EPON Optical access office equipment

ETS104 series OLTWeb management operation manual

Version: V1.1

Catalogue

1. Enter Web Management Interface

1.1 Connect the device

Connect the in-band management port (GE port) or out-of-band management port (Console port) of the OLT device to the IP network, or directly connect to the PC. As shown below.

1.2 Web Management OLT

OLT equipment supports in-band management port (network cable GE port or optical fiber PON port connected to service port) and out-of-band management port (network cable connection panel MGMT port). To log in to the OLT webpage management interface, you need to change the IP of the PC to 192.168.1.xxx even if the PC and the OLT device are on the same network segment.

OLT device default in-band (out-of-band) management IP：192.168.1.100

Note: The corresponding management VLAN must be configured for in-band management, otherwise it may not be connected; the management VLAN is not required for out-of-band management, but it must be a packet without a VLAN tag, otherwise it may not be connected.

1.3 User login

Login steps:

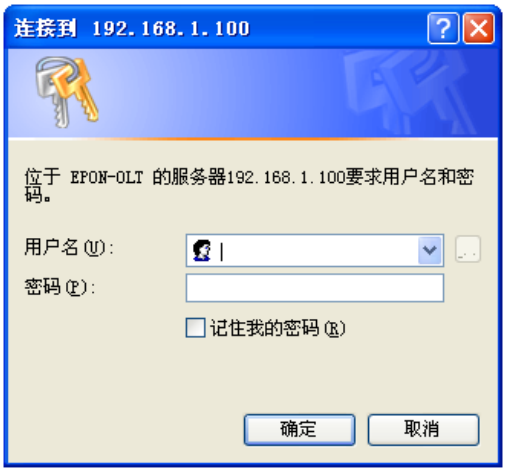
1. Comply with "1.1 Equipment Connection";
2. PC and OLT are on the same network segment;
3. Open a web browser and type the device IP in the address bar (default 192.168.1.100);

Enter the username and password. By default, the username and password are both "admin".

The OLT system provides the following two login users by default:

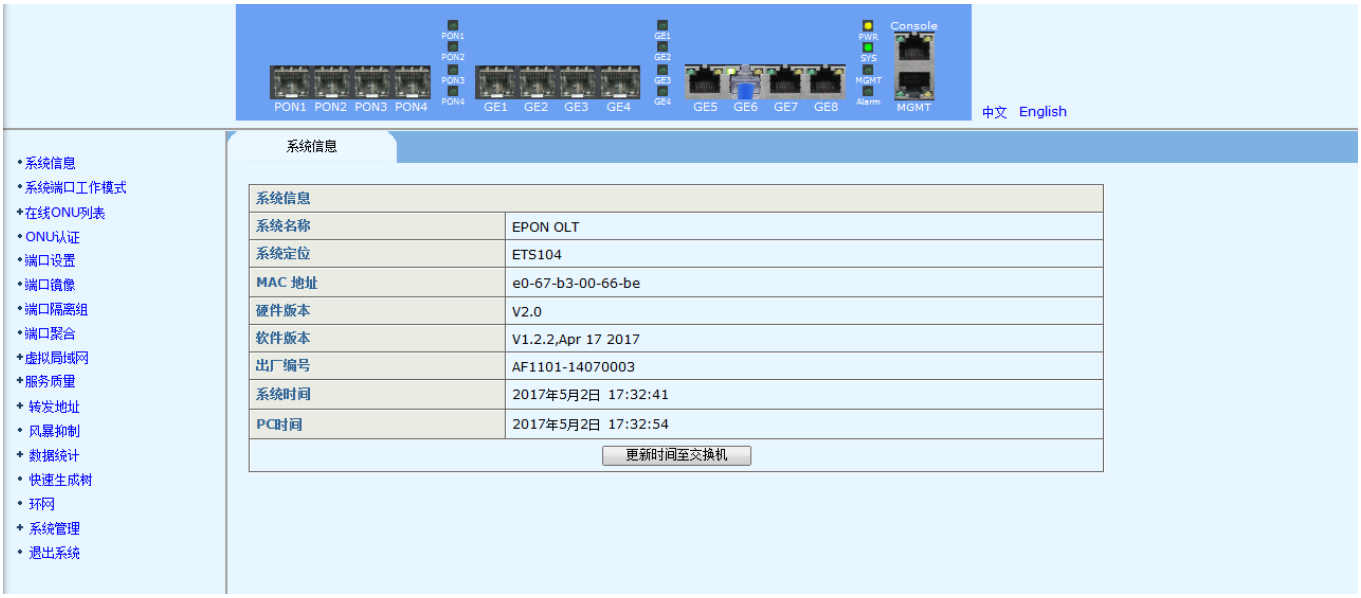
User Name	Password	Explanation
guest	guest	Visitors can check the device status, but they cannot manage the device.
admin	admin	Managers can view device status and manage devices.

Enter the management IP in the browser address bar, as shown in the figure below:



1.4 Device Information

The OLT port connection status is displayed at the top of the web page. The default front page displays system information. As shown below:



2. OLT port working mode configuration

2.1 Introduction to OLT Port Working Mode

ETS104 and ETS108 support the following port working modes:

Normal: The PON ports are isolated from each other, and the uplink ports are normally switched. The system defaults to this working mode.

Switching: All ports are switched normally.

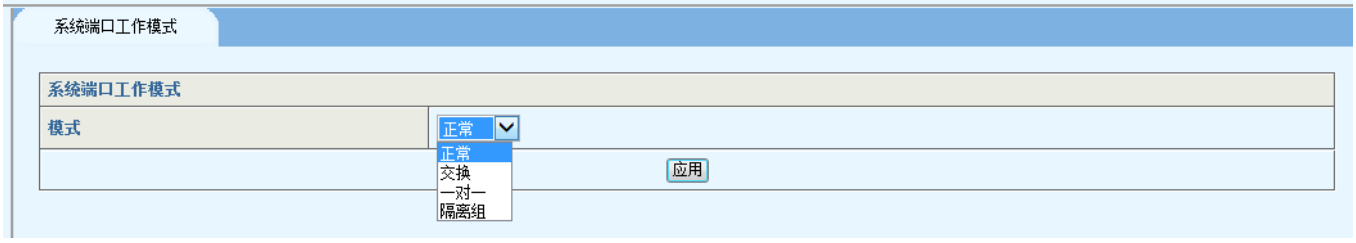
One to one: Each PON port corresponds to each GE port, the PON ports are isolated from each other, and the GE ports corresponding to the PON ports are also isolated from each other. The four electrical ports of GE9-GE12 of ETS108 can

be normal to any PON port and GE port. exchange.

Isolation group: This mode is used to enable the port isolation group function. If no port isolation group is configured, all ports exchange normally.

2.2 OLT port working mode web management

Click the system port working mode to enter management, as shown in the figure below:



3. OLT remote management ONU

3.1 Introduction to OLT remote management ONU

OLT remote management ONU mainly manages ONU through 802.3ah protocol and China Telecom CTC-2.0 standard, CTC-2.1 standard, CTC-3.0 standard. If the ONU does not support China Telecom's CTC-2.0 standard or CTC-2.1 standard or CTC-3.0 standard, then the OLT can only perform limited management of ONU functions through the 802.3ah protocol.

3.2 Enter ONU mode

3.2.1 Brief description of ONU mode

All ONU configurations are performed in the ONU mode. To enter the ONU mode, the OLT mode in which the ONU is located must be performed first, and the current ONU must be online, otherwise an error is reported.

3.2.2 ONU equipment connection

The OLT can be connected to the ONU through an optical splitter (also called an optical splitter), so as to manage multiple ONUs (each PON port can manage 64 ONUs).

Connection method: the input end of the optical splitter is connected to the optical module and then connected to the PON port of the OLT, and the output end is connected to the ONU.

