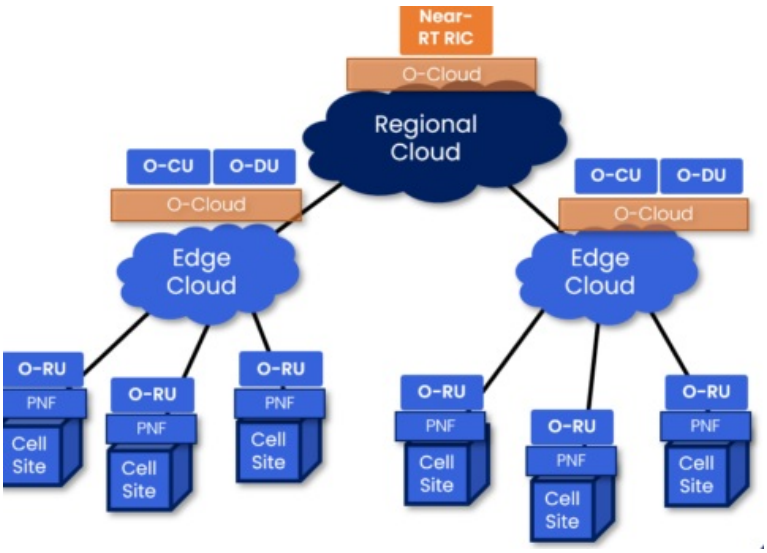
Contents [hide]

FS Typical Scenario Deployment



Introduction

Scope of Application

This case achieves wireless terminal access through multi AP coverage, while allowing a small number of wired terminals to access, suitable for office network scenarios with a user base of 100-200 people.

Business requirements

A new office needs to build a network, and the requirements are as follows:

The entire office is covered by wireless network, and employees can access the office network through wireless network to achieve mobile office.
Deploy wired networks in the office environment to provide wired network access for printers, conference rooms, and fixed workstations.

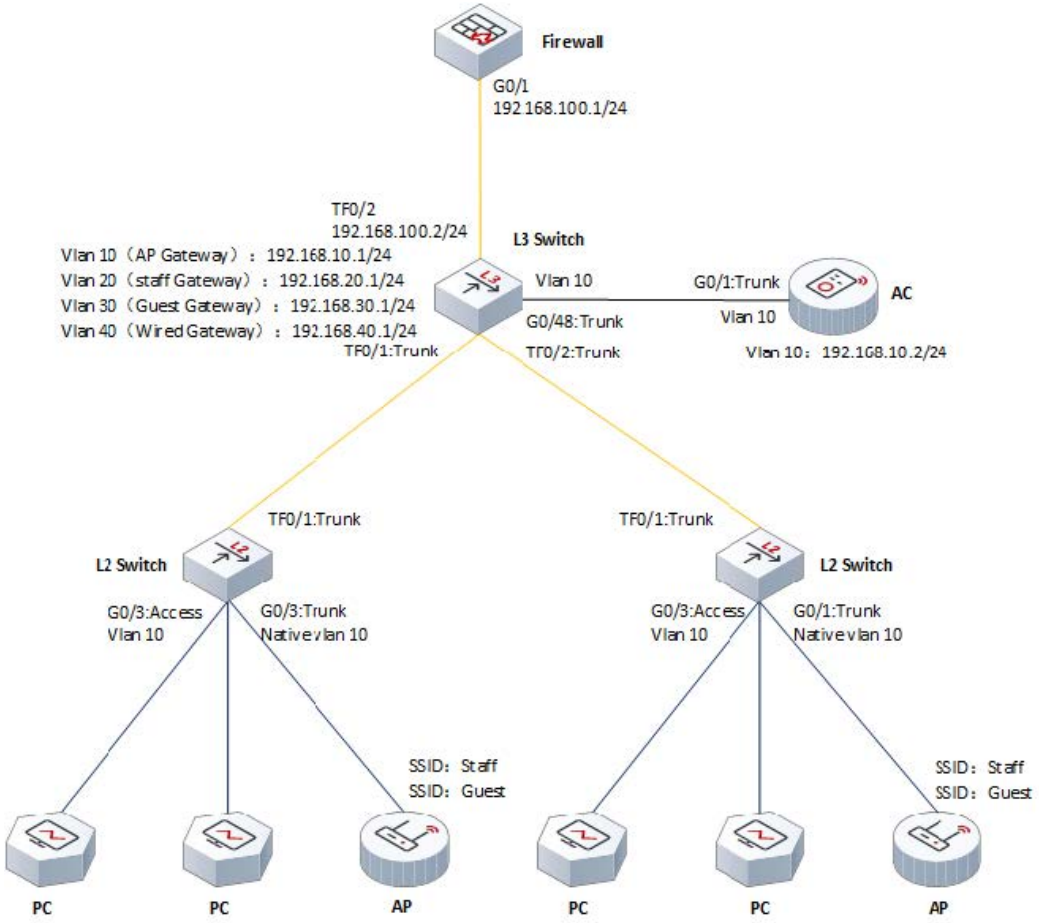
Product Usage Instructions

Scheme Design

2.1 Topology

AC side hook+layer 3 networking+local forwarding mode

AC is equipped with a core switch, wireless user address pool gateway is located in the core, and AP management segment address pool gateway is located in the AC.



The IP network segment between L3 switch and export gateway equipment is 192.168.100.0/24, and the gateway of L3 switch is 192.168.100.254/24.

DHCP server:

- The AC acts as the DHCP server of the AP and assigns IP addresses to the AP.
- L3 switch, as the user's DHCP server, assigns IP addresses to users.

AC controller: Use VLAN 100 as the management VLAN and 192.168.100.252 as the management IP.
AP management: the management VLAN is VLAN 100, the IP network segment is 192.168.100.0/24, and the gateway is 192.168.10.252.

User management:

- Wired network the wired network VLAN is VLAN 10, the IP network segment is 192.168.10.0/24, and the gateway is 192.168.10.254.
- Staff WiFi: the staff WiFi VLAN is VLAN 20, the IP network segment is 192.168.20.0/24, and the gateway is 192.168.20.254. The service data forwarding

mode of wireless users is local forwarding. Wi Fi signal with wireless network name “staff” and Wi-Fi password “admin@123 ”.

- Guest WiFi: the Guest WiFi VLAN is VLAN 30, the IP network segment is 192.168.30.0/24, and the gateway is 192.168.30.254. The service data forwarding mode of wireless users is local forwarding.
- Wi-Fi signal with wireless network name “guest” and Wi-Fi password “guest@123 ”.

Product List

Equipment name	Equipment model	Equipment role	Product link
AC	AC-1004	AC controller	https://www.fs.com/products/141375.html
L3 Switch	S3270-48TM	L3 Switch	https://www.fs.com/products/166610.html
L2 Switch	S3100-16TMS-P	L2 Switch	https://www.fs.com/products/160710.html
AP	AP-N505	AP	https://www.fs.com/products/149656.html

Data Planning

Device	Project	Parameter	Describe	
	Vlan	Vlan 100	Wireless access management VLAN (used for communication between AP and AC)	
	IP address	Vlanif 100 192.168.100.252/24	AC Controller IP address	

AC controller	WIFI	SSIF staffAuthentication method: Portal authentication STA Business VLAN VLAN20 STA Business network segment:192.168.20.0/24 AP AP1 AP8 SSIF guest Authentication method: Portal authentication STA Business VLAN VLAN30 STA Business network segment:192.168.30.0/24 AP AP1 AP8	Wireless Network Planning	
L3 Switch	Vlan	Vlan 10 Vlan 20 Vlan 30 Vlan 100	Vlan 10 Wired Network Vlan 20 staff WiFi Vlan 30 Guest WiFi Network Vlan 100 AP Management	
	IP address	Vlanif 10 192.168.10.254/24	Wired Network Gateway	
		Vlanif 20 192.168.20.254/24	Staff WiFi Network Gateway	
		Vlanif 30 192.168.30.254/24	Guest WiFi Network Gateway	
		Vlanif 100 192.168.100.254/24	Internal network interconnection	
		Vlanif 10 192.168.10.0/24	WiFi Network	

	DHCP	Vlanif 20 192.168.20.0/24		
		Vlanif 30 192.168.30.0/24	Wired Network	

	Route	ip route 0.0.0.0 0.0.0.0 192.168.10.253	Default route
L2 Switch	Vlan	Vlan 10 Vlan 20 Vlan 30 Vlan 100	

Configuration Steps

Configure L2 Switch

Taking S3100-16TMS-P as an example

#Create planned management VLAN and business VLAN.

