



**NX-AP Outdoor  
Access Point  
Series NXOS  
User Guide**

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## **Preface**

Thank you for using our products. This manual matches the NXOS User Guide

## **Audience**

This manual is intended for:

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

## **Obtaining Technical Assistance**

Website: <https://www.nodexon.com/>

Technical Support Website: <https://nodexon.com/support>

Community: <http://www.nodexon.com/community>

Technical Support Email: [support@nodexon.com](mailto:support@nodexon.com)

Case Portal : <https://www.nodexon.com/caseportal>

# 1 Web-based Configuration

## 1.1 Overview

A user accesses the Web-based management system using a browser such as Internet Explorer (IE) to manage the AP device.

Web-based management involves two parts: Web server and Web client. A Web server is integrated into a device to receive and process requests sent from a client (for example, read a Web file or execute a command request) and returns the processing results to the client. Generally, a Web client refers to a Web browser.

✔ Currently, this file is applicable to only AP devices.

## 1.2 Application

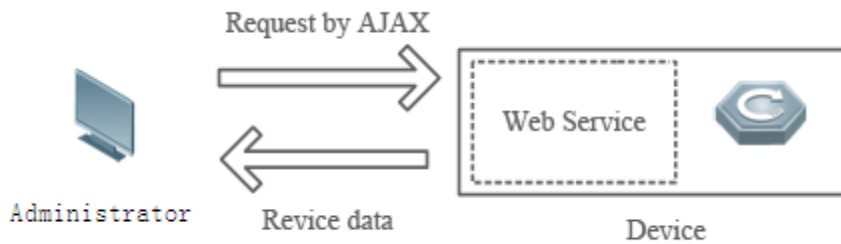
Application	Description
<a href="#">Web-based Management</a>	After configuring, a user can access the Web-based management system through a browser.

### 1.2.1 Web-based Management

#### Scenario

As shown in the following figure, an administrator can access a device through a browser on a PC to manage the device.

Figure 1-1



<b>Note</b>	The Web management system integrates configuration commands and sends them to the device through AJAX requests. Web service is enabled on the device to process HTTP requests to return requested data.
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#### Function Deployment

➤ [Configuration Environment Requirements](#)

#### Requirements for Client

- An administrator logs in to the Web-based management system using the Web browser on a client to manage the device. Generally, a client refers to a PC. It may also be other mobile terminal devices, for example, a laptop.
- Browsers supported: IE7.0, IE8.0, IE9.0, IE10.0, IE11.0, Google chrome, Firefox, and some IE kernel-based browsers (for example, Maxthon). Exceptions such as messy code and format errors may occur when other browsers are used.
- Resolution: It is recommended that the resolution be set to 1024 x 768, 1280 x 1024, or 1440 x 960. Exceptions such as font alignment error and format error may occur when other resolutions are selected.

#### Requirements for server

- The Web service must be enabled for the AP device.
- Login authentication information for Web-based management must be configured for the AP device.
- A management IP address must be configured for the AP device.

#### ↘ Default Configuration

The following table lists the Web management system default configuration.

Feature	Default Settings
Web service	Enabled
Management IP	192.168.110.1

Default Username/Password	Permission Description
admin/admin	Super administrator with all permissions.

#### ↘ Login

You can type **http://X.X.X.X** (management IP address) in the address bar of a browser and press **Enter** to access the login page, as shown in the following figure.

Figure 1-2 Login page



## Access Point

Wireless Control, Communication  
Everywhere

IE8/9/10/11, Google Chrome, and 360 browsers are supported

[Forget your password?](#)

[Simplified Chinese](#) ▾

After typing the username and password, click **Login**.

Enter the username and password. Click **Login** to access the Web management system.

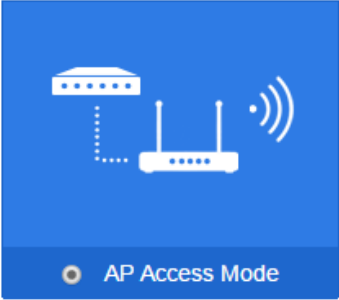
Click **Online Service** for configuration help.

## 1.3 Web-based Configuration

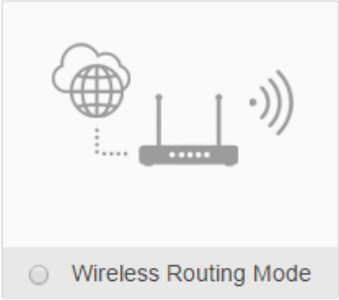
### 1.3.1 Quick Settings

Build a WiFi network for STAs to access for Internet services.

### Quick Settings—External Network Settings



AP Access Mode  
DHCP in others devices



Wireless Routing Mode  
DHCP in AP

VLAN:  \*

Internet Connection Type:

DHCP IP: 172.21.157.78

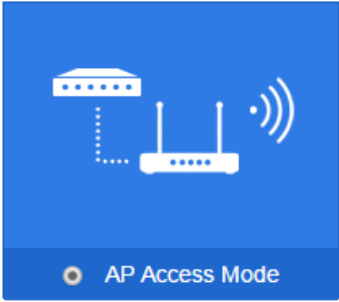
Note: This function is designed for ease of use based on user scenario. It is recommended to configure the function via Web instead of CLI. Aggregate port configuration is not supported.

**Next**

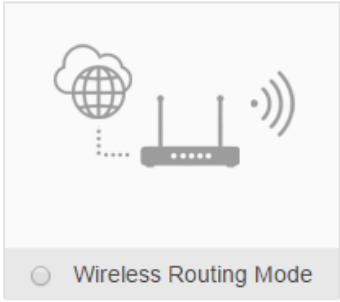
- 1) The **Quick Settings** page is displayed after successfully logging in to the Web if the device is in the default factory setting state, as shown in the preceding figure.
- 2) The **Quick Settings** page is also displayed when you click the **Quick Settings** link in the upper-right corner on the homepage.

The device supporting NAT can work in AP access mode or wireless routing mode.

### Quick Settings—External Network Settings



AP Access Mode  
DHCP in others devices



Wireless Routing Mode  
DHCP in AP

VLAN:  \*

Internet Connection Type:

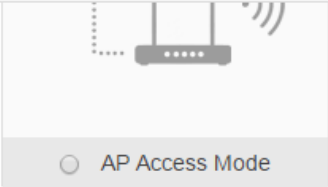
DHCP IP: 172.21.157.78

Note: This function is designed for ease of use based on user scenario. It is recommended to configure the function via Web instead of CLI. Aggregate port configuration is not supported.

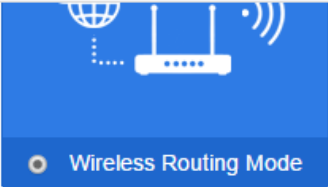
**Next**

A device not supporting NAT can work only in AP access mode.

### Quick Settings—External Network Settings



AP Access Mode  
DHCP in others devices



Wireless Routing Mode  
DHCP in AP

Port:  (If you want to change the port, please go to device configuration.)

Internet Connection Type:

IP:  \*

IP Mask:  \*

Default Gateway:  \*

NAT:  Check this box if you want to convert all internal addresses to external addresses.

**Next**



### Quick Settings—WiFi ✕

SSID:  \*

WiFi Password:   Show Password

DHCP:  Enable (IP addresses are allocated by AP)

Vlan ID:




IP Range:   to

DHCP Gateway:

Preferred DNS Server:  Optional

Secondary DNS Server:  Optional

Configure the WiFi parameters, and click **Finish** to finish the configuration.

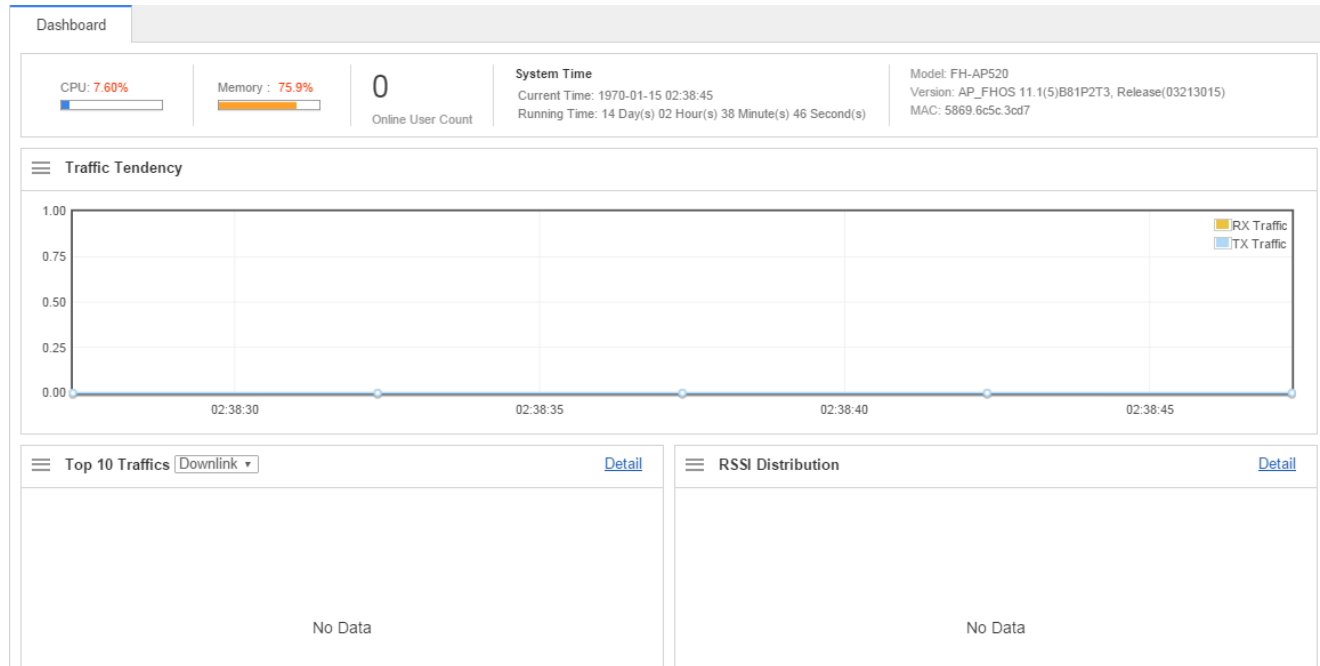
-  After the AP device is initialized, please configure the AP device through the Quick Settings page.
-  All quick settings are scenario-based settings. And some of the configuration is delivered by default. If configurations such as NAT, interface, or address pool are changed via CLI or MACC system, it is recommended to not change the configuration again via Quick Settings, otherwise there could be incompatibility.
-  If the AP device is in access mode, it is recommended to build the gateway and address pool on the other device. If the AP device is in routing mode, it is recommended to build the gateway and address pool on the AP device and configure the NAT for it.

## 1.3.2 Monitor

### 1.3.2.1 Dashboard

The Dashboard enables viewing basic information for the AP device, including the device MAC address, device model, system alarm information, flow trends of AP device ports, latest trends of all management APs, and STA information

corresponding to each management AP. In addition, it enables you to know the distribution condition of STA signal strength in real time.



Click the **Details** link in the upper-right corner to view more system alarm information.

Click the **View Detail** link in the lower left corner to view the STA details on the displayed page, for example, the MAC address and RSSI.

### 1.3.2.2 User Info

User information is displayed here.

User Info

Note: If you want to delete STAs from blacklist, please go to [Blacklist/Whitelist](#).

Refresh Blacklist MAC-based:  Search

<input type="checkbox"/>	STA	MAC	Link Duration	Speed(Kbps)	RSSI(dB)	Channel(Radio)	Network	Action
No Record Found								

Show No.: 10 Total Count: 0 First Pre Next Last 1 GO

## 1.3.3 Network

### 1.3.3.1 WiFi/WLAN

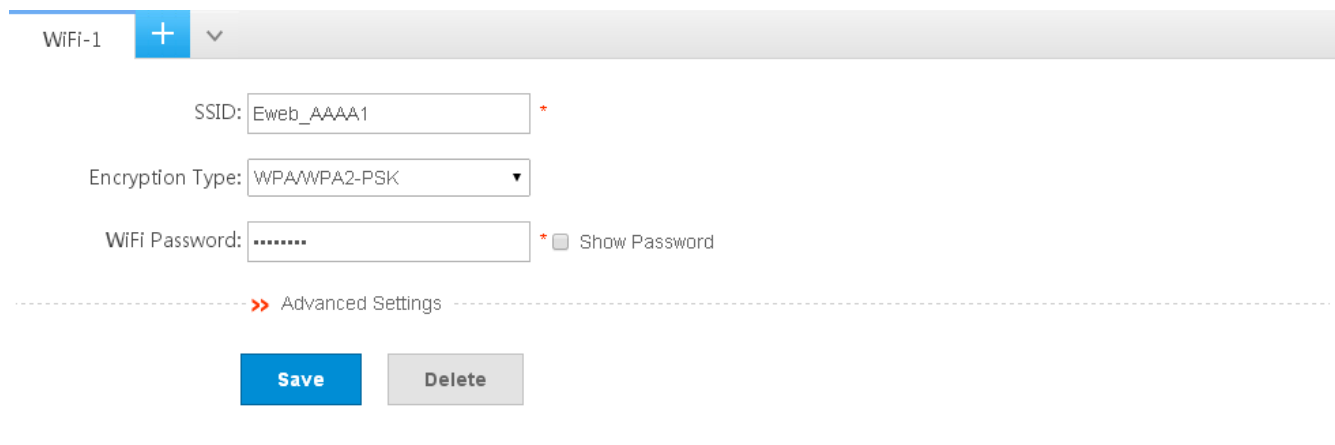
A Wireless Local Area Network (WLAN) refers to a network system that allows different PCs to communicate and share resources with each other by interconnecting different PCs through wireless communication technologies. The essence of a WLAN is that PCs are interconnected with each other in wireless rather than wired mode, thus constructing a network and allowing terminals to move more flexibly.

Wi-Fi or WiFi is a technology for wireless local area networking with devices based on the IEEE 802.11 standards. Devices that can use Wi-Fi technology include personal computers, video-game consoles, smartphones, digital cameras, tablet computers, smart TVs, digital audio players and modern printers. Wi-Fi compatible devices can connect to the Internet via a WLAN and a wireless access point. Such an access point (or hotspot) has a range of about 20 meters (66 feet) indoors and a greater range outdoors. Hotspot coverage can be as small as a single room with walls that block radio waves, or as large as many square kilometers achieved by using multiple overlapping access points.

Service Set Identifier (SSID), also referred to as ESSID: It is used to distinguish different networks, that is, identifying an ESS. An SSID contains a maximum of 32 characters. A WNIC configured with different SSIDs can access different networks. SSIDs are usually broadcasted by an AP or a wireless router. The scanning function delivered with the XP can be used to view SSIDs within the current area. In consideration of security, SSIDs may not be broadcasted. In this case, users need to manually set SSIDs to access corresponding networks. To be simple, an SSID is the name of a WLAN. Only computers with the same SSID can communicate with each other.

The WLAN allows wireless STAs to access the AP through WiFi for Internet services. Multiple WLANs can be added or deleted.

The following figure shows the page for adding a WLAN.



WiFi-1 + ▾

SSID:  \*


Encryption Type:  ▾

WiFi Password:  \*  Show Password

----->> Advanced Settings -----

- Adding WiFi/WLAN

The screenshot shows a web-based configuration interface for WiFi. At the top, there are two tabs: "WiFi-1" and "WiFi-2". The "WiFi-2" tab is active, indicated by a blue highlight and a plus sign icon. Below the tabs, there are three input fields: "SSID:" with the value "Eweb\_AAAA2", "Encryption Type:" with a dropdown menu set to "WPA/WPA2-PSK", and "WiFi Password:" with the value "ewebwifi". A checkbox labeled "Show Password" is checked. Below these fields, there is a dashed line and a link labeled "Advanced Settings" with a right-pointing arrow. At the bottom, there is a blue "Save" button.

- 1) Click , and a new panel for WiFi configuration is displayed.
- 2) Set the WiFi parameters.
- 3) Click **Save** to finish the configuration.

- Editing the WLAN

This screenshot is identical to the one above, showing the WiFi configuration interface for "WiFi-2". The fields are filled with the same values: SSID "Eweb\_AAAA2", Encryption Type "WPA/WPA2-PSK", and WiFi Password "ewebwifi". The "Show Password" checkbox is checked. The "Save" button is visible at the bottom.

- 1) Click the WiFi panel you want to edit.
- 2) Edit the WiFi configuration.
- 3) Click **Save**. The **Edit succeeded** message is displayed.

- Deleting WLANs

The screenshot shows a configuration panel for a WiFi network. At the top, there is a header bar with 'WiFi-1' on the left, a blue '+' button, and a grey 'v' dropdown arrow. Below this, there are three input fields: 'SSID:' with the value 'Eweb\_AAAA1', 'Encryption Type:' with a dropdown menu showing 'WPA/WPA2-PSK', and 'WiFi Password:' with a masked password '.....'. To the right of the password field is a checkbox labeled 'Show Password'. Below the input fields is a dashed line with a red arrow pointing right and the text 'Advanced Settings'. At the bottom of the panel are two buttons: a blue 'Save' button and a grey 'Delete' button.

- 1) Click the WiFi panel you want to delete.
- 2) Click **Delete**.
- 3) Click **OK** in the dialog box displayed to finish the deletion operation.

### 1.3.3.2 Wireless Channel Settings

Wireless channels transmit RF medium between APs and wireless STAs. The use of channels varies with different countries and frequency bands. For example, the 2.4 GHz frequency band can be configured with 13 channels (channel 1 to channel 13), and the 5 GHz frequency band can be configured with five channels (channels 149, 153, 157, 161, and 165). The overlapping channels in the 2.4 GHz frequency band generate interference. It is recommended that these channels be configured as non-overlapping channels (for example, channels 1, 6, and 11) to avoid radio signal collision. The five channels in the 5 GHz frequency band do not overlap or generate interference.

Wireless channel settings are mainly about adjusting the strength of the WiFi signal sent out by the device. Channel parameters can be set for the 2.4G and 5G networks.

- Enabling a 2.4G network

Channel

**Note:** If the signal is unstable or poor, please modify the following parameters.

**Note:** Take the following factors into consideration: antenna installation, signal interference, magnetic fields, and walls.

