XPON ONU USER MANUAL

(WIFI 6 AX3000)

Version V1.0

Release Date 2023-11-30

Contents

Chapter 1 Product Introduction

1.1 Product Description

The product is designed as HGU (Home Gateway Unit)/SFU(Single Family Unit) in different FTTH solutions. The carrier-class FTTH application provides data service access. It is based on mature and stable, cost-effective XPON technology. XPON can switch automatically with EPON and GPON mode when it accesses to the EPON OLT or GPON OLT. It adopts high reliability, easy management, configuration flexibility and good quality of service (QoS) guarantees to meet the technical performance of EPON Standard of China Telecom CTC3.0 and GPON Standard of ITU-TG.984.X

1.2 Special features

- Support EPON/GPON mode and switch mode automatically
- Support HGU Function
- Support Route mode for PPPoE/DHCP/Static IP and Bridge mode
- Support IPv4 and IPv6 Dual Mode
- Support LAN IP and DHCP Server configuration
- Support Port Mapping and Loop-Detect
- Support Firewall function and ACL function
- Support IGMP Snooping/Proxy multicast feature
- Specialized design for system breakdown prevention to maintain stable system

1.3 Technical Parameter

Technical item	Details
PON Interface	1 G/EPON port (EPON PX20+ and GPON Class B+) BOB(Boas on Board)
	Receiving sensitivity: ≤-27dBm
	Transmitting optical power: +1~+4dBm
	Transmission distance: 20KM
Wavelength	TX: 1310nm, RX: 1490nm
Optical Interface	SC/UPC Connector
LAN Interface	4 x 10/100/1000Mbps auto adaptive Ethernet interfaces. Full/Half, RJ45 connector
Push-Button	1,For Function of Reset 2,For Function of Reset,Power On/Off 3,For Function of WPS 4,For Function of WIFI
Operating Condition	Temperature: 0℃~+50℃
	Humidity: 10%～90%（non-condensing）
Storing Condition	Temperature: -30℃~+60℃
	Humidity: 10%~90%（non-condensing）
Power Supply	DC 12V/1.5A
Power Conswumption	≤6W

Table 1: Technical parameters

1.4 Application chart

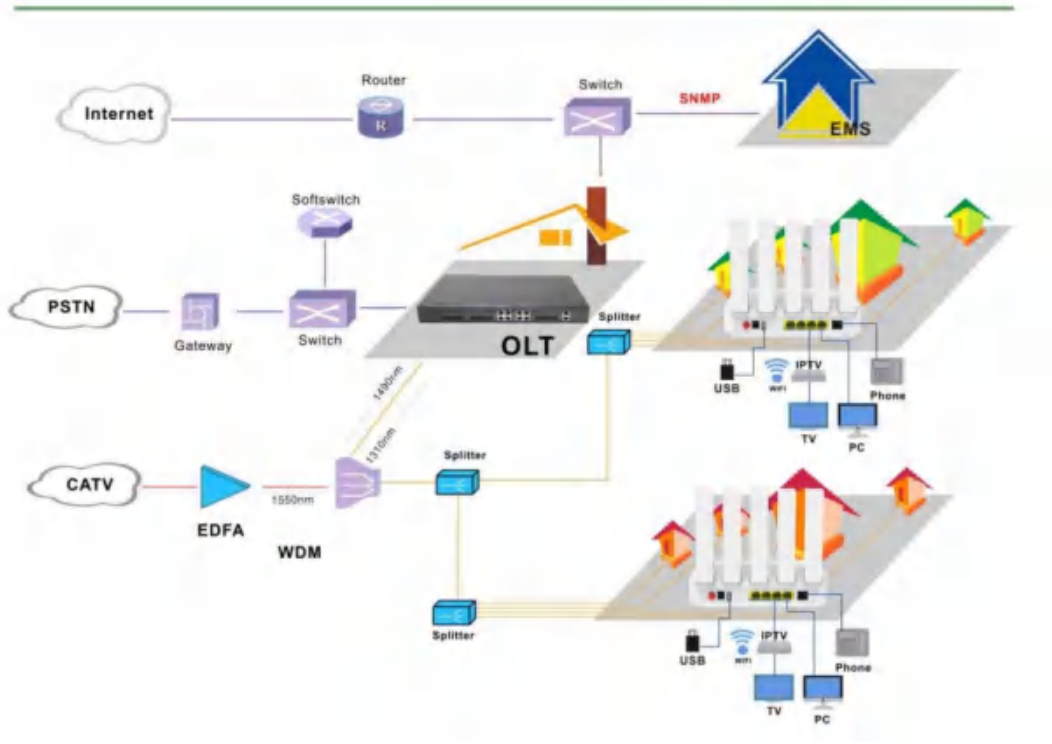

Figure 1-2: Application chart

1.5 Panel description

LED	Status	Description
POWER	On	The device is powered up.
	Off	The device is powered down.
PON	On	The device has registered to the PON system.
	Blink	The device is registering the PON system.
	Off	The device registration is incorrect.
LOS	Blink	The device doses not receive optical signals.
	Off	The device has received optical signal.
LAN1/2/3/4	On	Ethernet connected properly (LINK).
	Blink	Ethernet is sending or/and receiving data (ACT).
	Off	Ethernet connection exception or not connected.
WIFI(2.4/5G)	On	Wifi enable
	Blink	WIFI is sending or/and receiving data
	Off	Wifi disable
POTS	On	POTS connected properly (LINK).
	Blink	POTS is sending or/and receiving data

	Off	POTS connection exception or not connected.
WPS	Off	WPS connection exception or not connected.
	On	WPS connected
	Blink	WPS is conecting.

Table 2: Panel Lights Description

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 shipings, please contact carrier; other damage or lack of some parts, please contact with dealer.

Contents	Description
ONU	1 pcs
Power Adapter	1 pcs

Table 3: Packing Contents

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. The receiver optical power should be between -8dbm and -27 dbm by using 1490nm.

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. If the product has the power button, please push the power button before used.
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 Panel Lights Description 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.

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 management default IP address is 192.168.1.1;

3、 Open your web browser, type the device IP in address bar;

4、 Entry of the user name and password will be prompted. Enter the default login user name /password and check code in the picture.

By default, there are two user levels for management. Administration level user name is "admin", password is "admin". Normal level user name is "useradmin", password is "Zxic521!".

The Administration account is able to access and modify all settings of ONU.

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

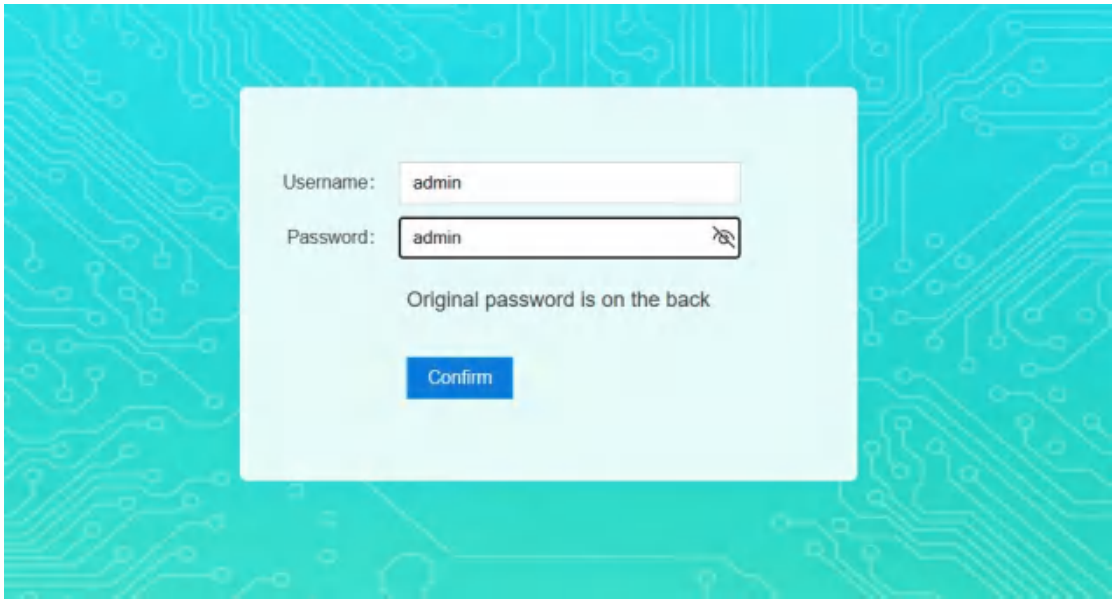

Figure 3-1: Login

3.2 Status

This menu supports to check the device information、Network Interface、User Interface.

3.2.1 Device

This part shows the main information of device status and basic settings

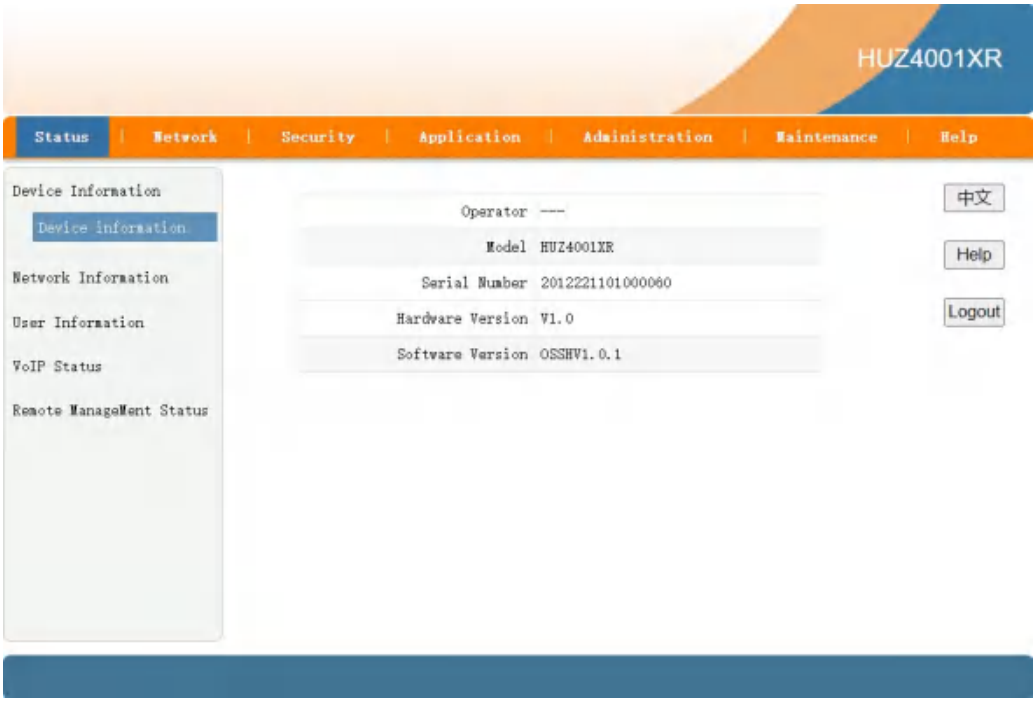

Figure 3-2:Device Information

3.2.2 Network Interface

This part shows the main information of WAN IPv4/IPv6 Configuration,PON Inform,PON Alarm.

3.2.2.1 WAN Connection

This part shows the WAN IPv4/IPv6 Configuration.

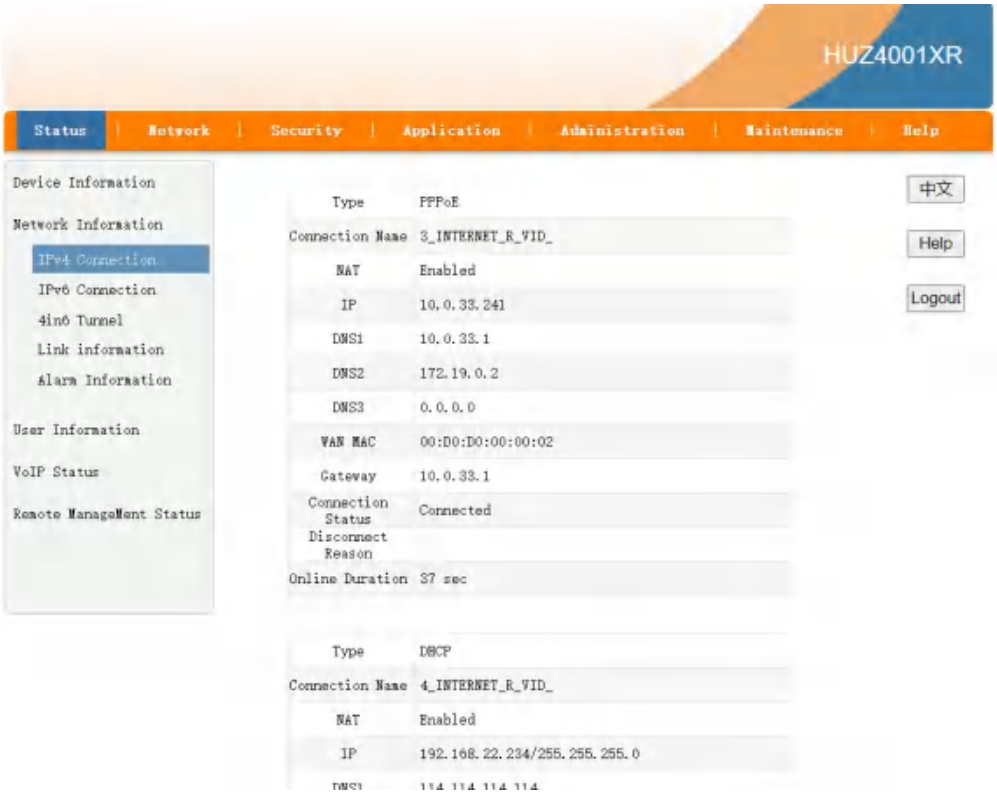

Figure 3-3:WAN Connection

3.2.2.2 PON Inform

This part shows the main information of PON module(Tx Power/Rx Power) and EPON/GPON register Status.

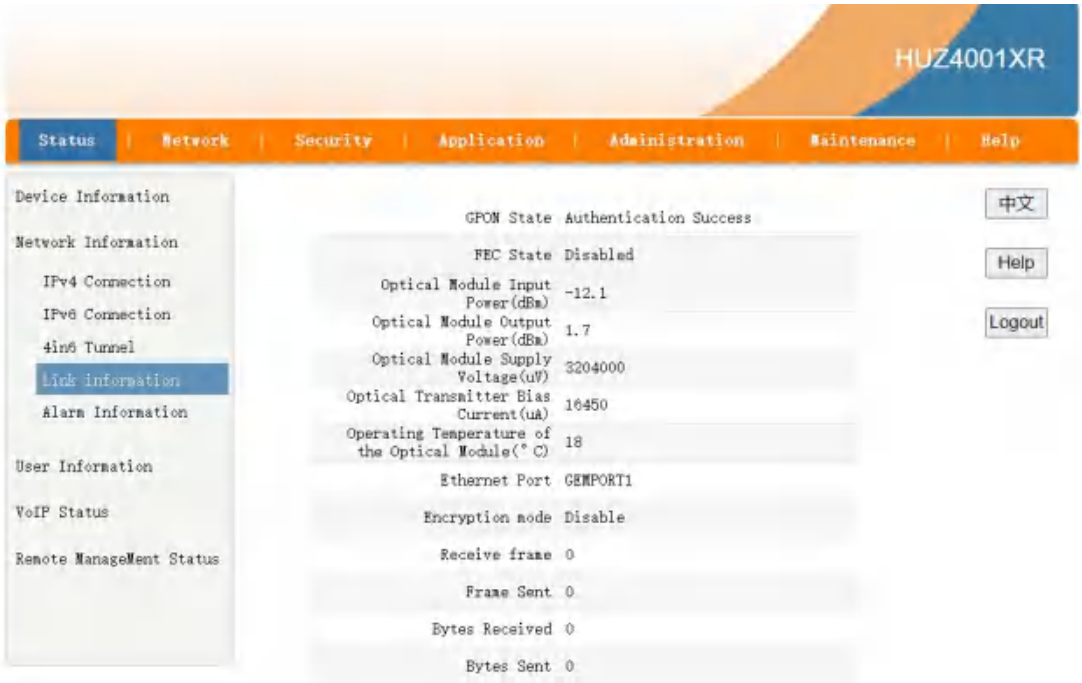

Figure 3-4:PON Inform

3.2.2.3 PON Alarm

This part shows the PON Alarm information.

