



1GE EPON ONU

USER MANUAL

Version V1.1

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Chapter 1 Product Introduction

1.1 Product Description

Thank you for choosing the 1GE EPON ONU. The terminal devices are designed for fulfilling FTTH and triple play service demand of fixed network operators or cable operators. The box is based on the mature Gigabit EPON technology, which have high ratio of performance to price, and the technology of Layer 2/3. They are highly reliable and easy to maintain, with guaranteed QoS for different service. And they are fully compliant with technical regulations such as IEEE802.3ah and technical requirement of EPON Equipment (V2.1 and above version) from China Telecom.



Figure 1-1: 1GE EPON ONU

1.2 Special features

- Plug and play, integrated auto detecting, auto configuration, and auto firmware upgrade technology.
- Support OAM remote configuration and maintenance.
- Support rich VLAN, DHCP Server and IGMP snooping multicast feature.
- Fully compatibility with OLT based on Broadcom/PMC/Cortina chipset.
- Support NAT, Firewall function.
- The WAN port supports bridge or router mode.

1.3 Technical Parameter

Technical items	Descriptions
PON interface	1EPON connector, SC single-mode/single-fiber, symmetric 1.25Gbps
Wavelength	Tx1310nm,Rx 1490nm
Optical interface	SC/PC connector
Interface	1* 10/100/1000Mbps auto adaptive Ethernet interfaces. Full /Half Duplex, RJ45 connectors.
Indicator	5 indicators, POWER、LOS、REG、LINK/ACT、SYS
Operating condition	-5℃~55℃, 10%~90% (non-condenseing)
Storing condition	-30℃~60℃, 10%~90% (non-condenseing)
Power supply	DC 12V,0.5A
Power consumption	≤3W
Dimension	120mm×78mm×30mm (L×W×H)
Net weight	0.13Kg

1.4 Application chart

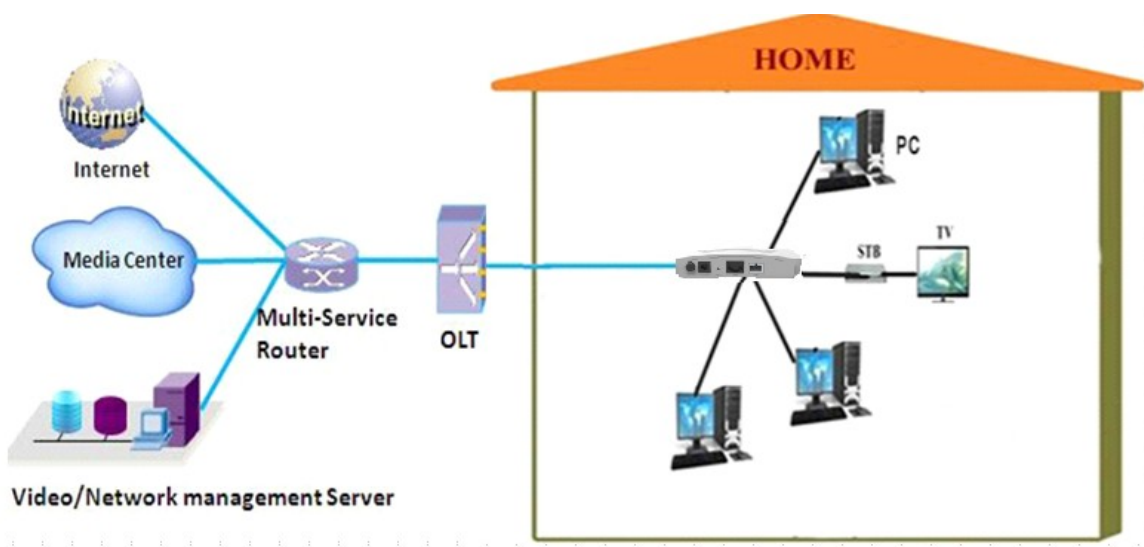


Figure 1-2: Application chart

1.5 Panel description

Interface panel



Figure 1-3: Interface panel

Name	Function
ON/OFF	Power switch.
POWER	Connect with power adaptor.
RST	Reset button. Press down less than 10s to restart ONU and more than 10s to restore factory default.
LAN	Ethernet port.
PON	EPON interface, SC/PC type, single mode optical fiber cable.

Indication Panel

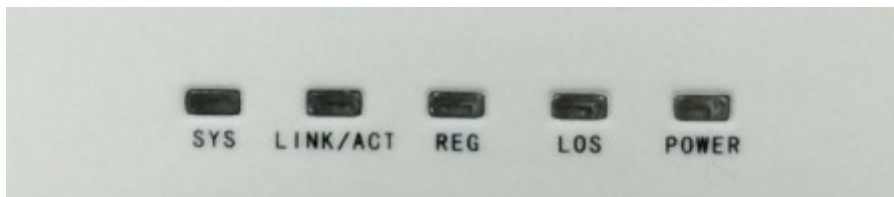


Figure 1-4: Indication panel

LED	Mark	Status	Description
System	SYS	Blink	The device runs normal.
		OFF	The device is powered down.
Ethernet	LINK/ACT	ON	Port is connected properly.
		Off	Port connection exception or not connected.
		Blink	Port is sending or/and receiving data.

Registration	REG	ON	The device is registered to the EPON system.
		OFF	Device is not registered to the EPON system.
		Blink	Device is registering.
Optical signal	LOS	Blink	Device does not receive optical signals.
		OFF	Device has received optical signals.
Power	POWER	ON	The device is powered up.
		OFF	The device is powered down.

Chapter 2 Quick Installation

2.1 Standard Packing Contents

When you receive our products, please check carefully to make sure that our products whether have some defects or not. If something wrong with shipping, please contact carrier; other damage or lack of some parts, please contact with dealer.

Contents	Description
ONU	1 pc
Power Adapter	1 pc
User Manual	1 pc

2.2 Quick Installation

1. Connecting the optical fiber cable to the unit.
 - a) Remove the protective cap of the optical fiber.
 - b) Clean the end of the optical fiber with an optical fiber end cleaner.
 - c) Remove the protective cap of the ONU optical interface (PON interface). Connect the fiber to the PON port on the unit.

Note: When measuring the optical power before connecting to the ONU, it is recommended to use a PON Inline Power Meter.

While connecting, please note:

- Keep the optical connector and the optical fiber clean.
 - Make sure there are no tight bends in the fiber and that the bending diameter is greater than 6cm. Otherwise, the optical signal loss may be increased, to the extent that signal may be unavailable.
 - Cover all optic ports and connectors with protective cap to guard against dust and moisture when the fiber is not used.
2. Apply power to the unit. Push the power button.
 3. After the ONU is power ON, Indicators should light up as for normal operation. Check whether the PON interface status LED (PON) is on continuously. If it is, the connection is normal; otherwise there is either problem of the physical connection or the optical level at either end. This may be caused by either too much or too little attenuation over the optical

fiber. Please refer to the Layout Description section of this installation manual for normal LED activity.

4. Check all signal levels and services on all the ONU communication ports.

Unit Installation Adjustment

Installing the ONU on a horizontal surface (Bench top)

Put the ONU on a clean, flat, sturdy bench top. You must keep the clearance for all sides of the unit to more than 10cm for heat dissipation.

Installing the ONU on a vertical surface (Hanging on a wall)

You can install the ONU on a vertical surface by using the mounting holes on the bottom of the ONU chassis and two flat-head wood screws.

- a) Insert the screws into the wall. The screw positions must be in the same horizontal line and the distance between them must be 145mm. Reserved at least 6mm between the screw caps and the wall.
- b) Hang the ONU on the screws through the mounting holes.

Chapter 3 Configuration

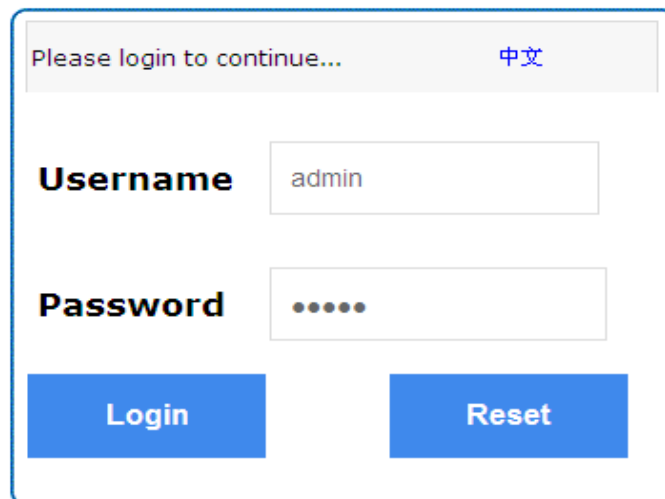
After finishing the basic connection configuration, you can use its basic function. In order to satisfy individuation service requirements, this charter provides the user parameter modification and individuation configuration description.

3.1 Login

The device is configured by the web interface. The following steps will enable you to login:

- 1、 Conform “2.2 Quick Installation” to install;
- 2、 The device default IP is 192.168.1.1;
- 3、 Open your web browser, type the device IP in address bar;
- 4、 Entry of the username and password will be prompted. Enter the default login User Name and Password.

By default, there are two user levels for management. Administration level username is “admin”, and normal username is “user”, which the passwords are the same as their usernames.



The screenshot shows a login interface with a header bar containing the text "Please login to continue..." and a language selector "中文". Below the header, there are two input fields: "Username" with the value "admin" and "Password" with masked characters. At the bottom, there are two blue buttons labeled "Login" and "Reset".

Figure 3-1: Login

3.2 Status

This part shows the main information of product.

3.2.1 Device Information

This page shows the device basic information, such as model, serial number, hardware version, software version and boot loader version.

Model	28ZE
Serial Number	-
Hardware Version	V8.0
Software Version	V6.0.1P1T2
Boot Loader Version	V6.0.1P1T2

Figure 3-2: Device Information

3.2.2 Network Interface

3.2.2.1 WAN Connection

This page shows WAN connection information you have configured.

Type	Static
Connection Name	WAN1
IP Version	IPv4
NAT	Enabled
IP	192.168.3.189/255.255.255.0
DNS	192.168.3.1/8.8.8.8/0.0.0.0
IPv4 Gateway	192.168.3.1
IPv4 Connection Status	Connected
IPv4 Disconnect Reason	None
WAN MAC	80:14:a8:10:15:81

Figure 3-3: WAN Information

3.2.2.2 PON Inform

This page shows the PON information, such as register and authorization status, power, voltage, current, and temperature,

Parameter	Value
EPON State	Registered and certified
OAM_Link	Established
Optical Module Input Power(dBm)	-21.5
Optical Module Output Power(dBm)	2.2
Optical Module Supply Voltage(uV)	3255000
Optical Transmitter Bias Current (uA)	11820
Operating Temperature of the Optical Module(°C)	38

Figure 3-4: PON Information

3.2.2.3 PON Alarm

This page shows PON alarm information.

PonSymPerAlarm	0
PonFrameAlarm	0
PonFraPerAlarm	0
PonSecSumAlarm	0
PonDygaspAlarm	0
PonLinkAlarm	0
PonCirEveAlarm	0

Figure 3-5: PON Alarm

3.2.3 User Interface

This page shows the Ethernet port information, including port name, link status, packets/bytes received, packets/bytes sent, etc.

Ethernet Port	LAN1	中文
Status	Up/100Mbps/Full Duplex	Help
MAC Address	80:14:a8:10:15:81	Logout
Bytes Received	76923763	
Packets Received	120469	
Unicast Packets Received	18080	
Multicast Packets Received	46509	
Error Packets Received	0	
Discard Packets Received	0	
Bytes Sent	4576795	
Packets Sent	11601	
Unicast Packets Sent	11600	
Multicast Packets Sent	0	
Error Packets Sent	0	
Discard Packets Sent	0	

[Refresh](#)

Figure 3-6: Ethernet Interface

3.3 Network

3.3.1 WAN

This page allows the user to configure WAN connections. You can only configure route mode WAN connections here. The device works on bridge mode with default settings.

