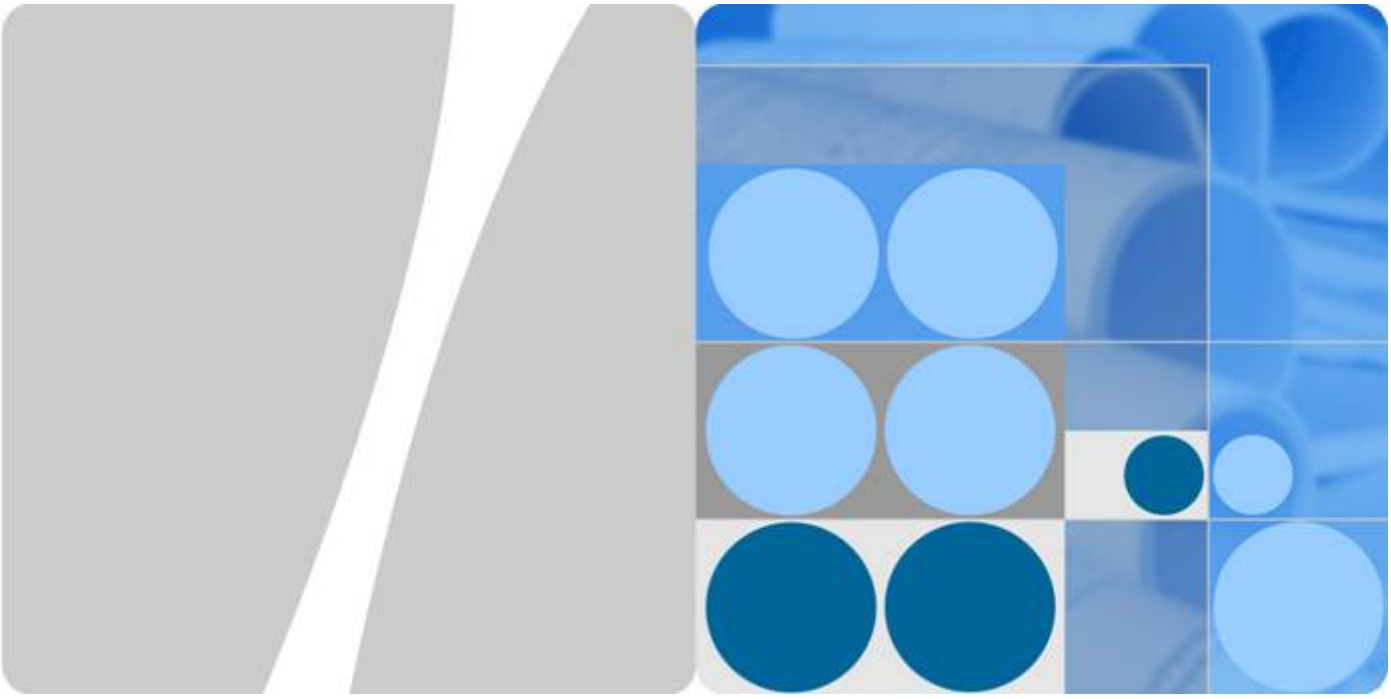

EchoLife HG8240/HG8245/HG8247 GPON Terminal

V100R002C04&C05

Service Manual

Issue 02

Date 2011-01-26

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About This Document

Overview

GPON terminal EchoLife HG8240/HG8245/HG8247 (hereafter referred to as the HG8240/HG8245/HG8247) is an indoor optical network terminal (ONT) designed for home users and small office and home office (SOHO) users. This document provides the appearance and specifications of the HG8240/HG8245/HG8247, and describes its configuration and usage, which helps you know the HG8240/HG8245/HG8247 quickly.

Product Version

The following table lists the product versions related to this document.

Product Name	Product Version
EchoLife HG8240/ HG8245/HG8247	V100R002C04&C05

Intended Audience

The intended audience of this document is as follows:

- Technical support engineers
- Maintenance engineers

Conventions

Symbol Conventions

The following symbols may be found in this document. They are defined as follows.

Symbol	Description
DANGER	Indicates a hazard with a high level of risk which, if not avoided, can result in death or serious injury.
WARNING	Indicates a hazard with a medium or low level of risk which, if not avoided, may result in minor or moderate injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may cause equipment damage, data loss, performance degradation, or unexpected results.
TIP	Indicates a tip that may help you solve a problem or save your time.
NOTE	Provides additional information to emphasize or supplement important points of the main text.

General Conventions

Convention	Description
Times New Roman	Main text is in Times New Roman.
Boldface	The first-level, second-level and third-level section titles are in **boldface**.
Courier New	Alarms and prompts are in `Courier New`, and the contents are separated from the main text by lines at the beginning and the end.
`Terminal Display`	Information displayed on the screen is in `Terminal Display`. In addition, information that is input by users and displayed is in **`Terminal Display`**.

Command Conventions

Convention	Description
Boldface	The keywords of a command are in **boldface**.
Italic	Command parameters are in *italics*.
[ ]	Items (keywords or parameters) in square brackets [ ] are optional.
{ x | y | ... }	Alternative items are grouped in braces and separated by vertical bars. One can be selected.

Convention	Description
[x | y | ...]	Alternative items are grouped in square brackets and separated by vertical bars. One or none can be selected.
{ x | y | ... } *	Alternative items are grouped in braces and separated by vertical bars. A minimum of one or a maximum of all can be selected.
[x | y | ...] *	Alternative items are grouped in square brackets and separated by vertical bars. Multiple or none can be selected.

GUI Conventions

Convention	Description
Boldface	GUI elements such as buttons, menus, parameters, tabs, window, and dialog titles are in **boldface**. For example, click **OK**.
>	Multi-level menus are separated by the > sign. For example, choose **File** > **Create** > **Folder**.

Keyboard Conventions

Convention	Description
Key	Press the key. For example, press **Enter**, **Tab**, **Backspace** and **a**.
Key 1 + Key 2	Press the keys concurrently. For example, pressing **Ctrl**+**Alt** +**A** means that the three keys are pressed concurrently.
Key 1, Key 2	Press the keys in turn. For example, pressing **Alt**, **F** means that the two keys are pressed in turn.

Mouse Conventions

Convention	Description
Click	Select and release the primary mouse button without moving the pointer.
Double-click	Press the primary mouse button twice continuously and quickly without moving the pointer.
Drag	Press and hold the primary mouse button and move the pointer to a certain position.

Update History

Updates between document versions are cumulative. Therefore, the latest document version contains all updates made to previous versions.

Updates in Issue 02 (2011-01-26)

Parts of contents are optimized.

Updates in Issue 01 (2010-10-26)

This is the first release for the HG8240/HG8245/HG8247 V100R002C04&C05. It is the first archive.

Contents

Figures

Tables

1 Safety Precautions

To ensure normal running of the device, read the safety precautions carefully before operating the device, and comply with the precautions when performing the operations.

Basic Requirements

- Keep the device dry during storage, transportation, and running of the device.
- Prevent the device from colliding with other objects during storage, transportation, and running of the device.
- Install the device in strict compliance with the vendor requirements.
- Do not uninstall the device without permission. Contact the specified service center when a fault occurs on the device.
- No enterprise or personnel should modify the structure, security design, or performance design of the device without authorization.
- Abide by local laws and regulations and respect the legal rights of others when using the device.

Environment Requirements

- Install the device in a well-ventilated place that is not directly exposed to sunlight.
- Keep the device clean.
- Keep the device away from water sources or wet places.
- Do not place any objects on the device. This is to protect the device from damages, such as overheat or distortion, which can be caused by such objects.
- Leave a space of at least 10 cm around the device for heat dissipation.
- Keep the device away from heat sources or fire sources, such as electrical heaters and candles.
- Keep the device away from the electrical appliances with strong magnetic fields or strong electric fields, such as microwave ovens, refrigerators, and mobile phones.

Instructions for Use

- Use the accessories delivered with the device, or use those recommended by the vendor, such as the power adapter and battery.

- The power supply voltage of the device must meet the requirements on the input voltage of the device.
- Keep power plugs clean and dry to avoid electric shocks or any other hazards.
- Dry your hands before removing or inserting cables.
- Stop the device and switch off the power before removing or inserting cables.
- Switch off the power and remove all the cables, including the power cable, optical fibers, and network cables, from the device during periods of lightning activity.
- Switch off the power and remove the power plug if the device needs to be shut down for a long time.
- Protect the device from ingress of water or other liquids. If such an accident occurs, switch off the power immediately and remove all the cables, including the power cable, optical fibers, and network cables, from the device. Contact the specified service center in the case of a device failure.
- Do not stamp, pull, drag, or excessively bend the cables because they may get damaged. Damaged cables can cause a device failure.
- Do not use the cables that are damaged or have deteriorated.
- Do not look directly into the optical port on the device without eye protection. The laser emitted from the optical port can injure your eyes.
- In case of any abnormalities, such as smoke, abnormal sound, or odor from the device, immediately stop the device, switch off the power, and remove all cables, including the power cable, optical fibers, and network cables, from the device. Contact the specified service center in the case of a device failure.
- Prevent foreign objects such as metal objects from dropping into the device through the heat dissipation mesh.
- Protect the outer case of the device from scratches, because the paint that peels off in the scratched areas can cause device abnormalities. If the paint falls into the device it may cause short circuits. In addition, peeled-off paint can cause an allergic reaction to the human body.
- Ensure that the device is kept out of the reach of children. Guard against risks such as children playing with the device or swallowing small parts of the device.

Instructions for Cleaning

- Before cleaning the device, stop the device from running, switch off the power, and remove all cables, including the power cable, optical fibers, and network cables, from the device. When inserting and removing optical fibers, keep the optical fiber connectors clean.
- Do not use cleaning fluid or spray-on detergent to clean the outer case of the device. Use a soft cloth instead.

Instructions for Environment Protection

- Put the retired device and batteries at the specified recycle place.
- Abide by local laws and regulations to handle packaging materials, run-out batteries and retired devices.

2 System Overview

About This Chapter

This topic provides the appearance and describes the typical network applications of the HG8240/HG8245/HG8247.

2.1 Product Introduction
This topic provides the appearance and describes the ports and LEDs of the HG8240/HG8245/HG8247.

2.2 Typical Network Applications
This topic describes the typical network applications of the HG8240/HG8245/HG8247.

2.1 Product Introduction

This topic provides the appearance and describes the ports and LEDs of the HG8240/HG8245/HG8247.

The HG8240/HG8245/HG8247 is an indoor optical network terminal (ONT) designed for home users and small office and home office (SOHO) users. Its upper shell adopts the natural heat dissipation material, and its optical port adopts the dust-proof design with a rubber plug. The HG8240/HG8245/HG8247 is eye-pleasing and energy-efficient. It can be deployed on a workbench or mounted on a wall, meeting users' deployment requirements in different scenarios.

By using the gigabit-capable passive optical network (GPON) technology, the HG8240/HG8245/HG8247 provides a high-speed data channel through a single optical fiber with an upstream rate of 1.244 Gbit/s and a downstream rate of 2.488 Gbit/s. In this way, you can enjoy quality high-speed data service, voice service, and video service. In addition, the HG8245 and HG8247 provide reliable wireless access service, and convenient storage and file sharing services within a home network.

As an ONT, the HG8240/HG8245/HG8247 provides convenient and efficient remote management functions. The HG8240/HG8245/HG8247 supports the TR-069 and ONT Management and Control Interface (OMCI) protocols and manages all home terminals in a unified manner, thus implementing remote fault diagnosis, service provisioning, and performance statistics measurement.

2.1.1 Appearance

This topic provides the appearance of the HG8240/HG8245/HG8247.

Figure 2-1, **Figure 2-2** and **Figure 2-3** show the appearance of the HG8240/HG8245/HG8247.

Figure 2-1 Appearance of the HG8240

Figure 2-2 Appearance of the HG8245

Figure 2-3 Appearance of the HG8247

2.1.2 Ports

This topic provides the appearance of the ports on the HG8240/HG8245/HG8247 and describes the functions of the ports.

Ports on the HG8240

Figure 2-4 and **Figure 2-5** show the ports on the rear panel and side panel of the HG8240 respectively.

Figure 2-4 Ports on the rear panel of the HG8240

Table 2-1 Descriptions of the ports on the rear panel of the HG8240

Port and Button	Function
OPTICAL	Indicates the optical port. The optical port is equipped with a rubber plug and is connected to an optical fiber for upstream transmission. The type of the optical connector connected to the OPTICAL port is SC/APC.
LAN1-LAN4	Indicate auto-sensing 10/100/1000M Base-T Ethernet ports (RJ-45), used for connecting to PCs or IP set-top boxes (STBs).
TEL1-TEL2	Indicate VoIP telephone ports (RJ-11), used for connecting to the ports on telephone sets.
ON/OFF	Indicates the power-on/power-off button, used for powering on or powering off the device.
POWER	Indicates the power port, used for connecting to the power adapter or backup battery.

Figure 2-5 Ports on the side panel of the HG8240

Table 2-2 Descriptions of the ports on the side panel of the HG8240

Port and Button	Function
BBU	Indicates the external backup battery monitoring port, used for connecting to the backup battery for monitoring the battery.
RESET	Indicates the reset button. Press the button for a short time to reset the device; press the button for a long time (longer than 10s) to restore the device to the default settings and reset the device.

Ports on the HG8245

Figure 2-6 and **Figure 2-7** show the ports on the rear panel and side panel of the HG8245 respectively.

Figure 2-6 Ports on the rear panel of the HG8245

Table 2-3 Descriptions of the ports on the rear panel of the HG8245

Port and Button	Function
OPTICAL	Indicates the optical port. The optical port is equipped with a rubber plug and is connected to an optical fiber for upstream transmission. The type of the optical connector connected to the OPTICAL port is SC/APC.
LAN1-LAN4	Indicate auto-sensing 10/100/1000M Base-T Ethernet ports (RJ-45), used for connecting to PCs or IP STBs.
TEL1-TEL2	Indicate VoIP telephone ports (RJ-11), used for connecting to the ports on telephone sets.
ON/OFF	Indicates the power-on/power-off button, used for powering on or powering off the device.
POWER	Indicates the power port, used for connecting to the power adapter or backup battery.

Figure 2-7 Ports on the side panel of the HG8245

Table 2-4 Descriptions of the ports on the side panel of the HG8245

Port and Button	Function
BBU	Indicates the external backup battery monitoring port, used for connecting to the backup battery for monitoring the battery.
USB	Indicates the USB host port, used for connecting to a USB storage device.
WLAN	Indicates the WLAN button, used for enabling or disabling the WLAN function.
WPS	Indicates the WLAN data encryption switch.
RESET	Indicates the reset button. Press the button for a short time to reset the device; press the button for a long time (longer than 10s) to restore the device to the default settings and reset the device.

Ports on the HG8247

Figure 2-8 and Figure 2-9 show the ports on the rear panel and side panel of the HG8247 respectively.

Figure 2-8 Ports on the rear panel of the HG8247

Table 2-5 Descriptions of the ports on the rear panel of the HG8247

Port and Button	Function
CATV	Indicates the radio frequency (RF) port, used for connecting to a TV set.
OPTICAL	Indicates the optical port. The optical port is equipped with a rubber plug and is connected to an optical fiber for upstream transmission. The type of the optical connector connected to the OPTICAL port is SC/APC.
LAN1-LAN4	Indicate auto-sensing 10/100/1000M Base-T Ethernet ports (RJ-45), used for connecting to PCs or IP STBs.
TEL1-TEL2	Indicate VoIP telephone ports (RJ-11), used for connecting to the ports on telephone sets.
ON/OFF	Indicates the power-on/power-off button, used for powering on or powering off the device.
POWER	Indicates the power port, used for connecting to the power adapter or backup battery.

Figure 2-9 Ports on the side panel of the HG8247

Table 2-6 Descriptions of the ports on the side panel of the HG8247

Port and Button	Function
BBU	Indicates the external backup battery monitoring port, used for connecting to the backup battery for monitoring the battery.
USB	Indicate the USB host port, used for connecting to a USB storage device.
WLAN	Indicates the WLAN button, used for enabling or disabling the WLAN function.
WPS	Indicates the WLAN data encryption switch.
RESET	Indicates the reset button. Press the button for a short time to reset the device; press the button for a long time (longer than 10s) to restore the device to the default settings and reset the device.

2.1.3 LEDs

This topic provides the appearance of the LEDs on the HG8240/HG8245/HG8247 and describes the indications of these LEDs.

Figure 2-10, **Figure 2-11** and **Figure 2-12** show the LEDs on the HG8240, HG8245 and HG8247 respectively.

Figure 2-10 LEDs on the HG8240

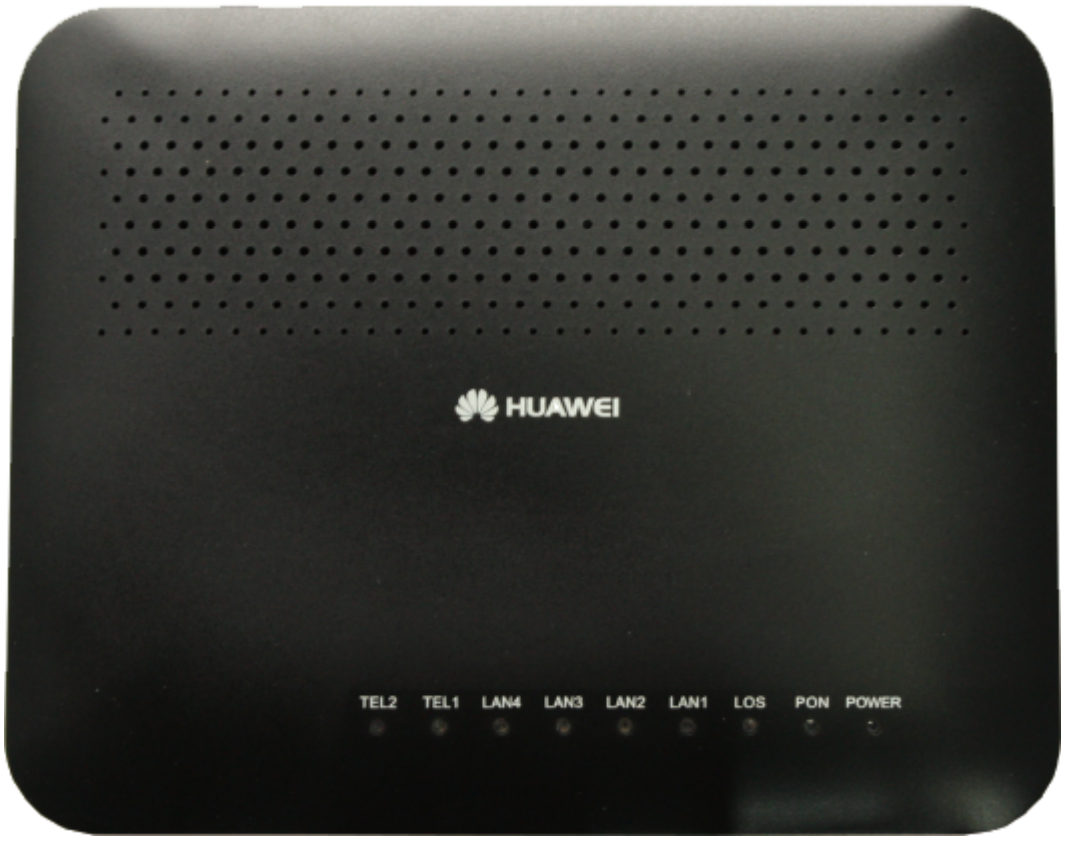


Figure 2-11 LEDs on the HG8245

Figure 2-12 LEDs on the HG8247

Table 2-7 Indications of the LEDs on the HG8240/HG8245/HG8247

Silk Screen	Name	Status	Indication
POWER	Power supply LED	Green: always on	The device is powered on.
		Orange: always on	The device is powered by the backup battery.
		Off	The power supply is cut off.
PON	Authentication LED	See **Table 2-8**.	
LOS	Connection LED	See **Table 2-8**.	
LAN1-LAN4	Ethernet port LED	Always on	The Ethernet connection is in the normal state.
		Blinks	Data is being transmitted on the Ethernet port.
		Off	The Ethernet connection is not set up.
TEL1-TEL2	Voice telephone port LED	Always on	The connection to the voice server is set up.
		Blinks quickly (twice per second)	The connection to the voice server is set up and the telephone is in the off-hook or ringing state.
		Blinks slowly (once two seconds)	The ONT is registering with the voice server.
		Off	The connection to the voice server is not set up.
USB	USB port LED	Always on	The USB port is connected and is working in the host mode, but no data is being transmitted.
		Blinks quickly (twice per second)	Data is being transmitted on the USB port.
		Off	The system is not powered on or the USB port is not connected.
WLAN	WLAN port LED	Always on	The WLAN function is enabled.
		Blinks	Data is being transmitted on the WLAN port.

Silk Screen	Name	Status	Indication
		Off	The WLAN function is disabled.
WPS	WPS port LED	Always on	The WPS function is enabled.
		Blinks	A Wi-Fi terminal is accessing the system.
		Off	The WPS function is disabled.
CATV	CATV port LED	Always on	The CATV function is enabled and CATV signals are received.
		Off	The CATV function is disabled or CATV signals are not received.

Table 2-8 Indications of PON and LOS LEDs

No.	LED Status		Indication
	PON	LOS	
1	Off	Off	The ONT is disabled by the OLT.
2	Blinks quickly (twice per second)	Off	The ONT is attempting to set up a connection to the OLT.
3	Always on	Off	The connection between the ONT and the OLT is set up.
4	Off	Blinks slowly (once two seconds)	The Rx optical power of the ONT is lower than the optical receiver sensitivity.
5	Blinks quickly (twice per second)	Blinks quickly (twice per second)	The OLT detects that the ONT is a rogue ONT.

2.2 Typical Network Applications

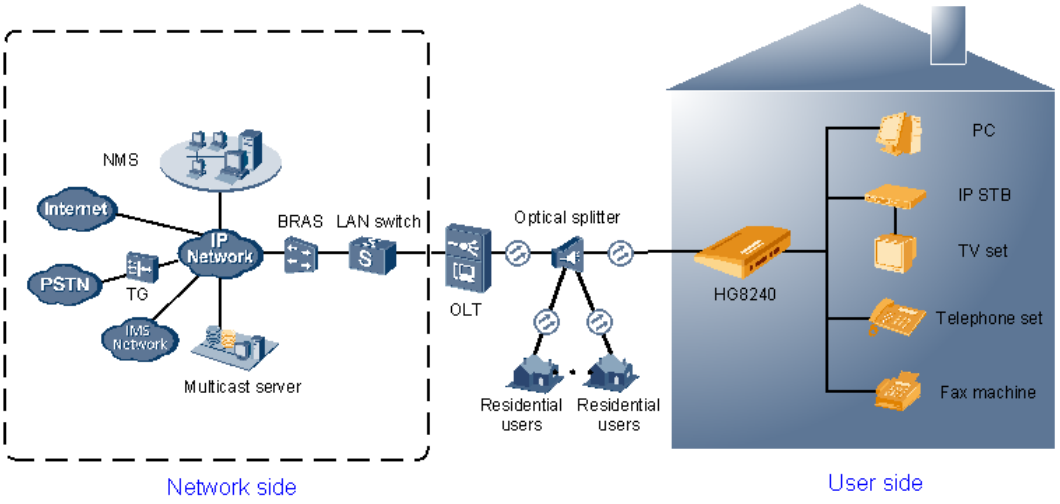
This topic describes the typical network applications of the HG8240/HG8245/HG8247.

As a network terminal, the HG8240/HG8245/HG8247 is deployed at the GPON access layer and connects home users and SOHO users to the Internet through optical upstream ports. On the local area network (LAN) side, the HG8240/HG8245/HG8247 provides abundant hardware ports to meet various network requirements of home users and SOHO users.

Network Topology of the HG8240

Figure 2-13 shows the position of the HG8240 in a network.

Figure 2-13 Network topology of the HG8240

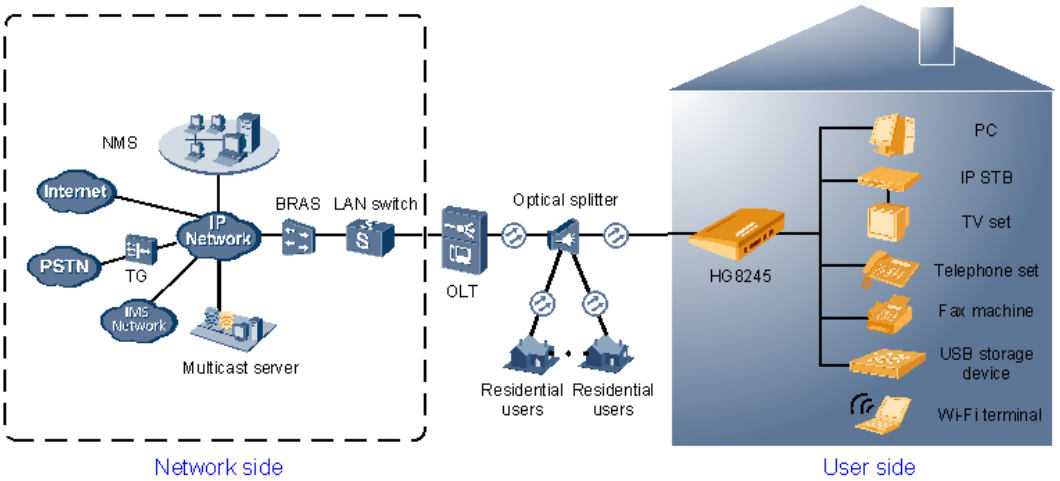


- In the upstream direction, the HG8240 is connected to the optical splitter and the network-side OLT through the passive optical network (PON) port, namely the OPTICAL port, to provide integrated access services.
- In the downstream direction, the HG8240 is connected to various terminals through the following LAN-side ports to implement the triple play service:
  - Four 10/100/1000M Base-T Ethernet ports, which can be connected to terminals such as PCs, STBs, and video phoned to provide the high-speed data and video services.
  - Two TEL ports, which can be connected to telephone sets or fax machines to provide superior and cost-effective voice over IP (VoIP), fax over IP (FoIP), and modem over IP (MoIP) services.

Network Topology of the HG8245

Figure 2-14 shows the position of the HG8245 in a network.

Figure 2-14 Network topology of the HG8245

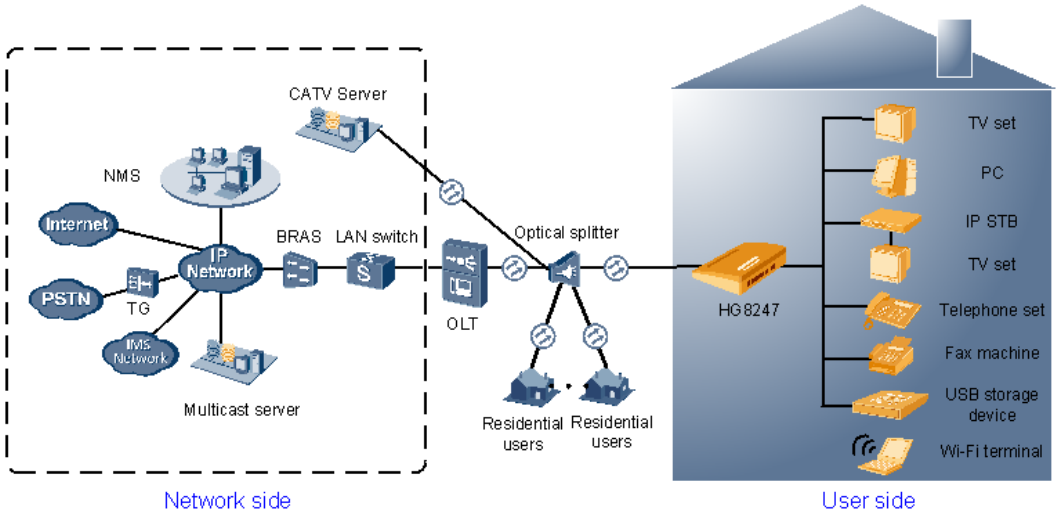


- In the upstream direction, the HG8245 is connected to the optical splitter and the network-side OLT through the PON port, namely the OPTICAL port, to provide integrated access services.
- In the downstream direction, the HG8245 is connected to various terminals through the following LAN-side ports to implement the triple play service:
  - Four 10/100/1000M Base-T Ethernet ports, which can be connected to terminals such as PCs, STBs, and video phones to provide the high-speed data and video services.
  - Two TEL ports, which can be connected to telephone sets or fax machines to provide superior and cost-effective VoIP, FoIP, and MoIP services.
  - Two Wi-Fi antennas, which can connect to Wi-Fi terminals wirelessly to provide a secure and reliable high-speed wireless network.
  - One USB port, which can be connected to a USB storage device to provide convenient storage and file sharing services within a home network.

Network Topology of the HG8247

Figure 2-15 shows the position of the HG8247 in a network.

Figure 2-15 Network topology of the HG8247



- In the upstream direction, the HG8247 is connected to the optical splitter and the network-side OLT through the PON port, namely the OPTICAL port, to provide integrated access services.
- In the downstream direction, the HG8247 is connected to various terminals through the following LAN-side ports to implement the triple play service:
  - One CATV port, which can be connected to a TV set to provide high-quality CATV service transmission.
  - Four 10/100/1000M Base-T Ethernet ports, which can be connected to terminals such as PCs, STBs, and video phones to provide the high-speed data and video services.
  - Two TEL ports, which can be connected to telephone sets or fax machines to provide superior and cost-effective VoIP, FoIP, and MoIP services.

- Two Wi-Fi antennas, which can connect to Wi-Fi terminals wirelessly to provide a secure and reliable high-speed wireless network.
- One USB port, which can be connected to a USB storage device to provide convenient storage and file sharing services within a home network.

3 Configuration Guide

About This Chapter

This topic describes how to configure the services of the HG8240/HG8245/HG8247 through the Web page.

3.1 OMCI Protocol

This topic describes the principles of the OMCI protocol and how to set up an OMCI channel.

3.1.1 Principles of the OMCI Protocol

This topic describes the principles of the OMCI protocol.

The optical network termination management and control interface (OMCI) protocol is defined in ITU-T Recommendation G.984.4. OMCI defines the format and the mechanism of the messages exchanged between the OLT and the ONT. OMCI also analyzes the service model of the ONT at a finer grain and defines a series of management entities used for service description.

OMCI specifies the format of the messages exchanged between the OLT and the ONT and the mechanisms of confirmation and retransmission. In this way, OMCI provides a logical channel for communication. Enabled with OMCI, the OLT supports the management and configuration of various types of ONTs, the offline configuration of ONTs, and the configuration recovery of online ONTs. Based on this mechanism, the ONT need not save the configuration information locally. This helps to provision services and maintain the terminal.

3.1.2 Setting Up an OMCI Channel

This topic describes how to set up an OMCI channel.

Context

The process of setting up an OMCI channel between the OLT and the ONT is performed automatically and requires no manual operation.

Procedure

Step 1 After being powered on, the ONT interacts with the OLT through Physical Layer OAM (PLOAM) messages to complete the registration.

Step 2 From the PLOAM messages, the OLT learns whether the ONT supports the OMCI protocol. If the ONT supports the OMCI protocol, an OMCI channel is set up between the OLT and the ONT.

Step 3 After the OMCI channel is set up, the OLT issues the configuration and management information about the ONT to the ONT through the OMCI channel, and the ONT uploads its status and alarm information to the OLT through the OMCI channel.

NOTE

- The PLOAM protocol is defined in ITU-T Recommendation G.984.3 and is used for the operation, maintenance, and management at the physical layer.
- OMCI is a master-slave management protocol. The OLT functions as the master device and the ONT as the slave device. The OLT controls multiple ONTs through the OMCI channel.

----End

3.2 Logging In Through the Web Page

This topic describes the data plan for and procedure of logging in through the Web Page.

3.2.1 Data Plan

This topic describes the data plan for logging in through the Web Page.

Before setting up the configuration environment, set parameters as listed in **Table 3-1**.

Table 3-1 Parameters required for setting up the configuration environment

Parameter	Description
User name and password	Default settings: ● Administrator: – User name: **telecomadmin** – Password: **admintelecom** ● Common user: – User name: **root** – Password: **admin**
LAN IP address and subnet mask	Default settings: ● IP address: 192.168.100.1 ● Subnet mask: 255.255.255.0
IP address and subnet mask of the PC	Set the IP address of the PC to be in the same subnet as the LAN IP address of the HG8240/HG8245/HG8247. For example: ● IP address: 192.168.100.100 ● Subnet mask: 255.255.255.0

The differences between the configuration rights of an administrator and a common user are as follows:

- An administrator has the right to configure all the parameters on the Web Page.
- The parameters of certain nodes are unavailable to a common user. Such parameters are:
  - **LAN** > **LAN Port Work Mode**
  - **Voice**

  - **Network Application** > **Portal Configuration** and **Network Application** > **Terminal Limit Configuration**
  - **System Tools** > **Time Setting**, **System Tools** > **TR-069**, and **System Tools** > **ONT Mode**
  - **Download Configuration File** and **Upload Configuration File** on the **System Tools** > **Configuration File** page
- A common user has no right to configure the parameters of certain nodes, such as **WAN** > **WAN Configuration**.

3.2.2 Procedure

This topic describes how to log in through the Web Page.

Procedure

Step 1 Use a network cable to connect a LAN port of the HG8240/HG8245/HG8247 to a PC.

Step 2 Ensure that the Internet Explorer of the PC does not use the proxy server. The following considers Internet Explorer 6.0 as an example to describe how to check whether the Internet Explorer uses the proxy server.

1. Start the Internet Explorer, and choose **Tools** > **Internet Options** from the main menu of the Internet Explorer window. Then, the **Internet Options** window is displayed.
2. Click **Connections** to display the **Connections** tab page, and then click **LAN settings**.
3. In the **Local Area Network (LAN) Settings** window, deselect **Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections).** under **Proxy server**. If this option is selected, deselect it to cancel the settings, and then click **OK**.

Step 3 Log in through the Web Page.

1. Input **http://192.168.100.1** in the address bar of the Internet Explorer (192.168.100.1 is the default IP address of the HG8240/HG8245/HG8247), and then press **Enter** to display the login window.
2. In the login window, input the user name and password. (For default settings of the user name and password, see **3.2.1 Data Plan**.) After the password authentication is successful, the Web Page is displayed.

----End

3.3 Overview of the Web Page

This topic describes the Web page of the HG8240/HG8245/HG8247.

The Web page of the HG8240/HG8245/HG8247 consists of the following parts:

- Navigation tree on the left: Click a link and then perform the configuration on the displayed page.
- Configuration management pane on the right: The contents displayed on the right depend on the function selected in the navigation tree on the left. For details, see the corresponding configuration page.

NOTE

- The Web page may vary with the software version. The Web page for an administrator and that for a common user are different. This section considers the Web page for an administrator as an example.
- The HG8240/HG8245/HG8247 has similar Web pages. This section considers the HG8247 as an example to describe its Web page. The HG8240 does not provide the Wi-Fi function and therefore its Web page does not have a Wi-Fi node.

3.3.1 Status
This topic describes how to query the information about the WAN interface, VoIP interface, and Wi-Fi port through the Web page.

3.3.2 WAN
This topic describes how to configure the WAN interface through the Web page.

3.3.3 LAN
This topic describes how to set the working mode of the LAN port, the LAN host, and the DHCP server through the Web page.

3.3.4 WLAN
This topic describes how to perform basic and advanced configurations of the WLAN through the Web page.

3.3.5 Security
This topic describes how to configure the IP address filter, MAC address filter, DoS, and ONT access control through the Web page.

3.3.6 Route
This topic describes how to configure the default route and static route through the Web page.

3.3.7 Forward Rules
This topic describes how to configure the DMZ, port mapping, and port trigger through the Web page.

3.3.8 Network Applications
This topic describes how to configure the USB, ALG, UPnP, and ARP through the Web page.

3.3.9 Voice
This topic describes how to configure the voice service through the Web page.

3.3.10 System Tools
This topic describes how to use the system tools on the Web page, including using the tools to restart the device, restore the default configuration, and conduct the test.

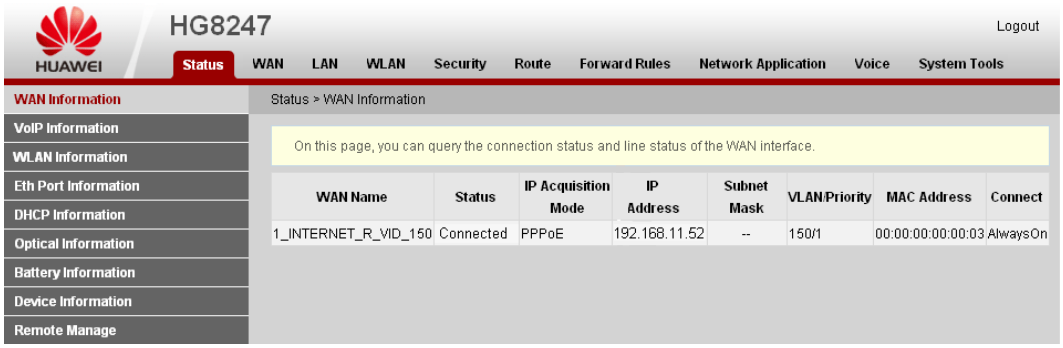
3.3.1 Status

This topic describes how to query the information about the WAN interface, VoIP interface, and Wi-Fi port through the Web page.

WAN Information

Click the **Status** tab and then choose **WAN Information** from the navigation tree. In the pane on the right, you can view the status of the WAN interface, mode of obtaining an IP address, IP address, and subnet mask, as shown in **Figure 3-1**.

Figure 3-1 WAN Information



VoIP Information

Click the **Status** tab and then choose **VoIP Information** from the navigation tree. Then, in the pane on the right, you can query the information such as user status and call status. The SIP configuration page is slightly different from the H.248 configuration page, as shown in **Figure 3-2** and **Figure 3-3**.

Figure 3-2 VoIP Information - SIP

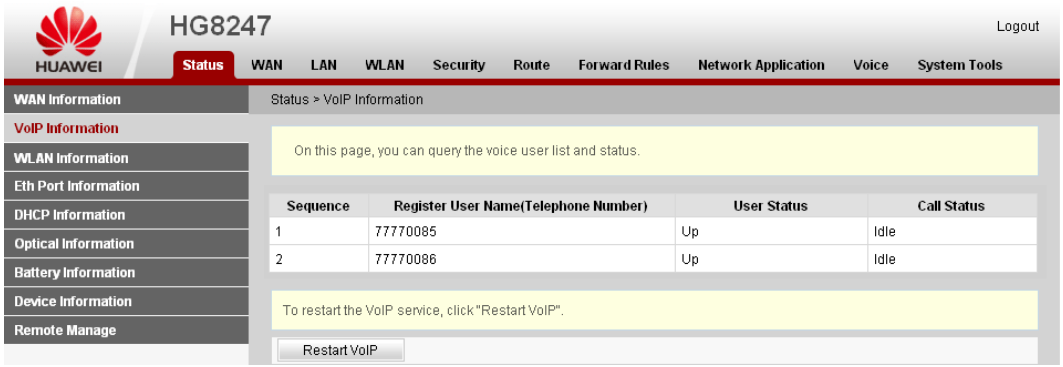
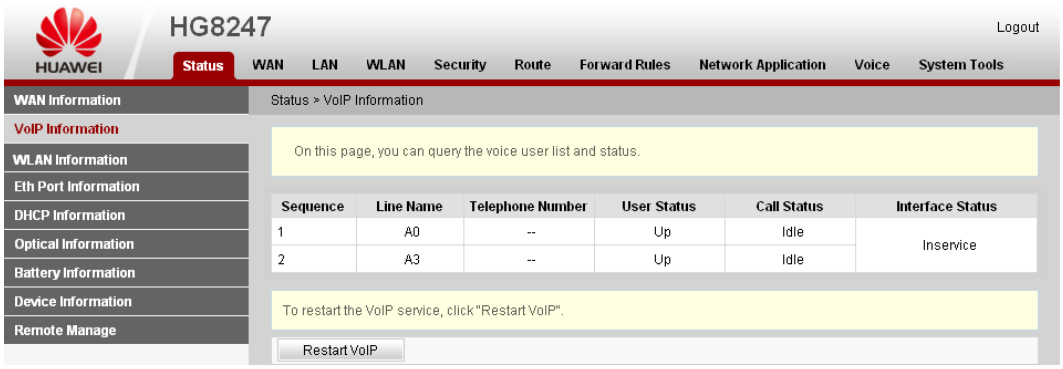


Figure 3-3 VoIP Information - H.248

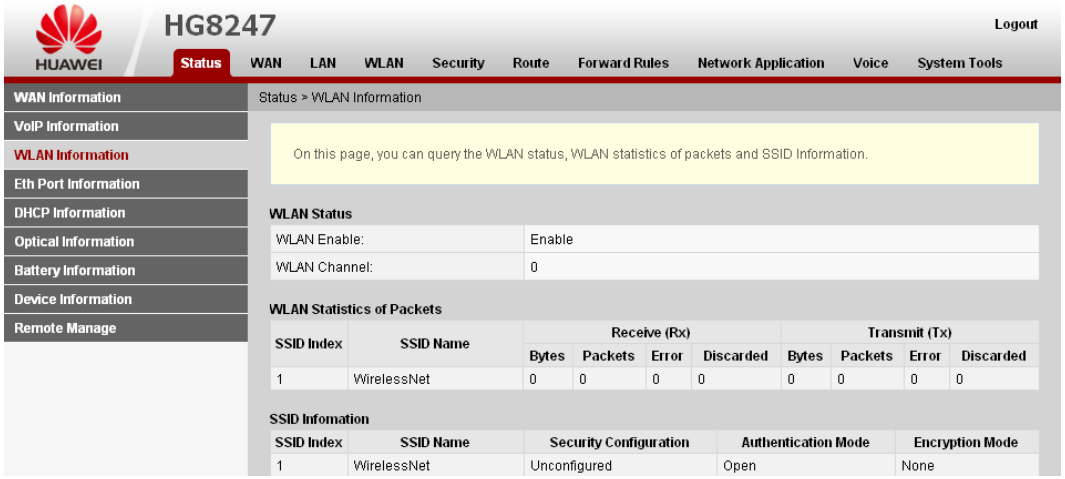


If the VoIP service needs to be restarted, click **Reset VoIP** in the pane on the right.

WLAN Information

Click the **Status** tab and then choose **WLAN Information** from the navigation tree. Then, in the pane on the right, you can query the information such as WLAN status, WLAN packet statistics, and SSID, as shown in **Figure 3-4**.

Figure 3-4 WLAN Information

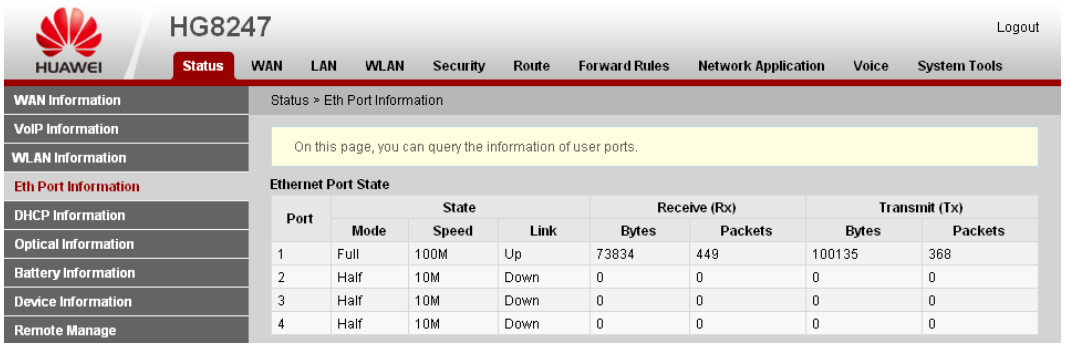


- In the pane on the right, click **Enable** or **Disable** to enable or disable the Wi-Fi function.
- Click the link in blue to go to the corresponding configuration page.

Eth Port Information

Click the **Status** tab and then choose **Eth Port Information** from the navigation tree. In the pane on the right, you can view the duplex mode, speed, and status of the ETH port, as shown in **Figure 3-5**.

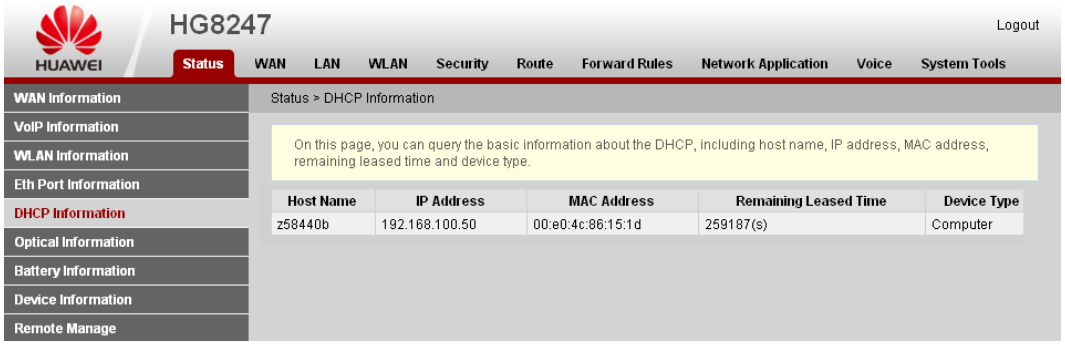
Figure 3-5 Eth Port Information



DHCP Information

Click the **Status** tab and then choose **DHCP Information** from the navigation tree. In the pane on the right, you can view the basic information about the DHCP server, including the IP address assigned to the connected PC through DHCP, MAC address, and remaining lease time, as shown in **Figure 3-6**.

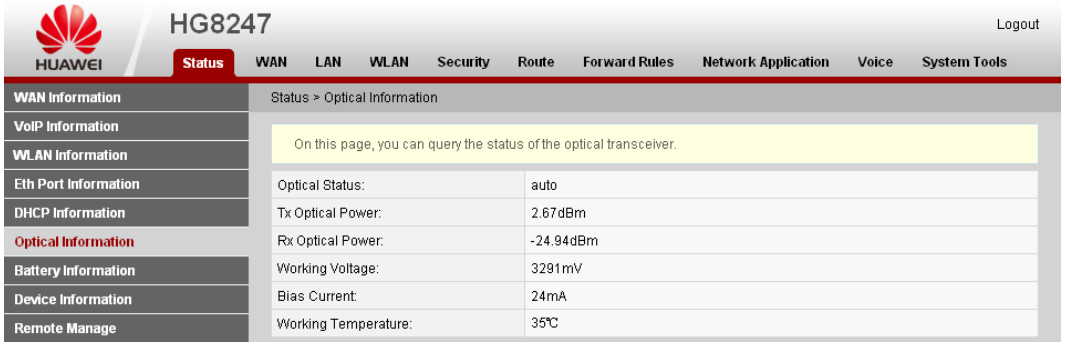
Figure 3-6 DHCP Information



Optical Information

Click the **Status** tab and then choose **Optical Information** from the navigation tree. In the pane on the right, you can view the optical status, transmit optical power, receive optical power of the optical module, as shown in **Figure 3-7**.

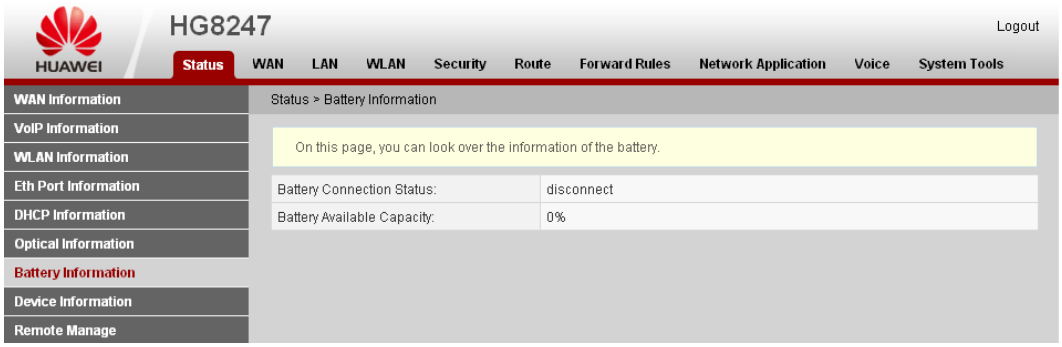
Figure 3-7 Optical Information



Battery Information

Click the **Status** tab and then choose **Battery Information** from the navigation tree. In the pane on the right, you can view the connection status and available capacity of the external standby battery, as shown in **Figure 3-8**.

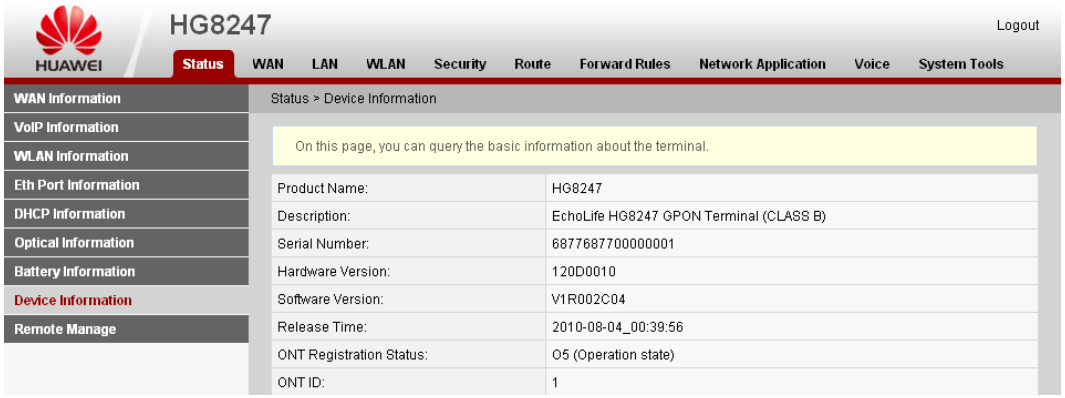
Figure 3-8 Battery Information



Device Information

Click the **Status** tab and then choose **Device Information** from the navigation tree. In the pane on the right, you can view the product name, hardware version, and software version, as shown in **Figure 3-9**.

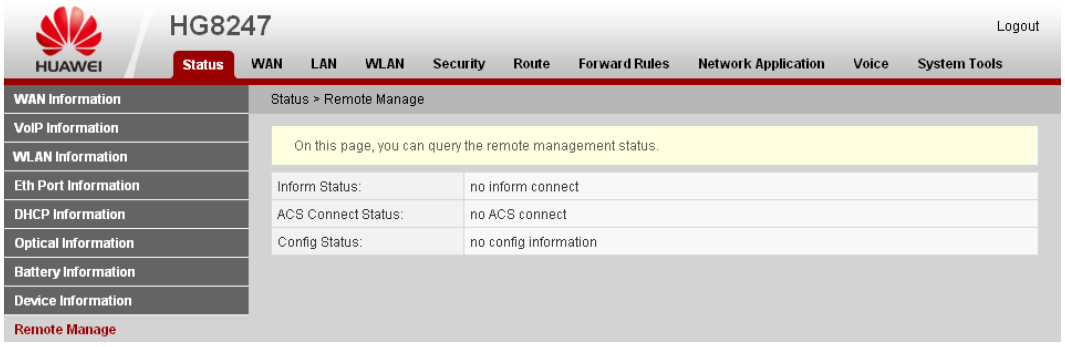
Figure 3-9 Device Information



Remote Management

Click the **Status** tab and then choose **Remote Manage** from the navigation tree. In the right pane, view the remote management status and service application status, as shown in **Figure 3-10**.

Figure 3-10 Remote management



3.3.2 WAN

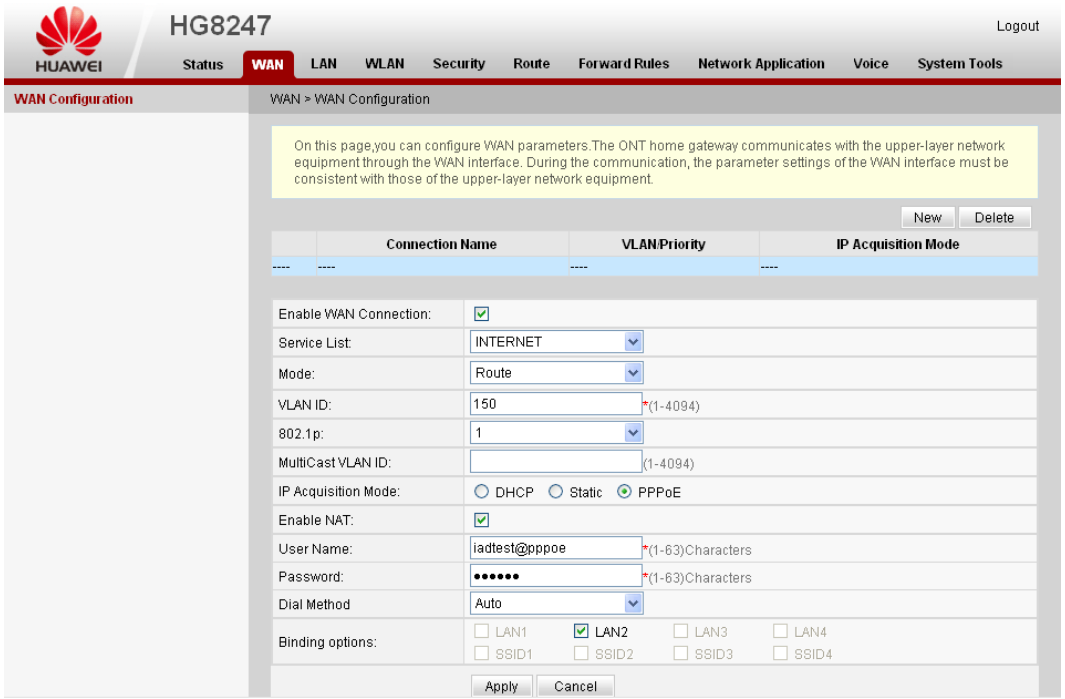
This topic describes how to configure the WAN interface through the Web page.

WAN Configuration

- WAN Configuration - route

  1. Click the **WAN** tab and then choose **WAN Configuration** from the navigation tree. In the pane on the right, click **New**. In the dialog box that is displayed, set **Mode** to **Route**, as shown in **Figure 3-11**.

Figure 3-11 WAN Configuration - Route



  2. Click **Apply**.

Table 3-2 describes the parameters related to the WAN in route mode.

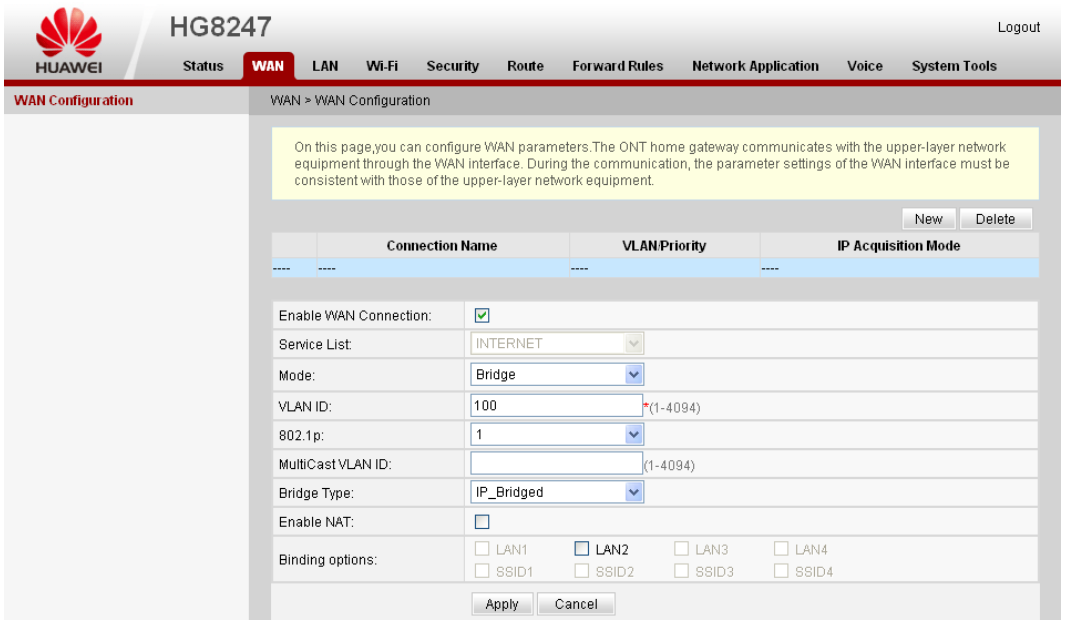
Table 3-2 Parameters related to the WAN in route mode

Parameter	Description
Enable	Indicates whether to enable the WAN connection.
Service List	Indicates the service type of the WAN interface. It can be set to TR069, INTERNET, TR069_INTERNET, VOIP, TR069_VOIP, VOIP_INTERNET, TR069_VOIP_INTERNET, IPTV or OTHER.
VLAN ID	Indicates the VLAN ID. It ranges from 1 to 4094. The VLAN ID must be the same as the CVLAN ID on the OLT.
802.1p	Indicates the 802.1p value. It ranges from 0 to 7.
IP Acquisition Mode	Indicates the mode of obtaining an IP address on the ONT. It can be set to DHCP, static, or PPPoE. ● In DHCP mode, the IP address is dynamically obtained. ● In static mode, the IP address is set statically. You need to enter the IP address, subnet mask, IP addresses of the active and standby DNS servers, and default gateway. ● In PPPoE mode, you need to enter the user name and password.
NAT	Indicates whether to enable the NAT function.
Vendor ID	Set the option 60 field on the DHCP client. The IP address can be obtained from the DHCP server only when the option 60 field is the same as the setting on the upper-layer DHCP server. When **IP Acquisition Mode** is set to **DHCP**, this parameter is configurable.
Binding options	Used to bind the WAN interface to the LAN port or to the wireless SSID. **NOTE** Before setting the binding options, set the work mode of the LAN port or the wireless SSID. The binding options can be set only after the work mode or wireless SSID is successfully set. For details, see **LAN Port Work Mode** and **WLAN Configuration**.

- WAN Configuration - bridge

  1. Click the **WAN** tab and then choose **WAN Configuration** from the navigation tree. In the pane on the right, click **New**. In the dialog box that is displayed, set **Mode** to **Bridge**, as shown in **Figure 3-12**.

Figure 3-12 WAN Configuration - Bridge



  2. Click **Apply**.

Table 3-3 describes the parameters related to the WAN in bridge mode.

Table 3-3 Parameters related to the WAN in bridge mode

Parameter	Description
Enable	Indicates whether to enable the WAN connection.
Service List	Indicates the service type of the WAN interface. It can be set to TR069, IPTV or OTHER.
VLAN ID	Indicates the VLAN ID. It ranges from 1 to 4094. The VLAN ID must be the same as the CVLAN ID on the OLT.
MultiCast VLAN ID	The multicast VLAN ID ranges from 1 to 4094. The multicast VLAN ID must be the same as the multicast VLAN ID on the OLT.

Parameter	Description
Bridge Type	It can be set to IP or PPPoE.
Binding options	Used to bind the WAN interface to the LAN port or to the wireless SSID. **NOTE** Before setting the binding options, set the work mode of the LAN port or the wireless SSID. The binding options can be set only after the work mode or wireless SSID is successfully set. For details, see **LAN Port Work Mode** and **WLAN Configuration**.

NOTE

- WAN in route mode: The ONT functions as a gateway. The IP address of the ONT can be obtained through DHCP, Static, or PPPoE. The IP address of the PC connected to the ONT can be obtained from the DHCP address pool of the ONT or can be set manually.
- WAN in bridge mode: The ONT functions as a relay and does not process data. The ONT does not obtain the IP address allocated by the upper-layer device and it does not allow manual configuration of a static IP address. The IP address of the device connected to the ONT can be obtained through DHCP, PPPoE, or static.
  - In the case of the DHCP mode, you need to set the DHCP relay. After configuration is complete, the user-side IP address is obtained from the upper-layer device. For the detailed procedure, see **DHCP Server Configuration**.
  - In the case of the PPPoE mode, the user-side IP address is obtained through PPPoE authentication of the upper-layer device.

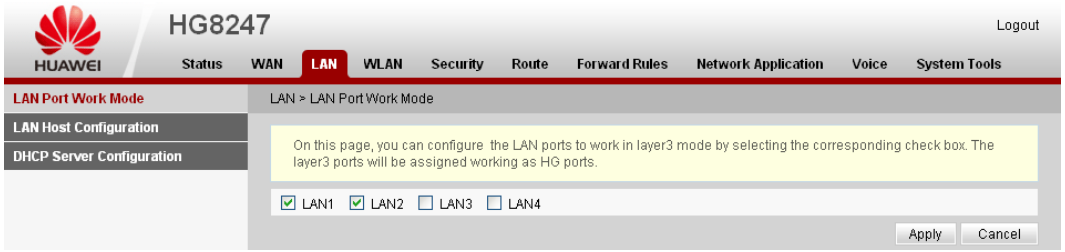
3.3.3 LAN

This topic describes how to set the working mode of the LAN port, the LAN host, and the DHCP server through the Web page.

LAN Port Work Mode

1. Click the **LAN** tab and then choose **LAN Port Work Mode** from the navigation tree. In the pane on the right, determine whether the LAN port works in layer 3 mode, as shown in **Figure 3-13**.

Figure 3-13 LAN Port Work Mode



NOTE

If the check box corresponding to the LAN port is selected, it indicates that the LAN port works in layer 3 mode, that is, the gateway mode; if the check box corresponding to the LAN port is deselected, it indicates that the LAN port works in layer 2 mode, that is, the bridge mode.

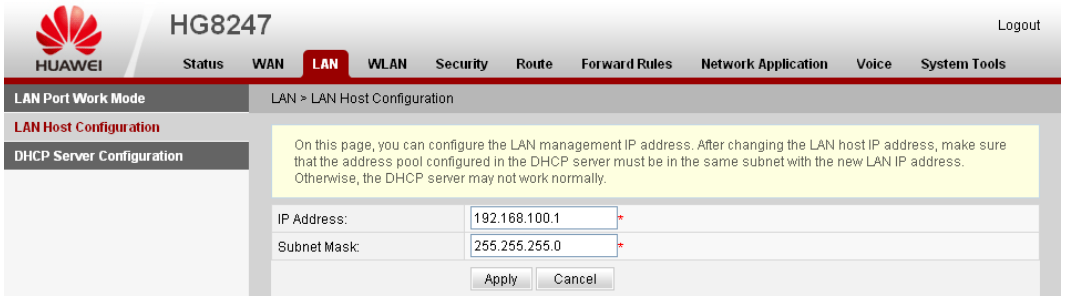
By default, the check boxes corresponding to all LAN ports are deselected, that is, all LAN ports work in layer 2 mode.

2. Click **Apply**.

LAN Host Configuration

1. Click the **LAN** tab and then choose **LAN Host Configuration** from the navigation tree. In the pane on the right, set the management IP address and subnet mask of the LAN host, as shown in **Figure 3-14**.

Figure 3-14 LAN Host Configuration



NOTE

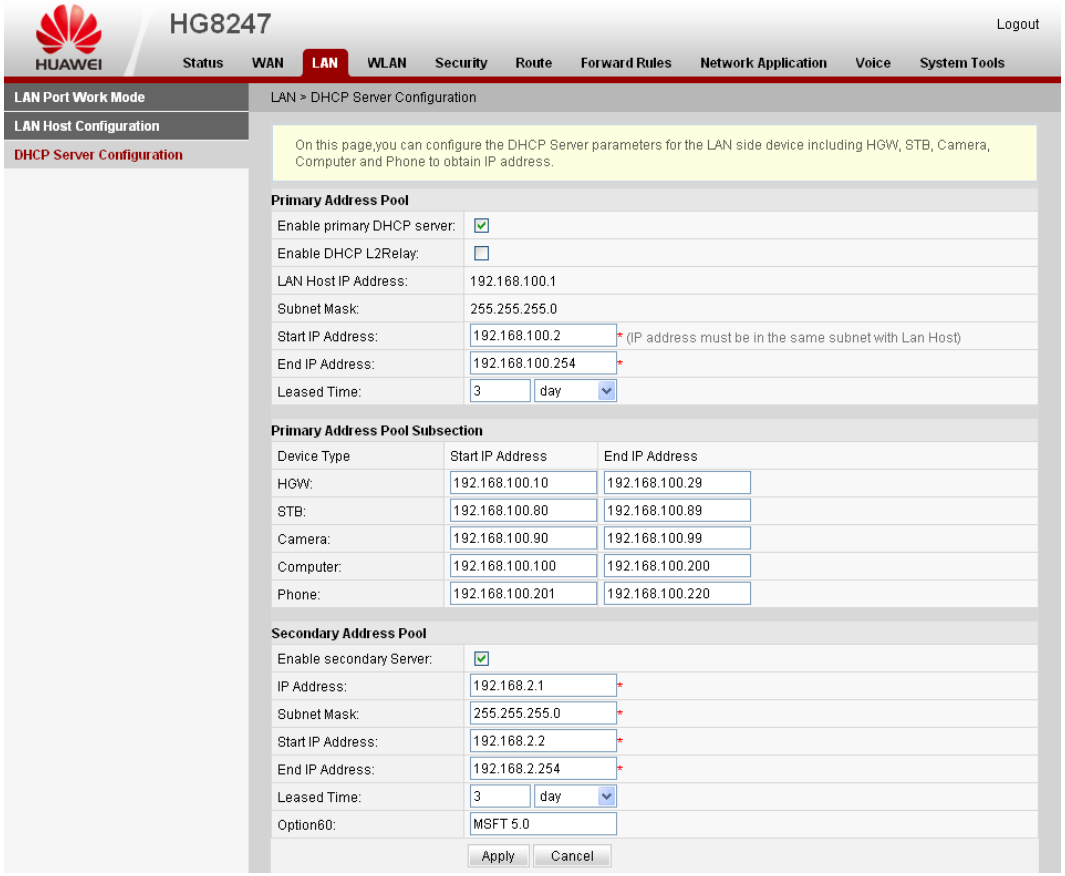
The IP address of the device connected to the LAN port must be in the same subnet as the management IP address. In this way, you can access an ONT through the Web page and perform query and management. You can manually set the IP address of the device connected to the LAN port to be on the same network segment as the management IP address, or start the DHCP server to set the IP address in the DHCP address pool to be on the same network segment as the management IP address. For details, see **DHCP Server Configuration**.

2. Click **Apply**.

DHCP Server Configuration

1. Click the **LAN** tab and then choose **DHCP Server Configuration** from the navigation tree. In the pane on the right, you can configure the LAN side DHCP address pool for the ONT that functions as a gateway. After the configuration, the PC connected to the LAN port can automatically obtain an IP address from the address pool, as shown in **Figure 3-15**.

Figure 3-15 DHCP Server Configuration



2. Click **Apply**.

Table 3-4 describes the parameters related to the DHCP server.

Table 3-4 Parameters related to the DHCP server

Parameter	Description
Enable primary DHCP server	Indicates whether to enable the primary DHCP server. If the check box is selected, you can set the primary DHCP server.

Parameter	Description
Enable DHCP L2 Relay	Indicates whether to enable the DHCP L2 Relay. The DHCP relay is a process in which cross-subnet forwarding of DHCP broadcast packets is implemented between the DHCP client and the DHCP server. In this manner, the DHCP clients in different physical subnets can obtain IP addresses which are dynamically allocated from the same DHCP server. ● If **Mode** of the WAN port is **Route**, the IP address of the ONT is obtained from upper-layer DHCP servers in different subnets and the user-side IP addresses are obtained from the DHCP address pool of the ONT. ● If **Mode** of the WAN port is **Bridge**, the ONT functions as a bridge. Thus, the ONT does not have an IP address. The user-side IP addresses are obtained from upper-layer DHCP servers in different subnets.
Start IP Address	Indicates the start IP address in the IP address pool on the primary DHCP server. It must be in the same subnet as that of the IP address set in "**LAN Host Configuration**". Otherwise, the DHCP server fails to work normally.
End IP Address	Indicates the end IP address in the IP address pool on the active DHCP server. It must be in the same subnet as that of the IP address set in "**LAN Host Configuration**". Otherwise, the DHCP server fails to work.
Leased Time	Indicates the lease time of the IP address pool on the active DHCP server. Options: minute, hour, day, and week.
Enable secondary DHCP server	Indicates whether to enable the secondary DHCP server. If the check box is selected, you can set the secondary DHCP server.
IP Address	Indicates the IP address of the secondary DHCP server.
Subnet Mask	Indicates the subnet mask of the secondary DHCP server.
Start IP Address	Indicates the start IP address in the IP address pool on the secondary DHCP server.

Parameter	Description
End IP Address	Indicates the end IP address in the IP address pool on the secondary DHCP server.
Leased Time	Indicates the lease time of the IP address pool on the secondary DHCP server. Options: minute, hour, day, and week.
Option60	Indicates the option 60 field of the secondary DHCP server. A user-side DHCP client can obtain an IP address from the IP address pool on the secondary DHCP server only when the option 60 field carried by the user-side DHCP client is the same as this setting.

