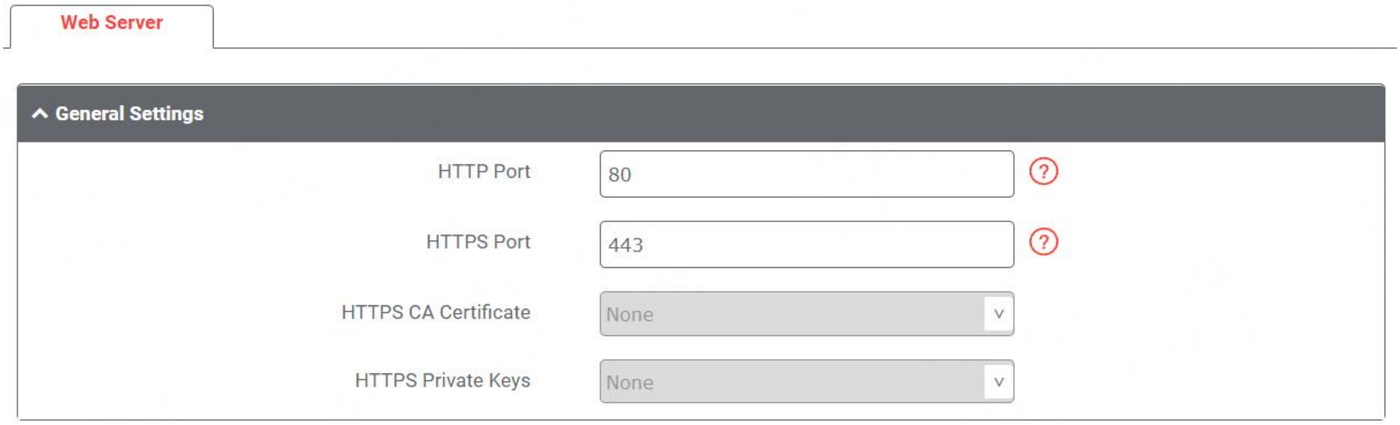
SNMP MIBS: Generate

SNMP MIBS: Download

| Item | Description | Default |
|---|---|---|
| MIBS | Click Generate to generate and click Download to download the device's MIB file. | -- |

## 2.5.12 Web Server

This section allows you to modify the parameters of Web Server.



Web Server

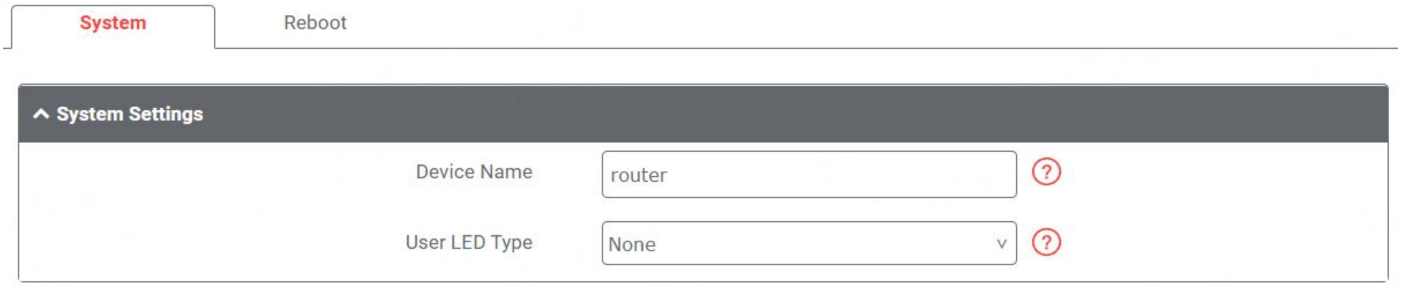
General Settings

| | |
|---|---|
| HTTP Port | 80 |
| HTTPS Port | 443 |
| HTTPS CA Certificate | None |
| HTTPS Private Keys | None |

| Item | Description | Default |
|---|---|---|
| HTTP Port | Enter the HTTP port number you want to change in router's Web Server. On a Web server, port 80 is the port that the server "listens to" or expects to receive from a Web client. If you configure the router with other HTTP Port number except 80, only adding that port number then you can login router's Web Server. | 80 |
| HTTPS Port | Enter the HTTPS port number you want to change in router's Web Server. On a Web server, port 443 is the port that the server "listens to" or expects to receive from a Web client. If you configure the router with other HTTPS Port number except 443, only adding that port number then you can login router's Web Server.<br>**Note**: HTTPS is more secure than HTTP. In many cases, clients may be exchanging confidential information with a server, which needs to be secured in order to prevent unauthorized access. For this reason, HTTP was developed by Netscape corporation to allow authorization and secured transactions. | 443 |
| HTTPS CA Certificate | Select one once the certification is imported, see **4.6.2 Certificate Manager** | |
| HTTPS Private Keys | Select one once the certification is imported, see **4.6.2 Certificate Manager** | |

## 2.5.13 Advanced

This section allows you to set the Advanced and parameters. Advanced router settings include system settings and reboot.

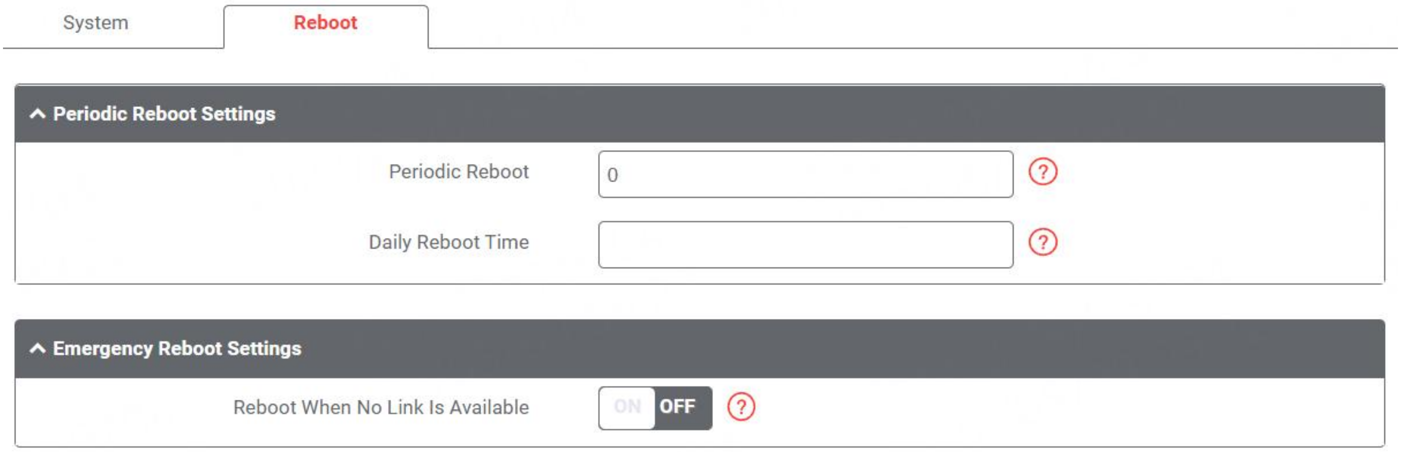


System Settings

Device Name: router

User LED Type: None

| Item | Description | Default |
|---|---|---|
| Device Name | Set the device name to distinguish different devices you have installed; valid characters are a-z, A-Z, 0-9, @, ., -, #, $, and *. | router |
| User LED Type | Specify the display type of your USR LED. Select from “None”, “OpenVPN” or “IPsec”.<br>• None: Meaningless indication, and the LED is off<br>• SIM:show the sim status.<br>• OpenVPN: USR indicator showing the OpenVPN status<br>• IPsec: USR indicator showing the IPsec status | None |



Periodic Reboot Settings

Periodic Reboot: 0

Daily Reboot Time:

Emergency Reboot Settings

Reboot When No Link Is Available: OFF

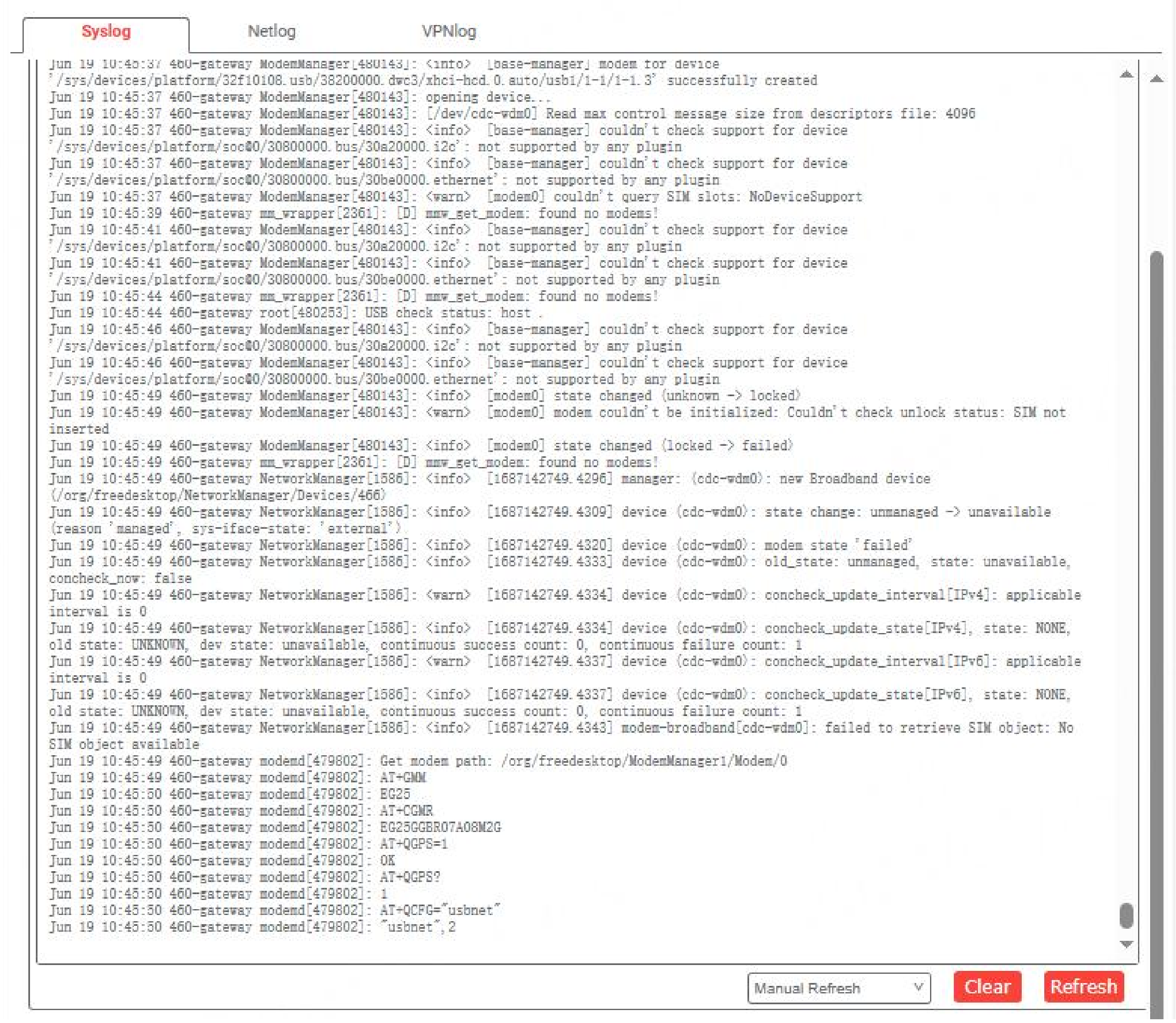
| Periodic Reboot Settings | | |
|---|---|---|
| **Item** | **Description** | **Default** |
| Periodic Reboot | Set the reboot period of the router. 0 means disable. | 0 |
| Daily Reboot Time | Set the daily reboot time of the router. You should follow the format as HH: MM, in 24h time frame, otherwise the data will be invalid. Leave it empty means disable. | Null |
| Reboot When No Link Is Available | Click the toggle button to enable/disable this option. | OFF |

## 2.6 System

### 2.6.1 Debug

This section allows you to check and download the syslog details. Click “**Service > Syslog > Syslog Settings**” to enable the syslog.

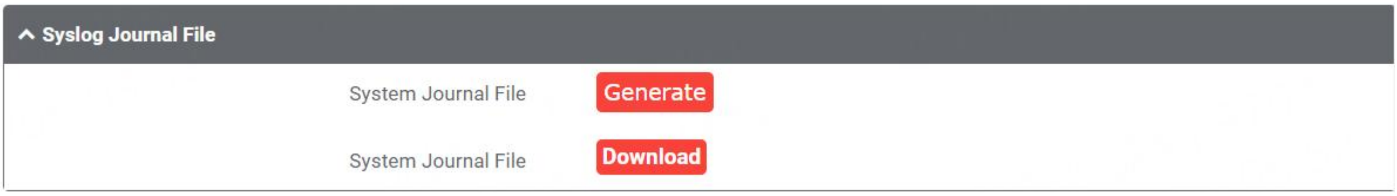
## Syslog



```
Jun 19 10:45:37 460-gateway ModemManager[480143]: <info>  [base-manager] modem for device
'/sys/devices/platform/32f10108.usb/38200000.dwc3/xhci-hcd.0.auto/usb1/1-1/1-1.3' successfully created
Jun 19 10:45:37 460-gateway ModemManager[480143]: opening device...
Jun 19 10:45:37 460-gateway ModemManager[480143]: [/dev/cdc-wdm0] Read max control message size from descriptors file: 4096
Jun 19 10:45:37 460-gateway ModemManager[480143]: <info>  [base-manager] couldn't check support for device
'/sys/devices/platform/soc@0/30800000.bus/30a20000.i2c': not supported by any plugin
Jun 19 10:45:37 460-gateway ModemManager[480143]: <info>  [base-manager] couldn't check support for device
'/sys/devices/platform/soc@0/30800000.bus/30be0000.ethernet': not supported by any plugin
Jun 19 10:45:37 460-gateway ModemManager[480143]: <warn>  [modem0] couldn't query SIM slots: NoDeviceSupport
Jun 19 10:45:39 460-gateway mm_wrapper[2361]: [D] mmw_get_modem: found no modems!
Jun 19 10:45:41 460-gateway ModemManager[480143]: <info>  [base-manager] couldn't check support for device
'/sys/devices/platform/soc@0/30800000.bus/30a20000.i2c': not supported by any plugin
Jun 19 10:45:41 460-gateway ModemManager[480143]: <info>  [base-manager] couldn't check support for device
'/sys/devices/platform/soc@0/30800000.bus/30be0000.ethernet': not supported by any plugin
Jun 19 10:45:44 460-gateway mm_wrapper[2361]: [D] mmw_get_modem: found no modems!
Jun 19 10:45:44 460-gateway root[480253]: USB check status: host .
Jun 19 10:45:46 460-gateway ModemManager[480143]: <info>  [base-manager] couldn't check support for device
'/sys/devices/platform/soc@0/30800000.bus/30a20000.i2c': not supported by any plugin
Jun 19 10:45:46 460-gateway ModemManager[480143]: <info>  [base-manager] couldn't check support for device
'/sys/devices/platform/soc@0/30800000.bus/30be0000.ethernet': not supported by any plugin
Jun 19 10:45:49 460-gateway ModemManager[480143]: <info>  [modem0] state changed (unknown -> locked)
Jun 19 10:45:49 460-gateway ModemManager[480143]: <warn>  [modem0] modem couldn't be initialized: Couldn't check unlock status: SIM not
inserted
Jun 19 10:45:49 460-gateway ModemManager[480143]: <info>  [modem0] state changed (locked -> failed)
Jun 19 10:45:49 460-gateway mm_wrapper[2361]: [D] mmw_get_modem: found no modems!
Jun 19 10:45:49 460-gateway NetworkManager[1586]: <info>  [1687142749.4296] manager: (cdc-wdm0): new Broadband device
(/org/freedesktop/NetworkManager/Devices/466)
Jun 19 10:45:49 460-gateway NetworkManager[1586]: <info>  [1687142749.4309] device (cdc-wdm0): state change: unmanaged -> unavailable
(reason 'managed', sys-iface-state: 'external')
Jun 19 10:45:49 460-gateway NetworkManager[1586]: <info>  [1687142749.4320] device (cdc-wdm0): modem state 'failed'
Jun 19 10:45:49 460-gateway NetworkManager[1586]: <info>  [1687142749.4333] device (cdc-wdm0): old_state: unmanaged, state: unavailable,
concheck_now: false
Jun 19 10:45:49 460-gateway NetworkManager[1586]: <warn>  [1687142749.4334] device (cdc-wdm0): concheck_update_interval[IPv4]: applicable
interval is 0
Jun 19 10:45:49 460-gateway NetworkManager[1586]: <info>  [1687142749.4334] device (cdc-wdm0): concheck_update_state[IPv4], state: NONE,
old state: UNKNOWN, dev state: unavailable, continuous success count: 0, continuous failure count: 1
Jun 19 10:45:49 460-gateway NetworkManager[1586]: <warn>  [1687142749.4337] device (cdc-wdm0): concheck_update_interval[IPv6]: applicable
interval is 0
Jun 19 10:45:49 460-gateway NetworkManager[1586]: <info>  [1687142749.4337] device (cdc-wdm0): concheck_update_state[IPv6], state: NONE,
old state: UNKNOWN, dev state: unavailable, continuous success count: 0, continuous failure count: 1
Jun 19 10:45:49 460-gateway NetworkManager[1586]: <info>  [1687142749.4343] modem-broadband[cdc-wdm0]: failed to retrieve SIM object: No
SIM object available
Jun 19 10:45:49 460-gateway modemd[479802]: Get modem path: /org/freedesktop/ModemManager1/Modem/0
Jun 19 10:45:49 460-gateway modemd[479802]: AT+GMM
Jun 19 10:45:50 460-gateway modemd[479802]: EG25
Jun 19 10:45:50 460-gateway modemd[479802]: AT+CGMR
Jun 19 10:45:50 460-gateway modemd[479802]: EG25GGBR07A08M2G
Jun 19 10:45:50 460-gateway modemd[479802]: AT+QGPS=1
Jun 19 10:45:50 460-gateway modemd[479802]: OK
Jun 19 10:45:50 460-gateway modemd[479802]: AT+QGPS?
Jun 19 10:45:50 460-gateway modemd[479802]: 1
Jun 19 10:45:50 460-gateway modemd[479802]: AT+QCFG="usbnet"
Jun 19 10:45:50 460-gateway modemd[479802]: "usbnet",2
```

| Item | Description | Default |
|---|---|---|
| Log Level | Select from “Debug”, “Info”, “Notice”, “Warn”, “Error” which from low to high. The lower level will output more syslog in detail. | Debug |
| Filtering | Enter the filtering message based on the keywords. Use “&” to separate more than one filter message, such as “keyword1&keyword2”. | Null |
| Refresh | Select from “Manual Refresh”, “5 Seconds”, “10 Seconds”, “20 Seconds” or “30 Seconds”. You can select these intervals to refresh the log information displayed in the follow box. If selecting “manual refresh”, you should click the refresh | Manual Refresh |

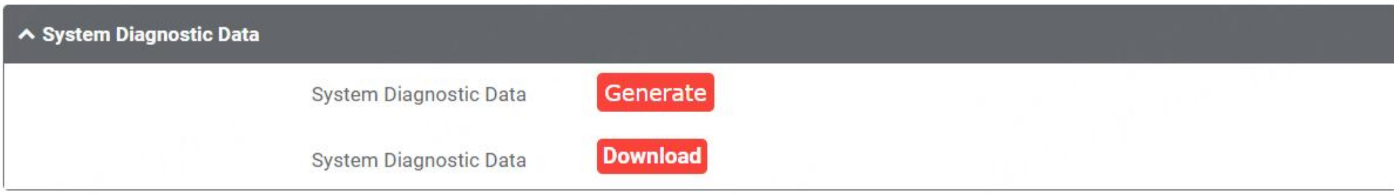
| | | |
|---|---|---|
| | button to refresh the syslog. | |
| Clear | Click the button to clear the syslog. | -- |
| Refresh | Click the button to refresh the syslog. | -- |


Syslog Journal File

System Journal File Generate

System Journal File Download

| Item | Description | Default |
|---|---|---|
| System Journal File | Click Generate to generate and click Download to download the system journal file. | -- |

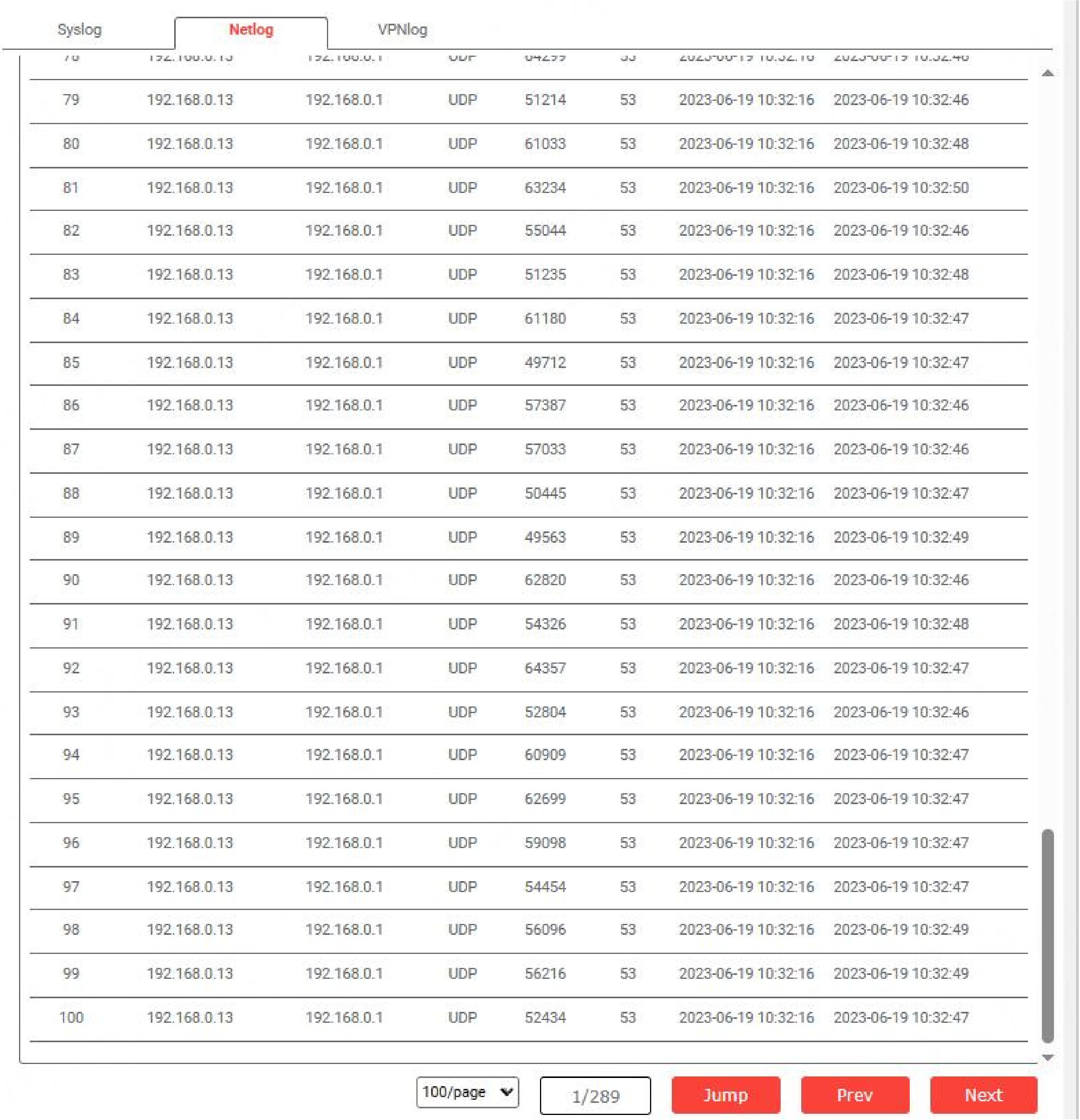

System Diagnostic Data

System Diagnostic Data Generate

System Diagnostic Data Download

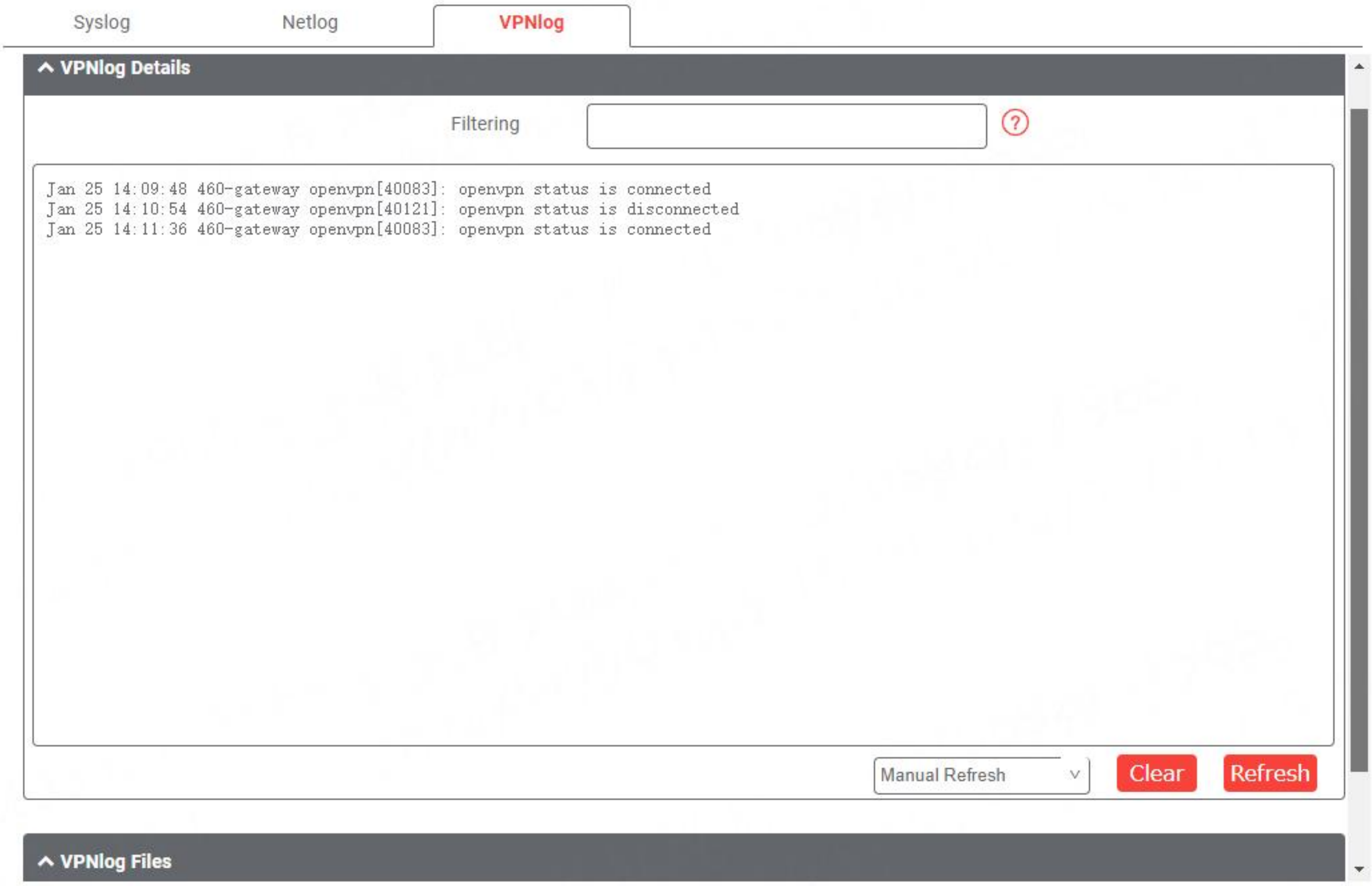
| Item | Description | Default |
|---|---|---|
| System Diagnostic Data | Click Generate to generate and click Download to download the system diagnostic data. | -- |

