Outdoor LoRaWAN® Hotspot

UG67

User 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 other electrical devices when installing.
- Ensure all connectors are tightened for water protection when used outdoors.
- Check lightning protection when used outdoors.
- Do not connect or power the equipment using cables that have been damaged.

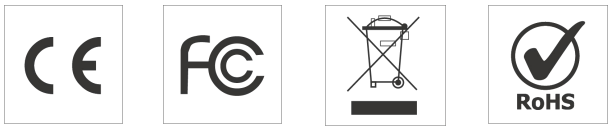
Related Documents

Document	Description
UG67 Datasheet	Datasheet for UG67 LoRaWAN® Hotspot.

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

Declaration of Conformity

UG67 conforms 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
Tel: 86-592-5085280
Fax: 86-592-5023065

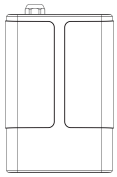
Revision History

Date	Doc Version	Description
March 29, 2022	V1.0	Initial version

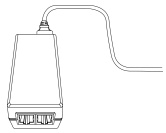
Contents

1. Packing List

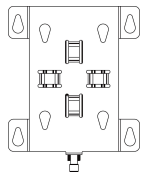
Before you begin to install the UG67 LoRaWAN® hotspot, please check the package contents to verify that you have received the items below.



1 × UG67 Hotspot

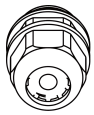


1 × PoE Injector



1 × Mounting Bracket

4 × Wall Mounting Kits



1 × Cable Gland

1 × Card Dust Cover

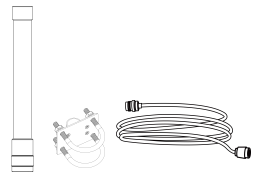
2 × Hose Clamps

1 × DC Power Cable

1 × LoRa Antenna (60 cm)

1 × Quick Start Guide

1 × Warranty Card

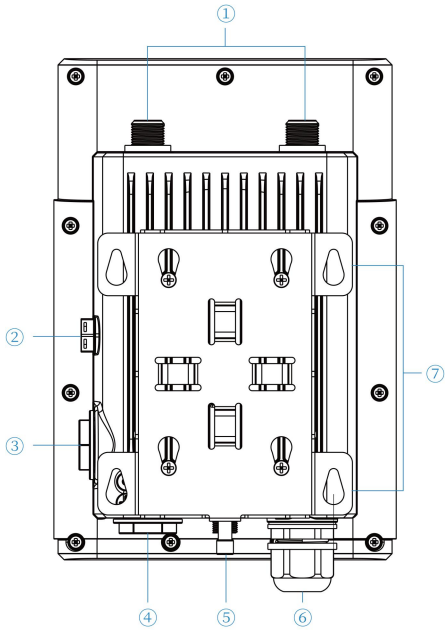


1.3m LoRa Antenna Kit (Optional)

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

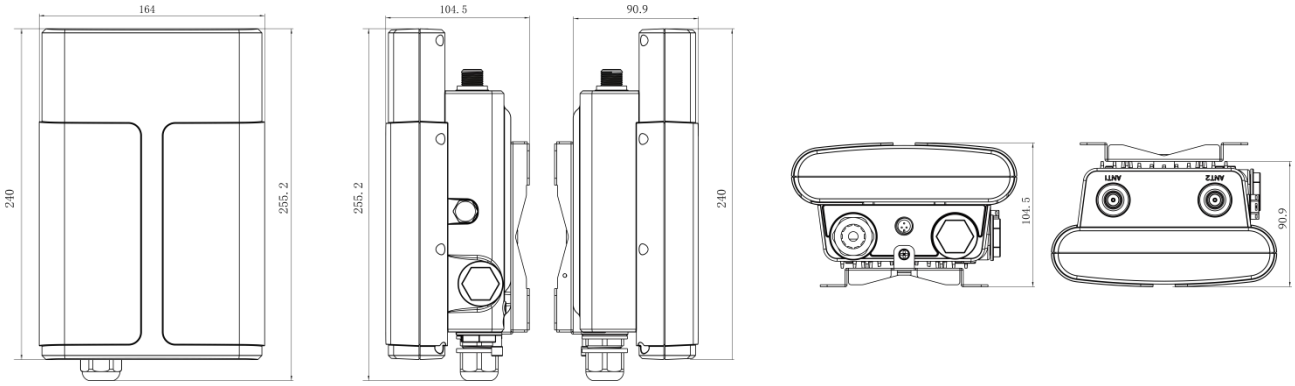
2. Hardware Introduction

2.1 Overview



① LoRa Antenna Connector
② Vent Plug
③ SIM Slot & Micro SD Slot
④ LED Area & Type-C Port & Reset Button
SYS: System Indicator
LoRa: LoRa Indicator
LTE: Cellular Indicator
⑤ DC Power Connector (Solar Connector)
⑥ Ethernet Port (PoE)
⑦ Mounting Bracket

2.2 Dimensions (mm)



2.3 LED Indicators

LED	Indication	Status	Description
SYS	System Status	Green Light	Static: the system is running properly
		Red Light	The system goes wrong
LoRa	LoRa Status	Off	Packet Forwarder mode is running off
		Green Light	Packet Forwarder mode is running well
LTE	Cellular Status	Off	SIM card is registering or fails to register (or there are no SIM cards inserted)
		Green Light	Blinking slowly: SIM card has been registered and is ready for dial-up

			Blinking rapidly: SIM card has been registered and is dialing up now
			Static: SIM card has been registered and dialed up successfully

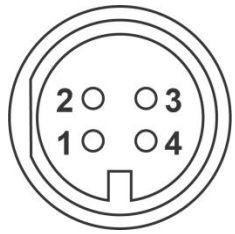
2.4 Reset Button

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 hotspot resets to factory default.

2.5 DC Power Connector

UG67 supports 12 VDC or solar supply via M12 connector.

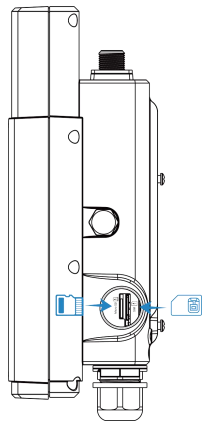
Pin	Color	Description
1	Black	GND
2	White	Reserved
3	Yellow	Reserved
4	Red	+12V



3. Hardware Installation

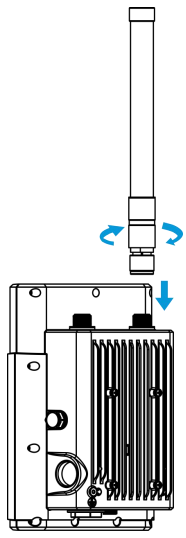
3.1 SIM Card & Micro SD Installation

A. Insert the SIM card or micro SD card into the device according to the direction icon on the device. If you need to take out the card, press the card and it will pop up automatically.
B. Tighten the dust cover with a wrench to prevent water damage.
Note: UG67 does not support hot-plugging (also called hot swapping). Please turn off the power before inserting or taking off SIM card.

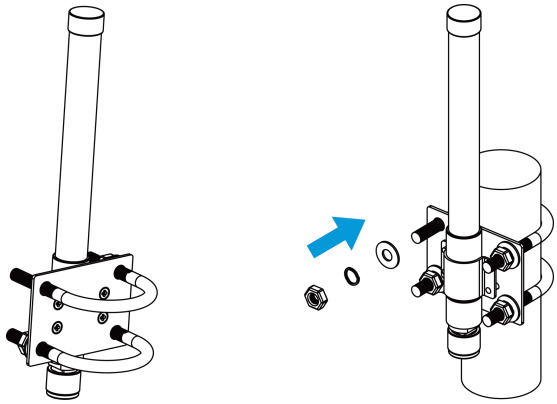


3.2 Antenna Installation

UG67 supports multiple LoRa antenna types. It's suggested to select single antenna mode for better Helium network coverage. The external antenna must be installed on the ANT1 connector. When installing in outdoors, it's recommended to use electrical insulation tapes and waterproof insulation tapes to cover the connectors.

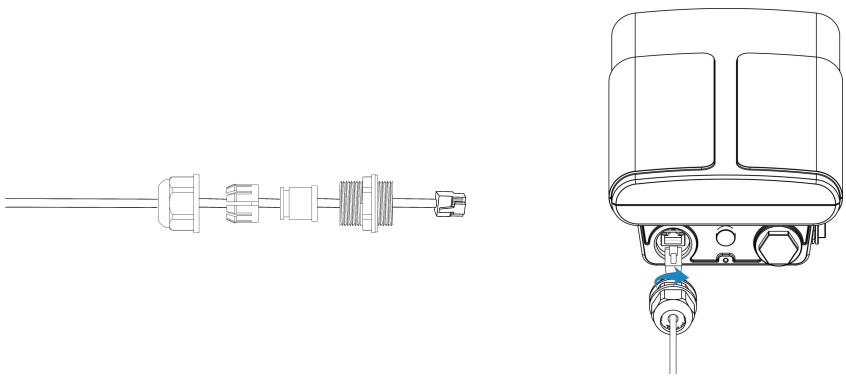


If you use 1.3m high gain antenna kit, fix the LoRa antenna to a pole via antenna clamp kit: pass the LoRa antenna through the antenna clamp and fix it with 4 screws, then wrap the U-bolt around a pole and fix the clamp with nuts and other accessories. After installation, connect the antenna to gateway ANT1 antenna connector via the coaxial cable. Note that do not install this antenna to hotspot directly.

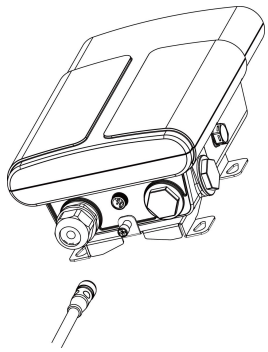


3.3 Ethernet Cable & Power Cable Installation

Pass the Ethernet cable through the cable gland and rotate the cable gland to the hotspot, then tighten the cable gland with a wrench.

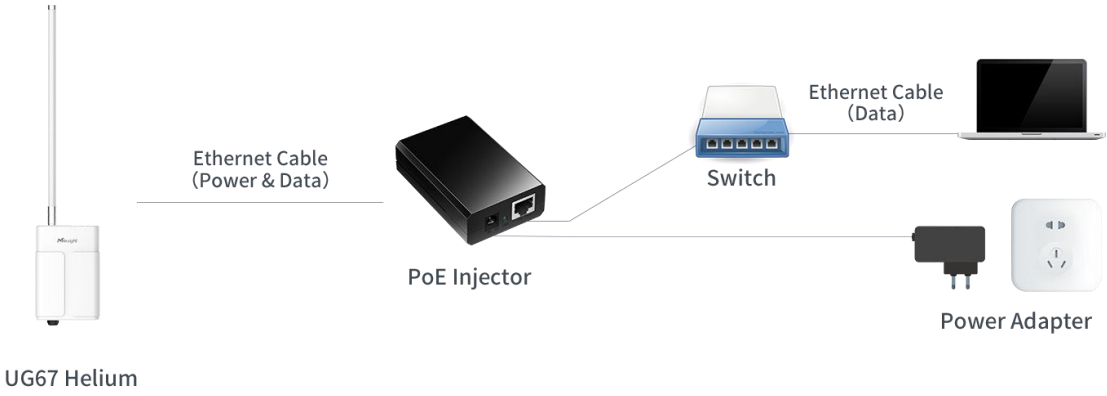


For DC or solar power supply, remove the protective cap of the power connector and rotate the DC power cable into the power connector.



3.4 Power Supply

UG67 can be powered by 802.3af standard PoE or 12VDC. If there is not PoE switch, please use a PoE injector to power on the UG67 as below:

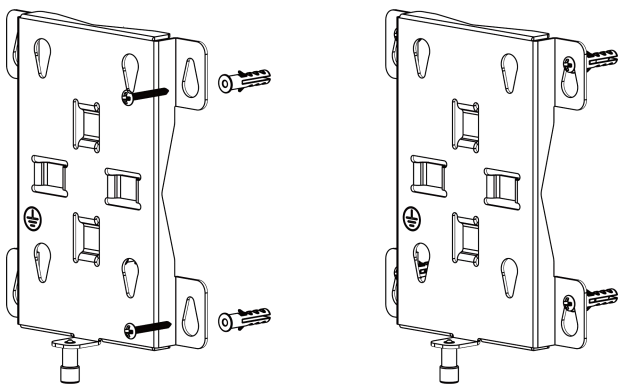


3.5 Hotspot Installation

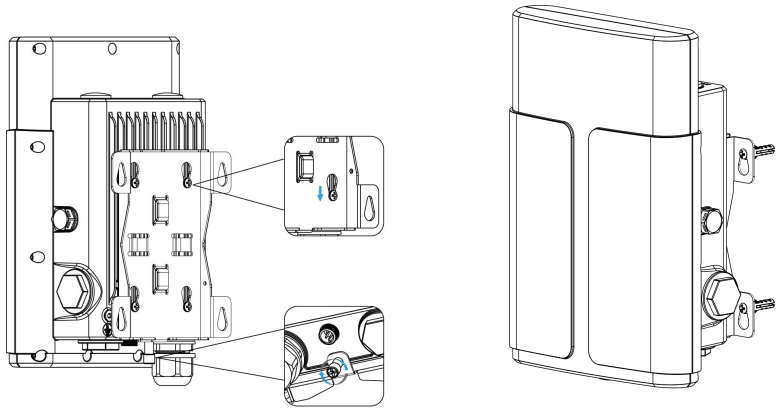
UG67 can be mounted to a wall or a pole. Before you start, make sure that your SIM card has been inserted, your antennas have been attached and all cables have been installed.
Note: Do not connect the device to the power supply or other devices when installing.