2.4G Network:  ON

[\[Force switching from 2.4GHz to 5GHz Network\]](#)

Country:

Radio Channel:  Current Channel: 1

RF Bandwidth:

RSSI:

Max STA Count:  (range: 1-156)

5G Network:  OFF

- 1) Click  ON to enable or disable the 2.4G network.
  - 2) Click Enforce switch from 2.4GHz to 5GHz Network to forcibly switch the network type.
- Enabling the 5G network

Channel

**Note:** If the signal is unstable or poor, please modify the following parameters.  
**Note:** Take the following factors into consideration: antenna installation, signal interference, magnetic fields, and walls.

2.4G Network:  OFF

5G Network:  ON  
[\[Force switching from 5GHz to 2.4GHz Network\]](#)

Country:

Radio Channel:  Current Channel: 36

RF Bandwidth:  20MHZ

RSSI:  Through-wall

Max STA Count:  32 (range: 1-100)

- 1) Click  ON to enable or disable the 5G network.
- 2) Click **Enforce switch from 5GHz to 2.4GHz Network** to forcibly switch the network type to a 2.4G network.

### 1.3.3.3 External Network Settings

External network settings are mainly about configuration of the communication mode between the AP and external network. Two communication modes are available: Bridge mode and NAT mode.

In **Bridge Mode**, the Nodexon APs act as bridges, allowing wireless clients to obtain their IP addresses from an upstream DHCP server.

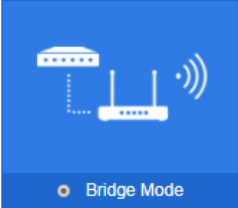
In **NAT Mode**, the Nodexon APs run as DHCP servers to assign IP addresses to wireless clients out of a private 10.x.x.x IP address pool behind a NAT.



The AP you use might not support this function, which is subject to the actual menu items.


External Network

**Note:** This function is designed for ease of use based on user scenario. It is recommended to configure the function via Web instead of CLI. Aggregate port configuration is not supported.



Bridge Mode

DHCP in others devices



NAT Mode

DHCP in AP

VLAN:

Internet Connection Type:

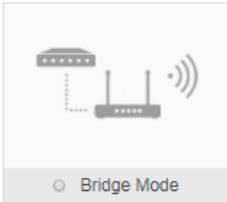
IP:  (in the same subnet with the uplink device)

Mask:  \*

Default Gateway:  Optional

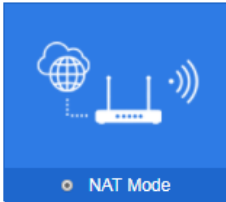
External Network

**Note:** This function is designed for ease of use based on user scenario. It is recommended to configure the function via Web instead of CLI. Aggregate port configuration is not supported.



Bridge Mode

DHCP in others devices



NAT Mode

DHCP in AP

Port:  (If you want to change the port, please go to device configuration.)

Internet Connection Type:

IP:  \*

IP Mask:  \*

Default Gateway:  \*

NAT:  Check this box if you want to convert all internal addresses to external addresses.



You can select the AP working mode to determine the AP role and then configure based on the corresponding working mode.

Set corresponding parameters and save the configuration.

### 1.3.3.4 Wireless Bridging

Multiple APs are connected to each other in a wireless repeater or bridging mode to connect distributed networks and spread wireless signals. An AP device can be regarded as a repeater. It spreads the front-end network and elongates the WiFi transmission distance for association and connection of STAs far away. Wireless bridging supports the 2.4G network and 5G network bridging.

Enable the 2.4G or 5G network bridging function as required, select the **Central Base Station** operating mode, and click **Save** to finish configuration.

### 1.3.3.5 Internet Auth

Web authentication allows you to control user access to the Internet. The users can perform authentication on the browser without installing any application, which is easy and convenient. Web authentication can be classified into iPortal authentication and ePortal authentication based on the server location.

#### ↳ ePortal Authentication

Unauthenticated users will be redirected to the specified website for authentication. If the Portal is not built into the AC, please select ePortal authentication.

ePortal	iPortal	WeChat Authentication	Marketing Authentication	Advanced
<p>Note: Authentication is based on the web controlling user access to the network. No authentication software is required on the client. Authentication can be done using common browsers.</p>				
ePortal Type : <input type="radio"/> ePortalv1 <input checked="" type="radio"/> ePortalv2				
Server IP: <input type="text"/> * <a href="#">[Other Server]</a>				
Redirection URL: <input type="text"/> *				
Portal Key: <input type="text"/>				
Authentication Server: <input type="text" value="All Servers"/> <a href="#">[Radius Server Settings]</a>				
Accounting Server: <input type="text" value="All Servers"/>				
SNMP Server: <a href="#">[SNMP Server]</a> *				
SSID: <input type="text" value="Please select an SSID."/> <a href="#">[WiFi/WLAN Settings]</a>				
<input type="button" value="Save"/> <input type="button" value="Clear"/>				

#### ↳ iPortal Authentication

Unauthenticated users will be redirected to the specified website for authentication. If the Portal is built into the AC, please select iPortal authentication.

ePortal	<b>iPortal</b>	WeChat Authentication	Marketing Authentication	Advanced
---------	----------------	-----------------------	--------------------------	----------

Authentication Package:  Default Package  Custom Package [\[Local User\]](#) [\[Online User\]](#)

Authentication Mode: Use user information on the:  [\[Radius Server\]](#) [\[SNMP Server\]](#)

iPortal Server Port:  (Range: 1025-65535, Default: 8081)

AD Push Mode:

SSID:

**↘ WeChat Authentication**

WeChat Auth is an authentication solution that relieves users from the need of entering usernames and passwords. Besides, it provides an AD space on WeChat for WiFi service providers.

The following two authentication modes are available: WiFi Auth 3.x and WiFi+SMS Auth. (The default is the WeChat template)

ePortal	iPortal	<b>WeChat Authentication</b>	Marketing Authentication	Advanced
---------	---------	------------------------------	--------------------------	----------

Note: WeChat Auth is an authentication solution that relieves users from the need of entering usernames and passwords. Besides, it provides an AD space on WeChat for WiFi service providers. The following two Auth modes are available: WiFi Auth 3.x and WiFi+SMS Auth. (The default Auth template is WeChat template)

WeChat Auth Server IP:

WeChat Auth Server Key:

Device IP:  \*

Target WiFi:  [\[WiFi/WLAN Settings\]](#)

DNS:  \*

⌵ Advanced Settings

Other Settings: [\[Advanced\]](#) [\[Auth Exempt\]](#)

SMS Auth: [\[Marketing Auth\]](#). If you want to enable the SMS Auth as well, please go to Marketing Auth to configure WMC-correlated authentication

Online Clients: [\[Online Clients\]](#)

Choose **Advanced Settings > Other Settings > Advanced.**

**☰ WeChat Auth-Advanced Settings**

Escape Clients Function  **ON** [View Escape Clients](#)

Exempt PC Clients from  **OFF**  
Auth:

Seamless Auth:  **ON**

Choose **Advanced Settings > Other Settings > Auth Exempt.**

**☰ WeChat Auth-Auth Exempt Settings** ✕

packets.

Update Interval:  (Range: 30-3600. Default: 180) The configuration sets the time interval to update online user information.

Redirection HTTP Port:  (Range: 1-65535) Please use ',' to separate port numbers. You can configure up to 10 port numbers.

Kick Inactive Users Off:  **Enabled**

MAC Authentication Bypass:  (Configure the Radius server to apply this function to the WiFi configured with dot1x authentication) This is a kind of MAC-based authentication exemption and mainly used for the authentication of devices such as printers.

Authentication-Exempted Network All users(including unauthorized users) can access the server IP address. You can configure up to 50 IP addresses.

Resource:   ✕ +Add

Authentication-Exempted User IP: The user can access the network without authentication. You can configure up to 50 IP addresses.

✕ +Add

Free Ur: Users access the URL address without authentication. The maximum configuration allows you to configure 50

✕ +Add

## 📌 Marketing Authentication

Marketing authentication is implemented on the WMC server based on the TR069 protocol.

The following three authentication modes are available: Fixed Account Auth, SMS Auth, and Auth Exempt (The default is the ePortalv1 template).

ePortal	iPortal	WeChat Authentication	<b>Marketing Authentication</b>	Advanced
---------	---------	-----------------------	---------------------------------	----------

**Note:** Marketing Auth is implemented on the WMC server based on TR069 protocol.  
The following three Auth modes are available: Fixed Account Auth, SMS Auth and Auth Exempt (The default Auth template is ePortalV1 template)

Auth Server URL:

Auth Server IP:

Auth Redirection URL:

Auth Server Key:

Target WiFi:  [\[WiFi/WLAN Settings\]](#)

DNS:  \*

>> Advanced Settings

### Advanced Settings

Advanced Settings provide some optional features applicable to both Web authentication V1 and Web authentication V2.

ePortal	iPortal	WeChat Authentication	Marketing Authentication	<b>Advanced</b>
---------	---------	-----------------------	--------------------------	-----------------

Max HTTP Session Count:  (Range: 1-255. Default: 255) The configuration prevents an unauthorized user from sending excessive HTTP requests.

Redirection Timeout:  (Range: 1-10. Default: 3) The configuration prevents an unauthorized user from occupying the TCP connection without sending GET/HEAD packets.

Update Interval:  (Range: 30-3600. Default: 180) The configuration sets the time interval to update online user information.

Redirection HTTP Port:  (Range: 1-65535) Please use ',' to separate port numbers. You can configure up to 10 port numbers.

Kick Inactive Users Off:  Enabled

MAC Authentication Bypass:  (Configure the Radius server to apply this function to the WiFi configured with dot1x authentication) This is a kind of MAC-based authentication exemption and mainly used for the authentication of devices such as printers.

Authentication-Exempted Network All users(including unauthorized users) can access the server IP address. You can configure up to 50 IP addresses.

Resource:

Authentication-Exempted User IP: The user can access the network without authentication. You can configure up to 50 IP addresses.

Free Url: Users access the URL address without authentication. The maximum configuration allows you to configure 50

## 1.3.4 Security

### 1.3.4.1 Containment

Rogue APs may exist in a WLAN. Rogue APs may have security vulnerabilities and can be manipulated by attackers to seriously threaten and endanger network security. The containment function can be enabled on the AP to attack rogue devices and prevent other wireless STAs from being associated with rogue devices.

#### ↳ Containment Settings

Click  OFF to enable or disable rogue AP containment for the device.

#### ↳ Contained AP

SSID	MAC	Channel	Rate(Mbps)	RSSI
No Record Found				

You can select the containment mode and view the WiFi list corresponding to the contained rogue APs.

You can click **Clear Rogue AP** to clear all contained APs.

#### ↳ Trusted AP

When the rogue AP containment function is enabled, the APs not authorized will be contained. However, some APs are trusted devices and special processing is required. You can configure the MAC addresses of trusted devices.


Containment Settings   Contained AP   **Trusted AP**

Note: The following MAC addresses correspond to trusted APs, which will not be contained.

**Trusted MAC:**

---

Trusted Vendor List

**OUI:**    **Multi-to-Multi**    **SSID:**

### 1.3.4.2 Blacklist/Whitelist

To increase wireless security, access for wireless users can be controlled by allowing or not allowing specified users WiFi access.


BlackList/WhiteList Settings

Note: The function specifies the users allowed to access the WiFi or denied from accessing the WiFi . The MAC address is the hardware address of the client (such as laptop or mobile phone) associated with the AP.

List Type:  Deny MAC address from accessing WiFi (Blacklist)    Permit MAC address to access WiFi (Whitelist)

Username:    MAC:  \* X

Current MAC: aaaa.aaaa.aaaa   [\[SSID-based Access Control\]](#)

Click the  icon to add a MAC address for a user. You can add multiple MAC addresses.

Click the **SSID-based Access Control** link to configure the blacklist and whitelist for each WiFi.

BlackList/WhiteList Settings    abcd    Eweb\_AAAA2    v

**Note:** The function specifies the users allowed to access the WiFi or denied from accessing the WiFi. The MAC address is the hardware address of the client (such as laptop or mobile phone) associated with the AP.

List Type:  Deny MAC address from accessing WiFi (Blacklist)     Permit MAC address to access WiFi (Whitelist)

Username:     MAC:  \* X    +Add

Current MAC: aaaa.aaaa.aaaa

**Save**

### 1.3.4.3 Dynamic Blacklist

Add malicious attack sources to the dynamic blacklist to prohibit access.

Dynamic Blacklist Settings

**Note:** With attack detection and dynamic blacklist function enabled, the AP adds the attack source to the dynamic blacklist automatically after identifying the attack. When the effective time runs out, the attack source is removed from the blacklist automatically.

Detection Mode:  Flood Attack Detection     Spoofing Attack Detection     Weak Initialization Vector Detection     DDoS attack

Dynamic Blacklist:  On

Effective Time:  \* (Range:60-1200 seconds)

**Save**

[Refresh](#)    [Delete Selected Item](#)

<input type="checkbox"/>	Number	MAC	Effective Time	Action
No Record Found				

Show No.:  Total Count:0    [First](#) [Pre](#) [Next](#) [Last](#)  **GO**

Dynamic Blacklist Settings

**Note:** With attack detection and dynamic blacklist function enabled, the AP adds the attack source to the dynamic blacklist automatically after identifying the attack. When the effective time runs out, the attack source is removed from the blacklist automatically.

Detection Mode:  Flood Attack Detection  Spoofing Attack Detection  Weak Initialization Vector Detection  DDoS attack

Dynamic Blacklist:  On

Effective Time:  \* (Range:60-1200 seconds)

[Refresh](#) [Delete Selected Item](#)

	Number	MAC	Effective Time	Action
No Record Found				

Show No.:  Total Count:0

- 1) Set the parameters and then save the configuration.
- 2) Select the blacklist from the list.
- 3) Click **Delete Selected Item** and then click **OK** in the displayed dialog box to finish deleting.

### 1.3.4.4 Prohibiting Mutual Access of Internal and External Networks

To ensure network security and prevent unwitting information transfer, you can prohibit communication between internal network users by means of configuration. Some special users (users who can access each other) can be identified based on the user name and MAC address.

User Isolation

**Note:** The function prevents users from communicating with each other without affecting their access to the network, ensuring service security.


User Isolation:  ON

Allowed MAC: Username:  MAC:  \*

Current MAC: 00d0.f822.33aa

- 1) Click  User Isolation:  ON  to enable or disable mutual access for internal network users.



- 2) Click  to delete the MAC address of the user.
- 3) Click the **Add** icon to add a MAC address for a mutual-access user. You can add multiple MAC addresses.
- 4) Click **Save** to finish the configuration.

### 1.3.4.5 Anti-attack/ARP Table

Some malicious attacks are always found in the network environment. These attacks may bring about an extremely heavy burden for the switch, resulting in the switch using an excessive amount of CPU power and giving rise to a potential operational failure.

#### ⤵ NFPP

NFPP	ARP
ARP-guard: <input checked="" type="checkbox"/> Enable ARP-guard, so as to prevent a large number of invalid ARP packets from attacking the device. <a href="#">[ARP-guard List]</a>	
IP-guard: <input checked="" type="checkbox"/> Enable IP-guard, so as to prevent hackers from scanning the entire network and consuming bandwidth. <a href="#">[IP-guard List]</a>	
ICMP-guard: <input checked="" type="checkbox"/> Enable ICMP-guard, so as to prevent a large number of invalid ICMP packets from consuming bandwidth and CPU resources. <a href="#">[ICMP-guard List]</a>	
DHCP-guard: <input checked="" type="checkbox"/> Enable DHCP-guard, so as to prevent malicious requests from exhausting DHCP pools and leaving legitimate users unable to access the Internet. <a href="#">[DHCP-guard List]</a>	
DHCPv6-guard: <input checked="" type="checkbox"/> Enable DHCPv6-guard, so as to prevent malicious requests from exhausting DHCPv6 pools and leaving legitimate users unable to access the Internet. <a href="#">[DHCPv6-guard List]</a>	
ND-guard: <input checked="" type="checkbox"/> Enable ND-guard, so as to prevent Neighbor Discovery packets from consuming bandwidth.	
Display NFPP Log: <a href="#">[Display NFPP Log]</a>	
<input type="button" value="Save"/> <input type="button" value="Restore Default Settings"/>	

- 1) **ARP-guard:** Enables ARP-guard configuration. Click the **ARP-guard List** link to view the host where ARP attack is detected.
- 2) **IP-guard:** Enables IP-guard configuration. Click the **IP-guard List** link to view the host where IP scanning is detected.
- 3) **ICMP-guard:** Enables ICMP-guard configuration. Click the **ICMP-guard List** link to view the host where an ICMP attack is detected.
- 4) **DHCP-guard:** Enables DHCP-guard configuration. Click the **DHCP-guard List** link to view the host where a DHCPv4 attack is detected.
- 5) **DHCPv6-guard:** Enables DHCPv6-guard configuration. Click the **DHCPv6-guard List** link to view the host where a DHCPv6 attack is detected.

6) **ND-guard:** Enables ND-guard configuration.

➤ **ARP**

NFPP ARP

Dynamic Binding>>Static Binding Remove static Binding Manual Binding IP-based:  Search

<input type="checkbox"/>	IP	MAC	Type	Action
<input type="checkbox"/>	192.168.3.1	5869.6c71.21de	Dynamic Binding	Dynamic Binding>>Static Binding
<input type="checkbox"/>	192.168.3.2	5869.6c5c.3cd8	Local ARP Entry	Dynamic Binding>>Static Binding

Show No.: 10 Total Count: 2 First Pre 1 Next Last 1 GO

● **Dynamic Binding>>Static Binding**

NFPP ARP

Dynamic Binding>>Static Binding Remove static Binding Manual Binding IP-based:  Search

<input type="checkbox"/>	IP	MAC	Type	Action
<input type="checkbox"/>	192.168.3.1	5869.6c71.21de	Dynamic Binding	Dynamic Binding>>Static Binding
<input type="checkbox"/>	192.168.3.2	5869.6c5c.3cd8	Local ARP Entry	Dynamic Binding>>Static Binding

Show No.: 10 Total Count: 2 First Pre 1 Next Last 1 GO

- 1) Select one or multiple records from the ARP list.
- 2) Click the **Dynamic Binding>>Static Binding** icon to switch from dynamic binding to static binding in batches.

