XPON ONU USER MANUAL

(ZTE125 1GE)

Version V1.0

Release Date 2022-11-30

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 and SFU 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	1 x 10/100/1000Mbps auto adaptive Ethernet interfaces. Full/Half, RJ45 connector
Push-Button	1,For Function of Reset
Operating Condition	Temperature: 0℃~+50℃
	Humidity: 10%～90%（non-condensing）
Storing Condition	Temperature: -30℃~+60℃
	Humidity: 10%~90%（non-condensing）
Power Supply	Type-C 5V/1A
Poer Conswumption	≤3W
Dimension	21.5mm*17mm*92mm
Net weight	0.03±0.0kg

Table 1: Technical parameters

1.4 Application chart

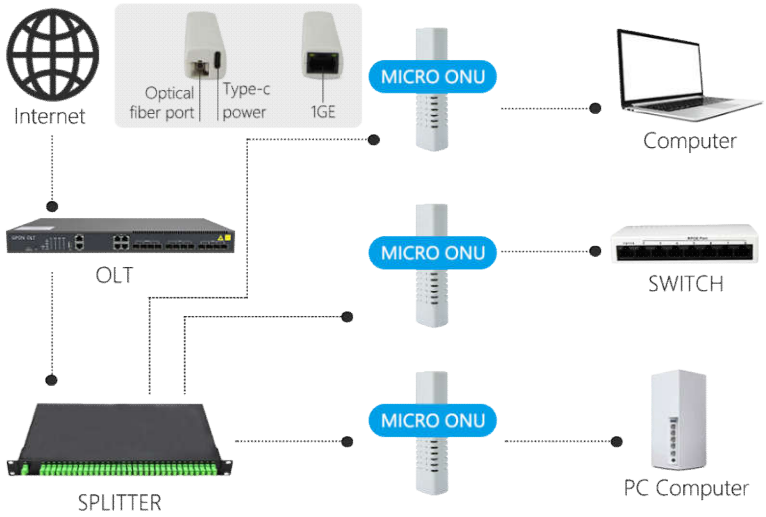


Figure 1-2: Application chart

1.5 Panel description

Figure 2-1: Interface diagram

LED	Status	Description
LAN	On(Green)	The device is powered up.
	Off(Green)	The device is powered down.
	On(Yellow)	Ethernet connected properly (LINK).
	Blink(Yellow)	Ethernet is sending or/and receiving data (ACT).
	Off(Yellow)	Ethernet connection exception or not connected.
PON/LOS	On(Green)	The device has registered to the PON system.
	Blink(Green)	The device is registering the PON system.
	Off(Green)	The device registration is incorrect.
	Blink(Red)	The device doses not receive optical signals.
	Off(Red)	The device has received optical signal.

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

Table 3: Packing Contents

Figure 2-2: Actual package content

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.

5. Installation Requirements

To avoid equipment damage caused by improper use and personal injury,please observe the following precautions:

- Do not place the device near water or in damp places,in order to prevent water or moisture from entering the device.
- Do not put the device in an unstable place,avoid falling damage to equipment.
- Make sure that the supply voltage of the device matches the required voltage value.
- Do not open the equipment chassis without permission.
- Do not open the equipment chassis without permission.

Installation Environment requirements

ONU equipment must be installed in the interior,and to ensure the following conditions:

- Confirmation at the ONU installation at sufficient space to facilitate cooling machine.
- ONU suitable operating temperature of 0℃~50℃,humidity 10%to 90%.

Electromagnetic Environment

ONU equipment in use can be affected by external electromagnetic interferences,such as radiation and conduction through the impact on the device,this should note the following:

- Device workplace should avoid radio transmitters,radar stations,and high-frequencyinterface from power equipment.
- User cable typically require alignment indoors if outdoor lighting traces measures should.

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 "user", password is "user".

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.

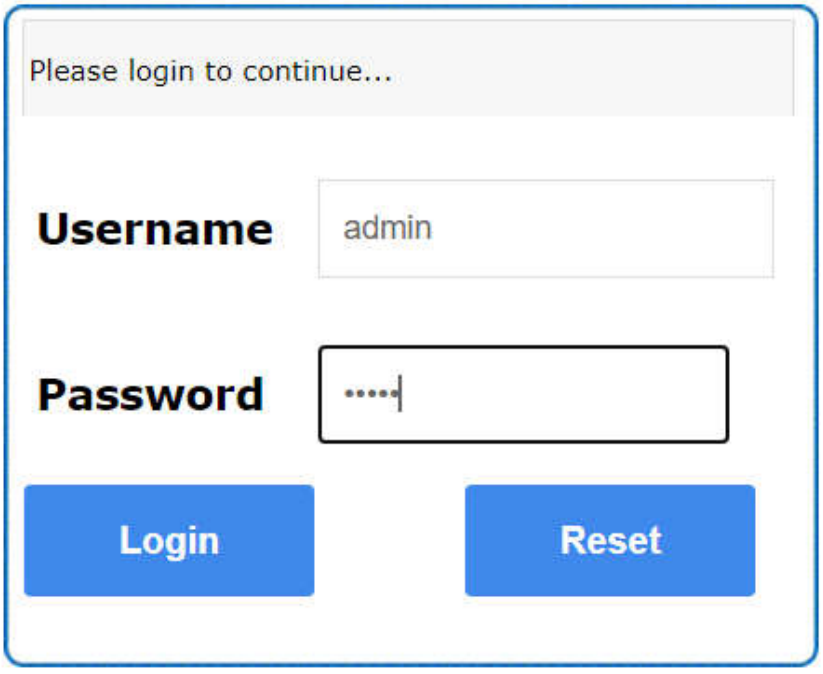


Figure 3-1: Login

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

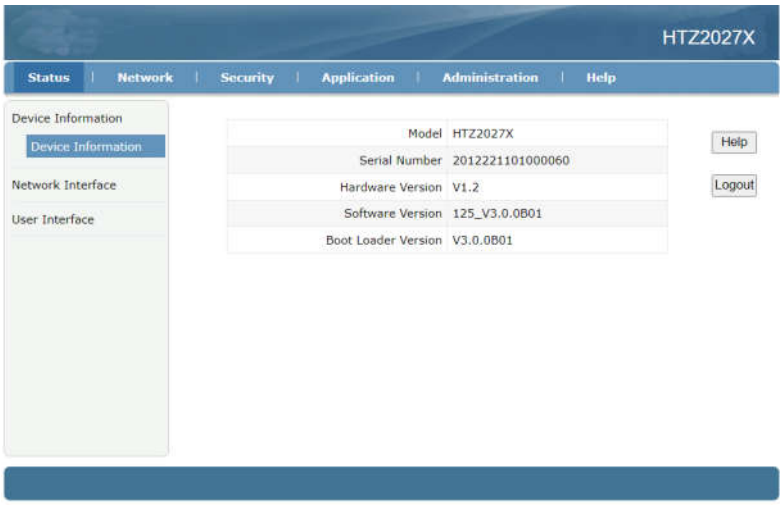


Figure 3-2:Device Information

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.

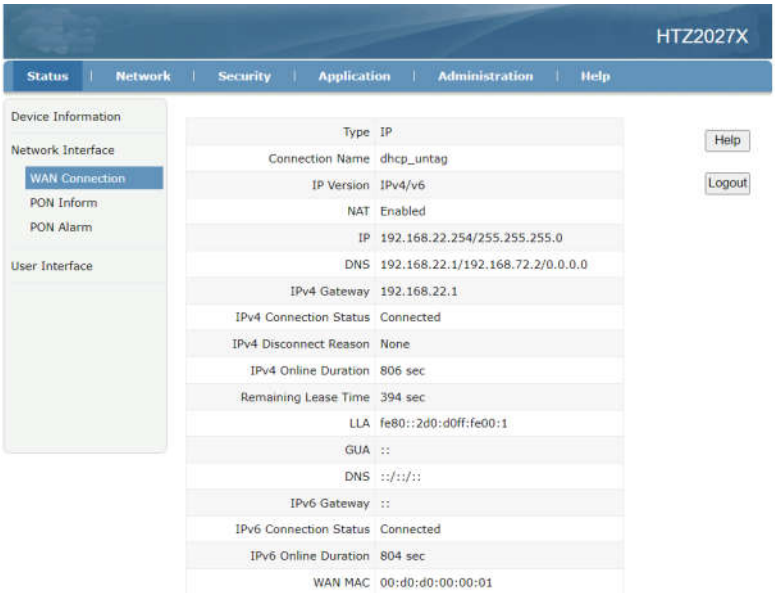


Figure 3-3:WAN Connection

3.2.2.2 PON Inform

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

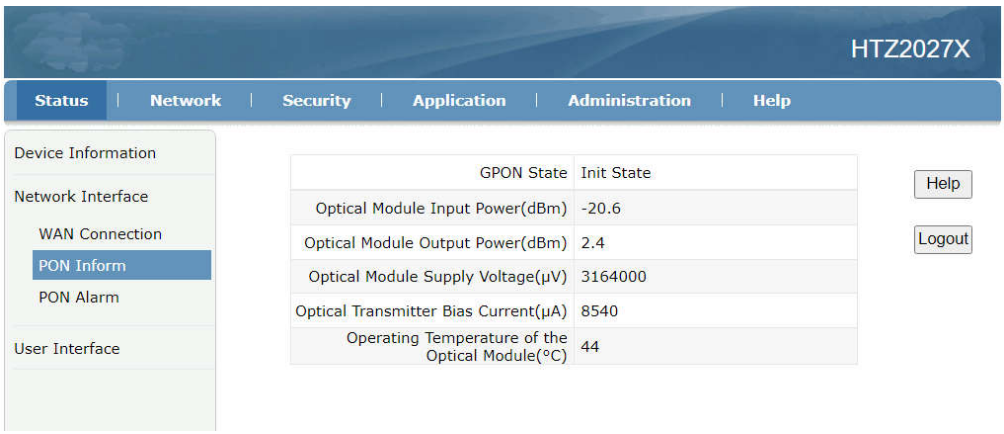


Figure 3-4:PON Inform

3.2.2.3 PON Alarm

This part shows the PON Alarm information.

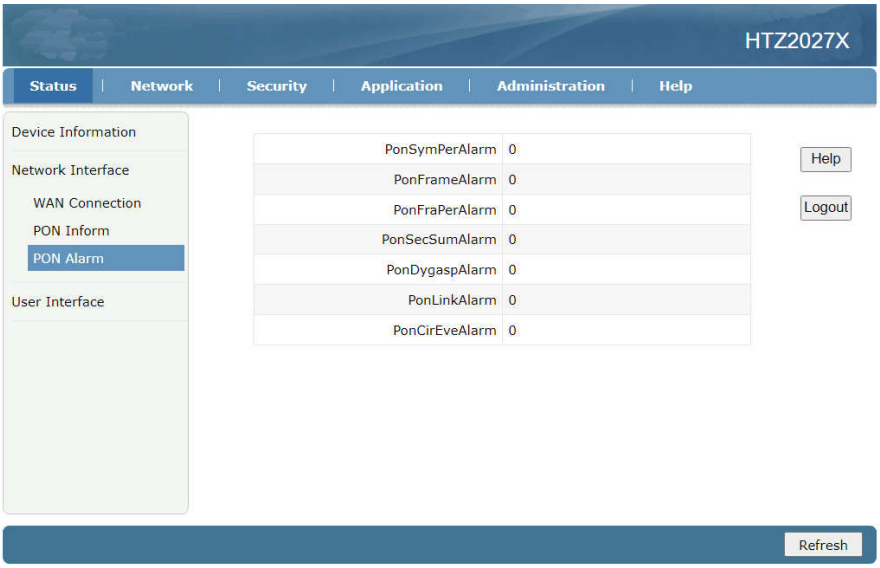


Figure 3-5: PON Alarm

3.2.3 User Interface

This part shows the Ethernet Port Information.

