ALLNET®

24 Ports PoE Gigabit Smart Managed Ethernet Switch with 4x SFP+

User Manual

Content

1 Product Introduction

1.1 Overview

The 24 ports PoE Gigabit managed Ethernet switch(abbreviated to 24P switch), which provide 24* PoE Gigabit downlink Ethernet ports , 4* 10Gigabit uplink SFP ports . The Products support IEEE 802.3 af/at ,support Web layer-3 network management and PoE management. Products are widely used in security surveillance, network engineering projects and so on.

1.2 Product Feature

- provide 24* PoE Gigabit downlink Ethernet ports , 4* 10Gigabit uplink SFP ports ;
- Provide web-based layer 3 network management and PoE management by simple operation;
- Support high-speed data forwarding, very suitable for large flow of video data forwarding in security surveillance；
- Support recovery of IP address & user password by one key recovery button；
- Quick Installation, simple operation, convenient for wall/desk/rack installation.

1.3 Board Diagram

The front panel

24 Ports PoE switch(24P) ↓

OOB ports   console ports
Web control   CLS control   Gigabit PoE ports   10Gigabit   indicator LED
                                                             SFP+ ports
        Recovery buttom
        Reset to defaults
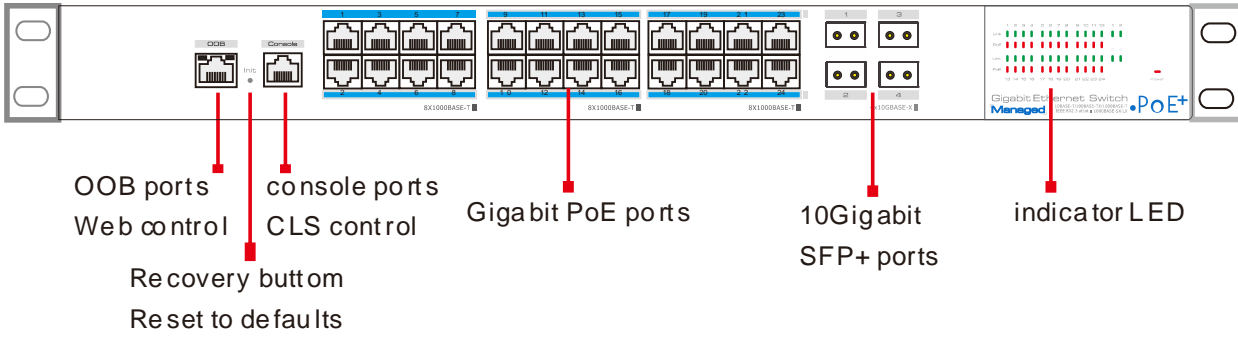
The back panel

Ground terminal

AC power input
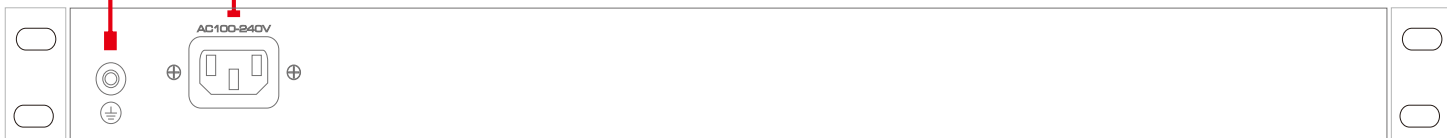
1.4 Specification

Item		24P	16P	24S	16S
Power	Power Supply	Mains on load			
	Voltage Range	AC 100~240V 50/60Hz			
	Consumption	450W	320W	Redundance Power 2*60W	
Network Connector	Ethernet Port	1~16/24 ports: 10/100/1000Mbps RJ45 Auto-MDI/MDI-X ports support IEEE 802.3 af/at		1~16/24 ports: 10/100/1000Mbps RJ45 Auto-MDI/MDI-X ports	
		Uplink: 10GEBase-X SFP+ Module ports support 1000Base-X, setup the "ports settings" on Web management			
	Transmission Distance	Ethernet ports: 100m SFP ports: depend on SFP module			
	PoE	Sigle port<30W Whole<390W	Sigle port<30W Whole<270W	N/A	
Network Switch	Network Standard	IEEE802. 3, IEEE802. 3u, IEEE802. 3ab, IEEE802. 3z, IEEE802. 3X, IEEE 802. 1Q, IEEE 802. 1p, IEEE 802. 3ad,IEEE802.3ae			
	Switch Capacity	24P and 24S 128Gbps;16P and 16S 112Gbps			
	Packet Buffer	12Mb			
	Packet Forwarding Rate	24P and 24S 95.2Mpps;16P and 16S 83.3Mpps			
	MAC Address	16K			
Management	Management	Management L3 + PoE			
Protection	ESD	6KV/8KV Per: IEC61000-4-2			
	Lighting Protection	6KV Per: IEC61000-4-5			
Environmental	Working Temperature	-10℃~45℃			
	Storge Temperature	-40℃~85℃			
	Humidity(non-condensing)	0~95%			
Mechanical	Dimension(LxWxH)	442mm×315mm×44mm			
	Material	Sheet Metal			
	Color	Black			
	Weight	4. 5kg			

Products are subject to change without prior notice.

2 Installation

⚠Caution

Anti-counterfeiting label is attached to switch's cover. Product damage caused by unauthorized disassembly is not covered under warranty.

2.1 Shipping List

Please check the following items before installation, if any missing, please

contact your local dealer.

Item	Name	Quantity	Unit
1	Switch	1	pc
2	AC Power Line	1*	pc
3	Accessory	1	set
4	Quick setup wizard	1	pc

the 24S and 16S switch have redundance power module, including 2 AC power lines.

2.2 Installation Precautions

To avoid device damage or personal injury by improper use, please observe the following precautions.

2.2.1 Safety Precautions

☞ **Instruction**

- This is level A product, which may cause radio disturbance in living environment. Users may need to take corresponding and effective measures to solve the problem.

- Pull out the power plug before cleaning the switch. Do not use wet cloth nor liquid to wipe or wash the switch;

- Do not leave the switch close to water or wet place   so as to   prevent water or dampness from entering into the switch;

- Make sure the switch work in a clean environment. Excessive dust may cause electrostatic adsorption, which will affect the equipment life and cause communication failure;

- The switch will work normally under the correct voltage. Please ensure the

voltage indicated on the switch corresponds to the power voltage;

- To avoid the danger of electric shock, please do not open the switch case. Do not open the switch case even if the switch is powered off;

- The accessories (including but not limited to power cables, etc.), which can be used for the switch only, is prohibited for other applications.

2.2.2 Installation Requirements

The device should work in indoor environment to avoid thunder stroke. It is important to obey the following requirements no matter you install it in the cabinet or on the workbench directly:

- Enough space (larger than 10cm) for air outlet so as to facilitate the heating dissipation; Good ventilation system for cabinets and workbench is preferred;

- Ensure the Cabinet and workbench is sturdy enough to support the switch and it's accessories's weight;

- Cabinet and workbench with good grounding is preferred.

2.2.3 The Requirements of Electromagnetic Environment

When it is working, the switch may be affected by external interference outside the system through the ways of radiation and conduction. Please pay attention to the followings:

- AC power supply is TN system, so it is necessary to use single phase power socket (PE) which can protect ground wire so that the filter circuit can effectively filter out the power grid disturbances;

- The switch should work far away from high-power radio transmitters, radar transmitters, high-frequency devices;

- Use electromagnetic shielding if necessary, such as shielded cable;

- Interface cables should be arranged indoor rather than outdoor to prevent over-voltage or over-current damage to the signal port.

2.3 Installation Way

There are 3 installation ways: rack, workbench and wall-hung installation.

⚠**Caution**

Please pull out the power plug before installing or moving the switch. Grounding and anti-lightening can greatly increase the protection level of the switch. please connect the grounding terminal to the earth area by using at least wire 20.

📝**Instruction**

The diagram is for reference only, the products are subject to actual product.

2.3.1 Rack Installation

Installation process:

(1) Check rack with good grounding and stability;

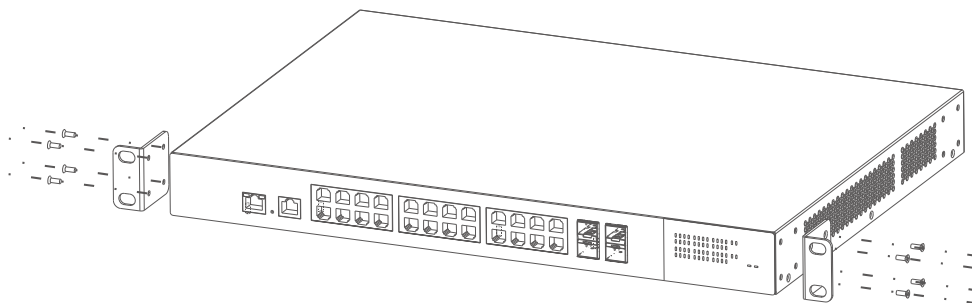(2) Use screws to fit hangers at the device board side;

Figure 2-1 Install hangers diagram

(3) Put the device on the rack's bracket and move the rack along the slot to proper position ;

(4) Use screws to fit the installation hanger at rack's fixed slot, make sure the device is   installed at rack's bracket steadily.
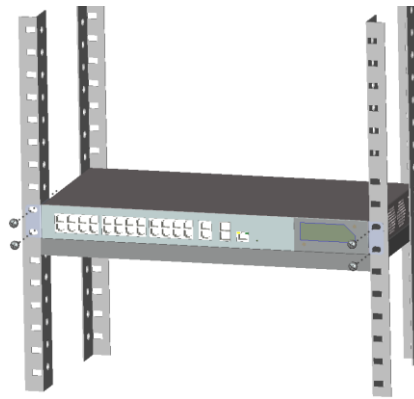

Figure 2-2 Install switch to the rack

Instruction

This product's fixing hangers are just to fix the switch rather than support it. Use brackets under the device (fixed to the rack) to support switch when install the switch to the rack.

2.3.2 Workbench Installation

You can put this product on clean, stable, grounded workbench. The installation procedure as below:

(1)Carefully put the device upside down, clean the grooves on the chassis backplane with soft cloth to make sure there is no oil or dust in it;

(2)Remove the stickers on the foot pad, paste the foot pad in backplane groove;

(3)Carefully put the device upright on the workbench.

2.3.3 Wall-hung Installation

You also can put the product on clean, steady vertical wall. Installation procedure is below:

(1) Use the screws to fix the hangers;

Figure 2-3 Hangers installation diagram

(2) Drill holes on the strong position of wall and then drive the rubber plug into the hole;

(3) Drive these screws into the hole for the rack and fix the product by aiming at the rubber plug .