Figure 3-7: WAN Connection

Parameter		Illustration
Connection Name		The list of WAN connection name that has been created. If you want to create a new WAN connection, please select “Create WAN Connection” and input other Parameter at the same time and then click “Create” button. If you want to edit WAN connection, please select the wan connect name you want to edit and change some Parameter and then click “Modify” button. If you want to delete one connection, please select the wan connection you want to delete and then click “Delete” button.
New Connection Name		Name of new connection that you want to create.
VLAN	Enable VLAN	Checked indicates the packets are transmitted by the PON port take VLAN tag. Unchecked indicates the packets are transmitted by the PON port don’t take VLAN tag.
	VLAN ID	Input the VLAN ID you want to set. Range is 0~4094. Input 0 means don’t use any VLAN.
	802.1P	Select VLAN priority you want to set. Range is 0~7.

Type	Route mode. The device works on route mode with this WAN connection.	
Service List	Service mode indicates what the wan connection is used for. There are INTERET and OTHER for choosing.	
MTU	Max transfer unit. Default Value (in Byte): 1500(static/DHCP) or 1492(PPPoE).	
Link type	Link type of WAN connection. PPP includes PPPOE, IP includes static and DHCP.	
PPP	Username	PPPOE account.
	Password	PPPOE password.
	Authentication type	PPPOE authentication type, including Auto, PAP, and CHAP.
	Connection trigger	WAN connection connecting mode, including Always On, On demand and Manual.
IP version	IPv4.	
IP Type/PPP TransType	Method of WAN connection Obtains IP address. If link type is PPP, PPP TransType will be PPPOE; if link type is IP, IP Type will be static or DHCP.	
Enable NAT	Checked indicates NAT function is enabled. Unchecked indicates NAT function is disabled.	

3.3.2 LAN

This page supports the management of the ONU's IP address, dynamic address management, including dynamic address distribution and relevant parameters distribution, such as lease time, address range, DNS, etc.

Status	Network	Security	Application	Administration	Help
--------	---------	----------	-------------	----------------	------

WAN

LAN

DHCP Server

PON

Routing(IPv4)

Port Configuration

NOTE: 1. The DHCP Start IP Address and DHCP End IP address should be in the same subnet as the LAN IP.

[中文]

LAN IP Address [Help]

Subnet Mask [Logout]

Enable DHCP Server

DHCP Start IP Address

DHCP End IP Address

Assign IspDNS

DNS Server1 IP Address

DNS Server2 IP Address

DNS Server3 IP Address

Default Gateway

Lease Time sec

Allocated Address

MAC Address	IP Address	Remaining Lease Time	Host Name	Port
There is no data.				

[Submit] [Cancel]

Figure 3-8: DHCP server settings

Parameter	Illustration
LAN IP Address	LAN IP address.
Subnet Mask	LAN IP mask.
Enable DHCP Server	Enable ONU DHCP server.
DHCP Start IP Address	The start IP address of IP pool.
DHCP End IP Address	The end IP address of IP pool.
Assign ISP DNS	Checked indicates using LAN IP as DNS server. Unchecked indicates you should fill in DNS server in the textbox manually.
Default Gateway	DHCP client's default gateway. You should fill in LAN IP address.
Lease Time	Lease time of the IP address.

3.3.3 PON

3.3.3.1 LOID

This page allows the user to configure LOID and password which are used for registering to OLT.

The screenshot shows the 'LOID settings' page. The navigation menu on the left includes: WAN, LAN, PON, LOID (selected), SN, Routing(IPv4), and Port Configuration. The main content area displays the 'LOID' field with the value 'epon' and the 'Password' field with the value '123456'. On the right side, there are three buttons: '中文', 'Help', and 'Logout'. At the bottom right of the page, there are 'Submit' and 'Cancel' buttons.

Figure 3-9: LOID settings

3.3.3.2 SN

This page allows the user to configure SN which is used for registering to OLT. SN will take effect after rebooting the device.

The screenshot shows the 'SN setting' page. The navigation menu on the left includes: WAN, LAN, PON, LOID, SN (selected), Routing(IPv4), and Port Configuration. The main content area displays an information message: 'Configure SN take effect after rebooting the device.' and the 'SN' field with the value 'epon'. On the right side, there are three buttons: '中文', 'Help', and 'Logout'. At the bottom right of the page, there are 'Submit' and 'Cancel' buttons.

Figure 3-10: SN setting

3.3.4 Routing(IPv4)

This page allows the user to configure static routing.

3.3.4.1 Default Gateway

This page allows the user to specify a WAN connection as the default gateway for routing.

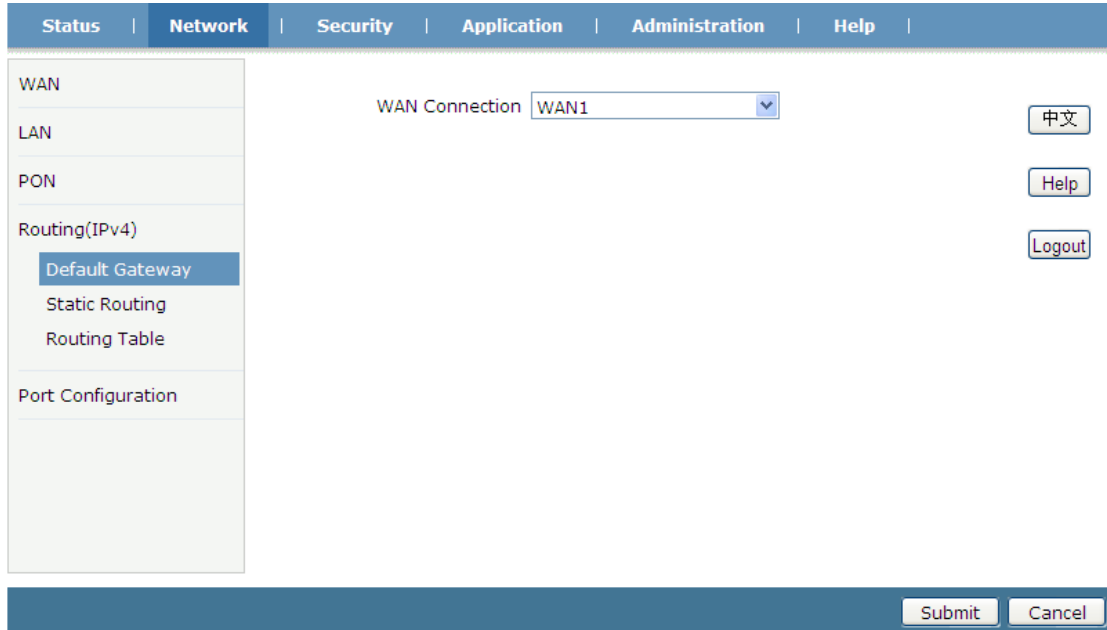


Figure 3-11: Default Gateway Setting

3.3.4.2 Static Routing

This page allows the user to specify a WAN connection as the Route Interface, then configure destination IP, mask and gateway.

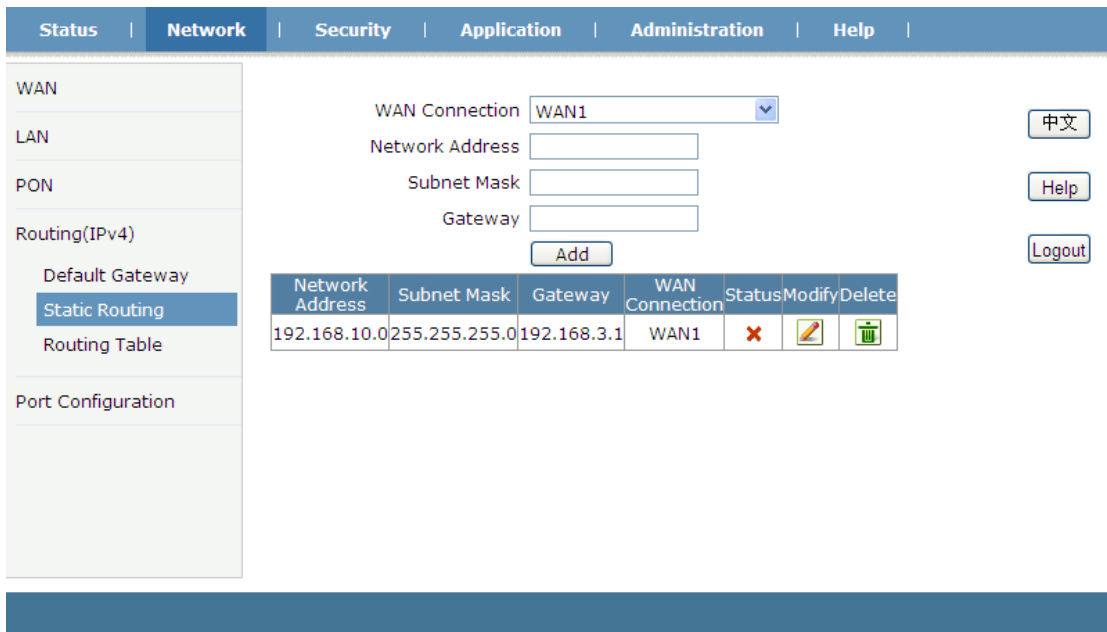


Figure 3-12: Static Routing Settings

Parameter	Illustration
WAN Connection	Select WAN connection as static routing interface.
Network Address	Destination network address, the last several bits which indicate host should be zero, just like 192.168.5.0/24, 192.168.0.0/16.

Subnet Mask	The Mask of destination network address.
Gateway	Gateway IP address of static routing.

3.3.4.3 Routing Table

This page displays current routing table of the device.

Network Address	Subnet Mask	Gateway	Interface
0.0.0.0	0.0.0.0	192.168.3.1	WAN1
192.168.3.0	255.255.255.0		WAN1
192.168.10.0	255.255.255.0	192.168.3.1	WAN1
192.168.100.0	255.255.255.0		LAN

Figure 3-13: Routing Table

3.3.5 Port Configuration

3.3.5.1 Mode

This page allows the user to configure speed and duplex of LAN port.

Figure 3-14: Port Mode Setting

3.3.5.2 Port Isolation

This page allows the user to configure port isolation function. Checked indicates port isolation is enabled; unchecked indicates port isolation is disabled.

