



IEM615 Series Managed Industrial Ethernet Switch Module User Manual

Version 02

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Preface

Managed Industrial Ethernet Switch Module User Manual has introduced the following features of this series of switch modules:

- Product feature
- Network management method
- Network management relative principle overview



Note

IEM615-1C-1D is the referenced product model of screenshots in this manual. Products of other models have the same interface function and operation, except for the number of supported serial ports and CAN ports.

Readers






This manual mainly suits for engineers as follows:

- Network administrator responsible for network configuration and maintenance
- On-site technical support and maintenance staff
- Hardware engineer

Text Format Convention

Format	Description
""	Words with "" represent the interface words. e.g.: "The port number".
>	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	Represent the words click to achieve hyperlink. Font color as: "Light blue".
About This Chapter	The "About This Chapter" section provides links to each section and corresponding principles / operating chapters in this chapter.

Icon Convention

Format	Description
 Notice	Reminder 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	Make a necessary supplementary instruction for operation description.
 Key	Configuration, operation, or tips for device usage.
 Tips	Pay attention to the operation or information to ensure success device configuration or normal working.

Revision Record

Version NO.	Revision Date	Revision Description
01	2013-11-21	Product release
02	2018-12-20	Manual upgrading

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1 Log in the Web Interface

1.1 WEB Browsing System Requirements

While using managed industrial Ethernet switches, the system should meet the following conditions.

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

1.2 Setting IP Address of PC

The switch default management as follows:

IP Setting	Default Value
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 computer IP address is on the same subnet as the one of switch.

Notes:

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

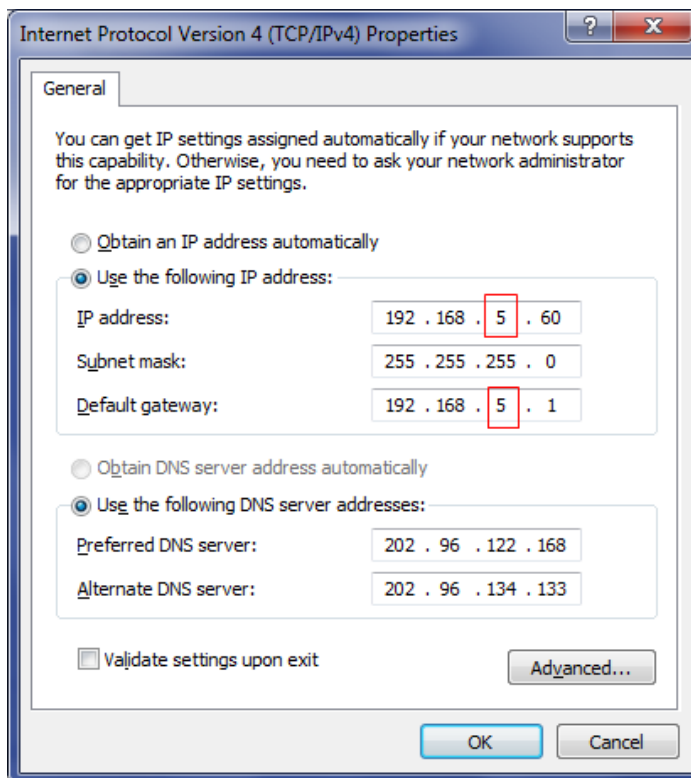
E.g.: Assume that the IP address of the current PC is 192.168.5.60, change the network segment "5" of the IP address to "1".

Operation Steps

Amendment steps as follows:

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

Step 2 Change the selected "5" in red frame of the picture below to "1".



Step 3 Click "OK", IP address modifies successfully.

Step 4 End.



Notice

In windows system, if user adopts the advanced configuration function of IP address and accesses the switch device via setting IP dummy address, the following managed functions can't be achieved: IEEE 802.1x polling.

1.3 Log in the Web Configuration Interface

Operation Steps

Login in the web configuration interface as follow:

Step 1 Run the computer browser.

Step 2 On the browser's address bar, type in the switch addresses "http://192.168.1.254".

Step 3 Click the "Enter" key.

Step 4 Pop-up a window as the figure below, enter the user name and password on the login window.



Notes:

- The default username and password are "admin", please strictly distinguish capital and small letter while entering.
- Default username and password have the administrator privileges.
- WebServer will provide 3 times opportunities to enter username and password. If enter the error information for 3 times, the browser will display a "Access denied" to reject access message. Refresh the page and try again.

Step 5 Click "OK".

Step 6 End.

After login in successfully, user can configure relative parameters and information according to demands.

Notes:

After login in the device, modify the switch IP address for usage convenience.

2 System Configuration

2.1 System Information

Function Description

In "System Information" page, user can check "Device Information" and "Port Info".

Operation Path

Open in order: "Main Menu > System Config > System Information".

Interface Description

Device information interface as follows:

Device Information			
Name :	ManagedSwitch	Hardware Ver :	V1.0.0
Module :	IndustrialSwitch	Firmware Ver :	1.1.0 build201505132R
Description :	5PORT	MAC Address :	00-22-6F-07-AB-00
Serial No. :		Contact Information :	

Port Information				
Port	Connection	Duplex	Speed	Type
1	LOS	HALF	10M	TX
2	LOS	HALF	10M	TX
3	LOS	HALF	10M	TX
4	LOS	HALF	10M	TX
5	LINK	FULL	100M	TX

The main element configuration description of device information interface:

Interface Element	Description
Name	Display the device name.
Module	Display the device model.
Description	Display characters description of the device.
Serial No.	SN code, product serial number.
Hardware Ver	Current hardware version information, pay attention to the hardware version limits in software version.
Firmware Ver	Current using software version information, updated software version has more functions.
MAC Address	Hardware address of device factory configuration.
Contact Information	Display the contact information of the device maintenance personnel.
Link status	Port connection state, display state as follows: <ul style="list-style-type: none"> "LINK" represents connected port; "LOS" represents disconnected port.
Port state	Port work state, display state as follows: <ul style="list-style-type: none"> "HALF" represents the corresponding port is in half-duplex state; "FULL" represents corresponding port is in full duplex state.
Speed	Current port link rate, valid after port connection, display speed as follows: <ul style="list-style-type: none"> 10M; 100M.
Interface type	Interface type, display port type as follows: <ul style="list-style-type: none"> Fiber port; Copper port.

3 Serial Server

3.1 COM Settings

Function Description

On the page of "COM Settings", user can configure baud rate, data bit, stop bit, parity bit and other basic parameters information of corresponding serial number and the operating mode of serial port.

Operation Path

Open in order: " Main Menu > Serial Server > COM Settings".

Interface Description

COM settings interface as follows:

Current Location>>Main Menu>>Serial Server>>COM Settings

SerialNo Setting

SerialNo:

Serial Parameters Settings

Baud Rate(bps): Parity: Max Frame Space(bytes): (1~1460)

Data Bits(bits): Stop Bits(bits): Character delay(ms): (1~500)

COM Mode:

Work Mode Settings

Mode Setting:

Sessions	Work Type	Local Por (1~65535)	Target Address	Target Por (1~65535)	Connect Mode	AT (0~65535)s	DisconTimeOut (0~65535)s	RealCo
<input checked="" type="checkbox"/>	TCP Server	<input type="text" value="30004"/>	IP <input type="text" value="192.168.0.254"/>	<input type="text" value="31004"/>	Connect	<input type="text" value="0"/>	<input type="text" value="300"/>	Close
<input type="checkbox"/>	TCP Server	<input type="text" value="30005"/>	IP <input type="text" value="192.168.0.254"/>	<input type="text" value="31005"/>	Connect	<input type="text" value="0"/>	<input type="text" value="300"/>	Close
<input type="checkbox"/>	TCP Server	<input type="text" value="30006"/>	IP <input type="text" value="192.168.0.254"/>	<input type="text" value="31006"/>	Connect	<input type="text" value="0"/>	<input type="text" value="300"/>	Close
<input type="checkbox"/>	TCP Server	<input type="text" value="30007"/>	IP <input type="text" value="192.168.0.254"/>	<input type="text" value="31007"/>	Connect	<input type="text" value="0"/>	<input type="text" value="300"/>	Close

Main elements configuration description of COM settings interface:

Interface Element	Description
Serial No Setting	Configuration column of serial number selection
Serial No	Select corresponding serial number of the device.
Serial Parameter Settings	Serial parameter settings column
Baud Rate(bps)	Select baud rate of corresponding serial number. Options include: 300/600/1200/2400/4800/9600/19200/38400/57600/115200
Parity	Select parity bits of corresponding serial number. Options include: <ul style="list-style-type: none"> • None; • Odd; • Even; • Mark; • Space.
Max Frame Space	Frame length of serial data to Ethernet data, within given time

Interface Element	Description
(bytes)	range, data frame that is greater or equal to given frame length should be forwarded; value range is 1-1460bytes.
Data Bits (bits)	Select data bits of corresponding serial number. Options include: <ul style="list-style-type: none"> • 5 bits; • 6 bits; • 7 bits; • 8 bits.
Stop Bits (bits)	Select stop bits of corresponding serial number. Options include: <ul style="list-style-type: none"> • 1 bits; • 1.5bits; • 2 bits. Notes: <ul style="list-style-type: none"> • When the data bit is 5 bits, stop bit options include "1 bits" and "1.5 bits"; • When the data bit is 6/7/8 bits, stop bit options include "1 bits" and "2 bits".
Character delay	Interval time of serial data to Ethernet data, value range is 1-500ms.
COM Mode	It's decided by software and hardware, there are RS232, RS485, RS422 three modes.
Work Mode Settings	Work Mode Settings Column
Mode Setting	Optional modes of the device as follows: <ul style="list-style-type: none"> • Basic: TCP Client, TCP Server, UDP, TcpAuto; • Advanced: TCP Server, UDP.
Sessions	1-4, each serial port of serial server supports 1-4 sessions. Session refers to the process serial server transmits data received from serial port to Ethernet via socket connection.
Local Port	1-65535, it refers to TCP port that is provided by serial server and can be connected by other TCP/IP nodes. The port is connected to relative serial ports of serial server. System will automatically distribute local port number when it's "0", fixed local port number will be used when it's not "0".
Target Address	IP address or domain name address to be connected to serial

Interface Element	Description
	server, both can be corresponding to the host address in Internet.
Target Port	1-65535, TCP port number to be connected to serial port.
Connect Mode	<ul style="list-style-type: none"> Connect Now: Serial server is connected to TCP server after power on, it will be connected soon after the connection is broken. Data Trigger: Serial server will initiate connection when the corresponding serial port receives the data.
AT	0-65535s, the device sends out heartbeat packet according to given time interval, it will break the session connection if there is no reply for successive 3 times.
Discon Time Out	0-65535s, set the idle time of automatic disconnection, and the serial server will break the session connection if there is no data transmission within given time. If it's set to "0", the serial server won't positively break the connection no matter how long the idle time is.
RealCom	<p>After enable RealCom, serial server will work together with Windows/Linux operation system installed with real serial port driver procedure.</p> <p>Notes: Real serial port COM/TTY driver procedure establishes transparent network transmission connection between the host and serial device in the operating system. According to IP address, serial number and other parameters of serial server configured by user, serial port of the serial server can be mapped to the local COM/TTY device of the host. Software or communication module of original serial server can be directly used without modification.</p>

Interface Description: Advanced Mode

TCP Server interface of advanced mode as follows:

UDP interface of advanced mode as follows:



Notice

- Address pool only supports B class and C class IP address.
- The value of start address and end address of address pool needs to be in the same network segment.
- The start address value of address pool must be less than or equal to its end address value.