3.3 Enter ONU mode

Click **the online ONU list** to enter the ONU management page, as shown in the figure below:

3.4 Configure ONU uplink and downlink SLA bandwidth

3.4.1 Brief description of uplink and downlink SLA bandwidth

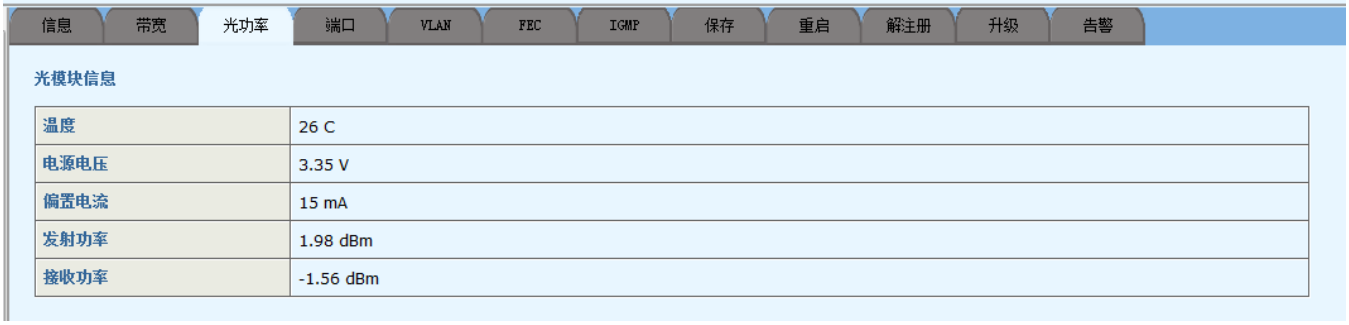
The OLT can allocate a fixed bandwidth to the LLID of each ONU by configuring the upstream and downstream SLAs of the ONU. Generally, an ONU has only one LLID, but some ONUs can apply for multiple LLIDs and can support up to 8 LLIDs. ONUs with multiple LLIDs are used to run different service flows. For example, ONUs in the TK scheme can apply for multiple LLIDs.

3.4.2 Uplink and downstream SLA bandwidth configuration examples

Configure the upstream SLA of ONU-1 on the PON1 port to ensure a guaranteed bandwidth of 100M, a maximum allowable bandwidth of 1G, and a weight of 1. The configuration example is as follows:

3.5 ONU optical power query

The ONU optical power is shown in the following figure:



3.6 Configure FEC

The FEC configuration is shown in the following figure:

3.7 ONU deregistration

The ONU deregister configuration is shown in the following figure:

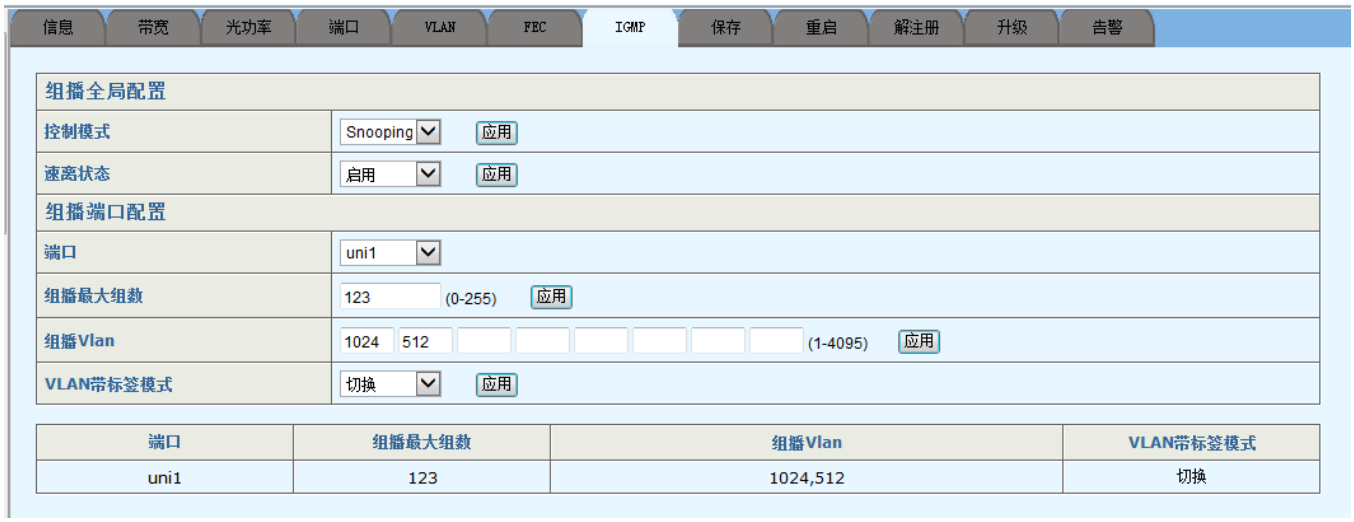
3.8 Multicast configuration

3.8.1 Brief description of ONU's multicast working mode

The OLT's multicast configuration for the ONU is configured in accordance with the CTC standard. For a description of the ONU multicast function, see the chapter on multicast functions in the China Telecom CTC Standard.

3.8.2 ONU Multicast Configuration Example

Configure the control mode to Snooping, enable the fast leave state, the maximum number of multicast groups is 123, the multicast VLAN is 1024 and 512, and the VLAN tagged mode is switched; the configuration effect is shown in the following figure:



3.9 UNI port

3.9.1 View UNI ports

Click on the port function to view the UNI port configured with the current ONU, as shown below:

3.9.2 Configure UNI ingress and egress rates

With upstream bandwidth enabled, the output rate needs to be configured, as shown in the following figure:

类型	内容			
上行带宽	上行带宽	使能		
	保证比特率	1000000	(0-1048576kbit/s)	
	承诺突发	0	(0-1024byte)	
	超额突发	0	(0-1024byte)	应用
下行带宽	下行带宽	不使能		
	保证比特率		(0-1048576kbps)	
	峰值比特率		(0-1048576kbps)	应用

3.10 Configure UNI VLAN mode

3.10.1 Brief description of ONU's VLAN working mode

The VLAN configuration of the ONU by the OLT is configured in accordance with the CTC standard. For descriptions of various modes, see the chapter on VLAN configuration in the China Telecom CTC Standard. The system supports the configuration of port transparent transmission mode, tag mode, aggregation mode, conversion mode and trunk mode.

3.10.2 Configuration of UNI VLAN mode

Configure ONU-1's UNI-1 as the label mode, where PVID is 100, TPID is 0x8100 (Note: Entering 0x8100 and 8100 are the same), and PRIO is 0, as shown in the figure below:

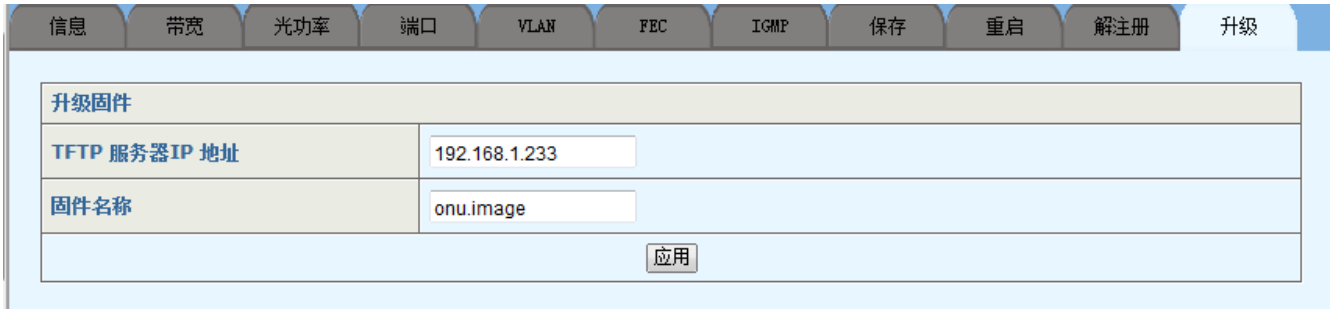
VLAN配置		
ONU端口	uni1	
Vlan模式	标签	
PVID	100	(1-4095)
TPID	0x8100	(0-0xFFFF)
PRIO	0	(0-7)
	应用	

3.11 Restart ONU

As shown below:

3.12 ONU firmware upgrade

You must open the tftp server and specify the firmware name. As shown below:



