IWR-2458-AC-S-I

Configuration Manual

Beijing Nodes Network Limited

2025

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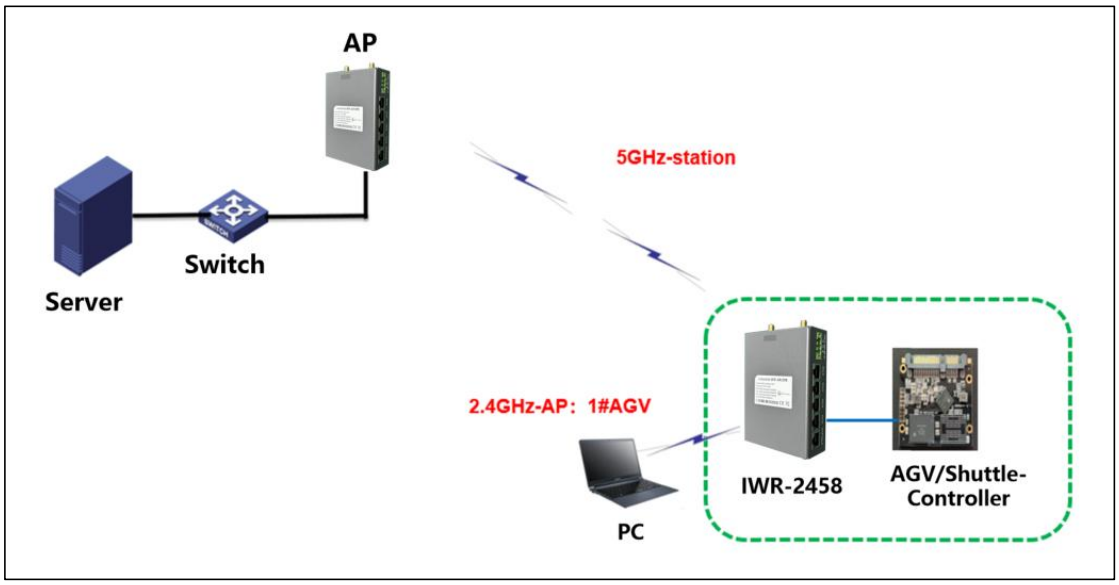
1. Introduction

IWR-2458-AC-S-I is an industrial dual-band equipment, which provides users with an unparalleled WiFi experience and highly reliable wireless connection by adding a number of powerful functions to meet the challenges in the WiFi deployment of the industrial field.

It can be operated on the 2.4 and 5 GHz simultaneously, and supports profinet & modbus protocols. It is built-in advanced interference suppression functional components which can significantly reduce wireless interference in noisy industrial applications.

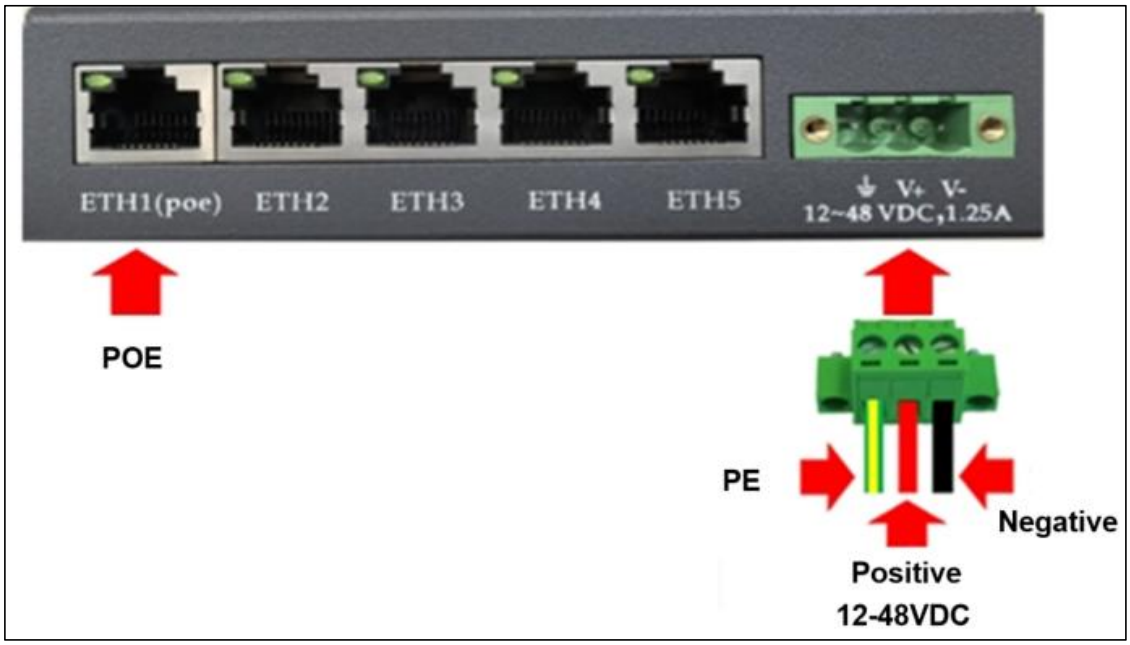
Overview

The IWR-2458-AC-S-I can be used as a dual-band wireless AP to provide WiFi coverage, It can also be used as a wireless client, installed on mobile devices such as AGV/RGV. You can change the work mode to adapt your applications, such as AP/Station/Repeater.



Power Supply

The IWR-2458-AC-S-I supports 12-48V DC power supply,the schematic diagram is as follows:



2. First-time Configuration

Before configuration the CPE-2458, you will need access to a PC equipped with an Ethernet port. The CPE-2458 has a default IP address that must be used when connecting to the device for the first time.

Step 1: Connect a power source.

The CPE-2458 can be powered by a DC(12-48v) power input.

Step 2: Connect the CPE-2458 to PC.

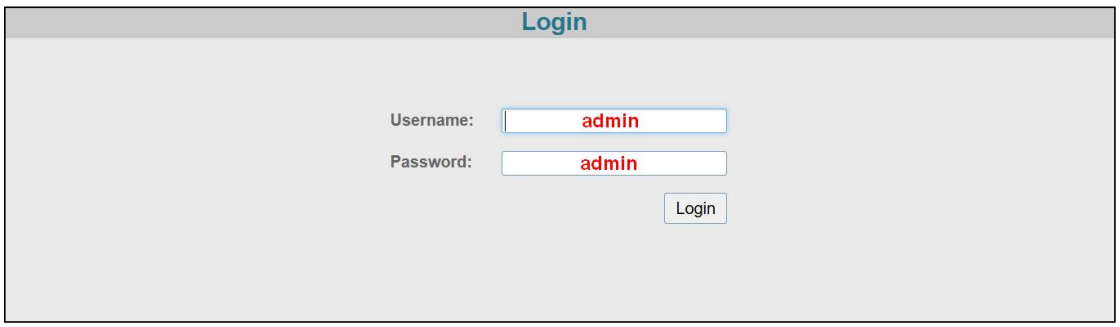
You can use a straight-through cable to connect the CPE-2458 to PC. The LED indicator on the CPE-2458's LAN port will light up when a connection is established.

Step 3: Set up the computer's IP address.

Choose an IP address on the same subnet as the CPE-2458. Since the CPE-2458's default IP address is 192.168.1.222, and the subnet mask is 255.255.255.0, you should set the IP address of the computer to 192.168.1.x.

