ASCENT
Communication Technology

ACT AE224S
P2P HGU

User Manual

Revision A

ACT AE224S P2P HGU

User Manual

ACT Document Number: ACT AE224S User Manual Revision A

This document is produced to assist professional and properly trained personnel with installation and maintenance issues for the product. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice.

For more information, contact ACT: support@ascentcomtec.com

Revision History

Revision	Date	Reason for Change
A	8/03/2016	Initial Release

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Chapter 1. Product Introduction

1.1 Product Description

ACT AE200 P2P CPE is a series of high performance optical residential gateways designed to deliver high-speed internet connections, VoIP, IPTV, and traditional CATV services. AE200 provides network operators and services providers with the powerful residential gateway equipment needed to provide advanced services in Fibre to The Home/Business (FTTH and FTTB) networks.

AE200 series includes three base models: AE204, AE224 and AE228 with selectable options to offer CATV RF, WiFi, Single or Dual WAN fibre port, 100 Mbps or 1000 Mbps uplink connection etc. The AE200 series provides high quality and robust services to allow operators to quickly expand their existing networks and services.

AE200 series offers powerful switching and routing capabilities, and seamlessly cooperates with ACT P2P Headend routing and switching products. Combined with ACT AE8000 Headend Core Switch, AE200 series can provide the ultimate end-to-end FTTX solution in offering advanced video, voice, and data services.

Figure 1-1: 4GE + 2POTS + WiFi P2P HGU

1.2 Special Features

- P2P wireless residential gateway for P2P active Ethernet FTTH applications
- Delivers high-speed internet, VoIP, and IPTV and traditional CATV services
- 4 or 8 ports 10/100 or 1000 Mbps, 2 ports VoIP FXS and 1 port 100 Mbps or 1000 Mbps uplink VoIP residential gateway with built-in IEEE 802.11b/g/n WiFi module
- NAT/bridge hybrid mode to intelligently prioritize transported video/voice/data traffic
- Optimizes service performance as well as utilization of limited IP resources for service providers
- Flexible auto provision schemes reduce the OPEX of device maintenance for service providers
- SNMP power down trap to rapidly identify network fault due to power outage and reduce truck rolls
- Built- in cable tray for friendly fiber management in FTTH deployment
- FCC Class A, CE

1.3 Technical Parameters

Hardware Parameters

Chipset	BCM68380 Series
Optical Type	SC/APC
	SC single-mode/single-fiber, symmetric 1.25 Gbps
Wavelength	Tx 1310 nm, Rx 1490 nm CATV 1550 nm
Optical Power	Tx power -9 dBm to -2 dBm
	Rx sensitivity -22 dBm
	CATV -8 dBm to +2 dBm
Interface Type	4 × 10/100/1000 Mbps
	Auto adaptive Ethernet interfaces, Full/Half Duplex, RJ45 connector
	2 POTS, RJ11 connector
	1 SCTE F connector
Wireless	Compliant with IEEE 802.11b/g/n, 300 Mbps, 2T2R 2 internal antennas
CATV	RF Video Output Bandwidth (MHz):45~875
	RF Output Level(dBuV):80
	AGC Dynamic Range(dBm):-6~+2
Indicators	12, For POWER, system, LINK, WiFi, Phone, LAN, Pair, CATV

Software Parameters

LAN	Supports port rate limiting
	Supports loop detection
VLAN	Supports VLAN tag mode
	Supports VLAN transparent mode
	Supports VLAN trunk mode
	Supports VLAN translation mode
	Supports VLAN QinQ mode
Multicast	Supports IGMP v1/v2/v3
	Supports IGMP proxy and MLD proxy
	Supports IGMP snooping and MLD snooping
QoS	Supports 4 queues
	Supports SP and WRR
	Supports 802.1P
	Supports DSCP
L3	Supports IPv4, IPv6 and IPv4/IPv6 dual stack
	Supports DHCP/PPPOE/Statics
	Supports static route
	Supports NAT
	Supports bridge, route, route and bridge mixed mode
	Supports DMZ
	Supports DNS

	Supports ALG
	Supports UPnP
	Supports virtual server
DHCP	Supports DHCP server
VOIP	Supports SIP protocol
	Supports voice coding: ITU-T G.711/G.723/G.726/G.729, auto-negotiate with call agent
	Supports Echo cancellation exceeding ITU-T G.165/G.168-2002, up to 128 ms tail length
	Supports high/low speed fax/Modem, bypass fax, and T38 fax
	Supports InBand / RFC2833/SIP INFO, MD5 authentication, call forward, call waiting, hot-line call, and all kinds of value-added voice service. Multi-party conferencing
	Supports Line testing according to GR-909
Wireless	Supports 802.11b/g/n and Mixed mode
	Supports 4 SSID
	Supports No-auth, WEP, WPA-PSK and WPA2-PSK function with AES, TKIP encryption
Performance	Data loss: <1*10E-12
	Call loss: <0.01%
Security	Supports Firewall
	Supports Mac filter
	Supports ACL
	Supports URL filter
Management	Supports WEB
	Supports TR069
	Supports TELNET
	Supports CLI

Switching and Routing Features

Standards	IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX/FX
	IEEE 802.1p Priority
	IEEE 802.1q Tag VLAN
	IEEE 802.3x Flow Control
	SIP (RFC3261)
	G.711/G.723/G.726 /G.729 Annex A/B
Layer 2 Switching	PPPoE Client
	IEEE 802.1p priority / 802.1Q tag VLAN
	Q-in-Q VLAN tag
	Application QoS
	Rate limit control
Layer 3 Routing	NAT/bridge hybrid mode
	DHCP client and server
	DNS client and DDNS
	IGMP proxy
	IGMP snooping v1/v2
	DMZ host

Security	Attack detection & blocking, Firewall
VoIP Function	VAD and CNG
	Echo cancellation (G.165/G.168)
	DTMF tone generation
	T.38 fax/modem relay, T.38/G.711 fax pass through
	Adaptive jitter buffer, caller ID, call forward, call hold, call transfer, 3-way conference
Network Management	Web UI management
	SNMP Management
	Supports SNMP v1/v2c
	URL Filtering & filtering schedule
	SNTP, Event Syslog
	Power down trap
	FTP/HTTP firmware upgrade
	Remotely FTP upgrade
	DHCP auto provision
	TR-069

1.4 Application Chart

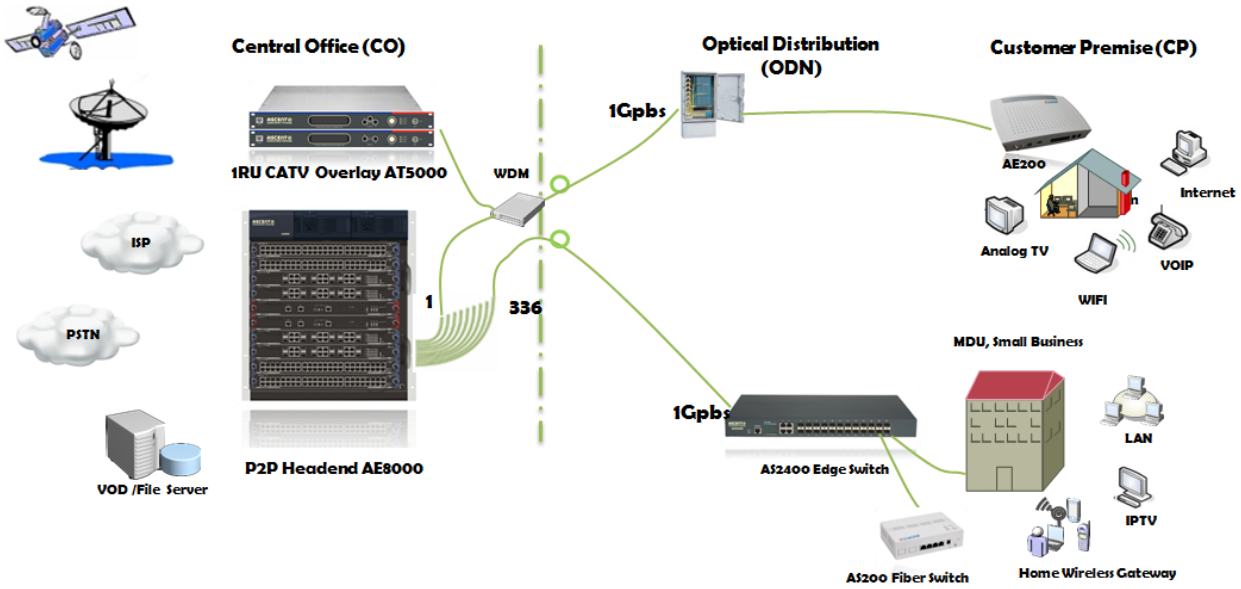

Figure 1-2: Application Chart

1.5 Panel Description

Interface Panel

Figure 1-3: Interface panel

Name	Function
Fiber	Connect P2P Fiber port to the internet using an SC type single-mode optical fiber cable
Phone 1/2	Connect a telephone with the FXS port using a telephone wire. If you only have one telephone, you should use the FXS1 port
LAN 1/2/3/4	Connect the LAN ports to your devices using RJ45 Ethernet cables
WPS	Press down Wi-Fi turn on/off for 3 seconds to enable/disable WiFi
WiFi	Hold down the reset button for 1 to 5 seconds to make the device restart and recover from the factory default settings
Reset	Press down the WPS button for 0.1 to 3 seconds to activate the WPS function
DC12V	Connect with power adapter
PWR	Turn power on/off
CATV	SCTE type-F TV antenna

Indicator Panel

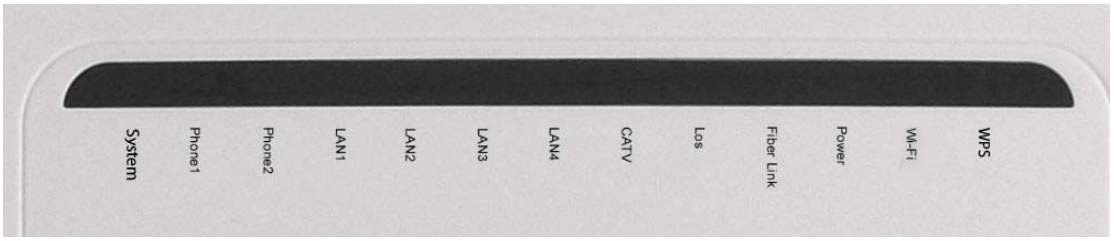

Figure 1-4: Indication panel

Name	Color	Status	Function
PWR	Green	OFF	Power is not supplied
		ON	Power is supplied
Fiber Link	Green	OFF	Device is not registered to P2P switch
		ON	Device has been registered to P2P switch
		Flash	Device is registering

LOS	Red	OFF	Rx optical power is normal
		Flash	Rx optical power is lower than the sensitivity of the optical receiver
CATV	Yellow	ON	CATV optical RX power <-8 dbm
	Green	ON	CATV optical RX power <-8 dbm
	Red	ON	CATV optical RX power >2 dbm
WPS	Green	OFF	Does not use WPS or WPS client is connected (LED automatically turns off after 5 minutes of successful connection)
		ON	WPS client is connected. (LED automatically turns off after 5 minutes of successful connection)
		Flash	WPS client is connecting
WiFi	Green	OFF	Device is powered off or WiFi is turned off
		ON	WiFi is turned on
		Flash	WiFi is turned on and currently transmitting data
PHONE 1/2	Green	OFF	Device is powered off or not registered to the soft-switch
		ON	Device has registered to the soft-switch
		Flash	The port is working
System	Green		
LAN1/2/3/4	Green	OFF	Device is powered off or Ethernet link is not established
		ON	Ethernet link is established but not currently transmitting data
		Flash	The port is currently transmitting data

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
4FE/GE+2POTS+WiFi+CATV Home Gateway	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 HGU optical interface (P2P interface). Connect the fiber to the Fiber port on the unit.

Note

When measuring the optical power before connecting to the HGU use of a Fiber Inline Power Meter is recommended.

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 HGU is power ON, Indicators should light up as for normal operation. Check whether the P2P interface status LED (LINK) 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 HGU communication ports.

Unit Installation Adjustment

Installing the HGU on a horizontal surface (Bench top)

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

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

You can install the HGU 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 165mm. Reserved at least 6mm between the screw caps and the wall.

b. Hang the HGU on the screws through the mounting holes.

2.3 Set up Connection

Set up wired connection

Connect PC with P2P HGU Ethernet port by RJ-45 Cat5 cable.

Set up wireless connection

Choose the wireless network name (SSID) “Broadcom1”, there is no password by default.

Chapter 3. Configuration

After finishing the basic connection configuration, you can use its basic function. In order to satisfy individuation service requirements, this charter provide you 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:

Note The default login User Name of administrator is “admin”, and the default login Password is “ascent”

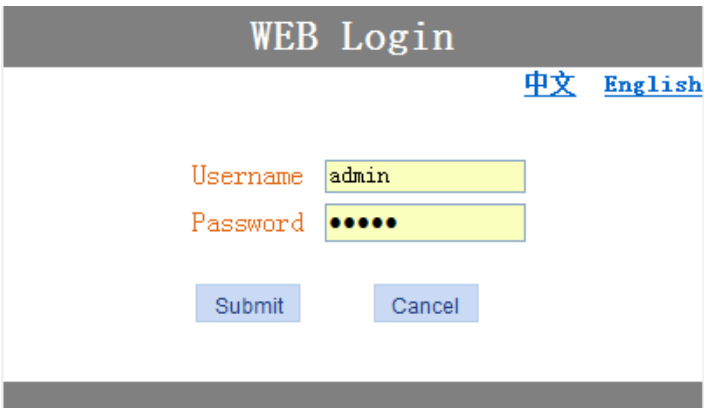

Figure 3-1: Login

3.2 Status

This part shows the main information of product.

3.2.1 Device Info

This page shows the device basic information, such as model, mac details, hardware version, software version and CFE version.

Figure 3-2: Device Info

3.2.2 Network Info

3.2.2.1 WAN Info

This page shows WAN connection information you have configured. WAN connection's protocol can be configured to IPv4, IPv6 or both of them.

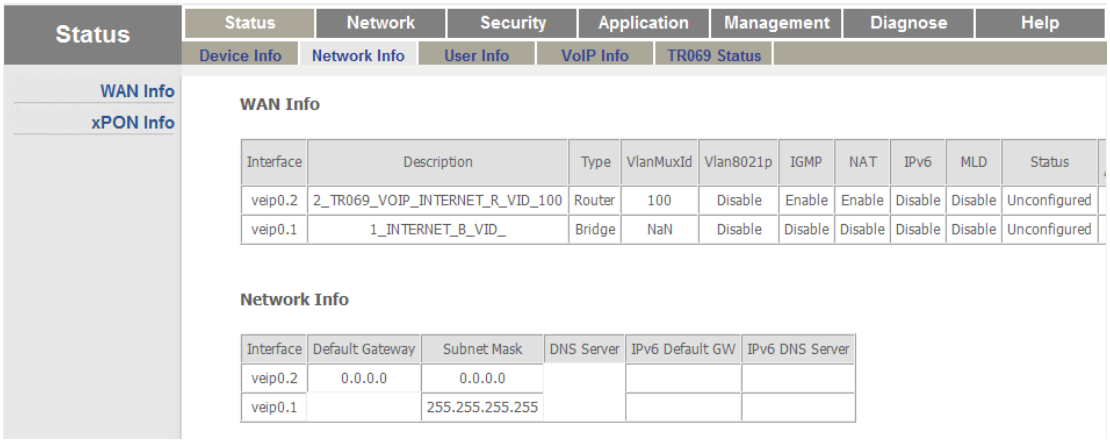

Figure 3-3: WAN Info

3.2.2.2 Ethernet Info

This page shows the P2P information, such as temperature, voltage, current, power, and link status.

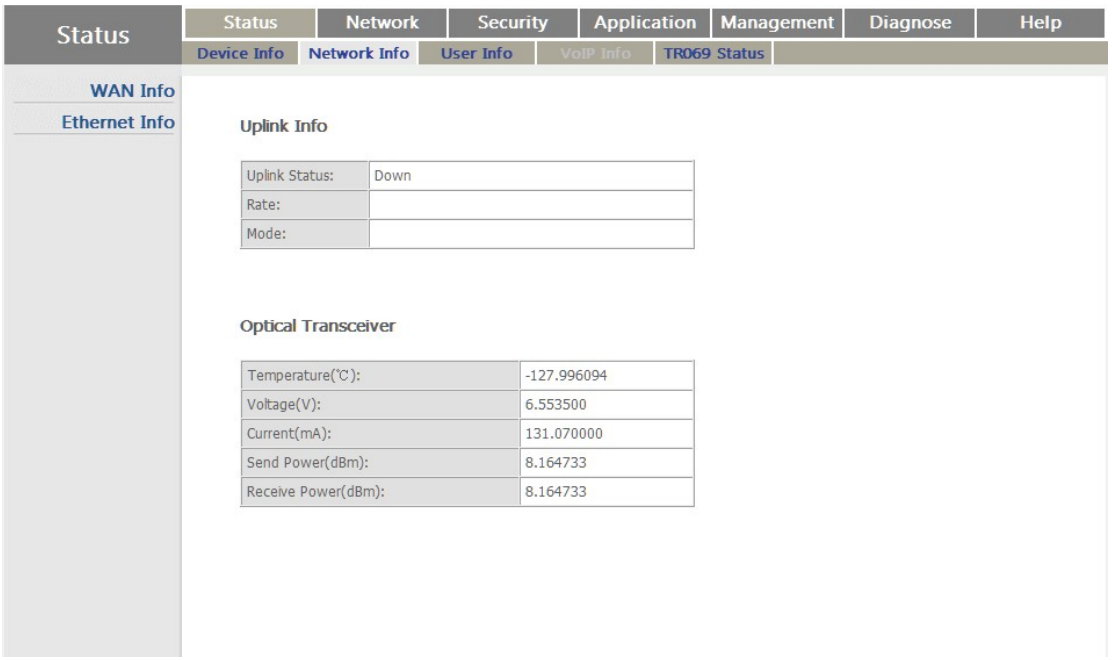

Figure 3-4: Ethernet Info

3.2.3 User Info

3.2.3.1 WLAN Interface

This page shows WLAN information, such as SSID name, whether enable security or not, statistics of the packet on both send and receive direction.

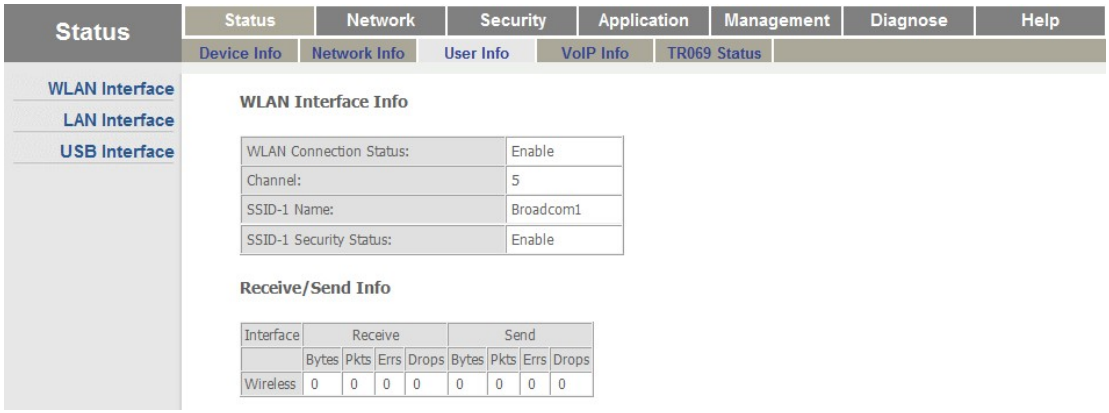

Figure 3-5: WLAN Interface

3.2.3.2 LAN Interface

This page shows LAN information, such as LAN gateway, receive or send packet statistics of LAN interface, list of connected clients.

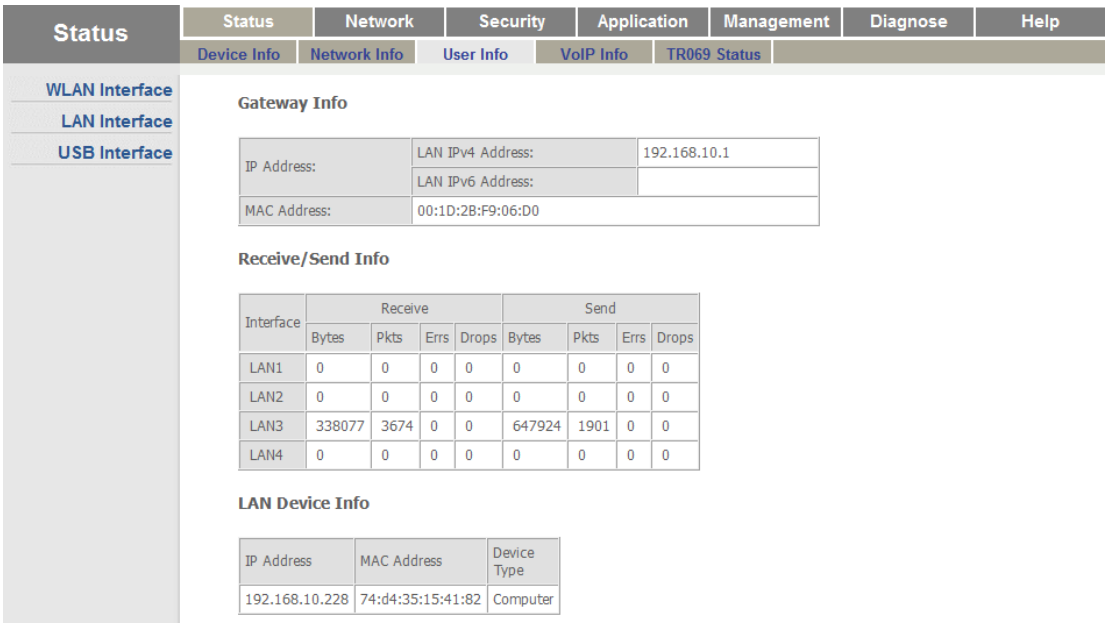

Figure 3-6: Ethernet Interface

3.2.4 VoIP Info

This page shows VoIP information which include registration status, user status and phone number.

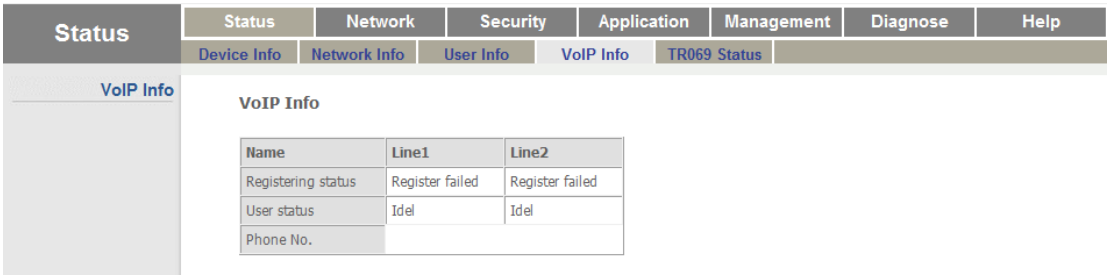

Figure 3-7: VoIP Info

3.2.5 TR069 Status

This page shows the request status of ITMS connection.

Figure 3-8: TR069 Status

3.3 Network

3.3.1 Internet

This page allows you to configure WAN connections. You can't add any WAN connection if you have configured eight connections because the largest number of wan connections is eight.

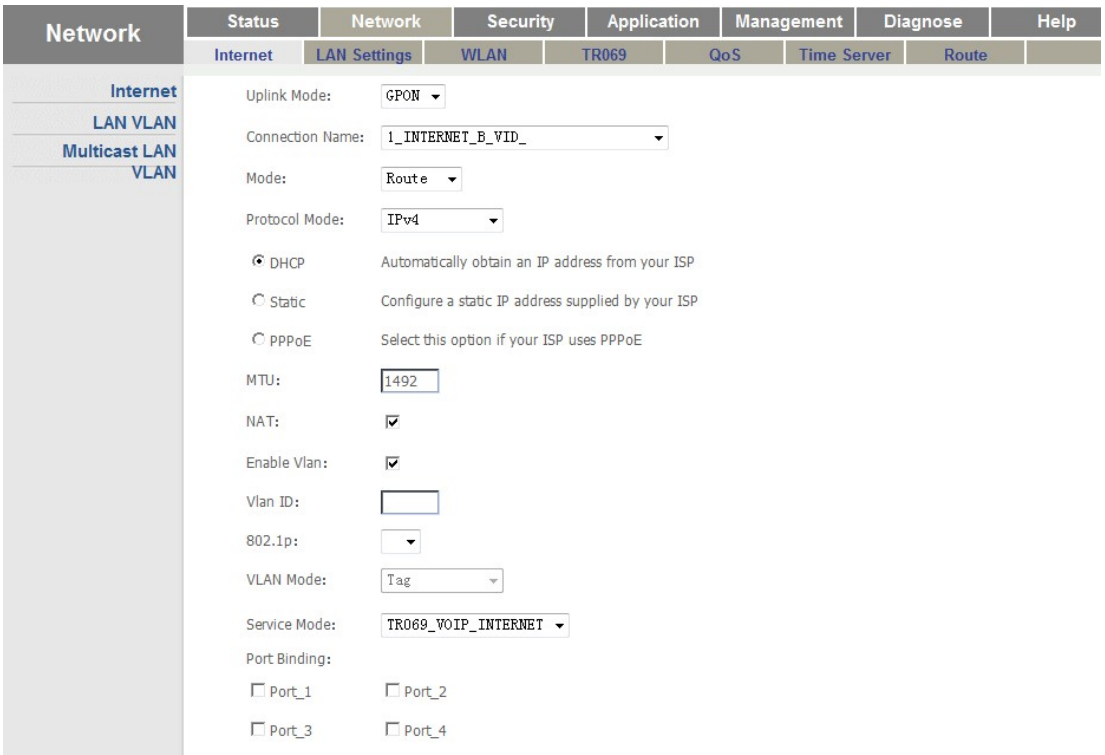

Figure 3-9: Internet

Parameters	Description
Uplink Mode	The uplink mode is set to P2P in this product and it can't be changed.
Connection Name	This is the list table of WAN connection name. If you want to create a new WAN connection, please select "Add WAN Connection" and input other parameters at the same time and then click "Save/Apply" button. If you want to edit WAN connection, please select the wan connect name you want to edit and change other parameters and then click "Save/Apply" button. If you want to delete one connection, please select the wan connection you want to delete and then click "Del" button.
Mode	Bridge: The LAN ports you have selected in this WAN connection and P2P port are in the bridge mode. Route: The LAN ports you have selected in this WAN connection and P2P port are in the route mode.
Protocol Mode	IPv4: WAN connections use IPv4 protocol. IPv6: WAN connections use IPv6 protocol. IPv4 & IPv6: WAN connections use both IPv4 and IPv6 protocol.
IP Mode	DHCP: Automatically obtain an IP address from your ISP Static: Set the IP address manually PPPoE: Select this option if your ISP uses PPPoE
MTU	MTU: max transfer unit Default Value: 1500 in bridge mode, 1492 in route mode.
NAT	Enable: open NAT function Disable: close NAT function
Enable VLAN	Disable: In this wan connection, the packets transmitted by the P2P port don't take VLAN tag. Enable: In this wan connection, the packets transmitted by the P2P port take VLAN tag. VLAN ID: input the VLAN ID you want to set. 802.1p: select the port priority you want to set. VLAN Mode: Tag or Transparent. If you select route mode, the VLAN mode is set to tag mode and it can't be changed.
IPv4 Static IP Settings	IP Address: Please input wan IP address. Subnet Mask: Please input wan IP address mask. Default gateway： Please input gateway. Primary DNS: Please input primary DNS. Secondary DNS: Please input secondary DNS.
IPv6 Static IP Settings	WAN IPv6 gateway address: Please input wan IP gateway. WAN IPv6 address: Please input wan IP address. Primary IPv6 DNS server: Please input primary DNS. Secondary IPv6 DNS server: Please input secondary DNS.
Service Mode	Service mode is indicating what the wan connection is used for. E.g.: If this wan connection is used for VoIP, you should select the service mode which includes VOIP, such as TR069_VOIP_INTERNET, TR069_VOIP, VOIP or VOIP_INTERNET.
Port Binding	Showing which LAN port or SSID the wan connection has included.

Port binding is only effective to OTHER mode WAN connection.

If port isn't bound to OTHER mode WAN, it will give preference to OTHER mode WAN connection for upstream when there is no LAN VLAN rule and give preference to INTERNET mode WAN connection for upstream when there is LAN VLAN rule.

Note

DHCP server of HGU will not affect the LAN port which is bound to OTHER mode WAN for upstream. You also can't visit webpage from this port

3.3.2 LAN VLAN

This page allows you to configure LAN interface VLAN.