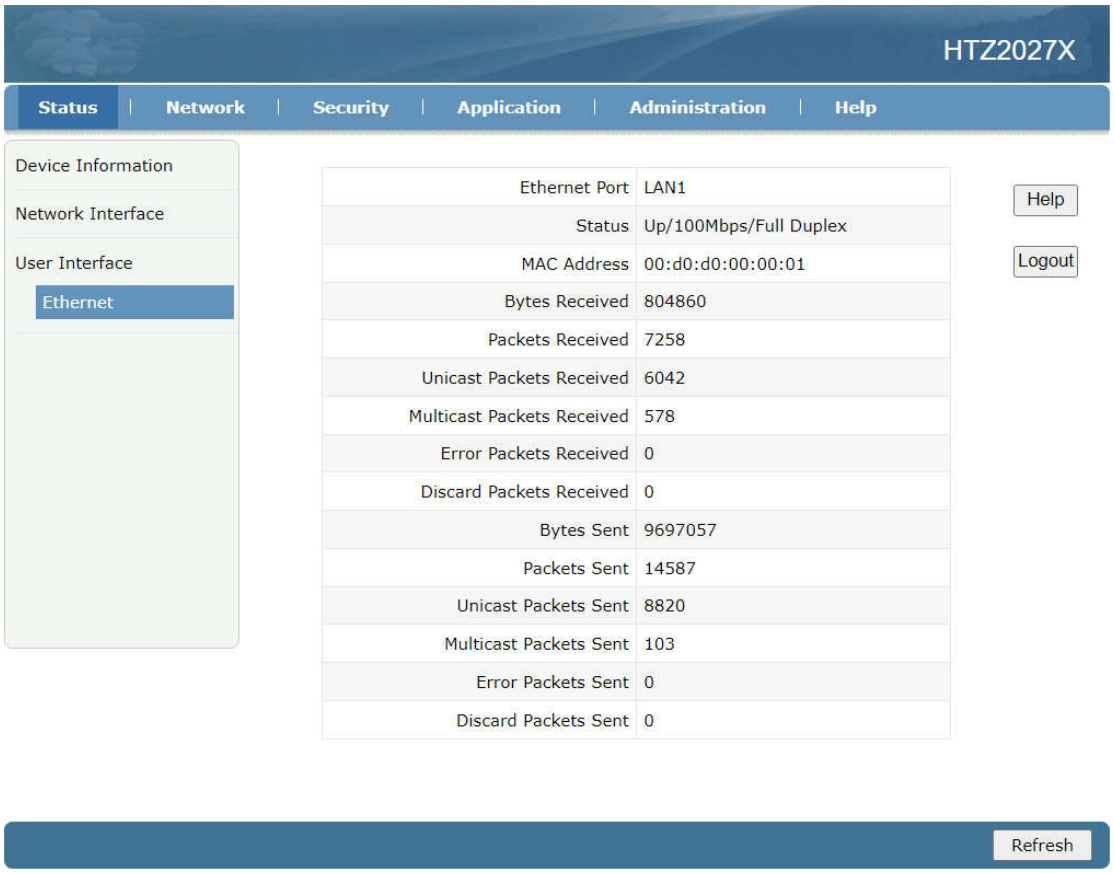


Figure 3-6: User Interface

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. If you don't create a WAN connection, it works in SFU mode.

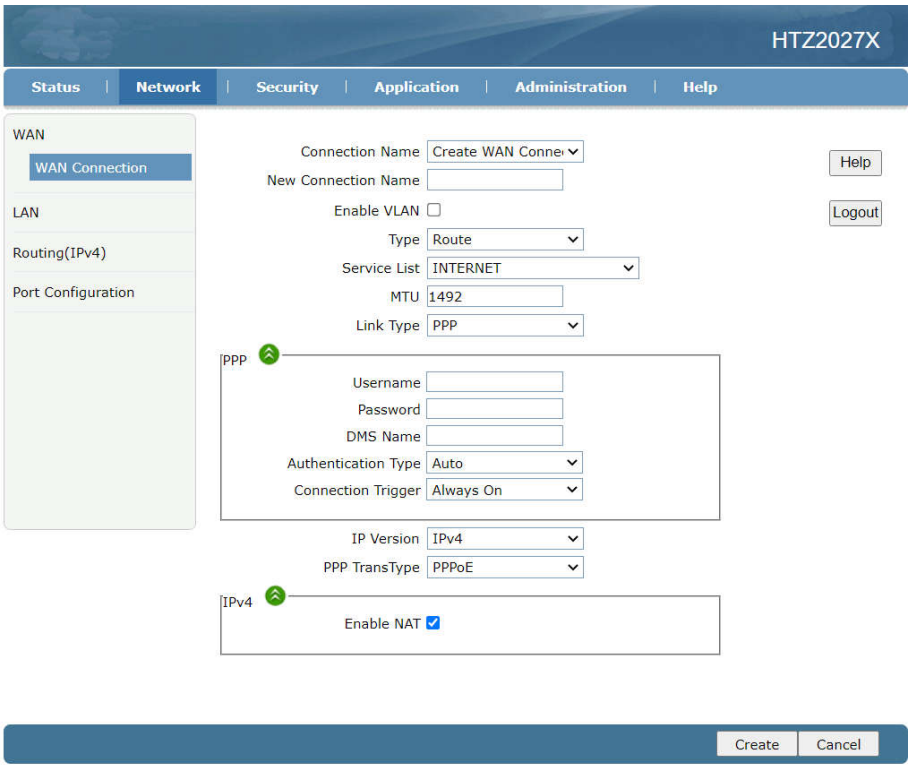


Figure 3-7: WAN Configuration

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.
WanName		The description about this wan connection which you operate
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、PPP，Usually default choose Auto
	Connection Trigger	Always on /Connect on Demand/Manual
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

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

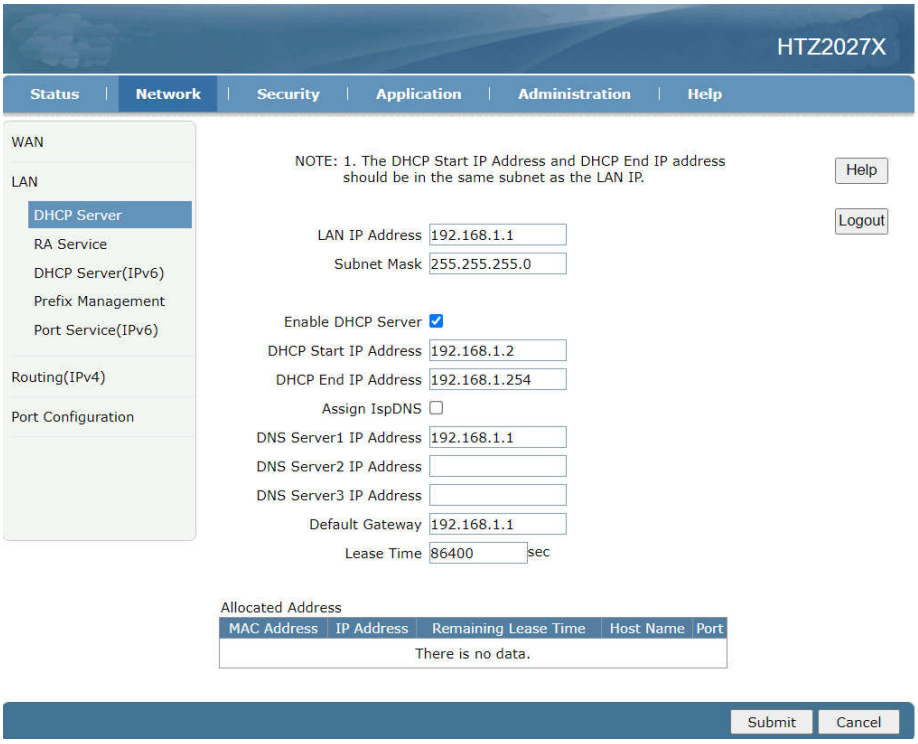


Figure 3-8: DHCP Server

Parameter	Description
Subnet Mask	Subnet Mask about DHCP Pool address and LAN IP
Assign IspDNS	Use ispDNS or set DNS manually
DNS1	The Primary DNS of DHCP Server
DNS2	The Secondary DNS of DHCP Server
DNS3	The Third DNS of DHCP Server
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.

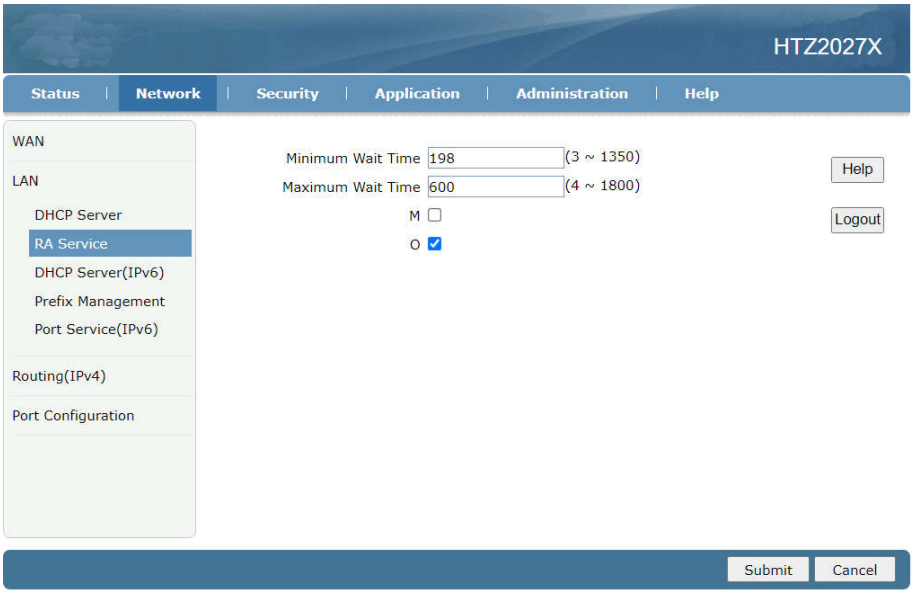


Figure 3-9: RA Service

3.3.2.3 DHCP Server(IPv6)

This page allows the user to set the IPv6 DHCP Server,including LAN IP, Enable DHCP Server, DNS Refresh Time.