3.2 Serial Port Information

Operation Path

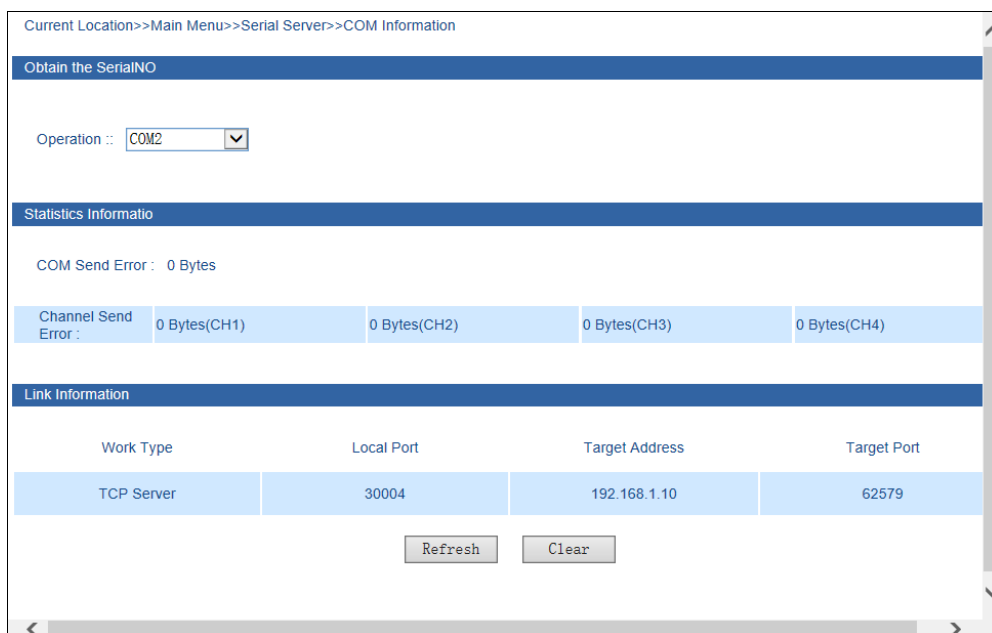
Open in order: "Main Menu > Serial Server > COM Information".

Function Description

On the page of "COM Information", user can check the statistics and connection information of serial port.

Interface Description

Serial port information interface screenshot as follows:



Main elements configuration description of serial port information interface:

Interface Elements	Description
Obtain the Serial NO.	Serial number configuration column
Operation	Pull-down list of serial port.
Statistics information	Statistics information column
COM Send Error	Quantity statistics of error bytes sent out by serial port.
Channel Send Error	Error bytes occur in channel or session 1-4.
Link Information	Link information column
Link Information	Display current work type, local port, target address, target port and other information of serial port.

4 CAN Server

4.1 CAN Configuration

Function Description

On the page of “CAN Configuration”, user can configure the parameters information of corresponding CAN port, such as session number, TCP operating mode, operating port, baud rate, operating mode of CAN server, destination port and destination address,etc.

Operation Path

Open in order: “Main menu > CAN server > CAN configuration”.

Interface Description

CAN configuration interface as follows:

SerialNo Setting

SerialNo :

CAN Parameters Settings

Baud Rate : bps CAN Mode : Packs Frames :

Packs time space : ms Clear CANBuffer : TCP Trubo :

Work Mode Settings

Mode Setting :

Sessions	Work Type	Local Port (1~65535)	Target Address	Target Port (1~65535)	Connect Mode	AT (0~65535)s	Discon TimeOut (0~65535)s
<input checked="" type="checkbox"/>	<input type="text" value="TCP Serve"/>	<input type="text" value="32000"/>	<input type="text" value="IP"/> <input type="text" value="192.168.0.254"/>	<input type="text" value="32000"/>	<input type="text" value="Connect n"/>	<input type="text" value="0"/>	<input type="text" value="300"/>
<input type="checkbox"/>	<input type="text" value="TCP Serve"/>	<input type="text" value="32001"/>	<input type="text" value="IP"/> <input type="text" value="192.168.0.254"/>	<input type="text" value="32001"/>	<input type="text" value="Connect n"/>	<input type="text" value="0"/>	<input type="text" value="300"/>
<input type="checkbox"/>	<input type="text" value="TCP Serve"/>	<input type="text" value="32002"/>	<input type="text" value="IP"/> <input type="text" value="192.168.0.254"/>	<input type="text" value="32002"/>	<input type="text" value="Connect n"/>	<input type="text" value="0"/>	<input type="text" value="300"/>
<input type="checkbox"/>	<input type="text" value="TCP Serve"/>	<input type="text" value="32003"/>	<input type="text" value="IP"/> <input type="text" value="192.168.0.254"/>	<input type="text" value="32003"/>	<input type="text" value="Connect n"/>	<input type="text" value="0"/>	<input type="text" value="300"/>

Configuration description of main elements on the CAN configuration interface:

Interface Element	Description
Serial No. Setting	Column of Serial No. Setting
SerialNo	Select corresponding CAN port number of the device.
CAN Parameters Settings	Configuration column of CAN parameters
Baud Rate	Select the baud rate of corresponding CAN port number. Options include: 5K/10K/20K/30K/40K/50K/80K/100K/120K/125K/250K/500K/600K/700K/800K/900K/1000K
CAN Mode	Operating mode of CAN server, optional parameters as follows: <ul style="list-style-type: none"> Normal: CAN server is running normally. Listen only: CAN server is in the status of snooping and can't transmit data. Auto detect: CAN server is transmitting the data automatically.

Interface Element	Description
Packs Frames	When the CAN port receives data continuously and the number of received CAN frames reaches the upper limit of “subpacket frames”, received data will be packed in an Ethernet packet to send out. Optional values range is 1~50.
Packs time space	When CAN port hasn't received new data frames within the period defined by “Subpacket time interval”, the data frames received before can be packed in an Ethernet packet and sent to the Ethernet port. Optional values range is 1~254ms.
Clear CANBuffer	<ul style="list-style-type: none"> Never: Never clear the cache data of CANBuffer. Clear TCP connection: Clear the data in CANBuffer when the connection between TCP client and server is established.
TCP Turbo	Enabling TCP Turbo means that the number of subpackage frames is configured as 1.
Work Mode Settings	Configuration column of operating mode
Mode Setting	Optional modes of the device as follows: <ul style="list-style-type: none"> Basic: TCP Client, TCP Server, UDP, TcpAuto; Advanced: TCP Server, UDP.
Sessions	1-4, each CAN port of the device can support 1-4 sessions. Session means that the data received by CAN server from the CAN port is transmitted to Ethernet via socket.
Local Port	1-65535, it refers to the TCP port that is provided by the device and can be connected to other TCP/IP nodes. The port is connected to corresponding CAN port of CAN server. When the local port is “0”, the system will automatically allocate local port number. When the local port isn't “0”, the system will adopt fixed local port number.
Target Address	IP or domain address to be connected to CAN server, both can be corresponding to the host address on the Internet.

Interface Element	Description
Target Port	1-65535, it refers to the TCP port number connected to CAN server.
Connect Mode	<ul style="list-style-type: none"> Connect now: The device will be connected after being powered on; and it will be reconnected after being disconnected. Data Trigger: CAN server initiates connection when the corresponding CAN port of the device receives data.
AT	0-65535s, the device sends out heartbeat packet after the setting time interval, and the session will be disconnected if there is no reply for three consecutive times.
Discon Timeout	0-65535s, configure the idle time of automatic disconnection. The device will disconnect the session if there is no data transmission in the setting time. If it is configured as "0", the device won't forwardly disconnect the session no matter how long the idle time is.

Interface Description: Advanced Mode

The interface of TCP Server under the advanced mode as follows:

The screenshot shows a 'Work Mode Settings' dialog box. At the top, 'Mode Setting' is set to 'Advanced'. Below, 'Work Type' is 'TCP Server', 'Sessions' is '4', and 'Local Port' is '32003'. 'AT(s)' is '0' and 'Connect Timeout(s)' is '300'. 'Apply' and 'Cancel' buttons are at the bottom.

UDP interface under the advanced mode as follows:

Work Mode Settings

Mode Setting : Advanced ▾

Work Type : UDP ▾ Sessions : 4 ▾

Local Port	Target Address	Target Port
<input style="width: 100%;" type="text" value="32000"/>	IP ▾ <input style="width: 100%;" type="text" value="192.168.0.254"/> - <input style="width: 100%;" type="text" value="192.168.0.254"/>	<input style="width: 100%;" type="text" value="33000"/>
<input style="width: 100%;" type="text" value="32001"/>	IP ▾ <input style="width: 100%;" type="text" value="192.168.0.254"/> - <input style="width: 100%;" type="text" value="192.168.0.254"/>	<input style="width: 100%;" type="text" value="33001"/>
<input style="width: 100%;" type="text" value="32002"/>	IP ▾ <input style="width: 100%;" type="text" value="192.168.0.254"/> - <input style="width: 100%;" type="text" value="192.168.0.254"/>	<input style="width: 100%;" type="text" value="33002"/>
<input style="width: 100%;" type="text" value="32003"/>	IP ▾ <input style="width: 100%;" type="text" value="192.168.0.254"/> - <input style="width: 100%;" type="text" value="192.168.0.254"/>	<input style="width: 100%;" type="text" value="33003"/>

Apply
Cancel



Notice

- Address pool only supports the IP addresses of B and A class.
- The value of the start and end address of address pool should be in the same network segment.
- The value of the start address of address pool can't be larger than the one of the end address of address pool.

4.2 CAN Information

Function Description

On the page of "CAN Information", user can check and count the error information transmitted by CAN server, the error information of CAN bus, the error information transmitted by CAN channel and connection status of CAN channel.

Operation Path

Open in order: "Main menu > CAN server > CAN information".

Interface Description

The interface of CAN information as follows:

Obtain the CANNO			
Operation :	CAN1 ▼		
Statistics Information			
CAN Send Error : 0 Frames			
CAN BUS Error : 0 Frames			
Channel Send Error :	0 Frames(CH1)	0 Frames(CH2)	0 Frames(CH3)
Link Information			
Work Type	Local Port	Target Address	Target Port
Refresh		Clear	

Configuration description of main elements on the CAN information interface:

Interface Element	Description
Obtain the CAN No.	CAN Configuration Column
Operation	Click the drop-down list and select the corresponding port number of CAN server.
Statistics Information	Statistics Information Column
CAN Send Error	Count the error information transmitted by CAN server.
CAN BUS Error	Count the error information transmitted by CAN bus.
Channel Send Error	Count the error information transmitted by CAN channel.
Link Information	Link Information Column
Link Information	Count the connection status information of CAN channel, such as work type, local port, target address and target port.

5 Port Configuration

5.1 Port Setting

Function Description

On the "Port Setting" page, user can check port type, rate and connection state, set rate mode, duplex mode, port enable, flow control and other parameters.



Note

- Speed, duplex, flow control will take effect when the port is enabled.
 - After selecting automated negotiation, speed and duplex will be gained via automated negotiation.
-

Operation Path

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

Interface Description

Port setting interface as follows:

Port	Type	Speed	Duplex	Enable	Flow Control
1	TX	AUTO ▼	Half Duplex ▼	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	TX	AUTO ▼	Half Duplex ▼	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	TX	AUTO ▼	Half Duplex ▼	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	TX	AUTO ▼	Half Duplex ▼	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	TX	AUTO ▼	Half Duplex ▼	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The main element configuration description of port setting interface:

Interface Element	Description
Port	Display the device port number.
Type	Support two kinds of interface types: <ul style="list-style-type: none"> • Copper port; • Fiber port.
Speed	Click the drop-down list box of “Speed” to select the port speed mode. <ul style="list-style-type: none"> • Full duplex 10M • Half duplex 100M • Auto-Detect Notes: All copper ports of the switch are MDI/MDIX self-adapting ports, and support automated negotiation speed mode.
Duplex	Click the drop-down list box of “Duplex” to select corresponding duplex mode of the port. Notes: When the speed mode is “AUTO”, the port will automatically match the opposite port mode, “Duplex” mode is disabled.
Enable	Enable Ethernet port. Note: If user doesn't check the port "Enable" checkbox, the port won't be connected to use.
Flow control	Tick the check box to enable the flow control function of the port. <ul style="list-style-type: none"> • Under full duplex mode, flow control method is IEEE

Interface Element	Description
	802.3x flow control. <ul style="list-style-type: none"> Under half duplex mode, flow control method is back pressure flow control.