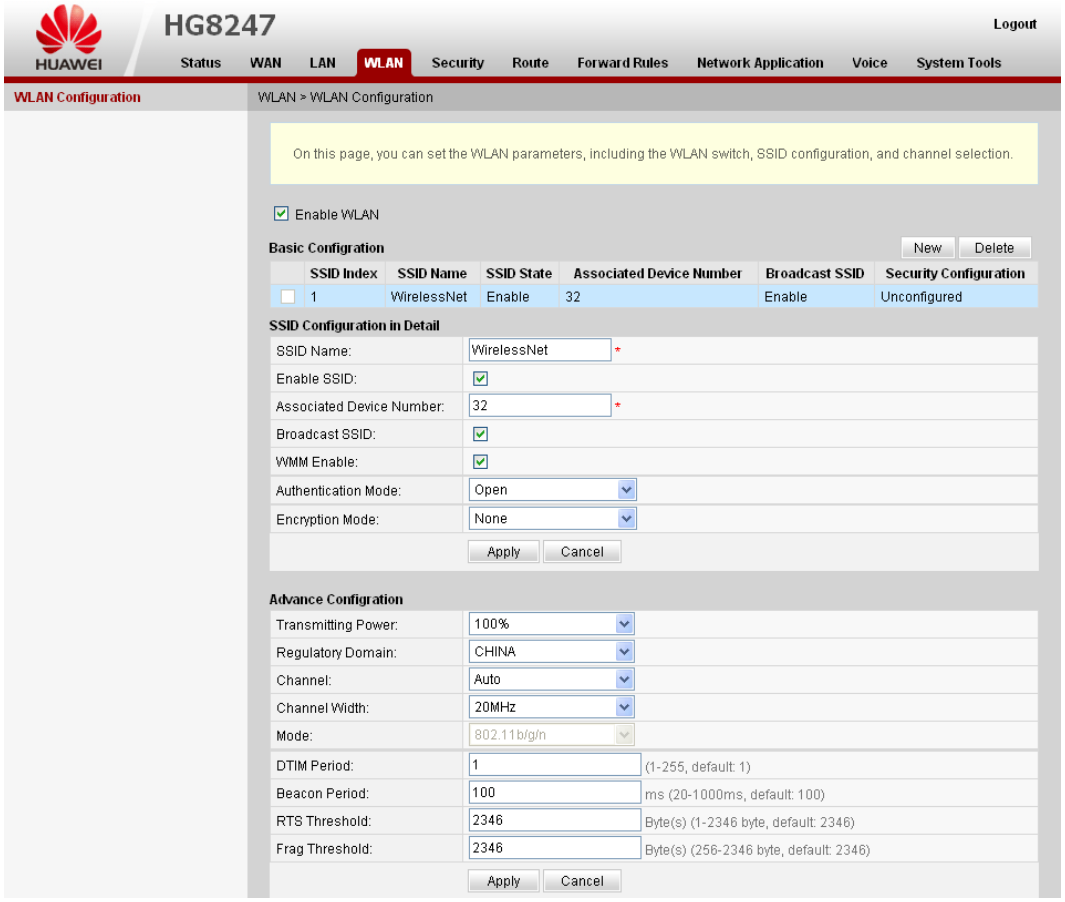
3.3.4 WLAN

This topic describes how to perform basic and advanced configurations of the WLAN through the Web page.

WLAN Configuration

1. Click the **WLAN** tab and then choose **WLAN Configuration** from the navigation tree. In the pane on the right, select the **Enable WLAN** option box. In the dialog box that is displayed, set the basic WLAN parameters, including the SSID, authentication mode, and encryption mode, as shown in **Figure 3-16**.

Figure 3-16 WI-FI Configuration



2. Click **Apply**.

Table 3-5 describes the basic Wi-Fi parameters.

Table 3-5 Basic Wi-Fi parameters

Parameter	Description
Enable WLAN	Indicates whether to enable the wireless network. The following parameters can be set only when the wireless network is enabled.
SSID	Indicates the name of the wireless network. It is used to differentiate different wireless networks. It consists of a maximum of 32 characters, without space or Tab character.
Associated Device Number	Specifies the number of STAs. It ranges from 1 to 32.

Parameter	Description
Hide Broadcast	Indicates whether to enable or hide broadcast. ● If the option box is not selected, it indicates that the SSID broadcast function is enabled. The ONT periodically broadcasts the SSID, that is, the name of the wireless network. In this way, any STA can search for the wireless network. ● If the option box is selected, it indicates that the SSID broadcast function is disabled. The SSID is hidden, and the STA cannot search for the wireless network. The SSID can be obtained only through a request.
WMM Enable	Indicates whether to enable the QoS of the wireless network. After the function is enabled, the video and voice QoS can be improved.
Authentication Mode	Indicates the authentication mode for the STA to request access to the wireless network. The mode can be Open, Shared, WPA Pre-Shared Key, WPA2 Pre-Shared Key, WPA Enterprise, WPA2 Enterprise, or Wi-Fi Protected Setup. It is set to open by default, that is, the STA can access the network without authentication.
Encryption Mode	Indicates the encryption mode for the STA to request access to the wireless network. The encryption mode and encryption parameters vary with the authentication mode. ● If the authentication mode is set to **Open**, the encryption mode can be set to **None** or **WEP**. ● If the authentication mode is set to **Shared**, the encryption is **WEP**. ● If the authentication mode is set to **WPA Pre-Shared Key**, **WPA2 Pre-Shared Key**, **WPA Enterprise**, or **WPA2 Enterprise**, the encryption mode can be set to **AES**, **TKIP**, or **TKIP&AES**. ● If the authentication mode is set to **Wi-Fi Protected Setup**, **WPS Mode** must be set to **Pin** or **Push-button**. **NOTE** ● **Pin** indicates the pin-based encryption. ● **Push-button** indicates the push-button-based encryption. When **WPS Mode** is set to **Push-button**, press the **WPS** button on the ONT and press the WPS icon included with the STA within two minutes, or run the WPS setup program in the STA to install the WPS software.

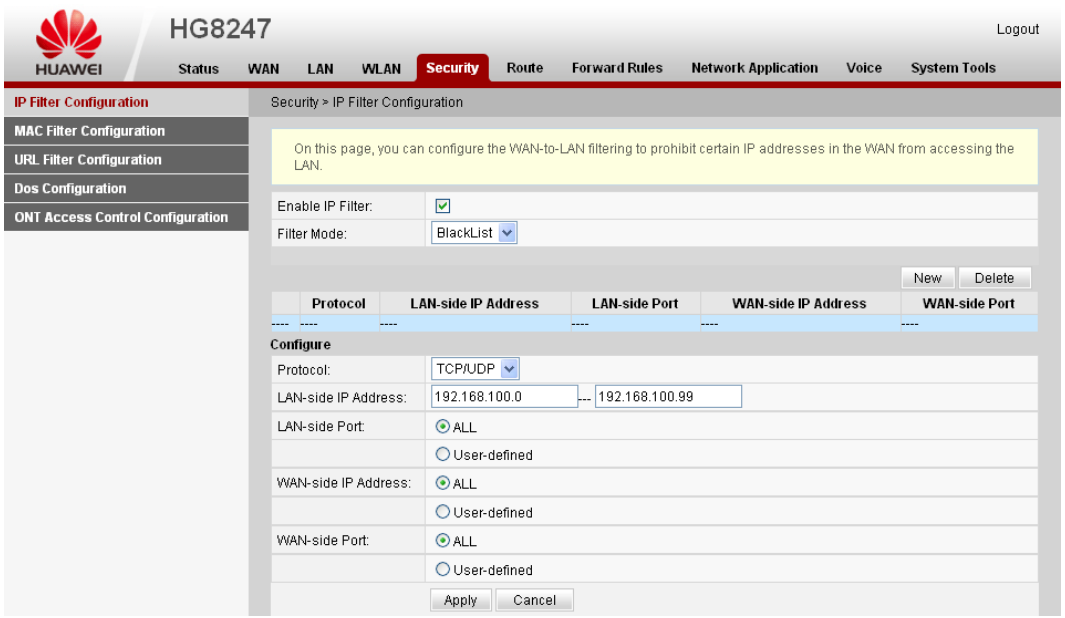
3.3.5 Security

This topic describes how to configure the IP address filter, MAC address filter, DoS, and ONT access control through the Web page.

IP Filter Configuration

1. Click the **Security** tab and then choose **IP Filter Configuration** from the navigation tree. In the pane on the right, enable the IP address filter function. After selecting the filter mode, click **New**. Then, in the dialog box that is displayed, configure the rule for filtering IP addresses from the WAN interface to the LAN port, as shown in **Figure 3-17**.

Figure 3-17 IP Filter Configuration



2. Click **Apply**.

The IP address filter function is a security mechanism configured on the residential gateway. It enables or disables all or partial ports in an Intranet IP address segment to communicate with all or partial ports in an Extranet IP address segment. The IP address filter configuration is used to limit communication between an Intranet device and an Extranet device.

Table 3-6 describes the parameters related to the IP address filter.

Table 3-6 Parameters related to the IP address filter

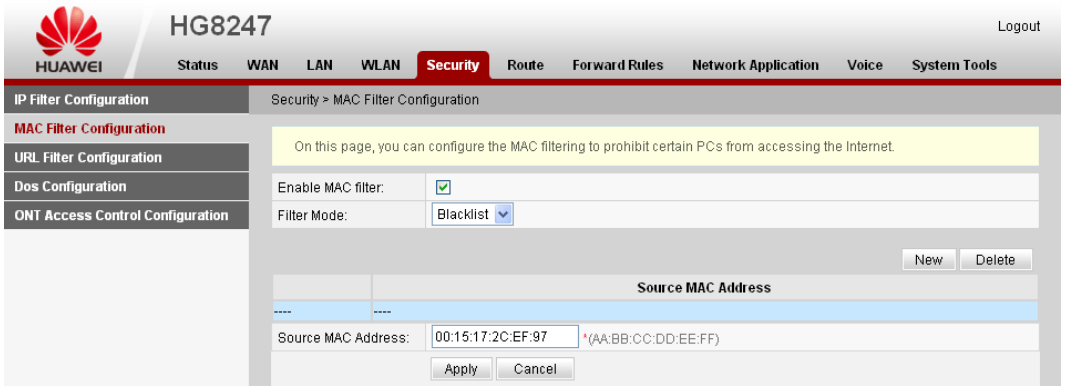
Parameter	Description
IP address filter function	Indicates whether to enable the IP address filter function by clicking **OPEN** or **CLOSE**.
Filter Mode	Indicates the IP address filter rule of the blacklist or whitelist. ● Blacklist: indicates that the data meeting the rule in the filter rule list is not allowed to pass. ● Whitelist: indicates that the data meeting the rule in the filter rule list is allowed to pass. The filter mode is global config mode. Thus, the blacklist and whitelist mode cannot be used at the same time.

Parameter	Description
Protocol	Indicates the type of the protocol, which may be TCP/UDP, TCP, UDP, ICMP, or ALL.
LAN-side IP Address	Indicates the IP address on the LAN side.
LAN-side Port	Indicates the port ID on the LAN side. This parameter can be configured when **Protocol** is set to **TCP/UDP**, **TCP** or **UDP**.
WAN-side IP Address	Indicates the IP address on the WAN side.
WAN-side Port	Indicates the ID of the WAN side port. This parameter can be configured when **Protocol** is set to **TCP/UDP**, **TCP** or **UDP**.

MAC Filter Configuration

1. Click the **Security** tab and then choose **MAC Filter Configuration** from the navigation tree. In the pane on the right, after enabling MAC filter and selecting the filter mode, click **New**. On the dialog box that is displayed, configure the MAC filter rule for the PC to access the Internet, as shown in **Figure 3-18**.

Figure 3-18 MAC Filter Configuration



2. Click **Apply**.

The MAC address lists of PCs in the network are saved on the ONT. Configuring MAC filter rules enables the PCs that conform to the rules to access the Internet service or disables the PCs that do not conform to the rules to access the Internet service. A PC may have more than one IP addresses but a unique MAC address. Therefore, configuring MAC filter rules effectively controls the Internet service access rights of PCs in a LAN.

Table 3-7 describes the parameters related to the MAC filter.

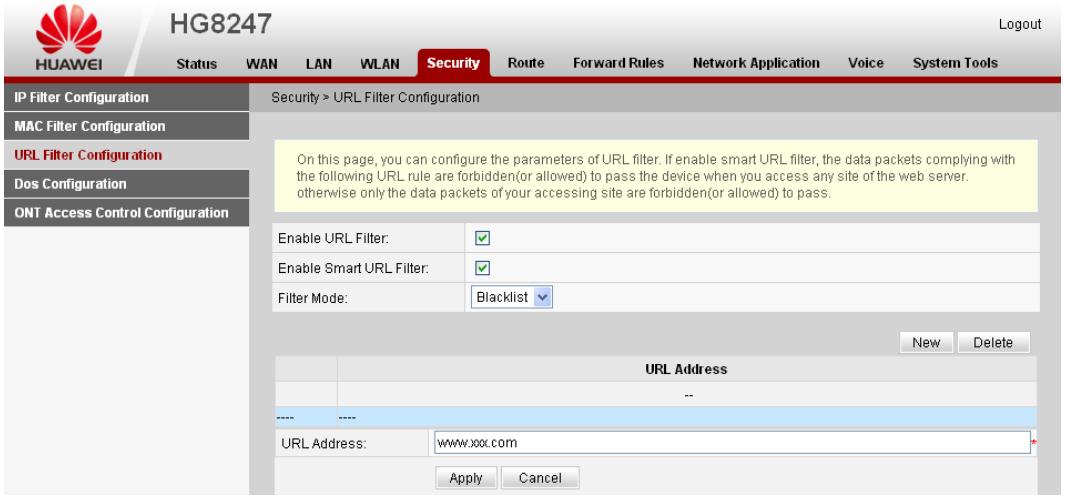
Table 3-7 Parameters related to the MAC address filter

Parameter	Description
MAC address filter function	Indicates whether to enable the MAC address filter function by clicking **OPEN** or **CLOSE**.
Filter Mode	Indicates the MAC address filter rule of the blacklist or whitelist. ● Blacklist: indicates that the data meeting the rule in the filter rule list is not allowed to pass. ● Whitelist: indicates that the data meeting the rule in the filter rule list is allowed to pass. The filter mode is global config mode. Thus, the blacklist and whitelist mode cannot be used at the same time.
Source MAC Address	Indicates the source MAC address in the MAC address filter rule.

URL Filter Configuration

1. Click the **Security** tab and then choose **URL Filter Configuration** from the navigation tree. In the pane on the right, after enabling URL filter and selecting the filter mode, click **New**. On the dialog box that is displayed, configure the URL filter rule for the PC to access the Internet, as shown in **Figure 3-19**.

Figure 3-19 URL Filter Configuration

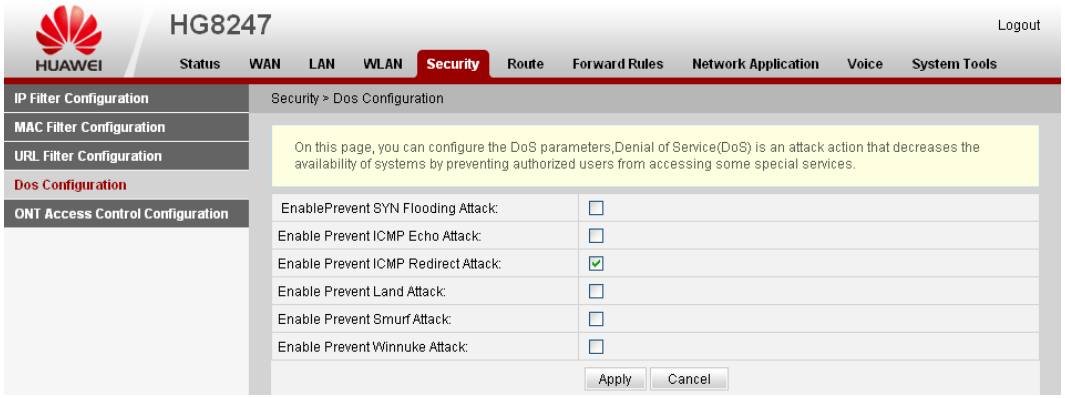


2. Click **Apply**.

DoS Configuration

1. Click the **Security** tab and then choose **DoS Configuration** from the navigation tree. In the pane on the right, determine whether to enable the DoS attack-preventive configuration, as shown in **Figure 3-20**.

Figure 3-20 DoS Configuration



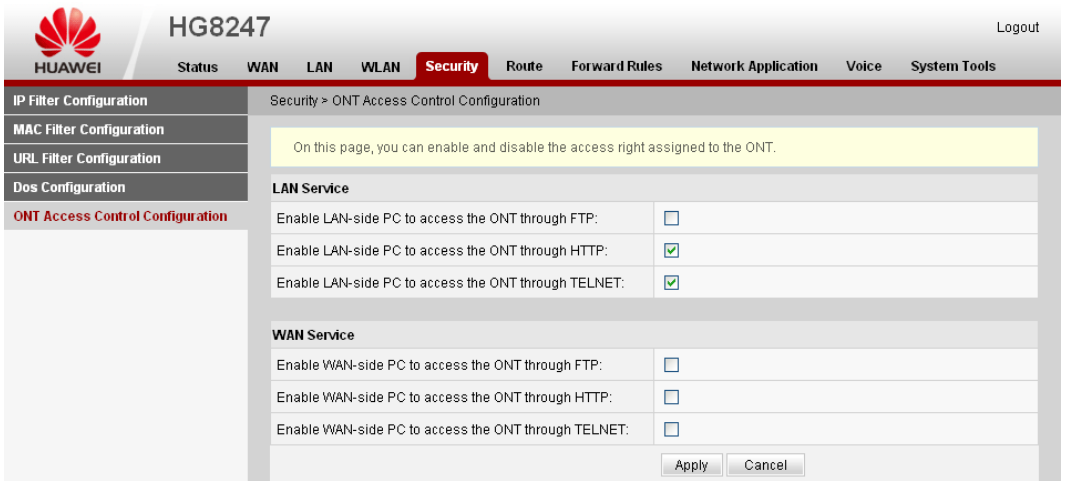
2. Click **Apply**.

Denial of service (DoS) attack is a network-based attack that denies users from accessing the Internet. The DoS attack initiates a large number of network connections, making the server or the program running on the server break down or server resources exhaust or denying users to access the Internet service. As a result, the network service fails.

ONT Access Control Configuration

1. Click the **Security** tab and then choose **ONT Access Control Configuration** from the navigation tree. In the pane on the right, configure the rule of ONT access control, as shown in **Figure 3-21**.

Figure 3-21 ONT Access Control Configuration



2. Click **Apply**.

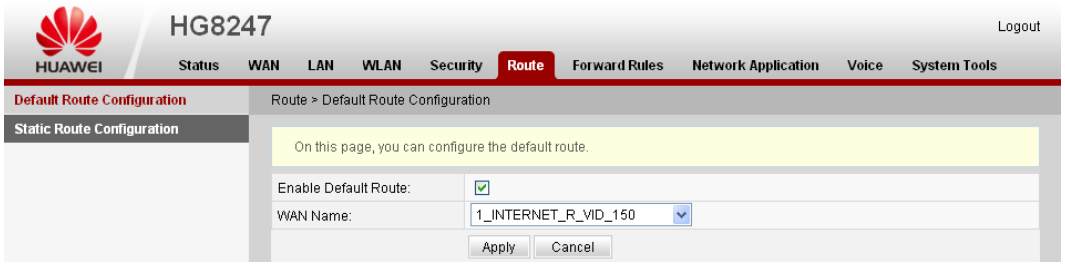
3.3.6 Route

This topic describes how to configure the default route and static route through the Web page.

Default Route Configuration

1. Click the **Route** tab and then choose **Default Route Configuration** from the navigation tree. In the pane on the right, select or deselect the **Default Route** option button to enable or disable the default route of the system, as shown in **Figure 3-22**.

Figure 3-22 Default Route Configuration



NOTE

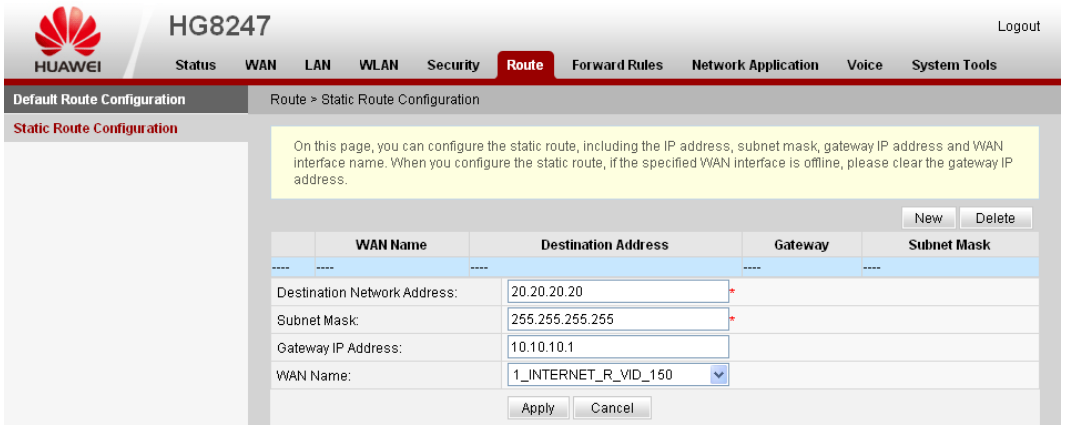
If an ONT fails to find a matching routing entry after receiving a packet, the WAN interface specified by the default route configuration sends the packet to a network device. Before the default route of the system is enabled, the WAN interface must obtain the IP address. Therefore, the parameters of the WAN interface must be correctly set. For details, see **WAN Configuration**.

2. Click **Apply**.

Static Route Configuration

1. Click the **Route** tab and then choose **Static Route Configuration** from the navigation tree. In the pane on the right, click **New**. In the dialog box that is displayed, set the parameters related to the static route, as shown in **Figure 3-23**.

Figure 3-23 Static Route Configuration



2. Click **Apply**.

Table 3-8 describes the parameters related to the static route.

Table 3-8 Parameters related to the static route

Parameter	Description
Destination Network Address	Indicates the destination IP address of the static route.
Subnet Mask	Indicates the subnet mask of the static route.
Gateway IP Address	Indicates the gateway IP address of the static route.
Interface	Indicates the WAN interface that the route travels through.

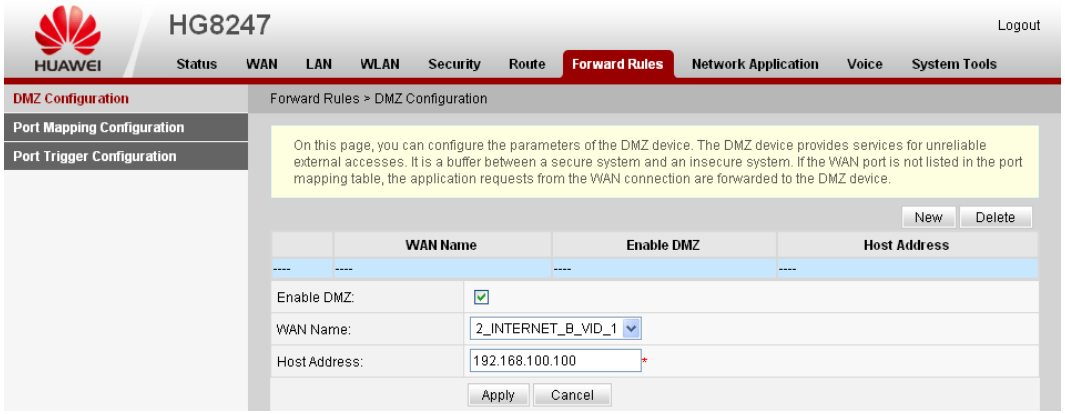
3.3.7 Forward Rules

This topic describes how to configure the DMZ, port mapping, and port trigger through the Web page.

DMZ Configuration

1. Click the **Forward Rules** tab and then choose **DMZ Configuration** from the navigation tree. In the pane on the right, click **New**. In the dialog box that is displayed, set the parameters related to the DMZ, as shown in **Figure 3-24**.

Figure 3-24 DMZ Configuration



2. Click **Apply**.

The demilitarized zone (DMZ) is a technology that enables the ONT to forward all received packets through a specified internal server. The technology enables a computer in the LAN to be completely exposed to all users on the Internet or enables the mutual communication without restrictions between a host with a specified IP address and other users or other servers on the Internet. In this way, many applications can run on the host with the specified IP address. The host with the specified IP address receives all connections and files that can be identified.

CAUTION

If the LAN-side device does not provide website service or other network services, do not set the device to a DMZ host because all ports of a DMZ host are opened to the Internet.

Table 3-9 describes the parameters related to the DMZ.

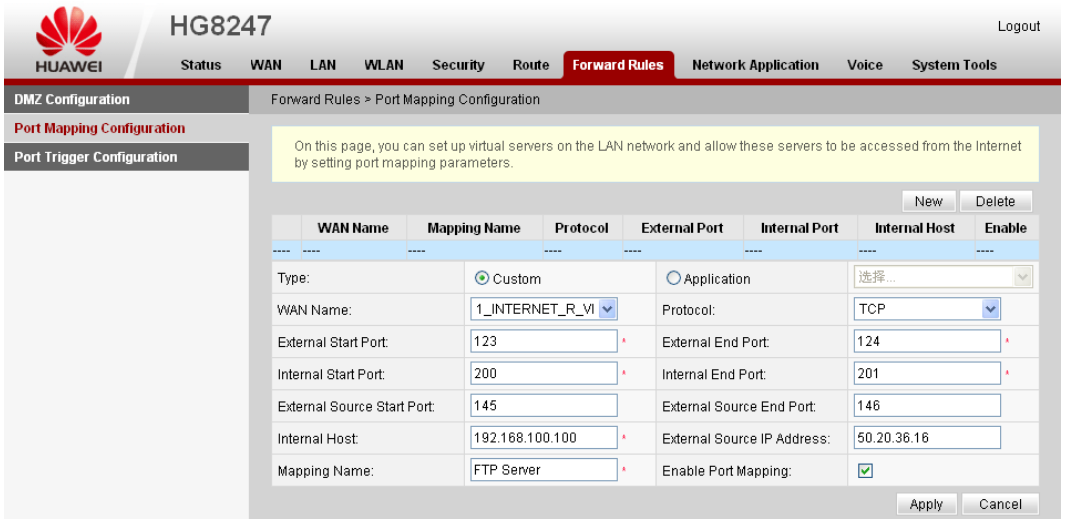
Table 3-9 Parameters related to the DMZ

Parameter	Description
Interface Name	Indicates the name of the WAN interface. If the WAN interface is not in the port mapping table, the application requests from the WAN connection are directly forwarded to the host in the DMZ.
Host Address	Indicates the IP address of the DMZ host.
Enable DMZ	Indicates whether to enable the DMZ.

Port Mapping Configuration

1. Click the **Forward Rules** tab and then choose **Port Mapping Configuration** from the navigation tree. In the pane on the right, click **New**. In the dialog box that is displayed, set the parameters related to port mapping, as shown in Figure 3-25.

Figure 3-25 Port Mapping Configuration



2. Click **Apply**.

Port mapping indicates that the Intranet server is allowed to be open to the Extranet (for example, the Intranet provides the Extranet with a WWW server or FTP server). Port mapping is to map the Intranet host IP address and port ID to Extranet IP address and corresponding port ID so that

users from Extranets can access the Intranet server. With port mapping, the users cannot see the Intranet IP address and they see the Extranet IP address.

Table 3-10 describes the parameters related to port mapping.

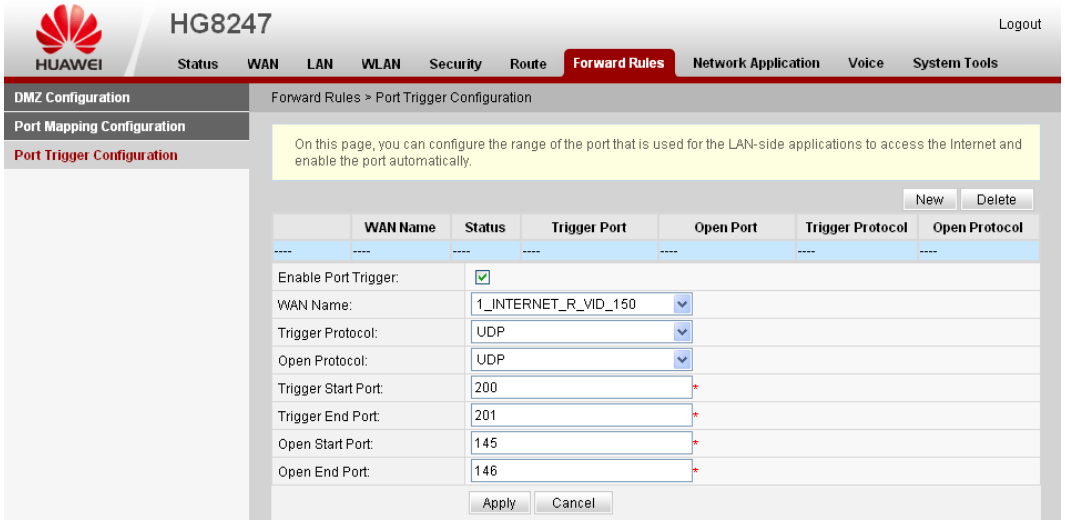
Table 3-10 Parameters related to port mapping

Parameter	Description
Interface	Indicates the name of the WAN interface where port mapping is enabled.
Protocol	Indicates the protocol type of port mapping packet, which may be TCP, UDP, or TCP/UDP.
External Start Port	Indicates the destination start port of the external data packet.
External End Port	Indicates the destination end port of the external data packet.
Internal Start Port	Indicates the internal destination start port of the port mapping packet.
Internal End Port	Indicates the internal destination end port of the port mapping packet.
External Source Start Port	Indicates the source start port of the external data packet.
External Source End Port	Indicates the source end port of the external data packet.
Internal Host	Indicates the IP address of the host to which the port is mapped.
External Source IP Address	Indicates the source IP address of the external data packet.
Mapping Name	Indicates the name of the port mapping rule.
Enable PortMapping	Indicates whether to enable port mapping.

Port Trigger Configuration

1. Click the **Forward Rules** tab and then choose **Port Trigger Configuration** from the navigation tree. In the pane on the right, click **New**. In the dialog box that is displayed, set the parameters related to the port trigger, as shown in Figure 3-26.

Figure 3-26 Port Trigger Configuration



2. Click **Apply**.

The port trigger indicates that a specific Extranet port is automatically enabled when a corresponding Intranet port sends a packet and the packet is mapped to the Intranet port on the host.A specific mapping packet is sent from the ONT through the Intranet so that specific packets of the Extranet can be mapped to the corresponding host. A specified port on the gateway firewall is open to some applications for remote access. The port trigger can dynamically enable the open port of the firewall.

Table 3-11 describes the parameters related to the port trigger.

Table 3-11 Parameters related to the port trigger

Parameter	Description
Interface	Indicates the name of the WAN interface where the port trigger is enabled.
Trigger Protocol	Indicates the protocol type of the port trigger packet, which may be TCP, UDP, or TCP/UDP.
Open Protocol	Indicates the protocol type of the open data packet.
Trigger Start Port	Indicates the destination start port of the port trigger packet.
Trigger End Port	Indicates the destination end port of the port trigger packet.
Open Start Port	Indicates the destination start port of the open packet.
Open End Port	Indicates the destination end port of the open packet.
Enable	Indicates whether to enable the port trigger.

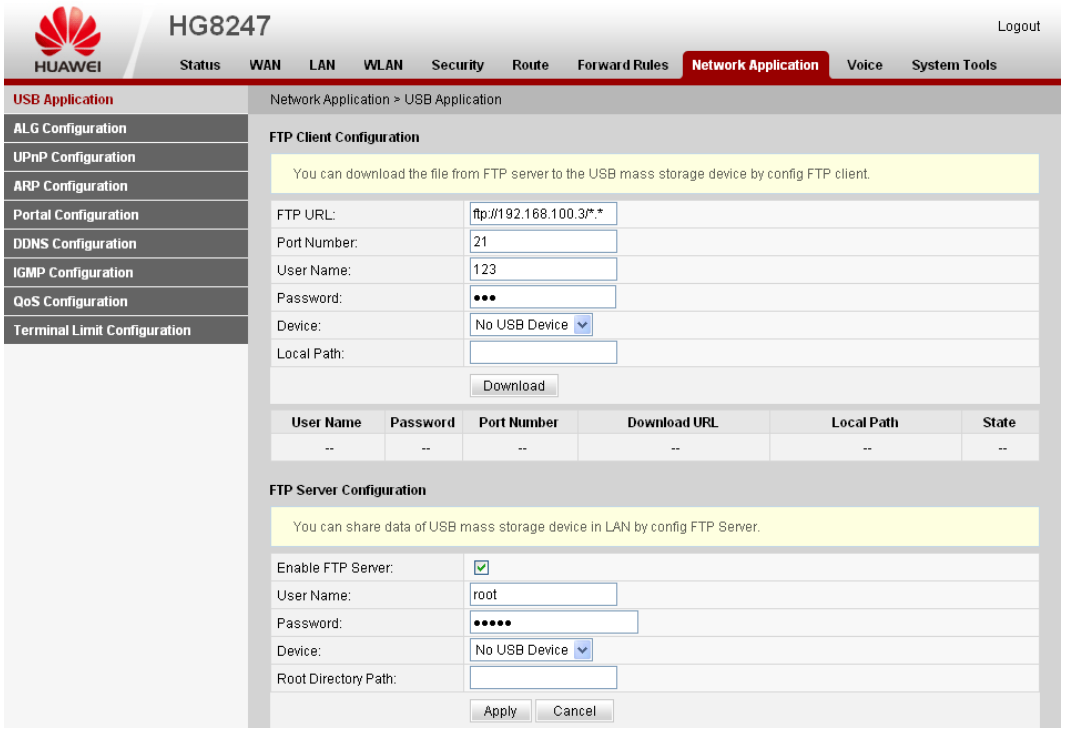
3.3.8 Network Applications

This topic describes how to configure the USB, ALG, UPnP, and ARP through the Web page.

USB Application

1. Click the **Network Applications** tab and then choose **USB Application** from the navigation tree. In the pane on the right, set the parameters related to FTP downloading to share the FTP file of the ONT, as shown in **Figure 3-27**.

Figure 3-27 USB Application



2. Click **Download** to download files from the FTP server to the USB storage device.

Table 3-12 describes the parameters related to the USB.

Table 3-12 Parameters related to the USB

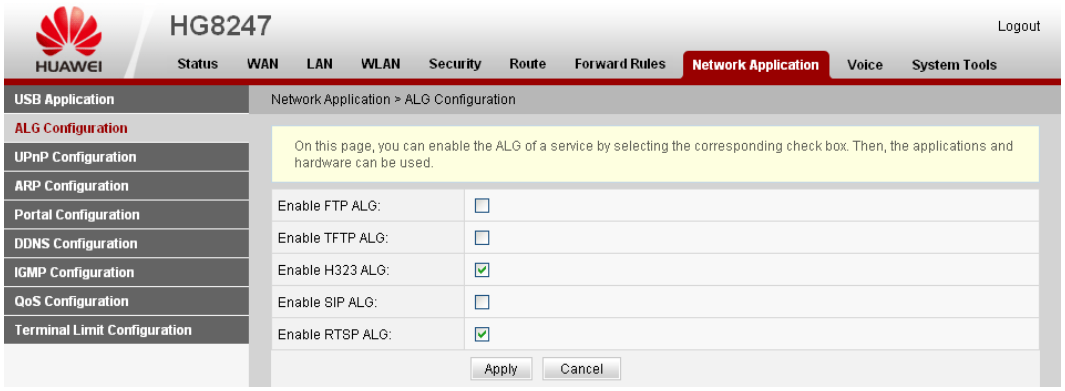
Parameter	Description
Download URL	Indicates the path of the file downloaded through FTP.
Port Number	Indicates the FTP port number. It is set to 21 by default. Generally, the setting is not required.
User Name	Indicates the user name for connecting to the FTP server. If the FTP server supports anonymous login, the setting is not required.
Password	Indicates the password for connecting to the FTP server. If the FTP server supports anonymous login, the setting is not required.

Parameter	Description
Device	Indicates the drive of the external USB device for saving the file downloaded through FTP. When the USB storage device is connected to the USB port, the drop-down list is available.
Local Path	Indicates the path for saving the FTP-downloaded file to the external USB device. If the path is not entered, the path specified in Download URL is used by default.

ALG Configuration

1. Click the **Network Applications** tab and then choose **ALG Configuration** from the navigation tree. In the pane on the right, determine whether to enable the FTP or TFTP, as shown in **Figure 3-28**.

Figure 3-28 ALG Configuration



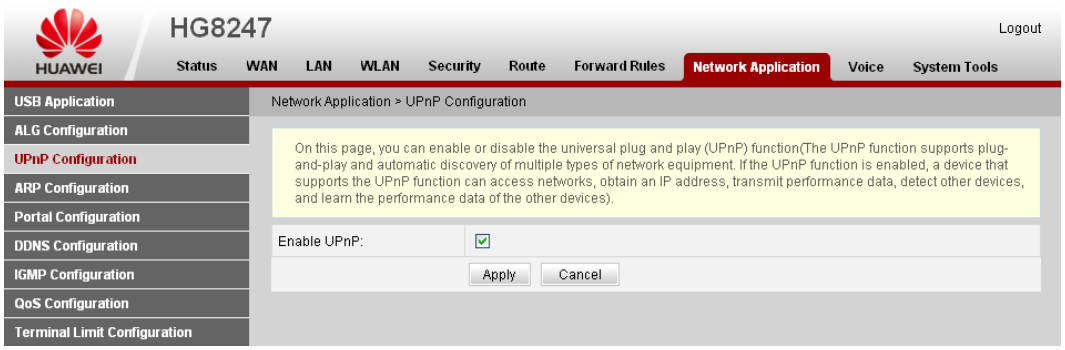
2. Click **Apply**.

When the NAT function is enabled, the application level gateway (ALG) function needs to be enabled to ensure that some application software and hardware can be normally used.

UPnP Configuration

1. Click the **Network Applications** tab and then choose **UPnP Configuration** from the navigation tree. In the pane on the right, determine whether to enable the UPnP, as shown in **Figure 3-29**.

Figure 3-29 UPnP Configuration



2. Click **Apply**.

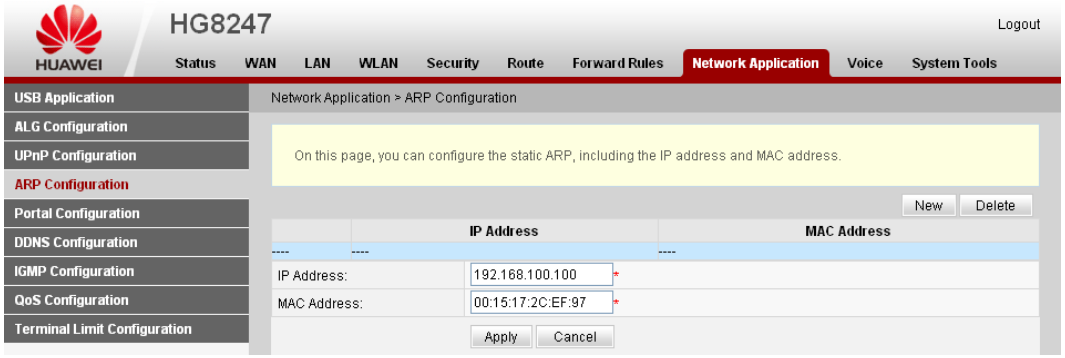
Universal Plug and Play (UPnP) is the name of a group of protocols. The UPnP supports zero configuration networking and automatic discovery of different network devices. If the UPnP is enabled, the UPnP-enabled device can be dynamically connected to the network to obtain the IP address, obtain the transfer performance, discover other devices, and learn the performance of the other devices. The UPnP-enabled device can be automatically disconnected from the network, without affecting the device or other devices.

When the UPnP is enabled, the LAN-side PC automatically finds the ONT, which is considered as a peripheral device of the PC and is plug-and-play. After running application software on the PC, port mapping entries are automatically generated on the ONT through the UPnP protocol, thus improving the running speed.

ARP Configuration

1. Click the **Network Applications** tab and then choose **ARP Configuration** from the navigation tree. In the pane on the right, click **New**. In the dialog box that is displayed, set the resolution rule between a MAC address and an IP address, as shown in **Figure 3-30**.

Figure 3-30 ARP Configuration



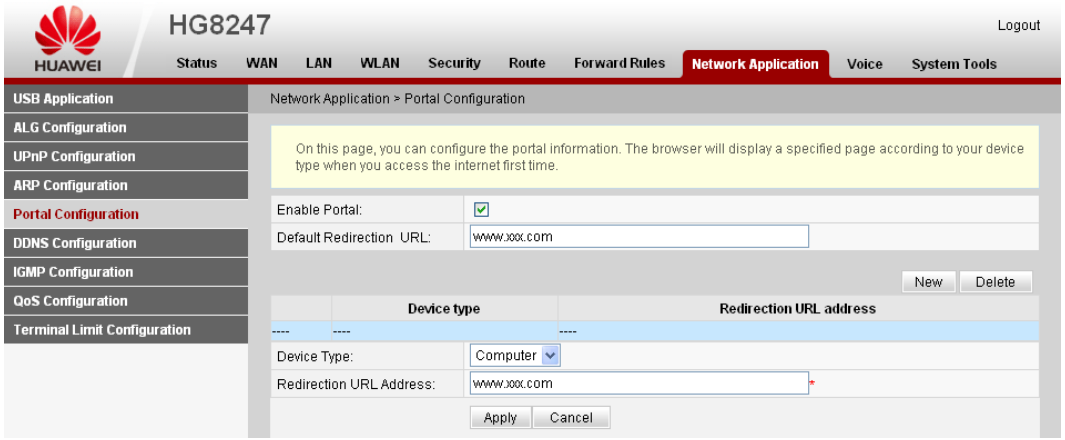
2. Click **Apply**.

Static ARP means to manually add an ARP entry on an ONT. A static ARP never ages and can only be deleted manually. If the mapping between the IP address and MAC address of the peer device is available, configuring a static ARP entry benefits a lot. For example, the dynamic ARP entry learning is omitted during device communication and the static ARP entry prevents a device from learning an incorrect ARP entry in the case of malicious attacks.

Portal Configuration

1. Click the **Network Application** tab and then choose **Portal Configuration** from the navigation tree. In the right pane, enable/disable the portal function and set the redirection URL addresses for different types of devices, as shown in **Figure 3-31**.

Figure 3-31 Portal configuration



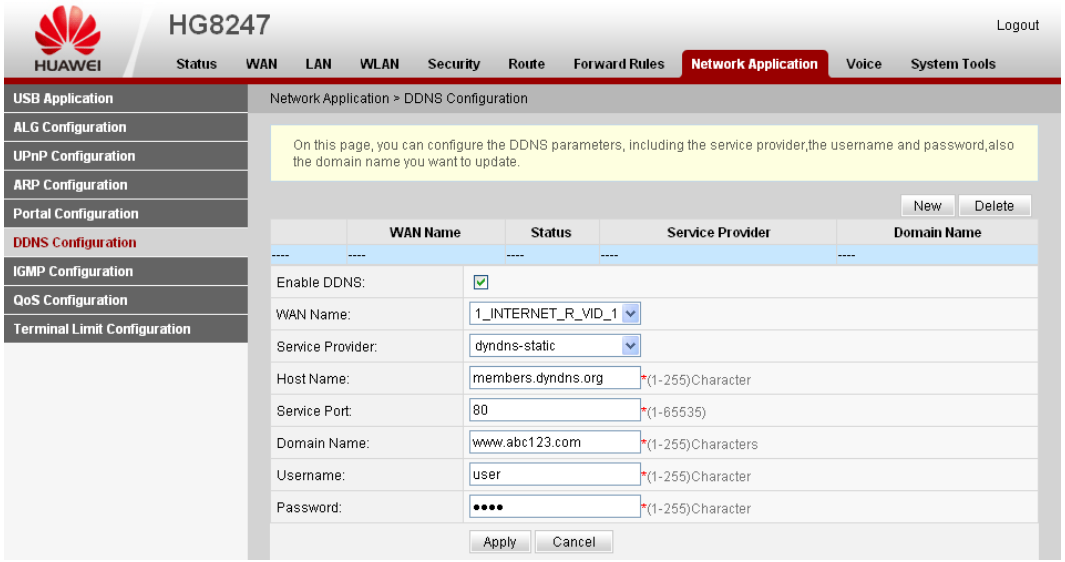
2. Click **Apply**.

If the type of the device that you use is not configured with a URL address or the device type cannot be identified, the system redirects to the default URL address upon the first access to the Internet.

DDNS Configuration

1. Click the **Network Application** tab and then choose **DDNS Configuration** from the navigation tree. In the right pane, configure DDNS parameters, including **Service Provider**, **Host Name**, **Service Port**, **Domain Name**, **Username**, and **Password**, as shown in **Figure 3-32**.

Figure 3-32 DDNS configuration



2. Click **Apply**.

Dynamic domain name service (DDNS) associates a static domain name with the dynamic IP address of its host.

Assume that server A provides HTTP or FTP service and it is connected to the Internet using routers. If server A obtains an IP address through DHCP, or server A is connected to the Internet through PPPoE, PPTP, or L2TP, the IP address is an dynamic IP address. That is, its IP address may change each time when server A initializes its connection to the Internet.

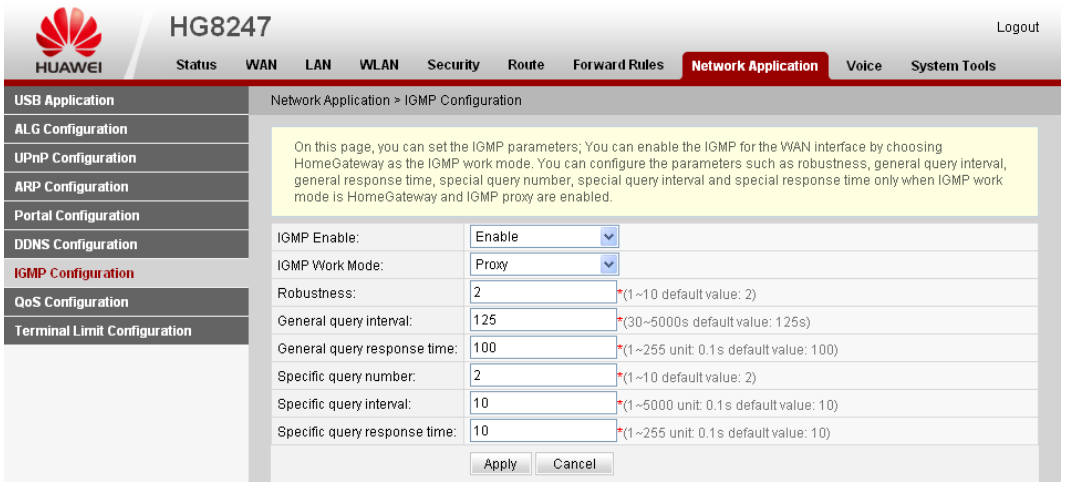
The mapping between the domain name and IP address provided by the domain name service (DNS) server is static, and the mapping does not update when the IP address changes. Therefore, when the IP address of server A changes, users on the Internet cannot access server A with domain names.

With DDNS, which associates a static domain name with the dynamic IP address of its host, users on the Internet can access the server only with domain names.

IGMP Configuration

1. Click the **Network Application** tab and then choose **IGMP Configuration** from the navigation tree. In the right pane, configure the IGMP parameters, as shown in **Figure 3-33**.

Figure 3-33 IGMP configuration



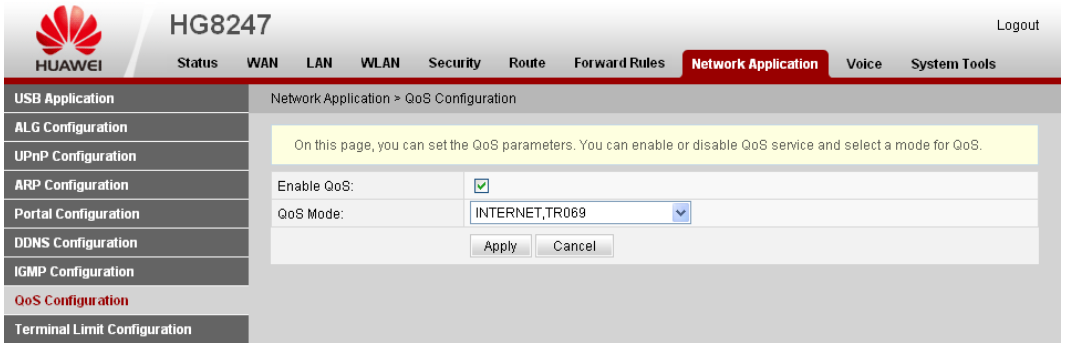
2. Click **Apply**.

The IGMP function of WAN ports can be enabled only when IGMP works in the gateway mode. Only when IGMP proxy is enabled in the gateway mode, parameters such as **Robustness**, **General query interval**, **General query response time**, **Specific query number**, **Specific query interval**, and **Specific query response time**.

QoS Configuration

1. Click the **Network Application** tab and then choose **QoS Configuration** from the navigation tree. In the right pane, enable/disable QoS and select a QoS mode, as shown in **Figure 3-34**.

Figure 3-34 QoS configuration

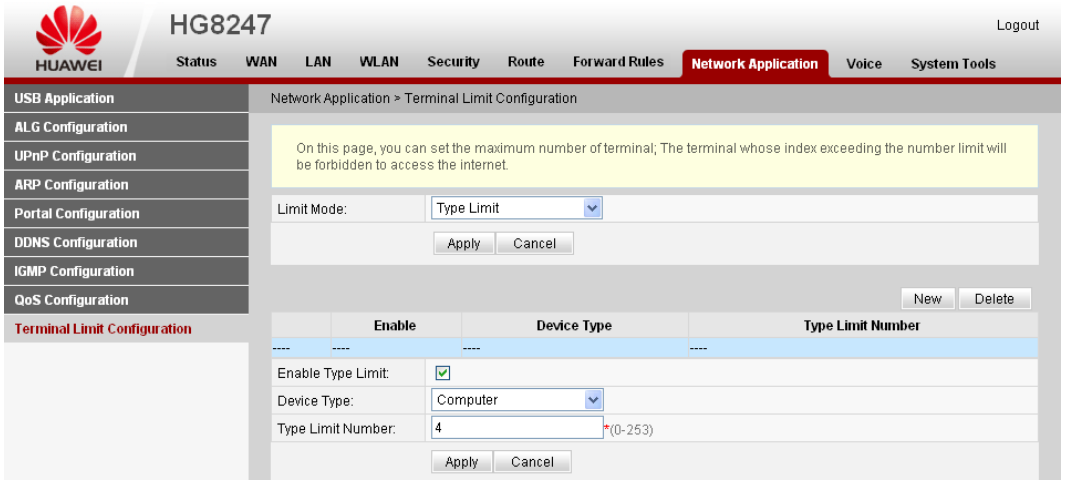


2. Click **Apply**.

Terminal Limit Configuration

1. Click the **Network Application** tab and then choose **Terminal Limit Configuration** from the navigation tree. In the right pane, configure relative parameters, as shown in **Figure 3-35**.

Figure 3-35 Terminal Limit Configuration



2. Click **Apply**.

3.3.9 Voice

This topic describes how to configure the voice service through the Web page.

NOTE

The Web page for configuring the voice service varies with the loaded voice protocols. The following topics describe the Web pages after the H.248 protocol and the SIP protocol are loaded.

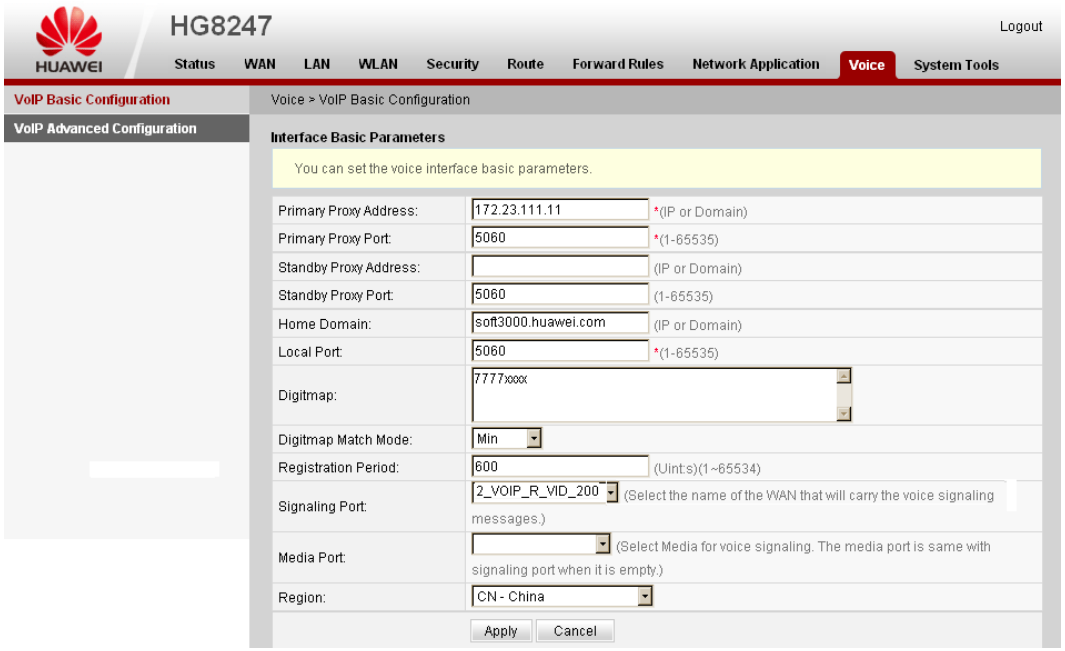
- Device software version V100R002C00 supports the SIP protocol.
- Device software version V100R002C01 supports the H.248 protocol.

VoIP Interface Configuration

- **Configuring VoIP Interface - SIP Protocol**

  1. Click the **Voice** tab and then choose **VoIP Basic Configuration** from the navigation tree. In the pane on the right, parameters of a VoIP interface can be configured, including the IP addresses of the primary server and secondary server, and digitmap, as shown in **Figure 3-36**.

Figure 3-36 VoIP Interface Configuration - SIP protocol



  2. Click **Apply**.

Table 3-13 describes the parameters used for configuring a VoIP interface based on the SIP protocol.

Table 3-13 Parameters used for configuring a VoIP interface based on the SIP protocol

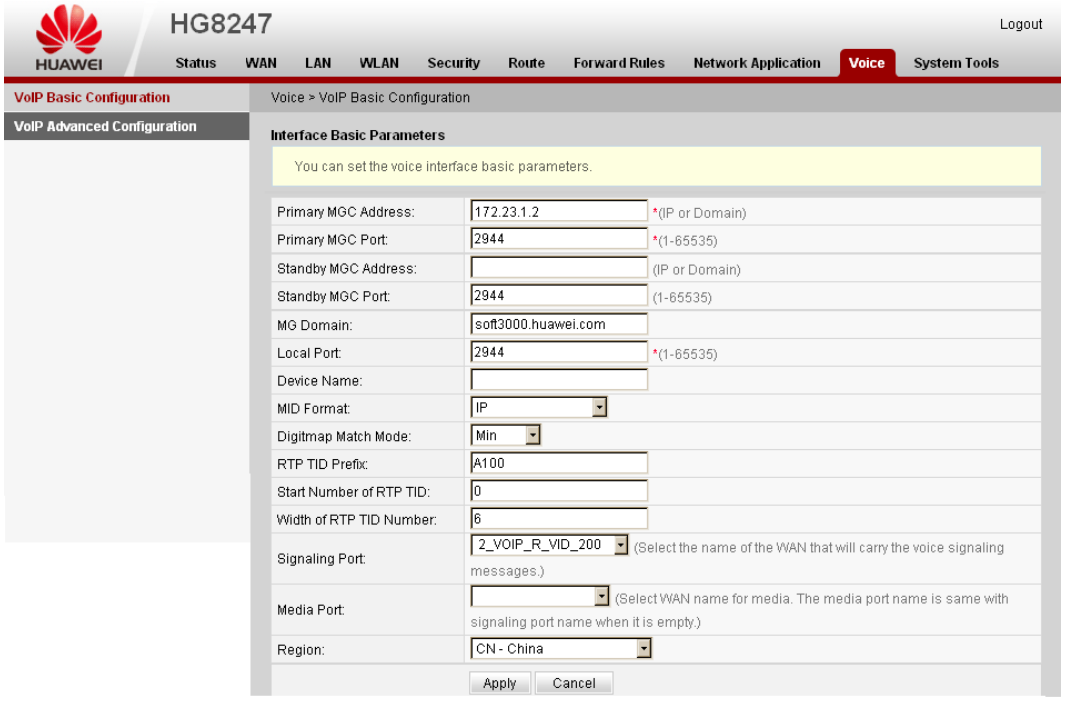
Parameter	Description
Primary Server	
Proxy Server Address	Indicates the IP address (provided by the ISP) of the primary SIP proxy server.
Proxy Server Port	Indicates the ID (provided by the ISP) of the port used for communication between the primary SIP proxy server and the VoIP terminal. The ID ranges from 1 to 65535 and the default ID is 5060.
Secondary Server	
Proxy Server Address	Indicates the IP address (provided by the ISP) of the secondary SIP proxy server.

Parameter	Description
Proxy Server Port	Indicates the ID (provided by the ISP) of the port used for communication between the secondary SIP proxy server and the VoIP terminal. The ID ranges from 1 to 65535 and the default ID is 5060.
General	
Home Domain	Indicates the domain of the registration server of the VoIP terminal in network communications, such as softx3000.huawei.com.
Local Port	Indicates the ID of the local port on the ONT. The ID ranges from 1 to 65535 and the default ID is 5060.
Digitmap	Indicates the voice digitmap.
Digitmap Match Mode	Indicates the digitmap matching mode, including Min and Max. ● Min: If a short digitmap is matched, the system immediately reports the number to the call proxy. ● Max: If a short digitmap is matched, the system does not immediately report the number to the call proxy but starts the short timer. If a user does not continue dialing digits, the system reports the number to the call proxy after the short timer times out; if the user continues dialing digits and the number matches the long digitmap, the system reports the number that matches the digitmap to the call proxy.
Region	Indicates the country code.
Signaling Port Name	Indicates the signaling WAN interface used for connecting the VoIP terminal to the SIP server.

- **VoIP Interface Configuration - H.248 Protocol**

  1. In the navigation tree on the left, choose **Voice** > **VoIP Interface Configuration**. In the pane on the right, parameters of a VoIP interface can be configured, including the primary MGC server, secondary MGC server, and digitmap, as shown in **Figure 3-37**.

Figure 3-37 VoIP Interface Configuration - H.248 protocol



2. Click **Apply**.

Table 3-14 describes parameters used for configuring a VoIP interface based on the H.248 protocol.

Table 3-14 Parameters used for configuring a VoIP interface based on the H.248 protocol

Parameter	Description
Primary Server	
MGC Address	Indicates the IP address (provided by the ISP) of the primary MGC server.
MGC Port	Indicates the ID (provided by the ISP) of the port used for communication between the primary MGC server and the VoIP terminal. The ID ranges from 1 to 65535 and the default ID is 2944.
Secondary Server	
MGC Address	Indicates the IP address (provided by the ISP) of the secondary MGC server.
MGC Port	Indicates the ID (provided by the ISP) of the port used for communication between the secondary MGC server and the VoIP terminal. The ID ranges from 1 to 65535 and the default ID is 2944.
General	

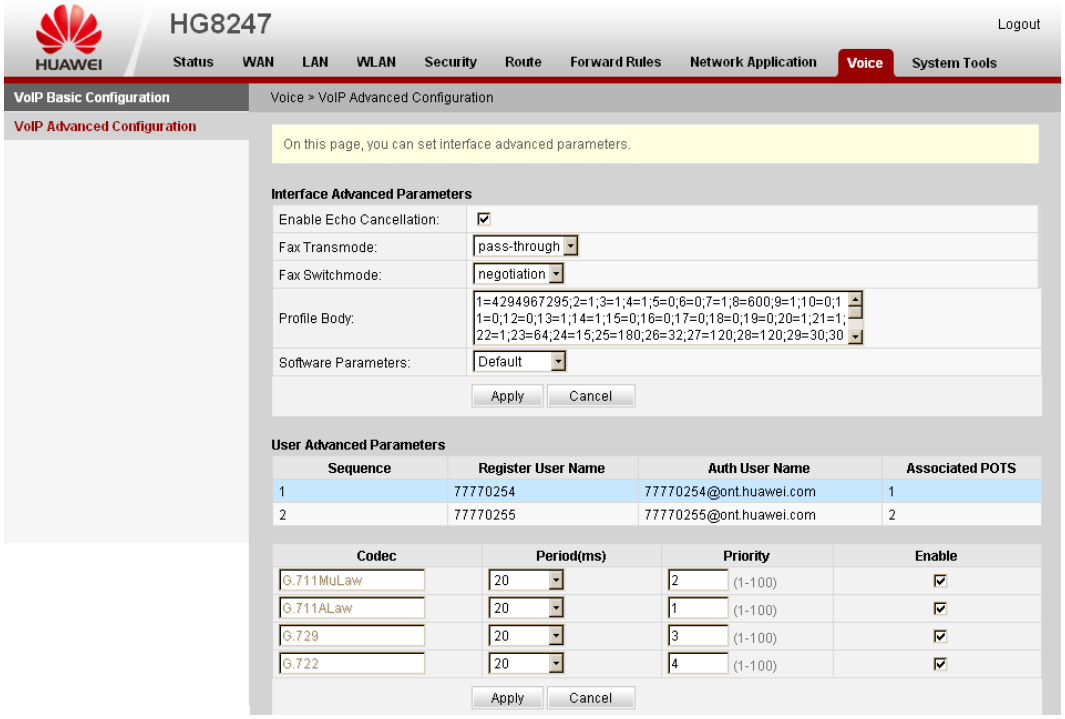
Parameter	Description
MG Domain	Fill the domain name when **Register Format** is set to **DomainName**, such as user.huawei.com.
Local Port	Indicates the ID of the local port on the ONT. The ID ranges from 1 to 65535 and the default ID is 2944.
Device Name	Fill the device name when **Register Format** is set to **DeviceName**.
Register Format	Indicates the MG registration format. It can be the MG domain name, IP address, or device name. The MG register format must be the same as the register format provided by the ISP.
Digitmap Match Mode	Indicates the digitmap matching mode, including Min and Max. ● Min: If a short digitmap is matched, the system immediately reports the number to the call proxy. ● Max: If a short digitmap is matched, the system does not immediately report the number to the call proxy but starts the short timer. If a user does not continue dialing digits, the system reports the number to the call proxy after the short timer times out; if the user continues dialing digits and the number matches the long digitmap, the system reports the number that matches the digitmap to the call proxy.
Signaling Port Name	Indicates the signaling WAN interface used for connecting the VoIP terminal to the MGC server.
Region Settings	Indicates the country code.

VoIP Advanced Configuration

- **VoIP Advanced Configuration - SIP protocol**

  1. Click the **Voice** tab and then choose **VoIP Advanced Configuration** from the navigation tree. In the pane on the right, you can configure the parameters, as shown in **Figure 3-38**.

Figure 3-38 VoIP Advanced Configuration - SIP protocol

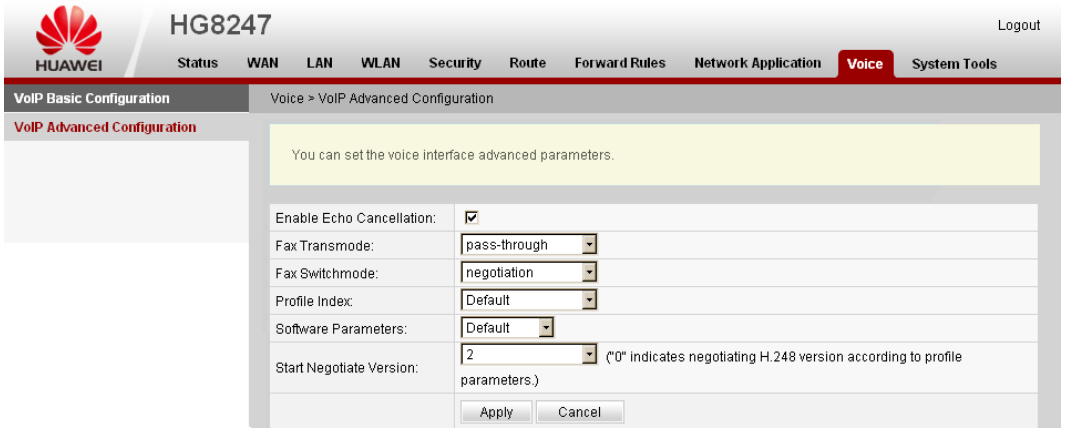


2. Click **Apply**.

- **VoIP Advanced Configuration - H.248 Protocol**

1. Click the **Voice** tab and then choose **VoIP Advanced Configuration** from the navigation tree. In the pane on the right, you can configure the parameters, as shown in **Figure 3-39**.

Figure 3-39 VoIP Advanced Configuration - H.248 Protocol



2. Click **Apply**.

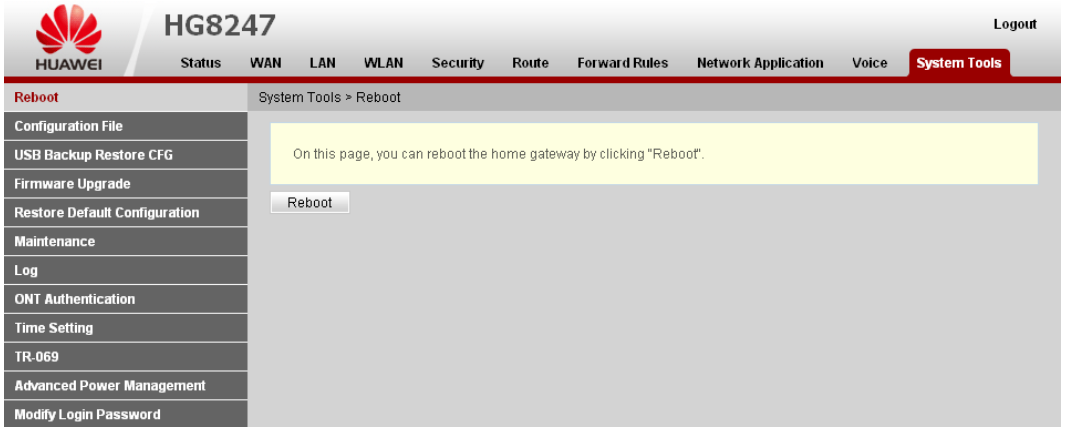
3.3.10 System Tools

This topic describes how to use the system tools on the Web page, including using the tools to restart the device, restore the default configuration, and conduct the test.

Reboot

Click the **System Tools** tab and then choose **Reboot** from the navigation tree. In the pane on the right, click **Reboot** to restart the device, as shown in **Figure 3-40**.

Figure 3-40 Reboot



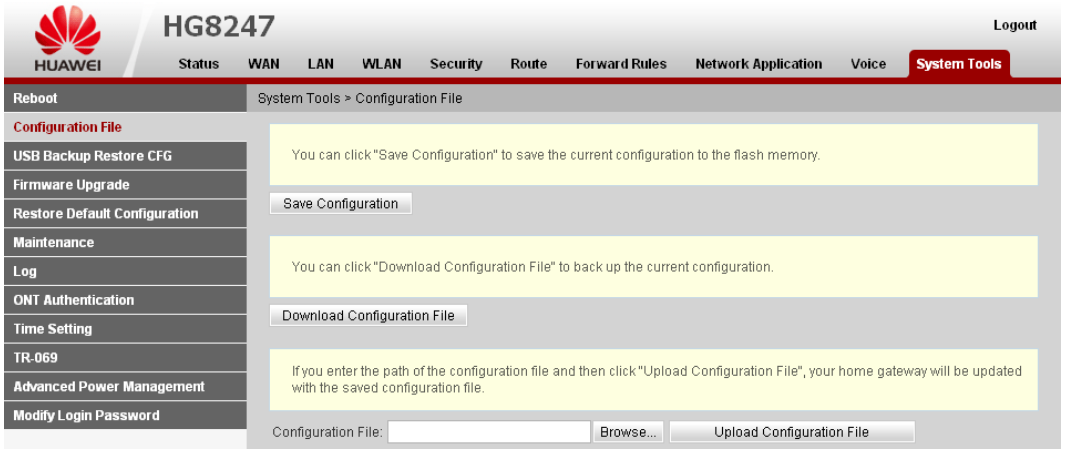
CAUTION

Save the configuration data before restarting the device. For details, see **Configuration File**.

Configuration File

Click the **System Tools** tab and then choose **Configuration File** from the navigation tree. In the pane on the right, click the button as required, as shown in **Figure 3-41**.

Figure 3-41 Configuration File



- Click **Save Configuration** to save the configuration file to the flash memory. This prevents data loss due to the restart of the device.
- Click **Download Configuration File**. In the dialog box that is displayed, click **Save**, specify the path of saving the configuration file, and then back up the file to the local disk.
- Click **Browse** following the **Configuration File** text box. In the dialog box that is displayed, select the configuration file to be uploaded. Click **Upload Configuration File** to upload the configuration file that is saved in the local disk. After the configuration file is successfully uploaded, the device automatically restarts and then the new configuration takes effect.