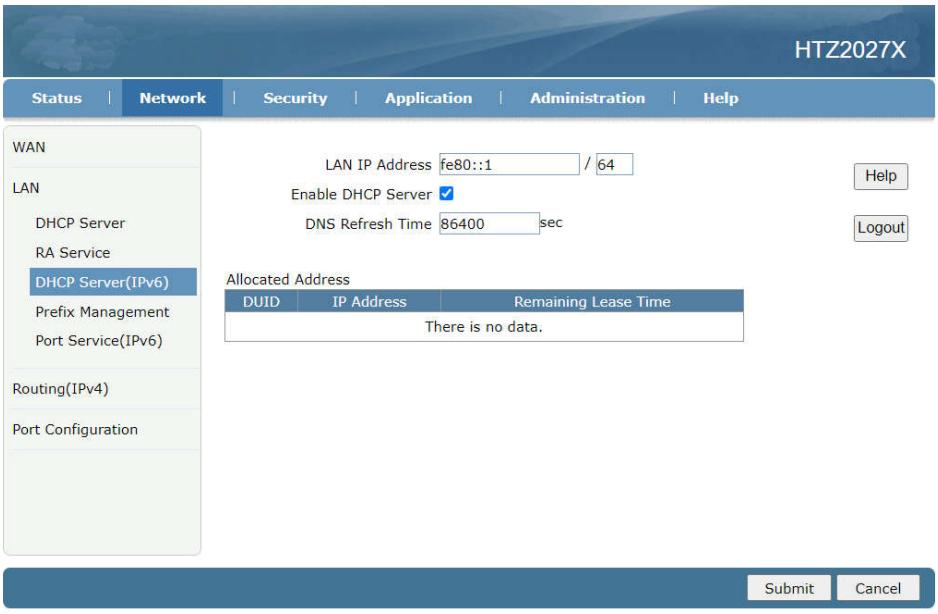


Figure 3-10: DHCP Server(IPv6)

3.3.2.4 Prefix Management

This page allows user to modify the Prefix Management.

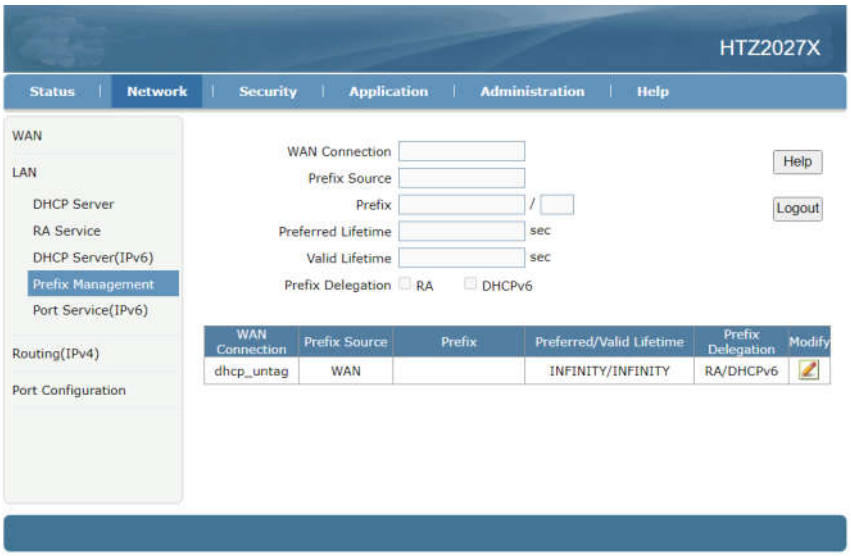


Figure 3-11:Prefix Management

3.3.2.5 Port Service(IPv6)

This page allows user to set the relevant parameters of the IPv6 Port Service,

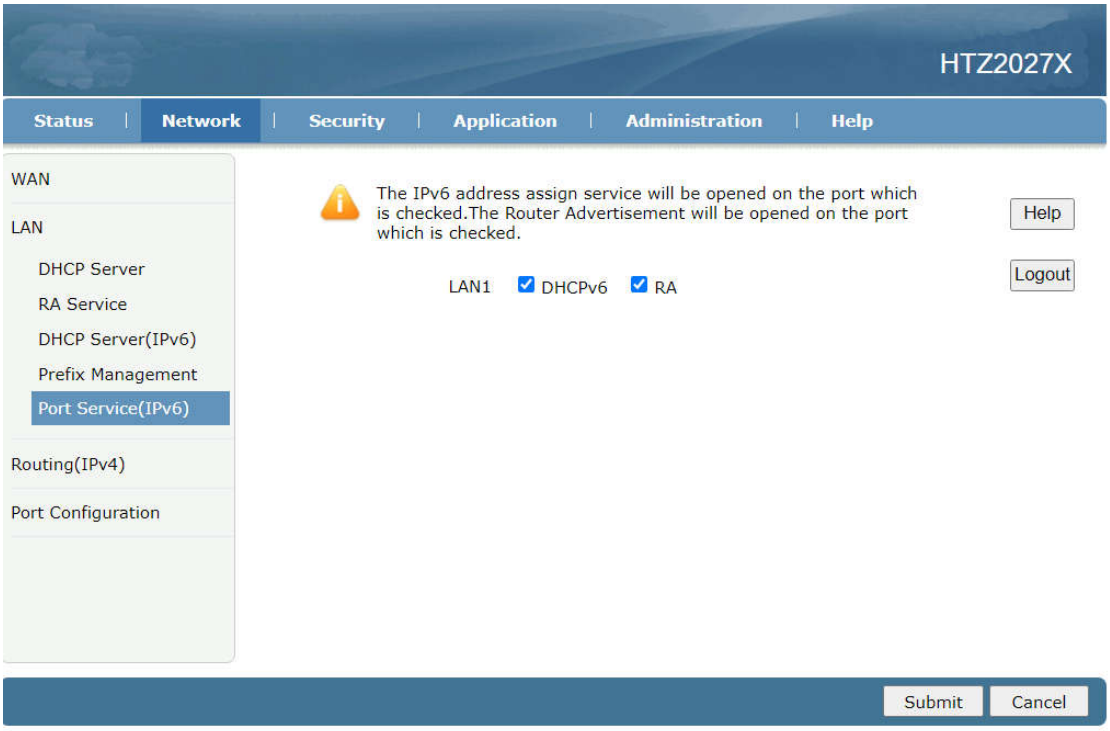


Figure 3-12:Port Service

3.3.3 Routing(IPv4)

This part allows user to set the IPv4 Routing, including Default Gateway, Static Routing, Routing Table.

3.3.3.1 Default Gateway

This page allows user to choose WAN Connection as default gateway.

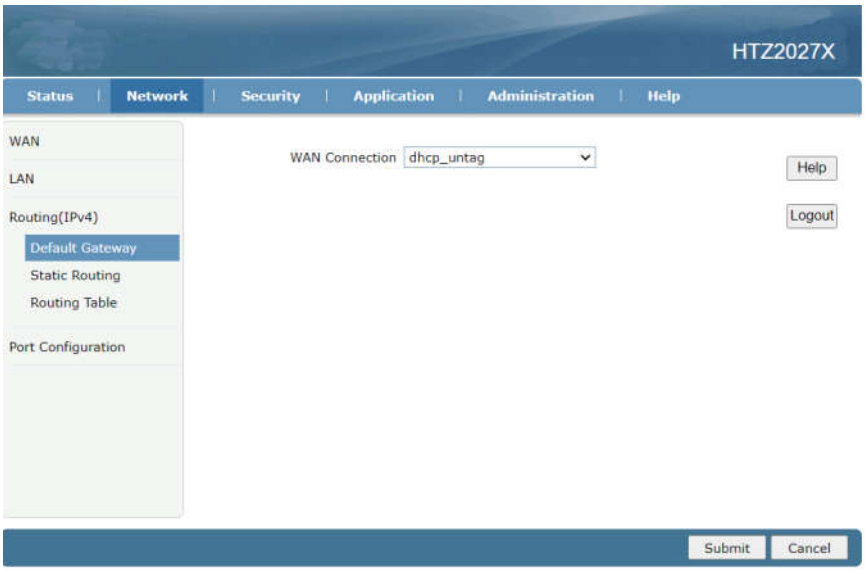


Figure 3-13:Default Gateway

3.3.3.2 Static Routing

This page allows user to set the Static Routing, including WAN Connection, Network Address, Subnet Mask and Gateway.

Attention:only user has special network application and then need to set this Route Info.

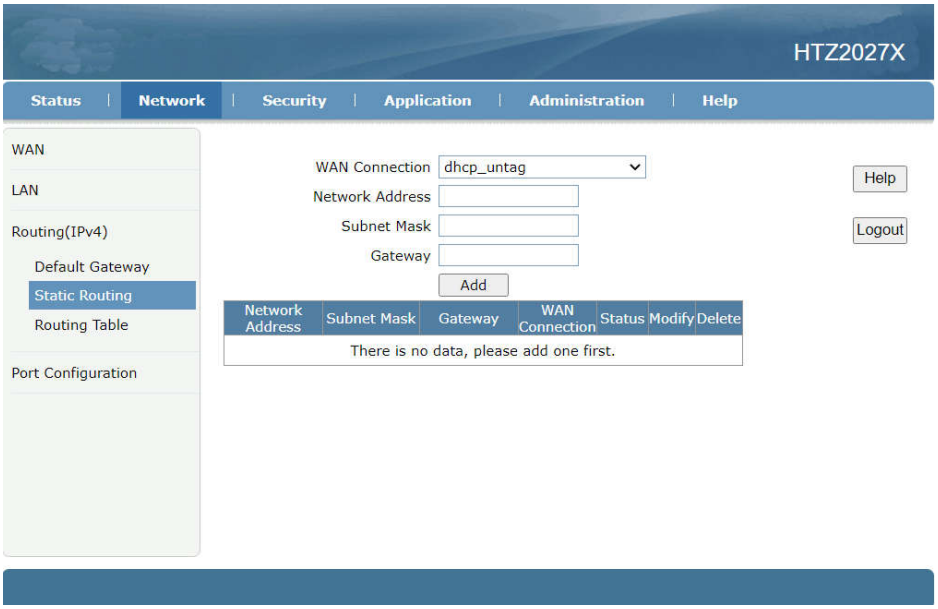


Figure 3-14:Static Routing

Parameter	Description

WAN Connection	WAN Interface
Network Address	Destination Host IP or IP Segment
Subnet Mask	Subnet mask about Destination IP
Gateway	Gateway (The next host ip)

Table 6: Routing Configuration parameters

3.3.3.3 Routing Table

This page shows the Routeing Table information.

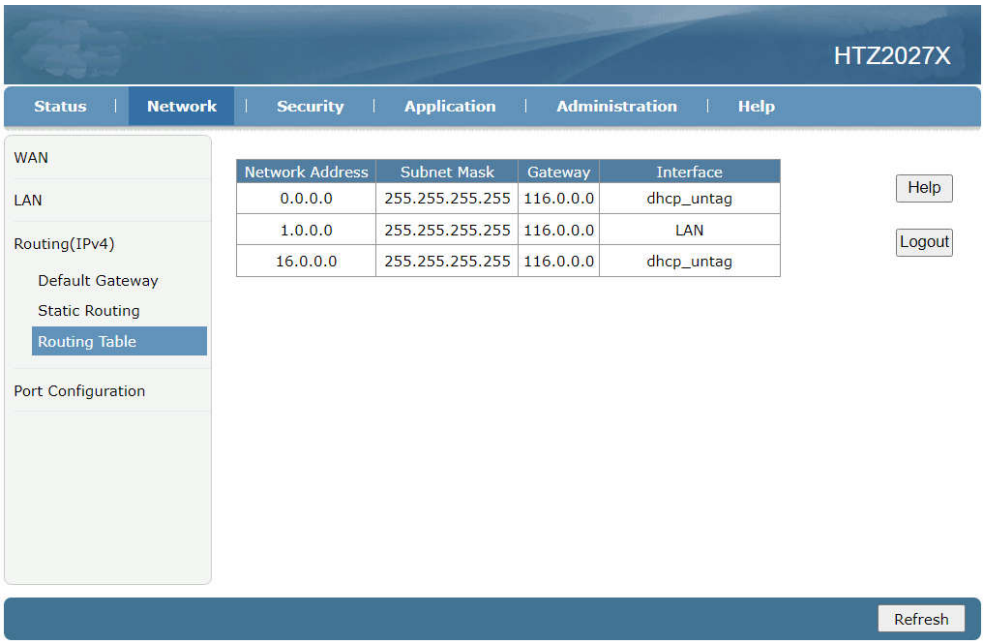


Figure 3-15:Routing Table

3.3.4 Port Configuration

This part allows user to set the Port Configuration, including Mode, Port Isolation, Rate Limiting, Flow Control and MAC Configuration.

