神州数码
Digital China

DCN Wireless AP Operation Manual

1 Preface

1.1 Manual Description

This manual mainly helps users use AP products correctly with the three working modes of AP.

- FIT AP Mode
- FAT AP Bridge Mode
- FAT AP Routing Mode

This manual takes the WL8200-I3 (R2) as an example for configuration. Because there are certain differences in hardware and software specifications for each model, all issues involving product specifications need to be confirmed with Yunke China Information Technology Limited.

1.2 Conventions

In this manual,

- For nouns such as buttons on the page, use "" to indicate them, such as "Edit";
- Use >> to indicate the sequence of entering the configuration interface, such as "first-level menu">>"second-level menu";

This manual also uses various eye-catching signs to indicate places that should be paid special attention to during operation. As following:

Caution & Attention: Remind the matters needing attention in the operation, and improper operation may cause the setting to be invalid, data loss or equipment damage.

Instructions & Tips: Make necessary additions and explanations to the description of the operation content.

1.3 Revision Record

Date	Modify the content	Modifier
2020/1/12	Edit DCN Wireless AP Operation Manual	Kaizhan Sun
2020/8/12	Add advanced configuration-RF configuration content	Yafei Li
2020/12/12	Edit DCN Wireless AP WL8200-X2 Operation Manual	Liyfaa
2021/6/20	Add WPA3 configure section	Sunkz

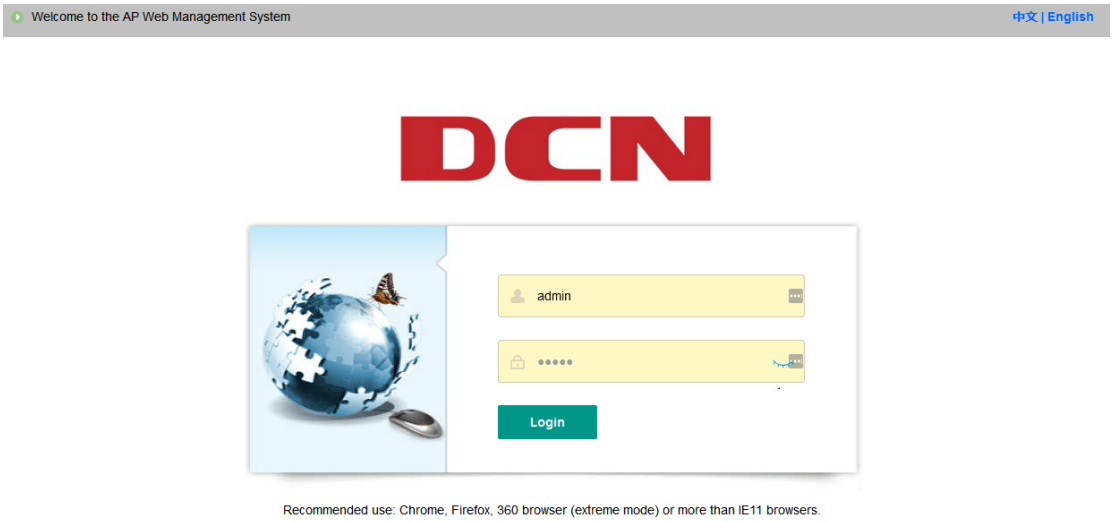
1.4 Applicable version

Version	Release time
3.12.1.x	2020.12
4.1.1.x	2020.7

2 APBasic Operations

2.1 WEBLogin

Use POE (or local power) to charge the AP, connect the network port of the management computer to the AP's LAN port (or the management host connects to the AP's WLAN wirelessly), open the browser (recommended: Google, Firefox or IE11) and enter the management IP address on the LAN side (the default is https://192.168.1.10) to access the web configuration interface of the wireless AP. The default login user name is admin, and the password is admin.



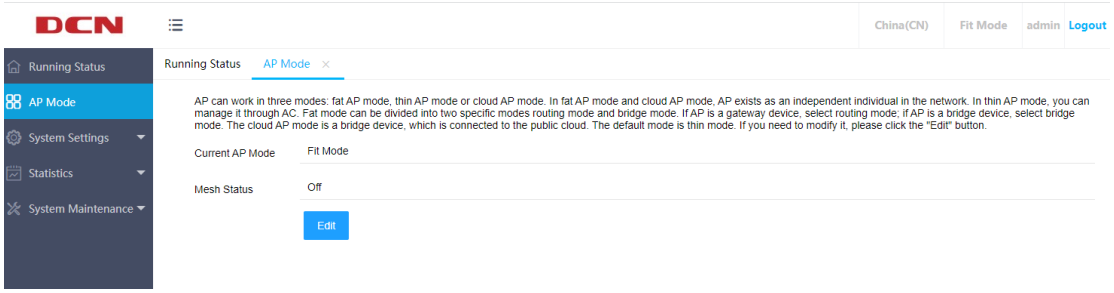
If the AP has no LAN port or no wired client, you can use the wireless client to connect to the AP's SSID (the default is DCN_WLAN) to access the AP.

If the network accessed by the AP has a DHCP server, the address of the AP may be obtained dynamically. In this situation, the user should access the current IP address of the AP.

2.2 AP Mode

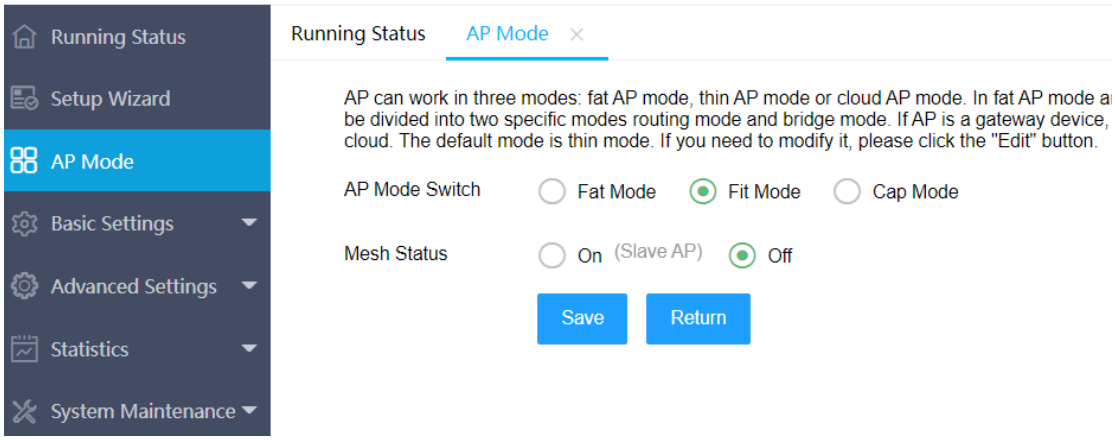
After logging in the AP web page, if you want to switch to a certain mode, click "AP mode" in the left menu to enter the mode configuration page. AP can work in three modes: fat AP mode, Fit AP mode or cloud AP mode. In fat AP mode and cloud AP mode, AP exists as an independent individual in the network. In the Fit AP mode, the AP needs to be online on AC or other devices. Fat mode can be subdivided into two specific modes - routing mode and bridge mode. If the AP is a gateway device, please select the routing mode; If the AP is a bridging device, select the bridging mode. The cloud AP mode is a bridging device connected to the public cloud. The default mode is Fit mode, as shown in the following figure:

:



2.2.1 Mesh mode

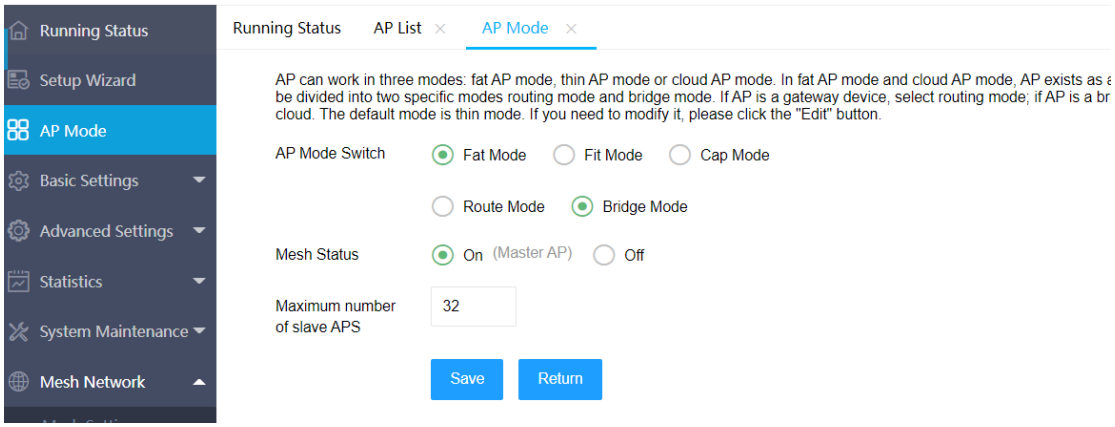
AP can turn on the mesh function, and the default mesh state is off. When the mesh state is enabled in the Fit AP mode, the AP is a slave AP, as shown in the following figure:



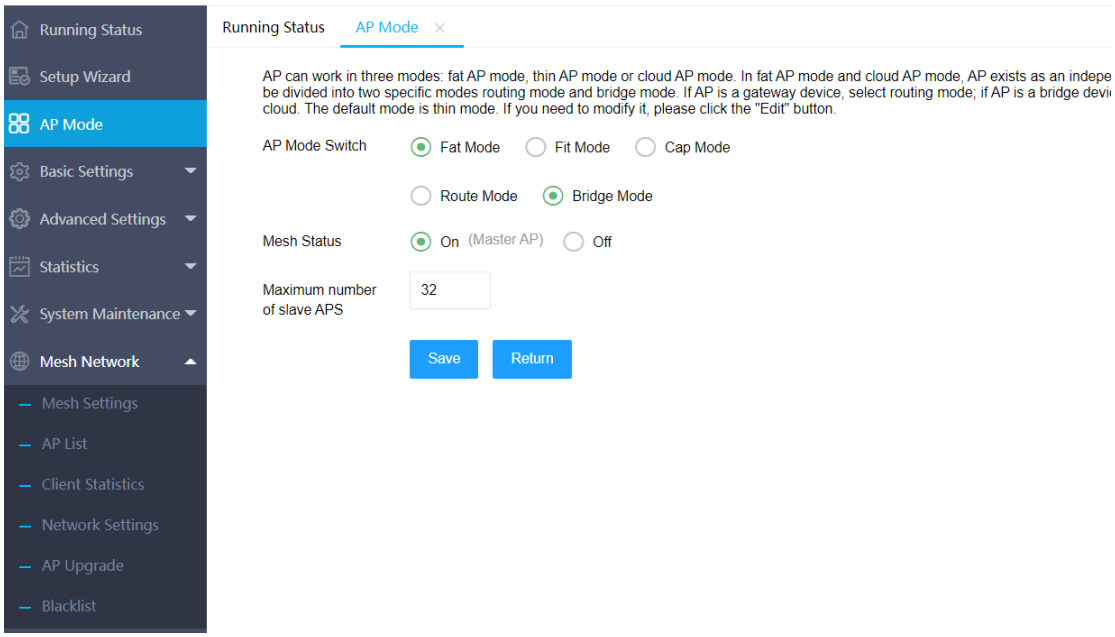
Click the Edit button on this page to edit the mesh status of the AP as "on (slave AP)". After saving the configuration, the AP will automatically restart. After restarting, the AP will switch to the mesh slave mode. At this time, the AP can only go online in the mesh master AP, and the wireless configuration and other contents are uniformly distributed through the mesh master AP (CAP).

Click "AP mode" in the menu on the left to configure the open mesh status (Master AP) on the AP mode page. After saving the configuration, the AP will

restart automatically. After successful restart, it will be the Master mesh mode, as shown in the following figure:

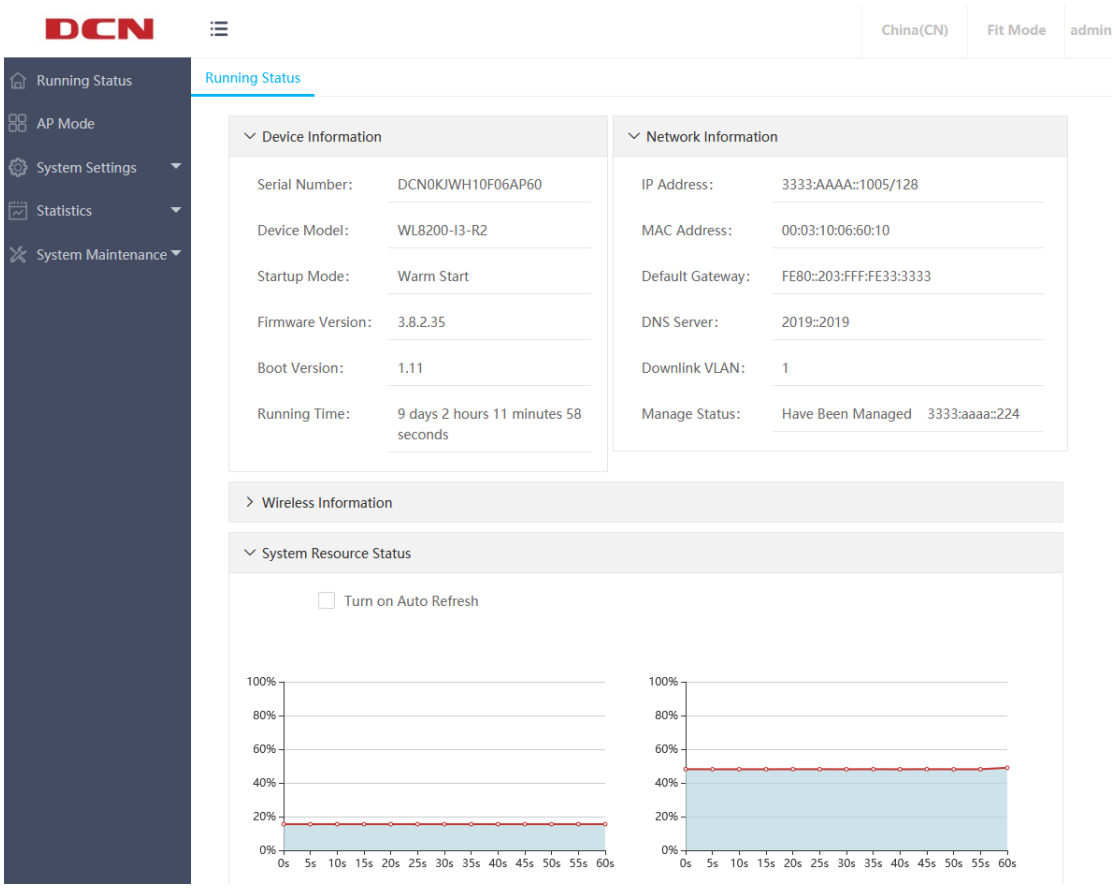


When the AP is in the mesh master mode, it can manage the mesh slave AP and synchronize the wireless video and other configurations to the slave AP. When the mesh status is "on (Master AP)", the "maximum number of slave AP" parameter needs to be configured. After configuration, the master AP can manage the number of slave AP of this value at most, different models of AP can manage different numbers of slave AP. The parameter can be modified after being configured as the master AP. If the parameter takes effect, the AP needs to be restarted. If the number of connected slave AP reaches the specified number, the new slave AP will be rejected. After the AP is configured as the mesh Master mode, a column "Mesh Network" will be added in the left column of the AP to configure the unique functions of the mesh network, as shown in the following figure:



2.3 Running Status

After logging into the system, the homepage displays the system running status, including device information, network information, wireless information and system resource status.Ticking "Turn on Auto Refresh" in the system resource status panel, the interface will display the CPU utilization and memory utilization in real time, and refresh every 5 seconds.

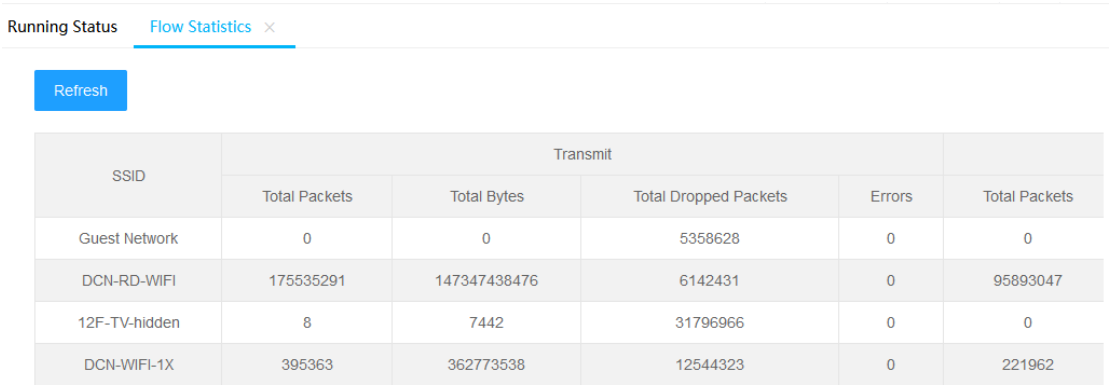


2.4 Statistics

The statistics contains three parts: flow statistics, radio statistics and client statistics.

2.4.1 Flow Statistics

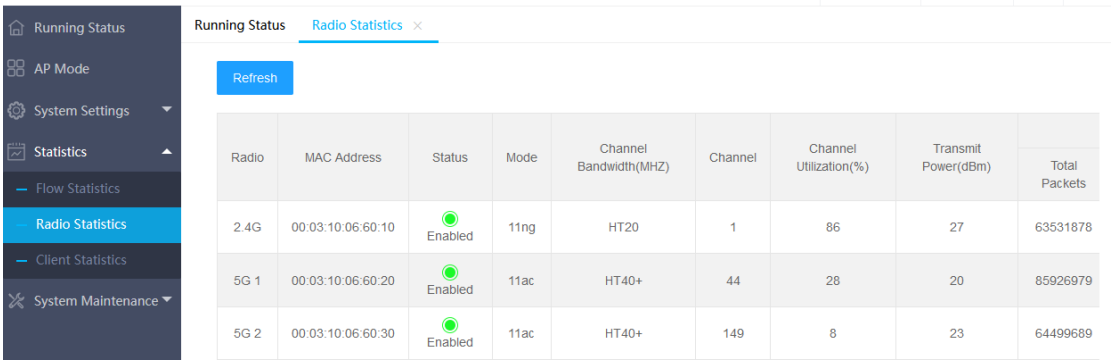
Flow Statistics interface shows the message sent and received by different SSIDs.As following:



SSID	Transmit				
	Total Packets	Total Bytes	Total Dropped Packets	Errors	Total Packets
Guest Network	0	0	5358628	0	0
DCN-RD-WIFI	175535291	147347438476	6142431	0	95893047
12F-TV-hidden	8	7442	31796966	0	0
DCN-WIFI-1X	395363	362773538	12544323	0	221962

2.4.2 Radio Statistics

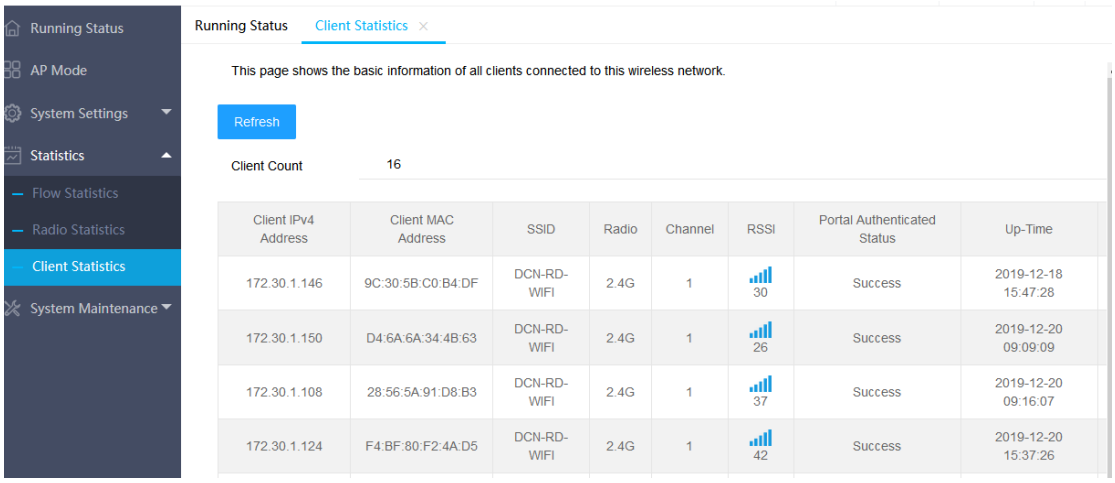
Radio statistics interface displays different radio statistics sending and receiving message information from radio statistics perspective. As following:



Radio	MAC Address	Status	Mode	Channel Bandwidth(MHZ)	Channel	Channel Utilization(%)	Transmit Power(dBm)	Total Packets
2.4G	00:03:10:06:60:10	Enabled	11ng	HT20	1	86	27	63531878
5G 1	00:03:10:06:60:20	Enabled	11ac	HT40+	44	28	20	85926979
5G 2	00:03:10:06:60:30	Enabled	11ac	HT40+	149	8	23	64499689

2.4.3 Client Statistics

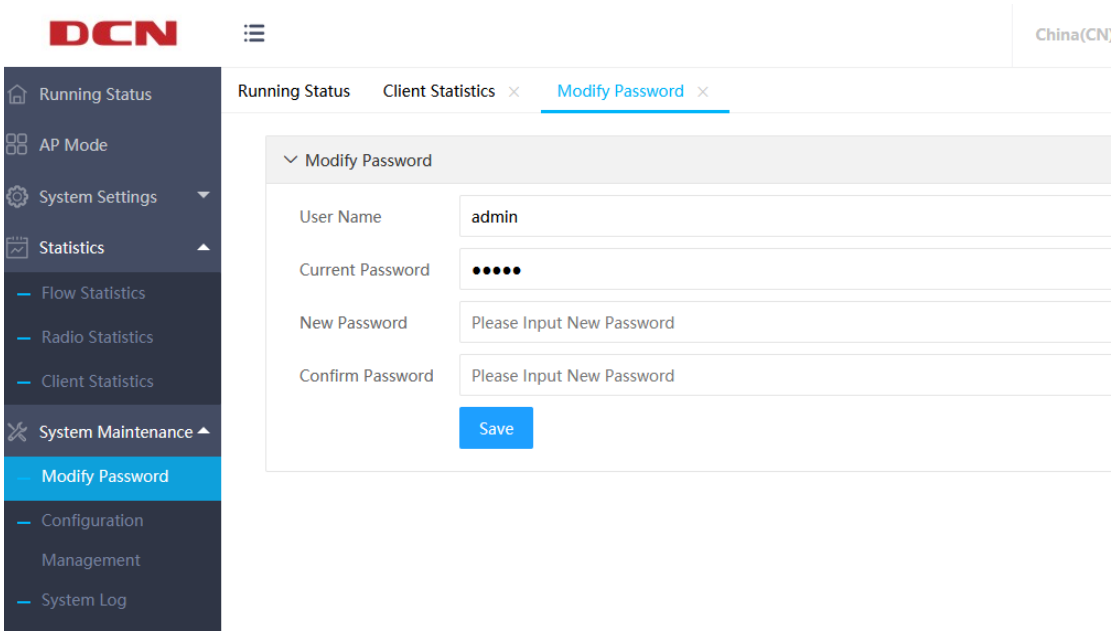
Client statistics list displays all client information related with the device, including client IP address, client MAC address, SSID, radio, channel, RSSI, portal authenticated status, up-time, etc. As following:



2.5 System Maintenance

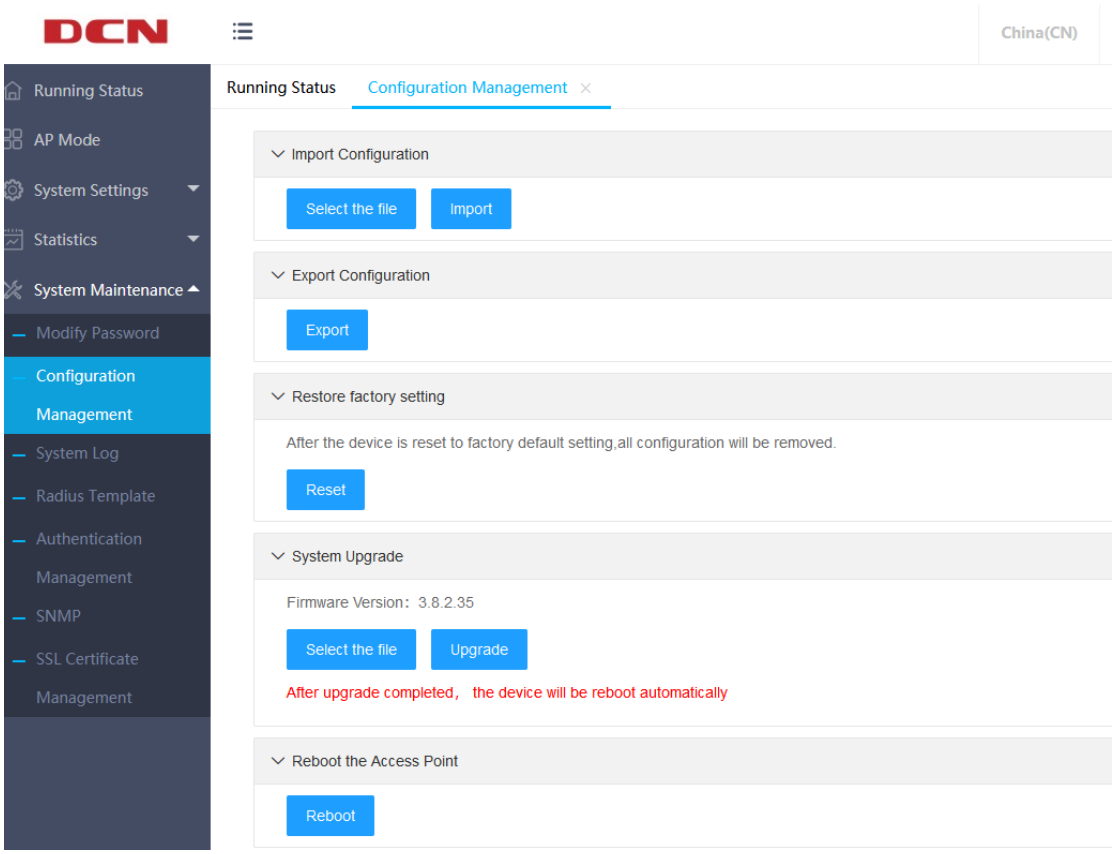
2.5.1 Modify Password

Click "System Maintenance">>"Modify Password" on the left menu, you can modify the username and password on the AP management interface. When modifying password, enter the original password first, then enter the new password twice, and click "Save ". As following:



2.5.2 Configuration Management

In this interface, the user can perform related operations such as configuration import and export, restore factory setting, system upgrade, reboot, etc. As following:



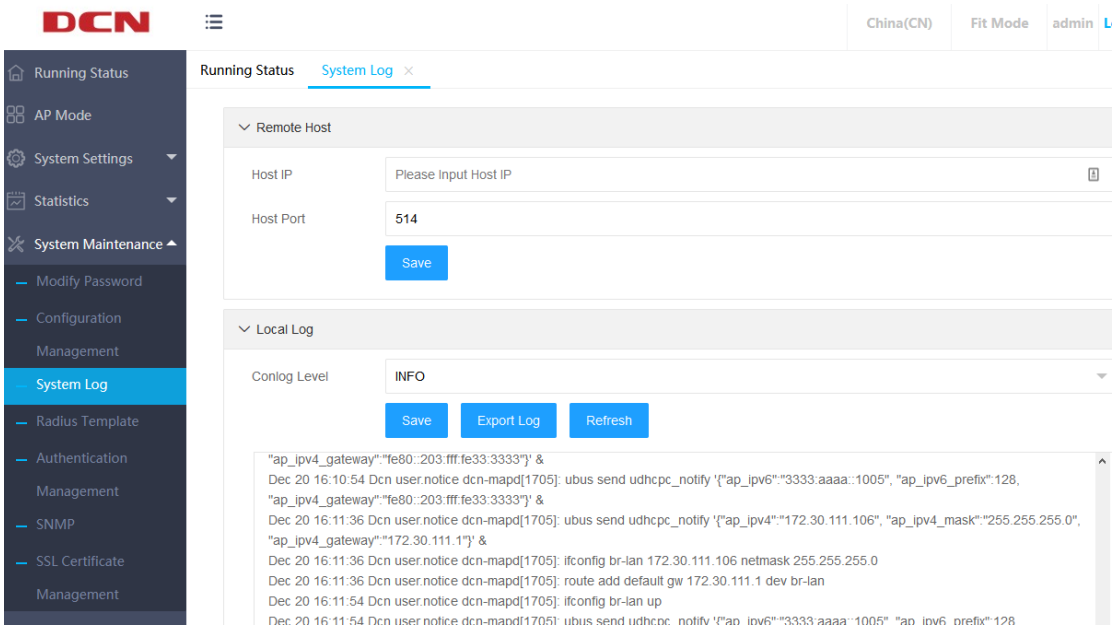
After the device is reset to factory default, all configurations will be deleted and restored to FIT mode.