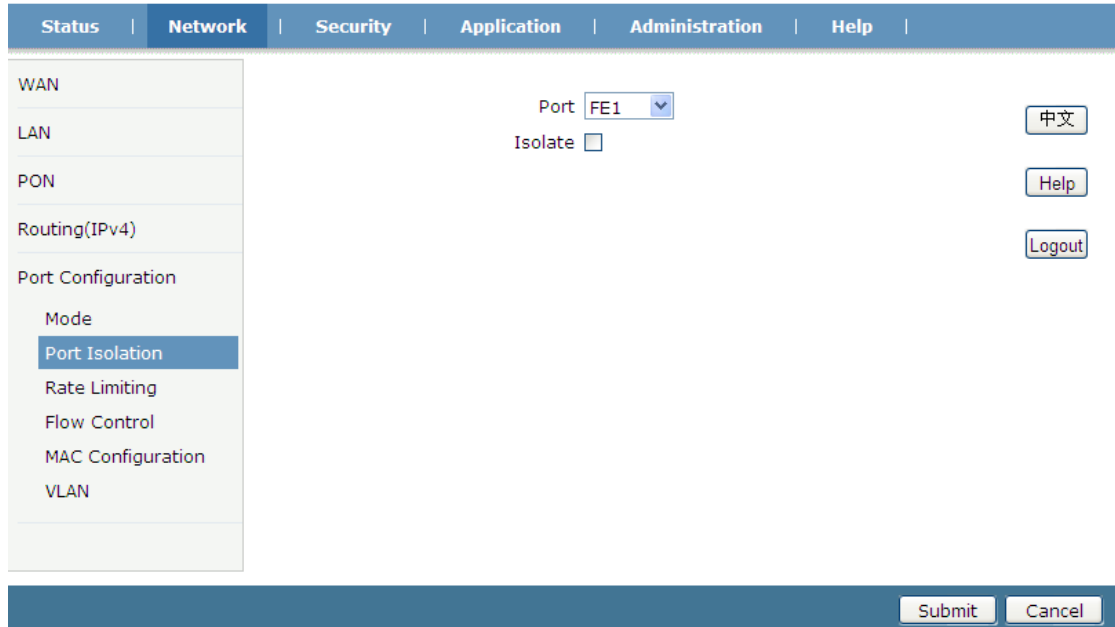


Figure 3-15: Port Isolation Setting

3.3.5.3 Rate Limiting

This page allows the user to configure port rate limiting of upstream and downstream.

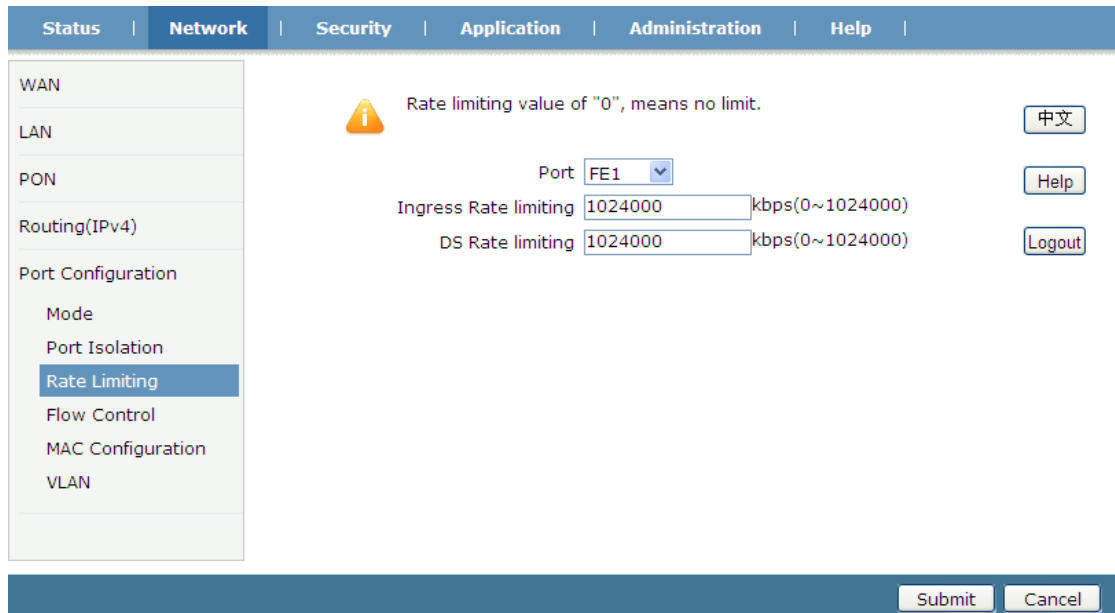


Figure 3-16: Port Rate Limiting Settings

Parameter	Illustration
Port	LAN port.

Ingress Rate limiting	Upstream rate limiting.
DS Rate limiting	Downstream rate limiting.

3.3.5.4 Flow Control

This page allows the user to enable flow control function of LAN port. Checked indicates flow control is enabled; unchecked indicates flow control is disabled.

The screenshot shows the 'Flow Control' configuration page. The top navigation bar includes 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. The left sidebar lists various configuration options, with 'Flow Control' highlighted. The main content area displays 'Port' as 'FE1' and 'Flow Control' as an unchecked checkbox. On the right side, there are buttons for '中文', 'Help', and 'Logout'. At the bottom of the page, there are 'Submit' and 'Cancel' buttons.

Figure 3-17: Flow Control Setting

3.3.5.5 MAC Configuration

This page allows the user to configure MAC aging time and MAC learning limit of LAN port.

The screenshot shows the 'MAC Configuration' page. The top navigation bar includes 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. The left sidebar lists various configuration options, with 'MAC Configuration' highlighted. The main content area displays 'MAC Aging Time' as 60 secs and 'Learning Limit' as 4095 (0~8192). A warning icon and message are present: 'Learning Limit value of "8192", means no limit.' On the right side, there are buttons for '中文', 'Help', and 'Logout'. At the bottom of the page, there are 'Submit' and 'Cancel' buttons.

Figure 3-18: MAC Configuration

3.3.5.6 VLAN

This page allows the user to configure VLAN mode and VLAN ID of LAN port.

Figure 3-19: VLAN settings

Parameter	Illustration
Port	LAN port.
VLAN Mode	VLAN mode of LAN port, including transparent, tag, translation, trunk. Default is transparent.
PVID	Native VLAN of LAN port. Data messages without tags will be added this VID after entering into the port. The range is 1~4094.
VLAN List	Display VLAN translation or trunk items that have been created. You can also create new item by choosing “Create” option.
Old VLAN	VLAN ID before being translated.
New VLAN	VLAN ID that has been translated in translation mode or VLAN ID that is allowed to pass through in trunk mode.

3.4 Security

3.4.1 Firewall

This page allows the user to set the level of the firewall (IPv4) and protection against attacks. Click the level with hyperlink to set custom firewall rules.

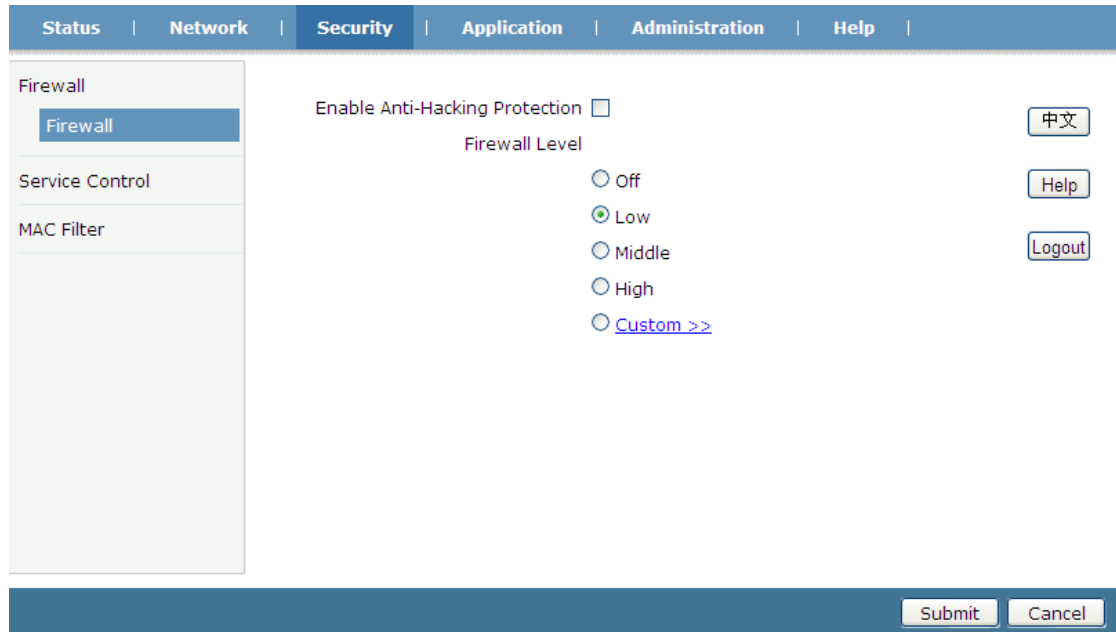


Figure 3-20: Firewall

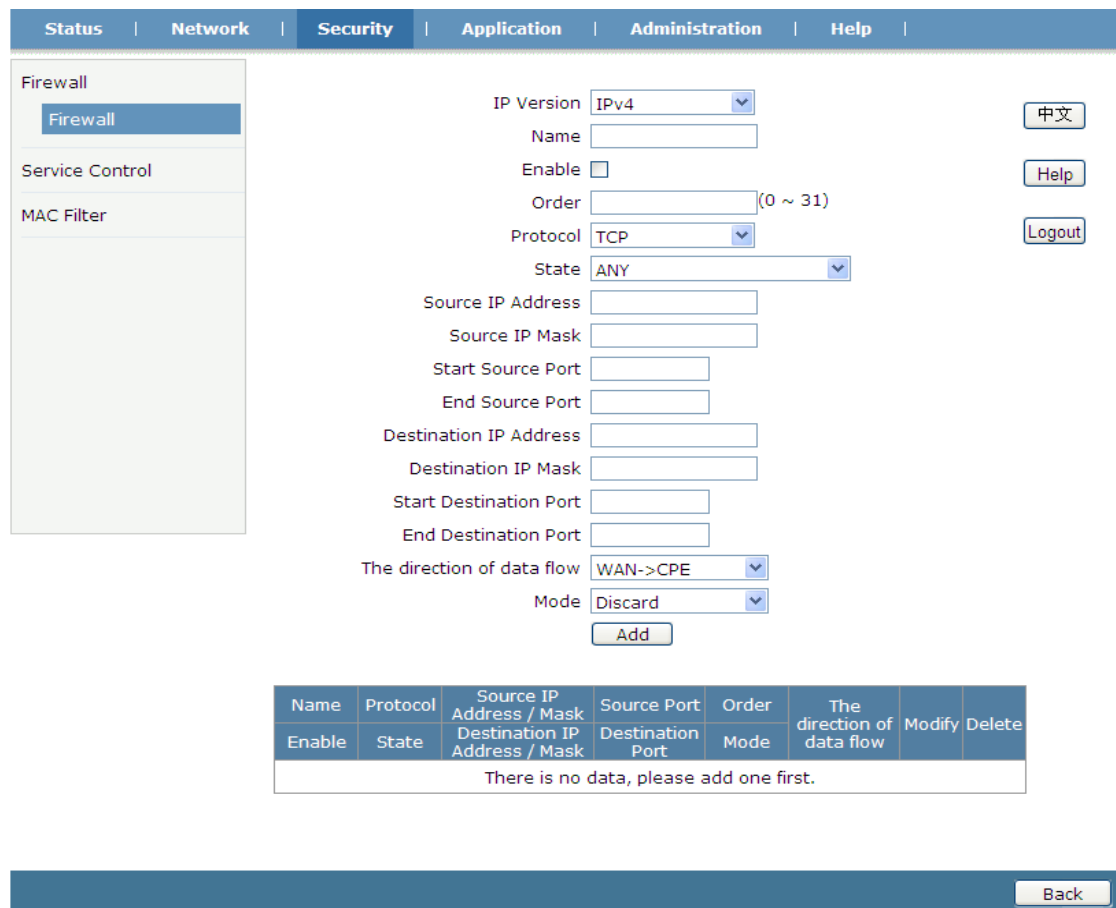


Figure 3-21: Custom Firewall

Parameter	Illustration
Enable Anti-Hacking Protection	Anti-Hacking Protection switch.

Firewall Level	<p>Off: Disable firewall.</p> <p>Low: Allow all inner or outer hosts to access.</p> <p>Middle: Allow inner or outer hosts which are limited by the rules that have been created to access.</p> <p>High: Forbid ICMP Input, Forbid Port Scan, Denial of Service protections.</p> <p>Custom: Custom firewall.</p>
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3.4.2 Service Control

This page allows the user to set the Service Control and modify remote access ports. Remote access ports are only effective when accessing from WAN side.