3.5.1 Wall Mounting

Preparation: mounting bracket (with a screw), wall plugs, wall mounting screws and other required tools.
A. Align the mounting bracket horizontally to the desired position on the wall, use a marker pen to mark four mounting holes on the wall, and then remove the mounting bracket from the wall.
Note: The connecting lines of adjacent points are at right angles.
B. Drill four holes with a depth of 32 mm by using your drill with a 6 mm drill bit on the positions you marked previously on the wall.
C. Insert four wall plugs into the holes respectively.
D. Mount the mounting bracket horizontally to the wall by fixing the wall mounting screws into the wall plugs.



E. Hang the device to the mounting bracket via bracket mounting screws on the back of the device, then screw the bracket screw to the bottom of the device.



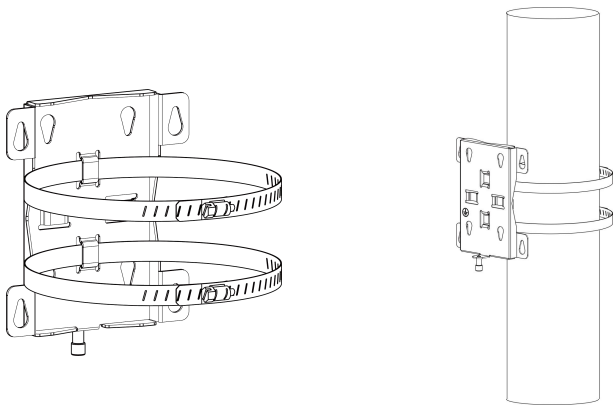
3.5.2 Pole Mounting

Preparation: mounting bracket (with a screw), hose clamp and other required tools.

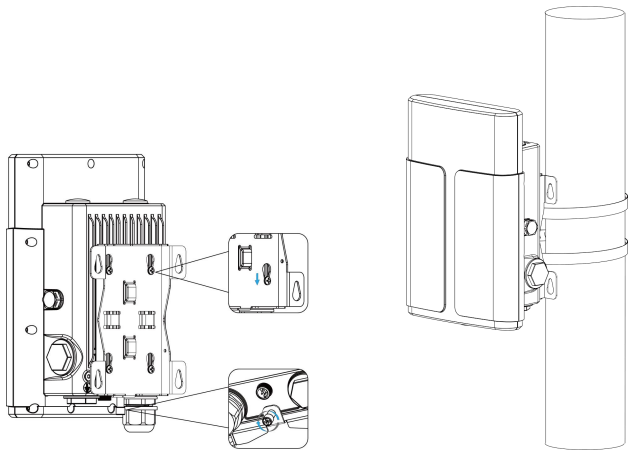
A. Loosen the hose clamp by turning the locking mechanism counter-clockwise.

B. Straighten out the hose clamp and slide it through the rectangular rings in the mounting bracket, wrap the hose clamp around the pole.

C. Use a screwdriver to tighten the locking mechanism by turning it clockwise.



D. Hang the device to the mounting bracket via bracket mounting screws on the back of the device, then screw the bracket screw to the bottom of the device.

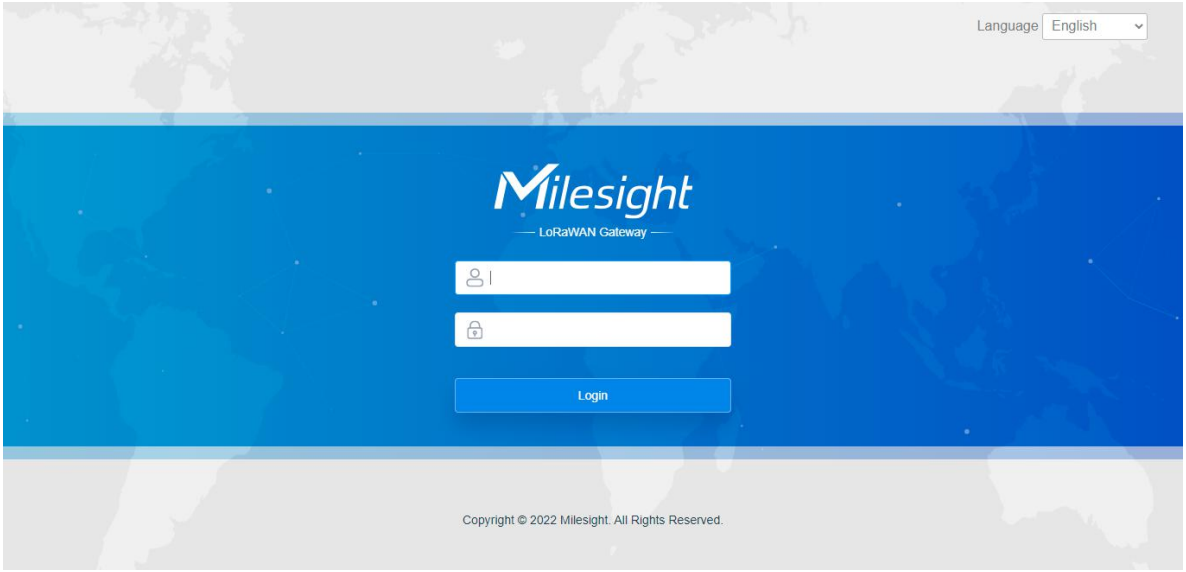


4. Login the Web GUI

UG67 provides a web-based configuration interface for management. If this is the first time you configure the hotspot, please use the default settings below:
ETH IP Address: **192.168.23.150**
Wi-Fi IP Address: **192.168.1.1**
Wi-Fi SSID: **Gateway_******
Username: **admin**
Password: **password**

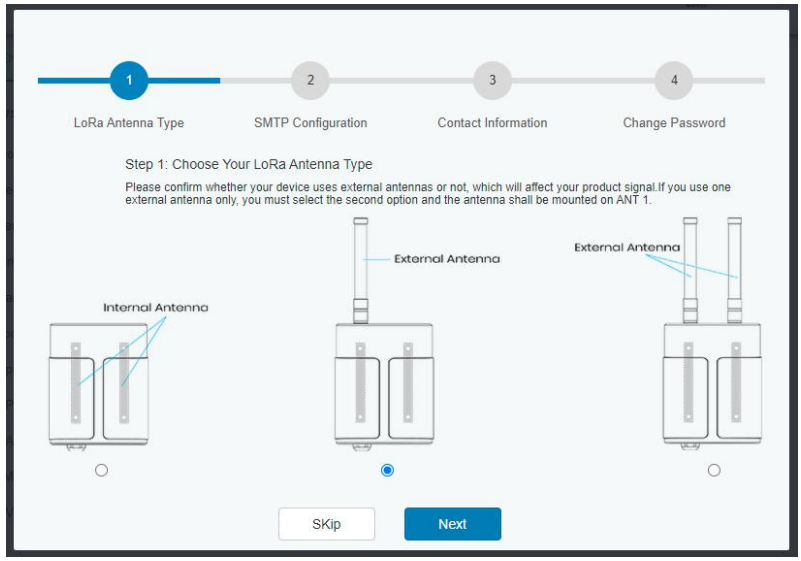
4.1 Wireless Access

A. Enable wireless network connection on your computer and search for access point "**Gateway_******" to connect it.
B. 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".

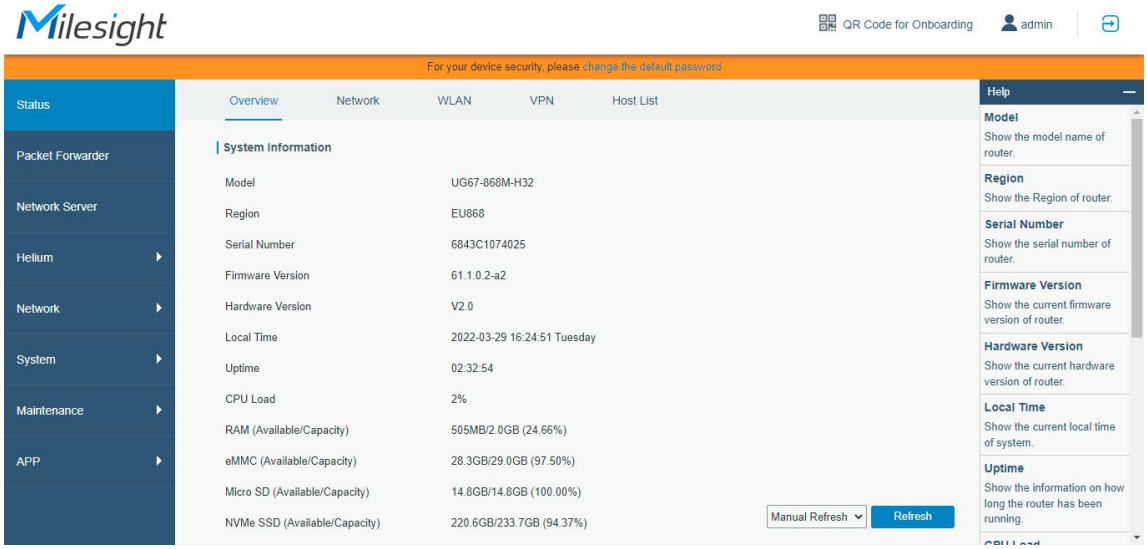


If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.

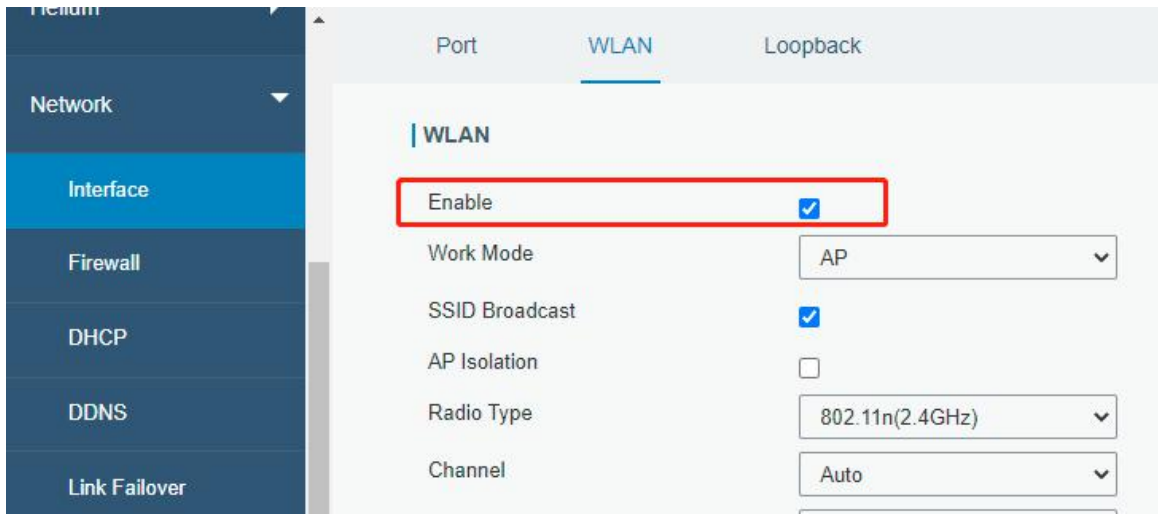
C. After logging, follow the guide to complete the basic configurations. It's suggested to change the password and keep the antenna type by default.



After the guide completed, you can view system information and perform more advanced settings.



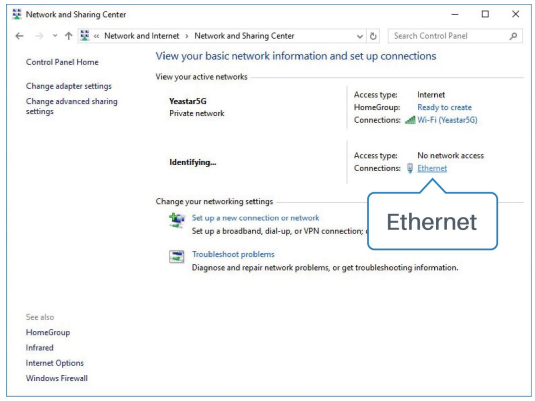
Please disable WLAN feature or add password after you completed all hotspot settings!



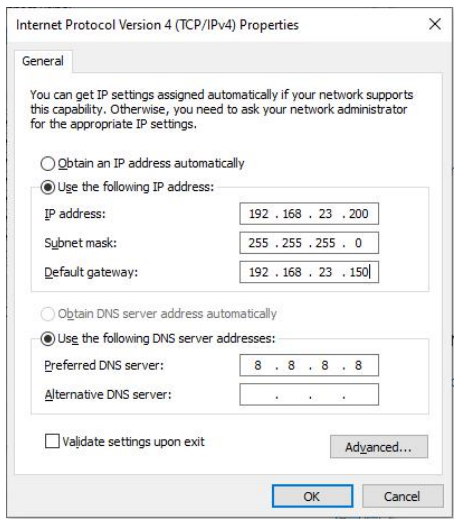
4.2 Wired Access

Connect PC to UG67 ETH port through PoE injector. The following steps are based on Windows 10 operating system for your reference.