## Netlog



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 78 | 192.168.0.13 | 192.168.0.1 | UDP | 64299 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:46 |
| 79 | 192.168.0.13 | 192.168.0.1 | UDP | 51214 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:46 |
| 80 | 192.168.0.13 | 192.168.0.1 | UDP | 61033 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:48 |
| 81 | 192.168.0.13 | 192.168.0.1 | UDP | 63234 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:50 |
| 82 | 192.168.0.13 | 192.168.0.1 | UDP | 55044 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:46 |
| 83 | 192.168.0.13 | 192.168.0.1 | UDP | 51235 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:48 |
| 84 | 192.168.0.13 | 192.168.0.1 | UDP | 61180 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:47 |
| 85 | 192.168.0.13 | 192.168.0.1 | UDP | 49712 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:47 |
| 86 | 192.168.0.13 | 192.168.0.1 | UDP | 57387 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:46 |
| 87 | 192.168.0.13 | 192.168.0.1 | UDP | 57033 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:46 |
| 88 | 192.168.0.13 | 192.168.0.1 | UDP | 50445 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:47 |
| 89 | 192.168.0.13 | 192.168.0.1 | UDP | 49563 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:49 |
| 90 | 192.168.0.13 | 192.168.0.1 | UDP | 62820 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:46 |
| 91 | 192.168.0.13 | 192.168.0.1 | UDP | 54326 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:48 |
| 92 | 192.168.0.13 | 192.168.0.1 | UDP | 64357 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:47 |
| 93 | 192.168.0.13 | 192.168.0.1 | UDP | 52804 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:46 |
| 94 | 192.168.0.13 | 192.168.0.1 | UDP | 60909 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:47 |
| 95 | 192.168.0.13 | 192.168.0.1 | UDP | 62699 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:47 |
| 96 | 192.168.0.13 | 192.168.0.1 | UDP | 59098 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:47 |
| 97 | 192.168.0.13 | 192.168.0.1 | UDP | 54454 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:47 |
| 98 | 192.168.0.13 | 192.168.0.1 | UDP | 56096 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:49 |
| 99 | 192.168.0.13 | 192.168.0.1 | UDP | 56216 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:49 |
| 100 | 192.168.0.13 | 192.168.0.1 | UDP | 52434 | 53 | 2023-06-19 10:32:16 | 2023-06-19 10:32:47 |

### VPNlog

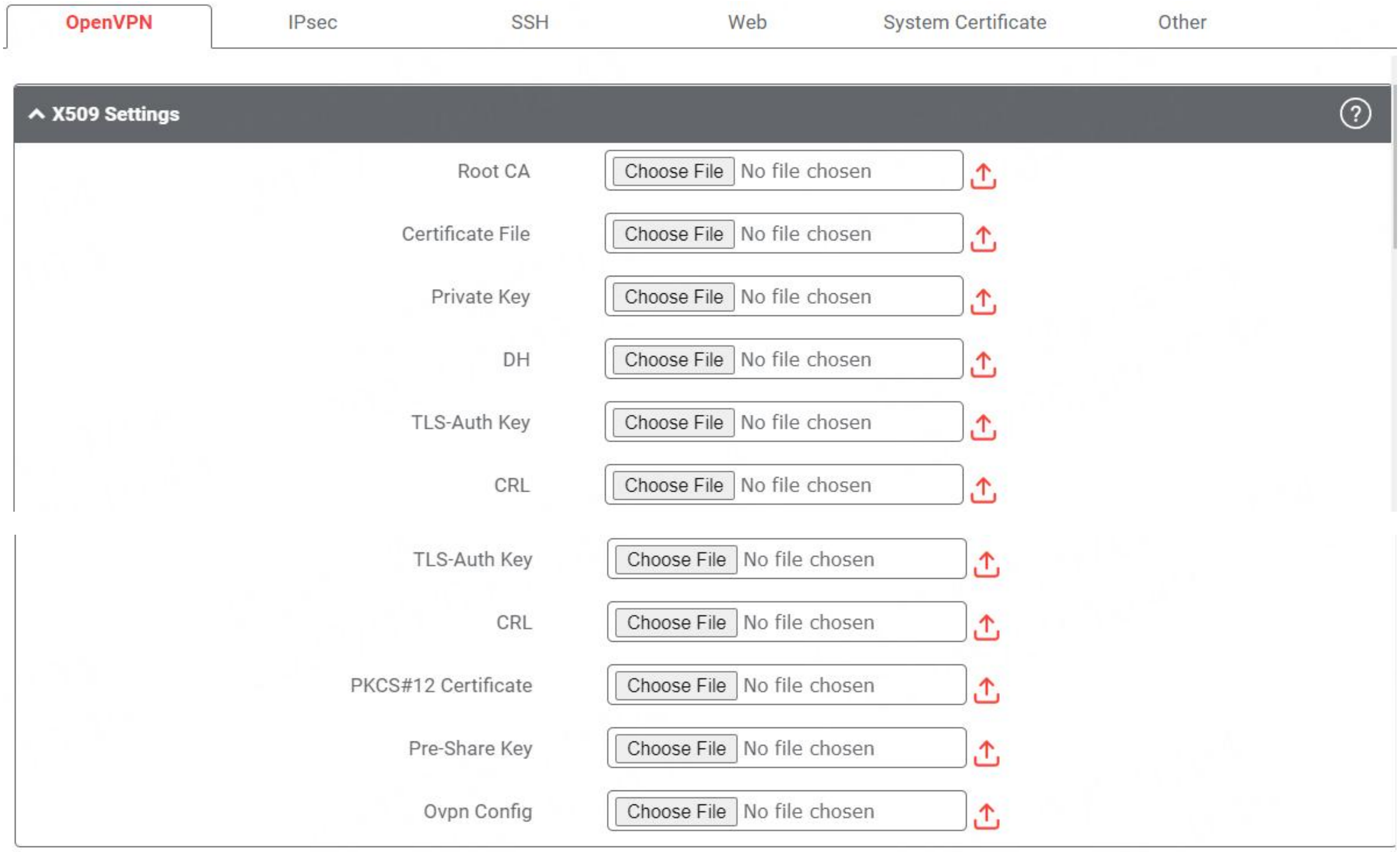


```
Jan 25 14:09:48 460-gateway openvpn[40083]: openvpn status is connected
Jan 25 14:10:54 460-gateway openvpn[40121]: openvpn status is disconnected
Jan 25 14:11:36 460-gateway openvpn[40083]: openvpn status is connected
```

## 2.6.2 Certificate Manager

This section allows you to mange all of certificates here. If you want to manage a certificate for your custom application, you can manage it through Other tab.

## OpenVPN



Root CA Choose File No file chosen ↥

Certificate File Choose File No file chosen ↥

Private Key Choose File No file chosen ↥

DH Choose File No file chosen ↥

TLS-Auth Key Choose File No file chosen ↥

CRL Choose File No file chosen ↥

TLS-Auth Key Choose File No file chosen ↥

CRL Choose File No file chosen ↥

PKCS#12 Certificate Choose File No file chosen ↥

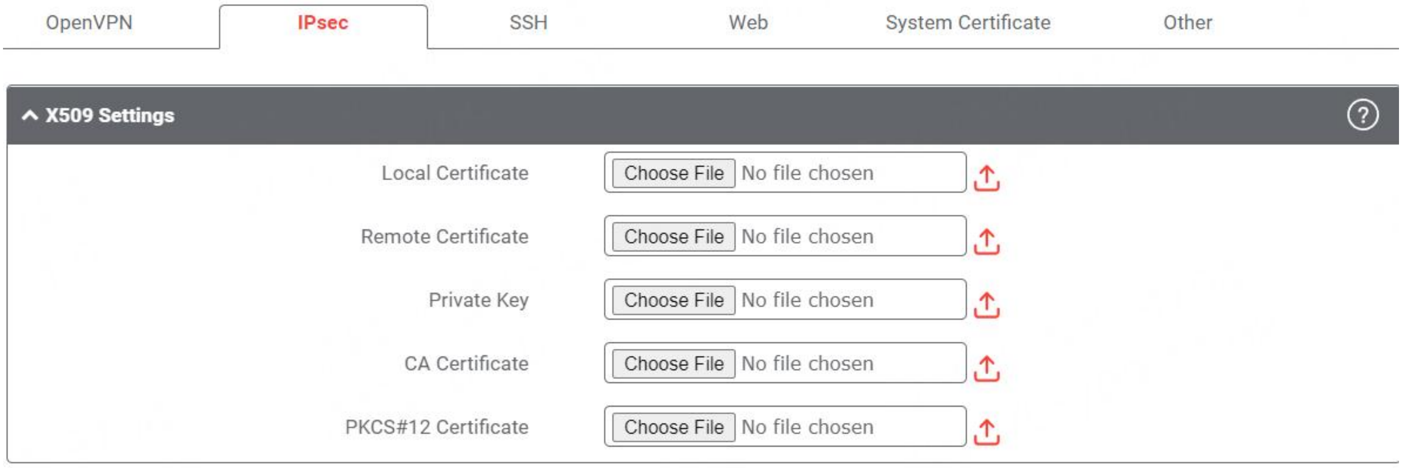
Pre-Share Key Choose File No file chosen ↥

Ovpn Config Choose File No file chosen ↥

| Item | Description | Default |
|---|---|---|
| Root CA | Click on Choose File to locate the root ca file, and then click on ↥ to import this file into your device. | -- |
| Certificate File | Click on Choose File to locate the certificate file, and then click on ↥ to import this file into your device. | -- |
| Private Key | Click on Choose File to locate the Private Key file, and then click on ↥ to import this file into your device. | -- |
| DH | Click on Choose File to locate the DH file, and then click on ↥ to import this file into your device. | |
| TLS-Auth Key | Click on Choose File to locate the TLS-Auth Key file, and then click on ↥ to import this file into your device. | -- |
| CRL | Click on Choose File to locate the CRL file, and then click on ↥ to import this file into your device. | -- |
| PKCS#12 Certificate | Click on Choose File to locate the PKCS#12 Certificate file, and then click on | -- |

| | | |
|---|---|---|
| | ⭱ to import this file into your device. | |
| Pre-Share Key | Click on Choose File to locate the Pre-Share Key file, and then click on ⭱ to import this file into your device. | -- |
| Ovpn Config | Click on Choose File to locate the Ovpn Configy file, and then click on ⭱ to import this file into your device. | -- |

## IPsec



Local Certificate: Choose File No file chosen ⭱

Remote Certificate: Choose File No file chosen ⭱

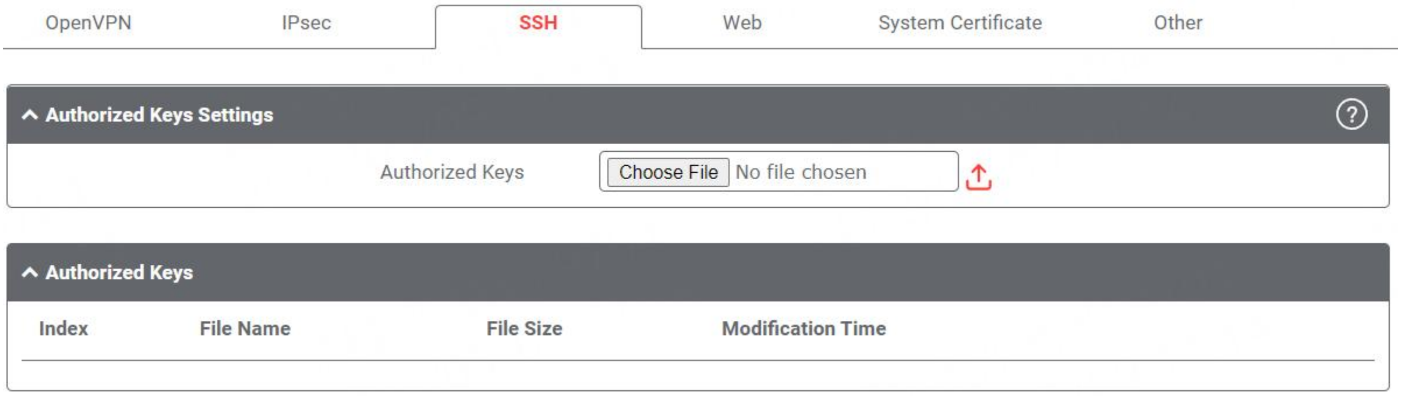
Private Key: Choose File No file chosen ⭱

CA Certificate: Choose File No file chosen ⭱

PKCS#12 Certificate: Choose File No file chosen ⭱

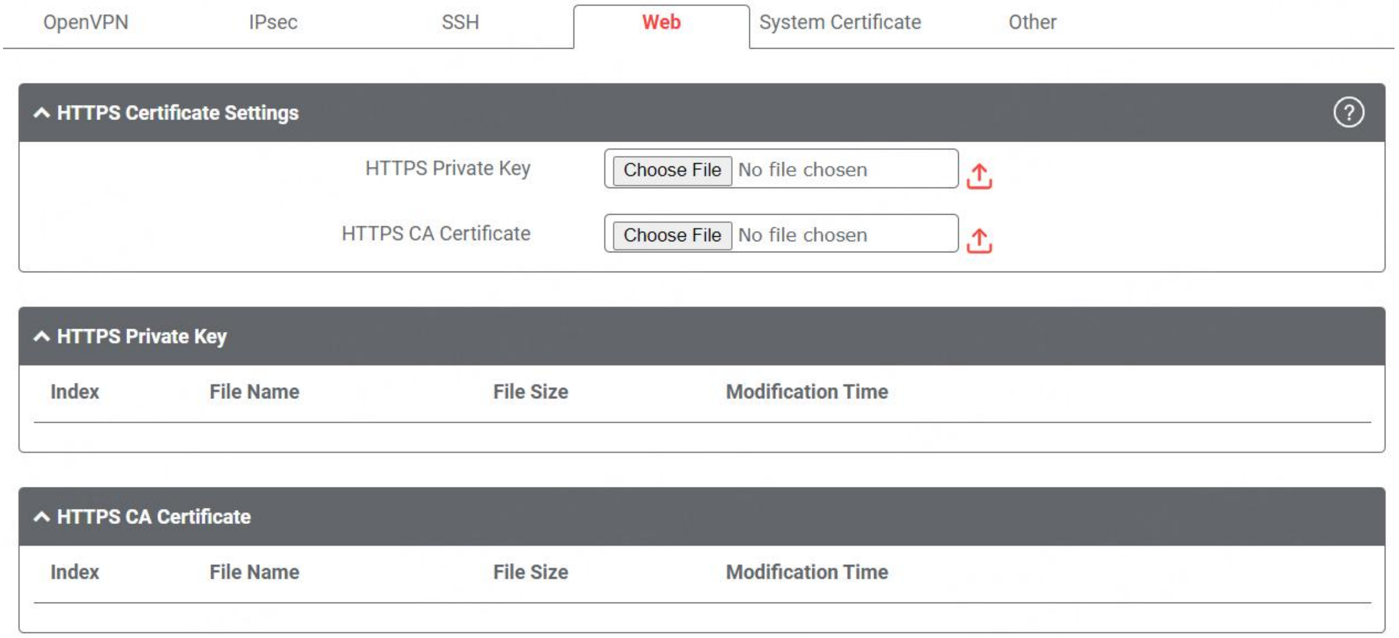
| Item | Description | Default |
|---|---|---|
| Local Certificate | Click on Choose File to locate the Local Certificate file, and then click on ⭱ to import this file into your device. | -- |
| Remote Certificate | Click on Choose File to locate the Remote Certificate file, and then click on ⭱ to import this file into your device. | -- |
| Private Key | Click on Choose File to locate the Private Key file, and then click on ⭱ to import this file into your device. | -- |
| CA Certificate | Click on Choose File to locate the CA Certificate file, and then click on ⭱ to import this file into your device. | -- |
| PKCS#12 Certificate | Click on Choose File to locate the PKCS#12 Certificate file, and then click on ⭱ to import this file into your device. | -- |

## SSH



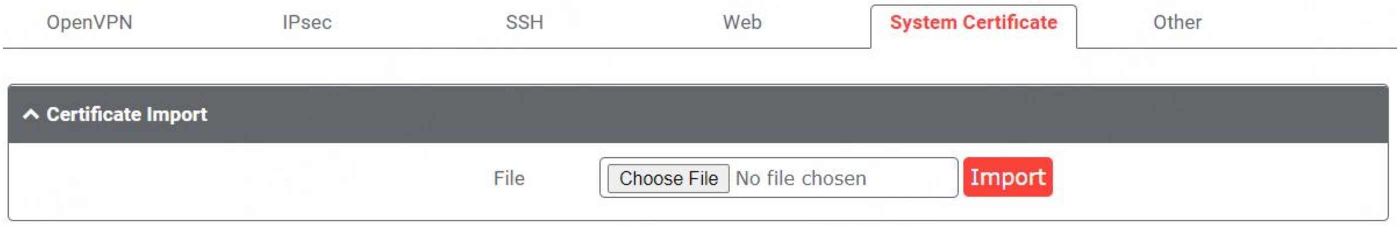
| Item | Description | Default |
|---|---|---|
| Authorized Keys | Click on Choose File to locate the Authorized Keys file, and then click on ↥ to import this file into your device. | -- |

## Web



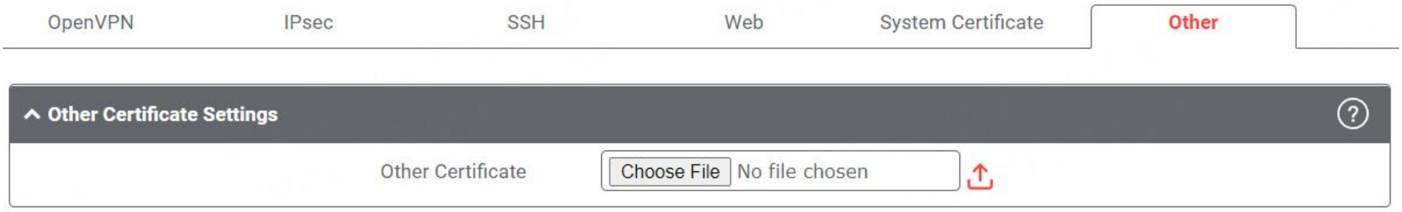
| Item | Description | Default |
|---|---|---|
| HTTPS Private Key | Click on Choose File to locate the Authorized Keys file, and then click on ↥ to import this file into your device. | -- |
| HTTPS CA Certificate | Click on Choose File to locate the Certificate file, and then click on ↥ to import this file into your device. | |

### System Certificate



| Item | Description | Default |
|---|---|---|
| File | Click on Choose File to locate the System certificate file, and then click on ↥ to import this file into your device. | -- |

### Other

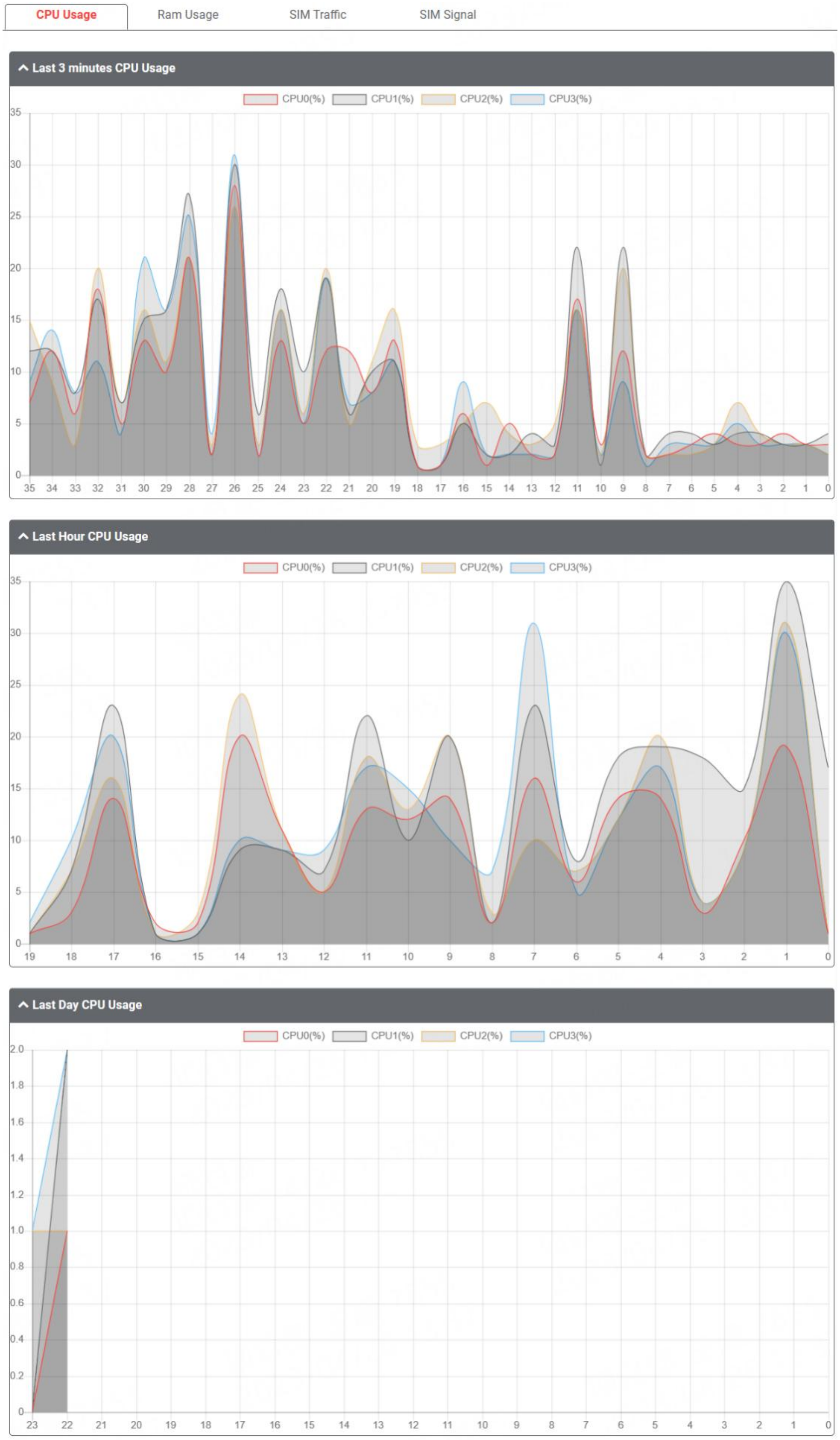


| Item | Description | Default |
|---|---|---|
| Other Certificate | Click on Choose File to locate the Other Certificate file, and then click on ↥ to import this file into your device. | -- |

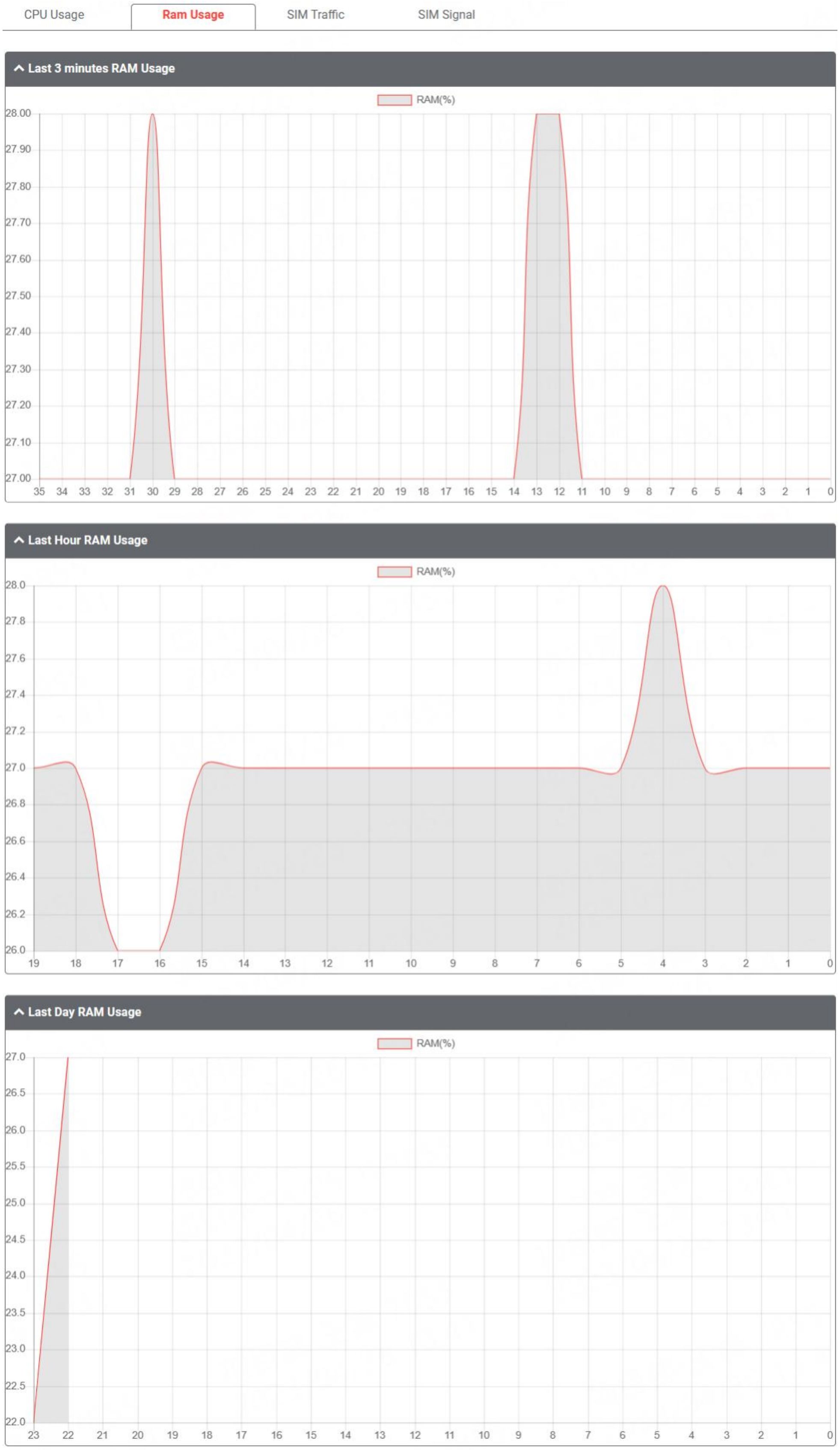
## 2.6.3 Resource Graph

This section allows you to view the system resource such as CPU usage or cellular signal strength in recent 3 minutes, last hour or last day.

