Ruijie RG-APF Series Access Points

Implementation Cookbook

Document Version: V1.0
Date: December 22, 2025
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Preface

Intended Audience

This document is intended for:

- Network engineers
- Technical support and servicing engineers
- Network administrators

Technical Support

- Ruijie Networks website: https://www.ruijie.com
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Conventions

1. GUI Symbols

Interface symbol	Description	Example
Boldface	1. Button names 2. Window names, tab name, field name and menu items 3. Link	1. Click **OK**. 2. Select **Config Wizard**. 3. Click the **Download File** link.
>	Multi-level menus items	Select **System > Time**.

2. Signs

The signs used in this document are described as follows:

Warning

An alert that calls attention to important rules and information that if not understood or followed can result in data loss or equipment damage.

Caution

An alert that calls attention to essential information that if not understood or followed can result in function failure or performance degradation.

Note

An alert that contains additional or supplementary information that if not understood or followed will not lead to serious consequences.

Specification

An alert that contains a description of product or version support.

3. Note

The manual offers configuration information (including model, description, port type, software interface) for indicative purpose only. In case of any discrepancy or inconsistency between the manual and the actual version, the actual version prevails.

Overview

This cookbook consists of multiple independent volumes, introducing the installation, deployment, and web-based configuration of the RG-APF Series Access Points, including:

01- Installation Guide

01- RG-APF2260(MG) Access Point Installation Guide

02-RG-APF1260(MG-P) Access Point Installation Guide

02- OS 2.380 Configuration Guide

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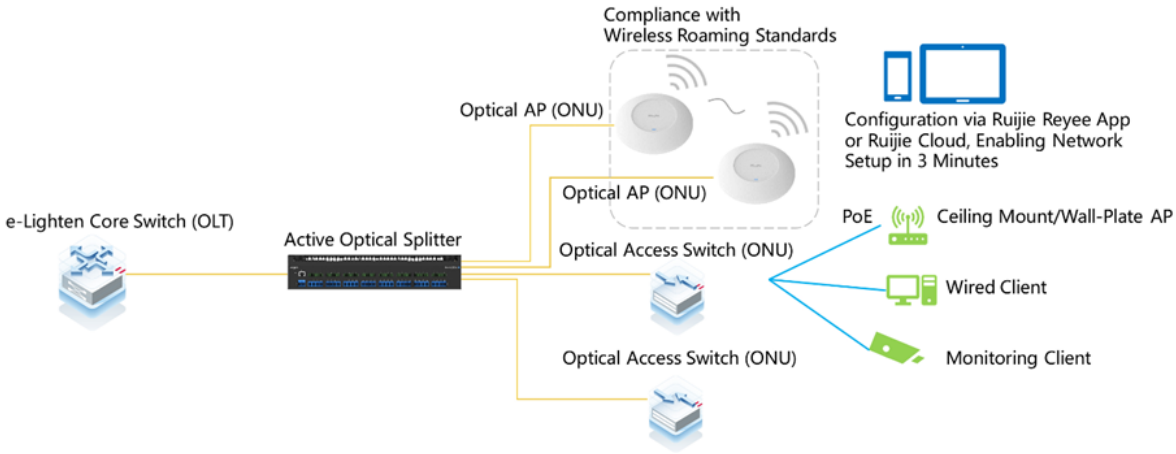
1 Overview

1.1 About the RG-APF2260(MG)

The RG-APF2260(MG) is a cost-effective ceiling mount Wi-Fi 6 3000M access point (AP) designed for medium to large indoor coverage scenarios. The RG-APF2260(MG) supports three power supply modes: local 12 V DC input, Power over Ethernet (PoE), and centralized Power over Fiber (PoF) via a hybrid cable. It complies with IEEE 802.11a/n/ac/ax and IEEE 802.11b/g/n/ax standards, supports 2x2 MIMO technology, and is equipped with built-in omnidirectional antennas. It can work in both 2.4 GHz and 5 GHz frequency bands, providing a combined wireless access rate of up to 2,976 Mbps, with 574 Mbps in 2.4 GHz and 2,402 Mbps in 5 GHz. Thanks to its beyond-line-of-sight coverage of 145 m^2 (1560.77 square ft.), the RG-APF2260(MG) is applicable to various service scenarios, especially campus offices, business hotels, villas, as well as small- and medium-sized governments, healthcare institutions, and educational institutions.

1.2 Terminology Introduction



- Passive optical network (PON): It is a network that uses optical cables to transmit data. The PON does not rely on external power sources nor uses any electronic amplifiers to enhance signals. It distributes optical signals from the OLT to multiple ONUs through optical splitters.
- Optical line terminal (OLT): An OLT on a PON is located in the equipment room. The OLT is responsible for sending and receiving optical signals.
- Optical network unit (ONU): It is an access device on a PON. Connecting to customer equipment and communicating with the OLT, an ONU is responsible for photoelectric conversion and data transmission.
- PON port: A PON port is a downlink port of an OLT and connects to an ONU.

1.3 Product Appearance

Figure 1-1 Appearance



1.3.2 Front Panel

Figure 1-2 Front Panel

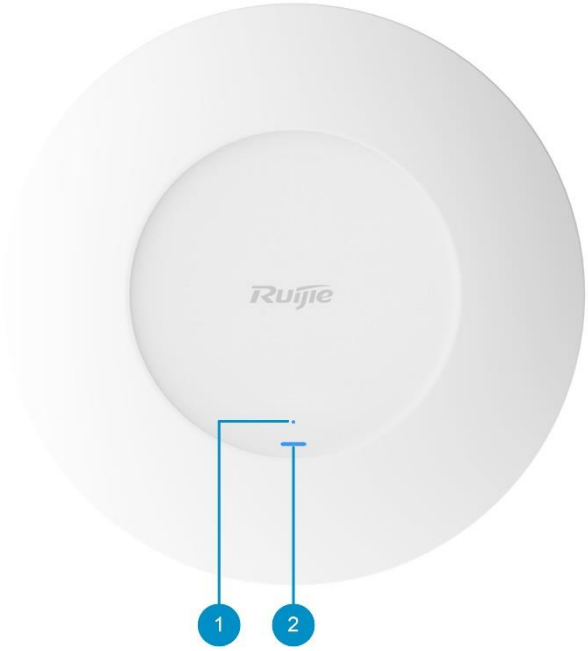


Table 1-1 Components on the Front Panel

No.	Component	Description
1	2500 Mbps SC port LED	Off: ● The AP is not powered on. ● No optical cable is connected to the 2500 Mbps SC port. ● The optical cable connected to the 2500 Mbps SC port experiences issues, for example, the cable is loosely connected or is faulty. ● When **Auto WAN Port** is enabled on an ONU and it is connected to an uplink device through the LAN/PoE port, the ONU fails to register with the OLT.
		Blinking yellow: The ONU is registering with the OLT.
		Blinking red: The ONU fails to register with the OLT.
		Blinking green: The SC port is connected properly, and is transmitting data.
		Solid green: The SC port is connected properly but not receiving or sending data.
2	System status LED	Off: The device is not powered on.
		Fast blinking blue (eight times per second): ● The AP is starting up. ● The AP is rebooting.
		Solid blue: The AP is operating properly.
		Blinking blue twice: ● The AP is being restored to factory settings. ● The AP version is upgrading. **Caution** Do not power off the AP when the LED is in this state.
		Blinking blue (one long blink followed by three short blinks): The main program is lost.
		Blinking blue (Solid on and fast off): The device is not connected to Ruijie Cloud.
		Fast blinking blue (eight times per second) for 3 seconds and then off for 3 seconds: The AP is being searched for through Ruijie Reyee App.

1.3.3 Rear Panel

Figure 1-3 Rear Panel

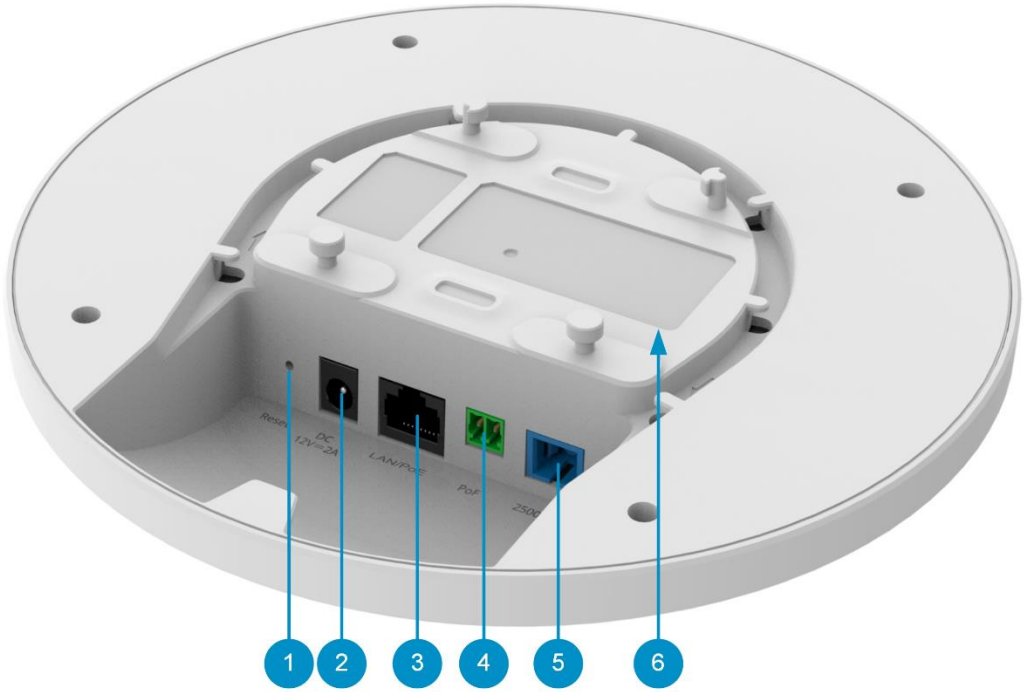


Table 1-2 Components on the Rear Panel

No.	Item	Description
1	Reset button	● Press and hold the button for less than 2 seconds: Reboot the AP. ● Press and hold the button for 2–5 seconds: No action is triggered. ● Press and hold the button for more than 5 seconds: Restore the device to factory settings. After restoration, you can log in to the device's eWeb by using the default IP address and password (10.44.77.254/admin).
2	DC 12 V ⎓ 2 A port	It is connected to the 12 V/2 A power adapter.
3	LAN/PoE port	It is a 10/100/1000BASE-T port, supporting PoE In and LAN/WAN switchover.
4	PoF port	It connects to a PoF Power Sourcing Equipment (PSE) (active optical splitter).
5	2500M SC port	It is a 2500 Mbps SC optical port for connecting an optical cable.
6	Nameplate	It is located at the bottom of the device.

1.4 Technical Specifications

Table 1-3 Technical Specifications

Parameter Type	Parameter Name	RG-APF2260(MG)
Wi-Fi Radio	5 GHz Wi-Fi	Wi-Fi 4 (IEEE 802.11a/n) Wi-Fi 5 (IEEE 802.11ac) Wi-Fi 6 (IEEE 802.11ax)
	2.4 GHz Wi-Fi	Wi-Fi 4 (IEEE 802.11b/g/n) Wi-Fi 6 (IEEE 802.11ax)
	Operating band	IEEE 802.11b/g/n/ax, 2.400 GHz to 2.4835 GHz IEEE 802.11a/n/ac/ax, 5.150 GHz to 5.350 GHz, 5.470 GHz to 5.725 GHz, 5.725 GHz to 5.850 GHz Note: Available bands vary with countries and regions. To use the preceding frequency bands, ensure that your country or region supports these frequency bands.
	Radio design	Dual-radio 4 spatial streams and 5 radio streams ● 2.4 GHz: 2 x 2, MIMO ● 5 GHz: 2 x 2, MIMO
	5 GHz channel width	Auto/20/40/80/160 MHz
	2.4 GHz channel width	Auto/20/40 MHz
	Maximum wireless data rate	2976 Mbps
	5 GHz wireless data rate	2402 Mbps
	2.4 GHz wireless data rate	574 Mbps
	Maximum transmit power (5 GHz)	Combined power: 28 dBm (single-stream power: 25 dBm) Note: The transmit power varies according to regulations in different countries and regions.
	Maximum transmit power (2.4 GHz)	Combined power: 28 dBm (single-stream power: 25 dBm) Note: The transmit power varies according to regulations in different countries and regions.

Parameter Type	Parameter Name	RG-APF2260(MG)
	Maximum transmit power	Frequency bands and maximum Effective Isotropic Radiated Power (EIRP): Note: Country specific restrictions apply. ● European Union & United Kingdom: o 2400–2483.5 MHz, EIRP ≤ 20 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm o 5470–5725 MHZ, EIRP ≤ 30 dBm ● Myanmar: o 2400–2483.5 MHz, EIRP ≤ 23 dBm o 5725–5825 MHz, EIRP ≤ 30 dBm ● Thailand: o 2400–2483.5 MHz, EIRP ≤ 20 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm o 5470–5725 MHz, EIRP ≤ 30 dBm o 5725–5825 MHz, EIRP ≤ 30 dBm ● Indonesia: o 2400–2483.5 MHz, EIRP ≤ 27 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm o 5725–5825 MHz, EIRP ≤ 23 dBm ● Egypt: o 2400–2483.5 MHz, EIRP ≤ 20 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm ● Vietnam: o 2400–2483.5 MHz, EIRP ≤ 23 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm o 5470–5725 MHz, EIRP ≤ 30 dBm o 5725–5850 MHz, EIRP ≤ 30 dBm
	Coverage range	145 m^2 (1560.77 square ft.) Note: The data is obtained in an ideal environment without obstruction. The signal coverage radius depends on client performance and environmental interference.
	Highest QAM order	1024
	Modulation	OFDM: BPSK @ 6/9 Mbps, QPSK @ 12/18 Mbps, 16-QAM @ 24 Mbps, 64-QAM @ 48/54 Mbps

Parameter Type	Parameter Name	RG-APF2260(MG)
		DSSS: DBPSK @ 1 Mbps, DQPSK @ 2 Mbps, and CCK @ 5.5/11 Mbps MIMO-OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM and 1024-QAM OFDMA
	Receive sensitivity	11b: –91 dBm (1 Mbps), –90 dBm (5.5 Mbps), –87 dBm (11 Mbps) 11a/g: –89 dBm (6 Mbps), –82 dBm (24 Mbps), –78 dBm (36 Mbps), –72 dBm (54 Mbps) 11n: –85 dBm (MCS0), –67 dBm (MCS7), –62 dBm (MCS8) 11ac: 20 MHz: –85 dBm (MCS0), –62 dBm (MCS8) 11ac: 40 MHz: –82 dBm (MCS0), –59 dBm (MCS8) 11ac: 80 MHz: –79 dBm (MCS0), —53 dBm (MCS9) 11ac: 160 MHz: –76 dBm (MCS0), –50 dBm (MCS9) 11ax: 20 MHz: –85 dBm (MCS0), –62 dBm (MCS8), –58 dBm (MCS11) 11ax: 40 MHz: –82 dBm (MCS0), –59 dBm (MCS8), –54 dBm (MCS11) 11ax: 80 MHz: –79 dBm (MCS0), –53 dBm (MCS9), –52 dBm (MCS11) 11ax: 160 MHz: –76 dBm (MCS0), –49 dBm (MCS11)
Antenna	Antenna	2.4 GHz: 2 built-in omnidirectional antennas 5 GHz: 3 built-in omnidirectional antennas
	Antenna gain (5 GHz)	4.00 dBi
	Antenna gain (2.4 GHz)	2.91 dBi
Port Specifications	Ethernet cable type	CAT5, CAT5e, CAT6, CAT6a, CAT7, CAT7a
	Reset button	1
	LEDs	1 x system status LED 1 x SC port LED

Parameter Type	Parameter Name	RG-APF2260(MG)
	Number of uplink optical ports	1
	Maximum transmission rate of uplink optical ports	2.5 Gbps
	Number of 1000BASE-T PoE ports (PoE In)	1
	Number of 10/100/1000BASE-T ports	1
	Total number of optical ports	1
	Tx power of an SC port	1.5 dBm to 3 dBm
	Rx power of an SC port	–8 dBm to –27 dBm Caution: Do not connect the SC port on the ONU directly to the PON port on the OLT. When short-distance single-mode fibers (SMFs) are used, a linear optical attenuator or splitter must be installed on the link to prevent the ONU from being damaged.
Power Supply and Consumption	Power supply	● DC power adapter ● PoE/PoE+ ● PoF Note: No power option is preferred over the others.
	PoE In standard	● IEEE 802.3af (PoE) Note: Radio transmission and reception is limited to 2T2R at 2.4 GHz and 5 GHz, and the wireless rate at 5 GHz is 60% of the original rate. ● IEEE 802.3at (PoE+)
	Maximum power consumption	18 W
	Dimensions of the DC connector	Outer diameter: 5.5 mm (0.22 in.) Inner diameter: 2.1 mm (0.08 in.) Depth: 10 mm (0.39 in.)

Parameter Type	Parameter Name	RG-APF2260(MG)
Dimensions and Weight	Product dimensions (diameter x height)	Ø230 mm x 35 mm (Ø9.06 in. x 1.38 in.) (spherical device, excluding the mounting bracket)
	Package dimensions (W x D x H)	265 mm x 255 mm x 58 mm (10.43 in. x 10.04 in. x 2.28 in.)
	Color	White
	Weight	0.36 kg (0.79 lbs) (without packaging materials)
	Shipping weight	0.69 kg (1.52 lbs)
Environment and Reliability	IP rating	IP41
	Mounting options	Ceiling/Wall
	Operating temperature	0°C to 40°C (32°F to 104°F)
	Storage temperature	–40°C to +70°C (–40°F to +158°F)
	Operating humidity	5% RH to 95% RH (non-condensing)
	Storage humidity	5% RH to 95% RH (non-condensing)
	Surge protection	Ethernet port: ±2 kV for common mode
	Cooling	Natural cooling
	Altitude	Operating altitude: 0 m to 5,000 m (0 ft. to +16,404.20 ft.) Storage altitude: –500 m to +5,000 m (–1,640.42 ft. to +16,404.20 ft.)
	MTBF	400,000 hours
Certification and Regulatory Compliance	Certification	CE, CB
	RoHS	Yes

1.5 Technical Specifications of Power Supply

- The RG-APF2260(MG) supports a power supply using a 12 V/2 A DC adapter. The specifications of the DC adapter are listed in the following table. If the AP is powered by a power adapter, purchase a power adapter that meets the standard requirements.

Inner Diameter	Outer Diameter	Insertion Depth	Conductor Resistance	Insulation Resistance	Voltage for Insulator and Conductor	Polarity
2.1 mm (0.08 in.)	5.5 mm (0.22 in.)	10 mm (0.39 in.)	30 MΩ	100 MΩ	500 V	Center: positive (+); Barrel: negative (–). Reverse polarity symbol is not allowed.

- PoF/PoE: The RG-APF2260(MG) is compliant with the IEEE 802.3at standard. To power this AP through PoF or PoE, ensure that the PSE is compliant with IEEE 802.3at. This allows the AP to deliver optimal performance.

Warning

When PoF is used, do not use a third-party device to supply power to the AP.

2 Preparing for Installation

2.1 Package Contents

No.	Item	Quantity
1	RG-APF2260(MG) access point	1
2	Cross pan head screw (ST4.2 x 25 mm)	2
3	Plastic expansion anchor (φ6.3 x 25 mm)	2
4	Terminal block	1
5	Alignment sticker	1
6	User Guide	1
7	Mounting bracket	1
8	Warranty Card	1

Note

The package contents are subject to the purchase contract, and actual delivery may vary. Please check the items carefully against the package contents or purchase contract. If you have any questions, please contact the distributor.

2.2 Safety Guidelines

This equipment is essential for network connectivity, and its proper operation is critical to ensure normal network functioning.

The following safety guidelines must be followed during installation and use.

- Do not place the equipment in a wet position, and keep it away from liquid.
- Keep the equipment away from heat sources.
- Wear an electrostatic discharge (ESD)-preventive wrist strap during installation and maintenance.
- Do not wear loose clothing that may be snagged on components of the equipment. Tighten your belt, scarf, and sleeves.
- Keep tools and accessories away from walk areas.
- Use uninterruptible power supplies (UPSs), as it can prevent power outages and avoid power interference.

2.3 Site Requirements

The equipment must be installed and used indoors for normal operation and prolonged service life. The installation site must meet the following requirements.

2.3.1 Temperature and Humidity

To ensure normal operation and prolonged service life of the equipment, maintain appropriate temperature and humidity conditions in the equipment room. In an environment with high relative humidity, insulating materials are prone to poor insulation or even electricity leakage. In an environment with low relative humidity, insulating gaskets may shrink, resulting in screw loosening. In a dry environment, static electricity is more likely to occur, posing a risk to the internal circuits of equipment. A high temperature can accelerate the aging process of insulation materials, greatly reducing the availability of the equipment and severely affecting its service life. The following table lists the temperature and humidity requirements.

Operating Temperature	Operating Humidity
0°C to 40°C (32°F to 104°F)	5% to 95%

2.3.2 Cleanliness

Dust poses a significant hazard to the equipment. Dust on the enclosure causes electrostatic adhesion, leading to poor contact with the metallic joints. It not only affects the service life of the equipment, but also causes communication faults. The risk of electrostatic adhesion increases when the indoor relative humidity is low.

The following table lists the requirements for dust concentration and particle size in the equipment room.

Maximum Diameter (μm)	0.5	1	3	5
Maximum Concentration (Number of Particles/m^3)	1.4×10^7	7×10^5	2.4×10^5	1.3×10^5

Apart from dust, limits are also imposed on the concentration of the salt, acid, and sulfide in the air of the equipment room. These harmful gases will accelerate metal corrosion and component aging. Therefore, the equipment room should be properly protected against harmful gases, including SO_2, H_2S, NO_2, NH_3, and Cl_2. The following table lists the limits on harmful gases.

Gas	Average (mg/m^3)	Maximum (mg/m^3)
Sulfur dioxide (SO_2)	0.2	1.5
Hydrogen sulfide (H_2S)	0.006	0.03
Nitrogen dioxide (NO_2)	0.04	0.15
Ammonia gas (NH_3)	0.05	0.15
Chlorine gas (CI_2)	0.01	0.3

2.3.3 ESD Prevention

The equipment is designed with ESD-preventive procedures during circuit design. However, excessive static electricity can still cause damage to its circuit board. Static electricity on the communication network connected to the equipment mainly originates from two sources:

- Outdoor high-voltage transmission lines, lightning, and other external electric fields
- Internal systems such as indoor flooring materials and the structure of the equipment

To prevent damage caused by static electricity, pay attention to the following:

- Keep the indoor installation environment clean and free of dust.
- Maintain appropriate temperature and humidity.

2.3.4 Electromagnetic Interference

Interference prevention measures primarily target electromagnetic and current interferences. The following requirements should be considered to ensure effective interference prevention.

- Take interference prevention measures for the power supply system.
- Keep the equipment away from the grounding system or lightning protection grounding system of the power facility.
- Keep the equipment far away from high-frequency current equipment such as high-power radio transmitting stations and radar launchers.

2.3.5 Installation Site

When the equipment is installed on the wall, the following conditions must be met:

- The wall surface must be smooth and clean.
- Make sure the device cables are connected and functioning properly.

2.4 Tools

Common Tools	Phillips screwdriver, power cords, cage nuts, diagonal pliers, and cable ties

Special Tools	Wire stripper, crimping pliers, crystal connector crimping pliers, wire cutter, and ESD-preventive glove
Meters	Multimeter and bit error rate tester (BERT)

Note

The equipment is delivered without a toolkit. Prepare the preceding tools by yourself.

3 Installing the AP

> ⚠ **Caution**
>
> Before installing the equipment, ensure that guidelines and requirements in Chapter 2 have been met.

3.1 Before You Begin

Carefully plan and arrange the installation position, networking mode, power supply, and cabling before installation. Confirm the following requirements before installation:

- The installation site meets the temperature and humidity requirements of the equipment.
- The power supply is available at the installation site, and its current meets the requirements.
- The power supply meets the requirements.
- The installation site meets the cabling requirements of the equipment.
- The installation site meets the site requirements of the equipment.
- The customized equipment meets the client-specific requirements.

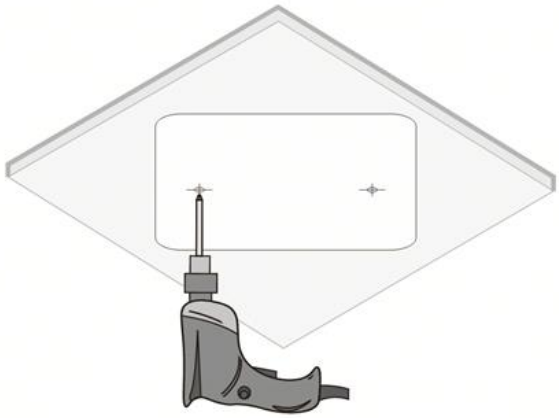
3.2 Precautions

To ensure the normal operation and prolonged service life of the AP, observe the following safety precautions:

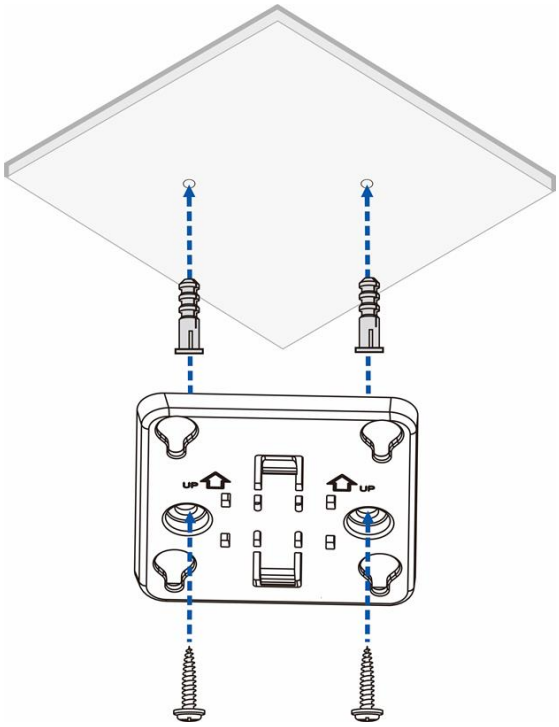
- Do not power on the equipment during installation.
- Place the equipment in a well-ventilated environment.
- Do not subject the equipment to high temperatures.
- Keep the equipment away from high-voltage power cables.
- Install the equipment indoors.
- Do not expose the equipment to a thunderstorm or strong electric field.
- Keep the equipment clean and dust-free.
- Cut off the power supply before cleaning the equipment.
- Do not wipe the equipment with a damp cloth.
- Do not wash the equipment with liquid.
- Do not open the enclosure when the equipment is working.
- Secure the equipment properly.

3.3 Installing the Equipment

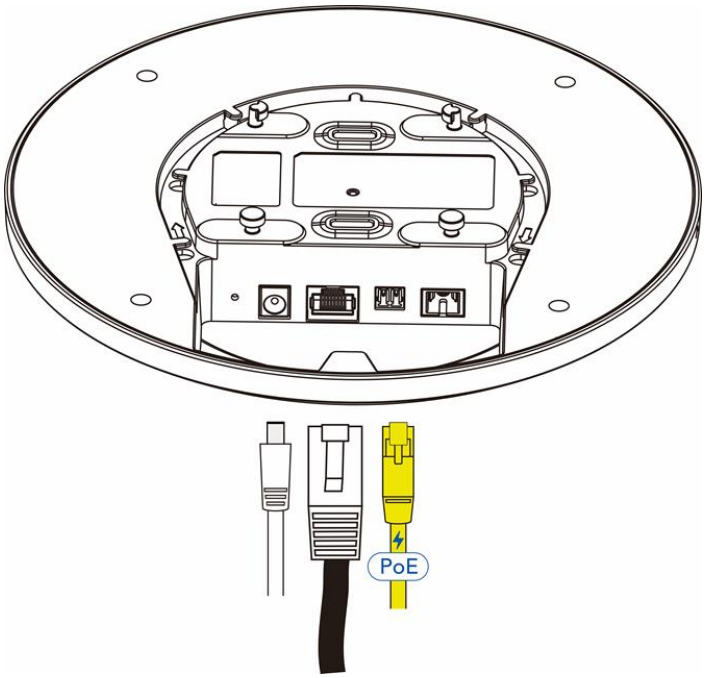
(1) Use an alignment sticker to mark and drill holes on the ceiling or wall in advance.



(2) Secure the mounting bracket to the ceiling or wall using the cross pan head screws and plastic expansion anchors.



(3) Connect cables according to the actual topology. The following describes how to connect cables to the AP:



- Ethernet cable: Connect one end of an Ethernet cable to the LAN/PoE port (PoE In) on the rear panel of the AP.
- Optical cable: Connect one end of the optical cable in a hybrid cable (PoF) or a single optical fiber to the 2500 Mbps SC port on the rear panel of the AP.

Note

If a centralized PoF power supply is used for the AP, you are advised to use the optical cable in the hybrid cable (PoF) to connect to the 2500 Mbps SC port.

- DC power cable: When the DC power supply is adopted, connect one end of the power cable to the 12 V ⎓ 2 A port on the rear panel of the AP.
- Hybrid cable (PoF): During a centralized PoF power supply, you need to make a hybrid cable as follows.

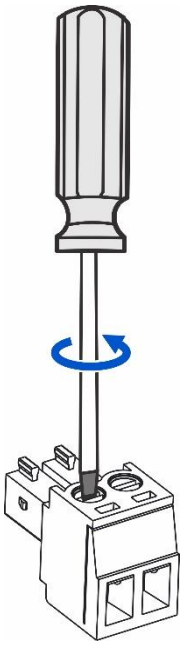
Note

You can use a customer-provided complete hybrid cable (PoF) for power supply by connecting the power cord in the hybrid cable to the PoF port on the rear panel of the AP.

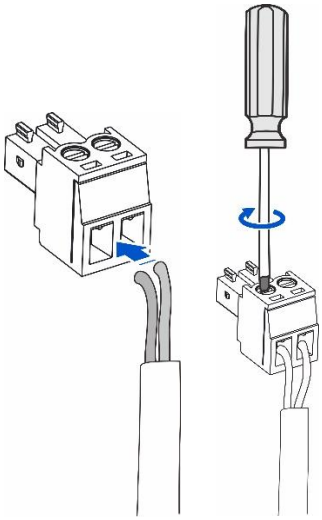
Power cord:

a Take out the terminal block from the package.

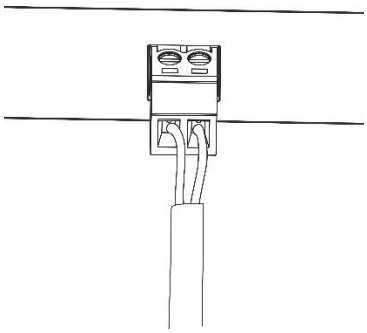
b Loosen screws on the terminal block.



c Connect both ends (polarity not required) of the power wires in the hybrid cable (PoF) to a terminal block and tighten the screws.



d Connect the terminal block to the PoF port on the rear panel of the AP.



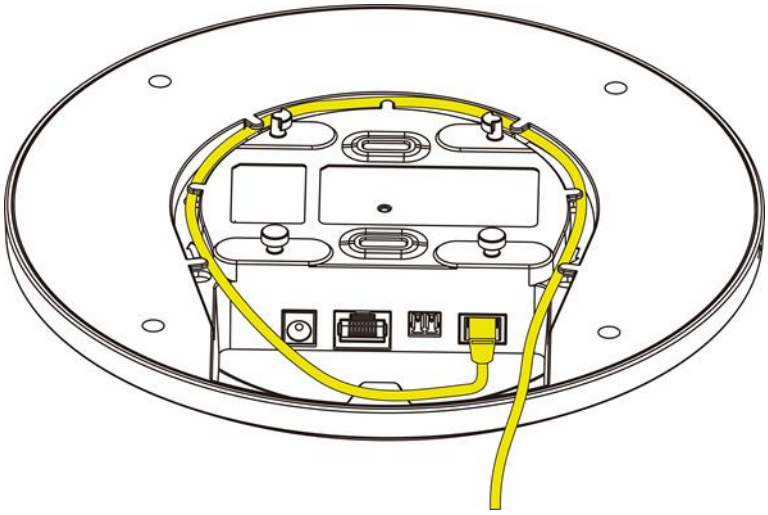
Optical cable: For the cold splicing and fusion splicing process of the optical cable in the hybrid cable (PoF),

watch the video by clicking Splicing the Optical Cable in a Hybrid Cable and Connecting Its Copper Cable to a Terminal Block.

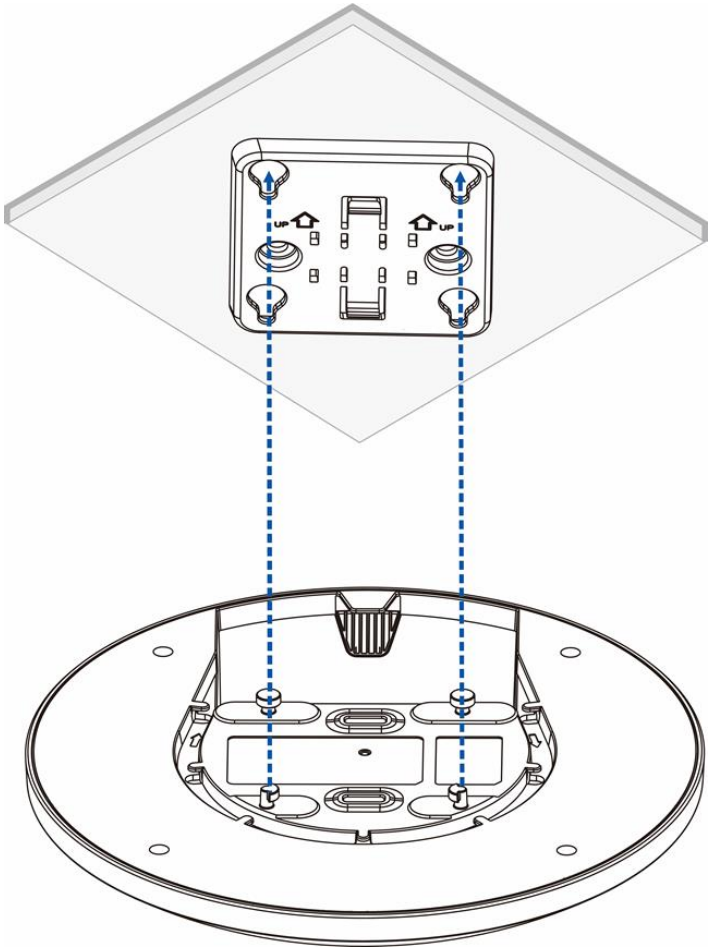
Note

You are advised to use cold connectors with a length of less than or equal to 50 mm (1.97 in.).

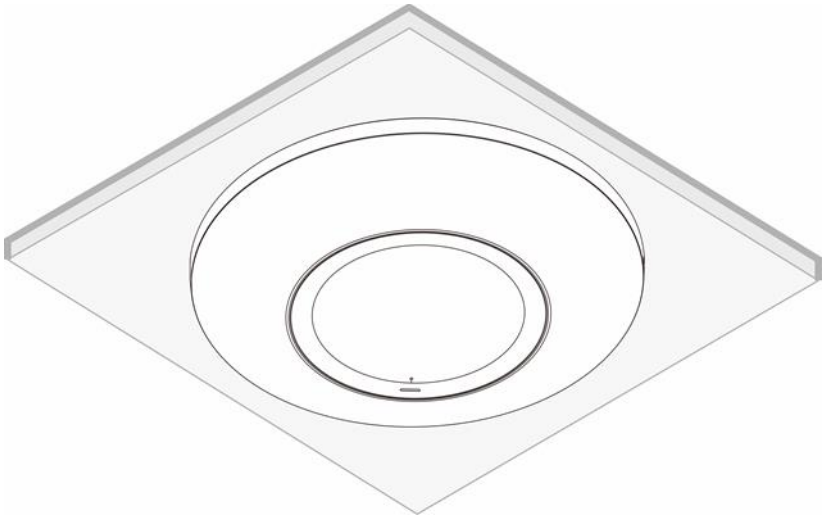
(4) Secure the optical cable in the cable management trough of the AP.



(5) Align the AP's clips with the mounting holes on the mounting bracket, and slide the AP along the hole direction to secure it on the mounting bracket.



(6) After bundling the cables, complete the installation.



3.4 Bundling Cables

Precautions

- Bundle cables in an aesthetically pleasing way.

- Ensure that the twisted pairs, optical cables, or hybrid cables (PoF) have natural bends or bends of large radius at the connectors.
- Do not bind the twisted pairs, optical cables, or hybrid cables (PoF) too tightly, as this may compromise their service life and transmission performance.

Bundling Steps

(1) Bundle the hanging parts of the twisted pairs, optical cables, or hybrid cables (PoF) using cable ties and lead them to the ceiling in the most convenient manner.

(2) Secure the twisted pairs, optical cables, or hybrid cables (PoF) inside the ceiling.

(3) Bundle the twisted pairs, optical cables, or hybrid cables (PoF), and route them in a straight line.

3.5 Checklist After Installation

- The equipment is securely fastened.
- The cables match the port types.
- Cables are properly bundled.

4 Commissioning

4.1 Setting Up the Configuration Environment

The AP supports power supply via PoE, PoF, or a DC adapter. During deployment, ensure that the power adapter is properly connected and complies with relevant safety standards.

4.2 Powering on the AP

4.2.1 Checklist Before Power-on

- The power adapter works properly.
- The optical cables, Ethernet cables, or hybrid cables (PoF) are properly connected.
- The PSE connected to the LAN/PoE port or PoF port must be compliant with IEEE 802.3at.

4.2.2 Checklist After Power-on

- Verify the LED status.
- After the AP is powered on, check whether the SSID can be detected by a mobile phone or other wireless clients.

4.3 Rectifying Power Supply Failures

You can determine whether a power system failure exists by checking the LED status on the front panel of the AP. For details about the working status of the LEDs, see Table 1-1 Components on the Front Panel. Perform the following checks if the power supply is not functioning properly.

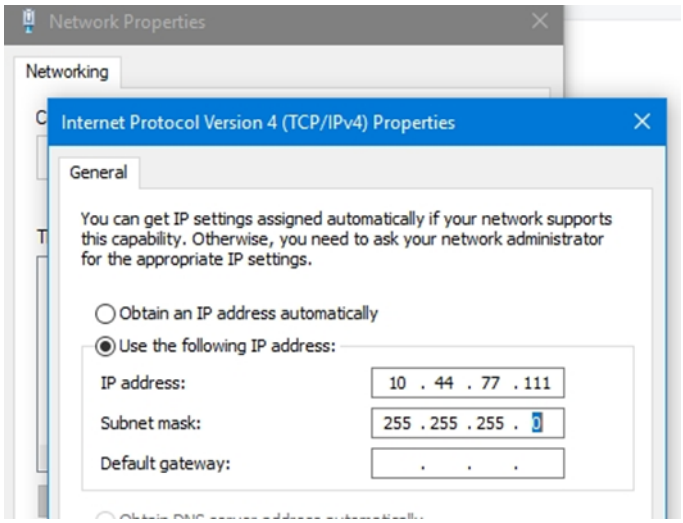
- Check whether the equipment is properly powered.
- Check whether the Ethernet cable is properly connected.

Note

If the equipment cannot start after all the preceding items are verified, contact your local distributor or technical support.

4.4 Login to eWeb

(1) Set your PC's IP address to 10.44.77.XXX (Range: 1–253) in the local connection properties, as shown in the following figure.



(2) Open a browser, enter 10.44.77.254 in the address bar of the browser, and press Enter to log in to eWeb. The default password is admin upon the first login to the AP's eWeb. For security purposes, change the default password after login.

5 Monitoring and Maintenance

5.1 Monitoring

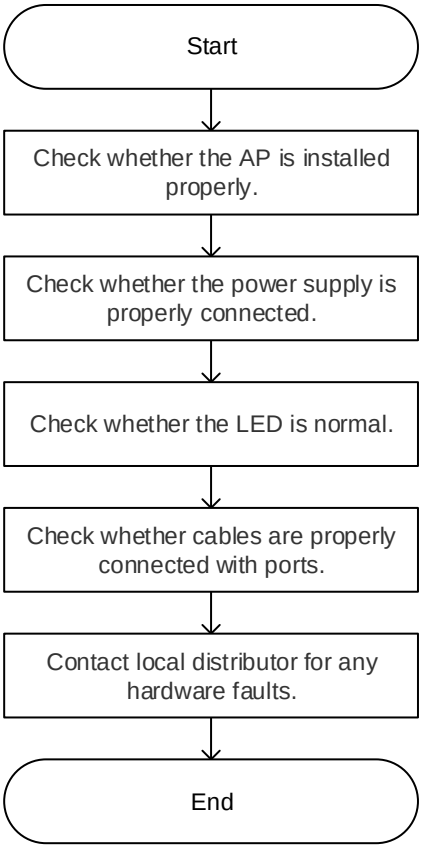
You can observe the LEDs to monitor the running status of the equipment.

5.2 Maintenance

If the hardware is faulty, please contact the Ruijie technical support.

6 Common Troubleshooting

6.1 General Troubleshooting Flowchart



6.2 Common Faults

6.2.1 Why is the LED off after the AP is powered on?

- Check whether the power adapter connected to the DC power connector works properly, and then check whether the Ethernet cable is connected properly.
- Check whether the PoE PSE connected to the LAN/PoE port is compliant with IEEE 802.3at, and whether the Ethernet cable is connected properly.
- Check whether the PoF PSE connected to the PoF port is compliant with IEEE 802.3at, and then check whether the hybrid cable (PoF) is connected properly.

6.2.2 Why does the Ethernet port fail to work after the Ethernet cable is connected to it?

- Check whether the power adapter connected to the DC port works properly. Then, verify that the Ethernet cable is capable of providing the required data rate and is properly connected.
- Check whether the PoE PSE connected to the LAN/PoE port works properly. Then, verify that the Ethernet

cable is capable of providing the required data rate and is properly connected.

- Check whether the PoF PSE connected to the PoF port works properly. Then, verify that the Ethernet cable is capable of providing the required data rate and is properly connected.

6.2.3 Why cannot clients discover the AP?

(1) Verify that the AP is properly powered.

(2) Verify that the Ethernet port is correctly connected.

(3) Check whether the AP is correctly configured.

(4) Move the client to adjust the distance between it and the AP.

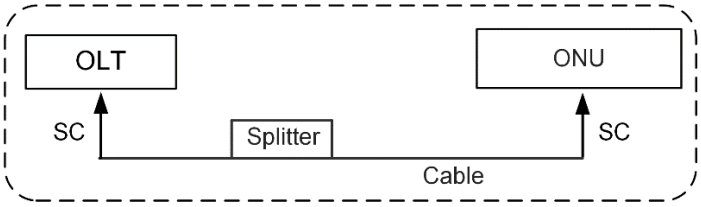
7 Appendix

7.1 Connectors and Media

7.1.1 Cable Connection to the SC Optical Port

Select appropriate cables to connect the SC optical port of the AP to the peer OLT through an optical splitter, as shown in the following figure.

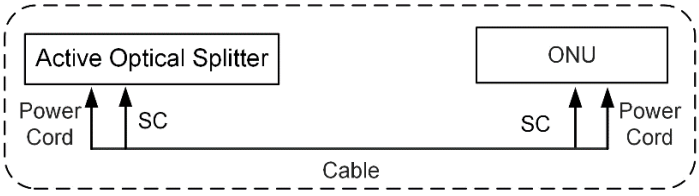
Figure 7-1 Connection to the SC Optical Port



7.1.2 Cable Connection to the PoF Port

Select appropriate cables to connect the PoF port of the AP to the corresponding active optical splitter, as shown in the following figure.

Figure 7-2 Connection to the PoF Port



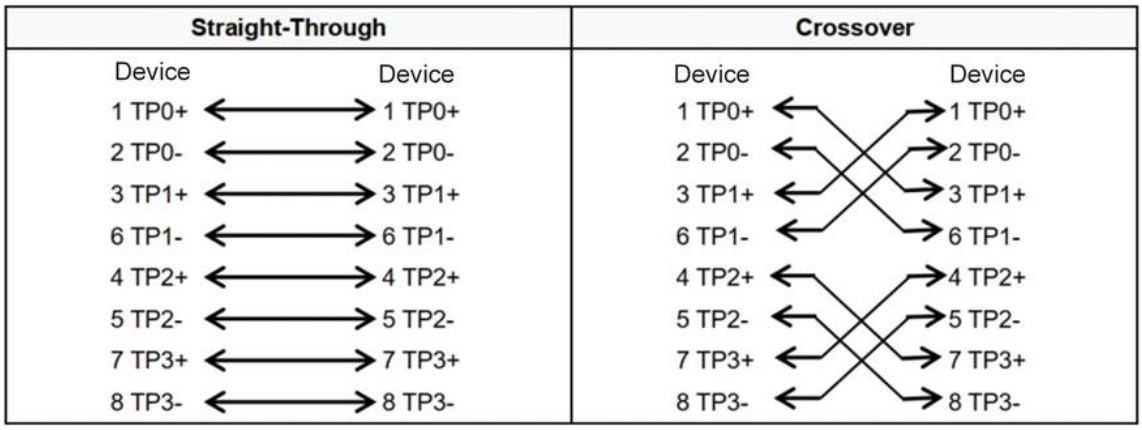
7.1.3 10/100/1000BASE-T Port

The 10/100/1000BASE-T port supports three rates with auto-negotiation, and supports the automatic MDI/MDIX crossover function at these three rates.

Compliant with IEEE 802.3ab, the 1000BASE-T port requires a 100-ohm Category 5e Unshielded Twisted Pair (UTP) or recommended Shielded Twisted Pair (STP) with a maximum distance of 100 meters (328.08 feet).

The 1000BASE-T port requires all four pairs of wires to be connected for data transmission. Figure 7-3 1000BASE-T Twisted Pair Connections shows twisted pair connections for the port.

Figure 7-3 1000BASE-T Twisted Pair Connections



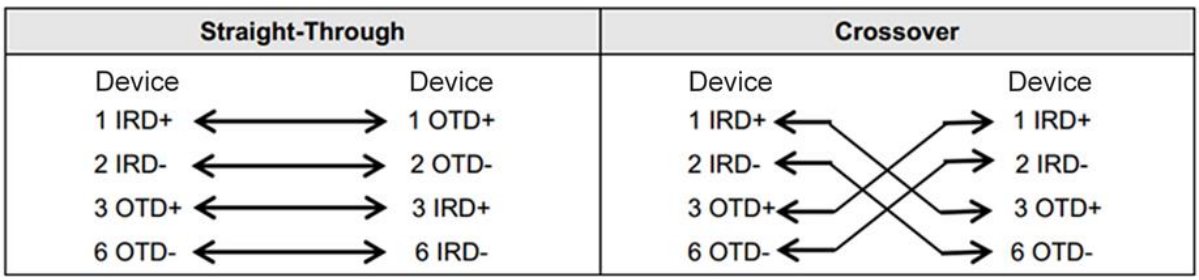
The 100BASE-TX or 10BASE-T port can also be connected by cables of the preceding specifications. Besides, the 10BASE-T port can be connected by 100-ohm Category 3, Category 4, and Category 5 cables with a maximum distance of 100 meters (328.08 feet). The 100BASE-TX port can be connected by 100-ohm Category 5 cables with a maximum distance of 100 meters (328.08 feet). Table 1-4 lists 100BASE-TX/10BASE-T pin assignments.

Table 1-4 100BASE-TX/10BASE-T Port Pin Assignments

Pin	Socket	Plug
1	Input Receive Data+	Output Transmit Data+
2	Input Receive Data-	Output Transmit Data-
3	Output Transmit Data+	Input Receive Data+
6	Output Transmit Data-	Input Receive Data-
4, 5, 7, 8	Not Used	Not Used

Figure 7-4 lists wiring of straight-through and crossover cables for the 100BASE-TX or 10BASE-T port.

Figure 7-4 100BASE-TX/10BASE-T Twisted Pair Connections



7.2 Cabling Recommendations

During installation, route cable bundles upward or downward along the sides of the cable management bracket depending on the actual situation in the equipment room. All adapted connectors should be placed at the bottom of the rack in an orderly manner instead of outside the rack that is easy to touch. Power cords are routed beside the rack. Top cabling or bottom cabling is adopted according to the actual situation in the equipment room, such as the positions of the DC power distribution box, AC socket, or lightning protection box.

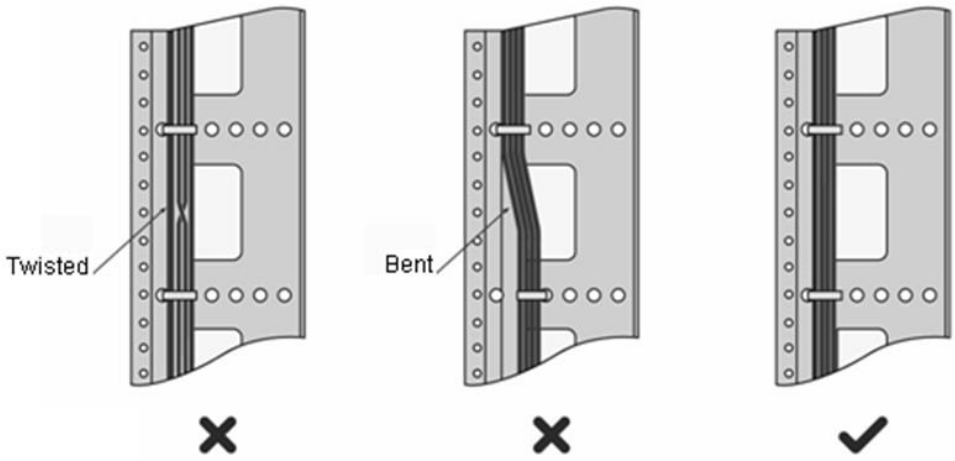
7.2.1 Requirement for the Minimum Bend Radius of Cables

- The bend radius of a fixed power cord, Ethernet cable, or flat cable should be over five times greater than their respective external diameters. The bend radius of these cables that are often bent or plugged should be over seven times greater than their respective external diameters.
- The bend radius of a fixed common coaxial cable should be over seven times greater than its external diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective external diameters.
- The minimum bend radius of a high-speed cable, such as an SFP+ cable, should be over five times greater than its external diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective external diameters.

7.2.2 Precautions for Cable Bundling

- Before cables are bundled, mark labels and stick the labels to cables wherever appropriate.
- Cables should be neatly and properly bundled in the rack without twisting or bending, as shown in Figure 7-5.

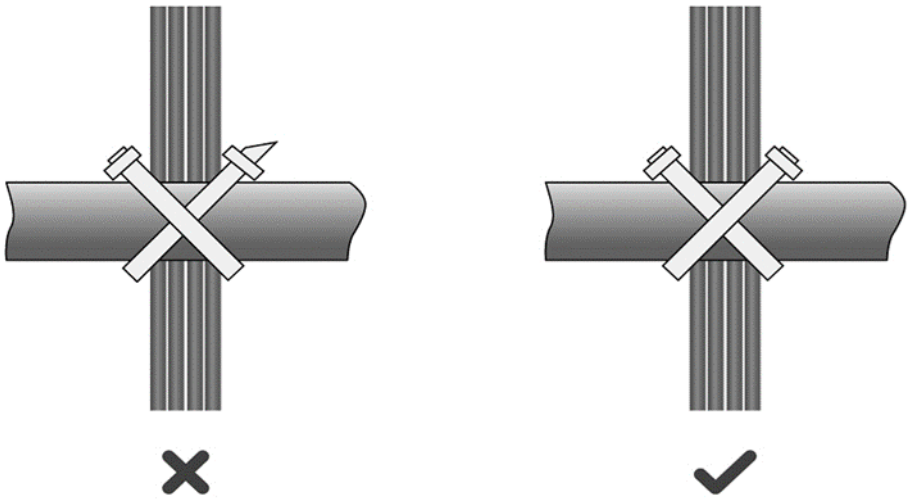
Figure 7-5 Bundling Cables (1)



- Cables of different types (such as power cords, signal cables, and grounding wires) should be separated in cabling and bundling. Mixed bundling is disallowed. When they are close to each other, you are advised to adopt crossover cabling. In the case of parallel cabling, maintain a minimum distance of 30 mm (1.18 in.) between power cords and signal cables.
- The cable management brackets and cabling troughs inside and outside the rack should be smooth without sharp corners.

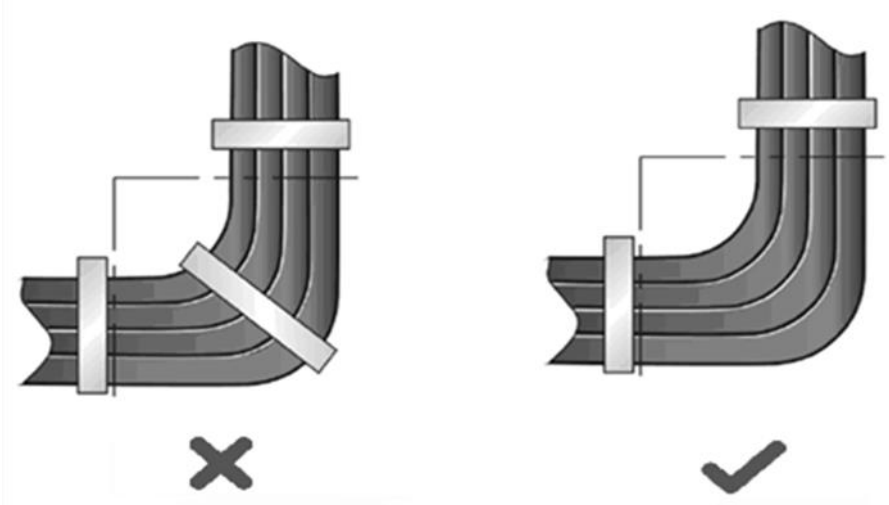
- The metal holes traversed by cables should have a smooth and fully rounded surface or an insulated lining.
- Use cable ties to bundle up cables properly. Please do not connect two or more cable ties to bundle up cables.
- After bundling up cables with cable ties, cut off the remaining part. The cut should be smooth and trim without sharp corners, as shown in Figure 7-6.

Figure 7-6 Bundling Cables (2)



- When cables need to be bent, bundle them first but do not tie cables within the bend. Otherwise, stress may be generated on the cables and cause the wires inside to break, as shown in Figure 7-7.

Figure 7-7 Binding Cables (3)

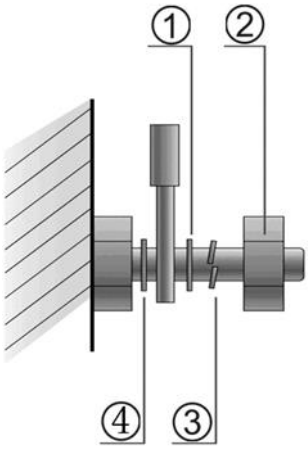


- Cables not to be assembled or the remaining parts of cables should be folded and placed in a proper position of the rack or cable trough. The proper position refers to a position that does not affect the equipment running or damage the equipment or cables.
- Do not bind power cords to the guide rails of moving parts.
- The power cords connecting moving parts such as door grounding cables should be reserved with some excess after being assembled. This can avoid tension or stress on power cords. After the moving part is

installed, the remaining cable part should not touch heat sources, sharp corners, or sharp edges. If heat sources cannot be avoided, high-temperature cables should be used.

- When using screw threads to secure a cable lug, ensure that the bolt or screw is properly tightened and take measures to prevent it from loosening, as shown in Figure 7-8.

Figure 7-8 Fastening Cable Lugs



Note:
1. Flat washer
2. Nut
3. Spring washer
4. Flat washer

- Hard power cords should be fastened in the terminal connection area to prevent stress on terminal connection and cable.
- Do not use tapping screws to secure cable lugs.
- Power cords of the same type and in the same cabling direction should be bundled up into cable bunches, with cables in cable bunches clean and straight.
- Bundle up cables by using cable ties according to the following table.

Cable Bunch Diameter	Bundling Spacing
10 mm (0.39 in.)	80 mm to 150 mm (3.15 in. to 5.91 in.)
10 mm to 30 mm (0.39 in. to 1.18 in.)	150 mm to 200 mm (5.91 in. to 7.87 in.)
30 (1.18 in.)	200 mm to 300 mm (7.87 in. to 11.81 in.)

- Do not tie cables or bundles in a knot.
- For wiring terminal blocks (such as circuit breakers) with cord end terminals, the metal part of the cord end terminal should not be exposed outside the terminal block when assembled.

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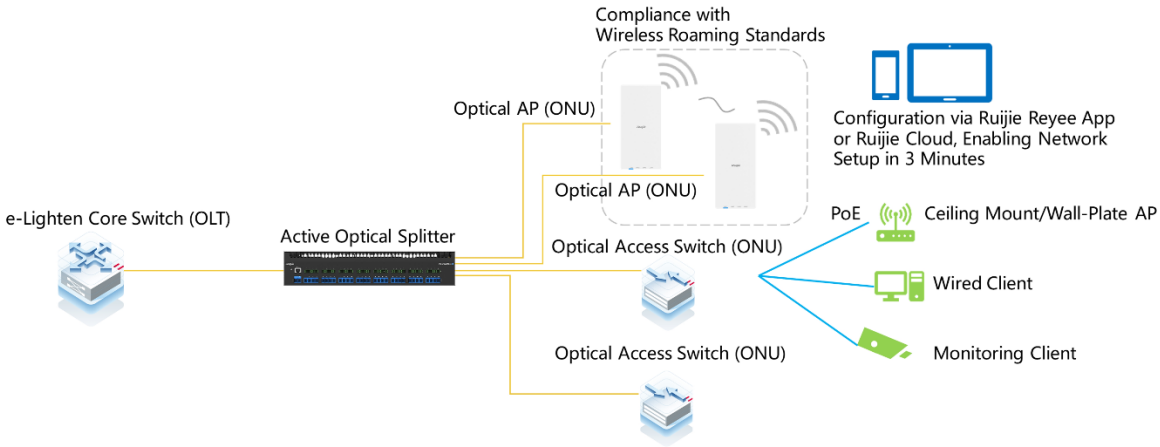
1 Overview

1.1 About the RG-APF1260(MG-P)

The RG-APF1260(MG-P) is a cost-effective Wi-Fi 6 3000M dual-band wall-plate access point (AP) designed for medium to large indoor coverage scenarios. The RG-APF1260(MG-P) supports local 54 V DC input and Power over Fiber (PoF) via a hybrid cable (PoF). It complies with IEEE 802.11a/b/g/n/ac/ax Wi-Fi standards, supports 2x2 MIMO technology, and is equipped with built-in omnidirectional antennas. It can work in both 2.4 GHz and 5 GHz frequency bands, providing a combined wireless access rate of up to 2,976 Mbps, with 574 Mbps in 2.4 GHz and 2,402 Mbps in 5 GHz. Thanks to its beyond-line-of-sight coverage of 55 m^2 (592.02 square ft.), the RG-APF1260(MG-P) is applicable to various service scenarios, especially campus offices, business hotels, villas, as well as small- and medium-sized governments, healthcare institutions, and educational institutions. The AP provides the Power over Ethernet (PoE) Out feature to power IP phones.

1.2 Terminology Introduction



- Passive optical network (PON): It is a network that uses optical cables to transmit data. The PON does not rely on external power sources nor use any electronic amplifiers to enhance signals. It distributes optical signals from the OLT to multiple ONUs through optical splitters.
- Optical line terminal (OLT): An OLT on a PON is located in the equipment room. The OLT is responsible for sending and receiving optical signals.
- Optical network unit (ONU): It is an access device on a PON. Connecting to customer equipment and communicating with the OLT, an ONU is responsible for photoelectric conversion and data transmission.
- PON port: A PON port is a downlink port of an OLT and connects to an ONU.

1.3 Product Appearance

Figure 1-1 Appearance



Note

The image is for reference only. Actual product may vary.

1.3.2 Front Panel

Figure 1-2 Front Panel

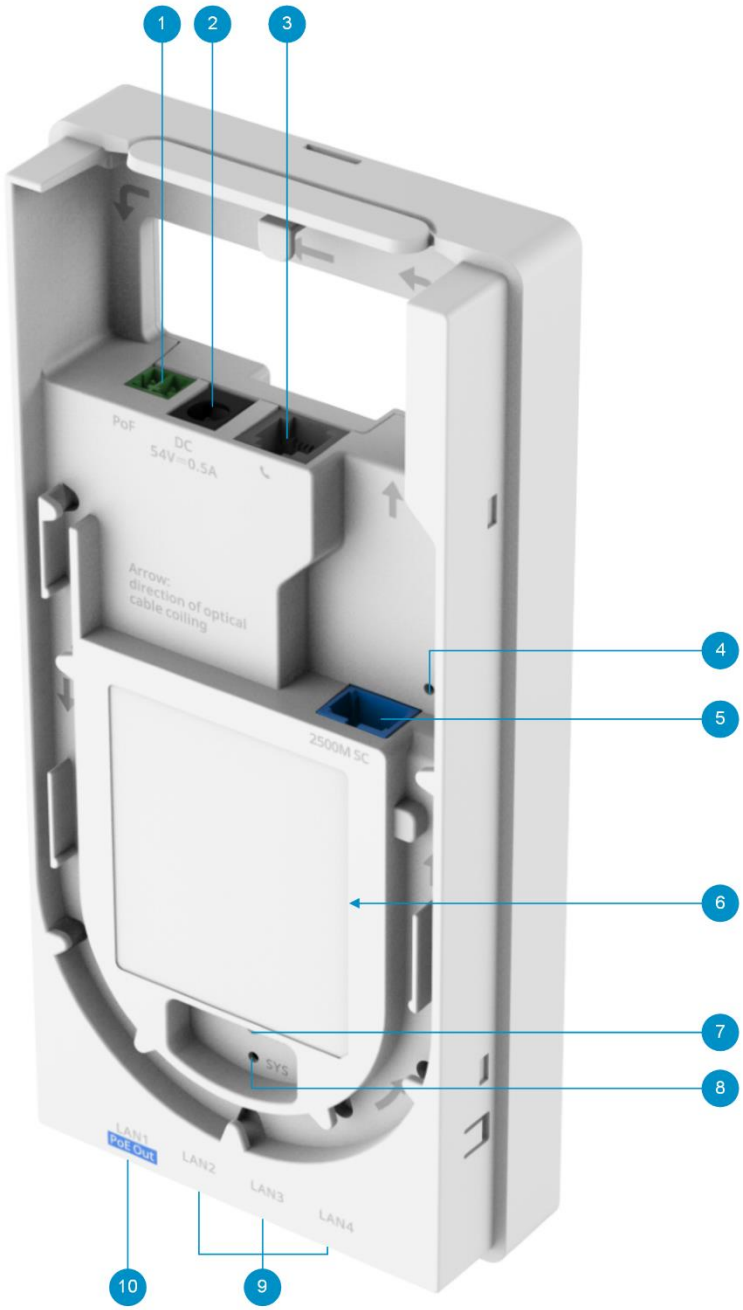


Table 1-1 Components on the Front Panel

No.	Component	Description
1	PoF port	It connects to a PoF Power Sourcing Equipment (PSE) (active optical splitter).
2	DC 54 V ⎓ 0.5 A	It connects to the 54 V power adapter.

No.	Component	Description
	port	
3	Phone port	It connects to a telephone cable.
5	2500M SC port	It is a 2500 Mbps SC optical port for connecting an optical cable.
6	Nameplate	The nameplate is located on the front panel of the device, and contains the product name, model, and default IP address.
7	Reset button	● Press and hold the button for less than 2 seconds to restart the AP. ● Press and hold the button for more than 5 seconds to restore the device to factory settings. After restoration, you can log in to the device's eWeb by using the default IP address and password (10.44.77.254/admin).
9	LAN2–LAN4 ports (RJ45)	3 x 10/100/1000BASE-T ports, which are connected to wired devices.
10	LAN 1 port (RJ45)	1 x 10/100/1000BASE-T port, which is connected to a wired device and supports PoE Out.

Table 1-2 LEDs

No.	Component	Description
4	2500 Mbps SC port LED	Off: ● The AP is not powered on. ● No optical cable is connected to the 2500 Mbps SC port. ● The optical cable connected to the 2500 Mbps SC port experiences issues, for example, the cable is loosely connected or is faulty.
		Blinking yellow: The ONU is registering with the OLT.
		Blinking red: The ONU fails to register with the OLT.
		Blinking green: The SC port is connected properly, and is transmitting data.
		Solid green: The SC port is connected properly but not receiving or sending data.
8	System status LED	Off: The device is not powered on.
		Solid blue: The AP is operating properly.
		Fast blinking blue (eight times per second): ● The AP is starting up. ● The AP is restarting.
		Blinking blue twice: ● The AP is being restored to factory settings. ● The AP firmware is being upgraded.

No.	Component	Description
		Caution Do not power off the AP when the LED is in this state.
		Blinking blue (one long blink followed by three short blinks): The main program is lost.
		Blinking blue (Solid on and fast off): The device is not connected to Ruijie Cloud.
		Fast blinking blue (eight times per second) for 3 seconds and then off for 3 seconds: The AP is being searched for through Ruijie Reyee App.

1.3.3 Rear Panel

Figure 1-3 Rear Panel



1.4 Technical Specifications

Table 1-3 Technical Specifications

Parameter Type	Parameter Name	RG-APF1260(MG-P)
Wi-Fi Radio	5 GHz Wi-Fi	Wi-Fi 4 (IEEE 802.11a/n) Wi-Fi 5 (IEEE 802.11ac) Wi-Fi 6 (IEEE 802.11ax)
	2.4 GHz Wi-Fi	Wi-Fi 4 (IEEE 802.11b/g/n) Wi-Fi 6 (IEEE 802.11ax)
	Operating band	IEEE 802.11b/g/n/ax, 2.400 GHz to 2.4835 GHz IEEE 802.11a/n/ac/ax, 5.150 GHz to 5.350 GHz, 5.470 GHz to 5.725 GHz, 5.725 GHz to 5.850 GHz Note: Available bands vary with countries and regions. To use the preceding frequency bands, ensure that your country or region supports these frequency bands.
	Radio design	Dual-radio 4 spatial streams and 5 radio streams ● 2.4 GHz: 2 x 2, MIMO ● 5 GHz: 2 x 2, MIMO
	5 GHz channel width	Auto/20/40/80/160 MHz
	2.4 GHz channel width	Auto/20/40 MHz
	Maximum wireless data rate	2976 Mbps
	5 GHz wireless data rate	2402 Mbps
	2.4 GHz wireless data rate	574 Mbps
	Maximum transmit power (5 GHz)	Combined power: 24 dBm (single-stream power: 18 dBm) Note: The transmit power varies according to regulations in different countries and regions.
	Maximum transmit power (2.4 GHz)	Combined power: 24 dBm (single-stream power: 18 dBm) Note: The transmit power varies according to regulations in different countries and regions.

Parameter Type	Parameter Name	RG-APF1260(MG-P)
	Maximum transmit power	Frequency bands and maximum Effective Isotropic Radiated Power (EIRP): Note: Country specific restrictions apply. ● European Union & United Kingdom: o 2400–2483.5 MHz, EIRP ≤ 20 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm o 5470–5725 MHZ, EIRP ≤ 30 dBm ● Myanmar: o 2400–2483.5 MHz, EIRP ≤ 23 dBm o 5725–5825 MHz, EIRP ≤ 30 dBm ● Thailand: o 2400–2483.5 MHz, EIRP ≤ 20 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm o 5470–5725 MHz, EIRP ≤ 30 dBm o 5725–5825 MHz, EIRP ≤ 30 dBm ● Indonesia: o 2400–2483.5 MHz, EIRP ≤ 27 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm o 5725–5825 MHz, EIRP ≤ 23 dBm ● Egypt: o 2400–2483.5 MHz, EIRP ≤ 20 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm ● Vietnam: o 2400–2483.5 MHz, EIRP ≤ 23 dBm o 5150–5350 MHz, EIRP ≤ 23 dBm o 5470–5725 MHz, EIRP ≤ 30 dBm o 5725–5850 MHz, EIRP ≤ 30 dBm
	Coverage range	55 m^2 (592.02 square ft.) Note: The data is obtained in an ideal environment without obstruction. The signal coverage radius depends on client performance and environmental interference.
	Highest QAM order	1024
	Modulation	OFDM: BPSK @ 6/9 Mbps, QPSK @ 12/18 Mbps, 16-QAM @ 24 Mbps, 64-QAM @ 48/54 Mbps DSSS: DBPSK @ 1 Mbps, DQPSK @ 2 Mbps, and CCK @ 5.5/11 Mbps MIMO-OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM and 1024-QAM OFDMA

Parameter Type	Parameter Name	RG-APF1260(MG-P)
	Receive sensitivity	11b: –91 dBm (1 Mbps), –88 dBm (5.5 Mbps), –85 dBm (11 Mbps) 11a/g: –89 dBm (6 Mbps), –80 dBm (24 Mbps), –76 dBm (36 Mbps), –71 dBm (54 Mbps) 11n: –85 dBm (MCS0), –65 dBm (MCS7), –85 dBm (MCS8), –65 dBm (MCS15) 11ac: 20 MHz: –85 dBm (MCS0), –60 dBm (MCS9) 11ac: 40 MHz: –82 dBm (MCS0), –57 dBm (MCS9) 11ac: 80 MHz: –79 dBm (MCS0), –54 dBm (MCS9) 11ac: 160 MHz: –76 dBm (MCS0), –51 dBm (MCS9) 11ax: 20 MHz: –85 dBm (MCS0), –58 dBm (MCS11) 11ax: 40 MHz: –82 dBm (MCS0), –55 dBm (MCS11) 11ax: 80 MHz: –79 dBm (MCS0), –52 dBm (MCS11) 11ax: 160 MHz: –76 dBm (MCS0), –49 dBm (MCS11)
Antenna	Antenna	2.4 GHz: 2 built-in omnidirectional antennas 5 GHz: 3 built-in omnidirectional antennas
	Antenna gain (5 GHz)	6.26 dBi
	Antenna gain (2.4 GHz)	4.14 dBi
Port Specifications	Ethernet cable type	CAT5, CAT5e, CAT6, CAT6a, CAT7, CAT7a
	Reset button	1
	LEDs	1 x system status LED 1 x SC port LED
	Number of uplink optical ports	1
	Maximum transmission rate of uplink optical ports	2.5 Gbps

Parameter Type	Parameter Name	RG-APF1260(MG-P)
	Number of 10/100/1000BASE-T ports	4
	Total number of optical ports	1
	Number of RJ11 phone ports	1
	Tx power of an SC port	1.5 dBm to 3 dBm
	Rx power of an SC port	–8 dBm to –27 dBm Caution: Do not connect the SC port on the ONU directly to the PON port on the OLT. When short-distance single-mode fibers (SMFs) are used, a linear optical attenuator or splitter must be installed on the link to prevent the ONU from being damaged.
Power Supply and Consumption	Power supply	● DC power adapter ● PoF Note: No power option is preferred over the others.
	Maximum power consumption	PoF power supply: 23 W DC power supply: 26 W
	PoE budget	PoF power supply: 7 W DC power supply: 12.95 W
	Power supply to external devices	Yes Note: The Ethernet interface provides external power supply of 54 V/12.95 W.
	Dimensions of the DC connector	Outer diameter: 5.5 mm (0.22 in.) Inner diameter: 2.1 mm (0.08 in.) Depth: 10 mm (0.39 in.)
Dimensions and Weight	Product dimensions (W x D x H)	180 mm x 86 mm x 34.5 mm (7.09 in. x 3.39 in. x 1.36 in.) (excluding the mounting bracket)
	Package dimensions (W x D x H)	222 mm x 125 mm x 71 mm (8.74 in. x 4.92 in. x 2.8 in.)
	Color	White
	Weight	0.34 kg (0.75 lbs) (without packaging materials)

Parameter Type	Parameter Name	RG-APF1260(MG-P)
	Shipping weight	0.64 kg (1.41 lbs)
Environment and Reliability	IP rating	IP41
	Mounting options	Wall
	Operating temperature	0°C to 40°C (32°F to 104°F)
	Storage temperature	–40°C to +70°C (–40°F to +158°F)
	Operating humidity	5% RH to 95% RH (non-condensing)
	Storage humidity	5% RH to 95% RH (non-condensing)
	Surge protection	Ethernet port: ±2 kV for common mode VoIP port: ±1.5 kV for common mode
	Cooling	Natural cooling
	Altitude	Operating altitude: 0 m to 5,000 m (0 ft. to +16,404.20 ft.) Storage altitude: –500 m to +5,000 m (–1,640.42 ft. to +16,404.20 ft.)
	MTBF	250,000 hours
Certification and Regulatory Compliance	Certification	CE, CB
	RoHS	Yes

1.5 Technical Specifications of Power Supply

- The RG-APF1260(MG-P) supports a power supply using a 54 V/1.21 A DC adapter. The specifications of the DC adapter are listed in the following table. If the AP is powered by a power adapter, refer to the following table.

Inner Diameter	Outer Diameter	Insertion Depth	Conductor Resistance	Insulation Resistance	Voltage for Insulator and Conductor	Polarity
2.1 mm (0.08 in.)	5.5 mm (0.22 in.)	10 mm (0.39 in.)	30 MΩ	100 MΩ	500 V	Center: positive (+); Barrel: negative (–). Reverse

Inner Diameter	Outer Diameter	Insertion Depth	Conductor Resistance	Insulation Resistance	Voltage for Insulator and Conductor	Polarity
						polarity symbol is not allowed.

- Power supply via PoF: compliant with IEEE 802.3at (PoE+). To power this AP through PoF, ensure that the PSE is compliant with IEEE 802.3at. This allows the AP to deliver optimal performance.

Warning

When PoF is used, do not use a third-party device to supply power to the AP.

2 Preparing for Installation

2.1 Package Contents

No.	Item	Quantity
1	RG-APF1260(MG-P) access point (with a decorative cover)	1
2	Machine screws (M4 x 40 mm)	2
3	Machine screws (M3.5 x 30 mm)	2
4	Tapping screws (ST3 x 30 mm)	2
5	Key to security lock	1
6	Mounting bracket	1
7	Terminal block	1
8	Cable cover	1
9	Warranty Card	1
10	User Guide	1

Note

The package contents are subject to the purchase contract, and actual delivery may vary. Please check the items carefully against the package contents or purchase contract. If you have any questions, please contact the distributor.

2.2 Safety Guidelines

This equipment is essential for network connectivity, and its proper operation is critical to ensure normal network functioning.

The following safety guidelines must be followed during installation and use.

- Do not place the equipment in a wet position, and keep it away from liquid.
- Keep the equipment away from heat sources.
- Wear an electrostatic discharge (ESD)-preventive wrist strap during installation and maintenance.
- Do not wear loose clothing that may be snagged on components of the equipment. Tighten your belt, scarf, and sleeves.
- Keep tools and accessories away from walk areas.
- Use an uninterruptible power supply (UPS), as it can prevent power outages and avoid power interference.

2.3 Site Requirements

The equipment must be installed and used indoors for normal operation and prolonged service life. The installation site must meet the following requirements.

2.3.1 Temperature and Humidity

To ensure normal operation and prolonged service life of the equipment, maintain appropriate temperature and humidity conditions in the equipment room. In an environment with high relative humidity, insulating materials are prone to poor insulation or even electricity leakage. In an environment with low relative humidity, insulating gaskets may shrink, resulting in screw loosening. In a dry environment, static electricity is more likely to occur, posing a risk to the internal circuits of equipment. A high temperature can accelerate the aging process of insulation materials, greatly reducing the availability of the equipment and severely affecting its service life. The following table lists the temperature and humidity requirements.

Operating Temperature	Operating Humidity
0°C to 40°C (32°F to 104°F)	5% to 95%

2.3.2 Cleanliness

Dust poses a significant hazard to the equipment. Dust on the enclosure causes electrostatic adhesion, leading to poor contact with the metallic joints. It not only affects the service life of the equipment, but also causes communication faults. The risk of electrostatic adhesion increases when the indoor relative humidity is low.

The following table lists the requirements for dust concentration and particle size in the equipment room.

Maximum Diameter (μm)	0.5	1	3	5
Maximum Concentration (Number of Particles/m^3)	1.4×10^7	7×10^5	2.4×10^5	1.3×10^5

Apart from dust, limits are also imposed on the concentration of the salt, acid, and sulfide in the air of the equipment room. These harmful gases will accelerate metal corrosion and component aging. Therefore, the equipment room should be properly protected against harmful gases, including SO_2, H_2S, NO_2, NH_3, and Cl_2. The following table lists the limits on harmful gases.

Gas	Average (mg/m^3)	Maximum (mg/m^3)
Sulfur dioxide (SO_2)	0.2	1.5
Hydrogen sulfide (H_2S)	0.006	0.03
Nitrogen dioxide (NO_2)	0.04	0.15
Ammonia gas (NH_3)	0.05	0.15
Chlorine gas (CI_2)	0.01	0.3

2.3.3 ESD Prevention

The equipment is designed with ESD-preventive procedures during circuit design. However, excessive static electricity can still cause damage to its circuit board. Static electricity on the communication network connected to the equipment mainly originates from two sources:

- Outdoor high-voltage transmission lines, lightning, and other external electric fields
- Internal systems such as indoor flooring materials and the structure of the equipment

To prevent damage caused by static electricity, pay attention to the following:

- Keep the indoor installation environment clean and free of dust.
- Maintain appropriate temperature and humidity.

2.3.4 Electromagnetic Interference

Interference prevention measures primarily target electromagnetic and current interferences. The following requirements should be considered to ensure effective interference prevention.

- Take interference prevention measures for the power supply system.
- Keep the equipment away from the grounding system or lightning protection grounding system of the power facility.
- Keep the equipment far away from high-frequency current equipment such as high-power radio transmitting stations and radar launchers.

2.3.5 Installation Site

When the equipment is installed on the wall, the following conditions must be met:

- The wall surface must be smooth and clean.
- Make sure the device cables are connected and functioning properly.

2.4 Tools

Common Tools	Phillips screwdriver, cables, cage nuts, diagonal pliers, and straps
Special Tools	Wire stripper, crimping pliers, RJ45 crimping pliers, wire cutter, and ESD-preventive glove
Meters	Multimeter and bit error rate tester (BERT)

Note

The equipment is delivered without a toolkit. Prepare the preceding tools by yourself.

3 Installing the AP

Caution

Before installing the equipment, ensure that guidelines and requirements in Chapter 2 have been met.

3.1 Before You Begin

Carefully plan and arrange the installation position, networking mode, power supply, and cabling before installation. Confirm the following requirements before installation:

- The installation site meets the temperature and humidity requirements of the equipment.
- The power supply is available at the installation site, and its current meets the requirements.
- The power supply meets the requirements.
- The installation site meets the cabling requirements of the equipment.
- The installation site meets the site requirements of the equipment.
- The customized equipment meets the client-specific requirements.

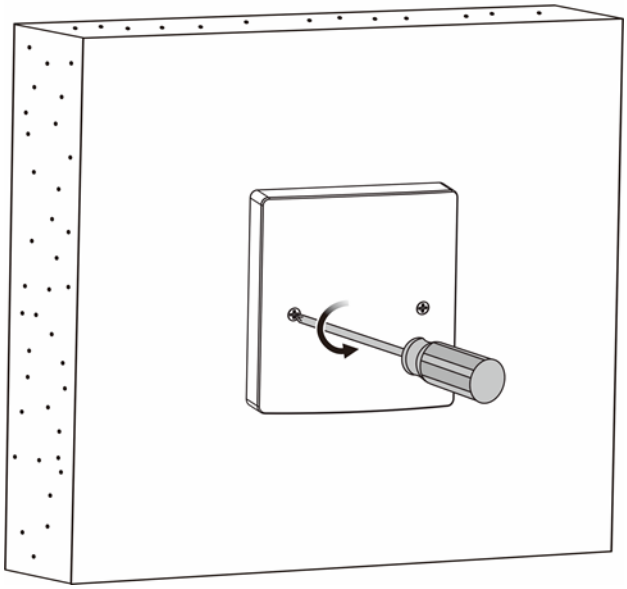
3.2 Precautions

To ensure the normal operation and prolonged service life of the AP, observe the following safety precautions:

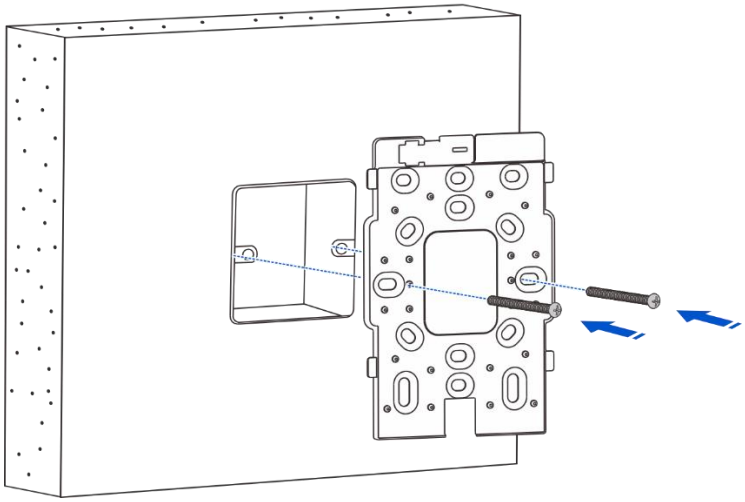
- Do not power on the equipment during installation.
- Place the equipment in a well-ventilated environment.
- Do not subject the equipment to high temperatures.
- Keep the equipment away from high-voltage power cables.
- Install the equipment indoors.
- Do not expose the equipment to a thunderstorm or strong electric field.
- Keep the equipment clean and dust-free.
- Cut off the power supply before cleaning the equipment.
- Do not wipe the equipment with a damp cloth.
- Do not wash the equipment with liquid.
- Do not open the enclosure when the equipment is working.
- Secure the equipment properly.

3.3 Installing the Equipment

(1) Remove the front panel of the 86 mm junction box on the wall.



(2) Use the screws delivered with the equipment to secure the mounting bracket to the junction box.

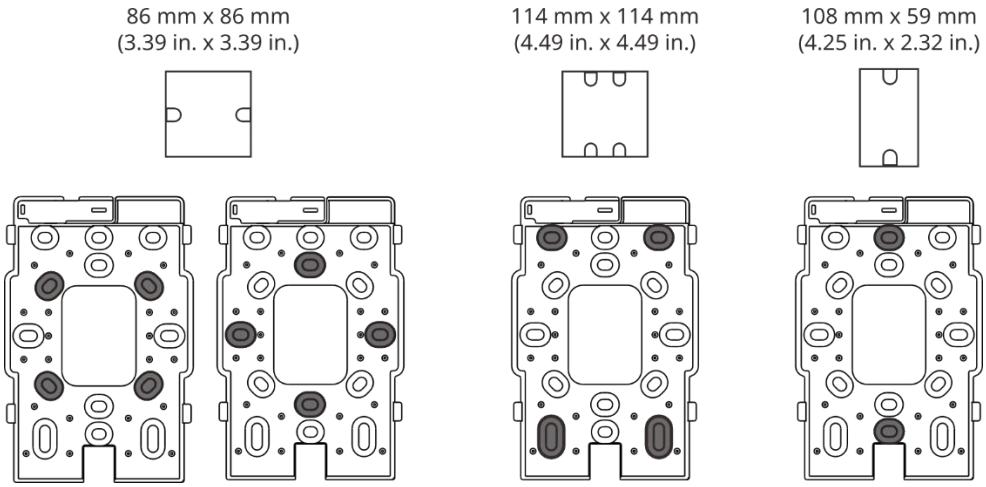


The following are brackets on a European-standard 86 mm x 86 mm junction box, a South African-standard 114 mm x 114 mm junction box, and an American-standard 108 mm x 59 mm junction box. The AP can be mounted horizontally or vertically on a South African-standard junction box.

Note

If more than two screws are required, prepare them by yourself.

- European-standard 86 mm x 86 mm junction box
- South African-standard 114 mm x 114 mm junction box
- American-standard 108 mm x 59 mm junction box



(3) Connect cables according to the actual topology. The following describes how to connect cables to the AP:

- Ethernet cable: Connect one end of the Ethernet cable to one of the LAN1 to LAN4 ports on the bottom of the AP. LAN1 port supports PoE Output.
- Optical cable: Connect one end of the optical cable from a hybrid cable (PoF) or a single optical cable to the 2500 Mbps SC port on the front panel of the AP.

Note

If a centralized PoF power supply is used for the AP, you are advised to use the optical cable in the hybrid cable (PoF) to connect to the 2500 Mbps SC port.

- Telephone cable: Connect one end of the telephone cable to the phone port (RJ11) on the front panel of the AP.
- DC power cord: When the DC power supply is adopted, connect one end of the power cord to the DC port on the front panel of the AP.
- Hybrid cable (PoF): During a centralized PoF power supply, you need to make a hybrid cable as follows.

Note

You can use a customer-provided complete hybrid cable (PoF) for power supply by connecting the power cord in the hybrid cable to the PoF port on the front panel of the AP.

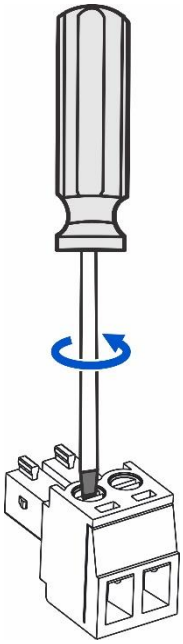
o Power cord:

Caution

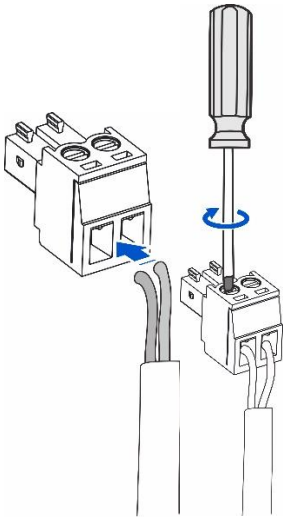
Due to the limited space inside the junction box, it is recommended that the total length of the power cord outside the wall does not exceed 20 cm (7.87 in.).

a Take out the terminal block from the package.

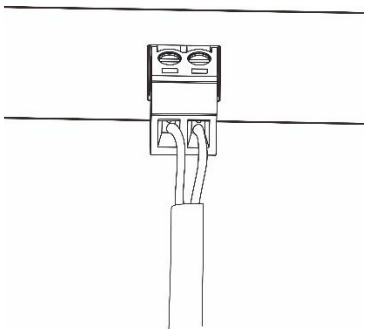
b Loosen screws on the terminal block.



c Connect both ends (polarity not required) of the power wires in the hybrid cable (PoF) to a terminal block and tighten the screws.



d Connect the terminal block to the PoF port on the front panel of the AP.



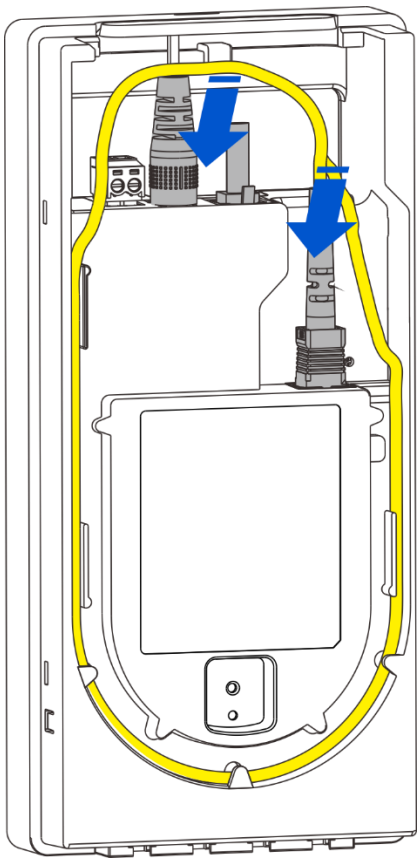
- Optical cable: For the cold splicing and fusion splicing process of the optical cable in the hybrid cable

(PoF), watch the video by clicking Splicing the Optical Cable in a Hybrid Cable and Connecting Its Copper Cable to a Terminal Block.

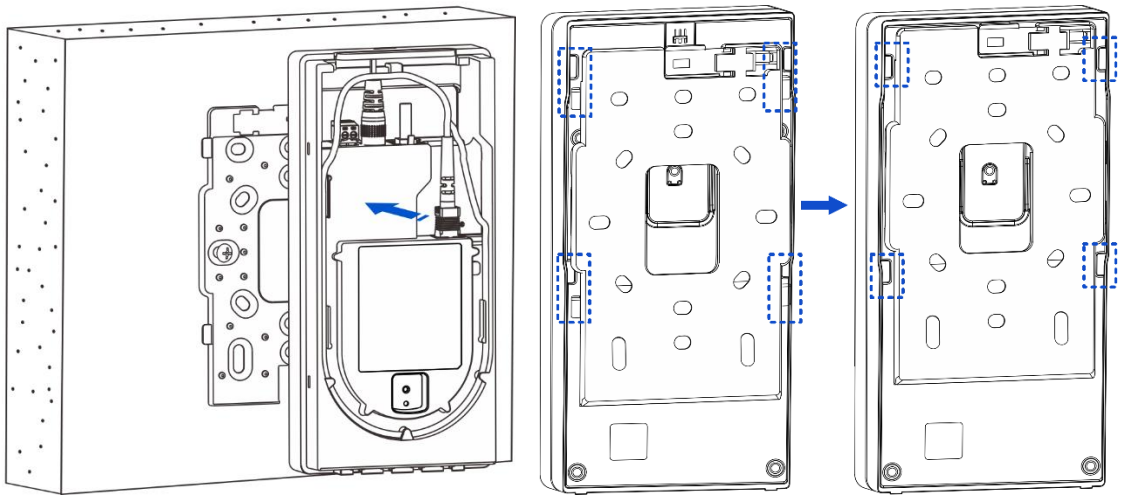
Caution

- You are advised to use cold connectors with a length of less than or equal to 50 mm (1.97 in.).
- Due to limited space in the junction box and the cable management tray of the AP, it is recommended that the total length of the optical cable outside the wall does not exceed 50 cm (19.69 in.).

(4) Secure the optical cable in the cable management tray of the AP.



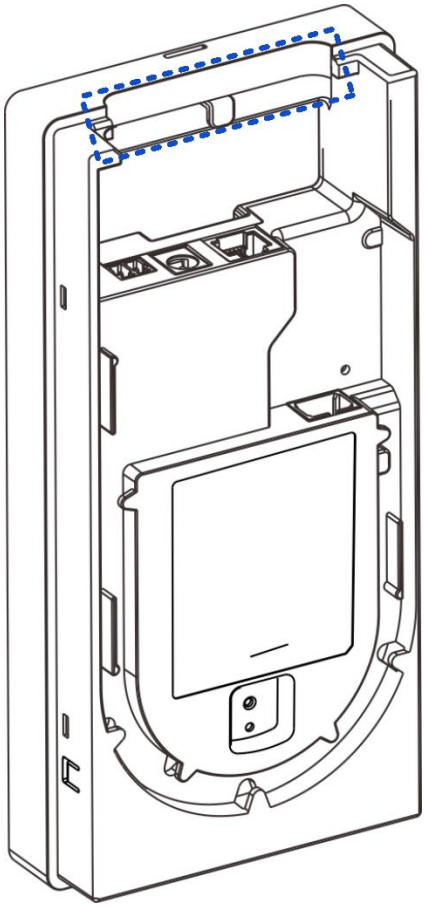
(5) Align the device edge with the edge of the mounting bracket. Slide the device downward to secure it in place.



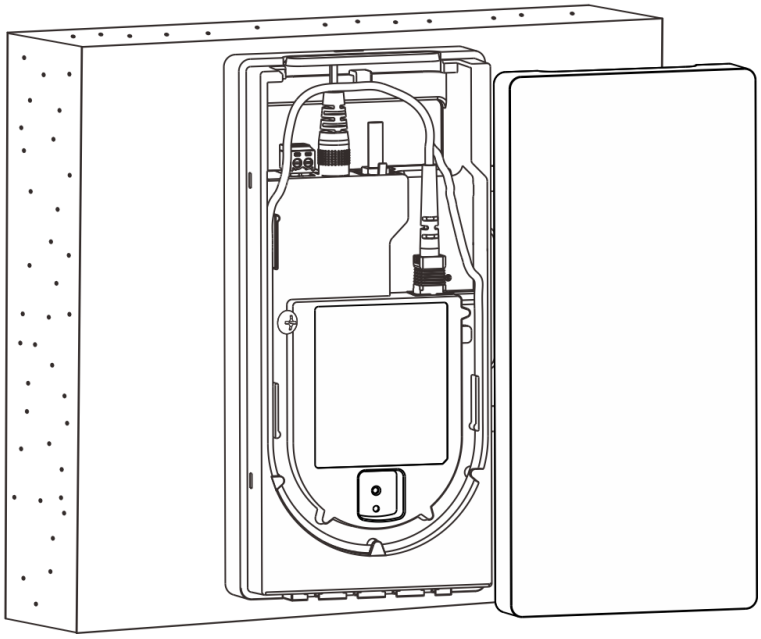
(6) (Optional) Remove the faceplate from the top of the device.

Note

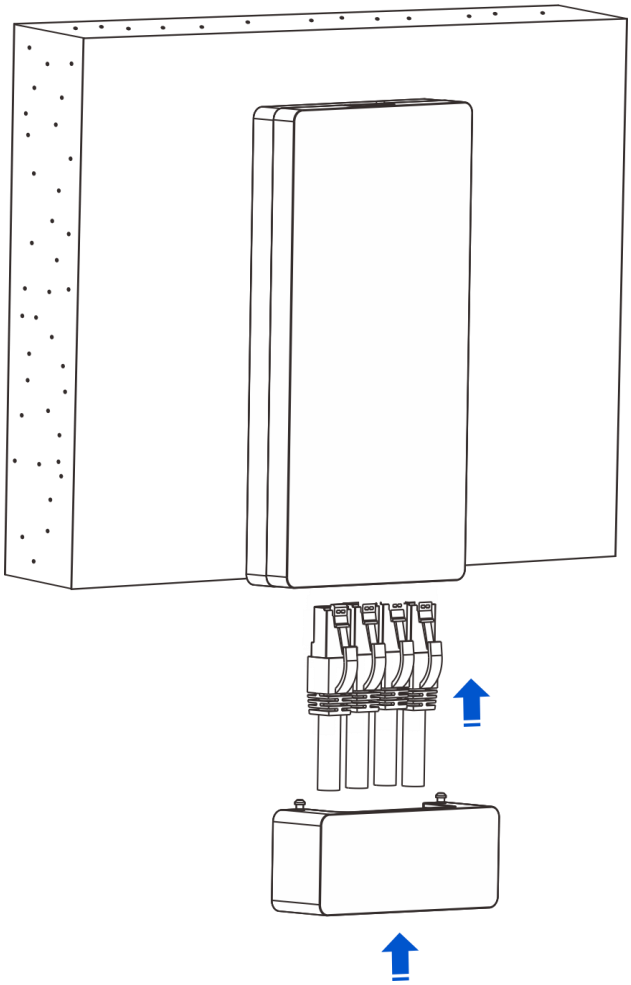
When the device cables need to be routed along the exterior of the wall (for example, the device is powered by a DC power adapter), remove the faceplate on the top of the device. Then, the reserved cable routing opening will be visible.



(7) Install the decorative cover on the AP.

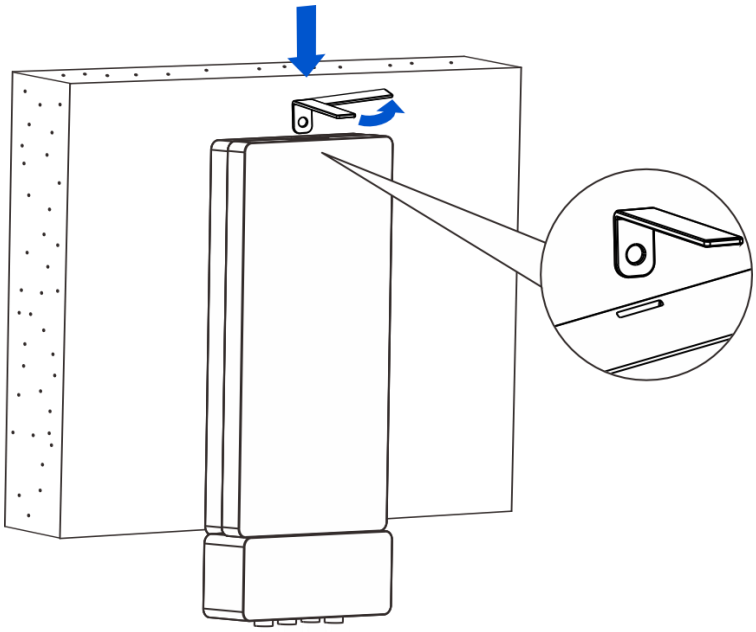


(8) (Optional) Decide whether to install the cable cover on the device after you connect the cables.

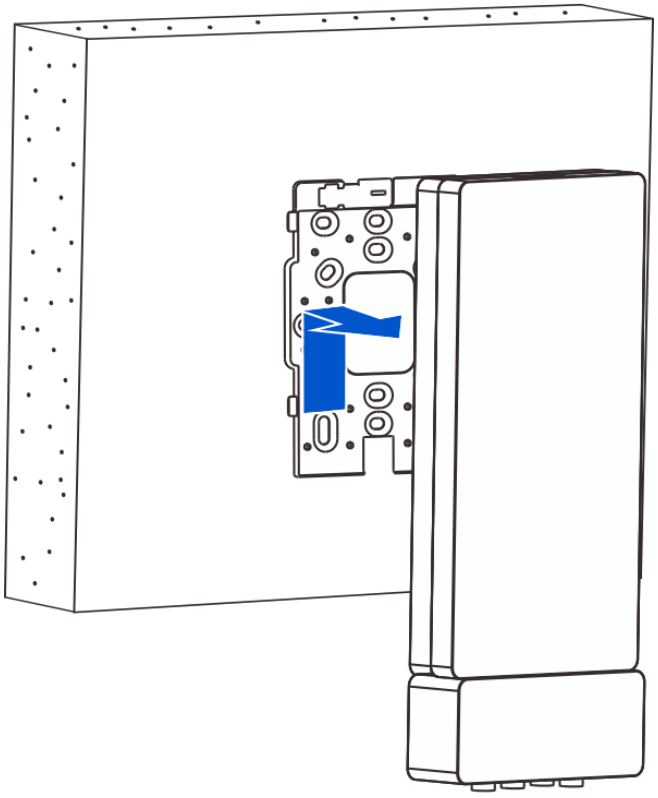


3.4 Removing the AP

(1) Insert the lock key into the reserved slot on the top of the AP and rotate the key in the direction shown in the figure.



(2) Slide the AP upward to remove it from the mounting bracket.



3.5 Bundling Cables

Precautions

- Bundle cables in an aesthetically pleasing way.
- Ensure that the cables have natural bends or bends of large radius at the connectors.
- Do not bind cables too tightly, as this may compromise their service life and transmission performance.

Bundling Procedure

(1) Bundle the drooping part of the cables and lead them to both sides of the device in the most convenient manner.

(2) Secure the cables to the 86 mm junction box.

(3) Route the cables under the AP and run them in a straight line.

3.6 Checklist After Installation

- The equipment is securely fastened.
- The cables match the port types.
- Cables are properly bundled.

Caution

Do not open the decorative panel while the device is running. If the panel must be opened, always power off the device first to prevent electric shock or other hazards.

4 Commissioning

4.1 Setting Up the Configuration Environment

The AP supports power supply via PoF or a DC adapter. During deployment, ensure that the power adapter is properly connected and complies with relevant safety standards.

4.2 Powering on the AP

4.2.1 Checklist Before Power-on

- Check whether the power adapter works properly.
- Check whether cables are properly connected.
- Check whether the PSE connected to the PoF port complies with IEEE 802.3at.

4.2.2 Checklist After Power-on

- Verify the LED status.
- After the AP is powered on, check whether the Service Set Identifier (SSID) can be detected by a mobile phone or other wireless clients.

4.3 Rectifying Power Supply Failures

You can determine whether a power system failure exists by checking the LED status on the front panel of the AP. For details about the working status of the LED, see Table 1-2 LEDs. Perform the following checks if the power supply is not functioning properly.

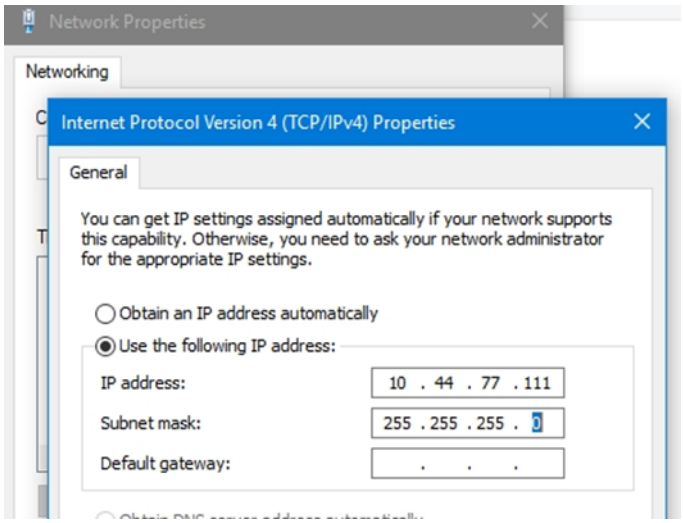
- Check whether the equipment is properly powered.
- Check whether the cables are properly connected.

Note

If the equipment cannot start after all the preceding items are verified, contact your local distributor or technical support.

4.4 Login to eWeb

(1) Set your PC's IP address to 10.44.77.X (Range: 1–253) in the local connection properties, as shown in the following figure.



(2) Open a browser, enter 10.44.77.254 in the address bar of the browser, and press Enter to log in to eWeb. The default password is admin upon the first login to the AP's eWeb. For security purposes, change the default password after login.

5 Monitoring and Maintenance

5.1 Monitoring

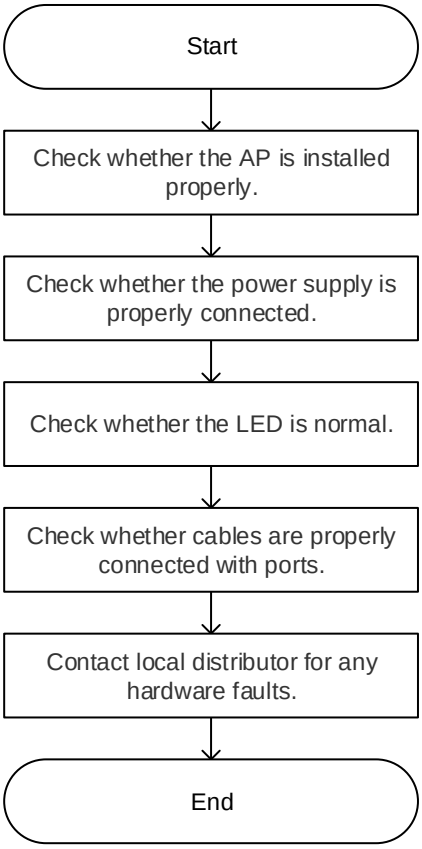
You can observe the LEDs to monitor the running status of the equipment.

5.2 Maintenance

If the hardware is faulty, please contact the Ruijie technical support.

6 Common Troubleshooting

6.1 General Troubleshooting Flowchart



6.2 Common Faults

6.2.1 Why is the system status LED off after the AP is powered on?

- Check whether the power adapter connected to the DC power connector works properly, and then check whether the DC power cord is connected properly.
- Check whether the PSE connected to the PoF port is compliant with IEEE 802.3at, and then check whether the hybrid cable (PoF) is connected properly.