3.3.4.1 Mode

This page allows user to choose the Port Mode, including Auto, Disabled, 10Mbps, 100Mbps and 1000Mbps.

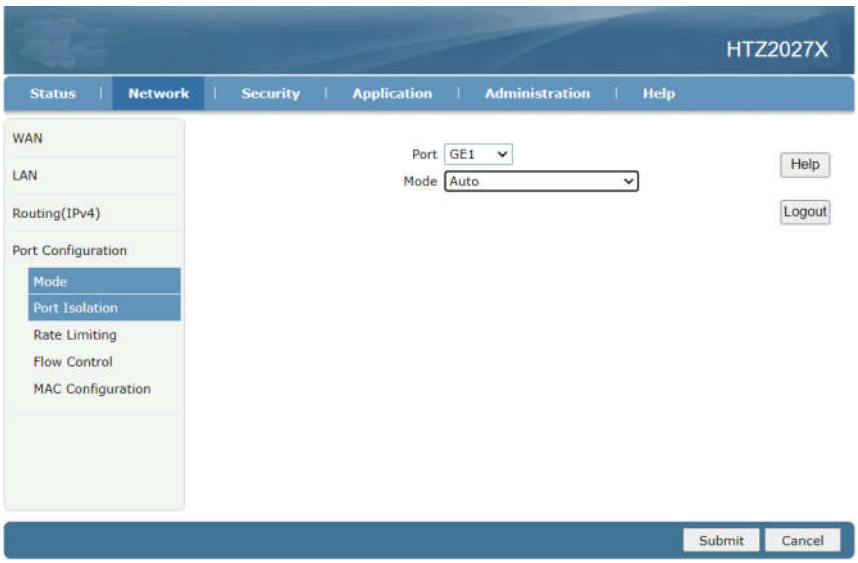


Figure 3-16:Port Mode

3.3.4.2 Port Isolation

This page allows user to set the Port Isolation.

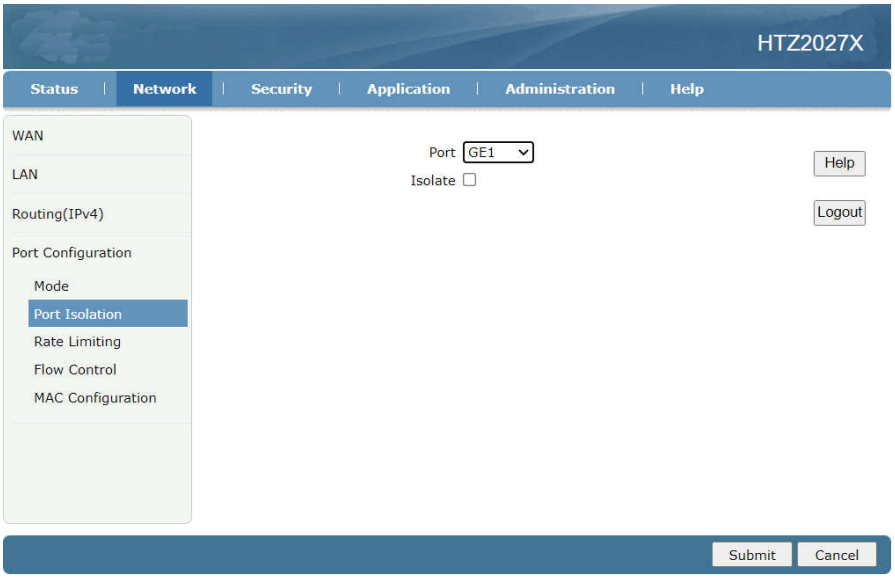


Figure 3-17:Port Isolation

3.3.4.3 Rate Limiting

This page allows user to set the Port Rate Limiting, including Ingress Rate limiting and Egress Rate limiting.

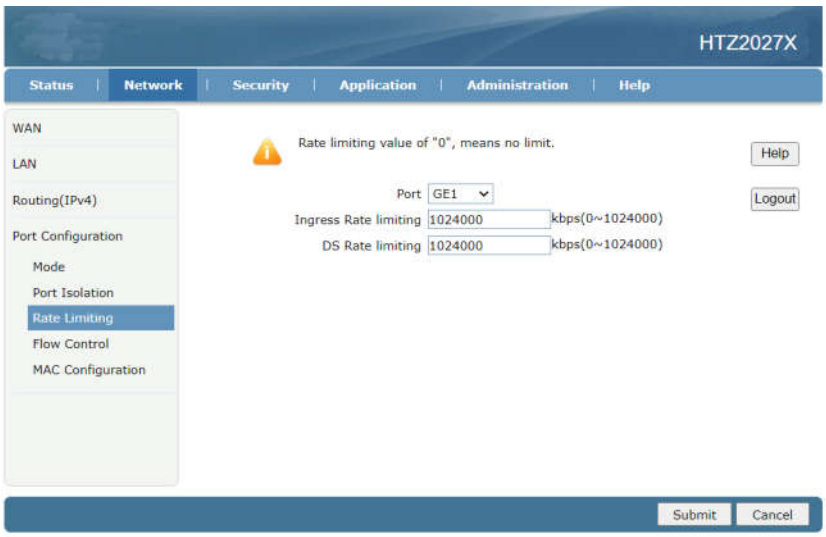


Figure 3-18:Rate Limiting

3.3.4.4 Flow Control

This page allows the user to enable/disable Flow Control.

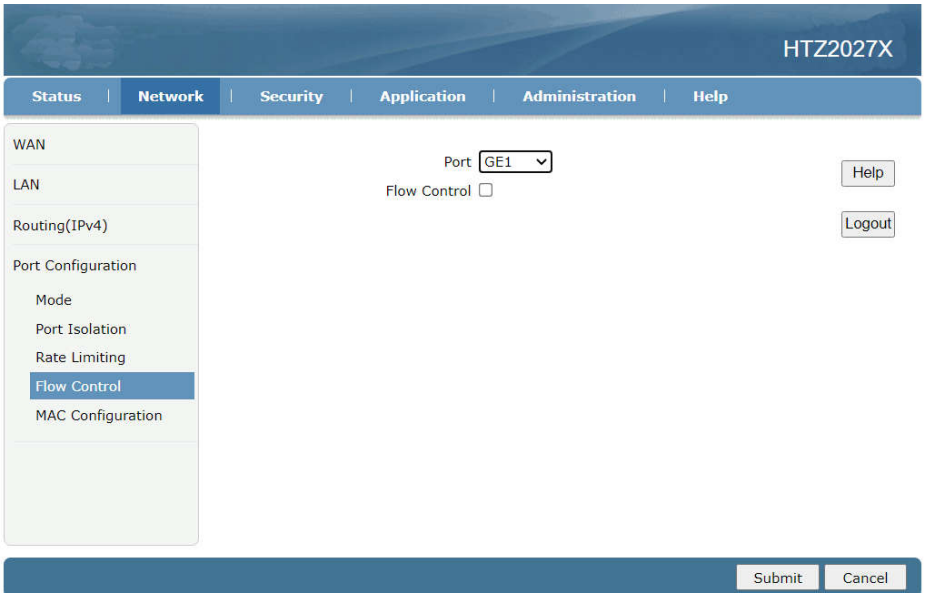


Figure 3-19:Flow Control

3.3.4.5 MAC Configuration

This page allows the user to set MAC Configuration, including MAC Aging Time, Port and Learning Limit.

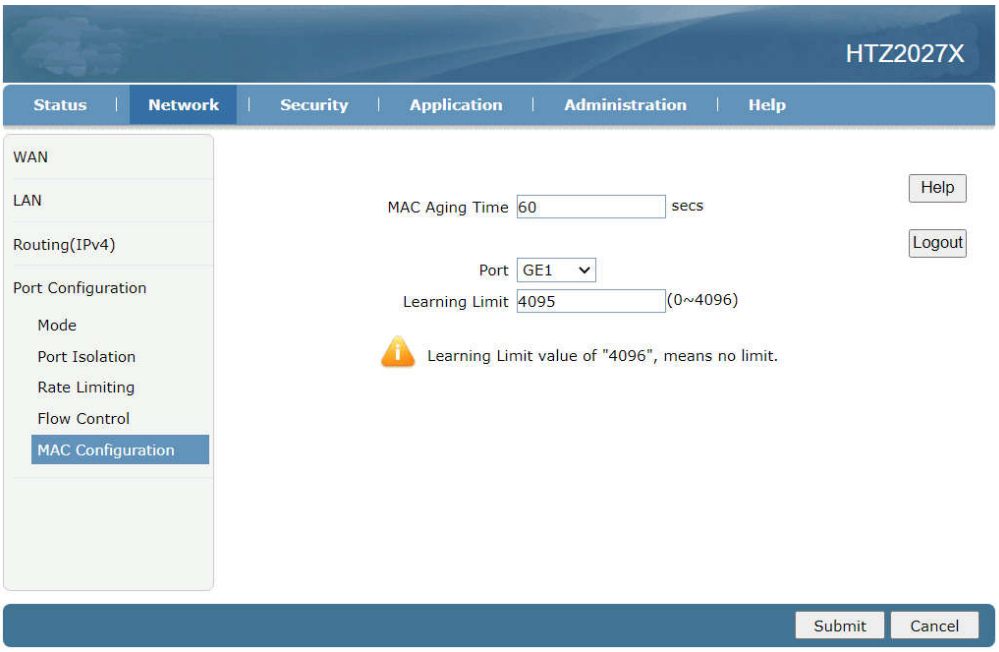


Figure 3-20:MAC Configuration

3.4 Security

This part allows the user to set Security Configuration, including Firewall, Service Control, MAC Filter.

