



# 16-Port Series Managed Industrial Ethernet Switch User Manual

Document Version: 01

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# Preface

Managed Industrial Ethernet Switch User Manual has introduced this series of switches:

- Product features
- Product network management configuration
- Overview of related principles of network management



Note

The reference model for the screenshot in this manual is 6 100M SFP slots +10 100M copper ports. In addition to the differences in the number of supported ports, the interface functions and operation of other models in this series are similar.

## Audience

This manual applies to the following engineers:






- Network administrators responsible for network configuration and maintenance
- On-site technical support and maintenance personnel
- Network engineer

## Text Format Convention


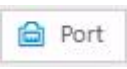

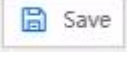

Format	Description
" "	Words with "" represent the interface words. Such as: "Port No."
>	Multi-level path is separated by ">". Such as opening the local connection path description: Open "Control Panel > Network Connection > Local Area Connection".
Light blue font	It represents the words clicked to achieve hyperlink. The font







Format	Description
	color is as follows: 'Light Blue'.

## Symbols

Format	Description
 Notice	Remind the announcements in the operation, improper operation may result in data loss or equipment damage.
 Warning	Pay attention to the notes on the mark, improper operation may cause personal injury.
 Note	Conduct necessary supplements and explanations for the description of operation content.
 Key	Configuration, operation, or tips for device usage.
 Tips	Pay attention to the operation or information to ensure success device configuration or normal working.

## Button Operation Convention

Format	Description
	There is a logout button in the upper right corner of the webpage. After clicking it, the webpage returns to the login page.
	There is a port button in the upper right corner of the webpage. Click or press F2 to view the port status, and press F2 or Esc to close the port status page.
	There is a restart button in the upper right corner of the webpage. After clicking, a restart confirmation box pops up. After confirmation, the device will restart.
	There is a Save button in the upper right corner of the webpage. Click it to save the current device configuration. After setting the device, the save icon will flash to remind the user to save the configuration, so as to avoid losing unsaved configuration information due to restart and other operations.
	Click the Add button to add a line of configuration. Note that repeated configuration may result in data overwrite.

Format	Description
	Check the line to be deleted, and then click the Delete button to delete the configuration.
	Check the line to be configured, and then click the configure button to enter the configuration page.
	Click the function status button to switch the function status,  means on and  means off.
	Click the Set button to submit the current configuration.

## Revision Record

Version No.	Revision Date	Revision Note
01	12/25/2025	Product release

# Contents

<b>PREFACE</b> .....	<b>1</b>
<b>CONTENTS</b> .....	<b>1</b>
<b>1 LOGIN TO THE WEB INTERFACE</b> .....	<b>1</b>
1.1 SYSTEM REQUIREMENTS FOR WEB BROWSING .....	1
1.2 SET THE IP ADDRESS OF PC .....	1
1.3 LOGIN TO THE WEB INTERFACE .....	2
1.4 EXIT THE WEB INTERFACE .....	3
<b>2 SYSTEM INFORMATION</b> .....	<b>5</b>
<b>3 LOGIN CONFIGURATION</b> .....	<b>7</b>
3.1 IP ADDRESS .....	7
3.2 USER .....	8
3.3 PROTOCOL AUTHORIZATION .....	10
<b>4 PORT CONFIGURATION</b> .....	<b>13</b>
4.1 PORT SETTINGS .....	13
4.2 LINK AGGREGATION .....	15
4.3 PORT SPEED LIMIT .....	16
4.4 STORM CONTROL .....	18
4.5 PORT MIRRORING .....	20
4.6 PORT STATISTICS .....	21
4.6.1 Port Statistics-Overview .....	21
4.6.2 Port Statistics-Port .....	22
<b>5 LAYER 2 CONFIGURATION</b> .....	<b>24</b>
5.1 VLAN CONFIGURATION .....	24
5.1.1 Global Configuration .....	25
5.1.2 VLAN Configuration .....	27
5.2 MAC CONFIGURATION .....	29
5.2.1 MAC Address Table .....	30
5.2.2 Static MAC .....	31
5.3 SPANNING-TREE CONFIGURATION .....	32
5.3.1 Global Configuration .....	32
5.3.2 Port Configuration .....	34
5.3.3 State Information of Spanning Tree .....	35
5.4 RING .....	37

5.4.1	Instance: Create Single Ring	41
5.5	IGMP SNOOPING CONFIGURATION	42
5.5.1	Global Configuration	43
5.5.2	Static Multicast MAC	44
5.6	PORT LOOPBACK DETECTION	45
<b>6</b>	<b>NETWORK MANAGEMENT</b>	<b>48</b>
6.1	SNMP CONFIGURATION	48
6.1.1	View	48
6.1.2	Community	49
6.1.3	SNMP Group	50
6.1.4	V3 User	52
6.1.5	Trap Alarm	54
6.2	LLDP CONFIGURATION	55
6.2.1	Global Configuration	56
6.2.2	Port Configuration	57
6.2.3	Neighbor Information	58
6.3	DHCP-SERVER CONFIGURATION	59
6.3.1	DHCP Switch	59
6.3.2	Lease and Gateway Configuration	60
6.3.3	DNS Server	61
6.3.4	Port Binding	61
6.4	ACCESS CONTROL	62
6.4.1	Port Authentication	62
6.4.2	Authentication Database	65
6.5	QoS	66
6.5.1	QoS Classification	66
6.5.2	CoS Mapping	69
6.5.3	ToS Mapping	70
6.6	MODBUS_TCP	71
6.7	IP FILTERING	77
<b>7</b>	<b>SYSTEM CONFIGURATION</b>	<b>79</b>
7.1	NETWORK DIAGNOSIS	79
7.1.1	Ping	79
7.2	TIME	80
7.2.1	NTP Configuration	80
7.2.2	Time Zone Configuration	81
7.3	ALARM CONFIGURATION	82
7.3.1	Relay Setting	82
7.3.2	Port Alarm	83
7.3.3	Power Alarm	84
7.3.4	Utilization Alarm	85
7.3.5	E-Mail Alarm	87

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7.4	CONFIGURATION FILE MANAGEMENT .....	88
7.4.1	Configuration File Update .....	88
7.4.2	Restore Factory Settings .....	89
7.5	UPGRADE .....	90
7.6	LOG INFORMATION .....	91
7.6.1	Log Information .....	91
7.6.2	Syslog Server .....	92
<b>8</b>	<b>FAQ .....</b>	<b>93</b>
8.1	LOGIN PROBLEM .....	93
8.2	CONFIGURATION PROBLEM .....	93
8.3	ALARM PROBLEM .....	94
8.4	INDICATOR PROBLEM .....	95

# 1 Login to the WEB Interface

## 1.1 System Requirements for WEB Browsing

Using the industrial Ethernet switch, the system should meet the following conditions.

Hardware and Software	System Requirements
CPU	Above Pentium 586
Memory	Above 128MB
Resolution	Above 1024x768
Color	256 colors or above
Browser	Internet Explorer 6.0 or above
Operating system	Windows XP Windows 7

## 1.2 Set the IP Address of PC

The switch default management is as follows:

IP Settings	Default Values
IP address	192.168.1.254
Subnet mask	255.255.255.0

While configuring the switch via Web:

- Before remote configuration, please make sure the route between computer and switch is reachable.
- Before local configuration, please make sure the IP address of the computer is on

the same subnet to the one of switch.

Note:

While first configuring the switch, if it is a local configuration mode, please make sure that the network segment of current PC is 1.

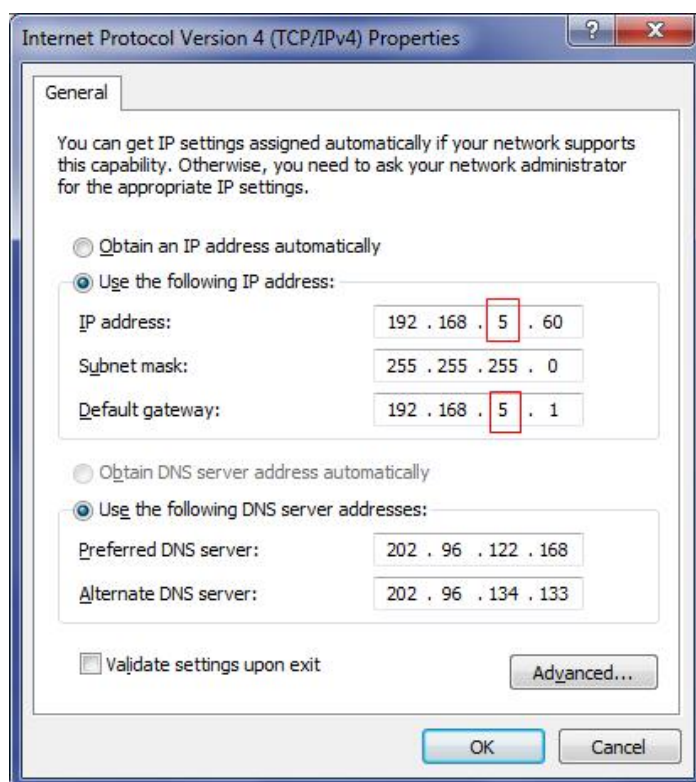
Eg: Assume that the IP address of the current PC is 192.168.5.60, change the network segment "5" of the IP address to "1".

## Operation Steps

Amendment steps are as follows:

**Step 1** Open "Control Panel> Network Connection> Local Area Connection> Properties> Internet Protocol Version 4 (TCP / IPv4)> Properties".

**Step 2** Change the "5" selected by the red frame in the figure to "1".



**Step 3** Click "OK", modification is successful.

**Step 4** End.

## 1.3 Login to the WEB Interface

### Operation Steps

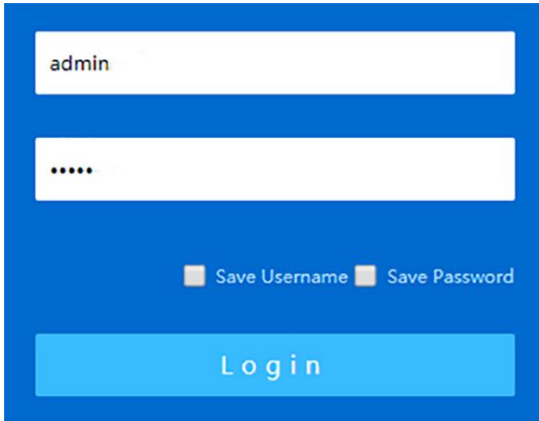
Log in to the WEB configuration interface as follows:

**Step 1** Run the computer browser.

**Step 2** Enter the address of the switch "http://192.168.1.254" in the address bar of the browser.

**Step 3** Click the "Enter" key.

**Step 4** Pop-up dialog box as shown below, enter the user name and password in the login window.

A screenshot of a login dialog box with a blue background. It features two white input fields: the top one contains the text "admin" and the bottom one contains five dots. Below the fields are two checkboxes, both unchecked, labeled "Save Username" and "Save Password". At the bottom is a large blue button with the text "Login" in white.

Note:

- The default username and password for the switch are "admin", which is strictly case-sensitive when typing.
- The default user password is with administrator privileges.
- WebServer will provide 5 opportunities to enter username and password. If there are five consecutive input errors, the system will be locked for 600 seconds. You need to wait for 600 seconds before refreshing the page and logging in again.

**Step 5** Click "Login," and the following dialog box will appear.

**Step 6** End.

After login successfully, user can configure relative parameters and information of WEB interface according to demands.

Note:

After logging in to the device, you can modify the IP address of the switch for ease of use.

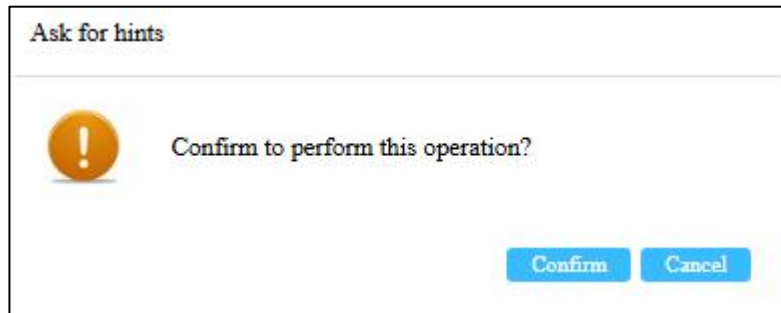
## 1.4 Exit the WEB Interface

### Operation Steps

The steps to exit the web interface are as follows:

**Step 1** Click "Log Out" in the upper right corner of the system.

**Step 2** Pop up a dialog box as shown in the following figure.



**Step 3** Click 'OK' to exit the system page.

# 2 System Information

## Function Description

View port status such as port type and connection status.

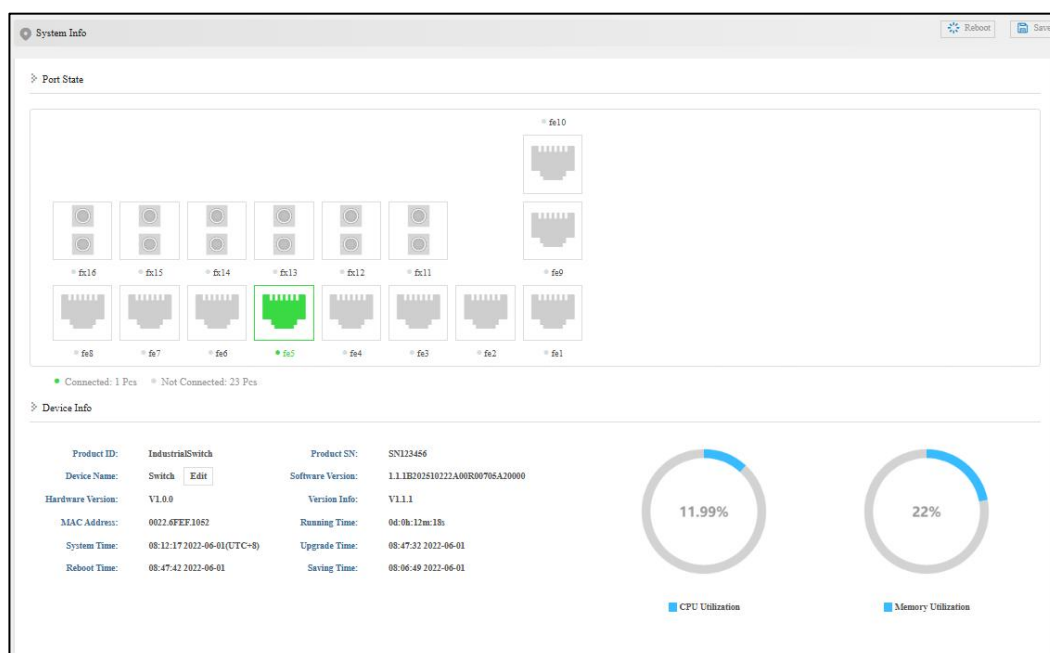
Check device information such as product model, software, and hardware version, etc.

## Operation Path





Open in the navigation bar: "System Information".

## Interface Description

System information interface screenshot:



The main element configuration description of system information interface:

Interface Element	Description
Port State	<p>Display port icon and port connection status of the device:</p> <ul style="list-style-type: none"> <li>•  Copper port icon, grayed out indicates that the device is not connected.</li> <li>•  Copper port icon, highlighting indicates that the device is connected.</li> <li>•  Fiber port icon, grayed out indicates that the device is not connected.</li> <li>•  Fiber port icon, highlighting indicates that the device is connected.</li> </ul>
Device Info	<p>Basic information of software, hardware, and operation of the device.</p> <ul style="list-style-type: none"> <li>• Product ID</li> <li>• Device Name</li> <li>• Hardware Version</li> <li>• MAC Address</li> <li>• Running Time</li> <li>• Upgrade Time</li> <li>• Product SN</li> <li>• Software Version</li> <li>• Version Info</li> <li>• Running Time</li> <li>• Upgrade Time</li> <li>• Saving Time</li> <li>• CPU Utilization</li> <li>• Memory Utilization</li> </ul>

# 3 Login Configuration

## 3.1 IP address

### Function Description

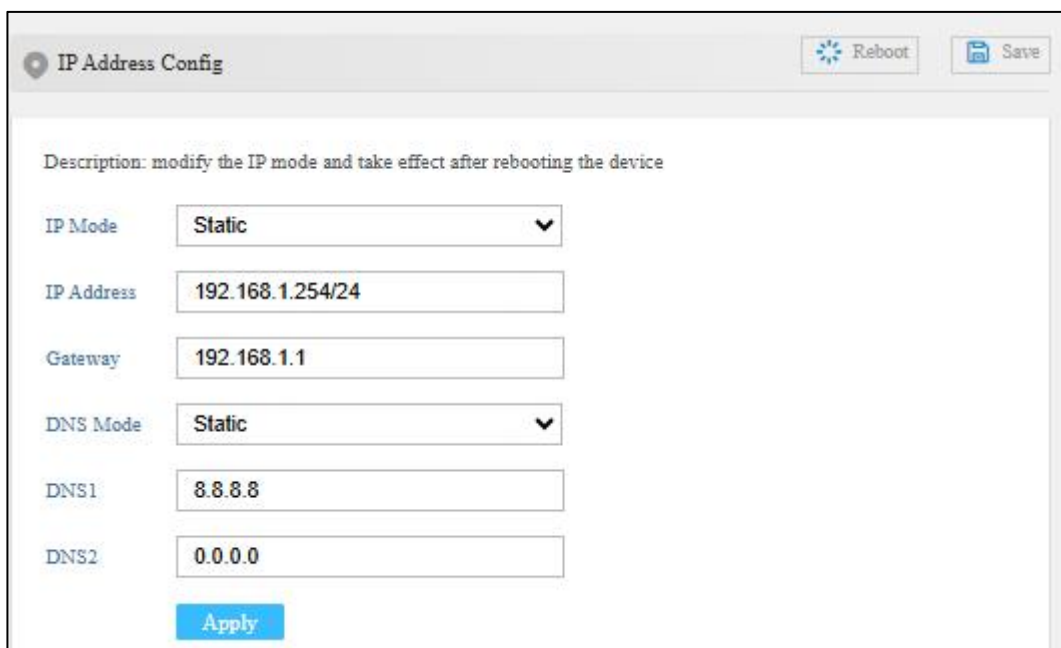
Configure the static or dynamic IP address.

### Operation Path

Open on the navigation bar: "Login Config > IP Address".

### Interface Description

Interface screenshot of IP address configuration:



The screenshot displays the 'IP Address Config' interface. At the top right, there are 'Reboot' and 'Save' buttons. Below the title bar, a description reads: 'Description: modify the IP mode and take effect after rebooting the device'. The configuration fields are as follows:

IP Mode	Static
IP Address	192.168.1.254/24
Gateway	192.168.1.1
DNS Mode	Static
DNS1	8.8.8.8
DNS2	0.0.0.0

An 'Apply' button is located at the bottom of the form.

The main elements configuration description of IP address configuration interface:

Interface Element	Description
IP Mode	<p>Set the IP address acquisition mode, which can be set to:</p> <ul style="list-style-type: none"> <li>• Static: System IP address configured by default or manually.</li> <li>• Dynamic: system automatically acquired IP address of the device.</li> </ul> <p>Note: Default configured IP address is 192.168.1.254/24.</p>
IP Address	Display the IP address of the device.
Gateway	Display the gateway address of the device.
DNS Mode	<p>Set the DNS acquisition mode, which can be set to:</p> <ul style="list-style-type: none"> <li>• Static: DNS that is either system default configuration or manually set.</li> <li>• Dynamic: system automatically acquired DNS of the device.</li> </ul> <p>Note: The default DNS1/DNS2 configuration is 8.8.8.8/0.0.0.0.</p>
DNS1	Display device DNS1.
DNS2	Display device DNS2.