5.2 Bandwidth Management

Function Description

On the “Bandwidth Management” page, user can limit the ingress and egress bandwidth speed of the port.

Operation Path

Open in order: “Main Menu > Port Configuration > Bandwidth Management”.

Interface Description

Bandwidth management interface as below:

The main element configuration description of bandwidth management interface:

Interface Element	Description
Bandwidth configuration	Enable/disable bandwidth configuration.
Port	Port number of the device.
Ingress	Ingress speed is the limited port speed during data receiving.
Egress	Egress speed is the limited port speed during data sending.

Instance: bandwidth setting

For example: set both the egress and ingress bandwidth of Port 1 to “4M”.

Operating steps

Step 1 Enter “Main Menu > Port Configuration > Bandwidth Management”.

Step 2 In “Bandwidth Configuration” area, click the option box of “Enable”.

Step 3 In “Egress” area, choose “4M” as the egress speed of Port 1.

Step 4 In “Ingress” area, choose “4M” as the ingress speed of Port 1.

Step 5 Click “Apply”.

Step 6 End.



Note

- Flow control should be enabled when using port speed limit, otherwise the speed between devices would not be stable.
 - Unless flow control is disabled, the packet loss should not happen when using port speed limit.
 - Port speed limit has high requirement on network cable quality, otherwise lots of conflict packets and broken packet would appear.
-

6 Layer2 Features

6.1 VLAN

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.

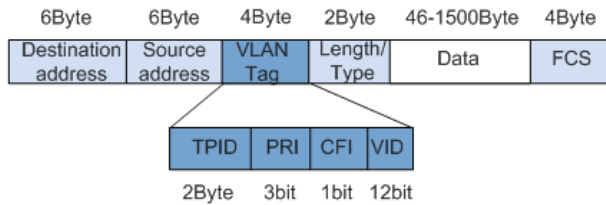
- Limit the broadcast domain;
- Increase the security of LAN;
- Improve the network stability;
- Flexibly construct virtual working team.

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. Value range is 0-7, larger value represents 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. VLAN ID value range is 0-4095. 0 and 4095 are reserved values of the protocol, so the valid value range of VLAN ID is 1-4094.

Function Description

On the VLAN page, user can configure the following functions:

- Configure the port PVID;
- Create VLAN entry;
- Configure the port member type.

Operation Path

Open in order: "Main Menu > L2 Feature > VLAN".

Interface Description 1: Port-based VLAN

Port-based VLAN interface as follows:

VLAN Mode : Port-based VLAN IEEE 802.1Q VLAN

VLAN Name : (Range :1~4094)

Join Port : 01 - 02 - 03 - 04 - 05 -

Operation :

- VLAN Name - - - - - - Join Port - - - - - -

1 01 02 03 04 05

The main elements configuration description of port-based VLAN interface:

Interface Element	Description
VLAN Mode	Choose VLAN type, options are: <ul style="list-style-type: none"> • Port-based VLAN • IEEE 802.1Q VLAN
VLAN name	Enter VLAN number in digital form.
Join port	Choose VLAN member.
Operation	Add/edit, delete or save VLAN configuration information.

Instance: create port-based VLAN.

The steps of configuring port-based VLAN:

- Step 1** Open “Main Menu > L2 Feature > VLAN”.
- Step 2** On the option box of “VLAN Mode”, select “Port-based VLAN”.
- Step 3** Enter VLAN table items in the textbox of “VLAN Name”, such as fill in the figure “3” to represent VLAN3.
- Step 4** Select VLAN member on the check box of “Join Port”, such as select port 2 and port 3.
- Step 5** Click “Add/Edit”.
- Step 6** Click “Apply”, port 2 and port 3 are divided into VLAN3, port 2 and port 3 that belong to the same VLAN can transmit data to each other.

Interface Description: VLAN based on 802.1Q

Interface screenshot of VLAN based on 802.1Q as follows:

VLAN Mode : Port-based VLAN IEEE 802.1Q VLAN

Vlan Tag Replace

Vlan Frame Control : No need change VID Replace VID into default VID

Default VID

Join Port : 01 - 02 - 03 - 04 - 05 - CPU-

802.1Q VLAN Settings

802.1Q VID : (Range :1~4094)

Join Port : 01 - 02 - 03 - 04 - 05 -

Operation 1: (-- : The port is not a VLAN member ; Tagged : No need to tag the egress frame s; UnTagged : No tag of the egress frame .)

Operation 2:

VID	Port 1	Port 2	Port 3	Port 4	Port 5
1	UnTagged	UnTagged	UnTagged	UnTagged	UnTagged

The main element configuration description of 802.1Q Vlan interface:

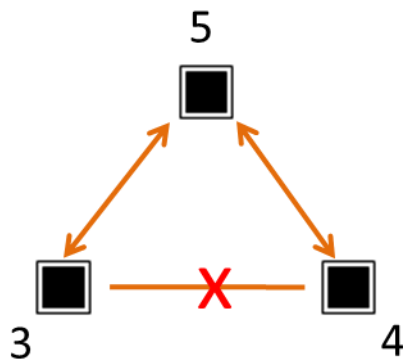
Interface Element	Description
VLAN mode	Choose VLAN mode, options are: <ul style="list-style-type: none"> Port-based VLAN: IEEE 802.1Q VLAN.
VLAN tag replace	The configuration bar of VLAN tag replace
VLAN frame control	Choose VLAN tag replace configuration, options are: <ul style="list-style-type: none"> No need change VID; Replace VID into default VID.
Default VID	The configuration bar of default VID
802.1Q VID	VLAN ID number. Its value range is 1-4094.
Member type	There are three types of data frame label that the port sends: <ul style="list-style-type: none"> --: no forwarding, which is not as a member of this VLAN ID; Tagged: forward and keep VLAN tag; UnTagged: forward but remove VLAN tag.
Operation 1	Modify All: Quickly modify the types of all members at the same time.
Operation 2	<ul style="list-style-type: none"> Add: Add the configured VLAN to the list of VLAN

Interface Element	Description
	members; <ul style="list-style-type: none"> • Delete: Delete one of the VLAN entries in the selected member list. • Apply: Save the VLAN configuration information.

6.1.1 Instance: typical VLAN configuration

Instance

Suppose that the switch port 3, 4 and 5 have the following requirements: Port 3 and Port 5 can communicate with each other. Port 4 and Port 5 can communicate with each other. But port 3 and Port 4 can't communicate with each other, as the picture below. Do not consider other ports, how to set the VLAN?



Example Analysis

Configure the "Type" of Port3, Port4 and Port5 as Access. Port3, Port 4 and Port 5 are set with different forwarding entries; forwarding entries can enable the communication between two ports.

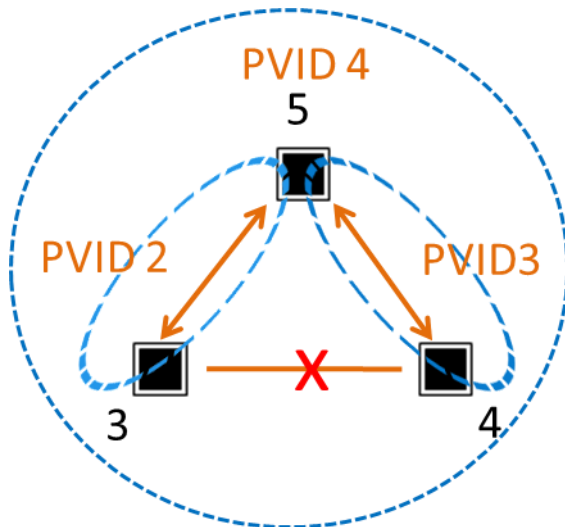
Analyse the port forwarding entries design as below:

- Port 3
Port3 and Port5 can communicate with each other. Port3 forwarding entries include Port3 and Port5. Therefore, a forwarding entry PVID3 is designed, including Port 3 and Port 5. Configure the "Type" of Port 3 and Port 5 to U.
- Port 4
Port 4 and Port 5 can communicate with each other. Port 4 forwarding entries

include Port 4 and Port 5. Therefore, a forwarding entry PVID4 is designed, including Port 4 and Port 5. Configure the "Type" of Port 4 and Port 5 to U.

- Port 5
Port 5 and Port 3, Port 4 can communicate with each other, Port 5 forwarding entries include Port 3, Port 4. Therefore, design a forwarding entry PVID5, including Port 3, Port 4. Configure the "Type" of Port 3 and Port 4 to U.

According to the forwarding entry analysis of Port 3, Port 4 and Port 5, forwarding entry design picture as follows:



Operation Steps

- Step 1** Enter "Main Menu>Layer 2 Config>VLAN".
- Step 2** Choose "IEEE 802.1Q VLAN" in the option box of "VLAN mode".
- Step 3** Choose "Replace VID into default VID" in the option box of "VLAN frame control".
- Step 4** In the "Default VID" area, enter 3, 4 and 5 respectively as the default VLAN "PVID" of Port3, Port4 and Port5.
- Step 5** Enter 3 in "802.1Q VID" textbox.
- Step 6** In the drop-down list of "member type":
1. Set the member type of Port3 to U.
 2. Set the member type of Port5 to U.
- Step 7** Click "Add/edit" button to add VLAN entry to the "member list".
- Step 8** Enter 4 in "802.1Q VID" textbox.
- Step 9** In the drop-down list of "member type":
1. Set the member type of Port4 to U.
 2. Set the member type of Port5 to U.

Step 10 Click “Add/edit” button to add VLAN entry to the “member list”.

Step 11 Enter 5 in “802.1Q VID” textbox.

Step 12 In the drop-down list of “member type”:

1. Set the member type of Port3 to U.
2. Set the member type of Port4 to U.
3. Set the member type of Port5 to U.

Step 13 Click “Add/edit” button to add VLAN entry to the “member list”.

VLAN Mode : Port-based VLAN IEEE 802.1Q VLAN

Vlan Tag Replace

Vlan Frame Control : No need change VID Replace VID into default VID

Default VID

Join Port : 01 - 02 - 03 - 04 - 05 - CPU-

802.1Q VLAN Settings

802.1Q VID : (Range :1~4094)

Join Port : 01 - 02 - 03 - 04 - 05 -

Operation 1: (- - : The port is not a VLAN member ; Tagged : No need to tag the egress frame s; UnTagged : No tag of the egress frame .)

Operation 2:

VID	Port 1	Port 2	Port 3	Port 4	Port 5
1	UnTagged	UnTagged	--	--	--
3	--	--	UnTagged	--	UnTagged
4	--	--	--	UnTagged	UnTagged
5	--	--	UnTagged	UnTagged	UnTagged

Step 14 Click “Apply” button.

Step 15 End.

6.2 Multicast Filtering

6.2.1 IGMP Snooping

Function Description

On the “IGMP Snooping” page, user can:

- Enable/disable IGMP Snooping;
- Enable/disable IGMP Snooping query;
- Set IGMP Snooping query interval.

Operation Path

Open in order: “Main Menu > L2 Feature > Multicast Configuration > Dynamic Multicast”.

Interface Description

IGMP Snooping interface as below:

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"> • Enable • Disable <p>Notes: 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"> • Enable • Disable <p>Notes: 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>Notes: The time range that can be entered is 60-1000s.</p>



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.

6.2.2 Static Filtering

Function Description

On the page of “Static Multicast”, user can configure the forwarding port list of static multicast.

Operation Path

Open in order: “Main Menu > L2 Feature > Multicast Configuration”.

Interface Description

Static filtering interface as follows:

Main elements configuration description of static filtering interface:

Interface Element	Description
MAC Address	<p>Input “MAC Address”, and the format should be “XX-XX-XX-XX-XX-XX”.</p> <p>Notes:</p> <ul style="list-style-type: none"> • Low-order of the highest byte of multicast MAC address is 1, please don’t input non-multicast address. • Space and other illegal characters are not allowed for address format, otherwise alarm message will pop up.
Join Port	Tick the check box of corresponding port, it represents that

Interface Element	Description
	corresponding port joins in the static multicast MAC address.
Operation	Add, delete or apply the configuration information of static multicast filtering.