3.4.1 Firewall

This page allows the user to configure Firewall, including Enable/Disable Anti-Hacking Protection, Firewall Level

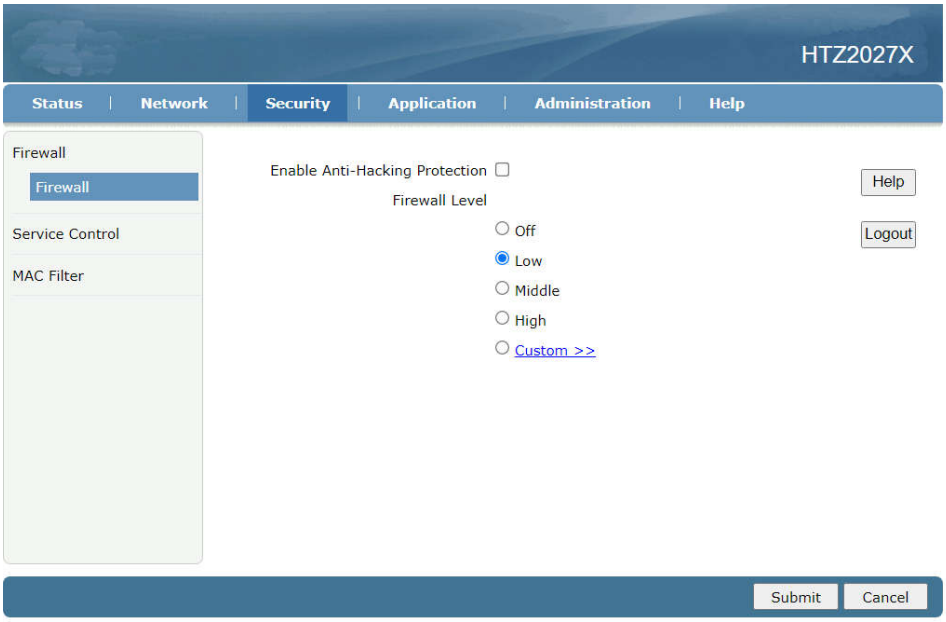


Figure 3-21:Firewall

If you select custom, it will jump to another page to configure these parameters

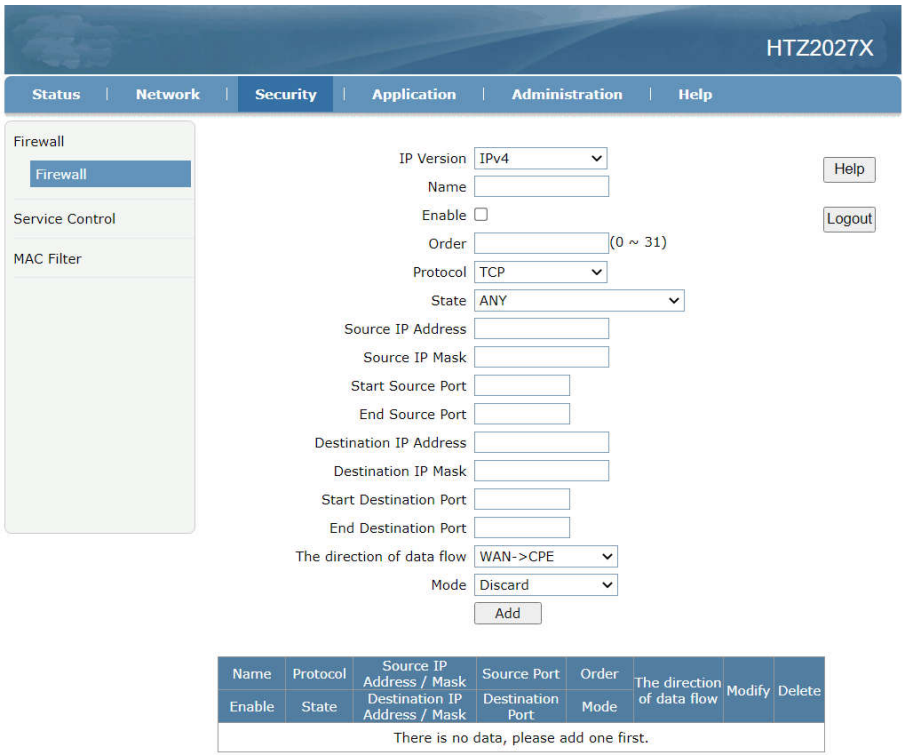


Figure 3-22:Firewall Custom

3.4.2 Service Control

This page allows the user to configure Service Control.

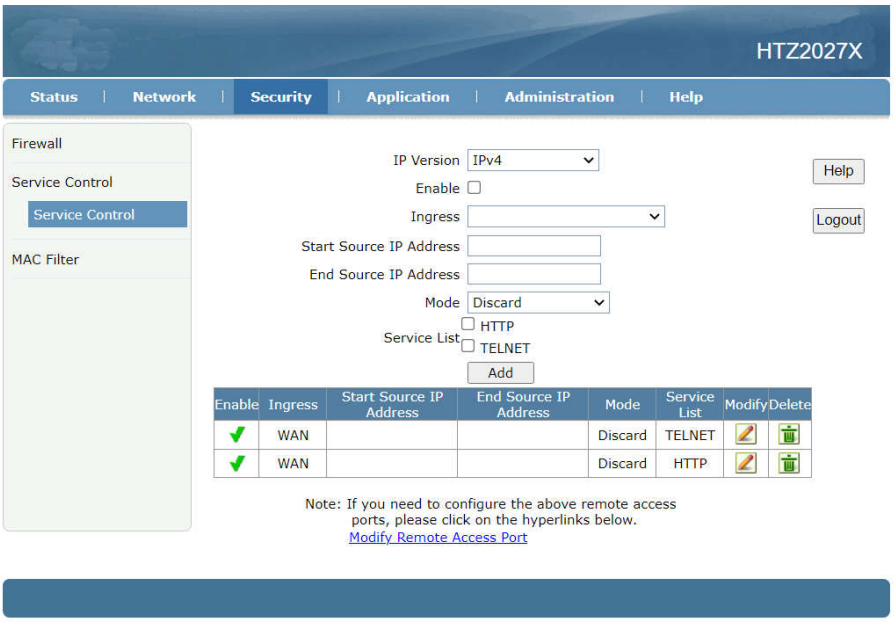


Figure 3-23:Service Control

If you modify remote access port, it will jump to another page to configure.

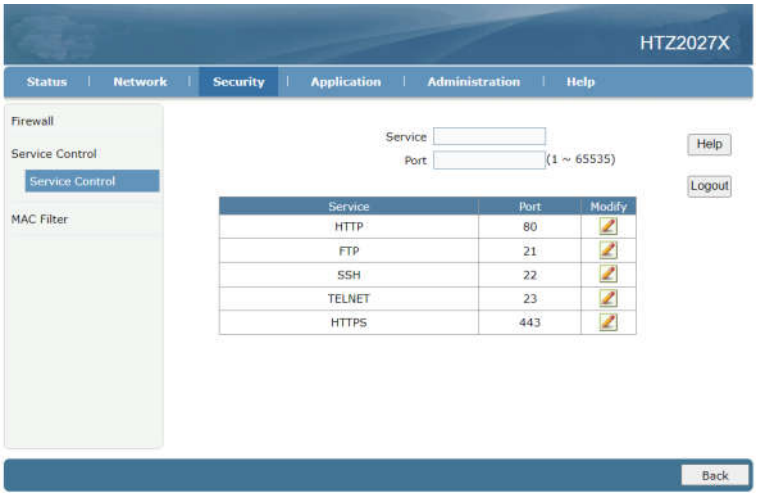


Figure 3-24:Service Control Modify Port

3.4.3 MAC Filter

This page allows user to set the relevant parameters of the MAC Filter function, including Permit and Discard. The Discard indicates that forbidden access, Permit indicates that allow access.

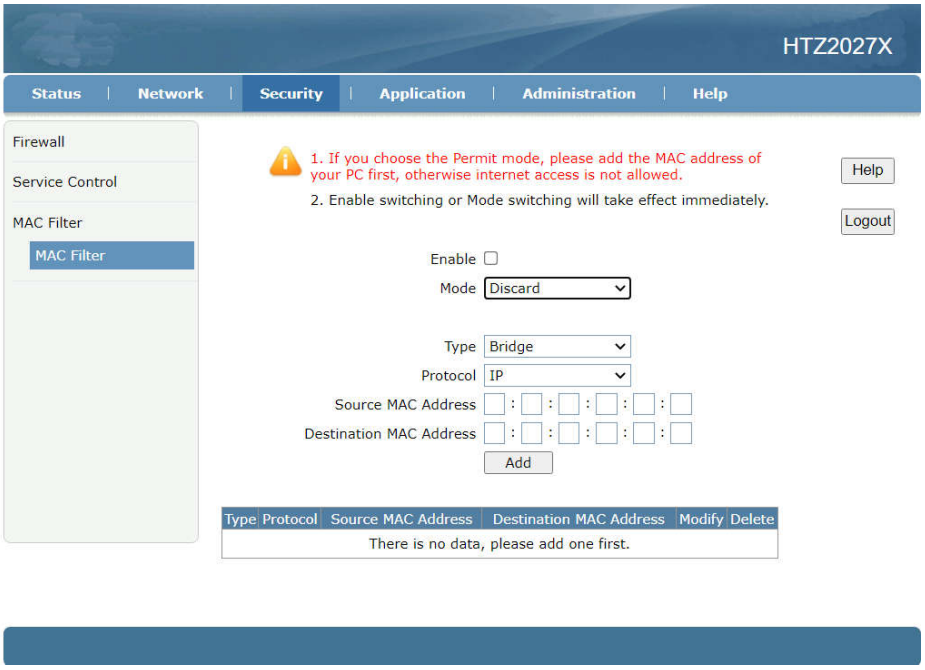


Figure 3-25:MAC Filter

3.5 Application

This menu allows user to configure Multicast, BPDU and port forwarding.

3.5.1 Multicast

This part allow user to set IGMP Mode, Basic Configuration and Maximum Address Configuration.

3.5.1.1 IGMP Mode

This page allow user to set IGMP Mode, including Disable, Snooping Mode, CTC IGMP.

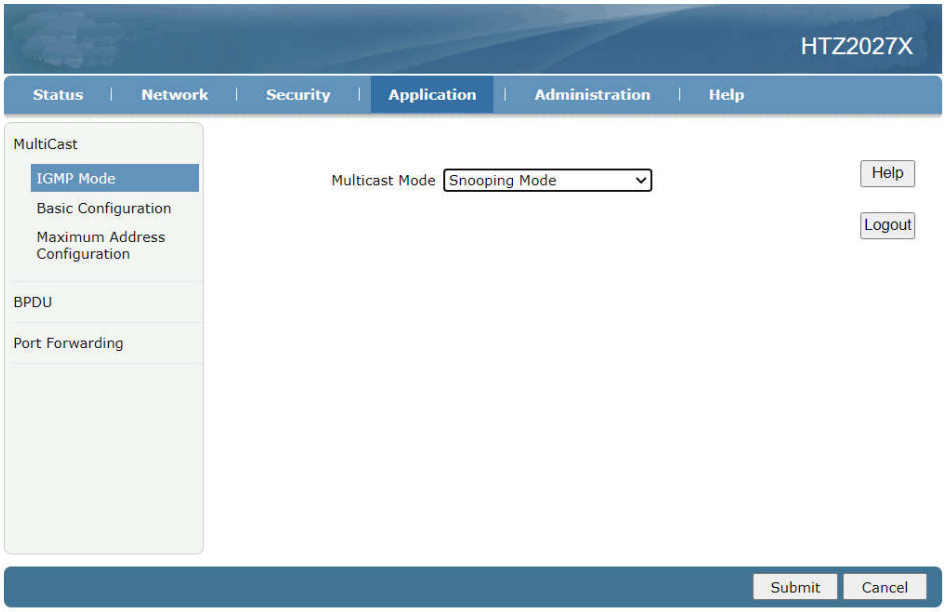


Figure 3-26: IGMP Mode

3.5.1.2 Basic Configuration

This page allows the user to set the Basic Configuration, including Aging Time and Enable/Disable Non-fast Leave.