## 3.2 User

### Function Description

Add/delete users accessing the network management system.

### Operation Path

Open in the navigation bar: "Login Config > User".

### Interface Description

The screenshot of user configuration interface:

The screenshot shows the 'User Config' interface. At the top right, there are 'Reboot' and 'Save' buttons. The main configuration area includes:

- Force password modification:** A dropdown menu set to 'Enable'.
- Mandatory password modification days:** A text input field containing '90'.
- Login error allowed:** A text input field containing '5'.
- Lock login time:** A text input field containing '600'.

Below these fields is an 'Apply' button. A description states: 'Description: up to 5 pieces of data can be added'. There are 'Add' and 'Delete' buttons. A table lists the current user configuration:

<input type="checkbox"/>	User name	Password	Privilege
<input type="checkbox"/>	admin	*****	Administrator

At the bottom, there is a pagination control showing 'Each page 20 Entries', 'Home page', 'Previous', 'Next', 'Last', '1' (selected), and 'Total 1 Entries'.

The main element configuration description of user interface:

Interface Element	Description
Force password modification	The switch for enforced password change, with the following options: <ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul>
Mandatory password modification days	The default is 90 days, with a value range of 1 to 65,535 days.
Login error allowed	The default allowed number of login errors is 5 times, with a range of 1-255 times.
Lock login time	After entering the username and password more than the allowed number of times, the webpage login duration will be locked. The default locked login duration is 600 seconds, with a range of 1-65535 seconds.
User name	User name for accessing the network management system. Note: <ul style="list-style-type: none"> <li>• The user name is a combination of letters, numbers and symbols not more than 20 bytes. Please be case-sensitive.</li> </ul>

Interface Element	Description
	<ul style="list-style-type: none"> <li>Up to 5 groups of users are supported.</li> </ul>
Password	User name for accessing the network management system. Note: The password is a combination of letters, numbers, and symbols not more than 20 bytes. Please be case-sensitive.
Privilege	<ul style="list-style-type: none"> <li>Observer: The configuration information of the device can be viewed, but the configuration of the device cannot be modified.</li> <li>Administrator: User has all privileges of the device, including downloading, uploading, rebooting, modifying device information and other other operations.</li> </ul> Notice: <ul style="list-style-type: none"> <li>Users can view, delete, or add other users whose priority does not exceed their own.</li> <li>If the added user name already exists, the original user information will be overwritten.</li> </ul>



#### Notice

Please keep the modified login name and password in mind. If you forget it, you can restore it to factory setting via DIP switch. Default login name and password of logging in to the WEB configuration interface are “admin”.

## 3.3 Protocol Authorization

### Function Description

Open the access security protocols Telnet and SSH for the remote login service.

The full English name of SSH is Secure Shell. SSH is the security protocol based on the application layer and transport layer. SSH is a reliable protocol which provides security for remote login sessions and other network services. Using SSH protocol can effectively prevent information leakage in the process of remote management, and can also prevent DNS and IP spoofing. In addition, the transmitted data is compressed so that the transmission speed can be increased. After SSH function is enabled, users can enter the command line configuration interface to manage devices.

Telnet is the standard protocol and main mode of Internet remote login service. It provides users with the ability to complete the remote host work on the local computer.

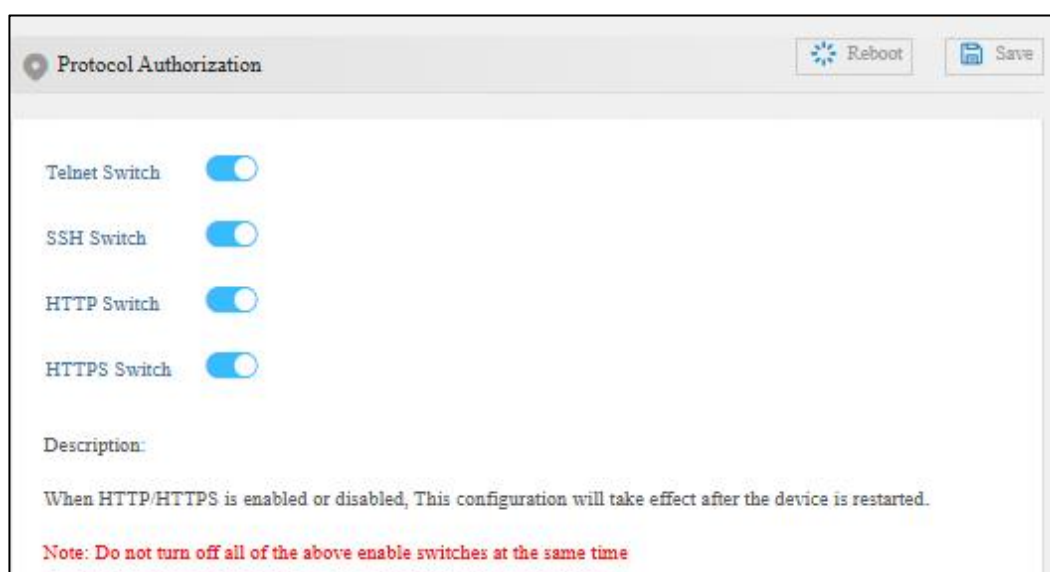
After the TELNET function is enabled, users can enter the command line configuration interface to manage devices.

## Operation Path

Open in the navigation bar: “Login Config > Protocol Authorization”.

## Interface Description

Screenshot of protocol authorization interface:



Configuration description of main elements of the protocol authorization interface:

Interface Element	Description
Telnet Switch	After opening, users can access the command line configuration interface through Ethernet port.
SSH Switch	After opening, users can access the command line configuration interface through Ethernet port.
HTTP Switch	After enabling, users can access the WEB configuration interface via the web page. After closing, the WEB configuration interface cannot be accessed through HTTP, but it can be reopened through WEB or command-line configuration. Note: When enabling or disabling HTTP/HTTPS, this configuration takes effect after restarting the device.
HTTPS Switch	After enabling, users can access the WEB configuration interface via the web page. After closing, the WEB

Interface Element	Description
	<p>configuration interface cannot be accessed through HTTPS, but it can be reopened through WEB or command-line configuration.</p> <p>Note: The system defaults to enabling HTTPS access to WEB pages. When disabling HTTP/HTTPS, this configuration takes effect after restarting the device.</p>

# 4 Port Configuration

## 4.1 Port Settings

### Function Description

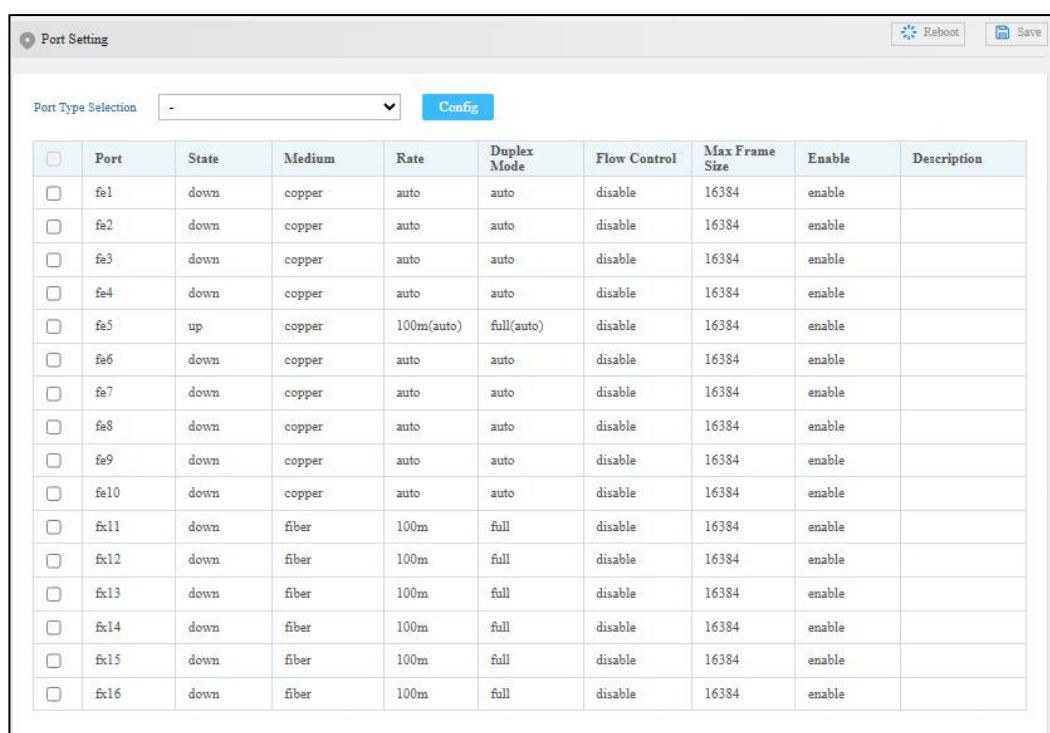
Set port parameters individually or in batches.

### Operation Path

Open in order: "Main Menu > Port Config > Port Setting".

### Interface Description

Port setting interface is as follows:



The screenshot shows the 'Port Setting' interface. At the top right, there are 'Reboot' and 'Save' buttons. Below the title bar, there is a 'Port Type Selection' dropdown menu and a 'Config' button. The main area contains a table with 10 columns: Port, State, Medium, Rate, Duplex Mode, Flow Control, Max Frame Size, Enable, and Description. The table lists 16 ports (fe1 to fe16 and fx11 to fx16) with their respective configurations.

<input type="checkbox"/>	Port	State	Medium	Rate	Duplex Mode	Flow Control	Max Frame Size	Enable	Description
<input type="checkbox"/>	fe1	down	copper	auto	auto	disable	16384	enable	
<input type="checkbox"/>	fe2	down	copper	auto	auto	disable	16384	enable	
<input type="checkbox"/>	fe3	down	copper	auto	auto	disable	16384	enable	
<input type="checkbox"/>	fe4	down	copper	auto	auto	disable	16384	enable	
<input type="checkbox"/>	fe5	up	copper	100m(auto)	full(auto)	disable	16384	enable	
<input type="checkbox"/>	fe6	down	copper	auto	auto	disable	16384	enable	
<input type="checkbox"/>	fe7	down	copper	auto	auto	disable	16384	enable	
<input type="checkbox"/>	fe8	down	copper	auto	auto	disable	16384	enable	
<input type="checkbox"/>	fe9	down	copper	auto	auto	disable	16384	enable	
<input type="checkbox"/>	fe10	down	copper	auto	auto	disable	16384	enable	
<input type="checkbox"/>	fx11	down	fiber	100m	full	disable	16384	enable	
<input type="checkbox"/>	fx12	down	fiber	100m	full	disable	16384	enable	
<input type="checkbox"/>	fx13	down	fiber	100m	full	disable	16384	enable	
<input type="checkbox"/>	fx14	down	fiber	100m	full	disable	16384	enable	
<input type="checkbox"/>	fx15	down	fiber	100m	full	disable	16384	enable	
<input type="checkbox"/>	fx16	down	fiber	100m	full	disable	16384	enable	

Main elements configuration description of port setting interface:

Interface Element	Description
Port Type Selection	Select ports of the same type in batches for configuration, and the options are as follows: <ul style="list-style-type: none"> <li>• -</li> <li>• fe:100M port</li> <li>• ge: Gigabit port</li> </ul>
Port	The corresponding port name of the device Ethernet port.
State	Ethernet port connection status, display status as follows: <ul style="list-style-type: none"> <li>• down: represent the port is disconnected;</li> <li>• up: represent the port is connected.</li> </ul>
Medium	Ethernet port connection type, display medium as follows: <ul style="list-style-type: none"> <li>• fiber: fiber port medium.</li> <li>• copper: copper port medium.</li> </ul>
Rate	Ethernet port working speed, optional speed as follows: <ul style="list-style-type: none"> <li>• auto</li> <li>• 10m</li> <li>• 100m</li> </ul>
Duplex Mode	Under current Ethernet working mode, optional mode as follows: <ul style="list-style-type: none"> <li>• Auto: Auto-negotiation</li> <li>• Full: full duplex</li> <li>• Half: half-duplex</li> </ul>
Flow Control	Port flow control status, options as follows: <ul style="list-style-type: none"> <li>• disable</li> <li>• enable</li> </ul>
Max Frame Size	Display the maximum data frame length that the Ethernet port transmitted.
Enable	Enable Ethernet port. Notice: If “disable” is selected, the port won't be connected to use.
Description	Supports a maximum of 31 English letters, numbers, and half-width symbols.

## 4.2 Link Aggregation

The link aggregation technology can increase link bandwidth by bundling multiple physical interfaces into one logical interface without hardware upgrade. While increasing the bandwidth, link aggregation adopts the mechanism of backup link, which can effectively improve the reliability of link between devices.

Link aggregation technology has the following three advantages:

- Increase bandwidth  
The maximum bandwidth of link aggregation interface can reach the sum of the bandwidth of each member interface.
- Improve the reliability  
When an active link fails, traffic can be switched to other available member links, thus improving the reliability of link aggregation interface.
- Load sharing  
Within a link aggregation group, load sharing can be achieved on the active links of each member.

### Function Description

Binding multiple physical ports into one logical channel.

### Operation Path

Open in order: "Main Menu > Port Config > Link Aggregation".

### Interface Description

Screenshot of Link Aggregation interface:



The main element configuration description of static trunking interface:

---

Interface Element	Description
Group Name	Aggregation group number, support 3 groups of ports of the same type.
Port Member	Ports that join the trunking group.



Note

One port can only join a trunking group.

---

## 4.3 Port Speed Limit

### Function Description

Single or batch limit the ingress bandwidth and egress bandwidth of broadcast, multicast and unicast received by the port.

### Operation Path

Open in order: "Main menu > Port Config > Port Speed Limit".

### Interface Description

Port speed limit interface is as follows.

<input type="checkbox"/>	Port	Ingress Rate Limit Type	Ingress Bandwidth	Egress Bandwidth
<input type="checkbox"/>	fe1	All frames		
<input type="checkbox"/>	fe2	All frames		
<input type="checkbox"/>	fe3	All frames		
<input type="checkbox"/>	fe4	All frames		
<input type="checkbox"/>	fe5	All frames		
<input type="checkbox"/>	fe6	All frames		
<input type="checkbox"/>	fe7	All frames		
<input type="checkbox"/>	fe8	All frames		
<input type="checkbox"/>	fe9	All frames		
<input type="checkbox"/>	fe10	All frames		
<input type="checkbox"/>	fx11	All frames		
<input type="checkbox"/>	fx12	All frames		
<input type="checkbox"/>	fx13	All frames		
<input type="checkbox"/>	fx14	All frames		
<input type="checkbox"/>	fx15	All frames		
<input type="checkbox"/>	fx16	All frames		

Main elements configuration description of Port Speed Limit interface:

Interface Element	Description
Port Type Selection	Select the port type, and check the ports of the same type in batches: <ul style="list-style-type: none"> <li>100M port (fe)</li> </ul>
<input type="checkbox"/>	Check box, you can check multiple ports for simultaneous configuration.
Port	Port number of the device.
Ingress Rate Limit Type	The data packets type of receiving bandwidth needs to be limited, options of drop-down list as follows: <ul style="list-style-type: none"> <li>All frames: all kinds of data packets;</li> </ul>
Ingress Bandwidth	Limit the transmission rate of all ingress data, and select the rate range: <ul style="list-style-type: none"> <li>128/256/512Kbps</li> <li>1/2/4/8/16/64Mbps</li> </ul>
Egress Bandwidth	Limit the transmission rate of all egress data, and select the rate range:

- |  |   |
|--|---|
|  | <ul style="list-style-type: none"><li>• 128/256/512Kbps</li><li>• 1/2/4/8/16/64Mbps</li></ul> |
|--|---|



Note

Port speed limit has high requirements on network cable quality. If the cable quality is not up to the standard, lots of conflict packets and broken packet would appear.

---

## 4.4 Storm Control

### Function Description

Configure the maximum broadcast, multicast or unknown unicast packet flow the port allows. When the sum of each port broadcast, unknown multicast or unknown unicast flow achieves the value user sets, the system will discard the packets beyond the broadcast, unknown multicast, or unknown unicast flow limit, so that the proportion of overall broadcast, unknown multicast or unknown unicast flow can be reduced to limited range, ensuring the normal operation of network business.

### Operation Path

Open in order: "Port Config > Storm Control".

### Interface Description

Storm control interface is as follows:

Storm Control
Reboot Save

Period Configuration 200us(1G) / 2ms(100M) / 20ms(10M) ▼

Threshold Configuration 10

Apply

Config

<input type="checkbox"/>	Port	Broadcast	Multicast	Unicast
<input type="checkbox"/>	fe1	disabled	disabled	disabled
<input type="checkbox"/>	fe2	disabled	disabled	disabled
<input type="checkbox"/>	fe3	disabled	disabled	disabled
<input type="checkbox"/>	fe4	disabled	disabled	disabled
<input type="checkbox"/>	fe5	disabled	disabled	disabled
<input type="checkbox"/>	fe6	disabled	disabled	disabled
<input type="checkbox"/>	fe7	disabled	disabled	disabled
<input type="checkbox"/>	fe8	disabled	disabled	disabled
<input type="checkbox"/>	fe9	disabled	disabled	disabled
<input type="checkbox"/>	fe10	disabled	disabled	disabled
<input type="checkbox"/>	fx11	disabled	disabled	disabled
<input type="checkbox"/>	fx12	disabled	disabled	disabled
<input type="checkbox"/>	fx13	disabled	disabled	disabled
<input type="checkbox"/>	fx14	disabled	disabled	disabled
<input type="checkbox"/>	fx15	disabled	disabled	disabled
<input type="checkbox"/>	fx16	disabled	disabled	disabled

Main elements configuration description of storm control interface:

Interface Element	Description
Period Configuration	<p>The detection period of different bandwidth ports for broadcasting, unknown multicast or unknown unicast can be selected as follows:</p> <ul style="list-style-type: none"> <li>200us (1G) / 2ms (100M) / 20ms (10M)</li> <li>1ms (1G) / 10ms (100M) / 100ms (10M)</li> <li>10ms (1G) / 10ms (100M) / 10ms (10M)</li> <li>100ms (1G) / 100ms (100M) / 100ms (10M)</li> </ul>
Threshold Configuration	<p>The limit number of detected broadcasts, unknown multicasts or unknown unicasts in a specified period, with a value range of 1-255; When the storm suppression threshold is exceeded, the exceeded message will be discarded.</p>

Interface Element	Description
Port	Port number.
Broadcast	Enabled state of broadcast suppression. <ul style="list-style-type: none"> <li>enabled</li> <li>disabled</li> </ul>
Multicast	Enabled state of multicast suppression. <ul style="list-style-type: none"> <li>enabled</li> <li>disabled</li> </ul>
Unicast	Enabled state of unicast suppression. <ul style="list-style-type: none"> <li>enabled</li> <li>disabled</li> </ul>

## 4.5 Port Mirroring

### Function Description

Copy the data from the source port to the appointed port for analysis and monitoring.

### Operation Path

Open in order: "Port Config > Port Mirroring".

### Interface Description

Port mirroring interface is as follows:



The main element configuration description of port mirroring interface:

Interface Element	Description
Session ID	Device mirror ID number, value is 1. Note: Support only 1 mirror session. If mirroring is configured multiple

Interface Element	Description
	times, only the data of the last configuration will be retained.
Source Port	Monitored ports, from which the device will collect input or output messages. There can be one or more mirror ports.
Destination Port	Monitoring port, used to copy and analyze messages from source port.
Add	<p>Click "Add" to reconfigure the mirror and configure the data direction of the mirror.</p> <p>Data direction options are as follows:</p> <ul style="list-style-type: none"> <li>• Send: egress data, the message sent by the source port will be mirrored to the destination port;</li> <li>• Receive: ingress data, the message received by the source port will be mirrored to the destination port;</li> <li>• Bidirectional: all data, mirror the source port receiving and sending packets at the same time.</li> </ul>

## 4.6 Port Statistics

### 4.6.1 Port Statistics-Overview

#### Function Description

Check the data information of each port:

- Number of messages sent and received and number of message bytes
- Number of dropped and error messages

#### Operation Path

Open in order: "Port Config > Port Statistics > Port Statistics-Overview".

