5G ODU

User Manual

V 1.0.0

Xiamen Four-Faith Communication Technology Co., Ltd.
https://www.fourfaith.com

Revision History

Date	Version	Declaration	Author
2023-11-24	V1.0.0	Initial version	YYL

Copyright Notice

Trademark Statement

Product Applicability Statement

This user manual explains how to configure the following devices:

- FNB600

FCC Statement:

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or changes to this equipment. Such modifications or changes could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following

measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Federal Communication Commission (FCC) Radiation Exposure Statement
When using the product, maintain a distance of 20cm from the body to ensure compliance with RF exposure requirements.

CE Warning:

1. The product shall only be connected to a USB interface of version USB2.0 or higher.
2. Adapter shall be installed near the equipment and shall be easily accessible.
3. Supply by specified adapter the operating temperature of the device.can't exceed 40℃ and shouldn't be lower than -10℃. Supply by other power supply the operating temperature of the device.can't exceed 60℃ and shouldn't be lower than -20℃.
4. The plug considered as disconnect device of adapter.
5. The device complies with RF specifications when the device used at 20cm from the body.

Hereby, Xiamen Four-Faith Communication Technology Co.,Ltd declares that this product is in compliance with essential requirements and other relevant provisions of Directive 2014/53/EU. This product is allowed to be used in all EU member states.

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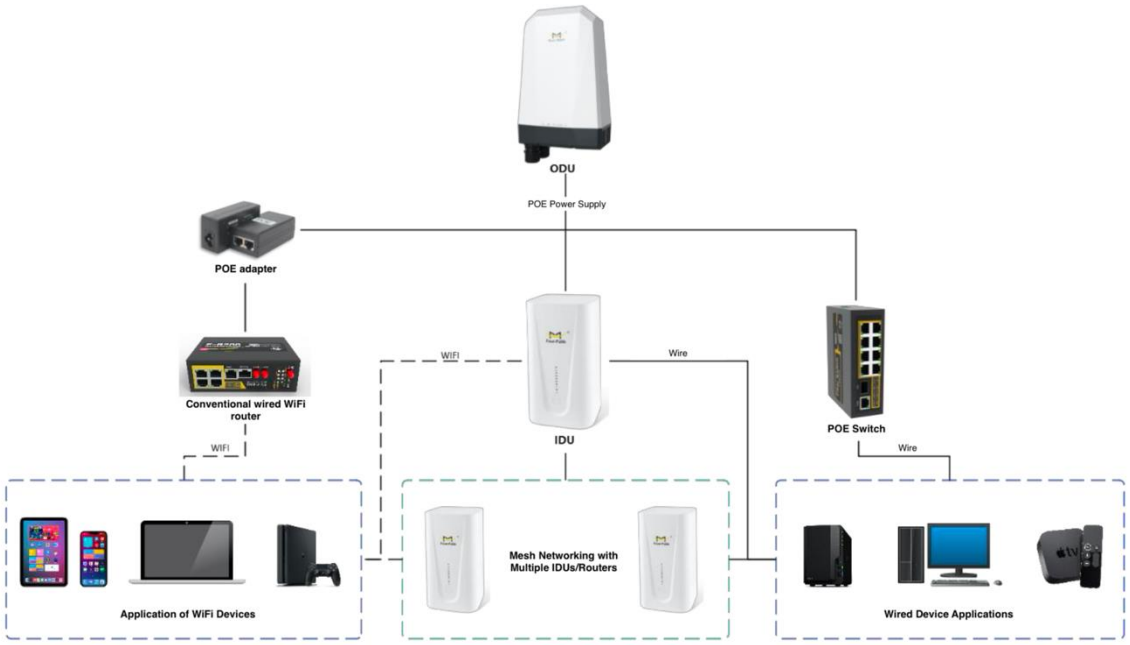
Contents

Chapter 1 Product Introduction

1.1 Product Overview

The FNB600 is a high-performance 5G outdoor unit (ODU) that supports NR (SA&NSA), TDD-LTE, and FDD-LTE. It can convert cellular network data into wired Ethernet data. Equipped with a high-speed 2.5G LAN interface, it supports PoE power supply, a metal heat dissipation base, and an IP68 waterproof shell. It is suitable for outdoor harsh environments where fast deployment of Fixed Wireless Access (FWA) is needed.

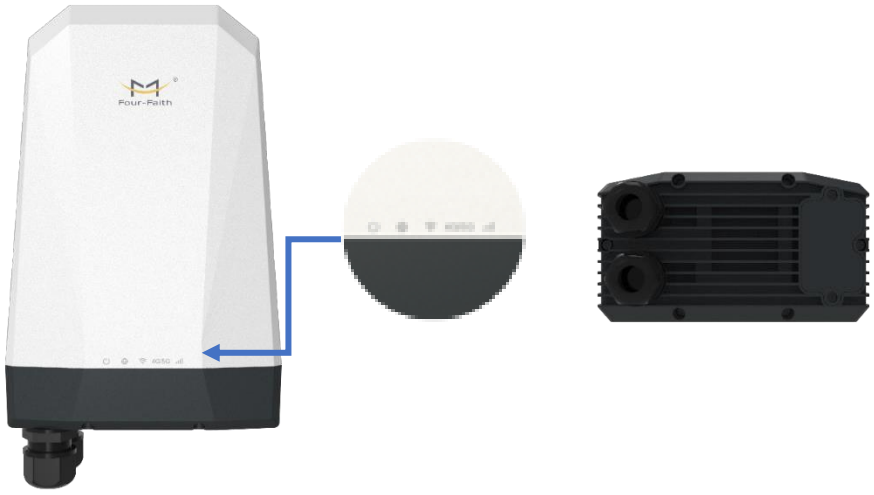


1.2 Product Features

- Supports a standard DC power supply port, which allows direct DC power supply deployment in situations where PoE is inconvenient to use.
- Equipped with a metal heat dissipation base, it efficiently dissipates internal heat, ensuring 24/7 high-speed and stable operation.
- Supports PoE input.
- It supports dual SIM cards, with one serving as the primary and the other as a backup.
- It boasts a high protection level of up to IP68.
- Supports various installation methods such as pole mounting and wall mounting.
- Customized high-gain antennas are available to enhance signal reception capabilities.

- It operates on a commercial router operating system.
- It includes features like frequency locking, cell locking, bridge mode, TR069, DDNS, firewall, QoS, and traffic statistics.

1.3 Product Appearance Overview



Indicator Light	Name	Definition Explanation
	Power Indicator Light	Power Indicator Light 1. Blue Steady on: Indicates normal power supply. 2. Off: Indicates abnormal power supply.
	LAN	LAN Indicator Light 1. If it is blinking blue, it indicates that the wired network connection is normal. 2. If it is not lit, it indicates a wired network abnormality.
	WiFi	WiFi Signal Indicator Light 1. Blue Steady on: Indicates WiFi is enabled. 2. Off: Indicates WiFi is disabled.
4G/5G	Cellular Network	Connected to Cellular Network 1. Solid blue indicates a connection to the 5G network. 2. Solid yellow indicates a connection to the 3G/4G network.

		3. If it is not lit, it means there is no network connection. 4. Blinking indicates dialing; the frequency of blinking is 500ms per cycle.
	**Cellular Signal Indicator**	1. Solid blue indicates a strong signal, defined as RSRP > -95dBm or RSCP > -80. 2. Solid yellow indicates a weak signal, defined as RSRP ≤ -95dBm or RSCP ≤ -80. 3. If it is not lit, there is no signal or no SIM card inserted.

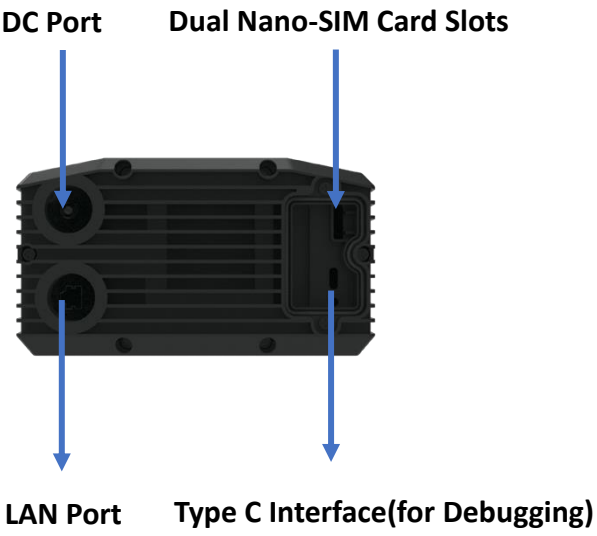
1.4 Product Specifications

FNB600	
Wireless Parameters	
Frequency Bands and MIMO	5G NR NSA & SA: n1/n2/n3/n5/n7/n8/n12/n14/n20/n25/n28/n30/n38/n40/n41/n48/n66/n71/n77/n78/n79 LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B20/B25/B26/B28/B29/B30/B32/B66/B71 LTE-TDD: B38/B40/B41/B42/B43/B48 LAA: B46 WCDMA: B1/B2/B4/B5/B8 5G NR: DL 4 ×4 MIMO: n1/n2/n3/n7/n25/n30/n38/n40/n41/n48/n66/n77/n78/n79 UL 2 ×2 MIMO: n41/n77/n78/n79 LTE: DL 4 ×4 MIMO: B1/B2/B3/B4/B7/B25/B30/B32/B38/B40/B41/B42/B43/B48/B66 Note: Supported frequency bands may vary depending on the selected regional version.
Theoretical Maximum Speed	5G Sub-6 SA: Downlink Speed: 4.67 Gbps, Uplink Speed: 1.25 Gbps 5G Sub-6 NSA: Downlink Speed: 4.47 Gbps, Uplink Speed: 730 Mbps LTE: Downlink Speed: 1.6 Gbps, Uplink Speed: 211 Mbps