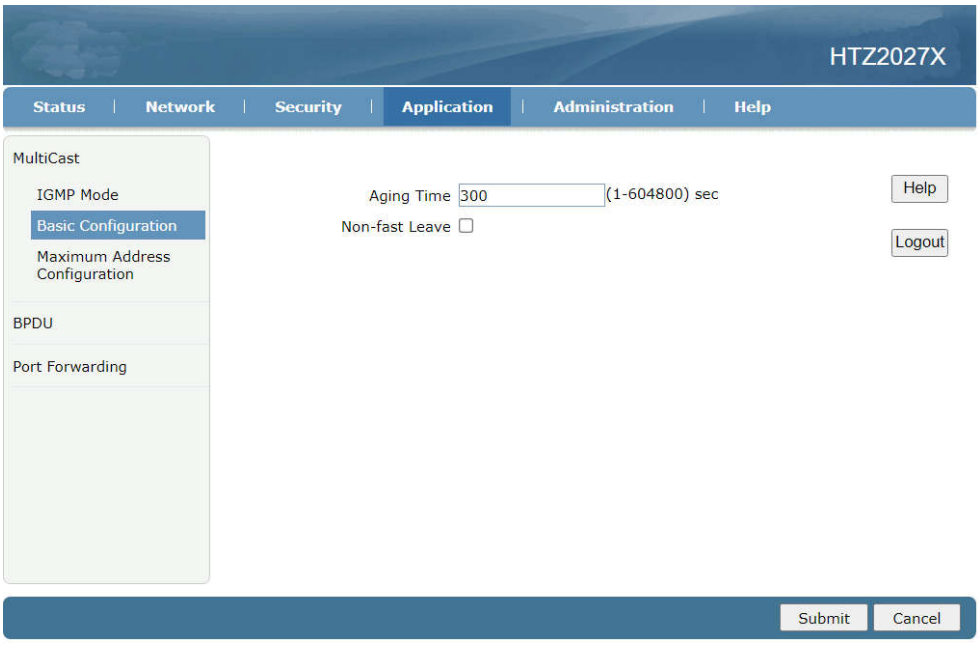


Figure 3-27: Basic Configuration

3.5.1.3 Maximum Address Configuration

This page allows the user to set Maximum Address Configuration.

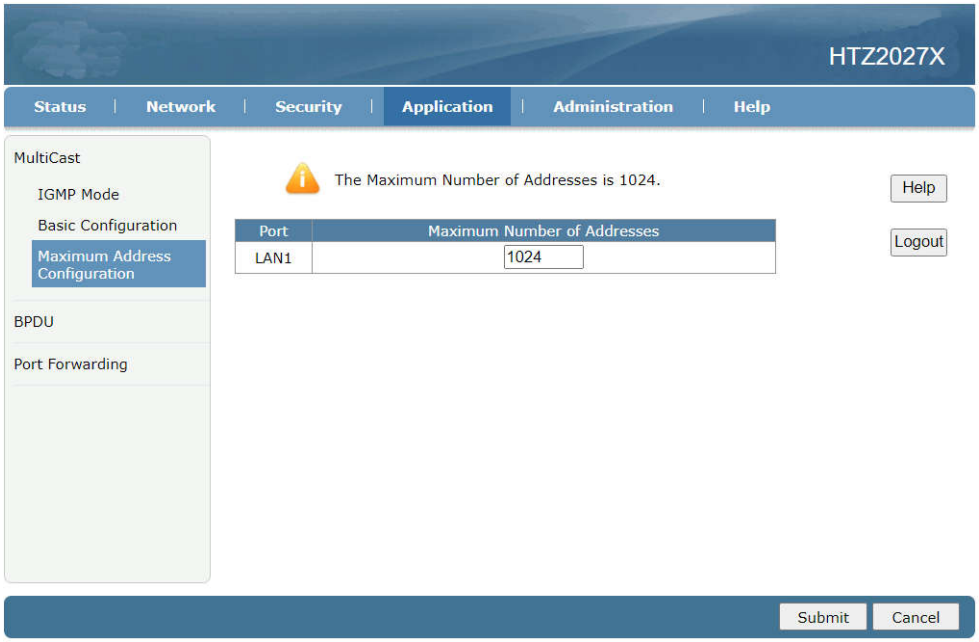


Figure 3-28: Maximum Address Configuration

3.5.2 BPDU

This page allows the user to enable or disable BPDU Forwarding.

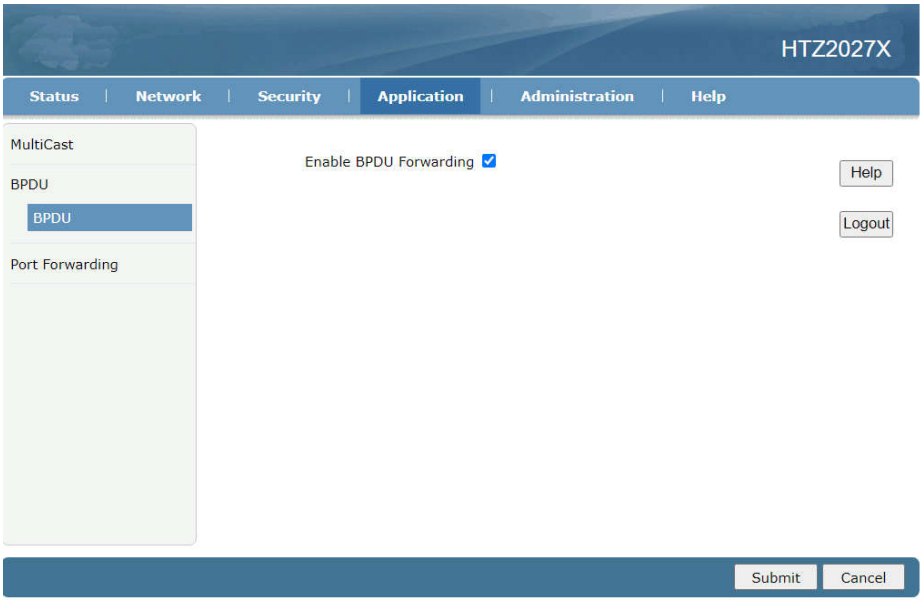


Figure 3-29: BPDU

3.5.3 Port Forwarding

This page allows user to set the relevant parameters of the Port Forwarding function,

Redirect common wan special packets to local device which on the private network behind NAT Firewall.

Attention:This function is not required generally, but if user need to use local server such as Web server,the rules must be filled correctly.

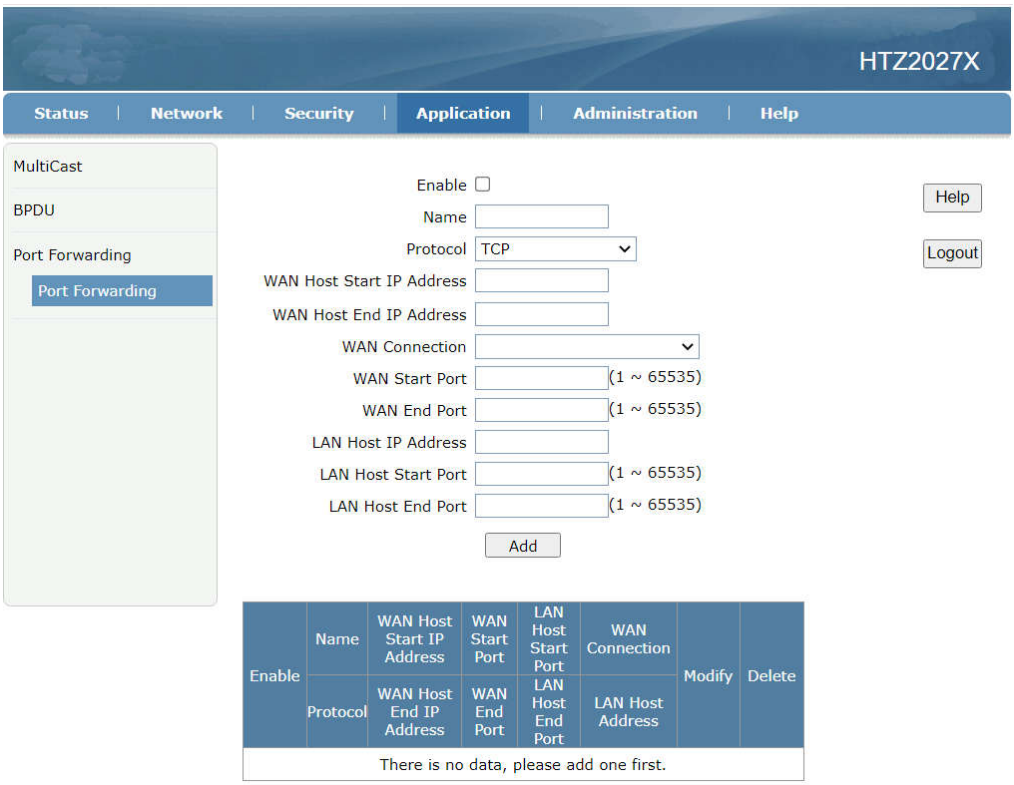


Figure 3-30:Port Forwarding

3.6 Administration

This menu allows user to set the basic function,including User Management, Login Timeout, Device Management, Diagnosis, Loopback Detection and Led Control.

3.6.1 User Management

This page allows the user to set User Management, including Administrator and User.

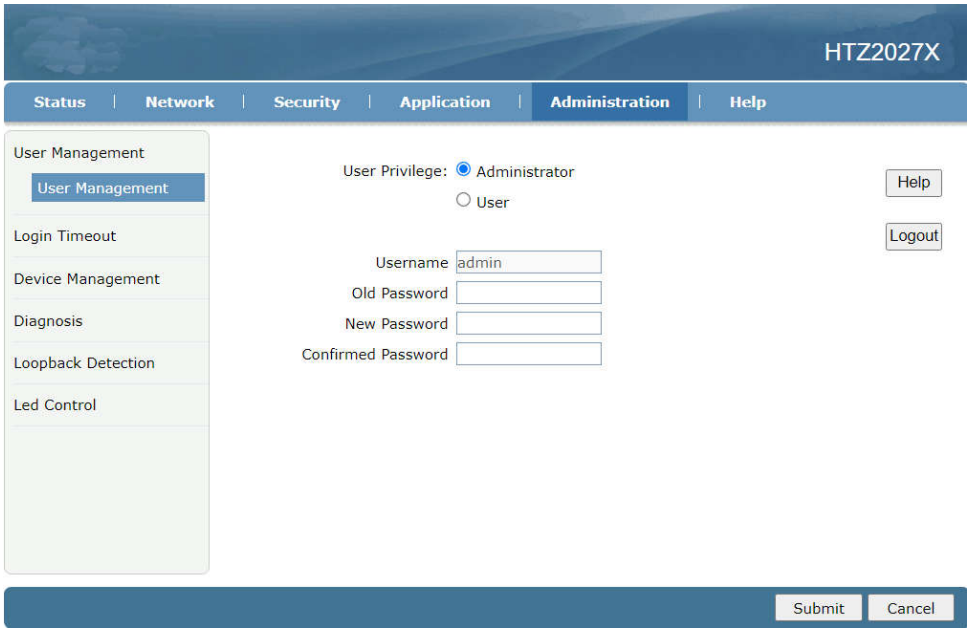


Figure 3-31: User Management

3.6.2 Login Timeout

This page allows the user to set the Login Timeout.