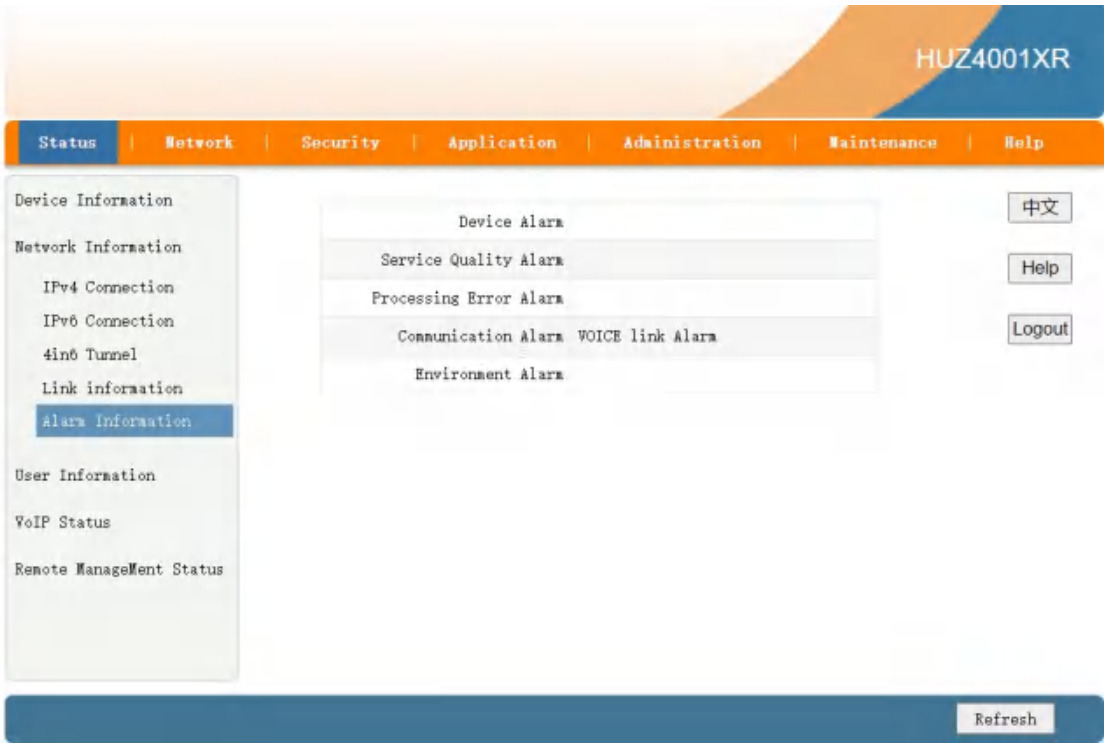

Figure 3-5: PON Alarm

3.2.3 User Interface

3.2.3.1 Ethernet

This part shows the Ethernet Port Information.

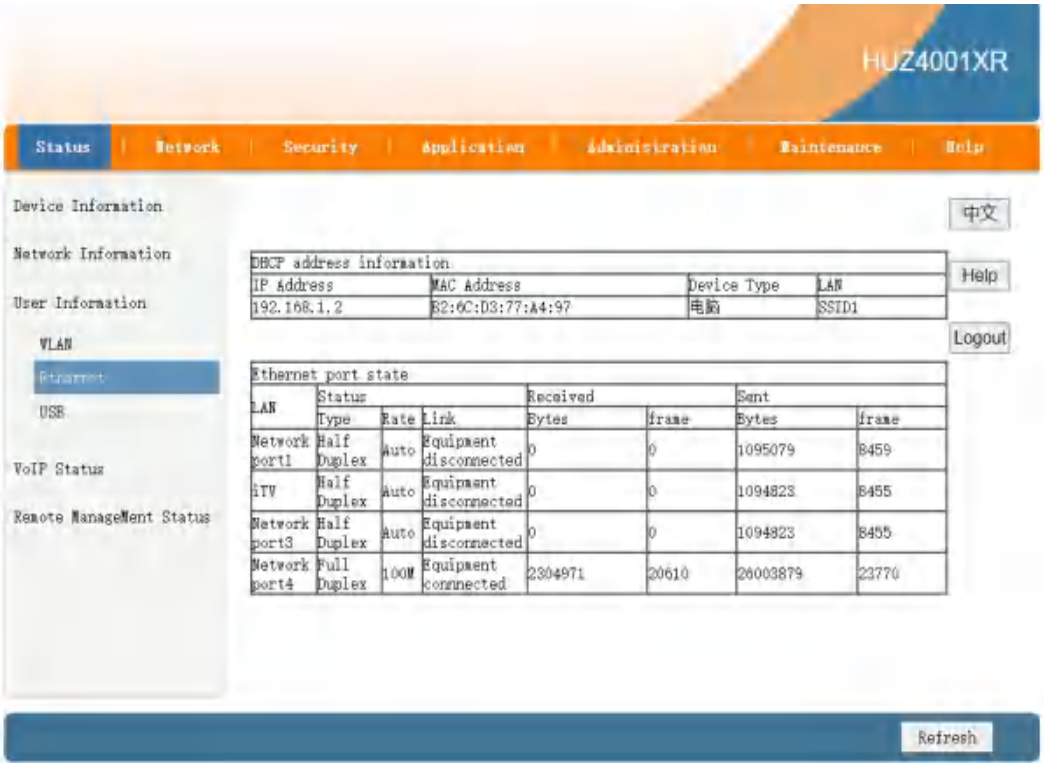

Figure 3-6: Ethernet Interface

3.2.3.2 WLAN interface

This part shows the WLAN Information.

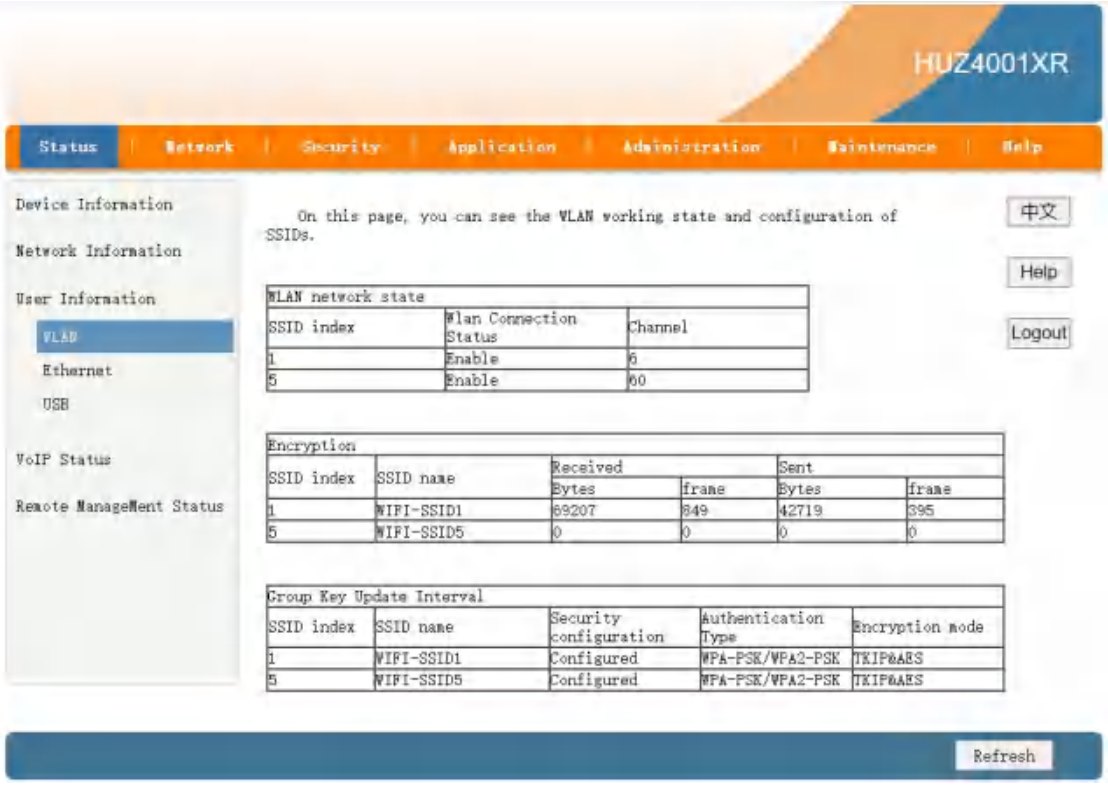

Figure 3-7: WLAN Interface

3.2.3.3 USB interface

This part shows the USB Information.

Figure 3-8: USB Interface

3.3 Network

This part allows the user to configure WAN connection, LAN information, Routing and Port Configuration.

3.3.1 WAN

This part allows the user to configure WAN connections. You can add/delete/modify WAN connections according to local network demand.

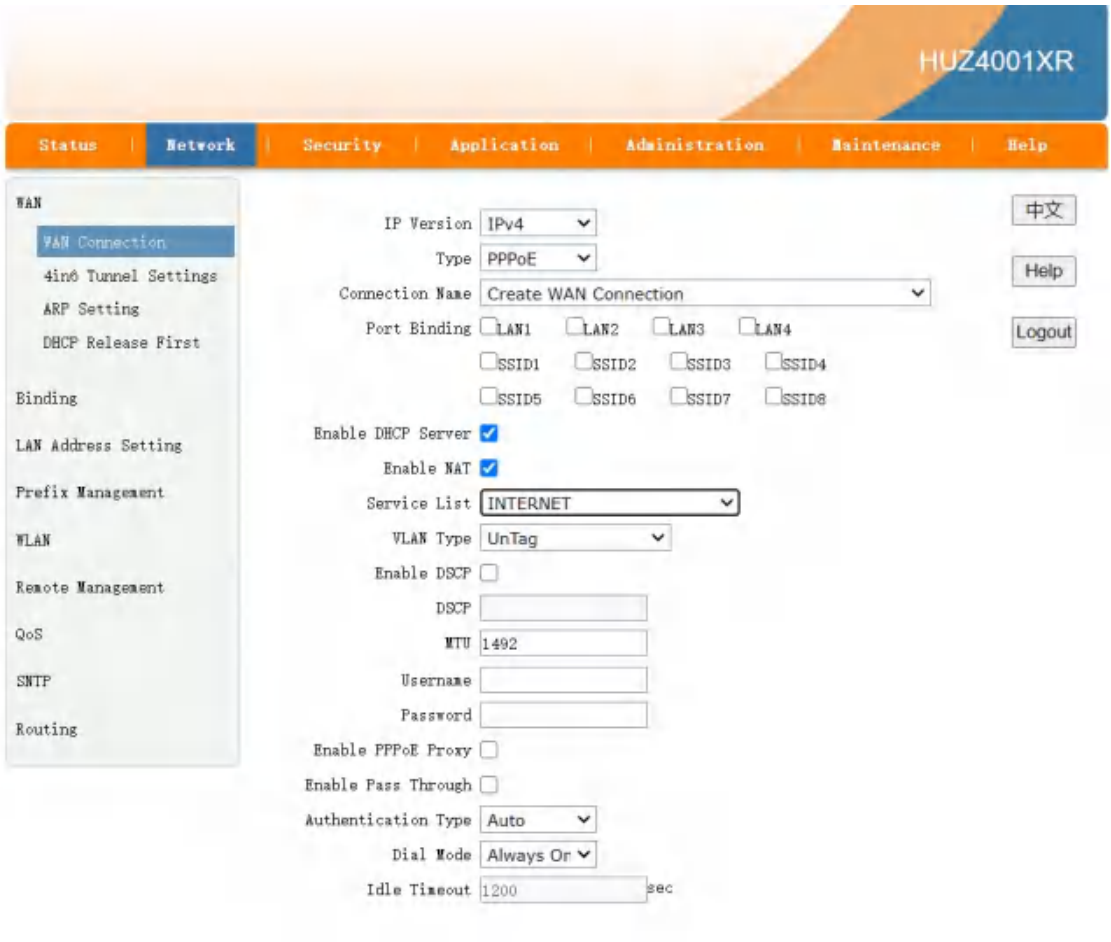

Figure 3-9: WAN Configuration

Parameter		Description
Interface		The interface of WAN connection which system will distribute automatically according to the current wan connections If you want to create a new WAN connection, please select “Create WAN connection” and input other WAN Parameters at the same time and then click “Create” button. If you want to modify/delete WAN connection, please select the WAN interface which you want to change and then click “Modify” or “Delete” button.
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 1~4094. Usually VLAN 1 donot use.
802.1P		Select VLAN priority you want to set. Range is 0~7. Default empty (means 0)
Link Type		IP/PPP .

		IP mode(IPoe):ONU works on Route mode,wan connection get the IP via DHCP or set the statics IP. PPP mode(PPPoe):ONU works works on Route mode,wan connection get the IP via PPPoE.
Enable NAT		If you select Route WAN Connection,the NAT option is default enable.If you select Bridge WAN connection,the NAT option is default disable. Checked indicates the NAT Function is enabled.
Service List		Service mode indicates what the wan connection is used for. INTERNET for choosing. INTERNET: means wan connection used for Internet service.
MTU		Max transfer unit. Default Value (in Byte): 1500(static/DHCP) or 1492(PPPoE).
Enable IGMP-Proxy		Checked indicates the IGMP-Proxy Function is enabled. If you want to use multicast function in Route wan connection,please enable this option.
IP Version		IPv4、IPv6、IPv4/IPv6
PPPoE	Username	PPPOE account.
	Password	PPPOE password.
	DMS Name	PPPOE DMS Name.
	Authentication Type	Auto、CHAP、PAP，Usually default choose Auto
	Dial Mode	Always on /Connect on Demand
IP Type		Static：means use the statics IP DHCP：means use the DHCP Proctol to get the IP address
IP Address		IP address about current WAN connection.
Subnet Mask		Subnet mask about current WAN IP address.
Gateway		Gateway about current WAN connection.
DNS Server1		The Primary DNS of current WAN connection
DNS Server2		The Secondary DNS of current WAN connection
DNS Server3		The Tertiary DNS of current WAN connection
Port Binding		Network port binding WAN connection
DHCP Server		Enable/Disable DHCP Server

Table 4: WAN parameters

3.3.2 LAN

This menu supports the management of the LAN DHCP Server, RA Service, DHCP server(IPv6), Prefix Management, Port Service(IPv6).

3.3.2.1 DHCP Server

Dynamic Address management, including Dynamic Address distribution, and parameters distributed to equipment, such as lease time, address range, DNS, etc.

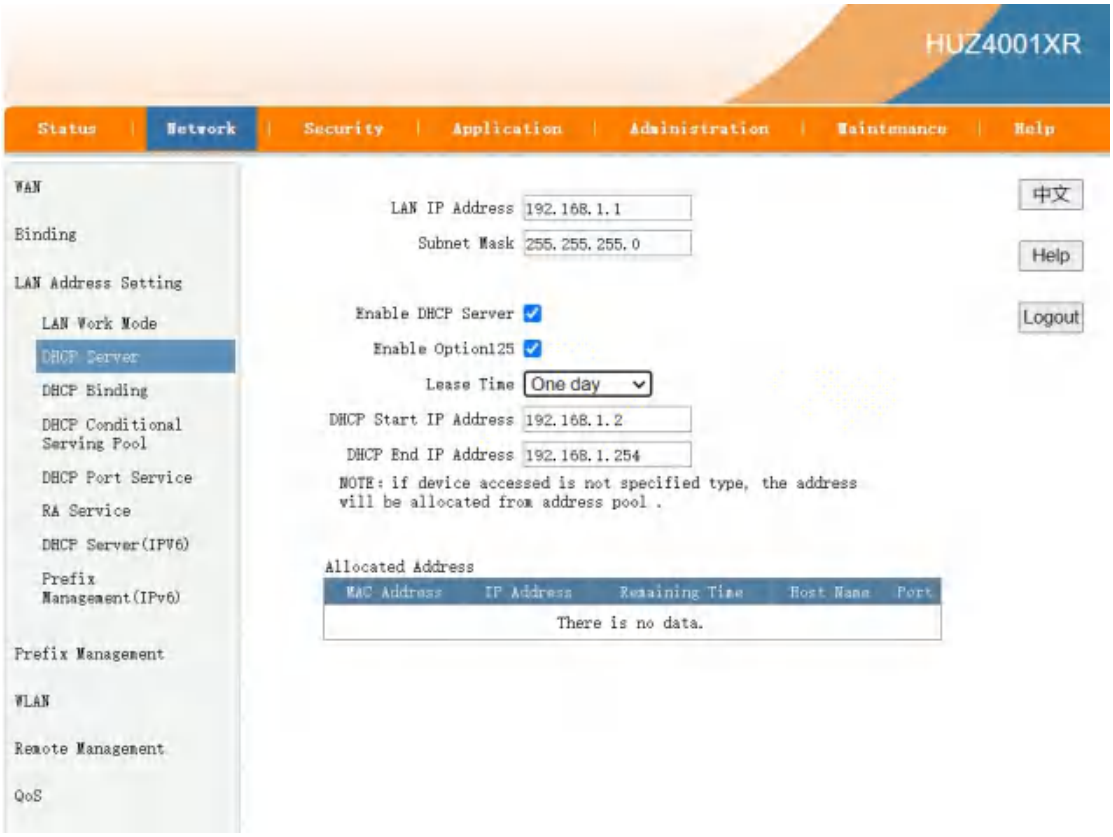

Figure 3-10: DHCP Server

Parameter	Description
Subnet Mask	Subnet Mask about DHCP Pool address and LAN IP
Lease Time	Lease time of LAN DHCP Server

Table 5: DHCP Server parameters

3.3.2.2 RA Service

This part supports the management of RA Service, including Minimum Wait Time, Maximum Wait Time, Manage Flag and Other Config Flag.