● **Remove static Binding**

NFPP ARP

Dynamic Binding>>Static Binding Remove static Binding Manual Binding IP-based:  Search

<input type="checkbox"/>	IP	MAC	Type	Action
<input type="checkbox"/>	192.168.3.1	5869.6c71.21de	Dynamic Binding	Dynamic Binding>>Static Binding
<input type="checkbox"/>	192.168.3.2	5869.6c5c.3cd8	Local ARP Entry	Dynamic Binding>>Static Binding

Show No.: 10 Total Count: 2 First Pre 1 Next Last 1 GO

- 1) Select one or multiple records from the ARP list.
- 2) Click the **Remove static Binding** icon to remove static binding in batches.

● **Manual Binding**

NFPP ARP

Dynamic Binding>>Static Binding Remove static Binding Manual Binding IP-based:  Search

<input type="checkbox"/>	IP	MAC	Type	Action
<input type="checkbox"/>	192.168.3.1	5869.6c71.21de	Dynamic Binding	Dynamic Binding>>Static Binding
<input type="checkbox"/>	192.168.3.2	5869.6c5c.3cd8	Local ARP Entry	Dynamic Binding>>Static Binding

Show No.: 10 Total Count: 2 First Pre 1 Next Last 1 GO

**Manual binding ARP** [X]

IP:

MAC:

OK Cancel

- 1) Click the **Manual Binding** icon.
- 2) Set the IP address and MAC address.

Click **OK**. The newly bound ARP is displayed in the ARP list after the **Save operation succeeded** message is displayed.

### 1.3.4.6 ACL

When receiving a packet on a port, the input ACL checks whether the packet matches the ACE entry for this port. When the device intends to output a packet through a port, the output ACL checks whether the packet matches the ACE entry for this port.

When there are different filtration rules, multiple rules may be applied simultaneously and only several of them can be applied. If a packet matches an ACE entry, this packet is processed (permitted or denied) according to the action policy defined by this ACE.

#### ACL List

ACL Settings | ACL Time

ACL List: 1 Add ACL Delete ACL + Add Access Rule X Delete Selected Access Rule

<input type="checkbox"/>	NO.	Source IP/Wildcard	Source Port	Access Control	Protocol	Destination IP/Wildcard	Destination port	Time Period	Status	Action
<input type="checkbox"/>	1	Any		Permit				All Time	Effective	<a href="#">Edit</a>   <a href="#">Move</a>

Show No.: 10 Total Count:1 First Pre **1** Next Last 1 GO

#### Adding an ACL

ACL Settings | ACL Time

ACL List: 1 Add ACL Delete ACL + Add Access Rule X Delete Selected Access Rule

<input type="checkbox"/>	NO.	Source IP/Wildcard	Source Port	Access Control	Protocol	Destination IP/Wildcard	Destination port	Time Period	Status	Action
<input type="checkbox"/>	1	Any		Permit				All Time	Effective	<a href="#">Edit</a>   <a href="#">Move</a>

Show No.: 10 ≡ Add ACL X 1 GO

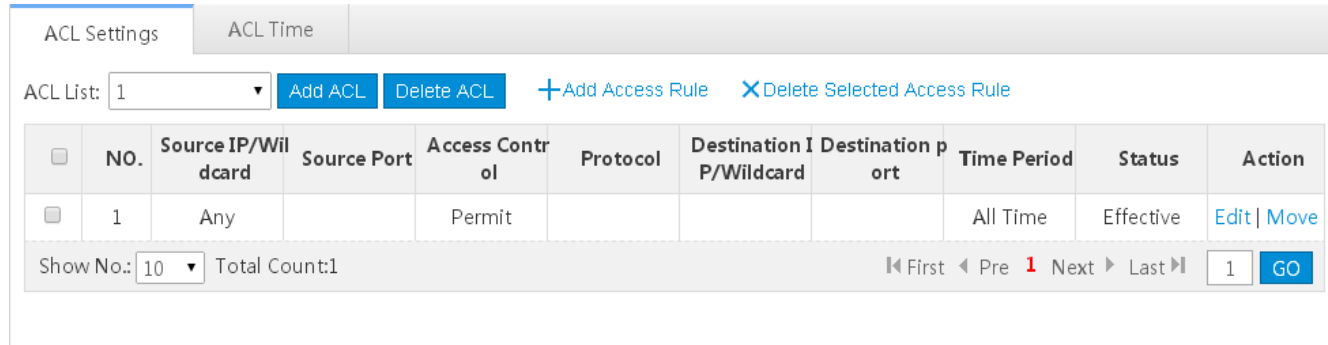
ACL Type:  Standard ACL (Source-address-based Control)  Extended ACL (Flow-based Control)

ACL List:  \* Both Chinese and English are supported. If you want to configure a number, please make sure that it is in the range of 1-99 or 1300-1999.

OK Cancel

Click **Add ACL** and set the configuration items in the dialog box displayed. Click **OK**. The newly added ACL is displayed in the **ACL List** drop-down list on the left after the **Save operation succeeded** message is displayed.

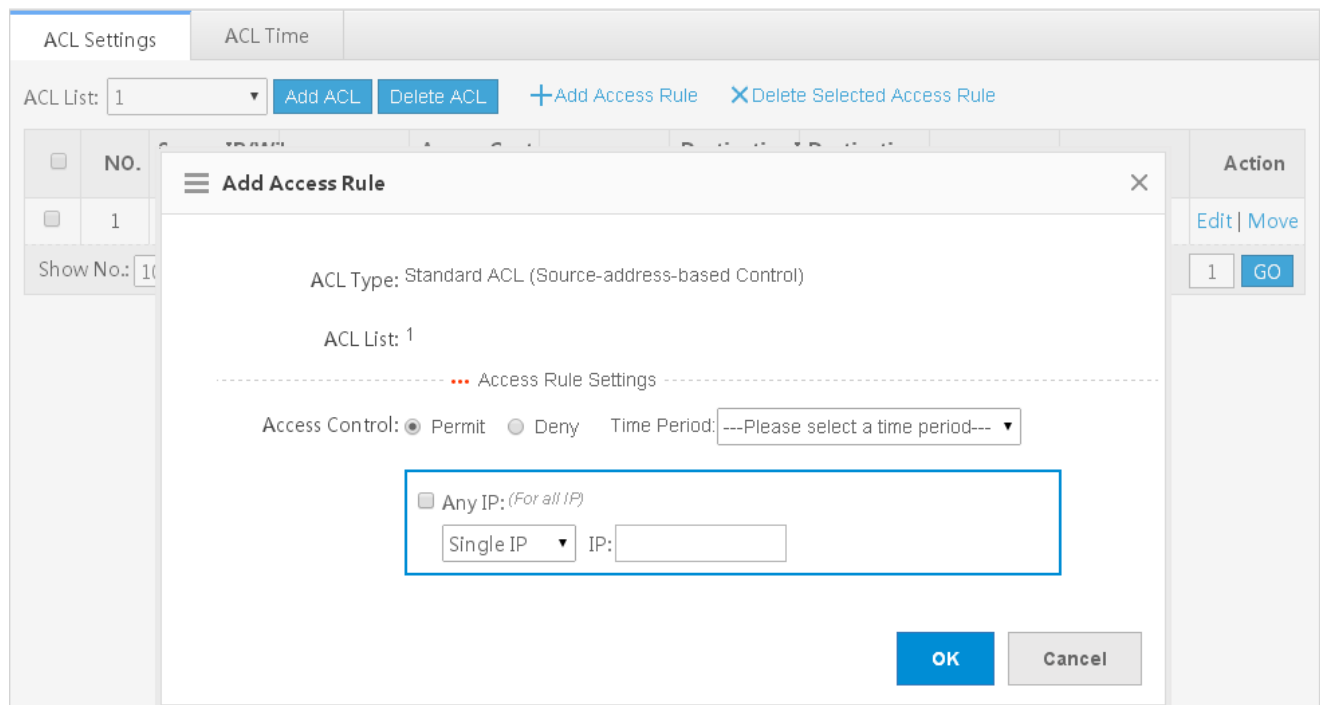
- Deleting an ACL



1) Select the ACL from the **ACL List** drop-down list.

2) Click **Delete ACL** to finish deleting.

- Adding an access rule



1) Click **Add Access Rule**.

2) Set the configuration items in the dialog box displayed.

3) Click **OK**. The newly added access rule is displayed in the access rule list after the **Save operation succeeded** message is displayed.

- Editing an access rule

1) Click the **Edit** button for an access rule in the access rule list.

- 2) The configuration for the access rule is displayed in the dialog box and the configuration can be edited.
- 3) Click **OK**. The **Save operation succeeded** message is displayed.

- Deleting an access rule

The screenshot shows the 'ACL Settings' interface with the 'ACL Time' tab selected. At the top, there are tabs for 'ACL Settings' and 'ACL Time'. Below the tabs, there is a dropdown menu for 'ACL List' set to '1', and buttons for 'Add ACL', 'Delete ACL', '+Add Access Rule', and 'X>Delete Selected Access Rule'. A table displays the ACL list with the following columns: NO., Source IP/Wildcard, Source Port, Access Control, Protocol, Destination IP/Wildcard, Destination port, Time Period, Status, and Action. The table contains one record with NO. 1, Source IP/Wildcard 'Any', Access Control 'Permit', and Status 'Effective'. Below the table, there is a 'Show No.' dropdown set to '10', 'Total Count:1', and navigation buttons: 'First', 'Pre', 'Next', 'Last', and a 'GO' button.

NO.	Source IP/Wildcard	Source Port	Access Control	Protocol	Destination IP/Wildcard	Destination port	Time Period	Status	Action
1	Any		Permit				All Time	Effective	Edit   Move

- 1) Select one or multiple records from the access rule list.

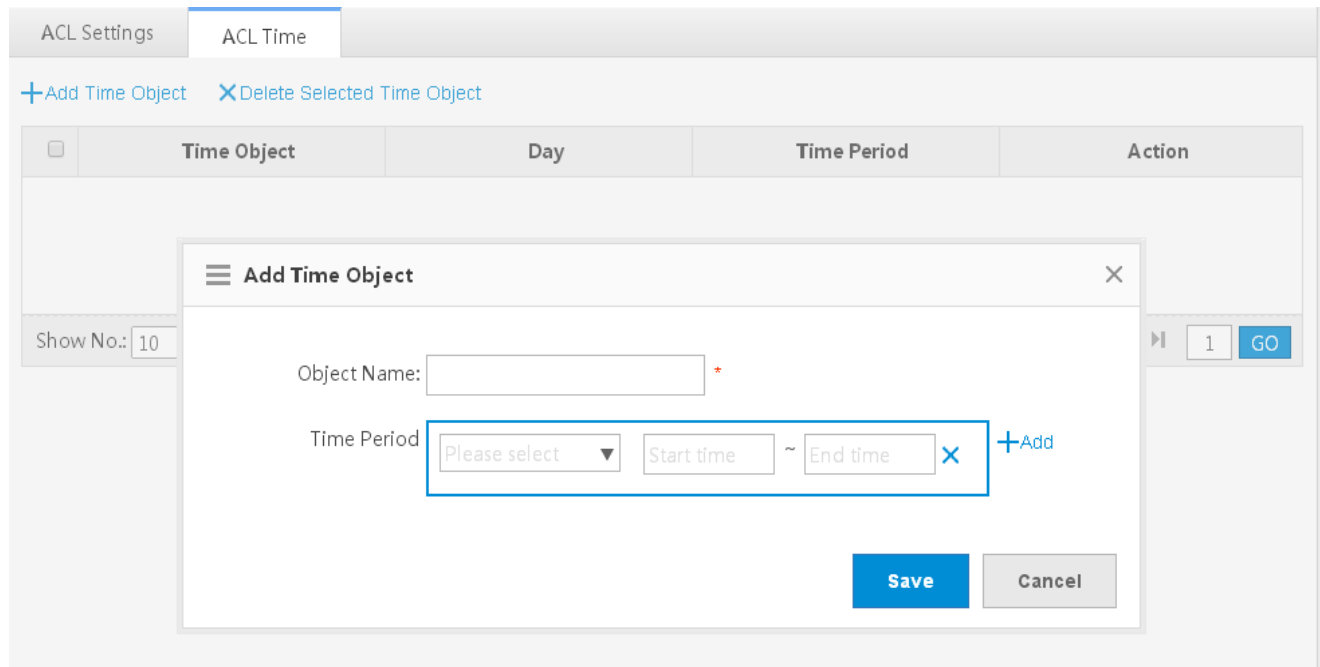
Click **Delete Selected Access Rule** and then click **OK** in the displayed dialog box to finish deleting.ACL Time

ACLs based on time can be enabled. For example, you can set ACLs to take effect in different time segments for a week, but first a time object must be configured.

The screenshot shows the 'ACL Time' interface with the 'ACL Time' tab selected. At the top, there are tabs for 'ACL Settings' and 'ACL Time'. Below the tabs, there are buttons for '+Add Time Object' and 'X>Delete Selected Time Object'. A table displays the ACL Time list with the following columns: Time Object, Day, Time Period, and Action. The table is empty and contains the text 'No Record Found'. Below the table, there is a 'Show No.' dropdown set to '10', 'Total Count:0', and navigation buttons: 'First', 'Pre', 'Next', 'Last', and a 'GO' button.

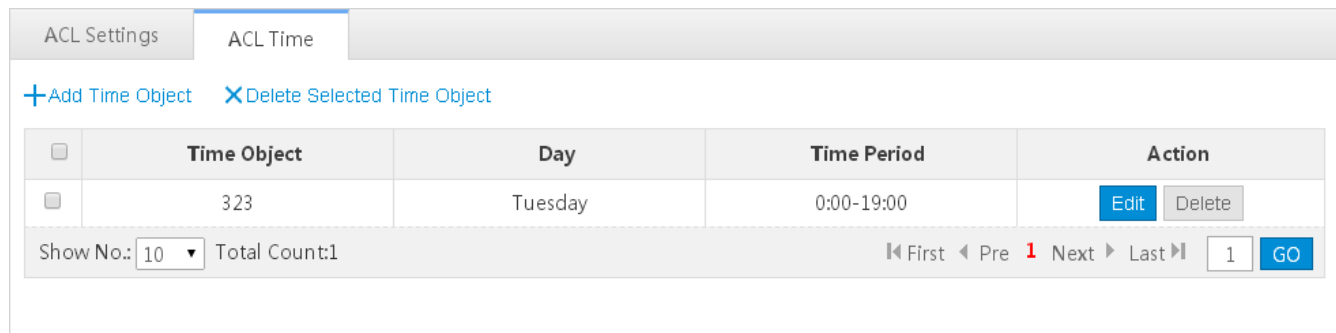
Time Object	Day	Time Period	Action
No Record Found			

- Adding a time object



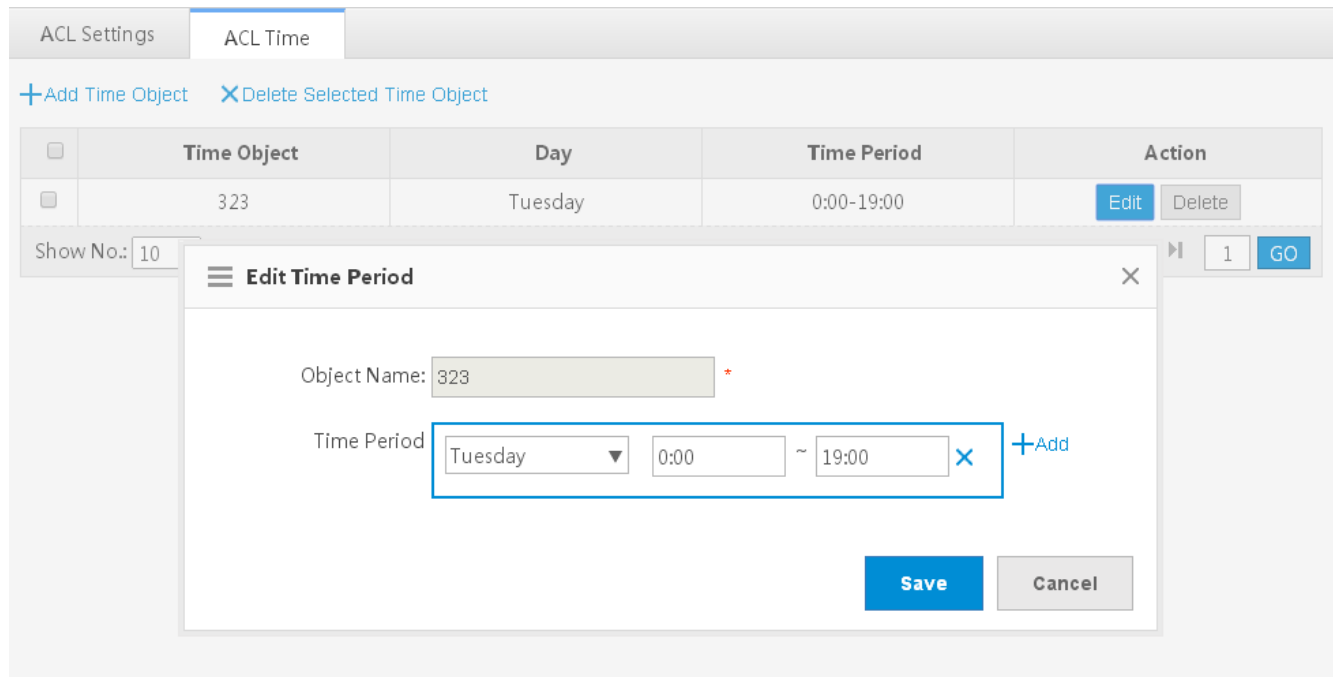
Click **Add Time Object**, then set the configuration items in the dialog box displayed, and click **Save**. The newly added time object is displayed in the time object list after the **Save operation succeeded** message is displayed.