Hardware Parameters	
CPU	Cortex-A55@2.0GHz, Quad-core
DDR3	1GB(8Gbit)
FLASH	1GB(8Gbit)

WIFI Parameters	
WIFI Protocol	IEEE802.11 a/b/g/n
Frequency Band	2.4GHz(only for Configuration)
Power Supply	
Standard Power Supply	POE: 802.3af / DC: 12V 1.5A
Interface Parameters	
Ethernet Interface LAN	1 x 2.5G Ethernet port (RJ45),, adaptive MDI/MDIX
Indicator Lights	Power, Internet, WIFI, 5G/4G, Signal
SIM Card	2xNano-SIM(One main and one backup)
USB	Type C 2.0
Reset Button	Can restore parameter configuration to factory settings.
Physical Characteristics	
Enclosure	ABS material, Metal base, IP68* device protection level. During testing, without inserting Ethernet and power cables, loosening the Ethernet cable may affect the waterproof effect
Dimensions	150x100x240mm
Weight	<= 1kg
Working temperature	-20~+60ºC
Storage Temperature	-40~+85ºC
Relative Humidity	95% (non-condensing)

1.5 Interface Figure



Interface	Name	Definition Explanation
DC Port	**POE Interface**	POE: 802.3af / DC: 12V 1.5A
LAN Port	**LAN**	1 x 2.5G Ethernet port (RJ45),, adaptive MDI/MDIX
SIM Card	**Nano-SIM Card Slot**	Install Nano-SIM Card
USB Interface	**Type-C Interface**	The Type-C interface is for development personnel debugging only.

Chapter 2 Install Internet Configuration

2.1 Configure SIM card for Internet Access

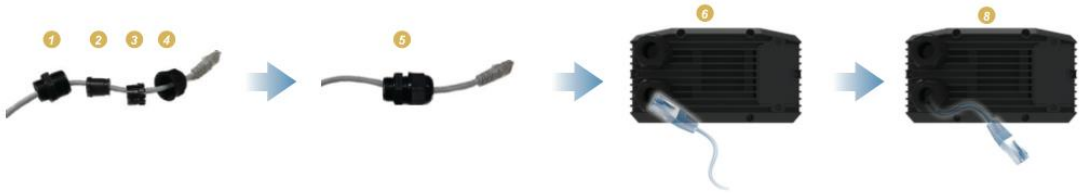
2.1.1 Configure SIM card for Internet Access(POE Supply)

Step 1: Unscrew the two screws on the device cover and remove the cover.

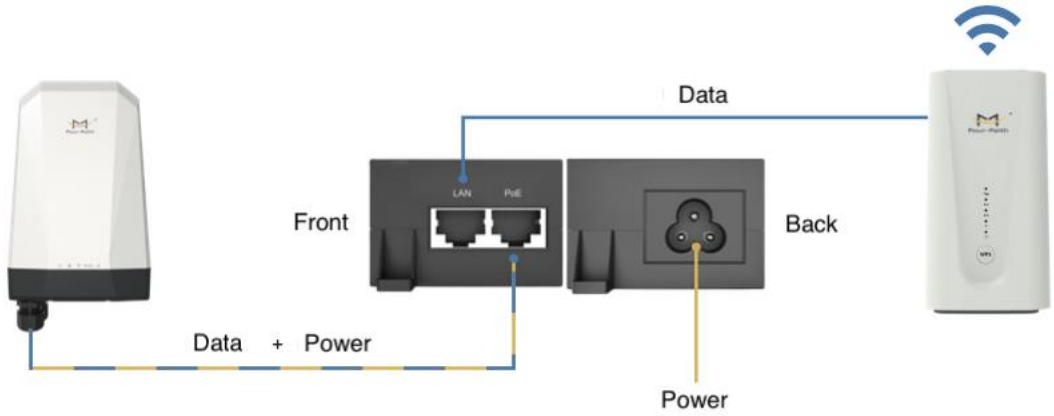
Step 2: Insert the SIM card according to the direction indicated by the SIM card slot (the left side of the slot is for the secondary card, and the right side is for the main card).

Step 3: Screw the device cover back on.

Step 4: Follow the steps from left to right in the picture to thread the Ethernet cable into the waterproof connector. Tighten the waterproof connector, insert it into the device LAN port, and securely fasten the waterproof connector to the device. Note: It is recommended to use a wrench to tighten; failure to tighten properly may affect the waterproof performance.



Step 5: Insert the Ethernet cable into the POE adapter's POE port, power on the adapter, and it will start automatically. Plug another Ethernet cable into the LAN port of the POE adapter and connect it to the IDU to provide wired connectivity for other network devices.



2.1.2 Configure SIM card for Internet Access(DC Supply)

Refer to steps 1 to 3 in the "Configure SIM card for Internet Access(POE Supply)" for the SIM card installation process.

Step 4: Follow the steps from left to right in the picture to sequentially insert the DC power cord into the waterproof connector, tighten the waterproof connector, plug it into the device's DC port, tighten the waterproof connector to the device, and power on the device. Note: If the DC power cord is too thin, it is recommended to wrap several turns of waterproof tape outside the coil to enhance waterproof performance.

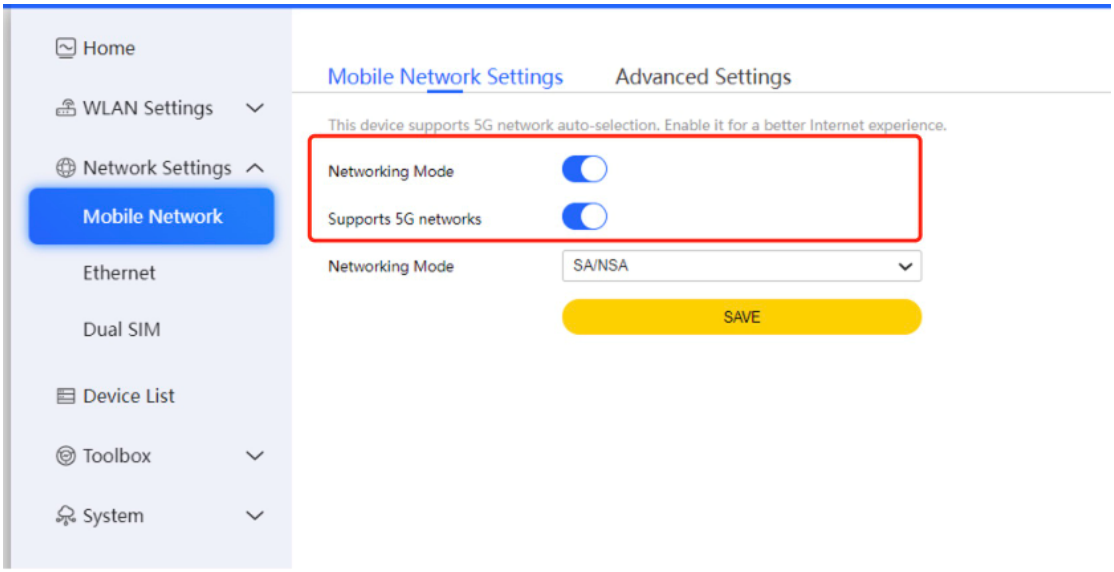
Step 5: The installation method for the Ethernet cable is the same as the step 4 in "Configure SIM card for Internet Access(POE Supply)"

Step 6: Connect the Ethernet cable to the IDU to provide wired or wireless network access for

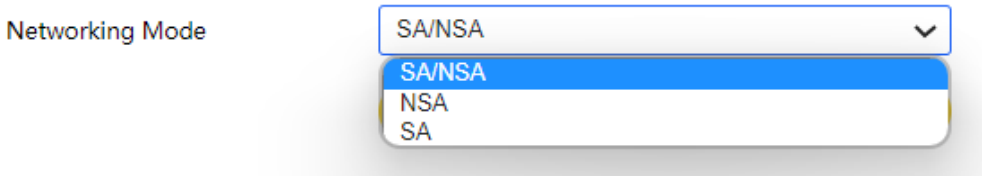
other network devices.

2.2 Mobile Network for Internet Access

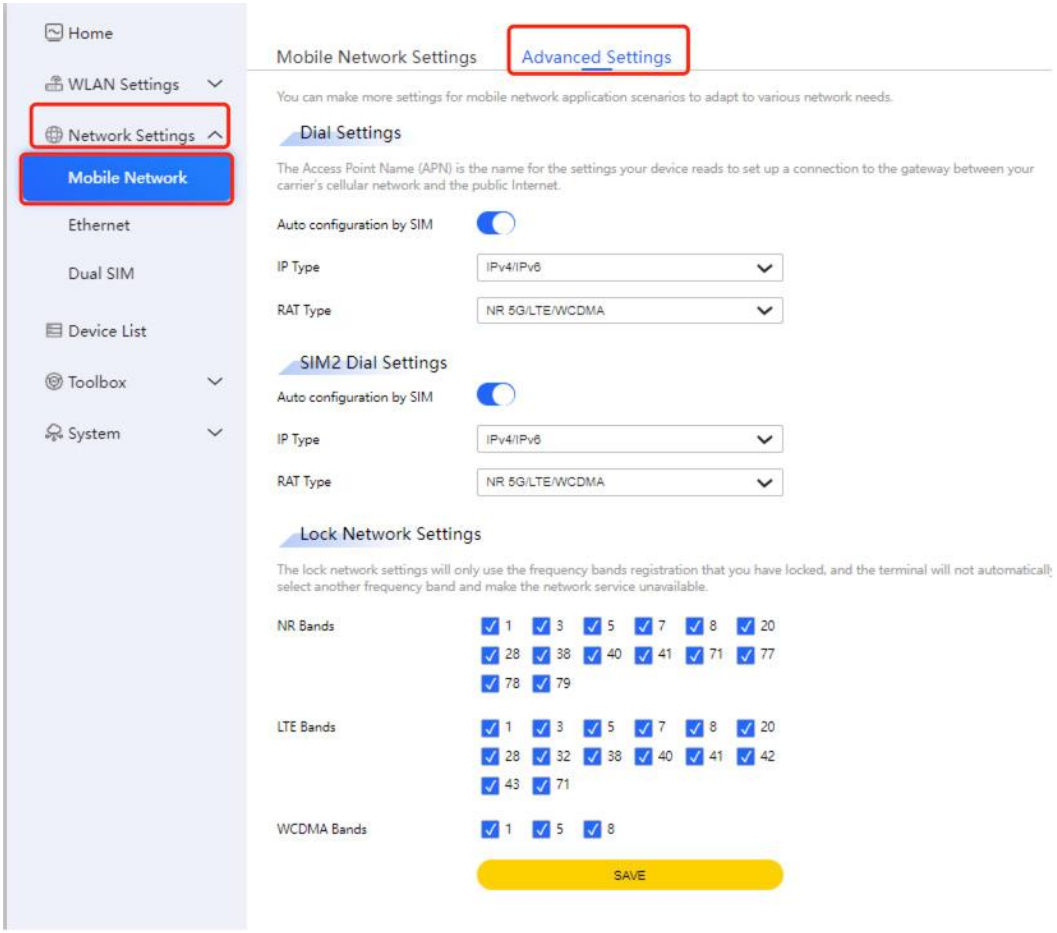
Step 1: After inserting the SIM card and powering on the device, open a browser and manually enter: 192.168.1.1. The initial login credentials are: admin (username) and admin (password). Then, select "Network Settings" > "Mobile Network" > "Mobile Network Settings," and enable "Networking Mode" and "Supports 5G Networks."