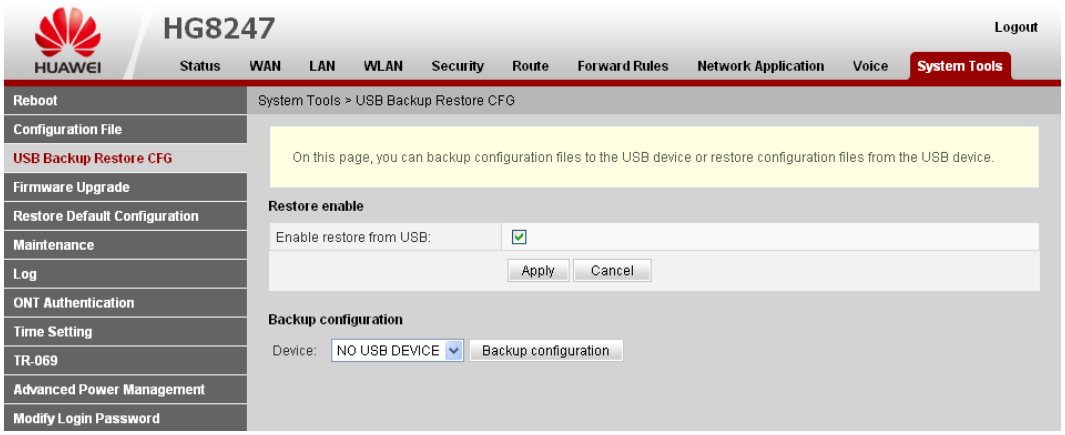
CAUTION

Before uploading the configuration file, choose the configuration file with the correct type and the name of the selected configuration file must not be the same as that of any file saved in the device. Otherwise, the configuration file fails to be uploaded.

USB Backup Restore CFG

Click the **System Tools** tab and then choose **USB Backup Restore CFG** from the navigation tree. In the pane on the right, the button as required, as shown in **Figure 3-42**.

Figure 3-42 USB Backup Restore CFG



- Select **Enable restore from USB** to configure whether the system supports fast recovery of the backed up configured file from the USB storage device.
- Click **Backup configuration** to back up the configuration file to the specified USB storage device.

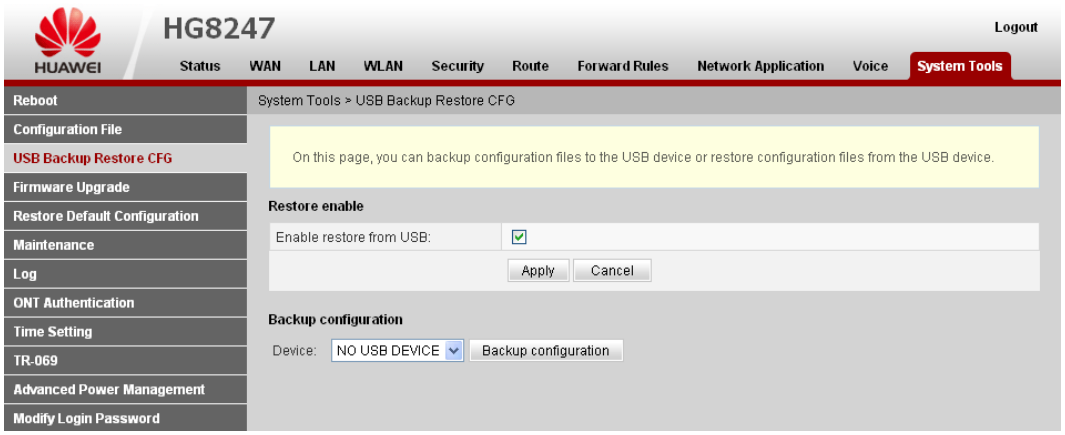
CAUTION

After the configuration file in the USB storage device is successfully uploaded, the device is restarted and then the new configuration data takes effect.

Firmware Upgrade

1. Click the **System Tools** tab and then choose **Firmware Upgrade** from the navigation tree. In the pane on the right, click **Browse**. In the dialog box that is displayed, select the target software version of the device. Click **Update Firmware** to upgrade the software of the device, as shown in **Figure 3-43**.

Figure 3-43 Firmware Upgrade

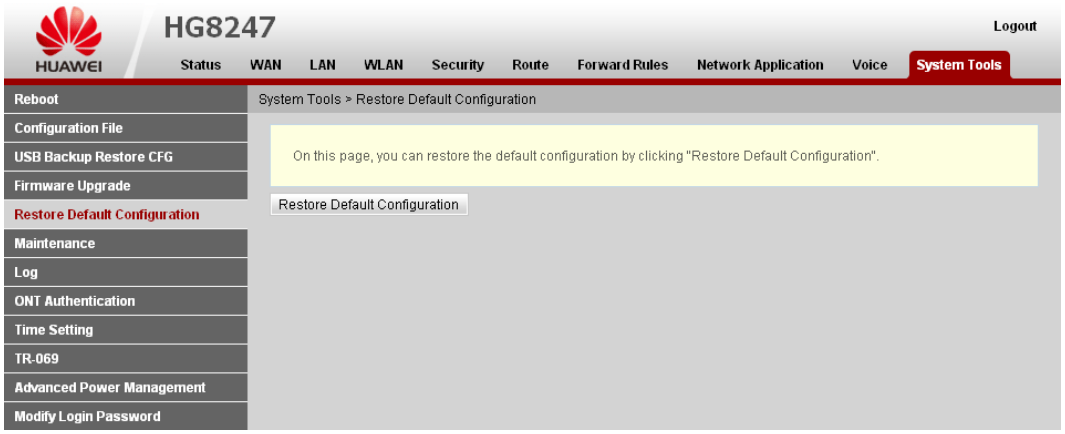


2. After the upgrade is successful, a message is displayed indicating that the device needs to be reset. Click **Reset**. The configuration data takes effect after the device is reset.

Restore Default Configuration

Click the **System Tools** tab and then choose **Restore Default Configuration** from the navigation tree. In the pane on the right, click **Restore Default Configuration** to restore the factory defaults, as shown in **Figure 3-44**.

Figure 3-44 Restore Default Configuration



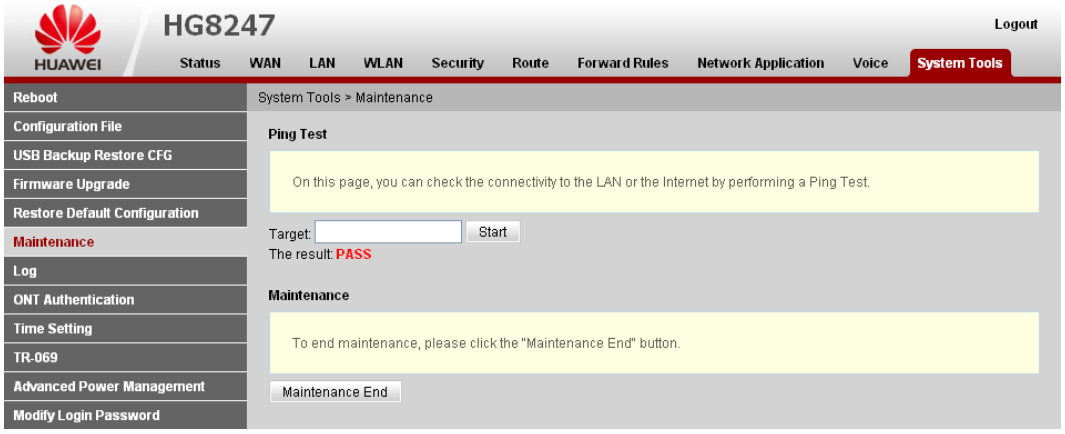
CAUTION

Exercise caution when you perform this operation because it restores factory defaults.

Maintenance

Click the **System Tools** tab and then choose **Maintenance** from the navigation tree. In the pane on the right, enter the destination IP address or host name for the ping test in the **Target** text box, and then click **Start**, as shown in **Figure 3-45**.

Figure 3-45 Ping test

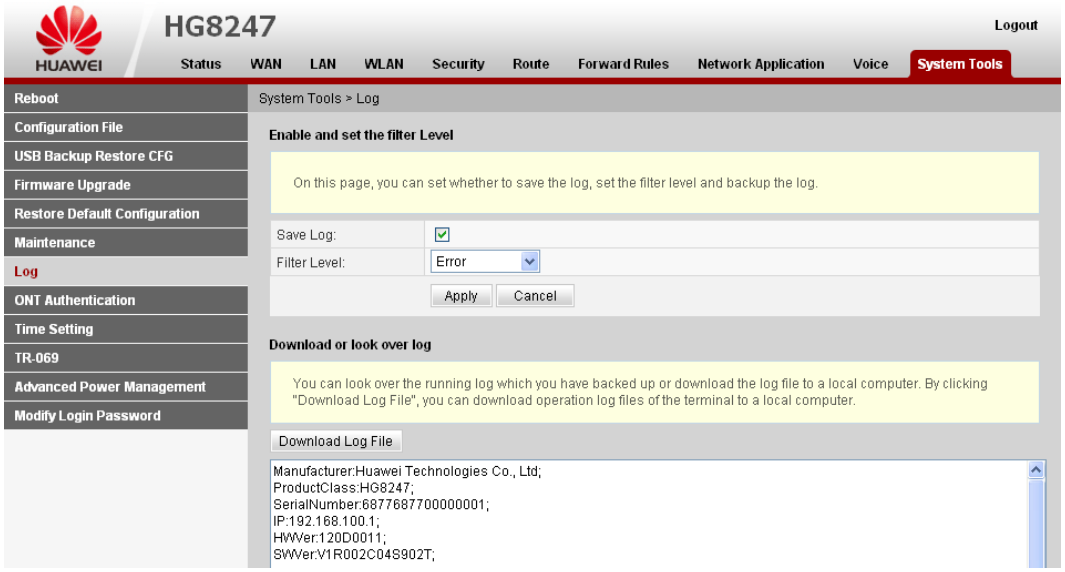


- If the ping test is successful, **The result** is displayed as **PASS**, that is, the ONT can interwork with the device with the destination IP address.
- If the ping test fails, **The result** is displayed as **FAIL**, that is, the ONT cannot interwork with the device with the destination IP address.

Log

Click the **System Tools** tab and then choose **Log** from the navigation tree. In the right pane, perform the required operations, as shown in **Figure 3-46**.

Figure 3-46 Log

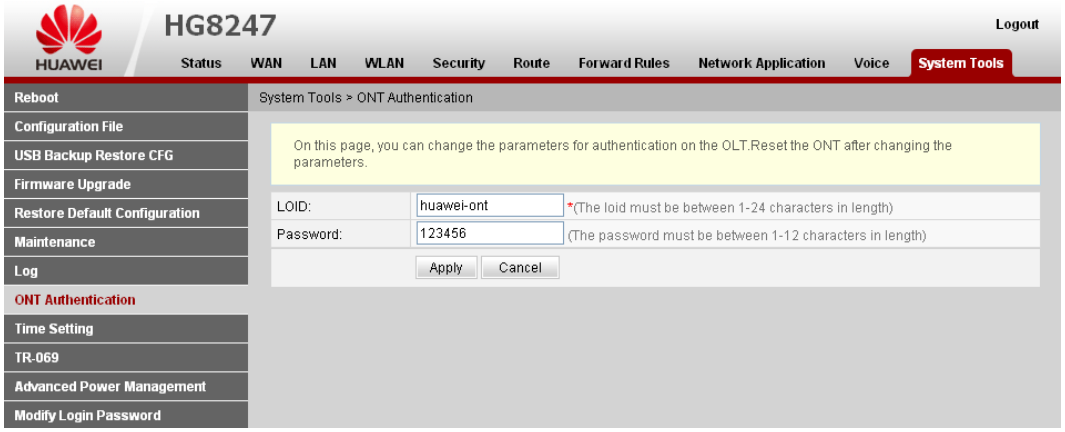


- Select **Save Log** to enable the log saving function in the system.
- Select **Filter Level** to save system logs accordingly.
- Click **Download Log File**. In the dialog box that is displayed, click **Save**, specify the path for saving the log file, and save the log file to the local disk.

ONT Authentication

1. Click the **System Tools** tab and then choose **ONT Authentication** from the navigation tree. In the pane on the right, you can view or change the password and LOID for the registration of the ONT on the OLT, as shown in **Figure 3-47**.

Figure 3-47 ONT Authentication

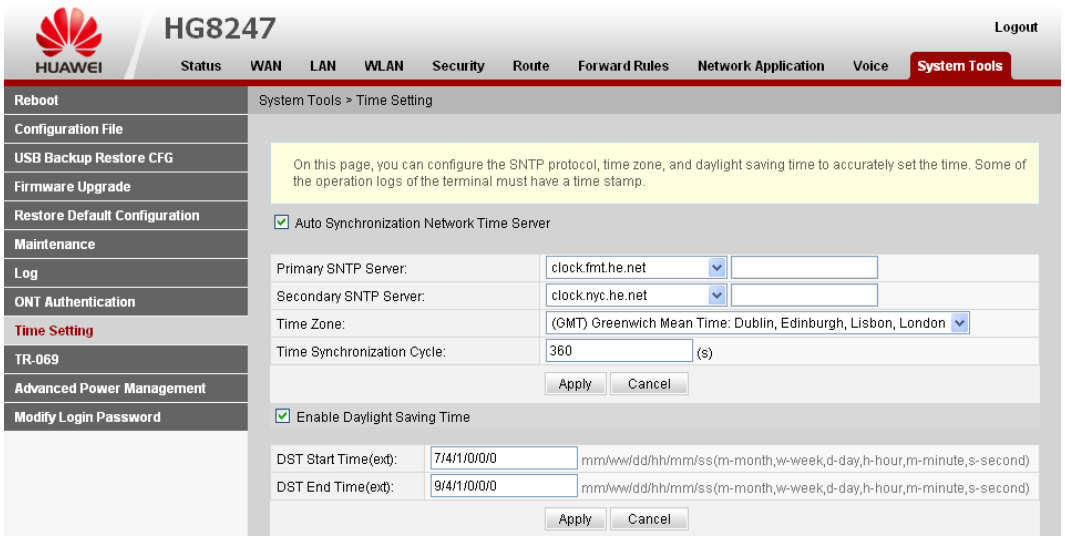


2. Click **Apply**.

Time Setting

1. Click the **System Tools** tab and then choose **Time Setting** from the navigation tree. In the pane on the right, set the parameters related to the system time, including the SNTP server, time zone, and daylight saving time (DST), as shown in **Figure 3-48**.

Figure 3-48 Time Setting



2. Click **Apply**.

Table 3-15 describes the parameters related to the system time.

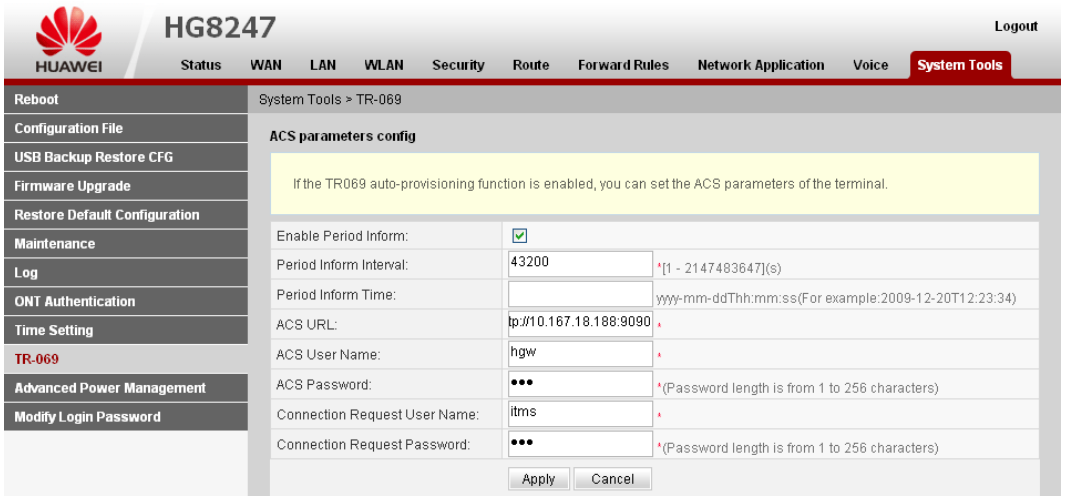
Table 3-15 Parameters related to the system time

Parameter	Description
Auto Synchronization Network Time Server	Indicates whether to enable the auto synchronization network time server, that is, SNTP server.
Primary SNTP Server	Indicates the primary SNTP server.
Secondary SNTP Server	Indicates the secondary SNTP server.
Time Zone	Indicates the time zone.
Time Synchronization Cycle	Indicates whether to enable the DST.
DST Start Time	Indicates the DST start time.
DST End Time	Indicates the DST end time.

TR-069

1. Click the **System Tools** tab and then choose **TR-069** from the navigation tree. In the pane on the right, set the parameters related to the interconnection between the ONT and the TR-069 server, as shown in **Figure 3-49**.

Figure 3-49 TR-069



NOTE

Configuring the interconnection between the ONT and the TR-069 requires creating a WAN interface. In addition, **Service List** of the WAN interface must contain the TR069. For details, see **WAN Configuration**.

2. Click **Apply**.

Table 3-16 describes the TR-069 parameters.

Table 3-16 TR-069 parameters

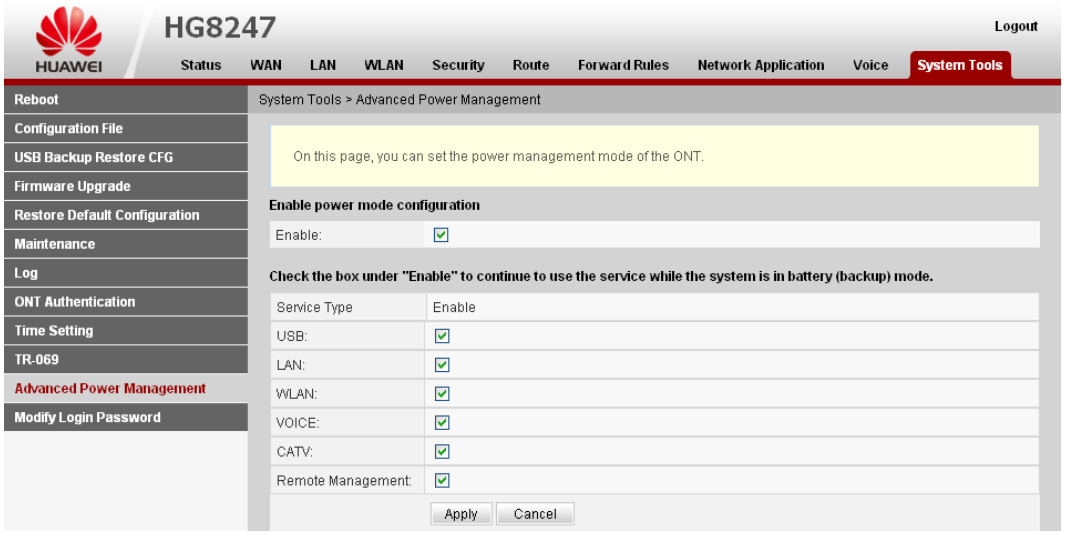
Parameter	Description
Period Inform	Indicates whether to enable the notification function. ● If the notification function is enabled, the ONT actively sends a connection request to the TR-069 server. ● If the notification function is disabled, the ONT does not actively send a connection request to the TR-069 server. When the notification function is enabled, the **Period Inform Interval** and **Period Inform Time** parameters can be set.
Period Inform Interval	Indicates the interval for the ONT to send a connection request to the TR-069 server.
Period Inform Time	Indicates the time for the ONT to send a connection request to the TR-069 server.
ACS URL	Indicates the address of the TR-069 server to which the ONT sends a connection request.

Parameter	Description
ACS User Name	Indicates the user name for the ONT to register with the TR-069 server.
ACS Password	Indicates the password for the ONT to register with the TR-069 server.
Connection Request User Name	Indicates the user name to be carried when the TR-069 server initiates a connection request to the ONT.
Connection Request Password	Indicates the password to be carried when the TR-069 server initiates a connection request to the ONT.

Advanced Power Management

1. Click the **System Tools** tab and then choose **Advanced Power Management** from the navigation tree. In the pane on the right, you can start the ONT energy conservation mode and set the power saving mode, as shown in **Figure 3-50**.

Figure 3-50 Advanced Power Management

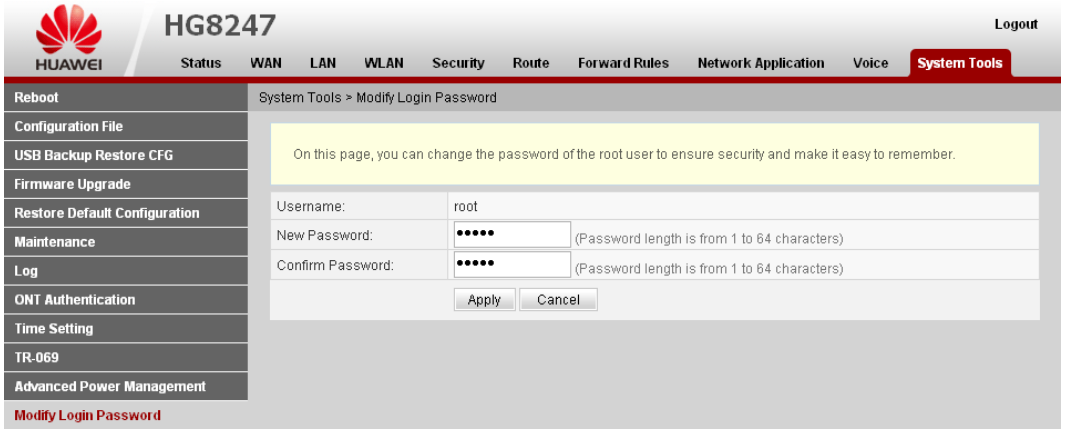


2. Click **Apply**.

Modify Login Password

1. Click the **System Tools** tab and then choose **Modify Login Password** from the navigation tree. In the right pane, change the password of the **root** user, as shown in **Figure 3-51**.

Figure 3-51 Modify Login Password



2. Click **Apply**.

4 Service Configuration Examples

About This Chapter

This topic provides examples of how to configure the Internet access service, voice service, and Wi-Fi access service.

Context

NOTE

The BMS V200R012C05 is used in the following configuration examples. The screen snapshots may vary with different N2000 BMS versions but the configuration procedures are similar. For details, see the associated configuration manual.

4.1 Introduction to the Configuration Method

This topic lists the configuration methods supported by the Internet access service, voice service, and Wi-Fi access service.

Table 4-1 lists the configuration methods supported by the Internet access service, voice service, and Wi-Fi access service.

Table 4-1 Supported configuration methods

Service Type	Through the Web Page	Through the N2000 BMS	Through the TR-069 server
Internet access service	Supported	Supported	Supported
Voice service	Supported	Supported	Supported
Wi-Fi access service	Supported	Not supported	Supported

4.2 Commissioning

Before configuring services on the ONT, you need to add an ONT through the OLT CLI or the N2000 BMS and configure associated traffic streams and service parameters. If you configure services on the ONT using the TR-069 server, you need to add on ONT on the TR-069 server. This topic describes how to perform configurations before configuring services on the ONT.

4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)
This topic describes how to add an ONT and configure relevant service ports for the ONT by means of the OLT CLI before configuring services for the ONT.

4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)
This topic describes how to add an ONT and configure relevant service ports for the ONT by means of the OLT CLI before configuring services for the ONT.

4.2.3 Commissioning Interoperation Between the TR-069 Server and the ONT Through the Web Page
To configure and issue ONT services using the TR-069 server, you need to add the ONT on the TR-069 server so that the TR-069 server can manage the ONT.

4.2.4 Commissioning Interoperation Between the TR-069 Server and the ONT Through the NMS
To configure and issue ONT services using the TR-069 server, you need to add the ONT on the TR-069 server so that the TR-069 server can manage the ONT.

4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)

This topic describes how to add an ONT and configure relevant service ports for the ONT by means of the OLT CLI before configuring services for the ONT.

Data Plan

Table 4-2 provides the data plan for commissioning the interoperation between the OLT and the ONT (through CLI of the OLT)..

Table 4-2 Data plan for commissioning the interoperation between the OLT and the ONT (through CLI of the OLT)

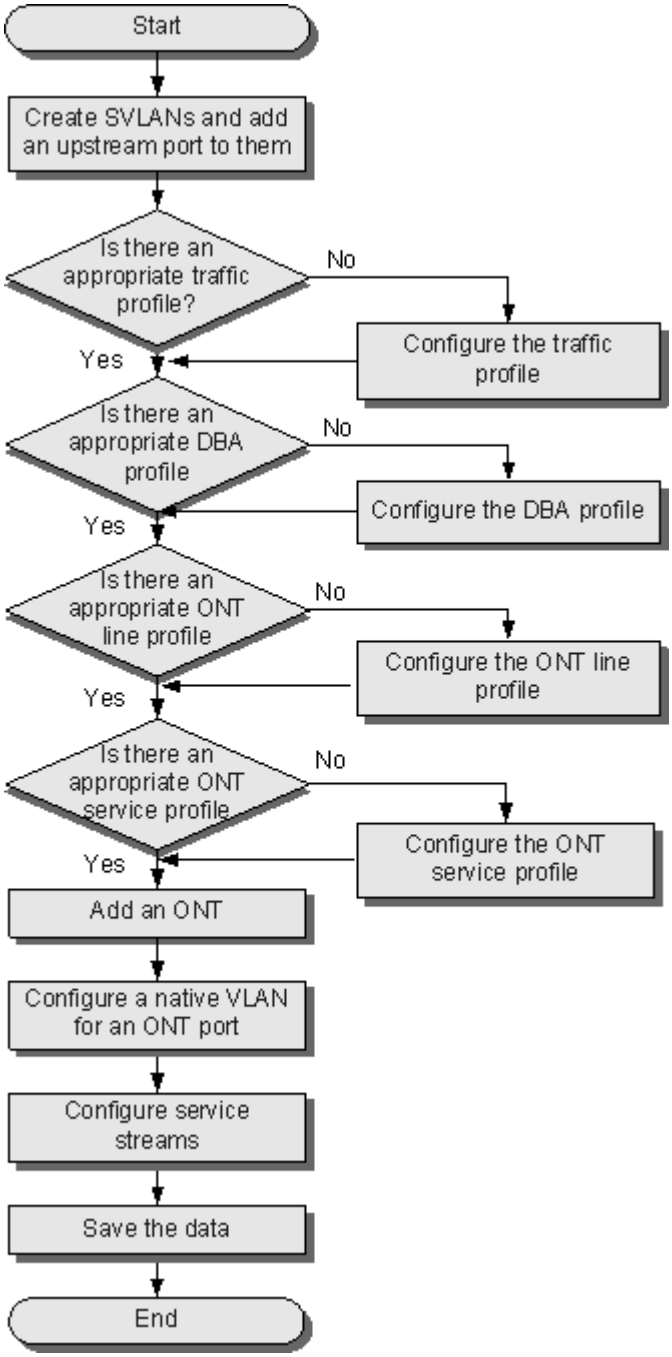
Parameter	Data
OLT	● SVLAN ID: – L2 Internet access service (ONT working in bridge mode): 100 – L3 Internet access service (ONT working in gateway mode): 150 – Voice service (SIP/H.248): 200 – Wi-Fi: 300 – TR-069 server management channel: 320 ● VLAN type: smart VLAN The VLAN attribute of Internet access service and Wi-Fi service is QinQ. ● Upstream port: 0/19/0
ONT	● Port ID: 0/2/0 ● ONT ID: 0 ● ONT authentication mode: SN (485754430DBCEA03) ● CVLAN ID: planned to be the same as the SVLAN ID ● L2 and L3 Internet access services: ETH1 and ETH2 (indicating LAN 1 and LAN 2 of the device interface)
Traffic profile	● Internet access/Wi-Fi/TR-069 server management channel: – Profile ID: 8 – CIR: 4 Mbit/s – Priority: 1 Packets are scheduled according to the priorities carried in the packets. ● Voice service: – Profile ID: 9 – Upstream and downstream rates: unlimited – Priority: 6 Packets are scheduled according to the priorities carried in the packets.

Parameter	Data
DBA profile	● Profile ID: 12 ● DBA profile type: type 2 (assured bandwidth 10240 kbit/s)
Line profile	● Profile ID: 12 ● Upstream FEC: disabled (default) ● QoS mode: priority queue – Internet access/Wi-Fi/TR-069 server management channel: 1 – Voice service: 3 ● Mapping mode: VLAN (default) ● GEM ports 0-4 for the L2 Internet access service, L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel respectively.
Service profile	● Profile ID: 12 ● Ports of the HG8240 or HG8245: – 4 Ethernet ports – 2 POTS ports ● Ports of the HG8247: – 1 CATV port – 4 Ethernet ports – 2 POTS ports

Flowchart

Figure 4-1 shows the flowchart for commissioning the interoperation between the OLT and the ONT (through CLI of the OLT).

Figure 4-1 Flowchart for commissioning the interoperation between the OLT and the ONT (through CLI of the OLT)



Procedure

Step 1 Create SVLANs and add an upstream port to them.

Set SVLANs 100, 150, 200, 300, and 320 for the L2 Internet access service, L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel respectively. Create smart SVLANs and set the attributes of the SVLANs for the Internet access service and Wi-Fi service to QinQ. Add upstream port 0/19/0 to the SVLANs.

```
huawei(config)#vlan 100,150,200,300,320 smart
huawei(config)#vlan attrib 100,150,300 q-in-q
huawei(config)#port vlan 100,150,200,300,320 0/19 0
```

Step 2 Configure the traffic profile.

Run the **display traffic table ip** command to query the existing traffic profiles in the system. If the traffic profiles existing in the system do not meet the requirements, run the **traffic table ip** command to add a traffic profile.

Set the priorities of the traffic profiles for Internet access/Wi-Fi/TR-069 server management channel and voice service to 1 and 6 respectively. The larger the value, the higher the priority.

```
huawei(config)#traffic table ip index 8 cir 4096 priority 1 priority-policy tag-In-
Packag
huawei(config)#traffic table ip index 9 cir off priority 6 priority-policy tag-In-
Packag
```

Step 3 Configure the DBA profile.

Set the DBA profile ID to 12, profile type to type2 (assured bandwidth), and assured bandwidth of access users to 10240 kbit/s.

NOTE

- The bandwidth type and the attribute of the DBA profile must be compatible with the service to be carried.
- The system supports five DBA profile types, namely, type1 (fixed bandwidth), type2 (assured bandwidth), type3 (assured bandwidth+maximum bandwidth), type4 (maximum bandwidth), and type5 (fixed bandwidth+assured bandwidth+maximum bandwidth).
- By default, the systems provides DBA profiles 1-9, each of which provides typical values for traffic parameters. By default, T-CONT 0 is bound to DBA profile 1.
- You can run the **display dba-profile** command to query the information about the DBA profile.

```
huawei(config)#dba-profile add profile-id 12 type2 assure 10240
```

Step 4 Configure the ONT line profile.

Create ONT line profile 12 and bind T-CONT 1 to DBA profile 12. In this way, the T-CONT can provide flexible DBA solutions based on the configurations of the DBA profile.

```
huawei(config)#ont-lineprofile gpon profile-id 12
huawei(config-gpon-lineprofile-12)#tcont 1 dba-profile-id 12
```

Add GEM ports 0-4 and bind them to T-CONT 1. Set the QoS mode to priority-queue, the priority-queue of Internet access/Wi-Fi/TR-069 server management channel to 1, and the priority-queue of the voice service to 3.

NOTE

- To change the default QoS mode, run the **qos-mode** command to set the QoS mode to gem-car or flow-car, and then run the **gem add** command to set the index of the traffic profile bound to the GEM port.
- When the QoS mode is priority-queue, the default queue priority is 0; when the QoS mode is flow-car or gem-car, traffic profile 6 is bound to the GEM port by default (no rate limitation).
- To enable the FEC function, run the **fec-upstream enable** command to improve the reliability of data transmission between the OLT and the ONT.

```
huawei(config-gpon-lineprofile-12)#gem add 0 eth tcont 1 priority-queue 1
huawei(config-gpon-lineprofile-12)#gem add 1 eth tcont 1 priority-queue 1
huawei(config-gpon-lineprofile-12)#gem add 2 eth tcont 1 priority-queue 3
huawei(config-gpon-lineprofile-12)#gem add 3 eth tcont 1 priority-queue 1
huawei(config-gpon-lineprofile-12)#gem add 4 eth tcont 1 priority-queue 1
```

Configure the mapping between the GEM port and the ONT-side service to the VLAN mapping mode (default) and map the service ports of CVLANs 100, 150, 200, 300, 320 to GEM ports 0-4, which are used for configuring the L2 Internet access service, L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel respectively.

```
huawei(config-gpon-lineprofile-12)#mapping-mode vlan
huawei(config-gpon-lineprofile-12)#gem mapping 0 0 vlan 100
huawei(config-gpon-lineprofile-12)#gem mapping 1 1 vlan 150
huawei(config-gpon-lineprofile-12)#gem mapping 2 2 vlan 200
huawei(config-gpon-lineprofile-12)#gem mapping 3 3 vlan 300
huawei(config-gpon-lineprofile-12)#gem mapping 4 4 vlan 320
huawei(config-gpon-lineprofile-12)#commit
huawei(config-gpon-lineprofile-12)#quit
```

CAUTION

After a profile is configured, run the **commit** command to make the configuration take effect before the system quits the profile mode.

Step 5 Configure the ONT service profile.

Set the ONT service profile ID to 12, the number of ETH ports on the ONT to 4, the number of POTS ports on the ONT to 2, and the VLAN ID of ETH1 (for L2 Internet access service) to 100.

NOTE

- The port capability set in the ONT service profile must be the same as the actual ONT capability set. The HG8240 and HG8245 each have four ETH ports and two POTS ports. The HG8247 has one CATV port, four ETH ports, and two POTS ports.
- The **port vlan** command is use for specifying a port VLAN and managing the attribute of the UNI port on the ONT remotely. This command is applicable for only the L2 service (L2 Internet access service) when the ONT functions as a bridge device. When the ONT functions as a gateway device, the configuration of the port VLAN is implemented on the ONT Web page, NMS, or TR-069 server.

```
huawei(config)#ont-srvprofile gpon profile-id 12
huawei(config-gpon-srvprofile-12)#ont-port eth 4 pots 2------------------
configurations for HG8240/HG8245
huawei(config-gpon-srvprofile-12)#ont-port catv 1 eth 4 pots 2----------
configurations for HG8247
huawei(config-gpon-srvprofile-12)#port vlan eth 1 100
huawei(config-gpon-srvprofile-12)#commit

+huawei(config-gpon-srvprofile-13)#quit
```

CAUTION

After a profile is configured, run the **commit** command to make the configuration take effect before the system quits the profile mode.

Step 6 Add an ONT.

Set the ONT ID to 0 and connect ONT 0 to GPON port 0; set the ONT authentication mode to the SN mode (SN 485754430DBCEA03) and the management protocol to OMCI; bind the ONT to ONT line profile 12 and ONT service profile 12.

NOTE

- There are two modes of adding an ONT, offline mode and auto-find mode. In offline mode, run the **ont add** command to add an ONT offline; in auto-find mode, run the **ont confirm** command to confirm the automatically discovered ONT. This topic considers the HG8245 V100R002C00 as an example.
- Before confirming an automatically discovered ONT, run the **port portid ont-auto-find** command in the GPON mode to enable the ONT auto-find function of the port.

```
huawei(config)#interface gpon 0/2
huawei(config-if-gpon-0/2)#port 0 ont-auto-find enable
huawei(config-if-gpon-0/2)#display ont autofind 0
```

```
  ---------------------------------------------------------------------------
  Number    F/ S/ P         SN            Password
  ---------------------------------------------------------------------------
   0        0/ 2/ 0    485754430DBCEA03
  ---------------------------------------------------------------------------
huawei(config-if-gpon-0/2)#ont confirm 0 ontid 0 sn-auth 485754430DBCEA03 omci ont-
lineprofile-id 12 ont-srvprofile-id 12
```

NOTE

- After adding the ONT, run the **display ont info** command to query the current status of the ONT. Ensure that **Run state** of the ONT is **up**, **Config state** is **normal**, and **Match state** is **match**.

```
huawei(config-if-gpon-0/2)#display ont info 0 all

  ---------------------------------------------------------------------------
  ---
    F/S/P   ONT-ID         SN         Control      Run    Config   Match
  DBA
                                     flag         state  state    state
  type

  ---------------------------------------------------------------------------
  ---
    0/ 2/0       0  485754430DBCEA03  active       up     normal   match
  SR

  ---------------------------------------------------------------------------
  ---
```

- If the ONT state in the actual query result is different from the preceding description, run the **display ont capability** command to query the actual ONT capabilities, and then modify the created ONT profiles so that they are consistent with the ONT actual capabilities. Then, add an ONT again.

Step 7 Configure a native VLAN for an ONT port.

The native VLAN ID of ETH port 1 is 100.

NOTE

The **ont port native-vlan** command is used for configuring the native VLAN of an ETH port. When a packet is transmitted to the ONT, a VLAN tag is added to the packet; when a packet is transmitted out of the ONT, the VLAN tag is removed from the packet. This command is applicable for only the L2 service (L2 Internet access service) when the ONT functions as a bridge device. When the ONT functions as a gateway device, the configuration of the port VLAN is implemented on the ONT Web page, NMS, or TR-069 server.

```
huawei(config-if-gpon-0/2)#ont port native-vlan 0 0 eth 1 vlan 100
```

Step 8 Configure service streams.

Configure service ports 1, 2, 3, 4, 5, and 6 for the L2 Internet access service, L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel respectively. Set the traffic profile IDs of Internet access/Wi-Fi/TR-069 server management channel and voice service to 8 and 9 respectively.

```
huawei(config-if-gpon-0/2)#quit
huawei(config)#service-port 1 vlan 100 gpon 0/2/0 ont 0 gemport 0 multi-service
user-vlan 100 inbound traffic-table index 8 outbound traffic-table index 8
huawei(config)#service-port 2 vlan 150 gpon 0/2/0 ont 0 gemport 1 multi-service
user-vlan 150 inbound traffic-table index 8 outbound traffic-table index 8
huawei(config)#service-port 3 vlan 200 gpon 0/2/0 ont 0 gemport 2 multi-service
user-vlan 200 inbound traffic-table index 9 outbound traffic-table index 9
huawei(config)#service-port 4 vlan 300 gpon 0/2/0 ont 0 gemport 3 multi-service
user-vlan 300 inbound traffic-table index 8 outbound traffic-table index 8
huawei(config)#service-port 5 vlan 320 gpon 0/2/0 ont 0 gemport 4 multi-service
user-vlan 320 inbound traffic-table index 8 outbound traffic-table index 8
```

Step 9 Save the data.

```
huawei(config)#save
```

----End

Configuration File

```
vlan 100,150,200,300,320 smart
vlan attrib 100,150,300 q-in-q
port vlan 100,150,200,300,320 0/19 0
traffic table ip index 8 cir 4096 priority 1 priority-policy tag-In-Packag
traffic table ip index 9 cir off priority 6 priority-policy tag-In-Packag
dba-profile add profile-id 12 type2 assure 10240
ont-lineprofile gpon profile-id 12
tcont 1 dba-profile-id 12
gem add 0 eth tcont 1 priority-queue 1
gem add 1 eth tcont 1 priority-queue 1
gem add 2 eth tcont 1 priority-queue 3
gem add 3 eth tcont 1 priority-queue 1
gem add 4 eth tcont 1 priority-queue 1
mapping-mode vlan
gem mapping 0 0 vlan 100
gem mapping 1 1 vlan 150
gem mapping 2 2 vlan 200
gem mapping 3 3 vlan 300
gem mapping 4 4 vlan 300
commit
quit
ont-srvprofile gpon profile-id 12
ont-port eth 4 pots 2
ont-port catv 1 eth 4 pots 2
port vlan eth 1 100
commit
quit
interface gpon 0/2
port 0 ont-auto-find enable
display ont autofind 0
ont confirm 0 ontid 0 sn-auth 485754430DBCEA03 omci ont-lineprofile-id 12 ont-
srvprofile-id 12
display ont info 0 all
ont port native-vlan 0 0 eth 1 vlan 100
service-port 1 vlan 100 gpon 0/2/0 ont 0 gemport 0 multi-service user-vlan 100
inbound traffic-table index 8 outbound traffic-table index 8
service-port 2 vlan 150 gpon 0/2/0 ont 0 gemport 1 multi-service user-vlan 150
inbound traffic-table index 8 outbound traffic-table index 8
service-port 3 vlan 200 gpon 0/2/0 ont 0 gemport 2 multi-service user-vlan 200
inbound traffic-table index 9 outbound traffic-table index 9
service-port 4 vlan 300 gpon 0/2/0 ont 0 gemport 3 multi-service user-vlan 300
inbound traffic-table index 8 outbound traffic-table index 8
service-port 5 vlan 320 gpon 0/2/0 ont 0 gemport 4 multi-service user-vlan 320
inbound traffic-table index 8 outbound traffic-table index 8
save
```

4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)

This topic describes how to add an ONT and configure relevant service ports for the ONT by means of the OLT CLI before configuring services for the ONT.

Prerequisite

NOTE

If an ONT is added to the OLT by running commands, the ONT can be auto-discovered in the corresponding slot on the NMS. In this case, you do not need to add the ONT any more. You can skip this operation and proceed with service configuration.

Data Plan

Table 4-3 provides the data plan for commissioning the interoperation between the OLT and the ONT (through the NMS).

Table 4-3 Data plan for commissioning the interoperation between the OLT and the ONT (through the NMS)

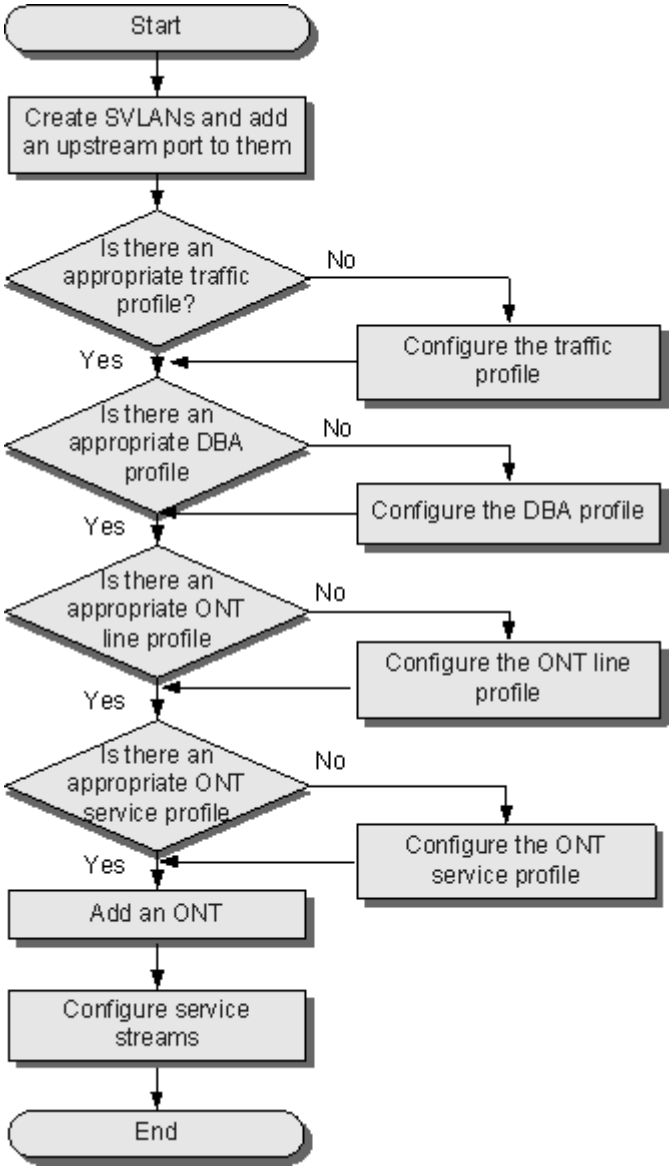
Item	Data Plan
OLT	● SVLAN ID: – L2 Internet access service (ONT working in bridge mode): 100 – L3 Internet access service (ONT working in gateway mode): 150 – Voice service (SIP/H.248): 200 – Wi-Fi: 300 – TR-069 server management channel: 320 ● VLAN type: Smart VLAN The VLAN attribute of Internet access service and Wi-Fi service is QinQ. ● Upstream port: 0/19/0
ONT	● Port ID: 0/2/0 ● ONT ID: 0 ● ONT authentication mode: SN (485754430DBCEA03) ● CVLAN ID: planned to be the same as the SVLAN ID ● L2 and L3 Internet access services: ETH1 and ETH2 (indicating LAN 1 and LAN 2 of the device interface)
Traffic profile	● Internet access/Wi-Fi/TR-069 server management channel: – Name: ip-traffic-table_8 – CIR: 4 Mbit/s – Priority: 1 Packets are scheduled according to the priorities carried in the packets. ● Voice service: – Name: ip-traffic-table_9 – Upstream and downstream rates: unlimited – Priority: 6 Packets are scheduled according to the priorities carried in the packets.
DBA profile	● Name: 10M-Assure ● DBA profile type: Assured Bandwidth (10240 kbit/s)

Item	Data Plan
Line profile	● Name: lineprofile-gpon ● Upstream FEC function: OFF (default) ● Traffic control: Priority Queue – Internet access/Wi-Fi/TR-069 server management channel: 1 – Voice service: 3 ● Mapping mode: VLAN (default) ● GEM ports 0-4 for the L2 Internet access service, L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel respectively.
Service profile	● Name: srvprofile-gpon ● Ports of the HG8240 or HG8245: – 4 Ethernet ports – 2 POTS ports ● Ports of the HG8247: – 1 CATV port – 4 Ethernet ports – 2 POTS ports

Flowchart

Figure 4-2 shows the flowchart for commissioning the interoperation between the OLT and the ONT (through the NMS).

Figure 4-2 Flowchart for commissioning the interoperation between the OLT and the ONT (through the NMS)



Procedure

Step 1 Create SVLANs and add an upstream port to them.

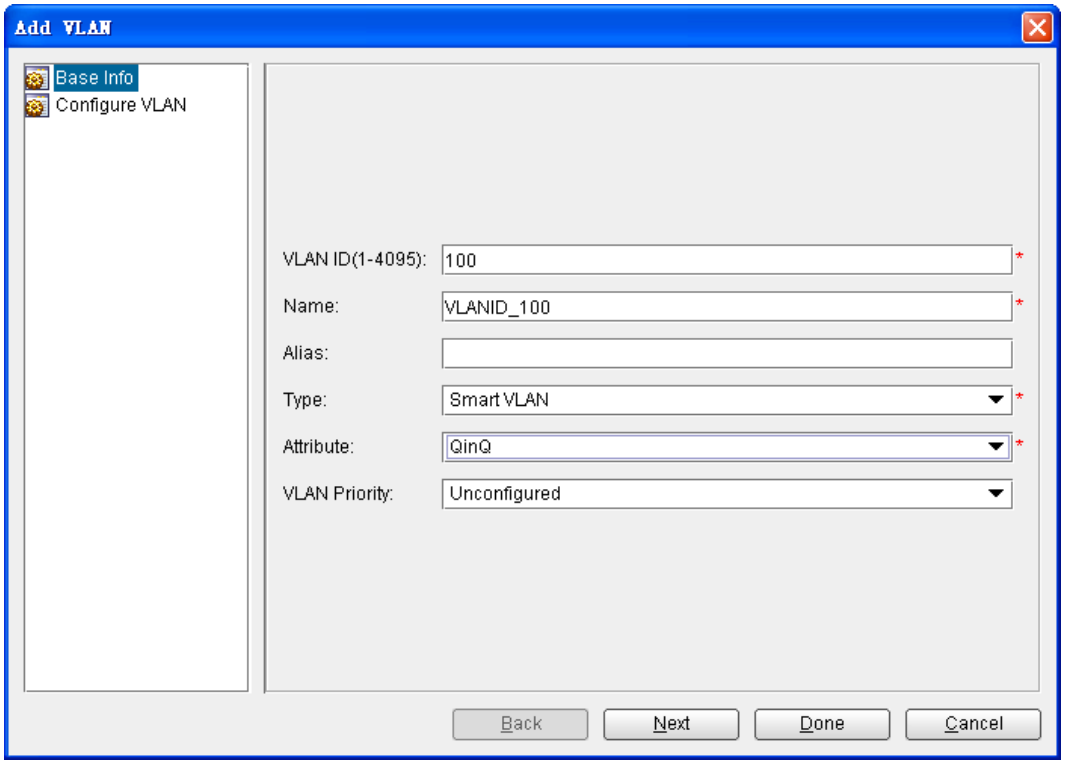
Set SVLANs 100, 150, 200, 300, and 320 for the L2 Internet access service, L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel respectively. Create smart SVLANs and set the attributes of the SVLANs for the Internet access service and Wi-Fi service to QinQ. Add upstream port 0/19/0 to the SVLANs. The following section considers l2 Internet access service as an example to describe how to create an SVLAN.

1. In the Main Topology, right-click the required OLT in the **Physical View** navigation tree and choose **Device Management** from the shortcut menu.

2. In the NE Explorer, choose **VLAN** from the navigation tree. In the VLAN list, right-click and choose **Add** from the shortcut menu.
3. In the dialog box that is displayed, click the **Basic Info** tab. On the **Basic Info** tab page, set the parameters as follows:
   - Set **Vlan ID** to **100**.
   - Set **Type** to **Smart VLAN**.
   - Set **Attribute** to **QinQ**.

   Figure 4-3 shows how to configure an SVLAN.

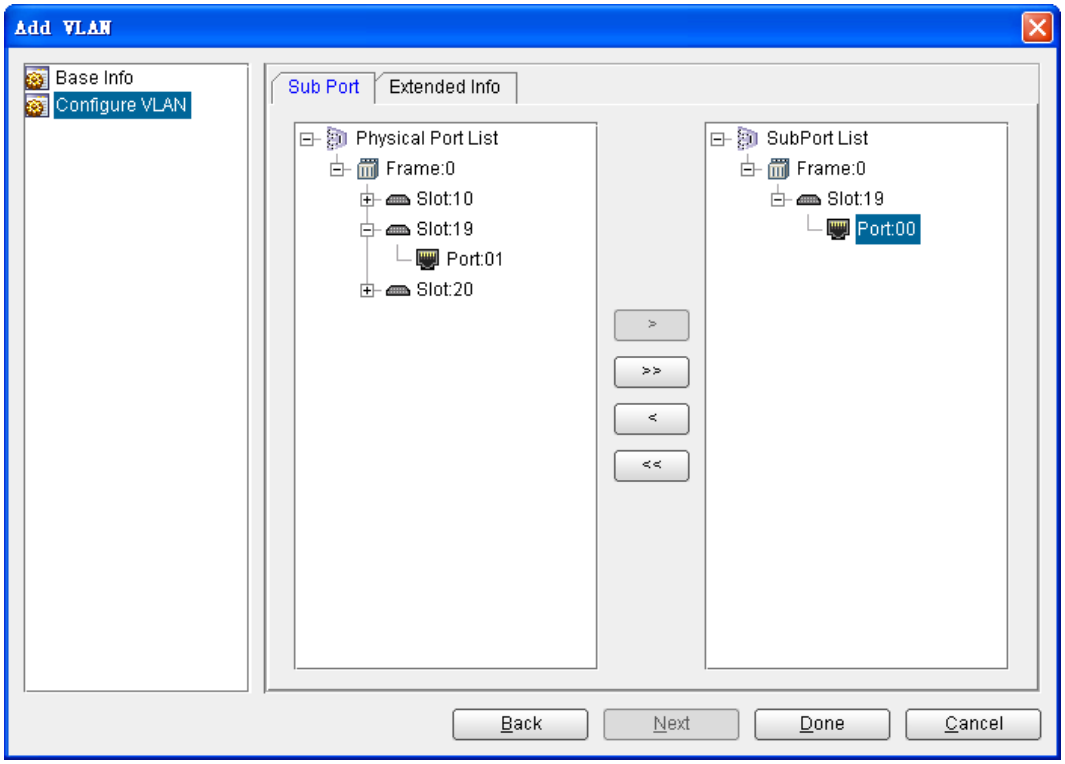
Figure 4-3 Configuring an SVLAN



4. Click **Next**. In the dialog box that is displayed, expand the **Physical Port List** branch, and add the SVLAN to upstream port 0/19/0.

   Figure 4-4 shows how to add the SVLAN to an upstream port.

Figure 4-4 Adding the SVLAN to an upstream port



5. Click **Done**.

Step 2 Configure the traffic profile.

1. Choose **Profile** > **Traffic Profile** from the main menu.
2. In the window that is displayed, right-click and choose **Add Global Profile** from the shortcut menu. In the dialog box that is displayed, set the traffic profile parameters.

   Set the priorities of Internet access service, Wi-Fi service, and TR-069 server management channel to **1** and set the priority of voice service to **6**. The greater the number is, the higher the priority is.

   Figure 4-5 and **Figure 4-6** provide parameter settings in the traffic profiles of Internet access service, Wi-Fi service, TR-069 server management channel, and voice service.

Figure 4-5 Configuring the traffic profile of Internet access service, Wi-Fi service, and TR-069 server management channel

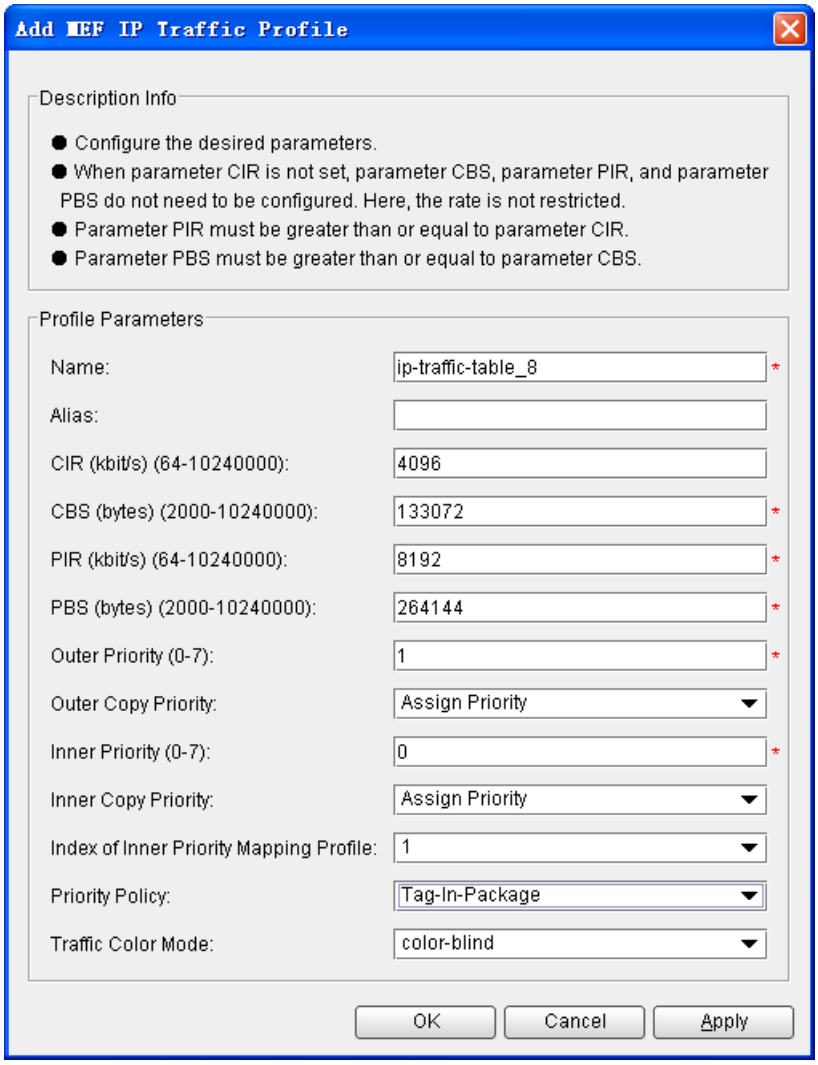
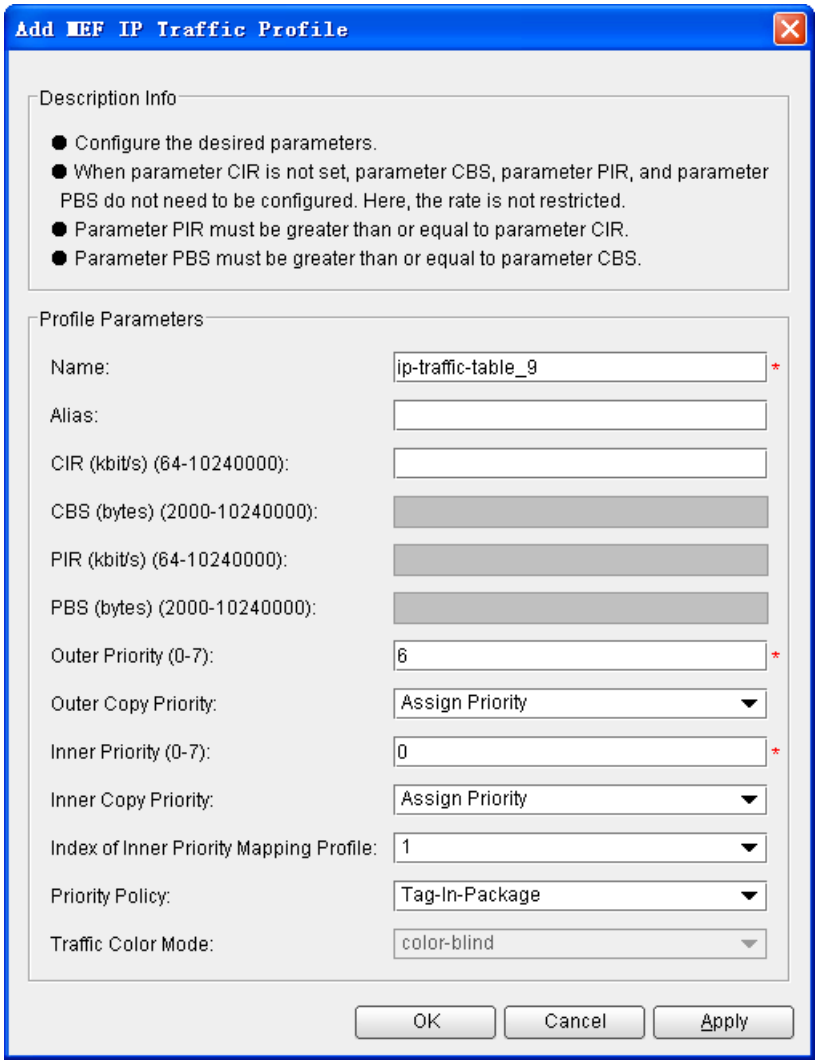


Figure 4-6 Configuring the traffic profile of the voice service



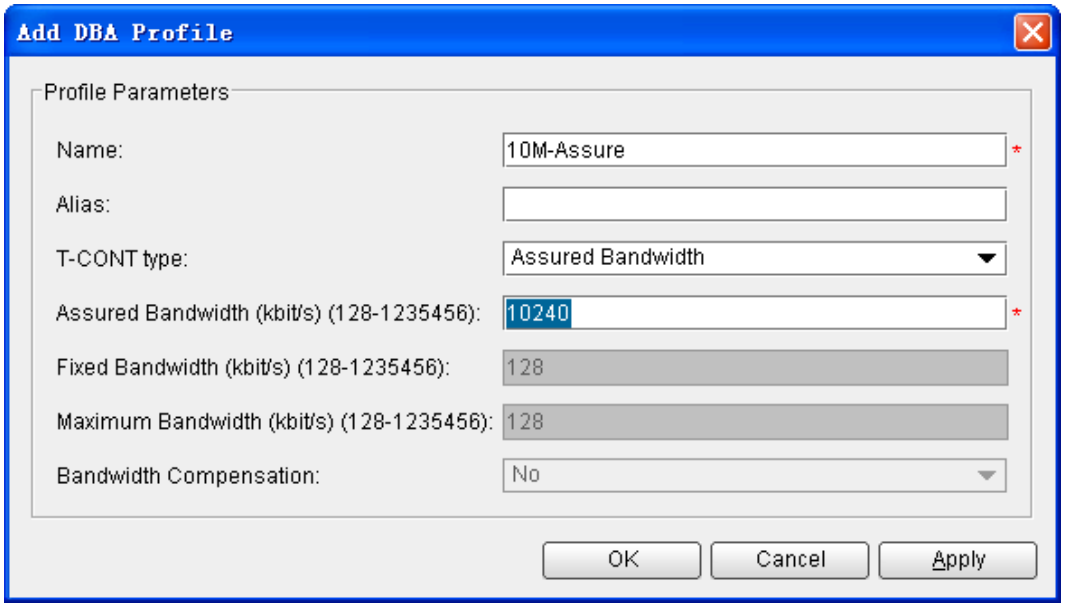
3. Click **OK**.
4. Right-click the new traffic profile and choose **Download to NE** from the shortcut menu. In the dialog box that is displayed, select the OLT and click **OK**.

Step 3 Configure the DBA profile.

1. Choose **Profile** > **PON** > **GPON Profile** from the main menu.
2. In the window that is displayed, click the **DBA Profile** tab. On the **DBA Profile** tab page, right-click and choose **Add Global Profile** from the shortcut menu. In the dialog box that is displayed, set the parameters as follows:
   - Set **Name** to **10M-Assure**.
   - Set **T-CONT type** to **Assured Bandwidth**.
   - Set **Assured Bandwidth** to **10240**.

   Figure 4-7 shows how to configure the DBA profile.

Figure 4-7 Configuring the DBA profile



NOTE

- There are five types of DBA profiles, supporting fixed bandwidth, assured bandwidth, assured bandwidth/maximum bandwidth, maximum bandwidth, and mixed mode.
- DBA profiles dba-profile_1 to dba-profile_9 are default DBA profiles. The default profiles provide typical traffic parameter settings. T-CONT 0 is bound to the DBA profile named dba-profile_1 by default.

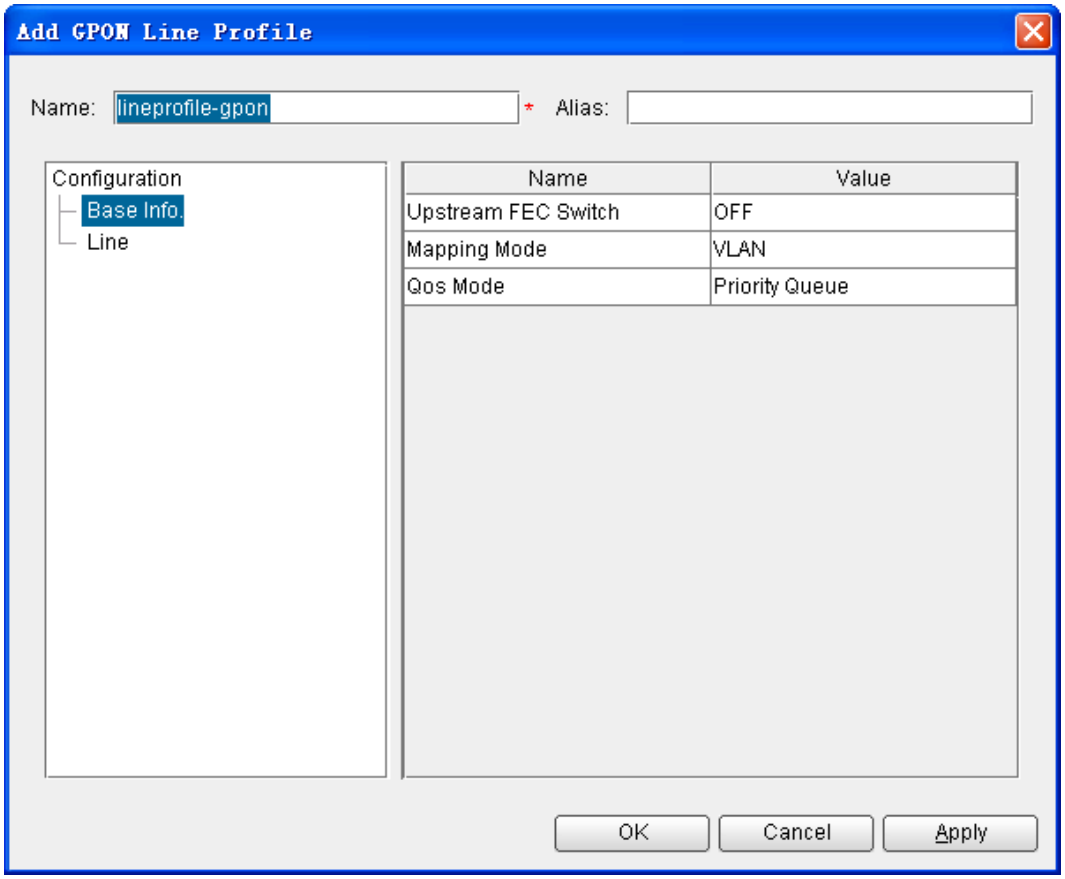
3. Click **OK**.

Step 4 Configure the ONT line profile.

1. Choose **Profile** > **PON** > **GPON Profile** from the main menu.
2. In the window that is displayed, click the **GPON Line Profile** tab. On the **GPON Line Profile** tab page, right-click and choose **Add Global Profile** from the shortcut menu. In the dialog box that is displayed, set **Name** to **lineprofile-gpon**.

   Figure 4-8 shows how to configure the ONT line profile.

Figure 4-8 Configuring the ONT line profile



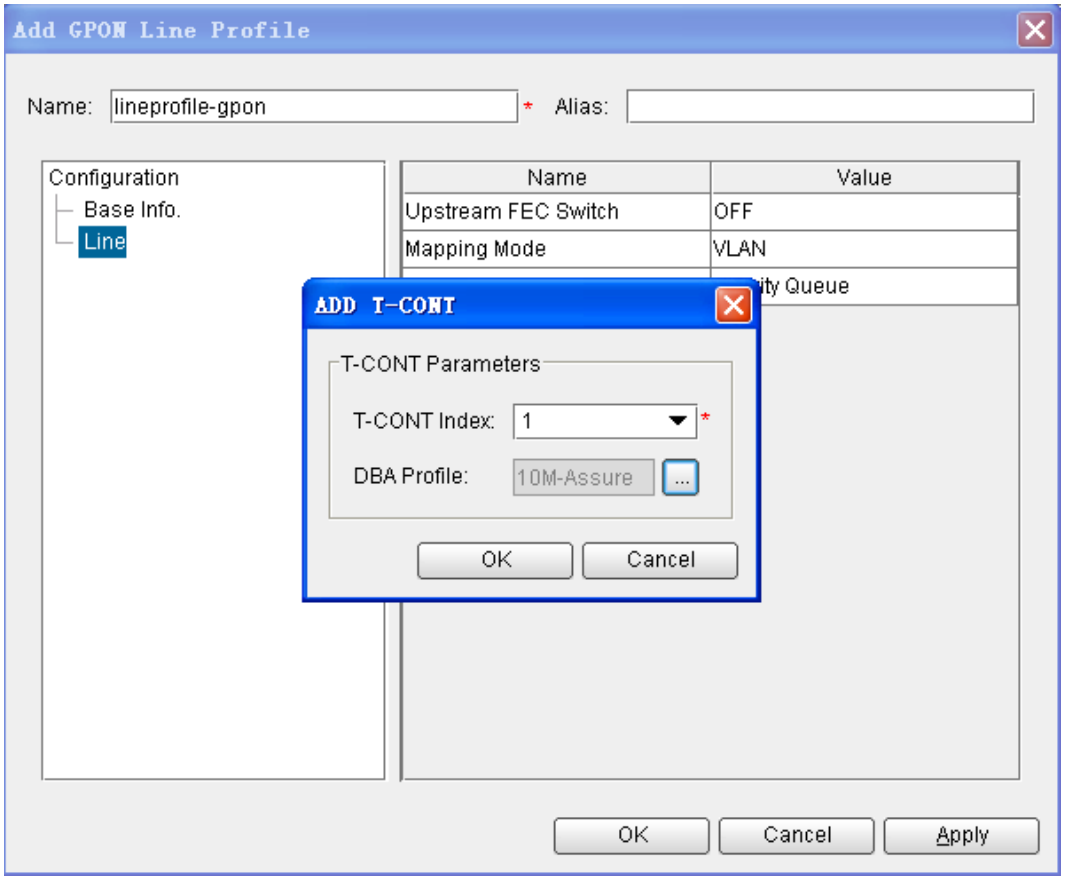
3. Add a T-CONT.

   In the dialog box as shown in **Figure 4-8**, choose **Line** from the navigation tree. Right-click and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters as follows:

   - Set **T-CONT index** to **1**.
   - Set **DBA Profile** to **10M-Assure**.

   Figure 4-9 shows how to add a T-CONT.