3.13 ONU Certification

3.13.1 ONU authentication mode

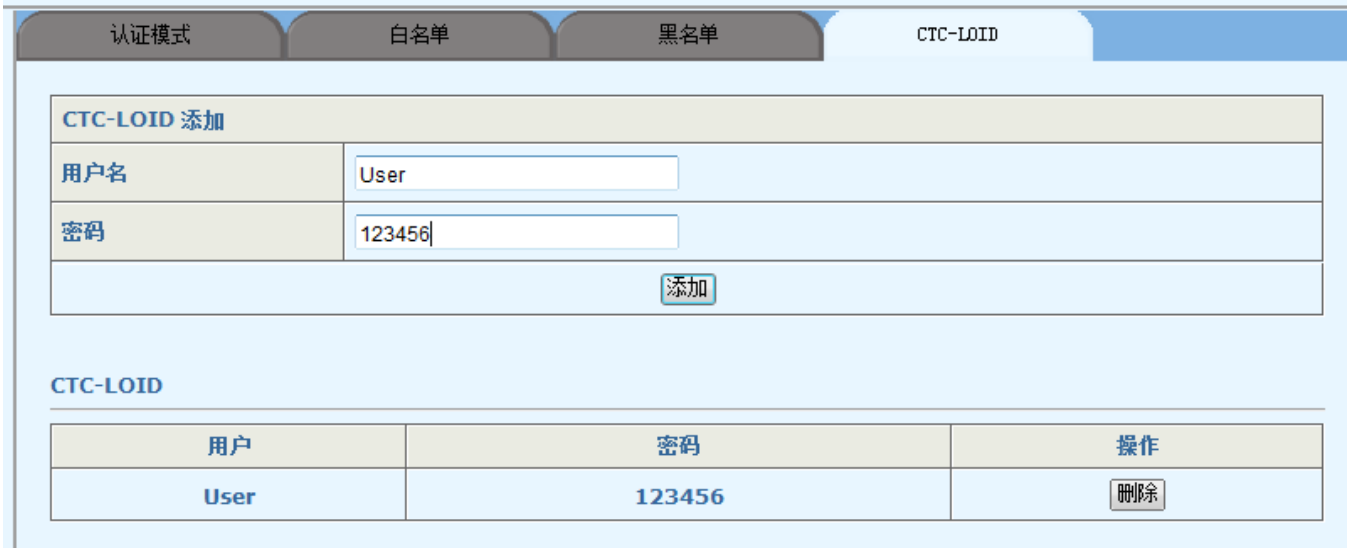
ONU authentication modes are: Forbidden, CTC-MAC, CTC-LOID, CTC-Mixed, Whitelist, Blacklist, as shown in the following figure:

3.13.2 Add white / blacklist

The authentication mode takes effect when the white / black list mode is enabled, and the adding method is shown in the following figure: (Note: MAC address is compatible with [xx-xx-xx-xx-xx-xx], [xx: xx: xx: xx: xx: xx], [xxxxxxxxxxxxxx] three input methods)

3.13.3 Add LOID

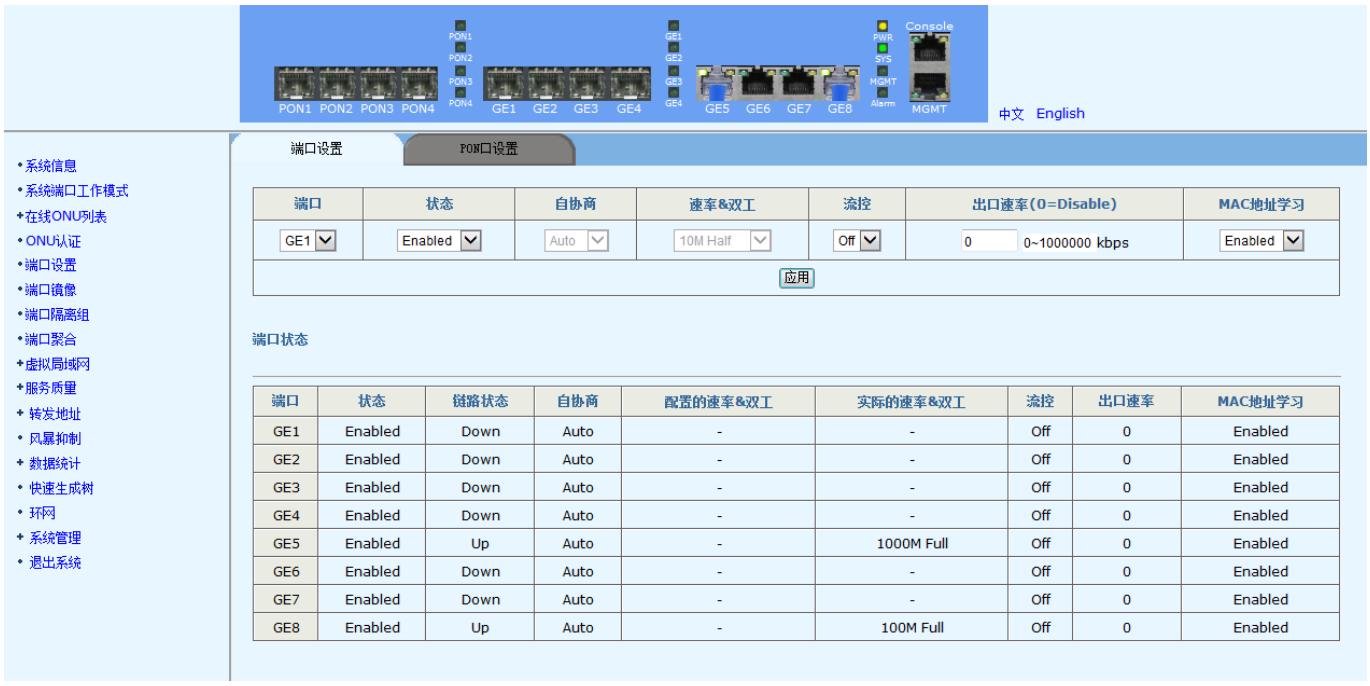
The authentication mode takes effect when the CTC-LOID mode is enabled, and the adding method is shown in the following figure: (Note: The user name supports 24 bytes, and the password supports 12 byte



4. OLT port settings

4.1 OLT uplink port configuration

Click **the port setting** to enter the management. The OLT uplink port (GE port) can be configured with the following items: port enable, auto-negotiation, rate and duplex, flow control, egress rate, and MAC learning. The configuration interface is shown in the following figure:



4.2 OLTPON Set up

PON port can be configured: port enable, P2P function, the configuration interface is as follows:

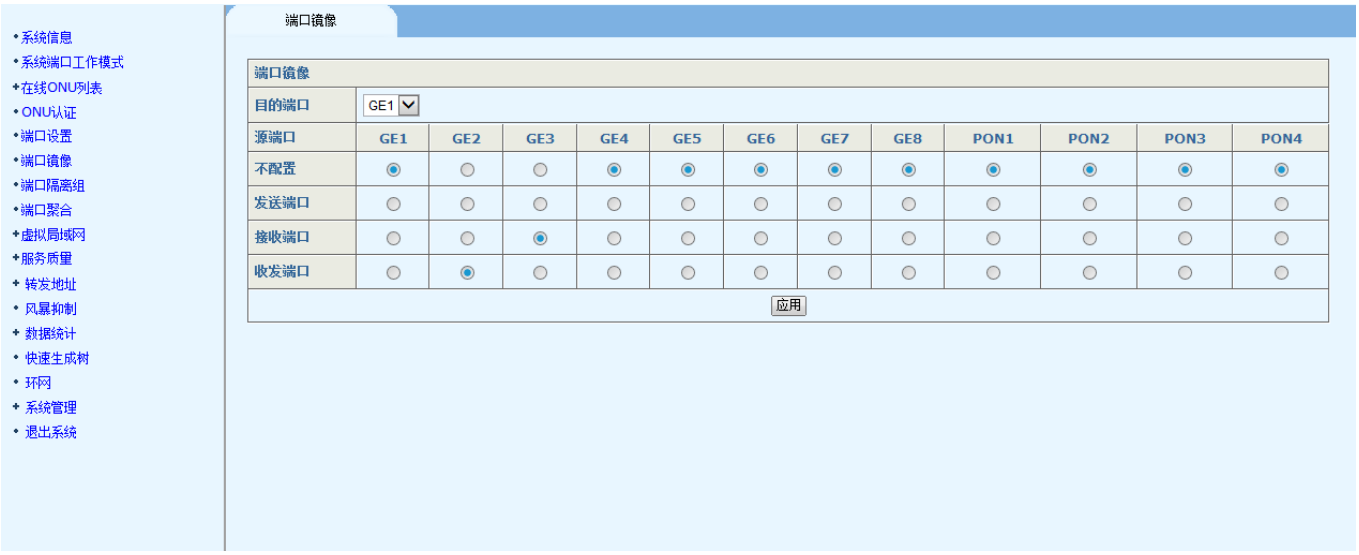
5. OLT port mirroring configuration

5.1 Introduction to OLT port mirroring

Port mirroring is not enabled by default in the system. For port mirroring to take effect, you must specify a mirroring destination port and configure a mirroring source. The mirrored destination port of the OLT device can only be specified as the uplink port. If the mirroring destination port and mirroring source are configured, all data packets passing through the mirroring source are copied and forwarded to the mirroring destination port to achieve the purpose of monitoring.