#### Interface Description

Port Statistics-Overview interface is as follows:

Port Statistics

Reboot Save

Port Statistics - Overview Port Statistics - Port

Clear

Port	Received Packets	Sent Packets	Received Bytes	Sent Bytes	Received Drop	Sent Drop	Received Error	Sent Error
fe1	0	0	0	0	0	0	0	0
fe2	0	0	0	0	0	0	0	0
fe3	0	0	0	0	0	0	0	0
fe4	0	0	0	0	0	0	0	0
fe5	7050	7171	1363794	4843157	0	0	0	0
fe6	0	0	0	0	0	0	0	0
fe7	0	0	0	0	0	0	0	0
fe8	0	0	0	0	0	0	0	0
fe9	0	0	0	0	0	0	0	0
fe10	0	0	0	0	0	0	0	0
fx11	0	0	0	0	0	0	0	0
fx12	0	0	0	0	0	0	0	0
fx13	0	0	0	0	0	0	0	0
fx14	0	0	0	0	0	0	0	0
fx15	0	0	0	0	0	0	0	0
fx16	0	0	0	0	0	0	0	0

## 4.6.2 Port Statistics-Port

### Function Description



Check the classification statistics of the total number of messages sent and received by the designated port and the number of bytes of messages.

### Operation Path

Open in order: "Port Config > Port Statistics > Port Statistics-Port".

### Interface Description

Port Statistics-Port interface is as follows:

Port Statistics  Reboot  Save

Port Statistics - Overview Port Statistics - Port

Port

	Ingress Direction	Egress Direction
Counting Statistics		
Number of Packets	0	0
Number of Bytes	0	0
Unicast Number	0	0
Multicast Number	0	0
Broadcast Number	0	0
Pause Frame	0	0
FCSErr	0	0
Undersize	0	-
Flagments	0	-
Oversize	0	-
Jabber	0	-
RxErr	0	-
Excessive	-	0
Collisions	-	0
Deferred	-	0
Single	-	0
Multiple	-	0
Late	-	0

# 5 Layer 2 Configuration

## 5.1 VLAN Configuration

VLAN (Virtual Local Area Network) is a communication technology that logically divides a physical LAN into multiple broadcast domains. Hosts in VLAN can directly communicate with each other, but two VLAN can't directly communicate with each other, which can limit the broadcast message in a VLAN. Using VLAN can bring following benefits to users.

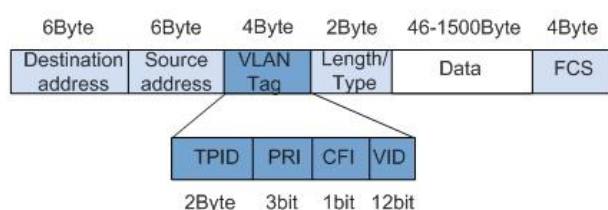
- Limit the broadcast domain;
- Increase the security of LAN;
- Improve the network stability;
- Flexibly construct virtual working team.

### Port VLAN

Port VLAN adopts different identifications to distinguish different VLAN. Adopting the same ID identification will cause internal member groups being replaced, new ID identification will establish new forwarding rules, and all ports must belong to one or more VLAN.

### IEEE802.1Q VLAN

Under the provisions of IEEE 802.1Q protocol, the device can add 4 bytes VLAN tag (Tag for short) between Source address and Length/Type fields of Ethernet data frame, identifying the VLAN information. As the picture below.



- TPID: Tag Protocol Identifier represents the data frame type, when the value is 0x8100, it represents the VLAN data frame of IEEE 802.1Q.
- PRI: Priority represents the 802.1p priority of data frame. The value ranges from 0 to 7. A larger value indicates a higher priority. During network congestion, the switch will preferentially send data frame with higher priority.
- CFI: Canonical Format Indicator represents whether MAC address is packaged in standard format in different transmission media. 0 represents that MAC address is packaged in standard format.
- VID: VLAN ID represents the VLAN number of the data frame. The value range of VLAN ID is 0-4095. 0 and 4095 are reserved values of the protocol, so the valid value range of VLAN ID is 1-4094.

## 5.1.1 Global Configuration

### Function Description

Global Configuration could realize:

- Set VLAN type
- Set the PVID of CUP
- Set the default PVID of the port
- Set port type

### Operation Path

Open in order: "Layer-2 Config > VLAN > Global Config".

### Interface Description 1: Port-based VLAN

Port-based VLAN interface is as follows:



### Interface Description: 802.1Q VLAN

Interface screenshot of 802.1Q VLAN:

The screenshot shows the 'VLAN Config' interface. At the top, there are 'Reboot' and 'Save' buttons. Below are two tabs: 'Global Config' and 'VLAN Config'. The configuration fields are as follows:

- VLAN Type: IEEE 802.1Q VLAN
- PVID Config of CPU Port: 1
- Port: 1
- CPU Port Type: Access
- Default Port PVID Config: 1
- Port Type: Access

Below these fields is a 'Port List' section with checkboxes for ports fe1 through fe16 and fx11 through fx16. An 'Apply' button is located below the checkboxes.

Port Member	PVID	Member Type
cpu	1	trunk
fe1	1	access
fe2	1	access
fe3	1	access
fe4	1	access
fe5	1	access
fe6	1	access
fe7	1	access
fe8	1	access
fe9	1	access
fe10	1	access
fx11	1	access

The main element configuration description of global configuration interface:

Interface Element	Description
VLAN Type	VLAN can be configured in two types: <ul style="list-style-type: none"> <li>Port-based VLAN</li> <li>802.1Q VLAN</li> </ul>
PVID Config of CPU Port	The default configuration is 1, and the optional range is 1-4094.
CPU Port Type	Configure the link type of CPU port, there are two types as follows: <ul style="list-style-type: none"> <li>Access: The message entering the switch from</li> </ul>

Interface Element	Description
	<p>the Access port, which is forced to use the PVID of the port as the VLAN ID.</p> <ul style="list-style-type: none"> <li>Trunk: the message entering the switch from Trunk port. If there is already a VLAN TAG, use the VLAN ID in the VLAN TAG of the message; Otherwise, use the PVID of this port as VLAN ID.</li> </ul>
Default Port PVID Config	The default configuration is 1, and the optional range is 1-4094.
Port Type	<ul style="list-style-type: none"> <li>Access: The message entering the switch from the Access port, which is forced to use the PVID of the port as the VLAN ID.</li> <li>Trunk: the message entering the switch from Trunk port. If there is already a VLAN TAG, use the VLAN ID in the VLAN TAG of the message; Otherwise, use the PVID of this port as VLAN ID.</li> </ul>
Port List	Device port number check box to configure the port type of the selected port in batch.

## 5.1.2 VLAN Configuration

### Function Description

Add VLAN based on port or 802.1Q.

### Operation Path

Open in order: "Layer-2 Config > VLAN > VLAN Config".

### Interface Description: View VLAN Configuration

View port-based VLAN interface screenshot:

VLAN Config			
<input type="button" value="Reboot"/> <input type="button" value="Save"/>			
<input type="button" value="Add"/> <input type="button" value="Delete"/>			
<input type="checkbox"/>	Group Name	Port	Description
<input type="checkbox"/>	1	cpu,fe1,fe2,fe3,fe4,fe5,fe6,fe7,fe8,fe9,fe10,fx11,fx12,fx13,fx14,fx15,fx16	

## Interface Description: Add Port-based VLAN

**Add** ✕

Group Name:

Port List:

fe1     fe2     fe3  
 fe4     fe5     fe6  
 fe7     fe8     fe9  
 fe10    fx11    fx12  
 fx13    fx14    fx15  
 fx16

Description:

## Interface Description: Add 802.1Q-based VLAN

**Add** ✕

802.1Q VID:

Member Type:  ▼

CPU:  ▼

Port List:

fe1     fe2     fe3  
 fe4     fe5     fe6  
 fe7     fe8     fe9  
 fe10    fx11    fx12  
 fx13    fx14    fx15  
 fx16

Description:

The main element configuration description of Add 802.1Q-based VLAN interface:

Interface Element	Description
802.1Q VID	Enter the ID to add the VALN. Note: If the VLAN ID already exists, the original VLAN ID configuration will be overwritten after saving.
Member Type	There are three types of “VLAN ID” for data frames sent out by the port: <ul style="list-style-type: none"> <li>• Unmodified: when the data frame is sent out from the port, it will recover the “VLAN ID” of accessing to the switch.</li> <li>• Untagged: remove the “VLAN ID” fields when the data frame is sent out from the port,</li> <li>• Tagged: reserve “VLAN ID” fields when the data frame is sent out from the port.</li> </ul>
CPU	There are three types of “VLAN ID” for data frames sent out by CPU: <ul style="list-style-type: none"> <li>• Unmodified: when the data frame is sent to CPU, it will recover the “VLAN ID” of accessing to the switch.</li> <li>• Untagged: remove the “VLAN ID” fields when the data frame is sent to CPU,</li> <li>• Tagged: reserve “VLAN ID” fields when the data frame is sent to CPU.</li> </ul>
Port List	The device port number check box can be used to configure the port type of the selected port in batch.

## 5.2 MAC Configuration

MAC (Media Access Control) address is the hardware identity of network device; the switch forwards the message according to MAC address. MAC address has uniqueness, which has guaranteed the correct retransmission of message. Each switch is maintaining a MAC address table. In the table, MAC address is corresponding to the switch port. When the switch receives data frames, it decides whether to filter them or forward them to the corresponding port according to the MAC address table. MAC address is the foundation and premise that switch achieves fast forwarding.

## 5.2.1 MAC Address Table

Each port in the switch is equipped with automatic address learning function, it stores the frame source address (source MAC address, switch port number) that port sends and receives in the address table. Ageing time is a parameter influencing the switch learning process; the default value is 300 seconds. When the timekeeping starts after an address record is added to the address table, if each port doesn't receive the frame whose source address is the MAC address within the ageing time, then these addresses will be deleted from dynamic forwarding address table (source MAC address, destination MAC address and their corresponding switch port number).

### Function Description

View the MAC address, including:

- The data source MAC of the access device learned by the device
- Static unicast MAC

### Operation Path

Open in order: "Layer-2 Config > MAC > MAC Address Table".

### Interface Description

MAC address table interface is as follows:

MAC	Port	Type
00E0.4C68.02EC	fe5	dynamic

Main elements configuration description of MAC address table interface:

Interface Element	Description
MAC	The dynamic MAC that the device has learned or the static unicast or multicast MAC that user has configured.
Port	Access the port number of the source data of the corresponding MAC address.

Interface Element	Description
Type	The type of MAC address, it displays as follows: <ul style="list-style-type: none"> <li>Dynamic: dynamic MAC address;</li> <li>Static: static MAC address.</li> </ul>

## 5.2.2 Static MAC

### Function Description

Support manual binding of unicast MAC addresses. The unicast address after binding is static MAC, which will not age.

### Operation Path

Open in order: "Layer-2 Config > MAC > Static Mac".

### Interface Description

Static MAC interface is as follows:

The main element configuration description of static MAC interface:

Interface Element	Description
MAC	Fill in the unicast MAC address that needs to bind the interface, such as 0001.0001.0001.
Port	The binding port number.



Note

- 
- The function is a sort of security mechanism, please carefully confirm the setting, otherwise, part of the devices won't be able to communicate;
  - Please don't adopt multicast address as the entering address;
  - Please don't enter reserved MAC address, such as the local MAC address.
- 

## 5.3 Spanning-tree Configuration



### Notice

Spanning tree and Ring cannot be enabled at the same time. Please disable the enable switch of the Ring before setting the spanning tree.

---

Spanning-tree protocol is a sort of layer 2 management protocol; it can eliminate the network layer 2 circuit via selectively obstructing the network redundant links. At the same time, it has link backup function. Here are three kinds of spanning-tree protocols:

- STP (Spanning Tree Protocol)
- RSTP (Rapid Spanning Tree Protocol);

Spanning-tree protocol has two main functions:

- First function is utilizing spanning-tree algorithm to establish a spanning-tree that takes a port of a switch as the root to avoid ring circuit in Ethernet.
- Second function is achieving the convergence protection purpose via spanning-tree protocol when Ethernet topology changes.

### 5.3.1 Global Configuration

#### Function Description

On the "Global Config" page, user can configure relative parameters of spanning-tree.

## Operation Path

Open in order: "Layer-2 Config > Spanning-tree > Global Config".

## Interface Description

Global configuration interface is as follows:

The screenshot shows the 'Spanning-tree Config' window with the following configuration details:

- Enable:** A toggle switch that is currently turned off.
- Priority:** A text input field containing the value '32768'.
- Forwarding Delay:** A text input field containing the value '15'.
- Aging Time:** A text input field containing the value '20'.
- Handshake Time:** A text input field containing the value '2'.
- STP Version:** A text input field containing the value '0'.

At the bottom of the configuration area is a blue 'Apply' button. In the top right corner of the window, there are 'Reboot' and 'Save' buttons.

The main element configuration description of global configuration interface:

Interface Element	Description
Enable	Spanning-tree enable switch. Disable by default.
Priority	Bridge priority level, defaults to 32768, value range is 0-61440. Note: Smaller the priority level value is, higher the priority level is.
Forwarding Delay	Port state transition delay, defaults to 15S, the value range is 4-30.
Aging Time	The maximum lifetime of the message in the device, defaults to 20S, the value range is 6-40. It's used to determine whether the configuration message times out.
Handshake Time	Message sending cycle, defaults to 2S, the value range is 1-10. Note: The spanning tree protocol sends configuration information every Hello time to check whether the link is faulty.
STP Version	STP revision level, defaults to 0, the value range is 0-1. <ul style="list-style-type: none"> <li>0 means STP Spanning Tree Protocol.</li> <li>1 means RSTP (Rapid Spanning Tree Protocol)</li> </ul>

## 5.3.2 Port Configuration

### Function Description

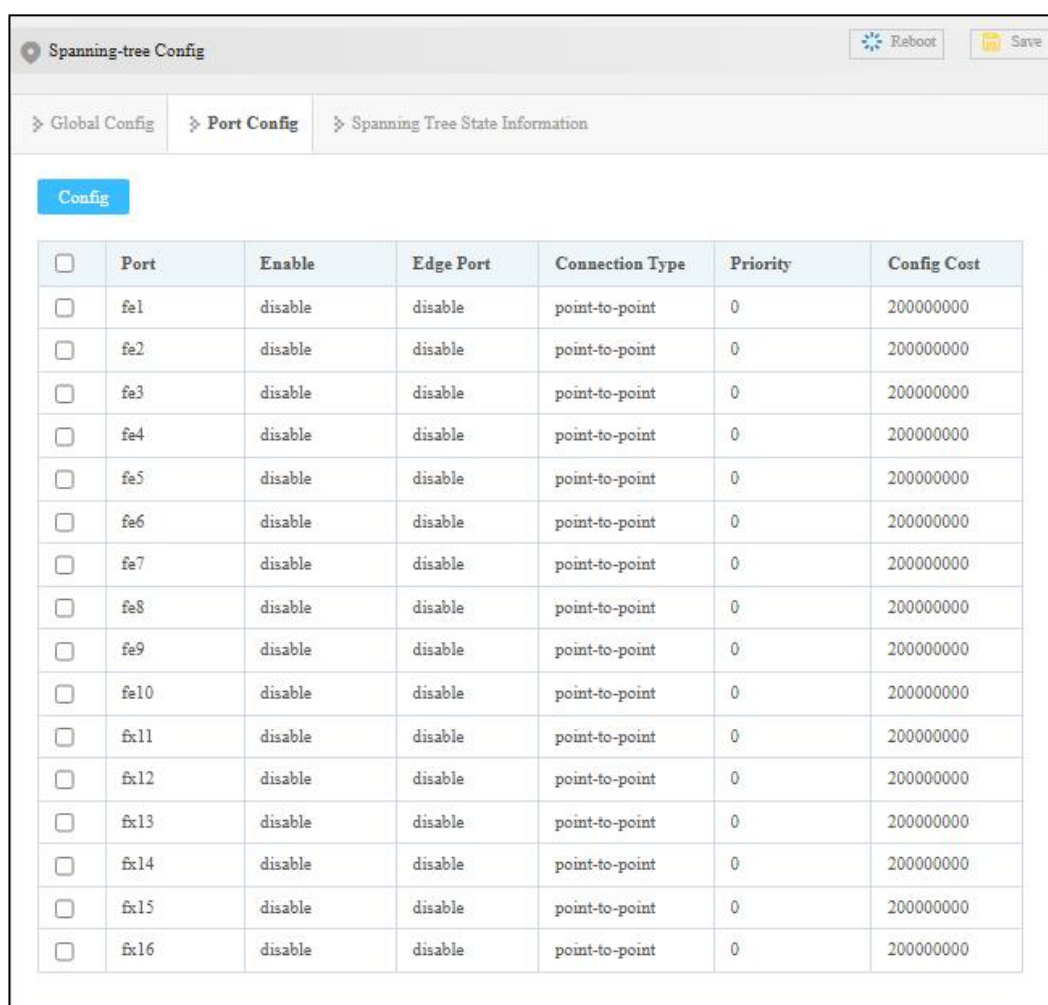
On the "Port Config" page, users can enable ports to participate in spanning tree and configure port connection type, path cost, priority, and other attributes.

### Operation Path

Open in order: "Layer-2 Config > Spanning-tree > Port Config".

### Interface Description

Check port configuration interface as below:



The screenshot shows the "Spanning-tree Config" interface. At the top right, there are "Reboot" and "Save" buttons. Below the title bar, there are three tabs: "Global Config", "Port Config" (which is selected), and "Spanning Tree State Information". A "Config" button is located above the table. The table has seven columns: "Port", "Enable", "Edge Port", "Connection Type", "Priority", and "Config Cost". Each row represents a port configuration, with all "Enable" and "Edge Port" fields set to "disable", and "Priority" set to 0. The "Config Cost" values range from 200000000 to 2000000000.

<input type="checkbox"/>	Port	Enable	Edge Port	Connection Type	Priority	Config Cost
<input type="checkbox"/>	fe1	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fe2	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fe3	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fe4	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fe5	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fe6	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fe7	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fe8	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fe9	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fe10	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fx11	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fx12	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fx13	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fx14	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fx15	disable	disable	point-to-point	0	200000000
<input type="checkbox"/>	fx16	disable	disable	point-to-point	0	200000000

The main element configuration description of port configuration interface:

Interface Element	Description
Port	The corresponding port name of the device Ethernet port.
Enable	Status of participating in spanning tree enable switch.
Edge Port	Remote port enable switch: <ul style="list-style-type: none"> <li>• Enable: participate in spanning-tree;</li> <li>• Disable: not participate in spanning-tree.</li> </ul>
Connection Type	Select port link type: <ul style="list-style-type: none"> <li>• Auto: Automatic system detection</li> <li>• Point-to-point: Point-to-point link is the connection between switches.</li> <li>• Shared: Non-point-to-point link is the connection between switch and hub.</li> </ul>
Priority	Port priority, optional values are: 0/16/32/48/64/80/96/112/128/144/160/176/192/208/224/240. Note: Port priority level in bridge, port priority level is higher when the value is smaller. The higher the priority of the port, the more likely it is to be a root port.
Config Cost	The path cost from network bridge to root bridge, defaults to 200000000. Value range: 1-200000000.