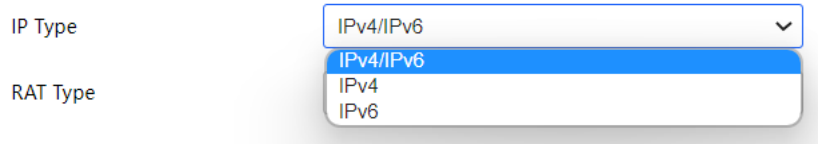
Select “Networking Mode”, then click “Save”



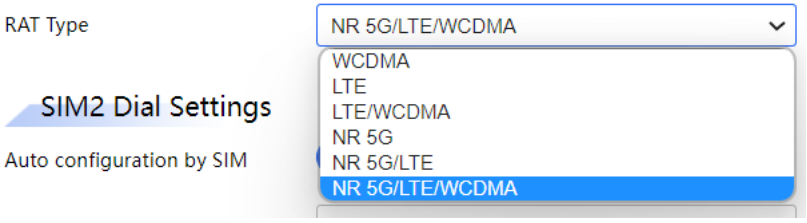
Step 2: Select Network Settings – Mobile Network – Advanced Settings, then enable “Auto configuration by SIM”.



Select IP Type



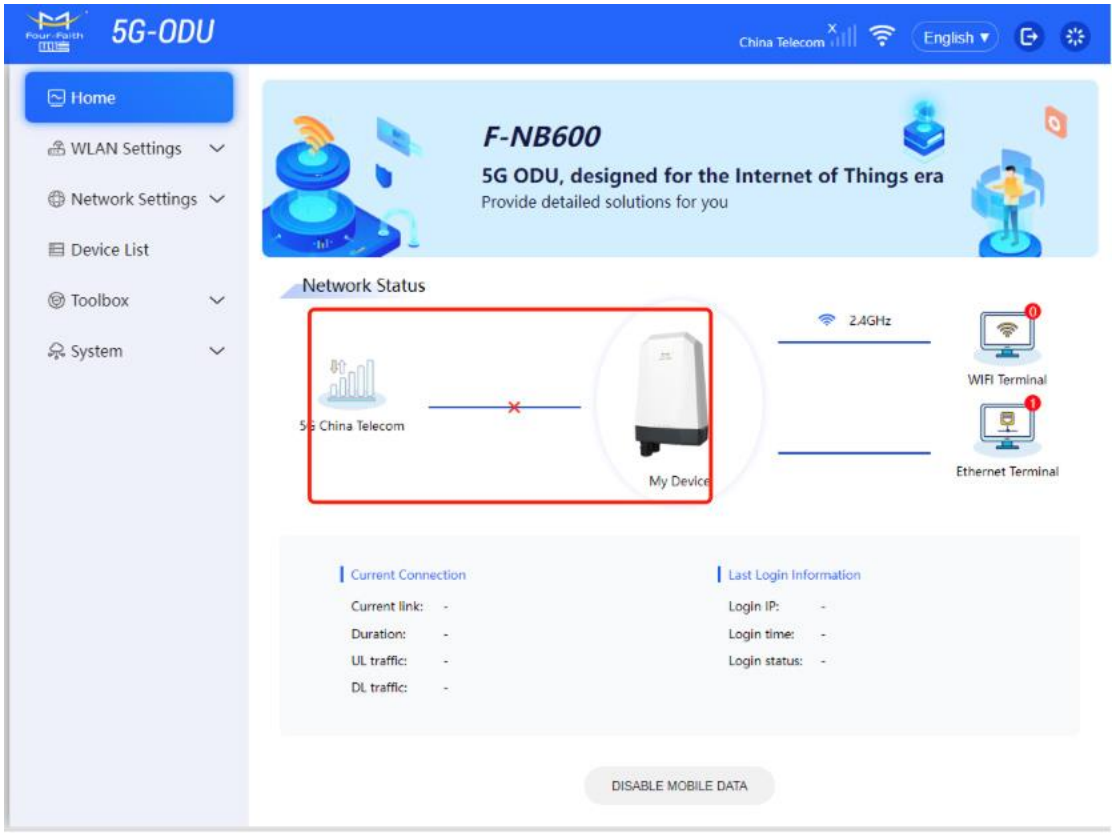
Select RAT Type



SIM2 dial-up settings are the same.

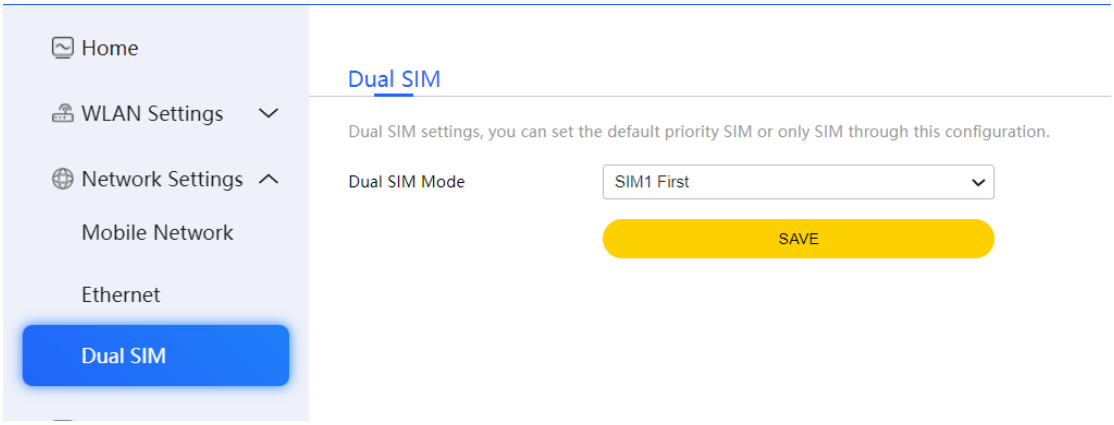
Click “Save”

Step 3: Select the "Home" page of the Configuration page, and check the "Network Status"



2.3 Dual SIM Card Settings

The WEB configuration page allows you to set the priority between two SIM Cards, with "SIM1 First"being the default priority (i.e., SIM card network). Select "Network Settings"- "Dual SIM"- "Dual SIM"

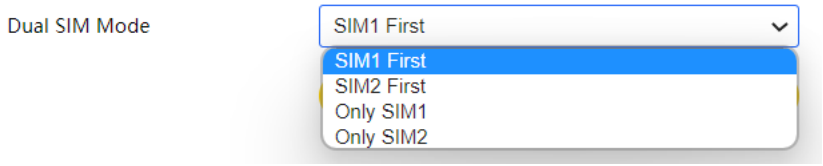


SIM1 First: The device will prioritize using the SIM1 network. When the SIM1 network is unavailable or unstable, it will automatically switch to using the SIM2 connection.

SIM2 First: The device will prioritize using the SIM2 network. When the SIM2 network is unavailable or unstable, it will automatically switch to using the SIM1 connection.