- Deleting time objects in batches

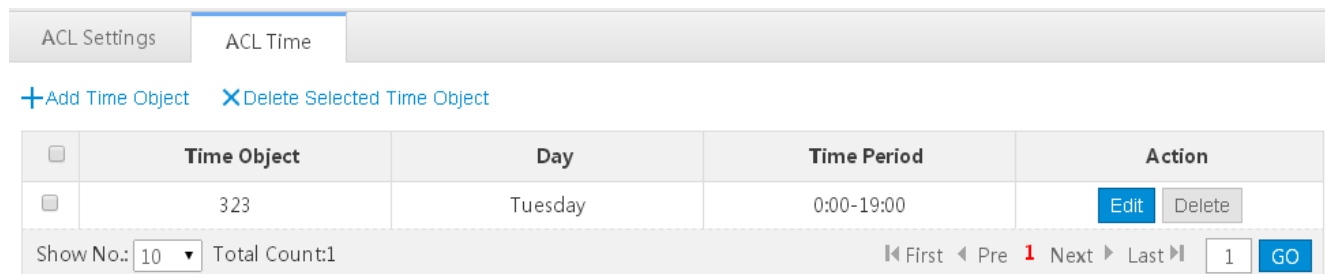


- 1) Select one or multiple records from the time object list.
- 2) Click **Delete Selected Time Object** and then click **OK** in the dialog box displayed to finish deleting.

- Editing a time object



- 1) Click the **Edit** button for a time object in the list.
  - 2) The configuration about the time object is displayed in the dialog box. Then edit the configuration.
  - 3) Click **Save**. The **Save operation succeeded** message is displayed.
- Deleting a time object



Click the **Delete** button for a time object in the list.

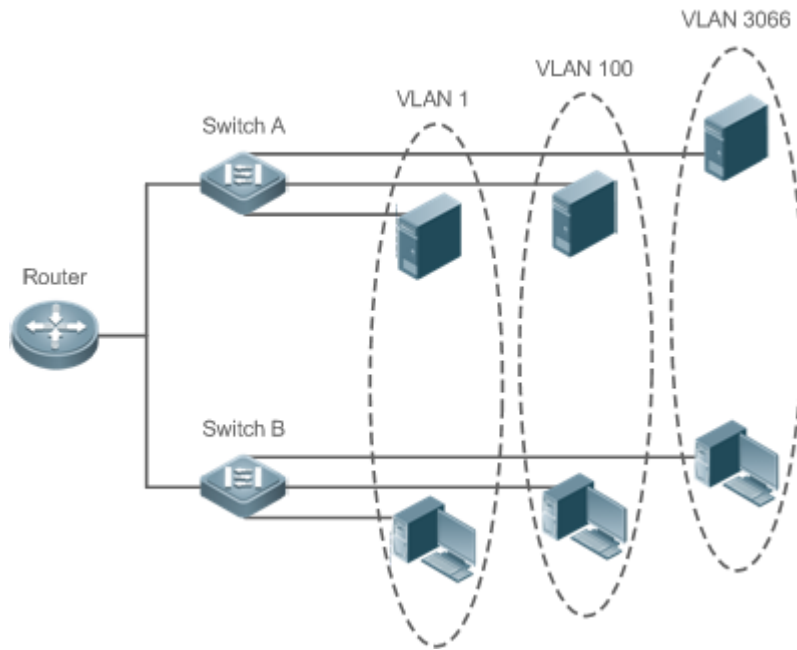
## 1.3.5 Advanced

### 1.3.5.1 VLAN

A Virtual Local Area Network (VLAN) is a logical network created based on a physical network. A VLAN can be categorized into Layer-2 networks of the OSI model.

A VLAN has the same properties as a common LAN, except for physical location limitation. Unicast, broadcast and multicast frames of Layer 2 are forwarded and transmitted within a VLAN, keeping traffic segregated.

We may define a port as a member of a VLAN, and all terminals connected to this port are parts of a virtual network that supports multiple VLANs. You do not need to adjust the network physically when adding, removing and modifying users. Communication among VLANs is realized through Layer-3 devices, as shown in the following figure.



The VLANs supported by Nodexon products comply with the IEEE802.1Q standard. A maximum of 4094 VLANs (VLAN ID 1-4094) are supported, among which VLAN 1 cannot be deleted.

VLAN Settings

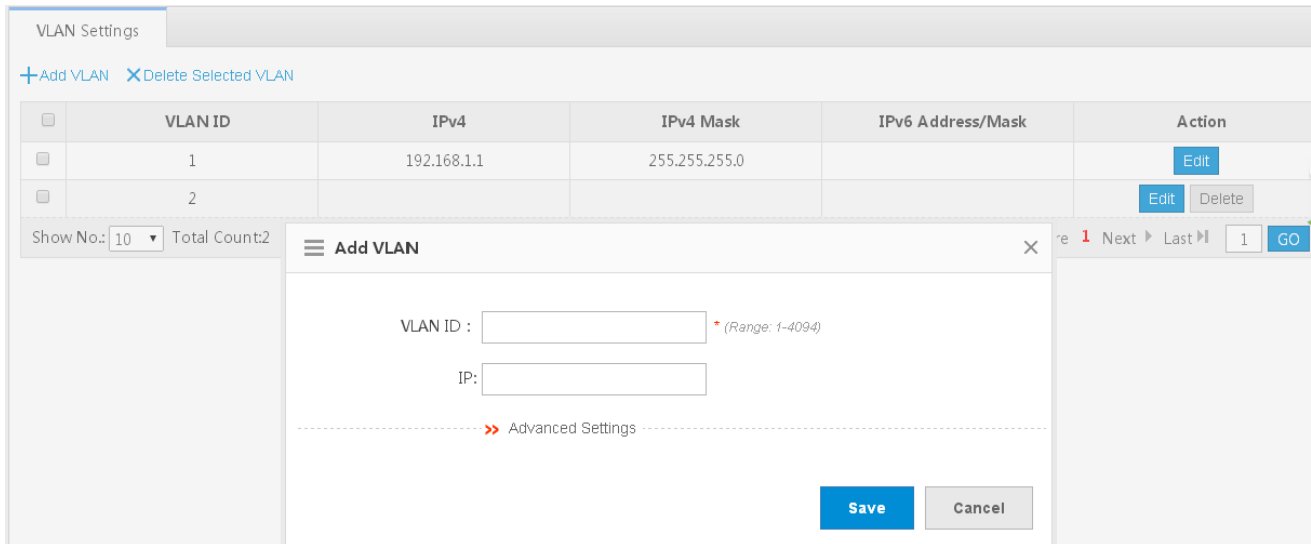
[+Add VLAN](#) [XDelete Selected VLAN](#)

<input type="checkbox"/>	VLAN ID	IPv4	IPv4 Mask	IPv6 Address/Mask	Action
<input type="checkbox"/>	1				<a href="#">Edit</a>
<input type="checkbox"/>	13	192.168.13.1	255.255.255.0		<a href="#">Edit</a> <a href="#">Delete</a>

Show No.:  Total Count:2 
[First](#) [Pre](#) [Next](#) [Last](#)  [GO](#)

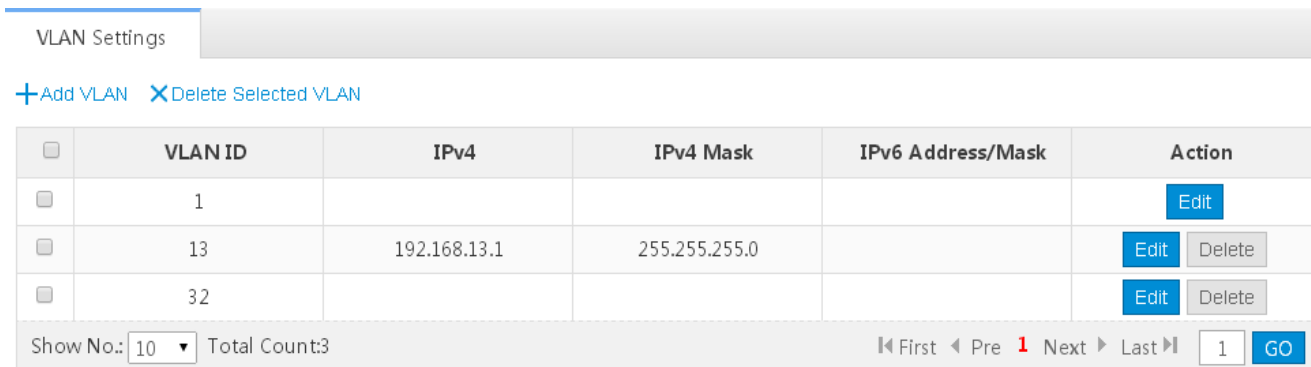
- Adding a VLAN





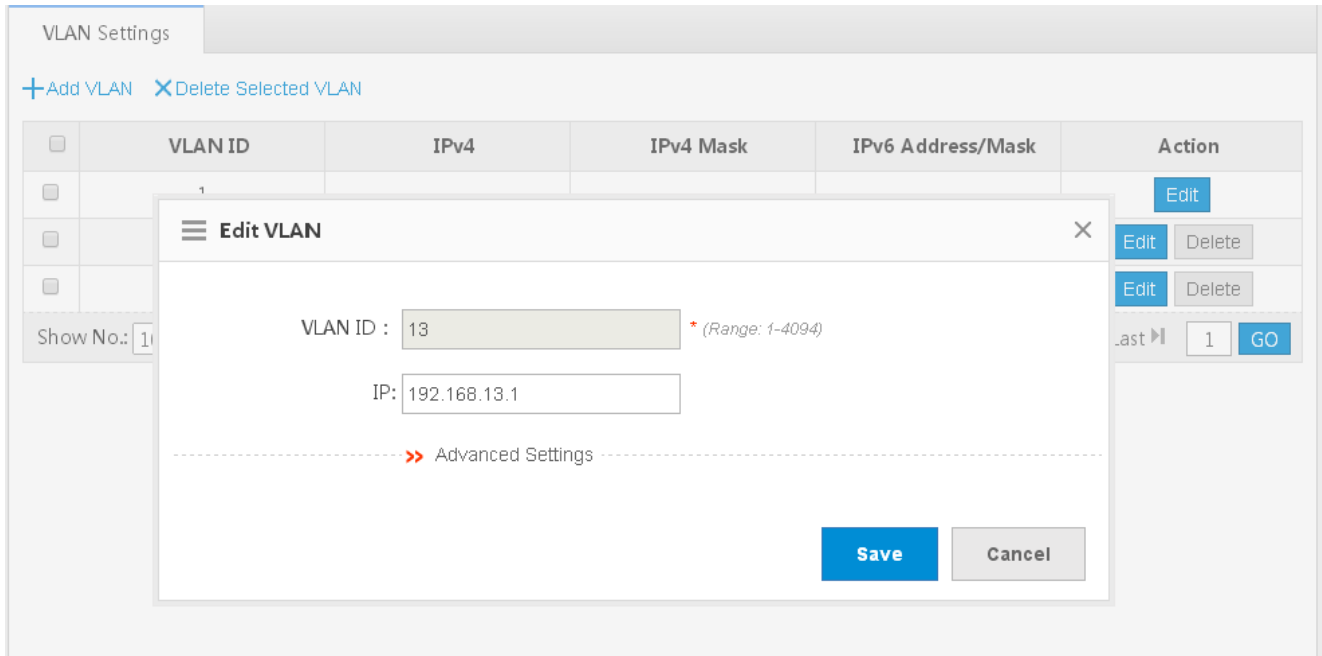
Click **Add VLAN**. A dialog box is displayed, as shown in the preceding figure. Set corresponding parameters in the dialog box and click **Save**. The newly added VLAN is displayed in the VLAN list after the **Add operation succeeded** message is displayed.

- Deleting VLANs in batches



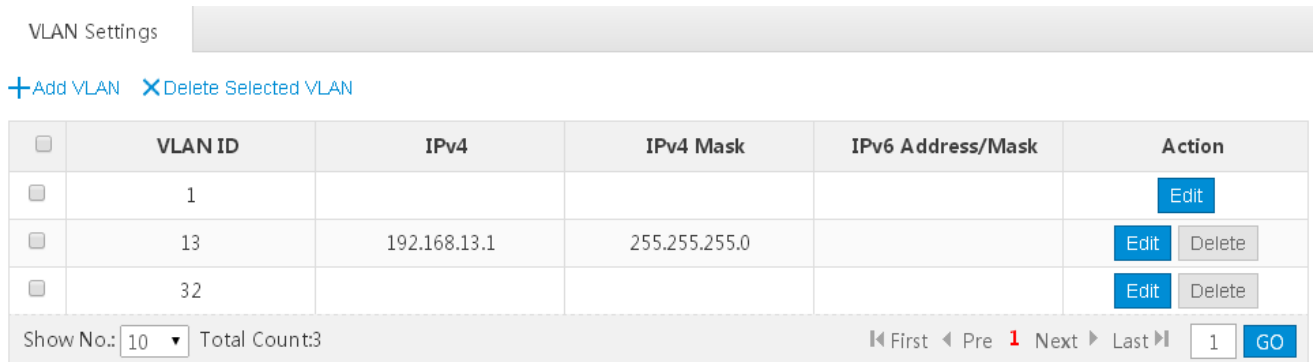
- 1) Select the VLAN to be deleted from the list.
- 2) Click **Delete Selected VLAN** to finish deleting.

- Editing a VLAN



Click the **Edit** button. A dialog box is displayed, as shown in the preceding figure. Click **Save**. The **Save operation succeeded** message is displayed.

● Deleting a VLAN



Click the **Delete** button for a VLAN in the list and then click **OK** in the displayed dialog box to finish deleting .

### 1.3.5.2 Port

A port is a physical entity that is used for connections on the network devices.

#### Speed

Generally, the speed of an Ethernet physical port is determined through negotiation with the peer device. The negotiated speed can be any speed within the interface capability. You can also configure any speed within the interface capability for the Ethernet physical port on the Web page.

When you configure the speed of an AP port, the configuration takes effect on all of its member ports. (All these member ports are Ethernet physical ports.)

## Duplex Mode

- Set the duplex mode of the interface to full-duplex so that the interface can receive packets while sending packets.
- Set the duplex mode of the interface to half-duplex so that the interface can receive or send packets at a time.
- Set the duplex mode of the interface to auto-negotiation so that the duplex mode of the interface is determined through auto negotiation between the local interface and peer interface.

## Interface Name

You can configure the name of an interface based on the purpose of the interface. For example, if you want to assign GigabitEthernet 1/1 for exclusive use by user A, you can describe the interface as "Port for User A."

## Administrative Status

You can configure the administrative status of an interface to disable the interface as required. If the interface is disabled, no frame will be received or sent on this interface, and the interface will loss all its functions. You can enable a disabled interface by configuring the administrative status of the interface. Two types of interface administrative status are defined: Up and Down. The administrative status of an interface is Down when the interface is disabled, and Up when the interface is enabled.

## Port Settings

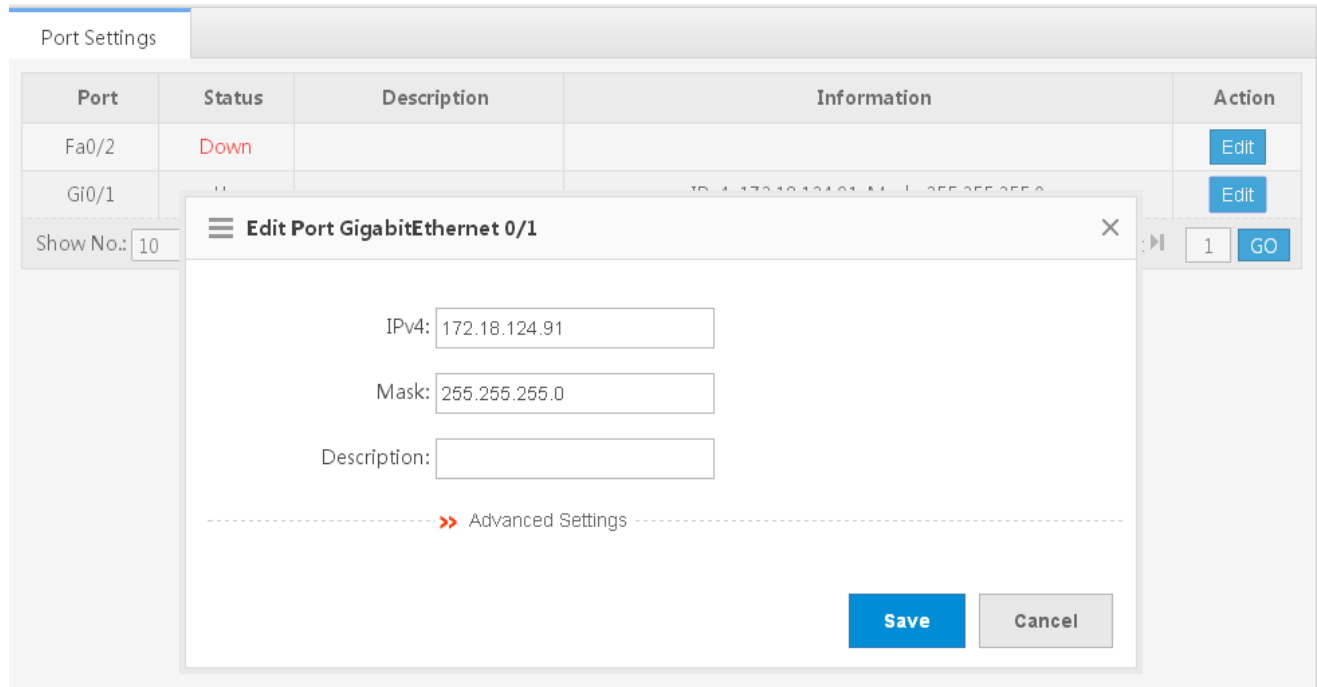
Port Settings				
Port	Status	Description	Information	Action
Fa0/2	Down			<a href="#">Edit</a>
Gi0/1	Up		IPv4: 172.18.124.91, Mask: 255.255.255.0	<a href="#">Edit</a>

Show No.:  Total Count:2

[First](#)
[Pre](#)
1
[Next](#)
[Last](#)

[GO](#)

- Editing port settings



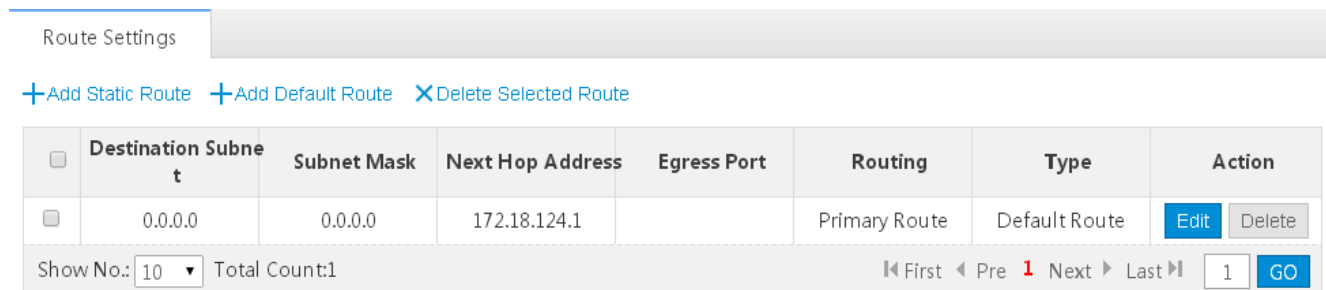
- 1) Click the **Edit** button for a port in the list.
- 2) The configuration for the port is displayed in the dialog box. Next, edit the configuration.
- 3) Click **Save**. The **Save operation succeeded** message is displayed.