Figure 2-4 Fix the switch on wall

2.4 Cable Connection

2.4.1 Device Connection

Use cross network cable or cross-over cable to connect PC or

other device with switch's Ethernet port;

2.4.2 Configuration Cable Connection

If web management,use a network cable to connect the OOB port and the computer'RJ45 port;

If CLS management,use a console cable to connect the Console port and the computer'serial port(DB9);
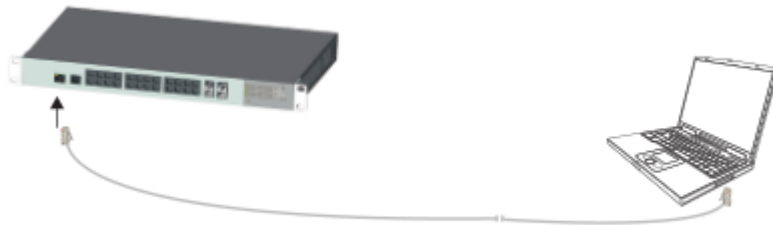
as the following figure:

Figure 2-5 Connect configuration cable

2.4.3 Power cable Connection

(1)Connect one side of switch's power cable with the switch's AC power port, and connect the another side with external AC power socket;

(2)Turn on the power ,check if switch's AC power LED is on, that means power connected correctly;

(3)Use the power plug snap to jammed the AC Power cable.

Figure 2-6 Connect power cable

3 Function Configuration Guide

3.1 Computer Requirements

- Make sure the management PC has already been installed with Ethernet adapter;
- Use network cable connect Ethernet ports with network card of PC(Except the console port.

3.2 Set Up Network Connection

Instruction

(1) You need to set the IP of the PC and the switch in the same network segment. The default IP address of the switch   is 192.168.2.1, network gate is 255.255.255.0.

(2) The port to connect management PC for Web setting must be management VLAN. By default, management VLAN is VLAN 1,and each port of the switch is VLAN1.

(3) If you need to connect the remote network, please make sure the management PC and the router can do the job above.

(4) This product can't assign the IP address for the management PC, you need to set the management static IP by yourself.

3.2.1 Set Static IP for the Management Computer

al connection property" windoOperation steps (take Windows XP as sample)：

(1) Click <start> to enter the [start] menu, select "control panel". Double click "network connection" icon, double click the "local connection" icon, pop out "local connection   status" window.
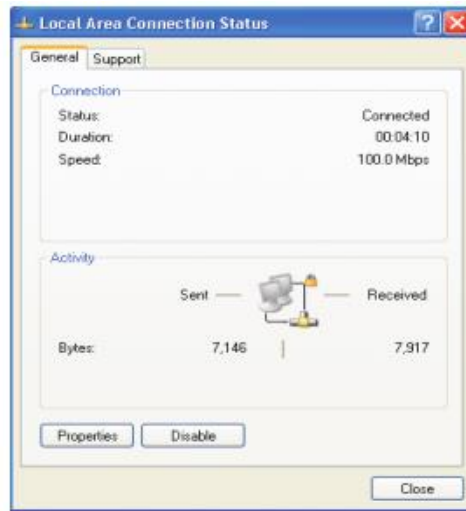
(2) Click <property> button, enter "locw.
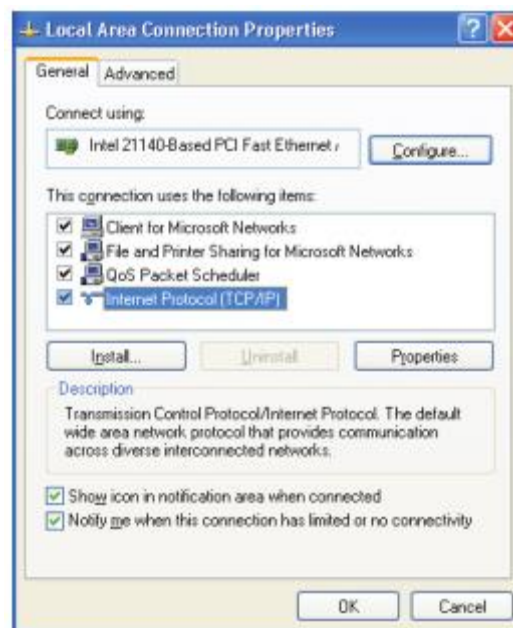
(3)Select "Internet protocol (TCP/IP), click <property> button, enter"Internet protocol (TCP/IP) property" window. Select " use the IP address below" button, input IP address （ use arbitrary value between 192.168.2.1~192.168.2.254, besides 192.168.2.1) and the subnet mask(255.255.255.0). Click "OK" to finish the configuration.
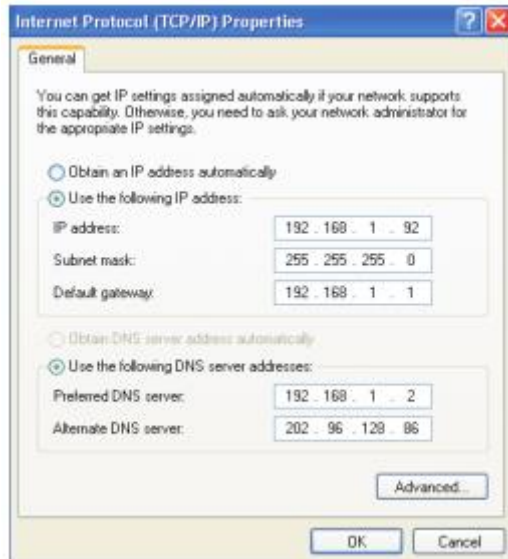
![Instruction icon] **Instruction**

DNS server address can be empty or be filled in with the real server address.

3.2.2 Confirm the Network Connection by Ping Command

Operation Steps below:

(1) Click <Start> button to enter [Start] menu, select [Run], pop out the dialog.
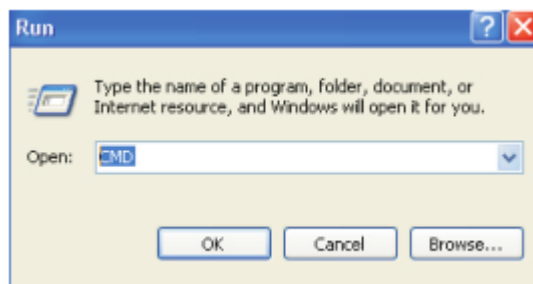
(2) Input "ping 192.168.2.1", click <confirm> button. If there is equipment response show in the pop out dialog, that means network connection succeed, otherwise please check if the network connection is correct.

3.2.3 Cancel the Proxy Server

If this management PC use proxy server to visit the internet, then you must prohibit the proxy service, following is the operation:

(1) In browser, select [tool/Internet option] enter [Internet option] window.
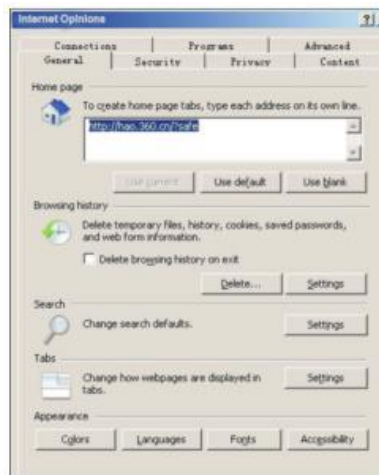
(2) Select "connection" tabs in [Internet option] window, and click [LAN Setting] button.
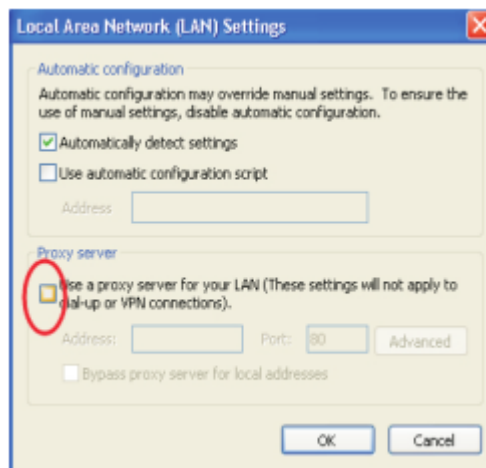
(3) Make sure the "Use proxy server for LAN"option is not selected. If selected,

please cancel it and click <yes> button.
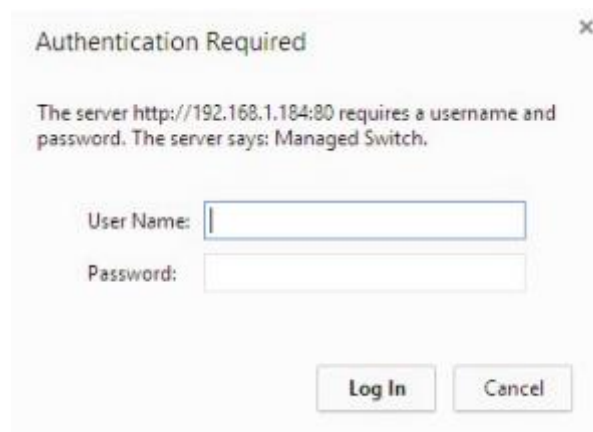
The menu bar has the following options: [System Status], [Port Configuration], [VLAN Settings], [QoS management], [link management], [Port Security], [network management], [Network Statistics], [System management], [Exit] and drop-down menu bar of the "language switching function". Click a option to make corresponding setting. The following will explain the function of each option.

3.3 Web Page Configuration Guide

The browser version recommend：IE7 and later, Firefox browser, Chrome, 360 browser (IE7 and later).

3.3.1 Start and Login

This product web default IP address: 192.168.2.1, subnet mask: 255.255.255.0, administrator account: admin, password：admin. After installing the equipment correctly and setting up the computer, open the browser, input the switch default address in the browser address bar: http://192.168.2.1, then press the Enter key, the user login page will show in front of you as follows:

⚠Caution

Please follow the steps to check if the switch is installed correctly:

(1) Whether the physical connection of the equipment is correct?

Use network cable to connect the product's Ethernet port(except the console port) with managed computer network card, and ensure the link LED of the port is on.
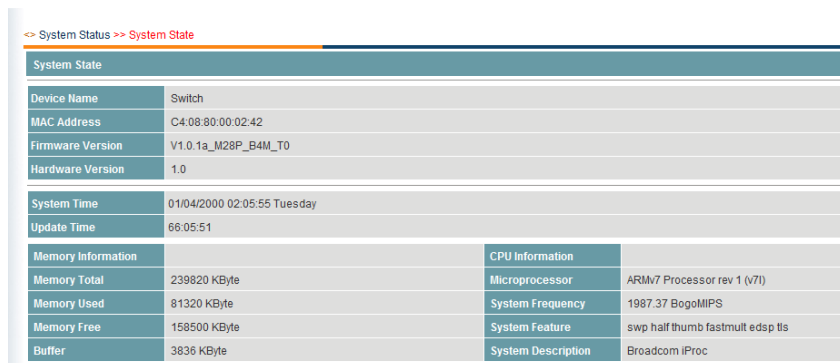
(2) Whether the computer TCP/IP agreement setting is correct?