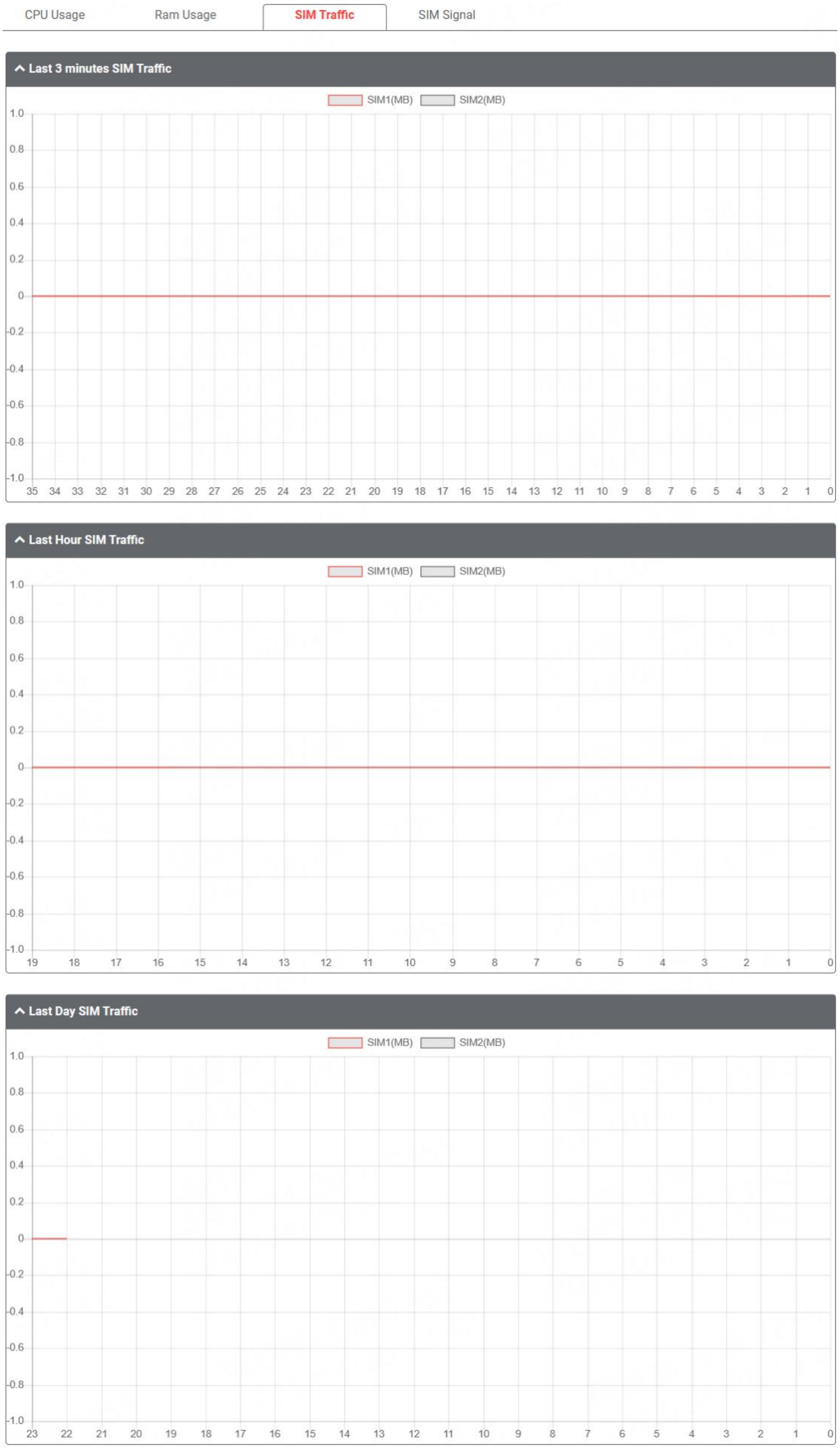
## CPU Usage


CPU Usage
Ram Usage
SIM Traffic
SIM Signal
Last 3 minutes CPU Usage
CPU0(%)
CPU1(%)
CPU2(%)
CPU3(%)
35
30
25
20
15
10
5
0
35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Last Hour CPU Usage
CPU0(%)
CPU1(%)
CPU2(%)
CPU3(%)
35
30
25
20
15
10
5
0
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Last Day CPU Usage
CPU0(%)
CPU1(%)
CPU2(%)
CPU3(%)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

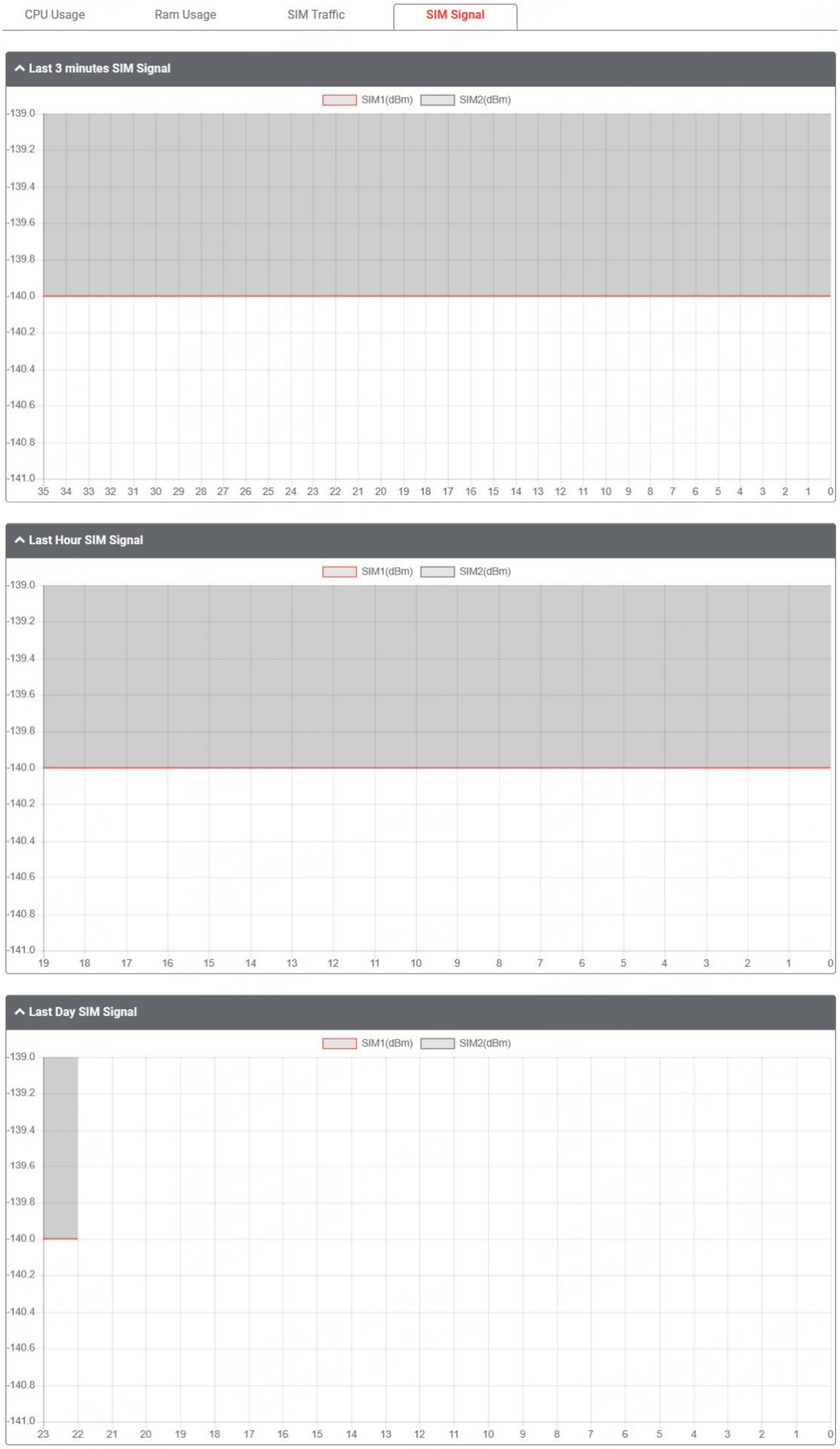
## RAM Usage


CPU Usage
Ram Usage
SIM Traffic
SIM Signal
Last 3 minutes RAM Usage
RAM(%)
28.00
27.90
27.80
27.70
27.60
27.50
27.40
27.30
27.20
27.10
27.00
35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Last Hour RAM Usage
RAM(%)
28.0
27.8
27.6
27.4
27.2
27.0
26.8
26.6
26.4
26.2
26.0
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Last Day RAM Usage
RAM(%)
27.0
26.5
26.0
25.5
25.0
24.5
24.0
23.5
23.0
22.5
22.0
23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

## SIM Traffic


CPU Usage
Ram Usage
SIM Traffic
SIM Signal
Last 3 minutes SIM Traffic
SIM1(MB)
SIM2(MB)
1.0
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1.0
35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Last Hour SIM Traffic
SIM1(MB)
SIM2(MB)
1.0
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1.0
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Last Day SIM Traffic
SIM1(MB)
SIM2(MB)
1.0
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1.0
23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

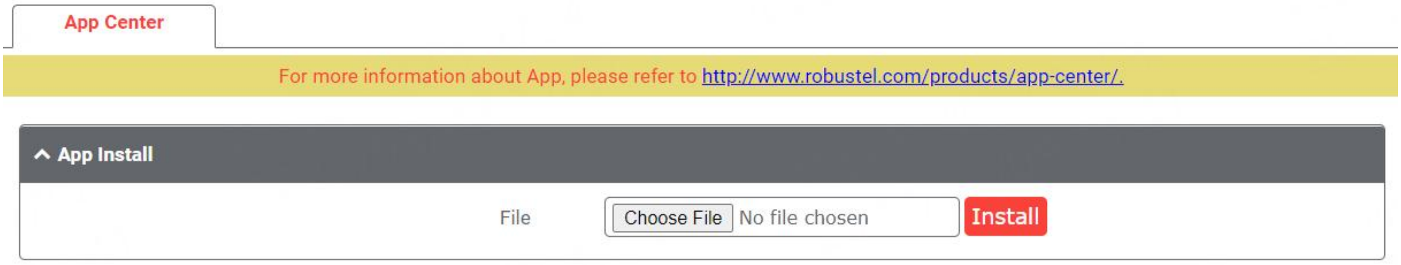
## SIM Signal


CPU Usage
Ram Usage
SIM Traffic
SIM Signal
Last 3 minutes SIM Signal
SIM1(dBm)
SIM2(dBm)
-139.0
-139.2
-139.4
-139.6
-139.8
-140.0
-140.2
-140.4
-140.6
-140.8
-141.0
35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Last Hour SIM Signal
SIM1(dBm)
SIM2(dBm)
-139.0
-139.2
-139.4
-139.6
-139.8
-140.0
-140.2
-140.4
-140.6
-140.8
-141.0
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Last Day SIM Signal
SIM1(dBm)
SIM2(dBm)
-139.0
-139.2
-139.4
-139.6
-139.8
-140.0
-140.2
-140.4
-140.6
-140.8
-141.0
23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

## 2.6.4 App Center

This section allows you to add some required or customized applications to the router. Import and install your applications to the App Center, and reboot the device according to the system prompts. Each installed application will be displayed under the “Services” menu, while other applications related to VPN will be displayed under the “VPN” menu.

**Note:** After importing the applications to the router, the page display may have a slight delay due to the browser cache. It is recommended that you clear the browser cache first and log in the router again.



App Center

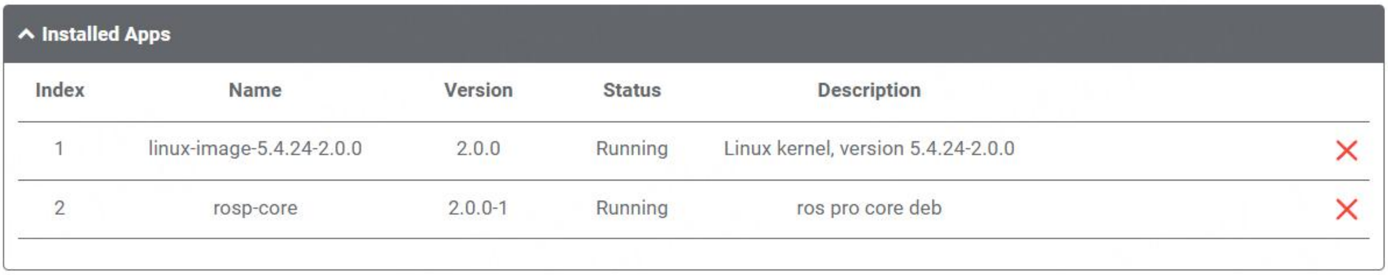
For more information about App, please refer to http://www.robustel.com/products/app-center/.

^ App Install

File: Choose File No file chosen Install

| Item | Description | Default |
|---|---|---|
| File | Click on “Choose File” to locate the App file from your PC, and then click<br>Install to import this file into your device. | -- |

The successfully installed app will be displayed in the following list. Click ✕ to uninstall the app.



^ Installed Apps

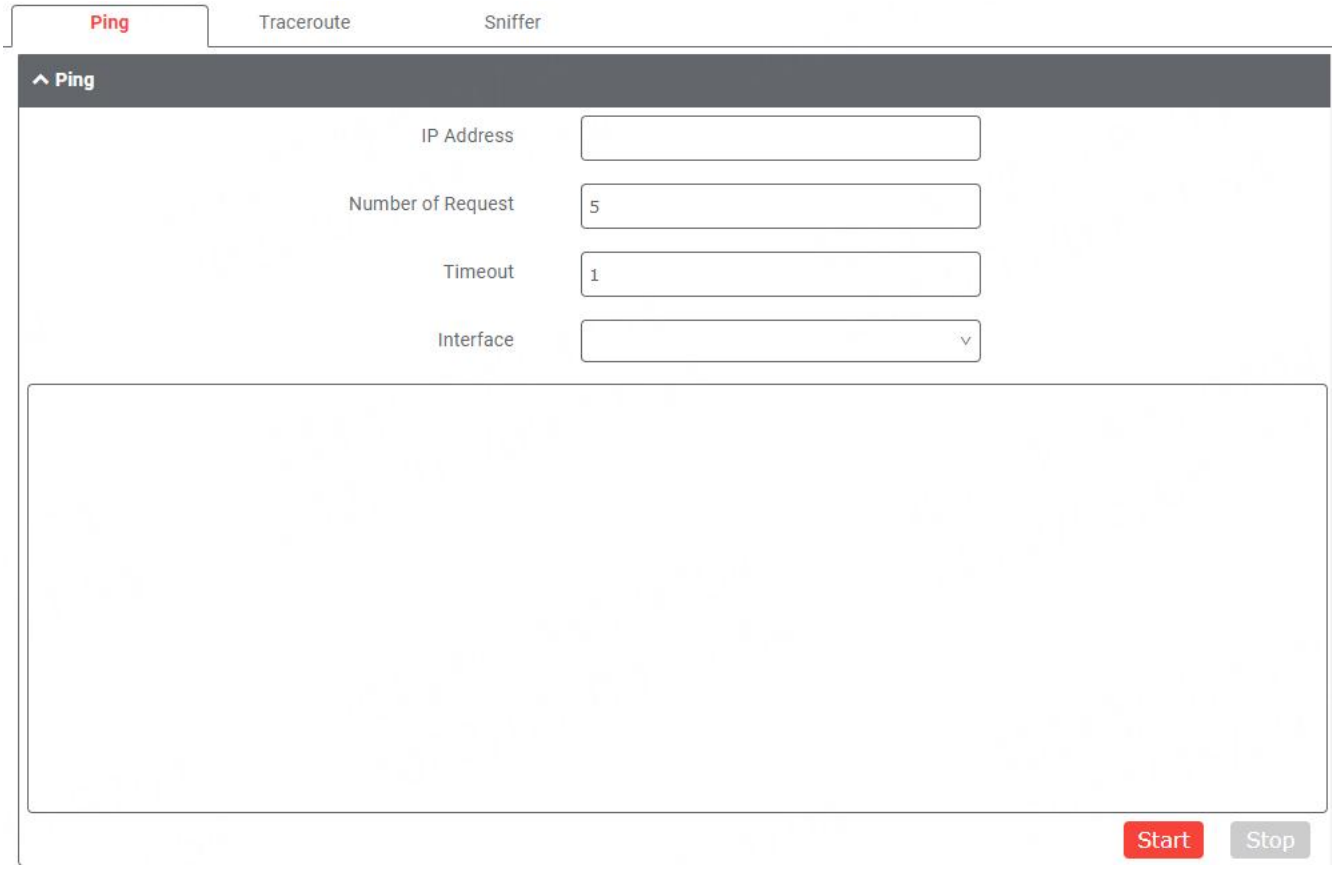
| Index | Name | Version | Status | Description | |
|---|---|---|---|---|---|
| 1 | linux-image-5.4.24-2.0.0 | 2.0.0 | Running | Linux kernel, version 5.4.24-2.0.0 | ✕ |
| 2 | rosp-core | 2.0.0-1 | Running | ros pro core deb | ✕ |

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Name | Show the name of the App. | Null |
| Version | Show the version of the App. | Null |
| Status | Show the status of the App. | Null |
| Description | Show the description for this App. | Null |

## 2.6.5 Tools

This section provides users three tools: Ping, Traceroute and Sniffer. The Ping is used to check the network connectivity.

## Ping



IP Address

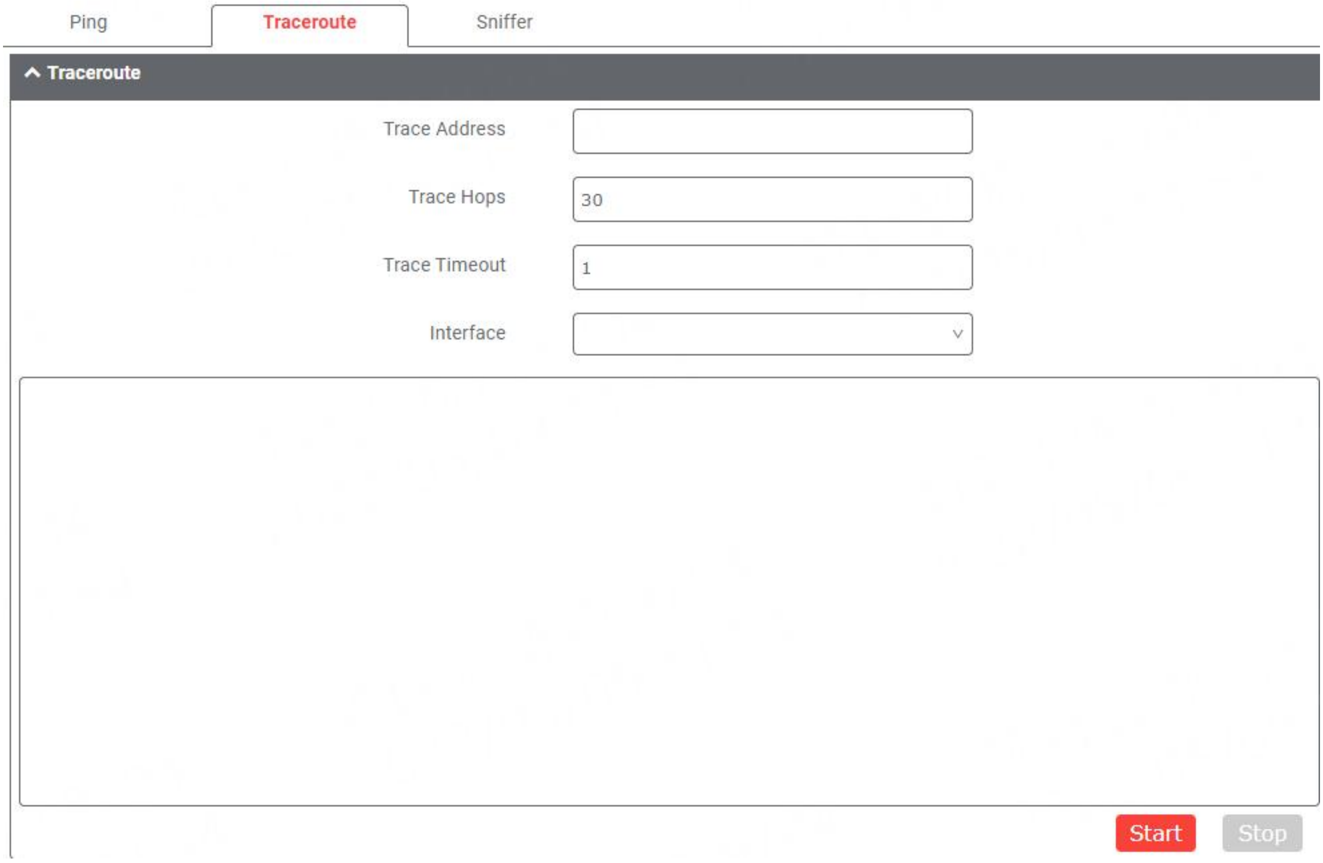
Number of Request: 5

Timeout: 1

Interface

| Item | Description | Default |
|---|---|---|
| IP address | Enter the ping's destination IP address or destination domain. | Null |
| Number of Requests | Specify the number of ping requests. | 5 |
| Timeout | Specify the timeout of ping requests. | 1 |
| Local IP | Specify the local IP from cellular WAN, Ethernet WAN or Ethernet LAN. Null stands for selecting local IP address from these three automatically. | Null |
| Start | Click this button to start ping request, and the log will be displayed in the follow box. | -- |
| Stop | Click this button to stop ping request. | -- |

## Traceroute



Trace Address

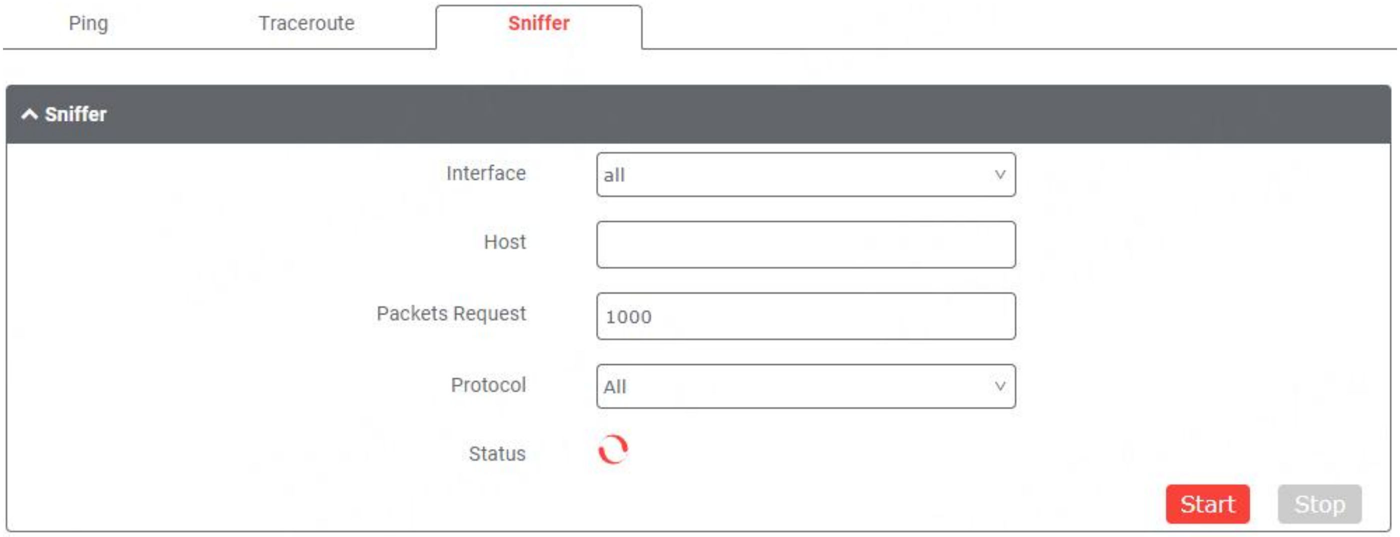
Trace Hops 30

Trace Timeout 1

Interface

| Item | Description | Default |
|---|---|---|
| Trace Address | Enter the trace's destination IP address or destination domain. | Null |
| Trace Hops | Specify the max trace hops. Router will stop tracing if the trace hops has met max value no matter the destination has been reached or not. | 30 |
| Trace Timeout | Specify the timeout of Traceroute request. | 1 |
| Interface | Select the trace interface. | -- |
| Start | Click this button to start ping request, and the log will be displayed in the follow box. | -- |
| Stop | Click this button to stop ping request. | -- |