5.2 OLT port mirroring configuration example

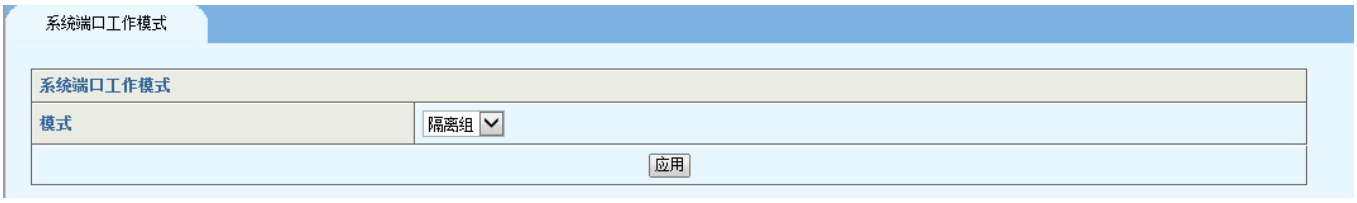
Click port mirroring to enter management, configure GE1 port as the mirroring destination port, GE2 as the source port, monitor its entrance and exit, and GE3 as the source port, monitor its entrance. The configuration interface is shown in the following figure:



6. OLT port isolation group configuration

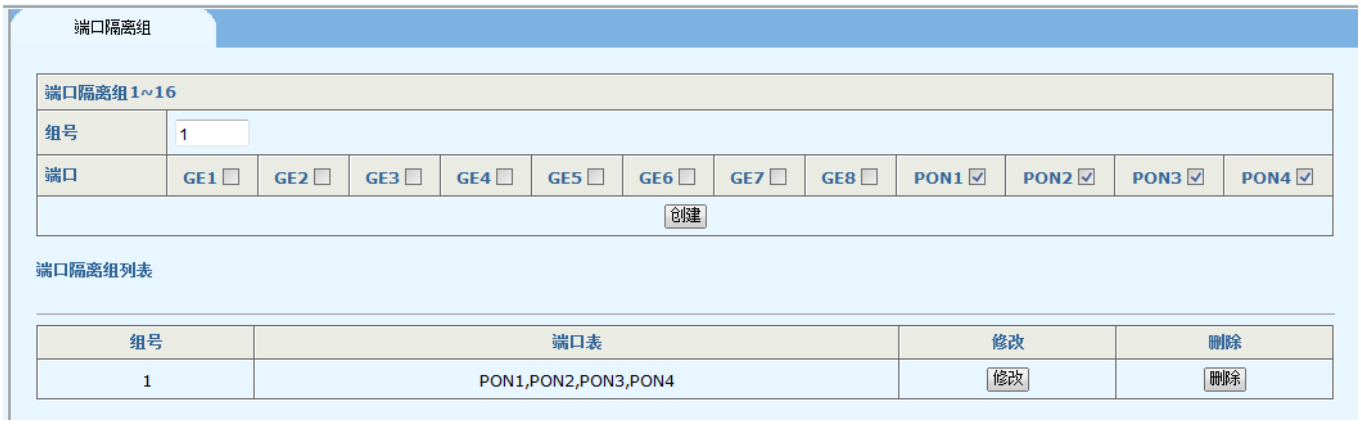
6.1 Introduction to OLT port isolation group

The system does not divide any port isolation group by default. The ports in the isolation group are isolated from each other. For the OLT port isolation group to take effect, the system port working mode must be configured as an isolation group, as shown in the following figure:



6.2 OLT port isolation group configuration example

Create a group of port isolation groups and configure that PON1, PON2, PON3, and PON4 cannot communicate with each other. As shown below:



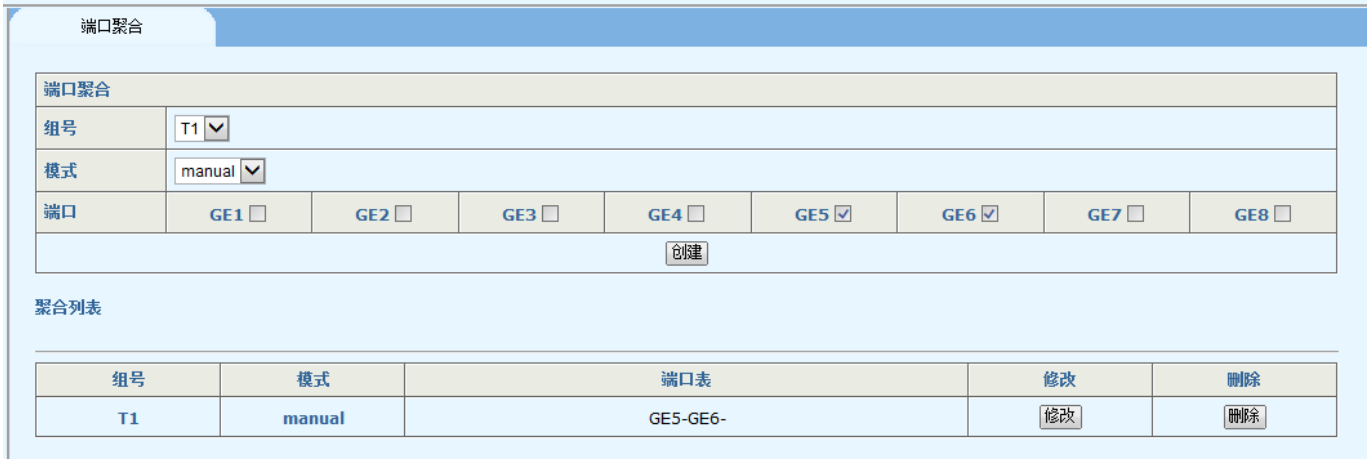
7. OLT port aggregation

7.1 Introduction to OLT port aggregation

Port aggregation is also called ethernet channel, which is mainly used for connection between switches. When there are multiple redundant links between two switches, STP will shut down several of them and keep only one, so that a Layer 2 loop can be avoided.

7.3 OLT port aggregation example

Click the port aggregation to enter the interface, the configuration mode is multicast, and the aggregation ports are GE5 and GE6, as shown in the figure below;



8. OLT VLAN configuration

8.1 OLT VLAN Configuration introduction

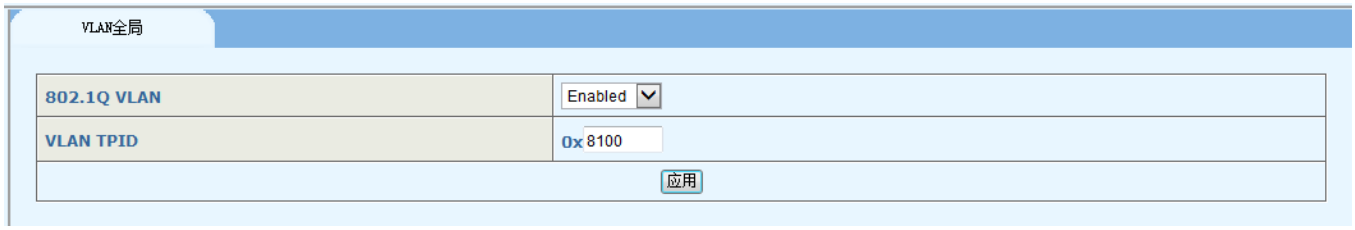
The system does not enable the 802.1Q VLAN function by default. To support the 802.1Q VLAN, the 802.1Q VLAN must be enabled. Configure the pvid and priority configurations associated with the VLAN to the port, as well as the port's egress with untagged mode.