Only SIM1: Using SIM1 only

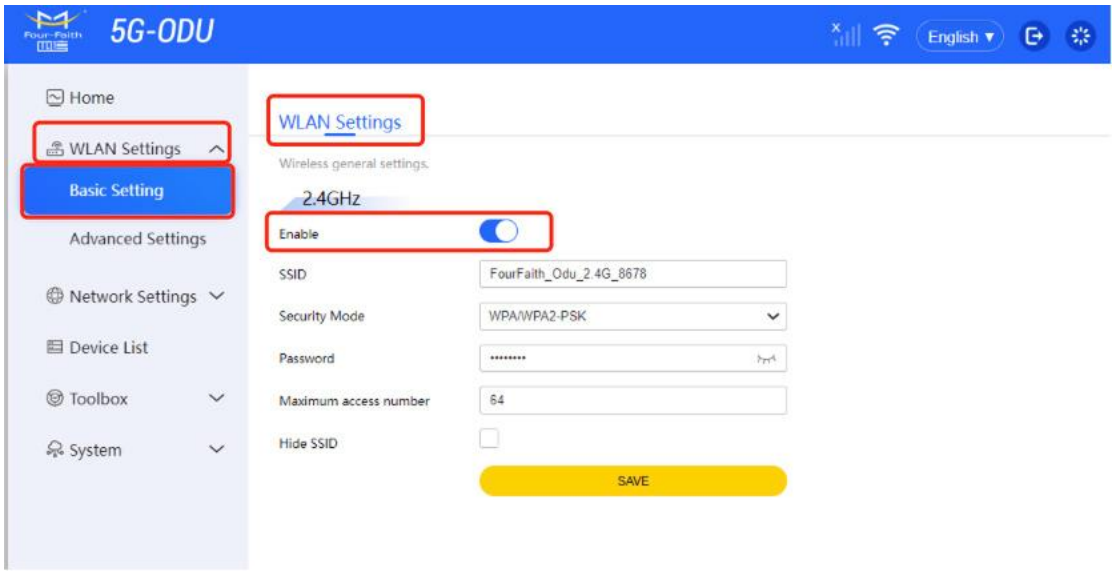
Only SIM2: Using SIM2 only



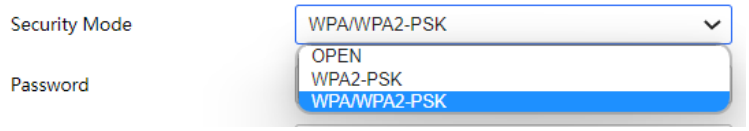
Chapter 3 Configuration of Related Features

3.1 WLAN Configuration

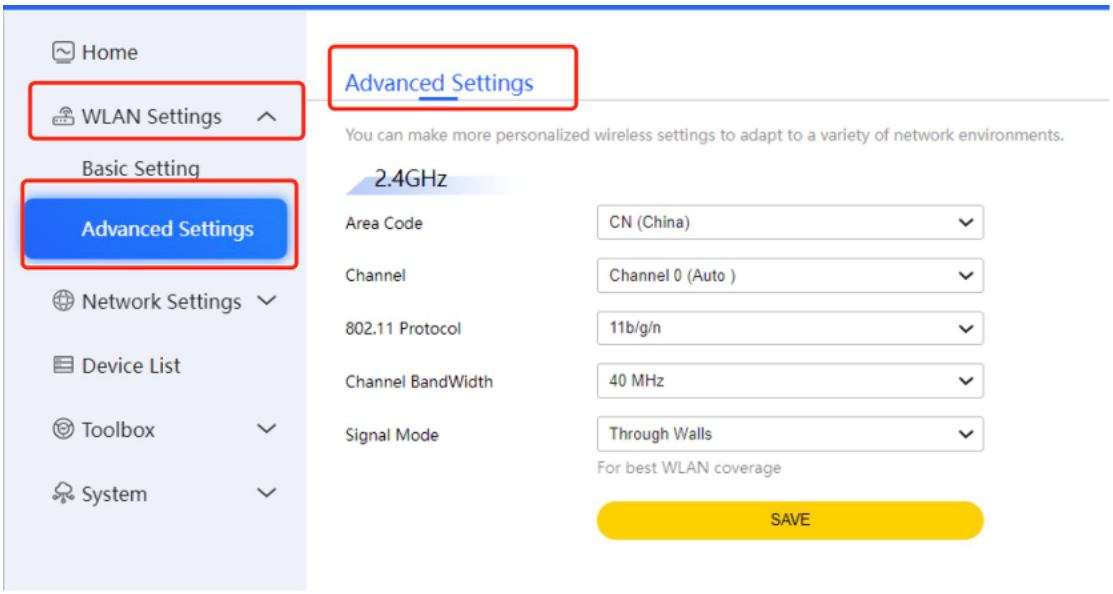
The WLAN settings are divided into basic settings and advanced settings. Basic settings allow you to configure the SSID, security mode, password, connection limit, broadcast hiding. Select “WLAN Settings”- “Basic Setting”- “WLAN Settings”, then Enable it.



Input SSID, Password, Maximum access number. For Security Mode, there are “OPEN”, “WPA2-PSK”and “WPA/WPA2-PSK”Mode.

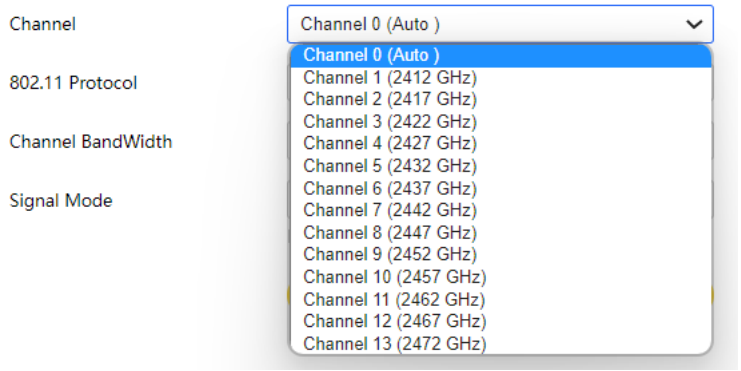


Advanced settings pertain to configuring channels, protocols, bandwidth, Area Code and Signal Mode. Select “WLAN Settings”- “Advanced Settings”-“Advanced Settings”.

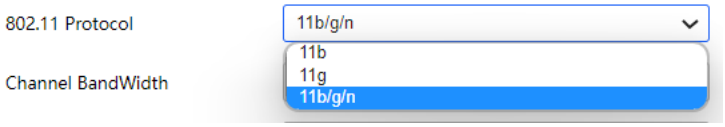


In the WI-FI advanced Settings page, you can find the option for Area code, allowing you to make more detailed wireless network settings.

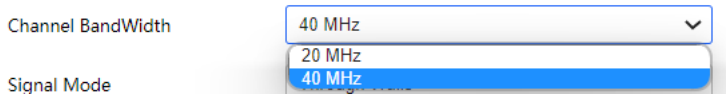
In the WI-FI Advanced Settings page, you will find the channel options, providing you with the ability to customize and optimize your wireless network settings further.



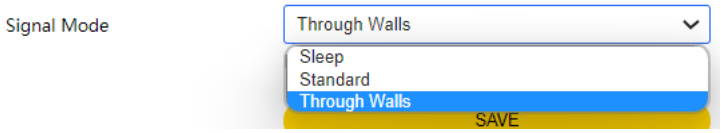
In the WI-FI Advanced Settings page, you can explore the 802.11 protocol options, allowing you to fine-tune and tailor your wireless network settings according to your specific requirements.



For Channel BandWidth, users can choose 40MHz or 20MHz.

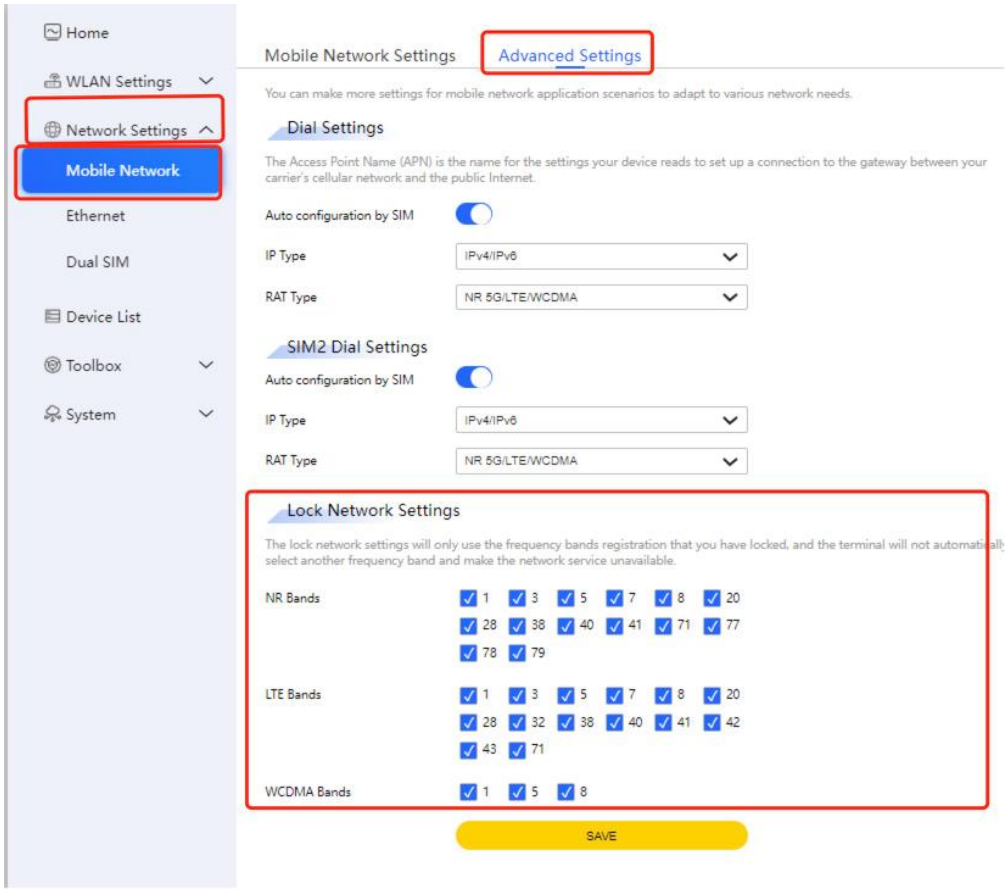


In the WI-FI Advanced Settings page, you'll discover signal mode options that empower you to customize and optimize your wireless network settings, ensuring seamless connectivity tailored to your preferences. Signal Mode includes "Sleep", "Standard" and "Through Walls" Mode.