A. Go to “Control Panel” → “Network and Internet” → “Network and Sharing Center”, then click “Ethernet” (May have different names).

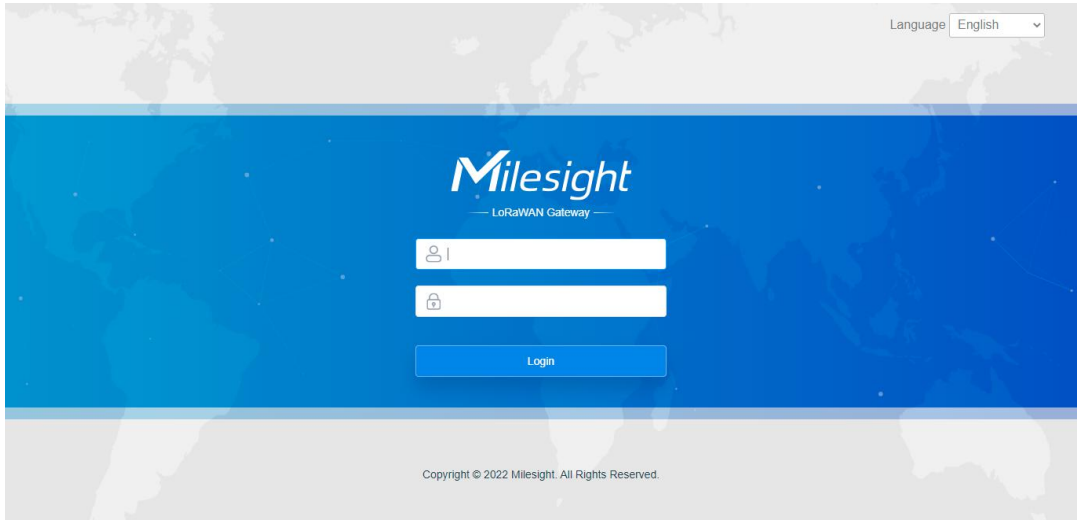


B. Go to “Properties” → “Internet Protocol Version 4(TCP/IPv4) ”and select “Use the following IP address”, then assign a static IP manually within the same subnet of the hotspot.

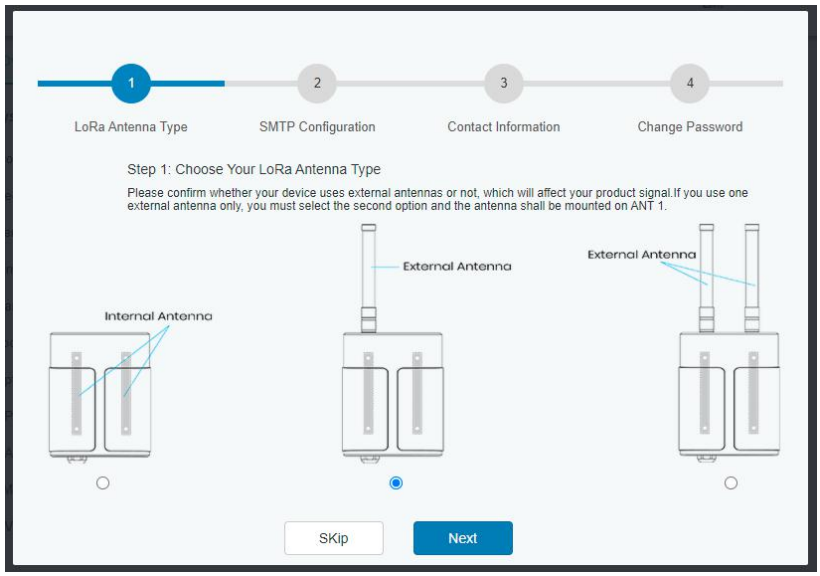


C. Open a web browser on your PC (Chrome is recommended) and type in the IP address **192.168.23.150** to access the web GUI, enter the username and password, click “Login”.

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



D. After logging, follow the guide to complete the basic configurations. It's suggested to change the password and keep the antenna type by default.



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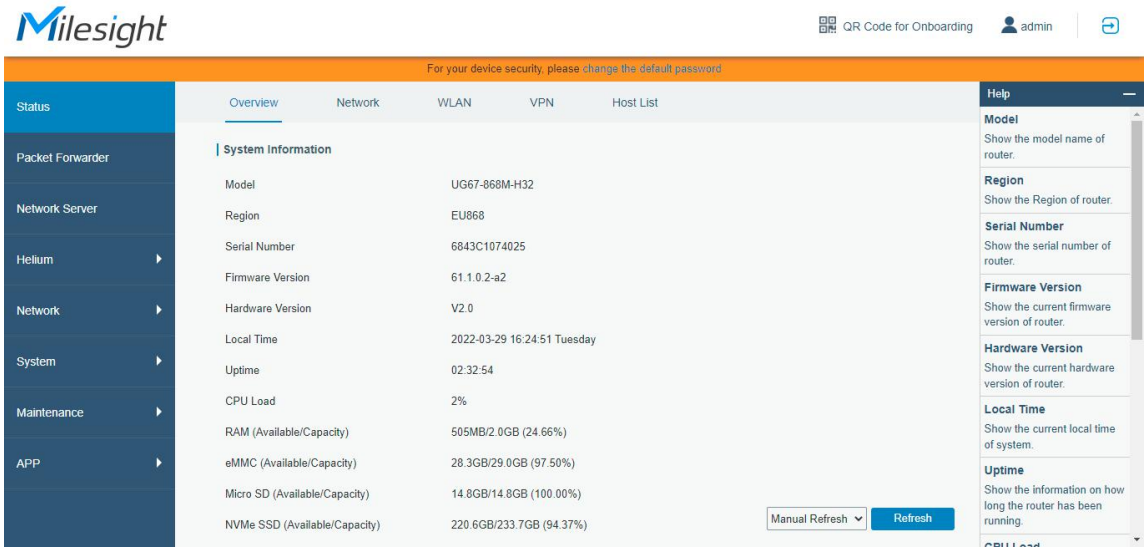
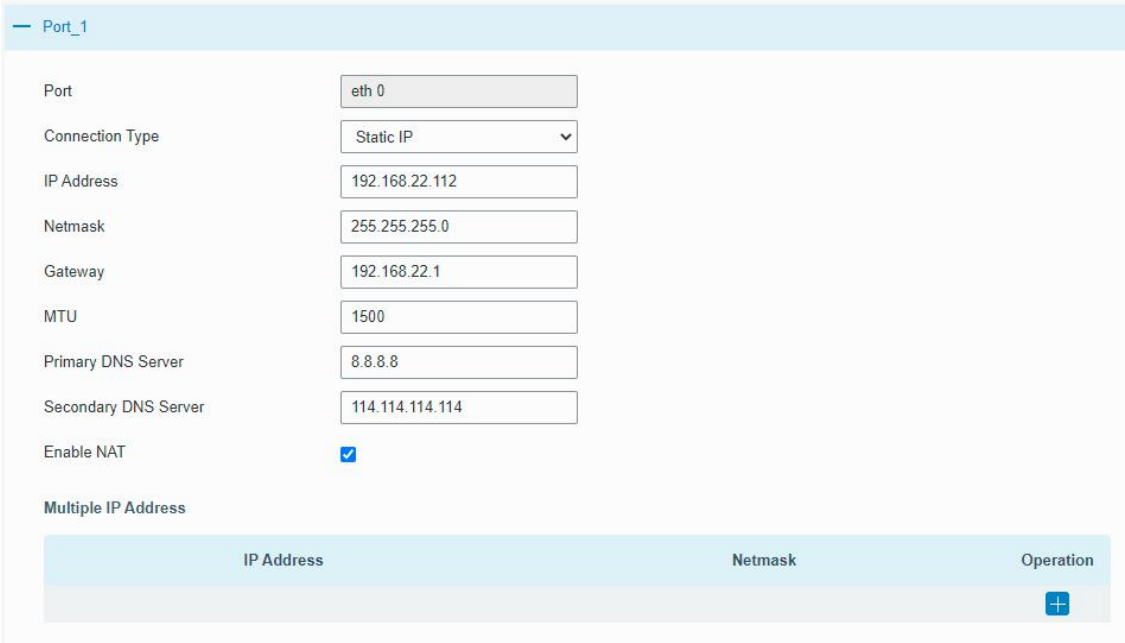


5. Network Connection

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

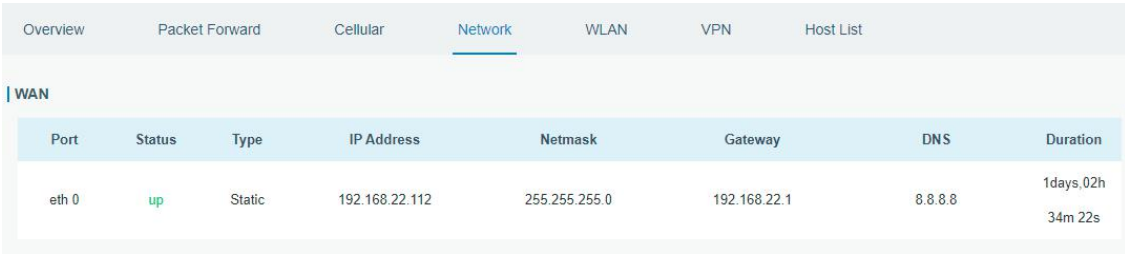
5.1 Configure the Ethernet Connection

A. Go to “Network” → “Interface” → “Port” page to select the connection type and configure Ethernet port information, click “Save & Apply” for changes to take effect.



B. Connect Ethernet port of hotspot to network device like router or modem via PoE injector or switch.

C. Log in the web GUI via the newly assigned Ethernet port IP address and check the network connection.

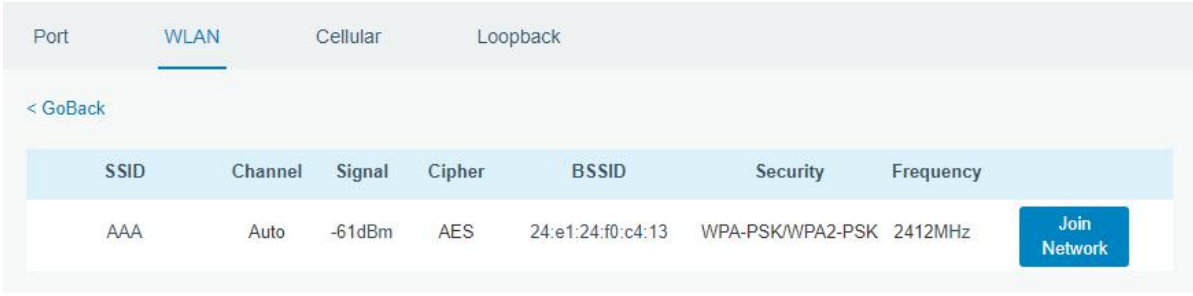


5.2 Configure the Wi-Fi Connection

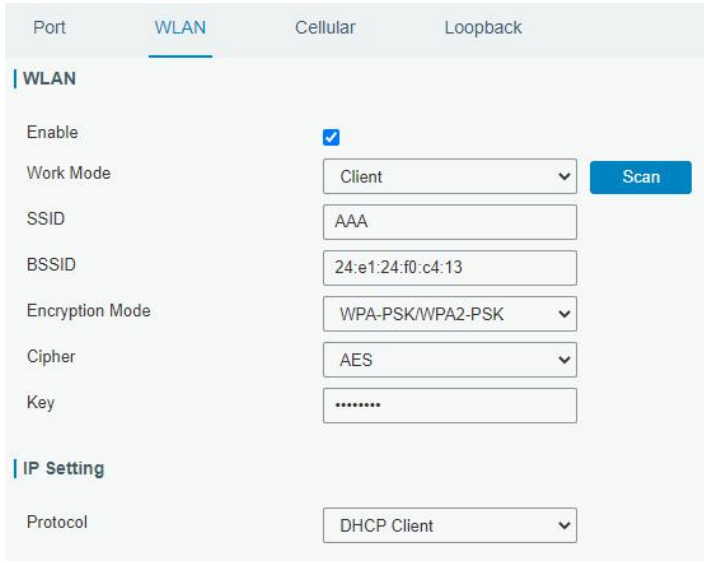
A. Go to “Network” → “Interface” → “WLAN” and select “Client” mode.

