Industrial LoRaWAN® Gateway

UG56

Quick Guide

Safety Precautions

Milesight will not shoulder responsibility for any loss or damage resulting from not following the instructions of this operating guide.

- The device must not be modeled in any way.
- Do not place the device close to objects with naked flames.
- Do not place the device where the temperature is below/above the operating range.
- Do not power on the device or connect it to another electrical device when installing.
- Check lightning and water protection when used outdoors.
- Do not connect or power the equipment using cables that have been damaged.

Related Documents

This Quick Start Guide only explains the installation of Milesight UG56 LoRaWAN® Gateway. For more functionality and advanced settings, please refer to the relevant documents as below.

Document	Description
UG56 Datasheet	Datasheet for UG56 LoRaWAN® Gateway.
UG56 User Guide	Users can refer to the guide for instruction on how to log in the web GUI, and how to configure all the settings.

The related documents are available on Milesight website: https://www.milesight-iot.com

Declaration of Conformity

UG56 is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.

For assistance, please contact
Milesight technical support:
Email: iot.support@milesight.com
Support Portal: support.milesight-iot.com
Tel: 86-592-5085280
Fax: 86-592-5023065

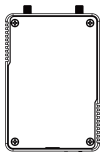
Revision History

Date	Doc Version	Description
Aug.8, 2022	V1.0	Initial version
Apr. 3, 2023	V1.1	Add external cellular antenna option and installation
Aug. 2, 2024	V1.2	Add default WLAN connection password
Jan. 20, 2025	V1.3	1. Add optional accessories: DIN rail clip and adapter 2. Add DIN Rail Mounting steps
April 11, 2025	V 1.4	1. Remove wired access method 2. Update Wi-Fi connection and network server steps

Contents

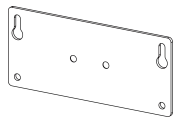
1. Packing List

Before you begin to install the UG56 LoRaWAN® Gateway, please check the package contents to verify that you have received the items below.

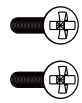


1 × UG56 Device

1 × LoRaWAN® Magnetic Antenna



1 × Wall Mounting Bracket



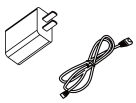
2 × Bracket Fixing Screws (M3)

4 x Wall Mounting Kits

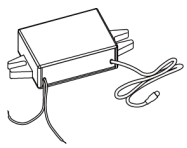
1 x Quick Start Guide

1 × Warranty Card

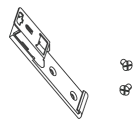
1 × Cellular Magnetic Antenna (Cellular Version Only)



1 × Type-C Cable (1m) & Power Adapter (Optional)



1 × AC/DC-DC Power Converter Kit (Optional)

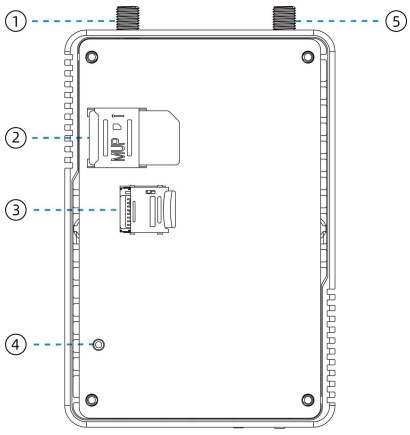


1 × DIN Rail Clip Kit (Optional)

If any of the above items is missing or damaged, please contact your sales representative.

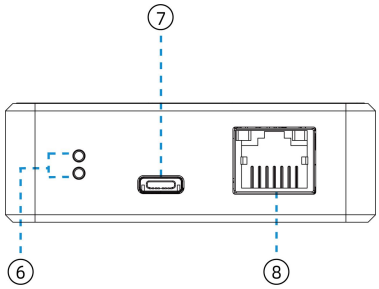
2. Hardware Introduction

2.1 Overview



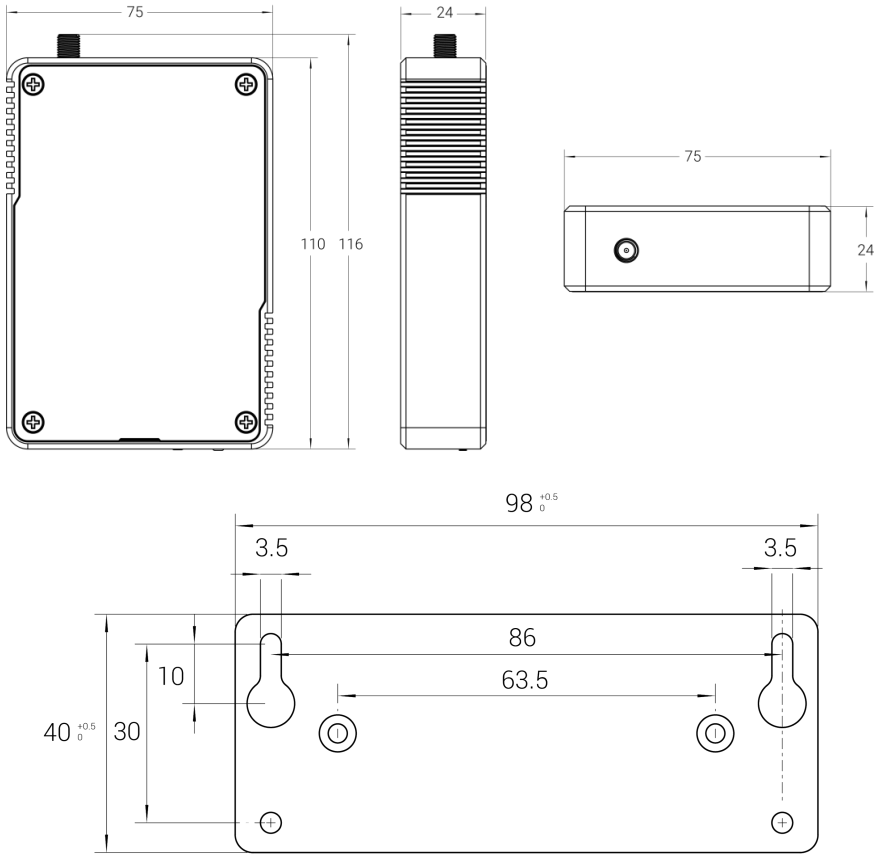
① LoRaWAN® Antenna Connector
② SIM Slot
③ Micro SD Slot
④ Reset Button
⑤ Cellular Antenna Connector (Cellular Version Only)

Note: It is necessary to open the front cover to see the slots and reset button.



⑥ LED Indicators
⑦ Type-C Power & Console Port
⑧ Ethernet Port (PoE)

2.2 Dimensions (mm)



2.3 LED Indicators

LED	Indication	Status	Description
SYS	System Status	Off	The system is starting up
		Red Light	The system goes wrong
		Green Light	The system is running properly
LoRa	LoRa Status	Off	Packet Forwarder mode is running off
		On	Packet Forwarder mode is running well
Ethernet Port	Link Indicator (Yellow)	Off	Disconnected or connect failure
		On	Connected
		Blinking	Transmitting data

	Rate Indicator (Green)	Off	Other modes
		On	100 Mbps mode

2.4 Reset Button

Function	Description	
	SYS LED	Action
Reset	Static Green	Press and hold the reset button for more than 5 seconds.
	Static Green → Rapidly Blinking	Release the button and wait.
	Off → Static Green	The gateway resets to factory default.

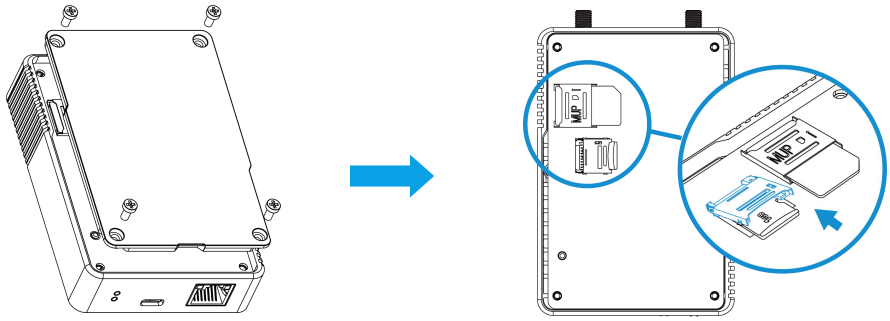
3. Hardware Installation

3.1 SIM & Micro SD Installation

Remove the front panel of the device, insert the SIM card or micro SD card into the corresponding slot.

Note:

- Before inserting, ensure this gateway supports cellular feature which the PN includes "-Lxxxx" on the label.
- UG56 does not support hot plugging (also called hot swapping). please turn off the power before you insert or take off cards.

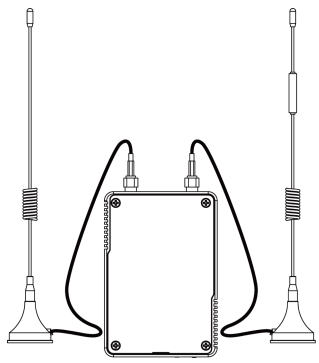


3.2 Antenna Installation

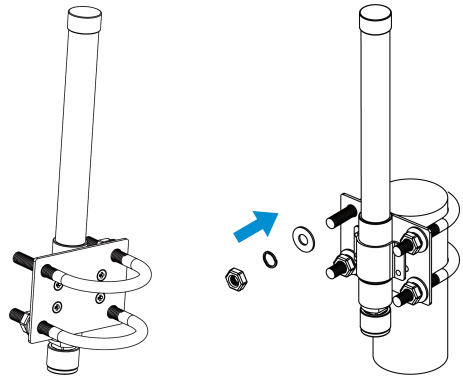
Rotate antennas into the antenna connectors.