3.2 Lock Network Settings

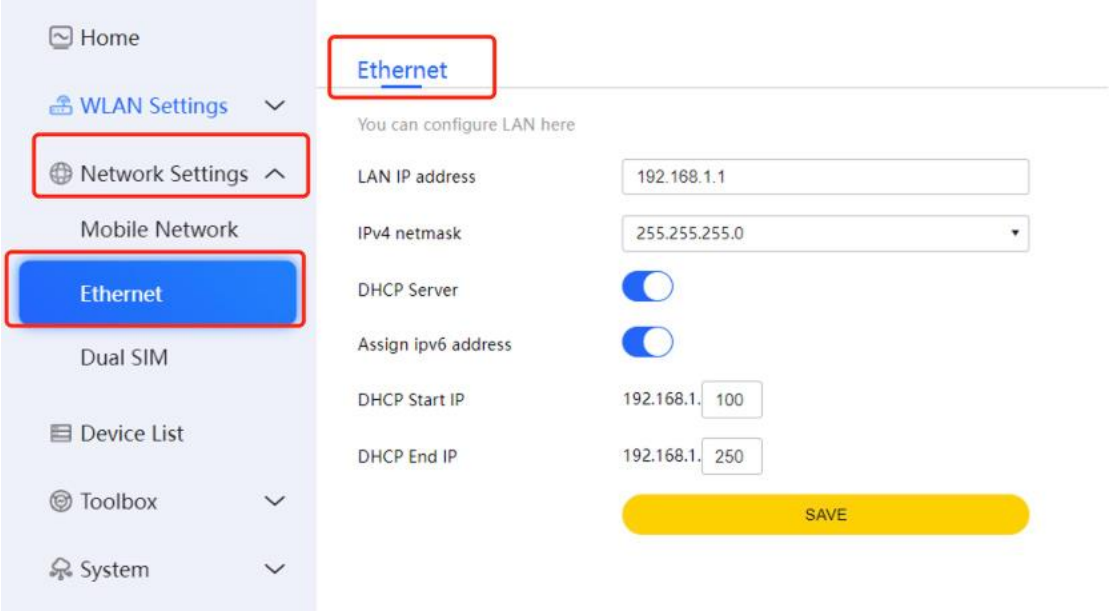
Select "Network Settings"- "Mobile Network"- "Advanced Settings". The Mobile Network Settings Page offers a comprehensive array of options, including the valuable addition of 'Lock Network Settings.' This feature provides users with enhanced control over their mobile network preferences, allowing them to secure and customize settings according to their specific requirements. The Lock Network Settings feature ensures that the device registers only on the user-locked frequency bands. The terminal will not automatically choose other frequency bands, preventing potential network service disruptions.



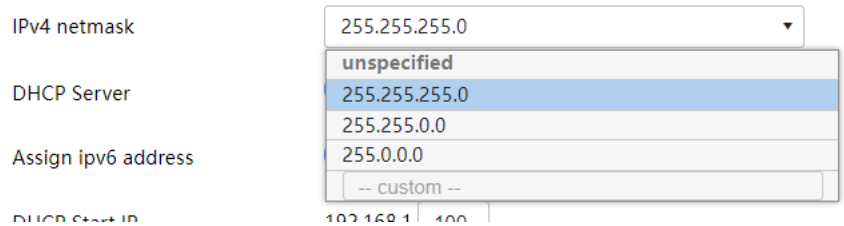
3.3 Ethernet Configuration

Connect one end of the Ethernet cable to the LAN port of the ODU device and the other end to the IDU device or CPE device, providing wired and wireless network access for these devices. Then, select “Network Settings” - “Ethernet” - “Ethernet”.

Ethernet Configuration involves setting up the LAN IP address, activating the DHCP Server, enabling Assign IPv6 address, and specifying the DHCP start and end IP addresses. This ensures efficient management and allocation of IP addresses within the network, facilitating seamless connectivity and communication among devices.

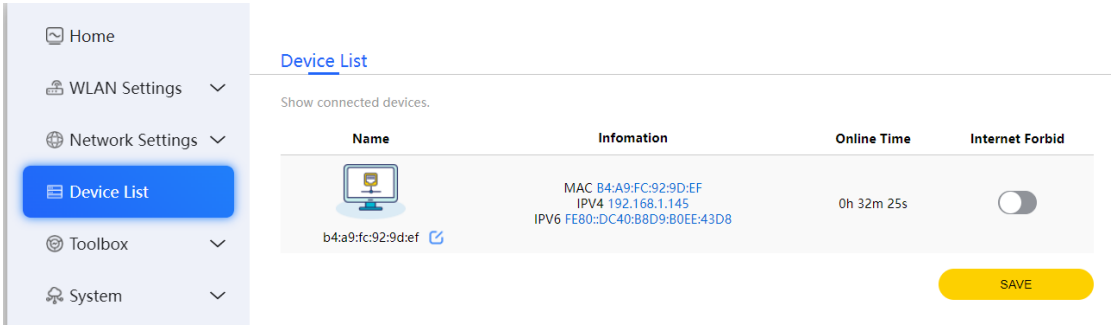


Ethernet Configuration encompasses the IPv4 netmask option, allowing users to define and customize the subnet mask for their network. This feature provides flexibility in tailoring the network layout and optimizing IP address allocation, contributing to a well-organized and efficient networking environment.



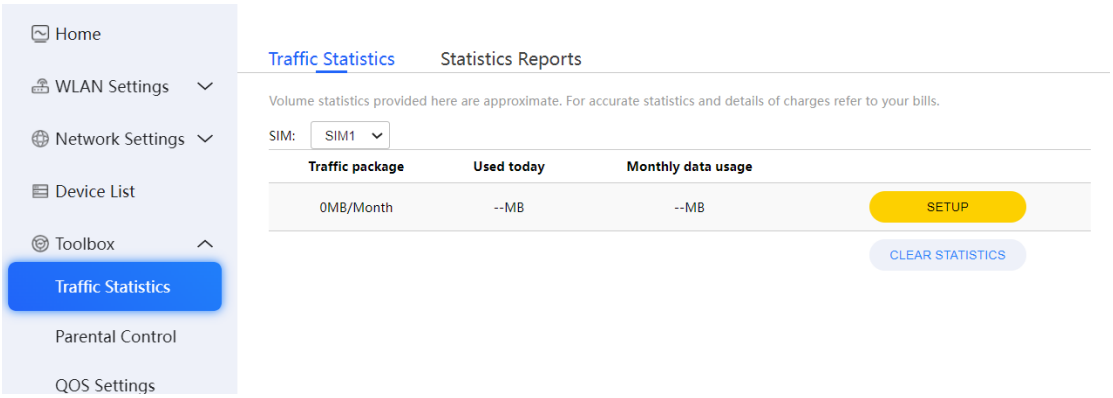
3.4 Device List

Device List shows connected devices.

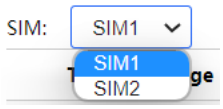


3.5 Traffic Usage Monitoring Configuration

Traffic Usage Monitoring is only applicable to mobile networks. The traffic usage monitoring page displays the total data usage for the current day and month. It also allows you to set up actions for exceeding data package limits and data flow restrictions.



SIM Card Option



To enable data usage exceeded alerts or automatic mobile data disconnection, follow these steps.

Step 1: Configuring Data Usage

Exceeded Data Usage Actions:

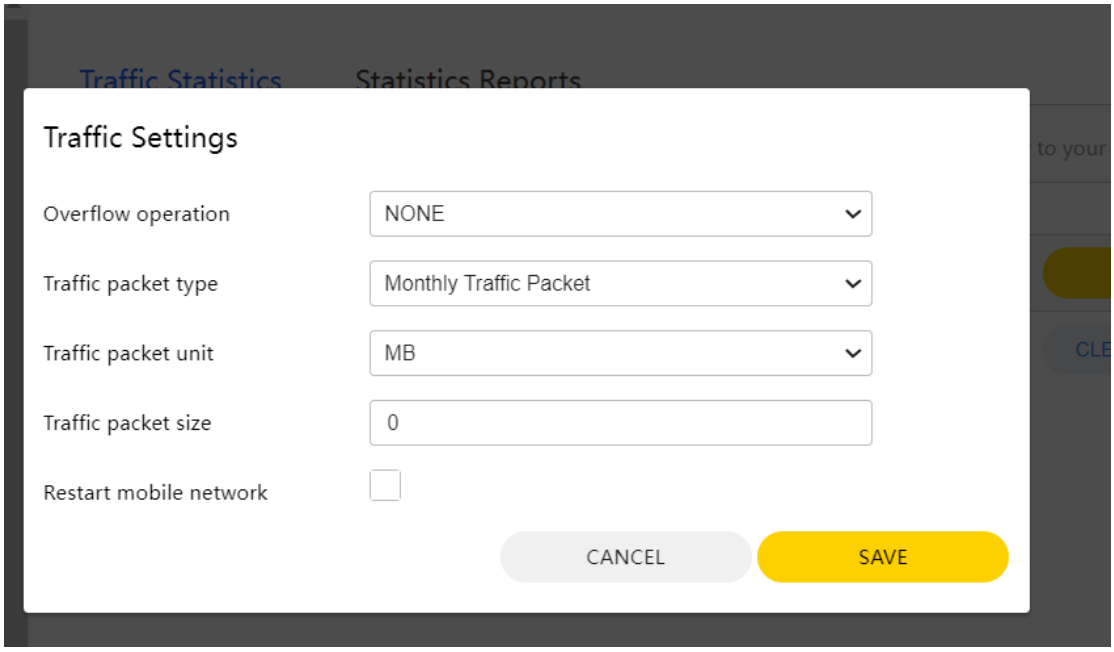
None: When data usage exceeds the set data package limit, a data usage icon will appear in the status bar as a reminder, but the mobile network will not be disconnected, and you can continue to use it.

Disconnect: When data usage exceeds the set data package limit, a data usage icon will appear in the status bar as a reminder, and the mobile network will automatically disconnect, rendering it unusable.。

Data Package Type: Choose to restrict usage based on daily or monthly data limits.