B. Click “Scan” to search for a Wi-Fi access point. Select the available one and click “Join Network”.

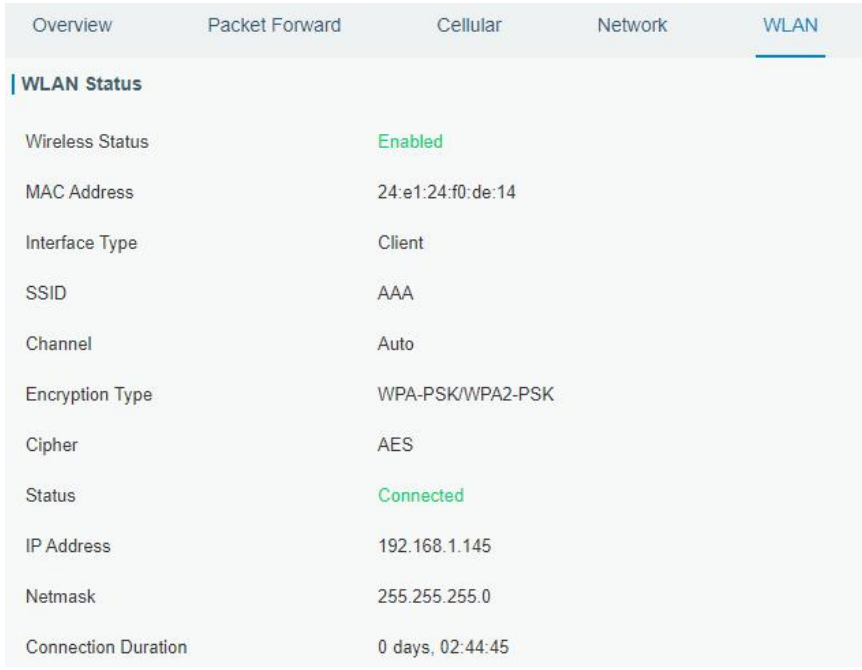
Note: please do use wired access method to access the web GUI of hotspot, or you will fail to configure Wi-Fi settings.



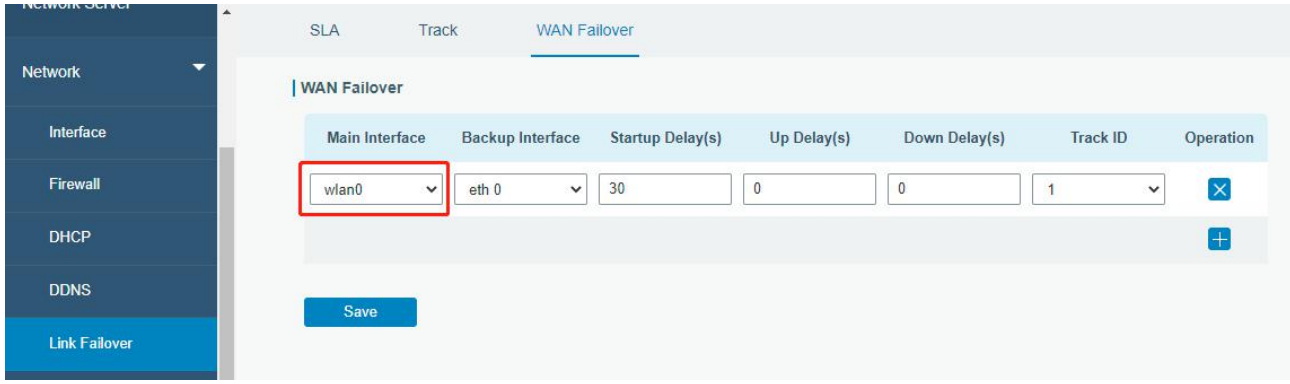
C. Type the key of Wi-Fi.



D. Go to “Status” → ”WLAN” to check Wi-Fi status. If it shows “Connected”, it means that the hotspot has connected to Wi-Fi successfully.

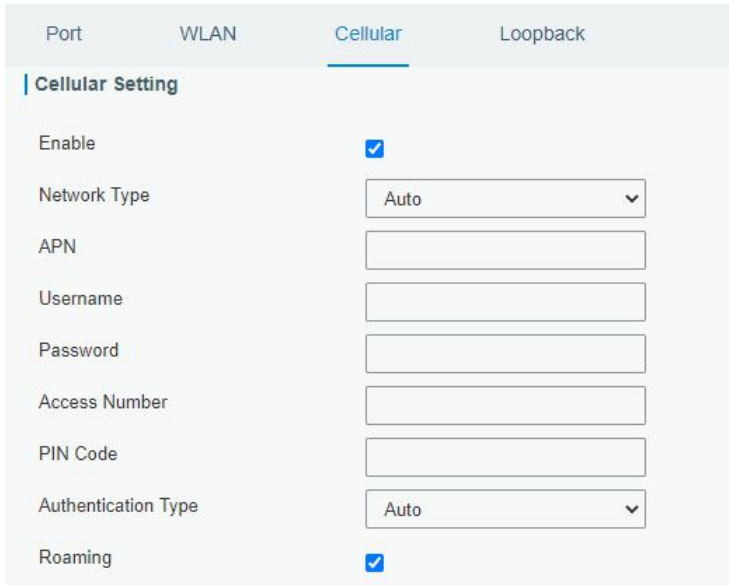


E. Go to “Network” → ”Failover” → ”WAN Failover” to switch the wlan0 as main interface, then gateway can use the Wi-Fi to access the Internet.



5.3 Configure the Cellular Connection

A. Go to “Network” → “Interface” → “Cellular” → “Cellular Setting” page to enable cellular settings.
B. Choose relevant network type and fill in SIM card information like APN or PIN code, click “Save” and “Apply” for changes to take effect.

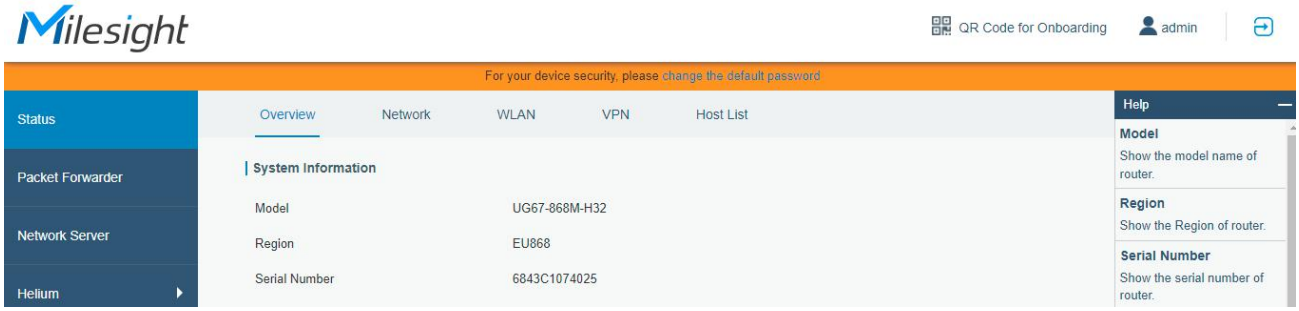


C. Go to “Status” → “Cellular” page to view the status of the cellular connection. If it shows “Connected”, it means the SIM has dialed up successfully. Moreover, you can check the status of the LTE indicator. If it keeps on lighting statically, it means SIM has dialed up successfully.

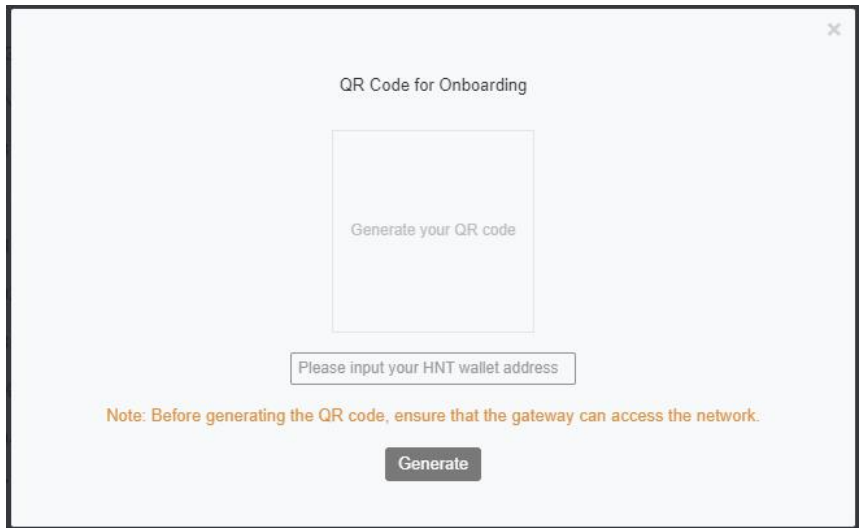
6. Helium Hotspot Setup

A. Download the Helium Hotspot App from Google Play or Apple App Store and create a Helium Wallet.

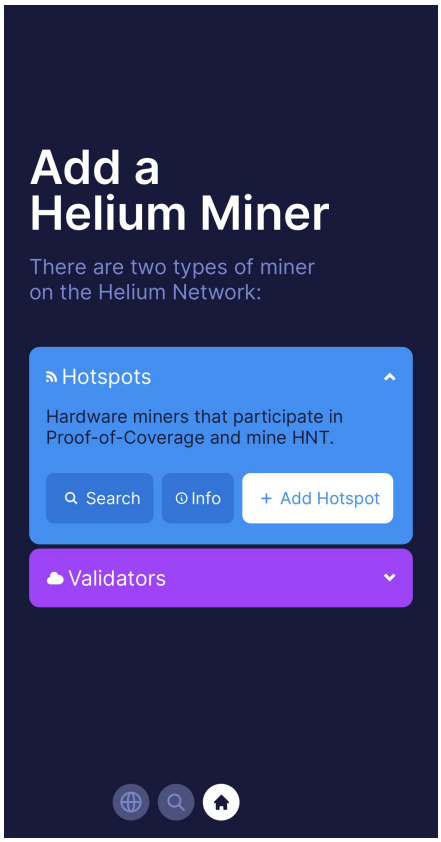
B. Log in the web GUI, click “QR Code for Onboarding” at the top right corner.

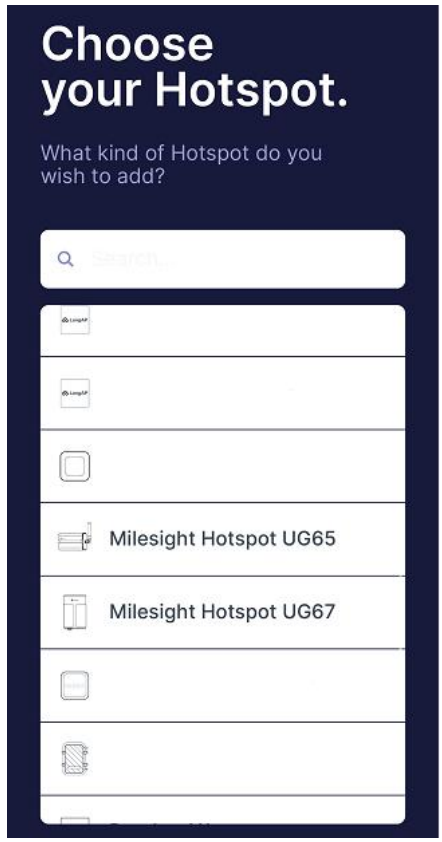


C. Fill in the wallet address in hotspot web GUI and click “Generate” to generate the QR code.

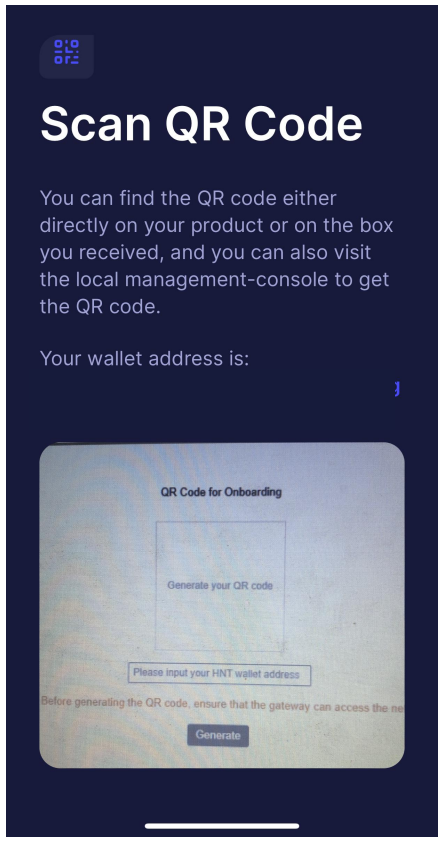


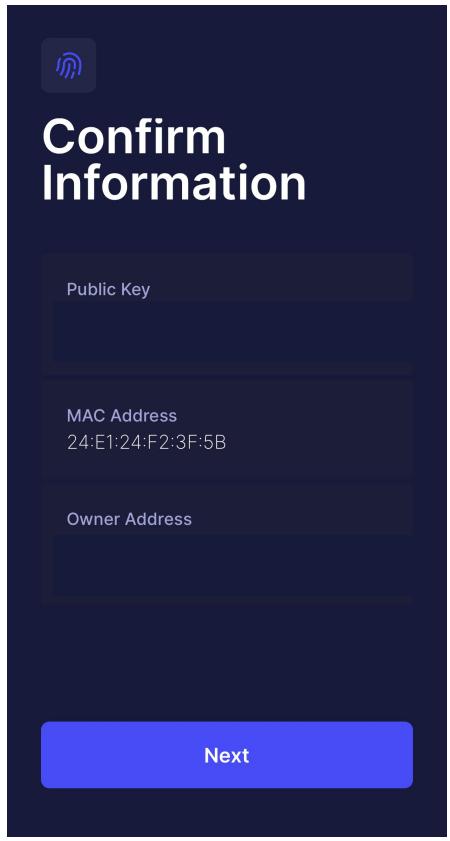
D. Open Helium Hotspot App, click “+Add Hotspot” and choose “Milesight Hotspot UG67” from the list.