### 1.3.5.3 Route

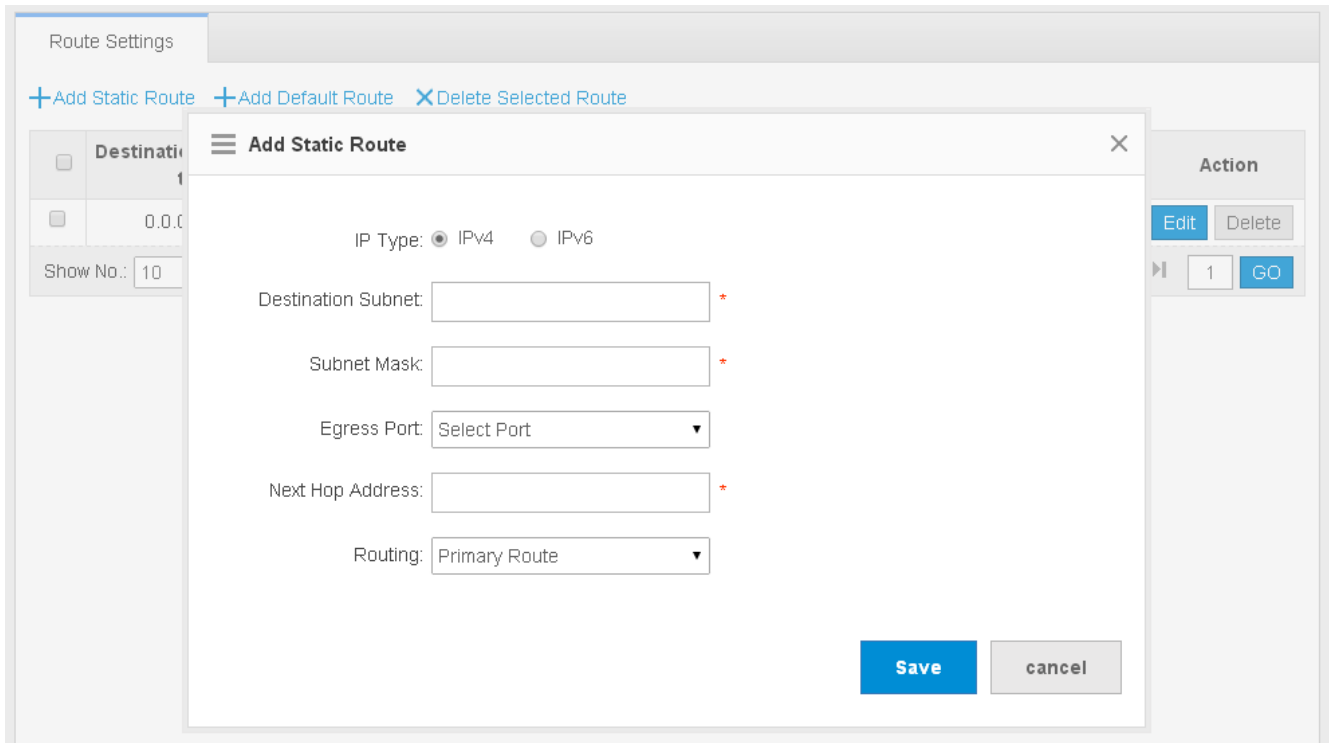
Routing is the process of selecting a path for traffic in a network, or between or across multiple networks.

Static routing is a form of routing that occurs when a router uses a manually-configured routing entry. In many cases, static routes are manually configured by a network administrator by adding in entries into a routing table, though this may not always be the case.

Default route is a setting on a computer that defines the packet forwarding rule to use when no specific route can be determined for a given Internet Protocol (IP) destination address. All packets for destinations not established in the routing table are sent via the default route.

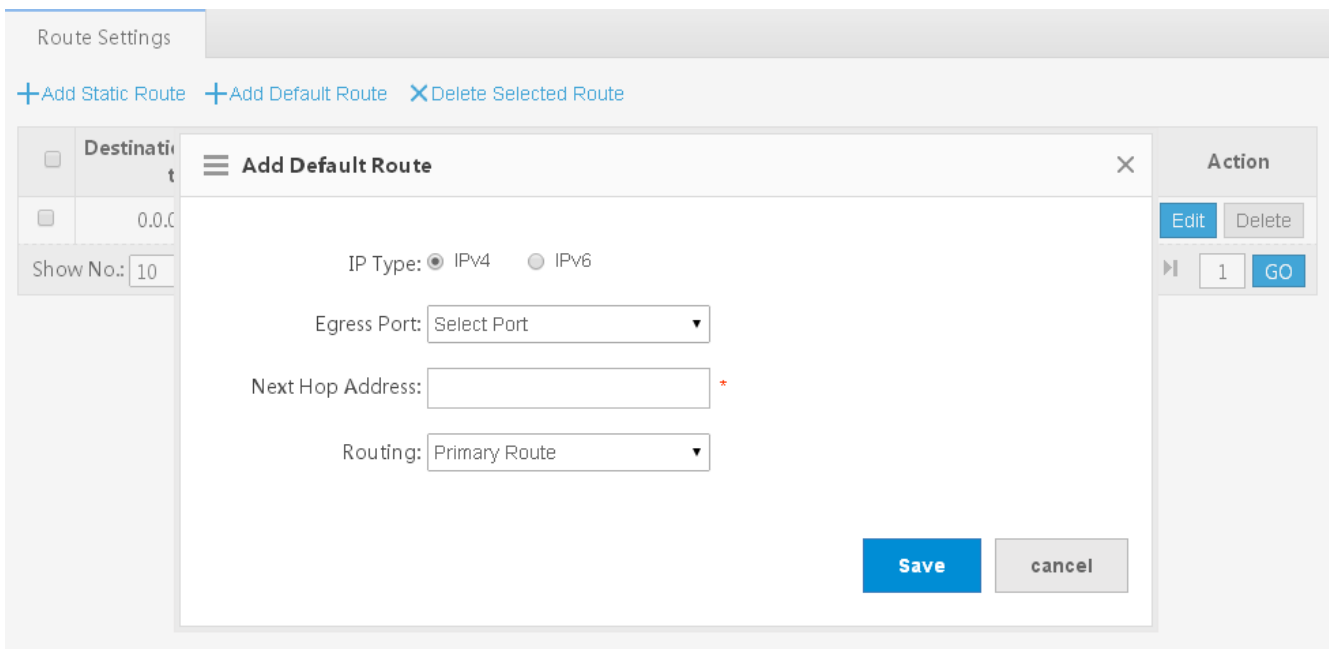


- Adding a static route



Click **Add Static Route**, set the configuration items in the dialog box displayed, and click **Save**. The newly added static route is displayed in the route list after the **Save operation succeeded** message is displayed.

- Adding the default route



Click **Add Default Route**. Set the configuration items in the displayed dialog box, and click **Save**. The newly added route is displayed in the route list after the **Save operation succeeded** message appears.

- Deleting routes in batches

Route Settings

[+Add Static Route](#)
[+Add Default Route](#)
[X Delete Selected Route](#)

<input type="checkbox"/>	Destination Subnet	Subnet Mask	Next Hop Address	Egress Port	Routing	Type	Action
<input type="checkbox"/>	0.0.0.0	0.0.0.0	172.18.124.1		Primary Route	Default Route	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Show No.: 10 Total Count:1

- 1) Select the route from the list.
- 2) Click **Delete Selected Route** to finish deleting.

- Editing a route

Route Settings

[+Add Static Route](#)
[+Add Default Route](#)
[X Delete Selected Route](#)

<input type="checkbox"/>	Destination Subnet	Action
<input type="checkbox"/>	0.0.0.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Show No.: 10

**Edit Default Route** X

IP Type:  IPv4  IPv6

Egress Port:

Next Hop Address:  \*

Routing:

- 1) Click the **Edit** button for a route in the list.
- 2) A dialog box is displayed, as shown in the preceding figure. The configuration for the route is displayed. Next, edit the configuration.
- 3) Click **Save**. The **Save operation succeeded** message is displayed.

- Deleting a route

Route Settings

[+Add Static Route](#)
[+Add Default Route](#)
[X Delete Selected Route](#)

<input type="checkbox"/>	Destination Subnet	Subnet Mask	Next Hop Address	Egress Port	Routing	Type	Action
<input type="checkbox"/>	0.0.0.0	0.0.0.0	172.18.124.1		Primary Route	Default Route	<a href="#">Edit</a> <a href="#">Delete</a>

Show No.: 10 Total Count:1

[First](#)
[Pre](#)
1
[Next](#)
[Last](#)

[GO](#)

Click the **Delete** button for a route in the list and then click **OK** in the displayed dialog box to finish deleting.

### 1.3.5.4 DHCP

Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway. RFCs 2131 and 2132 define DHCP as an Internet Engineering Task Force (IETF) standard based on Bootstrap Protocol (BOOTP), a protocol with which DHCP shares many implementation details. DHCP allows hosts to obtain required TCP/IP configuration information from a DHCP server.

DHCP supports three mechanisms for IP address allocation. In "automatic allocation", DHCP assigns a permanent IP address to a client. In "dynamic allocation", DHCP assigns an IP address to a client for a limited period of time (or until the client explicitly relinquishes the address). In "static allocation", a client's IP address is assigned by the network administrator, and DHCP is used simply to convey the assigned address to the client. A particular network will use one or more of these mechanisms, depending on the policies of the network administrator.

#### DHCP Settings

DHCP Settings    Static Address    Client List

[+Add DHCP](#)
[X Delete Selected DHCP](#)
[Excluded Address Range](#)
 DHCP:  ON

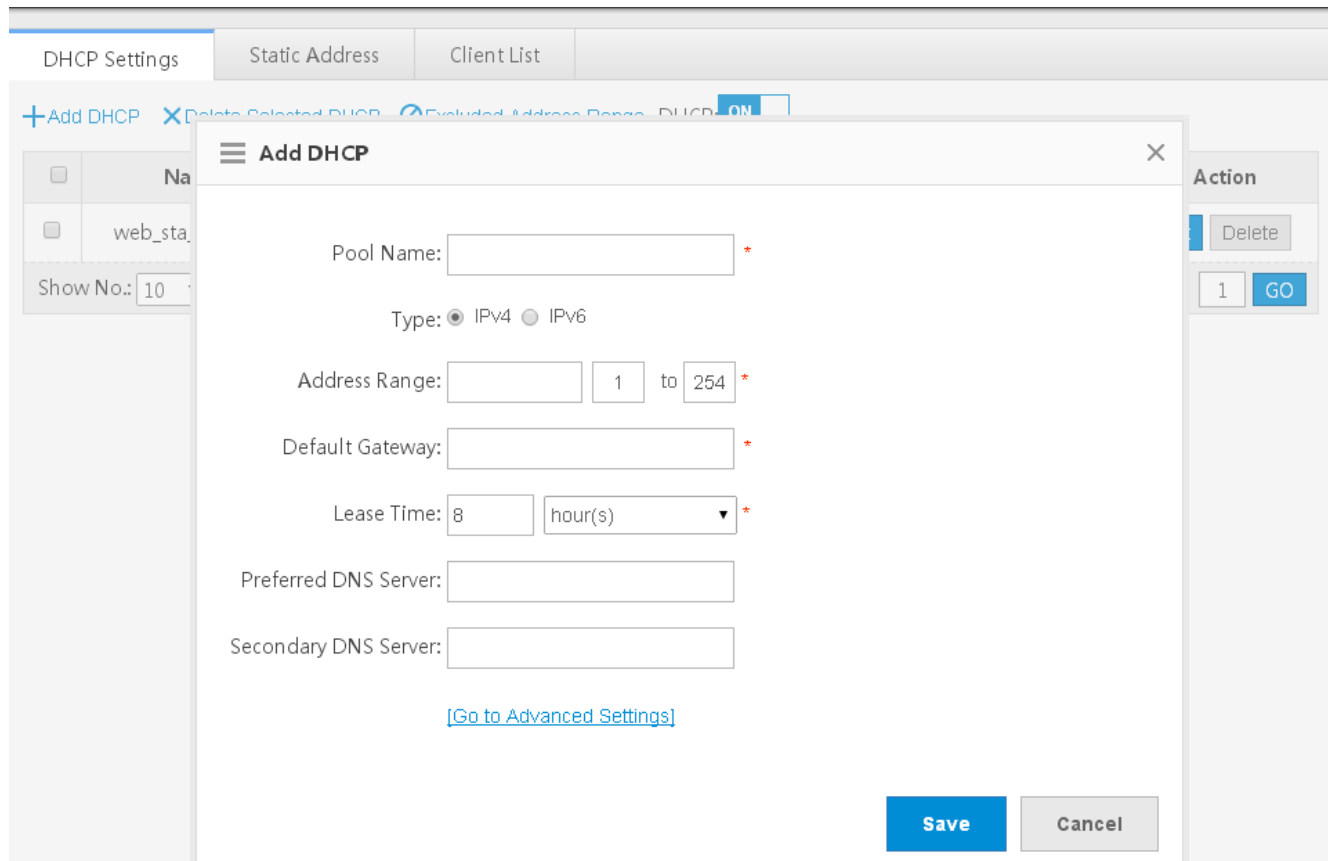
<input type="checkbox"/>	Name	IP Address Range	Default Gateway	Lease Time	DNS	Action
<input type="checkbox"/>	web_sta_pool_1	192.168.13.1-192.168.13.254	192.168.13.1	8 hour(s)	114.114.114.114	<a href="#">Edit</a> <a href="#">Delete</a>

Show No.: 10 Total Count:1

[First](#)
[Pre](#)
1
[Next](#)
[Last](#)

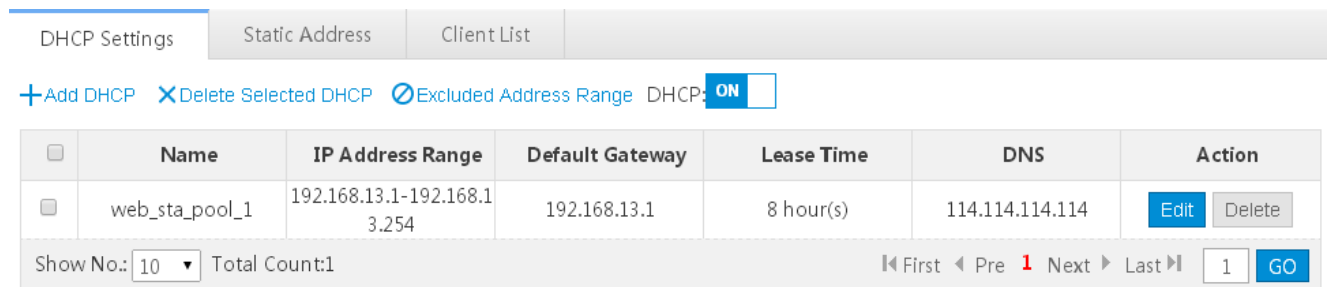
[GO](#)

- Adding a DHCP Pool



Click **Add DHCP**, set the configuration items in the dialog box displayed, and click **Save**. The newly added DHCP pool is displayed in the DHCP pool list after the **Save operation succeeded** message is displayed.