6.2.2 Why does the Ethernet port fail to work after the Ethernet cable is connected to it?

- Check whether the power adapter connected to the DC port works properly. Then, verify that the twisted pair is capable of providing the required data rate and is properly connected.
- Check whether the PSE connected to the PoF port works properly. Then, verify that the twisted pair is capable of providing the required data rate and is properly connected.

6.2.3 Why cannot clients discover the AP?

(1) Verify that the AP is properly powered.

(2) Verify that the Ethernet port is correctly connected.

(3) Check whether the AP is correctly configured.

(4) Move the client to adjust the distance between it and the AP.

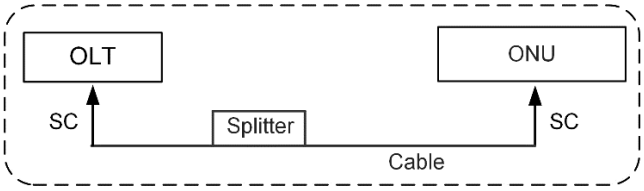
7 Appendix

7.1 Connectors and Media

7.1.1 Cable Connection to the SC Optical Port

Select appropriate cables to connect the SC optical port of the AP to the peer OLT through an optical splitter, as shown in the following figure.

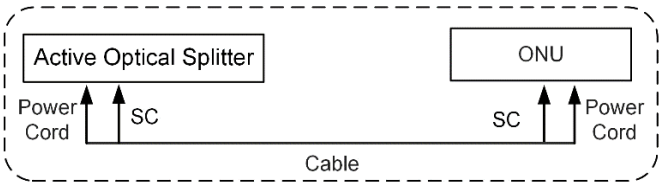
Figure 7-1 Connection to the SC Optical Port



7.1.2 Cable Connection to the PoF Port

Select appropriate cables to connect the PoF port of the AP to the corresponding active optical splitter, as shown in the following figure.

Figure 7-2 Connection to the PoF Port



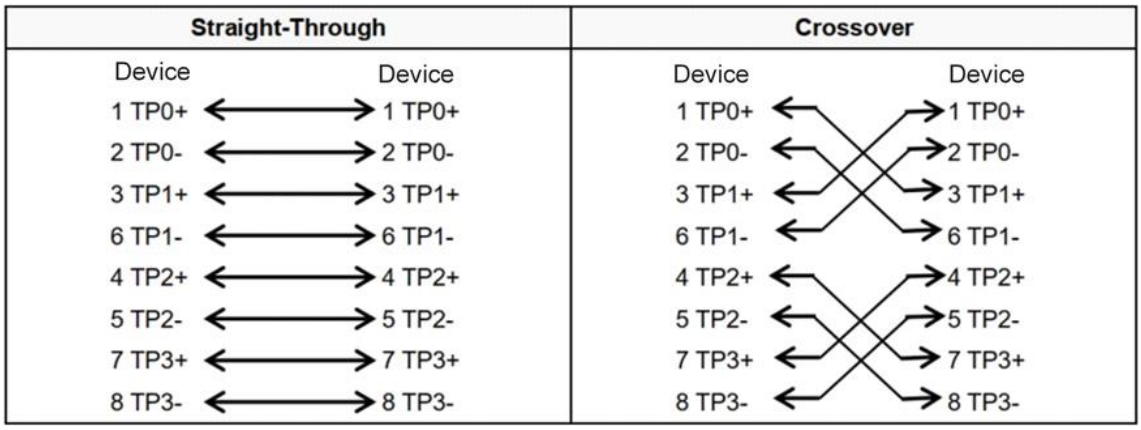
7.1.3 10/100/1000BASE-T Port

The 10/100/1000BASE-T port supports three rates with auto-negotiation, and supports the automatic MDI/MDIX crossover function at these three rates.

Compliant with IEEE 802.3ab, the 1000BASE-T port requires a 100-ohm Category 5e Unshielded Twisted Pair (UTP) or recommended Shielded Twisted Pair (STP) with a maximum distance of 100 meters (328.08 feet).

The 1000BASE-T port requires that all four pairs of wires be connected for data transmission. Figure 7-3 1000BASE-T Twisted Pair Connections shows twisted pair connections for the 1000BASE-T port.

Figure 7-3 1000BASE-T Twisted Pair Connections



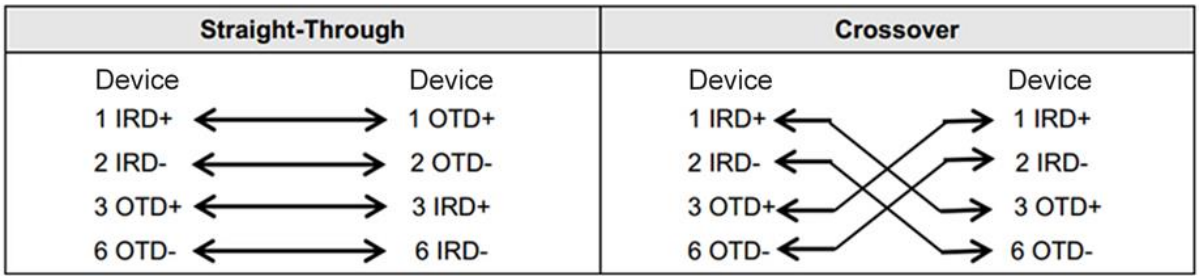
The 100BASE-TX or 10BASE-T port can also be connected by cables of the preceding specifications. Besides, the 10BASE-T port can be connected by 100-ohm Category 3, Category 4, and Category 5 cables with a maximum distance of 100 meters (328.08 feet). The 100BASE-TX port can be connected by 100-ohm Category 5 cables with a maximum distance of 100 meters (328.08 feet). Table 1-4 100BASE-TX/10BASE-T Port Pin Assignments lists 100BASE-TX/10BASE-T pin assignments.

Table 1-4 100BASE-TX/10BASE-T Port Pin Assignments

Pin	Socket	Plug
1	Input Receive Data+	Output Transmit Data+
2	Input Receive Data-	Output Transmit Data-
3	Output Transmit Data+	Input Receive Data+
6	Output Transmit Data-	Input Receive Data-
4, 5, 7, 8	Not Used	Not Used

Figure 7-4 100BASE-TX/10BASE-T Twisted Pair Connections lists wiring of straight-through and crossover cables for the 100BASE-TX or 10BASE-T port.

Figure 7-4 100BASE-TX/10BASE-T Twisted Pair Connections



7.2 Cabling Recommendations

During installation, route cable bundles upward or downward along the sides of the cable management bracket depending on the actual situation in the equipment room. All adapted connectors should be placed at the bottom of the rack in an orderly manner instead of outside the rack that is easy to touch. Power cords are routed beside the rack. Top cabling or bottom cabling is adopted according to the actual situation in the equipment room, such as the positions of the DC power distribution box, AC socket, or lightning protection box.

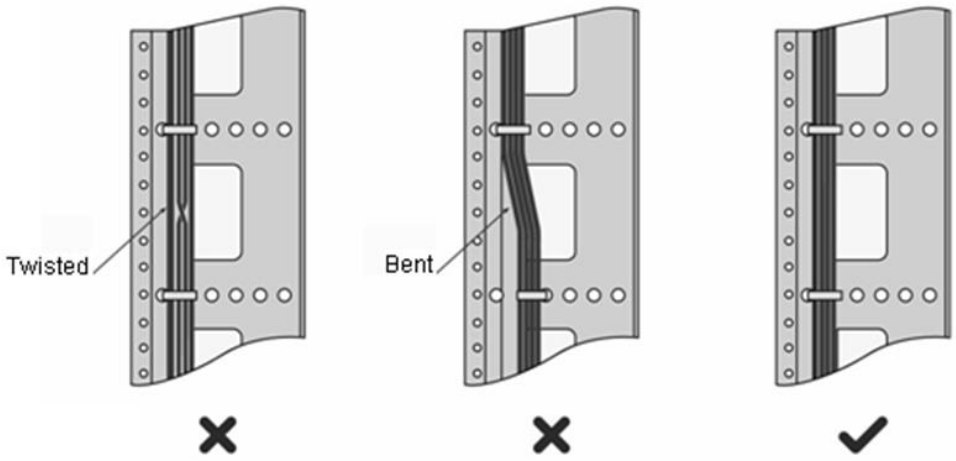
7.2.1 Requirement for the Minimum Bend Radius of Cables

- The bend radius of a fixed power cord, Ethernet cable, or flat cable should be over five times greater than their respective external diameters. The bend radius of these cables that are often bent or plugged should be over seven times greater than their respective external diameters.
- The bend radius of a fixed common coaxial cable should be over seven times greater than its external diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective external diameters.
- The minimum bend radius of a high-speed cable, such as an SFP+ cable, should be over five times greater than its external diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective external diameters.

7.2.2 Precautions for Cable Bundling

- Before cables are bundled, mark labels and stick the labels to cables wherever appropriate.
- Cables should be neatly and properly bundled in the rack without twisting or bending, as shown in Figure 7-5.

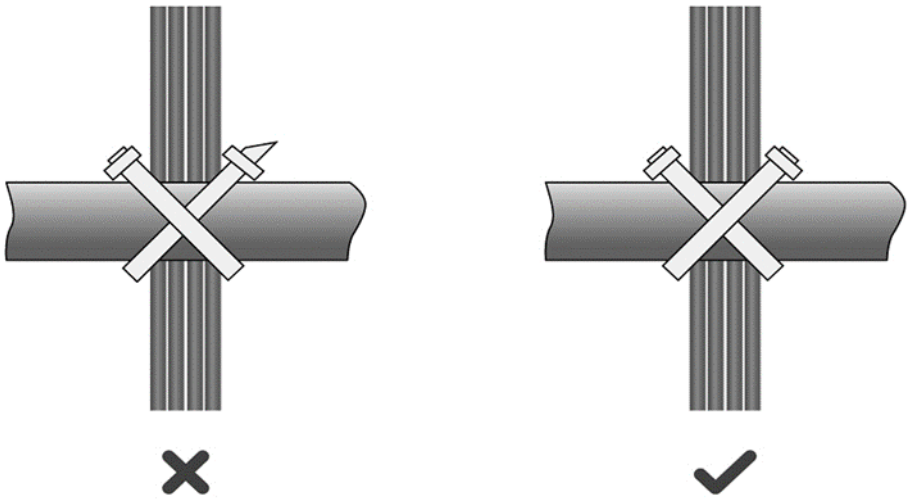
Figure 7-5 Bundling Cables (1)



- Cables of different types (such as power cords, signal cables, and grounding wires) should be separated in cabling and bundling. Mixed bundling is disallowed. When they are close to each other, you are advised to adopt crossover cabling. In the case of parallel cabling, maintain a minimum distance of 30 mm (1.18 in.) between power cords and signal cables.
- The cable management brackets and cabling troughs inside and outside the rack should be smooth without sharp corners.

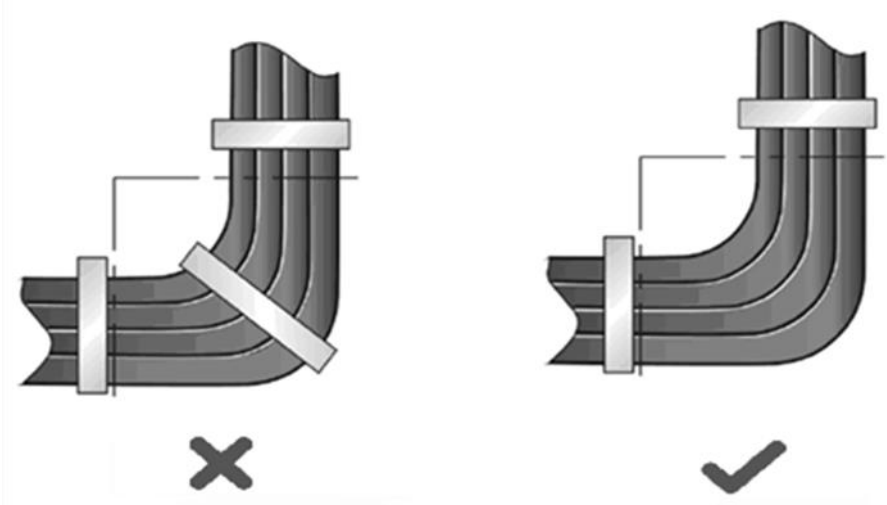
- The metal holes traversed by cables should have a smooth and fully rounded surface or an insulated lining.
- Use cable ties to bundle cables properly. Please do not connect two or more cable ties to bundle cables.
- After bundling up cables with cable ties, cut off the remaining part. The cut should be smooth and trim without sharp corners, as shown in Figure 7-6.

Figure 7-6 Bundling Cables (2)



- When cables need to be bent, bundle them first but do not tie cables within the bend. Otherwise, stress may be generated on the cables and cause the wires inside to break, as shown in Figure 7-7.

Figure 7-7 Binding Cables (3)

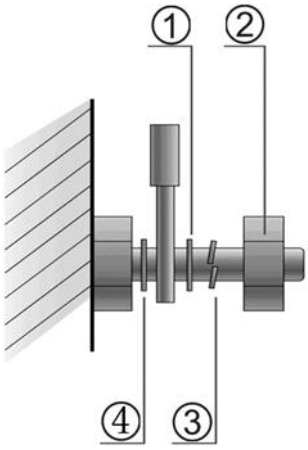


- Cables not to be assembled or the remaining parts of cables should be folded and placed in a proper position of the rack or cable trough. The proper position refers to a position that does not affect the equipment running or damage the equipment or cables.
- Do not bind power cords to the guide rails of moving parts.
- The power cords connecting moving parts such as door grounding cables should be reserved with some excess after being assembled. This can avoid tension or stress on power cords. After the moving part is

installed, the remaining cable part should not touch heat sources, sharp corners, or sharp edges. If heat sources cannot be avoided, high-temperature cables should be used.

- When using screw threads to secure a cable lug, ensure that the bolt or screw is properly tightened and take measures to prevent it from loosening, as shown in Figure 7-8.

Figure 7-8 Fastening Cable Lugs



Note: ① Flat washer ③ Spring washer
② Nut ④ Flat washer

- Hard power cords should be fastened in the terminal connection area to prevent stress on the cable termination area and cables.
- Do not use tapping screws to secure cable lugs.
- Power cords of the same type and in the same cabling direction should be bundled up into cable bunches, with cables in cable bunches clean and straight.
- Bundle cables by using cable ties according to the following table.

Cable Bunch Diameter	Bundling Spacing
10 mm (0.39 in.)	80 mm to 150 mm (3.15 in. to 5.91 in.)
10 mm to 30 mm (0.39 in. to 1.18 in.)	150 mm to 200 mm (5.91 in. to 7.87 in.)
30 (1.18 in.)	200 mm to 300 mm (7.87 in. to 11.81 in.)

- Do not tie cables or bundles in a knot.
- For wiring terminal blocks (such as circuit breakers) with cord end terminals, the metal part of the cord end terminal should not be exposed outside the terminal block when assembled.

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1 Change Description

This section outlines the key changes in software, hardware, and documentation across versions. For detailed hardware changes between different versions, please refer to the release notes provided with the software release.

1.1 OS 2.380

1.1.1 Hardware Changes

The following table lists the hardware models supported by this version.

Type	Model	Version Number
Wi-Fi 6 AP	RG-APF2260(MG)	1.xx
	RG-APF1260(MG-P)	1.xx

1.1.2 Software Feature Changes

This version has the following software feature changes on the basis of OS 2.330.

1. New Feature — Auto Join

This version supports the auto join feature. For details, see 5.1.3 Configuration Steps.

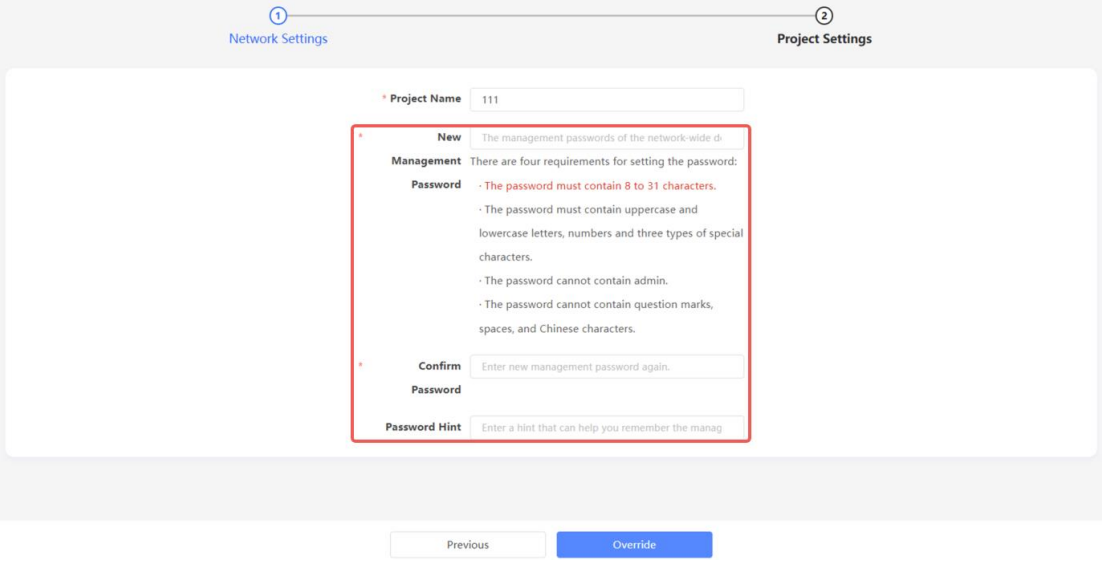
2. New Feature — Compatibility Mode

This version supports compatibility mode. For details, see 9.12 Configuring the Compatibility Mode.

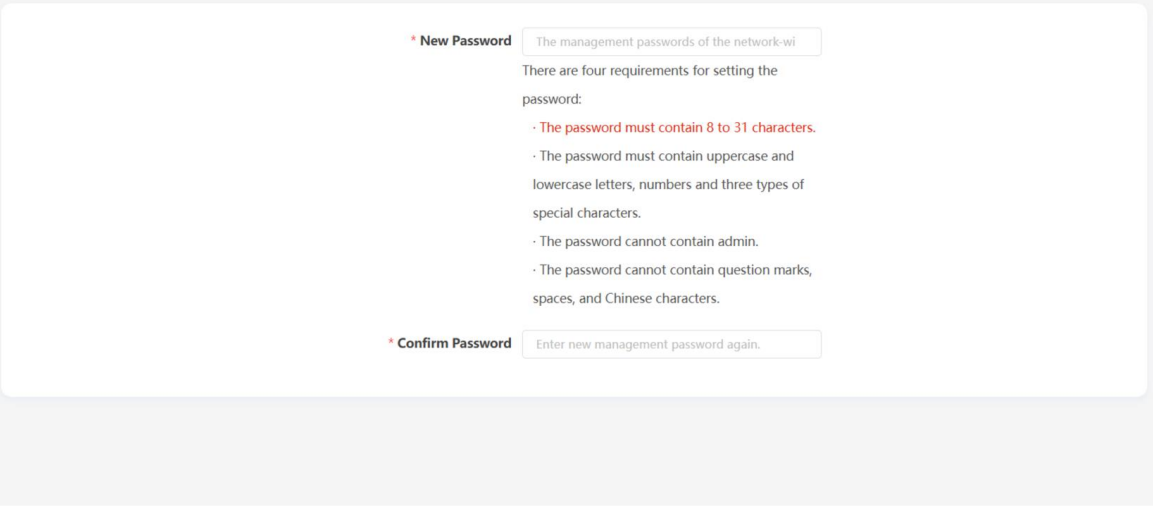
3. Changed Feature — Internet Access Settings

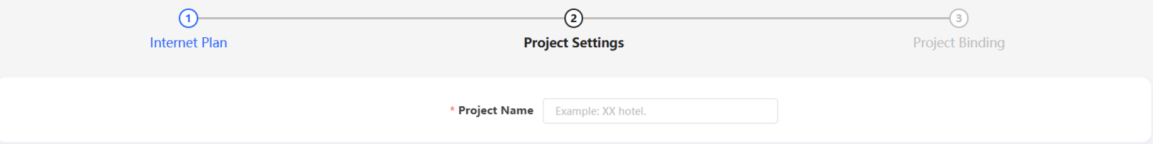
The order of configuration items in the Internet access settings is adjusted in this version. For details, see 2.5 Configuration Wizard (AP Mode).

- Before the change: Add a device to the network. Then create a network project, including configuring a management password.



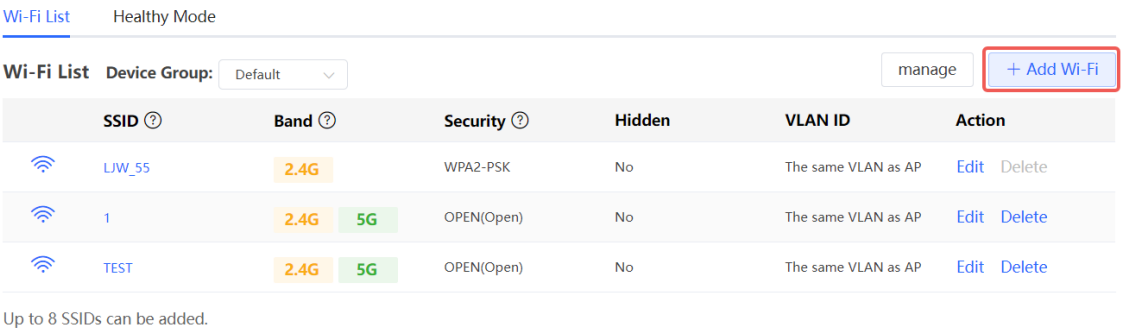
- After the change: Configure a management password, add a device to the network, and then create a network project.



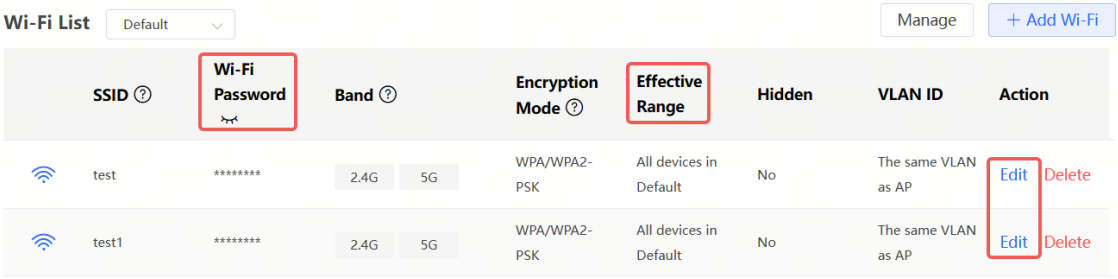


4. Change Feature — Wi-Fi Settings

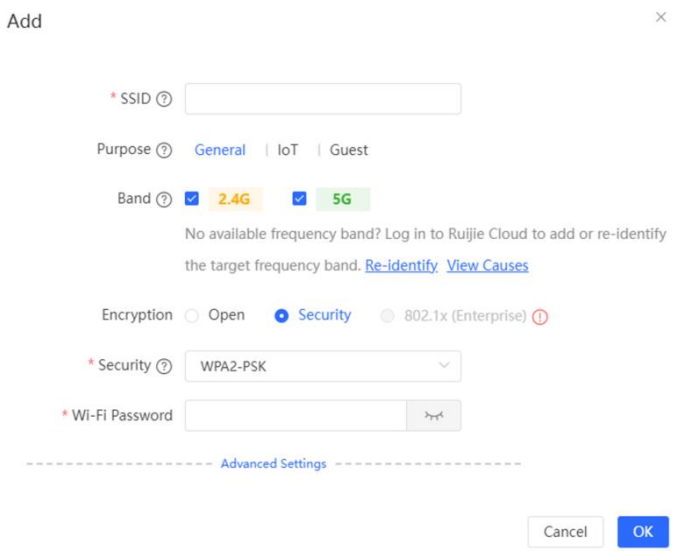
- Wi-Fi list
  - Before the change: The Wi-Fi password and effective range are not included in the list.

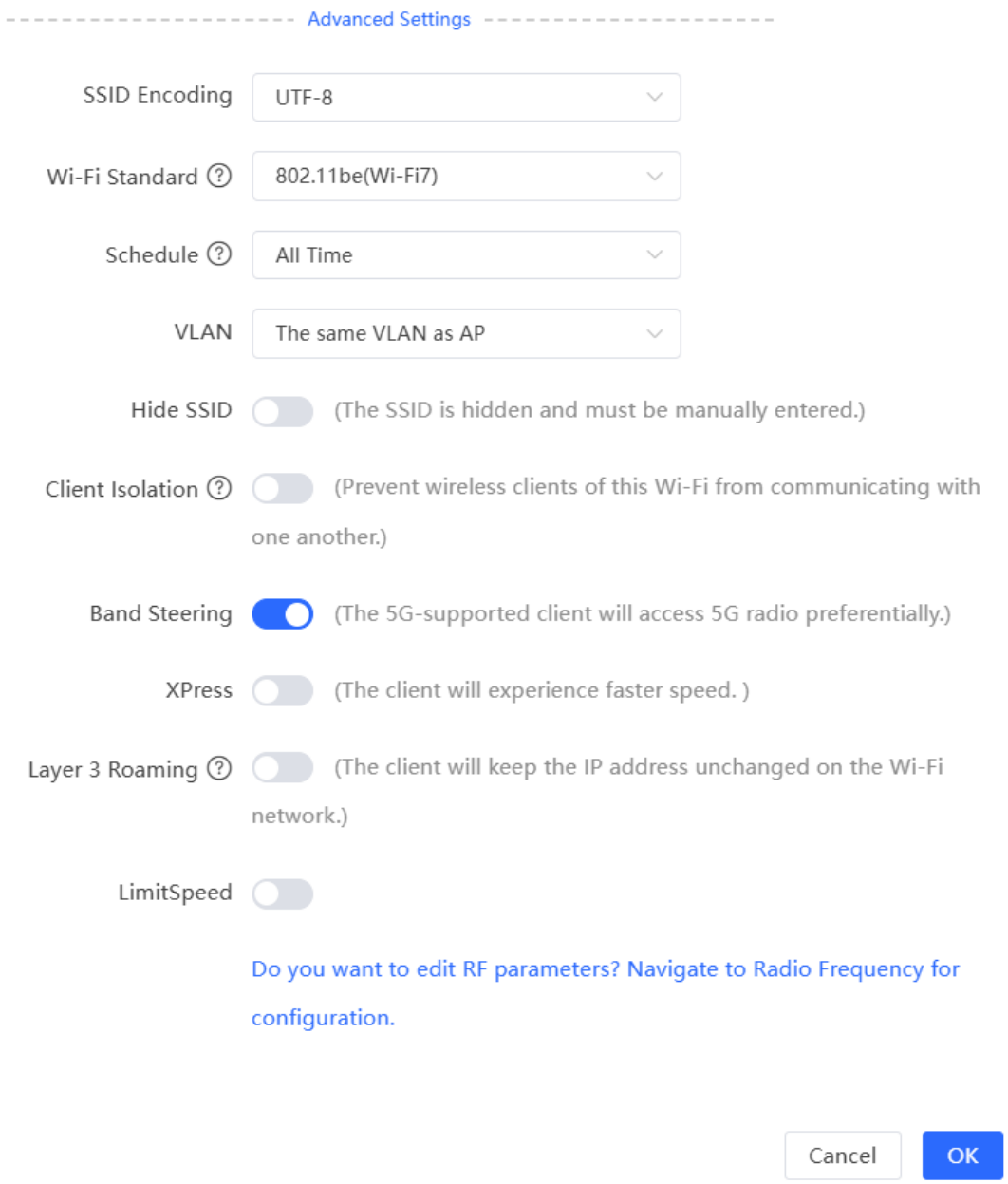


- After the change: The Wi-Fi password and effective range are displayed in the list. For details, see 4 Wi-Fi Network Settings.

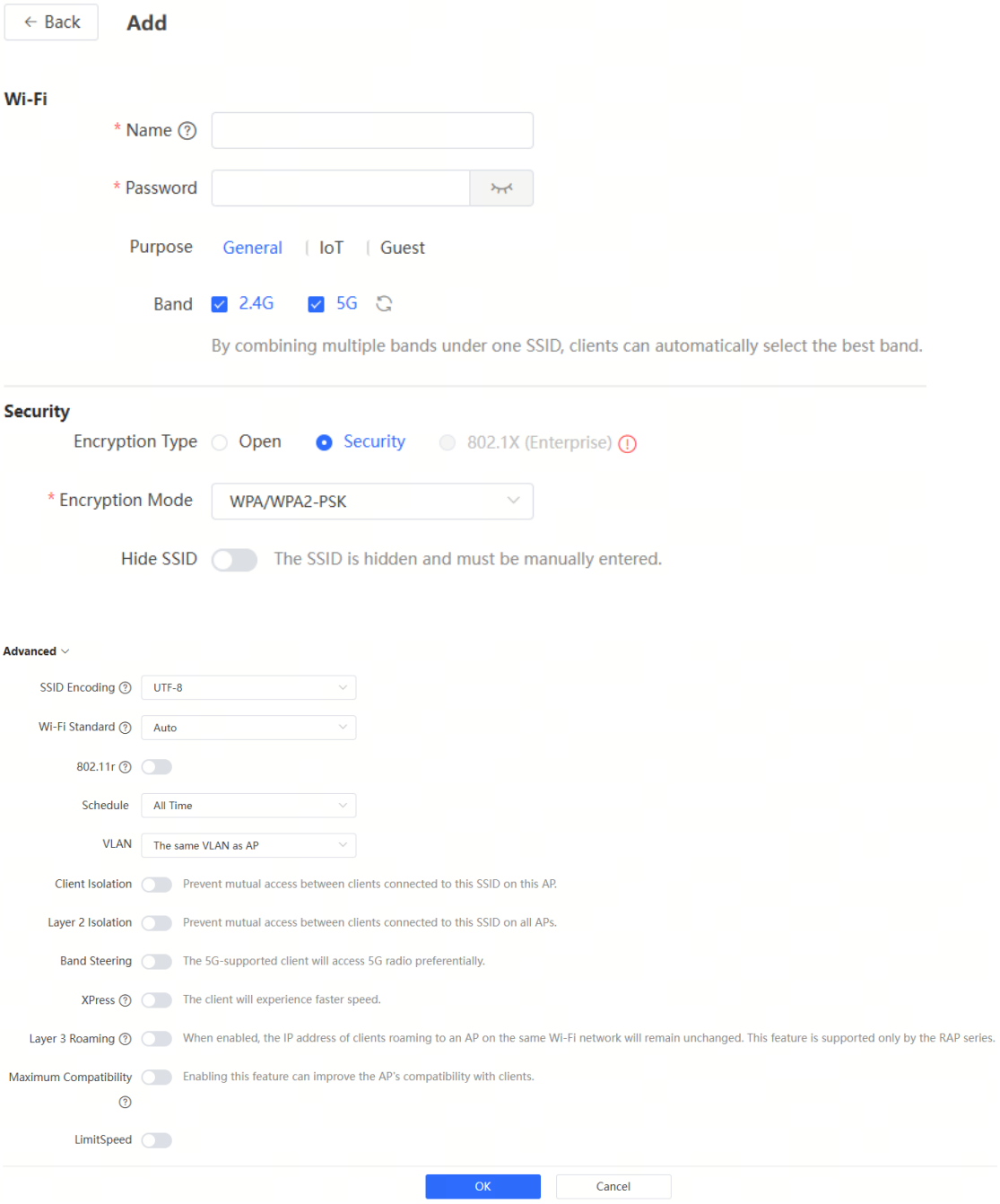


- Adding or modifying a Wi-Fi network
  - Before the change:



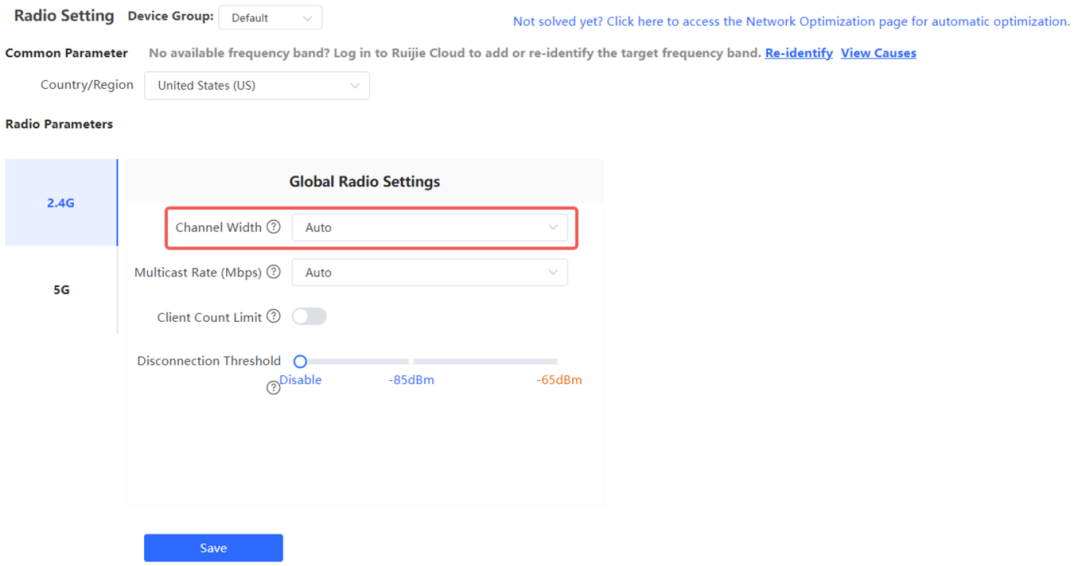


- After the change: The UI layout is adjusted.

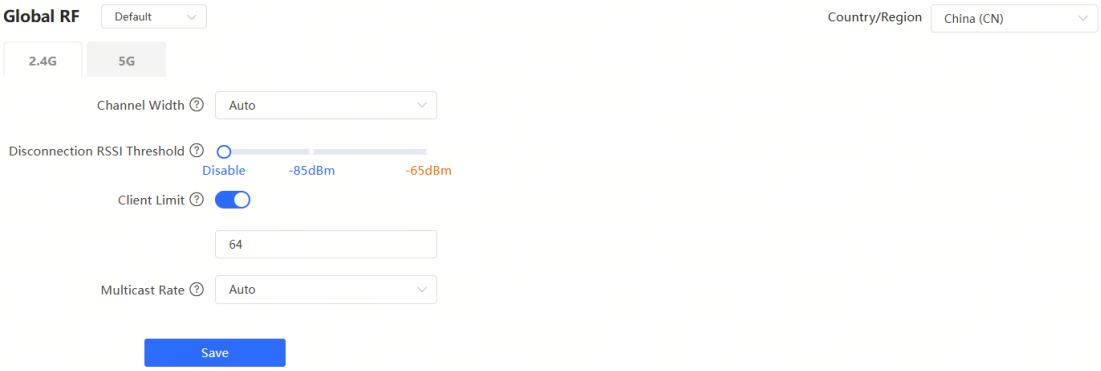


5. Changed Feature — Radio

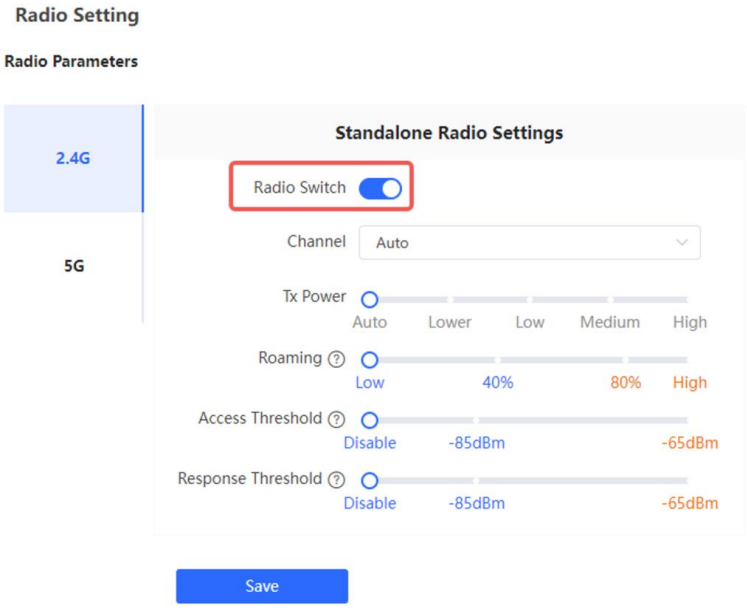
- Global radio
  - Before the change:



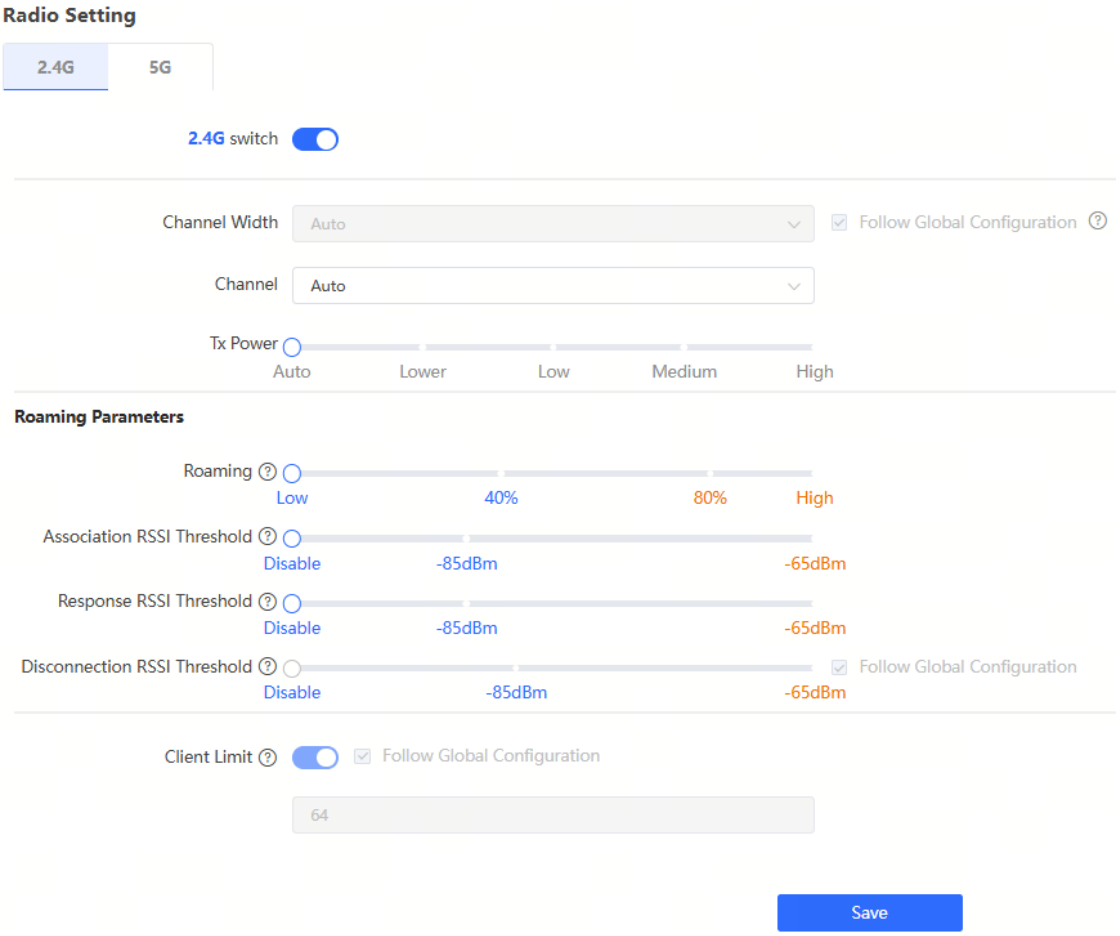
- After the change: **Client Count Limit** is changed to **Client Limit**, **Disconnection Threshold** is changed to **Disconnection RSSI Threshold**. For details, see 4.16.3 Configuring Global Radio Settings.



- Standalone radio:
  - Before the change:



- After the change: **Radio Switch** is changed to **2.4G switch** and **5G switch**; **Access Threshold** is changed to **Association RSSI Threshold**; **Response Threshold** is changed to **Response RSSI Threshold**. On the standalone radio page, **Channel Width**, **Client Limit**, **Disconnection RSSI Threshold** and **Follow Global Configuration** are added. For details, see 4.16.4 Configuring Standalone Radio Settings.



6. Changed Feature — Packet Obtaining

The phrase "Packet Capture" is changed to "Packet Obtaining" in this version. For details, see 10.5 Packet Obtaining.

2 Fast Internet Access

2.1 Configuration Environment Requirements

2.1.1 PC

- Browser: Google Chrome, Internet Explorer 9.0, 10.0, and 11.0, and some Chromium/Internet Explorer kernel-based browsers (such as 360 Extreme Explorer) are supported. Exceptions such as garble or format error may occur if an unsupported browser is used.
- Resolution: 1024 x 768 or a higher resolution is recommended. If other resolutions are used, the page fonts and formats may not be aligned, the GUI is less artistic, or other exceptions may occur.

2.2 Default Configuration

Table 2-1 Default Web Configuration

Item	Default
IP address	10.44.77.254
Username/Password	A username is not required when you log in for the first time. The default password is **admin**.

2.3 Login to Web Interface

2.3.1 Connecting to the Access Point

You can open the management page and complete Internet access configuration only after connecting a client to the access point in either of the following ways:

- Wired Connection

Connect a local area network (LAN) port of the access point to the network port of the PC, and set the IP address of the PC. See 2.3.2 Configuring the IP Address of the Management Client.

- Wireless Connection

On a mobile phone or laptop, search for wireless network **@Ruijie-S***XXXX* (XXXX is the last four digits of the MAC address of each device). In this mode, you do not need to set the IP address of the management Client, and you can skip the operation in 2.3.2 Configuring the IP Address of the Management Client.

2.3.2 Configuring the IP Address of the Management Client

Configure an IP address for the management client in the same network segment as the default IP address of the device (The default device IP address is 10.44.77.254, and the subnet mask is 255.255.255.0.) so that the

management client can access the device. For example, set the IP address of the management client to 10.44.77.100.

Caution

- Make sure that the client can access the web interface as long as it can ping the access point.
- The IP address of the management client cannot be set to 10.44.77.253, because this IP address is reserved by the device. If the management client uses this IP address, it cannot access the device.

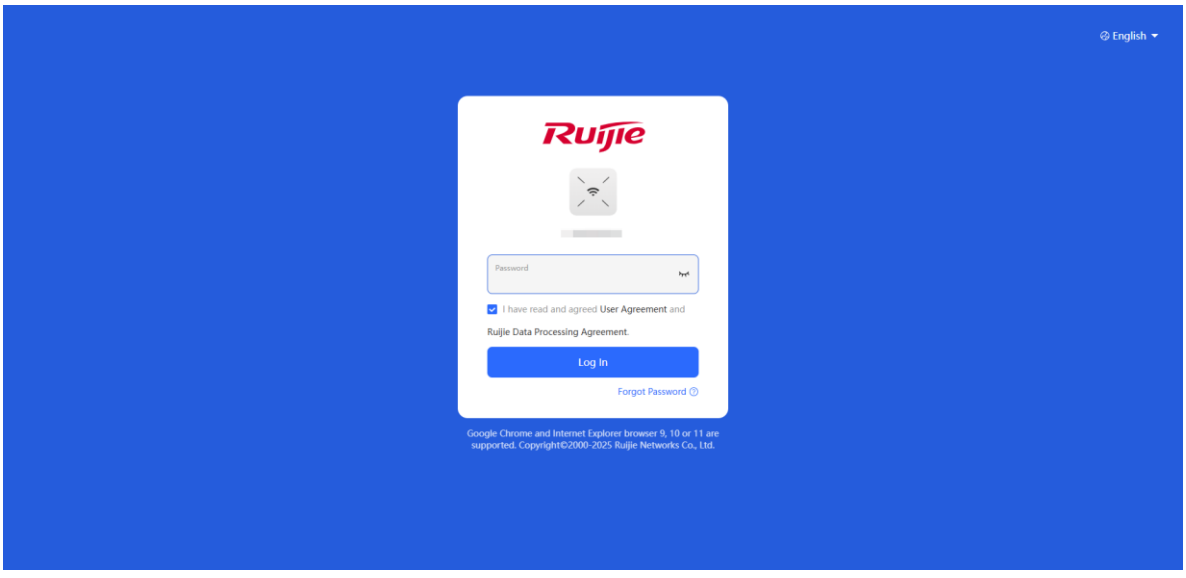
2.3.3 Logging in to the Web Page

(1) Enter the IP address (10.44.77.254 by default) of the access point in the address bar of the browser to open the login page.

Note

If the static IP address of the device is changed, or the device obtains a new dynamic IP address, the new IP address can be used to access the web management system of the device as long as the management client and the device are in the same network segment of a LAN.

(2) On the web page, enter the password and click **Log In** to enter the web management system.



You can use the default password **admin** to log in to the device for the first time. For security purposes, you are advised to change the default password as soon as possible after logging in, and to regularly update your password thereafter.

If you forget the IP address or password, hold down the **Reset** button on the device panel for more than 5 seconds when the device is connected to the power supply to restore factory settings. After restoration, you can use the default IP address and password to log in.

Caution

Restoring factory settings will delete the existing configuration and you are required to configure the device again at your next login. Therefore, exercise caution when performing this operation.

2.4 Work Mode

The device can work in the router mode, AP mode or wireless repeater mode. The displayed system menu page and function ranges vary with the work mode. The RAP works in the AP mode by default.

When setting the work mode, you can also set whether to enable the self-organizing network discovery function. This function is enabled by default.

Self-organizing network mode: After the self-organizing network discovery function is enabled, the new device and other unconnected devices can be discovered. Devices connect with each other to form a network based on their status and synchronize their configurations globally. You can log in to the web interface of the device to view management information of all devices on the network. After the self-organizing network discovery function is enabled, you can efficiently maintain and manage the network. You are advised to keep this function enabled.

When the device connect with each other to form a network, two configuration modes are displayed: network-wide mode and local device mode. See 2.8 Introduction to the Web Interface.

Local device mode: After the self-organizing network discovery function is disabled, the device will not be discovered. After logging in to the web interface, you can configure and manage only the new device. If only one device is configured or global configuration does not need to be synchronized to the device, you can disable the self-organizing network discovery function.

To switch the work mode, see 5.1 Switching Work Mode.

2.4.1 AP Mode

The device performs L2 forwarding and does not support the DHCP address pool function. In AP mode, the device often networks with devices supporting the routing function. IP addresses of downlink wireless clients are assigned and managed by the uplink device (supporting the DHCP address pool) of the AP in a unified manner, and the AP only transparently transmits data.

2.4.2 Router Mode

The device supports NAT routing and forwarding. The addresses of wireless clients can be assigned by the AP and wireless network data is routed and forwarded by the AP. NAT is supported in this mode. When an AP works in the router mode, it supports device networking, network-wide configuration, and AP-specific radio functions.

There are three Internet types available: PPPoE, DHCP mode and static IP address mode. You can connect the device to an Ethernet cable or an upstream device.

Caution

After switching to the router mode, the device's LAN IP address will change to 192.168.120.1. Please obtain an IP address automatically for your management client and enter 192.168.120.1 into the address bar of the browser to log in to web interface again.

2.4.3 Wireless Repeater Mode

The device does not support the routing and DHCP server functions in the wireless repeater mode. IP addresses of the clients are assigned and managed by the primary router. On an available network, the device can be

connected to the primary router through wireless connection to expand the Wi-Fi coverage and increase the number of LAN ports and wireless access devices.

2.5 Configuration Wizard (AP Mode)

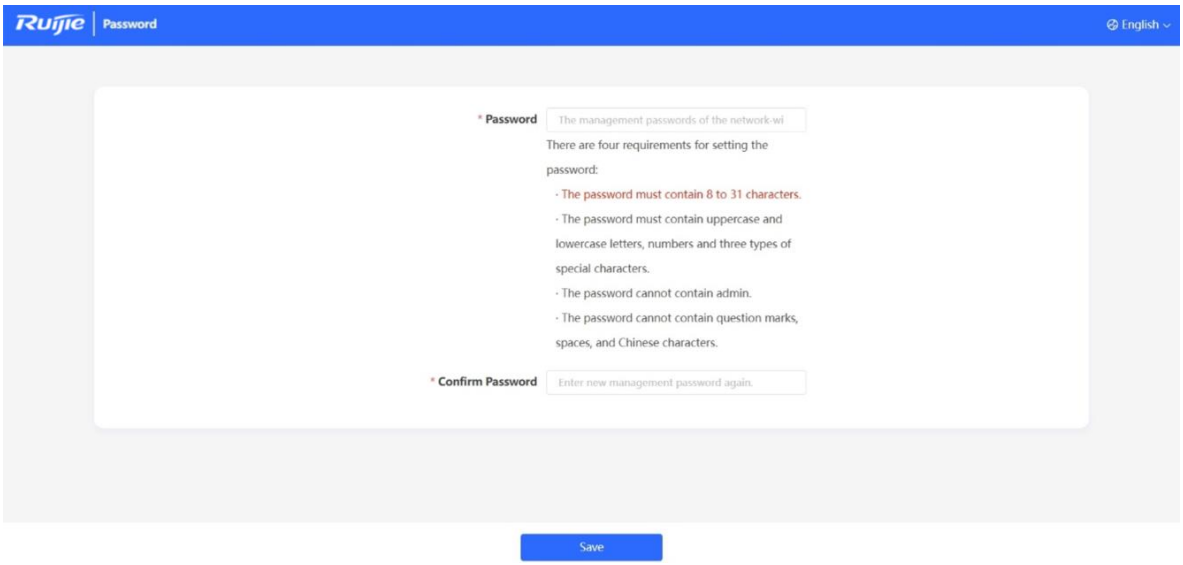
2.5.1 Getting Started

- Power on the device and connect the device to an upstream device.
- Make sure that the device can access the Internet.

2.5.2 Configuration Steps

1. Configuring the Management Password

Set a password for logging into the management system and click **Save**.

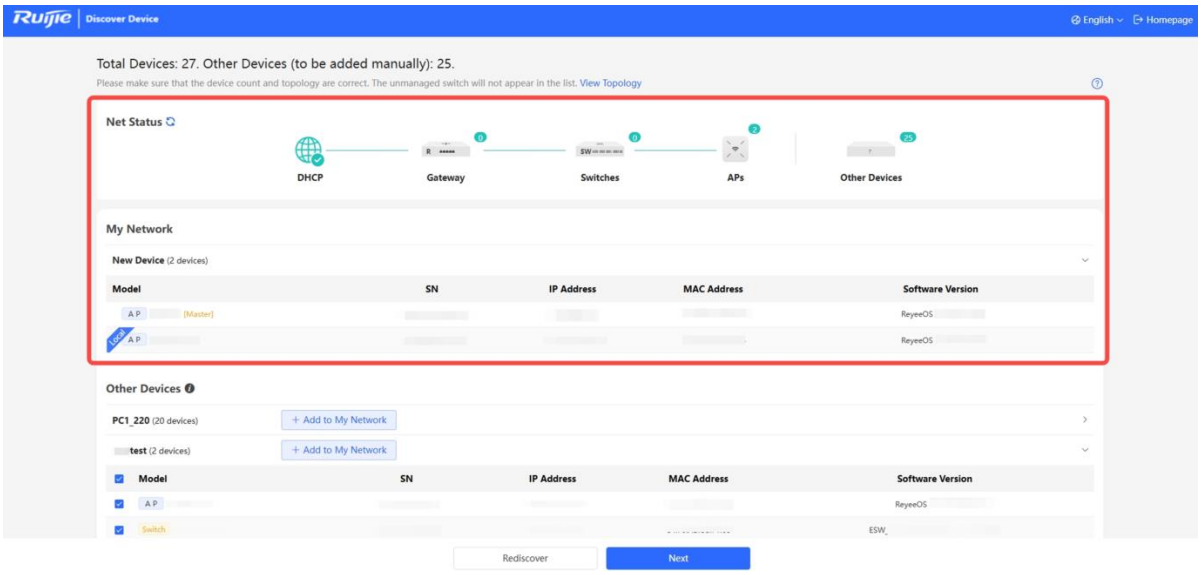


2. Confirming the Network Topology

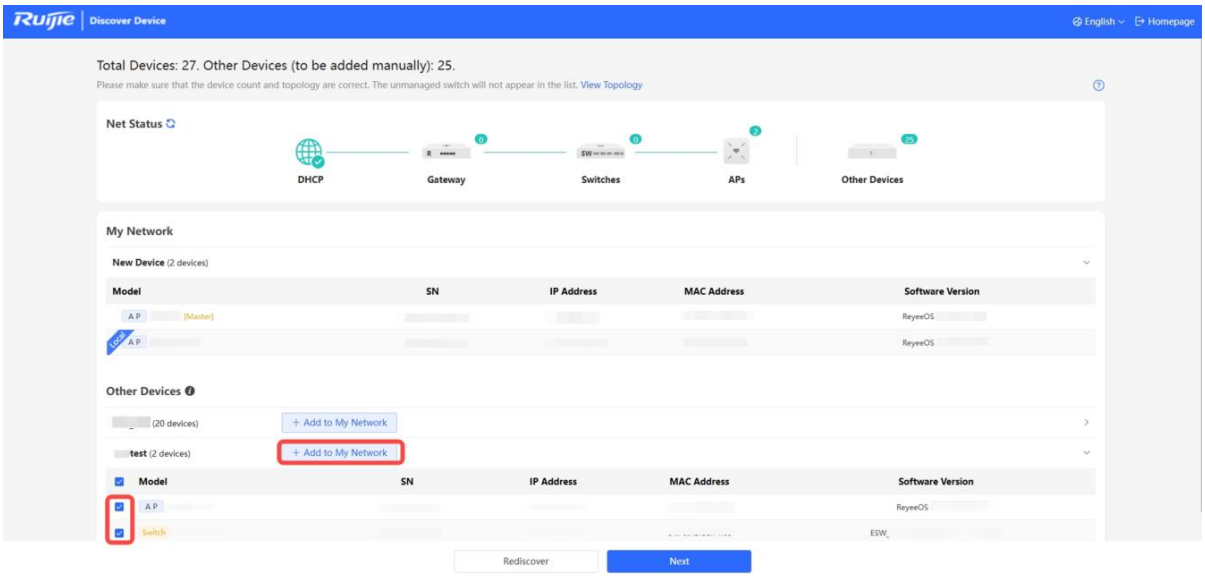
You can manage and configure all devices in the network in batches by default. Please verify the device count and network status before configuration.

Note

New devices will join in a network automatically after being powered on. You only need to verify the device count.



If a new device is detected not in the network, click **Add to My Network** and enter its management password to add the device manually.



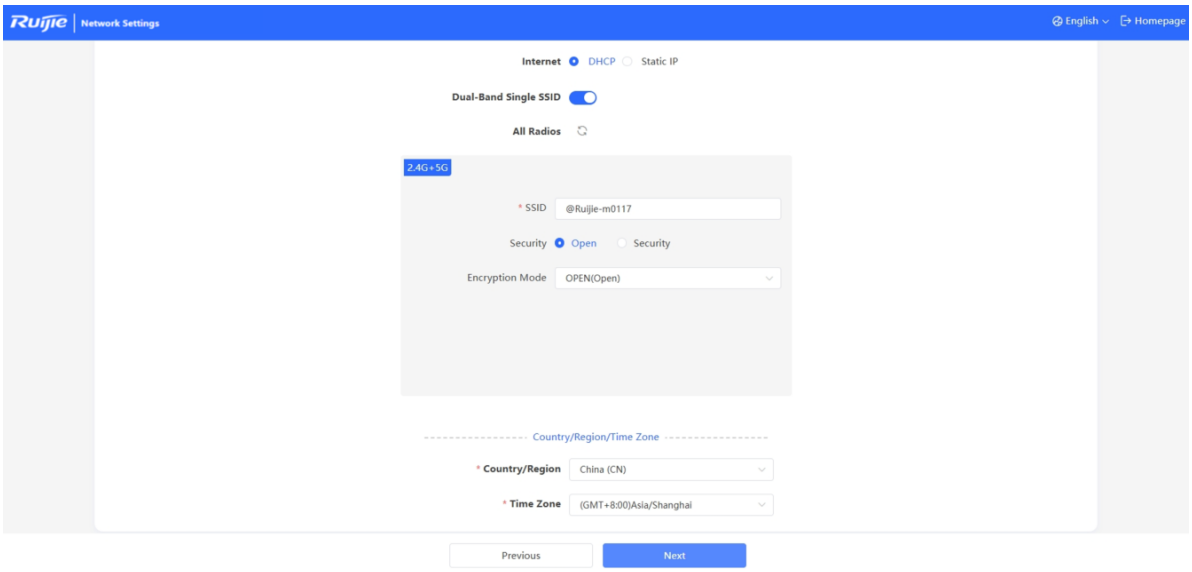
3. Creating a Network Project

(1) Click **Next** to configure the Internet connection type and Wi-Fi network.

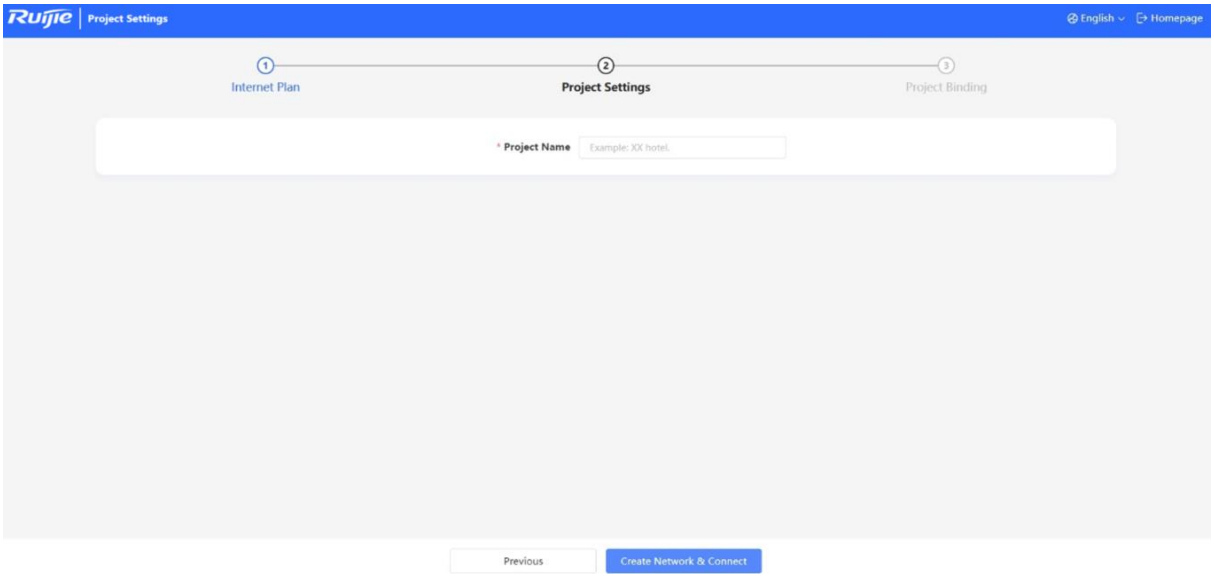
- **Internet**: Configure the Internet connection type according to requirements of the local Internet Service Provider (ISP).
  - DHCP: The access point detects whether it can obtain an IP address via DHCP by default. If the access point connects to the Internet successfully, you can click **Next** without entering an account.
  - Static IP: Enter the IP address, subnet mask, gateway, and DNS server, and click **Next**.
- **Dual-Band Single SSID**: When it is toggled on, the 2.4 GHz and 5 GHz frequency bands share the same Wi-Fi configuration. When it is toggled off, separate Wi-Fi configurations will be required for each band.
- **Country/Region**: The Wi-Fi channel may vary from country to country. To ensure that a client searches for

a Wi-Fi network successfully, you are advised to select the actual country or region.

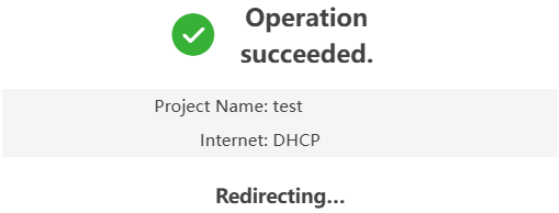
- **Time Zone**: Set the system time. The network time server is enabled by default to provide the time service. You are advised to select the actual time zone.



(2) Click **Next** and set **Project Name** for the device. The project name indicates the network where the device is located.



(3) Click **Create Network & Connect**. The device will deliver the initialization and check the network connectivity.



(4) After completing the quick setup, the new device can access the Internet. You can click **Homepage** in the upper right corner of the page to access the web interface, or bind the device with a Ruijie Cloud account for remote management. Follow the instruction to log in to Ruijie Cloud for further configuration.

Note

If your device is not connected to the Internet, click **Service is unavailable.** in the displayed **Internet connection failed.** dialog box to exit the configuration wizard.

2.6 Configuration Wizard (Wireless Repeater Mode)

2.6.1 Getting Started

- Before configuring the wireless repeater mode, configure the primary router and test that the primary router can access the Internet.
- Place the device where it can discover at least two-bar Wi-Fi signal of the primary router.

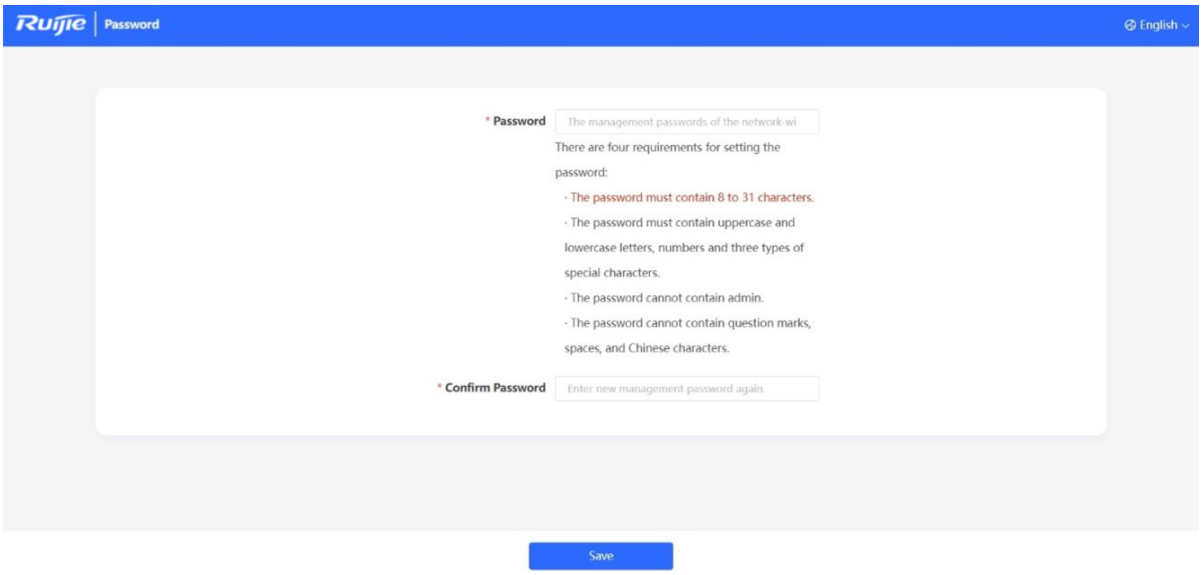
Caution

No Ethernet cable is required in the wireless repeater mode. The wireless network stability can be affected by many factors. Therefore, the wired connection is recommended.

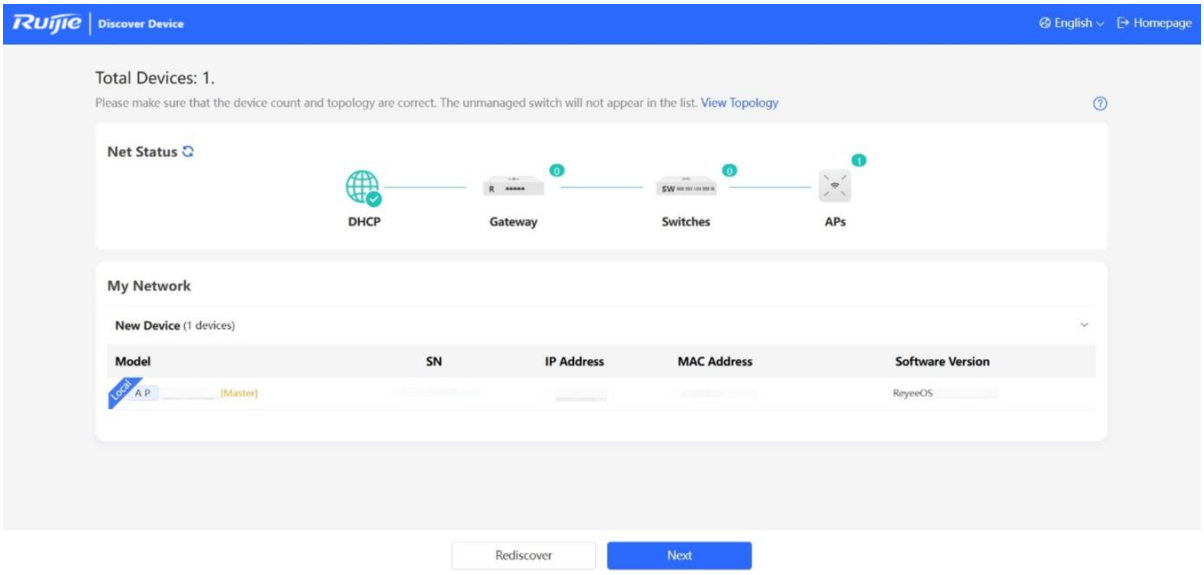
2.6.2 Configuration Steps

(1) Connect the device to a power supply without connecting an Ethernet cable to the uplink port.

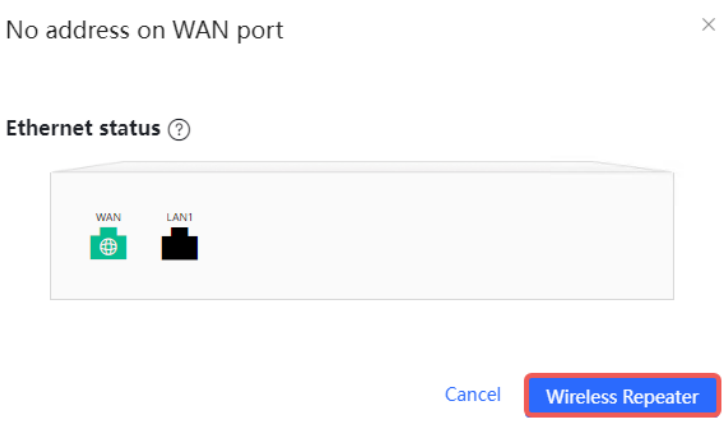
(2) Set a password for logging into the management system and click **Save**.



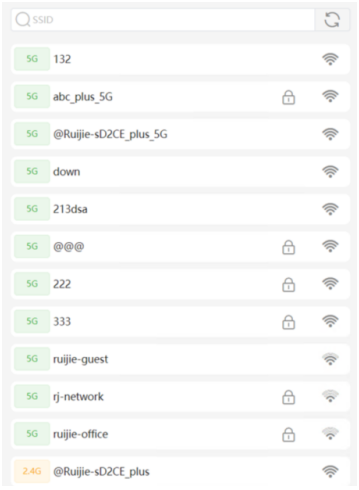
(3) Click **Next**.



(4) If you see a dialogue box indicating that the Ethernet cable is not connected to the WAN port, click **Wireless Repeater**.

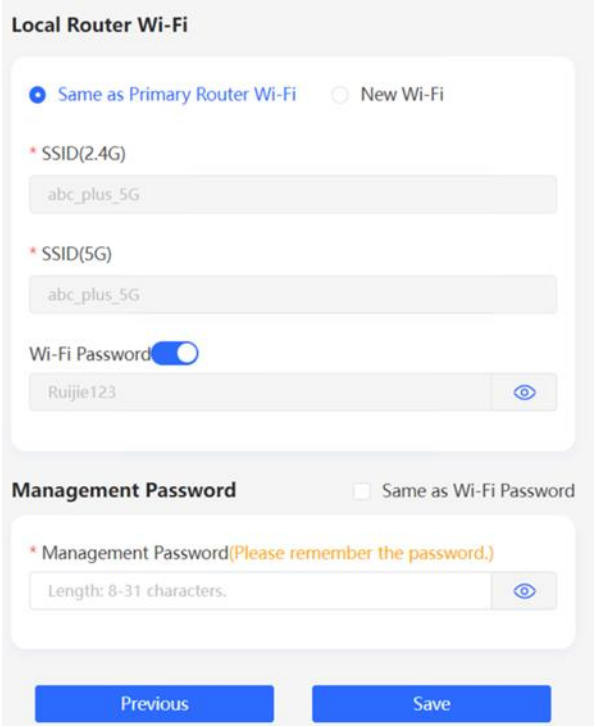


(5) Select the primary router SSID that requires expanding the Wi-Fi coverage, enter the Wi-Fi password of the primary router, and click **Next**.

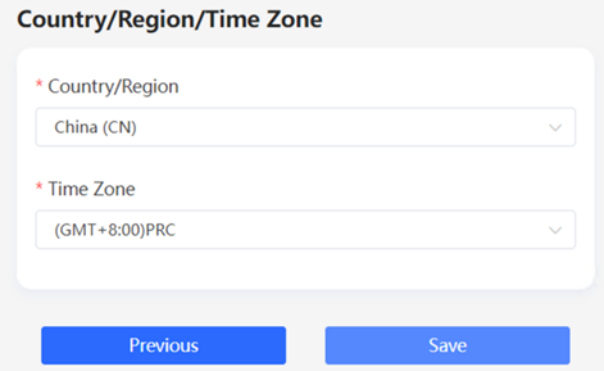




(6) Set the SSID and password and click **Save**. Then, the Wi-Fi network will be restarted.



(7) Set the country/region code and time zone, and click **Save**.



2.7 Configuration Wizard (Router Mode)

2.7.1 Getting Started

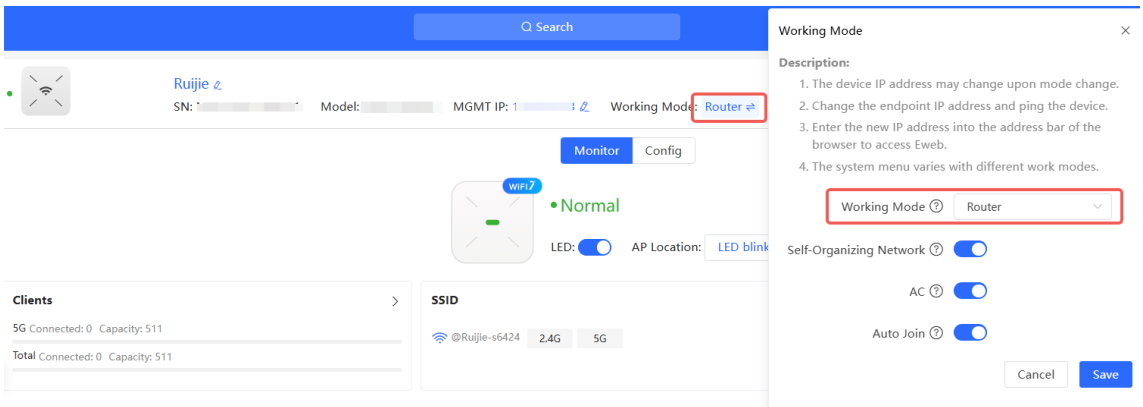
(1) Connect the device to a power supply and connect the port of the device to an upstream device with an Ethernet cable. Or you can connect an Ethernet cable to the device.

(2) Configure the Internet connection type according to requirements of the local Internet Service Provider (ISP). Otherwise, the Internet access may fail due to improper configuration. You are advised to contact your local ISP to confirm the Internet connection type:

- Figure out whether the Internet connection type is PPPoE, DHCP mode, or static IP address mode.
- In the PPPoE mode, a username, a password, and possibly a service name are needed.
- In the static IP address mode, an IP address, a subnet mask, a gateway, and a DNS server need to be configured.

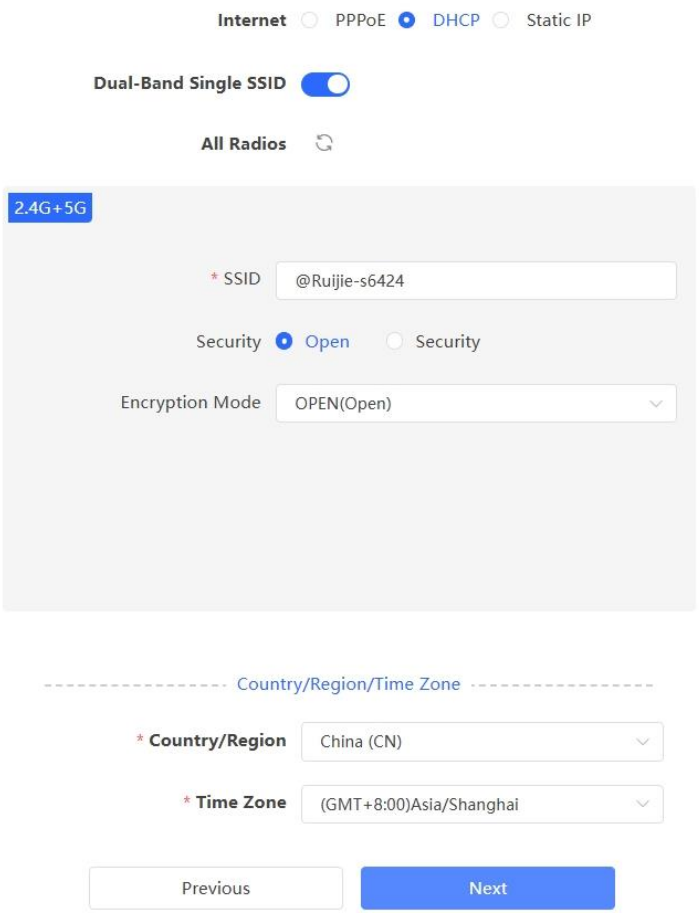
2.7.2 Configuration Steps

(1) The device works in the AP mode by default. If you want to switch the work mode to the router mode, perform the configuration on the work mode setting page. See 5.1 Switching Work Mode for more details.



(2) After switching to the router mode, the device's LAN IP address will change to 192.168.120.1. Please obtain an IP address automatically for your management client and enter 192.168.120.1 into the address bar of the browser to log in to web interface again. See 2.5 Configuration Wizard (AP Mode) for more details.

PPPoE: Click **PPPoE**, and enter the username, password, and service name. Click **Next**.



2.8 Introduction to the Web Interface

To facilitate flexible device management, the Web page displays different system configuration menus in different work modes. For details about the work mode, see 5.1 Switching Work Mode.

As to the RG-APF2260(MG) and RG-APF1260(MG-P) models, please refer to 2.8.1 Management Page for Wi-Fi 6 Products.

The self-organizing network discovery function is enabled by default, but can be disabled manually. After this function is disabled, the web interface displays the local device mode.

When the self-organizing network discovery function is enabled, you can switch between the network-wide mode and the local device mode. The displayed function menus vary with the mode.

Note

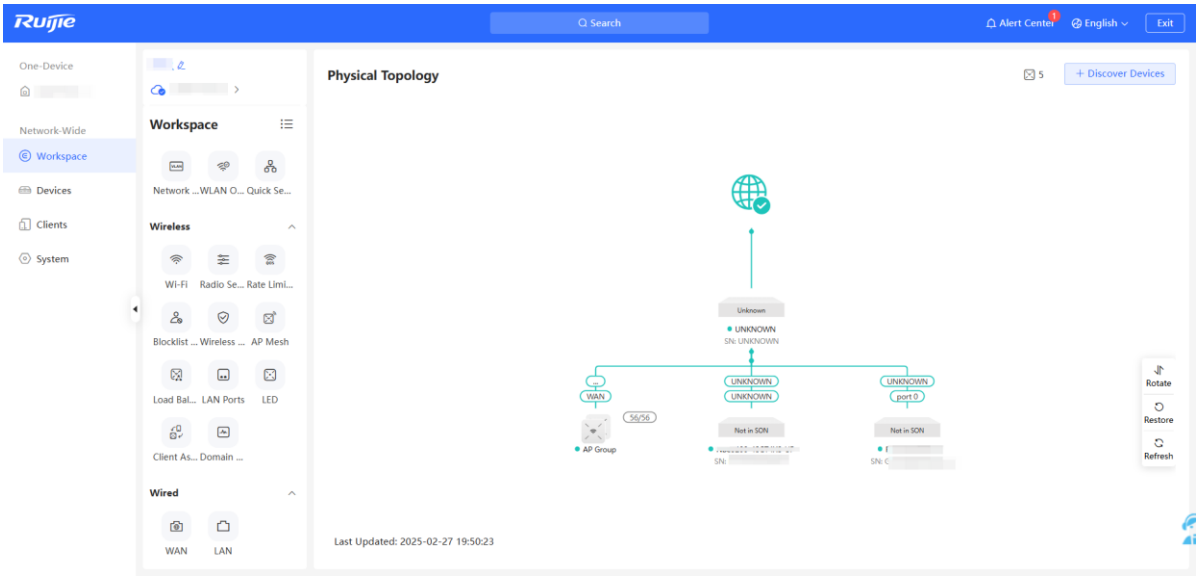
After the self-organizing network discovery function is enabled, the system configuration menus on the web interface depends on the master device on the network. If the master device supports Wi-Fi 6 or later, the web interface of the other devices on the network is the same as that of the master device.

2.8.1 Management Page for Wi-Fi 6 Products

1. Enabling Self-Organizing Network Discovery

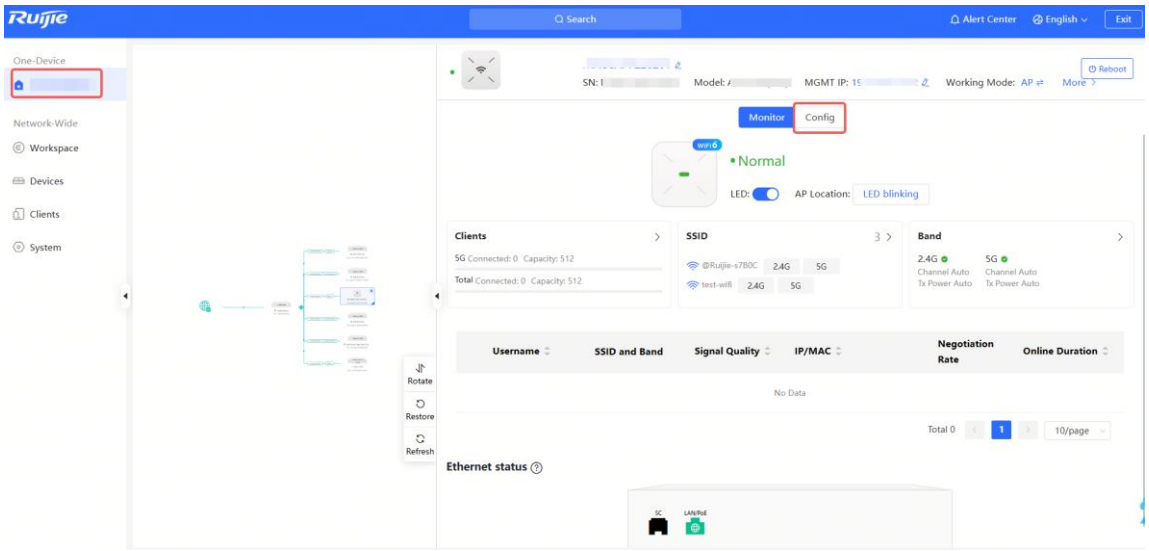
- Network-Wide Mode: Displays the management information of all devices on the network. You can configure all devices on the network from a network-wide perspective.
- Local Device Mode: You can only configure the current logged in device.

Network–Wide Mode

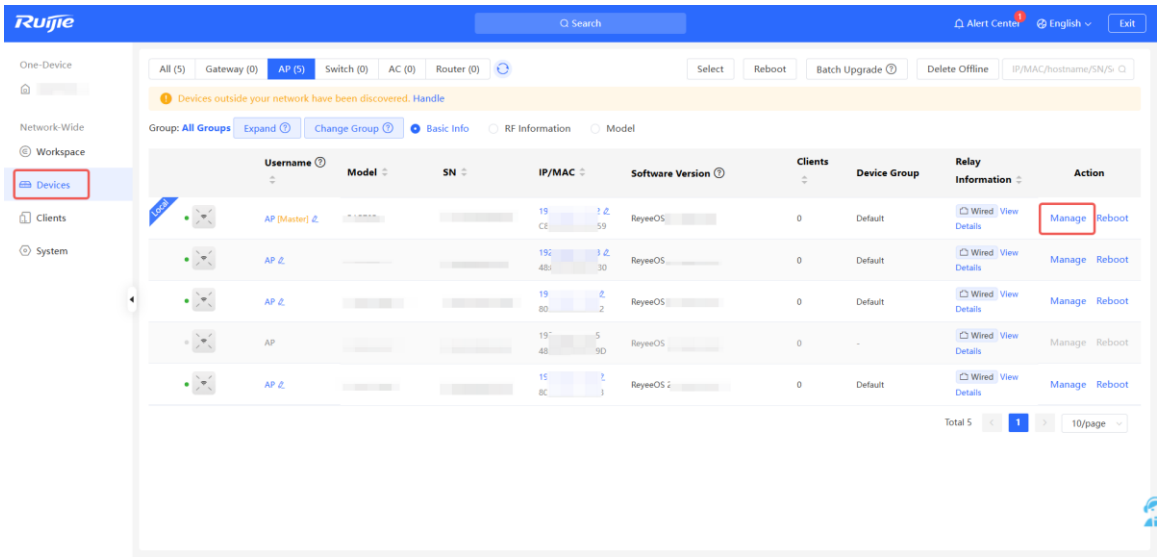


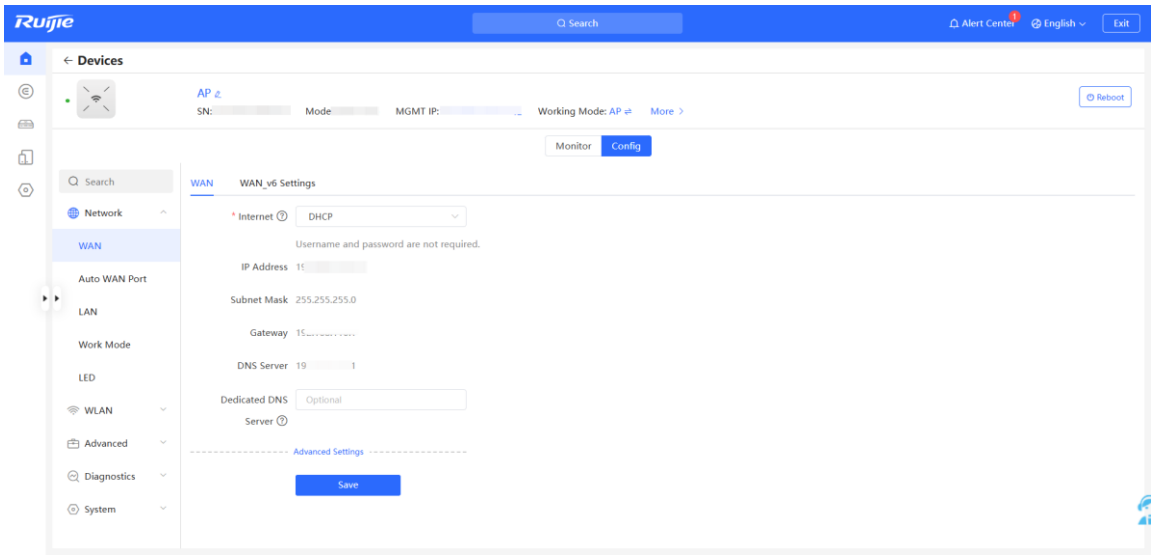
Local Device Mode

- To access the local device mode for the configuration and management of a single device, perform the following steps:
  - Method 1: Click the device name in the One Device menu and then click Config.



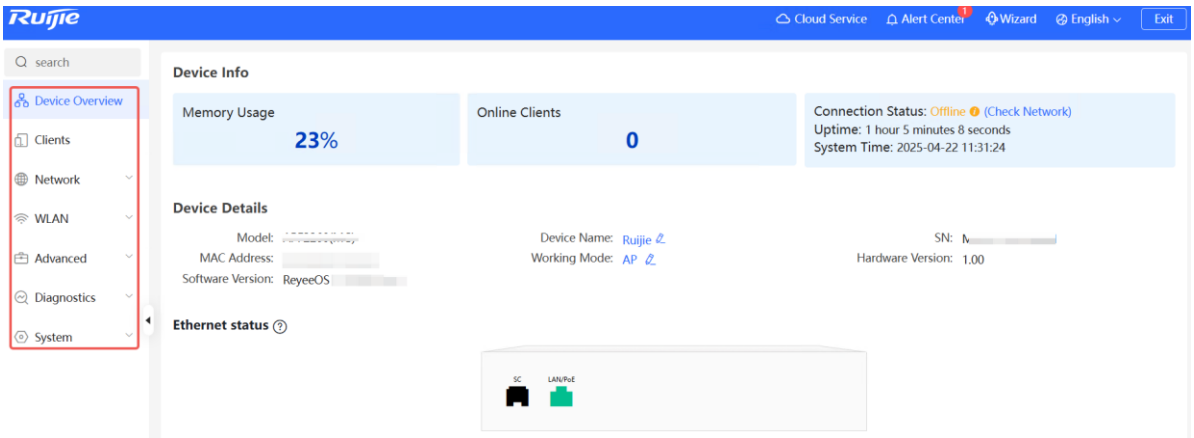
  - Method 2: Choose Network-Wide > Devices and click Manage next to a device in the AP list.





2. Disabling Self-Organizing Network Discovery

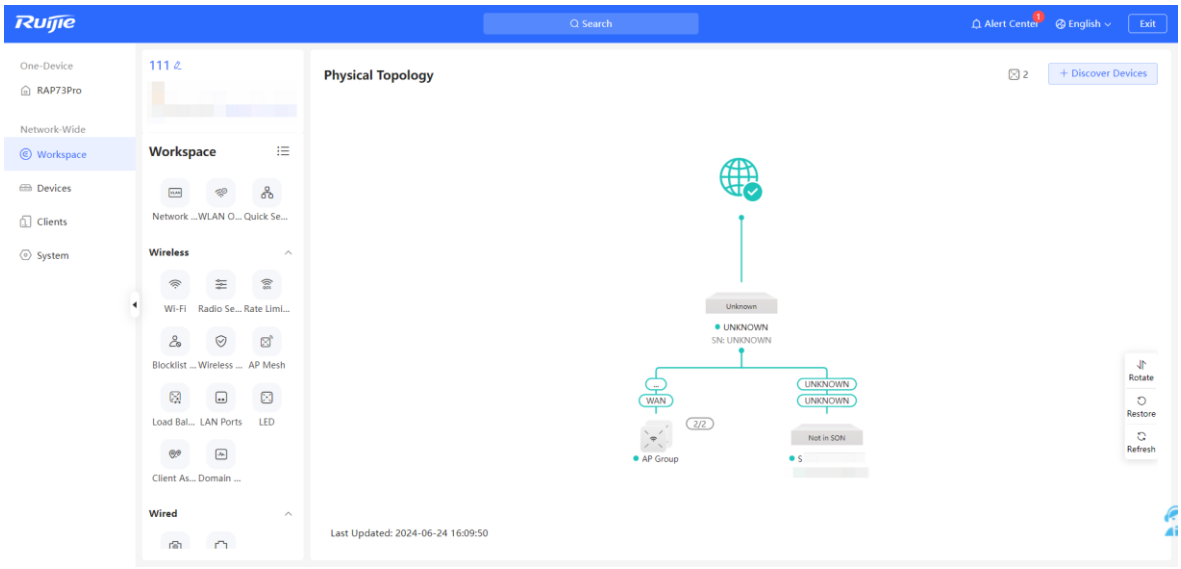
If a device is in standalone mode, you can configure and manage only the currently logged in device. The web interface displays the configuration menu of a single device on the left side.



3 Network Monitoring

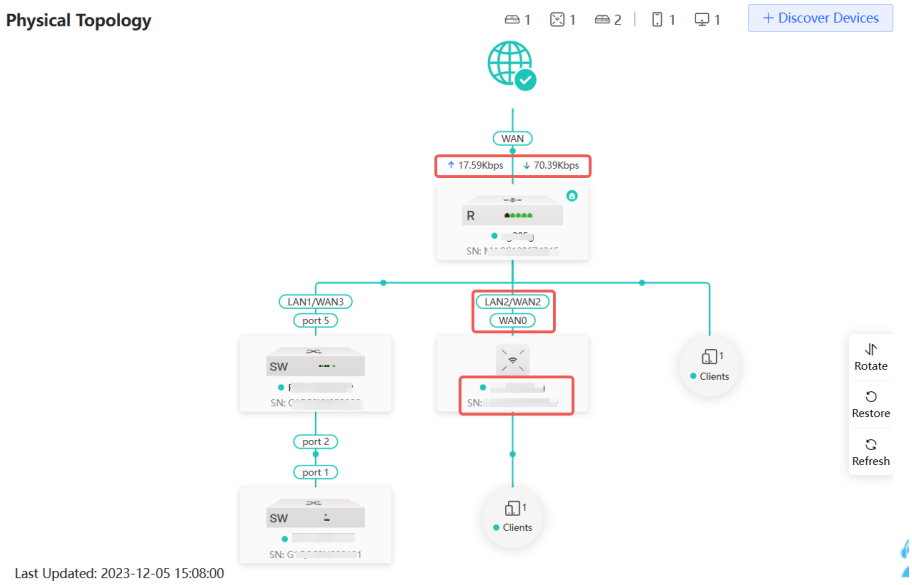
Choose **Network-Wide > Workspace** > **Topology**.

The **Overview** webpage displays the current network topology, real-time uplink and downlink flow, networking status, and the number of users. The quick access to network and device settings is also provided on the **Overview** webpage. Users can monitor, configure and manage the network status on the current page.

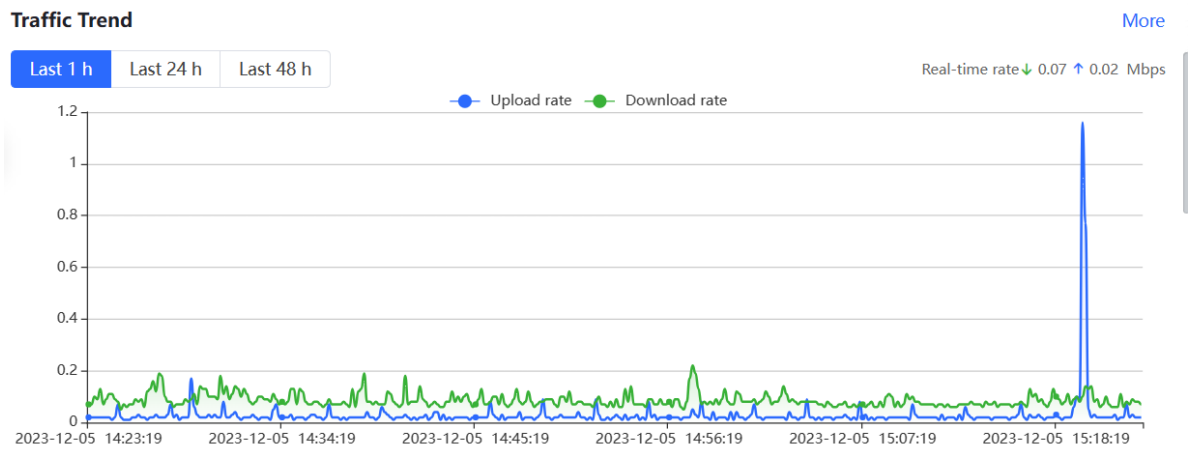


3.1 Viewing the Network Information

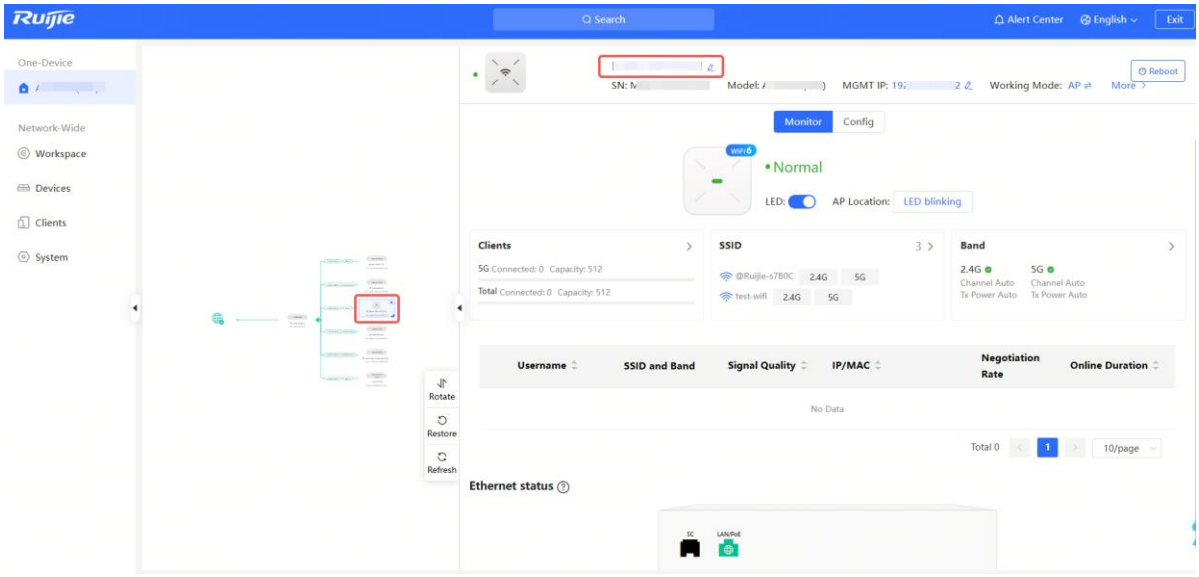
You can view the online device, port ID, device SN as well as the real-time uplink and downlink flow in the network topology.



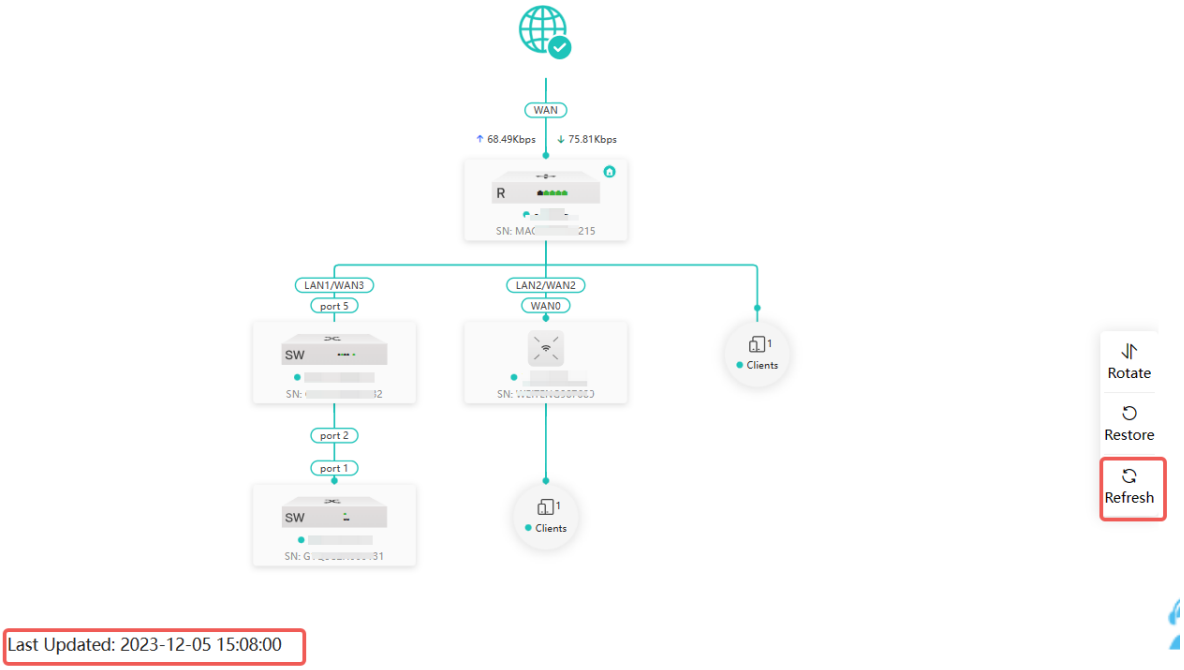
- Click the egress gateway to view real-time traffic information of the device.



- Click the device in the topology to view the operating status and configuration of the device and configure the device functions. The hostname is set to the product model by default. You can click to modify the hostname.



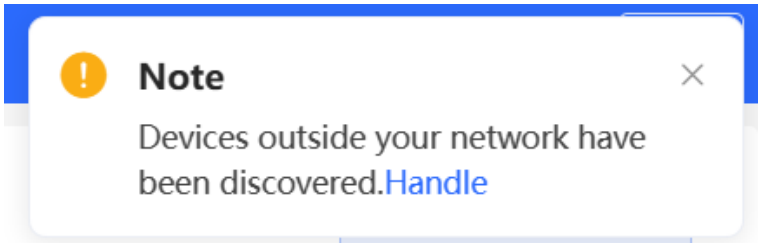
- The update time of the topology is displayed at the bottom left corner. Click **Refresh** to update the topology to the latest status. Please wait for a few minutes for the update.



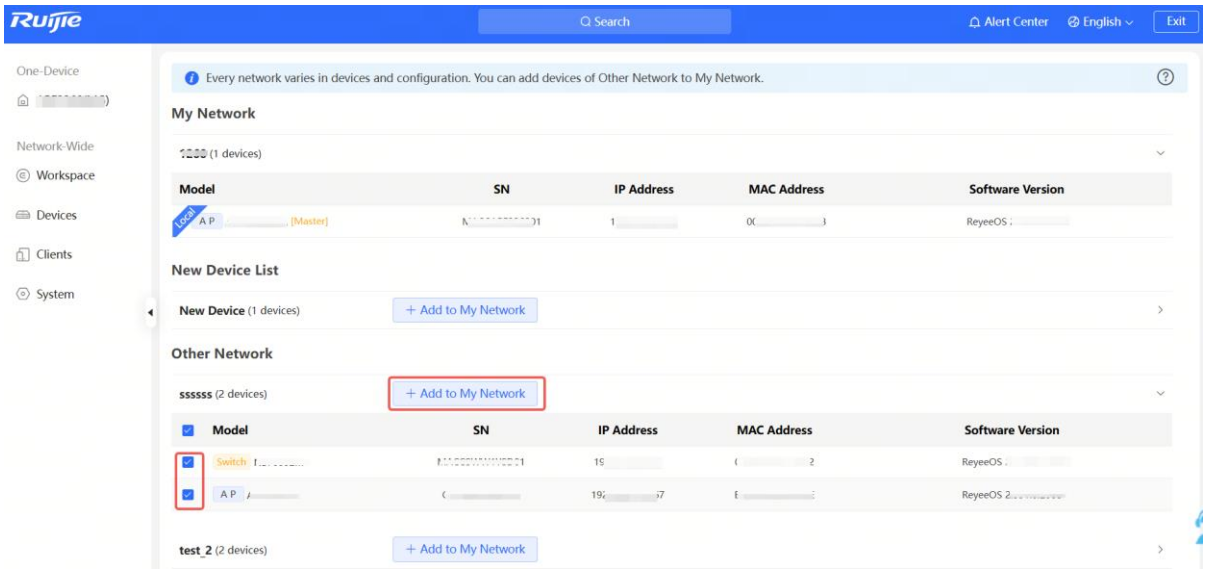
3.2 Adding Network Devices

3.2.1 Wired Connection

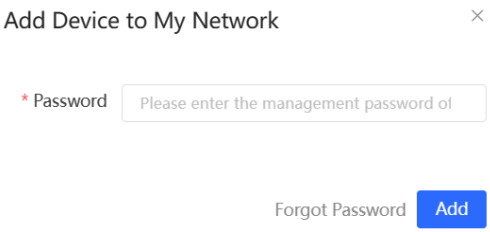
(1) If a new device is connected to the device in the network through wired connection, a prompt message will pop up, indicating that a device not in SON (Self-Organizing Network) is discovered. The number (in orange) of devices that are not in SON is displayed under the **Devices** at the top left corner of the page. Click **Handle** to add the device to the current network.



(2) Go to the **Network List** page, click **Other Network** to select the target device and click **Add to My Network**.



If the target device is not configured yet, you can add the device directly without a password. If the device is configured with a password, please enter the management password of the device. If the password is incorrect, the device cannot be added to the network.



3.2.2 AP Mesh

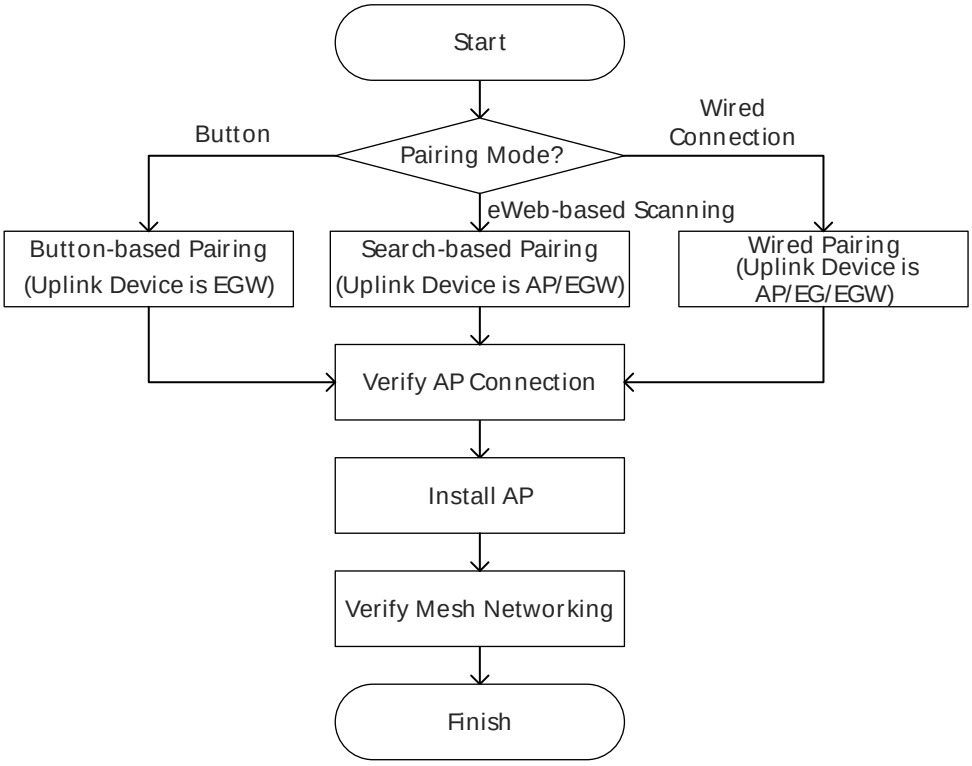
1. Overview

After being powered on and enabled with Mesh (see 4.21 Enabling AP Mesh for details), a Mesh-capable new AP can be paired with other Mesh-capable wireless devices on the target network through multiple ways. Then the AP will be synchronized its Wi-Fi configuration with other devices automatically. Mesh networking addresses pain points such as complex wireless networking and cabling. A new AP can be connected to any uplink wireless device among AP, EG router, and EGW router in the following ways:

- Button-based pairing: Short press the Mesh button on the EGW router on the target network to implement fast pairing of the AP with the EGW router.
- Search-based pairing: Log in to the web interface of a device on the target network. Search and add APs to be paired.
- Wired pairing: Connect the new AP to a wireless device on the target network using an Ethernet cable. The new AP will go online on the target network.