Enable	Ingress	Start Source IP Address	End Source IP Address	Mode	Service List	Modify	Delete
✓	WAN			Permit	TELNET		

Note: If you need to configure the above remote access ports, please click on the hyperlinks below.
[Modify Remote Access Port](#)

Figure 3-22: Service Control

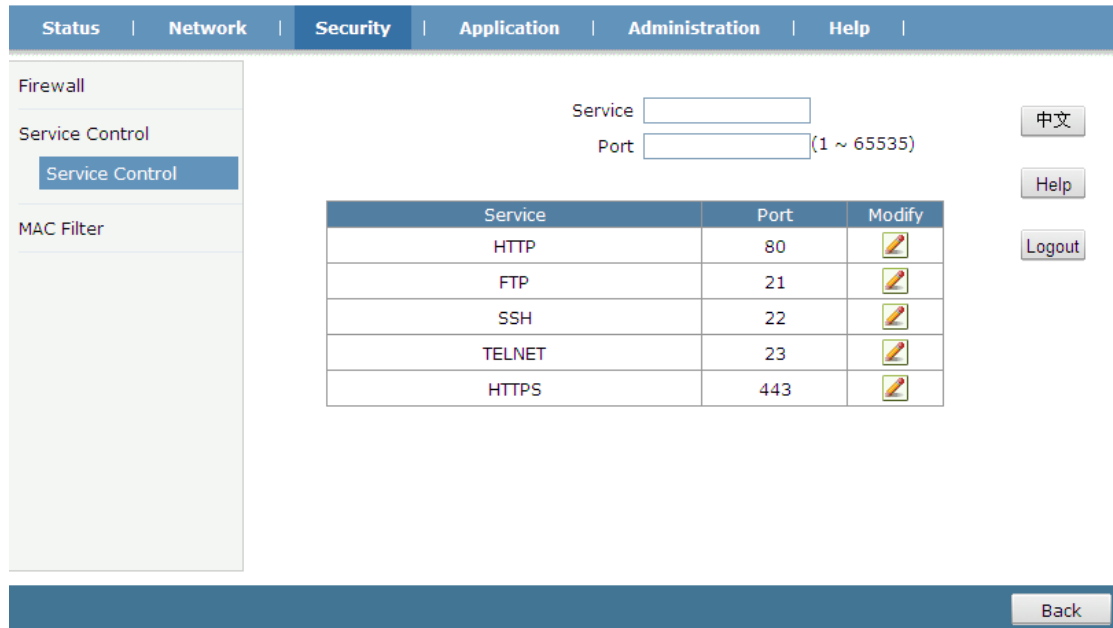
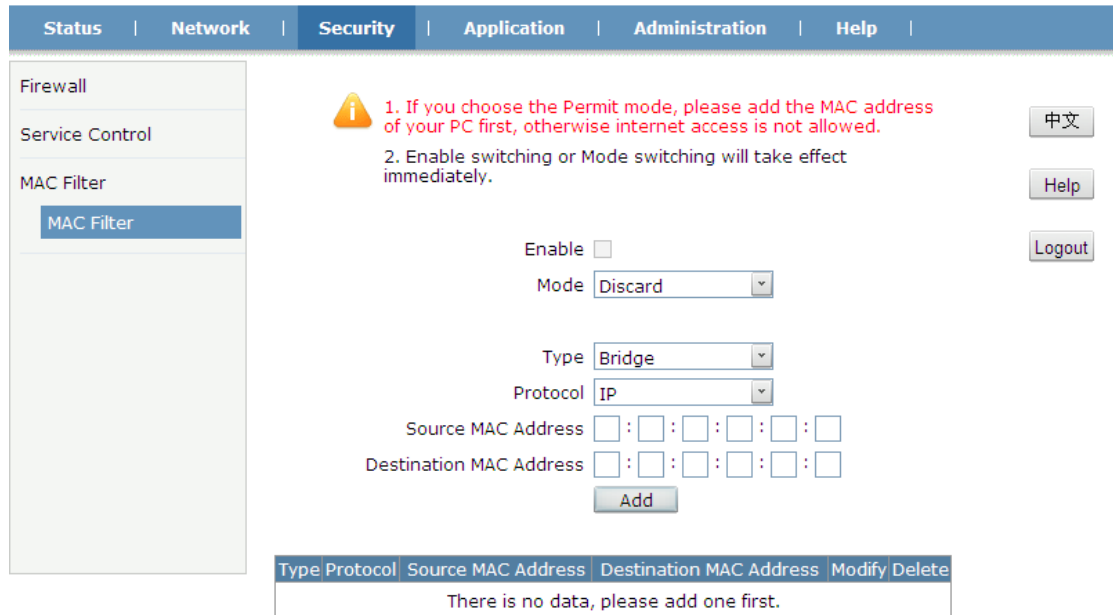


Figure 3-23: Remote Access Port

Parameter	Illustration
IP Version	IPv4
Enable	Enable service control.
Ingress	Choose the interface for service control. It is effective for any WAN connection rule when choosing WAN which has higher priority than other WAN connections' access rule.
Start Source IP Address	The start IP of source IP addresses range.
End Source IP Address	The end IP of source IP addresses range.
Mode	Discard indicates the interface denies data that match the rule passing through. Permit indicates the interface permits data that match the rule passing through.
Service List	Choose protocol for service control.

3.4.3 MAC Filter

This page allows the user to set the relevant parameters of the MAC filter function. The user interface will display the MAC Filter rules after setting completed.



1. If you choose the Permit mode, please add the MAC address of your PC first, otherwise internet access is not allowed.

2. Enable switching or Mode switching will take effect immediately.

Enable

Mode

Type

Protocol

Source MAC Address

Destination MAC Address

Type	Protocol	Source MAC Address	Destination MAC Address	Modify	Delete
There is no data, please add one first.					

Figure 3-24: MAC Filter

Parameter	Illustration
Enable	Enable MAC filter function.
Mode	Discard indicates the interface denies data that match the rule passing through. Permit indicates the interface permits data that match the rule passing through.
Type	The MAC filter rules work mode, contains bridge mode, route mode and bridge+route mode.
Protocol	The protocol of MAC filter rule which contains IP, ARP, RARP, PPPoE and ALL.
Source MAC Address	Source MAC address of MAC filter rule.
Destination MAC Address	Destination MAC address of MAC filter rule.

3.5 Application

3.5.1 Multicast

3.5.1.1 IGMP Mode

This page allows the user to set IGMP mode of the device.

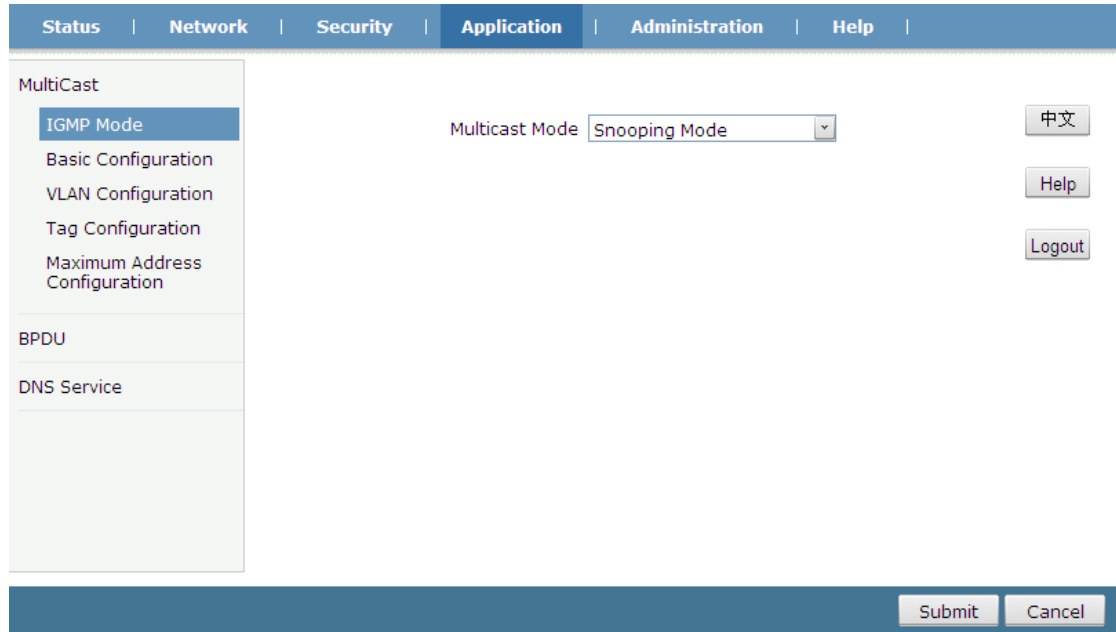


Figure 3-25: Multicast Mode

Parameter	Illustration
Disable	Disable IGMP. Multicast streams will flood to LAN port.
Snooping Mode	Enable snooping mode. Multicast streams will transmit to LAN port when there is a member join the group.
CTC IGMP	Enable controllable IGMP. Multicast streams will be controllable.

3.5.1.2 Basic Configuration

This page allows the user to set the aging time and leave mode for multicast module.

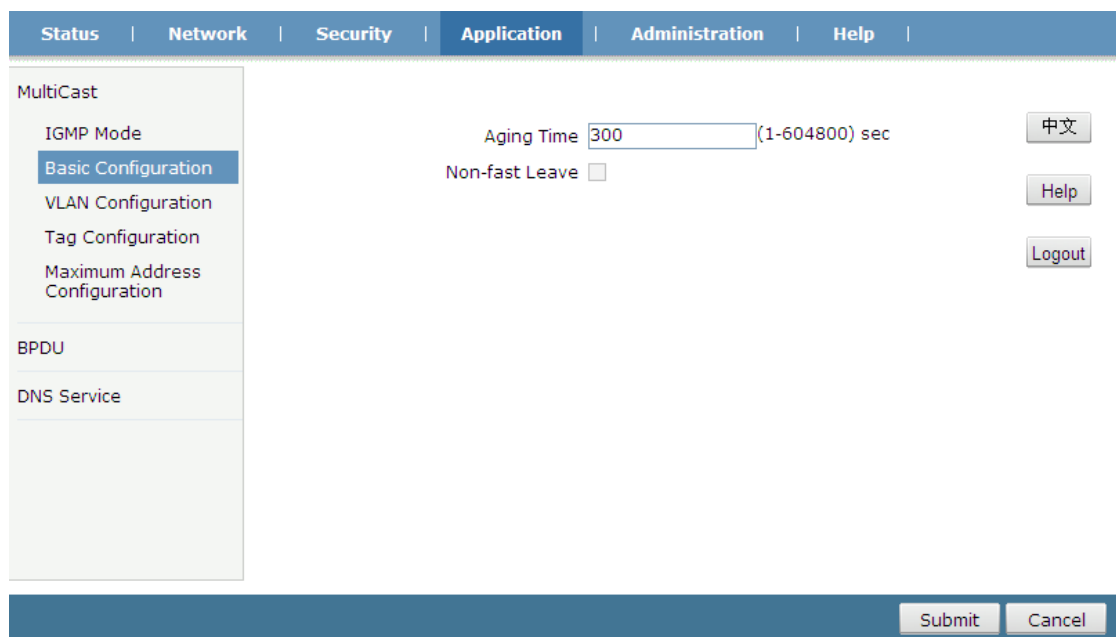


Figure 3-26: Multicast Basic Configuration

Parameter	Illustration
Aging Time	Multicast aging time.
Non-fast Leave	Non-fast leave switch. Checked indicates the device works on non-fast leave mode; unchecked indicates the device works on fast leave mode.