### 5.3.3 State Information of Spanning Tree

#### Function Description

Display information about the root switch and this switch in the spanning tree.

#### Operation Path

Open in order: "Layer-2 Config > Spanning-tree > Spanning Tree State Information".

#### Interface Description

The Spanning Tree State Information interface is as follows:

Spanning-tree Config
Reboot
Save

➤ Global Config
➤ Port Config
➤ Spanning Tree State Information

Local Switch ID

Root Switch ID

Root Port Number

Root Port Path Cost

Port Number	Priority	Path Overhead	Point-to-Point Network	Edge Port	Connected Network	Port Role	Forwarding Status
1	0	0	Y	N	Rapid	Disabled	Disabled
2	0	0	Y	N	Rapid	Disabled	Disabled
3	0	0	Y	N	Rapid	Disabled	Disabled
4	0	0	Y	N	Rapid	Disabled	Disabled
5	0	0	Y	N	Rapid	Disabled	Disabled
6	0	0	Y	N	Rapid	Disabled	Disabled
7	0	0	Y	N	Rapid	Disabled	Disabled
8	0	0	Y	N	Rapid	Disabled	Disabled
9	0	0	Y	N	Rapid	Disabled	Disabled
10	0	0	Y	N	Rapid	Disabled	Disabled
11	0	0	Y	N	Rapid	Disabled	Disabled
12	0	0	Y	N	Rapid	Disabled	Disabled
13	0	0	Y	N	Rapid	Disabled	Disabled
14	0	0	Y	N	Rapid	Disabled	Disabled
15	0	0	Y	N	Rapid	Disabled	Disabled
16	0	0	Y	N	Rapid	Disabled	Disabled

The main element configuration description of RSTP status interface:

Interface Element	Description
Local Switch ID	It displays the priority of this switch and MAC address information ID.
Root Switch ID	It displays the priority of the root switch and MAC address information ID.
Root Port Number	The port of the switch, which is not in the root bridge but nearest to it, oversees communicating with the root bridge. The path cost from this port to the root bridge is the lowest. When the path costs of multiple ports are the same, the one with the highest priority would be the root port.
Root Port Path Cost	The root cost of a switch is the sum of root port cost and the

	root cost that data packet goes through all switches. The root cost of root bridge is zero.
Port Number	Display the device port number.
Priority	The priority of ports in network bridge. The values range from 0 to 240. The smaller the value, the higher the port priority. The higher the priority of the port, the more likely it is to be a root port.
Path Overhead	The path cost from network bridge to root bridge.
Point-to-Point Network	The directly connected switch port.
Edge Port	The port that directly connects to terminal instead of other switches.
Connected Network	It displays the network protocol of devices with connected ports.
Port Role	Root port, specified port, Alternate port and Backup port.
Forwarding Status	<p>It is divided by whether the port forwards user flow and learns MAC address.</p> <ul style="list-style-type: none"> <li>• Discarding: neither forward user flow nor learn MAC address;</li> <li>• Learning: doesn't forward user flow but learn MAC address;</li> <li>• Forwarding: forward user flow and learn MAC address;</li> <li>• Listening: neither forward user flow nor learn MAC address; but can receive and send configuration message;</li> <li>• Blocking: port only receives and processes BPDU, doesn't forward user flow;</li> <li>• Disabled: blocked or physically disconnected.</li> </ul>

## 5.4 Ring



Notice

Spanning tree and Ring cannot be enabled at the same time. Please disable the enable

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switch of spanning tree before setting the Ring.

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Ring is an Ethernet Ring network algorithm developed and designed by the company for highly reliable industrial control network applications that require link redundancy backup. Features in Ethernet link redundancy, fast automatic recovery. Ring adopts no master station design. In a multi-ring network of up to 250 switches, the network self-recovery time is less than 20 milliseconds. Each port in this series of switches can be used as a ring port and connected with other switches. When an interruption occurs in the network connection, the SW-Ring redundant mechanism enables the backup link to quickly recover the network communication.

## Function Description

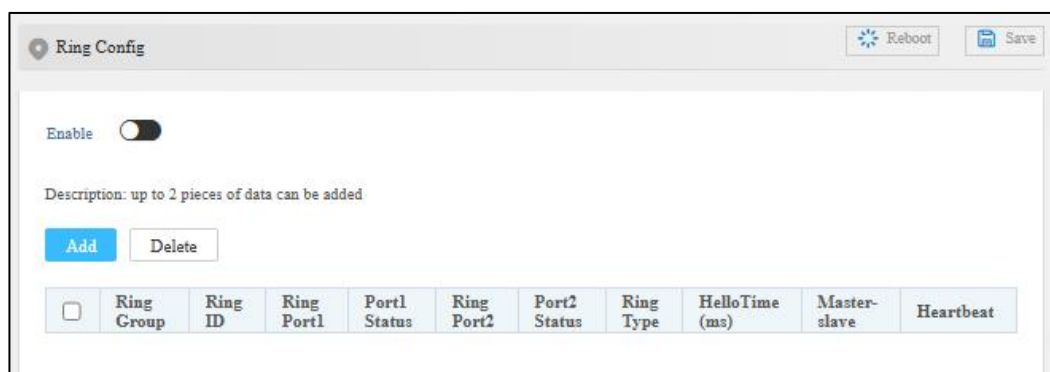
Quickly configure Ring network.

## Operation Path

Open in order: "Layer-2 Config > Ring".

## Interface Description

Ring interface is as follows:



The main element configuration description of Ring interface:

Interface Element	Description
Enable	Enable switch, slide to the right to enable the Ring ring network function.
Ring Group	Support ring group 1/2, it can create 2 ring networks at the same time.

Interface Element	Description
Ring ID	<p>When multiple switches form a ring, the current ring ID would be network ID. Different ring network has different ID. Value range is 1-255.</p> <p>Note: The ring network identification must remain the same in one ring network.</p>
Ring Port 1	<p>The network port 1 on the switch device used to form the ring network.</p> <p>Note: When the ring network type is "Couple", port 1 is the "Coupled Port". Coupling port is the port that connects different network identities.</p>
Port1 Status	<p>The current state of Port 1.</p> <ul style="list-style-type: none"> <li>• block</li> <li>• forward</li> </ul>
Ring Port 2	<p>The network port 2 on the switch device used to form the ring network.</p> <p>Note:</p> <ul style="list-style-type: none"> <li>• When the ring network type is "Couple", port 2 is the "console port". Console port is the port in the chain where two rings intersect.</li> <li>• "Port 1" and "Port 2" cannot be set to the same port, and the port number it sets must be the same as it connects without sequential order.</li> </ul>
Port2 Status	<p>The current state of Port 2.</p> <ul style="list-style-type: none"> <li>• block</li> <li>• forward</li> </ul>
Ring Type	<p>According to the requirement in the scene, user can choose different ring type.</p> <ul style="list-style-type: none"> <li>• Single: single ring, using a continuous ring to connect all device together.</li> <li>• Couple: couple ring is a redundant structure used for connecting two independent networks.</li> <li>• Chain: chain can enhance user's flexibility in constructing all types of redundant network topology via an advanced software technology.</li> <li>• Dual: Two adjacent rings share a switch; users can carry the same switch on two different networks or two different switching devices on the same network.</li> </ul>
Hello Time (ms)	<p>Hello_time is the sending time interval of Hello packet; via the ring port, CPU sends query packet to adjacent device</p>

Interface Element	Description
	<p>for confirming the connection is normal or not. Input range is 0~100.</p> <p>Note: When the Hello Time value is 0, it means that no inquiry packet is sent.</p>
Master-slave	<p>Single loop network supports no-master station structure and one-master multi-slave structure.</p> <ul style="list-style-type: none"> <li>• When all the single-loop devices are slave stations, the single-loop structure is no-master station.</li> <li>• When a single ring device is a master and multiple slave station, one device can be designated as the master device and the other devices as the slave device. One end of the main device of the ring network is the backup link. When the ring network fails, the backup link is enabled from the master station to ensure the normal operation of the network.</li> </ul>
Heartbeat	<p>Heartbeat detection mechanism. When this configuration is enabled, the network association will periodically send heartbeat messages to detect whether the corresponding devices are in live state, thus enhancing the reliability of the network. Configurable:</p> <ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul>

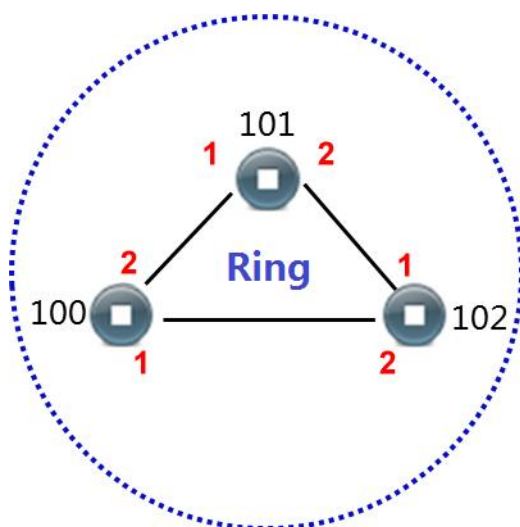


#### Notice

- A port cannot belong to multiple ring networks simultaneously.
- The ID in the same single ring must be the same; otherwise, it cannot form a ring and achieve normal communication.
- To ensure the communication of ring network, it's recommended to set the "Type" of ports that have already been set as ring network to "Trunk" and "member relationship" to "Tagged".
- When forming complicated ring networks like tangent ring, please make sure the ID conforms to the unity of single ring network ID. Network ID of different single ring must be different.

## 5.4.1 Instance: Create Single Ring

For example: create the following single ring:



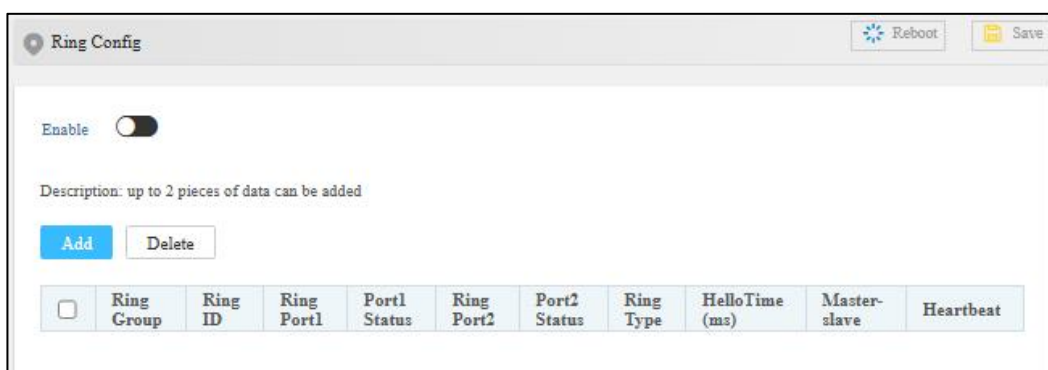
### Instance Analysis

The ring ports of Device 100, 101, and 102 are port 1 and port 2. Therefore, creating single ring is viable. Port 1 and port 2 are set as the ring ports of each device.

### Operation Steps

Configuring Device 100, 101 and 102 in the following steps:

- Step 1** Select “Layer-2 Config > Ring”.
- Step 2** Turn on the “Enable switch”.
- Step 3** Enter “1” into the “ID” textbox of “Group 1”.



- Step 4** Set “Port 1” as “fe1” and “Port 2” as “fe2” separately.

Note:

“Port 1” and “Port 2” cannot be set to the same port.

**Step 5** Choose “Single” in the drop-down list of “Type” of “Group 1”.

**Step 6** Enter “0” into the “HelloTime” textbox of “Group 1”.

**Step 7** (For Device 100 and 101) Choose “Slave” in the drop-down list of “Master-slave” of “Group 1”.

**Step 8** (For Device 102) Choose “Master” in the drop-down list of “Master-slave” of “Group 1”.

**Step 9** Click “OK”.

**Step 10** End.

## 5.5 IGMP Snooping Configuration

IGMP Snooping (Internet Group Management Protocol Snooping) is a kind of IPv4 layer-2 multicast protocol. It maintains the outgoing information of multicast messages by snooping the multicast protocol messages transmitted between layer 3 multicast device and user host, to manage and control the forwarding of multicast data messages in data link layer.

After configuring IGMP Snooping, layer 2 multicast device can snoop and analyze the IGMP message between multicast user and upstream router, and create layer 2 multicast forwarding entries based on these information to control multicast data message forwarding. This prevents multicast data from being broadcast in the layer 2 network.

The ways of IGMP Snooping processing different messages:

- IGMP universal group query message: IGMP universal group query message is sent periodically to all hosts and routers in the local network segment to query which multicast group members are in the network segment.
- IGMP report message: the member receives the IGMP universal group query message and responds by the IGMP report message. The member actively sends an IGMP report message to the IGMP query to declare joining the multicast group.
- IGMP leave message: a member running IGMPv2 sends an IGMP leave message to notify the IGMP query that it has left a multicast group.

## 5.5.1 Global Configuration

### Function Description

Enable/disable IGMP Snooping.

### Operation Path

Open in order: "Layer-2 Config > IGMP-Snooping > Global Config".

### Interface Description

Global configuration interface is as follows:

The main element configuration description of IGMP-Snooping interface:

Interface Element	Description
IGMP Snooping	<p>The switch of IGMP snooping function, options are:</p> <ul style="list-style-type: none"> <li>• Enable;</li> <li>• Disable.</li> </ul> <p>Note: IGMP snooping means snooping the messages between user host and router, as well as tracking multicast information and the ports that have been applied for.</p>
IGMP Query	<p>The switch of IGMP query, options are:</p> <ul style="list-style-type: none"> <li>• Enable;</li> <li>• Disable.</li> </ul> <p>Note: IGMP query means that router inquiring all hosts in subnet if they join some multicast groups.</p>
IGMP Query Interval	<p>IGMP query interval, unit: second.</p> <p>Note:</p>

	The time range that can be entered is 60~300s.
Group Member Survival Time	<p>The maximum time that multicast members in device can survive from existence to not receiving any response. Unit: second.</p> <p>Note:</p> <ul style="list-style-type: none"> <li>IGMP snooping needs to be enabled before using this function.</li> <li>The time range of group survival that can be set is 140-8960s, and the input value must be an integer multiple of 70.</li> </ul>



Note

- You need to set multicast source and port in one VLAN first to enable IGMP Snooping function.
- Multiple IGMP inquirers should be avoided in network lest cause waste of resources. Please choose all ports if the forwarding relationship of unknown multicast group is uncertain.

## 5.5.2 Static Multicast MAC

### Function Description

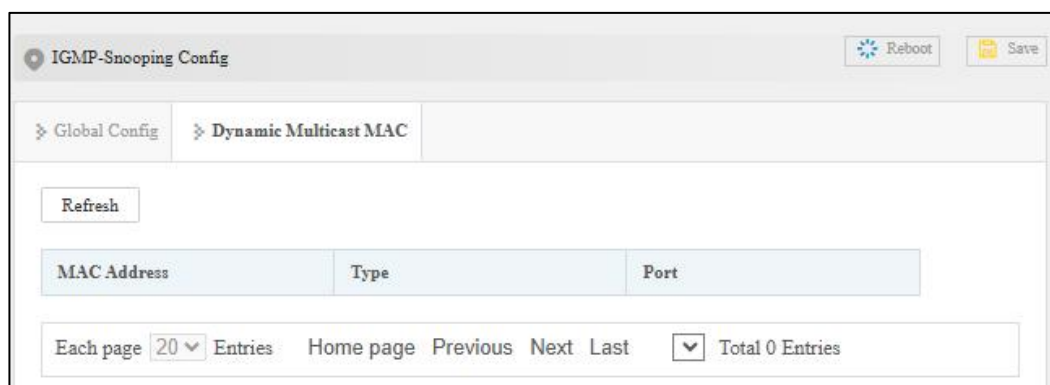
Display the dynamic multicast information received by the device interface.

### Operation Path

Open in order: "Layer-2 Config > IGMP-Snooping > Dynamic Multicast MAC".

### Interface Description

The Dynamic Multicast MAC interface is as follows:



Main element configuration description of multicast group information interface:

Interface Element	Description
MAC Address	The multicast address received by the interface.
Type	Multicast type: <ul style="list-style-type: none"> <li>dynamic</li> <li>static</li> </ul>
Port	Ethernet port.

## 5.6 Port Loopback Detection

### Function Description

Loop protection can be configured to avoid ring network storm.

### Operation Path

Open in order: "Layer-2 Config > Port Loop Detection".

### Interface Description

Screenshot of Port Loopback Detection interface:

Port Loop Detection

Enable

<input type="checkbox"/>	Port	Protected	State	Trap
<input type="checkbox"/>	fe1	No	Los	Disable
<input type="checkbox"/>	fe2	No	Los	Disable
<input type="checkbox"/>	fe3	No	Los	Disable
<input type="checkbox"/>	fe4	No	Los	Disable
<input type="checkbox"/>	fe5	No	Link	Disable
<input type="checkbox"/>	fe6	No	Los	Disable
<input type="checkbox"/>	fe7	No	Los	Disable
<input type="checkbox"/>	fe8	No	Los	Disable
<input type="checkbox"/>	fe9	No	Los	Disable
<input type="checkbox"/>	fe10	No	Los	Disable
<input type="checkbox"/>	fx11	No	Los	Disable
<input type="checkbox"/>	fx12	No	Los	Disable
<input type="checkbox"/>	fx13	No	Los	Disable
<input type="checkbox"/>	fx14	No	Los	Disable
<input type="checkbox"/>	fx15	No	Los	Disable
<input type="checkbox"/>	fx16	No	Los	Disable

Main elements configuration descriptions of Port Loop Protection interface:

Interface Element	Description
Enable	Enable or disable port loop detection.
Port	Displays the port number of the device.
Protected	<p>The state of the port protected by a loop. After enabled, when there is a port self-loop or a port loop, the loop can be quickly disconnected, and the port status can be set to blocking or forwarding to avoid network storms.</p> <p>Notice: The loop port cannot be set as a loop detection port.</p>
State	<p>The connection status of this port, values are:</p> <ul style="list-style-type: none"> <li>Los: the port is physically disconnected</li> <li>Link: The port is not looped and the port is connected.</li> <li>Block: The port is enabled with loop protection function, and the loop has been detected, so it has entered the</li> </ul>

---

	<p>protection state.</p> <ul style="list-style-type: none"><li>• Forward: The port is connected; loop protection is enabled and no loop is detected.</li></ul>
Trap	<p>The Trap switch is used to send or not send Trap information when the port loop is detected. The options are:</p> <ul style="list-style-type: none"><li>• Enable</li><li>• Disable</li></ul>

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# 6 Network Management

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## 6.1 SNMP Configuration

Now, the broadest network management protocol in network is SNMP (Simple Network Management Protocol). SNMP is the industrial standard that is widely accepted and comes into use, it's used for guaranteeing the management information transmission between two points in network, and is convenient for network manager search information, modify information, locate faults, complete fault diagnosis, conduct capacity plan and generate a report. SNMP adopts polling mechanism and only provides the most basic function library, especially suit for using in minitype, rapid and low-price environment. SNMP implementation is based on connectionless transmission layer protocol UDP, therefore, it can achieve barrier - free connection to many other products.