After pairing finishes, the new AP obtains the wireless backhaul information from network-wide neighboring APs. Install the new AP as planned, and it will connect to the optimal neighboring AP.

2. Configuration Steps



3. Configuration Steps for Button-based Pairing

Caution

- The uplink device is an EGW router.
- Only EG105GW-X and EG105GW(T) support button-based pairing, and each router can be paired with up to 15 new APs.
- The master device must be properly configured. Otherwise, AP mesh failure may occur due to constant channel scanning.
- The new AP must be in factory status.
- It can be scanned only when the live network is enabled with Mesh (see 4.21 Enabling AP Mesh for details).
- Place the new AP no more than 2 meters away from the uplink device to ensure that the new AP can receive the Wi-Fi signal from the uplink device. The new AP may fail to be scanned due to the long distance or obstacles between it and the uplink device.

(1) Power on the new AP and place it near the EGW router on the target network.

(2) Press and hold the Mesh button  on the EGW router for no more than two seconds to start pairing. The pairing process takes about one minute.

(3) Check the topology on the **Physical Topology** page to make sure that the new AP has connected to the uplink device in wireless mode.

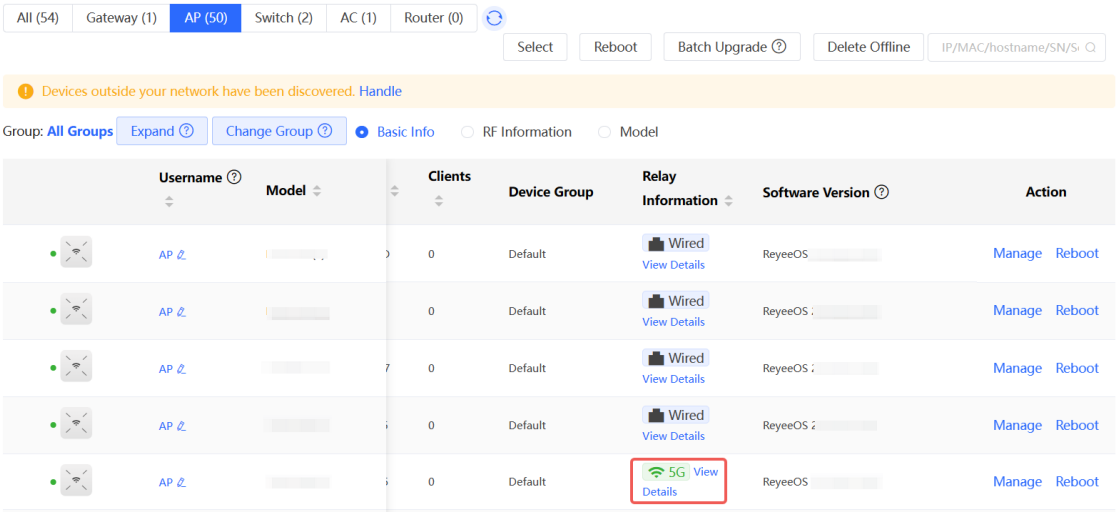


(4) Power off the new AP and install it as planned.

(5) Log in to the web interface of a device on the target network. In **Network-Wide** mode, choose **Devices** > **AP**.

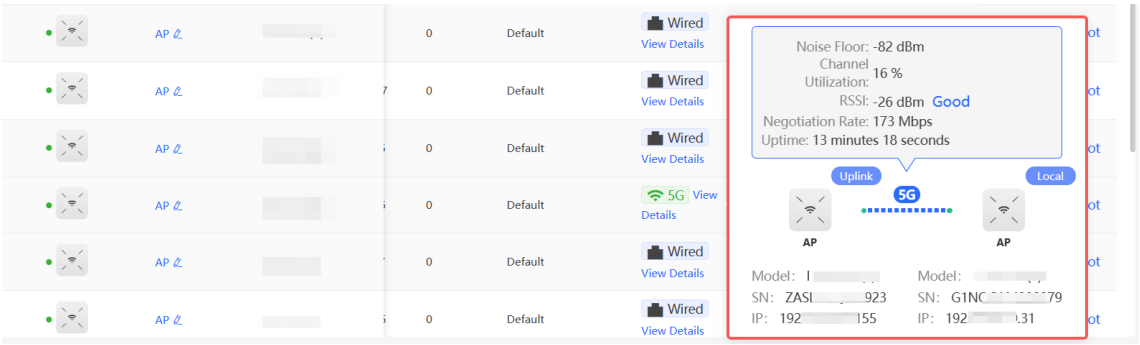
Make sure that the new AP is online and the corresponding entry contains icon 

in the **Relay Information** column. The icon indicates that wireless backhaul is performed through the 5 GHz radio.



(6) Click **View Details** following the 

icon to obtain information about the uplink device and RSSI.



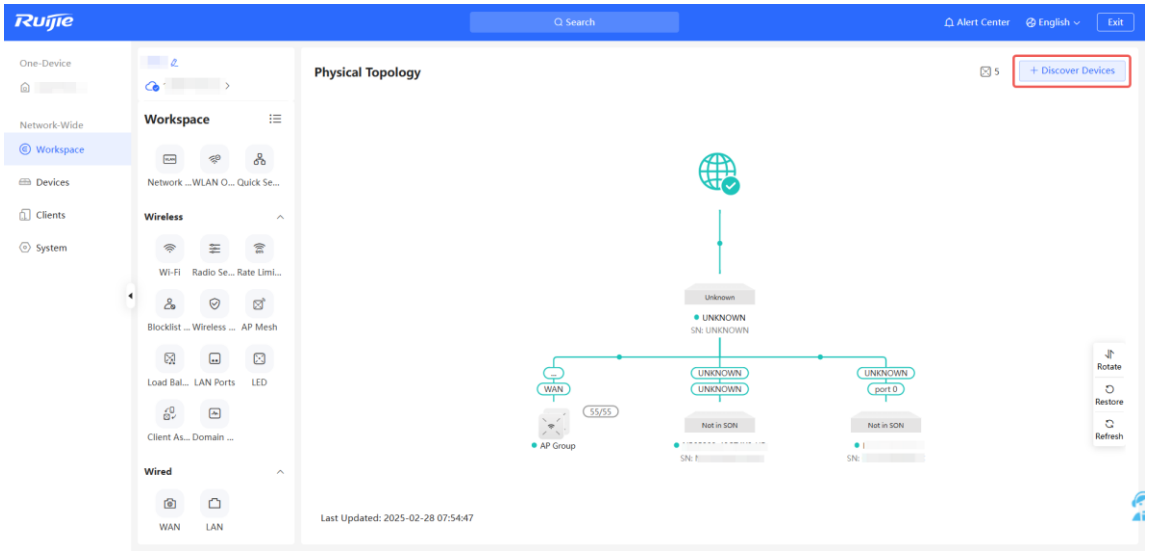
4. Configuration Steps for Search-based Pairing

Caution

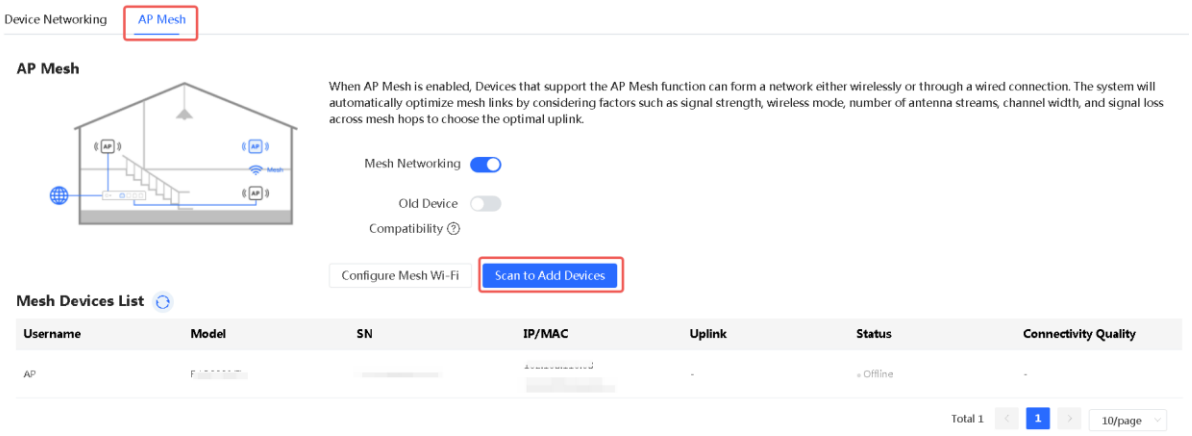
- Uplink device is an AP or EGW router.
- The master device must be properly configured. Otherwise, AP mesh failure may occur due to constant channel scanning.
- The new AP must be in factory status.
- It can be scanned only when the live network is enabled with Mesh (see 4.21 Enabling AP Mesh for details).
- Place the new AP no more than 2 meters away from the uplink device to ensure that the new AP can receive the Wi-Fi signal from the uplink device. The new AP may fail to be scanned due to the long distance or obstacles between it and the uplink device.
- You can scan to discover new APs on the AP Mesh page only when there are APs supporting the AP Mesh function on the network.

(1) Power on the new AP and place it near the AP or EGW router on the target network.

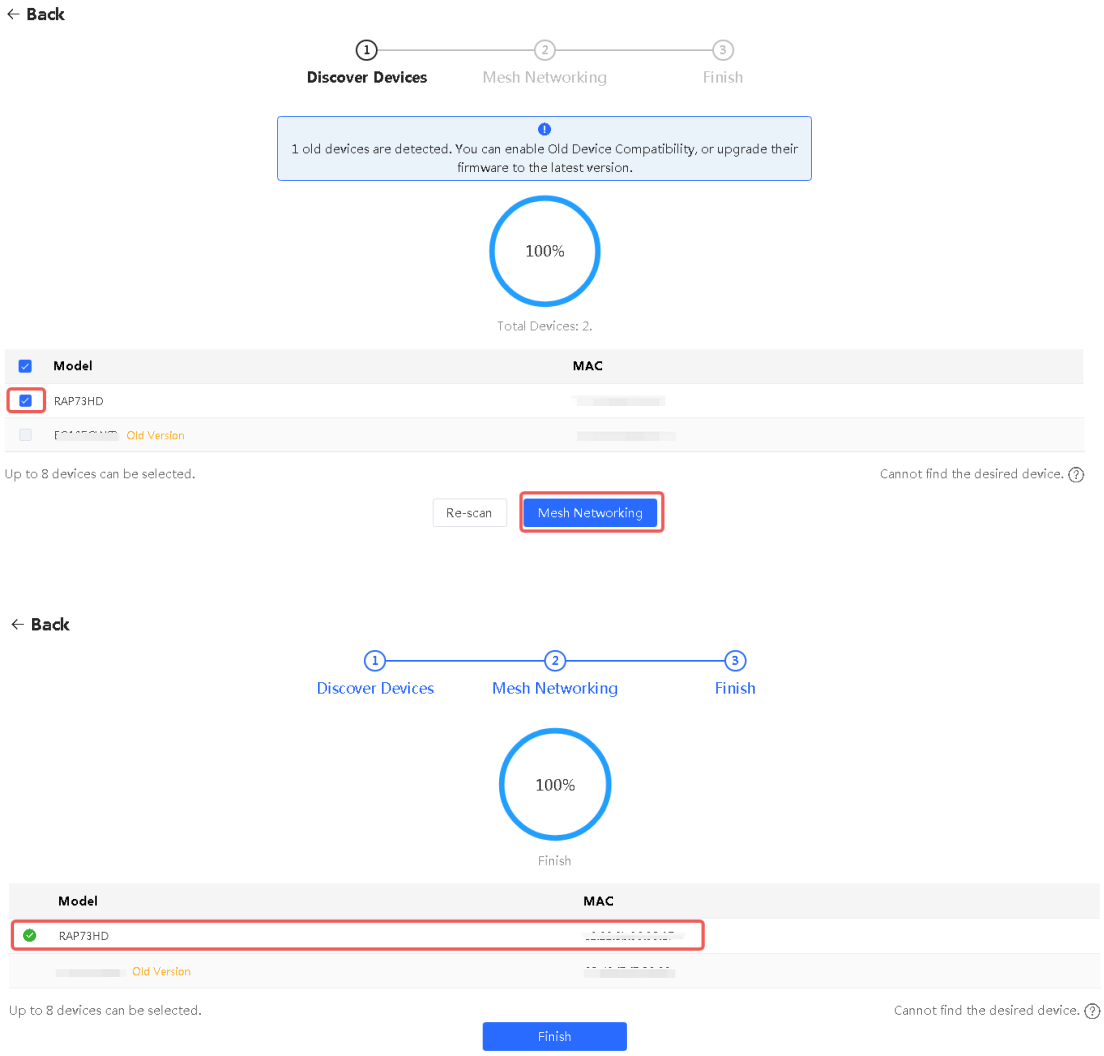
(2) Log in to the web interface of a device on the target network. In **Network-Wide** mode, click **+Discover Devices** in the upper right corner of the **Physical Topology** page to scan the APs in other networks not plugged in with Ethernet cables.



(3) On the **AP Mesh** page, click **Scan to Add Devices** to scan devices that are not connected to the network via an Ethernet cable.



(4) Select the APs to be added and click **Mesh Networking**. Up to eight APs can be selected at a time. Wait until network merging finishes.



(5) Check the topology on the **Physical Topology** page to make sure that the new AP has connected to the uplink device in wireless mode.

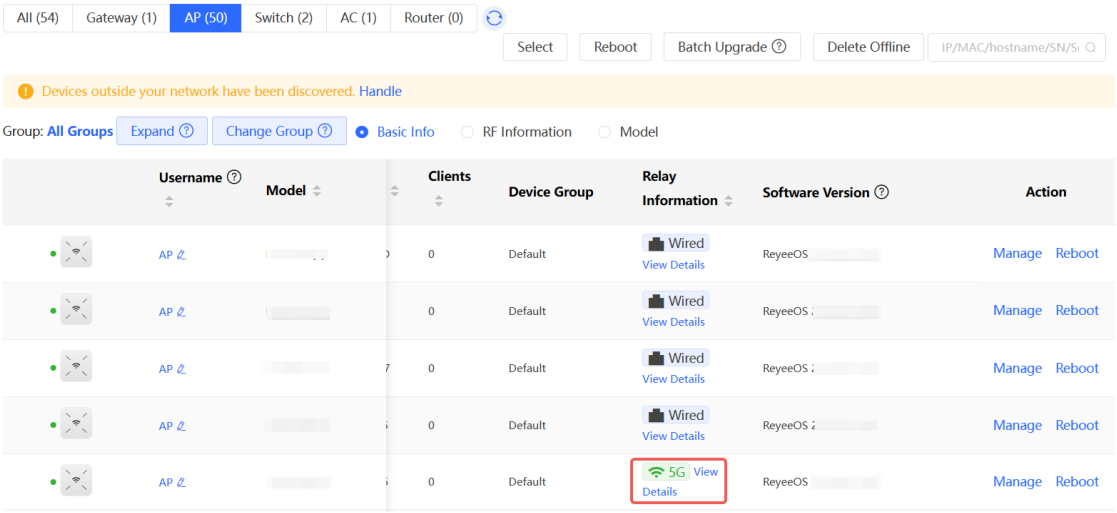


(6) Power off the new AP and install it as planned.

(7) Log in to the web interface of a device on the target network. In **Network-Wide** mode, choose **Devices** > **AP**.

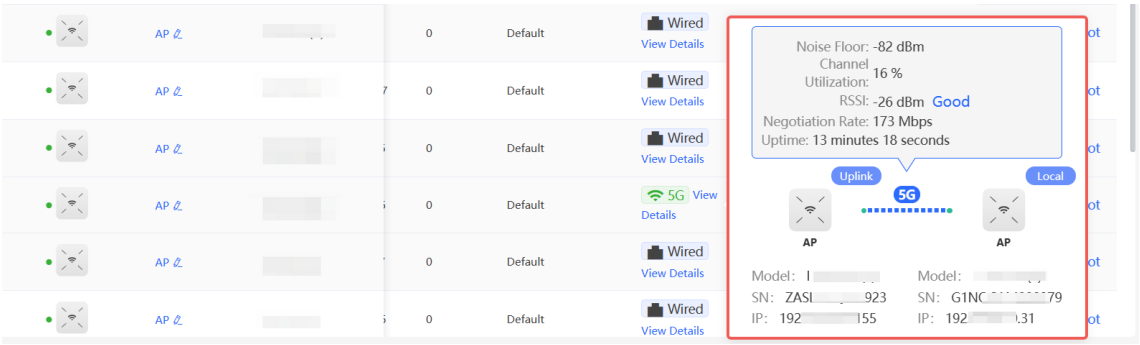
Make sure that the new AP is online and the corresponding entry contains icon 

in the **Relay Information** column. The icon indicates that wireless backhaul is performed through the 5 GHz radio.



(8) Click **View Details** following the 

icon to obtain information about the uplink device and RSSI.



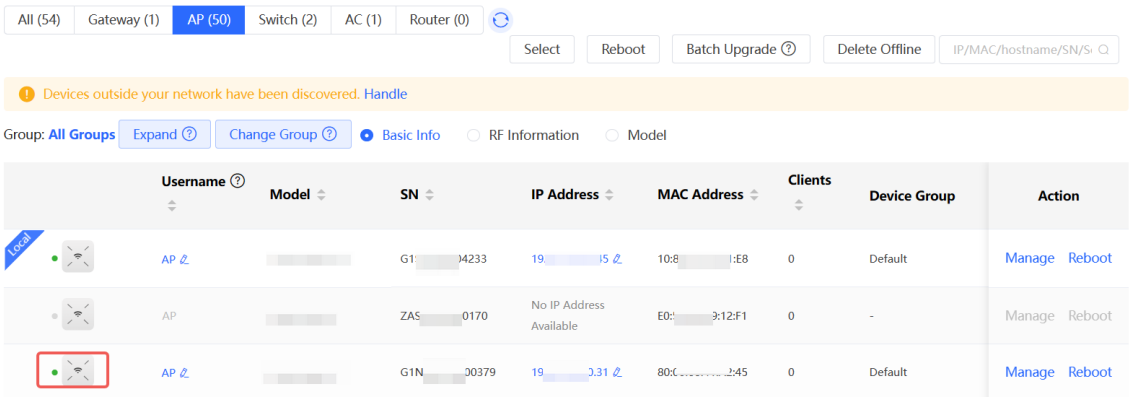
5. Configuration Steps for Wired Pairing

Caution

- Uplink device is an AP, EG router, or EGW router.
- The new AP must be in factory status.
- It can be scanned only when the live network is enabled with Mesh (see 4.21 Enabling AP Mesh for details).

(1) Plug one end of the Ethernet cable to the uplink port of the new AP, and the other end to the downlink port of an AP, EG router, or EGW router on the target network. Mesh networking takes one to three minutes. When the system status LED is steady on, it indicates that Mesh networking finishes.

(2) Log in to the web interface of a device on the target network. In **Network-Wide** mode, choose **Devices** and make sure that the new AP is online.



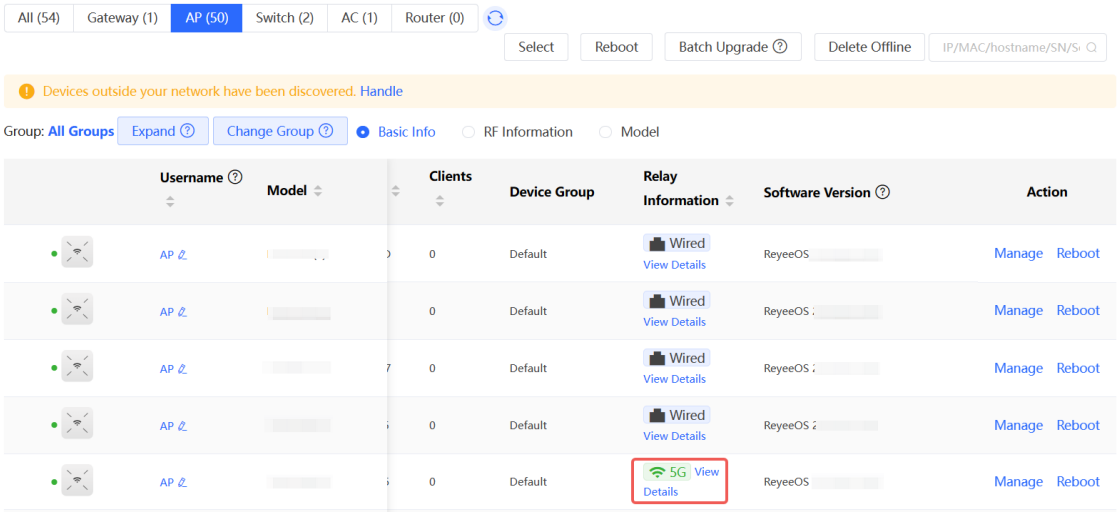
(3) **Self-Healing Mesh** is enabled by default. If it is disabled, enable it first (for details, see 5.13 Configuring Self-Healing Mesh) to complete the wired-to-wireless handoff process.

(4) Unplug the Ethernet cable, power off the new AP, and install it as planned.

(5) Log in to the web interface of a device on the target network. In **Network-Wide** mode, choose **Devices** > **AP**.

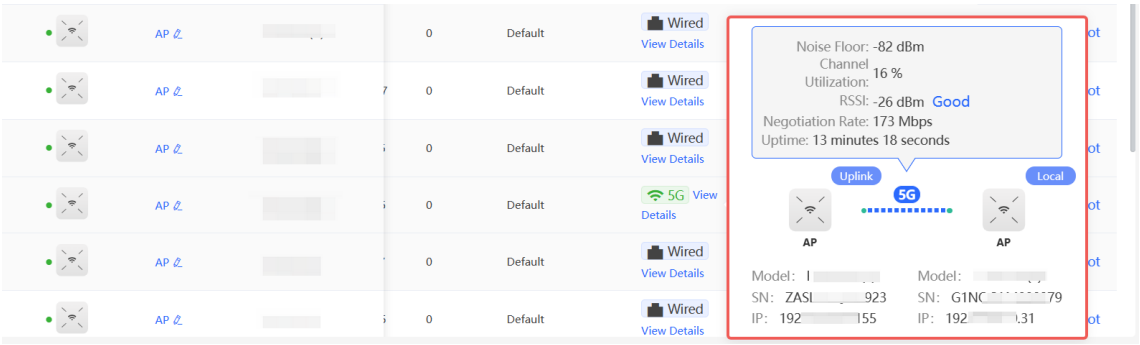
Make sure that the new AP is online and the corresponding entry contains icon 

in the **Relay Information** column. The icon indicates that wireless backhaul is performed through the 5 GHz radio.



(6) Click **View Details** following the 

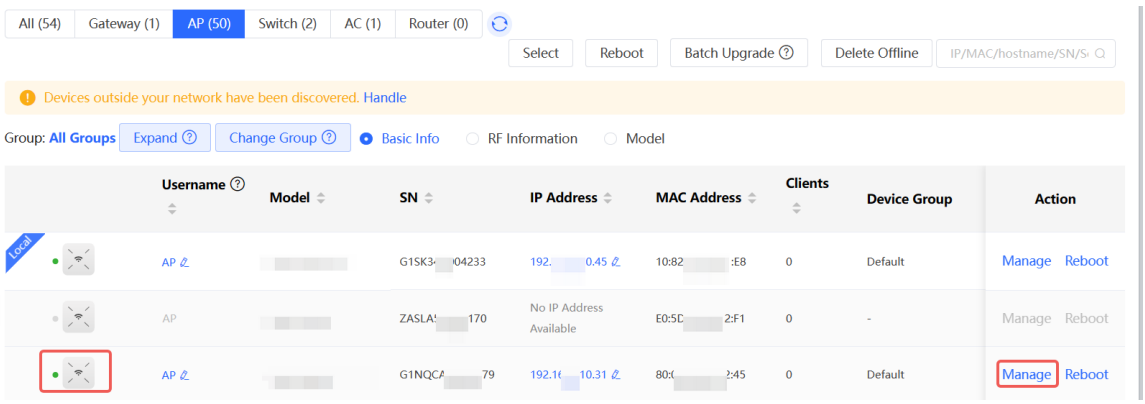
icon to obtain information about the uplink device and RSSI.



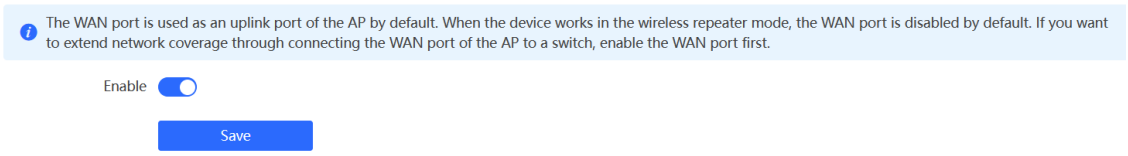
6. Enabling WAN Port

The WAN port works as the wired uplink port of the AP by default. For the AP added to the target network through Mesh pairing, the WAN port is disabled by default. If you want to connect the Mesh AP to other downlink device in wired mode to expand the network, enable this port.

(1) Log in to the web interface of the network project. Choose **Network-Wide** > **Devices** > **AP**, and click **Manage** next to a device in the AP list.



(2) Choose **Config** > **Advanced** > **Enable WAN**, toggle on **Enable**, and click **Save**.



7. Querying Mesh APs and Mesh Details

(1) Log in to the web interface of a device on the target network.

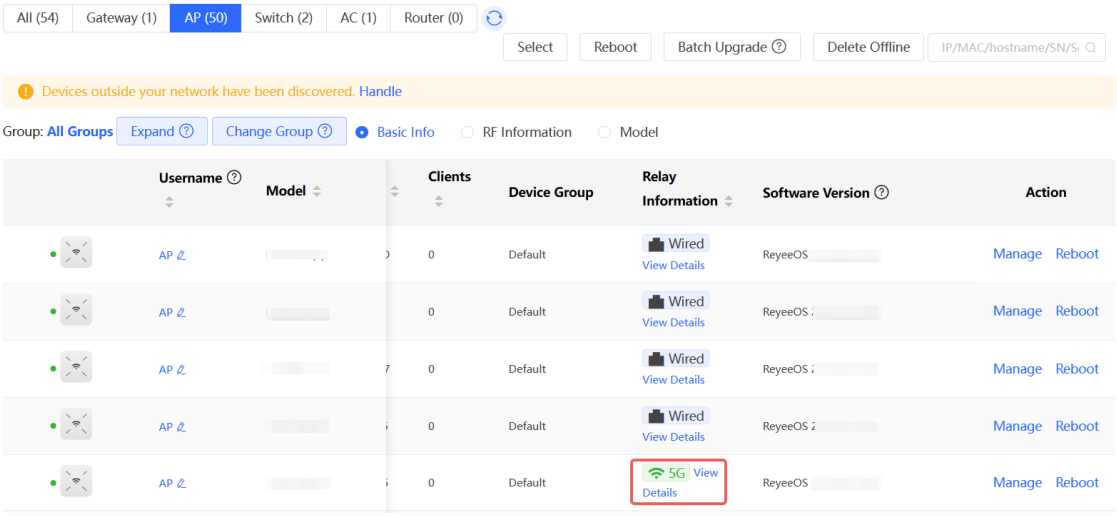
(2) Query Mesh APs.

- Method 1: In **Network-Wide** mode, check the topology on the **Physical Topology** page. The AP that connects to the uplink device in wireless mode is a Mesh AP.



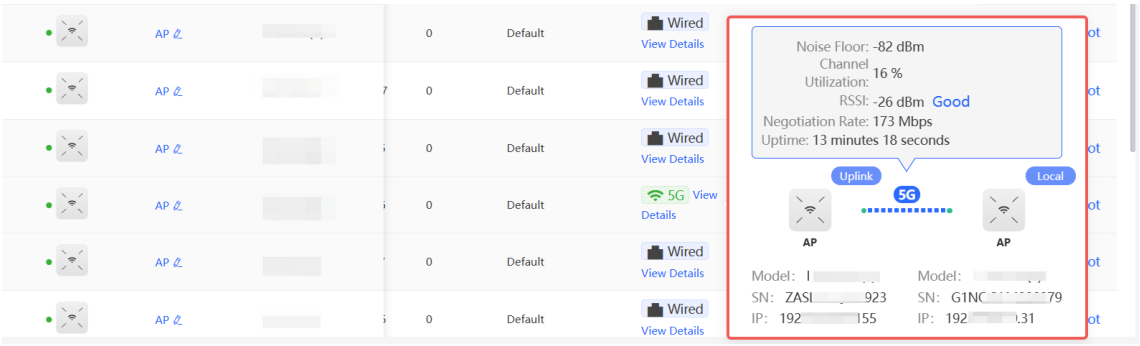
- Method 2: In **Network-Wide** mode, choose **Devices** > **AP**. If an entry contains icon 

in the **Relay Information** column, the corresponding AP is a Mesh AP.



(3) Query Mesh networking details.

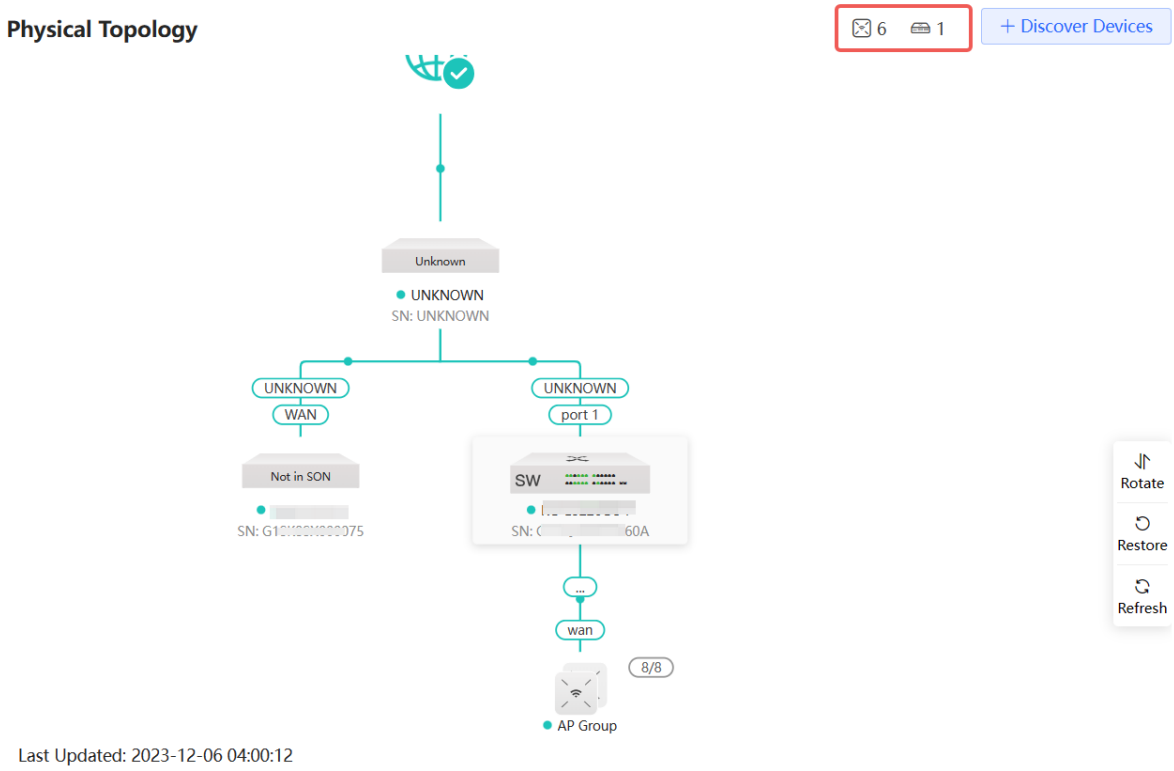
In **Network-Wide** mode, choose **Devices** > **AP**. Select the target AP, and click **View Details** in the **Relay Information** column to obtain the Mesh networking details.



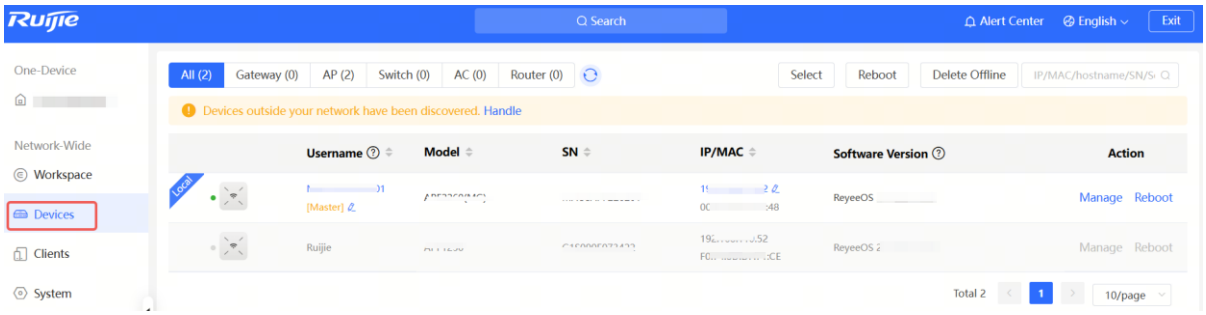
3.3 Managing Network Devices

You can view information of all devices on the network. You can configure and manage all devices on the network by simply logging in to only one device on the network. Follow the following steps to access the device's management page:

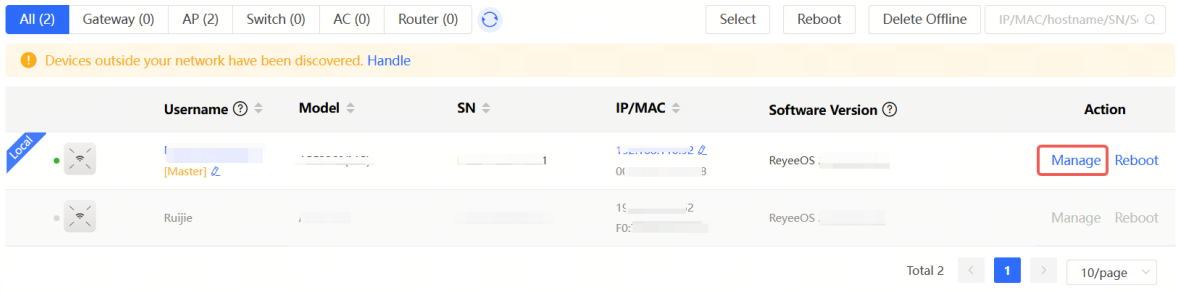
- Method 1: Click the device icon in the upper right corner of the topology to switch to the device list view.



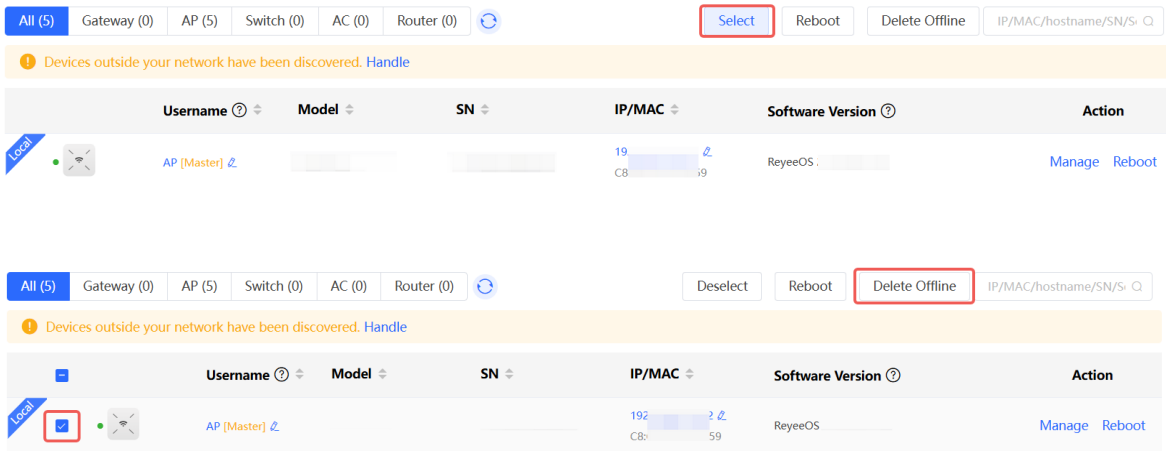
- Method 2: Choose **Network-Wide** > **Devices**.



- Click **Manage** to configure the selected device.

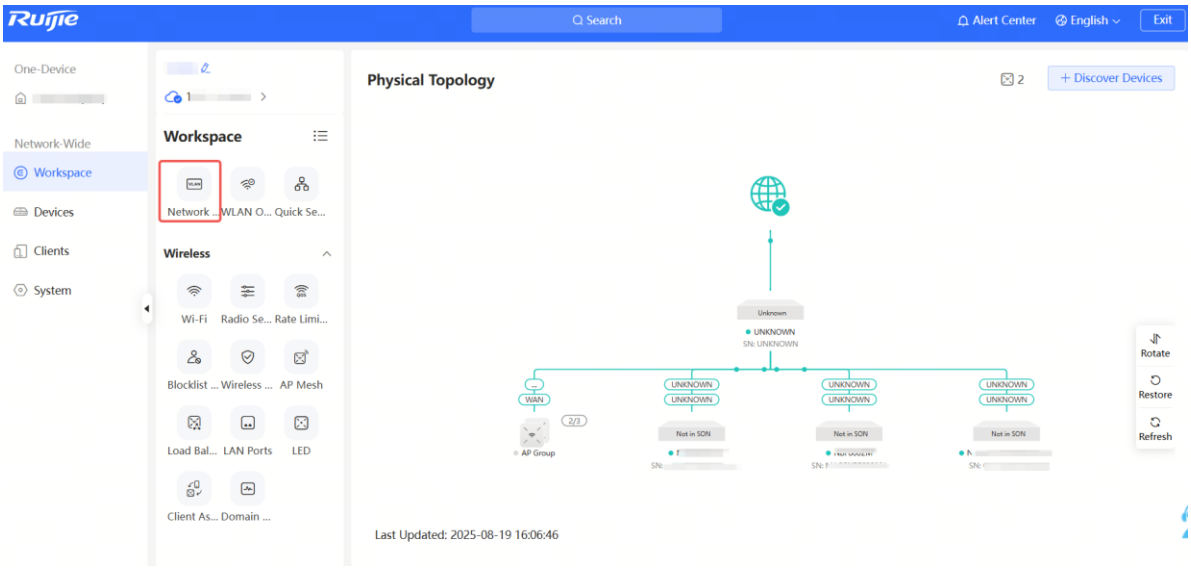


- Click **Select** to select an offline device, and click **Delete Offline** to remove the selected device from the list and the topology.

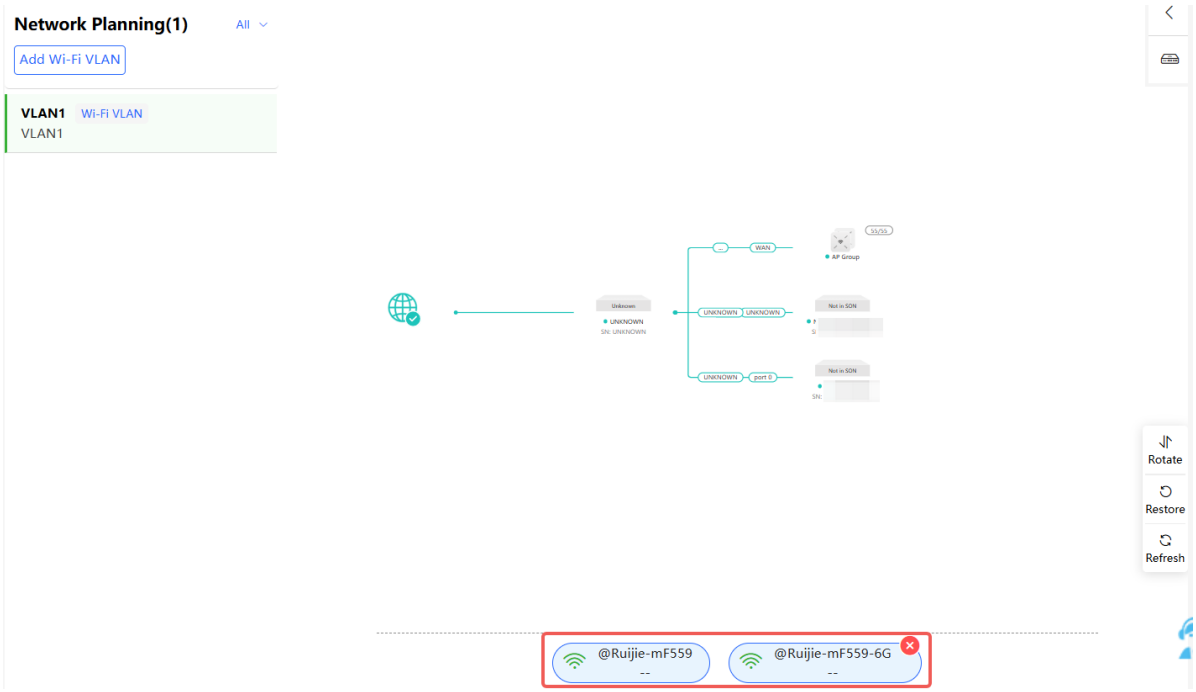


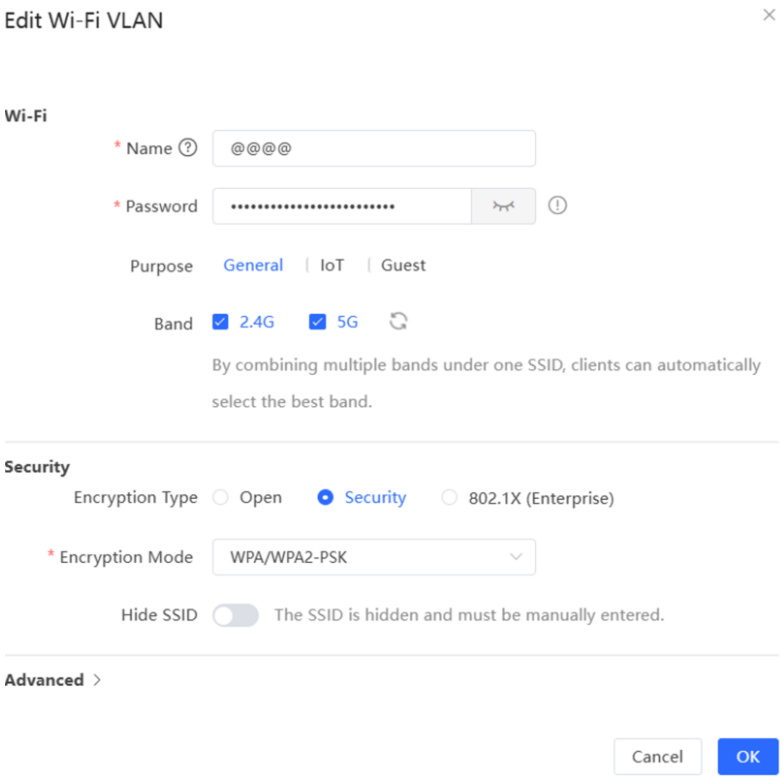
3.4 Configuring Network Planning

Choose **Network-Wide** > **Workspace** > **Network Planning**.



Click the SSID to edit the Wi-Fi configuration. For details, see Chapter 3 Wi-Fi Network Settings.

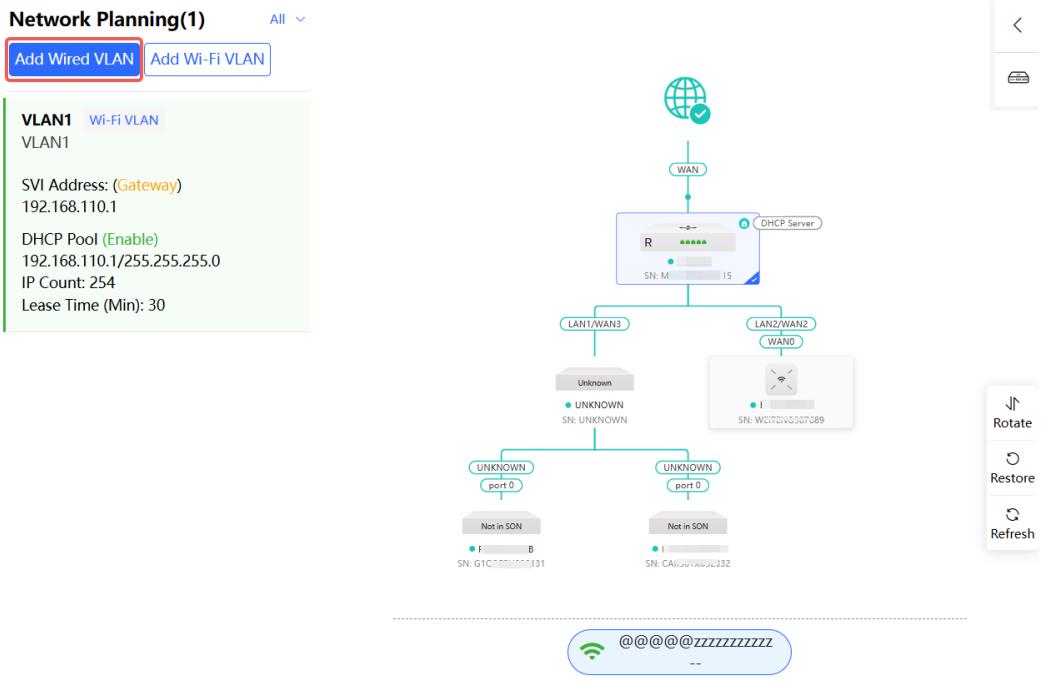




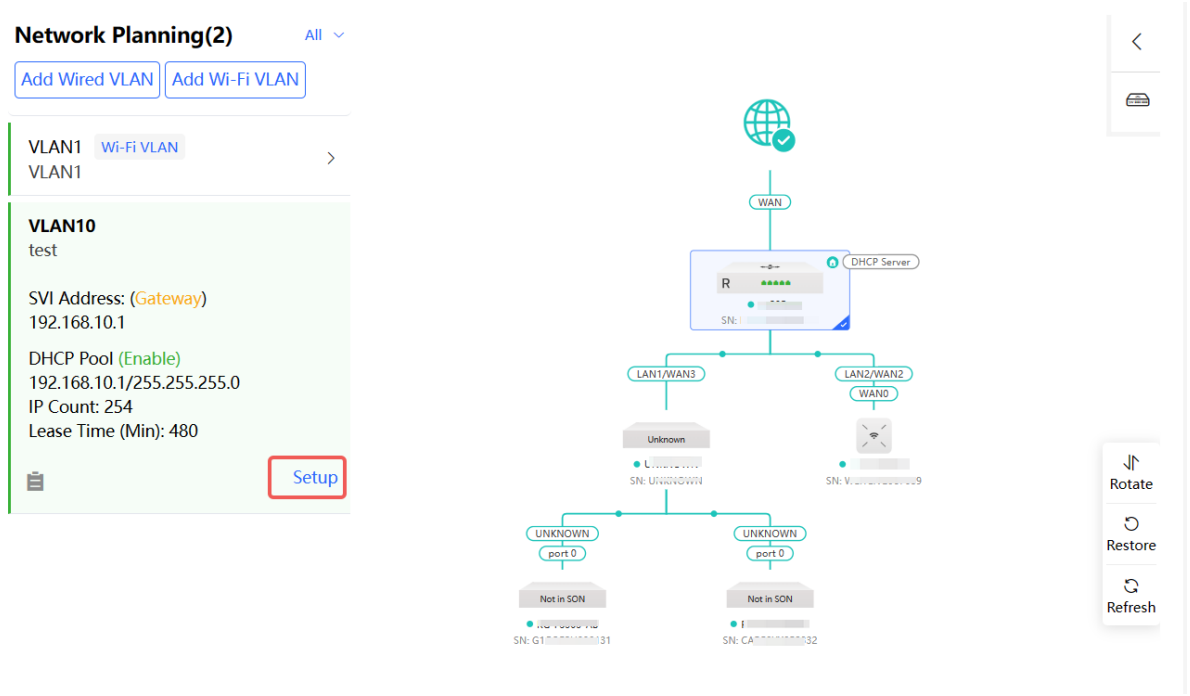
3.4.1 Configuring Wired VLAN

Choose **Network-Wide** > **Workspace** > **Network Planning**.

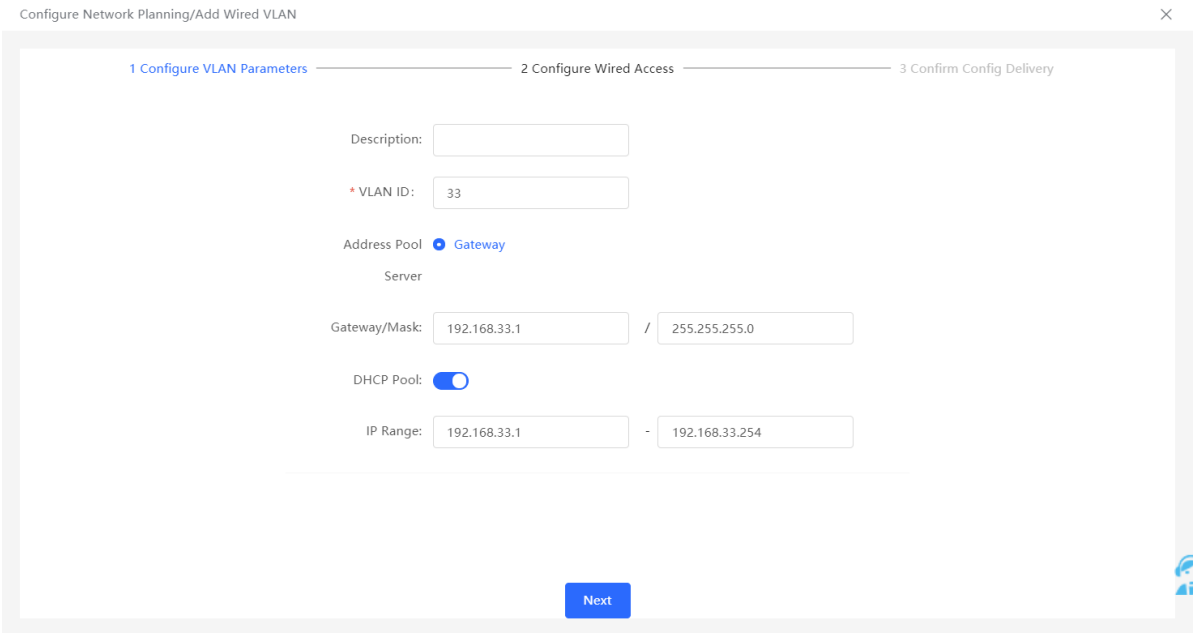
On the **Network Planning** page, click **Add Wired VLAN**.



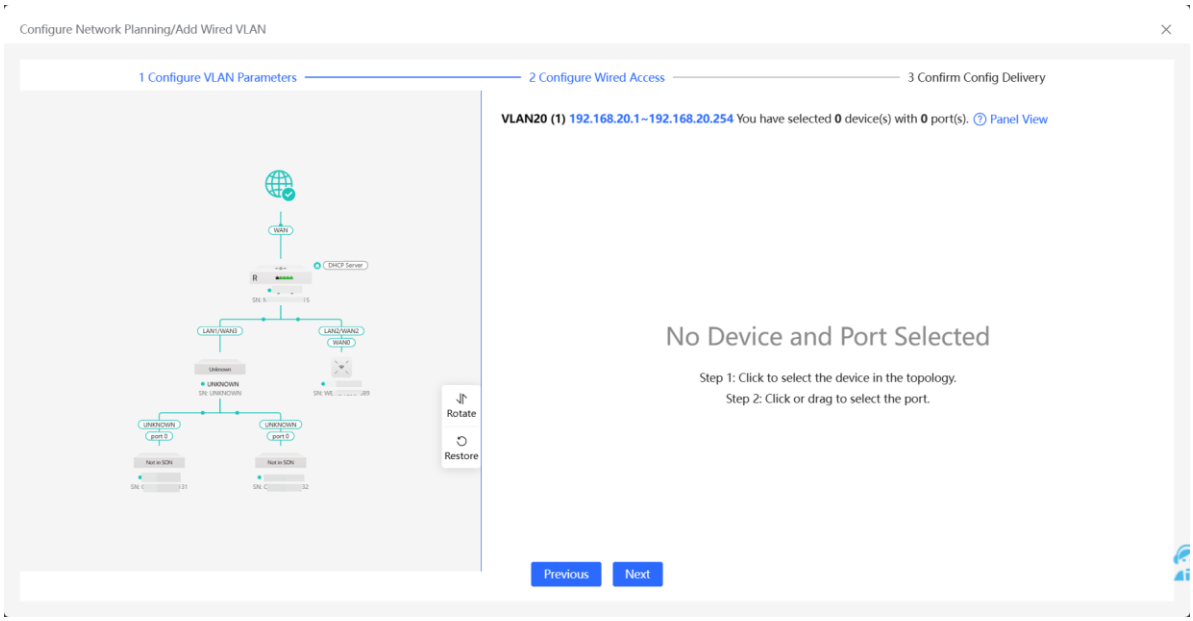
Alternatively, you can select an existing wired VLAN and click **Setup** to edit the VLAN.



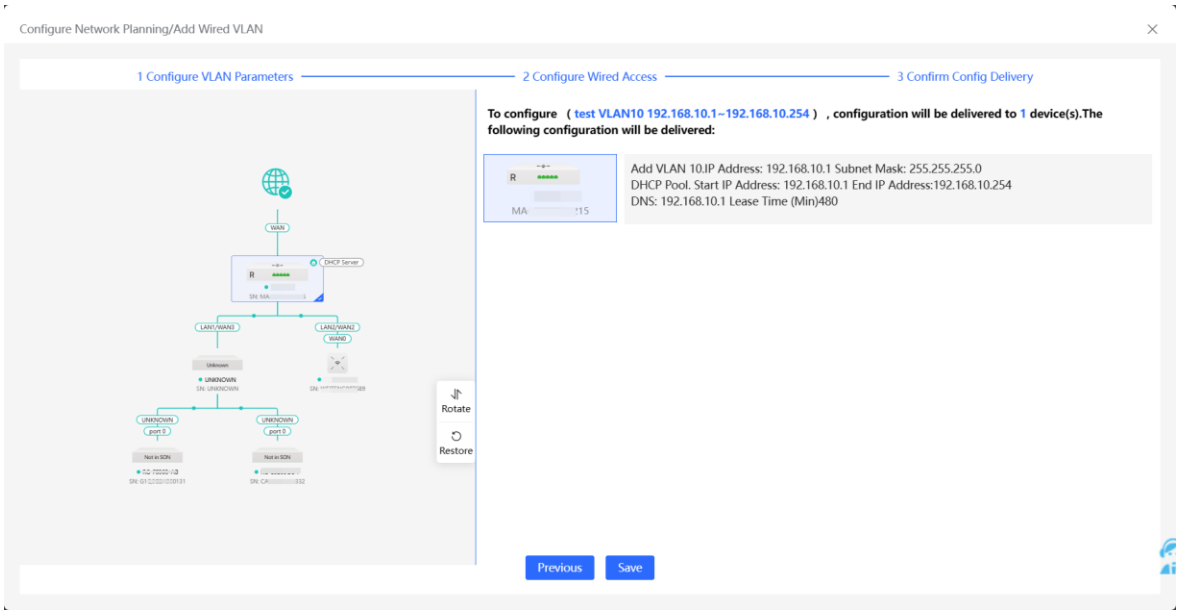
(1) Configure the VLAN ID, address pool server, and DHCP pool. The gateway is configured as the address pool server by default to assign IP addresses to clients. If an access switch exists in the network, you can select the access switch as the address pool server. Click **Next** after VLAN parameters are configured.



(2) Select the target switch in the topology and all member ports in the VLAN, and click **Next**.



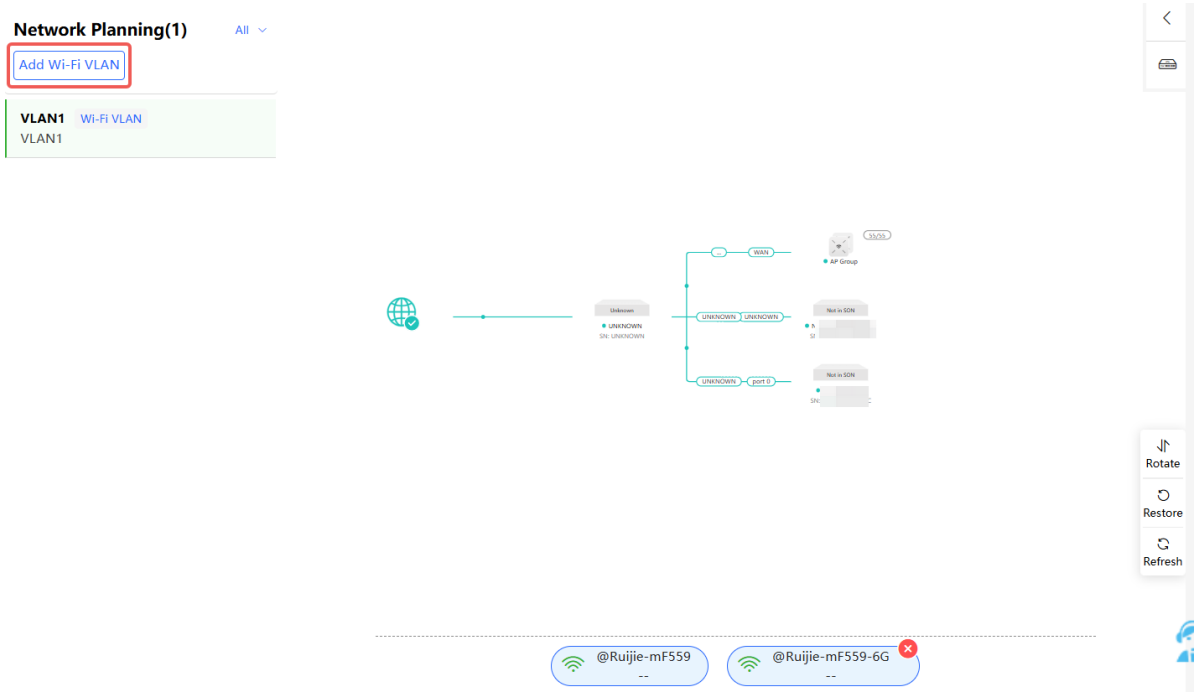
(3) Please confirm the delivered configurations and click **Save**. The configurations will take effect after a few minutes.



3.4.2 Configuring Wi-Fi VLAN

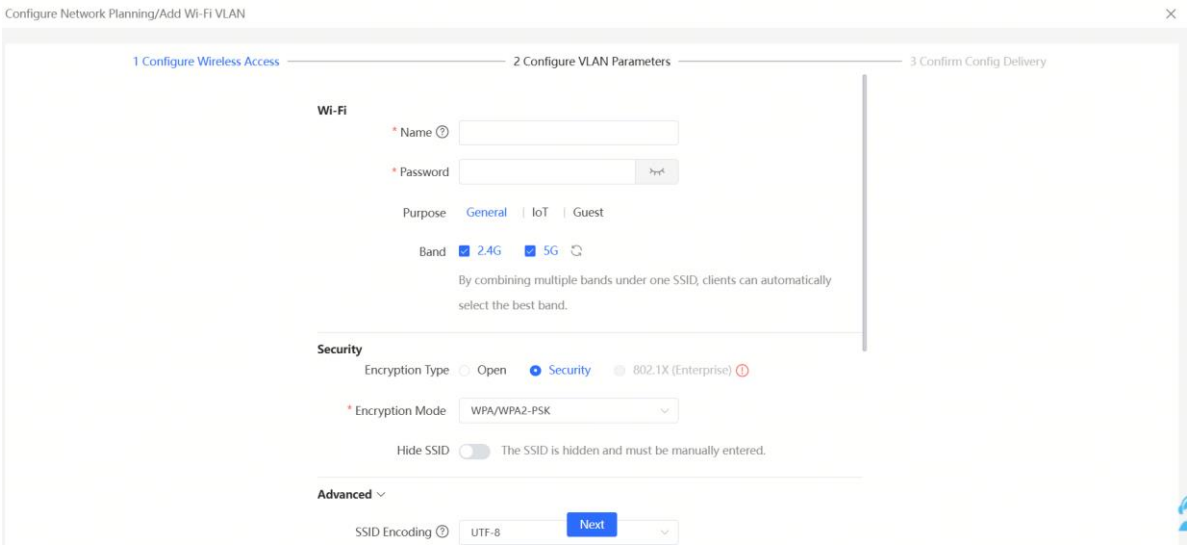
Choose **Network-Wide** > **Workspace** > **Network Planning**.

On the **Network Planning** page, click **Add Wi-Fi LAN**.

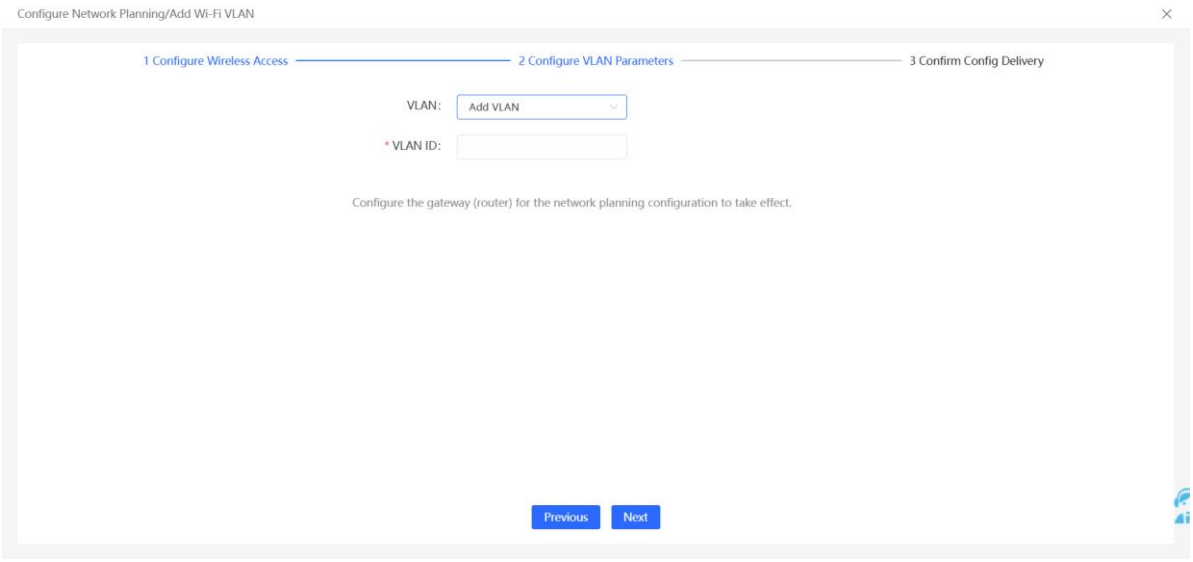


Alternatively, you can select an existing wireless VLAN and click **Setup** to edit the VLAN.

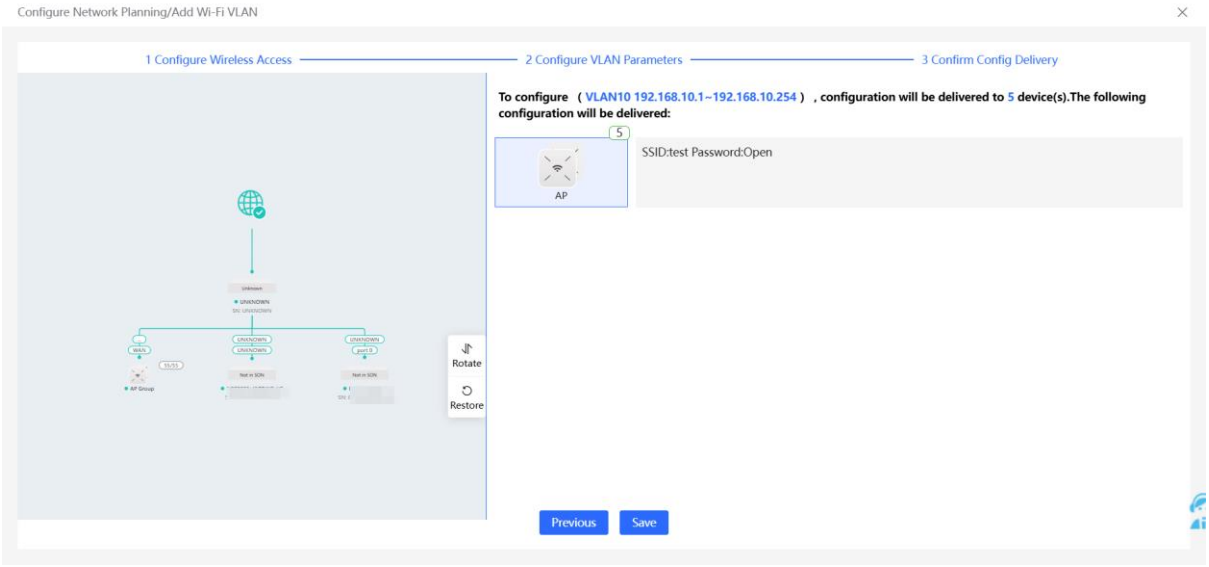
(1) Configure the SSID, Wi-Fi password and band. Click **Expand** to expand the advanced settings and set the parameters. Then, click **Next**.



(2) Configure the VLAN ID, address pool server and DHCP pool. The gateway is configured as the address pool server by default to assign IP addresses to clients. If an access switch exists in the network, you can select the access switch as the address pool server. Click **Next** after VLAN parameters are configured.



(3) Please confirm the delivered configurations and click **Save**. The configurations will take effect after a few minutes.



4 Wi-Fi Network Settings

Note

Wi-Fi network settings covers the Wi-Fi settings of the currently logged in devices and the management of all wireless devices in the network. In **Network** mode, the Wi-Fi network settings are synchronized to all wireless devices in the network. You can configure device groups to limit the synchronization range. For details, see 4.1 Configuring AP Groups.

4.1 Configuring AP Groups

4.1.1 Overview

After the self-organizing network is enabled, the device can act as the master AP/AC to perform batch configuration and management on the downlink APs in groups. Group the APs before the configurations are delivered.

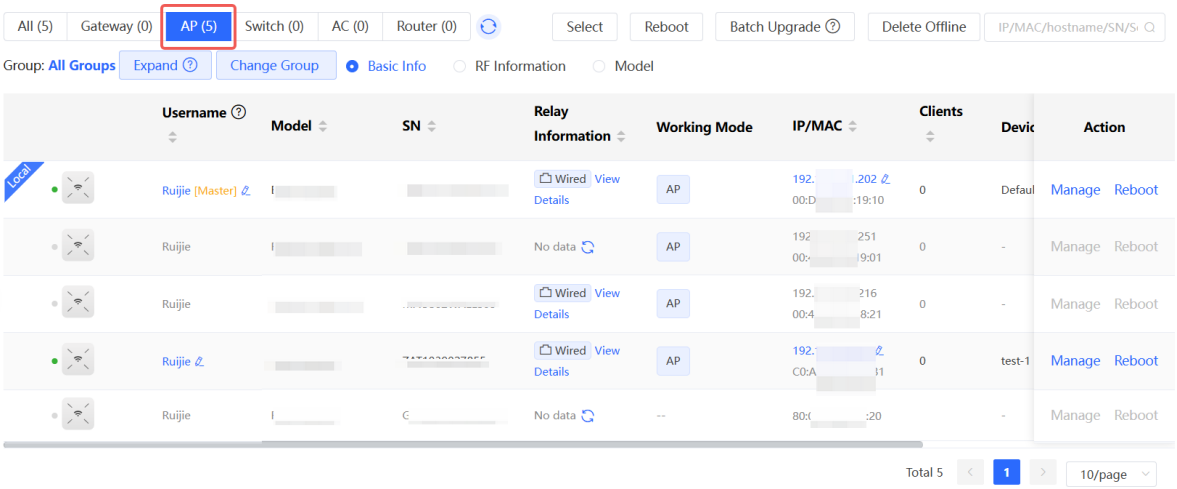
Note

If you specify a group when setting up a wireless network, the corresponding configuration will take effect on the wireless devices in the specified group.

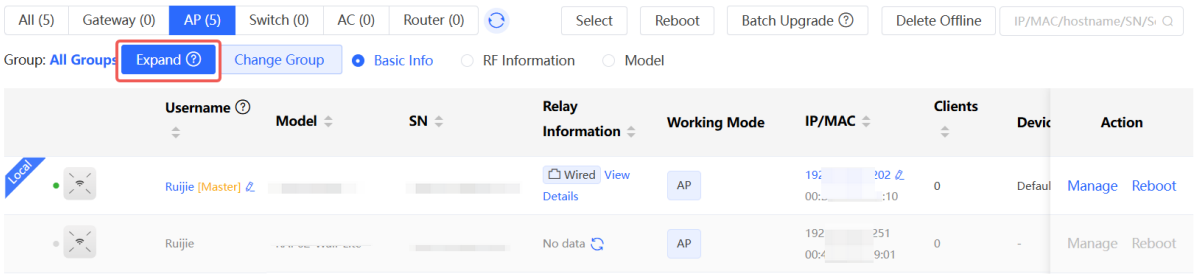
4.1.2 Configuration Steps

Choose **Network-Wide** > **Devices** > **AP**.

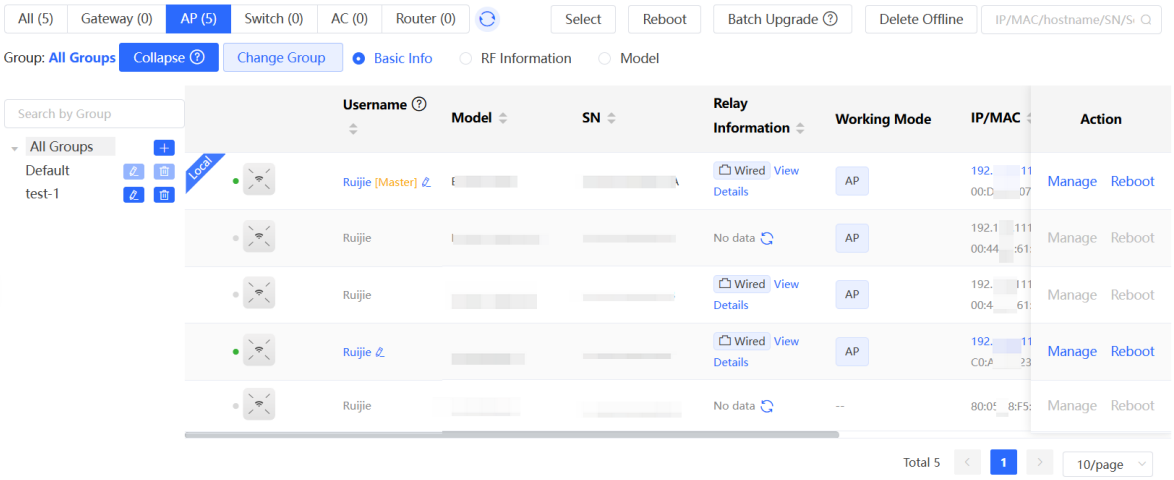
(1) The **AP** page displays all APs on the network. Click **Manage** to configure the selected device.



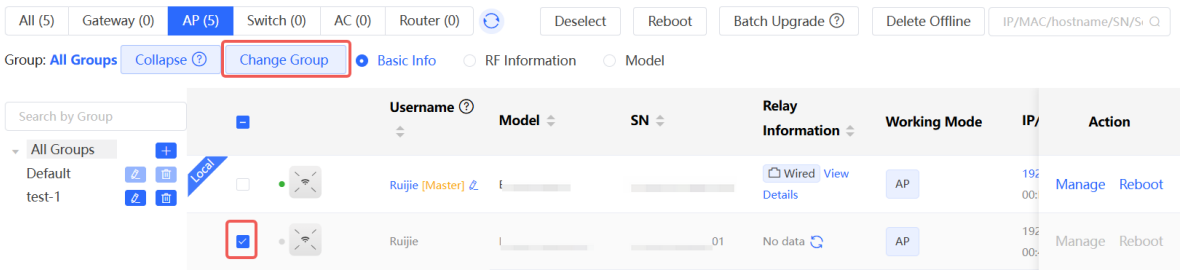
(2) Click **Expand** to view all device groups on the left section of the **Devices** page.

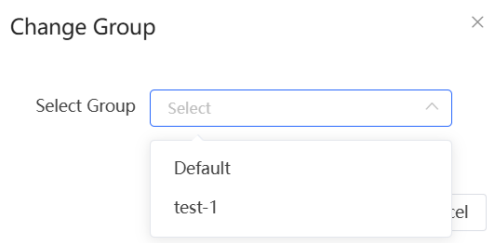


(3) Click  to create a new group. Up to 8 groups can be added. You can click  to edit the group name and click  to delete the group. The default group cannot be deleted and its name cannot be edited.



(4) Click the group name on the left part to view all devices in this group. A device can only belong to a group. By default, all devices belong to the default group. Select an entry in the list and click **Change Group** to move the target device to a specified group, and then the device will apply the configurations of this group. Click **Delete Offline Devices** to remove the offline device from the list.

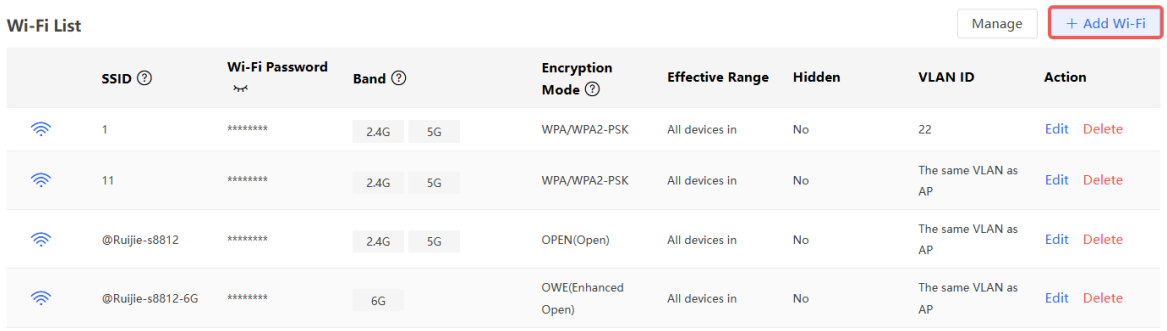




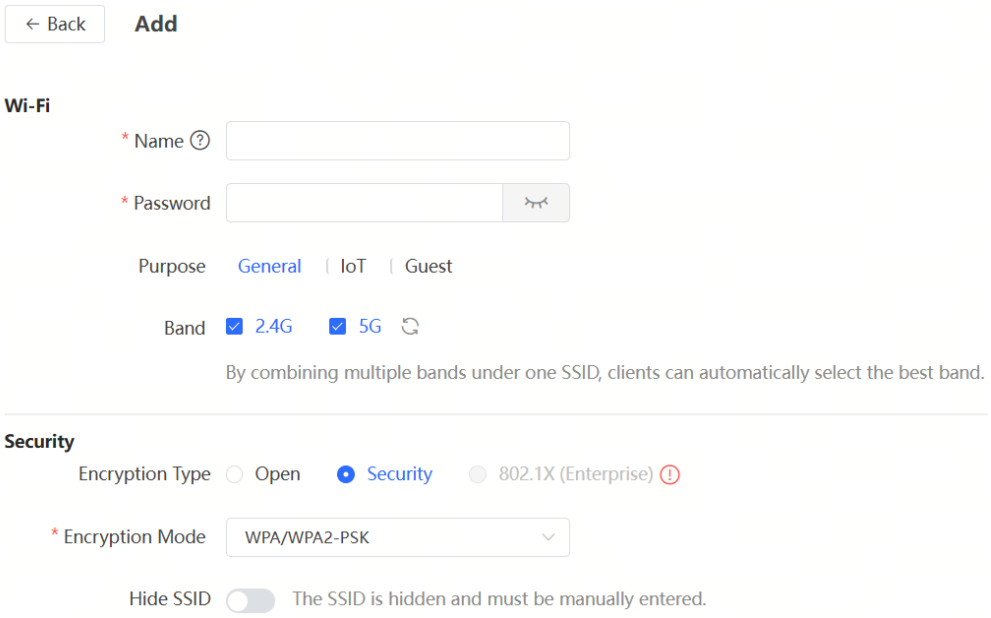
4.2 Adding a Wi-Fi Network

(1) Go to the page for configuration: Choose **Network-Wide > Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**.

(2) Click **Add Wi-Fi**.



(3) Configure the SSID, password, and other information.



(4) Click **advanced Settings** to configure more Wi-Fi parameters. After configuration, click **OK**. After the Wi-Fi is added, a client can detect the SSID, and the Wi-Fi information is displayed in the Wi-Fi list.

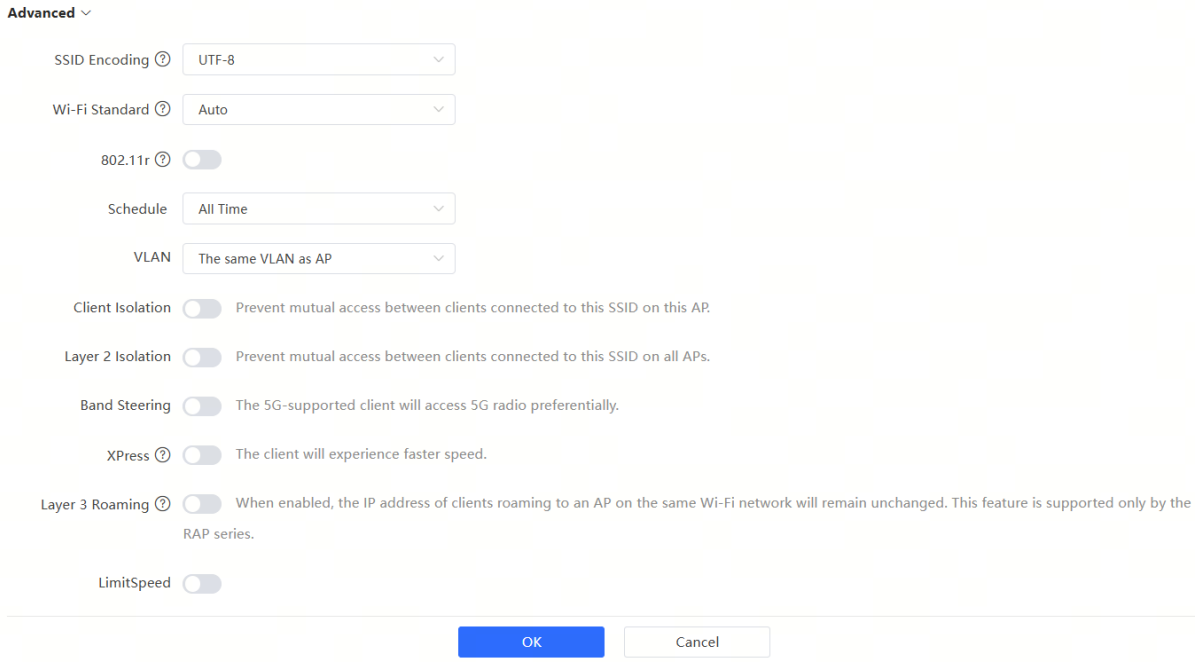


Table 4-1 Wi-Fi Configuration Parameters

Parameter	Description
Wi-Fi	
Name	Enter the name displayed when a wireless client searches for a wireless network.
Password	When the **Security** is set to WEP, you need to set the password for connecting to the wireless network. The password is a string of 8 to 63 characters.
Purpose	Set the Wi-Fi usage scenario. The options include **General**, **IoT**, and **Guest**. The system will recommend different Wi-Fi parameter combinations based on the selected purpose.
Band	Set the band used by the Wi-Fi signal. The options are 2.4 GHz and 5 GHz. The 5 GHz band provides faster network transmission rate and less interference than the 2.4 GHz band, but is inferior to the 2.4 GHz band in terms of signal coverage range and wall penetration performance. Select a proper band based on actual needs. The default value is **2.4G + 5G**, indicating that the device provides signals at both 2.4 GHz and 5 GHz bands.
Security	
Encryption Type	The encryption options for a Wi-Fi network include **Open**, **Security**, and **802.1x (Enterprise)**.

Parameter	Description
Encryption Mode	Indicates encryption technologies used to ensure the security of data transmission.
Hide SSID	Enabling the hide SSID function can prevent unauthorized user access to Wi-Fi, improving security. However, mobile phones or computers cannot find the SSID after this function is enabled. You must manually enter the correct name and password to connect to Wi-Fi. Record the current SSID before you enable this function.
Select server group	When the **Encryption** is set to **802. 1x (Enterprise)**, you need to configure a remote server set for authentication and authorization.
Advanced	
SSID Encoding	The SSID encoding standard is set to "UTF-8" by default when Chinese characters are included in the SSID. If the Chinese characters are garbled, you can choose "GB2312" as the SSID encoding standard.
Wi-Fi Standard	The Wi-Fi standards include **Wi-Fi 6 (802.11ax)**, **Wi-Fi 4/5 (Legacy Mode)** or **Auto**. The final effective Wi-Fi standard depends on the support of Wi-Fi standards on each device. The latest standard is recommended. If there is a compatibility issue, try use an older standard. However, an old standard setting will affect the bandwidth.
802.11r	Enabling the 802. 11r function can shorten the roaming handover time. The 802. 11r function is supported only when **Encryption** is set to **Security** or **802. 1x (Enterprise)**. Once 802. 11r is enabled, the encryption type can only be WPA2-PSK or WPA2-802. 1X.
Schedule	Specify the time periods during which Wi-Fi is enabled. After you set this parameter, users cannot connect to Wi-Fi in other periods.
VLAN	Set the VLAN to which the Wi-Fi signal belongs. You can choose from the available VLANs or click **Add New VLAN**, and go to the **LAN Settings** page to add a VLAN.
Client Isolation	When enabled, devices connected to this Wi-Fi network under the same access point (AP) will be isolated from each other. This prevents end users from accessing other users on the same subnet, thereby enhancing security.
Layer 2 Isolation	When enabled, clients connected to this SSID are isolated from each other, and cannot access other clients connected to this SSID on all APs on Layer 2, thereby improving security.

Parameter	Description
Band Steering	After this function is enabled, 5G-capable clients select 5G Wi-Fi preferentially. You can enable this function only when **Band** is set to **2.4G + 5G**.
XPress	After this function is enabled, the device sends game packets preferentially, providing more stable wireless network for games.
Layer 3 Roaming	After this function is enabled, clients keep their IP addresses unchanged when associating with the same Wi-Fi. This function improves the roaming experience of users in the cross-VLAN scenario.
LimitSpeed	After enabling Wi-Fi rate limiting, you can set the uplink and downlink rate limits for users. ● Rate Limit Per User: The rate limit applies to all clients connected to the SSID. ● Rate Limit All Users: All clients connected to the SSID share the configured rate limit equally. The rate limit of each client changes dynamically with the number of clients connected to the SSID.

Encryption Mode can be set to the following values.

Note

The available options for **Encryption Mode** vary depending on devices on the network.

- WPA-PSK
  - Definition: Wi-Fi Protected Access (WPA) that was released in 2003 uses the Temporal Key Integrity Protocol (TKIP) for encryption.
  - Security: It is not recommended because it is outdated and has vulnerabilities (for example, TKIP is easy to crack).
  - Applicable scenarios: It is applicable only to legacy devices, such as early printers and smart home devices.
- WPA/WPA2-PSK (hybrid mode)
  - Definition: Both WPA (TKIP protocol) and WPA2 (AES protocol) are enabled simultaneously to ensure compatibility with legacy and new devices. AES is short for Advanced Encryption Standard.
  - Security: It has low security because outdated TKIP is used. TKIP may become an attack entry.
  - Applicable scenarios: It can be used as a temporary solution for supporting both new and legacy devices.
- WPA2-PSK
  - Definition: It is a mainstream standard launched in 2004. It uses AES for encryption and replaces TKIP used by WPA.
  - Security: It has high security but is vulnerable to Key Reinstallation Attacks (KRACKs), which can be fixed by a router firmware upgrade.
  - Applicable scenarios: It is the most widely used encryption mode, which is compatible with most modern

devices.

- WPA2-PSK/WPA3-SAE (hybrid mode)
  - Definition: It supports both WPA2 (AES protocol) and WPA3 (SAE protocol), ensuring compatibility and security.
  - Security: The hybrid mode is more secure than WPA2, but does not give full play to the advantages of WPA3.
  - Applicable scenarios: It is a temporary solution for supporting new and legacy devices before WPA3 is fully used.
- WPA3-SAE
  - Definition: It is the latest standard released in 2018 which uses Simultaneous Authentication of Equals (SAE) to replace Pre-shared Key (PSK) and prevent brute-force cracking.
  - Security: It has the strongest security. Enhanced protection such as forward secrecy and resistance to offline dictionary attacks is provided.
  - Applicable scenarios: It is the preferred choice for new devices, such as Wi-Fi 6-capable phones and PCs. It is the mainstream encryption standard in the future.

WPA3-SAE (if supported by devices) or WPA2-PSK (with the best compatibility) is recommended.

Do not use WPA-PSK or WPA/WPA2-PSK unless necessary.

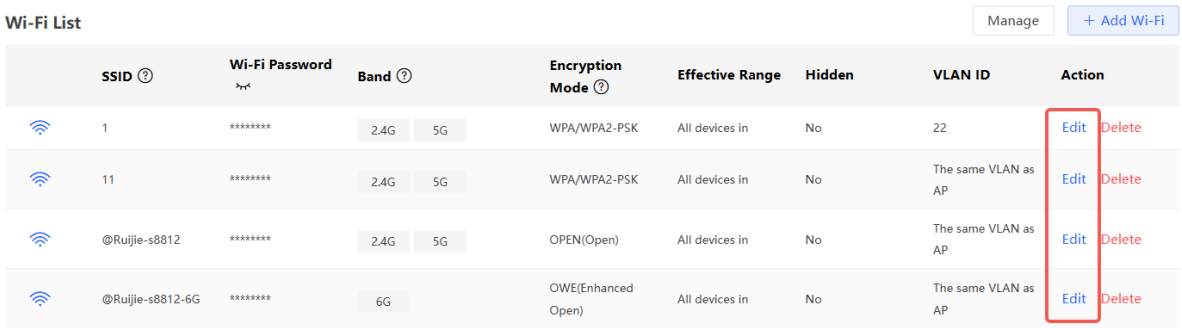
You can significantly improve network security and prevent data theft and intrusions by selecting a higher encryption standard such as WPA3.

Caution

After WPA3 is used, some legacy devices may fail to connect to the network and need to be configured separately.

4.3 Configuring SSID and Wi-Fi Password

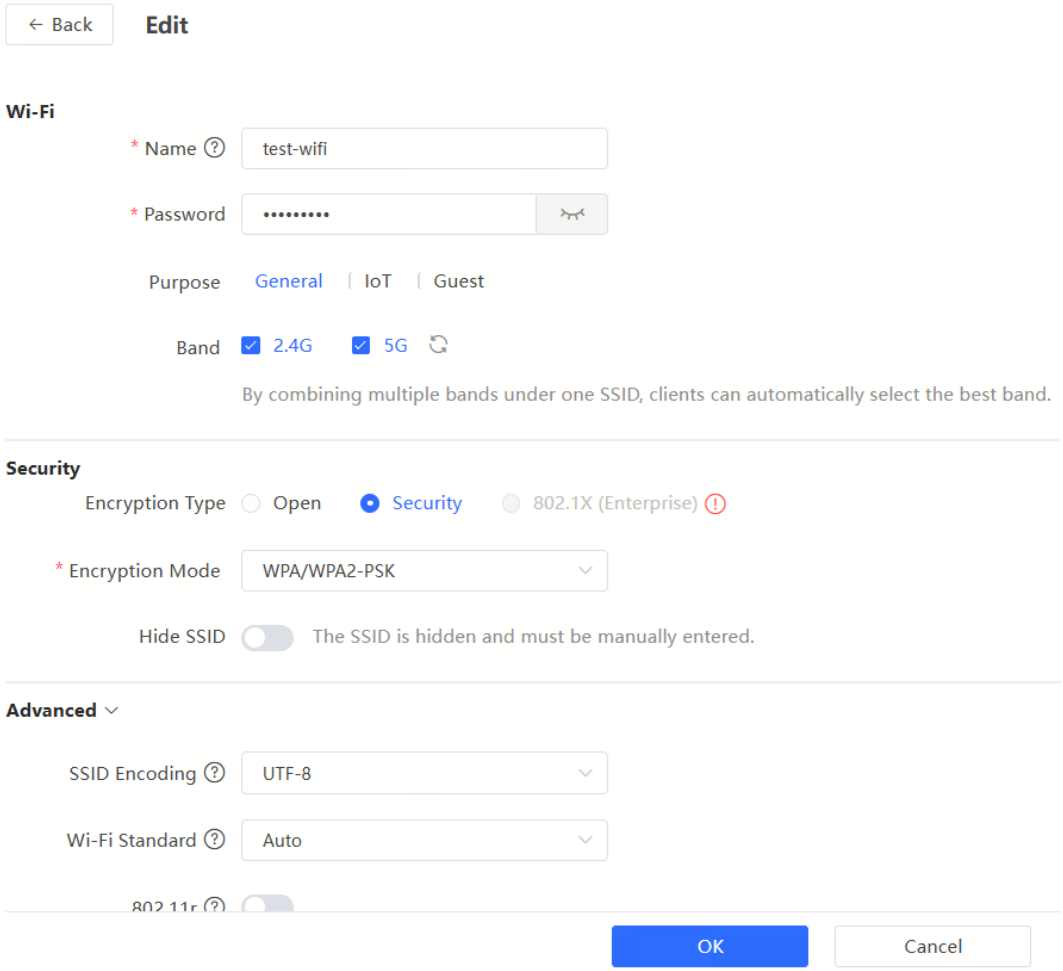
(1) Go to the page for configuration: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.



(2) Click the target Wi-Fi network, change the SSID and Wi-Fi password of the Wi-Fi network, and click **OK**.

Caution

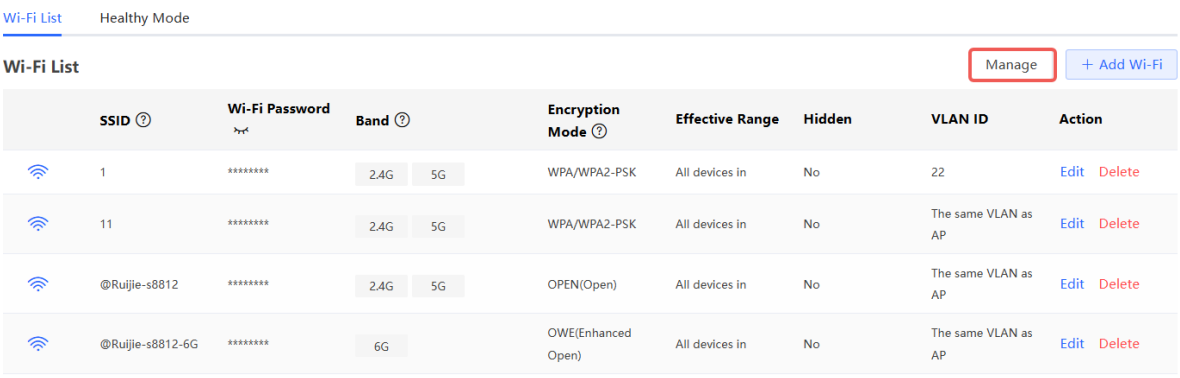
After the configuration is saved, all online clients will be disconnected from the Wi-Fi network. You have to enter the new password to connect to the Wi-Fi network.



4.4 Managing Wi-Fi Networks

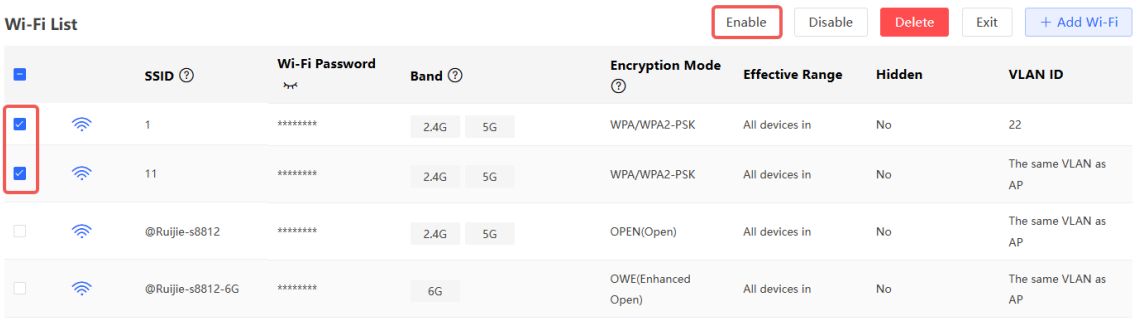
(1) Go to the configuration page: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**.

(2) Click **manage** to batch manage Wi-Fi networks.

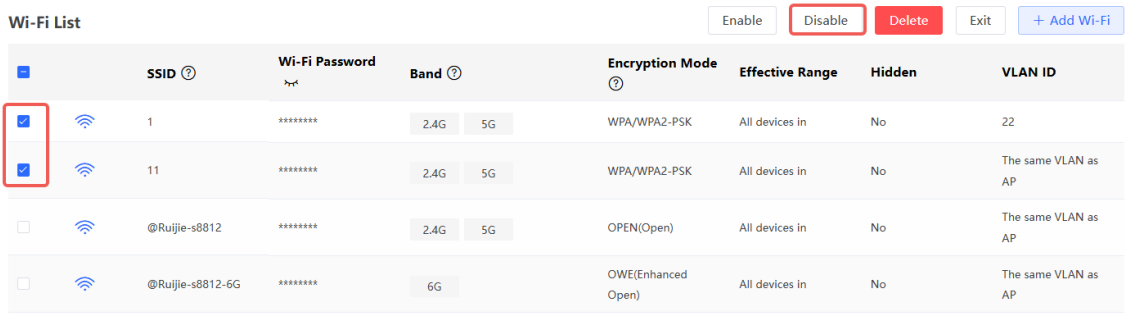


(3) Batch manage Wi-Fi networks.

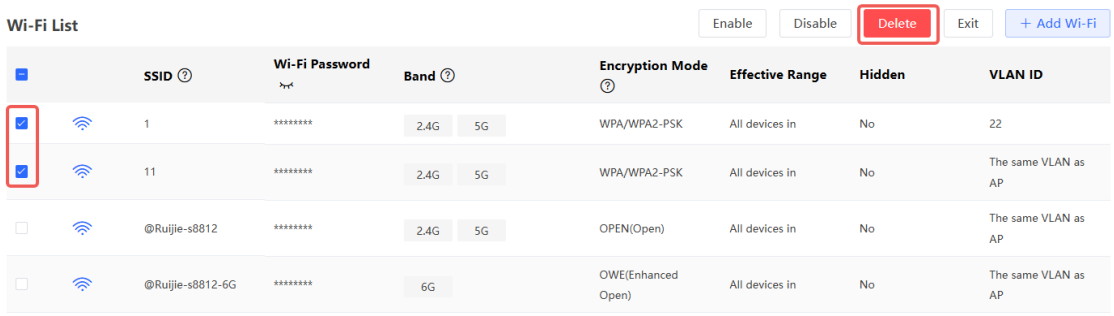
- Batch enable Wi-Fi networks: Select the desired Wi-Fi networks, and click **Enable**.



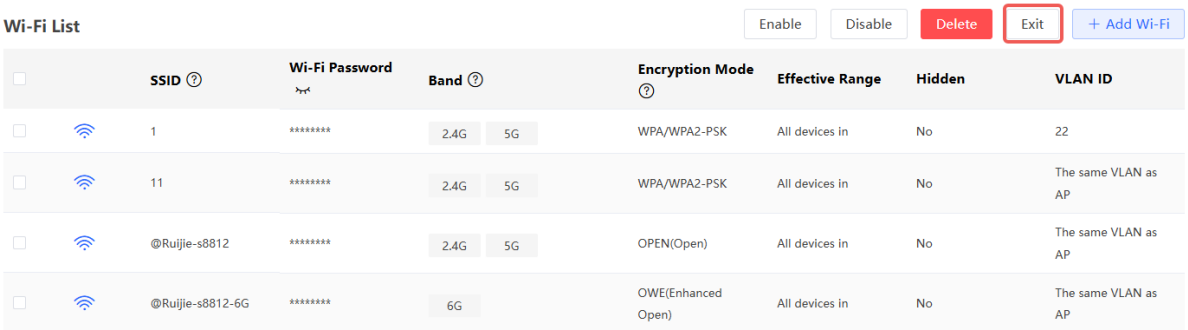
- Batch disable Wi-Fi networks: Select the desired Wi-Fi networks, and click **Disable**.



- Batch delete Wi-Fi networks: Select the desired Wi-Fi networks, and click **Delete**.



(4) Click **Exit** to exit Wi-Fi network batch management.



(5) If a message in the following figure is displayed, some Wi-Fi networks that are active on Wi-Fi groups or specified devices have been configured on Ruijie Cloud. To manage Wi-Fi configurations that are not applied to all devices, click **Go to Ruijie Cloud**.



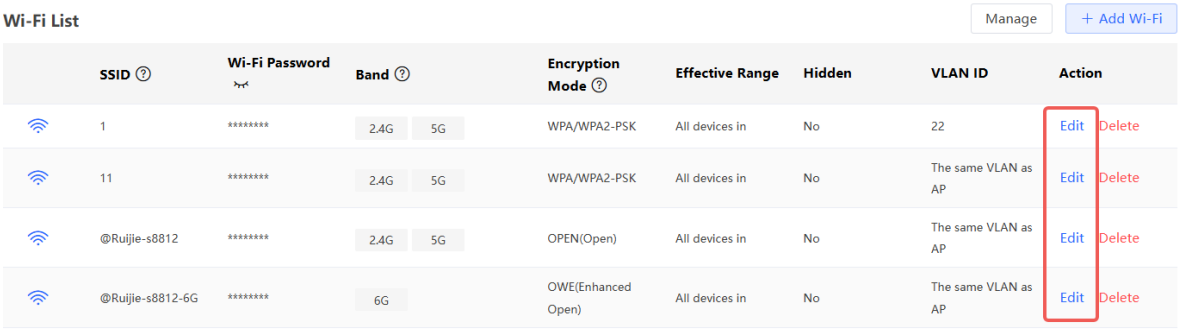
4.5 Hiding the SSID

4.5.1 Overview

Hiding the SSID can prevent unauthorized clients from accessing the Wi-Fi network and enhance network security. After this function is enabled, the mobile phone or PC cannot search out the SSID. Instead, you have to manually enter the correct SSID and Wi-Fi password. Remember the SSID so that you can enter the correct SSID after the function is enabled.

4.5.2 Configuration Steps

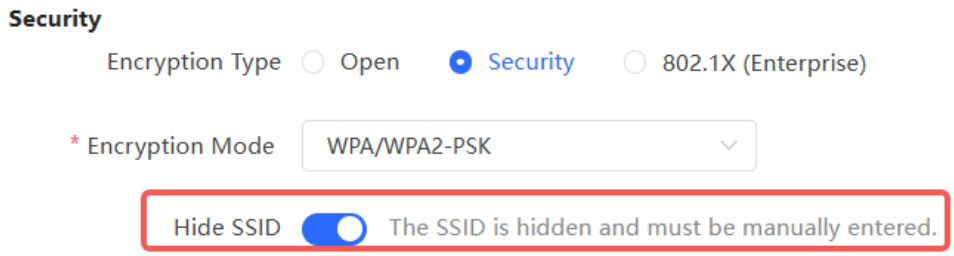
(1) Go to the page for configuration: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.



(2) Click to expand advanced settings, turn on **Hide SSID** in the expanded settings and click **OK**.

Caution

After the configuration is saved, you have to manually enter the SSID and Wi-Fi password before connecting any device to the Wi-Fi network. Therefore, exercise caution when performing this operation.



4.6 Configuring Wi-Fi Band

(1) Go to the page for configuration: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

(2) Set the band of Wi-Fi signals. The device supports the 2.4 GHz and 5 GHz bands.

Compared with the 2.4 GHz band, the 5 GHz band supports a higher network transmission rate and is less susceptible to interference, but is inferior in signal coverage and through-wall penetration. You can select an appropriate signal band based on actual requirements.

The default Wi-Fi band is **2.4G + 5G**, indicating that Wi-Fi signals are emitted in both 2.4 GHz and 5 GHz bands.



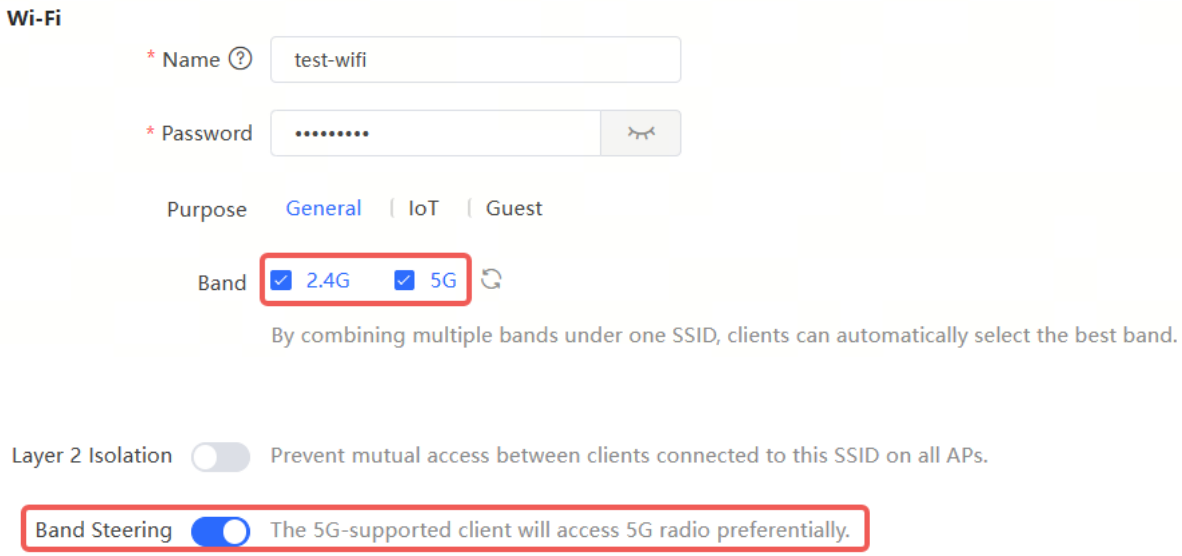
4.7 Configuring Band Steering

Caution

This function can be enabled only after the dual-band integration (**Band** is set to **2.4G + 5G**) is enabled on the Wi-Fi network. A client automatically selects a band only when the SSIDs of the 2.4 GHz and 5 GHz bands are the same.

(1) Go to the page for configuration: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

(2) Click to expand advanced settings, turn on **Band Steering** in the expanded settings, and click **OK**. After the function is enabled, the client supporting 5 GHz selects the 5G Wi-Fi network preferentially.