3.5.1.3 VLAN Configuration

This page allows the user to set multicast VLAN of LAN port.

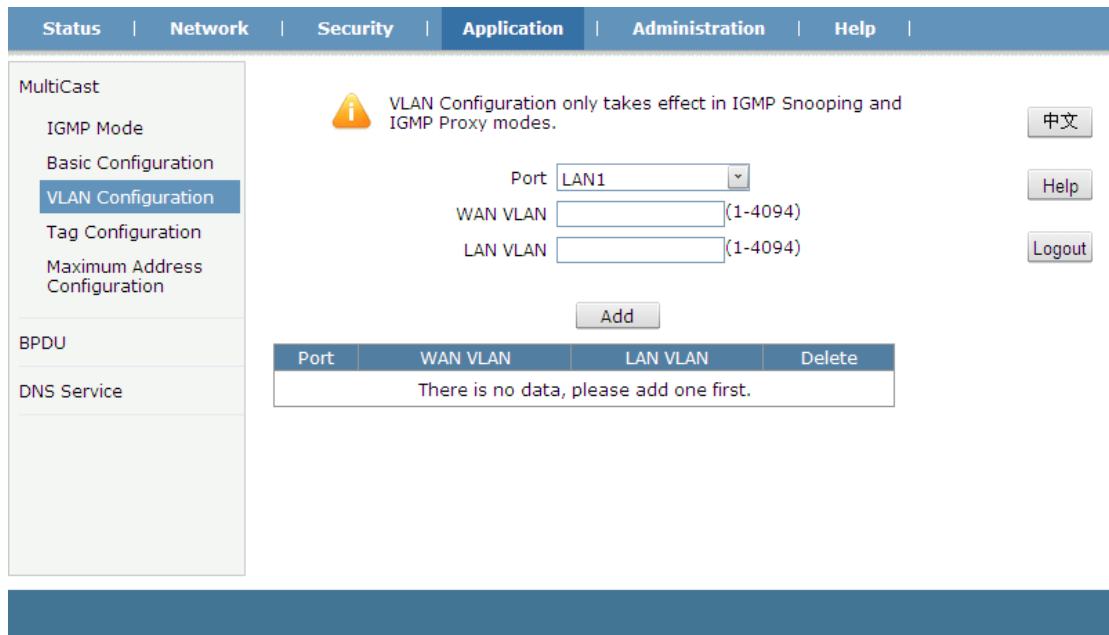


Figure 3-27: Multicast VLAN Configuration

Parameter	Illustration
WAN VLAN	Multicast service VLAN.
LAN VLAN	Multicast customer VLAN.

3.5.1.4 Tag Configuration

This page allows the user to set multicast tag strip attribute. Checked indicates multicast VLAN tag will be stripped, and unchecked indicates it will not be stripped.

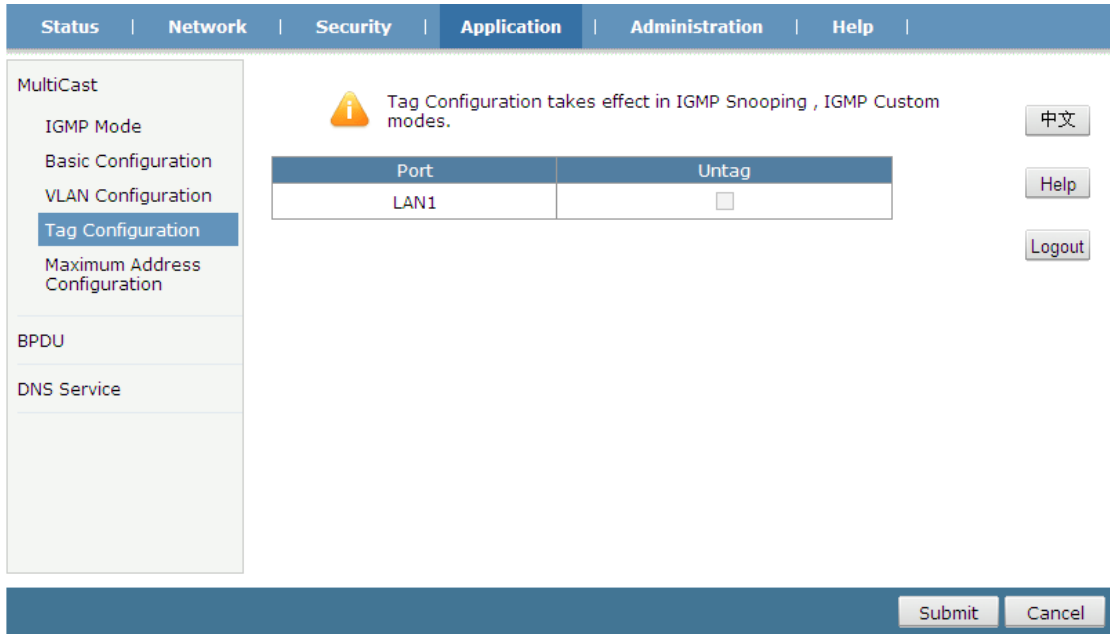


Figure 3-28: Multicast tag strip Configuration

3.5.1.5 Maximum Address Configuration

This page allows the user to set the maximum number of multicast addresses.

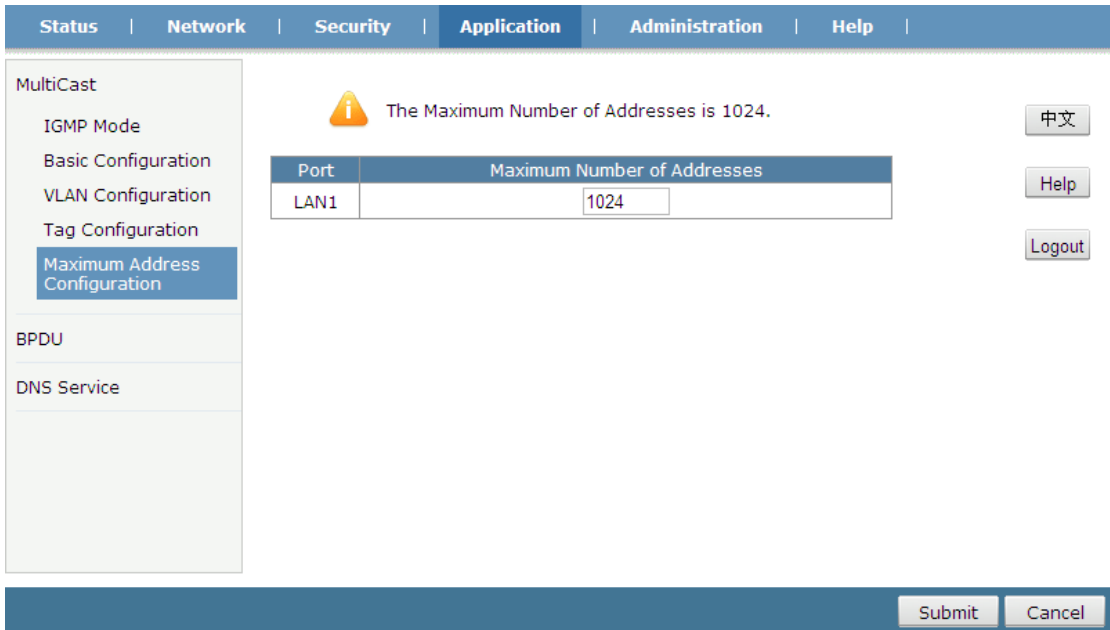


Figure 3-29: Multicast Maximum Address Configuration

3.5.2 BPDU

This page allows the user to set BPDU data frames control method. If BPDU forwarding is enabled, BPDU data frames will be replied; otherwise those will be processed in device.

The screenshot shows a web interface with a top navigation bar containing 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. The 'Application' tab is selected. On the left, a sidebar menu lists 'MultiCast', 'BPDUs', 'DNS Service', and 'BPDUs' (highlighted). The main content area displays 'Enable BPDUs Forwarding' with a checked checkbox. On the right, there are buttons for '中文', 'Help', and 'Logout'. At the bottom, there are 'Submit' and 'Cancel' buttons.

Figure 3-30: BPDUs Configuration

3.5.3 DNS Service

3.5.3.1 Domain Name

The page allows the user to set domain name. Domain Name represents a small network in LAN side with a name space; it can be configured on interface of LAN side.

The screenshot shows a web interface with a top navigation bar containing 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. The 'Application' tab is selected. On the left, a sidebar menu lists 'MultiCast', 'BPDUs', 'DNS Service', 'Domain Name' (highlighted), and 'DNS'. The main content area displays 'Domain Name' followed by an empty text input field. On the right, there are buttons for '中文', 'Help', and 'Logout'. At the bottom, there are 'Submit' and 'Cancel' buttons.

Figure 3-31: Domain Name

3.5.3.2 DNS

DNS Server is a database include hostname and IP Address, it can be configured to help DNS request in LAN side.

Figure 3-32: DNS Configuration

3.5.4 Port Forwarding

The page allows the user to set port forwarding.

Enable	Name	WAN Host Start IP Address	WAN Start Port	LAN Host Start Port	WAN Connection	Modify	Delete
	Protocol	WAN Host End IP Address	WAN End Port	LAN Host End Port	LAN Host Address		

There is no data, please add one first.

Figure 3-33: Port Forwarding

Parameter	Illustration
Enable	Enable Port Forwarding Function.
Name	Description of the Port Forwarding.
Protocol	TCP or UDP Protocol.
WAN Host Start IP Address	Start Public IP which want to access to LAN side server. If empty, permit any Public IP.
WAN Host End IP Address	End Public IP which want to access to LAN side server. If empty, permit any Public IP.
WAN Connection	Choose the WAN Connection which for public network access.
WAN Start Port	Start Public L4 port which want to access to LAN side server
WAN End Port	End Public L4 port which want to access to LAN side server
LAN Host IP address	Local IP address which provide services.
LAN Host Start Port	Start Local L4 port which want to access to LAN side server
LAN Host End Port	End Local L4 port which want to access to LAN side server

3.6 Administration

3.6.1 User Management

This page allows the user to change username or password. There are two User level accounts: **admin** and **user**.

The admin account is able to access and modify all settings of ONU. It also can modify user account's username and password.

The user account can only be used to view configurations, status and configure few parameters.

The screenshot shows the 'Administration' tab selected in the top navigation bar. On the left, a sidebar menu lists 'User Management', 'Login Timeout', 'System Management', 'Diagnosis', 'Loopback Detection', and 'Led Control'. The 'User Management' section is active, displaying the following fields and options:

- User Privilege:** Radio buttons for 'Administrator' (selected) and 'User'.
- Username:** Text input field containing 'admin'.
- Old Password:** Text input field.
- New Password:** Text input field.
- Confirmed Password:** Text input field.

On the right side, there are three buttons: '中文', 'Help', and 'Logout'. At the bottom of the page, there are 'Submit' and 'Cancel' buttons.

Figure 3-33: User management

3.6.2 Login Timeout

This page allows the user to set web login timeout.

The screenshot shows the 'Administration' tab selected in the top navigation bar. On the left, a sidebar menu lists 'User Management', 'Login Timeout', 'System Management', 'Diagnosis', 'Loopback Detection', and 'Led Control'. The 'Login Timeout' section is active, displaying the following information:

- Warning:** An information icon (i) is followed by two lines of text:
 - 1.Any value between 1 minute and 30 minutes is allowed.
 - 2.The changes of Timeout take effect after re-login.
- Timeout:** Text input field containing '5', followed by the label 'minute(s)'.