Figure 4-9 Adding a T-CONT



4. Click **OK**.
5. Add a GEM port.

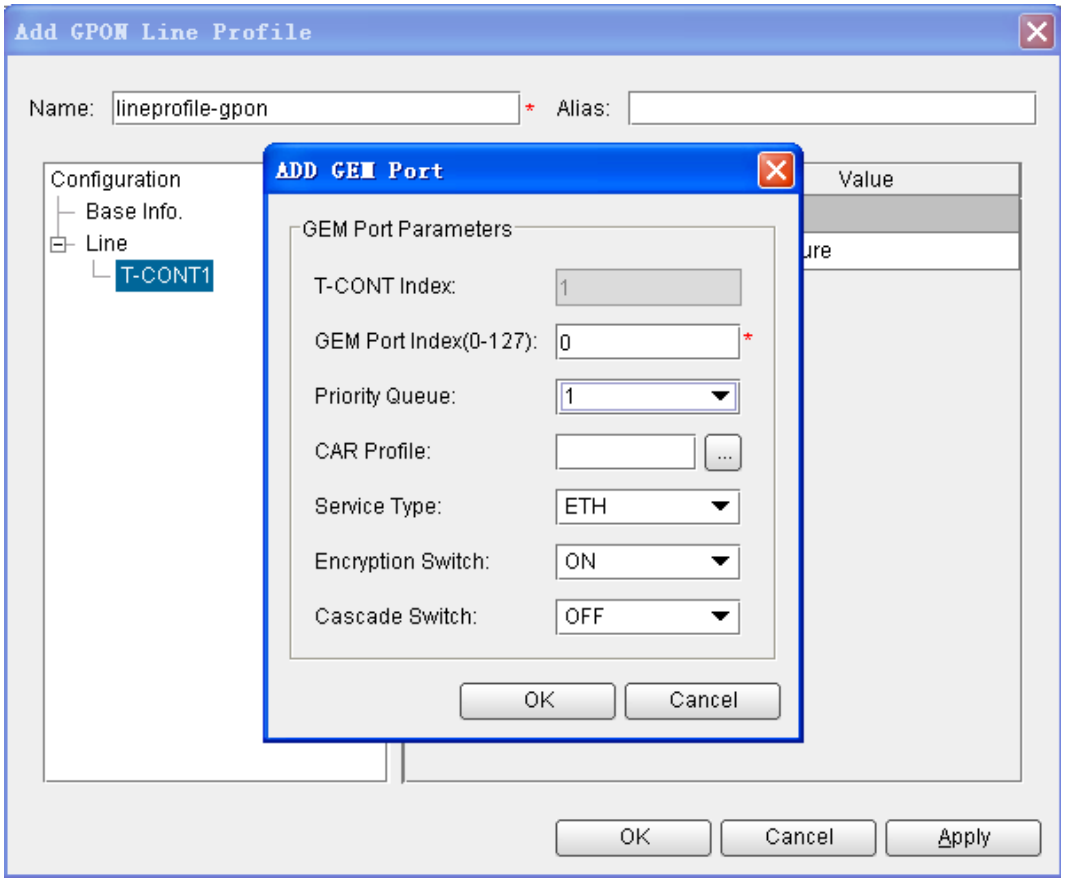
   The following section considers L2 Internet access service as an example to describe how to add a GEM port. GEM ports 1-4 are used for L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel respectively. The priority queue of Internet access service, Wi-Fi service, and TR-069 server management channel is **1** and the priority queue of the voice service is **6**.

   In the left pane, right-click the new **T-CONT1** and choose **ADD GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters as follows:

   - Set **GEM Port index** to **0**.
   - Set **Priority Queue** to **1**.
   - Set **Service Type** to **ETH**.

   Figure 4-10 shows how to add a GEM port.

Figure 4-10 Adding a GEM port



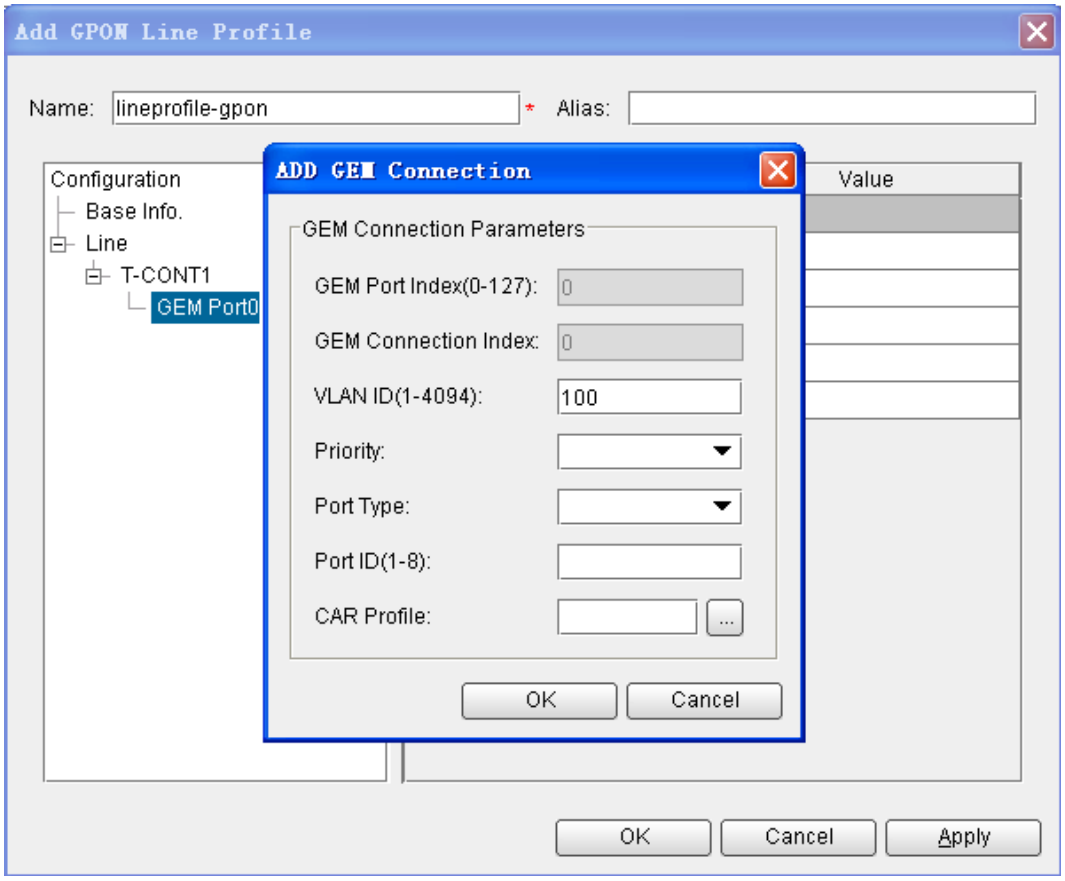
6. Click **OK**.
7. Add a GEM connection.

   The following section considers L2 Internet access service as an example to describe how to add a GEM connection. GEM connection 150, 200, 300, and 320 are used for L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel respectively.

   In the left pane, right-click **GEM Port0** that is created and choose **ADD GEM Connection** from the shortcut menu. In the dialog box that is displayed, set **VLAN ID** to **100**, the CVLAN.

   Figure 4-11 shows how to add a GEM connection.

Figure 4-11 Adding a GEM connection



8. Click **OK**.
9. Right-click the new line profile and choose **Download to NE** from the shortcut menu. In the dialog box that is displayed, select the required OLT and click **OK**.

Step 5 Configure the ONT service profile.

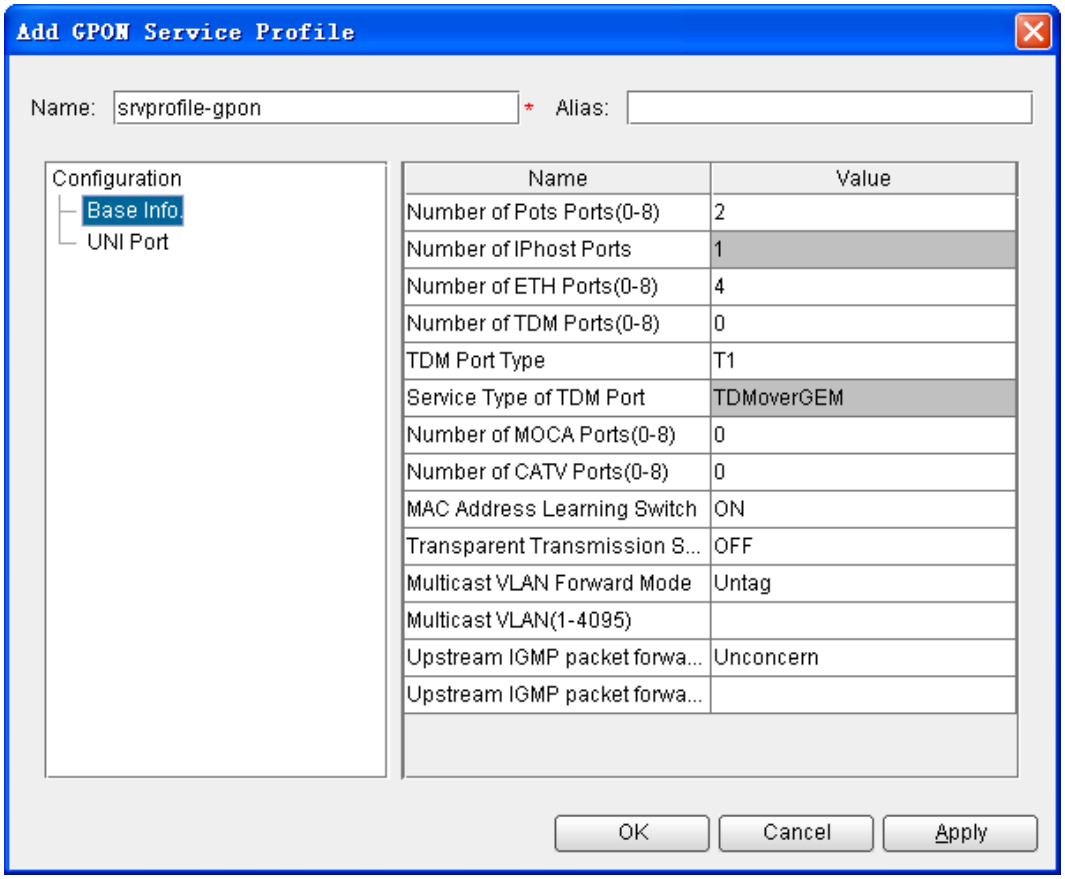
1. Choose **Profile** > **PON** > **GPON Profile** from the main menu.
2. In the window that is displayed, click the **GPON Service Profile** tab. On the **GPON Service Profile** tab page, right-click and choose **Add Global Profile** from the shortcut menu. Parameter values vary with terminal types.

   Assume that the HG8240 or HG8245 is used. Set the parameters as follows:

   - Set **Name** to **srvprofile-gpon**.
   - Set **Number of Pots Ports** to **2**.
   - Set **Number of ETH Ports** to **4**.

   Figure 4-12 shows how to configure the ONT service profile (HG8240/HG8245).

Figure 4-12 Configuring the ONT service profile (HG8240/HG8245)

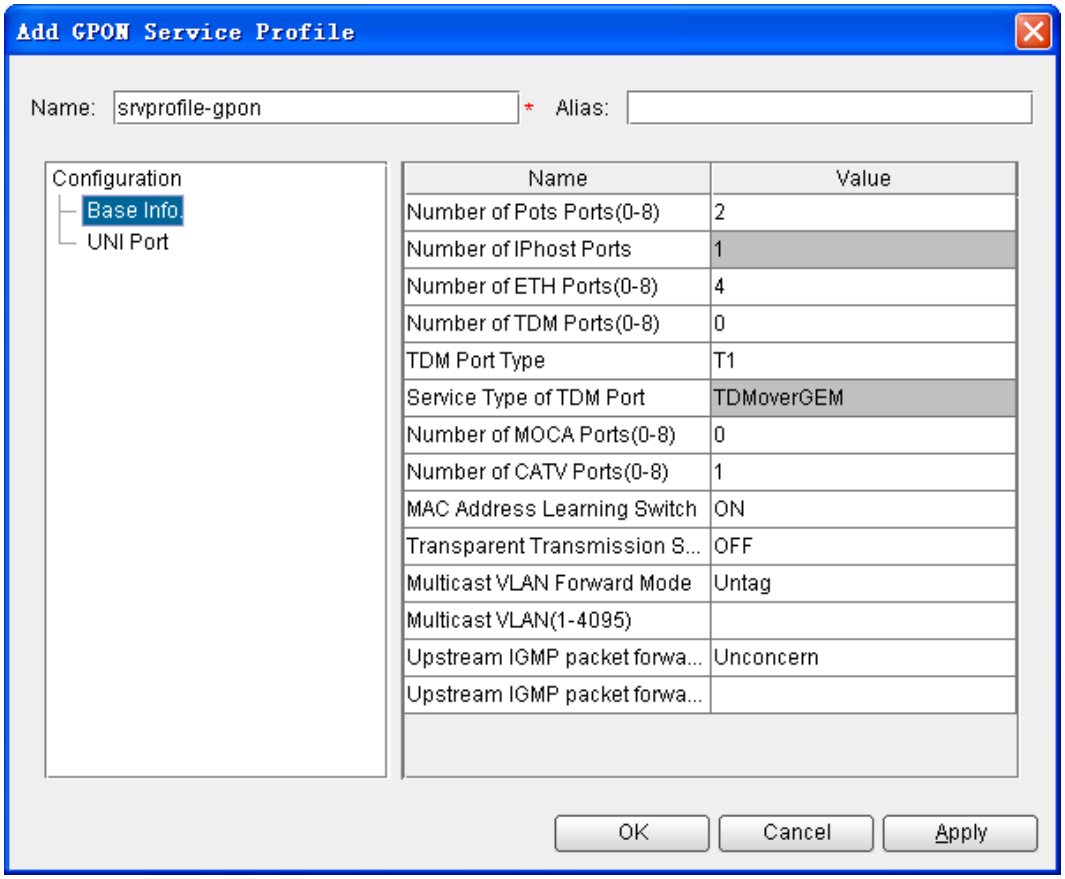


Assume that the HG8247 is used. Set the parameters as follows:

- Set **Name** to **srvprofile-gpon**.
- Set **Number of Pots Ports** to **2**.
- Set **Number of ETH Ports** to **4**.
- Set **Number of CATV Ports** to **1**.

Figure 4-13 shows how to configure the ONT service profile (HG8247).

Figure 4-13 Configuring the ONT service profile (HG8247)



NOTE

The port capability set in the ONT service profile must be the same as the actual port capability set of the ONT. The HG8240 and HG8245 each has four Ethernet ports and two POTS ports. The HG8247 has one CATV port, four Ethernet ports, and two POTS ports.

3. Configure the default VLAN ID.

   The default VLAN ID of Ethernet port 1 is 100 for L2 Internet access service.

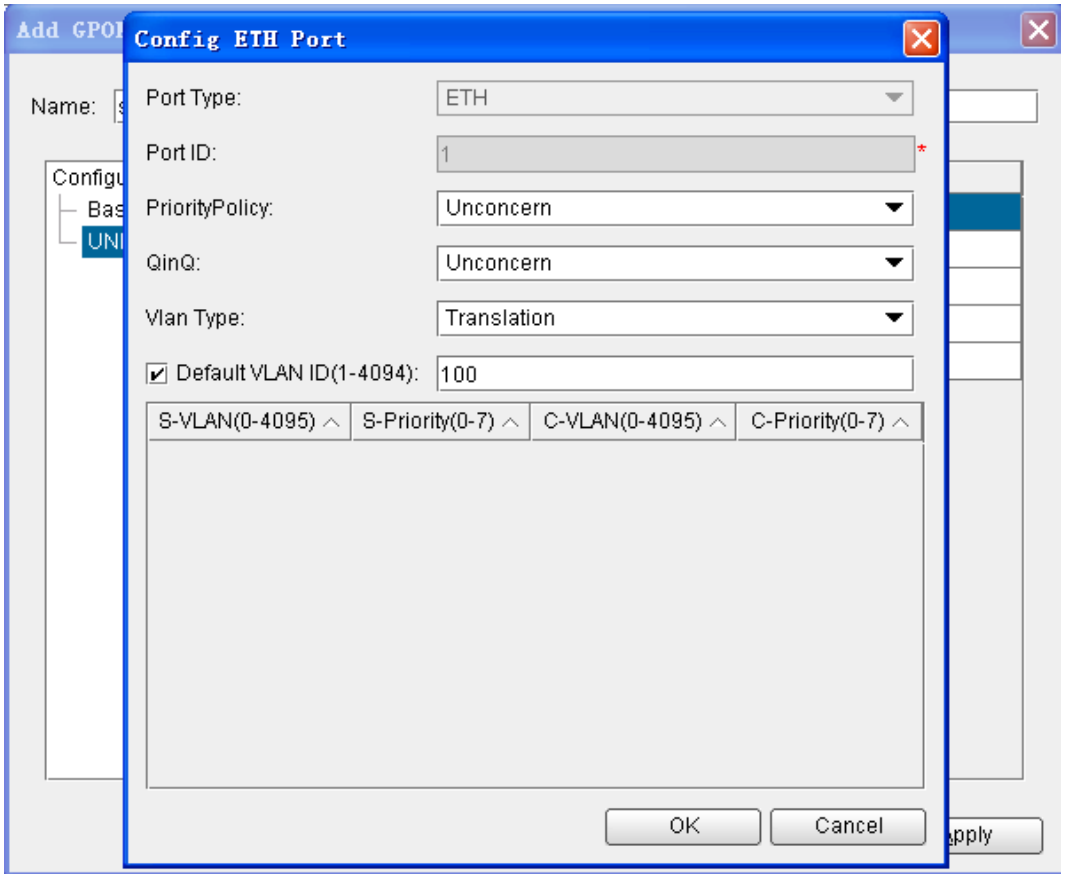
   NOTE

   This operation is applicable to only L2 Internet access service. Specifically, when an ONT works as a bridge, packets must be labeled with VLAN tags before entering the ONT and the VLAN tags must be stripped from the packets before the packets leave the ONT; when an ONT works as a gateway device, the VLAN IDs of ports can be set on the Web page of the ONT, on the NMS, or on the TR-069 server.

   In the dialog box as shown in **Figure 4-13**, choose **UNI Port** from the navigation tree. In the right pane, right-click Ethernet port 1 and choose **Config VLAN of UNI Port** from the shortcut menu. In the dialog box that is displayed, select the **Default VLAN** check box and set **Default VLAN** to **100**, the CVLAN ID.

   Figure 4-14 shows how to configure the default VLAN ID.

Figure 4-14 Configuring the default VLAN ID



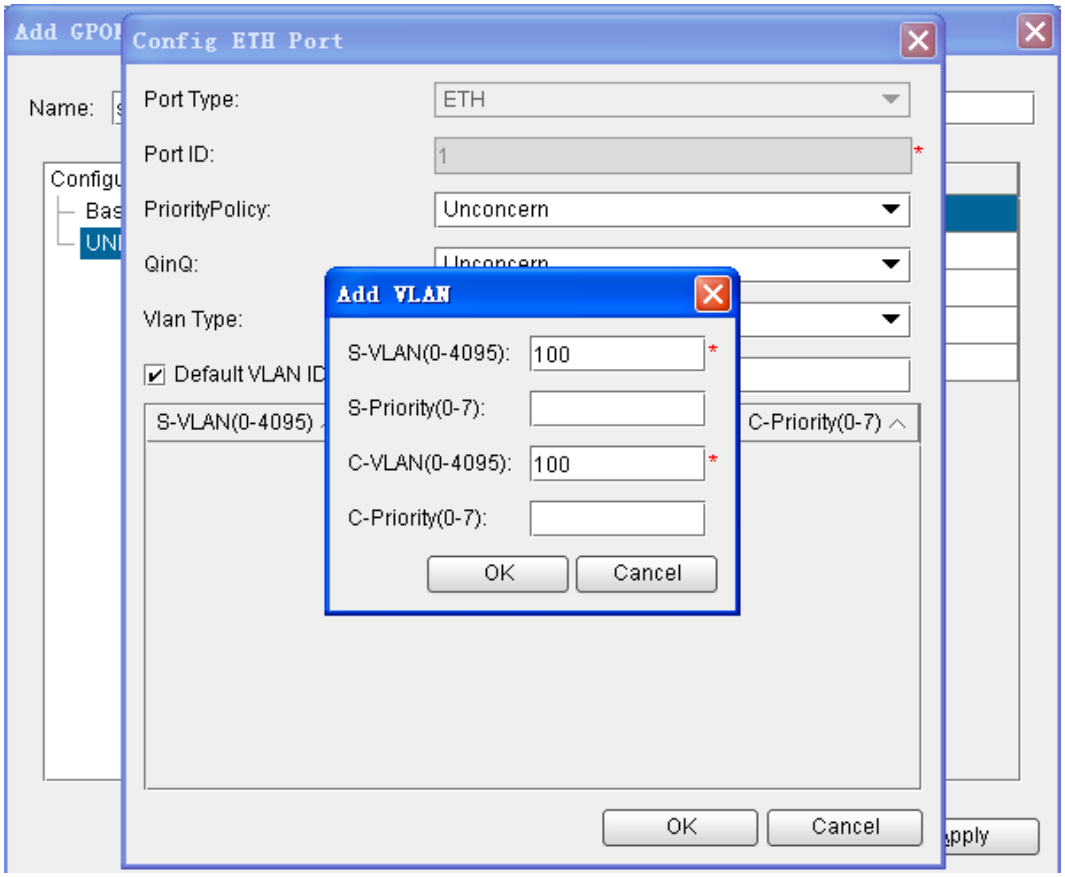
4. Click **OK**.
5. Configure the VLAN switching pair of a UNI port.

   The following section considers L2 Internet access service as an example to describe how to configure the VLAN switching pair of a UNI port. Both **S-VLAN** and **C-VLAN** must be set to 150, 200, 300, and 320 for L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel respectively.

   In the lower pane, right-click and choose **Add** from the shortcut menu. In the dialog box that is displayed, set both **S-VLAN** and **C-VLAN** to **100**. In this case, **S-VLAN** must be the same as **C-VLAN**.

   Figure 4-15 shows how to configure the VLAN switching pair of the UNI port.

Figure 4-15 Configuring the VLAN switching pair of the UNI port



6. Click **OK**.
7. Right-click the new service profile and choose **Download to NE** from the shortcut menu. In the dialog box that is displayed, select the OLT and click **OK**.

Step 6 Add an ONT.

NOTE

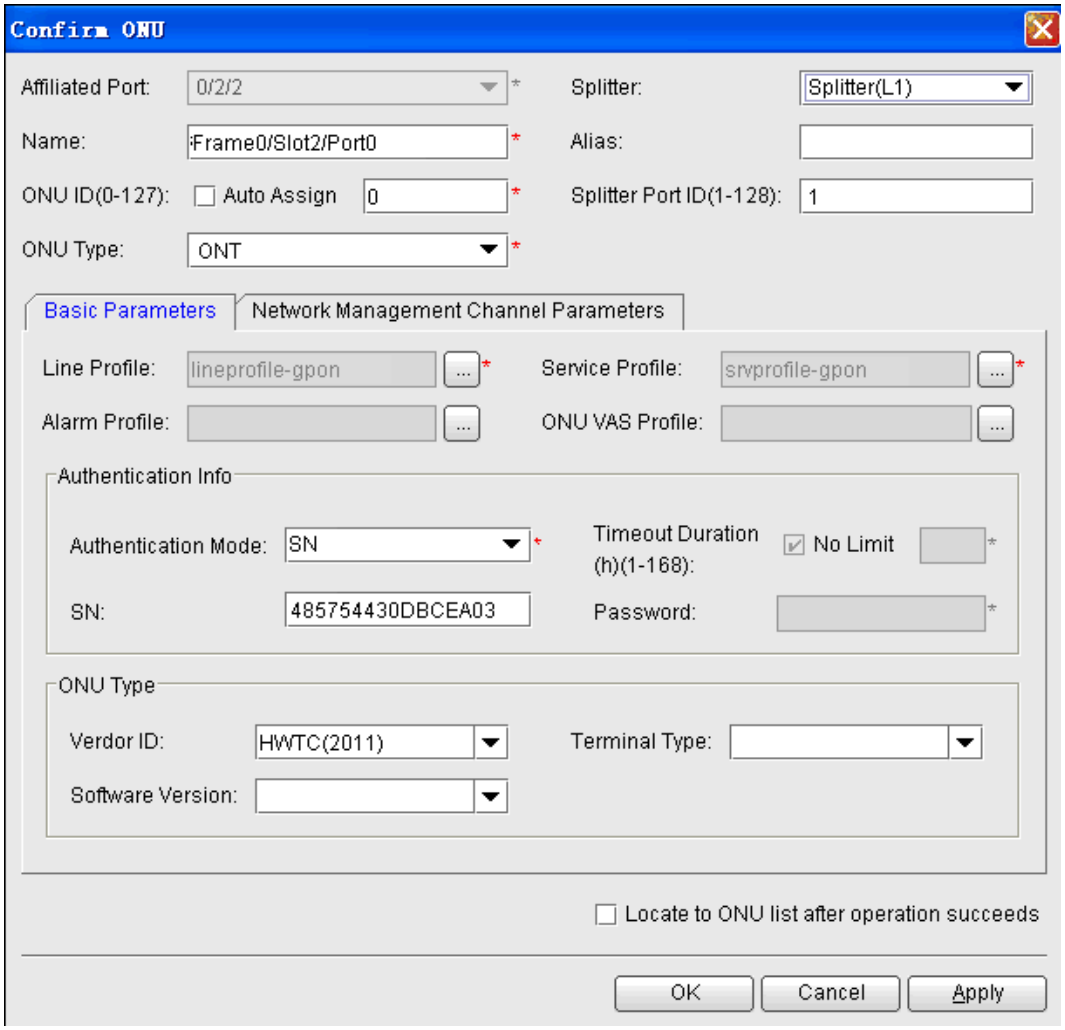
- An ONT can be added in auto-discovery or offline mode. This topic considers the auto-discovery mode as an example to describe how to add an ONT.
- You can also right-click on the **GPON ONU** tab page of an OLT and choose **Add** from the shortcut menu to add an ONT offline.

1. On the **GPON UNI Port** tab page, select one or more required ONTs from the ONT list, right-click, and then choose **Enable ONU Auto Find** from the shortcut menu to enable the ONT auto-discovery function.
2. On the **GPON UNI Port** tab page, select the required ONT from the ONT list, and click the **Auto-Discovered ONU Info** tab in the lower pane. Right-click and choose **Confirm ONU** from the shortcut menu. In the dialog box that is displayed, set the parameters as follows:
   - Set **ONU ID** to **0**.
   - Set **ONU Type** to **ONT**.
   - Set **Line Profile** to **lineprofile-gpon**.

- Set **Service Profile** to **srvprofile-gpon**.
- Set **Authentication Mode** to **SN**.

Figure 4-16 shows how to add an ONT.

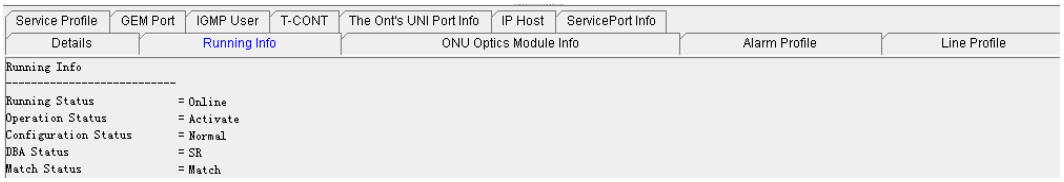
Figure 4-16 Adding an ONT



3. On the **GPON ONU** tab page, select the added ONT, and click the **Running Info** tab to view the information about the ONT. The ONT information is as follows:
   - **Running Status**: **Online**
   - **Operation Status**: **Activate**
   - **Configuration Status**: **Normal**
   - **Match Status**: **Match**

   Figure 4-17 shows how to view the ONT status.

Figure 4-17 Viewing the ONT status



4. If the actual status of the auto-discovered ONT is different from the preceding description, check whether the specified line profile and service profile match the actual ONT capabilities. If they are unmatched, modify the created ONT profiles so that they are consistent with the ONT actual capabilities. Then, add an ONT again.

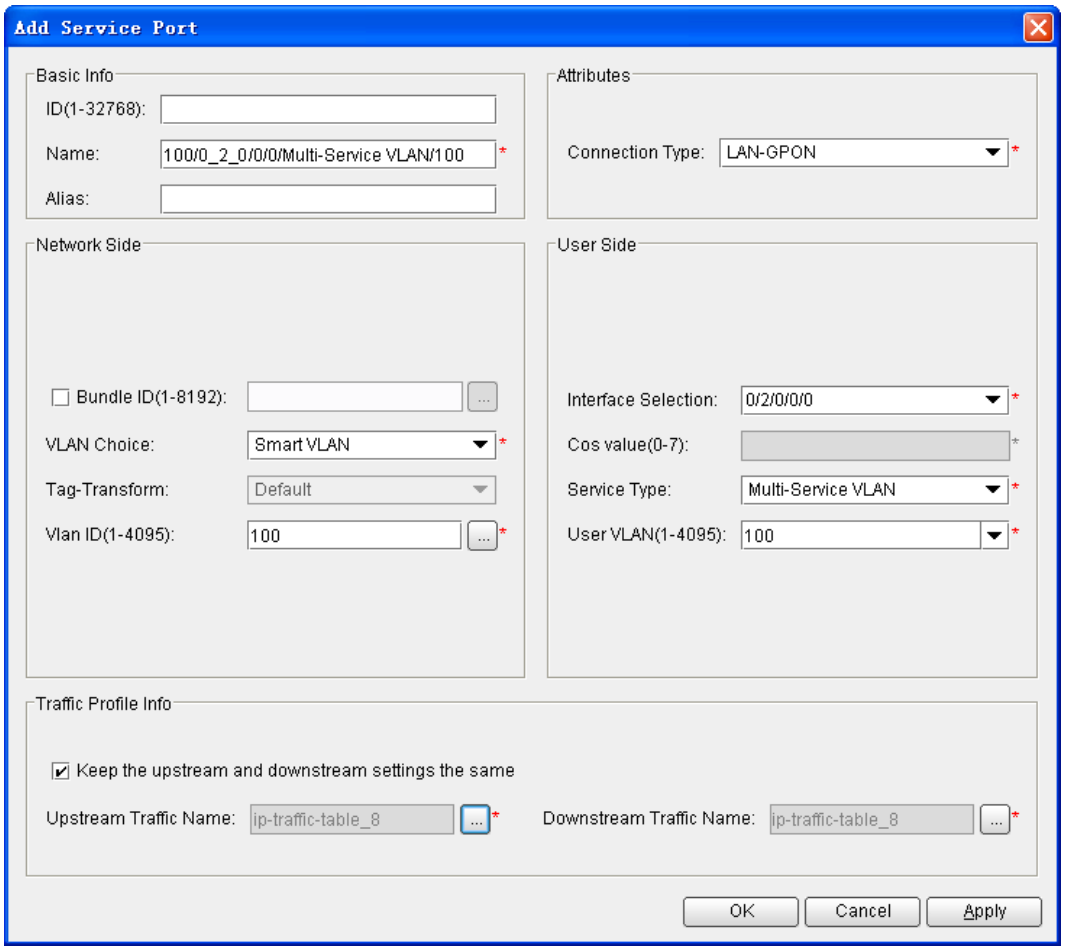
Step 7 Configure service streams.

Service streams must be configured separately for L2 Internet access service, L3 Internet access service, voice service, Wi-Fi service, and TR-069 server management channel. Internet access service, Wi-Fi service, and TR-069 server management channel use the traffic profile named ip-traffic-table_8 and the voice service use the traffic profile named ip-traffic-table_9. The following section considers L2 Internet access service as an example to describe how to configure service streams.

1. On the **GPON ONU** tab page, select the required ONT and click the **ServicePort Info** tab in the lower pane.
2. On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu. In the dialog box that is displayed, set the parameters as follows:
   - Set **VLAN Choice** to **Smart VLAN**.
   - Set **VLAN ID** to **100**. This VLAN is the SVLAN.
   - Set **Interface Selection** to **0/2/0/0/0**.
   - Set **Service Type** to **Multi-Service VLAN**.
   - Set **User VLAN** to **100**.
   - Select the **Keep the upstream and downstream settings the same** check box, and set **Upstream Traffic Name** and **Downstream Traffic Name** to **ip-traffic-table_8**.

   Figure 4-18 shows how to configure service streams.

Figure 4-18 Configuring service streams



3. Click **OK**.

----End

4.2.3 Commissioning Interoperation Between the TR-069 Server and the ONT Through the Web Page

To configure and issue ONT services using the TR-069 server, you need to add the ONT on the TR-069 server so that the TR-069 server can manage the ONT.

Prerequisite

ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.

Data Plan

Table 4-4 provides the data plan for commissioning interoperation between the TR-069 server and the ONT through the Web page.

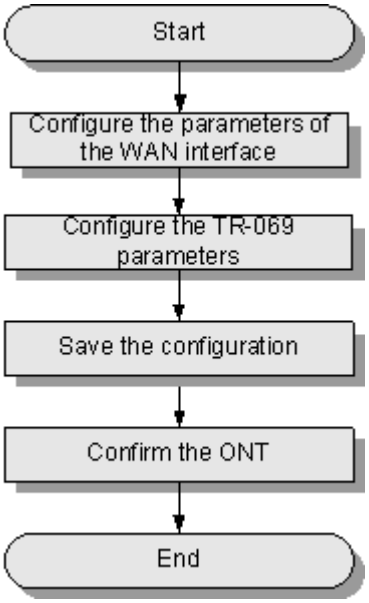
Table 4-4 Data plan for commissioning interoperation between the TR-069 server and the ONT through the Web page

Parameter	Data	Description
Service type of the WAN interface	TR069	When configuring the TR-069 management channel, you need to select only TR069 or a combination with TR069. In this example, TR069 is selected.
Connection mode	Route	-
VLAN ID of the WAN interface	320	The VLAN ID of the WAN interface must be the same as the CVLAN ID configured on the OLT.
Mode of obtaining an IP address	DHCP	There are three modes to obtain an IP address: ● DHCP: Obtain an IP address dynamically. ● Static: Configure an IP address manually. ● PPPoE: Access in the PPPoE dialup mode. In this example, the DHCP mode is configured. You can also select the static or PPPoE mode according to the data plan of the upper-layer network.
ACS URL	http://10.11.11.1:9070	It can be the IP address, port ID, domain name of the ACS server.
Periodical notification interval	43200	It is the default value of the system.
ACS user name	hgw	It is the default value of the system.
ACS password	hgw	It is the default value of the system.
User name of a requested connection	server	It must be the same as that planned on the TR-069 server.
Password of a requested connection	server	It must be the same as that planned on the TR-069 server.

Flowchart

Figure 4-19 shows the flowchart for commissioning interoperation between the TR-069 server and the ONT through the Web page.

Figure 4-19 Flowchart for commissioning interoperation between the TR-069 server and the ONT through the Web page



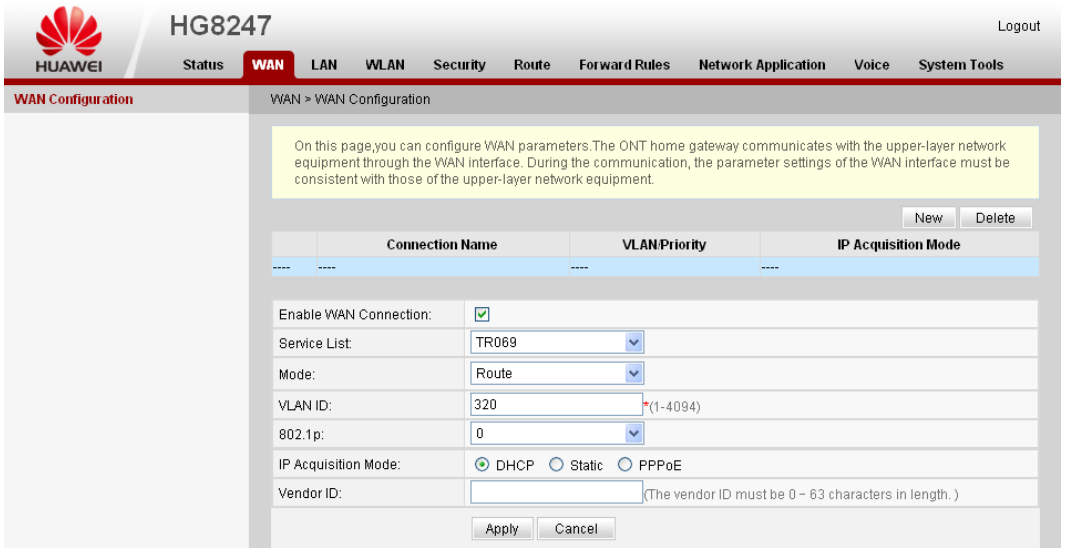
Procedure

Step 1 Configure the parameters of the WAN interface.

1. Coose **WAN** > **WAN Configuration**.
2. In the pane on the right, click **New**. In the dialog box that is displayed, configure the parameters of the WAN interface as follows:
   - Select **Enable** to enable the WAN connection that is newly set up.
   - Set **Service List** to **TR069**.
   - Set **Mode** to **Route**.
   - Set **VLAN ID** to **320**.
   - Set **IP Acquisition Mode** to **DHCP**.

   Figure 4-20 shows how to configure the parameters of the WAN interface.

Figure 4-20 Configuring the parameters of the WAN interface



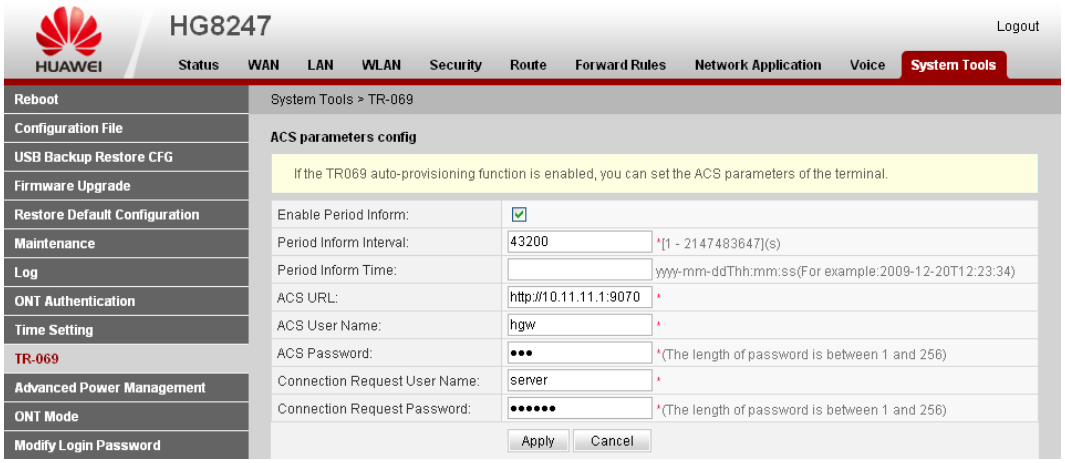
3. Click **Apply**.

Step 2 Configure the TR-069 parameters.

1. In the navigation tree on the left, choose **System Tools** > **TR-069**.
2. In the pane on the right, set the TR-069 client parameters (other parameters use the default values) as follows:
   - Set **ACS URL** to **http://10.11.11.1:9070**.
   - Set **Connection Request User Name** and **Connection Request Password** to **server**.

   Figure 4-21 shows how to configure the parameters of the TR-069 client.

Figure 4-21 Configuring the parameters of the TR-069 client

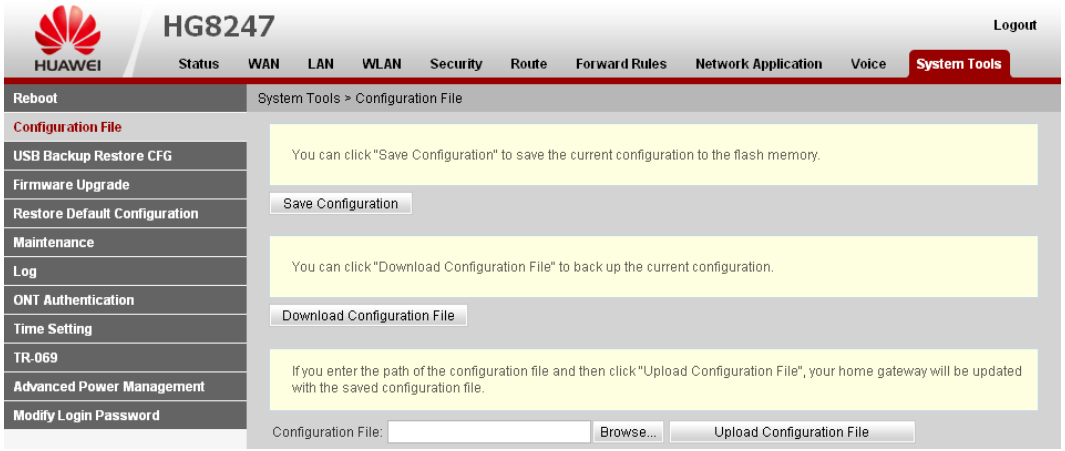


3. Click **Apply**.

Step 3 Save the configuration.

Choose **System Tools** > **Configuration File** from the navigation tree. In the right pane, click **Save Configuration**, as shown in **Figure 4-22**.

Figure 4-22 Saving the configuration



Step 4 Confirm the ONT.

Log in to the TR-069 server and then choose **Subnet view** > **TR-069 Subnet** from **WLAN and Home Network View** in the navigation tree on the left. In the pane on the right, right-click and choose **Refresh** from the shortcut menu. The reported ONT list is displayed. Then, select the ONT list, right-click, and choose **Confirm** from the shortcut menu.

----End

Result

On the TR-069 server, you can configure ONT services. For details, see the configuration examples.

4.2.4 Commissioning Interoperation Between the TR-069 Server and the ONT Through the NMS

To configure and issue ONT services using the TR-069 server, you need to add the ONT on the TR-069 server so that the TR-069 server can manage the ONT.

Prerequisite

ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.

Data Plan

Table 4-5 provides the data plan for commissioning interoperation between the TR-069 server and the ONT through the NMS.

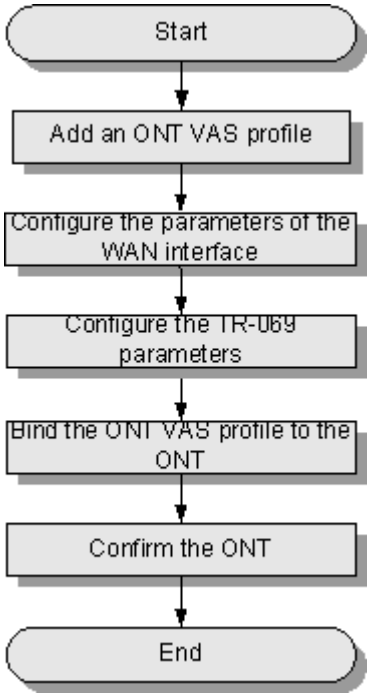
Table 4-5 Data plan for commissioning interoperation between the TR-069 server and the ONT through the NMS

Item	Data	Description
Service type of the WAN interface	TR069	When configuring the TR-069 management channel, you need to select only TR069 or a combination with TR069. In this example, TR069 is selected.
Connection mode	Route	-
VLAN ID of the WAN interface	320	The VLAN ID of the WAN interface must be the same as the CVLAN ID configured on the OLT.
Mode of obtaining an IP address	DHCP	There are three modes to obtain an IP address: ● DHCP: Obtain an IP address dynamically. ● Static: Configure an IP address manually. ● PPPoE: Access in the PPPoE dialup mode. In this example, the DHCP mode is configured. You can also select the static or PPPoE mode according to the data plan of the upper-layer network.
ACS URL	http://10.11.11.1:9070	It can be the IP address, port ID, domain name of the ACS server.
Periodical notification interval	43200	It is the default value of the system.
ACS user name	hgw	It is the default value of the system.
ACS password	hgw	It is the default value of the system.
User name of a requested connection	server	It must be the same as that planned on the TR-069 server.
Password of a requested connection	server	It must be the same as that planned on the TR-069 server.

Flowchart

Figure 4-23 shows the flowchart for commissioning interoperation between the TR-069 server and the ONT through the NMS.

Figure 4-23 Flowchart for commissioning interoperation between the TR-069 server and the ONT through the NMS



Procedure

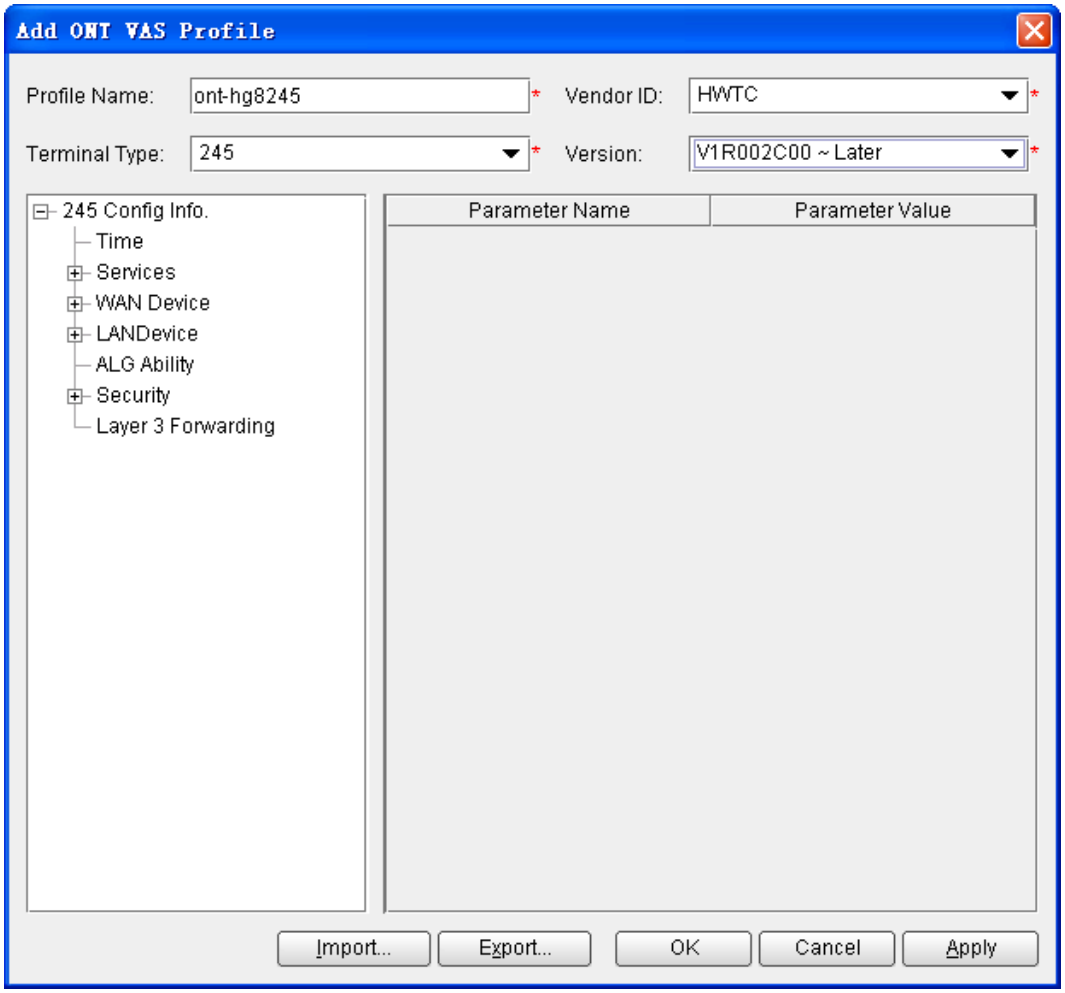
Step 1 Choose **Profile** > **ONT VAS Profile** from the main menu.

Step 2 Right-click and choose **Add** from the shortcut menu.

Step 3 In the dialog box that is displayed, set **Profile Name**, **Vendor ID**, **Terminal Type**, and **Version**. Where, **Version** must be set to **V1R002C00-Later**.

Figure 4-24 shows how to create an ONT VAS profile.

Figure 4-24 Creating an ONT VAS profile



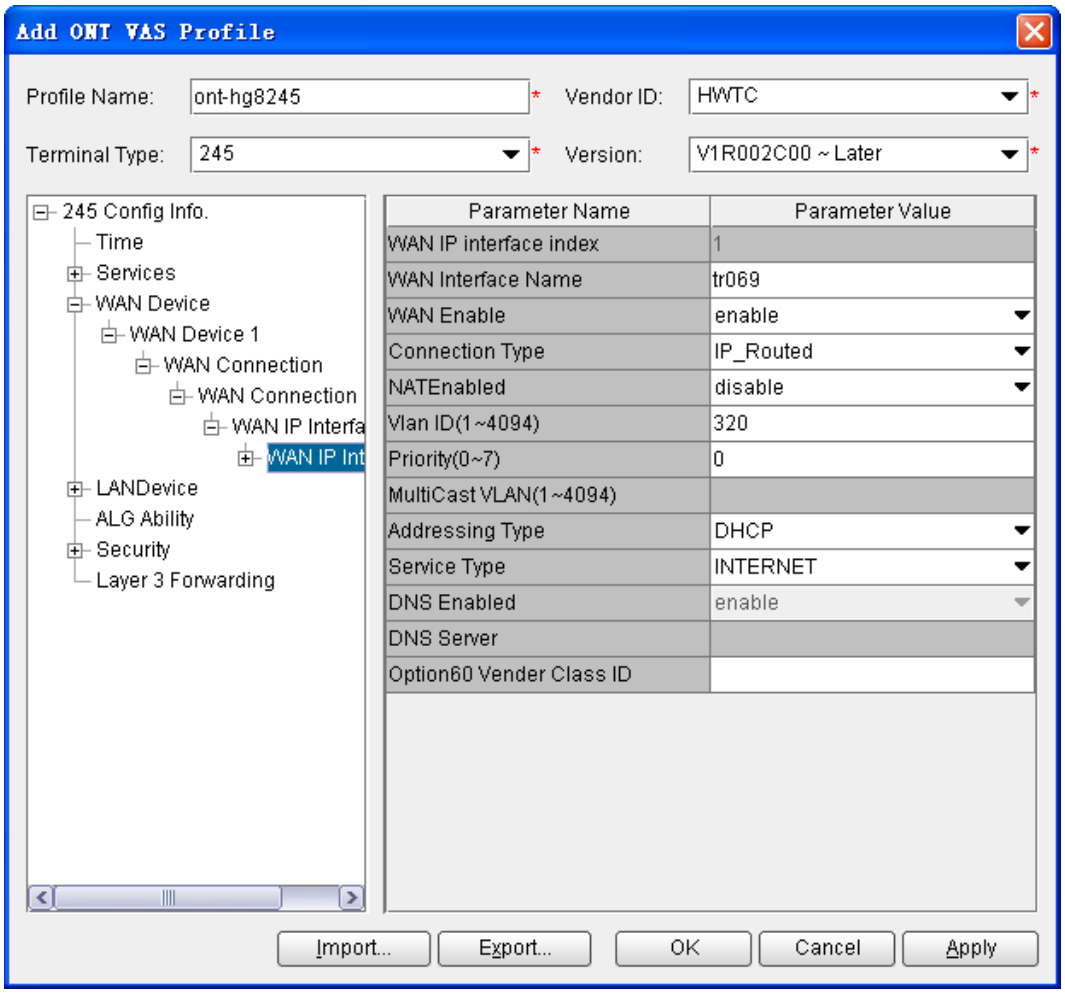
Step 4 Configure the parameters of the WAN interface.

Choose **WAN Device** > **WAN Device 1** > **WAN Connection** from the navigation tree. Right-click **WAN Connection** and choose **Add IP Connection** from the shortcut menu. Choose **WAN IP Interface 1** from the navigation tree. In the right pane, configure the parameters of the WAN interface as follows:

- Set **WAN Interface Name** to **tr069**.
- Set **WAN Enable** to **enable**.
- Set **Connection Type** to **IP_Routed**.
- Set **Vlan ID** to **320**.
- Set **Addressing Type** to **DHCP**.
- Set **Service Type** to **TR069**.

Figure 4-25 shows how to configure the parameters of the WAN interface.

Figure 4-25 Configuring the parameters of the WAN interface



Step 5 Configure the TR-069 parameters.

1. In the **Add ONT VAS Profile** dialog box, click **Export** in the lower pane to export the XML configuration file.
2. Open the XML configuration file and modify the parameters in the XML file as follows:
   - Set **URL** to **http://10.11.11.1:9070**.
   - Set **ConnectionRequestPassword** and **ConnectionRequestUsername** to **server**.
3. Save the XML configuration file.
4. In the **Add ONT VAS Profile** dialog box, click **Import** in the lower pane to import the modified XML configuration file.

Step 6 Click **OK**.

Step 7 Bind the ONT VAS profile to the ONT.

On the GPON ONU tab page, select one or more ONTs, right-click, and then choose **Bind VAS Profile** from the shortcut menu. In the dialog box that is displayed, select the new profile and click **OK** to bind the profile to the ONT.

Step 8 Confirm the ONT.

Log in to the TR-069 server and then choose **Subnet view** > **TR-069 Subnet** from **WLAN and Home Network View** in the navigation tree on the left. In the pane on the right, right-click and choose **Refresh** from the shortcut menu. The reported ONT list is displayed. Then, select the ONT list, right-click, and choose **Confirm** from the shortcut menu.

----End

Result

On the TR-069 server, you can configure ONT services. For details, see the configuration examples.

4.3 XML Configuration Methods

4.3.1 Configuring the ONT through Web Page by Uploading the XML Configuration File

This topic describes how to configure an ONT through the Web page by uploading the XML configuration file.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- The environment for service configuration on the Web page must be available and you must be logged into the Web page successfully. For details, see **3.2 Logging In Through the Web Page**.

Context

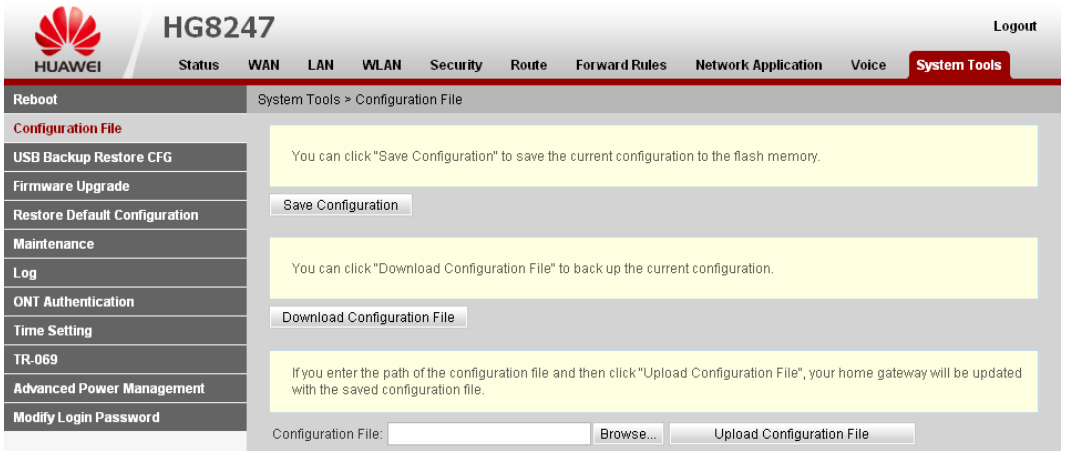
The ONT can be configured by uploading the XML configuration file. By using the method, configurations of the voice, WAN interface management, LAN port management, and line management are implemented on the ONT. The naming rule of the XML configuration file released with the software is XXXX_default_service_cfg.xml (XXXX indicates the software version number).

Procedure

Step 1 Download the XML configuration file.

1. In the navigation tree on the left, choose **System Tools** > **Configuration File**.
2. In the pane on the right, click **Download Configuration File**, as shown in **Figure 4-26**.

Figure 4-26 Downloading the XML configuration file



3. In the dialog box that is displayed, click **Save** to save the XML configuration file.

Step 2 Modify the XML configuration file.

NOTE

In the case of initial deployment, use the XML configuration file released with the software. Thus, you need not perform operations in step 1.

1. Open the XML configuration file downloaded in step 1 and find the parameters requiring modification.
2. Modify the relevant parameters.
3. Save the modified XML configuration file.

Step 3 Upload the XML configuration file.

1. In the navigation tree on the left, choose **System Tools** > **Configuration File**.
2. In the pane on the right, click **Browse**. Then, select the XML configuration file saved in step 2 and click **Open**.
3. In the pane on the right, click **Upload Configuration File**. After the XML configuration file is uploaded, the ONT automatically restarts and then the configuration takes effect.

----End

4.3.2 Configuring the ONT through NMS by Importing the XML Configuration File

This topic describes how to configure the ONT through NMS by importing the XML configuration file.

Prerequisite

ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.

Context

The ONT can be configured by importing the XML configuration file. By using the method, configurations of the voice, WAN interface management, LAN port management, and line management are implemented on the ONT. Configuring the ONT through NMS by importing the XML configuration file is typically applied in the following scenarios:

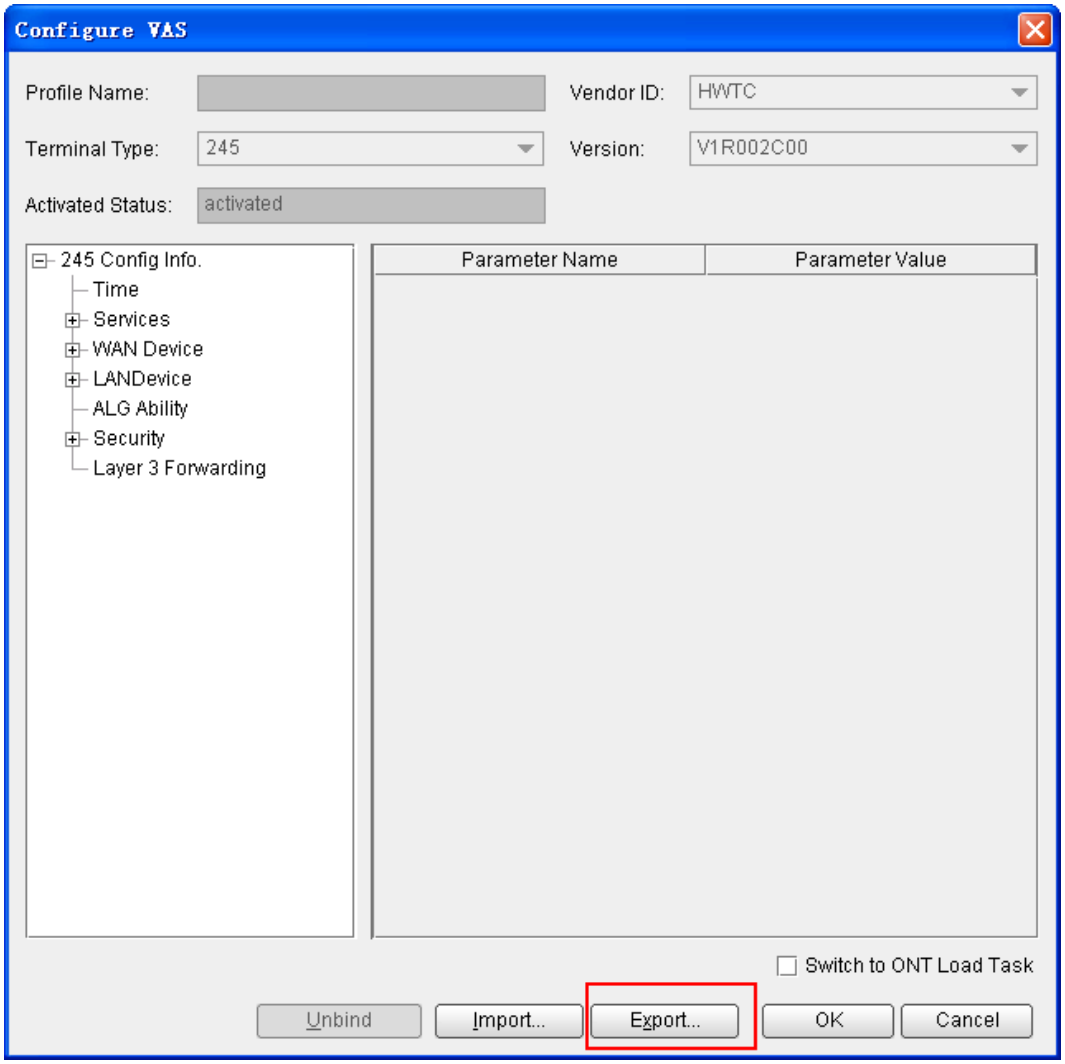
- Configuring services for a single ONT
- Bulk configuring services for ONTs

Procedure

- Configuring services for a single ONT
  1. To export the XML configuration file, do as follows:
     (1) On the **GPON ONU** tab page, right-lick an ONT and choose **Configure Value-Added Service** from the shortcut menu.
     (2) In the dialog box that is displayed, click **Export** to export the XML configuration file.

     Figure 4-27 shows how to export the XML configuration file.

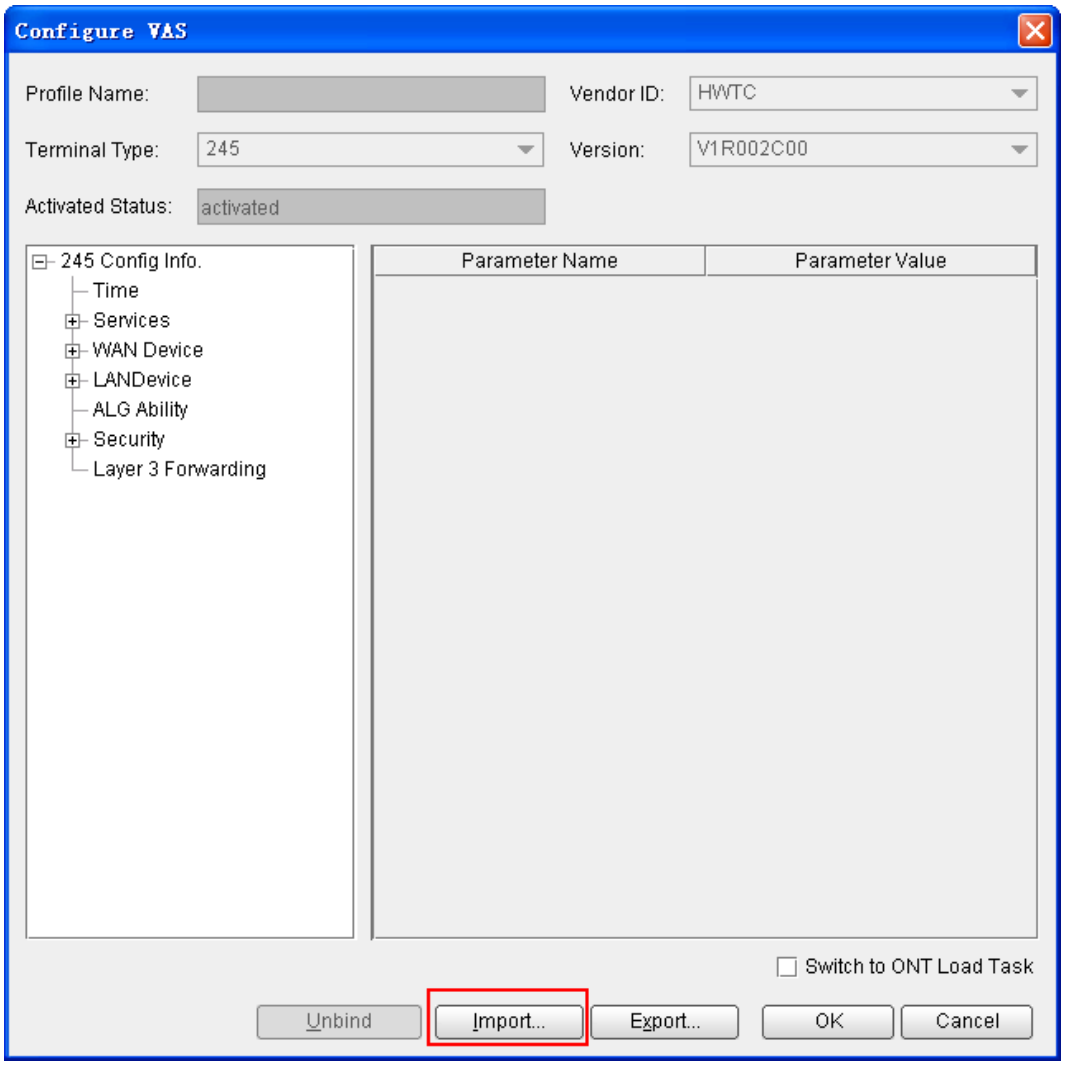
Figure 4-27 Exporting the XML configuration file



2. To modify the XML configuration file, do as follows:
   (1) Open the exported XML configuration file and locate the configuration parameters to be modified.
   (2) Modify the parameter values according to requirements.
   (3) Save the changes to the XML configuration file.
3. To import the XML configuration file to the NMS, do as follows:
   (1) On the **GPON ONU** tab page, right-click an ONT and choose **Configure Value-Added Service** from the shortcut menu.
   (2) In the dialog box that is displayed, click **Import**. In the dialog box that is displayed, select the modified XML configuration file to import.

   Figure 4-28 shows how to import the XML configuration file.

Figure 4-28 Importing the XML configuration file

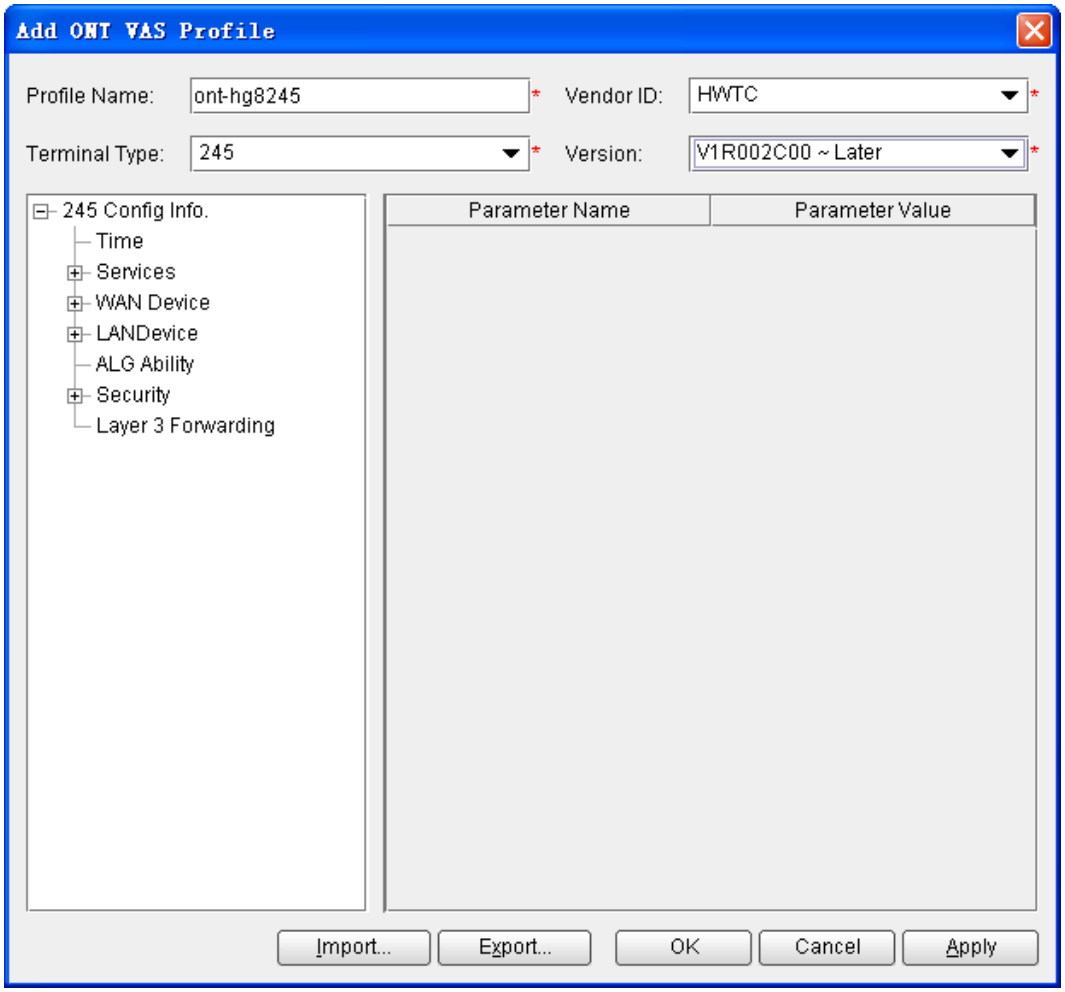


   (3) Click **OK**. The NMS applies new configuration data to the ONT.

- Bulk configuring services for ONTs
  1. To create an ONT VAS profile, do as follows:
     (1) Choose **Profile** > **ONT VAS Profile** from the main menu.
     (2) In the window that is displayed, right-click and choose **Add** from the shortcut menu.
     (3) In the dialog box that is displayed, set **Profile Name**, **Vendor ID**, **Terminal Type**, and **Version**. Where, **Version** must be set to **V1R002C00-Later**.

     Figure 4-29 shows how to create an ONT VAS profile.