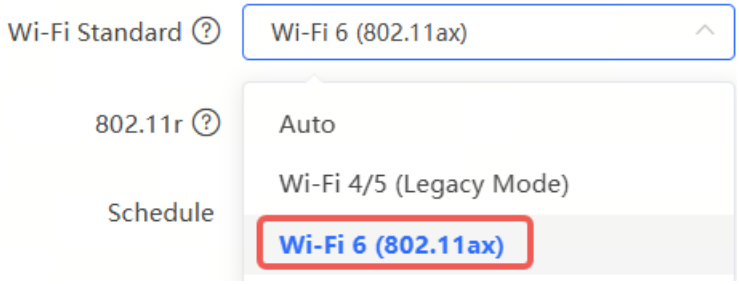
4.8 Configuring Wi-Fi 6

Caution

The function takes effect only on APs supporting the IEEE 802.11ax protocol. In addition, access clients must support IEEE 802.11ax so that clients can enjoy high-speed Internet access experience brought by Wi-Fi 6. If clients do not support Wi-Fi 6, you can disable this function.

(1) Go to the page for configuration: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

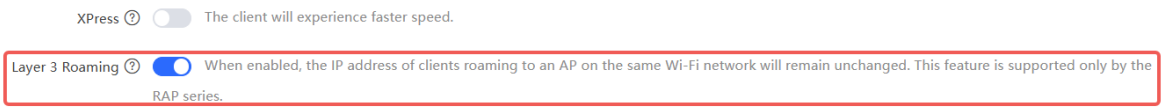
(2) Click **advanced Settings** to set the **Wi-Fi Standard** to **Wi-Fi 6 (802.11ax)**. Click **OK**. After this function is enabled, wireless clients can have faster network speed and optimized network experience.



4.9 Configuring Layer 3 Roaming

(1) Go to the page for configuration: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

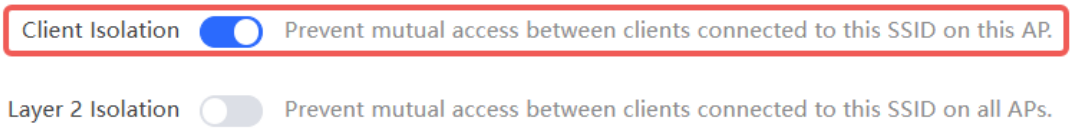
(2) Click to expand advanced settings, turn on **Layer 3 Roaming** in the expanded settings and click **OK**. The client will keep the IP address unchanged in this Wi-Fi network, improving roaming experience across VLANs.



4.10 Configuring Client Isolation

(1) Go to the page for configuration: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

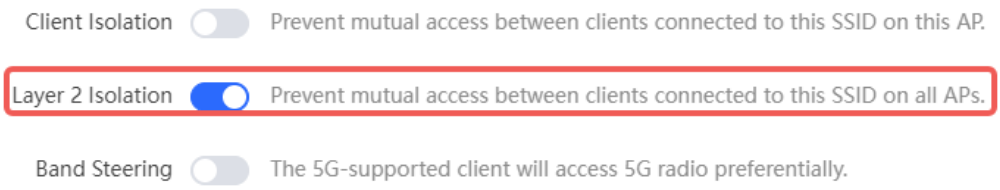
(2) Click to expand advanced settings, turn on **Client Isolation** in the expanded settings and click **OK**. When enabled, devices connected to this Wi-Fi network under the same access point (AP) will be isolated from each other. This prevents end users from accessing other users on the same subnet, thereby enhancing security.



4.11 Configuring Layer 2 Isolation

(1) Go to the page for configuration: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

(2) Click to expand advanced settings, turn on **Client Isolation** in the expanded settings and click **OK**. When enabled, clients connected to this SSID are isolated from each other, and cannot access other clients connected to this SSID on all APs on Layer 2, thereby improving security.

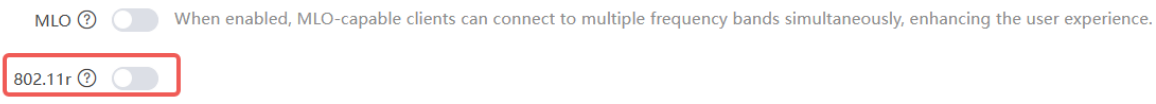


4.12 Configuring 802.11r

The **802.11r** function is available only when the Encryption is set to **Security** or **802.1x(Enterprise)**. Once **802.11r** is enabled, **Security** can only be set to WPA2-PSK or WPA2-802.1X.

(1) Go to the page for configuration: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

(2) Click **advanced Settings**. Enable **802.11r**, and click OK.



4.13 Configuring a Guest Wi-Fi

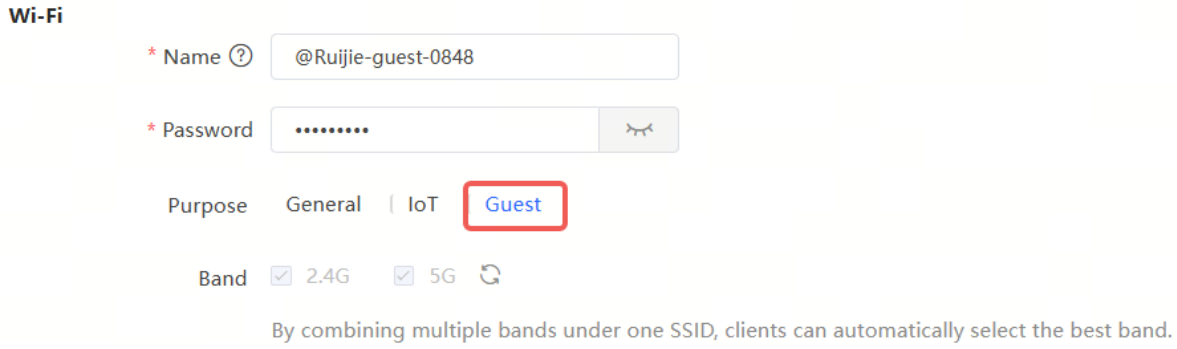
4.13.1 Overview

This Wi-Fi network is provided for guests and is disabled by default. It supports client isolation, that is, access clients are isolated from each other. They can only access the Internet via Wi-Fi, but cannot access each other, improving security. The guest Wi-Fi network can be turned off as scheduled. When the time expires, the guest network is off.

4.13.2 Configuration Steps

Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**.

Click **Add Wi-Fi**. Set the purpose to **Guest** and configure the SSID and password. Click **advanced Settings** to configure the effective time of the guest Wi-Fi and other Wi-Fi parameters. After the settings are saved, guests can connect to the Internet through the set SSID and password.



4.14 Configuring Wireless Rate Limiting

4.14.1 Overview

The device supports four rate limiting modes: client-based rate limiting, SSID-based rate limiting, AP-based rate limiting, and packet-based rate limiting. For the same client, if multiple rate limiting modes are configured, the priority order is as follows: client-based rate limiting > SSID-based rate limiting > AP-based rate limiting > packet-based rate limiting.

- Client-based rate limiting: This function allows you to limit the rate based on the MAC address of the client, so as to limit or guarantee the bandwidth required by specific clients.
- SSID-based rate limiting: This function provides two rate limiting modes for a specified SSID: **Rate Limit Per User** and **Rate Limit All Users**. **Rate Limit Per User** means that all clients connected to the SSID use the same rate limit. **Rate Limit All Users** means that the configured rate limit value is evenly allocated to all clients connected to the SSID. The rate limit value of each client dynamically changes with the number of clients connected to the SSID.
- AP-based rate limiting: This function limits the client rates based on the whole network. All clients connected to the network will work according to the configured rate limit value.

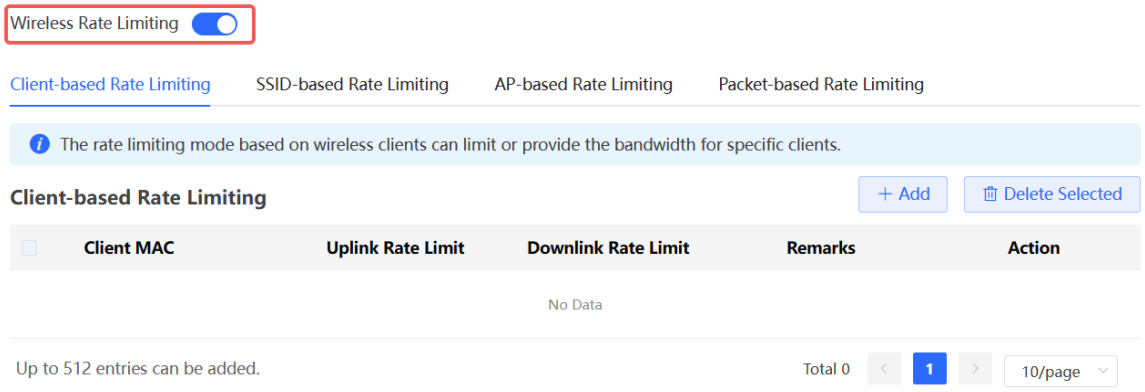
- Packet-based rate limiting: This function limits the client rates based on the downlink broadcast and multicast packets. The device supports rate limiting for specific broadcast packets (such as ARP and DHCP), multicast packets (such as MDNS and SSDP), or all types of broadcast and multicast packets. If network stalling remains during network access and there is no client with large traffic, you are advised to adjust the rate between 1 kbps and 512 kbps.

4.14.2 Configuration Steps

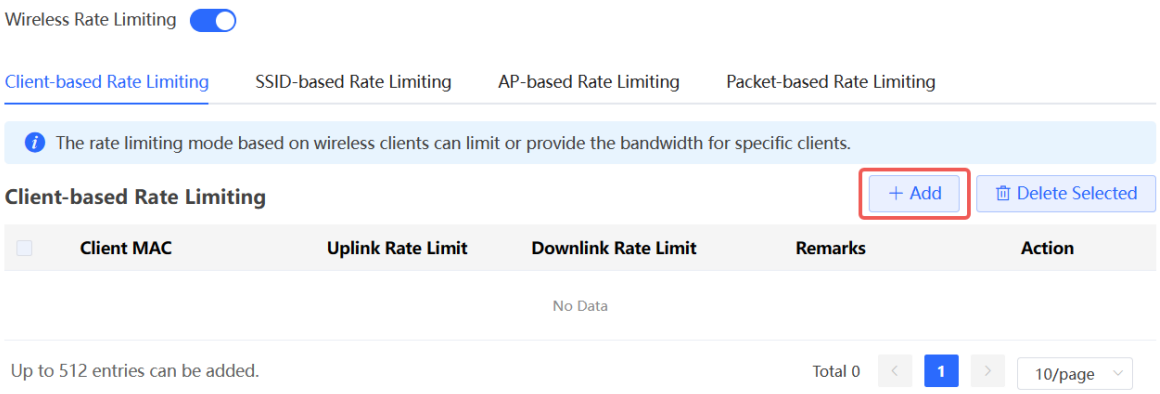
1. Configuring Client-based Rate Limiting

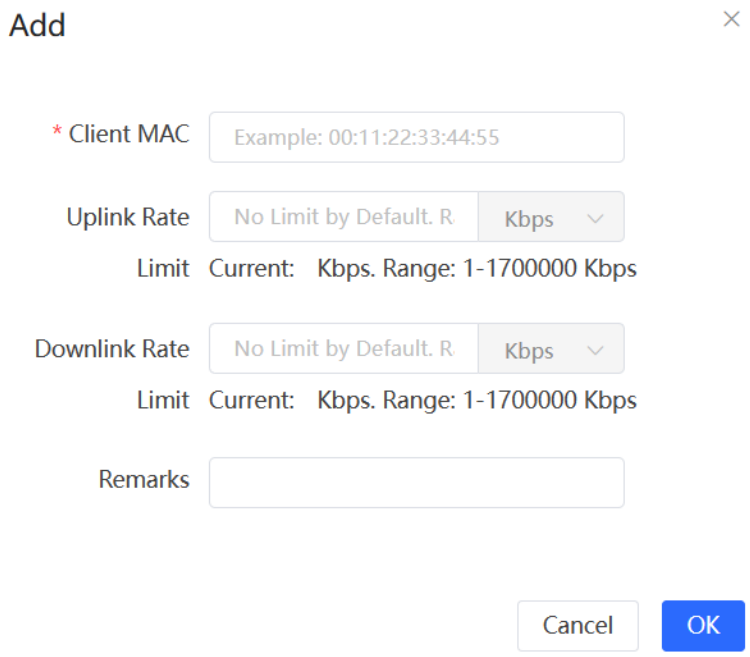
Choose **Network-Wide** > **Workspace** > **Wireless** > **Rate Limiting** > **Client-based Rate Limiting**.

(1) Enable **Wireless Rate Limiting**.



(2) Click **Add**. In the dialog box that appears, set the MAC address and uplink and downlink rate limit values of the client, and click **OK**.



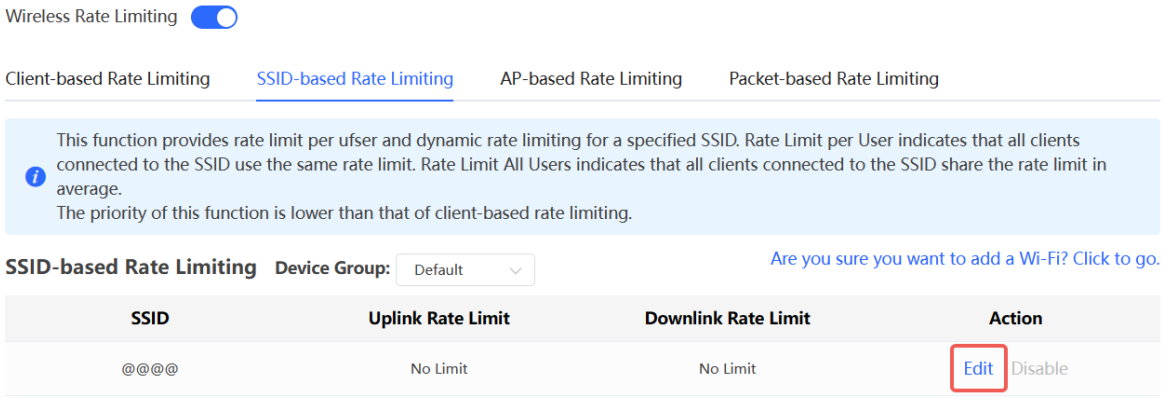


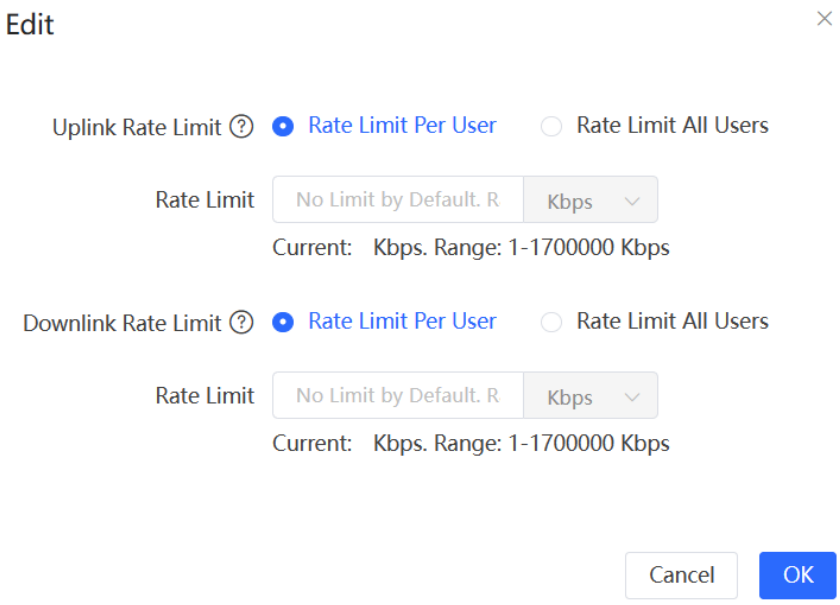
2. Configuring SSID-based Rate Limiting

Method 1: Choose **Network-Wide** > **Workspace** > **Wireless** > **Rate Limiting** > **SSID-based Rate Limiting**.

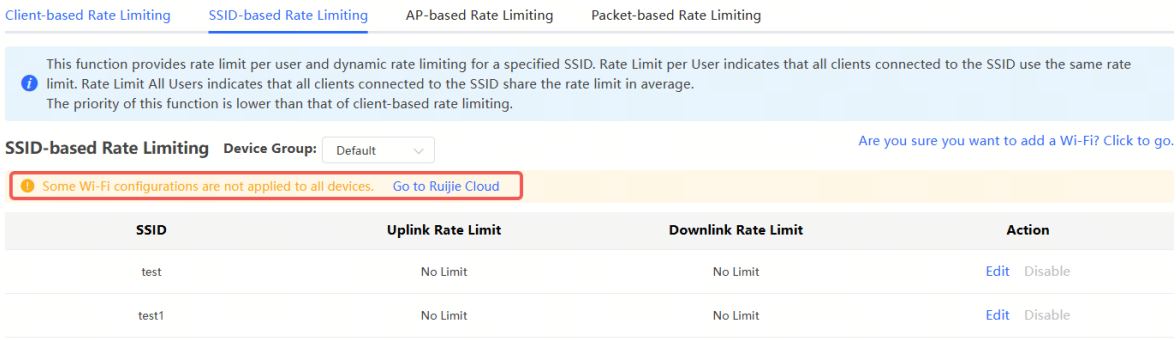
(1) Enable **Wireless Rate Limiting**.

(2) Click **Edit** in the **Action** column of the target SSID. In the dialog box that appears, set the uplink and downlink rate limit modes and values, and click **OK**.





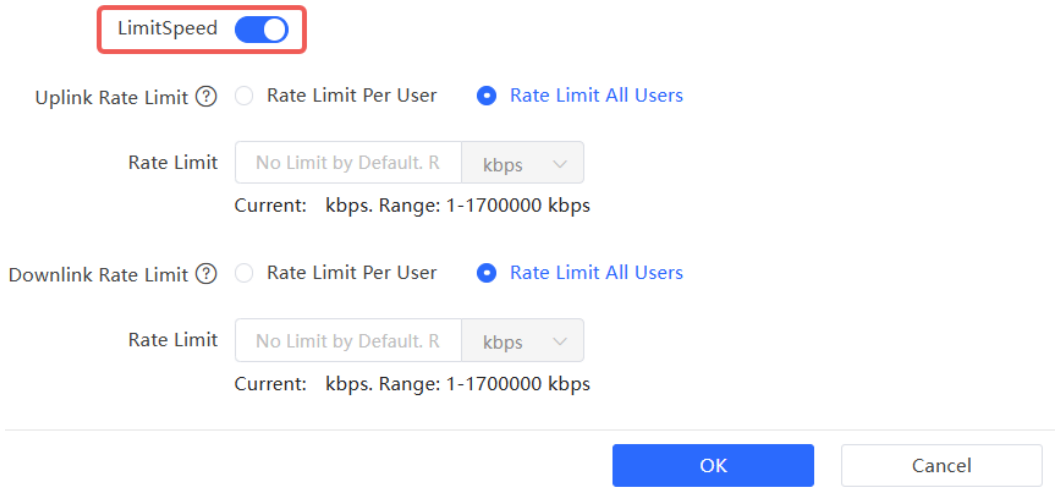
If a message in the following figure is displayed, some Wi-Fi networks that are active on Wi-Fi groups or specified devices have been configured on Ruijie Cloud. To manage Wi-Fi configurations that are not applied to all devices, click **Go to Ruijie Cloud**.



Method 2:

(1) Go to the configuration page: Choose **Network-Wide** > **Workspace** > **Wireless** > **Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

(2) Click to expand advanced settings. Enable **LimitSpeed**, set the uplink and downlink rate limit modes and rate limits, and click **OK**.

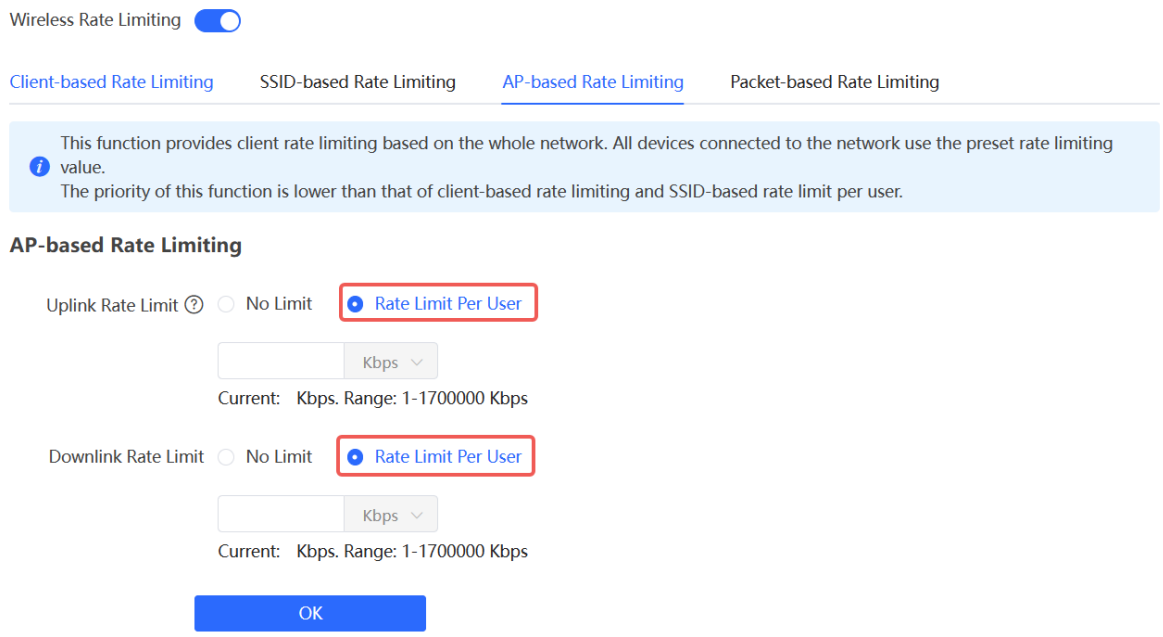


3. Configuring AP-based Rate Limiting

Choose **Network-Wide** > **Workspace** > **Wireless** > **Rate Limiting** > **AP-based Rate Limiting**.

(1) Enable **Wireless Rate Limiting**.

(2) Set the uplink and downlink rate limit modes to **Rate Limit Per User**, configure the rate limit values, and click **OK**.

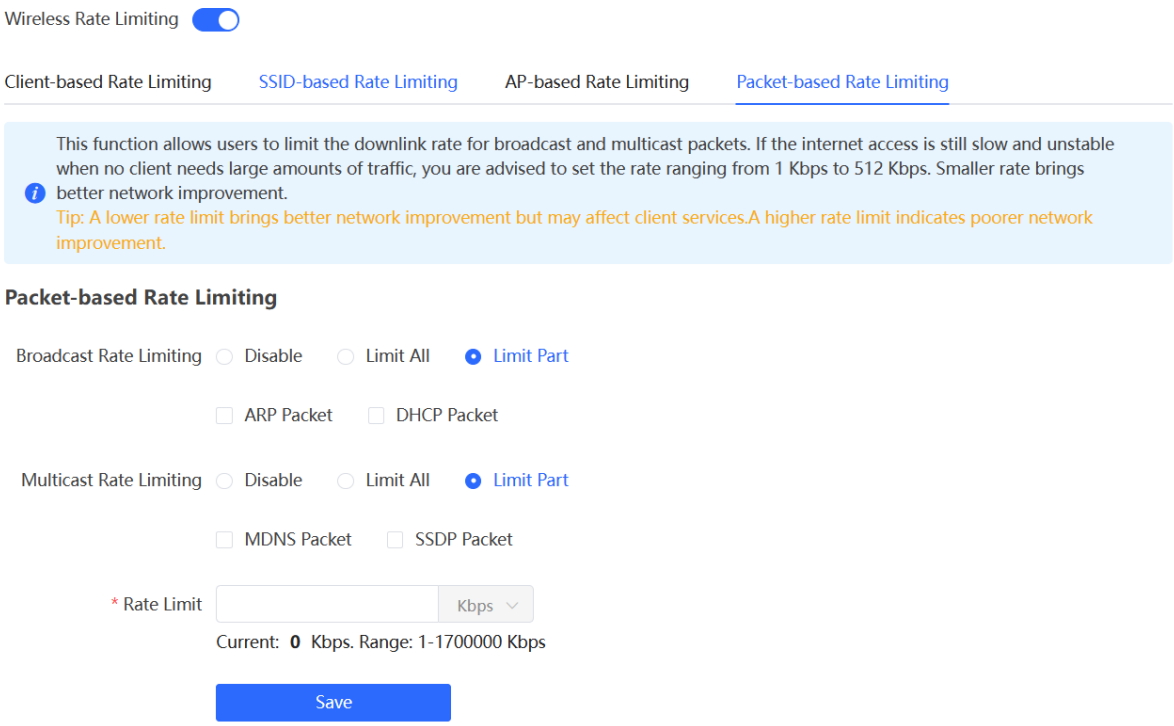


4. Configuring Packet-based Rate Limiting

Choose **Network-Wide** > **Workspace** > **Wireless** > **Rate Limiting** > **Packet-based Rate Limiting**.

(1) Enable **Wireless Rate Limiting**.

(2) Select the specific type of packets for rate limiting, configure the rate limit value, and click **Save**.



4.15 Configuring Wi-Fi Blocklist or Allowlist

4.15.1 Overview

You can configure the global or SSID-based blocklist and allowlist. The MAC address supports full match and OUI match.

Wi-Fi blocklist: Clients in the Wi-Fi blocklist are prevented from accessing the Internet. Clients that are not added to the Wi-Fi blocklist are free to access the Internet.

Wi-Fi allowlist: Only clients in the Wi-Fi allowlist can access the Internet. Clients that are not added to the Wi-Fi allowlist are prevented from accessing the Internet.

Caution

If the allowlist is empty, the allowlist does not take effect. In this case, all clients are allowed to access the Internet.

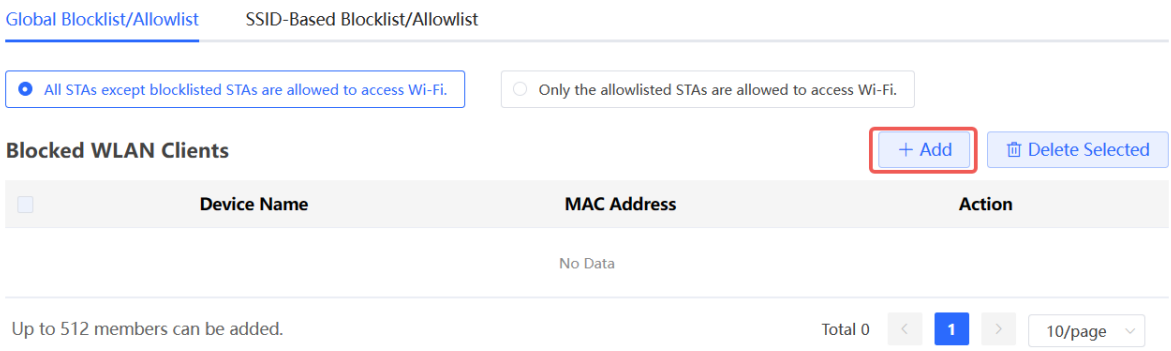
4.15.2 Configuration Steps

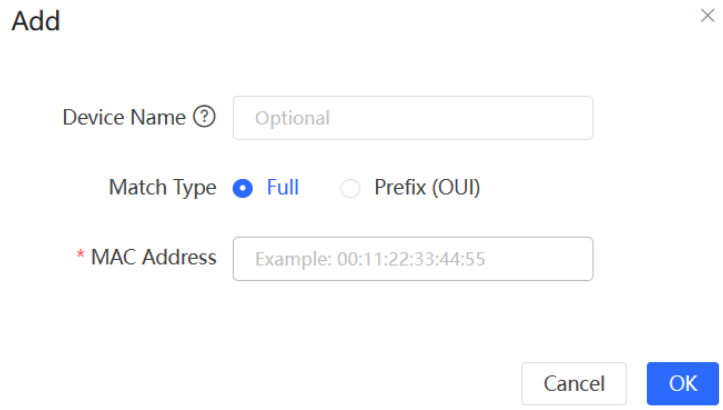
1. Configuring a Global Blocklist/Allowlist

Choose **Network-Wide > Workspace > Wireless > Blocklist and Allowlist** > **Global Blocklist/Allowlist**.

Select the blocklist or allowlist mode and click **Add** to configure a blocklist or allowlist client. Enter the device name, match type, and MAC address of the client to be added to the blacklist or whitelist in the displayed dialog box, and click **OK**. If a client is already associated with the access point, its MAC address will pop up automatically. Click the MAC address directly for automatic input. All clients in the blocklist will be forced offline

and not allowed to access the Wi-Fi network. The global blocklist and allowlist settings take effect on all Wi-Fi networks of the access point.

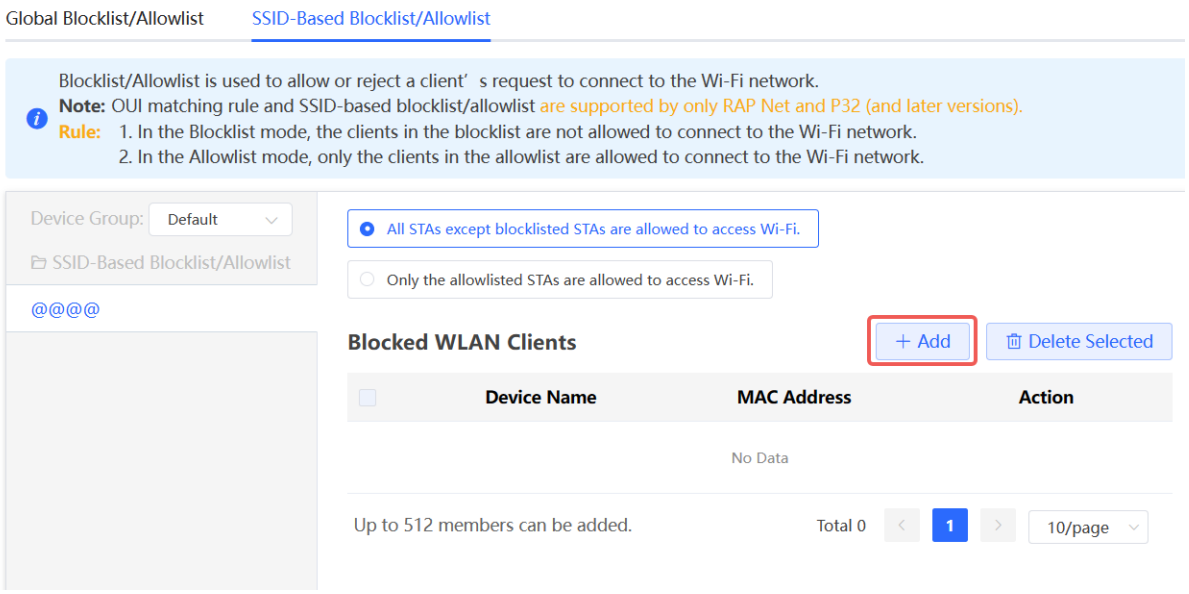




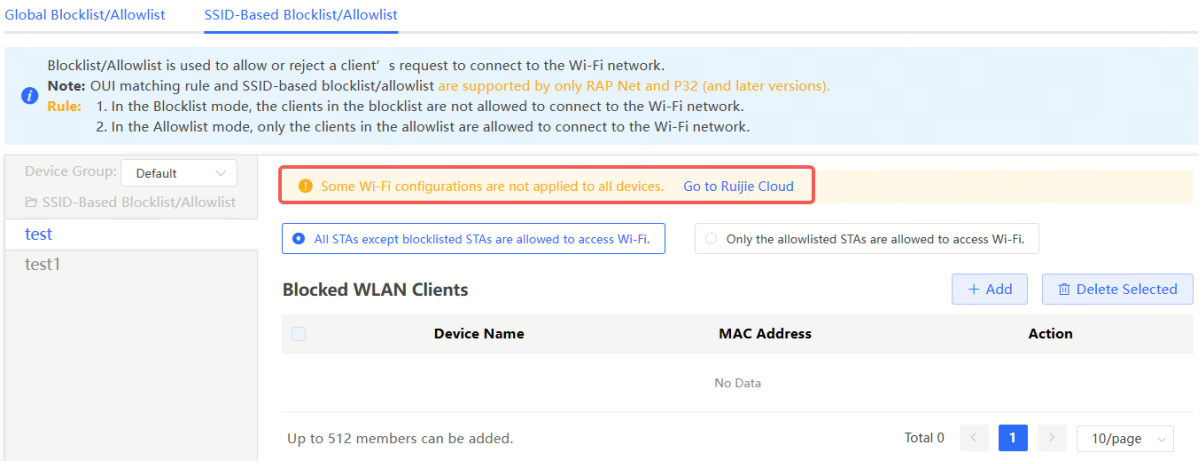
2. Configuring an SSID-based Blocklist/Allowlist

Choose **Network-Wide > Workspace > Wireless > Blocklist and Allowlist** > **SSID-Based Blocklist/Allowlist**.

Select a target Wi-Fi network from the left column, select the blocklist or allowlist mode and click **Add** to configure a blocklist or allowlist client. The SSID-based blocklist and allowlist will restrict the client access to the specified Wi-Fi.



If a message in the following figure is displayed, some Wi-Fi networks that are active on Wi-Fi groups or specified devices have been configured on Ruijie Cloud. To manage Wi-Fi configurations that are not applied to all devices, click **Go to Ruijie Cloud**.



4.16 Optimizing Wi-Fi Network

4.16.1 Overview

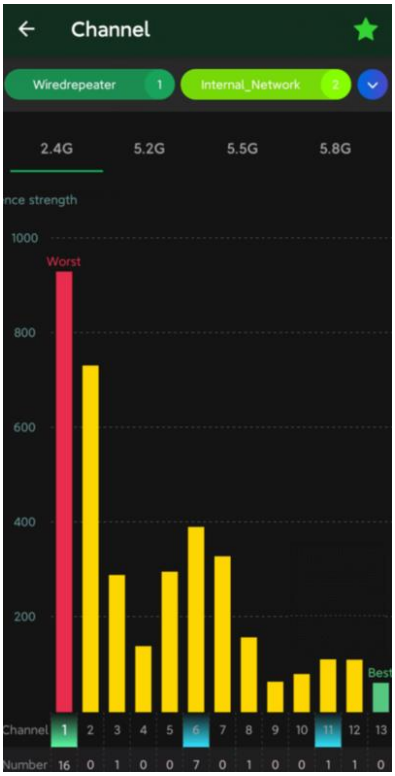
The device detects the surrounding wireless environment and selects the appropriate configuration upon power-on. However, network stalling caused by wireless environment changes cannot be avoided. You can optimize the network with one single click, analyze the wireless environment around the access point and select appropriate parameters.

Caution

After being optimized, the Wi-Fi network will restart, and clients need to reconnect to the W-Fi network. Therefore, exercise caution when performing this operation.

4.16.2 Getting Started

Install Wi-Fi Moho or other Wi-Fi scanning app on the mobile phone and check interference analysis results to find out the best channel.



4.16.3 Configuring Global Radio Settings

If a message in the following figure is displayed, some device-specific radio configuration has been made on Ruijie Cloud. To manage the device-specific radio configuration, click **Go to Ruijie Cloud**.



1. Optimizing the Channel Width

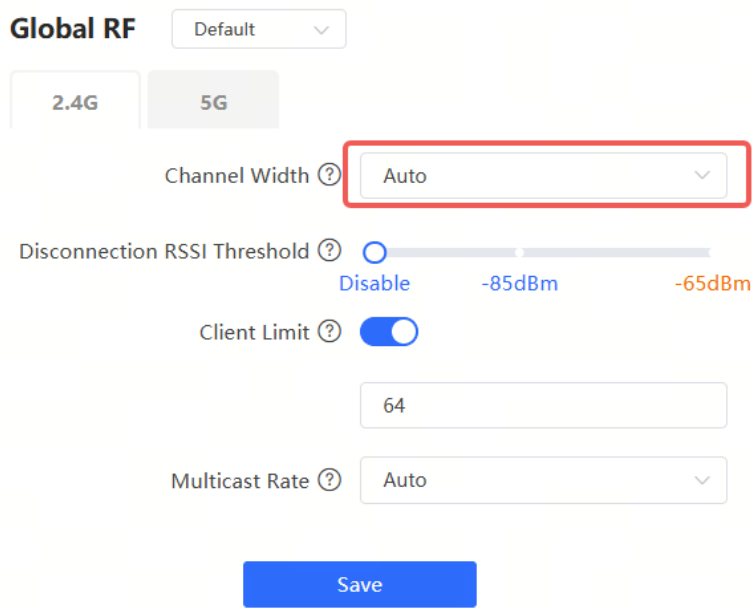
Choose **Network-Wide** > **Workspace > Wireless > Radio Setting**.

A network using a narrower channel width tends to be more stable, whereas a network with a wider channel width is more susceptible to interference. In cases of severe interference, using a narrower channel width can mitigate network disruptions to some extent. The access point supports the following channel widths: 20 MHz and 40 MHz in the 2.4 GHz band, and 20 MHz, 40 MHz, 80 MHz, 160 MHz in the 5 GHz band.

The default value is **Auto**, indicating that the channel width is automatically selected based on the environment. After changing the channel width, click **Save** to make the configuration take effect immediately.

Caution

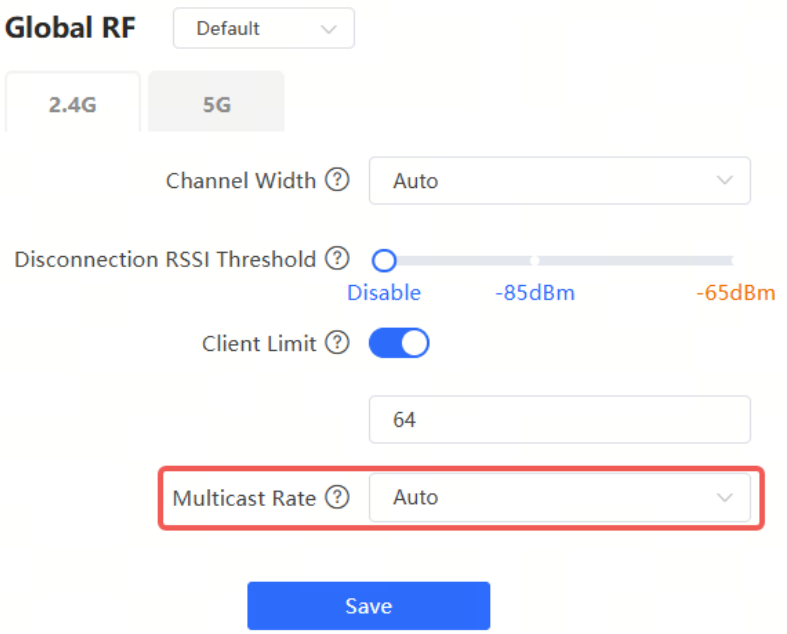
In the self-organizing network mode, the channel width settings will be synchronized to all devices in the network.



2. Configuring the Multicast Rate

Choose **Network-Wide** > **Workspace > Wireless > Radio Setting**.

If the multicast rate is too high, the packet loss rate of multicast packets may increase. If the multicast rate is too low, the radio interface may become busy. When network stalling is serious, you are advised to configure a high multicast rate. When network stalling is minor, configure a medium multicast rate. After adjusting the configuration, click **Save**.

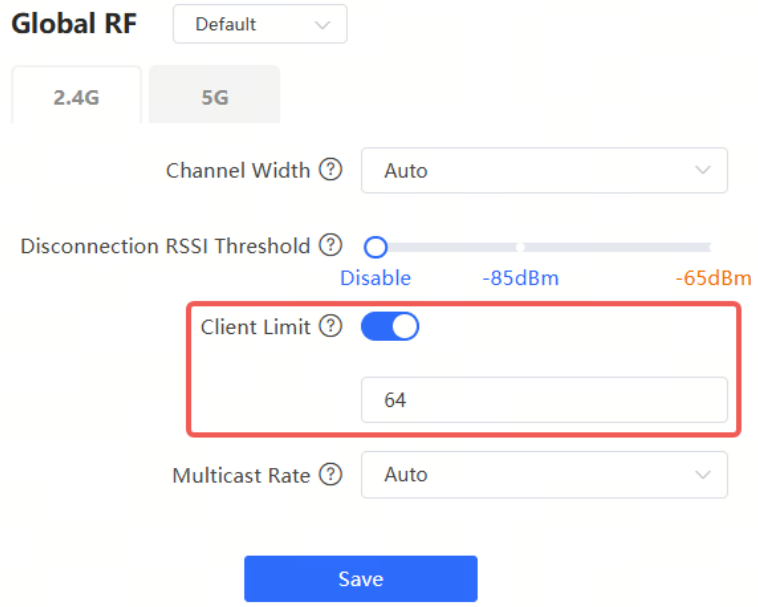


3. Configuring the Client Limit

Choose **Network-Wide** > **Workspace > Wireless > Radio Setting**.

If the access point is associated with too many clients, it will have a lower performance, affecting user experience. After you configure the threshold, new clients over the threshold will not be allowed to access the Wi-Fi network. You can lower the threshold if there is requirement for bandwidth per client. The **Client Limit** toggle switch is disabled by default. If there is no need to set a client limit, please keep the default setting.

You can toggle on the **Client Limit** toggle switch to set a client limit, and then click **Save**.



Note

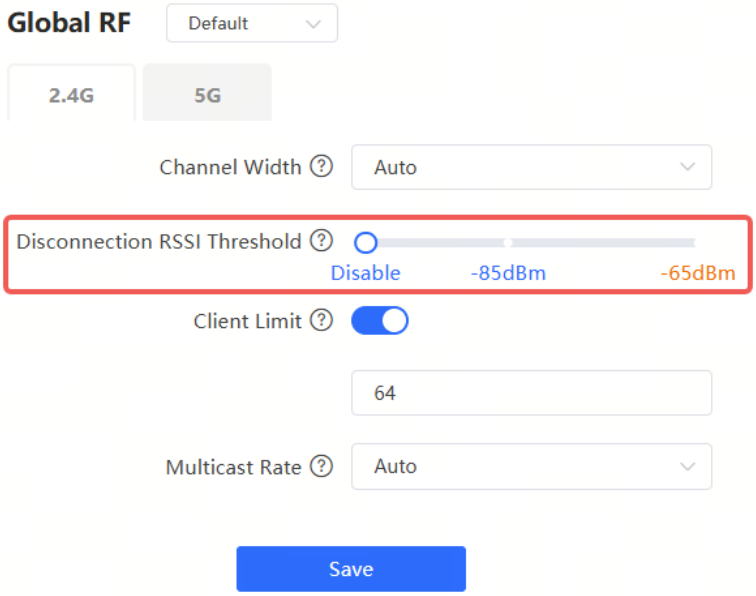
The **Client Limit** refers to the maximum number of clients that can connect to a single AP on the configured band.

4. Configuring the Kick-off Threshold

Choose **Network-Wide** > **Workspace > Wireless > Radio Setting**.

In the case of multiple Wi-Fi signals, setting the kick-off threshold can improve the wireless signal quality to a certain extent. The farther the client is away from the access point, the lower the signal strength is. If the signal is lower than the kick-off threshold, the Wi-Fi will be disconnected, and the client will be forced offline and select a nearer Wi-Fi signal.

However, the higher the kick-off threshold is, the easier it is for the client to be kicked offline. To ensure normal Internet access, you are advised to disable the kick-off threshold or set the value to less than -75dBm. After adjusting the configuration, click **Save**.



Caution

In the self-organizing network mode, the kick-off threshold settings will be synchronized to all devices in the network.

4.16.4 Configuring Standalone Radio Settings

Go to the configuration page.

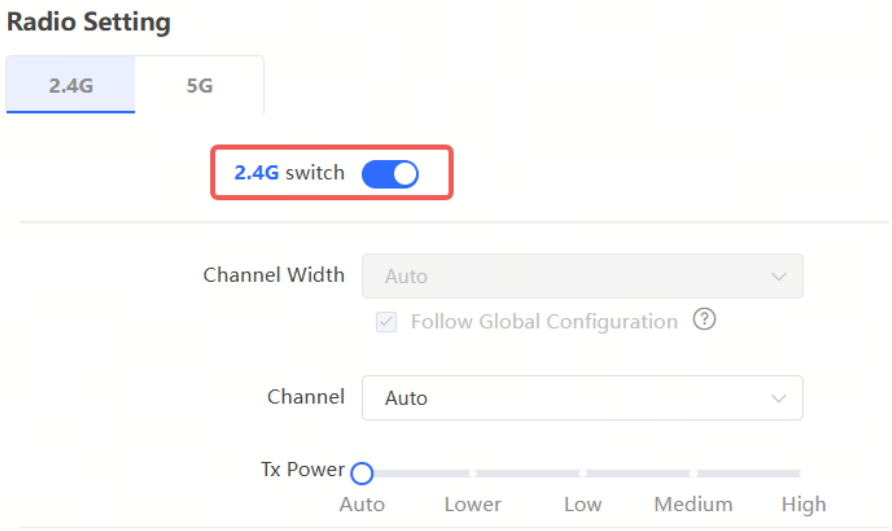
- Method 1: Choose **One-Device** > **Config** > **WLAN** > **Radio Setting**.
- Method 2: Choose **Network-Wide** > **Devices**> **Manage** > **Config** > **WLAN** > **Radio Setting**.

In high-density client environments, you can fine-tune radio settings to alleviate radio frequency interference resulting from too many access points in close proximity. This include disabling the radio of neighboring APs that

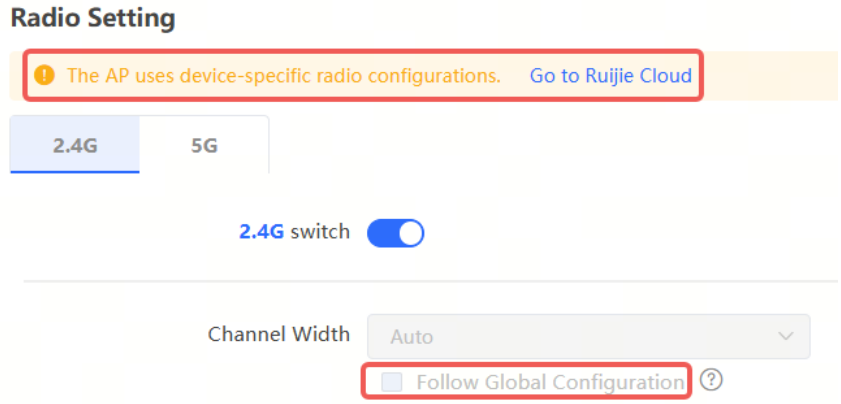
are causing significant interference, aiming to minimize signal conflicts and enhance the overall quality and stability of wireless communication.

In environments like conference rooms, offices, and smart homes, disabling the 2.4GHz radio of specific APs can enhance the performance of wireless devices such as mice, keyboards, Bluetooth and Zigbee devices when they experience signal interference or operational lag.

The **Radio Switch** is enabled by default, and can be disabled as required.



If a message in the following figure is displayed and the radio configuration is not applied to all devices, the device-specific radio configuration has been made on Ruijie Cloud. To manage the device-specific radio configuration, click **Go to Ruijie Cloud**.



1. Optimizing the Radio Channel

- Method 1: Choose **One-Device** > **Config** > **WLAN** > **Radio Setting**.
- Method 2: Choose **Network-Wide** > **Devices** > **Manage** > **Config** > **WLAN** > **Radio Setting**.

Choose the best channel identified by Wi-Fi Moho or other Wi-Fi scanning App. Click **Save** to make the configuration take effect immediately. The more devices in a channel, the greater the interference.

Note

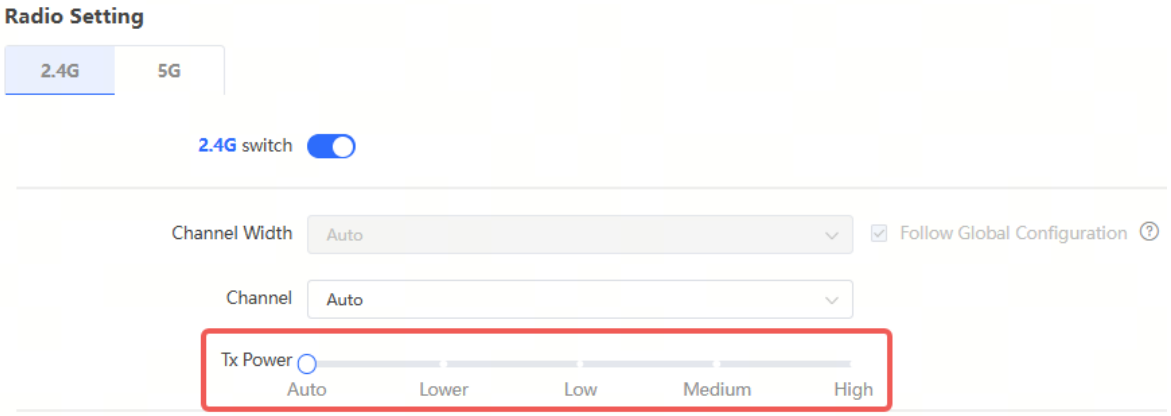
The available channel is related to the country or region code. Select the local country or region.



2. Optimizing the Transmit Power

- Method 1: Choose **One-Device** > **Config** > **WLAN** > **Radio Setting**.
- Method 2: Choose **Network-Wide** > **Devices** > **Manage** > **Config** > **WLAN** > **Radio Setting**.

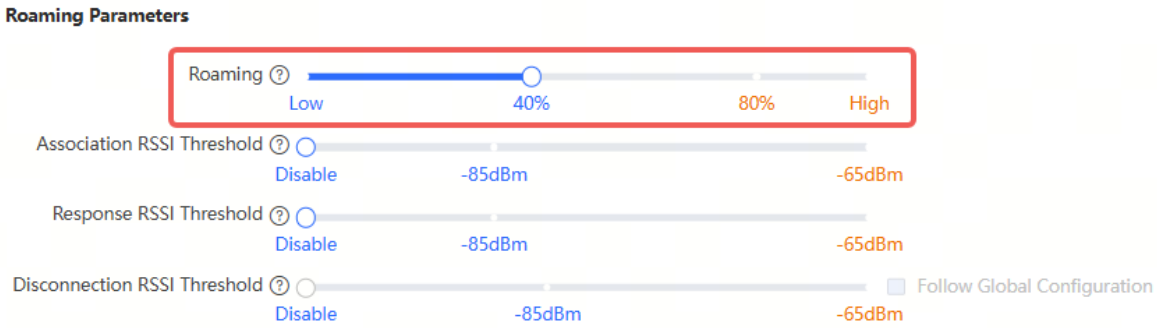
A greater transmit power indicates a larger coverage and brings stronger interference to surrounding wireless routers. In a high-density scenario, you are advised to set the transmit power to a small value. The **Auto** mode is recommended, indicating automatic adjustment of the transmit power. After adjusting the configuration, click **Save**.



3. Configuring the Roaming Sensitivity

- Method 1: Choose **One-Device** > **Config** > **WLAN** > **Radio Setting**.
- Method 2: Choose **Network-Wide** > **Devices** > **Manage** > **Config** > **WLAN** > **Radio Setting**.

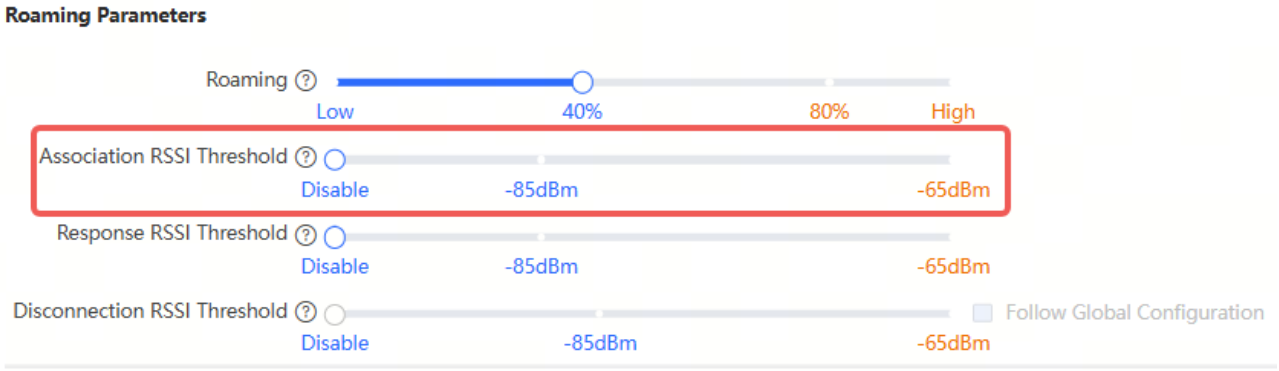
The roaming sensitivity enables the device to actively disconnect a client from the Wi-Fi network when the client is far away, forcing the client to re-select the nearest signal and thus improving the sensitivity of wireless roaming. Higher the roaming sensitivity level, smaller the wireless signal coverage. To improve the signal quality for a client moving within more than one Wi-Fi coverage, improve the roaming sensitivity level. You are advised to keep the default settings. After adjusting the configuration, click **Save**.



4. Configuring Access Threshold

- Method 1: Choose **One-Device** > **Config** > **WLAN** > **Radio Setting**.
- Method 2: Choose **Network-Wide** > **Devices** > **Manage** > **Config** > **WLAN** > **Radio Setting**.

When the wireless signal of the end user is lower than the access threshold set on the device, the client cannot detect the wireless signal of the device. After adjusting the configuration, click **Save**.



5. Configuring Response RSSI Threshold

- Method 1: Choose **One-Device** > **Config** > **WLAN** > **Radio Setting**.
- Method 2: Choose **Network-Wide** > **Devices** > **Manage** > **Config** > **WLAN** > **Radio Setting**.

When the wireless signal of the end user is lower than the response RSSI threshold configured on the device, the client cannot detect the wireless signal of the device. The smaller the response RSSI threshold is configured, the less the environmental factors interfere with the AP. However, the connection of the client may be affected. After adjusting the configuration, click **Save**.



6. Viewing Maximum EIRP

Caution

The maximum EIRP can only be viewed when the country/region code is set to Egypt or Indonesia.

(1) Set **Country/Region** to **Egypt (EG)** or **Indonesia (ID)**.

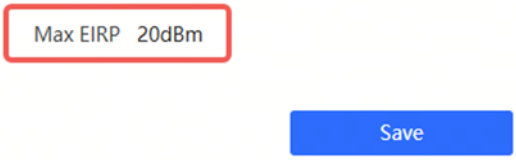
Choose **Network-Wide** > **Workspace** > **Wireless** > **Radio Setting**.



(2) View the maximum EIRP for each radio.

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **WLAN** > **Radio Setting**.
- Method 2: Choose **Network-Wide** > **Devices** > **Manage** > **Config** > **WLAN** > **Radio Setting**.



4.16.5 Configuring WIO

If a message in the following figure is displayed, some Wi-Fi networks that are active on Wi-Fi groups or specified devices have been configured on Ruijie Cloud. To manage Wi-Fi configurations that are not applied to all devices, go to Ruijie Cloud.



Choose **Network-Wide** > **Workspace** > **WLAN Optimization**.

Select the optimization mode. Then, click **OK** to optimize the wireless network.

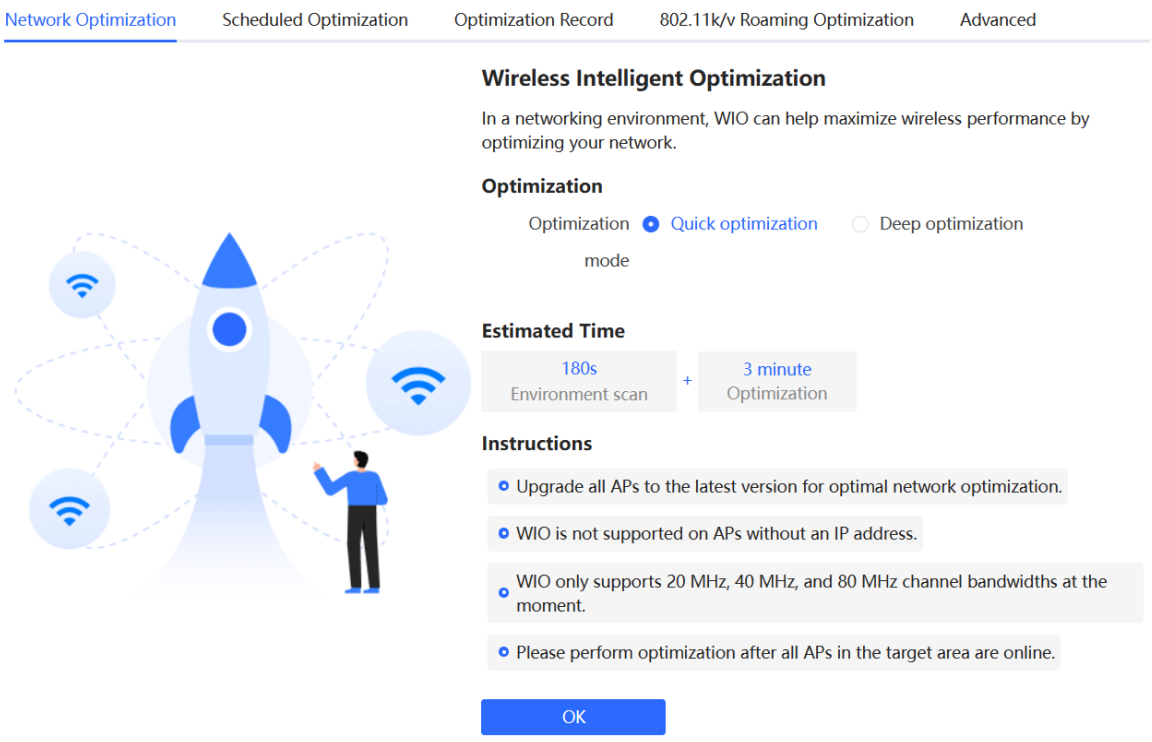
Caution

- WIO is supported only in the self-organizing network mode.
- The client may be offline during the optimization process. The configuration cannot be rolled back once optimization starts. Therefore, exercise caution when performing this operation.

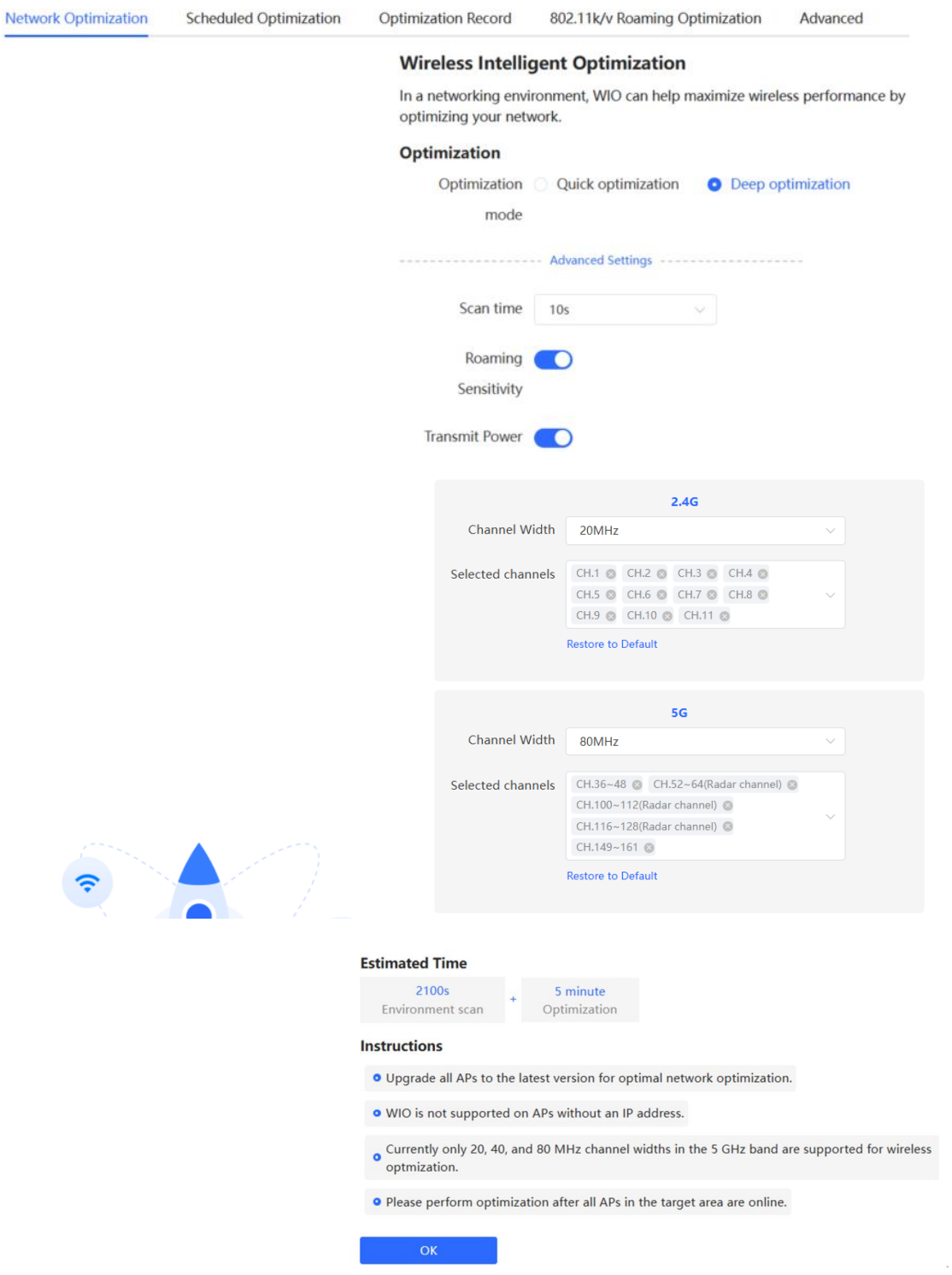
Table 4-2 Tuning Mode Configuration Parameters

Parameter	Description
Quick optimization	In this mode, external interference and bandwidth are not considered. A quick optimization is performed to optimize channel, power, and management frame power.
Deep optimization	In this mode, external interference and bandwidth are considered. A deep optimization is performed to optimize channel, power, and management frame power. Click to expand **Advanced Settings** to configure the scanning time, channel bandwidth and channels. ● Scanning time: Indicates the time for scanning channels during the optimization. ● Roaming Sensitivity: The roam sensitivity can be optimized based on the actual environment to ensure fast roaming of wireless devices. ● Transmit power: Increasing the transmit power enhances both the strength and coverage of the wireless signal, but it may also introduce interference to surrounding wireless networks. With this feature enabled, the AP will automatically adjust the transmit power based on the environment. ● 2.4G ○ Channel bandwidth: Indicates the channel bandwidth. The channel bandwidth will be calculated by the system if Default is selected. ○ Selected channels: Indicates the channels to be optimized. ● 5G ○ Channel bandwidth: Indicates the channel bandwidth. The channel bandwidth will be calculated by the system if Default is selected. ○ Selected channels: Indicates the channels to be optimized.

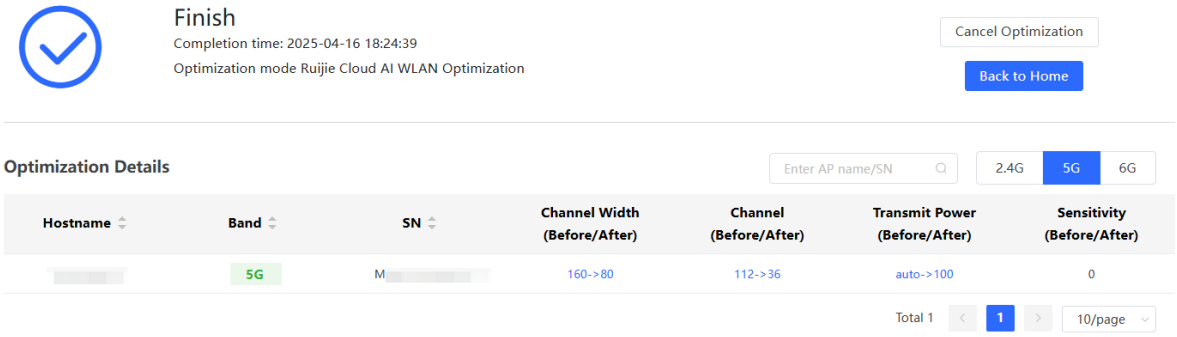
- Choose **Quick optimization**, and click **OK**.



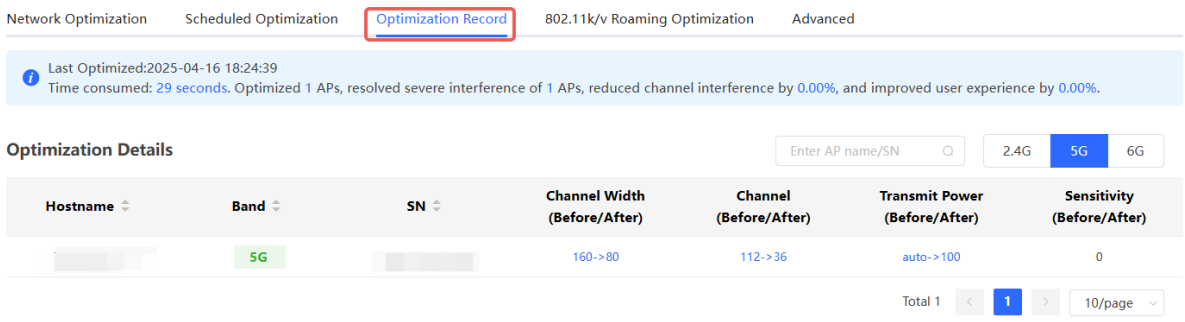
- Choose **Deep optimization**. Click to expand **Advanced Settings** to set the scanning time, channel bandwidth and selected channels. Then, click **OK**.



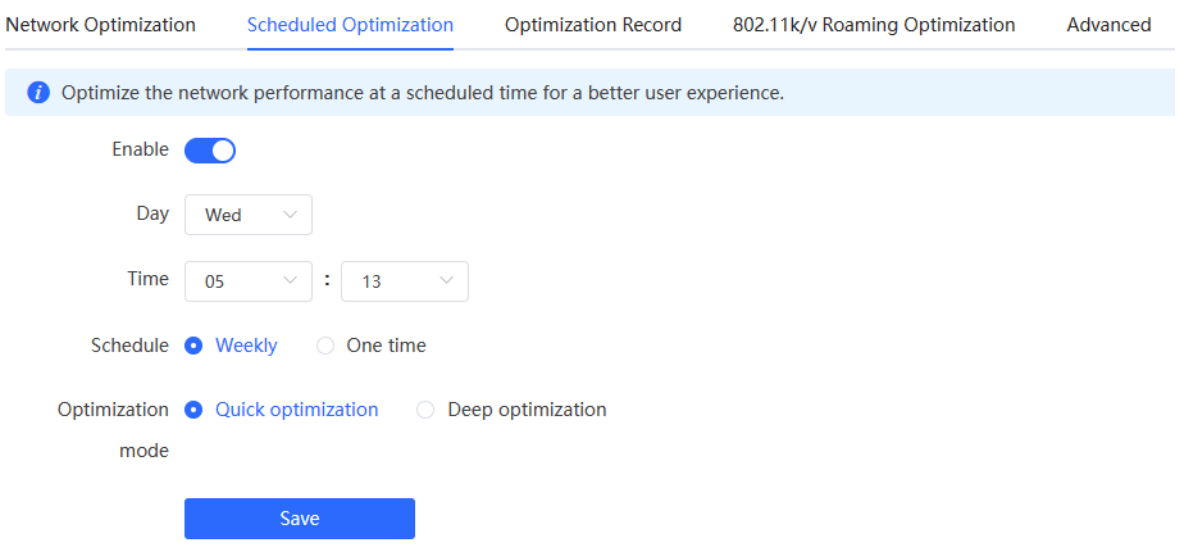
After the optimization starts, please be patient and wait for the optimization to complete. After optimization is completed, you can click **Cancel Optimization** to restore the optimized RF parameters to their default values. Click **Back to Home** to perform wireless optimization again.



Click **Optimization Record** to view the details of the latest optimization.



You are advised to set a scheduled task to optimize the wireless network in the early hours of the morning or when the network is idle.



4.16.6 Configuring Wi-Fi Roaming Optimization (802.11k/v)

Choose **Network-Wide** > **Workspace** > **WLAN Optimization** > **802.11k/v Roaming Optimization**.

Choose the optimization mode. Click **Enable** and the Wi-Fi roaming is further optimized through the 802.11k/v protocol. Smart clients compliant with 802.11k/v can switch to the APs with better signal and faster speed during the roaming process, ensuring high-speed wireless connectivity. To ensure smart roaming effect, the WLAN environment will be auto scanned when Wi-Fi roaming optimization is first enabled.

Caution

- WIO is supported only in the self-organizing network mode.
- During the WLAN environment scanning, the APs will switch channels, forcing the clients to go offline. The process will last for 2 minutes.

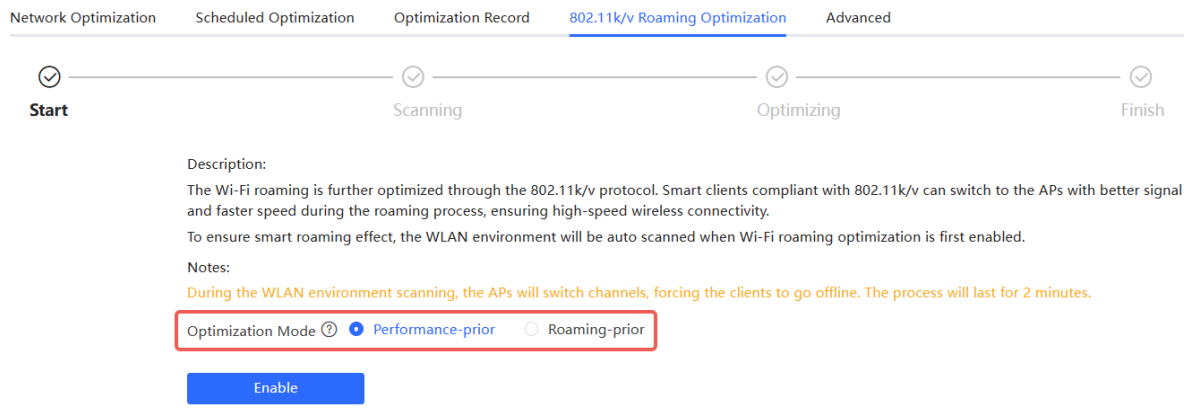
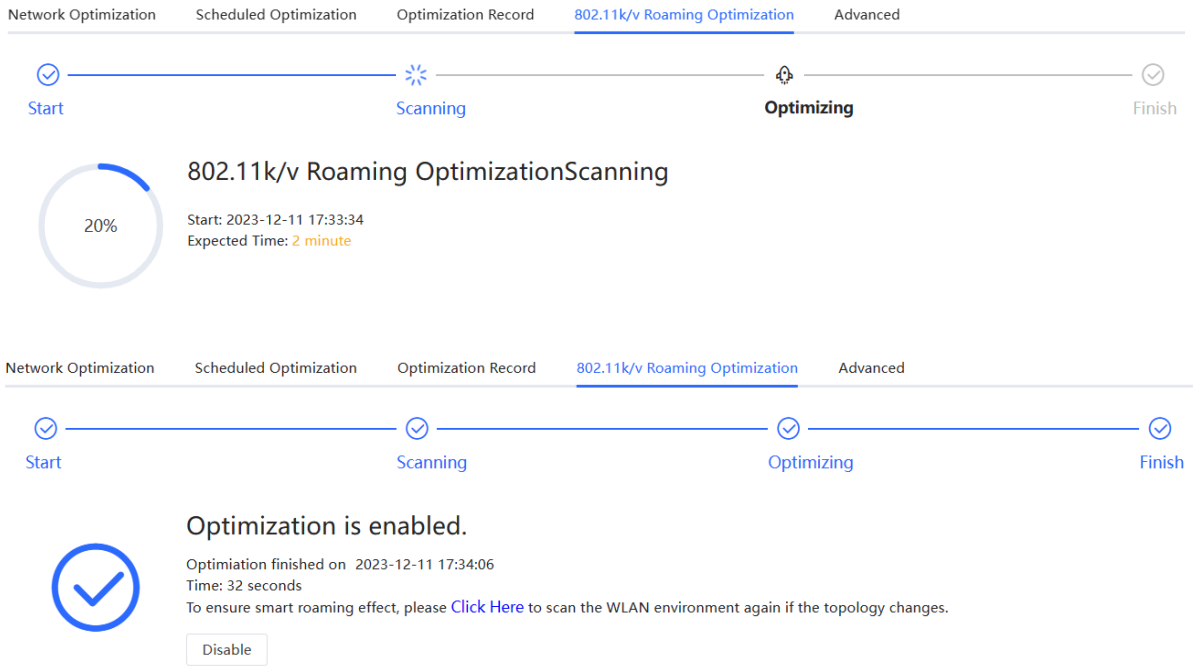


Table 4-3 Optimization Mode

Parameter	Description
Performance-prior	Maximum negotiation speed is preferentially guaranteed but connection stability may be affected.
Roaming-prior	Connection stability is preferentially guaranteed but maximum negotiation speed may be reduced.



4.17 Configuring IGMP Snooping

4.17.1 Overview

1. IGMP Snooping

IGMP Snooping technology listens to IGMP packets exchanged between devices and clients to establish a relationship between multicast traffic and clients, creating corresponding multicast group table entries. This technology can convert multicast packets sent by the AP into unicast packets, thereby improving transmission speed and reducing air interface channel utilization.

Air interface: The pathway through which wireless devices transmit data.

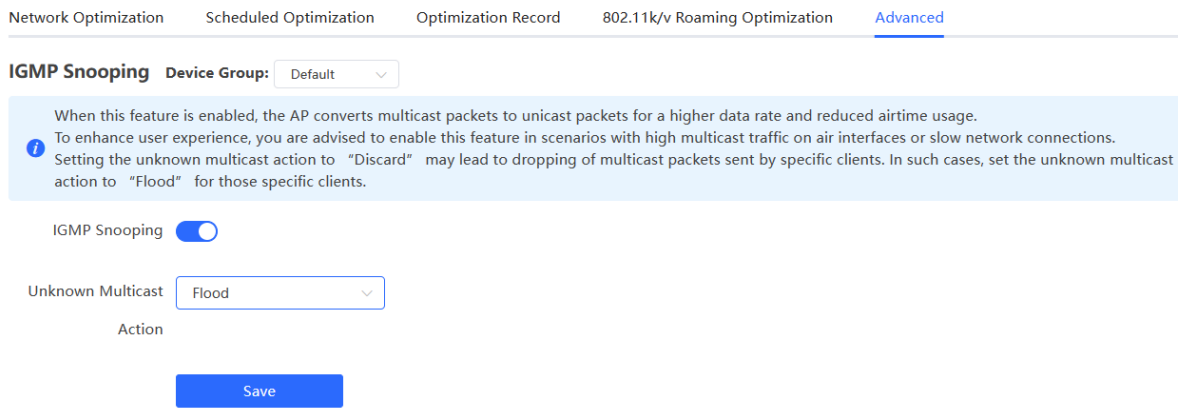
2. Unknown Multicast Packet

An unknown multicast packet refers to a multicast data packet transmitted across the network with a destination address that has not yet been mapped to a corresponding IGMP table entry in the AP.

4.17.2 Configuration Steps

Choose **Network-Wide** > **Workspace** > **WLAN Optimization** > **Advanced Settings**.

Enable **IGMP Snooping**, select the action for unknown multicast packets, and click **Save**.



Caution

- You are advised to enable this function when a large number of multicast packets are transmitted and the network is congested to improve the user experience.
- If you set the action for unknown multicast packets to **Discard**, multicast packets sent by certain clients may be discarded. Therefore, exercise caution when performing this configuration.

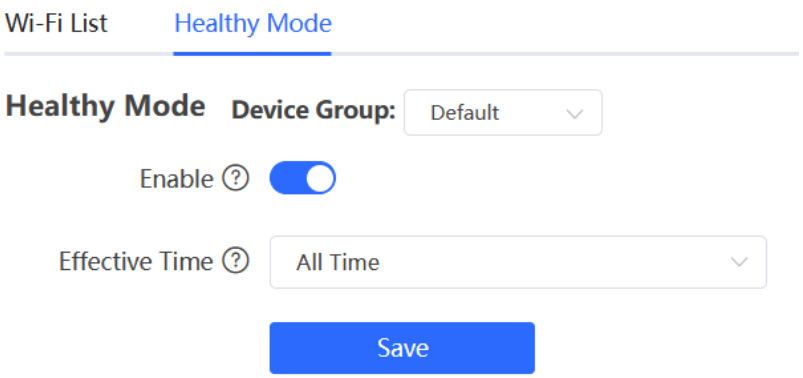
4.18 Configuring Healthy Mode

Go to the configuration page:

- Method 1: **Choose Network-Wide > Workspace > Wireless > Wi-Fi** > **Healthy Mode**.
- Method 2: Choose **One-Device** > **Config** > **WLAN** > **Wi-Fi** > **Healthy Mode**.

Select **Device Group** from the drop-down list box. Click **Enable** to enable the healthy mode. You are allowed to set the effective time period for the healthy mode.

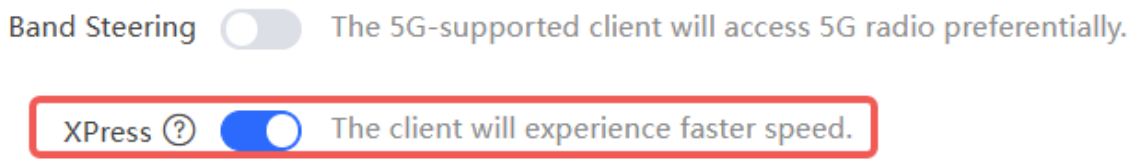
After the healthy mode is enabled, the transmit power and the Wi-Fi coverage area will decrease. The healthy mode may reduce signal strength and cause network stalling. You are advised to disable it or enable it when the network is idle.



4.19 Configuring XPress

(1) Go to the page for configuration: Choose **Network-Wide > Workspace > Wireless > Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

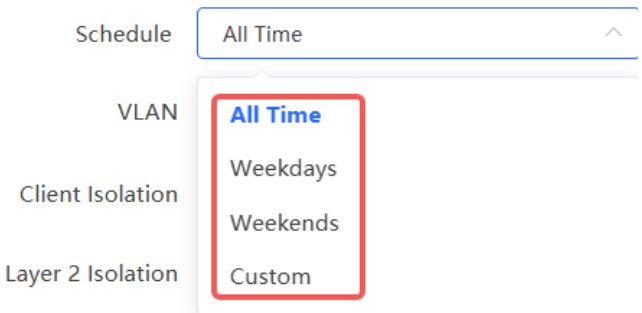
(2) Click to expand advanced settings, turn on **XPress** in the expanded settings and click **OK**. After XPress is enabled, the gaming traffic will be prioritized, ensuring a more stable gaming experience.



4.20 Configuring Wireless Schedule

(1) Go to the page for configuration: Choose **Network-Wide > Workspace > Wireless > Wi-Fi** > **Wi-Fi List**. Select the Wi-Fi network, and click **Edit**.

(2) Click to expand advanced settings, select a scheduled time span to turn on Wi-Fi and click **OK**. Clients will be allowed to access the Internet only in the specified time span.

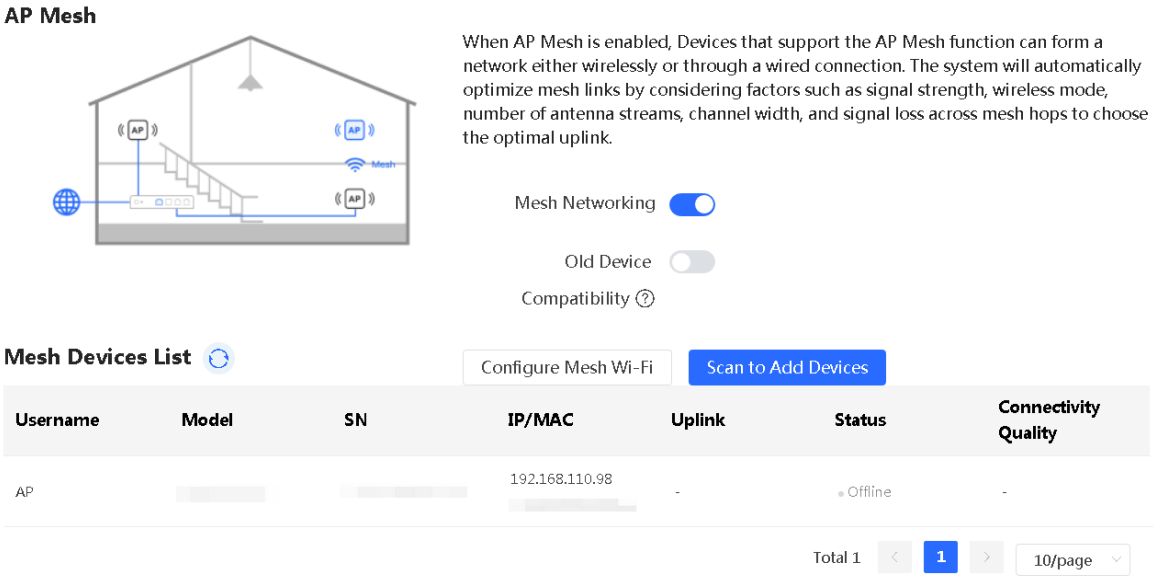


4.21 Enabling AP Mesh

Choose **Network-Wide** > **Workspace** > **Wireless > AP Mesh**.

After AP Mesh is enabled, you can set up a Mesh network through Mesh pairing between the devices that support AP Mesh. You can press the **Mesh** button on the device to automatically discover a new device for Mesh pairing or log in to the management page to select a new device for Mesh pairing. AP Mesh is enabled on the device by default.

Old Device Compatibility: If there are devices running software versions older than OS 2.320 in the environment to form a Mesh network, you are advised to enable **Old Device Compatibility**. When this feature is enabled, devices with software versions prior to OS 2.320 can join the mesh network through the fixed Mesh Wi-Fi network.



1. Configuring Mesh Wi-Fi

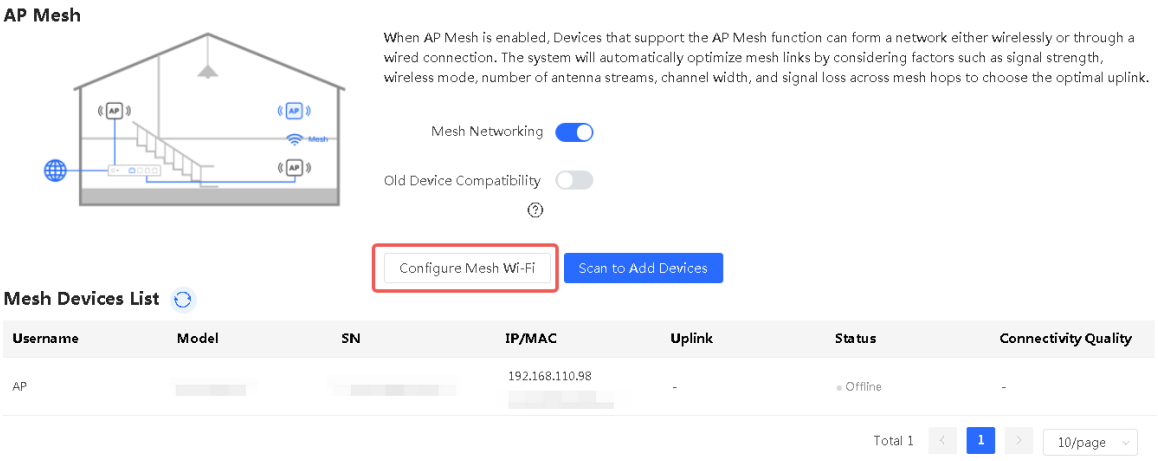
Specification

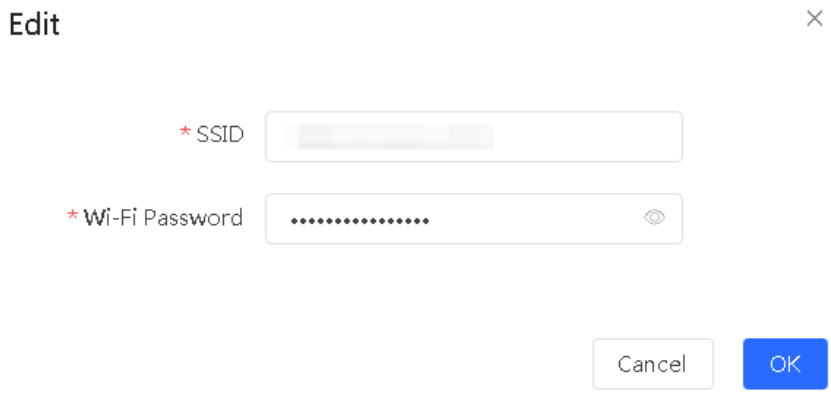
Devices running OS 2.320 or later can be paired through the configured Mesh Wi-Fi network.

(1) Click **Configure Mesh Wi-Fi**, modify the SSID and Wi-Fi password, and click **OK**.

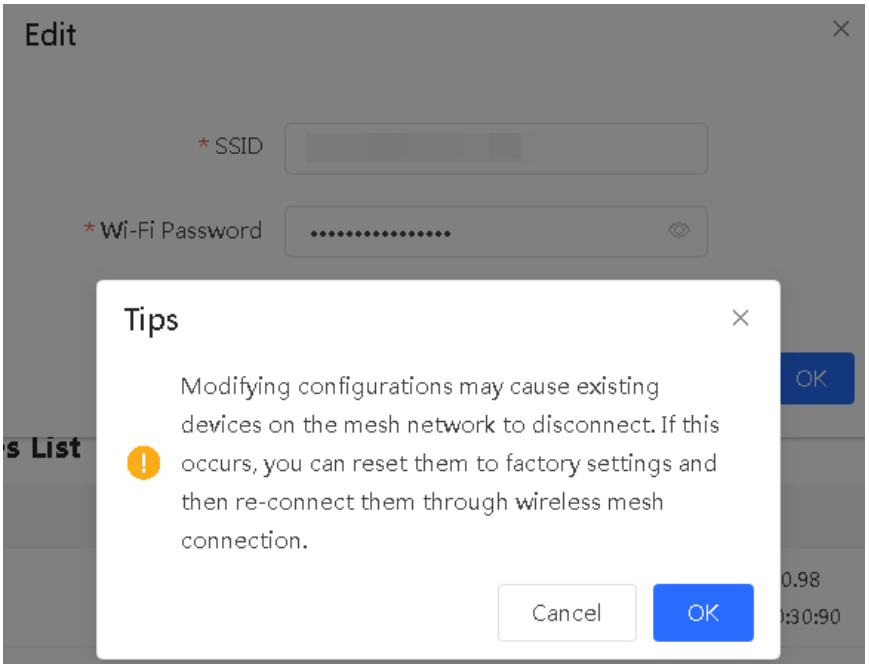
Note

Modifying the Mesh Wi-Fi configuration may lead to disconnections of paired devices, which will need to be reset to factory settings and re-paired.



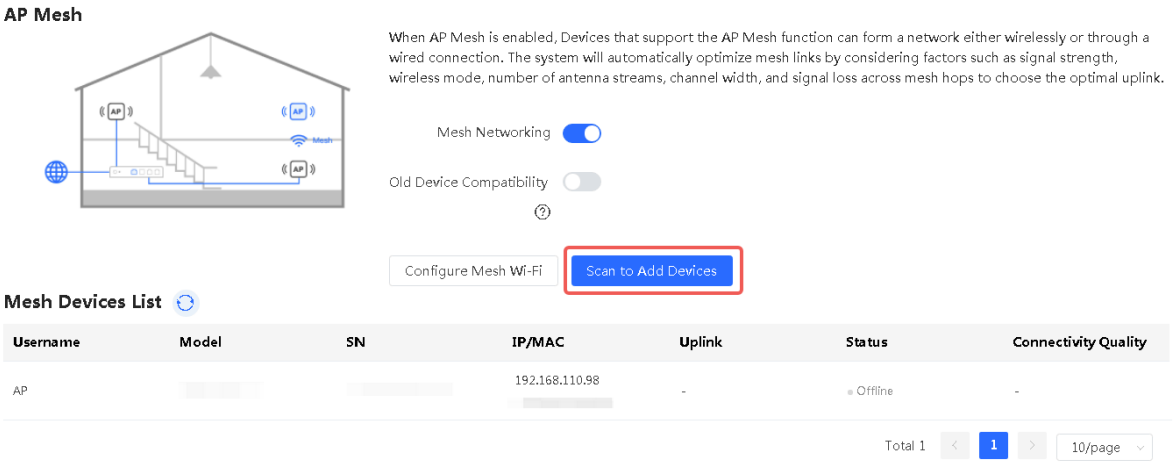


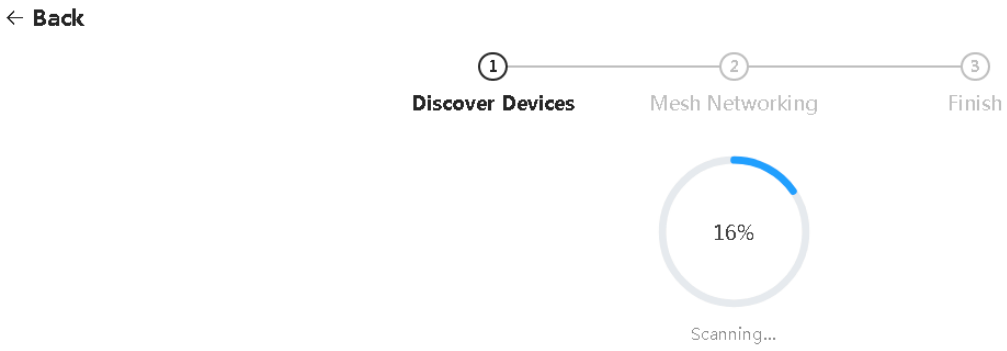
(2) Click **OK** in the pop-up window.



2. Add Mesh Devices

(1) Click **Scan to Add Devices** to scan for nearby APs that are not on the network and are not connected via an Ethernet cable.

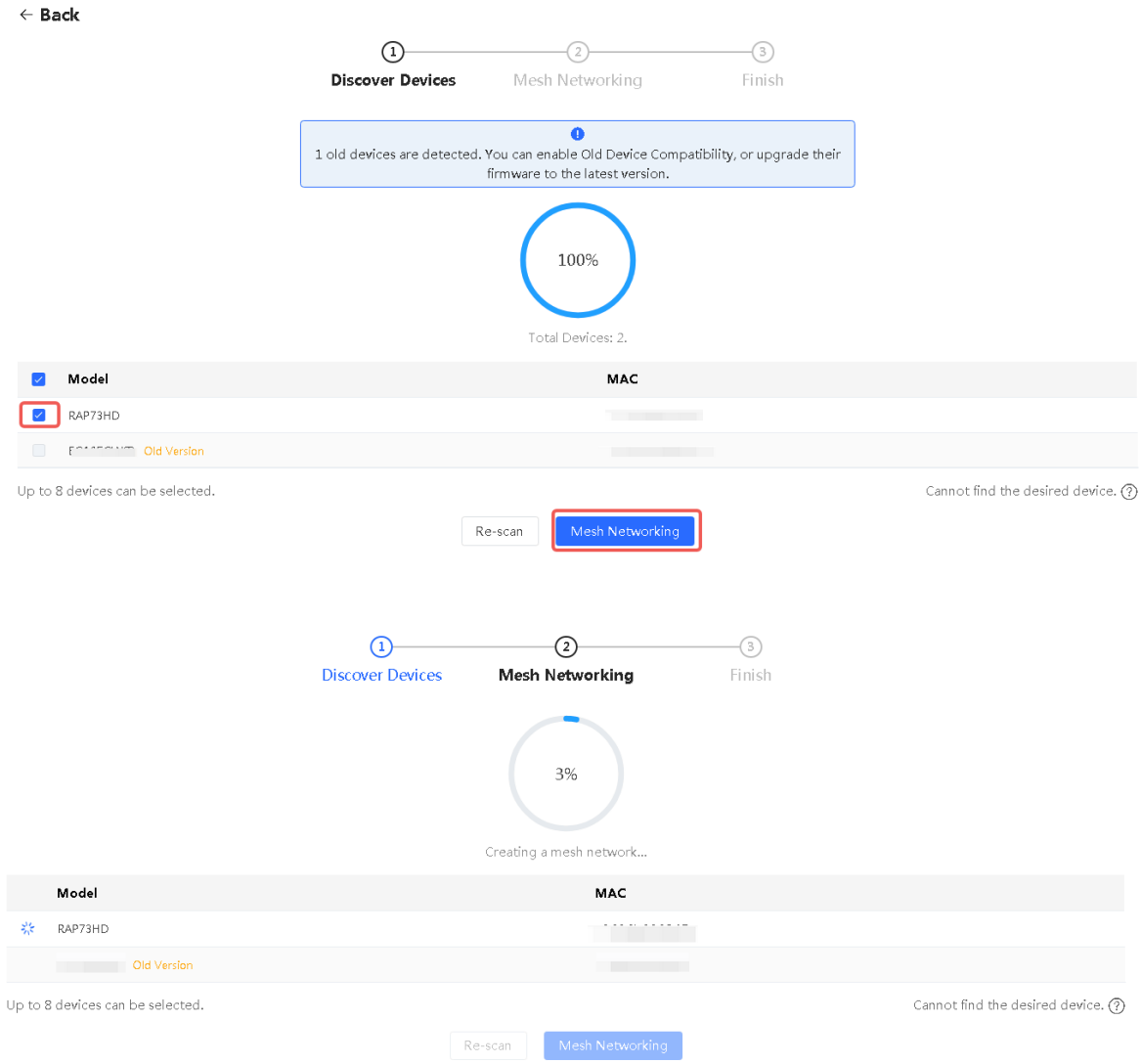




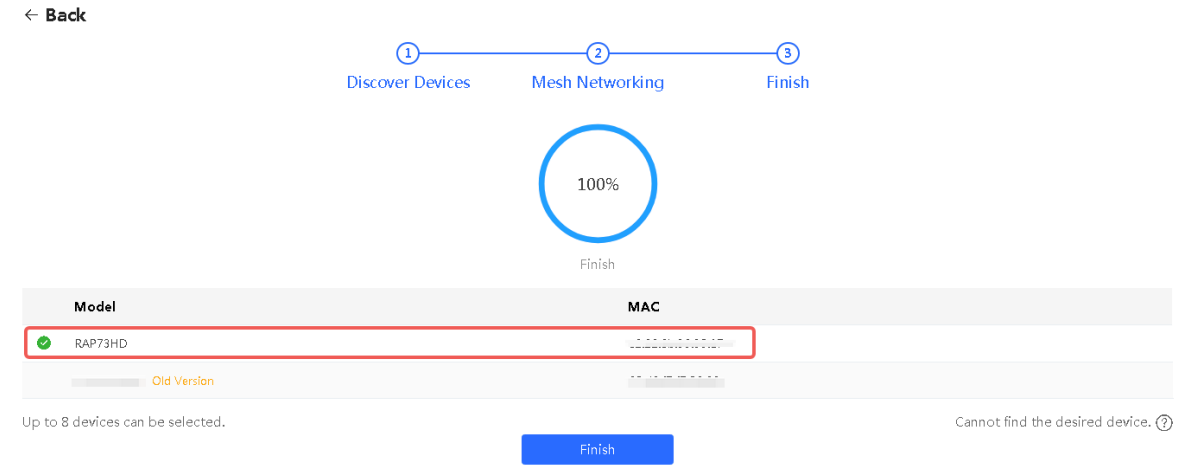
(2) Select the desired APs (up to eight APs can be selected at a time), then click **Mesh Networking**. Wait for the mesh process to complete.

Note

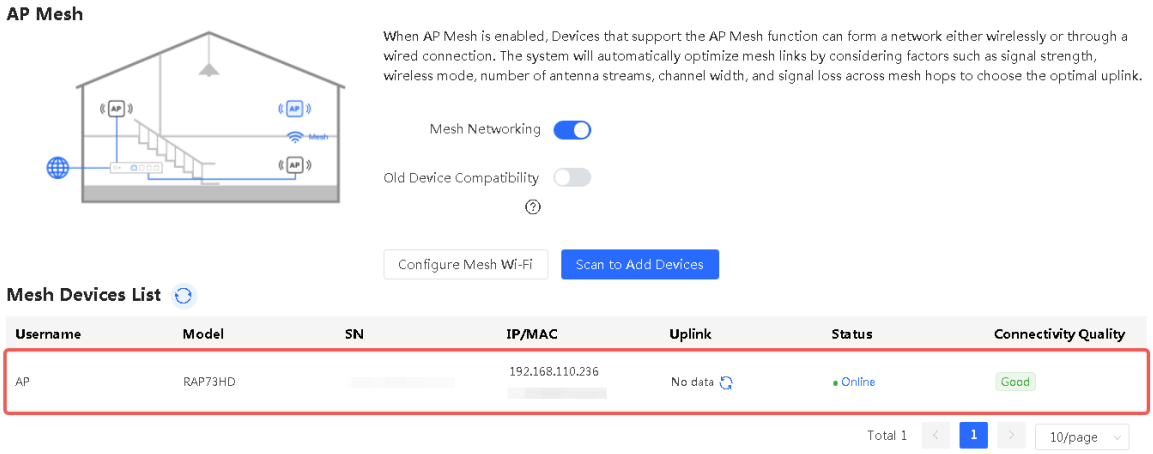
If devices with a software version older than OS 2.320 are detected, you can toggle on **Old Device Compatibility** or upgrade the device's software version to OS 2.320 or later for Mesh networking.



(3) Once the mesh networking process is complete, click **Finish** to return to the main interface.



(4) View the list of devices successfully joining the Mesh network.



4.22 Domain Proxy

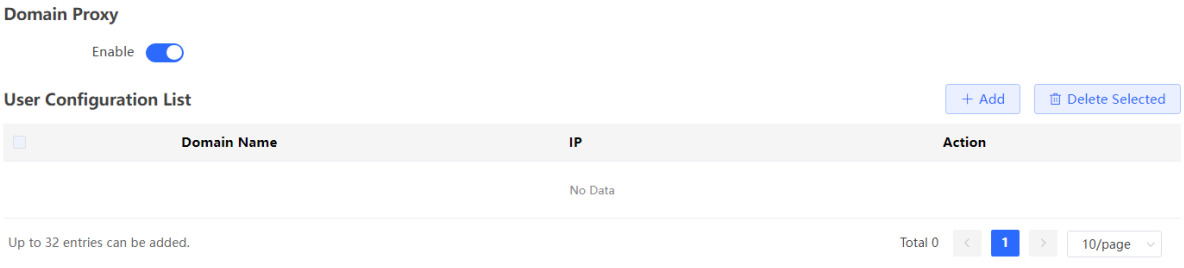
Go to the configuration page:

- Method 1: Choose **Network-Wide** > **Workspace** > **Wireless** > **Domain Proxy**.
- Method 2: Choose **One-Device** > **Config** > **WLAN** > **Domain Proxy**.

> **Note**
>
> The method 2 is supported only when the AP is the master device.

When a client accesses a Wi-Fi network, the message "No Internet connection" or "The Wi-Fi is not connected to the Internet" may be displayed. The possible cause is that the client's operating system introduces an Internet detection mechanism. Generally, the detection mechanism sends a probe packet to a specified domain name and evaluates whether the wireless network can access the Internet based on the detection result. If the DNS server takes a long time to parse a domain name or returns a probe node with a long delay, the probe may be deemed unreachable, causing a false network unavailability.

After the **Domain Proxy** function is enabled, the device returns the preset domain name node to the client, reducing the misjudgment of network unavailability of the client.



Click **+Add**, enter the preset domain name and IP address, and click **OK**.



4.23 Client Association

4.23.1 Configuring Intelligent Association

Go to the configuration page by choosing **Network-Wide > Workspace** > **Wireless** > **Client Association** > **Intelligent Association**.

After certain smart home devices are associated with a remote AP, they are unable to re-associate with a nearby AP, resulting in poor user experience and significant delays.

With the Intelligent Association feature enabled, clients can dynamically select the access point for association, eliminating issues related to poor user experience caused by remote associations.

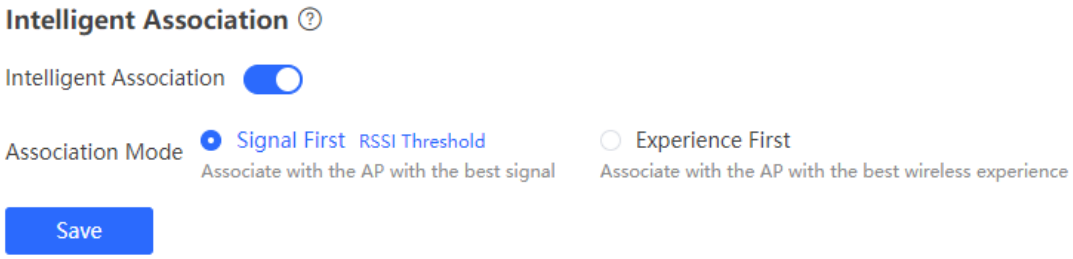
Toggle on the **Intelligent Association** switch, select the association mode, and click **Save**.

- Signal First

  Associate with the AP that broadcasts strongest signal.

- Experience First

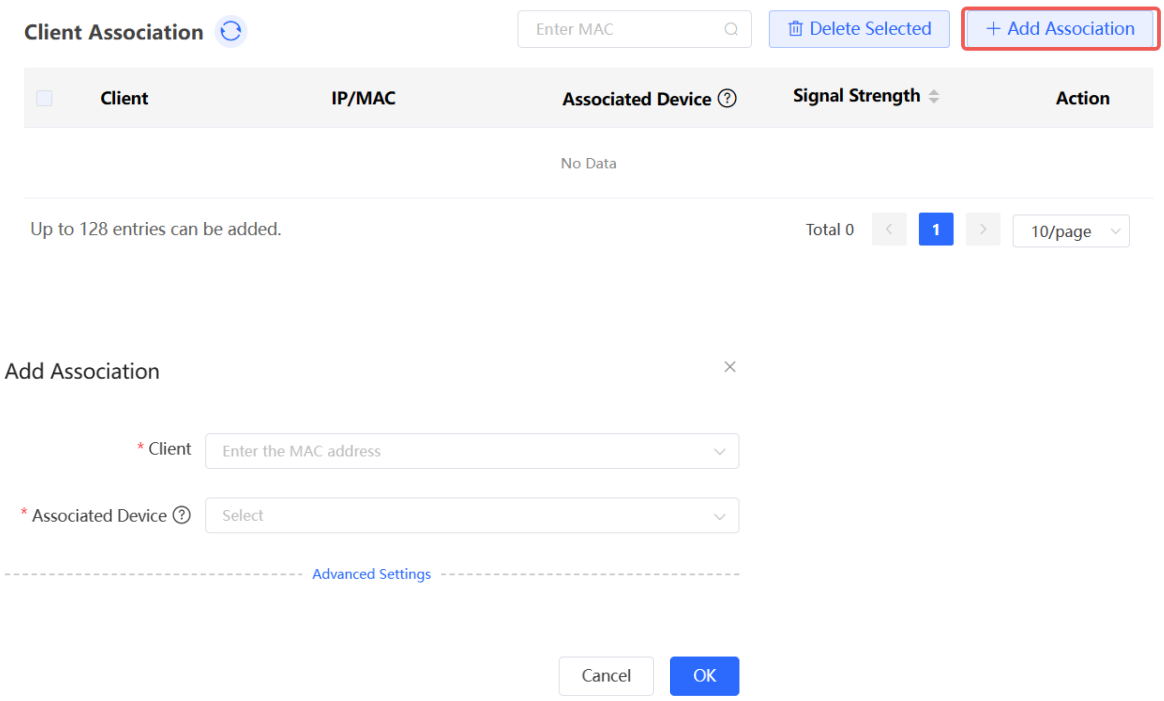
  Associate with the AP that delivers a better wireless experience.