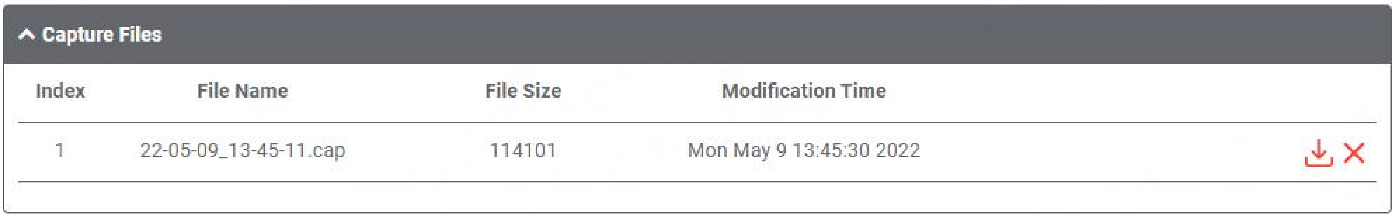
### Sniffer



^ Sniffer

| | |
|---|---|
| Interface | all |
| Host | |
| Packets Request | 1000 |
| Protocol | All |
| Status | |

| Item | Description | Default |
|---|---|---|
| Interface | Choose the interface according to your Ethernet configuration. | All |
| Host | Filter the packet that contain the specify IP address. | Null |
| Packets Request | Set the packet number that the router can sniffer at a time. | 1000 |
| Protocol | Select from “All”, “IP”, “TCP”, “UDP” and “ARP”. | All |
| Status | Show the current status of sniffer. | -- |
| Start | Click this button to start the sniffer. | -- |
| Stop | Click this button to stop the sniffer. Once you click this button, a new log file will be displayed in the following List. | -- |



^ Capture Files

| Index | File Name | File Size | Modification Time | |
|---|---|---|---|---|
| 1 | 22-05-09_13-45-11.cap | 114101 | Mon May 9 13:45:30 2022 | ⤓ ✕ |

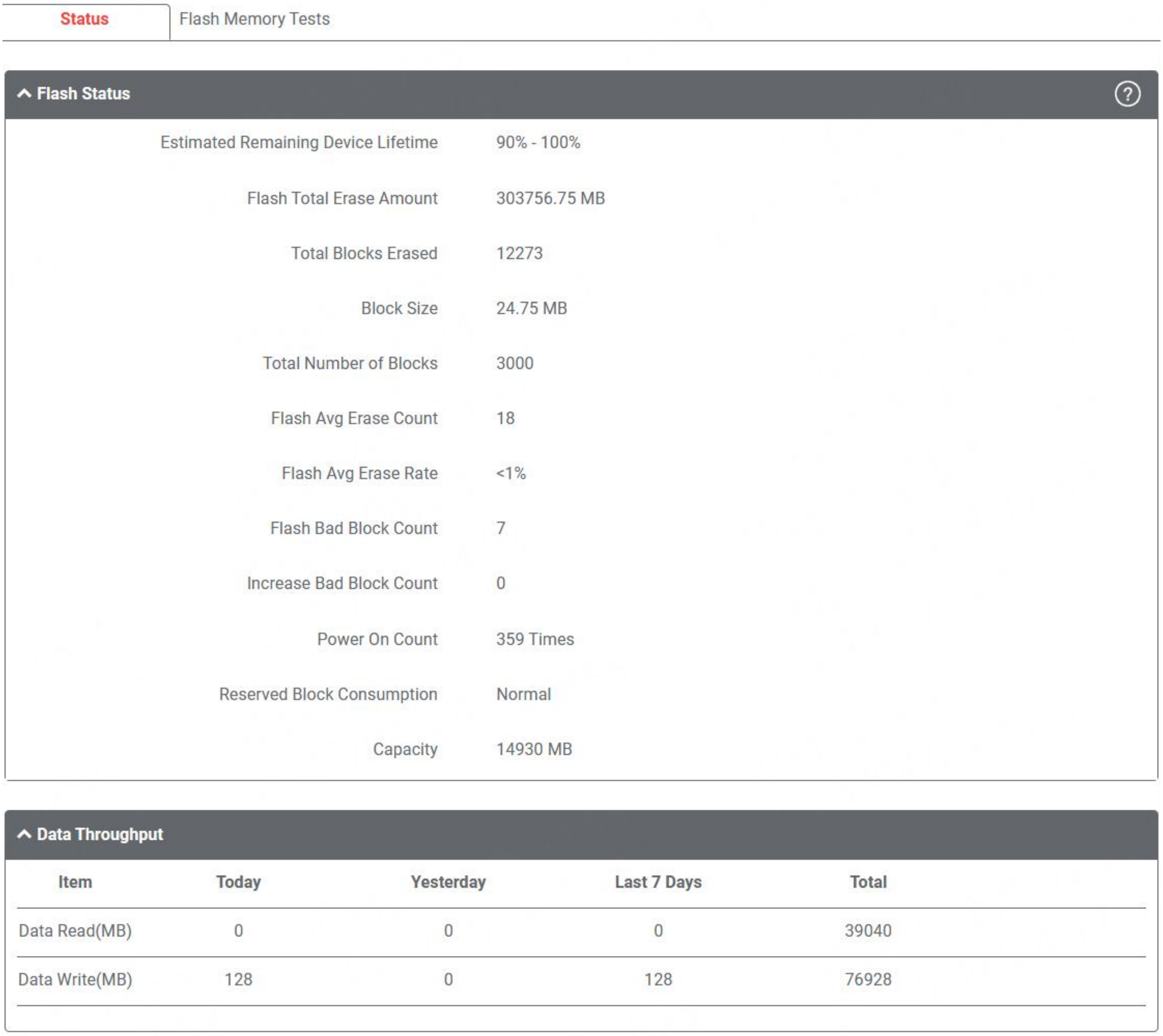
| Item | Description | Default |
|---|---|---|
| Capture Files | Every times of sniffer log will be saved automatically as a new file. You can find the file from this Sniffer Traffic Data List and click ⤓ to download the log, click ✕ to delete the log file. It can cache a maximum of 5 files. | -- |

## 2.6.6 Flash Manager

This section allows you to manage the device’s flash memory life, you can easily check the flash status or thoughput and start a period test on this section .

## Status

This page shows the flash status and data throughput details.



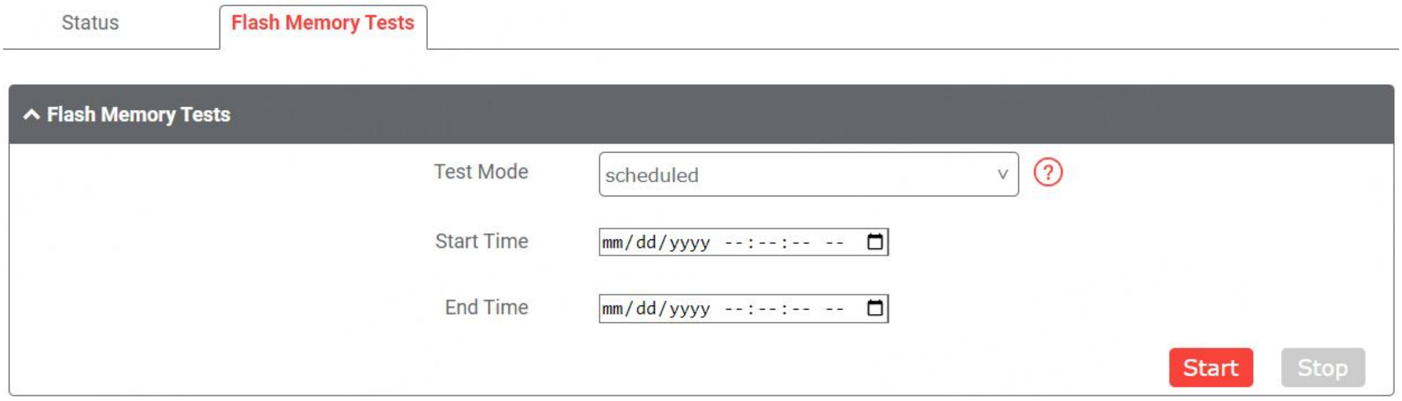
**Flash Status**

| | |
|---|---|
| Estimated Remaining Device Lifetime | 90% - 100% |
| Flash Total Erase Amount | 303756.75 MB |
| Total Blocks Erased | 12273 |
| Block Size | 24.75 MB |
| Total Number of Blocks | 3000 |
| Flash Avg Erase Count | 18 |
| Flash Avg Erase Rate | <1% |
| Flash Bad Block Count | 7 |
| Increase Bad Block Count | 0 |
| Power On Count | 359 Times |
| Reserved Block Consumption | Normal |
| Capacity | 14930 MB |

**Data Throughput**

| Item | Today | Yesterday | Last 7 Days | Total |
|---|---|---|---|---|
| Data Read(MB) | 0 | 0 | 0 | 39040 |
| Data Write(MB) | 128 | 0 | 128 | 76928 |

### Flash Memory Tests



Test Mode: scheduled

Start Time: mm/dd/yyyy --:--:-- --

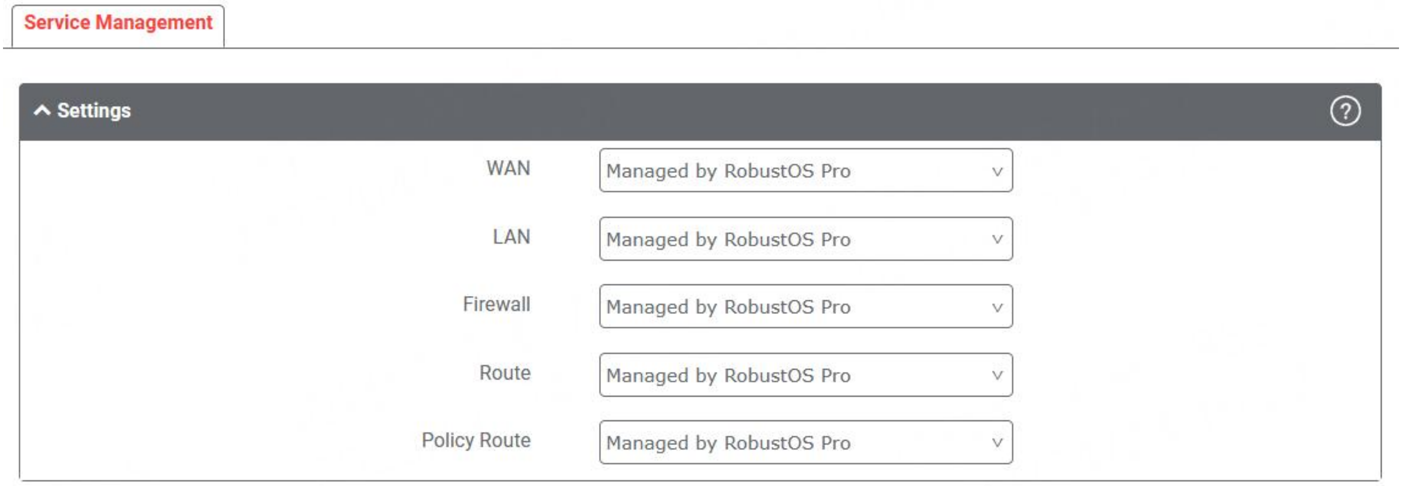
End Time: mm/dd/yyyy --:--:-- --

| Flash Memory Tests @ Flash Manager | |
|---|---|
| **Item** | **Description** |
| Test Mode | **Manual**: When choosing 'manual', click 'start' to run a test, you can click 'stop' to end the test;<br>**Scheduled**: Input the 'start' and 'end' time for a scheduled test.<br>You can click 'stop' button under whatever mode. |
| Start Time | Enter start time, format: yyyy/mm/dd, hh/mm/ss. E.g. 2023/04/24, 12:00:00 |
| End Time | Enter end time, format: yyyy/mm/dd, hh/mm/ss. E.g. 2023/04/24, 18:00:00 |

You can click ⤓ to download the test log for viewing more information.

## 2.6.7 Service Management

This section allows you to modify the network services manage way.



WAN: Managed by RobustOS Pro

LAN: Managed by RobustOS Pro

Firewall: Managed by RobustOS Pro

Route: Managed by RobustOS Pro

Policy Route: Managed by RobustOS Pro

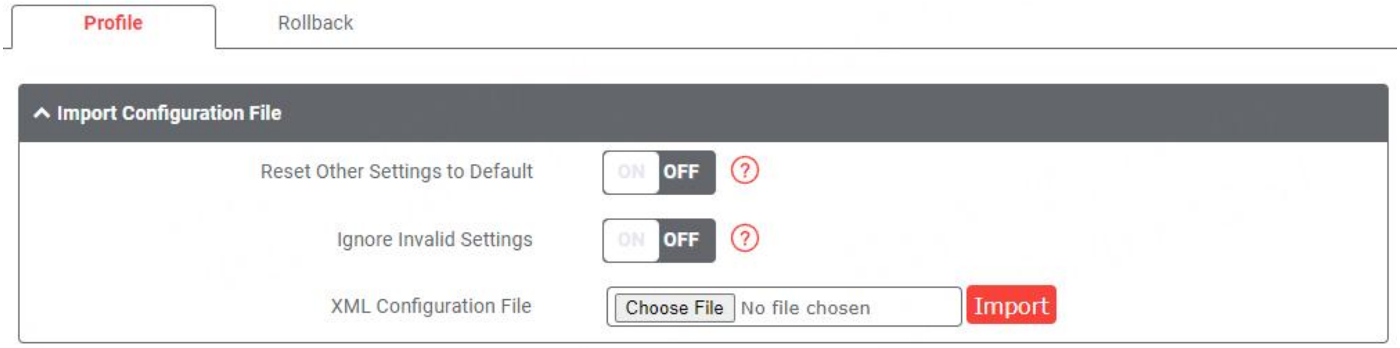
| Mode | View Status on RobustOS Pro | Configure via RobustOS Pro | Configure via Linux Shell |
|---|---|---|---|
| Managed By RobustOS Pro | √ | √ | X |

| | | | |
|---|---|---|---|
| Managed By Third-Party | X | X | √ |

## 2.6.8 Profile

This section allows you to import or export the configuration file, or rollback the device to a previous configuration.

### Profile

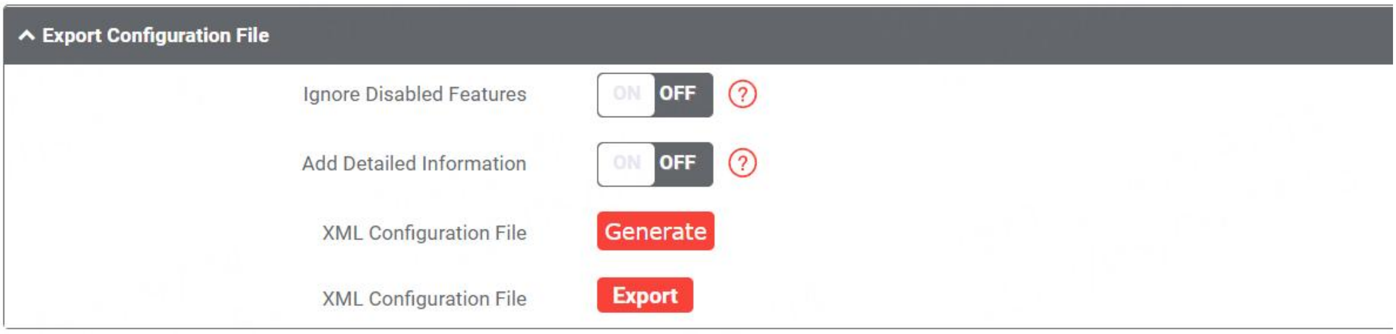


Reset Other Settings to Default: ON OFF

Ignore Invalid Settings: ON OFF

XML Configuration File: Choose File No file chosen Import

| Item | Description | Default |
|---|---|---|
| Reset Other Settings to Default | Click the toggle button as “ON” to return other parameters to default settings. | OFF |
| Ignore Invalid Settings | Click the toggle button as “ON” to ignore invalid settings. | OFF |
| XML Configuration File | Click on Choose File to locate the XML configuration file from your PC, and then click Import to import this file into your device. | -- |



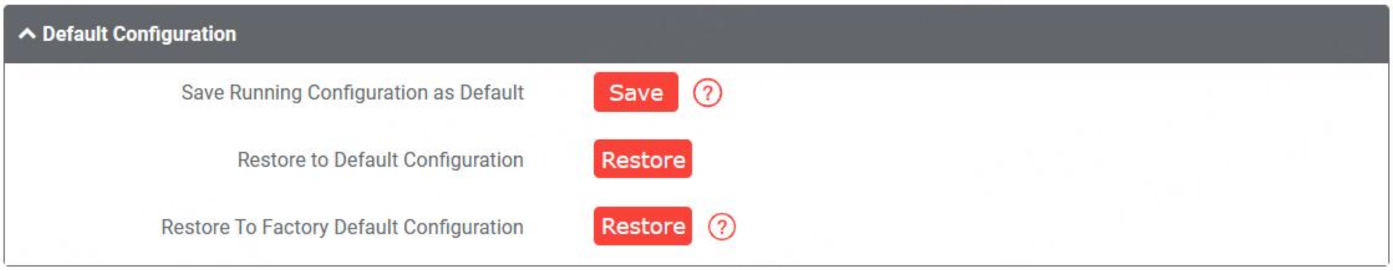
Ignore Disabled Features: ON OFF

Add Detailed Information: ON OFF

XML Configuration File: Generate

XML Configuration File: Export

| Item | Description | Default |
|---|---|---|
| Ignore Disabled Features | Click the toggle button as “OFF” to ignore the disabled features. | OFF |
| Add Detailed Information | Click the toggle button as “On” to add detailed information. | OFF |
| Encrypt Secret Data | Click the toggle button as “ON” to encrypt the secret data. | ON |
| XML Configuration File | Click Generate button to generate the XML configuration file, and click Export to export the XML configuration file. | -- |



^ Default Configuration

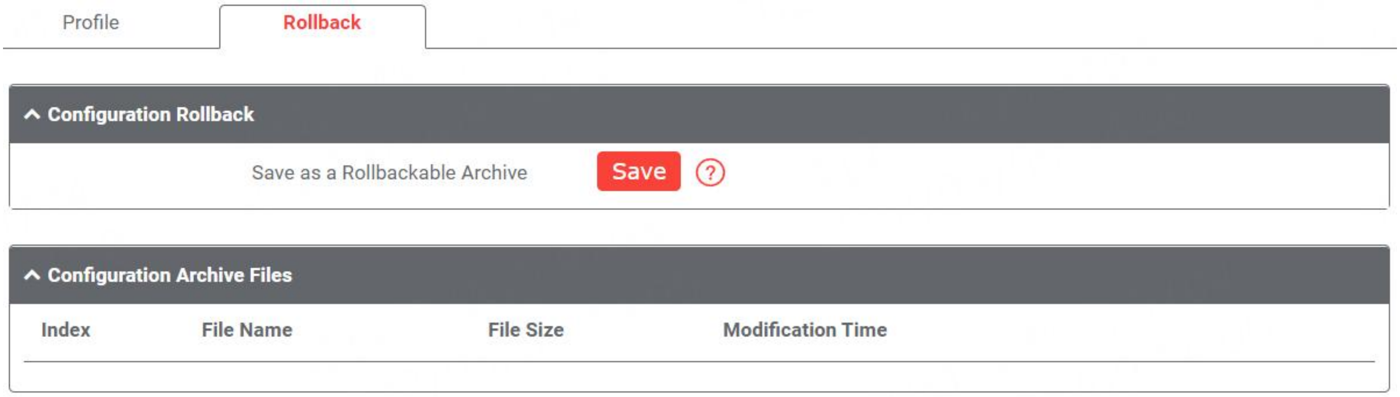
Save Running Configuration as Default Save ?

Restore to Default Configuration Restore

Restore To Factory Default Configuration Restore ?

| Item | Description | Default |
|---|---|---|
| Save Running Configuration as Default | Click Save button to save the current running parameters as default configuration. | -- |
| Restore to Default Configuration | Click Restore button to restore the defaults configuration. | -- |
| Restore to Factory Default Configuration | Click Restore button to restore the factory defaults configuration.<br>Note: The linux file system will be restored to the initialization state. | -- |

## Rollback



Profile Rollback

^ Configuration Rollback

Save as a Rollbackable Archive Save ?

^ Configuration Archive Files

| Index | File Name | File Size | Modification Time |
|---|---|---|---|

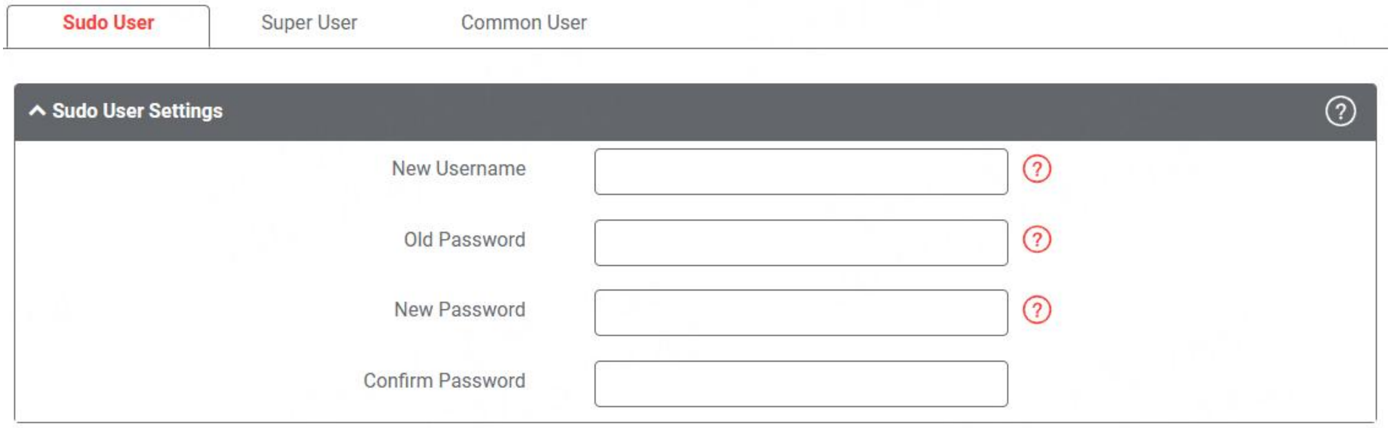
| Item | Description | Default |
|---|---|---|
| Save as a Rollbackable Archive | Create a save point manually. Additionally, the system will create a save point every day automatically if configuration changes. | -- |
| Configuration Archive Files | View the related information about configuration archive files, including name, size and modification time. | -- |

## 2.6.9 User Management

This section allows you to change your username and password, and create or manage user accounts. One device has only one super user who has the highest authority to modify, add and manage other common users.

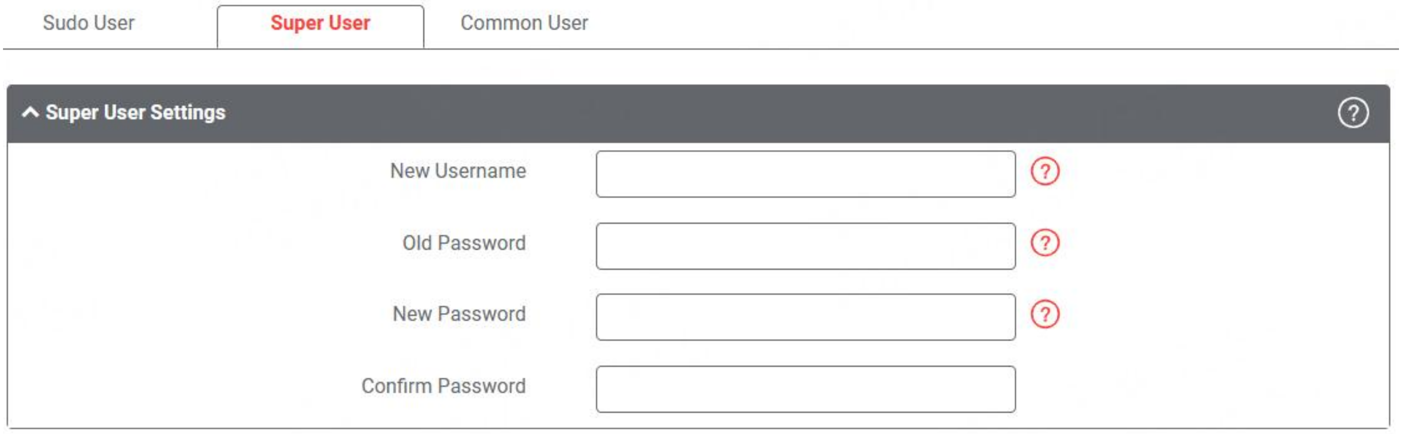
The password need to be meet the requirement: 8-32 characters, must consist of at least three types of lowercase, uppercase, digit, and special characters.