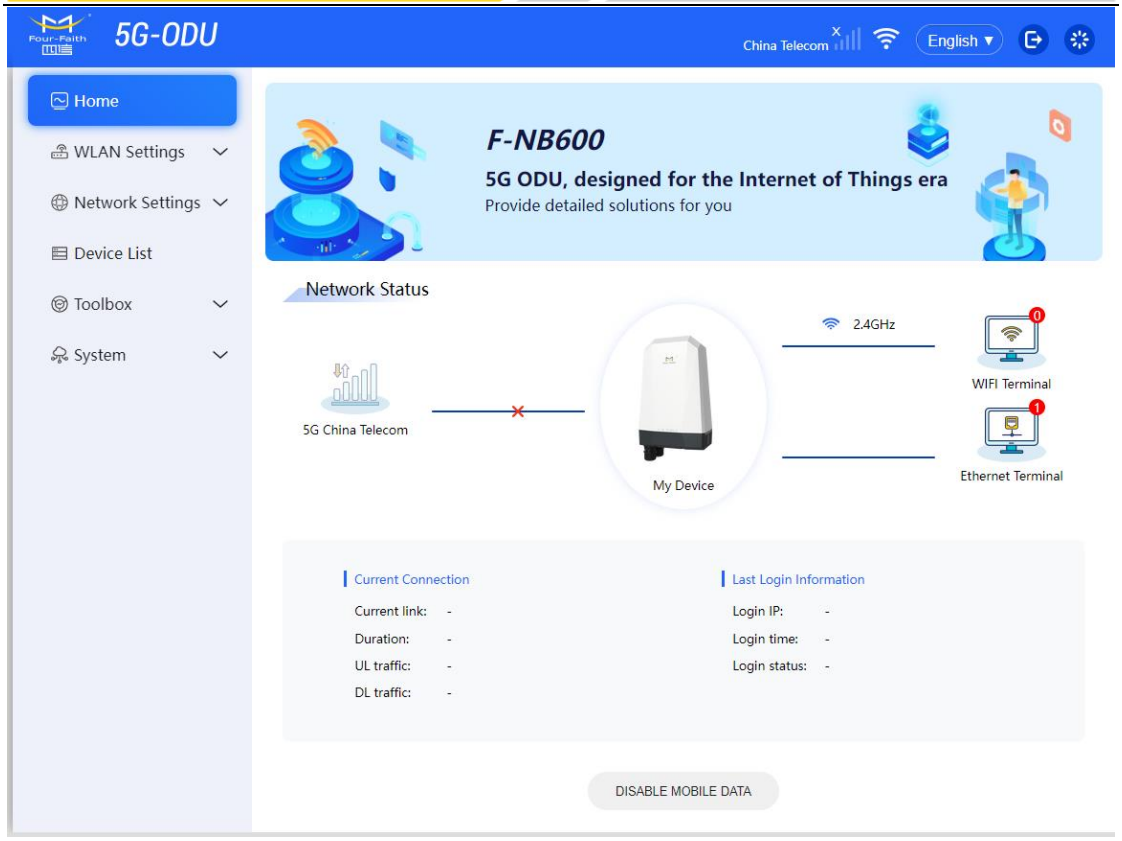
Data Package Size: Perform the corresponding action when the set limit is reached. Set to 0 to have no limit.

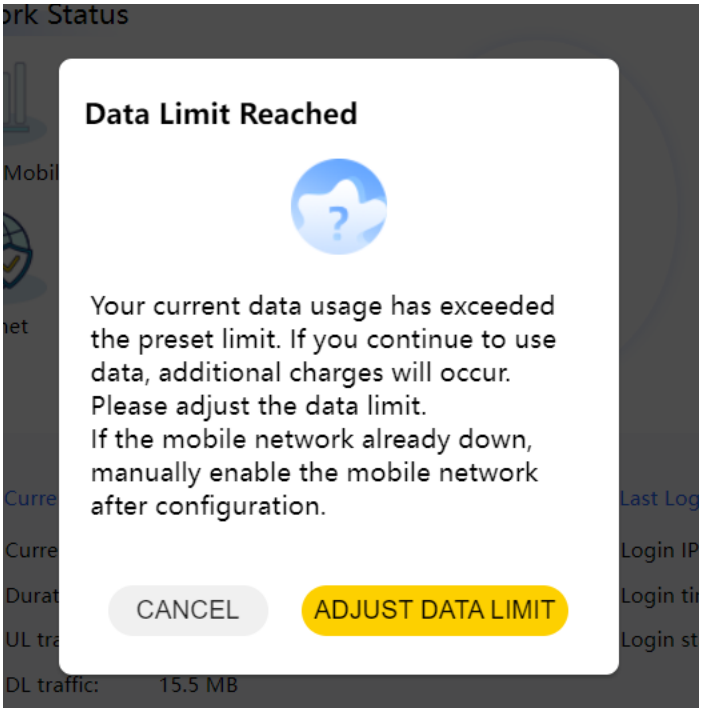
Restart Mobile Network: Check this option and save to enable automatic redialing of the mobile network.

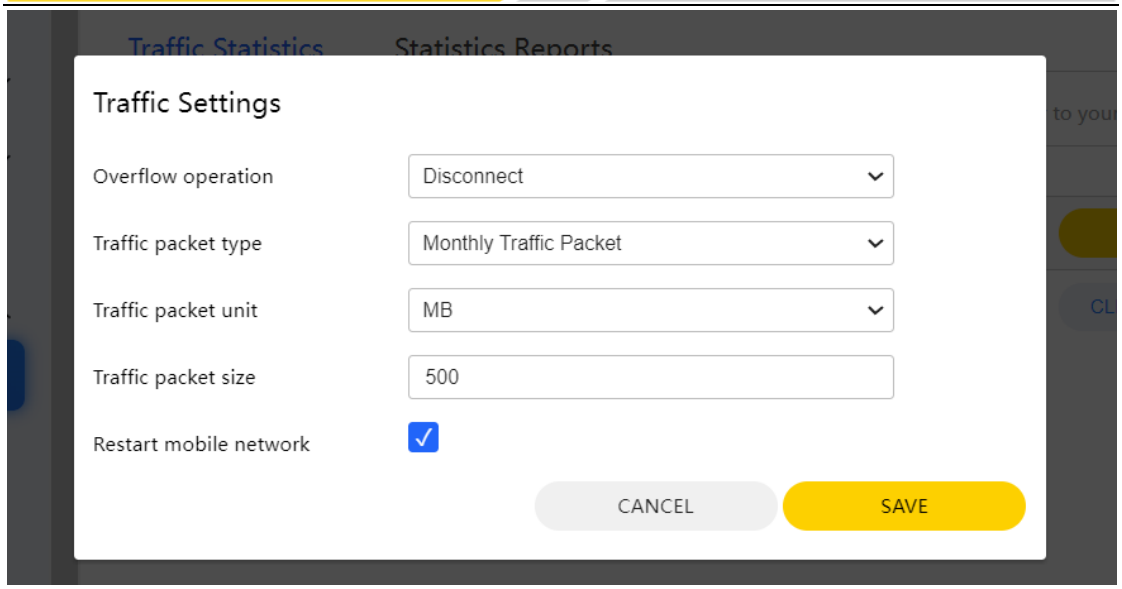


Step 2: Restoring Mobile Network After Data Exceedance

After data usage exceeds the limit and the mobile network disconnects, you will need to manually enable mobile data. On the home screen, click on "Enable Mobile Data." This will display a data usage exceeded notification page. Click on "Reset" to be redirected to the data usage statistics page, where you can reconfigure the data package size. Check the option to enable mobile data and save (if unchecked, after setting the data package size, you will need to manually click "Enable Mobile Data" on the home screen). The mobile network will automatically reconnect and restore connectivity after dialing.





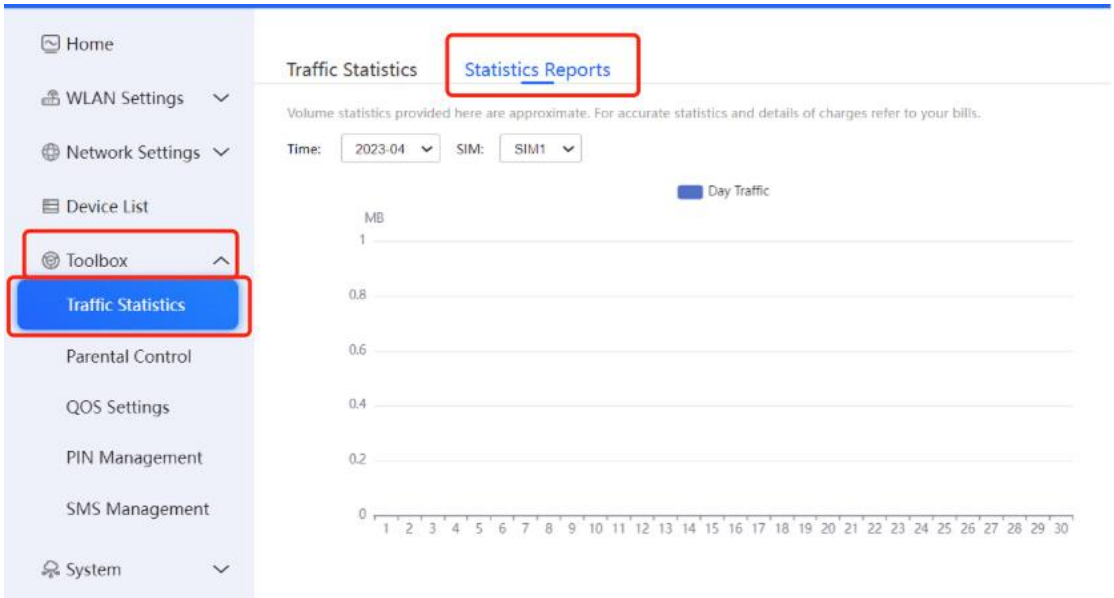


3.6 Statistics Reports

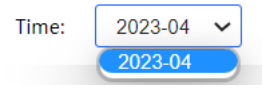
Select “Toolbox” - “Traffic Statistics” - “Statistics Reports”.