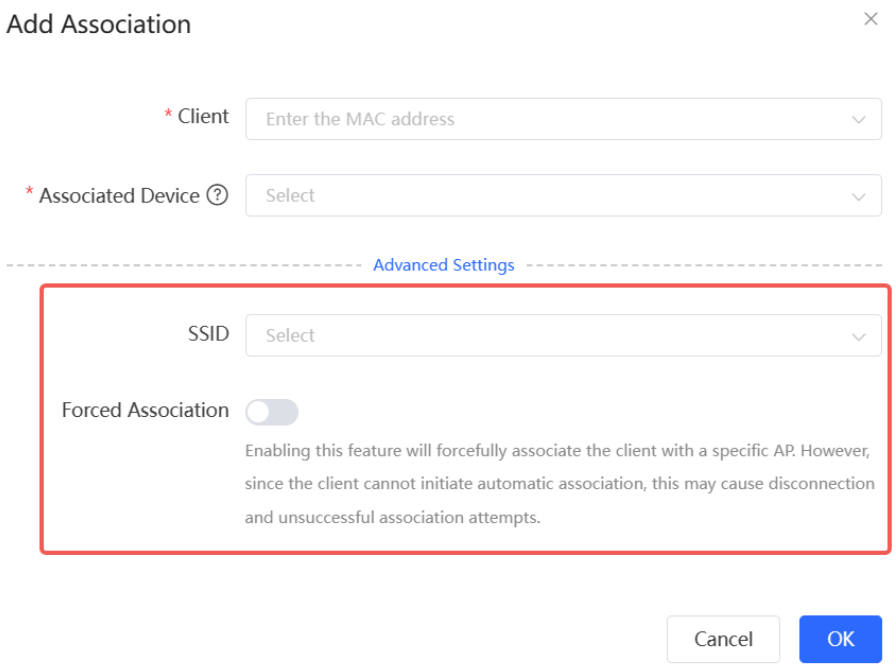
4.23.2 Configuring Client Association

Choose **Network-Wide** > **Workspace** > **Wireless** > **Client Association** > **Client Association**.

Click **Add Association**. Select the client and the associated device. You can associate the client with a specified AP on the network to reduce remote association and improve the wireless experience.



Click **Advanced Settings** to configure the SSID for client association and to enable **Forced Association**.



Caution

The **Forced Association** feature may cause the client to go offline or fail to associate with the AP. Therefore, exercise caution when performing this configuration.

4.24 Configuring AP Load Balancing

4.24.1 Overview

The AP load balancing function is used to balance the load of APs in the wireless network. When APs are added to a load balancing group, clients will automatically associate with the APs with light load when the APs in the group are not load balanced. AP load balancing supports two modes:

- Client Load Balancing: The load is balanced according to the number of associated clients. When a large number of clients have been associated with an AP and the count difference to the AP with the lightest load has reached the specified value, the client can only associate with another AP in the group.
- Traffic Load Balancing: The load is balanced according to the traffic on the APs. When the traffic on an AP is large and the traffic difference to the AP with the lightest load has reached the specified value, the client can only associate with another AP in the group.

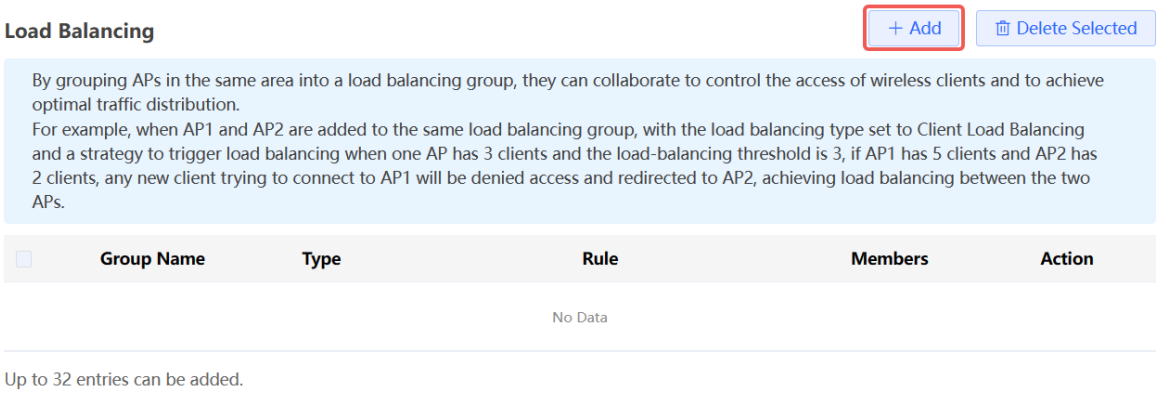
Example: Add AP1 and AP2 into a group and select client load balancing. Set both the client count threshold and difference to 3. AP1 is associated with 5 clients and AP2 is associated with 2 clients, triggering load balancing. New clients' attempt to associate to AP1 will be denied, and therefore they can associate only with AP2.

After a client request is denied by an AP and it fails to associate with another AP in the group, the client will keep trying to associate with this AP. If the client attempts reach the specified value, the AP will permit connection of this client, ensuring that the user can normally access the Internet.

4.24.2 Configuring Client Load Balancing

Choose **Network-Wide** > **Workspace > Wireless** > **Load Balancing**.

Click **Add**. In the dialog box that appears, set **Type** to **Client Load Balancing**, and configure **Group Name**, **Members**, and **Rule**.



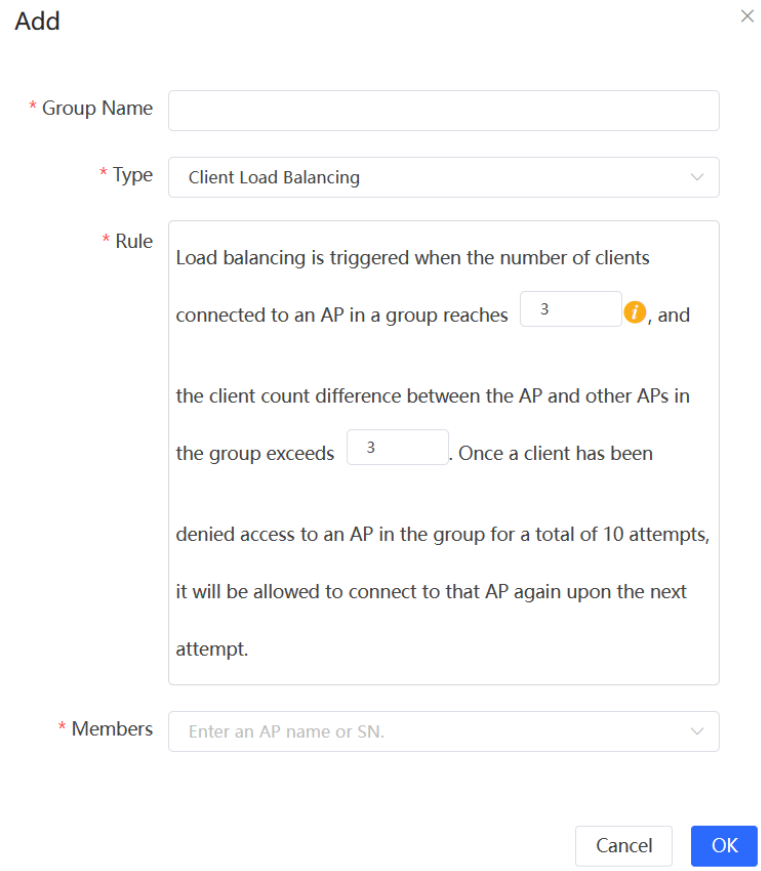


Table 4-4 Client Load Balancing Configuration Parameters

Parameter	Description
Group Name	Enter the name of the AP load balancing group.
Type	Select **Client Load Balancing**.
Rule	Configure a detailed load balancing rule, including the maximum number of clients allowed to associate with an AP, the difference between the currently associated client count and client count on the AP with the lightest load, and the number of attempts to the AP with full load. By default, when an AP is associated with 3 clients and the difference between the currently associated client count and client count on the AP with the lightest load reaches 3, clients can associate only to another AP in the group. After a client association is denied by an AP for 10 times, the client will be allowed to associate to the AP upon the next attempt.
Members	Specify the APs to be added to the AP load balancing group.

4.24.3 Configuring Traffic Load Balancing

Choose **Network-Wide** > **Workspace** > **Wireless** > **Load Balancing**.

Click **Add**. In the dialog box that appears, set **Type** to **Traffic Load Balancing**, and configure **Group Name**, **Members**, and **Rule**.

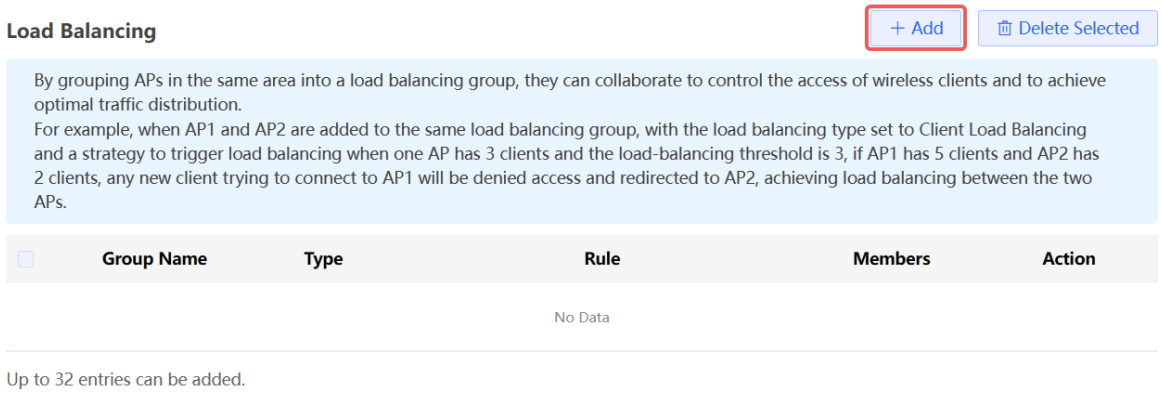




Table 4-5 Traffic Load Balancing Configuration Parameters

Parameter	Description
Group Name	Enter the name of the AP load balancing group.
Type	Select **Traffic Load Balancing**.
Rule	Configure a detailed load balancing rule, including the maximum traffic allowed on an AP, the difference between the current traffic and the traffic on the AP with the lightest load, and the number of attempts to the AP with full load. By default, when the traffic load on an AP reaches 500 Kbit/s and the difference between the current traffic and the traffic on the AP with the lightest load reaches 500 Kbit/s, clients can associate only to another AP in the group. After a client association is denied by an AP for 10 times, the client will be allowed to associate to the AP upon the next attempt.
Members	Specify the APs to be added to the AP load balancing group.

4.25 Wireless Authentication

4.25.1 Overview

Wireless authentication verifies the identity of users on a wireless network. Only authenticated users can access the network, ensuring wireless network security. You can configure authentication-free for wireless STAs (IP address/MAC address), public IP addresses, and domain names. Users can directly use network services or access specific websites without entering the username, password, or other information.

To use the wireless authentication function, ensure that the AP is added to Ruijie Cloud and is online. Then, configure a portal template on Ruijie Cloud and apply it to a specific SSID. When STAs connect to this SSID and access the network, the AP allows STAs added to the authentication-free lists configured on the web interface (excluding those added to the MAC address blocklist) to access the network without authentication. The AP forbids STAs whose MAC addresses are added to the MAC address blocklist configured on the web interface from accessing the network. For other users or domain names, the AP redirects them to the portal authentication page. Users need to complete identity verification on the portal page.

The following four authentication modes are supported:

- One-click Login: indicates login without the username and password.
- Voucher: indicates login with a random eight-digit password.
- Account: indicates login with the account and password.
- SMS: indicates login with the phone number and code.

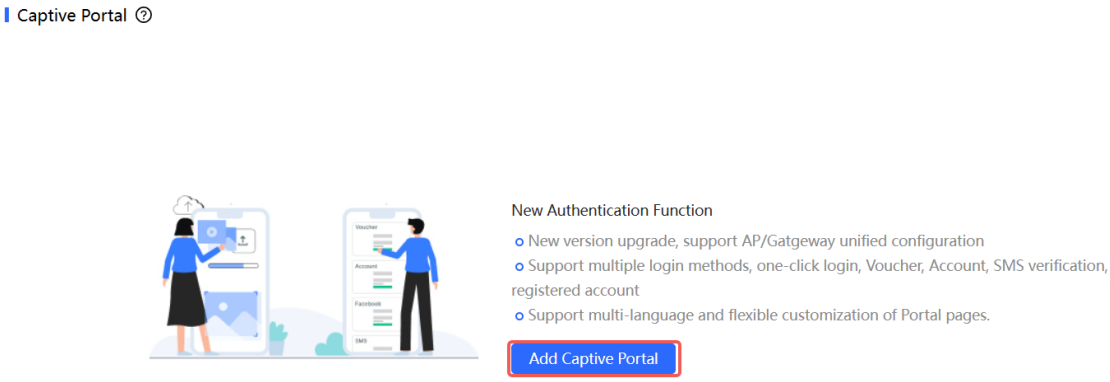
Two or more authentication modes can be configured in a portal template. When multiple authentication modes are configured, users can select an authentication mode on the portal page.

4.25.2 Configuring One-click Login on Ruijie Cloud

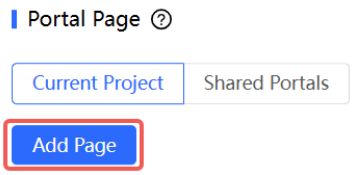
1. Configuring a Portal Template with the Authentication Mode Set to One-click Login

(1) Log in to Ruijie Cloud, choose **Project** > **Configuration** > **Auth & Accounts** > **Authentication** > **Captive Portal**, and select a network that needs to configure wireless authentication.

(2) Click **Add Captive Portal** to open the portal template configuration page.



(3) Click **Add Page** to customize a portal page.



(4) Configure basic information of the portal template.

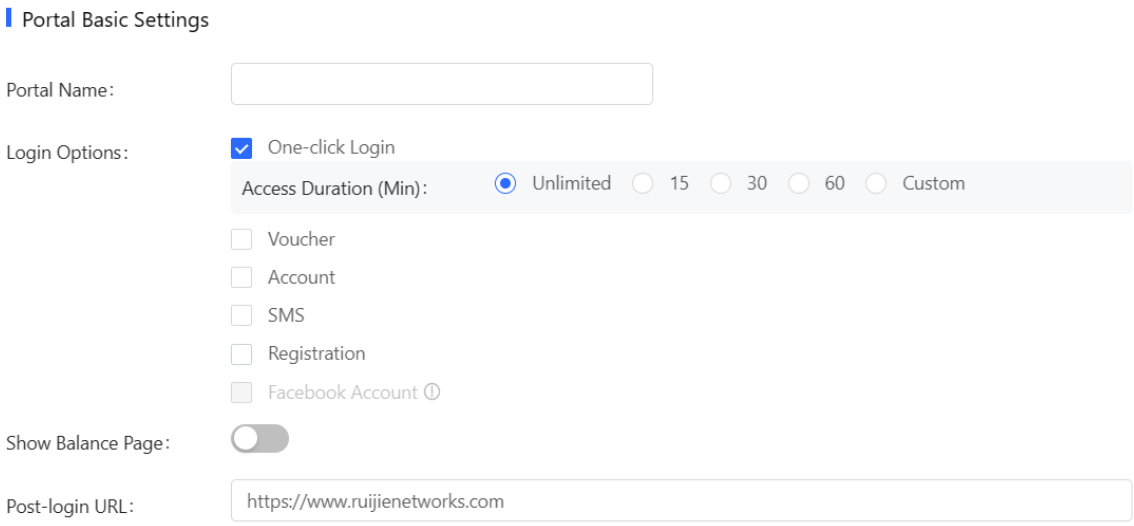
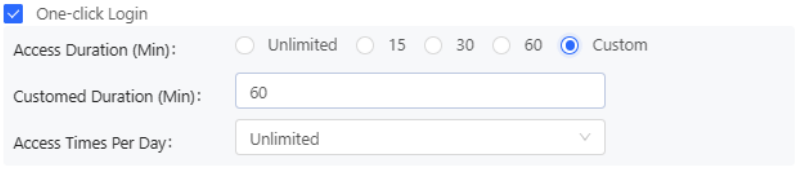


Table 4-6 Portal Template Configuration Parameters

Parameter	Description
Portal Name	Indicates the name of a captive portal template.
Login Options	Select **One-click Login**, which indicates login without the username and password. You can set **Access Duration** and **Access Times Per Day**. 
Show Balance Page	Indicates the available duration, time, or data after portal authentication.
Post-login URL	Indicates the URL that is displayed after portal authentication.

(5) Configure visual settings of the portal template.

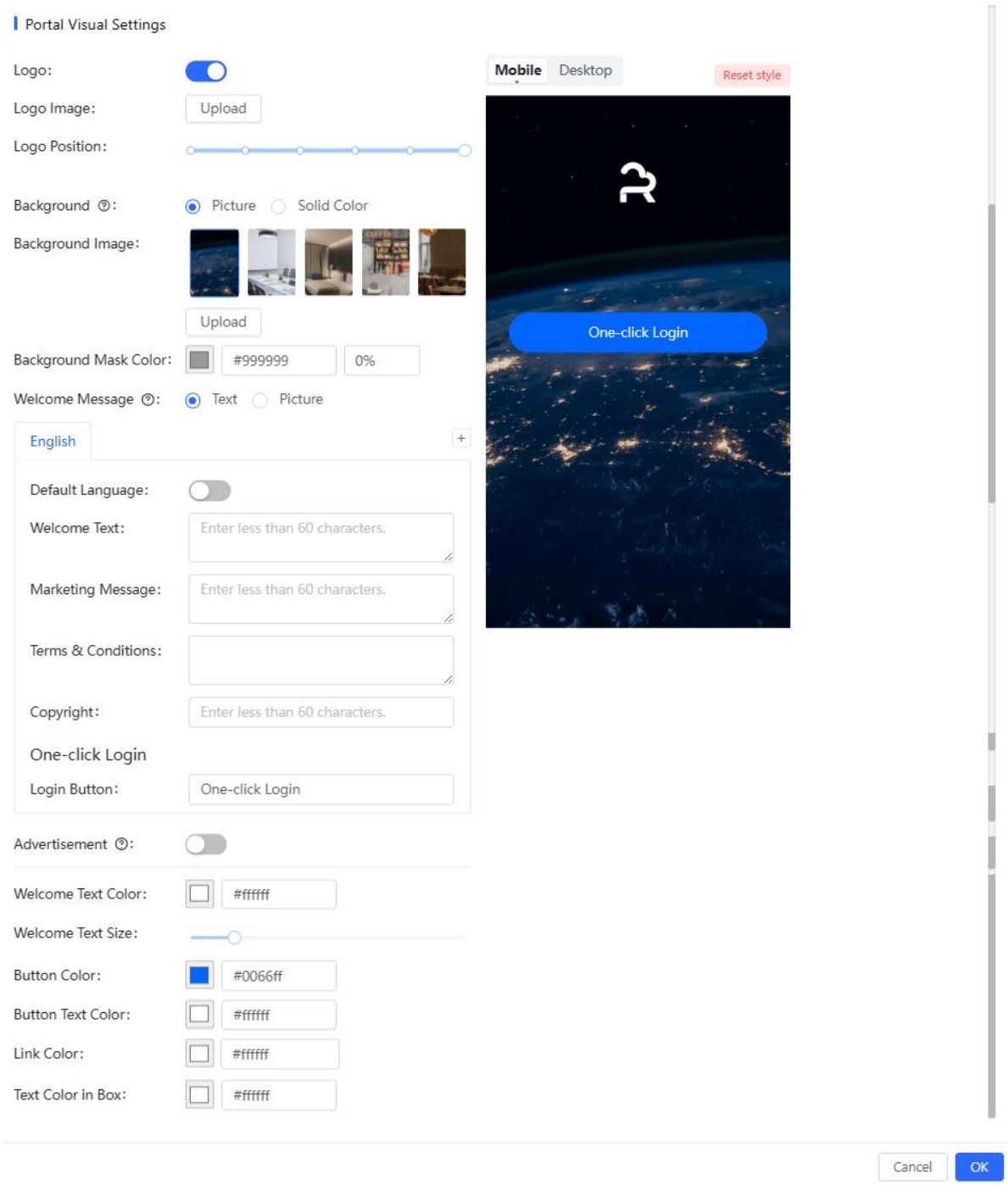
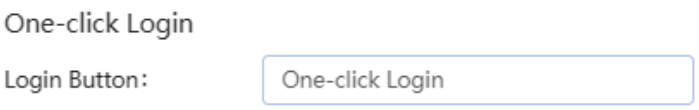


Table 4-7 Portal Page Configuration Parameters

Parameter	Description
Logo	Select whether to display the logo image.
Logo Image	When **Logo** is set to **Image**, upload the logo picture or select the default logo.
Logo Position	Select the logo position (Upper, Middle, or Lower).
Background	Select the background with the image or the solid color.

Parameter	Description
Background Image	When **Background** is set to **Image**, upload the background image or select the default image.
Background Mask Color	When **Background** is set to **Solid Color**, configure the background color. The default value is **#ffffff**.
Welcome Message	Select the welcome message with the image or text.
Language	Select the language of the portal page and configure the content displayed on the portal page as required. You can click + to add portal pages in other languages. ● Welcome Message: Select the welcome message with the image or text. ● Marketing message: Enter the marketing message. ● Terms & Conditions: Enter terms and conditions. ● Copyright: Enter the copyright. ● One-click Login: After **One-click Login** is enabled, you can customize the button name displayed on the portal page, which is set to **One-click Login** by default. 
Advertisement	Select whether to display the advertisement.
Welcome Text Color	Select the welcome message text color. The default value is #ffffff.
Welcome Text Size	Select the welcome text size.
Button Color	Select the button color. The default value is #0066ff.
Button Text Color	Select the button text color. The default value is #ffffff.
Link Color	Select the link color. The default value is #ffffff.
Text Color in Box	Select the text color in the box. The default value is #ffffff.

(6) After the configuration, click **OK** to save the portal template configurations.

2. Configuring Policy Info

Configure basic information of the policy info to add captive portal. After the configuration, click **OK** for the configurations to take effect.

Note

When **Encryption Mode** is set to a value other than **WPA2-Enterprise(802.1x)**, the **Captive Portal** page is available. You can select whether to perform wireless authentication.

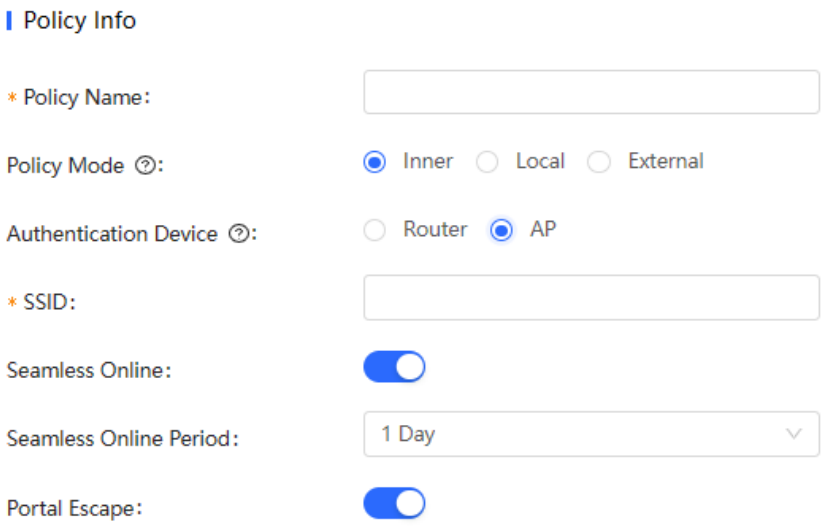


Table 4-8 Captive Portal Configuration Parameters

Parameter	Description
Policy Name	Indicates the name of a captive portal template.
Policy Mode	Indicates the authentication mode to which the captive portal applies: Inner: Cloud-based authentication. The built-in authentication server in the public cloud is used for authentication. Local: Device-based local authentication and acceleration. Portal pages and accounts in the cloud are synchronized with the device for local authentication and acceleration. External: Third-party authentication, facilitating integration between the device and a third-party authentication server for authentication.
Authentication Device	Indicates the device that performs the authentication. When there is a router on the network, you are advised to enable authentication on the router. You can perform authentication on either an access point (AP) or a router. AP: An AP acts as the NAS. Router: A router or gateway acts as the NAS responsible for performing authentication at the gateway exit. AP Authentication: RAP, ReyeeOS 1.219 or later version. This parameter is not required if the policy mode is Local.

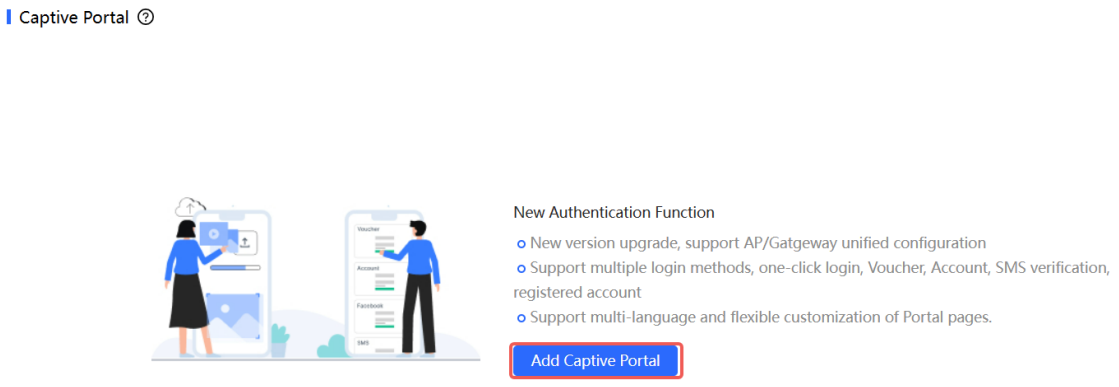
Parameter	Description
Network	Indicates the wired network that requires authentication. Enter the network segment in this field. Users connecting to the wired network corresponding to this network segment must be authenticated. This parameter is required if the Authentication Device is Router.
SSID	Indicates the network name of the Wi-Fi network that requires authentication. Users connecting to this wireless network must be authenticated. This parameter is required if the Authentication Device is AP.
Seamless Online	After this function is enabled, if the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within a certain period of time.
Seamless Online Period	Indicates the time period for seamless online. If the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within this period of time.
Portal Page	Indicates the portal page that is displayed after portal authentication. Click Current Project to select the portal page for an existing project. Click Shared Portals to select an existing portal page. Click Add Page to customize a portal page.

4.25.3 Configuring Voucher Authentication on Ruijie Cloud

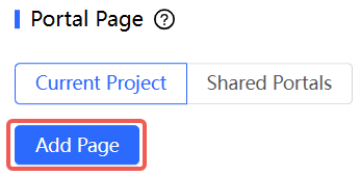
1. Configuring a Portal Template with the Authentication Mode Set to Voucher

(1) Log in to Ruijie Cloud, choose **Project** > **Configuration** > **Auth & Accounts** > **Authentication** > **Captive Portal**, and select a network that needs to configure wireless authentication.

(2) Click **Add Captive Portal** to open the portal template configuration page.



(3) Click **Add Page** to customize a portal page.



(4) Configure basic information of the portal template.

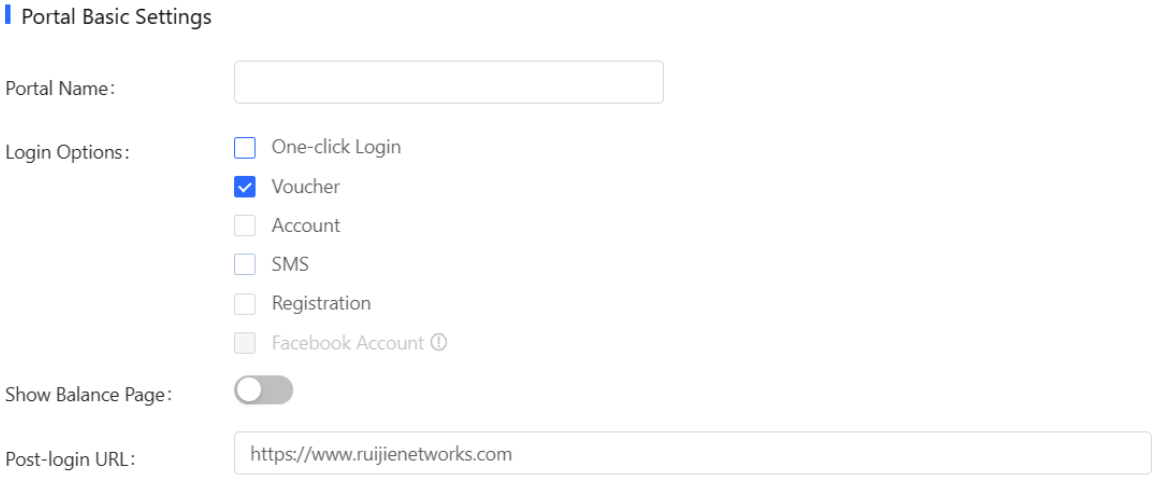


Table 4-9 Portal Template Configuration Parameters

Parameter	Description
Portal Name	Indicates the name of a captive portal template.
Login Options	Select **Voucher**, which indicates login with a random eight-digit password.
Show Balance Page	Indicates the available duration, time, or data after portal authentication.
Post-login URL	Indicates the URL that is displayed after portal authentication.

(5) Configure visual settings of the portal template.

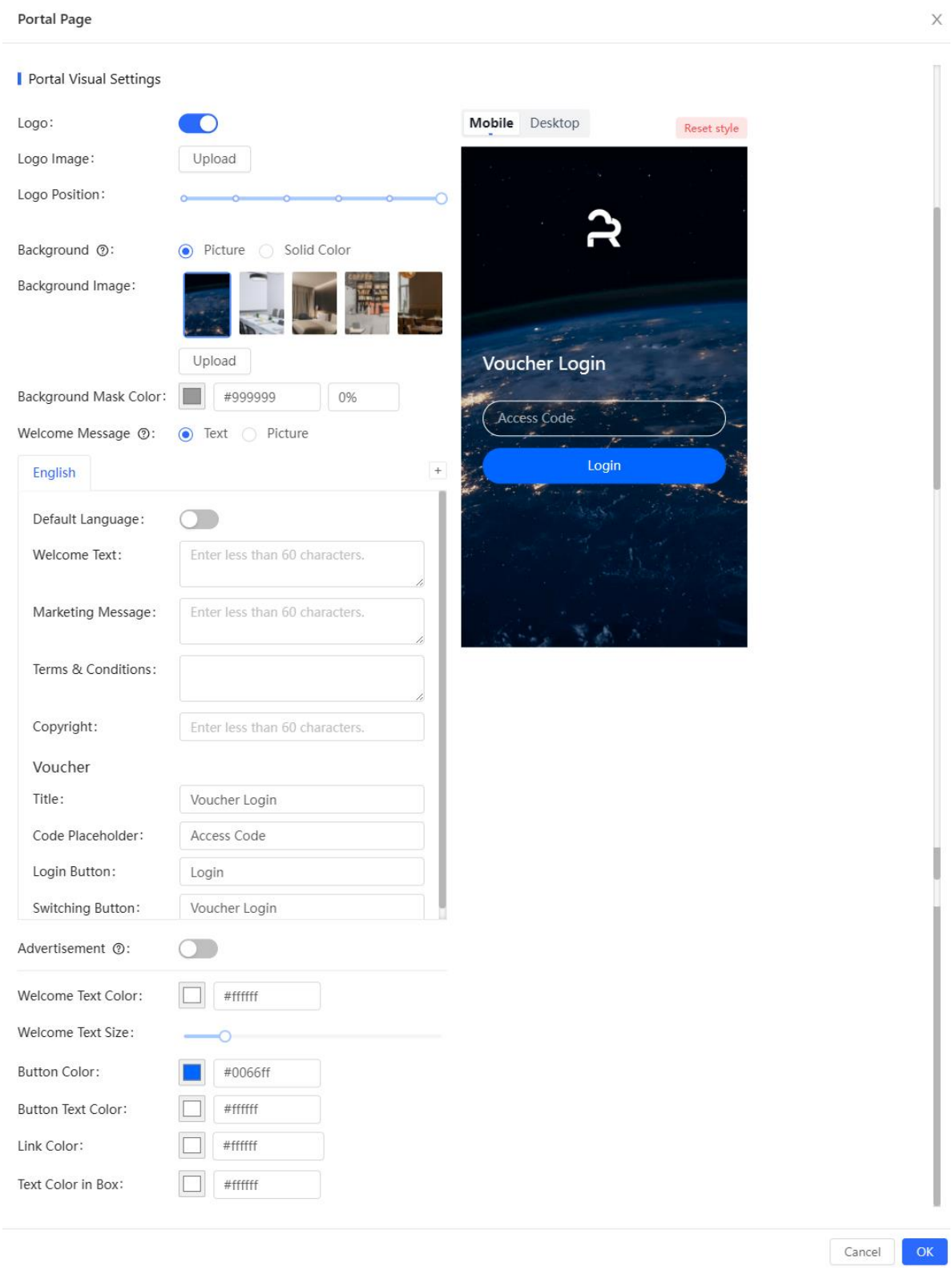
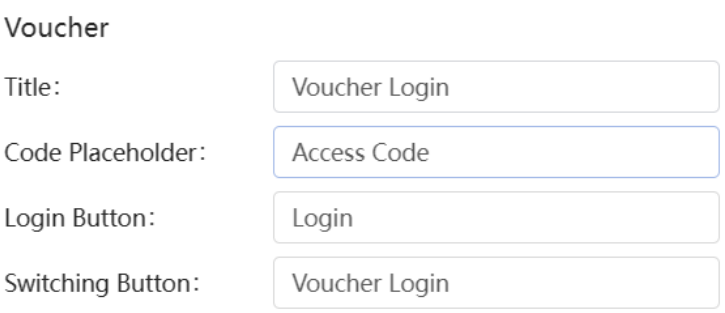


Table 4-10 Portal Page Configuration Parameters

Parameter	Description
Logo	Select whether to display the logo image.

Parameter	Description
Logo Image	When **Logo** is set to **Image**, upload the logo picture or select the default logo.
Logo Position	Select the logo position (Upper, Middle, or Lower).
Background	Select the background with the image or the solid color.
Background Image	When **Background** is set to **Image**, upload the background image or select the default image.
Background Mask Color	When **Background** is set to **Solid Color**, configure the background color. The default value is **#ffffff**.
Welcome Message	Select the welcome message with the image or text.
Language	Select the language of the portal page and configure the content displayed on the portal page as required. You can click + to add portal pages in other languages. ● Welcome Message: Select the welcome message with the image or text. ● Marketing message: Enter the marketing message. ● Terms & Conditions: Enter terms and conditions. ● Copyright: Enter the copyright. ● Voucher Login: After **Voucher Login** is enabled, you can customize the names of controls related to voucher authentication. 
Advertisement	Select whether to display the advertisement.
Welcome Text Color	Select the welcome message text color. The default value is #ffffff.
Welcome Text Size	Select the welcome text size.
Button Color	Select the button color. The default value is #0066ff.
Button Text Color	Select the button text color. The default value is #ffffff.
Link Color	Select the link color. The default value is #ffffff.
Text Color in Box	Select the text color in the box. The default value is #ffffff.

(6) After the configuration, click **OK** to save the portal template configurations.

2. Configuring Policy Info

Configure basic information of the policy info to add captive portal. After the configuration, click **OK** for the configurations to take effect.

Note

When **Encryption Mode** is set to a value other than **WPA2-Enterprise(802.1x)**, the **Captive Portal** page is available. You can select whether to perform wireless authentication.

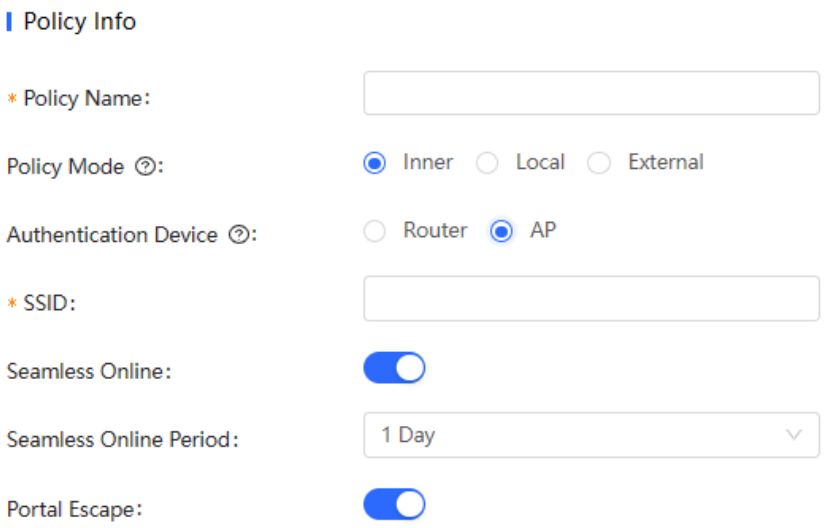


Table 4-11 Captive Portal Configuration Parameters

Parameter	Description
Policy Name	Indicates the name of a captive portal template.
Policy Mode	Indicates the authentication mode to which the captive portal applies: Inner: Cloud-based authentication. The built-in authentication server in the public cloud is used for authentication. Local: Device-based local authentication and acceleration. Portal pages and accounts in the cloud are synchronized with the device for local authentication and acceleration. External: Third-party authentication, facilitating integration between the device and a third-party authentication server for authentication.

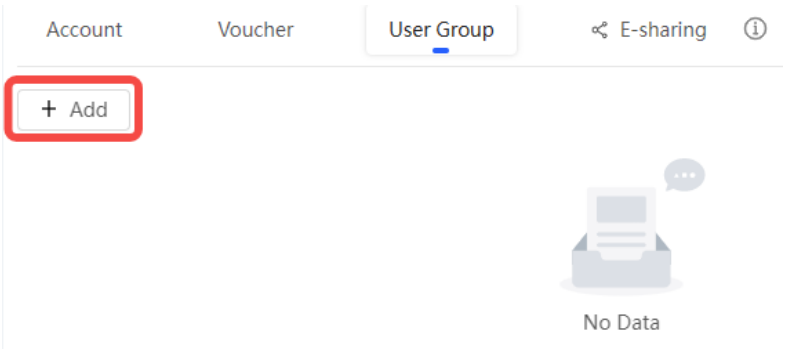
Parameter	Description
Authentication Device	Indicates the device that performs the authentication. When there is a router on the network, you are advised to enable authentication on the router. You can perform authentication on either an access point (AP) or a router. AP: An AP acts as the NAS. Router: A router or gateway acts as the NAS responsible for performing authentication at the gateway exit. AP Authentication: RAP, ReyeeOS 1.219 or later version. This parameter is not required if the policy mode is Local.
Network	Indicates the wired network that requires authentication. Enter the network segment in this field. Users connecting to the wired network corresponding to this network segment must be authenticated. This parameter is required if the Authentication Device is Router.
SSID	Indicates the network name of the Wi-Fi network that requires authentication. Users connecting to this wireless network must be authenticated. This parameter is required if the Authentication Device is AP.
Seamless Online	After this function is enabled, if the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within a certain period of time.
Seamless Online Period	Indicates the time period for seamless online. If the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within this period of time.
Portal Page	Indicates the portal page that is displayed after portal authentication. Click Current Project to select the portal page for an existing project. Click Shared Portals to select an existing portal page. Click Add Page to customize a portal page.

3. Adding a Voucher

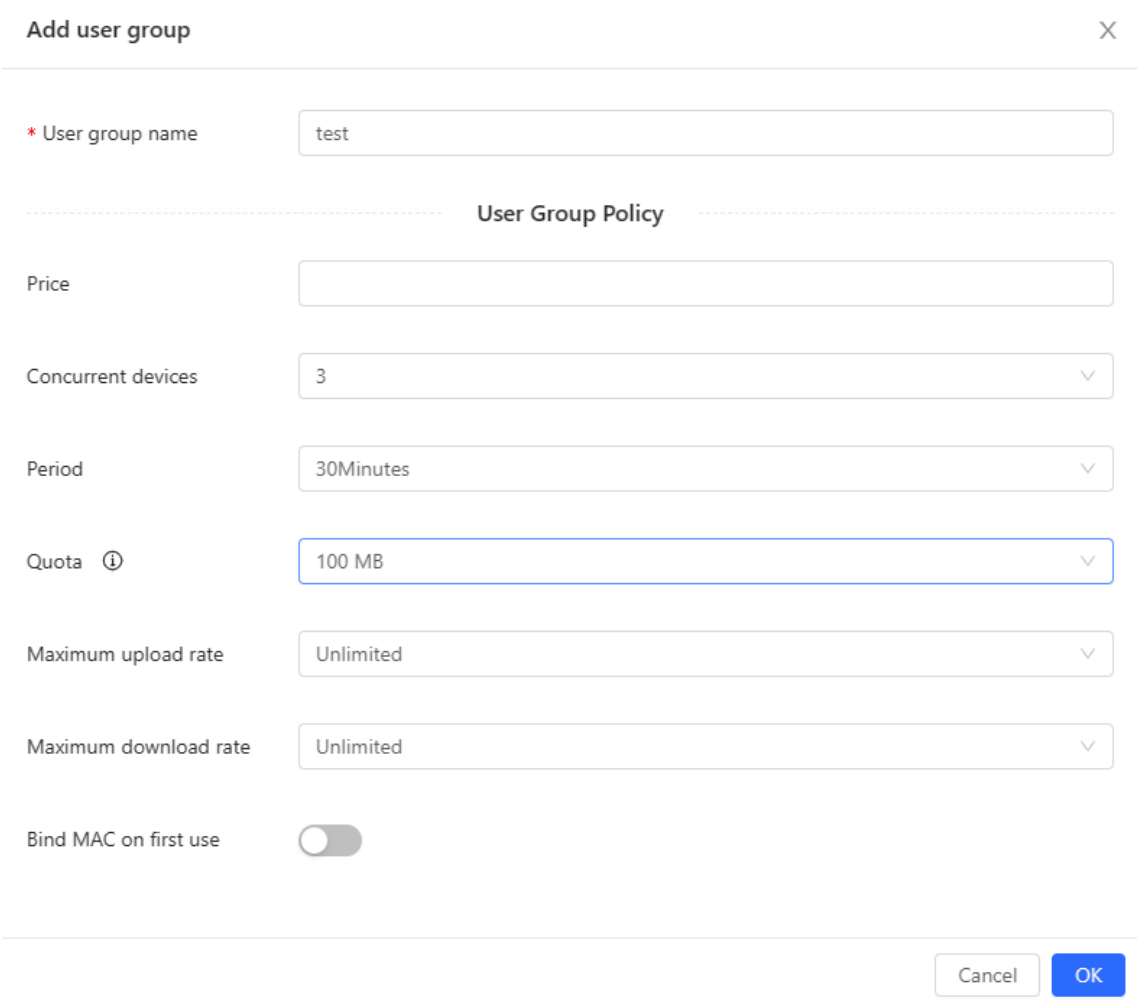
(1) Log in to Ruijie Cloud, choose **Project** > **Auth & Accounts** > **Accounts** > **User Management**, **and** select a network in this account**.**

(2) Configure a user group.

a On the **User Group** tab, click **Add**.



b Configure user group parameters. After the configuration, click **OK**.



User Group Name: indicates the user group name.

Price: indicates the price of the user group. Mark user groups by numeral. The current version has no impact on network usage.

Concurrent Devices: indicates the number of concurrent devices for one account.

Period: indicates the maximum validity time of an account. The maximum value is counted after the client passes authentication and successfully accesses the Internet.

Quota: indicates the maximum amount of data transfer.

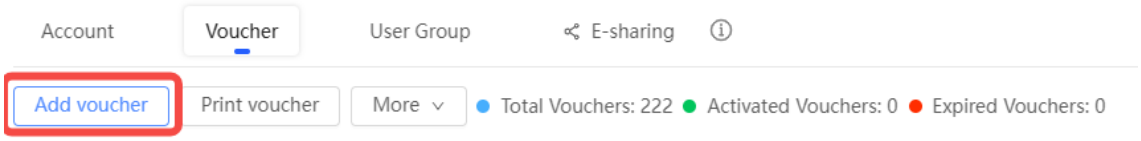
Maximum upload rate: indicates the maximum upload rate.

Maximum download rate: indicates the maximum download rate.

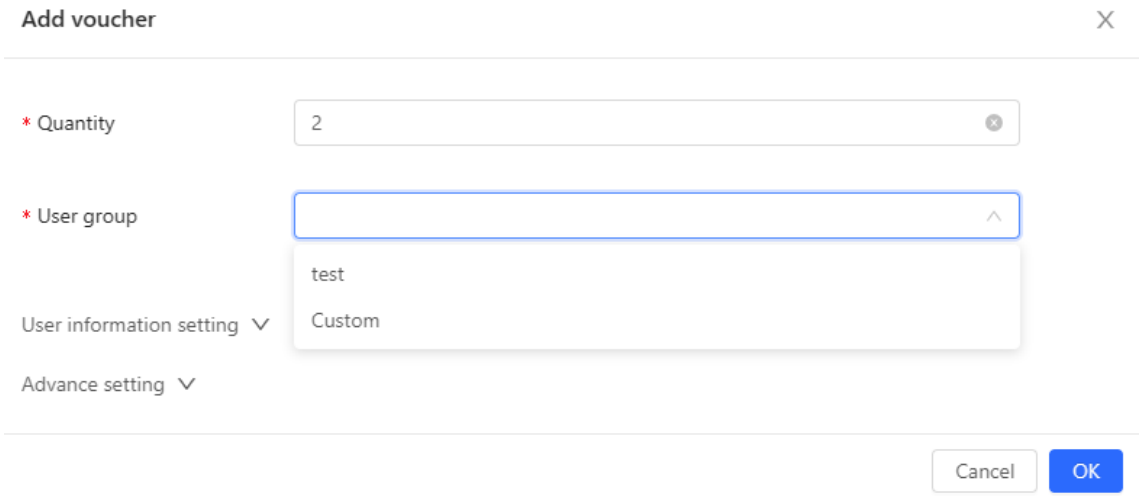
Bind MAC on first use: indicates that the MAC address of the first device used will be bound and other devices used by the same user will be prohibited from accessing the Internet.

(3) Configure a voucher.

a On the **Voucher** tab, click **Add voucher**.



b Configure voucher parameters. After the configuration, click **OK**.



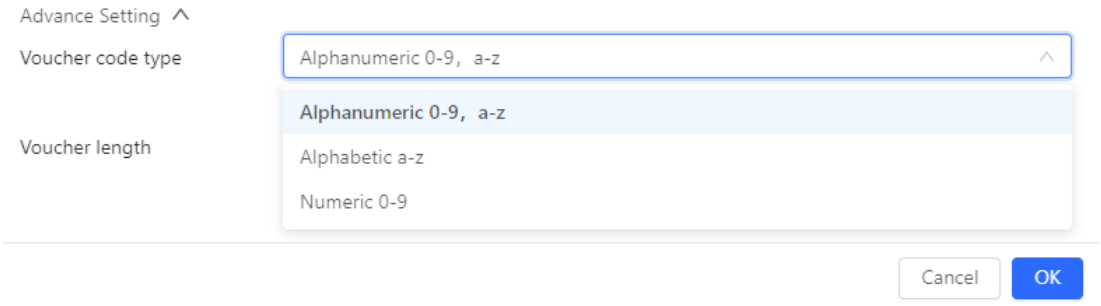
Quantity: Enter the quantity of the voucher to print. When the value is set to 1, you can add a voucher and configure the name and the email address. When the value is greater than 1, you can add vouchers in batches. In this case, you can only configure the name and email address separately after the vouchers are added.

User group: Select a created user group from the drop-down list. If the created user group does not meet the requirements, click **Custom** to create a user group.

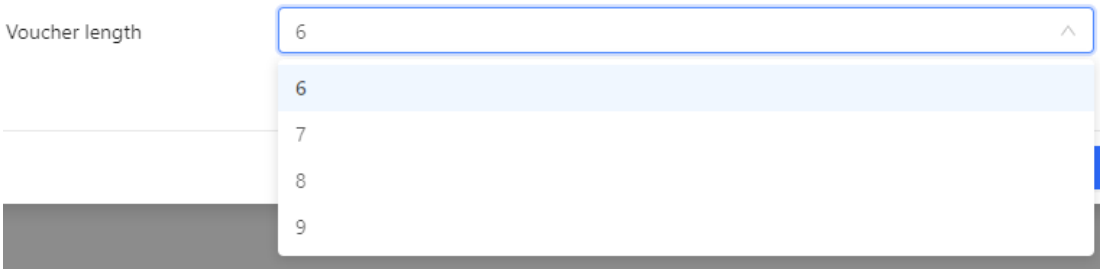
User information setting: Configure user information, which is optional.

Advance setting:

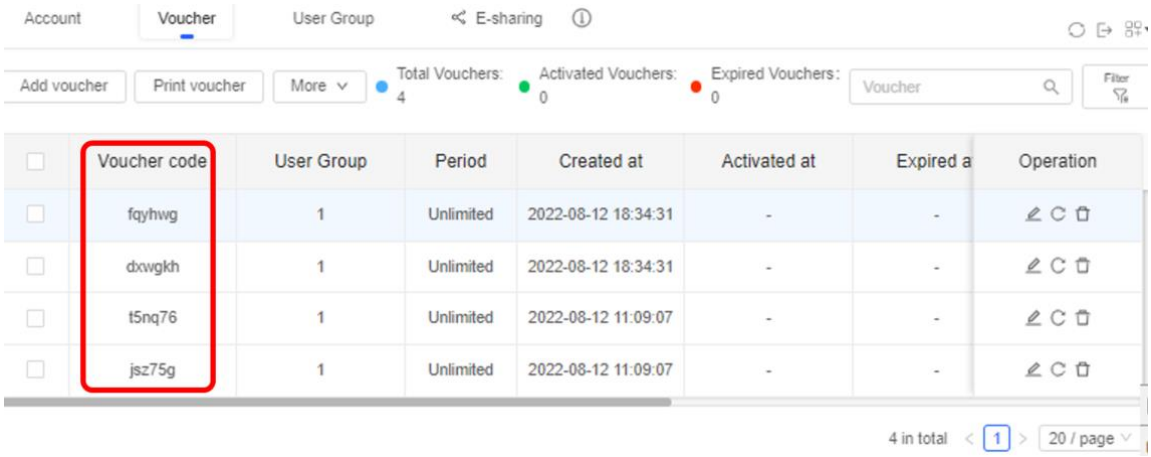
- Voucher code type: Set the value to Alphanumeric 0-9, a-z, Alphabetic a-z, or Numeric 0-9.



- Voucher length: Select the voucher length. The value ranges from 6 to 9.



(4) Obtain the voucher code from the voucher list.

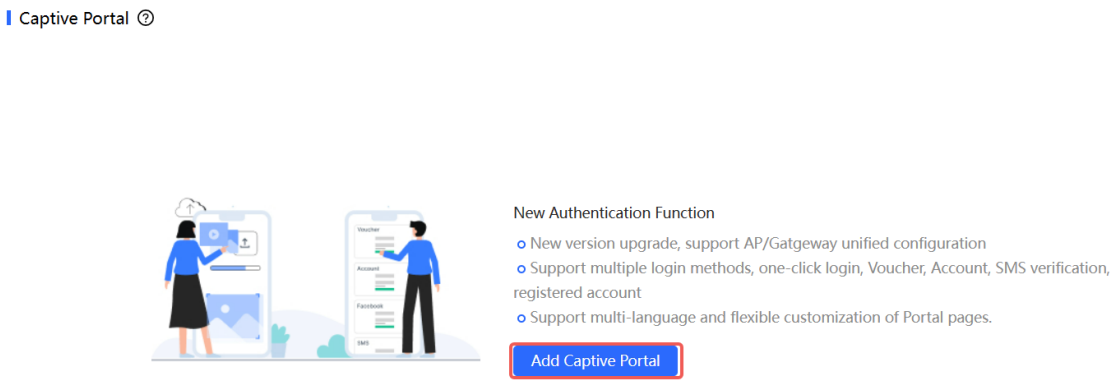


4.25.4 Configuring Account Authentication on Ruijie Cloud

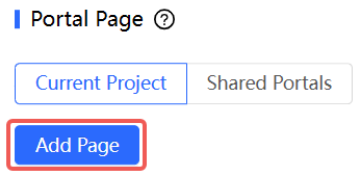
1. Configuring a Portal Template with the Authentication Mode Set to Account

(1) Log in to Ruijie Cloud, choose **Project** > **Configuration** > **Auth & Accounts** > **Authentication** > **Captive Portal**, and select a network that needs to configure wireless authentication.

(2) Click **Add Captive Portal** to open the portal template configuration page.



(3) Click **Add Page** to customize a portal page.



(4) Configure basic information of the portal template.

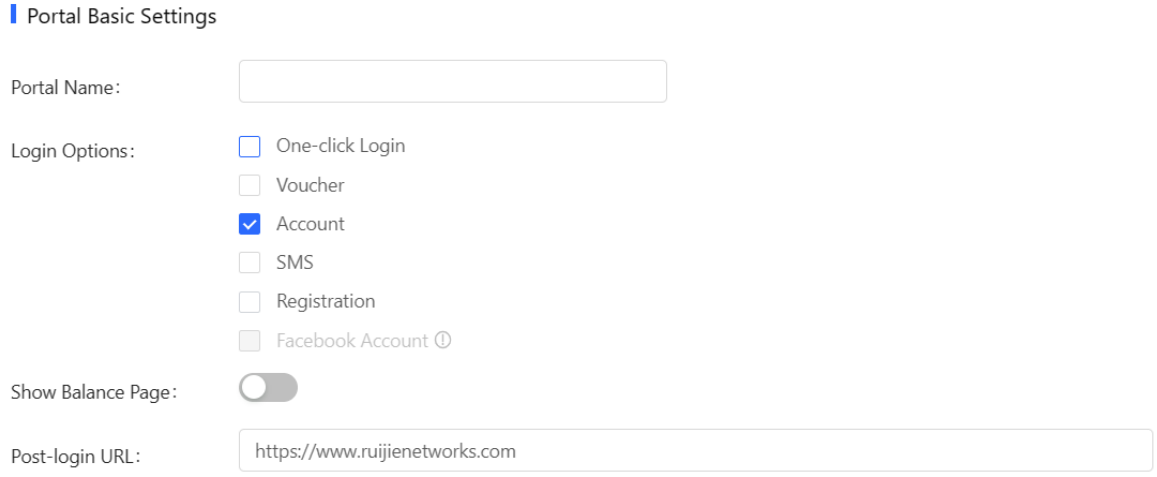


Table 4-12 Portal Template Configuration Parameters

Parameter	Description
Portal Name	Indicates the name of a captive portal template.
Login Options	Select **Account**, which indicates login with the account and password.
Show Balance Page	Indicates the available duration, time, or data after portal authentication.
Post-login URL	Indicates the URL that is displayed after portal authentication.

(5) Configure visual settings of the portal template.

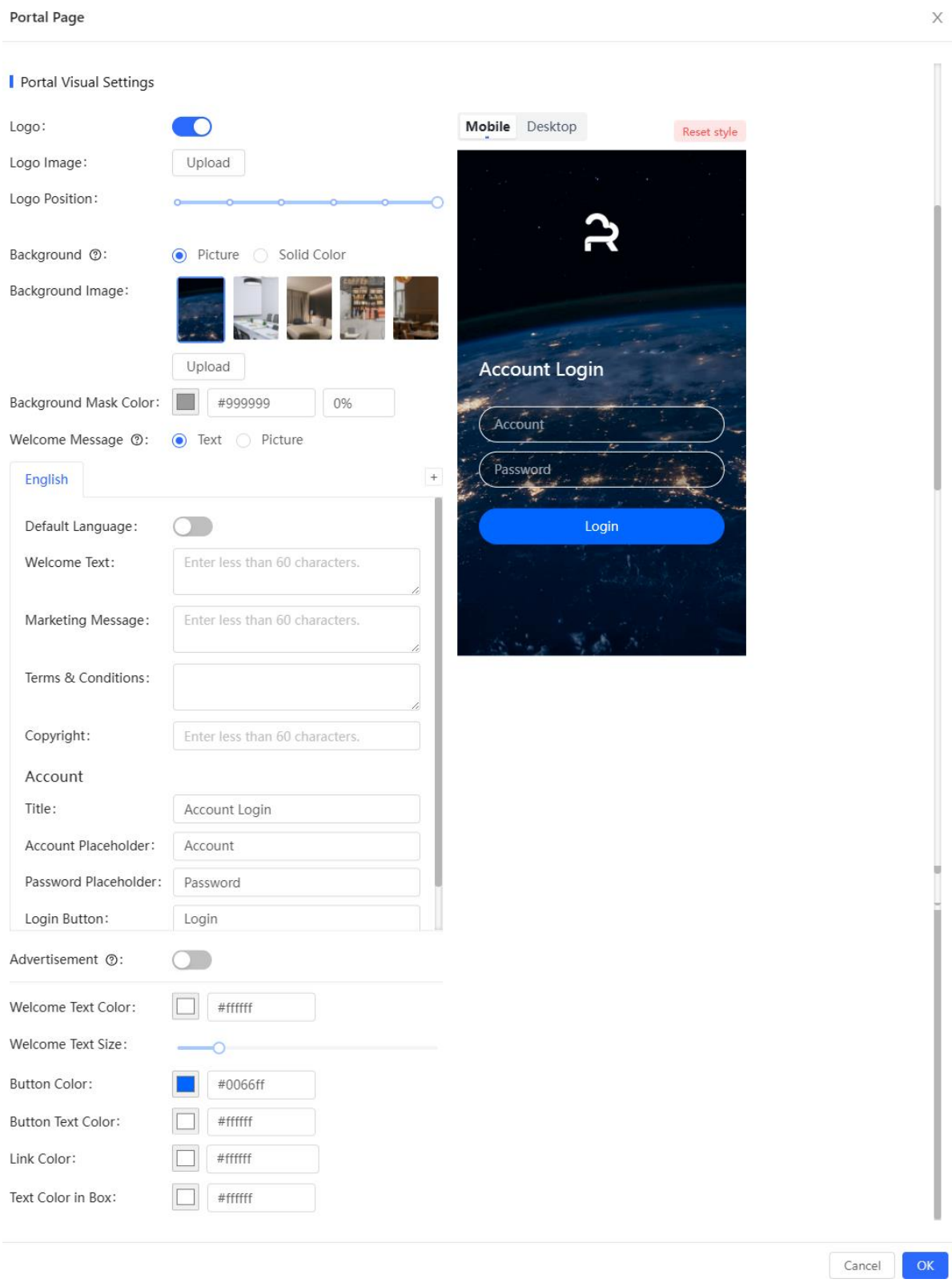
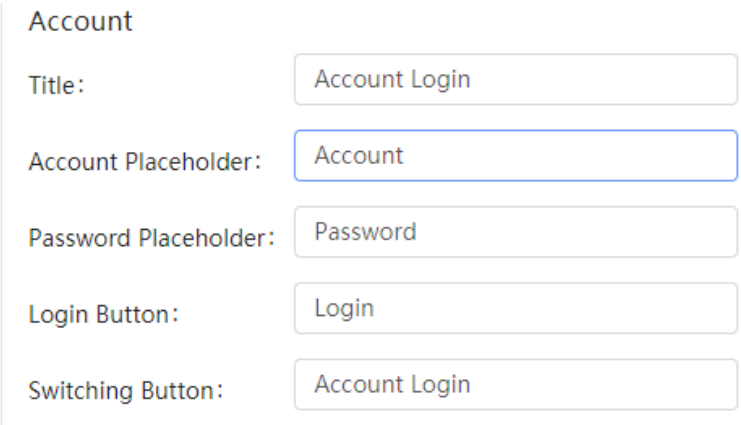


Table 4-13 Portal Page Configuration Parameters

Parameter	Description
Logo	Select whether to display the logo image.

Parameter	Description
Logo Image	When **Logo** is set to **Image**, upload the logo picture or select the default logo.
Logo Position	Select the logo position (Upper, Middle, or Lower).
Background	Select the background with the image or the solid color.
Background Image	When **Background** is set to **Image**, upload the background image or select the default image.
Background Mask Color	When **Background** is set to **Solid Color**, configure the background color. The default value is **#ffffff**.
Welcome Message	Select the welcome message with the image or text.
Language	Select the language of the portal page and configure the content displayed on the portal page as required. You can click + to add portal pages in other languages. ● Welcome Message: Select the welcome message with the image or text. ● Marketing message: Enter the marketing message. ● Terms & Conditions: Enter terms and conditions. ● Copyright: Enter the copyright. ● Account Login: After **Account Login** is enabled, you can customize the names of the controls related to account authentication. 
Advertisement	Select whether to display the advertisement.
Welcome Text Color	Select the welcome message text color. The default value is #ffffff.
Welcome Text Size	Select the welcome text size.
Button Color	Select the button color. The default value is #0066ff.
Button Text Color	Select the button text color. The default value is #ffffff.
Link Color	Select the link color. The default value is #ffffff.
Text Color in Box	Select the text color in the box. The default value is #ffffff.

(6) After the configuration, click **OK** to save the portal template configurations.

2. Configuring Policy Info

Configure basic information of the policy info to add captive portal. After the configuration, click **OK** for the configurations to take effect.

Note

When **Encryption Mode** is set to a value other than **WPA2-Enterprise(802.1x)**, the **Captive Portal** page is available. You can select whether to perform wireless authentication.

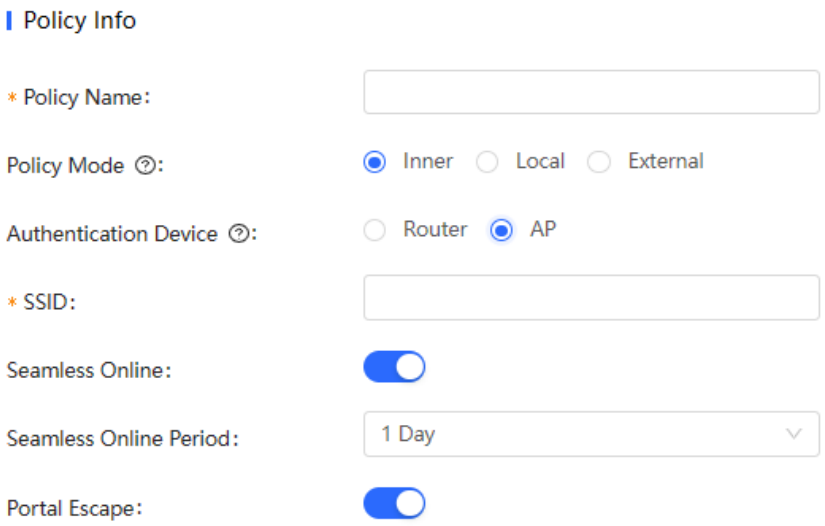


Table 4-14 Captive Portal Configuration Parameters

Parameter	Description
Policy Name	Indicates the name of a captive portal template.
Policy Mode	Indicates the authentication mode to which the captive portal applies: Inner: Cloud-based authentication. The built-in authentication server in the public cloud is used for authentication. Local: Device-based local authentication and acceleration. Portal pages and accounts in the cloud are synchronized with the device for local authentication and acceleration. External: Third-party authentication, facilitating integration between the device and a third-party authentication server for authentication.

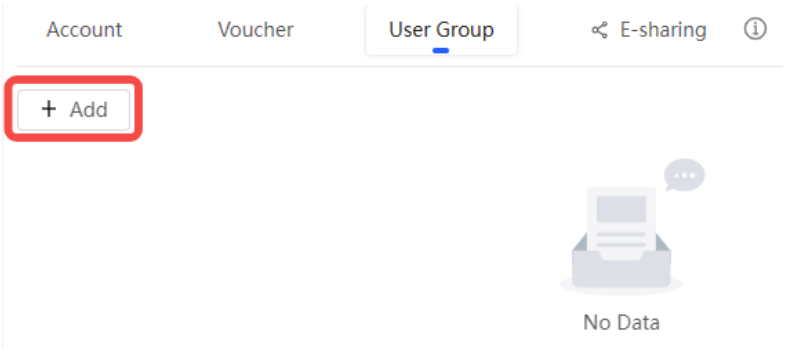
Parameter	Description
Authentication Device	Indicates the device that performs the authentication. When there is a router on the network, you are advised to enable authentication on the router. You can perform authentication on either an access point (AP) or a router. AP: An AP acts as the NAS. Router: A router or gateway acts as the NAS responsible for performing authentication at the gateway exit. AP Authentication: RAP, ReyeeOS 1.219 or later version. This parameter is not required if the policy mode is Local.
Network	Indicates the wired network that requires authentication. Enter the network segment in this field. Users connecting to the wired network corresponding to this network segment must be authenticated. This parameter is required if the Authentication Device is Router.
SSID	Indicates the network name of the Wi-Fi network that requires authentication. Users connecting to this wireless network must be authenticated. This parameter is required if the Authentication Device is AP.
Seamless Online	After this function is enabled, if the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within a certain period of time.
Seamless Online Period	Indicates the time period for seamless online. If the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within this period of time.
Portal Page	Indicates the portal page that is displayed after portal authentication. Click Current Project to select the portal page for an existing project. Click Shared Portals to select an existing portal page. Click Add Page to customize a portal page.

3. Adding an Account

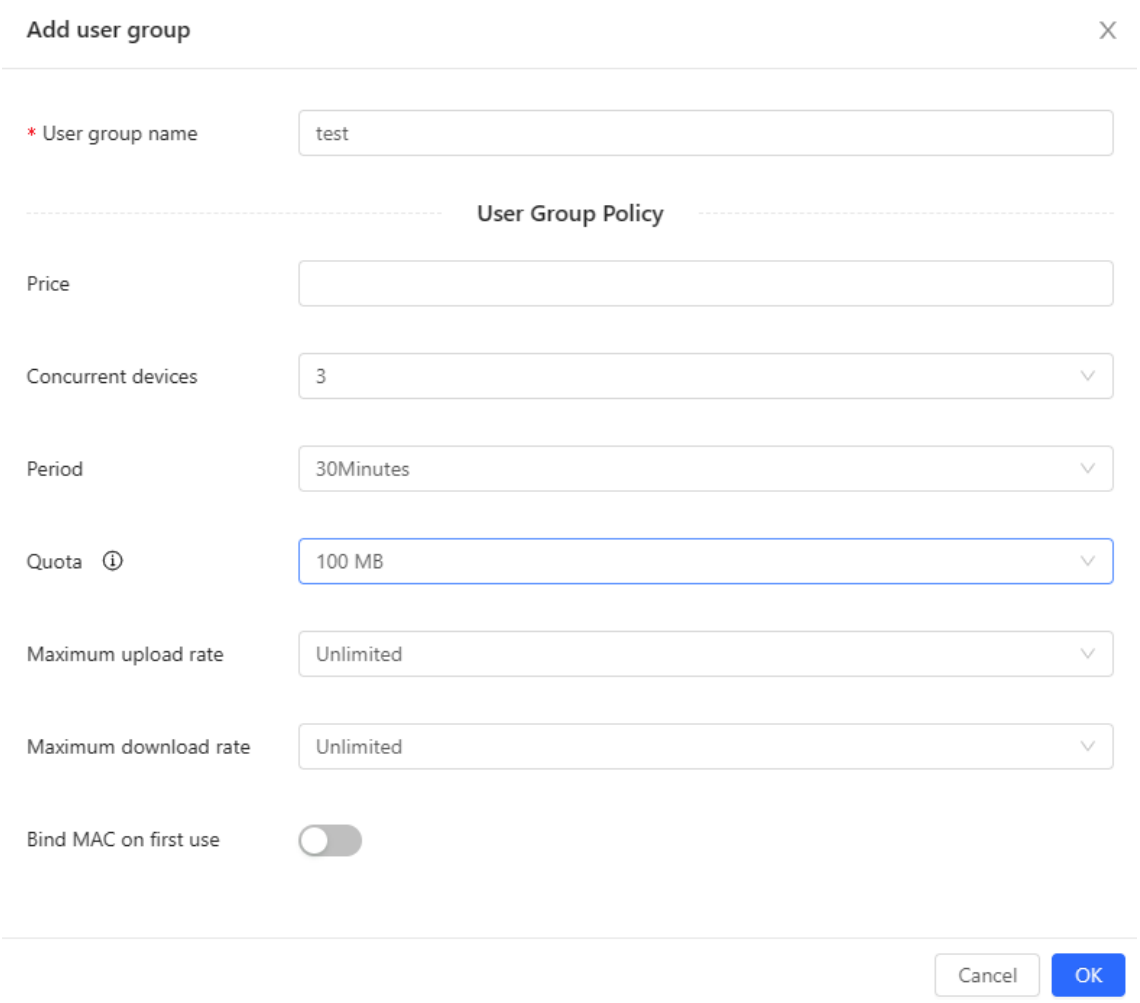
(1) Log in to Ruijie Cloud, choose **Project** > **Auth & Accounts** > **Accounts** > **User Management**, and select a network in this account**.**

(2) Configure a user group.

a On the **User Group** tab, click **Add**.



b Configure user group parameters. After the configuration, click **OK**.



User Group Name: indicates the user group name.

Price: indicates the price of the user group. Mark user groups by numeral. The current version has no impact on network usage.

Concurrent Devices: indicates the number of concurrent devices for one account.

Period: indicates the maximum validity time of an account. The maximum value is counted after the client passes authentication and successfully accesses the Internet.

Quota: indicates the maximum amount of data transfer.

Maximum upload rate: indicates the maximum upload rate.

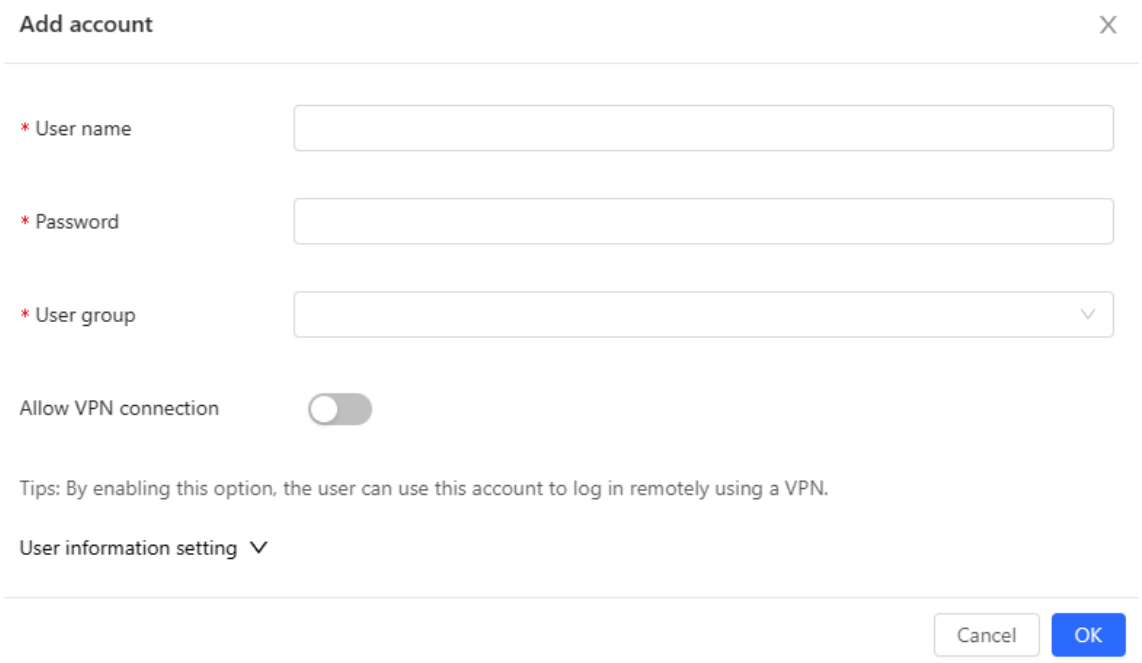
Maximum download rate: indicates the maximum download rate.

Bind MAC on first use: indicates that the MAC address of the first device used will be bound and other devices used by the same user will be prohibited from accessing the Internet.

(3) On the **Account** tab, add an account. Accounts can be added manually or through batch import.

- Adding an account manually

  Click **Add an Account**, set parameters about the account, and click **OK**.



User name: The value is a string of less than 32 characters, consisting of letters, numerals, and underscores.

Password: The value is a string of less than 32 characters, consisting of letters, numerals, and underscores.

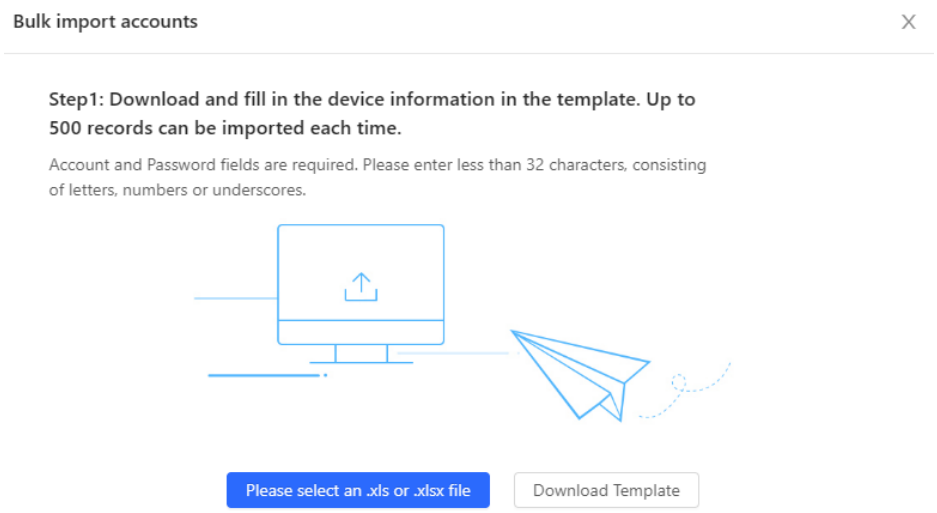
User group: Select a created user group from the drop-down list. If the created user group does not meet the requirements, click **Custom** to create a user group.

Allow VPN connection: By enabling this option, the user can use this account to log in remotely using a VPN.

User information setting: You can expand it to have more user information displayed, including the first name, last name, email, phone number, and alias.

- Adding accounts through batch import

  a Click **Bulk import**.



b Click **Download Template** to download the template.

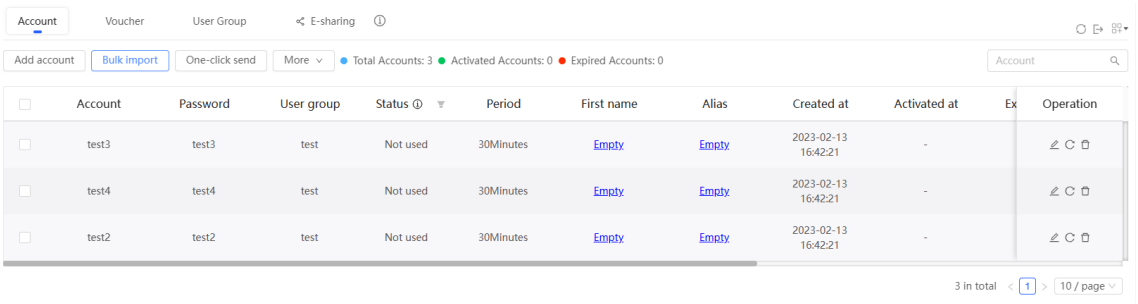
c Edit the template and save it.

Caution

- **Account**, **Password**, and **User Group** are mandatory.
- Check that the user group already exists and the added accounts are not duplicate with existing accounts.

Account	Password	First name	Last name	Alias	User group	Email
test2	test2				test	
test3	test3				test	
test4	test4				test	

d Click **Please select an .xls or .xlsx file** to upload the file. After uploading, users are automatically created.



4.25.5 Configuring SMS Authentication on Ruijie Cloud

1. Adding a Twilio Account

Prerequisites

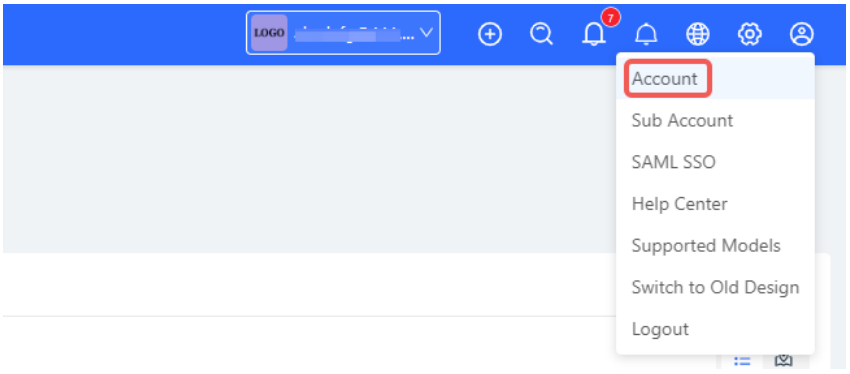
A Twilio account has been applied for from the Twilio official website (https://www.twilio.com/login).

Note

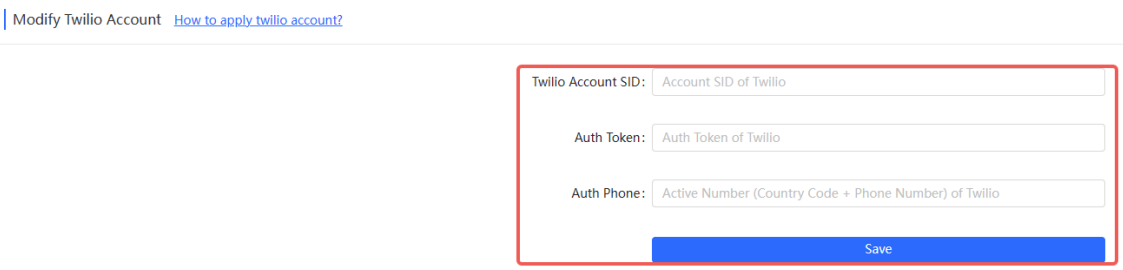
A Twilio account is used to send the SMS verification code.

Configuration Steps

(1) Log in to Ruijie Cloud and choose > **Account**.



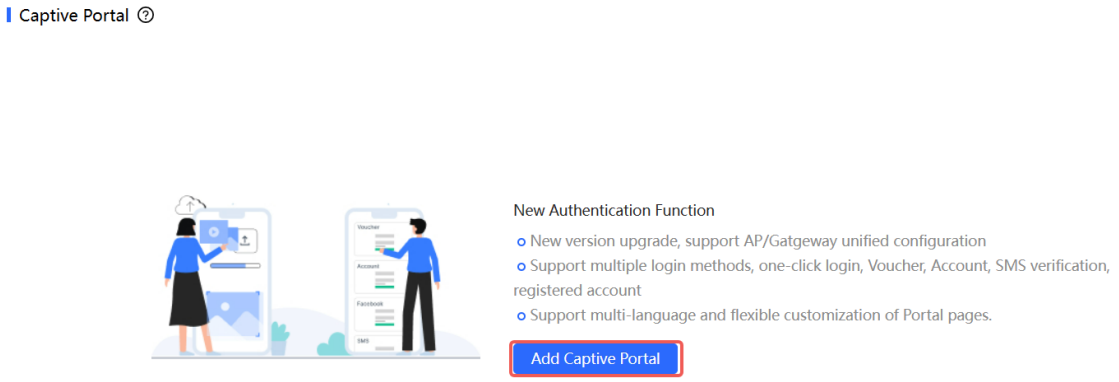
(2) Add Twilio account information and click **Save**.



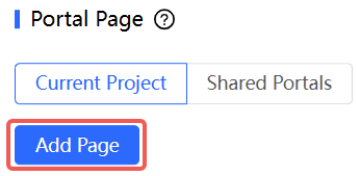
2. Configuring a Portal Template with the Authentication Mode Set to SMS

(1) Log in to Ruijie Cloud, choose **Project** > **Configuration** > **Auth & Accounts** > **Authentication** > **Captive Portal**, and select a network that needs to configure wireless authentication.

(2) Click **Add Captive Portal** to open the portal template configuration page.



(3) Click **Add Page** to customize a portal page.



(4) Configure basic information of the portal template.

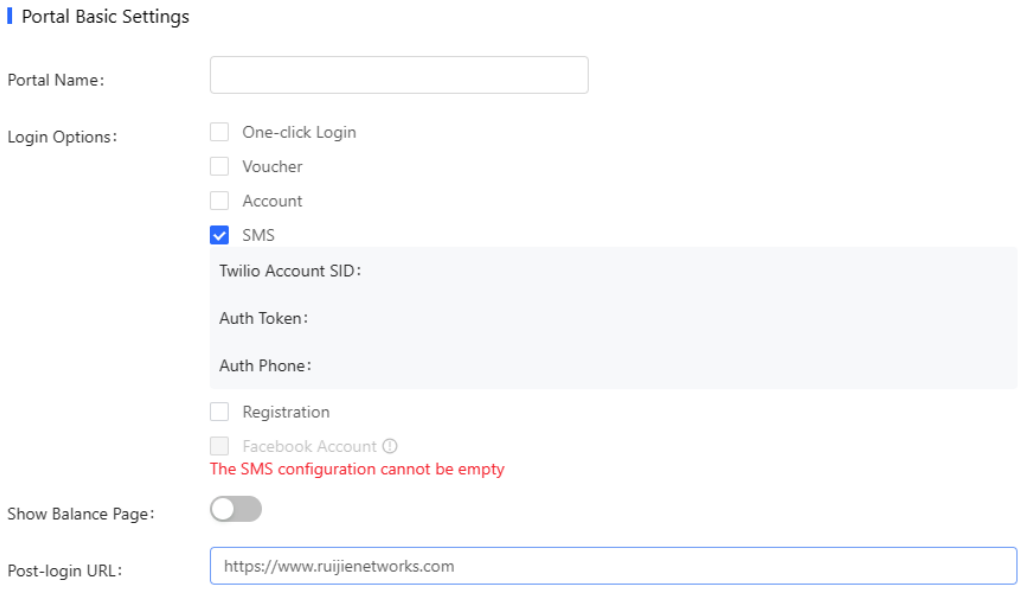


Table 4-15 Portal Template Configuration Parameters

Parameter	Description
Portal Name	Indicates the name of a captive portal template.
Login Options	Select **SMS**, which indicates login with the phone number and code.
Show Balance Page	Indicates the available duration, time, or data after portal authentication.
Post-login URL	Indicates the URL that is displayed after portal authentication.

(5) Configure visual settings of the portal template.

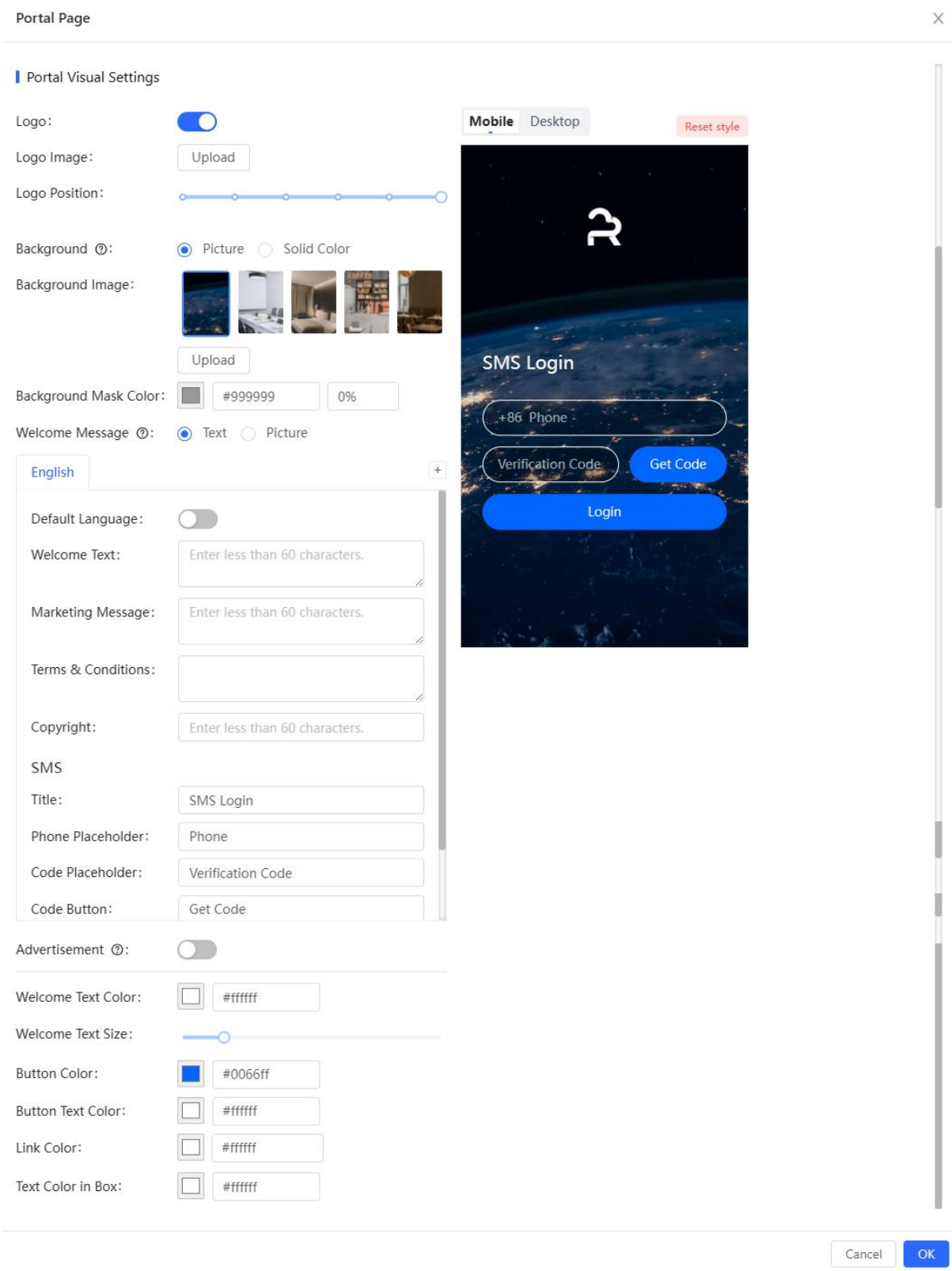
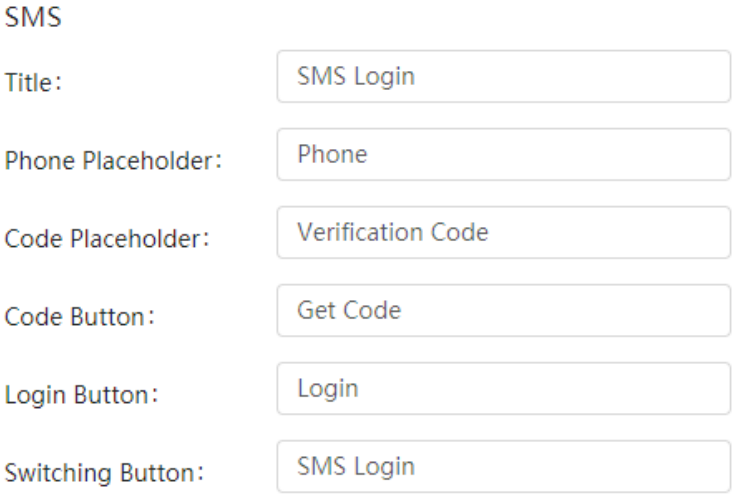

Portal Page
Portal Visual Settings
Logo:
Logo Image:
Upload
Logo Position:
Background:
Picture
Solid Color
Background Image:
Upload
Background Mask Color:
#999999
0%
Welcome Message:
Text
Picture
English
Default Language:
Welcome Text:
Enter less than 60 characters.
Marketing Message:
Enter less than 60 characters.
Terms & Conditions:
Copyright:
Enter less than 60 characters.
SMS
Title:
SMS Login
Phone Placeholder:
Phone
Code Placeholder:
Verification Code
Code Button:
Get Code
Advertisement:
Welcome Text Color:
#ffffff
Welcome Text Size:
Button Color:
#0066ff
Button Text Color:
#ffffff
Link Color:
#ffffff
Text Color in Box:
#ffffff
Mobile
Desktop
Reset style
SMS Login
+86 Phone
Verification Code
Get Code
Login
Cancel
OK

Table 4-16 Portal Page Configuration Parameters

Parameter	Description
Logo	Select whether to display the logo image.
Logo Image	When **Logo** is set to **Image**, upload the logo picture or select the default logo.
Logo Position	Select the logo position (Upper, Middle, or Lower).
Background	Select the background with the image or the solid color.
Background Image	When **Background** is set to **Image**, upload the background image or select the default image.
Background Mask Color	When **Background** is set to **Solid Color**, configure the background color. The default value is **#ffffff**.
Welcome Message	Select the welcome message with the image or text.
Language	Select the language of the portal page and configure the content displayed on the portal page as required. You can click + to add portal pages in other languages. ● Welcome Message: Select the welcome message with the image or text. ● Marketing message: Enter the marketing message. ● Terms & Conditions: Enter terms and conditions. ● Copyright: Enter the copyright. ● SMS Login: After **SMS Login** is enabled, you can customize the names of the controls related to SMS authentication. 
Advertisement	Select whether to display the advertisement.
Welcome Text Color	Select the welcome message text color. The default value is #ffffff.
Welcome Text Size	Select the welcome text size.
Button Color	Select the button color. The default value is #0066ff.

Parameter	Description
Button Text Color	Select the button text color. The default value is #ffffff.
Link Color	Select the link color. The default value is #ffffff.
Text Color in Box	Select the text color in the box. The default value is #ffffff.

(6) After the configuration, click **OK** to save the portal template configurations.

3. Configuring Policy Info

Configure basic information of the policy info to add captive portal. After the configuration, click **OK** for the configurations to take effect.

Note

When **Encryption Mode** is set to a value other than **WPA2-Enterprise(802.1x)**, **Go to the "Captive Portal" page** is available and you can select whether to perform wireless authentication.

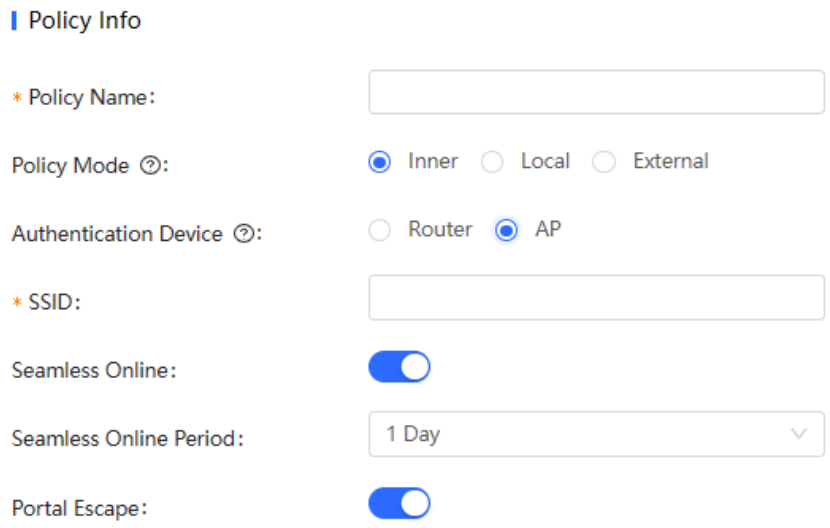


Table 4-17 Captive Portal Configuration Parameters

Parameter	Description
Policy Name	Indicates the name of a captive portal template.

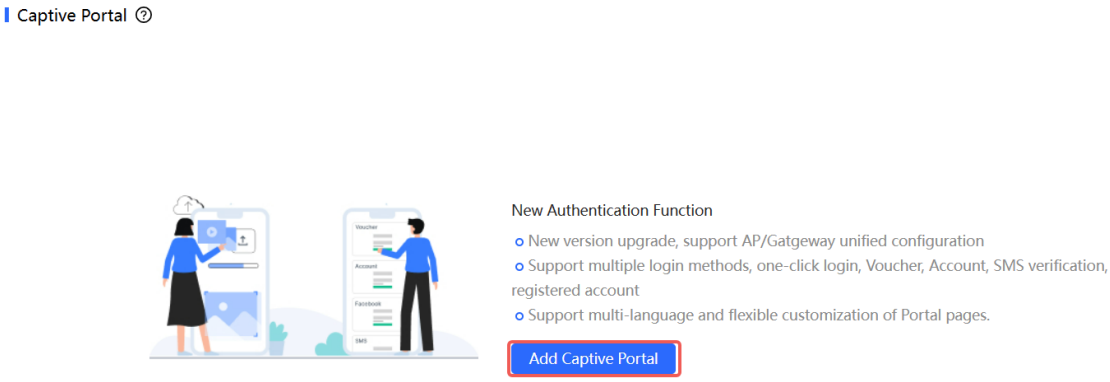
Parameter	Description
Policy Mode	Indicates the authentication mode to which the captive portal applies: Inner: Cloud-based authentication. The built-in authentication server in the public cloud is used for authentication. Local: Device-based local authentication and acceleration. Portal pages and accounts in the cloud are synchronized with the device for local authentication and acceleration. External: Third-party authentication, facilitating integration between the device and a third-party authentication server for authentication.
Authentication Device	Indicates the device that performs the authentication. When there is a router on the network, you are advised to enable authentication on the router. You can perform authentication on either an access point (AP) or a router. AP: An AP acts as the NAS. Router: A router or gateway acts as the NAS responsible for performing authentication at the gateway exit. AP Authentication: RAP, ReyeeOS 1.219 or later version. This parameter is not required if the policy mode is Local.
Network	Indicates the wired network that requires authentication. Enter the network segment in this field. Users connecting to the wired network corresponding to this network segment must be authenticated. This parameter is required if the Authentication Device is Router.
SSID	Indicates the network name of the Wi-Fi network that requires authentication. Users connecting to this wireless network must be authenticated. This parameter is required if the Authentication Device is AP.
Seamless Online	After this function is enabled, if the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within a certain period of time.
Seamless Online Period	Indicates the time period for seamless online. If the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within this period of time.
Portal Page	Indicates the portal page that is displayed after portal authentication. Click Current Project to select the portal page for an existing project. Click Shared Portals to select an existing portal page. Click Add Page to customize a portal page.

4.25.6 Configuring Registration on Ruijie Cloud

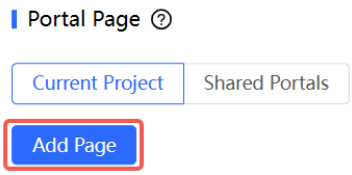
1. Configuring a Portal Template with the Authentication Mode Set to One-click Login

(1) Log in to Ruijie Cloud, choose **Project** > **Configuration** > **Auth & Accounts** > **Authentication** > **Captive Portal**, and select a network that needs to configure wireless authentication.

(2) Click **Add Captive Portal** to open the portal template configuration page.



(3) Click **Add Page** to customize a portal page.



(4) Configure basic information of the portal template.

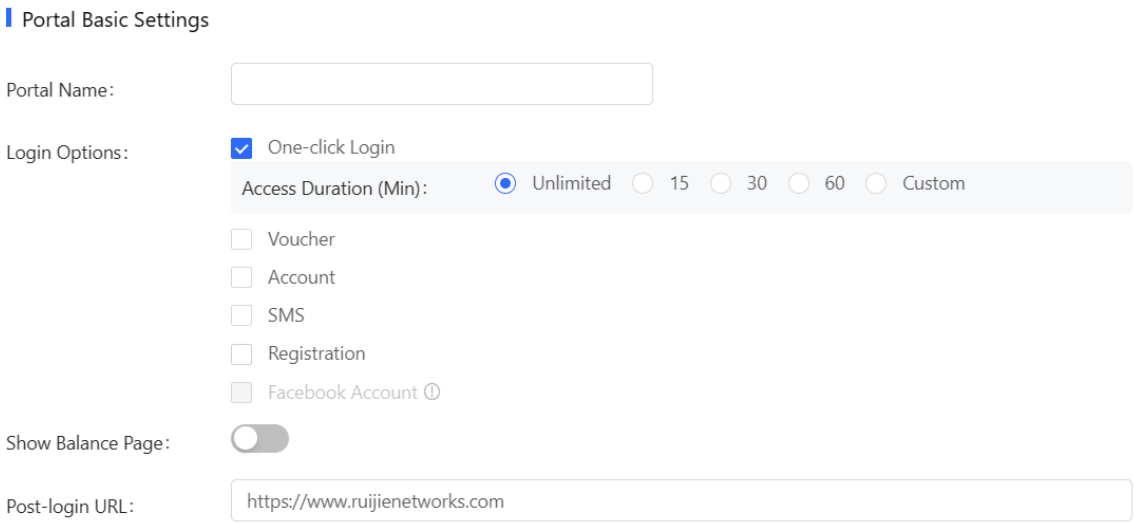
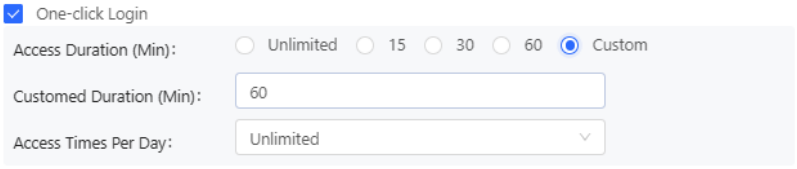


Table 4-18 Portal Template Configuration Parameters

Parameter	Description
Portal Name	Indicates the name of a captive portal template.
Login Options	Select **One-click Login**, which indicates login without the username and password. You can set **Access Duration** and **Access Times Per Day**. 
Show Balance Page	Indicates the available duration, time, or data after portal authentication.
Post-login URL	Indicates the URL that is displayed after portal authentication.

(5) Configure visual settings of the portal template.

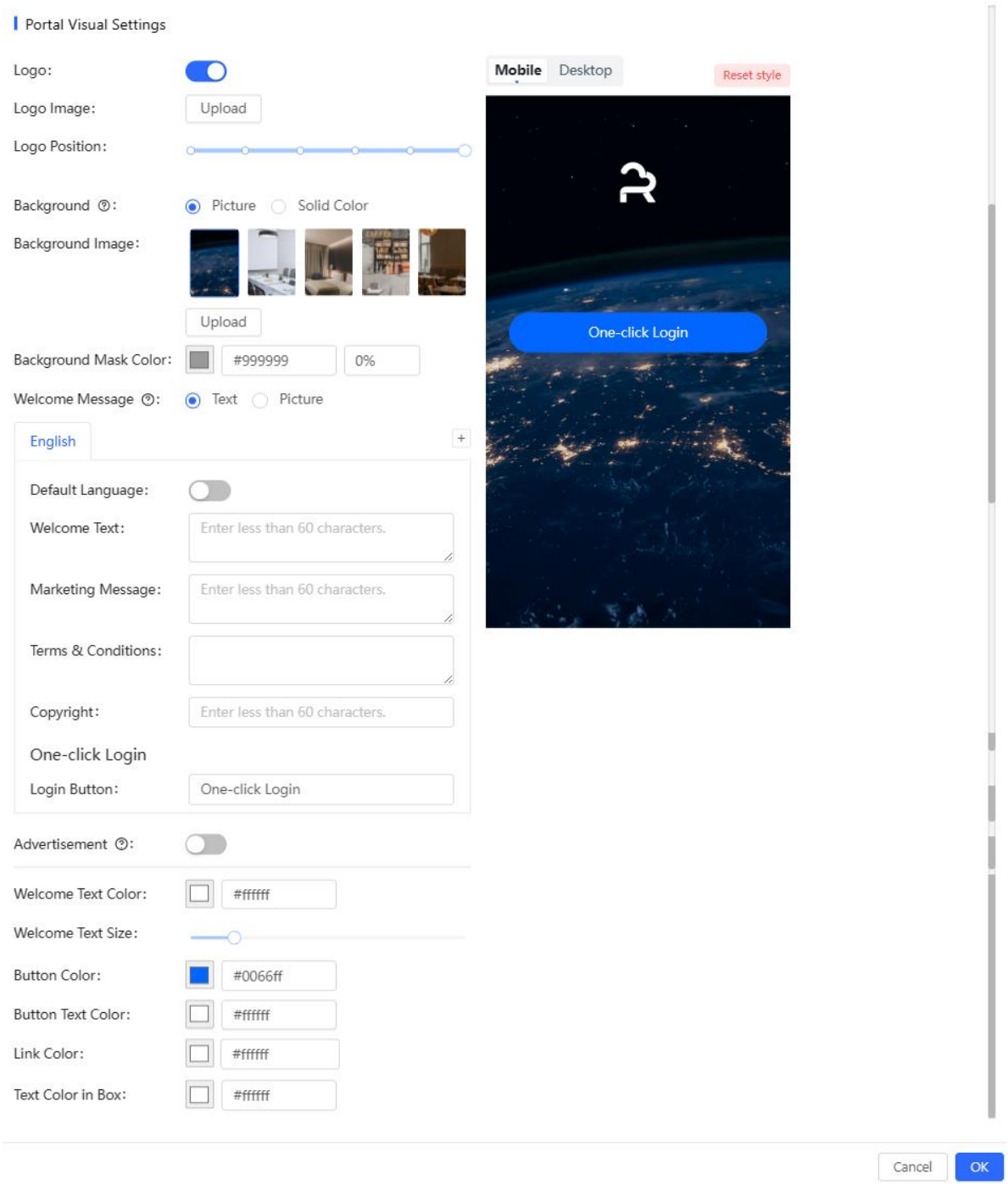
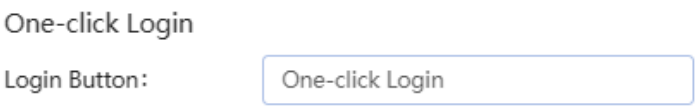


Table 4-19 Portal Page Configuration Parameters

Parameter	Description
Logo	Select whether to display the logo image.
Logo Image	When **Logo** is set to **Image**, upload the logo picture or select the default logo.
Logo Position	Select the logo position (Upper, Middle, or Lower).
Background	Select the background with the image or the solid color.

Parameter	Description
Background Image	When **Background** is set to **Image**, upload the background image or select the default image.
Background Mask Color	When **Background** is set to **Solid Color**, configure the background color. The default value is **#ffffff**.
Welcome Message	Select the welcome message with the image or text.
Language	Select the language of the portal page and configure the content displayed on the portal page as required. You can click + to add portal pages in other languages. ● Welcome Message: Select the welcome message with the image or text. ● Marketing message: Enter the marketing message. ● Terms & Conditions: Enter terms and conditions. ● Copyright: Enter the copyright. ● One-click Login: After **One-click Login** is enabled, you can customize the button name displayed on the portal page, which is set to **One-click Login** by default. 
Advertisement	Select whether to display the advertisement.
Welcome Text Color	Select the welcome message text color. The default value is #ffffff.
Welcome Text Size	Select the welcome text size.
Button Color	Select the button color. The default value is #0066ff.
Button Text Color	Select the button text color. The default value is #ffffff.
Link Color	Select the link color. The default value is #ffffff.
Text Color in Box	Select the text color in the box. The default value is #ffffff.