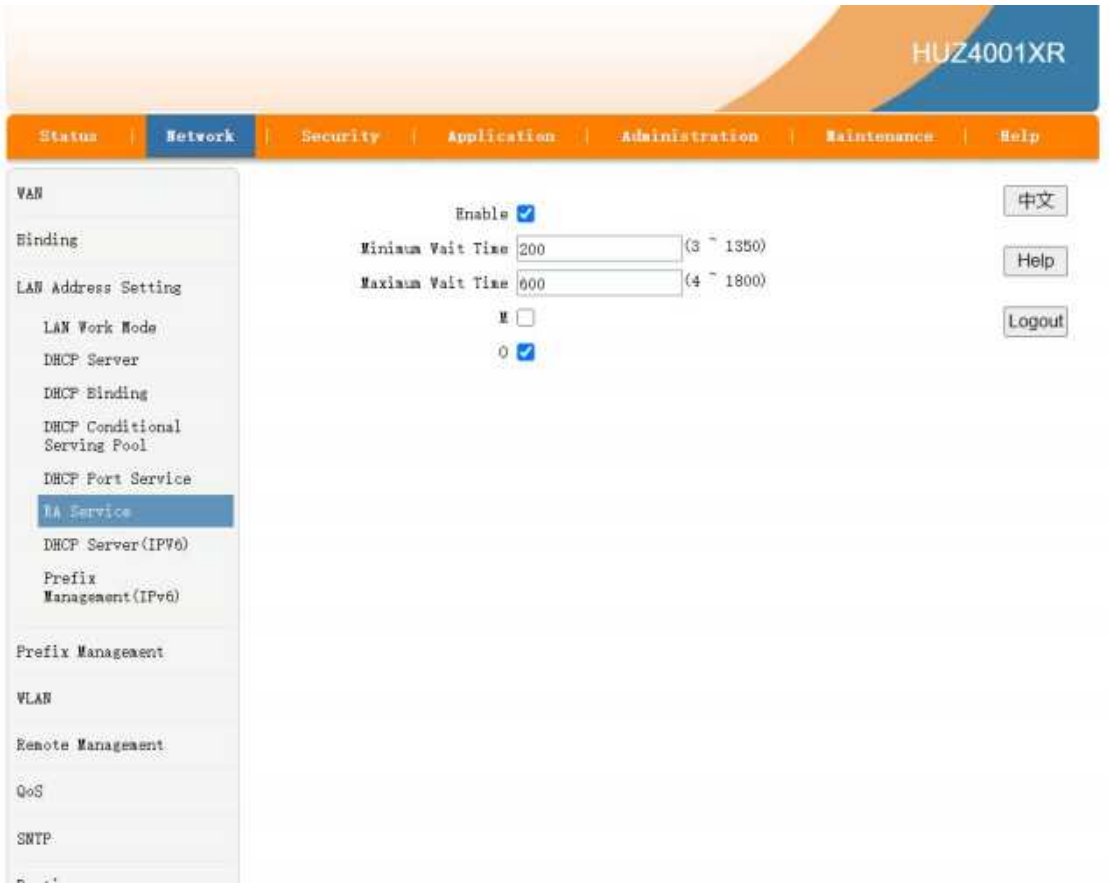

Figure 3-11: RA Service

3.3.2.3 DHCP Server(IPv6)

DHCP Setting, include enable DHCP or not, and setting parameters of device lease time, device address and so son.

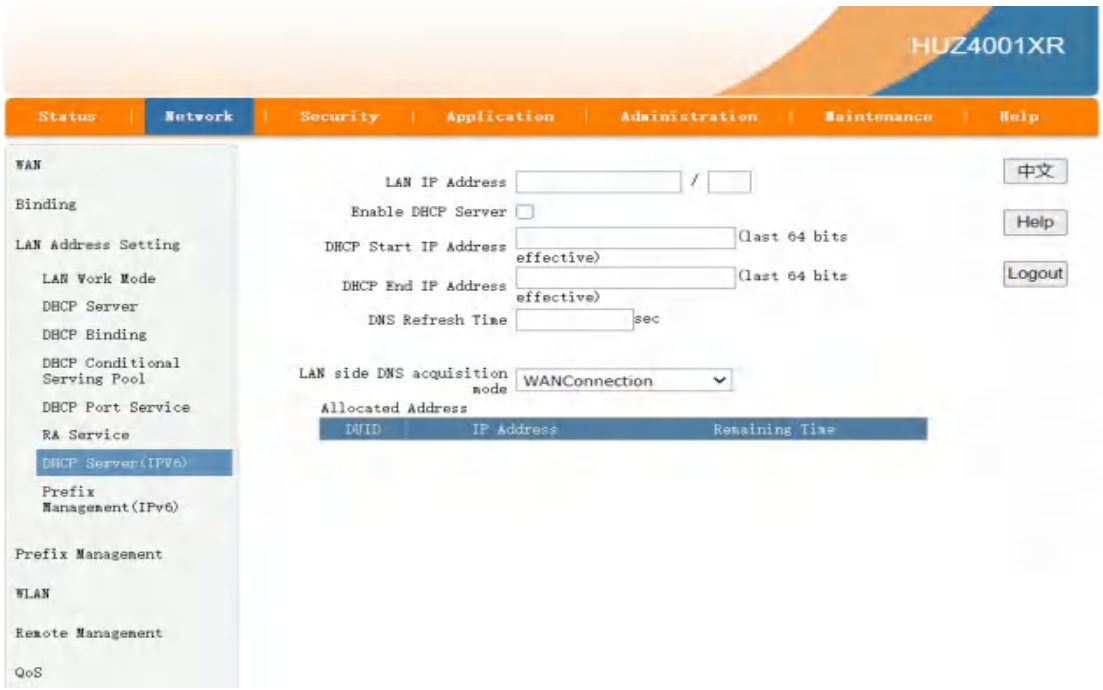

Figure 3-12: DHCP Server(IPv6)

3.3.2.4 Prefix Management

This page is used to display and modify the prefix information. The prefix can be obtained automatically, or configued manually. And the information is not allowed to be modified when prefix source is None.

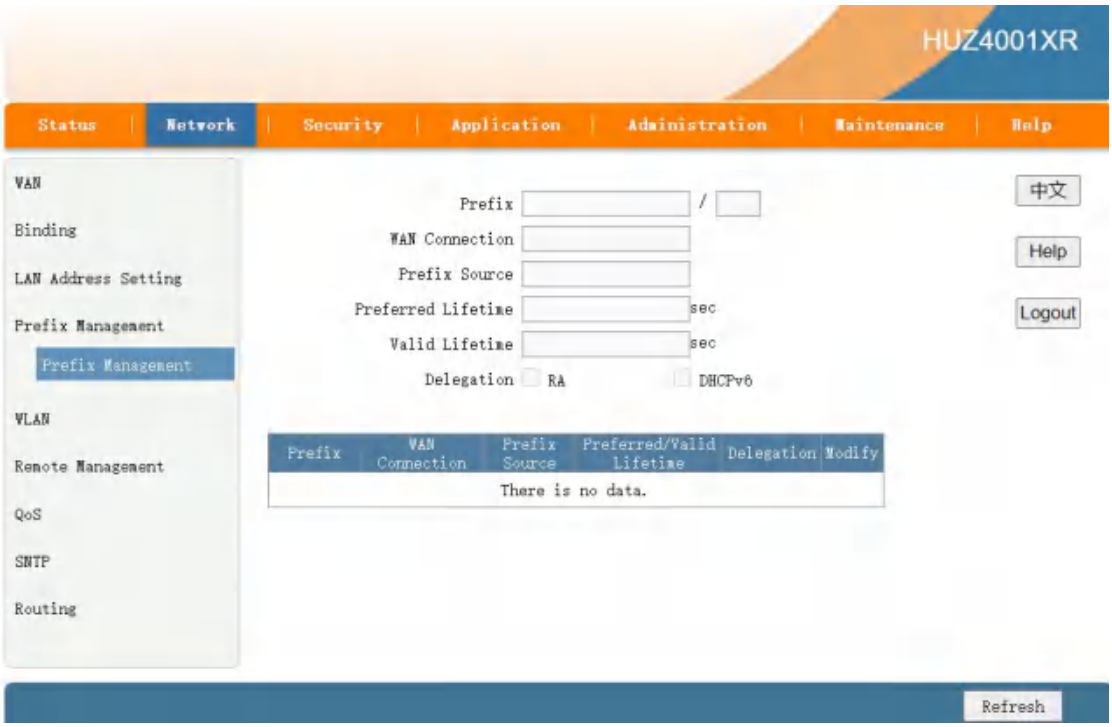

Figure 3-13:Prefix Management

3.3.2.5 DHCP Port Service

Configure the DHCP serivce of each port.

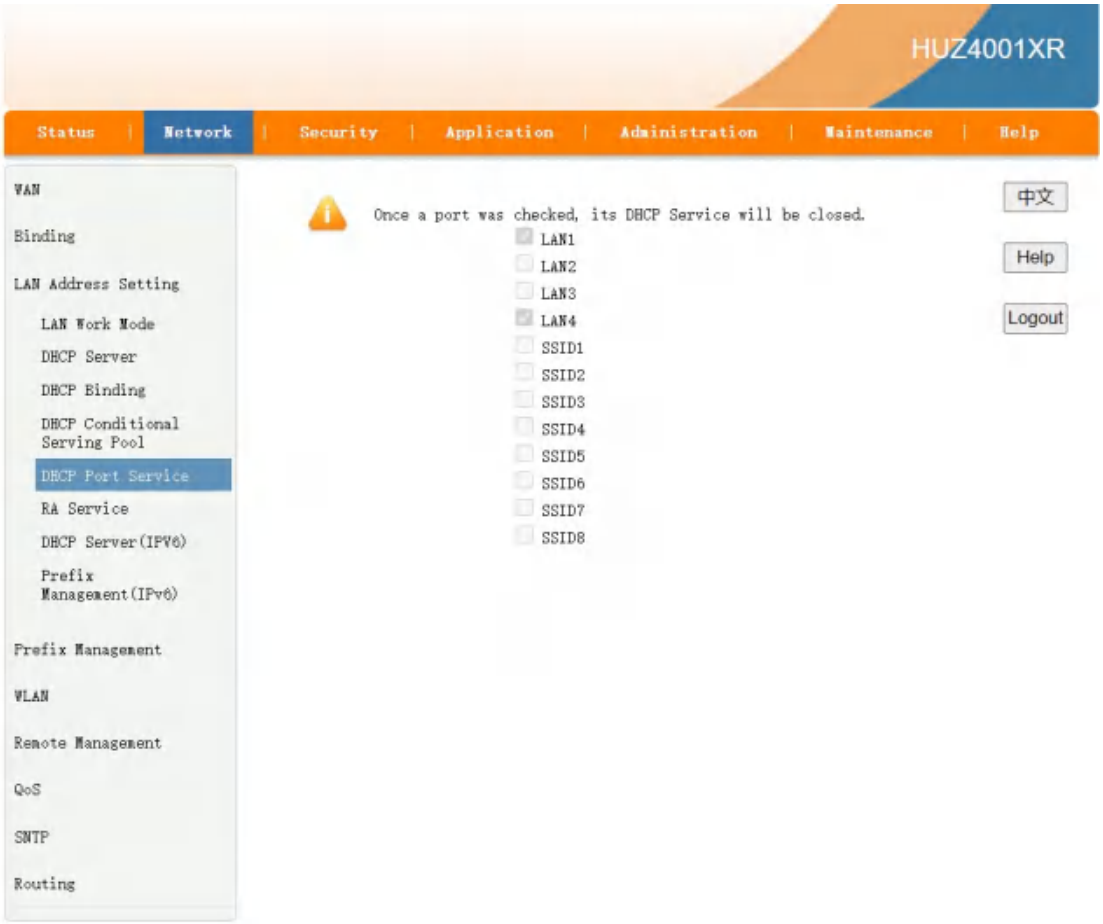

Figure 3-14:Port Service

3.3.3 WLAN

3.3.3.1 Basic

Configure WLAN basic parameters, such as radio, channel, wireless mode, transmitting power, etc.

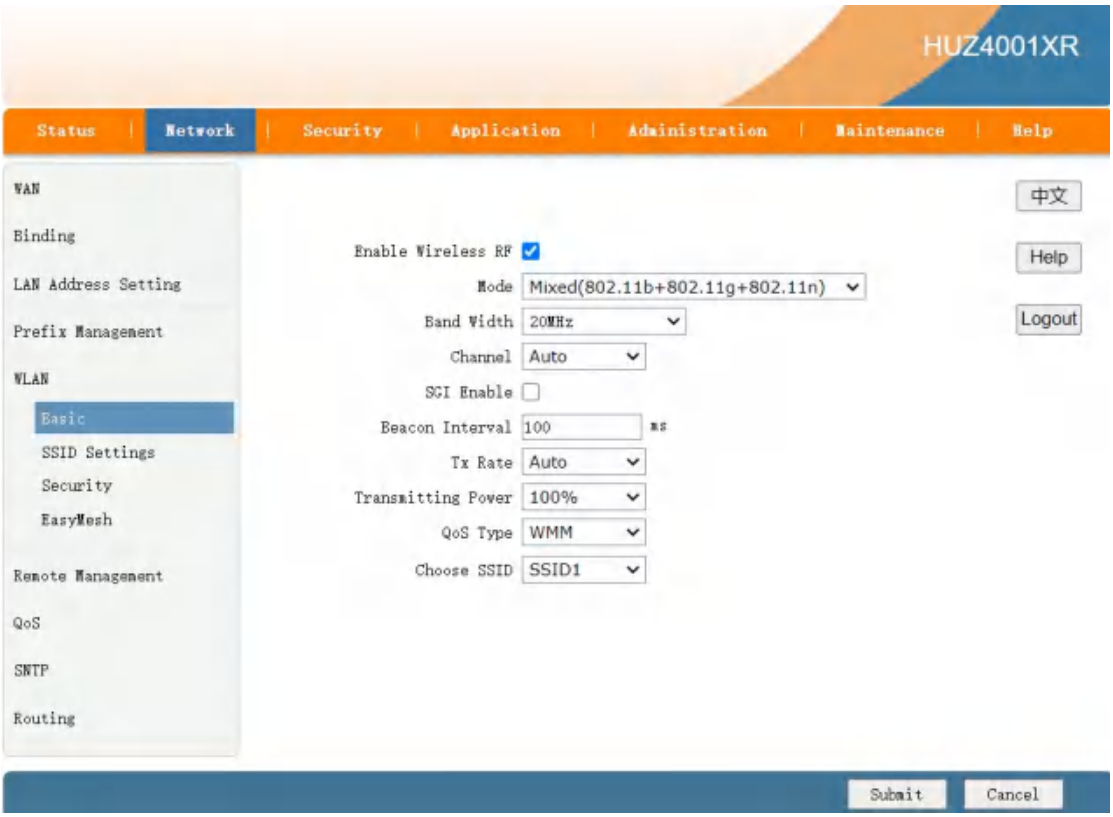

Figure 3-15: WLAN Basic

3.3.3.2 SSID Settings

SSID name, hiding SSID, Enable, SSID priority, etc.

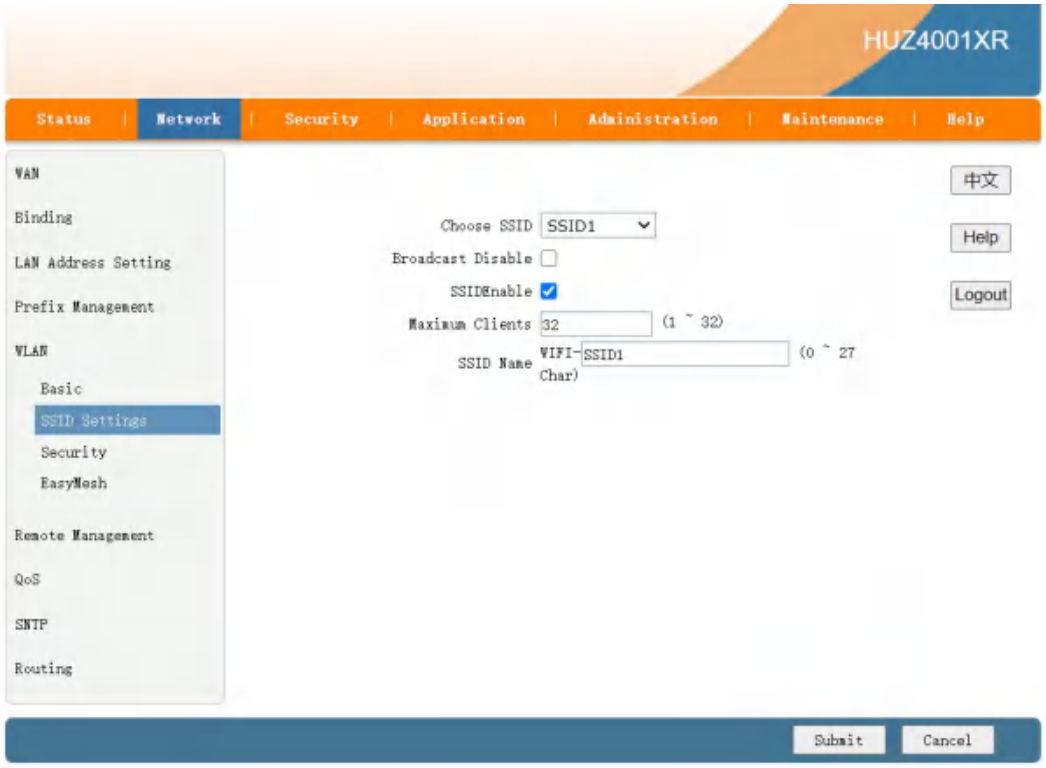

Figure 3-16: SSID Settings

3.3.3.3 Security

SSID security setting, supported methods: None, WEP, WPA, WPA2, WPA/WPA2, etc.