2.5.3 System Log

The diagnostic log interface displays the latest log information of the device. It is divided into two sections: remote host and local log.

The remote host includes the log host IP address and the log host port configuration, which can store device logs to a remote syslog server.

The local log supports the log level setting and log packaging export function. Click the "Export Log" to package and download all log information to the local. As following:



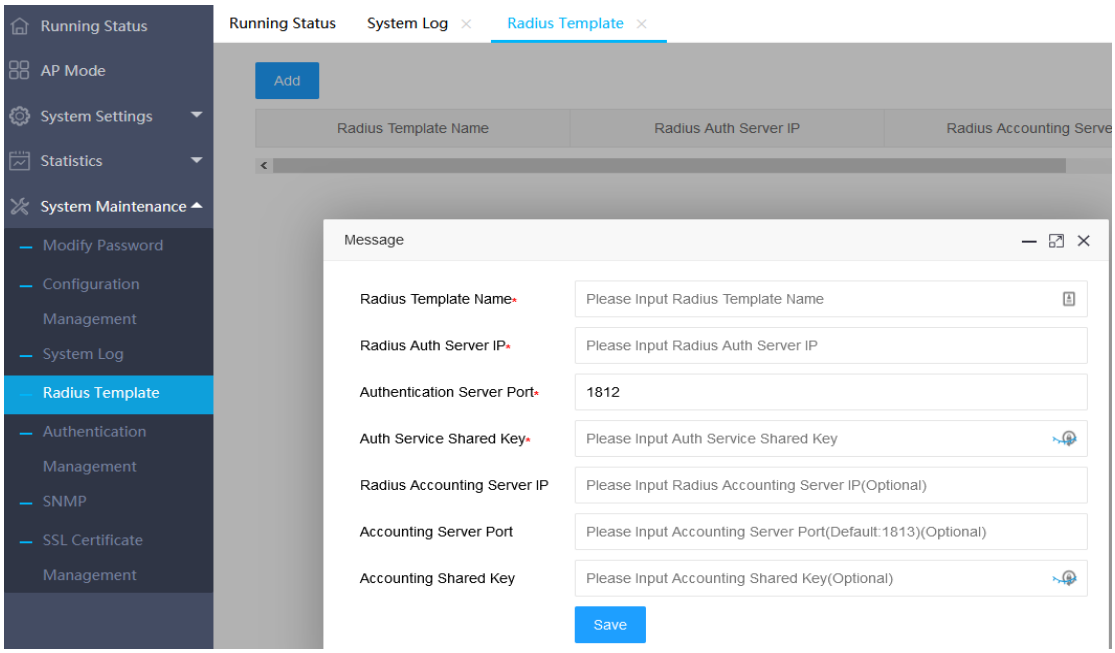
2.5.4 RadiusTemplate

Click"System Maintenance ">>" Radius Template "to maintain the Radius server template. As shown in Figure 23::

(1) Radius template name, authentication server IP address, and authentication service shared key are required;

(2) The accounting server IP and the accounting shared key are optional. Both of them must be filled in or not filled in at the same time, otherwise the system prompts that they cannot be saved normally.

(3) The key requires 1-64 non-Chinese characters.



2.5.5 Authentication Management

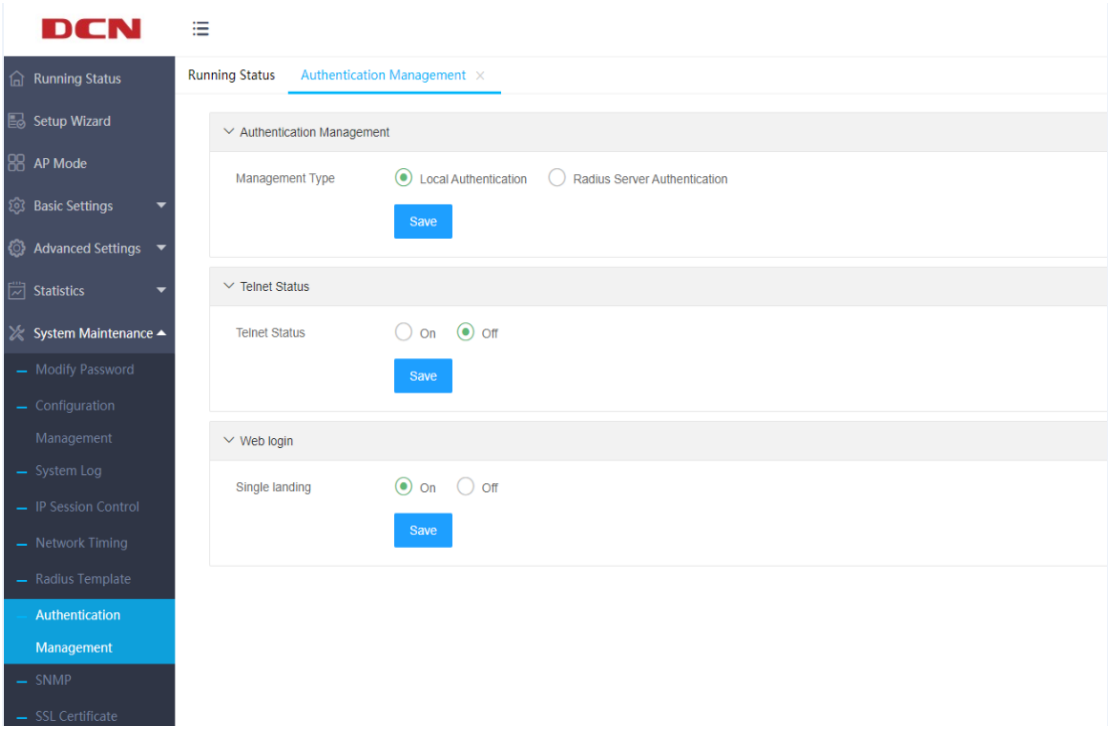
Click "System Maintenance" >> "Authentication Management", the user can see authentication management configuration and Telnet status. As shown in Figure 24:

(1) Select local authentication and save it directly.

(2) To select Radius server authentication, you need to select a Radius server. This Radius server has been maintained in the "Radius server template".

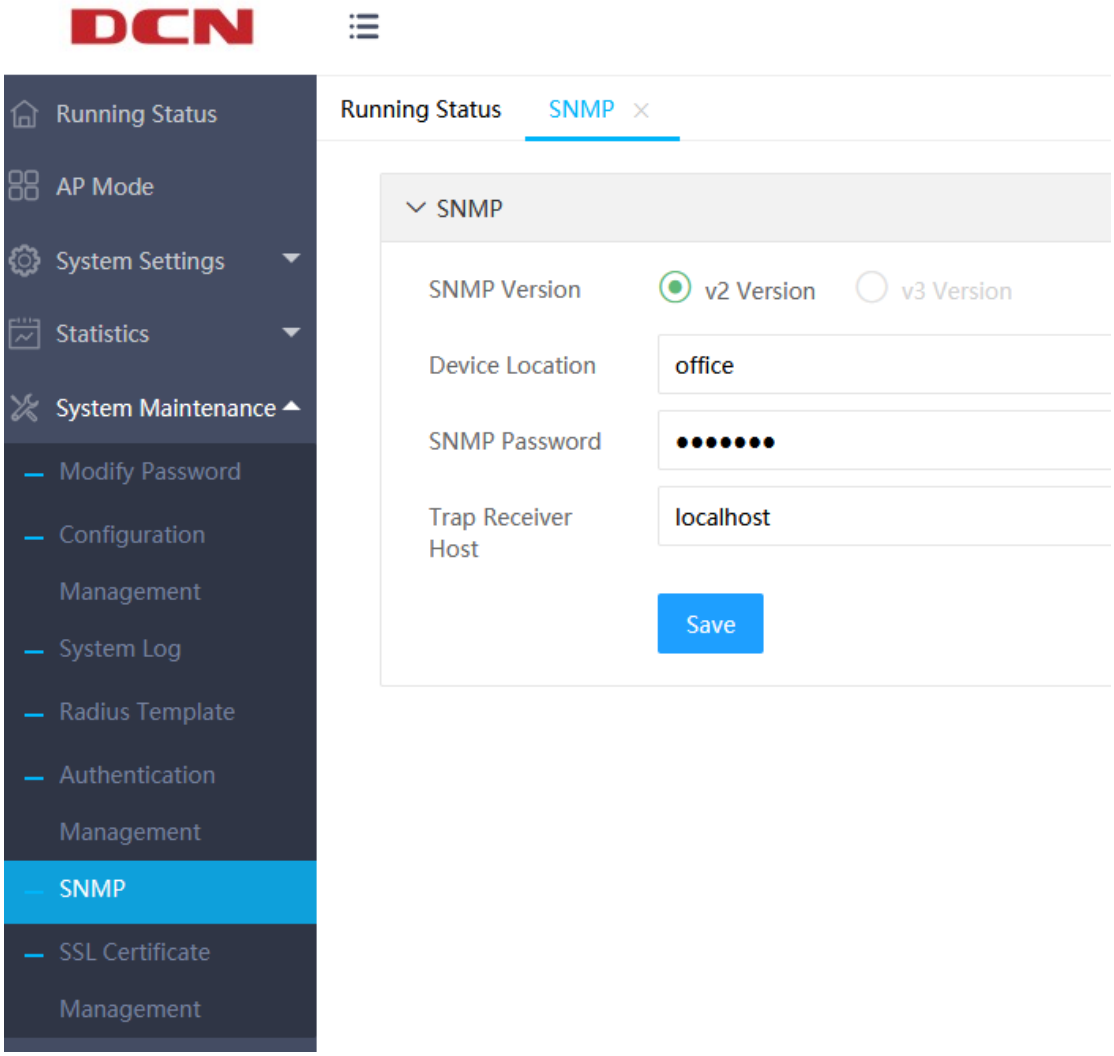
(3) Select open or close the Telnet,you can control the Telnet application of AP.

(4) Single landing to choose open or closed,allows a single device(a single brower) or more(multiple browers)login to the AP.



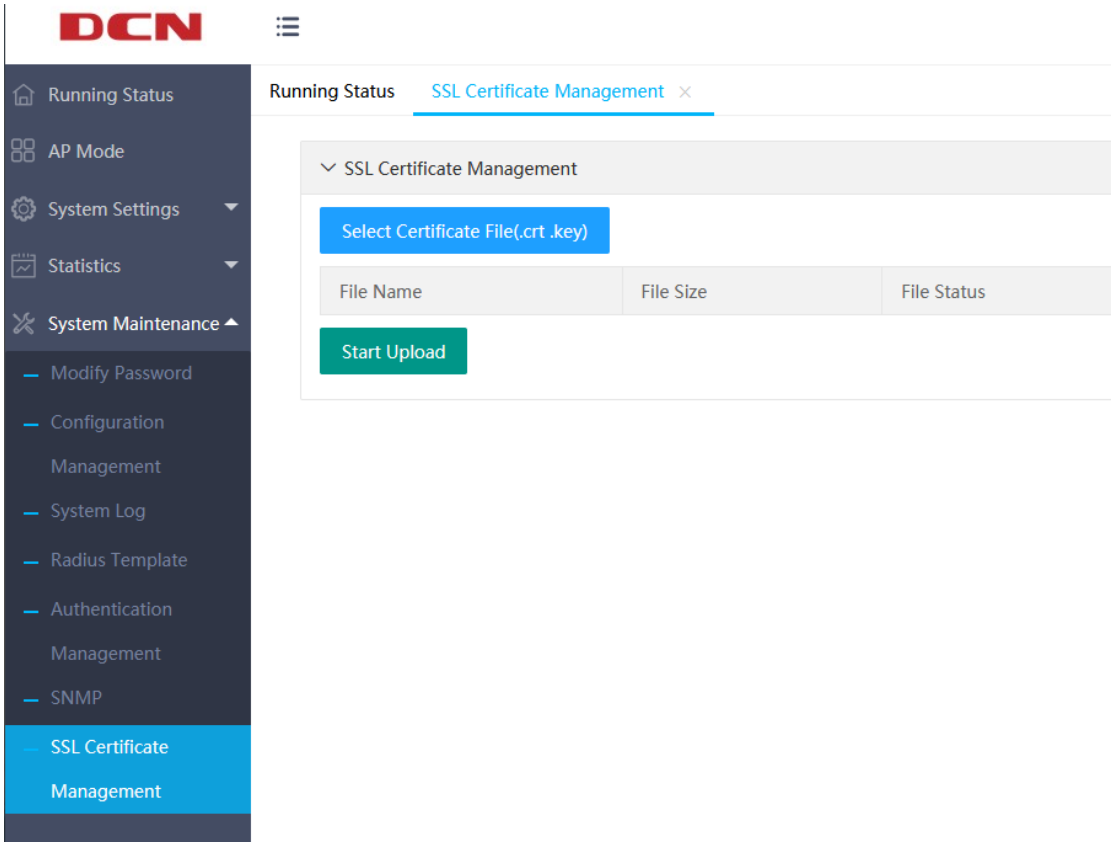
2.5.6 SNMP Configuration

Click "System Maintenance" >> "SNMP Configuration" to configureSNMP related information. As shown in Figure 25:



2.5.7 SSL Certificate Management

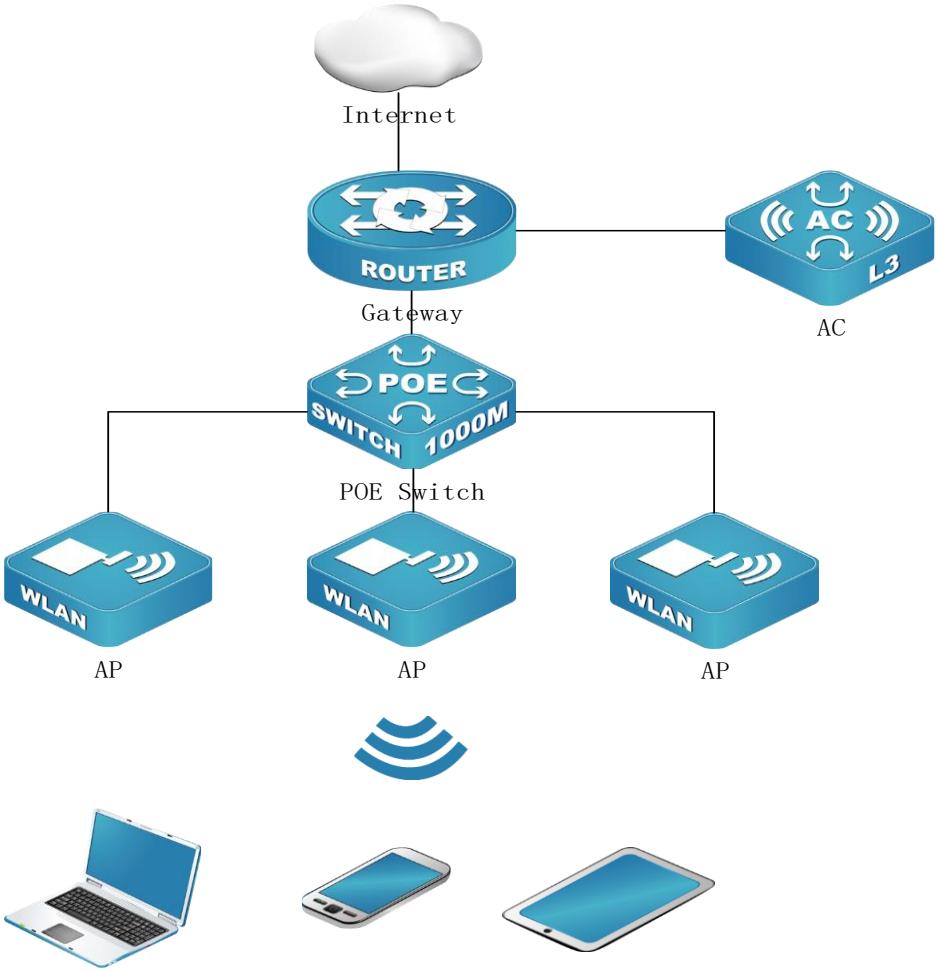
Click" System Maintenance ">>"SSL Certificate Management " to upload the SSL certificate. As shown in Figure 26:



3 FIT AP Mode

When there are a large number of APs on the network, the configuration or management one by one will become more complicated. At this time, it is suitable to use the FIT AP mode + AC (AP controller) for unified management and configuration, thereby reducing the configuration and management costs.

The typical topology is as following:

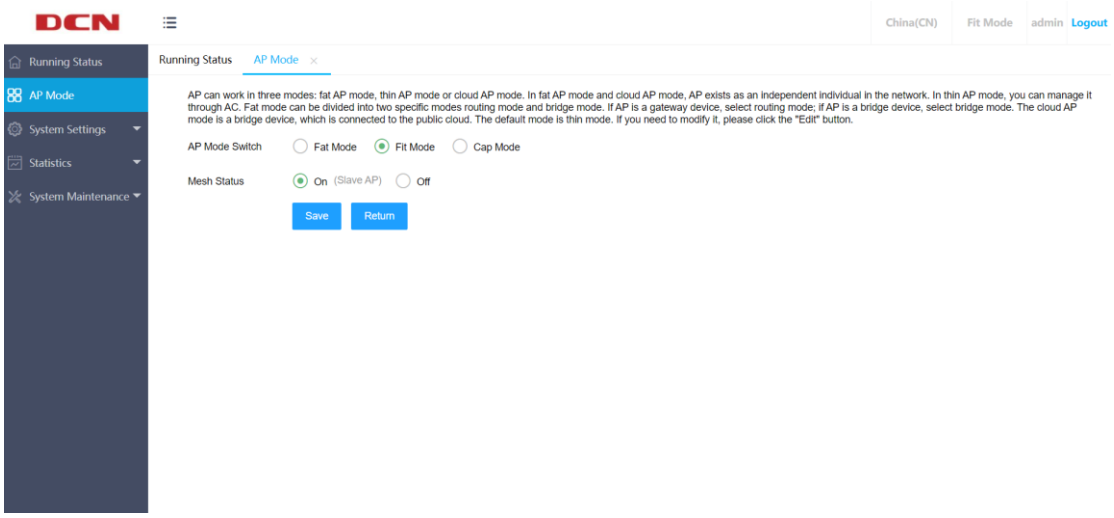


The AP is shipped in FIT AP mode by default. You can also switch to FIT AP mode by restoring the factory setting or following the instructions in the AP mode chapter. The wireless configuration of the FIT mode is operated uniformly through the AC. For details about this part, please refer to the DCN related AC operation manual. Here, the AP's wired configuration, AC address setting, WDS configuration, and system management are mainly introduced.

3.1 System Settings

3.1.1 Ethernet Settings

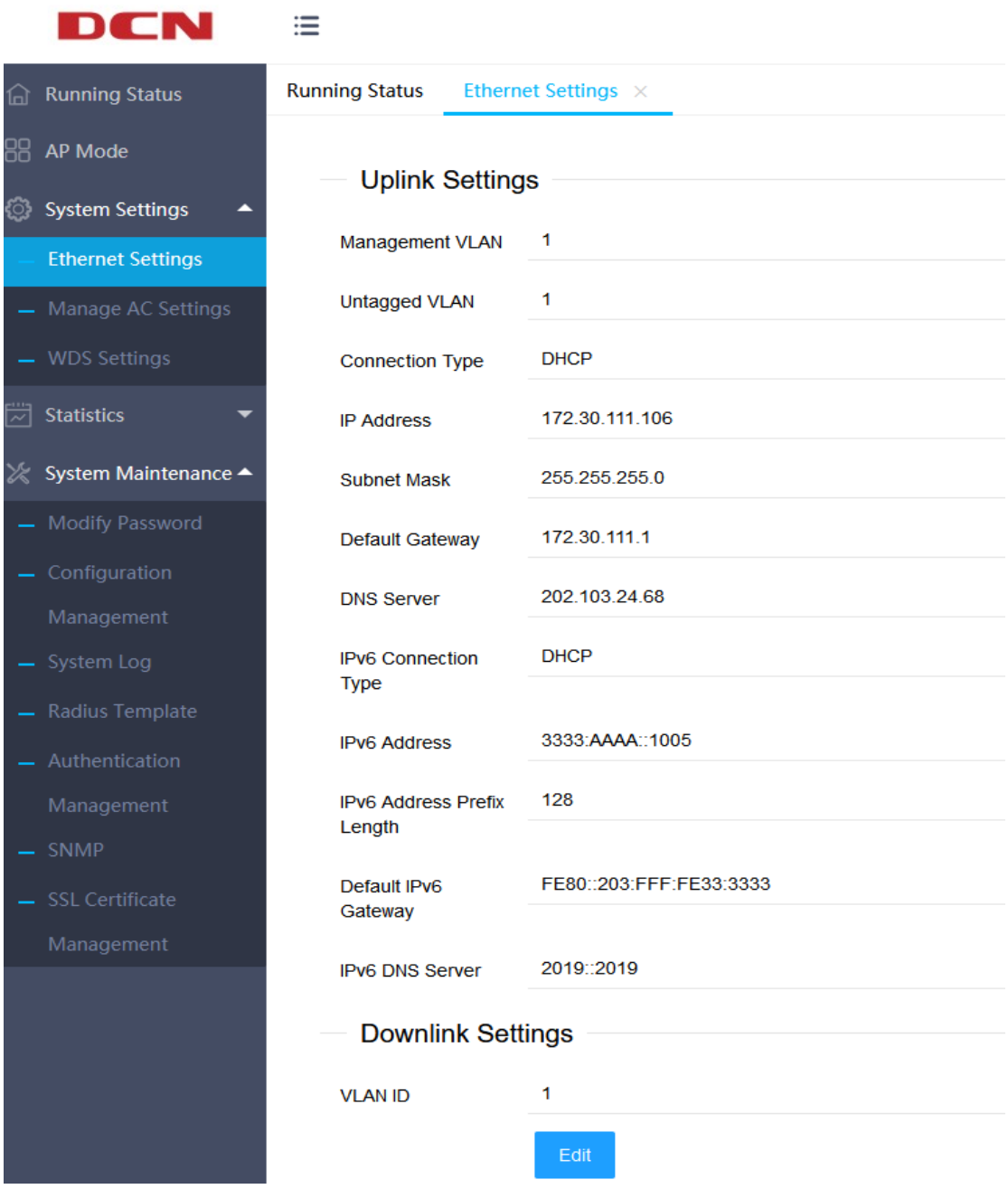
Click "AP mode" in the menu on the left to enter the AP wired configuration page. The page has two parameters: AP mode and mesh status. The default is Fit mode. The wireless configuration of Fit mode is uniformly distributed through AC. please refer to the AC related operation manual of DCN for this part. The default mesh status is off, as shown in the following figure:



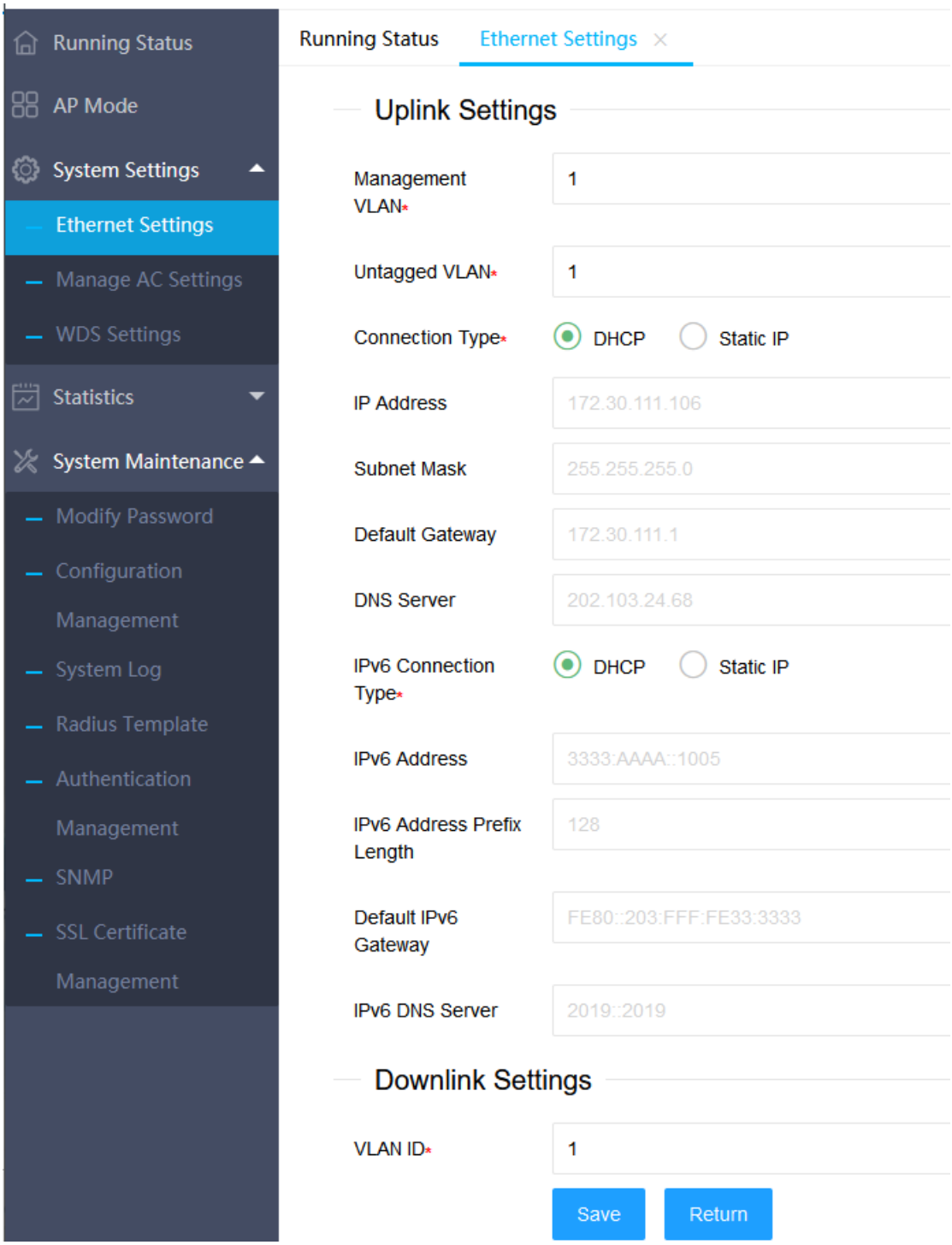
3.2 System Settings

3.2.1 Ethernet Settings

Click "System Settings">>"Ethernet Settings" on the left menu to enter the AP Ethernet setting interface. In default, the current status of the uplink port (usually the POE interface) and the downlink port of the AP are displayed. As following:



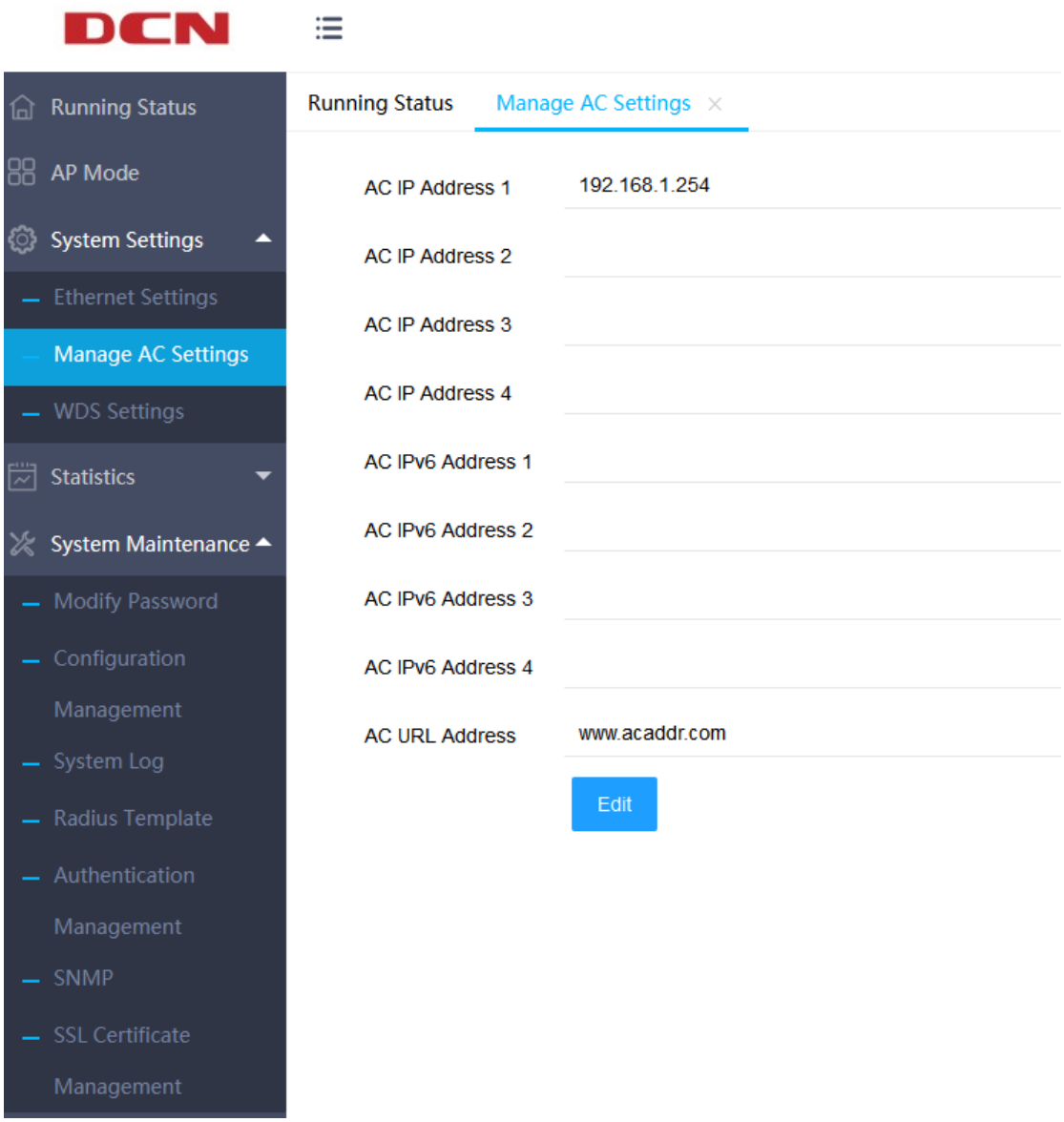
If you need to modify the related setting of the uplink port, you can click the "Edit" at the bottom of the interface to edit setting, where you can set the AP wired VLAN and the IP address configuration mode of the AP. As following:



3.2.2 Manage AC Settings

Click "System Settings">>"Manage AC Settings" on the left menu to enter theAC management settinginterface. From this page, you can view the static AC management address of the current AP setting. If you need to configure the

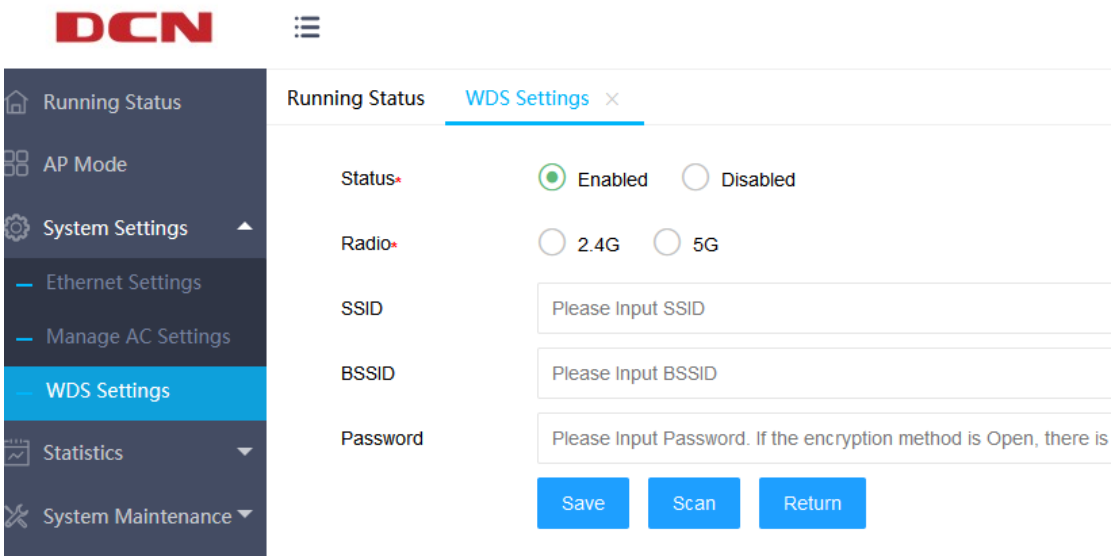
address of the static management AC, you can click the "Edit" at the bottom of the page to enter the setting page, where you can configure multiple IP (v6) addresses of the management AC or domain names of the management AC. As shown below:



Tip: In addition to static ACIP or AC domain name to find AC, you can also actively find AC through DHCP option. For details, refer to DCN AC related manuals or consult DCN staffs.

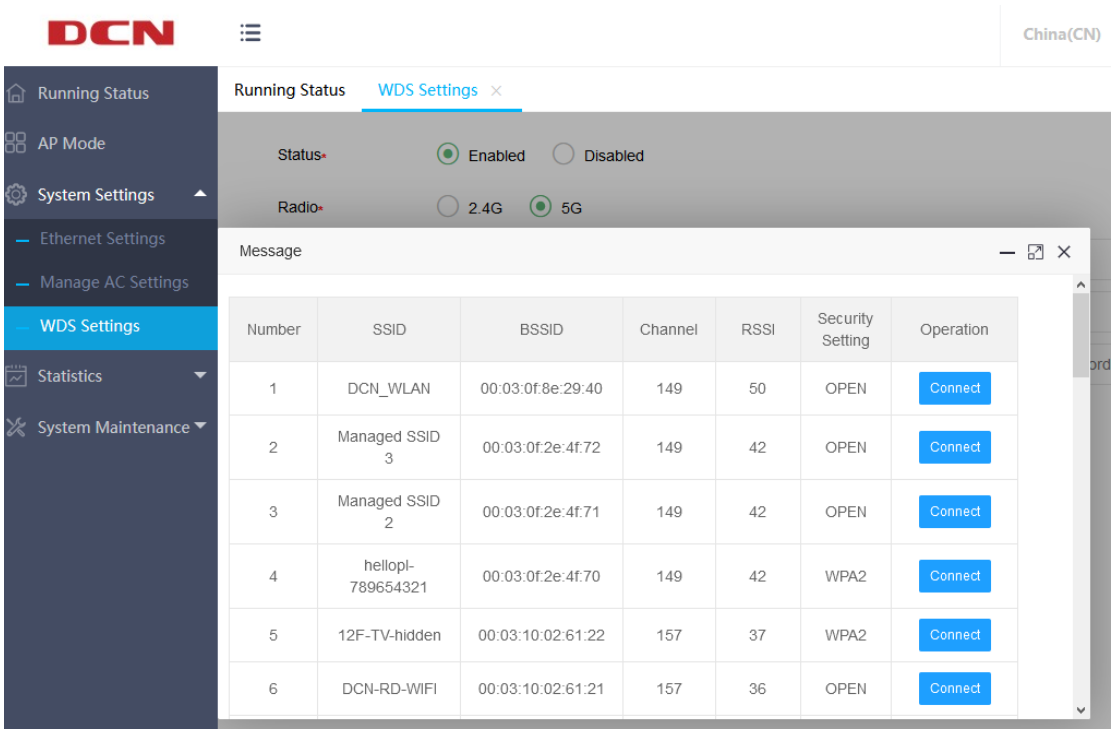
3.2.3 WDSSettings

Click "System Settings">>"WDS Settings" on the left menu to view the WDS current status of the AP. If you need to bridge this AP with other ones, you can click the "Edit" at the bottom of the page to enter the WDS setting page, as shown below:



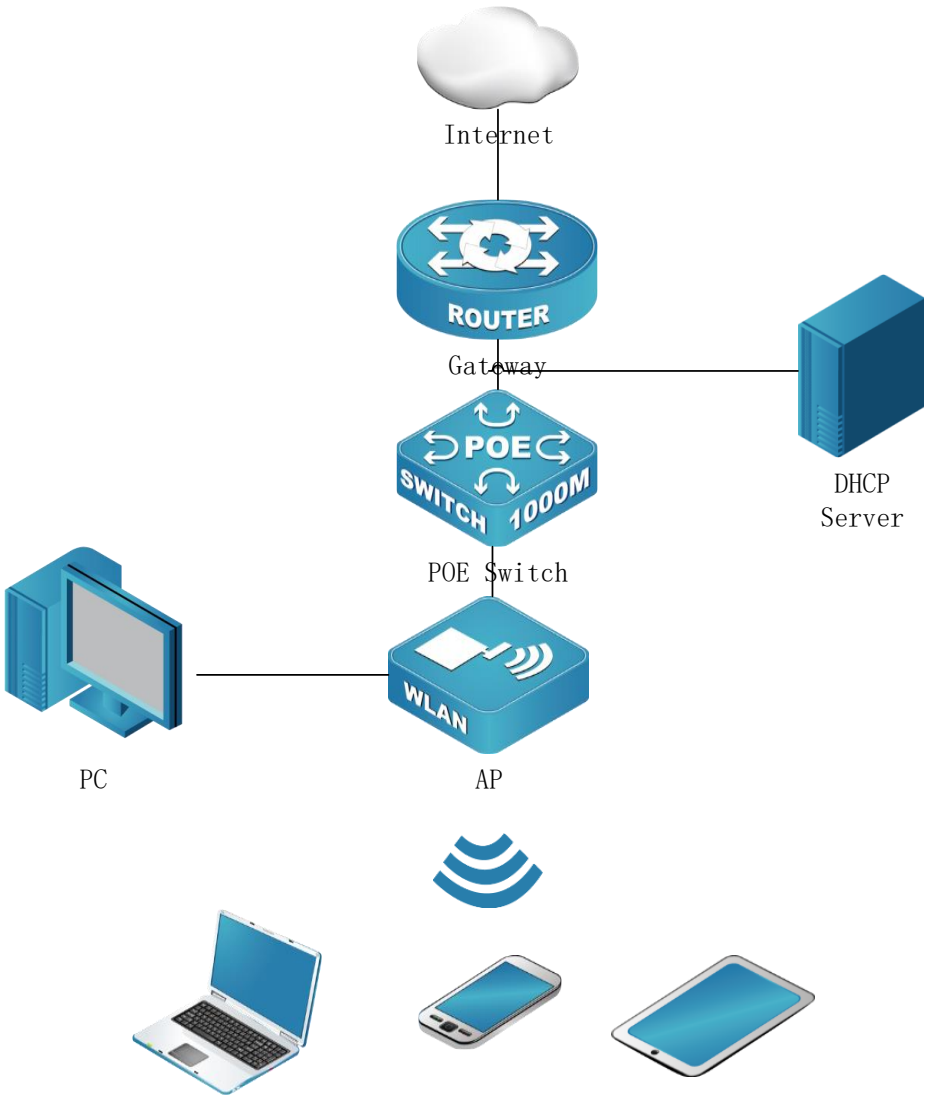
If you want to manually enter the information of the target wireless network or the target wireless network is a hidden network, you can directly enter the corresponding wireless network information and save it.

If you want to connect it through the scanning method, you can first select the radio frequency band to be bridged on this page, click the "Scan" to start scanning, select the target BSSID, and then select "Connect" for WDS connection, as shown below:


DCN
China(CN)
Running Status
AP Mode
System Settings
Ethernet Settings
Manage AC Settings
WDS Settings
Statistics
System Maintenance
Running Status
WDS Settings
Status*
Enabled
Disabled
Radio*
2.4G
5G
Message
Number
SSID
BSSID
Channel
RSSI
Security Setting
Operation
1
DCN_WLAN
00:03:0f:8e:29:40
149
50
OPEN
Connect
2
Managed SSID 3
00:03:0f:2e:4f:72
149
42
OPEN
Connect
3
Managed SSID 2
00:03:0f:2e:4f:71
149
42
OPEN
Connect
4
hellopl-789654321
00:03:0f:2e:4f:70
149
42
WPA2
Connect
5
12F-TV-hidden
00:03:10:02:61:22
157
37
WPA2
Connect
6
DCN-RD-WIFI
00:03:10:02:61:21
157
36
OPEN
Connect

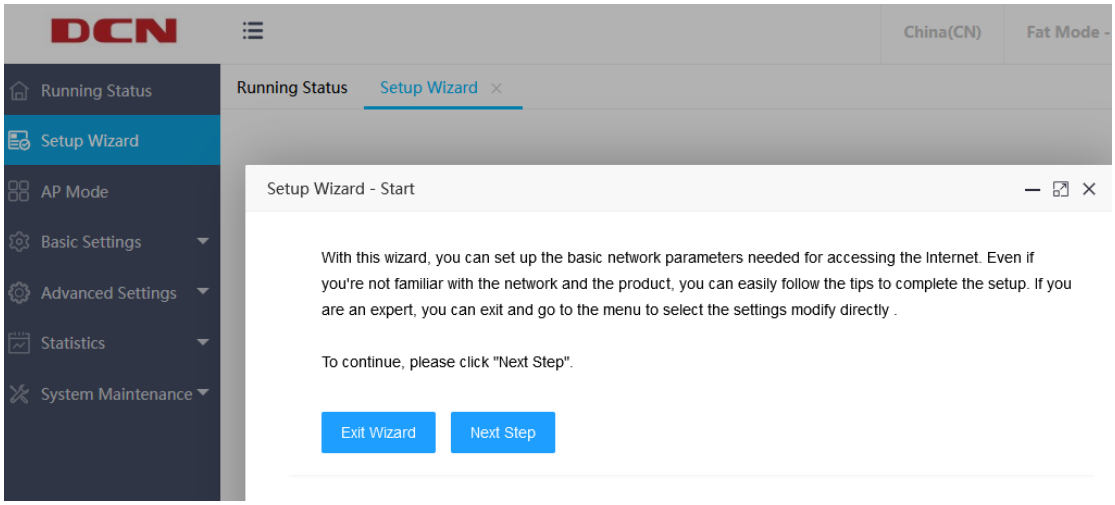
4 FAT Bridge Mode

When there is no AC in the network, you can select the fat mode. If there is a DHCP server in the network, you can switch the AP to the fat bridge mode to use the wireless network.

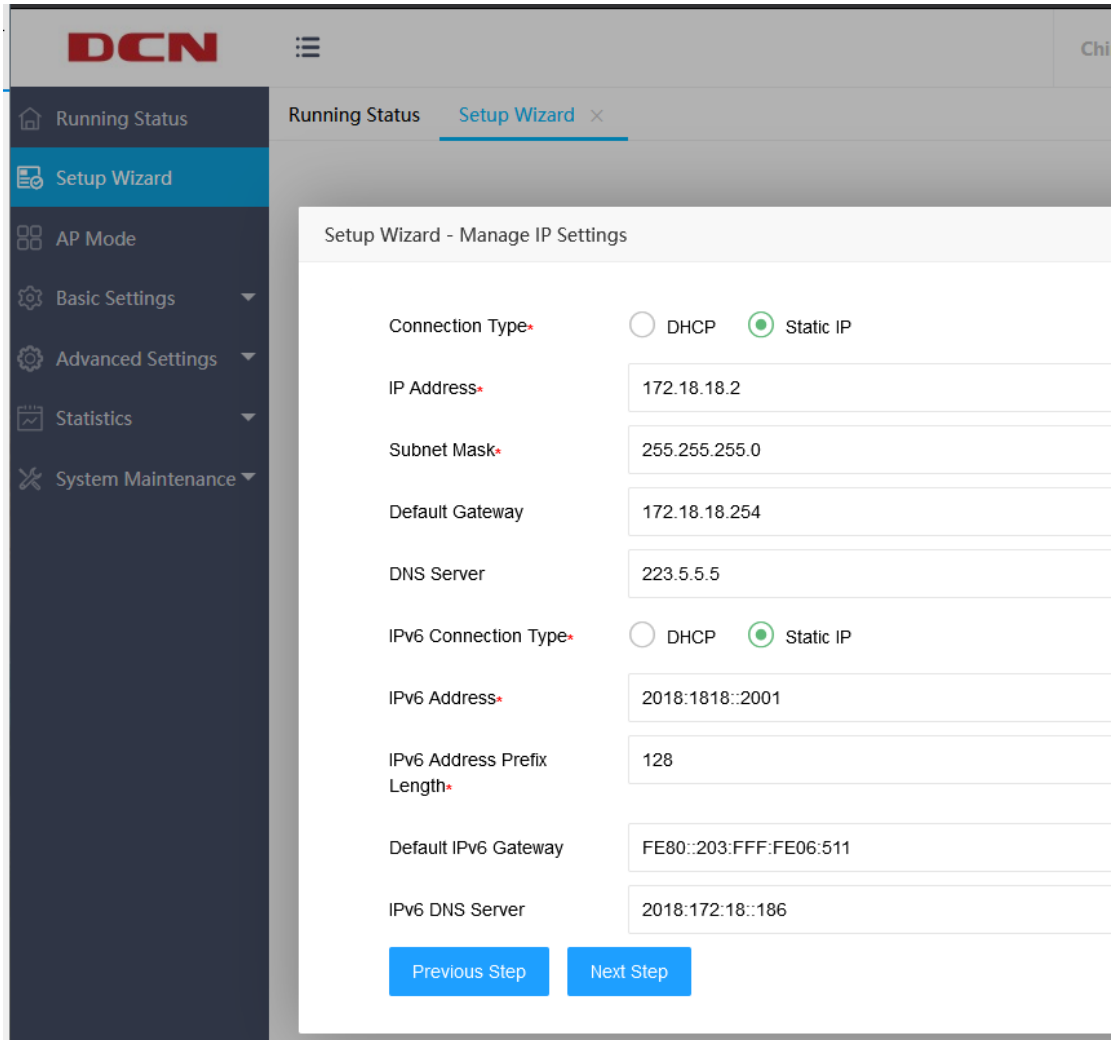


4.1 Setup Wizard

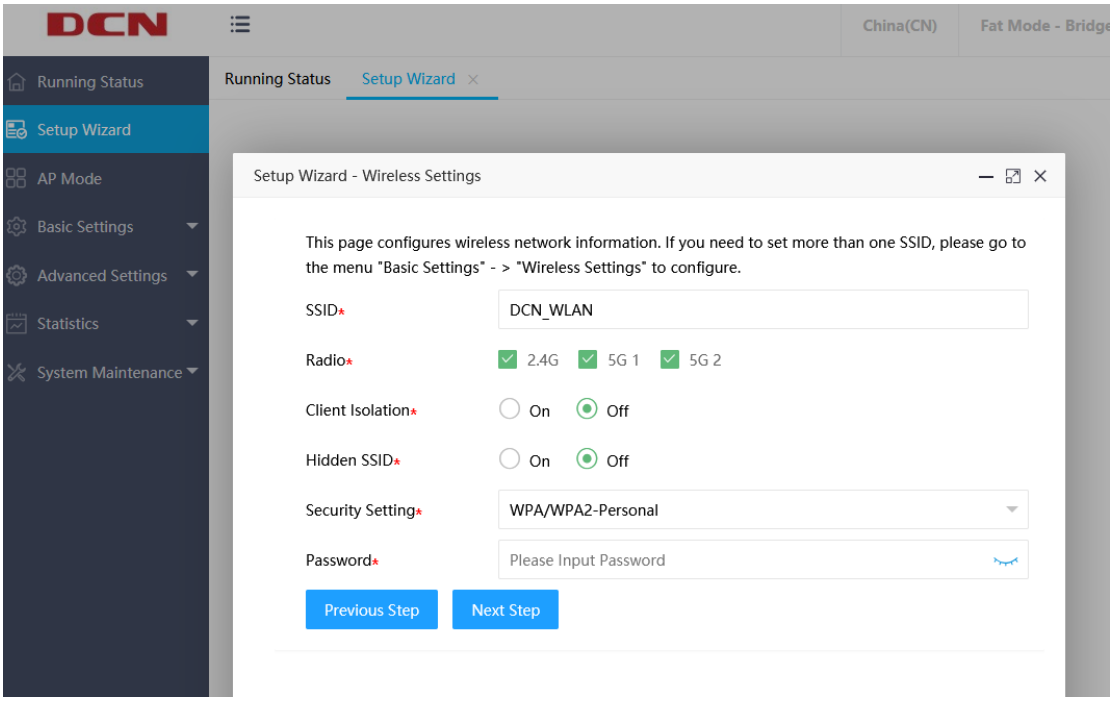
Clicking "Setup Wizard" on the left menu and then the "Setup Wizard-Start" interface will pop up, which introduces the role of the wizard. If you do not want to use the wizard, you can select "Exit Wizard".



If you want to use the wizard, you can click "Next Step" to enter the "Setup Wizard-Manage IP Settings" interface, where you can configure the AP's IP (v6) address connection method to be dynamic or static, as shown below:



After the management address setting is completed, click "Next Step" to enter the "Setup Wizard-Wireless Settings" interface, where you can set wireless parameters such as wireless name (SSID) and security mode, as shown in the figure below:

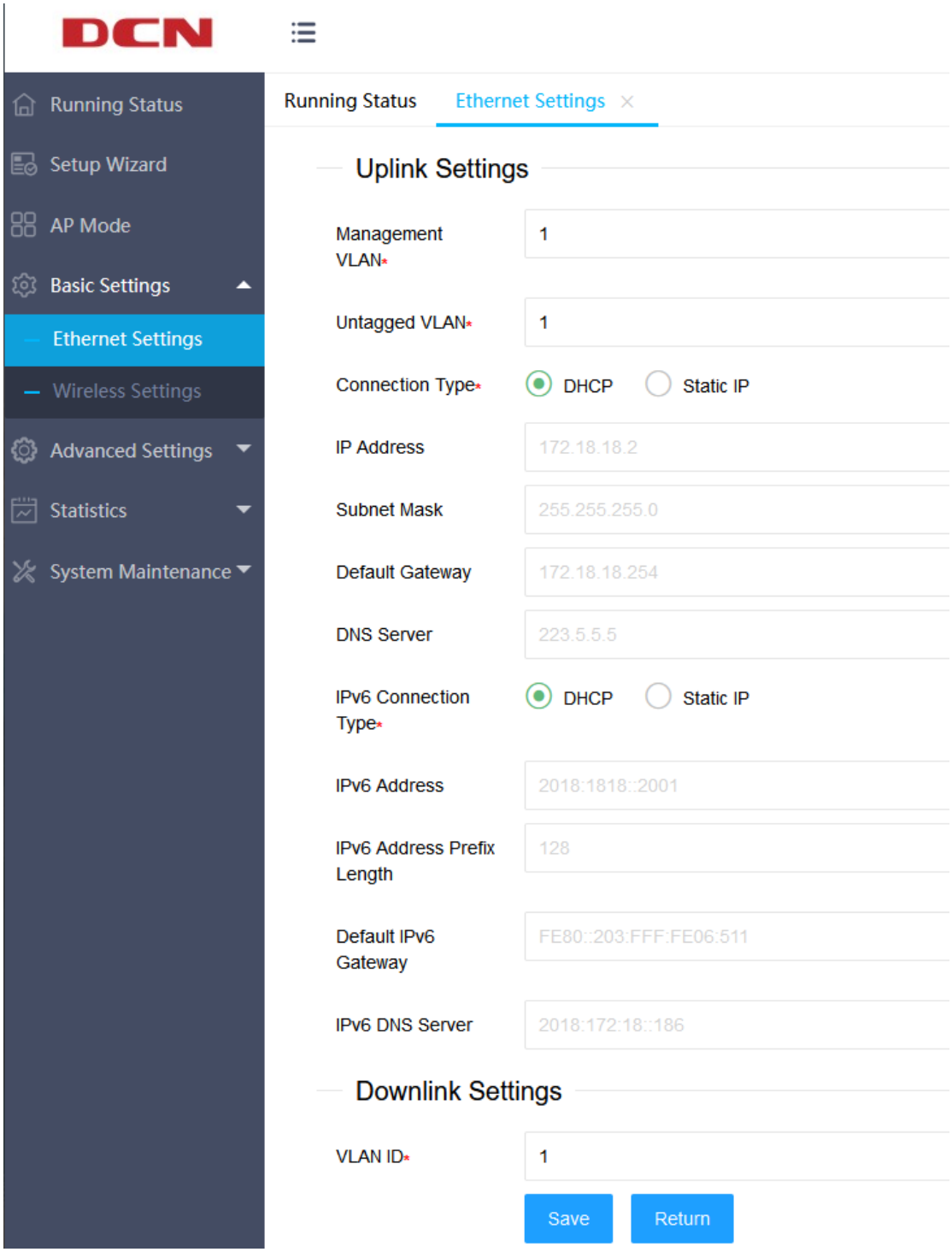


Click "Next Step" and then click "Complete". Finally, before you click "Complete", you can click "Previous Step" to modify the parameters that have been set. After you click "Complete", all parameter settings will take effect.