With 802.1Q VLAN enabled:

1. A tagged packet (VLAN3) enters a port. If the port is not familiar with the VLAN3 group, the port discards the packet. If the port has joined the VLAN3 group, the port forwards the packet.
2. Untagged packets enter a port. If the port is added to the pvid VLAN group, the port loads the pvid and priority of the port and forwards the packet. If the port is not added to the pvid VLAN group, That port dropped the packet.
3. If the port is configured in tagged mode, all packets going out of the port are tagged; if the port is configured in untagged mode, all packets going out of the port are deleted from the VLAN tag.

8.2 Open OLT VLAN

Click **the virtual LAN** to enter the management interface and enable the 802.1Q VLAN. The configuration interface is as follows:



8.3 OLT VLAN Configuration example

Create VLAN 12, and configure GE1 to GE4 ports to be in untagged mode.

Click **802.1Q VLAN** to enter the management interface, enter VID as 12, GE1-GE4 select Untagged, and click Create, as shown below

802.1Q VLAN | 802.1Q 端口

802.1Q VLAN 配置

VID											
端口	GE1	GE2	GE3	GE4	GE5	GE6	GE7	GE8	PON1	PON2	PC
模式	---	---	---	---	---	---	---	---	---	---	---

创建

*备注:UnTagged-此端口是VLAN成员,出去的帧无标记;Tagged-此端口是VLAN成员,出去的帧加标记; - - -此端口不是VLAN成员.

VLAN 列表

VID	GE1	GE2	GE3	GE4	GE5	GE6	GE7	GE8	PON1	PON2	PON3	PON4	修改	删除
1	Untagged	Untagged	Untagged	Untagged	Untagged	Untagged	Untagged	Untagged	Untagged	Untagged	Untagged	Untagged	修改	---
12	Untagged	Untagged	Untagged	Untagged	---	---	---	---	---	---	---	---	修改	删除

Click the 802.1Q port, set the PVID of the GE1 port to 12, and click Apply, as shown in the figure below:

802.1Q VLAN | 802.1Q 端口

端口	PVID (1~4094)	帧类型
GE1	12	Tagged+Untagged

应用

VLAN列表

端口	PVID	帧类型	端口	PVID	帧类型
GE1	12	Tagged+Untagged	GE2	1	Tagged+Untagged
GE3	1	Tagged+Untagged	GE4	1	Tagged+Untagged
GE5	1	Tagged+Untagged	GE6	1	Tagged+Untagged
GE7	1	Tagged+Untagged	GE8	1	Tagged+Untagged
PON1	1	Tagged+Untagged	PON2	1	Tagged+Untagged
PON3	1	Tagged+Untagged	PON4	1	Tagged+Untagged

9. OLT Quality service

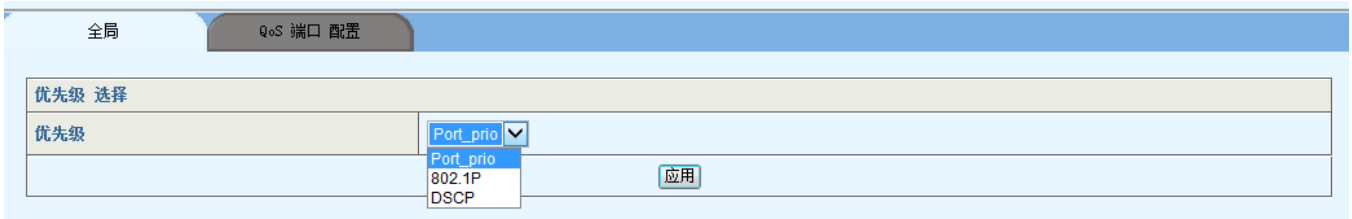
9.1 Introduction to OLT Quality Service

QoS (Quality of Service, Quality of Service) refers to a network that can use various basic technologies to provide better service capabilities for specified network communications. A technology. The OLT supports port priority, 802.1p priority for VLAN frames, and DSCP priority for Layer 3 IP packets.

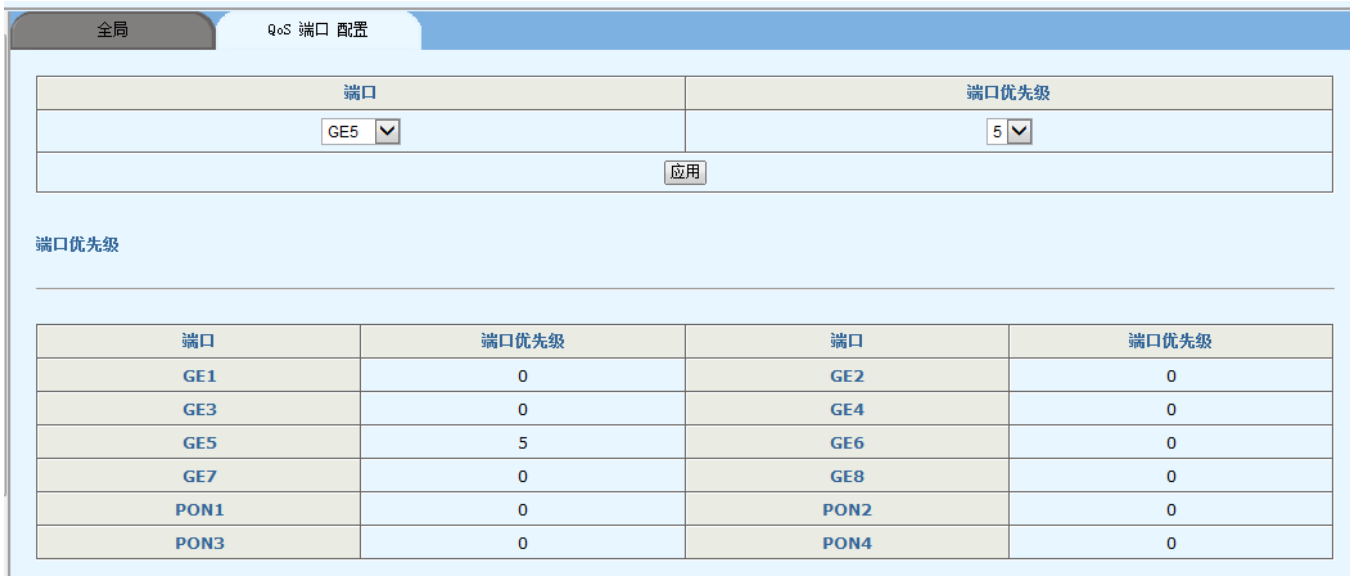
9.2 OLT Quality Service-Port Priority

Click **Quality Service** to select **the QoS configuration** and select the port priority (Port_prio), as

shown in the figure below:



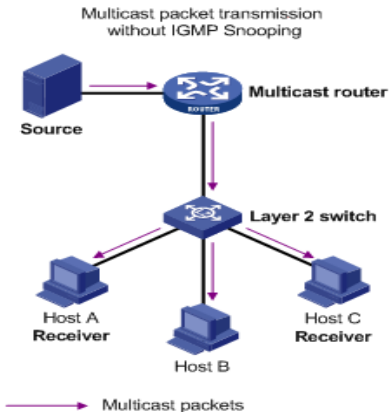
Set the G5 port priority to 5, as shown in the following figure:



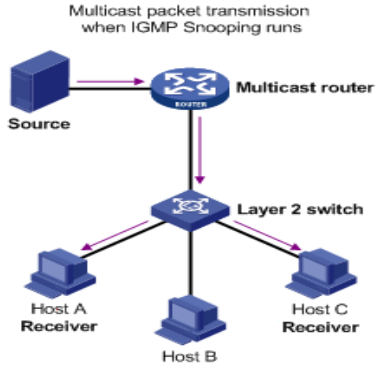
10. OLT IGMP-Snooping configuration

1 0.1 OLT IGMP-Snooping Configuration introduction

The system does not enable **IGMP-Snooping** by default. All multicast packets are forwarded in broadcast mode, as shown in the figure below.



After IGMP-Snooping-related functions are enabled, all multicast packet forwarding methods are shown in the figure below, which improves the bandwidth utilization of the port.