Your computer's IP address must be 192.168.2.x (x range is 1~254 and x can not be 1, otherwise it will conflict with the product IP address 192.168.2.1), subnet mask: 255.255.255.0.

(3) Whether the computer's port VLAN ID is 1?

By default, the management VLAN is VLAN 1, same as   each port of switch.

After inputting the correct password, click <Login in>, the browser will display the product Web management page as the picture below:

Web management page diagram

4 Quick Guide

4.1 Quick Guide

4.1.1 Port VLAN setting:

Enter the [Quick Guide] page, you can see port range, link type, PVID, VLAN forwarding table, click <configuration> button to modify the settings.

After setting, click the <Save> button at the bottom of the page to save the configuration.

The interface item is described as follows:

Item	description
port range	Enter the port number you want to modify, enter one or a group of ports, or select from the checkbox below. If you set a port, enter the corresponding port number in the port range; if you set a group of ports, you can use "," or "-" separated. "," Is used to set a set of discrete ports, such as 1,3,5. "-" is used to set up a set of consecutive ports, such as 1-8
link type	Select the link type of the port according to the different processing mode of the tag on the port when forwarding the packet. You can

	select Access, Trunk, and Hybrid.
PVID	Enter the VLAN ID number to be added to the port. The specified VLAN ID ranges from 1 to 4094.

Port configuration instructions:

VLAN 2 includes port 1-2, VLAN 3 includes port 3-4, VLAN 11 includes port 5, and management port is port 6.

Port 1 belongs to VLAN 2, so packets without VLAN TAG are set as the default VID, PVID is 2 VLAN forwarding including VLAN 2, and VLAN TAG is removed only VLAN 2;

Port 2 is the same as Port 1;

Port 3 belongs to VLAN 3, so packets without VLAN TAG are set as the default VID, PVID is 3, VLAN forwarding includes VLAN 3, and VLAN 3 is removed from VLAN.

Port 4 is the same as Port 3;

Port 5 belongs to VLAN 11, so packets without VLAN TAG are set to the default VID, PVID is 11, VLAN forwarding includes VLAN 11, and VLAN TAG is only VLAN 11

Port 6 belongs to the management port and the default PVID must be 1.

4.1.2 Configure the interface attribute for each virtual VLAN

Enter the [Quick Guide] page, you can see network interface, IP address settings, etc., click the <configuration> button to modify the settings. As shown below:

Configuration instructions:

Each VLAN can be configured with an IP, but not necessary, if you do not want it to do layer 3 forwarding, you can not configure the IP address, in turn, to be layer 3 forwarding, IP address must be configured .

It is currently recommended that each port directly use static IP, because a well-planned network on the network runs more stable, to avoid malicious IP address to seize lead to unknown problems.

4.1.3 Configure the DHCP service for each interface

Enter the Quick Guide page, you can set the network interface, the starting IP address, the number of users, the preferred DNS address, etc., click the <Save> button to modify the settings. As shown below:

Configuration instructions:

The main parameters for setting DHCP are the IP address segments that are

expected to be assigned by each interface. DNS must be provided, and the allocation network segments should be set as needed. Similarly, not all interfaces need to allocate addresses.

4.1.4 Setting up static routes

Enter the Quick Guide page, you can set the routing table configuration, such as turning on / off dynamic RIP routing, target network, subnet mask, next hop address, network port, etc., and click the <Save> button to modify the settings. As shown below:

Configuration instructions:

For example, if the address of the router is 192.168.1.1, the routing interface must be connected to port 5 because the corresponding interface IP of port 5 is 192.168.1.20 and must be communicated on the same network segment

To access the 192.168.11.0 network segment, this network segment in 192.168.1.x / 24 hidden behind 192.168.1.10, as shown in Figure:
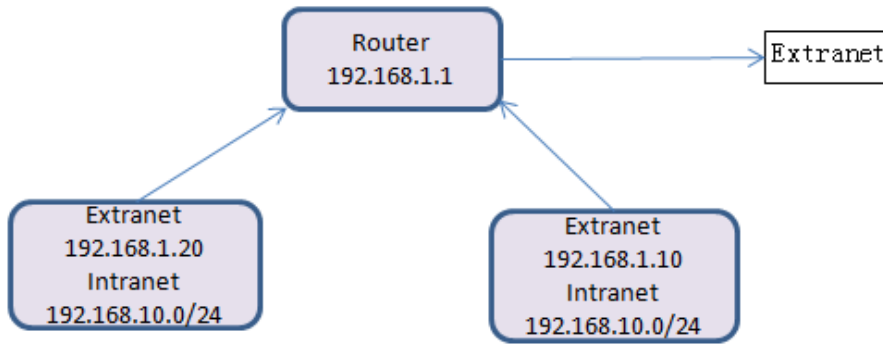
This is the so-called routing table, the routing table is to tell you the next hop who will send you a message.

5 Interface Management

5.1 port settings

Go to the [Interface Management] - [Port Settings] menu bar. In the Port Settings page, you can enable / disable the port, set the port rate, enable / disable the traffic control, click the <Modify> button to modify the settings. Click the <Save> button to save the configuration. As shown below:

The interface item is described as follows:

Item	description
Port Enable	Select to enable / disable the port.
Port rate	Set the port port rate, can be set to auto-negotiation, 100M full duplex, 100M half duplex, 10M full duplex, 10M half duplex.

Flow Control	Select to enable / disable flow control.
Port Range	Enter the port number to be modified, enter one or a group of ports, or select from the following check boxes. The range of the port is 1 to 26. If you set a port, enter the corresponding port in the port range ; If you set a set of ports, you can use "," or "-" separated. "," Is used to set a set of discrete ports, such as 1,3,5. "-" is used to set up a set of consecutive ports, such as 1-8.

In the [Port Settings] page, you can view the status and configuration information of each port.

☐	Port	Port Mark	Current Status(speed/duplex)	Port Enable		
				Port Rate(speed/duplex)	Traffic Control	Port State
☐	1	port1	disconnected	100M/Auto	Enable	Enable
☐	2	port2	disconnected	Auto/Auto	Disable	Enable
☐	3	port3	disconnected	100M/Auto	Enable	Enable
☐	4	port4	disconnected	Auto/Auto	Disable	Enable
☐	5	port5	disconnected	Auto/Auto	Disable	Enable
☐	6	port6	disconnected	Auto/Auto	Disable	Enable
☐	7	port7	disconnected	Auto/Auto	Disable	Enable
☐	8	port8	disconnected	Auto/Auto	Disable	Enable
☐	9	port9	disconnected	Auto/Auto	Disable	Enable
☐	10	port10	disconnected	Auto/Auto	Disable	Enable
☐	11	port11	disconnected	Auto/Auto	Disable	Enable
☐	12	port12	disconnected	Auto/Auto	Disable	Enable
☐	13	port13	disconnected	Auto/Auto	Disable	Enable

The interface item is described as follows:

Item	description
The port	displays the serial number of each port of the switch.
Port ID	Displays the identity of the current port.
Current status	Displays the connection rate of the current port.
Port Rate	Displays the port rate of the current port.
Flow Control	Displays the status of the current port's flow control function.

Port Enable	Displays the status of the current port.

5.1.1 Port setup example

Configuration requirements

Open ports 1-2, 4-5, set the port rate to "auto-negotiation", and enable the flow control function.

Configuration steps

【method 1】

Go to [Interface Management] - [Port Settings] menu bar, select Enable Port, select Auto Negotiation Port Rate, select Enable Flow Control, set the port range to "1-2, 4-5", click <Modify> to modify the setting , Click the <Save> button to save the configuration after setting. As shown below:

【Method 2】

Go to the [Interface Management] - [Port Settings] menu bar, select the port number you want to set, select Enable Port, select Auto Negotiate Port Rate, select Enable Flow Control, click <Modify> button to complete the configuration, after setting click the <Save> button to save the configuration.

5.2 Storm suppression

A broadcast storm occurs when the host system responds to a packet that is cycling on the network or attempts to respond to an unresponsive system. In general, in order to change this state, the request or the response group is constantly generated, often making the situation worse. With the increase in the number of packets on the network, congestion will occur, thus reducing the performance of the network so that it is paralyzed. ·

For the above reasons, you can use the appropriate method to prevent, but when the storm is generated, you need to set the broadcast traffic bandwidth ratio or the maximum broadcast packet limit on the network port. Assuming that the broadcast limit on a port is 3000 Kbps, when the broadcast traffic exceeds 3000 Kbps, the excess part of the broadcast packet is discarded, thus preventing a large amount of broadcast information from spreading to the entire network through the port, thus avoiding broadcast in the broadcast domain storm.

Enter the interface management - [storm suppression] menu bar, in the storm suppression page, you can set to enable / disable storm suppression, broadcast packet flow limit, multicast packet traffic limit, set the finished, click <Save> button to complete Configuration. As shown below:

The interface item is described as follows:

Item	description
Storm suppression	Select Enable / Disable Storm suppression. Note: The following parameter settings can be set only after the Storm suppression is enabled.
Port range	Enter the port number you want to modify.
Broadcast Packet Traffic Limits	The amount of broadcast packet traffic that is suppressed by the input limits the traffic of broadcast packets to a reasonable range, effectively suppressing broadcast storms, avoiding network congestion, and ensuring the normal operation of network services. The storm suppression function is enabled only when set. Range: 64-64000Kbps
Multicast Packet Traffic Limits	The amount of multicast packet traffic that is suppressed by the entry restricts the flow of multicast packets to a reasonable range, effectively suppressing broadcast storms, avoiding network congestion, and ensuring the normal operation of network services. The storm suppression function is enabled only when set. Range: 64-64000Kbps
Unicast Packet Traffic Limit	Enter the amount of unicast packet traffic to be suppressed to limit the traffic of unicast packets to a reasonable range. This can effectively suppress broadcast storms, prevent network congestion, and ensure the normal operation of network services. The storm suppression function is enabled only when set. Range: 64-64000Kbps

5.3 bandwidth settings

Enter 【Interface Management】 - 【Bandwidth Setting】 menu bar. In the Bandwidth Setting page, you can limit the speed of each port's outbound / inbound bandwidth, click <Configure> button to modify the setting, after setting, click <Save > Button to save the configuration. As shown below:

<> Port Configuration >> Rate Limit				
Speed Limit	⊙ Enable ○ Disable			
Port Range	1-6			
Input Speed	3000	Kbps		
Output Speed	6000	Kbps Modify		
☐	Port	Port Mark	Input Speed	Output Speed
☑	1	port1	3000Kbps	6000Kbps
☑	2	port2	3000Kbps	6000Kbps
☑	3	port3	3000Kbps	6000Kbps
☑	4	port4	3000Kbps	6000Kbps
☑	5	port5	3000Kbps	6000Kbps
☑	6	port6	3000Kbps	6000Kbps

The interface item is described as follows:

Item	description
Interface item description	Bandwidth Setting Select to enable / disable bandwidth setting function. Note: The following parameter settings can be set only when the bandwidth control function is enabled.
Port Range	Enter the port number to be modified, enter a port or a group of ports, or select from the check boxes below. If you set a port, enter the corresponding port number in the port range; if you set a group of ports, you can use "," or "-" separated. "," Used to set a group of non-contiguous ports, such as 1,3,5. "-" is used to set a group of contiguous ports, such as 1-8.
Entrance	Set the entrance speed of the port, Fast port speed range can be

speed	set to 64k ~ 100M; if you do not limit the entrance speed, please do not fill in.
Export speed	Set the port exit speed, Fast port speed range can be set to 64k ~ 100M; if you do not limit the export speed, please do not fill in.