The statistical reports summarize the monthly traffic usage of the ODU, presenting a graphical representation of the daily traffic usage throughout the month. This feature offers a comprehensive overview of the ODU's data consumption patterns, aiding users in analyzing and understanding the network traffic dynamics on a day-to-day basis. User can choose specific month and specific SIM card by themself.

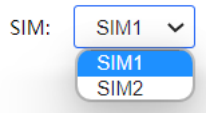
The traffic statistics are provided for reference only, and the actual data usage is subject to the user's billing statement and plan limits.



Month Option:

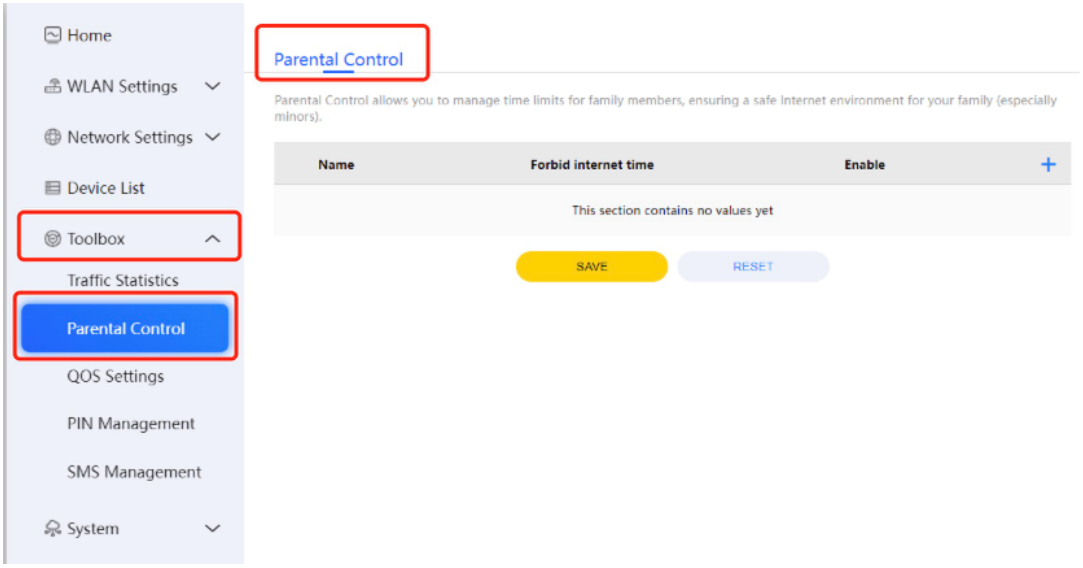


SIM Card Option:

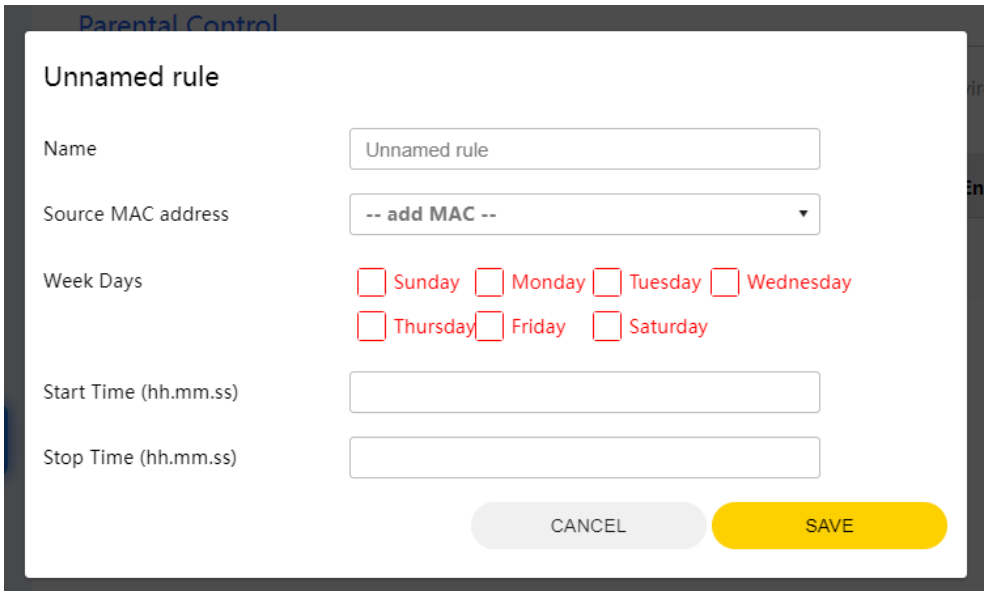


3.7 Parental Control

The parental control feature allows you to set the internet access time for family members, promoting healthy online habits, especially for minors.

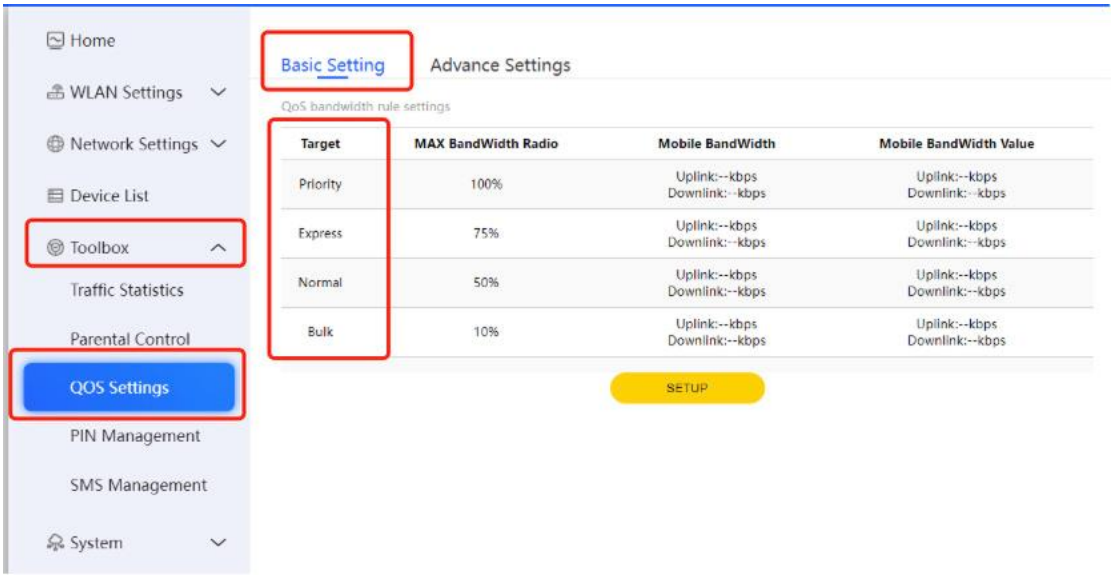


The configuration for child internet protection includes setting a name, selecting the Source MAC address, and defining the times for enabling and disabling the protection.



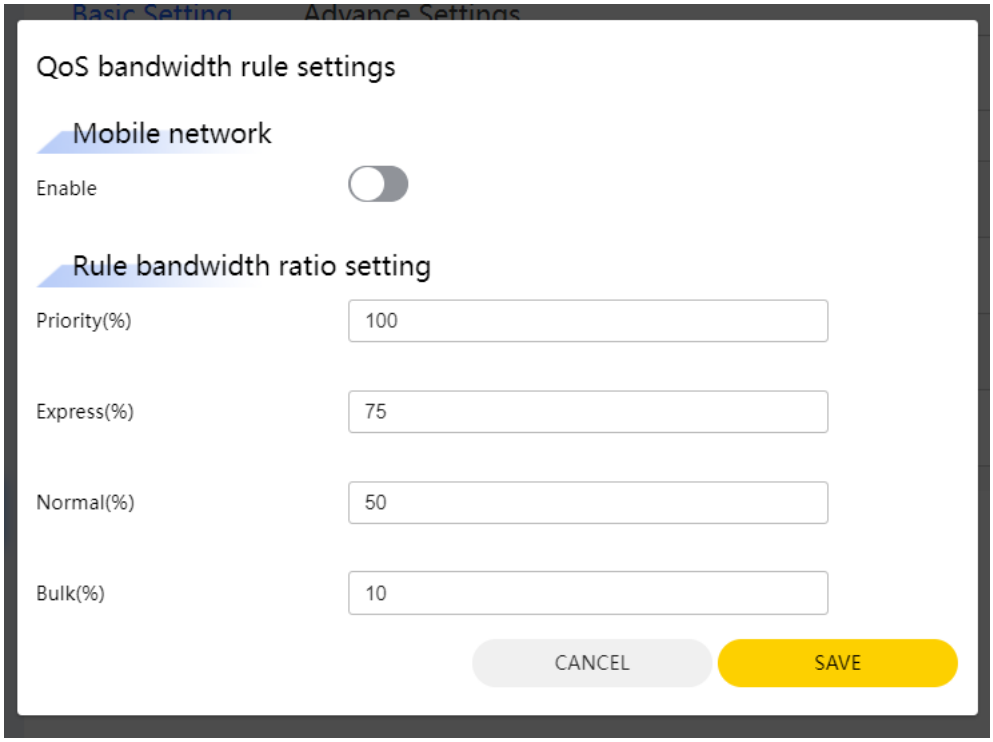
3.8 QOS Configuration

Select “Toolbox” – “QOS Settings” – “Basic Setting”. Users can select different QoS bandwidth rule settings for Mobile Network. They are “Priority”, “Express”, “Normal”, “Bulk”.