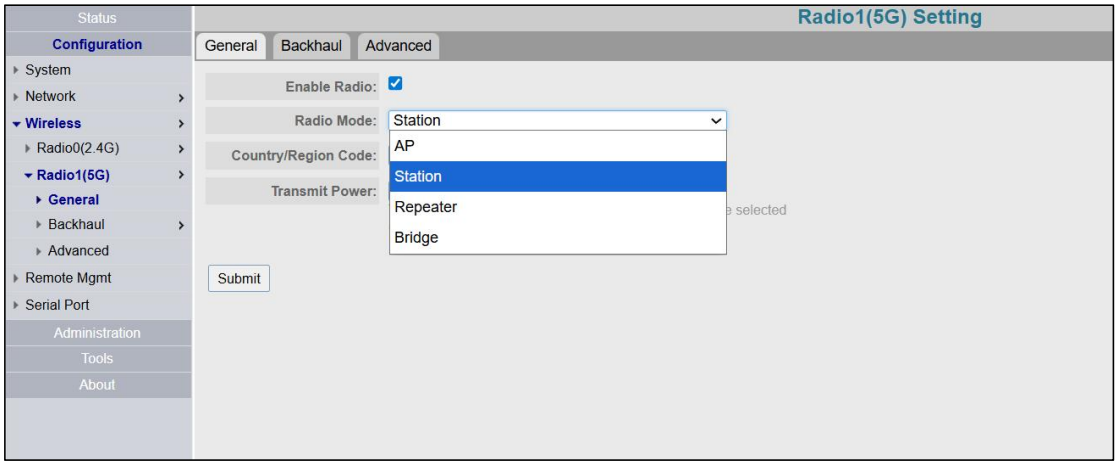
Step 4: Use the web-based manager to configure the CPE-2458

Open your computer's web browser and type http://192.168.1.222 in the address field to access the homepage of the web-based Network Manager. Before the homepage opens, you will need to enter the Username and Password as shown in the following figure. For first-time configuration, enter the default username and password and then click on the Login button.



3. Operation Mode

The CPE-2458 supports four operation modes—AP, Station, Repeater, and Bridge—each of which plays a distinct role in a wireless network.



Enable Radio

Setting	Description	Factory Default
Enable Radio	Use this function to turn the RF (Radio Frequency) module on or off.manually.	Enable

Operation mode

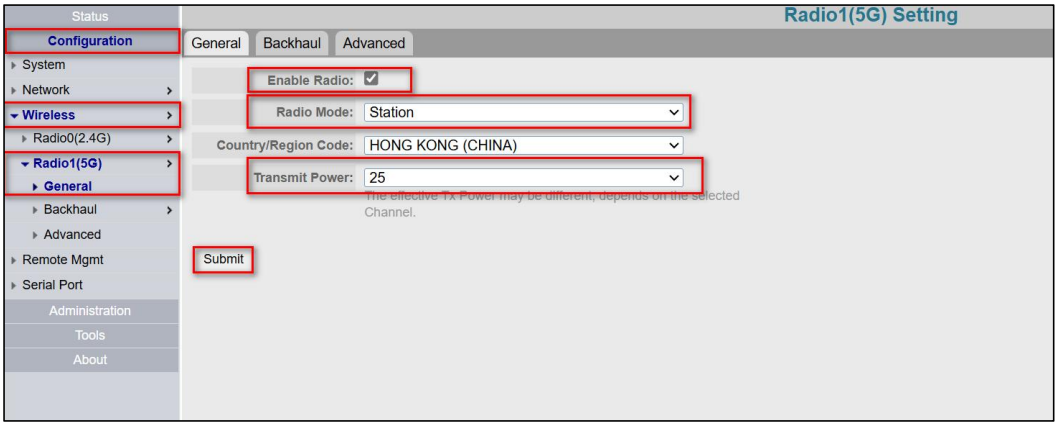
Setting	Description	Factory Default
AP	CPE-2458 plays the role of wireless access point	2.4GHz-AP 5GHz-Station
Station	CPE-2458 plays the role of wireless client	
Repeater	CPE-245 can not only provide a backhaul link as a client but also offer signal coverage as an AP	
Bridge	CPE-245 plays the role of Point To Point link	

3.1 Client Mode

Wireless-Radio setup

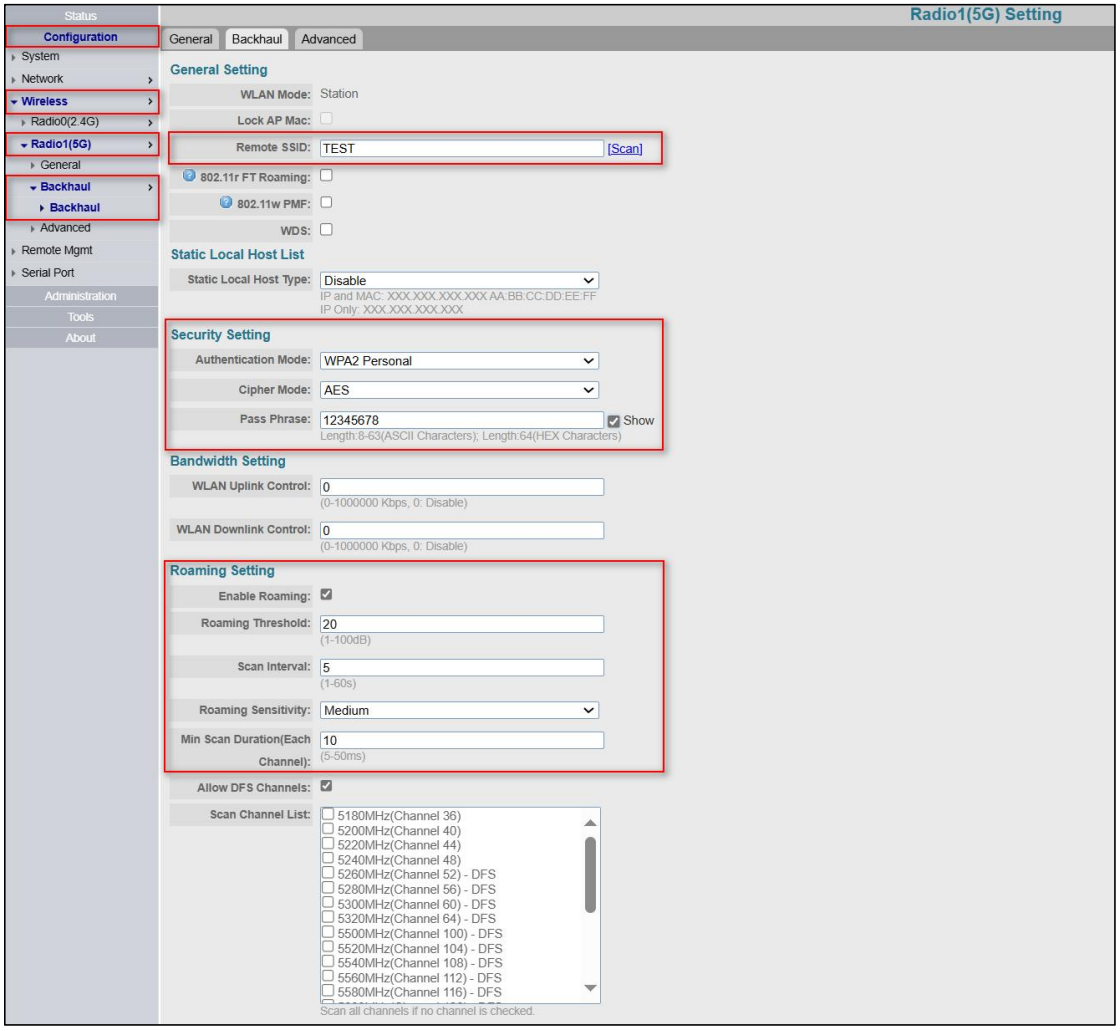
The **Wireless-Radio** panel is used to edit the SSIDs and set the RF type for the device. You can choose the Radio0 or Radio1 to configure the CPE-2458 to operate either on the 2.4 GHz or 5 GHz frequency band. An SSID is a unique identifier that wireless networking devices use to establish and maintain wireless connectivity. Set the SSID of CPE-2458 to match with the SSID of the AP that you want it to connect to, so that the CPE-2458 will associate with the network defined by the SSID.