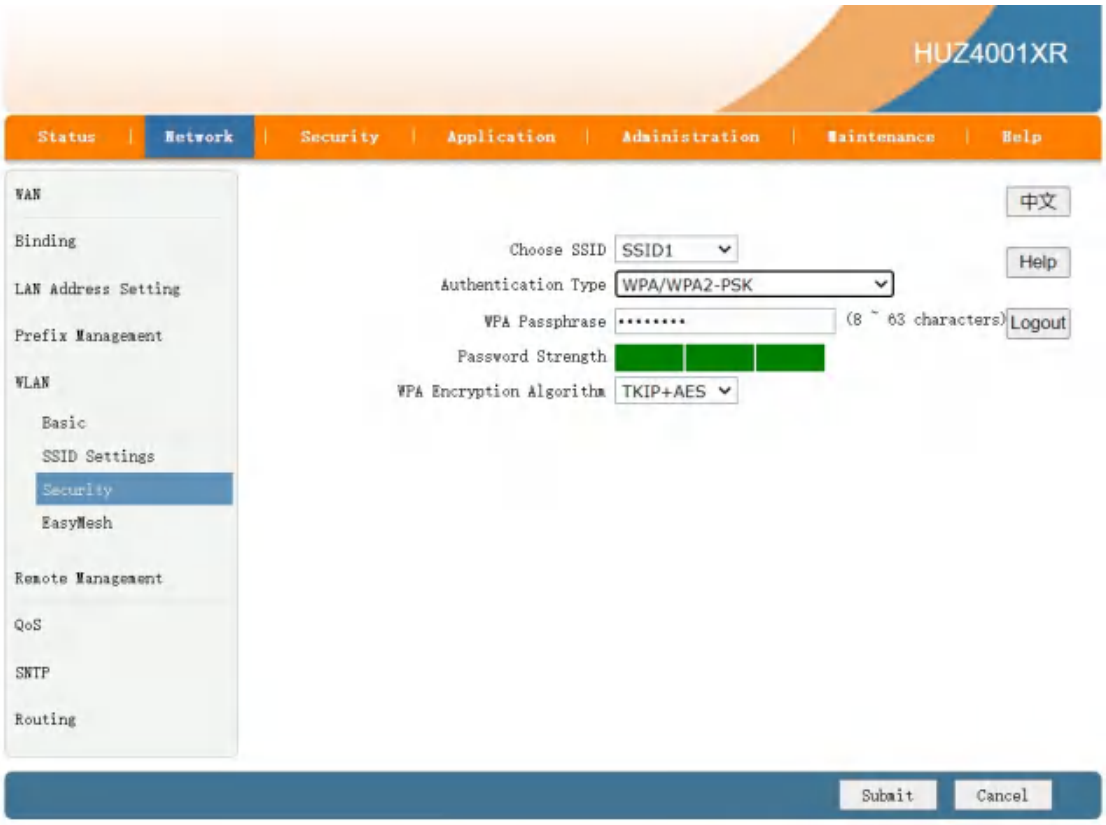

Figure 3-17: WLAN Security

3.3.4 Routing

3.3.4.1 Dynamic Routing

Dynamic routing, enable RIP, RIPv1 and RIPv2 protocol can be supported, including RIPv2 authentication.

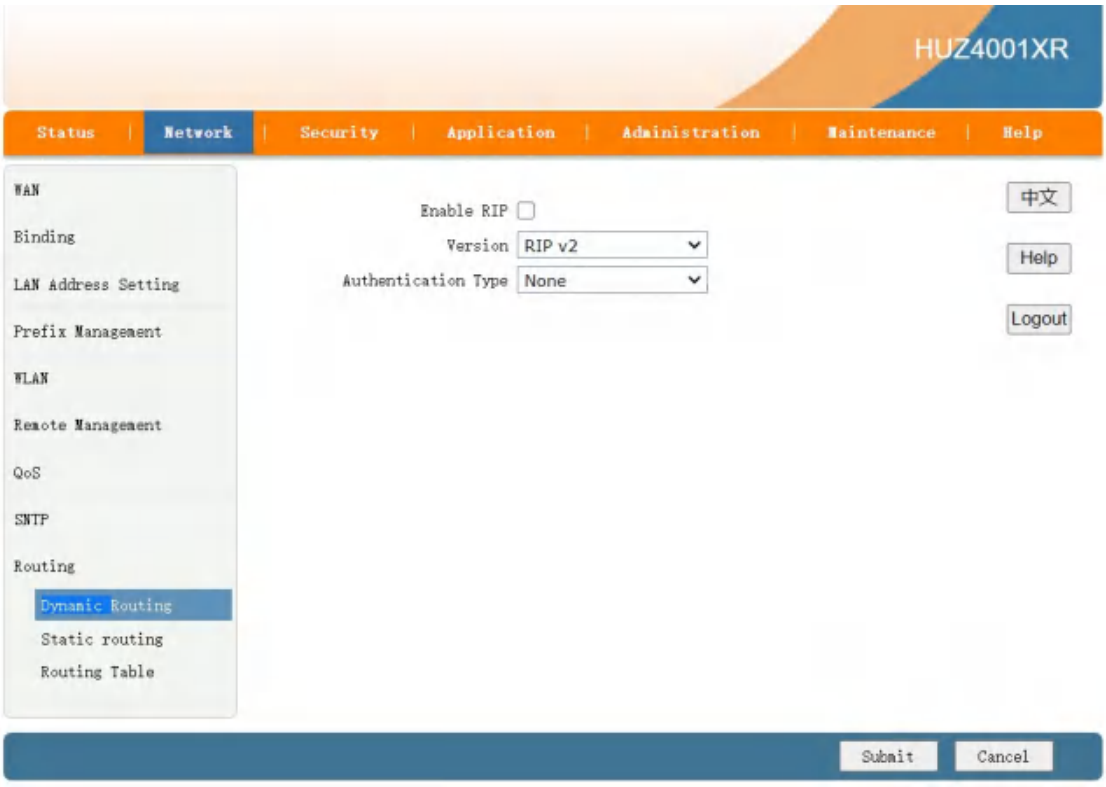

Figure 3-18: Dynamic Routing

3.3.4.2 Static Routing

Static Routing Configuration:select a WAN connection as the Route Interface, then configure destination IP, Mask, Gateway.

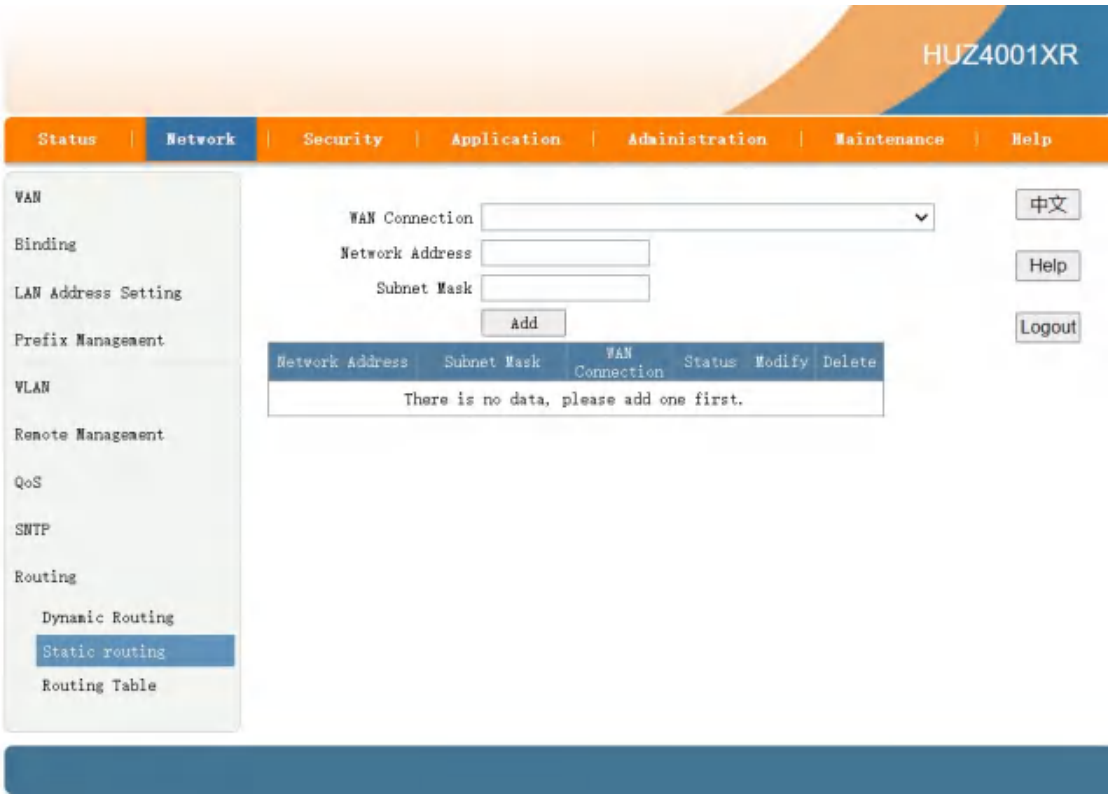

Figure 3-19: Static routing

3.3.4.3 Routing Table

Route Information View, such as Network Address, Subnet Mask, Gateway, Interface Information.

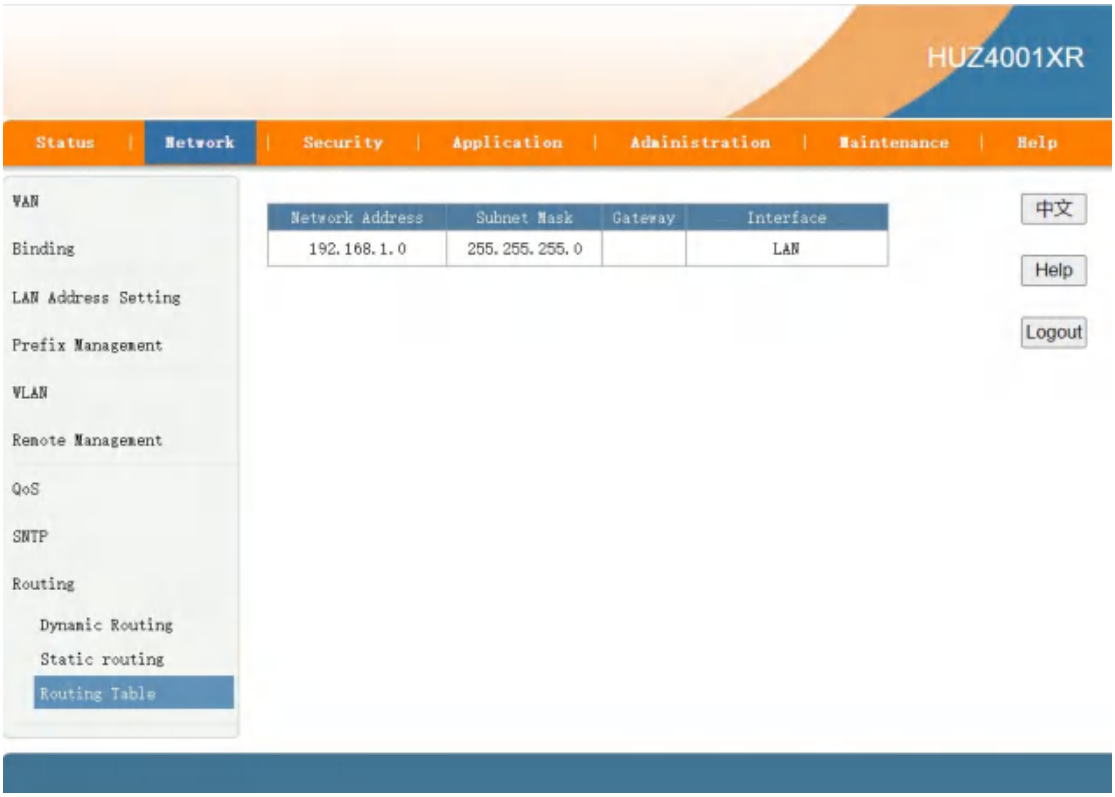

Figure 3-20: Routing Table

3.4 Security

3.4.1 Firewall

3.4.1.1 Security level

Security level, the use of the operation, you can set the firewall level (IPv4) to high or low, after setting, a new firewall status will be showed.

Figure 3-21: Firewall level

3.4.1.2 Anti-Hacking Protection

Attack protection Settings, you can open or close Anti-Hacking Protection.

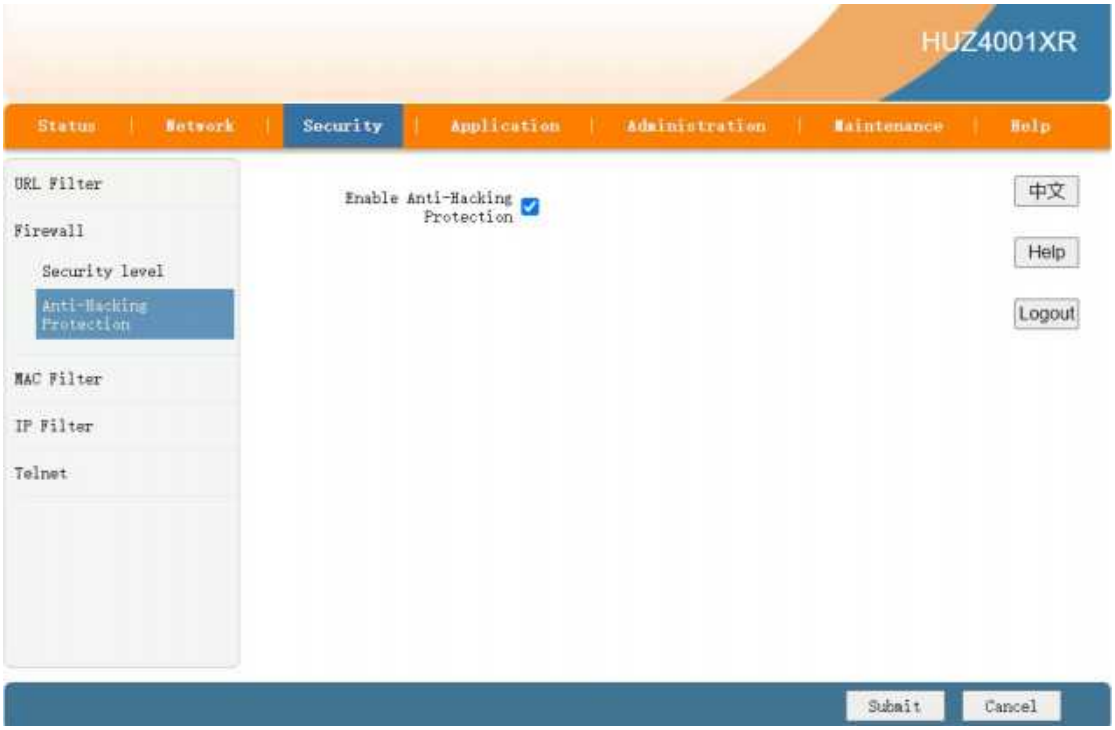

Figure 3-22: Anti-Hacking Protection

3.4.2 MAC Filter

MAC Address Filter: The MAC Address Filter settings can set the relevance parameters of the MAC filter function. The user interface will display the set MAC Filter rules after setting completed.