3.3.2.1 Basic Mode Settings

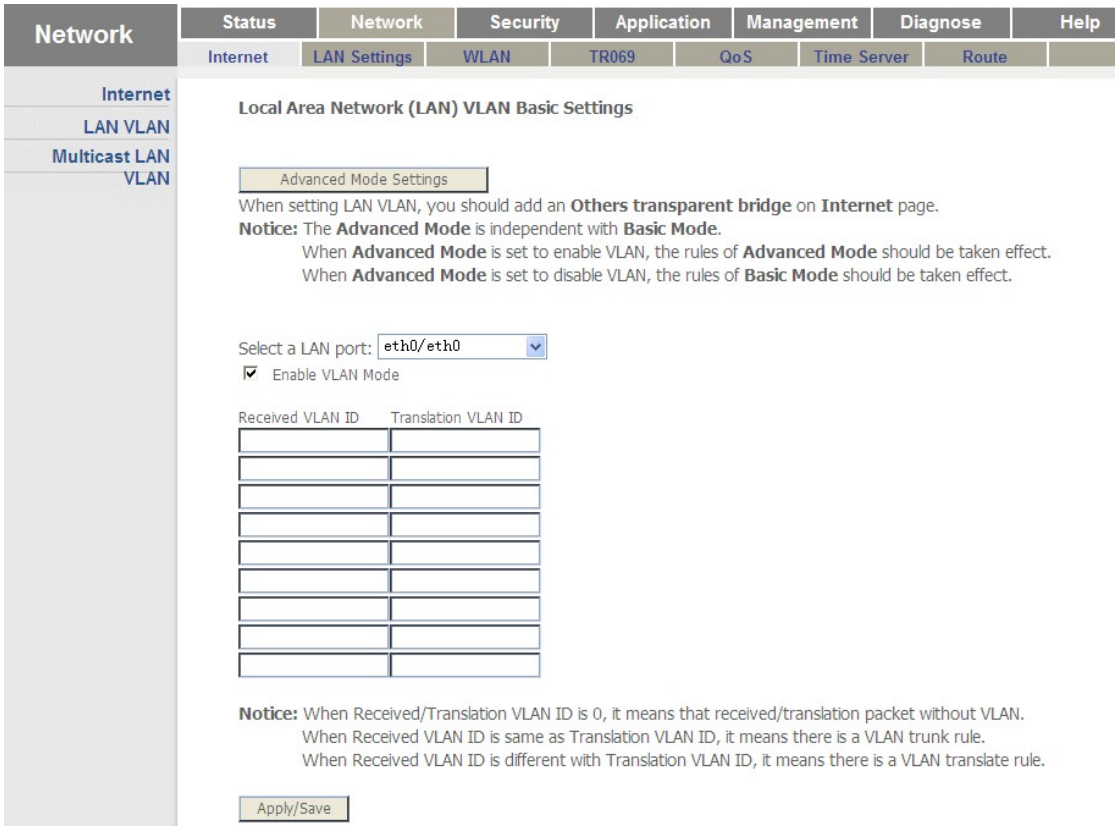

Figure 3-10: LAN VLAN basic mode settings

Parameter	Description
Enable VLAN mode	VLAN mode switch
Received VLAN ID	LAN port received VLAN.
Translation VLAN ID	LAN port translated VLAN. LAN port sends messages to P2P port with this VLAN.

For example,

1. Received VLAN ID is 0, translation VLAN ID is 99. It means the port is tag mode, VLAN ID is 99.
2. Received VLAN ID is 99, translation VLAN ID is 99. It means the port is trunk mode, VLAN ID is 99.
3. Received VLAN ID is 77, translation VLAN ID is 99.
4. It means the port is translation mode. The port receives messages with VLAN 77, then translates to VLAN 99 and sends to P2P port.
5. Received VLAN ID is 0, translation VLAN ID is 0. It means the port is transparent mode.

Advanced mode settings

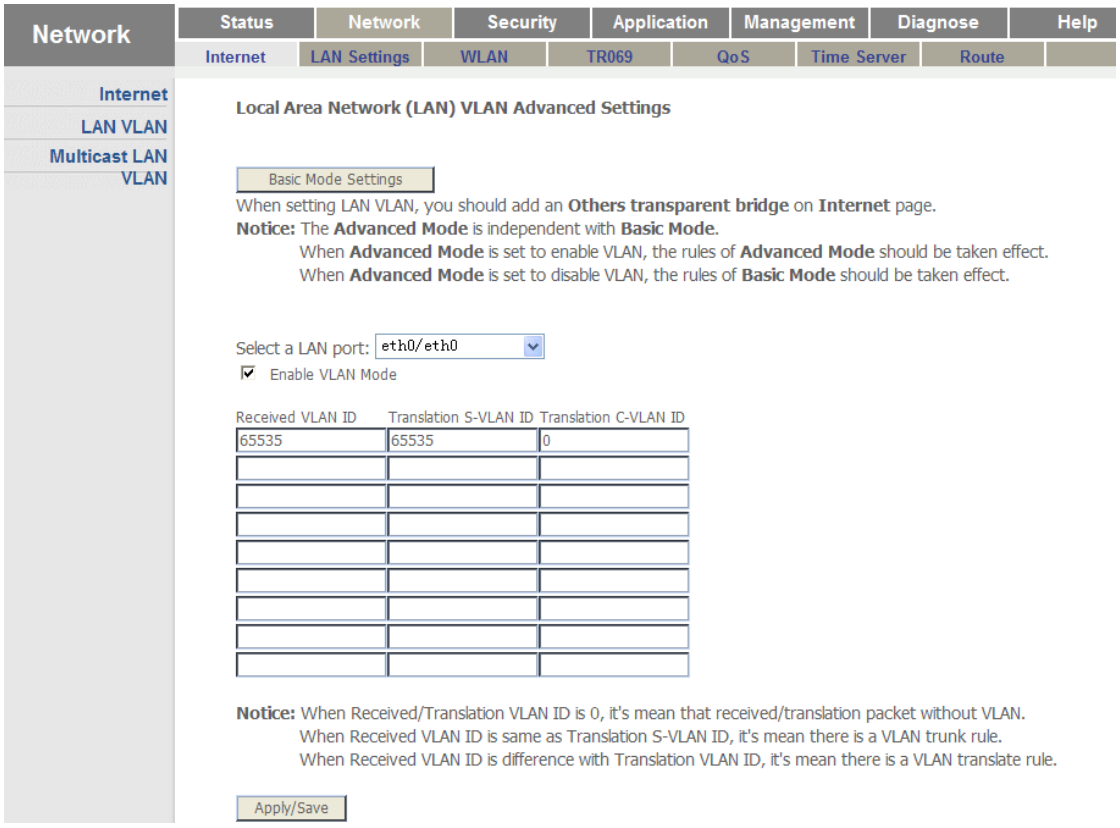

Figure 3-11: LAN VLAN advanced mode settings

Parameter	Description
Enable VLAN mode	VLAN mode switch.
Received VLAN ID	LAN port received VLAN.
Translation S-VLAN ID	LAN port translated service VLAN.
Translation C-VLAN ID	LAN port translated custom VLAN.

For example,

1. Received VLAN ID is 0, translation S-VLAN ID is 99.

It means the port is tag mode, VLAN is 99.

2. Received VLAN ID is 99, translation S-VLAN ID is 99. It means the port is trunk mode, VLAN is 99.

3. Received VLAN ID is 77, translation S-VLAN ID is 99.

It means the port is translation mode. The port receives messages with VLAN 77, then translates to VLAN 99 and sends to P2P port.

4. Received VLAN ID is 65535, translation S-VLAN ID is 65535. It means the port is transparent mode.

5. Received VLAN ID is 22, translation S-VLAN ID is 33 and translation C-VLAN ID is 44.

It means the port is QinQ mode. The port receives messages with VLAN 22, sends to P2P port with double VLAN that inner VLAN is 44 and outer VLAN is 33.

3.3.3 Multicast LAN VLAN

This page allows you to configure multicast VLAN of LAN ports.

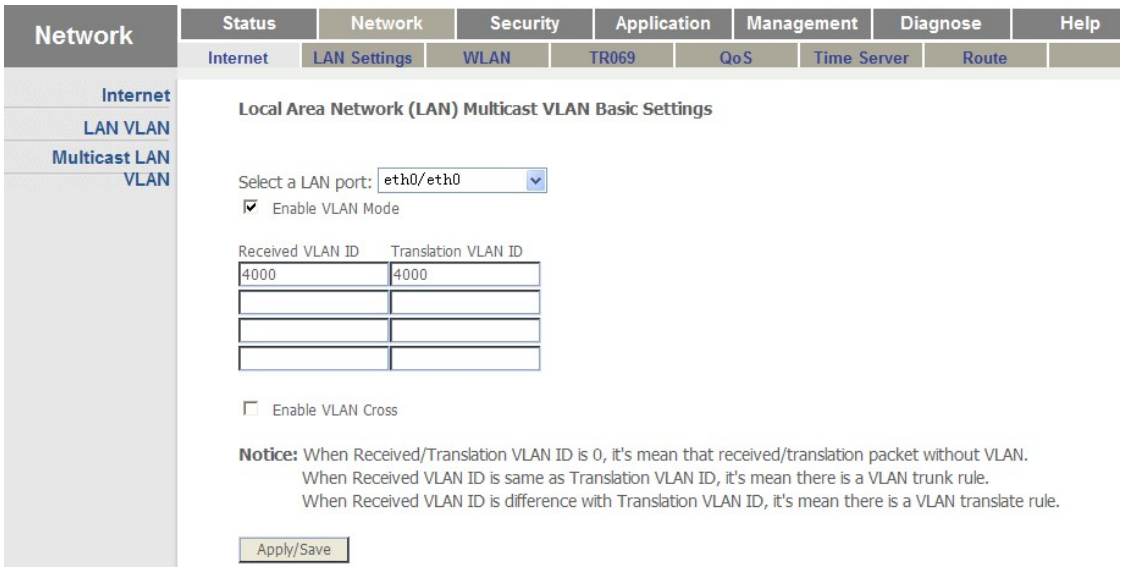

Figure 3-12: LAN multicast VLAN

Parameter	Description
Enable VLAN mode	Multicast VLAN mode switch.
Received VLAN ID	LAN port received VLAN.
Translation VLAN ID	LAN port translated VLAN.
Enable VLAN cross	Multicast VLAN cross switch. Join or leave message doesn't need to carry the same VLAN as multicast VLAN when VLAN cross is enabled; but it must be the same as multicast VLAN when it is disabled.

For example,

1. Received VLAN ID is 0, translation VLAN ID is 10.

It means multicast VLAN mode of the port is tag, VLAN is 10.

2. Received VLAN ID is 10, translation VLAN ID is 10.

It means multicast VLAN mode of the port is trunk, VLAN is 10.

3. Received VLAN ID is 10, translation VLAN ID is 20.

It means multicast VLAN mode of the port is translation. LAN port translates multicast VLAN 20 to VLAN 10 before sending multicast streams to customer.

3.3.4 LAN Settings

3.3.4.1 IPv4

This page allows you to make some LAN settings, such as LAN IP setting, DHCP server setting.

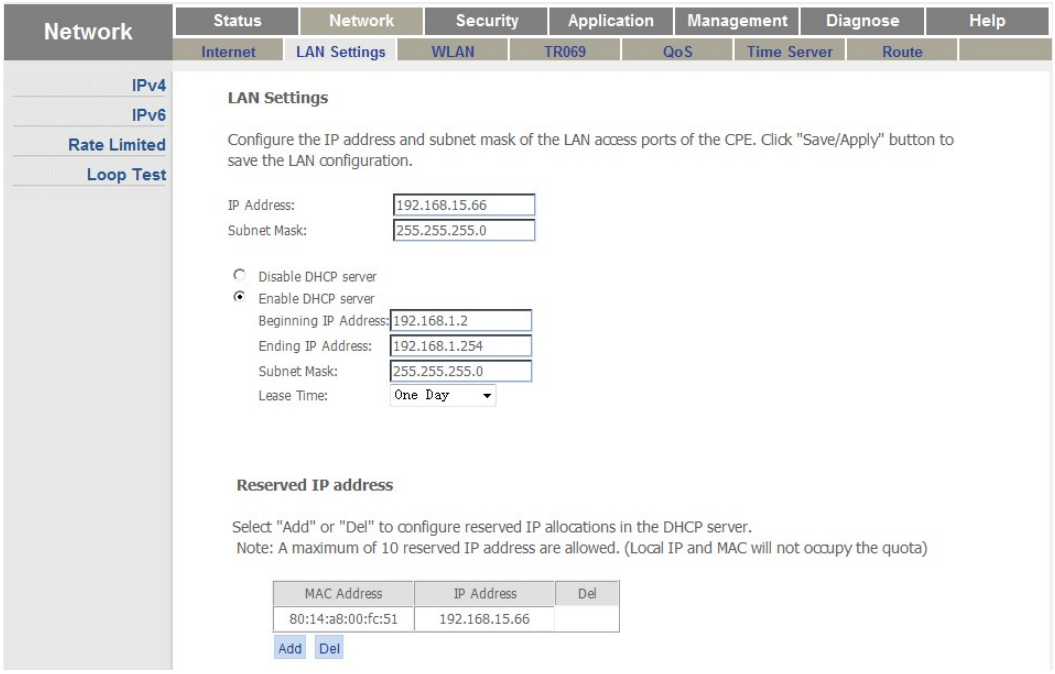

Figure 3-13: IPv4 Settings

Parameter	Description
IP Address	LAN IP address.
Subnet Mask	LAN IP mask.
Disable DHCP Server	DHCP Server is disabled.
Enable DHCP Server	Enable HGU DHCP server. Beginning IP Address: The start IP address of IP pool. Ending IP Address: The end IP address of IP pool. Subnet Mask: The subnet mask of IP pool. Lease Time: Lease time of the IP address.
Reserved IP Address	Click “Add” button to configure IP address you want to reserve. If you want to delete one reserve IP configuration, select “Del” checkbox and then click “Del” button.

3.3.4.2 IPv6

This page allows you to configure IPv6 DHCP server.

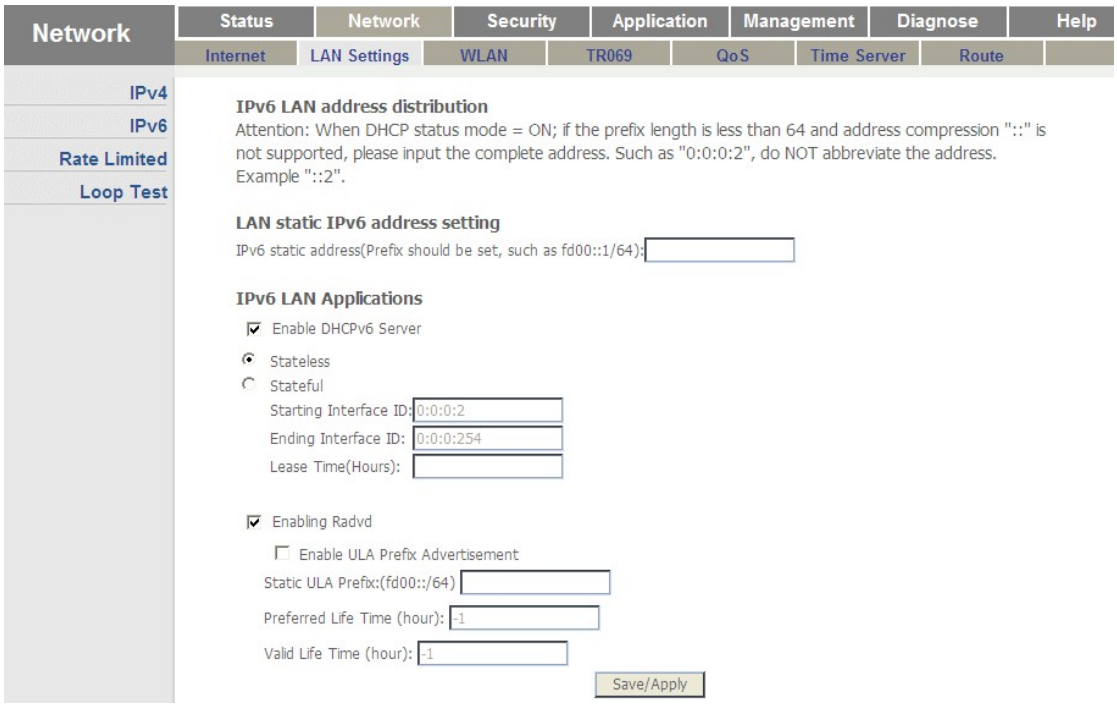

Figure 3-14: IPv6 Settings

Parameter	Description
LAN static IPv6 address setting	LAN IPv6 address.
Enable DHCPv6 server	Enable or disable DHCPv6 server.
Stateless	In this mode, terminal host gets a gatherable unicast IP address according to the global address prefix, which the router declared, and its interface ID.
Stateful	In this mode, mainly use DHCP to configure host. You should set up DHCP server according to your requirement.
Enable RADVD	Enable RADVD to monitor automatic configuration request of IPv6 host and also response in the local area network.
Enable ULA prefix advertisement	Enable or disable ULA prefix advertisement.
Static ULA prefix	Input static ULA prefix.
Preferred lift time	Use to restrain lease time and re-bind time. By default, lease time is 50% of preferred life time and re-bind time is 80% of preferred life time.
Valid life time	Lease Period of IPv6 address. After valid life time up, the server will take back IPv6 address.

3.3.4.3 Rate Limited

This page allows you to configure LAN port rate limiting.

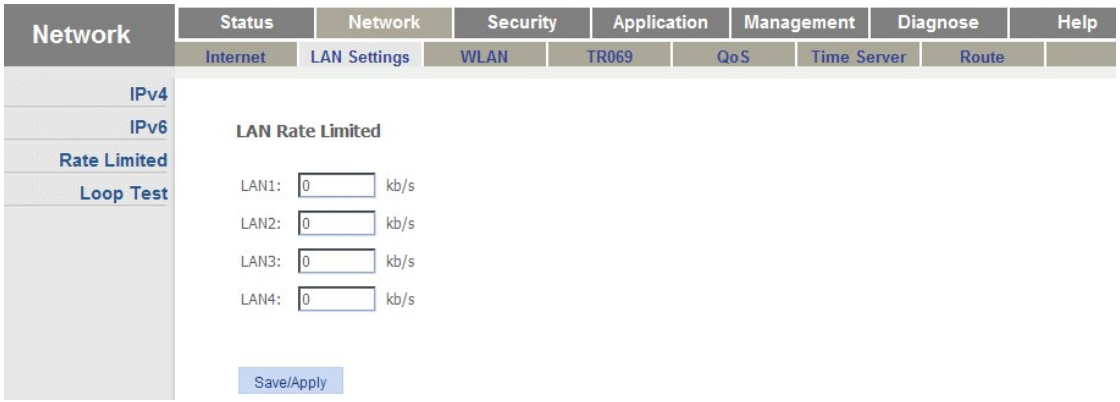

Figure 3-15: Rate Limited

Parameter	Description
LAN Rate Limited	Input the value you want to limit and then click the “Save/Apply” button to save. 0 means no limit. It is only effective for down streams.

3.3.4.4 Loop Test

This page allows you to enable loop test function.

Figure 3-16: Enable Loop Test

3.3.5 WLAN

This part is used to configure WIFI parameters. On each page, after configuring you should click “Save/Apply” button to save it.

3.3.5.1 WLAN Basic

This page allows you to configure wireless basic settings. Basic settings include wireless switch setting, SSID name, country, max clients and so on for each SSID. You can enable each AP and decide whether hidden SSID or not.

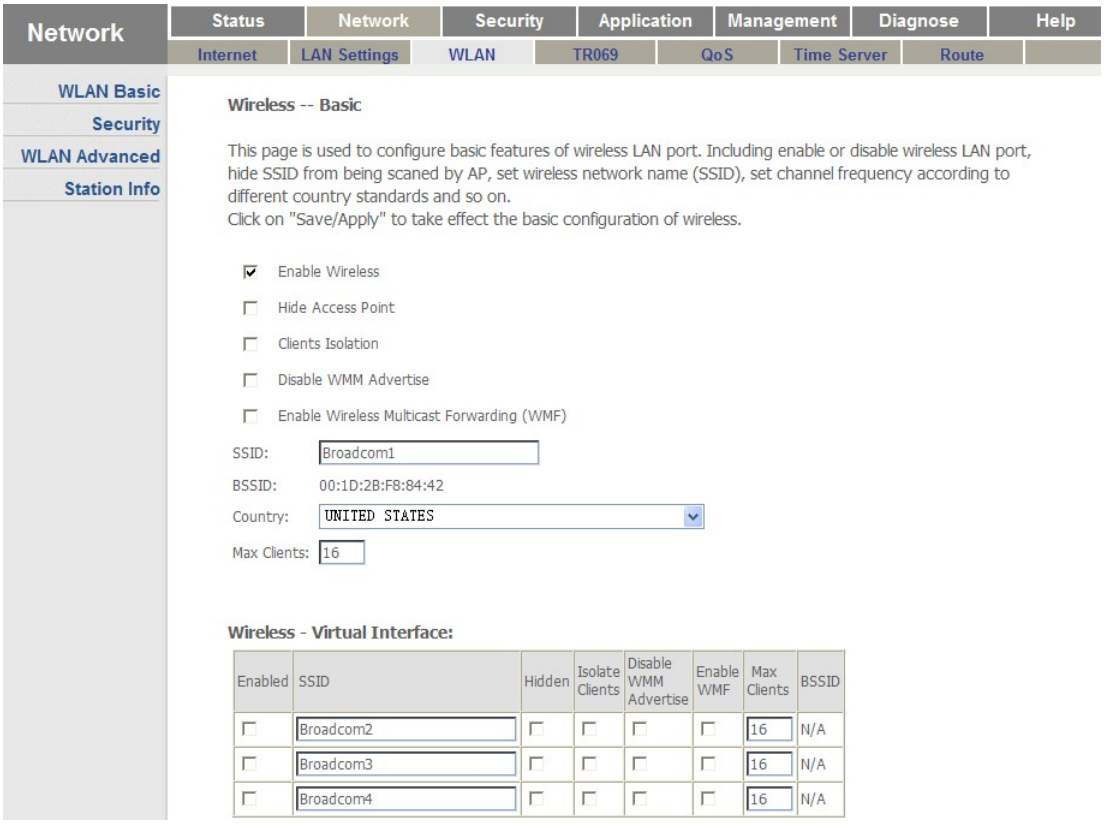

Figure 3-17: WLAN Basic

Parameter	Description
Enable Wireless	Enable or Disable WLAN.
Hide Access Point	Select it to hide SSID.
Clients Isolation	Isolate each WIFI clients.
Disable WMM Advertise	Disable wireless QoS.
Enable Wireless Multicast Forwarding	Whether to enable wireless multicast or not.
SSID	SSID Name.
Country	Country or region.
Max Clients	Max Clients for this SSID.

3.3.5.2 Security

This page is used to configure Wireless security.

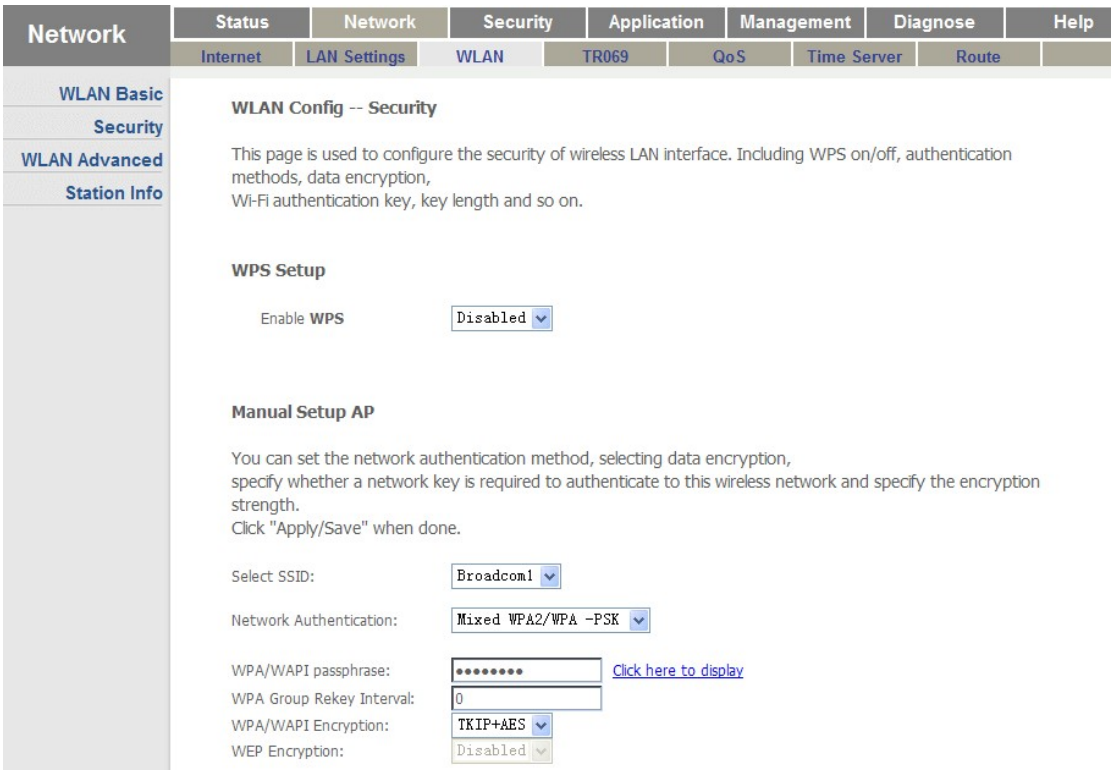

Figure 3-18: WLAN Security

In “WPS Setup” you can select whether to enable WPS(Wi-Fi Protected Setup) function and add WPS client method: by Push Button or PIN.

In “Manual Setup AP”, select your SSID name. Take WPA-PSK for example, select “Mixed WPA2/WPA-PSK” in 【Network Authentication】, and set up WPA-PSK password in WPA/WAPI passphrase】.

3.3.5.3 WLAN Advanced

This page shows more detail settings about wireless.

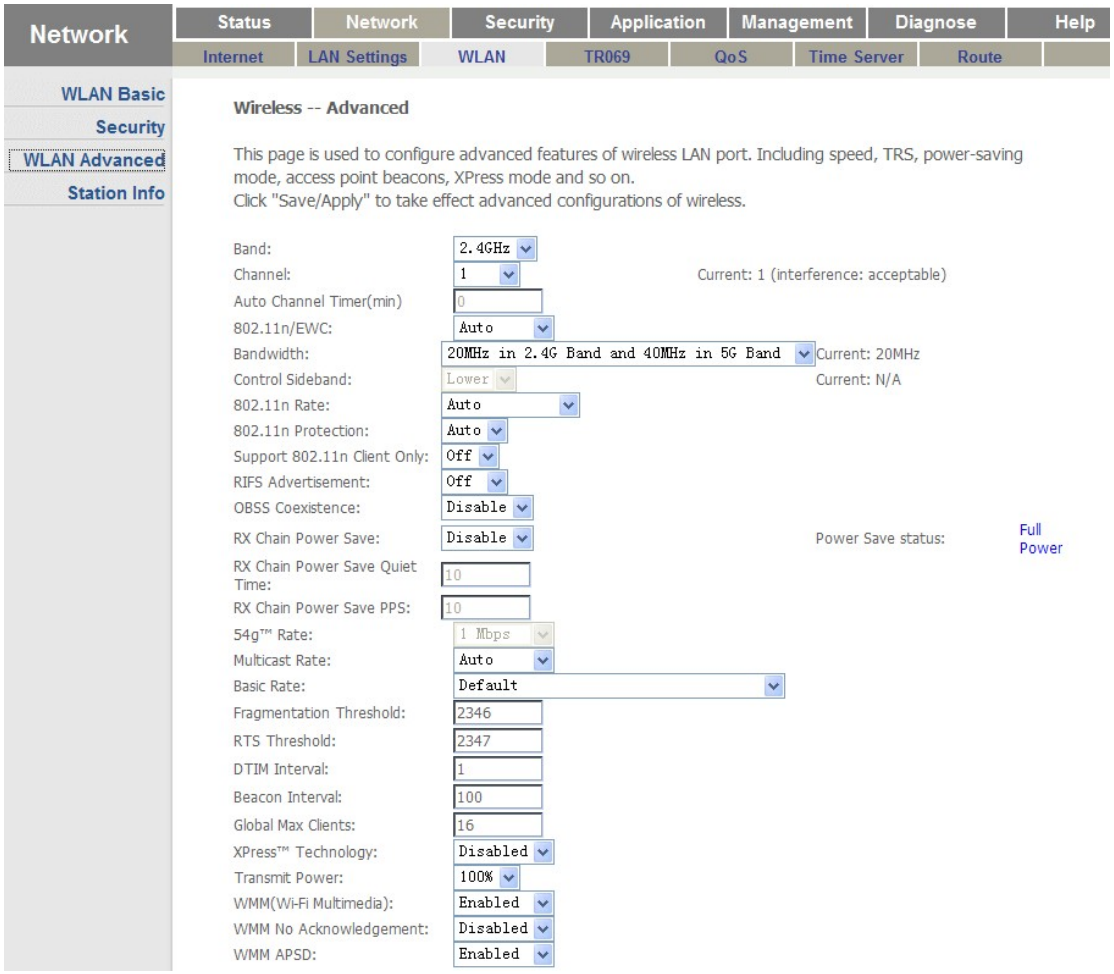

Figure 3-19: WLAN Advanced

Parameter	Description
Band	2.4GHz or 5.8GHz.
Channel	Wireless channel, different bandwidth has different channel range.
802.11n/EWC	802.11n/EWC switch. There are some other parameters for 802.11n/EWC when it is enabled.
54g™ Rate	54g™ rate.
Multicast Rate	Wireless multicast rate.
Basic Rate	Wireless basic rate.
Fragmentation Threshold	Messages will be segmented if its length is bigger than the threshold. When fragmentation transmission is interrupted, only the part that is sent failed needs to re-send. The range is 256~2346 byte, default is 2346 byte.