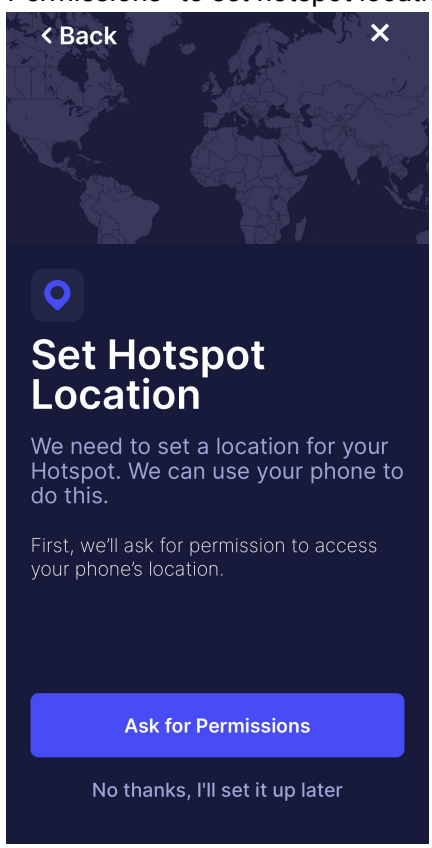


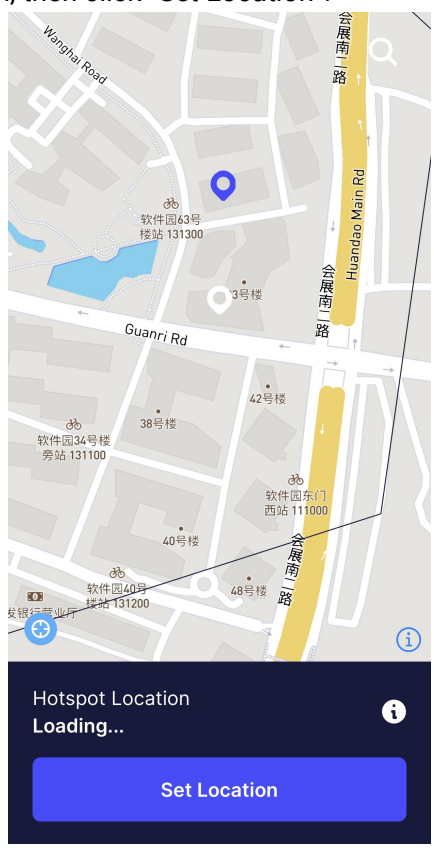
E. Scan the QR code on the hotspot login web GUI, then App will get the hotspot information. Click “Next”.



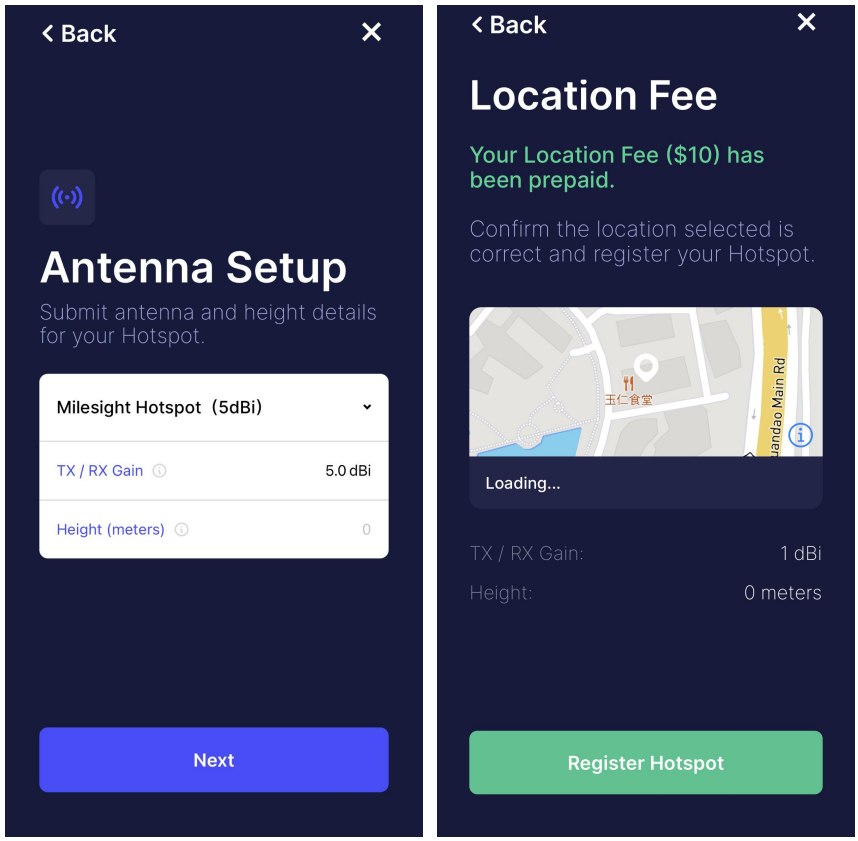


F. Click “Ask for Permissions” to set hotspot location, then click “Set Location”.

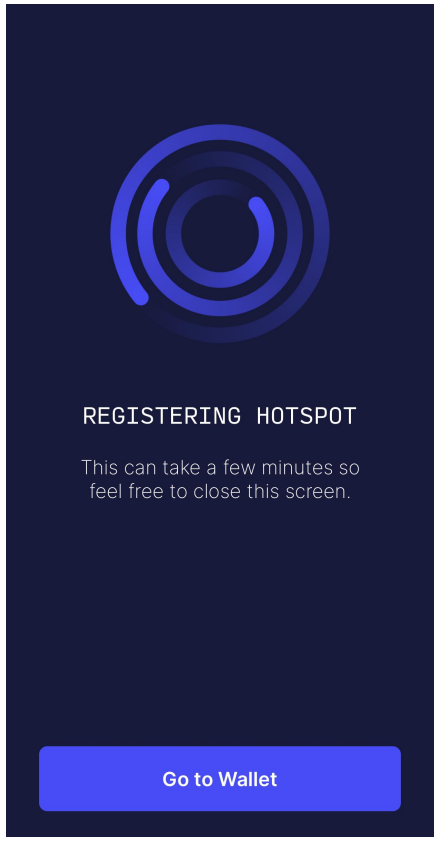




G. Set hotspot antenna gain and height according to your external antenna type, it’s 5dBi by default. Click “Next” and “Register Hotspot”. This registration requires $10 and it’s already prepaid by Milesight.



H. It will submit all hotspot information and add it to the Helium network.



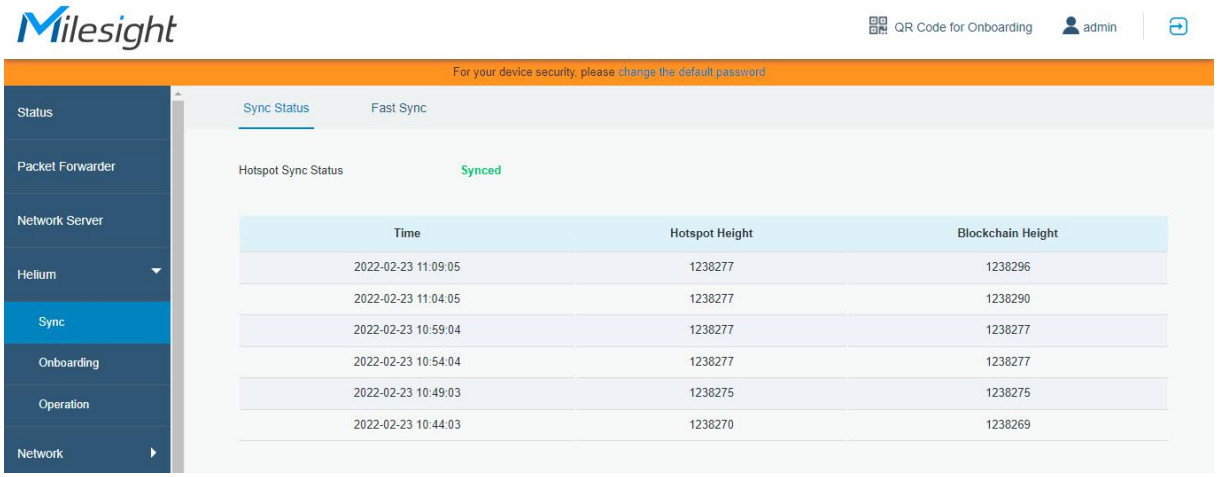
7. Helium Advanced Setting

UG67 Helium hotspot provides options to get the latest sync status and Helium process status and control.

7.1 Sync

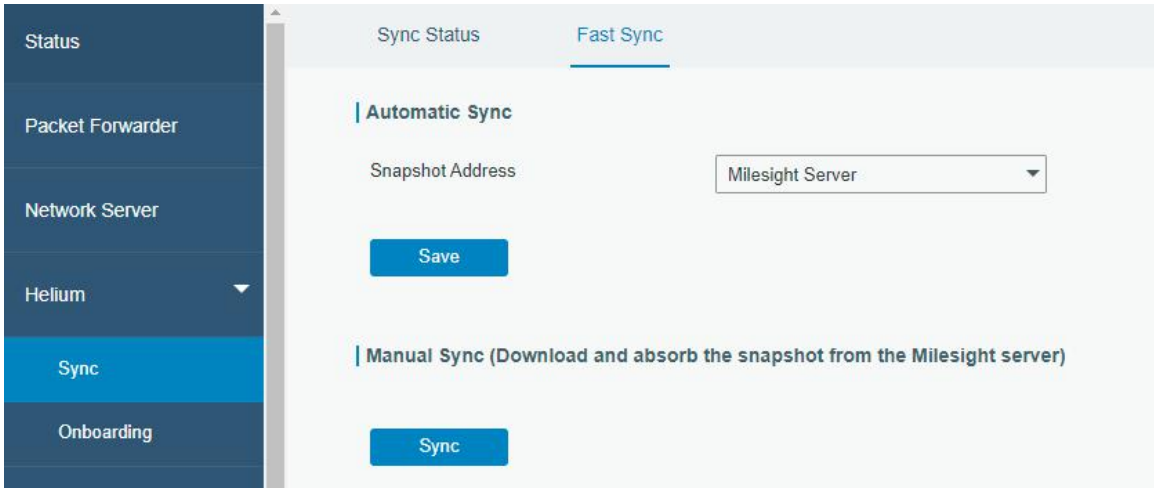
Sync page is used for checking sync status and configure the sync settings.

7.1.1 Sync Status



Item	Description
Hotspot Sync Status	There are 4 status: **Not syncing:** the hotspot does not start the syncing. **Absorbing:** when the hotspot is absorbing the snapshot, other sync operations and Helium reboot are forbidden. **Syncing:** the hotspot is catching up the latest blockchain height. **Synced:** when the hotspot height is within the range of 100 of blockchain height, it will show synced.
Hotspot Height	Show the latest 6 hotspot height records, and the record will update every 5 minutes.
Blockchain Height	Show the latest 6 blockchain height records, and the record will update every 5 minutes.

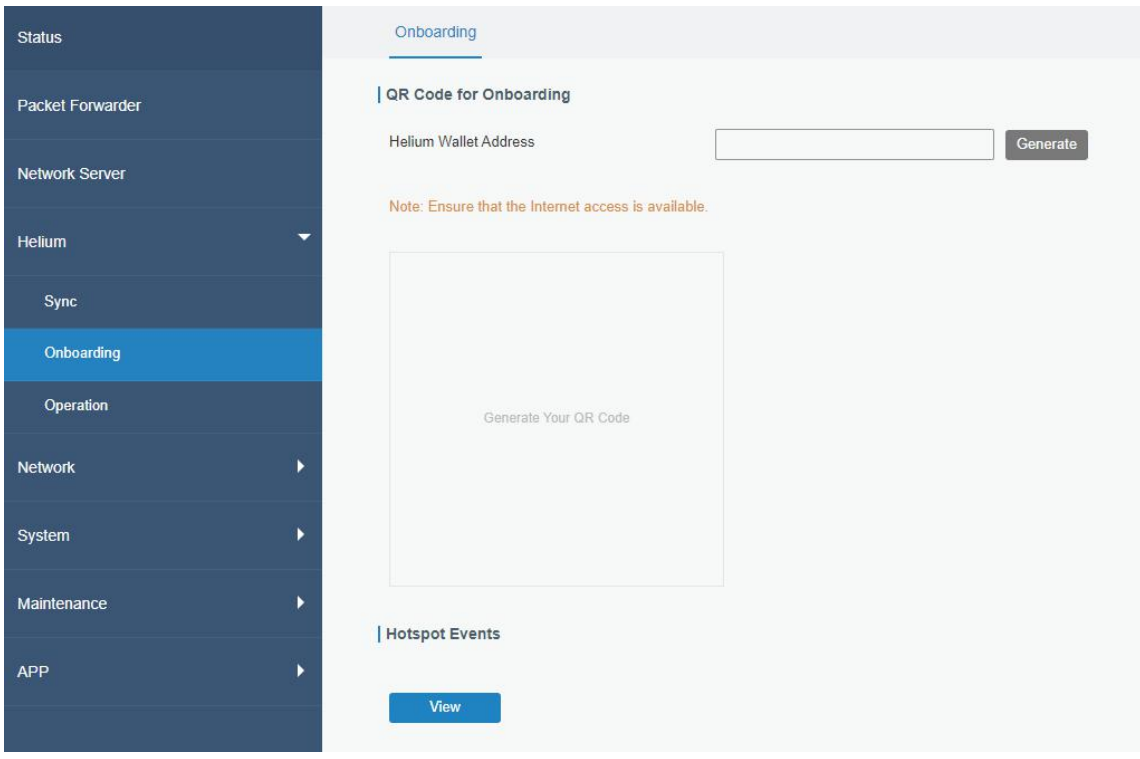
7.1.2 Fast Sync



Item	Description
Automatic Sync	Hotspot will download and absorb the latest snapshot from the selected address automatically when current height far behind the latest blockchain height. Default: Milesight Server
Manual Sync	Click “Sync” to download and absorb the snapshot from the Milesight Server.