4.2 Basic Settings

4.2.1 Ethernet Settings

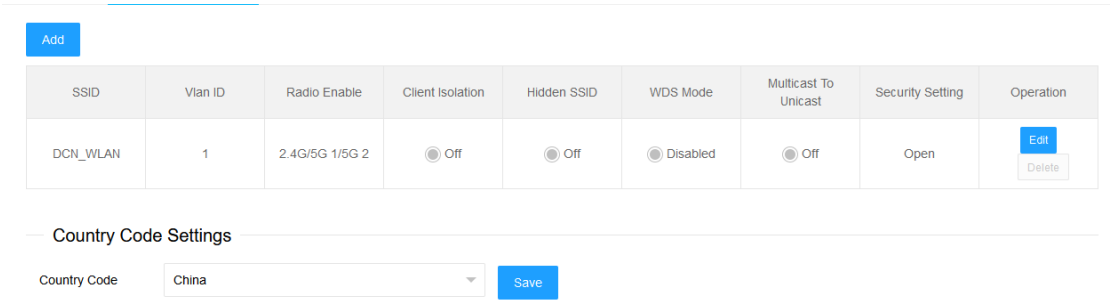
Click "System Settings">>"Ethernet Settings" on the left menu to enter the AP Ethernet setting page. The AP uplink (usually a POE interface) and the current status of the downlink are displayed by default. Then you can click the "Edit" at the bottom of the page to enter the page, where you can set the AP wired interface VLAN and the IP address configuration method of the AP. As shown below:



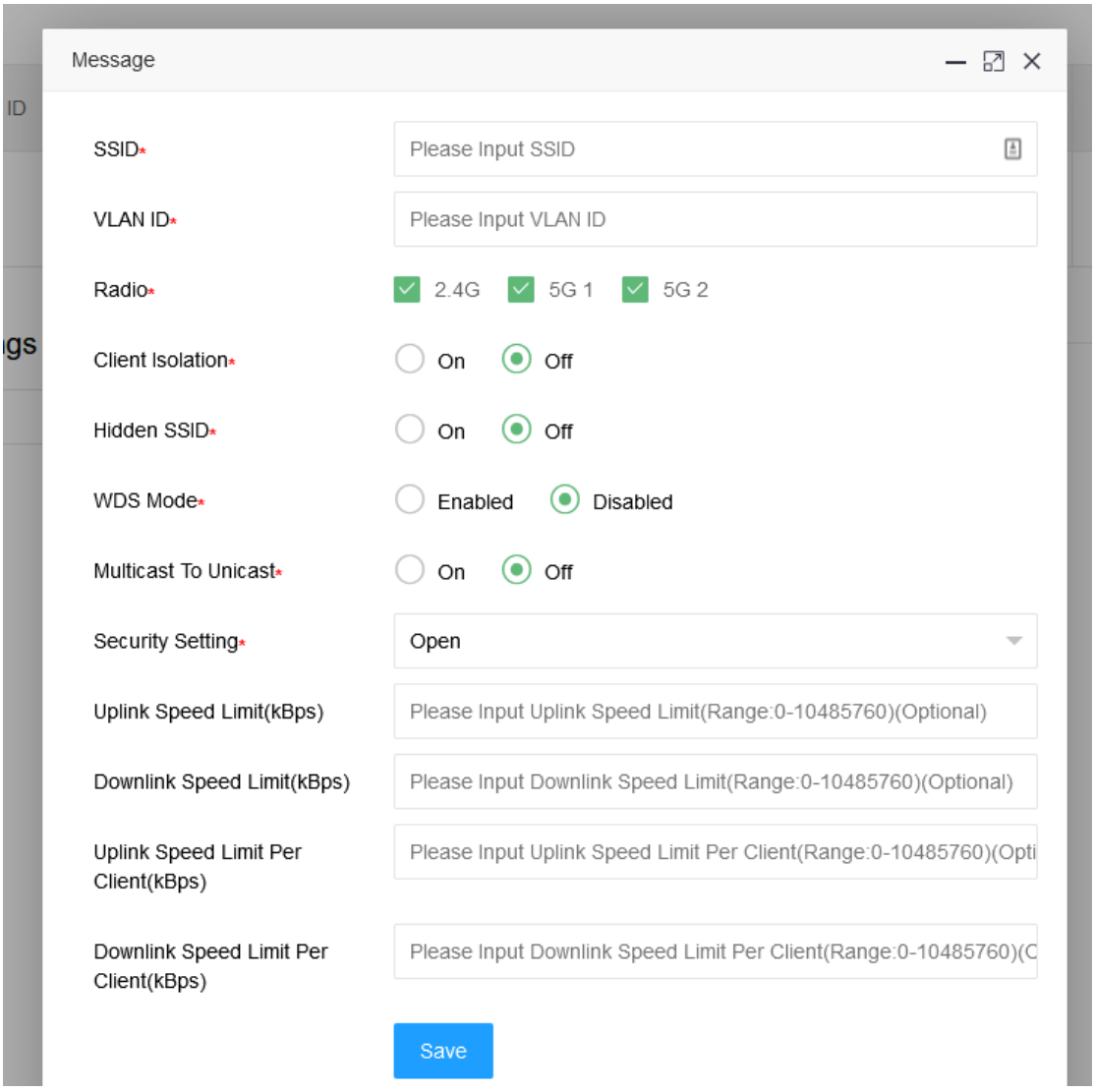
4.2.2 Wireless Settings

Click "Basic Settings">>"Wireless Settings" on the left menu to enter the wireless setting page, where you can set the basic parameters of the wireless

network, as shown below:



If you need to create a new wireless network, you can click "Add" and enter the corresponding parameters, as shown below:



The content marked with " * " in the above picture is required, the others are

optional, and the brief introduction is as follows:

Client Isolation: Communication control between wireless clients. When being turned on, wireless clients cannot communicate with each other. Off by default.

Hidden SSID: When the hidden SSID is turned on, the wireless client will not be able to search for this SSID information.

Security Settings: This router supports three security settings, Open, WPA / WPA2-Personal, and WPA / WPA2-Enterprise.

Uplink Speed Limit: Control the uplink speed of all users under this SSID to not exceed the specified speed.

Downlink Speed Limit: Control the downlink speed of all users on a certain radio frequency under the SSID to not exceed the specified speed.

Uplink Speed Per Client: Controls the uplink speed of each client accessing the wireless.

Downlink Speed Per Client: Controls the downlink speed of a single client.

It should be noted that the bandwidth speed limit is for wireless to wired interfaces, and does not include the speed limit between wireless to wireless interfaces or between wireless clients to wireless clients under the same VAP. And one-way SSID speed limit and client speed limit cannot be used at the same time. In addition, each AP can set up to 16 SSIDs. The default SSID can only be edited and cannot be deleted.

In addition, the OPEN mode does not need to set a password, and the wireless client can directly access;

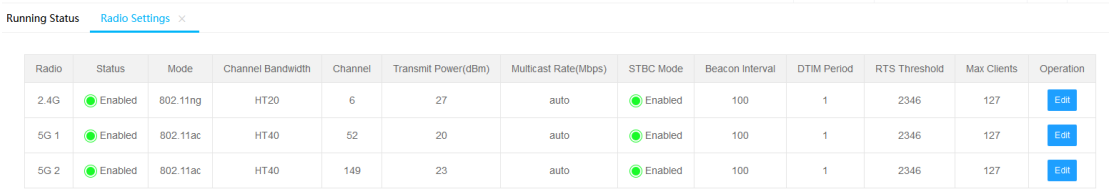
In WPA / WPA2-Persional mode, you need to set a password with a length of 8 to 63 characters;

WPA / WPA2-Enterprise mode is authenticated by the radius server, so you need to bind the radius template. For details, refer to section 2.5.4.

4.3 Advanced Settings

4.3.1 Radio Settings

The radio setting page displays all radio information in a list with no new features. Click" Edit " in the operation column to modify the radio settings, including status, channel, channel bandwidth, transmit power, multicast rate, STBC mode, Beacon interval, DTIM period, RTS period, max clients, etc., as shown below:



Radio	Status	Mode	Channel Bandwidth	Channel	Transmit Power(dBm)	Multicast Rate(Mbps)	STBC Mode	Beacon Interval	DTIM Period	RTS Threshold	Max Clients	Operation
2.4G	Enabled	802.11ng	HT20	6	27	auto	Enabled	100	1	2346	127	Edit
5G 1	Enabled	802.11ac	HT40	52	20	auto	Enabled	100	1	2346	127	Edit
5G 2	Enabled	802.11ac	HT40	149	23	auto	Enabled	100	1	2346	127	Edit

Status: Setting the Radio on or off. On by default.

Mode: Configure the Radio mode, such as bgn, an, ac.

Channel Bandwidth: Configure the Radio bandwidth to 20Mhz, 40Mhz, 80Mhz.

Channel: Configure the Radio channel.

Transmit Power: Configure the Radio transmit power.

Multicast Rate: Configure the Radio to fixed multicast rate.

STBC mode: Setting the Radio STBC mode on of off. On by default.

Beacon Interval: Configurethe Radio beacon interval, 100ms by default.

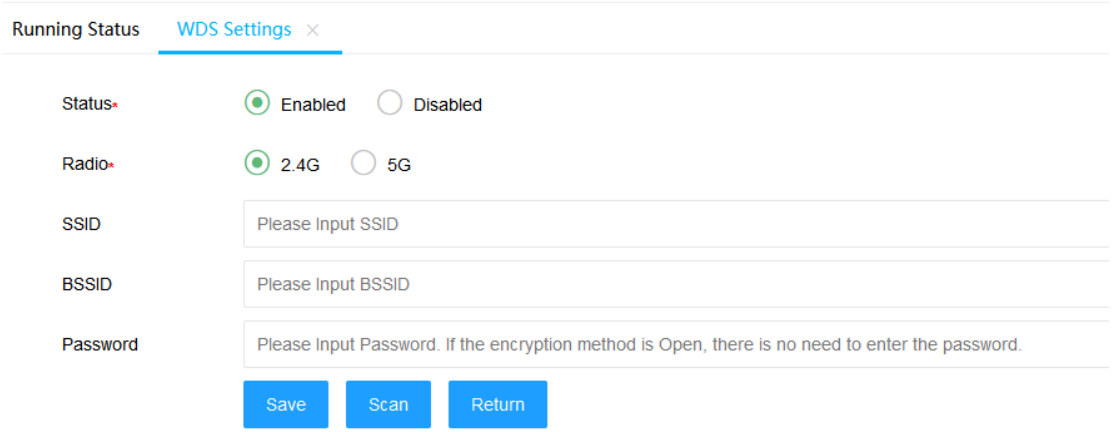
DTIM Period: Configure the beacon DTIM period, 1 by default.

RTS Period: Configure the packets size that triggers RTS.

Max Clients: Configure the max number of associated client.

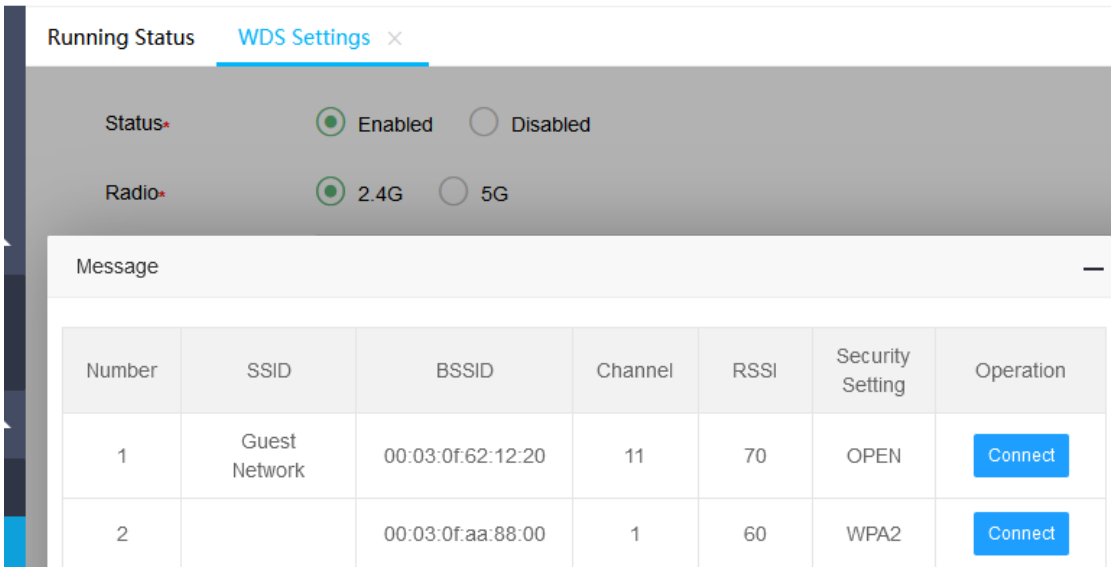
4.3.2 WDSSettings

Click "Advanced Settings">>"WDS Settings" on the left menu to view the WDS current status of the AP. If you need to bridge this AP with other ones, you can click the "Edit" at the bottom of the page to enter the WDS setting page, as shown below:



If you want to manually enter the information of the target wireless network or the target wireless network is a hidden network, you can directly enter the related wireless network information and save it.

If you want to connect it through the scanning method, you can first select the radio frequency band to be bridged on this page, click the "Scan" to start scanning, select the target BSSID, and then select "Connect" for WDS connection, as shown below:

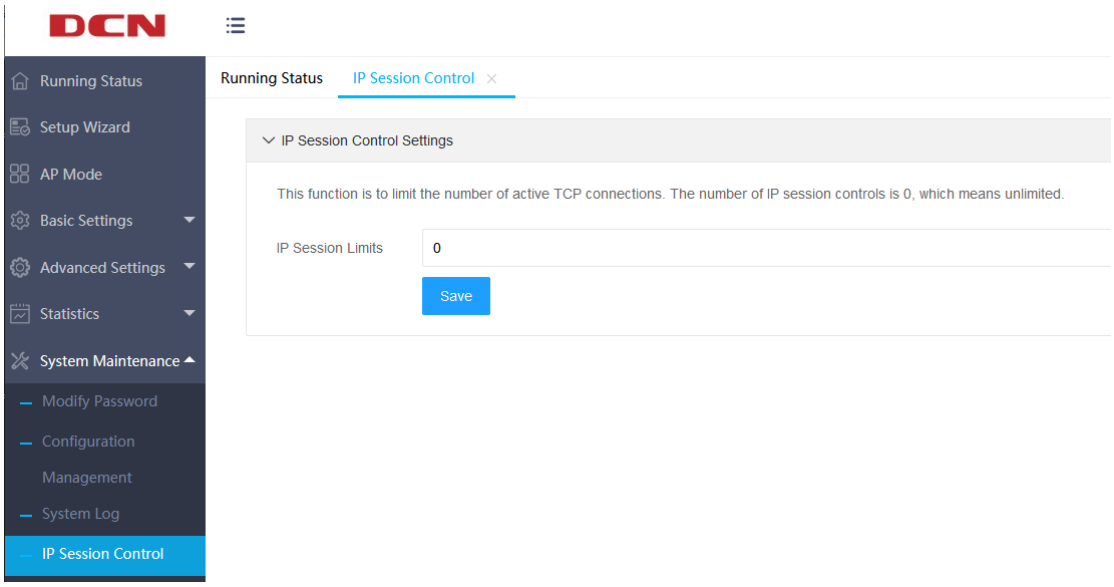


4.4 System Maintenance

4.4.1 IPSession Control

Click "System Maintenance">>"IP Session Control" on the left menu to enter the IP session control page, where you can set the number of TCP connections that each client can use simultaneously. If the number of connections reaches the specified number, the new TCP connections will be rejected. Note that closed TCP connections are not counted in the number of connections.

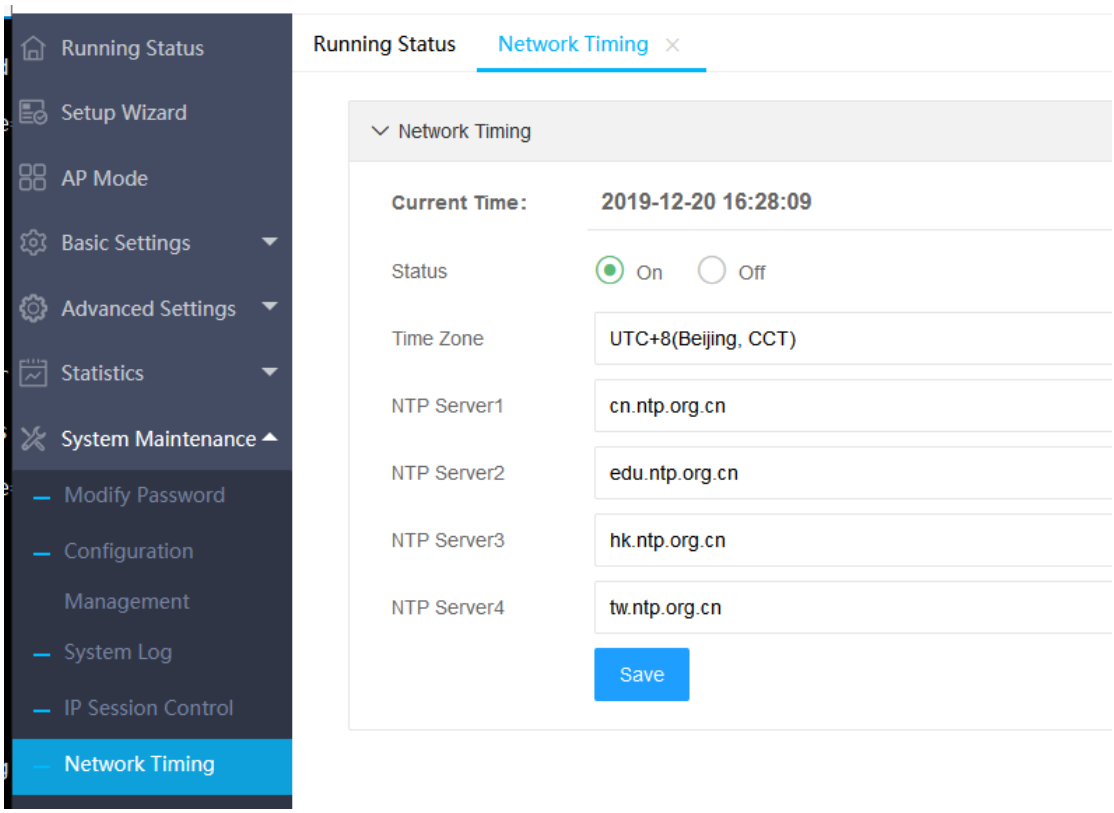
The default is 0, which means unlimited. As shown below:



4.4.2 Network Timing

Click "System Maintenance" >>" Network Timing", you can set NTP network time, turn on or off the NTP server. It supports up to 4 NTP server settings.

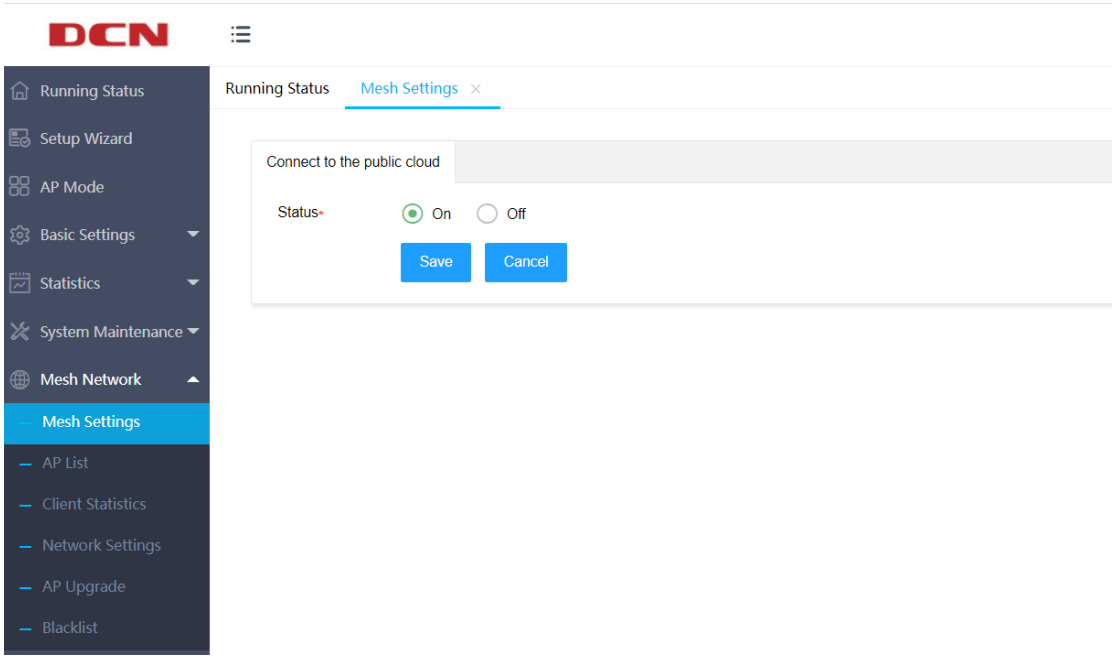
As shown below:



4.5 Mesh Network

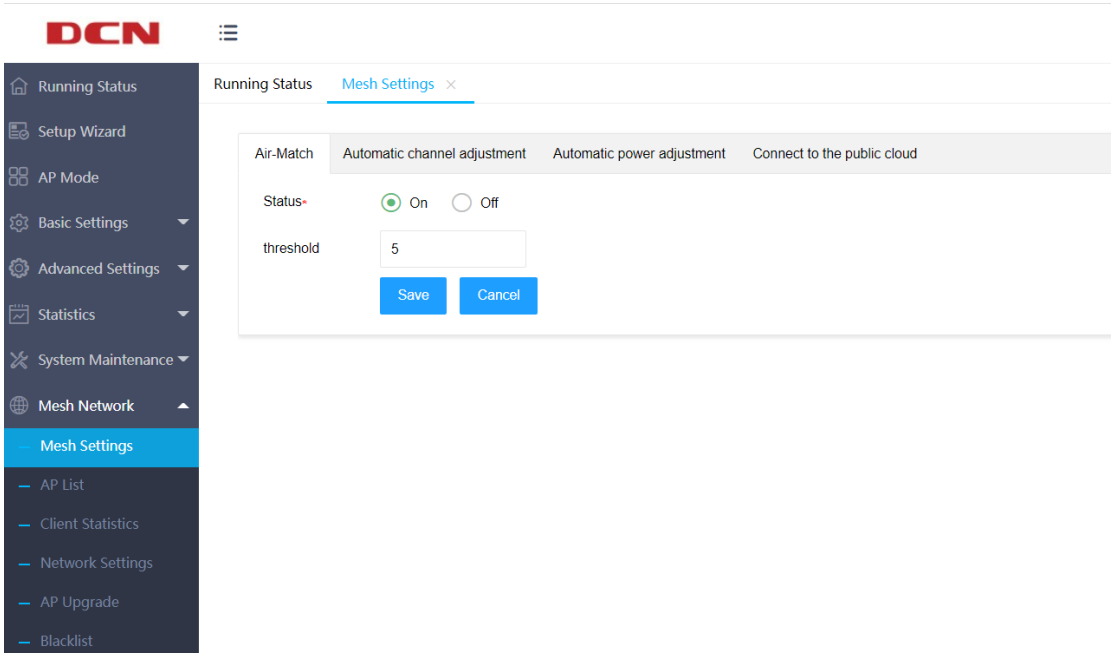
4.5.1 Mesh Setting

When the AP is in mesh Master mode, click "Mesh Network" - "Mesh Settings" in the menu on the left to enter the mesh settings page, which can configure some global functions of the mesh network, including airmatch, automatic channel adjustment, automatic power adjustment and public cloud connection switch, as shown in the following figure:

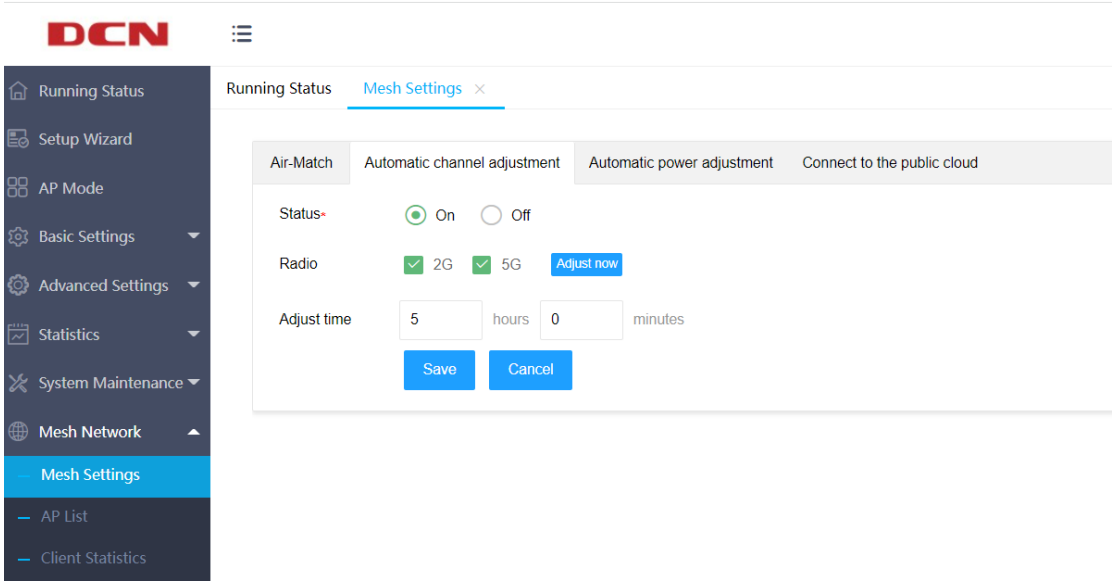


- When mesh is Master mode, it is connected to the public cloud by default. At this time, the Master AP of mesh will be online in the public cloud. When the connection to the public cloud is enabled, some local configuration functions of the mesh network will be turned off, and the configuration will be distributed by the public cloud. After the "Connect to the public cloud" status is configured as off, the AP can configure other global functions.