RTS Threshold	RTS (Request To Send) threshold is used to avoid transmission conflict in WLAN. Much smaller the value is, much faster the frequency of sending RTS messages and system recover from interrupt or conflict is. But it costs more bandwidth and affects throughput. The range is 1~2347 byte, default is 2347 byte。
DTIM Interval	DTIM (Delivery Traffic Indication Map) interval. The range is 1~125, default is 1.
Beacon Interval	Beacon interval, default is 100.
Global Max Clients	The maximum clients for the whole equipment.
XPress™ Technology	Xpress is on the basis of wireless multimedia extension of IEEE802.11e. In single network, using Xpress technology can improve the total rate of AP by 27%.
Transmit Power	Wireless transmit power, value is 20%, 40%, 60%, 80% or 100%. Much bigger the value is, much better the coverage area is.
WMM (Wi-Fi Multimedia)	Enable or disable wireless QoS function. This will improve video and voice quality of wireless terminal.
WMM No Acknowledgement	WMM No Acknowledgement switch.
WMM APSD	WMM APSD switch.

3.3.5.4 Station Info

This page shows information of clients that connected to wireless.

Figure 3-20: Station Info

3.3.6 TR069

3.3.6.1 ITMS server

This page allows you to configure ITMS server parameters

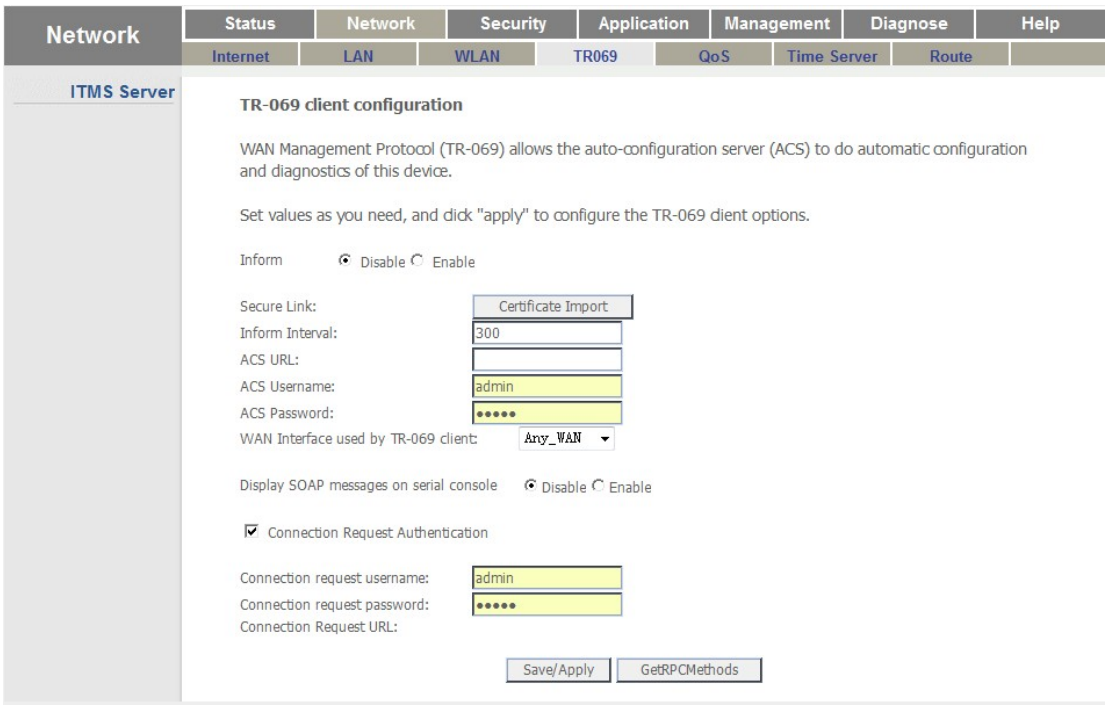

Figure 3-21: ITMS server parameters

Parameter	Description
Inform	Enable or disable HGU sends information to server.
Inform Interval	Reconnection interval. HGU will verify connection with ITMS server when inform interval times up.
ACS URL	Server provider's network management server.
ACS Username	Authentication username for HGU connects to ITMS server.
ACS Password	Authentication password for HGU connects to ITMS server.
WAN interface	Choose a WAN interface for TR069.
Connection request username	Authentication username for ITMS connects to HGU.
Connection request password	Authentication password for ITMS connects to HGU.

3.3.6.2 LOID

This page shows about the LOID settings. After input the LOID and password you can click "Save/effect" button to save them.

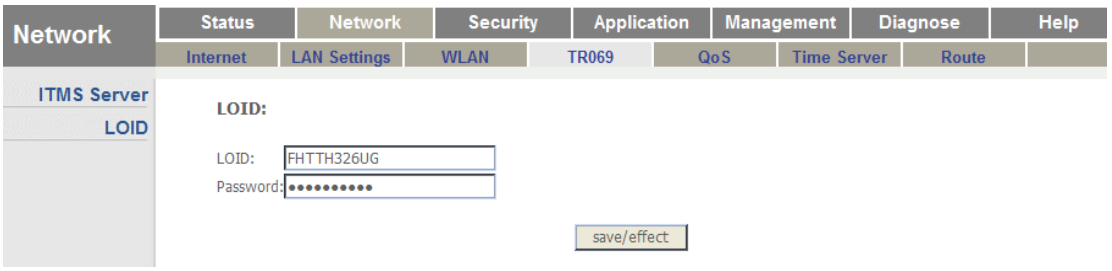

Figure 3-22: LOID settings

3.3.7 QoS

This page shows QoS settings. Once the data stream is matched to the rule and the rule has bound to the specifical queue, the data stream's rate will be in schedule depending on the queue setting.

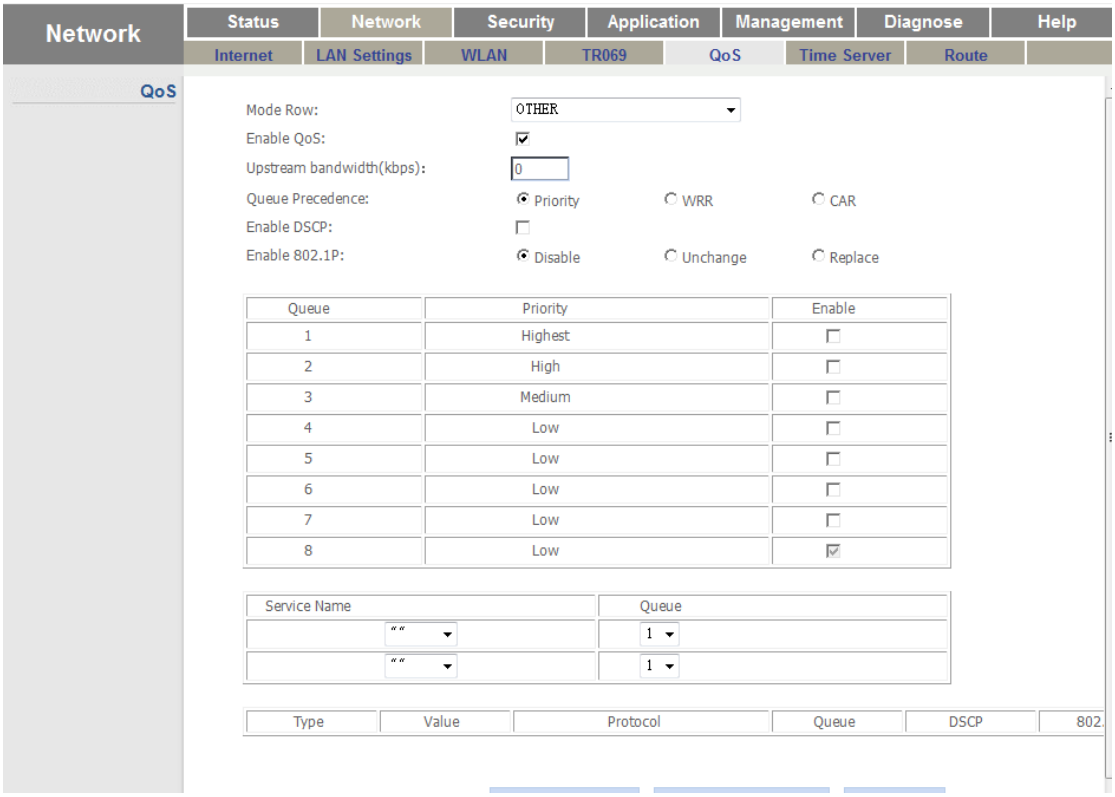

Figure 3-23: QoS Configuration

Parameter	**Description**
Mode Row	QoS template. There are several templates can be chose.
Enable QoS	Enable QoS.
Upstream bandwidth	Setup upstream bandwidth. 0 means no limit.
Queue Precedence	Setup the scheduling policy.
Enable DSCP	Enable DSCP.
Enable 802.1P	Enable 802.1P.

3.3.8 Time Server

This page allows you to configure time related parameters of your router. After you have selected the check box, select the time server and time zone you want to set and then click the “Save/Apply” button to save.

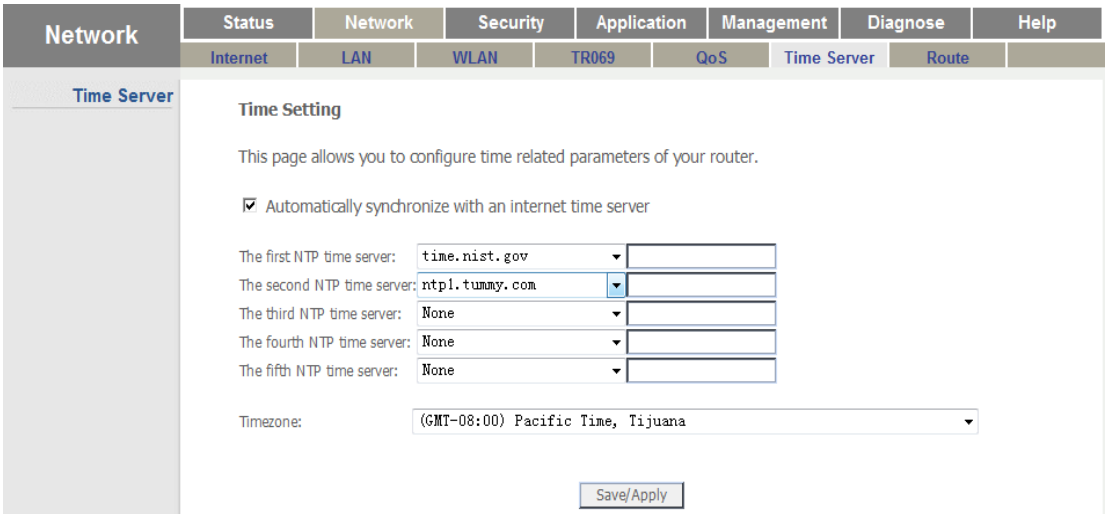

Figure 3-24: Time server

3.3.9 Route

This page allows you to configure static routing.

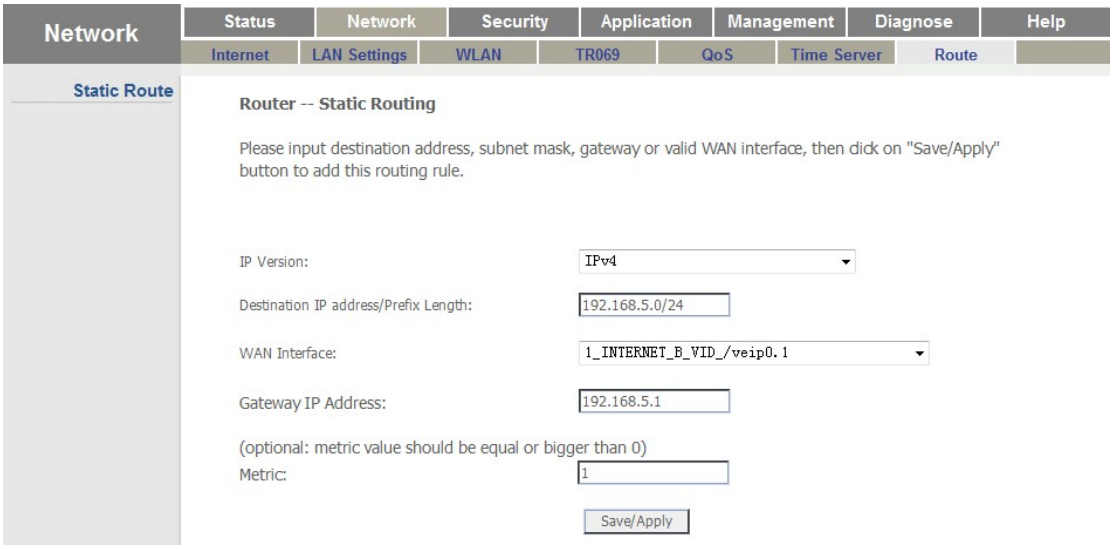

Figure 3-25: Configure Static Route

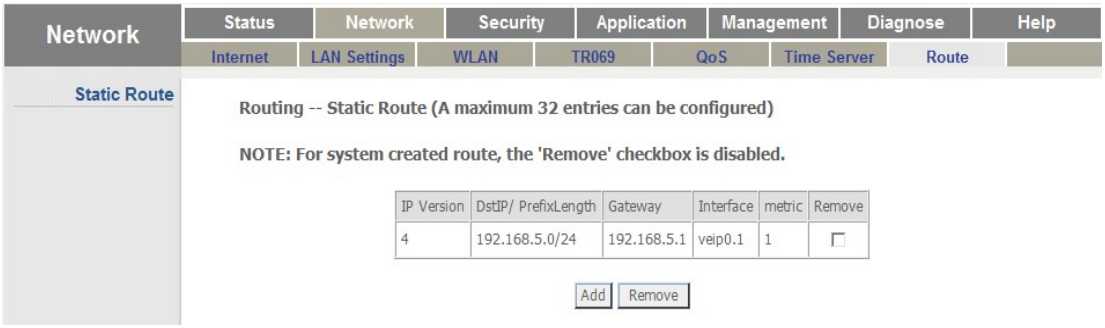

Figure 3-26: Static Route List

Parameter	Description
IP Version	IPv4: Static route for IPv4. IPv6: Static route for IPv6
Destination IP address	Destination IP address format: the last several bits should be zero, just like 192.168.5.0/24, 192.168.0.0/16.
WAN Interface	Select the wan interface you want to add static route
Gateway IP Address	Please input the gateway IP address.
Metric	Please input the metric value.

3.4 Security

3.4.1 URL Filter

This page allows you to configure URL filter. URL filter is taking effect when the wan connection is in router mode. Other words, when the wan connection is in bridge mode, the URL filter cannot be taken effect.

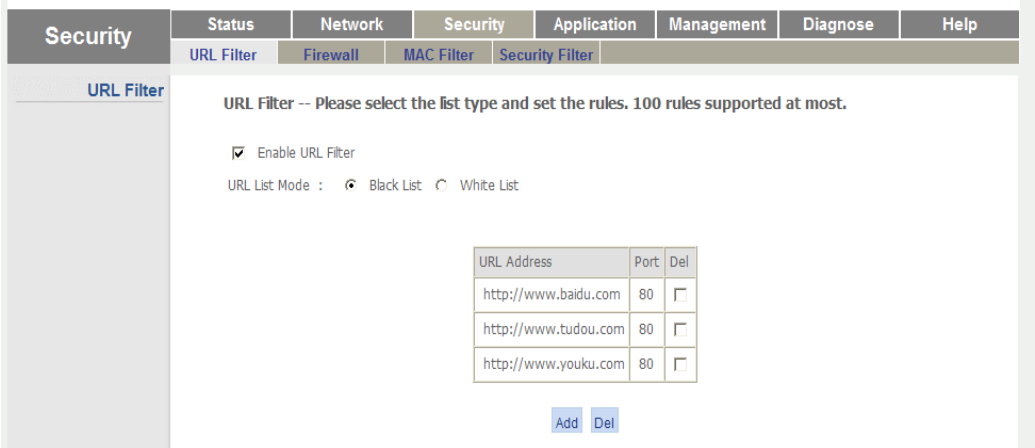

Figure 3-27: URL Filter

Parameter	Description
Enable URL Filter	Enable or Disable URL Filter
URL List Mode	Black List: URL in the list will be forbidden and others will be accessed. White List: URL in the list will be accessed and others will be forbidden.

URL List	URL List you want to deal with (Drop or Access). Click “Add” button to add URL item to the list. Select “Del” checkbox and then click “Del” button to remove URL items from the list.

3.4.2 Firewall

3.4.2.1 Security Level

This page allows you to configure firewall level. Firewall has three levels: Low, Medium and High.

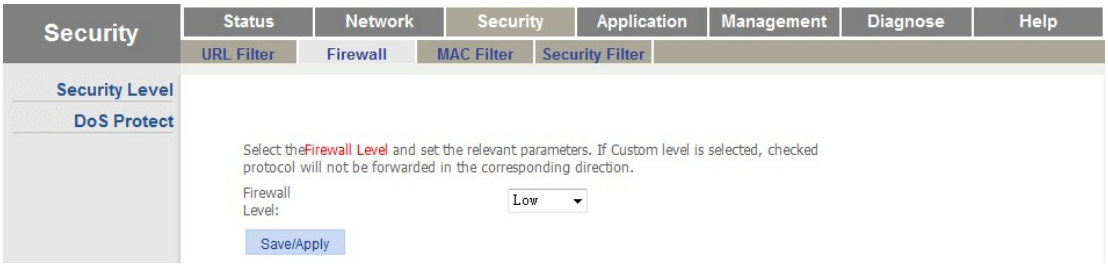

Figure 3-28: Security Level

Parameter	**Description**
Firewall Level	Low: Protect nothing. Medium: Denial of Service protections. High: Forbid ICMP Input, Forbid Port Scan, Denial of Service protections.

3.4.2.2 DoS Protect

This page allows you to enable/disable DoS protect function

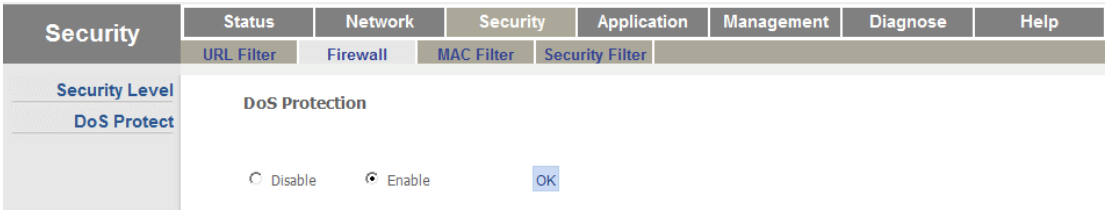

Figure 3-29: DoS Protect

3.4.3 MAC Filter

This page allows you to configure MAC filter. Mac filter is different from URL filter that it is nothing to do with the wan connection mode. When packets input the LAN port, the packets will be dropped or accessed depends on the MAC filter rules.

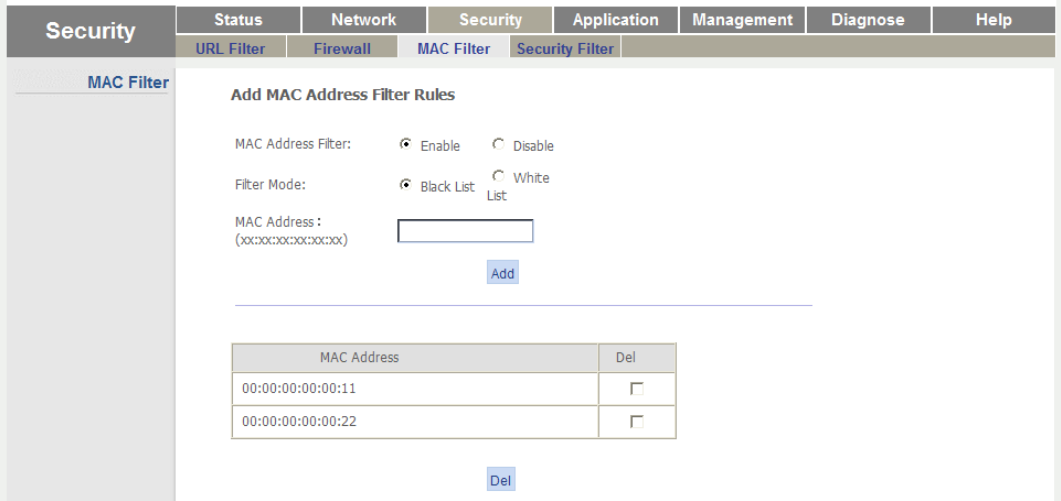

Figure 3-30: MAC Filter

Parameter	Description
Mac Address Filter	Disable: Disable Mac Filter. Enable: Enable Mac Filter.
Filter Mode	Black List: MAC Address in the list will be forbidden and others will be accessed. White List: Mac Address in the list will be accessed and others will be forbidden.
MAC Address	Input the MAC address and click the “Add” button to add MAC address to the table. Select “Del” checkbox and then click “Del” button to remove MAC address from the table.

3.4.4 Port Filter

This page is used to configure port filter. Port filter include many kind of filters, such as MAC filter, IP filter, protocol filter and port filter.

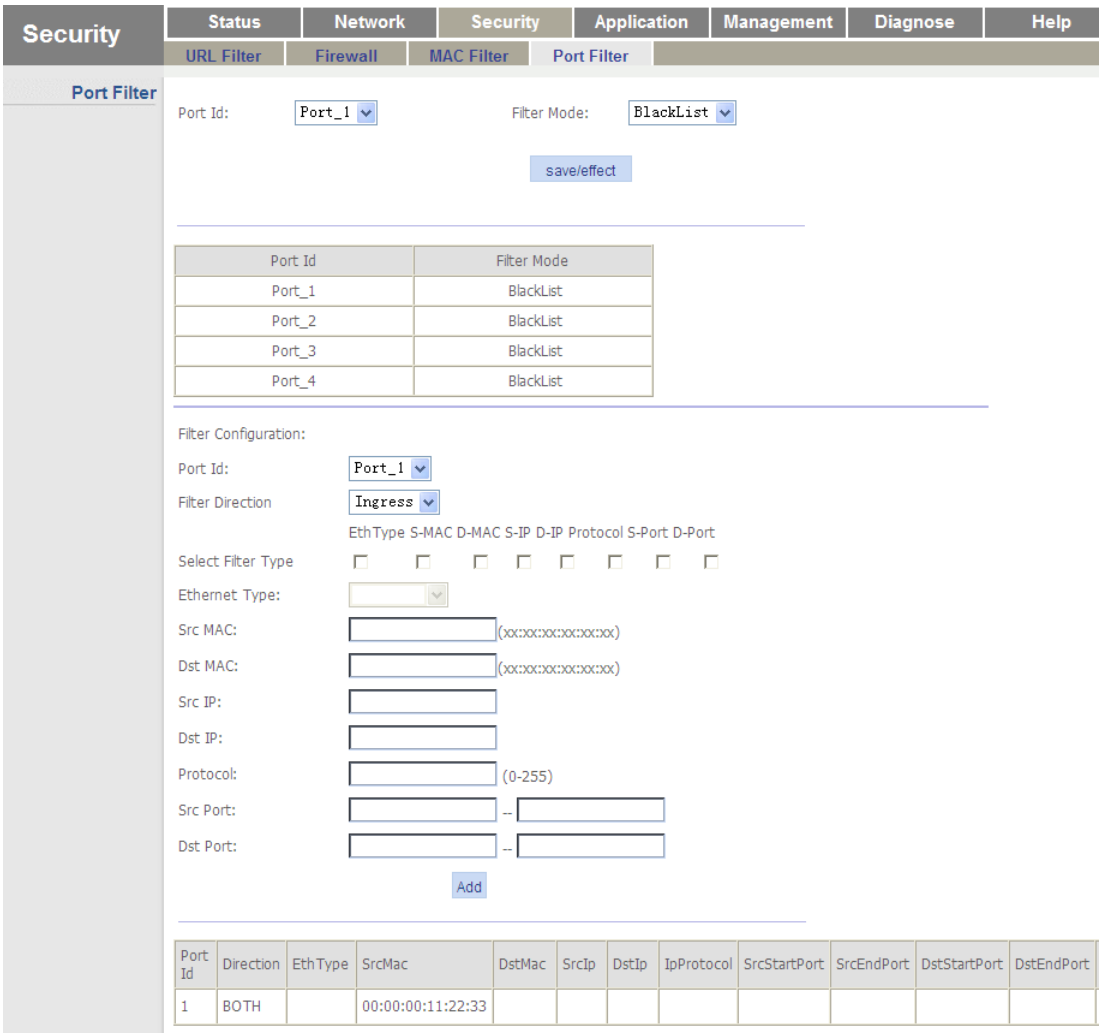

Figure 3-31: Port Filter

Parameter	Description
Filter Global Settings	
Port Id	Select the port you want to configure
Filter Mode	Black List: Rule in the list will be forbidden and others will be accessed. White List: Rule in the list will be accessed and others will be forbidden.
Filter Rule Settings	
Port Id	Select the port you want to configure rules.
Filter Direction	Ingress: Packets ingress the port will be filtered by the rule. Egress: Packets egress the port will be filtered by the rule. BOTH: Packets of both directions will be filtered by the rule.
Select Filter Type	Select the items you want to configure in rule.
Ethernet Type	Select which Ethernet type you want to configure in the rule.
Src Mac	Input the source MAC address you want to configure in the rule.
Dst Mac	Input the destination MAC address you want to configure in the rule.

Src IP	Input the source IP address you want to configure in the rule.
Dst IP	Input the destination IP address you want to configure in the rule.
Protocol	Input the protocol you want to configure in the rule.
Src Port	Input the source port you want to configure in the rule.
Dst Port	Input the destination port you want to configure in the rule.

Notice: When port filter mode change to white list, you should configure two rules. One rule for ingress direction and one rule for egress direction.

Eg: Port_1 filter mode has changed into white list.

Port Id	Filter Mode
Port_1	WhiteList
Port_2	WhiteList
Port_3	BlackList
Port_4	BlackList

Here I had configured two rules (one for ingress and one for egress). The MAC address is my computer's MAC address. In this way, my computer can access the equipment via the port 1.

Port Id	Direction	EthType	SrcMac	DstMac	SrcIp
1	Ingress		00:30:18:ae:ef:35		
1	Egress			00:30:18:ae:ef:35	

3.5 Application

3.5.1 NAT

3.5.1.1 ALG

This page shows about ALG settings, such as h.323, SIP, RTSP, IPSEC, FTP and L2TP.

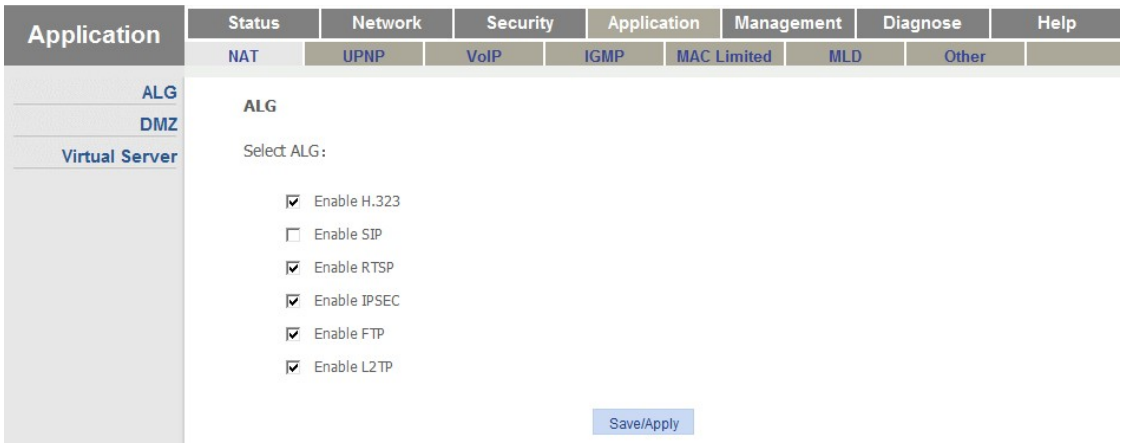

Figure 3-32: ALG

3.5.1.2 DMZ

This page allows you to configure DMZ server.

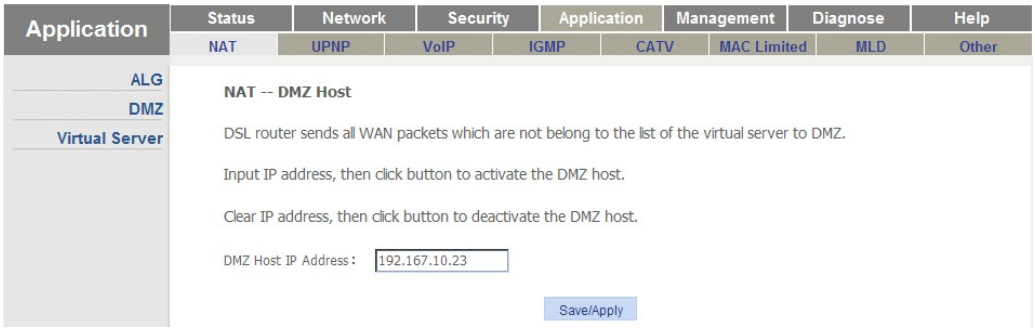

Figure 3-33: DMZ

3.5.1.3 Virtual Server

This page allows you to configure virtual server. You should create a wan connection with NAT function enable before you configure the virtual server. After you click the “Add” button, you will see the page show as in Figure 3-32.