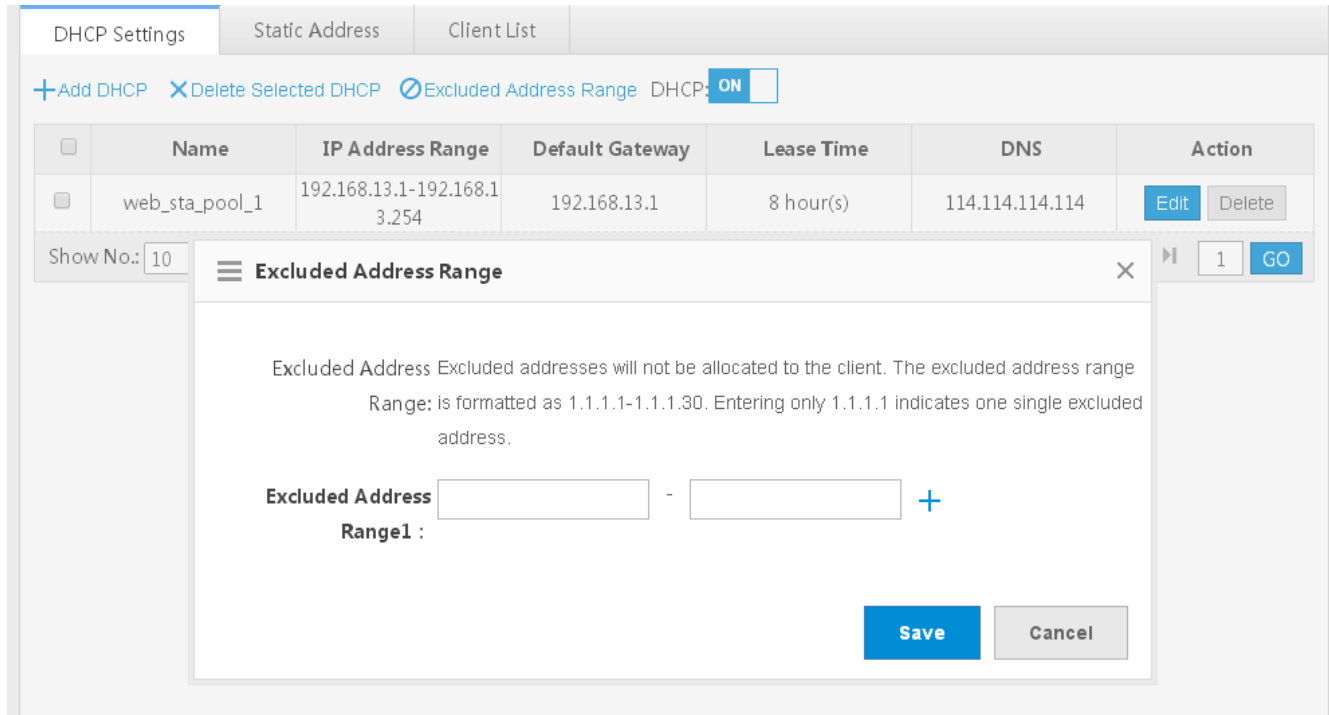
- Deleting DHCPs in batches



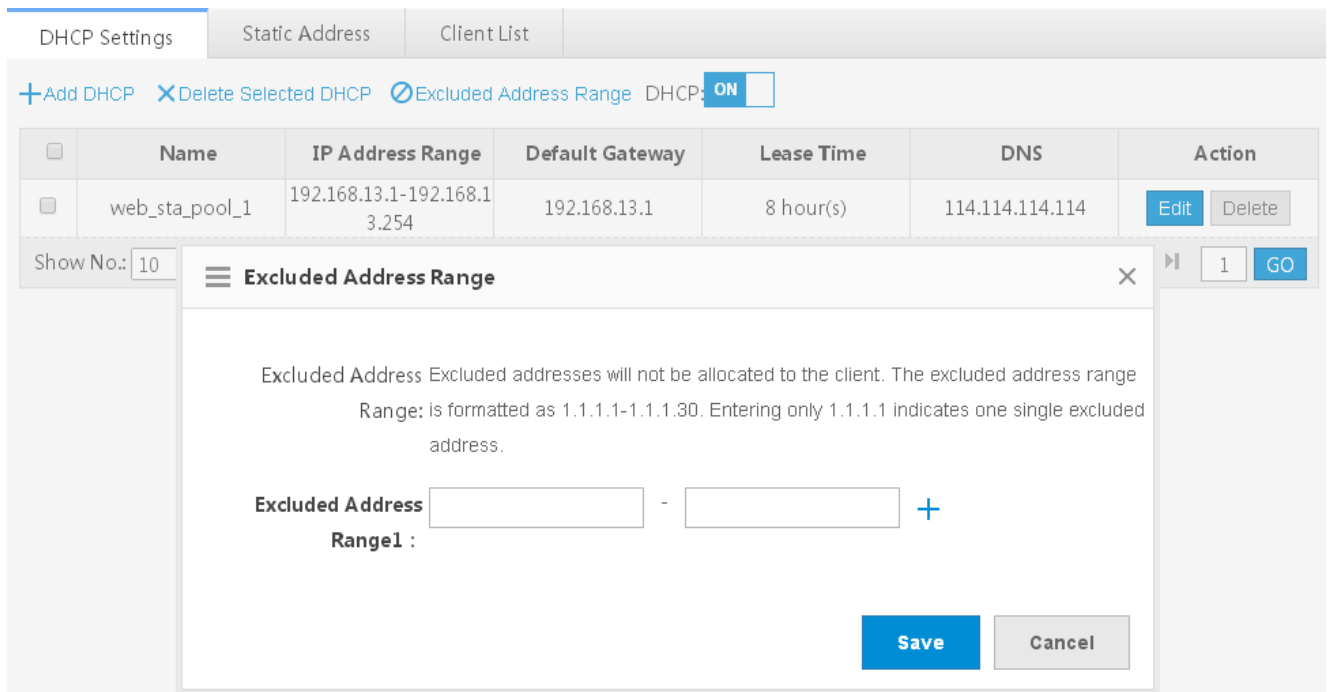
- 1) Select the DHCP pool from the list.
- 2) Click **Delete Selected DHCP** and then click **OK** in the dialog box displayed to finish deleting.

- Configuring excluded address range





Click **Excluded Address Range**. A dialog box is displayed, as shown in the preceding figure. Set the configuration items in the displayed dialog box, and click **Save**. The newly configured address range is displayed in the DHCP pool list after the **Save operation succeeded** message is displayed.



- DHCP service

[DHCP Settings](#) | [Static Address](#) | [Client List](#)

[+Add DHCP](#) | [X>Delete Selected DHCP](#) | [Excluded Address Range](#) | DHCP:  ON

<input type="checkbox"/>	Name	IP Address Range	Default Gateway	Lease Time	DNS	Action
<input type="checkbox"/>	web_sta_pool_1	192.168.13.1-192.168.13.254	192.168.13.1	8 hour(s)	114.114.114.114	<a href="#">Edit</a> <a href="#">Delete</a>

Show No.: 10 Total Count:1 First Pre 1 Next Last 1 GO

Click  DHCP: ON to enable or disable the DHCP service.

- Editing a DHCP pool

[DHCP Settings](#) | [Static Address](#) | [Client List](#)

[+Add DHCP](#) | [X>Delete Selected DHCP](#) | [Excluded Address Range](#) | DHCP:  ON

**Edit DHCP** X

Pool Name:  \*

Type:  IPv4  IPv6

Address Range:   to  \*

Default Gateway:  \*

Lease Time:   \*

Preferred DNS Server:

Secondary DNS Server:

[Save](#) [Cancel](#)

- 1) Click the **Edit** button for a DHCP pool in the list.
- 2) The configuration for the DHCP pool is displayed in the dialog box. Next, edit the configuration.
- 3) Click **Save**. The **Save operation succeeded** message is displayed.

- Deleting a DHCP pool

DHCP Settings    Static Address    Client List

[+Add DHCP](#)   [X>Delete Selected DHCP](#)   [Excluded Address Range](#)   DHCP:  ON

<input type="checkbox"/>	Name	IP Address Range	Default Gateway	Lease Time	DNS	Action
<input type="checkbox"/>	web_sta_pool_1	192.168.13.1-192.168.13.254	192.168.13.1	8 hour(s)	114.114.114.114	<a href="#">Edit</a> <a href="#">Delete</a>

Show No.: 10   Total Count:1   [First](#)   [Pre](#) 1 [Next](#)   [Last](#)    [GO](#)

Click **Delete** to finish deleting.

### Static Address

DHCP Settings    Static Address    Client List

[+Add Static Address](#)   [X>Delete Selected Address](#)

<input type="checkbox"/>	Client Name	Client IP	Mask	Gateway Address	Client MAC	DNS Server	Action
<input type="checkbox"/>	dd	2.2.2.2	255.255.255.0		0002.0002.0002		<a href="#">Edit</a> <a href="#">Delete</a>

Show No.: 10   Total Count:1   [First](#)   [Pre](#) 1 [Next](#)   [Last](#)    [GO](#)

#### ● Adding a static address

DHCP Settings    Static Address    Client List

[+Add Static Address](#)   [X>Delete Selected Address](#)

<input type="checkbox"/>	Client	Action
<input type="checkbox"/>	dc	<a href="#">Edit</a> <a href="#">Delete</a>

Show No.: 10

#### Add Static Address

Client Name:  \*

Client IP:  \*

Mask:

Client MAC:  \*

Gateway Address:

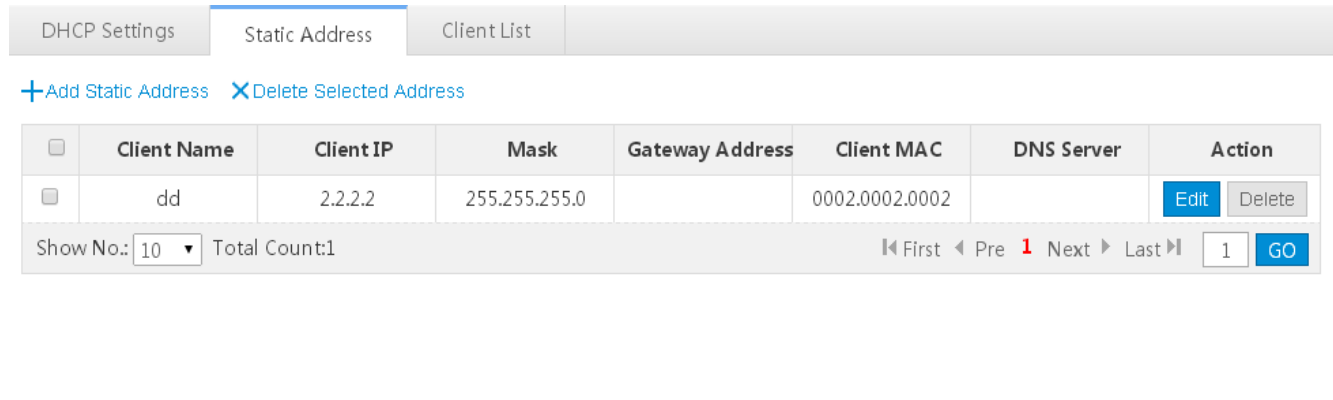
DNS:

[Save](#)   [Cancel](#)

[First](#)   [Pre](#) 1 [Next](#)   [Last](#)    [GO](#)

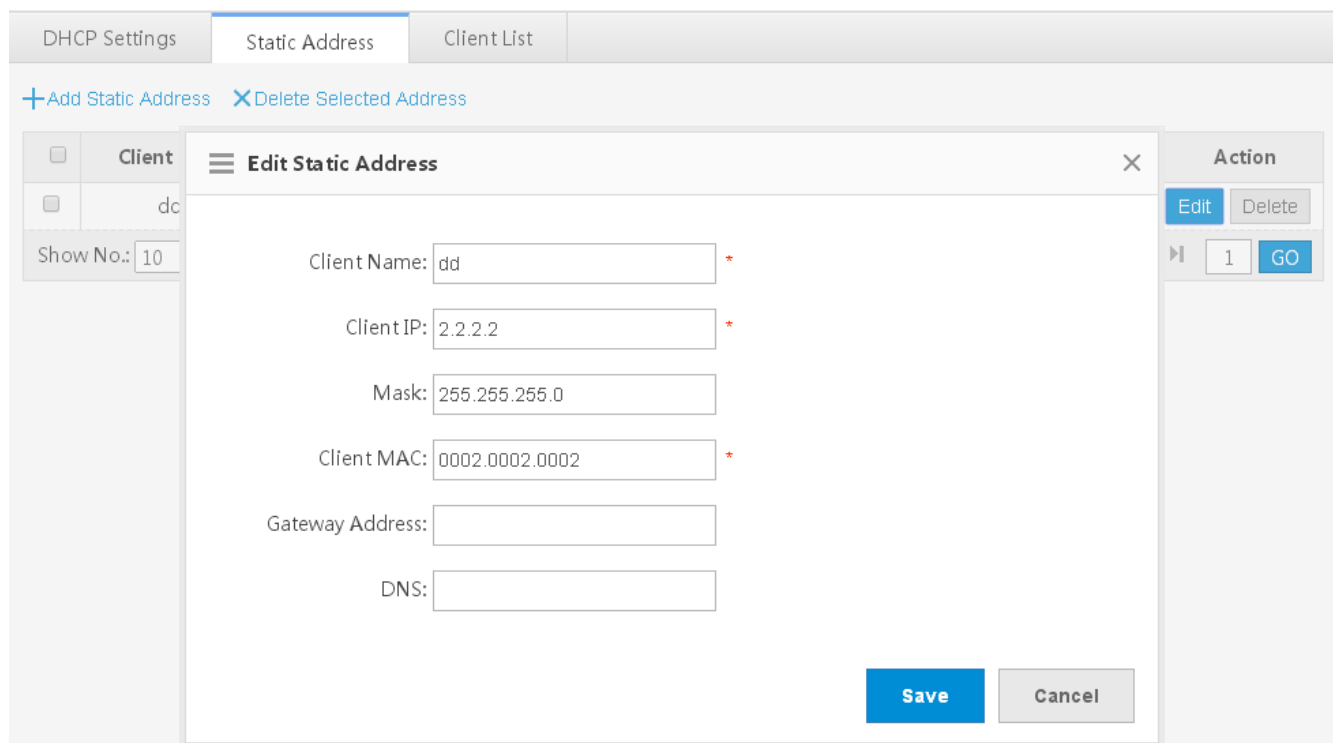
Click **Add Static Address**, set the configuration items in the displayed dialog box, and then click **Save**. The newly added static address is displayed in the list after the **Save operation succeeded** message is displayed.

- Deleting static addresses in batches



- 1) Select the static address from the list.
- 2) Click **Delete Selected Address** and then click **OK** in the dialog box displayed to finish deleting.

- Editing a static address



- 1) Click the **Edit** button for a static address in the list. A dialog box is displayed.
- 2) The configuration for the static address is displayed in the dialog box. Next, edit the configuration.
- 3) Click **Save**. The **Save operation succeeded** message is displayed.

- Deleting a static address

DHCP Settings   Static Address   Client List

+ Add Static Address   X Delete Selected Address

<input type="checkbox"/>	Client Name	Client IP	Mask	Gateway Address	Client MAC	DNS Server	Action
<input type="checkbox"/>	dd	2.2.2.2	255.255.255.0		0002.0002.0002		<a href="#">Edit</a> <a href="#">Delete</a>

Show No.: 10 Total Count:1    << First < Pre 1 Next > Last >>    1 [GO](#)

Click the **Delete** button for a static address in the list to finish deleting.

Client List

DHCP Settings   Static Address   Client List

[Bind MAC to Dynamic IP](#)    IP-based:     [Search](#)

<input type="checkbox"/>	IP	MAC	Lease Time	Allocation Type
<input type="checkbox"/>	192.168.13.2	38bc.1a14.c644	0 Day(s) 7 hour(s) 33 minute(s)	Dynamic Allocation

Show No.: 20 Total Count:1    << First < Pre 1 Next > Last >>    1 [GO](#)

● Binding a MAC address to a dynamic IP address

DHCP Settings   Static Address   Client List

[Bind MAC to Dynamic IP](#)    IP-based:     [Search](#)

<input type="checkbox"/>	IP	MAC	Lease Time	Allocation Type
<input type="checkbox"/>	192.168.13.2	38bc.1a14.c644	0 Day(s) 7 hour(s) 33 minute(s)	Dynamic Allocation

Show No.: 20 Total Count:1    << First < Pre 1 Next > Last >>    1 [GO](#)

- 1) Select the static address from the list.
  - 2) Click **Bind MAC to Dynamic IP** and then click **OK** in the displayed dialog box to finish deleting.
- Querying clients based on IP address:

DHCP Settings   Static Address   **Client List**

[Bind MAC to Dynamic IP](#)   IP-based:  **Search**

<input type="checkbox"/>	IP	MAC	Lease Time	Allocation Type
<input type="checkbox"/>	192.168.13.2	38bc.1a14.c644	0 Day(s) 7 hour(s) 33 minute(s)	Dynamic Allocation

Show No.:  Total Count:1   First Pre 1 Next Last **GO**

Input the IP address in the text box. Click **Search**. The search results meeting the criterion are displayed in the list.

### 1.3.5.5 E-bag Optimization

 Your AP might not support this function, as it is subject to the actual menu items.

This function is mainly applicable to the E-bag solution for schools. Balanced optimization ensures a smooth network experience and avoids disconnection when a user uses the E-bag application.

#### ↳ **Balanced Optimization**

Balanced Optimization   Group Access

**Balancing:** This function provides a smooth network and avoids disconnection for WiFi user groups (using E-bag application).  
**Note:** It is recommended that you enable this function in a multi-user scenario as it may affect extreme performance.

Balancing:  OFF

It is recommended to enable this function in a multi-user scenario as it may affect performance.

#### ↳ **Group Access**

Balanced Optimization    **Group Access**

**Note:** The function allows you to specify a primary user for a group of users (secondary users). The secondary users will access the same WiFi as the primary user. In general, it is applied in the school scenario (for example, the E-bag application).

Group Access:

+

Click the  button to enable or disable the Group Access function.

Configure the user binding relationship. Configure bound primary user and secondary user data.

### 1.3.5.6 Unicast/Multicast

Unicast refers to a one-to-one transmission from one point in the network to another point; that is, one sender and one receiver, each identified by a network address.

Multicast is group communication where information is addressed to a group of destination computers simultaneously. Multicast can be one-to-many or many-to-many distribution. Multicast should not be confused with physical layer point-to-multipoint communication.

Multicast/Unicast

**Simple Multicast:** It is used to broadcast learning in classroom situations. PCs for students and teachers are in the same broadcast domain. Multicast packets are sent in the broadcast domain without the need to cross over different devices and segments.


**Standard Multicast:** It is applied in school-wide broadcast in colleges who have own multicast video servers.

Multicast:  Simple    Standard    Close

Set parameters as required, and then click **Save**.

### 1.3.5.7 Port Mapping

Generally, this function is used to map a specified port of a specified host in the internal network to a specified port of an external network address.

 Your AP might not support this function, as it is subject to the actual menu items.

Port Mapping Settings

**Note:** A port of the specified host on the intranet is mapped to the specified port on the internet generally.

[+ Add Port Mapping](#) [X Delete Selected Port Mapping](#)

<input type="checkbox"/>	Mapping Mode	Internal IP Address	Inner Port	External IP Address	Outer Port	Protocol Type	Port	Action
No Record Found								

Show No.:  Total Count:0 
[◀ First](#) [◀ Pre](#) [Next ▶](#) [Last ▶](#)  [GO](#)

- Adding port mapping



Port Mapping Settings

Note: A port of t

+ Add Port Mappi

Mapping

Show No.: 10

**Add Port Mapping** ✕

Mapping Mode: Port Mapping ▾

Internal IP:  \*

Inner Port:  \* (Range:1-65535)

External IP:  Enter Address:  \*

Use Port Address: Fa0/2 ▾

Outer Port:  \* (Range:1-65535)

Protocol Type: TCP ▾

Action

▶ 1 GO

Click **Add Port Mapping**, set the configuration items in the dialog box displayed, and then click **Save**. The newly added port mapping is displayed in the list after the **Save operation succeeded** message is displayed.

- Batch deleting port mapping entries

Port Mapping Settings

Note: A port of the specified host on the intranet is mapped to the specified port on the internet generally.