Warning

- Static multicast filtering has a great impact on multicast data packets forwarding via network, please don't use it unless the added address is exactly right.
- Multicast addresses of 0180C20000xx and 01005E0000xx are reserved for the device or protocol, please don't use them.
- IGMP dynamic learning won't update statically typed multicast address, static multicast forwarding table is more of a security mechanism.

Example: Static Multicast Filtering Configuration

For example: configure the filtering port of multicast address 01-00-00-00-00-01 as 01, 02 and 03.

Operation steps as follows:

- Step 1** Open "Main Menu > L2 Feature > Multicast Configuration > Static Multicast".
- Step 2** On the text box after "MAC Address", input "01-00-00-00-00-01".
- Step 3** On the row of "Join Port":
 - a) Tick the check box after "1-";
 - b) Tick the check box after "2-";
 - c) Tick the check box after "3-".
- Step 4** Click "Add".
- Step 5** Configured static filtering is displayed in the display frame on the bottom of the page, click "Apply".
- Step 6** End.

7 QoS

7.1 QoS Classification

Function Description

On the page of QoS Classification, user can set:

- Queuing mechanism
- Enable ToS
- Enable CoS
- Port priority

Operation Path

Open in order: "Main Menu > QoS > QoS Classification".

Interface Description

Screenshot of QoS Classification interface:

QoS Classification

Queuing Mechanism : Weighted Fair(8:4:2:1) ▼

Port	Inspect ToS	Inspect CoS	Default Port Priority
1	<input type="checkbox"/>	<input type="checkbox"/>	0 ▼
2	<input type="checkbox"/>	<input type="checkbox"/>	0 ▼
3	<input type="checkbox"/>	<input type="checkbox"/>	0 ▼
4	<input type="checkbox"/>	<input type="checkbox"/>	0 ▼
5	<input type="checkbox"/>	<input type="checkbox"/>	0 ▼

Apply
Cancel

The main element configuration description of QoS classification interface:

Interface Element	Description
Queuing mechanism	<p>Queuing scheduling setting, options are:</p> <ul style="list-style-type: none"> Weighted Fair (8:4:2:1): according to the queue's weighted value 8:4:2:1, weighted round-robin queue scheduling algorithm would schedule queues in turn to ensure that each queue can get some service time. Strict (Strict Priority): Strict priority queue scheduling algorithm includes 4 queues and schedules in the decreasing order of priority. When the queue with fairly high priority is empty, then it would send groupings of queue with fairly low priority.
Port	Port number of switch.
Inspect ToS	After checking the checkbox, the priority of ToS would be checked during queue scheduling.
Inspect CoS	After checking the checkbox, the priority of CoS would be checked during queue scheduling.
Default port priority	<p>To configurate 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.</p> <p>Description: 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.</p>



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.

Instance: QoS configuration

For example:

- Set port 1's queuing mechanism as "Weight Fair (8:4:2:1)", adopts ToS priority.

Operation steps

Step 1 Open "Main Menu > QoS > QoS Classification".

Step 2 On the page of classification, choose "Weight Fair (8:4:2:1)" in queuing mechanism.

Step 3 On the line of port 1, check the checkbox of "inspect ToS".

Step 4 Click "apply".

Step 5 Ends.

7.2 CoS Mapping

Function Description

On the page of "CoS Mapping", user can configurate mapping between CoS value and priority queues.

Operation Path

Open in order: "Main Menu > QoS > QoS Mapping".

Interface Description

Screenshot of QoS Mapping interface:

CoS	0	1	2	3
Priority Queue	Low	Low	Low	Low
CoS	4	5	6	7
Priority Queue	Low	Low	Low	Low

The main element configuration description of QoS mapping interface:

Interface Element	Description
CoS value	Display CoS value.
Priority queue	Set mapping between CoS value and priority queue, options are as follows: <ul style="list-style-type: none"> • Low: low priority queue • Normal: normal priority queue • Medium: medium priority queue • High: high priority queue

Instance: CoS mapping configuration

For example:

- When the CoS value is set to 0 and 1, the corresponding priority queue is Low
- When the CoS value is set to 2 and 3, the corresponding priority queue is Normal
- When the CoS value is set to 4 and 5, the corresponding priority queue is Medium
- When the CoS value is set to 6 and 7, the corresponding priority queue is High

Operation steps

Step 1 Open “Main Menu > QoS > CoS Mapping”.

Step 2 In the table of CoS value and priority queue mapping of CoS mapping page:

1. When the CoS value is “0”, choose Low as the corresponding priority.
2. When the CoS value is “1”, choose Low as the corresponding priority.
3. When the CoS value is “2”, choose Normal as the corresponding priority.
4. When the CoS value is “3”, choose Normal as the corresponding priority.
5. When the CoS value is “4”, choose Medium as the corresponding priority.

6. When the CoS value is “5”, choose Medium as the corresponding priority.
7. When the CoS value is “6”, choose High as the corresponding priority.
8. When the CoS value is “7”, choose High as the corresponding priority.

Step 3 Click “apply”

Step 4 Ends.

7.3 ToS Mapping

Function Description

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

Operation Path

Open in order: “Main Menu > QoS > ToS Mapping”.

Interface Description

Screenshot of ToS Mapping interface:

Current Location>>Main Menu>>QoS>>ToS/DiffServ Mapping

Mapping Table of ToS (DSCP) Value and Priority Queues							
ToS(DSCP)	Level	ToS(DSCP)	Level	ToS(DSCP)	Level	ToS(DSCP)	Level
0x00(01)	Low	0x04(02)	Low	0x08(03)	Low	0x0C(04)	Low
0x10(05)	Low	0x14(06)	Low	0x18(07)	Low	0x1C(08)	Low
0x20(09)	Low	0x24(10)	Low	0x28(11)	Low	0x2C(12)	Low
0x30(13)	Low	0x34(14)	Low	0x38(15)	Low	0x3C(16)	Low
0x40(17)	Low	0x44(18)	Low	0x48(19)	Low	0x4C(20)	Low
0x50(21)	Low	0x54(22)	Low	0x58(23)	Low	0x5C(24)	Low
0x60(25)	Low	0x64(26)	Low	0x68(27)	Low	0x6C(28)	Low
0x70(29)	Low	0x74(30)	Low	0x78(31)	Low	0x7C(32)	Low
0x80(33)	Low	0x84(34)	Low	0x88(35)	Low	0x8C(36)	Low
0x90(37)	Low	0x94(38)	Low	0x98(39)	Low	0x9C(40)	Low
0xA0(41)	Low	0xA4(42)	Low	0xA8(43)	Low	0xAC(44)	Low
0xB0(45)	Low	0xB4(46)	Low	0xB8(47)	Low	0xBC(48)	Low
0xC0(49)	Low	0xC4(50)	Low	0xC8(51)	Low	0xCC(52)	Low
0xD0(53)	Low	0xD4(54)	Low	0xD8(55)	Low	0xDC(56)	Low
0xE0(57)	Low	0xE4(58)	Low	0xE8(59)	Low	0xEC(60)	Low
0xF0(61)	Low	0xF4(62)	Low	0xF8(63)	Low	0xFC(64)	Low

The main element configuration description of ToS mapping interface:

Interface Element	Description
ToS (DSCP) value	It displays ToS (DSCP) in hexadecimal and decimal format simultaneously. The value in the bracket is decimal.
Priority queue	Set mapping between ToS value and priority queue, options are as follows: <ul style="list-style-type: none"> • Low: low priority queue • Normal: normal priority queue • Medium: medium priority queue • High: high priority queue

Instance: ToS mapping configuration

For example:

- When the ToS value is set to 0x00~0x3C, the corresponding priority is Low.
- When the ToS value is set to 0x40~0x7C, the corresponding priority is Normal.
- When the ToS value is set to 0x80~0xBC, the corresponding priority is Medium.
- When the ToS value is set to 0xC0~0xFC, the corresponding priority is High.

Operation steps

Step 1 Open “Main Menu > QoS > ToS Mapping”.

Step 2 In the table of ToS value and priority queue mapping of ToS mapping page:

1. When the “ToS value” is “0x00” ~ “0x3C” , choose Low as the corresponding priority.
2. When the “ToS value” is “0x40” ~ “0x7C” , choose Normal as the corresponding priority.
3. When the “ToS value” is “0x80” ~ “0xBC” , choose Medium as the corresponding priority.
4. When the “ToS value” is “0xC0” ~ “0xFC” , choose High as the corresponding priority.

Step 3 Click “apply”.

Step 4 Ends.

8 Link Backup

8.1 Rapid Ring

Function Description

On the “Rapid ring” page, user can choose redundancy protocol and configure the ring network under this protocol quickly.

Operation Path

Open in order: “Main Menu > Redundancy > Rapid Ring”.

Interface Description

Initial rapid ring interface as follows:

Current Status	
Active Protocol of Redundancy : None	
Settings	
Protocol of Redundancy :	<div style="border: 1px solid black; padding: 2px;"> None Ring V3 RSTP(IEEE802.1W/1D) </div>
<p style="color: red; font-size: small;">Note : Changes will only take effect after system reboot .</p>	
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	

The main element configuration description of initial rapid ring interface:

Interface Element	Description
-------------------	-------------

Interface Element	Description
Current status	Current status bar
Active protocol of redundancy	The current status of ring network protocol of the device.
Settings	Settings bar
Protocol of redundancy	Choose the corresponding redundancy protocol. Options are: <ul style="list-style-type: none"> • None: it means that the ring network function is disabled. • Ring V3: single ring, coupling ring, chain and Dual homing are supported. • RSTP (IEEE 802.1W/1D): rapid spanning tree.

Function description of Ring V1/V2/V3

On the “rapid ring” page, user can choose Ring redundancy protocol and configure the ring network under this protocol quickly.

Operation Path

Open in order: “Main Menu > Redundancy > Rapid Ring”. Choose “Ring V3” in the drop-down list of “protocol of redundancy”.

Interface Description

Ring network interface as follows:

Settings

Protocol of Redundancy : Ring V3 ▼

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	<input style="width: 30px;" type="text" value="1"/>	1 ▼	2 ▼	Single ▼	<input style="width: 30px;" type="text" value="0"/> ×100ms	<input type="checkbox"/>
2	<input style="width: 30px;" type="text" value="2"/>	4 ▼	5 ▼	Single ▼	<input style="width: 30px;" type="text" value="0"/> ×100ms	<input type="checkbox"/>

Note : Changes will only take effect after system reboot .

The main element configuration description of Ring network interface:

Interface Element	Description
Group	Support Group 1-2 or Group 1-4, it means that the device

Interface Element	Description
	supports up to 2 or 4 groups. Notes: Device with less than 10 ports supports up to 2 rings, device with more than 10 ports supports 4 rings.
ID	When multiple switches form a ring, the current ring ID would be network ID. Different ring network has different ID.
Port 1	port 1 can be used for the formation of ring network in switch.
Coupling port	When the ring type is "Couple", the coupling port would be the one connects different network ID.
Port 2	Port 2 can be used for the formation of ring network in switch.
Control port	When the ring type is "Couple", the control port would be the one in the link of the intersection of two rings.
Type	According to the requirement in the scene, user can choose different ring network. <ul style="list-style-type: none"> • Single: single ring, using a continuous ring to connect all device together. • Couple: couple ring is a redundant structure used for connecting two independent networks. • Chain: chain can enhance user's flexibility in constructing all types of redundant network topology via an advanced software technology. • Dual-homing: two adjacent rings share one switch. User could put one switch in two different networks or two different switching equipments in one network.
HelloTime	Hello_time is the time interval of Hello packet transmission. It is a query packet sent to adjacent device via ring network port to confirm whether the connection is normal.
Enable	Enable or disable the corresponding ring group.