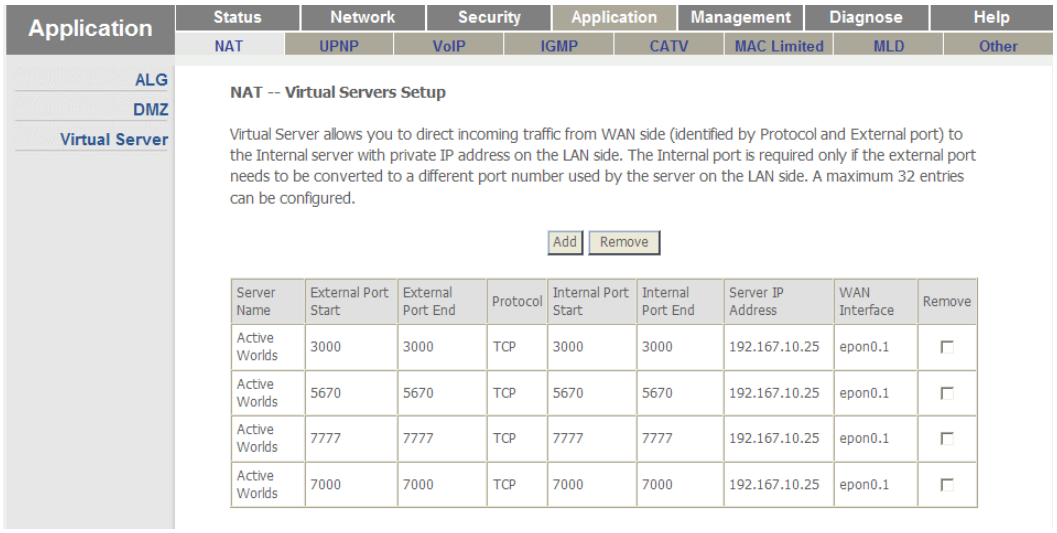

Figure 3-34: Virtual Server

You can select the “Remove” checkbox and then click the “Remove” button to remove service items from the service table.

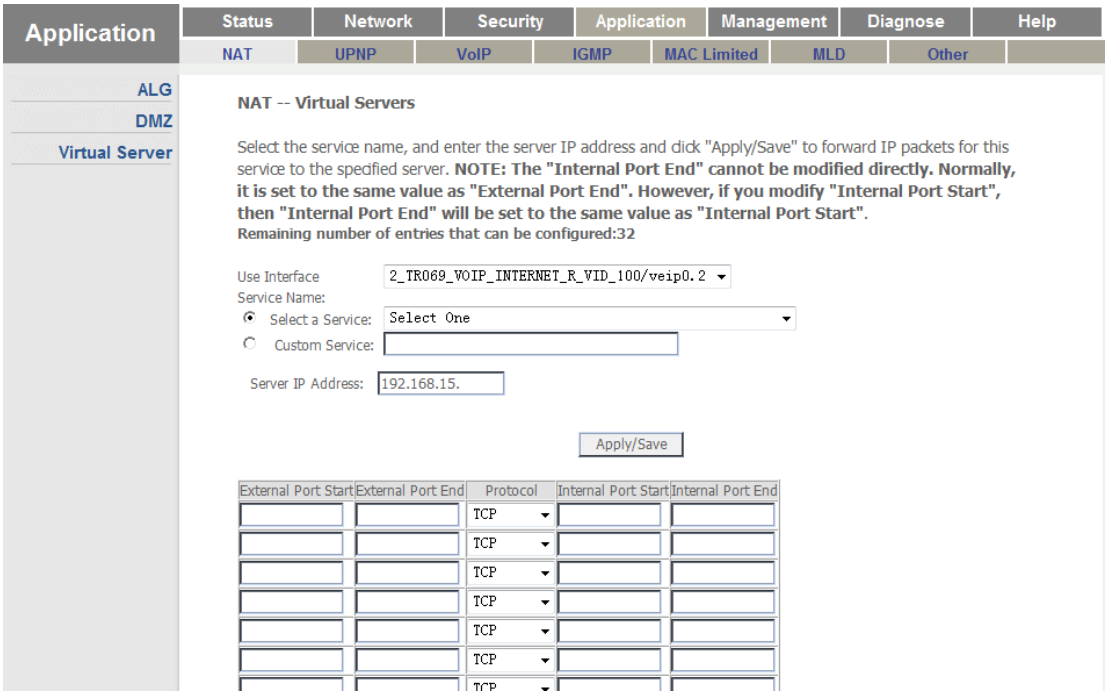

Figure 3-35: Virtual Server

Parameter	Description
Use Interface	Select one of the wan connections with nat function enable.
Service Name	Select a service you want to add to the virtual server.
Server IP Address	Please input internal server ip address.

3.5.2 UPNP

This page is used to enable UPNP.

Figure 3-36: UPNP Setting

3.5.3 VoIP

3.5.3.1 General Settings

This page allows you to do VoIP general settings.

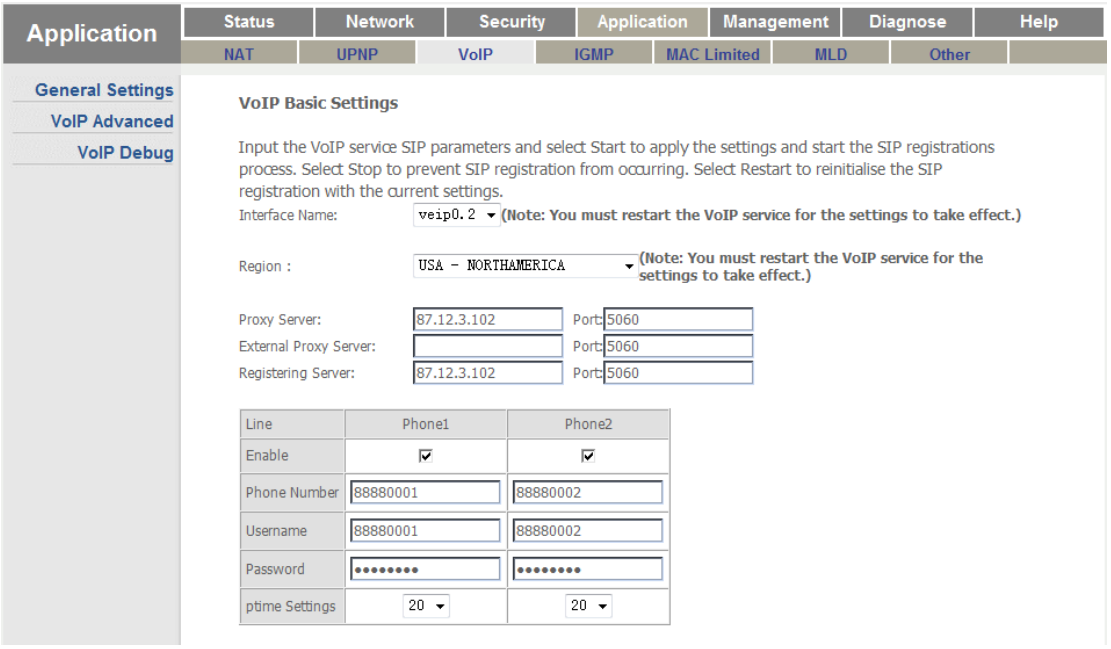

Figure 3-37: VoIP General Setting

Parameter	Description
Interface Name	Select the WAN connection that includes VoIP service.
Region	Select the region.
Proxy Server	Enter the IP address or Domain Name of the SIP proxy server.

External Proxy Server	Enter external proxy server address. If the main proxy server was down, the equipment will send the signal to external proxy server.
Registering Server	Enter the IP address or Domain Name of the SIP server address.
Port	Enter the signal port of the server. The range is 1 to 65535. The default port is 5060.
Enable	Enable: Enable phone 1 or phone 2 VoIP function. Disable: Disable phone 1 or phone 2 VoIP function.
Phone Number	Enter the display name as it should appear on caller ID.
Username	Enter the registration ID of the user with the registrar.
Password	Enter the password used for authentication with the registrar.
ptime Settings	Select the packing time you want to set.

This page shows the VoIP wan connection. Service mode must contain VOIP.

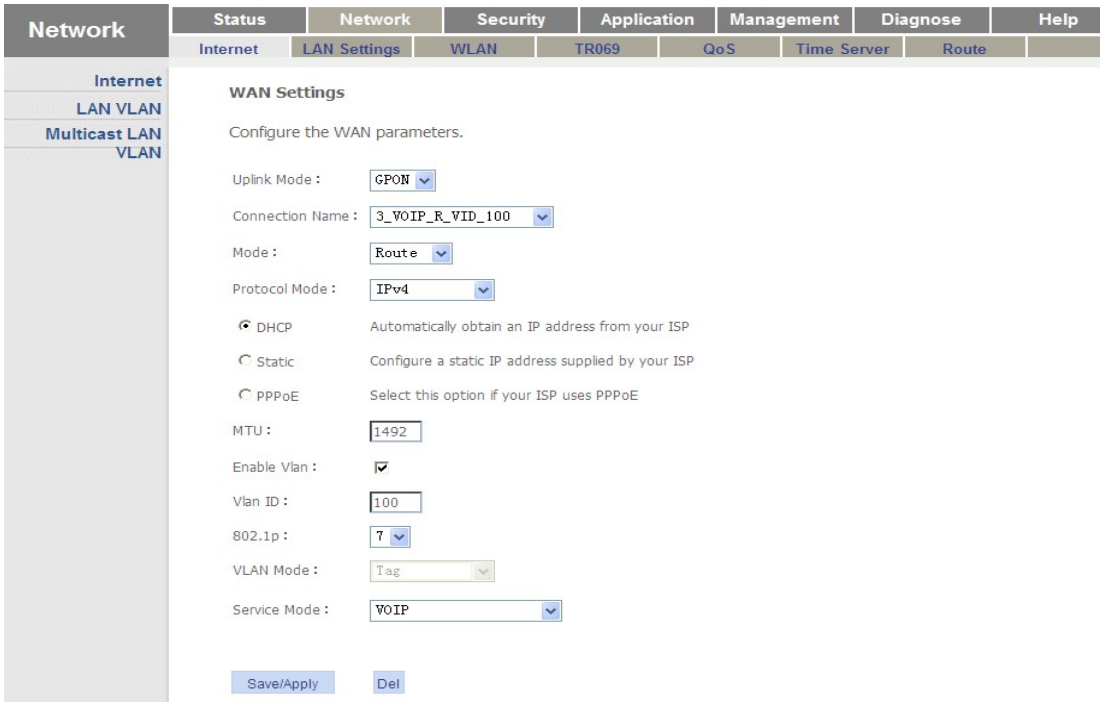

Figure 3-38: VoIP WAN Connection Setting

3.5.3.2 VoIP Advanced

This page shows about VoIP advanced settings.

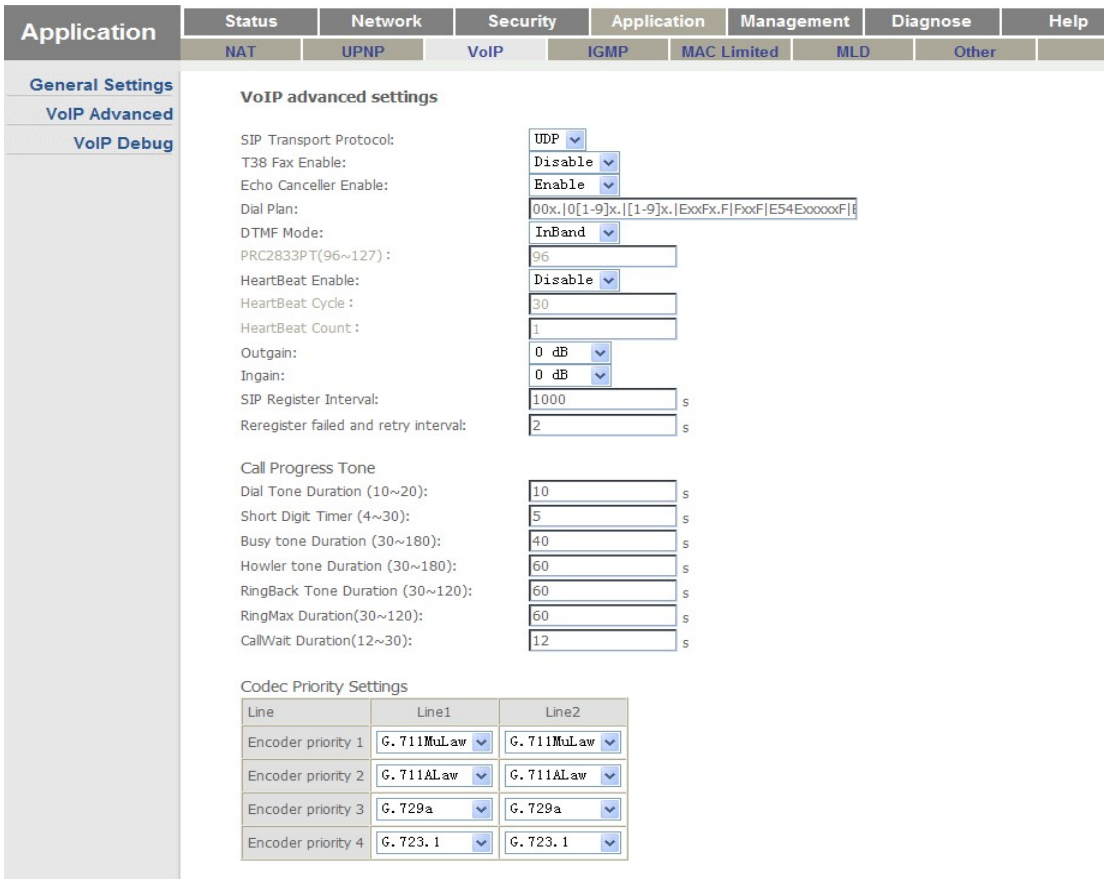

Figure 3-39: VoIP Advanced Setting(1)

Parameter	**Description**
SIP Transport Protocol	Select the sip transport protocol: UDP or TCP.
Enable T38 Fax	Enable T38 mode.
Enable Echo Canceller	Enable echo canceller or not.
Dial Plan	Default is : 00x.|0[1-9]x.|[1-9]x.|ExxFx.F|FxxF|E54ExxxxxF|ExxExxsxxxxxsx .F|ExxExxExxxxxxxxF|FxxF|EExx|FxxExxF|ExxF|EExxExxxxEx xxxxxxxF|FExxExxxxExxxxxxxxF|FF|ExxExxxxF|FExx|ExxEx.F| ExxEx.Ex.F|E98x.|E5s.|F54ExxxxxF
DTMF Mode	DTMF type: It is referred to the transfer mode of users pressing the button in the progress of talk. It can be set as 3 modes that is In-Band, RFC2833, INFO message. If the mode is set as In-brand transport, the signal of pressing buttons will be transferred with voice signal. If the mode is set as INFO message, the signal of pressing buttons will be transferred in the signaling. It's noticed that the INFO message mode only supports the nonfast-connection;
Outgain	Select the outgain value.
Ingain	Select the ingain value.
SIP Register Interval	Set the sip register internal value, default value is 1000.
Register Interval	Set the register internal value, default value is 2.

Dial Tone Duration	Set the off-hook dialing expire time, default value is 10 (range: 10s~20s).
Short Digit Timer	Set the short digit timer value, default value is 5 (range: 4s~30s).
Busy tone Duration	Set the busy tone time, default value is 40 (range: 30s~180s).
Howler tone Duration	Set the howler tone time, default value is 60 (range: 30s~180s).
Ring back Tone Duration	Set the ring back tone time, default value is 60 (range: 30s~120s).
Ring max Duration	Set the ringing time, default value is 60 (range: 30s~120s).
Call wait Duration	Set the call wait time, default value is 12 (range: 12s~30s).
Codec Priority Settings	The parameter set the ITU-T coding standard of the voice. The coding technology supported by this equipment is G.711 A law, G.711 Mu law, G.723.1 and G.729 and so on. Users can choose one or several coding mode, but one of those modes must be chosen as the priority.

Call Addition Functions

Line	Line1	Line2
Call Wait	☐	☐
Call Conference	☐	☐
Warm Line	☐	☐
Warm Line Timeout	0	0
Warm Line Number		
CfwdUncond	☐	☐
CfwdUncond Number		
CfwdBusy	☐	☐
CfwdBusy Number		
CfwdNoAns	☐	☐
CfwdNoAns Timeout	30	30
CfwdNoAns Number		
Call Transfer	☑	☑
Unattended(E/F/0~9)	E77	E77
Attended(E/F/0~9)	E78	E78

RTP Transfer Setting

Line	Line1	Line2
Audio port	4000	4010
T.38 port	5000	5010

Figure 3-40: VoIP Advanced Settings (2)

Parameter	Description
Call Addition Functions	Set call wait, call conference, warm line and several call forward modes.
RTP Transfer Setting	Set audio port and T38 port for the two lines.

3.5.4 IGMP

3.5.4.1 IGMP SNOOPING

This page allows you to enable or disable the IGMP Snooping function.

Figure 3-41: IGMP Snooping Setting

3.5.4.2 IGMP PROXY

This page allows you to enable IGMP proxy for a specified wan connection.

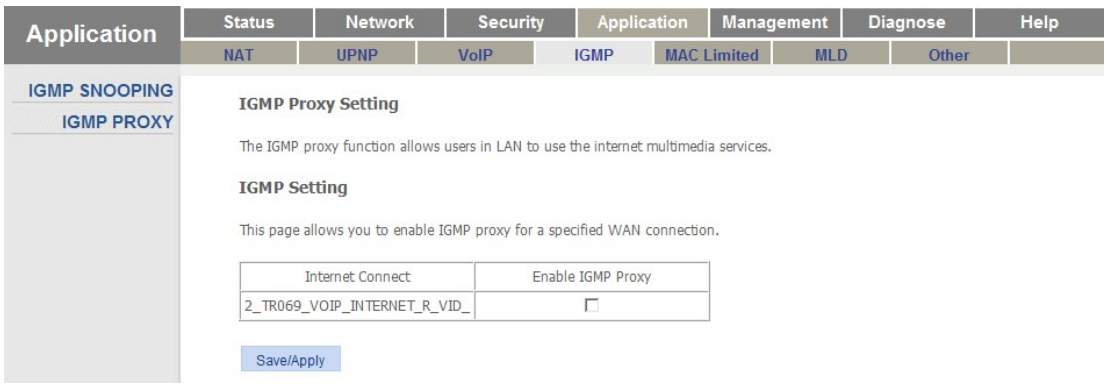

Figure 3-42: IGMP PROXY Setting

3.5.5 MAC Limited

This page allows you to configure MAC aging time as well as the MAC address limited.

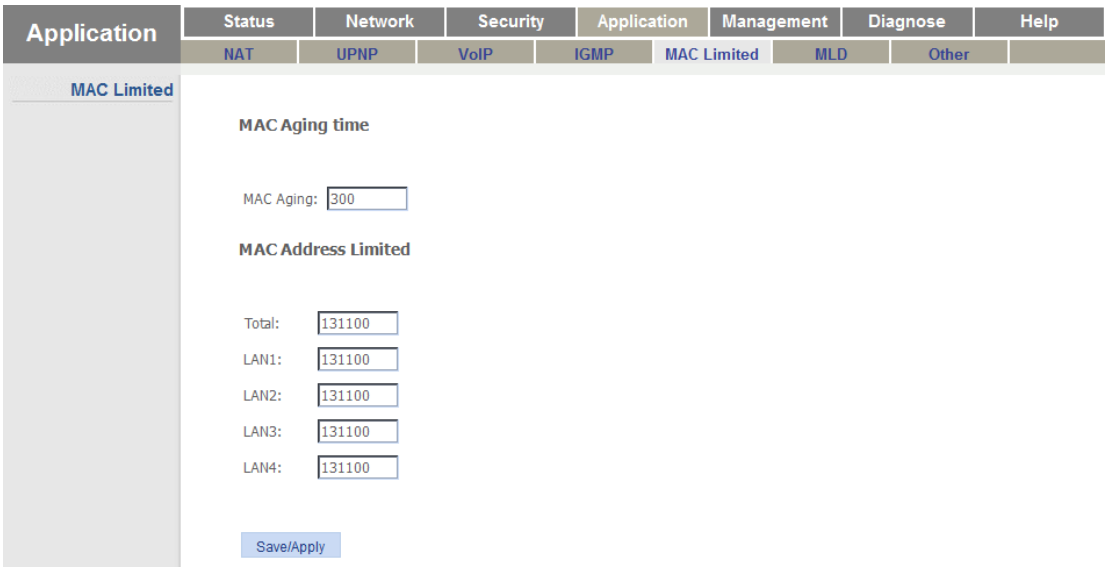

Figure 3-43: MAC Limited Setting

3.5.6 MLD

3.5.6.1 MLD SNOOPING

This page allows you to enable or disable the MLD snooping function for IPv6, just like the IGMP snooping for IPv4.

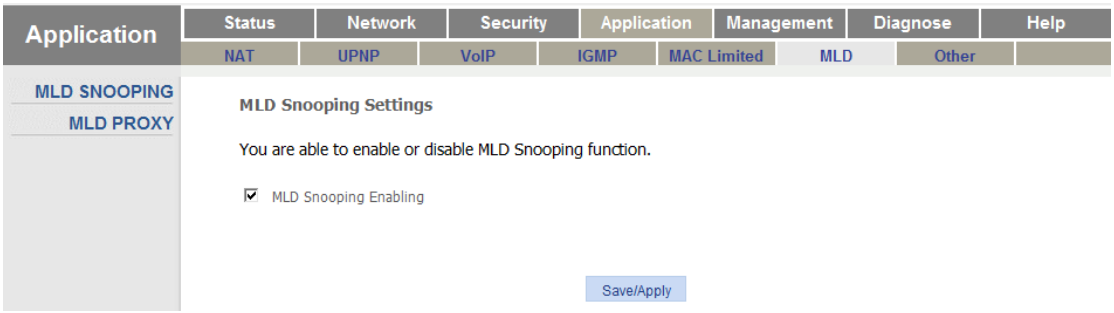

Figure 3-44: MLD SNOOPING Setting

3.5.6.2 MLD PROXY

This page allows you to enable MLD proxy for IPv6, just like enable IGMP proxy for IPv4.

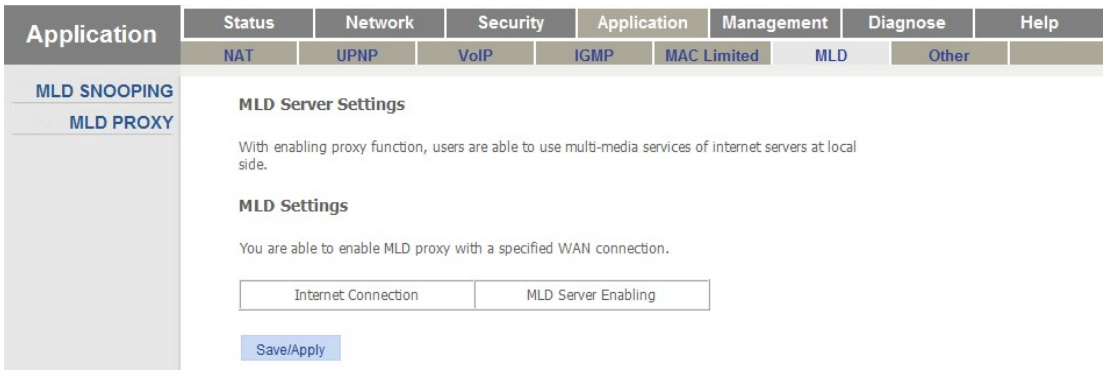

Figure 3-45: MLD PROXY Setting

3.5.7 Other

3.5.7.1 Family Storage

This page allows you to build a FTP server.

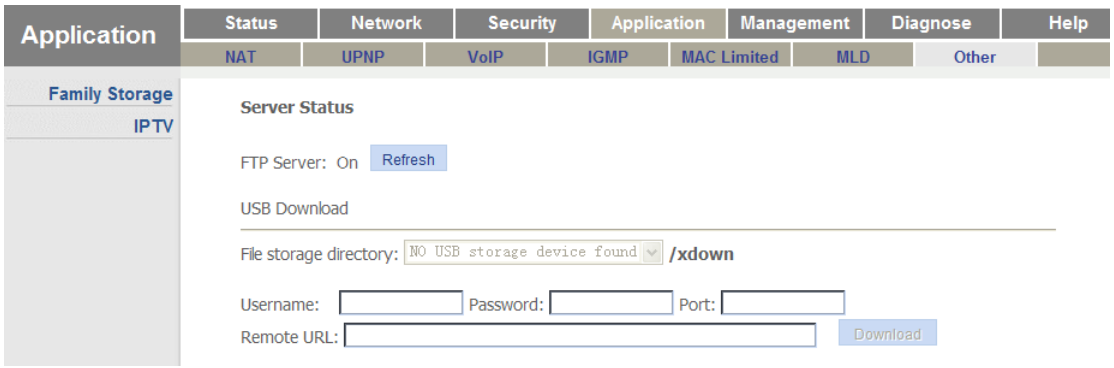

Figure 3-46: Family Storage

3.5.7.1 IPTV

This page allows you to do IPTV settings for route mode WAN connections.

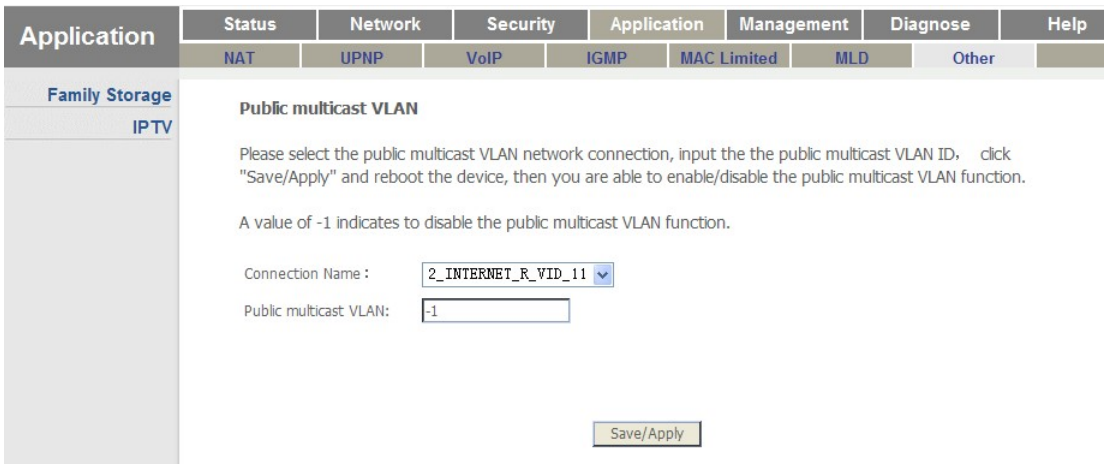

Figure 3-47: IPTV Setting

3.6 Management

3.6.1 User Manage

This page allows you 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 HGU.

The user account can only be used to view configurations, status and configure few parameters such as enable wireless, modify SSID name, configure filter, firewall and reboot HGU, etc.

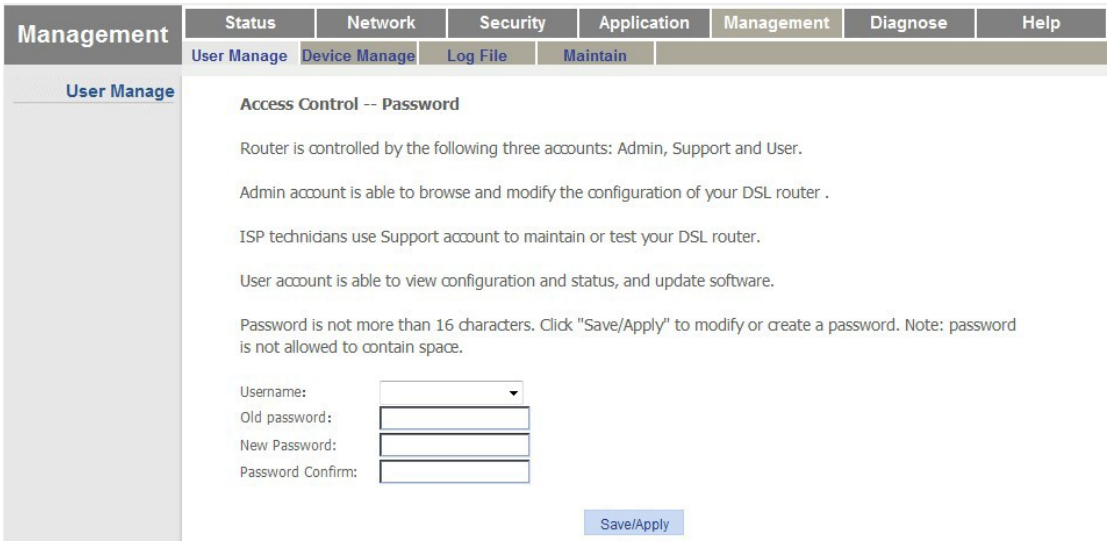

Figure 3-48: User manage

3.6.2 Device Manage

3.6.2.1 Device Reboot

This page allows you to reboot the device. The process of reboot will take several minutes.

Figure 3-49: Device reboot

3.6.2.2 Update Image

This page allows you to update the software of the device. You can click the “browse” button to select the software you want to update and then click the “Update Software” button to update the image.