### 6.1.1 View

#### Function Description

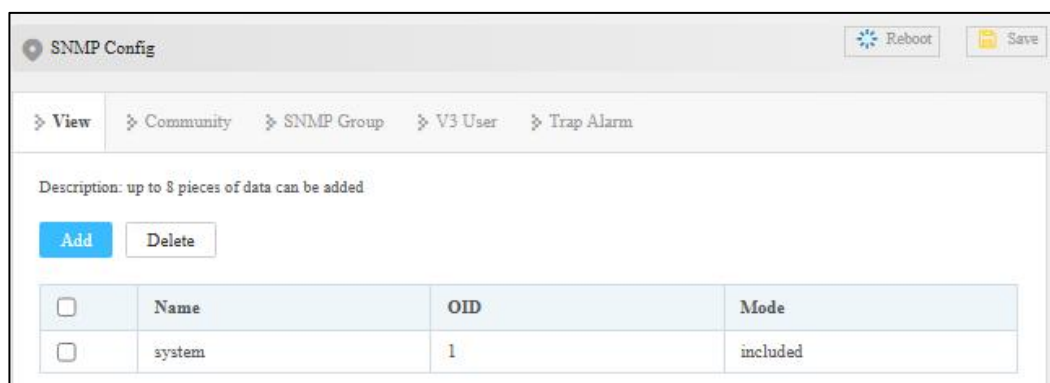
Add/delete SNMP view.

#### Operation Path

Open in order: "Network Config > SNMP > View".

#### Interface Description

View interface is as below:



The main element configuration description of view interface:

Interface Element	Description
Name	SNMP view name definition, support 32 characters input including a-z and 0-9.
OID	Node location information of MIB tree where the device resides. Note: <ul style="list-style-type: none"> <li>OID object identifier, a component node of MIB, uniquely identified by a string of numbers that represent the path.</li> <li>The information of OID could be viewed via the third-party software MG-SOFT MIB Browser.</li> </ul>
Mode	Node OID dealing method, options as below: <ul style="list-style-type: none"> <li>Included: It contains all objects under the node subtree;</li> <li>Excluded: Eliminate all objects beyond the node subtree.</li> </ul>

## 6.1.2 Community

### Function Description

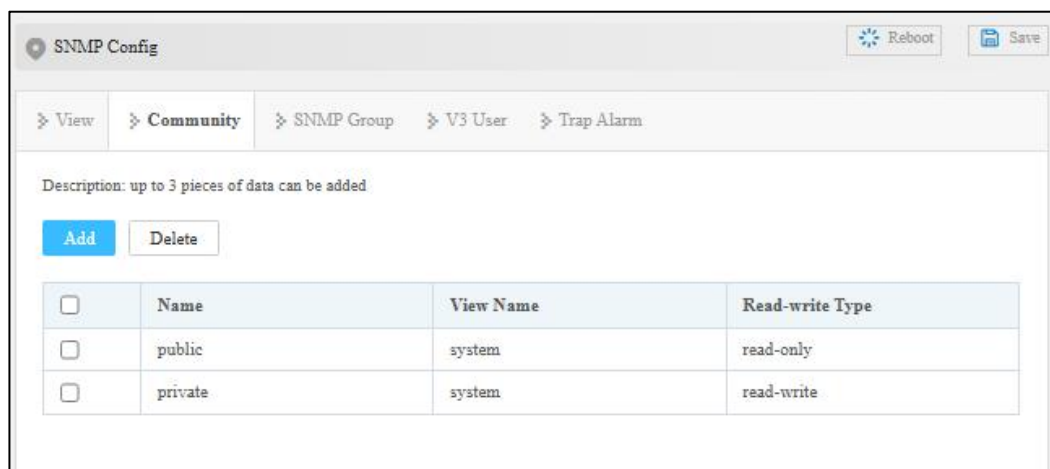
Add SNMP community, and define MIB view that community can access, set MIB object access privilege of community as write privilege or read privilege.

### Operation Path

Open in order: "Network Config > SNMP > Community".

## Interface Description

Community interface is as below:



The main element configuration description of community interface:

Interface Element	Description
Name	Group name, including numbers or letters, with a length of no more than 32 characters.
View Name	SNMP view name definition, which has been configured in the View page.
Read-write Type	Read-write privilege view name selection, options: <ul style="list-style-type: none"> <li>• Read Only</li> <li>• Write Only</li> <li>• Read-Write</li> </ul>

### 6.1.3 SNMP Group

#### Function Description

Configure a new SNMP group and set the secure mode and corresponding SNMP view of the SNMP group.

#### Operation Path

Open in order: "Network Config > SNMP > SNMP Group".

## Interface Description

SNMP Group interface is as follows:

Main elements configuration description of SNMP Group interface:

Interface Element	Description
Name	SNMP group name, ranging from 1 to 32 bytes.
Encryption Mode	Whether to authenticate and encrypt the message, values: <ul style="list-style-type: none"> <li>noauth: indicates that the message is neither authenticated nor encrypted;</li> <li>auth: indicates that the message is authenticated but not encrypted;</li> <li>priv: indicates that the message is authenticated and encrypted.</li> </ul>
Read View	Specify the read view of the group. Note: The view must be configured in the View interface.
Write View	Specify the write and read view of the group Note: The view can be matched or not. To configure, the view must be configured by the View interface.
Notification View	Specify the notification view of the group. Note: The view can be matched or not. To configure, the view must be the view configured in the View interface.

## 6.1.4 V3 User

### Function Description

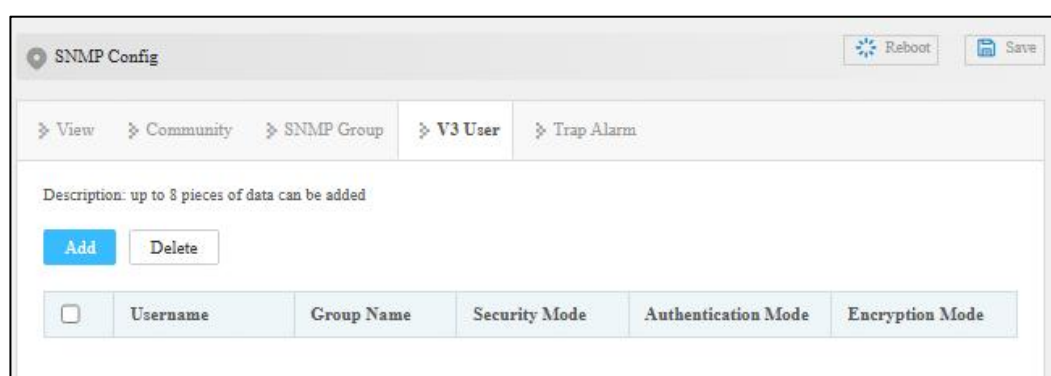
SNMPv3 adopts User-Based Security Model (USM) authentication mechanism. Network manager can configure authentication and encryption function. Authentication is used to verify the validity of the packet sender and prevent unauthorized users from accessing it. Encryption encrypts the transmission packet between NMS and Agent to prevent eavesdropping. It adopts authentication and encryption function to provide higher security for the communication between NMS and Agent.

### Operation Path

Open in order: "Network Config > SNMP > V3 User".

### Interface Description

V3 user interface is as follows:



The main element configuration description of V3 user interface:

Interface Element	Description
User name	SNMP v3 user name definition, can only contain numbers, letters, or @_! , no longer than 32 characters.
Group Name	Group name, ranging from 1 to 32 bytes. Note: Group name must be created snmp group, and only created group can create SNMP v3 users.
Security Mode	Whether to authenticate and encrypt the message, values: <ul style="list-style-type: none"> <li>auth: indicates that the message is authenticated but not encrypted;</li> </ul>

Interface Element	Description
	<ul style="list-style-type: none"> <li>noauth: indicates that the message is neither authenticated nor encrypted;</li> <li>priv: indicates that the message is authenticated and encrypted.</li> </ul>
Authentication Mode	Authentication mode type, acceptable value: <ul style="list-style-type: none"> <li>Md5: Information abstract algorithm 5;</li> <li>Sha: Secure hash algorithm.</li> </ul>
Encryption Mode	V3 user data encryption algorithm, options as follows: <ul style="list-style-type: none"> <li>Des: Adopt data encryption algorithm;</li> <li>Aes: Adopt advanced encryption standard.</li> </ul>

### V3 User: “Add” Interface Description

The screenshot shows a web-based configuration window titled "Add" with a close button (X) in the top right corner. The form contains the following fields and controls:

- Username:** A text input field.
- Group Name:** A dropdown menu.
- Auth Enable:** A dropdown menu with "Enable" selected.
- Auth Information:** A dropdown menu with "md5" selected.
- Auth Password:** A text input field.
- Priv Enable:** A dropdown menu with "Enable" selected.
- Encryption Information:** A dropdown menu with "des" selected.
- Encryption Password:** A text input field.
- Confirm:** A blue button at the bottom center.

The main element configuration description of V3 user “Add” interface:

Interface Element	Description
User name	SNMP v3 user name definition, can only contain numbers, letters, or @_! , no longer than 32 characters.
Group Name	The drop-down list of SNMP group name.
Auth Enable	Indicate that security mode requires authentication. If “disable” is selected, the default is no authentication, no encryption mode.

Interface Element	Description
Auth Information	Authentication information type, acceptable values: <ul style="list-style-type: none"> <li>• Md5: Information abstract algorithm 5;</li> <li>• Sha: Secure hash algorithm.</li> </ul>
Auth Password	The authenticated password is a string with a length of 8-20 digits.
Priv Enable	Indicate that security mode requires encryption.
Encryption Information	V3 user data encryption algorithm, options as follows: <ul style="list-style-type: none"> <li>• Des: Adopt data encryption algorithm;</li> <li>• Aes: Adopt advanced encryption standard.</li> </ul>
Encryption Password	The encrypted password is a string with a length of 8-20 digits.

## 6.1.5 Trap Alarm

### Function Description

Base on TCP/IP protocol, SNMP usually adopts UDP port 161 (SNMP) and 162 (SNMP-traps), SNMP protocol agent exists in the network device and adopts information specific to the device (MIBs) as the device interface; these network devices can be monitored or controlled via Agent. When a trap event occurs, the message is transmitted by SNMP Trap. At this point, an available trap receiver can receive the trap message.

### Operation Path

Open in order: "Network Config > SNMP > Trap Alarm".

### Interface Description

Trap alarm interface is as follows:

The main element configuration description of Trap alarm interface:

Interface Element	Description
Enable	Trap alarm enable switch, default to disable.
Address	IP address of SNMP management device, used for receiving alarm information, such as PC.
Mode	Managed device that sends an active alert to the NMS. After the inform alarm is sent out, it will wait for the confirmation message from NMS, and if no confirmation message is received, it will resend the Inform message; Trap message has no confirmation process. The types of alarm messages include: <ul style="list-style-type: none"> <li>• trapV1: send snmpV1 trap</li> <li>• trapV2c: send snmpV2c trap</li> <li>• trapV3: send snmpV3 trap</li> <li>• informV2c: send snmpv2 inform</li> <li>• informV3: send snmpV3 inform</li> </ul>
Group Name / V3 User	Community name or snmpv3 user name.

## 6.2 LLDP Configuration

LLDP is a layer 2 topology discovery protocol, its basic principle is: Devices in network send the status information message to adjacent device, and each port in the device stores its own information, if there is change in the status of local device, it can also send updated information to the adjacent device directly connected to it. Adjacent devices will store the information in standard SNMP MIB bank. The network management system could inquiry the connection status of current layer 2 from SNMP MIB bank. It should be noted that LLDP is only a remote device status

information discovery protocol, which cannot complete the network device configuration, port control and other functions.

## 6.2.1 Global Configuration

### Function Description

Enable LLDP and configuration.

### Operation Path

Open in order: "Network Config > LLDP > Global Config".

### Interface Description

The global configuration interface is as follows:

The screenshot shows the 'LLDP Config' window with the 'Global Config' tab selected. The 'Enable' toggle is turned on, and the 'Send Period' is set to 30. There are 'Reboot' and 'Save' buttons at the top right, and an 'Apply' button at the bottom.

Main elements configuration description of the global configuration interface:

Interface Element	Description
Enable	The radio box of LLDP function status, check to enable.
Send Period	LLDP transmission period, range 5-32768, unit: second, default: 30 Note: When no device status changes, the device periodically sends LLDP packets to its adjacent nodes. The interval is called the period for sending LLDP packets.
Apply	Click "Apply" button to operate.

## 6.2.2 Port Configuration

### Function Description

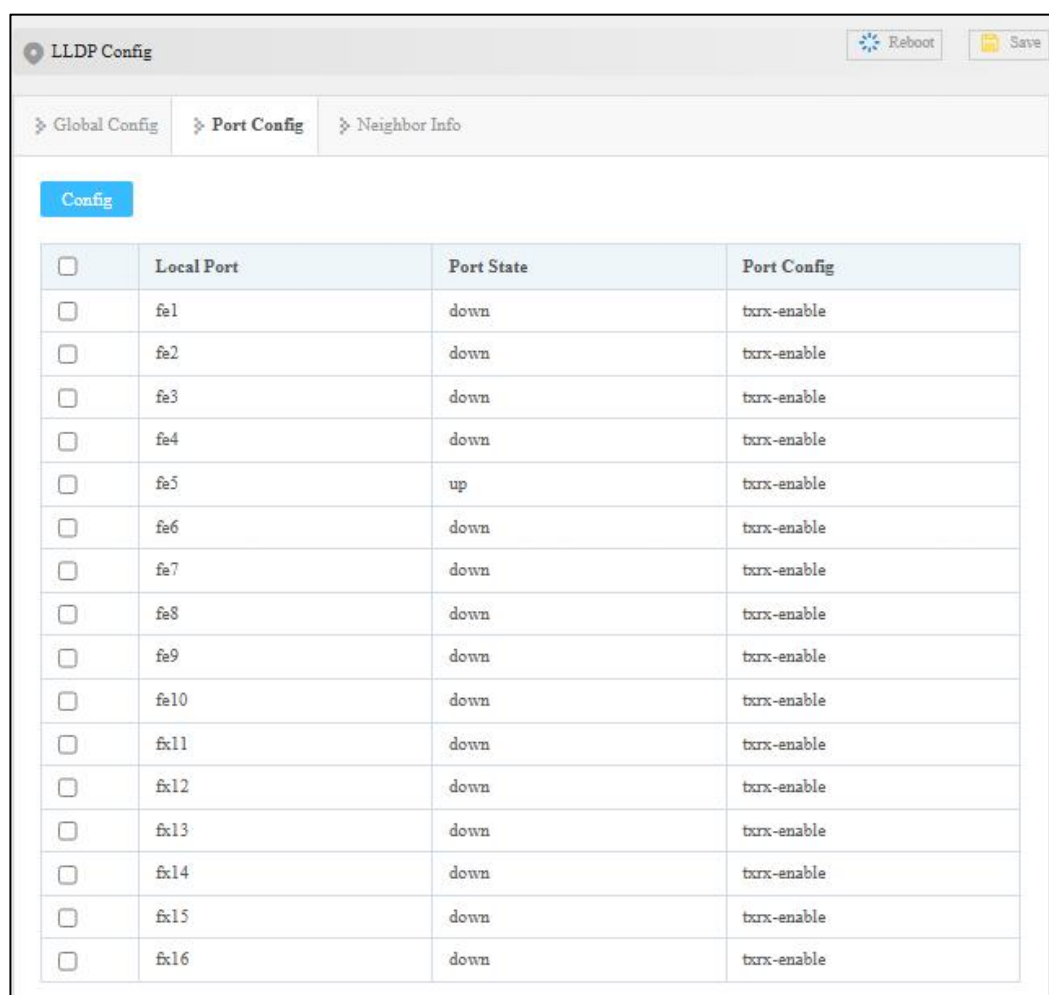
Configure the LLDP work mode of the port.

### Operation Path

Open in order: "Network Config > LLDP > Port Config".

### Interface Description

Check port configuration interface as below:



The screenshot shows the 'LLDP Config' interface with a 'Port Config' tab selected. A 'Config' button is visible above a table with the following data:

<input type="checkbox"/>	Local Port	Port State	Port Config
<input type="checkbox"/>	fe1	down	txrx-enable
<input type="checkbox"/>	fe2	down	txrx-enable
<input type="checkbox"/>	fe3	down	txrx-enable
<input type="checkbox"/>	fe4	down	txrx-enable
<input type="checkbox"/>	fe5	up	txrx-enable
<input type="checkbox"/>	fe6	down	txrx-enable
<input type="checkbox"/>	fe7	down	txrx-enable
<input type="checkbox"/>	fe8	down	txrx-enable
<input type="checkbox"/>	fe9	down	txrx-enable
<input type="checkbox"/>	fe10	down	txrx-enable
<input type="checkbox"/>	fx11	down	txrx-enable
<input type="checkbox"/>	fx12	down	txrx-enable
<input type="checkbox"/>	fx13	down	txrx-enable
<input type="checkbox"/>	fx14	down	txrx-enable
<input type="checkbox"/>	fx15	down	txrx-enable
<input type="checkbox"/>	fx16	down	txrx-enable

The main element configuration description of port configuration interface:

Interface Element	Description
Local Port	The corresponding port name of the device Ethernet port.
Port State	Port connection status:

Interface Element	Description
	<ul style="list-style-type: none"> <li>up</li> <li>down</li> </ul>
Port Config	<p>The options of LLDP working modes of device port are as follows:</p> <ul style="list-style-type: none"> <li>tx-enable: working mode is Tx, only sending and not receiving LLDP message.</li> <li>rx-enable: working mode Rx, only receiving, and not sending LLDP message.</li> <li>txrx-enable: working mode is TxRx, both sending and receiving LLDP message.</li> <li>disable: working mode Disable, neither receiving nor sending LLDP message.</li> </ul> <p>Note: By default, the working mode of LLDP is TxRx when global LLDP is enabled.</p>

## 6.2.3 Neighbor Information

### Function Description

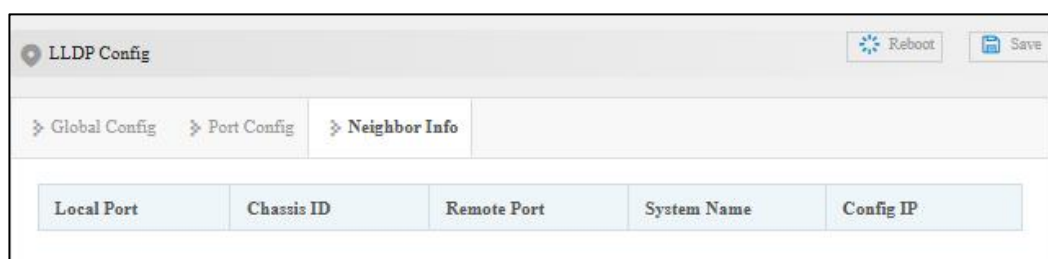
On the "Neighbor Info" page, user can look over the relative information of neighbors.

### Operation Path

Open in order: "Network Config > LLDP > Neighbor Info".

### Interface Description

Neighbor information interface is as follows:



Main elements configuration description of neighbor information interface:

Interface Element	Description
Local Port	Local port number of local switch connected to adjacent devices.
Chassis ID	Bridge MAC address of neighbor device or port.
Remote Port	Port number of neighbor device.
System Name	System name of the neighbor device.
Config IP	Management IP address of neighbor device or port.

## 6.3 DHCP-Server Configuration

DHCP (Dynamic Host Configuration Protocol) is usually applied to large LAN environment. Its main functions are centralized management and IP address distribution, which enables the host in the network to acquire IP address, Gateway address, DNS server address dynamically and improve the usage of addresses.