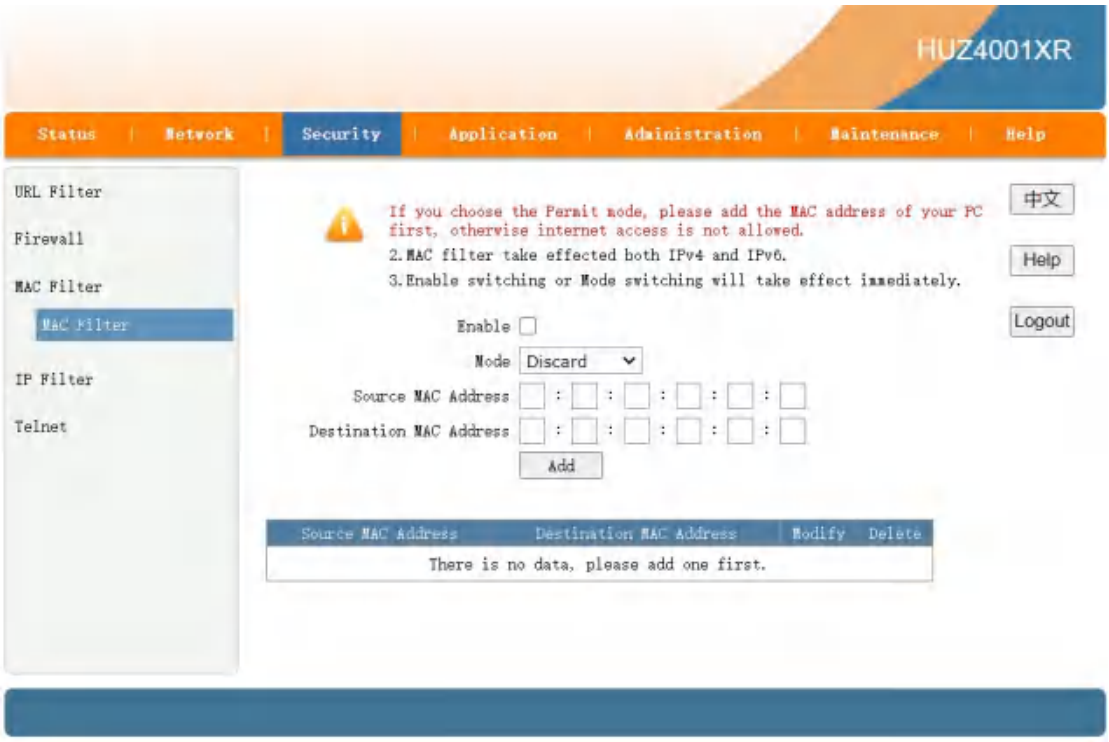

Figure 3-23: MAC Filter

3.4.3 IP Filter

This page allows the user to set the rule to filter the packet. After setting, this page displays the rule.

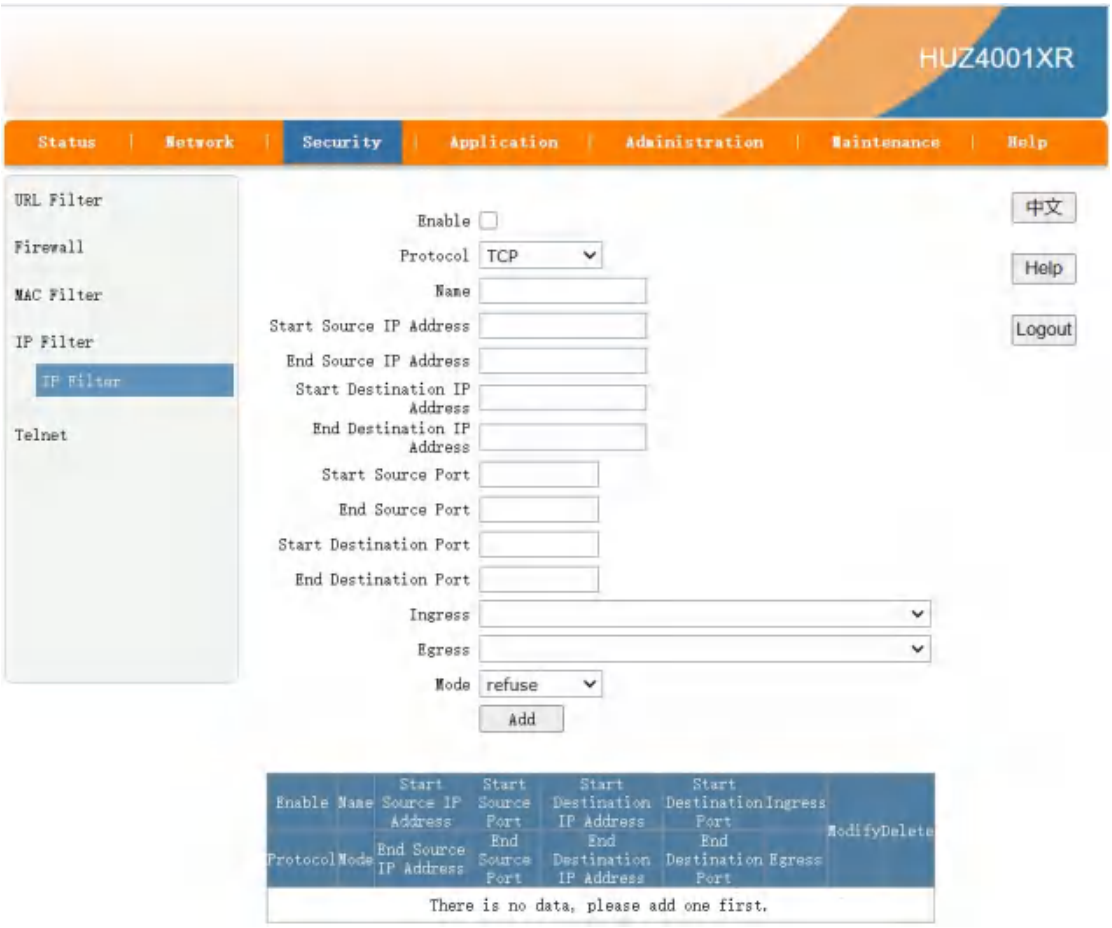

Figure 3-24: IP Filter

3.4.4 Telnet

Telnet configuration: used to open or close the Telnet Telnet function and WAN side.

Figure 3-25: Telnet

3.5 Application

3.5.1 Advanced NAT Settings

3.5.1.1 ALG Setting

This page allows the user to set ALG switch. After setting, this page displays the new state of ALG switch.

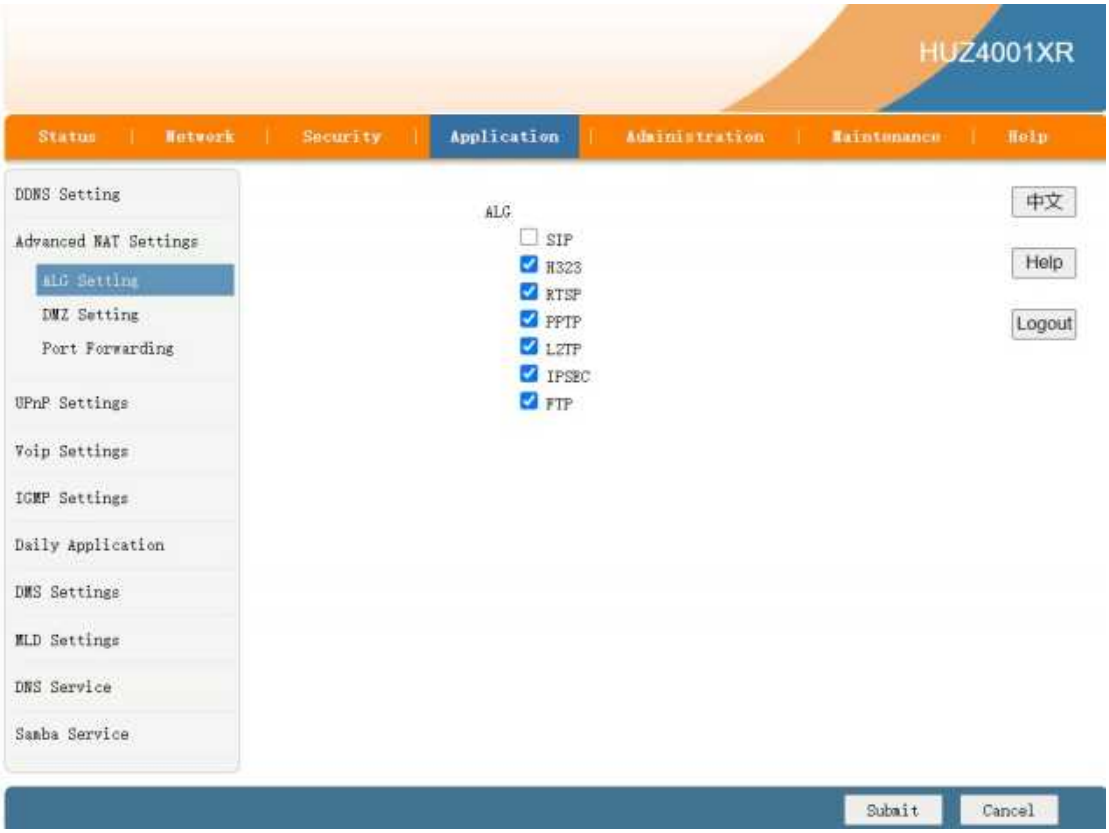

Figure 3-26: ALG Setting

3.5.1.2 DMZ Setting

This page allows to set DMZ Host and displays the information of DMZ Host.

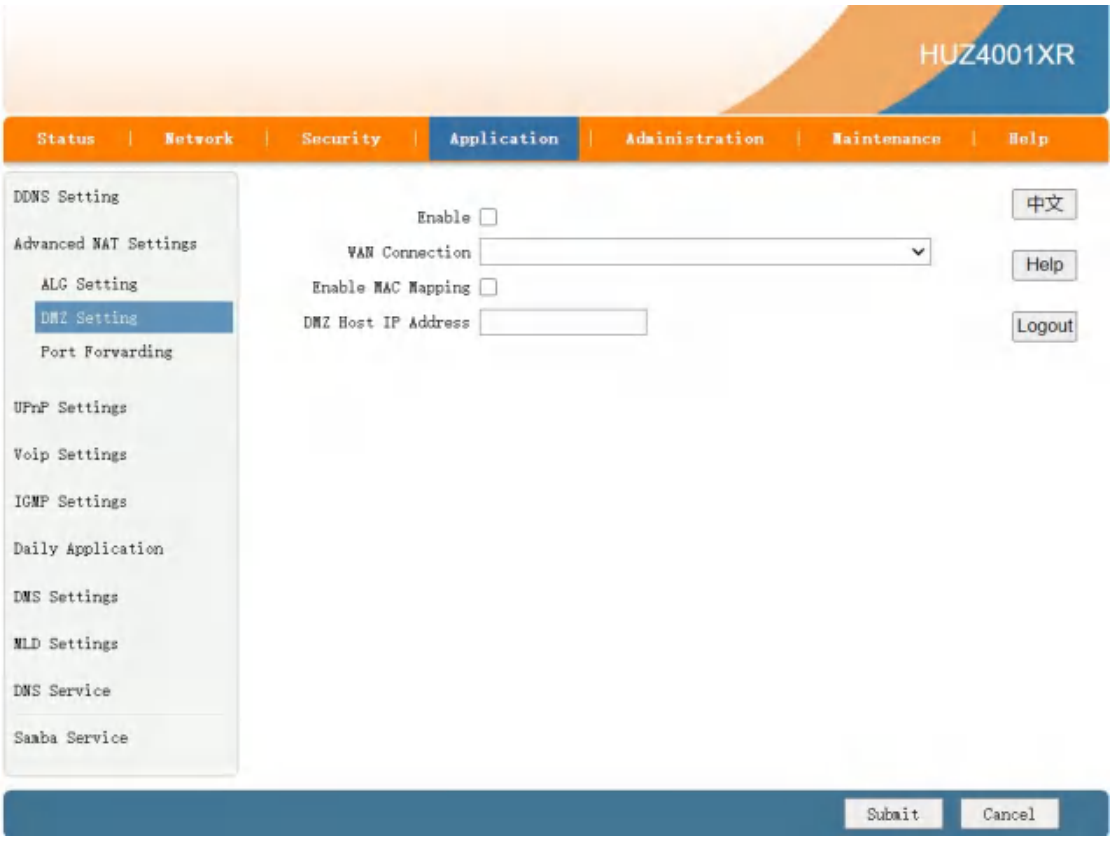

Figure 3-27: DMZ Setting

3.5.1.3 Port Forwarding

Users can use the application name to set a virtual server. if you enable virtual server configuration, you can use Wide Area Network to access the virtual host.

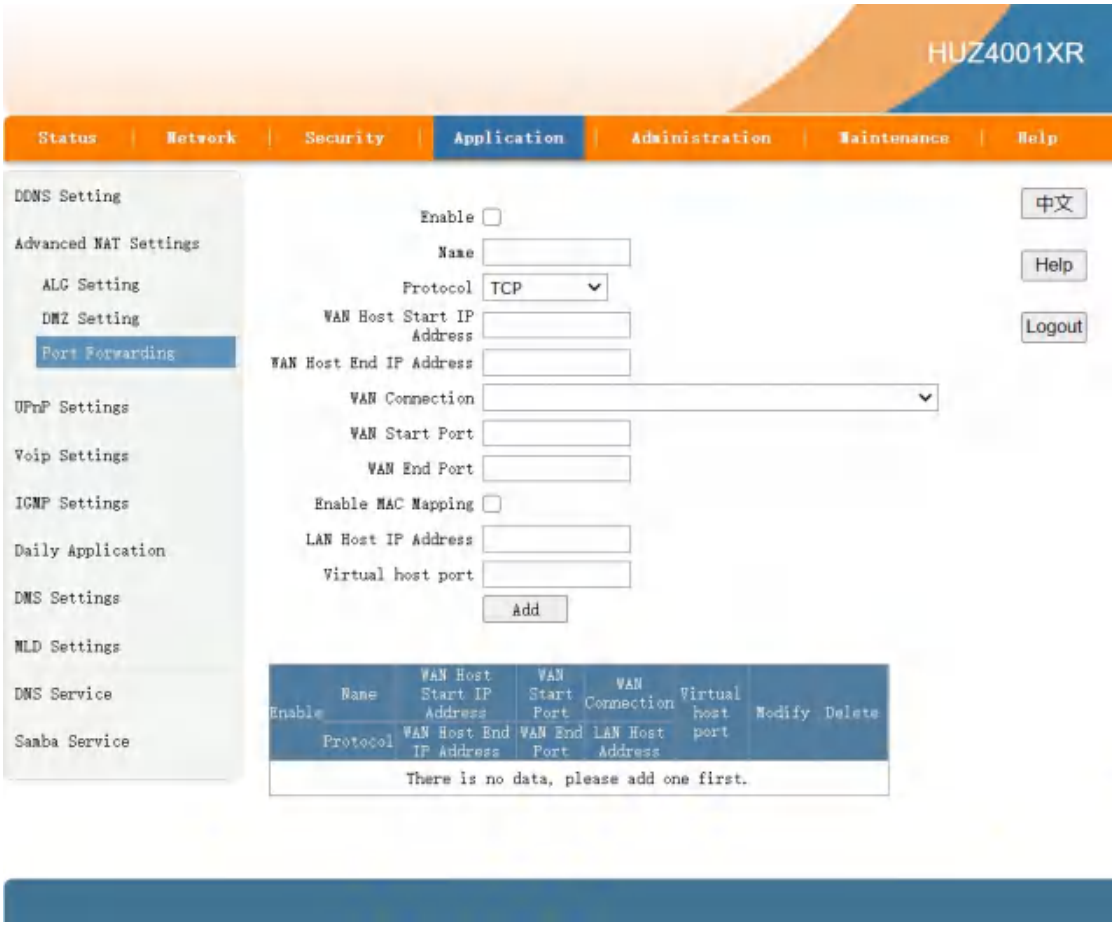

Figure 3-28: Port Forwarding

3.5.2 DNS Service

3.5.2.1 Domain Name

Domain Name is represent a small network in LAN side with a name space, it can be configured on interface of LAN side.