On the right side, there are three buttons: '中文', 'Help', and 'Logout'. At the bottom of the page, there are 'Submit' and 'Cancel' buttons.

Figure 3-34: Login Timeout

3.6.3 System Management

3.6.3.1 System Management

This page allows the user to reboot the device or restore factory default. The process of reboot will take several minutes.

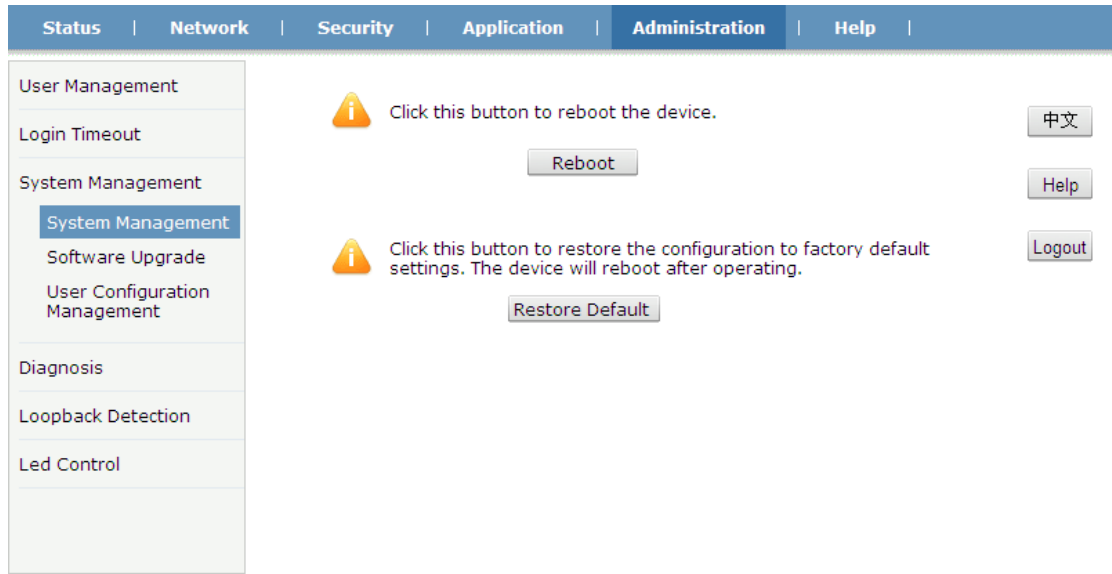


Figure 3-35: System Management

3.6.3.2 Software Upgrade

This page allows the user to update the software of the device. Click the “browse” button to select the software and then click the “Update” button to update.

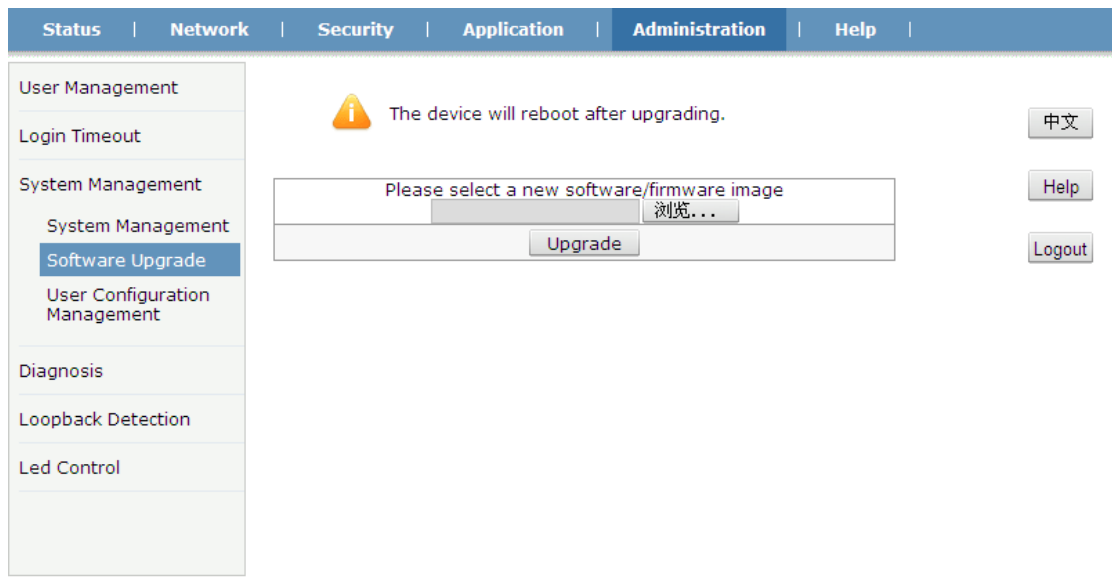


Figure 3-36: Software Upgrade

3.6.3.3 Configuration Management

This page allows the user to backup and restore the configurations.

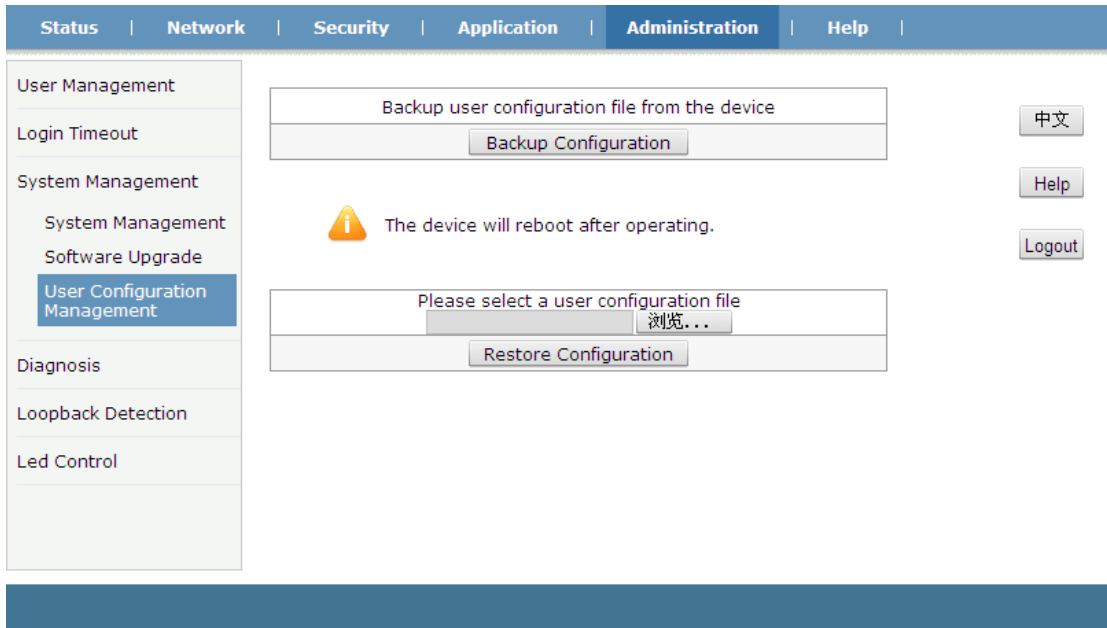


Figure 3-37: Configuration management

Parameter	Illustration
Backup Configuration	Backup configurations to local computer.
Restore Configuration	Restore configurations from local computer.

3.6.4 Diagnosis

3.6.4.1 PING Diagnosis

This page shows about the ping test. You can diagnose connection status between ONU and other devices.

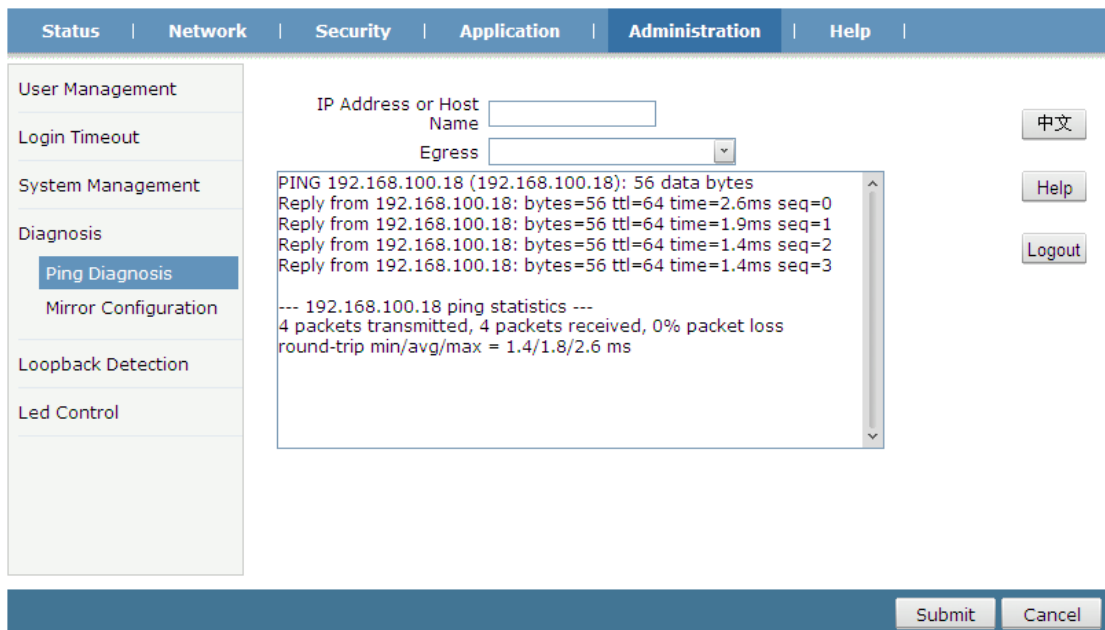


Figure 3-38: PING diagnosis

Parameter	Illustration
IP Address or Host Name	Input the destination IP you want to ping.
Egress	Select the interface you want to test.

3.6.4.2 Mirror Configuration

Mirror configure, which is used to send mirror data of WAN connection to LAN, then developers or maintenance personnel can analyze caught packets.

The screenshot displays the 'Mirror Configuration' page in a web management interface. The top navigation bar includes 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. The left sidebar lists various management options, with 'Mirror Configuration' highlighted. The main content area features a warning icon and message: 'Cannot configure the same rules, and a source port cannot correspond to multiple destination ports.' Below the warning, there are two dropdown menus: 'Source' (selected as 'WAN1') and 'Destination' (selected as 'LAN1'), with an 'Add' button underneath. A table with columns 'Source', 'Destination', and 'Delete' is shown below, containing the message 'There is no data, please add one first.' On the right side, there are buttons for '中文', 'Help', and 'Logout'.

Figure 3-39: Mirror Configuration

3.6.5 Loopback Detection

3.6.5.1 Basic Configuration

This page is used to configure the loopback global configuration.

The screenshot shows the 'Basic Configuration' page in the 1GE EPON ONU user interface. The navigation menu on the left includes: User Management, Login Timeout, System Management, Diagnosis, Loopback Detection, Basic Configuration (selected), Enable Configuration, VLAN Configuration, and Led Control. The main configuration area includes:

- Destination MAC: Broadcast Address BPDU Address (with a '中文' button)
- Ethernet Type: (hex 0000 - ffff) (with a 'Help' button)
- Send Interval: (100 - 1000) ms
- Port Closing Time: (60 - 300)sec
- Loopback Recovery Time: (5 - 300)sec (with a 'Logout' button)

At the bottom right, there are 'Submit' and 'Cancel' buttons.

Figure 3-40: Basic Configuration

Parameter	Illustration
Destination MAC	Set broadcast MAC or BPDU multicast MAC as detection message's MAC address.
Ethernet Type	Set detection message's Ethernet type.
Send Interval	Set frequency of detection message send out.
Port Closing Time	The port's shut down time when loopback detected.
Loopback Recovery Time	It is used to determine if loopback disappears. If the period of this time has not received detection packets, namely, that the loop disappears.