### 6.3.1 DHCP Switch

#### Function Description

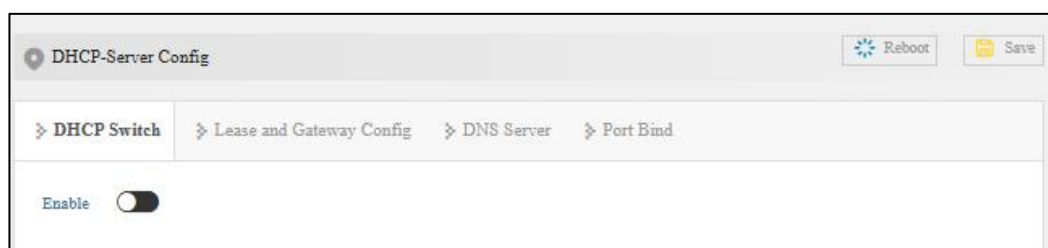
On the "DHCP Switch" page, user can enable/disable DHCP.

#### Operation Path

Open in order: "Network Config > DHCP-Server > DHCP Switch".

#### Interface Description

DHCP switch interface is as follows:



The main element configuration description of DHCP switch configuration interface.

Interface Element	Description
Enable	After enabling the switch, the device, as a DHCP server, can

Interface Element	Description
	distribute IP address to devices connected to it by setting static allocation address table.

## 6.3.2 Lease and Gateway Configuration

### Function Description

Set the valid time and default gateway for the IP address of the client.

### Operation Path

Open in order: "Network Config > DHCP-Server > Lease and Gateway Config".

### Interface Description

The Lease and Gateway Configuration interface is as follows:

The screenshot shows the 'DHCP-Server Config' window with the 'Lease and Gateway Config' tab selected. The 'Lease Time' field is set to 120, and the 'Default Gateway' field is empty. There are 'Reboot' and 'Save' buttons in the top right corner, and an 'Apply' button at the bottom.

The main element configuration description of Lease and Gateway Configuration interface:

Interface Element	Description
Lease Time	The IP address of the client is valid for use. The default value is 120, the unit is min, and the value range is 1-65535. Note: When the time of ip address obtained by dhcp client reaches the lease time, it needs to renew it otherwise the ip address would be invalid and dhcp client needs to request ip address again.
Default Gateway	Default client gateway address, example: 255.255.255.0.

### 6.3.3 DNS Server

#### Function Description

Configure the DNS server address. Parse the domain name to be visited to an IP address, realizing domain name access network.

#### Operation Path

Open in order: "Network Config > DHCP-Server > DNS Server".

#### Interface Description

DNS server interface is as follows:

The screenshot shows a web-based configuration interface titled "DHCP-Server Config". At the top right, there are "Reboot" and "Save" buttons. Below the title bar, there are four tabs: "DHCP Switch", "Lease and Gateway Config", "DNS Server" (which is active), and "Port Bind". The main content area contains two text input fields labeled "DNS Server 1" and "DNS Server 2". Below these fields is a blue "Apply" button.

The main element configuration description of DNS server configuration interface:

Interface Element	Description
DNS Server 1	IP address of domain name resolution server 1.
DNS Server 2	IP address of domain name resolution server 2.

### 6.3.4 Port Binding

#### Function Description

Bind the relationship of IP addresses assigned by ports.

Take Device A and Device B as examples.

If DHCP Server function is enable on Device A and two static address allocation tables are set:

- 192.168.1.19 corresponds to Port 1;
- 192.168.1.20 corresponds to Port 2.

After the function of automatically obtaining the IP address is enabled on Device B,

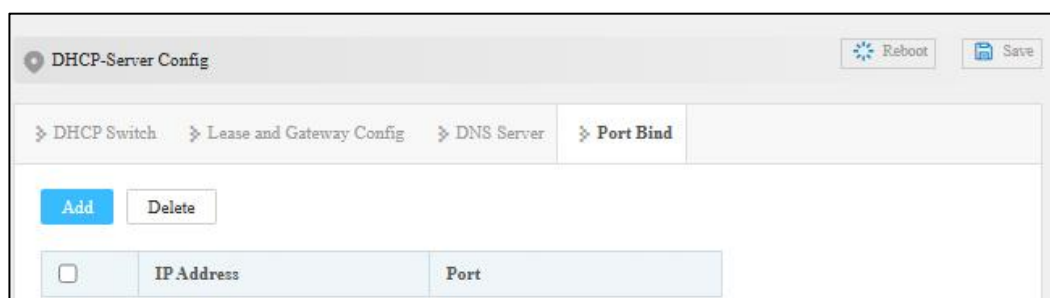
- If Device A is connected to Device B through port 1, Device B can automatically obtain the IP address of 192.168.1.19;
- If Device A is connected to Device B through port 2, Device B can automatically obtain the IP address of 192.168.1.20.

## Operation Path

Open in order: "Network Config > DHCP-Server > Port Bind".

## Interface Description

Port bind configuration interface is as follows:



The main element configuration description of port bind interface:

Interface Element	Description
IP Address	IP address distributed by DHCP address pool, the IP addresses that client gains in the port.
Port	The corresponding port name of the device Ethernet port.

## 6.4 Access Control

### 6.4.1 Port Authentication

IEEE 802.1X protocol is a port-based network access control protocol, that is, user devices are authenticated on the ports of LAN access devices so that user devices can control access to network resources.

IEEE 802.1x adopts the logic functions of "controllable port" and "uncontrollable port" in the authentication architecture, thus realizing the separation of business and authentication. After the user passes the authentication, the business flow and the authentication flow realize the separation. It has no special request to the subsequent packet processing, the service can be very flexible, and has a great advantage in business especially in carrying out broadband multicast, all services are not restricted by the authentication method.

802.1X structure mainly consists of three parts:

- Supplicant: user or client that wants to get the authentication;
- authentication server: typical example is RADIUS server;
- Authentication system Authenticator: access devices, such as wireless access points, switches, etc

## Function Description

Enable and configure 802.1X Authentication parameter.

## Operation Path

Open in order: "Network Config > Access Control > Port Authentication".

## Interface Description

The screenshot of Port Authentication interface is as follows:

Access Control
Reboot Save

Port Authentication
Authentication Database

IEEE 802.1X Authentication

Timed Update Authentication Time

Radius Server

Shared Authentication Password

Authentication Server Address

Authentication Server Port No.

[Apply](#)

[Config](#)

<input type="checkbox"/>	Port Number	IEEE 802.1x Port Authentication
<input type="checkbox"/>	fe1	disable
<input type="checkbox"/>	fe2	disable
<input type="checkbox"/>	fe3	disable
<input type="checkbox"/>	fe4	disable
<input type="checkbox"/>	fe5	disable
<input type="checkbox"/>	fe6	disable
<input type="checkbox"/>	fe7	disable
<input type="checkbox"/>	fe8	disable
<input type="checkbox"/>	fe9	disable
<input type="checkbox"/>	fe10	disable
<input type="checkbox"/>	fx11	disable
<input type="checkbox"/>	fx12	disable
<input type="checkbox"/>	fx13	disable
<input type="checkbox"/>	fx14	disable

The main element configuration description of port authentication interface:

Interface Element	Description
IEEE802.1X Authentication	Enable/disable IEEE802.1X authentication.
Timed Update Authentication Time	The time range of authentication upgrade interval is 60~4095, unit: second. The reauthentication interval of 802.1x used for strengthening the security of authentication.
Radius Server	Local internal Radius server and external Radius server configuration:

Interface Element	Description
	<ul style="list-style-type: none"> <li>Local: built-in Radius server, if choosing internal Radius server, the applicant will only use the username and password of internal Radius database.</li> <li>Remote: fill in the IP address, port number and shared password for authentication of the authentication server if using external Radius server.</li> </ul>
Shared Authentication Password	The shared password character string used for device accessing Radius server. Supports combinations of letters, numbers, and symbols with a length of no more than 50 characters.
Authentication Server Address	IP address of Radius server
Authentication Server Port No.	The port number of the Radius server. The default is 1812, value range is 1-65535.
Port Number	Switch port number.
IEEE802.1x Authentication Port	IEEE802.1X authentication state of the port: <ul style="list-style-type: none"> <li>Enable;</li> <li>Disable.</li> </ul>

## 6.4.2 Authentication Database

### Function Description

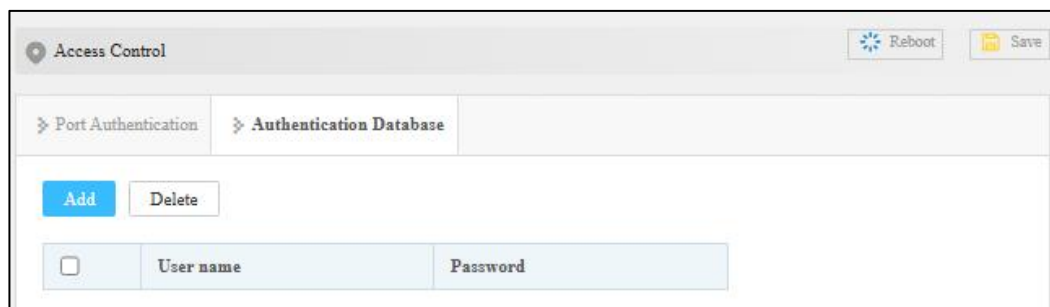
Set the username and password locally authenticated by 802.1X, and add, delete, and save users.

### Operation Path

Open in order: "Network Config > Access Control > Authentication Database".

### Interface Description

Screenshot of authentication database interface:



The main element configuration description of authentication database interface:

Interface Element	Description
User name	Username of logging into local authentication.
Password	Password of logging into local authentication

## 6.5 QoS

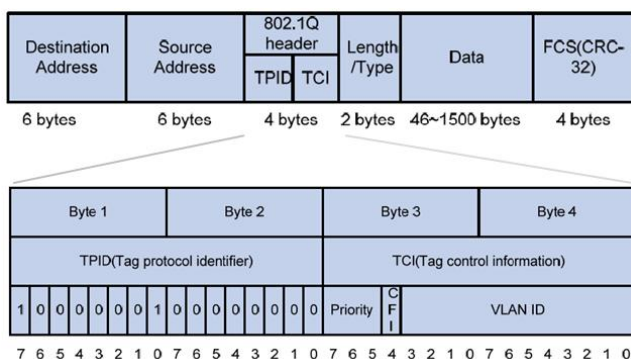
### 6.5.1 QoS Classification

QoS (Quality of Service) is used to evaluate the ability of the service provider to meet the service needs of customers. As for network business, service quality includes transmission bandwidth, transfer delay, data packet loss rate and so on.

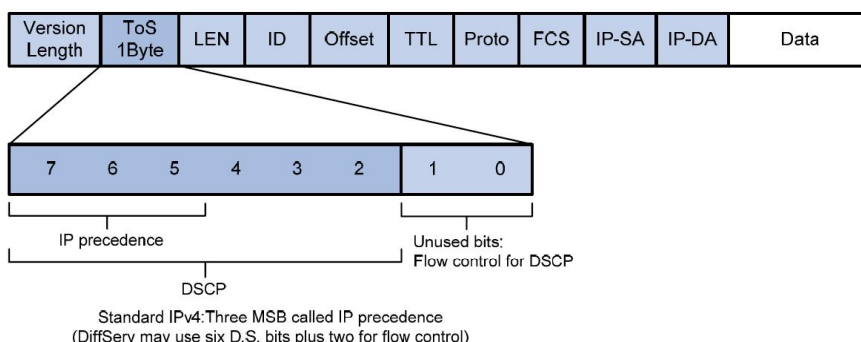
The service quality issues that traditional network faces are caused by network congestion. The so-called congestion refers to the phenomenon that the forwarding rate decreases and extra delays are introduced due to the relative shortage of supply resources, thus leading to the decline of service quality. As for congestion management, queue technology is generally adopted. It uses a queue algorithm to classify flow, then uses some priority algorithm to send these flow.

Priority is used to tag the priority of message transmission.

- CoS  
Ethernet defines 8 business priorities (CoS, Class of Service) in the VLAN TAG of Ethernet frame head. The 802.1Q label head of 4 bytes has included 2-byte TPID (Tag Protocol Identifier) and 2-byte TCI (Tag Control Information), TPID's is 0x8100, the following graph has displayed the details of 802.1Q label head, priority field is 802.1p priority.



- ToS**  
 The ToS (Type of Service) domain in the head of IP message is called DS (differential Services) domain, in which the priority of DSCP is represented by the first 6 digits (0 ~ 5 digits) of this domain, with a value range of 0-63, and the last 2 digits (6 and 7 digits) are reserved. The greater the priority level value, the higher the priority level.



## Function Description

Set the queue mechanism of the device and the priority parameters of each port.

## Operation Path

Open in order: “Network Config > QoS > Classification of QoS”.

## Interface Description

Screenshot of QoS Classification interface:

Qos
Reboot Save

Classification of QOS
CoS Mapping
ToS Mapping

Queue Mechanism: Weighted Round(8:7:6:5:4:3:2:1) ▼

Config

	Port	Check DSCP	Check CoS	Port Priority
<input type="checkbox"/>	fe1	disable	disable	0
<input type="checkbox"/>	fe2	disable	disable	0
<input type="checkbox"/>	fe3	disable	disable	0
<input type="checkbox"/>	fe4	disable	disable	0
<input type="checkbox"/>	fe5	disable	disable	0
<input type="checkbox"/>	fe6	disable	disable	0
<input type="checkbox"/>	fe7	disable	disable	0
<input type="checkbox"/>	fe8	disable	disable	0
<input type="checkbox"/>	fe9	disable	disable	0
<input type="checkbox"/>	fe10	disable	disable	0
<input type="checkbox"/>	fx11	disable	disable	0
<input type="checkbox"/>	fx12	disable	disable	0
<input type="checkbox"/>	fx13	disable	disable	0
<input type="checkbox"/>	fx14	disable	disable	0
<input type="checkbox"/>	fx15	disable	disable	0
<input type="checkbox"/>	fx16	disable	disable	0

The main element configuration description of QoS classification interface:

Interface Element	Description
Queue Mechanism	Queuing scheduling setting, options are: <ul style="list-style-type: none"> <li>Weighted Fair (8:7:6:5:4:3:2:1): according to the queue's weighted value 8:7:6:5:4:3:2:1, weighted round-robin queue scheduling algorithm would schedule queues in turn to ensure that each queue can get some service time.</li> <li>Strict (Strict Priority): Strict priority queue scheduling algorithm includes 8 queues and schedules in the decreasing order of priority. When the queue with high priority is empty, then it would send groupings of queue with low priority.</li> </ul>
Port	The switch port number.

Interface Element	Description
Check DSCP	After checking the checkbox, the priority of ToS would be inspected during queue scheduling.
Check CoS	After checking the checkbox, the priority of CoS would be inspected during queue scheduling.
Port Priority	To configure default port priority for ports that haven't enabled ToS and CoS priority. The value range is 0-7. The higher the value, the higher the priority. Note: By default, switch would use port priority in place of the 802.1p priority the port comes with when receiving message to control the quality of service the messages deserve.



#### Note

- When the ToS and CoS are not enabled, queuing and scheduling are in the order of port priority.
- When the ToS or CoS are enabled, queuing, and scheduling according to ToS or CoS instead of considering port priority.
- If the ToS and CoS are enabled at the same time, queuing according to ToS priority. When the ToS values are the same, queuing according to CoS priority.

## 6.5.2 CoS Mapping

### Function Description

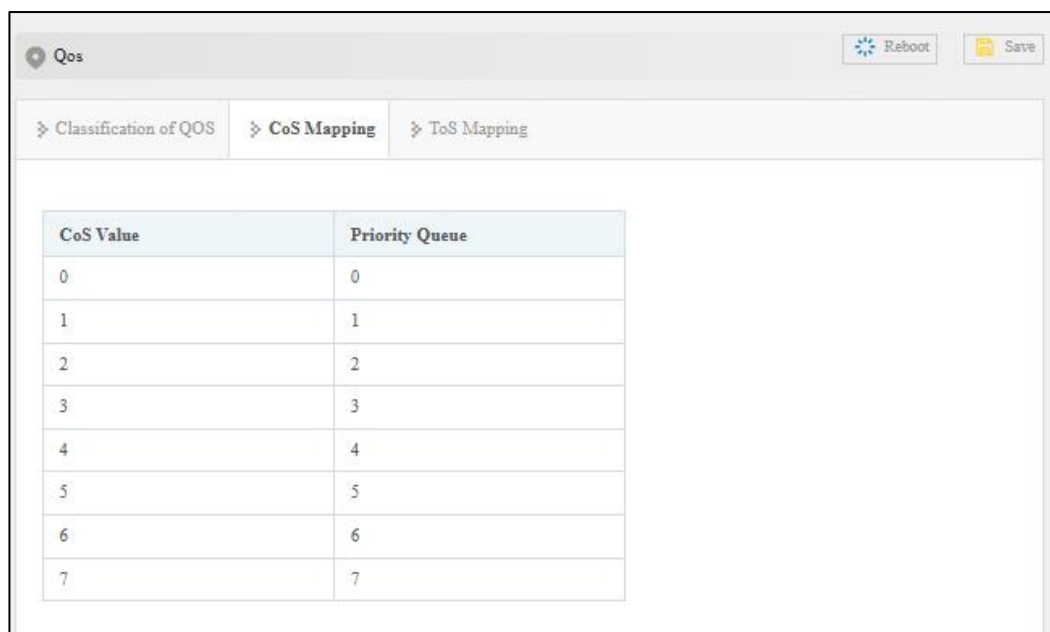
On the page of “CoS Mapping”, user can configure mapping between CoS value and priority queues.

### Operation Path

Open in order: “Network Config > QoS > CoS Mapping”.

### Interface Description

Screenshot of CoS Mapping interface:



The main element configuration description of CoS mapping interface:

Interface Element	Description
CoS Value	Display CoS value.
Priority Queue	Set mapping between CoS value and priority queue, priority queue is as follows: <ul style="list-style-type: none"> <li>0-7 Priority queue</li> </ul>

## 6.5.3 ToS Mapping

### Function Description

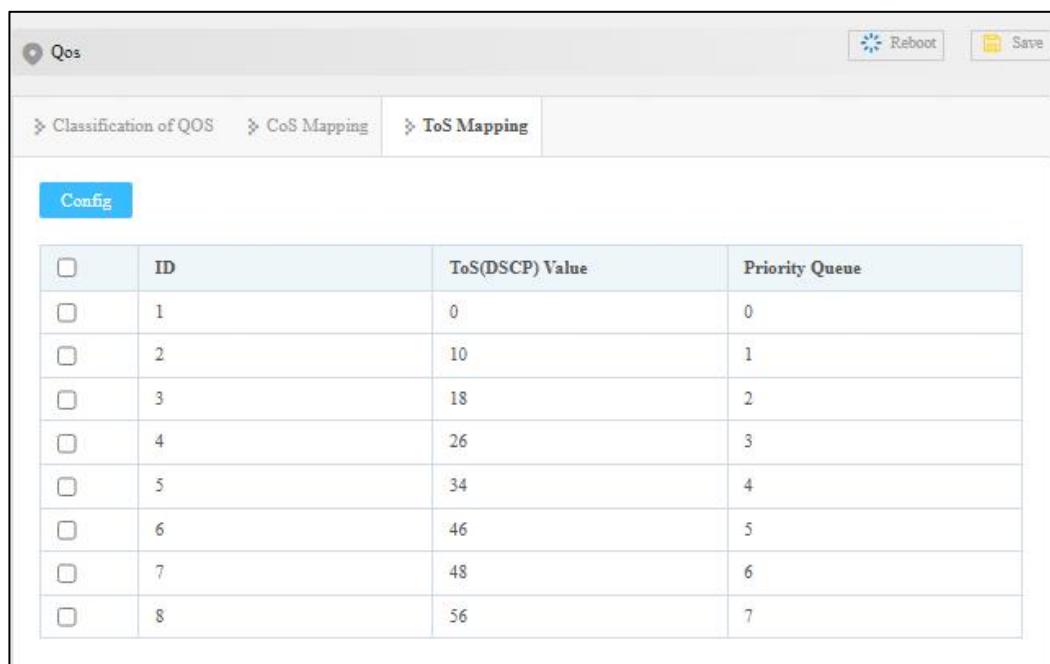
On the page of “ToS Mapping”, user can configure mapping between CoS value and priority queue.