- L2Switch(config)# vlan rang 10,20,30,100
- L2Switch(config-vlan)# exit

#Enter the physical interface connected to the PC and modify the interface to VLAN 10.

- L2Switch(config)# interface gigabitEthernet 0/1
- L2Switch(config-if-GigabitEthernet 0/1)#switchport access vlan 10

#Enter the physical interface connected to the AP, modify the link type of the interface to trunk, and specify the default VLAN of the interface to be the management VLAN of the AP.

- L2Switch(config)# interface gigabitEthernet 0/10
- L2Switch(config-if-GigabitEthernet 0/10)# switch mode trunk
- L2Switch(config-if-GigabitEthernet 0/10)# switchport trunk native vlan 100
  L2Switch(config-if-GigabitEthernet 0/10)# exit

#Enter the physical interface connecting the L3 switch and modify the link type of the interface to trunk.

- L2Switch(config)# interface tenGigabitEthernet 0/17
- L2Switch(config-if-tenGigabitEthernet 0/9)# switch mode trunk
- L2Switch(config-if-tenGigabitEthernet 0/9)#exit

#Save config.

- L2Switch(config)# end
- # write

Configure L3 Switch

#Create planned management VLAN and business VLAN.

- L3Switch(config)# vlan rang 10,20,30,100
- L3Switch(config-vlan)# exit

#Enter the physical interface connected to the AP, modify the link type of the interface to trunk, and specify the default VLAN of the interface to be the management VLAN of the AP.

- L3Switch(config)# interface gigabitEthernet 0/48
- L3Switch(config-if-GigabitEthernet 0/48)# switch mode trunk
- L3Switch(config-if-GigabitEthernet 0/48)# switchport trunk native vlan 100
- L3Switch(config-if-GigabitEthernet 0/48)# exit

#Enter the physical interface connected to the access switch and modify the link type of the interface to trunk.

- L3Switch(config)# interface TFGigabitEthernet 0/1
- L3Switch(config-if-TFGigabitEthernet 0/1)# switch mode trunk
- L3Switch(config-if-TFGigabitEthernet 0/1)# exit
- L3Switch(config)# interface TFGigabitEthernet 0/2
- L3Switch(config-if-TFGigabitEthernet 0/2)# switch mode trunk

- L3Switch(config-if-TFGigabitEthernet 0/2)# exit

#Enter the physical interface connected to the Firewall and modify the link type of the interface to access.

- L3Switch(config)# interface TFGigabitEthernet 0/4
- L3Switch(config-if-TFGigabitEthernet 0/4)#switchport access vlan 100
- L3Switch(config-if-TFGigabitEthernet 0/4)#exit

#Save config.

- L3Switch(config)# end
- L3Switch# write

#Create VLAN virtual interface and configure the planned IP address.

- L3Switch(config)# interface vlan 10
- L3Switch(config-if-VLAN 10)# ip address 192.168.10.254 255.255.255.0
- L3Switch(config-if-VLAN 10)# exit
- L3Switch(config)# interface vlan 20
- L3Switch(config-if-VLAN 20)# ip address 192.168.20.254 255.255.255.0
- L3Switch(config-if-VLAN 20)# exit
- L3Switch(config)# interface vlan 30
- L3Switch(config-if-VLAN 30)# ip address 192.168.30.254 255.255.255.0
- L3Switch(config)# interface vlan 100
- L3Switch(config-if-VLAN 100)# ip address 192.168.100.254 255.255.255.0
- L3Switch(config-if-VLAN 100)#exit

#Configure the default route. The next hop (192.168.100.253) is the interface IP on the interconnected peer device.

- L3Switch(config)#ip route 0.0.0.0 0.0.0.0 192.168.100.253

#Turn on DHCP service function.

- L3Switch(config)# service dhcp

#Create a DHCP address pool “staff_pool” to assign IP addresses to wireless users. The IP network segment in the DHCP address pool is 192.168.20.0/24, the DNS server address used by the user is 8.8.8.8, and the gateway is 192.168.20.254.

- L3Switch(config)# ip dhcp server pool staff_pool
  L3Switch(dhcp-config)# network 192.168.20.0 255.255.255.0
- L3Switch(dhcp-config)# dns-server 8.8.8.8
  L3Switch(dhcp-config)# default-router 192.168.20.254
- L3Switch(dhcp-config)# exit

#Create a DHCP address pool “guest_pool” to assign IP addresses to wireless users. The IP network segment in the DHCP address pool is 192.168.30.0/24, the DNS server address used by the user is 8.8.8.8, and the gateway is 192.168.30.254.

- L3Switch(config)# ip dhcp server pool staff_pool
  L3Switch(dhcp-config)# network 192.168.30.0 255.255.255.0
- L3Switch(dhcp-config)# dns-server 8.8.8.8
  L3Switch(dhcp-config)# default-router 192.168.30.254
- L3Switch(dhcp-config)# exit

#Create a DHCP address pool “wired_pool” to assign IP addresses to wireless users. The IP network segment in the DHCP address pool is 192.168.30.0/24, the DNS server address used by the user is 8.8.8.8, and the gateway is 192.168.30.254.

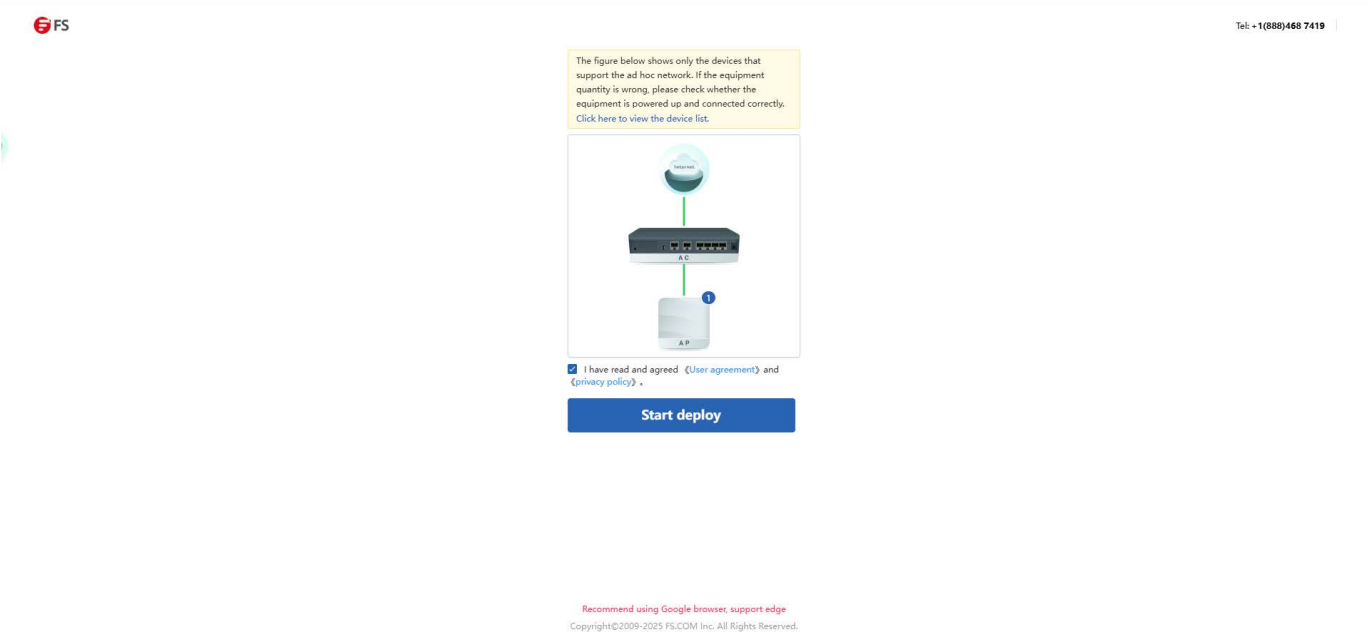
- L3Switch(config)# ip dhcp server pool wired_pool
- L3Switch(dhcp-config)# network 192.168.10.0 255.255.255.0
- L3Switch(dhcp-config)# dns-server 8.8.8.8
  L3Switch(dhcp-config)# default-router 192.168.10.254
- L3Switch(dhcp-config)# exit