3.6.5.2 Enable Configuration

This page is used to configure the loopback enable configuration.

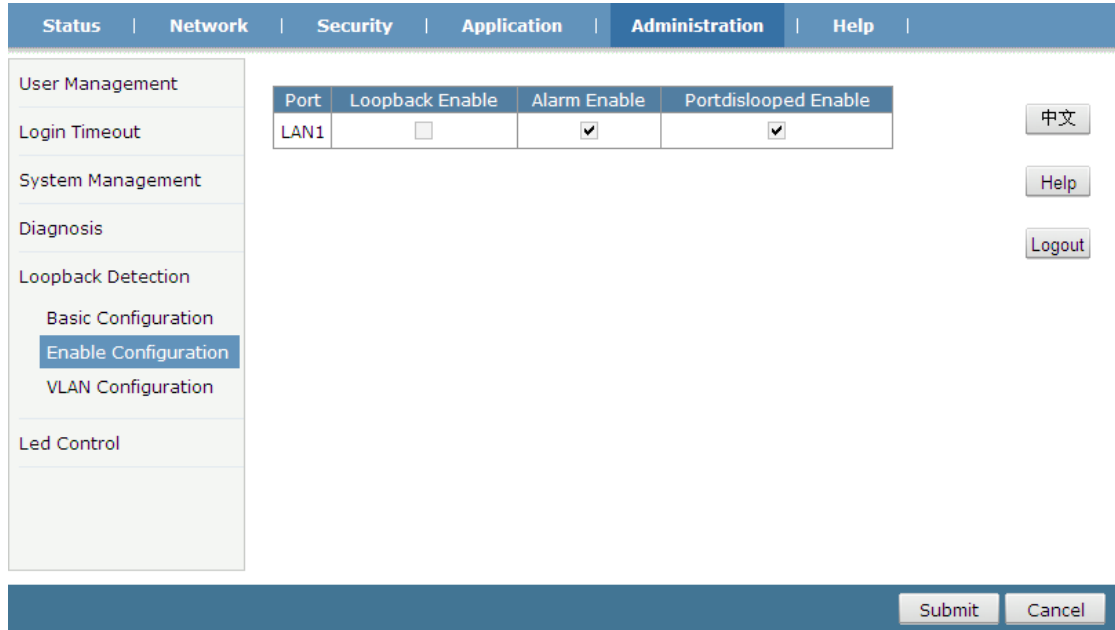


Figure 3-41: Enable Configuration

Parameter	Illustration
Loopback Enable	To control whether to detecting loopback.
Alarm Enable	To control whether to report alarm when detected loopback
Portdislooped Enable	To control whether to shut down the port when detected loopback.

3.6.5.3 Loopback VLAN Configuration

This page is used to configure the VLAN for detection packets, distinguish between the ports.

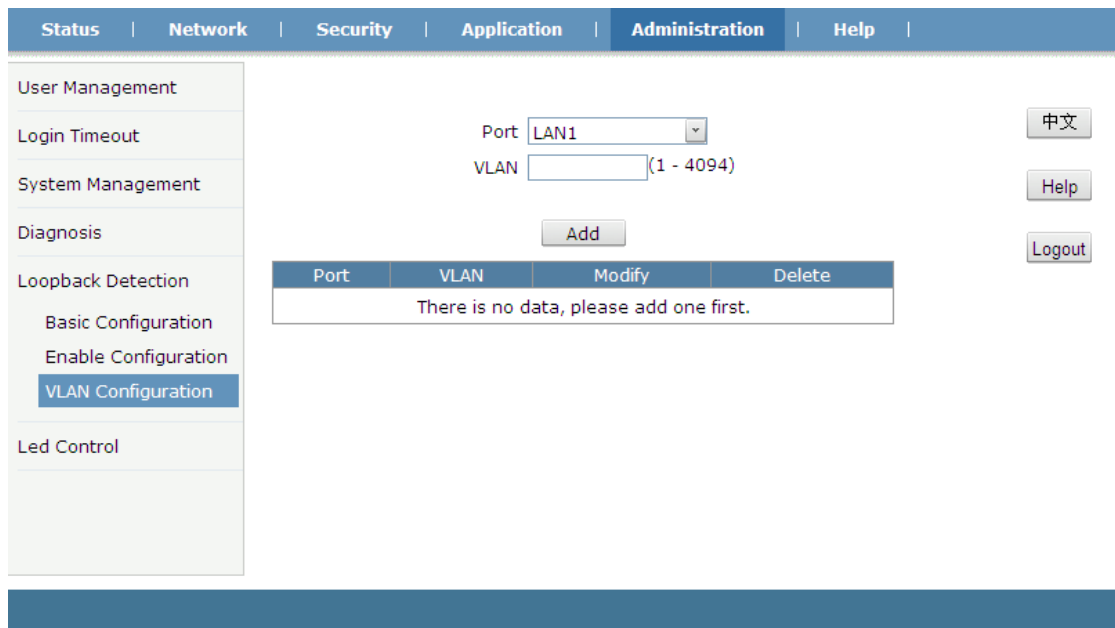


Figure 3-42: VLAN Configuration

3.6.6 LED Control

This page is used to turn on or turn off LEDs of the device.

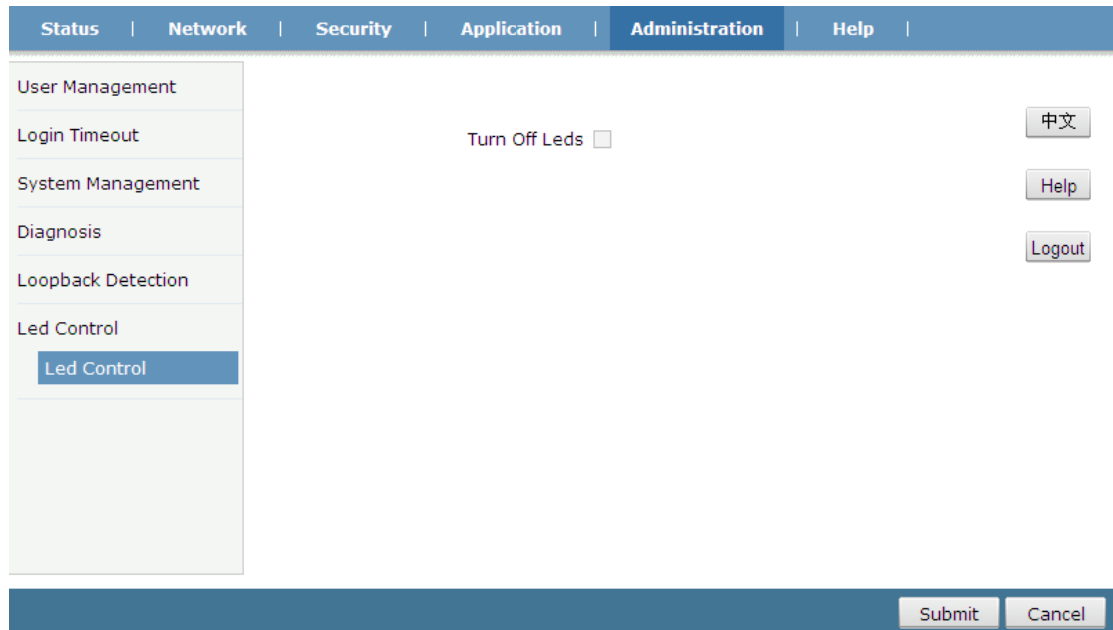


Figure 3-43: LED Control

3.7 Help

The Help information of ONU displays instruction and prompt of each web UI.

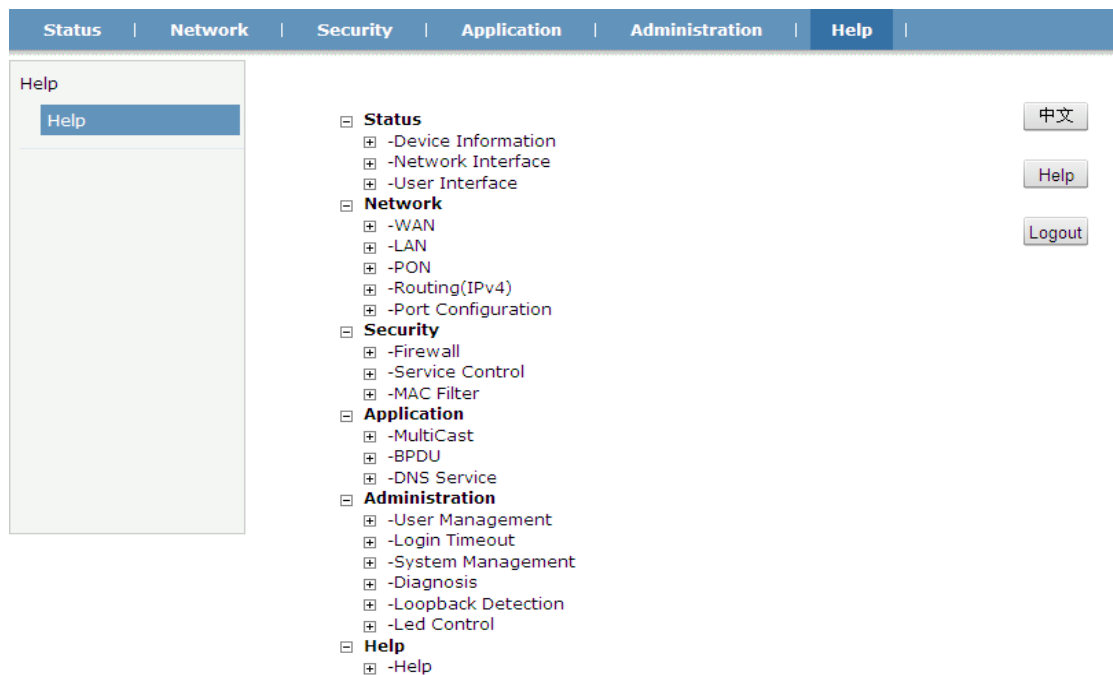


Figure 3-44: Help information

Chapter 4 Examples

4.1 Internet service

There are two configuration methods for Internet service. One works on bridge mode and another works on route mode.

4.1.1 Requirement

Scenario 1:

ONU works on bridge mode, service VLAN is 10. User gets IP address via DHCP.

Scenario 2:

ONU works on route mode, service VLAN is 10. ONU gets IP address via PPPoE.

4.1.2 Steps

For scenario 1, it doesn't need to configure anything in ONU side but need to configure VLAN in OLT side.

For scenario 2, except configuring VLAN in OLT side, it also needs to configure WAN connection in ONU web.

4.1.2.1 Bridge mode for Internet service

In this example, we take V1600D and Huawei MA5680T for example, to introduce how to configure Internet service.