Special characters allowed: @, #, $, ., *, !, -

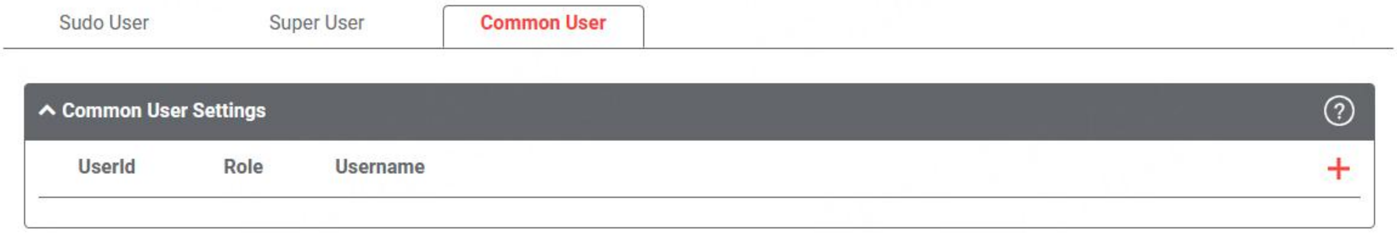


Sudo User
Super User
Common User
Sudo User Settings
New Username
Old Password
New Password
Confirm Password

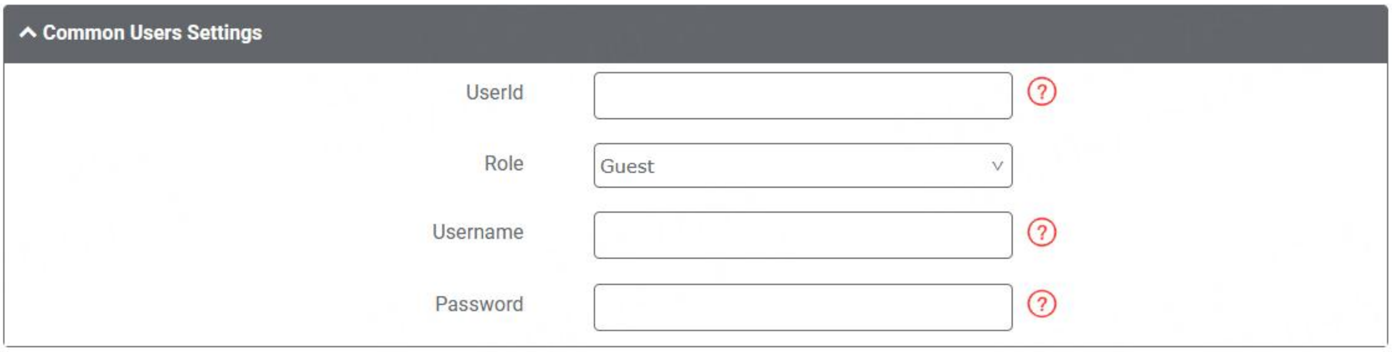
| Item | Description | Default |
|---|---|---|
| New Username | Enter a new username you want to create; valid characters are a-z, A-Z, 0-9, @,., -, #, $, and *. | Null |
| Old Password | Enter the old password of your router. The default password please see the product label. | Null |
| New Password | Enter a new password you want to create; valid characters are a-z, A-Z, 0-9, @,., -, #, $, and *. | Null |
| Confirm Password | Enter the new password again to confirm. | Null |



| Item | Description | Default |
|---|---|---|
| New Username | Enter a new username you want to create; valid characters are a-z, A-Z, 0-9, @,., -, #, $, and *. | Null |
| Old Password | Enter the old password of your router. The default password please see the product label. | Null |
| New Password | Enter a new password you want to create; valid characters are a-z, A-Z, 0-9, @,., -, #, $, and *. | Null |
| Confirm Password | Enter the new password again to confirm. | Null |



Click + button to add a new common user. The maximum rule count is 5.

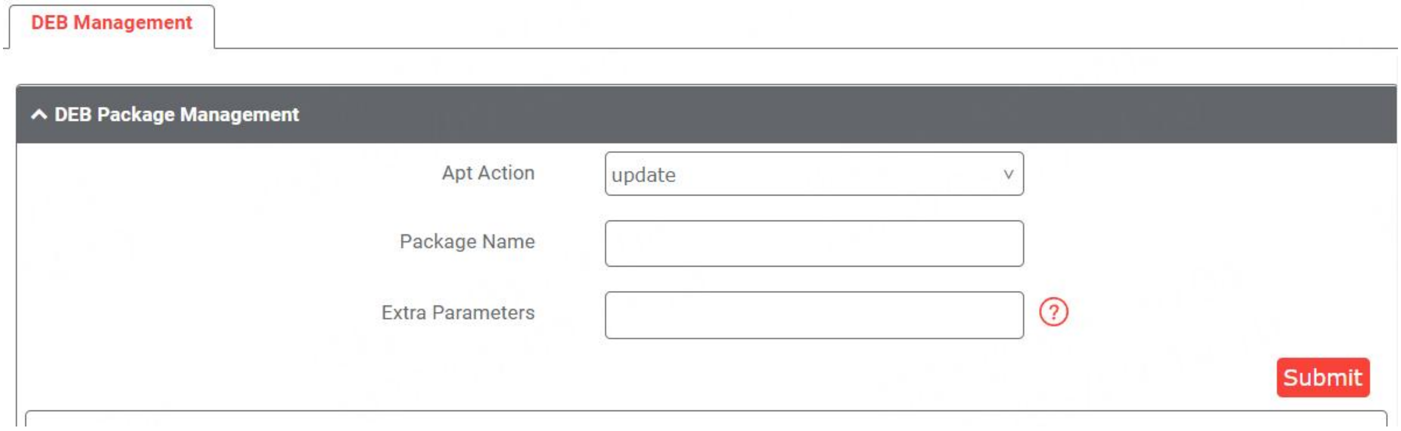


Role: Guest

| Item | Description | Default |
|---|---|---|
| Index | Indicate the ordinal of the list. | -- |
| Role | Select from "Guest" and "User".<br>• Guest: Guest only can view the configuration of router under this level<br>• User: User can view and set the configuration of router under this level | Guest |
| Username | Set the Username; valid characters are a-z, A-Z, 0-9, @, ., -, #, $, and *. | Null |
| Password | Set the password which at least contains 5 characters; valid characters are a-z, A-Z, 0-9, @, ., -, #, $, and *. | Null |

## 2.6.10 DEB Management

This section allows you to manage your own Debian packages.



Apt Action: update

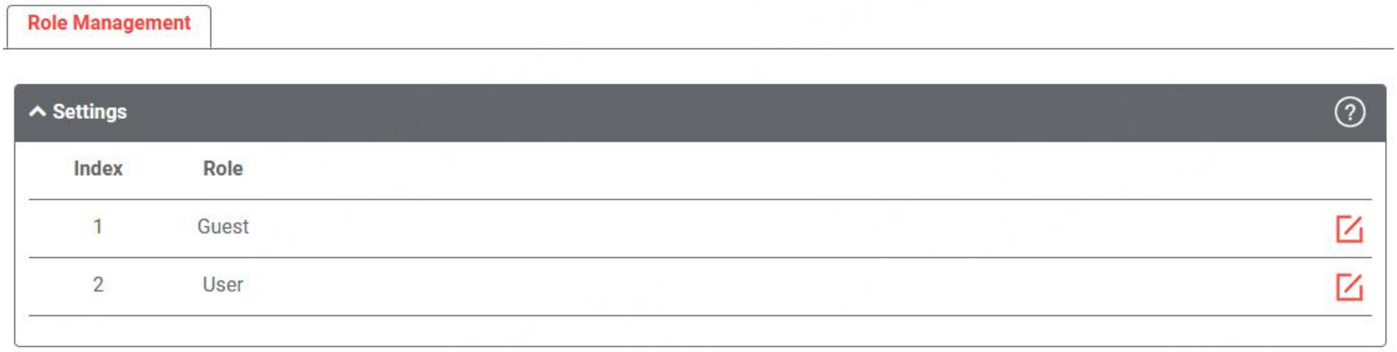
Package Name:

Extra Parameters:

| Item | Description | Default |
|---|---|---|
| Apt Action | Select from "update", "install", "clean", "remove", "show".<br>• update: to update the apt.<br>• Install: to install the apt.<br>• Remove: to remove the apt.<br>• Clean: to clean the apt.<br>• Show: to show the apt list. | -- |
| Package Name | Enter the package name to implement. | -- |
| Extra Parameters | More parameters of 'apt' command, such as '--purge', etc. | Null |

## 2.6.11 Role Management

This section is used to manage user roles and manage permissions for users in different roles.



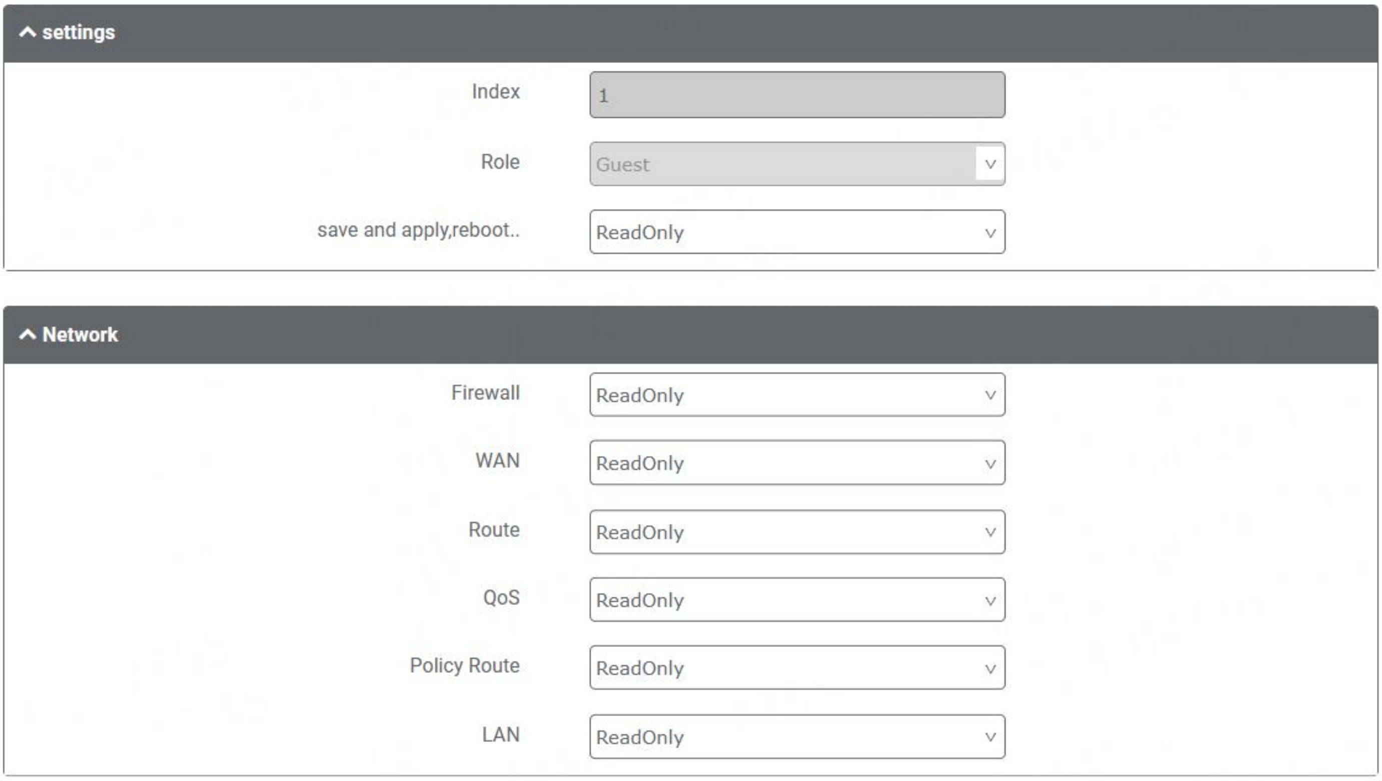
Role Management

Settings

| Index | Role |
|---|---|
| 1 | Guest |
| 2 | User |

| Role Names @ Role Management | | |
|---|---|---|
| **Item** | **Description** | **Default** |
| Guest | Enter a visitor name; valid characters are a-z, A-Z, 0-9, @,., -, #, $, and *. | Guest |
| User | Enter a editor name; valid characters are a-z, A-Z, 0-9, @,., -, #, $, and *. | User |

Click ✎ to edit Visitor/Editor permission.

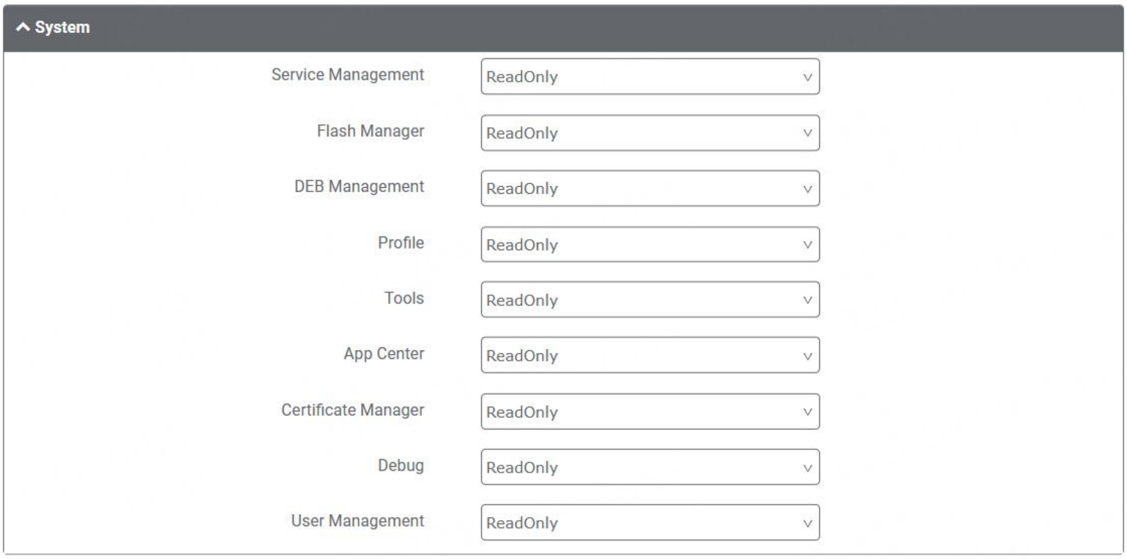


settings

| | |
|---|---|
| Index | 1 |
| Role | Guest |
| save and apply,reboot.. | ReadOnly |

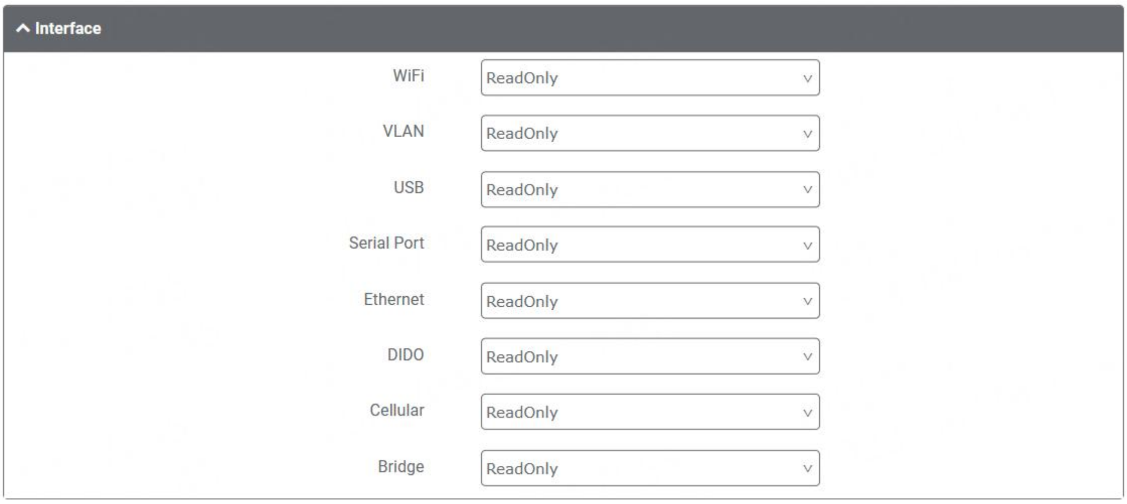
Network

| | |
|---|---|
| Firewall | ReadOnly |
| WAN | ReadOnly |
| Route | ReadOnly |
| QoS | ReadOnly |
| Policy Route | ReadOnly |
| LAN | ReadOnly |



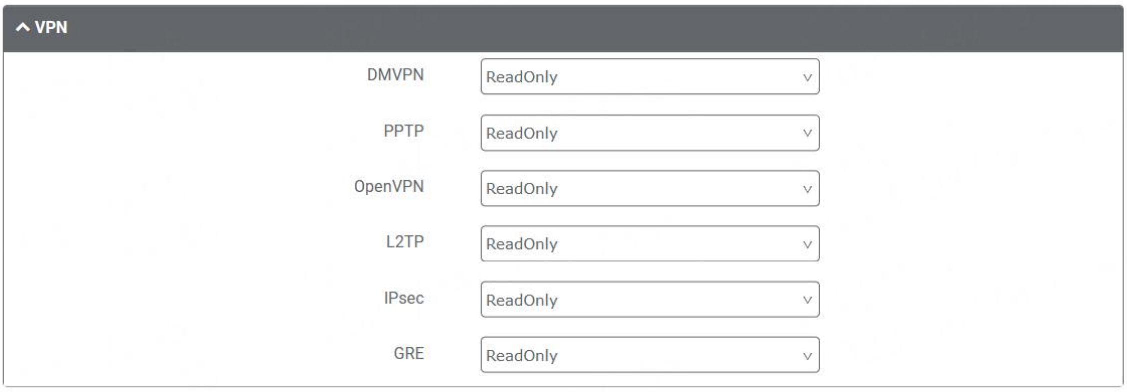
^ System

| | |
|---|---|
| Service Management | ReadOnly |
| Flash Manager | ReadOnly |
| DEB Management | ReadOnly |
| Profile | ReadOnly |
| Tools | ReadOnly |
| App Center | ReadOnly |
| Certificate Manager | ReadOnly |
| Debug | ReadOnly |
| User Management | ReadOnly |



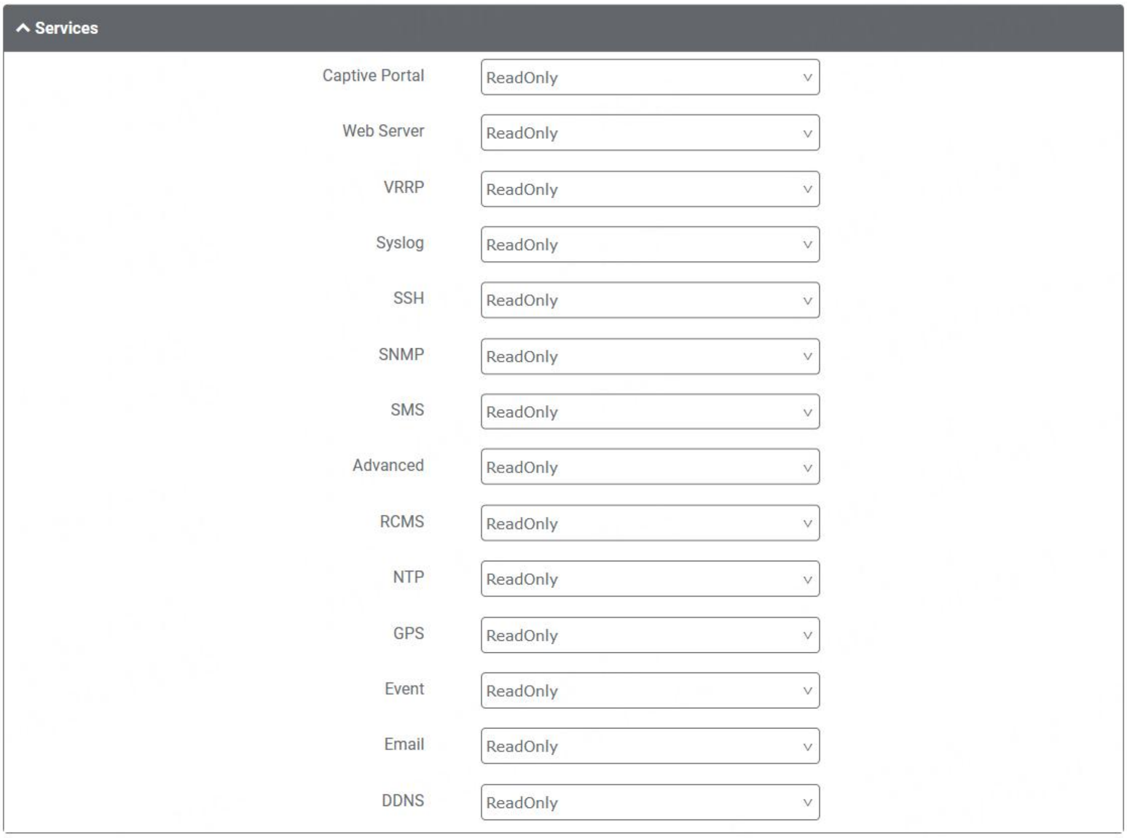
^ Interface

| | |
|---|---|
| WiFi | ReadOnly |
| VLAN | ReadOnly |
| USB | ReadOnly |
| Serial Port | ReadOnly |
| Ethernet | ReadOnly |
| DIDO | ReadOnly |
| Cellular | ReadOnly |
| Bridge | ReadOnly |



^ VPN

| | |
|---|---|
| DMVPN | ReadOnly |
| PPTP | ReadOnly |
| OpenVPN | ReadOnly |
| L2TP | ReadOnly |
| IPsec | ReadOnly |
| GRE | ReadOnly |



Services

| | |
|---|---|
| Captive Portal | ReadOnly |
| Web Server | ReadOnly |
| VRRP | ReadOnly |
| Syslog | ReadOnly |
| SSH | ReadOnly |
| SNMP | ReadOnly |
| SMS | ReadOnly |
| Advanced | ReadOnly |
| RCMS | ReadOnly |
| NTP | ReadOnly |
| GPS | ReadOnly |
| Event | ReadOnly |
| Email | ReadOnly |
| DDNS | ReadOnly |

| User Permission @ Role Management | |
|---|---|
| **Item** | **Description** |
| None | User have no permission to access or modify this setting. |
| ReadOnly | User only have permission to read. |
| Read/Write | User have permission to access or modify this setting. |

**Note:**

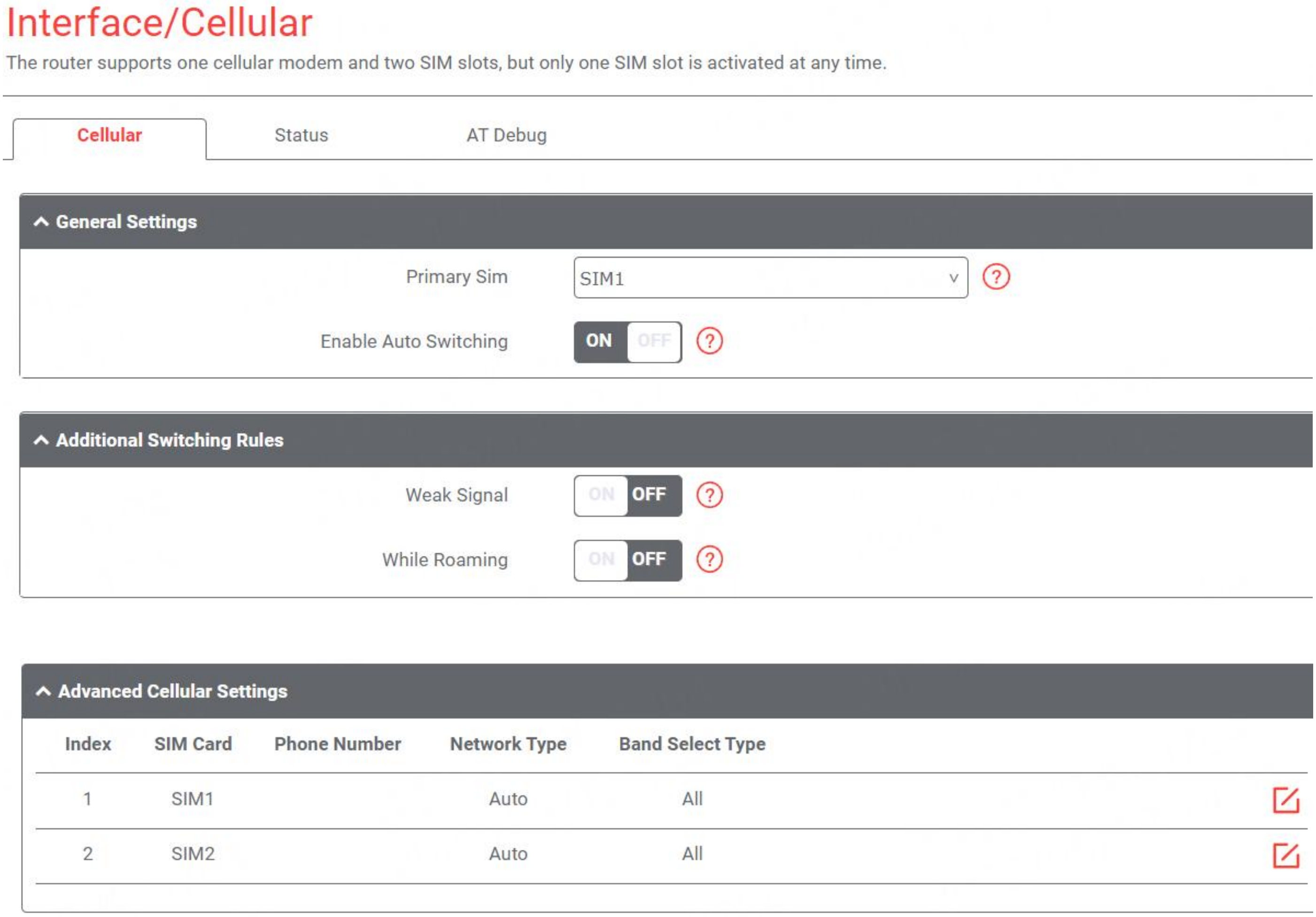
1. When logging in with Guest/User, “Profile” is not available.
2. When Guest “Save and apply, reboot” permission was set to “ReadOnly”. After logging as Guest, “save and apply”, “reboot” buttons will not be displayed.

# Chapter 3 Configuration Examples

## 3.1 Cellular

### 3.1.1 Cellular APN Manual Setting and Cellular Dial-up.

This section shows you how to configure the APN for Cellular Dial-up. Connect the device correctly and insert the SIM card, then open the web configuration page. Under the homepage menu, click “**Interface > Cellular > Cellular ”** to go to the cellular configuration page.