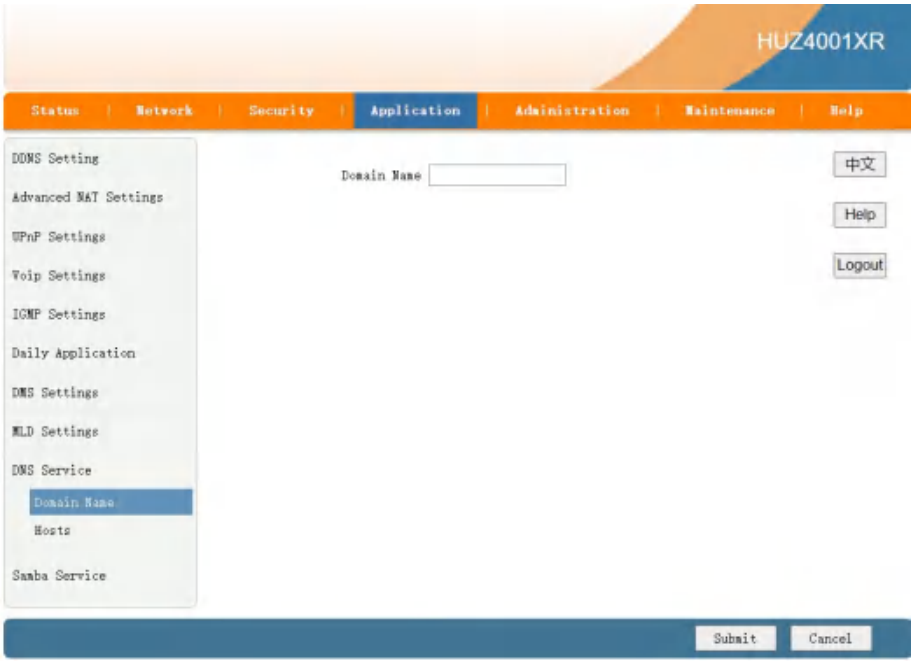

Figure 3-29: Domain Name

3.5.2.2 Hosts

Host Name is mapped with a IP Address, they can be configured by user to resolve DNS request.

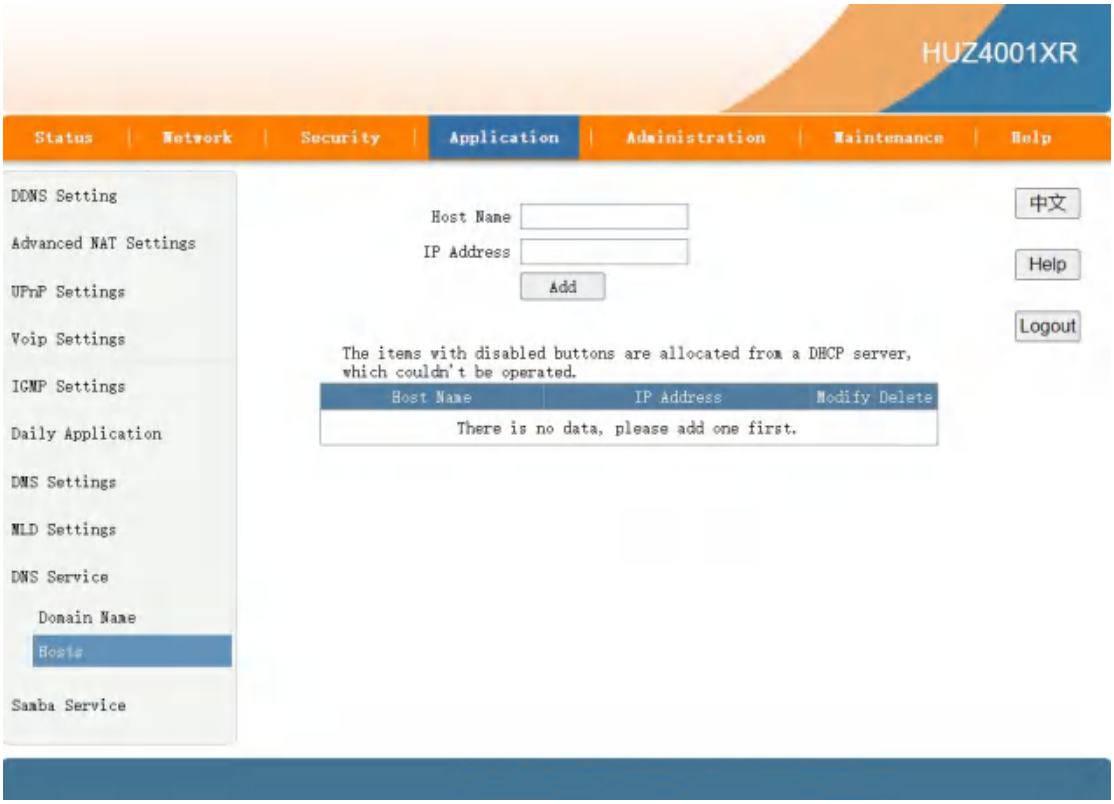

Figure 3-30: Hosts

3.5.3 IGMP Settings

3.5.3.1 IGMP SNOOPING

Enable IGMP Proxy, IGMP Snooping and configure some other parameters.

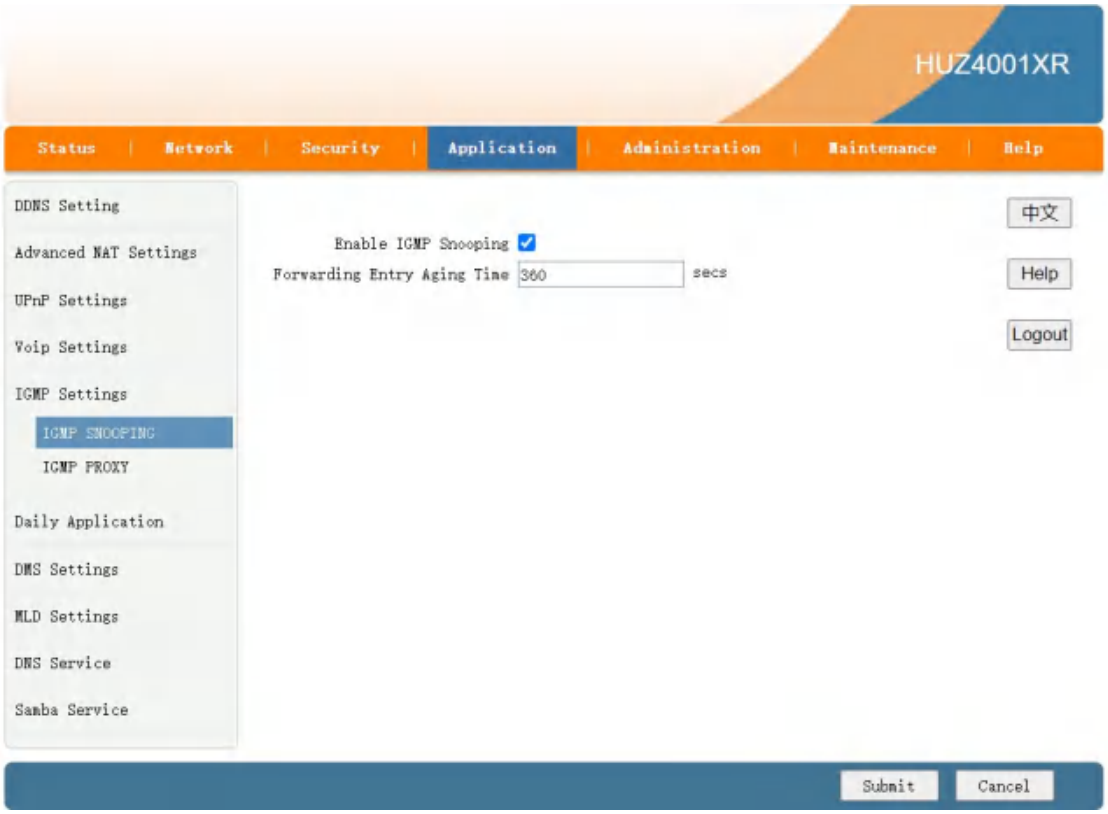

Figure 3-31: IGMP SNOOPING

3.5.3.2 IGMP PROXY

If you select "AutoSense" radio button, the configuration of binding relationship which you manually configure will be cleared away. If you select "Manual" radio button, you can choose the WAN Connection of bridge or route type for IGMP packet.

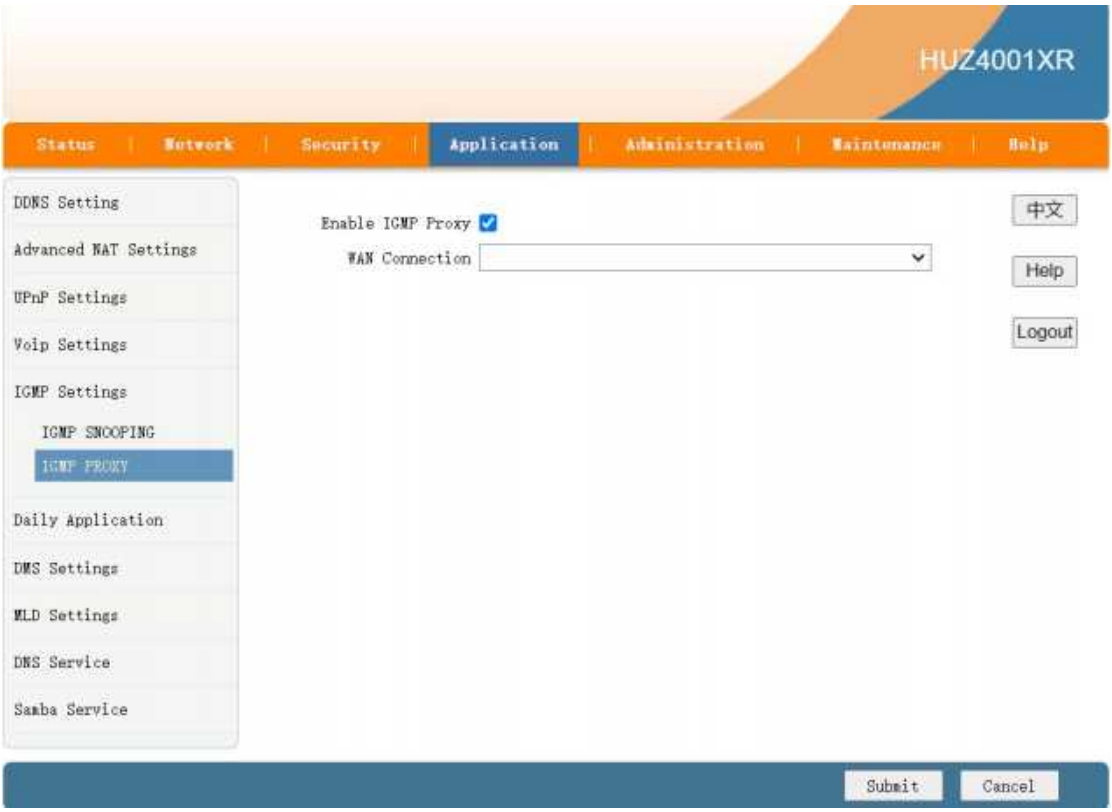

Figure 3-32: IGMP PROXY

3.6 Administration

3.6.1 User Management

Maintaining the WEB users accounts information of the device.

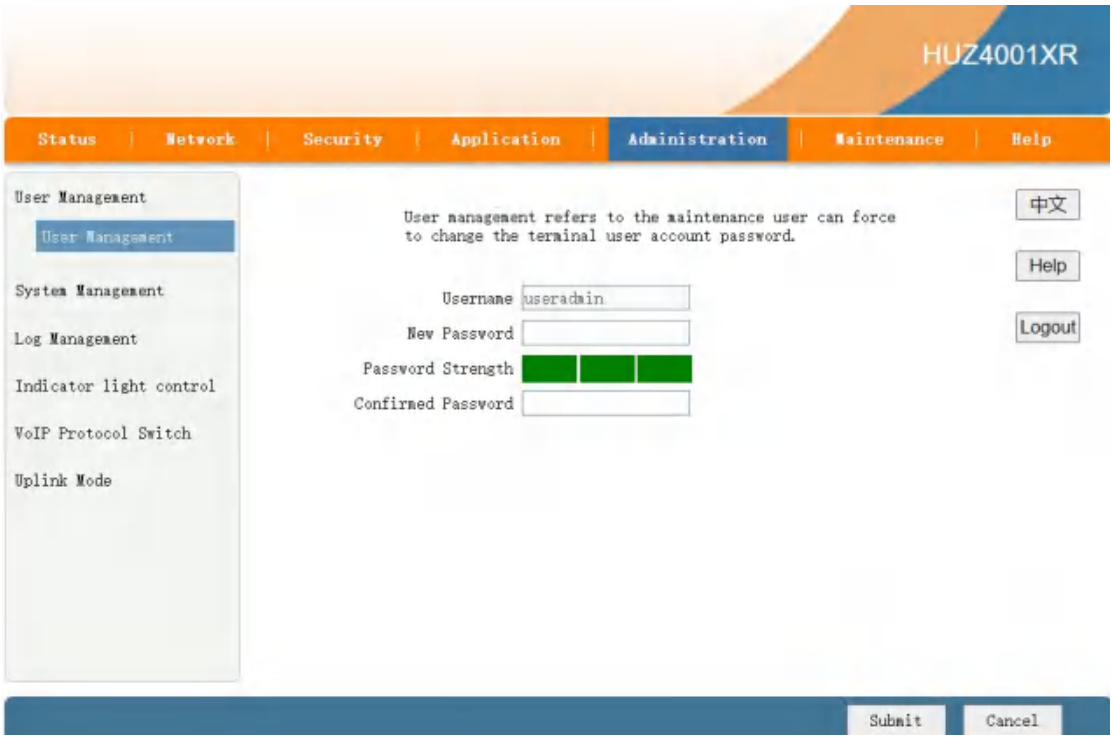

Figure 3-33: User Management

3.6.2 System Management

3.6.2.1 System Management

Reboot or restore default if needed.

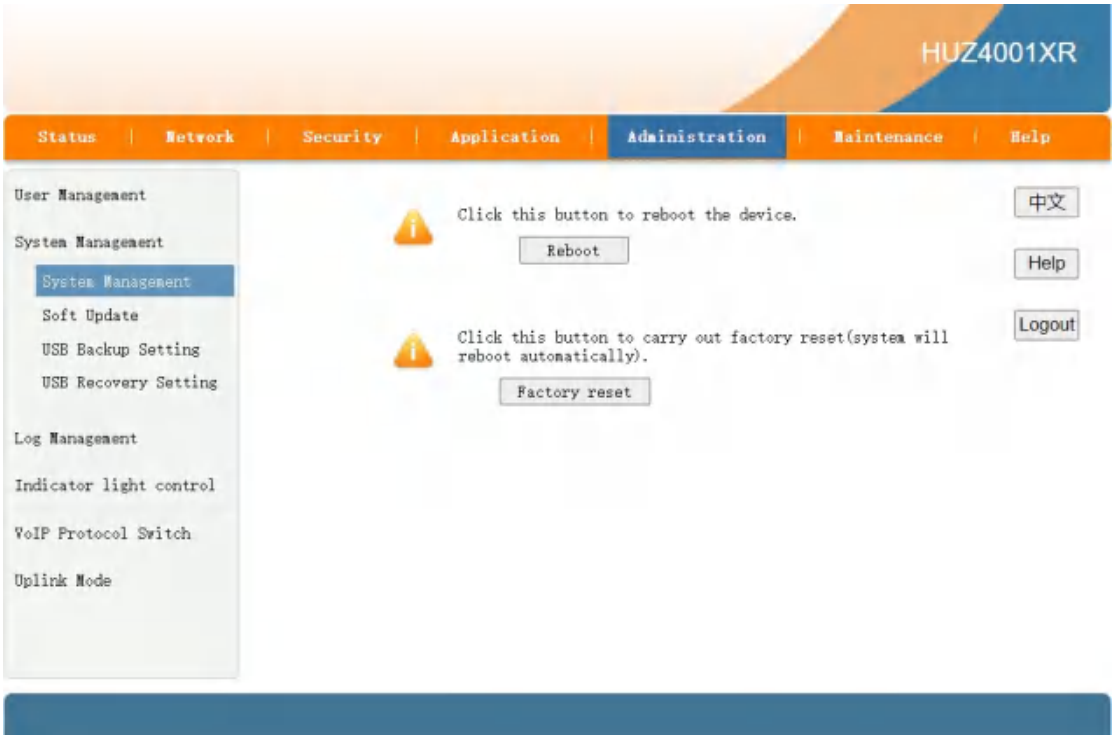

Figure 3-34: System Management

3.6.2.2 Soft Update

With this operation, the version file can be upgraded.