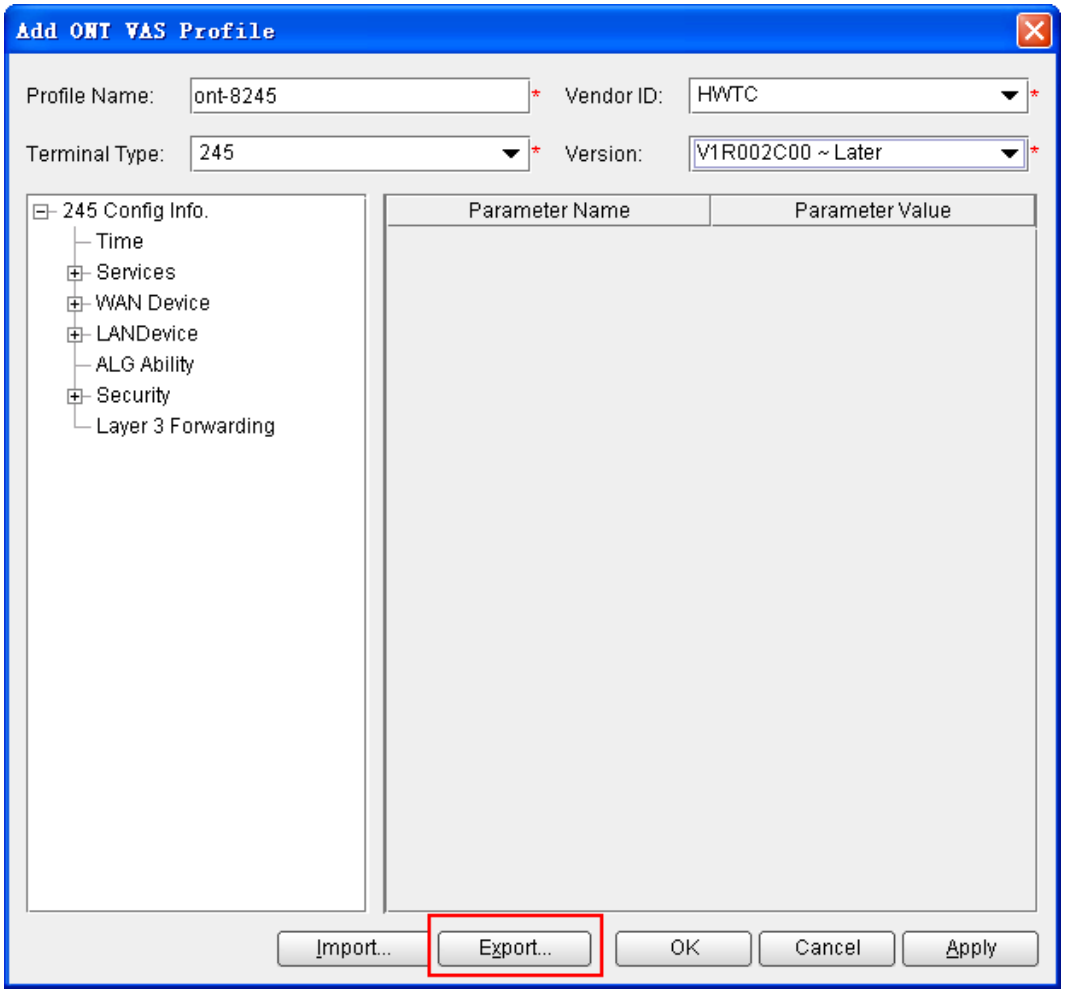
Figure 4-29 Creating an ONT VAS profile



  2. To export the XML configuration file, do as follows:
     In the **Add ONT VAS Profile** dialog box, click **Export** to export the XML configuration file.

     Figure 4-30 shows how to export the XML configuration file.

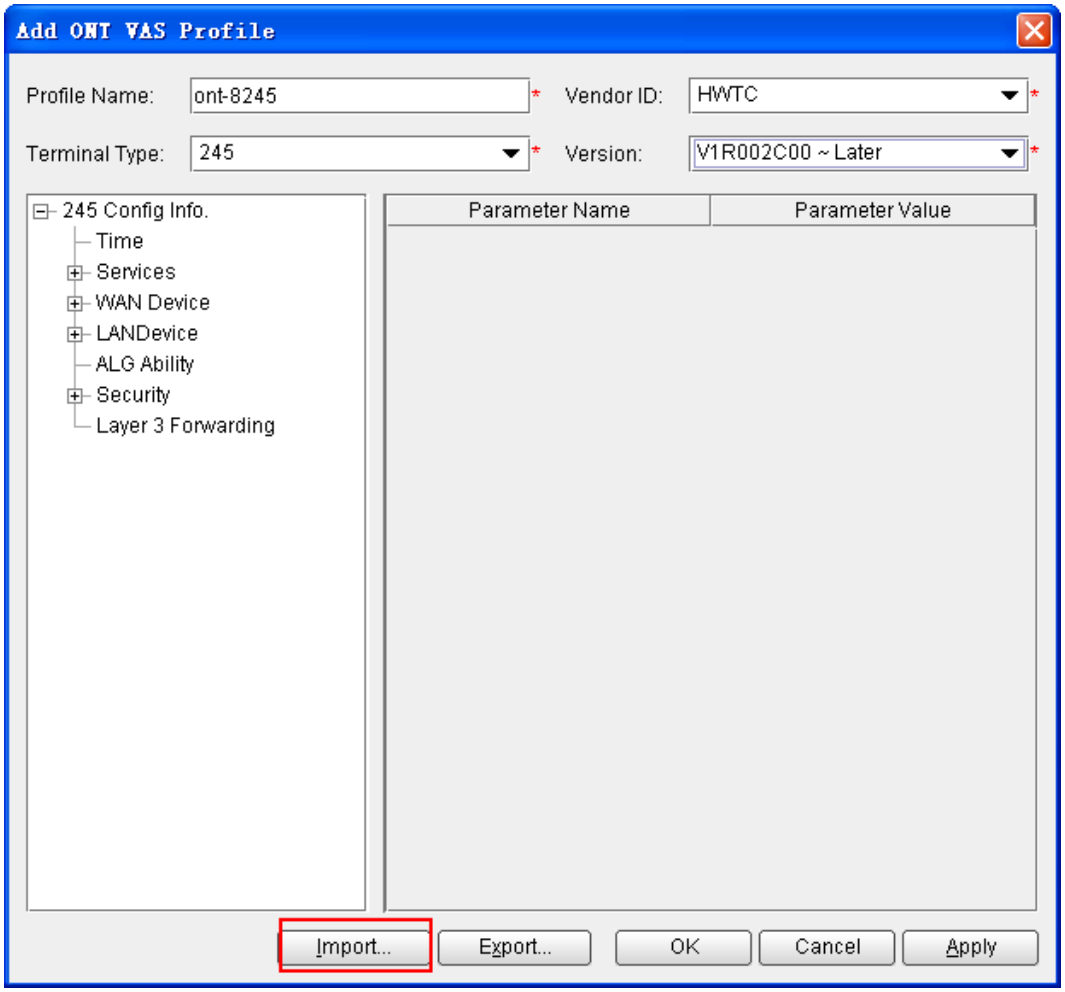
Figure 4-30 Exporting the XML configuration file



3. To modify the XML configuration file, do as follows:
   (1) Open the exported XML configuration file and locate the configuration parameters to be modified.
   (2) Modify the parameter values according to requirements.
   (3) Save the changes to the XML configuration file.
4. To import the XML configuration file, do as follows:
   In the **Add ONT VAS Profile** dialog box, click **Import** to import the XML configuration file to the NMS.

   Figure 4-31 shows how to import the XML configuration file.

Figure 4-31 Importing the XML configuration file



5. Click **OK**.
6. To bind the ONT VAS profile to ONTs, do as follows:

   On the GPON ONU tab page, select one or more ONTs, right-click, and then choose **Bind VAS Profile** from the shortcut menu. In the dialog box that is displayed, select the new profile and click **OK** to bind the profile to the ONTs.

   NOTE

   After voice parameters in the XML file are issued, the ONT re-starts the voice process. Then, the voice parameters are read from the XML file and take effect. The ONT does not need to reset.

----End

4.4 Configuring the Internet Access Service

This topic provides an example of how to configure the Internet access service.

4.4.1 Data Plan

This topic provides the typical data plan for configuring the Internet access service so as to make good preparations for the configuration.

4.4.2 Configuration Flowchart
This topic shows the flowchart for configuring the L3 Internet access service.

4.4.3 Configuration Method
The Internet access service can be configured through the Web page, N2000 BMS, or TR-069 server.

4.4.1 Data Plan

This topic provides the typical data plan for configuring the Internet access service so as to make good preparations for the configuration.

The Internet access service includes the L2 Internet access service and L3 Internal access service.

- L2 Internet access service: In this mode, the ONT functions as a bridge device. Instead, the OLT issues the L2 Internet access service to the ONT.
- L3 Internet access service: The ONT functions as a gateway device and the WAN interface needs to be configured.

NOTE

This topic mainly describes how to configure the L3 Internet access service. The L2 Internet access service need not be configured on the ONT but on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)**, or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.

Table 4-6 provides the data plan for configuring the L3 Internet access service.

Table 4-6 Data plan for configuring the L3 Internet access service

Parameter	Data	Description
Working mode of a LAN port	L3 mode	Configure port LAN2 to work in layer 3 mode.
Service type of the WAN interface	INTERNET	When **Connection mode** is set to **Route**, you can select Internet, TR069, VoIP, or a combination of them. When configuring the Internet access service, you need to select only Internet or a combination with Internet. In this example, Internet is selected.
Connection mode	Route	It can be set to route or bridge. In this example, route is selected.
VLAN ID of the WAN interface	150	The VLAN ID of the WAN interface must be the same as the VLAN ID of the traffic streams configured on the OLT.

Parameter	Data	Description
Mode of obtaining an IP address	PPPoE ● User name: iadtest@pppoe ● Password: iadtest	There are three modes to obtain an IP address: ● DHCP: Obtain an IP address dynamically. ● Static: Configure an IP address manually. ● PPPoE: Access in the PPPoE dialup mode. In this example, the PPPoE mode is selected. You can also choose the DHCP or static mode according to the data plan of the upper-layer network. When the PPPoE mode is selected, the configured user name and password must be the same as those planned on the BRAS.
802.1p	1	The larger the priority value, the higher the priority. The priorities are the same as those planned on the OLT, that is, the priority sequence is the voice service, multicast service, and Internet access service/Wi-Fi in a descending order.
NAT function	Enable	Enable the network address translation (NAT) function.
Port binding	LAN2	The WAN interface is bound to port LAN2 connected to the PC. The PC can access the Internet.
DHCP function	Enable	The PC connected to port LAN2 obtains an IP address from the DHCP address pool configured on the ONT. By default, the DHCP function is enabled and need not be configured.

4.4.2 Configuration Flowchart

This topic shows the flowchart for configuring the L3 Internet access service.

Figure 4-32 shows the flowchart for configuring the L3 Internet access service through the Web page.

Figure 4-32 Flowchart for configuring the Internet access service through the Web page

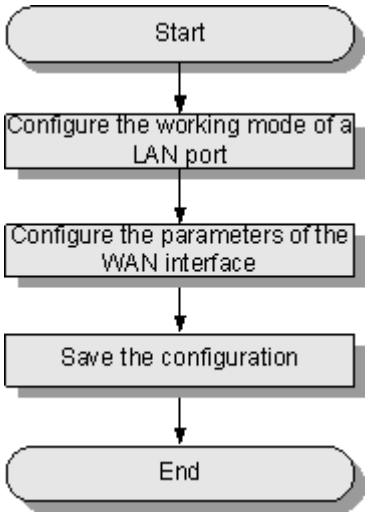


Figure 4-33 shows the flowchart for configuring the L3 Internet access service through the N2000 BMS.

Figure 4-33 Flowchart for configuring the Internet access service through the N2000 BMS

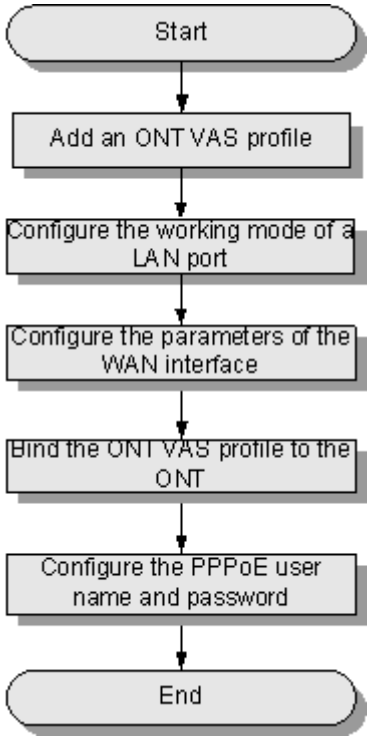
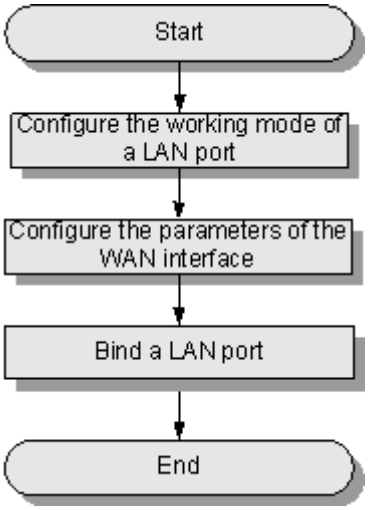


Figure 4-34 shows the flowchart for configuring the L3 Internet access service through the TR-069 server.

Figure 4-34 Flowchart for configuring the L3 Internet access service through the TR-069 server



4.4.3 Configuration Method

The Internet access service can be configured through the Web page, N2000 BMS, or TR-069 server.

Configuring the Internet Access Service Through the Web Page

This topic provides an example of how to configure the Internet access service through the Web page.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- The environment for service configuration on the Web page must be available and you must be logged into the Web page successfully. For details, see **3.2 Logging In Through the Web Page**.
- A PC is connected to port LAN2 on the ONT. The IP address of the PC is allocated by the DHCP server (the ONT). PPPoE dialup is performed on the ONT to implement the L3 Internet access service of the PC.

Context

NOTE

This topic describes how to configure only L3 Internet access service. For L2 Internet access service, configuration is not required on the ONT but on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.

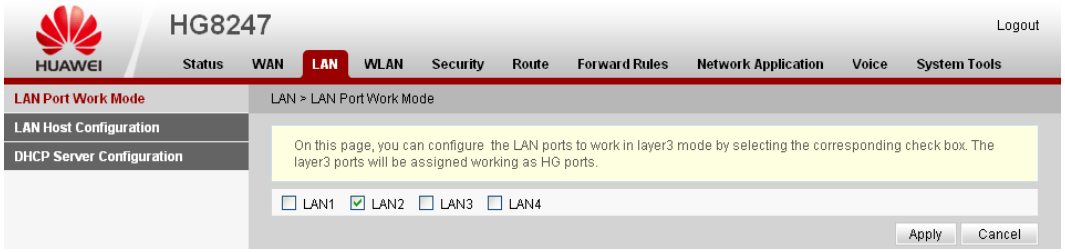
Procedure

Step 1 Configure the working mode of a LAN port.

1. In the navigation tree on the left, choose **LAN** > **LAN Port Work Mode**. Select the check boxes of LAN 2 to set port LAN2 to work in the L3 mode.

   Figure 4-35 shows how to configure the working mode of a LAN port.

Figure 4-35 Configuring the working mode of a LAN port



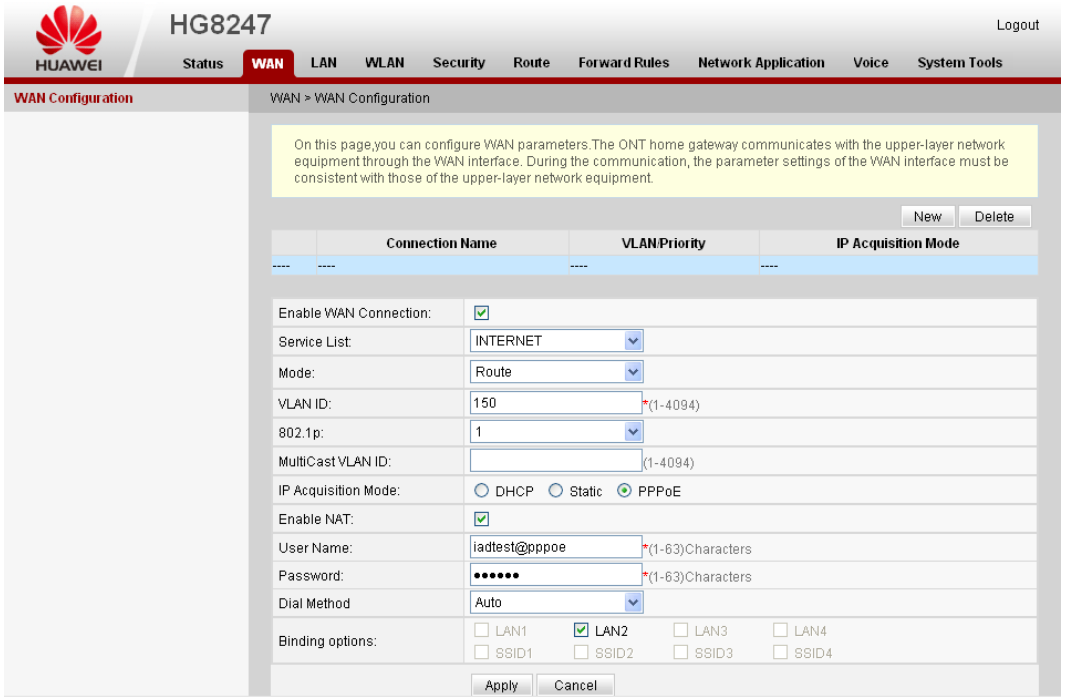
2. Click **Apply**.

Step 2 Configure the parameters of the WAN interface.

1. In the navigation tree on the left, choose **WAN** > **WAN Configuration**.
2. In the pane on the right, click **New**. In the dialog box that is displayed, set the parameters of the WAN interface as follows:
   - Select **Enable** next to **NewWanConnction** to enable the WAN connection that is newly set up.
   - Set **Service List** to **INTERNET**.
   - Set **Mode** to **Route**.
   - Set **VLAN ID** to **150**.
   - Set **802.1p** to **1**.
   - Set **IP Acquisition Mode** to **PPPoE**.
   - Select **Enable** next to **NAT** to enable the NAT function.
   - Set **User Name** to **iadtest@pppoe** and **Password** to **iadtest**.
   - Select the check box of **LAN2** in **Binding options**, indicating that the WAN interface is bound to LAN2.

   Figure 4-36 shows how to configure the parameters of the WAN interface.

Figure 4-36 Configuring the parameters of the WAN interface

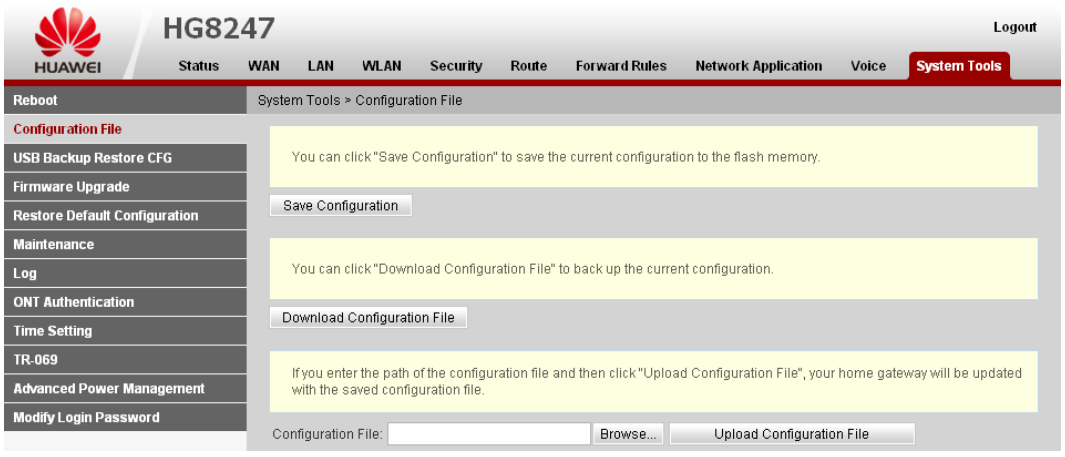


3. Click **Apply**.

Step 3 Save the configuration.

Choose **System Tools** > **Configuration File** from the navigation tree. In the right pane, click **Save Configuration**, as shown in **Figure 4-37**.

Figure 4-37 Saving the configuration



----End

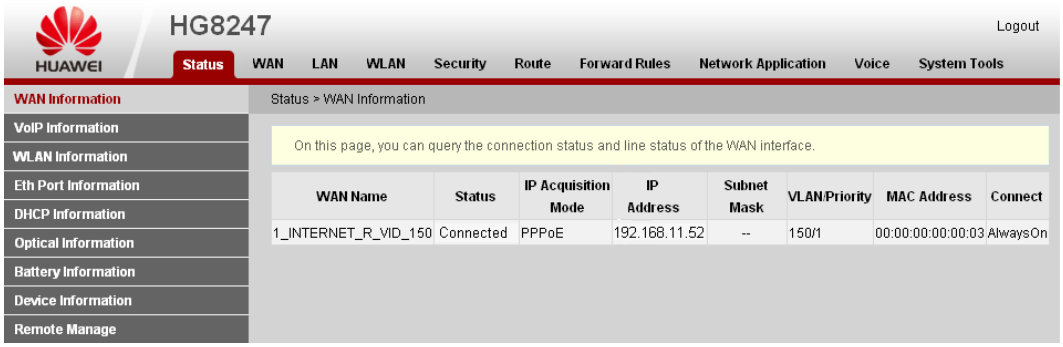
Result

1. Query the connection status of the ONT.

   In the navigation tree on the left, choose **Status** > **WAN Information**. In the pane on the right, the **Status** is **Connected** and the obtained IP address is displayed in **IP**.

   Figure 4-38 shows the connection status of the L3 Internet access service.

Figure 4-38 Querying connection status of L3 Internet access service



2. Verify the service.

   The PC obtains the IP addresses automatically. After the PPPoE dialup is successfully performed on the ONT, the PC can automatically obtain the IP addresses allocated by the ONT through DHCP. Then, the Internet access service is provisioned after websites are entered into Internet Explorer (IE) address bars of the PC.

Configuring the Internet Access Service Through the NMS

This topic provides an example of how to configure the Internet access service through the NMS.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- A PC is connected to port LAN2 on the ONT. The IP address of the PC is allocated by the DHCP server (the ONT). PPPoE dialup is performed on the ONT to implement the L3 Internet access service of the PC.

Context

NOTE

- This topic describes how to configure only L3 Internet access service. For L2 Internet access service, configuration is not required on the ONT but on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- The procedures for configuring the HG8240, HG8247, and HG8245 are the same. This topic considers the HG8245 as an example to describe how to configure the ONT.
- The following section considers the creation of an ONT VAS profile as an example to describe how to bulk configure ONTs. To configure a single ONT, right-click the ONT on the GPON ONU tab page, and choose **Configure Value-Added Service** from the shortcut menu. Details will not be provided in this topic.

Procedure

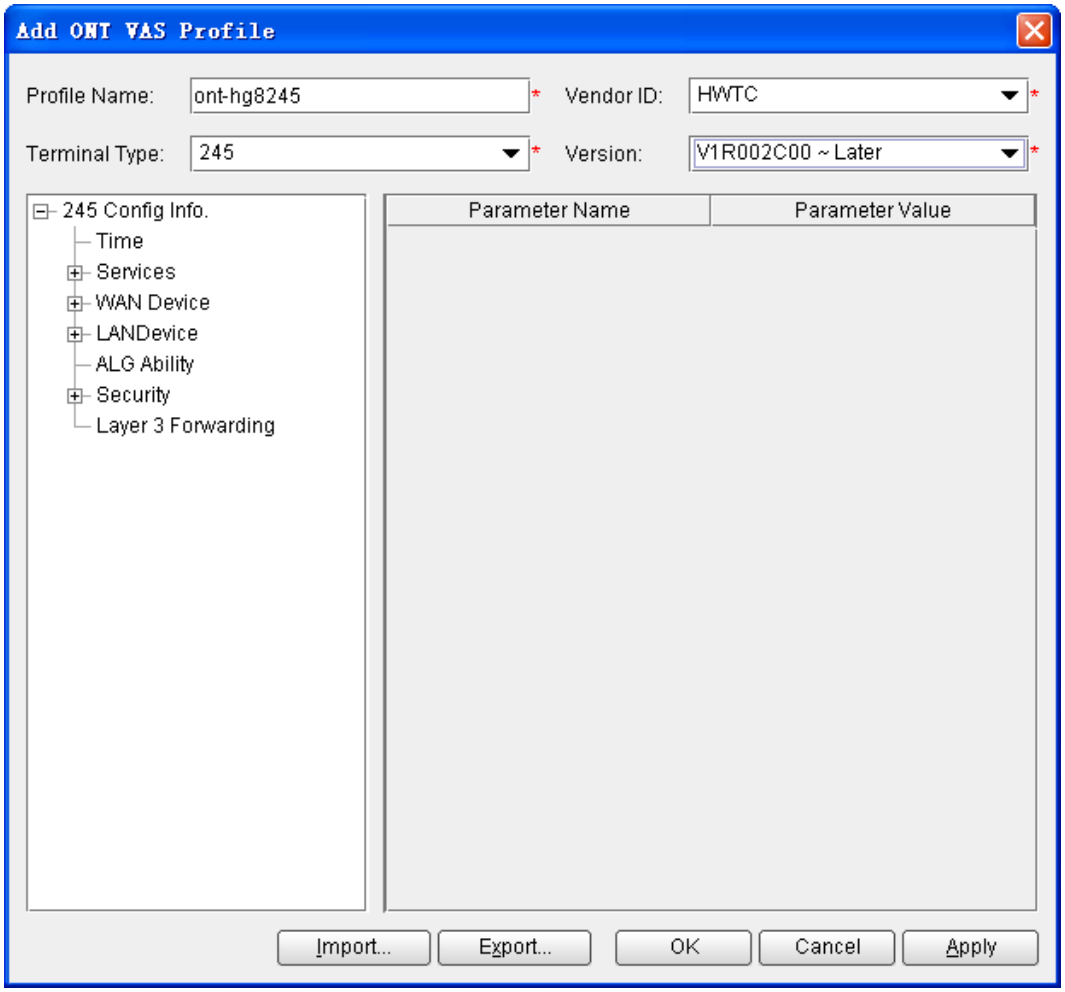
Step 1 Choose **Profile** > **ONT VAS Profile** from the main menu.

Step 2 Right-click and choose **Add** from the shortcut menu.

Step 3 In the dialog box that is displayed, set **Profile Name**, **Vendor ID**, **Terminal Type**, and **Version**. Where, **Version** must be set to **V1R002C00-Later**.

Figure 4-39 shows how to create an ONT VAS profile.

Figure 4-39 Creating an ONT VAS profile

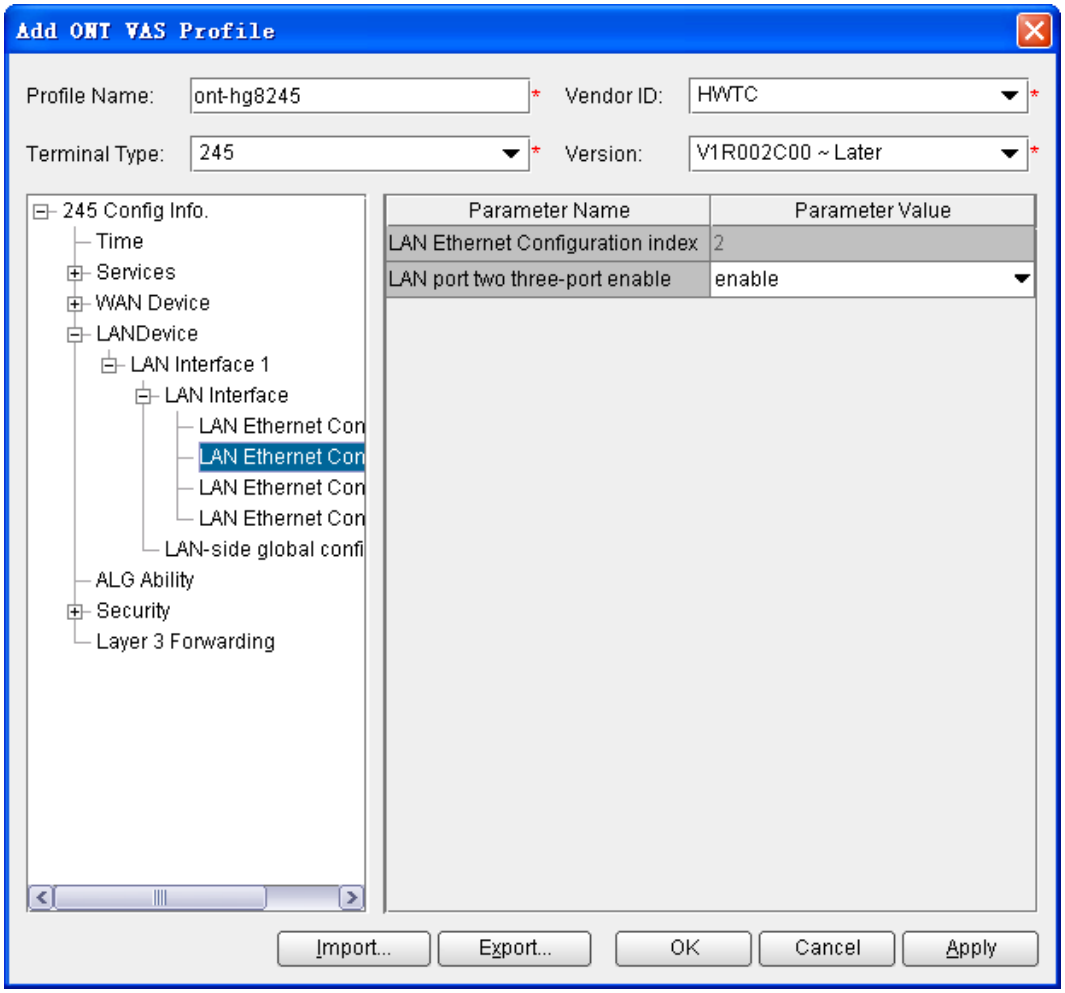


Step 4 Configure the working mode of a LAN port.

Choose **LANDevice** > **LAN Interface 1** > **LAN Interface** > **LAN Ethernet Configuration 2** from the navigation tree. In the right pane, set **LAN Port twothree-port enable** to **enable**, indicating that port LAN2 works in the L3 mode (gateway mode).

Figure 4-40 shows how to configure the working mode of a LAN port.

Figure 4-40 Configuring the working mode of a LAN port



NOTE

- When **LAN Port two three-port enable** is set to **disable**, it indicates that the corresponding LAN port works in the L2 mode.
- When **LAN Port two three-port enable** is set to **enable**, it indicates that the corresponding LAN port works in the L3 mode.

By default, **LAN Port two three-port enable** is set to **disable**.

Step 5 Configure the parameters of the WAN interface.

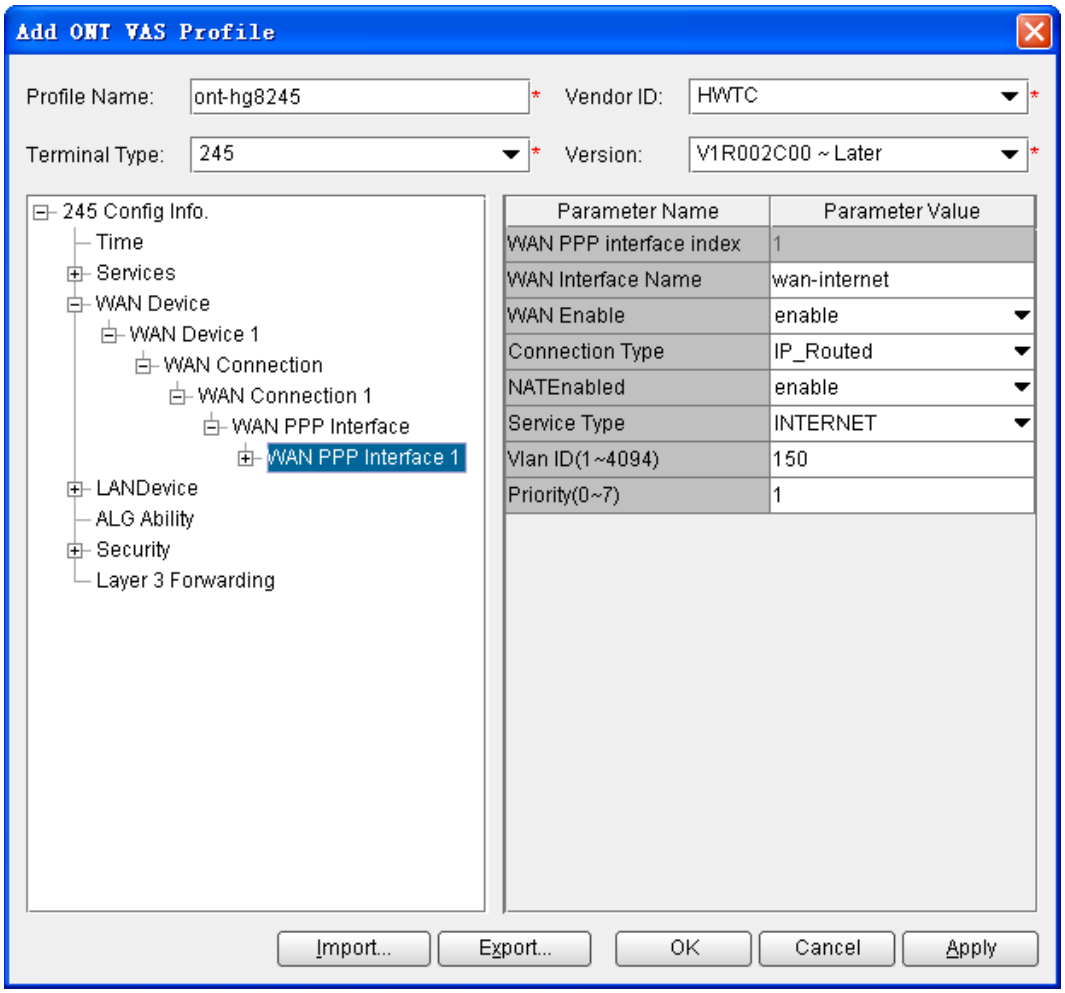
1. Choose **WAN Device** > **WAN Device 1** > **WAN Connection** from the navigation tree. Right-click the **WAN Connection** branch and choose **Add PPP Connection** from the

shortcut menu. Choose the **WAN PPP Interface1** branch from the navigation tree. In the right pane, configure the parameters of the WAN interface as follows:

- Set **WAN Interface Name** to **wan-internet**.
- Set **WAN Enable** to **enable**.
- Set **Connection Type** to **IP_Routed**.
- Set **NATEnable** to **enable**.
- Set **Service Type** to **INTERNET**.
- Set **Vlan ID** to **150**.
- Set **Priority** to **1**.

Figure 4-41 shows how to configure the parameters of the WAN interface.

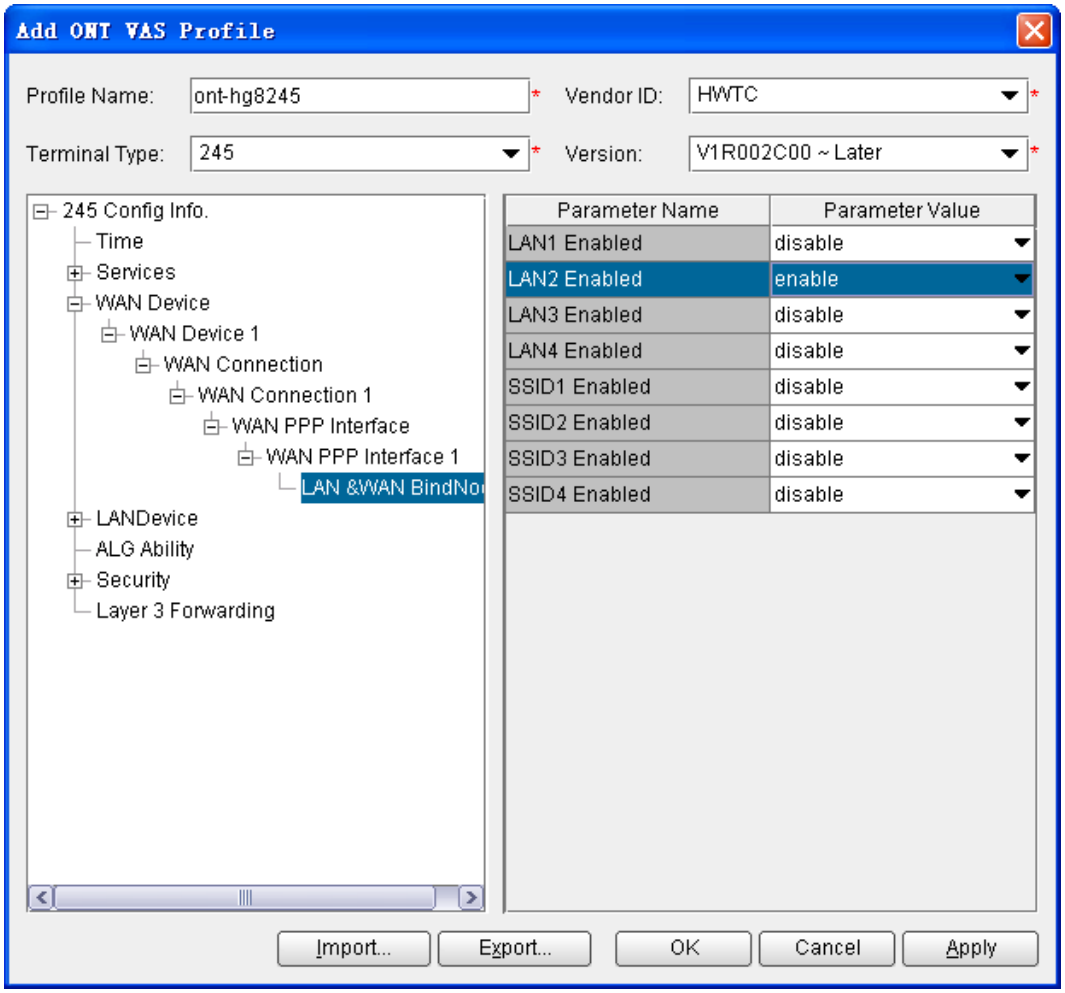
Figure 4-41 Configuring the parameters of the WAN interface



2. Select **LAN&WANBindNode** under **WAN PPP Connection 1** in the navigation tree. In the right pane, set **LAN2 Enabled** to **enable** to bind the WAN interface to LAN port 2.

   Figure 4-42 shows how to bind the WAN interface.

Figure 4-42 Binding the WAN interface



Step 6 Click **OK**.

Step 7 Bind the ONT VAS profile to the ONT.

On the GPON ONU tab page, select one or more ONTs, right-click, and then choose **Bind VAS Profile** from the shortcut menu. In the dialog box that is displayed, select the new profile and click **OK** to bind the profile to the ONT.

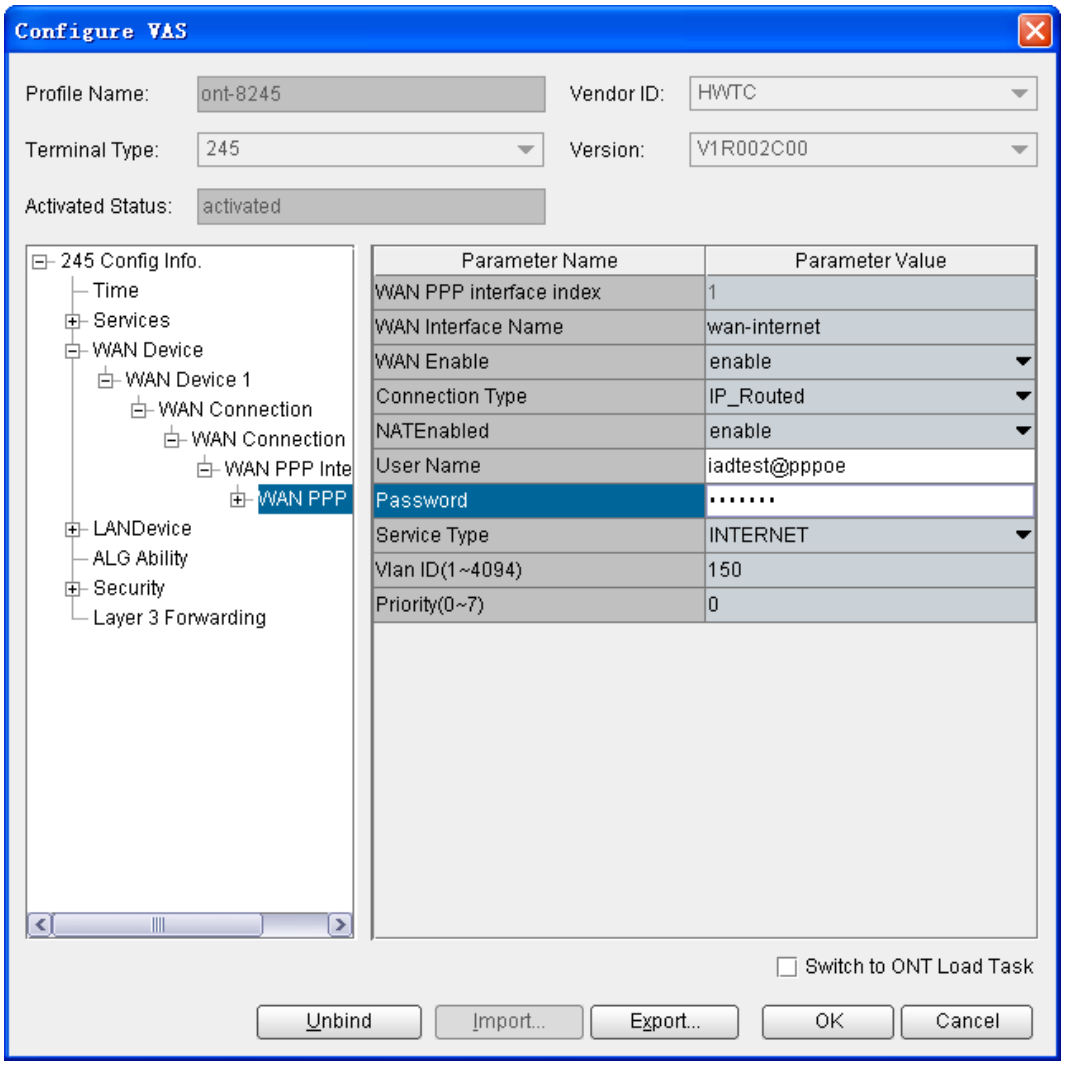
Step 8 On the GPON ONU tab page, right-click an ONT and choose **Configure Value-Added Service** from the shortcut menu.

Step 9 Configure the PPPoE user name and password.

Choose **WAN Device** > **WAN Device 1** > **WAN Connection** > **WAN Connection 1** > **WAN PPP Interface** > **WAN PPP Interface 1** from the navigation tree. In the right pane, set **User Name** to **iadtest@pppoe** and **Password** to **iadtest**.

Figure 4-43 shows how to configure the PPPoE user name and password.

Figure 4-43 Configuring the PPPoE user name and password



Step 10 Click **OK**. In the dialog box that is displayed, click **OK**. Then, the configuration takes effect after the device automatically restarts.

----End

Result

The PC obtains the IP addresses automatically. After the PPPoE dialup is successfully performed on the ONT, the PC can automatically obtain the IP addresses allocated by the ONT through DHCP. Then, the Internet access service is provisioned after websites are entered into Internet Explorer (IE) address bars of the PC.

Configuring the Internet Access Service Through the TR-069 Server

This topic provides an example of how to configure the Internet access service through the TR-069 server.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- ONT must be auto-discovered on the TR-069 server. For details, see **4.2.3 Commissioning Interoperation Between the TR-069 Server and the ONT Through the Web Page** or **4.2.4 Commissioning Interoperation Between the TR-069 Server and the ONT Through the NMS**.
- A PC is connected to port LAN2 on the ONT. The IP address of the PC is allocated by the DHCP server (the ONT). PPPoE dialup is performed on the ONT to implement the L3 Internet access service of the PC.

Context

- This topic describes how to configure only L3 Internet access service. For L2 Internet access service, configuration is not required on the ONT but on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- Every data change must be saved. You can click **Save** in a window to save data changes. If you navigate to another node without saving data changes, a dialog box will be displayed prompting you to save the data changes. In this case, click **YES** in the dialog box. New data will be automatically applied to the ONTs after the data changes are saved.

CAUTION

When configuring services on the TR-069 server, do not modify the WAN interface connecting the TR-069 server and the ONT. Otherwise, the TR-069 server loses communication with the ONT.

Procedure

Step 1 Log in to the TR-069 server and choose **Subnet View** > **TR069 Subnet** from the navigation tree. In the terminal list, right-click an ONT and choose **Tools** > **Configure in Real Time** from the shortcut menu.

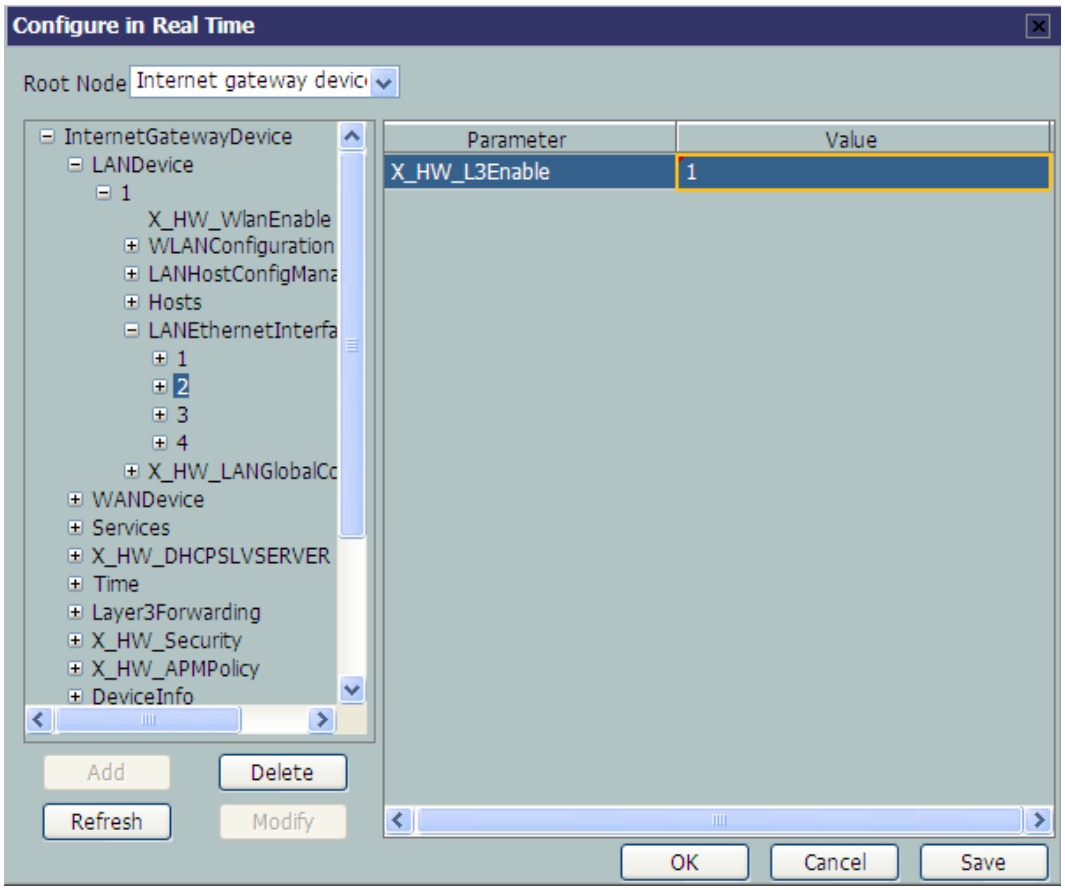
Step 2 In the **Configure in Real Time** dialog box, set **Root Node** to **Internet gateway device**.

Step 3 Configure the working mode of a LAN port.

Choose **InternetGatewayDevice** > **LANDevice** > **1** > **LANEthernetInterfaceConfig** > **2** from the navigation tree. In the right pane, set **X_HW_L3Enable** to **1**, indicating that port LAN2 works in the L3 mode.

Figure 4-44 shows how to configure the working mode of a LAN port.

Figure 4-44 Configuring the working mode of a LAN port



NOTE

- When **X_HW_L3Enable** is set to **0**, it indicates that the corresponding LAN port works in the L2 mode.
- When **X_HW_L3Enable** is set to **1**, it indicates that the corresponding LAN port works in the L3 mode.

By default, **X_HW_L3Enable** is set to **0**.

Step 4 Configure the parameters of the WAN interface.

1. Choose **InternetGatewayDevice** > **WANDevice** > **1** > **WANConnectionDevice** from the navigation tree. Click **Add** in the lower left part to create an instance.
2. Choose **2** > **WANPPPConnection** from the navigation tree and click **Add** in the lower left part. Choose the new **1** branch from the navigation tree. In the right pane, set parameters as follows:
   - Set **Enable** to **1**, indicating that the WAN connection is enabled.
   - Set **Connection Type** to **IP_Routed**, indicating that the connection type of the WAN interface is in routing mode.
   - Set **NATEnable** to **1**, indicating that the NAT function is enabled.
   - Set **Username** to **iadtest@pppoe** and **Password** to **iadtest**, indicating that the PPPoE user name is **iadtest@pppoe** and the password is **iadtest**.

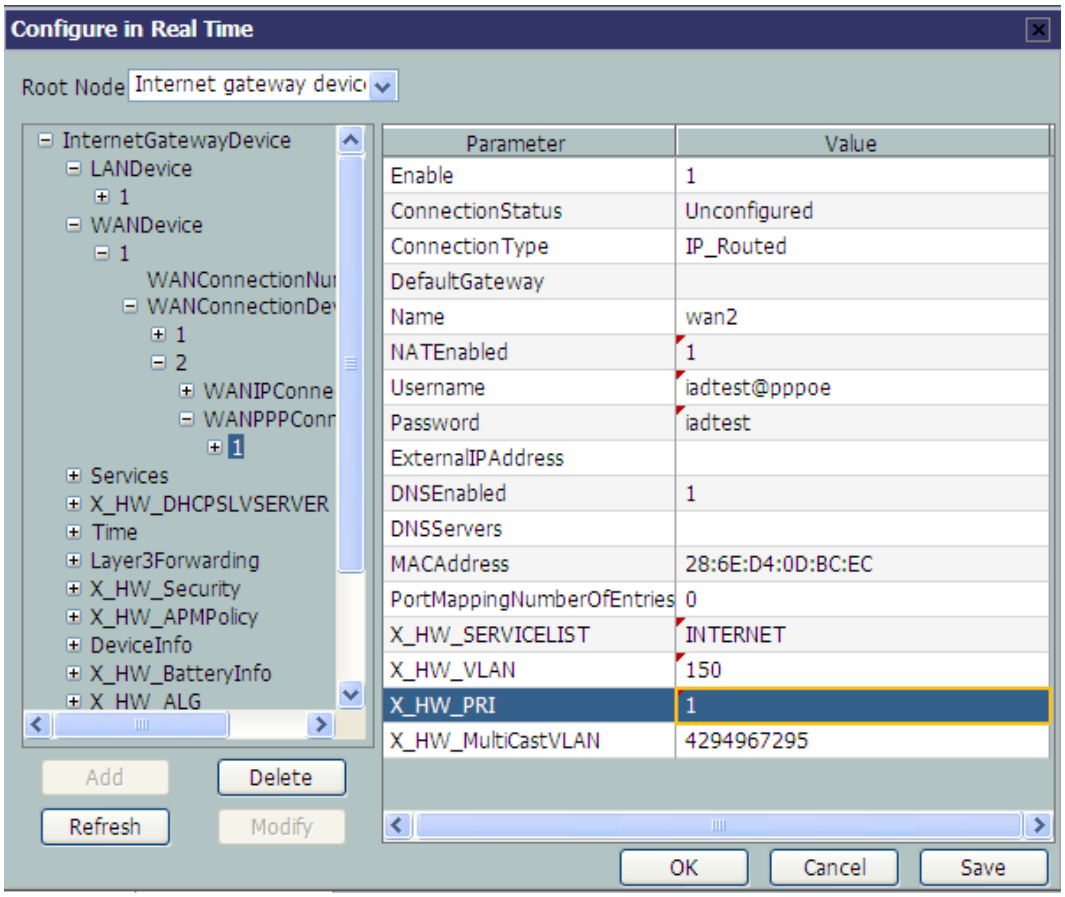
- Set **X_HW_SERVICELIST** to **INTERNET**, indicating that the WAN interface provides Internet access.
- Set **X_HW_VLAN** to **150**, indicating the VLAN ID of the WAN interface is 150.
- Set **X_HW_PRI** to **1**, indicating the priority level of the WAN interface is 1.

NOTE

- If the WAN interface obtains IP addresses in static or DHCP mode, choose **WANIPConnection** to set the parameters of the WAN interface.
- If the WAN interface obtains IP addresses in PPPoE mode, choose **WANPPPConnection** to set the parameters of the WAN interface.

Figure 4-45 shows how to configure the parameters of the WAN interface.

Figure 4-45 Configuring the parameters of the WAN interface

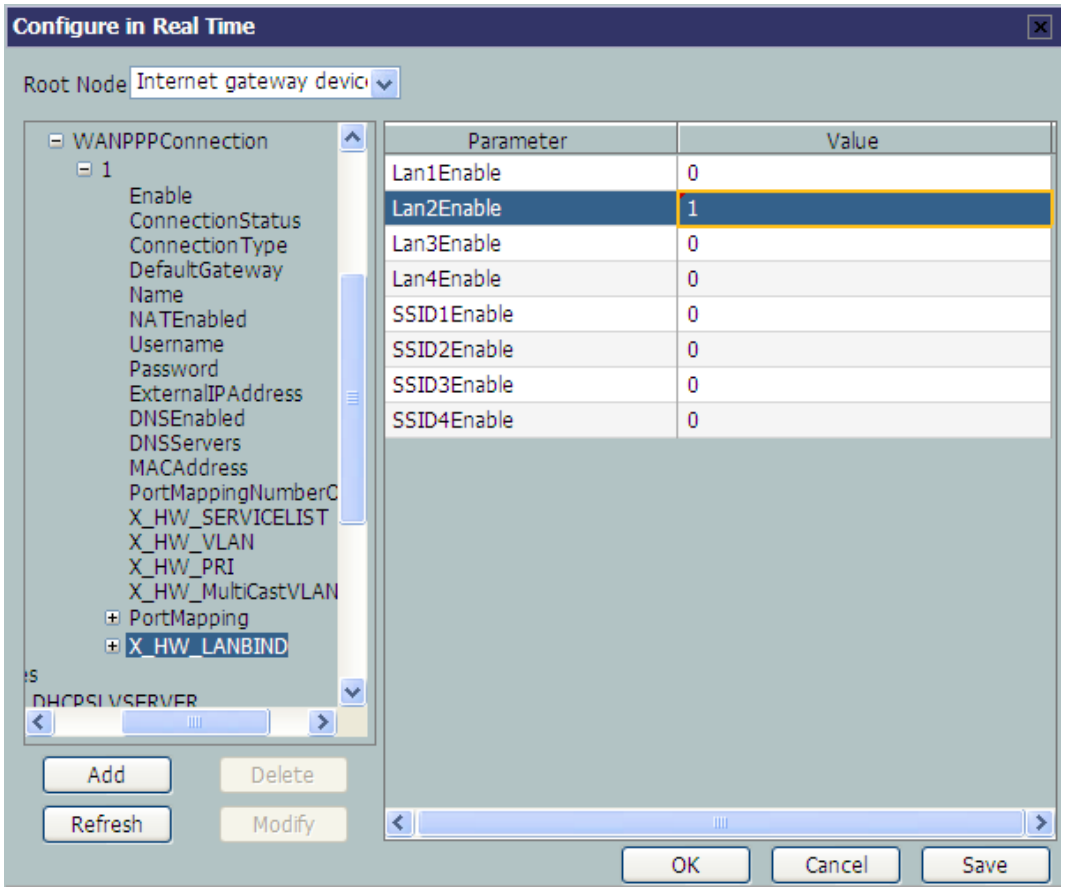


Step 5 Bind a LAN port.

Choose **1X_HW_LANBIND** from the navigation tree. In the right pane, set **Lan2Enable** to **1** to bind the WAN interface to LAN port 2.

Figure 4-46 shows how to bind a LAN port.

Figure 4-46 Binding a LAN port



Step 6 Click **OK** after the configuration.

----End

Result

The PC obtains the IP addresses automatically. After the PPPoE dialup is successfully performed on the ONT, the PC can automatically obtain the IP addresses allocated by the ONT through DHCP. Then, the Internet access service is provisioned after websites are entered into Internet Explorer (IE) address bars of the PC.

4.5 Configuring a SIP-based Voice Service

This topic provides an example of how to configure the SIP-based voice service.

4.5.1 Data Plan
This topic provides the typical data plan for configuring the SIP-based voice service to make good preparations for the configuration.

4.5.2 Configuration Flowchart
This topic provides the flowchart for configuring the SIP-based voice service.

4.5.3 Configuration Method

The SIP-based voice service can be configured through the Web page, N2000 BMS, or TR-069 server.

4.5.1 Data Plan

This topic provides the typical data plan for configuring the SIP-based voice service to make good preparations for the configuration.

Table 4-7 provides the data plan for configuring the SIP-based voice service.

Table 4-7 Data plan for configuring the SIP-based voice service

Parameter	Data	Description
Service type of the WAN interface	VoIP	When configuring the voice service, you just need to select VoIP or a combination with VoIP. In this example, VoIP is selected.
Connection mode	Route	It can be set to route and bridge. In the case of the voice service, only route can be selected.
VLAN ID of the WAN interface	200	The VLAN ID of the WAN interface must be the same as the VLAN ID of the traffic streams configured on the OLT.
Mode of obtaining an IP address	DHCP	There are three modes of obtaining an IP address. ● DHCP: Obtain an IP address dynamically. ● Static: Configure an IP address manually. ● PPPoE: Access in the PPPoE dialup mode. In this example, the DHCP mode is configured. You can also select the static or PPPoE mode according to the data plan of the upper-layer network.
802.1p	6	The larger the service priority value, the higher the service priority. The priorities are the same as those planned on the OLT, that is, the priority sequence is the voice service, multicast service, and Internet access service/Wi-Fi in a descending order.
Region	China	-
Signaling protocol	SIP	● Device software version V100R002C00 supports the SIP protocol. ● Device software version V100R002C01 supports the H.248 protocol. For the SIP voice service, load V100R002C00 software version if the available software version is not V100R002C00. This item need not be configured on the Web page. If the software version is V100R002C00, only the page about SIP voice parameters is displayed; if the software version is V100R002C01, only the page about H.248 voice parameters is displayed.

Parameter	Data	Description
IP address of the SIP server	172.23.1.2	The IP address of the SIP server must be the same as the IP address configured on the softswitch.
Domain name for SIP registration	softx3000.huawei.com	The registration domain name must be the same as the registration domain name configured on the softswitch.
Telephone number and password of SIP users	● User 1: telephone number 88001234 (77770085); password iadtest1. ● User 2: telephone number 88001235 (77770086); password iadtest2.	The telephone numbers must be the same as those set on the softswitch.
SIP digitmap	8800xxxx 7777xxxx(For web configure)	Indicates that the eight-digit telephone numbers starting with **8800** are allowed to have voice services. This parameter must be consistent with the CO data plan in a specific country/region.

4.5.2 Configuration Flowchart

This topic provides the flowchart for configuring the SIP-based voice service.

Figure 4-47 shows the flowchart for configuring the SIP-based voice service through the Web page.

Figure 4-47 Flowchart for configuring the SIP-based voice service through the Web page

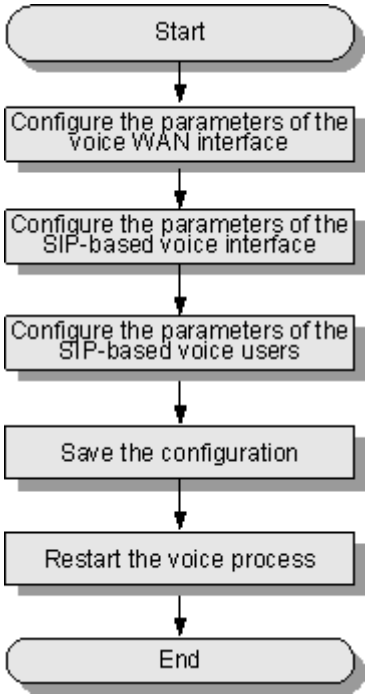


Figure 4-48 shows the flowchart for configuring the SIP-based voice service through the N2000 BMS.

Figure 4-48 Flowchart for configuring the SIP-based voice service through the N2000 BMS

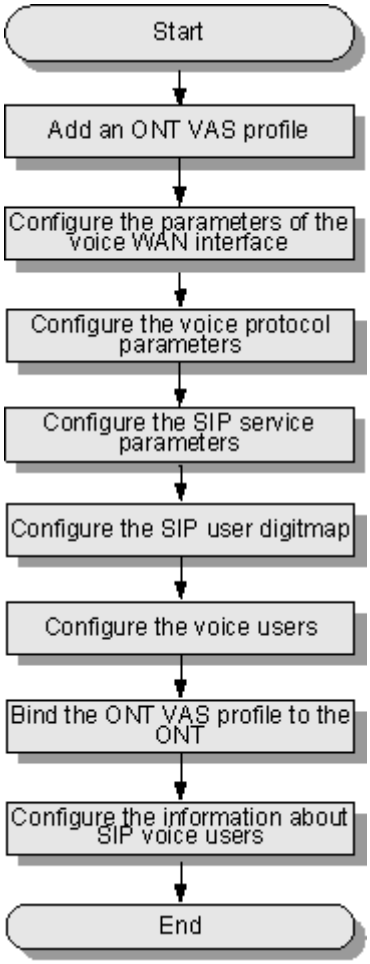
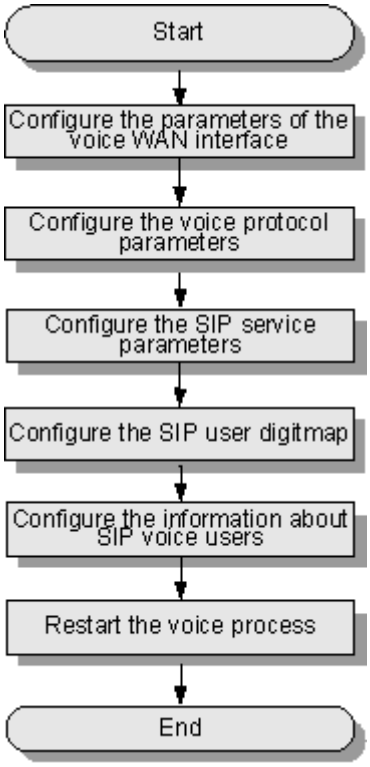


Figure 4-49 shows the flowchart for configuring the SIP-based voice service through the TR-069 server.

Figure 4-49 Flowchart for configuring the SIP-based voice service through the TR-069 server



4.5.3 Configuration Method

The SIP-based voice service can be configured through the Web page, N2000 BMS, or TR-069 server.

Configuring SIP-based Voice Service Through the Web Page

This topic provides an example of how to configure the SIP-based voice service through the Web page.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- The environment for service configuration on the Web page must be available and you must be logged into the Web page successfully. For details, see **3.2 Logging In Through the Web Page**.
- Two telephone sets are connected to TEL1 and TEL2 on the ONT respectively.

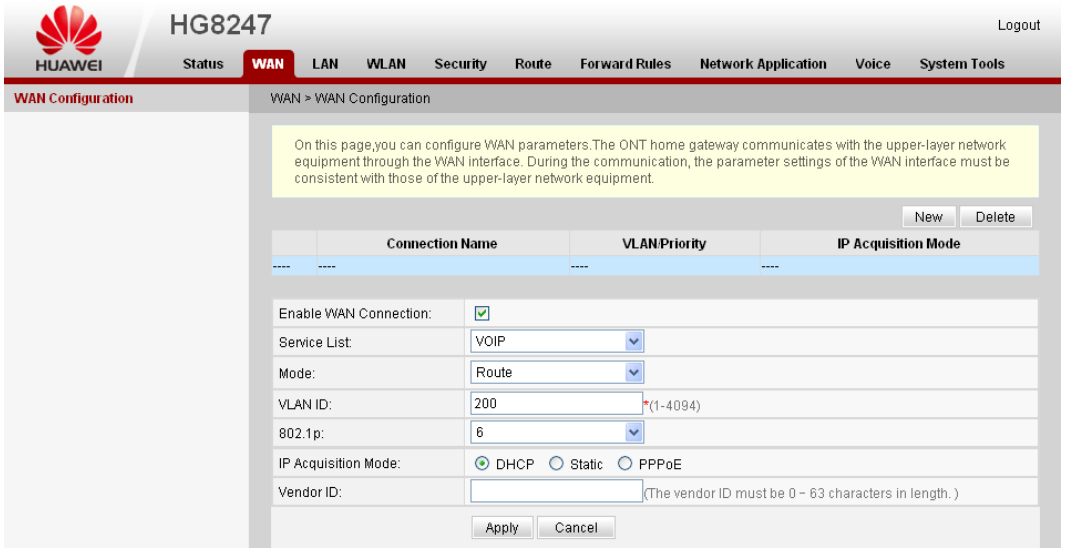
Procedure

Step 1 Configure the parameters of the voice WAN interface.

1. Coose **WAN** > **WAN Configuration**.
2. In the pane on the right, click **New**. In the dialog box that is displayed, configure the parameters of the WAN interface as follows:
   - Select **Enable** next to **NewWanConnction** to enable the WAN connection that is newly set up.
   - Set **Service List** to **VOIP**.
   - Set **Mode** to **Route**.
   - Set **VLAN ID** to **200**.
   - Set **802.1p** to **6**.
   - Set **IP Acquisition Mode** to **DHCP**.

   Figure 4-50 shows how to configure the parameters of the voice WAN interface.

Figure 4-50 Configuring the parameters of the voice WAN interface through the Web page



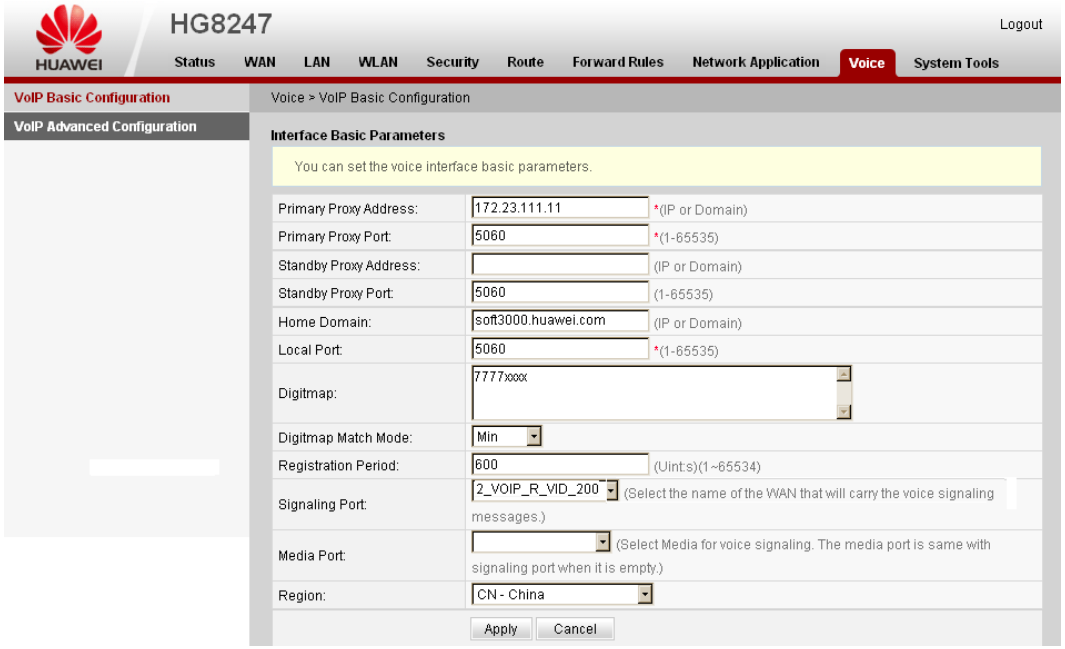
3. Click **Apply**.

Step 2 Configure the parameters of the SIP-based voice interface.

1. In the navigation tree on the left, choose **Voice** > **VoIP Interface Configuration**.
2. In the pane on the right, configure the parameters of the SIP-based voice interface as follows:
   - Set **Proxy Server Address** below **Primary Server** to **172.23.1.2**.
   - Set **Home Domain** to **softx3000.huawei.com**.
   - Set **Digitmap** to **7700xxxx**.
   - Set **Region** to **CN - China**.
   - Set **Signaling Port Name** to **1_VOIP_R_VID_200**.

   Figure 4-51 shows how to configure the parameters of the SIP-based voice interface.

Figure 4-51 Configuring the parameters of the SIP-based voice interface through the Web page



3. Click **Apply**.

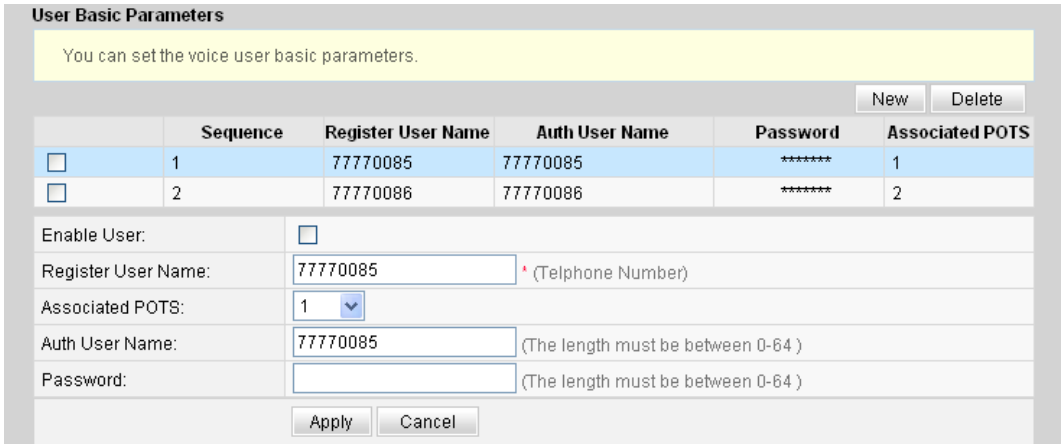
Step 3 Configure the parameters of the SIP-based voice users.