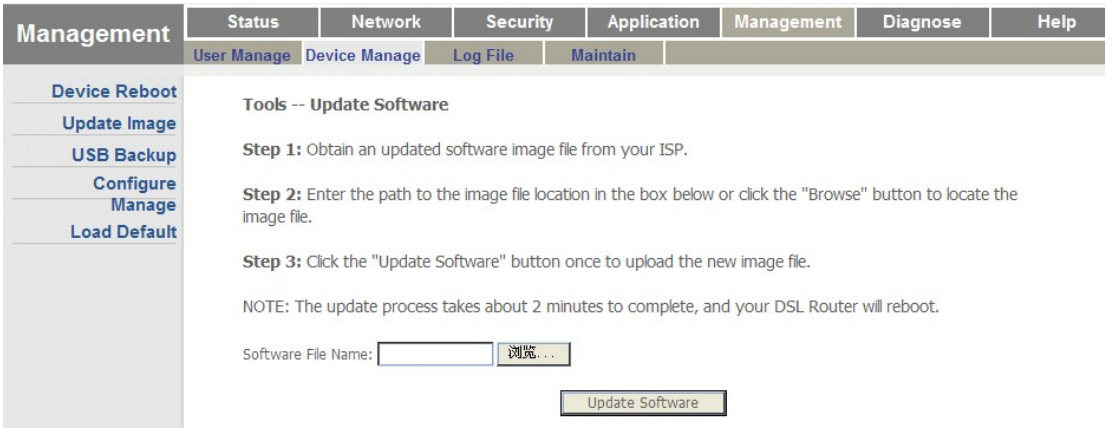

Figure 3-50: Update image

3.6.2.3 USB Backup

This page allows you to backup configuration file to USB storage.

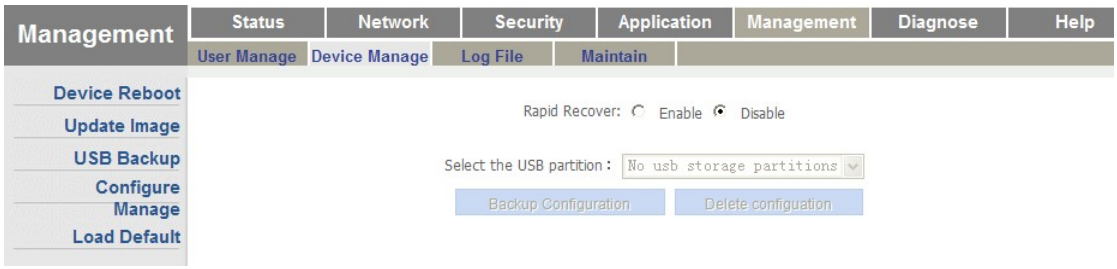

Figure 3-51: USB backup

3.6.2.4 Configure Manage

This page allows you to backup and restore the configurations of router.

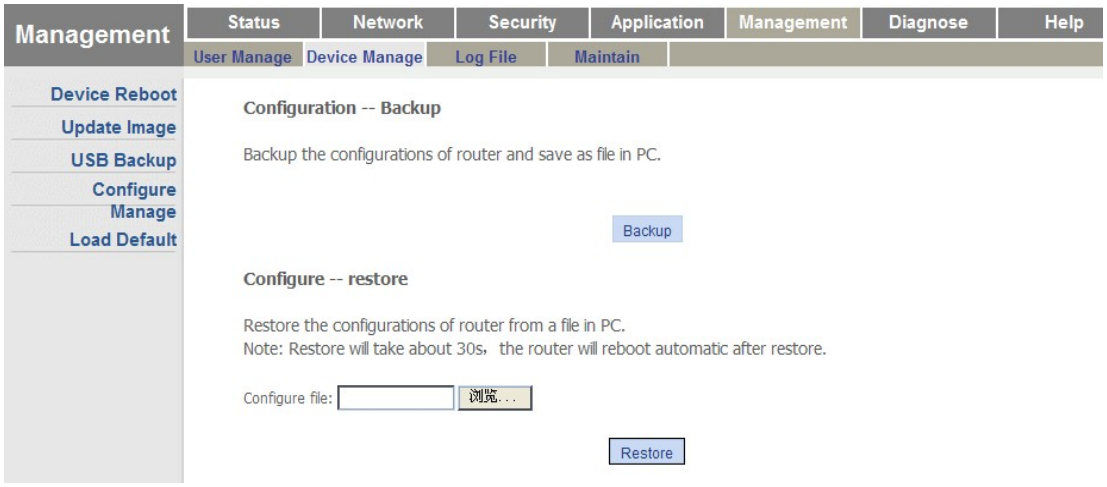

Figure 3-52: Configure manage

3.6.1.1 Load Default

This page allows you to restore the device to default settings. You can click “Load Default” button to restore the factory settings of the device. After restored, it will restart automatically.

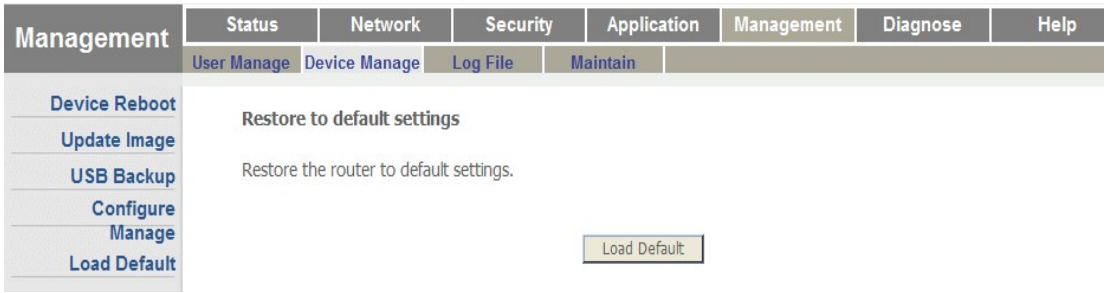

Figure 3-53: Load default

3.6.3 Log File

3.6.3.1 Log

This page allows you to set up log level and display level, etc.

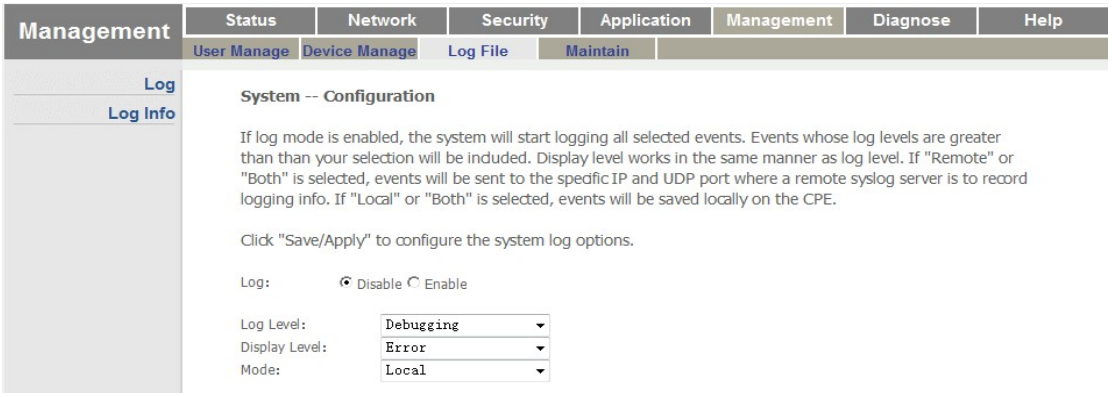

Figure 3-54: Log settings

Parameter	Description
Log Level	Log record level, include Emergency, Alert, Critical, Error, Warning, Notice, Informational, Debugging.
Display Level	Log display level, include Emergency, Alert, Critical, Error, Warning, Notice, Informational, Debugging.
Mode	Local: Log will be saved locally. Remote: Log will be sent to remote specific host. Both: Log will be saved locally and be sent to remote specific host meanwhile.

3.6.3.1 Log Info

This page allows you to view and clear the log information.

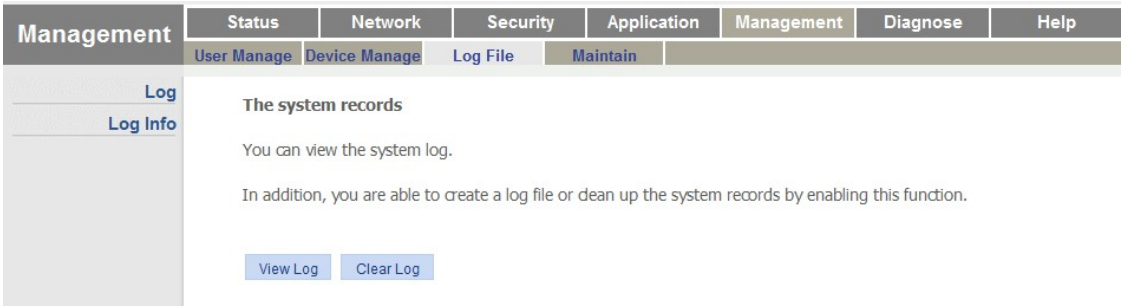

Figure 3-55: Log Info

3.6.4 Maintain

This page shows about the maintenance. Click "End of maintenance" button, the new data will be reported to server automatically.

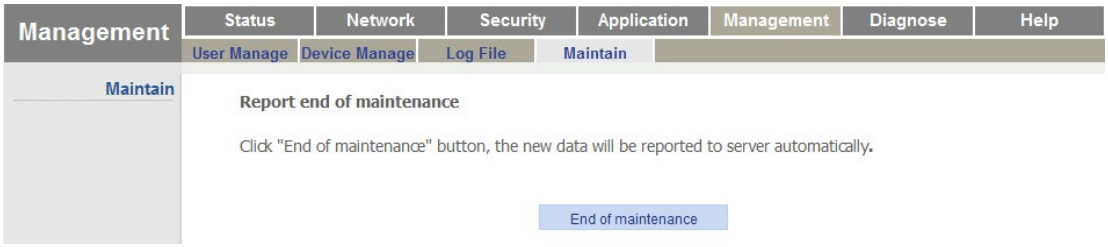

Figure 3-56: Maintain

3.7 Diagnose

3.7.1 Line Diagnose

This page shows about the line diagnose. You can click the “Re-diagnose” button to refresh the status.

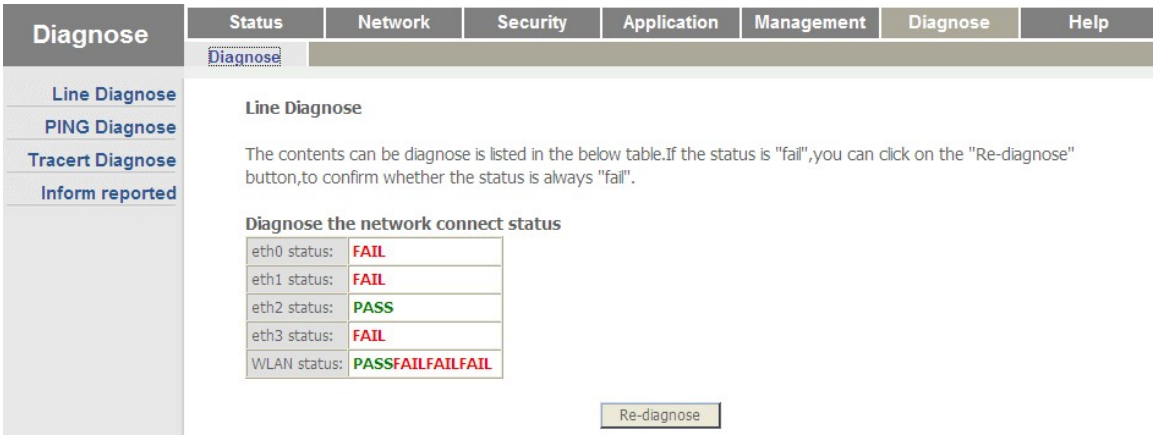

Figure 3-57: Line diagnose

3.7.2 PING Diagnose

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

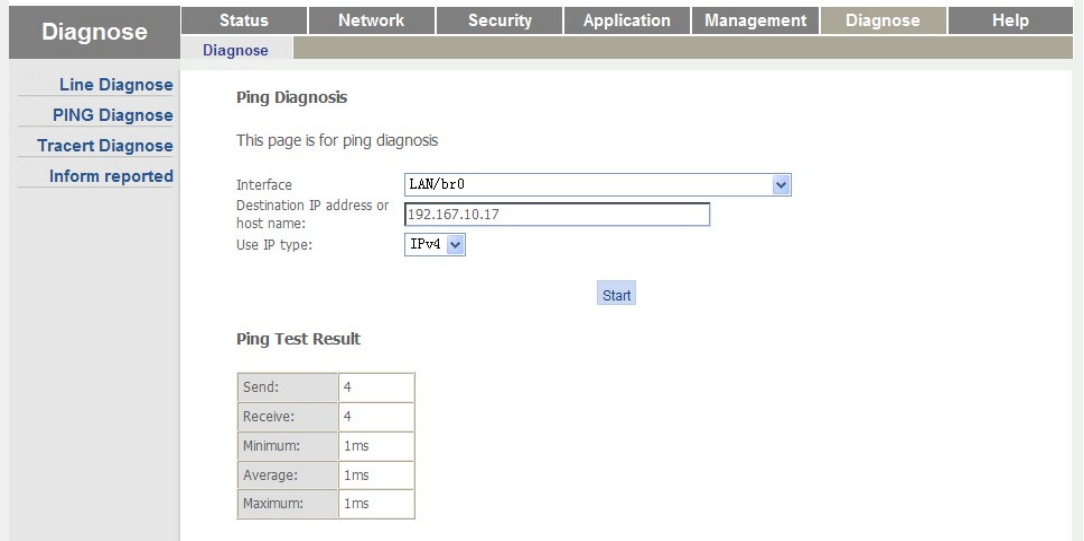

Figure 3-58: PING diagnose

Parameters	Description
Interface	Select the interface you want to test.
Destination IP or host name	Input the destination IP you want to ping.
Use IP type	IPv4: Use IPv4 protocol. IPv6: Use IPv6 protocol.

3.7.3 Tracert Diagnose

This page shows about tracert diagnose.

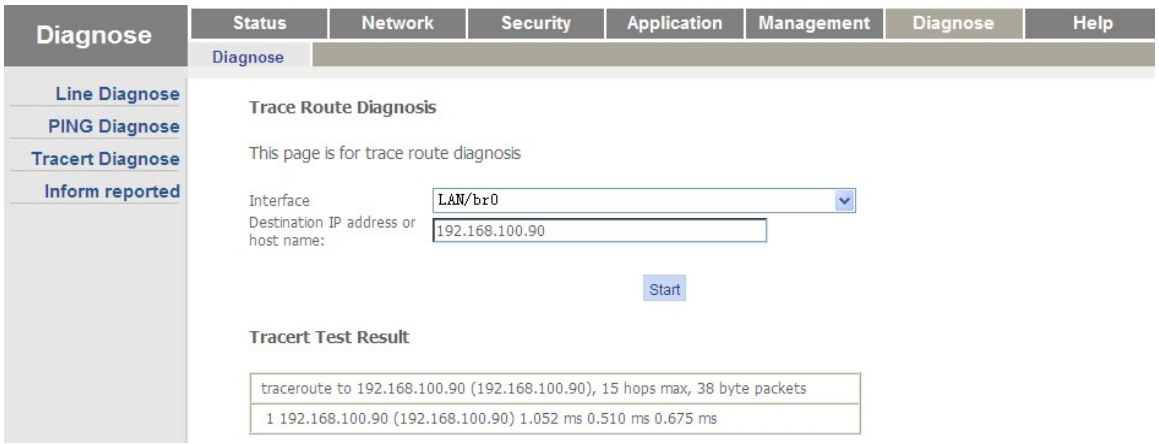

Figure 3-59: Tracert diagnose

Note Do not do trace route test again when the trace route in running status.

3.7.4 Inform Reported

This page shows about manual send inform test.

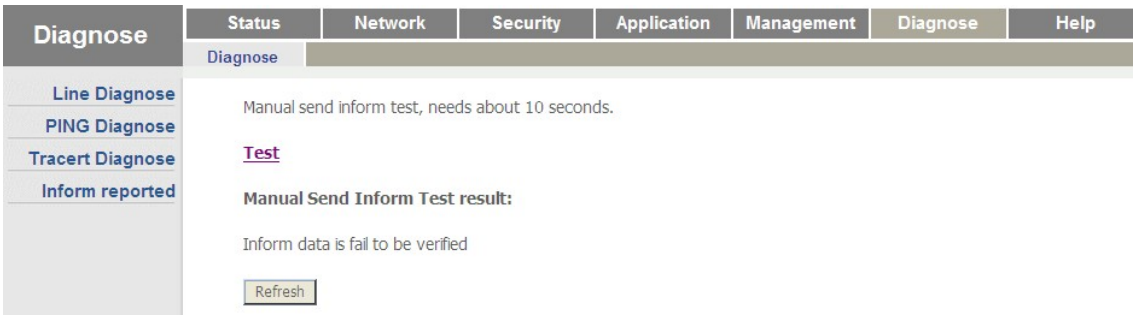

Figure 3-60: Inform reported

3.8 Help

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

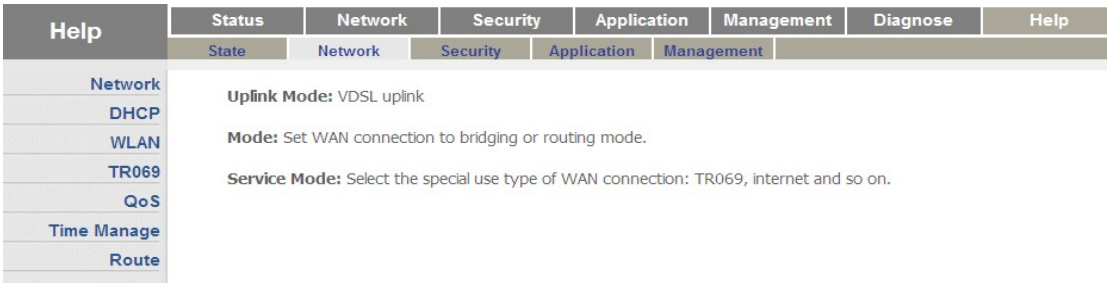

Figure 3-61: Help information

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 Requirements

HGU works on bridge mode, service VLAN is 9. User surf the Internet via LAN port 1.

HGU works on route mode, service VLAN is 10. HGU gets IP address via DHCP.

4.1.2 Steps

Before configuring, make sure HGU has registered and been authorized successfully. Connect PC to one LAN port of HGU directly with twisted cable.

4.1.2.1 Bridge Mode for Internet Service

Add a WAN connection

Choose “Network > Internet > Internet” in navigation menu. Add a bridge mode WAN connection as the following parameters.

- Mode is bridge.
- Enable VLAN and VLAN mode is transparent.
- Service mode is OTHER.
- Bind port 1.
- Other parameters keep default.

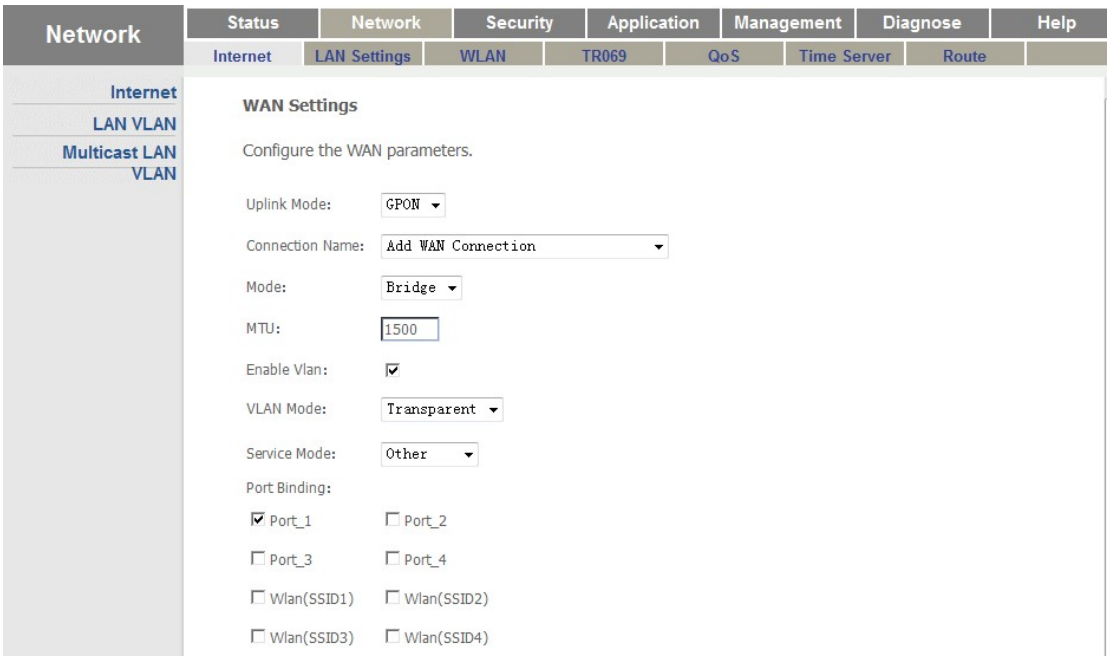

Figure 4-1: Add a bridge WAN connection

Configure LAN port

Choose “Network > Internet > LAN VLAN” in navigation menu. Enable VLAN mode of LAN1, received VLAN is 0 and translation VLAN is 9.

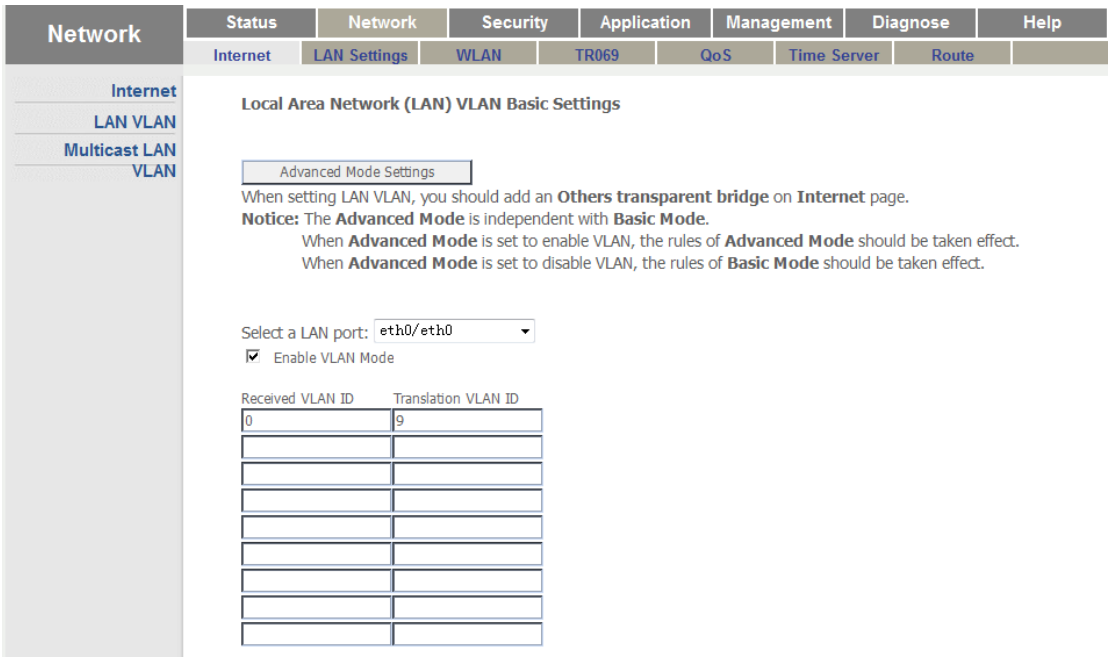

Figure 4-2: LAN VLAN settings

Surf the Internet

Connect PC to LAN 1 port. After get IP address from DHCP server in the network, the PC can surf the Internet.

4.1.2.2 Route mode for Internet service

Add a WAN connection

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

- Protocol mode is IPv4.
- Choose DHCP.
- NAT function is checked.
- Enable VLAN and VLAN ID is 10.
- Service mode is INTERNET.
- Bind port 1.
- Other parameters keep default.

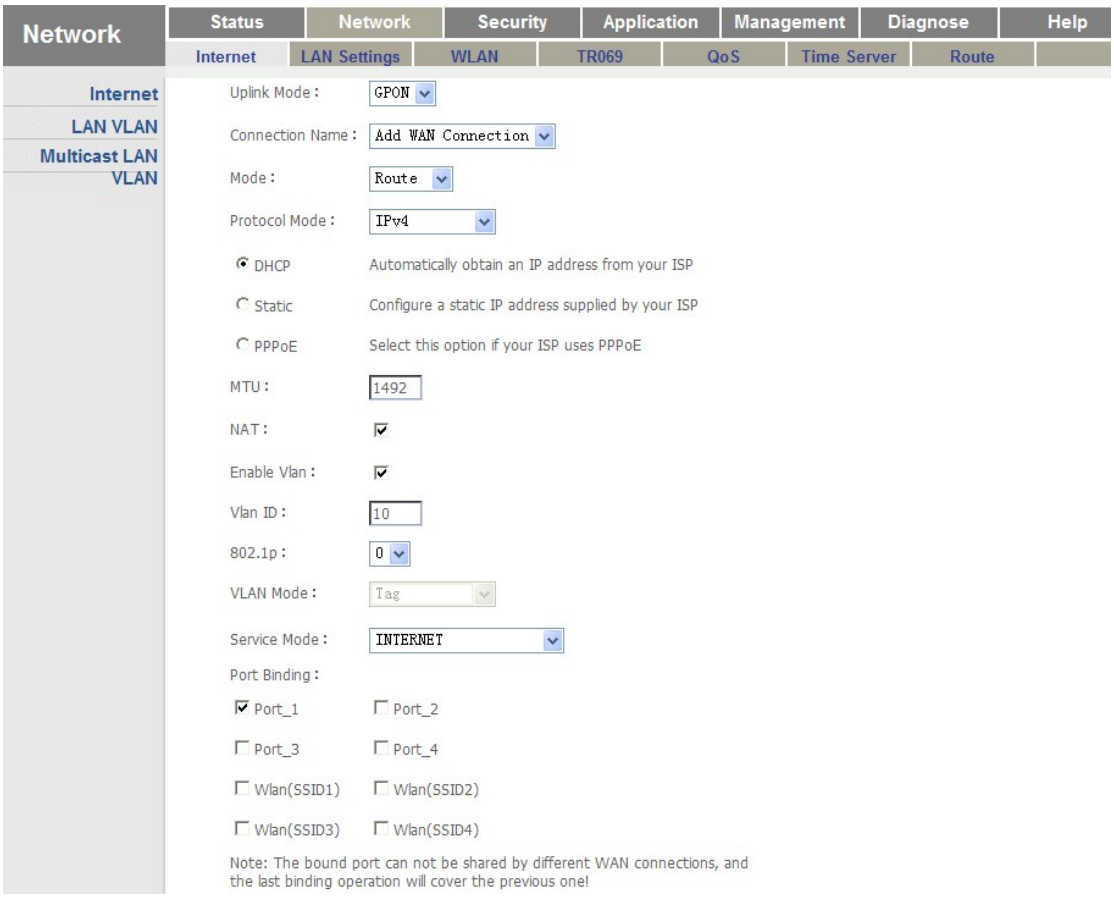

Figure 4-3: Add a route WAN connection

Configure LAN port

You should disable VLAN mode of port 1.

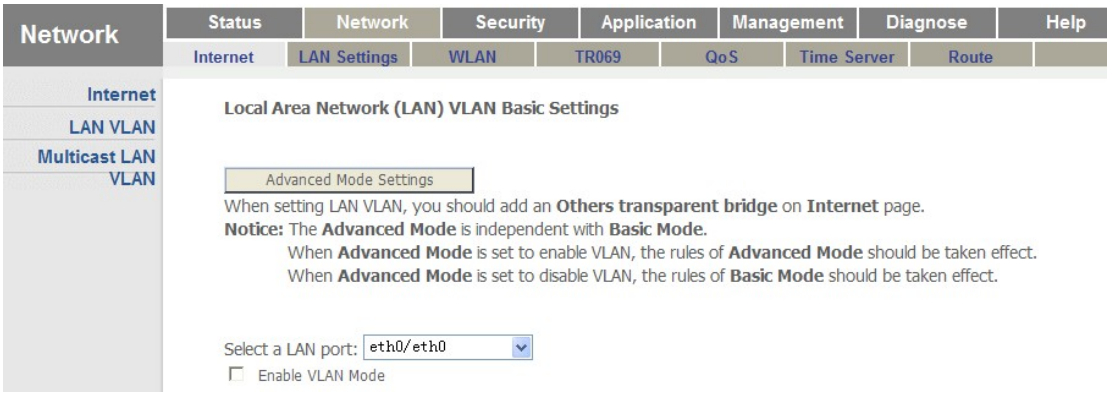

Figure 4-4: LAN VLAN settings

Surf the Internet

Connect PC to LAN port 1. The PC gets IP address from HGU and HGU gets IP address from DHCP server in the network, and then you can surf the Internet.

Note Usually, VLAN mode of bridge WAN connection is transparent.

4.2 IPTV service

There are two methods for IPTV service, IGMP snooping and IGMP proxy. You must enable IGMP proxy when HGU works on route mode.

4.2.1 Requirements

HGU works on bridge mode for IPTV service, VLAN is 20.