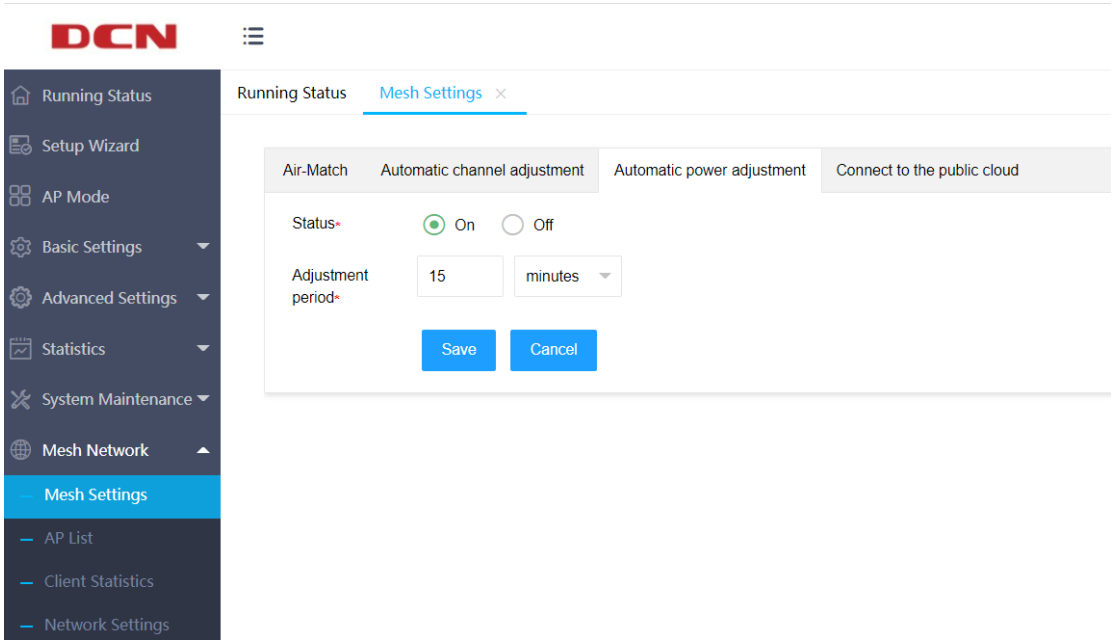
When the"Connect to the public cloud"is off, the airmatch function can be configured. It is on by default. The mesh network can adjust the airmatch, as shown in the following figure:



The automatic channel function is on by default. The AP of mesh network can adjust the time according to the setting, and make an automatic channel adjustment at that time. You can also click the "Adjust now" button on the page to automatically adjust the AP channel in real time, as shown in the following figure:

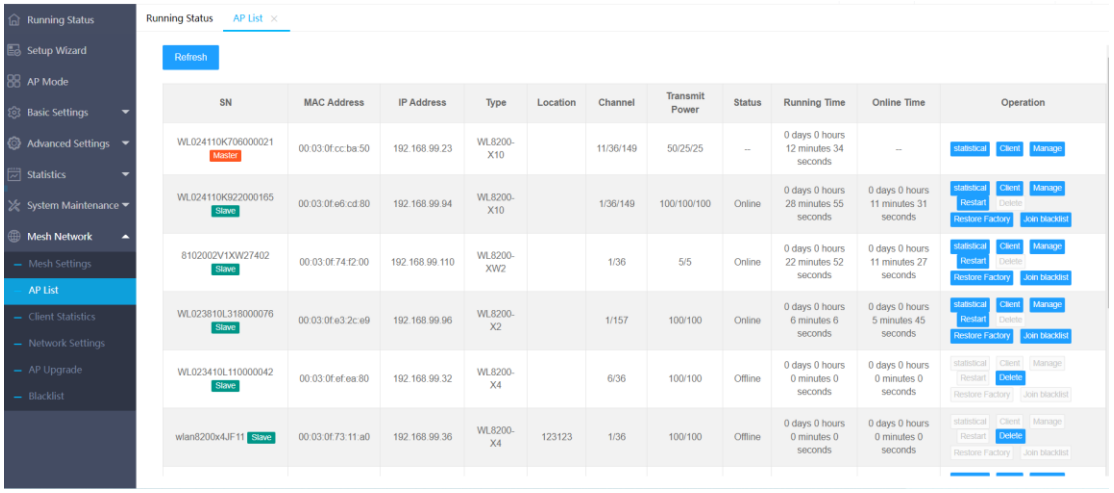


The automatic power adjustment function is on by default. The AP of mesh network can automatically adjust the power according to the set adjustment cycle, as shown in the following figure:

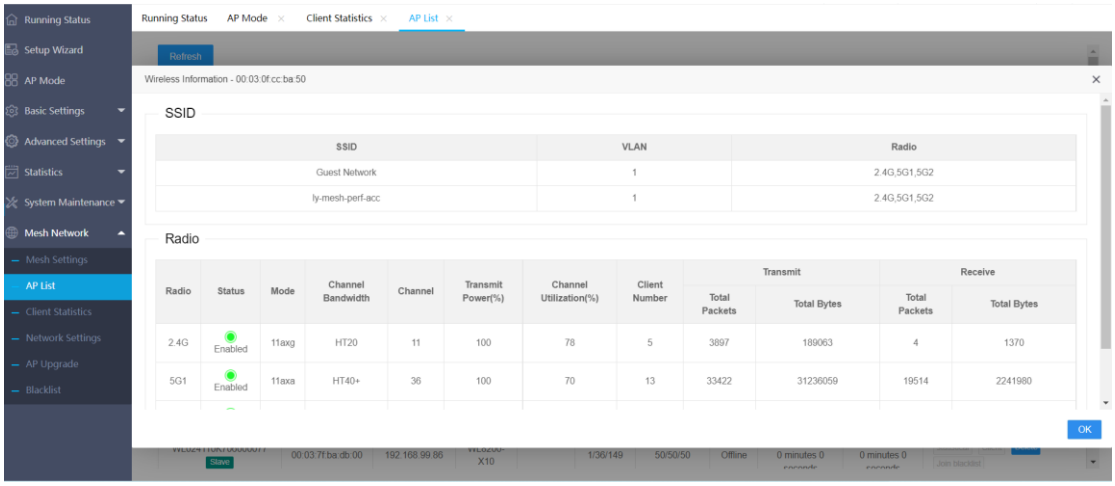


4.5.2 AP List

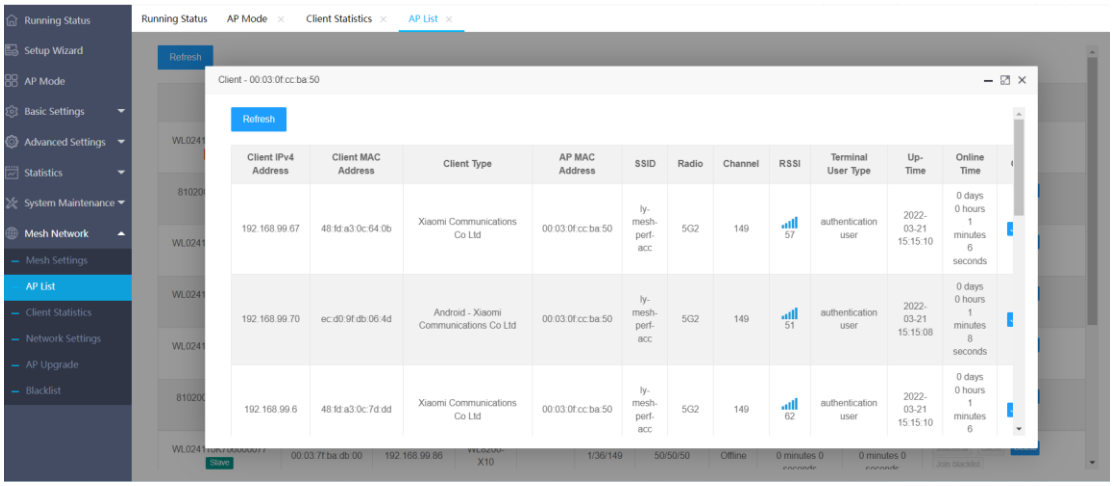
When the AP is in mesh master AP mode, click "Mesh network" - "AP List" in the left menu to enter the mesh AP list page, where all APS of the current mesh network can be displayed, as shown in the following figure:



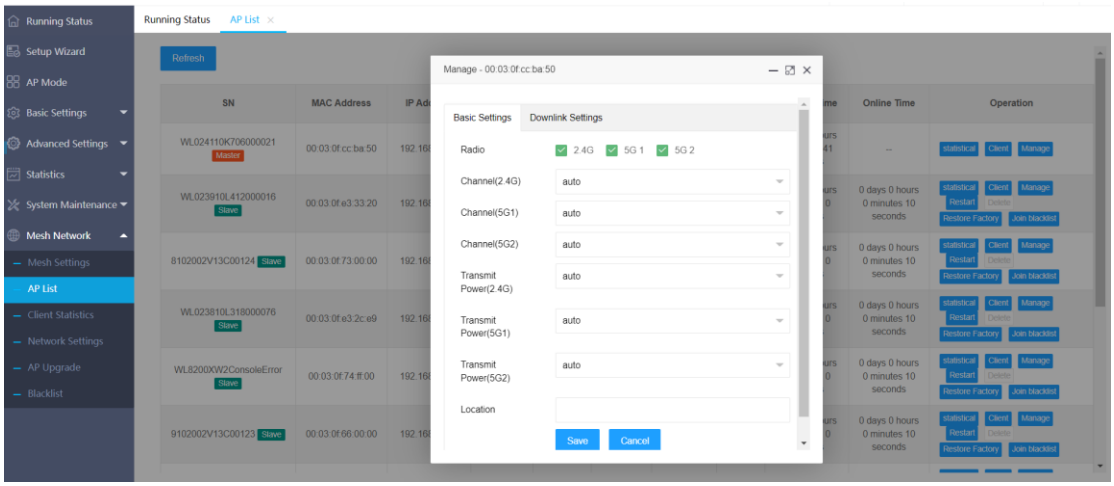
This page can manage APS. Click the "statistics" button on the right side of the AP list to view the statistics of AP, including SSID and RF information, as shown in the following figure:



Click the "Client" button on the right side of the AP list to view the associated client information under the AP, as shown in the following figure:



Click the "Manage" button on the right side of the AP list to configure the RF parameters AP and LAN ports of each AP separately, as shown in the following figure:



Click the "Restart" button on the right side of the AP list to restart the slave AP.

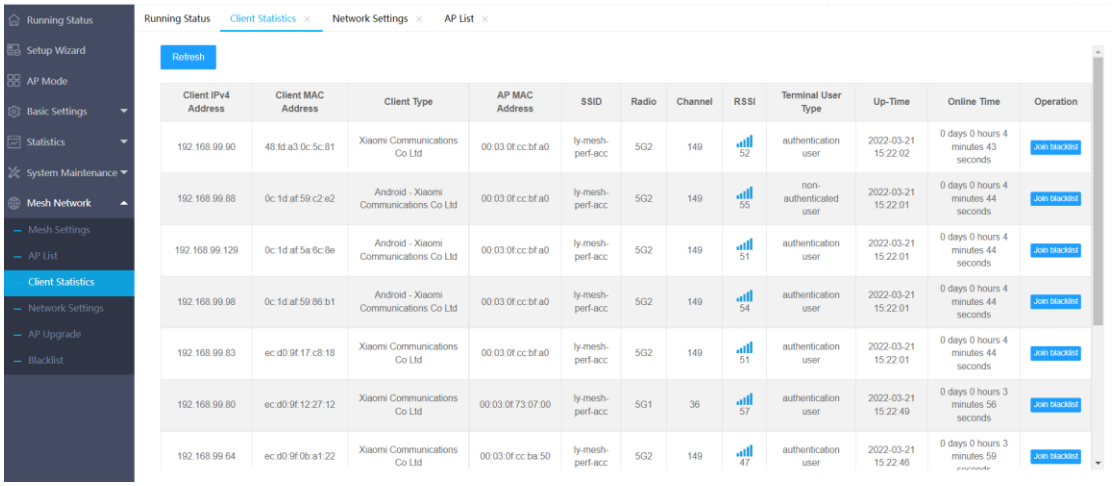
When slave AP offline from Master AP, you can click the "Delete" button on the right side of the AP list to delete the slave AP data. This button will not be illuminated when the AP is online.

Click the "Restore Factory" button on the right side of the AP list to restore the from the AP to the factory. After restoring the factory, the AP is a Fit AP, the mesh is from the AP state, and other configurations are cleared.

Click the "Join to Blacklist" button on the right side of the AP list to add the slave AP to the blacklist list and kick the slave AP off the line. The slave AP cannot go online on the Master AP.

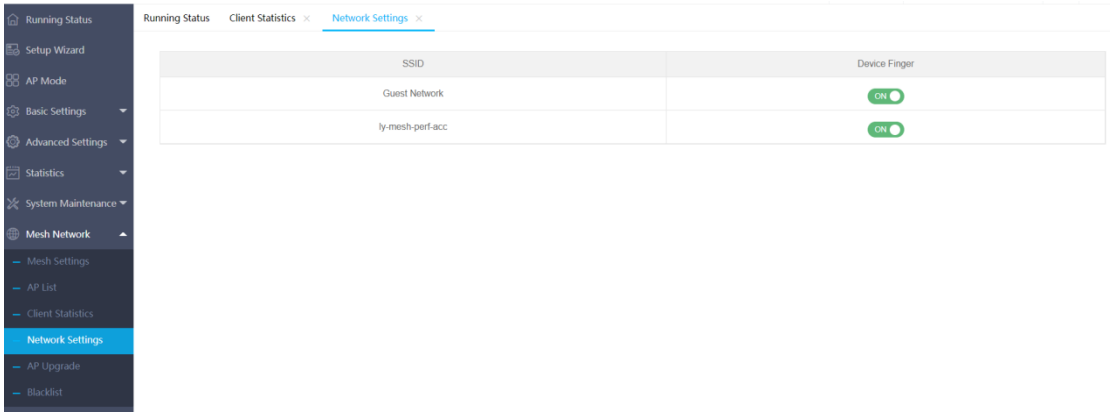
4.5.3 Client Statistics

When the AP is in mesh master AP mode, click "Mesh Network" - "Client Statistics" in the left menu to enter the mesh client statistics list page, where all client information of the current mesh network can be displayed, as shown in the following figure:



4.5.4 Network settings

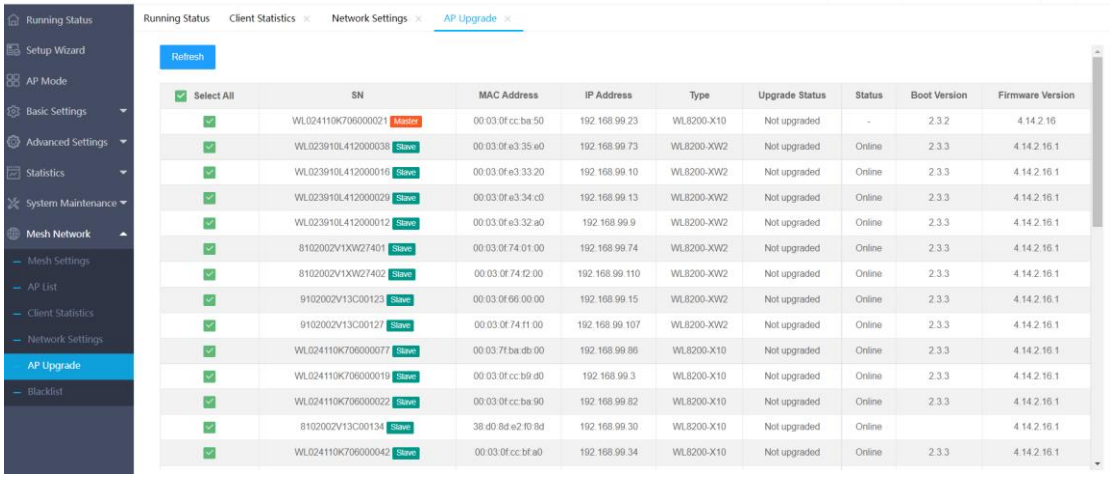
When the AP is in the mesh master AP mode, click "mesh network" - "network settings" in the left menu to enter the mesh network settings page. On this page, the device finger status of the current mesh network can be displayed and configured. When it is turned on, the AP of the mesh network can identify the client type associated with the mesh network. The configuration page is as follows:



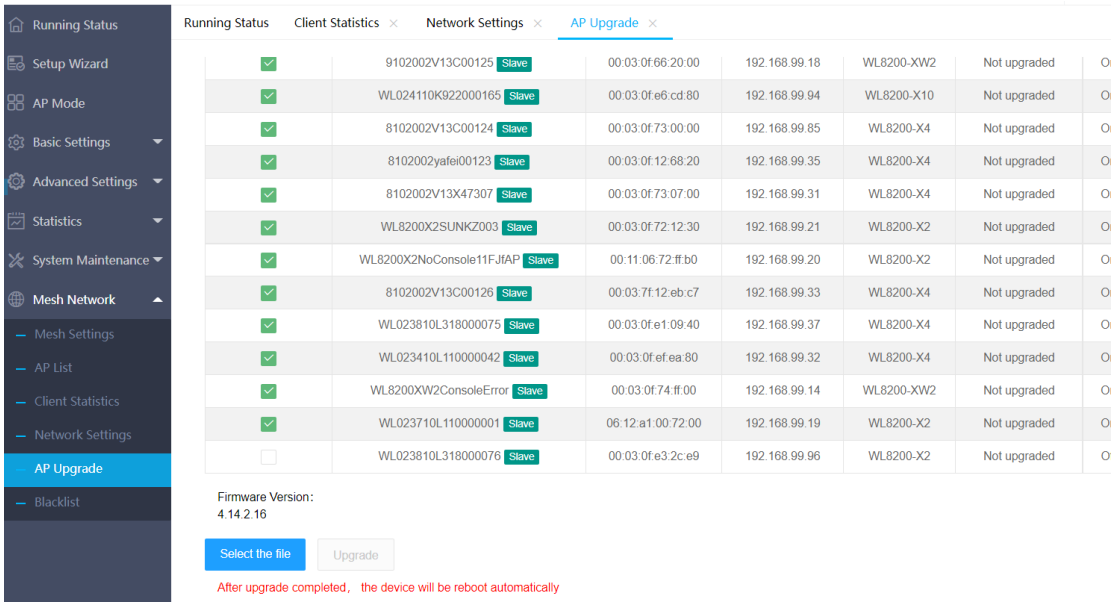
4.5.5 AP Upgrade

When the AP is in mesh master AP mode, click "mesh network" - "AP Upgrade" in the left menu to enter the mesh AP upgrade page, where the version information

and upgrade status of all APS in the current mesh network can be displayed. Select the AP to be upgraded through the check box on the left side of the AP list. You can select one or more APS to upgrade. When selecting multiple APS, you can only select APS of the same model, otherwise the upgrade cannot succeed.

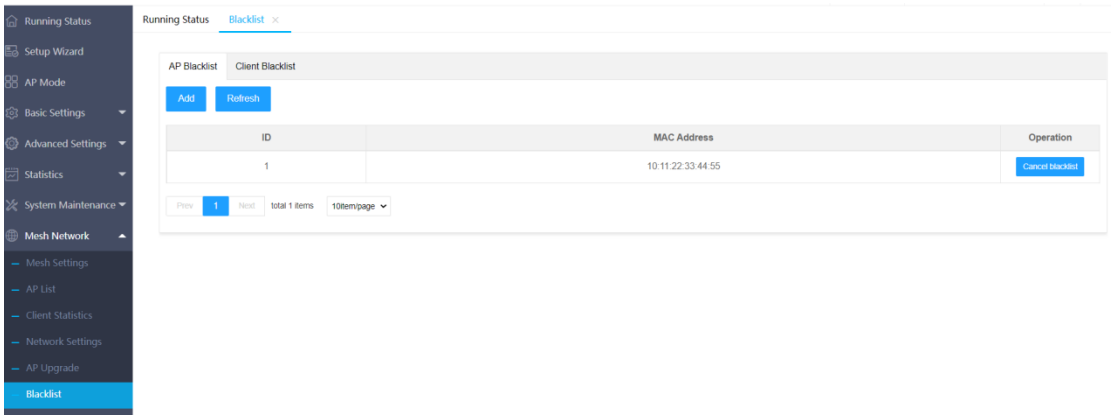


Click the "Select the file" button at the bottom of the page to select the local version file, and then click the "Upgrade" button to upgrade the selected AP, as shown in the following figure:

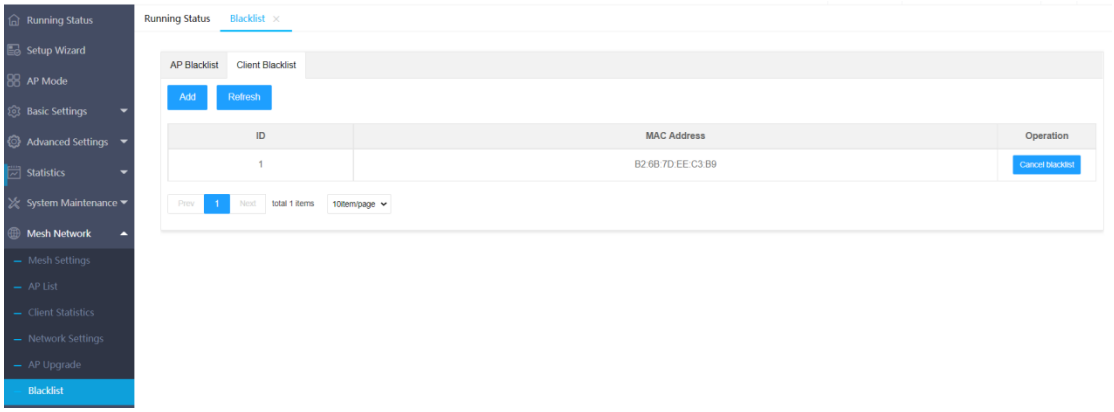


4.5.6 Blacklist

When the AP is in mesh master AP mode, click "Mesh Network" - "Blacklist" in the left menu to enter the mesh blacklist page, where the AP blacklist and client blacklist of the current mesh network can be displayed. If the MAC of the slave AP is in the AP blacklist, the slave AP cannot join the mesh network. There is a "Add" button on the page. Click to add a new AP blacklist; There is a "Cancel blacklist" button on the right side of the blacklist MAC list. Click to delete the blacklist parameter.



If the MAC of the client is in the" Client Blacklist" , the client cannot connect to the wireless of the mesh network. There is a "Add" button on the page. Click to add a new client MAC blacklist; There is a "Cancel blacklist" button on the right side of the blacklist MAC list. Click to delete the blacklist parameter.



4.6 Configuration example

4.6.1 Open Wireless Connection

4.6.1.1 Networking Requirements

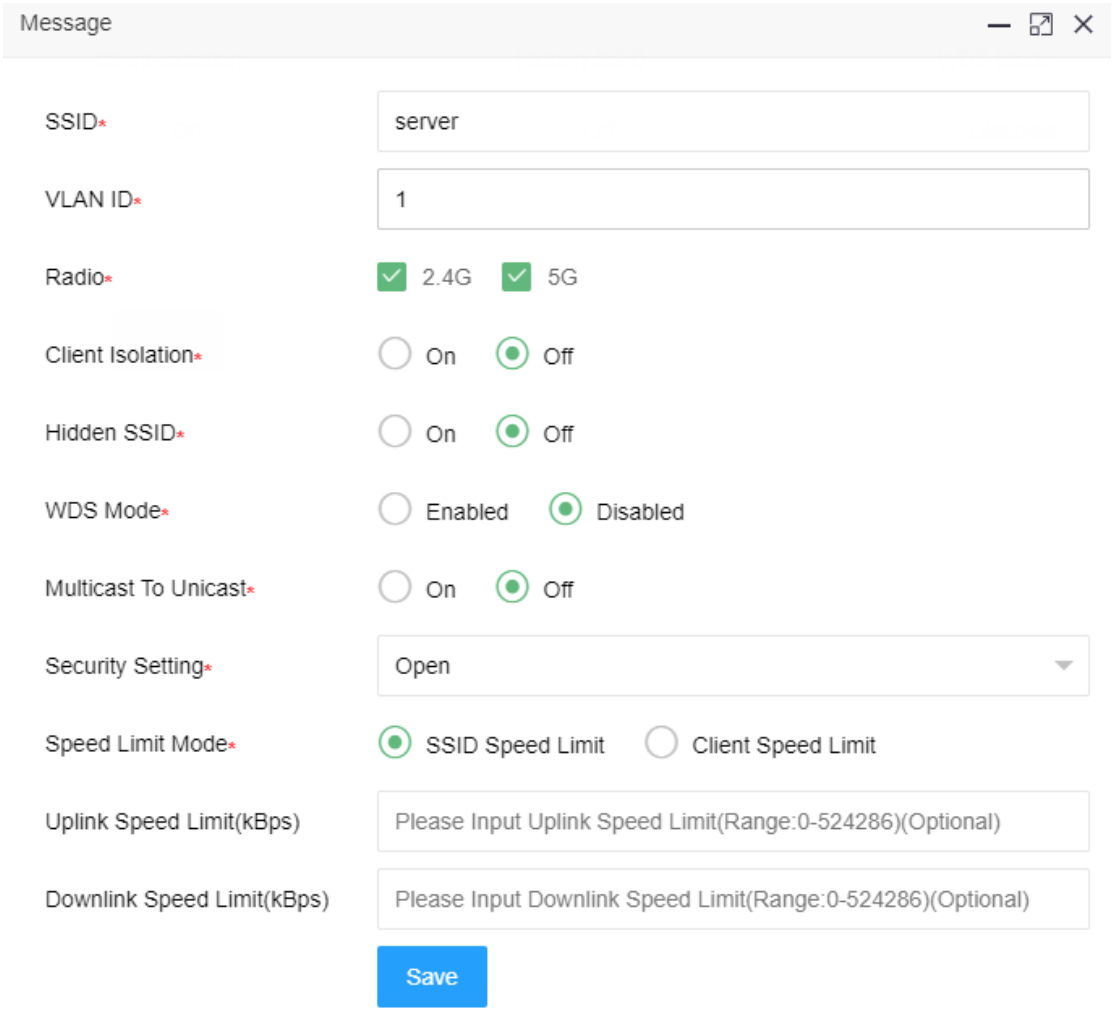
In order to ensure that staff can access the internal network resources of the department anytime and anywhere,need to achieve through the deployment of the AP.Device administrators can configure wireless access in open mode, the specific requirements are as follows:

- AP provides the SSID is ‘service’ and the security is the open mode.
- In order to high bandwidth requirements，and compatible with existing 802.11n wireless networks, adopt 802.11axg (2.4GHz) radio frequency mode.
- In order to high bandwidth requirements，and compatible with existing 802.11ac wireless networks, adopt 802.11axa (5GHz) radio frequency mode.

Wirelessnetwork with open mode:

4.6.1.2 Configuration Steps

Login AP basic setting,enter the wireless setting page.



- Radio 2.4G、5Gcheck to enable
- VLAN ID configure according to actual situation
- SSID configure to “service”
- Security setting select “Open”
- Click <save> button

4.6.1.3 Verify configuration results

Enter the client statistics page, you can view the successfully online client。

4.6.2 WPA2-PSK Wireless Connection

4.6.2.1 Networking Requirements

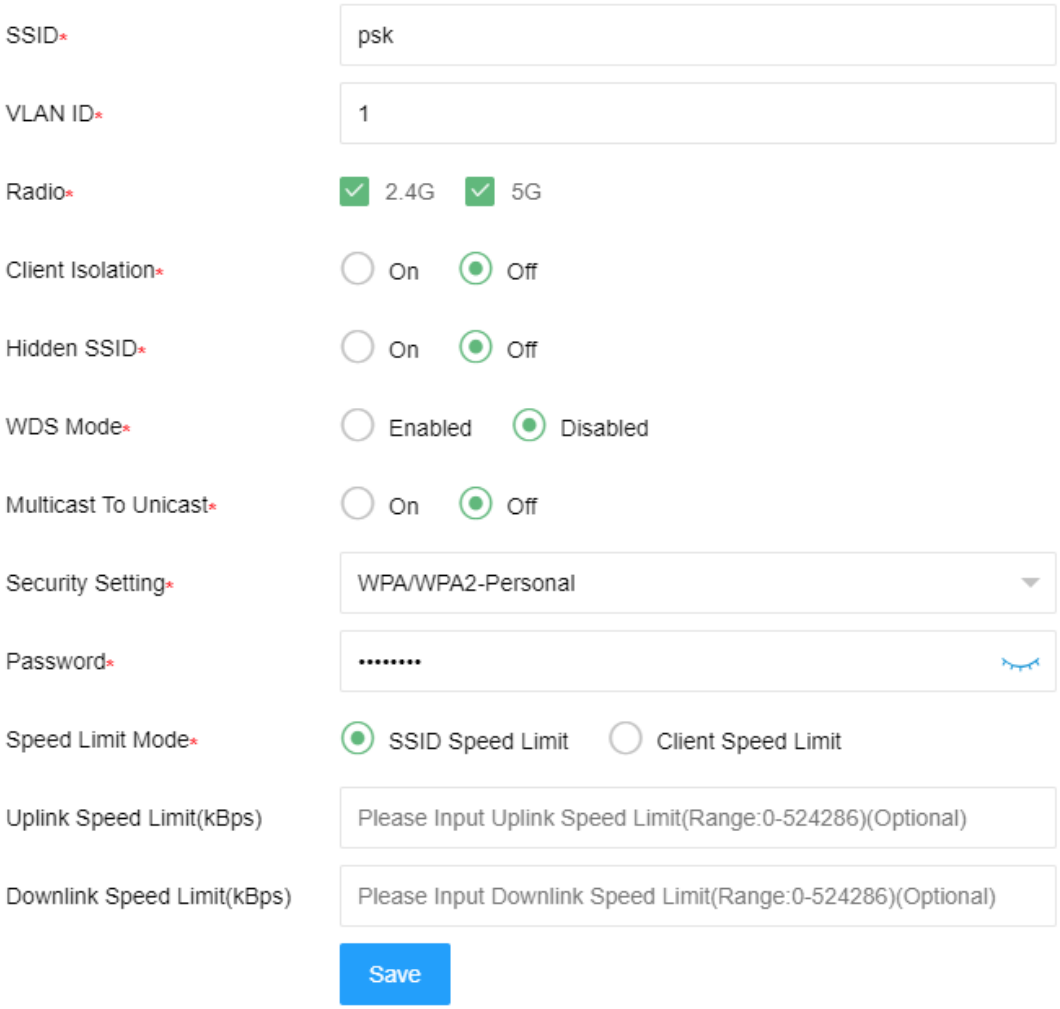
In a small office，device administrators can complete WPA2-PSK wireless access configuration through the web page, the specific requirements are as follows：

- AP provides the SSID is ‘service’ and the security is the WPA2-PSK.
- In order to high bandwidth requirements，and compatible with existing 802.11n wireless networks, adopt 802.11axg (2.4GHz) radio frequency mode.
- In order to high bandwidth requirements，and compatible with existing 802.11ac wireless networks, adopt 802.11axa (5GHz) radio frequency mode.