In the [Bandwidth Settings] page, you can view the bandwidth limit of each port.

The interface items are as follows:

Item	description
Port	Displays the serial number of each port on the switch.
Port ID	Displays the ID of the current port.
Inlet Speed	Displays the current port's entry speed.
Exit Speed	Displays the exit speed of the current port.

5.3.1 Example of bandwidth setting

Configure the requirements

Restrict the switch to all ports on the entrance rate of 1Mbps, the exit speed of 512Kbps.

Configuration steps

【method 1】

Enter 【Interface Management】 - 【Bandwidth Setting】 menu, select Enable Bandwidth Setting, set the port range to "1-8", set the entrance speed to 1024, set the exit speed to 512, and click the button Modify the settings, and then click the button on the bottom of the page to save the configuration so that the configuration takes effect. As shown below:

Speed Limit	⊙ Enable ○ Disable	
Port Range	1-8	
Input Speed	1024	Kbps
Output Speed	512	Kbps [Modify]

5.4 Port Protection

Port protection is that in some application environments, certain ports on a device can not communicate with each other. In this environment, the communication between these ports, whether unicast frames, broadcast frames, or multicast frames, can not be forwarded between the protection ports. You can achieve this by setting some ports as Protected Ports. After you set some ports as protection ports, the protection ports can not communicate with each other, and the protection ports and non-protection ports can communicate normally.

When you set two protection ports as a mirror port pair, the frames sent or received by the source port of the mirror port are sent to the destination port of the mirror port according to the setting of the mirror port. So it is best not to set the destination port of the mirroring port as the protection port.

The device supports the aggregation port as the protection port. When you set one port in the aggregation group as the protection port, all the member ports in the aggregation group are set as the protection ports.

Enter 【Interface Management】 - 【Port Protection】 menu bar, in the port protection setting page, you can enable / disable the port protection function,

set the port as the isolated port / normal port, click <Configure> button to modify the setting, click the The <Save> button at the bottom of the page to save the configuration. As shown below:

The interface items are as follows:

Interface item	description
Port Protection Configuration	Select Enable / Disable Port Protection. Note: The following parameter settings can only be set if the port protection function is enabled.
Port Protection	Set the port to be an isolated port or a normal port. Isolation port and isolation port can not communicate between isolation port and normal port can communicate properly.
Port Range	Enter the port number to be modified, enter a port or a group of ports, or select from the check boxes below. If you set a port, enter the corresponding port number in the port range; if you set a group of ports, you can use "," or "-" separated. "," Used to set a group of non-contiguous ports, such as 1,3,5. "-" is used to set a group of contiguous ports, such as 1-8.

In the [Port Protection] page, you can view the port protection information.

The interface items are as follows:

Interface item	description
Port Number	Displays the serial number of each port on the switch.
Port ID	Displays the ID of the current port.
Port Protection	Displays the port protection status of the current port.

5.4.1 Port Protection Example

Configure the requirements

In a residential environment, all users are in a VLAN, but users can not access each other, and the gateway can only communicate to access the Internet. In this case, the product is placed in residential buildings, of which 1 to 6 ports In connection with the user, the other port for the uplink connection.
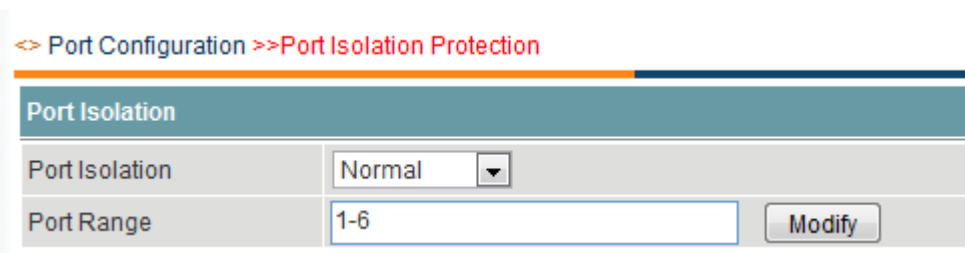
Configure the topology
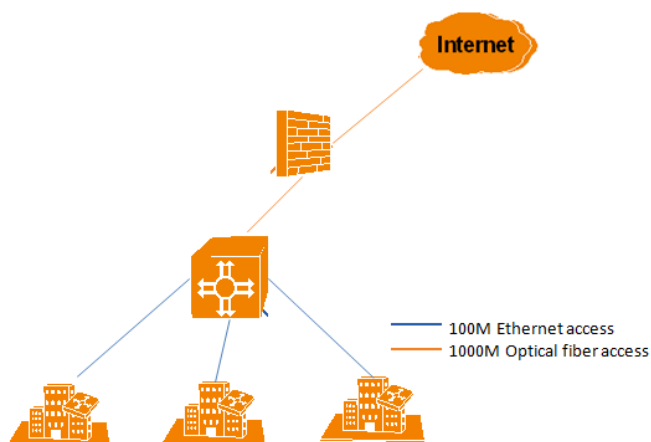
Configuration steps

【method 1】

Enter the [Interface Management] - [Port Protection] menu bar, and select Enable Port Protection to set ports 1 to 6 as isolated ports, that is, ports 1 to 6 can not access each other. Click the button to modify settings, Then click the button on the bottom of the page to save the configuration so that the configuration takes effect. As shown below:

5.5 loop detection

Loopback detection determines whether a loopback condition exists on the port by sending a special packet on the port and checking whether the packet can be sent back from the port to be sent.

Enter [Interface Management] - [Loopback Detection] menu bar. On the loopback detection page, you can enable / disable the loopback detection function, enable / disable the protection and recovery function, disable the port loop time and click the button to modify settings and settings Click the <Save> button at the bottom of the page to save the configuration. As shown below:

Loop Detection	○ Enable ⊙ Disable			
Protec Automatic Recovery	Disable ▼			
Disable Loop Port Time	300 s (Effective value： 20-300)			
Port Range	[ ]	Port Loop Detection [Enable ▼] [Modify]	(Warning: Be careful of port in link aggregation）	
☐	Port No	Port Mark	Loop Detection	Loop Detection State
☐	1	port1	Enable	Forward
☐	2	port2	Enable	Forward
☐	3	port3	Enable	Forward
☐	4	port4	Enable	Forward
☐	5	port5	Enable	Forward
☐	6	port6	Enable	Forward
☐	7	port7	Enable	Forward
☐	8	port8	Enable	Forward

The interface items are as follows:

Interface item	description
Loopback detection	Select to enable / disable loopback detection. Note: The following parameter settings can be set only when loopback detection is enabled.
Protection automatic recovery	protection Automatic recovery is the loop in the port for protection, the port protection for a period of time, the port can resume forwarding state. Enabled: The forwarding status is automatically restored after the port protection time expires. Disabled: The port does not resume forwarding until the switch is restarted after port protection.
Disable Loop	The disable loop port time refers to the time it takes to shut

Port Time	down the port when the loop occurs, that is, the port protection time. This parameter is valid only when Protect Automatic Recovery is enabled.
Port Range	Enter the port number to be modified, enter a port or a group of ports, or select from the check boxes below. If you set a port, enter the corresponding port number in the port range; if you set a group of ports, you can use "," or "-" separated. "," Used to set a group of non-contiguous ports, such as 1,3,5. "-" is used to set a group of contiguous ports, such as 1-8.
Port Loopback Detection	Select to enable / disable port loopback detection.

In the [Loopback Detection] page, you can view the loopback detection information of each port.

The interface items are as follows:

Interface item	description
Port Number	Displays the serial number of each port on the switch.
Port ID	Displays the ID of the current port.
Loopback Detection	Displays the loopback detection enabled status of the current port.
Loopback Detection Status	Displays the loopback detection status of the current port.

5.6 MAC Address Table

The MAC address table contains the address information used for packet forwarding between the ports. The MAC address table is divided into three types of addresses: static MAC address, dynamic MAC address, and filter MAC address.

- ◻ Static MAC address: The MAC address that users manually add does not age and can not be learned.

- ◻ Dynamic MAC address: The device learns from the source MAC address and has aging time.

- ◻ Filter MAC addresses: If the device manually discards MAC addresses, the device discards the packets with the source MAC address as the source MAC address and discards the packets. The filter addresses are never aged out.

Enter 【Interface Management】- 【MAC Address Table】menu bar. In the MAC Address Table page, you can query the MAC address table of the switch according to different query conditions. As shown below:

The interface items are as follows:

Interface item	description
Query by physical port	Query by physical port, the specified physical port range is 1 ~ 26. You can enter one or a group of ports. If you

	set a port, enter the corresponding port number in the port range; if you set a group of ports, you can use "," or "-" separated. "," Used to set a group of non-contiguous ports, such as 1,3,5. "-" is used to set a group of contiguous ports, such as 1-8.
Query by MAC Address Type	Query by MAC address type. The available types are static MAC address, dynamic MAC address, and filtered MAC address.
The query	shows the relevant MAC information you are looking for.

In the [MAC Address Table] page, you can view the found MAC address table information.

The interface items are as follows:

Interface Item	description
Serial Number	Displays the serial number of each MAC address.
Source Address	Displays the current source MAC address.

VLAN ID	Displays the corresponding VLAN ID number.
Type	Displays the type of the current MAC address.
The port	shows the corresponding port number.
Processing method	Display processing method.