Click in sequence, "Configuration→Wireless→Radio1(5G)→General" to enter the following configuration interface:



- Enable Radio:The RF (Radio Frequency) module can be manually turned on or off. When you check it ,the RF turns on.
- Radio Mode:Station
- Transmit Power:Click on the options bar.Scroll down to the bottom and select the maximum value
- Click Submit

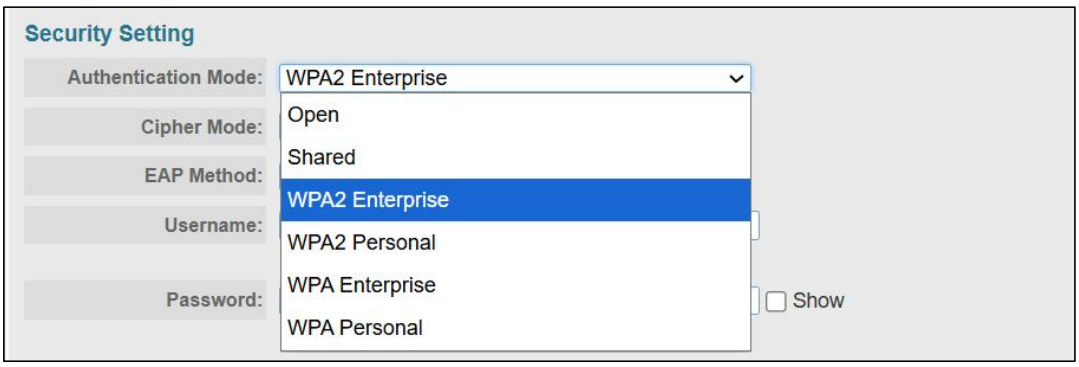
Click on "Backhaul" to enter the following basic configuration interface:



- Remote SSID: Fill in the SSID (you can scan and select ）
- Authentication Mode: Select the corresponding mode
- Cipher Mode: Select the corresponding mode
- Pass Phrase: Fill in the connection password
- Enable Roaming:check
- Roaming Threshold:20
- Roaming Sensitivity: Medium
- Allow DFS Channels: Check .(To ensure that the device supports 5GHz full frequency band)
- Scan Channel List: No need to check
- Click Submit

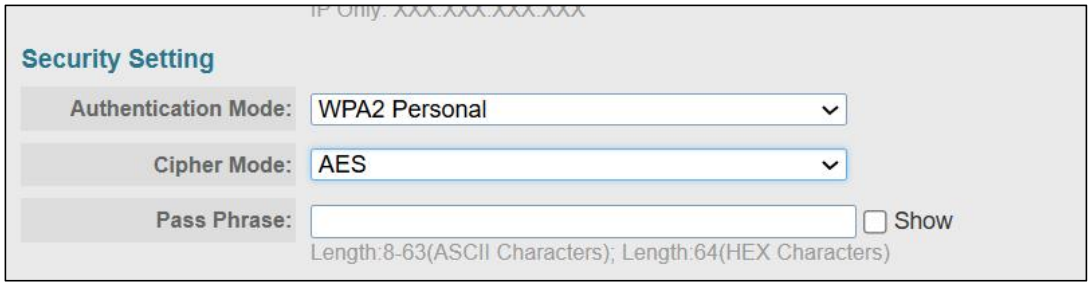
WLAN Security Settings

The CPE-2458 provides four standardized wireless security modes: Open, Shared（Shared Key）, WPA (Wi-Fi Protected Access), and WPA2. Several security modes are available in the CPE-2458 by selecting Security mode and WPA type:



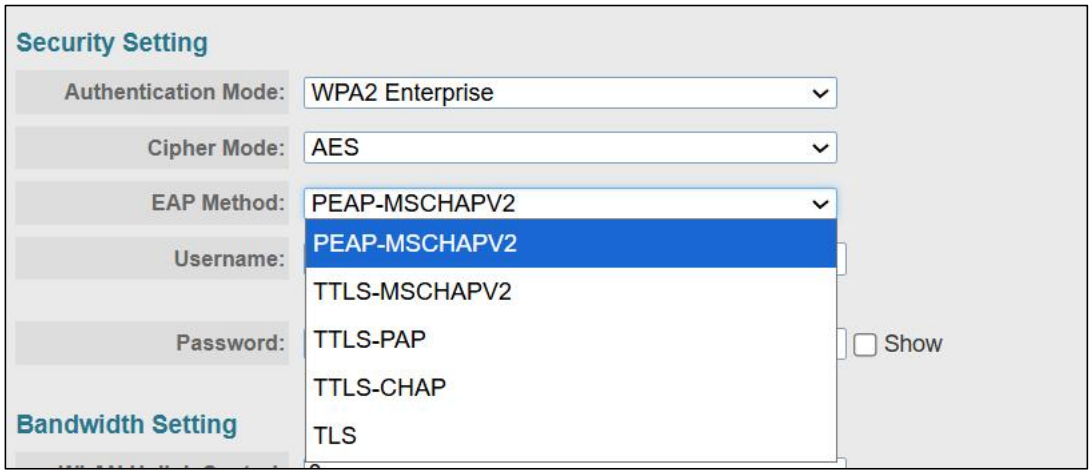
WPA/WPA2 Personal :

Personal versions of WPA/WPA2, also known as WPA/WPA-PSK (Pre-Shared Key), provide a simple way of encrypting a wireless connection for high confidentiality. A Passphrase is used as a basis for encryption methods (or cipher types) in a WLAN connection. The passphrases should be complicated and as long as possible. For security reasons, this passphrase should only be disclosed to users who need it, and it should be changed regularly.



WPA/WPA2 Enterprise :

When used as a client, the CPE-2458 can support three EAP methods (or EAP protocols): EAP-TLS, EAP-TTLS, and EAP-PEAP, corresponding to WPA/WPA-Enterprise settings on the AP side.

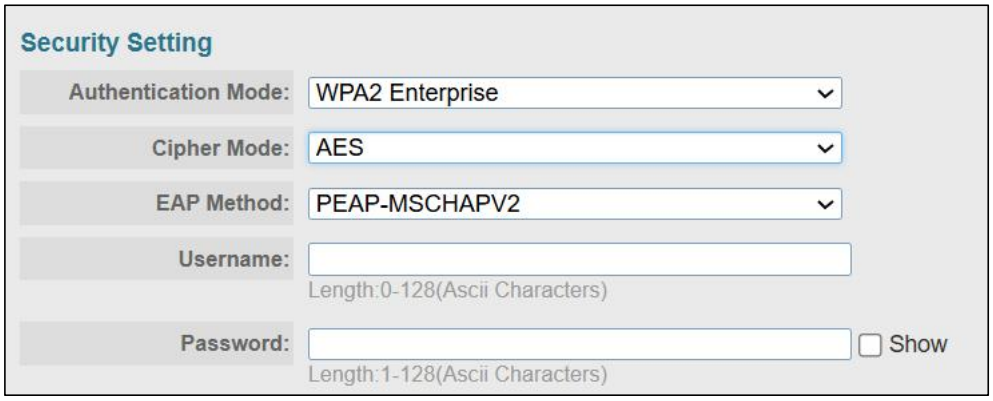


EAP Protocol

Setting	Description	Factory Default
PEAP	Specifies Protected Extensible Authentication Protocol, or Protected EAP	PEAP
TTLS	Specifies Tunneled Transport Layer Security	
TLS	Specifies Transport Layer Security protocol	

Before choosing the EAP protocol for your WPA/WPA2-Enterpise settings on the client end, please contact the network administrator to make sure the system supports the protocol on the AP end. Detailed information on these three popular EAP protocols is presented in the following sections.