(6) After the configuration, click **OK** to save the portal template configurations.

2. Configuring Policy Info

Configure basic information of the policy info to add captive portal. After the configuration, click **OK** for the configurations to take effect.

Note

When **Encryption Mode** is set to a value other than **WPA2-Enterprise(802.1x)**, the **Captive Portal** page is available. You can select whether to perform wireless authentication.

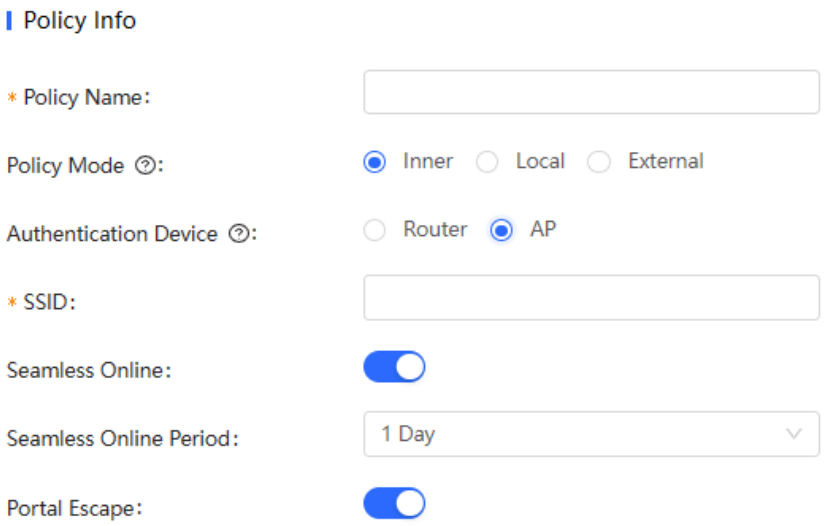


Table 4-20 Captive Portal Configuration Parameters

Parameter	Description
Policy Name	Indicates the name of a captive portal template.
Policy Mode	Indicates the authentication mode to which the captive portal applies: Inner: Cloud-based authentication. The built-in authentication server in the public cloud is used for authentication. Local: Device-based local authentication and acceleration. Portal pages and accounts in the cloud are synchronized with the device for local authentication and acceleration. External: Third-party authentication, facilitating integration between the device and a third-party authentication server for authentication.
Authentication Device	Indicates the device that performs the authentication. When there is a router on the network, you are advised to enable authentication on the router. You can perform authentication on either an access point (AP) or a router. AP: An AP acts as the NAS. Router: A router or gateway acts as the NAS responsible for performing authentication at the gateway exit. AP Authentication: RAP, ReyeeOS 1.219 or later version. This parameter is not required if the policy mode is Local.

Parameter	Description
Network	Indicates the wired network that requires authentication. Enter the network segment in this field. Users connecting to the wired network corresponding to this network segment must be authenticated. This parameter is required if the Authentication Device is Router.
SSID	Indicates the network name of the Wi-Fi network that requires authentication. Users connecting to this wireless network must be authenticated. This parameter is required if the Authentication Device is AP.
Seamless Online	After this function is enabled, if the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within a certain period of time.
Seamless Online Period	Indicates the time period for seamless online. If the first authentication is successful, subsequent connections to this Wi-Fi network will automatically be authenticated within this period of time.
Portal Page	Indicates the portal page that is displayed after portal authentication. Click Current Project to select the portal page for an existing project. Click Shared Portals to select an existing portal page. Click Add Page to customize a portal page.

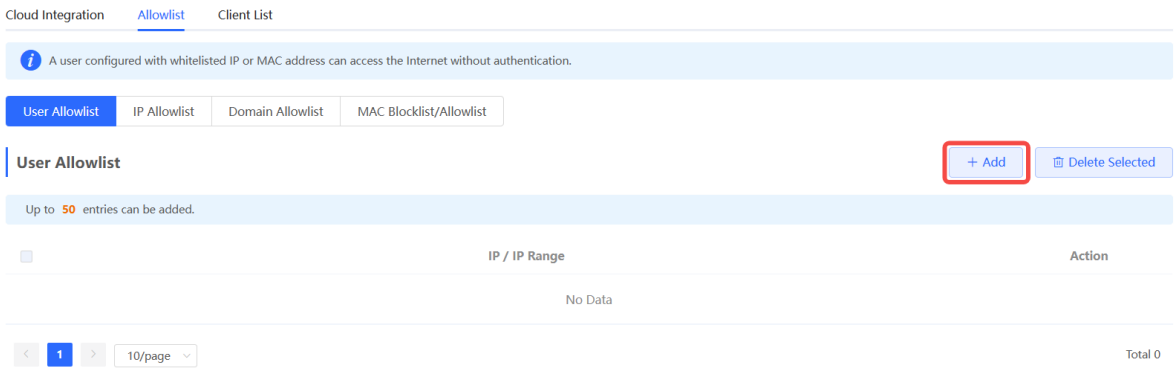
4.25.7 Configuring an Authentication-Free User List on Web Interface

You can configure authentication-free for wireless STAs (IP address/MAC address), public IP addresses, and domain names. Users can directly use network services or access specific websites without entering the username, password, or other information.

1. Configuring an Authentication-Free User

(1) Choose **Network-Wide** > **Workspace** > **Wireless** > **Wireless Auth** > **Allowlist > User Allowlist.**

(2) Click **Add** to open the configuration page.



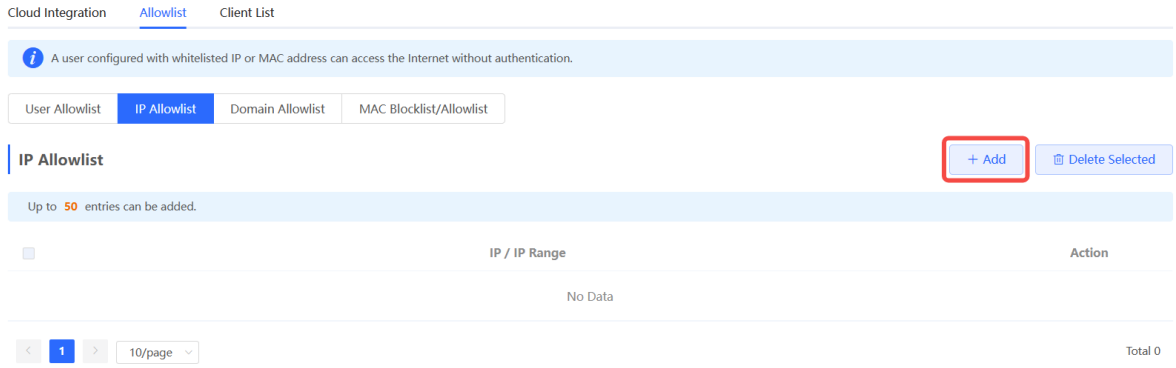
(3) Configure an STA IP address or IP address range. After the configuration, click **OK** to save the configurations.



2. Configuring an Authentication-Free Public IP Address

(1) Choose **Network-Wide** > **Workspace** > **Wireless** > **Wireless Auth** > **Allowlist > IP Allowlist.**

(2) Click **Add** to open the configuration page.



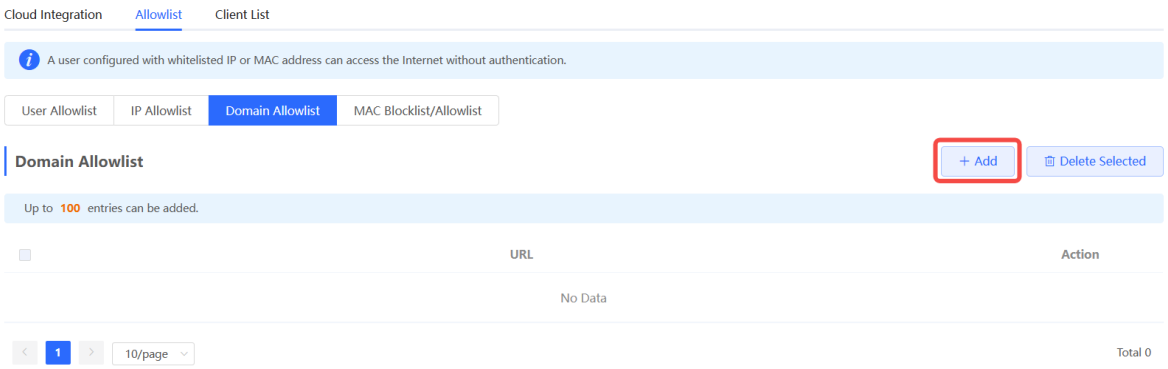
(3) Configure a public IP address or public IP address range. After the configuration, click **OK** to save the configurations.



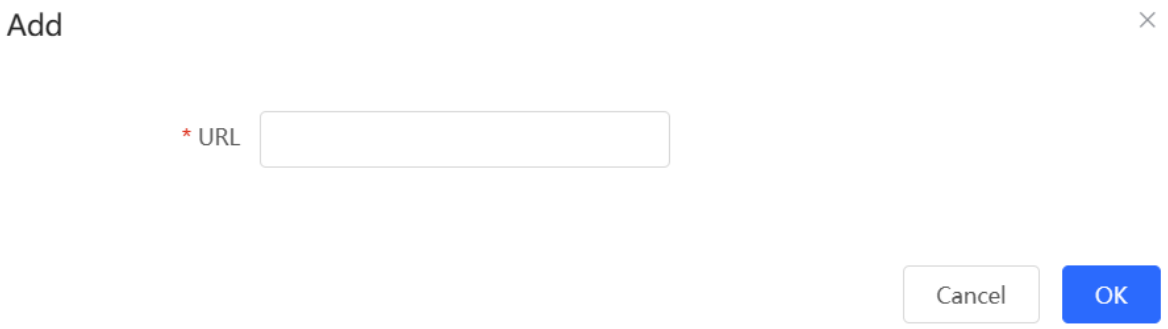
3. Configuring a Domain Name Allowlist

(1) Choose **Network-Wide** > **Workspace** > **Wireless** > **Wireless Auth** > **Allowlist > Domain Allowlist.**

(2) Click **Add** to open the configuration page.



(3) Configure authentication-free websites. After the configuration, click **OK**.

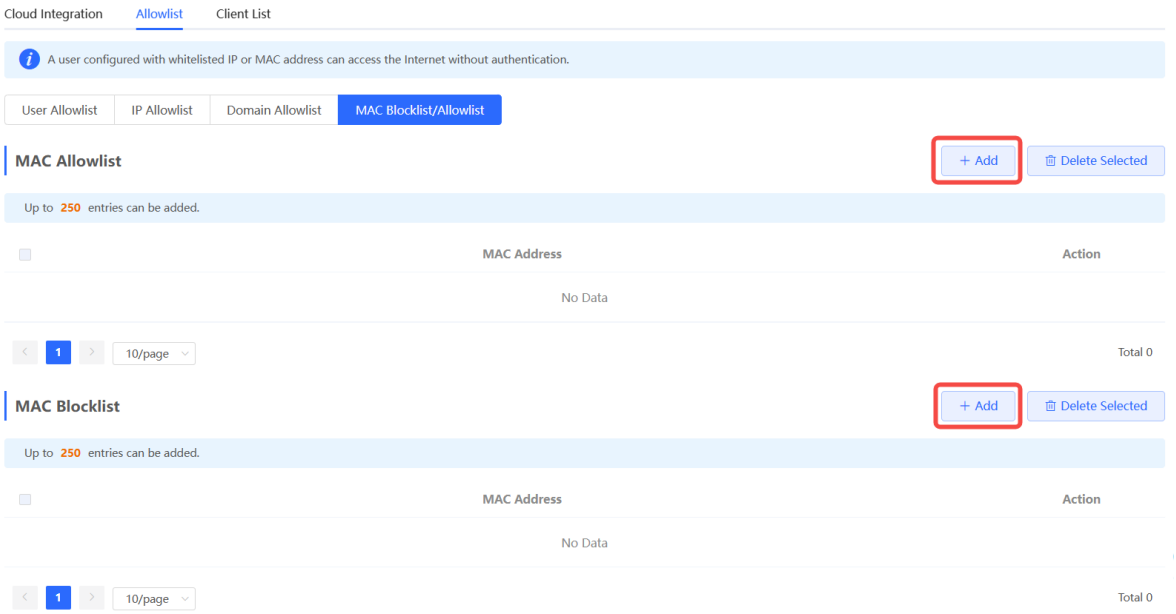


4. Configuring a MAC Address Allowlist and Blocklist

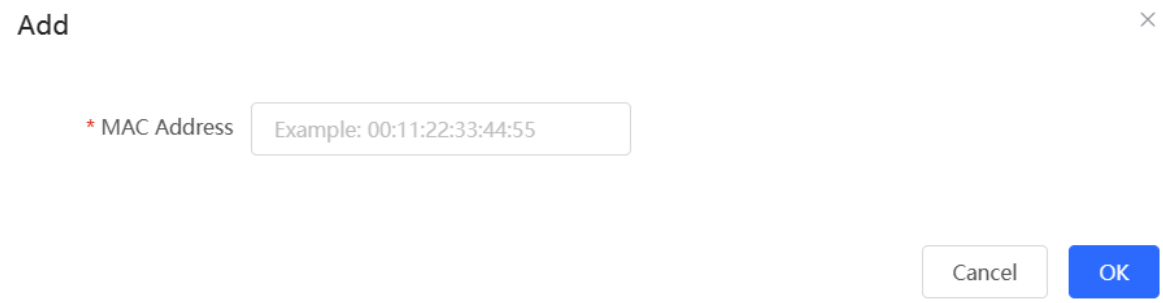
STAs whose MAC addresses are added to the MAC address allowlist can access the network without authentication, and STAs whose MAC addresses are added to the MAC address blocklist are forbidden to access the network.

(1) Choose **Network-Wide** > **Workspace** > **Wireless** > **Wireless Auth** > **Allowlist > MAC Blocklist/Allowlist.**

(2) Click **Add** to open the MAC address allowlist or blocklist configuration page.



(3) Configure the MAC address of a wireless STA. After the configuration, click **OK**.

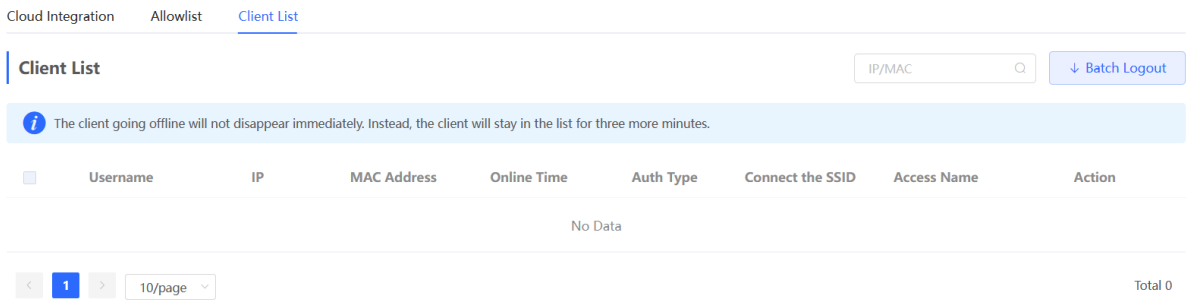


4.25.8 Displaying Authenticated Users on web interface

Choose **Network-Wide** > **Workspace** > **Wireless** > **Wireless Auth** > **Client List** to display authenticated users.

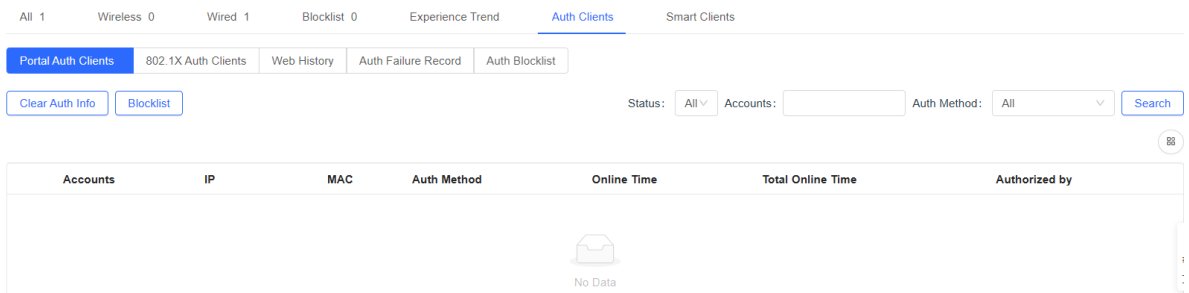
Note

The client going offline will not disappear immediately. Instead, the client will stay on the list for three more minutes.



4.25.9 Displaying Authenticated Users on Ruijie Cloud

Log in to Ruijie Cloud, choose **Project** > **Network** > **Clients** > **Auth Clients**, and select a network that needs to display authenticated users.



4.26 Configuring 802.1X Authentication

4.26.1 Overview

IEEE 802.1X is a port-based network access control standard that provides secure access services for LANs.

On an IEEE 802 LAN, a user can directly access network resources without authentication and authorization as long as it can connect to a network device. This uncontrolled behavior can bring security risks to the network. The IEEE 802.1X protocol was proposed to address the security issues on an IEEE 802 LAN.

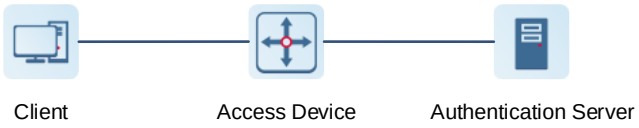
The IEEE 802.1X protocol supports three security applications: Authentication, Authorization, and Accounting, abbreviated as AAA.

- Authentication: Determines whether a user can obtain access, and restricts unauthorized users.
- Authorization: Authorizes services available for authorized users, and controls the permissions of unauthorized users.
- Accounting: Records the usage of network resources by users, and provides a basis for traffic billing.

The 802.1X feature can be deployed on networks to control user authentication, authorization, and more.

An 802.1X network uses a typical client/server architecture, consisting of three entities: client, access device, and authentication server. A typical architecture is shown here.

Figure 4-1 Typical Architecture of 802.1X Network



- The client is usually an endpoint device which can initiate 802.1X authentication through the client software. The client must support the Extensible Authentication Protocol over LANs (EAPoL) on the local area network.
- The access device is usually a network device (AP or switching device) that supports the IEEE 802.1X protocol. It provides an interface for clients to access the local area network, which can be a physical or a logical interface.
- The authentication server can realize user authentication, authorization, and accounting. Usually a RADIUS server is used as the authentication server.

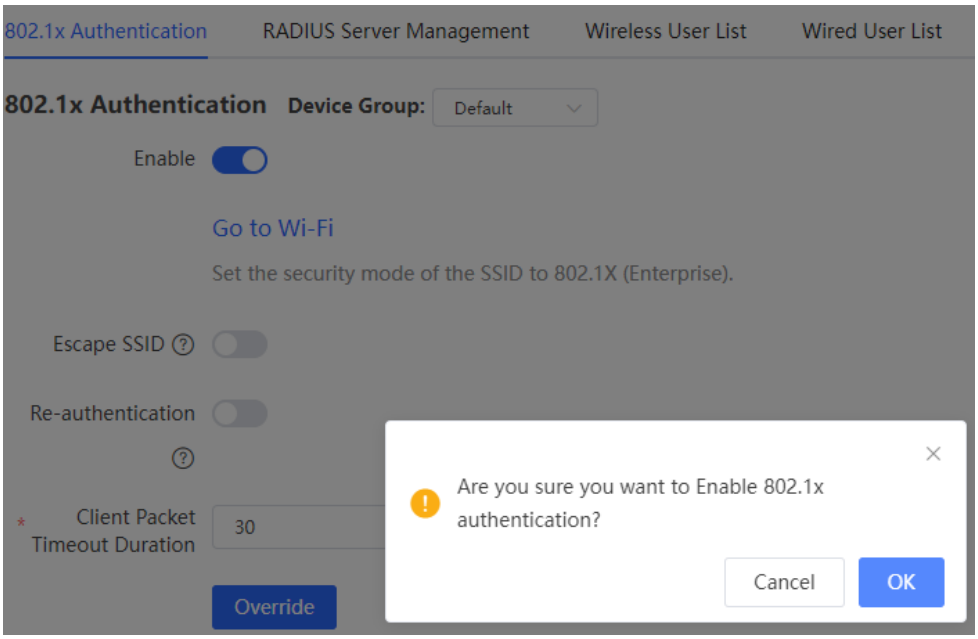
Note

The APs only support the authentication.

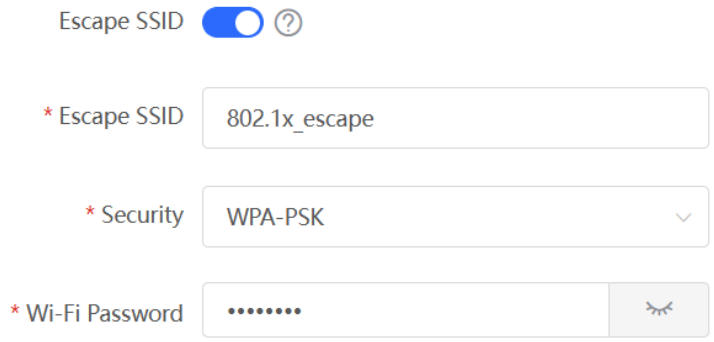
4.26.2 Configuring 802.1X Authentication

(1) Choose **Network-Wide** > **Workspace** > **Network-Wide** > **802.1x Authentication**.

(2) Click **Global 802.1x.** A pop-up window is displayed. Click **OK**.



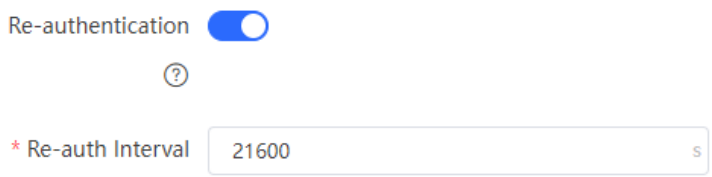
Enable the **Escape SSID** and configure parameters such as Escape SSID. Users can temporarily connect to the Escape SSID without a password when the authentication server is unavailable.



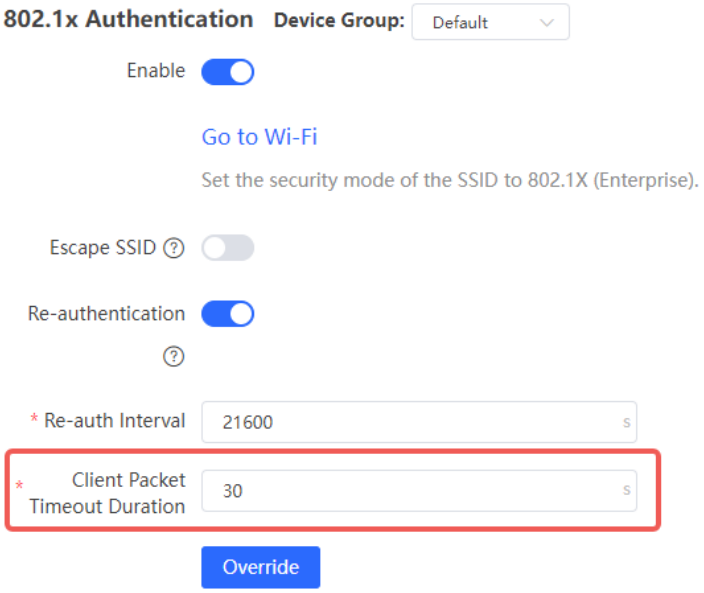
Toggle on **Re-authentication** and set the re-authentication interval. The re-authentication function performs periodic user authentication, and users who do not pass the periodic authentication will be disconnected.

Caution

The re-authentication interval must be set to 10800 seconds or above.



Client Packet Timeout Duration: The time limit for a client to wait for a response from the server. An authentication failure occurs after this time limit expires. The value range is 10 to 60 seconds.



(3) Add a server.

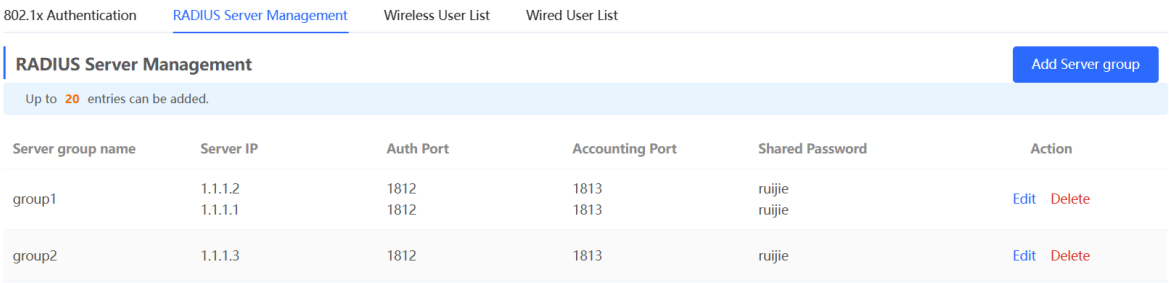
Before proceeding, make sure that the following conditions are met:

- The RADIUS server is ready and the following configurations have been completed.
  - A username and a password have been added for client login.
  - The firewall has been disabled. Otherwise, authentication messages may be blocked, leading to authentication failure.
  - The IP address of the device to be authenticated has been added as a trusted IP address on the RADIUS server.
- The network between the device and the RADIUS server is reachable.
- The IP addresses of the RADIUS server and the device to be authenticated have been obtained.

Click **Add Server group** to configure server group parameters. You can click **Edit** to edit the server group, and click **Delete** to delete the server group.

Note

- You need to add at least one server for each server group, and a maximum of five servers can be added.
- Up to 20 server groups can be added under **RADIUS Server Management**.



You can click ⊕ Add Server to add multiple servers to a server group, and click 🗑 Server to delete a selected server.

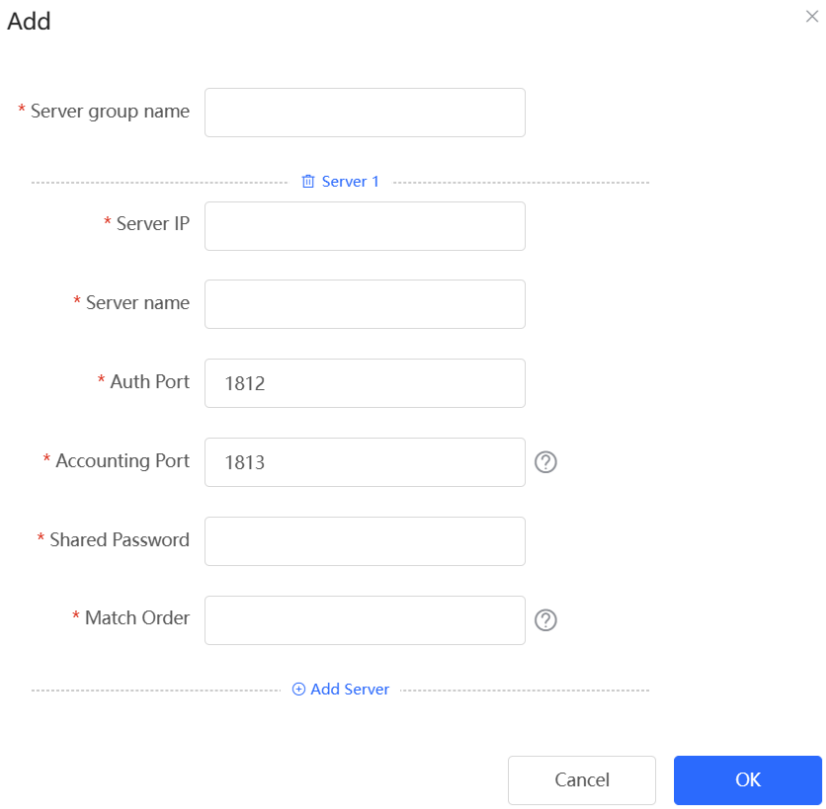


Table 4-21 Server Group Configuration Parameters

Parameter	Description
Server group name	Name of RADIUS server group
Server IP	IP address of the RADIUS server.
Server name	Name of RADIUS server
Auth Port	The port number for the RADIUS server to perform user authentication.
Accounting Port	The port number for the RADIUS server to perform user accounting.
Shared Password	Shared key of the RADIUS server.
Match Order	The system supports up to five RADIUS servers. A larger value indicates a higher priority.

(4) Configure the server and click **Save**.

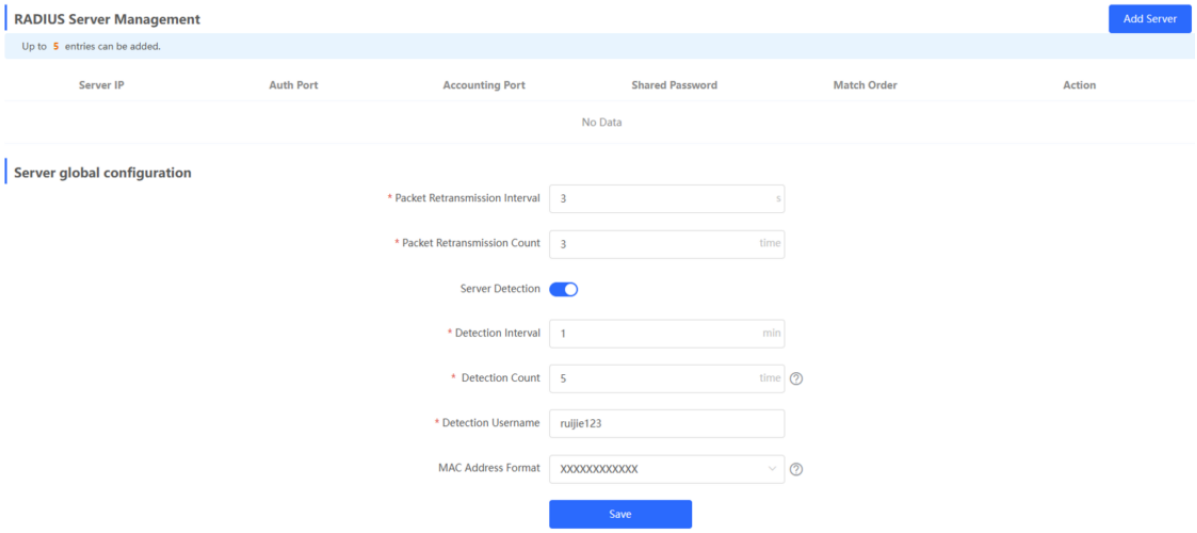


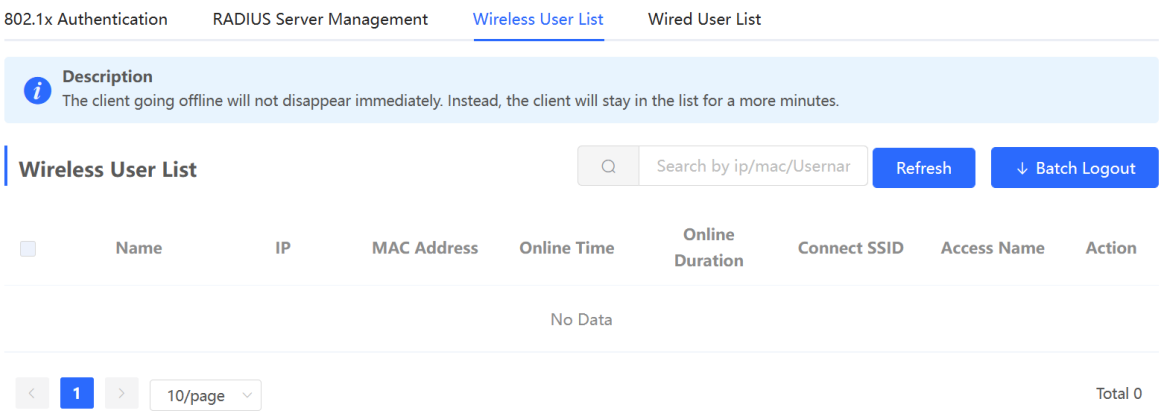
Table 4-22 Server Global Configuration Parameters

Parameter	Description
Packet Retransmission Interval	Configure the interval during which the device sends a request to a RADIUS server before confirming that the RADIUS server is unreachable.
Packet Retransmission Count	Configure the number of times that the device sends requests to a RADIUS server before confirming that the RADIUS server is unreachable.
Server Detection	If this function is enabled, it is necessary to set the server detection cycle, server detection times, and server detection username. Determines the server status and whether to enable functions such as the escape function.
MAC Address Format	Configure the format of the MAC address used in attribute 31 (**Calling-Station-ID**) of a RADIUS message. The following formats are supported: ● Dotted hexadecimal format. For example, 00d0.f8aa.bbcc. ● IETF format. For example: 00-D0-F8-AA-BB-CC. ● Unformatted (default). For example: 00d0f8aabbcc

4.26.3 Viewing Wireless User List

When the 802.1X feature is configured globally, and a client is authenticated and connected to the network in a wireless manner, you can view the client in the **Wireless User List**.

Choose **Network-Wide** > **Workspace** > **Wireless** > **802.1x Authentication** > **Wireless User List**.



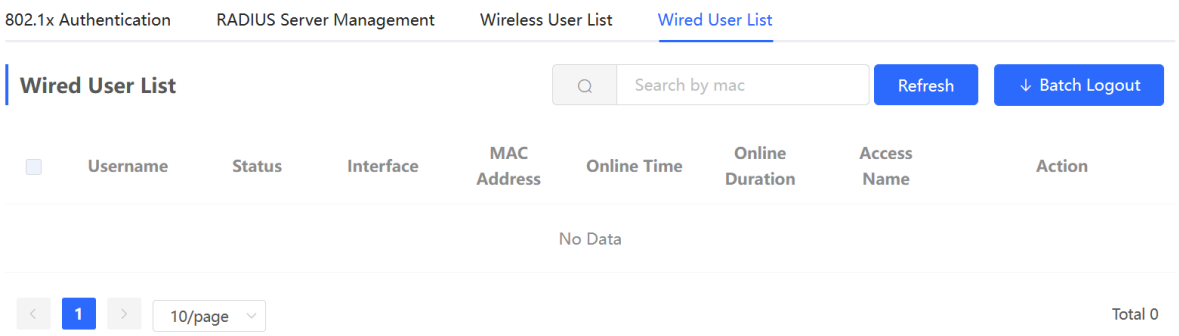
Click **Refresh** to view the latest user list.

If you want to disconnect a user from the network, select the user and click **Logout** under the **Action** column. You can also select multiple users and click **Batch Logout** to disconnect selected users.

4.26.4 Viewing Wired User List

When the 802.1X feature is configured globally, and a client is authenticated and connected to the network in a wired manner, you can view the client in the **Wired User List**.

Choose **Network-Wide** > **Workspace** > **Wireless** > **802.1x Authentication** > **Wired User List.**



Click **Refresh** to view the latest user list.

If you want to disconnect a user from the network, select the user and click **Logout** under the **Action** column. You can also select multiple users and click **Batch Logout** to disconnect selected users.

5 Network Settings

Note

This chapter takes the currently logged in device as an example to describe the entry of each function setting page. If you need to configure other devices in the network, please refer to the following path to enter the configuration page of the corresponding device, and then configure the function. Click 3.3 Managing Network Devices.

5.1 Switching Work Mode

5.1.1 Work Mode

See 2.4 Work Mode for details.

5.1.2 Self-Organizing Network Discovery

When setting the work mode, you can set whether to enable the self-organizing network discovery function. This function is enabled by default.

After the self-organizing network discovery function is enabled, the device can be discovered in the network and discover other devices in the network. Devices network with each other based on the device status and synchronize global configuration. You can log in to the Web management page of any device in the network to check information about all devices in the network. After this function is enabled, clients can maintain and manage the current network more efficiently. You are advised to keep this function enabled.

If the self-organizing network discovery function is disabled, the device will not be discovered in the network and it runs in local device mode. After logging in to the Web page, you can configure and manage only the currently logged in device. If only one device is configured or global configuration does not need to be synchronized to the device, you can disable the self-organizing network discovery function.

5.1.3 Configuration Steps

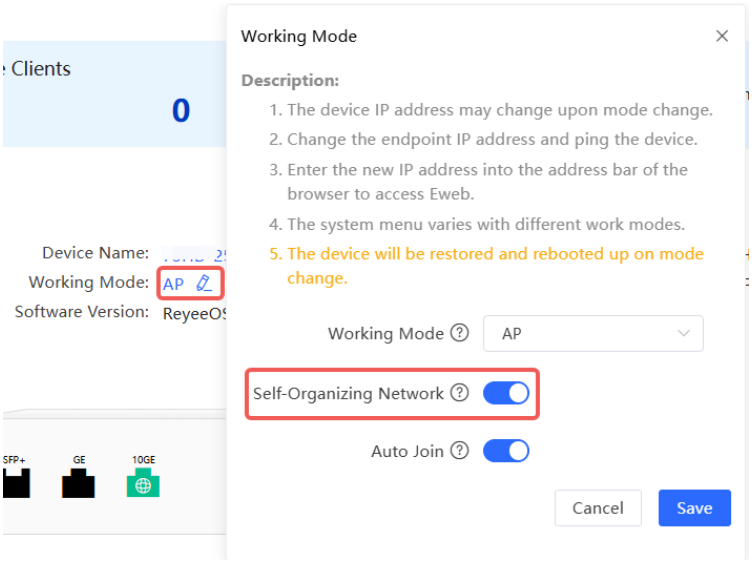
Note

If you need to switch the work mode to wireless bridging mode, please see 5.6.2 Wireless Repeater for details.

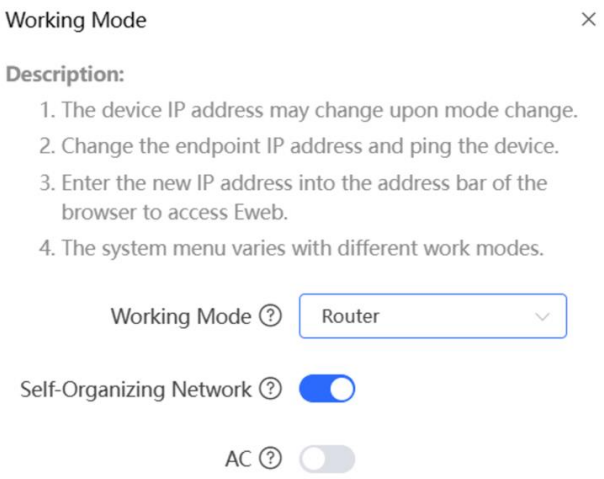
Go to the configuration page:

- Method 1: Choose **One-Device**. Click the device model and click the **Config** tab.
- Method 2: Choose **Network-Wide** > **Devices** > **AP**. Select the target device in the list and click **Manage**.

Click the current work mode to change the work mode.



AC function switch: If a device works in the router mode and the self-organizing network discovery function is enabled, you can enable or disable the AC function. After the AC function is enabled, the device in the router mode supports the virtual AC function and can manage downlink devices. If this function is disabled, the device needs to be elected as an AC in self-organizing network mode and then manage downlink devices.



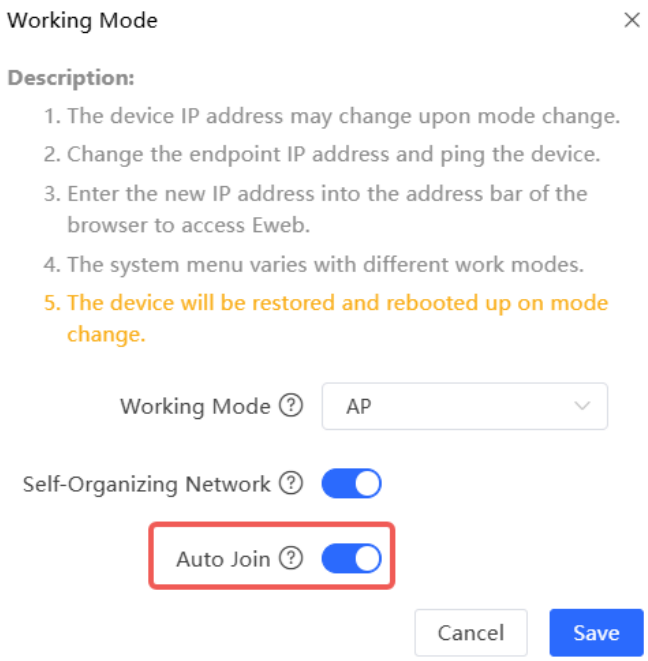
Caution

After the self-organizing network discovery is enabled, you can check the role of the device in self-organizing network mode.

Auto Join: When you toggle on **Self-Organizing Network** on a device, you can toggle on or off **Auto Join** as required. When **Auto Join** is toggled on, and the Reyee gateway or AC functions as the primary device, devices without deployment will automatically join the network. When **Auto Join** is toggled off, the devices cannot automatically join the network. **Auto Join** is enabled by default.

Specification

Auto Join is only supported on a device running OS 2.360 or later.

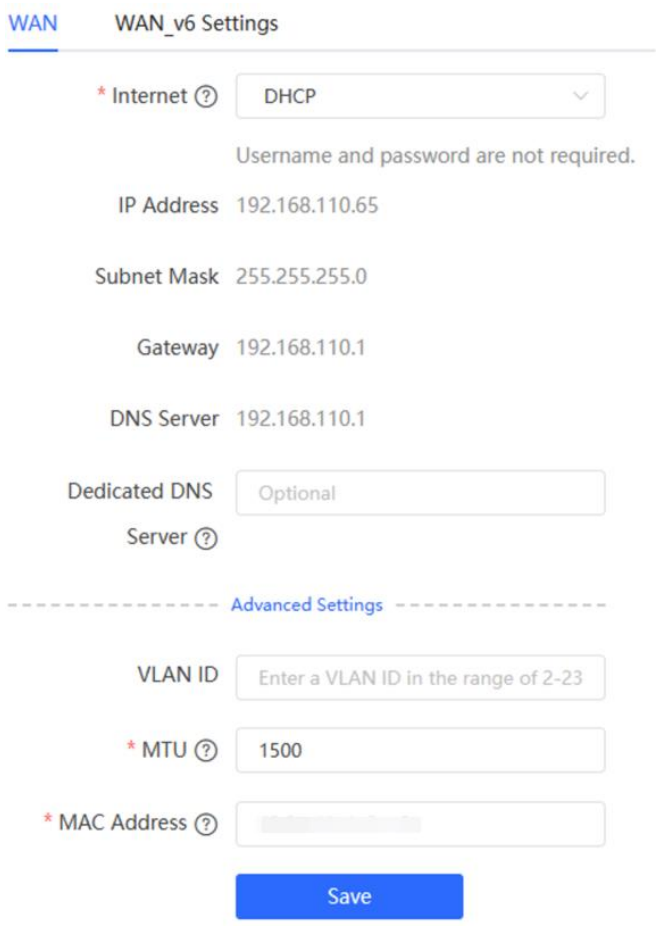


5.2 Configuring Internet Connection Type (IPv4)

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network** > **WLAN** > **WAN.**
- Method 2: Choose **Network-Wide** > **Workspace** > **Wired** > **WAN** > **WAN**.

Select the Internet connection type after confirming with the ISP. For detailed configuration, see 2.7 Configuration Wizard (Router Mode). After completing the configuration, click **Save**.



The device supports the following Internet connection types:

- **PPPoE**: This Internet connection type is supported only when the device works in routing mode. You need to manually configure the PPPoE username and password.
- **DHCP**: The current device will act as a DHCP client and apply for the IPv4 address/prefix from the upstream network device.
- **Static IP**: If this Internet connection type is selected, you need to manually configure a static IPv4 address, subnet mask, gateway address, and DNS server.

5.3 Configuring Internet Connection Type (IPv6)

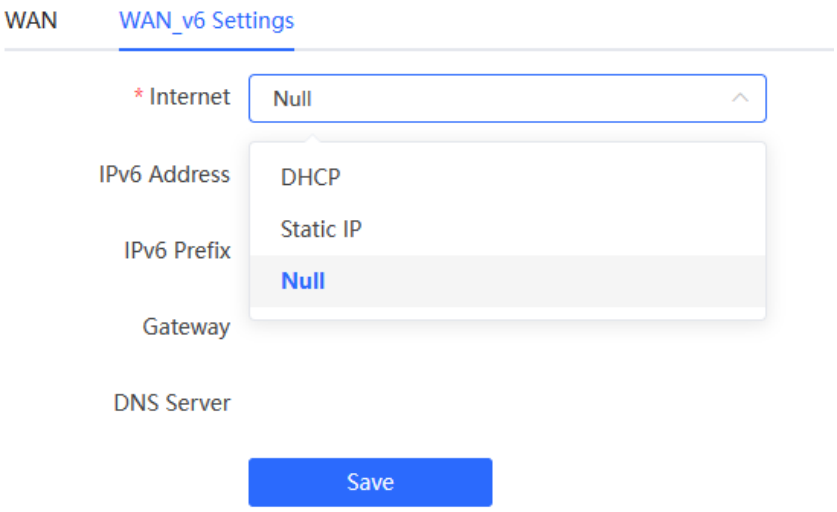
Caution

This function is supported when the device works in AP mode.

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network** > **WLAN** > **WAN_V6 Settings.**
- Method 2: Choose **Network-Wide** > **Workspace** > **Wired** > **WAN** > **WAN_V6 Settings**.

Select the Internet connection type after confirming with the ISP. After completing the configuration, click **Save**.



The device supports the following Internet connection types:

- **DHCP**: The current device will act as a DHCPv6 client and apply for the IPv6 address/prefix from the upstream network device.
- **Static IP**: If this Internet connection type is selected, you need to manually configure a static IPv6 address, gateway address, and DNS server.
- **Null**: The IPv6 function is disabled on the current WAN port.

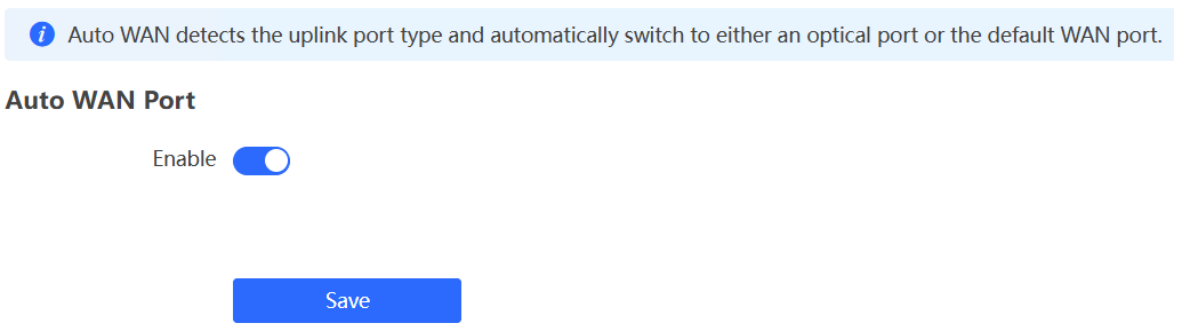
5.4 Configuring Automatic WAN Port Switching

Specification

This function is only supported on the RG-APF2260(MG).

Go to the configuration page: Choose **One-Device** > **Config** > **Network** > **Auto WAN Port**.

When a non-optical port is selected to connect to an uplink device and **Auto WAN Port** is enabled, the Ethernet port on the optical AP will serve as the WAN port to connect to an uplink switch or gateway. In this case, the optical AP functions as a conventional AP.



Caution

- **Auto WAN Port** only applies to the switching between the device's Ethernet port and the default WAN port.
- Upgrading a deployed device while saving the configuration: When upgrading from a version that does not support **Auto WAN Port** to a version that supports it, **Auto WAN Port** will be disabled by default.
- Upgrading a deployed device without saving the configuration: When upgrading from a version that does not support **Auto WAN Port** to a version that supports it, **Auto WAN Port** will be enabled by default.
- For new devices: **Auto WAN Port** is enabled by default.
- Using a non-default WAN port as an uplink port: If you upgrade or downgrade the software version to one that does not support **Auto WAN Port** while saving the configuration, you will receive a prompt that the upgrade or downgrade is not allowed. Existing configurations cannot be imported to a device that does not support **Auto WAN Port**. Forcing such an import may result in network unavailability.

5.5 Configuring LAN Port

Caution

This function is not supported when the device works in AP mode.

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network** > **LAN** > **LAN Settings.**
- Method 2: Choose **Network-Wide** > **Workspace** > **Wired** > **LAN** > **LAN Settings**.

Click **Edit**. In the displayed dialog box, enter the IP address and subnet mask, and click **OK**. Change the IP address of the LAN port. Enter the new IP address in the browser and log in to the device again to configure and manage the device.

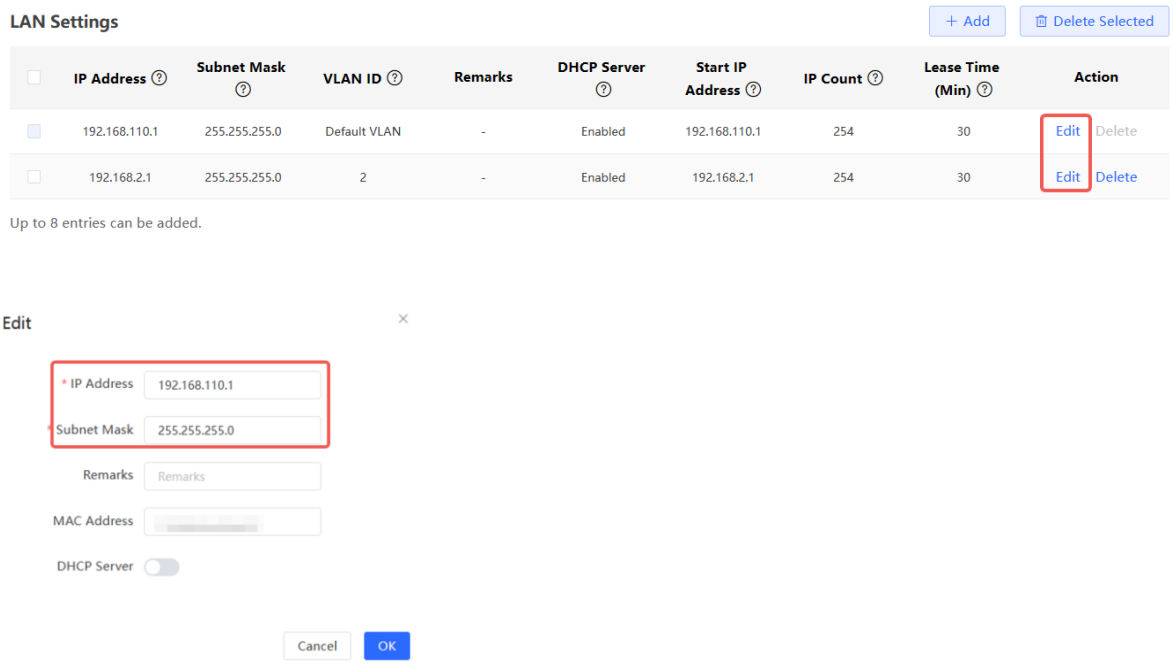


Table 5-1 LAN Settings

Parameter	Description
IP Address	Default gateway for devices connected to the Internet through this LAN.
Subnet Mask	Subnet mask of devices on the LAN.
VLAN ID	VLAN ID.
Remarks	VLAN description.
DHCP Server	After this function is enabled, devices on the LAN can automatically obtain the IP address. You need to configure the start IP address, IP count and lease time, as well as DHCP server options. For details, see5.11 Configuring DHCP Server
Start IP Address	Start IP address that a DHCP server automatically assigns to clients. The start IP address must be within the network segment calculated based on the IP address and subnet mask.
IP Count	The number of assignable IP addresses depends on the LAN segment and the start IP address.
Lease Time (Min)	Lease time of the automatically assigned IP addresses. When the lease time expires, devices on the LAN will obtain IP addresses again.

5.6 Configuring Repeater Mode

5.6.1 Wired Repeater

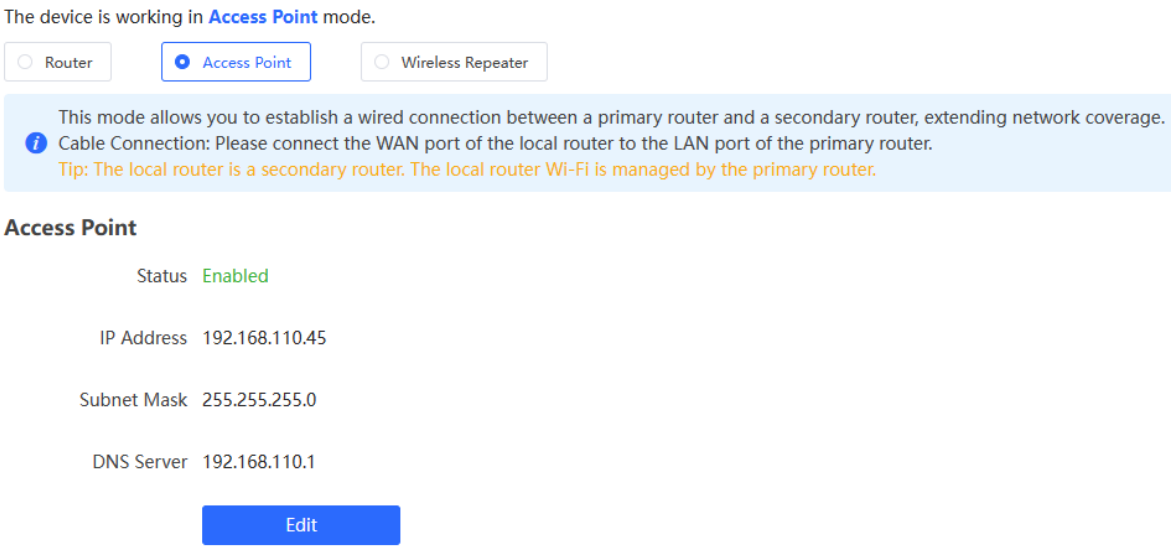
Choose **One-Device**. Click the device mode, and then choose **Config** > **Network** > **Work Mode**.

Connect a network cable from the WAN port (uplink LAN port) of the device to the upper-layer device.

Select **Access Point**, click **Check**, confirm the Wi-Fi settings of the AP, and then click **Save** to expand the network coverage.

Caution

After the configuration is saved, connected clients will be disconnected from the network for a short period of time. You can reconnect the clients to the Wi-Fi network for restoration.



5.6.2 Wireless Repeater

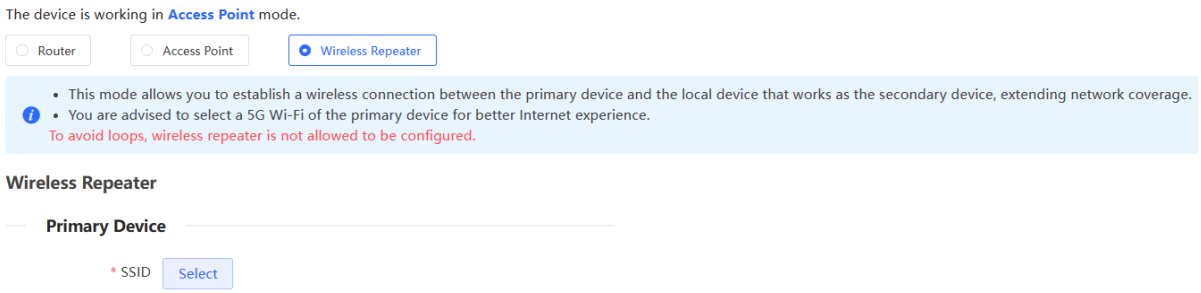
The wireless repeater mode extends the Wi-Fi coverage range of the primary device. The device supports the dual-link wireless repeater mode and can extend both 2.4 GHz and 5 GHz signals of the primary device.

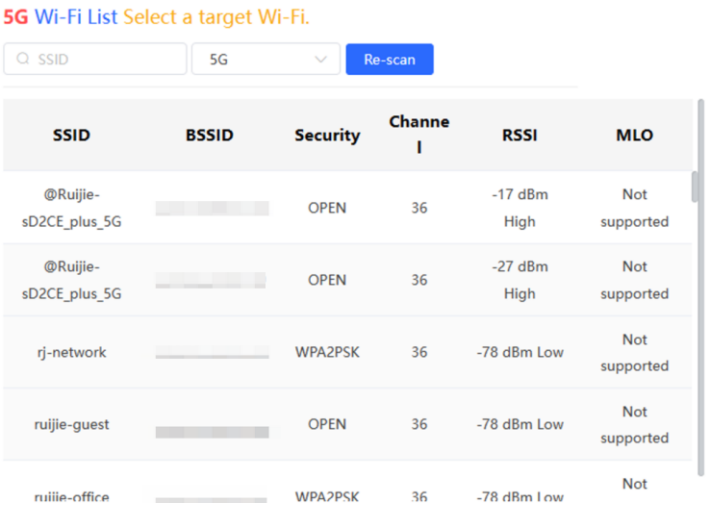
Note

- To avoid loops in wireless repeater mode, remove the network cable from the WAN port.
- Obtain the Wi-Fi name and Wi-Fi password of the upper-layer router.

Choose One-Device. Click the device mode, and then choose **Config** > **Network** > **Work Mode**.

Click **Wireless Repeater** and then click **Select**. A list of surrounding Wi-Fi signals pops up. A list of nearby 5 GHz Wi-Fi networks is displayed by default. You can switch from 5 GHz to 2.4 GHz band by selecting **2.4G** from the drop-down list box. You are advised to select a strong 5 GHz Wi-Fi network signal.

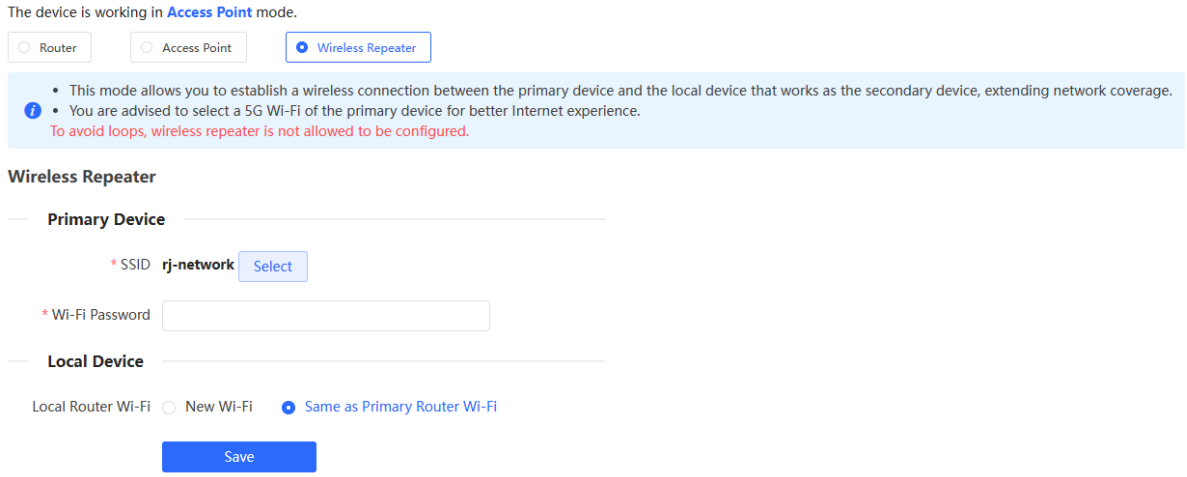




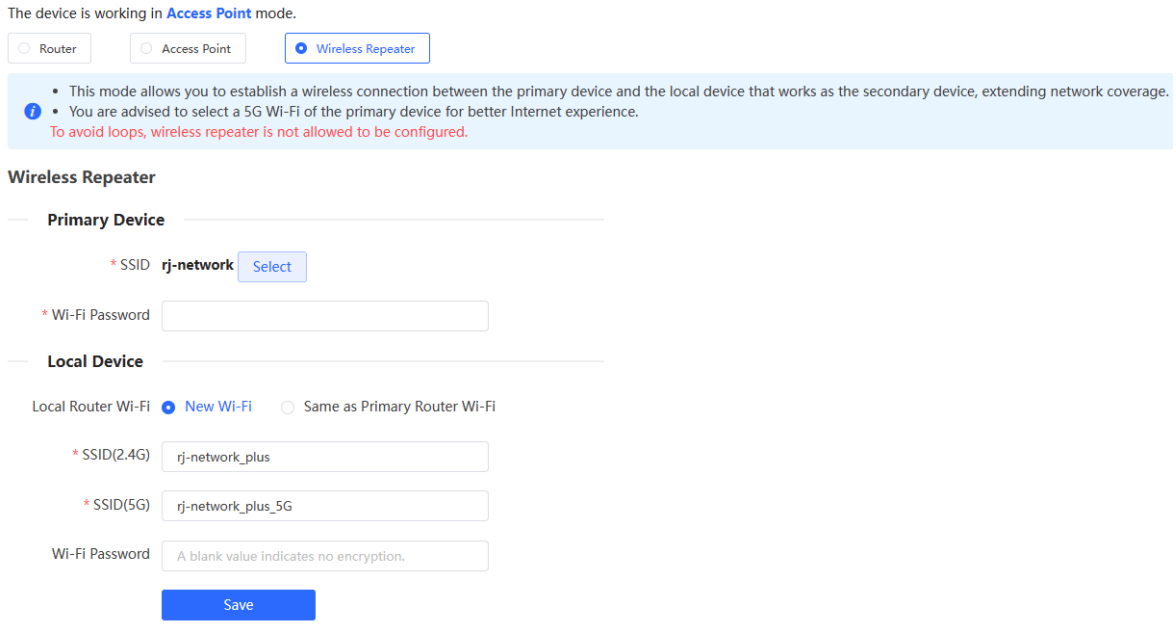
(1) Select the Wi-Fi signal of the upper-layer device that you want to extend. The configuration items of the local device are displayed. If the signal of the upper-layer device is encrypted, enter the Wi-Fi password of the upper-layer device.

(2) Configure Local Router Wi-Fi. You can select New Wi-Fi or Same as Primary Router Wi-Fi.

- If you select **Same as Primary Router Wi-Fi**, the Wi-Fi settings of the router are automatically synchronized with those on the primary router. Generally, clients merge Wi-Fi signals with the same name into one Wi-Fi signal, and they can search out only the Wi-Fi signal of the primary router.



- If **New Wi-Fi** is selected, you can set a local Wi-Fi name and password. Clients will search out different Wi-Fi signals.



Caution

- After the configuration is saved, the AP will be disconnected from the Wi-Fi network and needs to connect to the new Wi-Fi network. Exercise caution when performing this operation. Record the new Wi-Fi name and password.
- You are advised to install the AP in a position where the RSSI is greater than two bars of signal to prevent signal loss. If the signal at the installation position is too weak, the Wi-Fi extension may fail or the quality of extended signal may be poor.

5.7 Creating a VLAN

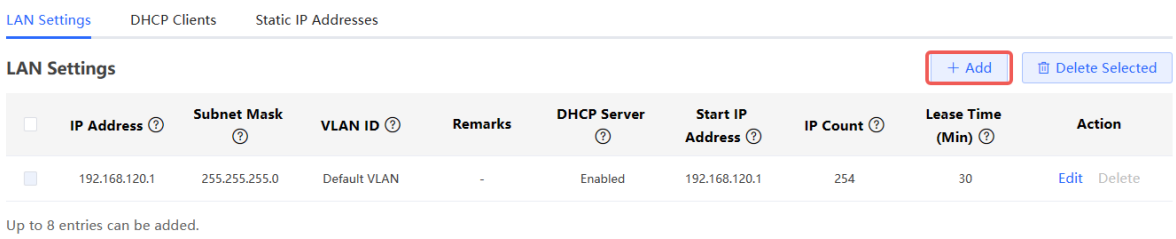
Caution

This function is not supported when the device works in AP mode.

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network > LAN > LAN Settings**.
- Method 2: Choose **Network-Wide > Workspace > Wired > LAN > LAN Settings**.

A LAN can be classified into multiple VLANs. Click **Add** to create a VLAN.



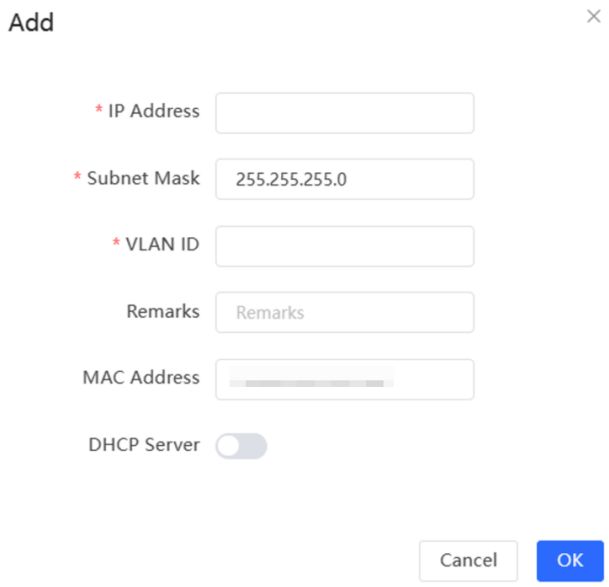


Table 5-2 VLAN Configuration Parameters

Parameter	Description
IP Address	IP address of the VLAN interface. The default gateway of devices that access the Internet through the current LAN should be set to this IP address.
Subnet Mask	Subnet mask of the IP address of the VLAN interface.
VLAN ID	VLAN ID.
Remark	VLAN description.
MAC	MAC address of the VLAN interface.
DHCP Server	Enable the DHCP server function. After it is enabled, devices on the LAN can automatically obtain IP addresses. After the DHCP service is enabled, you need to configure the start IP address to be assigned, number of IP addresses to be assigned, and address lease term for the DHCP server, and other DHCP server options. For details, see 5.11 Configuring DHCP Server.

Caution

VLAN configuration is associated with the configuration of the uplink device. Therefore, refer to the configuration of the uplink device when configuring a VLAN.

5.8 Configuring Port VLAN

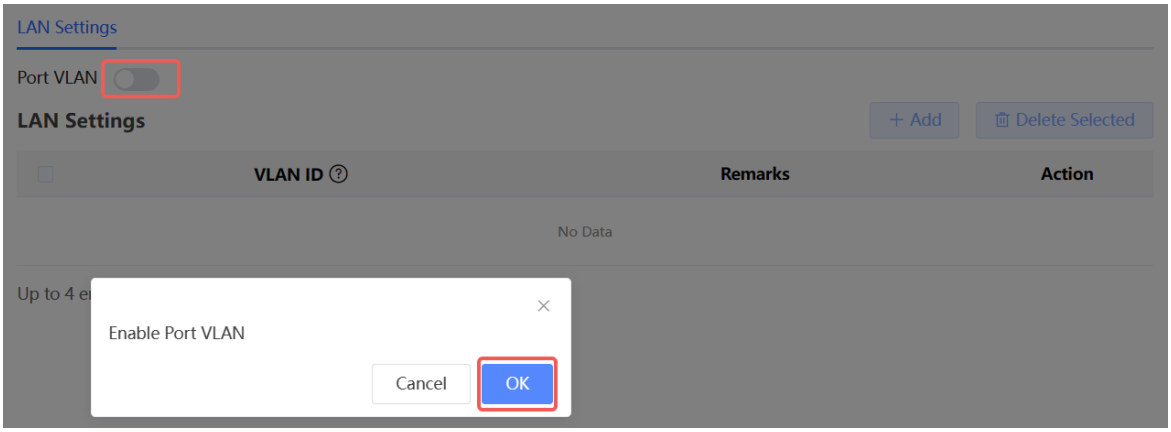
Caution

The port VLAN can be configured only when the device works in AP mode.

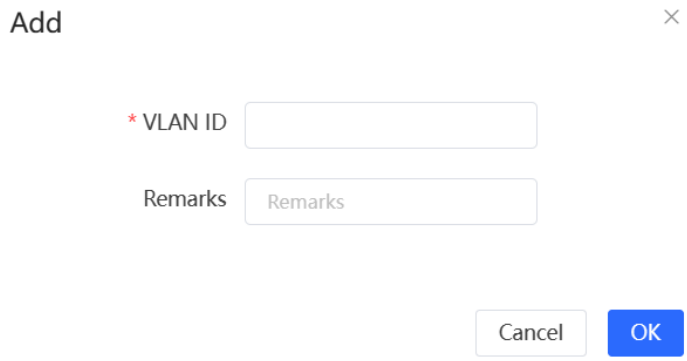
Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network > LAN > LAN Settings**.
- Method 2: Choose **Network-Wide > Workspace > Wired > LAN > LAN Settings**.

(1) On the **LAN Settings** tab page, turn on **Port VLAN**, and click **OK** in the confirmation dialog box.

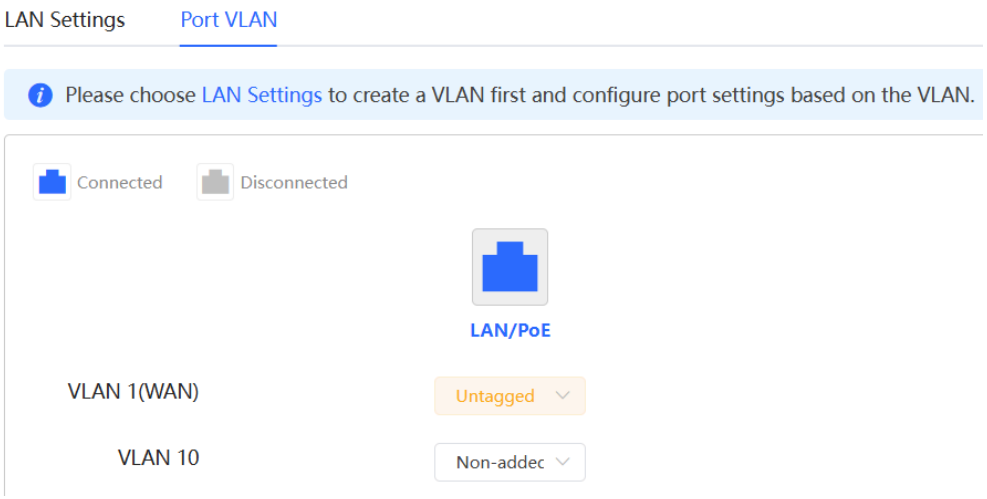


(2) Click **Add**. Enter the VLAN ID and description, and click **OK** to create a VLAN. The added VLAN is used to set the VLAN, to which a port belongs.



(3) Switch to the **Port VLAN** tab page and configure VLANs for the port. Click the option box below the port, select the mapping between a VLAN and the port from the drop-down list box, and click **Save**.

- **Untagged**: Configure the VLAN as the native VLAN of the port. That is, when receiving a packet from this VLAN, the port removes the VLAN tag from the packet and forwards the packet. When receiving an untagged packet, the port adds the VLAN tag to the packet and forwards the packet through the VLAN. Only one VLAN can be configured as an untagged VLAN on each port.
- **Tagged**: Configure the VLAN as an allowed VLAN of the port, but the VLAN cannot be the native VLAN. That is, VLAN packets carry the original VLAN tag when they are forwarded by the port.
- **Non-added**: Configure the port not to allow packets from this VLAN to pass through. For example, if VLAN 10 and VLAN 20 are not added to port 2, port 2 will neither receive nor send packets from or to VLAN 10 and VLAN 20.



5.9 Changing MAC Address

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network > WAN > WAN**.
- Method 2: Choose **Network-Wide > Workspace > Wired > WAN > WAN**.

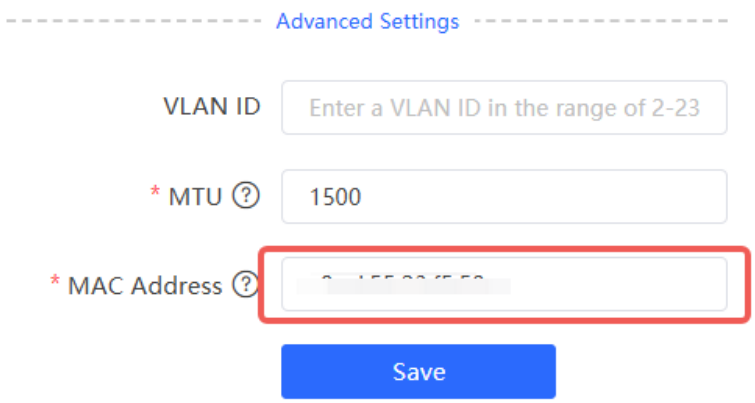
ISPs may restrict the access of devices with unknown MAC addresses to the Internet for the sake of security. In this case, you can change the MAC address of the WAN port.

Click to expand **Advanced Settings**, enter the MAC address, and click **Save**. You do not need to change the default MAC address unless in special cases.

In the router mode, change the MAC address of the LAN port on **LAN > LAN Settings**.

Caution

Changing the MAC address will disconnect the device from the network. You need to reconnect the device to the network or restart the device. Therefore, exercise caution when performing this operation.

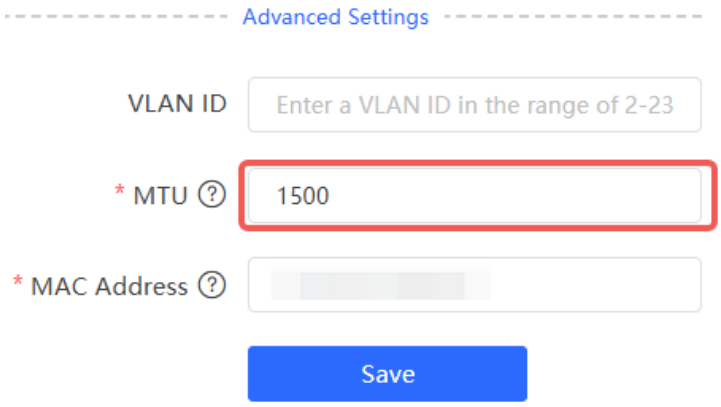


5.10 Changing MTU

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network > WAN > WAN**.
- Method 2: Choose **Network-Wide > Workspace > Wired > WAN > WAN**.

WAN interface MTU indicates the maximum transmission unit (MTU) allowed by the WAN interface. The default value is 1500 bytes, indicating the maximum data forwarding efficiency. Sometimes, ISP networks restrict the speed of large data packets or forbid large data packets from passing through. As a result, the network speed is unsatisfactory or even the network is disconnected. In this case, you can set the MTU value to a smaller value.



5.11 Configuring DHCP Server

Caution

This function is not supported when the device works in AP mode.

5.11.1 DHCP Server

In the router mode, the DHCP server function can be enabled on the device to automatically assign IP addresses to clients so that clients connected to the LAN ports or Wi-Fi network of the device obtain IP addresses for Internet access.

5.11.2 Configuring the DHCP Server Function

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network > LAN > LAN Settings**.
- Method 2: Choose **Network-Wide > Workspace > Wired > LAN > LAN Settings**.

DHCP Server: The DHCP server function is enabled by default in the router mode. You are advised to enable the function if the device is used as the sole router in the network. When multiple routers are connected to the upper-layer device through LAN ports, disable this function.

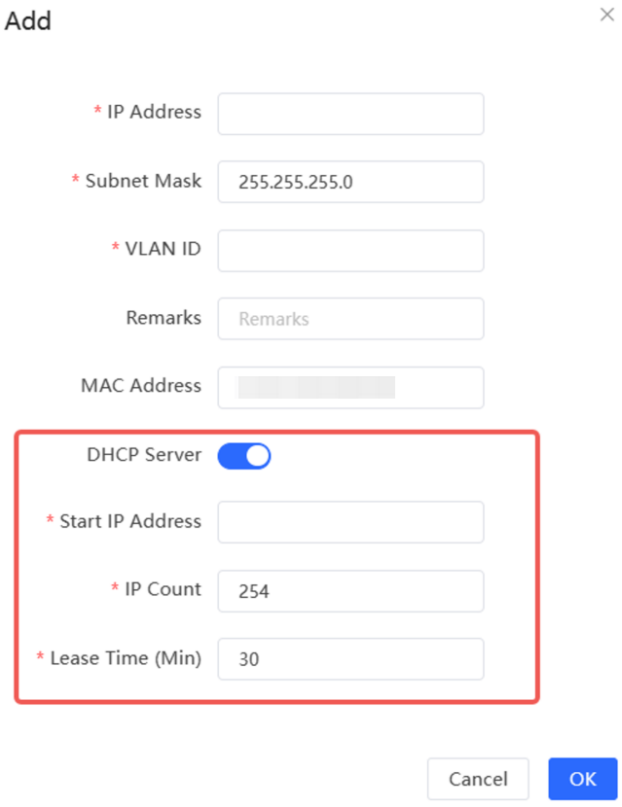
Caution

If the DHCP server function is disabled on all devices in the network, clients cannot automatically obtain IP addresses. You need to enable the DHCP server function on one device or manually configure a static IP address for each client for Internet access.

Start: Enter the start IP address of the DHCP address pool. A client obtains an IP address from the address pool. If all the addresses in the address pool are used up, no IP address can be obtained from the address pool.

IP Count: Enter the number IP addresses in the address pool.

Lease Time(Min): Enter the address lease term. When a client is connected, the leased IP address is automatically renewed. If a leased IP address is not renewed due to client disconnection or network instability, the IP address will be reclaimed after the lease term expires. After the client connection is restored, the client can request an IP address again. The default lease term is 30 minutes.

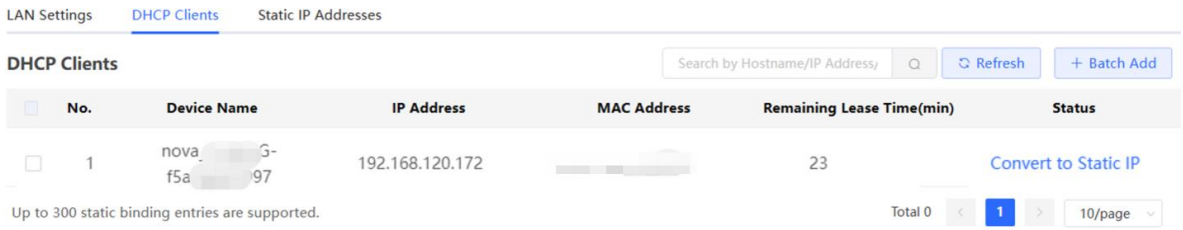


5.11.3 Displaying Online DHCP Clients

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network > LAN > DHCP Clients**.
- Method 2: Choose **Network-Wide > Workspace > Wired > LAN > DHCP Clients**.

Check information about an online client. Click **Convert to Static IP**. Then, the static IP address will be obtained each time the client connects to the network.

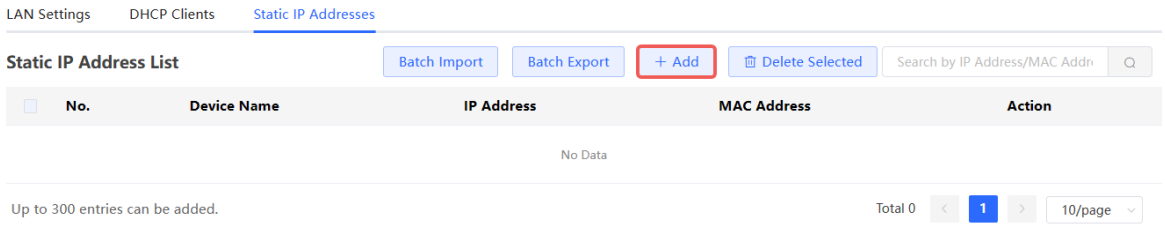


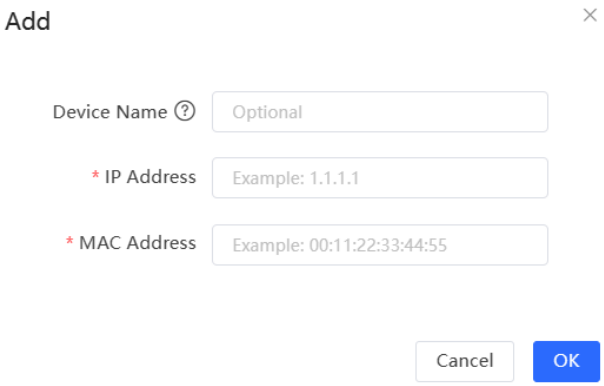
5.11.4 Displaying the DHCP Static IP Address List

Go to the configuration page:

- Method 1: Choose **One-Device** > **Config** > **Network > LAN > Static IP Addresses**.
- Method 2: Choose **Network-Wide > Workspace > Wired > LAN > Static IP Addresses**.

Click **Add**. In the displayed static IP address binding dialog box, enter the MAC address and IP address of the client to be bound, and click **OK**. After a static IP address is bound, the bound IP address will be obtained each time the client connects to the network.

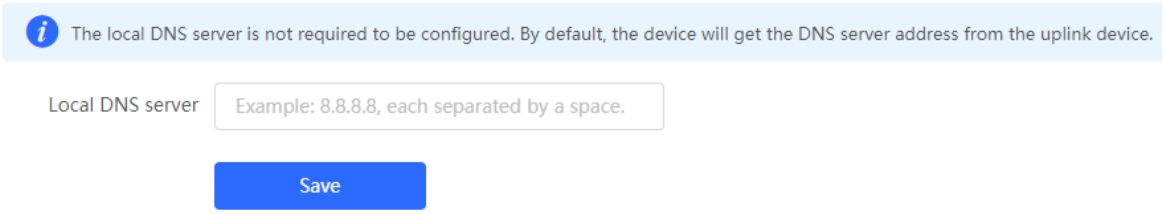




5.12 Configuring DNS

Choose **One-Device** > **Config** > **Advanced** > **Local DNS**.

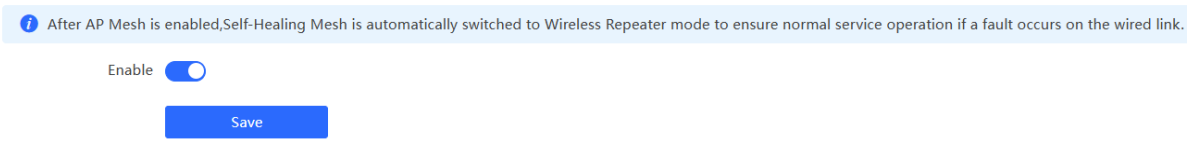
Enter the IP address of the DNS server and click **Save**. The local DNS server is optional. The device obtains the DNS server address from the connected uplink device by default. The default configuration is recommended. The available DNS service varies from region to region. You can consult the local ISP.



5.13 Configuring Self-Healing Mesh

Choose **One-Device** > **Config** > **Advanced** > **Self-Healing Mesh**.

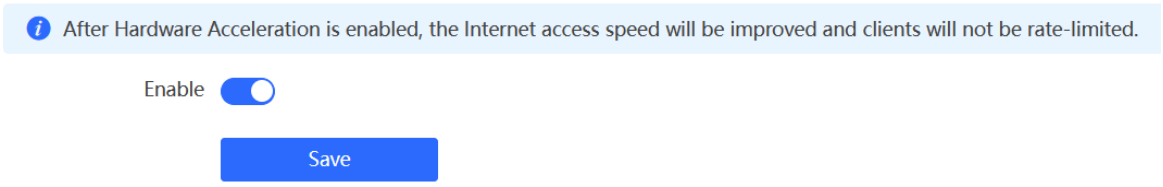
After AP Mesh is enabled, Self-Healing Mesh is automatically switched to Wireless Repeater mode to ensure normal service operation if a fault occurs on the wired link. Self-Healing Mesh is enabled by default.



5.14 Hardware Acceleration

Choose **One-Device** > **Config** > **Advanced** > **Hardware Acceleration**.

After Hardware acceleration is enabled, the Internet access speed will be improved.



Caution

- Hardware Acceleration and IPv6 are mutually exclusive.

  When the device is in router mode: Ensure that IPv6 is disabled. (For IPv6 settings, see 5.18 IPv6 Settings).

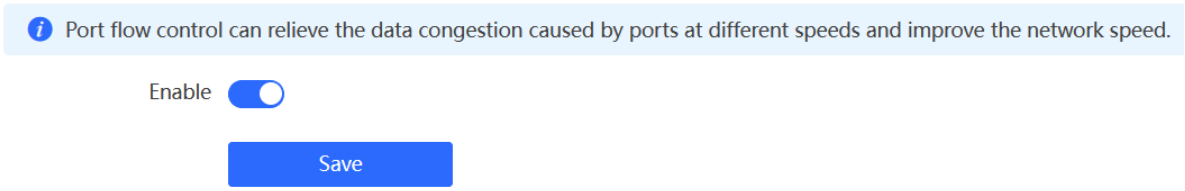
  When the device is in AP mode: Ensure that the internet connection type in WAN_V6 settings is "Null" (for WAN_V6 settings, see 5.3 Configuring Internet Connection Type (IPv6)).

- The Hardware Acceleration feature conflicts with the WLAN Rate Limiting feature. If Wireless Rate Limiting is configured, enabling Hardware Acceleration will cause the Wireless Rate Limiting to become ineffective.
- The Hardware Acceleration feature conflicts with the Wireless Authentication function. If Wireless Authentication is configured, Hardware Acceleration cannot be enabled.

5.15 Configuring Port Flow Control

Choose **One-Device** > **Config** > **Advanced** > **Port Settings**.

When the LAN ports work at different rates, data congestion may occur, which can slow down the network speed and affect the Internet access experience. Enabling port flow control can help mitigate this problem.



5.16 Configuring ARP Binding

Caution

This function is not supported when the device works in AP mode.

The device learns the IP and MAC addresses of network devices connected to ports of the device and generates ARP entries. You can bind ARP mappings to improve network security.

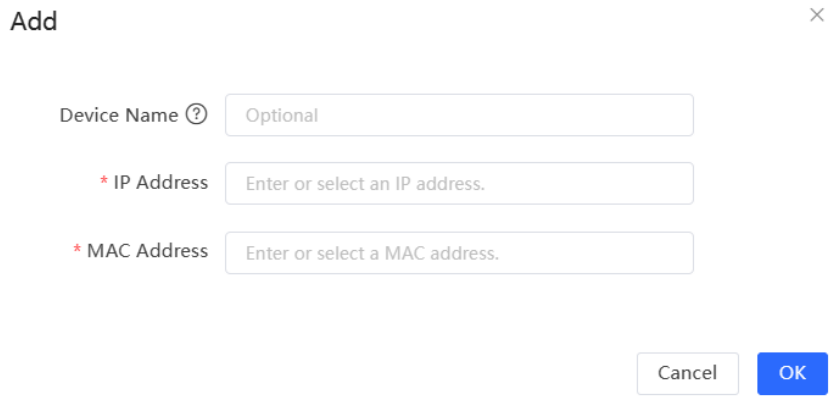
Choose **One-Device** > **Config** > **Security** > **ARP List**.

ARP mappings can be bound in two ways:

(1) Select a dynamic ARP entry in the ARP list and click **Bind**. You can select multiple entries to be bound at one time and click **Bind Selected** to bind them. To remove the binding between a static IP address and a MAC address, click **Delete** in the **Action** column.



(2) Click **Add**, enter the IP address and MAC address to be bound, and click **OK**. The input box can display existing address mappings in the ARP list. You can click a mapping to automatically enter the address mapping.



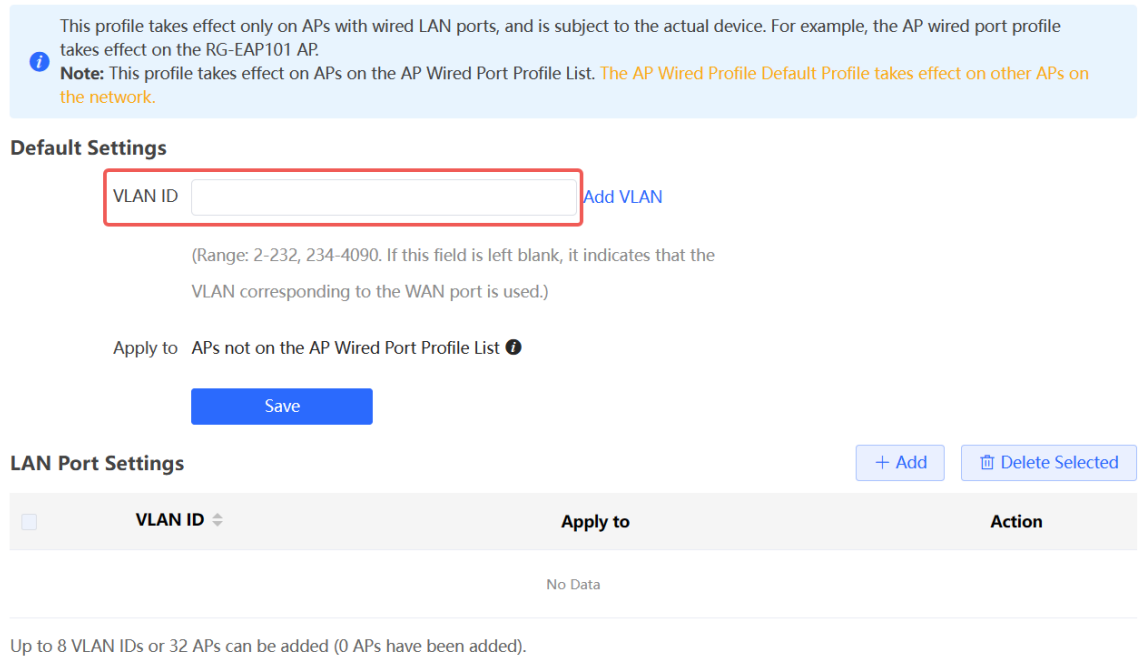
5.17 Configuring LAN Ports

Caution

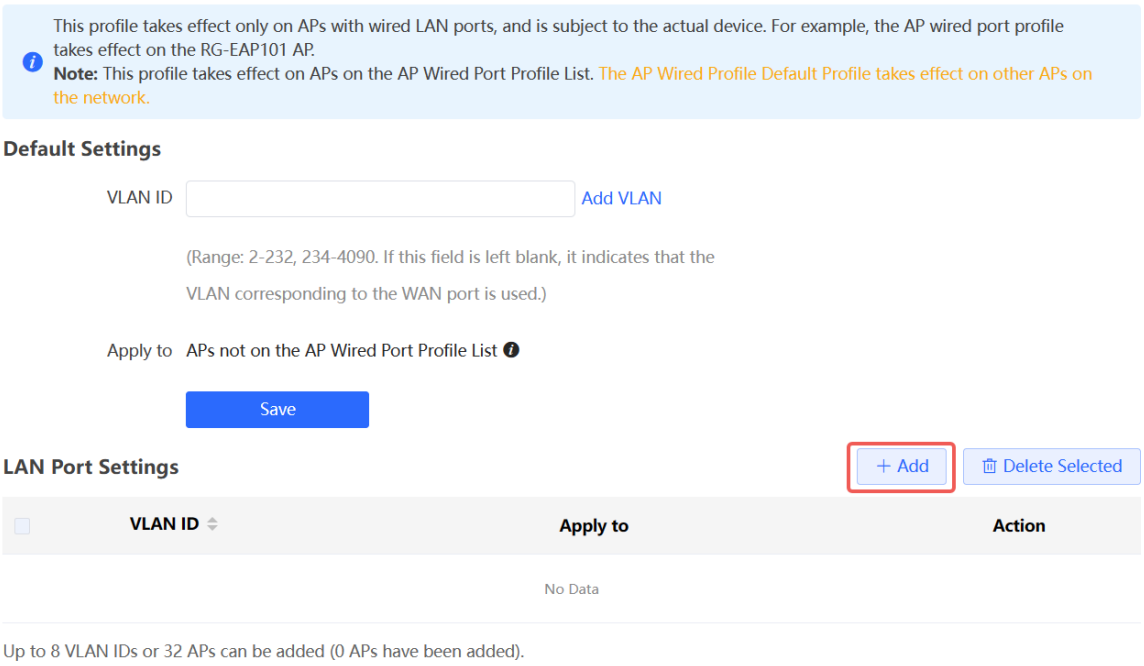
The configuration takes effect only on APs having wired LAN ports.

Choose **Network-Wide** > **Workspace** > **Wireless** > **LAN Ports**.

Enter the VLAN ID and click **Save** to configure the VLAN, to which the AP wired ports belong. If the VLAN ID is null, the wired ports and WAN port belong to the same VLAN.



In self-organizing network mode, the AP wired port configuration applies to all APs having wired LAN ports on the current network. The configuration applied to APs in **LAN Port Settings** takes effect preferentially. Click **Add** to add the AP wired port configuration. For APs, to which no configuration is applied in **LAN Port Settings**, the default configuration of the AP wired ports will take effect on them.



5.18 IPv6 Settings

5.18.1 Overview

Internet Protocol Version 6 (IPv6) is the next generation IP protocol designed by the Internet Engineering Task Force (IETF) to replace IPv4 and solve the IPv4 problems such as address depletion.

5.18.2 IPv6 Basic

1. IPv6 Address Format

IPv6 increases the length of the address from 32 bits in IPv4 to 128 bits, and therefore has a larger address space than IPv4.

The basic format of an IPv6 address is **X:X:X:X:X:X:X:X**. The 128-bit IPv6 address is divided into eight 16-bit sections that are separated by colons (:), and 16 bits in each section are represented by four hexadecimal characters (0–9 and A–F). Each **X** represents a 4-character hexadecimal number.

For example: 2001:ABCD:1234:5678:AAAA:BBBB:1200:2100, 800:0:0:0:0:0:0:1, 1080:0:0:0:8:800:200C:417A

The number **0** in the IPv6 address can be abbreviated as follows:

- The starting 0s can be omitted. For example, 2001:00CD:0034:0078:000A:000B:1200:2100 can be written as 2001:CD:34:78:A:B:1200:2100.
- Consecutive 0s can be replaced by two colons (::). For example, **800:0:0:0:0:0:0:1** can be written as **800::1**. Consecutive 0s can be replaced by two colons only when the 16-bit section contains all 0s, and the two colons can only appear once in the address.

2. IPv6 Prefix

An IPv6 address consists of two parts:

- Network prefix: It contains n bits, and is equivalent to the network ID in an IPv4 address.

- Interface identifier: It contains (128 - n) bits, and is equivalent to the host ID in an IPv4 address.

The length of the network prefix is separated from the IPv6 address by a slash (/). For example, **12AB::CD30:0:0:0:0/60** indicates that the length of the prefix used for routing in the address is 60 bits.

3. Special IPv6 Address

There are also some special IPv6 addresses, for example:

fe80::/8 is a link local address, and equivalent to 169.254.0.0/16 in IPv4.

fc00::/7 is a local address, and similar to 10.0.0.0/8, 172.16.0.0/16, or 192.168.0.0/16 in IPv4.

ff00::/12 is a multicast address, and similar to 224.0.0.0/8 in IPv4.

4. NAT66

IPv6-to-IPv6 Network Address Translation (NAT66) is the process of converting the IPv6 address in an IPv6 packet header to another IPv6 address. NAT66 prefix translation is an implementation of NAT66. It replaces the IPv6 address prefix in the packet header with another IPv6 address prefix to achieve IPv6 address translation. NAT66 can realize mutual access between an intranet and Internet.

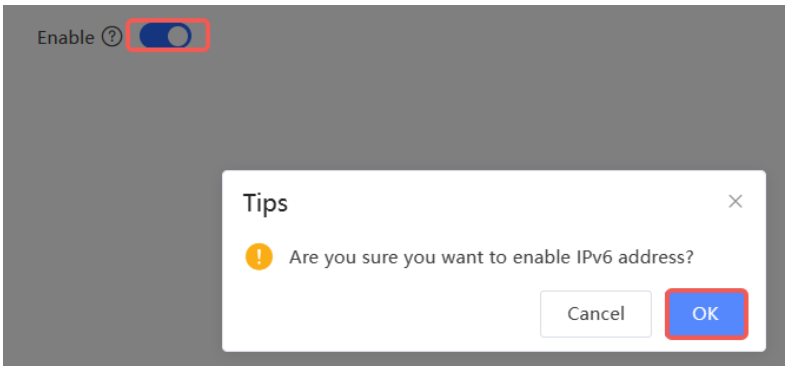
5.18.3 IPv6 Address Assignment Methods

- Manual configuration: The IPv6 address/prefix and other network configuration parameters are manually configured.
- Stateless Address Autoconfiguration (SLAAC): The link local address is generated based on the interface ID, and then the local address is automatically configured based on the prefix information contained in the route advertisement packet.
- Stateful address autoconfiguration, that is, DHCPv6: DHCPv6 is divided into the following two types:
  - DHCPv6 autoconfiguration: The DHCPv6 server automatically configures the IPv6 address/prefix and other network configuration parameters.
  - DHCPv6 Prefix Delegation (PD): The lower-layer network device sends a prefix allocation application to the upper-layer network device. The upper-layer network device assigns an appropriate address prefix to the lower-layer device. The lower-layer device automatically subdivides the obtained prefix (generally less than 64 bits in length) into subnet segments with 64-bit prefix length, and then advertises the subdivided address prefixes to the user link directly connected to the IPv6 host through the route to realize automatic address configuration of the host.

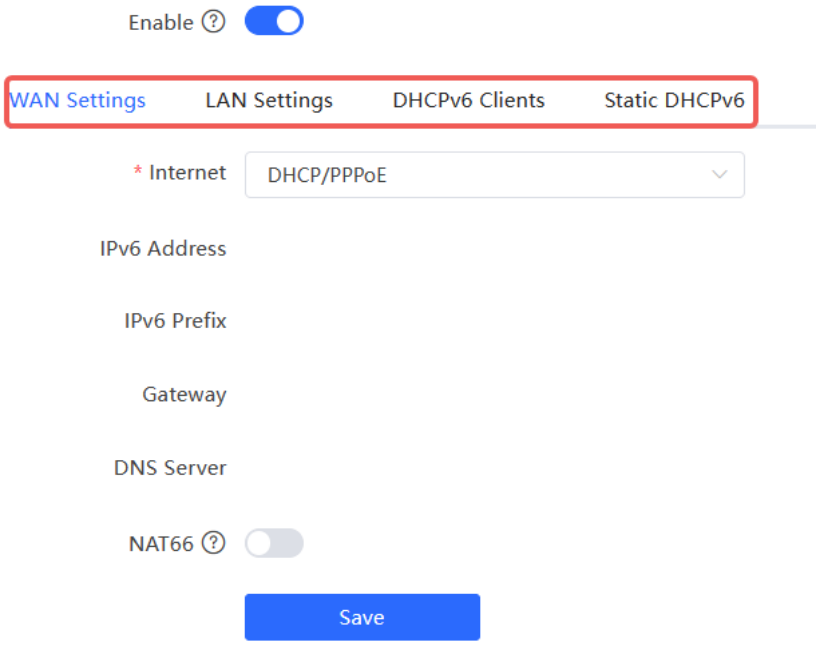
5.18.4 Enabling IPv6

Choose **One-Device** > **Config** > **Network** > **IPv6 Address**.

Click **Enable**, and then click **OK** in the dialog box that appears to enable IPv6.



After IPv6 is enabled, you can configure the IPv6 addresses of WAN and LAN ports, view the DHCPv6 client, and configure a static DHCPv6 address for the client.



5.18.5 Configuring the IPv6 Address for the WAN Port

Choose **One-Device** > **Config** > **Network** > **IPv6 Address** > **WAN Settings**.

Configure the IPv6 address for the WAN port, and click **Save**.

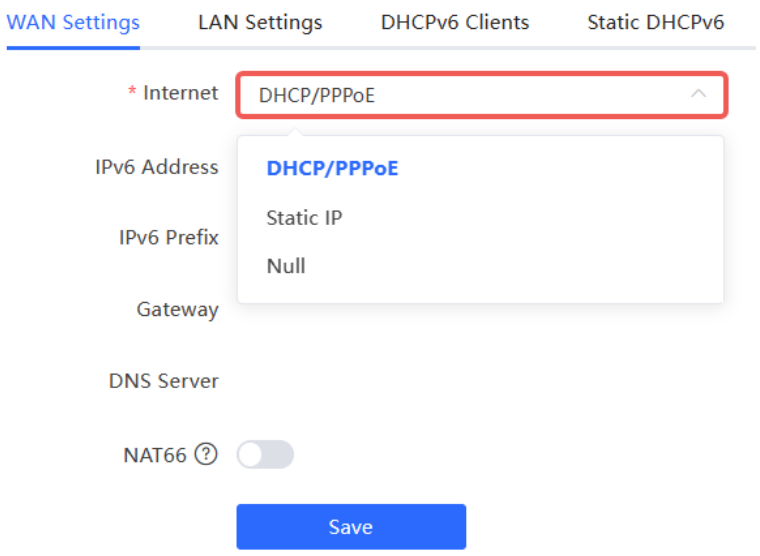


Table 5-3 WAN Port IPv6 Address Configuration Parameters

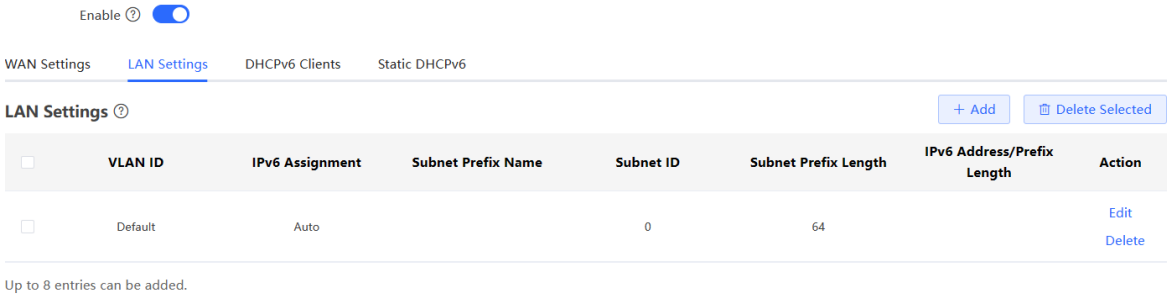
Parameter	Description
Internet	Specify the method for obtaining an IPv6 address for the WAN port. ● **DHCP/PPPoE**: The current device will act as a DHCPv6 client and apply for the IPv6 address/prefix from the upstream network device. ● **Static IP**: If this Internet connection type is selected, you need to manually configure a static IPv6 address, gateway address, and DNS server. ● **Null**: The IPv6 function is disabled on the current WAN port.
IPv6 Address	If **Internet** is set to **DHCP/PPPoE**, the automatically obtained IPv6 address is displayed. If **Internet** is set to **Static IP**, you need to manually configure this parameter.
IPv6 Prefix	If **Internet** is set to **DHCP/PPPoE** and the current device obtains the IPv6 address prefix from the upstream device. The obtained IPv6 address prefix is displayed.
Gateway	If **Internet** is set to **DHCP/PPPoE**, the automatically obtained gateway address is displayed. If **Internet** is set to **Static IP**, you need to manually configure this parameter.
DNS Server	If **Internet** is set to **DHCP/PPPoE**, the automatically obtained DNS server address is displayed. If **Internet** is set to **Static IP**, you need to manually configure this parameter.

Parameter	Description
NAT66	If the current device cannot access the Internet in DHCP mode or cannot obtain the IPv6 address prefix, you must enable NAT66 to assign the IPv6 address to an intranet client.

5.18.6 Configuring the IPv6 Address for the LAN Port

Choose **One-Device** > **Config** > **Network** > **IPv6 Address** > **LAN Settings**.

When the device accesses the network in DHCP mode, the upstream device can assign an IPv6 address to the LAN port, and assign IPv6 addresses to the clients in the LAN based on the IPv6 address prefix. If the upstream device cannot assign an IPv6 address prefix to the current device, you need to manually configure an IPv6 address prefix for the LAN port, and assign IPv6 addresses to the clients in the LAN by enabling the NAT66 function (see 5.18.5 Configuring the IPv6 Address for the WAN Port).