1. In the navigation tree on the left, choose **Voice** > **VoIP User Configuration**.
2. In the pane on the right, configure the parameters of voice user 1 as follows:
   - Set **Public User Name** to **77770085**.
   - Select **Enable** to enable the voice user configuration.
   - Set **Password** to **iadtest1**.
   - Set **Associated POTS** to **1**.

   In the pane on the right, click **New** to add voice user 2, and configure the parameters of voice user 2 as follows:
   - Set **Public User Name** to **77770086**.
   - Select **Enable** to enable the voice user configuration.
   - Set **Password** to **iadtest2**.
   - Set **Associated POTS** to **2**.

   Figure 4-52 shows how to configure the parameters of voice user 2.

Figure 4-52 Configuring the parameters of the SIP-based voice user 2 through the Web page

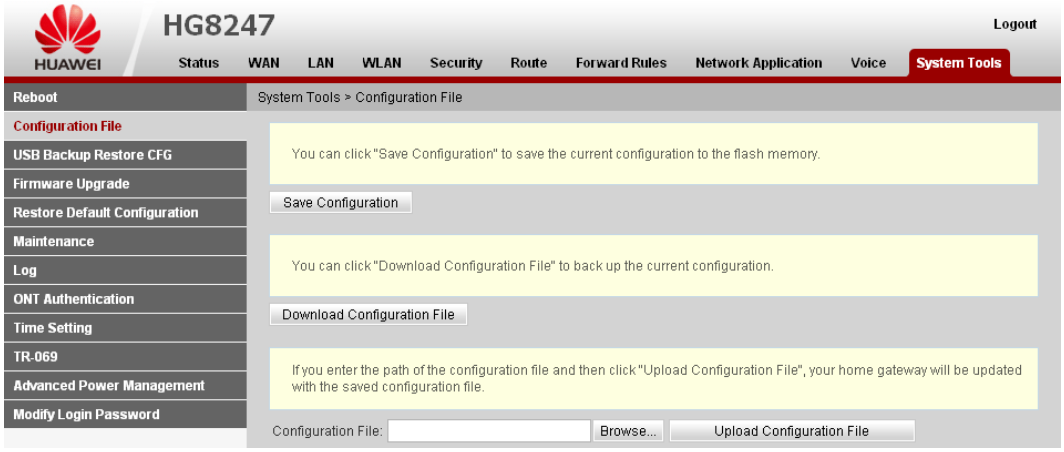


3. Click **Apply**.

Step 4 Save the configuration.

Choose **System Tools** > **Configuration File** from the navigation tree. In the right pane, click **Save Configuration**, as shown in **Figure 4-53**.

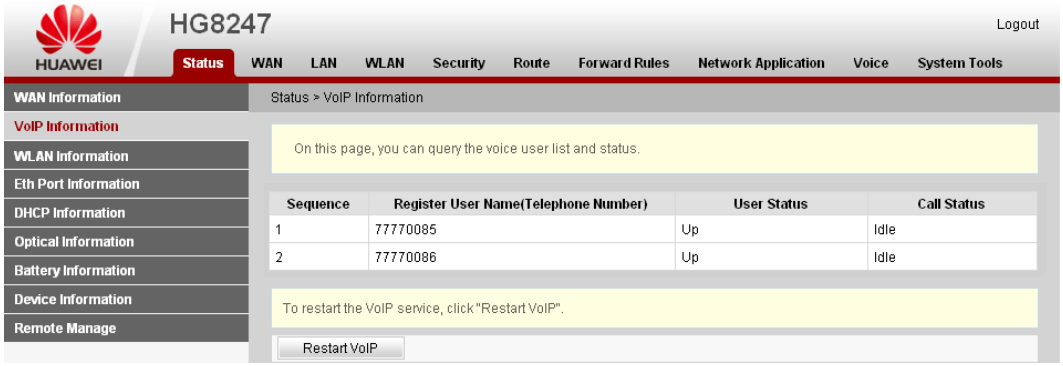
Figure 4-53 Saving the configuration



Step 5 Restart the voice process.

In the navigation tree on the left, choose **Status** > **VoIP Information**. In the pane on the right, click **Restart VoIP**, as shown in **Figure 4-54**.

Figure 4-54 Restarting the voice process



----End

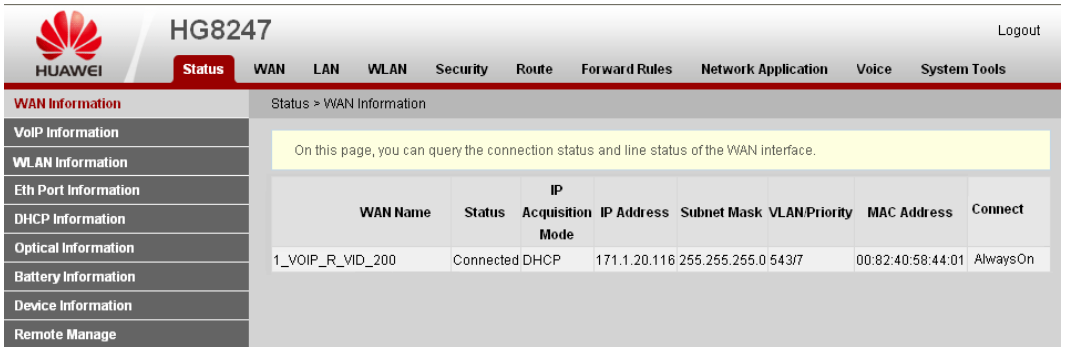
Result

1. Query the connection status of the ONT.

   In the navigation tree on the left, choose **Status** > **WAN Information**. In the pane on the right, the **Status** is **Connected** and the obtained IP address is displayed in **IP**.

   Figure 4-55 shows how to query the connection status of voice service.

Figure 4-55 Querying connection status of voice service

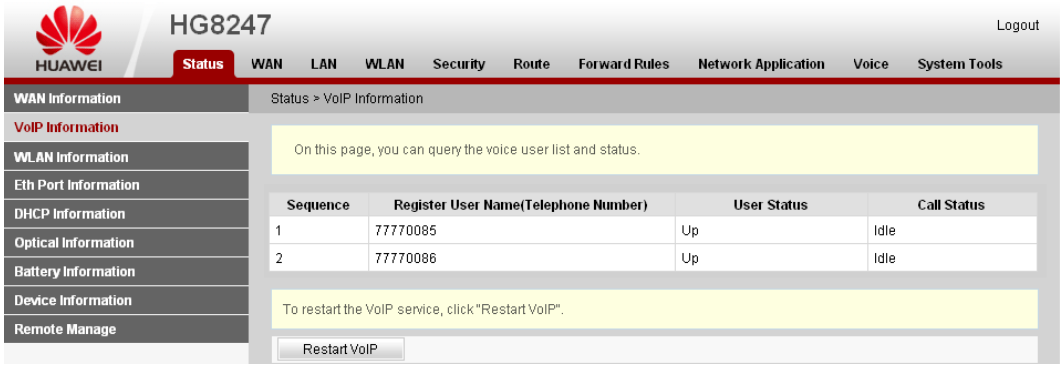


2. Query the registration status of the voice user.

   In the navigation tree on the left, choose **Status** > **VoIP Information**. In the pane on the right, the **User Status** is **Up**.

   Figure 4-56 shows how to query the registration status of voice user.

Figure 4-56 Querying the registration status of voice user



3. Verify the service.

   User 1 with telephone number **77770086** can call user 2 with telephone number **77770086**, and the communication between them is normal. The same is true when user 2 calls user 1.

Configuring SIP-based Voice Service Through the NMS

This topic provides an example of how to configure the SIP-based voice service through the NMS.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- Two telephone sets are connected to TEL1 and TEL2 on the ONT respectively.

Context

- The procedures for configuring the HG8240, HG8247, and HG8245 are the same. This topic considers the HG8245 as an example to describe how to configure the ONT.
- The following section considers the creation of an ONT VAS profile as an example to describe how to bulk configure ONTs. To configure a single ONT, right-click the ONT on the GPON ONU tab page, and choose **Configure Value-Added Service** from the shortcut menu. Details will not be provided in this topic.

Procedure

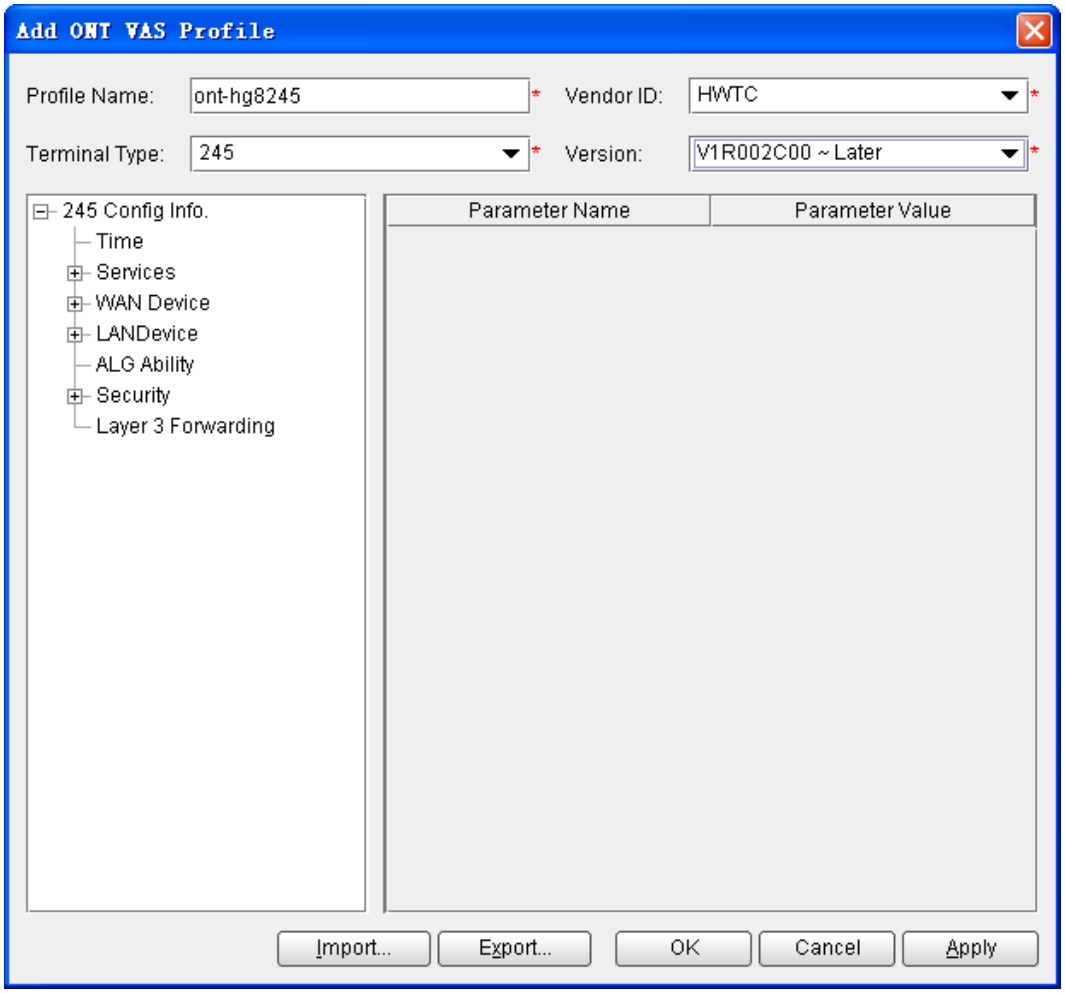
Step 1 Choose **Profile** > **ONT VAS Profile** from the main menu.

Step 2 Right-click and choose **Add** from the shortcut menu.

Step 3 In the dialog box that is displayed, set **Profile Name**, **Vendor ID**, **Terminal Type**, and **Version**. Where, **Version** must be set to **V1R002C00-Later**.

Figure 4-57 shows how to create an ONT VAS profile.

Figure 4-57 Creating an ONT VAS profile



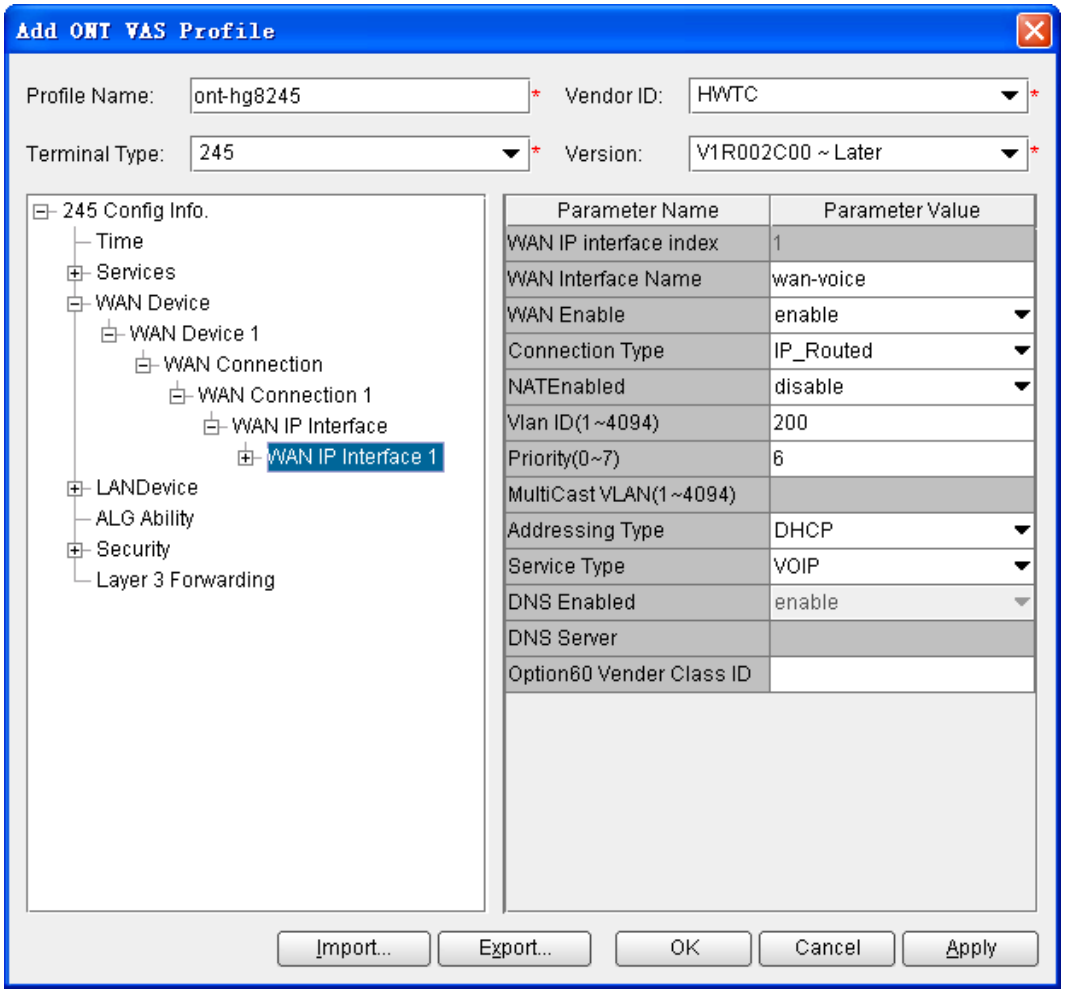
Step 4 Configure the parameters of the voice WAN interface.

Choose **WAN Device** > **WAN Device 1** > **WAN Connection** from the navigation tree. Right-click **WAN Connection** and choose **Add IP Connection** from the shortcut menu. Choose **WAN IP Interface 1** from the navigation tree. In the right pane, set the parameters as follows:

- Set **WAN Interface Name** to **wan-voice**.
- Set **WAN Enable** to **enable**.
- Set **Connection Type** to **IP_Routed**.
- Set **Vlan ID** to **200**.
- Set **Priority** to **6**.
- Set **Addressing Type** to **DHCP**.
- Set **Service Type** to **VOIP**.

Figure 4-58 shows how to configure the parameters of the voice WAN interface.

Figure 4-58 Configuring the parameters of the voice WAN interface



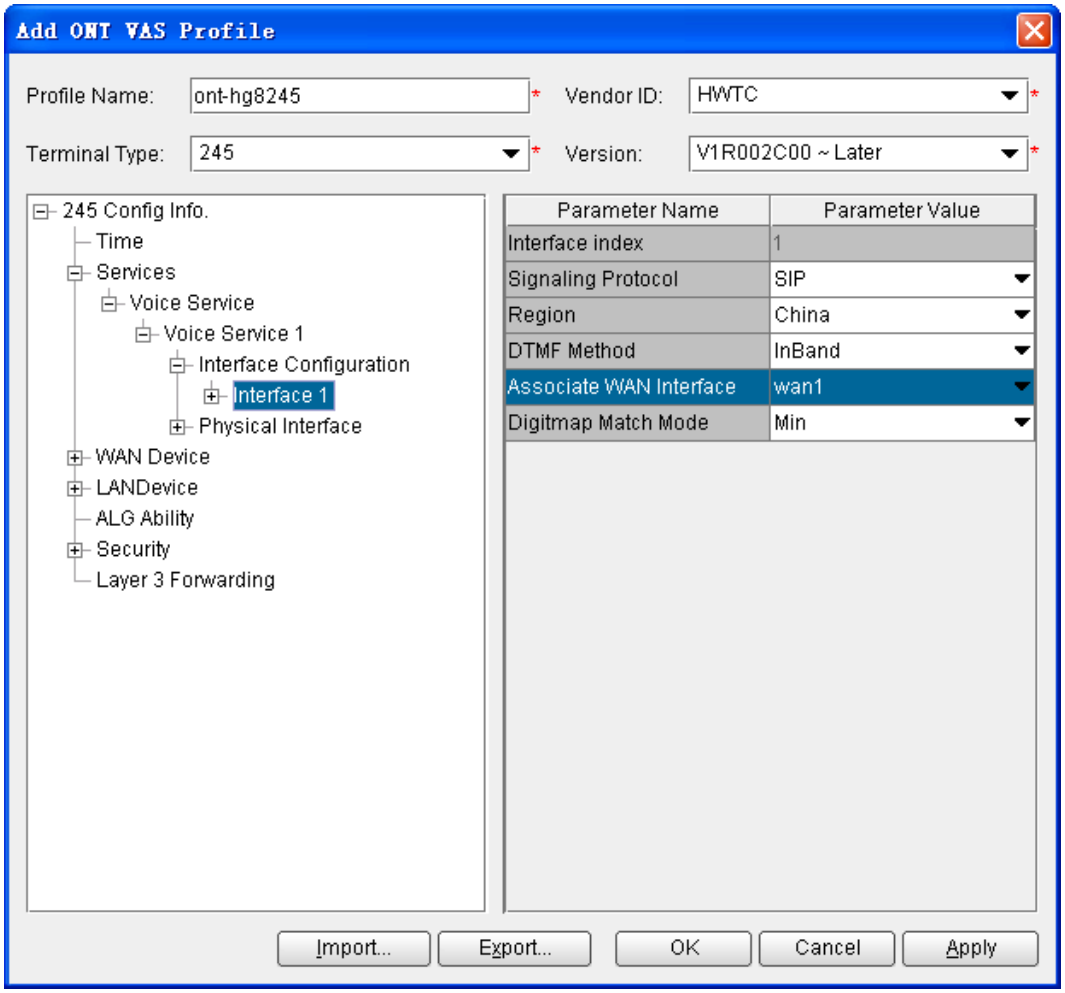
Step 5 Configure the voice protocol parameters.

Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** from the navigation tree. In the right pane, configure the voice protocol parameters as follows:

- Set **Signaling Protocol** to **SIP**.
- Set **Region** to **CN - China**.
- Set **Associate WAN Interface** to **wan1** to bind the WAN interface for voice configuration.

Figure 4-59 shows how to configure the voice protocol parameters.

Figure 4-59 Configuring the voice protocol parameters

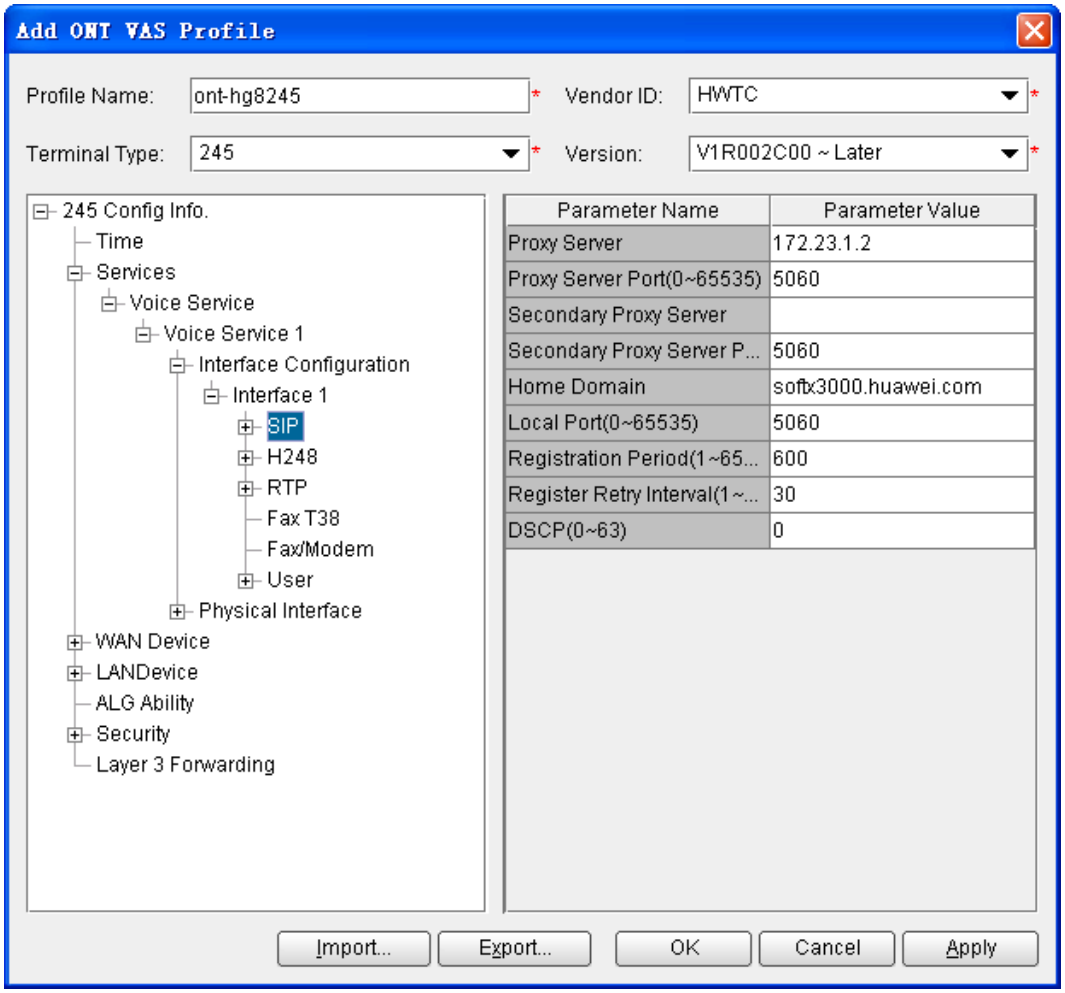


Step 6 Configure the SIP service parameters.

Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** > **SIP** from the navigation tree. In the right pane, set **Proxy Server** to **172.23.1.2** and **Home Domain** to **softx3000.huawei.com**.

Figure 4-60 shows how to configure the SIP service parameters.

Figure 4-60 Configuring the SIP service parameters



Step 7 Configure the SIP user digitmap.

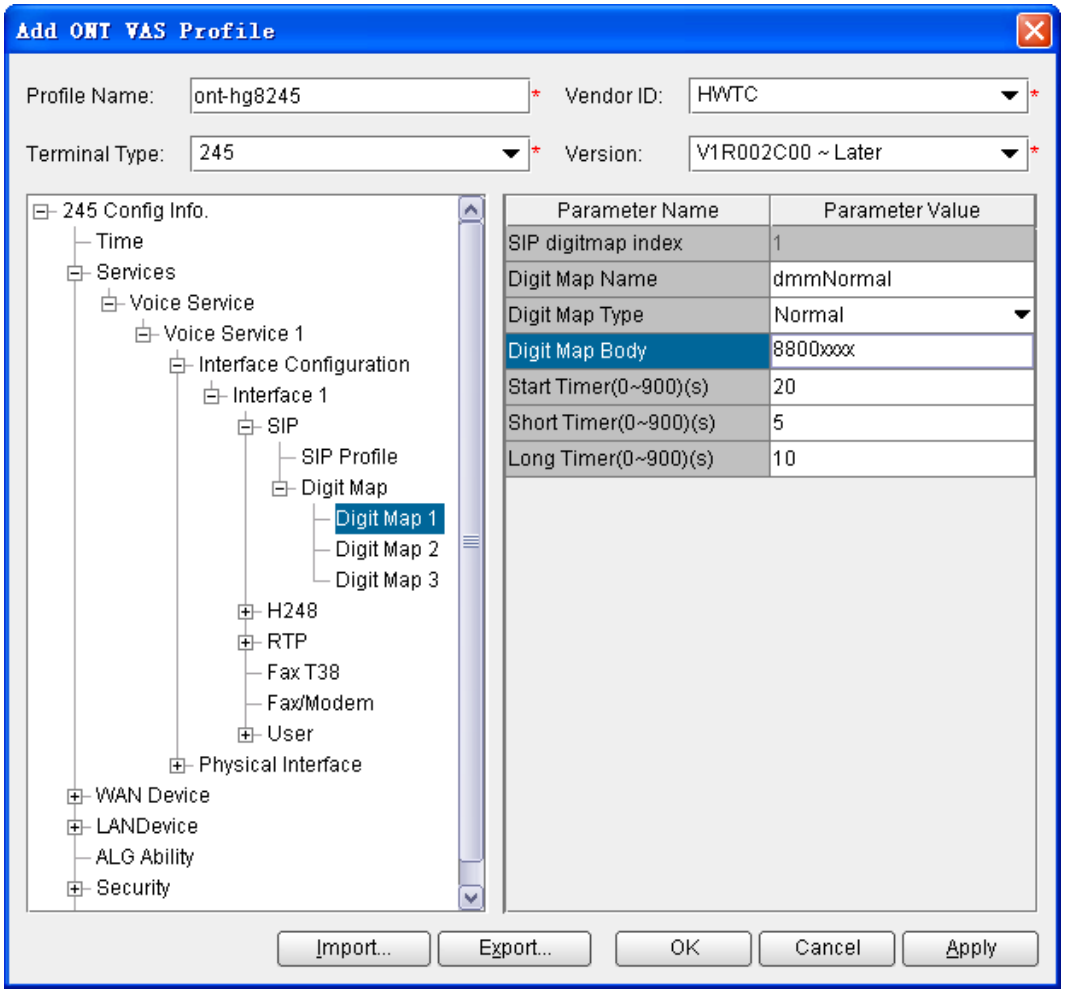
Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** > **SIP** > **Digit Map** > **Digit Map 1** from the navigation tree. In the right pane, set **Digit Map Body** to **8800xxxx**.

NOTE

This step considers the value **8800xxxx** of **Digit Map Body** as an example to describe how to configure the digitmap. In this example, 8-digit numbers beginning with 8800 can be used to make calls. You can set **Digit Map Body** according to requirements of different offices.

Figure 4-61 shows how to configure the SIP user digitmap.

Figure 4-61 Configuring the SIP user digitmap



Step 8 Configure the voice users.

1. Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** > **User** from the navigation tree. Right-click **User** and choose **Add** from the shortcut menu.

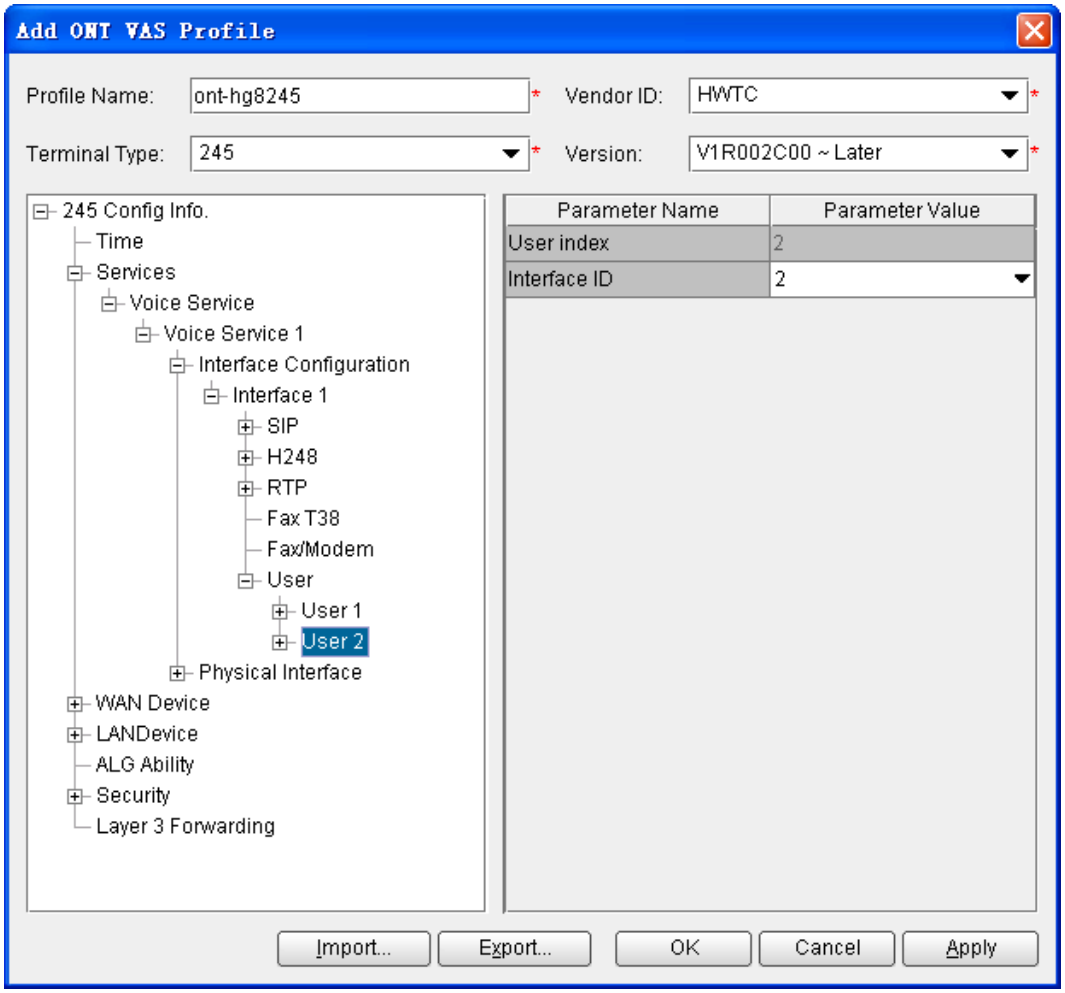
   NOTE

   You can configure a maximum of two users on the HG8240/HG8245/HG8247.

2. Choose **User** > **User 1** from the navigation tree. In the right pane, set **Interface ID** to **1**. In the same way, choose **User** > **User 2** from the navigation tree. In the right pane, set **InterfaceID** to **2**.

   Figure 4-62 shows how to configure the voice users.

Figure 4-62 Configuring the voice users



Step 9 Click **OK**.

Step 10 Bind the ONT VAS profile to the ONT.

On the GPON ONU tab page, select one or more ONTs, right-click, and then choose **Bind VAS Profile** from the shortcut menu. In the dialog box that is displayed, select the new profile and click **OK** to bind the profile to the ONT.

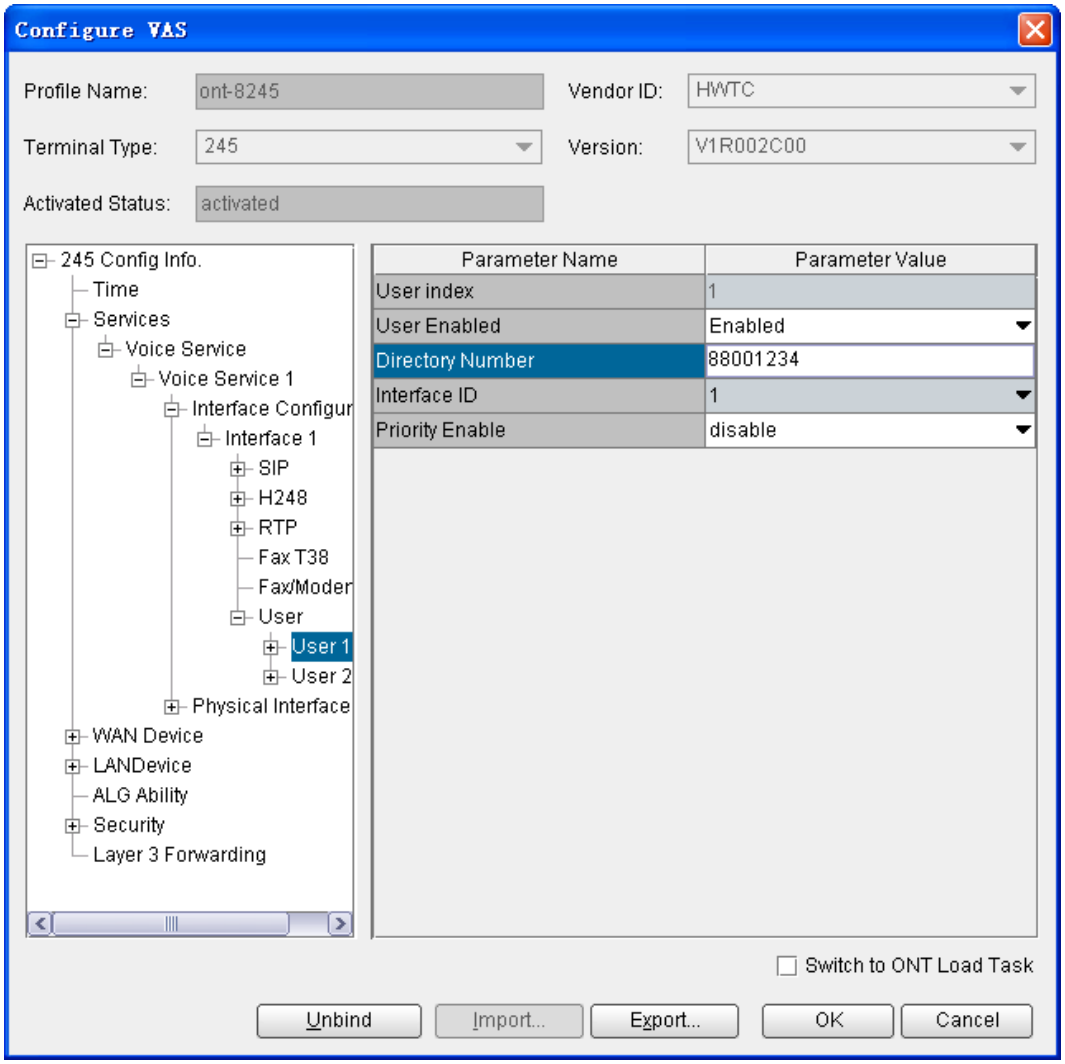
Step 11 On the GPON ONU tab page, right-click an ONT and choose **Configure Value-Added Service** from the shortcut menu.

Step 12 Configure the information about SIP voice users.

1. Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** > **User** > **User 1** from the navigation tree. In the right pane, set **Directory Number** to **88001234**.

   Figure 4-63 shows how to configure the telephone number of SIP voice user 1.

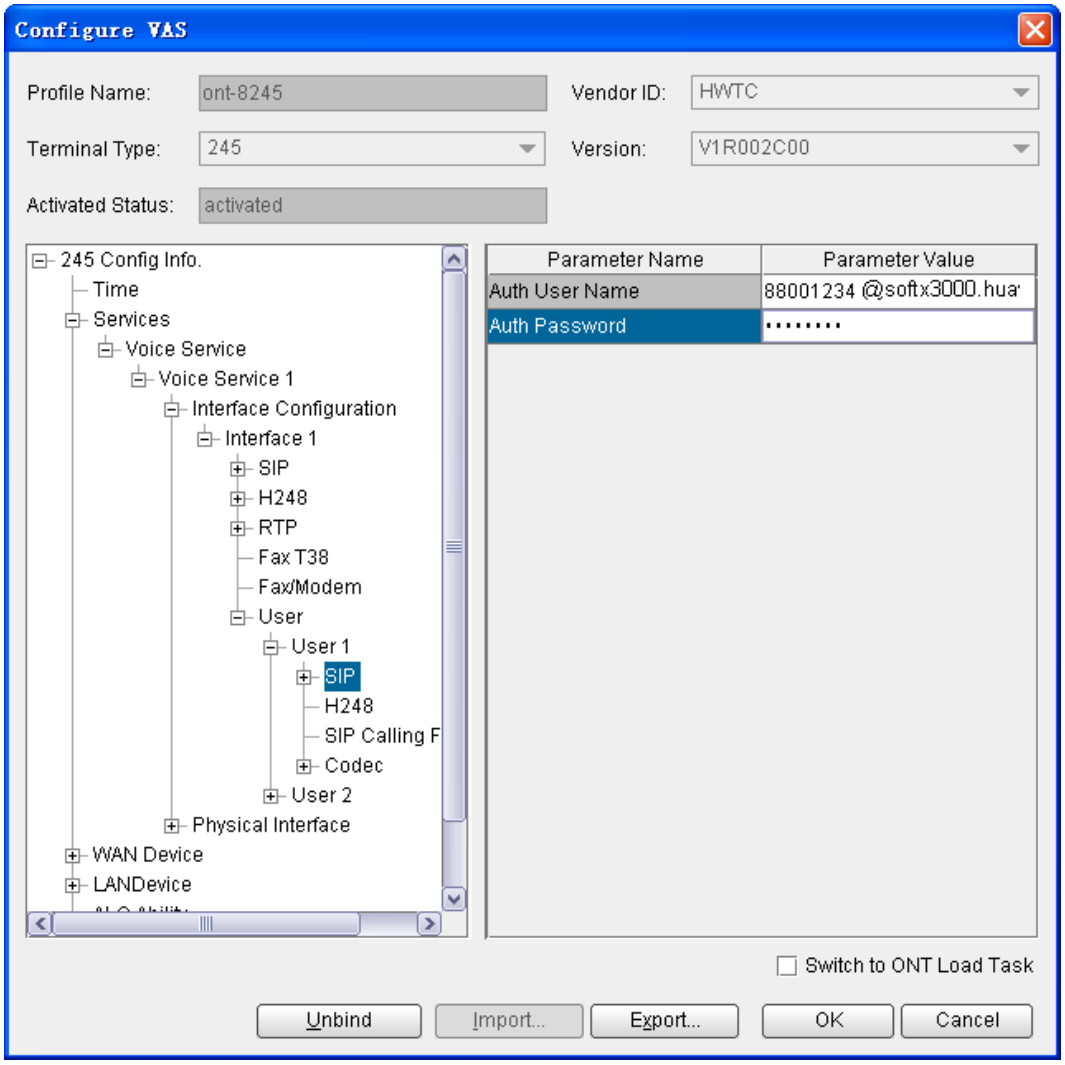
Figure 4-63 Configuring the telephone number of SIP voice user 1



2. Choose **User 1** > **SIP** from the navigation tree. In the right pane, set **Auth User Name** to **88001234@softx3000.huawei.com** and **Auth Password** to **iadtest1**.

   Figure 4-64 shows how to configure the authentication information of SIP voice user 1.

Figure 4-64 Configuring the authentication information of SIP voice user 1



3. In the same way, set **Directory Number** of **User 2** to **88001235**, **Auth User Name** to **88001235@softx3000.huawei.com**, and **Auth Password** to **iadtest2**.

   Figure 4-65 and **Figure 4-66** show how to configure the telephone number and the authentication information of SIP voice user 2.

Figure 4-65 Configuring the telephone number of SIP voice user 2

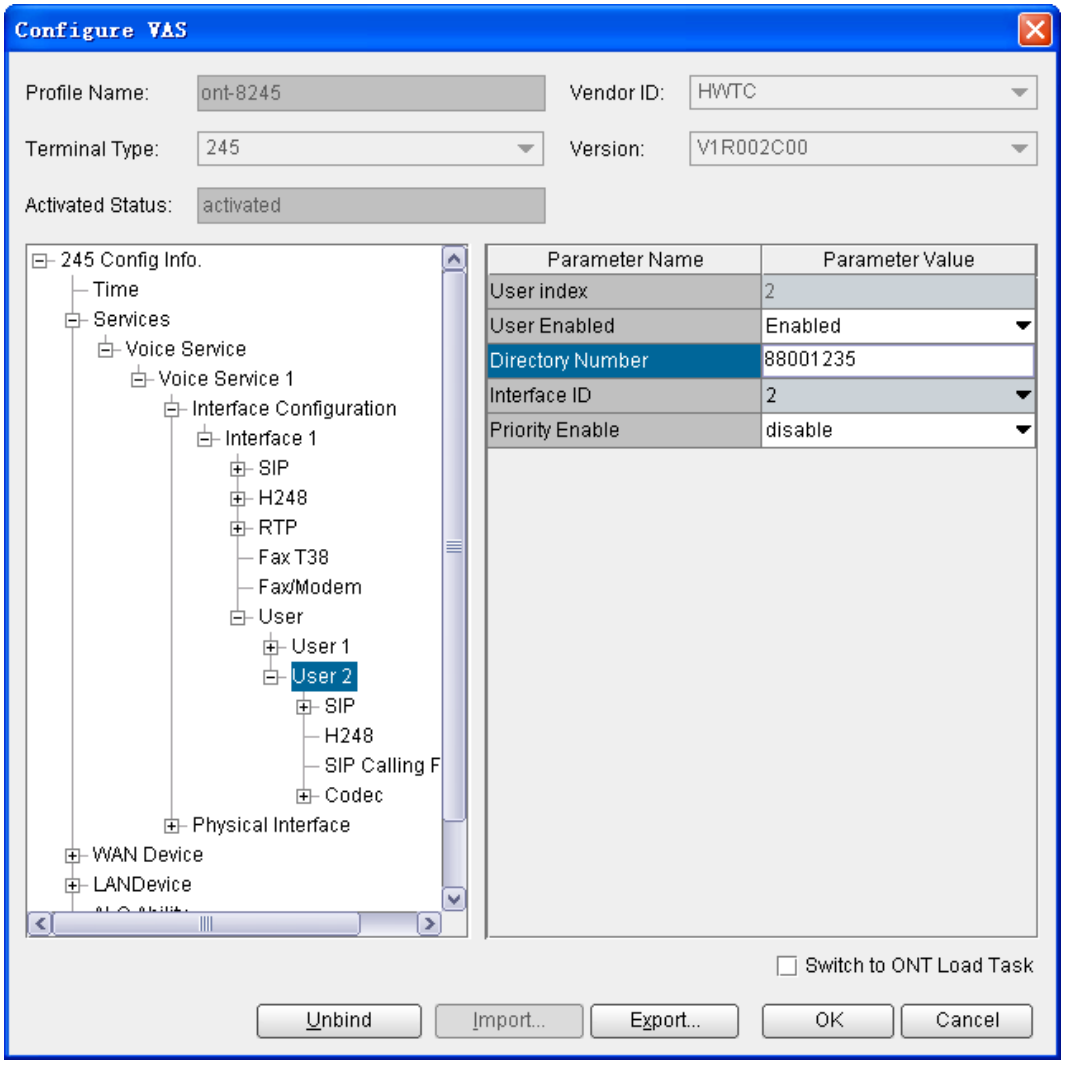
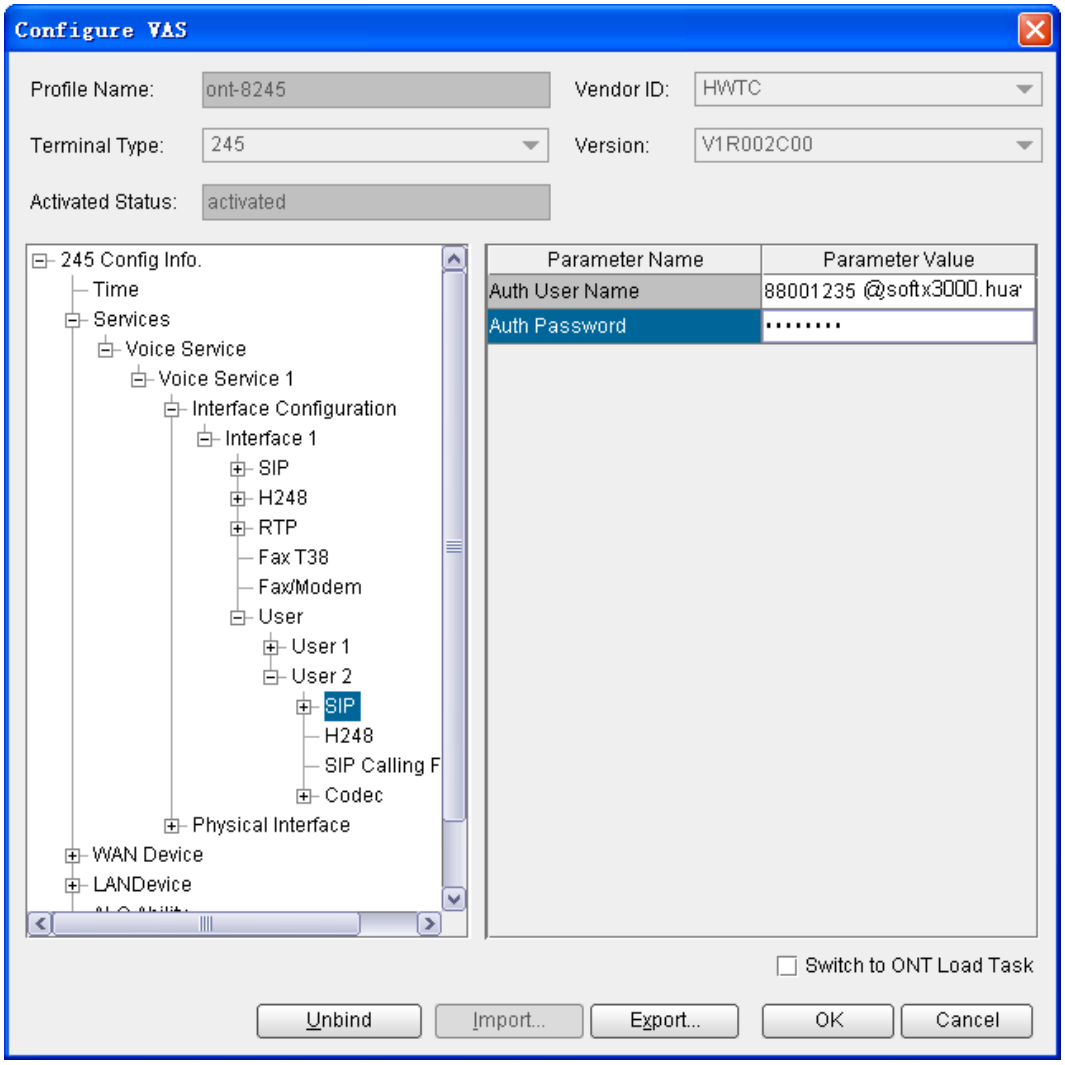


Figure 4-66 Configuring the authentication information of SIP voice user 2



Step 13 Click **OK**. In the dialog box that is displayed, click **OK**. Then, the configuration takes effect after the device automatically restarts.

----End

Result

User 1 with telephone number **77770086** can call user 2 with telephone number **77770086**, and the communication between them is normal. The same is true when user 2 calls user 1.

Configuring SIP-based Voice Service Through the TR-069 Server

This topic provides an example of how to configure the SIP-based voice service through the TR-069 server.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- ONT must be auto-discovered on the TR-069 server. For details, see **4.2.3 Commissioning Interoperation Between the TR-069 Server and the ONT Through the Web Page** or **4.2.4 Commissioning Interoperation Between the TR-069 Server and the ONT Through the NMS**.
- Two telephone sets are connected to TEL1 and TEL2 on the ONT respectively.

Context

- This topic describes how to configure only L3 Internet access service. For L2 Internet access service, configuration is not required on the ONT but on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- Every data change must be saved. You can click **Save** in a window to save data changes. If you navigate to another node without saving data changes, a dialog box will be displayed prompting you to save the data changes. In this case, click **YES** in the dialog box. New data will be automatically applied to the ONTs after the data changes are saved.

CAUTION

When configuring services on the TR-069 server, do not modify the WAN interface connecting the TR-069 server and the ONT. Otherwise, the TR-069 server loses communication with the ONT.

Procedure

Step 1 Log in to the TR-069 server and choose **Subnet View** > **TR069 Subnet** from the navigation tree. In the terminal list, right-click an ONT and choose **Tools** > **Configure in Real Time** from the shortcut menu.

Step 2 In the **Configure in Real Time** dialog box, set **Root Node** to **Internet gateway device**.

Step 3 Configure the parameters of the voice WAN interface.

1. Choose **InternetGatewayDevice** > **WANDevice** > **1** > **WANConnectionDevice** from the navigation tree. Click **Add** in the lower left part to create an instance.
2. Choose **2** > **WANIPConnection** from the navigation tree. Click **Add** in the lower left part. Choose **1** from the navigation tree. In the right pane, set the parameters as follows:
   - Set **Enable** to **1**, indicating that the WAN connection is enabled.
   - Set **Connection Type** to **IP_Routed**, indicating that the connection type of the WAN interface is in routing mode.
   - Set **Addressing Type** to **DHCP**, indicating that the WAN interface obtains IP addresses in DHCP mode.

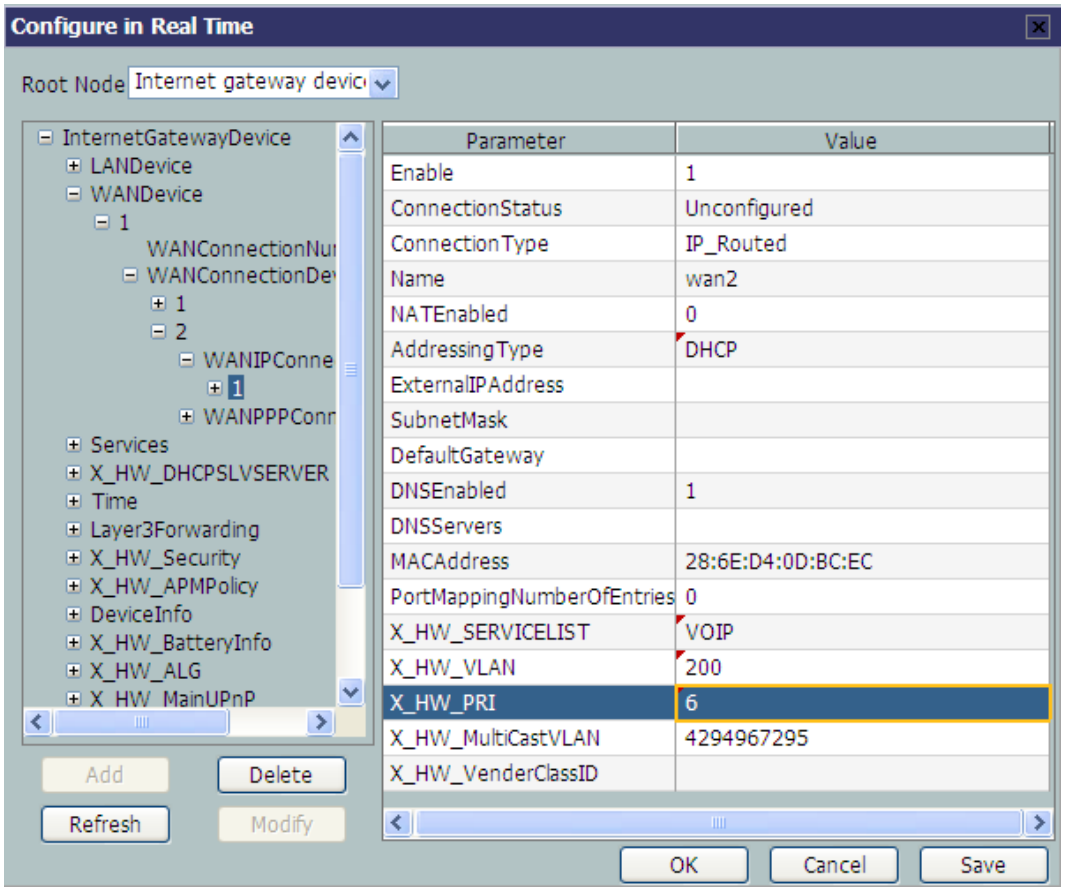
- Set **X_HW_SERVICELIST** to **VOIP**, indicating that the WAN interface provides the VoIP access service.
- Set **X_HW_VLAN** to **200**, indicating the VLAN ID of the WAN interface is 200.
- Set **X_HW_PRI** to **6**, indicating that the priority level of the WAN interface is 6.

NOTE

- If the WAN interface obtains IP addresses in static or DHCP mode, choose **WANIPConnection** to set parameters of the voice WAN interface.
- If the WAN interface obtains IP addresses in PPPoE mode, choose **WANPPPConnection** to set parameters of the voice WAN interface.

Figure 4-67 shows how to configure the parameters of the voice WAN interface.

Figure 4-67 Configuring the parameters of the voice WAN interface



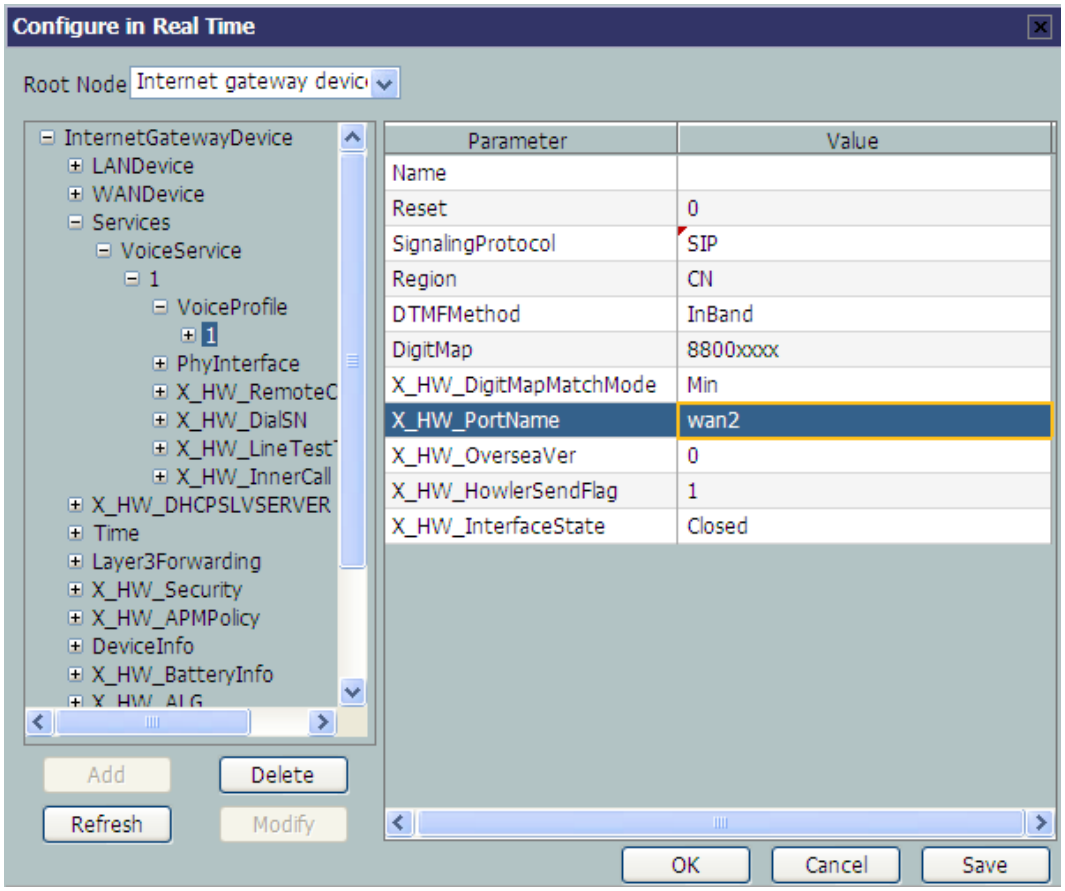
Step 4 Configure the voice protocol parameters.

Choose **InternetGatewayDevice** > **Services** > **VoiceService** > **1** > **VoiceProfile** > **1** from the navigation tree. In the right pane, set the parameters as follows:

- Set **SignalingProtocol** to **SIP**, indicating that the SIP protocol is used.
- Set **Region** to **CN**, indicating the country code of China.
- Set **X_HW_PortName** to **wan2**, indicating that the new WAN interface 2 is bound.

Figure 4-68 shows how to configure the voice protocol parameters.

Figure 4-68 Configuring the voice protocol parameters



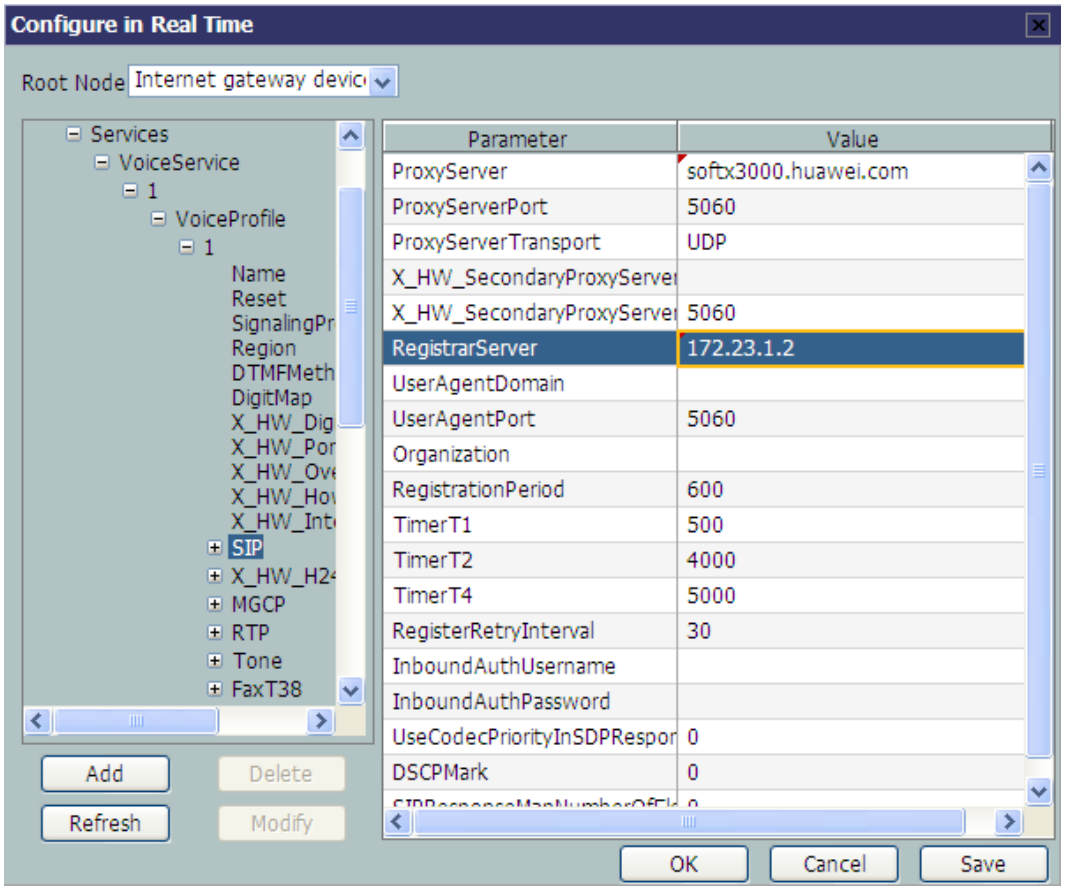
Step 5 Configure the SIP service parameters.

Choose **InternetGatewayDevice** > **Services** > **VoiceService** > **1** > **VoiceProfile** > **1** > **SIP** from the navigation tree. In the right pane, set the parameters as follows:

- Set **ProxyServer** to **softx3000.huawei.com**, indicating that the address of the SIP proxy server is **softx3000.huawei.com**.
- Set **RegistarServer** to **172.23.1.2**, indicating that the SIP registration address is **172.23.1.2**.

Figure 4-69 shows how to configure the SIP service parameters.

Figure 4-69 Configuring the SIP service parameters

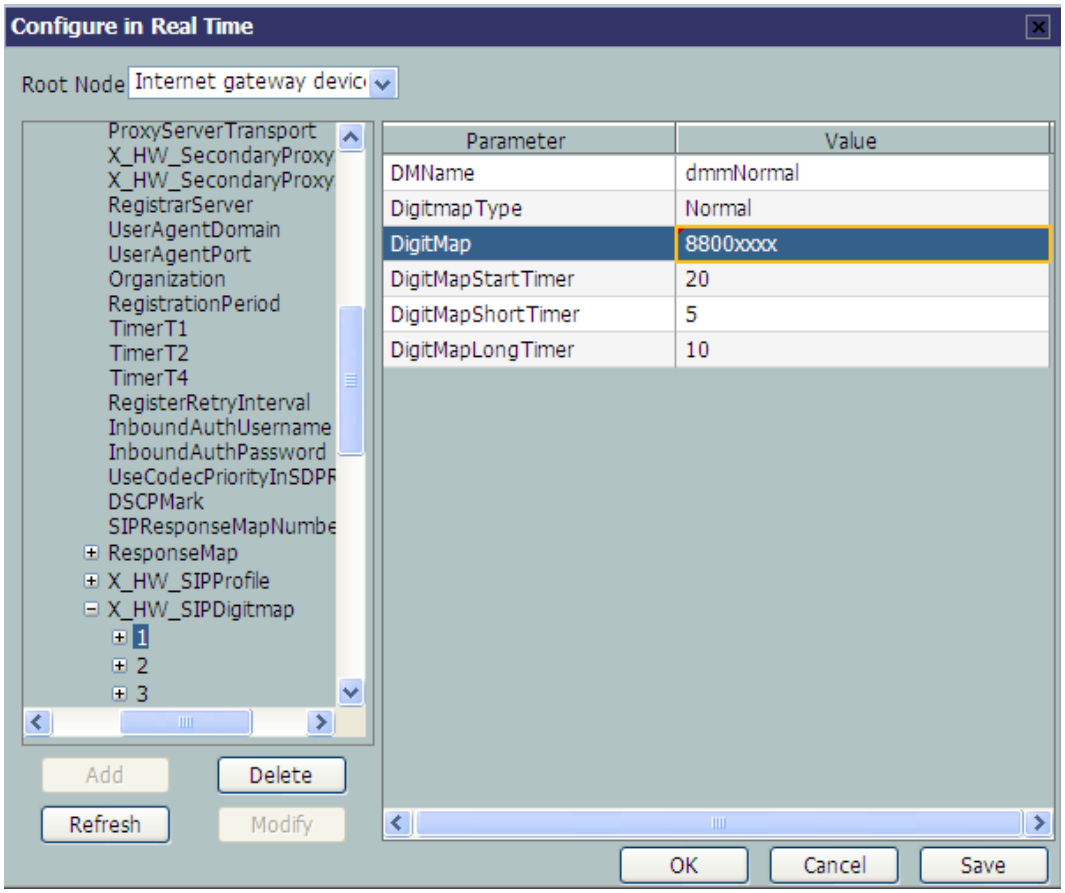


Step 6 Configure the SIP user digitmap.

Choose **InternetGatewayDevice** > **Service** > **VoiceService** > **1** > **VoiceProfile** > **1** > **SIP** > **X_HW_SIPDigitmap** > **1** from the navigation tree. In the right pane, set **DigitMap** to **8800xxxx**.

Figure 4-70 shows how to configure the SIP user digitmap.

Figure 4-70 Configuring the SIP user digitmap

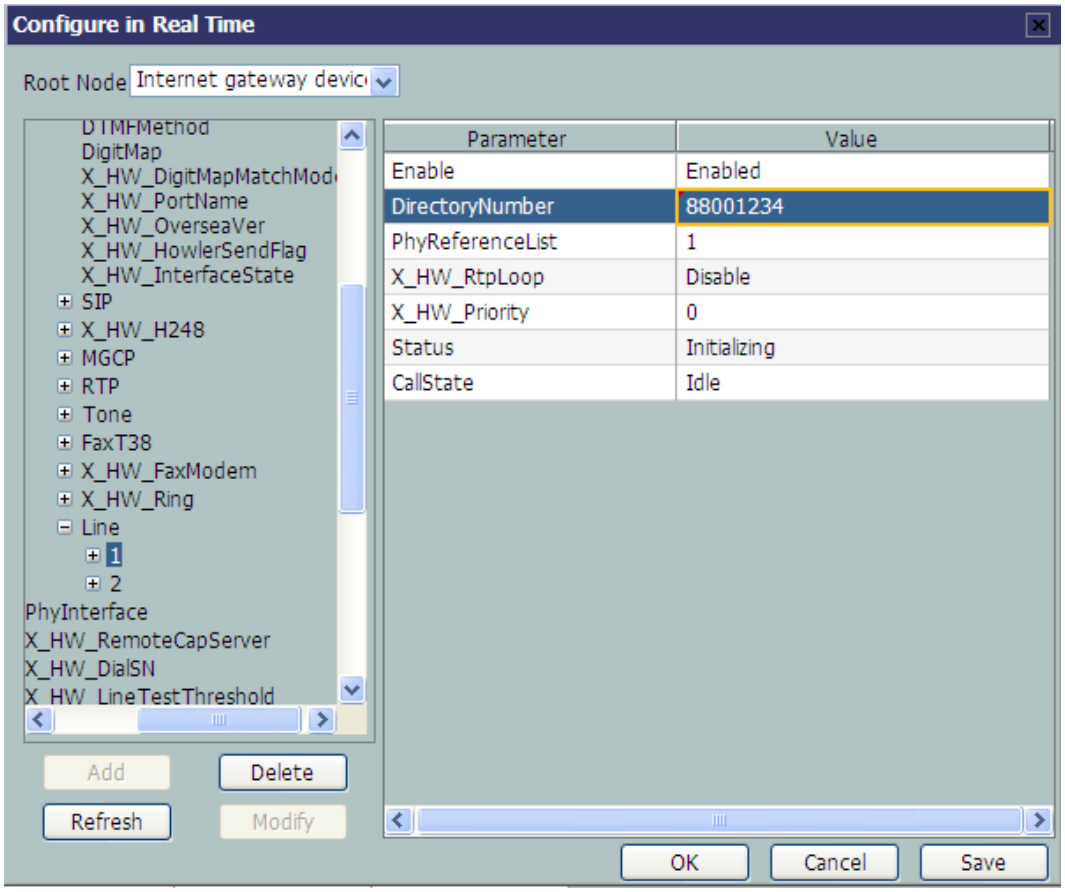


Step 7 Configure the information about SIP voice users.

1. Choose **InternetGatewayDevice** > **Service** > **VoiceService** > **1** > **VoiceProfile** > **1** > **Line** > **1** from the navigation tree. In the right pane, set **DirectoryNumber** to **88001234**, indicating that the telephone number of SIP user 1 is 88001234.

   Figure 4-71 shows how to configure the information about SIP voice users.

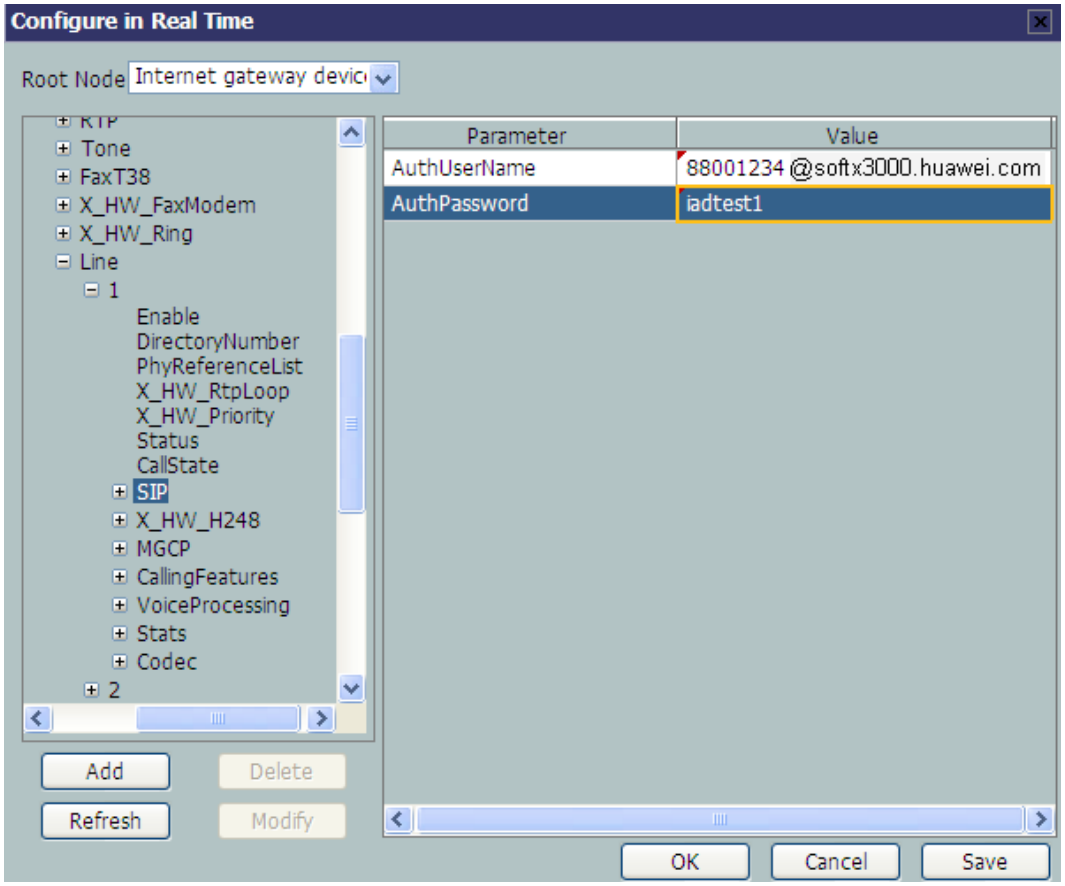
Figure 4-71 Configuring the telephone number of SIP voice user 1



2. Choose **1** > **SIP** from the navigation tree. In the right pane, set **AuthUserName** to **88001234@softx3000.huawei.com** and **AuthPassword** to **iadtest1**, indicating that the user name and password of user 1 for authentication are **88001234@softx3000.huawei.com** and **iadtest1** respectively.