5.7 Traffic Statistics

The traffic statistics of a device are divided into received frames and sent frames, which include unicast packets, multicast packets, broadcast packets, and error packets.

[Interface Management] - [Traffic Statistics] menu bar. On this page, you can view the statistics of the number of received and forwarded unicast packets, multicast packets, broadcast packets and error packets. As shown below:

<> System Status >> Traffic Statistics

Port No	Sent Frame Statistics				Received Frame Statistics			
	Unicast	Muticast	Broadcast	Error	Unicast	Muticast	Broadcast	Error
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0

6 VLAN Settings

VLAN refers to Virtual Local Area Network, "virtual LAN." VLAN is a LAN device will be logically divided into a network segment, in order to achieve the virtual workgroup of emerging data exchange technology. This emerging technology is mainly used in switches. The IEEE released the draft 802.1Q protocol standard for implementing a standardized VLAN in 1999. The emergence of VLAN

technology allows administrators to logically divide different users within the same physical LAN into different broadcast domains according to the actual application requirements. Each VLAN contains a set of computer workstations that share the same requirements, and are physically connected to a LAN Have the same attributes. Since it is logically partitioned rather than physically partitioned, the individual workstations in the same VLAN are not restricted to the same physical scope, ie they can be on different physical LAN segments. According to the characteristics of VLAN, broadcast and unicast traffic inside a VLAN can not be forwarded to other VLANs, which helps to control traffic, reduce equipment investment, simplify network management, and improve network security.

6.1 Port VLAN

Port-based VLAN is the most simple and effective VLAN division method. It defines the VLAN member according to the device port. After adding the specified port to the specified VLAN, the port can forward the packets of the specified VLAN.

Depending on how the port processes tags when forwarding packets, you can divide the link types of the ports into three types:

 Access connection: The packets sent by the port do not carry the tag. It is generally used to connect to terminal devices that can not identify VLAN tags or to distinguish different VLAN members. As shown in the following figure, Device A is connected to a common PC. The PC does not recognize packets with VLAN tags. Therefore, you need to set the link type of Device A and the PC to

Access as Access.

Trunk connection: The packets sent by the port, the packets in the default VLAN of the port are untagged, and the packets in other VLANs must be tagged. Commonly used for interconnection between network transmission devices. As shown in the following figure, Device A and Device B need to transmit packets of VLAN 2 and VLAN 3. Therefore, you need to set the link type of Device A and Device B to trunk and allow VLAN 2 and VLAN 3 to pass .

Hybrid connection: Packets sent by a port can be tagged in some VLANs according to their needs. Packets in some VLANs carry no tag. It is usually used for connected devices to support VLAN tag uncertain situations. As shown in the following figure, Device B is connected to a small local area network (LAN). Some PCs in the LAN belong to VLAN 2 and some PCs belong to VLAN 3. You need to set the link type of Device B to the LAN port to Hybrid and allow VLAN 2 and VLAN 3 packets without tag.
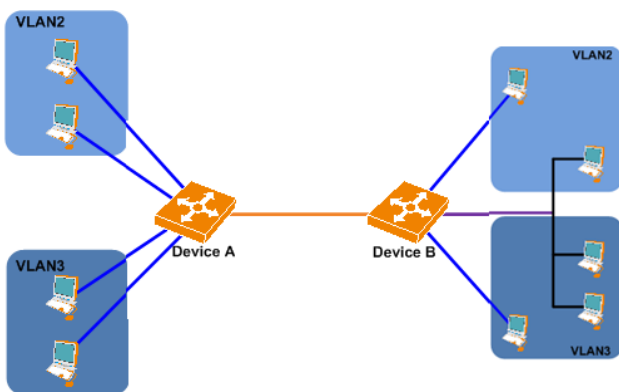
Enter the [VLAN Setting] - [Port VLAN] menu bar. In the Port VLAN Setting page, you can set the link type, port range, VLAN ID and so on. Then click the button to modify the setting. Save button to save the configuration. As shown below:

802.1Q VLAN Setting

Port Range		
Link Type	Access ▾	
PVID		
vlan-allowed		
vlan-untagged		[Add] \A3\A8Warning: VLAN property of all ports aggregated are same!\A3\A9

☐	Port	Port Mark	Link Type	PVID	vlan-allowed	vlan-untagged
☐	1	port1	Access	1		
☐	2	port2	Access	1		
☐	3	port3	Access	1		
☐	4	port4	Access	1		
☐	5	port5	Access	1		
☐	6	port6	Access	1		
☐	7	port7	Access	1		

The interface items are as follows:

Interface item	description
Port VLAN	Select Enable / Disable Port VLAN function. Note: The following parameter settings can be set only when the port VLAN function is enabled.
Port Range	Enter the port number to be modified, enter a port or a group of ports, or select from the check boxes below. If you set a port, enter the corresponding port number in the port range; if you set a group of ports, you can use "," or "-" separated. "," Used to set a group of non-contiguous ports, such as 1,3,5. "-" is used to set a group of contiguous ports, such as 1-8.
Link type Select	the link type of the port according to the tag processing method of the port when forwarding packets. You can choose Access, Trunk, and Hybrid.

PVID	input port to join the VLAN ID number. The specified VLAN ID ranges from 1 to 4094.

In the [Port VLAN] page, you can view the configuration information of each port. The interface items are as follows:

Interface item	description
Port Number	Displays the serial number of each port on the switch.
Port ID	Displays the ID of the current port.
Link Type	Displays the link type of the current port.
PVID	Displays the PVID number corresponding to the current port.

6.2 QinQ settings

In the [VLAN Setting] - [QinQ Setting] menu, you can set the PVID in the QinQ setting page and click the button to modify the setting. Click <Save> to save the configuration.

Interface item	description
Port Number	Displays the serial number of each port on the switch.
The TPID	indicates the protocol type of the VLAN tag. The device can identify whether the packet carries the corresponding VLAN tag based on the TPID value

6.3 VLAN forwarding rules Introduction:

- ⬚ The following is the definition of a variety of port types on a variety of data frame processing methods;

	Tagged data frame IN	Tagged data frame OUT	Untagged data frame IN	Untagged data frame OUT
Tagged Port	Receive as it is Hit PVID tag tag	Send as it is	Hit Tag as port PVID	Hit Tag as PVID
Untagged Port	discard	Remove tag	Hit Tag as port PVID	Send as it is

- The so-called Untagged Port and Tagged Port do not state the status of a physical port, but the status of a certain VID owned by a physical port. Therefore, a physical port can be a Untagged Port on one VID and a Tagged on another VID Port;

- ⬚ A physical port can only have one PVID. When a physical port has a PVID, it must have the same VID as the PVID's TAG. On this VID, the physical port must be a Untagged Port.

- ⬚ The role of PVID is only when the switch receives a Untagged data frame from the outside to add a TAG tag to the data frame. When the data is forwarded inside the switch, the PVID does not play any role.

- ☐ A physical port that has a VID that is consistent with the TAG tag can accept tagged data frames marked with this TAG tag from inside the switch, regardless of whether the VID is a Untagged Port or a Tagged Port.

- ☐ A physical port that has a VID consistent with the TAG tag can accept tagged frames tagged with this TAG tag from outside the switch only if it is a tagged port on this VID.

Enter the [VLAN Settings] - [VLAN Forwarding Table] menu, set VLAN forwarding rules in the VLAN Forwarding Table page, click <Add> to add settings, click <Edit> to modify, click <Delete> to delete settings After setting, click the button on the bottom of the page to save the configuration.

The interface items are as follows:

Interface item	description
VID	Enter the VLAN ID number to be set.
VLAN Name	Set the name of the VLAN to be configured.

In VLAN Forwarding Table page, you can view the configuration information forwarded by VLAN.

The interface items are as follows:

Interface item	description
The numbers	correspond to the numbers of the forwarding rules of each VLAN.
VID	Displays the VID of the current VLAN forwarding rule.
VLAN Name	Displays the name of the VLAN for the current VLAN

	forwarding rule.
Tagged Port	Displays the currently tagged port.
Untagged Port	Shows the port currently unlabeled.

7 QoS Management

QoS (Quality of Service) that quality of service. For network services, quality of service includes the transmission bandwidth, transmission delay, data packet loss rate. In the network, the service quality can be improved by ensuring the transmission bandwidth, reducing the transmission delay, reducing the data packet loss rate and delay jitter.

Network resources are always limited, as long as there is the case of snatch network resources, there will be quality of service requirements. Quality of service is relative to the network business, in ensuring the quality of service of a certain type of business, it may damage the quality of service in other businesses. For example, if the total bandwidth of a network is fixed, if the bandwidth occupied by a certain type of service is greater, less bandwidth can be used by other services and the usage of other services may be affected. Therefore, network managers need to make rational planning and distribution of network resources according to the characteristics of various services so that network resources can be efficiently utilized.

Once the network can distinguish between phone calls and online browsing, priority processing can ensure large downloads on the Internet without

interrupting phone calls. To ensure accurate prioritization, all traffic must be identified within the network backbone. Data prioritization at workstation endpoints can be problematic due to human error or malicious destruction. Hackers can deliberately mark ordinary data as high priority, steal the bandwidth of critical business applications, and lead to the failure of business applications. This situation is called a denial of service attack. By analyzing all the traffic entering the network, you can examine security attacks and stop them before they cause any harm.

In LAN switches, multiple service queues allow packet prioritization. Higher priority services can go through the switch without being affected by lower priority services, reducing latency incidents such as voice or video on time sensitive services.

In order to provide priority, each port of the switch must have at least 2 queues. Although more queues per port can provide a more granular priority choice, it is not likely to require more than 4 queues per port in a LAN environment. When each packet arrives at the switch, it is assigned to the appropriate queue based on its priority, which then forwards the packet from each queue. The switch through its queuing mechanism to determine the next queue to serve. There are 2 kinds of queuing methods.

● Strict Priority Queue (SPQ) This is the simplest way to queue a service that first serves a queue with the highest priority until it is empty, then serves the next highest priority queue, and so on. The advantage of this approach is that high-priority traffic is always handled before low-priority traffic. However, low-priority services may be completely blocked by high-priority

services.

● Weighted Round Robin (WRR) This method serves all business queues and assigns priorities to higher priority queues. In most cases, WRRs will handle high priority first, but when there are many high priority services, the lower priority traffic is not completely blocked.

7.1 QoS settings

Enter QoS Management - QoS Setting menu. In QoS Setting page, you can enable / disable QoS function, set QoS priority, enable / disable 802.1p QoS function and set priority, click <Configure> button to modify After setting, click <Save> button at the bottom of the page to save the configuration. As shown below:

The interface items are as follows:

Interface item	description
QoS Settings Select	Enable / Disable QoS function. Note: The following parameter settings can be set only after the QoS function is enabled.