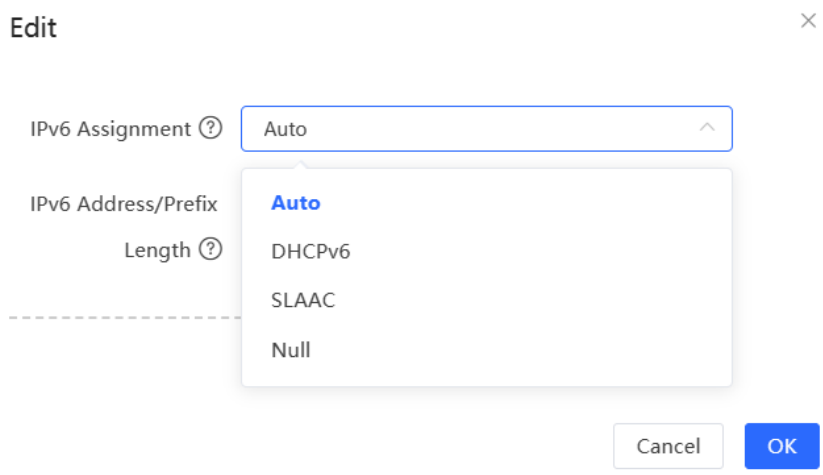


Click **Edit** corresponding to the default VLAN, and fill in a local address of no more than 64 bits in the **IPv6 Address/Prefix Length** column. This address will also be used as the IPv6 address prefix.

IPv6 Assignment specifies the method for assigning IPv6 addresses for clients. The following options are available:

- **Auto**: Both DHCPv6 and SLAAC are used to assign IPv6 addresses to clients.
- **DHCPv6**: DHCPv6 is used to assign IPv6 addresses to clients.
- **SLAAC**: SLAAC is used to assign IPv6 addresses to clients.
- **Null**: No IPv6 addresses are assigned to clients.

The setting of **IPv6 Assignment** is determined by the protocol supported by intranet clients. If you are not sure about the protocol supported by intranet clients, select **Auto**.



You can click **Advanced Settings** to configure more address attributes.

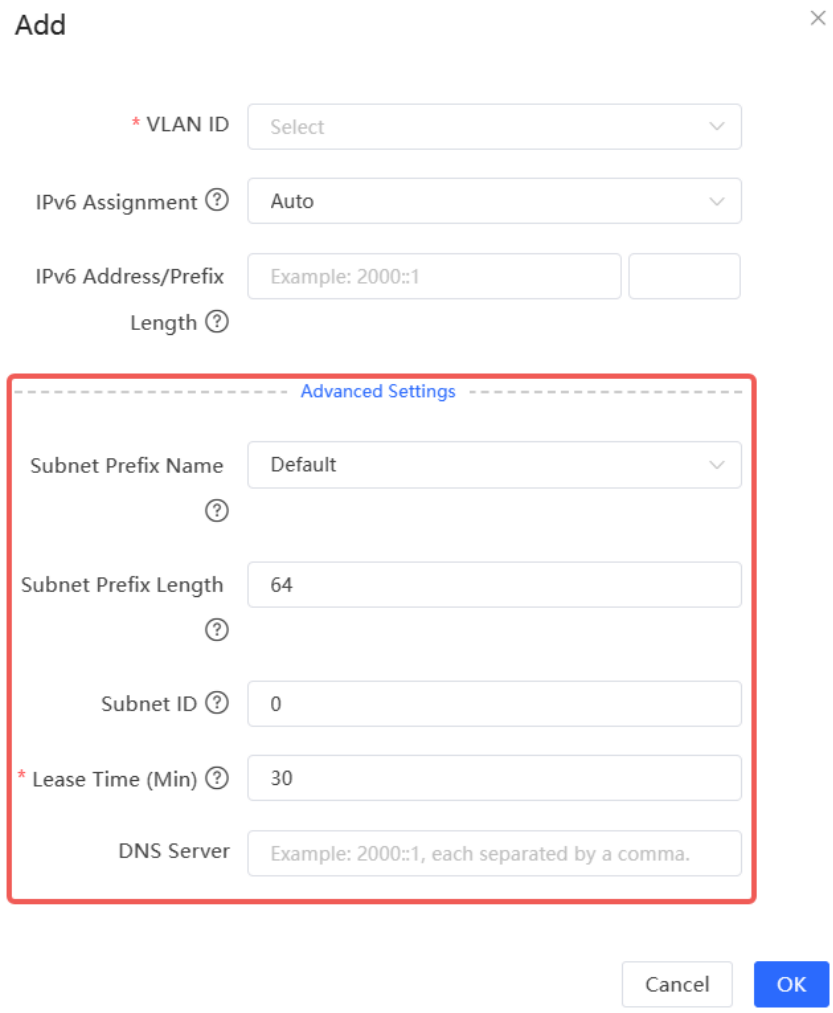


Table 5-4 LAN Port IPv6 Address Configuration Parameters

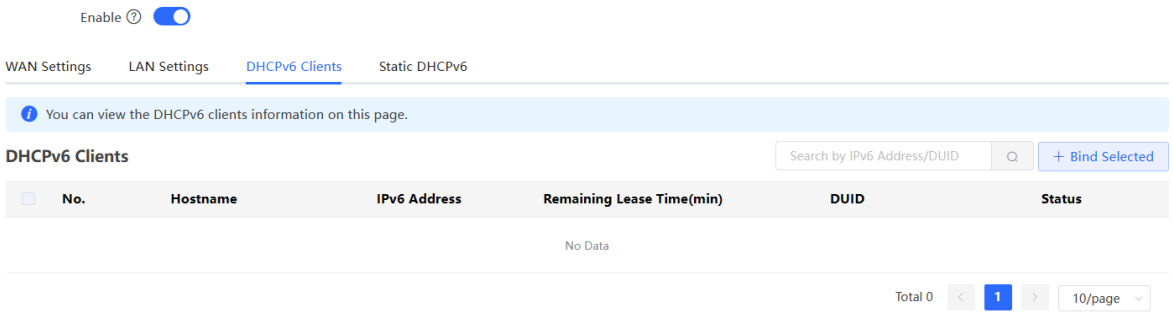
Parameter	Description
Subnet Prefix Name	Configure the interface from which the prefix is obtained, for example, **WAN_V6**. The default value is all interfaces. If **Disable** is selected, the **IPv6 Address/Prefix Length** field must be configured to assign IP addresses to hosts on the LAN.
Subnet Prefix Length	Configure the length of the subnet prefix. The value ranges from 48 to 64.
Subnet ID	Configure the subnet ID in hexadecimal notation. **0** indicates that the subnet ID automatically increments.
Lease Time (Min)	Configure the lease term of the IPv6 address. The unit is minutes.
DNS Server	Configure the address of the IPv6 DNS server.

5.18.7 Viewing DHCPv6 Clients

Choose **One-Device** > **Config** > **Network** > **IPv6 Address** > **DHCPv6 Clients**.

When the device acts as a DHCPv6 server to assign IPv6 addresses to clients, you can view information about the clients that obtain IPv6 addresses from the device on the current page. The information includes the host name, IPv6 address, remaining lease term, and DHCPv6 Unique Identifier (DUID) of each client.

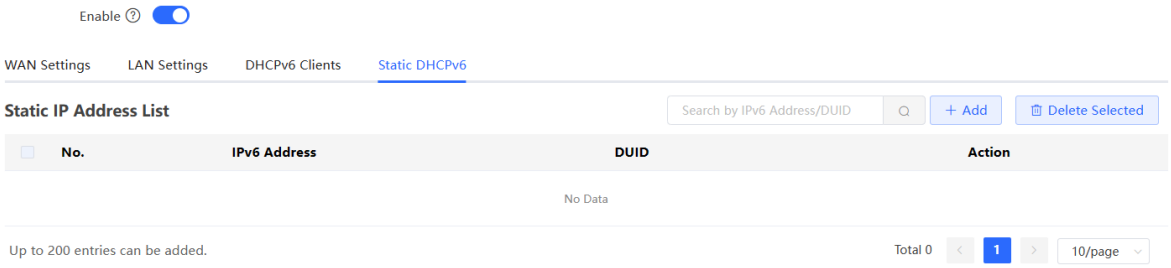
Enter an IPv6 address or DUID in the search bar, and click to quickly find the information of the specified DHCPv6 client.



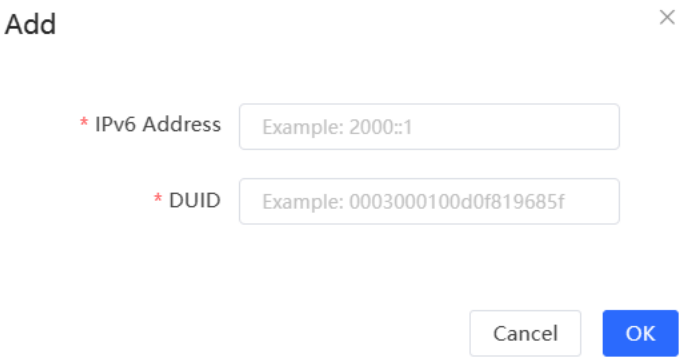
5.18.8 Configuring the Static DHCPv6 Address

Configure the IPv6 address statically bound to the DUID of a client so that the client can obtain the specified address each time.

Choose **One-Device** > **Config** > **Network** > **IPv6 Address** > **Static DHCPv6**.



(1) Click **Add**.



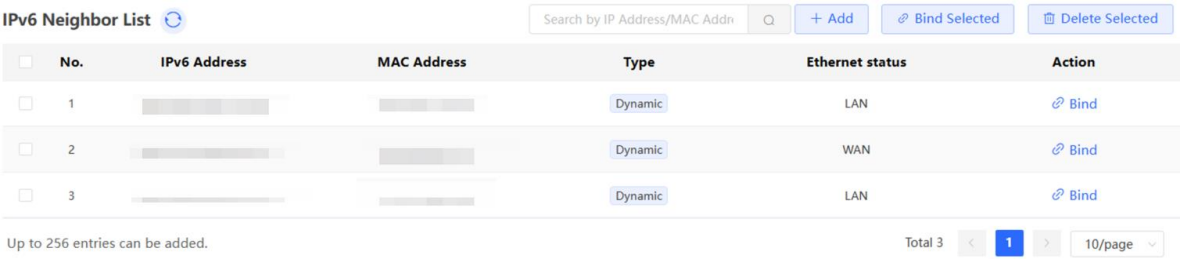
(2) Enter the IPv6 address and DUID of the client.

(3) Click **OK**.

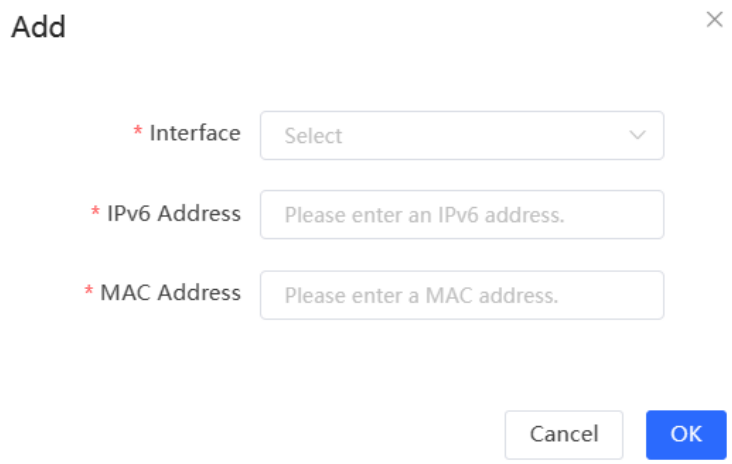
5.18.9 Configuring the IPv6 Neighbor List

In IPv6, Neighbor Discovery Protocol (NDP) is an important basic protocol. NDP replaces the ARP and ICMP route discovery protocols of IPv4, and supports the following functions: address resolution, neighbor status tracking, duplicate address detection, router discovery, and redirection.

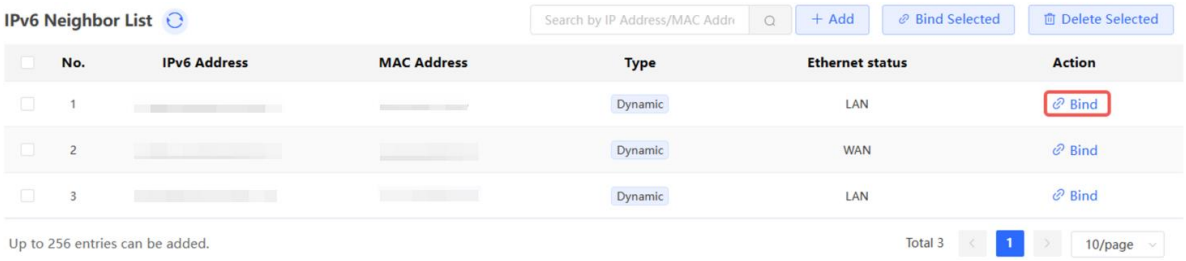
Choose **One-Device** > **Config** > **Security** > **IPv6 Neighbor List**.



(1) Click **Add** and add the interface, IPv6 address and MAC address of the neighbor.



(2) Select the IPv6 neighbor list to be bound, and click **Bind** in the **Action** column to bind the IPv6 address and MAC address.



5.19 Configuring the Optical Transceiver

Choose **One-Device** > **Config** > **Network** > **Optical Transceiver Info**.

The **Optical Transceiver Info** page displays the optical port connection status of the device.

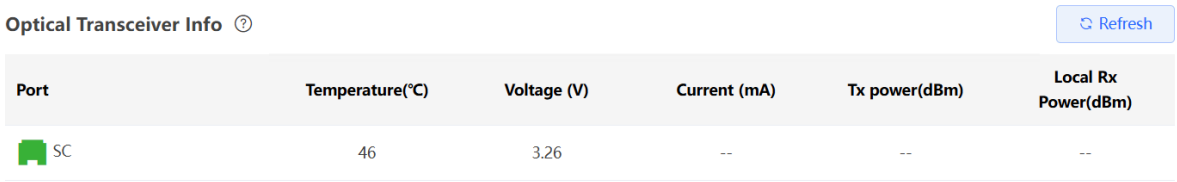


Table 5-5 Optical Transceiver Parameters

Parameter	Description
Temperature (°C)	Current working temperature of the optical transceiver.
Voltage (V)	Current working voltage of the optical transceiver.
Current (mA)	Current of the optical transceiver.
Tx Power (dBm)	Power of the optical signal sent by the optical transceiver.

Parameter	Description
Local Rx Power (dBm)	Power of the optical signal received by the optical transceiver, which indicates the quality of the optical signal sent to the device.

5.20 Configuring VoIP

Specification

This function is only supported on the RG-APF1260(MG-P).

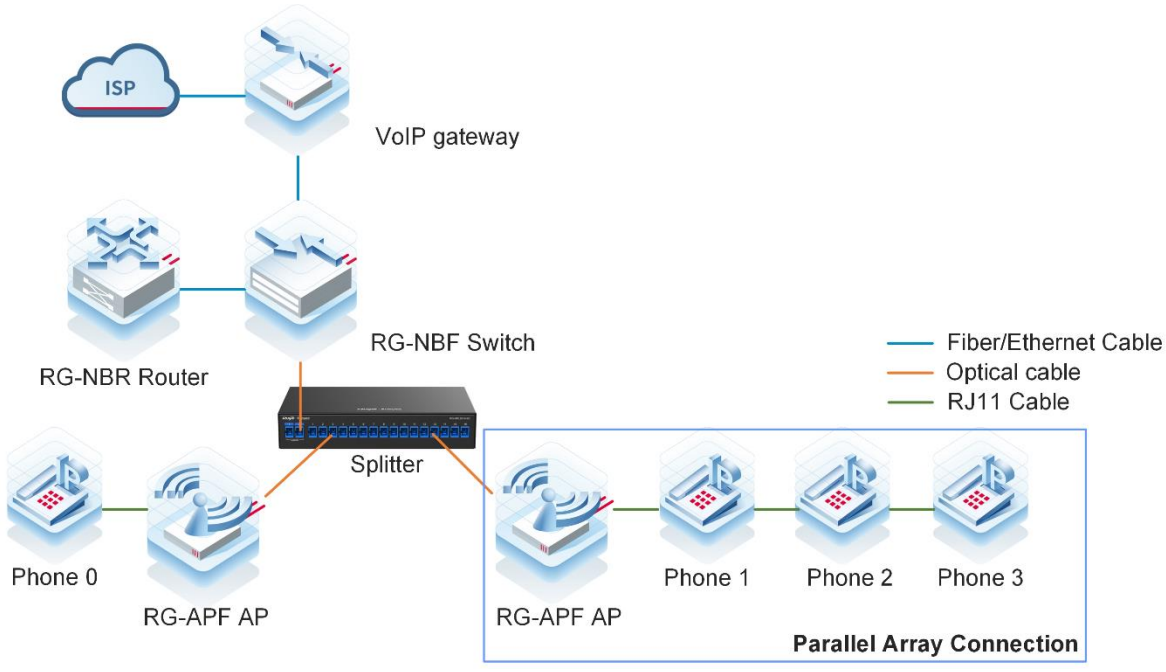
5.20.1 Overview

Traditional hotel room phone systems usually require dedicated phone lines and devices, which need regular maintenance and are costly. When adding rooms or functions, the traditional guest room telephone system requires additional telephone lines and devices to meet the new demand, which increases the complexity of deployment and costs, and cannot meet the needs of modern hotels for diversified communication functions, scalability, and cost-effectiveness.

Voice over Internet Protocol (VoIP) compresses voice signals using compression algorithms and packages them into IP packets for transmission on the Internet. VoIP reduces communication costs and provides rich functions, such as call forwarding, voice mail, and multimedia communication, to enhance the customer experience.

With Reyee VoIP gateway and Ruijie Reyee App or Ruijie Cloud, VoIP system construction and quick deployment and acceptance can be achieved in hotels and apartments.

Figure 5-1 VoIP Network Architecture



Parallel Array Connection

On a VoIP network, the RG-APF series supports parallel array connection for connecting VoIP phones. This means that multiple VoIP phones (up to three) can be connected to the SC port of an RG-APF access point. The parallel array connection is shown in Figure 5-1.

A user can use a VoIP phone connected to the same RG-APF access point in parallel array connection to make voice calls to another VoIP phone connected to another RG-APF access point. For example, phones 1, 2, and 3 can receive calls from phone 0 at the same time. The phones connected in parallel arrays can also communicate with each other during a voice call. That is, phones 1, 2, and 3 can communicate with each other during a voice call to voice phone 0.

5.20.2 Prerequisites

Caution

- On a VoIP network, an SIP-compliant VoIP gateway must be used as the SIP server.
- An RG-APF access point supports the SIP protocol, which is compatible with most VoIP gateways.
- The name of the RG-APF access point must be used as the extension number.

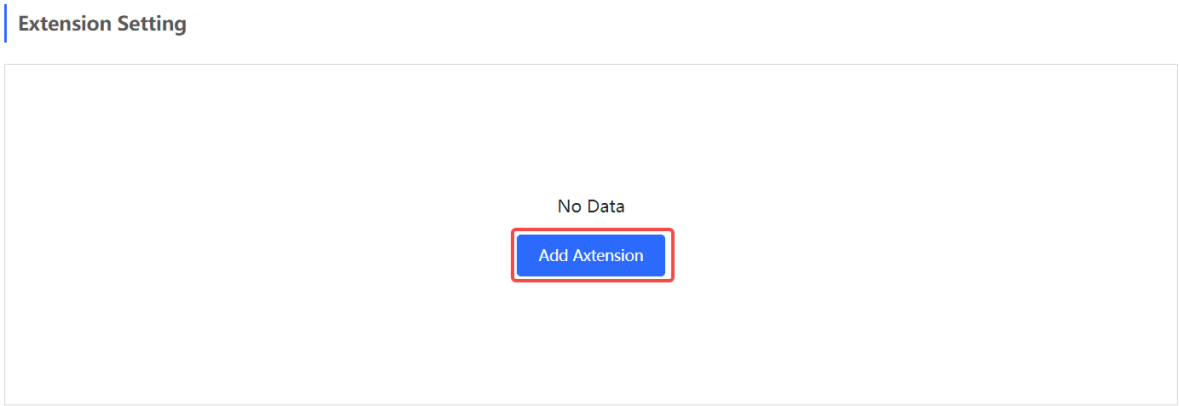
You can connect a VoIP phone to the phone port of the RG-APF access point. Each RG-APF access point is registered with the VoIP gateway through the network using the SIP protocol for interconnection of internal phones. A VoIP gateway connects a public switched telephone network (PSTN) to an IP network to implement VoIP communication. A Reyee VoIP gateway can be automatically connected to the cloud management platform for VoIP configuration.

Before configuring the VoIP service, ensure that each AP in the hotel is named uniquely. Otherwise, automatic registration of the extension number will be affected. You are advised to name the APs according to the room number. For example, the AP in room 303 is named '303'. When multiple APs exist in a room, a suffix should be added. For example, if there are two APs in room 101, they are named 101_1 and 101_2.

5.20.3 Configuration Steps

Choose **WLAN** > **APs** > **Manage** > **Network** > **Extension Setting**.

Click **Add Extension** on the **Extension Setting** page, enter the phone information, and click **OK**.



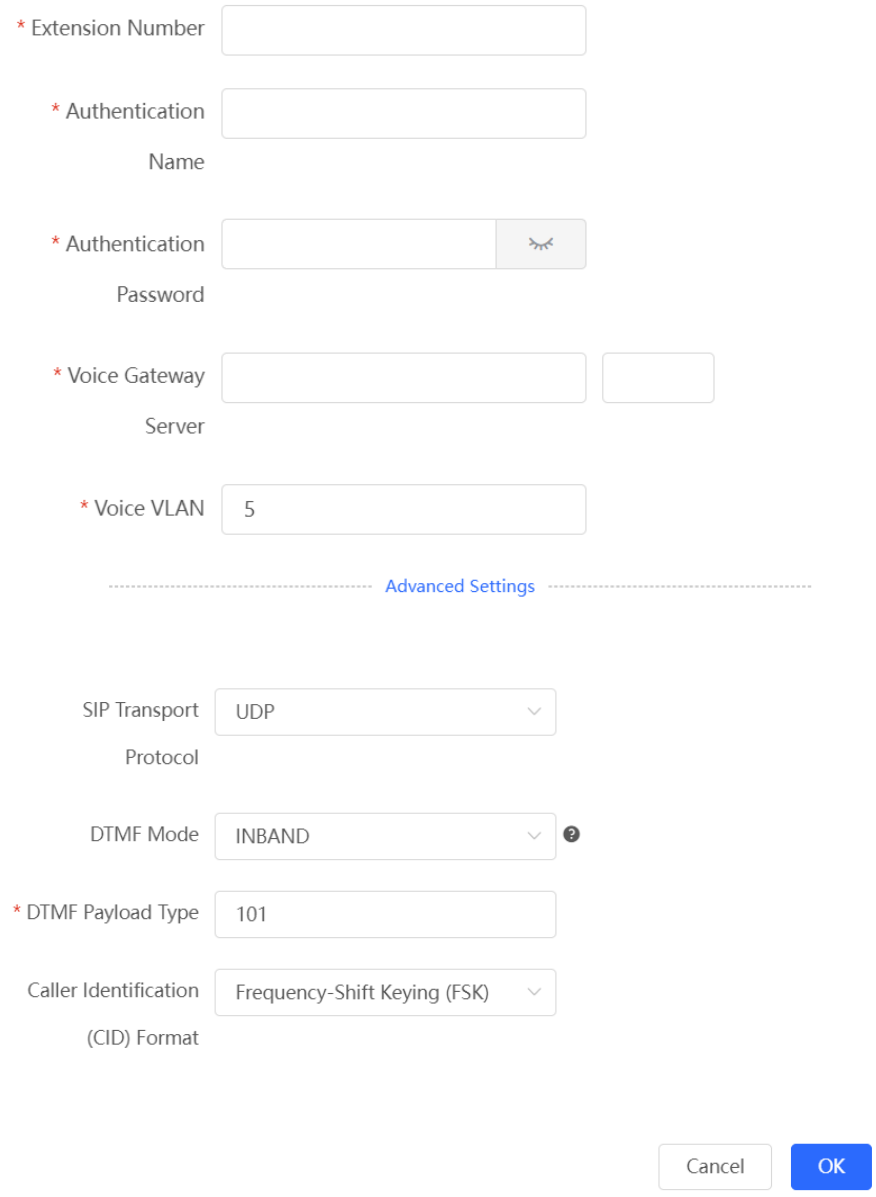


Table 5-6 Extension Configuration Parameters

Parameter	Description
Extension Number	Extension number. Each extension is assigned a unique extension number.
Authentication Name	Authentication ID. The authentication name can be the same as the extension number or set in a project.
Authentication Password	Authentication password. The password must contain at least six characters and cannot be the same as the authentication name.

Parameter	Description
Voice Gateway Server	IP address (or domain name) and port number of the voice gateway server
Voice VLAN	VLAN ID for voice service (Range: 2–4094)
SIP Transport Protocol	Ensure that SIP messages are transmitted correctly across the network by choosing the right transmission protocol, either UDP or TCP: ● UDP: Suitable for most real-time interactive communications, such as voice calls. ● TCP: Suitable for transmitting SIP control messages in unstable network environments or when higher reliability is required.
DTMF Mode	Different modes for transmitting DTMF signals. ● INBAND: DTMF signals are mixed with the audio stream for transmission. ● RFC2833: DTMF signals are separately transmitted as special RTP event packets. ● SIP INFO: DTMF signals are separately transmitted in SIP INFO messages.
DTMF Payload Type	The encapsulation method for transmitting special data packets in VoIP. The default value is 101, with a value range of 96 to 127.
Caller Identification (CID) Format	The transmission method for call identification information on the phone. ● Frequency-Shift Keying (FSK): Transmit information in the ASCII character set. ● Dual-Tone Multi-Frequency (DTMF): Transmit numbers from 0 to 9 and a few characters, including #, *, A, B, C, and D.

After an extension is added, you can view the extension information on the **Extension Setting** page.

6 Switch Management

Caution

- Features in this chapter are not supported when there are no switches on the network.
- For additional functionalities, see 3.3 Managing Network Devices and configure a designated switch. For detailed descriptions of functions and configuration instructions specific to switches, see the configuration guide of the corresponding device.

6.1 Configuring RLDP

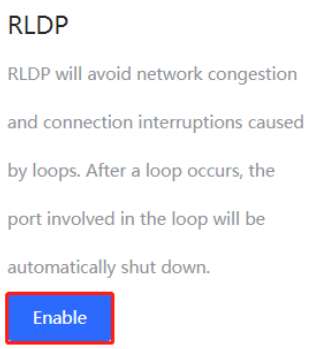
6.1.1 Overview

Rapid Link Detection Protocol (RLDP) is an Ethernet link fault detection protocol used to quickly detect link faults and downlink loop faults. RLDP can prevent network congestion and connection interruptions caused by loops. After a loop occurs, the port on the access switch involved in the loop will shut down automatically.

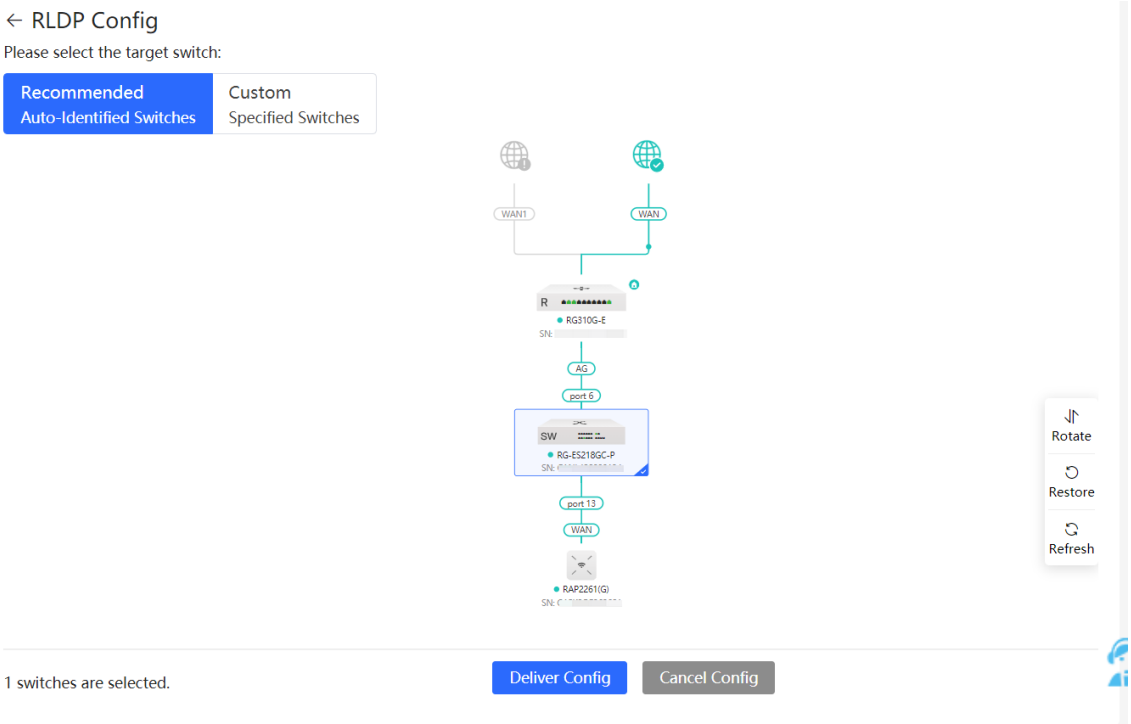
6.1.2 Configuration Steps

Choose **Network-Wide** > **Workspace** > **Wired** > **RLDP**.

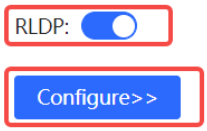
(1) Click **Enable** to access the **RLDP Config** page.



(2) In the networking topology, you can select the access switches on which you want to enable RLDP in either recommended or custom mode. If you select the recommended mode, all access switches in the network are selected automatically. If you select the custom mode, you can manually select the desired access switches. Click **Deliver Config**. RLDP is enabled on the selected switches.



(3) After the configuration is delivered, if you want to modify the effective range of the RLDP function, click **Configure** to select desired switches in the topology again. Turn off **RLDP** to disable RLDP on all the switches with one click.



6.2 Configuring DHCP Snooping

6.2.1 Overview

DHCP Snooping implements recording and monitoring the usage of client IP addresses through exchange of DHCP packets between the server and client. In addition, this function can filter invalid DHCP packets to ensure that clients can obtain network configuration parameters only from the DHCP server in the controlled range. DHCP Snooping will prevent rogue DHCP servers offering IP addresses to DHCP clients to ensure the stability of the network.

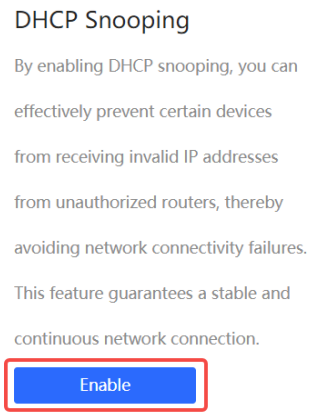
Caution

After DHCP Snooping is enabled on the switch, the switch does not forward invalid DHCP packets. However, if a client directly connects to a rogue DHCP server, it cannot access the Internet as the obtained IP address is incorrect. In this case, you need to find the rogue router and disable DHCP on it, or use the WAN interface for uplink connection.

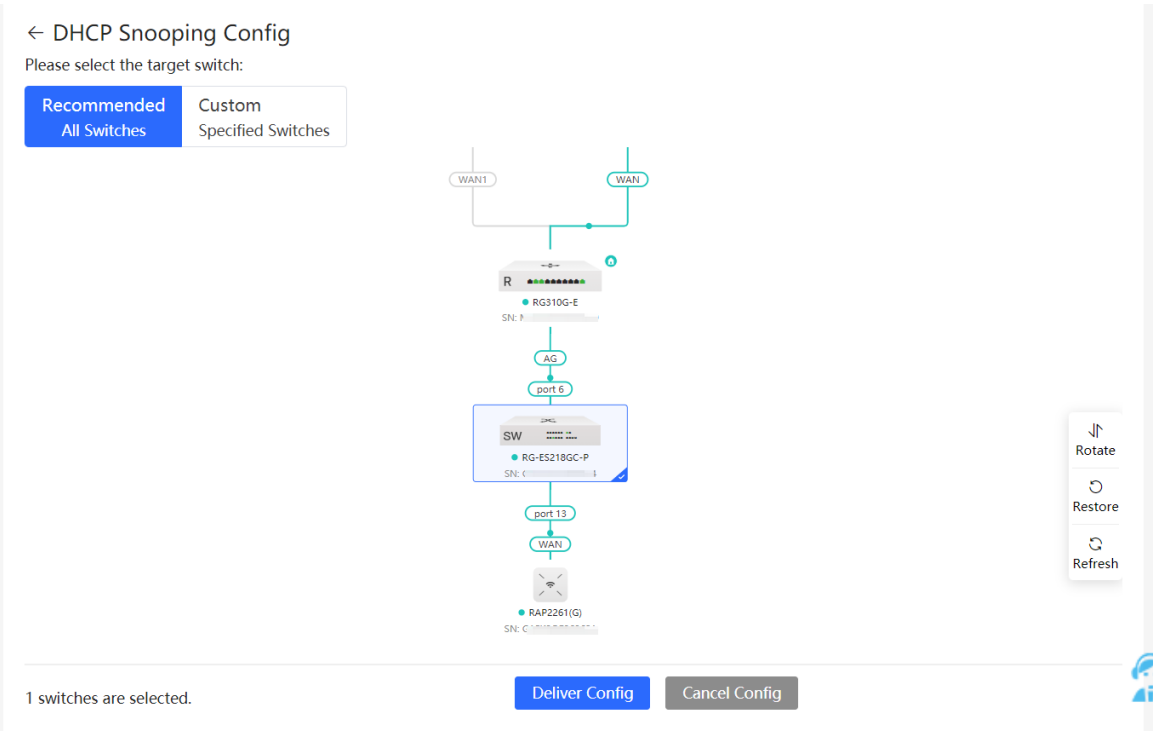
6.2.2 Configuration Steps

Choose **Network-Wide** > **Workspace** > **Wired** > **DHCP Snooping**.

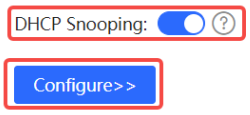
(1) Click **Enable** to access the **DHCP Snooping Config** page.



(2) In the networking topology, you can select the access switches on which you want to enable DHCP Snooping in either recommended or custom mode. If you select the recommended mode, all switches in the network are selected automatically. If you select the custom mode, you can manually select the desired switches. Click **Deliver Config**. DHCP Snooping is enabled on the selected switches.



(3) After the configuration is delivered, if you want to modify the effective range of the DHCP Snooping function, click **Configure** to select desired switches in the topology again. Turn off **DHCP Snooping** to disable DHCP Snooping on all switches with one click.



6.3 Batch Configuring Switches

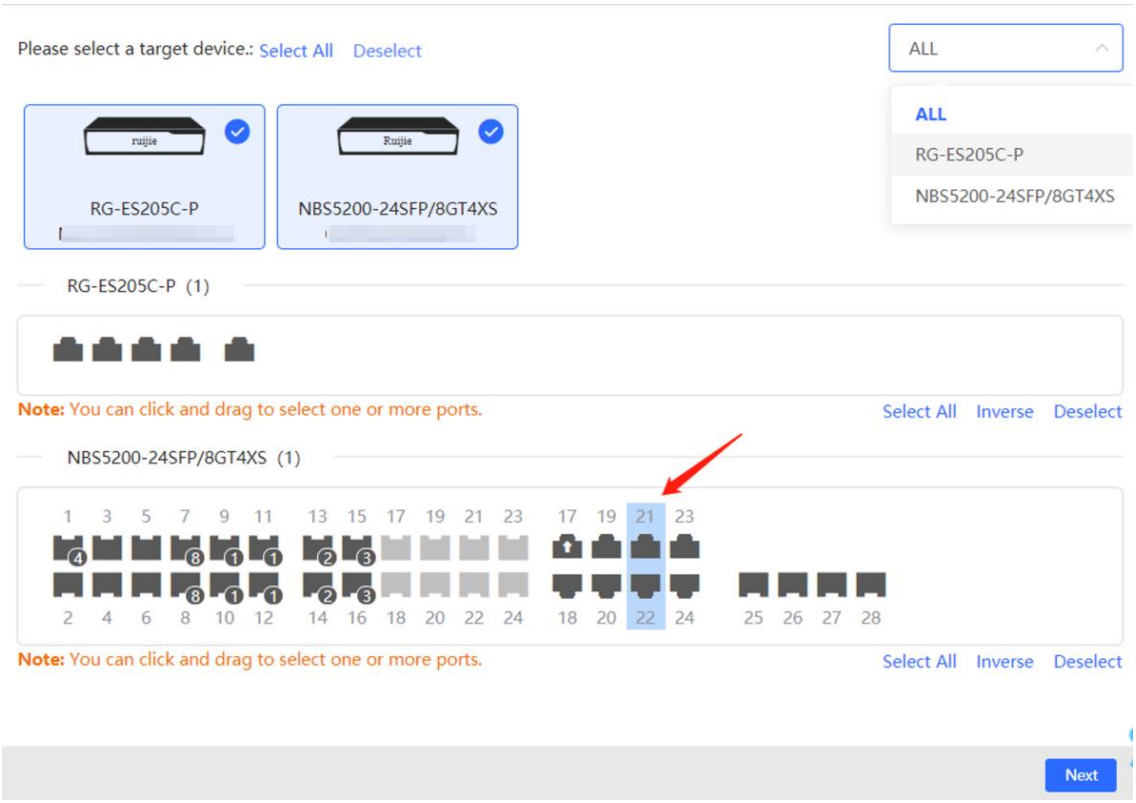
6.3.1 Overview

You can batch create VLANs, configure port attributes, and divide port VLANs for switches in the network.

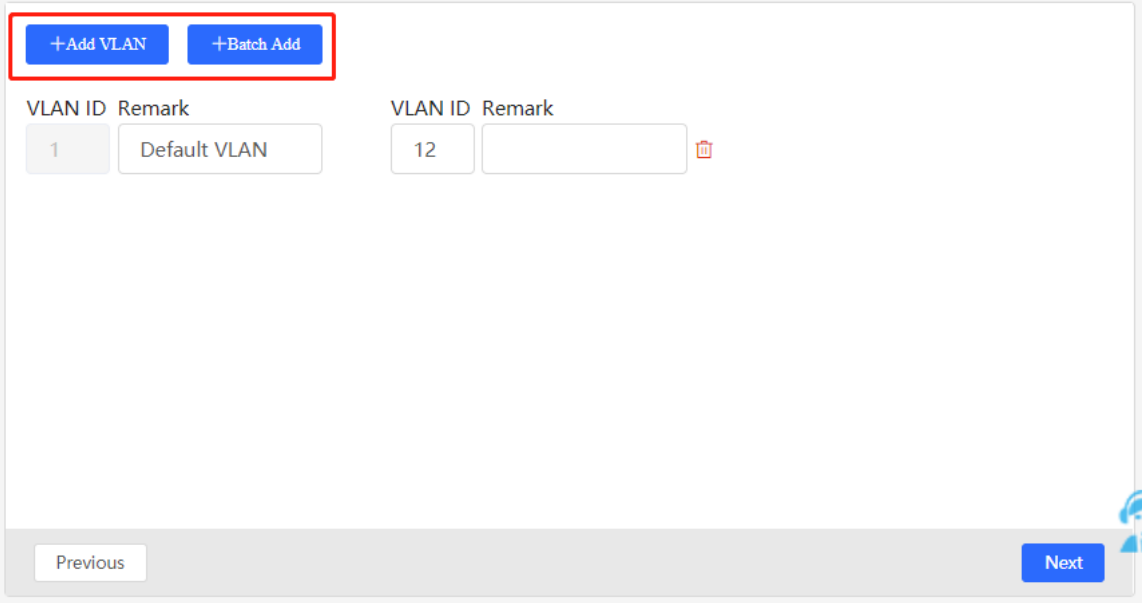
6.3.2 Configuration Steps

Choose **Network-Wide** > **Workspace** > **Wired** > **SW Config**.

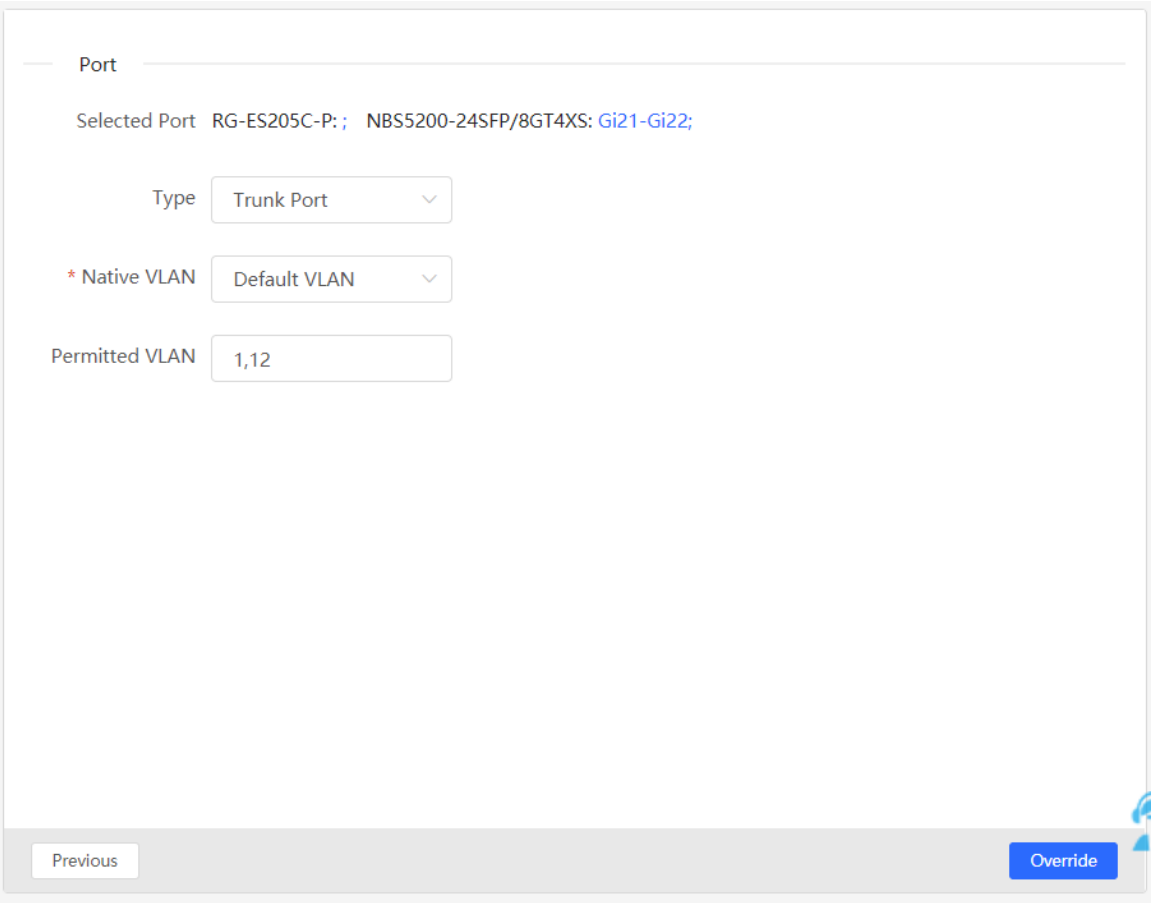
(1) The page displays all switches in the current network. Select the switches to configure, and then select the desired ports in the device port view that appears below. If there are a large number of devices in the current network, select a product model from the drop-down list box to filter the devices. After the desired devices and ports are selected, click **Next**.



(2) Click **Add VLAN** to create a VLAN for the selected devices in a batch. If you want to create multiple VLANs, click **Batch Add** and enter the VLAN ID range, such as 3-5,100. After setting the VLANs, click **Next**.

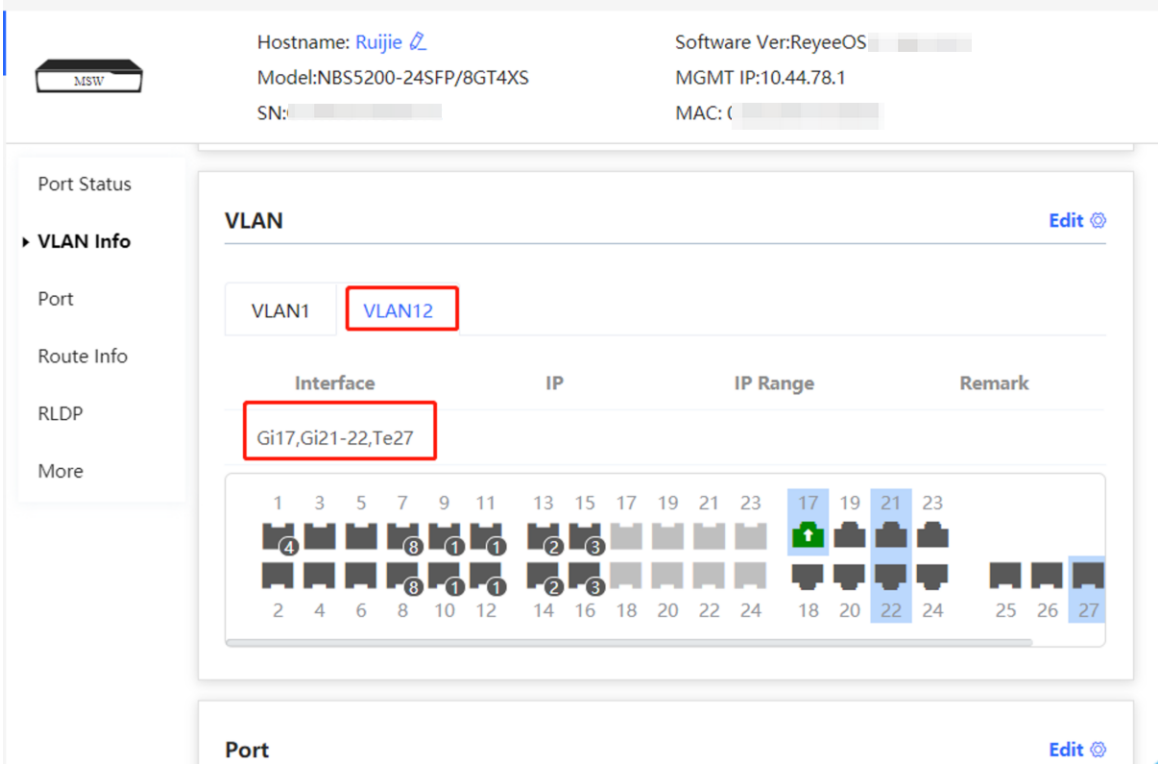


(3) Configure port attributes for the ports selected in Step 1 in a batch. Select a port type. If you set **Type** to **Access Port**, you need to configure **VLAN ID**. If you set **Type** to **Trunk Port**, you need to configure **Native VLAN** and **Permitted VLAN**. After setting the port attributes, click **Override** to deliver the batch configurations to the target devices.



6.3.3 Verifying Configuration

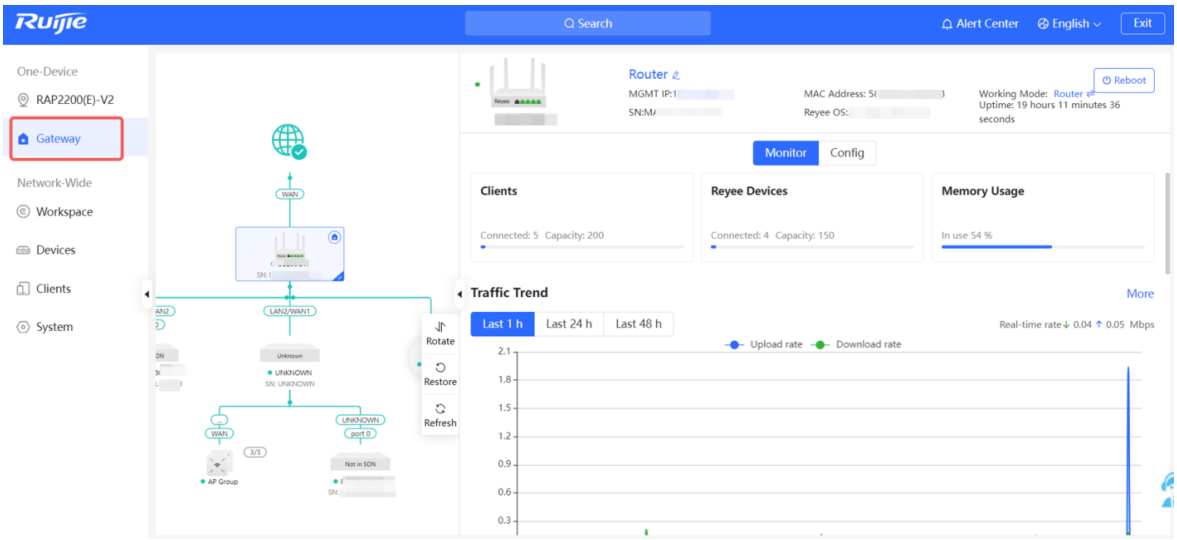
View the VLAN and port information of switches to check whether the batch configurations are successfully delivered.



7 Gateway Management

Go to the configuration page: Choose **One-Device** > **Gateway**.

When there is a gateway device on the network, you can configure and manage the gateway device using the Egress Router menu. For details, see the configuration guide of the gateway device.



8 Online Client Management

Caution

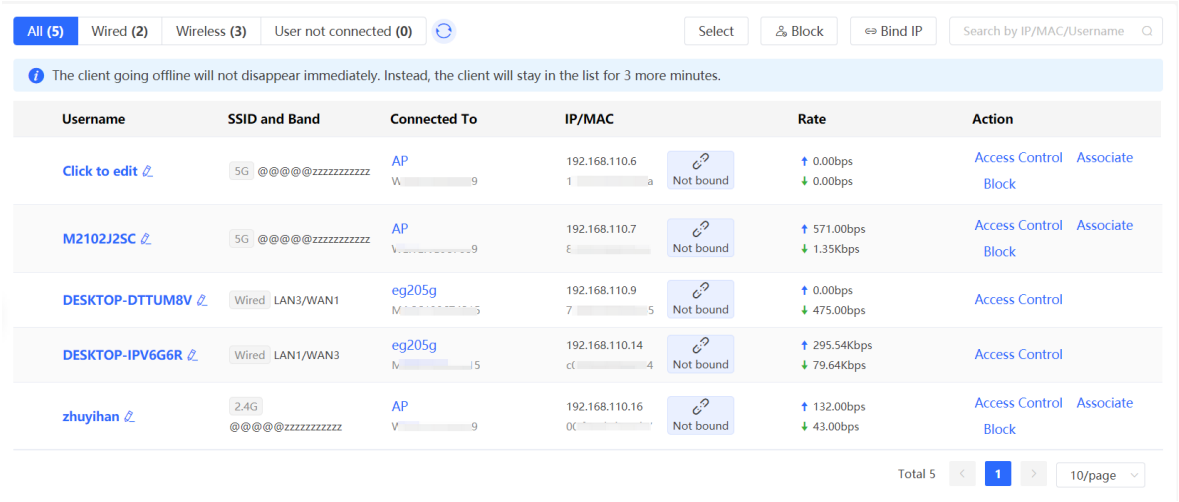
- When the AP is used as the primary device, clients on the network are only displayed when the AP works in router mode.
- When the AP is used as a secondary device, the functions presented in the web interface are based on the primary device on the network.

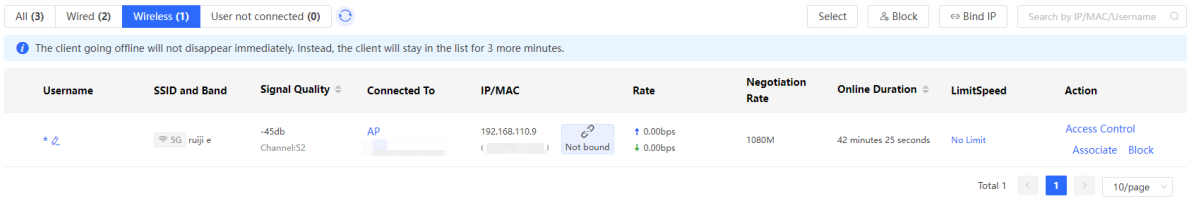
Go to the configuration page:

- Choose **Network-Wide** > **Clients**.
- AP as a secondary device: Choose **One-Device** > **Config** > **Clients**.

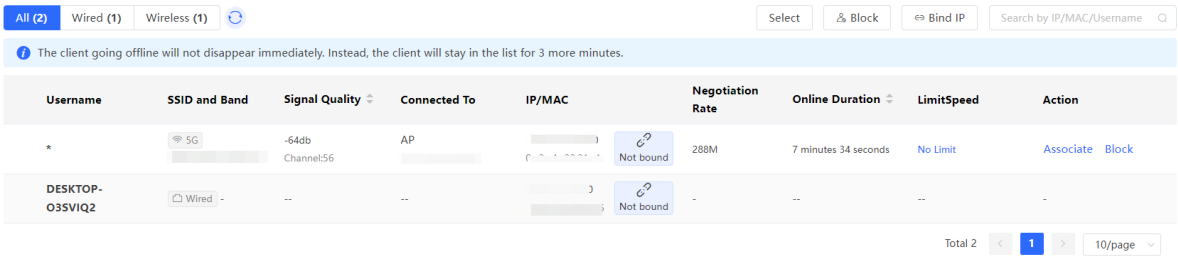
The client list displays wired, wireless, and users not connected on the current network, including the username, connection mode, associated device, IP/MAC address, IP address binding status, rate, and related operations.

- AP as a secondary device.





- AP as a primary device.



Click **Not Bound** in the **IP/MAC** column to bind the client to a static IP address.

Click a button in the **Action** column to perform the corresponding operation on the online client.

- **Wired**: Only access control can be configured.
- **Wireless**: Access control, associate, and block can be configured.
- **User not connected**: Only the delete action is supported.

Note

- Client IP binding is only supported when the AP works in router mode.
- **Access Control** is not supported on AP devices . However, when there are devices on the network that support the **Access Control** function, you can configure this feature globally.

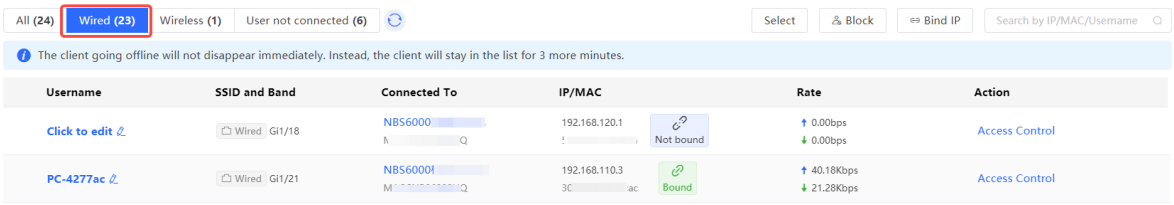
Table 8-1 Online Client Management Configuration Parameters

Parameter	Description
Username	Name of the connected client.
SSID and Band	Indicates the access mode of the client, which can be wireless or wired. The SSID and frequency band is displayed when a client is connected wirelessly.
Signal Quality	The Wi-Fi signal strength of the client and the associated channel. **Note** This information is displayed only in the wireless online client list.
Connected To	Indicates wired or wireless connection, the associated device and SN.
IP/MAC	Indicates the IP address and MAC address of the client.
Rate	Indicates the uplink and downlink rates of the client.
Negotiated Rate	Negotiation rate between the client and the AP. **Note** This information is displayed only in the wireless online client list.
Online Duration	Client access duration. **Note** This information is displayed only in the wireless online client list.

Parameter	Description
LimitSpeed	Implement wireless speed limiting for clients to prevent certain clients from consuming large amounts of bandwidth resources. For details, see 8.5 Configuring Client Rate Limiting. **Note** This information is displayed only in the wireless online client list.
Action	You can click the corresponding button to perform access control, association, and block operations on online clients.

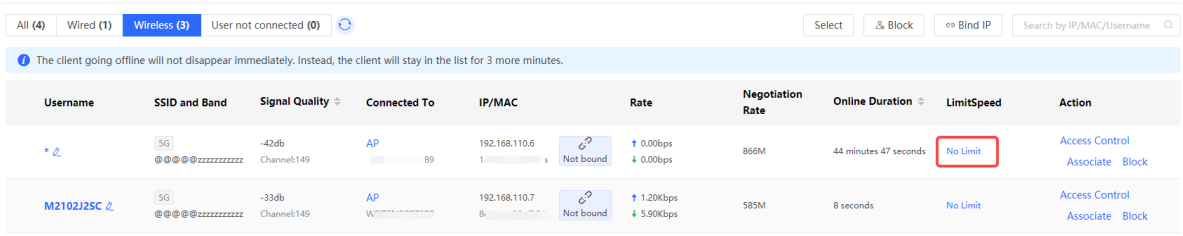
Wired Clients

Click the **Wired** tab to see details about wired clients.



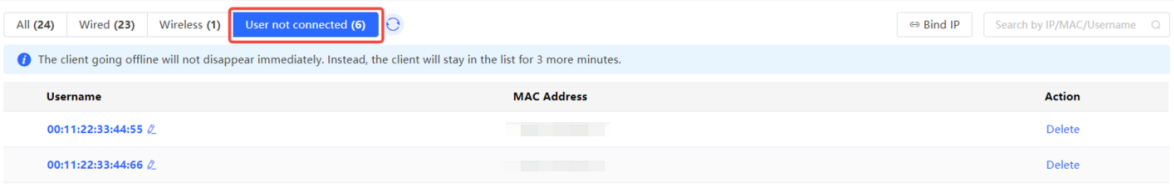
Wireless Clients

Click the **Wireless** tab to see details about wireless clients.



User not connected

Click the **User not connected tab** to see details about clients waiting to connect. This list includes clients tagged manually or recognized as devices previously connected to the network but not currently listed in device management or online client lists. To remove a client device, click **Delete**.



8.1 Configuring Client IP Binding

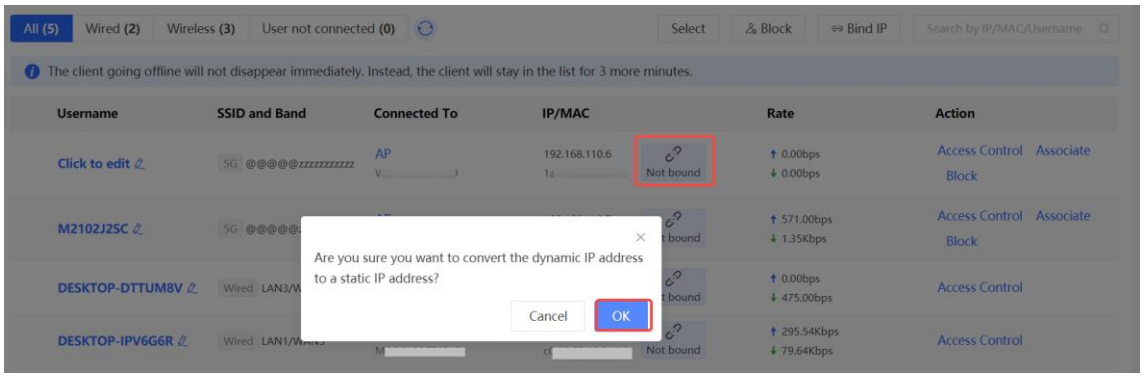
Caution

This function is supported only in router mode.

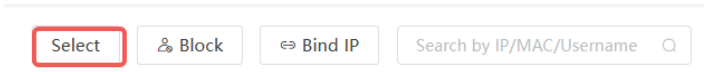
Choose **Network-Wide** > **Clients**.

IP address binding is a security and access control policy that associates a specific IP address with a specific device or user to achieve identity authentication, access control, monitoring, and accounting.

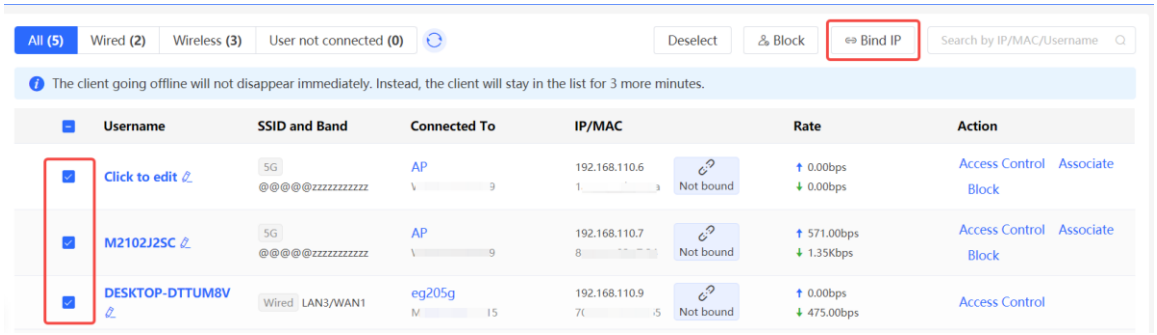
- Single client IP address binding
  Select the client to be bound with an IP address in the list, click **Not bound**, and click **OK** in the pop-up box to bind the client to a static IP address.



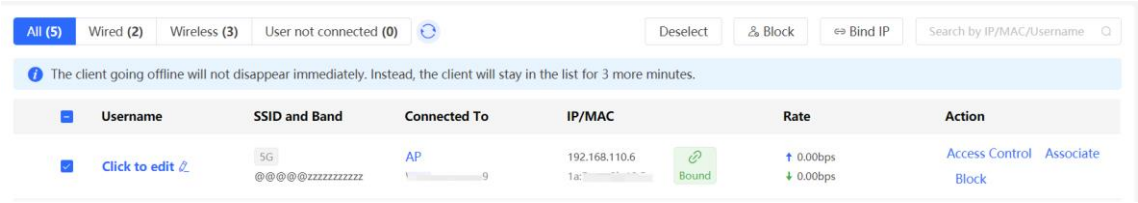
- Batch IP binding
  Click **Select**.



  Select the clients to be bound, click **Bind IP**, and click **OK** in the pop-up box to bind the selected clients to a static IP address.



- Unbind an IP address
  Select the client to be unbound from the list, click **Bound**, and click **OK** in the pop-up box.



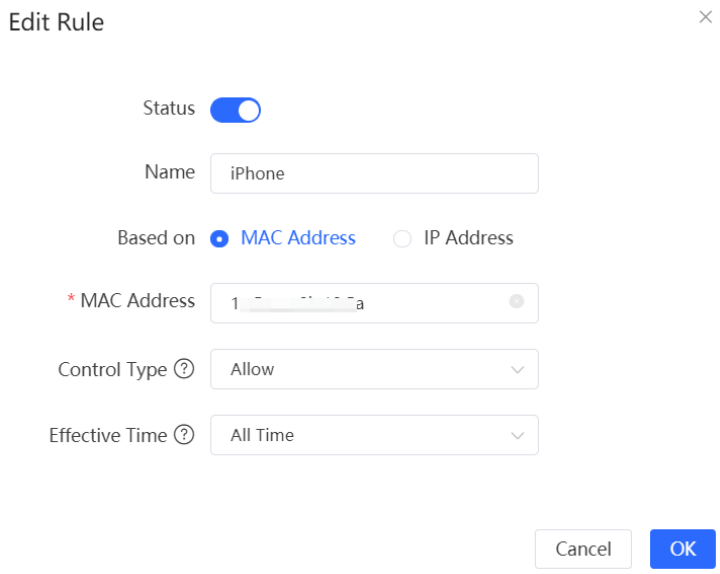
8.2 Configuring Client Access Control

Caution

Access Control is not supported on AP devices . However, when there are devices on the network that support the **Access Control** function, you can configure this feature globally.

Choose **Network-Wide** > **Clients**.

Select a client in the list and click **Access Control** in the **Action** column. You will be redirected to the **Edit Rule** page, where a MAC-based access control rule is automatically generated. The name and MAC address are automatically generated based on the selected client. After selecting the control type and effective time, click **OK** to create an access control rule for the client.



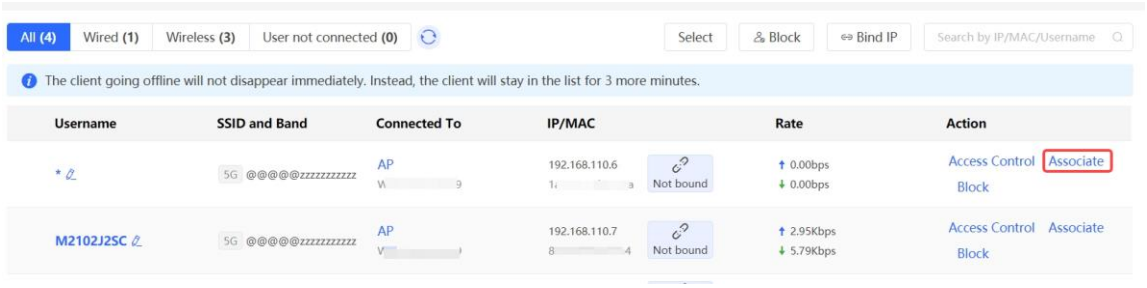
8.3 Configuring Client Association

Choose **Network-Wide** > **Clients**.

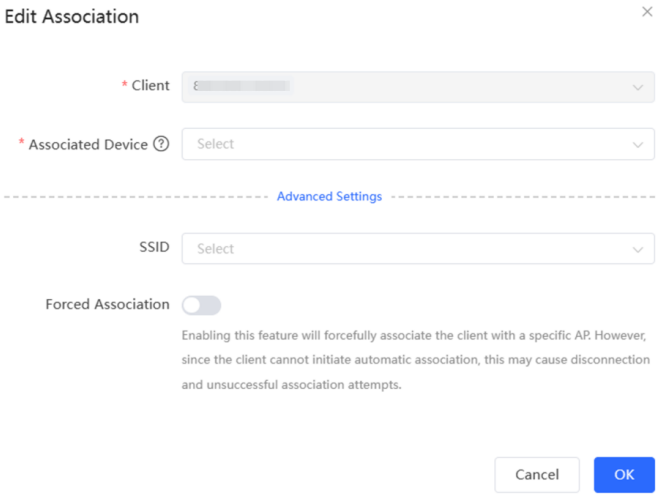
Caution

This function applies only to wireless clients.

Select a client in the list and click **Associate** in the **Action** column. You will be redirected to the **Edit Association** page.



The **Client** field is populated with the MAC address of the selected client and cannot be modified. The **Associated Device** field is populated with the associated device of the client by default. Set the SSID and the Forced Association feature as required, and click **OK**. For details, see4.23 Client Association.



8.4 Blocking Clients

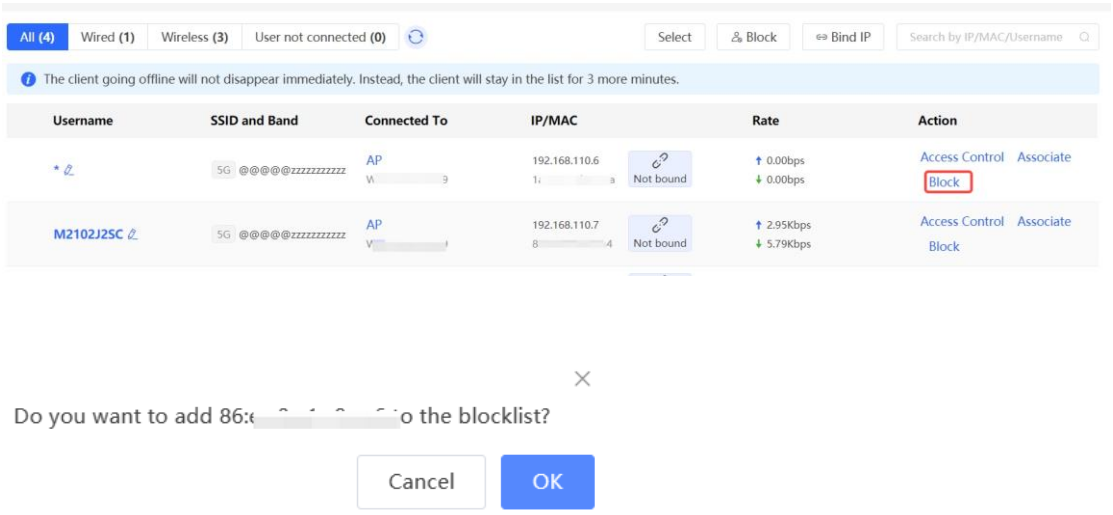
Choose **Network-Wide** > **Clients**.

An unauthorized client may occupy network bandwidth and pose security risks. You can block specified clients to solve the unauthorized access problem.

Caution

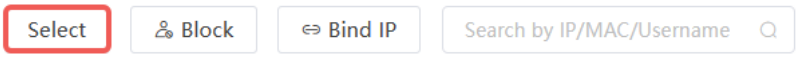
Client block is available only for wireless clients.

- Block a single client
  Select a client to block in the list, click **Block** in the **Action** column, and click **OK** in the pop-up box to block the selected client.

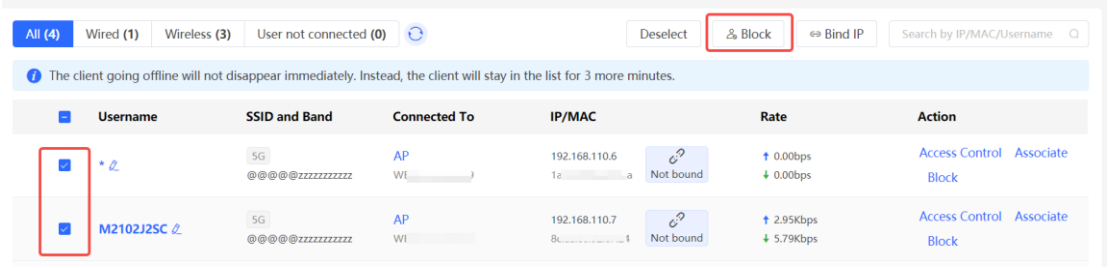


- Batch block clients

  a Click **Select**.



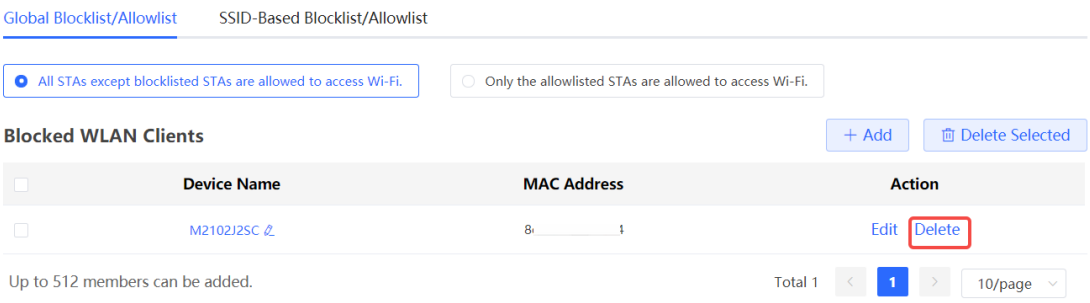
  b Select the target clients, click **Block**, and click **OK** in the pop-up box to block the selected clients.



- Cancel block

  Choose **Network-Wide** > **Workspace** > **Wireless** > **Blocklist/Allowlist** > **Global Blocklist/Allowlist.**

  Select the client to be removed from the blocklist in the wireless blocklist and click **Delete**.



8.5 Configuring Client Rate Limiting

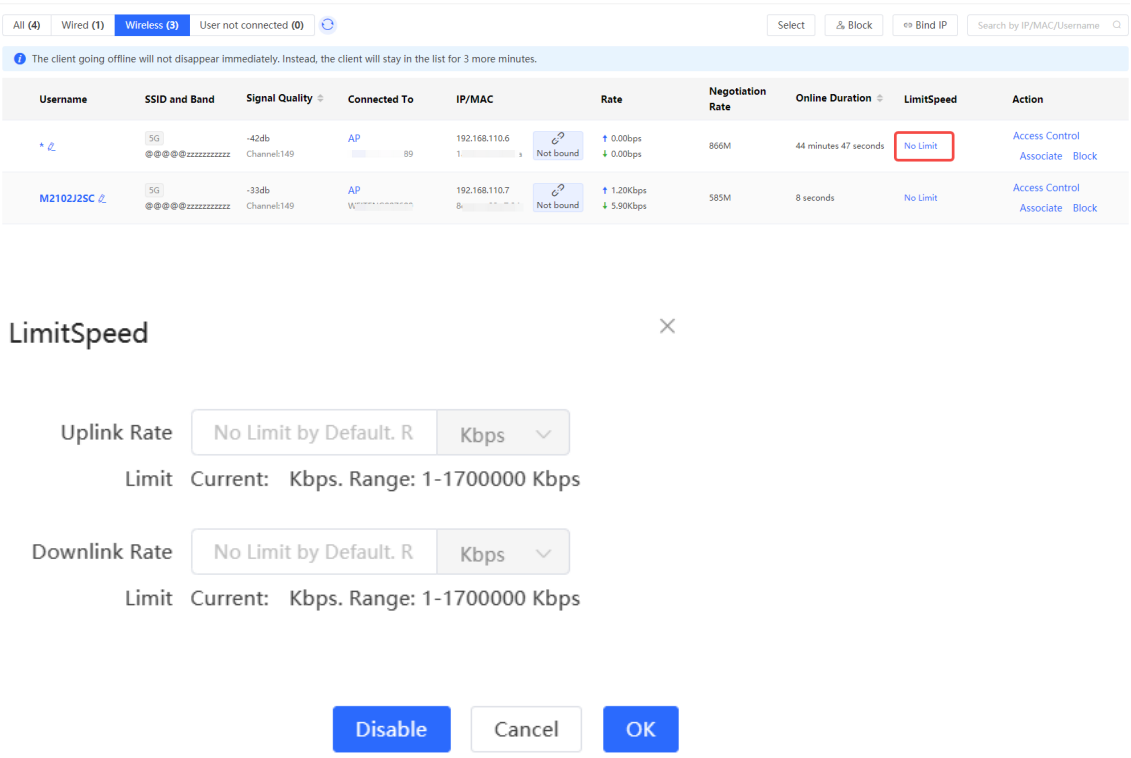
Choose **Network-Wide** > **Clients** > **Wireless**.

To ensure fair resource allocation, the network administrator can implement wireless rate limiting to prevent some users or devices from occupying a large amount of bandwidth and affecting the network experience of other users.

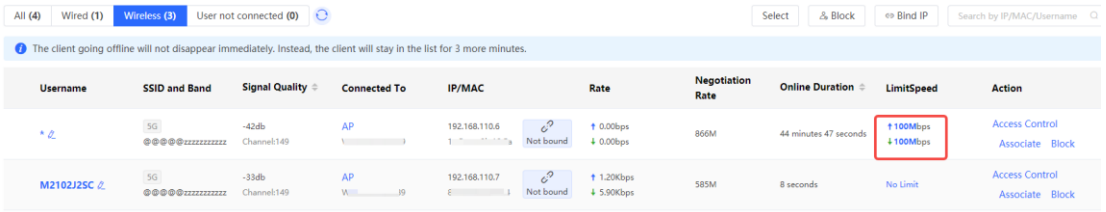
Caution

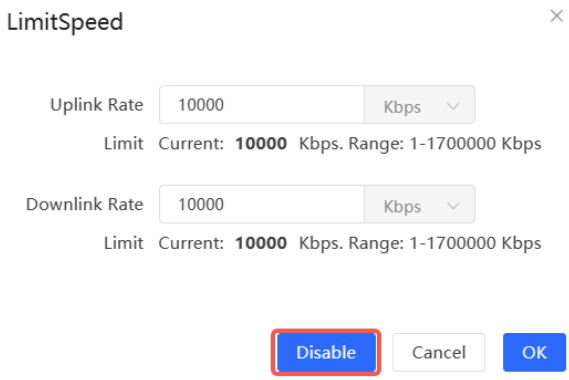
Rate limiting applies only to wireless clients.

- Configure rate limits for clients
  Click the **Wireless** tab, click the **LimitSpeed** column in the table, set the uplink rate limit and downlink rate limit, and click **OK**.



- Cancel rate limits
  Click the **Wireless** tab, click the **LimitSpeed** column in the table, and click **Disable**.




LimitSpeed
Uplink Rate
10000
Kbps
Limit Current: 10000 Kbps. Range: 1-1700000 Kbps
Downlink Rate
10000
Kbps
Limit Current: 10000 Kbps. Range: 1-1700000 Kbps
Disable
Cancel
OK

9 System Settings

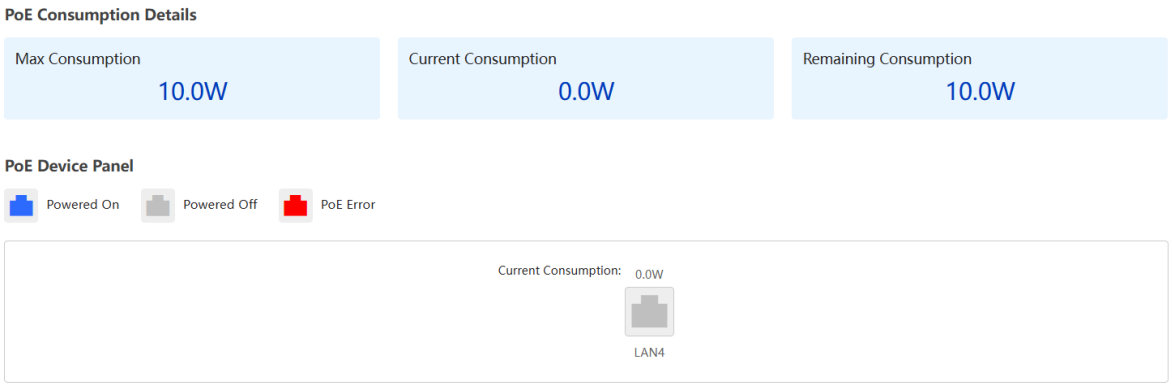
9.1 PoE Out Settings

Specification

This function is only supported on the RG-APF1260(MG-P).

Choose **One-Device** > **Config** > **Network** > **PoE**.

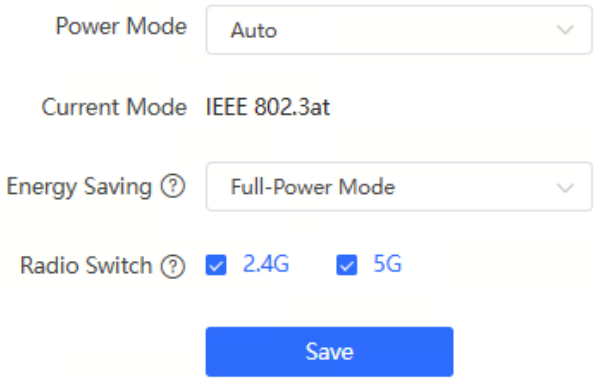
The device supplies power to PoE powered devices through ports. You can check the total power, current consumption, remaining consumption, and whether PoE power supply status is normal. Move the cursor over a port. The power switch icon appears. You can click it to control whether to enable PoE on the port.



9.2 PoE In Settings

Choose **One-Device** > **Config** > **Advanced** > **PoE Settings.**

Set the power mode for the AP to accept power over PoE. In AF mode, the maximum power supported by the device is 15.4 W. In AT mode, the maximum power is 30 W according to the IEEE 802.3at standard. In BT mode, the maximum power is 51 W according to the IEEE 802.3bt standard. By default, the device automatically negotiates with the power sourcing equipment (PSE) about the power mode. The default configuration is recommended.



9.3 Setting the Login Password

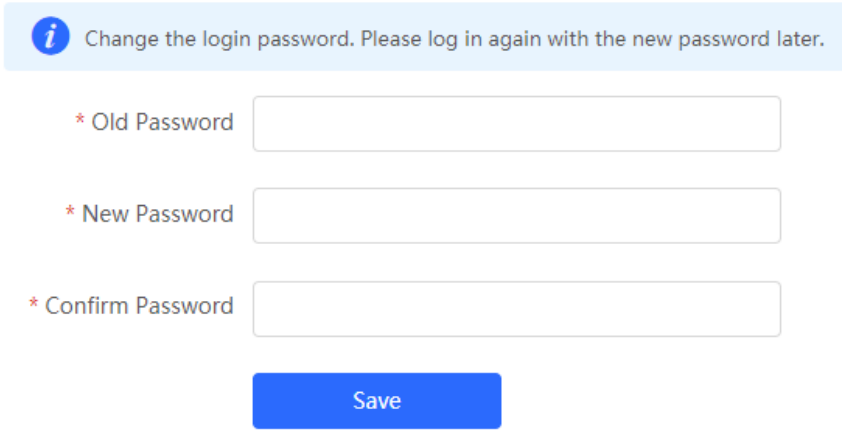
Go to the configuration page:

- In self-organizing network mode: Choose **Network-Wide** > **Workspace** > **Network-Wide** > **Password**.
- In standalone mode: Choose **System** > **Login** > **Password**.

Enter the old password and new password. After saving the configuration, use the new password to log in.

Caution

In self-organizing network mode, the login password of all devices in the network will be changed synchronously.

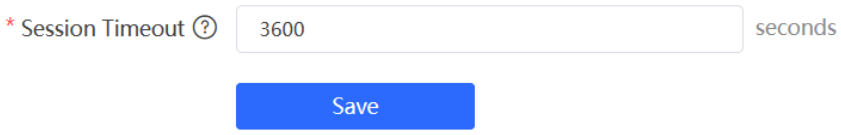


9.4 Setting the Session Timeout Duration

Go to the configuration page:

- In self-organizing network mode: Choose **One-Device > Config** > **System** > **Login**.
- In standalone mode: Choose **System** > **Login** > **Session Timeout**.

If no operation is performed on the Web page within a period of time, the session is automatically disconnected. When you need to perform operations again, enter the password to log in again. The default timeout duration is 3600 seconds, that is, 1 hour.



9.5 Setting and Displaying System Time

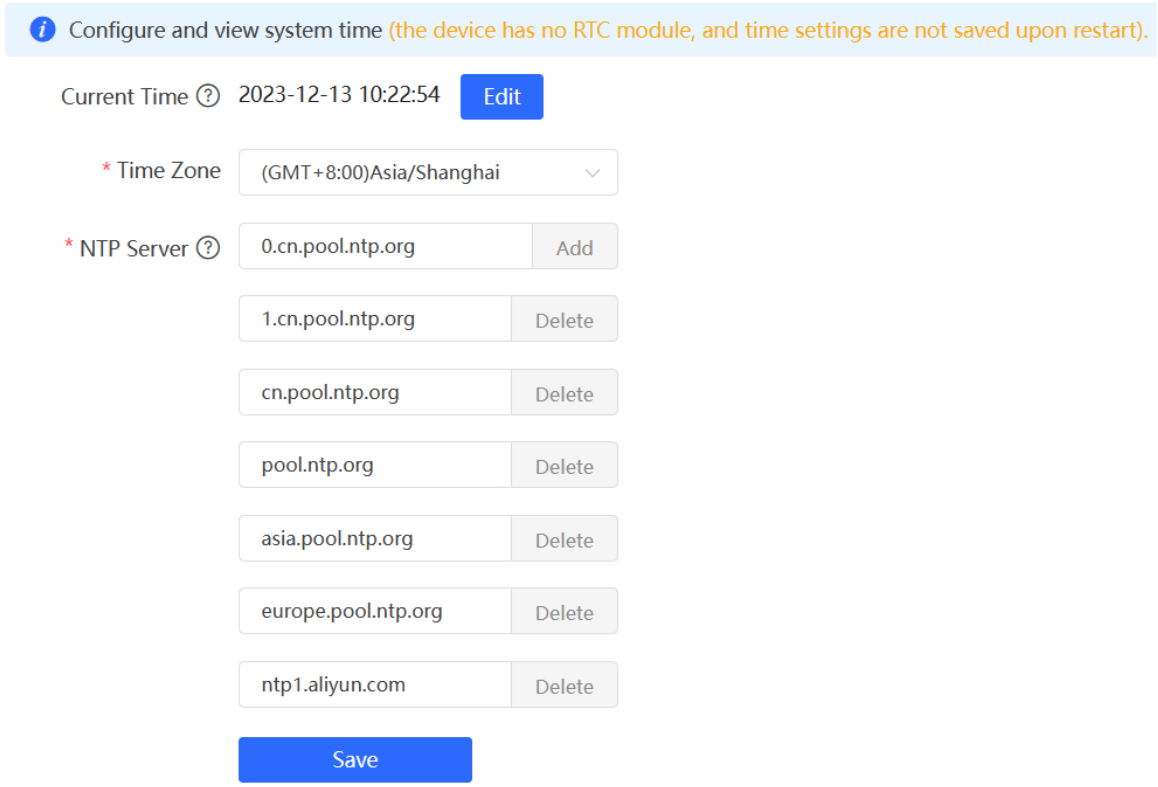
Go to the configuration page:

- In self-organizing network mode: Choose **Network-Wide** > **System** > **System Time**.
- In standalone mode: Choose **System** > **System Time**.

You can view the current system time. If the time is incorrect, check and select the local time zone. If the time zone is correct but time is still incorrect, click **Edit** to manually set the time. In addition, the device supports Network Time Protocol (NTP) servers. By default, multiple servers serve as the backup of each other. You can add or delete the local server.

Caution

In self-organizing network mode, the system time of all devices in the network will be changed synchronously.



9.6 Configuring SNMP

9.6.1 Overview

The Simple Network Management Protocol (SNMP) is a protocol for managing network devices. Based on the client/server model, it can achieve remote monitoring and control of network devices.

SNMP uses a manager and agent architecture. The manager communicates with agents through the SNMP protocol to retrieve information such as device status, configuration details, and performance data. It can also be used to configure and manage devices.

SNMP can be used to manage various network devices, including routers, switches, servers, firewalls, etc. You can achieve user management through the SNMP configuration interface and monitor and control devices through the third-party software.

9.6.2 Global Configuration

1. Overview

The purpose of global configuration is to enable the SNMP service and make the SNMP protocol version (v1/v2c/v3) take effect, so as to achieve basic configuration of local port, device location, and contact information.

SNMP v1: As the earliest version of SNMP, SNMP v1 has poor security, and only supports simple community string authentication. SNMP v1 has certain flaws, such as plaintext transmission of community strings and vulnerability to attacks. Therefore, SNMP v1 is not recommended for modern networks.

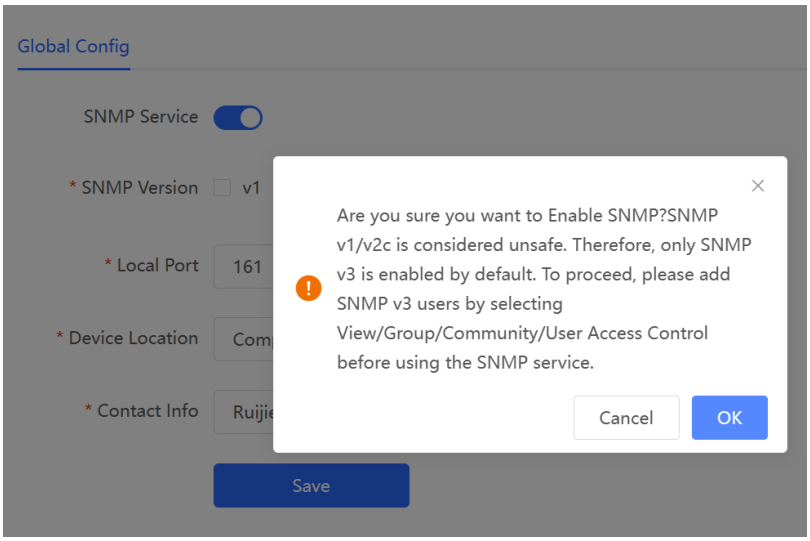
SNMP v2c: As an improved version of SNMP v1, SNMP v2c supports richer functions and more complex data types, with enhanced security. SNMP v2c performs better than SNMP v1 in terms of security and functionality, and is more flexible. It can be configured according to different needs.

SNMP v3: As the newest version, SNMP v3 supports security mechanisms such as message authentication and encryption compared to SNMP v1 and SNMP v2c. SNMP v3 has achieved significant improvements in security and access control.

2. Configuration Steps

Choose **Network-Wide** > **Workspace** > **Network-Wide** > **SNMP** > **Global Config**.

(1) Enable the SNMP service.



When it is enabled for the first time, SNMP v3 is enabled by default. Click **OK**.

(2) Set SNMP service global configuration parameters.

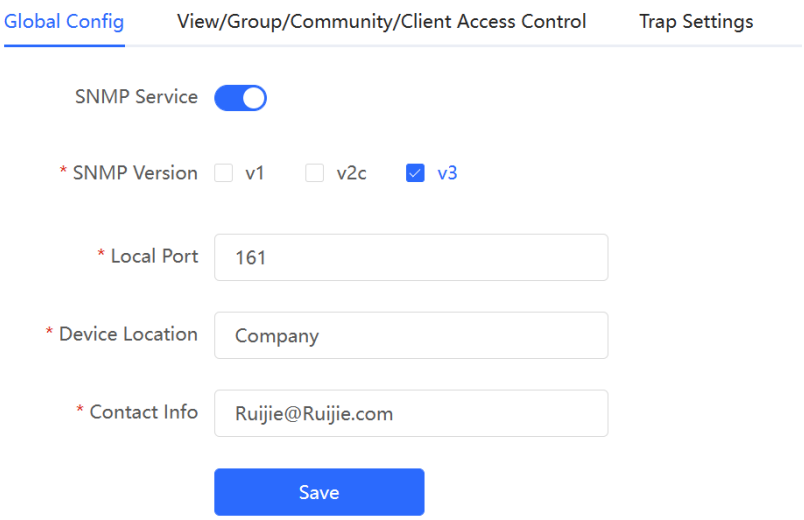


Table 9-1 Global Configuration Parameters

Parameter	Description
SNMP Service	Indicates whether SNMP service is enabled.
SNMP Version	Indicates the SNMP protocol version, including v1, v2c, and v3 versions.
Local Port	The port range is 1 to 65535.
Device Location	1-64 characters. Chinese characters, full-width characters, question marks, and spaces are not allowed.
Contact Info	1-64 characters. Chinese characters, full-width characters, question marks, and spaces are not allowed.

(3) Click **Save**.

After the SNMP service is enabled, click **Save** to make basic configurations such as the SNMP protocol version number take effect.

9.6.3 View/Group/Community/User Access Control

1. Configuring Views

- Overview

Management Information Base (MIB) can be regarded as a database storing the status information and performance data of network devices. It contains a large number of object identifiers (OIDs) to identify the status information and performance data of these network devices.

Views in SNMP can limit the range of MIB nodes that the management system can access, thereby improving the security and reliability of network management. Views are an indispensable part of SNMP and need to be configured or customized according to specific management requirements.

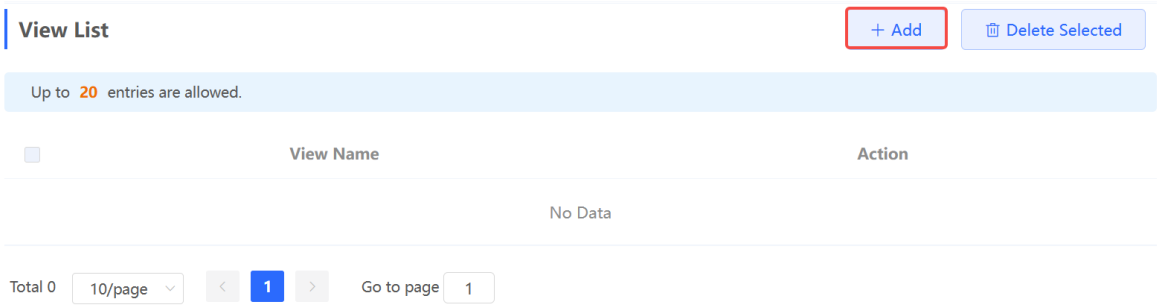
A view can have multiple subtrees. The management system can only access MIB nodes in these subtrees, and cannot access other unauthorized MIB nodes. This can prevent unauthorized system administrators from

accessing sensitive MIB nodes, thereby protecting the security of network devices. Moreover, views can also improve the efficiency of network management and speed up the response from the management system.

- Configuration Steps

Choose **Network-Wide** > **Workspace** > **Network-Wide** > **SNMP** > **View/Group/Community/Client Access Control** > **View List.**

(1) Click **Add** under the View List to add a view.



(2) Configure basic information of a view.

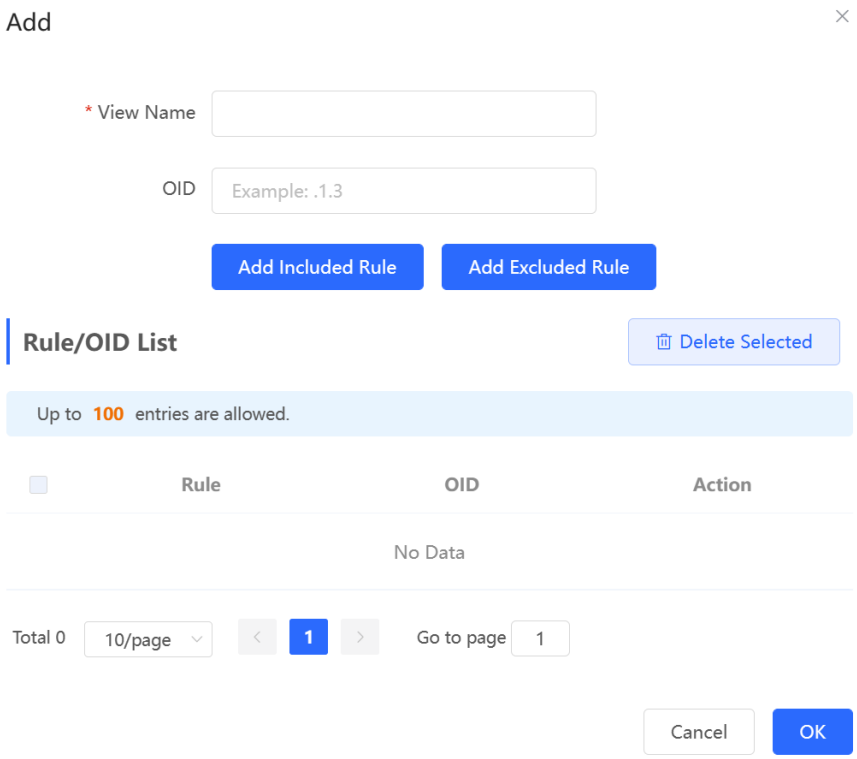


Table 9-2 View Configuration Parameters

Parameter	Description
View Name	Indicates the name of the view. 1-32 characters. Chinese or full width characters are not allowed.

Parameter	Description
OID	Indicates the range of OIDs included in the view, which can be a single OID or a subtree of OIDs.
Type	There are two types of rules: included and excluded rules. ● The included rule only allows access to OIDs within the OID range. Click **Add Included Rule** to set this type of view. ● Excluded rules allow access to all OIDs except those in the OID range. Click **Add Excluded Rule** to configure this type of view.

Note

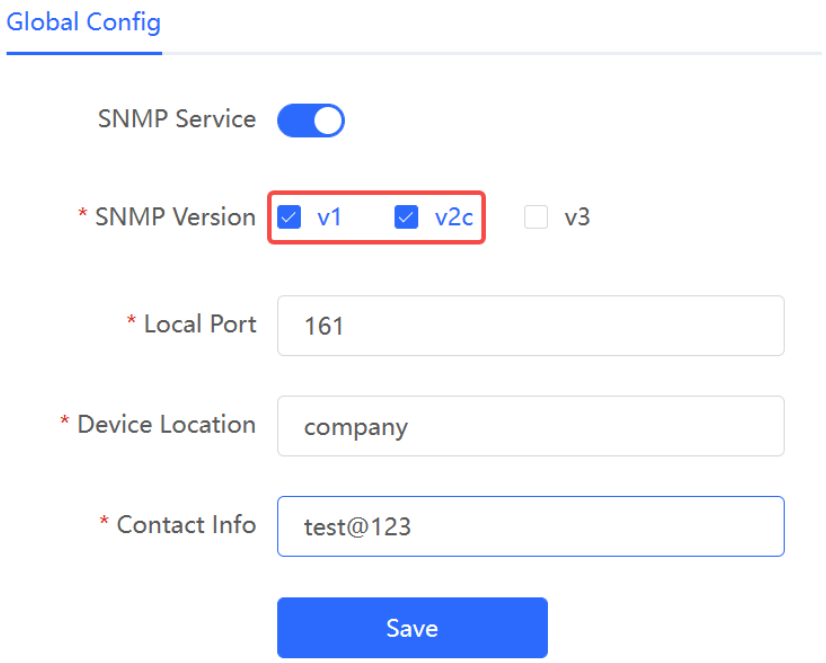
A least one OID rule must be configured for a view. Otherwise, an alarm message will appear.

(3) Click **OK**.

2. Configuring v1/v2c Users

- Overview

When the SNMP version is set to v1/v2c, user configuration is required.



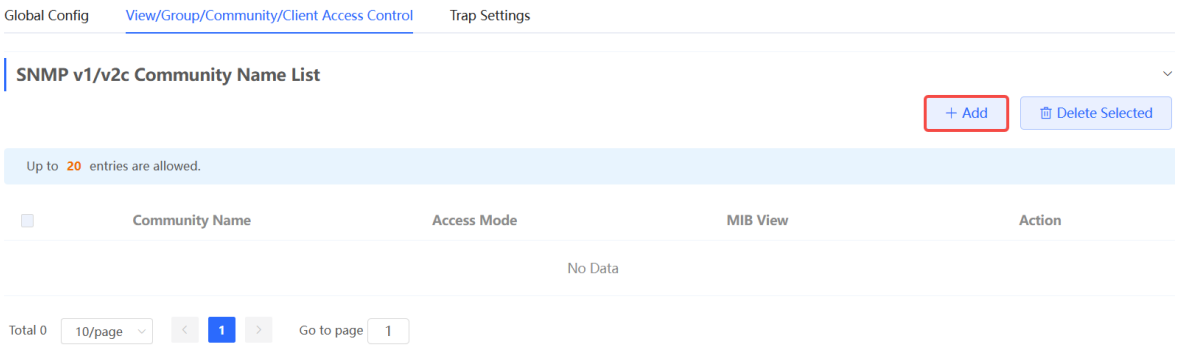
Note

Select the SNMP protocol version, and click **Save**. The corresponding configuration options will appear on the **View/Group/Community/User Access Control** page.

- Configuration Steps

Choose **Network-Wide** > **Workspace** > **Network-Wide** > **SNMP** > **View/Group/Community/Client Access Control** > **SNMP v1/v2c Community Name List.**

(1) Click **Add** in the **SNMP v1/v2c Community Name List** pane.



(2) Add a v1/v2c user.

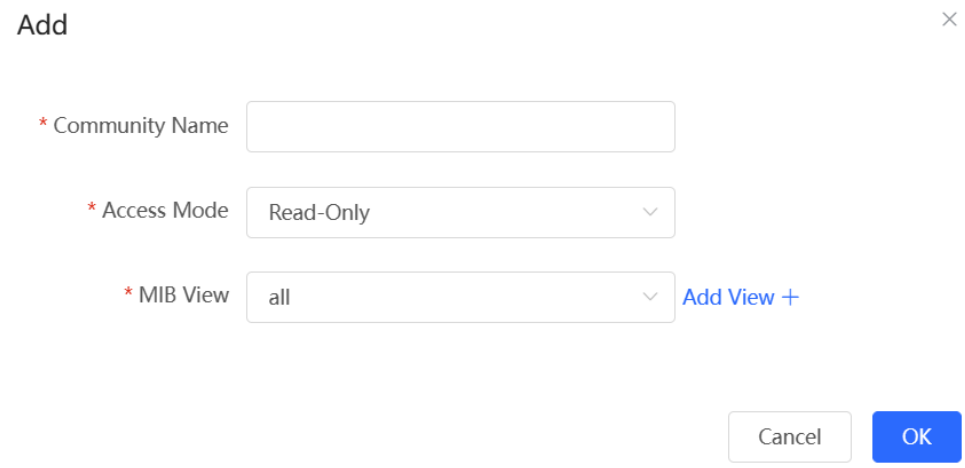


Table 9-3 v1/v2c User Configuration Parameters

Parameter	Description
Community Name	At least 8 characters. It must contain at least three character categories, including uppercase and lowercase letters, digits, and special characters. Admin, public or private community names are not allowed. Question marks, spaces, and Chinese characters are not allowed.
Access Mode	Indicates the access permission (read-only or read & write) for the community name.
MIB View	The options under the drop-down box are configured views (default: all, none).

Caution

- Community names cannot be the same among v1/v2c users.
- Click **Add View** to add a view.

(3) Click **OK**.

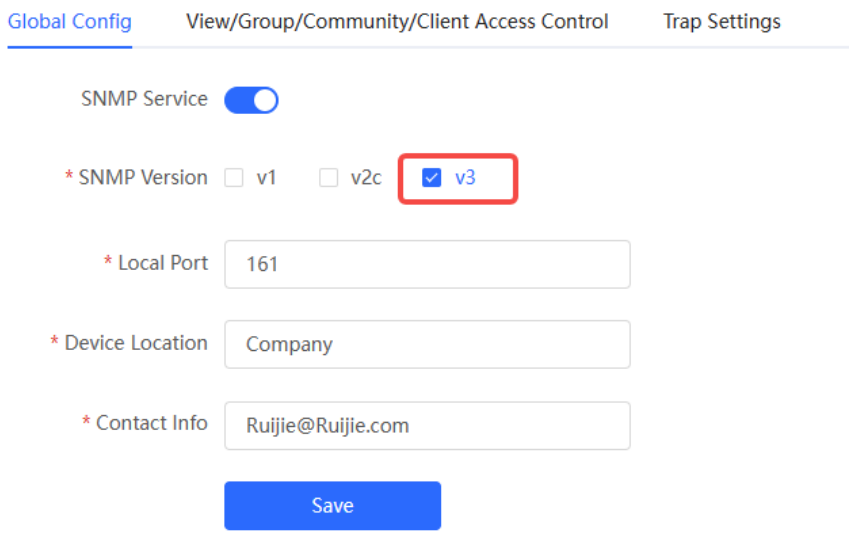
3. Configuring v3 Groups

- Overview

SNMP v3 introduces the concept of grouping to achieve better security and access control. A group is a group of SNMP users with the same security policies and access control settings. With SNMP v3, multiple groups can be configured, each with its own security policies and access control settings. Each group can have one or more users.

- Prerequisites

When the SNMP version is set to v3, the v3 group configuration is required.



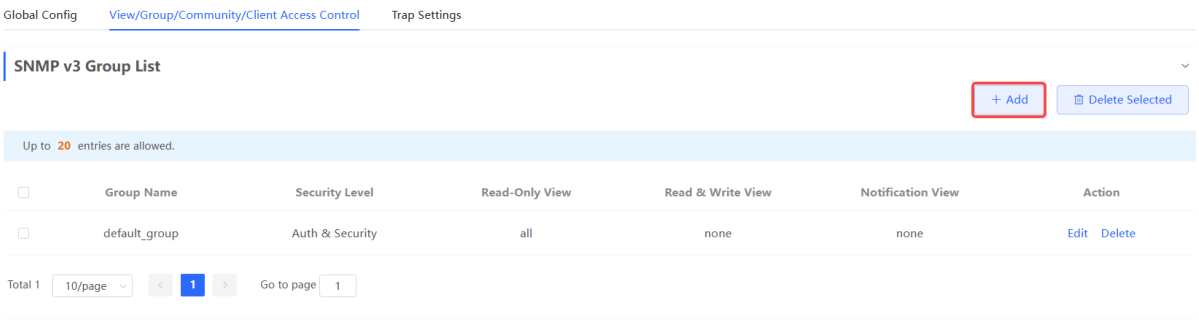
Note

Select the SNMP protocol version, and click **Save**. The corresponding configuration options will appear on the **View/Group/Community/User Access Control** page.