7.2 Onboarding

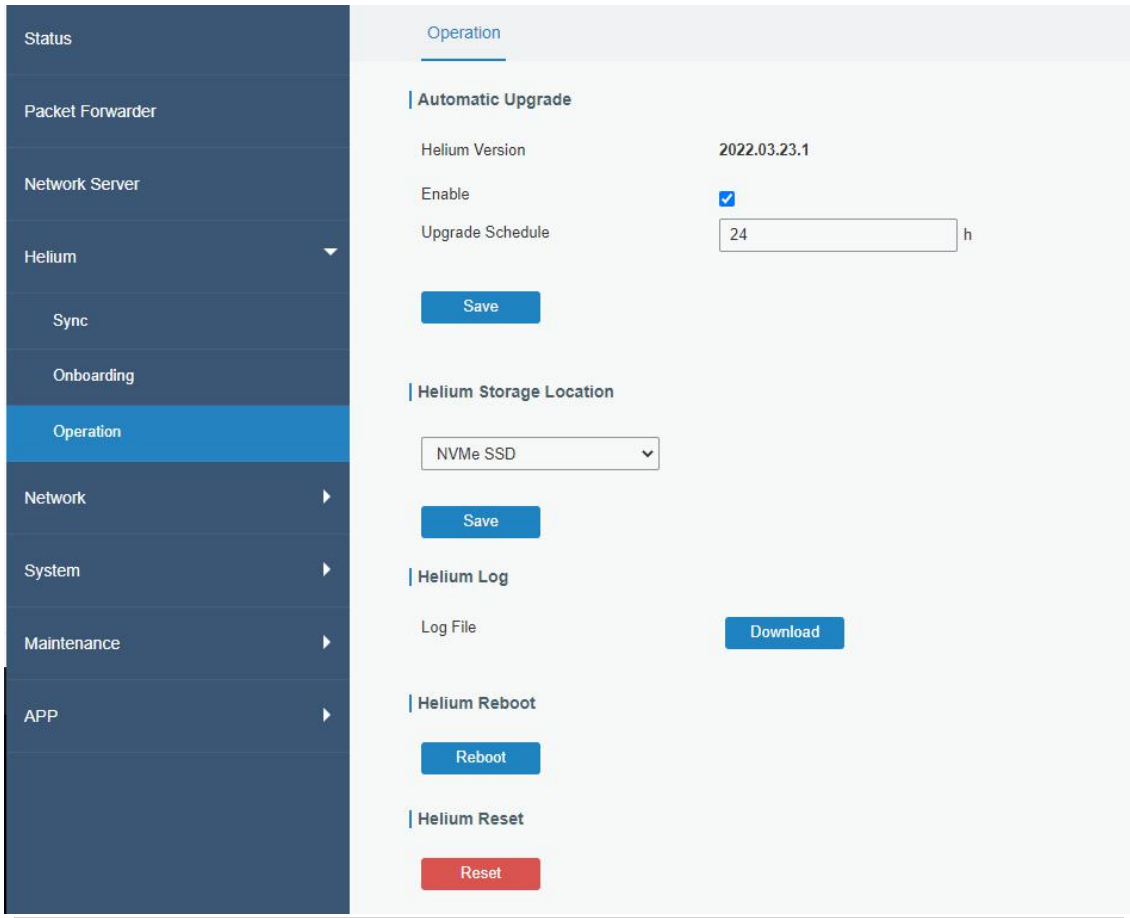
This page is used for generating QR code for onboarding and checking hotspot events. You can also click the button on the top right corner to generate the QR code.



Item	Description
QR Code for Onboarding	Type the wallet address, then click “Generate” to generate the QR code for hotspot onboarding. Before generating, ensure the hotspot can access the Internet.
Hotspot Events	Click “View” to check hotspot transaction status and information. Including onboard and transfer hotspot.

7.3 Operation

This page is used for setting Helium upgrade interval and operating the Helium process.



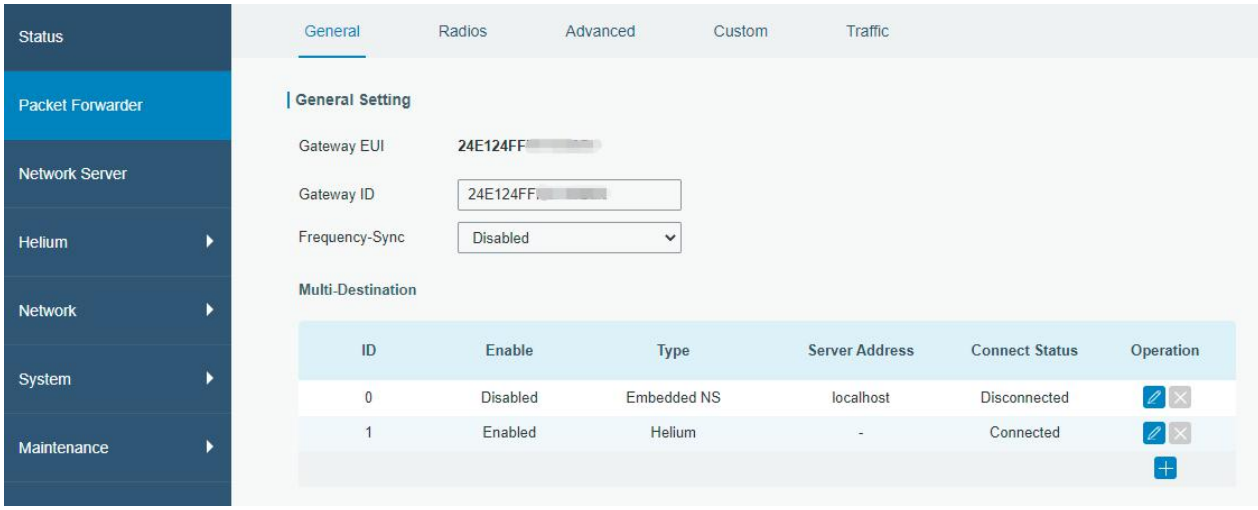
Operation	
Item	**Description**
Automatic Upgrade	
Helium Version	Show the current hotspot Helium program version.
Enable	When enabled, the hotspot will check and upgrade the Helium program version automatically.
Upgrade Schedule	Set the time interval of checking Helium version. If there is a newer version, the hotspot will update the version automatically. Range: 1-168 hours.
Helium Storage Location	
Storage Location	eMMC, micro SD or NVMe SSD are optional.

Helium Log	
Download	Download the Helium logs containing the Helium progress running status, configuration changes, and so on.
Helium Reboot	
Reboot	Reboot the Helium progress.
Helium Reset	
Reset	Reset the Helium progress and block data, then download the latest Helium progress automatically.

8. Packet Forwarder Configuration

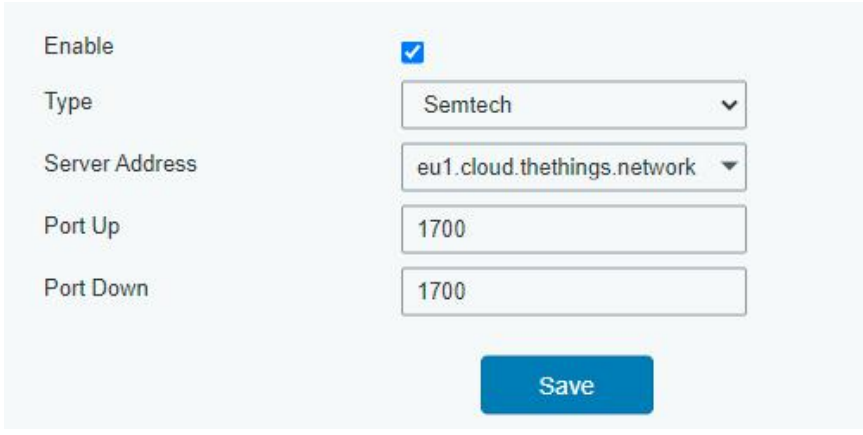
UG67 has installed multiple packet forwarders including Semtech, Chirpstack-Generic MQTT broker, etc.

A. Go to "Packet Forwarder" → "General" page and click to add a network server.

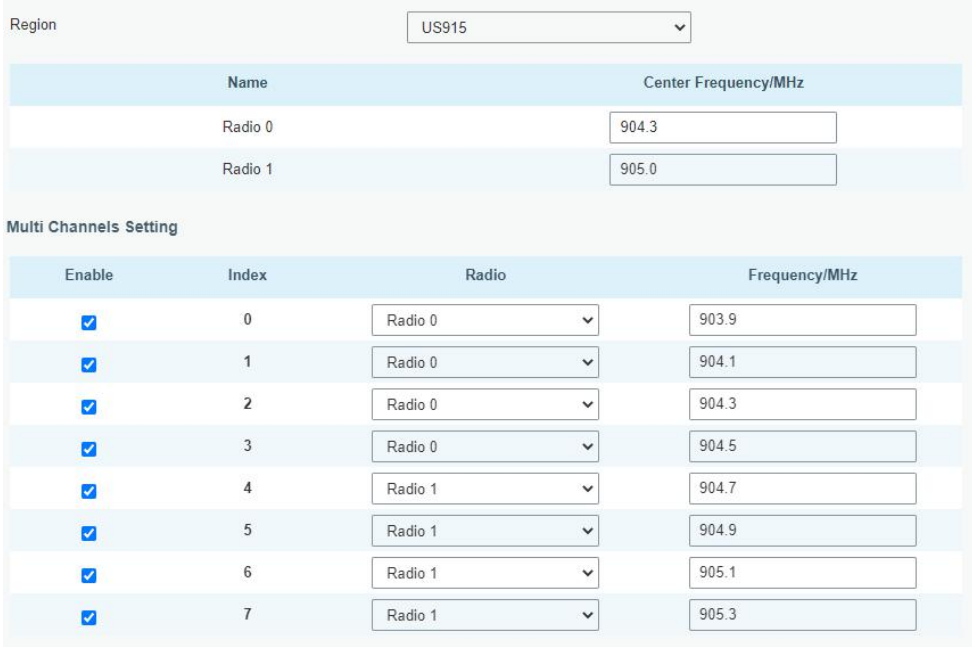


B. Fill in the server information and enable this server. If Helium is enabled, you can only enable Semtech type package forwarder or remote Embedded NS.

Note: when you add any NS or modify the NS setting and click "Save & Apply", the Helium program will reboot and disconnect for dozens of seconds.

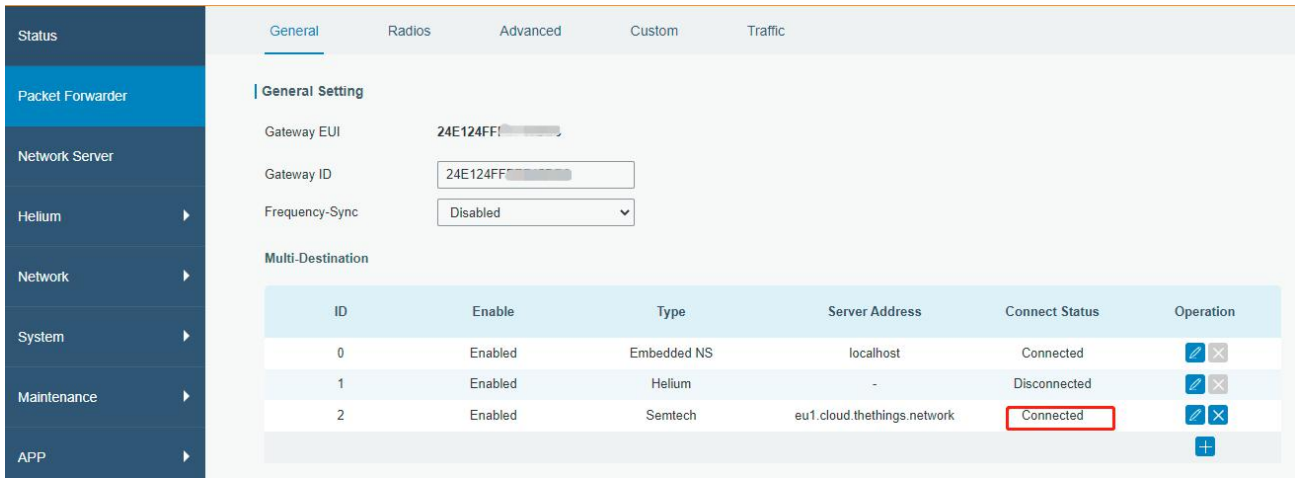


C. Go to “Packet Forwarder” → “Radio” page to configure antenna type, center frequency and channels. The channels of the gateway and network server need to be the same.



D. Add the hotspot to the network server page. For more details about the network server configuration please refer to network server guide or Milesight IoT Support portal.