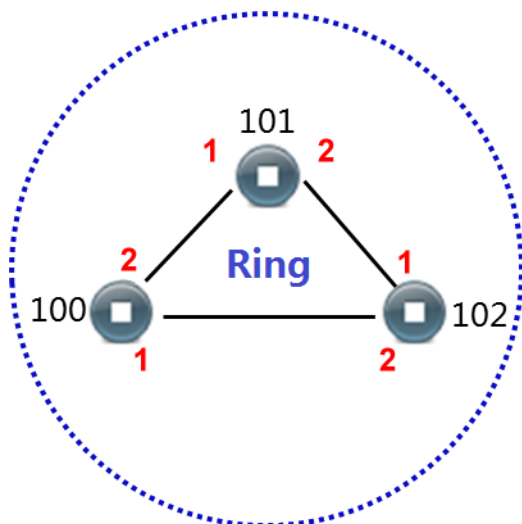
Now introduce the creation process respectively according to different ring network:

- Create single ring
- Create coupling ring
- Create chain
- Create rapid spanning tree

8.1.1 Instance: create single ring

Instance

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** Choose "Main Menu > Redundancy > Rapid Ring".
- Step 2** In the setting area of the "Rapid Ring" page, choose "Ring V3" as the "protocol of redundancy".
- Step 3** Check the box of "Enable" in "Group 1".
- Step 4** Choose "Single" in the drop-down list of "Type" of "Group 1".

Settings

Protocol of Redundancy : Ring V3

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	<input style="width: 40px;" type="text" value="1"/>	1	2	Single	<input style="width: 40px;" type="text" value="0"/> ×100ms	<input checked="" type="checkbox"/>

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
2	<input style="width: 40px;" type="text" value="2"/>	4	5	Single	<input style="width: 40px;" type="text" value="0"/> ×100ms	<input type="checkbox"/>

Note : Changes will only take effect after system reboot .

Apply
Cancel

Step 5 Enter “1” in the “ID” textbox of “Group1”.

Step 6 Set “Port 1” as “01” and “Port 2” as “02” separately.

Note:

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

Step 7 Click “Apply”. Enter “Main Menu > System Management > Device Address”.

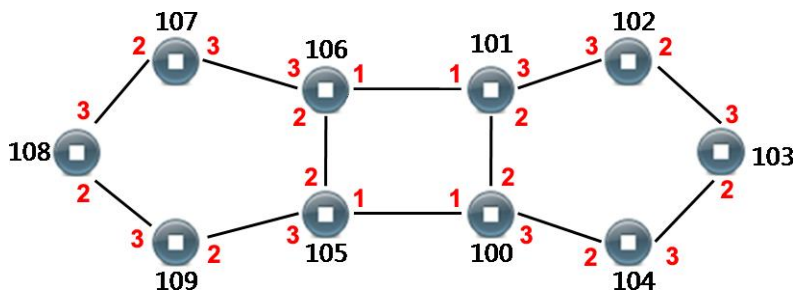
Step 8 In the area of “reboot the device”, click “reboot”.

Step 9 End.

8.1.2 Instance: create coupling ring

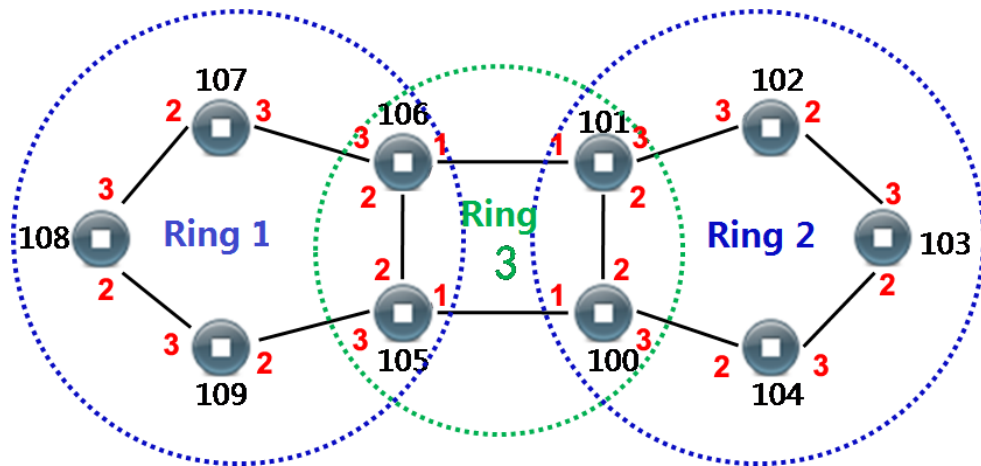
Instance

For example: creating coupling ring. Its basic architecture is shown as below:



Instance analysis

We can get the following picture by analyzing the coupling ring above.



There are three rings in coupling ring. Ring 1 and Ring 2 intersect Ring 3 respectively. When setting ring in WEB interface, we can set Ring 1 and Ring 2 as single ring, Ring 3 as coupling ring. In coupling ring, we set the port in the link where the two rings intersect as control port. The Port 2 of Device 105 in the picture above is the control port. The analyses of each switch are displayed as follows:

- 105, 106, 107, 108 and 109 are in Ring 1; ring network ports are Port 1 and Port 2; single ring; 105 is the master station, others are slave stations.
- 100, 101, 102, 103 and 104 are in Ring 2; ring network ports are Port 2 and Port 3; single ring; 100 is the master station, others are slave stations.
- 100, 101, 105 and 106 are in Ring 3. It is a coupling ring. Port 1 is coupling port. Port 2 is control port.

Operation Step 1: configuring Ring 1 in WEB interface

Configuring Device 105, 106, 107, 108 and 109 in the following steps respectively.

Step 1 Choose “Main Menu > Redundancy > Rapid Ring”.

Step 2 In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

Step 3 Check the “Enable” box in the “Group 1”.

Step 4 Choose “Single” in the drop-down list of “Type” of “Group 1”.

Settings

Protocol of Redundancy : Ring V3 ▼

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	<input style="width: 30px;" type="text" value="1"/>	2 ▼	3 ▼	Single ▼	<input style="width: 30px;" type="text" value="0"/> ×100ms	<input checked="" type="checkbox"/>

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
2	<input style="width: 30px;" type="text" value="2"/>	4 ▼	5 ▼	Single ▼	<input style="width: 30px;" type="text" value="0"/> ×100ms	<input type="checkbox"/>

Note : Changes will only take effect after system reboot .

Apply
Cancel

Step 5 Enter “1” into the “ID” textbox of “Group 1”.

Step 6 Set “Port 1” and “Port 2” to “02” and “03” respectively.

Note:

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

Step 7 Click “Apply”. Enter “Main Menu > System Management > Device Address”.

Step 8 In the area of “reboot the device”, click “reboot”.

Step 9 End.

Operation Step 2: configuring Ring 2 in WEB interface

Configuring Device 100, 101, 102, 103 and 104 in the following steps respectively.

Step 1 Choose “Main Menu > Redundancy > Rapid Ring”.

Step 2 In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

Step 3 Check the “Enable” box in the “Group 1”.

Step 4 Choose “Single” in the drop-down list of “Type” of “Group 1”.

Settings

Protocol of Redundancy : Ring V3

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	2	2	3	Single	0 <100ms	<input checked="" type="checkbox"/>
2	2	4	5	Single	0 <100ms	<input type="checkbox"/>

Note : Changes will only take effect after system reboot .

Apply Cancel

Step 5 Enter “2” into the “ID” textbox of “Group 1”.

Step 6 Set “Port 1” and “Port 2” to “02” and “03” respectively.

Note:

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

Step 7 For Device 101/102/103/104, choose “Slave” in the drop-down list of “Master-slave” of “Group 1”.

Step 8 For Device 100, choose “Master” in the drop-down list of “Master-slave” of “Group 1”.

Step 9 Click “Apply”. Enter “Main Menu > System Management > Device Address”.

Step 10 In the area of “reboot the device”, click “reboot”.

Step 11 End.

Operation Step 3: configuring Ring 3 in WEB interface

Configuring Device 100, 101, 105 and 106 in the following steps respectively.

Step 1 Choose “Main Menu > Redundancy > Rapid Ring”.

Step 2 In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

Step 3 Check the “Enable” box in the “Group 2”.

Step 4 Choose “Couple” in the drop-down list of “Type” of “Group 2”.

Step 5 Enter “3” into the “ID” textbox of “Group 2”.

Step 6 Choose “1” in the drop-down list of “Coupling Port” of “Group 2”.

Step 7 Choose “2” in the drop-down list of “Coupling Ctrl Port” of “Group 2”.

Step 8 Click “Apply”. Enter “Main Menu > System Management > Device Address”.

Step 9 In the area of “reboot the device”, click “reboot”.

Step 10 End.

Settings

Protocol of Redundancy : Ring V3

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	2	2	3	Single	0 ×100ms	<input checked="" type="checkbox"/>

Group	ID	Coupling Port	Coupling Ctrl Port	Type	HelloTime	Enable
2	3	1	2	Couple	0 ×100ms	<input checked="" type="checkbox"/>

Note : Changes will only take effect after system reboot .

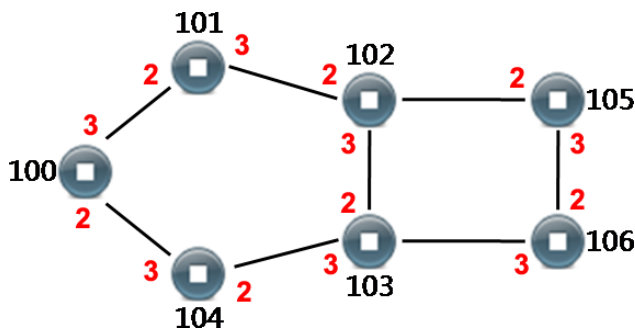
Apply
Cancel

Instance: creating chain

The chain could be created when the “Protocol of Redundancy” is “Ring V3”.

Instance

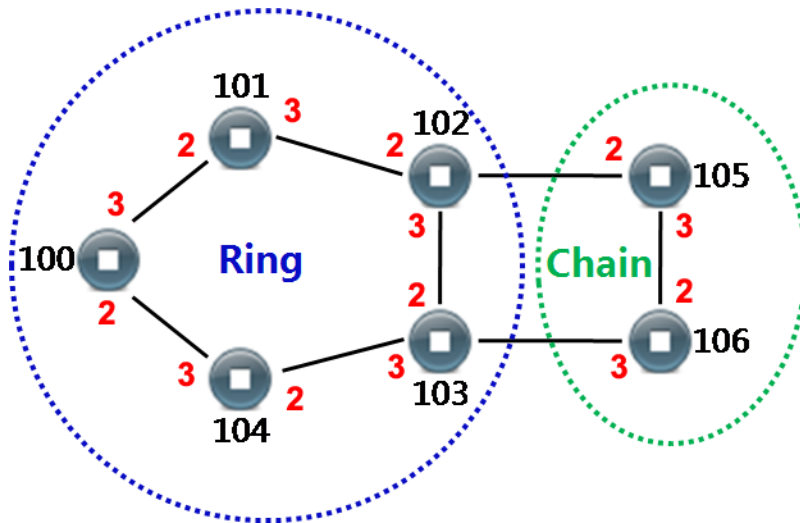
For example: creating chain. Its basic architecture is shown as below:



Instance analysis

Basic framework, we can make the following analyses:

- 100, 101, 102, 103 and 104 are in the ring. The ring network ports are 2 and 3. Device 100 is the master station, others are slave stations.
- Device 105 and 106 are in the chain. The ring network ports are 2 and 3.



Operation Step 1: creating ring

Configuring Device 100, 101, 102 and 103 in the following steps respectively.

Step 1 Choose “Main Menu > Redundancy > Rapid Ring”.

Step 2 In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

Step 3 Check the “Enable” box in the “Group 1”.

Step 4 In the “settings” area of “Rapid Ring”:

1. Set “Type” to “Single”;
2. Set “ID” to “1”;
3. Set “Port 1” to “2”;
4. Set “Port 2” to “3”;

Settings

Protocol of Redundancy : Ring V3

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	<input style="width: 30px;" type="text" value="1"/>	2	3	Single	<input style="width: 40px;" type="text" value="0"/> ×100ms	<input checked="" type="checkbox"/>

Group	ID	Coupling Port	Coupling Ctrl Port	Type	HelloTime	Enable
2	<input style="width: 30px;" type="text" value="3"/>	1	2	Couple	<input style="width: 40px;" type="text" value="0"/> ×100ms	<input type="checkbox"/>

Note : Changes will only take effect after system reboot .