QoS priority queue	selection QoS control data transmission priority, you can choose absolute priority and relative priority.
802.1p QoS Settings	Select Enable / Disable 802.1p QoS feature. TIP: The following parameter settings can be set only when the 802.1p QoS feature is enabled.
802.1p ID Range	Configure 802.1p QoS priority range. 802.1p defines eight priority levels, with the priority range of 0-7 and the highest priority level of seven. You can enter one or a group of priorities. If you set a priority, enter the corresponding priority at the 802.1p ID range. If you set a priority, you can use "," or "-" to separate it. "," Used to set a group of discontinuous priority, such as 1,3,5. "-" is used to set a group of consecutive priorities, such as 1-4.
Priority	Select the 802.1p QoS priority queue.

In the [QoS Settings] page, you can view the configuration information of 802.1p QoS. The interface items are as follows:

Interface item	description
The 802.1p identifier	shows the priority defined by 802.1p.
Priority	Displays the queue to which the current priority belongs.

7.2 DSCP QoS

TIP: This function item can be configured only after the QoS function is enabled

on the [QoS Settings] page.

Enter the [QoS Management] - [DSCP QoS] menu bar. On the DSCP QoS page, you can enable DSCP or disable this function, set DSCP ID range and DSCP priority, click <Configure> to modify settings and set DSCP Click the <Save> button at the bottom of the page to save the configuration.

The interface items are as follows:

Interface item	description
DSCP QoS Configuration	to enter the DSCP configuration page and select <Disable> to disable this function. Note: The following parameter settings can be set only if DSCP function is enabled.
DSCP ID Range	Enter the DSCP ID that needs to be configured. You can enter one or a group of IDs. If you set an ID, enter the corresponding ID number in the DSCP ID range. If you set a ID, you can use "," or "-" to separate it. "," Used to set a group of non-continuous identification, such as 1,3,5. "-" is used to set a group of consecutive identifiers, such as 1-6. Configurable when selecting DSCP.
DSCP Priority	Configure the DSCP priority queue, which can be configured when DSCP is selected.

In the [DSCP QoS] page, you can view the configuration of DSCP QoS. The interface items are as follows:

Interface item	description
DSCP ID	Shows the ID of the current DSCP.
Priority	Displays the priority queue to which the current DSCP ID belongs.

8 Network Management

8.1 Trunking

Trunking aggregates multiple physical Ethernet ports to form a logical aggregation group. The upper entity using the link aggregation service considers the multiple physical links in the same aggregation group as a logical link . Link aggregation can be achieved out of / load in the aggregation group between the various member ports to increase bandwidth. At the same time, each member port in the same aggregation group dynamically backs up each other, improving connection reliability.

According to the different aggregation methods, link aggregation can be divided into two modes:

● ⊠ Static aggregation mode

The static aggregation mode is manually configured by the user and does not allow the system to automatically add or delete ports in the aggregation group. The aggregation group must contain at least one port. When an aggregation

group has only one port, you can delete the aggregation group from the aggregation group only by deleting the aggregation group.

- ⊠ Dynamic aggregation mode

Dynamic aggregation mode is a system automatically create or delete the aggregation, dynamic aggregation group within the port to add and delete LACP protocol is done automatically. Only the same basic configuration, the same rate and duplex attributes, connected to the same device, and the opposite port also meet the above conditions, can be dynamically brought together. Even if only one port can create dynamic aggregation, this time for the single-port aggregation. Dynamic aggregation, the port LACP protocol is turned on.

In the same aggregation group, the member ports that can perform in / out load sharing must have the same rate, duplex, and basic configuration. The basic configuration includes:

● STP configurations are the same: including STP on / off, link attributes (such as point-to-point or non-point-to-point), STP priority, STP cost, STP packet format, loop protection and root protection on the port, Whether it is an edge port or not.

QoS configuration is consistent, including: traffic rate limiting, priority marking, 802.1p priority, traffic redirection, traffic statistics.

Enter【Network Management】-【Trunking】 menu bar. In Trunking page, you can enable / disable aggregation function, set aggregation parameters, click <Add> button to add settings, click <Modify> button to modify settings, click <Delete > Button to delete the setting. After setting, click the button on the

bottom of the page to save the configuration. As shown below:

The interface items are as follows:

Interface item	description
Trunk Configuration	Select to enable / disable port aggregation. Note: The following parameter settings can be set only when the port aggregation function is enabled.
Aggregation load balancing mode	Select load balancing mode, you can choose MAC source / destination address, MAC source address and MAC destination address.
Trunk Name	Set the name of an aggregation group, up to 6 trunk groups. Enter 4 characters for the name of the trunk.
Aggregation mode	Select the aggregation mode, you can choose manual aggregation, static LACP aggregation, dynamic LACP aggregation.
Operation key	Set the operation key, the operation key at both ends must be the same. The value ranges from 1 to 65535.
Port Range	Set the port number to be added to the aggregation group. Up to eight ports can be assigned to each trunk group. Each port can belong to only one trunk group.

In [Trunking] page, you can view the port aggregation configuration

information. As shown below:

☐	No	Trunk Name	Aggregation Pattern	Port Range	Aggregation Group State

Save   Refresh

The interface items are as follows:

Interface item	description
Number	Displays the serial number of the current aggregation group.
Trunk Name	Displays the name of the current aggregation group.
Aggregation mode	Indicates the aggregation mode of the current aggregation group.
Operation key	Displays the operation key of the current aggregation group.
Port Range	Displays the port number of the current aggregation group.

8.1.1 Port Aggregation Configuration Example

Configure the topology
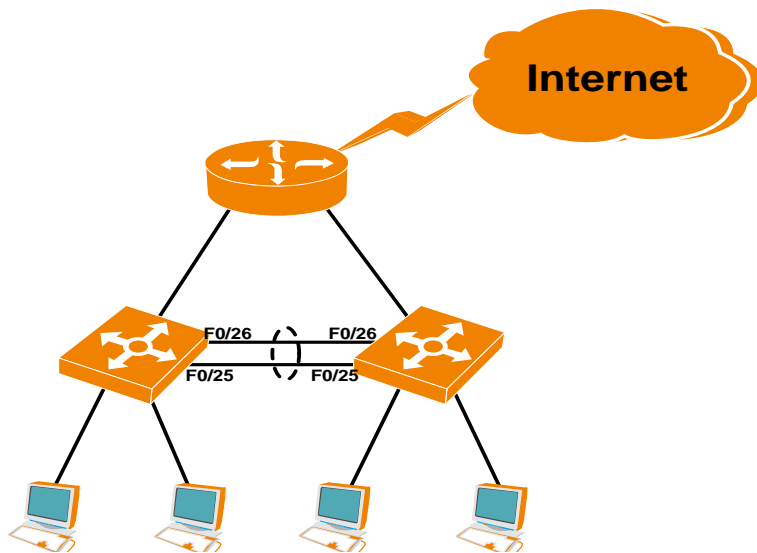
Configuration steps

Enter 【Network Management】 - 【Trunking】 menu bar. In the Trunking configuration page, enable the port aggregation function, set the name of the aggregation group, select the aggregation load mode as the source address, the

aggregation mode as "dynamic LACP aggregation", set the operation The key is 12345. Both ends of the operation key must be the same. Set the port range to 25-26. Click <Add> to add a setting and click <Save> to make the configuration take effect.

8.2 Port Mirroring

Port mirroring Ports a switch's data on one or more ports (VLANs) to one or more ports.

Enter 【Network Management】 - 【Port Mirroring】 menu bar. In the port mirroring page, you can enable / disable port mirroring function, set monitor port or mirror port, set monitor mode and collect data, click <Configure> Modify the settings, click the <Save> button at the bottom of the page to save the configuration after the settings are completed. As shown below:

<> System Management >> Port Mirror			
Port Mirror Setting			
Port Mirror	⦿ Enable ◯ Disable		
Monitor Port			
Mirror Port Range			
Collect Data	⦿ All Data ◯ Input Data ◯ Output Data [Add] (Warning: Must close when using Link Aggregation or Spanning Tree)		
No	**Monitor Port**	**Mirror Port**	**Collect Data**
1			Input Data
2			Output Data

[Save] [Refresh]

The interface items are as follows:

Interface item	description
Port Mirroring	Select to enable / disable port mirroring.

	Note: The following parameter settings can be set only if port mirroring is enabled.
Monitoring port Set	the monitoring port, which is about to copy or mirror the data stream of the mirror port to the traffic analyzer connected to the monitoring port. Tip: The monitoring port must be a unique value, that is, it can not be a group of ports.
Mirroring Port Range	Set the range of the mirrored port. The port is a controlled port, and the data destined for the port will be copied and sent to the monitoring port. You can enter one or a group of ports. If you set a port, enter the corresponding port number in the port range; if you set a group of ports, you can use "," or "-" separated. "," Used to set a group of non-contiguous ports, such as 1,3,5. "-" is used to set a group of contiguous ports, such as 1-8.
Collect data	Select the port to monitor the data collection hairstyle. Can choose all the data, import data and export data in 3 ways. All data: Monitor the data received and sent by the mirrored port. Import Data: Monitor the data received by the mirror port. Export Data: Monitor the data sent by the mirror port.

In the [Port Mirroring] page, you can find the port mirroring configuration

information. As shown below:

The interface items are as follows:

Interface item	description
Monitor Port	Displays the current monitor port number.
Mirror Port	Displays the current mirror port number.
Acquisition Data	Shows the current method of acquiring data.

8.2.1 Port Mirroring Configuration Example

Configure the requirements

All users to configure data traffic will be monitored by the administrator.

Configure the topology

Configuration steps

Go to [Network Management] - [Port Mirroring] menu bar. In the port mirroring configuration page, enable port mirroring first, set monitoring port to "26", set mirror port range to "1-10" and choose to collect data Method is "All data", click <Config> to modify the configuration, and then click <Save> to save the configuration so that the configuration takes effect. As shown below:

8.3 RSTP

RSTP is the abbreviation of Rapid Spanning Tree Protocol, which provides the same function as STP, and is completely backward compatible with 802.1D STP. Relative to the STP, the most important feature is "fast", if a LAN within the bridge are supported RSTP protocol, and the administrator configured properly, once the network topology changes, and to regenerate the topology tree only need not more than 1 second time (traditional STP takes about 50 seconds).

Go to Network Management-- RSTP bar, in the RSTP spanning tree page, you can enable / disable the RSTP spanning tree function, set the RSTP parameters, etc., and click the <Modify> button to modify the settings. After setting, click the bottom of the page. Save the Save button to save the configuration.