Wirelessnetwork with WPA2-PSK mode：

4.6.2.2 Configuration Steps

Login AP basic setting,enter the wireless setting page.



- Radio 2.4G、5G check to enable
- VLAN ID configure according to actual situation
- SSID configure to “psk”
- Security setting select “WPA/WPA2-Personal”
- Security configure to “12345678”
- Click <save> button

4.6.2.3 Verify configuration results

- Operation station connects to wireless network（ssid：psk）,enter password 12345678。After the client successfully associates with the AP, it can access the

wireless network.

- Enter the client statistics page, you can view the successfully online client.

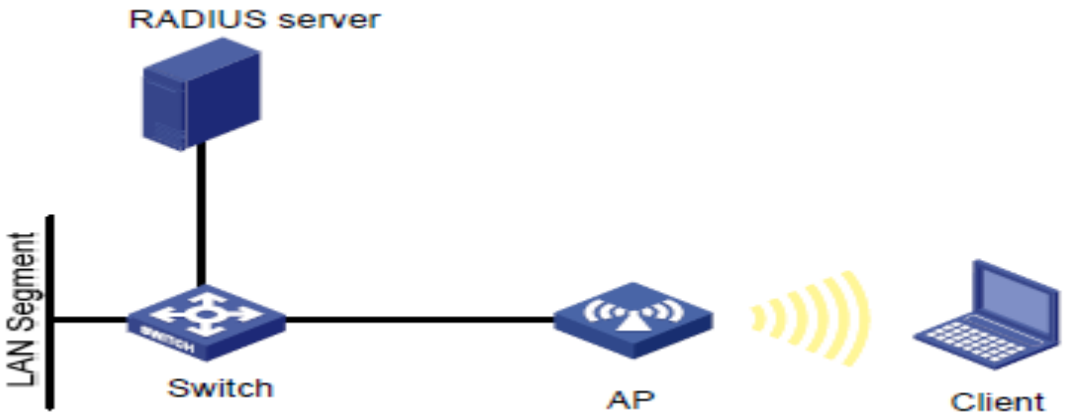
4.6.3 WPA2-Enterprise Wireless Connection

4.6.3.1 Networking Requirements

In a company's office, employees need to be able to access the office environment through wireless，mobile devices that are not employees of the company cannot be accessed，Administrators can configureWPA2-Enterprise by the web page, specific requirements are as follows：

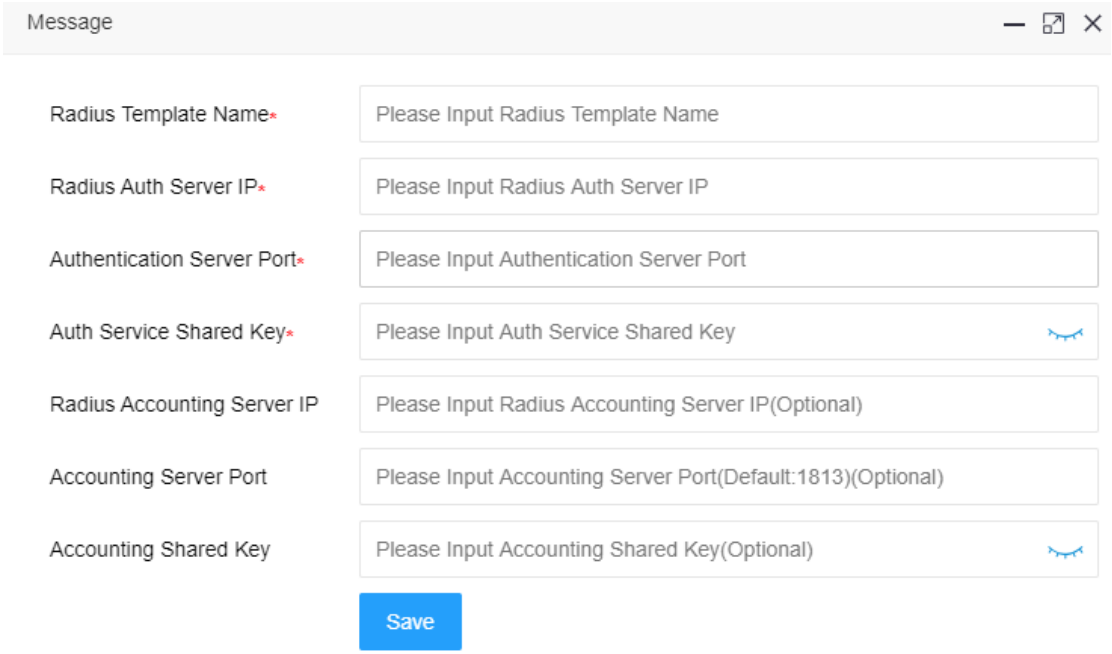
- AP provides the SSID is ‘WPA-Enterprise’ and the security is the WPA2-Enterprise.
- In order to high bandwidth requirements，and compatible with existing 802.11n wireless networks, adopt 802.11axg (2.4GHz) radio frequency mode.
- In order to high bandwidth requirements，and compatible with existing 802.11ac wireless networks, adopt 802.11axa (5GHz) radio frequency mode.

Wirelessnetwork with WPA2-Enterprise：



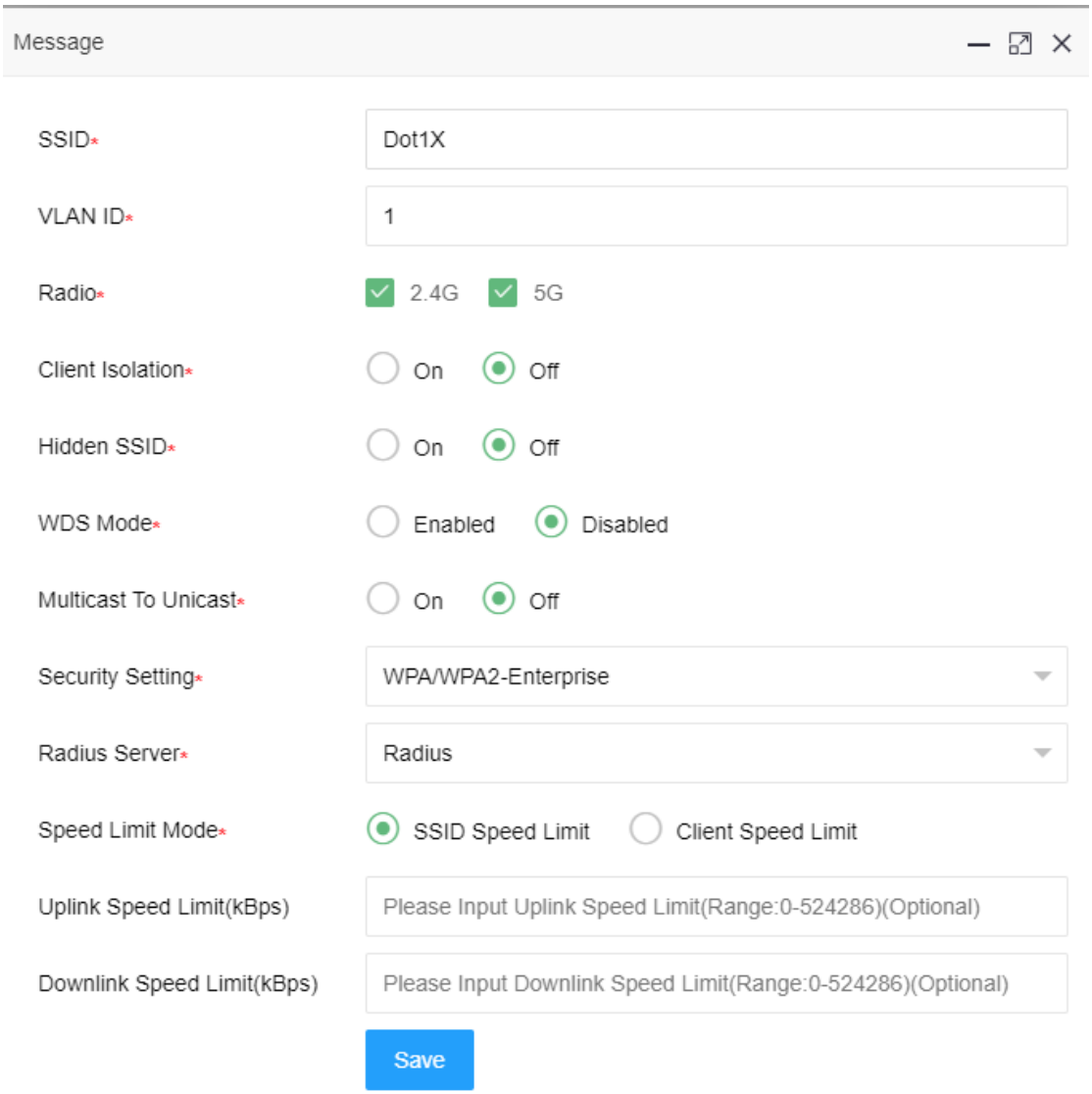
4.6.3.2 Configuration Steps

1. Login system maintenance，enter Radius template page.



- Configure Radiustemplate name to ‘Radius’
- Configure the authentication server IP address and server port according to the actual Radius server address
- Configure shared key for authentication server settings
- Click <save> button

2. Logging APweb, edit wireless configuration



- Radio 2.4G、5G check to enable
- VLAN ID configure according to actual situation
- SSID configure to “Dot1X”
- Security setting select “WPA/WPA2- Enterprise”
- Radius server is selected as the configured Radius
- Click <save> button

4.6.3.3 Verify configuration results

- The wireless client configures wireless network settings in windows，click

<add>button, enter in the "Network Name (SSID)" in the pop-up window “WPA-Enterprise”，Select " WPA/WPA2- Enterprise " for the network authentication type，clicknext. Change connection settings，click<setting>in safe page，select EAP authentication method "Secure password (EAP-MSCHAP v2)",cancel "Verify server identity by verifying certificate", click ok. Refresh the wireless network list，select the configured network service (WPA-Enterprise) in the list，click<connect>,enter the user name and password existing in the Radius server in the pop-up box. After the client successfully associates with the AP, it can access the wireless network.

- Enter the client statistics page,you can view the successfully online client.

4.6.4 WPA3-Open-Transition Wireless Connection

4.6.4.1 Networking Requirements

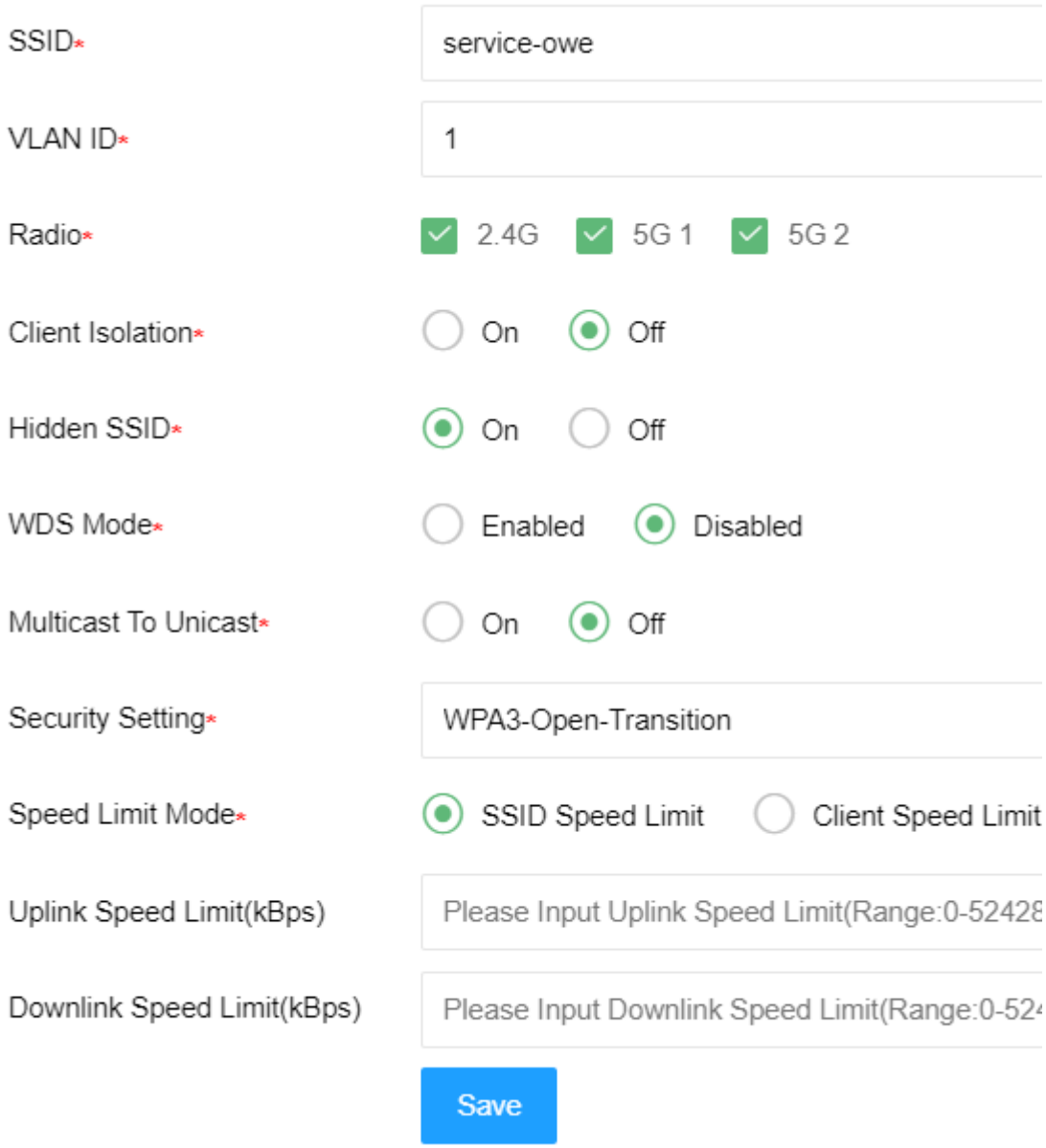
In order to ensure that staff can access the internal network resources of the department anytime and anywhere,need to achieve through the deployment of the AP.Device administrators can configure wireless access in open mode, the specific requirements are as follows：

- AP provides the SSID is ‘service-owe’ and the security is the owemode.
- In order to high bandwidth requirements，and compatible with existing 802.11n wireless networks, adopt 802.11axg (2.4GHz) radio frequency mode.
- In order to high bandwidth requirements，and compatible with existing 802.11ac wireless networks, adopt 802.11axa (5GHz) radio frequency mode.

Wirelessnetwork with OWE mode：

4.6.4.2 Configuration Steps

Login AP basic setting,enter the wireless setting page, Click “Add” button.



- Radio 2.4G、5Gcheck to enable

- VLAN ID configure according to actual situation
- SSID configure to “service-owe”
- Security setting select “WPA3-Open-Transition”
- Click <save> button

4.6.4.3 Verify configuration results

Enter the client statistics page, you can view the successfully online client。

4.6.5 WPA2/WPA3-Personal Wireless Connection

4.6.5.1 Networking Requirements

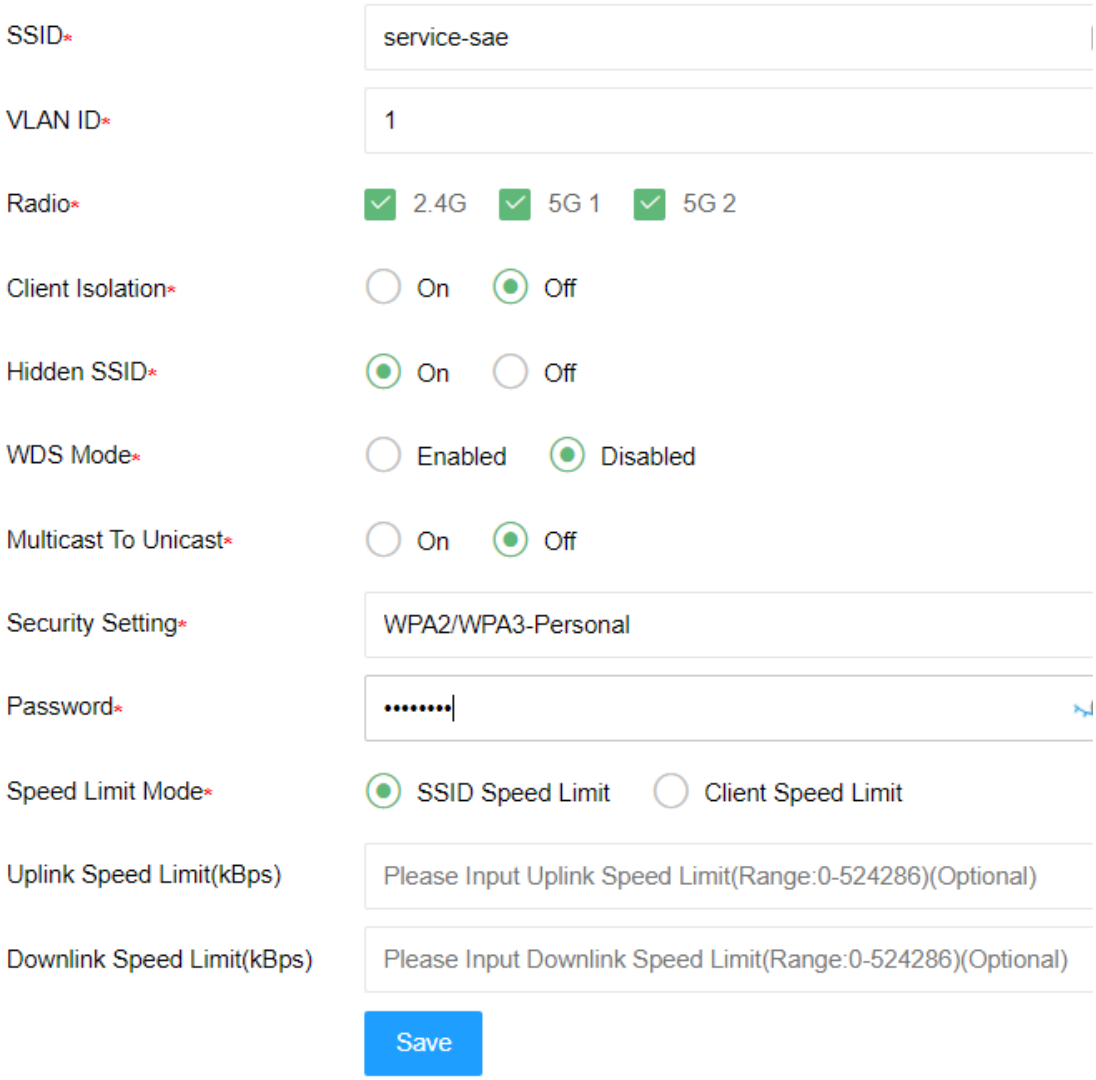
In order to ensure that staff can access the internal network resources of the department anytime and anywhere,need to achieve through the deployment of the AP.Device administrators can configure wireless access in open mode, the specific requirements are as follows：

- AP provides the SSID is ‘service-sae’ and the security is the WPA2/WPA3-Personal mode.
- In order to high bandwidth requirements，and compatible with existing 802.11n wireless networks, adopt 802.11axg (2.4GHz) radio frequency mode.
- In order to high bandwidth requirements，and compatible with existing 802.11ac wireless networks, adopt 802.11axa (5GHz) radio frequency mode.

Wirelessnetwork with WPA2/WPA3-Personal mode：

4.6.5.2 Configuration Steps

Login AP basic setting,enter the wireless setting page.



- Radio 2.4G、5Gcheck to enable
- VLAN ID configure according to actual situation
- SSID configure to “service-sae”

- Security setting select “WPA2/WPA3-Personal”
- Security configure to “12345678”
- Click <save> button

4.6.5.3 Verify configuration results

Enter the client statistics page, you can view the successfully online client。

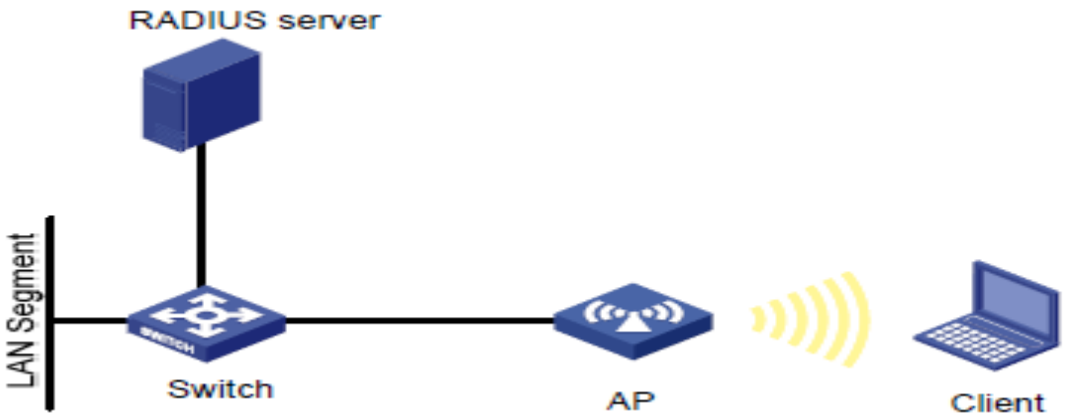
4.6.6 WPA2/WPA3-Enterprise Wireless Connection

4.6.6.1 Networking Requirements

In a company's office, employees need to be able to access the office environment through wireless，mobile devices that are not employees of the company cannot be accessed，Administrators can configureWPA2/WPA2-Enterprise by the web page, specific requirements are as follows：

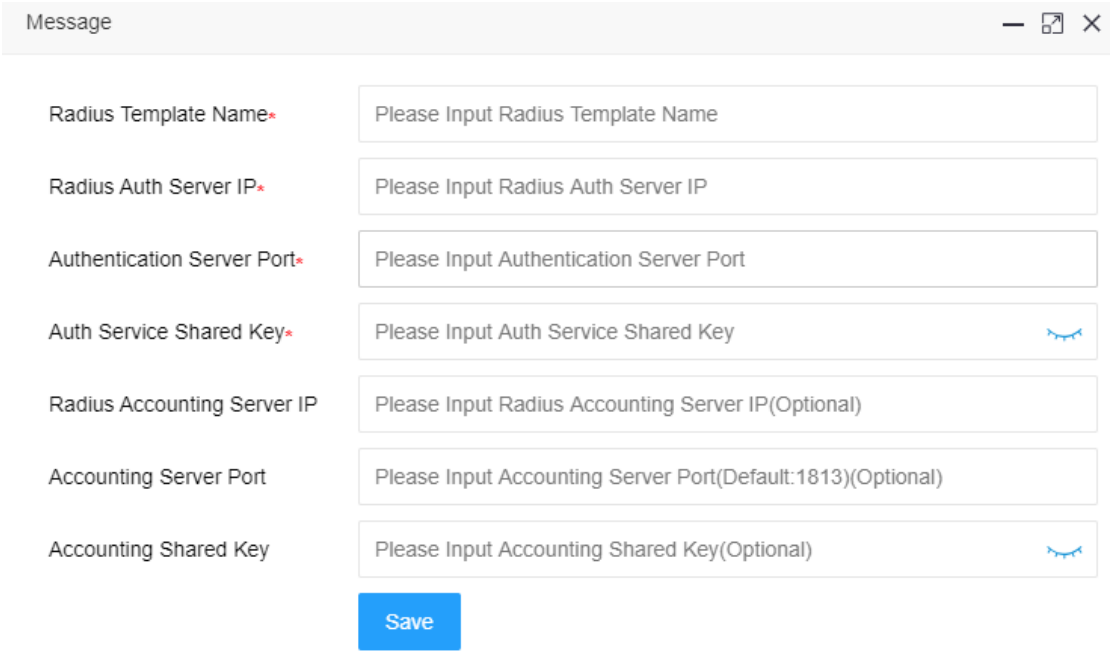
- AP provides the SSID is ‘WPA3-Enterprise’ and the security is the WPA2/WPA3-Enterprise.
- In order to high bandwidth requirements，and compatible with existing 802.11n wireless networks, adopt 802.11axg (2.4GHz) radio frequency mode.
- In order to high bandwidth requirements，and compatible with existing 802.11ac wireless networks, adopt 802.11axa (5GHz) radio frequency mode.