➢ **PEAP&TTLS:**



TTLS and PEAP work in a similar way. First, they establish a TLS tunnel (EAP-TLS for example), and validate whether the network is trustworthy with digital certificates on the authentication server. This step establishes a tunnel that protects the next step (or “inner”authentication), and consequently is

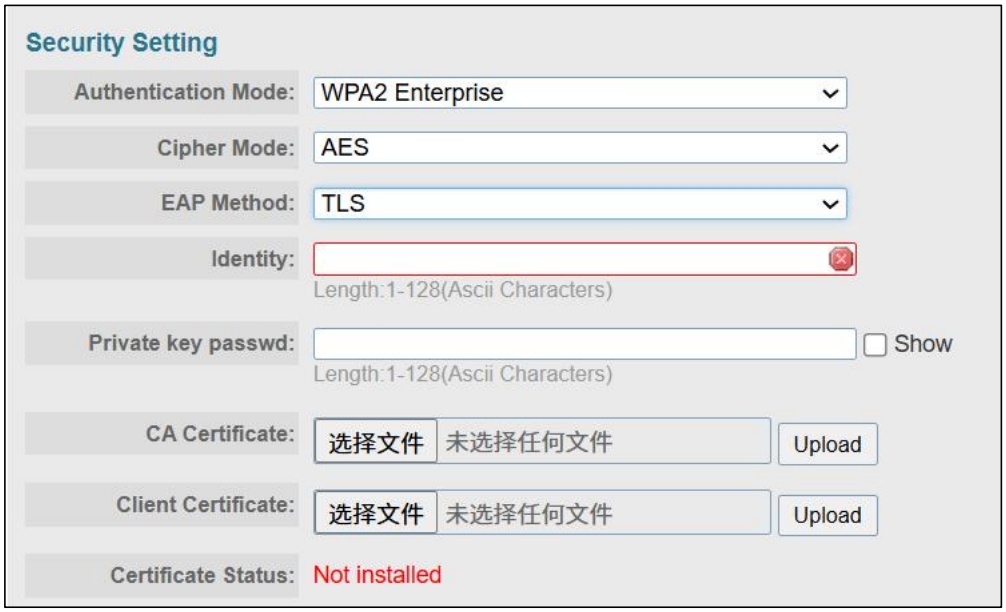
sometimes referred to as “outer” authentication. The TLS tunnel is then used to encrypt an older authentication protocol that authenticates the user for the network.

As you can see, digital certificates are still needed for outer authentication in a simplified form. Only a small number of certificates are required, which can be generated by a small certificate authority. Certificate reduction makes TTLS and PEAP much more popular than EAP-TLS.

- **TLS:**

TLS is the standards-based successor to Secure Socket Layer (SSL). It can establish a trusted communication channel over a distrusted network. TLS provides mutual authentication through certificate exchange.

EAP-TLS is also secure to use. You are required to submit a digital certificate to the authentication server for validation, but the authentication server must also supply a certificate.



Network Setup

The network mode includes:

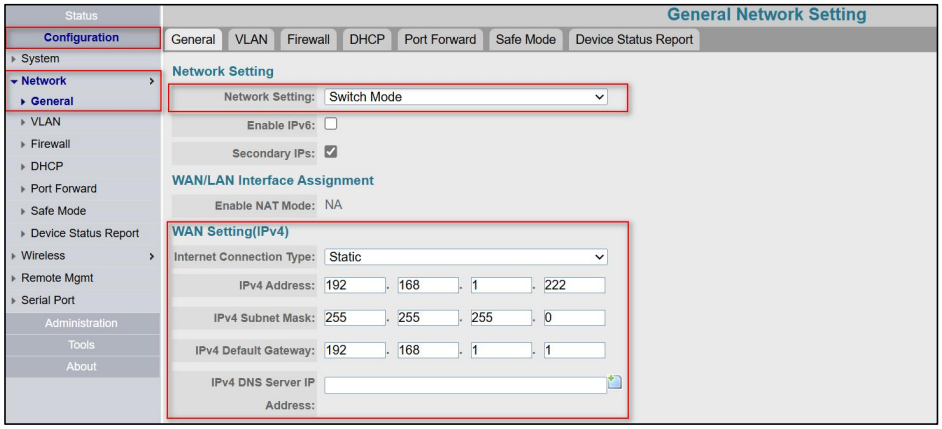
①Switch Mode

②Gateway Mode

Switch Mode:

Adapt to the Nodes AP and other fat AP , in which the CPE module and AGV controller use the same network segment IP.(Each AGV will occupy multiple IP addresses, making it more suitable for self-organizing LAN environments)

Click on "Configuration→Network→General":



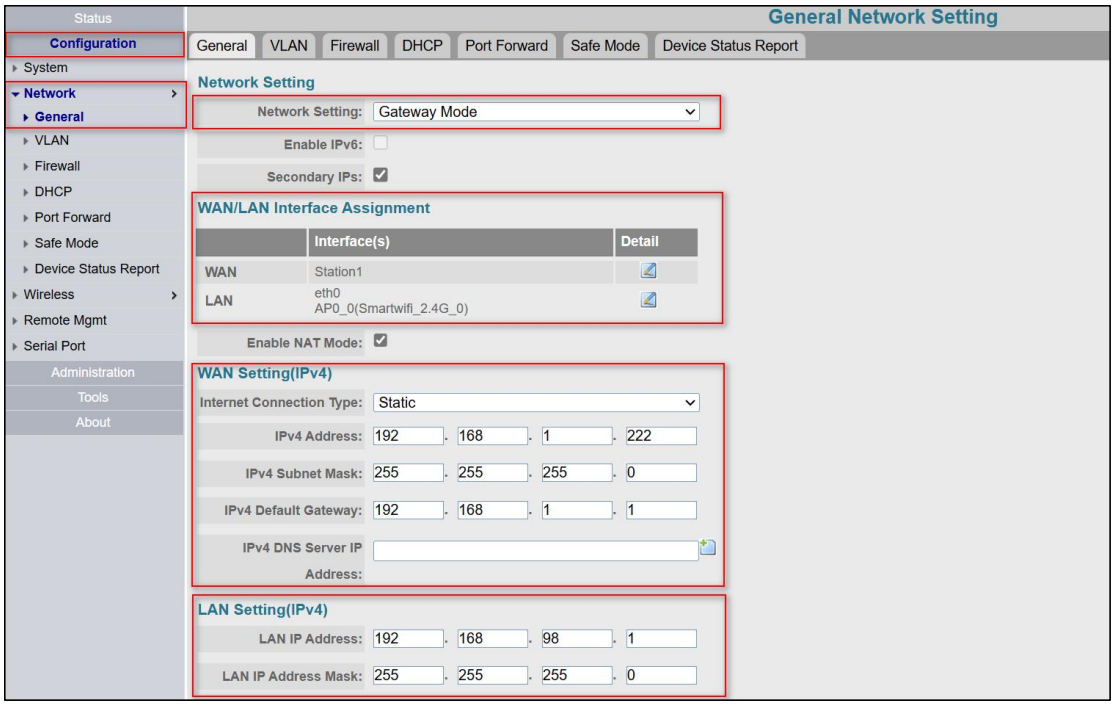
- Network Setting:Switch Mode
- Static IP address modification:
  - Fill in the IP address, subnet mask, and gateway
  - Choose whether to modify the DNS server based on the project
  - Click Summit
- Dynamic IP address modification:
  - Internet connection type:DHCP
  - Click Submit

Gateway Mode:

If you need to access to fit AP， and the number of IP addresses is limited, CPE can use gateway mode.Each AGV/RGV only occupies one IP address, and the controller's configuration is simple and unified.

Due to the better compatibility and adaptability of the gateway mode, we strongly recommend to use gateway mode!