HGU works on route mode for IPTV service, VLAN is 30.

4.2.2 Steps

Before configuring, make sure HGU has registered and been authorized successfully.

Connect PC to one LAN port of HGU directly with twisted cable.

4.2.2.1 Bridge Mode for IGMP

Add a WAN connection

Choose “Network > Internet > Internet” in navigation menu. Add a bridge mode WAN connection as the following parameters.

- Enable VLAN and VLAN mode is transparent.
- Service mode is OTHER.
- Bind port 2.

- Other parameters keep default.

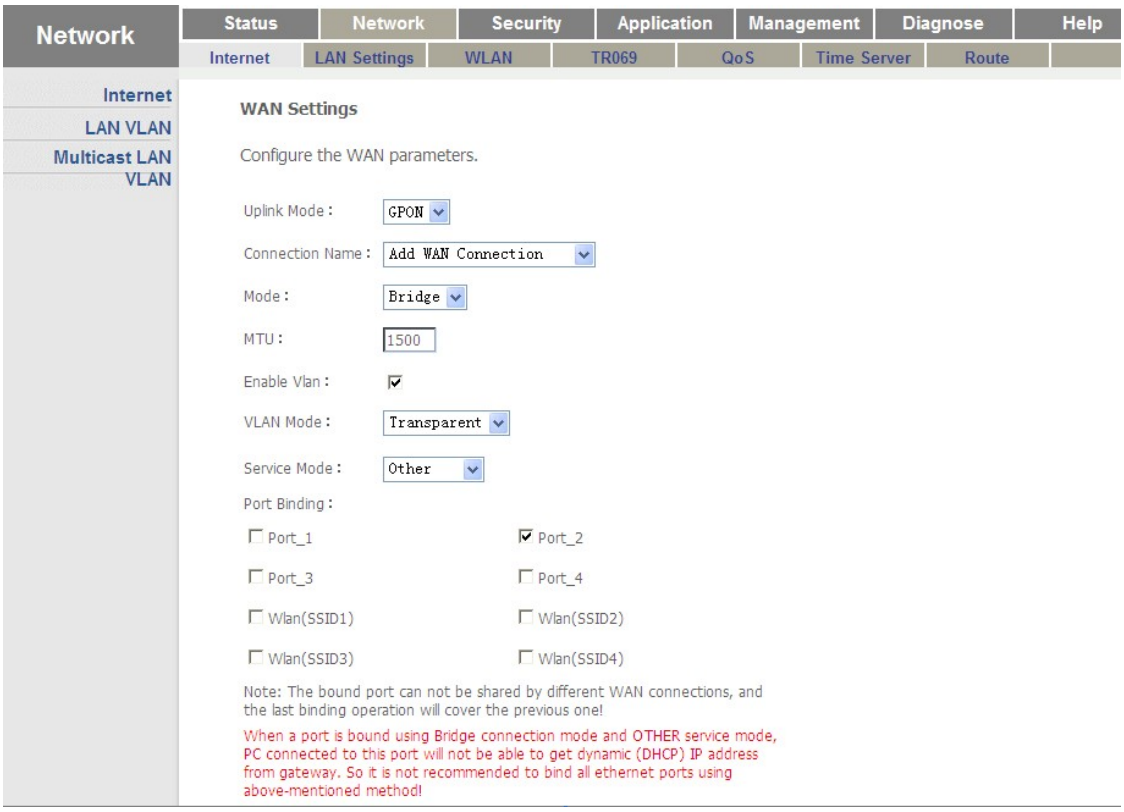

Figure 4-5: Add a bridge WAN connection

Configure LAN port

Choose “Network > Internet > LAN VLAN” in navigation menu. Enable VLAN mode of port 2. Received VLAN ID is 0 and translation VLAN ID is 0.

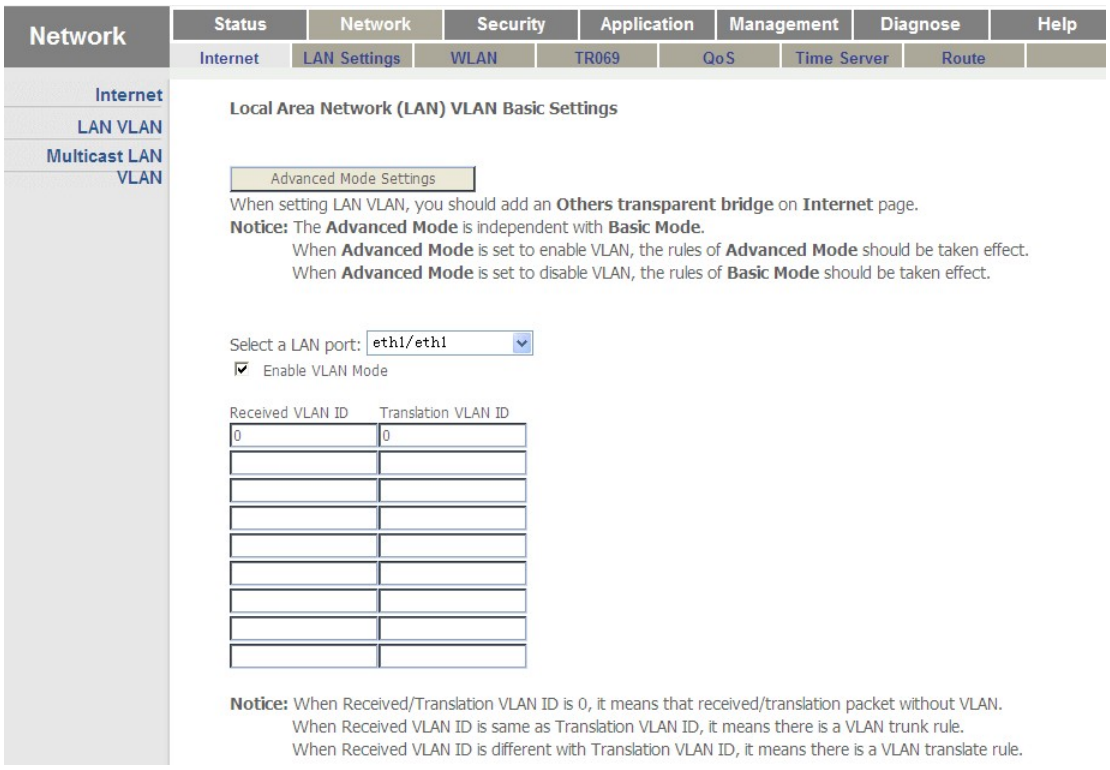

Figure 4-6: Enable LAN VLAN

Choose “Network > Internet > Multicast LAN VLAN” in navigation menu. Enable VLAN mode of LAN 2. Received VLAN is 0 and translation VLAN is 20.

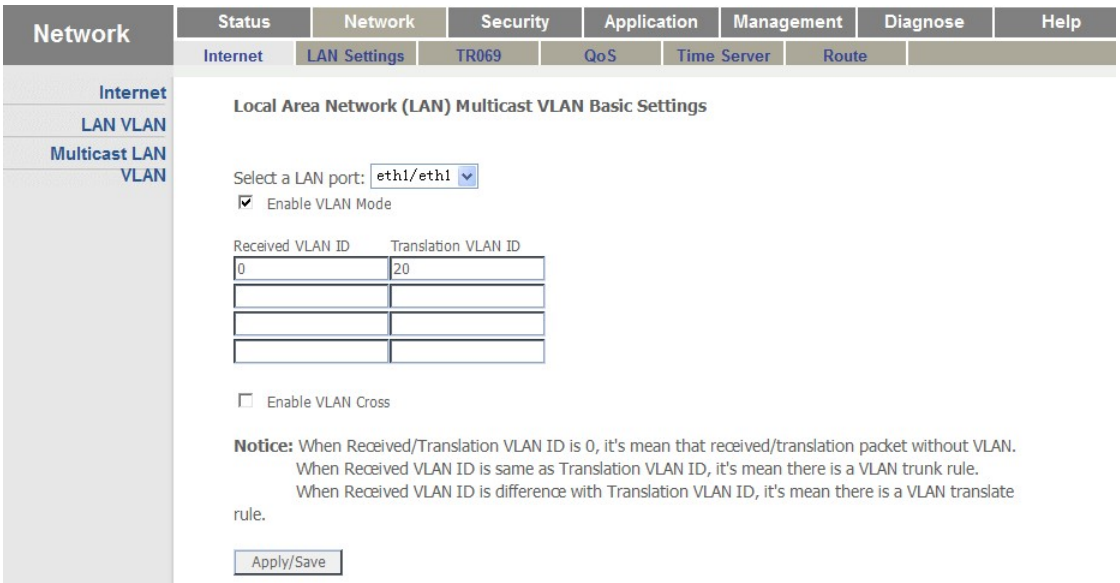

Figure 4-7: Configure multicast VLAN

Enable IGMP snooping

Choose “Application > IGMP > IGMP SNOOPING” in navigation menu. Check down IGMP snooping. IGMP snooping is checked by default. It will not be mentioned in the rear examples.

Figure 4-8: Enable IGMP snooping

Join multicast group

User sends an IGMP report message through LAN port 2. Report message doesn’t take any VLAN tag.

4.2.2.2 Route Mode for IGMP

Add a WAN connection

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

- Mode is Route.
- Protocol mode is IPv4.
- Choose DHCP. (Provided by ISP)
- NAT function is checked.
- Enable VLAN and VLAN ID is 30.
- Service mode is INTERNET.
- Bind port 3.
- Other parameters keep default.

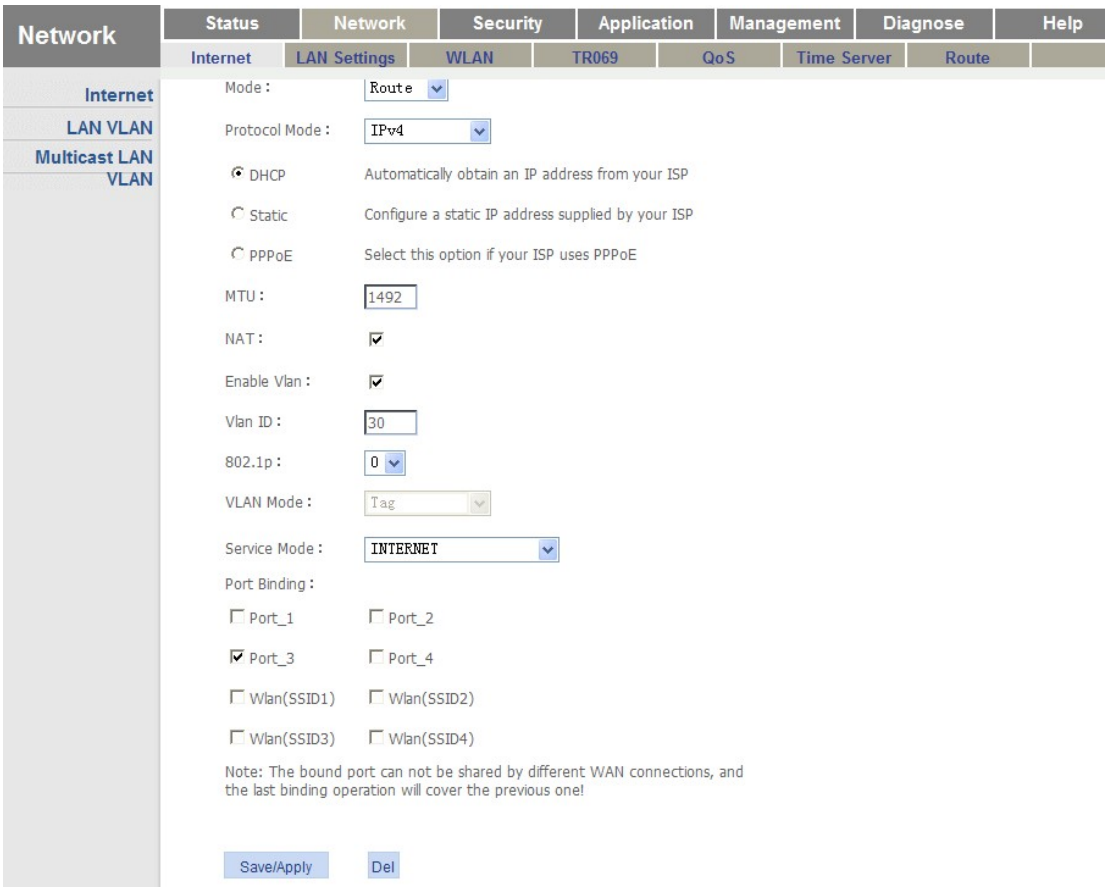

Figure 4-9: Add a route WAN connection

Enable IGMP proxy

Choose “Application > IGMP > IGMP PROXY” in navigation menu. Choose the relevant WAN connection and enable IGMP proxy.

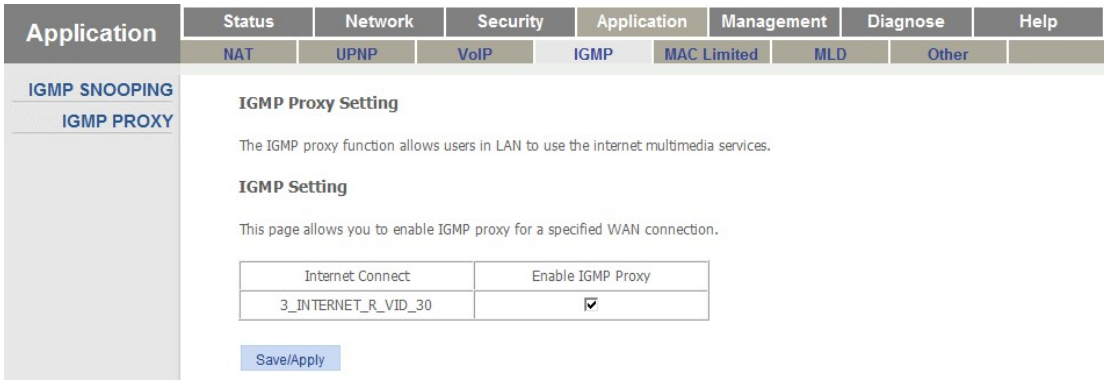

Figure 4-10: Enable IGMP proxy

Configure LAN port

It is not necessary to configure any VLAN for LAN ports when HGU works on route mode for IGMP. So you should disable VLAN mode of LAN 3.

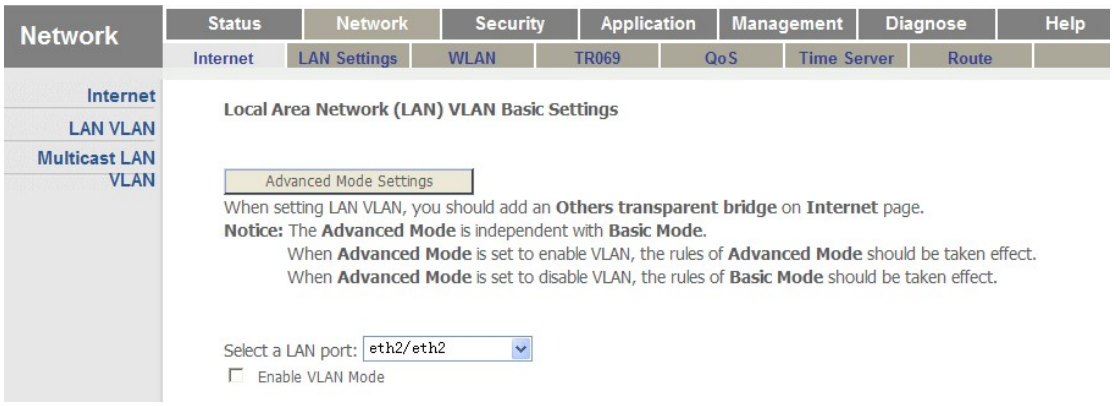

Figure 4-11: LAN VLAN setting

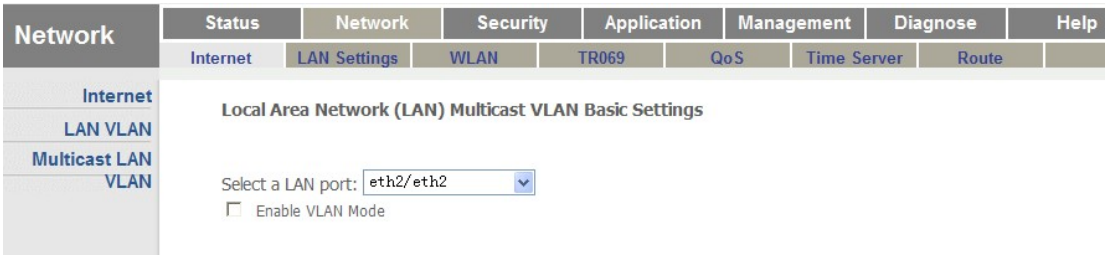

Figure 4-12: multicast LAN VLAN setting

Join multicast group

User sends an IGMP report message through LAN port 3 after got an IP address from HGU.

4.3 VoIP service

HGU supports SIP protocol for VoIP service. This example introduces how to configure VoIP service on webpage.

4.3.1 Requirement

HGU works on route mode. Its IP address is 192.168.3.199, VLAN ID is 100. SIP server is 192.168.3.19, proxy server is 192.168.3.19.

Phone numbers are 88880001, 88880002, usernames and their passwords are the same as phone numbers.

4.3.2 Steps

Before configuring, make sure HGU has registered and been authorized successfully.

Connect PC to one LAN port of HGU directly with twisted cable.

Add a WAN connection

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

- Protocol mode is IPv4.

- Static IP address.
- Enable VLAN and VLAN ID is 100.
- IP address is 192.168.3.199.
- Subnet mask is 255.255.255.0.
- Default gateway is 192.168.3.1.
- DNS is 192.168.1.1.
- Service mode is VOIP.
- Other parameters keep default.

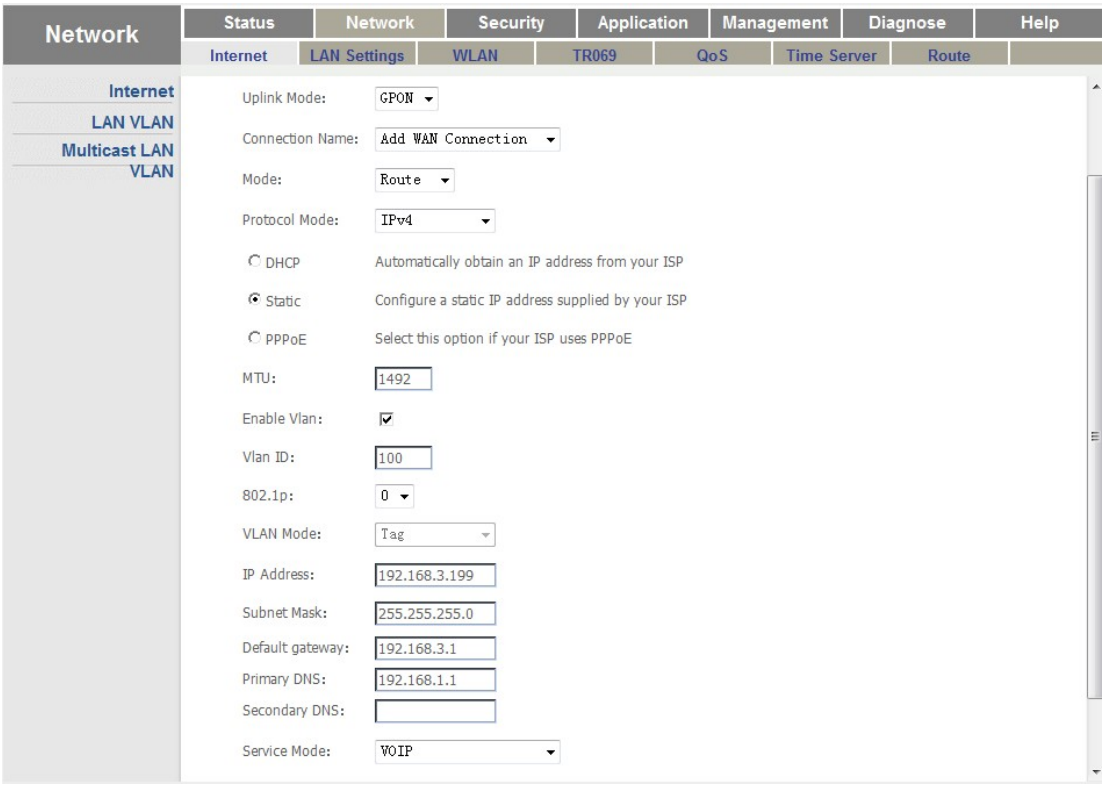

Figure 4-13: Add a route WAN connection

Configure VoIP general parameters

Choose “Application > VoIP > General settings” in navigation menu. Set up VoIP general parameters as following shows.

- Interface Name is the WAN connection for VoIP you have added.
- Choose which region VoIP service is used for. Different regions have different Dial tones, ringing tones etc.
- Proxy server and registering server both are 192.168.3.19. Protocol ports both are 5060.
- Enable phone 1 and phone 2. Fill phone numbers, usernames and passwords.
- Select suitable packing time, default value is 20 ms.

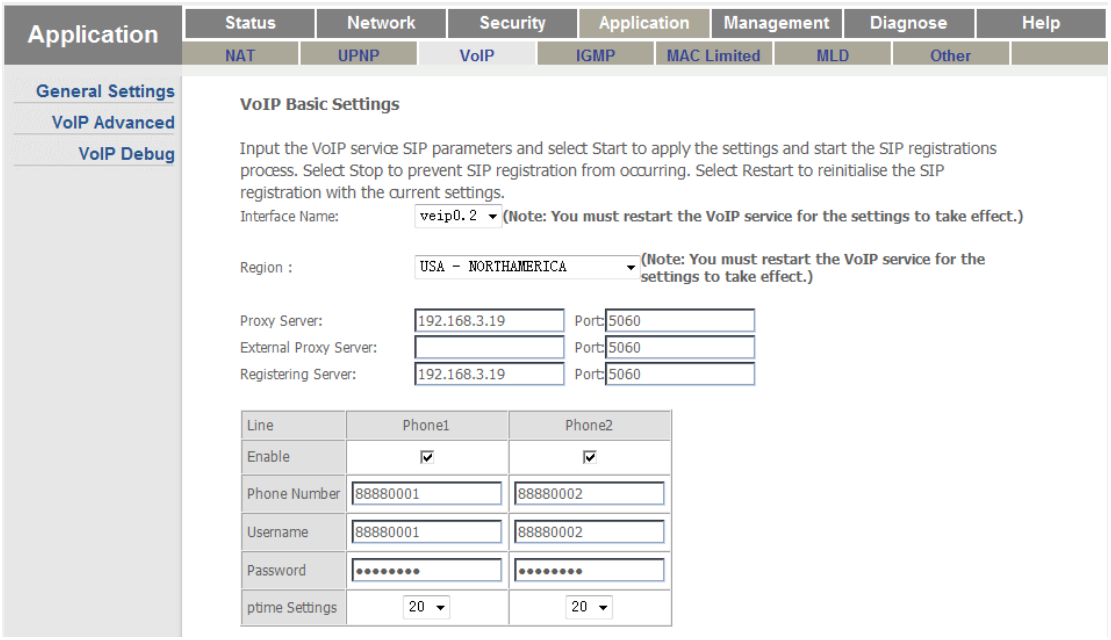

Figure 4-14: VoIP general settings

Look up register status

Choose “Status > VoIP Info > VoIP Info” in navigation menu. You can use VoIP service when register status is successful.

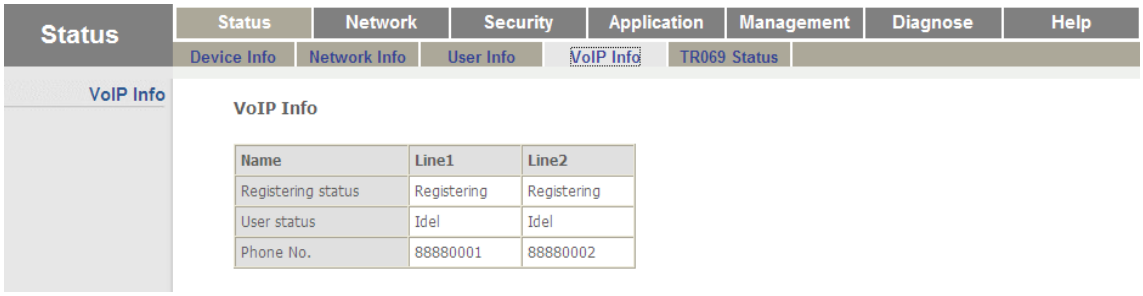

Figure 4-15: VoIP registering status

4.4 Internet and IPTV Service Mixed

This example introduces how to achieve Internet service and IPTV service at the same time.

4.4.1 Requirements

HGU uses route mode for Internet service and bridge mode for IPTV service.

LAN 1 is used for Internet service, VLAN is 10; LAN 2 is used for IPTV service, including

VOD (unicast) and multicast. VOD VLAN is 1000 and multicast VLAN is 1100.

HGU uses route mode for Internet service and IPTV service.

LAN 1 is used for Internet service, VLAN is 11; LAN 2 is used for IPTV service, including VOD (unicast) and multicast. VOD VLAN is 11 too and multicast VLAN is 22.

4.4.2 Steps

Before configuring, make sure HGU has registered and been authorized successfully.

Connect PC to one LAN port of HGU directly with twisted cable.

4.4.2.1 Route and bridge mode for mixed service

Add WAN connections

Choose “Network > Internet > internet” in navigation menu. Add a route mode WAN connection as the following parameters.

- Protocol mode is IPv4.
- Choose DHCP. (Provided by ISP)
- Enable VLAN and VLAN ID is 10.
- Service mode is INTERNET.
- Bind port 1.
- Other parameters keep default.

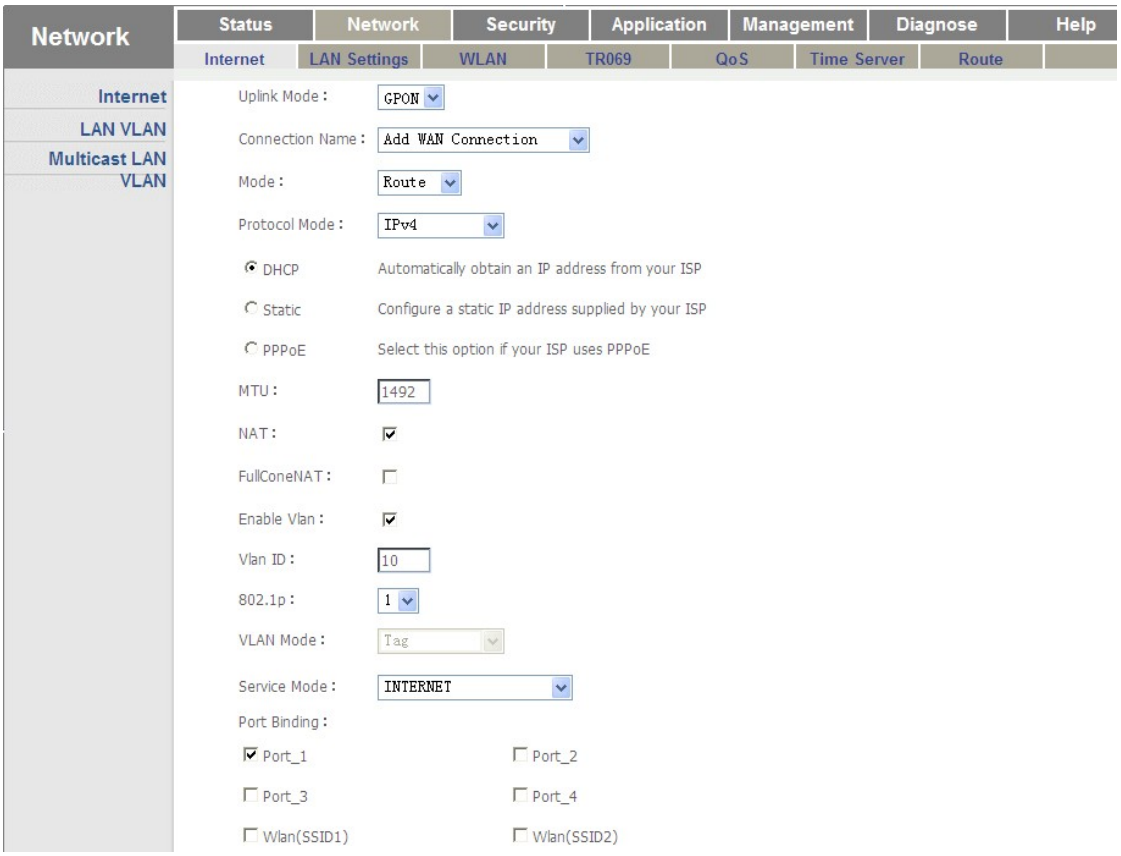

Figure 4-16: Add a route mode WAN

Add a bridge mode WAN connection, enable VLAN and its mode is transparent, service mode is OTHER and bind port 2.