Wirelessnetwork with WPA2/WPA3-Enterprise：



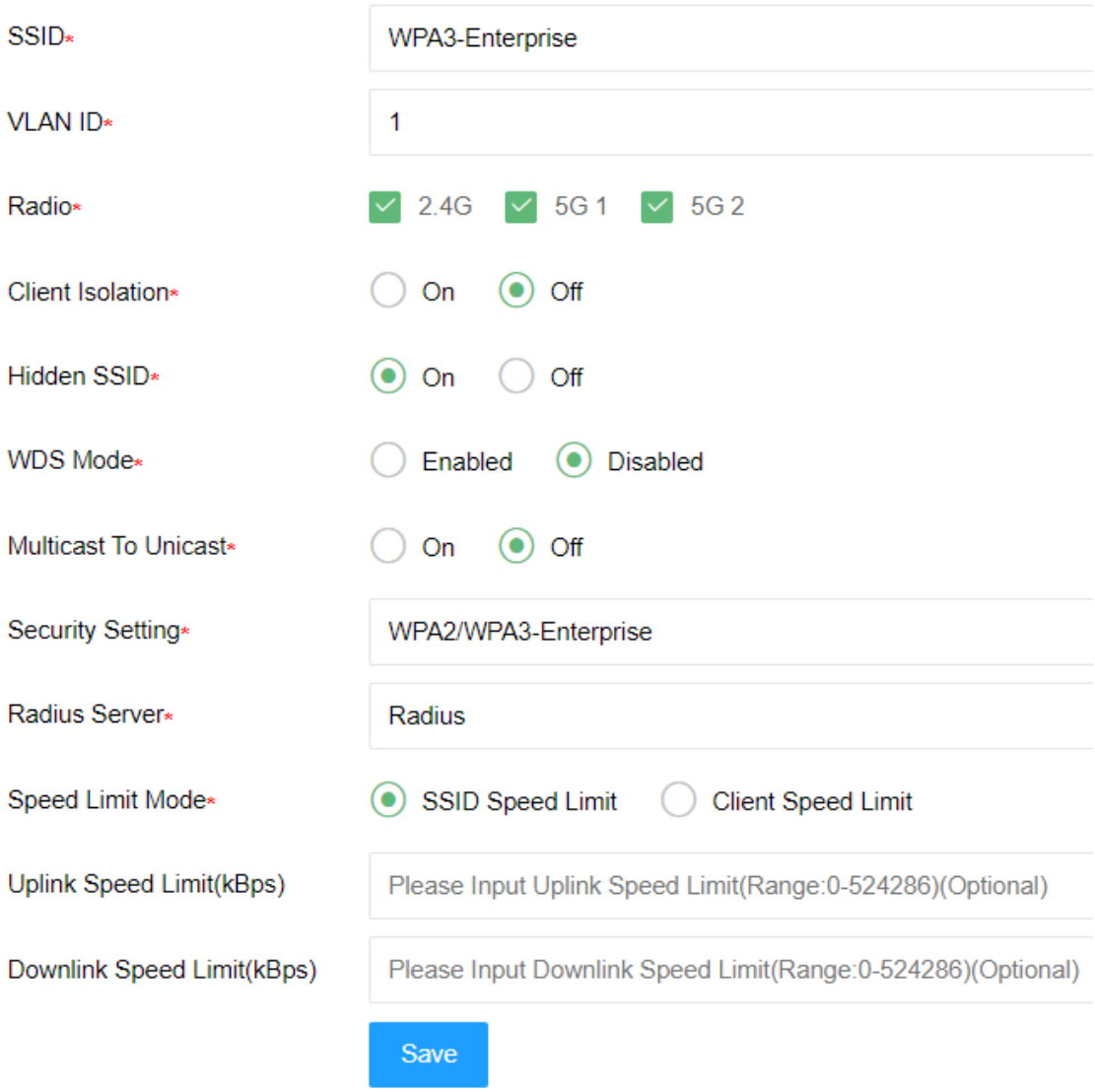
4.6.6.2 Configuration Steps

3. Login system maintenance，enter Radius template page.



- Configure Radiustemplate name to ‘Radius’
- Configure the authentication server IP address and server port according to the actual Radius server address
- Configure shared key for authentication server settings
- Click <save> button

4. Logging APweb, edit wireless configuration



- Radio 2.4G、5G check to enable
- VLAN ID configure according to actual situation
- SSID configure to “WPA3-Enterprise”
- Security setting select “WPA2/WPA3- Enterprise”
- Radius server is selected as the configured Radius
- Click <save> button

4.6.6.3 Verify configuration results

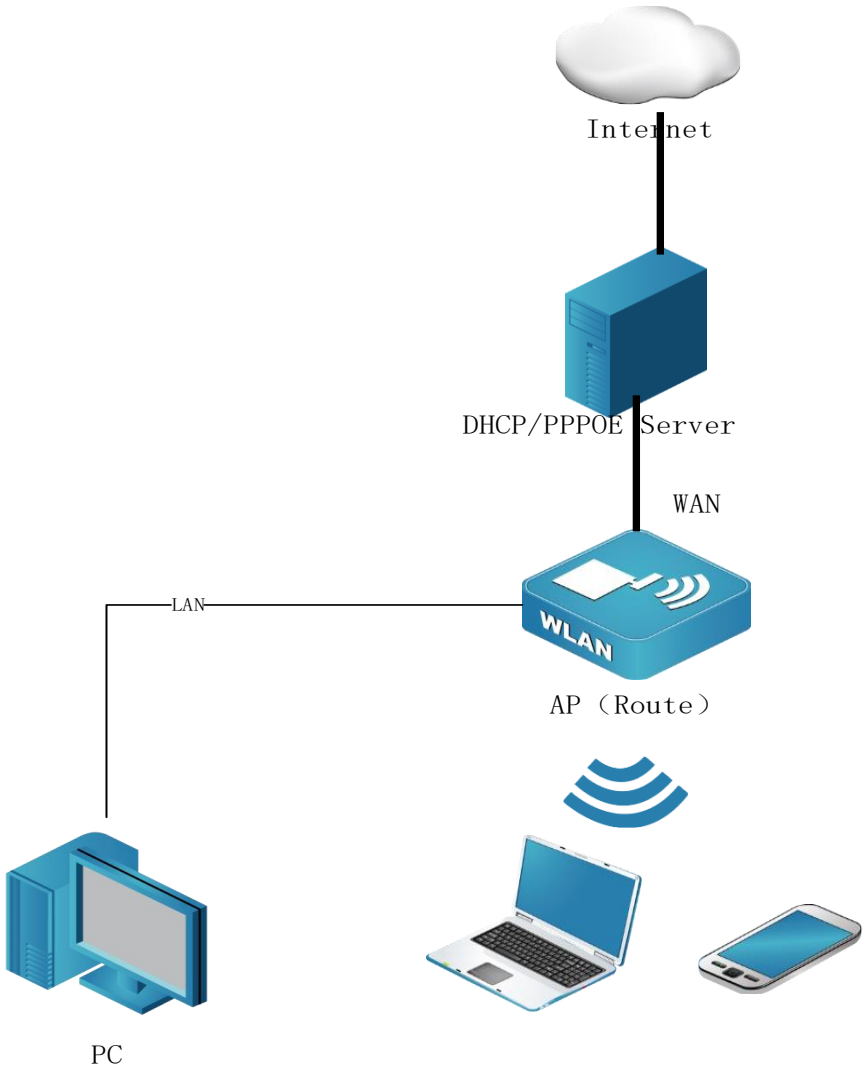
- The wireless client configures wireless network settings in windows，click

<add>button, enter in the "Network Name (SSID)" in the pop-up window “WPA-Enterprise”，Select " WPA2/WPA3- Enterprise " for the network authentication type，clicknext. Change connection settings，click<setting>in safe page，select EAP authentication method "Secure password (EAP-MSCHAP v2)",cancel "Verify server identity by verifying certificate", click ok. Refresh the wireless network list，select the configured network service (WPA-Enterprise) in the list，click<connect>,enter the user name and password existing in the Radius server in the pop-up box. After the client successfully associates with the AP, it can access the wireless network.

Enter the client statistics page,you can view the successfully online client.

5 FAT Routing Mode

The AP in the FAT routing mode can access broadband lines to provide DHCP and wireless access for LAN phones, laptops, etc. to achieve the shared Internet access. The typical topology is as follows:

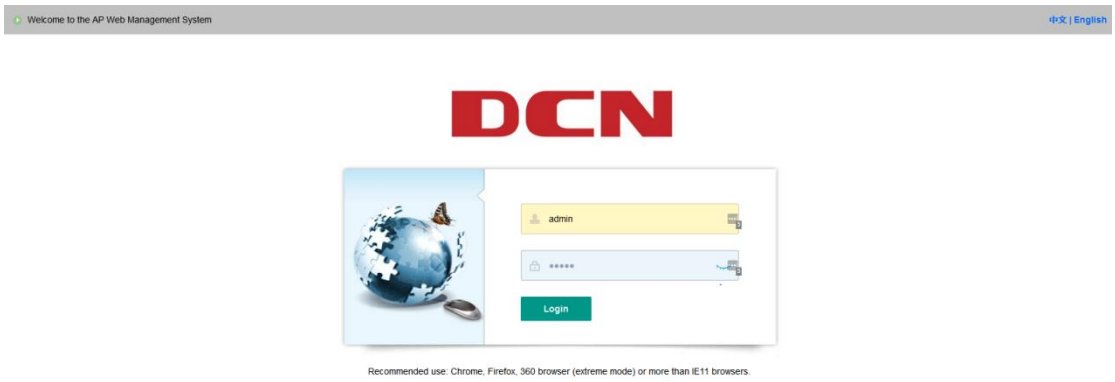


On the WAN side of the AP, set the WAN port address through PPPoE, DHCP, or static address, and then connect to the Internet or other network through the gateway device. LAN and WLAN constitute a private subnet. Devices on this network apply to the AP for dynamic or static IP addresses through DHCP.

The WAN side and the LAN (WLAN) side network are isolated by a firewall. The LAN side host performs IP masquerading (NAT) and is not visible to the WAN side device.

5.1 WEBLogin

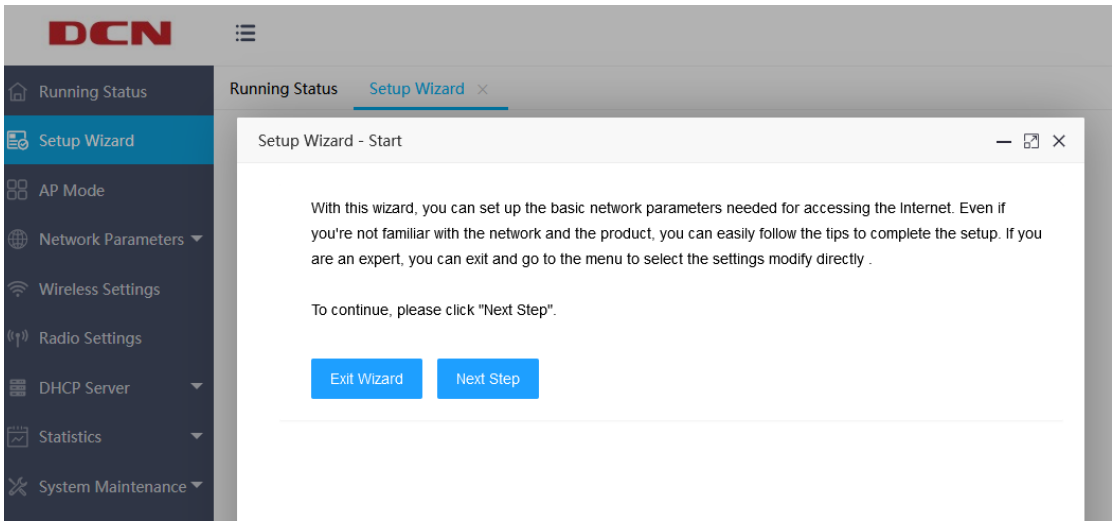
Unlike the fit mode and the fat bridge mode, in the fat routing mode the AP can only be accessed from the LAN side, so it can only be accessed by using a LAN-side wired device connected to the AP's LAN port or a wireless client connected to the AP's SSID (the default is DCN_WLAN). Open the browser after connecting and enter the LAN side management IP address (the default address is: 192.168.1.10), you can access the web setting interface of the wireless AP, recommended use: Google, Firefox, 360 browser (speed mode) or IE11 browser. The default username is: admin, and the password is: admin, which supports https access.



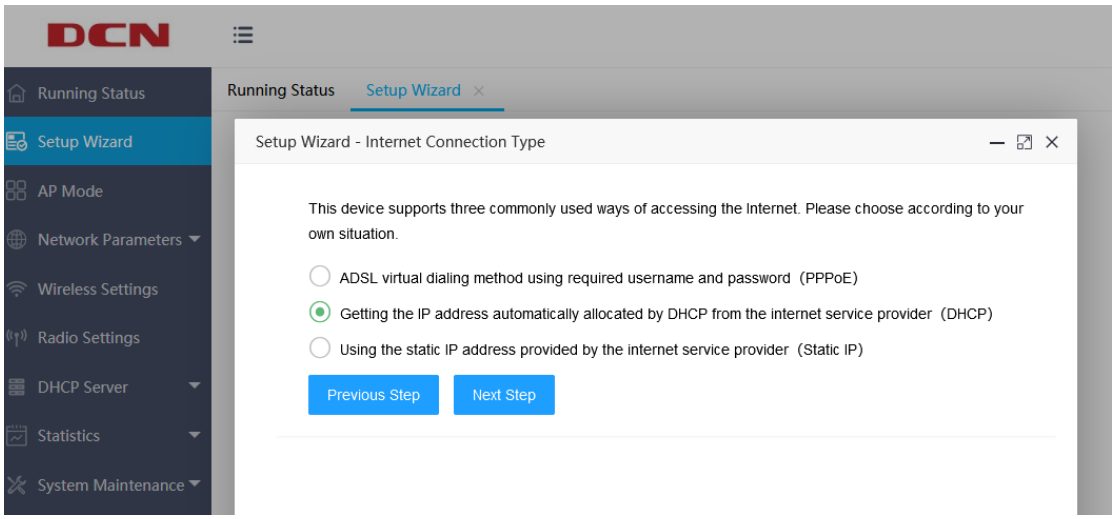
5.2 Setup Wizard

Click "Setup Wizard" on the left menu to configure the device. The detailed

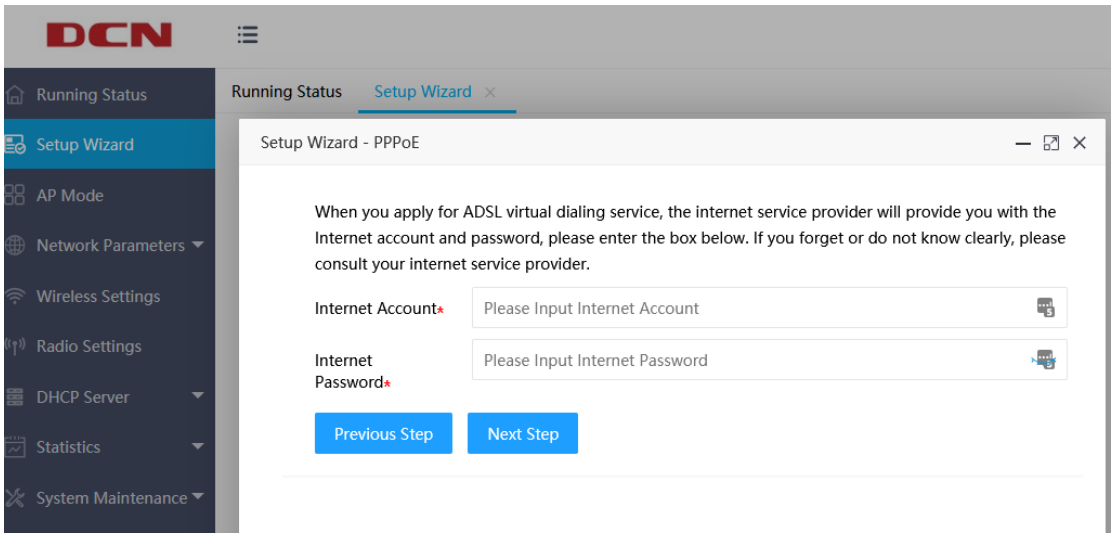
steps are as shown below:



There are three Internet access modes supported by the device: PPPoE, dynamic IP and static IP, which can be configured according to the Internet access provided by the network service provider. As shown below:

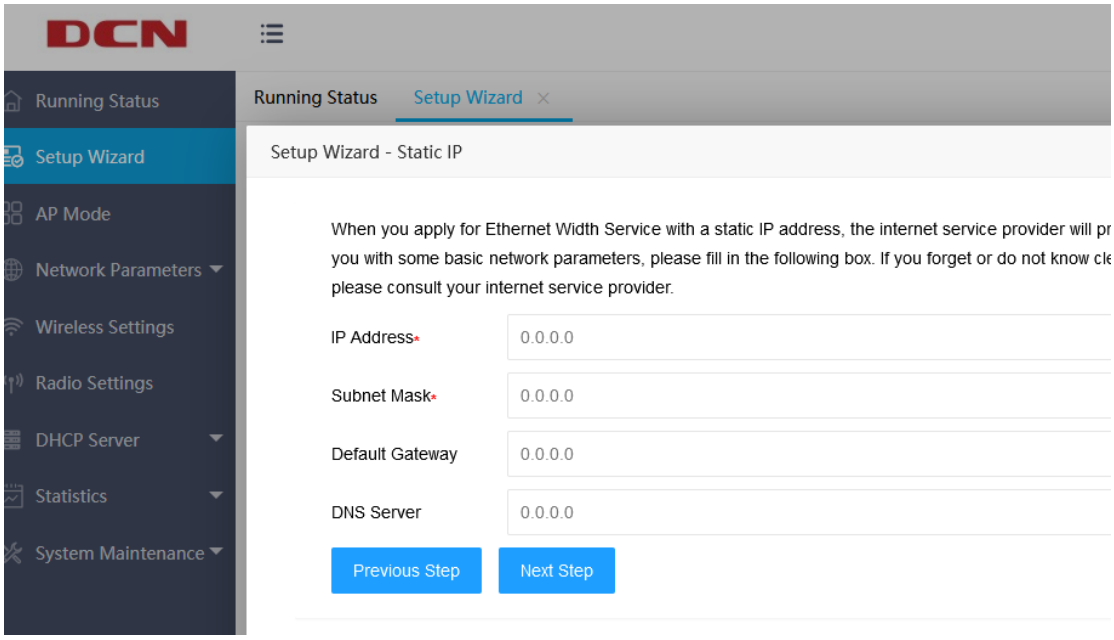


If the selected Internet access method is PPPoE, you need to fill in your Internet account and password, as shown in the figure below:

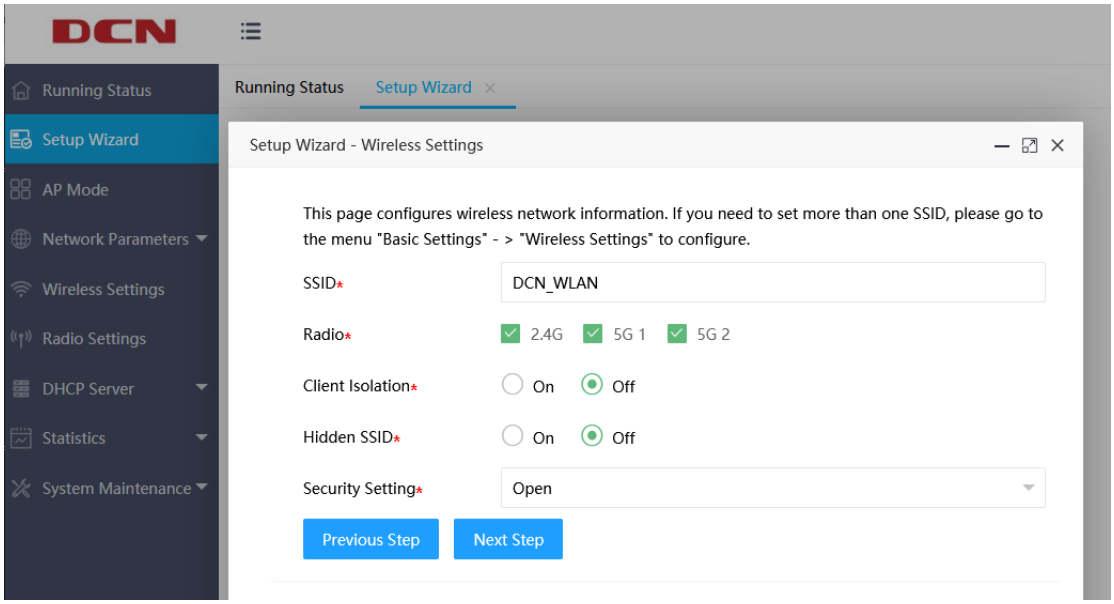


If the selected Internet access method is dynamic IP, it will directly jump to the next wireless setting.

If the selected Internet access method is static IP, you need to configure a static IP address, as shown below:



If the Internet access mode is set, the next step is wireless settings, as shown below:



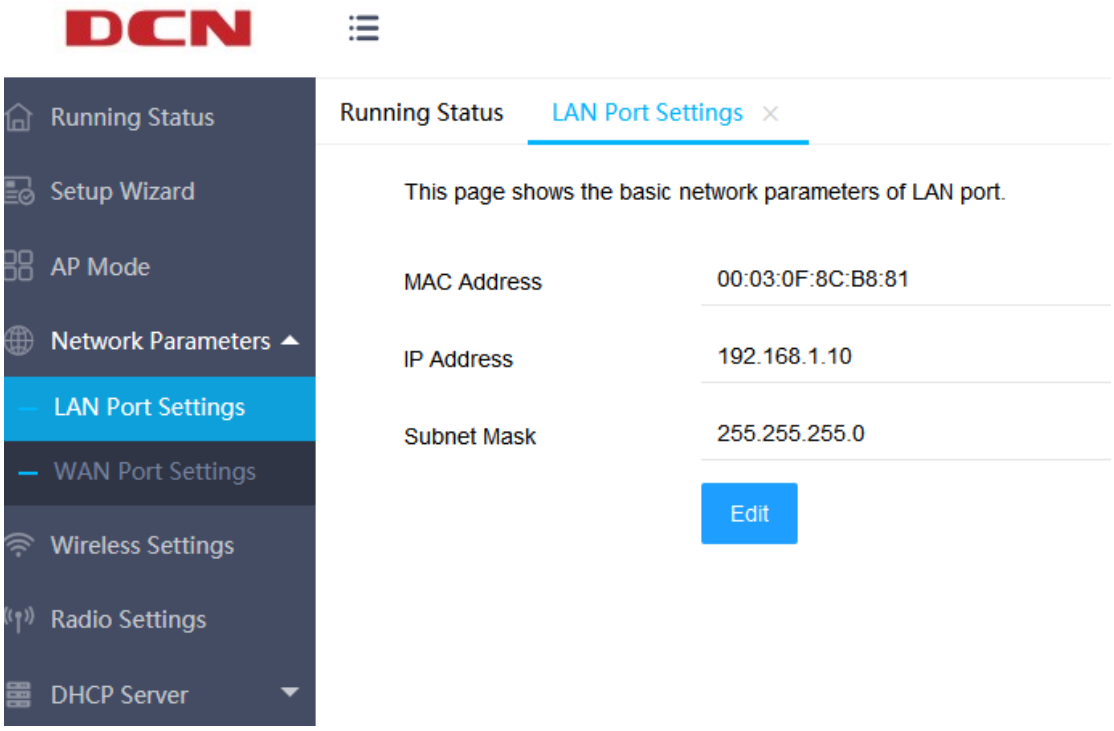
Click "Next Step" and then click "Complete". Finally, before you click "Complete", you can click "Previous Step" to modify the parameters that have been set. After you click "Complete", all parameter settings will take effect.

5.3 Network Parameter Settings

5.3.1 LANPort Setting

Click "Network Parameters">>"LAN Port Settings" on the left menu to set the LAN side IP address and subnet mask. When the LAN port IP parameters are changed, to ensure that the DHCP server can work normally, the address pool, static address set in the DHCP server and the new LAN port IP should be on the same network segment. After saving the settings, please enter IP address to visit this page.

As shown below:



MAC Address: The MAC address of the AP to the LAN is used to identify the local area network and cannot be changed.。

IP Address: The IP address of the AP to the LAN. The factory default value of this IP address is 192.168.1.10 and you can change it if needed.

Subnet Mask: The subnet mask of this AP to the LAN. You can enter different subnet masks based on the actual network status.

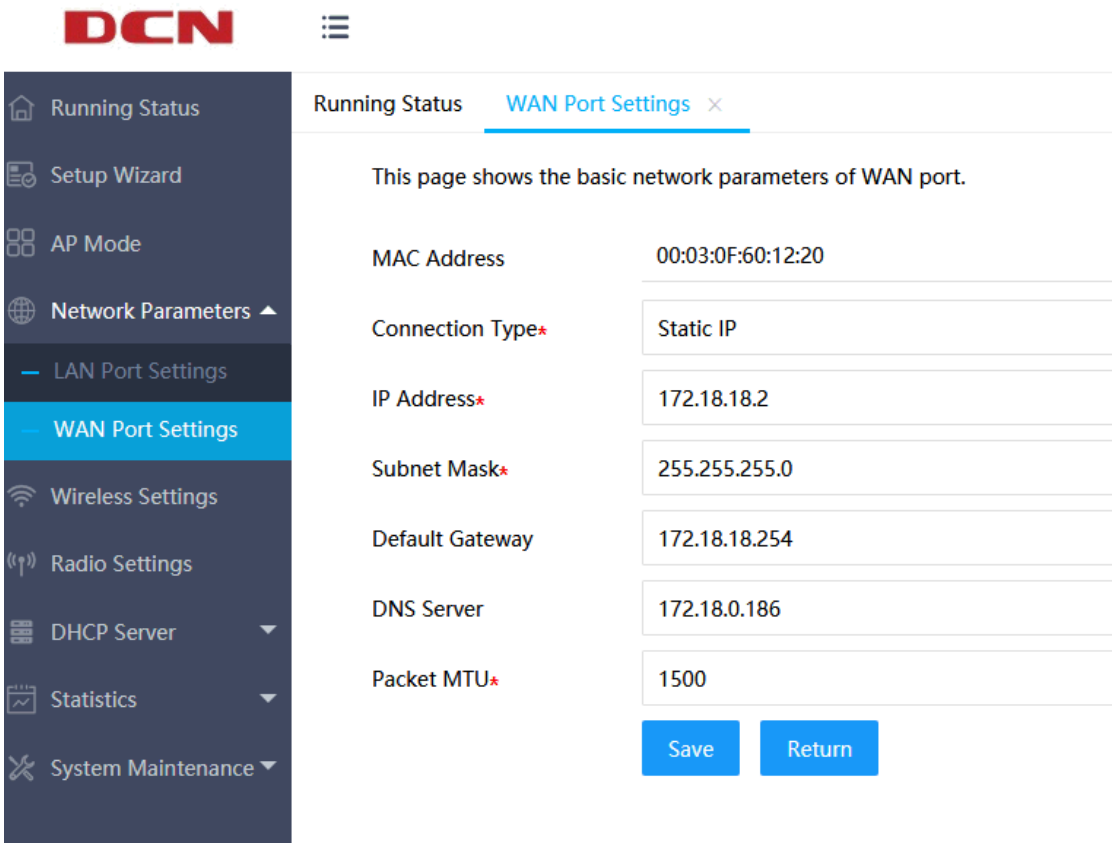
5.3.2 WANPort Settings

Click "Network Parameters">>"WAN Port Settings" on the left menu to modify the basic parameters of the WAN port.

There are currently three ways to obtain the IP address of the WAN port: static IP, dynamic IP, and PPPoE, which can be set according to the Internet access method provided by the service provider. Compared to the setup wizard, the information

configured on this page is more comprehensive.

If the selected IP address acquisition method is static IP, as shown below:



IP Address: The IP address of the AP to the WAN. Please enter the public IP address provided by the ISP. It must be set.

Subnet Mask: The subnet mask of this AP to the WAN. Please enter the subnet mask provided by the ISP. According to different network types, the subnet mask is different, generally 255.255.255.0 (class C).

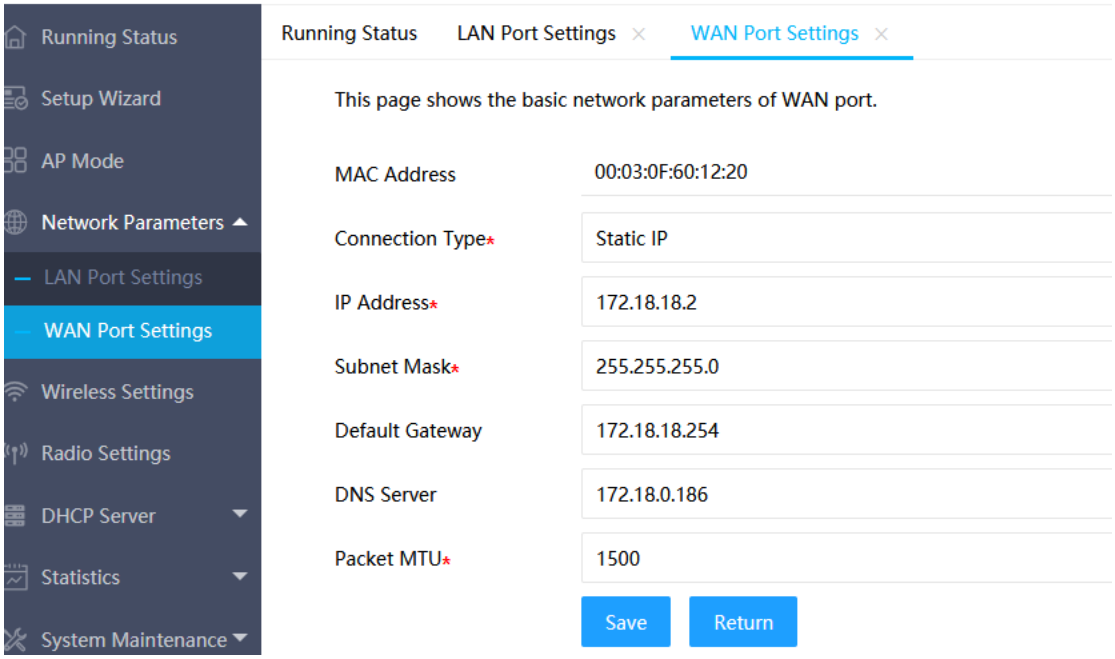
Default Gateway: Please enter the gateway provided by the ISP. It is the IP address of the connected ISP.

DNS Server: Please enter the DNS server provided by the ISP.

Packet MTU: The MTU is a data transmission unit throughout, and the default value is 1500. Please ask the ISP if you need to change it, but don't change it unless

it is specifically needed.