Interface/Cellular
The router supports one cellular modem and two SIM slots, but only one SIM slot is activated at any time.
Cellular
Status
AT Debug

General Settings

Primary Sim: SIM1

Enable Auto Switching: ON

Additional Switching Rules

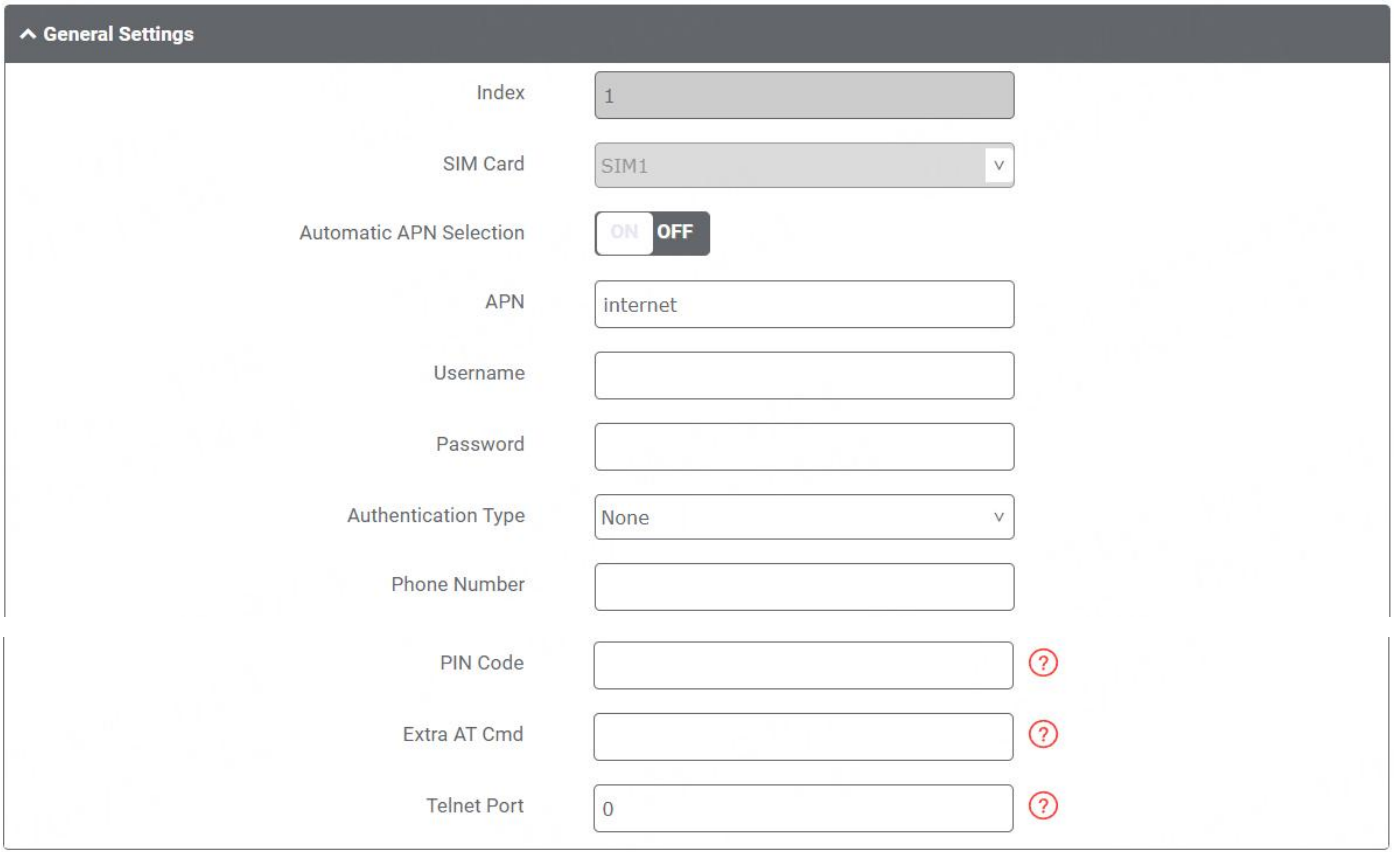
Weak Signal: OFF

While Roaming: OFF

Advanced Cellular Settings

| Index | SIM Card | Phone Number | Network Type | Band Select Type |
|---|---|---|---|---|
| 1 | SIM1 | | Auto | All |
| 2 | SIM2 | | Auto | All |

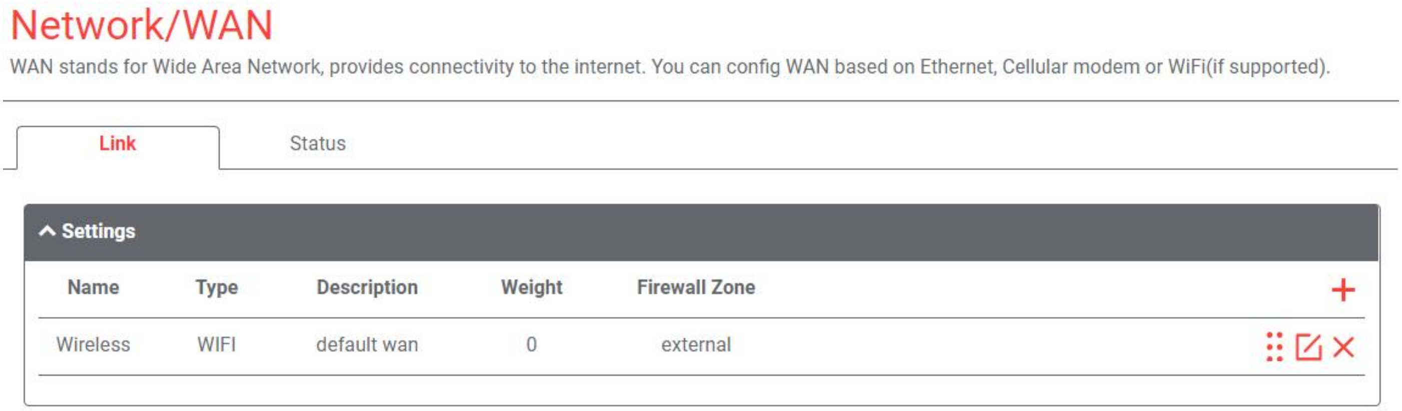
Click ☑ to set its parameters according to the current ISP.



^ General Settings

| | |
|---|---|
| Index | 1 |
| SIM Card | SIM1 |
| Automatic APN Selection | ON OFF |
| APN | internet |
| Username | |
| Password | |
| Authentication Type | None |
| Phone Number | |
| PIN Code | |
| Extra AT Cmd | |
| Telnet Port | 0 |

Then Click **“Network> WAN> Link”** go to the WAN configuration page.



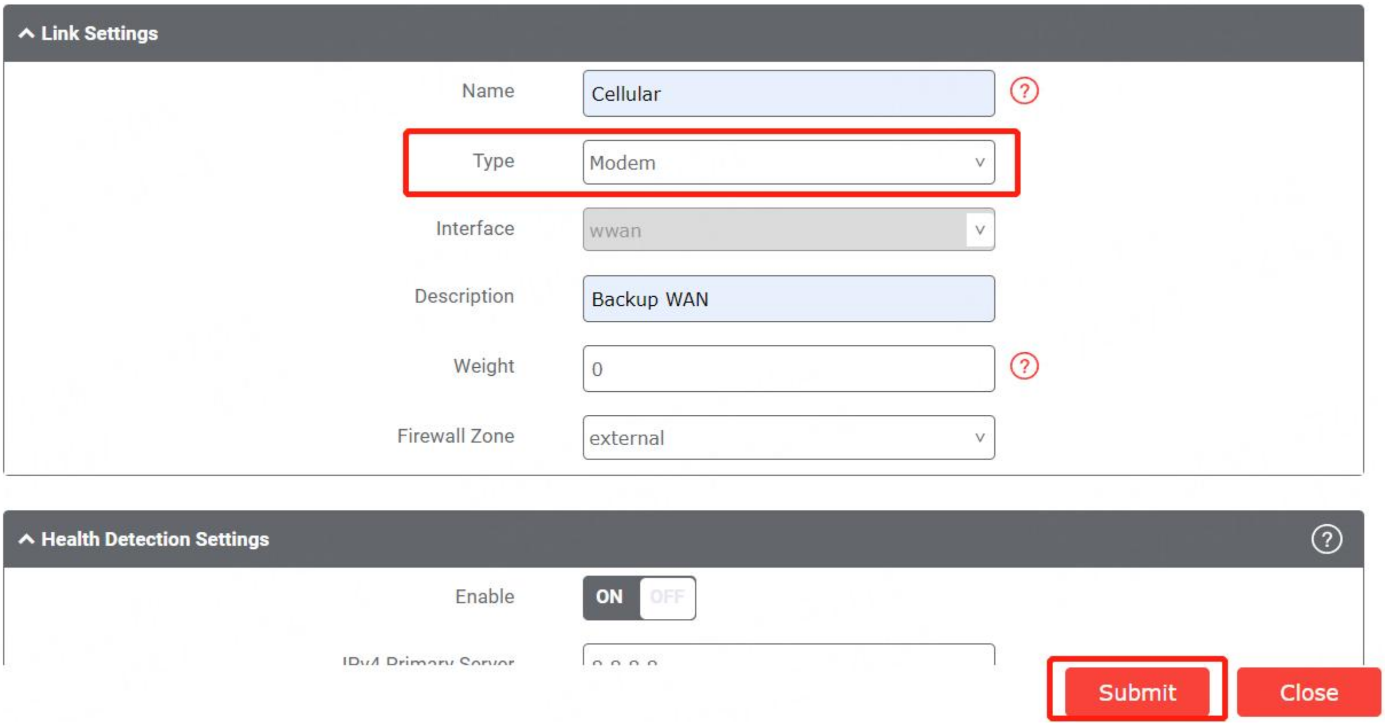
Network/WAN

WAN stands for Wide Area Network, provides connectivity to the internet. You can config WAN based on Ethernet, Cellular modem or WiFi(if supported).

^ Settings

| Name | Type | Description | Weight | Firewall Zone |
|---|---|---|---|---|
| Wireless | WIFI | default wan | 0 | external |

Click + to add one link for cellular dial-up, select “Modem” as the link type, then click Submit to submit.



Link Settings

Name: Cellular

Type: Modem

Interface: wwan

Description: Backup WAN

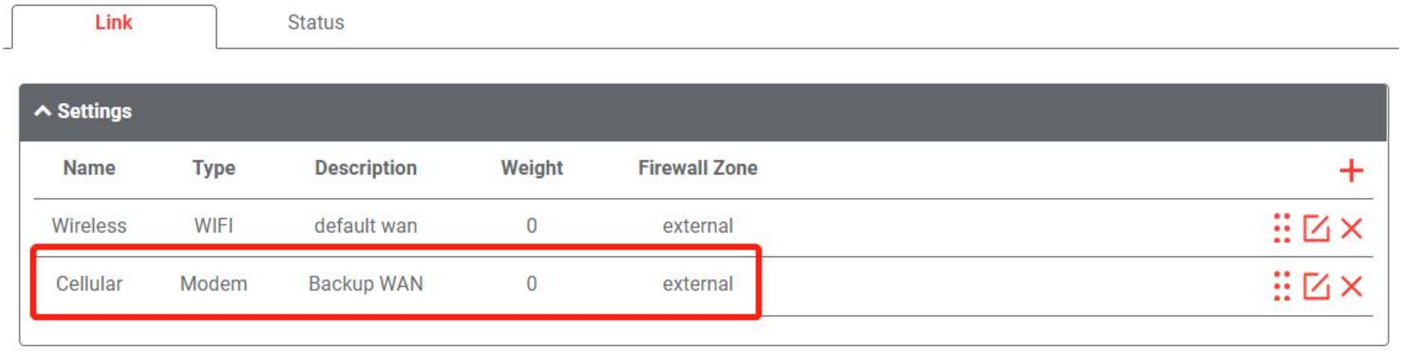
Weight: 0

Firewall Zone: external

Health Detection Settings

Enable: ON

After save and apply, the new cellular WAN link will take effect.



| Name | Type | Description | Weight | Firewall Zone |
|---|---|---|---|---|
| Wireless | WIFI | default wan | 0 | external |
| Cellular | Modem | Backup WAN | 0 | external |

## 3.1.2 SMS Remote Control

MG460 supports remote control via SMS. You can use following commands to get the status of the router, and set all the parameters of the router.

**SMS command have the following structures:**

1. Password mode—Username: Password;cmd1;cmd2;cmd3; …cmdn (available for every phone number).
2. Phonenum mode-- Password; cmd1; cmd2; cmd3; … cmdn (available when the SMS was sent from the phone number which had been added in router’s phone group).
3. Both mode-- Username: Password;cmd1;cmd2;cmd3; …cmdn (available when the SMS was sent from the phone number which had been added in router’s phone group).
4. Note: All command symbols must be entered in the half-angle mode of the English input method.

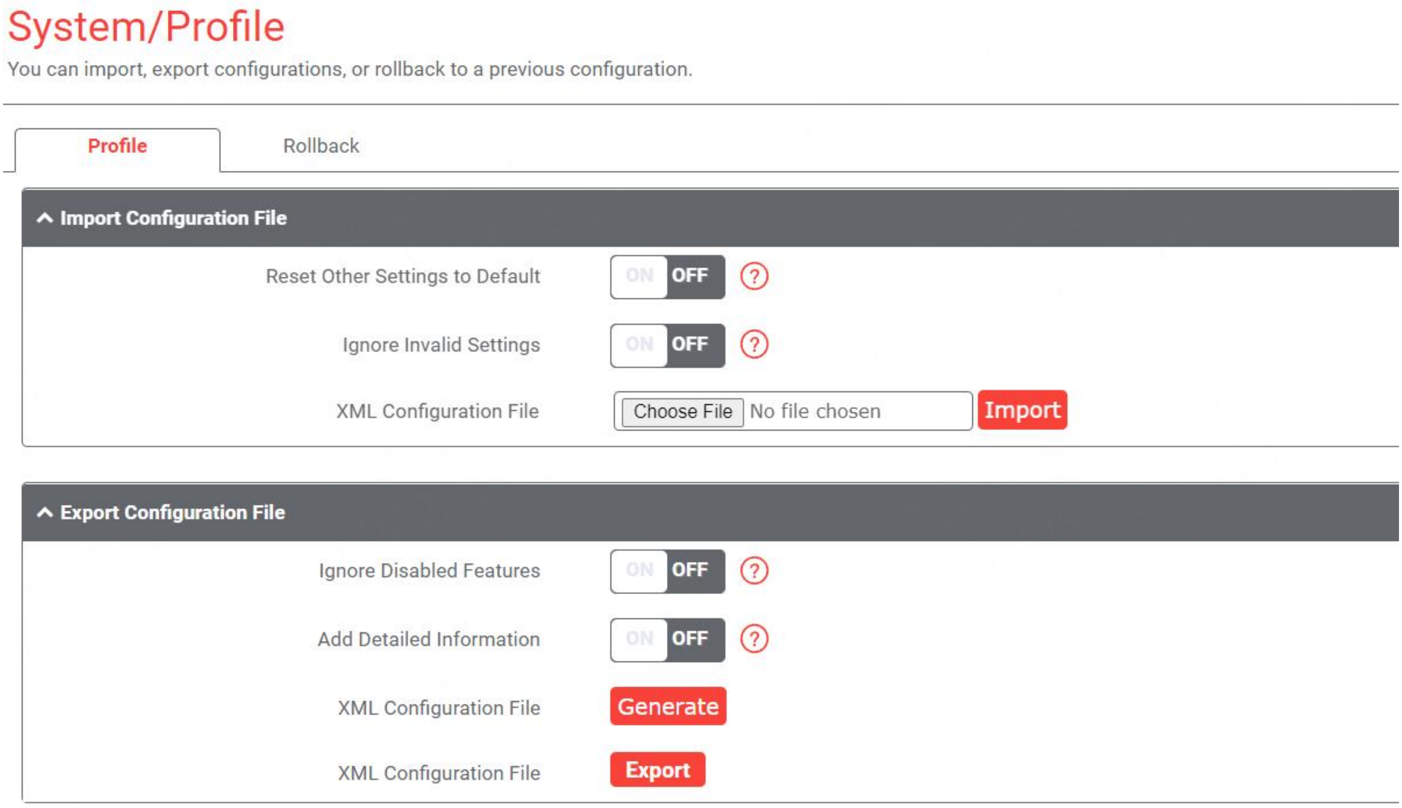
**SMS command Explanation:**

1. Username and Password: Use the same username and password as WEB manager for authentication.
2. **cmd1, cmd2, cmd3 to cmdn**, the command format is the same as the CLI command, more details about CLI cmd

please refer to 4.1 What Is CLI.

**Note:** Download the configure XML file from the configured web browser. The format of SMS control command can refer to the data of the XML file.

Go to "**System > Profile > Export Configuration File**", click Generate to generate the XML file and click Export to export the XML file.



System/Profile

You can import, export configurations, or rollback to a previous configuration.

Reset Other Settings to Default: ON OFF
Ignore Invalid Settings: ON OFF
XML Configuration File: No file chosen
Ignore Disabled Features: ON OFF
Add Detailed Information: ON OFF
XML Configuration File
XML Configuration File

***XML command:***

```
<lan>
<network max_entry_num="5">
<id>1</id>
<interface>lan0</interface>
<ip>172.16.24.24</ip>
<netmask>255.255.0.0</netmask>
<mtu>1500</mtu>
```

**SMS cmd:**

```
set lan network 1 interface lan0
set lan network 1 ip 172.16.24.24
set lan network 1 netmask 255.255.0.0
set lan network 1 mtu 1500
```

3. The semicolon character (';') is used to separate more than one commands packed in a single SMS.
4. E.g.

   **admin:admin;status system**

   In this command, username is "admin", password is "admin", control command is "status system", and the function of the command is to get the system status.

   **SMS received:**

```
firmware_version = 2.0.0
firmware_version_full = "2.0.0 (60b55c0)"
kernel_version = 5.4.24-2.0.0
hardware_version = 0.0
operation_system = "Debian GNU/Linux 11.3"
device_model = ""
serial_number = 2204190667030003
temperature_interval = 53.0
uptime = "0 days, 00:12:06"
system_time = "Thu May 19 16:52:22 2022"
ram_usage = 392M/448M
cpu_usage = "22569s Idle/71405s Total /1 cpus"
disk_usage = 1.9G/7.1G
```

**admin:admin;reboot**

In this command, username is “admin”, password is “admin”, and the command is to reboot the Router.

**SMS received:**

```
OK
```

**admin:admin;set firewall remote_ssh_access false;set firewall remote_telnet_access false**

In this command, username is “admin”, password is “admin”, and the command is to disable the remote_ssh and remote_telnet access.

**SMS received:**

```
OK
OK
```

**admin:admin;set lan network 1 interface lan0;set lan network 1 ip 172.16.24.24;set lan network 1 netmask 255.255.0.0;set lan network 1 mtu 1500**

In this command, username is “admin”, password is “admin”, and the commands is to configure the LAN parameter.

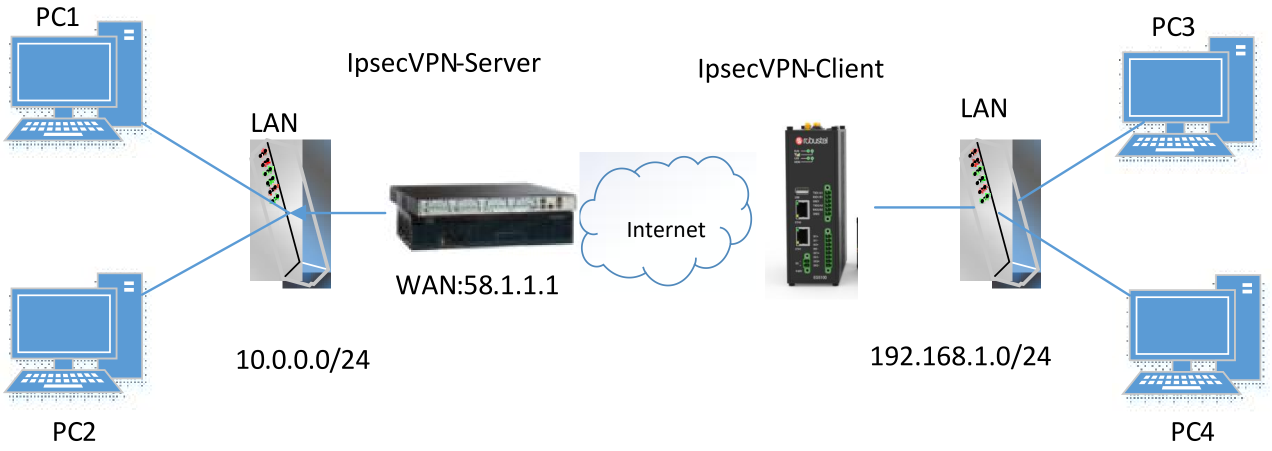
**SMS received:**

```
OK
OK
OK
OK
```

## 3.2VPN Configuration Examples

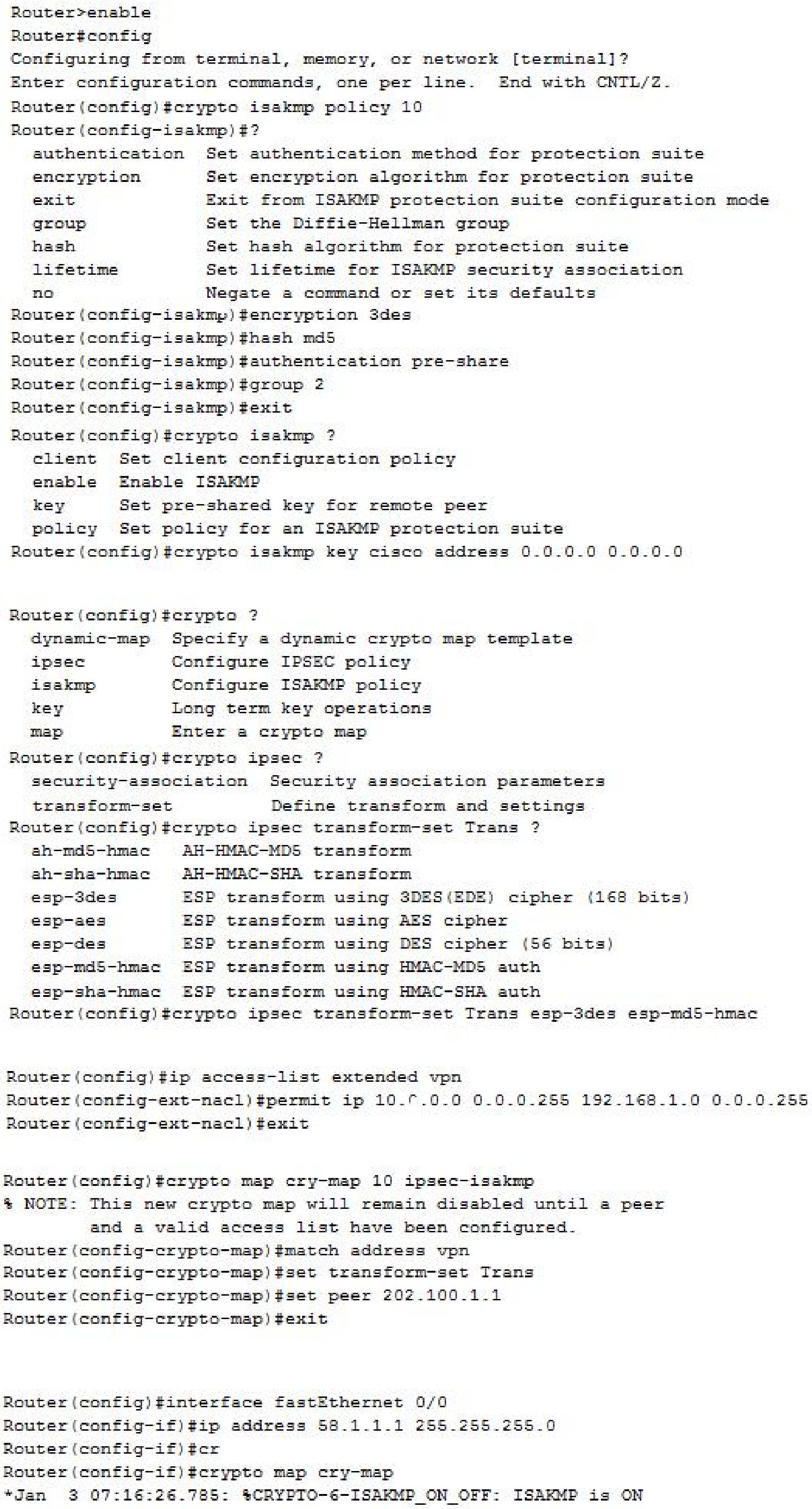
### 3.2.1 IPsec VPN

IPsec VPN topology (server-side and client-side IKE and SA parameters must be configured the same).