The interface item is described as follows:

Interface Item	Description
RSTP Setup	Select to enable / disable the RSTP function. Note: The following parameter settings can only be set if the RSTP function is enabled.
Device Priority	Set the bridge priority of a device. When this priority is used to participate in spanning tree election, it determines which device becomes the root of the entire network and serves as the forwarding of the entire network. The priority must be a multiple of 4096, and the default is 32768 The smaller the value, the higher the priority. Tip: It is recommended to set the priority of the core switch to a smaller value so that the switch becomes the root bridge at election time, which is good for the stability of the entire network.
Period for Sending a Message	Configure the interval for sending BPDUs periodically. The default is 2 seconds.
Maximum Lifetime of BPDUs	Configuration BPDUs are stored for the longest period of time. The default is 20 seconds.

Delay in port status migration	Configure the delay in the change of port status. The default is 15 seconds.
This bridge update informatio n	shows the current bridge information.
Path Cost	The path cost of a port is configured. The default value of the path cost of a port is related to the port rate. Generally, the higher the port rate is, the lower the cost of the port path is. The path cost ranges from 0 to 200000000,0, which is automatically detected and the path cost of 1 to 200000000.
Port Priority	Port path cost, which must be a multiple of 16.
Point-to-po int port	configuration Port Point to Point mode, when the port is only connected with a bridge, then point to point port. "Yes" means a point-to-point port, "no" means that it is not a point-to-point port, and "auto-detect" means to automatically detect if it belongs to a point-to-point port. The default is automatic detection.
Edge Port	Configuration Port Edge mode, called the edge port when the port is not connected to any bridge. After the port is set to be an edge

| | port and the port receives BPDUs again, the port automatically changes to a non-edge port. |

In RSTP Spanning Tree page, you can view the RSTP configuration information.

The interface item is described as follows:

Interface item	Description
Port No.	Display the serial number of each port of the switch.
Port Identify	Display the identity of the current port.
Path Cost	Display the path cost of the current port
Port priority	Display the priority of the current port
Point to Point port	Display whether the current port is a point-to-point port.
Edge port	Display whether the current port is an edge port.

9 IGMP Snooping

IGMP snooping is an abbreviation of Internet Group Management Protocol snooping, which is a multicast constraint mechanism running on Layer 2 devices for managing and controlling multicast groups. The switch forms the correspondence between the group member and the switch interface by listening to the host to the IGMP member of the router. The switch will send the multicast packet to the interface with the group member according to the corresponding relationship.

Enter the [IGMP Snooping] menu bar. In the IGMP snooping page, you can enable / disable IGMP snooping, set the IGMP Snooping multicast table, and click Add to add the settings. Click the Modify button. Set, click the <Delete> button to delete the settings, click the <Save> button at the bottom of the page to save the configuration.

The interface item is described as follows:

Interface Item	Description
IGMP snooping function	Select Enable / Disable IGMP Snooping function. Note: The following parameter settings can be set only after IGMP Snooping is enabled.
IGMP query	Enable / disable IGMP query function.
IGMP query interval	How long to query the existence of multicast members, 60-1000 seconds.
Group members survive time	The longest time of multicast member device already exists to survive from the presence to receive no response.
Static multicast MAC address	Set the MAC address of static multicast
VLAN ID (optional)	The VLAN ID of the static multicast MAC address

Port Range	The port number of the static multicast MAC address

On the [IGMP Snooping] page, you can view the configuration information of IGMP snooping.

The interface item is described as follows:

Interface Item	Description
No.	Display the number of the current static multicast address.
Multicast address	Display the current static multicast MAC address.
VLAN ID	Display the VLAN ID of the current static multicast address.
Port ID	Display the port number of the current static multicast address.

10 Chapter 11 Network Safety

10.1 Port Security Authentication

IEEE 802 LAN / WAN Committee in order to solve the wireless LAN network security issues, proposed 802.1X protocol. Later, 802.1X protocol as a LAN port of a common access control mechanism in the Ethernet is widely used, mainly to solve the Ethernet authentication and security issues.

The 802.1X protocol is a port-based network access control protocol. "Port-based network access control" refers to the access and control of the access user equipment at the port of the LAN access device. If the user device connected to the port can pass the authentication, you can access the resources in the LAN; if can not pass the authentication, you can not access the resources in the LAN.

To enter the [Network Security] - [Port Security Authentication] menu bar, enable or disable the port security authentication function on the port security authentication page, set the port security authentication parameters, and click the <Configure> button to modify the settings. Save the configuration under the <Save> button at the bottom of the page.
The interface item is described as follows:

Interface Item	Description
Global Settings	Select Enable / Disable Port Security Authentication. Note: The following parameter settings can be set only after the port security authentication function is enabled.
Regularly updated certification	Set the cycle time for updating the authentication, in the range of 60 to 40000000 seconds.
Authentication server settings	Set the IP address, port number, and shared key for the authentication server. The shared key must be consistent with the shared key of the

	authentication server.
Billing server settings (optional)	Set the IP address, port number, and shared key for the accounting server. The shared key must be consistent with the shared key of the billing server.
Control mode	Set up 802.1X on the port for access control mode, the optional mode and its meaning as follows: Automatic identification mode: indicates that the port is in the unauthorized state. If the authentication process passes, the port switches to the authorized state. This is also the most common case. Mandatory Authorization Mode: Indicates that the port is always in an authorized state. Forced Unauthorized mode: Indicates that the port is always in an unauthorized state.
Port control mode	Set the 802.1X access control mode on the port. MAC Based: Indicates that MAC is based on MAC.
Maximum number of users	Set the maximum number of users to authenticate, ranging from 1 to 1024.

Periodic re-certificatio n	Set whether to enable the periodic re-authentication timer on the port.
Port Range	To set the port to enable 802.1X authentication, enter one or a group of ports, or select from the following check boxes. If you set a port, enter the corresponding port number in the port range;If you set a group of ports, you can use "," or "-" separated. "," is used to set a set of discrete ports, such as 1,3,5. "-" is used to set up a set of consecutive ports, such as 1-8.

On the [Port Security Authentication] page, you can view the configuration information of port security authentication.

The interface item is described as follows:

Interface Item	Description
Port	Corresponds to the serial number of each port of the switch.
Port Sign	Display the identity of the current port.
Control Mode	Display the control mode of current ports.
Control Type	Display the control type of the current port.
Maximum	Display the maximum number of

number of users	authenticated users for the current port.

10.2 Static Address Lock

The static MAC address is different from the normal dynamic MAC address obtained by learning. Once the static address is added, the address will remain valid until it is deleted, regardless of the maximum aging time. The static address table records the static address of the port. A MAC address in the static address table corresponds to a port. If set, all data sent to this address will be forwarded to the port only. Also become MAC address binding.

Static MAC address table is designed to limit the movement of the computer, all the computer's MAC and port binding, this computer moved to other ports can not communicate, and other computers to move to this interface can still communicate. And the corresponding "port security", port security is designed to protect the port security, the port can only be specified in the MAC and its connection when the data is forwarded, assuming that the port is set up and a MAC binding, then the PC received Other ports can be communicated, but other PC received this port can not communicate. This function is the "802.1x authentication" described earlier.

Enter the [Network Security] - [Static Address Lock] menu bar, in the static address latch page, you can enable / disable static address latch, port learning function port range, enable / disable learning ability and set the MAC to be locked Address, VLAN ID and port number, click <Configure> button to add the

settings, click <Undo> button to delete the settings, click the <Save> button at the bottom of the page to save the configuration.

The interface item is described as follows:

Interface Item	Description
Static Address Lock	Select to enable / disable the static address lock function. 📝 Note: The following parameter settings can be set only after the static address lock function is enabled.
Port Range	Need to set the port range.
Learning ability	MAC address learning ability, you can choose to disable or enable.
Function enabled port	Display the port number where the current function is enabled.
Function disabled port	Display the port number where the current function is off.
MAC Address	Set the MAC address to be locked.
VLAN ID	Set the VLAN to which the MAC address is to be locked
Port	Set the port number to be locked.

In the static lock address page, you can view the locked MAC address of the relevant information, the interface item is described as follows:

Interface Item	Description
No.	Display the serial number of the current static address lock.
MAC	Display the currently locked MAC address.
VLAN ID	Display the currently locked VLAN ID
Port	Display the currently locked port

11   Chapter 12 IP Route

11.1   IP Route

In addition to the layer 3 switches can be the same as the layer 2 switches through a MAC address in a LAN to pass data packets, but also can be the same as the router through the IP address in multiple LAN packets. Both can achieve network routing function, but also according to different network conditions to achieve optimal network performance.

VLANs are usually associated with IP networks. All working terminals in a specific IP subnet belong to the same VLAN. Different VLANs must communicate through a router or a router with a router function.

In general, routing information that directs IP forwarding can be obtained in three different ways:

Static routing - The only path that is manually configured by the system administrator to the destination network, which must also be manually modified by the system administrator when the network structure changes. But the rational use of static routing can improve the performance of the network, for important applications to save bandwidth.

Default routing - A special route manually configured by the system administrator. You can forward all packets that do not match the route to the specified default gateway.

Dynamic routing - from the other routing router from the other routing to reach the target network to send the path, according to the changes in network structure to dynamically update the routing information.

11.2Routing table configuration

Configure the routing function on the Layer 3 switch. You must enable the routing function. Otherwise, the Layer 3 switch function is equivalent to Layer 2 switches.

Enter the [Routing Interface] - [Routing Configuration] menu bar. In the port routing configuration page, you can select the dynamic RTP route to enable the Layer 3 switch function, set the target network, subnet mask, next hop Address, Network Interface Click the <Configure> button to modify the settings. After setting, click the <Save & Enable Layer 3 Forward> button at the bottom of the page to save the configuration. As shown below:

The interface item is described as follows:

Interface item	Description

Dynamic RIP routing	Select the routing function to enter the routing configuration page, select <open> open routing function. 🖊️ Note: The following parameter settings can be set only after the dynamic RIP routing function is enabled.
Target network	The IP address of the destination address. (Default route using 0.0.0.0)
Subnet mask	Used to indicate which bits of an IP address identify the subnet where the host is located and which bits identify the host's bit mask (the default route uses 0.0.0.0)
Next hop address	The router looks at the destination address of the packet and forwards it to the address of the next port according to its own routing table.
Network port	Network equipment of the various ports. Currently used are Ethernet ports.

To enter the [System Management] - [Routing Interface] menu bar, in the routing interface page, you can choose to set the IP address and set the IP address, subnet mask, default gateway, DNS, click the bottom of the page, Save> button to save the configuration.