Configure AC

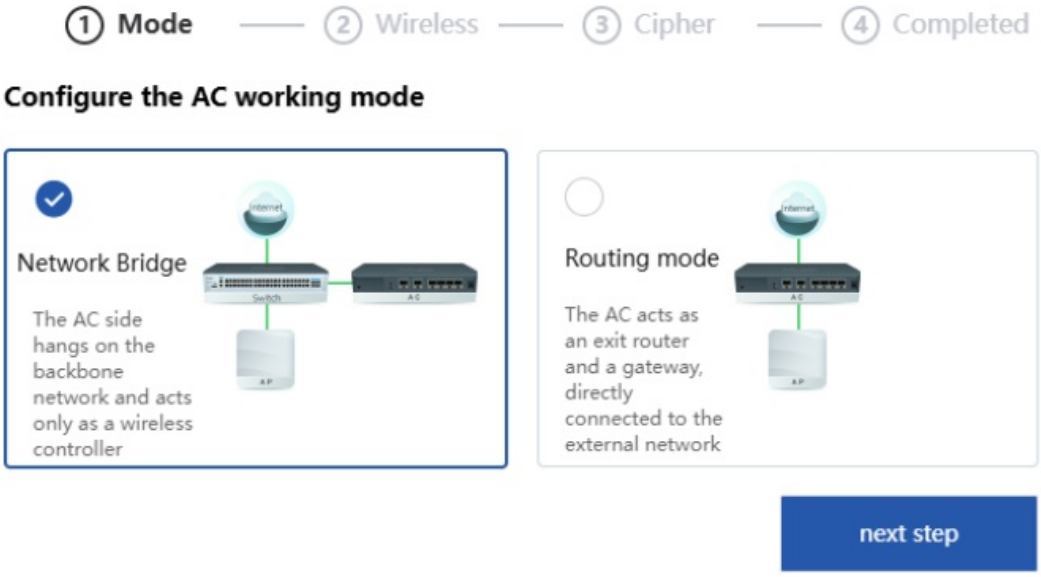
After logging into the web network management interface using the default management IP (192.168.1.1), select the deployment mode. In this solution, the AC controller adopts a

side hanging method, which only manages APs and does not forward traffic.

The initial login to the AC controller must be done using the default wizard. Please refer to the screenshot below to complete the setup:



Select the working mode of the AC controller, which supports two deployment modes:

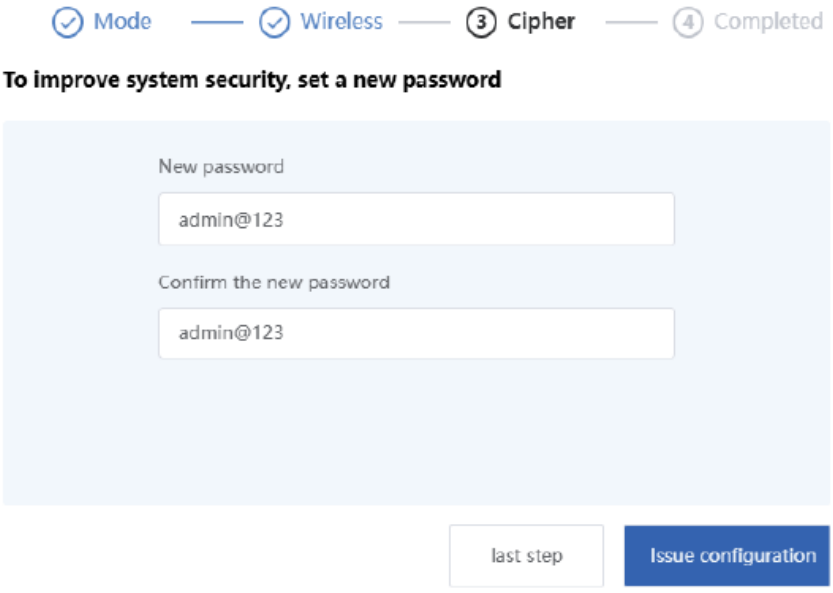


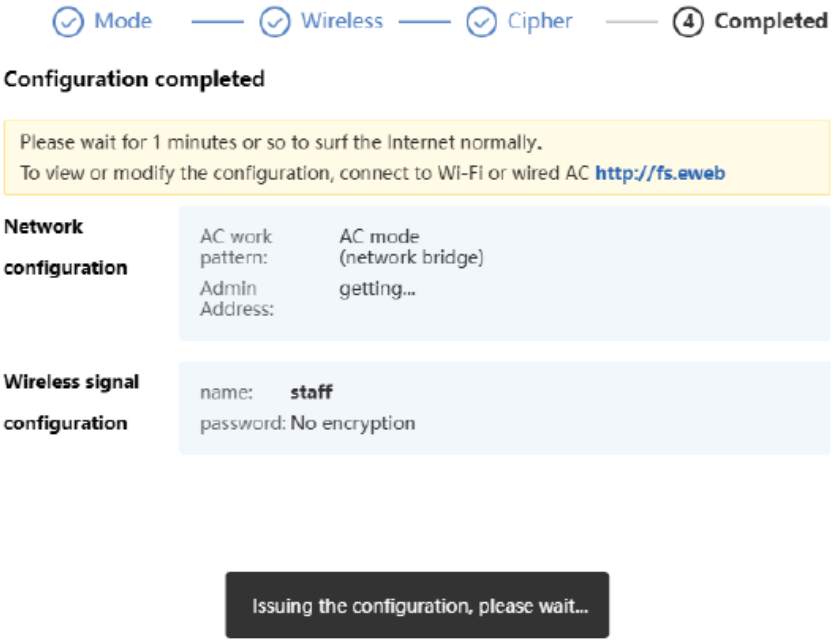
Configure SSID

Shortcuts can only configure SSIDs, cannot configure passwords and VLANs.

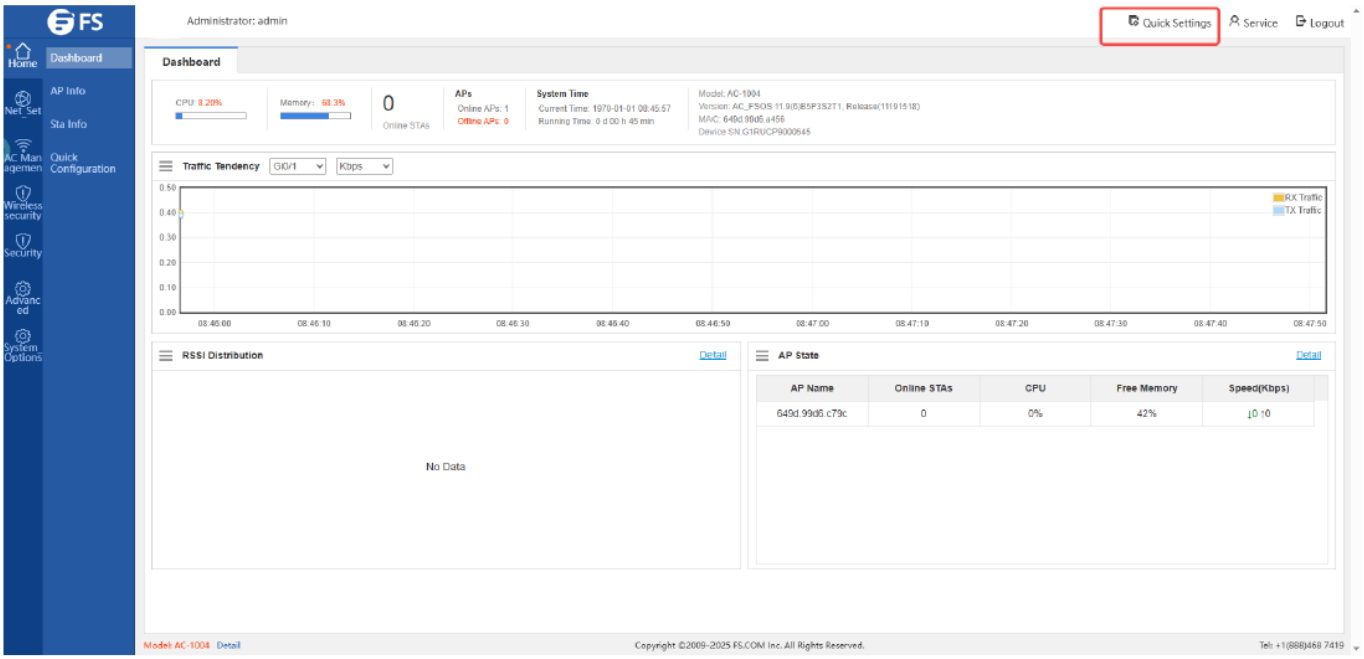
Configure password

Set a new management password for the AC controller.