Note:

- The antenna should be installed vertically, with the magnetic base attached to a metal surface.
- Keep the antenna away from walls and ensure there are no obstacles around it.
- For better coverage, it is recommended to position the antenna at a higher location.
- Place the antenna near windows when used indoors.
- Keep a distance of at least 50 cm between antennas.



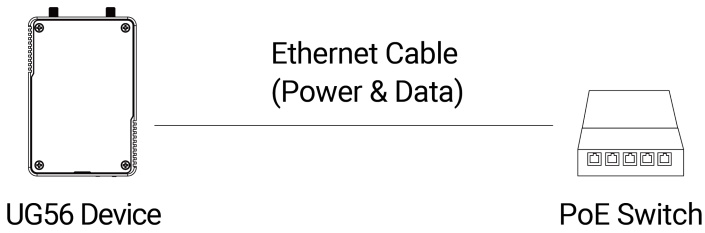
If you need to fix the LoRaWAN® fiber-glass antenna to a pole, please pass the LoRaWAN® antenna through the antenna clamp and fix it with 4 screws, then wrap the U-bolt around a pole and fix the clamp with nuts and other accessories.



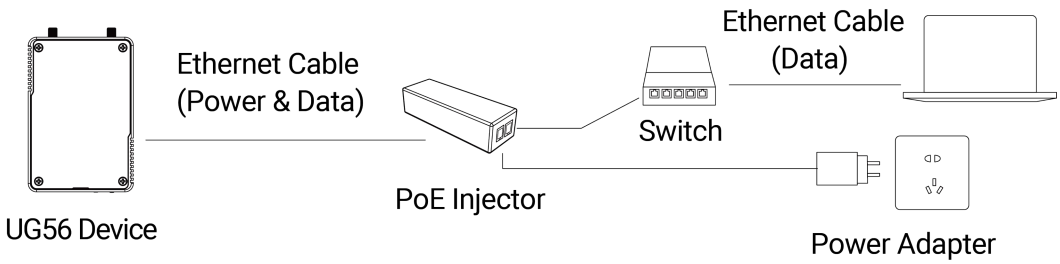
3.3 Power Supply

UG56 can be powered by 802.3af standard PoE or Type-C port (5 VDC). If both are connected, the device will be powered by the former method (PoE).

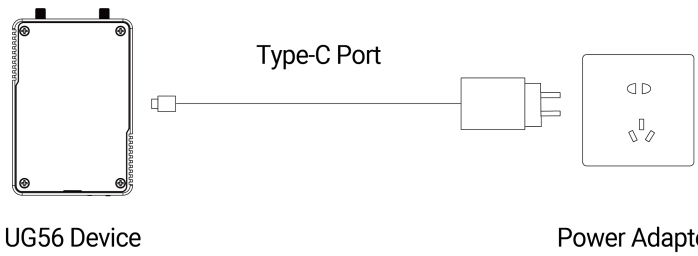
- **Power by a PoE Switch**



- **Power by a PoE injector**



- **Power by a Type-C Port**



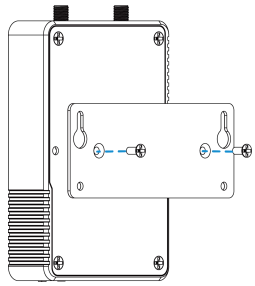
Note: When connecting, Ethernet cable of UG56 device side should be installed first, otherwise, PoE devices or gateway may be damaged.

3.4 Gateway Installation

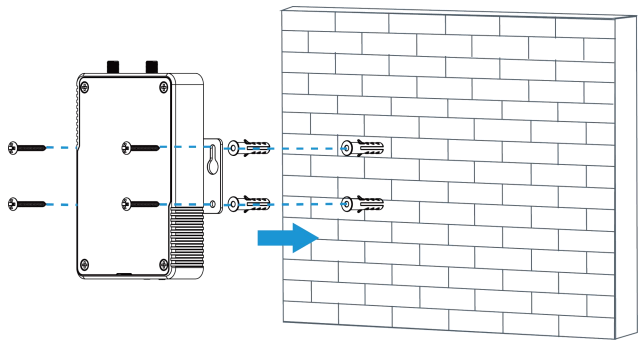
Before you get started, make sure all fittings are installed and the power supply is disconnected.

Wall Mounting

1. Fix the wall mounting bracket to the device with 2 x M3 bracket fixing screws.



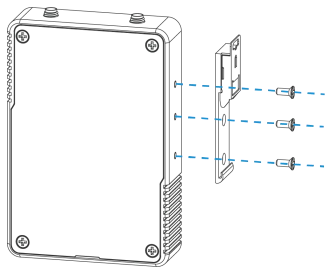
2. Drill 4 holes on the wall according to the wall mounting bracket, then fix the wall plugs into the wall.
3. Fix the device to the wall plugs with M3 wall mounting screws. When installation, it's suggested to fix the upper two screws first.



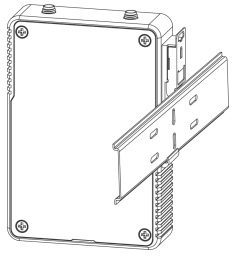
DIN Rail Mounting

Note: only new hardware devices support DIN rail mounting.

1. Fix the mounting clip to the device with 3 fixing screws.



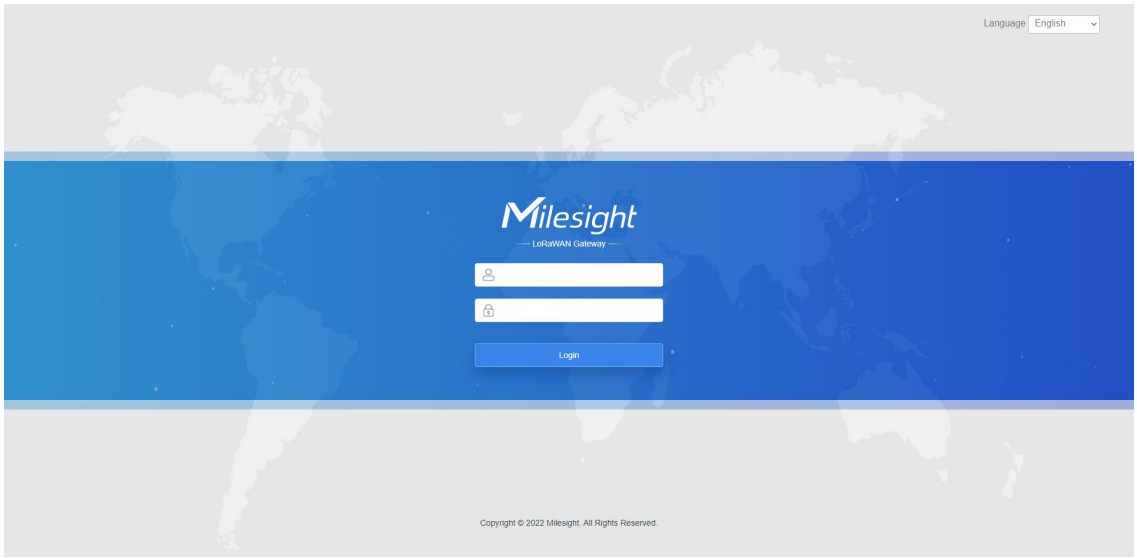
2. Hang the device to the DIN rail. The width of DIN rail is 3.5cm.



4. Web GUI Access

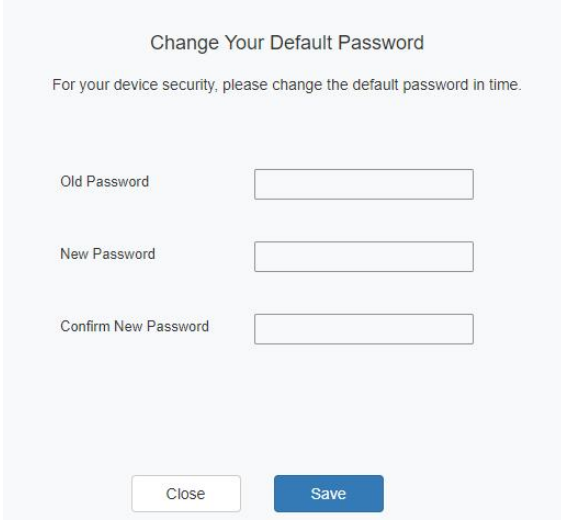
UG56 provides a web-based configuration interface for management. If this is the first time you configure the gateway, please use the default settings below:
Username: **admin**
Password: **password**
Browser: **Chrome(recommended)**

1. Enable wireless network connection on your computer and search for access point "**Gateway_******" to connect it, the default Wi-Fi password is **iotpassword**.
2. Open a web browser on your PC (Chrome is recommended) and type in the IP address **192.168.1.1** to access the web GUI, enter the username and password, click "Login".