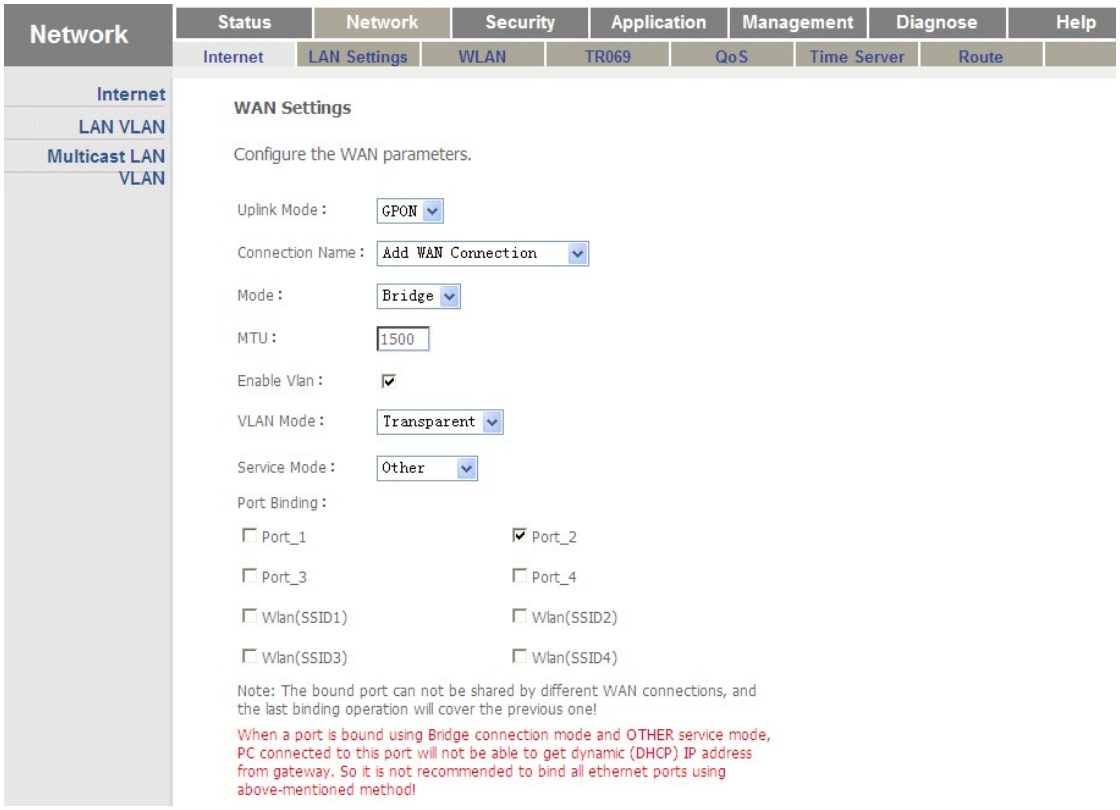

Figure 4-17: Add a bridge mode WAN

Configure LAN VLAN

Choose “Network > Internet > LAN VLAN” in navigation menu. Disable VLAN mode of LAN 1.

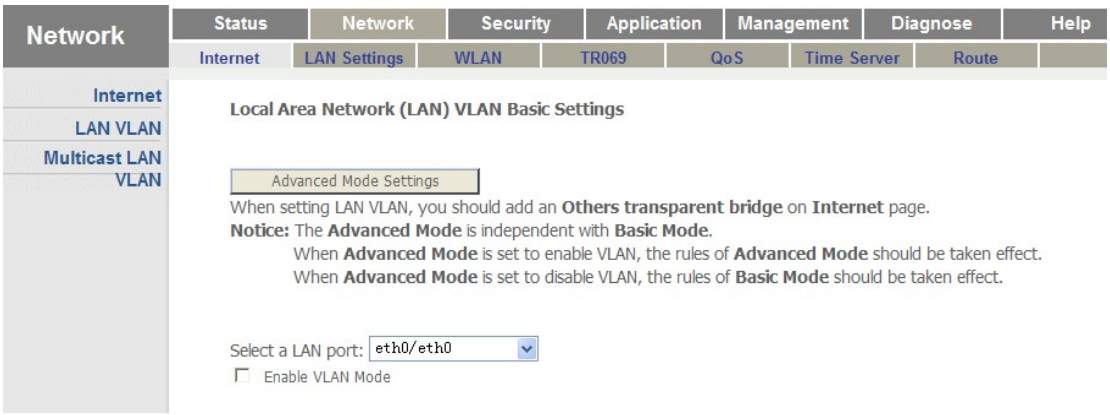

Figure 4-18: Set VLAN for LAN1

Set VLAN as 1000 for VOD service in LAN 2. Received VLAN is 0 and translation VLAN is 1000.

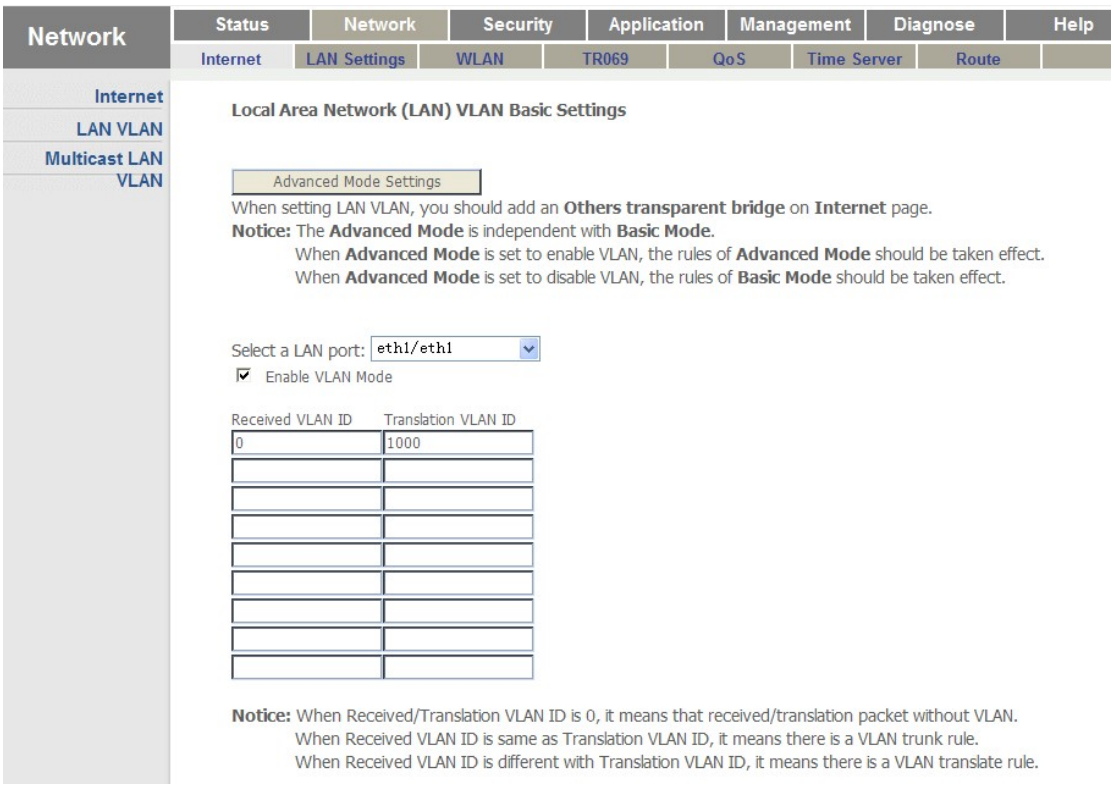

Figure 4-19: Set VLAN for LAN2

Configure LAN multicast VLAN.

Choose “Network > Internet > Multicast LAN VLAN” in navigation menu. Set multicast VLAN as 1100 for LAN2. Received VLAN is 0 and translation VLAN is 1100.

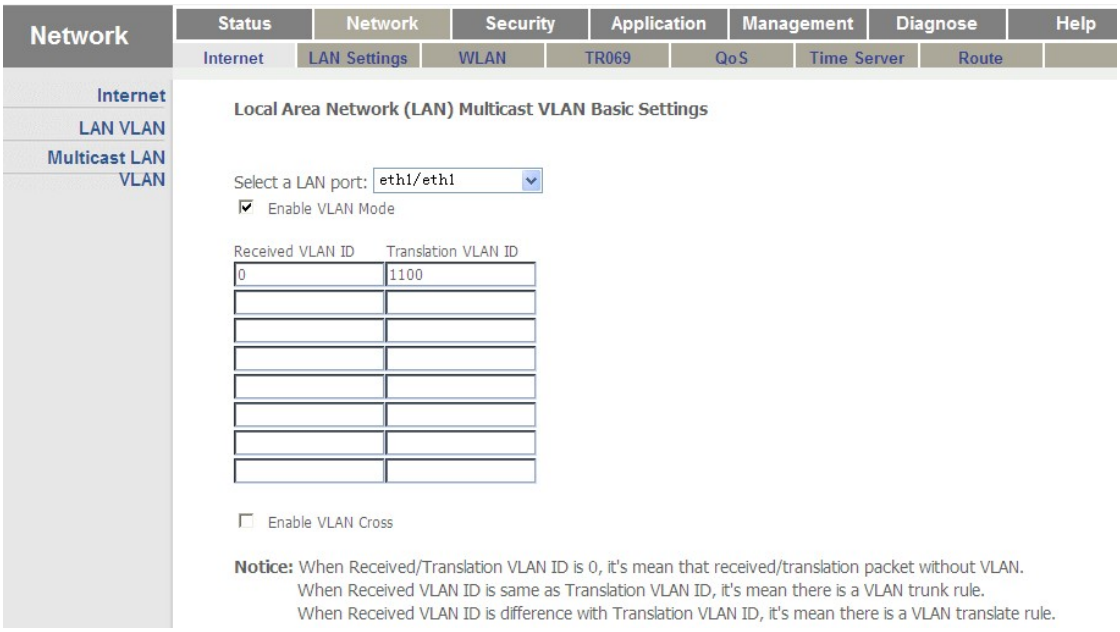

Figure 4-20: Set multicast VLAN for LAN2

Surf the Internet

Connect PC to LAN port 1. The PC gets an IP address from HGU and HGU gets an IP address from DHCP server in the network, and then you can surf the Internet.

Watch IPTV

After STB gets an IP address from ISP via DHCP, you can watch IPTV.

4.4.2.2 Route mode for mixed service

1. Add WAN connection

Choose “Network > Internet > internet” in navigation menu. Add a route mode WAN connection as the following parameters.

- Protocol mode is IPv4.
- Choose DHCP. (Provided by ISP)
- Enable VLAN and VLAN ID is 11.
- Service mode is INTERNET.
- Bind port 1 and port 2.
- Other parameters keep default.

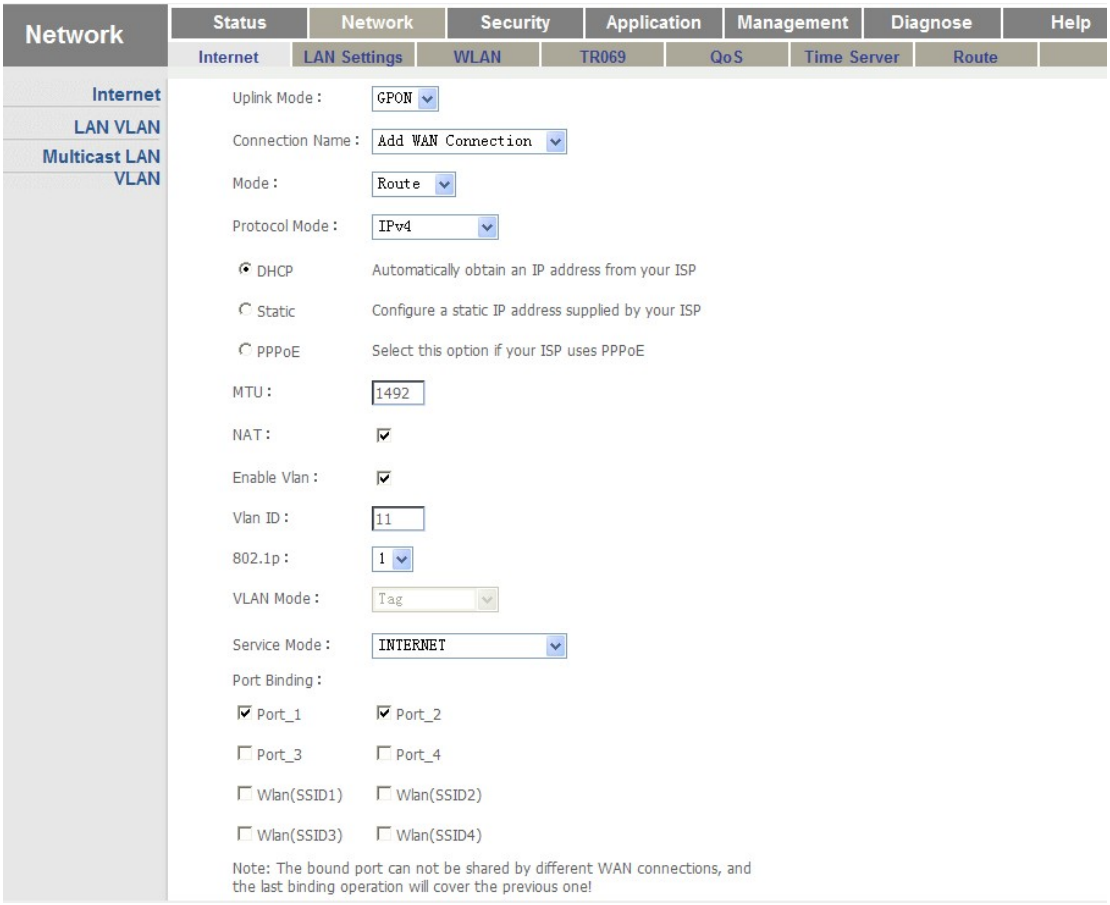

Figure 4-21: Add a route mode WAN connection

2. Enable IGMP proxy

Choose “Application > IGMP > IGMP PROXY” in navigation menu. Choose the relevant WAN connection and enable IGMP proxy.

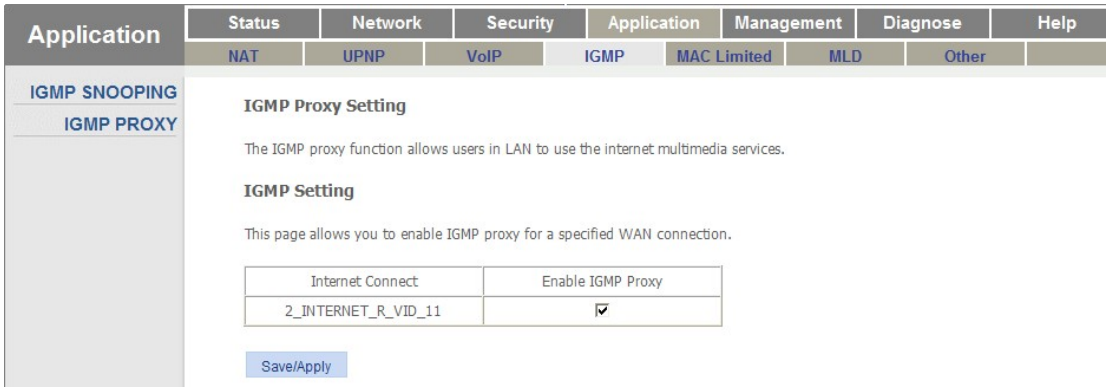

Figure 4-22: Enable IGMP proxy

3. Configure public multicast VLAN

Choose “Application > Other > IPTV” in navigation menu. Choose the relevant WAN connection and set public multicast VLAN as 22.

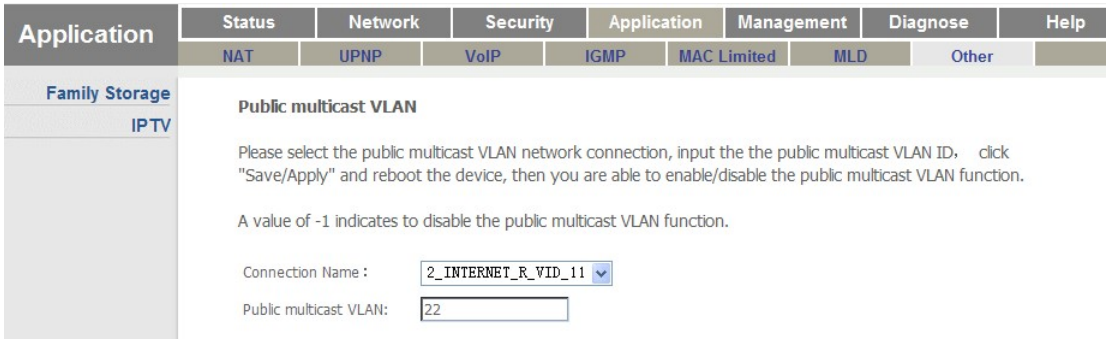

Figure 4-23: Configure public multicast VLAN

4. Configure LAN VLAN

Choose “Network > Internet > LAN VLAN” in navigation menu. Disable VLAN mode of LAN 1.

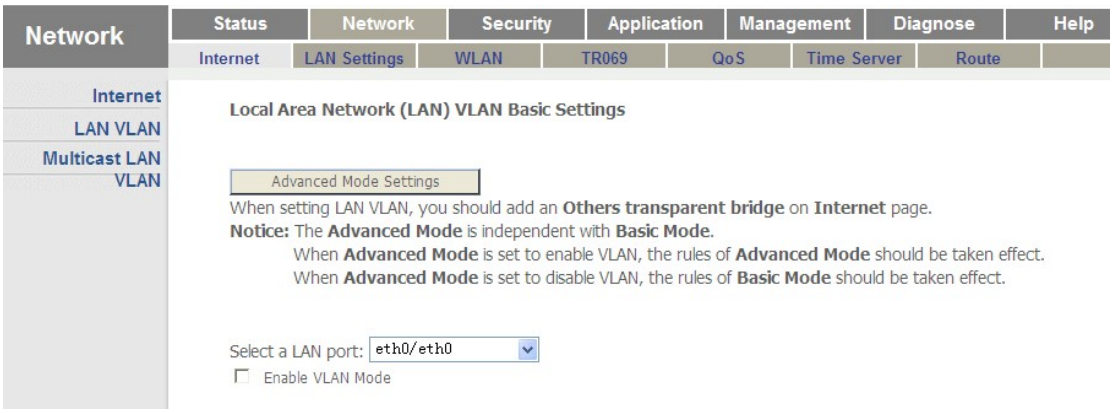

Figure 4-24: Configure VLAN of LAN 1

Disable VLAN mode of LAN 2.

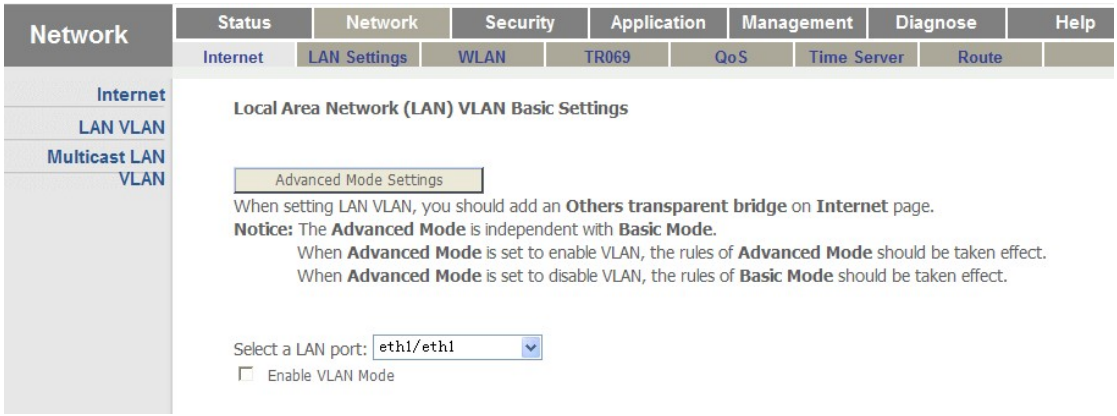

Figure 4-25: Configure VLAN of LAN 2

5. Configure LAN multicast VLAN

Choose “Network > Internet > Multicast LAN VLAN” in navigation menu. Disable multicast VLAN of LAN 2.

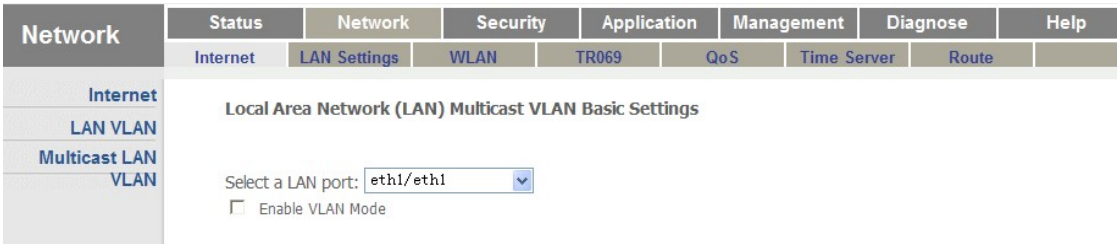

Figure 4-26: Configure multicast VLAN of LAN 2

6）Surf the Internet

Connect PC to LAN port 1. The PC gets an IP address from HGU and HGU gets an IP address from DHCP server in the network, and then you can surf the Internet.

7）Watch IPTV

After STB gets an IP address from ISP via DHCP, you can watch IPTV.

4.5 Internet, IPTV and VOIP Service Mixed

4.5.1 Requirement

LAN 1 is used for Internet service, VLAN is 10;

LAN 2 is used for IPTV service, including VOD（unicast）and multicast, VLAN both are 1100;

VOIP VLAN is 100, VOIP IP address is 192.168.3.199, and SIP server is 192.168.3.19.

The proxy server is 192.168.3.19 too;

Username and password of SIP account 1: 88880001, 88880001; Account 2: 88880002, 88880002.

4.5.2 Steps

Before configuring, make sure HGU has registered and been authorized successfully.

Connect PC to one LAN port of HGU directly with twisted cable.

1. Add WAN connection

Choose “Network > Internet > Internet” in navigation menu. Add a route mode WAN connection for Internet service as the following parameters.

- Protocol mode is IPv4.
- Choose PPPoE.
- NAT function is checked.
- Enable VLAN and VLAN ID is 10.
- Service mode is INTERNET.
- Bind port 1.
- Other parameters keep default.

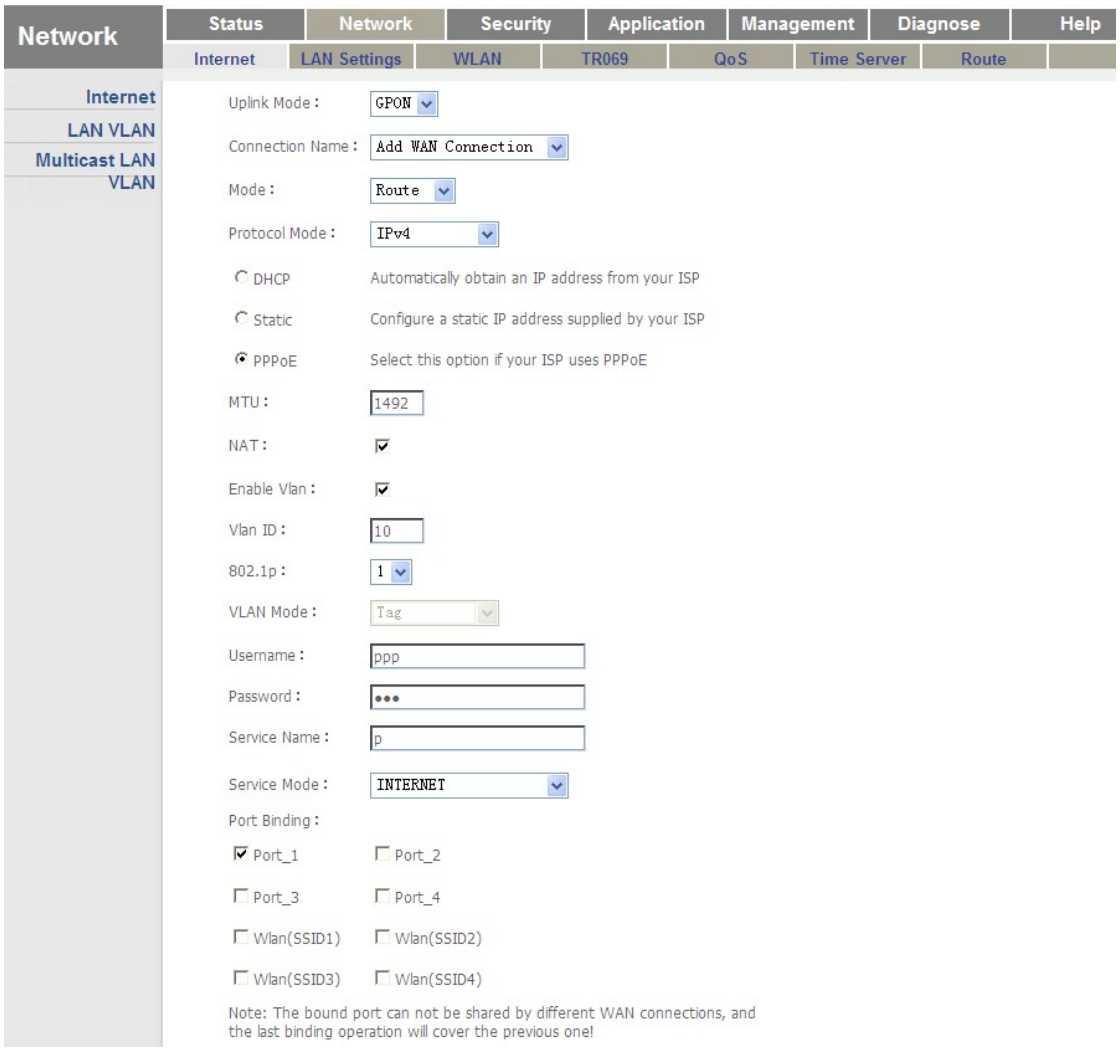

Figure 4-27: Add a WAN connection for Internet service

Add a bridge mode WAN connection for IPTV service. Enable VLAN and its mode is transparent. Service mode is other. Bind LAN 2.

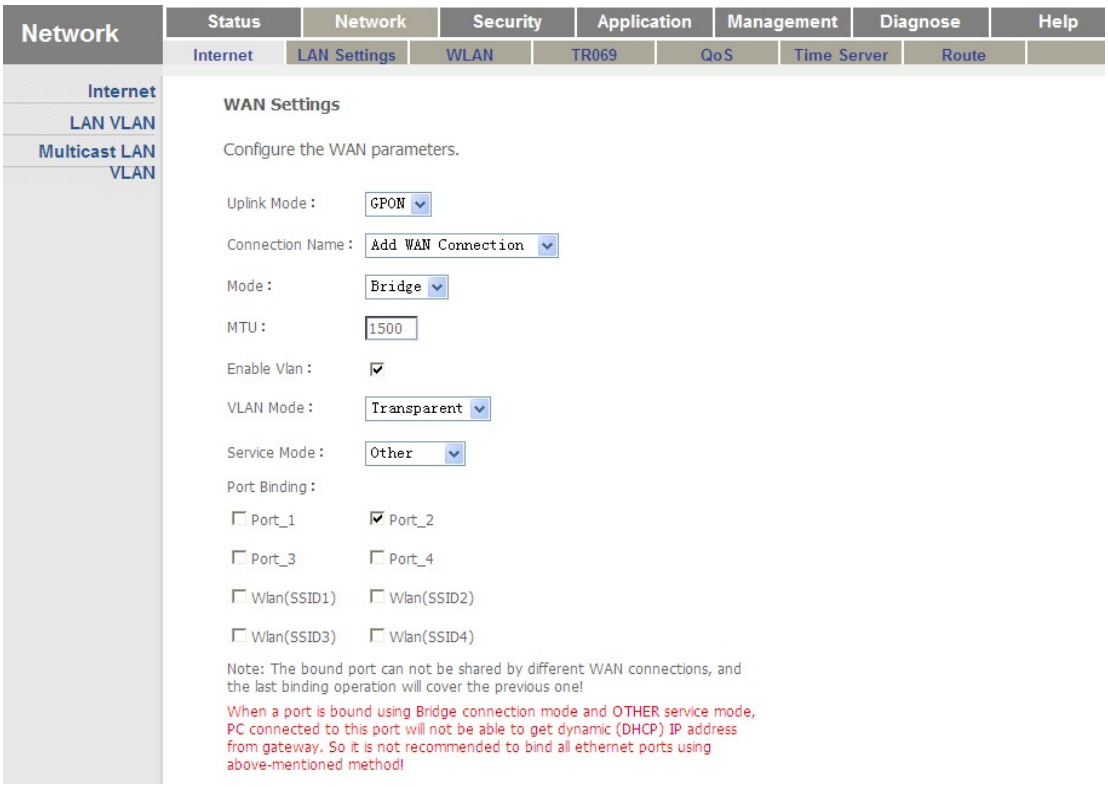

Figure 4-28: Add a WAN connection for IPTV service

Add a route mode WAN connection for VOIP service. Choose IPv4 and static; fill up the IP address, mask, gateway, DNS etc. Enable VLAN, VLAN ID is 100. Service mode is VOIP.