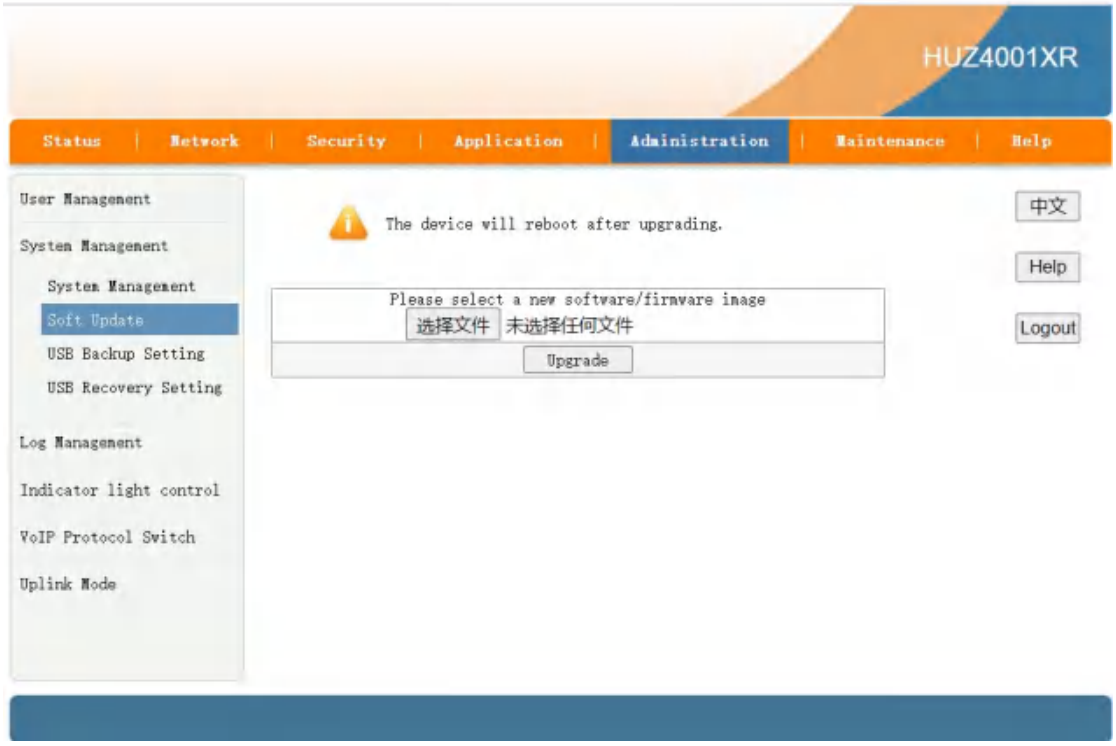

Figure 3-35: Soft Update

3.6.2.3 USB Backup Setting

You should backup user configuration on USB storage device.

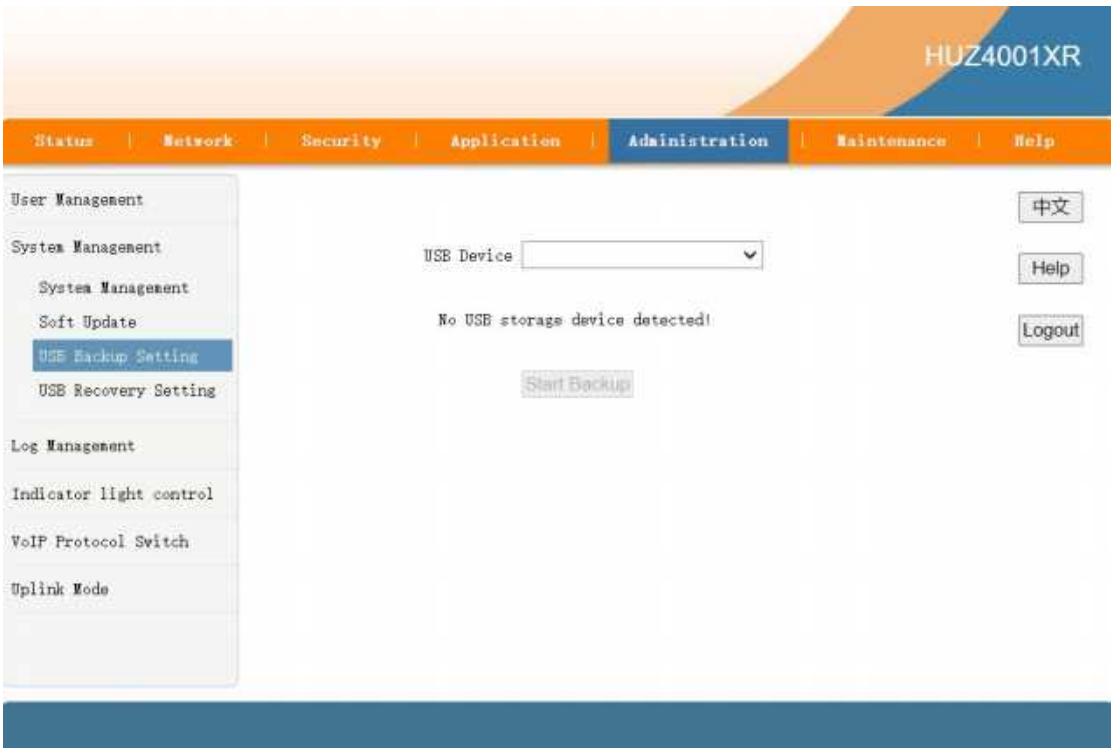

Figure 3-36: USB Backup Setting

3.6.2.4 USB Recovery Setting

Use this function to restore user configuration.

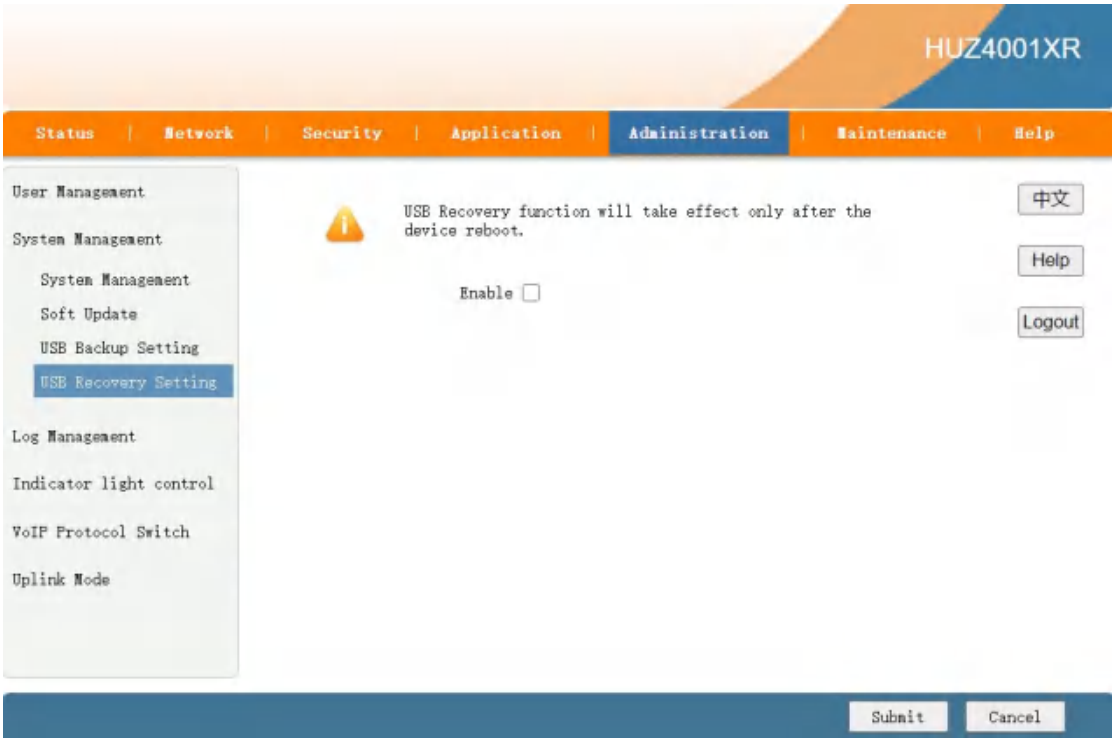

Figure 3-37: USB Recovery Setting

3.6.3 Log Management

3.6.3.1 Log Management

Log Management: set the log enable, the log level. Log Search: based on different log level you chose, device displays the corresponding log. Clear Log: delete the current log.

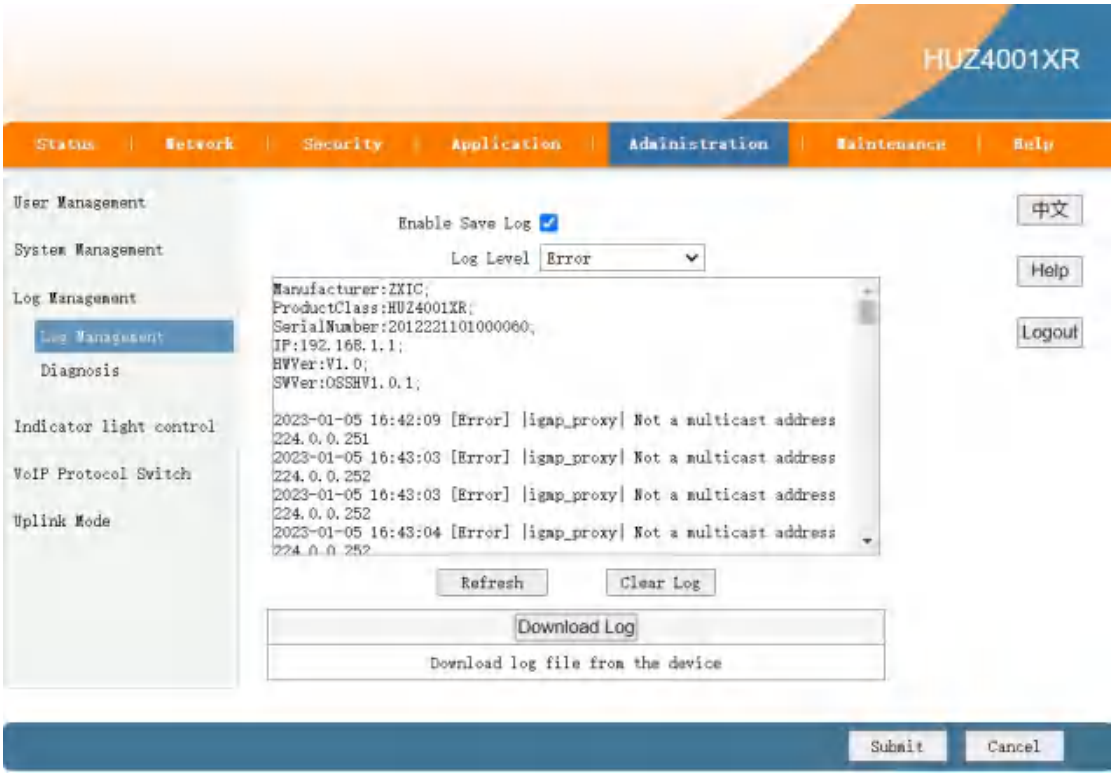

Figure 3-38: Log Management

3.6.3.2 Diagnosis

End of maintenance, complete maintenance report.

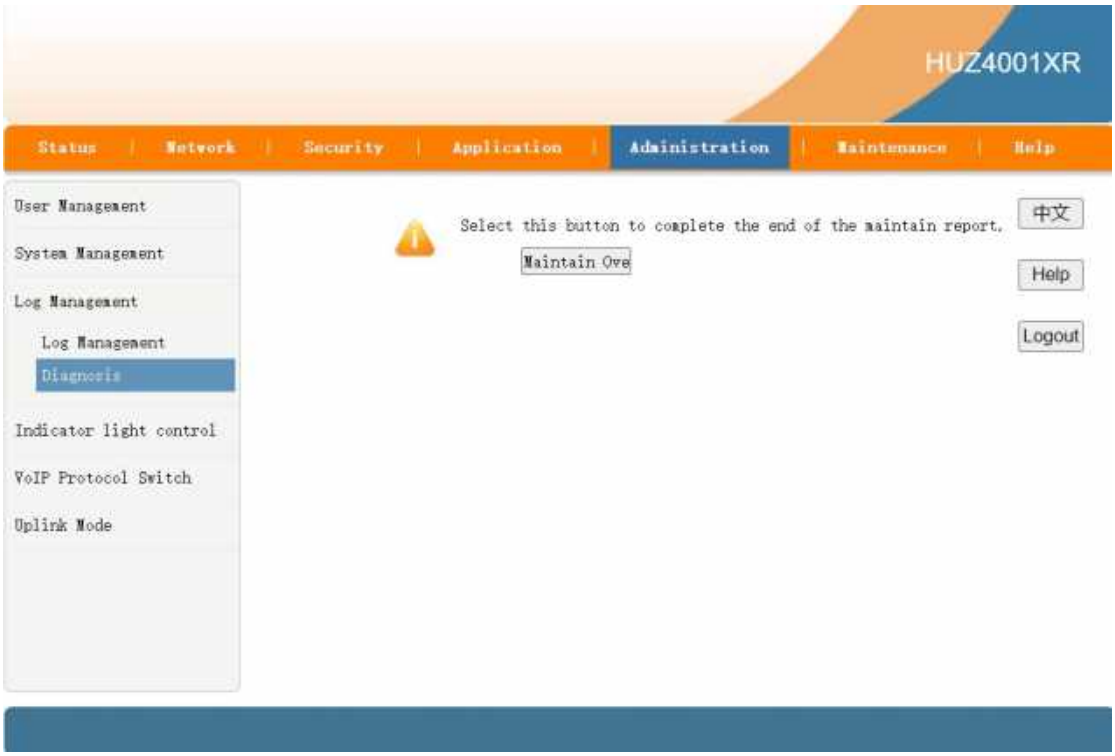

Figure 3-39: Diagnosis

3.6.4 Uplink Mode

PON mode configuration

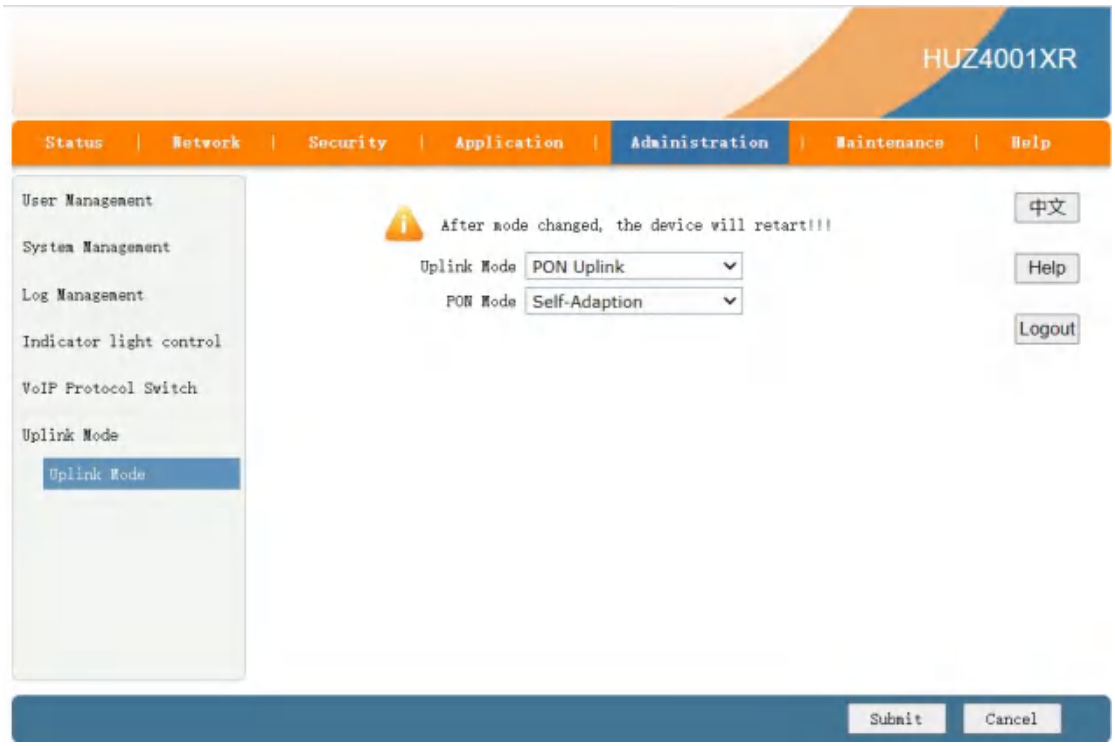

Figure 3-40: Uplink Mode

3.7 Maintenance

3.7.1 Network Diagnosis

3.7.1.1 Ping Diagnosis

This pages is used for diagnosing the network connectivity from this device to the specified IP address or host name.