The interface item is described as follows:

Interface item	Description
MAC Address	Media access control, or physical address, hardware address, used to define the location of network equipment.
Network port	Network equipment of the various ports. Currently used are Ethernet ports.
IP Address	IP address is a unified address format provided by the IP protocol, assigns a logical address to each network and each host on the Internet.

12 System Management

12.1 IP Address

The IP address is assigned to a 32-bit address of the device connected to the Internet. The IP address consists of two fields: the network number field (net-id) and the host number field (host-id). The IP address is assigned by the Network Information Center (NIC) of the US Defense Data Network. In order to facilitate the management of IP addresses, IP addresses are divided into five categories. As follows:

Network Type	Address Range	The range of IP networks available to users
A	0.0.0.0 ~ 127.255.255.255	1.0.0.0 ~ 126.0.0.0
B	128.0.0.0 ~ 191.255.255.255	128.0.0.0 ~ 191.254.0.0
C	192.0.0.0 ~ 223.255.255.255	192.0.0.0 ~ 223.255.254.0
D	224.0.0.0 ~ 239.255.255.255	No
E	240.0.0.0 ~ 247.255.255.255	No

Class A, B, and Class C addresses are unicast addresses; Class D addresses are multicast addresses; Class E addresses are reserved addresses for future special purpose. At present, a large number of IP addresses used in the A, B, C three types of addresses.

IP addresses are recorded in dotted decimal notation. Each IP address is represented as a decimal number separated by a decimal point, with each integer corresponding to one byte, such as 10.110.50.101.

Enter the [System Management] - [IP Address] menu bar, in the IP address page,

you can choose to set the IP address and set the IP address, subnet mask, default gateway, DNS, click the bottom of the page, Save> button to save the configuration.

The interface item is described as follows:

Interface Item	Description
Device Address	Set the IP address of the device, you can get through dynamic DHCP or manually set the IP address. Tip: The DHCP configuration is not recommended and this setting may cause the switch to fail to obtain administrative address.
IP Address	Set the IP address of the device, which is available when a static IP address is selected.
Subnet Mask	Set the subnet mask of the IP address of the device, which is available when a static IP address is selected.。
Default Gateway	Sets the default gateway address for the device, which is available when a static IP address is selected.。
DNS Address	Set the DNS address of the device, which is available when a static IP address is selected.

In the [IP address] page, you can view the IP address of the current device. The interface item is described as follows:

Interface Item	Description
No.	Display the serial number of the corresponding device address.
IP Address	Display the IP address of the device.
Subnet Mask	Display the subnet mask of the IP address of the device.
Default Gateway	Display the default gateway address for the device.
DNS Address	Display the DNS address of the device.

12.2　Username and password

Go to 【System Management】 - 【User Password】 menu bar, in the user password page, you can set the user's permissions, change the user password, set the finished click <Save> button to save the configuration. As shown below:

The interface item is described as follows:

Interface item	Description
User index	Set the user ID of the login user.

Access level	Set the user's access level, select the administrator or customer. Administrator: You can do all the operations on the switch. Customer: Only the switch can be configured easily.
Username	Set the login user's name.
Type in password	Set the password for the login user.
Confirm password	Re-enter the user's password for the login user, and must remain the same as the last password entered.

12.3 SNMP Setup

SNMP is a simple network management protocol (Simple Network Management Protocol SNMP) for short, is to solve the following network problems arising from the agreement:

Network size gradually increased, the number of network equipment to increase the number of stages, the network administrator is difficult to timely monitoring the status of all equipment, find and repair the fault.

Network devices may come from different vendors, and if each vendor provides a separate set of management interfaces (such as the command line), network management will become increasingly complex.

SNMP mainly SNMP V1, SNMP V2c several of the most commonly used version.

SNMP V1

SNMP V1 is the original version of the SNMP protocol, providing minimal network management capabilities. SNMP V1 SMI and MIB are relatively simple, and there are more security flaws.

SNMPv1 uses community name authentication. The role of the community name is similar to the password used to restrict access to the Agent by the NMS. If the community name carried by the SNMP packet is not recognized by the NMS / Agent, the packet is discarded.

SNMP V2c

SNMP V2c also uses community name authentication. SNMP V1 is also compatible with SNMP V1 functionality: it provides more types of operations (GetBulk operations, etc.); support for more data types (Counter32, etc.); provides richer error code for more granularity The area is wrong.

Enter the [System Management] - [SNMP Configuration] menu bar. In the SNMP settings page, you can enable / disable the SNMP function. You can set the SNMP gateway, version, community name and so on. Click the <Save> button to complete the configuration. As shown below:

The interface item is described as follows:

Interface Item	Description
SNMP Setup	Select Enable/Disable SNMP function. Note: The following parameter settings can be set only after the SNMP function is enabled.
SNMP Gateway	SNMP Trap is part of SNMP. When a specific event is detected, it may be a performance problem. Even if the network device interface is off, the proxy will send an alarm event to the management station. Through the alarm event, the management station can handle the alarm through the defined method. The SNMP gateway address is the IP address of the management host.
SNMP Version	Select the SNMP version number to use.
Read only community name	Set the read-only community name, used to limit the NMS access to the Agent, the device information can only query.
Read and write community name	Set the read and write community name, used to limit the NMS access to the Agent, not only can query the device, but also on the device configuration.

12.4 Log Output

Enter the [System Management] - [Log Output] menu bar, in the log output page, you can enable / disable the log function, according to the different log type query log, you can click the <download all information> button to log export or click <Delete all information> button to delete the log, click <Previous> or <Next> button, you can turn up or down the log information.

The interface item is described as follows:

Interface Item	Description
Log Record	Select Enable / Disable Logging. Note: The following parameter settings can be set only after the logging function is enabled.
Show Type	View log according to different log types, select all information, operation information, network information and alarm information.
Information processing	Can select log processing, export logs, or delete logs.
Numbering	Display the serial number of the current log.
Type	Display the current log type.
Time	Display the time at which the current log was generated.
Event	Display the specific information of the log.

12.5 File Management

Go to the [System Management] - [File Management] menu bar. In the file management page, you can import / export the configuration file, upgrade the software, restore the factory settings and reboot the device. As shown below:

The interface item is described as follows:

Interface Item	Description
Setup Backup	Save the configuration to the computer as a file, and click the <Download> button to export the configuration file of the device.
Restore the file	Restore the configuration file in the computer to the device, select the exported configuration file via the <Browse> button, and click the <Upload> button to complete the import of the configuration file.

Update file	To upgrade your device, you can download the latest upgrade file (www.feixun.com.cn) by logging into our website. Use the <Update> button to select the latest upgrade file and click the <Upgrade> button to complete the upgrade.
Restore to factory default	To restore the factory settings of the device, click the <Start> button to complete the setup.
System restart	Restart the switch and click the <Start> button to complete the setup.

13 Console Interface Settings

13.1 Login Equipment Console Interface

This product can be configured through the console line to the command line configuration interface of the device and configure the device accordingly.

Specific configuration steps are as follows (Windows XP operating system as an example)
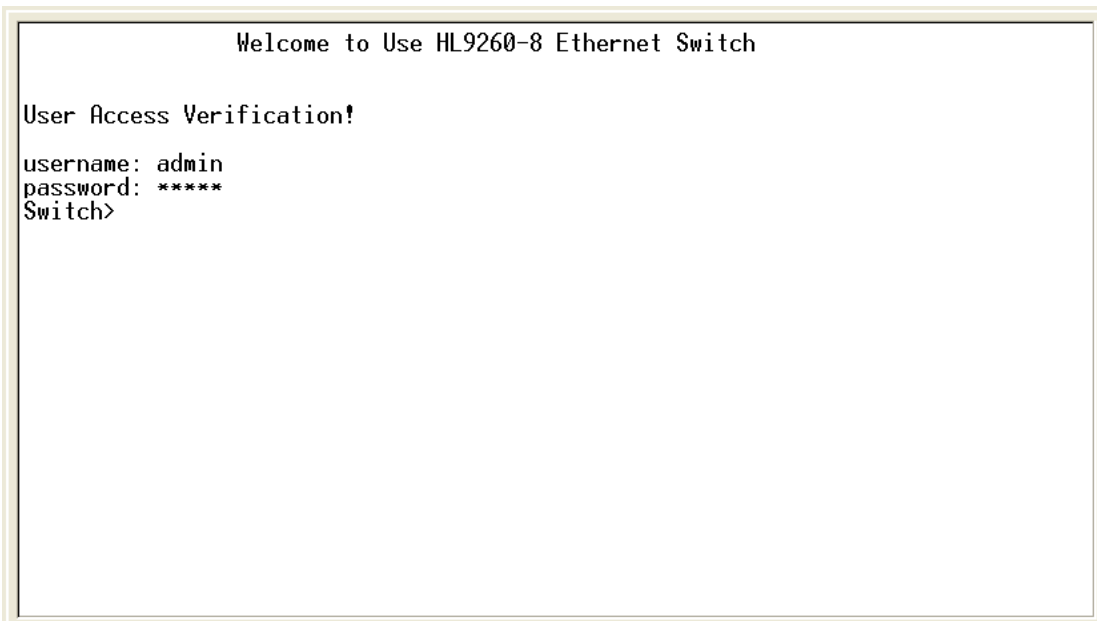
1. Open in turn【Start】 - 【Program】 - 【Accessories】 - 【Communication】 - 【Hyper Terminal】 (You can also start 【Start】 - 【Run】 - 【type "hypertrm.exe"】) ;

1) Enter a name in the pop-up new connection and select an icon for the connection. After the configuration is complete, click <OK> to make the configuration take effect;

2. Select the COM port to use;

1) Set the number of bits per second to 115200; Data bit is 8; Parity is none; Stop bit is 1; Data flow control is none, click <OK> to make it take effect;

2) Log in to the console of the device successfully.

```
                    Welcome to Use HL9260-8 Ethernet Switch

User Access Verification!

username: admin
password: *****
Switch>
```

3) Administrator account login configuration

User name: admin, password: admin.

Example: You can add a management IP address of: 192.168.10.2, subnet mask: 255.255.255.0,

The configuration command is as follows (default command user to restore factory value):

```
Switch>
Switch> de
Switch> default
Are you sure to reset factory default(y/n)?
Commit succeed, if you want to enable the configuration, reboot first!
Switch> 1970-01-01 00:02:10 [CONFIG-5-DELETE]: Restore factory default, Configur
ed from console by console


Switch> ip
Switch> ip a
Switch> ip address 192.168.1.4/24
Switch> 1970-01-01 00:02:43 [CONFIG-5-INTVLAN]: Set the IP address of lan to 192
.168.1.4/24,and the netmask to 192.168.1.255, Configured from console by console


Switch>
```

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