+ Add Port Mapping ✕ Delete Selected Port Mapping

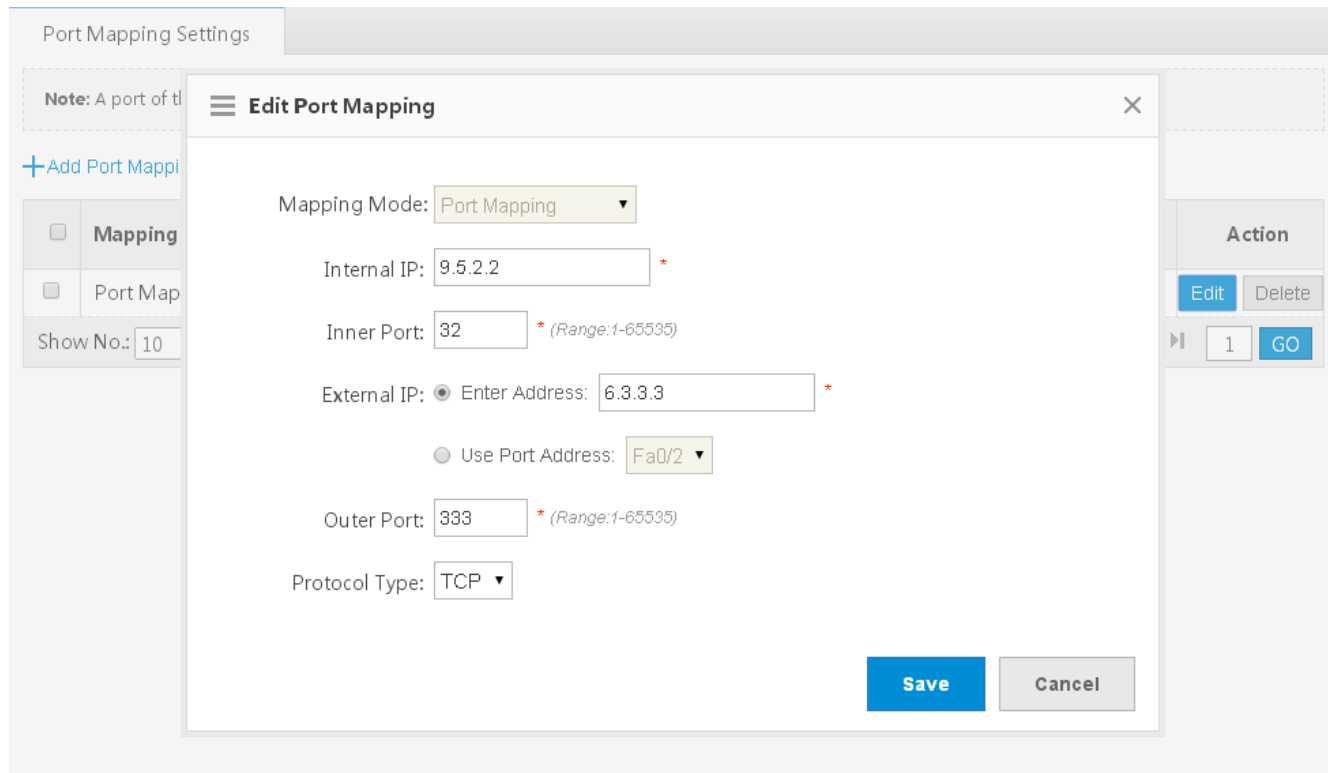
<input type="checkbox"/>	Mapping Mode	Internal IP Address	Inner Port	External IP Address	Outer Port	Protocol Type	Port	Action
<input type="checkbox"/>	Port Mapping	9.5.2.2	32	6.3.3.3	333	TCP	-	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Show No.: 10 Total Count:1

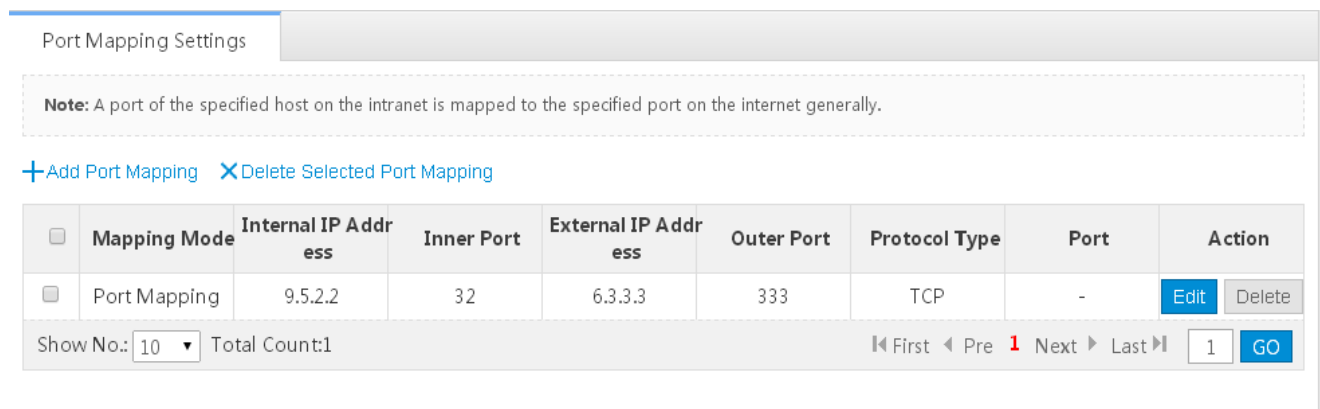
1

- 1) Select the port mapping from the list.
- 2) Click **Delete Selected Port Mapping** and then click **OK** in the displayed dialog box to finish deleting.

- Editing port mapping



- 1) Click the **Edit** button for a port mapping in the list.
  - 2) The configuration for port mapping is displayed in the dialog box. Next, edit the configuration.
  - 3) Click **Save**. The **Save operation succeeded** message is displayed.
- Deleting port mapping



Click the **Delete** button for a port mapping entry in the list to finish deleting.

### 1.3.5.8 CWMP

CPE WAN Management Protocol (CWMP) provides a general framework of unified device management, related message specifications, management methods, and data models, so as to solve difficulties in unified management and maintenance of dispersed customer-premises equipment (CPEs), improve troubleshooting efficiency, and save O&M costs.

- **CPE:** Customer Premises Equipment
- **ACS:** Auto-Configuration Server
- **RPC:** Remote Procedure Call
- **DM:** Data Model

**i** For details about TR069 protocol specifications, visit <http://www.broadband-forum.org/technical/trlist.php>.

The server implements the CPE WAN Management Protocol (CWMP) to manage, configure and monitor APs, routers and switches.

**i** If CWMP is not displayed in the menu, this function is not supported.

CWMP

**Note:** The server implements the CPE WAN Management Protocol (CWMP) to manage, configure and monitor APs, routers and switches.

CWMP:  ON

Server URL:  \*

Server Username:

Server Password:

Device URL:

Device Username:

Device Password:

CPE inform interval:  Range(30-3600s), default 600

### 1.3.5.9 iBeacon

iBeacon uses Bluetooth low energy proximity sensing to transmit a universally unique identifier picked up by a compatible app or operating system. The identifier and several bytes sent with it can be used to determine the device's physical location, track customers, or trigger a location-based action on the device such as a check-in on social media or a push notification.

iBeacon signals are broadcast over Bluetooth, and mainly applied to WeChat Shake.

**i** If iBeacon is not displayed in the menu, this function is not supported.

**iBeacon**

Note: iBeacon signals are broadcast over Bluetooth, mainly applied to WeChat Shake.

UUID:  \* format : FDA50693-A4E2-4FB1-AFCF-C6EB07647825

Major:  \* 0 ~ 65535

Minor:  \* 0 ~ 65535

## 1.3.6 System

### 1.3.6.1 System Settings

#### Time

The network device system clock records the time of events on the device. For example, the time shown in system logs is obtained from the system clock. Time is recorded in the format of *year-month-day, hour:minute:second*, day of the week.

When you use a network device for the first time, set its system clock to the current date and time manually.

Set the system time based on the region for the device.

**Time** Password Restore Enhancement SNMP DNS

Current Time: **1970-1-6-00:59:12**

Reset Time:

Time Zone:

Time Synchronization:  Automatically synchronize with an Internet time server **(Please set DNS Server first, otherwise the system time will not be synchronized.)**

#### Password

To improve security for information exchanges, please change the system default password.

Time	<b>Password</b>	Restore	Enhancement	SNMP	DNS
------	-----------------	---------	-------------	------	-----

---

**Web Management Password**

Username: admin

Old Password:  \*

New Password:  \*

Confirm Password:  \*

---

**Telnet Password (Telnet and Enable Password)**

Username: admin

New Password:  \*

Confirm Password:  \*

## Restore

Restore configurations to the factory settings. The configuration can be imported and exported in batches, facilitating user operation.

Time	Password	<b>Restore</b>	Enhancement	SNMP	DNS
------	----------	----------------	-------------	------	-----

---

**Import/Export Configuration**

Note: Please don't close or update the page during import, or import will fail. If you want to apply the new configuration, please restart the device on this page, or the configuration will not take effect.

File Name:

---

**Restore Factory Settings**

Note: After the device is reset to the factory default settings, all configurations will be removed. Please **Export Current Configuration** before resetting the device.

Display Current Configuration

After selecting a configuration file, click **Import** to import this configuration file.

Click **Export Current Configuration** to download the latest configuration file.

Click **Restore Factory Settings** to clear the configurations and restore to the initial state.

You can click the **Display Current Configuration** button to view the configurations in the box below this button.

## ↘ Enhancement

To facilitate device management, set **Device Location** for better device examination. After **Login Timeout** is set, the Web system logs out automatically when you leave for a long time, ensuring system security.

Time	Password	Restore	Enhancement	SNMP	DNS
------	----------	---------	-------------	------	-----

☰ Basic Information

Web Access Port:  \* (Range:80,1025-65535)

Login Timeout:

Device Location:

## ↘ SNMP

The Simple Network Management Protocol (SNMP) is by far the dominant protocol in network management. This Protocol (SNMP) was designed to be an easily implementable, basic network management tool that could be used to meet network management needs. It is named Simple Network Management Protocol as it is really easy to understand. A key reason for its widespread acceptance, besides being the chief Internet standard for network management, is its relative simplicity. There are different versions of SNMP, such as SNMP V1, SNMP V2c, and SNMP V3.

Time	Password	Restore	Enhancement	SNMP	DNS
------	----------	---------	-------------	------	-----

SNMP Version:  v2  v3

Device Location:  \*

SNMP Password:  \*

Trap Password:  The Trap password cannot be the same as the SNMP password.

Trap Recipient Address:  \* You can configure up to 9 Trap recipients. Please use ',' or press the Enter key to separate addresses.

Set the configuration items, and click **Save**.

↘ **DNS**


A Domain Name System (DNS) is a distributed database containing mappings between domain names and IP addresses on the Internet, which facilitate users to access the Internet without remembering IP strings that can be directly accessed by computers. The process of obtaining an IP address through the corresponding host name is called domain name resolution (or host name resolution).

DNS consists of a resolver and a DNS server. The DNS server stores the mappings between domain names and IP addresses of all hosts on the network, and implements mutual conversion between the domain names and IP addresses. Both the TCP and UDP port IDs of DNS are 53, and generally a UDP port is used.

Dynamic domain name resolution (DNS) can be enabled only after the DNS server is configured.

Time	Password	Restore	Enhancement	SNMP	DNS
------	----------	---------	-------------	------	-----

DNS Server 1:  +

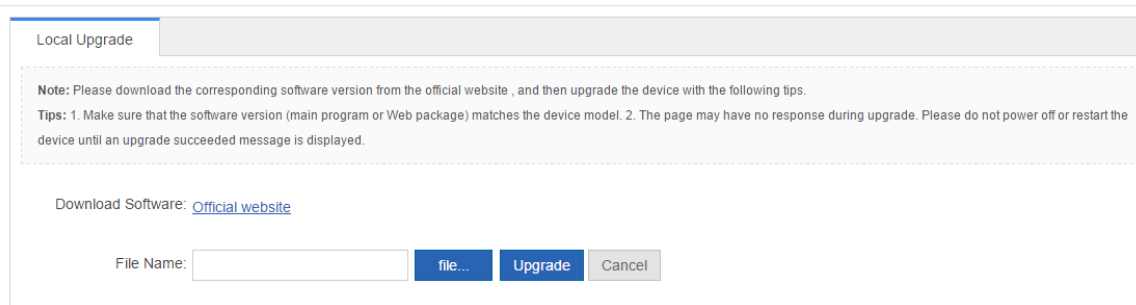
Click  to add a DNS server.

Click  to delete a DNS server.

### 1.3.6.2 Upgrade

#### Local Upgrade

Download the main program or Web package to the local device and perform local upgrade.



Local Upgrade

**Note:** Please download the corresponding software version from the official website, and then upgrade the device with the following tips.

**Tips:** 1. Make sure that the software version (main program or Web package) matches the device model. 2. The page may have no response during upgrade. Please do not power off or restart the device until an upgrade succeeded message is displayed.

Download Software: [Official website](#)

File Name:

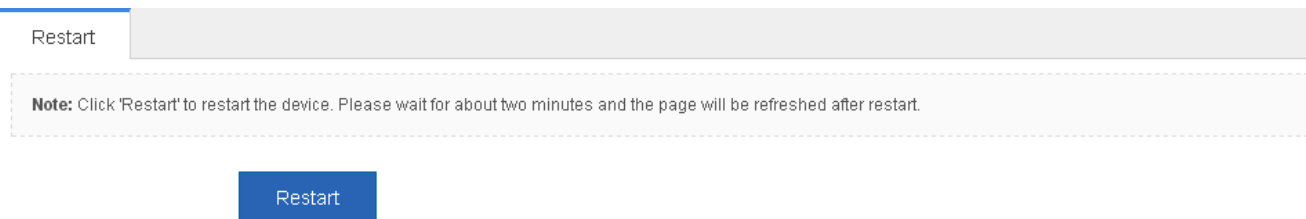
Click to select the main program or Web package to be upgraded.

You can click **Cancel** to terminate an ongoing upgrade.

Click the **DNS Server** and **Route** links to check network connection.

### 1.3.6.3 Restart

Conveniently restart the system with a click.



Restart

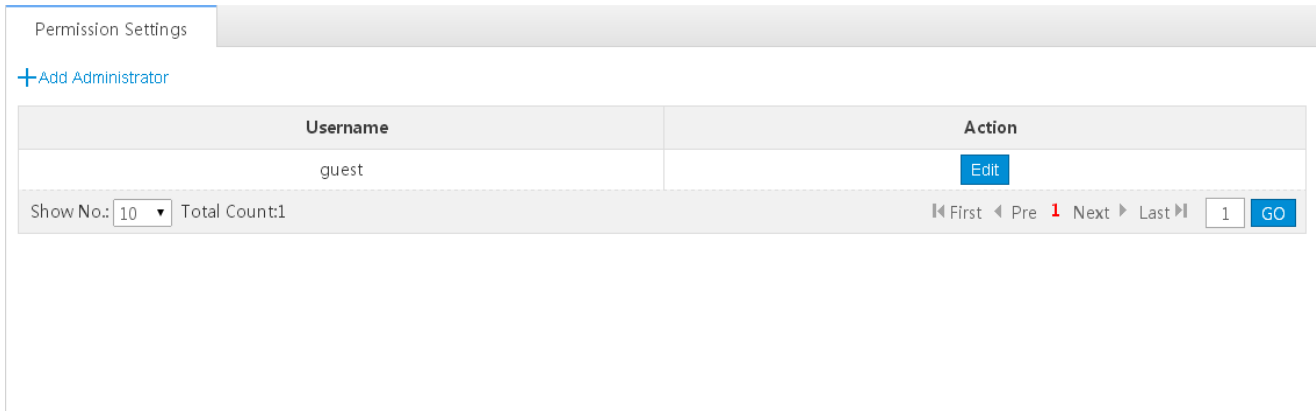
**Note:** Click 'Restart' to restart the device. Please wait for about two minutes and the page will be refreshed after restart.

Click **Restart** to restart the device.