### Operation Path

Open in order: “Network Config > QoS > ToS Mapping”.

### Interface Description

Screenshot of ToS Mapping interface:



The main element configuration description of ToS mapping interface:

Interface Element	Description
Tos (DSCP) Value	Display ToS (DSCP) value
Priority Queue	Set mapping between ToS value and priority queue, options are as follows: <ul style="list-style-type: none"> <li>0-7 Priority queue</li> </ul>

## 6.6 Modbus\_TCP

### Function Description

Modbus TCP monitoring function can be enabled. Client can read the switch system, port, ring network, frame statistics and other parameters information via Modbus TCP protocol, which are convenient for various integrated systems to monitor and manage the device.



Note

Please see the switch read-only register address information in the "Modbus TCP data sheet" of this section.

## Operation Path

Open in order: "Network Config > Modbus TCP".

## Interface Description

Modbus\_TCP screenshot:



The main element configuration description of Modbus\_TCP interface:

Interface Element	Description
Modbus TCP	Modbus TCP monitoring enable switch, which is disabled by default. After enabling Modbus TCP monitoring function, client can read the switch device information via function code 4.

## Modbus\_TCP Data Sheet

Switch read-only register (support function code 4) address information and stored device information, as the table below:



The following table address is hexadecimal format, please convert it into suitable format according to the demands of current debugging tool.

Information Type	Address (HEX)	Data Type	Description
System Information	0x0000	2 Words	Device ID (reserved)
	0x0002	16 Words	Name (ASCII display)
	0x0012	16 Words	Description (ASCII display)
	0x0022	3 Words	MAC Address (HEX display)
	0x0025	2 Words	IP address

Information Type	Address (HEX)	Data Type	Description
	0x0027	16 Words	Contact Information
	0x0037	16 Words	Firmware Ver (ASCII display)
	0x0047	16 Words	Hardware Ver (ASCII display)
	0x0057	16 Words	Serial No.
	0x0067	1 Word	Power supply 1 status: <ul style="list-style-type: none"> <li>0x0000: OFF</li> <li>0x0001: ON</li> </ul>
	0x0068	1 Word	Power supply 2 status: <ul style="list-style-type: none"> <li>0x0000: OFF</li> <li>0x0001: ON</li> </ul>
Port Information	0x1000-0x101B	1 Word	Port connection status: <ul style="list-style-type: none"> <li>0x0000: Link down</li> <li>0x0001: Link up</li> <li>0x0002: Disable</li> <li>0xFFFF: No port</li> </ul>
	0x101D-0x1038	1 Word	Port operating mode: <ul style="list-style-type: none"> <li>0x0000: 10M-Half</li> <li>0x0001: 10M-Full</li> <li>0x0002: 100M-Half</li> <li>0x0003: 100M-Full</li> <li>0x0004: 1G-Half</li> <li>0x0005: 1G-Full</li> <li>0xFFFF: No port</li> </ul>
	0x1039-0x1054	1 Word	Port flow control status: <ul style="list-style-type: none"> <li>0x0000: OFF</li> <li>0x0001: ON</li> <li>0xFFFF: No port</li> </ul>
	0x1056-0x1071	1 Word	Port interface type: <ul style="list-style-type: none"> <li>0x0000: Copper port</li> <li>0x0001: Fiber port</li> <li>0x0002: Combo port</li> <li>0xFFFF: No port</li> </ul>

## Example: MODBUS\_TCP Configuration

Acquire the switch device name information via DebugTool analogue client, the switch information is as follows:

- Switch default IP address: 192.168.1.254;
- Address of switch register that stores the device name information: 0x002;
- Number of switch register that stores the device name information: 16 words;

## Operation Steps

First, configure the switch Modbus\_TCP monitoring enable.

**Step 1** Log into Web configuration interface.

**Step 2** Select "Network Management > Remote Monitoring > Modbus\_TCP".

**Step 3** Slide on the "Modbus\_TCP" enable switch, as shown in the figure below.



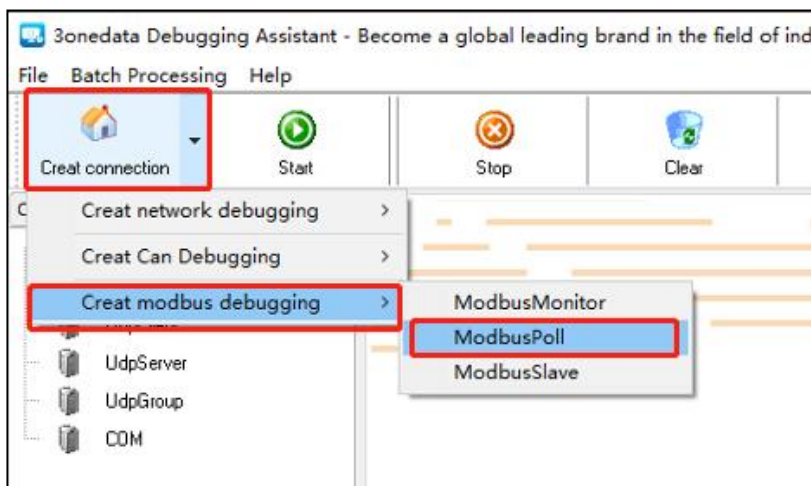
**Step 4** End.

Then, run the debug tool software to acquire the device parameters.

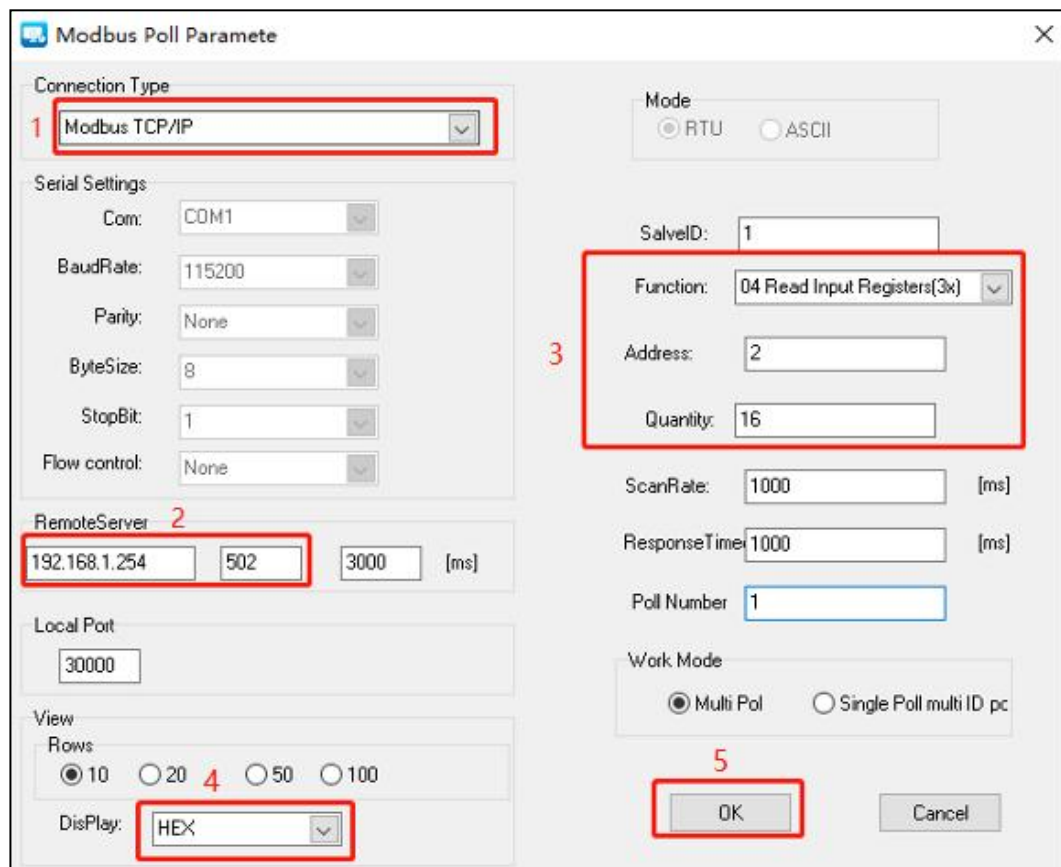
**Step 1** Open "Debug Tool".

**Step 2** Click the drop-down list of "Create connection".

**Step 3** Select "Create Modbus debugging > ModbusPoll", as the picture below.

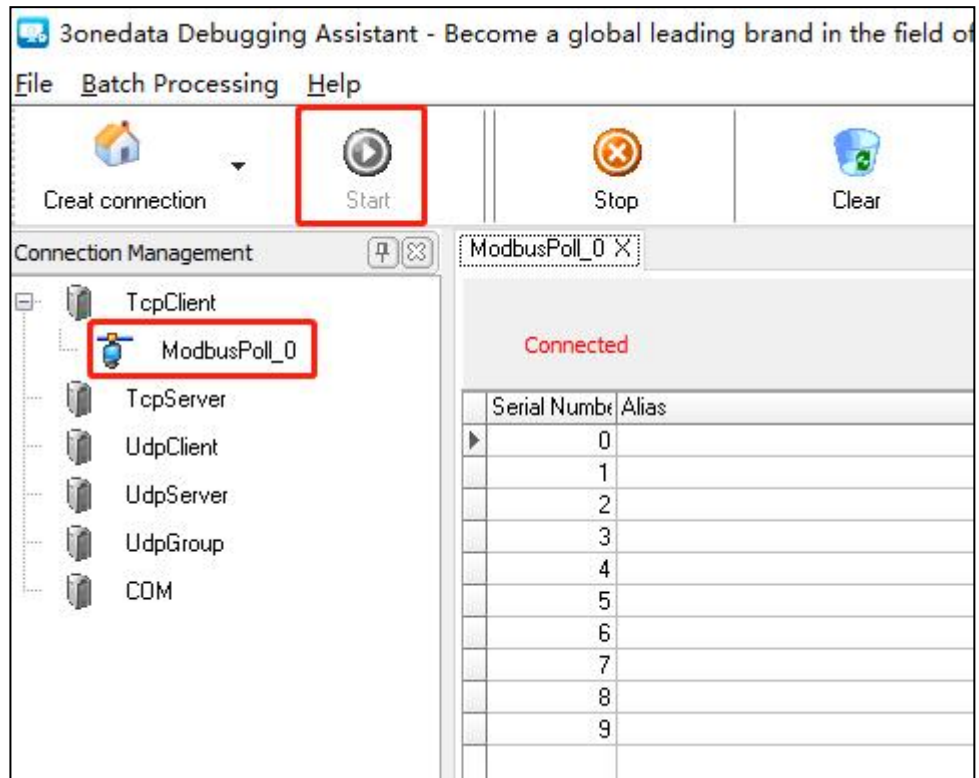


**Step 4** Configuration window of ModbusPoll parameters pops up, the configuration as the picture below:

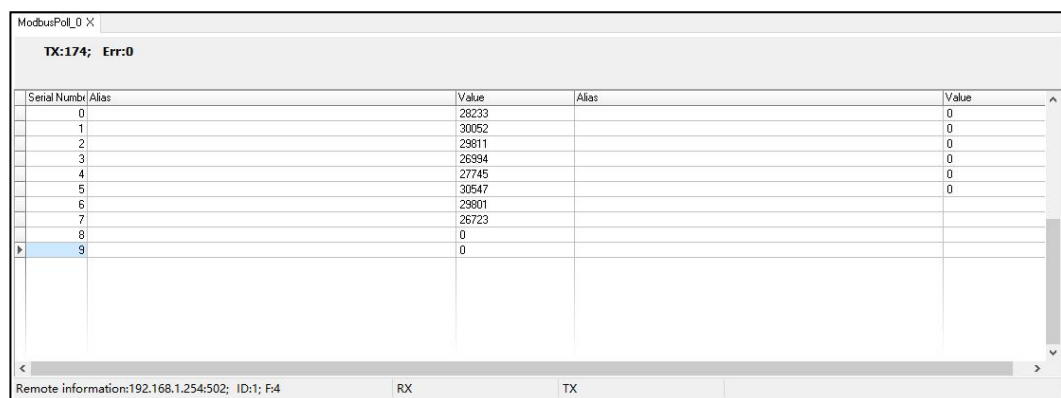


- 1 On the drop-down list of "Connection Type", select "Modbus TCP/IP";
- 1 Enter the switch IP address "192.168.1.254" and port number "502" on the column of "Remote Server";
- 2 Select "04 Read Input Registers (3x)" on the drop-down list of "Function";
- 3 Enter decimal device name register address "2" on the text box of "Address";  
Notice:  
Here the start address is decimal format, so hexadecimal register address should be converted into decimal format.
- 4 Enter the register amount "16" on the text box of "Quantity";
- 5 Select "HEX" on the drop-down list of "Display";
- 6 Click "OK".

**Step 5** On the page of Debug Tool, select created ModbusPoll, and then click "Start";



**Step 6** Check responsive data, and convert the hexadecimal value read by register into ASCII code, displayed as "Industrial Switch";



**Step 7** End.



Note

- Switch can establish 4 Modbus TCP monitoring connections at the same time.
- Switch Port Information, Frame Statistics and PoE Information. It supports the sequential read of port parameters of multiple registers. For example, address range of the register that stores port connection status information is 0x1000-0x101B, each

register data is 1 word; when the start address of register is 0x1000, the register number is 1, it will read port 1 status; If the register quantity is 10, it will read the status from Port 1 to Port 10; If the port doesn't exist, then the read data will be 0xFFFF.

## 6.7 IP Filtering

### Function Description

On the "IP Filtering" page, user can check or add IP filter to forbid the communication between the clients in LAN and WAN.

### Operation Path

Open in order: "Network Config > IP Filtering".

### Interface Description

IP filtering interface is as follows:

The main element configuration description of IP filtering interface:

Interface Element	Description
Enable IP Filtering	Enable or disable IP address filtering rules. <ul style="list-style-type: none"> <li>enable</li> <li>disable</li> </ul>
IP Filtering Mode	Set filtering rules for IP addresses. <ul style="list-style-type: none"> <li>White list: the IP address set in the filtering rule is</li> </ul>

Interface Element	Description
	<p>allowed to access the device.</p> <ul style="list-style-type: none"> <li>Blacklist: IP addresses set in filtering rules are prohibited from accessing devices.</li> </ul> <p>Notice:</p> <ul style="list-style-type: none"> <li>When the white list is enabled, IP addresses outside the white list will not be able to access the device.</li> <li>If the IP address in the white list cannot access the device, please clean the browser cache, and access it again.</li> <li>When the blacklist is enabled, the IP addresses covered by the blacklist will not be able to access the device.</li> </ul>
Serial Number	Displays the IP address filtering rule number.
Ingress Port	Select the device port number for IP filtering.
Source IP	The source IP address of the LAN filtered by this device, for example: 192.168.1.1.
Destination IP	The destination IP address of the LAN filtered by this device, for example: 192.168.1.254.
Description	The remarks field for the IP address filter list supports up to 11 characters (English letters, numbers, or half-width symbols) and is optional.

# 7 System Configuration

## 7.1 Network Diagnosis

### 7.1.1 Ping

#### Function Description

Ping is used to check whether the network is open or network connection speed. The Ping command uses the uniqueness of the IP addresses of the machines on the network to send a packet to the target IP address, and then asks the opposite end to return a packet with the same size to determine the connection status and delay value of the two network devices.

#### Operation Path

Open in order: "System Config > Network Diagnosis".

#### Interface Description

The Network diagnosis interface is as follows:



The main element configuration description of Ping interface:

Interface Element	Description
Address	The IP address of the detected device, that is, the destination address. The device can check the network intercommunity to other devices via the ping command.

## 7.2 Time

### 7.2.1 NTP Configuration

The full name of NTP protocol is Network Time Protocol. Its purpose is to deliver uniform, standard time on the international Internet. Specific implementation scheme is appointing several clock source websites in the network to provide user with timing service, and these websites should be able to mutually compare to improve the accuracy. It can provide millisecond time correction, and is confirmed by the encrypted way to prevent malicious protocol attacks.

#### Function Description

Enable and configure NTP server.

#### Operation Path

Open in order: "System Config > NTP > NTP Config".

#### Interface Description

The NTP configuration interface is as follows:

Main element configuration description of NTP configuration interface:

Interface Element	Description
Enable	Enable/Disable NTP configuration.
NTP Server	IP address of NTP server, for example: 192.168.1.1. Note: As an NTP client, the system performs time synchronization with the NTP server every configured synchronization period.
Synchronization period	The time synchronization period, with a value range of 10-72000 seconds, and a default configuration of 60 seconds.

## 7.2.2 Time Zone Configuration

### Function Description

Configure the device time zone.

### Operation Path

Open in order: "System Config > NTP > Time Zone Config".

### Interface Description

Time Zone Configuration interface is as follows:



Main elements configuration description of time zone configuration interface:

Interface Element	Description
Time Zone	UTC (Universal Time Coordinated) time zone. Due to different regions, users can freely set the system clock according to the regulations of their own country or region.

## 7.3 Alarm Configuration

After enabling alarm, when the device port is in an abnormal state, the administrator can be informed in time, and the device state can be quickly repaired to avoid excessive loss.

### 7.3.1 Relay Setting

#### Function Description

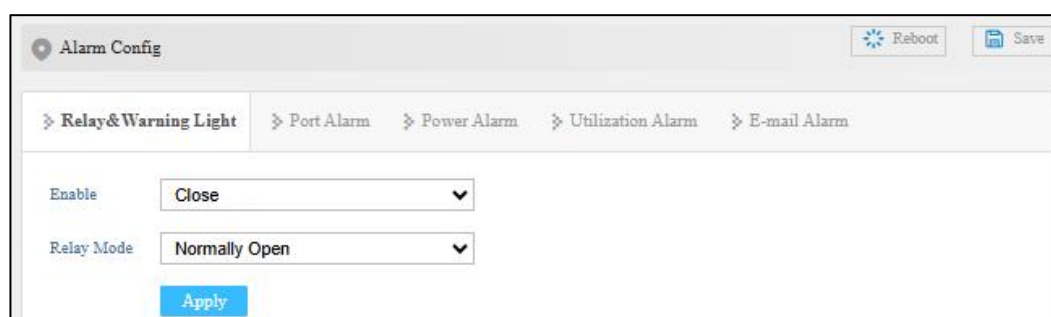
Set the enable and circuit mode of the relay.

#### Operation Path

Open in order: "System Config > Alarm > Relay&Warning Light".