E. After connected, you can check connection status here.



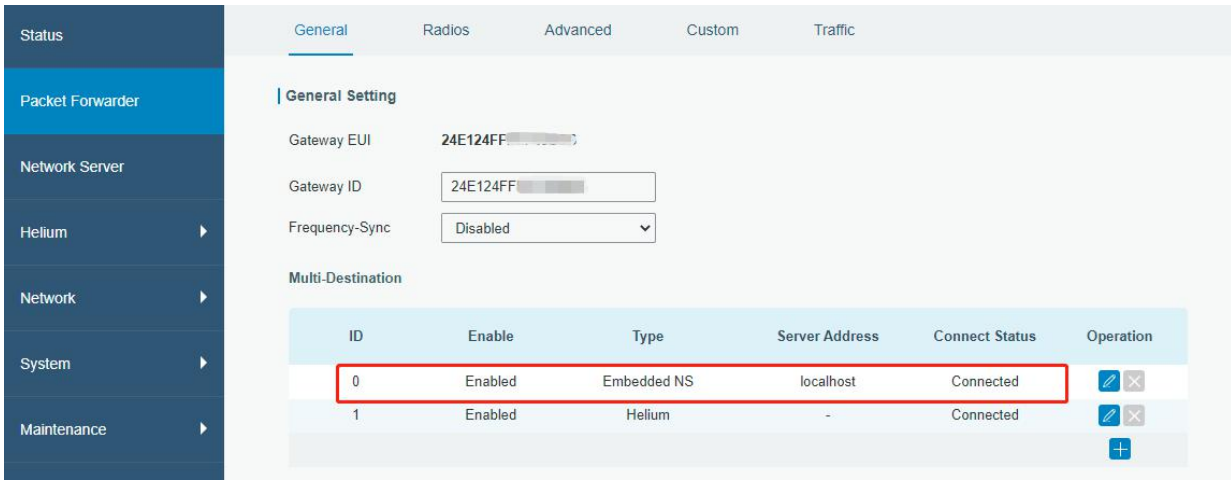
9. Network Server Configuration

UG67 can work as network server and transmit data to Milesight IoT Cloud or other platform via MQTT/HTTP/HTTPS.

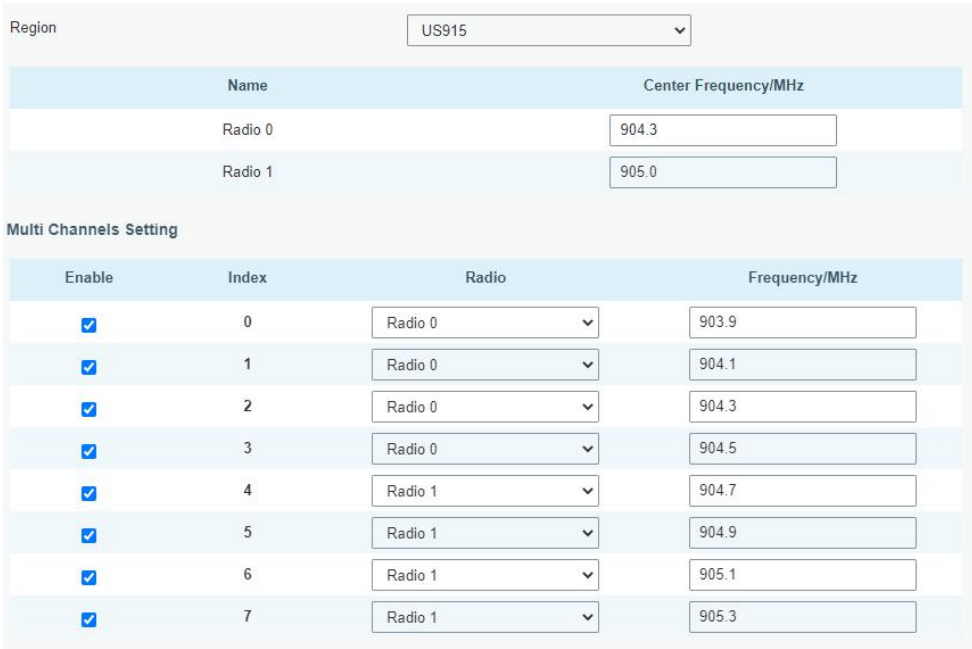
9.1 Connect UG67 to Milesight IoT Cloud

A. Go to “Packet Forwarder” → “General” page to enable the embedded network server.

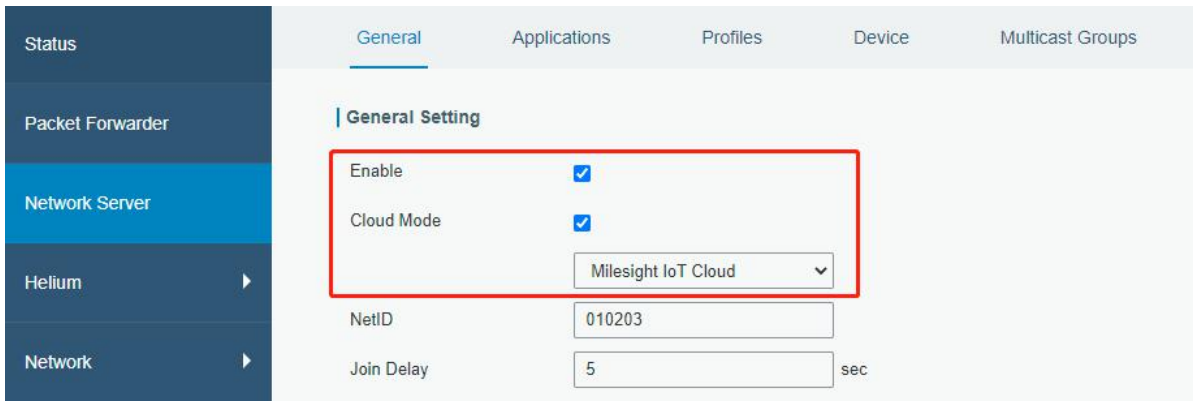
Note: when you enable and click “Save & Apply”, the Helium program will reboot and disconnect for dozens of seconds.



B. Go to “Packet Forwarder” → “Radio” page to select the antenna type, center frequency and channels. The channels of the gateway and nodes need to be the same.

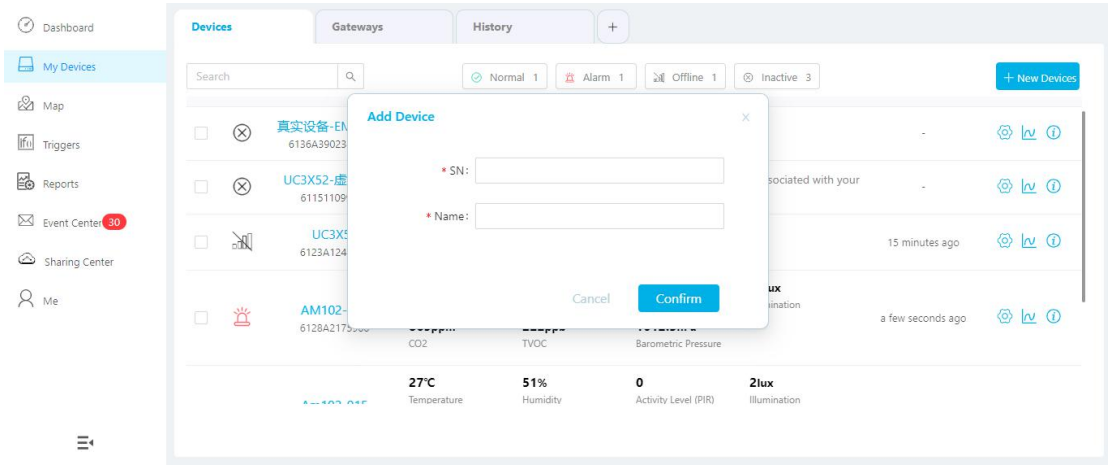


C. Go to “Network Server” → “General” page to enable the network server and “Milesight IoT Cloud” mode.

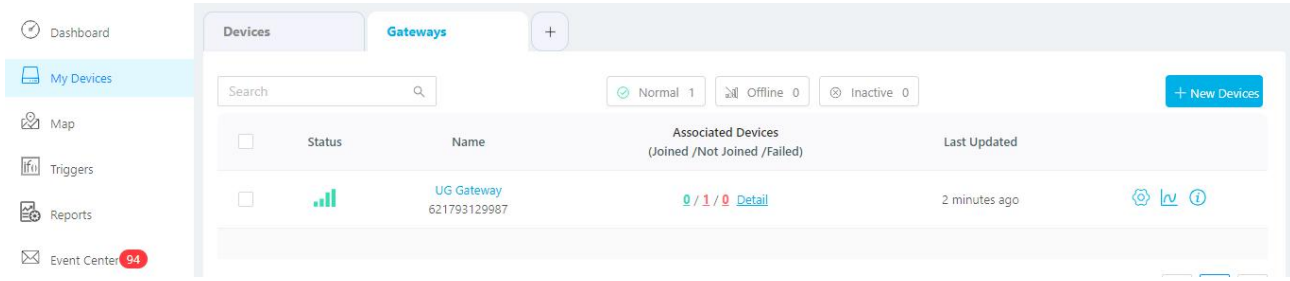


D. Log in the Milesight IoT Cloud. Then go to “My Devices” page and click “+New Devices” to add

hotspot to Milesight IoT Cloud via SN. Gateway will be added under “Gateways” menu.



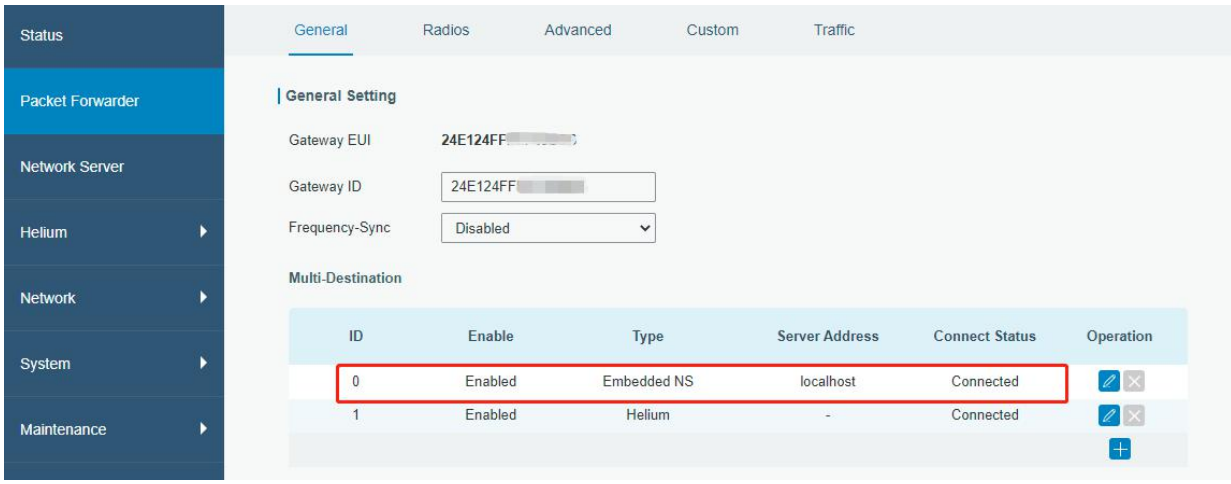
E. The hotspot is online on Milesight IoT Cloud.



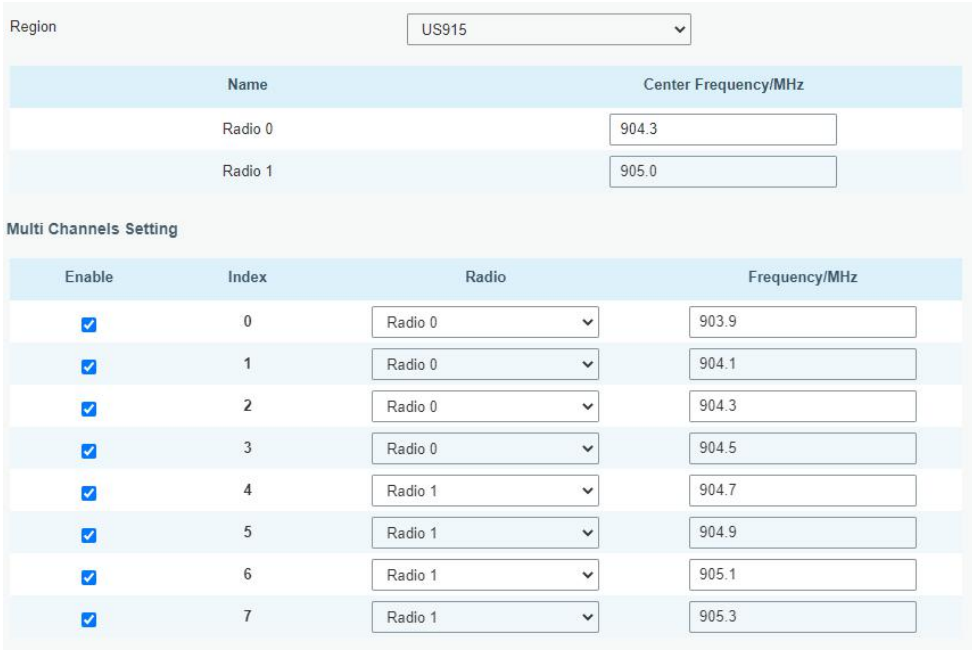
9.2 Connect UG67 to MQTT/HTTP Server

A. Go to “Packet Forwarder” → “General” page to enable the embedded network server.

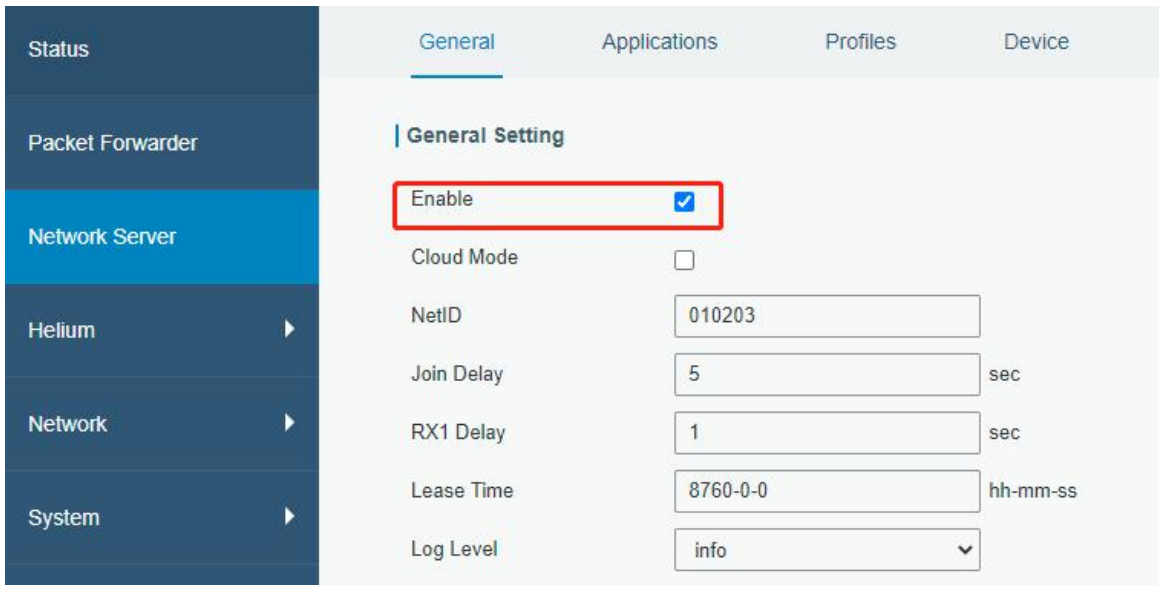
Note: when you add any NS or modify the NS setting and click “Save & Apply”, the Helium program will reboot and disconnect for dozens of seconds.



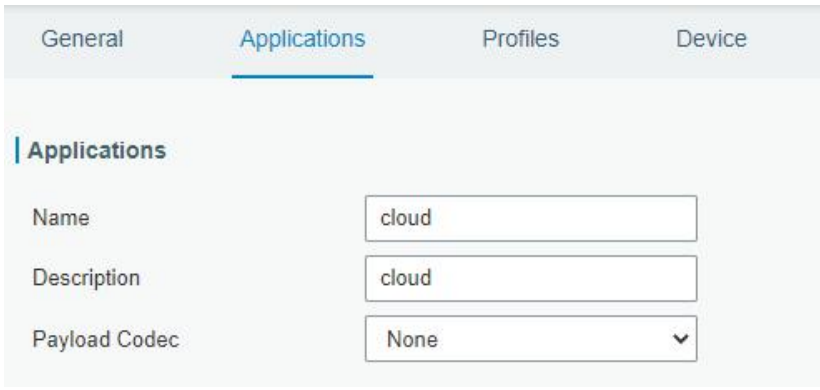
B. Go to “Packet Forwarder” → “Radio” page to select the antenna type, center frequency and channels. The channels of the gateway and nodes need to be the same.



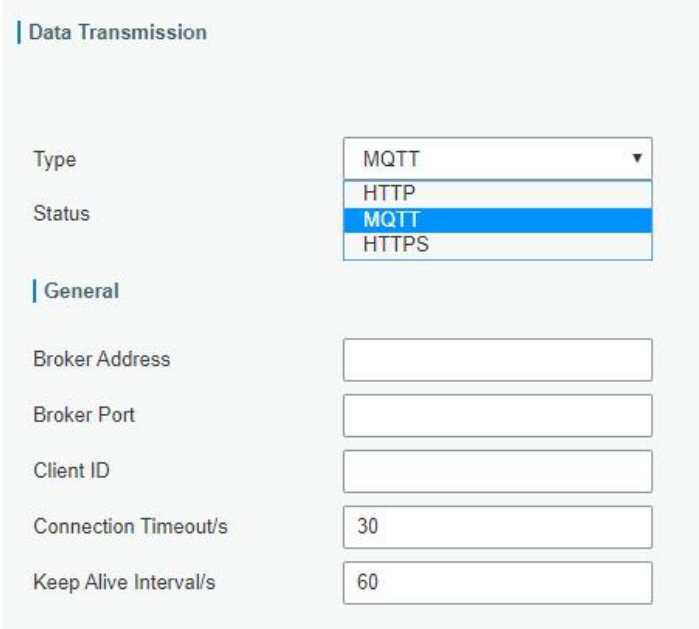
C. Go to “Network Server” → “General” page to enable the network server mode.



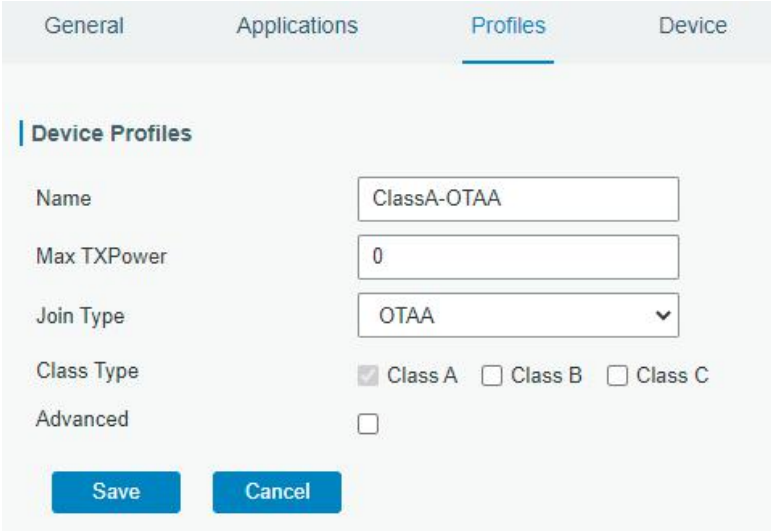
D. Go to “Network Server”→”Application” to add a new application.



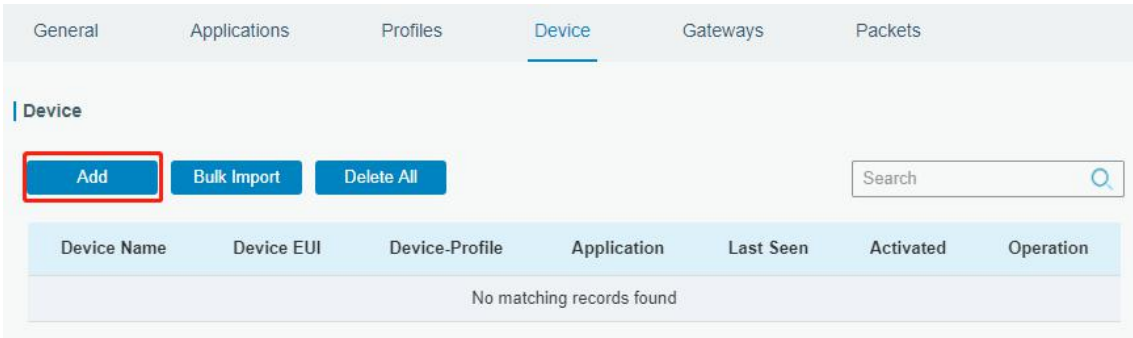
After saving the application, you can select HTTP, HTTPS or MQTT protocol and fill in correspond server information to send data to another server.

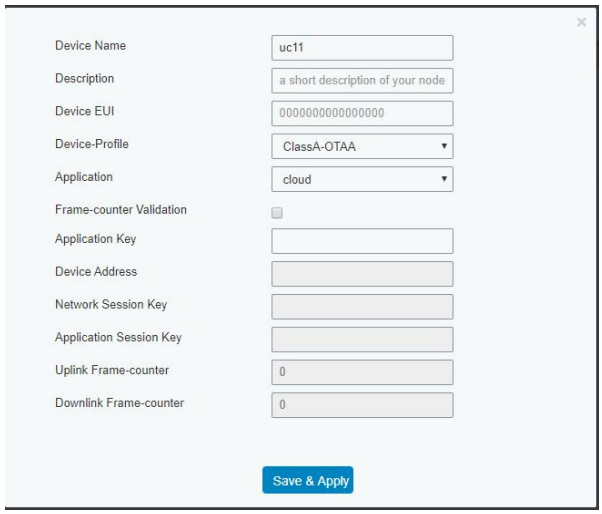


E. Go to “Profiles” page to add a new profile for the device.



F. Go to “Device” page and click “Add” to add LoRaWAN® node devices.





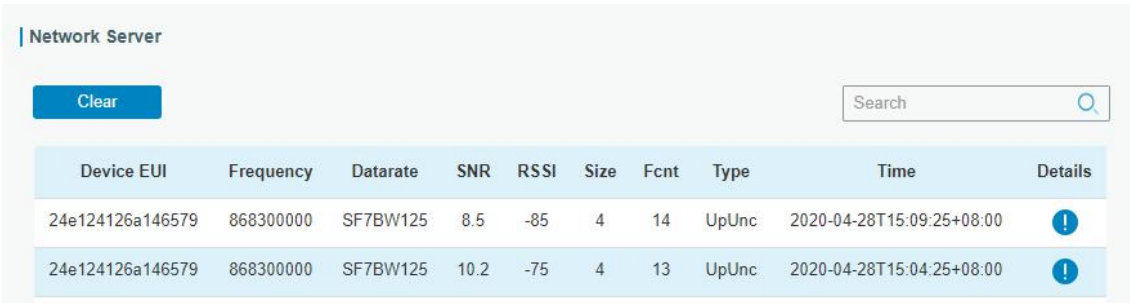
You can also click “Bulk Import” if you want to add all nodes at once.

Click “Template Download” to download template file and add device information to this file. Application and device profile should be the same as you created on web page.

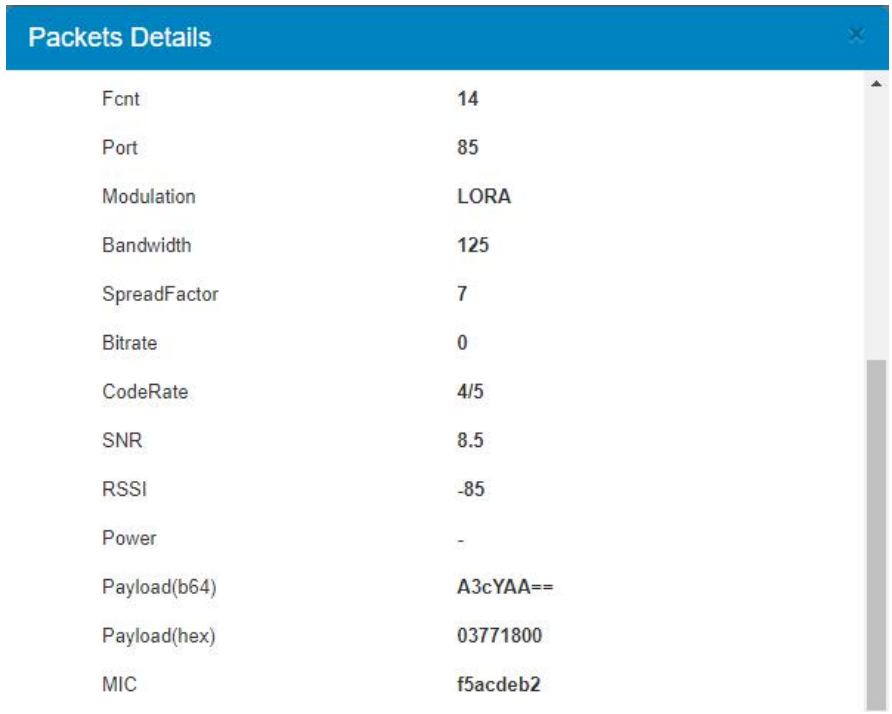
	A	B	C	D	E	F	G	H	I
1	name	description	deveui	application	deviceprofile	appkey	devaddr	appskey	nwkskey
2	24e1242191323266		24e1242191323266	cloud	ClassC-OTAA	112233445566778899aa112233445566			
3									
4									
5									

Import this file to add bulks of devices.

G. Go to “Packets” page to check the packets from LoRaWAN® node devices. The type starts from “Up” means uplinks and “Dn” means downlinks.



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


Packets Details
Fcnt 14
Port 85
Modulation LORA
Bandwidth 125
SpreadFactor 7
Bitrate 0
CodeRate 4/5
SNR 8.5
RSSI -85
Power -
Payload(b64) A3cYAA==
Payload(hex) 03771800
MIC f5acdeb2

[END]