## IPsecVPN_Server:

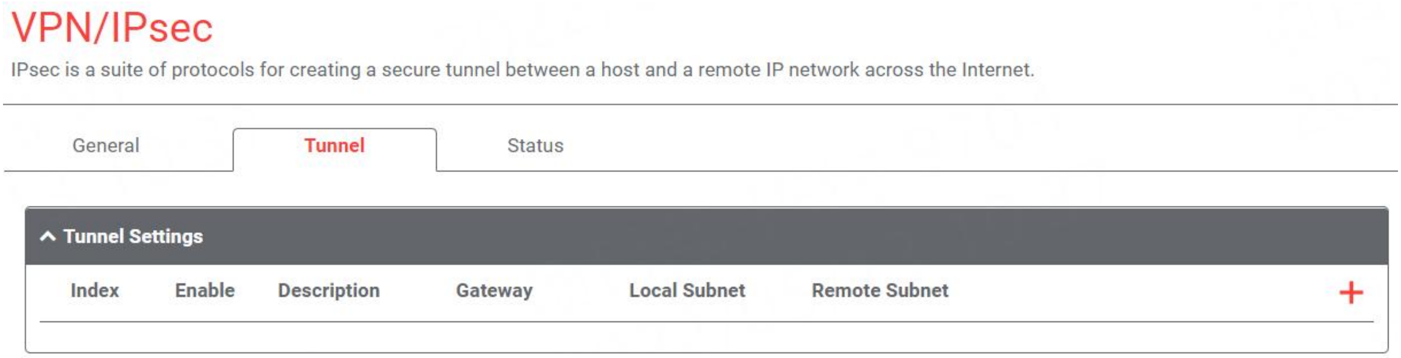
## Cisco 2811:



```
Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#crypto isakmp policy 10
Router(config-isakmp)#?
  authentication  Set authentication method for protection suite
  encryption      Set encryption algorithm for protection suite
  exit            Exit from ISAKMP protection suite configuration mode
  group           Set the Diffie-Hellman group
  hash            Set hash algorithm for protection suite
  lifetime        Set lifetime for ISAKMP security association
  no              Negate a command or set its defaults
Router(config-isakmp)#encryption 3des
Router(config-isakmp)#hash md5
Router(config-isakmp)#authentication pre-share
Router(config-isakmp)#group 2
Router(config-isakmp)#exit
Router(config)#crypto isakmp ?
  client  Set client configuration policy
  enable  Enable ISAKMP
  key     Set pre-shared key for remote peer
  policy  Set policy for an ISAKMP protection suite
Router(config)#crypto isakmp key cisco address 0.0.0.0 0.0.0.0


Router(config)#crypto ?
  dynamic-map  Specify a dynamic crypto map template
  ipsec        Configure IPSEC policy
  isakmp       Configure ISAKMP policy
  key          Long term key operations
  map          Enter a crypto map
Router(config)#crypto ipsec ?
  security-association  Security association parameters
  transform-set         Define transform and settings
Router(config)#crypto ipsec transform-set Trans ?
  ah-md5-hmac   AH-HMAC-MD5 transform
  ah-sha-hmac   AH-HMAC-SHA transform
  esp-3des      ESP transform using 3DES(EDE) cipher (168 bits)
  esp-aes       ESP transform using AES cipher
  esp-des       ESP transform using DES cipher (56 bits)
  esp-md5-hmac  ESP transform using HMAC-MD5 auth
  esp-sha-hmac  ESP transform using HMAC-SHA auth
Router(config)#crypto ipsec transform-set Trans esp-3des esp-md5-hmac


Router(config)#ip access-list extended vpn
Router(config-ext-nacl)#permit ip 10.0.0.0 0.0.0.255 192.168.1.0 0.0.0.255
Router(config-ext-nacl)#exit


Router(config)#crypto map cry-map 10 ipsec-isakmp
% NOTE: This new crypto map will remain disabled until a peer
        and a valid access list have been configured.
Router(config-crypto-map)#match address vpn
Router(config-crypto-map)#set transform-set Trans
Router(config-crypto-map)#set peer 202.100.1.1
Router(config-crypto-map)#exit



Router(config)#interface fastEthernet 0/0
Router(config-if)#ip address 58.1.1.1 255.255.255.0
Router(config-if)#cr
Router(config-if)#crypto map cry-map
*Jan  3 07:16:26.785: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is ON
```

## IPsec VPN_Client:

The window is displayed as below by clicking “**VPN > IPsec > Tunnel**.”



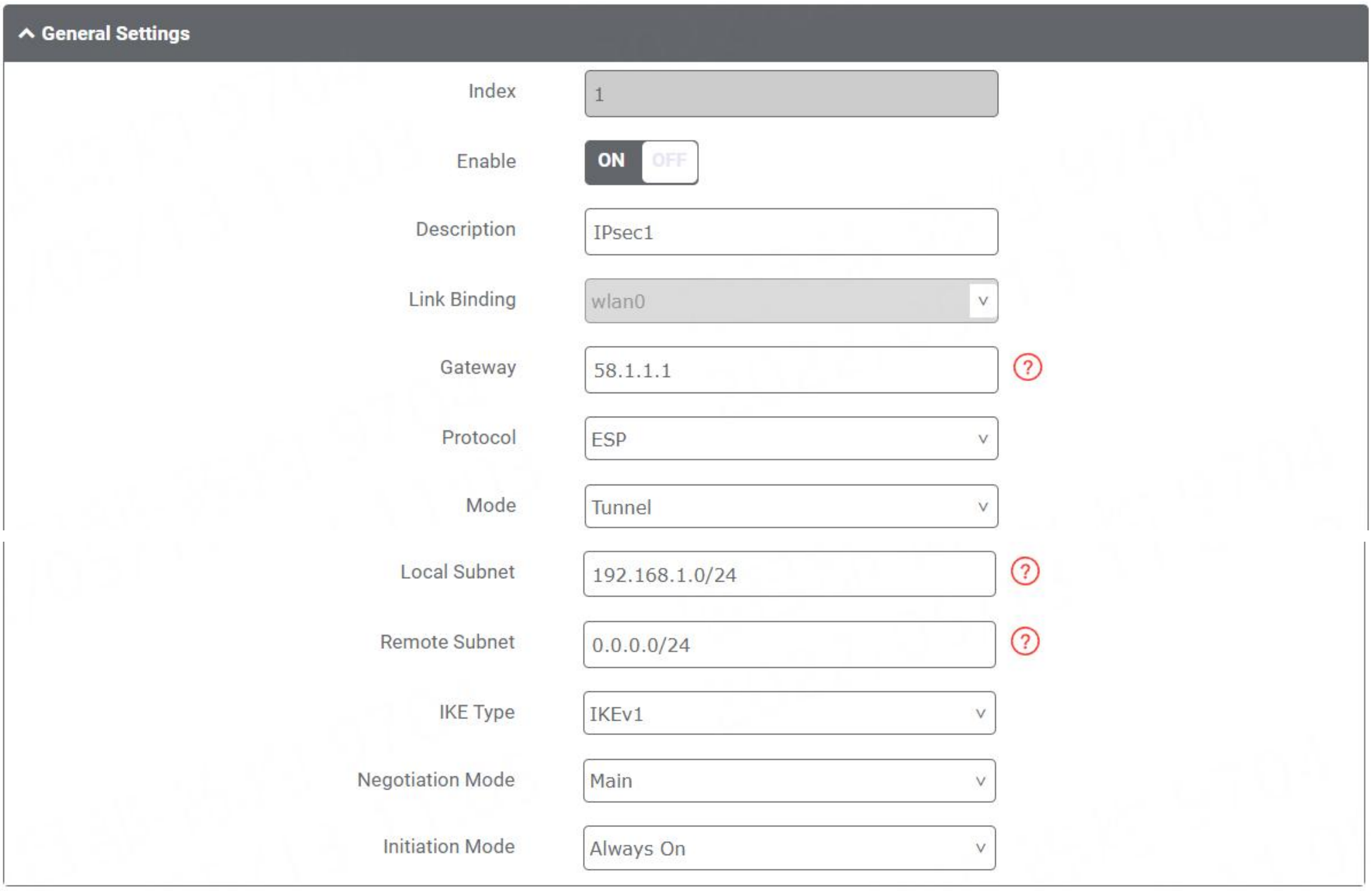
VPN/IPsec

IPsec is a suite of protocols for creating a secure tunnel between a host and a remote IP network across the Internet.

^ Tunnel Settings

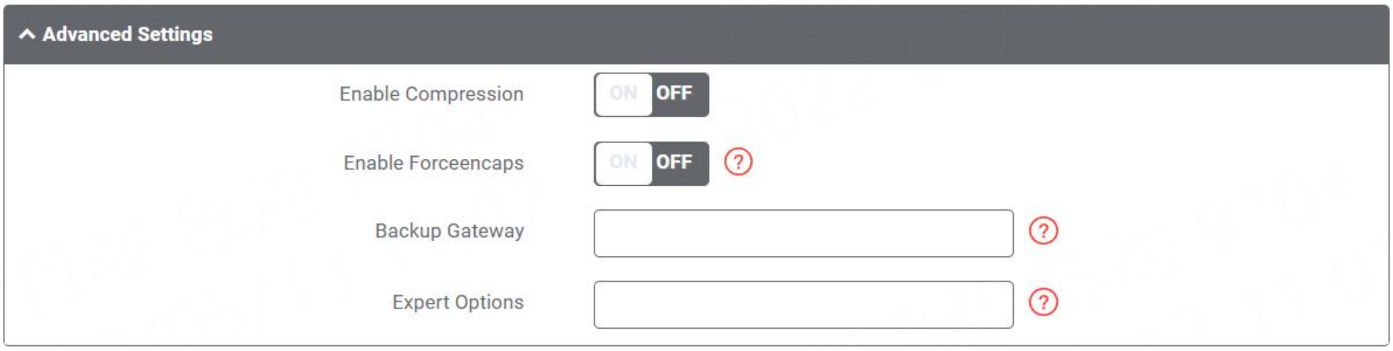
| Index | Enable | Description | Gateway | Local Subnet | Remote Subnet | + |
|---|---|---|---|---|---|---|

Click + button and set the parameters of IPsec Client as below.



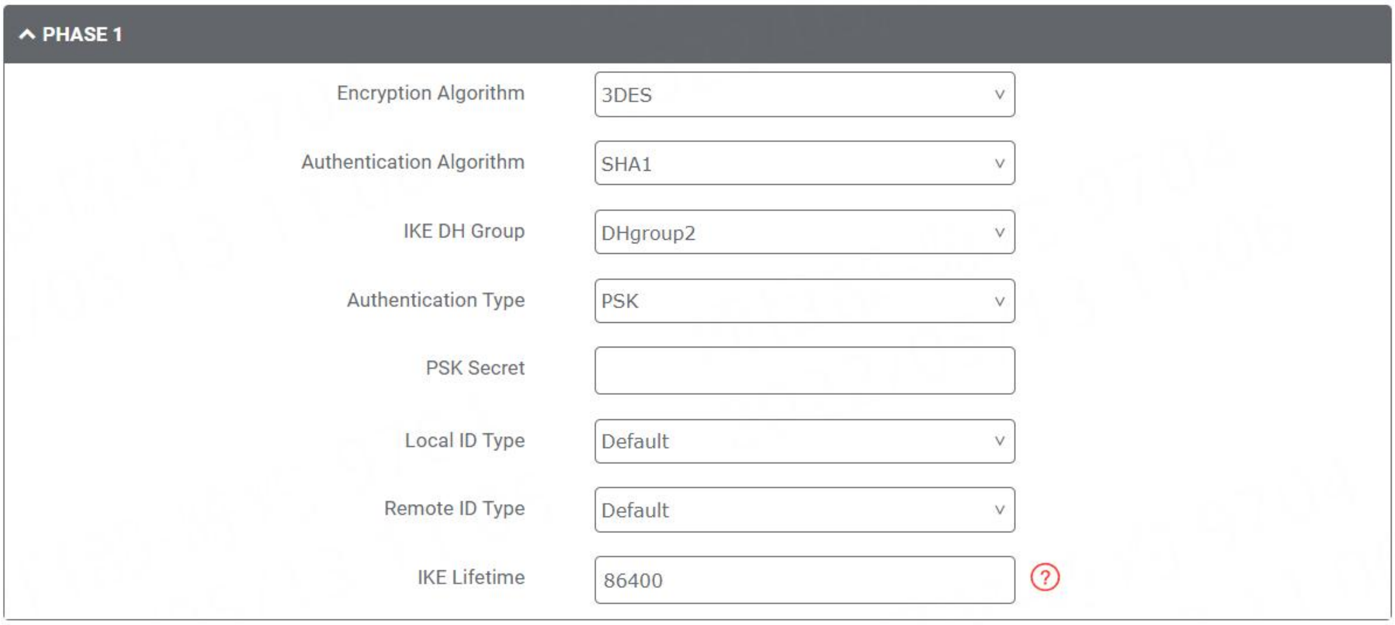
^ General Settings

| | |
|---|---|
| Index | 1 |
| Enable | ON |
| Description | IPsec1 |
| Link Binding | wlan0 |
| Gateway | 58.1.1.1 |
| Protocol | ESP |
| Mode | Tunnel |
| Local Subnet | 192.168.1.0/24 |
| Remote Subnet | 0.0.0.0/24 |
| IKE Type | IKEv1 |
| Negotiation Mode | Main |
| Initiation Mode | Always On |



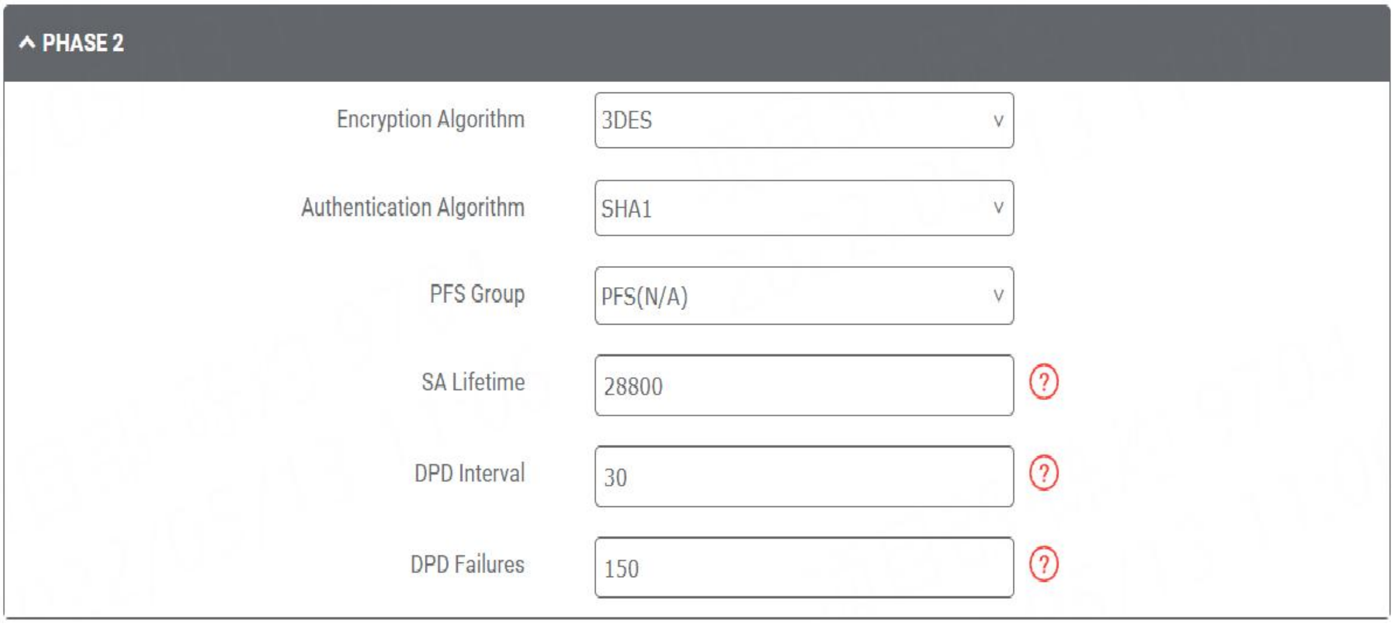
^ Advanced Settings

| | |
|---|---|
| Enable Compression | OFF |
| Enable Forceencaps | OFF |
| Backup Gateway | |
| Expert Options | |



^ PHASE 1

| | |
|---|---|
| Encryption Algorithm | 3DES |
| Authentication Algorithm | SHA1 |
| IKE DH Group | DHgroup2 |
| Authentication Type | PSK |
| PSK Secret | |
| Local ID Type | Default |
| Remote ID Type | Default |
| IKE Lifetime | 86400 |



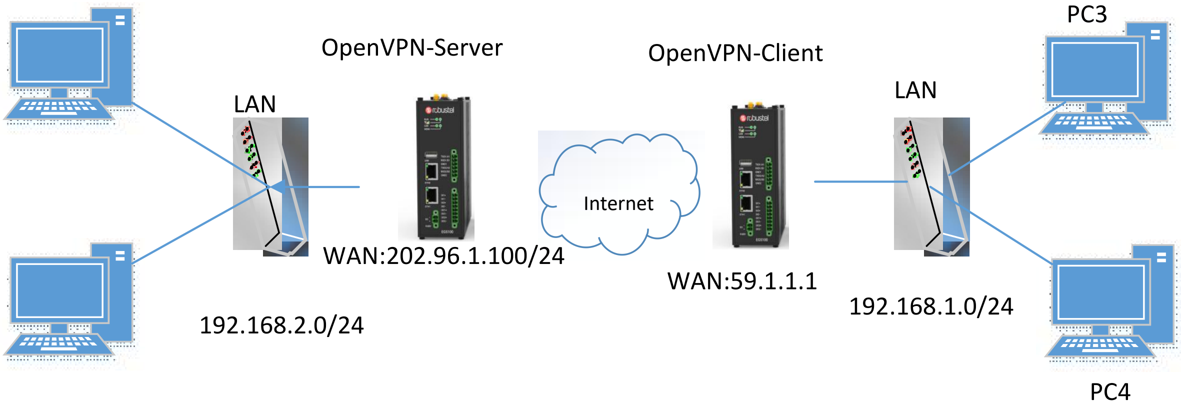
^ PHASE 2

| | |
|---|---|
| Encryption Algorithm | 3DES |
| Authentication Algorithm | SHA1 |
| PFS Group | PFS(N/A) |
| SA Lifetime | 28800 |
| DPD Interval | 30 |
| DPD Failures | 150 |

When finished, click Submit to submit and click ✓ for the configuration to take effect.

## 3.2.2 OpenVPN

OpenVPN supports two modes, including Client and P2P. Here takes Client as an example.



### OpenVPN_Server:

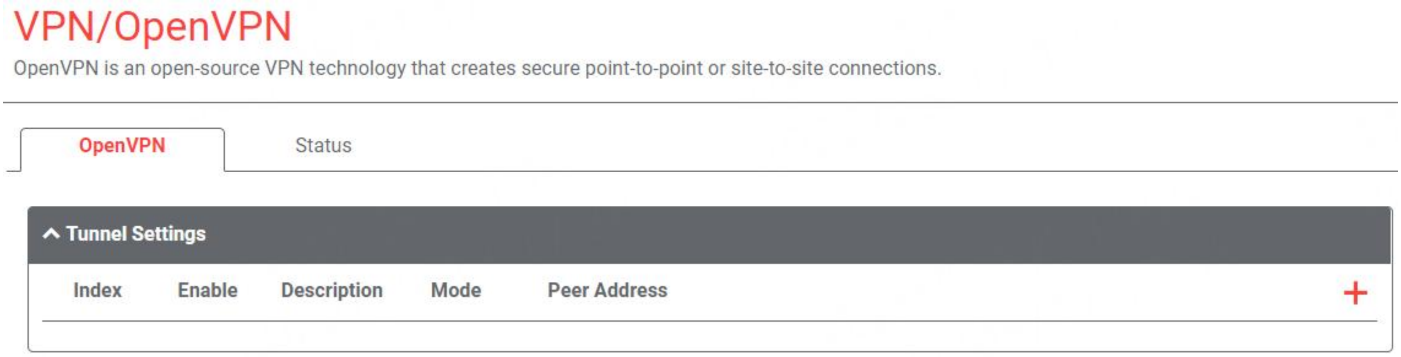
Generate relevant OpenVPN certificate on the server side firstly, and refer to the following commands to configuration the Server:

```
local 202.96.1.100
mode server
port 1194
proto udp
dev tun
tun-mtu 1500
fragment 1500
ca ca.crt
cert Server01.crt
key Server01.key
dh dh1024.pem
server 10.8.0.0 255.255.255.0
ifconfig-pool-persist ipp.txt
push "route 192.168.3.0 255.255.255.0"
client-config-dir ccd
route 192.168.1.0 255.255.255.0
keepalive 10 120
cipher BF-CBC
comp-lzo
max-clients 100
persist-key
persist-tun
status openvpn-status.log
verb 3
```

**Note**: For more configuration details, please contact your technical support engineer.

## OpenVPN_Client:

Click “**VPN > OpenVPN > OpenVPN**” as below.

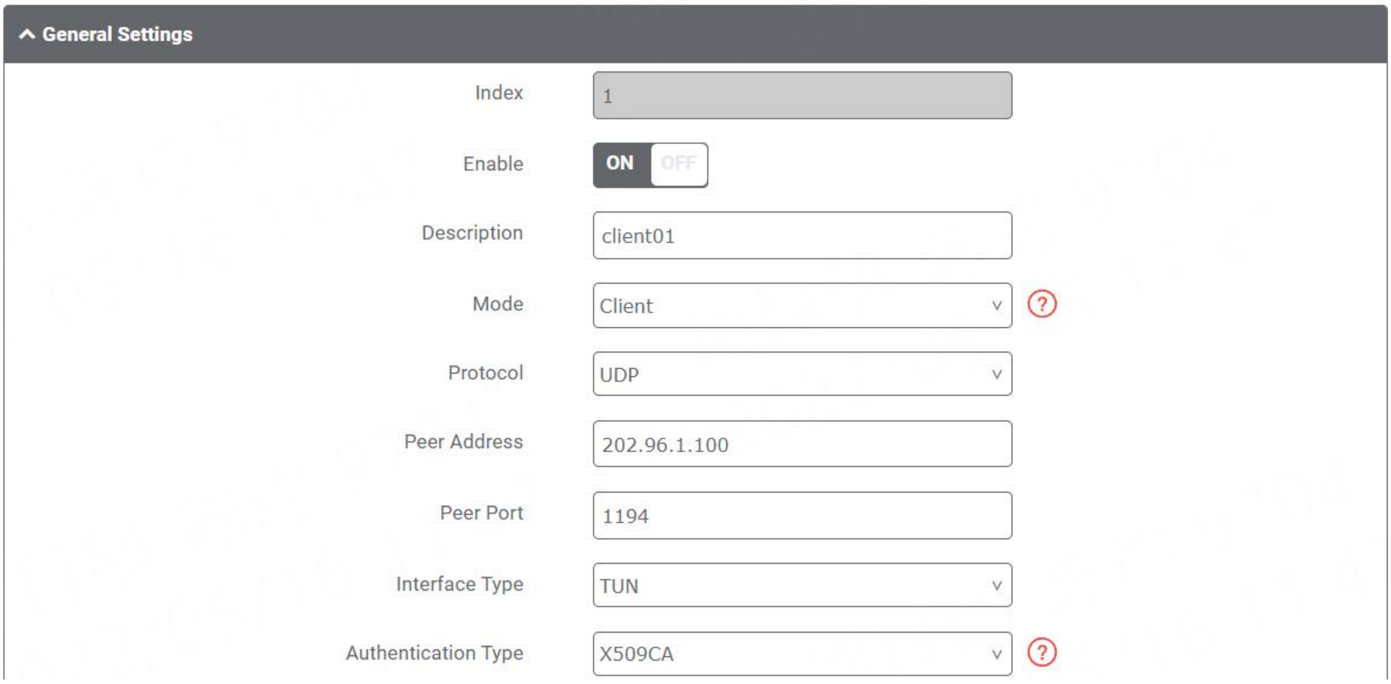


VPN/OpenVPN

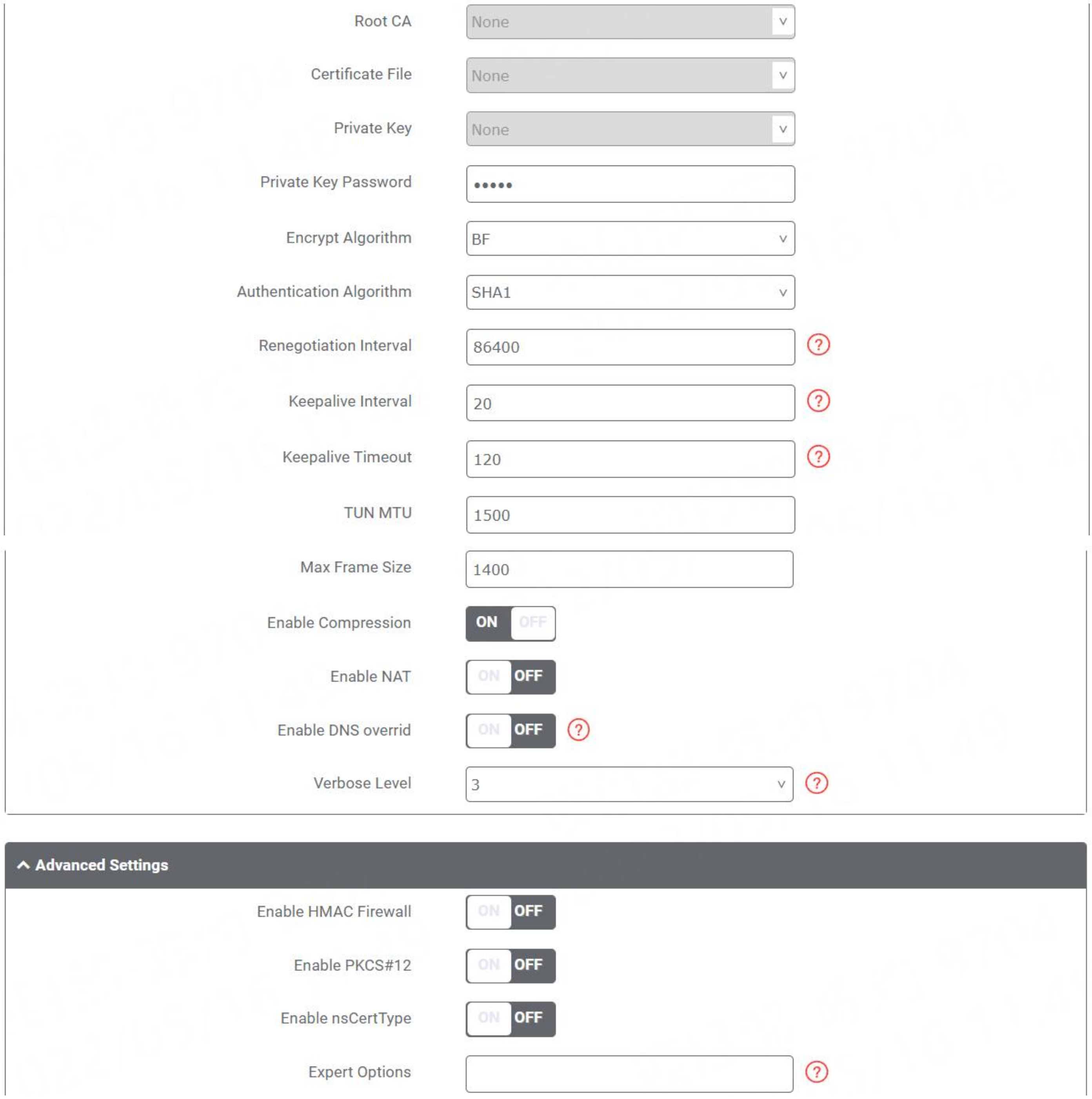
OpenVPN is an open-source VPN technology that creates secure point-to-point or site-to-site connections.

| Index | Enable | Description | Mode | Peer Address |
|---|---|---|---|---|

Click + to configure the Client01 as below.



| | |
|---|---|
| Index | 1 |
| Enable | ON OFF |
| Description | client01 |
| Mode | Client |
| Protocol | UDP |
| Peer Address | 202.96.1.100 |
| Peer Port | 1194 |
| Interface Type | TUN |
| Authentication Type | X509CA |



| | |
|---|---|
| Root CA | None |
| Certificate File | None |
| Private Key | None |
| Private Key Password | ••••• |
| Encrypt Algorithm | BF |
| Authentication Algorithm | SHA1 |
| Renegotiation Interval | 86400 |
| Keepalive Interval | 20 |
| Keepalive Timeout | 120 |
| TUN MTU | 1500 |
| Max Frame Size | 1400 |
| Enable Compression | ON |
| Enable NAT | OFF |
| Enable DNS overrid | OFF |
| Verbose Level | 3 |

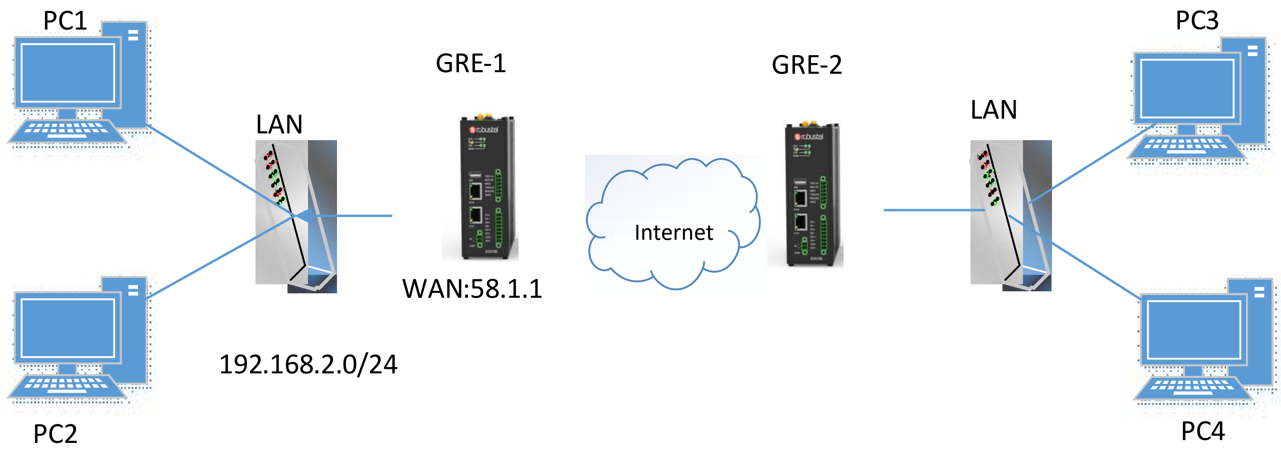
**Advanced Settings**

| | |
|---|---|
| Enable HMAC Firewall | OFF |
| Enable PKCS#12 | OFF |
| Enable nsCertType | OFF |
| Expert Options | |

When finished, click Submit to submit and click ✓ for the configuration to take effect.