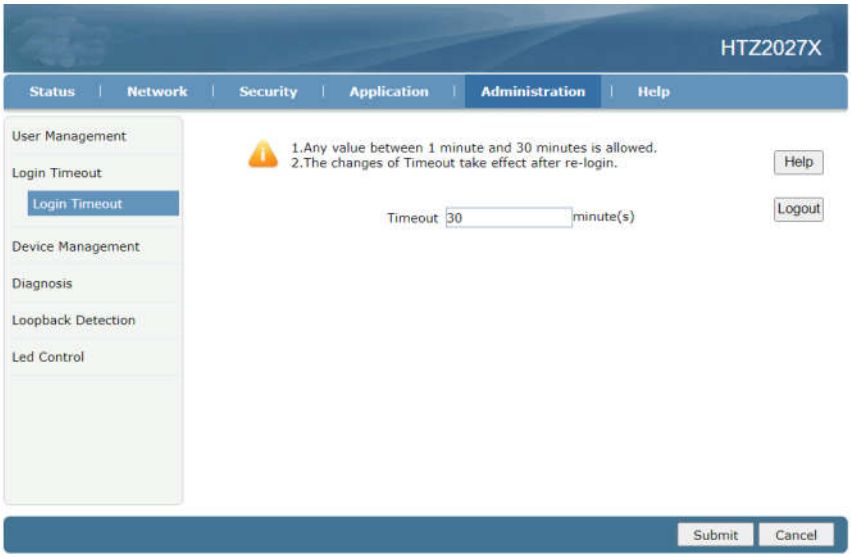


Figure 3-32:Login Timeout

3.6.3 Device Management

This page allows the user to set the Device Management, including System Management, Software Upgrade and User Configuration Management.

3.6.3.1 System Management

This page allows the user to reboot or restore default the device.

If users want to make the device Factory Reset,please click the button “Restore Default”，and the configuration would change into default.

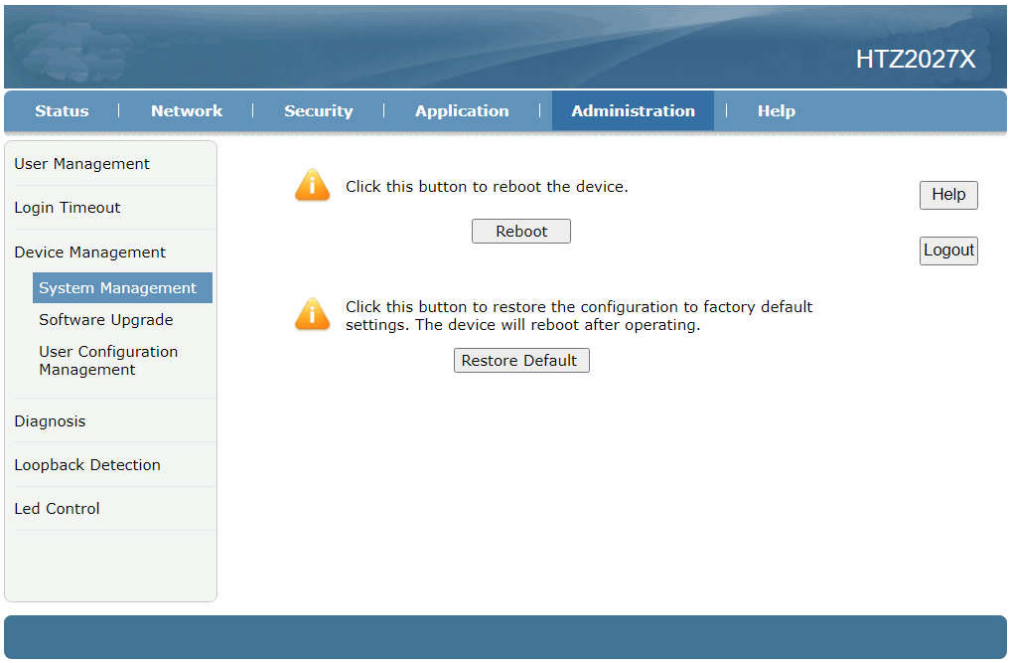


Figure 3-33:System Management

3.6.3.2 Software Upgrade

This page allows the user to update the software of the device. Click the “Choose File ” button to select the software and then click the “Upgrade” button to update. When the device upgrade succeed, it would reboot automatically. The whole process of upgrade will take 3-4 minutes.

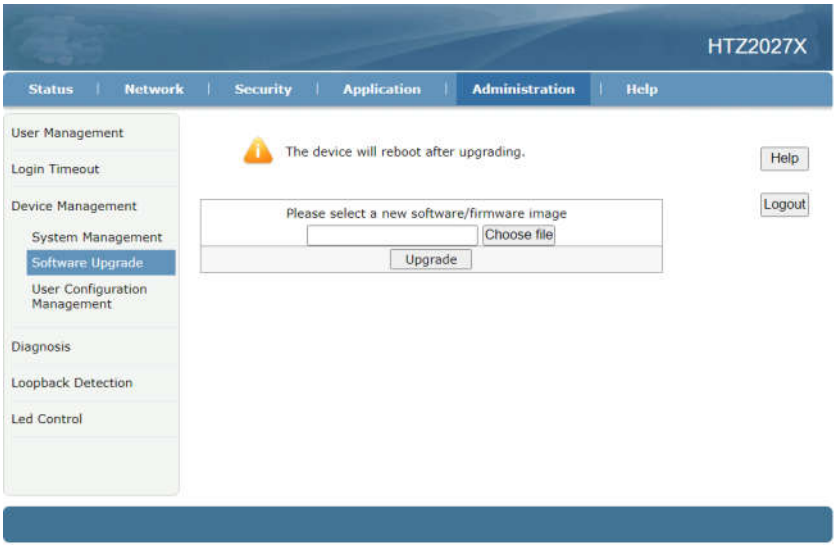


Figure 3-34:Software Upgrade

3.6.3.3 User Configuration Management

This page allows the user to export and import the onu configuration file.If you want to save the system current configuration ,you need to click “Backup Configuration”， and download the file “config.bin”; If user want to reload the ONU configuration,please click the “Choose file” to choose the saved file about ONU configuration and then click “Restore Configuration” finally， the device will reboot automatically and ONU configuration would change into as “config.bin”.

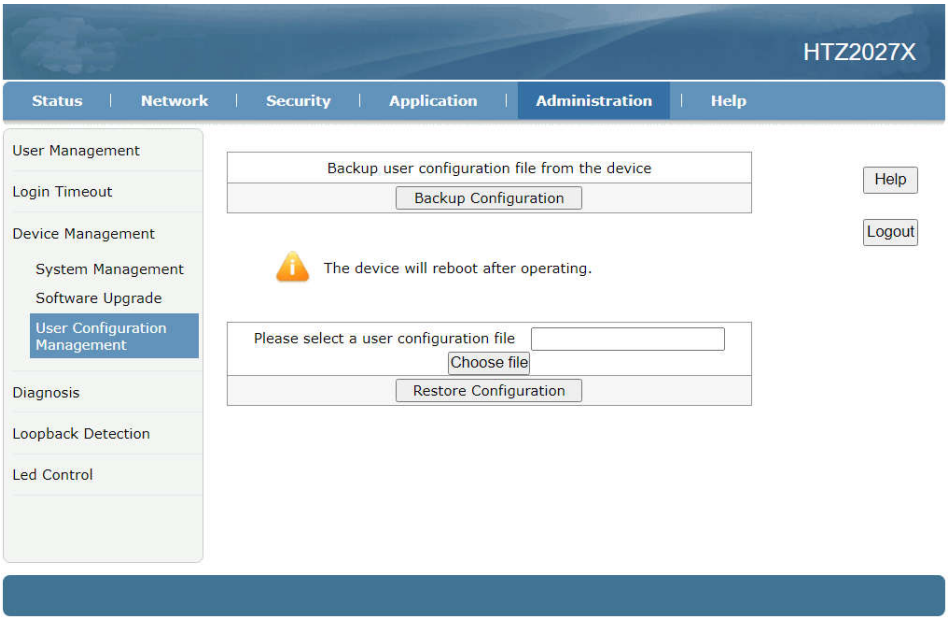


Figure 3-35:User Configuration Management

3.6.4 Diagnosis

This menu allows user to diagnose the current network and set Mirror Configuration.

3.6.4.1 Ping Diagnosis

This page shows about the ping test. Users can diagnose network connection via ping Host IP or URL.

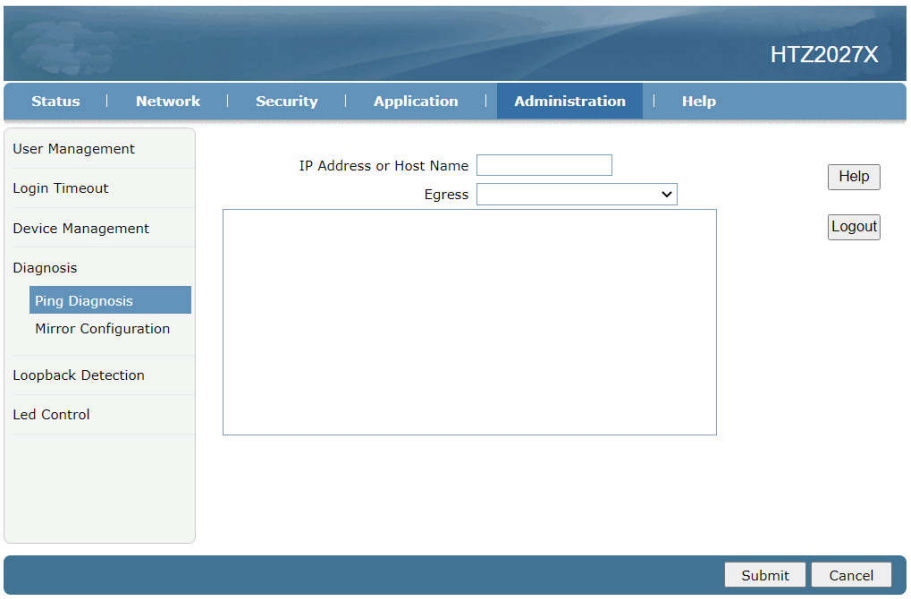


Figure 3-36:Ping Diagnosis

3.6.4.2 Mirror Configuration

This page allows the user to set Mirror Configuration.

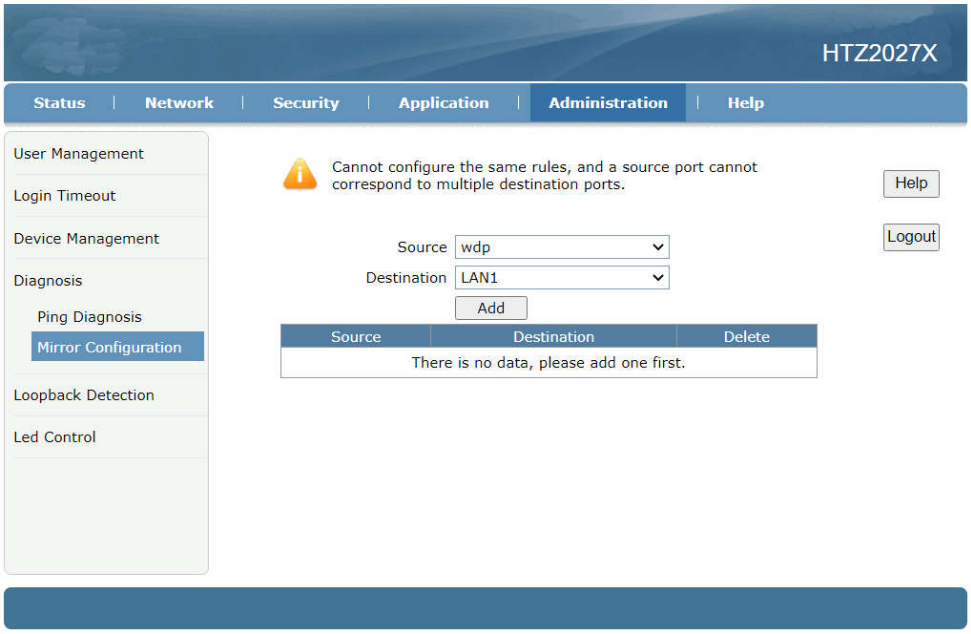


Figure 3-37:Mirror Configuration

3.6.5 Loopback Detection

This page allows the user to set Loopback Detection,including Basic Configuration, Enable Configuration and VLAN Configuration.