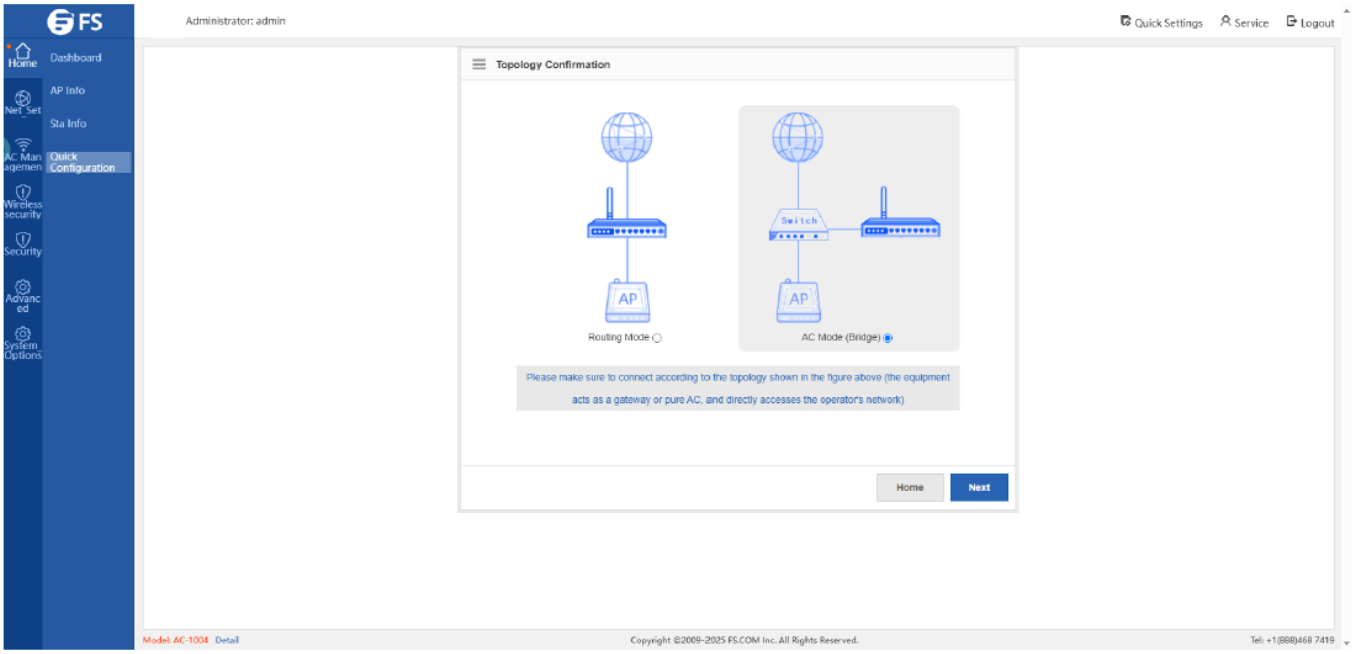




After completing the default wizard, you can officially log in to the AC controller. Due to the default wizard using default VLAN and IP to manage APs, we need to modify the management network of the AC controller. Select the red font wizard in the upper right corner for quick configuration, as shown below.

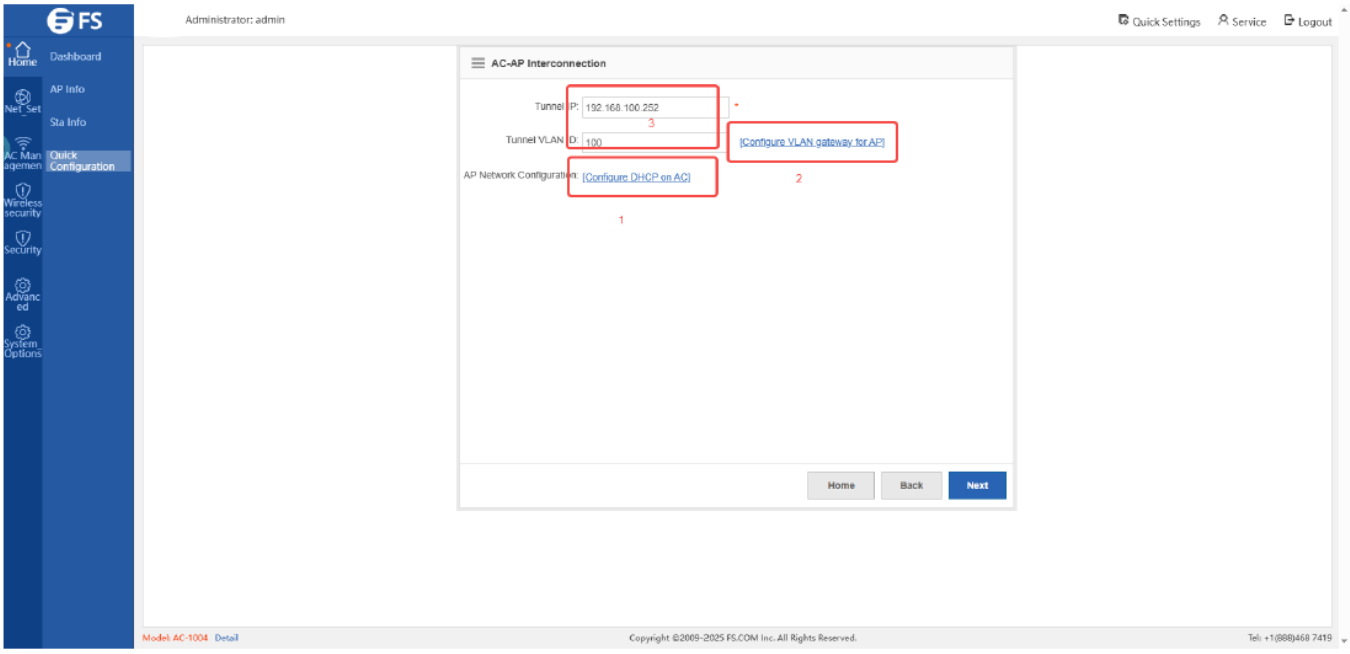


Select working mode Select the bridging mode.



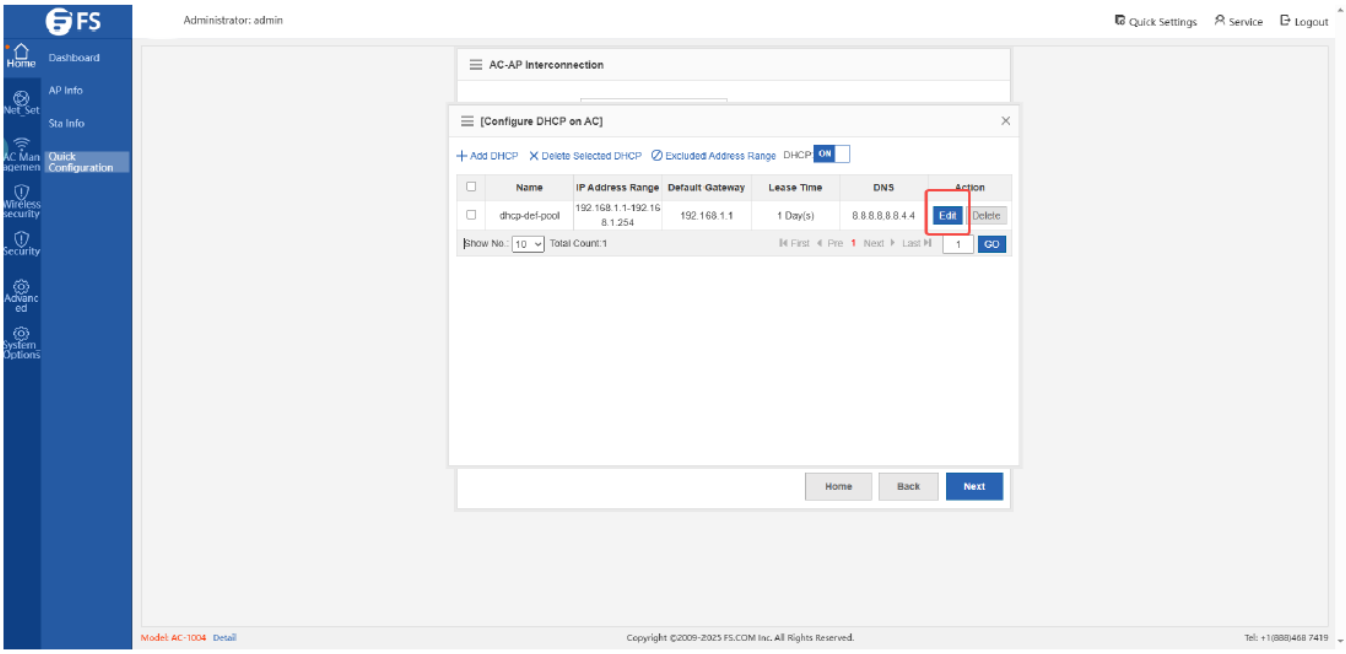
Configure AC controller to manage network:

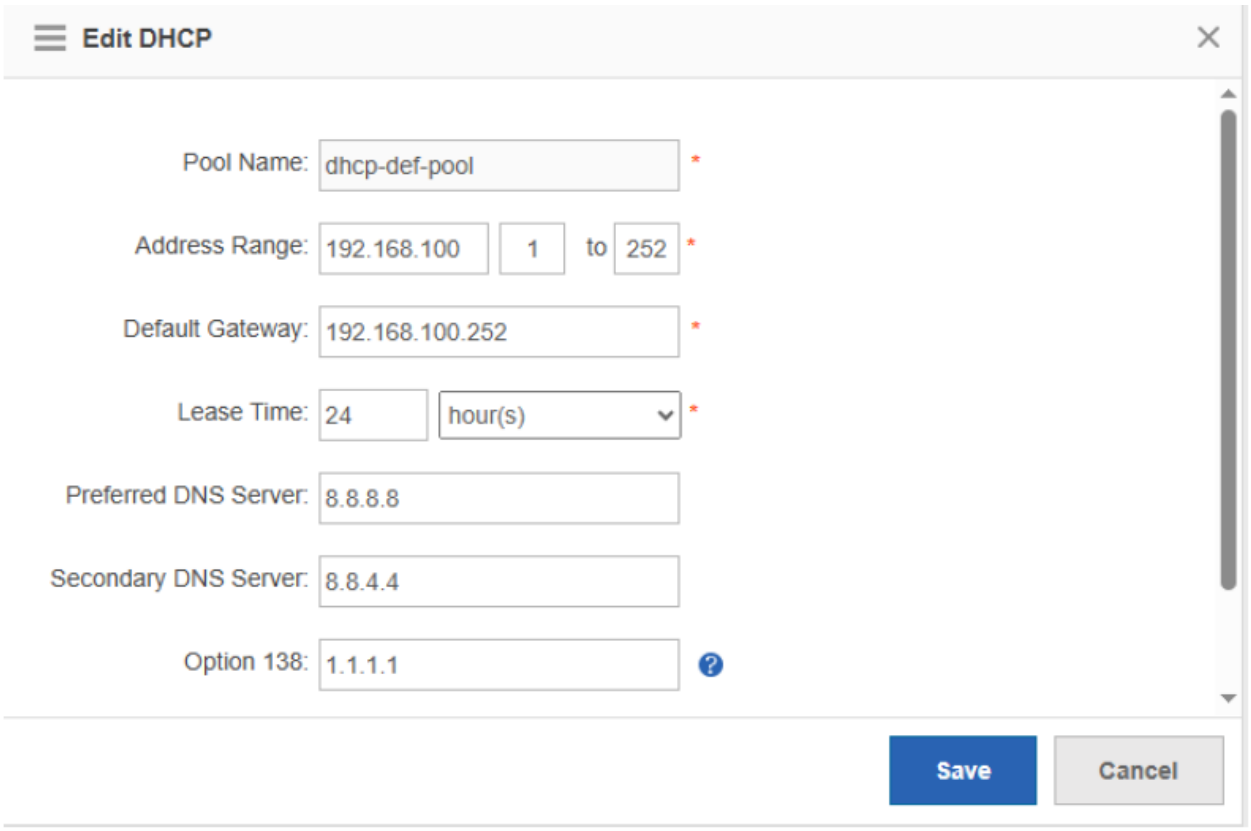
1. Configure DHCP address pool: Use 192.168.100.0/24 as the wireless management network, and AP devices can obtain management IP addresses from the local support.
2. Configure and manage VLAN and IP addresses: The IP address and VLAN are respectively used for the management IP and VLAN of the AC management AP.
3. Configure tunnel IP and VLAN: Tunnel IP and VLAN are tunnel addresses and VLANs for AC and AP interconnection.

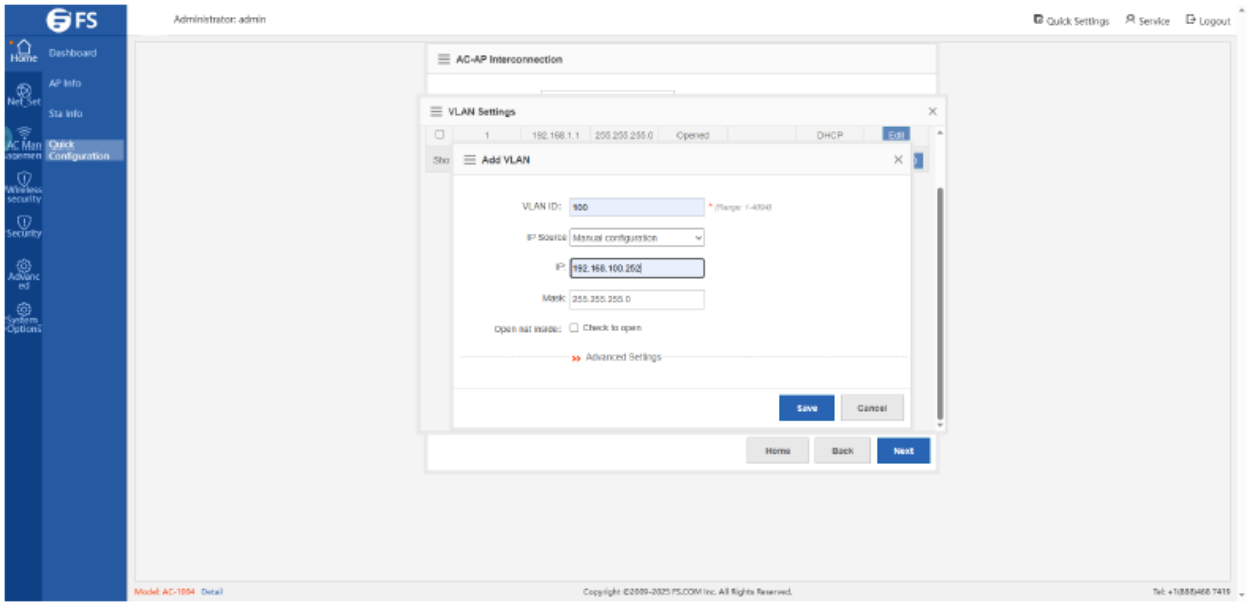


Configure DHCP

DHCP is used to allocate management IP addresses for APs.