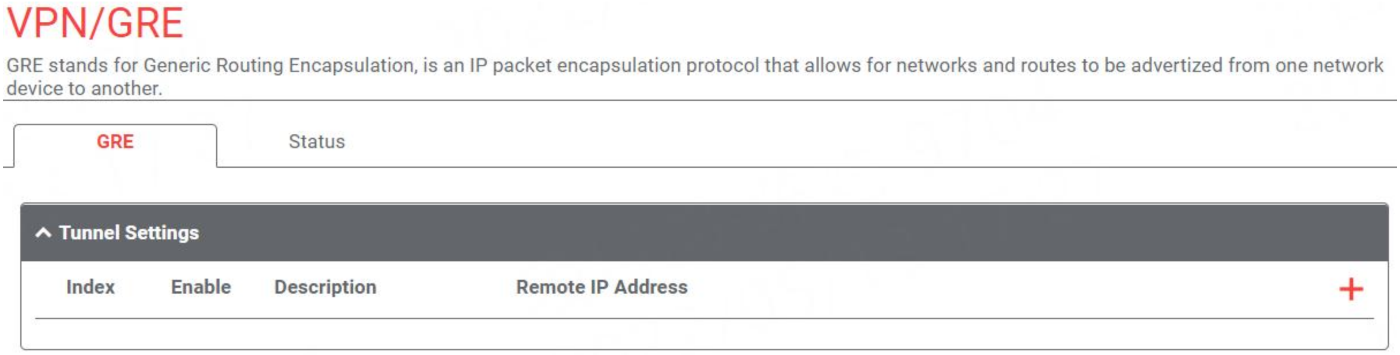
## 3.2.3 GRE VPN

GRE VPN topology



### GRE-1：

The window is displayed as below by clicking “**VPN > GRE > GRE**”.

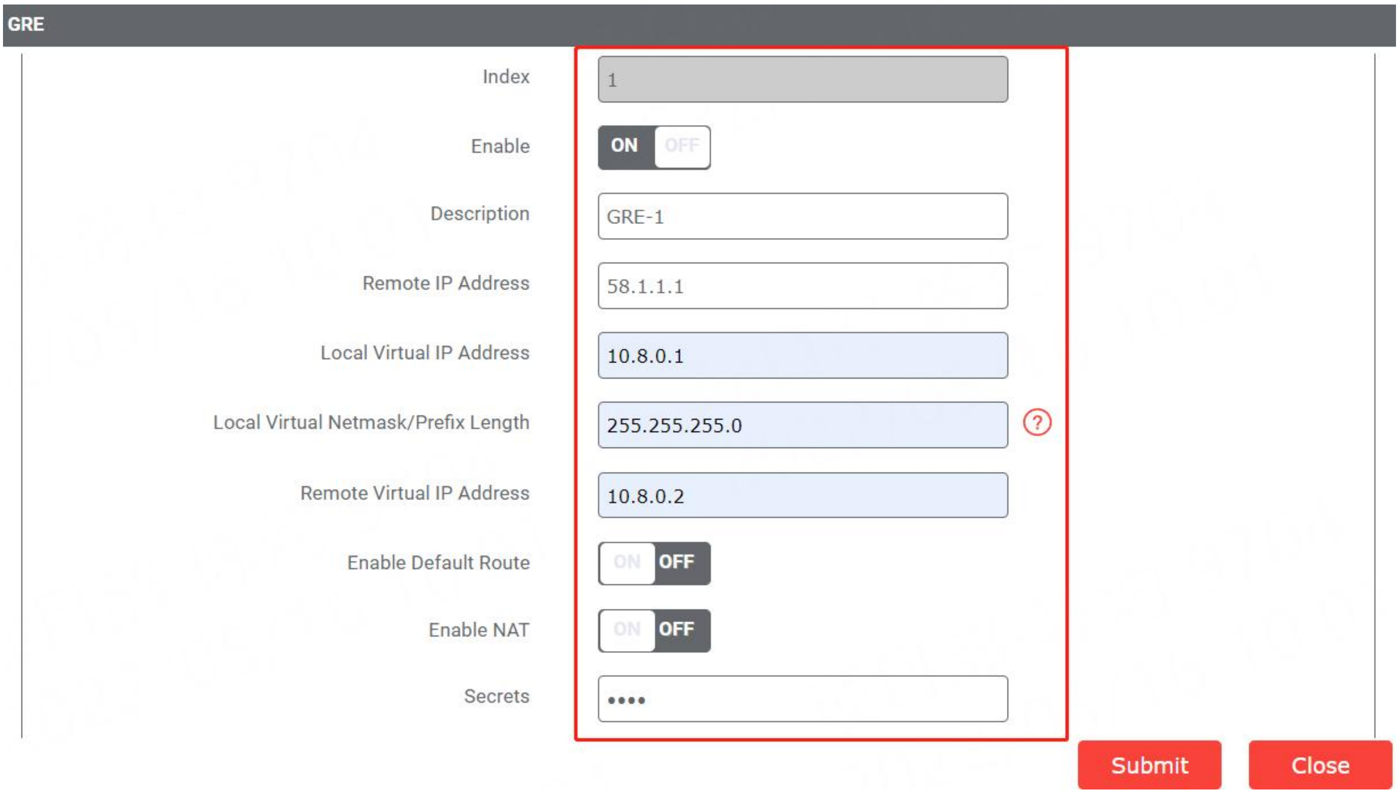


VPN/GRE

GRE stands for Generic Routing Encapsulation, is an IP packet encapsulation protocol that allows for networks and routes to be advertized from one network device to another.

| Index | Enable | Description | Remote IP Address | + |
|---|---|---|---|---|

Click + button and set the parameters of GRE-1 as below.



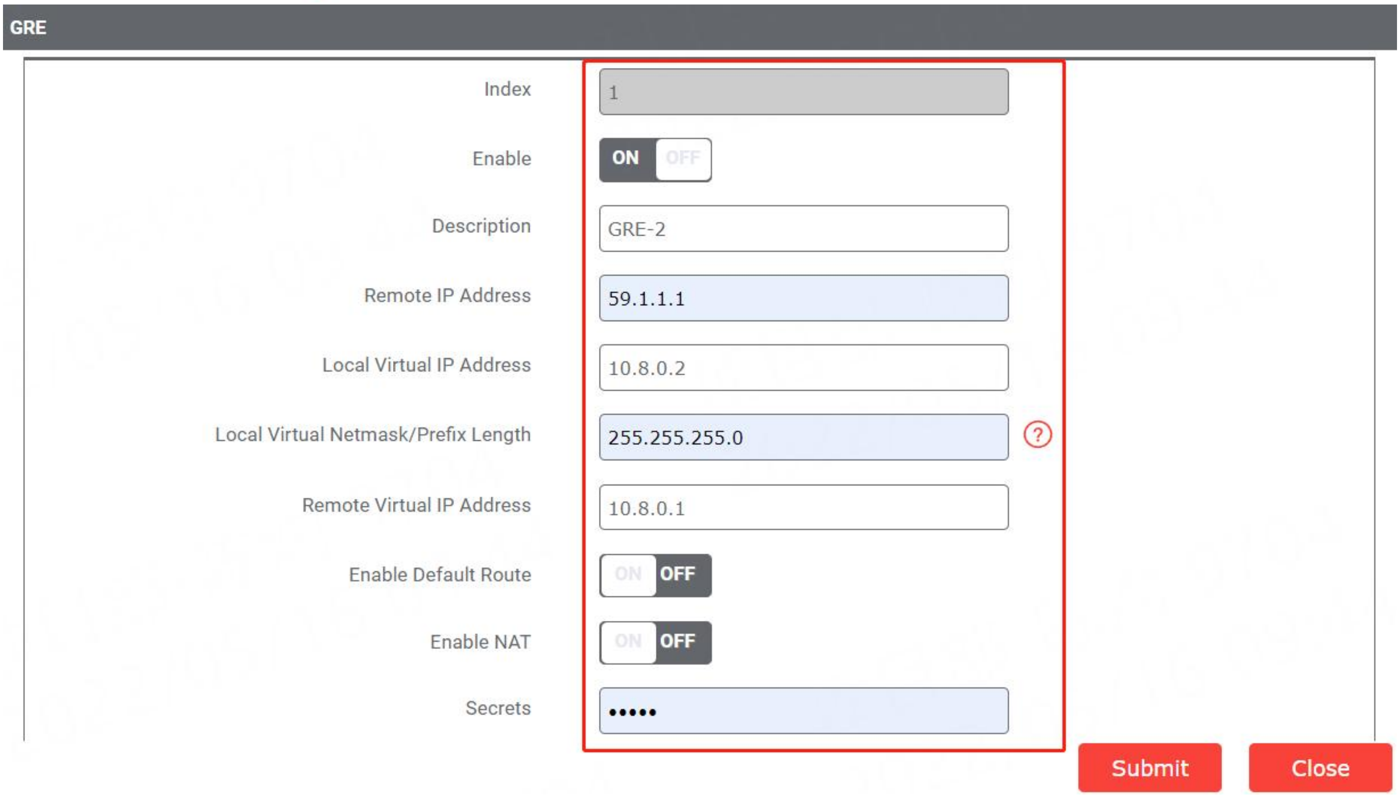
GRE

| | |
|---|---|
| Index | 1 |
| Enable | ON |
| Description | GRE-1 |
| Remote IP Address | 58.1.1.1 |
| Local Virtual IP Address | 10.8.0.1 |
| Local Virtual Netmask/Prefix Length | 255.255.255.0 |
| Remote Virtual IP Address | 10.8.0.2 |
| Enable Default Route | OFF |
| Enable NAT | OFF |
| Secrets | •••• |

When finished, click Submit to submit and click ✓ for the configuration to take effect.

## GRE-2:

On the remote side, click + button and set the parameters of GRE-2 as below.

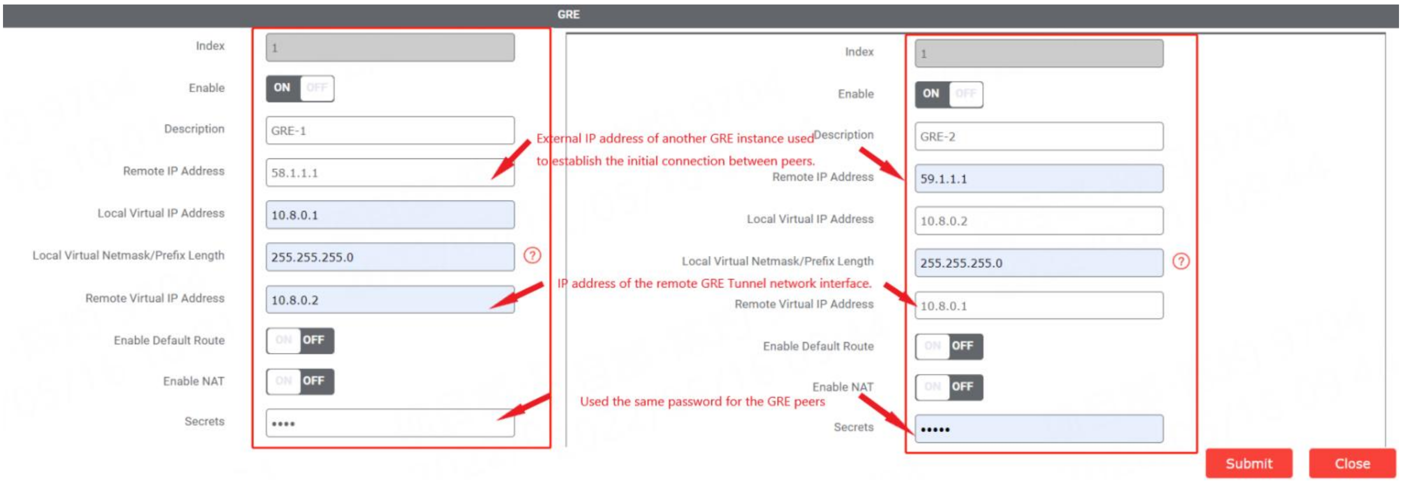


GRE

| | |
|---|---|
| Index | 1 |
| Enable | ON |
| Description | GRE-2 |
| Remote IP Address | 59.1.1.1 |
| Local Virtual IP Address | 10.8.0.2 |
| Local Virtual Netmask/Prefix Length | 255.255.255.0 |
| Remote Virtual IP Address | 10.8.0.1 |
| Enable Default Route | OFF |
| Enable NAT | OFF |
| Secrets | ••••• |

When finished, click Submit to submit and click ✓ for the configuration to take effect.

The comparison between GRE-1 and GRE-2 is as below.



GRE

| | GRE-1 | GRE-2 |
|---|---|---|
| Index | 1 | 1 |
| Enable | ON | ON |
| Description | GRE-1 | GRE-2 |
| Remote IP Address | 58.1.1.1 | 59.1.1.1 |
| Local Virtual IP Address | 10.8.0.1 | 10.8.0.2 |
| Local Virtual Netmask/Prefix Length | 255.255.255.0 | 255.255.255.0 |
| Remote Virtual IP Address | 10.8.0.2 | 10.8.0.1 |
| Enable Default Route | OFF | OFF |
| Enable NAT | OFF | OFF |
| Secrets | •••• | ••••• |

External IP address of another GRE instance used to establish the initial connection between peers.

IP address of the remote GRE Tunnel network interface.

Used the same password for the GRE peers

# Chapter 4 Introductions for CLI

## 4.1What Is CLI

Command-line interface (CLI) is a software interface providing another way to set the parameters of equipment from the SSH or through a telnet network connection. After establishing a Telnet or SSH connection with the router, enter the login account and password (here take admin/admin for example) to enter the configuration mode of the router, as shown below.

**Route login:**

```
Router login: admin
Password: admin(could be different)
#
```

**CLI commands:**

```
 # ?
 #
   !                   Comments
   add                  Add a list entry of configuration
   clear               Clear statistics
   config              Configuration operation
   debug                Output debug information to the console
   del                 Delete a list entry of configuration
   do                   Set the level state of the do
   exit                Exit from the CLI
   help                Display an overview of the CLI syntax
   ovpn_cert_get       Download OpenVPN certificate file via http or ftp
   ping                Send messages to network hosts
   reboot              Halt and perform a cold restart
   set                 Set system configuration
   show                 Show system configuration
   status              Show running system information
   tftpupdate          Update firmware or configuration file using tftp
   traceroute          Print the route packets trace to network host
   trigger             Trigger action
   urlupdate           Update firmware via http or ftp
   ver                 Show version of firmware
```

## 4.2How to Configure the CLI

Following is a table about the description of help and the error should be encountered in the configuring program.

| Commands /tips | Description |
|---|---|
| ? | Typing a question mark “?” will show you the help information.<br>eg.<br># config（Press ‘?’）<br>config Configuration operation<br><br># config（Press spacebar +’?’）<br>commit Save the configuration changes and take effect changed configuration<br>save_and_apply Save the configuration changes and take effect changed configuration<br>loaddefault Restore Factory Configuration |
| Ctrl+c | Press these two keys at the same time, except its “copy” function but also can be used for “break” out of the setting program. |
| Syntax error: The command is not completed | Command is not completed. |
| Tick space key+ Tab key | It can help you finish you command.<br>Example:<br># config (tick enter key)<br>Syntax error: The command is not completed<br># config (tick space key+ Tab key)<br>commit save_and_apply loaddefault |
| #config commit<br># config save_and_apply | When your setting finished, you should enter those commands to make your setting take effect on the device.<br>**Note:** Commit and save_and_apply plays the same role. |

## 4.3 Commands Reference

| Commands | Syntax | Description |
|---|---|---|
| Debug | Debug *parameters* | Turn on or turn off debug function |
| Show | Show *parameters* | Show current configuration of each function , if we need to see all please using “show running ” |
| Set | Set *parameters* | All the function parameters are set by commands set and add, the difference is that set is for the single parameter and add is for the list parameter |
| Add | Add *parameters* | |

**Note:** Download the config.XML file from the configured web browser. The command format can refer to the config.XML file format.

## 4.4 Quick Start with Configuration Examples

The best and quickest way to master CLI is firstly to view all features from the web page and then read all CLI commands at a time, finally learn to configure it with some reference examples.

### Example 1: Show current version

```
# status system
firmware_version = 2.0.0
firmware_version_full = "2.0.0 (60b55c0)"
kernel_version = 5.4.24-2.0.0
hardware_version = 0.0
operation_system = "Debian GNU/Linux 11.3"
device_model = ""
serial_number = 2204190667030003
temperature_interval = 53.0
uptime = "0 days, 00:12:06"
system_time = "Thu May 19 16:52:22 2022"
ram_usage = 392M/448M
cpu_usage = "22569s Idle/71405s Total /1 cpus"
disk_usage = 1.9G/7.1G
#
```

### Example 2: CLI for setting Cellular

```
# show cellular all
primary_sim = sim1
auto_switch = false
switch_by_signal = false
rssi_quality = -87
switch_while_roaming = false
sim {
    id = 1
    card = sim1
    phone_number = ""
    pin_code = ""
    extra_at_cmd = ""
    telnet_port = 0
    network_type = auto
    band_select_type = all
    band_settings {
        gsm_850 = false
        gsm_900 = false
        gsm_1800 = false
        gsm_1900 = false
```

```
            wcdma_800 = false
            wcdma_850 = false
            wcdma_900 = false
            wcdma_1900 = false
            wcdma_2100 = false
            wcdma_1700 = false
            wcdma_band19 = false
            lte_band1 = false
            lte_band2 = false
            lte_band3 = false
            lte_band4 = false
            lte_band5 = false
            lte_band7 = false
            lte_band8 = false
            lte_band13 = false
            lte_band17 = false
            lte_band18 = false
            lte_band19 = false
            lte_band20 = false
            lte_band21 = false
            lte_band25 = false
            lte_band28 = false
            lte_band31 = false
            lte_band38 = false
            lte_band39 = false
            lte_band40 = false
            lte_band41 = false
      }
      debug_enable = true
      verbose_debug_enable = false
}
# set(space+space)
ai            bridge        cellular          ddns            dido
dmvpn         email         ethernet          event           firewall
gps           gre           ipsec             l2tp            lan_links
ntp           openvpn       policy_router     pppoe_bridge    pptp
qos           rcms          reboot            route           serial_port
sms           snmp          ssh               syslog          system
Usb           syslog        user_management   vlan            vrrp
web_server    wan_links     web_server        wireless

# set cellular(space+?)
  sim    SIM Settings
# set cellular sim(space+?)
  Integer    Index (1..1)
```

```
# set cellular sim 1(space+?)
   card                        SIM Card
   phone_number                Phone Number
   pin_code                    PIN Code
   extra_at_cmd                Extra AT Cmd
   telnet_port                 Telnet Port
   network_type                Network Type
   band_select_type            Band Select Type
   band_settings               Band Settings
   telit_band_settings         Band Settings
   debug_enable                Debug Enable
   verbose_debug_enable        Verbose Debug Enable
# set cellular sim 1 phone_number 18620435279
OK
…
# config save_and_apply
OK                                             // save and apply current configuration, make you configuration effect
```

# Chapter 5 Glossary

| Abbr. | Description |
|---|---|
| AC | Alternating Current |
| APN | Access Point Name |
| ASCII | American Standard Code for Information Interchange |
| CE | Conformité Européene (European Conformity) |
| CHAP | Challenge Handshake Authentication Protocol |
| CLI | Command Line Interface for batch scripting |
| CSD | Circuit Switched Data |
| CTS | Clear to Send |
| dB | Decibel |
| dBi | Decibel Relative to an Isotropic radiator |
| DC | Direct Current |
| DCD | Data Carrier Detect |
| DCE | Data Communication Equipment (typically modems) |
| DCS 1800 | Digital Cellular System, also referred to as PCN |
| DI | Digital Input |
| DO | Digital Output |
| DSR | Data Set Ready |
| DTE | Data Terminal Equipment |
| DTMF | Dual Tone Multi-frequency |
| DTR | Data Terminal Ready |

| Abbr. | Description |
|---|---|
| EDGE | Enhanced Data rates for Global Evolution of GSM and IS-136 |
| EMC | Electromagnetic Compatibility |
| EMI | Electro-Magnetic Interference |
| ESD | Electrostatic Discharges |
| ETSI | European Telecommunications Standards Institute |
| EVDO | Evolution-Data Optimized |
| FDD LTE | Frequency Division Duplexing  Long Term Evolution |
| GND | Ground |
| GPRS | General Packet Radio Service |
| GRE | generic route encapsulation |
| GSM | Global System for Mobile Communications |
| HSPA | High Speed Packet Access |
| ID | identification data |
| IMEI | International Mobile Equipment Identity |
| IP | Internet Protocol |
| IPsec | Internet Protocol Security |
| kbps | kbits per second |
| L2TP | Layer 2 Tunneling Protocol |
| LAN | local area network |
| LED | Light Emitting Diode |
| M2M | Machine to Machine |
| MAX | Maximum |
| Min | Minimum |
| MO | Mobile Originated |
| MS | Mobile Station |
| MT | Mobile Terminated |
| OpenVPN | Open Virtual Private Network |
| PAP | Password Authentication Protocol |
| PC | Personal Computer |
| PCN | Personal Communications Network, also referred to as DCS 1800 |
| PCS | Personal Communication System, also referred to as GSM 1900 |
| PDU | Protocol Data Unit |
| PIN | Personal Identity Number |
| PLCs | Program Logic Control System |
| PPP | Point-to-point Protocol |
| PPTP | Point to Point Tunneling Protocol |
| PSU | Power Supply Unit |
| PUK | Personal Unblocking Key |
| R&TTE | Radio and Telecommunication Terminal Equipment |
| RF | Radio Frequency |
| RTC | Real Time Clock |

| Abbr. | Description |
|---|---|
| RTS | Request to Send |
| RTU | Remote Terminal Unit |
| Rx | Receive Direction |
| SDK | Software Development Kit |
| SIM | subscriber identification module |
| SMA antenna | Stubby antenna or Magnet antenna |
| SMS | Short Message Service |
| SNMP | Simple Network Management Protocol |
| TCP/IP | Transmission Control Protocol / Internet Protocol |
| TE | Terminal Equipment, also referred to as DTE |
| Tx | Transmit Direction |
| UART | Universal Asynchronous Receiver-transmitter |
| UMTS | Universal Mobile Telecommunications System |
| USB | Universal Serial Bus |
| USSD | Unstructured Supplementary Service Data |
| VDC | Volts Direct current |
| VLAN | Virtual Local Area Network |
| VPN | Virtual Private Network |
| VSWR | Voltage Stationary Wave Ratio |
| WAN | Wide Area Network |

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