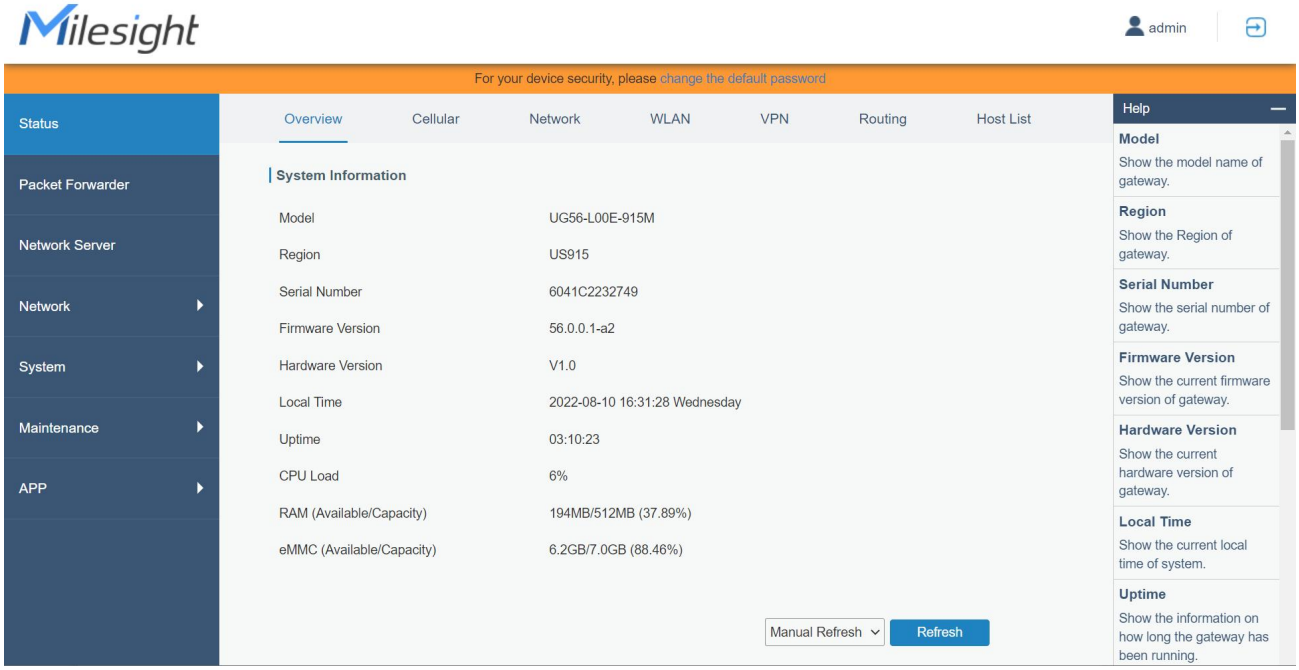


If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.

3. After logging the web GUI, follow the guide to complete the basic configurations. It's suggested that you change the password for the sake of security.



4. You can view system information and perform configuration of the gateway.

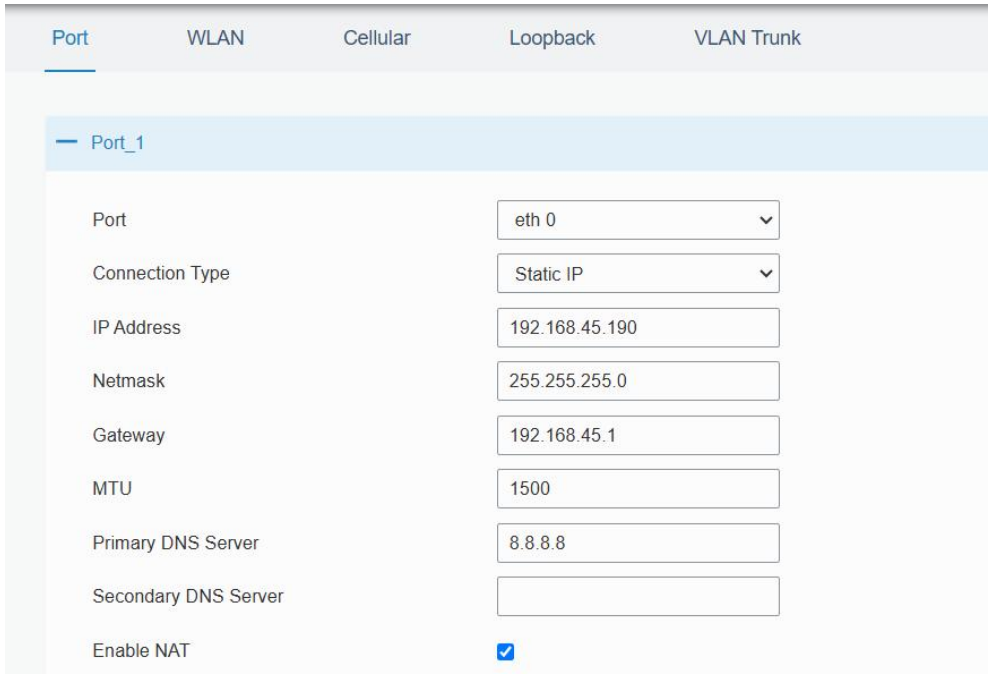


5. Network Connection

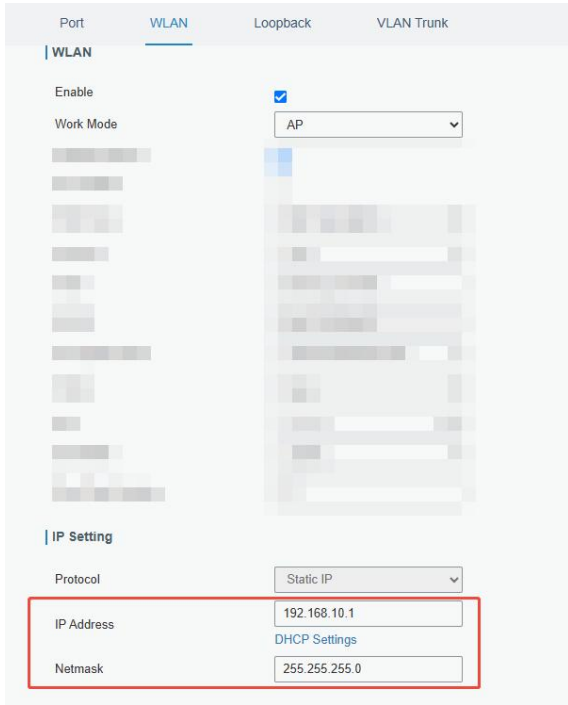
This section explains how to connect the gateway to network via WAN connection, Wi-Fi or cellular.

5.1 Configure the Ethernet Connection

1. Go to **Network > Interface > Port** page to select the connection type and configure Ethernet port information, click "Save & Apply" for changes to take effect.

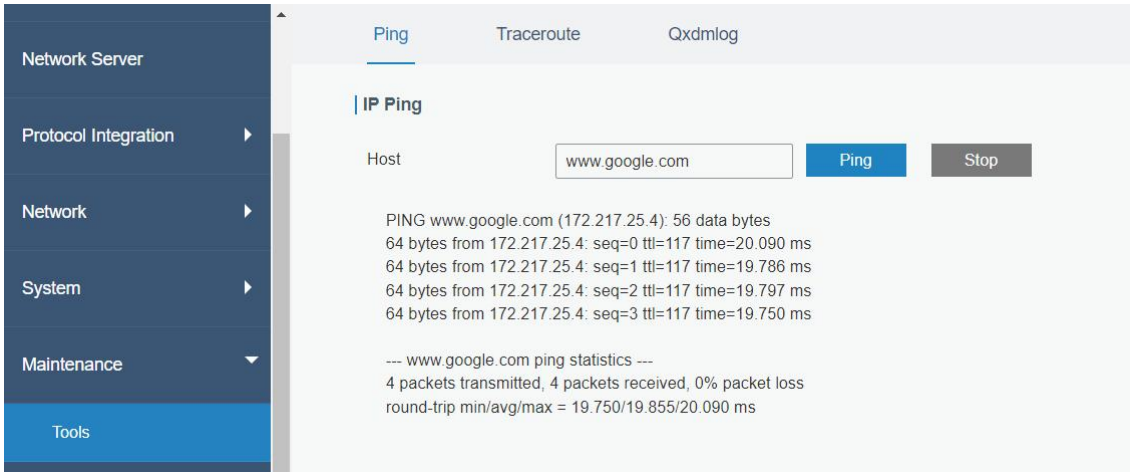


Note: If there is IP conflict when changing the IP address of Ethernet port, please change the subnet of WLAN first.



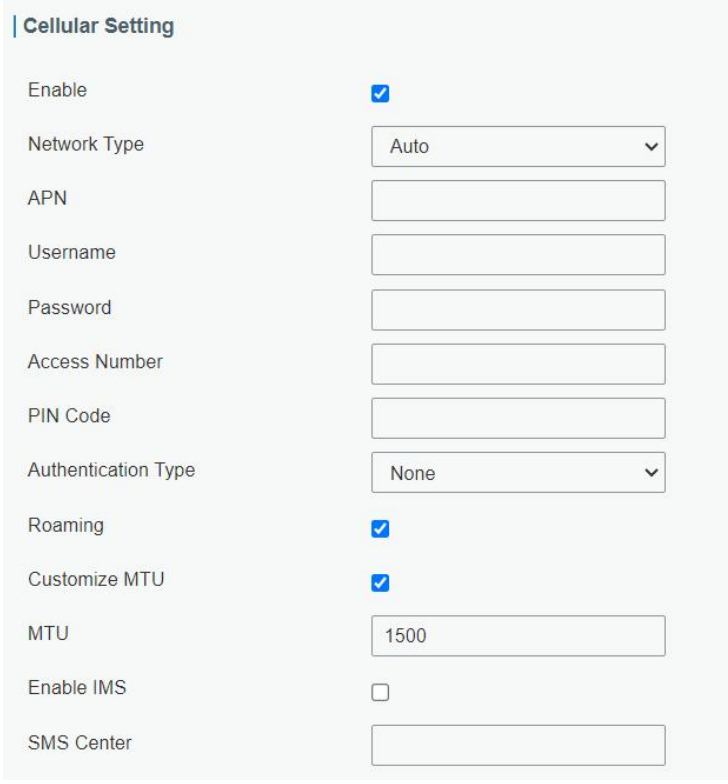
2. Connect Ethernet port of gateway to devices like router or modem.