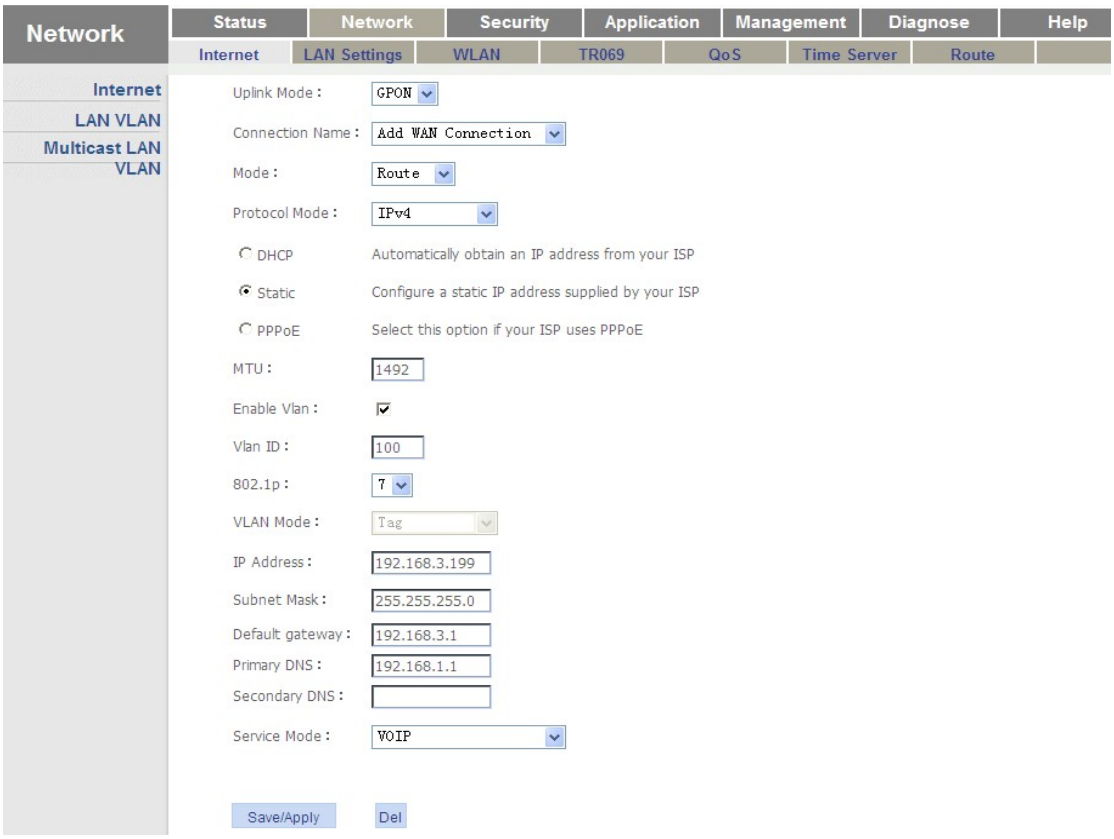

Figure 4-29: Add a WAN connection for VOIP service

2. Configure LAN VLAN

Choose “Network > Internet > LAN VLAN” in navigation menu. Disable VLAN mode of LAN 1.

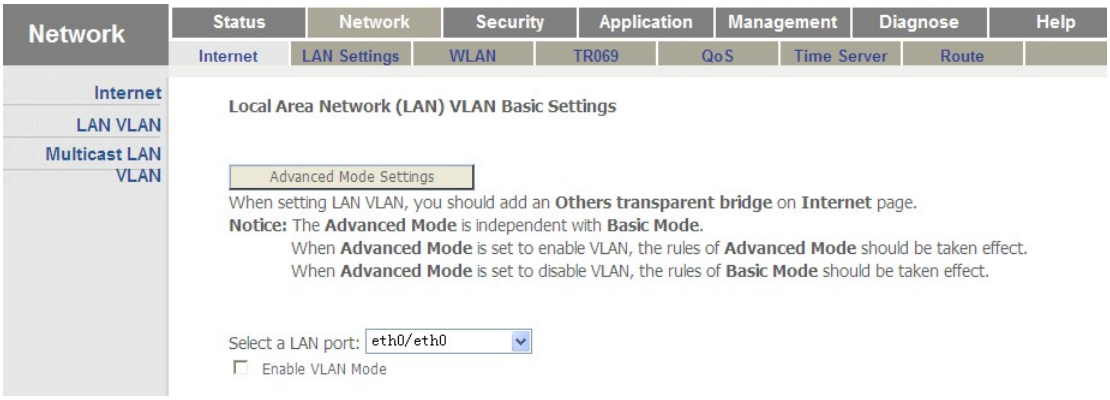

Figure 4-30: Configure VLAN of LAN 1

Configure VLAN of LAN 2; VLAN ID is 1100, for VOD service.

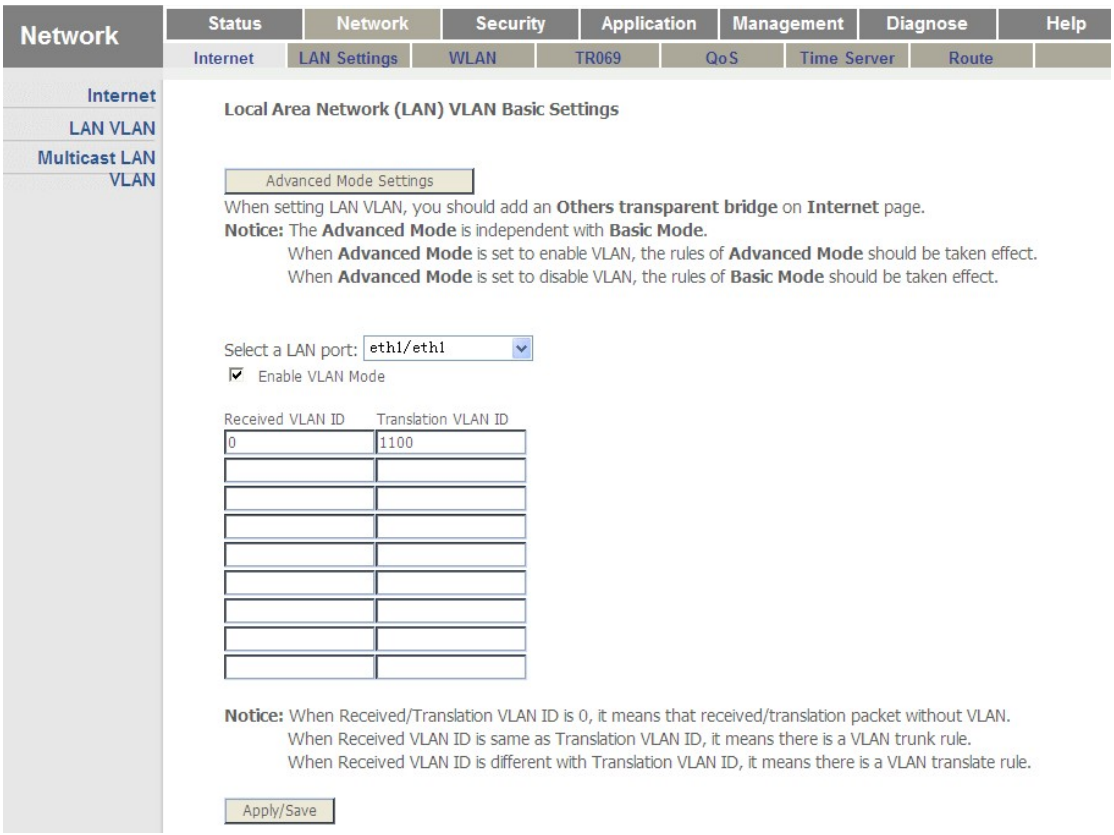

Figure 4-31: Configure VLAN of LAN 2

3. Configure LAN multicast VLAN

Choose “Network > Internet > Multicast LAN VLAN” in navigation menu. Enable VLAN of LAN 2; fill up received VLAN ID with 0 and translation VLAN ID with 1100.

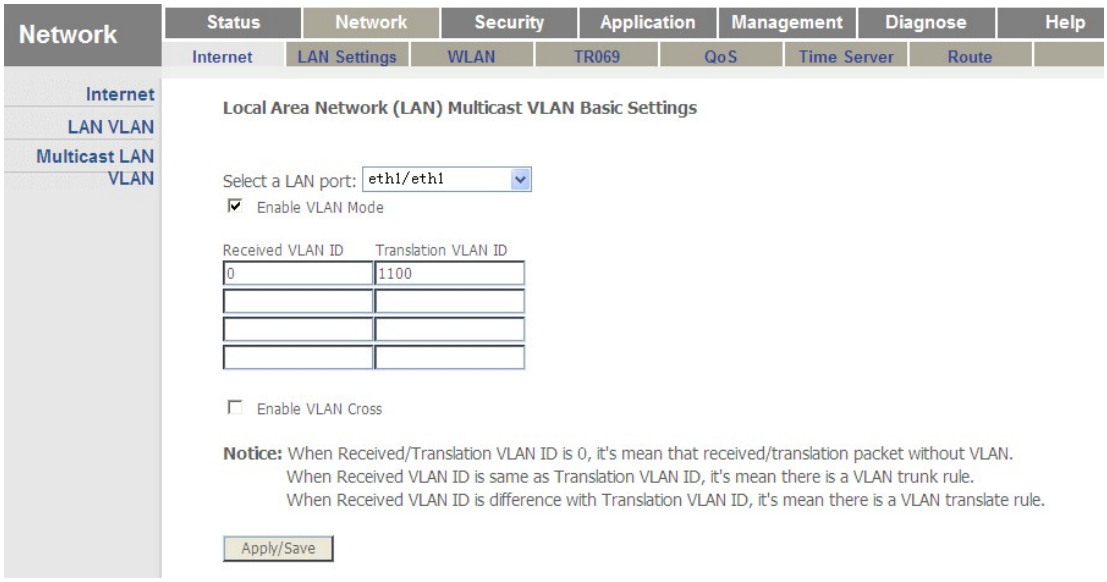

Figure 4-32: Configure multicast VLAN of LAN 2

4. Configure VOIP general parameters

Choose “Application > VOIP > General Settings” in navigation menu. Configure VOIP general parameters as the following shows.

- “Interface Name” is the WAN connection that you have added for VOIP in step 1;
- “Region” contains many countries or regions. Different regions have their own dial tone and ringing tone, etc.
- “Proxy server” and “Registering server” both are 192.168.3.19, port is 5060;
- Fill up phone number, username and password of each line.
- Choose packing time, default is 20ms.

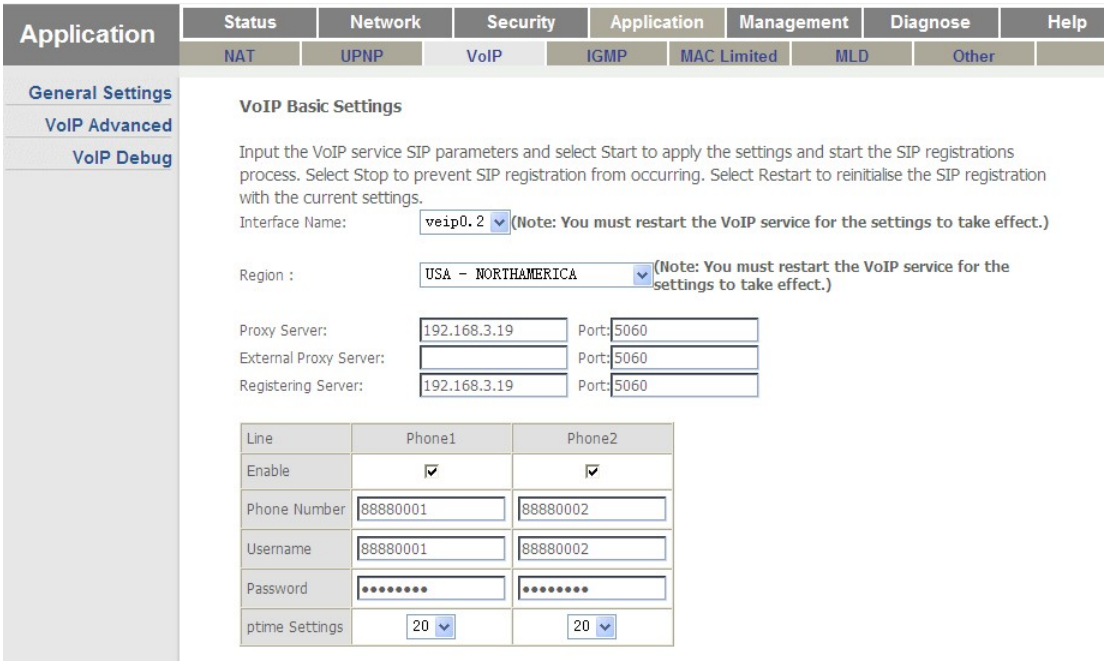

Figure 4-33: VOIP general settings

5. Surf the Internet

Connect PC to LAN port 1. The PC gets an IP address from HGU and HGU gets an IP address from DHCP server in the network, and then you can surf the Internet.

6. Watch IPTV

After STB gets an IP address from ISP via DHCP, you can watch IPTV.

7. Look up register status

Choose “Status > VoIP Info > VoIP Info” in navigation menu. You can use VoIP service when register status is successful.

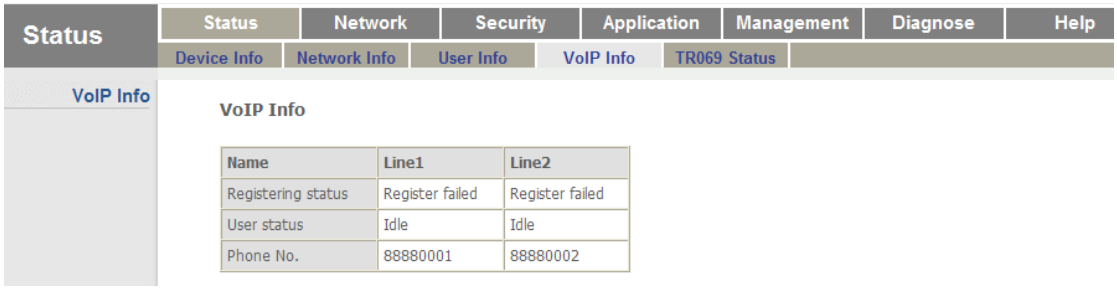

Figure 4-34: VOIP information

4.6 WLAN Service

HGU supports wireless access service. This example introduces how to configure WLAN service when HGU works on Route mode.

4.6.1 Requirement

HGU works on Route mode, HGU gets IP by DHCP mode,VLAN ID is 11.

Only enable SSID 1, its name is “xyz”. Network authentication method is WPA-PSK, and encryption method is TKIP+AES.

4.6.2 Steps

Before configuring, make sure HGU has registered and been authorized successfully.

Connect PC to one LAN port of HGU directly with twisted cable.

Add a WAN connection

Choose “Network > Internet > Internet” in navigation menu. Add a bridge mode WAN connection as the following parameters.

- Obtain IP address by DHCP.
- Enable VLAN and VLAN ID is 11.
- Service mode is INTERNET and bind SSID1.
- Other parameters keep default.

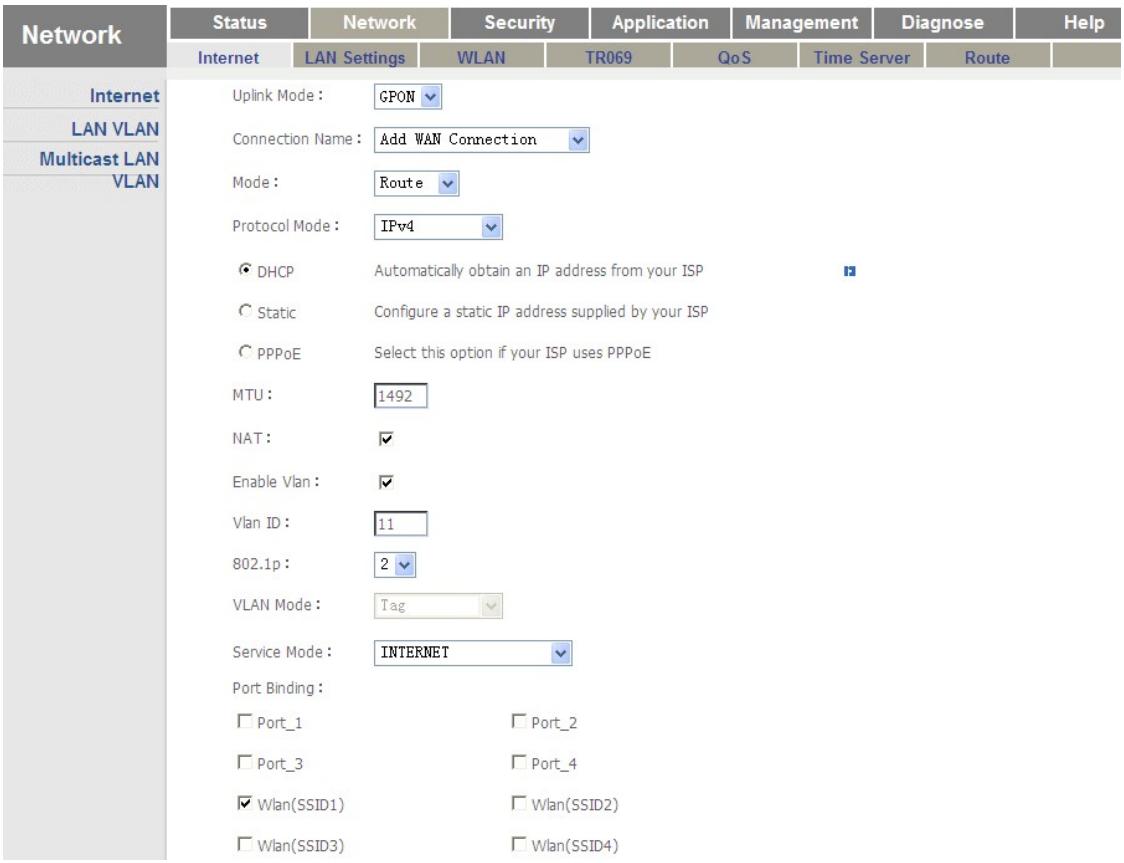

Figure 4-35: Add a route WAN connection

Configure WLAN basic parameters

Choose “Network > WLAN > WLAN Basic” in navigation menu. Enable wireless and modify SSID1’s name to xyz. For other parameters, just configure the suitable ones if necessary.

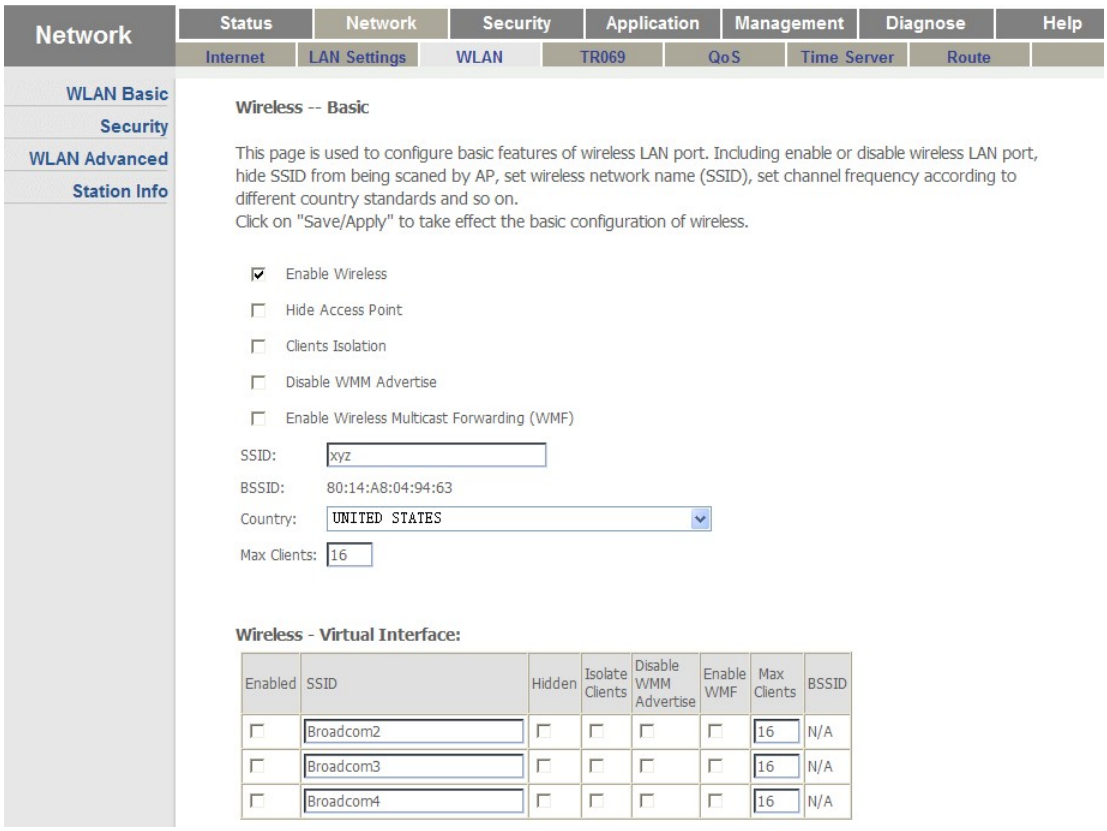

Figure 4-36: WLAN basic settings

Configure network authentication

Choose “Network > WLAN > Security” in navigation menu. Select the SSID, and set up WPA-PSK for its network authentication method and TKIP+AES for its encryption method. Fill a password in passphrase textbox.

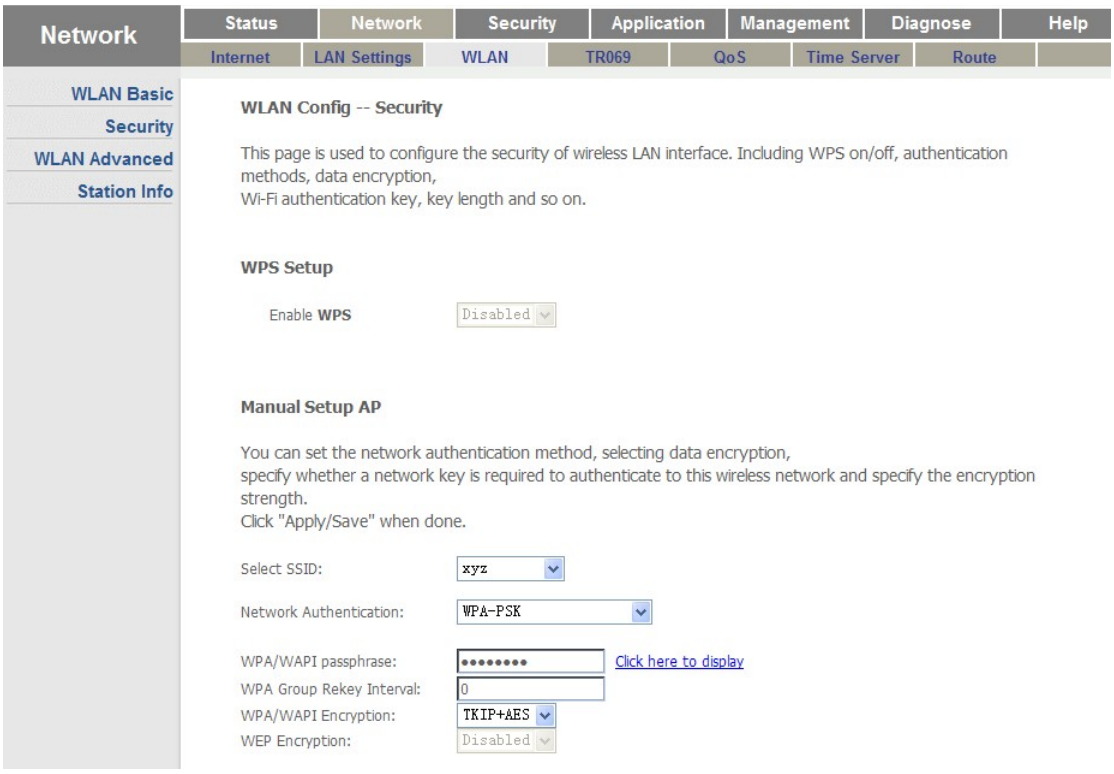

Figure 4-37: WLAN security settings

Configure WPS

Choose “Network > WLAN > Security” in navigation menu. Enable WPS and select Push-Button for both client and AP.

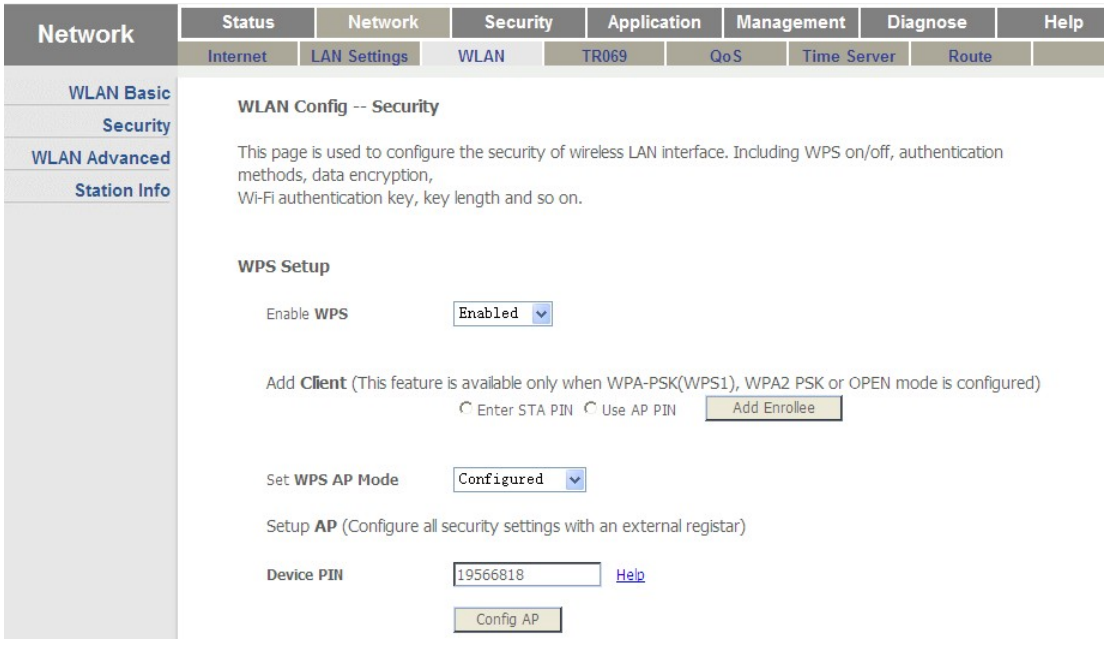

Figure 4-38: WPS settings

Surf the Internet

Search SSID named xyz with a laptop, double-click to connect and enter the correct password.

If client has WPS function, you can connect client to AP by pressing Pair button in HGU. When the WPS indicator blinks, press WPS button in client simultaneously. They will connect after a short time.

4.7 Update image

You can update software image on webpage.

Choose “Management > Device Manage > Update Image” in navigation menu. Select the software image file with .w extension, click “Update Software” button. HGU will restart automatically after updated. The whole process needs about 2 minutes.

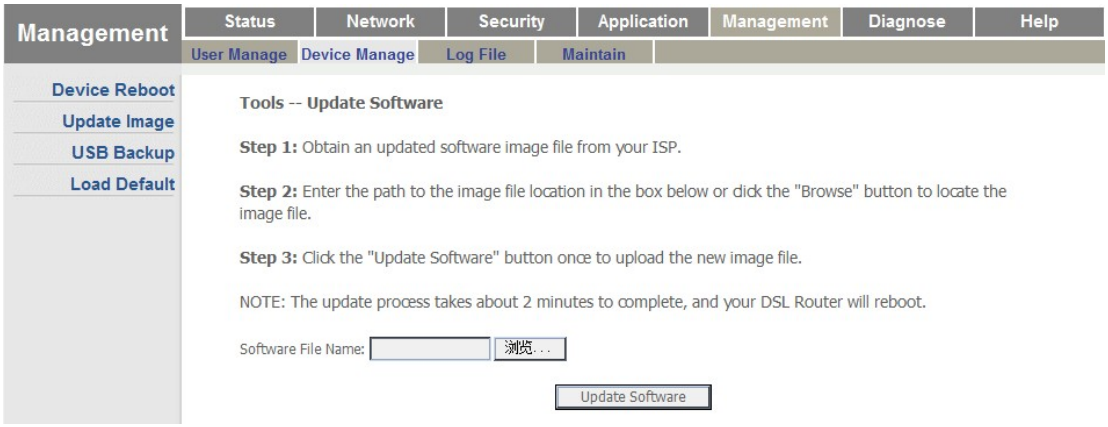

Figure 4-39: Update software

Chapter 5. FAQ

Q: All indicators are not lit?

A: (1) Power is off or power adapter is bad.

Indicator LED switch is turned off.

Q: Why Los indicator flashes?

A: (1) There is no optical signal. Maybe the fiber is broke down or connection loosened.

Optical power is too low.

The fiber is dusty.

Q: LAN indicators are not lit?

A: (1) Indicator LED switch is turned off.

The cable breaks down or connection loosened.

The cable type incorrect or too long.

Q: FXS indicators are not lit?

A: (1) Indicator LED switch is turned off.

SIP accounts aren't registered.

Q: PC can't visit web UI?

A: (1) PC and HGU are not in the same network fragment. By default, LAN IP is 192.168.1.1/24.

The cable breaks down.

IP conflict or have loopback.

Q: User can't surf the Internet normally.

A: (1) PC has set a wrong IP and gateway or network is bad.

There is loopback or attack in network.

Route mode WAN connection doesn't get an IP or DNS is disabled.

Q: Customer can't use the VoIP service. **A:** (1) The phone or the wire is damaged.

SIP accounts aren't registered.

Dial plan is wrong.

Q: HGU stops to work after working for some time. **A:** (1) Power supply is not working properly.

The device overheats.

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