#### Interface Description

The Relay & Warning Light interface is as follows:



Main elements configuration description of relay configuration interface:

Interface Element	Description
Enable	Enable/disable relay.
Relay Mode	Set the circuit state of the relay: <ul style="list-style-type: none"> <li>Normally closed: when the relay is normal without alarm, it is in closed status; when alarm occurs, the relay is in open status;</li> <li>Normally open: when the relay is normal without alarm, it is in open status; when alarm occurs, the relay is in closed status.</li> </ul>

## 7.3.2 Port Alarm

### Function Description

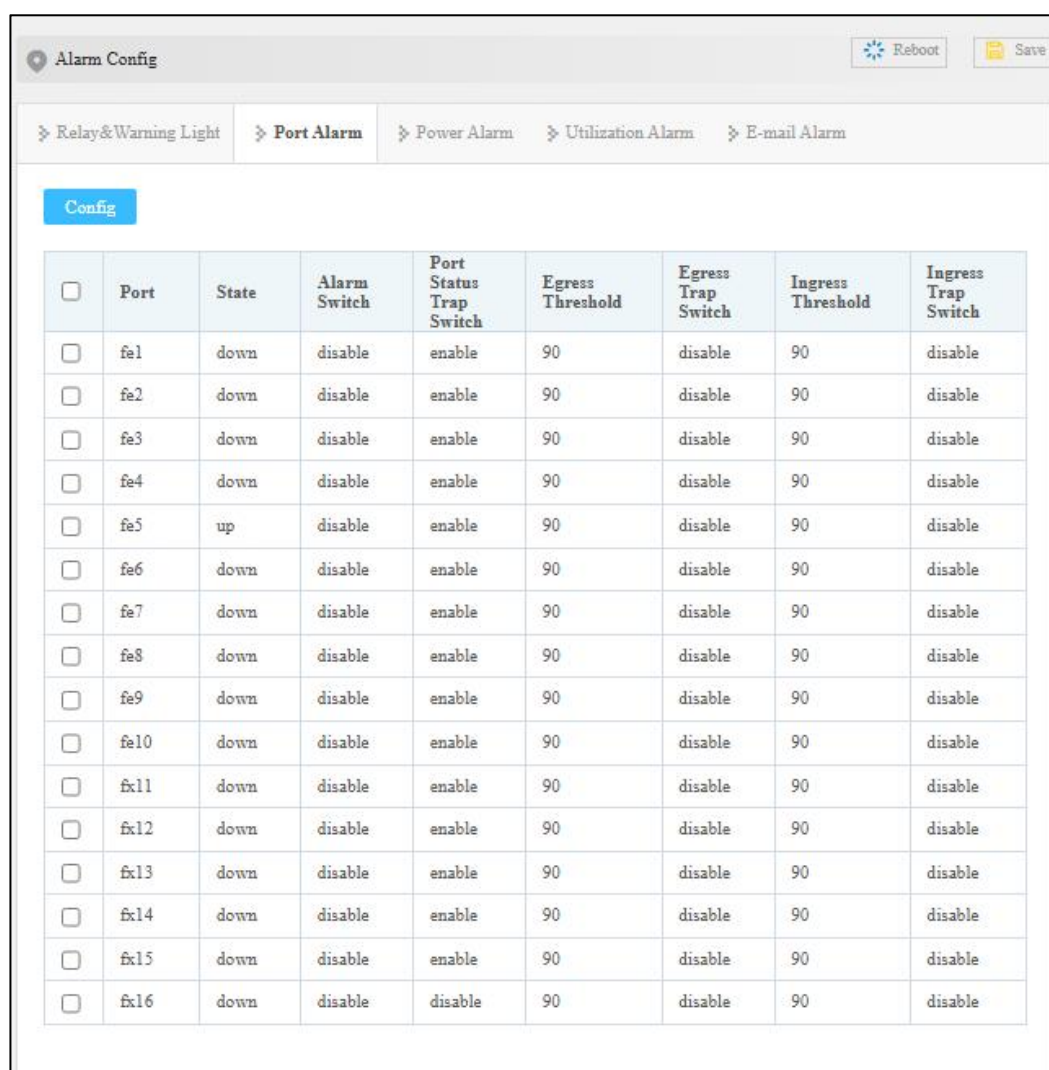
After enabling alarm, when the device port is in an abnormal state, the administrator can be informed in time, and the device state can be quickly repaired to avoid excessive loss.

### Operation Path

Open in order: "System Config > Alarm > Port Alarm".

### Interface Description

Port alarm interface is as below:



<input type="checkbox"/>	Port	State	Alarm Switch	Port Status Trap Switch	Egress Threshold	Egress Trap Switch	Ingress Threshold	Ingress Trap Switch
<input type="checkbox"/>	fe1	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fe2	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fe3	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fe4	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fe5	up	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fe6	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fe7	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fe8	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fe9	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fe10	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fx11	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fx12	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fx13	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fx14	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fx15	down	disable	enable	90	disable	90	disable
<input type="checkbox"/>	fx16	down	disable	disable	90	disable	90	disable

The main element configuration description of port alarm interface:

Interface Element	Description
Port	The corresponding port name of the device Ethernet port.
State	Port link status, display items as follows: <ul style="list-style-type: none"> <li>up</li> <li>down</li> </ul>
Alarm Switch	Port alarm function status, options as follows: <ul style="list-style-type: none"> <li>Enable</li> <li>Disable</li> </ul>
Port Status Trap Switch	Port status Trap switch, options: <ul style="list-style-type: none"> <li>Enable</li> <li>Disable</li> </ul>
Egress Trap Switch	Enable the egress Trap switch. Send Trap information when the threshold is reached. Egress Trap switch, options: <ul style="list-style-type: none"> <li>Enable</li> <li>Disable</li> </ul>
Egress Threshold	When the egress port reaches the threshold, NMS software prompts an alarm. Value range of threshold is 5-95, unit: %.
Ingress Trap Switch	Enable the ingress Trap switch. Send Trap information when the threshold is reached. Ingress Trap switch, options: <ul style="list-style-type: none"> <li>Enable</li> <li>Disable</li> </ul>
Ingress Threshold	When the ingress port reaches the threshold, NMS software prompts an alarm. Value range of threshold is 5-95, unit: %.

### 7.3.3 Power Alarm

#### Function Description

Enable/disable the power alarm function.



Note

Only DC dual power supply supports power alarm, and AC current does not support power alarm.

## Operation Path

Open in order: "System Config > Alarm > Power Alarm".

## Interface Description

Power alarm interface is as below:

	Power	State	Alarm Switch	Trap Switch
<input type="checkbox"/>	1	on	disable	disable
<input type="checkbox"/>	2	off	disable	disable

Main elements configuration description of power alarm interface:

Interface Element	Description
Power	The corresponding name of this device's power supply
State	Device power link status, display items as follows: <ul style="list-style-type: none"> <li>On: connected</li> <li>Off: disconnected</li> </ul>
Alarm Switch	Port alarm function status, options as follows: <ul style="list-style-type: none"> <li>Enable: alarm has been enabled.</li> <li>Disable: the alarm is not enabled</li> </ul>
Trap Switch	<ul style="list-style-type: none"> <li>When the power alarm is enabled or disabled, select "Enable" to send Trap information.</li> <li>When the power alarm is enabled or disabled, select "Disable" to not send Trap information.</li> </ul>

### 7.3.4 Utilization Alarm

#### Function Description

On the "Utilization Alarm" page, you can set CPU utilization and memory utilization alarm events. When the alarm event parameter value exceeds the set threshold, the

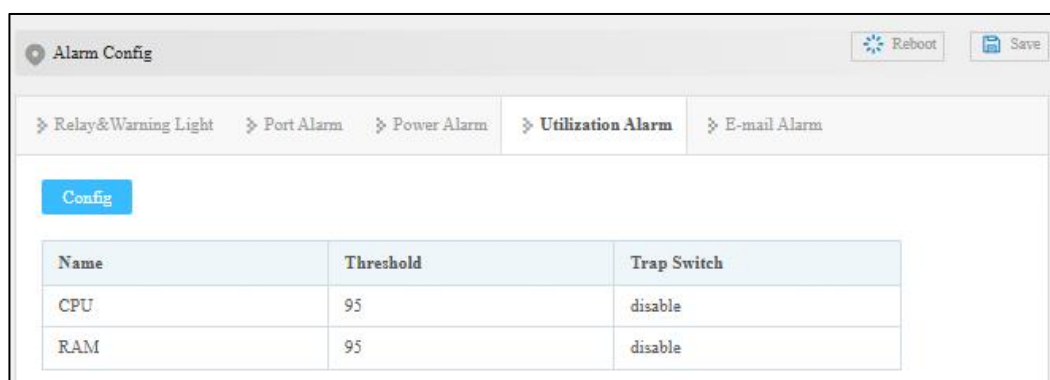
device will continuously send out Trap information to inform relevant personnel. When the alarm event parameter value drops below the set threshold, the device will send out a Trap message to inform the relevant personnel.

## Operation Path

Open in order: "System Config > Alarm > Utilization Alarm".

## Interface Description

Utilization Alarm interface is as below:



The main element configuration description of utilization alarm interface:

Interface Element	Description
CPU Trap Switch	Enable the CPU Trap switch, and send Trap information when the CPU utilization reaches the threshold. CPU Trap status, options: <ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul>
CPU Threshold	CPU utilization threshold, when the CPU utilization reaches the threshold, an alarm will be generated. Value range of threshold is 5-95, unit: %.
RAM Trap Switch	Enable the memory Trap switch, and send Trap information when the memory utilization reaches the threshold. Memory Trap status, options: <ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul>
RAM Threshold	Memory utilization threshold, when the memory utilization reaches the threshold, an alarm will be generated. Value range of threshold is 5-95, unit: %.

## 7.3.5 E-Mail Alarm

### Function Description

On the page of "E-mail Alarm", user can enable remote alarm.

### Operation Path

Open in order: "System Config > Alarm > E-mail Alarm".

### Interface Description

E-mail Alarm interface is as follows:

The screenshot shows the 'Alarm Config' interface with the 'E-mail Alarm' tab selected. The 'State' toggle is currently turned off. Below the toggle are 'Config' and 'Mail Test' buttons. A table below contains configuration fields for Mail Server, Recipient's Address, Sender's Address, and Password of Sender's Mailbox.

	Mail Server	Recipient's Address	Sender's Address	Password of Sender's Mailbox
<input type="checkbox"/>	-	-	-	*****

Main element configuration description of Mail Alarm interface:

Interface Element	Description
State	Enable/disable E-mail alarm.
Mail Server	Server address of used E-mail should be filled according to the account of used E-mail address. The host IP address or used host name that provides E-mail delivery service for the device.
Recipient's Address	E-mail address used by abnormal event receiver.
Sender's Address	E-mail address of sender, account name used for logging in to the E-mail server.
Password of Sender's Mailbox	E-mail password of sender, corresponding password used for logging in to the E-mail account.



Notice

While using E-mail alarm, user must ensure that the switch is connected to network normally and the gateway of switch is same to the one of LAN.

## 7.4 Configuration File Management

### 7.4.1 Configuration File Update

#### Function Description

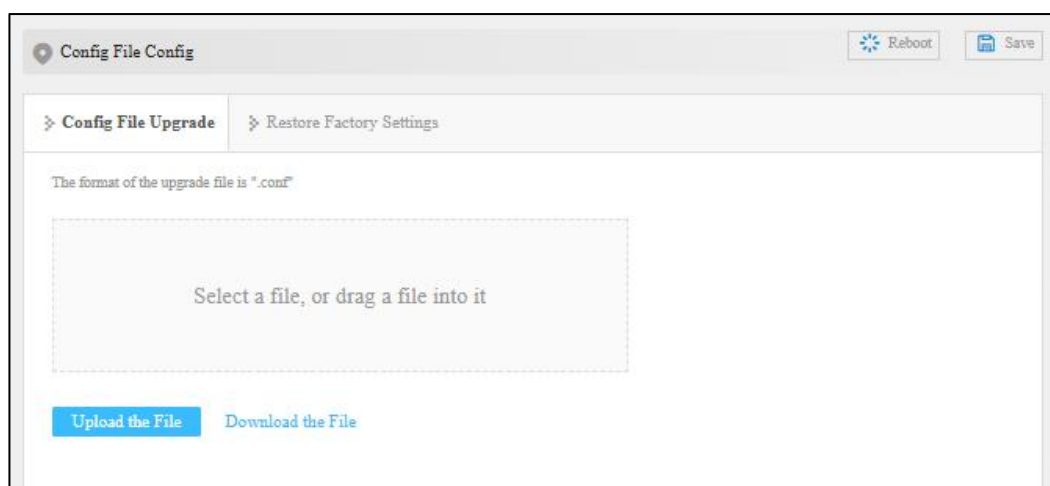
Upload and download configuration files

#### Operation Path

Open in order: "System Config > Config File Config > Config File Upgrade".

#### Interface Description

Configuration file upgrade interface is as follows:



The main element configuration description of Config File Upgrade interface:

Interface Element	Description
Download the File	Download the configuration information files of current switch. Tips: Downloaded configuration files can be uploaded to other homogeneous devices, achieving repeated usage after one-time configuration.

Upload the File	The format of the configuration file is ".conf". Drag the profile into the upgrade box, or click "Upload the File" to select the profile.
-----------------	---



#### Warning

In the process of uploading configuration files or upgrading software, please don't click or configure other WEB page of the switch, not even reboot the switch; otherwise, it will lead to failure of configuration files uploading or software upgrading, or even cause system breakdown of the switch.

## 7.4.2 Restore Factory Settings

### Function Description

Restore the device firmware to the factory configuration.

### Operation Path

Open in order: "System Config > Config File Config > Restore Factory Setting".

### Interface Description

The Restore Factory Settings interface is as follows.



The main element configuration description of Restore Factory Settings interface:

Interface Element	Description
One-Key Reset	Restore factory defaults of the switch. Note: Restore factory defaults will cause all devices to be in the factory status, default IP address is "192.168.1.254".

## 7.5 Upgrade

### Function Description

Update and upgrade the device program via web.

### Operation Path

Open in order: "System Config > Software Upgrade".

### Interface Description

The software upgrade interface is as follows:



The main elements configuration description of software update interface:

Interface Element	Description
Upgrade	Drag the upgrade file into the upgrade box or click "Upgrade" to select the upgraded file in the format of ".bin".

## 7.6 Log Information

### 7.6.1 Log Information

#### Function Description

On the page of "Log information", user can check the log information of the device. Log information mainly records user operation, system failure, system safety and other information, including user log, security log and diagnostic log.

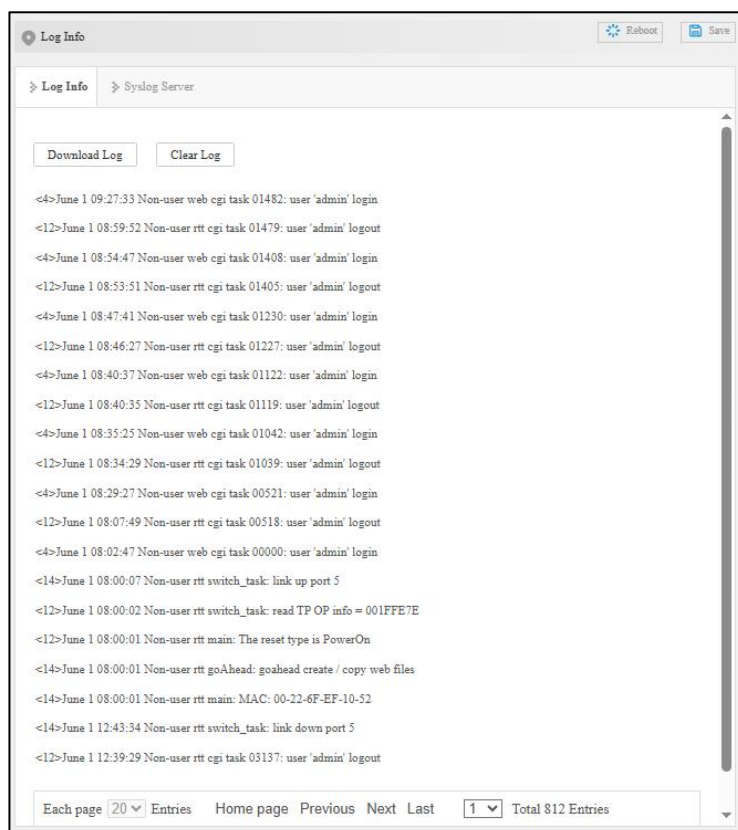
- User log: records user operations and system operation information.
- Security log: records information including account management, protocol, anti-attack, and status.
- Diagnostic log: records information that assists in problem identification.

#### Operation Path

Open in order: "System Config > Log Info > Log Info".

#### Interface Description

The Log Information interface is as follows:



Main elements configuration description of log information interface:

Interface Element	Description
Download Log	Click the "Download Log" button to download the current log information to the local.
Clear Log	Click the "Clear Log" button to clear the current log information record.

## 7.6.2 Syslog Server

### Function Description

Configure the Syslog server IP address, and the system log information can be sent to the configured syslog server.

### Operation Path

Open in order: "System Config > Log Info > Syslog Server".

### Interface Description

The Syslog server interface is as follows:

Syslog server interface main elements configuration instructions:

Interface Element	Description
Syslog Server	IP address of Syslog server
Port Number	Port number of Syslog server.

## 8.1 Login Problem

1. **Why the web page display abnormally when browsing the configuration via WEB?**

Before accessing the WEB, please eliminate IE cache and cookies. Otherwise, the web page will display abnormally.

2. **What should I do if I forget my login password?**

IF you forget the login password, you can initialize the password by restoring factory settings. The specific method is to search by BlueEyes\_II software and use restore factory setting function, then the password will be initialized. The initial user name and password are "admin".

3. **Is configuring via WEB browser same to configuring via BlueEyes\_II software?**

Both configurations are the same, without conflict.

## 8.2 Configuration Problem

1. **How to configure the device restore default setting via DIP switch?**

Turn the DIP switch 2 to ON position, and restore default setting after power on again.

2. **Why the bandwidth can't be increased after configuring Trunking (port aggregation) function?**

Check whether the port attributes set to Trunking are consistent, such as rate, duplex mode, VLAN and other attributes.

3. **How to deal with the problem that part of switch ports are impassable?**

When some ports on the switch are impassable, it may be network cable, network adapter and switch port faults. User can locate the faults via following tests:

- Keep connected computer and switch ports unchanged, change other network cables;
- Keep connected network cable and switch port unchanged, change other computers;
- Keep connected network cable and computer unchanged, change other switch port;
- If the switch port faults are confirmed, please contact supplier for maintenance.

4. **How about the order of port self-adaption state detection?**

The port self-adaption state detection is conducted according to following order: 1000Mbps full duplex, 100Mbps full duplex, 100Mbps half-duplex, 10Mbps full duplex, 10Mbps half-duplex, detect in order from high to low, connect automatically in supported highest speed.

## 8.3 Alarm Problem

1. **When the device alarms, except BlueEyes\_II software nether alarm information display area will display alarm information, is there any other way to notify technical staffs?**

When the device alarms, monitoring host computer buzzer will continue to emit alarm sounds.

## 8.4 Indicator Problem

### 1. Why is the power supply indicator off?

Possible reasons include:

- Not connected to the power socket; troubleshooting, connected to the power socket.
- Power supply or indicators faults; troubleshooting, change the power supply or device test.
- Power supply voltage can't meet the device requirements; troubleshooting, configure the power supply voltage according to the device manual.

### 2. Link/Act indicator isn't bright, what's the reason?

Possible reasons include:

- The network cable portion of Ethernet copper port is disconnected or bad contact; troubleshooting, connect the network cable again.
- Ethernet terminal device or network card works abnormally; troubleshooting, eliminate the terminal device fault.
- Not connected to the power socket; troubleshooting, connected to the power socket.
- Interface rate doesn't match the pattern; troubleshooting, examine whether the device transmission speed matches the duplex mode.

### 3. Ethernet copper port and fiber port indicator are connected normally, but can't transmit data, what's the reason?

When the system is power on or network configuration changes, the device and switch configuration in the network will need some time. Troubleshooting, after the device and switch configuration are completed, Ethernet data can be transmitted; if it's impassable, power off the system, and power on again.

### 4. Why does the communication crashes after a period of time, namely, it cannot communicate, and it returns to normal after restarting?

Reasons may include:

- Surrounding environment disturbs the product; troubleshooting, product grounding adopts shielding line or shields the interference source.
- Site wiring is not normative; Troubleshooting, optical fiber, network cable, optical cable cannot be arranged with power line and high-voltage line.
- Network cable is disturbed by static electricity or surge; Troubleshooting, change the shielded cable or install a lightning protector.
- High and low temperature influence; troubleshooting, check the device temperature usage range.