3.6.5.1 Basic Configuration

This page allows the user to Basic Configuration, including Destination MAC, Ethernet Type, Send Interval, Port Closing Time and Loopback Recovery Time.

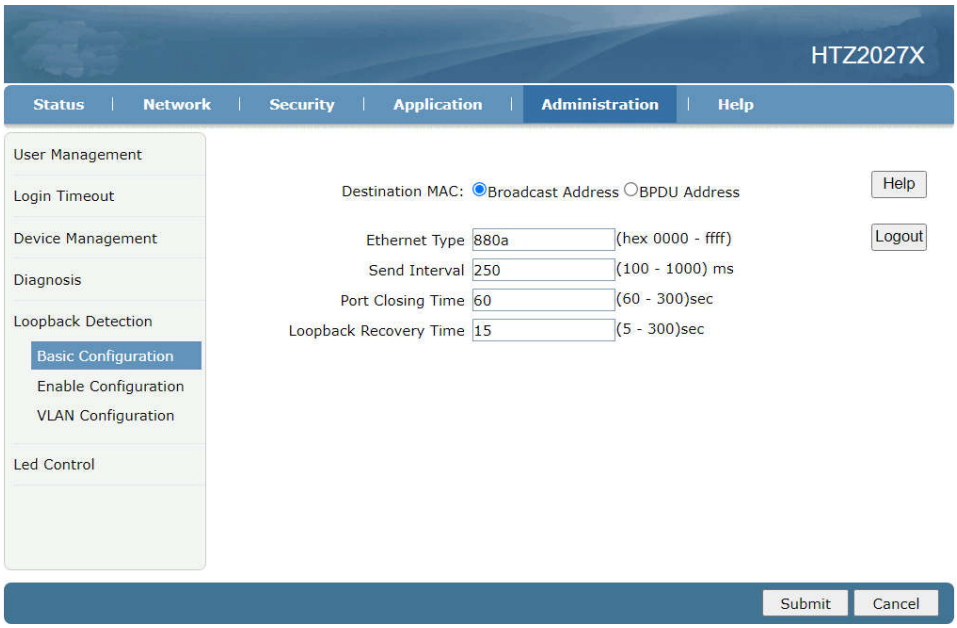


Figure 3-38:Basic Configuration

3.6.5.2 Enable Configuration

This page allows the user to Loopback Detection Enable Configuration, including Loopback Enable, Alarm Enable and Port dislooped Enable.

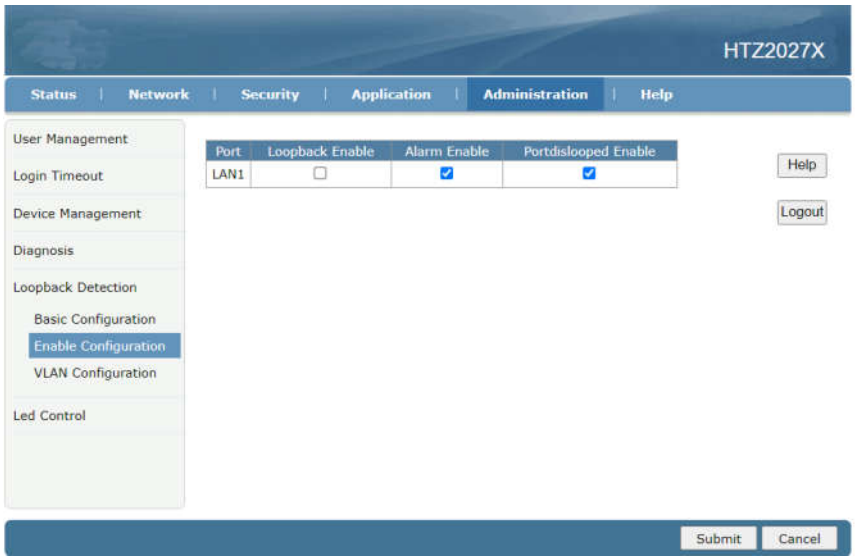


Figure 3-39:Enable Configuration

3.6.5.3 VLAN Configuration

This page allows the user to set Loopback VLAN Configuration.

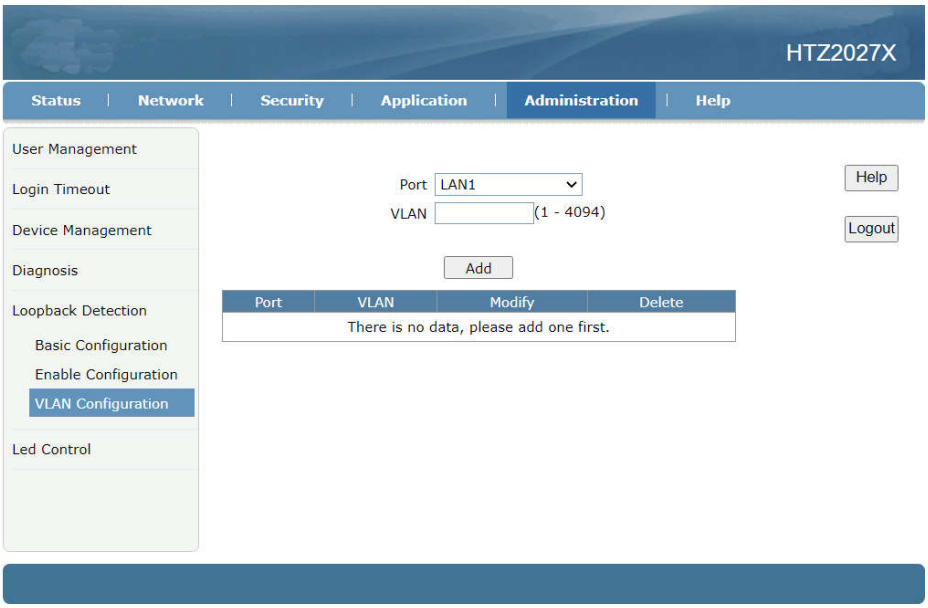


Figure 3-40:VLAN Configuration

3.6.6 Led Control

This page allows the user to control the LED. When turn off LEDS, it will leave only a single power LED.

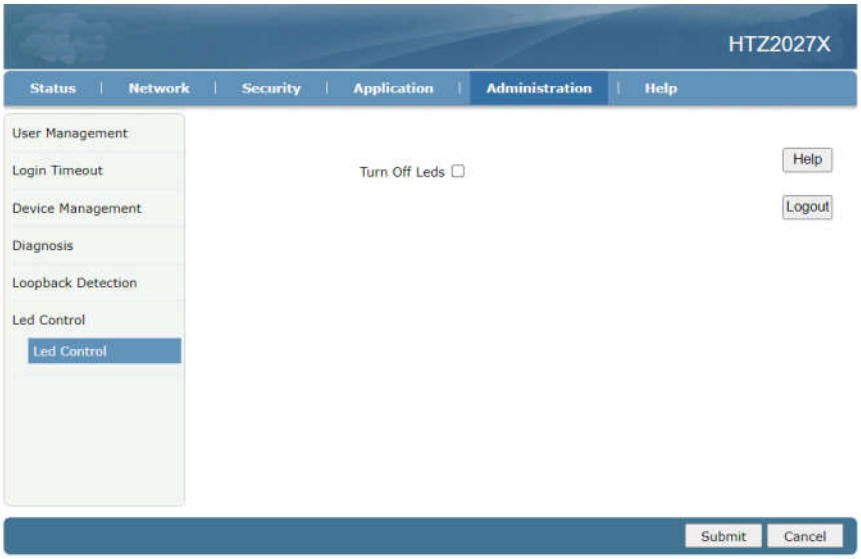


Figure 3-41:Led Control

Chapter 4 Application scenario

SFU mode accept vlan configuration from olt side (No WAN Connnection is SFU)
HGU mode use Route wan connection.

4.1 Requirment

(XPON 1GE Internet service with VLAN-100)

Scenario 1(SFU):

User client gets IP address from ISP DHCP/PPPoE Server or set the statics IP.

Scenario 2(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 1,it needs to configure VLAN service in OLT side

For scenario 2,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 ONT Port VLAN //Scenario 1(SFU)

MA5608T(config)#interface gpon 0/1

MA5608T(config)#ont port native-vlan 2 1 eth 1 vlan 100

(8)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 1(SFU):

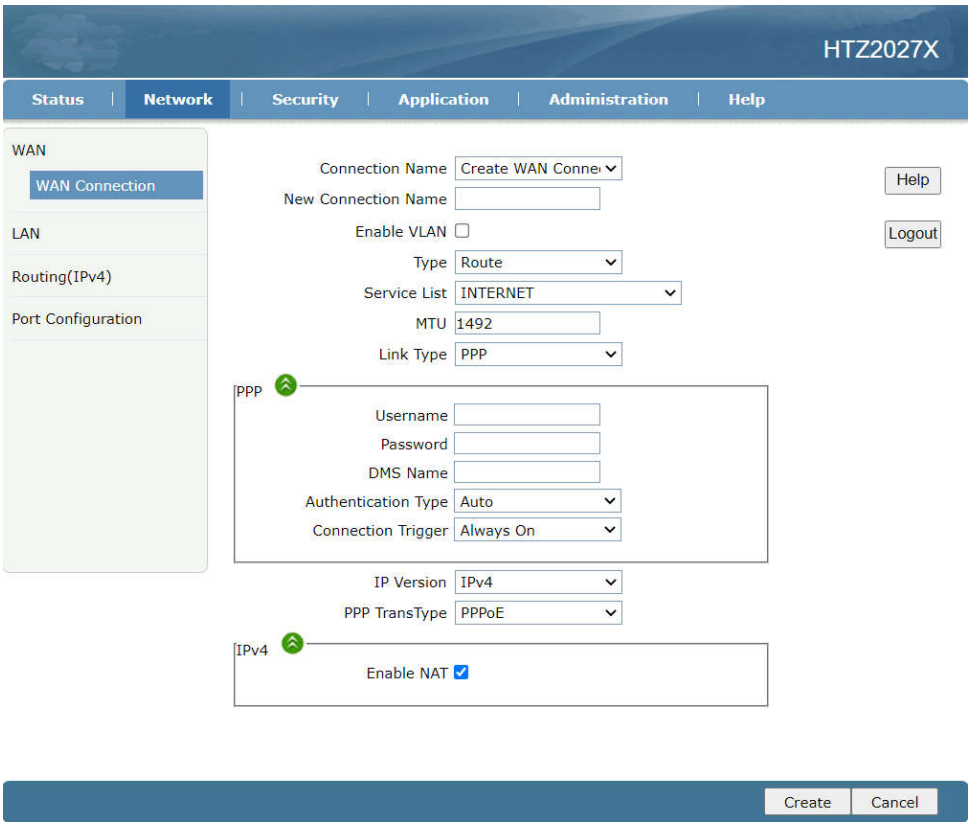
If you don't configure WAN Connection, it will work in SFU Mode.

Attention:

Please disable LAN DHCP Server when device works in SFU Mode.

Scenario 2(HGU_Route):

Configure ONU WAN connection in the ONU Webpage



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;