Click in sequence, "Configuration→Network→General" to enter the following configuration interface:



- Network Setting:Gateway Mode
- WAN/LAN Interface Assignment：
  - Station interface as WAN port;
  - eth0 and others as LAN port
- WLAN Setting (IPv4):
  - Internet Connection Type：Static/DHCP
  - Fill in the planned IP address, subnet mask, and gateway
  - Choose whether to modify the DNS server based on the project

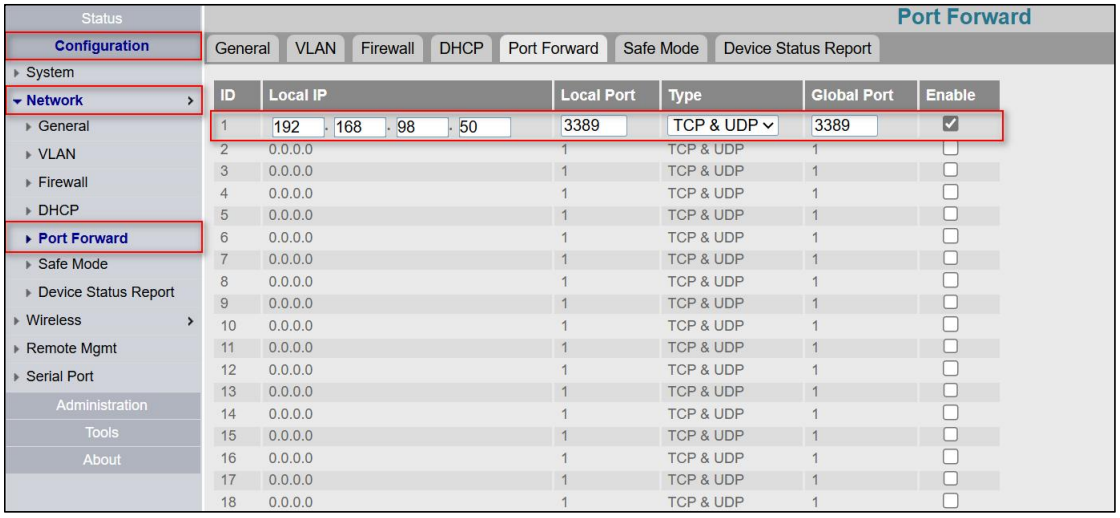
- ✧ Click Submit

➢ LAN Setting(IPv4):

- ✧ Click to submit the IP address and subnet mask planned for the device
- ✧ LAN-IPv4 serves as the management IP for the LAN port of the device and the gateway for the backend controller.

➢ Port Forward：

Click on "Port Forwarding" :



➢ Check to enable port

➢ Local IP:Fill in the IP address of the AGV/RGV controller

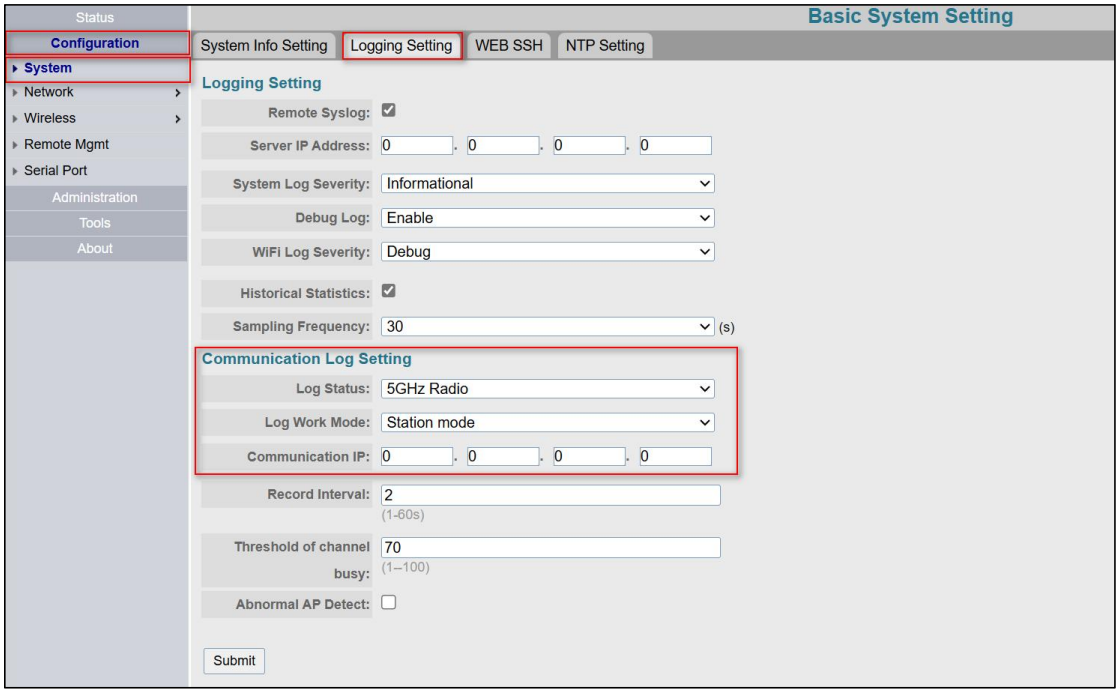
➢ Local Port and Global Port:The communication port used by controller

➢ Type：TCP or UDP,TCP&UDP

➢ Click Submit

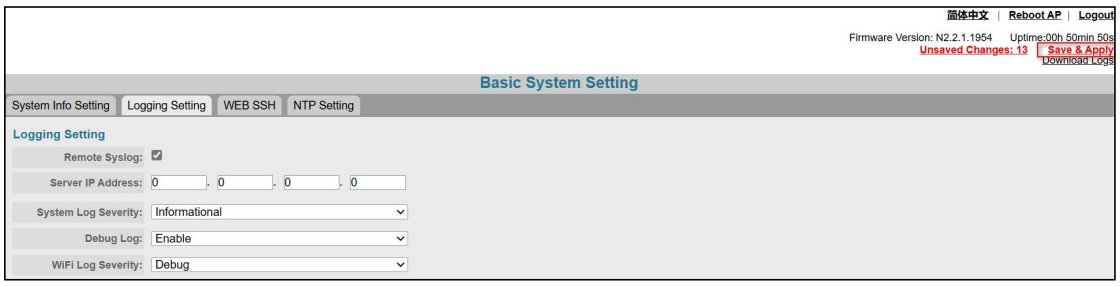
Communication Log Setting

Click in sequence,"Configuration→System→Logging Setting" to enter the following interface:



- Log Status:5GHz RF/2.4GHz RF **（Choose the band of station mode）**
- Log Work Mode:Station mode
- Communication IP:Server of AGV or gateway**(Server is better）**
- Record Interval：3
- Click Submit
- Save Application

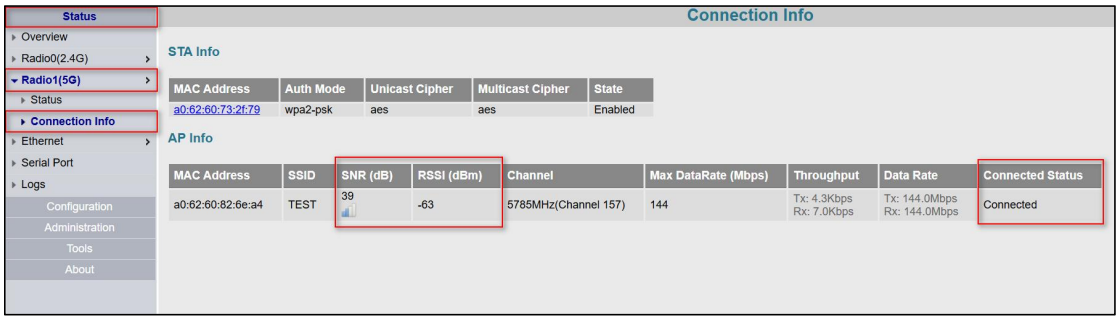
Click on "Save&Apply" in the upper right corner of the page, it will reboot,and the configurations take effect.



Attention:Please use the new IP address to login again.