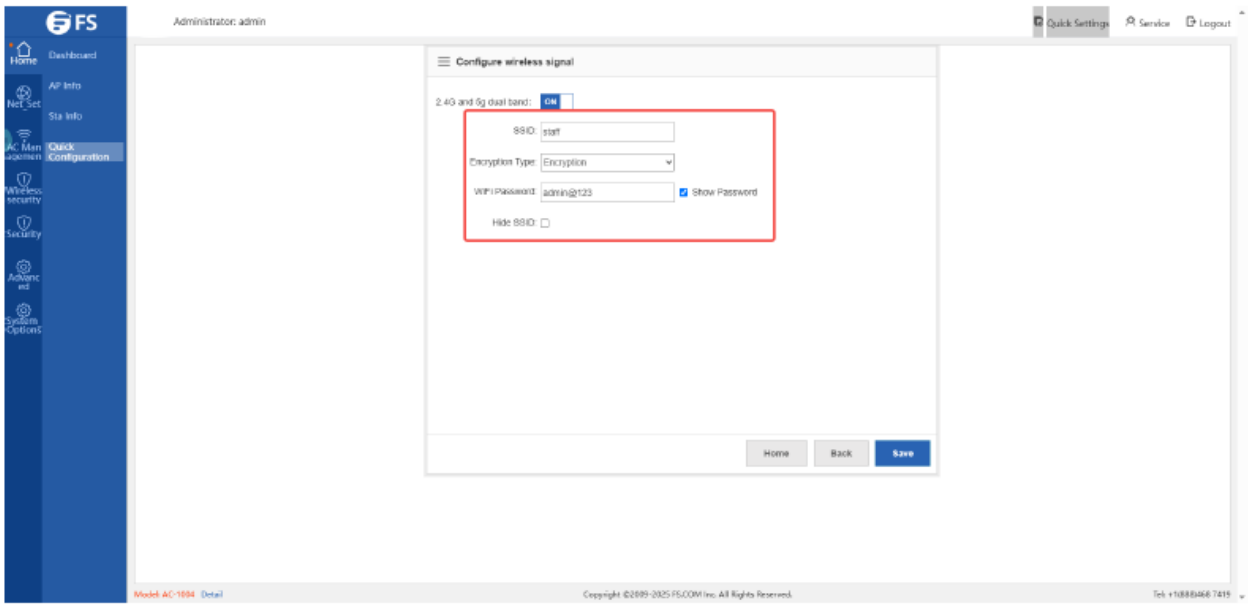


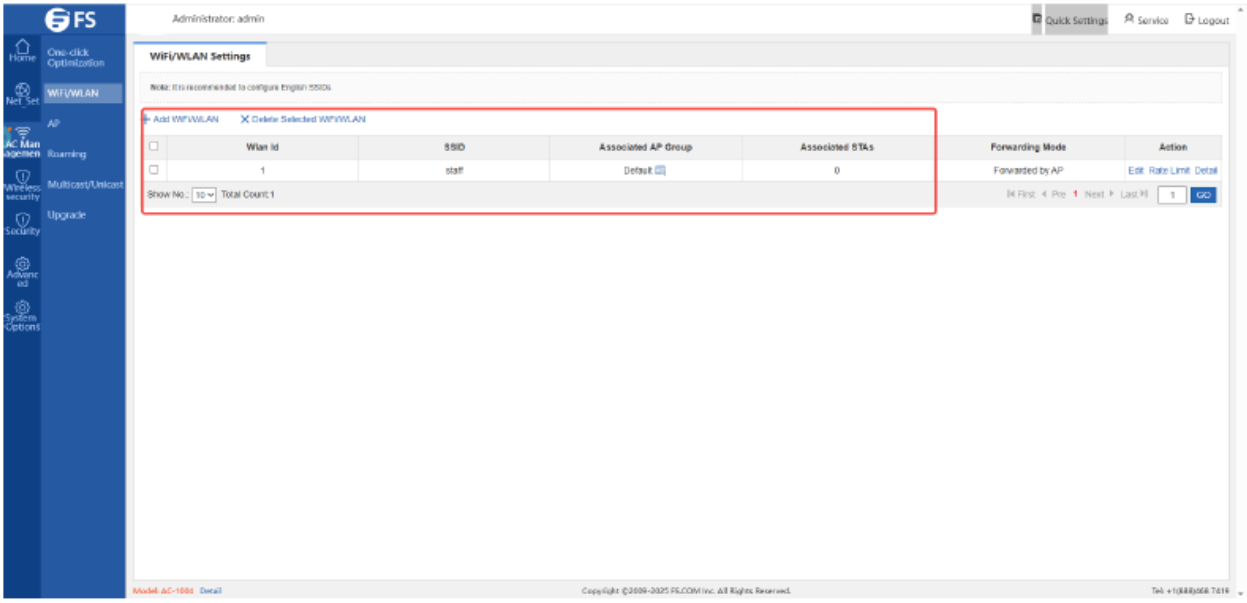




Manage IP and VLAN configurations

Manage IP and VLAN for communication between AC controller and AP.





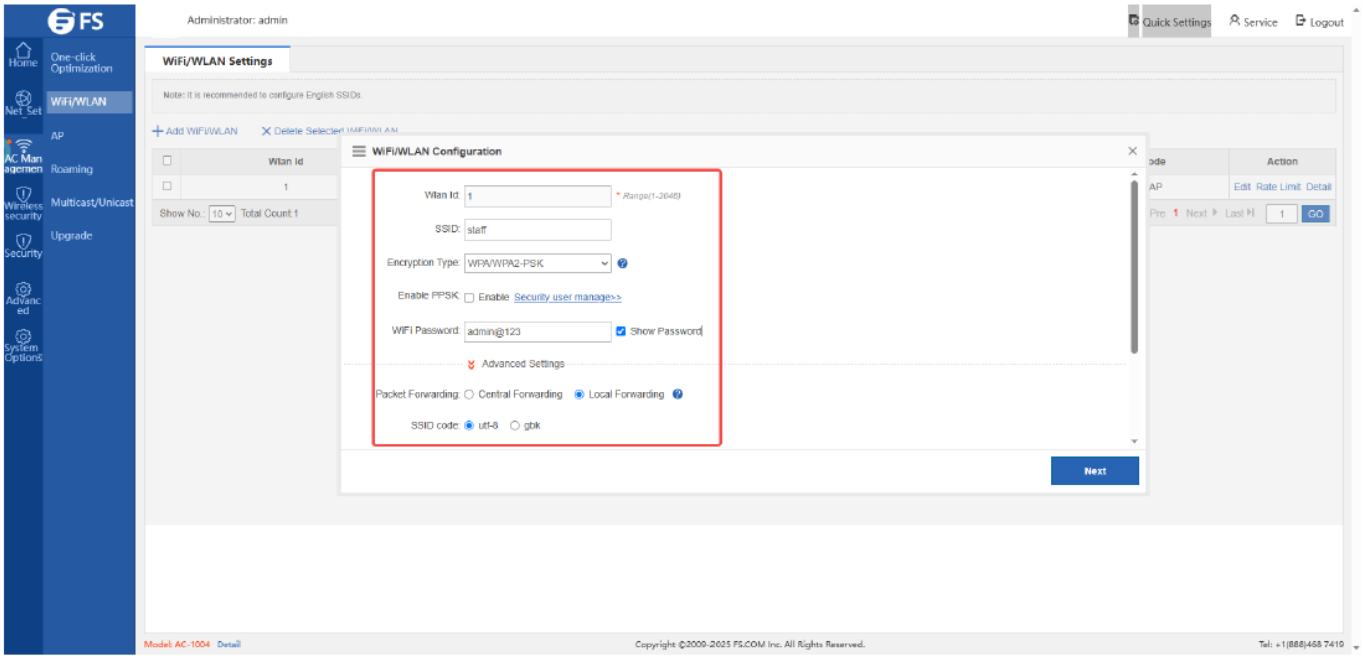
The SSID authentication method and business VLAN configured by the default wizard need to be re edited, and the staff password and business VLAN need to be modified.
Explanation of Various Parameters in Wi Fi Configuration

Parameter Name	Parameter Description
Wi-Fi Name	Indicates the wireless network name, co nfigured as “staff”.
Encryption mode	Indicates the security configuration mod e of the wireless network. You can choo se “Open without encryption” and “Pers onal WPA/WPA2-PSK”. In this case, you can choose “Personal WPA/WPA2-PSK”.
Wi-Fi password	When the encryption mode is “Personal WPA/WPA2-PSK”, this parameter is req uired. The password configuration of thi s case is“ admin@123 ”.

Advanced Settings	Packet Forwarding: SSID code: Hide SSID: Max STA Count: Network OFF Period: 5 G-Prior Access:
Associated AP Group	For easy management, multiple APs em itting WiFi signals are clustered in one g roup.
STA VLAN ID	Indicates the user’s service VLAN. The service VLAN planned in this case is VL AN 10.
STA DHCP Service	Please configure the DHCP service on t he switch connected with the AC. Note: t he address pool allocated by DHCP mu st be in the same subnet as the VLAN.
Network Type	Supports 2.4G, 5G, and 2.4G&5G mode s
Support Radio	It is recommended that you not specify r adios (The function takes effect on all ra dios.) .

Configure staff WiFi

According to the network plan, refer to the screenshot below for configuration.