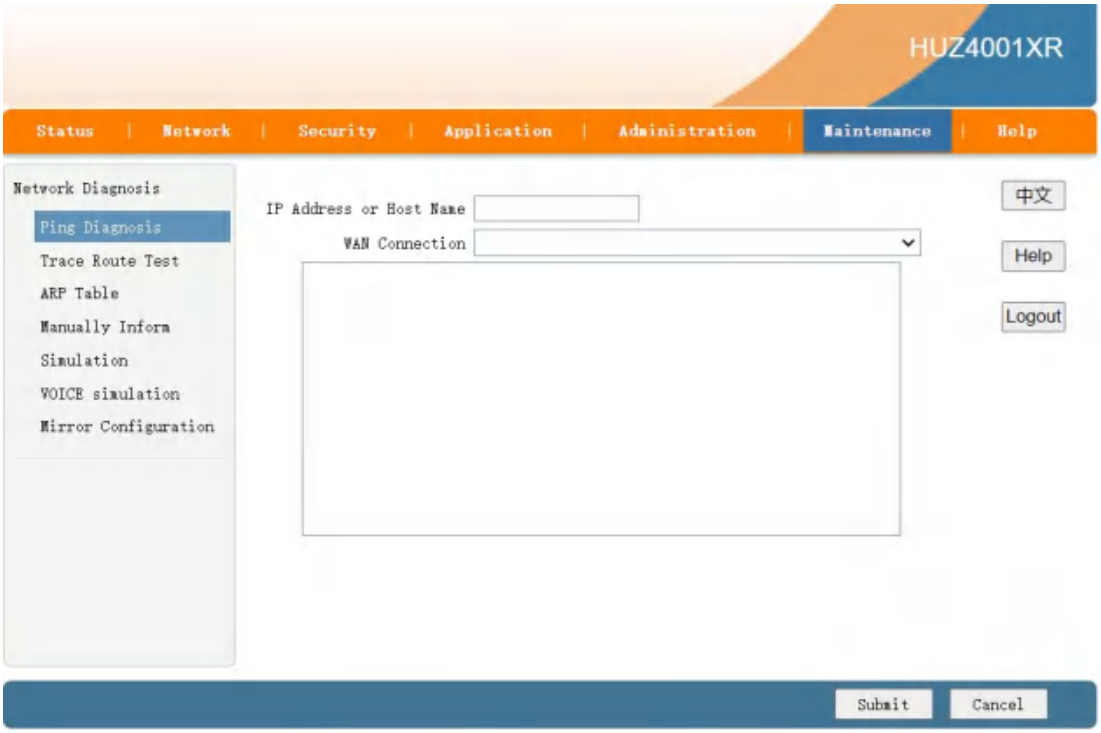

Figure 3-41: Ping Diagnosis

3.7.1.2 Trace Route Test

For the diagnosis of this home gateway between the IP address or host name specified network status.

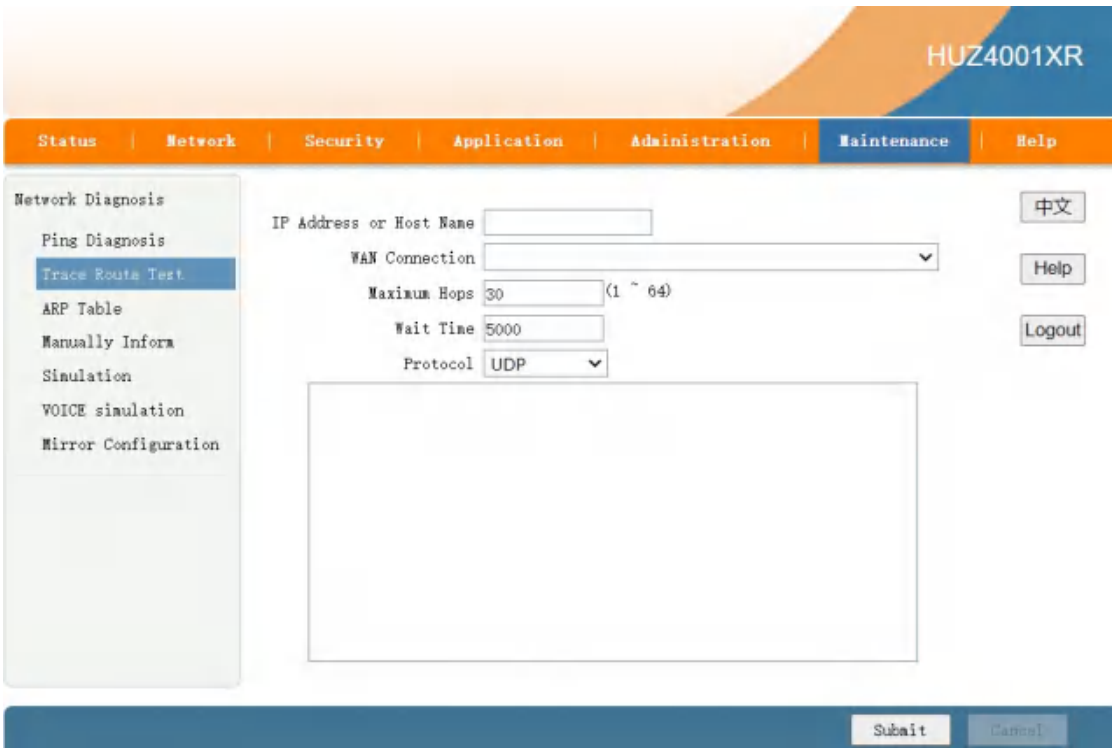

Figure 3-42: Trace Route Test

3.7.1.3 ARP Table

ARP Ifomation show.

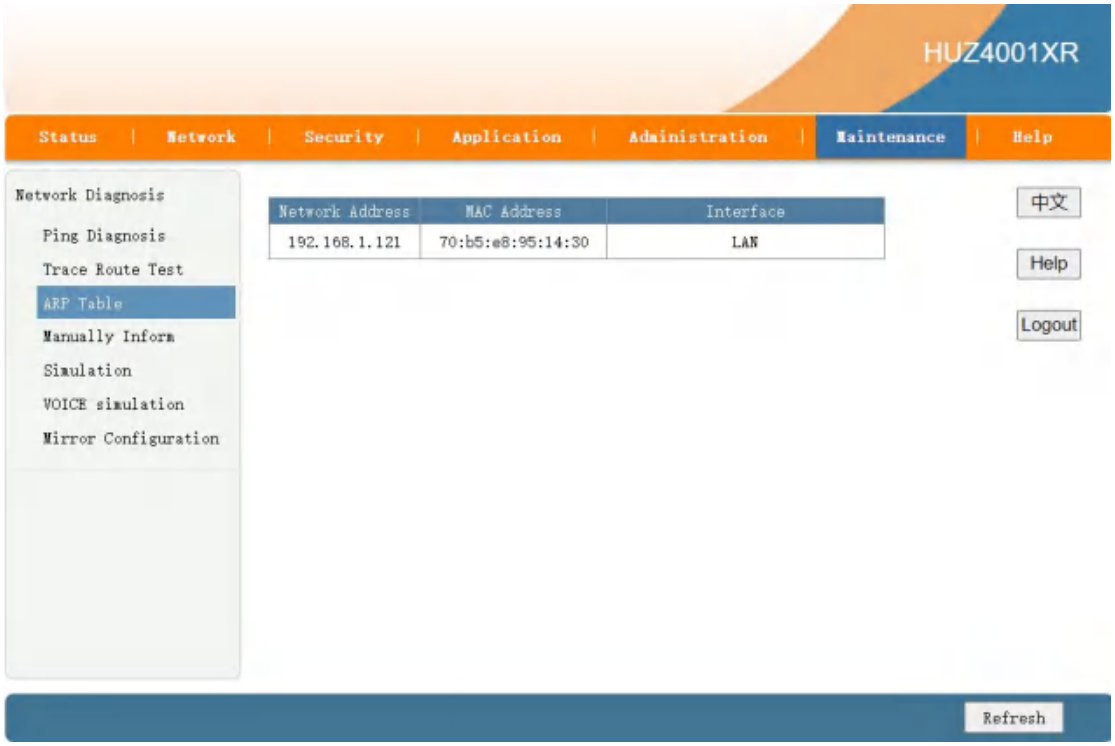

Figure 3-43: ARP Table

3.7.1.4 Manually Inform

Manually Trigger reporting TR069 Inform.

Figure 3-44: Manually Inform

3.7.1.5 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.

Figure 3-45: Mirror Configuration

Chapter 4 Application scenario

HGU mode use Route wan connection.

4.1 Requirment

(XPON 4GE Internet service with VLAN-100)

Scenario (HGU_Route):

ONU works on Route wan mode,WAN interface gets IP address from ISP DHCP/PPPoE Server or set the statics IP.

4.2 Configurations

For scenario,it needs to configure VLAN service in OLT side and WAN connection in ONU webpage.

4.2.1 OLT Configuration

In this case, we take Huawei MA5608T for example, to introduce how to configure Internet service with VLAN 100 .

Huawei MA5680T Configurations

(1) Create VLAN

MA5608T(config)#vlan 100 smart

(2) Configure uplink port's VLAN

MA5608T(config)#port vlan 100 0/2 1

MA5608T(config)#interface mcu 0/2

MA5608T(config-if-mcu-0/2)#native-vlan 1 vlan 100 // (if necessary)

(3) Creat DBA profile

MA5608T(config)#dba-profile add profile-id 10 profile-name test type3 assure 102400 max 899968

(4) Creat ont-line profile

MA5608T(config)#ont-lineprofile gpon profile-id 10 profile-name test

MA5608T(config-gpon-lineprofile-10)#tcont 1 dba-profile-id 10

MA5608T(config-gpon-lineprofile-10)#gem add 1 eth tcont 1

MA5608T(config-gpon-lineprofile-10)#gem mapping 1 1 vlan 100

MA5608T(config-gpon-lineprofile-10)#commit

(5) Creat ont-service profile

MA5608T(config)#ont-srvprofile gpon profile-id 10 profile-name test

MA5608T(config-gpon-srvprofile-10)#ont-port eth 1

MA5608T(config-gpon-srvprofile-10)#commit

(6) Authorize ONT

MA5608T(config)#interface gpon 0/1

MA5608T(config-if-gpon-0/1)#port 2 ont-auto-find enable

MA5608T(config-if-gpon-0/1)#display ont autofind 2

MA5608T(config-if-gpon-0/1)#ont add 0 1 sn-auth OEMT-0303B9BD omci ont-lineprofile-id 10 ont-srvprofile-id 10

(7)Configure service-port

MA5608T(config)#service-port vlan 100 gpon 0/1/2 ont 1 gemport 1 multi-service user-vlan 100

4.2.2 ONU Configuration

Scenario (HGU_Route):

Configure ONU WAN connection in the ONU Webpage

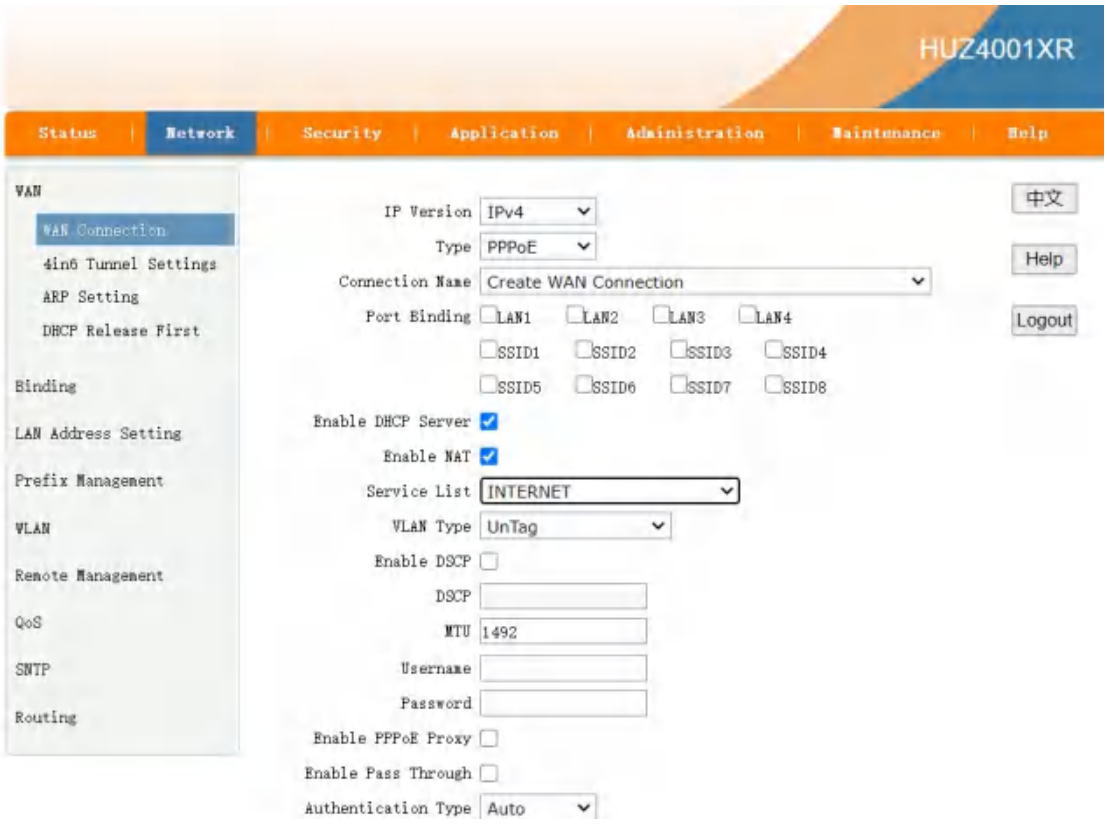

Figure 4-1

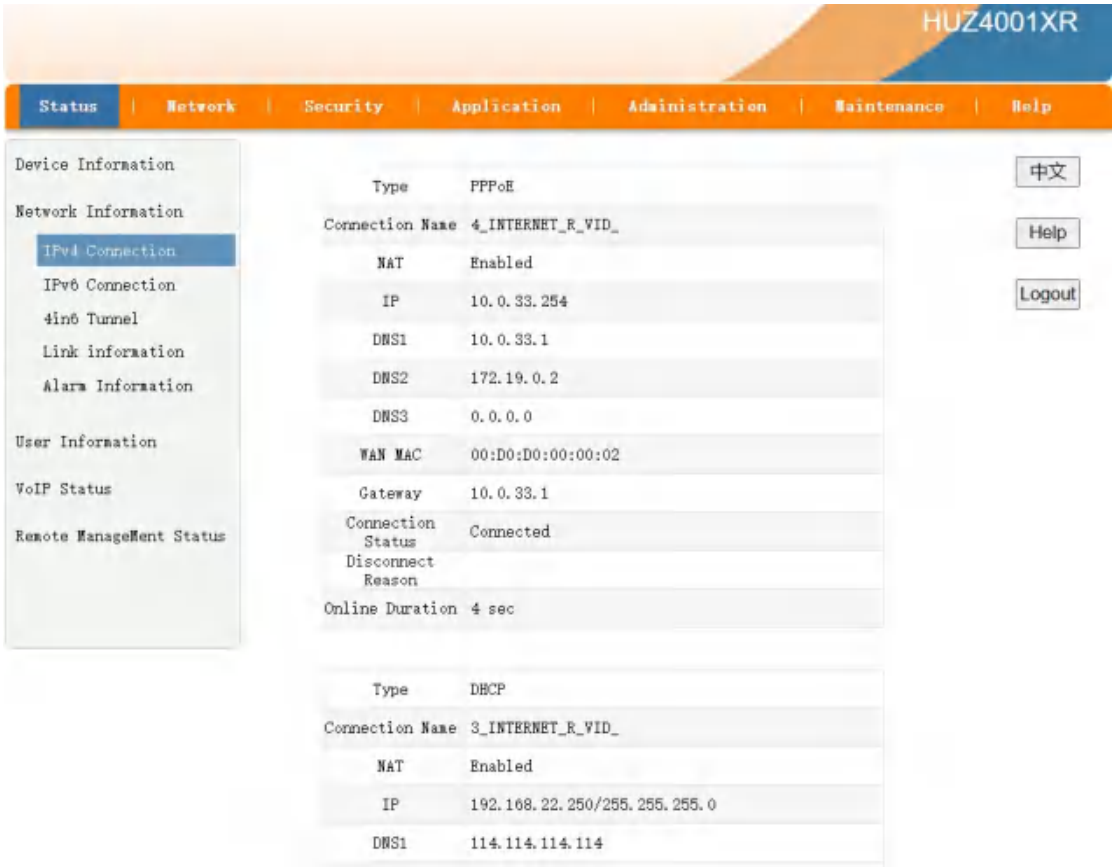

Figure 4-2

Attention:

Please enable LAN DHCP Server, otherwise user client couldn't get the IP address from LAN DHCP Server.

Chapter 5 FAQ

1. Why does LED of LAN not light?

Reasons:

1) Network cable is damaged or loose connection;

2) Cable type errors;

3) Cable length exceeds the allowable range

Solution:

1) Plug the cable tightly;

2) Replace the network cable and pay attention to the standard cable must be parallel or crossing lines.

2. Why is LED of LOS always blinking?

Reasons:

1) Fiber connector loose and dirty;

2) ONU PON module broken;

3) Center office equipment failure;

Solution:

1) Check the connection characteristics of optical fiber,whether connected to the correct connector and whether optical power is in a normal range;

2) Contact your operator.

3.Why does LED of PON flashed instead of always on?

Reasons:

1) Fiber connector loose and dirty;

2) ONU PON module broken;

3) Center office equipment failure;

Solution:

1) Inspect fiber is connected property, is connected to the correct connector, optical power is normal;

2) Contact your operator.

4. Why does ONU stop working after working for a long time?

Reasons:

1) Power supply is not working properly;

2) Central office equipment failure;

Solution:

1) Change the power adapter;

2) Reboot the ONU;

3) Contact your operator;