Apply
Cancel

Step 5 Click “Apply”.

Step 6 Enter “Main Menu > System Management > Device Address”.

Step 7 In the area of “reboot the device”, click “reboot”.

Step 8 End.

Operation Step 2: creating chain

Configuring Device 105 and 106 in the following steps respectively.

Step 1 Choose “Main Menu > Redundancy > Rapid Ring”.

Step 2 In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

Step 3 Check the “Enable” box in the “Group 1”.

Step 4 In the “Settings” area of “Rapid Ring” page, set the “Type” to “Chain”.

Step 5 In the “Settings” area of “Rapid Ring” page, set the “ID” to “2”.

Step 6 Set “Port 1” to “02” and set “Port 2” to “03”.

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	2	2	3	Chain	0 $\times 100\text{ms}$	<input checked="" type="checkbox"/>
Group	ID	Coupling Port	Coupling Ctrl Port	Type	HelloTime	Enable
2	3	1	2	Couple	0 $\times 100\text{ms}$	<input type="checkbox"/>

Note : Changes will only take effect after system reboot .

Apply Cancel



The chain + single ring combination could be formed by using configured ring network port of chain ring device to connect the normal port of single ring device.

Step 7 Click “Apply”.

Step 8 Enter “Main Menu > System Management > Device Address”.

Step 9 In the area of “reboot the device”, click “reboot”.

Step 10 End.



- The port that has been set to port trunking could not be set as rapid ring port. One port can't belong to multiple ring networks.
- 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.

8.1.3 Creating Spanning Tree

Function description

On the "Rapid ring" page, user can choose "RSTP (IEEE 802.1W/1D)" as redundancy protocol to create spanning tree quickly.

Operation Path

Open in order: "Main Menu > Redundancy > Rapid Ring > Protocol of Redundancy > RSTP (IEEE 802.1W/1D)".

Interface Description

RSTP interface as follows:

Port	Cost	Priority	P2P	Edge	Port STP
1	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
2	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
3	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
4	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
5	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>

Note : Changes will only take effect after system reboot .

Apply Cancel

The main element configuration description of RSTP interface:

Interface Element	Description
Protocol of redundancy	Choose the algorithm of redundancy protocol, options are: <ul style="list-style-type: none"> • None: represents disabling ring network function; • Ring V1: supports single ring; • Ring V2: supports single ring and coupling ring; • Ring V3: supports single ring, coupling ring, chain and Dual_homing; • RSTP (IEEE 802.1W/1D): rapid spanning tree.
Bridge priority	The priority of bridge. Note: In STP/RSTP network, the device with smallest bridge ID would be elected as root bridge. The bridge ID consists of bridge priority and bridge MAC address.
Hello time	The transmission time interval of the BPDU data packet. Note: The protocol message that STP/RSTP adopts is BPDU (Bridge Protocol Data Unit).
FWD delay	The forward delay time that the port of switch maintains in transition state (listening and learning). Note: STP/RSTP adopts a mechanism of state transition. The newly-selected root port and specified port have to go through twice the Forward Delay time to enter the forwarding state.
MAX age	The lifetime of BPDU packets.
RSTP status	Button, used for checking the current status of rapid spanning tree.
Port	Displays the port number of the device.
Cost	The path cost from network bridge to root bridge. Note: Path cost is a reference value for STP protocol to choose links. The path cost from a port to the root bridge is cumulated by the path cost it go through each port of each bridge.
Priority	The priority of ports in bridge. The smaller the value, the higher the priority. Note: PID (Port ID) consists of two parts. The high 4 digits are port priorities, the low 12 digits are port numbers. In the case of same root path cost, it would not block the port with the smallest PID value, but the one with greater PID value.
P2P	The directly connected switch port, options are: <ul style="list-style-type: none"> • Yes; • No;

	<ul style="list-style-type: none"> Auto: adopt negotiation mechanism that could implement quick conversion of port states.
Edge	The switch that is on the edge of network and connects to the terminal devices.
Port STP	Checking this checkbox. It represents participating in the operation of spanning tree protocol.

RSTP status interface as follows:

Root Information							
Local ID :							
Root ID :							
Root Port :							
Root Cost :							
Basic Information							
Port	Priority	Cost	P2P	Edge	Connected	Role	FWD Status
1	128	0	Y	N	Rapid	Disabled	Disabled
2	128	0	Y	N	Rapid	Disabled	Disabled
3	128	0	Y	N	Rapid	Disabled	Disabled
4	128	0	Y	N	Rapid	Disabled	Disabled
5	128	0	Y	N	Rapid	Disabled	Disabled
Close							

The main element configuration description of RSTP status interface:

Interface Element	Description
Root information	The display bar of root information table
Local ID	It displays the priority of this switch and MAC address information ID.
Root ID	It displays the priority of the root switch and MAC address information ID.
Root port	The port of the switch, which is not in the root bridge but nearest to it, is in charge of 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 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.
Basic information	The display bar of basic information table
Port	It displays the port number of this device.
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, the more likely it is to be a root port.
Cost	The path cost from network bridge to root bridge.
P2P	The directly connected switch port.
Edge	The port that directly connects to terminal instead of other switches.
Connected	It displays the network protocol of devices with connected ports.
Role	Root port, specified port, Alternate port and Backup port.
FWD status	It is divided by whether the port forwards user flow and learns MAC address. <ul style="list-style-type: none"> • Discarding: neither forward user flow nor learn MAC address; • Learning: doesn't forward user flow but learn MAC address; • Forwarding: forward user flow and learn MAC address; • Listening: neither forward user flow nor learn MAC address; but can receive and send configuration message; • Blocking: port only receives and processes BPDU, doesn't forward user flow; • Disabled: blocked or physically disconnected.



The settings of rapid spanning tree will take effect after rebooting the device.

8.2 Port Trunking

8.2.1 Static Trunking

Function Description

Binding multiple physical ports into one logical channel.

Operation Path

Open in order: “Main Menu > Redundancy > Port Trunking > Static Trunking”.

Interface Description

Static Trunking interface as follows:

Group	Join Port
1	02 03
2	04 05

The main element configuration description of static trunking interface:

Interface Element	Description
Enable	Enable or disable trunking configuration.
Group	Choose trunking group.
Join port	Check the box of ports that join the trunking group.
Deal with	Add, edit, delete or apply the configuration of port trunking group.

For instance: port trunking

For example: if the port 1 and port 2 of switch A and switch B share the same rates and duplex modes, we could improve bandwidth by grouping them into a Trunking group.

Operation Steps

Configure switch A and switch B in the same way respectively.

Step 1 Log in Web configuration page.

Step 2 Choose “Main Menu > Redundancy > Port Trunking > Static Trunking”.

Step 3 On the page of “Static Trunking”, check the box of “Yes” in the “Enable” bar.

Step 4 Choose “1” in the droplist of “Group”.

Enable : Yes No

Group :

Join Port : 01- 02- 03- 04- 05-

Deal With :

- Group -	- Join Port -
1	01 02

Step 5 Check the box of Port 1 and Port 2 in the “join port” bar.

Step 6 Click “Add/Edit”.

Step 7 Click “Apply”.

Step 8 End.



Note

- All attributes of ports in trunking group should be the same, including rates and duplex modes, etc.
- Setting one port as both ring network port and trunking port is not supported.
- Each trunking group should have 2 ports at least, up to 4.
- One port can only join a trunking group.

9 Access Control

9.1 Login Settings

Function Description

On the “Login Settings” page, user can configure the login name and password of logging in to WEB configuration page and other parameter information.

Operation Path

Open in order: “Main Menu > Access control > Login settings”.

Interface Description

Login settings interface as follows:

Current Location>>Main Menu>>Access Control>>Login Settings

Index:

Access Level:

Login Name:

Password:

Confirm Password:

The main element configuration description of login settings interface:

Interface Element	Description
Index	The index number is corresponding to the access level. <ul style="list-style-type: none"> • 1: administrator • 2: administrator or observer • 3: administrator or observer
Access level	Access level setting, options: <ul style="list-style-type: none"> • Administrator: check and modify permissions. • Observer: check permissions.
Login name	Login name setting of WEB configuration interface.
Password	Login password setting of WEB configuration interface. Note: The password should a combination of letters that less than 16 bytes.
Confirm password	Confirm password.



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 WEB configuration interface are “admin”.

For instance: create administrator

For example: create a new administrator user “admin8” and set the management password to “admin8”.

Operation Path

Step 1 Log in to Web configuration interface.

Step 2 Choose “Main Menu > Access Control > Login Settings”.

Step 3 On the “Login settings” page:

1. Choose “1” as “Index” number
2. Choose “administrator” as “access level”
3. Enter “admin8” as “login name”
4. Enter “admin8” as “password”
5. Enter “admin8” as “confirm password”.

Step 4 Click “apply”.

Step 5 End.

10 Remote Monitoring

10.1 SNMP Configuration

Function Description

On the page of "SNMP Configuration", user can conduct the following operations:

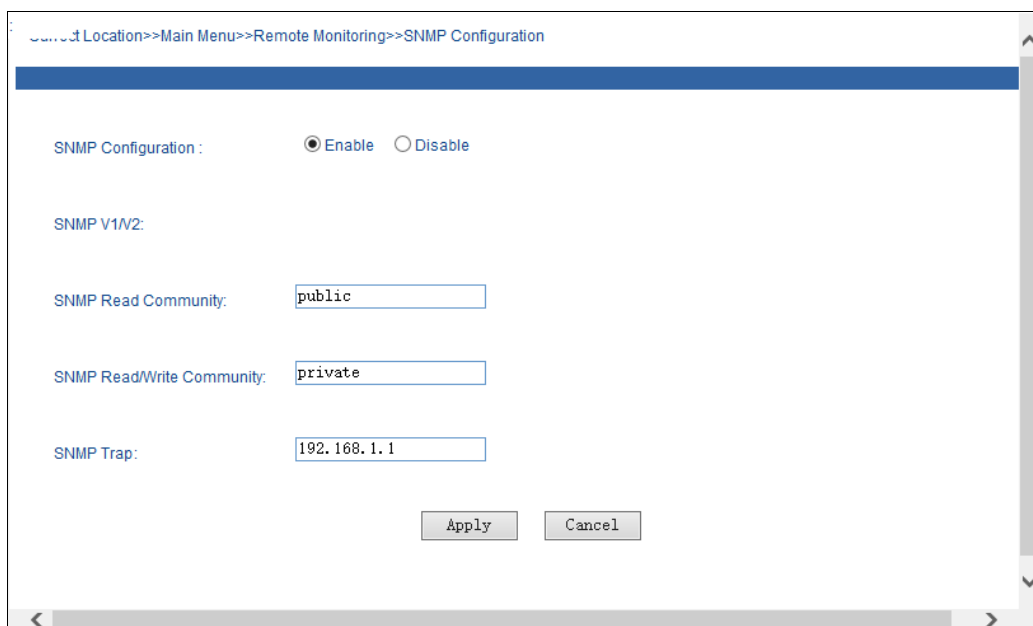
- Enable or disable SNMP configuration function;
- Configure SNMP V1/V2 read-only community name;
- Configure SNMP V1/V2 read-only community name;
- Configure SNMP gateway.

Operation Path

Open in order: "Main Menu > Remote Monitoring > SNMP Configuration".

Interface Description

Interface screenshot of SNMP configuration as follows:



Main elements configuration description of SNMP configuration interface:

Interface Element	Description
SNMP Configuration	SNMP configuration function, options as follows: <ul style="list-style-type: none"> • Enable; • Disable.
SNMP V1/V2	SNMP supports the following version: <ul style="list-style-type: none"> • SNMP V1: It adopts UDP protocol which can be used widely but exists security issue. • SNMP V2: Semantics has been enhanced, and it supports TCP protocol.
SNMP Read Community	Configure the read-only SNMP community name with the only operation permission of Get.
SNMP Read/Write Community	Configure the Read/Write SNMP community name with the operation permission of Get and Set.
SNMP Trap	Configure the destination IP address that sends out warning message. Notes: It will send out alarm during cold or warm start, port offline/online, power on/off.