Administrator: admin
Quick Settings
Service
Logout
WiFi/WLAN Settings
Note: It is recommended to configure English SSIDs.
Add WiFi/WLAN
Delete Selected WiFi/WLAN
WiFi/WLAN Configuration
Wlan Id: 1
Range(1-2048)
SSID: staff
Encryption Type: WPA/WPA2-PSK
Enable PPSK: Enable Security user manage>>
WiFi Password: admin@123
Show Password
Advanced Settings
Packet Forwarding: Central Forwarding Local Forwarding
SSID code: utf-8 gbk
Next
Wlan Id
Action
Edit Rate Limit Detail
Show No.: 10 Total Count:1
Model: AC-1004 Detail
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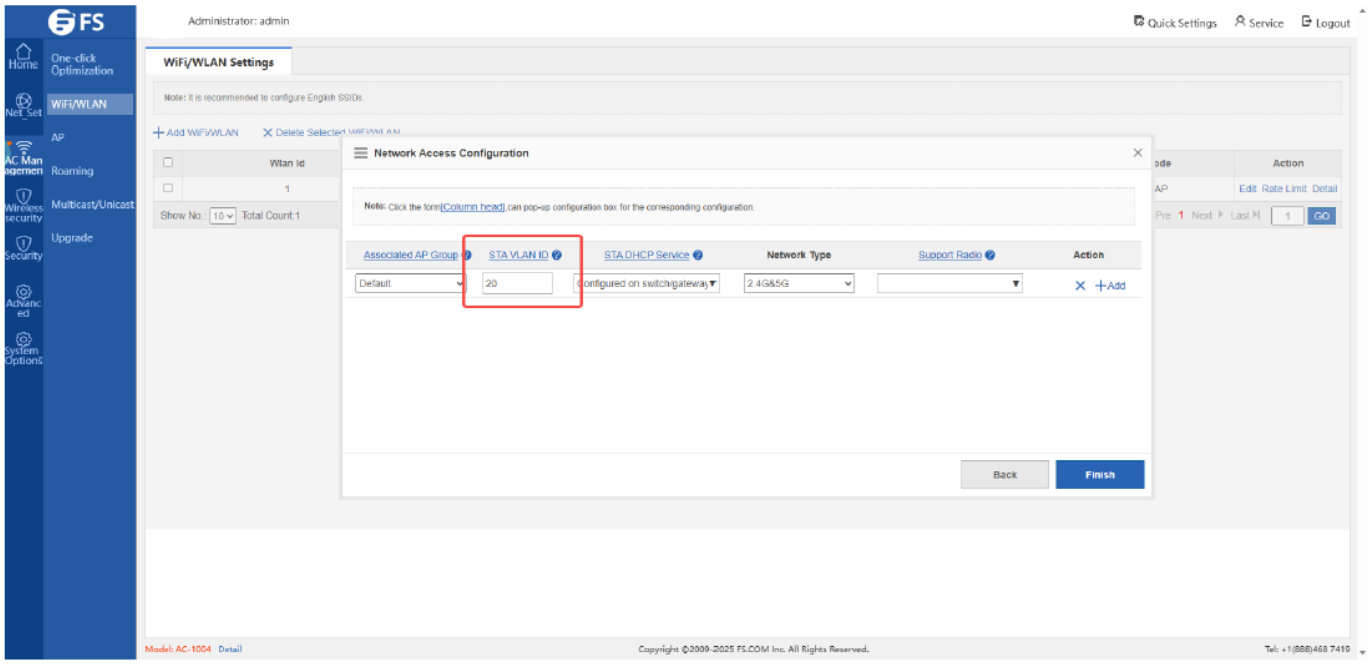
Administrator: admin
Quick Settings
Service
Logout
WiFi/WLAN Settings
Note: It is recommended to configure English SSIDs.
Add WiFi/WLAN
Delete Selected WiFi/WLAN
Network Access Configuration
Note: Click the form[Column head] can pop-up configuration box for the corresponding configuration.
Associated AP Group
STA VLAN ID
STA DHCP Service
Network Type
Support Radio
Action
Default
20
Configured on switch/gateway
2.4G&5G
Add
Back
Finish
Wlan Id
Action
Edit Rate Limit Detail
Show No.: 10 Total Count:1
Model: AC-1004 Detail
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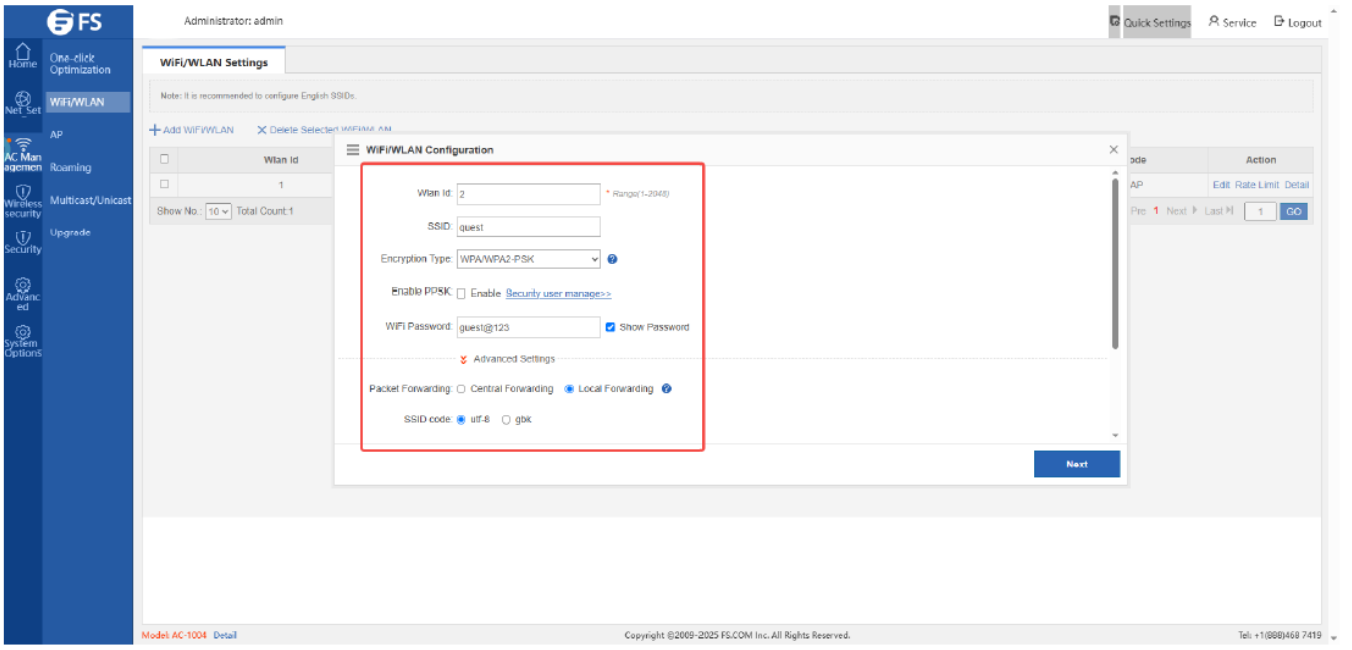
Administrator: admin
Quick Settings
Service
Logout
WiFi/WLAN Settings
Note: It is recommended to configure English SSIDs.
Add WiFi/WLAN
Delete Selected WiFi/WLAN
WiFi/WLAN Configuration
Wlan Id: 2
Range(1-2048)
SSID: guest
Encryption Type: WPA/WPA2-PSK
Enable PPSK: Enable Security user manage>>
WiFi Password: guest@123
Show Password
Advanced Settings
Packet Forwarding: Central Forwarding Local Forwarding
SSID code: utf-8 gbk
Next
Wlan Id
Action
Edit Rate Limit Detail
Show No.: 10 Total Count:1
Model: AC-1004 Detail
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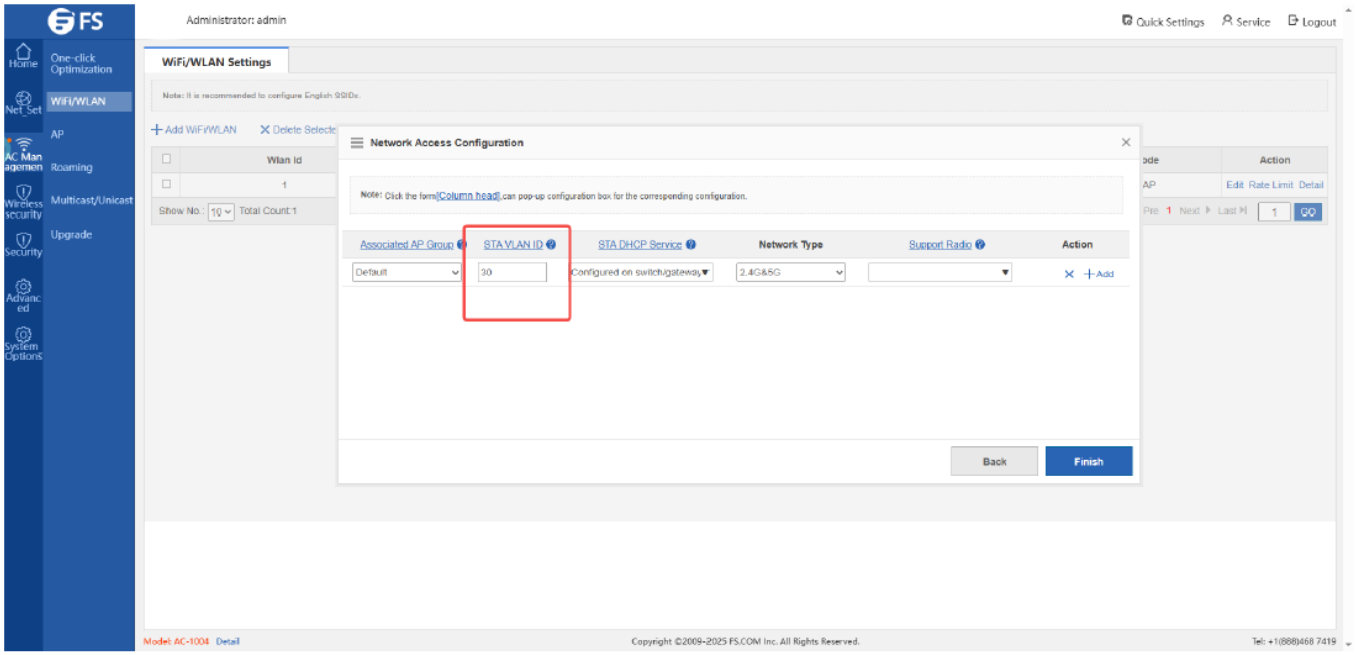
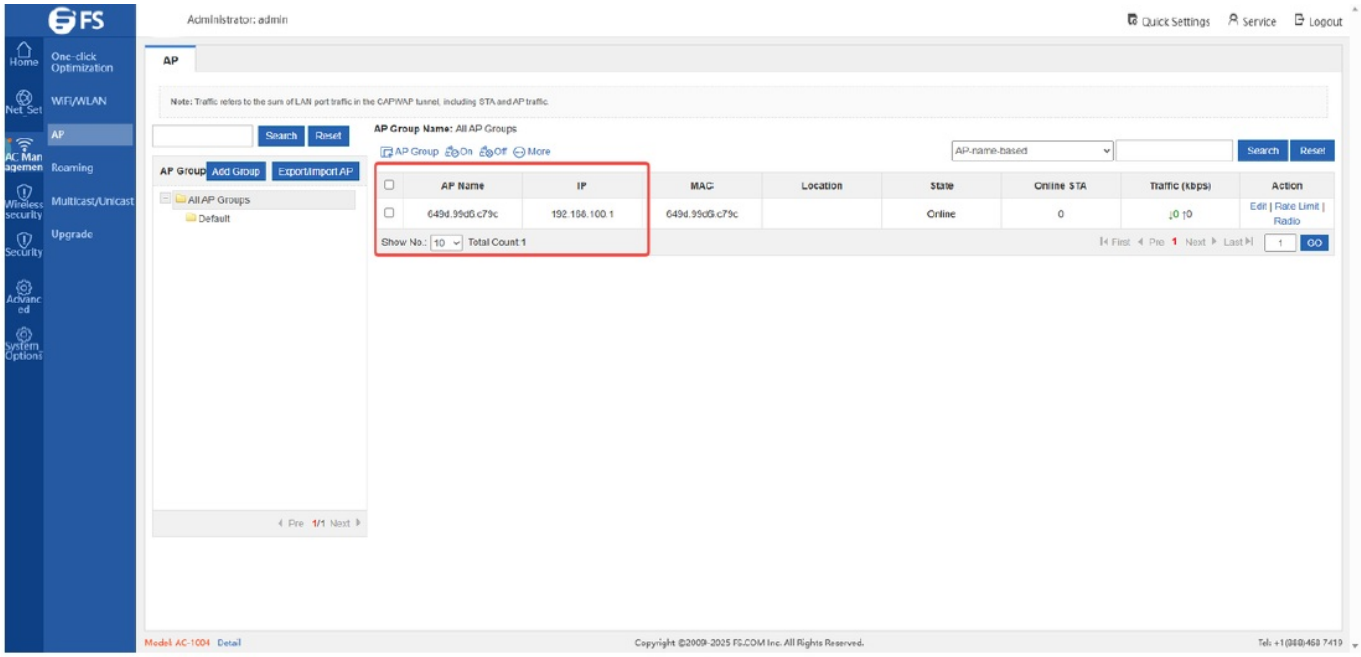
Tel: +1(888)468 7419