   Figure 4-72 shows how to configure the password of SIP voice user 1.

Figure 4-72 Configuring the password of SIP voice user 1



3. Set information about SIP user 2 in the same way.

   Choose **InternetGatewayDevice** > **Service** > **VoiceService** > **1** > **VoiceProfile** > **1** > **Line** from the navigation tree. Click **Add** in the lower left part. Choose **2** from the navigation tree. In the right pane, set **DirectoryNumber** to **88001235**, indicating the telephone number of SIP user 2 is 88001235.

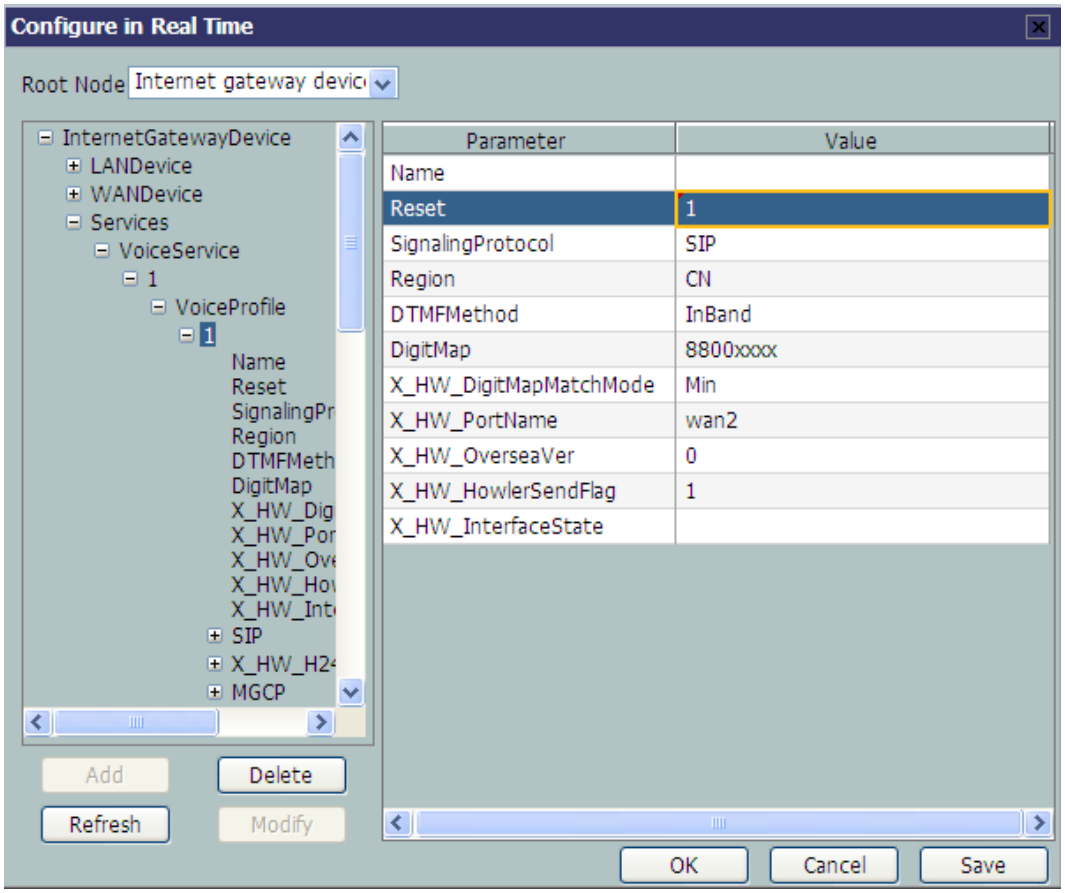
   Choose **2** > **SIP** from the navigation tree. In the right pane, set **AuthUserName** to **88001235@softx3000.huawei.com** and **AuthPassword** to **iadtest2**, indicating that the user name and password of user 2 for authentication are **88001235@softx3000.huawei.com** and **iadtest2** respectively.

Step 8 Restart the voice process.

Choose **InternetGatewayDevice** > **Services** > **VoiceService** > **1** > **VoiceProfile** > **1** from the navigation tree. In the right pane, set **Reset** to **1**, indicating that the voice process will be restarted.

Figure 4-73 shows how to configure restart the voice process.

Figure 4-73 Restarting the voice process



Step 9 Click **OK** after the configuration.

----End

Result

User 1 with telephone number **77770086** can call user 2 with telephone number **77770086**, and the communication between them is normal. The same is true when user 2 calls user 1.

4.6 Configuring the H.248-based Voice Service

This topic provides an example of how to configure the H.248-based voice service.

4.6.1 Data Plan

This topic provides the typical data plan for configuring the H.248-based voice service to make good preparations for the configuration.

4.6.2 Configuration Flowchart

This topic provides the flowchart for configuring the H.248-based voice service.

4.6.3 Configuration Method

The H.248-based voice service can be configured through the Web page, N2000 BMS, or TR-069 server.

4.6.1 Data Plan

This topic provides the typical data plan for configuring the H.248-based voice service to make good preparations for the configuration.

Table 4-8 provides the data plan for configuring the H.248-based voice service.

Table 4-8 Data plan for configuring the H.248-based voice service

Parameter	Data	Description
Service type of the WAN interface	VOIP	When configuring the voice service, you just need to select VoIP or a combination with VoIP. In this example, VoIP is selected.
Connection mode	Route	It can be set to route and bridge. In the case of the voice service, only route can be selected.
VLAN ID of the WAN interface	200	The VLAN ID of the WAN interface must be the same as the VLAN ID of the traffic streams configured on the OLT.
Mode of obtaining an IP address	DHCP	There are three modes of obtaining an IP address. ● DHCP: Obtain an IP address dynamically. ● Static: Configure an IP address manually. ● PPPoE: Access in the PPPoE dialup mode. In this example, the DHCP mode is configured. You can also select the static or PPPoE mode according to the data plan of the upper-layer network.
802.1p	6	The larger the service priority value, the higher the service priority. The priorities are the same as those planned on the OLT, that is, the priority sequence is the voice service, multicast service, and Internet access service/Wi-Fi in a descending order.
Region	China	-

Parameter	Data	Description
Signaling protocol	H.248	● Device software version V100R002C00 supports the SIP protocol. ● Device software version V100R002C01 supports the H.248 protocol. For the SIP voice service, load V100R002C01 software version if the available software version is not V100R002C01. This item need not be configured on the Web page. If the software version is V100R002C00, only the page about SIP voice parameters is displayed; if the software version is V100R002C01, only the page about H.248 voice parameters is displayed.
IP address of the MGC server	172.23.1.2	The IP address of the MGC server must be the same as the IP address configured on the MGC.
MG registration mode	Domain name	The MG registration mode must be the same as the mode configured on the MGC. There are three registration modes: domain name, IP address, and device name.
Domain name for MG registration	user.huawei.com	The domain name for MG registration must be the same as the registration domain name configured on the MGC.
Termination ID	● Line 1 termination ID: A0; corresponding telephone number: 88001234 ● Line 2 termination ID: A1; corresponding telephone number: 88001235	The termination IDs of line 1 and line 2 configured on the MGC correspond to telephone numbers **88001234** and **88001235** respectively.

4.6.2 Configuration Flowchart

This topic provides the flowchart for configuring the H.248-based voice service.

Figure 4-74 shows the flowchart for configuring the H.248-based voice service through the Web page.

Figure 4-74 Flowchart for configuring the H.248-based voice service through the Web page

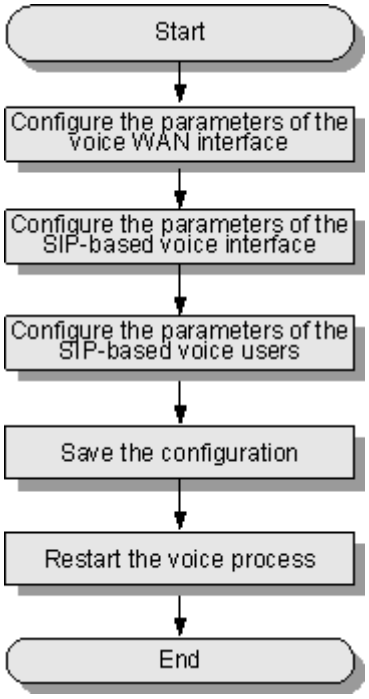


Figure 4-75 shows the flowchart for configuring the H.248-based voice service through the N2000 BMS.

Figure 4-75 Flowchart for configuring the H.248-based voice service through the N2000 BMS

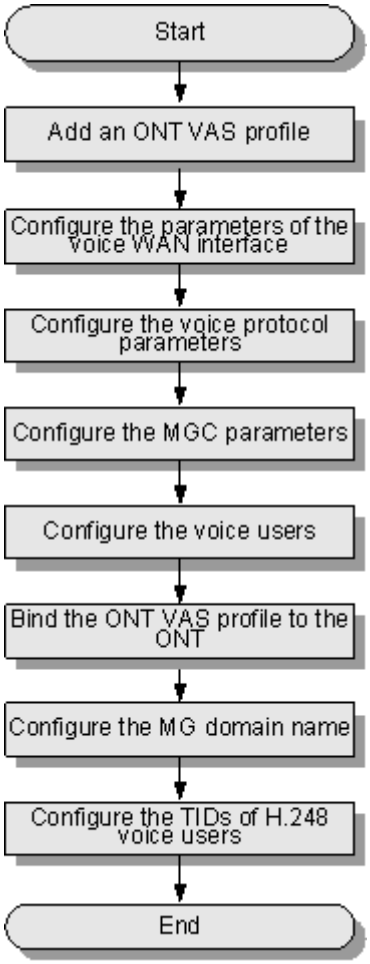
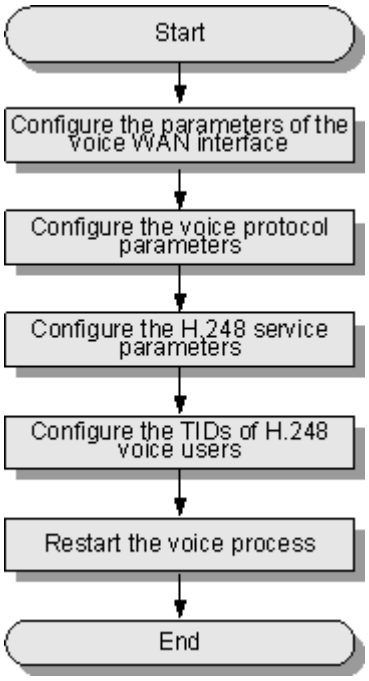


Figure 4-76 shows the flowchart for configuring the H.248-based voice service through the TR-069 server.

Figure 4-76 Flowchart for configuring the H.248-based voice service through the TR-069 server



4.6.3 Configuration Method

The H.248-based voice service can be configured through the Web page, N2000 BMS, or TR-069 server.

Configuring the H.248-based Voice Service Through the Web Page

This topic provides an example of how to configure the H.248-based voice service through the Web page.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- The environment for service configuration on the Web page must be available and you must be logged into the Web page successfully. For details, see **3.2 Logging In Through the Web Page**.
- Two telephone sets are connected to TEL1 and TEL2 on the ONT respectively.

Procedure

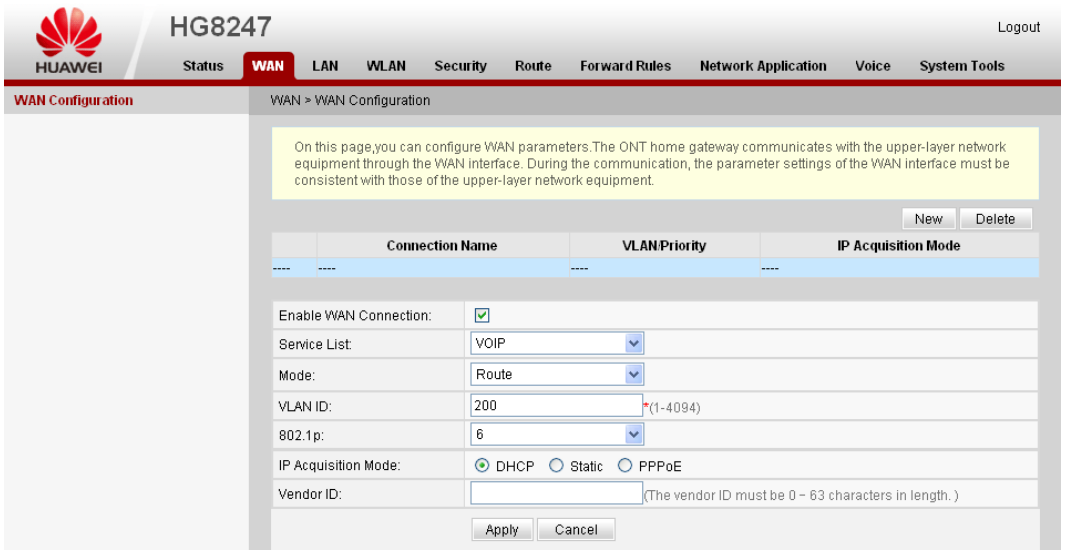
Step 1 Configure the parameters of the voice WAN interface.

1. Coose **WAN** > **WAN Configuration**.
2. In the pane on the right, click **New**. In the dialog box that is displayed, configure the parameters of the WAN interface as follows:

- Select **Enable** next to **NewWanConnction** to enable the WAN connection that is newly set up.
- Set **Service List** to **VOIP**.
- Set **Mode** to **Route**.
- Set **VLAN ID** to **200**.
- Set **802.1p** to **6**.
- Set **IP Acquisition Mode** to **DHCP**.

Figure 4-77 shows how to configure the parameters of the voice WAN interface.

Figure 4-77 Configuring the parameters of the voice WAN interface through the Web page



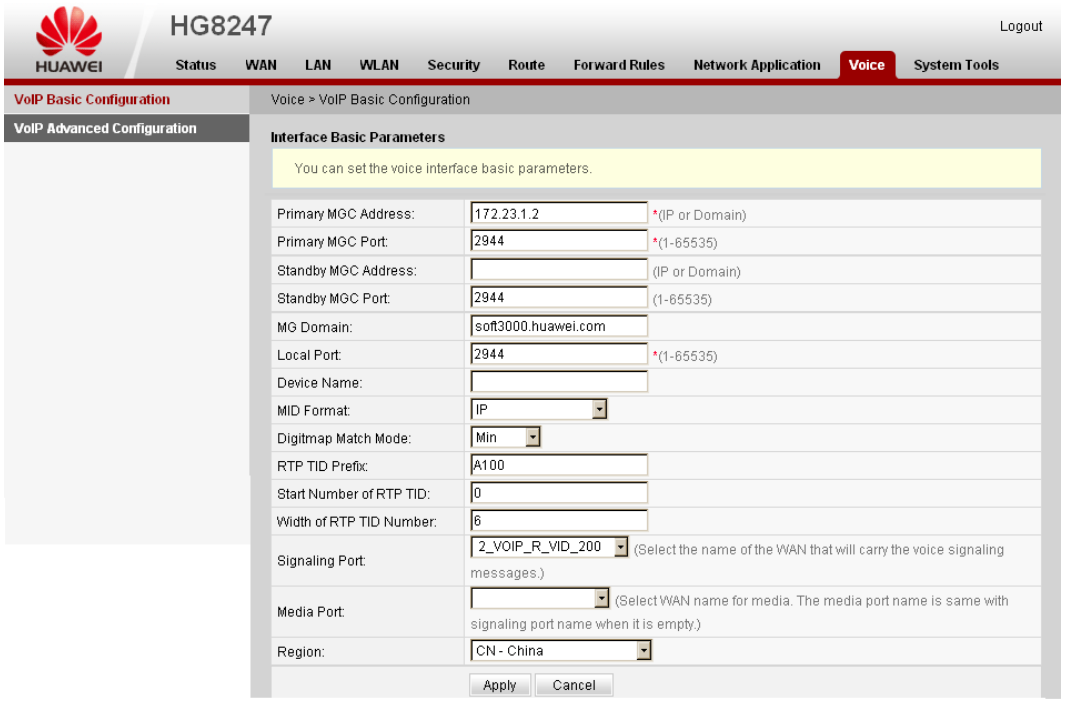
3. Click **Apply**.

Step 2 Configure the parameters of the H.248-based voice interface.

1. In the navigation tree on the left, choose **Voice** > **VoIP Interface Configuration**.
2. In the pane on the right, configure the parameters of the H.248-based voice interface as follows:
   - Set **MGC Address** below **Primary Server** to **172.23.1.2**.
   - Set **Register Format** to **DomainName** and **MG Domain** to **user.huawei.com**.
   - Set **Signaling Port Name** to **1_VOIP_R_VID_200**.
   - Set **Region Settings** to **CN - China**.

   Figure 4-78 shows how to configure the parameters of the H.248-based voice interface.

Figure 4-78 Configuring the parameters of the H.248-based voice interface through the Web page



3. Click **Apply**.

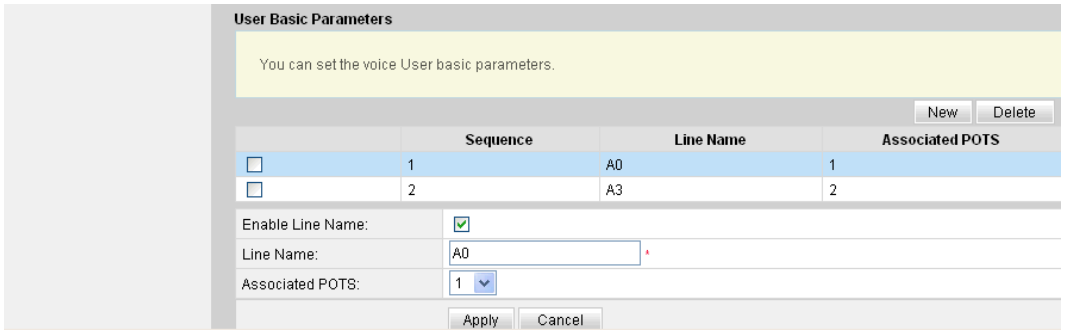
Step 3 Configure the parameters of the H.248-based voice users.

1. In the navigation tree on the left, choose **Voice** > **VoIP User Configuration**.
2. In the pane on the right, configure the parameters of voice user 1 as follows:
   - Set **Line Name** to **A0**.
   - Set **Associated POTS** to **1**.
   - Select **Enable** to enable the voice user configuration.

   In the pane on the right, click **New** to add voice user 2, and configure the parameters of voice user 2 as follows:
   - Set **Line Name** to **A1**.
   - Set **Associated POTS** to **2**.
   - Select **Enable** to enable the voice user configuration.

   Figure 4-79 shows how to configure the parameters of the H.248-based voice user.

Figure 4-79 Configuring the parameters of the H.248-based voice user through the Web page

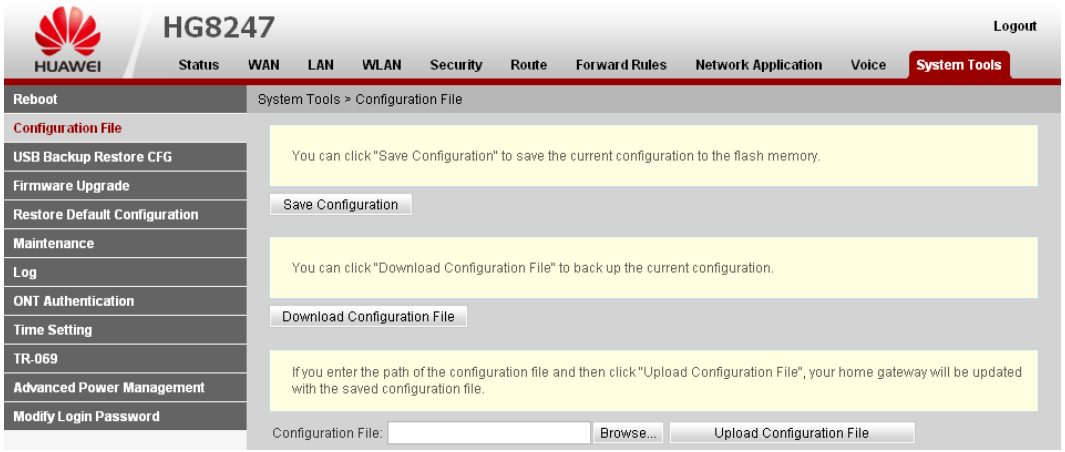


3. Click **Apply**.

Step 4 Save the configuration.

Choose **System Tools** > **Configuration File** from the navigation tree. In the right pane, click **Save Configuration**, as shown in **Figure 4-80**.

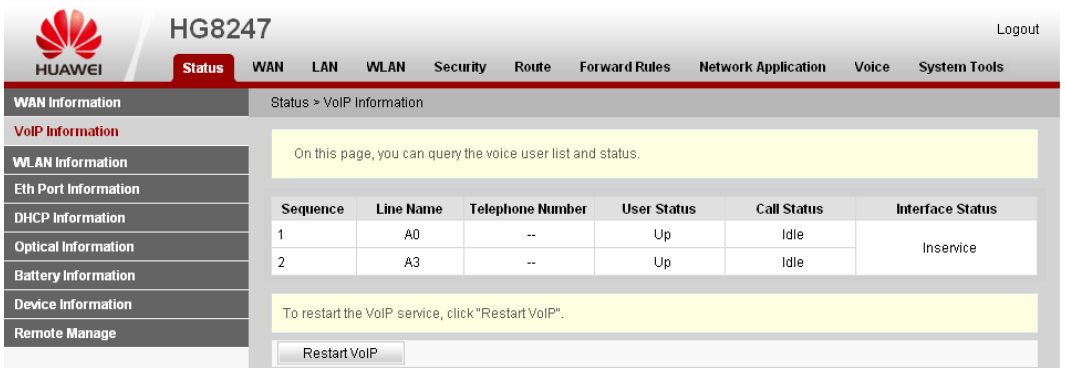
Figure 4-80 Saving the configuration



Step 5 Restart the voice process.

In the navigation tree on the left, choose **Status** > **VoIP Information**. In the pane on the right, click **Restart VoIP**, as shown in **Figure 4-81**.

Figure 4-81 Restarting the voice process



----End

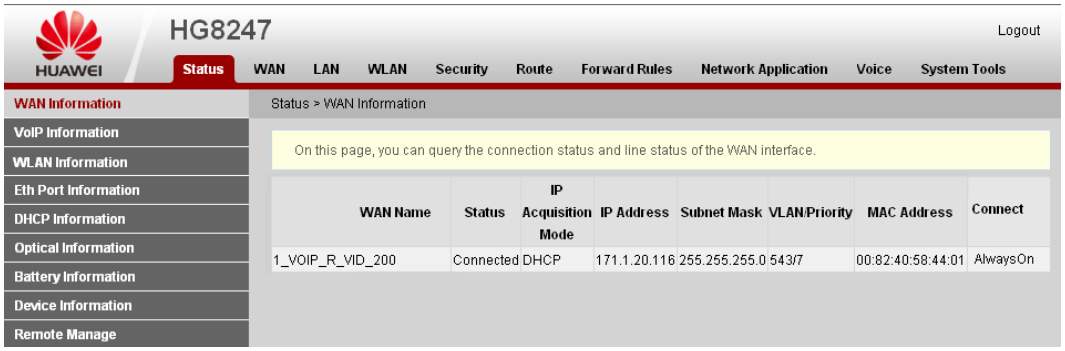
Result

1. Query the connection status of the ONT.

   In the navigation tree on the left, choose **Status** > **WAN Information**. In the pane on the right, the **Status** is **Connected** and the obtained IP address is displayed in **IP**.

   Figure 4-82 shows how to query the connection status of voice service.

Figure 4-82 Querying connection status of voice service

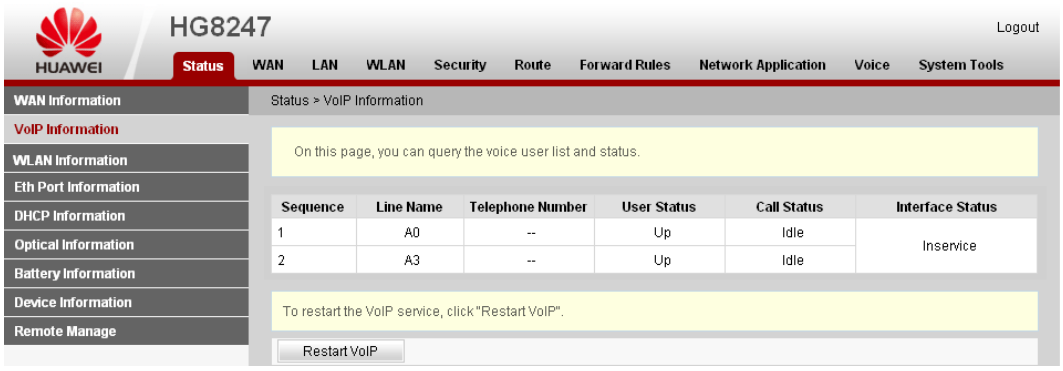


2. Query the registration status of the voice user.

   In the navigation tree on the left, choose **Status** > **VoIP Information**. In the pane on the right, the **User Status** is **Up**.

   Figure 4-83 shows how to query the registration status of voice user.

Figure 4-83 Querying the registration status of voice user



3. Verify the service.

   User 1 with telephone number **88001234** can call user 2 with telephone number **88001235**, and the communication between them is normal. The same is true when user 2 calls user 1.

NOTE

The termination IDs of line 1 and line 2 configured on the MGC correspond to telephone numbers **88001234** and **88001235** respectively.

Configuring the H.248-based Voice Service Through the NMS

This topic provides an example of how to configure the H.248-based voice service through the NMS.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- Two telephone sets are connected to TEL1 and TEL2 on the ONT respectively.

Context

- The procedures for configuring the HG8240, HG8247, and HG8245 are the same. This topic considers the HG8245 as an example to describe how to configure the ONT.
- The following section considers the creation of an ONT VAS profile as an example to describe how to bulk configure ONTs. To configure a single ONT, right-click the ONT on the GPON ONU tab page, and choose **Configure Value-Added Service** from the shortcut menu. Details will not be provided in this topic.

Procedure

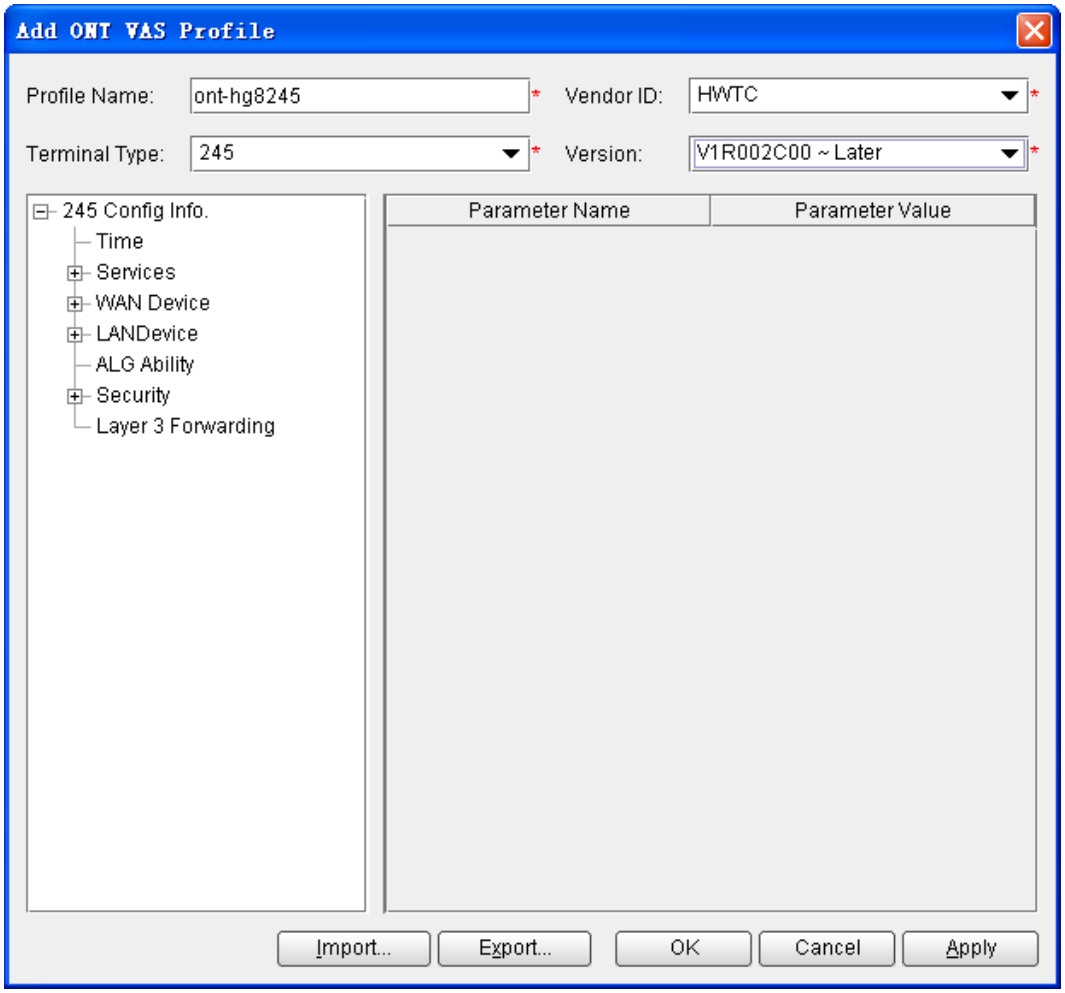
Step 1 Choose **Profile** > **ONT VAS Profile** from the main menu.

Step 2 Right-click and choose **Add** from the shortcut menu.

Step 3 In the dialog box that is displayed, set **Profile Name**, **Vendor ID**, **Terminal Type**, and **Version**. Where, **Version** must be set to **V1R002C00-Later**.

Figure 4-84 shows how to create an ONT VAS profile.

Figure 4-84 Creating an ONT VAS profile



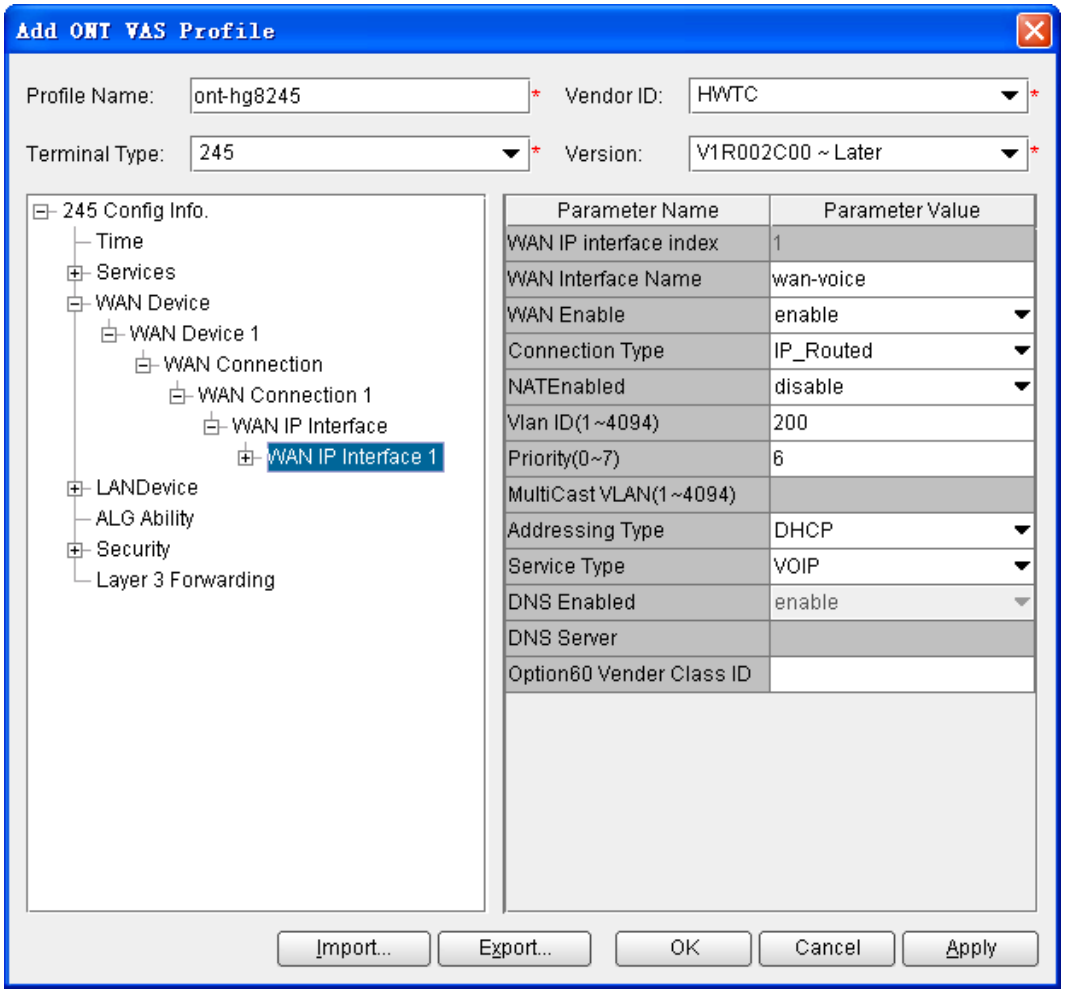
Step 4 Configure the parameters of the voice WAN interface.

Choose **WAN Device** > **WAN Device 1** > **WAN Connection** from the navigation tree. Right-click **WAN Connection** and choose **Add IP Connection** from the shortcut menu. Choose **WAN IP Interface 1** from the navigation tree. In the right pane, set the parameters as follows:

- Set **WAN Interface Name** to **wan-voice**.
- Set **WAN Enable** to **enable**.
- Set **Connection Type** to **IP_Routed**.
- Set **Vlan ID** to **200**.
- Set **Priority** to **6**.
- Set **Addressing Type** to **DHCP**.
- Set **Service Type** to **VOIP**.

Figure 4-85 shows how to configure the parameters of the voice WAN interface.

Figure 4-85 Configuring the parameters of the voice WAN interface



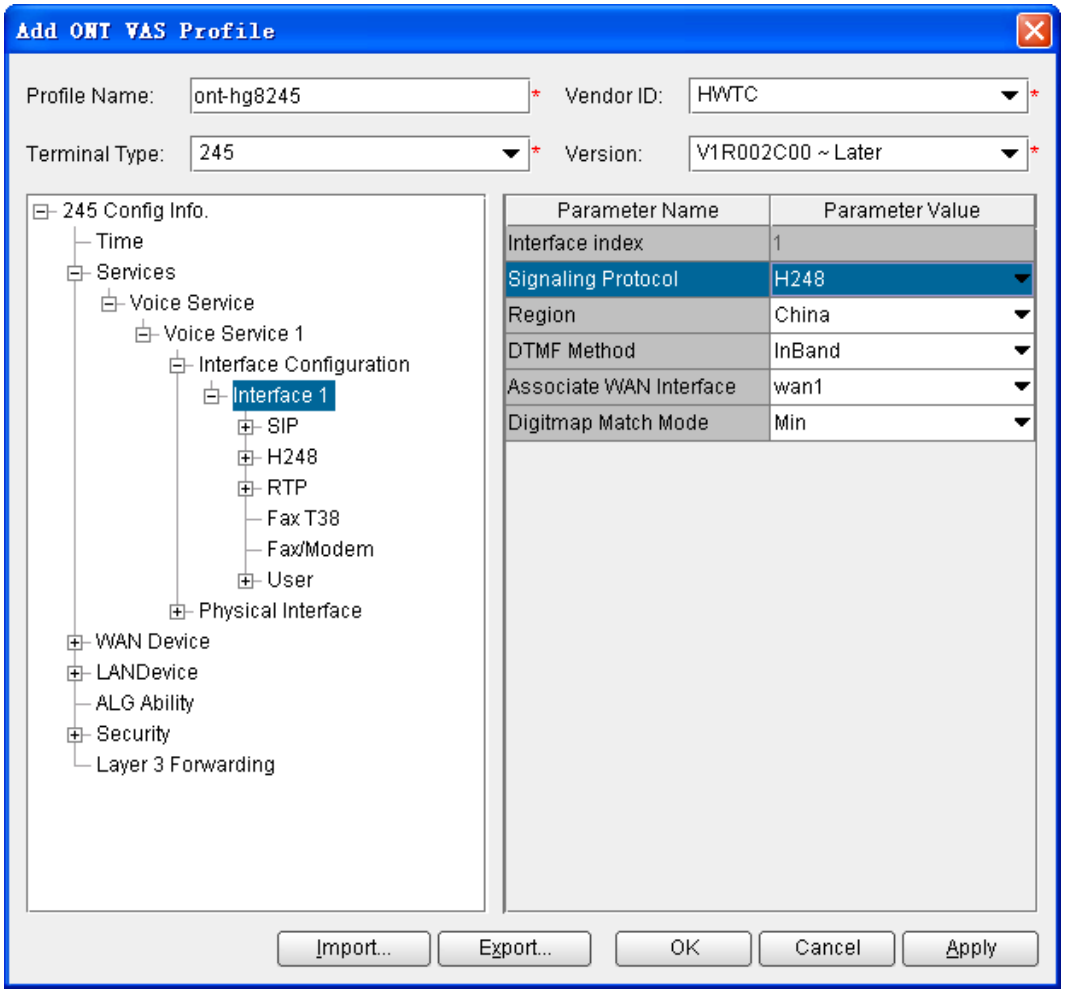
Step 5 Configure the voice protocol parameters.

Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** from the navigation tree. In the right pane, configure the voice protocol parameters as follows:

- Set **Signaling Protocol** to **H248**.
- Set **Region** to **China**.
- Set **Associate WAN Interface** to **wan1** to bind the WAN interface for voice configuration.

Figure 4-86 shows how to configure the voice protocol parameters.

Figure 4-86 Configuring the voice protocol parameters

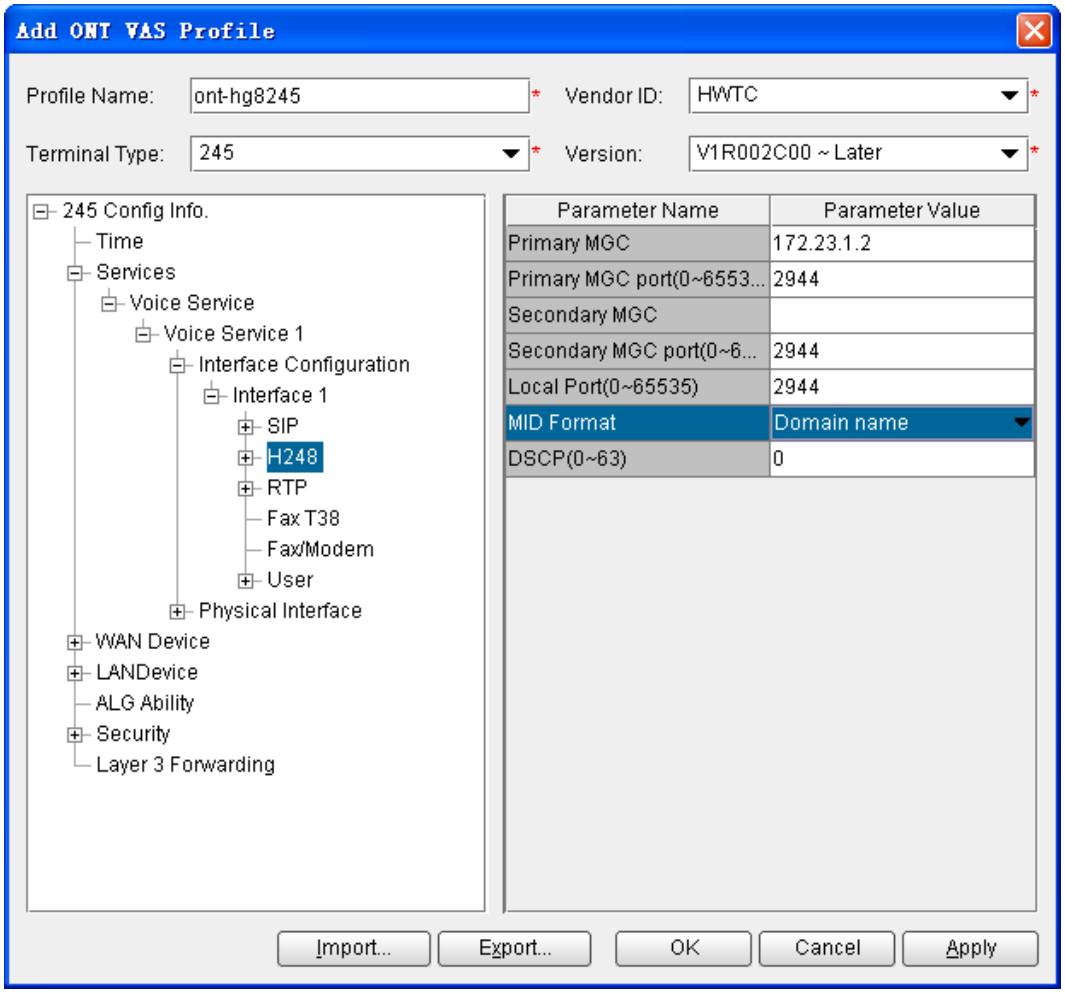


Step 6 Configure the MGC parameters.

Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** > **H248** from the navigation tree. In the right pane, set **Primary MGC** to **172.23.1.2** and **MID Format** to **Domain name**.

Figure 4-87 shows how to configure the MGC parameters.

Figure 4-87 Configuring the MGC parameters



Step 7 Configure the voice users.

1. Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** > **User** from the navigation tree. Right-click **User** and choose **Add** from the shortcut menu.

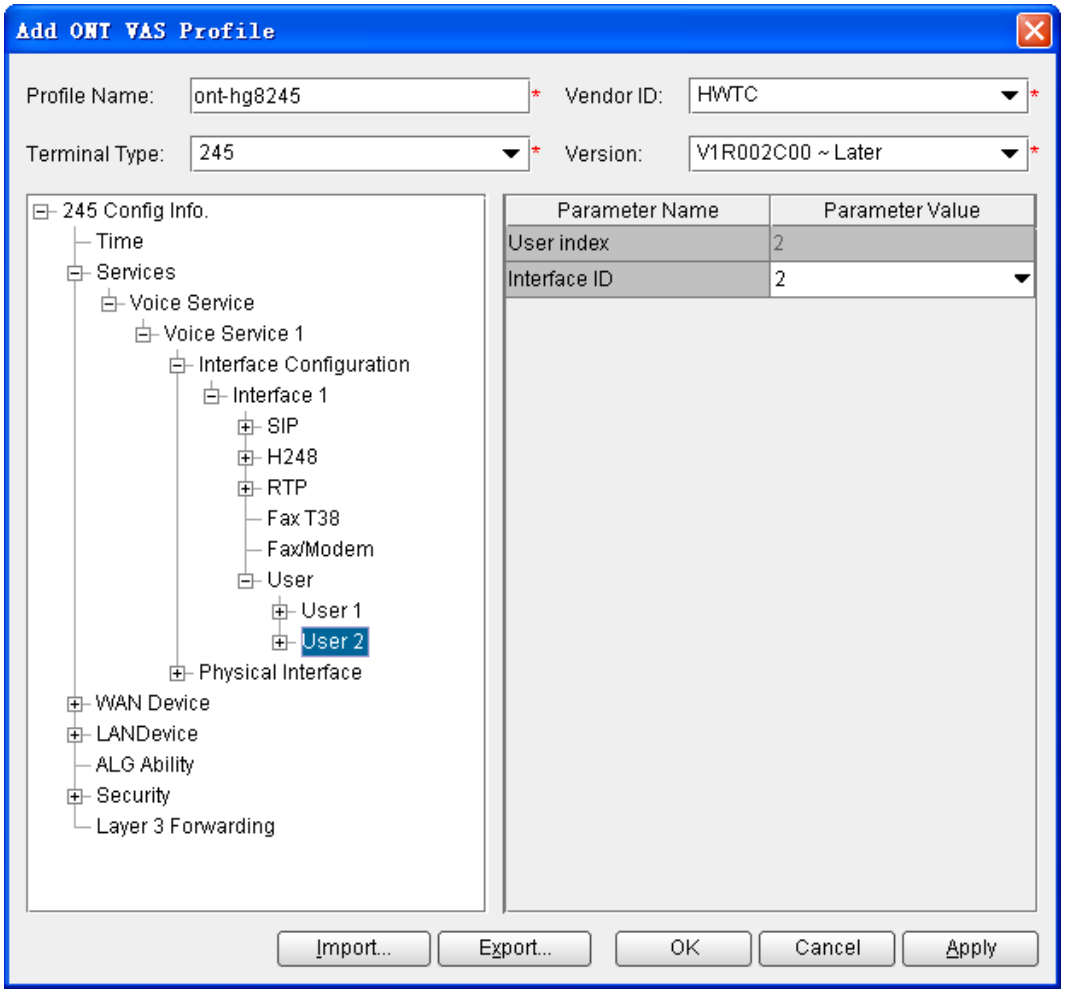
   NOTE

   You can configure a maximum of two users on the HG8240/HG8245/HG8247.

2. Choose **User** > **User 1** from the navigation tree. In the right pane, set **Interface ID** to **1**. In the same way, choose **User** > **User 2** from the navigation tree. In the right pane, set **InterfaceID** to **2**.

   Figure 4-88 shows how to configure the voice users.

Figure 4-88 Configuring the voice users



Step 8 Click **OK**.

Step 9 Bind the ONT VAS profile to the ONT.

On the GPON ONU tab page, select one or more ONTs, right-click, and then choose **Bind VAS Profile** from the shortcut menu. In the dialog box that is displayed, select the new profile and click **OK** to bind the profile to the ONT.

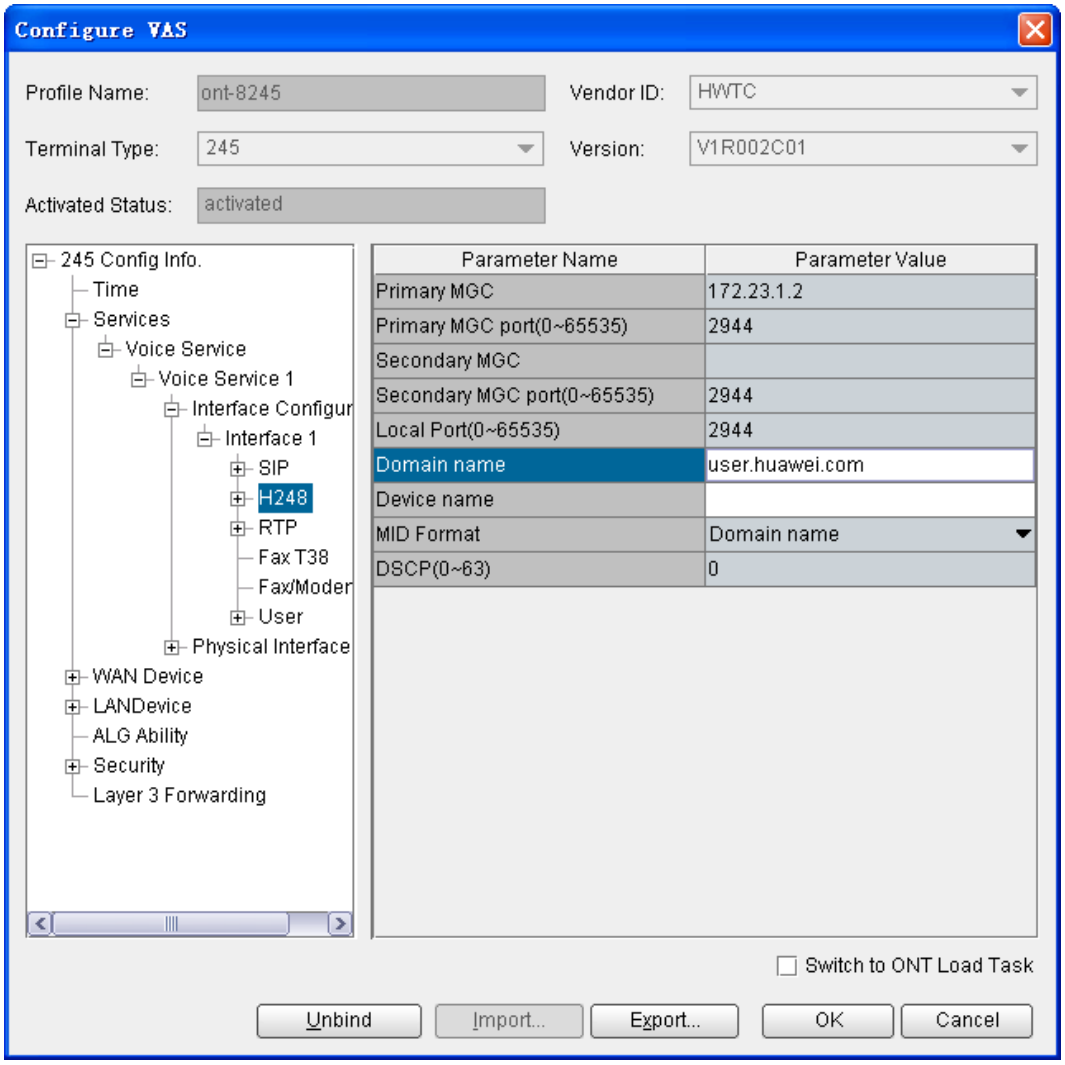
Step 10 On the GPON ONU tab page, right-click an ONT and choose **Configure Value-Added Service** from the shortcut menu.

Step 11 Configure the MG domain name.

Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** > **H248** from the navigation tree. In the right pane, set **Domain name** to **user.huawei.com**.

Figure 4-89 shows how to configure the MG domain name.

Figure 4-89 Configuring the MG domain name



Step 12 Configure the TIDs of H.248 voice users.

Choose **Services** > **Voice Service** > **Voice Service 1** > **Interface configuration** > **Interface1** > **User** from the navigation tree. In the right pane, set the TIDs as follows:

1. Choose **User 1** > **H248** from the navigation tree. In the right pane, set **TID** to **A0**.
2. Choose **User 2** > **H248** from the navigation tree. In the right pane, set **TID** to **A1**.

NOTE

TIDs A0 and A1 are configured on the MGC and telephone numbers 88001234 and 88001235 are bound to TIDs A0 and A1 respectively.

Figure 4-90 and **Figure 4-91** show how to configure the TID of H.248 voice user 1 and the TID of H.248 voice user 2.

Figure 4-90 Configuring the TID of H.248 voice user 1

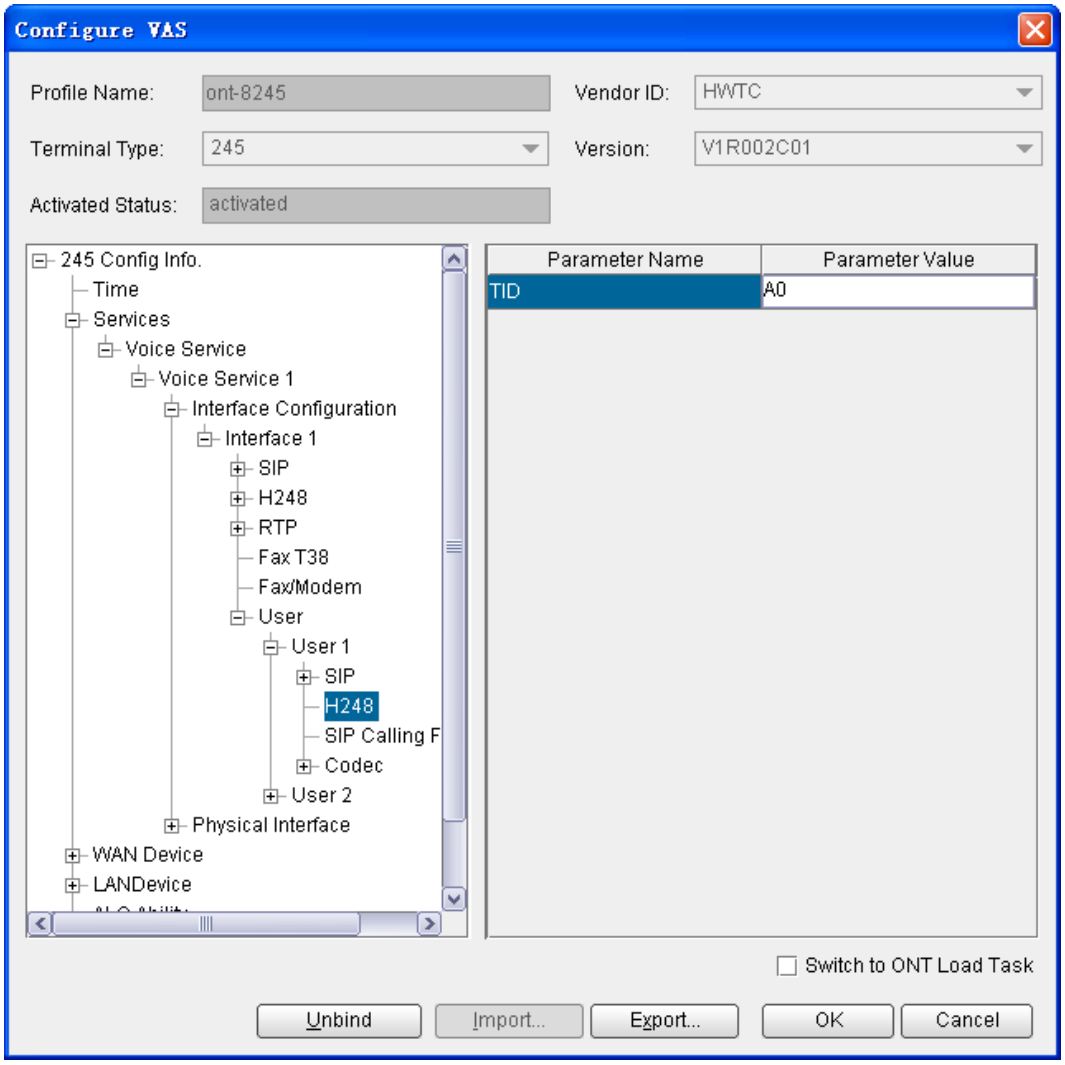
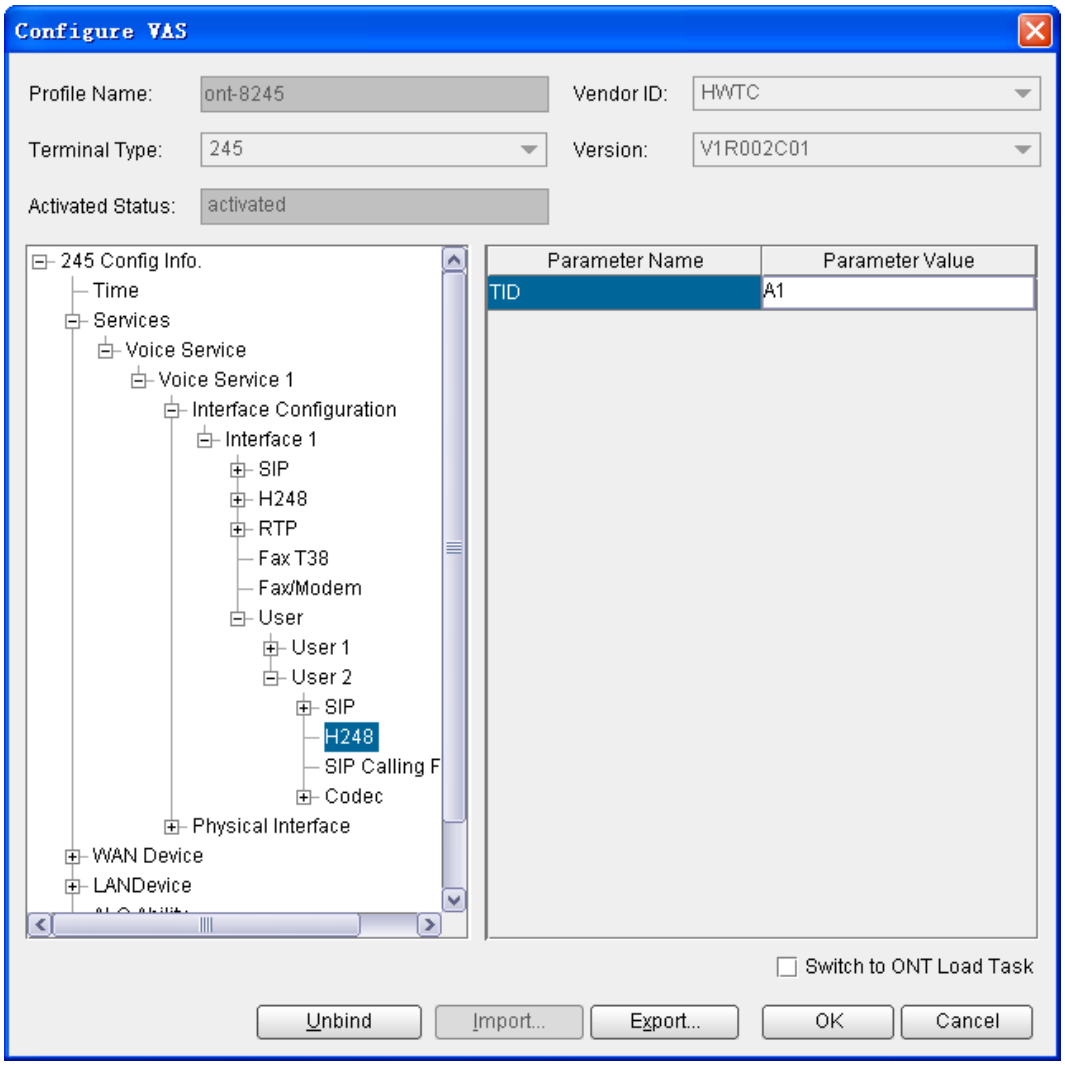


Figure 4-91 Configuring the TID of H.248 voice user 2



Step 13 Click **OK**. In the dialog box that is displayed, click **OK**. Then, the configuration takes effect after the device automatically restarts.

----End

Result

User 1 with telephone number **88001234** can call user 2 with telephone number **88001235**, and the communication between them is normal. The same is true when user 2 calls user 1.

NOTE

The termination IDs of line 1 and line 2 configured on the MGC correspond to telephone numbers **88001234** and **88001235** respectively.

Configuring the H.248-based Voice Service Through the TR-069 Server

This topic provides an example of how to configure the H.248-based voice service through the TR-069 server.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- ONT must be auto-discovered on the TR-069 server. For details, see **4.2.3 Commissioning Interoperation Between the TR-069 Server and the ONT Through the Web Page** or **4.2.4 Commissioning Interoperation Between the TR-069 Server and the ONT Through the NMS**.
- Two telephone sets are connected to TEL1 and TEL2 on the ONT respectively.

Context

- This topic describes how to configure only L3 Internet access service. For L2 Internet access service, configuration is not required on the ONT but on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- Every data change must be saved. You can click **Save** in a window to save data changes. If you navigate to another node without saving data changes, a dialog box will be displayed prompting you to save the data changes. In this case, click **YES** in the dialog box. New data will be automatically applied to the ONTs after the data changes are saved.

CAUTION

When configuring services on the TR-069 server, do not modify the WAN interface connecting the TR-069 server and the ONT. Otherwise, the TR-069 server loses communication with the ONT.

Procedure

Step 1 Log in to the TR-069 server and choose **Subnet View** > **TR069 Subnet** from the navigation tree. In the terminal list, right-click an ONT and choose **Tools** > **Configure in Real Time** from the shortcut menu.

Step 2 In the **Configure in Real Time** dialog box, set **Root Node** to **Internet gateway device**.

Step 3 Configure the parameters of the voice WAN interface.

1. Choose **InternetGatewayDevice** > **WANDevice** > **1** > **WANConnectionDevice** from the navigation tree. Click **Add** in the lower left part to create an instance.
2. Choose **2** > **WANIPConnection** from the navigation tree. Click **Add** in the lower left part. Choose **1** from the navigation tree. In the right pane, set the parameters as follows:
   - Set **Enable** to **1**, indicating that the WAN connection is enabled.
   - Set **Connection Type** to **IP_Routed**, indicating that the connection type of the WAN interface is in routing mode.
   - Set **Addressing Type** to **DHCP**, indicating that the WAN interface obtains IP addresses in DHCP mode.

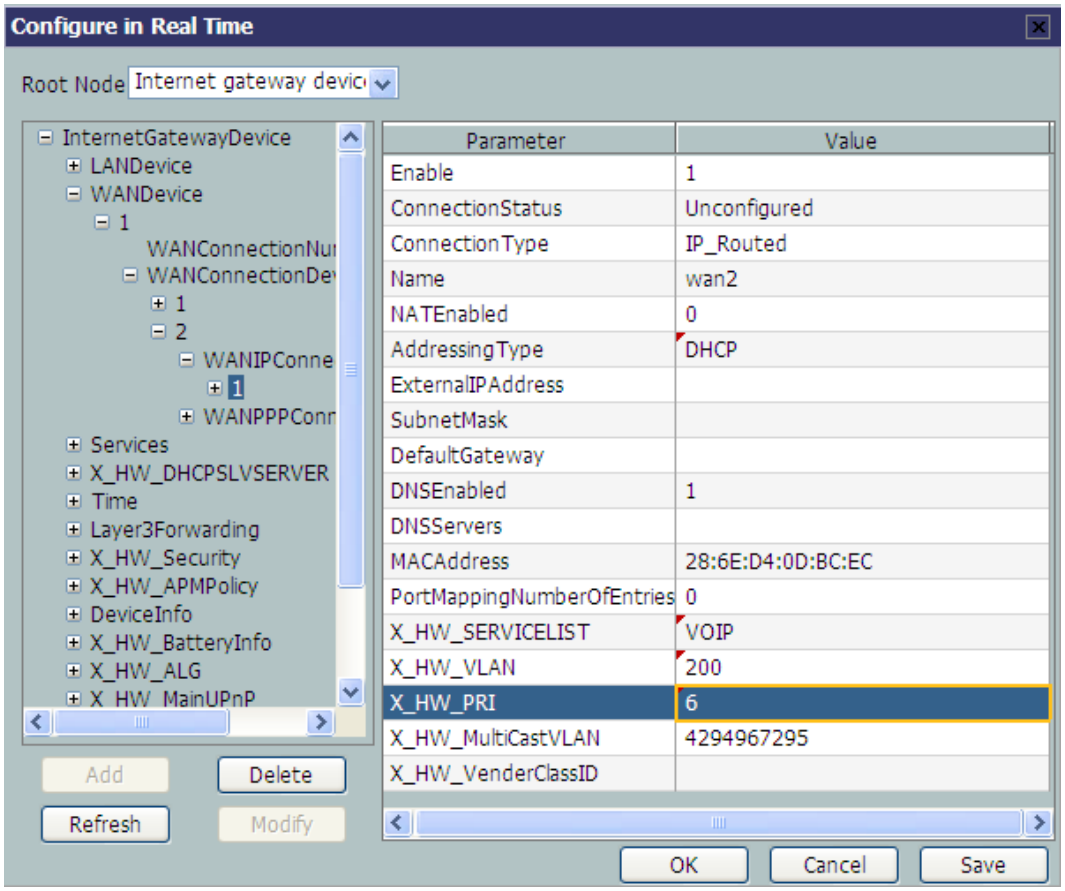
- Set **X_HW_SERVICELIST** to **VOIP**, indicating that the WAN interface provides the VoIP access service.
- Set **X_HW_VLAN** to **200**, indicating the VLAN ID of the WAN interface is 200.
- Set **X_HW_PRI** to **6**, indicating that the priority level of the WAN interface is 6.

NOTE

- If the WAN interface obtains IP addresses in static or DHCP mode, choose **WANIPConnection** to set parameters of the voice WAN interface.
- If the WAN interface obtains IP addresses in PPPoE mode, choose **WANPPPConnection** to set parameters of the voice WAN interface.

Figure 4-92 shows how to configure the parameters of the voice WAN interface.

Figure 4-92 Configuring the parameters of the voice WAN interface



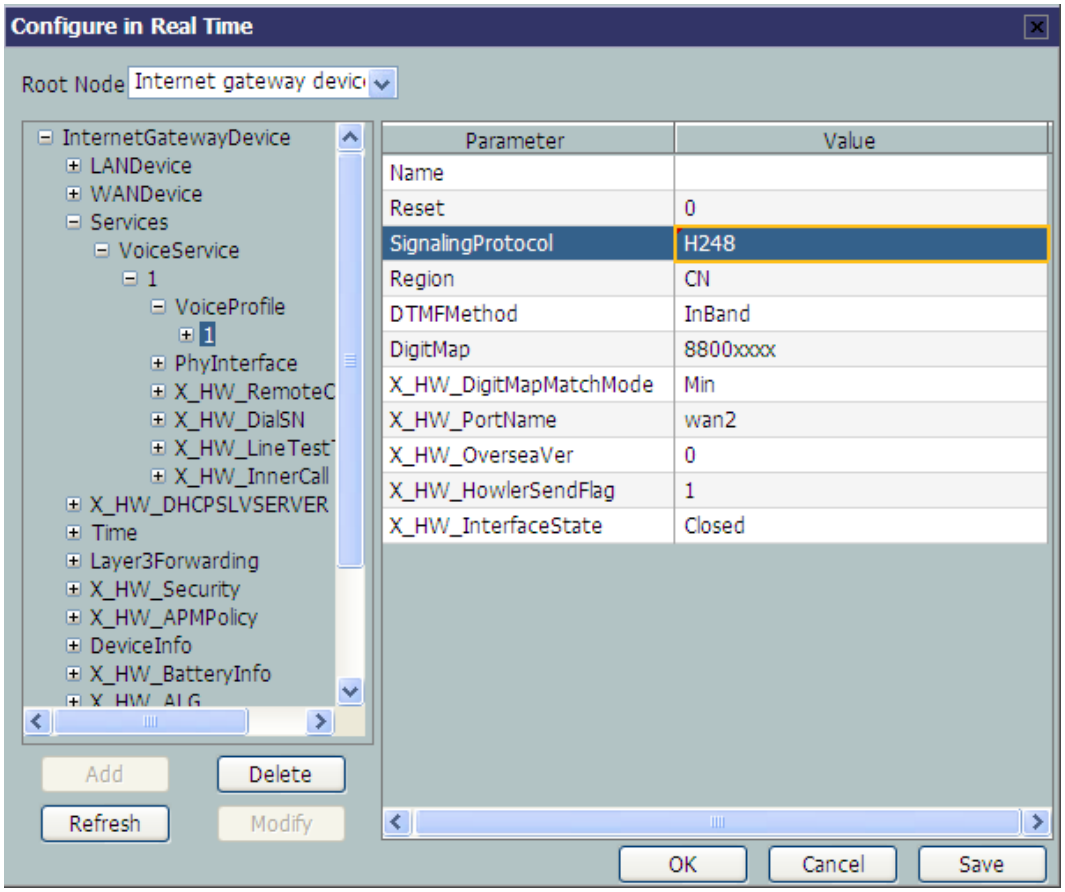
Step 4 Configure the voice protocol parameters.

Choose **InternetGatewayDevice** > **Services** > **VoiceService** > **1** > **VoiceProfile** > **1** from the navigation tree. In the right pane, set the parameters as follows:

- Set **SignalingProtocol** to **H248**, indicating that the H.248 protocol is used.
- Set **Region** to **CN**, indicating the country code of China.
- Set **X_HW_PortName** to **wan2**, indicating that the new WAN interface 2 is bound.

Figure 4-93 shows how to configure the voice protocol parameters.