Please pay attention to the permission problem of read and write in the SNMP browser,

user can check the permission of used "community name" if the permission of "write" is invalid.

Example: SNMP Configuration (B)

For example: Enable SNMP configuration and configure the "Read-only community name" as "public", "Read-write community name" as "private", "SNMP gateway" as "192.168.1.1".

Operation Steps

Step 1 Log on to the Web configuration interface.

Step 2 Select "Main Menu > Remote Monitoring > SNMP Configuration".

Step 3 On the displayed page of "SNMP Configuration":

1. Select "enable" on the column of "SNMP Configuration";
2. Select "Read-only community name" as "public";
3. Select "Read/Write community name" as "private";
4. Select "SNMP gateway" as "192.168.1.1".

Step 4 Click "Apply".

Step 5 End.

10.2 SNMP Configuration

Function Description

On the page of "SNMP Configuration", user can conduct the following operations:

- Enable or disable SNMP configuration function;
- Configure SNMP V1/V2 read-only community name;
- Configure SNMP V1/V2 read-only community name;
- Configure SNMP gateway.

Operation Path

Open in order: "Main Menu > Remote Monitoring > SNMP Configuration".

Interface Description

Interface screenshot of SNMP configuration as follows:

Current Location>>Main Menu>>Remote Monitoring>>SNMP Configuration

SNMP Configuration : Enable Disable

SNMP V1/V2:

SNMP Read Community:

SNMP Read/Write Community:

SNMP Trap1:

SNMP Trap2: (options)

SNMP Trap3: (options)

Main elements configuration description of SNMP configuration interface:

Interface Element	Description
SNMP Configuration	SNMP configuration function, options as follows: <ul style="list-style-type: none"> • Enable; • Disable.
SNMP V1/V2	SNMP supports the following version: <ul style="list-style-type: none"> • SNMP V1: It adopts UDP protocol which can be used widely but exists security issue. • SNMP V2: Semantics has been enhanced, and it supports TCP protocol.
SNMP Read Community	Configure the read-only SNMP community name with the only operation permission of Get.
SNMP Read/Write Community	Configure the Read/Write SNMP community name with the operation permission of Get and Set.

SNMPTrap1	Configure the destination IP address that sends out warning messages. Notes: It will send out alarm during cold or warm start, port offline/online, power on/off.
SNMPTrap2	Configure the destination IP address 2 that sends out warning messages. Notes: It will send out alarm during cold or warm start, port offline/online, power on/off.
SNMPTrap3	Configure the destination IP address 3 that sends out warning messages. Notes: It will send out alarm during cold or warm start, port offline/online, power on/off.



Note

Please pay attention to the permission problem of read and write in the SNMP browser, user can check the permission of used "community name" if the permission of "write" is invalid.

Example: SNMP Configuration

For example: Enable SNMP configuration and configure the "Read-only community name" as "public", "Read-write community name" as "private", "SNMP gateway" as "192.168.1.1".

Operation Steps

Step 1 Log on to the Web configuration interface.

Step 2 Select "Main Menu > Remote Monitoring > SNMP Configuration".

Step 3 On the displayed page of "SNMP Configuration":

1. Select "enable" on the column of "SNMP Configuration";
2. Select "Read-only community name" as "public";
3. Select "Read/Write community name" as "private";
4. Select "SNMP gateway" as "192.168.1.1".

Step 4 Click "Apply".

Step 5 End.

10.3 Relay Warning

Function Description

On the page of "Relay Warning", user can set power supply alarm, port alarm function; when the equipment is in abnormal state, it can promptly notify the administrator, and quickly repair the equipment status to avoid excessive losses.

Operation Path

Open in order: "Main Menu > Remote Monitoring > Relay Warning".

Interface Description

Relay warning interface as follows:

The interface shows the following configuration options:

- Enable:** Yes No
- Relay Output Type:** Open
- External input Alarm Settings:**

Alarm source	Alarm Setting	Level state	Alarm source	Alarm Setting	Level state
1	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	High	2	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	High
- Port Events:**

Port	Alarm Setting	Connection
1	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	LOS
2	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	LOS
3	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	LOS
4	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	LOS
5	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	Link

Buttons: Apply, Cancel

Main elements configuration description of relay warning interface:

Interface Element	Description
System Events	Configure alarm settings. Options as follows: <ul style="list-style-type: none"> • Enable; • Disable.
Relay Output Type	Click the drop-down list of "Relay Output Type", options as follows: <ul style="list-style-type: none"> • Normally open: when it's normal without alarm, relay is

Interface Element	Description
	<p>in closed status; when alarm occurs, relay is in open status;</p> <ul style="list-style-type: none"> Normally closed: when it's normal without alarm, relay is in open status; when alarm occurs, relay is in closed status.
Level state	<p>Display the current status of power supply:</p> <ul style="list-style-type: none"> High level; Low level.
External Input Alarm Settings	External Input Alarm Settings Column
Power	Display the device power supply number.
Alarm Setting	<p>Configure the power supply alarm function. Options as follows:</p> <ul style="list-style-type: none"> Enable; Disable.
Status	<p>Display current status of power supply:</p> <ul style="list-style-type: none"> Fault; Normal.
Port Events	Port events column
Port	Display the device port number.
Alarm Setting	<p>Configure the port alarm function. Options as follows:</p> <ul style="list-style-type: none"> Enable; Disable. <p>Note After enabling port alarm, when port is in abnormal status, such as connection or disconnection, the device will output a signal to hint the abnormal operation of device.</p>
Connection	<p>Display port connection status of the device:</p> <ul style="list-style-type: none"> Unconnected; Connected.

Example: Alarm Configuration

For example: Enable alarm configuration, and enable power supply alarm for power 1, port alarm for port 1.

Operation Steps

Step 1 Log on to the Web configuration interface.

Step 2 Click "Main Menu > Remote Monitoring > Relay Warning".

Step 3 On the displayed page of "Relay Warning":

1. Select "enable" on the column of "Alarm Setting";
2. Select "Relay Output Type" as "open".

Step 4 On the region of "System Events", select "Enable" the "Alarm Setting" of power 1.

Step 5 On the region of "Port Events", select "Enable" the "Alarm Setting" of power 1.

Step 6 Click "Apply".

Step 7 End.

11 Port Statistics

11.1 Frame Statistics

Function Description

On the page of “Frame Statistics”, user can check frame statistics of sending/receiving data packets transmitted by the port within a period of time.

Operation Path

Open in order: “Main Menu > Port Statistics > Frame Statistics”.

Interface Description

Frames statistics interface as follows:

Tx Frame Statistics					
Item / Port	Port 1	Port 2	Port 3	Port 4	Port 5
TxOctets	0	0	0	0	305711
TxDropPkts	0	0	0	0	0
TxBroadcastPkts	0	0	0	0	3
TxMulticastPkts	0	0	0	0	0
TxUnicastPkts	0	0	0	0	514
TxCollisions	0	0	0	0	0
TxSingleCollision	0	0	0	0	0
TxMultiple Collision	0	0	0	0	0
TxDeferredTransmit	0	0	0	0	0
TxLateCollision	0	0	0	0	0
TxExcessiveCollision	0	0	0	0	0
TxFramelnDisc	0	0	0	0	0
TxPausePkts	0	0	0	0	0
Rx Frame Statistics					
Item / Port	Port 1	Port 2	Port 3	Port 4	Port 5
RxOctets	0	0	0	0	73952
RxUndersizePkts	0	0	0	0	0
RxPausePkts	0	0	0	0	0
Pkts64Octets	0	0	0	0	283
Pkts65to127Octets	0	0	0	0	275
Pkts128to255Octets	0	0	0	0	52
Pkts256to511Octets	0	0	0	0	31
Pkts512to1023Octets	0	0	0	0	13
Pkts1024toMaxPktOctets	0	0	0	0	0
RxOversizePkts	0	0	0	0	0
RxJabbers	0	0	0	0	0
RxAlignmentErrors	0	0	0	0	0
RxFCSErrors	0	0	0	0	1
RxGoodOctets	0	0	0	0	73822
RxDropPkts	0	0	0	0	0
RxUnicastPkts	0	0	0	0	350
RxMulticastPkts	0	0	0	0	198
RxBroadcastPkts	0	0	0	0	105
RxSACChanges	0	0	0	0	1
RxFragments	0	0	0	0	0
JumboPkt	0	0	0	0	0
RXSymbolError	0	0	0	0	0
InRangeErrors	0	0	0	0	0
OutOfRangeErrors	0	0	0	0	0

Main elements configuration description of transmitted frames statistics interface:

Interface Element	Description
TxOctets	The total number of good bytes of data transmitted by a port (excluding preamble but including FCS).
TxDropPkts	This counter is incremented every time a transmit packet is dropped due to lack of resources.
TxBroadcastPkts	The number of good packets transmitted by a port that are directed to a broadcast address. This counter does not include errored broadcast packets or valid multicast packets.
TxMulticastPkts	The number of good packets transmitted by a port that are directed to a multicast address. This counter does not

Interface Element	Description
	include errored multicast packets or valid broadcast packets.
TxUnicastPkts	The number of good packets transmitted by a port that are addressed to a unicast address.
TxCollisions	The number of collisions experienced by a port during packet transmissions.
TxSingleCollision	The number of packets successfully transmitted by a port that have experienced exactly one collision.
TxMultiple Collision	The number of packets successfully transmitted by a port that have experienced more than one collision.
TxDeferredTransmit	The number of packets transmitted by a port for which the first transmission attempt is delayed because the medium is busy. This only applies to the Half Duplex mode, while the Carrier Sensor Busy.
TxLateCollision	The number of times that a collision is detected later than 512 bit-times into the transmission of a packet.
TxExcessiveCollision	The number of packets that are not transmitted from a port because the packet experienced 16 transmission attempts.
TxFramelnDisc	The number of valid packets received which are discarded by the forwarding process due to lack of space on an output queue.
TxPausePkts	The number of PAUSE events at each port.

Main elements configuration description of received frames statistics interface:

Interface Element	Description
RxOctets	The number of data bytes received by a port (excluding preamble, but including FCS), including bad packets.
RxUndersizePkts	The number of good packets received by a port that are less than 64 bytes long (excluding framing bits, but including the FCS).
RxPausePkts	The number of PAUSE frames received by a port.

Interface Element	Description
Pkts64Octets	The number of packets (including error packets) that are 64 bytes long.
Pkts65to127Octets	The number of packets (including error packets) that are between 65 and 127 bytes long.
Pkts128to255Octets	The number of packets (including error packets) that are between 128 and 255 bytes long.
Pkts256to511Octets	The number of packets (including error packets) that are between 256 and 511 bytes long.
Pkts512to1023Octets	The number of packets (including error packets) that are between 512 and 1023 bytes long.
Pkts1024toMaxPktOctets	The number of packets that (include error packets) are between 1024 and the standard maximum packet size inclusive.
RxOversizePkts	The number of good packets received by a port that are greater than 1522 bytes (tagged) and 1518 bytes (untagged).
RxJabbers	The number of packets received by a port that are longer than 1522 bytes and have either an FCS error or an alignment error.
RxAlignmentErrors	The number of packets received by a port that have a length (excluding framing bits, but including FCS) between 64 and 1522 bytes, inclusive, and have a bad FCS with a nonintegral number of bytes.
RxFCSErrors	The number of packets received by a port that have a length (excluding framing bits, but including FCS) between 64 and 1522 bytes inclusive, and have a bad FCS with an integral number of bytes.
RxGoodOctets	The total number of bytes in all good packets received by a port (excluding framing bits, but including FCS).
RxDropPkts	The number of good packets received by a port that were dropped due to a lack of resources
RxUnicastPkts	The number of good packets received by a port that

Interface Element	Description
	are less than 64 bytes long (excluding framing bits, but including the FCS).
RxMulticastPkts	The number of good packets received by a port that are directed to a multicast address.
RxBroadcastPkts	The number of good packets received by a port that are directed to the broadcast address.
RxSACHanges	The number of times the SA of good receive packets has changed from the previous value.
RxFragments	The number of packets received by a port that are less than 64 bytes (excluding framing bits) and have either an FCS error or an alignment error.
JumboPkt	The number of good packets received by a port that are greater than the standard maximum size and less than or equal to the jumbo packet size, regardless of CRC or alignment errors.
RXSymbolError	The total number of times a valid-length packet was received at a port and at least one invalid data symbol was detected.
InRangeErrors	The number of packets received with good CRC and one of the following: (1) The value of length/type field is between 46 and 1500 inclusive, and does not match the number of (MAC client data + PAD) data octets received, OR (2) The value of length/type field is less than 46, and the number of data octets received is greater than 46 (which does not require padding).
OutOfRangeErrors	The number of packets received with good CRC and the value of length/type field is greater than 1500 and less than 1536.