Configure guest WiFi

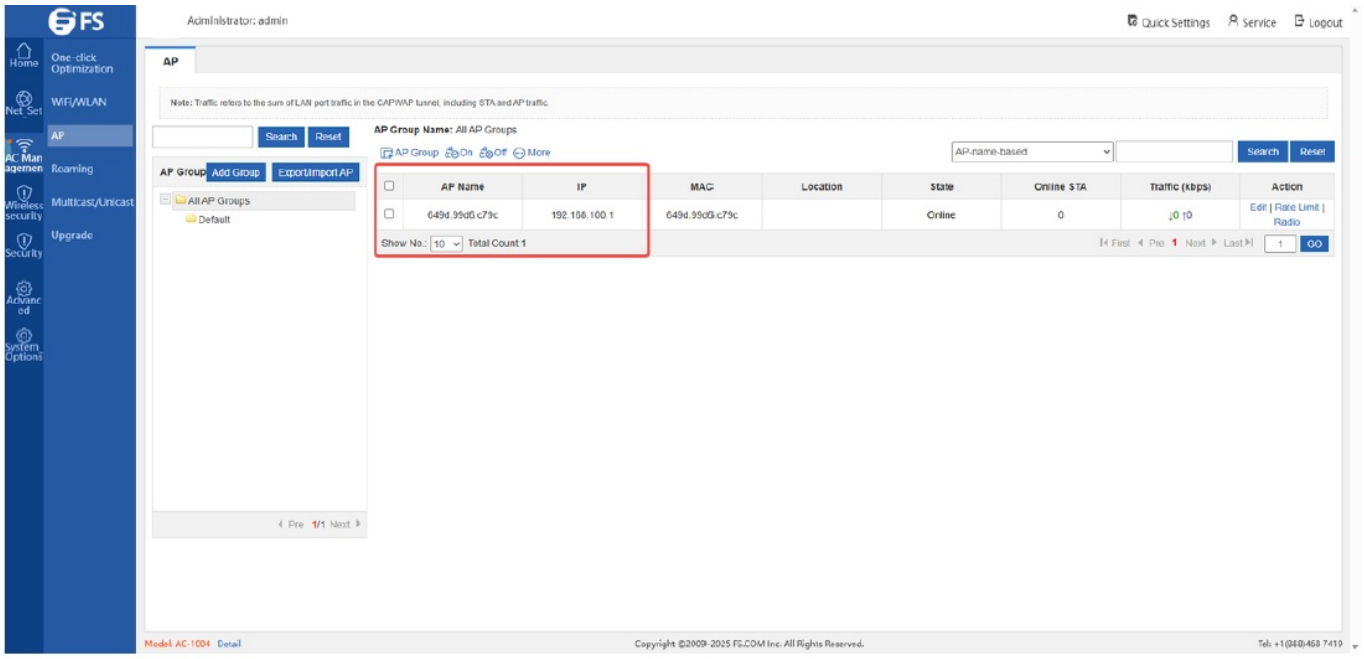
According to the network plan, refer to the screenshot below for configuration.



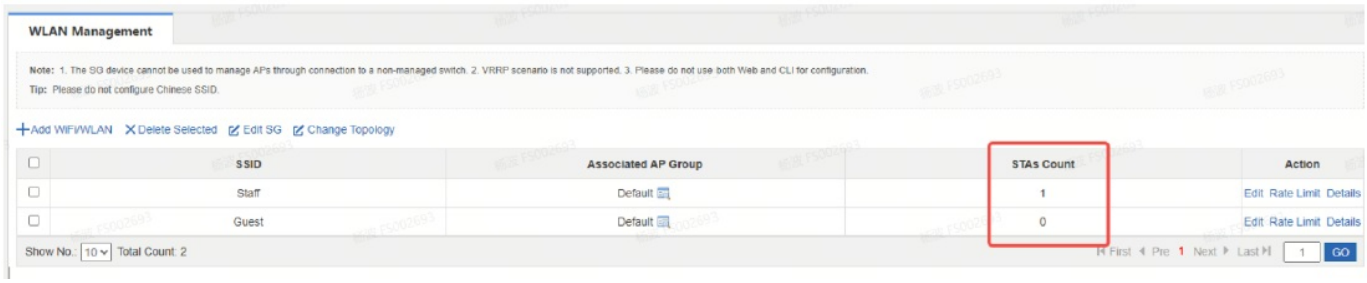


Verify Configuration Results

After the router is configured, the AP device will automatically go online, and you can see in the AP list that one AP has successfully gone online.



STA represents the connected user, and after the terminal connects to the wireless network through SSID, it can view the information of the connected user through STA.



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FAQ

- **Q: What is the role of the L3 Switch in the network setup?**
  The L3 Switch acts as the user's DHCP server and plays a crucial role in routing data between different VLANs in the network.
- **Q: How can I access the management interface of the AC controller?**
  You can access the management interface of the AC controller by entering the management IP address (192.168.100.252) in a web browser.

Documents / Resources

	FS Typical Scenario Deployment [pdf] User Guide Typical Scenario Deployment, Scenario Deployment, Deployment

References

- User Manual

Deployment, FS, Scenario Deployment, Typical Scenario

FS Deployment

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