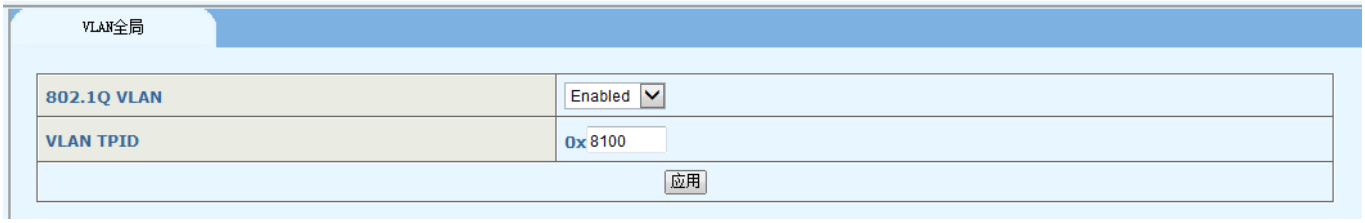


After IGMP-Snooping is enabled, to create a multicast VLAN, the multicast VLAN is based on the 802.1Q VLAN. Therefore, you must enable the 802.1Q VLAN and create a corresponding VLAN group. Without joining a VLAN group of a multicast VLAN, all multicasts are broadcast.

10.2 OLT IGMP-Snooping Configuration

10.2.1 Open OLT IGMP-Snooping

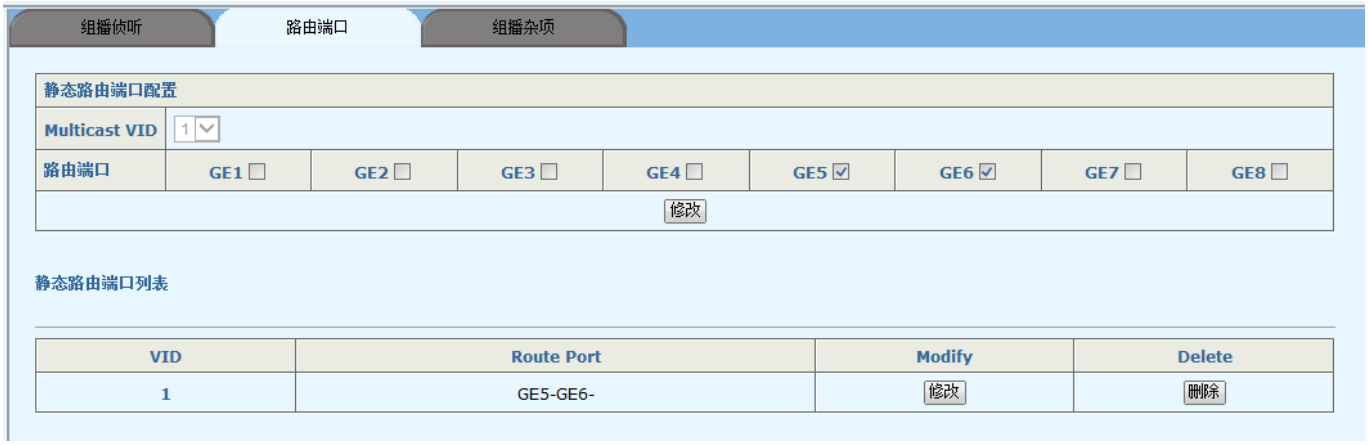
The multicast VLAN is based on the 802.1Q VLAN, so you must enable the 802.1Q VLAN, click the virtual LAN to select the VLAN global, and enable the 802.1Q VLAN, as shown below:



Click the forwarding address to select IGMP Snooping, enable IGMP Snooping, and create a Multicast VID, as shown in the following figure:

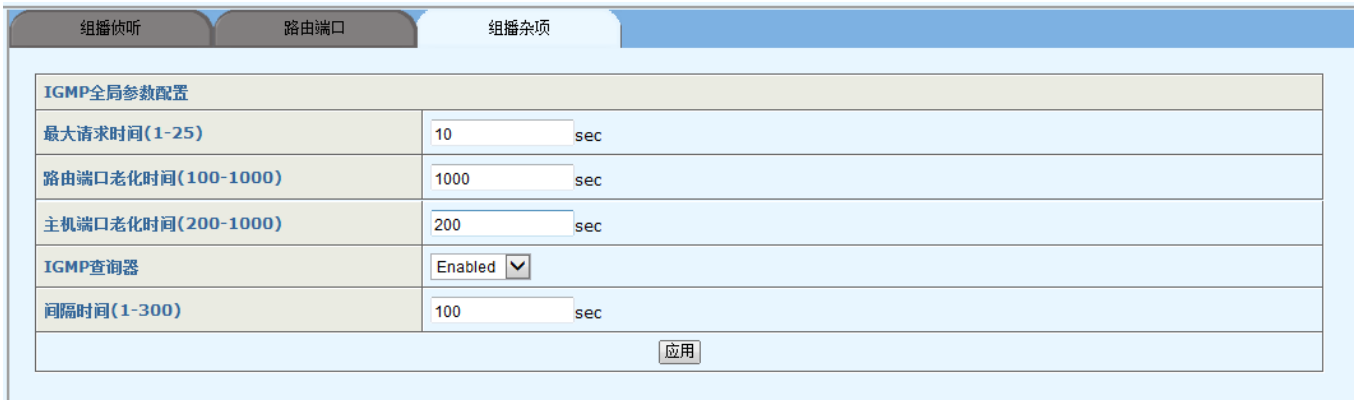
10.2.2 IGMP routing port configuration

Configure GE5 and GE6 as routing ports, as shown in the following figure:



10.2.3 Multicast Miscellaneous

Some details of configuring multicast are shown below:



11. OLT storm suppression configuration

11.1 OLT Introduction to Storm Suppression Configuration

The system does not enable the storm suppression function by default. All ports do not forward packets at a rate limit. Current storm suppression uses frame limited mode (PPS) to suppress the port. Configure storm suppression to avoid network storms.

11.2 OLT Storm Suppression Configuration Example

Click Storm Suppression to enter the interface, and configure the GE1 port storm suppression multicast type to be 2 frames per second and the broadcast type to be 100 frames per second. As shown below:

风暴抑制

端口	流量类型	入口速度(0=Disable)
GE1	Broadcast	100 0~2000000 pps
应用		

Storm Limit List

端口	流量类型	入口速度
GE1	Broadcast	100
GE1	Multicast	2
GE2	None	0
GE3	None	0
GE4	None	0
GE5	None	0
GE6	None	0
GE7	None	0
GE8	None	0

12. OLT Statistics

12.1 OLT Port frame statistics

Click Data Statistics and select Port Frame Statistics to view the OLT data frame situation, as shown in the figure below:

端口帧统计

数据包/端口	GE1	GE2	GE3	GE4	GE5	GE6	GE7	GE8	PON1	PON2	PON3	PON4
RxUnicast	0	0	0	0	229103	309779	43530	17317	15873	0	0	0
RxNUcast	0	0	0	0	34278	3366	549	59760	13812	0	0	0
RxDiscard	0	0	0	0	7894	2056	863	4	0	0	0	0
RxError	0	0	0	0	0	0	0	0	0	0	0	0
TxUnicast	0	0	0	0	300038	230644	54712	4299	42584	13689	13689	13689
TxNUnicast	0	0	0	0	20204	40382	62484	13036	92499	92355	92355	92355
TxDiscard	0	0	0	0	38096	0	1	0	0	0	0	0
TxError	0	0	0	0	0	0	0	0	0	0	0	0
DropEvent	0	0	0	0	0	0	0	0	0	0	0	0
Multicast	0	0	0	0	25670	3187	57839	57028	58493	58090	58090	58090
Broadcast	0	0	0	0	28812	40561	5194	15768	47818	34265	34265	34265
Undersize	0	0	0	0	0	0	0	0	0	0	0	0
Fragment	0	0	0	0	0	0	0	0	0	0	0	0
RT64	0	0	0	0	176299	161784	25127	16504	33234	19315	19315	19315
RT65~127	0	0	0	0	85276	106954	11688	16456	30490	14351	14351	14351

12.2 OLT MAC address

Click Data Statistics and select the MAC address to view the MAC address of the device connected

to the OLT, as shown in the figure below:

MAC地址列表

序号	VID	MAC 地址	端口	类型
1	1	00-22-aa-da-ae-0f	GE5	Dynamic
2	1	5c-63-bf-31-e5-6b	GE5	Dynamic
3	1	00-e0-4c-68-00-7f	GE5	Dynamic
4	1	18-59-36-7c-d1-a5	GE5	Dynamic
5	1	00-25-22-fc-25-f2	GE5	Dynamic
6	1	9c-21-6a-f6-98-d8	GE5	Dynamic
7	1	08-57-00-2c-9b-a5	GE5	Dynamic
8	1	00-1a-70-6e-b3-28	GE5	Dynamic
9	1	84-c9-b2-6e-76-2c	GE5	Dynamic
10	1	00-1e-58-47-c3-41	GE5	Dynamic

13. OLT Rapid spanning tree

13.1 Introduction to OLT Rapid Spanning Tree

Rapid spanning tree protocol: 802.1w was developed from 802.1d. This protocol can converge the network faster when the network structure changes. It has two more port types than 802.1d: alternate port type and backup port type.