12 Network Diagnosis

12.1 Port Mirror

Function Description

On the “Port Mirror” page, user can enable or configure the correspondence between ingress data mirror and egress data mirror.

Operation Path

Open in order: “Main Menu > Diagnosis > Mirror”.

Interface Description

Port mirror interface as follows:

The screenshot shows a configuration window titled "Ingress". It contains the following settings:

- Ingress :** Radio buttons for "Enable" and "Disable". "Disable" is selected.
- Monitored port :** Five checkboxes labeled "1-", "2-", "3-", "4-", and "5-". "1-" is checked.
- Mirror port :** Five radio buttons labeled "1-", "2-", "3-", "4-", and "5-". "2-" is selected.
- Watch direction :** Radio buttons for "All", "Ingress", and "Egress". "All" is selected.

At the bottom right, there are "Apply" and "Cancel" buttons.

The main element configuration description of port mirror interface:

Interface Element	Description
Mirror	Setting port mirror function, options are: <ul style="list-style-type: none"> • Enable; • Disable.
Mirror port	Choose the ingress and egress data port that needs mirroring.
Collect port	Configure the collect ports with ingress/egress data mirroring.
Watch direction	Backup data during mirroring, options are: <ul style="list-style-type: none"> • All; • Ingress; • Egress.

For instance: port mirror configuration

For example: use port 4 to collect ingress data and egress data of port 1, port 2 and port 3.

Operation Steps

- Step 1** Log in to Web configuration interface.
- Step 2** Choose “Main Menu > Diagnosis > Mirror”.
- Step 3** On the “Mirror” page, choose “enable” in the “mirror”.
- Step 4** In the option of “mirror port”, choose port “1”, “2” and “3”.
- Step 5** In the option of “collect port”, choose port “4”.
- Step 6** In the option of “watch direction”, choose “all”.
- Step 7** Click “apply”.
- Step 8** End.

13 System Management

13.1 Device Address

Function Description

On the page of “Network Settings”, user can conduct following operations:

- Configure default IP address of the device;
- Configure netmask;
- Configure gateway address;
- Configure DNS server;
- Reboot the device.

Operation Path

Open in order: “Main Menu > Basic Settings > Network & Reboot”.

Interface Description

Device address interface as follows:

Network Settings

Use the following IP address Automatically obtain IP address

IP Address:

Subnet Mask:

Gateway:

Use the following DNS server address Automatically obtain DNS server address

DNSServer:

Main elements configuration description of device address interface:

Interface Elements	Description
Network Settings	Configuration column of the device address
Use the following IP address	It represents that enabling manually configured IP address, netmask and gateway address.
Automatically obtain DNS server address	It represents that enabling the system automatic acquisition for the device IP address.
IP Address	Configure IP address of the device. Notes: Default configured IP address is 192.168.1.254.
Subnet Mask	Configure subnet mask of the device. Notes: Default configured subnet mask is 255.255.255.0.
Gateway	Configure gateway address of the device. Notes: Default configured gateway address is 192.168.1.1.
Use the following DNS server address	Configure the acquisition form of DNS server address as manual configuration. Notes: Default configured DNS server address is 202.96.134.133.
Automatically obtain DNS server address	Configure the acquisition form of DNS server address as automatic acquisition. Notes: When IP address is manual configuration, this option becomes gray and is not optional.

Interface Elements	Description
DNS Server	Configure DNS server address.
Apply	Save the device address information. Notes: Some devices may automatically reboot after configuration, and the configuration will take effect after rebooting.
Cancel	Cancel the modification of device address information.

For Example: Manual Configuration

For example: Configure the device address information, IP address is 192.168.5.88, gateway address is 192.168.5.1.

Operation Steps

- Step 1** Login to the Web configuration interface.
- Step 2** Select “Main Menu > Basic Settings > Network & Reboot”.
- Step 3** On the “Network Settings” region of displayed page of “Device Management”, select “Use the following IP address”.
 - a) Enter “192.168.5.88” in the textbox of “IP Address”.
 - b) Enter “192.168.5.1” in the textbox of “Gateway”.
- Step 4** Click “Apply”, system will automatically save the configuration.
- Step 5** End.

For Example: Automatic Acquisition of IP

For example: configure the device IP address as automatic acquisition.

Operation Steps

- Step 1** Login to the Web configuration interface.
- Step 2** Select “Main Menu > Basic Settings > Network & Reboot”.
- Step 3** On the “Network Settings” region of displayed page of “Device Management”, select “Automatically obtain IP address”.
- Step 4** Click “Apply”, system will automatically save the configuration.
- Step 5** End.

13.2 System Information

Function Description

On the page of “System Identification”, user can configure the following options:

- Device model;
- Device name;

- Device description;
- Device number;
- Contact information.

Operation Path

Open in order: “Main Menu > Basic Settings > System Identification”.

Interface Description

System information interface as follows:

Settings

Module :

Name :

Description :

Serial No. :

Contact Information :

Main elements configuration description of system information interface:

Interface Elements	Description
Module	Configure the device model.
Name	Configure the device name to identify each device in the network.
Description	Configure the device summary description.
Serial No.	Configure the device number. Notes: <ul style="list-style-type: none"> • The number can be used for describing the installation position of the device; • The number length shouldn't be more than 30 bytes.
Contact Information	Configure the contact Information of the device maintenance personnel. Notes: <ul style="list-style-type: none"> • Support the entering of Chinese characters, English letters,

	<p>number, characters like “-”, “_”, “@”, “,”, “.”;</p> <ul style="list-style-type: none">• The entering of blank space is not supported.
--	---

For Example: Device Information Configuration

For example: Configure the device according to following information:

- “Module” is “ManagedSwitch1”;
- “Name” is “IndustrialSwitch”;
- “Description” is “8ports”.

Operation Steps

- Step 1** Login to the Web configuration interface.
- Step 2** Select “Main Menu > Basic Settings > System Identification”.
- Step 3** On the “Settings” region of displayed page of “System Identification”:
 - a) Enter “Module” as “ManagedSwitch1”;
 - b) Enter “Name” as “IndustrialSwitch”;
 - c) Enter “Description” as “8ports”.
- Step 4** Click “Apply” to save the configuration.
- Step 5** End.

13.3 File Management

Function Description

On the page of "File Management", user can conduct following operations:

- Restore factory defaults;
- Upload and download configuration files;
- System upgrading.

Operation Path

Open in order: "Main Menu > System Management > File Management".

Interface Description

File management interface as follows:

Current Location>>Main Menu>>Basic Settings>>System File Update

Factory Default

Load Factory Default :

Update Configuration File from Local PC

Download Configuration :

Upload Configuration :

Upgrade Firmware from Local PC

Upgrade Firmware :

Main elements configuration description of file management interface:

Interface Element	Description
Factory Default	Configuration column of restore factory defaults
Load Factory Default	Restore factory defaults of the switch. Notes: Restore factory defaults will cause all devices status to be in the factory status, default IP address is "192.168.1.254".
Update Configuration File from Local PC	Configuration column of configuration files
Download Configuration	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 Configuration	Configure the switch via uploading configuration files information.
Upgrade Firmware from Local PC	Configuration column of system upgrade
Upgrade Firmware	Upgrade operating system of the switch.



Warning

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

Example: Download Configuration Files

For example: Download configuration files.

Operation Steps

- Step 1** Log on to the Web configuration interface.
- Step 2** Select "Main Menu > System Management > File Management".
- Step 3** On the region of "Update Configuration File from Local PC" of displayed page of "File Management", click "Download".
- Step 4** Click "Save (S)" on the pop-up dialog box of "File Download".
- Step 5** Select save path on the pop-up dialog box of "Save as".
- Step 6** Click "Apply".
- Step 7** End.

Example: Upload Configuration

For example: Upload configuration files to the switch for updating the switch configuration.

Operation Steps



Please prepare the configuration files and then conduct uploading operation.

- Step 1** Log on to the Web configuration interface.
- Step 2** Select "Main Menu > System Management > File Management".
- Step 3** On the region of "Update Configuration File from Local PC" of displayed page of "File Management", click "Browse" after the label of "Upload Configuration".
- Step 4** Select prepared cfg configuration files on the pop-up "select files to load".
- Step 5** Click "Open".
- Step 6** Click "Upload".
- Step 7** Alarm information is displayed in the pop-up dialog box of "messages from the webpage", click "OK".
- Step 8** The device is rebooted automatically and its configuration is updated.
- Step 9** End.

13.4 System Logout

Function Description

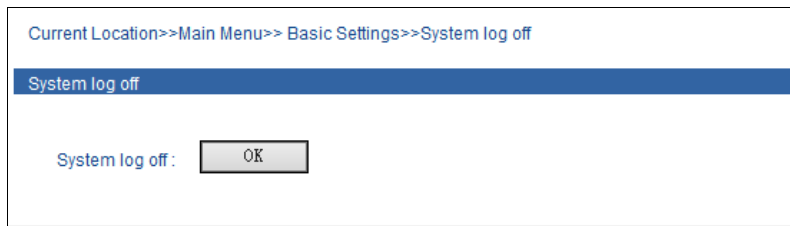
On the page of “System log off”, user can log off the login information of current user.

Operation Path

Open in order: “Main Menu > Basic Settings > System log off”.

Interface Description

System logout interface as follows:



Main elements configuration description of system logout interface:

Interface Elements	Description
System log off	Log off the login information of current user.

For example: Log off and change administrator to login

For example: Log off current user, and then login again via entering “admin8” in the column of administrator and “admin8” in the column of password.

Operation Steps

- Step 1** Login to the Web configuration interface.
- Step 2** Select “Main Menu > Basic Settings > System log off”.
- Step 3** Click “OK” on the displayed page of “System log off”.
- Step 4** Conduct following operations on the pop-up login dialog box:
 - a) Enter “admin8” on the option box of “User name”.
 - b) Enter “admin8” on the option box of “Password”.
- Step 5** Click “OK”.
- Step 6** Alarm information is displayed on the pop-up dialog box of “messages from the webpage”, click “OK”.
- Step 7** Login successfully to the WEB interface.
- Step 8** End.

14 FAQ

14.1 Sign in Problems

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

Before access the WEB, please eliminate IE cache buffer and cookies. Otherwise, the webpage will display abnormally.

2. **How about forget the login password?**

For forgetting the login password, the password can be initialized by restoring factory setting, specific method is adopt BlueEyes_II software to search and use restore factory setting function to initialize the password. Both of 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.

14.2 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 configure Trunking (port aggregation) function?

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

3. What's the difference between RING V2 and RING V3?

RING V2 and RING V3 are our company's ring patents. RING V2 only supports single ring and coupling ring. RING V3 supports single ring, coupling ring, chain and Dual_homing, and Hello_Time can be set to detect port connection status.

4. 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:

- Connected computer and switch ports keep invariant, change other network cable;
- Connected network cable and switch port keep invariant, change other computers;
- Connected network cable and computer keep invariant, change other switch port;
- If the switch port faults are confirmed, please contact supplier for maintenance.

5. 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.

14.3 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.

14.4 Indicator Problem

1. Power indicator isn't bright, what's the reason?

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. The switch halts after communicate for a period time, and returns to normal after reboot, what's the reason?

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.



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