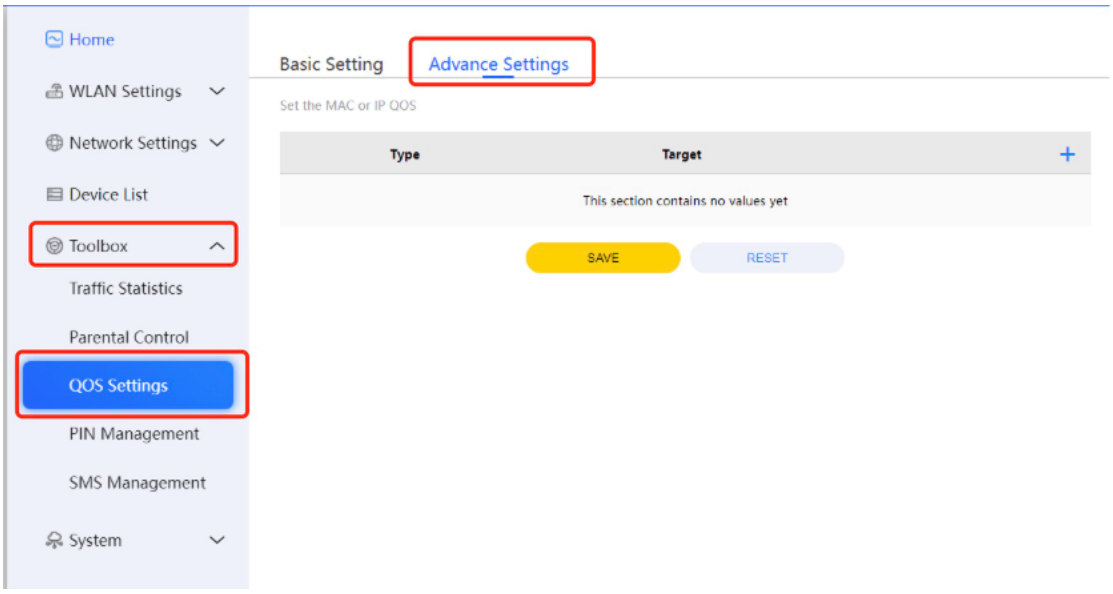


The QoS (Quality of Service) function allows you to limit the bandwidth for mobile networks connections. When the bandwidth policy is enabled and no settings are configured in the advanced settings, the default bandwidth limitation policy for connected terminal devices is set to "Normal.

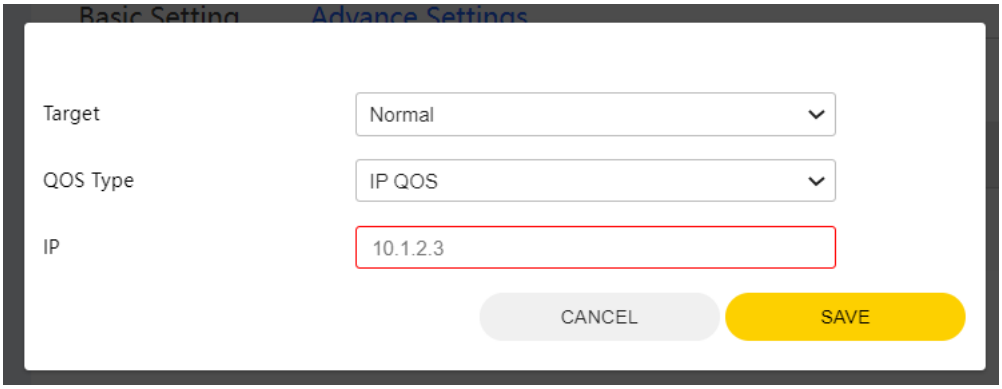
Users can click “SETUP”, and enable “Mobile network”. Users can customize ratio for these four different bandwidth rules(Priority, Express, Normal, Bulk).



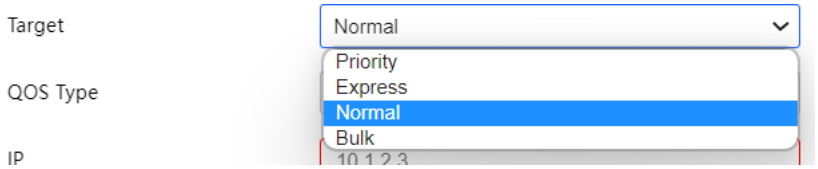
Select “Toolbox”- “QoS Settings”- “Advanced Settings”. QoS Advance Settings allows users to finely tune the QoS by configuring MAC or IP QoS settings. This feature enables users to prioritize specific devices or IP addresses, ensuring a more optimized and efficient network experience based on users' preferences.



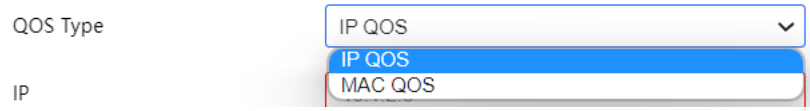
Users can choose Target bandwidth rule, QoS type and configuring IP by themselves.



Target bandwidth rule option includes “Priority”, “Express”, “Normal”, “Bulk”.



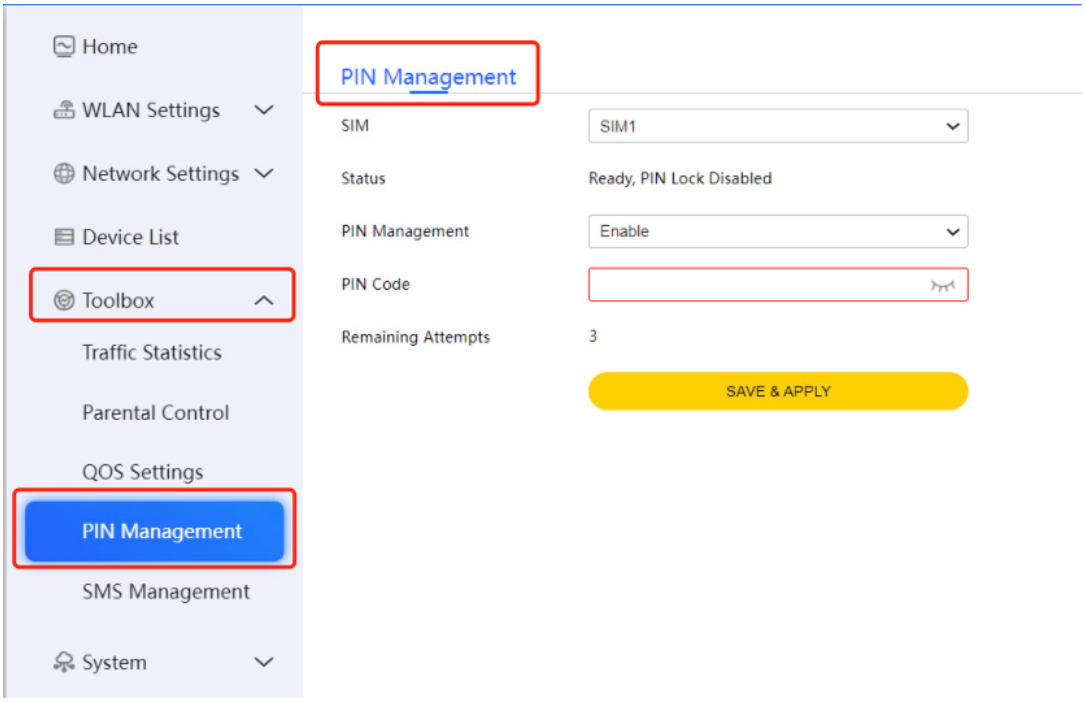
QoS Type includes “IP QoS”and “Mac QoS”



3.9 PIN Management

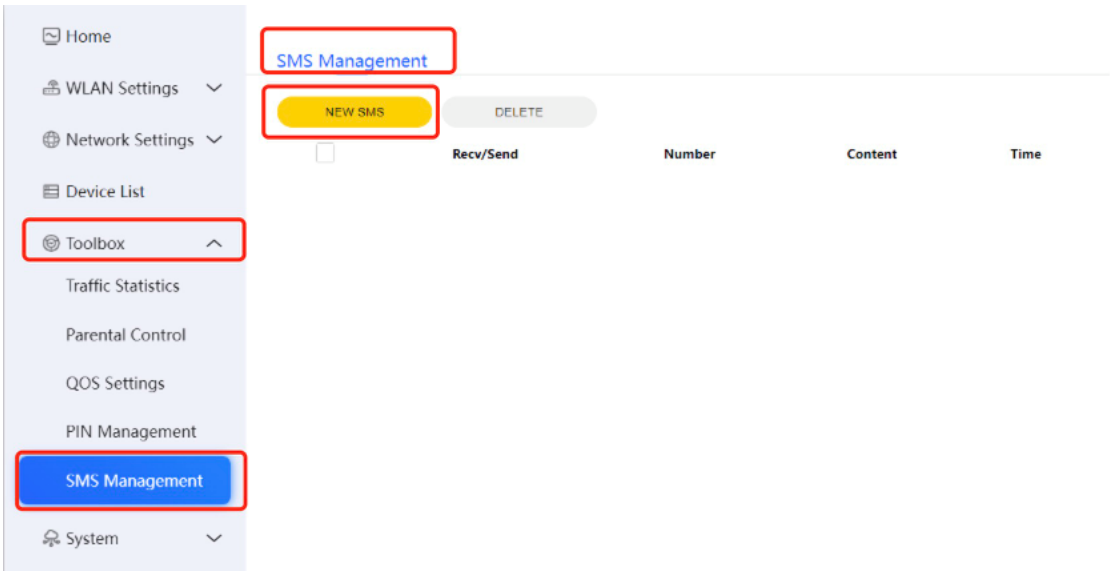
Select “Toolbox” – “PIN Management” – “PIN Management”. The ODU Configuration page encompasses comprehensive PIN management, providing you with the ability to securely manage and customize personal identification numbers (PINs). This feature adds an extra layer of protection and control over access to your ODU device, ensuring the security of your network infrastructure.

Users can select SIM Card, check PIN status, enable or disable PIN management, input PIN code.



3.10 SMS Management

Select “Toolbox” – “SMS Management” – “SMS Management”. Users can click “NEW SMS”.



Users input number and content, then send SMS.