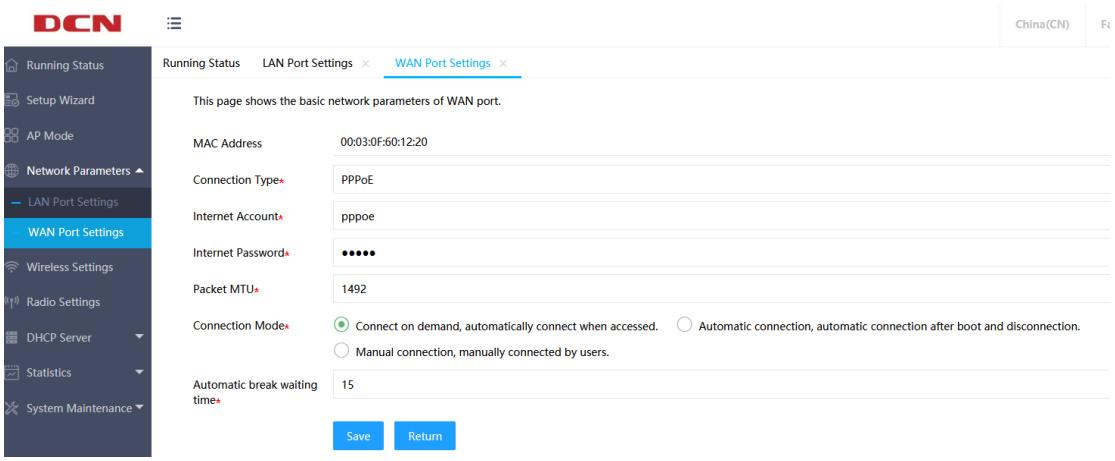
If the selected IP address acquisition method is dynamic IP, as shown below:



DNS Server: This shows the DNS server address automatically obtained from the ISP.

Packet MTU: The MTU is a data transmission unit throughout, and the default value is 1500. Please ask the ISP if you need to change it, and don't change it unless it is specifically needed.

If the selected IP address acquisition method is PPPoE, as shown below:



Internet Account and Password: Please enter the Internet account and

password provided by the ISP correctly. This item must be filled in.

On-demand Connection: If you select the on-demand connection mode, the system will automatically connect when there is a network access request from the local area network. If there is no network request within the set time (automatic disconnection waiting time), the system will automatically disconnect. For users who are billed based on usage time, this connection method can be selected to effectively save Internet access costs.

Automatic Connection: If the automatic connection mode is selected, the system will automatically connect after power on. During use, if the network is disconnected due to external reasons, the system will try to connect at regular intervals until the connection is successful. If your network service is a monthly subscription, you can choose this connection method.

Manual Connection: Select this option to require the user to dial-up manually after power-on. If there is no network request within the specified time (automatic disconnection waiting time), the system will automatically disconnect. You can choose this connection method if your Internet service pays according to the time of use

Automatic Break Waiting Time: The default value is 15 minutes. If there is no network access traffic for this set period of time, the network connection will be automatically disconnected to protect your online resources. This setting is only effective for "On-demand connection" and "Manual connection".

Packet MTU: The MTU is a data transmission unit throughout. The default value

is 1492. Please ask the ISP if you need to change it, and don't change it unless it is specifically needed.

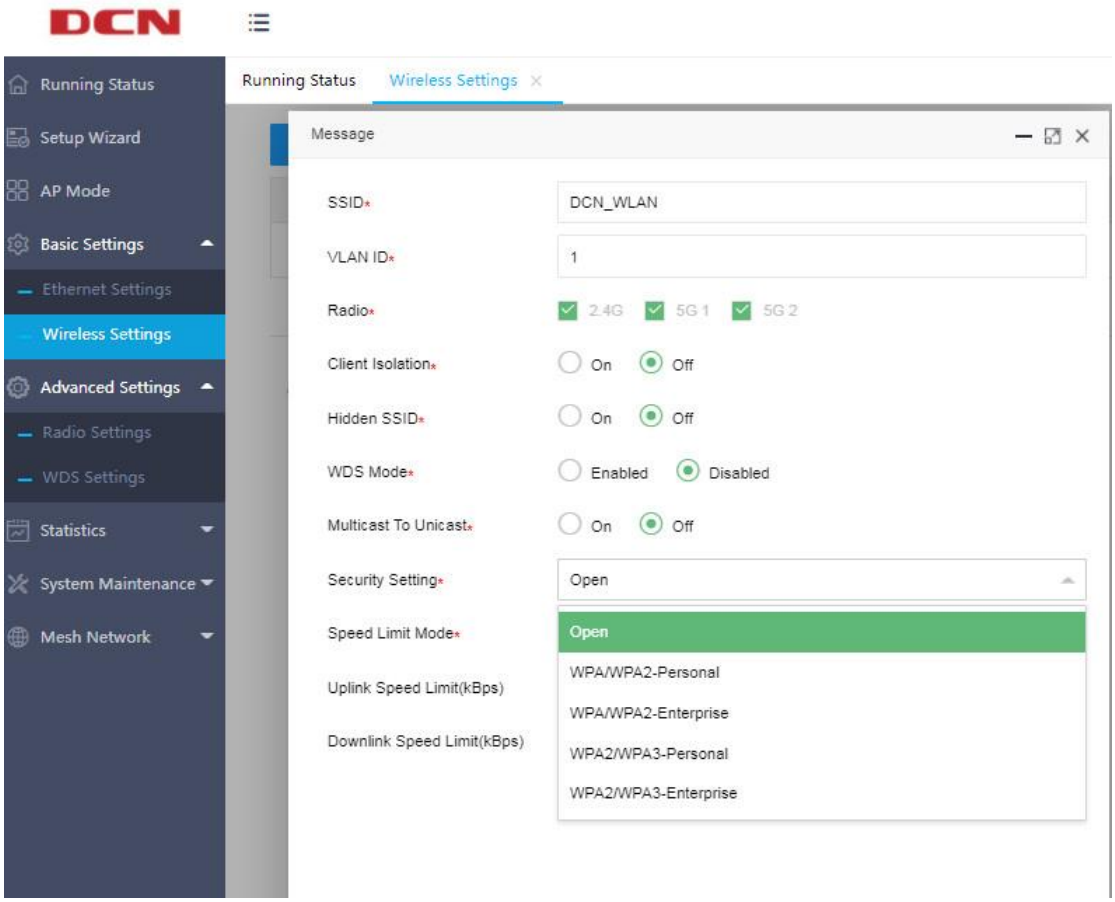
5.4 Wireless Settings

The wireless settings mainly set the basic parameters of the router wireless network. The first SSID is reserved by the system and can be edited but not deleted. The maximum number of SSIDs is 16. As shown below:

Client Isolation: Communication control between wireless clients. After being turned on, wireless clients cannot communicate with each other. Off by default.

Hidden SSID: When the hidden SSID is turned on, the wireless client will not be able to search for this SSID information.

Security Settings: This router supports six security settings:open, WPA / WPA2-Personal, WPA / WPA2-Enterprise，WPA3-Open-Transition，WPA2/WPA3-Personal，WPA2/WPA3-Enterprise



The OPEN or WPA3-Open-Transition mode does not need to set a password, and the wireless client can directly access;

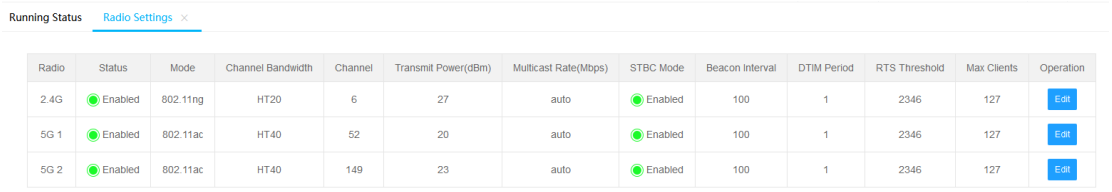
In WPA / WPA2-Persional or WPA2/WPA3-Personalmode, the user need to set a password with a length of 8 to 63 characters;

WPA / WPA2-Enterprise or WPA2/WPA3-Enterprise mode is authenticated by the radius server, so you need to bind the radius template. For details, refer to section 2.5.4.

5.5 Radio Settings

The radio setting page displays all radio information in a list with no new features. Click " Edit " in the operation column to modify the radio settings,

including status, channel, channel bandwidth, transmit power, multicast rate, STBC mode, Beacon interval, DTIM period, RTS period, max clients, etc., as shown below:



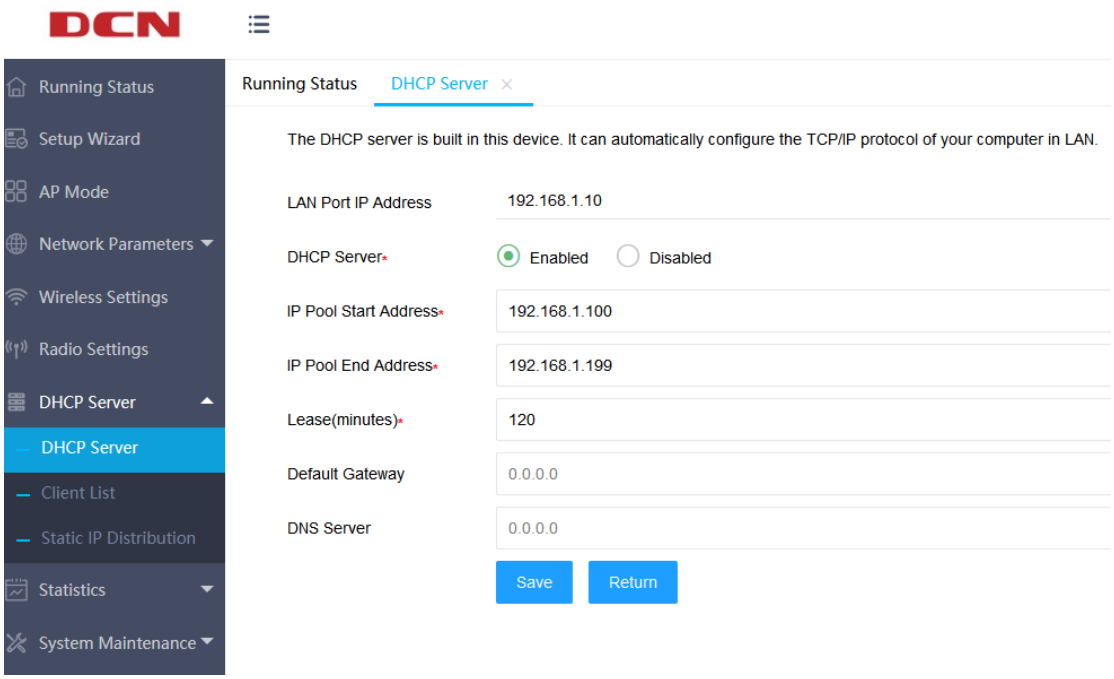
Radio	Status	Mode	Channel Bandwidth	Channel	Transmit Power(dBm)	Multicast Rate(Mbps)	STBC Mode	Beacon Interval	DTIM Period	RTS Threshold	Max Clients	Operation
2.4G	Enabled	802.11ng	HT20	6	27	auto	Enabled	100	1	2346	127	Edit
5G 1	Enabled	802.11ac	HT40	52	20	auto	Enabled	100	1	2346	127	Edit
5G 2	Enabled	802.11ac	HT40	149	23	auto	Enabled	100	1	2346	127	Edit

5.6 DHCPServer

DHCP refers to the Dynamic Host Control Protocol. The WL8200-T3 (IT3) has a built-in DHCP server that can automatically assign IP addresses to computers in the local area network. It is not easy for users to configure TCP / IP protocol parameters for all computers in the local area network. It includes IP address, subnet mask, gateway, DNS server, etc. The DHCP service can solve these problems.

5.6.1 DHCP Server

Click "DHCP Server">>"DHCP Server" on the left menu to set the DHCP server parameters. As shown below:



IP Pool Start Address and IP Pool End Address: These two items are the start address and end address when the DHCP server automatically allocates IP addresses. After setting these two items, the IP address obtained by the intranet host will be between these two addresses.

Address Lease: This item refers to the valid use time of the dynamic IP address assigned by the DHCP server to the client host. During this time, the server will not assign IP addresses to other hosts.

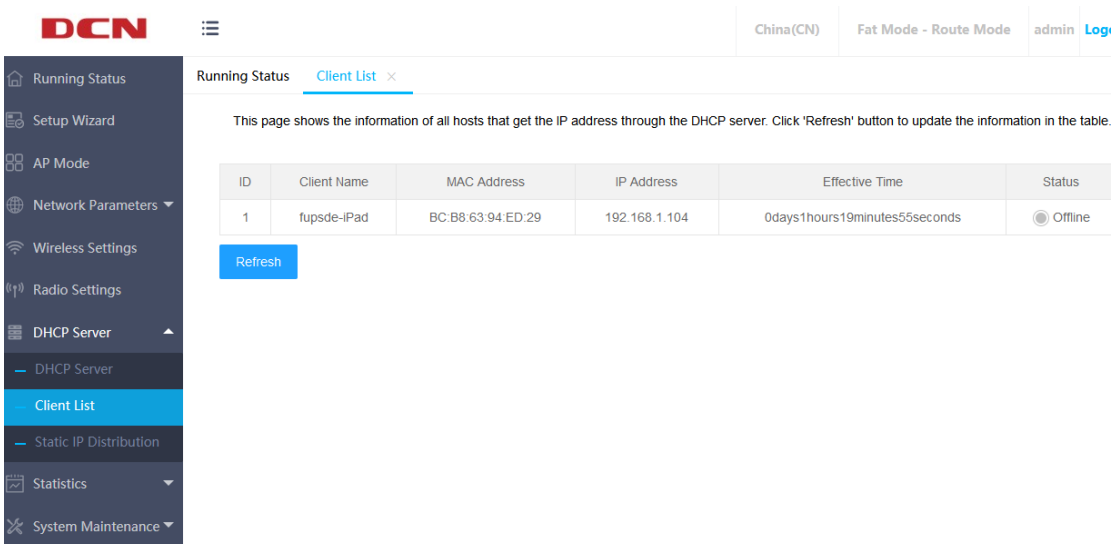
Default Gateway: This item should be filled in the IP address of the router LAN port. The default is 192.168.1.10.

DNS Server: Enter the DNS server provided by the ISP.

5.6.2 Client List

Click "DHCP Server"->"Client List" on the left menu, you can see the information of all the hosts that have obtained the IP address through the DHCP

server.As shown below:



Client Name: This field displays the client name that has obtained the IP address.

MAC Address: This field displays the MAC address of the client that obtained the IP address.

IP Address: This field displays the IP address assigned by the DHCP server to the client host.

Effective Time: This item refers to the lease period of the IP address obtained by the client host. Each IP address has a certain lease time, and the client software will automatically renew the lease before it expires.

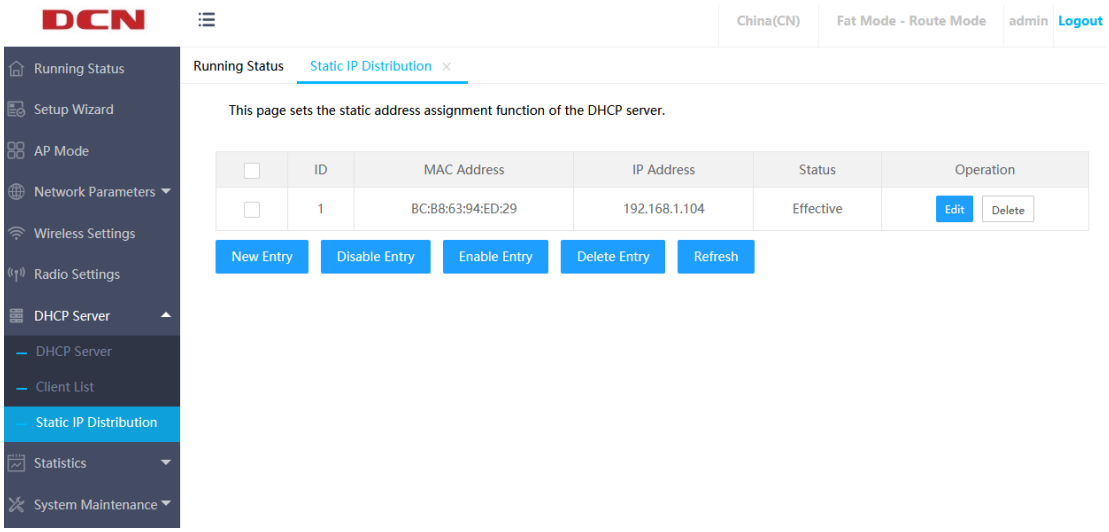
Status: The online / offline status of the client that has obtained the IP address is displayed here.。

5.6.3 Static IP Distribution

Click "DHCP Server">>"Static IP Distribution" on the left menu to manually set a static IP address.

The static reserved IP address assignment function can reserve IP addresses for specific clients, allowing IP addresses to establish a fixed binding relationship with MAC addresses.

For a client that has established a binding relationship, when requesting an IP address, the DHCP server preferentially assigns a bound IP address to it. As shown below:

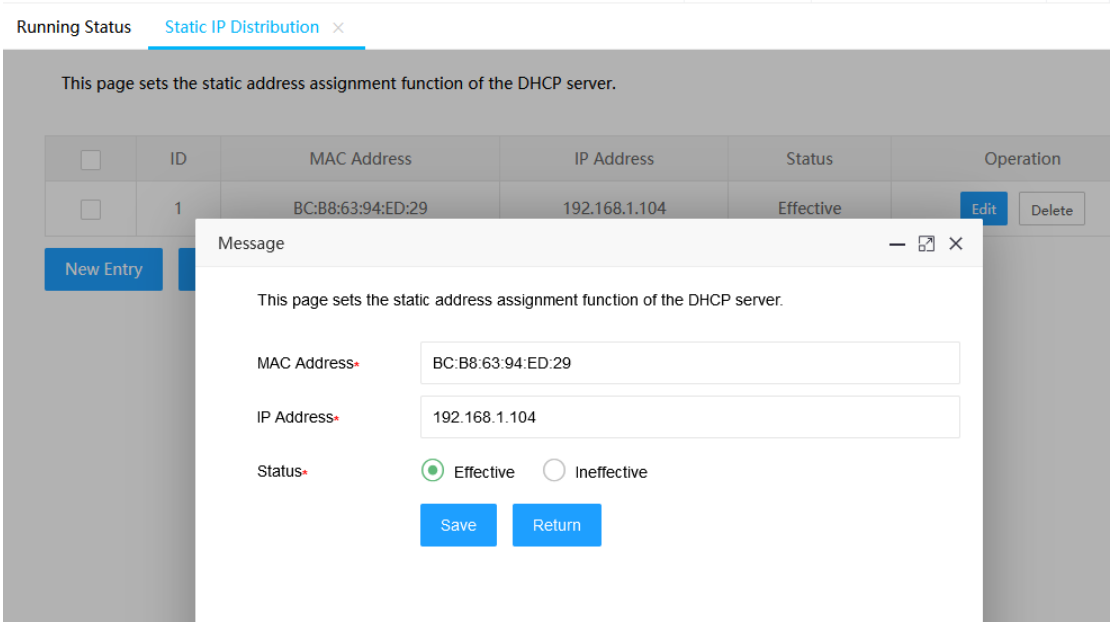


MAC Address: The MAC address of the client that will reserve the IP address.

IP address: Refers to the IP address reserved for the client.

Status: The status displays "Effective" or "Ineffective", that is, only binding rules marked as "Effective" will take effect.

New Entry: Click this button, you can add a new reserved address entry in the subsequent interface, as shown below:



Enable Entry: Click this button to make the selected item effective.

Disable Entry: Click this button to invalidate selected items.

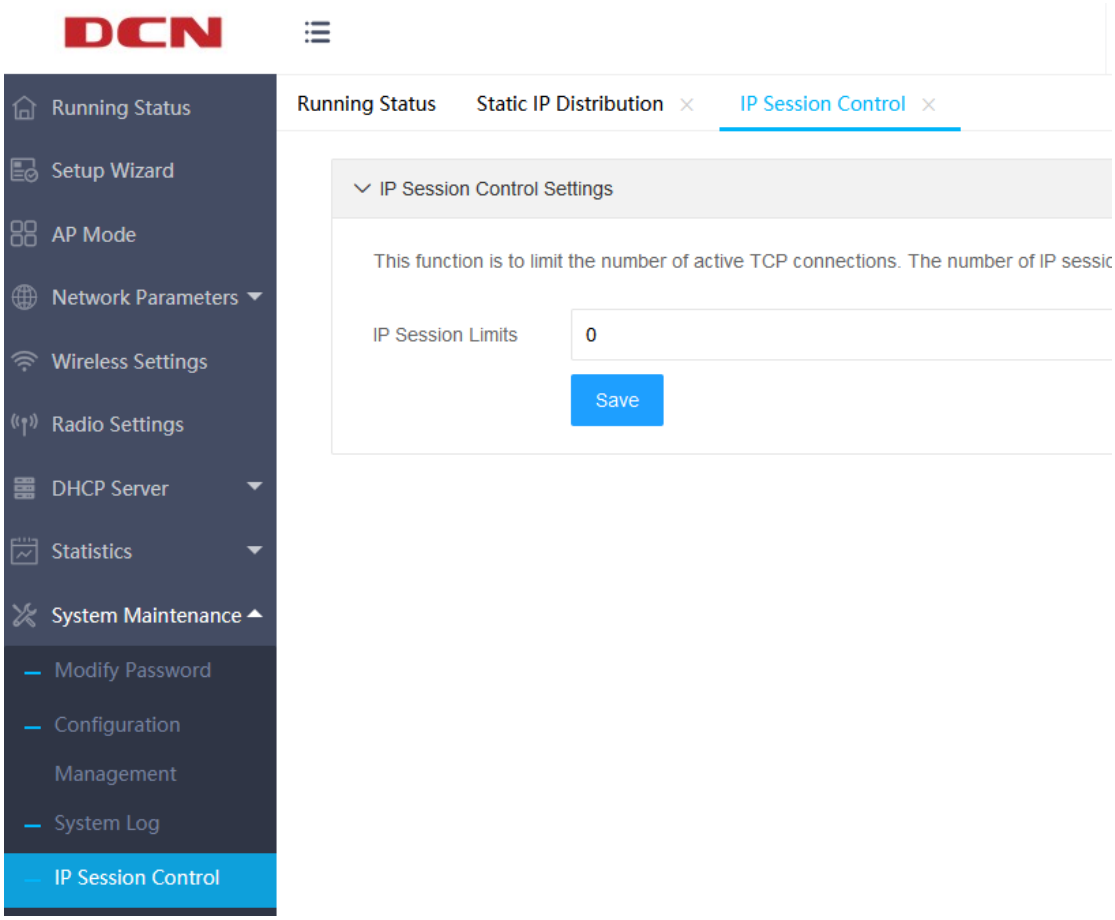
Delete Entry: Click this button to delete all entries in the table.。

5.7 System Maintenance

5.7.1 IPSession Control

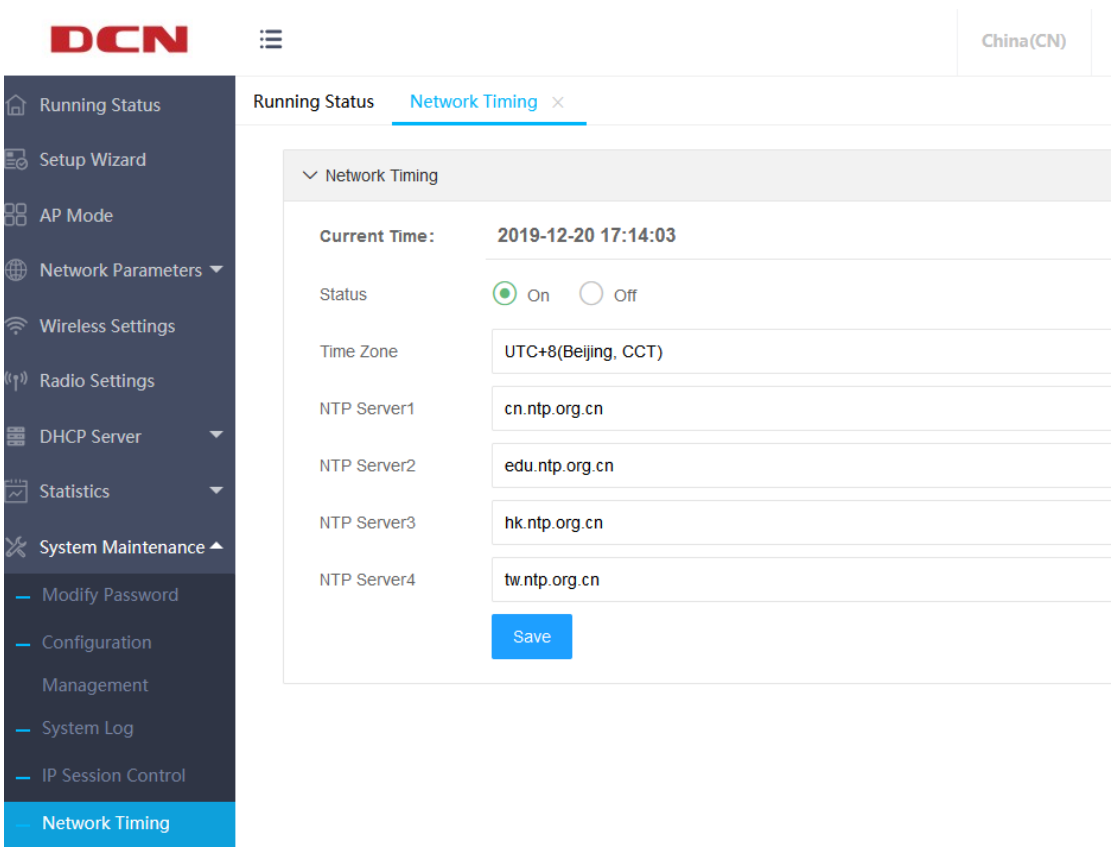
Click "System Maintenance"-"IP Session Control" on the left menu to enter the IP session control page, where you can set the number of TCP connections that each client can use simultaneously. If the number of connections reaches the specified number, the new TCP connections will be rejected. Note that closed TCP connections are not counted in the number of connections.

The default is 0, which means unlimited. As shown below:



5.7.2 Network Timing

Click "System Maintenance" >>" Network Timing", you can set NTP network time, turn on the off status and NTP server. It supports up to 4 NTP server settings. As shown below:


DCN
China(CN)
Running Status
Setup Wizard
AP Mode
Network Parameters
Wireless Settings
Radio Settings
DHCP Server
Statistics
System Maintenance
Modify Password
Configuration
Management
System Log
IP Session Control
Network Timing
Running Status
Network Timing
Network Timing
Current Time:
2019-12-20 17:14:03
Status
On
Off
Time Zone
UTC+8(Beijing, CCT)
NTP Server1
cn.ntp.org.cn
NTP Server2
edu.ntp.org.cn
NTP Server3
hk.ntp.org.cn
NTP Server4
tw.ntp.org.cn
Save

Appendix A FAQS

Question 1: How to restore the factory settings if the user forgets the device password?

Take WL8200-I3 (R2) as an example. In the power-on state, long press the Reset button for 5 seconds and release the reset button, the AP will restore the factory settings and restart. After restart, the user name and password are reset to the initial user name and password.

After restoring the factory settings, all settings will be deleted and restored to fit mode.

There may be differences between different products. For details, please refer to the product specifications.

Question 2: Can't open the device webpage using the default address of 192.168.1.10?

The address 192.168.1.10 is the default static address of the device. It may happen that the device webpage cannot be opened through this address in the following situations:

1. When the AP is in fit mode or fat bridge mode

(1) The device may have obtained another IP address through the POE port. Please access it through the current address of the AP.

(2) The IP address of the device may be modified;

2. When the AP is in fat routing mode:

(1) The device used to access the AP is located on the WAN side of the AP.

Please access the AP from the lan side.

(2) The address on the LAN side of the device may have been modified by the administrator;

Question 3: After switching from thefit mode or the fat bridge mode to the fat routing mode, the page cannot be returned, and refresh cannot be accessed?

When switching from other modes to routing mode to access the network, in order to ensure security, WAN-side device access is blocked by default. If the device is accessed from the POE port side before the switching, the switching will fail to return and cannot access. You need to ensure that you are accessing the device using https://192.168.1.10 on the LAN side or WLAN device.