1) V1600D Configurations

(1) Create VLAN

```
epon-olt (config)# vlan 10
```

```
epon-olt (config-vlan-10)# exit
```

(2) Configure uplink port

```
epon-olt (config)# inter g 0/3
```

```
epon-olt (config-if-ge0/3)#switchport hybrid vlan 10 untagged
```

```
epon-olt (config-if-ge0/3)#switchport hybrid pvid vlan 10
```

(3) Configure PON port

```
epon-olt (config)# inter epon 0/2
```

```
epon-olt (config-pon-0/2)# switchport hybrid vlan 10 tagged
```

(4) Configure ONU LAN port's VLAN mode and PVID

```
epon-olt (config-pon-0/2)# onu 1 ctc eth 1 vlan mode tag
```

```
epon-olt (config-pon-0/2)# onu 1 ctc eth 1 vlan pvid 10 pri 0
```


2) Huawei MA5680T Configurations

(1) Create VLAN

```
MA5680T(config)#vlan 10 smart
```

(2) Configure uplink port's VLAN

```
MA5680T(config)#port vlan 10 0/19 1
```

```
MA5680T(config)#interface giu 0/19
```

```
MA5680T(config-if-giu-0/19)#native-vlan 1 vlan 10
```

(3) Configure DBA profile

```
MA5680T(config)#dba-profile add profile-id 12 profile-name 1GE type3 assure 102400 max
899968
```

(4) Configure line profile

```
MA5680T(config)#ont-lineprofile epon profile-id 11 profile-name 1GE
```

```
MA5680T(config-epon-lineprofile-11)#llid dba-profile-id 12
```

```
MA5680T(config-epon-lineprofile-11)#commit
```

(5) Configure service profile

```
MA5680T(config)#ont-srvprofile epon profile-id 6 profile-name 1GE
```

```
MA5680T(config-epon-srvprofile-6)#ont-port eth 1
```

```
MA5680T(config-epon-srvprofile-6)#port vlan eth 1 10
```

```
MA5680T(config-epon-srvprofile-6)#commit
```

(6) Authorize ONU

```
MA5680T(config)#interface epon 0/5
```

```
MA5680T(config-if-epon-0/5)#ont add 1 0 mac-auth 002A-8523-C610 oam ont-lineprofile-id
11 ont-srvprofile-id 6
```

(7) Configure ONU LAN port's VLAN tag-strip

```
MA5680T(config-if-epon-0/5)#ont port native-vlan 1 0 eth 1 vlan 10
```

(8) Configure service-port

```
MA5680T(config)#service-port 27 vlan 10 epon 0/5/1 ont 0 multi-service user-vlan 10
```

4.1.2.2 Route mode for Internet service

1) Add a WAN connection

Choose “Network > WAN > WAN Connection” in navigation menu. Add a route mode WAN connection as the following Parameter.

- ✧ New connection name is INTERNET.
- ✧ Enable VLAN. VLAN ID is 10 and 802.1p is 0.
- ✧ Service list is INTERNET.
- ✧ Link type is PPP. And PPPoE username and password both are ppptest.
- ✧ Other Parameters keep default.

Status | **Network** | Security | Application | Administration | Help

WAN
WAN Connection
 LAN
 PON
 Routing(IPv4)
 Port Configuration

Connection Name: Create WAN Conn
 New Connection Name: INTERNET
 Enable VLAN:
 VLAN ID: 10
 802.1p: 0
 Type: Route
 Service List: INTERNET
 MTU: 1492
 Link Type: PPP

PPP
 Username: ppptest
 Password: ●●●●●●
 Authentication Type: Auto
 Connection Trigger: Always On
 IP Version: IPv4
 PPP TransType: PPPoE

IPv4
 Enable NAT:

中文
 Help
 Logout

Create Cancel

Figure 4-1: Add a route WAN connection

2) Enable DHCP server

Status | **Network** | Security | Application | Administration | Help

WAN
 LAN
DHCP Server
 PON
 Routing(IPv4)
 Port Configuration

NOTE: 1. The DHCP Start IP Address and DHCP End IP address should be in the same subnet as the LAN IP.

LAN IP Address: 192.168.1.1
 Subnet Mask: 255.255.255.0

Enable DHCP Server:
 DHCP Start IP Address: 192.168.1.2
 DHCP End IP Address: 192.168.1.254
 Assign IspDNS:
 DNS Server1 IP Address: 192.168.1.1
 DNS Server2 IP Address:
 DNS Server3 IP Address:
 Default Gateway: 192.168.1.1
 Lease Time: 86400 sec

Allocated Address

MAC Address	IP Address	Remaining Lease Time	Host Name	Port
There is no data.				

中文
 Help
 Logout

Submit Cancel

Figure 4-2: Enable LAN DHCP server

3) OLT Configurations

V1600D configurations:

(1) Create VLAN

```
epon-olt (config)# vlan 10
epon-olt (config-vlan-10)# exit
```

(2) Configure uplink port

```
epon-olt (config)# inter g 0/3
epon-olt (config-if-ge0/3)#switchport hybrid vlan 10 untagged
epon-olt (config-if-ge0/3)#switchport hybrid pvid vlan 10
```

(3) Configure PON port

```
epon-olt (config)# inter epon 0/2
epon-olt (config-pon-0/2)# switchport hybrid vlan 10 tagged
```

(4) Configure ONU LAN port's VLAN mode

```
epon-olt (config-pon-0/2)# onu 1 ctc eth 1 vlan mode transparent
```

Huawei MA5680T Configuratins:

(1) Create VLAN

```
MA5680T(config)#vlan 10 smart
```

(2) Configure uplink port VLAN

```
MA5680T(config)#port vlan 10 0/19 1
MA5680T(config)#interface giu 0/19
MA5680T(config-if-giu-0/19)#native-vlan 1 vlan 10
```

(3) Configure DBA profile

```
MA5680T(config)#dba-profile add profile-id 12 profile-name 1GE type3 assure 102400 max
899968
```

(4) Configure line profile

```
MA5680T(config)#ont-lineprofile epon profile-id 11 profile-name 1GE
MA5680T(config-epon-lineprofile-11)#llid dba-profile-id 12
MA5680T(config-epon-lineprofile-11)#commit
```

(5) Configure service profile

```
MA5680T(config)#ont-srvprofile epon profile-id 6 profile-name 1GE
MA5680T(config-epon-srvprofile-6)#ont-port eth 1
MA5680T(config-epon-srvprofile-6)# port vlan eth 1 transparent
MA5680T(config-epon-srvprofile-6)#commit
```

(6) Authorize ONU

```
MA5680T(config)#interface epon 0/5
MA5680T(config-if-epon-0/5)#ont add 1 0 mac-auth 002A-8523-C610 oam ont-lineprofile-id
11 ont-srvprofile-id 6
```

(7) Configure service-port

```
MA5680T(config)#service-port 27 vlan 10 epon 0/5/1 ont 0 multi-service user-vlan 10
```

4.2 IPTV service

4.2.1 Requirement

ONU works on bridge mode, STB gets IP address from DHCP server, IPTV service VLAN is 10.

4.2.2 Steps

In this example, we take V1600D and Huawei MA5680T for example, to introduce how to configure IPTV service.

1) V1600D Configurations

(1) Create VLAN

```
epon-olt (config)# vlan 10
```

```
epon-olt (config-vlan-10)# exit
```

(2) Configure uplink port

```
epon-olt (config)# interface g 0/5
```

```
epon-olt config-if-ge0/5# switchport hybrid vlan 10 untagged
```

```
epon-olt (config-if-ge0/5)#switchport hybrid pvid vlan 10
```

```
epon-olt (config-if-ge0/5)# exit
```

(3) Configure PON port

```
epon-olt (config)# inter epon 0/1
```

```
epon-olt (config-pon-0/1)# switchport hybrid vlan 10 tagged
```

```
epon-olt (config-pon-0/1)# ip igmp snooping user-vlan 10 group-vlan 10 tagged
```

```
epon-olt (config-pon-0/1)# exit
```

(4) Enable IGMP Snooping

```
epon-olt (config)# ip igmp snooping enable
```

(5) Configure multicast port

```
epon-olt (config)# ip igmp snooping mrouter vlan 10 interface gigabitethernet 0/5
```

(6) Configure ONU LAN port

```
epon-olt (config)# inter epon 0/1
```

```
epon-olt (config-pon-0/1)# onu 1 ctc eth 1 vlan mode tag
```

```
epon-olt (config-pon-0/1)# onu 1 ctc eth 1 vlan pvid 10 pri 0
```

```
epon-olt (config-pon-0/1)# onu 1 ctc eth 1 mc_vlan add 10
```

```
epon-olt (config-pon-0/1)# onu 1 ctc eth 1 mc_tagstrip enable
```

```
epon-olt (config-pon-0/1)# exit
```

2) Huawei MA5680T Configurations

(1) Create VLAN

```

MA5680T(config)#vlan 10 smart
(2) Configure uplink port VLAN
MA5680T(config)#port vlan 10 0/19 1
MA5680T(config)#interface giu 0/19
MA5680T(config-if-giu-0/19)#native-vlan 1 vlan 10
(3) Configure DBA profile
MA5680T(config)#dba-profile add profile-id 12 profile-name 1GE type3 assure 102400 max
899968
(4) Configure line profile
MA5680T(config)#ont-lineprofile epon profile-id 11 profile-name 1GE
MA5680T(config-epon-lineprofile-11)#llid dba-profile-id 12
MA5680T(config-epon-lineprofile-11)#commit
(5) Configure service profile
MA5680T(config)#ont-srvprofile epon profile-id 6 profile-name 1GE
MA5680T(config-epon-srvprofile-6)#ont-port eth 1
MA5680T(config-epon-srvprofile-6)#port vlan eth 1 10
(6) Configure multicast VLAN and strip attribute
MA5680T(config-epon-srvprofile-6)#port multicast-vlan eth 1 10
MA5680T(config-epon-srvprofile-6)#port eth 1 multicast-tagstrip untag
MA5680T(config-epon-srvprofile-6)#commit
(7) Authorize ONU
MA5680T(config)#interface epon 0/5
MA5680T(config-if-epon-0/5)#ont add 1 0 mac-auth 002A-8523-C610 oam ont-lineprofile-id
11 ont-srvprofile-id 6
(8) Configure ONU LAN VLAN strip
MA5680T(config-if-epon-0/5)#ont port native-vlan 1 0 eth 1 vlan 10
(9) Configure service-port
MA5680T(config)#service-port 27 vlan 10 epon 0/5/1 ont 0 multi-service user-vlan 10
(10)Configure IGMP user
MA5680T(config)#btv
MA5680T(config-bTV)#igmp user add service-port 27 no-auth
(11)Configure multicast VLAN and multicast port
MA5680T(config)#mutlcast-vlan 10
MA5680T(config-mvlan10)#igmp uplink-port 0/19/1
(12)Configure multicast IGMP version
MA5680T(config-mvlan10)#igmp version v2
This operation will delete all programs in current multicast vlan
Are you sure to change current IGMP version? (y/n)[n]: y

```

(13)Configure IGMP match mode

MA5680T(config-mvlan10)#igmp match mode disable

//disable mode indicates that OLT will match programs automatically according to members' requirements but not program settings.

(14)Configure IGMP mode

MA5680T(config-mvlan10)#igmp mode proxy

Are you sure to change IGMP mode?(y/n)[n]:y

(15)Configure multicast VLAN member

MA5680T(config-mvlan10)# igmp multicast-vlan member service-port 27

Chapter 5 FAQ

2. **Q:** All indicators are not lit?
A: (1) Power is off or power adapter is bad.
(2) Indicator LED switch is turned off.
3. **Q:** Why Los indicator flashes?
A: (1) There is no optical signal. Maybe the fiber is broke down or connection loosened.
(2) Optical power is too low.
(3) The fiber is dusty.
4. **Q:** LAN indicators are not lit?
A: (1) Indicator LED switch is turned off.
(2) The cable breaks down or connection loosened.
(3) The cable type incorrect or too long.
5. **Q:** PC can't visit web UI?
A: (1) PC and ONU are not in the same network fragment. By default, LAN IP is 192.168.1.1/24.
(2) The cable breaks down.
(3) IP conflict or have loopback.
6. **Q:** User can't surf the Internet normally.
A: (1) PC has set a wrong IP and gateway or network is bad.
(2) There is loopback or attack in network.
(3) Route mode WAN connection doesn't get an IP or DNS is disabled.
7. **Q:** ONU stops to work after working for some time.
A: (1) Power supply is not working properly.
(2) The device overheats.