3. Go to **Maintenance > Tools > Ping** to check network connectivity.



5.2 Configure the Cellular Connection (Cellular Version Only)

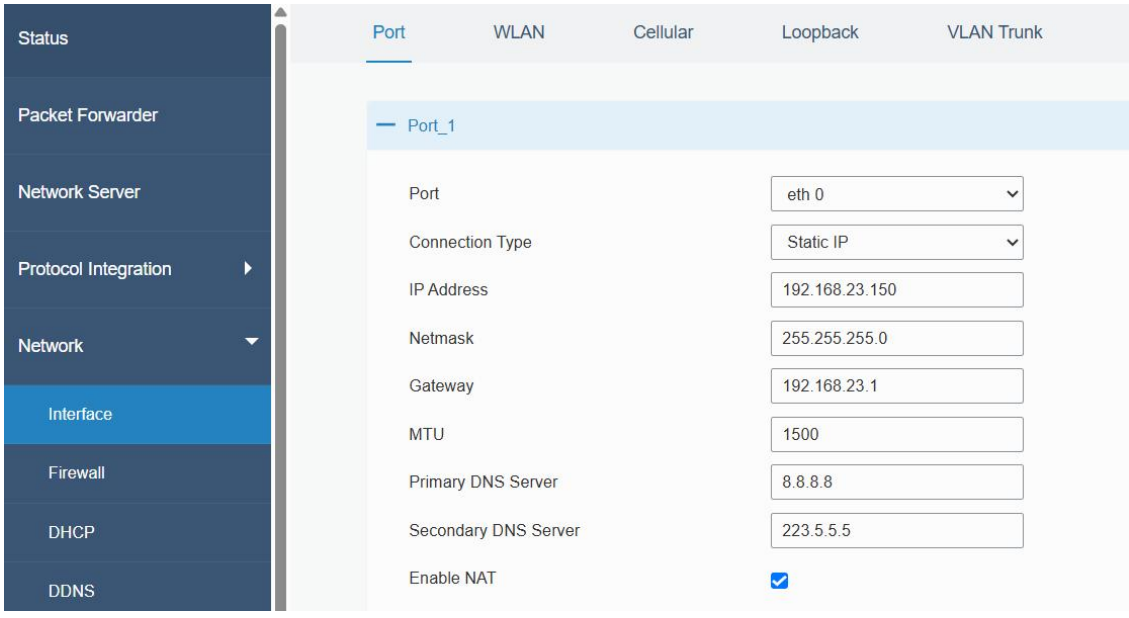
1. Go to **Network > Interface > Cellular > Cellular Setting** page to enable cellular settings and configure the necessary cellular info of the SIM card, then click “Save” and “Apply” for changes to take effect.



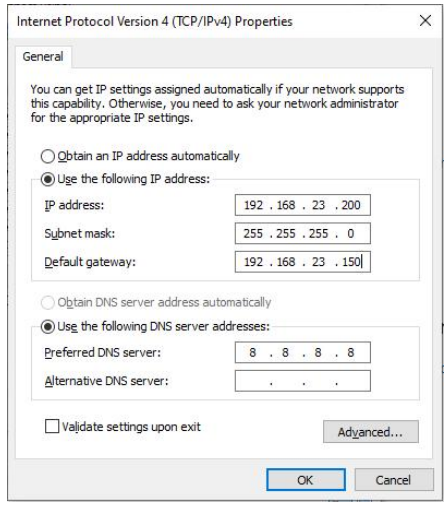
2. Go to **Status > Cellular** page to view the status of the cellular connection. If it shows “Connected”, it means the SIM has dialed up successfully.

5.3 Configure the Wi-Fi Connection

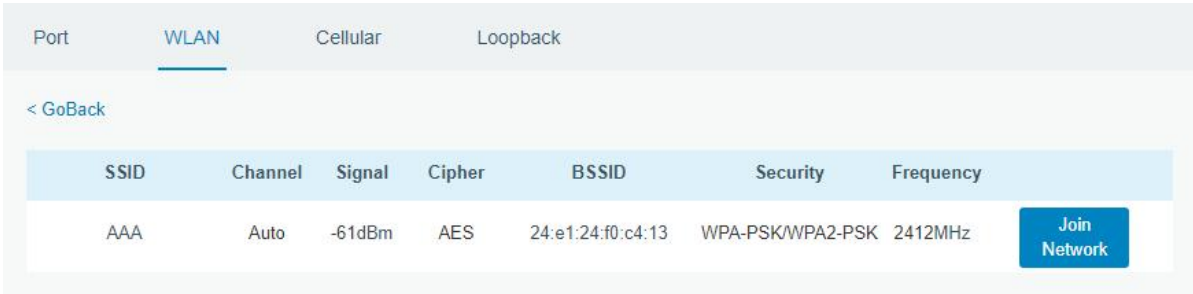
1. Go to **Network > Interface > Port** page to select connection type as **Static IP** and configure an IP address for the Ethernet WAN port.



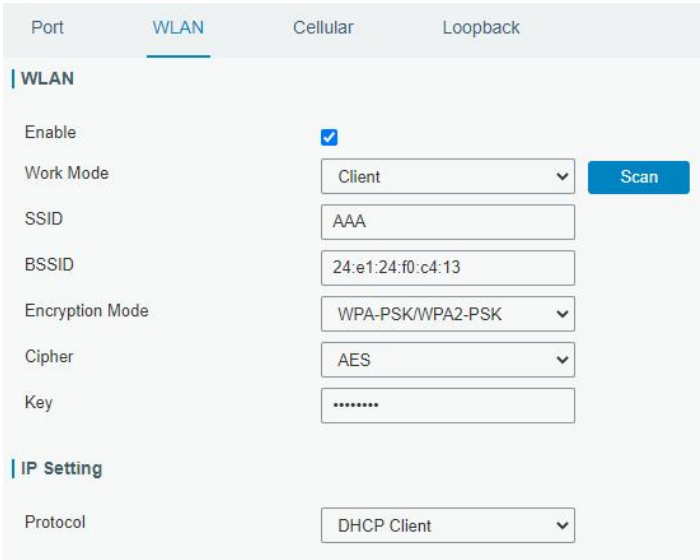
2. Connect PC to UG56 ETH port directly or through PoE injector.
3. Assign the IP address to computer manually. Take Windows 10 system as an example:



4. Open a Web browser and type in the IP address of the Ethernet port to access the web GUI.
5. Go to **Network > Interface > WLAN** and click **Scan** to search for WiFi access point.

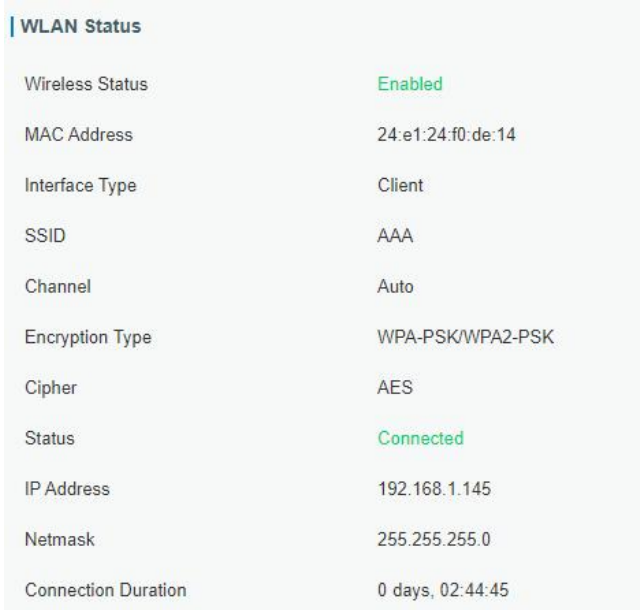


6. Select one access point and click **Join Network**, then type the password of the access point.

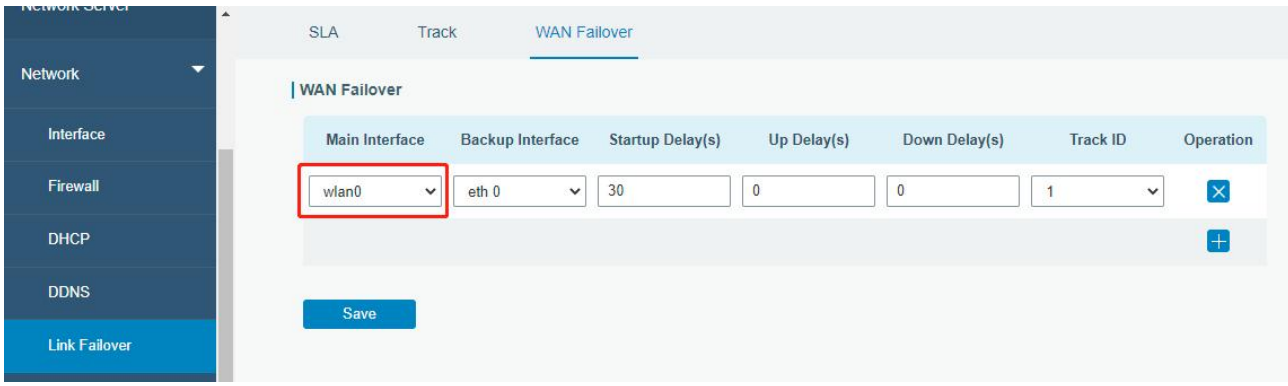


Click **Save** and **Apply** buttons after all configurations are done.

7. Go to **Status > WLAN** to check the connection status of the client. If it shows “Connected”, it means gateway connects to Wi-Fi successfully.



8. Go to **Network > Failover > WAN Failover** to switch the wlan0 as main interface, then gateway can use the Wi-Fi to access the network.

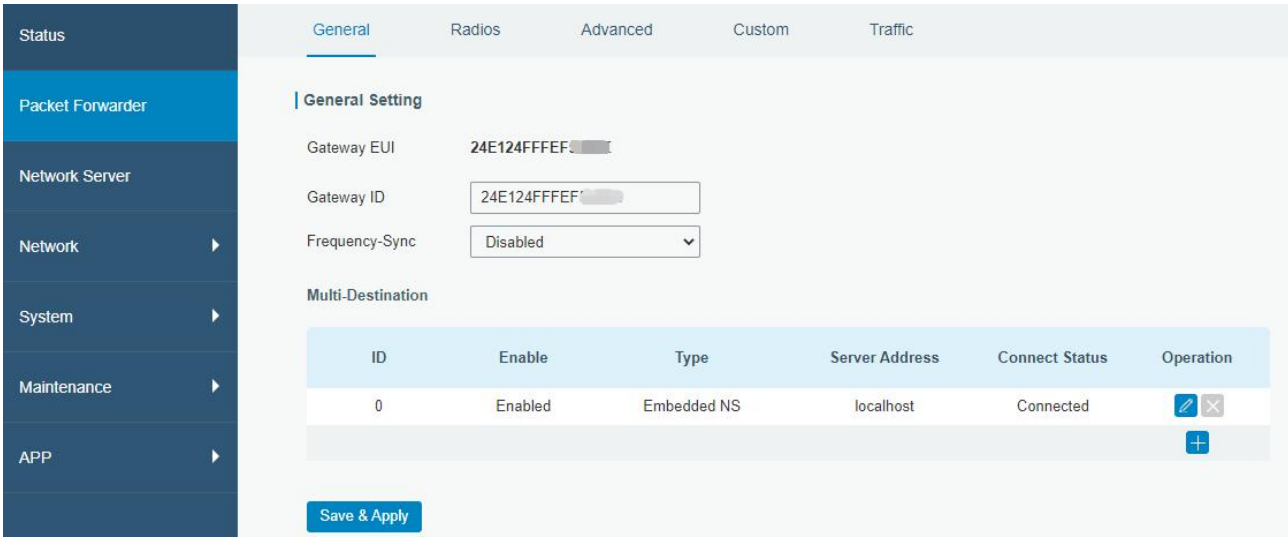


6.Packet Forwarder Configuration

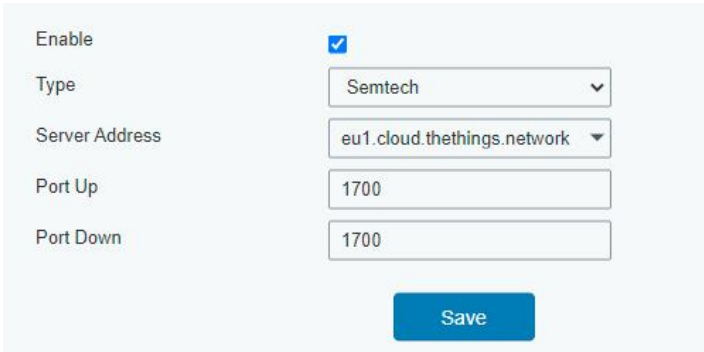
UG56 has installed multiple packet forwarders including Semtech, Chirpstack, etc. This section explains how to connect the gateway to network servers.

Make sure the gateway connects to the network as shown in Section 5.

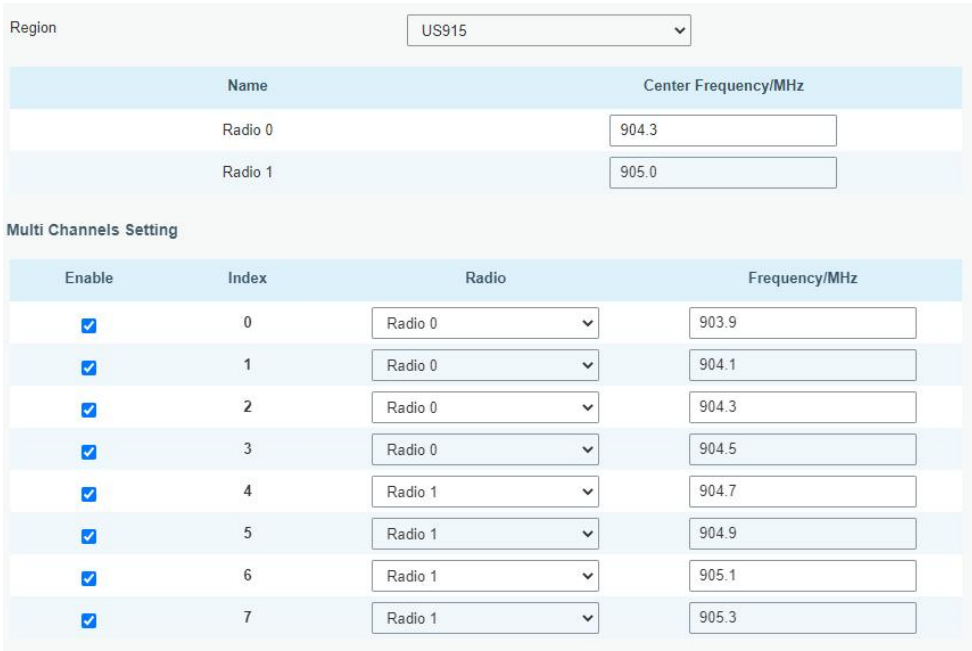
1. Go to **Packet Forwarder > General** page and click to add a network server.



2. Fill in the server information and enable this server.



3. Go to **Packet Forwarder > Radio** page to configure the center frequency and channels. The channels of the gateway and network server need to be the same.



4. Add the gateway on network server page. For more details about the network server connection please refer to Milesight IoT Support portal.

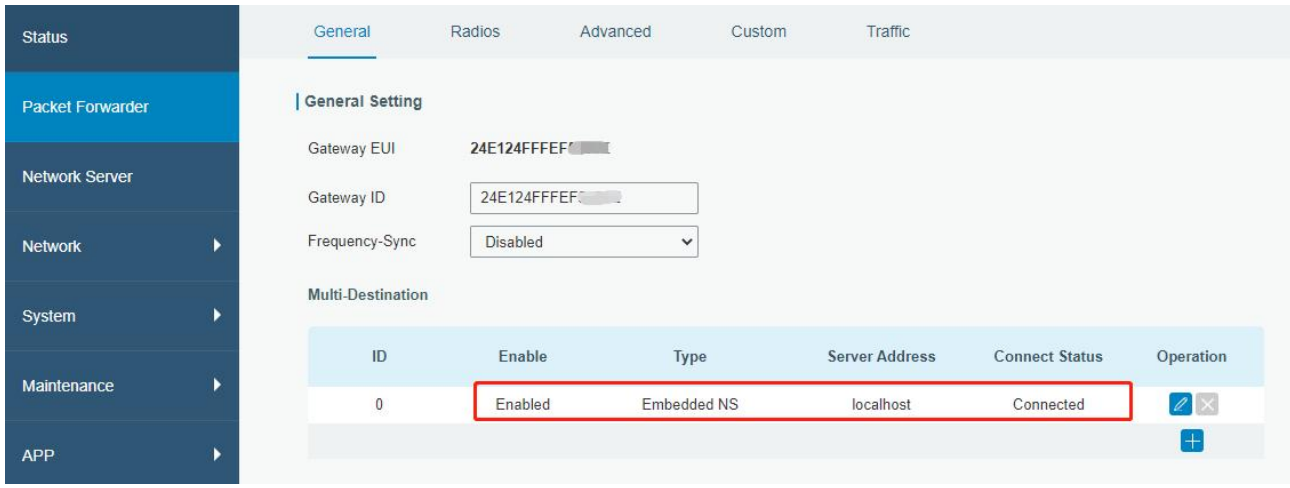
7.Network Server Configuration

The gateway can work as a LoRaWAN® network server to receive and analyze the data of LoRaWAN® end devices, and then achieve the flexible integration with different systems.

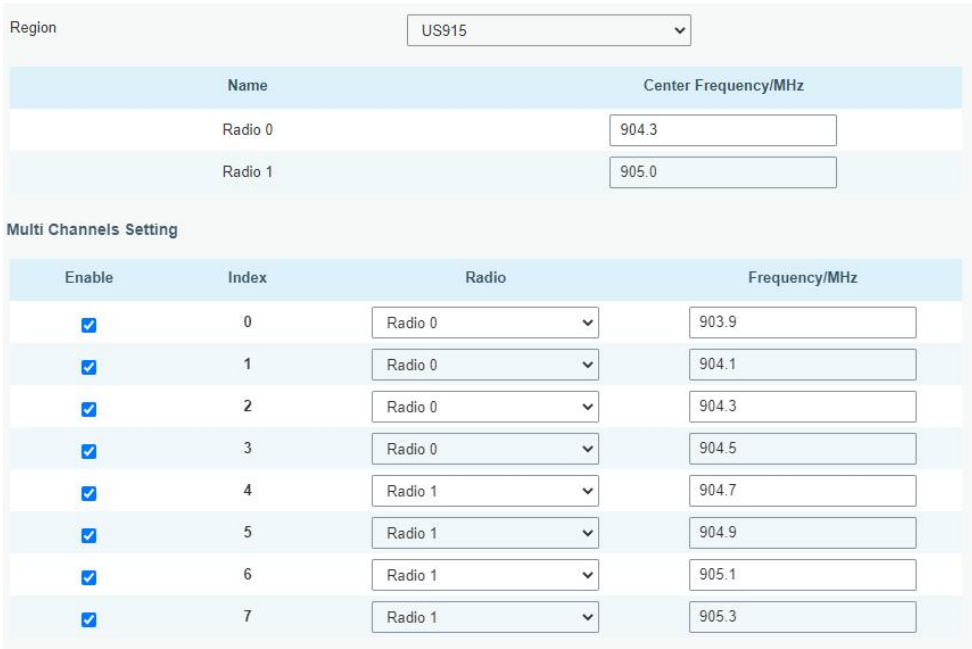
Make sure the gateway connects to the network as shown in Section 5.

7.1 Connect to Milesight IoT Cloud

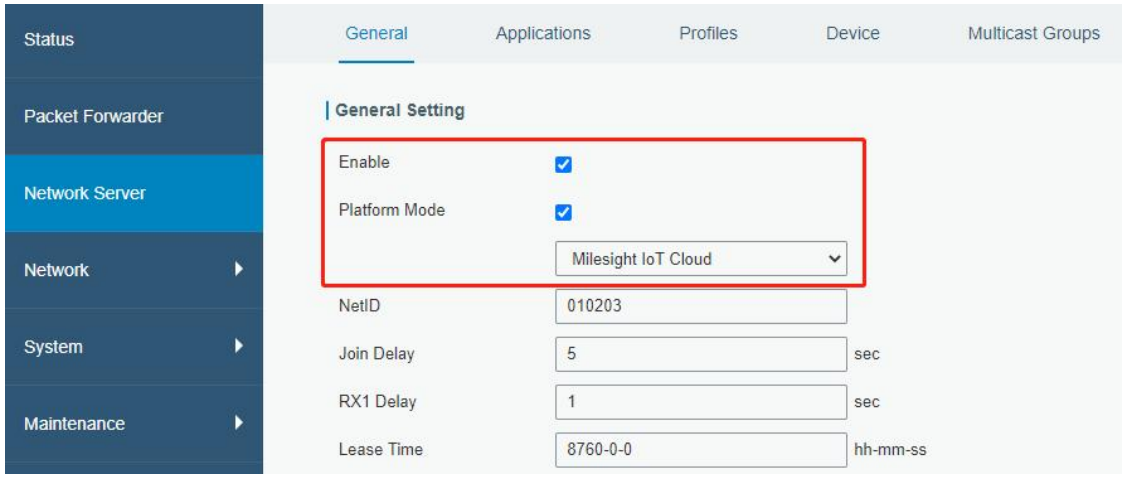
1. Go to **Packet Forwarder > General** page to enable the embedded network server.



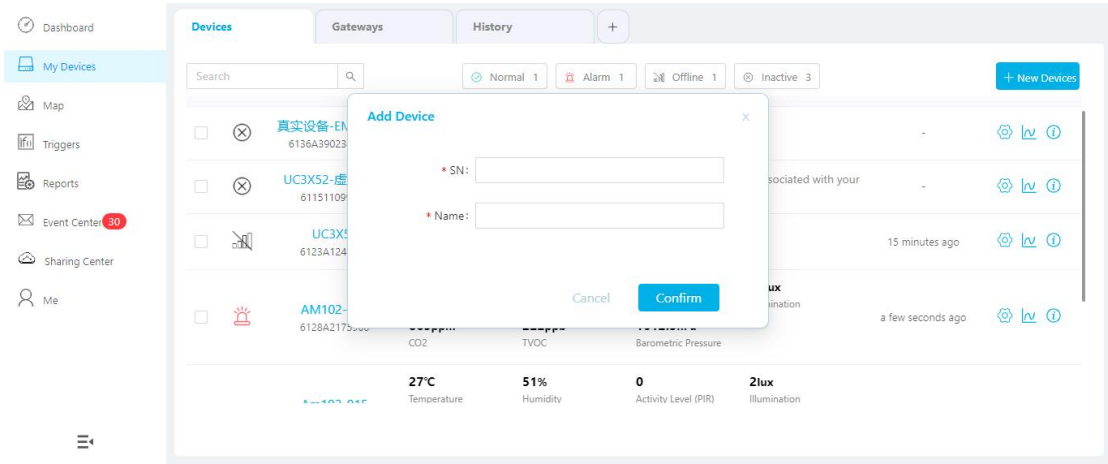
2. Go to **Packet Forwarder > Radio** page to select center frequency and channels. The channels of the gateway and the end devices need to be the same.



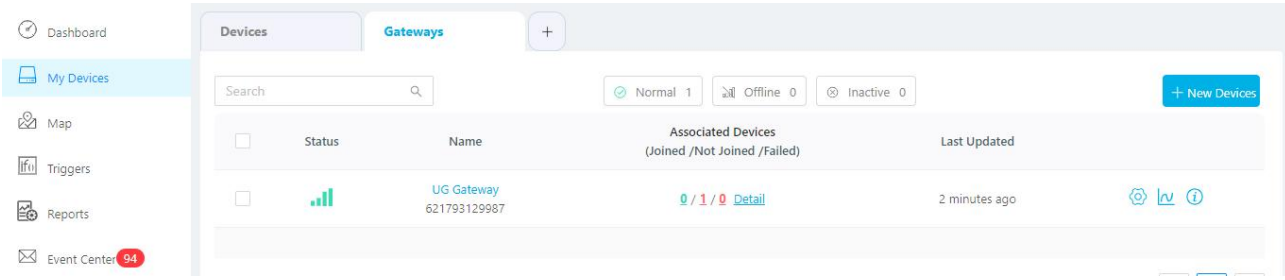
3. Go to **Network Server > General** page to enable the network server and “Milesight IoT Cloud” mode.
Note: after this mode is enabled, the other settings of network server will be not allowed to edit.



4. Log in the Milesight IoT Cloud. Then go to **My Devices** page and click "+New Devices" to add gateway to Milesight IoT Cloud via SN. Gateway will be added under "Gateways" menu.

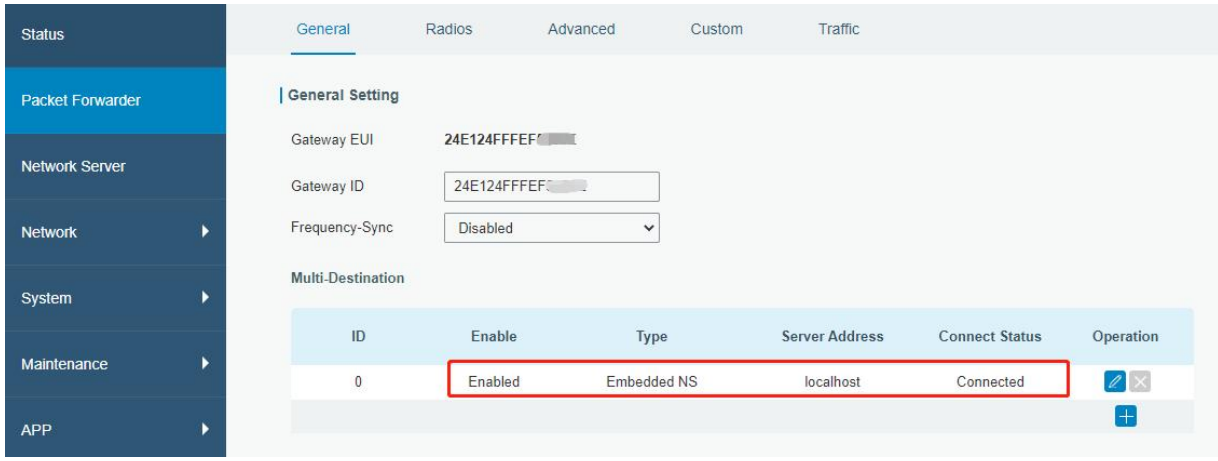


5. The gateway is online on Milesight IoT Cloud.

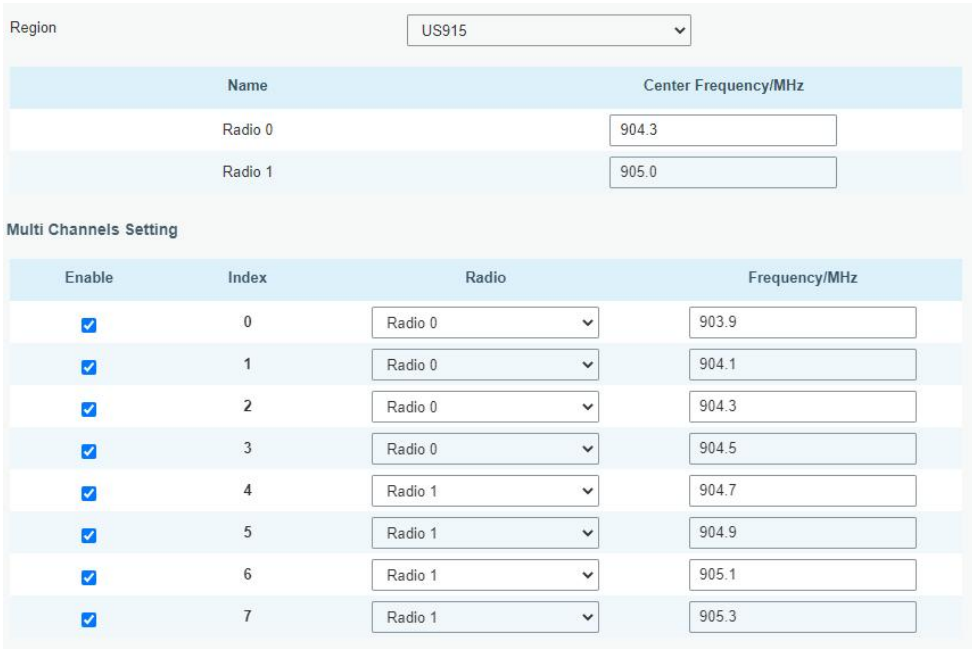


7.2 Add End Devices

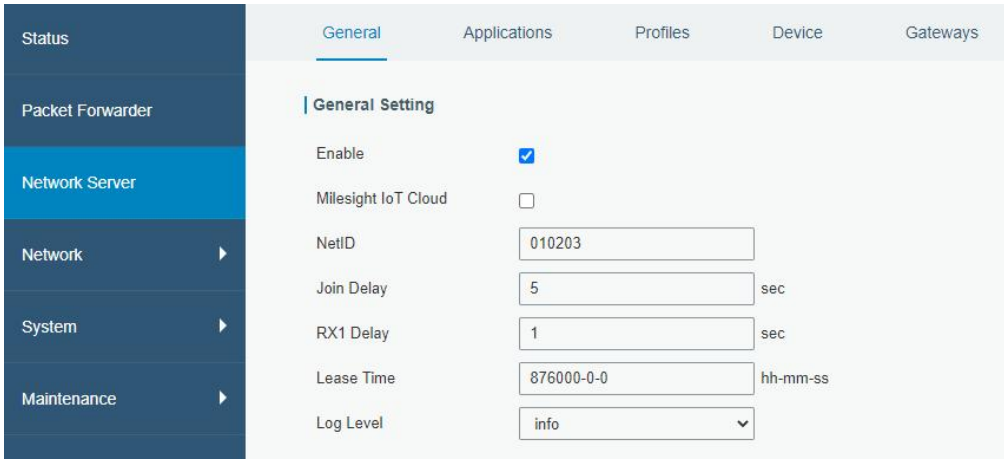
1. Go to **Packet Forwarder > General** page to enable the embedded network server.



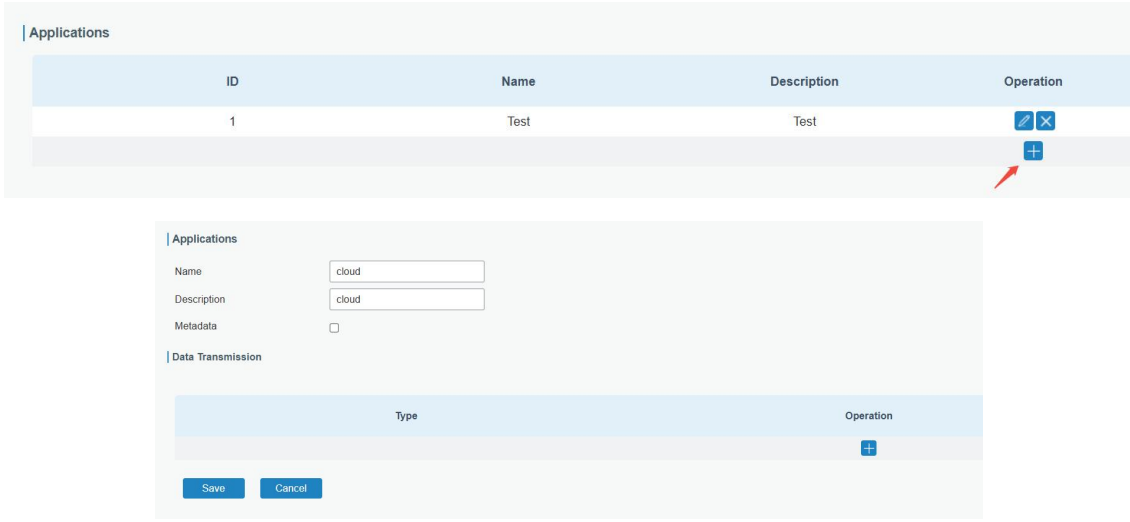
2. Go to **Packet Forwarder > Radio** page to select the center frequency and channels. The channels of the gateway and the end devices need to be the same.



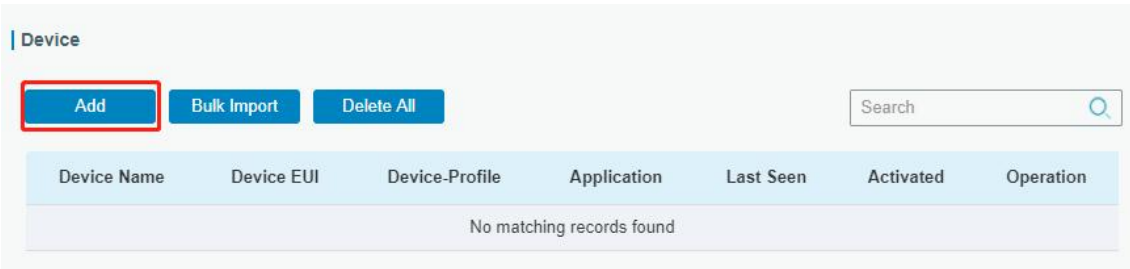
3. Go to **Network Server > General** page to enable the network server mode.



4. Go to **Network Server > Application** to add a new application.

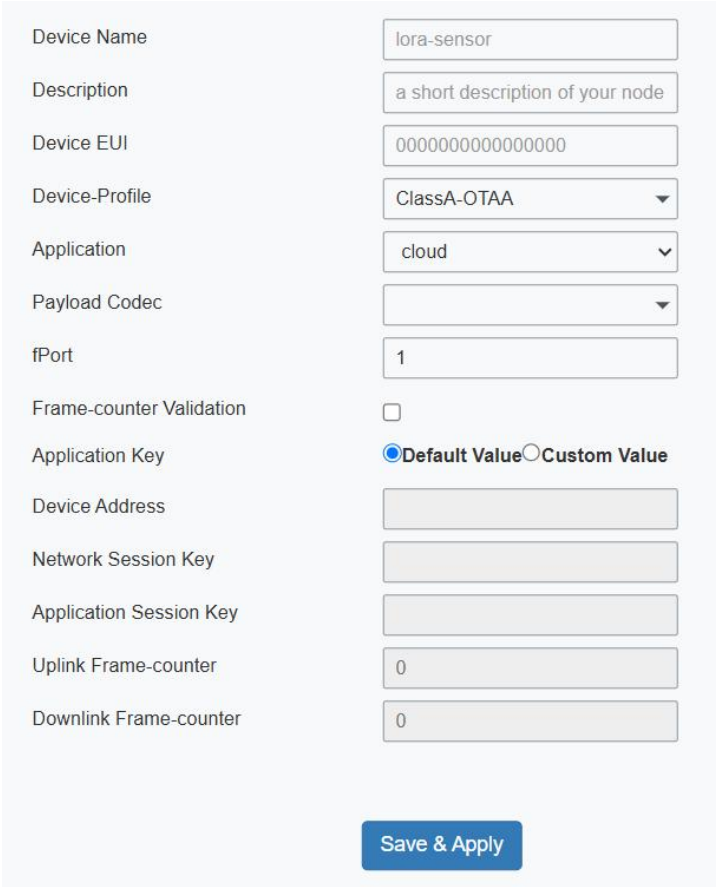


5. Go to **Network Server > Device** page and click **Add** to add a LoRaWAN® end device. You can also click **Bulk Import** to use template to add bulk devices at once.

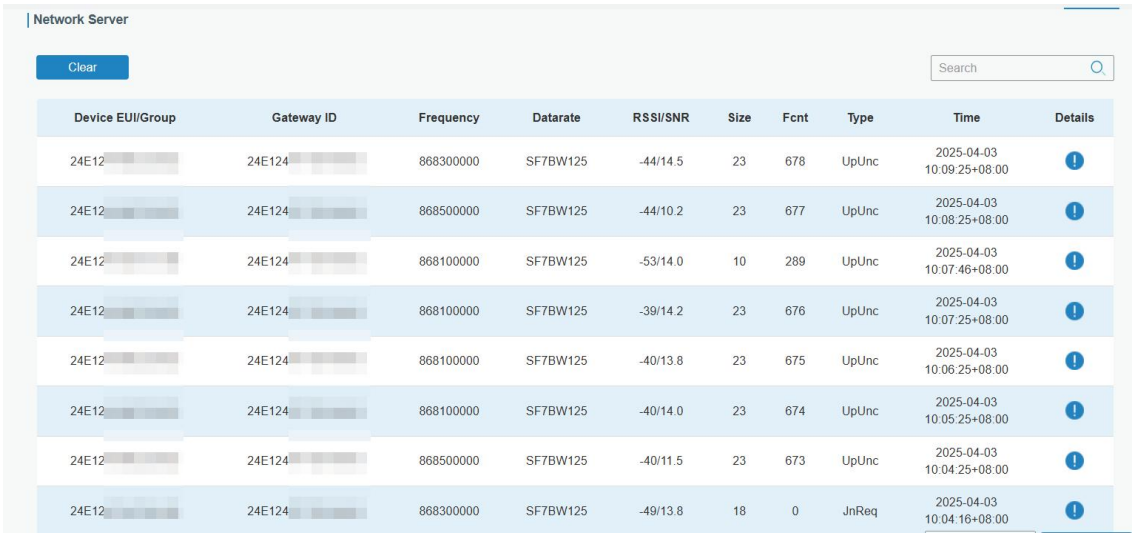


6. Fill in the information of the end device and click **Save&Apply**. The information can be found on the end device's configuration page or from manufacturer's manuals. Here are the default settings of Milesight end devices:

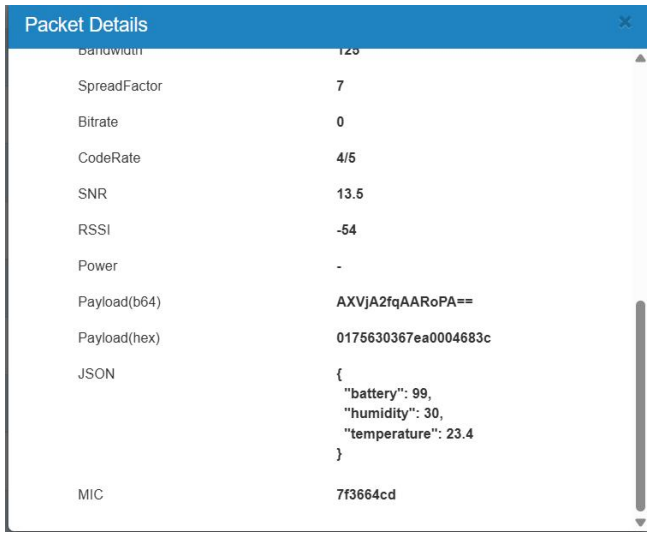
- Device EUI: this can be found on the device.
- Device-Profile: OTAA type files
- Payload Codec: select the model
- fPort: 85
- Application Key: select Default Value. If you use random keys, please select Custom Value.



7. Go to **Network Server > Packets** page to check the packets from LoRaWAN® end devices. The type starts from "Up" means uplinks and "Dn" means downlinks.



Click **Details** to check the properties and payload contents of packets.



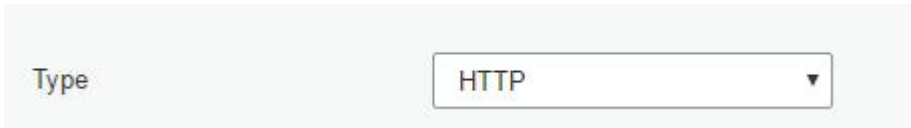
7.3 Connect to MQTT/HTTP Server

The gateway supports choosing the data transport protocol to send the data of device within this application to third-party servers. One application supports to add a MQTT transmission or a HTTP (HTTPS) transmission at most.

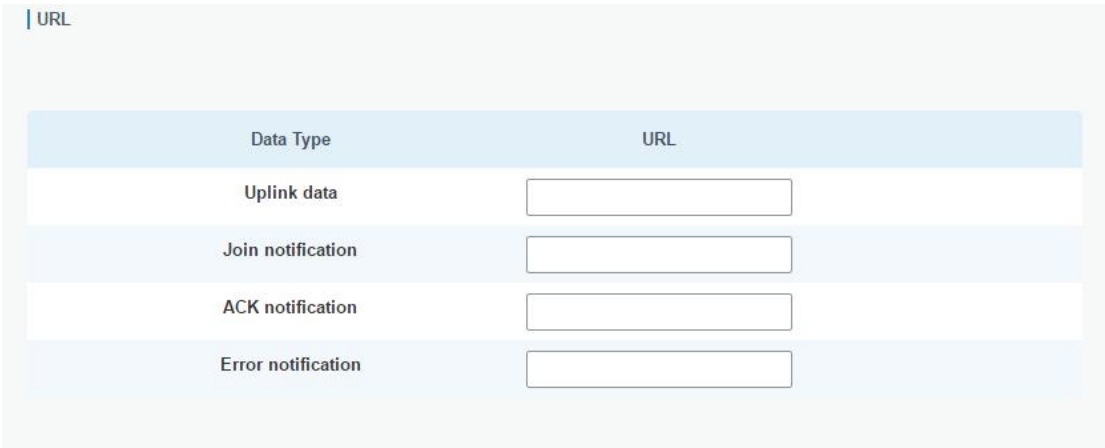
1. Go to **Network Server > Application** to select the application to edit.
2. Click  to add a data transmission type.

HTTP or HTTPS:

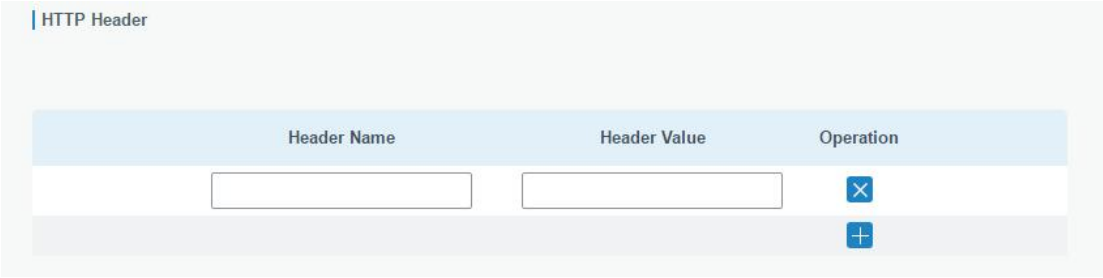
Step 1: select HTTP or HTTPS as transmission protocol.



Step 2: Enter the destination URL. Different types of data can be sent to different URLs.



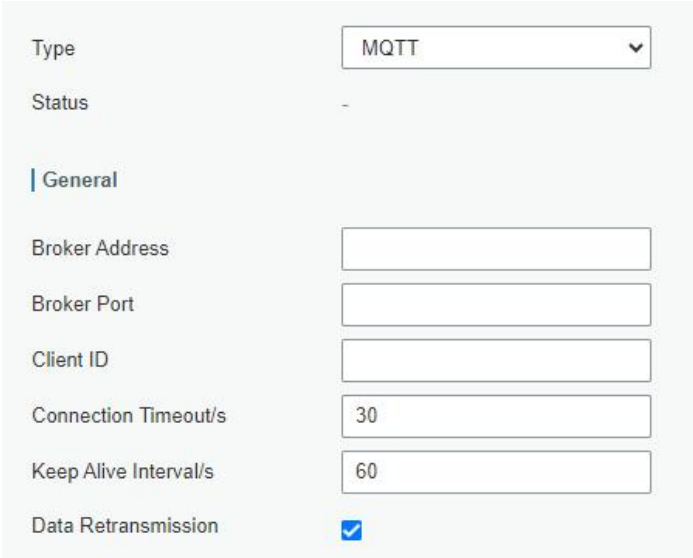
Enter the header name and header value if there is user credentials when accessing the HTTP(s) server.



MQTT:

Step 1: select the transmission protocol as MQTT.

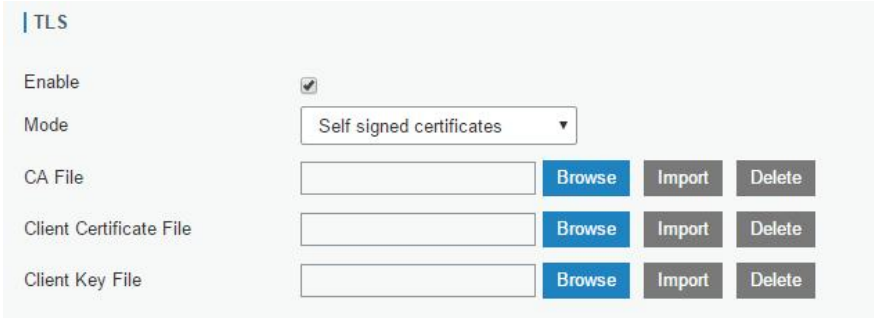
Step 2: Fill in MQTT broker general settings.



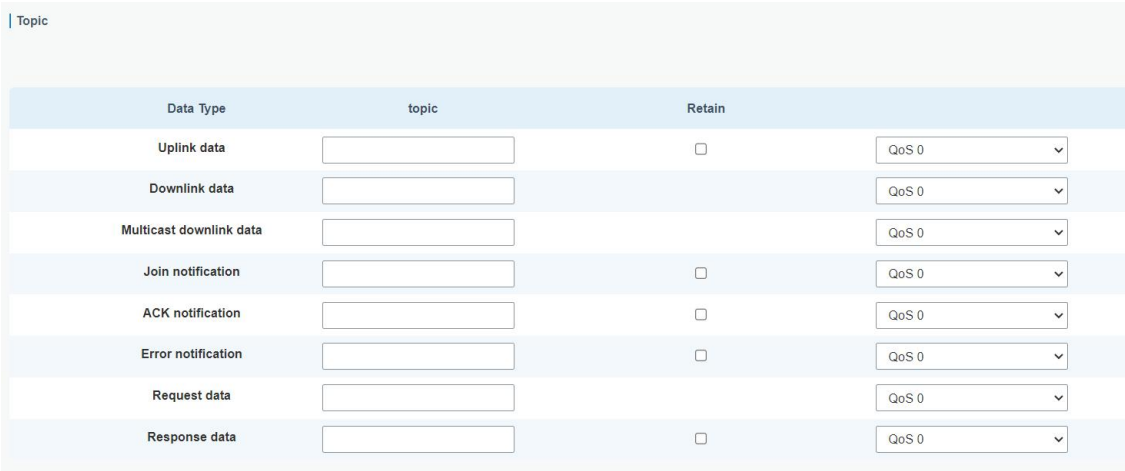
Step 3: Select the authentication method required by the server.

If you select user credentials for authentication, you need to enter the username and password for authentication.

If certificate is necessary for verification, please select mode and import CA certificate, client certificate and client key file for authentication.



Step 4: Enter the topics to receive data or send downlinks, and choose the QoS.



[END]