- Configuration Steps

Choose **Network-Wide** > **Workspace** > **Network-Wide** > **SNMP** > **View/Group/Community/Client Access Control** > **SNMP v3 Group List.**

(1) Click **Add** in the **SNMP v3 Group List** pane to create a group.



(2) Configure v3 group parameters.

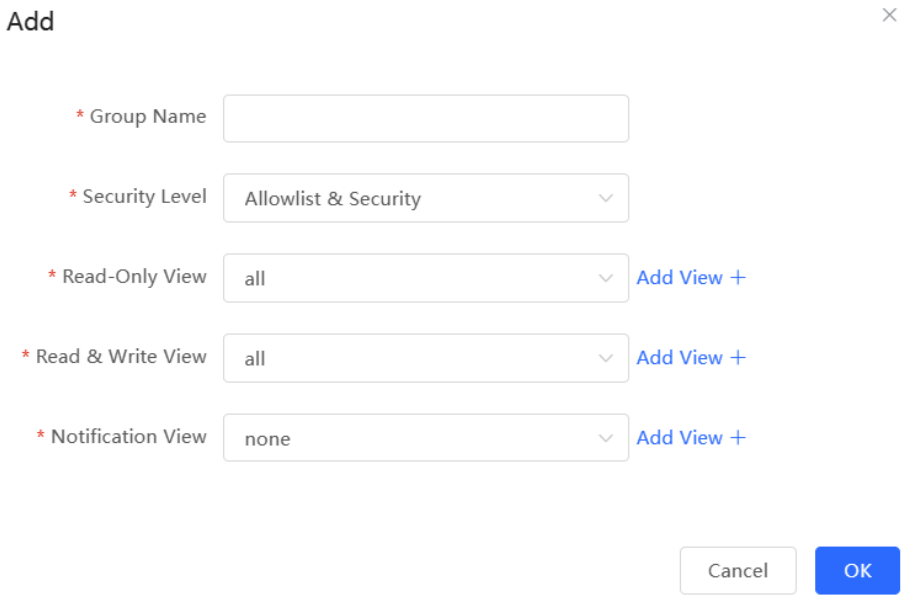


Table 9-4 v3 Group Configuration Parameters

Parameter	Description
Group Name	Indicates the name of the group. 1-32 characters. Chinese characters, full-width characters, question marks, and spaces are not allowed.
Security Level	Indicates the minimum security level (authentication and encryption, authentication but no encryption, no authentication and encryption) of the group.
Read-Only View	The options under the drop-down box are configured views (default: all, none).
Read & Write View	The options under the drop-down box are configured views (default: all, none).

Parameter	Description
Notification View	The options under the drop-down box are configured views (default: all, none).

Caution

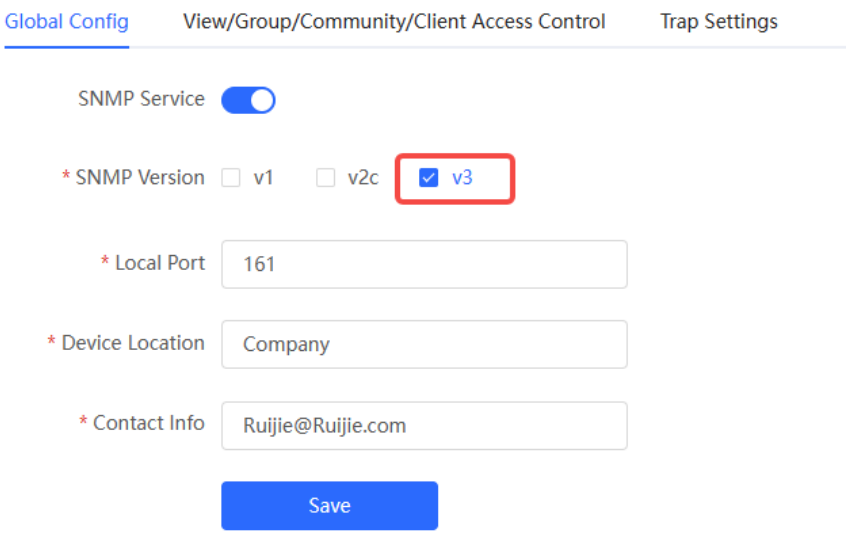
- A group defines the minimum security level, read and write permissions, and scope for users within the group.
- The group name must be unique. To add a view, click **Add View**.

(3) Click **OK**.

4. Configuring v3 Users

- Prerequisites

When the SNMP version is set to v3, the v3 group configuration is required.



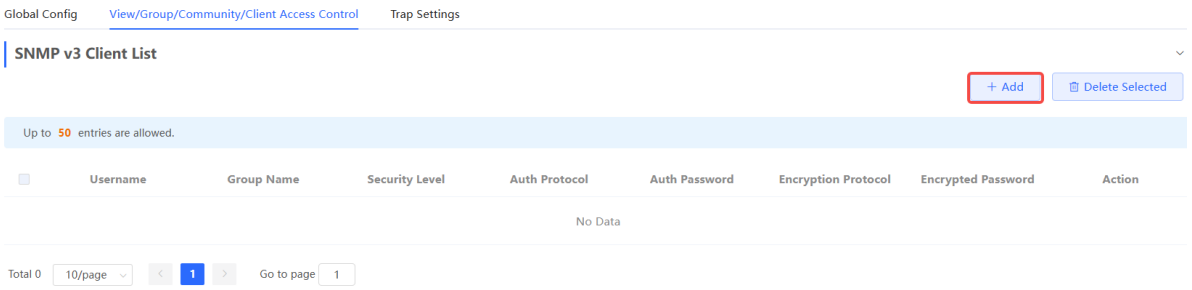
Note

Select the SNMP protocol version, and click **Save**. The corresponding configuration options will appear on the **View/Group/Community/User Access Control** page.

- Configuration Steps

Choose **Network-Wide** > **Workspace** > **Network-Wide** > **SNMP** > **View/Group/Community/Client Access Control** > **SNMP v3 Client List.**

(1) Click **Add** in the **SNMP v3 Client List** pane to add a v3 user.



(2) Configure v3 user parameters.

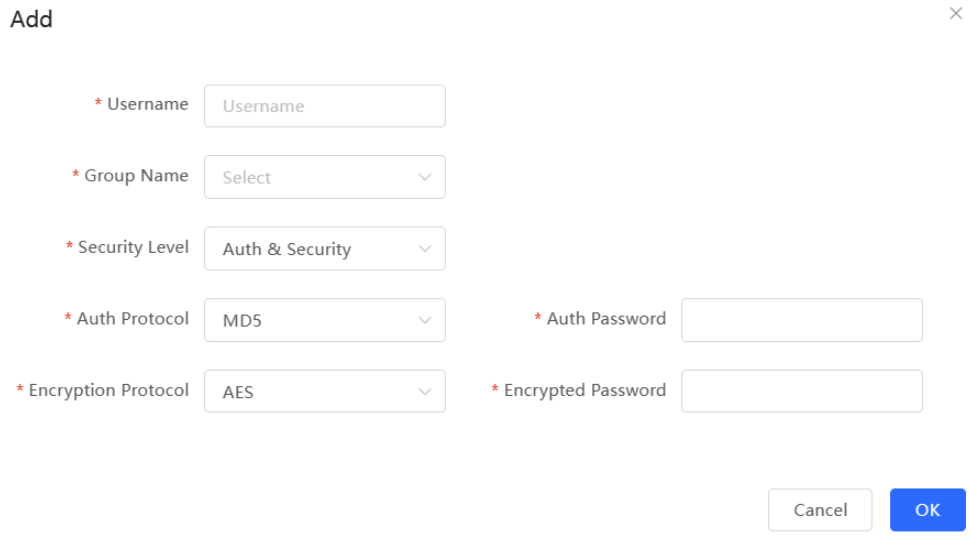


Table 9-5 v3 User Configuration Parameters

Parameter	Description
Username	Username At least 8 characters. It must contain at least three character categories, including uppercase and lowercase letters, digits, and special characters. Admin, public or private community names are not allowed. Question marks, spaces, and Chinese characters are not allowed.
Group Name	Indicates the group to which the user belongs.
Security Level	Indicates the security level (authentication and encryption, authentication but no encryption, and no authentication and encryption) of the user.

Parameter	Description
Auth Protocol, Auth Password	Authentication protocols supported: MD5/SHA/SHA224/SHA256/SHA384/SHA512. Authentication password: 8-31 characters. Chinese characters, full-width characters, question marks, and spaces are not allowed. It must contain at least three character categories, including uppercase and lowercase letters, digits, and special characters. Note: This parameter is mandatory when the security level is authentication and encryption, or authentication but no encryption.
Encryption Protocol, Encrypted Password	Encryption protocols supported: DES/AES/AES192/AES256. Encryption password: 8-31 characters. Chinese characters, full-width characters, question marks, and spaces are not allowed. It must contain at least three character categories, including uppercase and lowercase letters, digits, and special characters. Note: This parameter is mandatory when the security level is authentication and encryption.

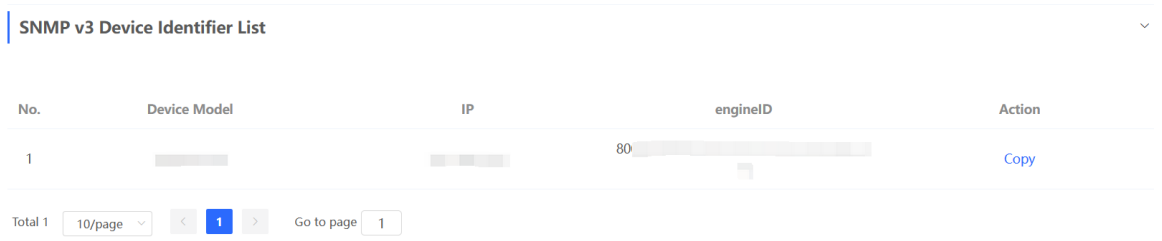
Caution

- The security level of v3 users must be greater than or equal to that of the group.
- There are three security levels, among which authentication and encryption requires the configuration of authentication protocol, authentication password, encryption protocol, and encryption password. Authentication but no encryption only requires the configuration of authentication protocol and encryption protocol, while no authentication and encryption does not require any configuration.

5. Viewing v3 Device Identifier

Choose **Network-Wide** > **Workspace** > **Network-Wide** > **SNMP** > **View/Group/Community/Client Access Control** > **SNMP v3 Device Identifier List.**

View the v3 device identifier in the **SNMP v3 Device Identifier List** pane.



9.6.4 SNMP Service Typical Configuration Examples

1. Configuring SNMP v2c

- Application Scenario

You only need to monitor the device information, but do not need to set and deliver it. A third-party software can be used to monitor the data of nodes like 1.3.6.1.2.1.1 if v2c version is configured.

- Configuration Specification

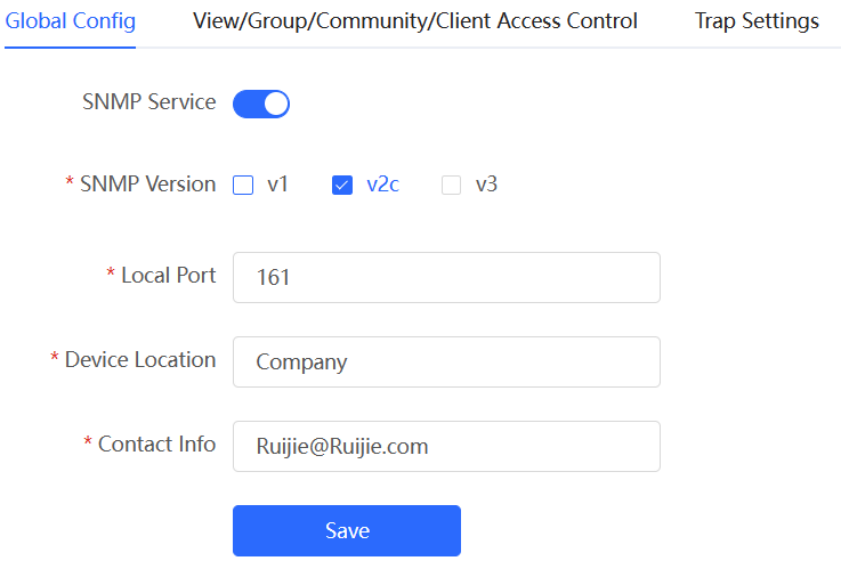
According to the user's application scenario, the requirements are shown in the following table:

Table 9-6 User Requirement Specification

Item	Description
View range	Included rule: the OID is .1.3.6.1.2.1.1, and the custom view name is "system".
Version	For SNMP v2c, the custom community name is "Ruijie_com", and the default port number is 161.
Read & write permission	Read-only permission.

- Configuration Steps

(1) In the global configuration interface, select v2c and set other settings as default. Then, click **Save**.

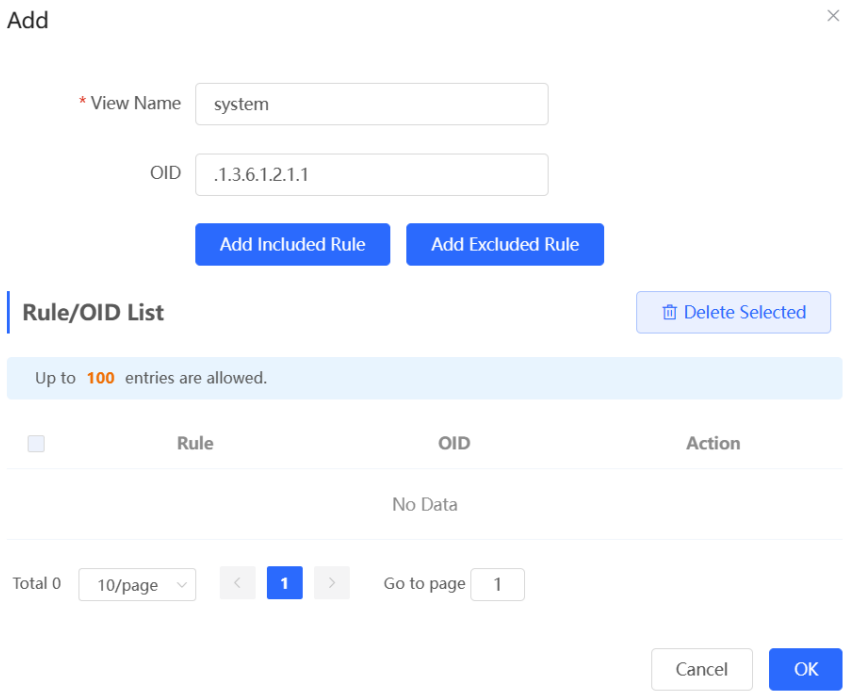


(2) Add a view on the **View/Group/Community/Client Access Control** interface.

a Click **Add** in the **View List** pane to add a view.

b Enter the view name and OID in the pop-up window, and click **Add Included Rule**.

c Click **OK**.

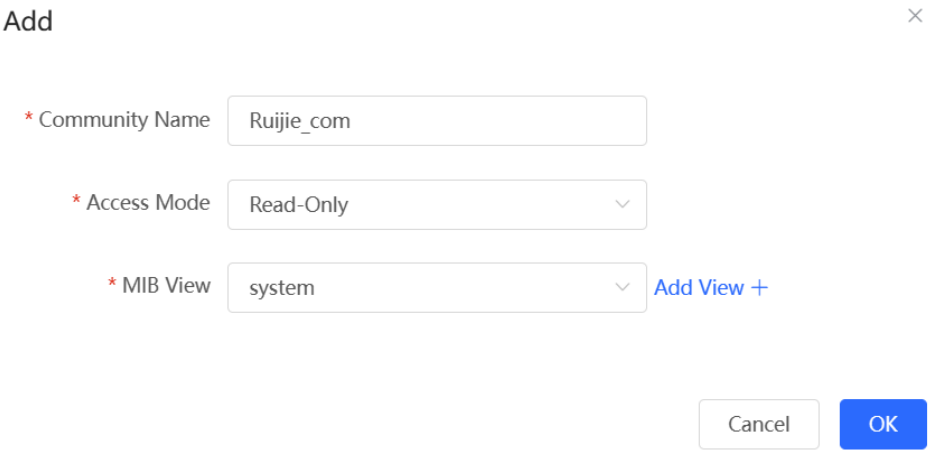


(3) On the View/Group/Community/Client Access Control interface, enter the SNMP v1/v2c community name.

a Click **Add** in the **SNMP v1/v2c Community Name List** pane.

b Enter the group name, access mode, and view in the pop-up window.

c Click **OK**.



2. Configuring SNMP v3

- Application Scenario

You need to monitor and control devices, and use the third-party software to monitor and deliver device information to public nodes (1.3.6.1.2.1). The security level of v3 is authentication and encryption.

- Configuration Specification

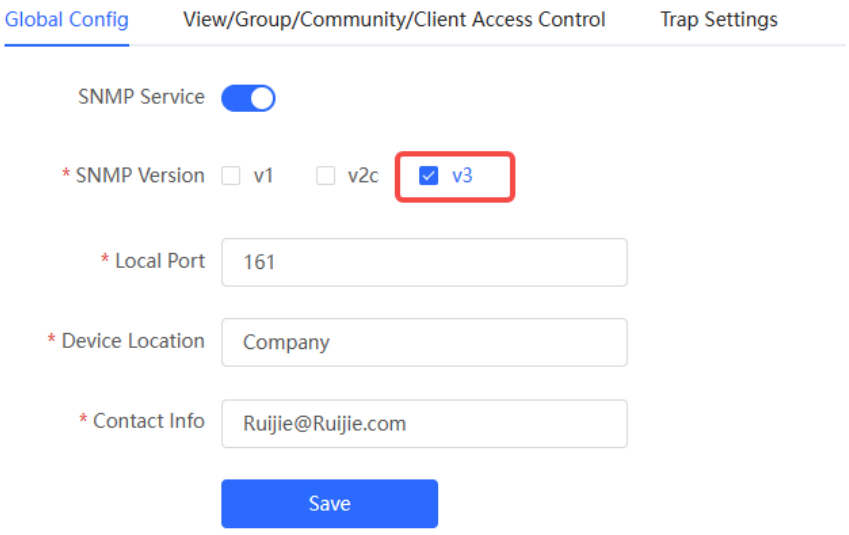
According to the user's application scenario, the requirements are shown in the following table:

Table 9-7 User Requirement Specification

Item	Description
View range	Included rule: the OID is .1.3.6.1.2.1, and the custom view name is "public_view".
Group configuration	Group name: group Security level: authentication and encryption Select public_view for a read-only view. Select public_view for a read & write view. Select none for a notify view.
Configuring v3 Users	User name: v3_user Group name: group Security level: authentication and encryption Authentication protocol/password: MD5/Ruijie123 Encryption protocol/password: AES/Ruijie123
Version	For SNMP v3, the default port number is 161.

- Configuration Steps

(1) On the global configuration interface, select v3, and change the port number to 161. Set other settings to defaults. Then, click **Save**.

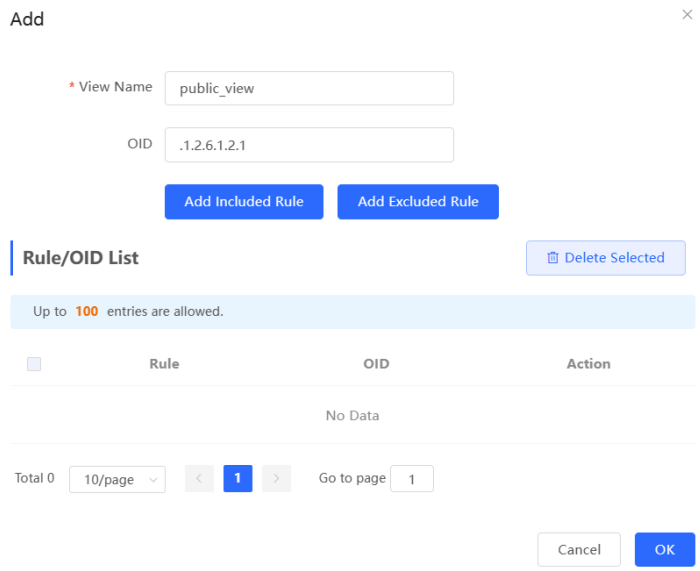


(2) Add a view on the **View/Group/Community/Client Access Control** interface.

a Click **Add** in the **View List** pane.

b Enter the view name and OID in the pop-up window, and click **Add Included Rule**.

c Click **OK**.

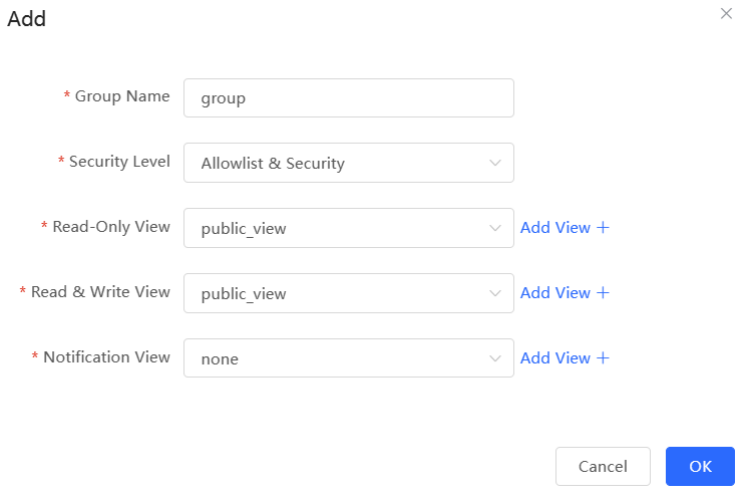


(3) On the **View/Group/Community/Client Access Control** interface, add an SNMP v3 group.

a Click **Add** in the **SNMP v3 Group List** pane.

b Enter the group name and security level on the pop-up window. As this user has read and write permissions, select public_view for read-only and read & write views, and select none for notify views.

c Click **OK**.

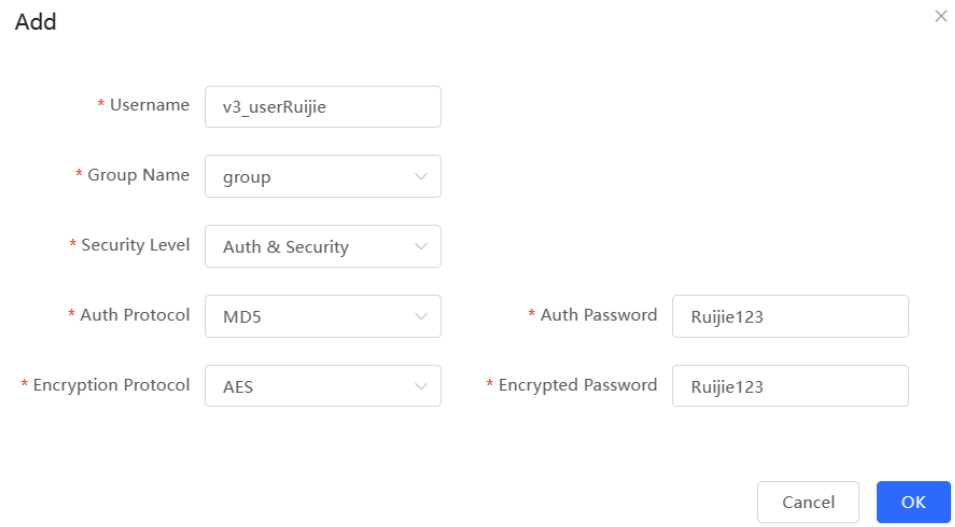


(4) On the **View/Group/Community/Client Access Control** interface, add an SNMP v3 user.

a Click **Add** in the **SNMP v3 Client List** pane.

b Enter the user name and group name in the pop-up window. As the user's security level is authentication and encryption, enter the authentication protocol, authentication password, encryption protocol, and encryption password.

c Click **OK**.



9.6.5 Configuring Trap Service

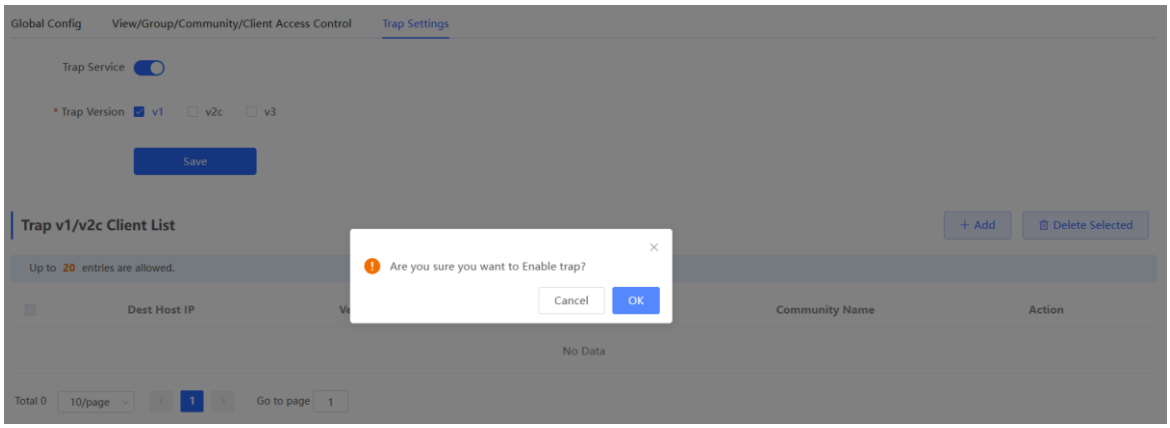
Trap is a notification mechanism of the Simple Network Management Protocol (SNMP) protocol. It is used to report the status and events of network devices to administrators, including device status, faults, performance, configuration, and security management. Trap provides real-time network monitoring and fault diagnosis services, helping administrators discover and solve network problems in a timely manner.

1. Enabling Trap Service

Enable the trap service and select the effective trap version, including v1, v2c, and v3 versions.

Choose **Network-Wide** > **Workspace** > **Network-Wide** > **SNMP** > **Trap Settings.**

(1) Enable the trap service.



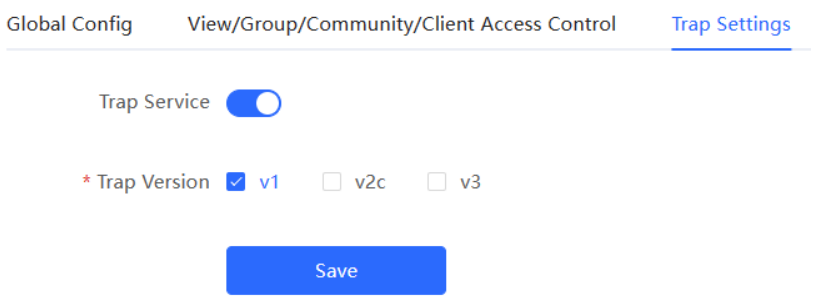
When the trap service is enabled for the first time, the system will pop up a prompt message. Click **OK**.

(2) Set the trap version.

The trap versions include v1, v2c, and v3.

(3) Click **Save**.

After the trap service is enabled, click **Save** for the configuration to take effect.



2. Configuring Trap v1/v2c Users

- Overview

Trap is a notification mechanism that is used to send alerts to administrators when important events or failures occur on devices or services. Trap v1/v2c are two versions in the SNMP protocol for network management and monitoring.

Trap v1 is the first version that supports basic alert notification functionality. Trap v2c is the second version, which supports more alert notification options and advanced security features.

By using trap v1/v2c, administrators can promptly understand problems on the network and take corresponding measures.

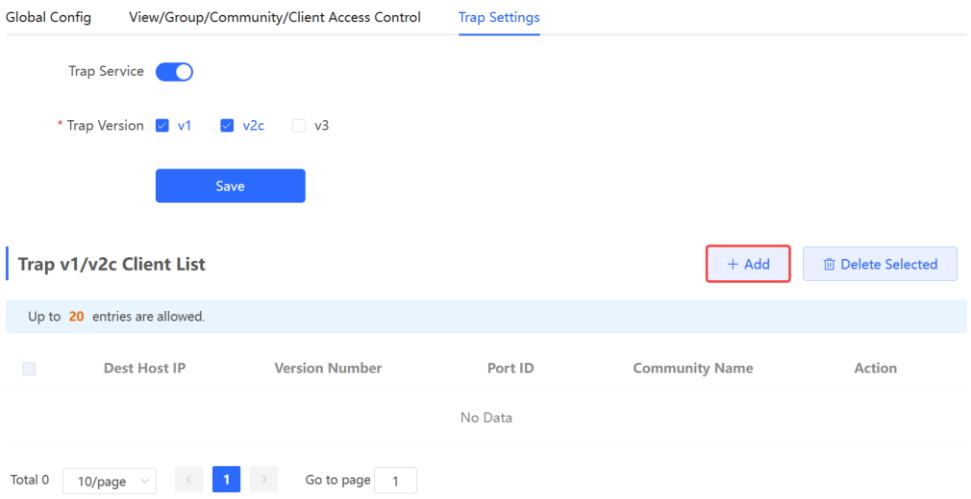
- Prerequisites

  Once trap v1 and v2c versions are selected, it is necessary to add trap v1v2c users.

- Configuration Steps

Choose **Network-Wide** > **Workspace** > **Network-Wide** > **SNMP** > **Trap Settings.**

(1) Click **Add** in the **Trap v1/v2c Client List** pane to add a trap v1/v2c user.



(2) Configure trap v1/v2c user parameters.

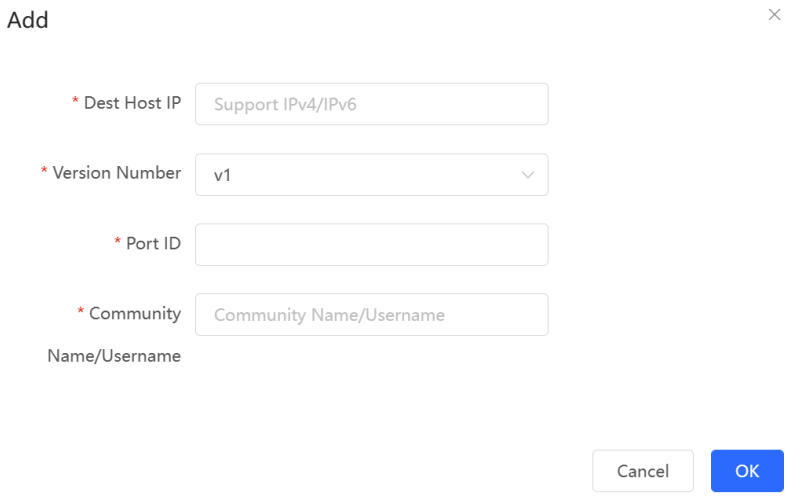


Table 9-8 Trap v1/v2c User Configuration Parameters

Parameter	Description
Dest Host IP	IP address of the trap peer device. An IPv4 or IPv6 address is supported.
Version Number	Trap version, including v1 and v2c.
Port ID	The port range of the trap peer device is 1 to 65535.
Community Name/Username	Community name of the trap user. At least 8 characters. It must contain at least three character categories, including uppercase and lowercase letters, digits, and special characters. Admin, public or private community names are not allowed. Question marks, spaces, and Chinese characters are not allowed.

Caution

- The destination host IP address of trap v1/ v1/v2c users cannot be the same.
- Community names of trap v1/ v1/v2c users cannot be the same.

(3) Click **OK**.

3. Configuring Trap v3 Users

- Overview

Trap v3 is a network management mechanism based on the SNMP protocol. It is used to send alert notifications to administrators. Unlike previous versions, trap v3 provides more secure and flexible configuration options, including authentication and encryption features.

Trap v3 offers custom conditions and methods for sending alerts, as well as the recipients and notification methods for receiving alerts. This enables administrators to have a more accurate understanding of the status of network devices and to take timely measures to ensure the security and reliability of the network.

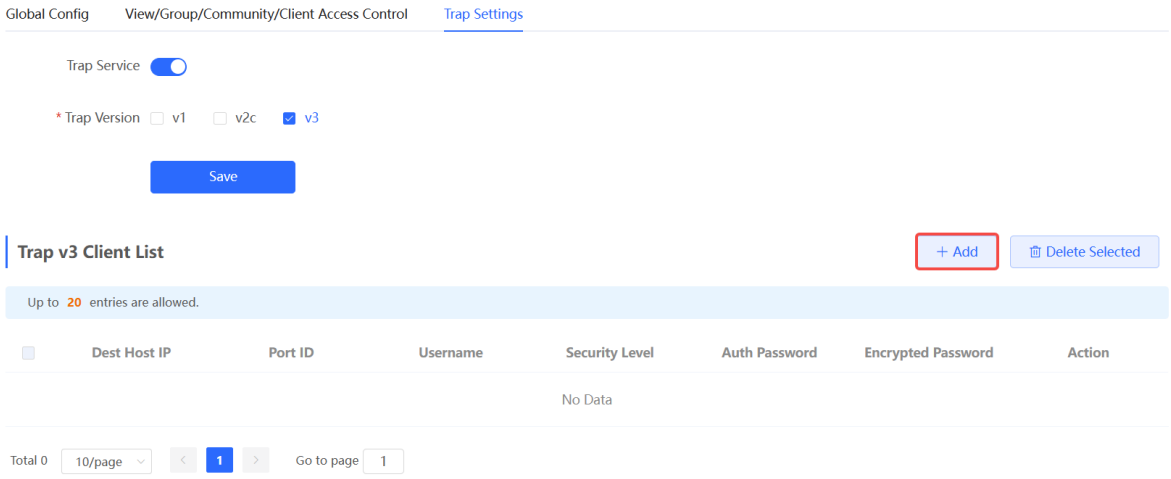
- Prerequisites

When the v3 version is selected for the trap service, it is necessary to add a trap v3 user.

- Configuration Steps

Choose **Network-Wide** > **Workspace** > **Network-Wide** > **SNMP** > **Trap Settings.**

(1) Click **Add** in the **Trap v3 Client List** pane to add a trap v3 user.



(2) Configure trap v3 user parameters.

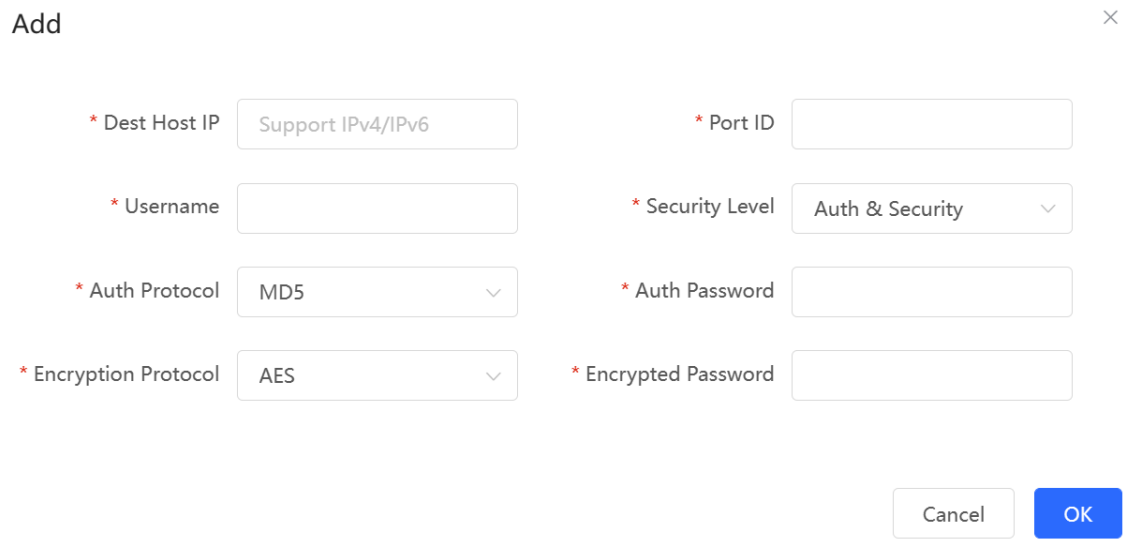


Table 9-9 Trap v3 User Configuration Parameters

Parameter	Description
Dest Host IP	IP address of the trap peer device. An IPv4 or IPv6 address is supported.
Port ID	The port range of the trap peer device is 1 to 65535.

Parameter	Description
Username	Name of the trap v3 user. At least 8 characters. It must contain at least three character categories, including uppercase and lowercase letters, digits, and special characters. Admin, public or private community names are not allowed. Question marks, spaces, and Chinese characters are not allowed.
Security Level	There are three security levels for a trap user, which are "Auth & Security", "Auth & Open", and "Allowlist & Security".
Auth Protocol, Auth Password	Authentication protocols supported: MD5/SHA/SHA224/SHA256/SHA384/SHA512. Authentication password: 8-31 characters. Chinese characters, full-width characters, question marks, and spaces are not allowed. It must contain at least three character categories, including uppercase and lowercase letters, digits, and special characters. Note: This parameter must be set when the Security Level is Auth & Security or Auth & Open.
Encryption Protocol, Encrypted Password	Encryption protocols supported: DES/AES/AES192/AES256. Encryption password: 8-31 characters. Chinese characters, full-width characters, question marks, and spaces are not allowed. It must contain at least three character categories, including uppercase and lowercase letters, digits, and special characters. Note: This parameter must be set when the Security Level is Auth & Security.

Caution

The destination host IP address of trap v1/v2c/v3 users cannot be the same.

(3) Click **OK**.

9.6.6 Trap Service Typical Configuration Examples

1. Configuring Trap v2c

- Application Scenarios

During device monitoring, if the device is suddenly disconnected or encounters an abnormality, and the third-party monitoring software cannot detect and handle the abnormal situation in a timely manner, you can configure the device with a destination IP address of 192.168.110.85 and a port number of 166 to enable the device to send a v2c trap in case of an abnormality.

- Configuration Specification

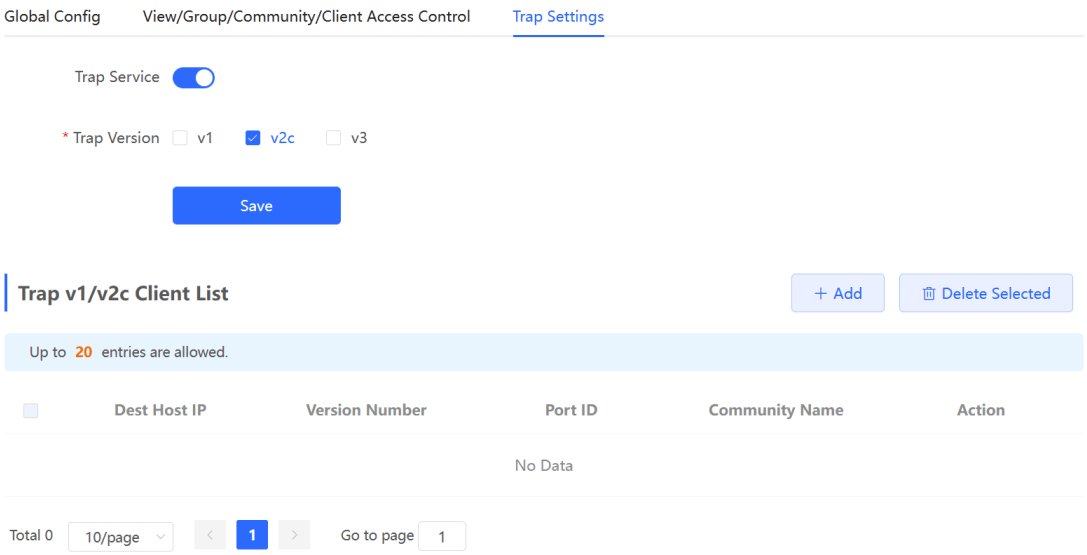
According to the user's application scenario, the requirements are shown in the following table:

Table 9-10 User Requirement Specification

Item	Description
IP address and port number	The destination host IP is 192.168.110.85, and the port number is 166.
Version	Select the v2c version.
Community name/User name	Trap_ruijie

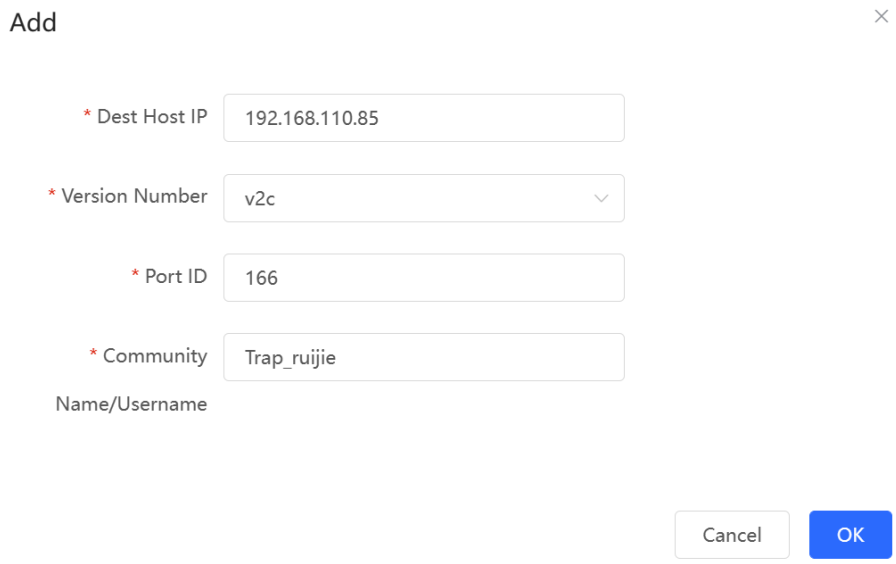
- Configuration Steps

(1) Select the v2c version in the **Trap Setting** interface and click **Save**.



(2) Click **Add** in the Trap v1/v2c Client List to add a trap v2c user.

(3) Enter the destination host IP address, version, port number, user name, and other information. Then, click **OK**.



2. Configuring Trap v3

- Application Scenarios

During device monitoring, if the device is suddenly disconnected or encounters an abnormality, and the third-party monitoring software cannot detect and handle the abnormal situation in a timely manner, you can configure the device with a destination IP address of 192.168.110.87 and a port number of 167 to enable the device to send a v3 trap, which is a safer trap compared with v1/v2c traps.

- Configuration Specification

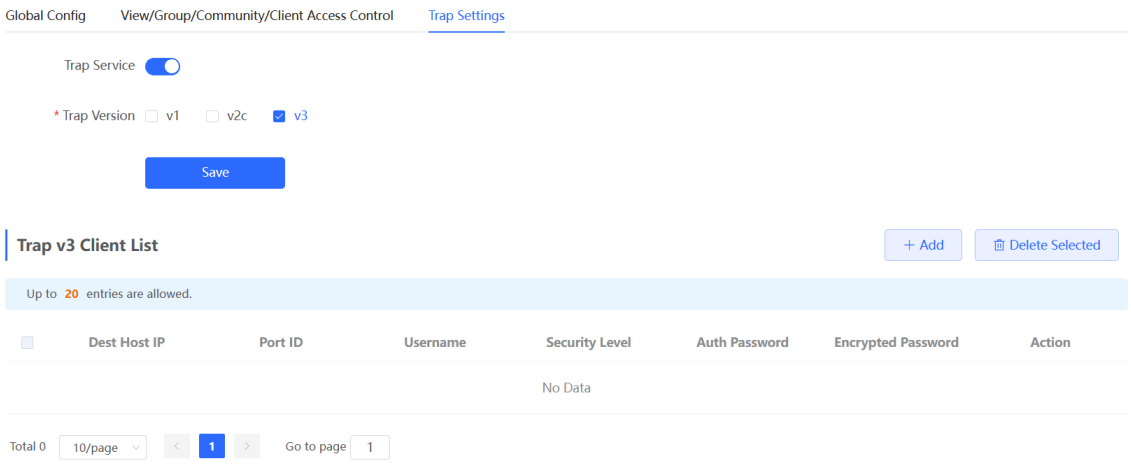
According to the user's application scenario, the requirements are shown in the following table:

Table 9-11 User Requirement Specification

Item	Description
IP address and port number	The destination host IP is 192.168.110.87, and the port number is 167.
Version and user name	Select the v3 version and trapv3_ ruijie for the user name.
Authentication protocol/authentication password Encryption protocol/encryption password	Authentication protocol/password: MD5/Ruijie123 Encryption protocol/password: AES/Ruijie123

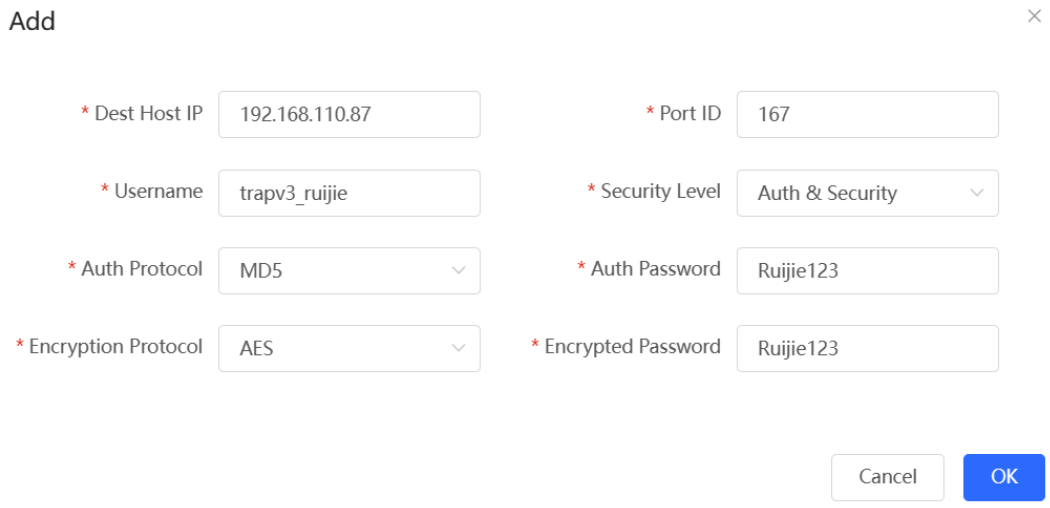
- Configuration Steps

(1) Select the v3 version in the **Trap Setting** interface and click **Save**.



(2) Click **Add** in the Trap v3 Client List to add a trap v3 user.

(3) Enter the destination host IP address, port number, user name, and other information. Then, click **OK**.



9.7 Configuring Reboot

Caution

- Do not cut off power during system reboot to avoid device damage.
- Do not refresh the page or close the browser during the reboot. After the device is successfully rebooted and the Web service becomes available, the device automatically jumps to the login page.
- Rebooting the device affects the network. Therefore, exercise caution when performing this operation.

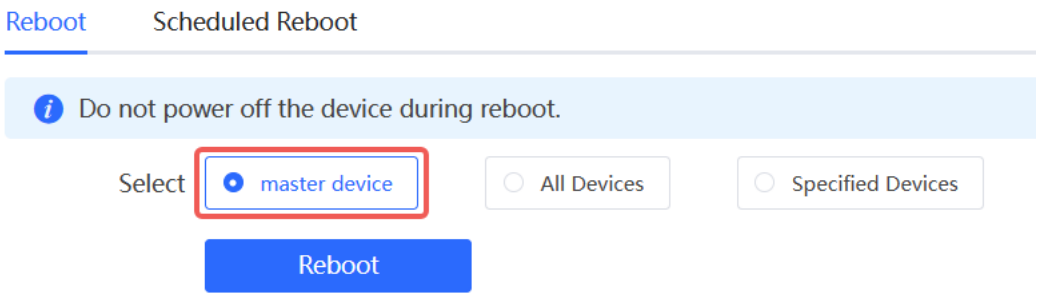
9.7.1 Rebooting the Master Device

In self-organizing network mode:

- Choose **Network-Wide** > **System** > **Reboot**. Click the **Reboot** tab and select **master device**.
- Choose **Network-Wide** > **Workspace** > **Network-Wide** > **Reboot**. Click the **Reboot** tab and select **master**

device.

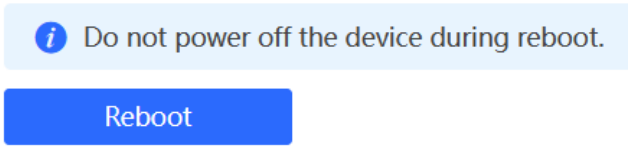
Click the **Reboot** button. The master device will restart.



9.7.2 Rebooting Local Device

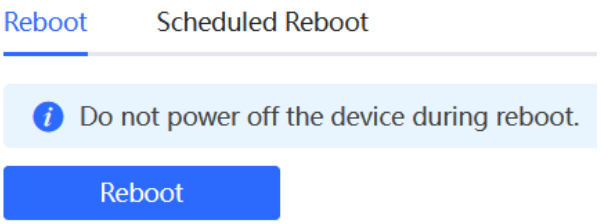
- In self-organizing network mode, choose **One-Device** > **Config** > **System** > **Reboot**.

Click the **Reboot** button. The device will restart.



- In standalone mode: choose **System** > **Reboot** > **Reboot**.

Click the **Reboot** button. The device will restart.



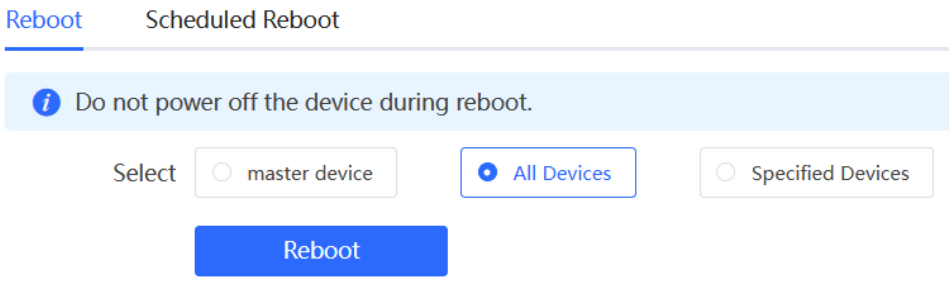
9.7.3 Rebooting All Devices on the Network

In self-organizing network mode, you can batch reboot all devices on the network.

Go to the configuration page:

- Choose **Network-Wide** > **System** > **Reboot**. Click the **Reboot** tab and select **All Devices**.
- Choose **Network-Wide** > **Workspace** > **Network-Wide** > **Reboot**. Click the **Reboot** tab and select **All Devices**.

Click the **Reboot** button to batch reboot all devices on the network.



Caution

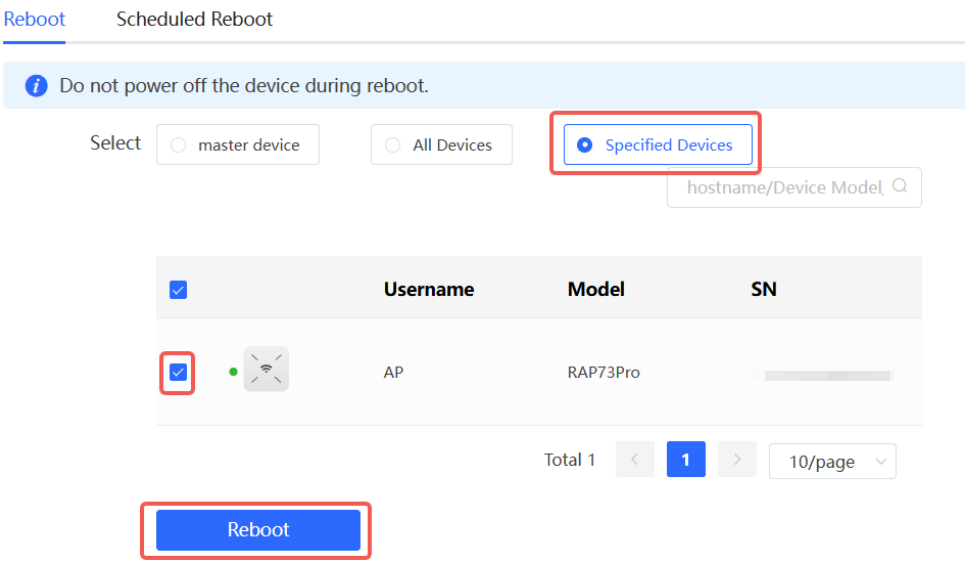
It takes time to reboot all devices in the current network. The action may affect the whole network. Please be cautious.

9.7.4 Rebooting the Specified Devices

In self-organizing network mode, you can reboot specified devices in the network in batches. Go to the configuration page:

- Choose **Network-Wide** > **System** > **Reboot**. Click the **Reboot** tab and select **Specified Devices**.
- Choose **Network-Wide** > **Workspace** > **Network-Wide** > **Reboot**. Click the **Reboot** tab and select **Specified Devices**.

Select the required devices from the list and click **Reboot**.



9.8 Configuring Scheduled Reboot

Confirm that the system time is accurate to avoid network interruption caused by device reboot at wrong time. For details about how to configure the system time, see 9.5 Setting and Displaying System Time.

Go to the configuration page:

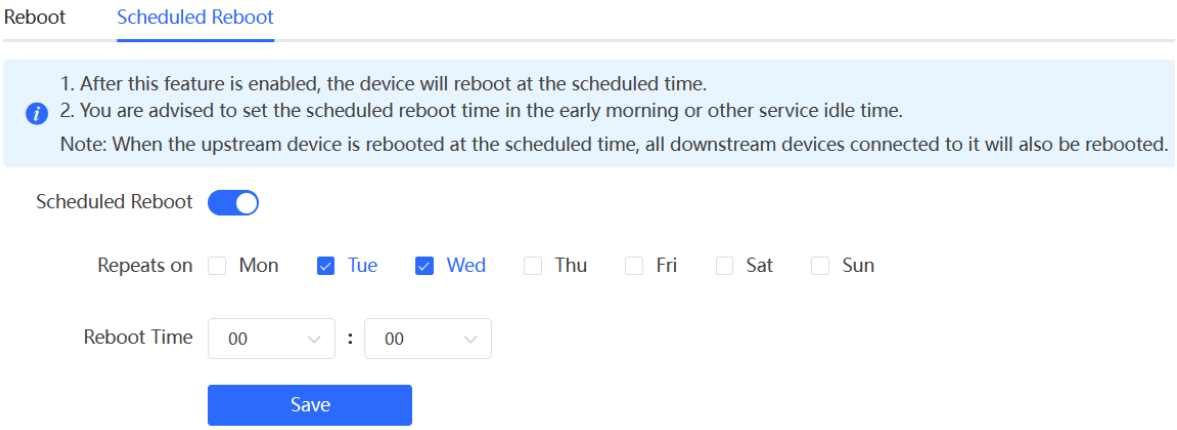
- Choose **Network-Wide** > **System** > **Reboot** > **Scheduled Reboot.**

- Choose **Network-Wide** > **Workspace** > **Network-Wide** > **Reboot** > **Scheduled Reboot**.

Caution

If you configure scheduled reboot on the management webpage, all devices will restart when the system time matches with the scheduled reboot time. Please be cautious.

Click **Scheduled Reboot**, and select the date and time of scheduled reboot every week. Click **Save**. When the system time matches with the scheduled reboot time, the device will restart. You are recommended to set scheduled reboot time to off-peak hours.



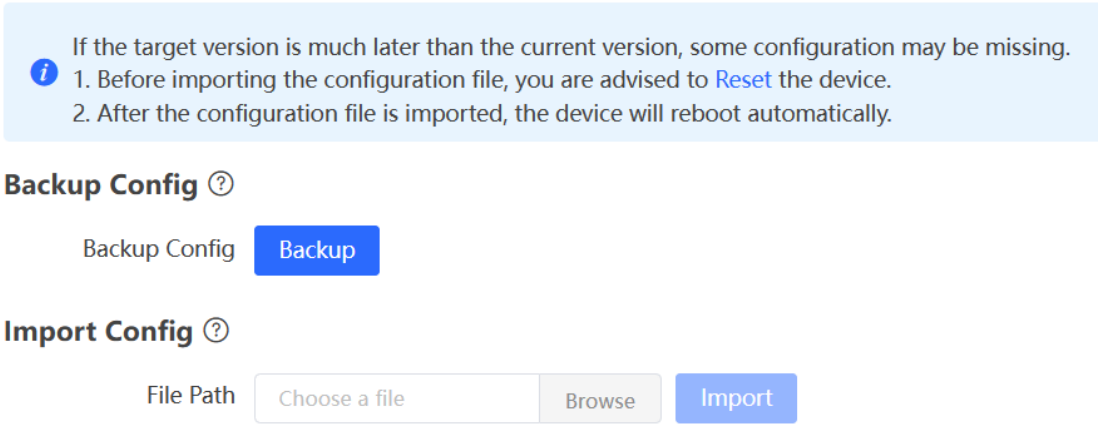
9.9 Configuring Backup and Import

Go to the configuration page:

- Choose **Network-Wide** > **System** > **Backup & Import**.
- Choose **One-Device** > **Config** > **System** > **Backup** > **Backup & Import**.

Configuration backup: Click **Backup** to download a configuration file locally.

Configuration import: Click **Browse**, select a backup file on the local PC, and click **Import** to import the configuration file. The device will restart.

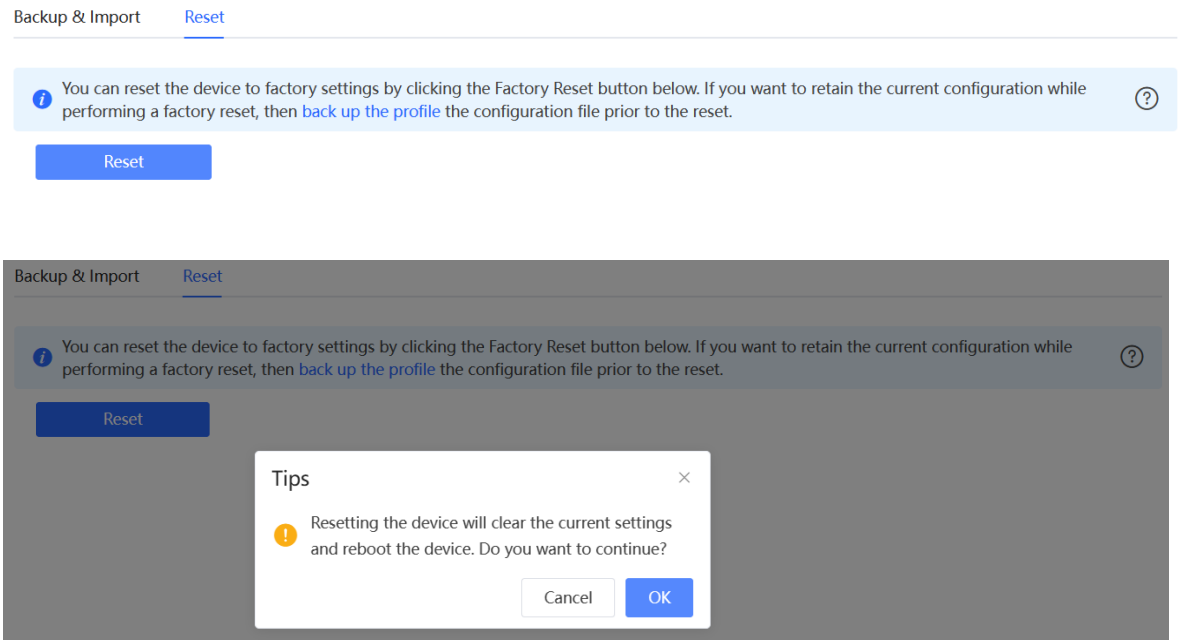


9.10 Restoring Factory Settings

9.10.1 Restoring the Current Device to Factory Settings

Choose **One-Device** > **Config** > **System** > **Backup** > **Reset**.

Click **Reset** to restore the current device to the factory settings.



Caution

The operation will clear all configuration of the current device. If you want to retain the current configuration, back up the configuration first (See 9.9 Configuring Backup and Import). Therefore, exercise caution when performing this operation.

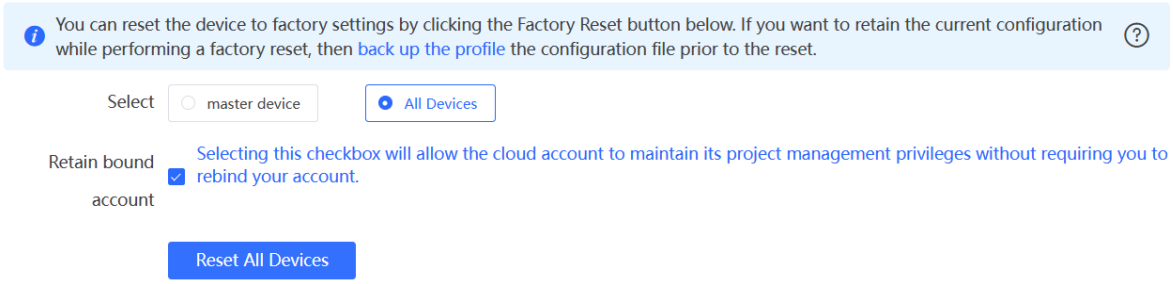
9.10.2 Restoring All Devices to Factory Settings

In the self-organizing network mode, all devices in the network will be restored to factory settings.

Go to the configuration page:

- Choose **Network-Wide** > **System** > **Reset.**
- Choose **Network-Wide** > **Workspace** > **Network-Wide** > **Reset**.

Click **All Devices**, select whether to enable **Retain bound account** and Click **Reset All Devices**. All devices in the network will be restored to factory settings.



Caution

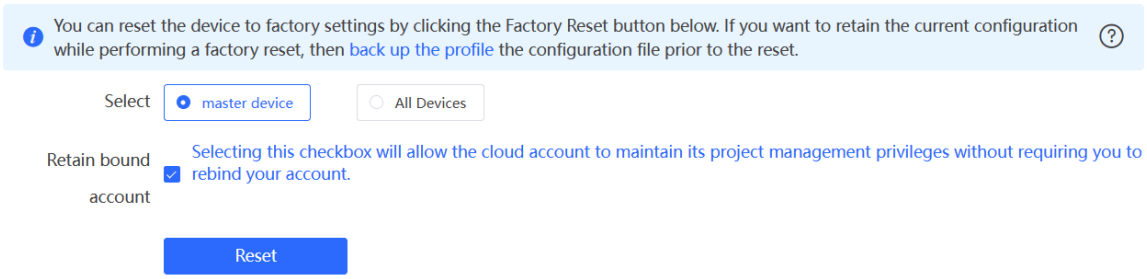
The operation will clear all configuration of all devices in the network. If you want to retain the current configuration, back up the configuration first (See 9.9 Configuring Backup and Import). Therefore, exercise caution when performing this operation.

9.10.3 Restoring Master Device to Factory Settings

Go to the configuration page:

- Choose **Network-Wide** > **System** > **Reset.**
- Choose **Network-Wide** > **Workspace** > **Network-Wide** > **Reset**.

Select **master device**, and check or uncheck the box next to **Retain bound account**. Then, click **Reset**. The master device will be restored to factory settings.



Caution

This operation will clear the current settings of the master device on the network and reboot the device. If you want to retain the current configuration, back up the configuration first (See 9.9 Configuring Backup and Import). Therefore, exercise caution when performing this operation.

9.11 Performing Upgrade and Checking System Version

Caution

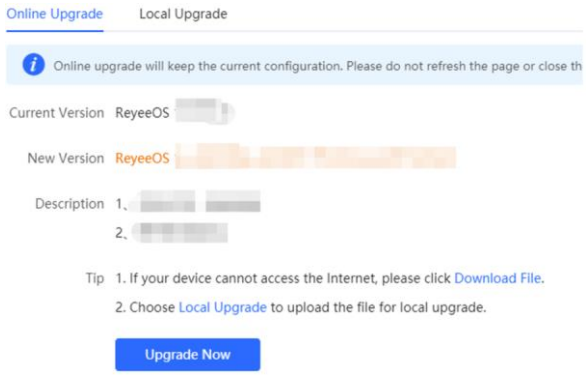
- You are advised to back up the configuration before upgrading the access point.
- After being upgraded, the access point will reboot. Therefore, exercise caution when performing this operation.

9.11.1 Online Upgrade

Go to the configuration page:

- Upgrade master device on the network: Choose **Network-Wide** > **Workspace** > **Network-Wide** > **Upgrade** > **Online Upgrade**.
- Upgrade local device: Choose **One-Device** > **Config** > **System** > **Upgrade** > **Online Upgrade**.

You can view the current system version. If there is a new version available, you can click it for an update.

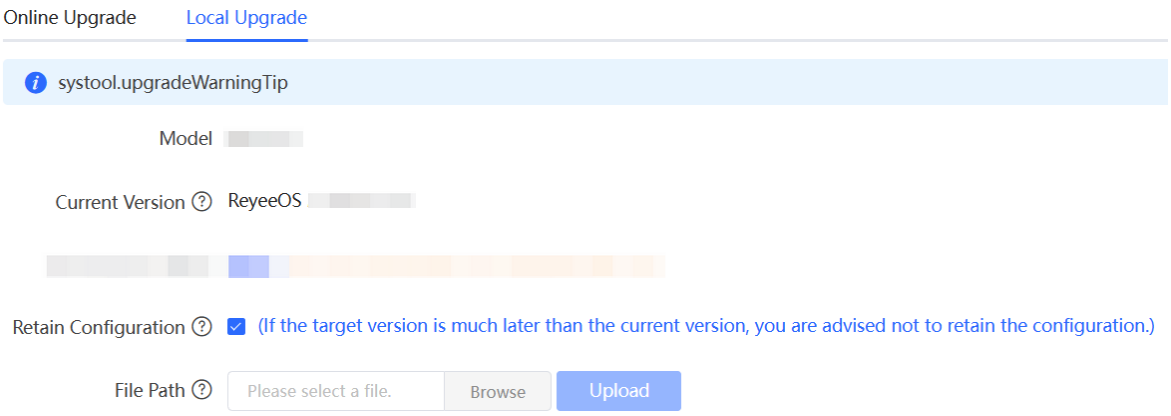


9.11.2 Local Upgrade

Go to the configuration page:

- Upgrade master device on the network: Choose **Network-Wide** > **Workspace** > **Network-Wide** > **Upgrade** > **Local Upgrade**.
- Upgrade local device: Choose **One-Device** > **Config** > **System** > **Upgrade** > **Local Upgrade**.

You can view the current software version, hardware version and device model. If you want to upgrade the device with the configuration retained, check **Retain Configuration**. Click **Browse**, select an upgrade package on the local PC, and click **Upload** to upload the file. The device will be upgraded.



9.12 Configuring the Compatibility Mode

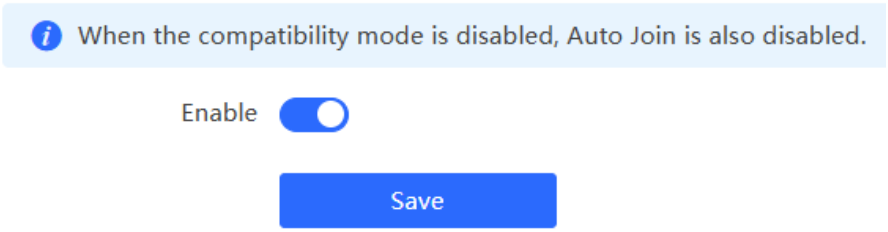
Specification

The compatibility mode can be configured on a primary device running OS 2.360 or later.

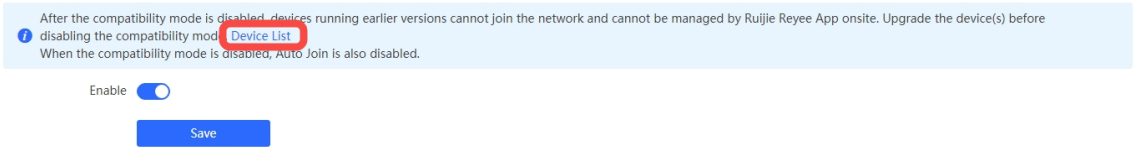
Choose **Network-Wide** > **System** > **Compatibility Mode**.

Enabling compatibility mode can improve interoperability between devices running the early and latest versions during networking. If the compatibility mode is disabled, **Auto Join** will be disabled as well.

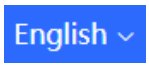
- When no device on the network runs a software version earlier than OS 2.360, the user interface will be displayed as follows:



- When a device running a software version earlier than OS 2.360 exists on the network, and the compatibility mode is disabled, the device cannot join the network and be managed by Ruijie Reyee App in local mode. You are advised to upgrade the device to the latest version before disabling the compatibility mode.

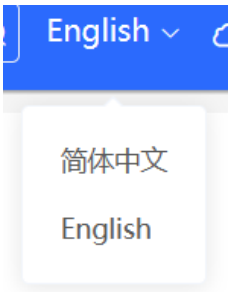


9.13 Switching System Language

Choose 

in the upper right corner of the Web page.

Click a required language to switch the system language.



9.14 Configuring LED Status Control

Note

- When the primary device supports the individual AP LED switch function, all the secondary devices will also support individual AP LED configuration.

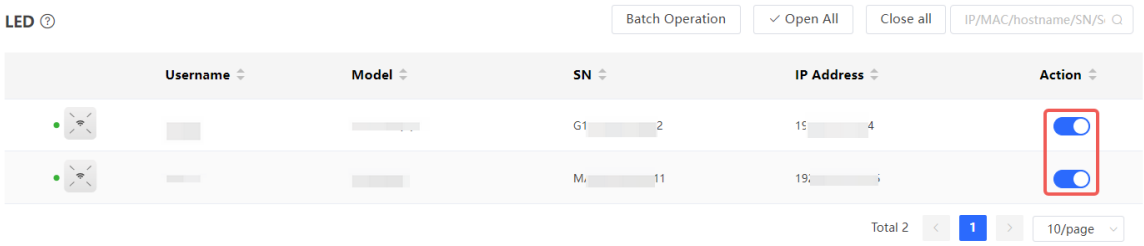
- When the primary device does not support the individual AP LED switch function, none of the secondary devices will support individual AP LED configuration either. Only a one-click toggle for the LEDs of all APs in the network is available.

9.14.1 Configuring Standalone LED Status

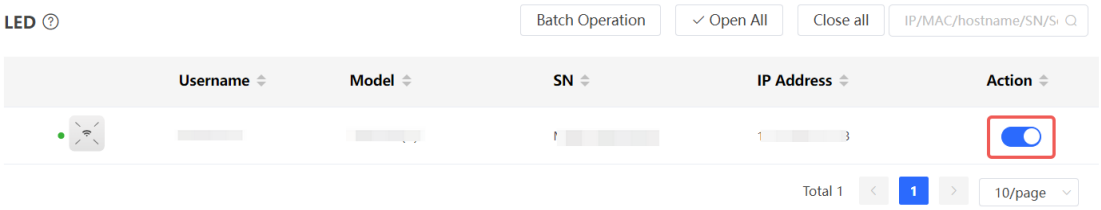
You can enable or disable the system LED status for individual wireless devices on the network.

Go to the configuration page:

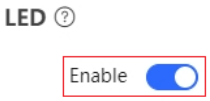
- Method 1: Choose **Network-Wide** > **Workspace** > **Wireless** > **LED**.



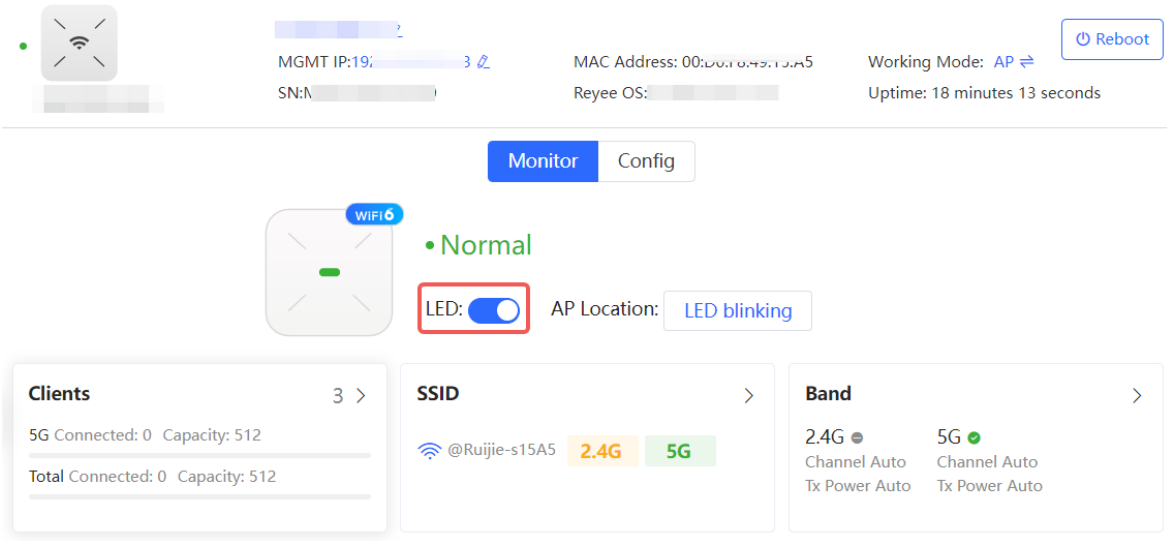
- Method 2: Choose **One-Device** > **Config** > **Network** > **LED**.
  - When the AP is the master device:



  - When the AP is a slave device.



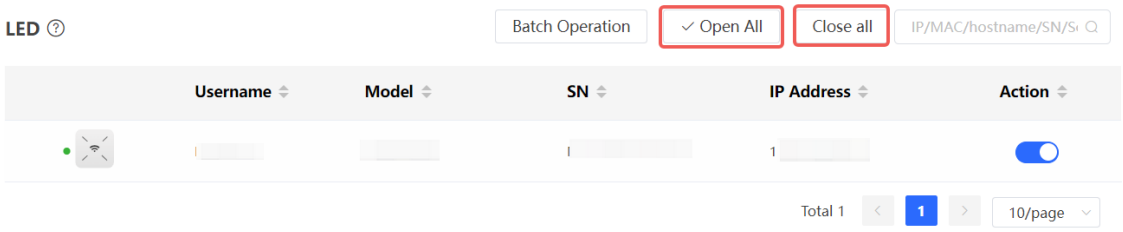
- Method 3: Choose **One-Device** > **Monitor** > **LED**.



9.14.2 Configuring Network-wide LED Status

Choose **Network-Wide** > **Workspace** > **Wireless** > **LED**.

Turn on the LED of all downlink access points in the network.



9.15 Configuring Cloud Service

9.15.1 Overview

The Cloud Service feature provides powerful remote network management and operation capabilities, making it convenient and efficient to manage geographically dispersed networks with diverse device types. This feature supports wireless devices, switches, and gateways, enabling unified network management and visualized monitoring and operation. Additionally, it also offers various components such as real-name authentication, dedicated Wi-Fi, and passenger flow analysis, allowing for flexible expansion of network services.

By configuring Cloud Service, you can conveniently mange networks through Ruijie Cloud or the Ruijie Reyee app.

9.15.2 Configuration Steps

Choose **One-Device** > **Config** > **System** > **Cloud Service**.

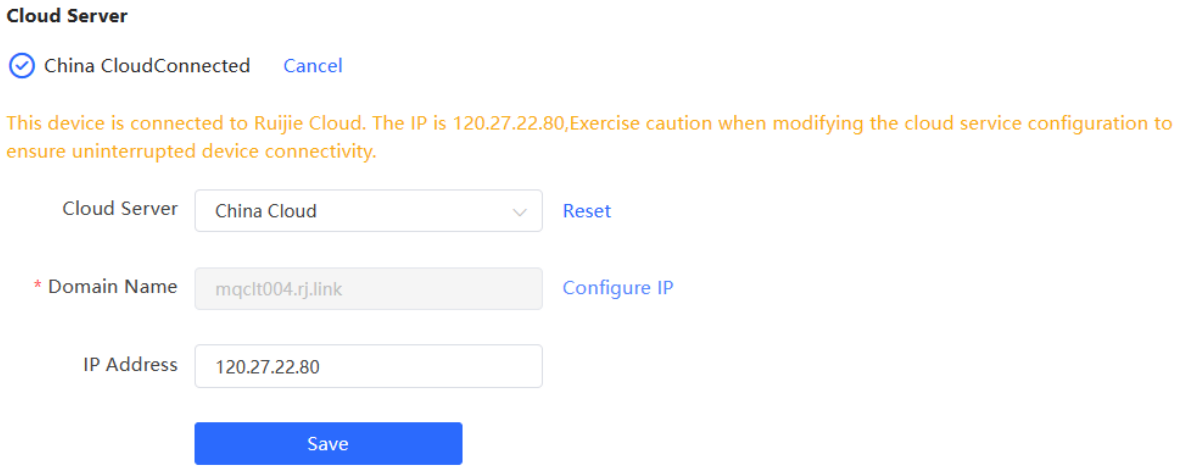
If the device is not currently associated with a cloud account, simply follow the on-screen instructions to add it to the network. Open up the Ruijie Reyee app, click the scan icon at the upper left corner on the **Project** page, and enter the device's management password.



Once the device is associated with a cloud account, it will automatically be bound to a cloud server based on its geographic location.

Caution

Exercise caution when modifying cloud service configurations as improper modifications may lead to connectivity issues between the device and the cloud service.



To change the Cloud Service configurations, select the cloud server from the **Cloud Server** drop-down list, enter the domain name and IP address, and click **Save**.

Note

If the server selected is not **Other Cloud**, the system automatically fills in the domain name and IP address of the cloud server. When **Other Cloud** is selected, you need to manually configure the domain name and IP address and upload the cloud server certificate.

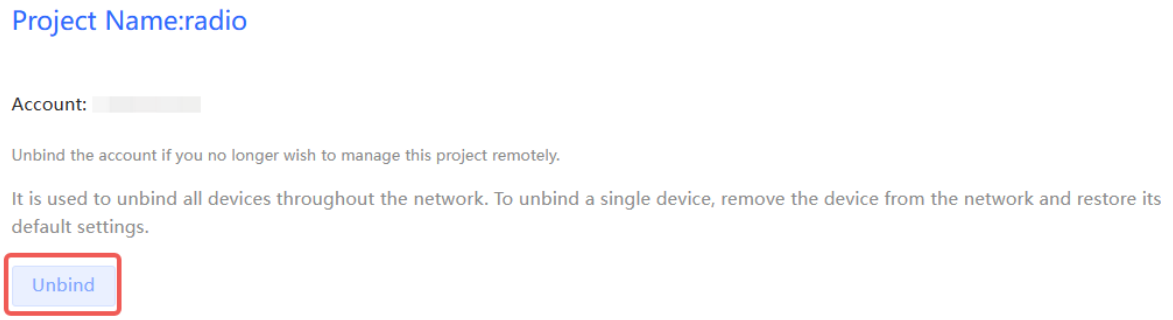
Table 9-12 Cloud Server Description

Parameter	Description
Cloud Server	Geographic location of the cloud server, including China Cloud, Asia Cloud, Europe Cloud, America Cloud, and Other.
Domain Name	Domain name of the cloud server.
IP Address	IP address of the cloud server.

9.15.3 Unbinding Cloud Service

Choose **One-Device** > **Config** > **System** > **Cloud Service**

You can click **Unbind** to unbind the account if you no longer wish to manage this project remotely.



10 Network Diagnosis Tools

Caution

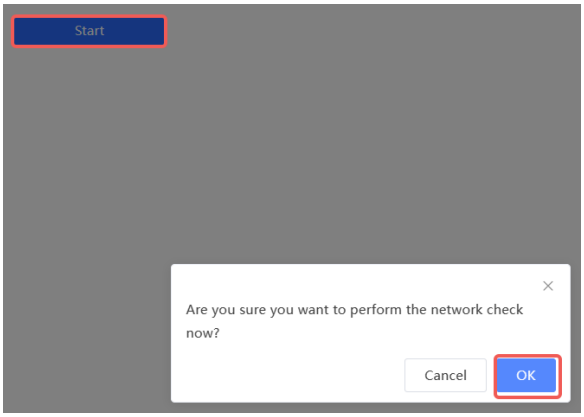
If the issue persists despite following the troubleshooting methods provided in this section, you may require remote support from a technician who will enable developer mode to resolve the issue. We will ensure your data is protected during this process.

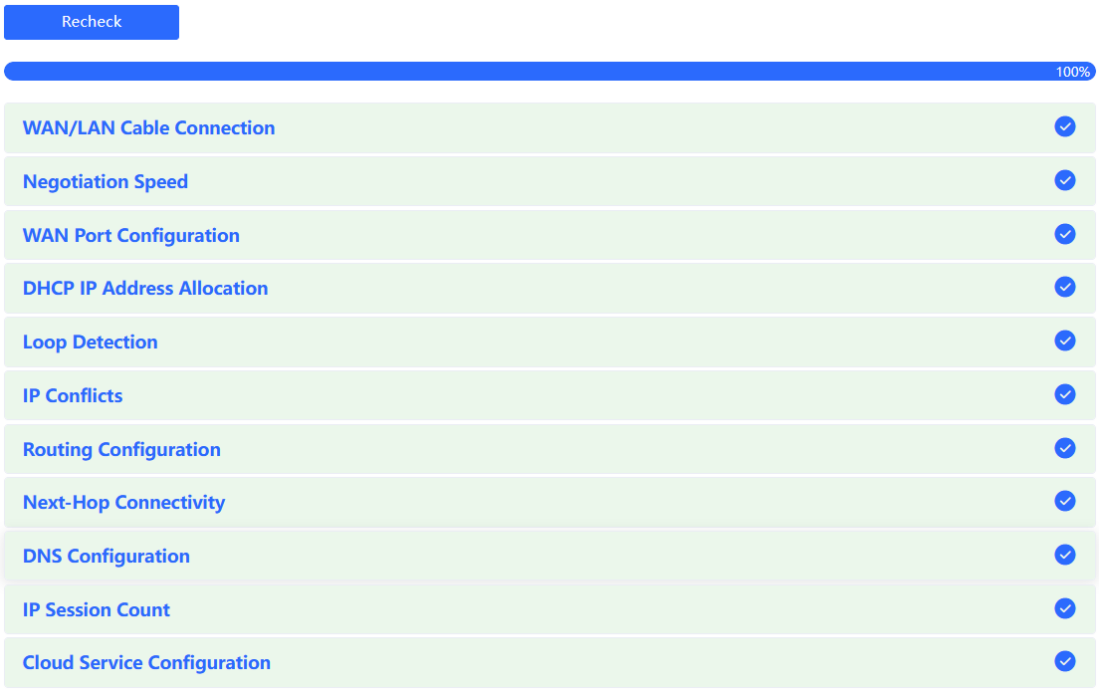
10.1 Network Check

When a network problem occurs on the device, perform a network check and configure the device based on the detection result.

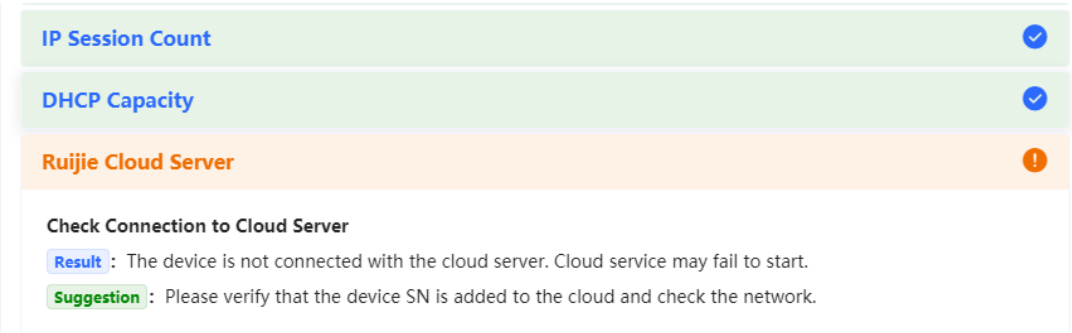
Go to the configuration page: Choose **One-Device** > **Config** > **Diagnostics** > **Diagnose**.

(1) Click **Start** to perform the network check and show the result.





(2) After performing the network check, you will find the check result and suggested action.

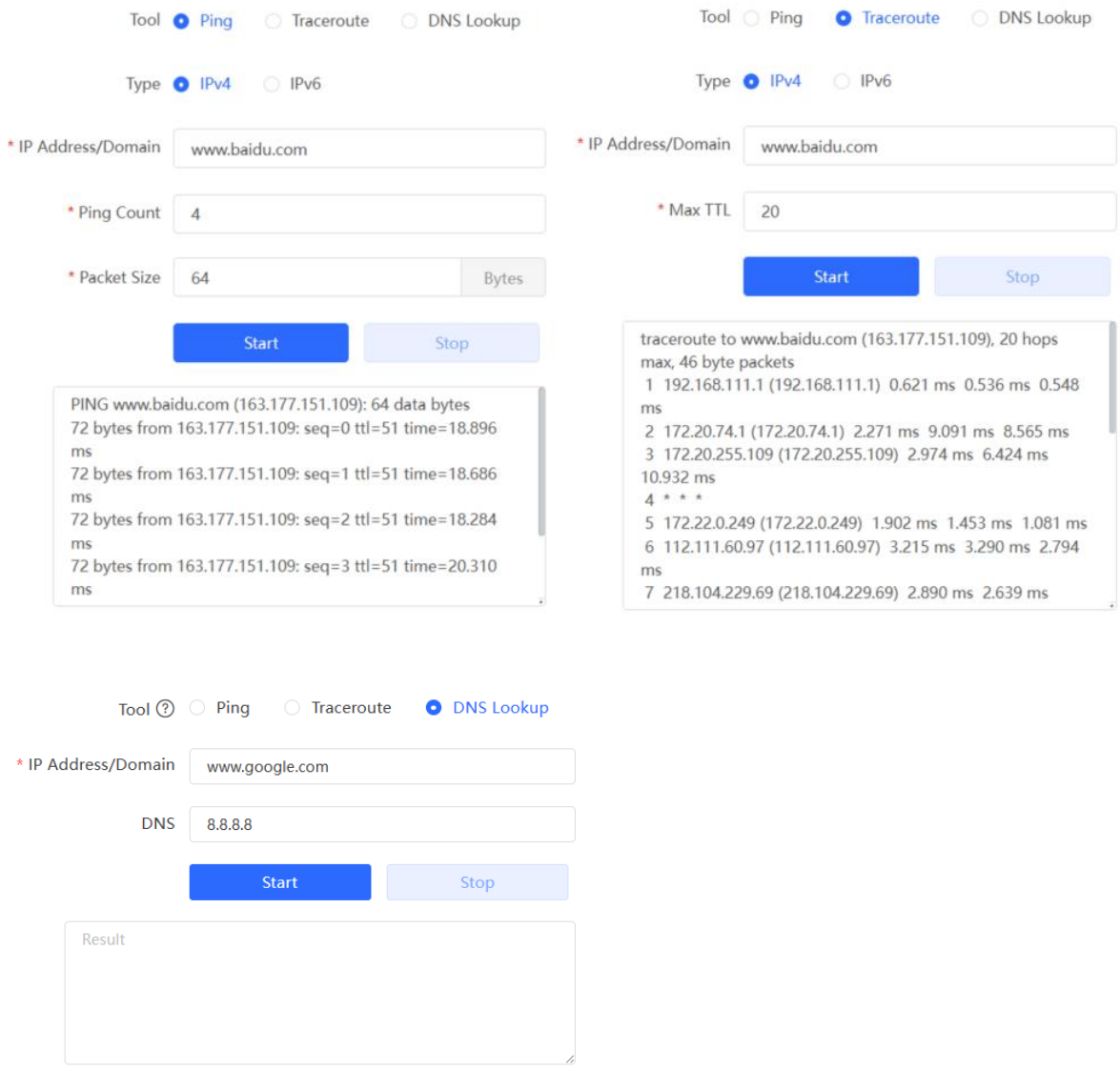


10.2 Network Tools

Choose **One-Device** > **Config** > **Diagnostics** > **Network Tools**.

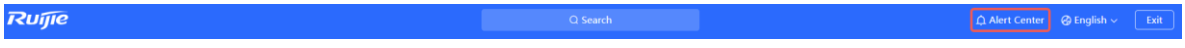
- The Ping tool tests the connectivity between the access point and the IP address or URL. The message "Ping failed" indicates that the access point cannot reach the IP address or URL.
- The Traceroute tool displays the network path to a specific IP address or URL.
- The DNS Lookup tool displays the DNS server address used to resolve a URL.

Enter an IP address or a URL, and click **Start**. If you need to perform the ping or Traceroute operation, configure other parameters as required.



10.3 Alerts

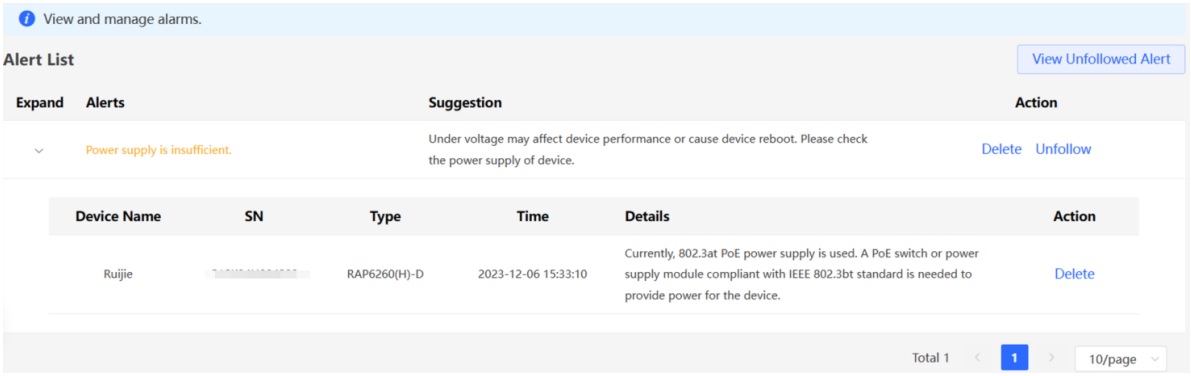
When a network exception occurs, the network overview page will display an alert and provide a suggestion. Click an alert in the **Alert Center** to view the faulty device, problem details, and description. You can troubleshoot the fault based on the suggestion.

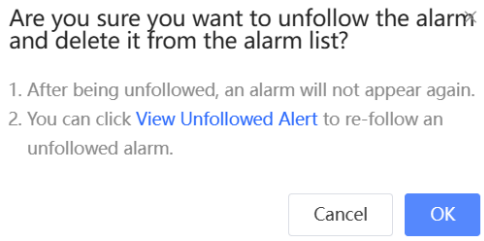


The **Alert List** page displays possible problems on the network environment and device. All types of alarms are followed by default. You can click **Unfollow** in the **Action** column to unfollow this type of alarm.

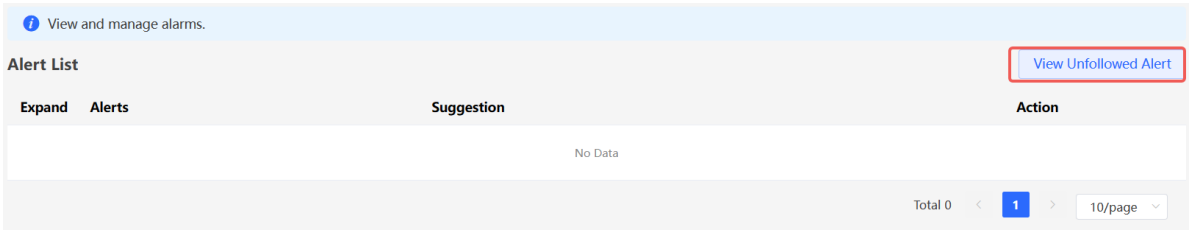
Caution

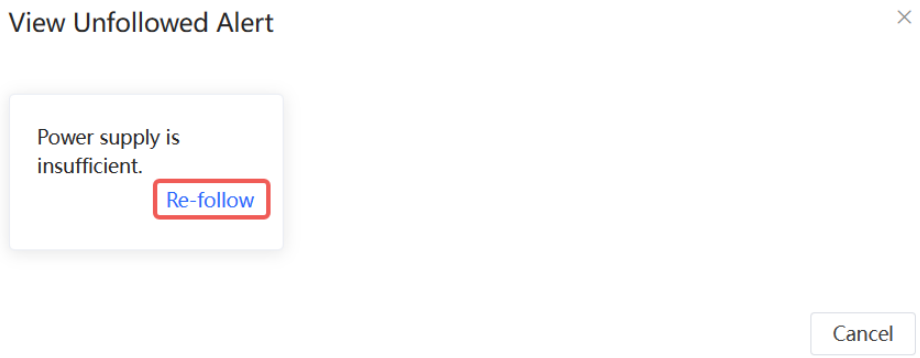
After unfollowing a specified alert type, you will not discover and process all alerts of this type promptly. Therefore, exercise caution when performing this operation.





Click **View Unfollowed Alert** to view the unfollowed alert. You can follow the alert again in the pop-up window.

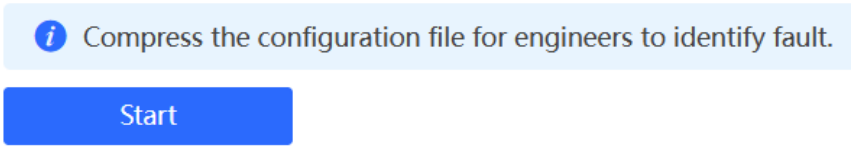




10.4 Fault Collection

Choose **One-Device** > **Config** > **Diagnostics** > **Fault Collection**.

When an unknown fault occurs on the device, you can collect fault information on this page. Click **Start** to collect fault information and compress it into a file for engineers to identify fault.



10.5 Packet Obtaining

Choose **One-Device** > **Config** > **Diagnostics** > **Packet Obtaining**.

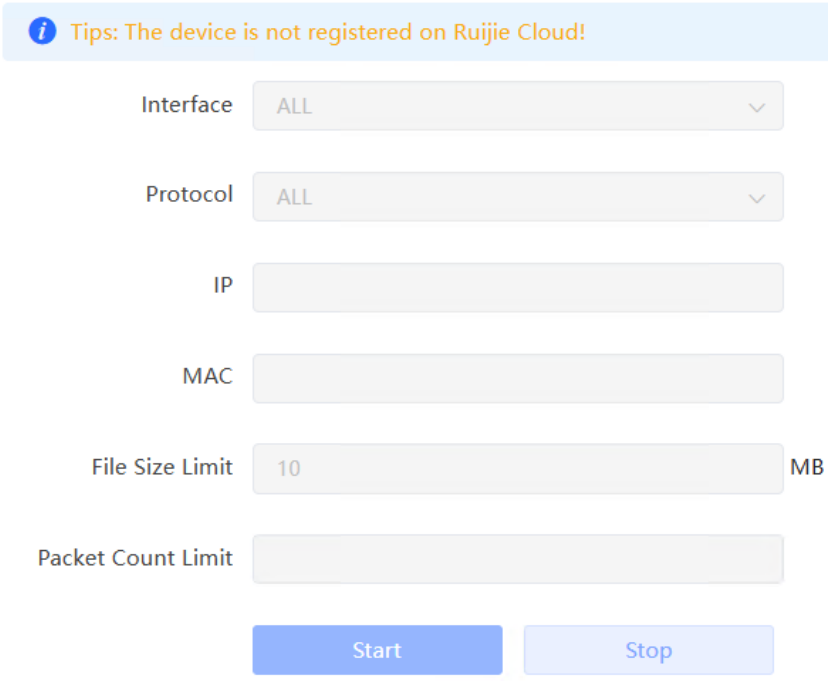
If the device fails and troubleshooting is required, the packet obtaining result can be analyzed to locate and rectify the fault.

(1) Select an interface and a protocol and specify the host IP address to obtain the content in data packets. Select the file size limit and packet count limit to determine the conditions for automatically stopping packet obtaining. (If the file size or number of packets reaches the specified threshold, packet obtaining stops and a diagnostic package download link is generated.)

Caution

The packet obtaining operation may occupy excessive system resources, causing network freezing. Therefore, exercise caution when performing this operation.

(2) Before performing packet obtaining for diagnosis, ensure that the device has been connected to Ruijie Cloud.



(3) The downloaded component package takes effect automatically. Click **Start** to execute the packet obtaining command.

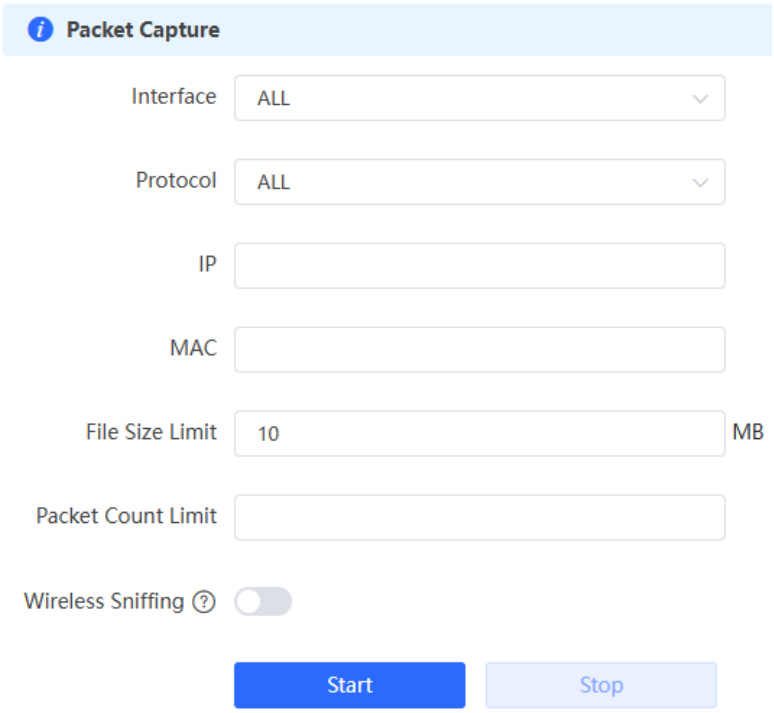
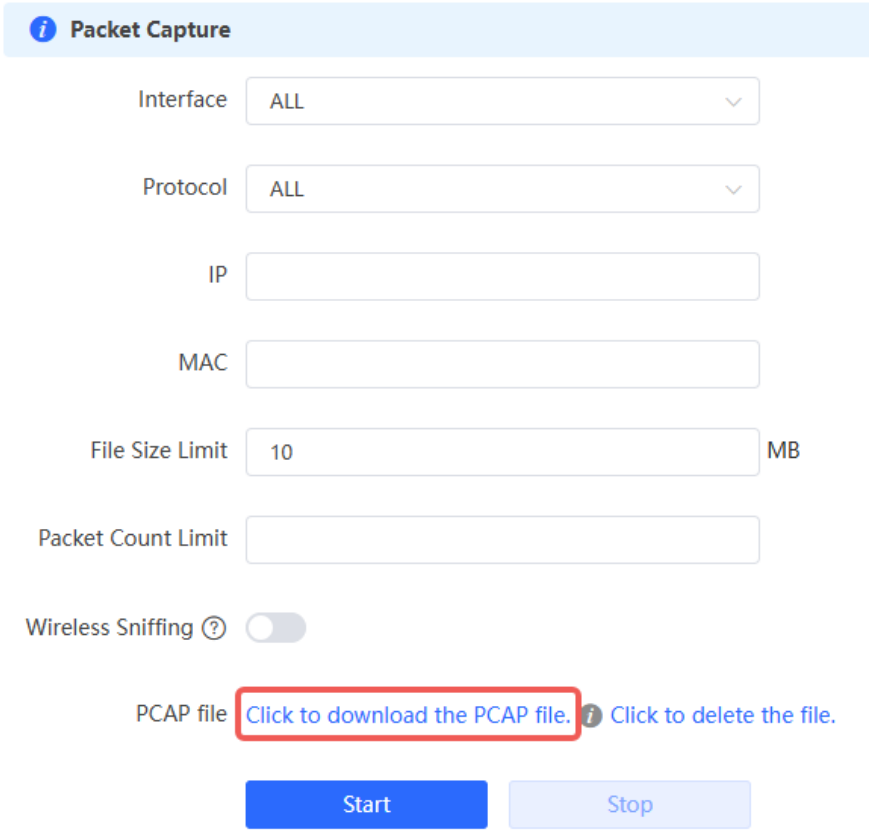


Table 10-1 Packet Collection Configuration Parameters

Parameter	Description
Interface	Physical or logical interface on the network
Protocol	Protocol used by the packet
IP	IP address of the device
MAC	MAC address of the device
File Size Limit	The maximum amount of data allowed to be stored within a certain time period. If this limit is reached during packet obtaining, new packet obtaining will be stopped, or excess packets will be discarded. The maximum limit is 10 MB.
Packet Count Limit	The number of packets stored and analyzed during packet obtaining. The maximum limit is 1500. **Caution** You can configure either the packet count limit or the file size limit, as they are mutually exclusive parameters.
Wireless Sniffing	You can select a wireless interface for packet obtaining only after enabling this function. After this function is enabled, the interface will be marked as Down, and the Wi-Fi network will be unavailable. To prevent users from forgetting to disable this function and causing the Wi-Fi network to be unusable, the system will automatically disable this function 10 minutes later after it is enabled.

(4) Packet obtaining can be stopped at any time. After that, a download link is generated. Click this link to save the packet obtaining result in the PCAP format locally. Use analysis software such as Wireshark to view and analyze the result.



11 FAQs

11.1 Login Failure

➢ **What can I do when I failed to log in to the web interface?**

Perform the following steps:

(1) Check that the Ethernet cable is properly connected to the LAN port of the device.

(1) Before accessing the setup page, you are advised to choose **Auto** for the device enabled with DHCP service to assign an IP address to the PC. If you want to configure a static IP address for the PC, please make sure the IP address of the PC and the LAN port are in the same IP range. The default IP address of the LAN port is 10.44.77.254, and the subnet mask is 255.255.255.0. The IP address of the PC should be set to 10.44.77.X (X is an integer between 2 and 254), and the subnet mask is 255.255.255.0.

(2) Run the **Ping** command to check the connectivity between the PC and the device. If the ping fails, please check the network settings.

(3) If the login failure persists, restore the device to factory settings.

11.2 Factory Setting Restoration

➢ **How can I restore the device to factory settings?**

Power on the device and press the **Reset** button for more than 5 seconds. The device is restored to factory settings after it is restarted. Then, you can log in to the web interface using the default IP address (10.44.77.254).

11.3 Password Loss

➢ **What can I do when I forget the password?**

- Webpage management password loss: Please enter the Wi-Fi password. If it is still incorrect, please restore the device to factory settings.
- Wi-Fi password loss: When the access point expands the Wi-Fi coverage, its Wi-Fi password is consistent with that of the master router. Please check the configuration of the master router and enter its Wi-Fi password. If the password is still incorrect, please restore the device to factory settings and reconfigure the Wi-Fi password.

12 Appendix

12.1 User Ports

Table 12-1 Default Open Port Information

Port Number	Protocol	Service
1883, 8883, 9883, 43561, 43562	TCP	SON service
53	TCP, UDP	DNS domain name service
67	UDP	DHCP service
5248	UDP	Roaming service
5252	UDP	Layer 3 roaming service
3799	UDP	RADIUS service
80, 443, 2062	TCP	Web service
22867	TCP	AP mesh service
6378, 6379, 6390, 6391	TCP	Database service

12.2 User Privacy Log

To generate and store logs for certain privacy-related activities, users must first connect their devices to the cloud.