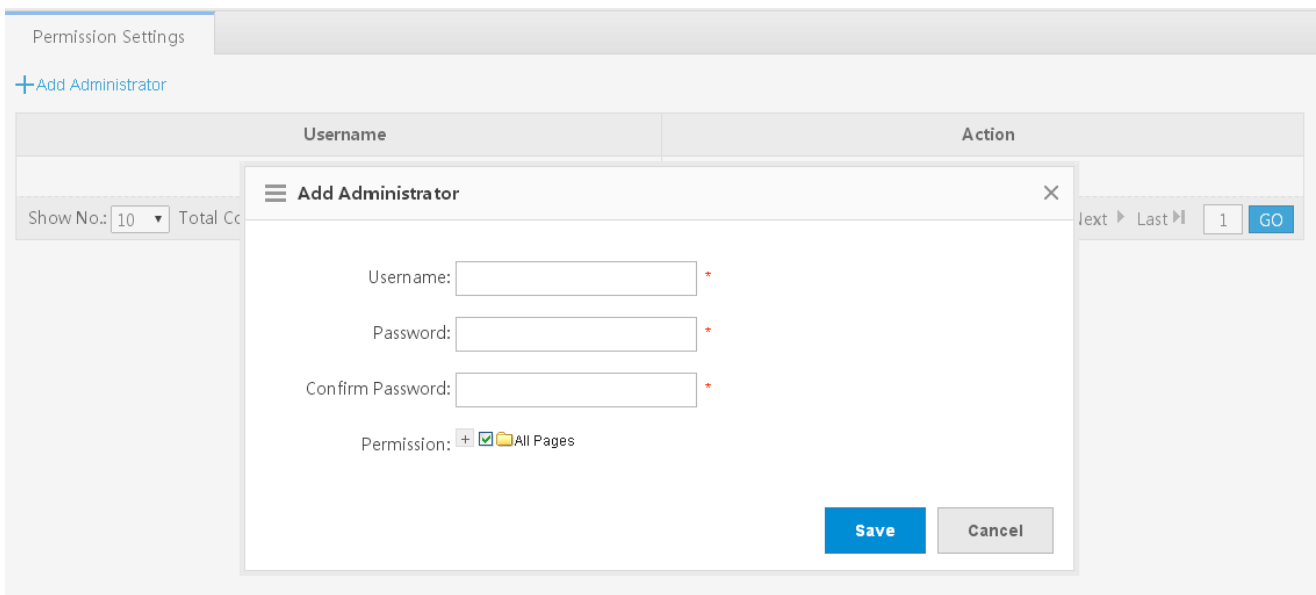
### 1.3.6.4 Permission

A system may have multiple users of different levels that correspond to different permissions. You can set or view permissions through the **Permission Settings** page. The system has two default users: user **admin**



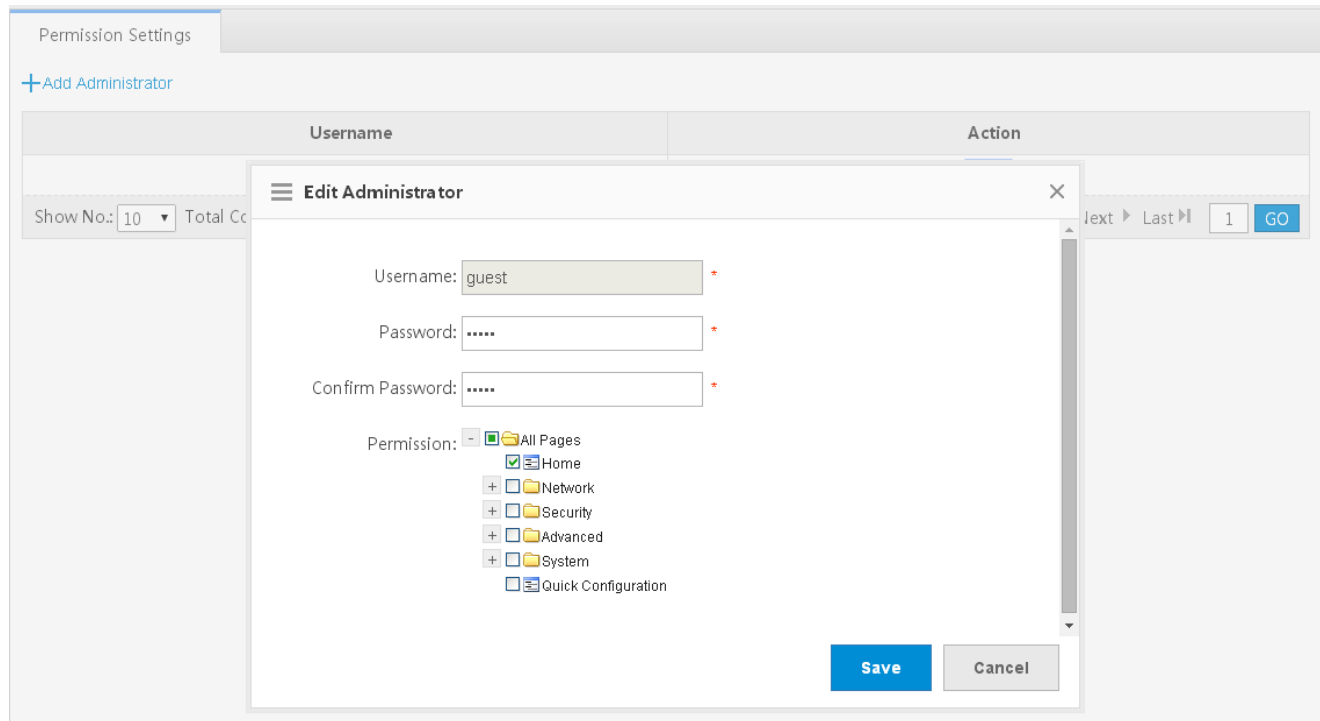


- Adding an administrator

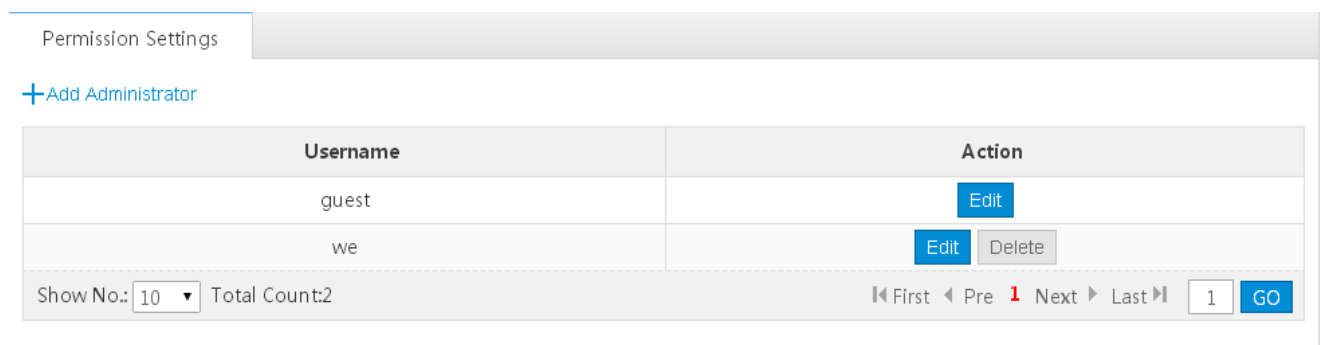


Click **Add Administrator**. A dialog box is displayed, as shown in the preceding figure. Set the configuration items in the dialog box, and click **Save**. The newly added administrator is displayed in the list after the **Save succeeded** message is displayed.

- Editing administrator information



- 1) Click the **Edit** button for an administrator in the list.
  - 2) A dialog box is displayed, as shown in the preceding figure. The configuration about the administrator is displayed in the dialog box. Then edit the configuration.
  - 3) Click **Save**. The **Save operation succeeded** message is displayed.
- Deleting an administrator



Click **Delete** to delete an administrator.

### 1.3.6.5 Logging

Status changes (such as link up and down) or abnormal events may occur anytime. Nodexon products provide the syslog mechanism to automatically generate messages (log packets) in fixed format upon status changes or occurrence of events. These messages are displayed on the related windows such as the Console or monitoring terminal, recorded on media such as the memory buffer or log files, or sent to a group of log servers on the network so that the administrator can analyze

network performance and identify faults based on these log packets. Log packets can be added with the timestamps and sequence numbers and classified by severity level so that the administrator can conveniently read and manage log packets.

Local logs on the device are sent to a corresponding server for storage to facilitate access to these logs.

### Logging Settings

**Note:** Local logs are sent to the corresponding server in order of priority level. Higher the level is, sooner the log is sent. The highest level is level 0 and the lowest is 7.

Server Logging:

Server IP:

Logging Level:

Click  to enable or disable the server logging function.

### 1.3.6.6 Detection Tools

The ping tool sends an Internet Control Message Protocol (ICMP) Request message to the destination host to request the for an ICMP Echo Reply message. In this way, the ping tool determines the delay and the connectivity between the two network devices.

When the network is faulty, network connections can be detected for troubleshooting.

### Detection

<input checked="" type="checkbox"/> Port State	Normal
<input checked="" type="checkbox"/> WiFi Configuration Detection	Normal
<input checked="" type="checkbox"/> Network Connection State	Normal

When an AP is faulty, click the **Route** link to view and configure relevant information.

Click the **Advanced Diagnosis** button to detect network connection.

### 1.3.6.7 Web Console

You can configure any command on the Web Console as in the Telnet operation. But you cannot log in to an AP using Telnet or entering any command in Shell mode.

The screenshot displays the Web Console interface. At the top, there is a 'Web Cli' label and a grey input field. Below this, the 'Console Output' section shows a terminal window with the prompt 'Ruijie#'. To the right of the terminal window, there is a 'Background Color:' label followed by three color selection boxes: black, blue, and red. At the bottom, there is a 'Command Input' label, a text input field, a blue 'Send' button, and a grey 'Clear Screen' button.

### 1.3.6.8 System Mode

Two types of APs are available: Fat Access Points and Fit Access Points.

A FAT AP is suitable for family and small-scaled networks and provides full features. Generally, one device can implement access, authentication, routing, VPN, address translation, and even the firewall functions.

A FIT AP is suitable for large-scale wireless network deployment. A dedicated wireless controller is needed to provide unified management. A FIT-AP can be used only after the wireless controller delivers configurations and it cannot complete configuration by itself.

Select the AP mode.

System Mode

Note: The device restarts after mode switch. Please wait for a minute.

## 1.4 Enabling the Web Server

The Web service is enabled for an AP device when this AP is delivered. By default, the IP address is 192.168.110.1. The following describes how to enable Web service on the CLI when it is disabled.

Configuration	Commands	
Configuring the Web server	<b>enable service web-server</b>	Enables the Web service.
	<b>ip address</b>	(Optional) Configures the IP address.
	<b>webmaster level username password</b>	(Optional) Configures the username and password for logging in to the Web-based management system.

### Configuration Method

#### ▾ Enabling the Web Service

- Mandatory configuration.
- This configuration is performed on the AP device.

#### ▾ Configuring the IP Address

- Optional configuration.

#### ▾ Configuring the Username and Password for Logging in to the Web-Based Management System

- Optional configuration.

- When the Web service is enabled, the administrator username/passwords (admin/admin) and guest user/passwords (guest/guest) are created by default. The passwords of these two accounts can be changed. In addition, you can create other Web-based management accounts.

## Verification

Log in to the Web page by using the preset IP address and Web-based management account and password, then check whether the login is successful.

## Relevant Commands

### ↳ Enabling the Web Service

<b>Command</b>	<b>enable service web-server [ http   https   all ]</b>
<b>Parameter Description</b>	<b>http   https   all:</b> Enables corresponding services. <b>http</b> enables the HTTP service, <b>https</b> enables the HTTPS service, and <b>all</b> enables both the HTTP and HTTPS services. By default, both the HTTP and HTTPS services are enabled.
<b>Command Mode</b>	Global configuration mode.

### ↳ Configuring the IP Address

<b>Command</b>	<b>ip address ip-address ip-mask</b>
<b>Parameter Description</b>	<i>ip-address:</i> IP address. <i>ip-mask:</i> network mask.
<b>Command Mode</b>	Interface configuration mode.

### ↳ Configuring the Account and Password for Logging in to the Web-Based Management System

<b>Command</b>	<b>webmaster level privilege-level username name password { password   [ 0   7 ] encrypted-password</b>
<b>Parameter Description</b>	<i>privilege-level:</i> indicates the level of the permission bound to the user. Three levels are available, which are 0, 1, and 2. The super administrator account (admin) created by default corresponds to level 0, a guest account (guest) corresponds to level 2, and other accounts correspond to level 1. <i>name:</i> address of the static RP. <i>password:</i> The ACL is used to limit the group address range of the static RP service. The default range is all group services. <b>0   7:</b> password encryption type. <b>0</b> indicates no encryption, and <b>7</b> indicates simple encryption. The default value is 0. <i>encrypted-password:</i> password.
<b>Command Mode</b>	Global configuration mode.
<b>Usage Guide</b>	N/A

## Configuration Example

## ▾ Configuring the Web Server

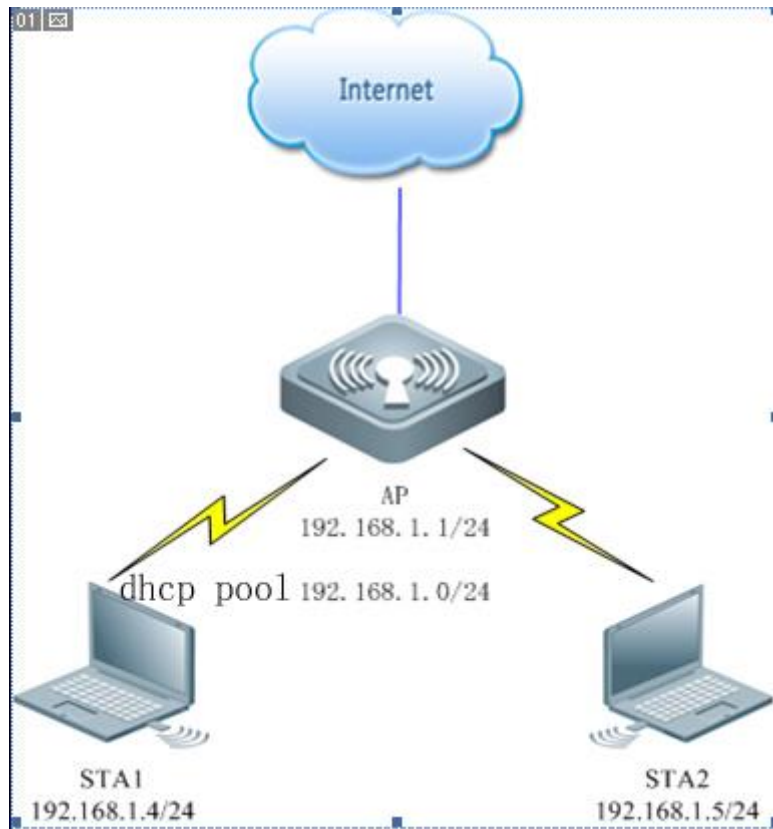
<b>Configuration Steps</b>	<p>Enable the Web service.</p> <p>Configure the local username and password.</p> <p>Configure the device management IP address. The default management VLAN is VLAN 1.</p> <p>Configure an IP address for VLAN 1. Ensure that the management IP address can be pinged from the user's PC.</p>
	<pre>Nodexon# configure terminal Nodexon(config)# enable service web-server Nodexon(config)# webmaster level 0 username admin password admin Nodexon(config)#interface vlan 1 Nodexon(config-if-VLAN 1)#ip address 192.168.1.200 255.255.255.0 Nodexon(config)# end</pre>
<b>Verification</b>	<p>Run the <b>show running-config</b> command to display related configuration commands.</p>
	<pre>Nodexon(config)#show running- config Building configuration... Current configuration : 6312 bytes  ! hostname Nodexon ! ! webmaster level 0 username admin password 7 08022b181b29 webmaster level 1 username manager password 7 06073f webmaster level 2 username guest password 7 14155f083206 http update mode auto-detect ! ! interface VLAN 1 ip address 192.168.1.200 255.255.255.0 no shutdown ! line con 0 line vty 0 4 login ! ! End</pre>

## 1.5 Web-based Configuration Examples

### 1.5.1 Constructing a WLAN for the DHCP Server on the AP Device

The AP is regarded as a wireless router and constructs a small-scale network as a fat AP. The DHCP server is configured on the AP device. The following figure shows the topology.

Figure 1-3 Topology 1 (AP is in routing mode)



Configuration	Description and Command	
Construction of a WLAN for the DHCP server on the AP	<p><b>i</b> Mandatory. It is used to configure a WLAN.</p>	
	WiFi name	Associates internet access wireless signals for an STA
	WiFi password	An STA inputs the password for internet access.
	DHCP configuration	Allocates IP addresses to wireless STAs.

#### Verification

- Select AP working mode and set the Internet connection type



**Quick Settings—External Network Settings**

AP Access Mode  
DHCP in others devices

**Wireless Routing Mode**  
DHCP in AP

Port:  (If you want to change the port, please go to device configuration.)

Internet Connection Type:

IP:

IP Mask:

Default Gateway:

NAT:  Check this box if you want to convert all internal addresses to external addresses.

**Next**

- The AP works in wireless routing mode.
- You can select the following Internet connection types when the AP works in wireless routing mode.
- Static IP (dedicated IP)

☰ Quick Settings—External Network Settings
✕

AP Access Mode  
DHCP in others devices

Wireless Routing Mode  
DHCP in AP

Port:  (if you modify the port, please switch to the device configuration, link port)

Internet Connection Type: 
  
 IP:  \*
   
 IP Mask:  \*
   
 Default Gateway:  \*
   
 NAT:  Have need to be open when network address all converted to IP networks outside

● PPPoE (ADSL line)

☰ Quick Settings—External Network Settings
✕

AP Access Mode  
DHCP in others devices

Wireless Routing Mode  
DHCP in AP

Port:  (if you modify the port, please switch to the device configuration, link port)

Internet Connection Type: 
  
 Account:  \*
   
 Password:  \*
   
 PPPOE IP: Not Obtained
   
 NAT:  Have need to be open when network address all converted to IP networks outside

- DHCP (dynamic IP)

### Quick Settings—External Network Settings

AP Access Mode  
DHCP in others devices

Wireless Routing Mode  
DHCP in AP

Port:  (if you modify the port, please switch to the device configuration, link port)

Internet Connection Type:

Default Gateway:  Optional

DHCP IP: Not Obtained

NAT:  Have need to be open when network address all converted to IP networks outside

**Next**

- **Configure a WiFi name (use a simple name that is easy to remember). A WiFi name contains up to 32 characters.**

Figure 1-4 AP Quick Settings for SSID

**Quick Settings—WiFi**

SSID:

WiFi Password:   Show Password

DHCP:  Enable (IP addresses are allocated by AP)

Vlan ID:

IP Range:   to

DHCP Gateway:

Preferred DNS Server:  Optional

Secondary DNS Server:  Optional

### ➤ Security configuration

- By default, the WPA2-PSK mode is selected. A password consists of 8 to 64 characters and can be a combination of letters, digits, and special characters.

Figure 1-5 AP Quick Settings for Security

**Quick Settings—WiFi** ✕

SSID:  \*

WiFi Password:   Show Password

DHCP:  Enable (IP addresses are allocated by AP)

Vlan ID:

IP Range:   to

DHCP Gateway:

Preferred DNS Server:  Optional

Secondary DNS Server:  Optional

## DHCP configuration

Figure 1-6 AP Quick Settings for DHCP

Quick Settings—WiFi

SSID: Eweb\_7EF51

WiFi Password: ..... Show Password

DHCP:  Enable (IP addresses are allocated by AP)

Vlan ID: 1

IP Range: 192.168.1 1 to 254

DHCP Gateway: 192.168.1.1

Preferred DNS Server: 114.114.114.114 Optional

Secondary DNS Server: Optional

Back Finish

- IP address range: 192.168.1.0/24 to 192.168.1.254/24.
- DNS server: 192.168.58.110 (Perform configuration based on actual conditions.)
- Click **Finish**.

### Verification

- Associate an STA with WiFi: Eweb\_AAAA1 and obtain the IP address 192.168.1.4.
- Verify that the STA can connect to the WiFi and then visit the Web through 192.168.1.1.

**i** If the management IP address is changed, use the new management IP address to use the Web again.