STP (Spanning Tree Protocol) is an acronym for Spanning Tree Protocol. The protocol can be applied to a loop network, and a certain algorithm is used to implement path redundancy. At the same time, the loop network is trimmed into a loop-free tree network, thereby avoiding the proliferation and infinite loop of packets in the loop network.

Spanning Tree Protocol STP / RSTP.

13.2 OLT Rapid Spanning Tree Configuration

13.2.1 Open OLT Rapid Spanning Tree Configuration

Click Rapid Spanning Tree to enter the management interface to enable the Rapid Spanning Tree protocol, as shown in the figure below:

RSTP 全局 | RSTP 桥 | RSTP 端口属性

RSTP	Enabled
Transmit Hold Count	20
	应用

*Ring 和RSTP 不能同时设置

13.2.2 OLT RSTP bridge configuration

Click the RSTP bridge for configuration, as shown in the figure below:

RSTP 全局 | RSTP 桥 | RSTP 端口属性

桥 配置	
优先级(0-61440 with a 4096 interval)	32768
最长老化时间(6-40)	20 sec
传输延迟时间(4-30)	15 sec
应用	

指定 桥	
桥 ID	32768-e0:67:b3:00:66:be
根 桥 ID	32768-e0:67:b3:00:66:be
联络时间	2
根 路径开销	0

13.2.3 OLT RSTP Port attribute configuration

Click RSTP port properties to configure, as shown below:

RSTP 全局 | RSTP 桥 | RSTP 端口属性

端口	Mcheck	边缘端口配置	点对点配置	路径开销1~200000000	优先级0-240(16 interval)
GE1	Enabled	Auto	Auto	20000	128
应用					

端口属性

端口	模式	优先级	路径开销	边缘端口配置	实际边缘端口	点对点配置	实际点对点	状态
GE1	Rstp	128	20000	Auto	non-edge	Auto	p2p	LinkDown
GE2	Rstp	128	20000	Auto	non-edge	Auto	p2p	LinkDown
GE3	Rstp	128	20000	Auto	non-edge	Auto	p2p	LinkDown
GE4	Rstp	128	20000	Auto	non-edge	Auto	p2p	LinkDown
GE5	Rstp	128	20000	Auto	non-edge	Auto	shared	LinkDown
GE6	Rstp	128	20000	Auto	edge	Auto	p2p	Forwarding
GE7	Rstp	128	20000	Auto	edge	Auto	p2p	Forwarding
GE8	Rstp	128	20000	Auto	non-edge	Auto	shared	LinkDown

14. OLT Ring

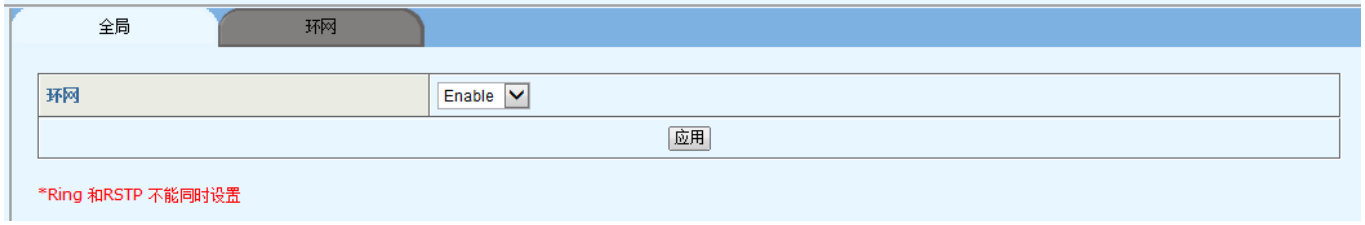
14.1 OLT Ring Network Introduction

An Ethernet ring network (commonly known as a ring network) is a ring topology composed of a group of IEEE 802.1 compatible Ethernet nodes. Each node is connected to the other two nodes through a ring port based on 802.3 Media Access Control (MAC), and the Ethernet MAC It can be carried by other service layer technologies (such as SDHVC, MPLS Ethernet pseudo wire, etc.), and all nodes can communicate directly or indirectly.

14.2 OLT Ring network configuration

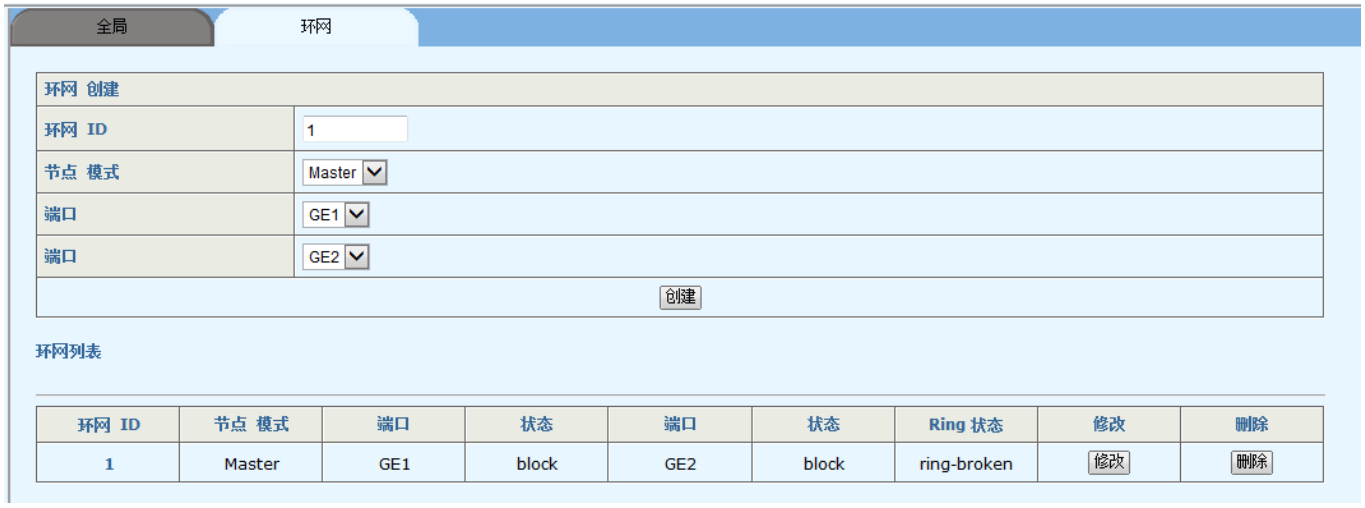
14.2.1 Open OLT ring network

Click the ring network to enter the management interface to open the ring network mode, as shown in the figure below:



14.2.2 OLT Ring network configuration

Click the ring network to enter the management interface, and configure GE1 and GE2 ports to form a ring network, as shown in the figure below.