Figure 4-93 Configuring the voice protocol parameters



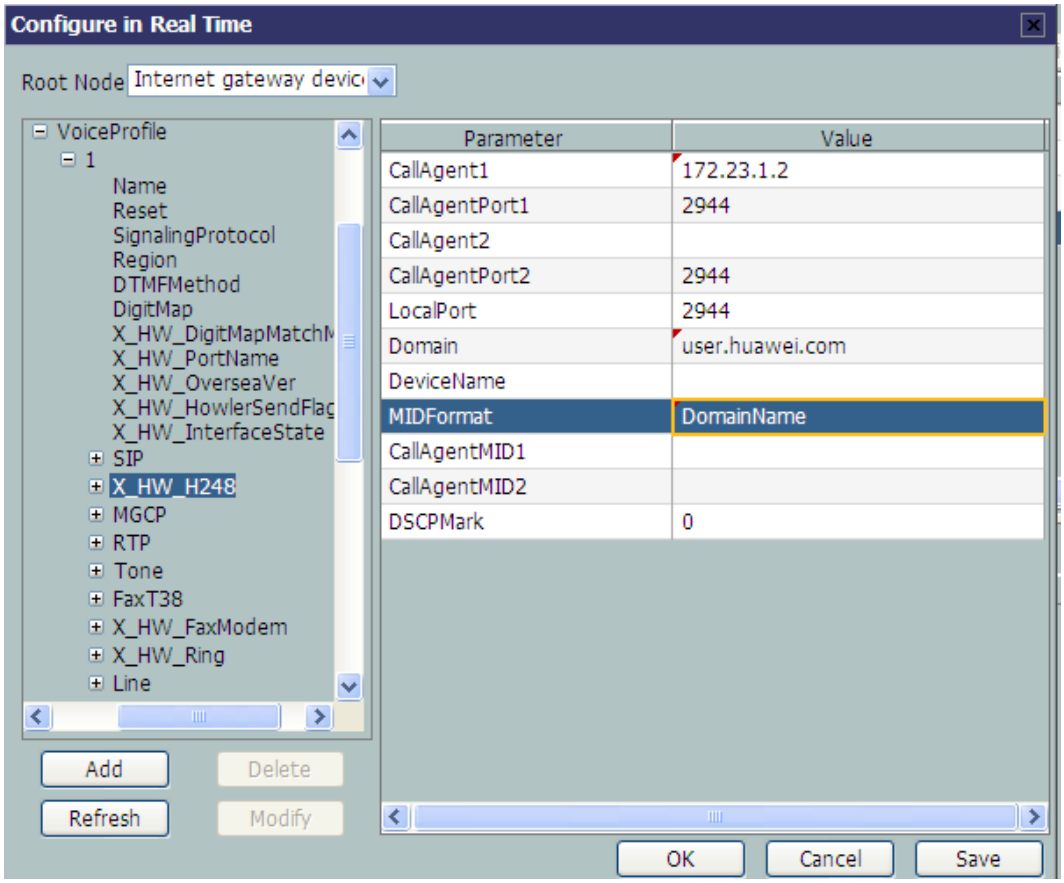
Step 5 Configure the H.248 service parameters.

Choose **InternetGatewayDevice** > **Services** > **VoiceService** > **1** > **VoiceProfile** > **1** > **X_HW_H248** from the navigation tree. In the right pane, set the parameters as follows:

- Set **CallAgent1** to **172.23.1.2**, indicating that the IP address of the MGC server is 172.23.1.2.
- Set **Domain** to **user.huawei.com**, indicating that the MG registration address is **user.huawei.com**.
- Set **MIDFormat** to **DomainName**, indicating that the MG uses its domain name to register.

Figure 4-94 shows how to configure the H.248 service parameters.

Figure 4-94 Configuring H.248 service parameters

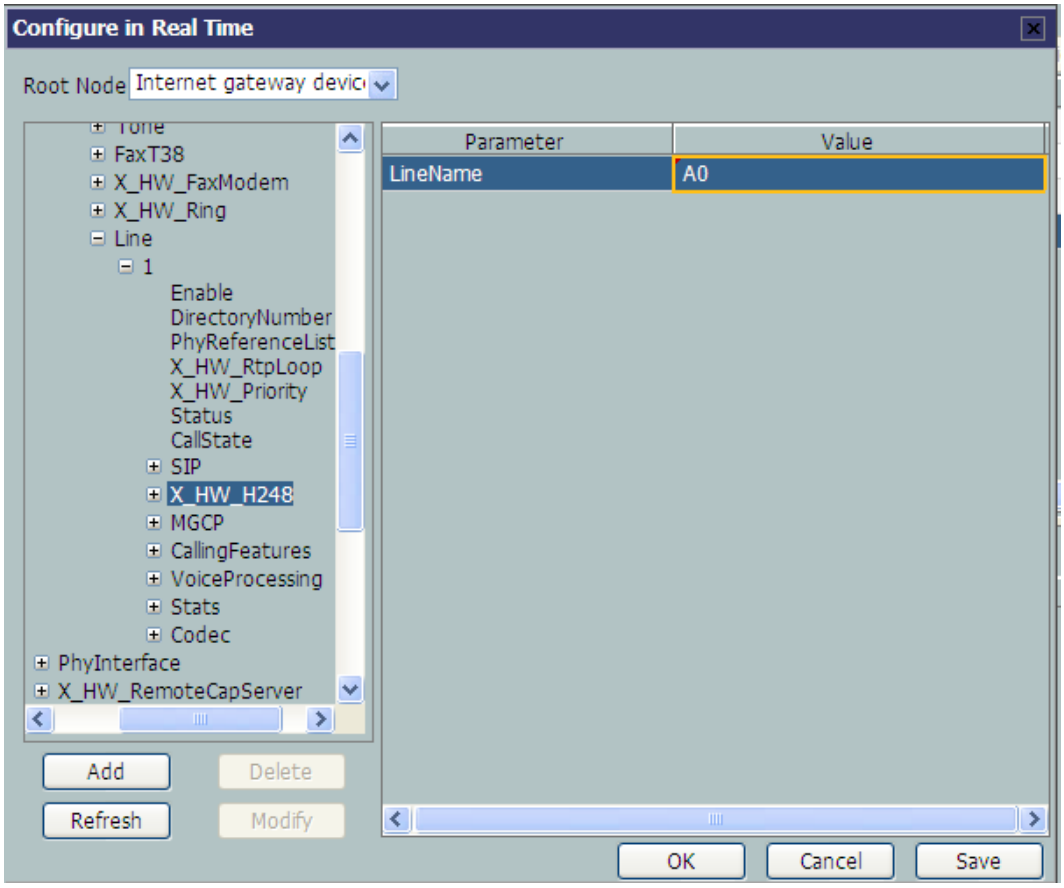


Step 6 Configure the TIDs of H.248 voice users.

1. Choose **InternetGatewayDevice** > **Services** > **VoiceService** > **1** > **VoiceProfile** > **1** > **Line** > **1** > **X_HW_H248** from the navigation tree. In the right pane, set **LineName** to **A0**, indicating that the TID of H.248 voice user 1 is A0. The user telephone number set on the MGC is 88001234.

   Figure 4-95 shows how to configure the TID of H.248 voice user 1.

Figure 4-95 Configuring the TID of H.248 voice user 1

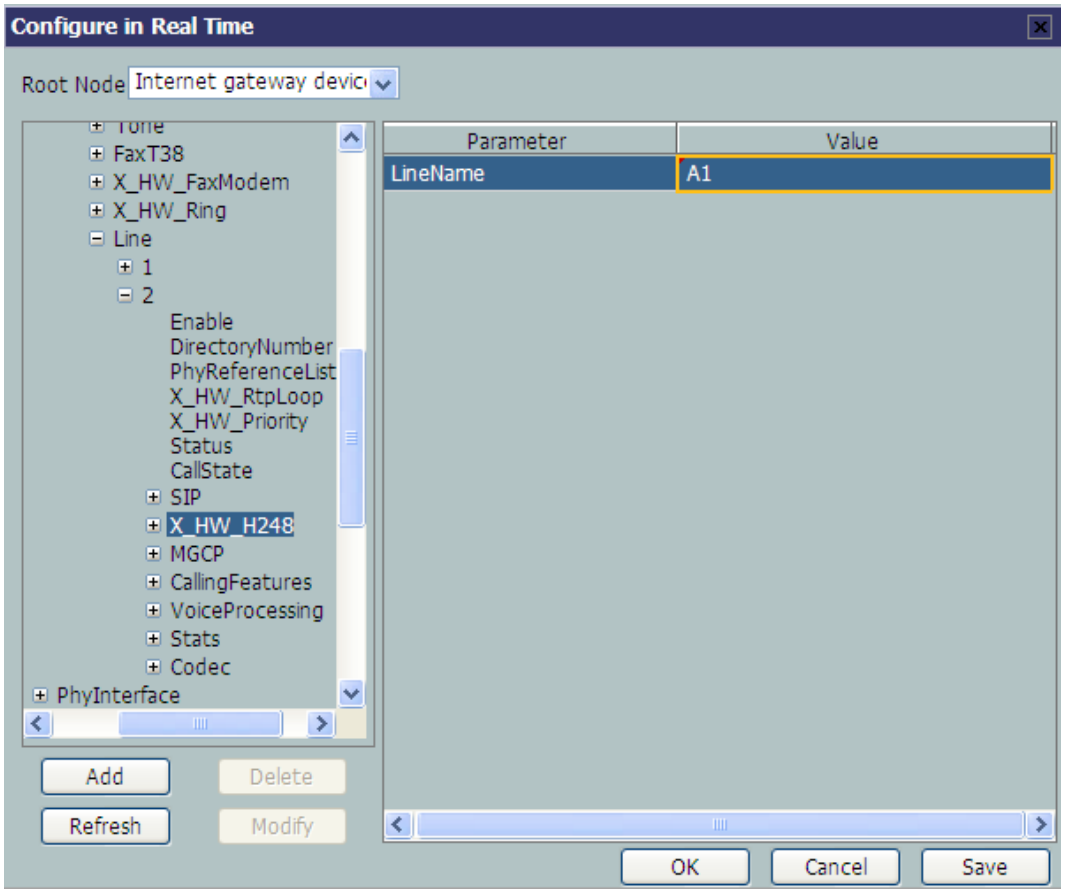


2. Configure the TID of H.248 voice user 2 in the same way.

   Choose **InternetGatewayDevice** > **Service** > **VoiceService** > **1** > **VoiceProfile** > **1** > **Line** from the navigation tree. Click **Add** in the lower left part. Choose **2** > **X_HW_H248** from the navigation tree. In the right pane, set **LineName** to **A1**, indicating that the TID of H.248 voice user 2 is A1. The user telephone number set on the MGC is 88001235.

   Figure 4-96 shows how to configure the TID of H.248 voice user 2.

Figure 4-96 Configuring the TID of H.248 voice user 2

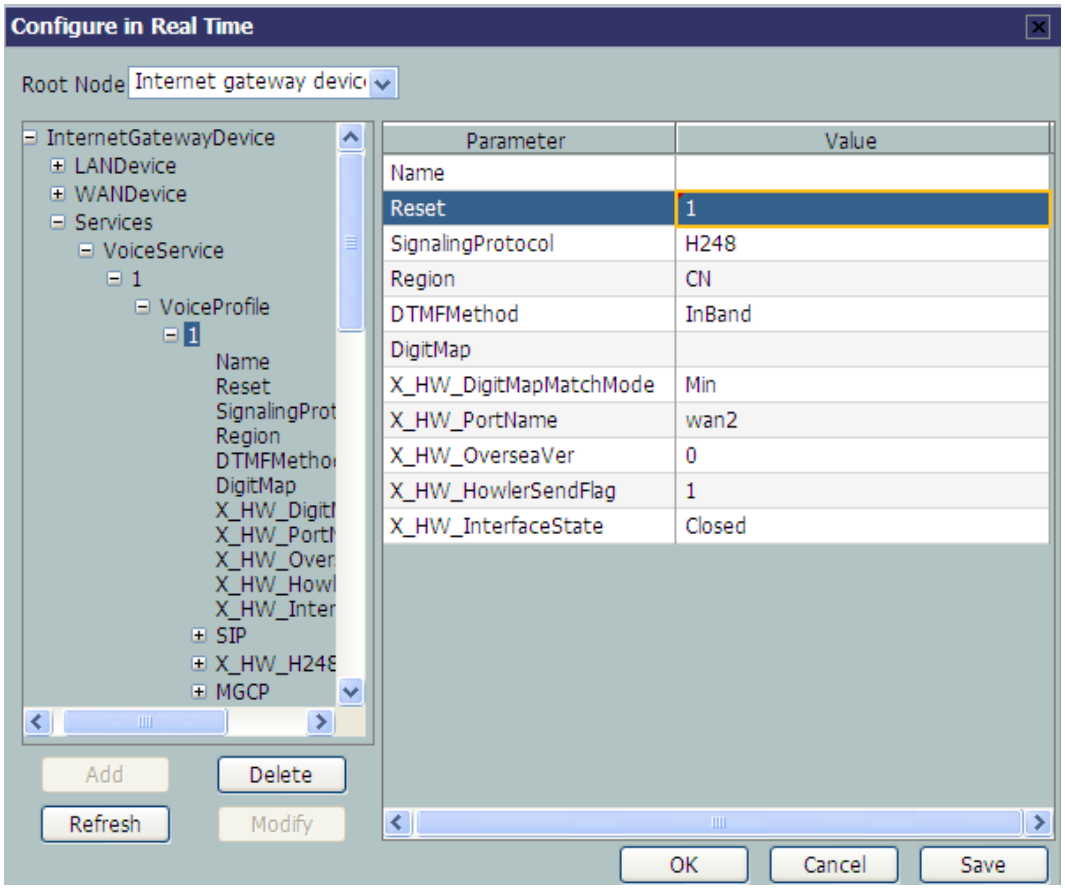


Step 7 Restart the voice process.

Choose **InternetGatewayDevice** > **Services** > **VoiceService** > **1** > **VoiceProfile** > **1** from the navigation tree. In the right pane, set **Reset** to **1**, indicating that the voice process will be restarted.

Figure 4-97 shows how to restart the voice process.

Figure 4-97 Restarting the voice process



Step 8 Click **OK** after the configuration.

----End

Result

User 1 with telephone number **88001234** can call user 2 with telephone number **88001235**, and the communication between them is normal. The same is true when user 2 calls user 1.

NOTE

The termination IDs of line 1 and line 2 configured on the MGC correspond to telephone numbers **88001234** and **88001235** respectively.

4.7 Configuring the Wi-Fi Access Service

This topic provides an example of how to configure the Wi-Fi access service.

4.7.1 Data Plan
This topic provides the typical data plan for configuring the Wi-Fi access service to make good preparations for the configuration.

4.7.2 Configuration Flowchart
This topic shows the flowchart for configuring the Wi-Fi access service.

4.7.3 Configuration Method
The Wi-Fi access service can be configured through the Web page or TR-069 server.

4.7.1 Data Plan

This topic provides the typical data plan for configuring the Wi-Fi access service to make good preparations for the configuration.

Table 4-9 provides the data plan for configuring the Wi-Fi access service.

Table 4-9 Data plan for configuring the Wi-Fi access service

Parameter	Data	Description
Service type of the WAN interface	INTERNET	When **Connection mode** is set to **Route**, you can select Internet, TR069, VoIP, or a combination of them. When configuring the Wi-Fi access service, you need to select only Internet or a combination with Internet. In this example, Internet is selected.
Connection mode	Route	It can be set to route or bridge. In this example, route is selected.
VLAN ID of the WAN interface	300	The VLAN ID of the WAN interface must be the same as the VLAN ID of the traffic streams configured on the OLT.
Mode of obtaining an IP address	PPPoE ● User name: iadtest@pppoe ● Password: iadtest	There are three modes to obtain an IP address. ● DHCP: Obtain an IP address dynamically. ● Static: Configure an IP address manually. ● PPPoE: Access in the PPPoE dialup mode. In this example, the PPPoE mode is selected. You can also choose the DHCP or static mode according to the data plan of the upper-layer network. When the PPPoE mode is selected, the configured user name and password must be the same as those planned on the BRAS.
802.1p	1	The larger the service priority value, the higher the service priority. The priorities must be the same as those planned on the OLT, that is, the priority sequence is the voice service, multicast service, and Internet access service/Wi-Fi service in a descending order.
NAT function	Enable	Enable the network address translation (NAT) function.
Port binding	SSID1	-

Parameter	Data	Description
DHCP function	Enable	The PC connected to port LAN2 obtains an IP address from the DHCP address pool configured on the ONT. By default, the DHCP function is enabled and need not be configured.
SSID1	ChinaNet-huawei	Indicates the wireless network, which is used to differentiate the different networks when a user accesses the network.
Security mode	WPA Pre-Shared Key	The network security mode includes Open, Shared, WPA Pre-Shared Key, WPA2 Pre-Shared Key, WPA Enterprise, WPA2 Enterprise, and Wi-Fi Protected Setup.
WPA encryption mode	TKIP&AES Key: chinahuawei	The WPA encryption mode includes TKIP, AES, and TKIP&AES.

4.7.2 Configuration Flowchart

This topic shows the flowchart for configuring the Wi-Fi access service.

Figure 4-98 shows the flowchart for configuring the Wi-Fi access service through the Web page.

Figure 4-98 Flowchart for configuring the Wi-Fi access service through the Web page

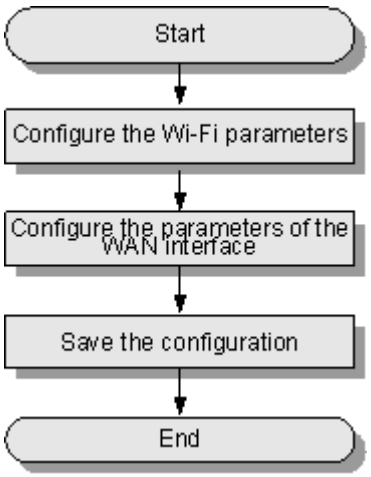
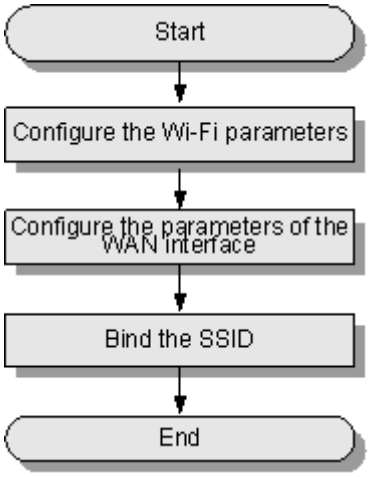


Figure 4-99 shows the flowchart for configuring the Wi-Fi access service through the TR-069 server.

Figure 4-99 Flowchart for configuring the Wi-Fi access service through the TR-069 server



4.7.3 Configuration Method

The Wi-Fi access service can be configured through the Web page or TR-069 server.

Configuring the Wi-Fi Access Service Through the Web Page

This topic provides an example of how to configure the Wi-Fi access service through the Web page.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- The environment for service configuration on the Web page must be available and you must be logged into the Web page successfully. For details, see **3.2 Logging In Through the Web Page**.
- A notebook or mobile phone with the Wi-Fi function is available. The IP address of the notebook or mobile phone with the Wi-Fi function is allocated by the DHCP server (ONT). After PPPoE dialup is successfully performed on the ONT, the notebook or mobile phone with the Wi-Fi function can access the Internet by searching for the SSID.

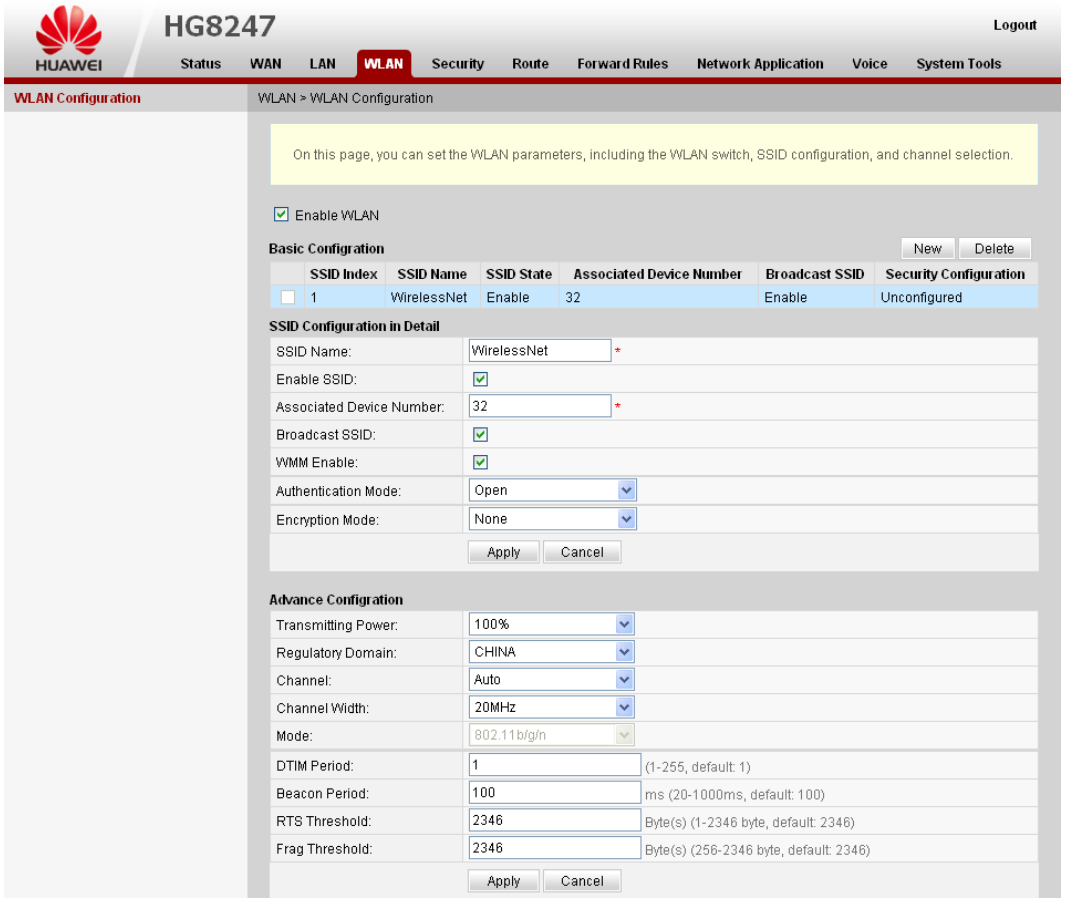
Procedure

Step 1 Configure the Wi-Fi parameters.

1. In the navigation tree, choose **Wi-Fi** > **Wi-Fi Basic Configuration**.
2. Select **Enable Wireless** to enable the Wi-Fi function. Then, set the parameters as follows:
   - Set **SSID** to **ChinaNet-huawei**.
   - Set **Authentication Mode** to **WPA Pre-Shared Key**.
   - Set **Encryption Mode** to **TKIP&AES** and **WPA PreSharedKey to chinahuawei**.

   Figure 4-100 shows how to configure the Wi-Fi parameters.

Figure 4-100 Configuring the Wi-Fi parameters



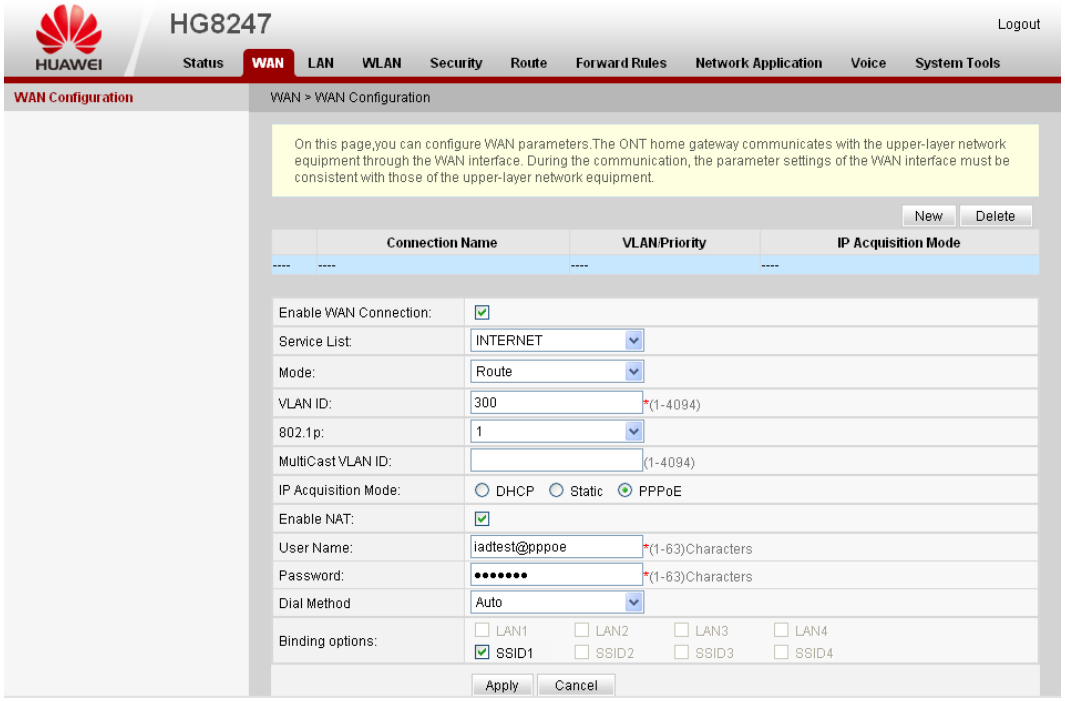
3. Click **Apply**.

Step 2 Configure the parameters of the WAN interface.

1. In the navigation tree on the left, choose **WAN** > **WAN Configuration**.
2. In the pane on the right, click **New**. In the dialog box that is displayed, set the parameters of the WAN interface as follows:
   - Select **Enable** next to **NewWanConnction** to enable the WAN connection that is newly set up.
   - Set **Service List** to **INTERNET**.
   - Set **Mode** to **Route**.
   - Set **VLAN ID** to **300**.
   - Set **802.1p** to **1**.
   - Set **IP Acquisition Mode** to **PPPoE**.
   - Select **Enable** next to **NAT** to enable the NAT function.
   - Set **User Name** to **iadtest@pppoe** and **Password** to **iadtest**.
   - Select the check box of **SSID1** in **Binding options**, indicating that the WAN interface is bound to SSID1.

   Figure 4-101 shows how to configure the parameters of the WAN interface.

Figure 4-101 Configuring the parameters of the WAN interface

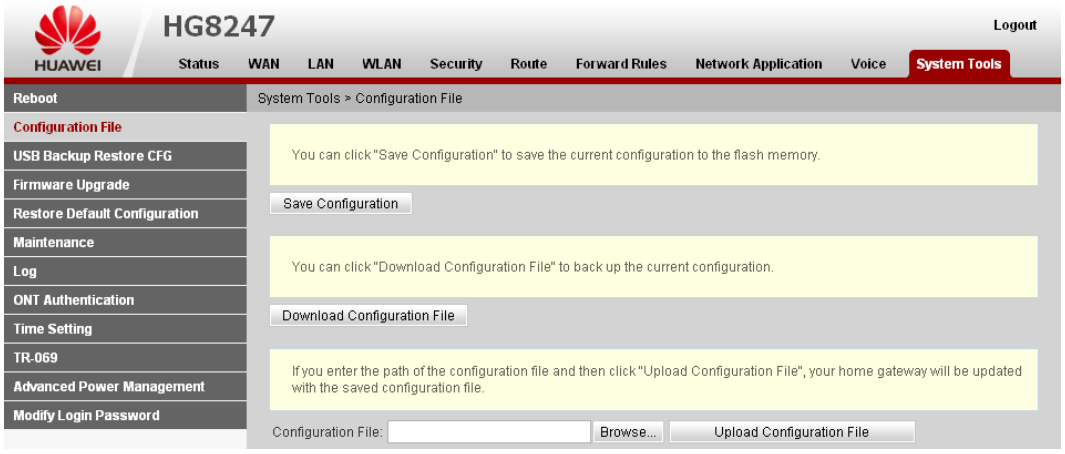


3. Click **Apply**.

Step 3 Save the configuration.

Choose **System Tools** > **Configuration File** from the navigation tree. In the right pane, click **Save Configuration**, as shown in **Figure 4-102**.

Figure 4-102 Saving the configuration



----End

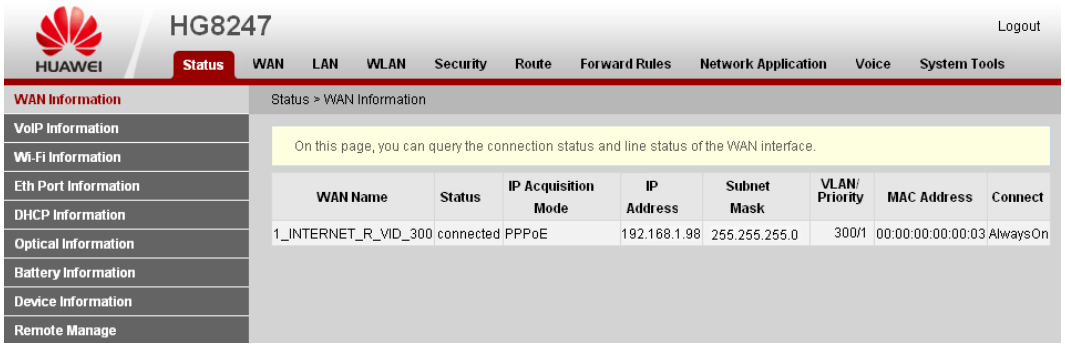
Result

1. Query the connection status of the ONT.

   In the navigation tree on the left, choose **Status** > **WAN Information**. In the pane on the right, the **Status** is **Connected** and the obtained IP address is displayed in **IP**.

   Figure 4-103 shows how to query the connection status.

Figure 4-103 Querying connection status of Wi-Fi access service



2. Verify the service.

   The notebook or mobile phone with the Wi-Fi function can search for the wireless signals of SSID **ChinaNet-huawei**. After the correct authentication key **chinahuawei** is entered, the Wi-Fi access service is implemented.

Configuring the Wi-Fi Access Service Through the TR-069 Server

This topic provides an example of how to configure the Wi-Fi access service through the TR-069 server.

Prerequisite

- ONT must be added or auto-discovered on the OLT and associated service streams must be configured on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the OLT)** or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.
- ONT must be auto-discovered on the TR-069 server. For details, see **4.2.3 Commissioning Interoperation Between the TR-069 Server and the ONT Through the Web Page** or **4.2.4 Commissioning Interoperation Between the TR-069 Server and the ONT Through the NMS**.
- A notebook or mobile phone with the Wi-Fi function is available. The IP address of the notebook or mobile phone with the Wi-Fi function is allocated by the DHCP server (ONT). After PPPoE dialup is successfully performed on the ONT, the notebook or mobile phone with the Wi-Fi function can access the Internet by searching for the SSID.

Context

- This topic describes how to configure only L3 Internet access service. For L2 Internet access service, configuration is not required on the ONT but on the OLT. For details, see **4.2.1 Commissioning the Interoperation Between OLT and ONT (Through CLI of the**

OLT) or **4.2.2 Commissioning the Interoperation Between OLT and ONT (Through the NMS)**.

- Every data change must be saved. You can click **Save** in a window to save data changes. If you navigate to another node without saving data changes, a dialog box will be displayed prompting you to save the data changes. In this case, click **YES** in the dialog box. New data will be automatically applied to the ONTs after the data changes are saved.

CAUTION

When configuring services on the TR-069 server, do not modify the WAN interface connecting the TR-069 server and the ONT. Otherwise, the TR-069 server loses communication with the ONT.

Procedure

Step 1 Log in to the TR-069 server and choose **Subnet View** > **TR069 Subnet** from the navigation tree. In the terminal list, right-click an ONT and choose **Tools** > **Configure in Real Time** from the shortcut menu.

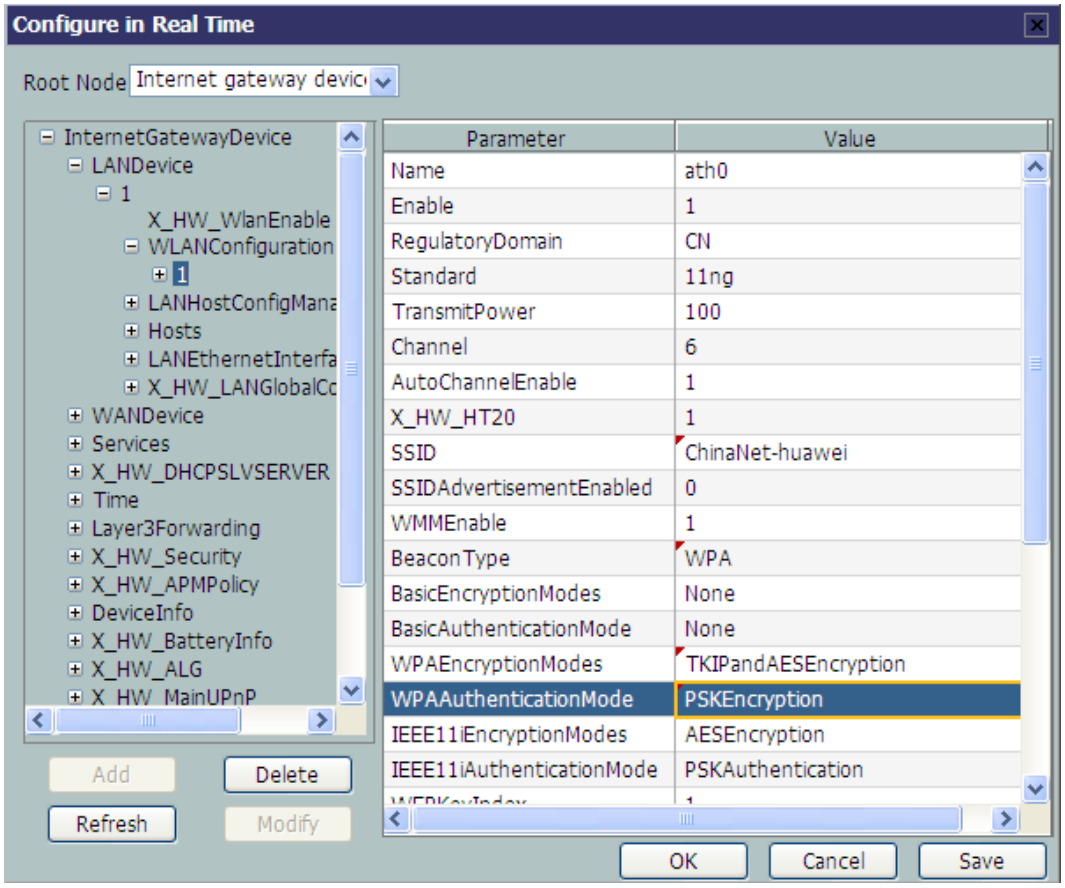
Step 2 In the **Configure in Real Time** dialog box, set **Root Node** to **Internet gateway device**.

Step 3 Configure the Wi-Fi parameters.

1. Choose **InternetGatewayDevice** > **LANDevice** > **1** > **WLANConfiguration** > **1** from the navigation tree. In the right pane, set the parameters as follows:
   - Set **Enable** to **1**, indicating that the WLAN service is enabled.
   - Set **RegulatoryDomain** to **CN**, indicating the country code of China.
   - Set **SSID** to **ChinaNet-huawei**.
   - Set **BeaconType** to **WPA** and **WPAEncryptionModes** to **TKIPandAESEncryption**, indicating that the encryption mode of the WPA is **TKIP&AES**.
   - Set **WPAAthenticationMode** to **PSKEncryption**, indicating that the authentication mode is **Pre-Shared Key**.

   Figure 4-104 shows how to configure the Wi-Fi parameters.

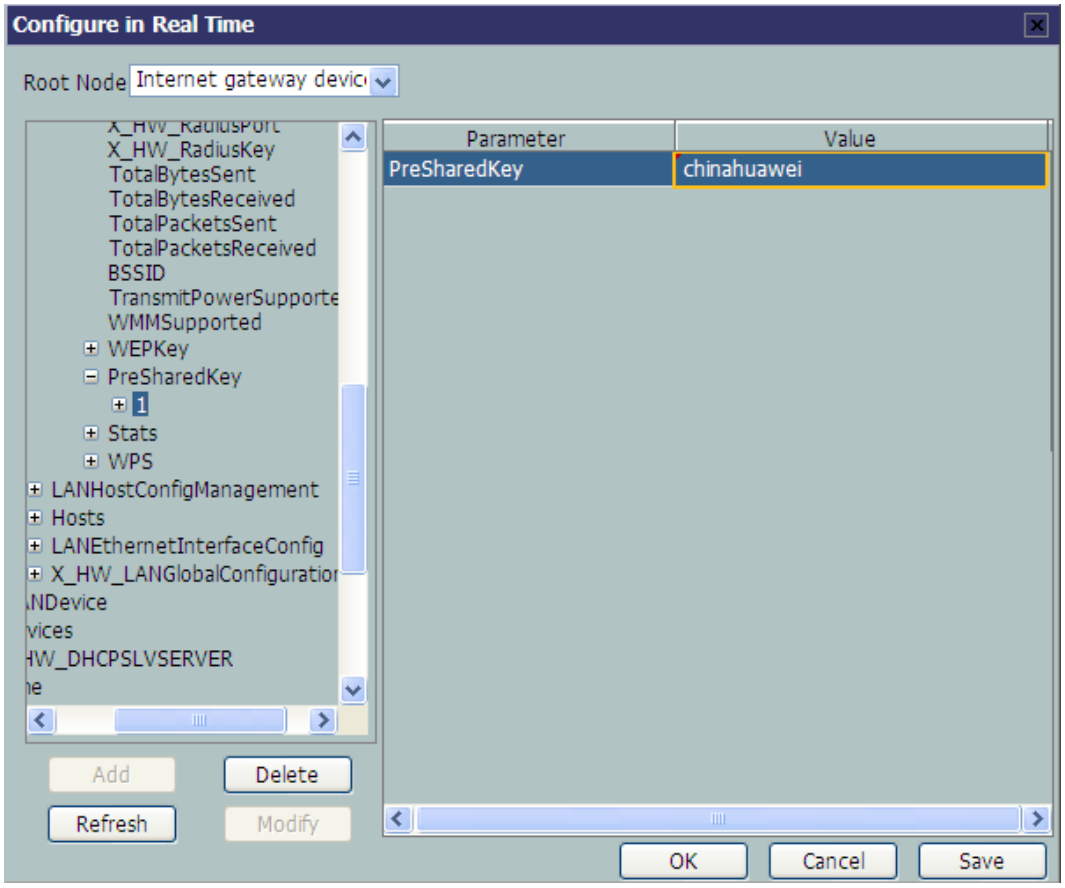
Figure 4-104 Configuring the Wi-Fi parameters



2. Choose **PreSharedKey** > **1**, **1** from the navigation tree. In the right pane, set **PreSharedKey** to **chinahuawei**, indicating that the WPA encryption key is **chinahuawei**.

   Figure 4-105 shows how to configure the WPA encryption key.

Figure 4-105 Configuring the WPA encryption key



Step 4 Configure the parameters of the WAN interface.

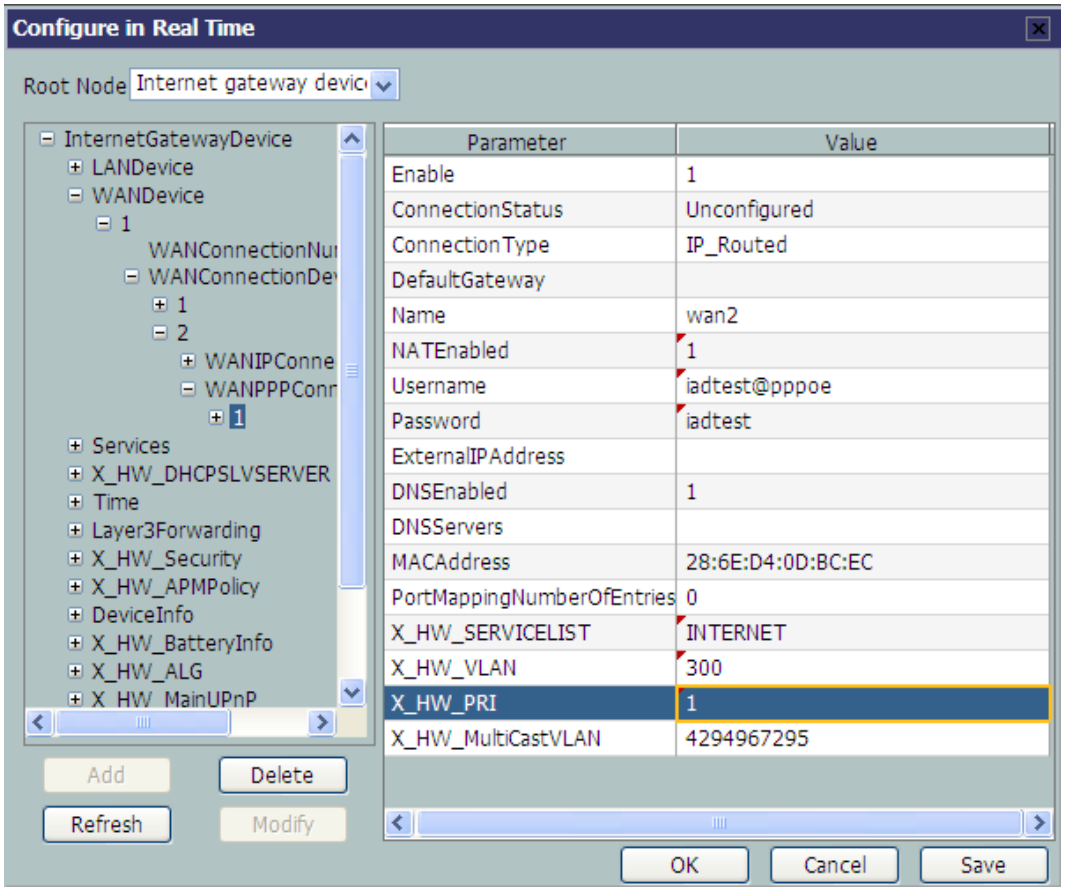
1. Choose **InternetGatewayDevice** > **WANDevice** > **1** > **WANConnectionDevice** from the navigation tree. Click **Add** in the lower left part to create an instance.
2. Choose **2** > **WANPPPConnection** from the navigation tree. Click **Add** in the lower left part. Choose the new **1** branch from the navigation tree. In the right pane, set the parameters as follows:
   - Set **Enable** to **1**, indicating that the WAN connection is enabled.
   - Set **Connection Type** to **IP_Routed**, indicating that the connection type of the WAN interface is in routing mode.
   - Set **NATEnable** to **1**, indicating that the NAT function is enabled.
   - Set **Username** to **iadtest@pppoe** and **Password** to **iadtest**, indicating that the PPPoE user name is **iadtest@pppoe** and the password is **iadtest**.
   - Set **X_HW_SERVICELIST** to **INTERNET**, indicating that the service type of the WAN interface is Internet.
   - Set **X_HW_VLAN** to **300**, indicating that the VLAN ID of the WAN interface is 300.
   - Set **X_HW_PRI** to **1**, indicating that the priority level of the WAN interface is 1.

NOTE

- If the WAN interface obtains IP addresses in static or DHCP mode, choose **WANIPConnection** to set the parameters of the WAN interface.
- If the WAN interface obtains IP addresses in PPPoE mode, choose **WANPPPConnection** to set the parameters of the WAN interface.

Figure 4-106 shows how to configure the parameters of the WAN interface..

Figure 4-106 Configuring the parameters of the WAN interface

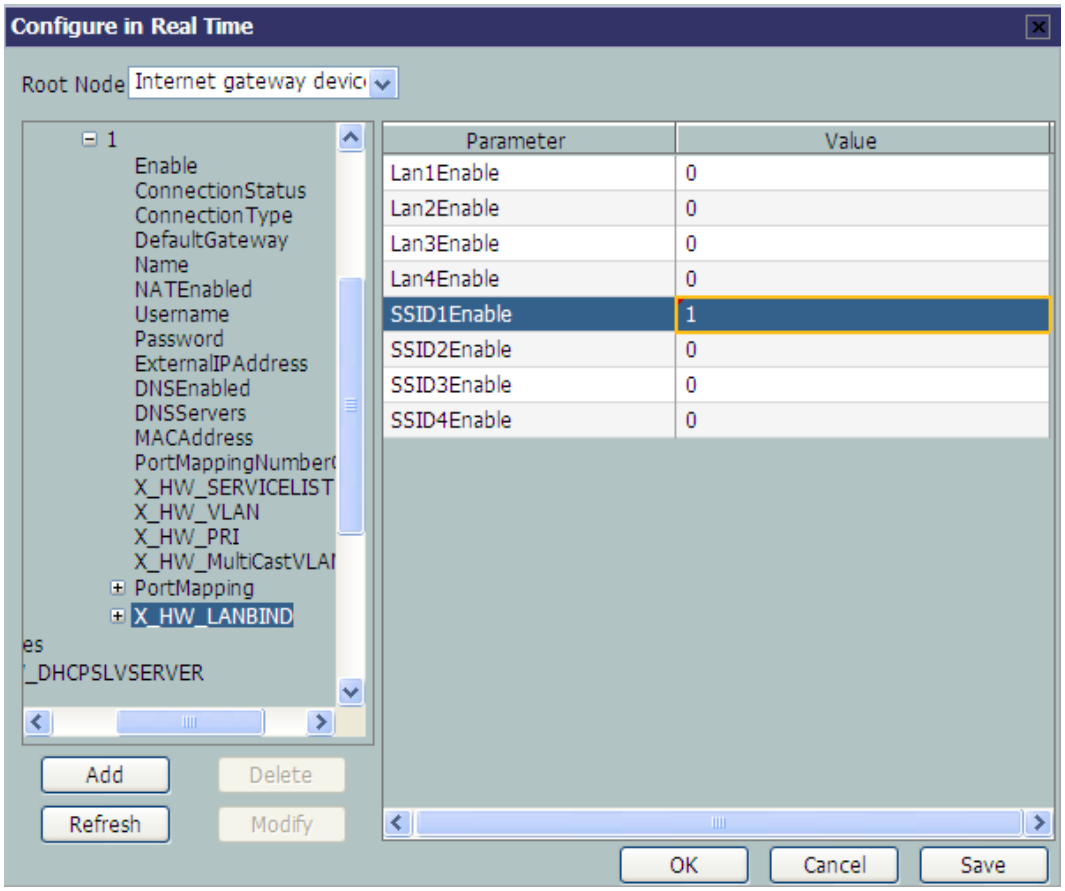


Step 5 Bind the SSID.

Choose **InternetGatewayDevice** > **WANDevice** > **1** > **WANConnectionDevice** > **1** > **WANIPConnection** > **1** > **X_HW_LANBIND** from the navigation tree. In the right pane, set **SSID1Enable** to **1**, indicating that the WAN interface is bound to SSID 1.

Figure 4-107 shows how to bind the SSID.

Figure 4-107 Binding the SSID



----End

Result

The notebook or mobile phone with the Wi-Fi function can search for the wireless signals of SSID **ChinaNet-huawei**. After the correct authentication key **chinahuawei** is entered, the Wi-Fi access service is implemented.

5 ONT Downstream User Guide

About This Chapter

This topic describes the configuration flow of the ONT when it is connected to a downstream TV set, telephone set, STB, PC, Wi-Fi laptop, or USB storage device.

NOTE

Refer to respective operations described in this section according to the type of the terminal connected to the HG8240/HG8245/HG8247. For details about the terminals that can be connected to the HG8240/HG8245/HG8247, see **2.2 Typical Network Applications**.

5.1 Using a TV Set

This topic describes the configuration flow of the ONT connected to a downstream TV set.

Procedure

Step 1 Connect a TV set to the ONT.

Connect the CATV port of the ONT to the TV set by using a coaxial cable and make sure that they are properly connected.

Step 2 Turn on the power supply.

Turn on the power supply of the TV set, and press the POWER button on the ONT. If the POWER LED is always on, it indicates that the ONT is connected to the power supply.

Step 3 Enjoy the high-speed video service.

Watch programs according to the prompts displayed on the screen of the TV set.

----End

5.2 Using a STB

This topic describes the configuration flow of the ONT connected to a downstream STB.

Procedure

Step 1 Connect a STB to the device.

Connect a LAN port of the ONT to the STB by using the STB cable and make sure that they are connected properly.

Step 2 Turn on the power supply.

Power on the TV set and the STB and then press the POWER button of the ONT. If the POWER LED is always on, it indicates that the ONT is connected to the power supply.

Step 3 Configure the IP address of the STB.

There are three methods of configuring the IP address of the STB:

- Configuring the static IP address
- Obtaining the IP address dynamically through the DHCP server
- Obtaining the IP address through the PPPoE dialup

NOTE

The service provider determines the specific method to be adopted.

Step 4 Enjoy the high-speed video service.

Watch programs according to the prompts displayed on the screen of the TV set.

----End

5.3 Using a PC

This topic describes the configuration flow of the ONT connected to a downstream PC.

Procedure

Step 1 Connect a PC to the device.

Connect a LAN port of the ONT to the PC by using an Ethernet cable and make sure that they are connected properly.

Step 2 Turn on the power supply.

Power on the PC and then press the POWER button of the ONT. If the POWER LED is always on, it indicates that the ONT is connected to the power supply.

Step 3 Configure the IP address of the PC.

There are three methods of configuring the IP address of the PC:

- Configuring the static IP address
- Obtaining the IP address dynamically through the DHCP server
- Obtaining the IP address through the PPPoE dialup

NOTE

The service provider determines the specific method to be adopted.

Step 4 Enjoy the high-speed data service.

Run the Internet Explorer and input correct Web site addresses to browse Web pages.

NOTE

The working parameters of the ONT are configured by the service provider remotely. Hence, the ONT supports plug and play (PnP) and requires no configuration on the user side.

----End

5.4 Using a Telephone Set

This topic describes the configuration flow of the ONT connected to a downstream telephone set.

Procedure

Step 1 Connect a telephone set to the device.

Connect the TEL port of the ONT to the telephone set by using a telephone cable and make sure that they are connected properly.

Step 2 Turn on the power supply.

Press the POWER button on the ONT. If the POWER LED is always on, it indicates that the ONT is connected to the power supply.

Step 3 Enjoy the high-quality voice service.

After picking up the telephone, dial the callee number, and wait for the callee to answer the telephone.

----End

5.5 Using a Wi-Fi Laptop

This topic describes the configuration flow of the ONT connected to a Wi-Fi laptop.

Procedure

Step 1 Turn on the power supply.

Turn on the power supply of the Wi-Fi laptop, and press the POWER button on the ONT. If the POWER LED is always on, it indicates that the ONT is connected to the power supply.

Step 2 Enable the Wi-Fi function on the ONT.

Press the WLAN button. If the WLAN LED is always on, it indicates that the Wi-Fi function is enabled. By default, the Wi-Fi function is enabled.

Step 3 Configure the Wi-Fi parameters of the laptop, including the following:

- Wireless network name (SSID)
- Wireless network key

NOTE

The service provider determines the parameters to be configured.

Step 4 If WPS is adopted as the encryption mode for the STA (Wi-Fi laptop) to request access to the wireless network, press the WPS button on the side panel of the ONT and press the WPS button on the laptop (or run the WPS program installed on the laptop) within two minutes.

Step 5 Enjoy the high-speed data service.

Run the Internet Explorer and input correct Web site addresses to browse Web pages.

NOTE

- A Wi-Fi Ethernet card must be installed on the laptop.
- The working parameters of the ONT are configured by the service provider remotely. Hence, the ONT supports plug and play (PnP) and requires no configuration on the user side.

----End

5.6 Using a USB Storage Device

This topic describes the configuration flow of the ONT connected to a downstream USB storage device.

Procedure

Step 1 Turn on the power supply.

Press the POWER button on the ONT. If the POWER LED is always on, it indicates that the ONT is connected to the power supply.

Step 2 Connect a USB storage device to the ONT.

Connect the USB port of the ONT to the USB storage device by using a USB data cable and make sure that they are properly connected.

Step 3 Log in to the ONT Web page on a PC. Then, configure associated USB parameters. For details ,see**6.3.6 USB LED Off**. After the configuration is complete, you can download files through the ONT.

----End

6 Troubleshooting

About This Chapter

This topic describes the preliminary troubleshooting flow and methods, preparations before troubleshooting, and methods of locating faults according to the status of LEDs.

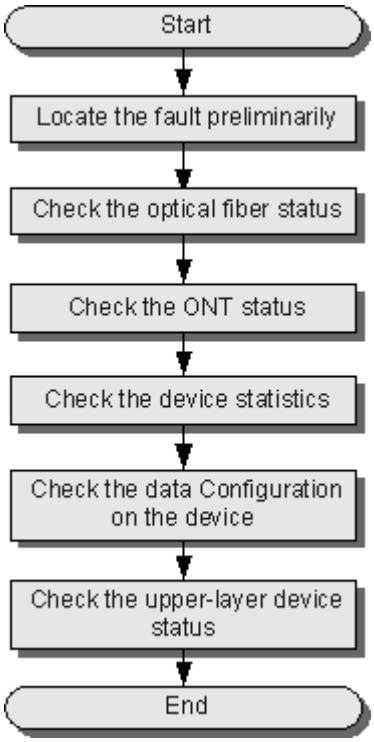
6.1 General Troubleshooting Flowchart and Methods

This topic describes the general troubleshooting flowchart and the methods of preliminarily locating faults.

Context

Figure 6-1 shows the general troubleshooting flowchart.

Figure 6-1 General troubleshooting flowchart



Procedure

Step 1 Locate a fault preliminarily.

Find the fault location and determine the cause of the fault. **Table 6-1** lists the possible causes during preliminary fault locating.

Table 6-1 Possible causes during preliminary fault locating

Fault Type	Possible Cause
ONT registration failure	● The PON terminal goes online in an incorrect mode. ● The optical fiber connected to the ONT is of poor quality or is loosely connected. ● The optical power of the ONT is not within the normal range. ● The minimum and maximum logical distances configured on the OLT port to which the ONT is connected are inconsistent with the actual distances. ● The ONT auto-find function is disabled on the OLT port. ● When the ONT is added, the configured SN of the ONT is different from the actual ONT SN. ● An ONT with the same SN is already connected to the OLT. ● The ONT is a rogue ONT.
Call failure or poor voice quality	● The connection between the telephone set and the ONT is abnormal. ● The ONT port to which the telephone set is connected is configured incorrectly. ● The telephone set does not register with the voice server. ● The voice service of the telephone set is not configured with a high priority. ● The line connections are abnormal. ● The telephone set is faulty. ● The numbers configured on the ONT are incomplete. ● The codec and authentication configured on the ONT are incorrect. ● A phone number conflict occurs during the registration. ● The voice IP address fails to be obtained.

Fault Type	Possible Cause
Internet access failure	● The user terminal or the loop line is faulty. ● The PON port is faulty. ● The data configuration of the upper-layer device is incorrect. ● The PON board on the OLT is faulty. ● The optical path is faulty. ● The board or port on the ONT is faulty. ● There are network attacks. ● The WAN port fails to obtain the address. ● The ping operation with the IP addresses of the ONT WAN port and the ONT fails. ● The WAN MAC address of the ONT defaults to 000000000002. ● The NAT function is disabled on the bound WAN port. ● The LAN port on the ONT is a bridge Ethernet port, but the PC connected to the LAN port fails to obtain the IP address allocated by the upper-layer network.

Step 2 Check the status of the optical fiber.

Check the following items:

- Whether the optical fiber is properly connected.
- Whether the optical fiber is bent excessively.
- Whether the optical fiber connector is clean.
- Whether the mean launched Tx optical power is normal.
- Whether the Rx optical sensitivity is normal.

Step 3 Check the ONT status.

Check the status of the LEDs on the ONT. For details, see **6.3 Fault Locating According to the LED Status**.

You can also query the ONT status on the OLT.

In the GPON mode, run the **display ont info** command to check the ONT information. Specifically, mainly check **Control Flag**, **Run State**, **Config State**, and **Match State**.

- If **Control Flag** is **active** and **Run State** is **up**, it indicates that the ONT works in the normal state, that is, the user passes the authentication and goes online.
- If **Control Flag** is **active** and **Run State** is **down**, it indicates that the user is offline.
- If **Control Flag** is **deactive**, the ONT registration is disabled. In this case, run the **ONT activate** command in the GPON mode to activate the control flag.
- If **Config State** is **normal**, it indicates that the ONT configuration recovery is successful.

- If **Config State** is **failed**, it indicates that the ONT configuration recovery fails. A possible cause of this failure is that the ONT is bound to an incorrect ONT profile. To resolve this problem, run relevant commands to issue a correct ONT profile, or reset the ONT.
- If **Match State** is **match**, it indicates that the configured capacity set of the ONT is the same as the actual ONT capabilities. If **Match State** is **mismatch**, it indicates that the configured capacity set of the ONT is different from the actual ONT capabilities, which will cause registration failure. In this case, add a new ONT service profile.

Step 4 Check the statistics of the ONT.

- In the GIU mode, run the **display port statistics** command to query the traffic statistics of the upstream port of the ONT. Specifically, check whether receive and transmit traffic exists.
- In the GPON mode, run the **display statistics ont** command to query the performance statistics of the ONT PON port.
- In the GPON mode, run the **display statistics ont-eth** command to query the performance statistics of the ONT.

Step 5 Check the data configuration of the ONT.

- Run the **display dba-profile** command to check the DBA profile bound to the ONT.
- Run the **display service-port** command to check whether the traffic stream configuration is correct.
- Run the **display vlan** command to check whether the upstream port of the ONT is added to a VLAN.

Step 6 Check the status of the upper-layer device. Specifically, check whether the OLT is in the normal state.

----End

6.2 Tools Used for Troubleshooting

This topic describes the tools required for troubleshooting: digital multimeter and optical power meter.

6.2.1 Digital Multimeter
This topic describes the functions and usage instructions of the digital multimeter.

6.2.2 Optical Power Meter
This topic describes the appearance, functions, and usage instructions of the optical power meter.

6.2.1 Digital Multimeter

This topic describes the functions and usage instructions of the digital multimeter.

The digital multimeter is a simple and practical test meter frequently used in the electrotechnical and electronic industries. It is inexpensive, convenient to carry and easy to use, and has a complete set of functions.

Basically, the digital multimeter is used to measure the resistance, DC voltage, AC voltage, current and capacitance, and test diodes and triodes.

To use the digital multimeter, do as follows:

1. Turn on the power supply. (If a digital multimeter without a dedicated power switch is used, skip this step.)
2. Select the items to be tested.
3. Choose a proper measurement range.
4. Perform the measurement correctly.
5. (Optional) Press the button for keeping the current measurement value unchanged.
6. Read the measurement value.

6.2.2 Optical Power Meter

This topic describes the appearance, functions, and usage instructions of the optical power meter.

The optical power meter is a necessary test meter for testing an optical fiber communication system. It is mainly used to measure the optical power of various wavelengths at multiple measurement points of an optical link. Optical power indicates the energy of the light at a measurement point of an optical link and is an important index of the optical fiber network. When the optical power is smaller than a specified value, the optical receive end will fail to detect optical signals. In other words, the optical receive end cannot receive the signals sent from the transmit end. Hence, it is important to use the optical power meter correctly.

The following considers EXFO's PPM-350B optical power meter as an example to describe how to use an optical power meter. (Other dedicated optical power meters for PON are used in a similar way.)

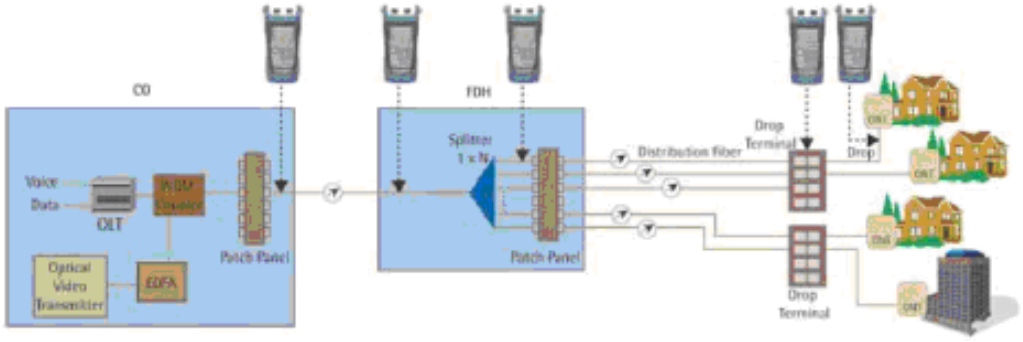
The PPM-350B optical power meter can measure the optical power of various wavelengths, including 1310 nm, 1490 nm, and 1550 nm in the GPON network. **Figure 6-2** shows the appearance of the PPM-350B optical power meter.

Figure 6-2 Appearance of the PPM-350B optical power meter

As shown in **Figure 6-2**, the PPM-350B optical power meter is different from common optical power meters. Specifically, the PPM-350B has a downstream input optical port and an upstream input optical port and can display the optical power of three wavelengths: 1310 nm, 1490 nm, and 1550 nm.

Figure 6-3 shows the common measurement points.

Figure 6-3 Measurement points of the optical power in the GPON network



Maintenance engineers should also know related optical specifications on the ONT side, such as the maximum output optical power of the 1310 nm wavelength, minimum input optical power of the 1490 nm wavelength, and receiver sensitivity of the 1490 nm or 1550 nm wavelength. **Table 6-2** lists the optical specifications on the ONT side.

Table 6-2 Optical specifications of optical ports on GPON ONTs

Parameter Type	Wavelength (nm)	Unit	Min.	Max.
Upstream data	1310	dBm	+0.5	+5
Downstream data	1490	dBm	-28	-8
Downstream CATV	1550	dBm	-8	+2

To use an optical power meter, do as follows:

1. Connect optical fibers to optical ports correctly in upstream and downstream directions.
2. Turn on the power supply.
3. Choose the measurement unit (dB or dBm).
4. Perform the measurement.

Figure 6-4 shows the measurement interface of the optical power meter.

Figure 6-4 Measurement interface of the optical power meter

Optical channel loss is the total insertion loss caused by optical fibers, optical splitters, optical fiber connectors, and fiber connection points. **Table 6-3** shows the estimation of optical channel loss in the engineering design.

Table 6-3 Optical loss parameters in engineering

Item		Average Loss (dB)
Connection point	Connector	0.3
	Mechanical splicing	0.2
	Fusion splicing	0.1
Optical splitter	1:64	19.7
	1:32	16.5
	1:16	13.5
	1:8	10.5
	1:4	7.2
	1:2	3.2
Optical fiber (G.652)	1310 nm (1 km)	0.35
	1490 nm (1 km)	0.25

Optical channel loss = L x a + n1 x b + n2 x c + n3 x d + e + f (dB)

NOTE

- a indicates the average loss of an optical fiber per kilometer (unit: dB/km). L indicates the total length of the optical fiber (unit: km). The loss of patch cords and pigtail fibers used in engineering can be ignored because they are usually very short.
- b indicates the loss of a fusion splicing point (unit: dB) and n1 indicates the number of fusion splicing points.
- c indicates the loss of a mechanical splicing point (unit: dB) and n2 indicates the number of mechanical splicing points.
- d indicates the loss of a connector (unit: dB) and n3 indicates the number of connectors.
- e indicates the loss of an optical splitter (unit: dB). Only 1-level optical splitting is considered here. In the case of 2-level optical splitting, the loss of two optical splitters must be considered.
- f indicates the engineering margin, and generally its value is 3 dB.

6.3 Fault Locating According to the LED Status

This topic describes how to locate a fault according to the status of the LEDs on the ONT.

6.3.1 POWER LED Off

This topic describes how to locate the fault when the POWER LED does not illuminate.

Procedure

Step 1 Check whether the power adapter matches the device.

Step 2 Check whether the power cables are properly connected.

Step 3 Check whether the POWER button is pressed for power-on.

Step 4 Check whether the mains supply is normal (whether the mains supply meets the requirements for Huawei's product).

----End

6.3.2 PON LED Off

This topic describes how to locate the fault when the PON LED does not illuminate.

Procedure

Step 1 Check whether the OPTICAL interface on the ONT rear panel is connected to the optical fiber properly.

Step 2 Check whether the GPON ONT fails to register with the OLT. If such a problem occurs, contact the service provider for help.

----End

6.3.3 LOS LED Blinking

This topic describes how to locate the fault when the LOS LED blinks.

Procedure

Step 1 Check whether the optical fiber is connected properly.

Step 2 Check whether the optical fiber connector is clean.

----End

6.3.4 LAN LED Off

This topic describes how to locate the fault when the LAN LED does not illuminate.

Procedure

Step 1 Check whether the network cables match the device.

Step 2 Check whether the network cables are properly connected.

Step 3 Check whether the LED of the network interface card (NIC) is normal.

If the LINK LED is always on, it indicates that the network cables are properly connected. If the ACT LED blinks, it indicates that data is being transmitted.

Step 4 Check whether the NIC works in the normal state.

In **Device Manager** of the Windows operating system, check whether there is a device marked with **?** or **!** under **Network Adapter**. If there is a device marked with **?** or **!** under **Network Adapter**, uninstall the NIC and then re-install it, or install the NIC in another slot. If the problem persists, replace the NIC.

----End

6.3.5 TEL LED Off

This topic describes how to locate the fault when the TEL LED does not illuminate.

Procedure

Step 1 Check whether a voice user is configured and enabled.

----End

6.3.6 USB LED Off

This topic describes how to locate the fault when the USB LED does not illuminate.

Procedure

Step 1 Check whether the USB storage device is correctly connected.

----End

6.3.7 WLAN LED Off

This topic describes how to locate the fault when the WLAN LED does not illuminate.

Procedure

Step 1 Check whether the ONT is correctly connected to the power supply.

If the POWER LED is always on, it indicates that the ONT is correctly connected to the power supply.

Step 2 Check whether the Wi-Fi function is correctly configured and enabled.

Step 3 Check whether the Wi-Fi terminal is correctly configured and whether its connection to the ONT is set up.

----End

6.3.8 WPS LED Off

This topic describes how to locate the fault when the WPS LED does not illuminate.

Procedure

Step 1 Check whether the ONT is correctly connected to the power supply.

If the POWER LED is always on, it indicates that the ONT is correctly connected to the power supply.

Step 2 Check whether the Wi-Fi function is correctly configured.

Step 3 Check whether the WPS button is pressed.

Step 4 Check whether the WPS function is enabled.

----End

6.3.9 CATV LED Off

This topic describes how to locate the fault when the CATV LED does not illuminate.

Procedure

Step 1 Contact the service provider to check whether the CATV service is provisioned.

Step 2 Check whether the optical fiber is properly connected.

Step 3 Measure the optical power of the downstream 1550 nm wavelength by using an optical power meter. Check whether the measured optical power complies with the optical specifications of optical ports on GPON ONTs as specified in **6.2.2 Optical Power Meter**.

- If the measured optical power complies with the specifications, proceed to the next step.
- If the measured optical power does not comply with the specifications, check whether the endface of the optical fiber connected to the ONT is contaminated. If it is contaminated, wipe the endface of the optical fiber in a unidirectional manner with paper that is specially used for cleaning optical fibers or lens of cameras.

Step 4 Check whether the combiner works in the normal state.

----End

7 Technical Specifications

About This Chapter

This topic describes the technical specifications of the ONT, include its physical specifications and the standards and protocols which the ONT complies with.

7.1 Physical Specifications

This topic describes the physical specifications of the ONT, including its dimensions, weight, voltage range, and environment parameters.

Table 7-1 lists the physical specifications of the HG8240/HG8245/HG8247.

Table 7-1 Physical specifications

Item	HG8240	HG8245	HG8247
Dimensions (length x width x depth)	195 mm x 155 mm x 34 mm	195 mm x 174 mm x 34 mm	268 mm x 213 mm x 34 mm
Weight (including the power adapter)	About 500 g	About 550 g	About 800 g
Overall system power supply	11-14 V DC, 1 A	11-14 V DC, 2 A	11-14 V DC, 2 A
Power adapter input range	100-240 V AC, 50-60 Hz	100-240 V AC, 50-60 Hz	100-240 V AC, 50-60 Hz
Typical power consumption	8W	9W	12W
Temperature range	0°C to +40°C	0°C to +40°C	0°C to +40°C
Humidity range	5%-95% (non-condensing)	5%-95% (non-condensing)	5%-95% (non-condensing)

7.2 Protocols and Standards

This topic provides the protocols and standards which the ports of the ONT comply with.

- GPON: ITU-T G.984
- VoIP: H.248, SIP, G.711A/u, G.729a/b, and T.38
- Multicast: IGMPv2, IGMPv3, and IGMP snooping
- Routing: NAT, NAPT, and ALG
- Ethernet: IEEE 802.3ab
- USB: USB 1.1/USB 2.0
- Wi-Fi: IEEE 802.11n

NOTE

The USB protocol and Wi-Fi protocol are applicable to the HG8245 and HG8247 only.

8 Acronyms and Abbreviations

ALG	Application Level Gateway
BRAS	Broadband Remote Access Server
CATV	Community Antenna Television
DBA	Dynamic Bandwidth Assignment
DHCP	Dynamic Host Configuration Protocol
DMZ	Demilitarized Zone
DNS	Domain Name Server
DoS	Denial of Service
FTP	File Transfer Protocol
FTTH	Fiber To The Home
GPON	Gigabit-capable Passive Optical Network
HTTP	Hyper Text Transport Protocol
IGMP	Internet Group Management Protocol
ISP	Internet Service Provider
LAN	Local Area Network
MAC	Media Access Control
NAPT	Network Address and Port Translation
NAT	Network Address Translation
NMS	Network Management System
OLT	Optical Line Terminal
OMCI	Optical Network Termination Management and Control Interface
PON	Passive Optical Network
PPPoE	Point to Point Protocol over Ethernet

PSTN	Public Switched Telephone Network
SIP	Session Initiation Protocol
SOHO	Small Office and Home Office
SSID	Service Set Identifier
STB	Set Top Box
TCP	Transmission Control Protocol
TKIP	Temporal Key Integrity Protocol
UDP	User Datagram Protocol
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
VLAN	Virtual Local Area Network
VoIP	Voice over IP
WLAN	Wireless Local Area Network
WEP	Wired Equivalent Privacy
WPA	Wi-Fi Protected Access
WPS	Wi-Fi Protected Setup