Connection Info

Click in sequence,"Status→Radio1(5G)→Connection Information" to enter the following interface:

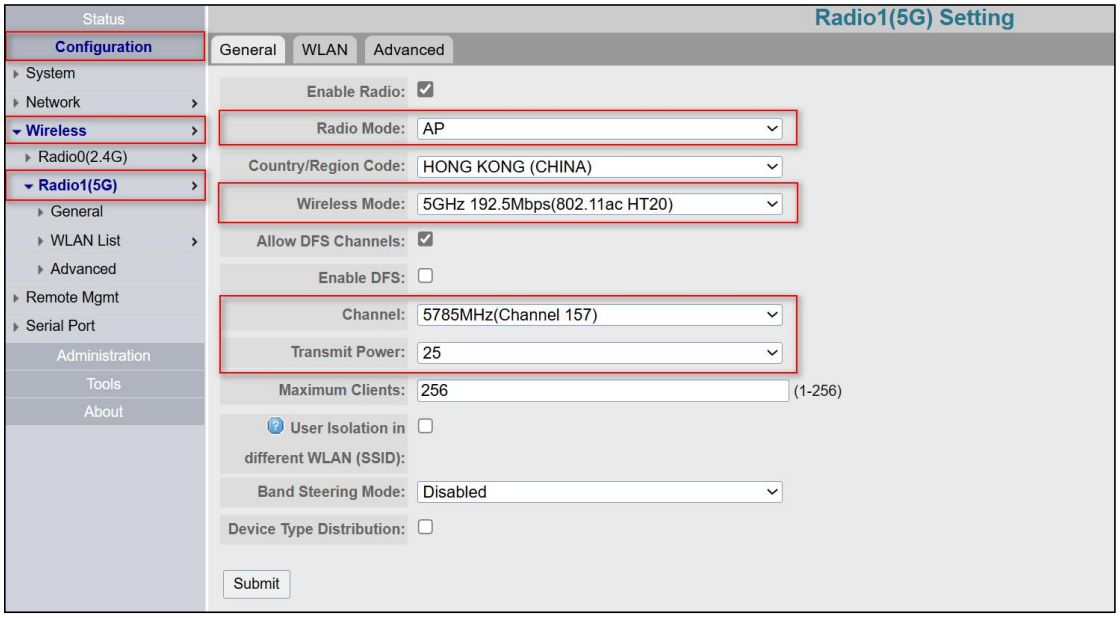


- Connected Status:Connected
- SNR(dB):39
- RSSI(dBm):-63

3.2 AP Mode

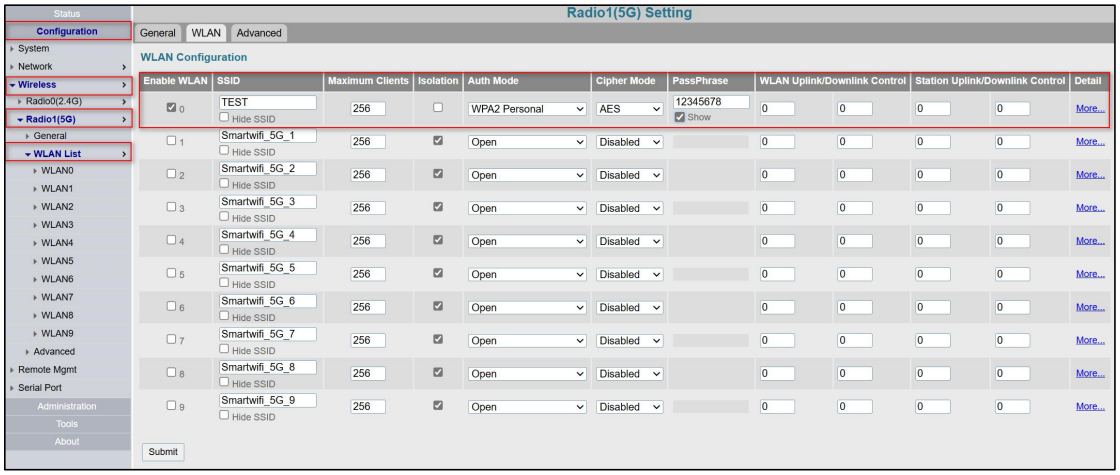
WLAN Setup

Click in sequence,"Configuration→Wireless→Radio1(5G)→Basic Information" to enter the following configuration interface:



- Radio Mode:AP
- Wireless Mode：802.11ac HT20
- Channel:Select based on the project site network planning（Recommend using high-frequency channels 149~165）
- Transmit Power:Click on the options bar, scroll down to the bottom, and select the one with the highest value
- Click Submit

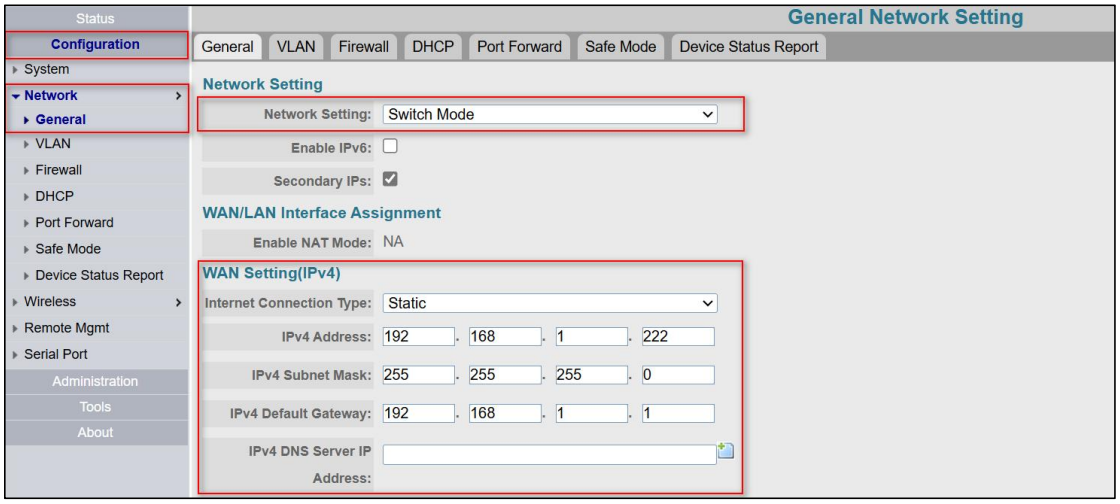
Click in sequence, "Configuration→Wireless→Radio1(5G)→WLAN" to enter the following configuration interface:



- Enable WLAN:Check to activate the corresponding SSID, multiple SSIDs can be checked
- SSID:Fill in the SSID name according to the project
- Isolation:Uncheck
- Auth Mode:Select what you need
- Cipher Mode:Select the corresponding mode
- PassPhrase：Fill in the password
- Click Submit

Network Setup

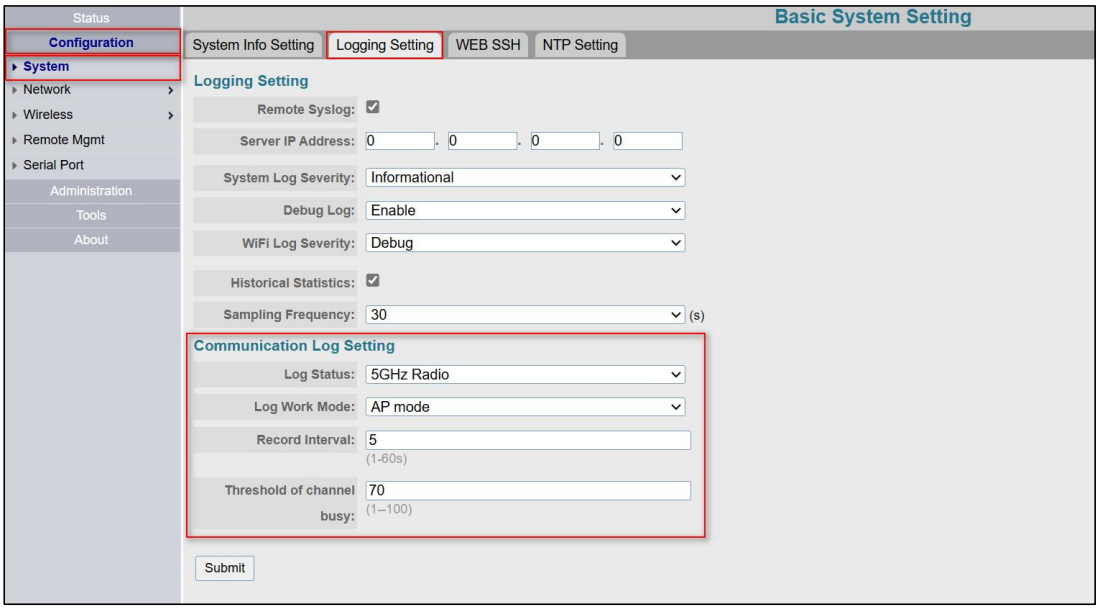
Click in sequence,"Configuration→Network→General" to enter the following configuration interface:



- Network Mode:Switch Mode
- Static IP address modification:
  - Fill in the IP address, subnet mask, and gateway
  - Choose whether to modify the DNS server based on the project
  - Click Summit
- Dynamic IP address modification:
  - Internet connection type:DHCP
  - Click Submit

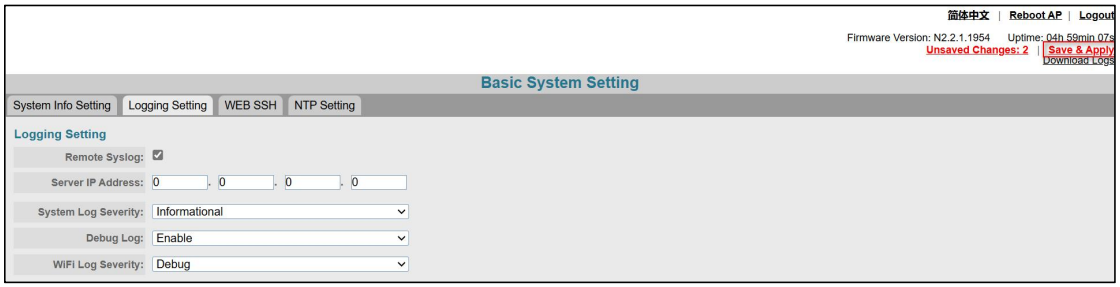
Communication Log Setting

Click in sequence,"Configuration→System→Logging Setting" to enter the following configuration interface:



- Log States:5GHz RF/2.4GHz RF **（Choose the band of AP mode）**
- Log Work Mode:AP mode
- Record Interval:5
- Click Submit
- Save Application

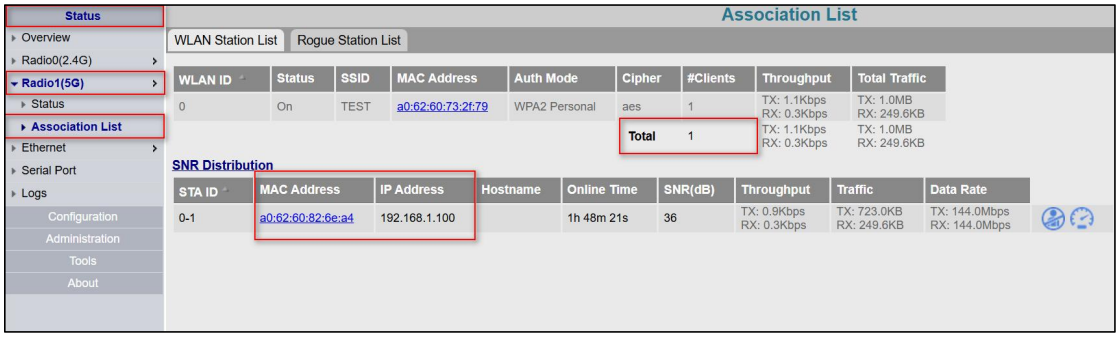
Click on "Save&Apply" in the upper right corner of the page, it will reboot,and the configurations take effect.



Attention:Please use the new IP address to login again.

Association List

Click in sequence,"Status→Radio1(5G)→Association List" to enter the following interface:

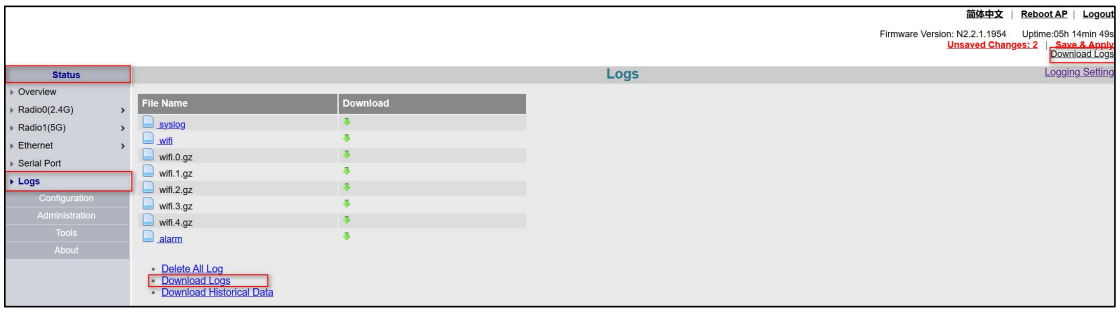


- Total number of connections:1
- Access terminal MAC/IP/SNR/Data Rate

4. Maintenance

Log Download

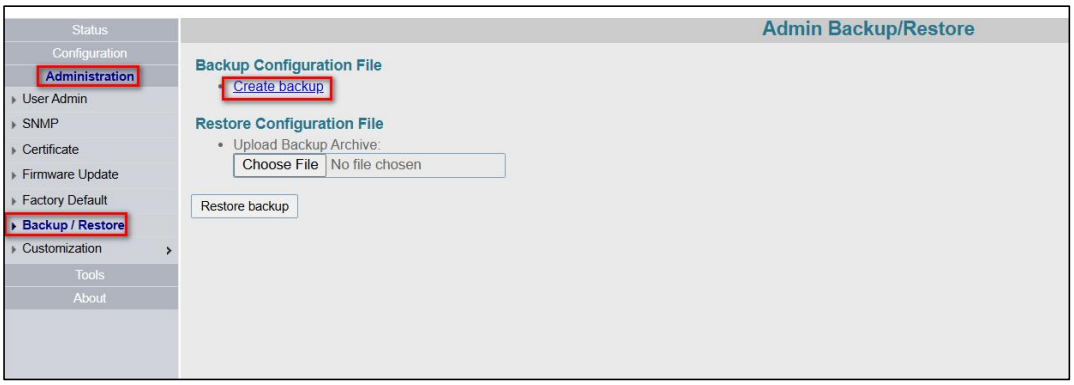
Click on "Download Logs" in the upper right corner of the device interface.



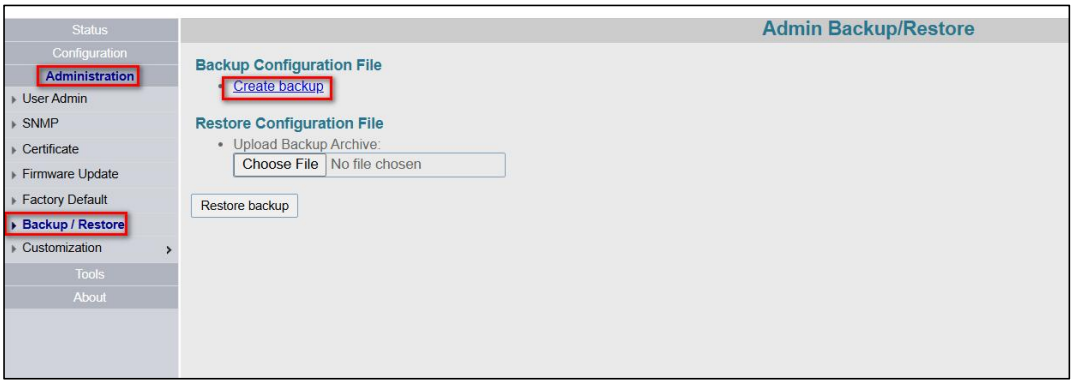
Change Password

Configuration Import and Export

- Backup configuration:
- click in sequence,"Administration→Backup/Restore→Create Backup"



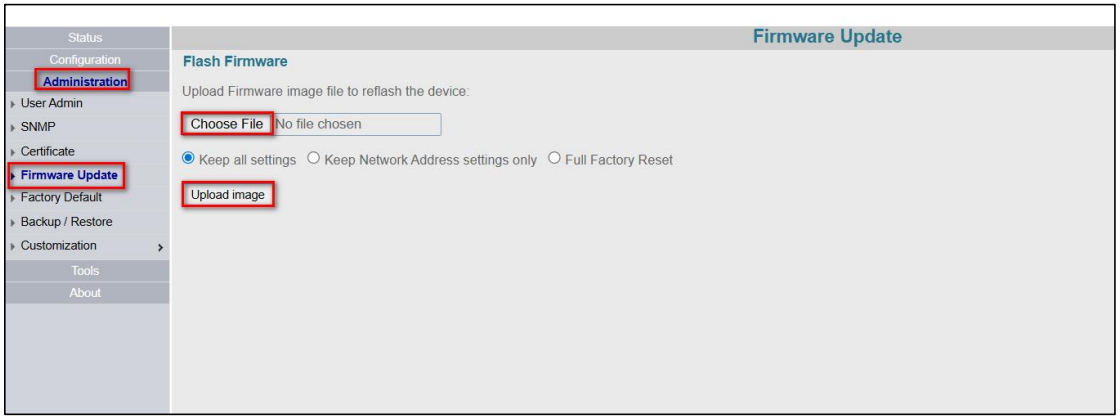
- Restore configuration:click in sequence,"Administration→Backup/Restore→Upload Backup Archive→Restore Configuration"



Attention:Please change the IP address for the device.

Firmware Update

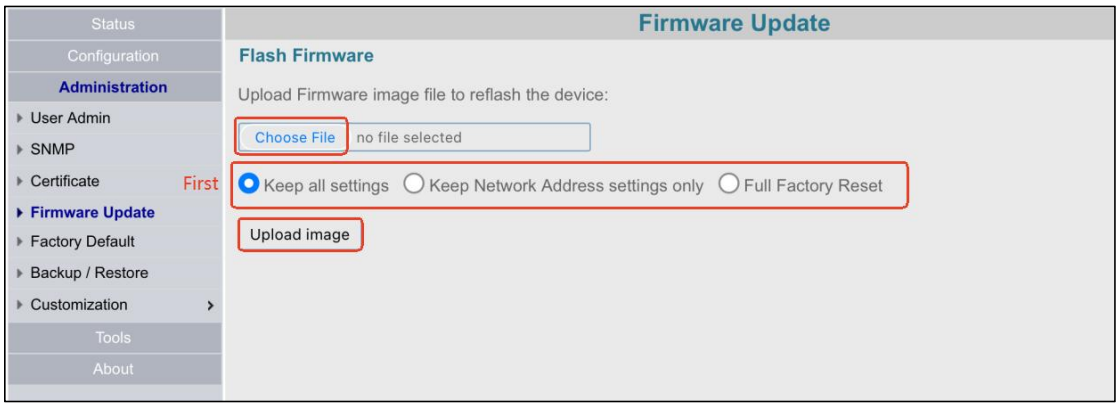
Click “Administration→ Firmware Upgrade”:



Before clicking “Choose File” to upload the firmware, choose one of the three configuration retention strategies based on your actual needs:

- Keep All Settings: The upgrade will keep all configurations;
- Keep Network Address settings Only: The upgrade will only keep the network-related configurations.
- Full Factory Reset: The upgrade will restore the device to its factory configuration simultaneously.

Example: Select“Keep All Settings”, choose the corresponding firmware file and click “Upload image”, as shown below:

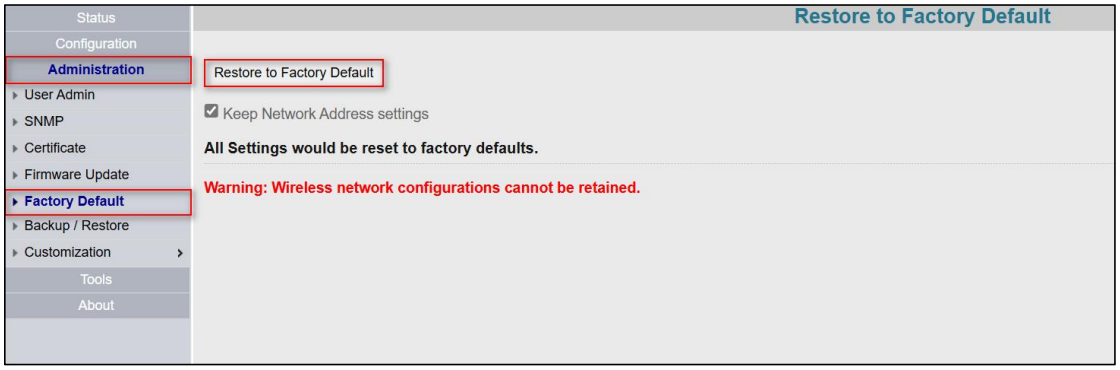


After the firmware file is successfully uploaded, click “Proceed” and wait for the AP upgrade to complete, as shown below:

Attention:Please do not power off the device under any circumstances during this process.Otherwise it will be sent to the factory for repair!

Load Factory Default

Click "Administration→Factory Default":



1) Restore to Factory Default.
2) Keep Network Address settings:

- Check, the device will restored the factory settings but retain the network configurations;
- Uncheck, the device will be fully restored to factory settings, the device's IP address is restored to the default 192.168.1.222.

FCC Warning

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired

operation.

NOTE 1: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

RF Exposure Statement

To maintain compliance with FCC'S RF Exposure guidelines, This equipment should be installed and operated with minimum 20cm between the radiator and your body. This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

EU Declaration of Conformity (DoC)

Company name	Beijing Nodes Network Technology Co., Ltd.
Address	Rm705, Shenzhou Building, No.31 Zhongguancun, South Street, Haidian District, Beijing, 100081, China
Name of Contact	Su Xie
Title	Manager
Phone number	13601232288
E-mail address	xiesu@nodes.com.cn

We declare that the DoC is issued under our sole responsibility and belongs to the following product:

Equipment manufacturer	Beijing Nodes Network Technology Co., Ltd.
Model Type	IWR-2458-AC-5P
Product description	AP/CPE
HW version	1.5
SW version	2.2.1.1956T17
Optional accessories or System components	/

The object of the declaration described above is in conformity with the relevant Union Harmonization Legislation:

RE Directive 2014/53/EU	

The Notified Body Name: **Compliance Testing, LLC**, has conducted the conformity assessment according to module B of Directive 2014/53 / EU (RED) and issues the EU type certificate [XXXXXXX].

The following standards and technical specifications have been applied for

RE Directive 2014/53/EU:

Article 3.1a: Safety and Health	EN IEC 62368-1:2024+A11:2024 EN 50665:2017
Article 3.1b: EMC	EN 301489-1 V2.2.3 (2019-11) EN 301489-17 V3.3.1 (2024-09) EN 55032 :2015+A11 :2020+A1 :2020 EN 55035 :2017+A11 :2020 EN IEC 61000-3-2:2019+A2:2024 EN 61000-3-3:2013+A2:2021+ AC:2022-01
Article 3.2: RF Spectrum Efficiency	EN 300328 V2.2.2 (2019-07) EN 301893 V2.2.1 (2024-11)
Article 3.3: Special requirements invoked	Not applicable

The following standards and technical specifications have been applied for the other European Legislation:

N/A	

Signed on behalf of: Beijing Nodes Network Technology Co., Ltd.

2/3/2026

Print name: Su Xie

Title: Manager

Signature: Su Xie