15. OLT System Management

15.1 OLT Introduction to System Management

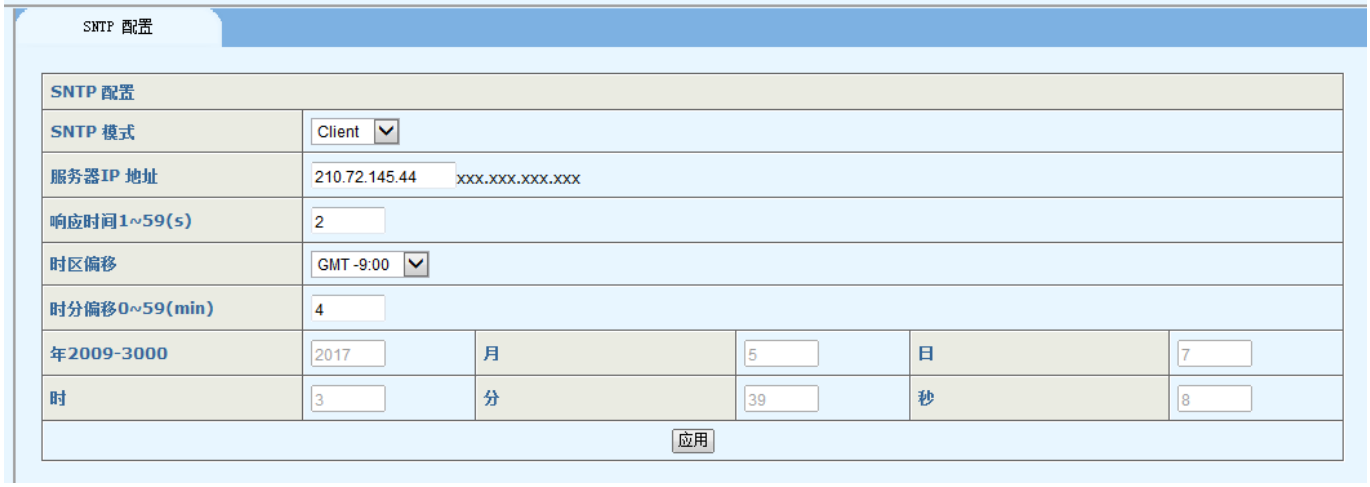
OLT system management mainly explains system upgrade, system configuration backup, system management IP configuration, system management VLAN configuration, system alarm configuration, system log management, system management user change, network diagnostics, ONU batch upgrade and so on.

15.2 OLT IP Configuration

Click System Management and select IP configuration to enter the configuration interface, as shown in the figure below:

15.3 OLT Simple Network Time Protocol

Used to modify the built-in time of the OLT device. The configuration interface is shown in the following figure:



15.4 OLT System alarm configuration

15.4.1 Brief description of system alarms

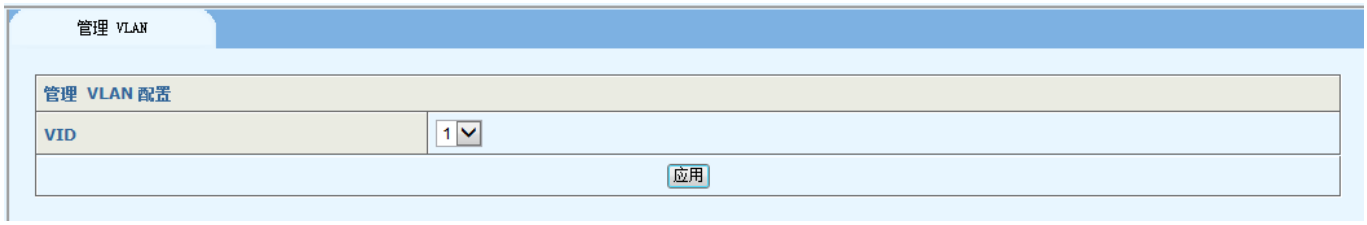
The device panel has a red Alarm indicator, which can be flashed by configuring the corresponding alarm function. Currently it supports port disconnection alarm, ring network alarm, etc. In addition to port alarms and ring network alarms, the unified network management system supports ONU online and offline alarms, and RSTP port status change alarms. If you want to support more alarm functions, you can contact the company for a personal customization.

15.4.2 System alarm configuration

As shown below:

15.5 OLT Management VLAN

Used to set the system management VLAN and view the system management VLAN, as shown in the following figure:



15.6 OLT system log

As shown below:

系统日志

序号	告警 信息
1	05/03/17 11:08:25 onu-1-1-4 (llid-0,mac-00-00-00-00-00-01,ctc-30)online..
2	05/03/17 11:08:38 onu-1-1-4 (ctc-30) offline..
3	05/03/17 11:25:08 onu-1-1-4 (llid-0,mac-00-00-00-00-00-01,ctc-30)online..
4	05/03/17 11:28:23 GE-6 is Link-Down
5	05/03/17 11:30:46 GE-5 Link-Up
6	05/03/17 11:30:47 GE-7 Link-Up
7	05/03/17 11:31:40 onu-1-1-4 (ctc-30) offline..
8	05/03/17 11:32:15 onu-1-1-4 (llid-0,mac-00-00-00-00-00-01,ctc-30)online..
9	05/03/17 11:37:29 onu-1-1-4 (ctc-30) offline..
10	05/03/17 11:37:48 (heysoOnuLinkUpHandle) ONU-1-1-5(linkId-1) not support CTC configuration...05/03/17 11:37:48 onu-1-1-5 (llid-0,mac-00-00-00-00-00-01,ctc-00)online..
11	05/03/17 11:37:48 onu-1-1-5 (ctc-00) offline..

15.7 System network diagnostics

Use the ping command to detect whether the OLT device is connected to the target IP, as shown in the following figure:

Ping 诊断

Ping 诊断	
Ping	192.168.1.1
	应用

Ping 诊断

该网络IP 有效!

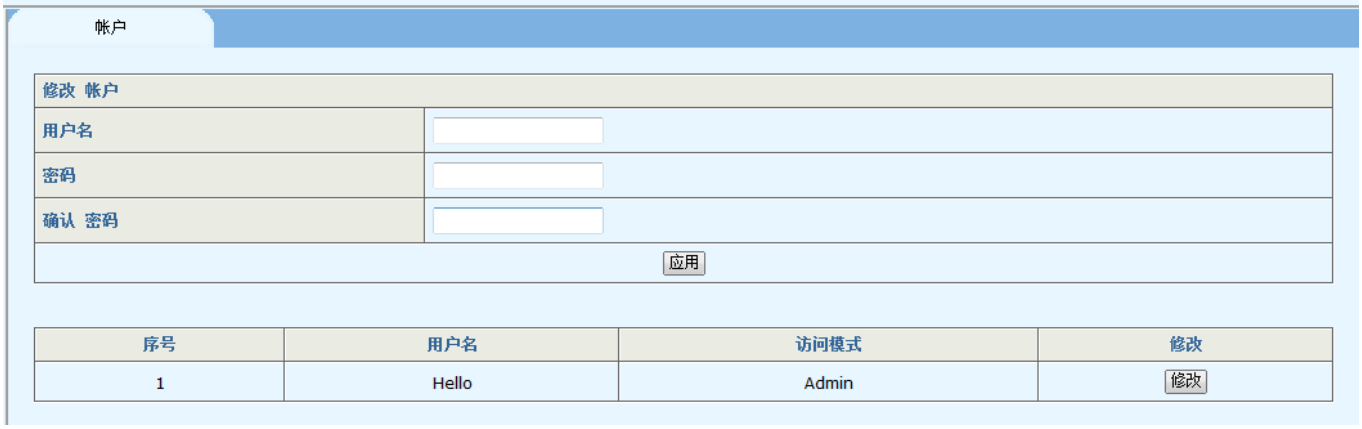
确认

15.8 OLT System management user changes

Used to modify the login user and password of the device. The configuration is shown in the following figure:

帐户

修改 帐户	
用户名	Hello
密码	••••••
确认 密码	••••••
	应用



15.9 OLT System Upgrade

15.9.1 Brief description of system upgrade

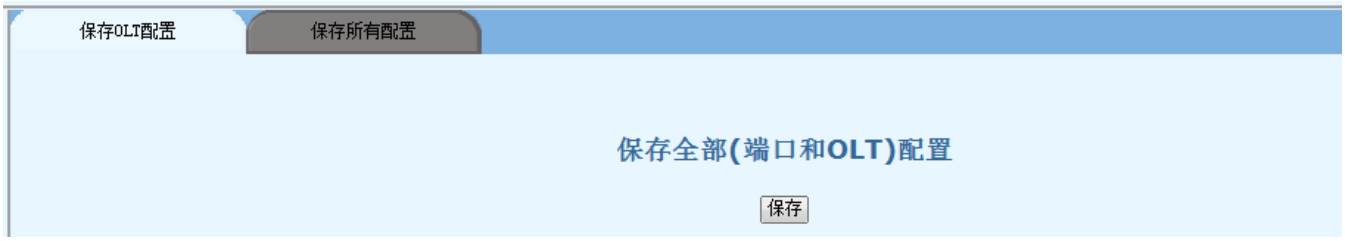
The system firmware upgrade uses the tftp method for transmission, so when performing the system upgrade, make sure that the tftp server is turned on and that the firmware is stored in the specified directory of the tftp server. After the upgrade is complete, restart the device for the firmware to take effect

15.9.2 System Upgrade

As shown below:

15.10 OLT save configuration

As shown below:



15.11 OLT Restart system

As shown below: