



iManager U2000 Unified Network Management System

V100R002C01

Operation Guide for ONU NE Management

Issue 03

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About This Document

Related Version

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

Product Name	Version
iManager U2000	V100R002C01

Intended Audience




This document describes the functions and services provided by the ONU. After you read this document, you should be able to know how to operate the ONU and configure services through the U2000.



This document is intended for:

- Data Configuration Engineer
- Network Monitoring Engineer

Symbol Conventions

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

Symbol	Description
 DANGER	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazard with a medium or low level of risk, which if not avoided, could result in minor or moderate injury.
 CAUTION	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.

Symbol	Description
 TIP	Indicates a tip that may help you solve a problem or save time.
 NOTE	Provides additional information to emphasize or supplement important points of the main text.

Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
Boldface	The keywords of a command line are in boldface .
<i>Italic</i>	Command arguments are in <i>italics</i> .
[]	Items (keywords or arguments) in brackets [] are optional.
{ x y ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[x y ...]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x y ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[x y ...]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.

GUI Conventions

The GUI conventions that may be found in this document are defined as follows.

Convention	Description
Boldface	Buttons, menus, parameters, tabs, window, and dialog titles are in boldface . For example, click OK .
>	Multi-level menus are in boldface and separated by the ">" signs. For example, choose File > Create > Folder .

Change History

Updates between document issues are cumulative. Therefore, the latest document issue contains all updates made in previous issues.

Changes in Issue 03 (2010-11-19) Based on Product Version V100R002C01

The third commercial release has the following updates:

The following changes: [1.1.5 Configuring the xFTP File in the NAT Networking Mode](#).

Changes in Issue 02 (2010-09-24) Based on Product Version V100R002C01

The second commercial release has the following updates:

The parameter names and graphs are changed according to latest GUIs.

Changes in Issue 01 (2010-08-16) Based on Product Version V100R002C01

Initial release for V100R002C01 version.

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1 Managing Network Elements

About This Chapter

The U2000 provides device management functions through the graphical user interface (GUI). The GUI displays the physical status of the devices in the topological view. Therefore, the devices are managed in a centralized manner through the topology or view.

Context

Optical network units (ONUs) are classified into two types: multi-dwelling unit (MDU) and optical network terminal (ONT).

- MDUs are deployed in corridors or by the road and used as ONUs in the fiber to the building (FTTB) or fiber to the curb (FTTC) scenario. The MDUs provide voice, video, and data services for multiple users through various ports, and the OLT at the CO implements convergence of the services of multiple remote ONUs.
- ONTs are deployed in user homes and used as ONUs in the fiber to the home (FTTH) scenario. An ONT provides voice, video, and data services for a single user, and the OLT at the CO implements convergence of the services of multiple ONUs.

[1.1 Configuring the xFTP Service](#)

This topic describes how to configure the FTP, SFTP, or TFTP service on Windows, Solaris, or Linux OS and how to check the xFTP service on the U2000.

[1.2 Adding an ONU](#)

This topic describes how to add an ONU to the U2000 so that the connection between the ONU and the OLT can be set up in the L2 topological view. After the ONU is added, the U2000 can maintain and manage the ONU and other devices in a centralized manner.

[1.3 Replacing an ONU](#)

This topic describes how to replace an ONU when it is faulty. In this case, connect the new ONU that is of the same type as the faulty ONU to the corresponding port on the OLT, and then bind the MAC address of the new ONU. After the new ONU goes online, service configuration data is issued to the new ONU automatically. Therefore, you need not configure the data again.

[1.4 Moving an ONU](#)

This topic describes how to move an ONU so that the ONU is connected to another optical splitter.

1.5 Managing the SRG Web Service

The SRG is a service router gateway developed by Huawei. The SRG is a cost-effective security and access solution for small and medium-sized enterprise networks and the telecommunications networks.

1.6 Configuration Example of the Outband Management (Based on the SNMPv3 Protocol)

This topic provides an example for configuring the outband management to manage and maintain the ONU. In outband management the non-service channel is used to transmit the management information. With the use of the non-service channel, the management channel and the service channel are separated, which provides a more reliable management channel for the device compared with the inband management.

1.7 Configuration Example of the Inband Management

This topic provides an example for configuring the inband management to manage and maintain the ONU. The inband management transmits the management information through the service channel of the device. The inband management features the flexible networking without any adjunct device and low cost, but it is difficult to maintain.

1.1 Configuring the xFTP Service

This topic describes how to configure the FTP, SFTP, or TFTP service on Windows, Solaris, or Linux OS and how to check the xFTP service on the U2000.

1.1.1 Configuring the FTP, SFTP, or TFTP Service (Windows)

This topic describes how to configure and start the FTP, SFTP, or TFTP service on Windows OS. NE software communicates with the client or NEs through the FTP, SFTP, or TFTP protocol for NE upgrade, data backup, and patch installation.

1.1.2 Configuring the FTP, SFTP, or TFTP Service (Solaris)

This topic describes how to configure and start the FTP, SFTP, or TFTP service on Solaris OS. The DC communicates with clients or NEs by using the FTP, SFTP, or TFTP protocol to upgrade NEs, back up data, and install patches.

1.1.3 Configuring the FTP, SFTP, or TFTP Service (Linux)

This topic describes how to configure and start the FTP, SFTP, or TFTP service on Linux OS. The DC communicates with clients or NEs by using the FTP, SFTP, or TFTP protocol to upgrade NEs, back up data, and install patches.

1.1.4 Configuring the xFTP Watcher

When NE data is synchronized to the U2000 server in FTP or SFTP mode, you need to configure the xFTP watcher. If you configure the xFTP watcher correctly, the NE data is successfully synchronized to the U2000 server and the U2000 successfully manages the NEs whose data is synchronized in xFTP mode.

1.1.5 Configuring the xFTP File in the NAT Networking Mode

In the NAT networking mode, the xFTP must be configured to ensure that the device data can be synchronized to the U2000 server automatically.

1.1.1 Configuring the FTP, SFTP, or TFTP Service (Windows)

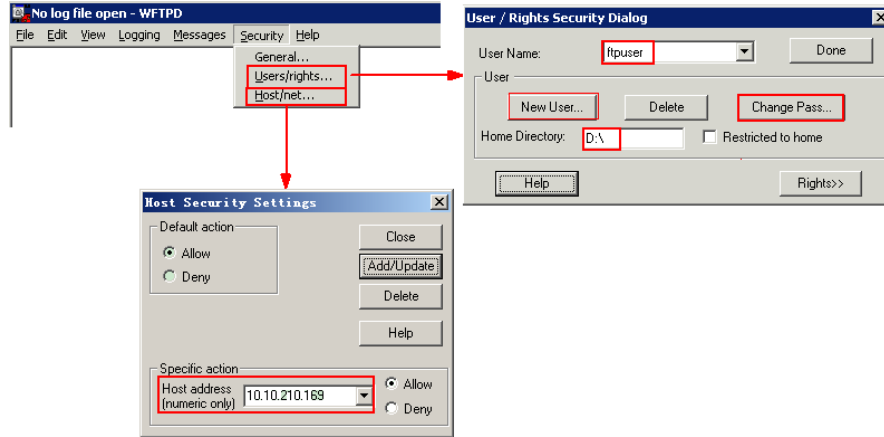
This topic describes how to configure and start the FTP, SFTP, or TFTP service on Windows OS. NE software communicates with the client or NEs through the FTP, SFTP, or TFTP protocol for NE upgrade, data backup, and patch installation.

Context

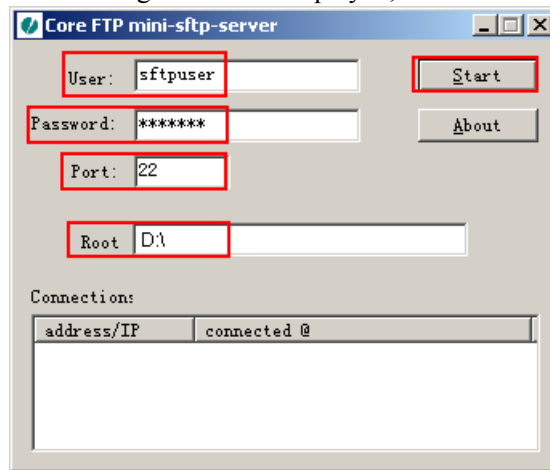
- The third-party tool must be started after the FTP, SFTP, or TFTP server is configured.
- The file transfer parameters set on the U2000 must be the same as the parameters set on the FTP, SFTP, or TFTP server.

Procedure

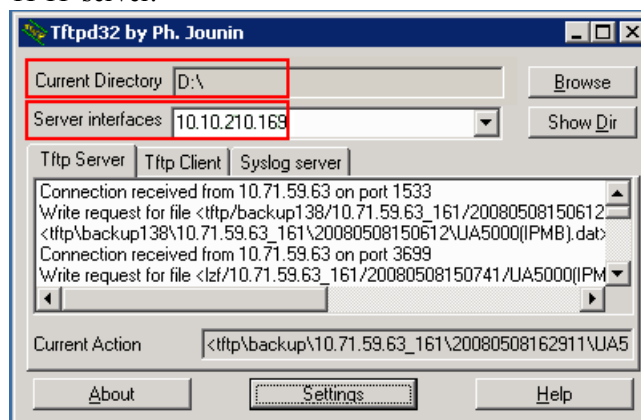
- **Configuring the FTP server by using the third-party tool wftpd32.exe**
 1. Copy the **wftpd32.exe** file to the U2000 server and double-click the file.
 2. In the dialog box that is displayed, choose **Security > Users/rights** and create a user; choose **Security > Host/net** and enter the IP address of the FTP server.



- **Configuring the SFTP server by using the third-party tool msftpsrvr.exe**
 1. Copy the **msftpsrvr.exe** file to the U2000 server and double-click the file.
 2. In the dialog box that is displayed, create a user.

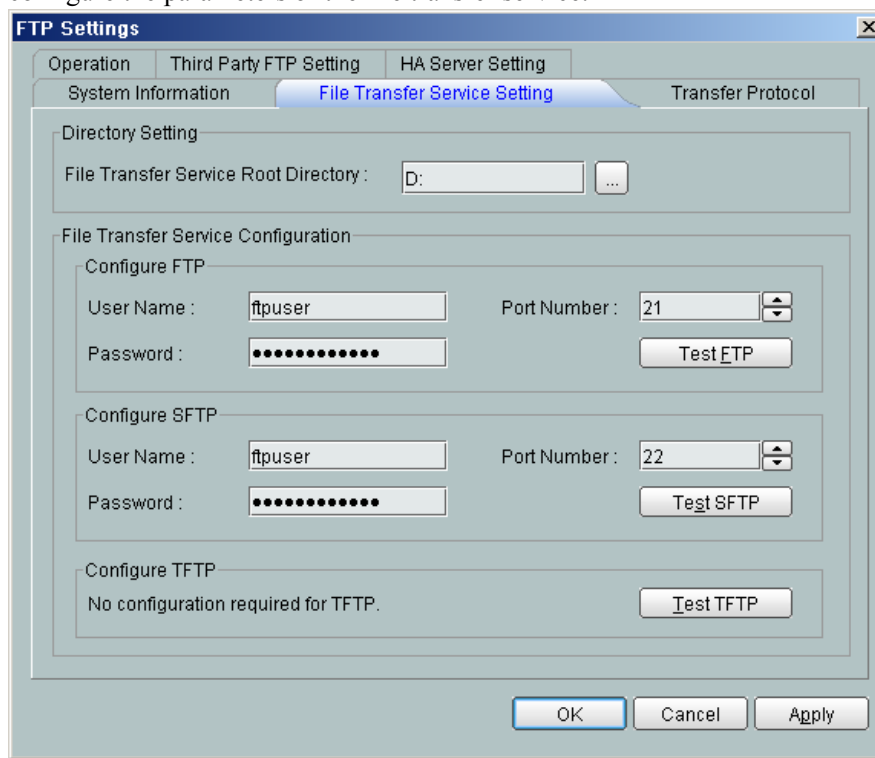


- **Configuring the TFTP server by using the third-party tool tftpd32.exe**
 1. Copy the **tftpd32.exe** file to the U2000 server and double-click the file.
 2. In the dialog box that is displayed, set the root directory and the IP address of the TFTP server.



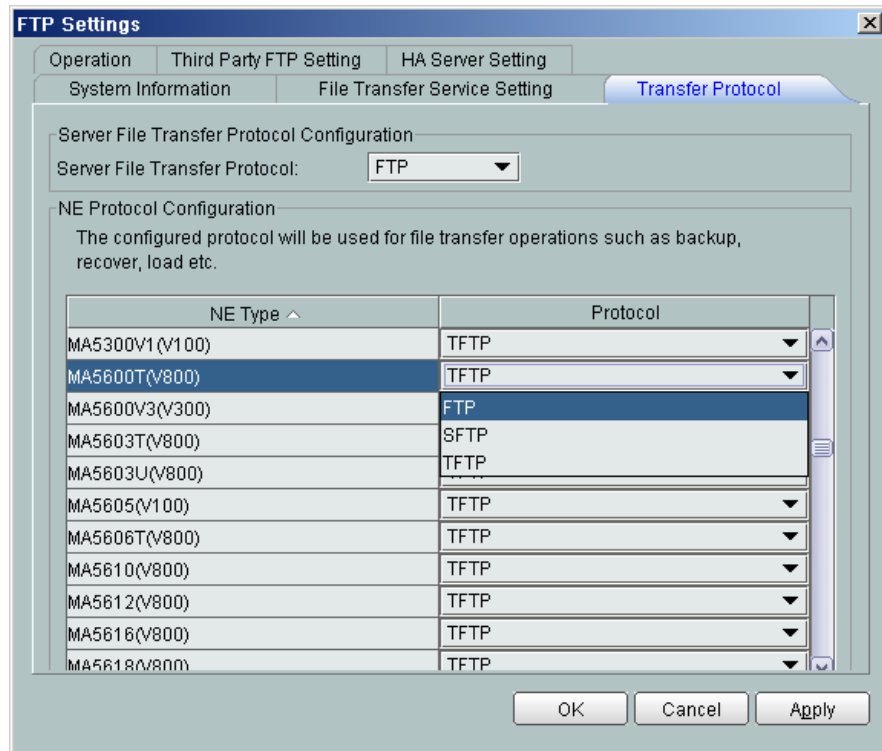
- **Testing the communication between the FTP, SFTP, or TFTP service and the NE software**

1. Choose **Administration > NE Software Management > FTP Settings** from the main menu.
2. In the dialog box that is displayed, click the **File Transfer Service Setting** tab to configure the parameters of the file transfer service.



 **NOTE**

- **File Transfer Service Root Directory** configured on the U2000 must be the same as the root directory configured on the FTP, SFTP, or TFTP server. In addition, the FTP, SFTP, or TFTP server must be started.
 - If the FTP protocol is used, ensure that the user name and password set in the last step are the same as the user name and password set when the FTP server is configured.
 - If the SFTP protocol is used, ensure that the user name, password, and port number set in the last step are the same as the user name, password, and port number set when the SFTP server is configured.
 - Click **Test FTP**, **Test SFTP**, or **Test TFTP** to check the configuration of the file transfer service.
3. Click the **Transfer Protocol** tab. Select a proper protocol from the **Protocol** drop-down list for file transfer between NEs and the U2000 server.



4. Click **OK**.

----End

1.1.2 Configuring the FTP, SFTP, or TFTP Service (Solaris)

This topic describes how to configure and start the FTP, SFTP, or TFTP service on Solaris OS. The DC communicates with clients or NEs by using the FTP, SFTP, or TFTP protocol to upgrade NEs, back up data, and install patches.

Prerequisite

You must be logged in to the Solaris OS as user **root**.

Context

- In the case of the Solaris- or Linux-based U2000, the FTP, SFTP, or TFTP function provided by the Solaris or Linux OS is used.
- On Solaris OS, the FTP, SFTP, or TFTP server can be configured in the command line interface (CLI). The configuration method varies with OS versions. The following section describes the configuration processes on the Solaris 8 and Solaris 10 OSs in details.
- The root directory, user name, and password of the FTP, SFTP, or TFTP service must be the same as those that are set on the U2000 client.

Procedure

- **Configure the FTP server.**
 1. To start the FTP service, run the following commands:
 - Solaris 8:

```
# cd /etc/init.d
```

```
# ./inetsvc start
```

- Solaris 10:

```
# inetconv -i /etc/inet/inetd.conf 1>/dev/null 2>&1
```

```
# svcadm enable svc:/network/ftp
```

- To check whether the FTP service is started, run the `# netstat -a | grep ftp` command.

 **NOTE**

If the following message is displayed, it indicates that the FTP service is started.

```
*.tftp                               Idle
*.tftp
Idle
*.ftp                                *.*                                0      0 49152      0
LISTEN
*.ftp                                *.*
0      0
49152      0 LISTEN
```

- To create an FTP user and set its user name and password, run the following commands:

```
# useradd -d /tftpboot -s /bin/bash ftpuser
# passwd ftpuser
New Password: ftp123
Re-enter new Password: ftp123
```

● **Configure the SFTP server.**

- If the ssh service is not started, perform the following steps to start it:
 - In the `/etc/ssh/sshd_config` file, change **PasswordAuthentication no** to **PasswordAuthentication yes** and **PermitRootLogin no** to **PermitRootLogin yes**.
 - Run the `svcadm refresh svc:/network/ssh:default` command.
- To check whether the ssh service is started on Solaris OS, run the `svcs -a | grep ssh` command.

 **NOTE**

If the following message is displayed, it indicates that the ssh service is started on Solaris OS.

```
online          May_04   svc:/network/ssh:default
*.tftp
```

- To create an SFTP user and set its user name and password, run the following commands:

```
# useradd -d /tftpboot sftpuser
# passwd sftpuser
```

● **Configure the TFTP server.**

- On the Common Desktop Environment (CDE) desktop, right-click and choose **File > File Manager** from the shortcut menu.
- Locate the `inetd.conf` file in the `etc` directory and double-click the file to open the file.
- Search for the `tftp dgram udp6 wait root /usr/sbin/in.tftpd in.tftpd -s /tftpboot` command.

 **NOTE**

If the command does not exist, add it to the file. If the command exists but is commented out by the pound sign (#), delete the pound sign and save the file.

- Start the TFTP service.

- Solaris 8: Run the `./inetsvc start` command in the `/etc/init.d` path to start the TFTP service. After the service is started, the default TFTP file path is `/tftpboot`.
- Solaris 10: Run the `inetconv -i /etc/inet/inetd.conf 1>/dev/null 2>&1` command, and then run the `svcadm enable svc:/network/tftp/udp6:default` command to start the TFTP service. After the service is started, the default TFTP file path is `/tftpboot`.

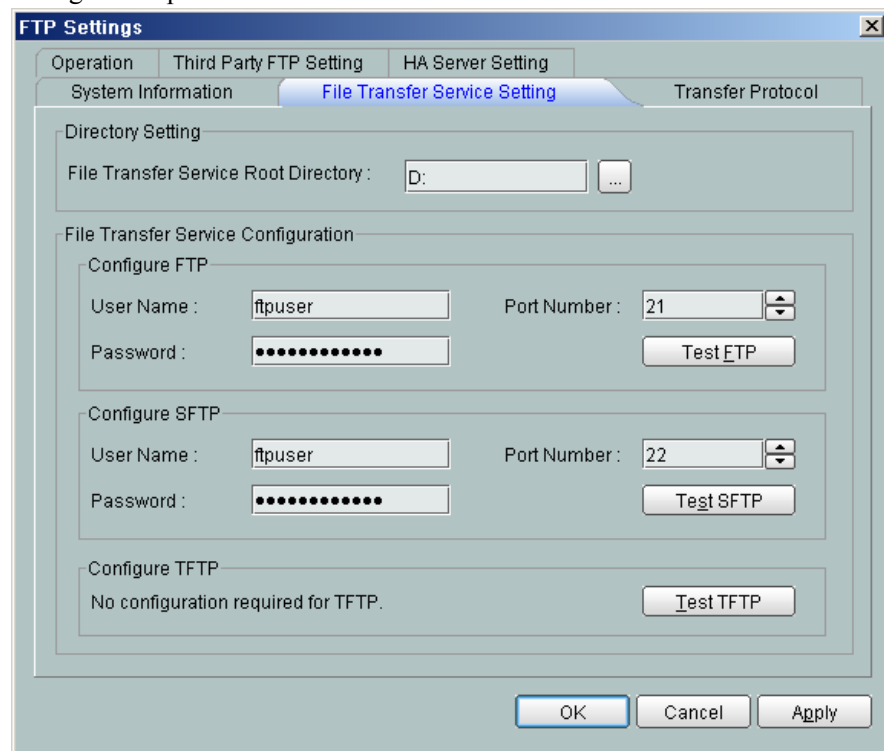
 **NOTE**

If the `/etc/inet/inetd.conf` configuration file is modified, you need to stop the TFTP service and then restart it. To stop the TFTP service, do as follows:

- Solaris 8: Run the `./inetsvc stop` command in the `/etc/init.d` path.
 - Solaris 10: Run the `svcadm disable svc:/network/tftp/udp6:default` command.
5. Run the `#svcs |grep tftp` command to check whether the TFTP service is started on Solaris OS.

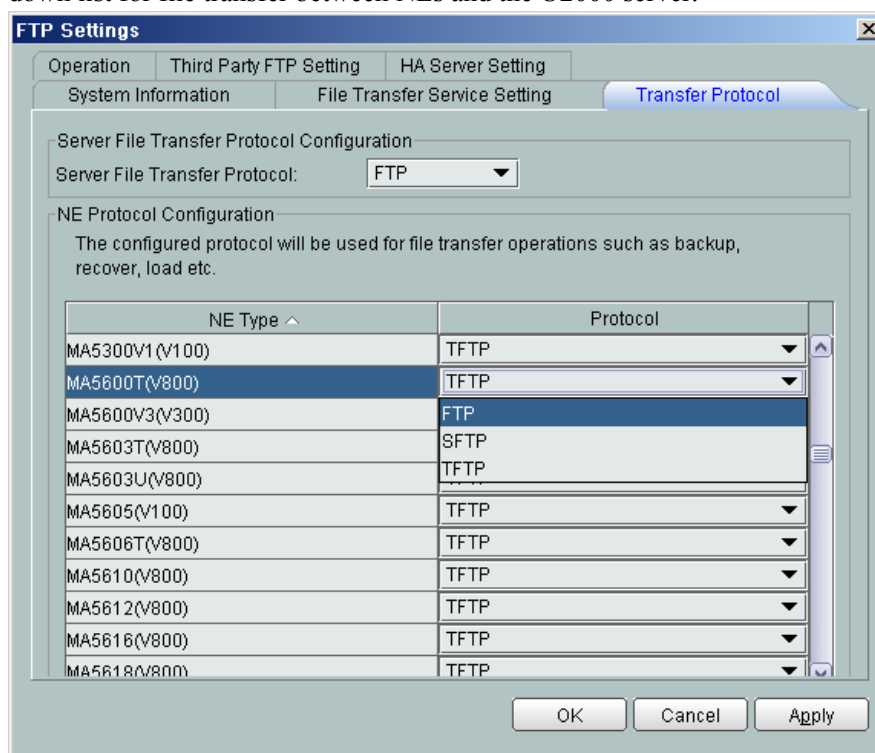
● **Testing the communication between the FTP, SFTP, or TFTP service and the NE software**

1. Choose **Administration > NE Software Management > FTP Settings** from the main menu.
2. In the dialog box that is displayed, click the **File Transfer Service Setting** tab to configure the parameters of the file transfer service.



 **NOTE**

- **File Transfer Service Root Directory** configured on the U2000 must be the same as the root directory configured on the FTP, SFTP, or TFTP server. In addition, the FTP, SFTP, or TFTP server must be started.
 - If the FTP protocol is used, ensure that the user name and password set in the last step are the same as the user name and password set when the FTP server is configured.
 - If the SFTP protocol is used, ensure that the user name, password, and port number set in the last step are the same as the user name, password, and port number set when the SFTP server is configured.
 - Click **Test FTP**, **Test SFTP**, or **Test TFTP** to check the configuration of the file transfer service.
3. Click the **Transfer Protocol** tab. Select a proper protocol from the **Protocol** drop-down list for file transfer between NEs and the U2000 server.



4. Click **OK**.

----End

1.1.3 Configuring the FTP, SFTP, or TFTP Service (Linux)

This topic describes how to configure and start the FTP, SFTP, or TFTP service on Linux OS. The DC communicates with clients or NEs by using the FTP, SFTP, or TFTP protocol to upgrade NEs, back up data, and install patches.

Prerequisite

You must be logged in to the Linux OS as user **root**.

Context

- In the case of the Solaris- or Linux-based U2000, the FTP, SFTP, or TFTP function provided by the Solaris or Linux OS is used.
- The root directory, user name, and password of the FTP, SFTP, or TFTP service must be the same as those that are set on the U2000 client.
- In a distributed system, you need to configure the FTP or SFTP service on the master server and the slave server that is deployed with the access NE management instance by following the same procedure.

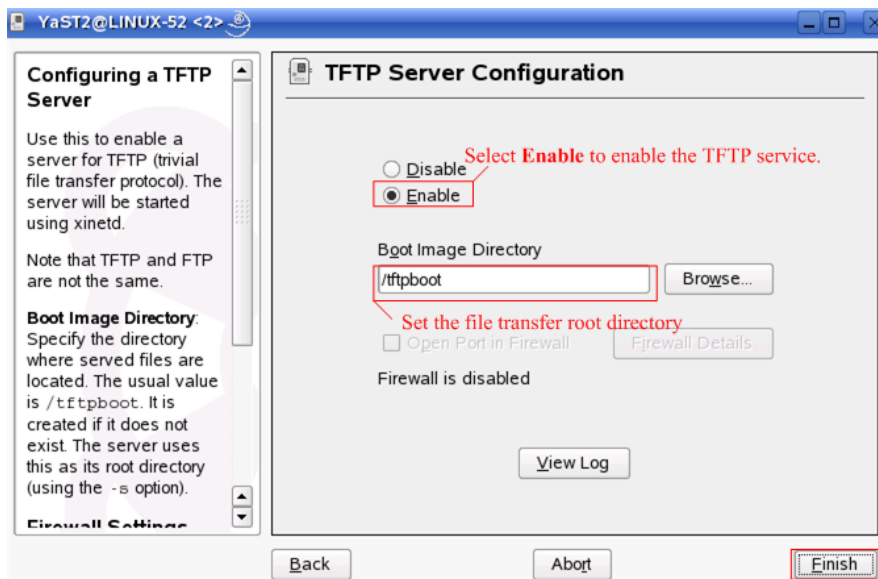
Procedure

- **Configure the FTP server.**
 1. To create an FTP user and set its user name and password, run the following commands:

```
# useradd -d /tftpboot -s /bin/bash ftpuser
# passwd ftpuser
New Password: ftp123
Re-enter new Password: ftp123
```
 2. Restart the FTP service.
 - To stop the FTP service, run the following commands:

```
# cd /etc/init.d
# /xinetd stop
```
 - To start the FTP service, run the following commands:

```
# cd /etc/init.d
# ./xinetd start
```
- **Configure the SFTP server.**
 1. In the terminal window, run the **useradd -d /ftpboot -m -s /bin/bash ftpuser** command to create an SFTP user. **ftpuser** in the command indicates the SFTP user name.
 2. Restart the OS.
 3. After the OS is restarted, run the **passwd ftpuser** command to change the password of the SFTP user to **ftpuser**.
 4. In the **/etc/ssh/sshd_config** file, change **PasswordAuthentication no** to **PasswordAuthentication yes** to allow the SFTP user to log in to the Linux OS after entering the password.
 5. After the configuration file is modified, run the **/etc/init.d/sshd stop** command to stop the SFTP service.
 6. Run the **/etc/init.d/sshd start** command to start the SFTP service.
 7. Run the **sftp servername@localhost** command to connect to the server.
- **Configure the TFTP server.**
 1. To configure the TFTP server by using the YaST, do as follows:
 - (1) Click **YaST**. The administrator setting panel is displayed.
 - (2) Choose **Network Services > TFTP Server**. The **TFTP Server Configuration** window is displayed, as shown in the following figure.



2. To configure the TFTP server by using the Konsole, do as follows:
 - (1) In the terminal window, run the `cd /etc/xinetd.d` command to navigate to the `/etc/xinetd.d` directory. Then, run the `vi tftp` command to open the `tftp` file.
 - (2) Set `disable` to `no` (that is, `disable = no`) to start the TFTP server.

 **NOTE**

To stop the TFTP service, set `disable` to `yes` (that is, `disable = yes`) in the `tftp` file.

To restart the TFTP service, run the `/etc/init.d/xinetd restart` command.

----End

1.1.4 Configuring the xFTP Watcher

When NE data is synchronized to the U2000 server in FTP or SFTP mode, you need to configure the xFTP watcher. If you configure the xFTP watcher correctly, the NE data is successfully synchronized to the U2000 server and the U2000 successfully manages the NEs whose data is synchronized in xFTP mode.

Prerequisite

The third-party software must be available for configuring the FTP server if more than 5,000 NEs are managed.

The FTP or SFTP server must be configured and the xFTP service must be enabled. For details, see [1.1.1 Configuring the FTP, SFTP, or TFTP Service \(Windows\)](#), [1.1.2 Configuring the FTP, SFTP, or TFTP Service \(Solaris\)](#), and [1.1.3 Configuring the FTP, SFTP, or TFTP Service \(Linux\)](#).

Context

Data synchronization in xFTP mode is implemented based on the FTP or SFTP protocol. To improve the efficiency of synchronizing NE data, NEs upload their data in the form of files to the U2000 by using the FTP or SFTP protocol.

Table 1-1 Types and versions of NEs supporting data synchronization in xFTP mode

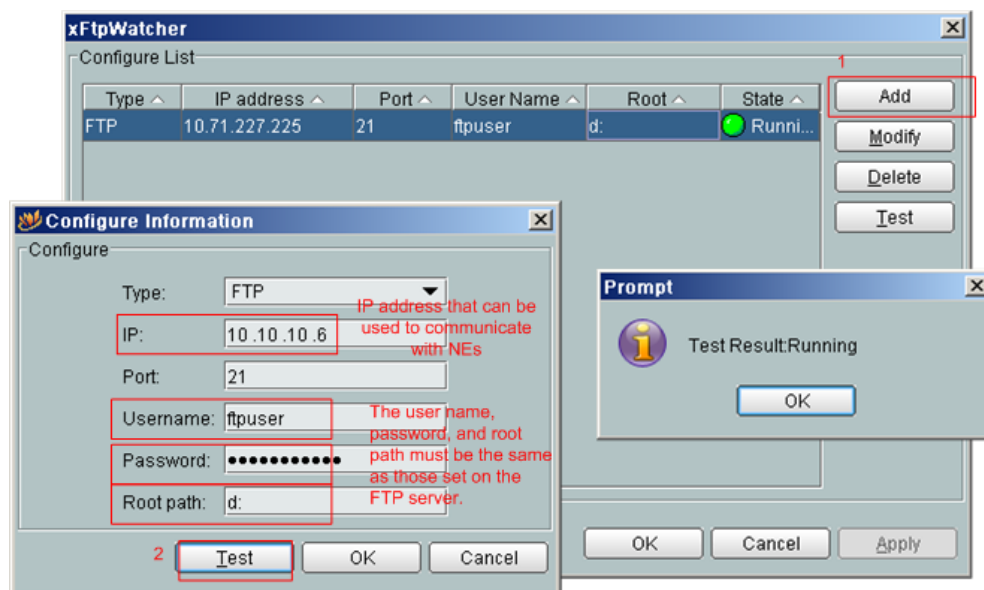
NE Type	Applicable Version
MA5662	MA5662 V800R202C00
ATN910	ATN931 V800R202
MA5626E	MA5626E V800R307C00
MA5620E	MA5620E V800R307C00
MA5620G	MA5620G V800R307C00
MA5626G	MA5626G V800R307C00
MA5610	MA5610 V800R306C01 MA5610 V800R307C00
MA5616	MA5616 V800R306C01 MA5616 V800R307C00 MA5616 V800R308C00
MA5652G	MA5652 V800R306C01 MA5652 V800R307C00
MA5620	MA5620 V800R307C00
MA5626	MA5626 V800R307C00
ATN930	ATN930 V800R307
MA5635	MA5635 V800R307C00
MA5612	MA5612 V800R307C00
MA5628	MA5628 V800R307C00

 **NOTE**

- In the case of the NE whose data is synchronized in SNMP mode, you do not need to configure the xFTP watcher.
- The U2000 synchronizes data in FTP or SFTP mode, not in TFTP mode.
- After the U2000 that is newly installed is started successfully, it automatically configures the xFTP watcher. Therefore, you do not need to modify the default configuration unless it is necessary.

Procedure

- 1 Choose **Administration > Settings > xFtpWatcher** from the main menu.
- 2 In the **xFtpWatcher** dialog box, click **Add**.
- 3 In the dialog box that is displayed, set the parameters.



NOTE

- The default values of **Username**, **Password**, and **Root path** of the U2000 FTP service are **ftpuser**, **u2000ftpuser**, **d:** (Windows-based server) or **/ftpboot** (Linux-based server or Solaris-based server for single-server system) or **/opt/sybase/data** (Solaris-based server for backup system) respectively.
- If the user password and path of the FTP service are changed, make sure that **Password** and **Root path** in the **xFtpWatcher** dialog box are also changed.
- **IP address** cannot be set to **127.0.0.1**.
- In the case of a single-server system, **IP address** is the IP address of the FTP server that can communicate with NEs, that is, the IP address of the U2000 server. In the case of a distributed system, **IP address** is the IP address that is configured by means of the network address translation (NAT).
- The value of **Root path** must be correct. In addition, **Root path** must be an absolute path and cannot end with / or \ or contain a space.

----End

1.1.5 Configuring the xFTP File in the NAT Networking Mode

In the NAT networking mode, the xFTP must be configured to ensure that the device data can be synchronized to the U2000 server automatically.

Prerequisite

The xFTP watcher of the U2000 must be configured, the FTP server must be configured successfully, and the FTP service must be enabled. For details, see [1.1.4 Configuring the xFTP Watcher](#).

Context

- If the NAT networking mode is adopted or the U2000 manages NEs in multiple separated network segments, you need to create the **iptables_ne2nms.cfg** file manually and configure it to ensure that the device data is synchronized to the U2000 server automatically.
- In the distributed NAT networking mode, the **iptables_ne2nms.cfg** file must be configured on the master server.

Procedure

- 1 Open the **iptables_ne2nms.cfg** file in the installation directory **\$IMAPROOT/server/etc/conf/** of the U2000 server.
- 2 Configure the **iptables_ne2nms.cfg** file.

Each line added to the configuration file indicates a mapping configuration. The format of the mapping configurations is as follows:

NE start IP address NE end IP address U2000 IP address [the IP address of the U2000 after NAT translation]

The parameters are separated with white spaces or tab spaces.

- **NE start IP address** and **NE end IP address**: Specify the IP address range of NEs.
- **U2000 IP address**: Indicates the external IP address that the U2000 at a site uses to communicate with NEs. The IP address ranges of the NEs at different sites can overlap.
- **The IP address of the U2000 after NAT translation**: If the NAT networking mode is adopted between the U2000 and NEs, this parameter must be specified. Otherwise, this parameter does not need to be specified.

For example, if the NAT networking mode is not adopted, the mapping configuration is 10.71.226.1 10.71.226.255 10.71.221.153.

If the NAT networking mode is adopted, the mapping configuration is 10.71.227.1 10.71.227.255 10.71.221.152 10.10.10.10.

----End

Example

In the NAT networking mode, the IP address of the U2000 server is 136.12.36.2 and the IP address changes to 198.168.23.25 after the mapping on the firewall. The IP addresses of certain devices are in the 198.0.0.0 network and these devices can communicate with the U2000 through the mapping address of the U2000 server. The IP addresses of other devices are in the 136.0.0.0 network and these devices can communicate with the U2000 server.

In this case, configure the **iptables_ne2nms.cfg** file as follows:

```
136.0.0.1 136.0.0.255 136.12.36.2
```

```
198.0.0.1 198.0.0.255 136.12.36.2 198.168.23.25
```

1.2 Adding an ONU

This topic describes how to add an ONU to the U2000 so that the connection between the ONU and the OLT can be set up in the L2 topological view. After the ONU is added, the U2000 can maintain and manage the ONU and other devices in a centralized manner.

Prerequisite

Before adding an ONU, make sure that the FTP server is configured correctly and the FTP service starts. For details, see [1.1.1 Configuring the FTP, SFTP, or TFTP Service \(Windows\)](#).

For the ONUs that support the EPON upstream mode:

- When the OLT is set to work in the profile mode, you need to configure the EPON line profile and the EPON service profile for it.
- The ONU that is discovered automatically must exist on the OLT.

For the ONUs that support the GPON upstream mode:

- When the OLT is set to work in the distributed mode, you need to configure the GPON ONU capacity profile and the MDU SNMP profile for it.
- When the OLT is set to work in the profile mode, you need to configure the GPON line profile and the GPON service profile for it.
- The ONU that is discovered automatically must exist on the OLT.

ONUs can be configured and managed remotely on the OLT through the OMCI or SNMP protocol similarly. The difference is as follows:

- If an ONU is added through the OMCI protocol, the U2000 can discover the ONU automatically when the ONU is online only after the OLT issues the SNMP parameters.
- If an ONU is added through the SNMP protocol, the U2000 can discover the ONU automatically when the ONU is online.

Context

- When you add an ONU on the U2000 and do not set **Alias**, the U2000 obtains the system name of the ONU and considers the system name as the ONU alias.
- When the U2000 discovers multiple ONUs automatically, it obtains the system names of the ONUs and consider the system names as the ONU aliases.

NOTE

To set the system name of an ONU, run the **sysname** command. By default, the device name is the system name. For details, see the command reference.

Procedure

- **To add an MDU that supports xPON upstream transmission, do as follows:**
 1. On the topological navigation tree, select the required ODN under the OLT node. Select the splitter under the ODN, right-click, and then choose **New > ONU**; or select the splitter under the ODN, right-click the blank area on the **Physical Root** interface on the right side, and then choose **New > ONU**.
 2. On the interface that is displayed, set the parameters on the **Basic Parameters** and **Network Management Channel Parameters** tab pages (on this interface, the ONU that supports the GPON upstream mode is considered as an example).

Add ONU Info

Affiliated Port: 0/2/0 * Splitter ID: Splitter(L1) ▼

Name: ONU * Alias: *

ONU ID(0-127): Auto Assign 127 * Splitter Port ID(1-128): 1

ONU Type: MDU ▼

Protection Role

Basic Parameters | Network Management Channel Parameters

Line Profile: ... * Service Profile: ...

Optic Alarm Profile: ... ONU VAS Profile: ...

Auth Info

Auth Way: MAC Address *
 MAC Address: - - - - - * Key: *
 LOID: * CHECKCODE: *
 Auth Mode: Always On * Time Out(h)(1-168): Disable *

Extend Information

DHCP Status PTP Status IGMP Mode: CTC ▼

ONU Type

Vendor ID: ▼ Terminal Type: ▼
 Software Version: ▼

OK Cancel Apply

Add ONU Info

Affiliated Port: 0/2/0 * Splitter ID: Splitter(L1) ▼

Name: ONU * Alias: *

ONU ID(0-127): Auto Assign * Splitter Port ID(1-128): 1

ONU Type: MDU ▼

Protection Role

Basic Parameters | Network Management Channel Parameters

OLT Sets Network Management Channel Parameters EPON SNMP Profile: ... *

Net Para

Manager VLAN(1-4095): * Gateway IP Address: ...

IP Address: 10.10.10.6 * IP Address Mask: 255.255.255.0 *

Priority(0-7):

Static Route Parameters

Target IP Address: ... Target Mask: ...

Next Hop IP Address: ...

OK Cancel Apply

 **NOTE**

- When the OLT works in the profile mode, the ONU that supports the EPON upstream mode needs to be bound with the EPON line profile and the EPON service profile.
 - When the OLT works in the profile mode, the ONU that supports the GPON upstream mode needs to be bound with the GPON line profile and the GPON service profile.
 - When the OLT works in the distributed mode, the ONU that supports the GPON upstream mode needs to be bound with the ONU capacity profile.
 - When the **OLT sets network management channel parameters** check box is cleared, ONUs are configured and managed remotely on the OLT through the OMCI protocol.
 - When the **OLT sets network management channel parameters** check box is selected, ONUs are configured and managed remotely on the OLT through the SNMP protocol.
 - Do not add the SNMP parameters on the ONU through the serial port, but issue the SNMP profile from the OLT to the ONU only.
3. Click **OK**.
 4. In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
 5. Choose **VLAN** from the navigation tree.
 6. On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
 7. In the dialog box that is displayed, set the parameters.
 - VLAN ID: 4000
 - Type: Smart VLAN
 8. Click **Next**.
 - Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
 - Click the **L3 Interface** tab and set the parameters.
 - Configure L3 Interface: selected
 - IP Address: 192.168.50.4
 9. Click **Finish**.
 10. Choose **GPON > GPON ONU** from the navigation tree.
 11. On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
 12. In the information list, select the record where the shelf, slot, port, and ONU IDs are 0, 2, 1, and 0 respectively and click the **ServicePort Info** tab in the lower pane.
 13. On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
 14. In the dialog box that is displayed, set the parameters.
 - Connection Type: LAN-GPON
 - VLAN ID: 4000
 - Interface Selection: 0/2/1/0/0
 - Service Type: Multi-Service VLAN
 - User VLAN: 4000
 - Keep the upstream and downstream settings the same: selected
 - Upstream Traffic Name: ip-traffic-table_6 (it is recommended that you use the default profile ip-traffic-table_6 because the OLT does not limit the rates of service streams in the management VLAN)

15. Click **OK**.

- **To add an MDU that supports GE upstream transmission, do as follows:**

The MDU that supports GE upstream transmission supports the SNMPv3 protocol.

1. Choose **Administration > NE Communicate Parameter > NE Access Protocol Parameters** from the main menu.
2. On the tab page, click **Reset**. In the dialog box that is displayed, click the **SNMPv1 Parameters** tab and then click **Add**.
3. In the dialog box that is displayed, set the name and SNMP parameters as follows:

Default Access Protocol Parameters

SNMPv1 Parameters | SNMPv2 Parameters | **SNMPv3 Parameters**

Template Na...	Version ^	Timeout Inter...	Retries ^	Poll Interval(s) ^	NE Port ^
123	SNMPv3	5	3	1800	161
default	SNMPv3	10	5	1800	161

Template Name: huawei * Version: SNMPv3

Common parameters:

Retries: 3 Poll Interval(s): 1800

Timeout Interval(s): 5 NE Port: 161

SNMP v3 security params

NE User: user1 *

Context Name: Context Engine ID: 012345678

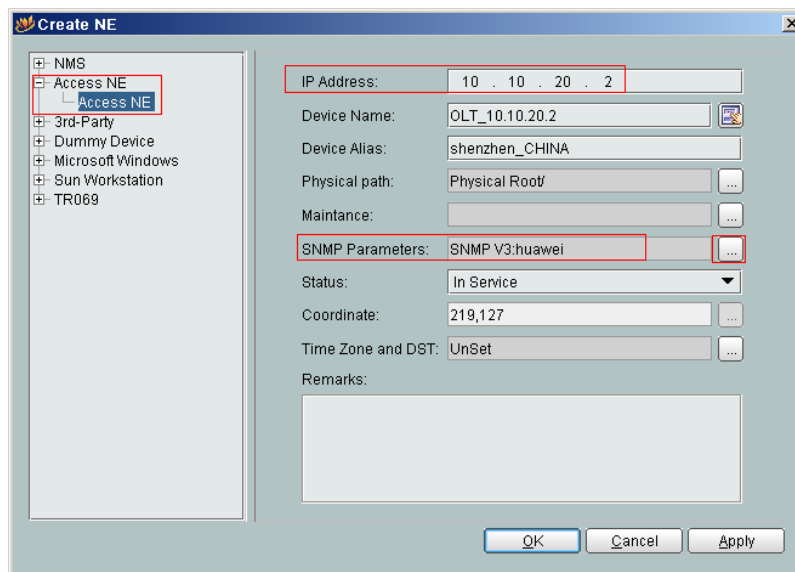
Privacy protocol: DES Auth Protocol: HMACMD5

OK Cancel

NOTE

The SNMPv3 protocol supports three security levels: authentication, noauth, and privacy. To implement successful communication through the SNMPv3 protocol, ensure that the authentication and encryption modes of the SNMP user on the device, SNMP group, and the SNMP parameters on the U2000 are the same.

4. Click **OK**.
5. Select the added SNMP parameters. Click **OK**.
6. In the dialog box that is displayed, click **Yes**. Test the set SNMP parameters.
7. The U2000 displays the **Loading** dialog box. After the testing is complete, click **OK**.
8. In the physical root view page, right-click and then choose **New > NE**.
9. In the dialog box that is displayed, set the parameters.



10. Click **OK**.

----End

1.3 Replacing an ONU

This topic describes how to replace an ONU when it is faulty. In this case, connect the new ONU that is of the same type as the faulty ONU to the corresponding port on the OLT, and then bind the MAC address of the new ONU. After the new ONU goes online, service configuration data is issued to the new ONU automatically. Therefore, you need not configure the data again.

Context

NOTE

You can replace the ONU with a new ONU if the ONU is not used any more. The data of the original ONU is synchronized to the new ONU.

Procedure

- 1 On the **Main Topology**, choose the OLT that the ONU is connected to from the navigation tree, select the ONU subnode, right-click, and then choose **GPON Option > Replace ONU** or **EPON Option > Replace ONU**.
- 2 In the **Replace ONU** dialog box, modify the authentication information.
- 3 Click **OK**.

----End

Result

After the ONU is replaced, the new ONU is online, that is, the ONU icon in the **Physical Root** navigation tree in Main Topology changes from gray to green.

The OLT reports a trap to the U2000, and the U2000 determines whether the ONU is the new ONU according to the MAC address in the trap. If the ONU is the new ONU, the U2000 applies

the configuration data that is backed up to the new ONU. In addition, the DC automatically creates an upgrade task. Choose **Administration > NE Software Management > NE Upgrade Task Management** from the main menu. Then, view the task information on the **NE Upgrade Task Management** tab page.

1.4 Moving an ONU

This topic describes how to move an ONU so that the ONU is connected to another optical splitter.

Context

An ONU can be moved only between ODN submaps where the same PON port is located. It cannot be moved to the ODN submap where another PON port is located.

Procedure

- 1 On the **Main Topology**, select the OLT to which the ONU is connected from the navigation tree, select the ONU subnode, right-click, and then choose **Move To**.
- 2 On the **Move ONU** interface, select the required splitter.
- 3 Click **OK**.

---End

1.5 Managing the SRG Web Service

The SRG is a service router gateway developed by Huawei. The SRG is a cost-effective security and access solution for small and medium-sized enterprise networks and the telecommunications networks.

Context

The web-manager function provides users with a simple and friendly Web configuration interface. Through this interface, users can operate and maintain the SRG conveniently.

The **NE Explorer** tab page is used to configure and manage the access services of the SRG, and the **Web LCT** tab page is used to configure and manage other services of the SRG, such as route configuration and security management.

Procedure

- 1 On the **Physical Root** navigation tree on the **Main Topology** tab page, double-click the required SRG device; or select the required **SRG** device, right-click, and then choose **NE Explorer**, the U2000 supports the automatic login of the Web interface of the SRG.

 **NOTE**

In certain circumstances, to log in to the **WEB LCT**, do as follows:

- Click the **WEB LCT** tab, set **User name** and **Password**, and then click **Referring** to log in to the Web management interface.
- The initial account and password for logging in to the LCT Web management interface are **admin** and **Admin@123** respectively.

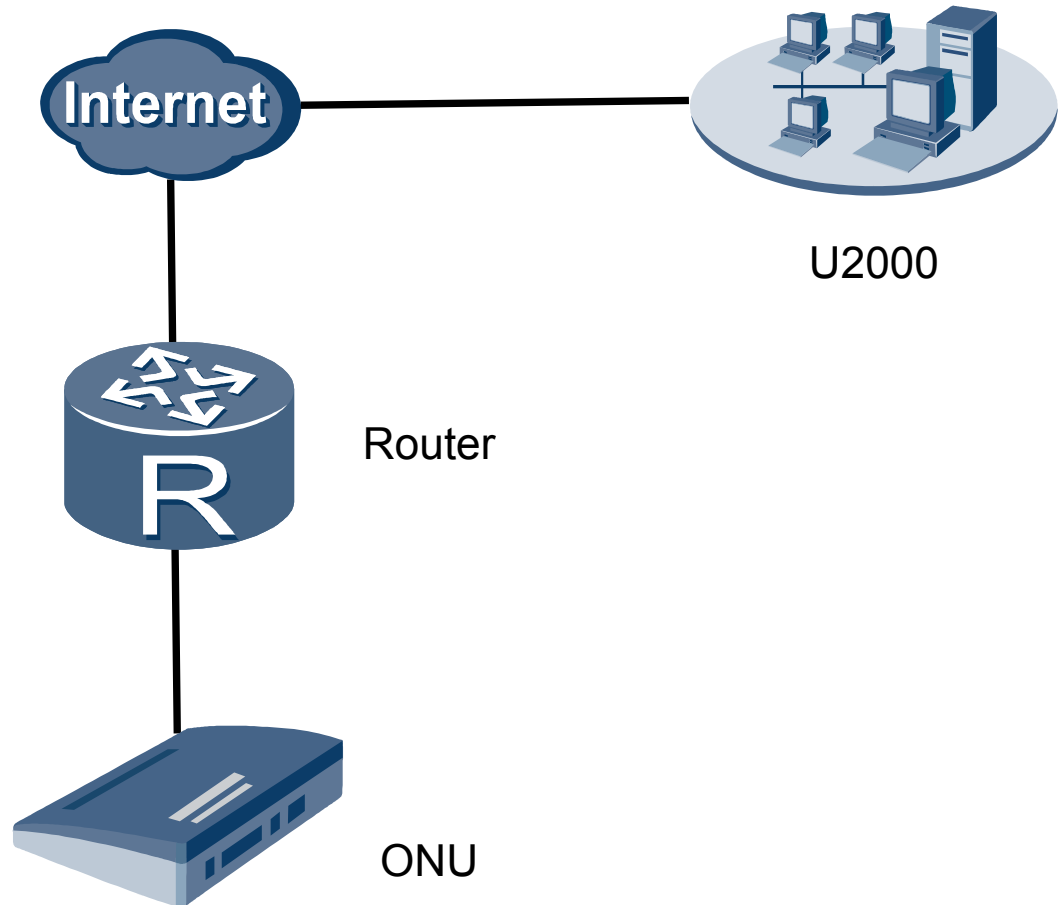
----End

1.6 Configuration Example of the Outband Management (Based on the SNMPv3 Protocol)

This topic provides an example for configuring the outband management to manage and maintain the ONU. In outband management the non-service channel is used to transmit the management information. With the use of the non-service channel, the management channel and the service channel are separated, which provides a more reliable management channel for the device compared with the inband management.

Example Network

After you add a static route to the U2000 on the ONU and set the related SNMP parameters, the U2000 manages and maintains the ONU in the outband management mode through the ETH port.

Figure 1-1 Example network of the outband management

Data Plan

Configuring the Data Plan for the Outband Management (U2000 Standalone System)

The IP address of the outband management interface on the ONU side and the IP address of the gateway must be in the same subnet. When the IP address of the outband management interface and the IP address of the U2000 are in different subnets, you need to configure the route information for forwarding the IP packets. The IP address of the destination host for the traps is the IP address of the U2000.

Table 1-2 Data plan for the outband network management in the standalone mode

Item	Data
Outband network management interface on the ONU	IP address: 10.10.21.2/24
U2000	IP address: 10.10.21.1/24
The IP address of the gateway of the ONU	IP address: 10.10.20.254/24
SNMP	User name: user1

Item	Data
	Group name: group1
	View user: hardy
	Authentication method: MD5 Authentication password: auth12345678
	Encryption method: DES Encryption password: pri12345678
	Version: V3

Configuring the Data Plan for the Outband Management (U2000 HA System)

- If the floating IP address allocation scheme is used, the active and standby U2000 servers use the floating IP address to communicate with the device. That is, the IP address of the destination host for the traps is the floating IP address. The IP address of the outband management interface on the ONU side and the IP address of the gateway must be in the same subnet. When the IP address of the outband management interface and the floating IP address of the U2000 are in different subnets, you need to configure the route information for forwarding the IP packets.
- If the floating IP address allocation scheme is not used, the IP addresses used for the communication between the active and standby servers and the device are different. The IP address of the outband management interface on the ONU side and the IP address of the gateway must be in the same subnet. When the IP address of the outband management interface and the IP addresses of the active and standby U2000 servers are in different subnets, you need to configure the route information for forwarding the IP packets.

Table 1-3 Data plan for the outband network management in the HA system

Item	Data
Outband network management interface on the ONU	IP address: 10.10.20.2/24
U2000 (adopting the method of allocating floating IP addresses)	Floating IP address: 10.10.21.1/24
U2000 (not adopting the method of allocating floating IP addresses)	IP address of the active server: 10.10.21.1/24
	IP address of the standby server: 10.10.21.2/24
The IP address of the gateway of the ONU	IP address: 10.10.20.254/24
SNMP	User name: user1
	Group name: group1
	View user: hardy

Item	Data
	Authentication method: MD5 Authentication password: auth12345678
	Encryption method: DES Encryption password: pri12345678
	Version: V3

Procedure

1 Procedures for configuring the outband network management on the device

Procedures for configuring the outband network management on the device in the standalone mode

1. Configure the IP address of the maintenance network port.

 **NOTE**

By default, the IP address of the maintenance network port is 10.11.104.2, and the subnet mask is 255.255.255.0.

```
huawei(config)#interface meth 0
```

```
huawei(config-if-meth0)#ip address 10.10.20.2 255.255.255.0
```

```
huawei(config-if-meth0)#quit
```

2. Add a route for the outband network management.

```
huawei(config)#ip route-static 10.10.21.0 24 10.10.20.254
```

3. Set the SNMP parameters.

- Set the SNMP user, group, and view.

```
- huawei(config)#snmp-agent usm-user v3 user1 group1 authentication-mode md5 auth12345678 privacy-mode des56 pri12345678
```

```
- huawei(config)#snmp-agent group v3 group1 authentication read-view hardy write-view hardy
```

```
- huawei(config)#snmp-agent mib-view hardy include ip
```

- (Optional) Set the administrator flag and contact.

```
huawei(config)#snmp-agent sys-info contact HW-075528780808
```

- (Optional) Set the location information about the device.

```
huawei(config)#snmp-agent sys-info location Shenzhen_China
```

- (Optional) Configure the engine ID of the SNMP entity.

```
huawei(config)#huawei(config)#snmp-agent local-engineid 0123456789
```

- Set the SNMP version.

 **NOTE**

The SNMP version must be consistent with the SNMP version set on the U2000. The following example assumes that the SNMP version on the U2000 is SNMP V3.

```
huawei(config)#snmp-agent sys-info version v3
```

4. Enable the sending of the trap packet.

- ```
huawei(config)#snmp-agent trap enable standard
```
5. Configure the IP address of the destination device of the trap packet.  

```
huawei(config)#snmp-agent target-host trap-hostname huawei address 10.10.21.1 trap-paramsname ABC
```

```
huawei(config)#snmp-agent target-host trap-paramsname ABC v3 securityname user1 privacy
```
  6. Configure the IP address of the maintenance network port as the source IP address of the trap packet.  

```
huawei(config)#snmp-agent trap source meth 0
```
  7. Save the data.  

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

Procedures for configuring the outband network management on the device in the HA system

- When the HA system adopts the method of allocating floating IP addresses, the procedures for configuring the outband network management on the device in the HA system is the same as the procedures for configuring the outband network management on the device in the standalone mode.
- The following describes how to configure the outband network management on the device when the HA system does not adopt the method of allocating floating IP addresses.
- Configure the IP address of the maintenance network port.  

```
huawei(config)#interface meth 0
```

```
huawei(config-if-meth0)#ip address 10.10.20.2 255.255.255.0
```
- Add the route for the outband network management.  

```
huawei(config)#ip route-static 10.10.21.0 24 10.10.20.254
```
- Set the SNMP parameters.
  - Set the SNMP user, group, and view.  


```
huawei(config)#snmp-agent usm-user v3 user1 group1 authentication-mode md5 auth12345678 privacy-mode des56 pri12345678
```

```
huawei(config)#snmp-agent group v3 group1 authentication read-view hardy write-view hardy
```

```
huawei(config)#snmp-agent mib-view hardy include ip
```
  - (Optional) Set the administrator flag and contact.  

```
huawei(config)#snmp-agent sys-info contact HW-075528780808
```
  - (Optional) Set the location information about the device.  

```
huawei(config)#snmp-agent sys-info location Shenzhen_China
```
  - (Optional) Configure the engine ID of the SNMP entity.  

```
huawei(config)#huawei(config)#snmp-agent local-engineid 0123456789
```
  - Set the SNMP version.  
 **NOTE**  
The SNMP version must be consistent with the SNMP version set on the U2000. The following example assumes that the SNMP version on the U2000 is SNMP V3.  

```
huawei(config)#snmp-agent sys-info version v3
```
- Enable the sending of the trap packet.  

```
huawei(config)#snmp-agent trap enable standard
```

- Configure the IP address of the destination device of the trap packet.  

```
huawei(config)#snmp-agent target-host trap-hostname huawei address 10.10.21.1 trap-paramsname ABC1
```

```
huawei(config)#snmp-agent target-host trap-paramsname ABC1 v3 securityname user1 privacy
```

```
huawei(config)#snmp-agent target-host trap-hostname huawei address 10.10.21.2 trap-paramsname ABC2
```

```
huawei(config)#snmp-agent target-host trap-paramsname ABC2 v3 securityname user1 privacy
```
- Configure the IP address of the maintenance network port as the source address of the trap packet.  

```
huawei(config)#snmp-agent trap source meth 0
```
- Save the data.  

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

## 2 Procedure for configuring the outband management on the U2000 side

The MDU that supports GE upstream transmission supports the SNMPv3 protocol.

1. Choose **Administration > NE Communicate Parameter > NE Access Protocol Parameters** from the main menu.
2. On the tab page, click **Reset**. In the dialog box that is displayed, click the **SNMPv1 Parameters** tab and then click **Add**.
3. In the dialog box that is displayed, set the name and SNMP parameters as follows:

The screenshot shows the 'Default Access Protocol Parameters' dialog box with the 'SNMPv3 Parameters' tab selected. It features a table with columns for Template Name, Version, Timeout Interval, Retries, Poll Interval, and NE Port. Below the table are input fields for Template Name (huawei), Version (SNMPv3), Retries (3), Poll Interval (1800), Timeout Interval (5), and NE Port (161). The 'SNMP v3 security params' section includes fields for NE User (user1), Context Name, Context Engine ID (012345678), Privacy protocol (DES), and Auth Protocol (HMACMD5). Buttons for OK and Cancel are at the bottom right.

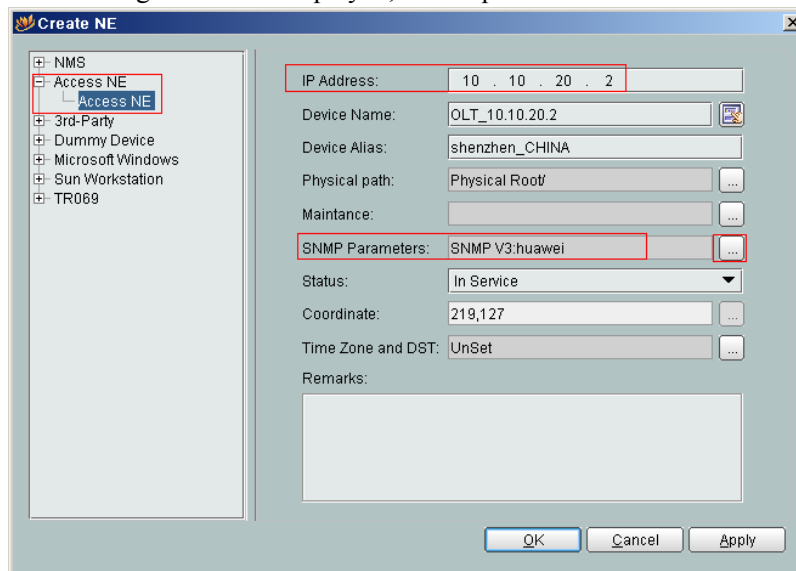
### NOTE

The SNMPv3 protocol supports three security levels: authentication, noauth, and privacy. To implement successful communication through the SNMPv3 protocol, ensure that the authentication and encryption modes of the SNMP user on the device, SNMP group, and the SNMP parameters on the U2000 are the same.

4. Click **OK**.



5. Select the added SNMP parameters. Click **OK**.
6. In the dialog box that is displayed, click **Yes**. Test the set SNMP parameters.
7. The U2000 displays the **Loading** dialog box. After the testing is complete, click **OK**.
8. In the physical root view page, right-click and then choose **New > NE**.
9. In the dialog box that is displayed, set the parameters.



10. Click **OK**.

----End

## Result

The U2000 can manage and maintain the ONU normally.

## 1.7 Configuration Example of the Inband Management

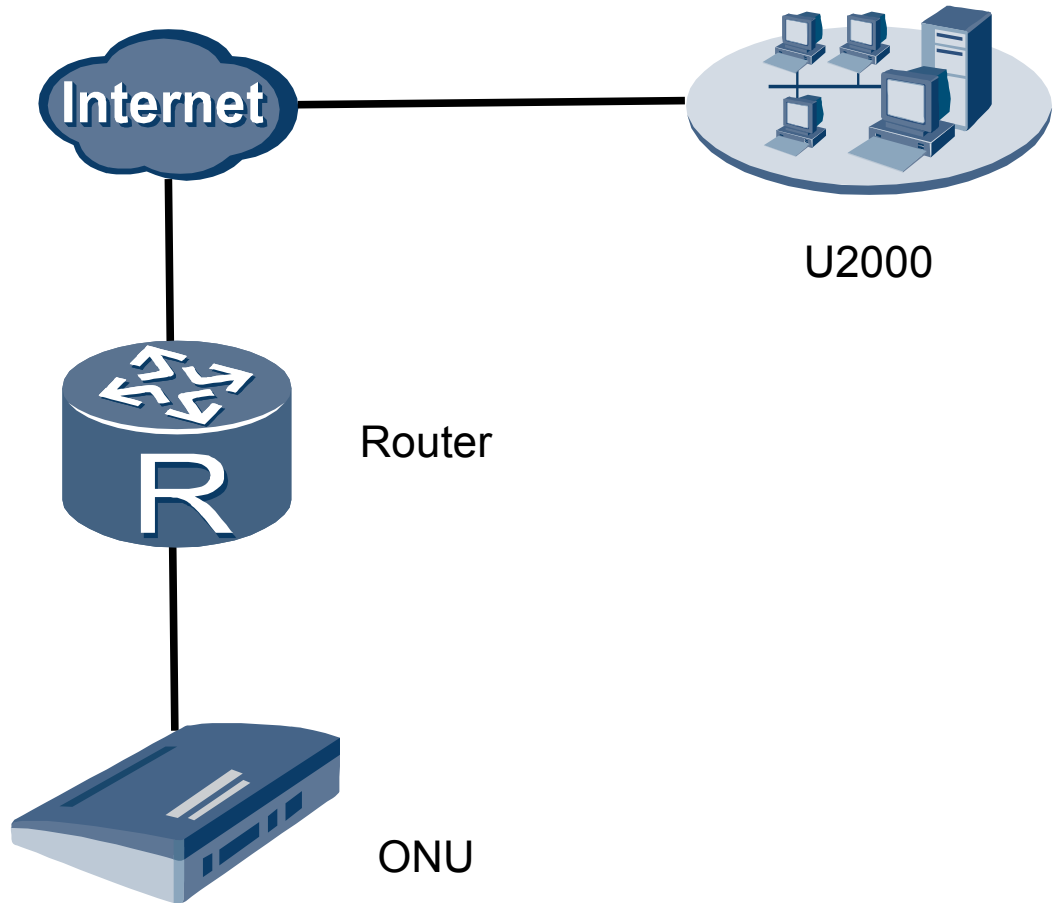
This topic provides an example for configuring the inband management to manage and maintain the ONU. The inband management transmits the management information through the service channel of the device. The inband management features the flexible networking without any adjunct device and low cost, but it is difficult to maintain.

### Example Network

After you add a static route to the U2000 on the ONU and set the related SNMP parameters, the U2000 manages and maintains the ONU in the inband management through the upstream port.

#### NOTE

The procedure for configuring inband management by means of the SNMPv1 protocol is similar to that by means of the SNMPv2c protocol. This topic considers the SNMPv1 protocol as an example.

**Figure 1-2** Example network of the inband management

## Data Plan

### Configuring the Data Plan for the Inband Management (U2000 Standalone System)

The IP address of the inband management interface on the ONU side and the IP address of the gateway must be in the same subnet. When the IP address of the inband management interface and the IP address of the U2000 are in different subnets, you need to configure the route information for forwarding the IP packets. The IP address of the destination host for the traps is the IP address of the U2000.

**Table 1-4** Data plan for the inband network management in the standalone mode

| Item                                           | Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ONU                                            | <ul style="list-style-type: none"> <li>● SNMP Profile: snmpprofile</li> <li>● Line Profile: lineprofile</li> <li>● Service Profile: serviceprofile</li> <li>● ONU Capacity Profile: ontprofile</li> <li>● Affiliated Port: 0/2/0</li> <li>● Name: 0/2/0</li> <li>● ONU ID: 1</li> <li>● Splitter Port ID: 1</li> <li>● Auth Way: SN</li> <li>● Key: 0123456789ABCDEF</li> <li>● Manager VLAN: 100</li> <li>● IP Address: 10.10.20.2</li> <li>● IP Address Mask: 255.255.0.0</li> </ul> |
| Inband network management interface on the ONU | IP address: 10.10.21.2/24                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| U2000                                          | IP address: 10.10.21.1/24                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| The IP address of the gateway of the ONU       | IP address: 10.10.20.254/24                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Get Community                                  | public                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Set Community                                  | private                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| SNMP Version                                   | V1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

Configuring the Data Plan for the Inband Management (U2000 HA System)

- If the floating IP address allocation scheme is used, the active and standby U2000 servers use the floating IP address to communicate with the device. That is, the IP address of the destination host for the traps is the floating IP address. The IP address of the inband management interface on the ONU side and the IP address of the gateway must be in the same subnet. When the IP address of the inband management interface and the floating IP address of the U2000 are in different subnets, you need to configure the route information for forwarding the IP packets.
- If the floating IP address allocation scheme is not used, the IP addresses used for the communication between the active and standby servers and the device are different. The IP address of the inband management interface on the ONU side and the IP address of the gateway must be in the same subnet. When the IP address of the inband management interface and the IP addresses of the active and standby U2000 servers are in different subnets, you need to configure the route information for forwarding the IP packets.

**Table 1-5** Data plan for the inband network management in the HA system

| Item                                                                | Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ONU                                                                 | <ul style="list-style-type: none"> <li>● SNMP Profile: snmpprofile</li> <li>● Line Profile: lineprofile</li> <li>● Service Profile: serviceprofile</li> <li>● ONU Capacity Profile: ontprofile</li> <li>● Affiliated Port: 0/2/0</li> <li>● Name: 0/2/0</li> <li>● ONU ID: 1</li> <li>● Splitter Port ID: 1</li> <li>● Auth Way: SN</li> <li>● Key: 0123456789ABCDEF</li> <li>● Manager VLAN: 100</li> <li>● IP Address: 10.10.20.2</li> <li>● IP Address Mask: 255.255.0.0</li> </ul> |
| Inband network management interface on the ONU                      | IP address: 10.10.20.2/24                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| U2000 (adopting the method of allocating floating IP addresses)     | Floating IP address: 10.10.21.1/24                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| U2000 (not adopting the method of allocating floating IP addresses) | IP address of the active server: 10.10.21.1/24                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                     | IP address of the standby server: 10.10.21.2/24                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| The IP address of the gateway of the ONU                            | IP address: 10.10.20.254/24                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Get Community                                                       | public                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Set Community                                                       | private                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| SNMP Version                                                        | V1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Procedure

### 1 Procedures for configuring the inband network management on the device


Procedures for configuring the inband network management on the device in the standalone mode

The SNMP parameters must be consistent with the SNMP parameters on the U2000. Configure the parameters according to the actual requirements.

1. Configure the IP address of the inband network management port.

 **NOTE**

If the packet transmitted from the upstream port is untagged, run the **native-vlan** command to configure the native VLAN of the upstream port to be the same as the VLAN of the upstream port.

- a. Create the network management VLAN.  
huawei(config)#**vlan 1000 standard**
  - b. Add the upstream ports.  
huawei(config)#**port vlan 1000 0/0 0**
  - c. Enter the U2000 VLAN interface.  
huawei(config)#**interface vlanif 1000**
  - d. Configure the IP address of the U2000 VLAN interface.  
huawei(config-if-Vlanif1000)#**ip address 10.10.20.2 255.255.255.0**  
huawei(config-if-vlanif1000)#**quit**
2. Add a route for the inband network management.  
huawei(config)#**ip route-static 10.10.21.0 24 10.10.20.254**
  3. Set the SNMP parameters.
    - Set the community name and access rights.  
huawei(config)#**snmp-agent community read public**  
huawei(config)#**snmp-agent community write private**
    - (Optional) Set the administrator flag and contact.  
huawei(config)#**snmp-agent sys-info contact HW-075528780808**
    - (Optional) Set the location information about the device.  
huawei(config)#**snmp-agent sys-info location Shenzhen\_China**
    - Set the SNMP version.  
 **NOTE**  
The SNMP version must be consistent with the SNMP version set on the U2000. The following example assumes that the SNMP version on the U2000 is SNMP V1.  
huawei(config)#**snmp-agent sys-info version v1**
  4. Enable the sending of the trap packet.  
huawei(config)#**snmp-agent trap enable**
  5. Configure the IP address of the destination device of the trap packet.  
huawei(config)#**snmp-agent target-host trap-hostname huawei address 10.10.21.1 trap-paramsname ABC**  
huawei(config)#**snmp-agent target-host trap-paramsname ABC v1 securityname private**
  6. Set the source IP address of the trap packet.  
huawei(config)#**snmp-agent trap source vlanif 1000**
  7. Save the data.  
huawei(config)#**save**

Procedures for configuring the inband network management on the device in the HA system

- When the HA system adopts the method of allocating floating IP addresses, the procedures for configuring the inband network management on the device is the same as the procedure for configuring the inband network management on the device in the standalone mode.
- The following describes how to configure the inband network management on the device when the HA system does not adopt the method of allocating floating IP addresses.

1. Configure the IP address of the inband network management port.

 **NOTE**

If the packet transmitted from the upstream port is untagged, run the **native-vlan** command to configure the native VLAN of the upstream port to be the same as the VLAN of the upstream port.

- a. Create the network management VLAN.

```
huawei(config)#vlan 1000 standard
```

- b. Add the upstream ports.

```
huawei(config)#port vlan 1000 0/0 0
```

- c. Enter the U2000 VLAN interface.

```
huawei(config)#interface vlanif 1000
```

- d. Configure the IP address of the U2000 VLAN interface.

```
huawei(config-if-Vlanif1000)#ip address 10.10.20.2 255.255.255.0
```

```
huawei(config-if-vlanif1000)#quit
```

2. Add a route for the inband network management.

```
huawei(config)#ip route-static 10.10.21.0 24 10.10.20.254
```

3. Set the SNMP parameters.

- Set the community name and access rights.

```
huawei(config)#snmp-agent community read public
```

```
huawei(config)#snmp-agent community write private
```

- (Optional) Set the administrator flag and contact.

```
huawei(config)#snmp-agent sys-info contact HW-075528780808
```

- (Optional) Set the location information about the device.

```
huawei(config)#snmp-agent sys-info location Shenzhen_China
```

- Set the SNMP version.

 **NOTE**

The SNMP version must be consistent with the SNMP version set on the U2000. The following example assumes that the SNMP version on the U2000 is SNMP V1.

```
huawei(config)#snmp-agent sys-info version v1
```

4. Enable the sending of the trap packet.

```
huawei(config)#snmp-agent trap enable
```

5. Configure the IP address of the destination device of the trap packet.

```
huawei(config)#snmp-agent target-host trap-hostname huawei address 10.10.21.1
trap-paramsname ABC1
```

```
huawei(config)#snmp-agent target-host trap-paramsname ABC1 v1 securityname
private
```

```
huawei(config)#snmp-agent target-host trap-hostname huawei address 10.10.21.2
trap-paramsname ABC2
```

```
huawei(config)#snmp-agent target-host trap-paramsname ABC2 v1 securityname
private
```

6. Set the source IP address of the trap packet.

```
huawei(config)#snmp-agent trap source vlanif 1000
```

7. Save the data.

huawei(config)#save

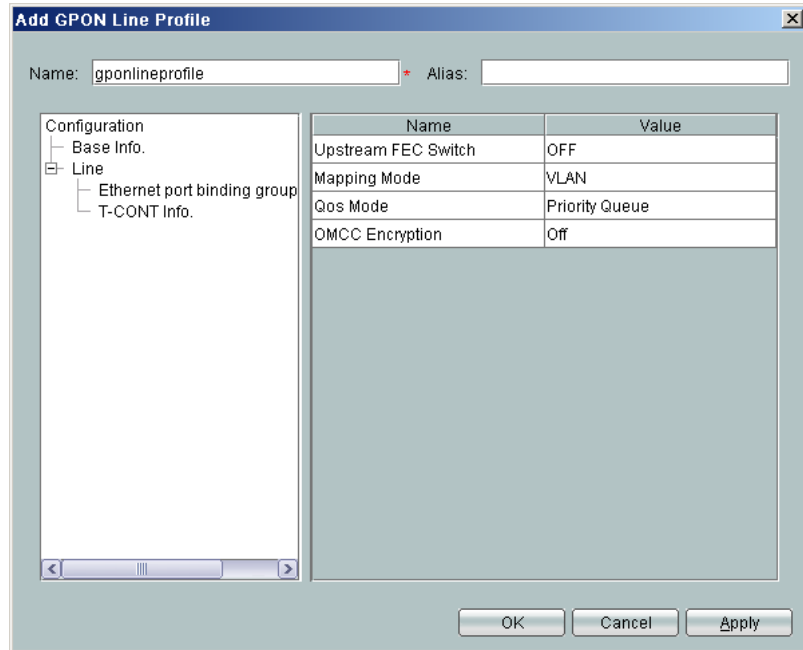
## 2 Procedure for configuring the inband management on the U2000 side

The MDU that supports GPON upstream transmission is considered as an example.

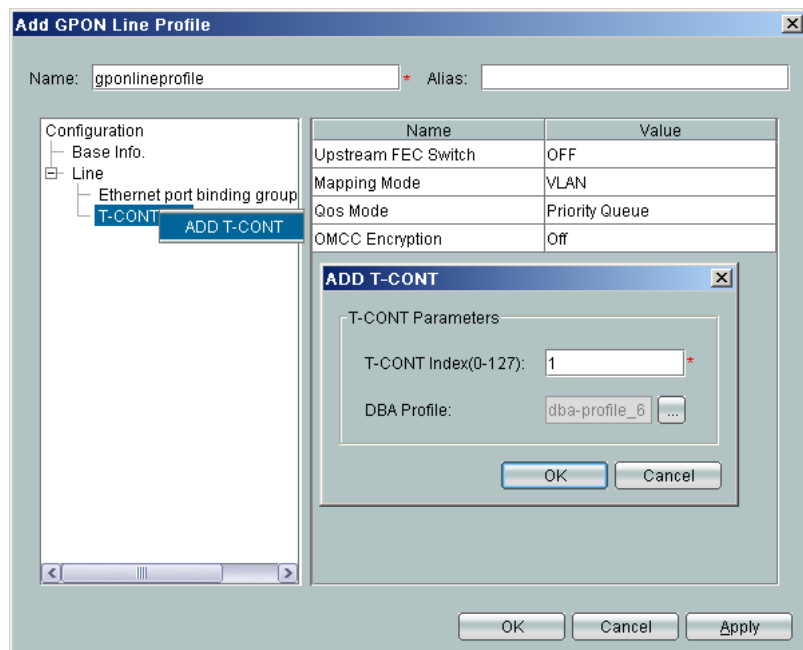
1. Configuring an MDU SNMP Profile
  - a. Choose **Configuration** > **Access Profile Management** > **MDU SNMP Profile** from the main menu.
  - b. Right-click and choose **Add Global Profile** from the shortcut menu.
  - c. In the dialog box that is displayed, set the parameters.

| Profile Parameter        |               |
|--------------------------|---------------|
| Name:                    | snmpprofile * |
| Alias:                   |               |
| SNMP Version:            | v1 *          |
| Read Name:               | public *      |
| Write Name:              | private *     |
| Trap Host IP:            | 10.10.21.1 *  |
| Trap UDP Port (1-65535): | 162 *         |
| SNMP Security Name:      | public *      |

- d. Click **OK**.
  - e. In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - f. In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. Configuring a GPON Line Profile
  - a. Choose **Configuration** > **Access Profile Management** > **GPON Profile** from the main menu.
  - b. Click the **GPON Line Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
  - c. In the dialog box that is displayed, set the parameters.
    - 1) Choose **Basic Info** from the navigation tree, and then set the basic parameters of the profile.



- 2) Choose **T-CONT Info.** from the navigation tree, right-click, and then choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set **T-CONT Index** and **DBA Profile**.



### CAUTION

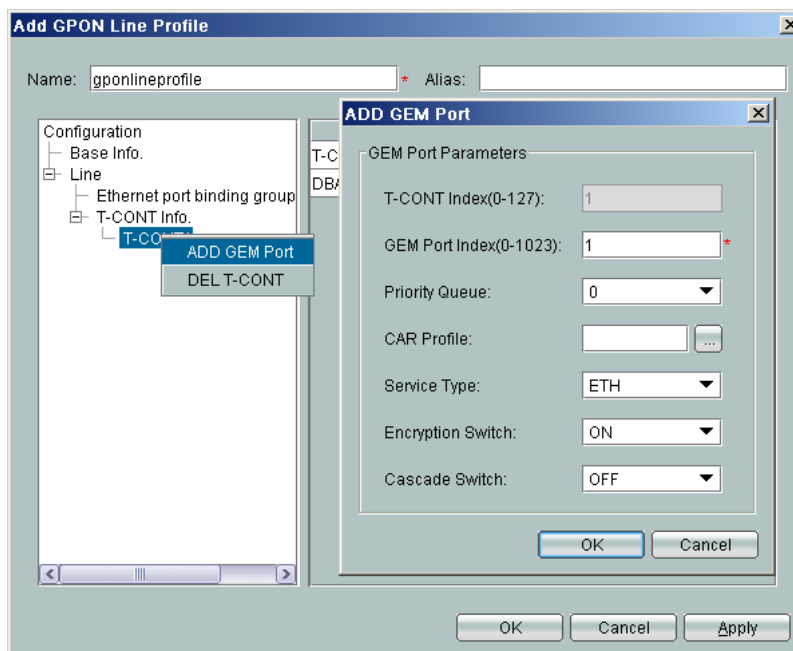
It is recommended that you do not set **T-CONT Index** to **0**. TCONT 0 is reserved for the internal communication of the GPON protocol.

- 3) Choose **T-CONTx** from the navigation tree, right-click, and then choose **ADD GEM Port** from the shortcut menu. In the dialog box that is displayed, set **GEM Port Index**.



 **NOTE**

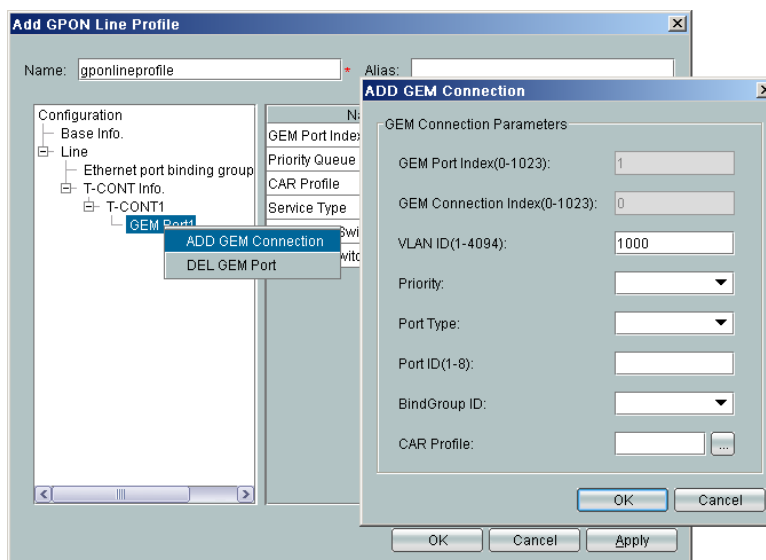
x indicates the T-CONT index.



- 4) Choose **GEM Port<sub>x</sub>** from the navigation tree, right-click, and then choose **ADD GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the basic parameters of the GEM connection.

 **NOTE**

x indicates the GEM port index.



- d. Click **OK**.
  - e. In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - f. In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. Adding the MDU That Supports GPON Upstream Transmission
    - a. On the topological navigation tree, select the required ODN under the OLT node. Select the splitter under the ODN, right-click, and then choose **New > ONU**; or select

- the splitter under the ODN, right-click the blank area on the **Physical Root** interface on the right side, and then choose **New > ONU**.
- b. On the interface that is displayed, set the parameters on the **Basic Parameters** and **Network Management Channel Parameters** tab pages (on this interface, the ONU that supports the GPON upstream mode is considered as an example).

**Add ONU Info**

Affiliated Port: 0/2/0 \* Splitter ID: Splitter(L1)

Name: ONU \* Alias:

ONU ID(0-127):  Auto Assign 127 \* Splitter Port ID(1-128): 1

ONU Type: MDU

Protection Role

**Basic Parameters** | Network Management Channel Parameters

Line Profile: ... \* Service Profile: ...

Optic Alarm Profile: ... ONU VAS Profile: ...

**Auth Info**

Auth Way: MAC Address \*  
MAC Address: - - - - - \* Key: \*  
LOID: \* CHECKCODE: \*  
Auth Mode: Always On \* Time Out(h)(1-168):  Disable \*

**Extend Information**

DHCP Status  P1TP Status IGMP Mode: CTC

**ONU Type**

Vendor ID: ... Terminal Type: ...  
Software Version: ...

OK Cancel Apply

**NOTE**

- When the OLT works in the profile mode, the ONU that supports the EPON upstream mode needs to be bound with the EPON line profile and the EPON service profile.
  - When the OLT works in the profile mode, the ONU that supports the GPON upstream mode needs to be bound with the GPON line profile and the GPON service profile.
  - When the OLT works in the distributed mode, the ONU that supports the GPON upstream mode needs to be bound with the ONU capacity profile.
  - When the **OLT sets network management channel parameters** check box is cleared, ONUs are configured and managed remotely on the OLT through the OMCI protocol.
  - When the **OLT sets network management channel parameters** check box is selected, ONUs are configured and managed remotely on the OLT through the SNMP protocol.
  - Do not add the SNMP parameters on the ONU through the serial port, but issue the SNMP profile from the OLT to the ONU only.
- c. Click **OK**.
- d. In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- e. Choose **VLAN** from the navigation tree.
- f. On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- g. In the dialog box that is displayed, set the parameters.
- VLAN ID: 4000
  - Type: Smart VLAN
- h. Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4
- i. Click **Finish**.
- j. Choose **GPON > GPON ONU** from the navigation tree.
- k. On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
- l. In the information list, select the record where the shelf, slot, port, and ONU IDs are 0, 2, 1, and 0 respectively and click the **ServicePort Info** tab in the lower pane.
- m. On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- n. In the dialog box that is displayed, set the parameters.
  - Connection Type: LAN-GPON
  - VLAN ID: 4000
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 4000
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)
- o. Click **OK**.

----End

## Result

After the parameters on the element management system (EMS) are configured successfully, the U2000 can manage and maintain the ONU normally.

# 2 Configuring the VLAN Stacking Wholesale Service

---

## About This Chapter

The VLAN stacking is a service by which the subscribers can access their corresponding ISP service in batches based on some rules.

### Context

The wholesale service allows the subscribers to access their own ISP service in batches based on some rules when the L2 metropolitan area network has many ISPs.

The Stacking VLAN packets contain the inner and outer VLAN tags allocated by the ONU. The packets can be applied to the upper BRAS for performing the dual VLAN authentication and adding to the number of access subscribers.

#### [2.1 Introduction to the VLAN Stacking Wholesale Service](#)

VLAN stacking refers to the stacking of the 802.1Q tags. It allows the device to add two 802.1Q VLAN tags to an untagged user packet or change a tagged user packet into a packet with two 802.1Q VLAN tags. The packet with two VLAN tags can then be transmitted over the backbone network of the service provider. When the packet reaches the BRAS, the BRAS authenticates the packet based on the two VLAN tags, or removes the outer VLAN tag and identifies the user by the inner VLAN tag.

#### [2.2 Configuring the VLAN Stacking Wholesale Service](#)

This topic describes how to configure the VLAN stacking wholesale service on the ONU in the FTTx networking scenario.

#### [2.3 Application Example: Configuring the VLAN Stacking Wholesale Service](#)

Based on the example network, this topic describes how to configure the VLAN Stacking Wholesale Service.

## 2.1 Introduction to the VLAN Stacking Wholesale Service

VLAN stacking refers to the stacking of the 802.1Q tags. It allows the device to add two 802.1Q VLAN tags to an untagged user packet or change a tagged user packet into a packet with two 802.1Q VLAN tags. The packet with two VLAN tags can then be transmitted over the backbone network of the service provider. When the packet reaches the BRAS, the BRAS authenticates the packet based on the two VLAN tags, or removes the outer VLAN tag and identifies the user by the inner VLAN tag.

### Background

The VLAN stacking feature allows the ONU to add an inner 802.1Q VLAN tag and an outer 802.1Q VLAN tag to an access user packet. The packet with two VLAN tags is transmitted to the layer-2 switching network, and forwarded to the ISP network according to the outer VLAN tag.

Wholesale service: In a layer-2 metropolitan area network, there may exist multiple Internet service providers (ISPs). The services of these ISPs need to be delivered to their respective users quickly. Therefore, the outer VLAN tag is used to identify the ISP and the inner VLAN tag is used to identify the user. In this way, different user groups with different outer VLAN tags can access the specified ISP networks and obtain the services provided by the ISPs.

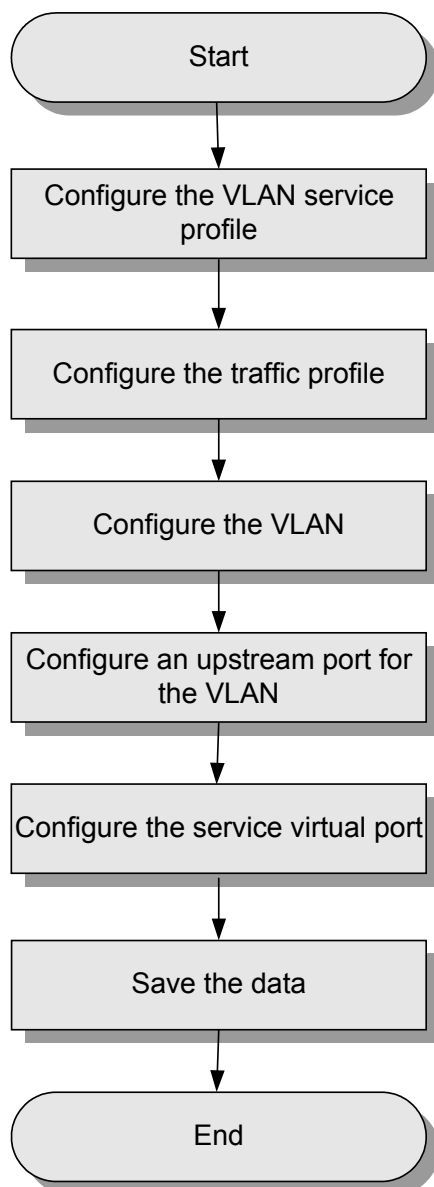
## 2.2 Configuring the VLAN Stacking Wholesale Service

This topic describes how to configure the VLAN stacking wholesale service on the ONU in the FTTx networking scenario.

### Context

[Figure 2-1](#) shows the flowchart for configuring the VLAN Stacking Wholesale Service.

**Figure 2-1** Flowchart for configuring the VLAN Stacking Wholesale Service



## 2.3 Application Example: Configuring the VLAN Stacking Wholesale Service

Based on the example network, this topic describes how to configure the VLAN Stacking Wholesale Service.

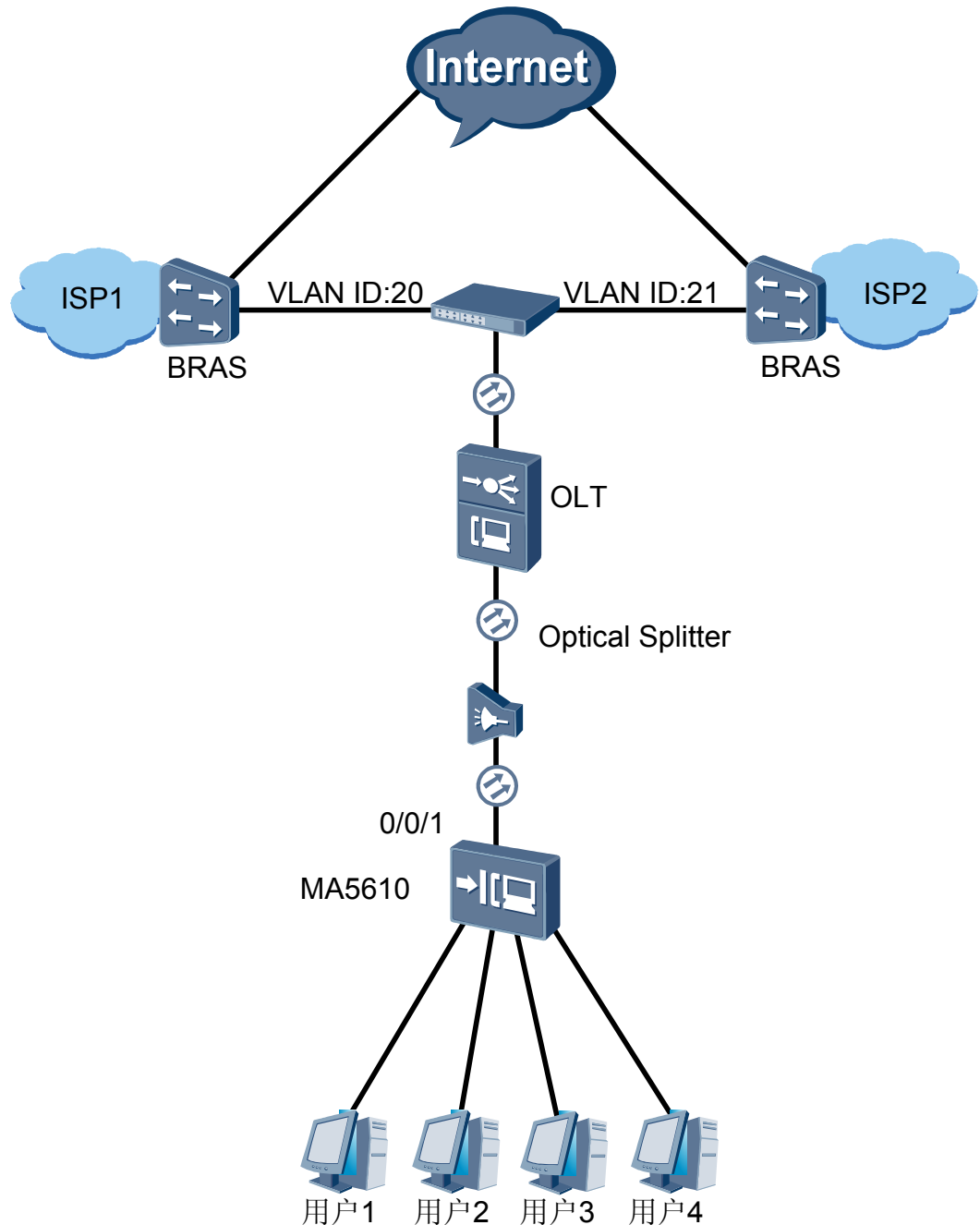
### Prerequisite

The devices are connected according to the example network as shown in the figure [Figure 2-2](#) and the devices work in the normal state.

## Context

Figure 2-2 shows an example network of the VLAN Stacking Wholesale Service.

Figure 2-2 Example network of the VLAN Stacking Wholesale Service



Users 1 and 2 belong to one ISP, and users 3 and 4 belong to another ISP. Based on the VLAN stacking feature, the ONU adds the outer VLAN tag to differentiate ISPs and inner VLAN tag to differentiate users and forwards the user packet to the L2 network. Then the switch at the L2 forwards the user packets to the specified ISP BRAS based on the outer VLAN tag. The BRASs



of the user's ISP remove the outer VLAN tag and identify the users based on the inner VLAN tag. After passing the authentication, the users can obtain various services provided by the ISP.

## Data Plan

**Table 2-1** provides the data plan for configuring the VLAN Stacking Wholesale Service.

**Table 2-1** Data plan for configuring the VLAN Stacking Wholesale Service

| Item Data       | Data                                                                                            |
|-----------------|-------------------------------------------------------------------------------------------------|
| Upstream port   | 0/0/1                                                                                           |
| ISP1 user group | Upstream VLAN ID (outer VLAN tag): 20<br>VLAN type: Smart VLAN<br>VLAN attribute: Stacking VLAN |
|                 | User 1:<br>● Inner VLAN tag: 11                                                                 |
|                 | User 2:<br>● Inner VLAN tag: 12                                                                 |
| ISP2 user group | Upstream VLAN ID (outer VLAN tag): 21<br>VLAN type: Smart VLAN<br>VLAN attribute: Stacking VLAN |
|                 | User 3:<br>● Inner VLAN tag: 11                                                                 |
|                 | User 4:<br>● Inner VLAN tag: 12                                                                 |

## Procedure

- 1 Configuring the VLAN Service Profile.
  1. Choose **Configuration > Access Profile Management > VLAN Service Profile** from the main menu.
  2. Right-click and choose **Add Global Profile** from the shortcut menu.
  3. In the dialog box that is displayed, set the parameters.
    - Name: Vservice\_profile
    - Forwarding Mode: vlan-mac
  4. Click **OK**.
  5. Select the VLAN Service Profile, right-click, and then choose **Download to NE**.
  6. In the dialog box that is displayed, select the required MDU, and then click **OK**.
- 2 Configure the MEF IP traffic profile.

1. Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  2. Click the **MEF IP Traffic Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
  3. In the dialog box that is displayed, set the MEF IP traffic profile parameters **Name** to **ip\_profile** and **CIR** to **3072kbit/s**.
  4. Click **OK**.
  5. Select the MEF IP traffic profile, right-click, and then choose **Download to NE**.
  6. In the dialog box that is displayed, select the required MDU, and then click **OK**.
- 3 Adding a VLAN and configuring an Upstream Port.**
1. In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
  2. Choose **VLAN** from the navigation tree. On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
  3. Right-click the list, and then choose **Batch Add**.
  4. In the dialog box that is displayed, select **Base Info.**, set the parameters.
    - **Start VLAN ID: 20.**
    - **End VLAN ID: 21.**
    - **Type: Smart VLAN.**
    - **Attribute: Stacking.**
  5. Click **Next**, configure an Upstream Port, set 0/0/1 as the upstream port of the VLAN.
  6. Click **Done**.
- 4 Configure a service virtual port.**
1. In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
  2. Choose **Connection > Service Port** from the navigation tree.
  3. On the **Service Port** tab page, set the filter criteria to display the required service virtual ports. Right-click the list, and then choose **Add**.
  4. In the dialog box that is displayed, set the parameters.
    - In the **Attribute** field, set **Port Type** to **ETHER** and **Service Type** to **Muti-Service VLAN**.
    - In the **Network Side** field, set **VLAN Choice** to **Stacking VLAN**, **Outer VLAN ID** to **20**, and **Inner VLAN ID** to **11**.
    - In the **User Side** field, set **Interface Selection** to **0/2/0** and **User VLAN** to **11**.
    - Click **OK**.
  5. Configure the service virtual ports for users 2, 3, and 4 according to the data plan.
- 5 Save the data.**
1. On the tab page that is displayed, choose **NE Properties > Auto Save Configuration** from the navigation tree.
  2. In the right pane, set **Save Type** to **All**, select the **Enable Auto Save** check box, and then select **Absolute Period** or **Relative Period**.

3. Click **Apply**.

---**End**



# 3 Configuring the QinQ VLAN Private Line Service

---

## About This Chapter

QinQ VLAN is used in the private line services of enterprise private networks to provide safe channels for the data transmission between the enterprise private networks.

### Context

The private line service allows the private network services to be transparently transmitted to the peer end, for example, on an intranet.

To communicate with each other, users that are on the same private network but at different locations are connected to the public network through the ONU respectively. On the ONU, configure the upstream VLAN for user packets from the private network to have the QinQ attribute. In this way, the packet has two VLAN tags: an inner VLAN tag from the private network and an outer VLAN tag from the public network. Through the outer VLAN tag, the packet is transparently transmitted to the peer private network user. In this way, private network users can communicate with each other.

#### [3.1 Introduction to the QinQ VLAN Private Line Service](#)

QinQ VLAN is a tunnel protocol based on the 802.1Q encapsulation. QinQ VLAN adds an 802.1Q tag to a VLAN packet that already has an 802.1Q tag from the private network so that this VLAN packet can be transparently transmitted from the private network to the layer-2 VPN through the public network.

#### [3.2 Configuring the QinQ VLAN Leased Line Service](#)

This topic describes how to configure the QinQ VLAN Leased Line Service on the ONU in the FTTx networking scenario.

#### [3.3 Application Example: Configuration the QinQ VLAN Leased Line Service](#)

Based on the example network, this topic describes how to configure the QinQ VLAN Leased Line Service.

## 3.1 Introduction to the QinQ VLAN Private Line Service

QinQ VLAN is a tunnel protocol based on the 802.1Q encapsulation. QinQ VLAN adds an 802.1Q tag to a VLAN packet that already has an 802.1Q tag from the private network so that this VLAN packet can be transparently transmitted from the private network to the layer-2 VPN through the public network.

### Background

The ONU receives a packet with a private VLAN tag and uses the QinQ (802.1Q in 802.1Q) feature to add a public VLAN tag (that is, the QinQ VLAN tag) to the packet. The packet with the private VLAN tag is forwarded to the peer ONU over the public network according to its outer public VLAN tag. The peer ONU removes the outer VLAN tag and transmits the packet to the peer private network.

The ONU also supports the transparent transmission of BPDU packets from a private network to its peer private network by using the QinQ VLAN private line service.

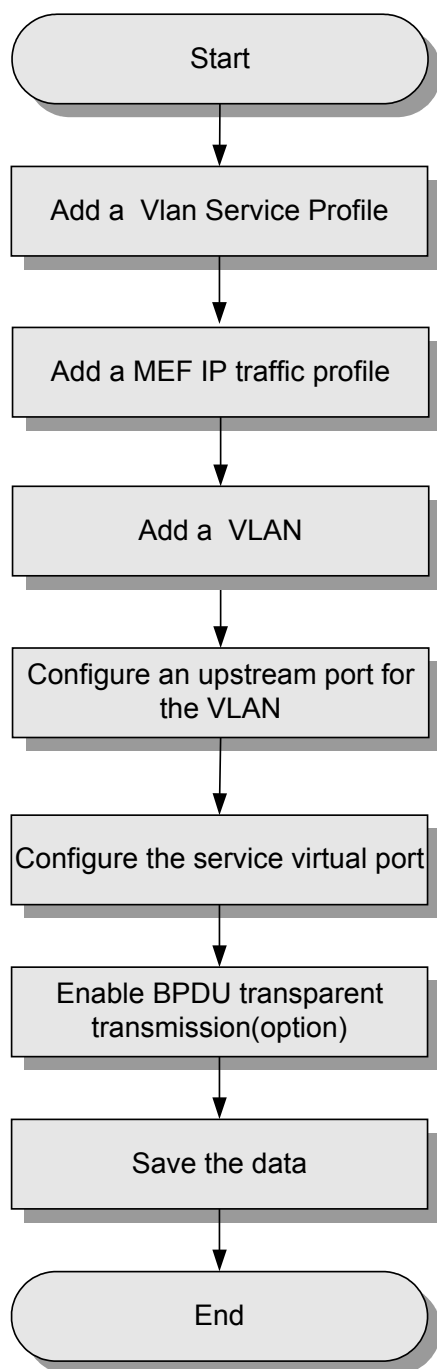
## 3.2 Configuring the QinQ VLAN Leased Line Service

This topic describes how to configure the QinQ VLAN Leased Line Service on the ONU in the FTTx networking scenario.

### Context

[Figure 3-1](#) shows the flowchart for configuring the QinQ VLAN Leased Line Service.

**Figure 3-1** Flowchart for configuring the QinQ VLAN Leased Line Service



### 3.3 Application Example: Configuration the QinQ VLAN Leased Line Service

Based on the example network, this topic describes how to configure the QinQ VLAN Leased Line Service.

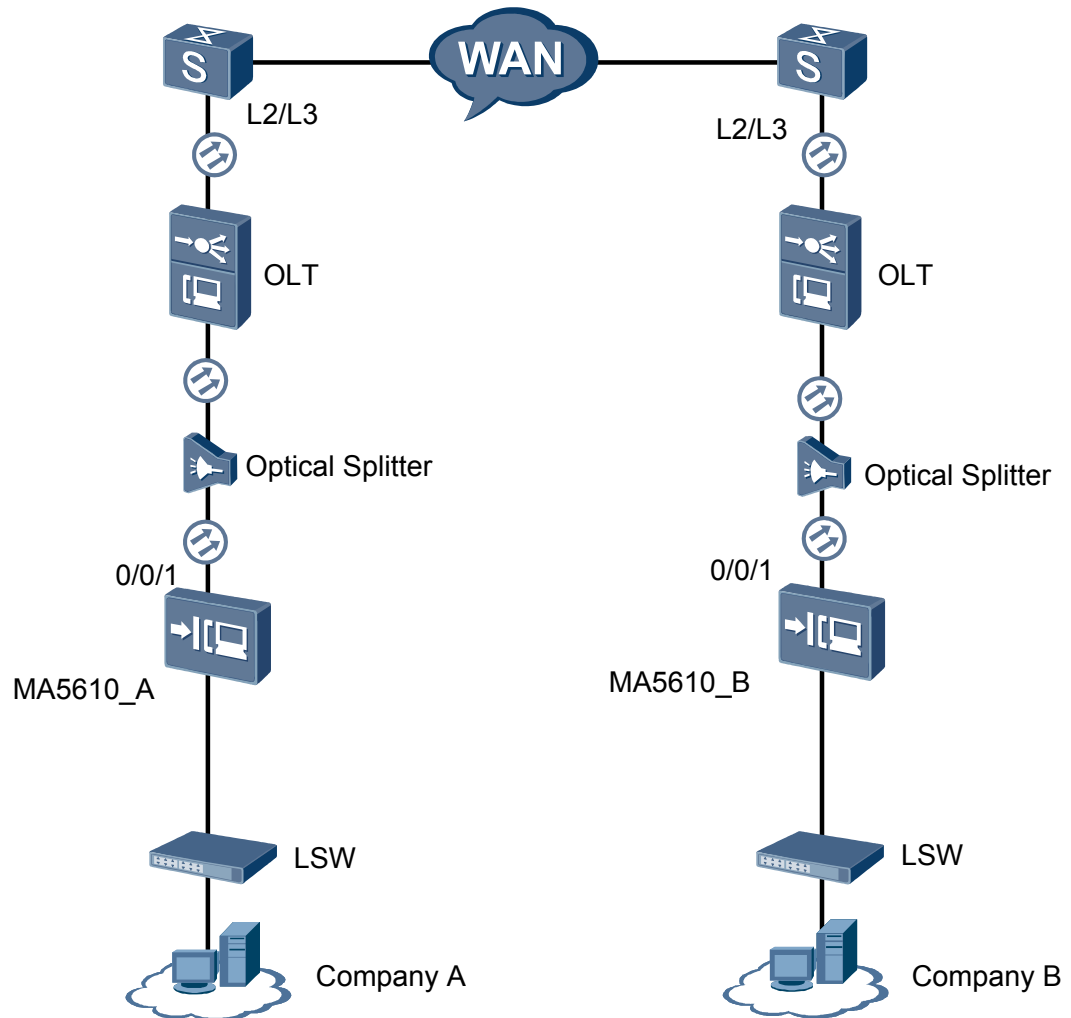
## Prerequisite

The devices are connected according to the example network as shown in the figure [Figure 3-2](#) and the devices work in the normal state.

## Context

[Figure 3-2](#) shows an example network of the QinQ VLAN Leased Line Service.

**Figure 3-2** Example network of the QinQ VLAN Leased Line Service



Two offices of the enterprise are connected to the metropolitan area network (MAN) through ONU\_A and ONU\_B respectively. After the QinQ VLAN private line service is configured on the ONU, the services can be transparently transmitted between the two offices within the enterprise private network over the public network.

## Data Plan


[Table 3-1](#) provides the data plan for configuring the QinQ VLAN Leased Line Service.



**Table 3-1** Data plan for configuring the QinQ VLAN Leased Line Service

| Item Data | Data                                                                      |
|-----------|---------------------------------------------------------------------------|
| ONU_A     | Upstream port: 0/0/1                                                      |
|           | Upstream VLAN ID: 10<br>VLAN type: Smart VLAN<br>VLAN attribute: QinQ     |
|           | BPDU transparent transmission: enabled                                    |
|           | Traffic profile: ip_profile, with the permitted access rate of 3072kbit/s |
| ONU_B     | The same as the data plan ofONU_A                                         |

## Procedure

- 1 Configuring the VLAN Service Profile.
  1. Choose **Configuration > Access Profile Management > VLAN Service Profile** from the main menu.
  2. Right-click and choose **Add Global Profile** from the shortcut menu.
  3. In the dialog box that is displayed, set the **Name** of the VLAN Service Profile as **Vservice\_profile**, and then select **Enable** for the **BPDU Tunnel**.
  4. Click **OK**.
  5. Select the VLAN Service Profile, right-click, and then choose **Download to NE**.
  6. In the dialog box that is displayed, select the required MDU, and then click **OK**.
- 2 Configure the MEF IP traffic profile.
  1. Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  2. Click the **MEF IP Traffic Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
  3. In the dialog box that is displayed, set the MEF IP traffic profile parameters **Name** to **ip\_profile** and **CIR** to **3072kbit/s**.
  4. Click **OK**.
  5. Select the MEF IP traffic profile, right-click, and then choose **Download to NE**.
  6. In the dialog box that is displayed, select the required MDU, and then click **OK**.
- 3 Adding a VLAN and configuring an Upstream Port.
  1. In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
  2. Choose **VLAN** from the navigation tree. On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
  3. Right-click the list, and then choose **Add**.
  4. In the dialog box that is displayed, select **Base Info.**, set the parameters.

- **VLANID: 10.**
  - **Type: Smart VLAN.**
  - **Attribute: QinQ.**
5. Click **Next**, configure an Upstream Port, set 0/0/1 as the upstream port of the VLAN.
  6. Click **Done**.
- 4** Configure a service virtual port.
1. In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
  2. Choose **Connection > Service Port** from the navigation tree.
  3. On the **Service Port** tab page, set the filter criteria to display the required service virtual ports. Right-click the list, and then choose **Add**.
  4. In the dialog box that is displayed, set the parameters.
    - In the **Attribute** field, set **Port Type** to **ETHER** and **Service Type** to **Muti-Service VLAN**.
    - In the **Network Side** field, set **VLAN Choice** to **Smart VLAN** and **VLAN ID** to **10**.
    - In the **User Side** field, set **Interface Selection** to **0/2/0**.
    - Click **OK**.
  5. Click **OK**.
- 5** Save the data.
1. On the tab page that is displayed, choose **NE Properties > Auto Save Configuration** from the navigation tree.
  2. In the right pane, set **Save Type** to **All**, select the **Enable Auto Save** check box, and then select **Absolute Period** or **Relative Period**.
  3. Click **Apply**.

---End

# 4 Configuring the Dual GE Link Aggregation Upstream Transmission

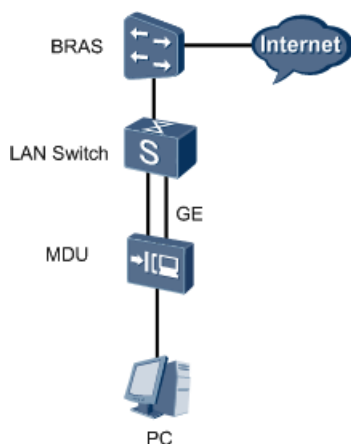
This topic describes how to configure the dual GE link aggregation upstream transmission. The ONU supports the networking application of the dual GE link aggregation upstream transmission and provides services for community users as a Mini DSLAM device. Port aggregation means that two GE upstream ports of the ONU are aggregated to increase the bandwidth and balance the input and output load between member ports. **Currently, the MA5616 supports the dual GE link aggregation upstream transmission.**

## Example Network

**Figure 4-1** shows an example network of the dual GE link aggregation upstream transmission.

The PC is connected to the Ethernet access port of the ONU. The user packets are sent to the ONU through the port and then sent upstream to the upper-layer network through the upstream GE port on the control card of the device.

**Figure 4-1** Example network of the dual GE link aggregation upstream transmission



## Data Plan

**Table 4-1** describes the data plan for the dual GE link aggregation upstream transmission.

**Table 4-1** Data plan for the dual GE link aggregation upstream transmission


| Item                                    | Data                                                                                                                                                                                                                                                                                           | Remarks                                                                                                                                                                                                                                         |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Traffic profile                         | The default value: ip-traffic-table_3                                                                                                                                                                                                                                                          | The committed access rate (CAR), priority, and priority policy are configured in traffic profiles. Therefore, when adding a service virtual port, you can specify the CAR, priority and priority policy by choosing a specific traffic profile. |
| Service port                            | 0/1/0                                                                                                                                                                                                                                                                                          | -                                                                                                                                                                                                                                               |
| Upstream port                           | 0/0/0 and 0/0/1                                                                                                                                                                                                                                                                                | The two Ethernet ports to be aggregated.                                                                                                                                                                                                        |
| Requirements for the upper-layer device | LAN Switch: <ul style="list-style-type: none"> <li>● The LAN switch transparently transmits the service packets of an MDU at Layer 2.</li> <li>● A VLAN must be configured for the service access of the MDU. The VLAN ID must be the same as that of the upstream VLAN of the MDU.</li> </ul> | For the configuration of the LAN switch and the BRAS, see the related configuration guides.                                                                                                                                                     |
|                                         | BRAS: Configure the BRAS according to the authentication and accounting requirements of users. For example, configure the access user domain (including the authentication scheme, accounting scheme, and authorization scheme that are bound to the domain) and specify the RADIUS server.    |                                                                                                                                                                                                                                                 |

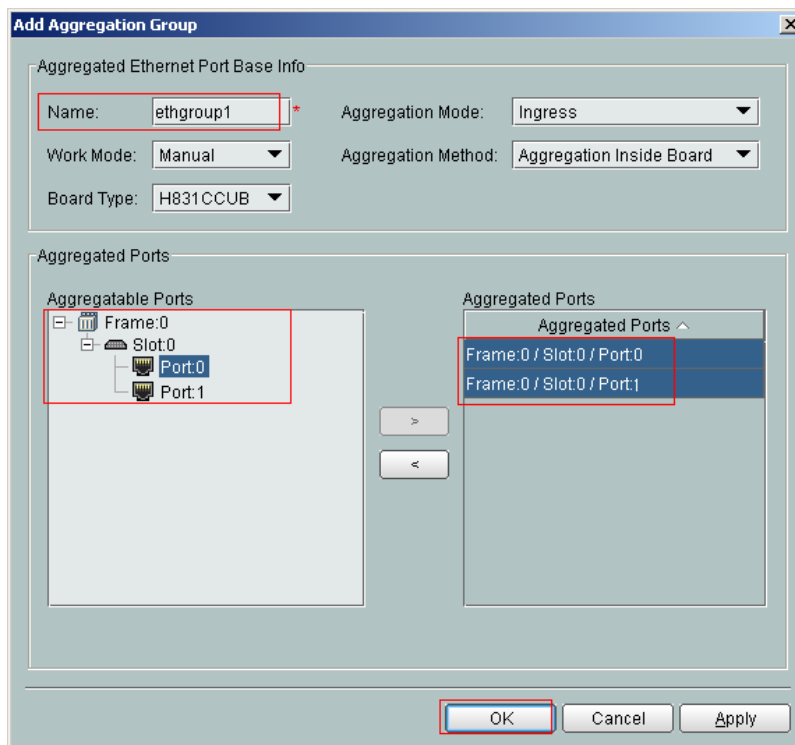
## Procedure

### 1 Configure the Ethernet port aggregation.

#### NOTE

To perform the following operations in the navigation tree, you need to navigate to the NE Explorer of the ONU. To navigate to the NE Explorer of the ONU, do as follows: In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.

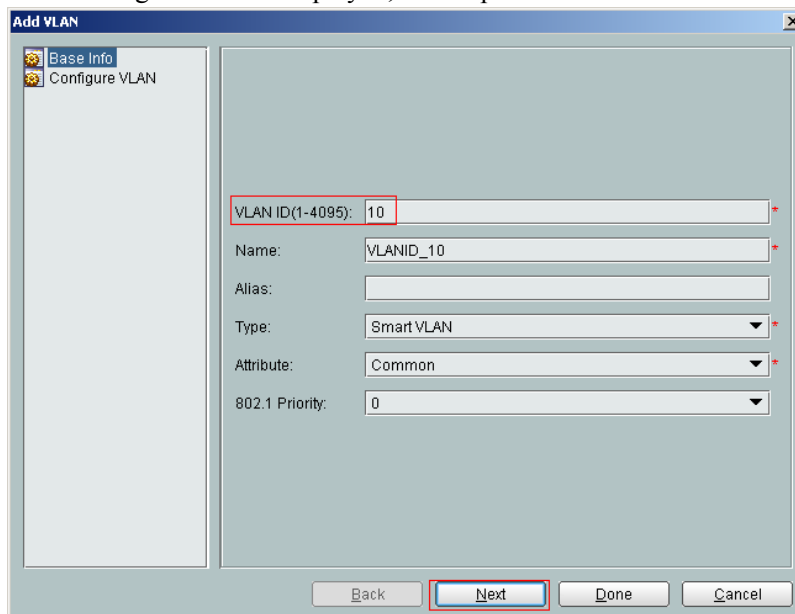
1. Choose **ETH** from the navigation tree.
2. Click the **Aggregation Group** tab, and set the filter criteria or click  to display the aggregation groups.
3. In the information list, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters.



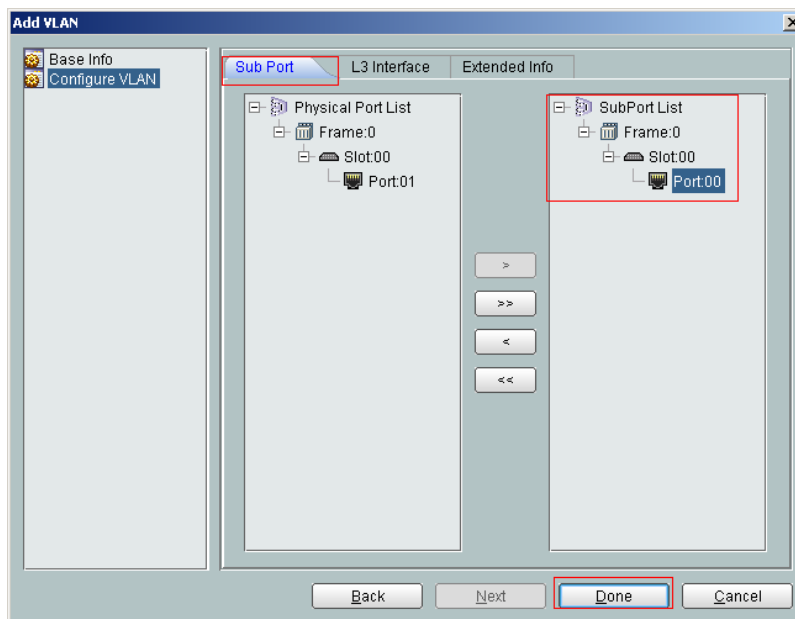
5. Click **OK**.

## 2 Add a VLAN and configure an upstream port for the VLAN.

1. Choose **VLAN** from the navigation tree.
2. In the information list, right-click and choose **Add** from the shortcut menu.
3. In the dialog box that is displayed, set the parameters.



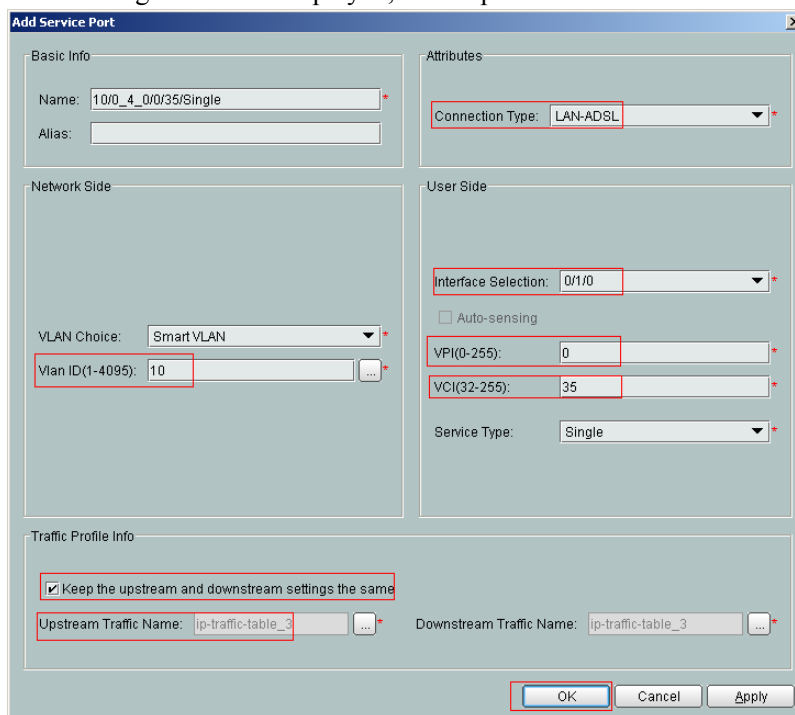
4. Click **Next** to configure the upstream port for the VLAN.



5. Click **Done**.

### 3 Add a service virtual port.

1. Choose **Connection > Service Port** from the navigation tree.
2. On the **Service Port** tab page, set the filter criteria to display the required service virtual ports.
3. In the information list, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters.



5. Click **OK**.

----End

## Result

The PC can still access the Internet through PPPoE dialup after you deactivate port 0/0/0 or 0/0/1.





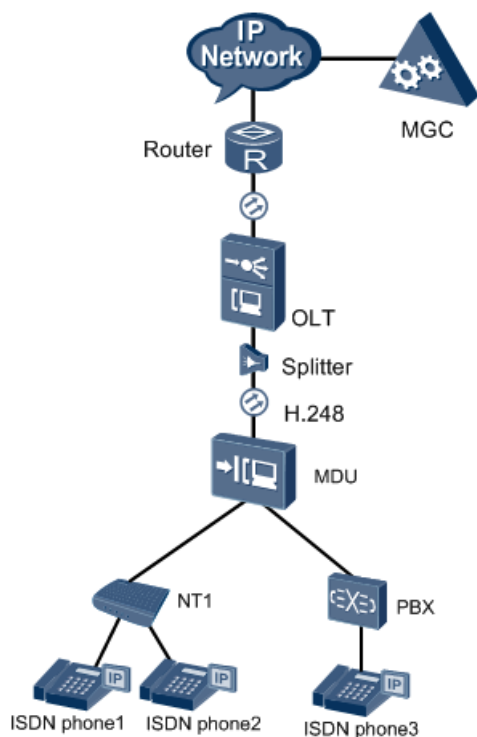
# 5 Configuring the VoIP ISDN BRA Service (H.248 Protocol)

This topic describes how to configure the VoIP ISDN BRA service based on the H.248 protocol for the ONU. Then, the service is sent upstream to the IP network through the control card. In this way, the ISDN BRA service is configured successfully. **Currently, the MA5616 supports the ISDN BRA service.**

## Example Network

**Figure 5-1** shows an example network of the VoIP ISDN BRA service.

**Figure 5-1** Example network of the VoIP ISDN BRA service



## Data Plan

**Table 5-1** describes the data plan for the VoIP ISDN BRA service.

**Table 5-1** Data plan for the VoIP ISDN BRA service

| Item                                                |                                                             | Data                                      |
|-----------------------------------------------------|-------------------------------------------------------------|-------------------------------------------|
| Parameters of the media stream and signaling stream | IP address and mask of the VLAN L3 interface                | 10.13.4.116/16                            |
|                                                     | IP address of the media stream and signaling stream         | 10.13.4.116                               |
|                                                     | Upstream interface of the media stream and signaling stream | 0/0/0                                     |
|                                                     | Upstream VLAN of the media stream and signaling stream      | VLAN ID: 10                               |
|                                                     | Default media gateway (MG) of the MG interface              | 10.13.1.1                                 |
| TID profile                                         | Index of the TID profile used by the ISDN BRA user          | 2 (default, no configuration is required) |
|                                                     | Prefix of the TID terminal used by the ISDN BRA user        | A (default, no configuration is required) |
| Static route from the MG to the MGC                 | IP address of the destination network segment               | 10.14.0.0                                 |
|                                                     | IP address of the gateway                                   | 10.13.1.1                                 |
| Attribute parameters of the MG interface            | MG interface ID                                             | 0                                         |
|                                                     | Encoding mode of the MG interface                           | text                                      |
|                                                     | Protocol supported by the MG interface                      | H.248                                     |
|                                                     | Signaling port ID of the MG interface                       | 2944                                      |
|                                                     | Media/Signaling IP address of the MG interface              | 10.13.4.116                               |
|                                                     | Default MG of the MG interface                              | 10.13.1.1                                 |

| Item          |                                                                     | Data                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | IP address of the primary MGC to which the MG interface belongs     | 10.14.1.2                                                                                                                                                                                                                                                                                                                                                                                                                        |
|               | Port ID of the primary MGC to which the MG interface belongs        | 2944                                                                                                                                                                                                                                                                                                                                                                                                                             |
|               | Transmission mode of the MG interface                               | UDP                                                                                                                                                                                                                                                                                                                                                                                                                              |
|               | Start negotiation version of the H.248 protocol of the MG interface | 2                                                                                                                                                                                                                                                                                                                                                                                                                                |
|               | domainname                                                          | mdu.com                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Association   | Association ID                                                      | 0                                                                                                                                                                                                                                                                                                                                                                                                                                |
|               | Local port                                                          | 1401                                                                                                                                                                                                                                                                                                                                                                                                                             |
|               | Local IP address                                                    | 10.13.4.116/16                                                                                                                                                                                                                                                                                                                                                                                                                   |
|               | Remote port ID                                                      | 1400                                                                                                                                                                                                                                                                                                                                                                                                                             |
|               | IP address of the primary MGC at the remote end                     | 10.14.1.2/16                                                                                                                                                                                                                                                                                                                                                                                                                     |
| BRA user data | ISDN phone1 and ISDN phone2                                         | <ul style="list-style-type: none"> <li>● Shelf/slot/port ID of the BRA user: 0/1/0</li> <li>● Phone number: 83110001</li> <li>● Working mode: point to multi-point</li> <li>● Terminal ID: 2</li> <li>● IUA interface ID: 0</li> <li>● Priority of the user: Cat3 (default)</li> </ul>                                                                                                                                           |
|               | ISDN phone3                                                         | <ul style="list-style-type: none"> <li>● Shelf/slot/port ID of the BRA user: 0/1/1</li> <li>● Phone number: 83110002</li> <li>● Working mode: point to point</li> <li>● Terminal ID: 4</li> <li>● IUA interface ID: 2</li> <li>● Priority of the user: Cat1</li> </ul> <p><b>NOTE</b><br/>                     In the point to point mode, the terminal endpoint identifier (TEI) of the ISDN BRA digital phone is always 0.</p> |

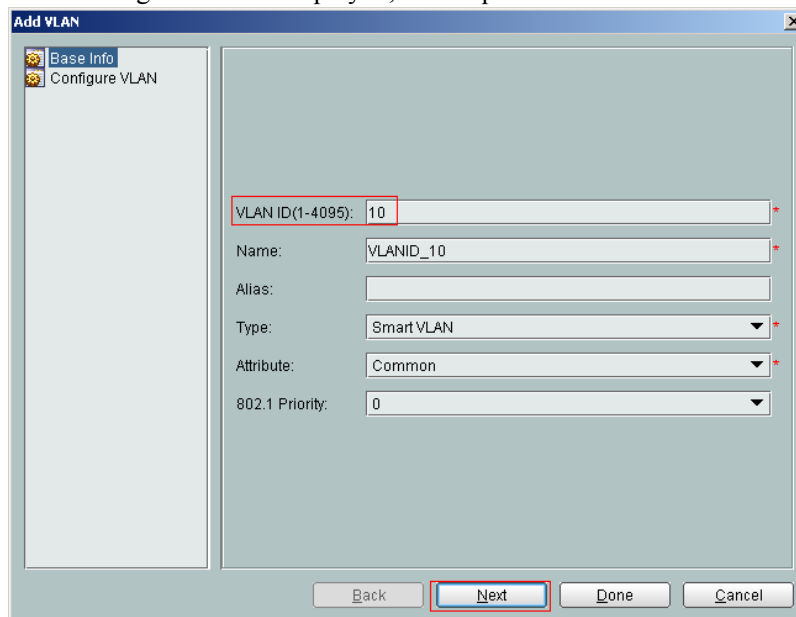
## Procedure

- 1 Add a VLAN and configure its upstream port, L3 interface, media IP address, and signaling IP address.

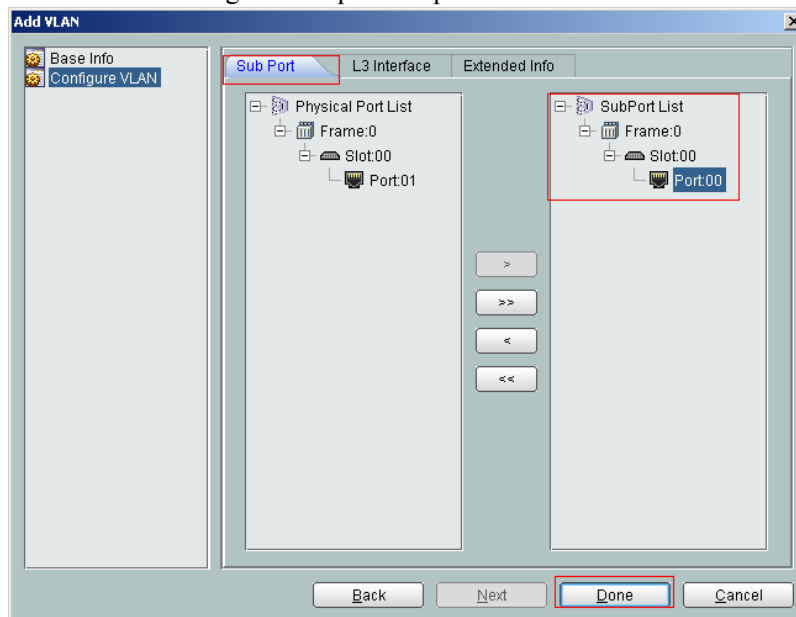
 **NOTE**

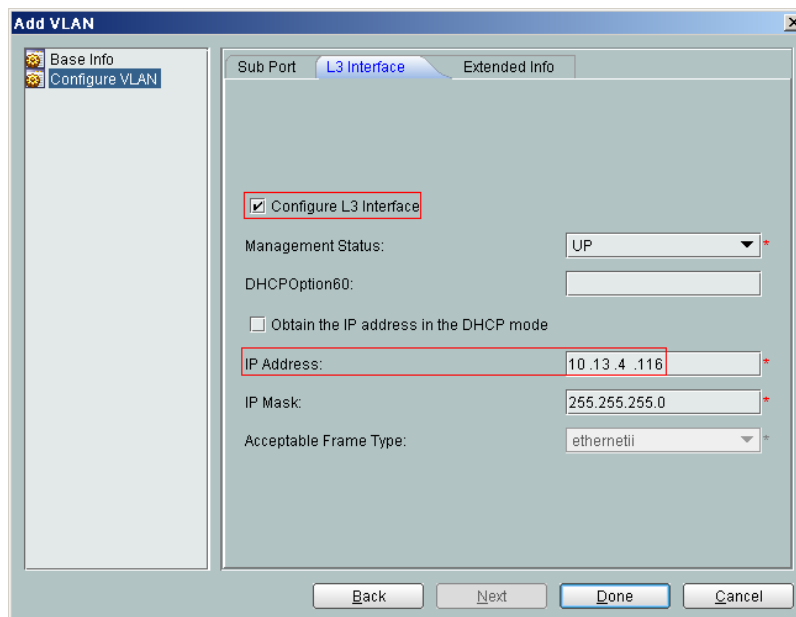
To perform the following operations in the navigation tree, you need to navigate to the NE Explorer of the ONU. To navigate to the NE Explorer of the ONU, do as follows: In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.

1. Choose **VLAN** from the navigation tree.
2. In the information list, right-click and choose **Add** from the shortcut menu.
3. In the dialog box that is displayed, set the parameters.

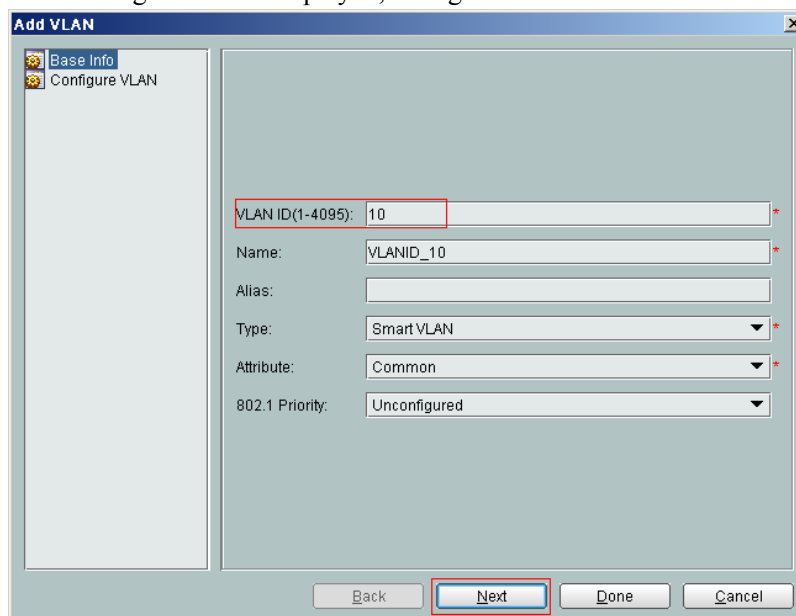


4. Click **Next** to configure the upstream port and L3 interface of the VLAN.



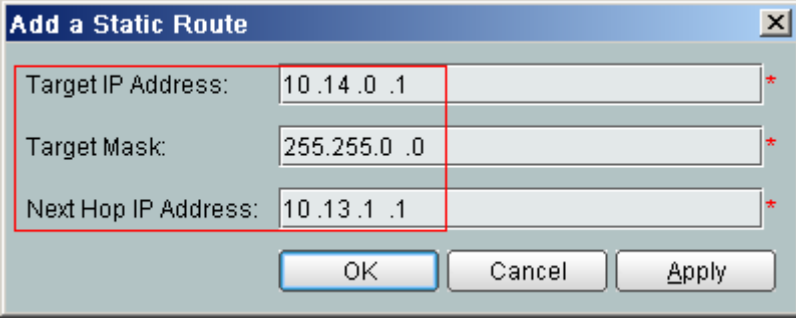


5. Click **Done**.
6. In the VLAN list, select the newly added VLAN and click the **IP Interface** tab in the lower pane.
7. In the information list, right-click and choose **Add** from the shortcut menu.
8. In the dialog box that is displayed, configure the media IP address and signaling IP address.



## 2 Configure a static route.

1. Choose **Static Route** from the navigation tree.
2. In the information list, right-click and choose **Add** from the shortcut menu.
3. In the dialog box that is displayed, set the parameters.



**Add a Static Route**

Target IP Address: 10.14.0.1 \*

Target Mask: 255.255.0.0 \*

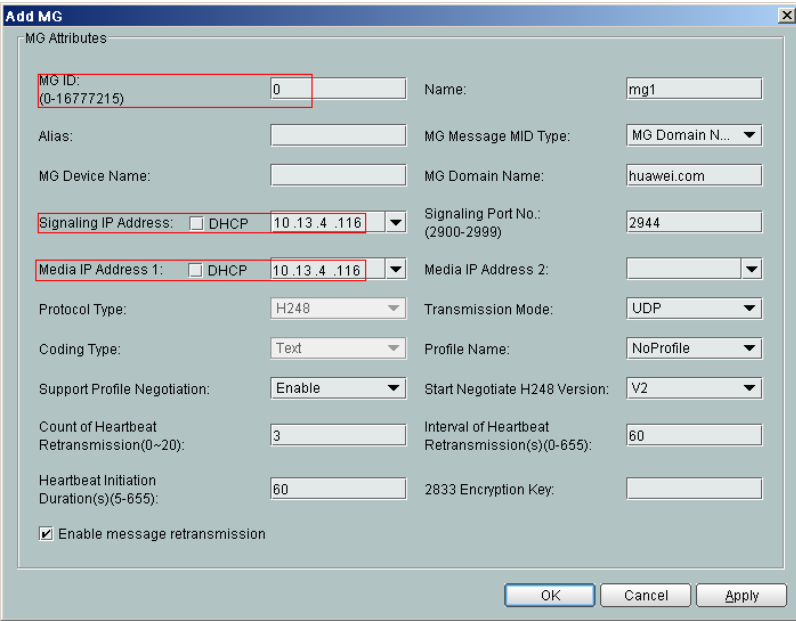
Next Hop IP Address: 10.13.1.1 \*

OK Cancel Apply

4. Click **OK**.

### 3 Configure the MG.

1. Choose **Voice Gateway > Media Gateway** from the navigation tree.
2. On the **Media Gateway** tab page, set the filter criteria to display the required MGs.
3. In the information list, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters.



**Add MG**

MG Attributes

MG ID: 0 (0-16777215) Name: mg1

Alias: MG Message MID Type: MG Domain N...

MG Device Name: MG Domain Name: huawei.com

Signaling IP Address:  DHCP 10.13.4.116 Signaling Port No.: 2944 (2900-2999)

Media IP Address 1:  DHCP 10.13.4.116 Media IP Address 2:

Protocol Type: H248 Transmission Mode: UDP

Coding Type: Text Profile Name: NoProfile

Support Profile Negotiation: Enable Start Negotiate H248 Version: V2

Count of Heartbeat Retransmission(0~20): 3 Interval of Heartbeat Retransmission(s)(0-655): 60

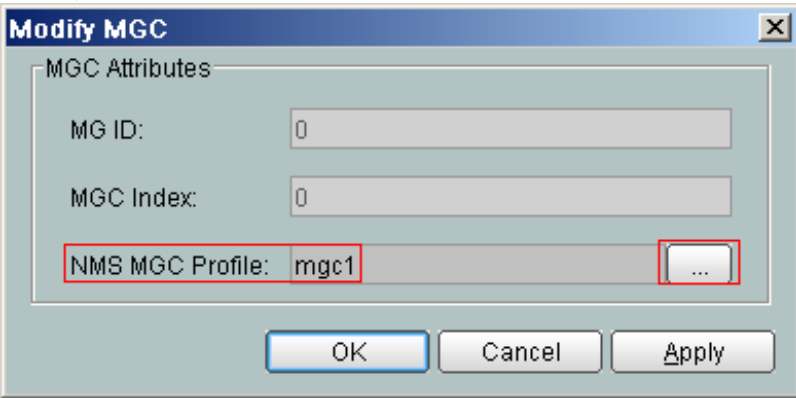
Heartbeat Initiation Duration(s)(5-655): 60 2833 Encryption Key:

Enable message retransmission

OK Cancel Apply

5. Click **OK**.

6. In the MG list, select a record and click the **MGC Attribute Info** tab in the lower pane. In the window that is displayed, right-click the record where **MGC Index** is set to **0** and choose **Modify** from the shortcut menu.



**Modify MGC**


MGC Attributes

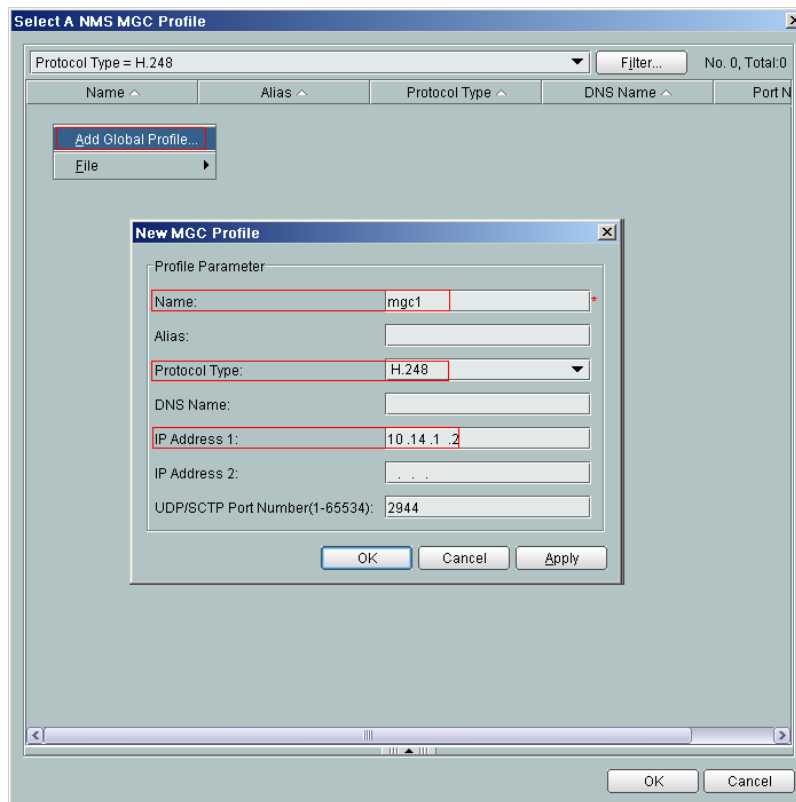
MG ID: 0

MGC Index: 0

NMS MGC Profile: mgc1 ...

OK Cancel Apply

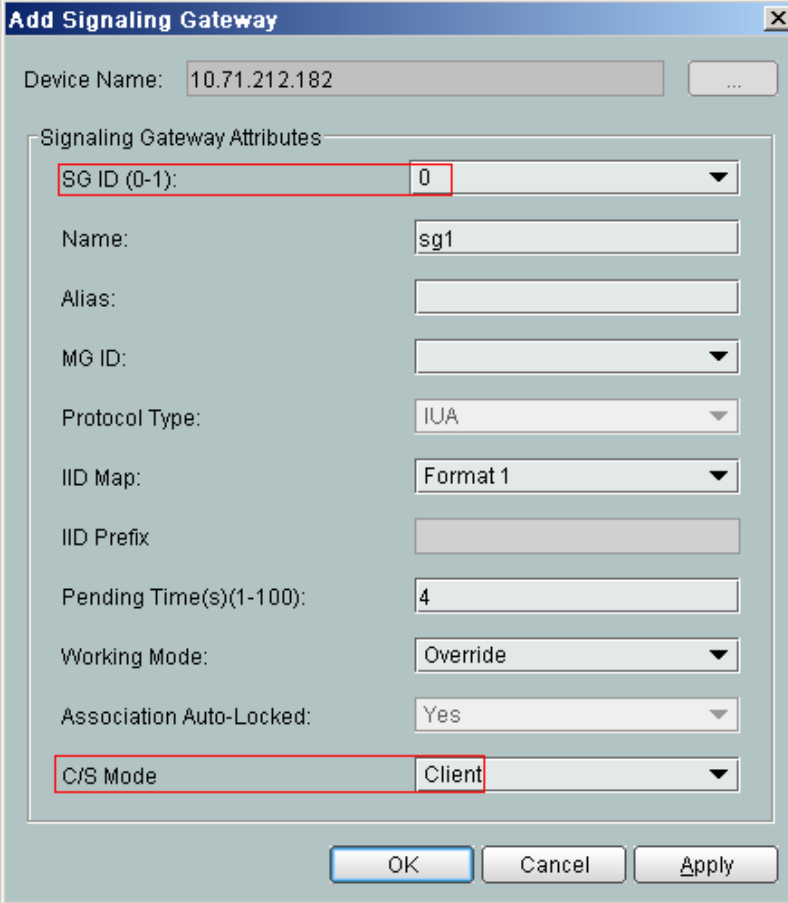
Click  next to **NMS MGC Profile**. In the dialog box that is displayed, add an MGC profile.



7. In the MG list, right-click a record and choose **Cold Start** from the shortcut menu.
8. In the confirmation dialog box, click **Yes**.

#### 4 Configure a signaling gateway and an association.

1. Choose **Voice Gateway > Signaling Gateway** from the navigation tree.
2. On the **Signaling Gateway** tab page, set the filter criteria to display the required SGs.
3. In the information list, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters.



**Add Signaling Gateway**

Device Name: 10.71.212.182

Signaling Gateway Attributes

SG ID (0-1): 0

Name: sg1

Alias:

MG ID:

Protocol Type: IUA

IID Map: Format 1

IID Prefix:

Pending Time(s)(1-100): 4

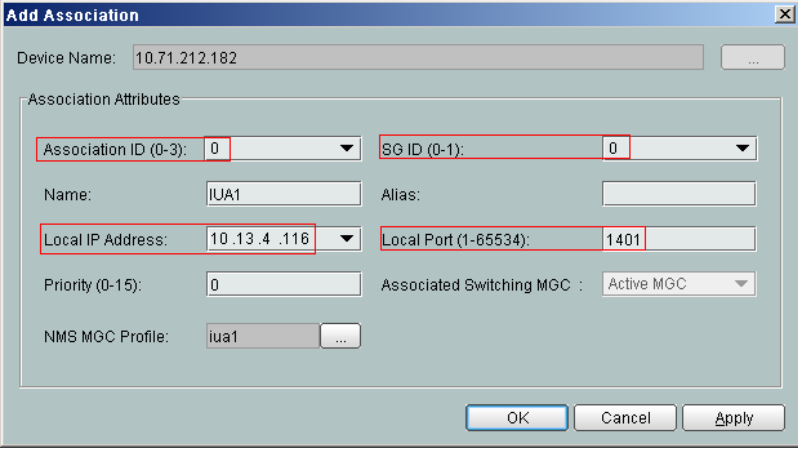
Working Mode: Override

Association Auto-Locked: Yes

C/S Mode: Client

OK Cancel Apply

5. Click **OK**.
6. On the **Association** tab page, set the filter criteria to display the required associations.
7. In the information list, right-click and choose **Add** from the shortcut menu.
8. In the dialog box that is displayed, set parameters of the association.



**Add Association**

Device Name: 10.71.212.182

Association Attributes

Association ID (0-3): 0 SG ID (0-1): 0


Name: IUA1 Alias:

Local IP Address: 10.13.4.116 Local Port (1-65534): 1401

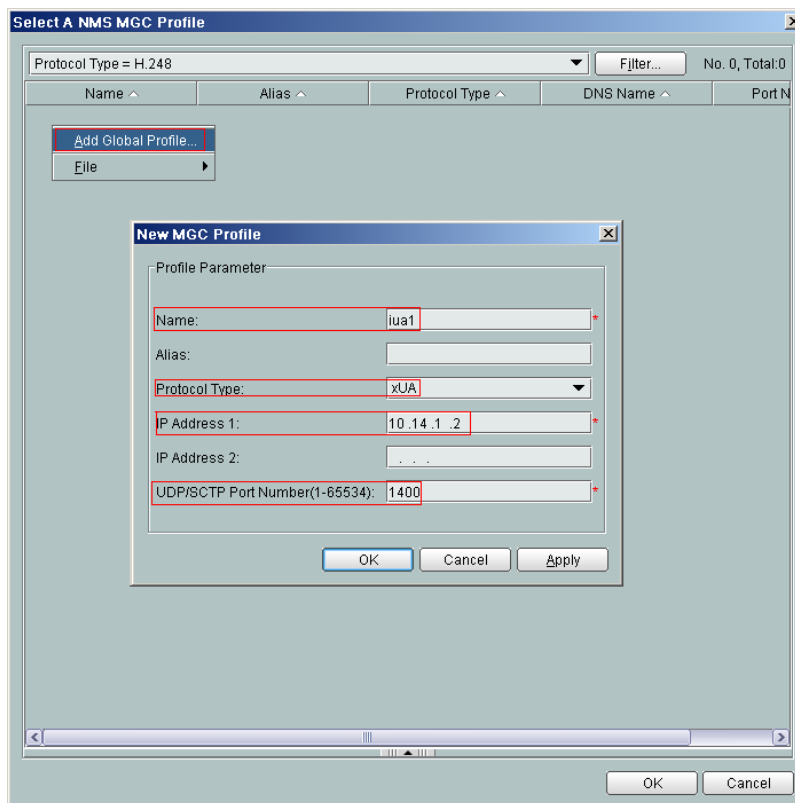
Priority (0-15): 0 Associated Switching MGC : Active MGC

NMS MGC Profile: iua1

OK Cancel Apply

Click  next to **NMS MGC Profile**. In the dialog box that is displayed, add an MGC profile.

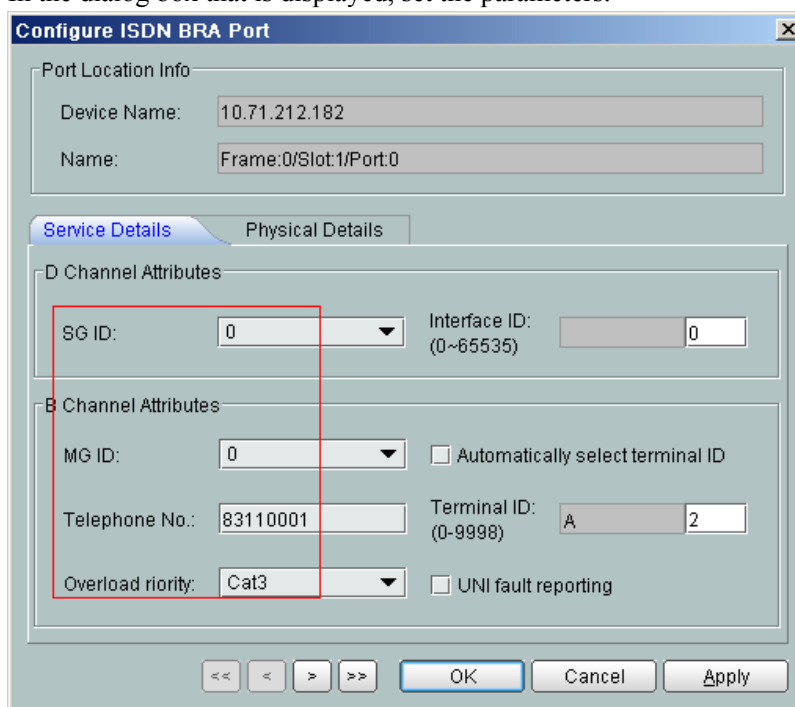


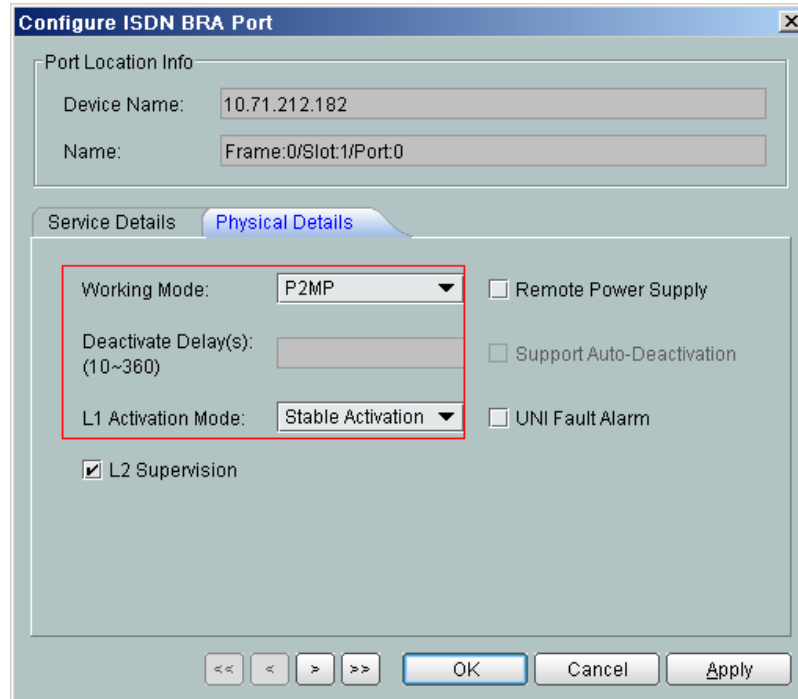


9. Click **OK**.

### 5 Configure the attributes of the VoIP ISDN BRA port.

1. Choose **DSL > ISDN(BRA) Port** from the navigation tree.
2. In the VoIP ISDN BRA port list, right-click a record and choose **Configure Attribute** from the shortcut menu.
3. In the dialog box that is displayed, set the parameters.





4. Click **OK**.

----End

## Result

ISDN phone1 and ISDN phone2 can communicate with ISDN phone3 by dialing number 83110002.

When ISDN phone3 dials number 83110001, ISDN phone1 and ISDN phone2 can hear the ringing tone. In addition, ISDN phone1 and ISDN phone2 can communicate with ISDN phone3 at the same time.

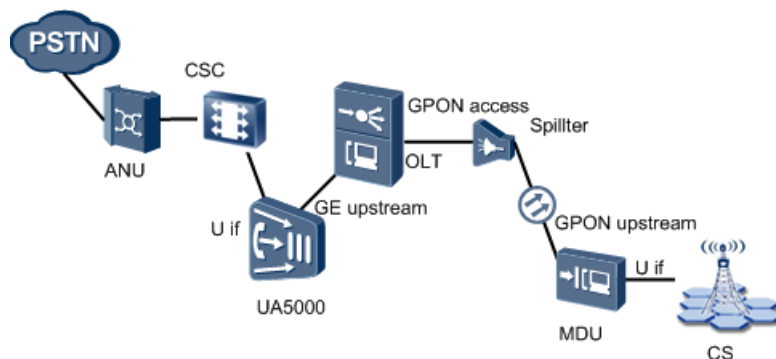
# 6 Configuring the PHS Service

This topic describes how to configure the PHS service. The ONU connects to base stations of the personal handyphone system (PHS) and transmits received signals to the UA5000 transparently. Then the UA5000 transmits the signals to the cell site controller (CSC) for processing. In this way, the ONU carries and transmits the PHS service successfully. **Currently, the MA5616 supports the PHS service.**

## Example Network

**Figure 6-1** shows an example network of the PHS service.

**Figure 6-1** Example network of the PHS service



## Data Plan

**Table 6-1** describes the data plan for the PHS service on the OLT.

**Table 6-2** describes the data plan for the PHS service on the UA5000.

**Table 6-3** describes the data plan for the PHS service on the MA5616.

**Table 6-1** Data plan for the PHS service on the OLT

| Item                           | Data           |
|--------------------------------|----------------|
| Clock VLAN                     | 11             |
| Service VLAN                   | 10             |
| IP address of the L3 interface | 10.13.4.100/24 |
| PON access port                | 0/4/0          |
| GE access port                 | 0/20/0         |

**Table 6-2** Data plan for the PHS service on the UA5000 (on the convergence side)

| Item                                                | Data                                     |
|-----------------------------------------------------|------------------------------------------|
| <b>NE configuration</b>                             |                                          |
| Service IP address                                  | 10.13.4.101/24                           |
| Upstream port                                       | 0/2/1 (GE port)                          |
| <b>Association configuration</b>                    |                                          |
| Association ID                                      | 0                                        |
| Local port ID                                       | 11000                                    |
| Local IP address                                    | 10.13.4.101                              |
| Remote port ID                                      | 12000                                    |
| Remote IP address                                   | 10.13.4.116                              |
| <b>SPC configuration</b>                            |                                          |
| Shelf/slot/port/timeslot of the DSLD card           | 0/6/0/0<br>0/6/1/0<br>0/6/2/0<br>0/6/3/0 |
| Local port ID                                       | 16400, 16408, 16416, and 16424           |
| Local IP address                                    | 10.13.4.101                              |
| Remote port ID                                      | 57600, 57608, 57616, and 57624           |
| Remote IP address                                   | 10.13.4.116                              |
| Type of the SPC starting port                       | MNT                                      |
| Encoding type of the DSP channel                    | 5                                        |
| RTP (UDP) packetization interval of the DSP channel | 10 ms                                    |

| Item                                                              | Data           |
|-------------------------------------------------------------------|----------------|
| <b>Clock configuration</b>                                        |                |
| Clock VLAN                                                        | 11             |
| IP address of the L3 interface of the clock VLAN                  | 20.20.20.10/24 |
| Remote IP address of the L3 interface for receiving clock packets | 20.20.20.20/24 |

**Table 6-3** Data plan for the PHS service on the MA5616

| Item                                      | Data                                     |
|-------------------------------------------|------------------------------------------|
| <b>NE configuration</b>                   |                                          |
| Service VLAN                              | 10                                       |
| IP address of the L3 interface            | 10.13.4.102/24                           |
| Upstream port                             | 0/0/1 (PON port)                         |
| <b>Association configuration</b>          |                                          |
| Association ID                            | 0                                        |
| Local port ID                             | 12000                                    |
| Local IP address                          | 10.13.4.116                              |
| Remote port ID                            | 11000                                    |
| Remote IP address                         | 10.13.4.101                              |
| <b>SPC configuration</b>                  |                                          |
| Shelf/slot/port/timeslot of the DSLD card | 0/2/0/0<br>0/2/1/0<br>0/2/2/0<br>0/2/3/0 |
| Remote port ID                            | 16400, 16408, 16416, and 16424           |
| Remote IP address                         | 10.13.4.101                              |
| Local port ID                             | 57600, 57608, 57616, and 57624           |
| Local IP address                          | 10.13.4.102                              |
| Type of the SPC starting port             | MLT                                      |
| Encoding/Decoding type of a DSP           | clearmode coding mode                    |
| <b>Clock configuration</b>                |                                          |

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Clock VLAN                                                      | 11             |
| Card where the adaptive clock source is located                 | 0/2            |
| IP address of the L3 interface for receiving ACM clock packets  | 20.20.20.20/24 |
| Remote IP address of the L3 interface for sending clock packets | 20.20.20.10/24 |

## Procedure

- **Configure the PHS service on the OLT side.**

 **NOTE**

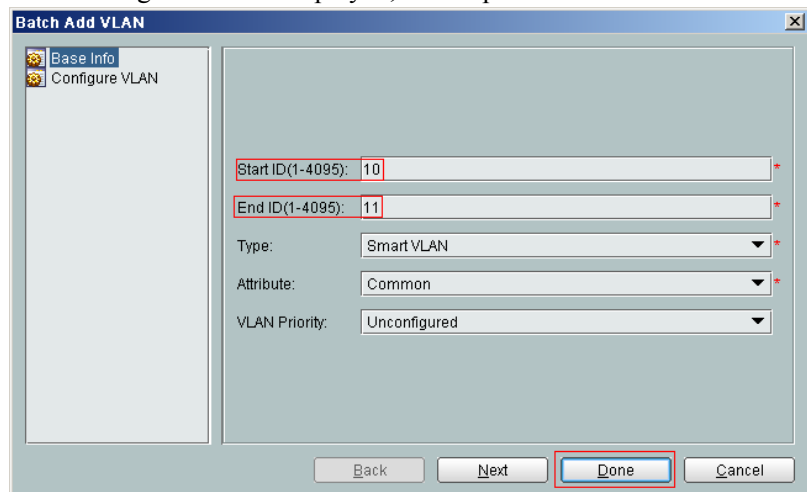
In addition to forwarding services, the OLT also forwards clock packets from the UA5000 to the ONU.

To perform the following operations in the navigation tree, you need to navigate to the NE Explorer of the OLT as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. Configure the ONU data on the OLT side.

- (1) Add a PHS service VLAN and clock VLAN.

- a. Choose **VLAN** from the navigation tree.
- b. Right-click the list, and then choose **Batch Add** from the shortcut menu.
- c. In the dialog box that is displayed, set the parameters.



- d. Click **Done**.
  - e. In the information list, right-click VLAN 10 and choose **Configure** from the shortcut menu. In the dialog box that is displayed, set the IP address of the L3 interface to **10.13.4.100**.
  - f. Click **Done**.
- (2) Add a service virtual port.

 **NOTE**

Service virtual ports are required for both the service VLAN and the clock VLAN.

- a. Choose **Connection > Service Port** from the navigation tree.
- b. On the **Service Port** tab page, set the filter criteria to display the required service virtual ports.
- c. In the information list, right-click and choose **Add** from the shortcut menu.
- d. In the dialog box that is displayed, set the parameters.


The screenshot shows the 'Add Service Port' dialog box with the following configuration:

- Basic Info:** Name: 10/0\_4\_0/0/Multi-Service VLAN/10, Alias: (empty)
- Attributes:** Connection Type: LAN-EPON
- Network Side:** Bundle ID(1-8192): (empty), VLAN Choice: Smart VLAN, Tag-Transform: (empty), Vlan ID(1-4095): 10, Cos value(0-7): (empty)
- User Side:** Create Bulk Service Port: (unchecked), Interface Selection: 0/4/0/0, Service Type: Multi-Service VLAN, User VLAN(1-4095): 10
- Traffic Profile Info:** Keep the upstream and downstream settings the same: (checked), Upstream Traffic Name: ip-traffic-table\_5, Downstream Traffic Name: ip-traffic-table\_5

- e. Click **OK**.
2. Configure the UA5000 data on the OLT side.
    - (1) Configure the attributes of an Ethernet port.

 **NOTE**

You need to disable the unicast suppression function of the upstream Ethernet port and set the service VLAN as the default VLAN of the upstream Ethernet port, because clock packets are unidirectionally transmitted from the UA5000 to the ONU. If the VLAN ID of the upstream Ethernet port is the same as the default VLAN ID, the packets of the upstream Ethernet port do not contain VLAN tags. Specifically, the packets are untagged.

- a. Choose **ETH** from the navigation tree.
- b. Click the **Ethernet Port** tab, and set the filter criteria or click  to display the Ethernet ports.
- c. In the Ethernet port list, right-click the port 0/20/0 and choose **Configure Attributes** from the shortcut menu.
- d. In the dialog box that is displayed, set the parameters.

**Configure Attributes**

Name: Frame:0/Slot:20/Port:0

Auto-negotiation Mode: Enable

Working Mode: Auto-Full Duplex

Port Rate(Mbit/s): Auto-negotiation 1000

Type of Connected Cable: --

Pause Frame Flow Control: No

Support Jumbo Frame: Disable

Default VLAN ID(1-4095): 10

Broadcast Suppression: 7

Multicast Suppression: 7

Unicast Suppression: OFF

OK Cancel Apply

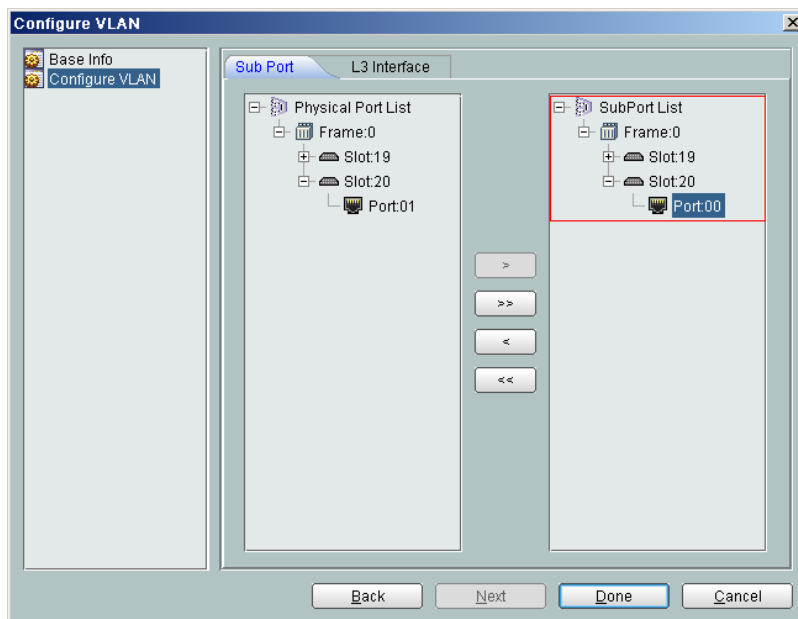
- e. Click **OK**.
- (2) Configure an upstream port for the clock VLAN.

 **NOTE**

To transmit user packets tagged with clock VLAN IDs upstream through an Ethernet port, you need to add the Ethernet port to the clock VLAN.

- a. Choose **VLAN** from the navigation tree.
- b. In the information list, right-click VLAN 10 and choose **Configure** from the shortcut menu.
- c. In the dialog box that is displayed, set the parameters.





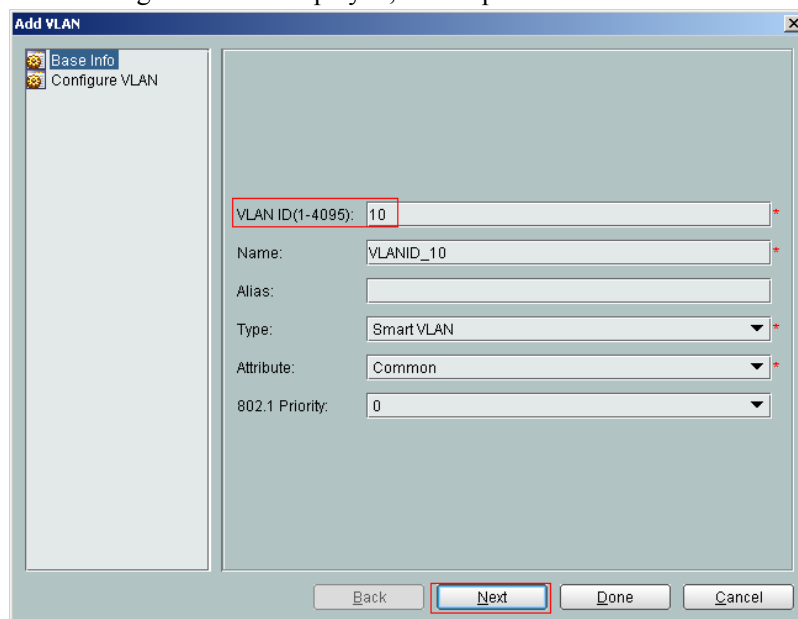
d. Click **Done**.

- **Configure the PHS service on the ONU side.**

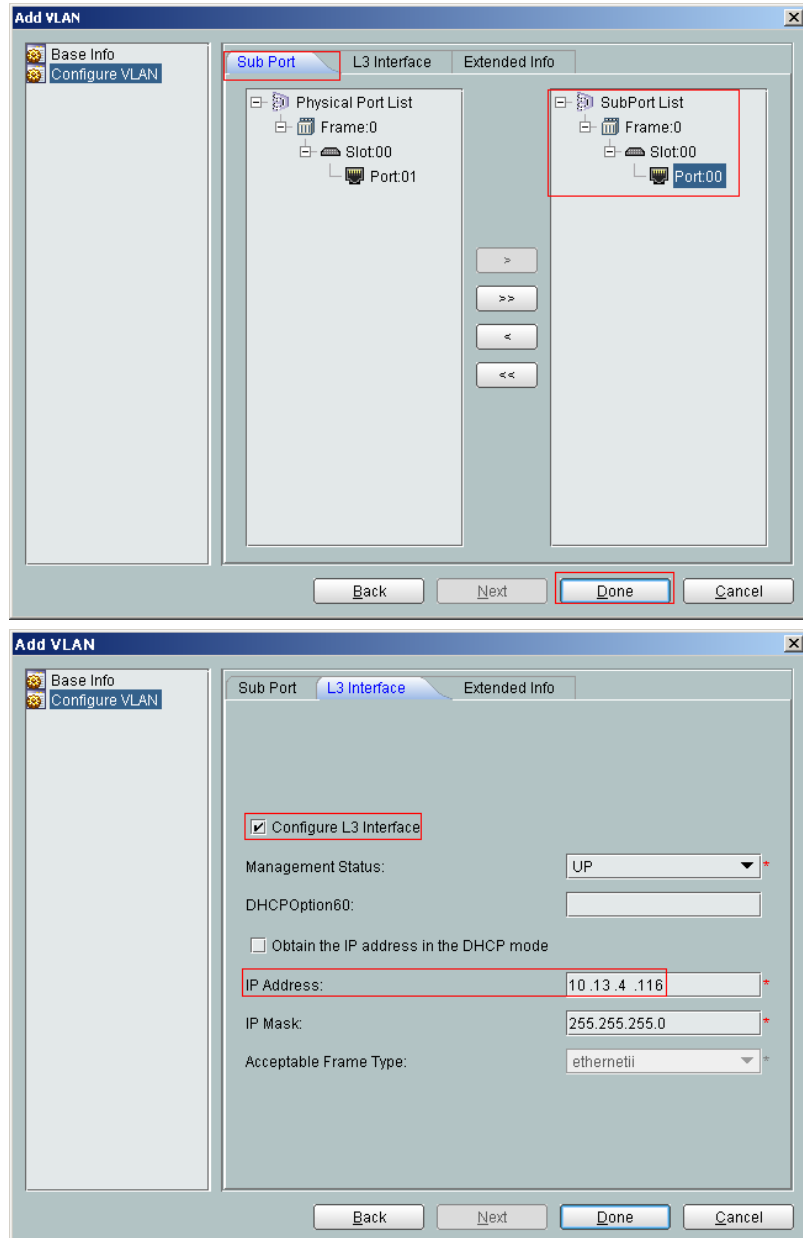
**NOTE**

To perform the following operations, you need to navigate to the NE Explorer of the ONU as follows: In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.

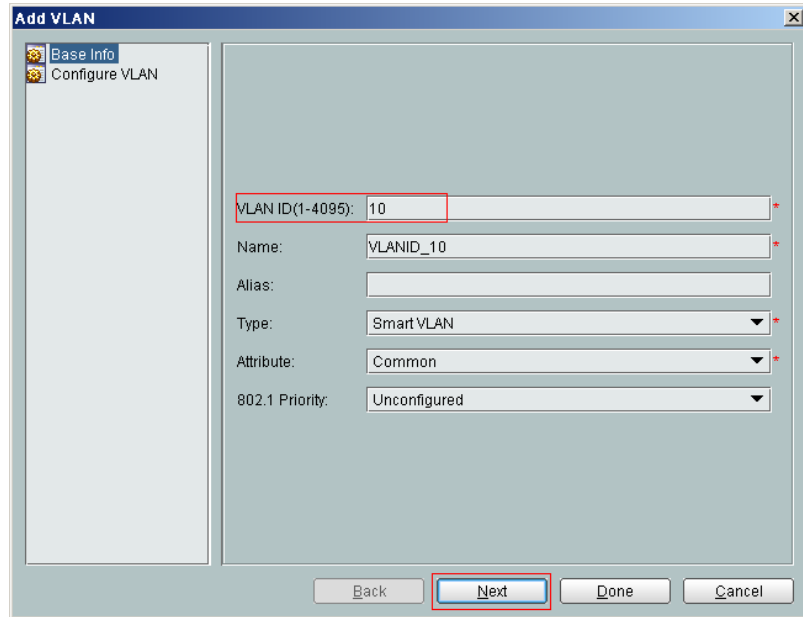
1. Add a VLAN and configure its upstream port, L3 interface, media IP address, and signaling IP address.
  - (1) Choose **VLAN** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.



(4) Click **Next** to configure the upstream port and L3 interface of the VLAN.

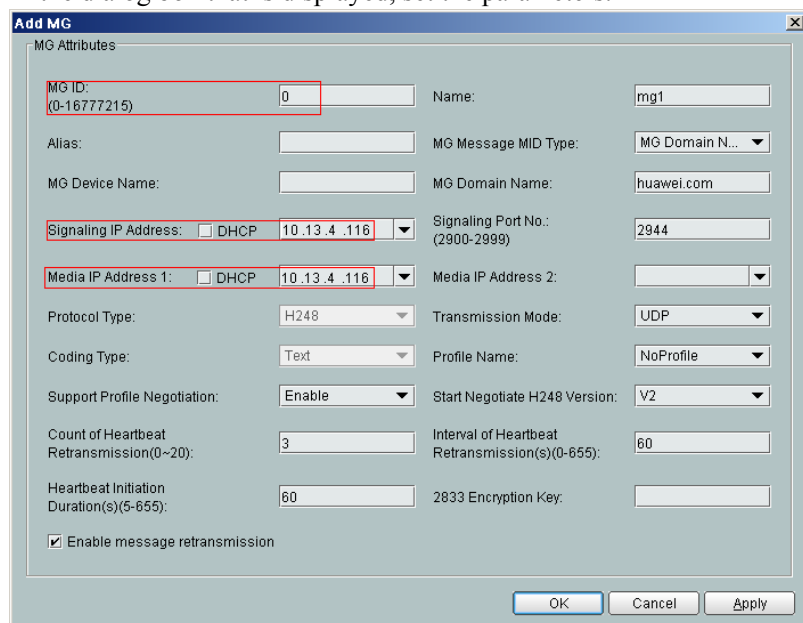


- (5) Click **Done**.
- (6) In the VLAN list, select the newly added VLAN and click the **IP Interface** tab in the lower pane.
- (7) In the information list, right-click and choose **Add** from the shortcut menu.
- (8) In the dialog box that is displayed, configure the media IP address and signaling IP address.

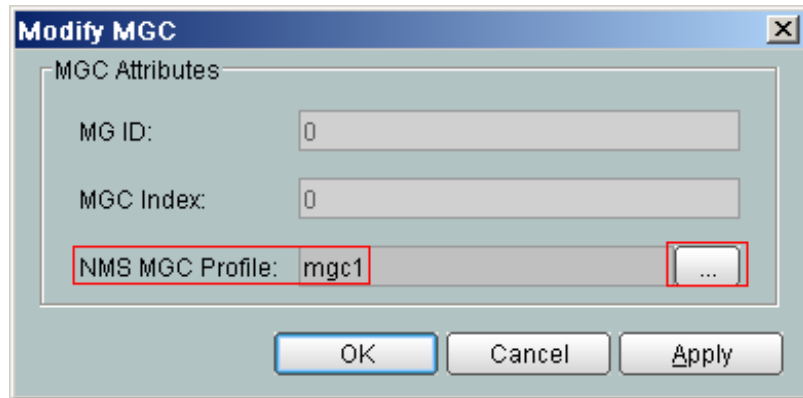


2. Configure the MG.

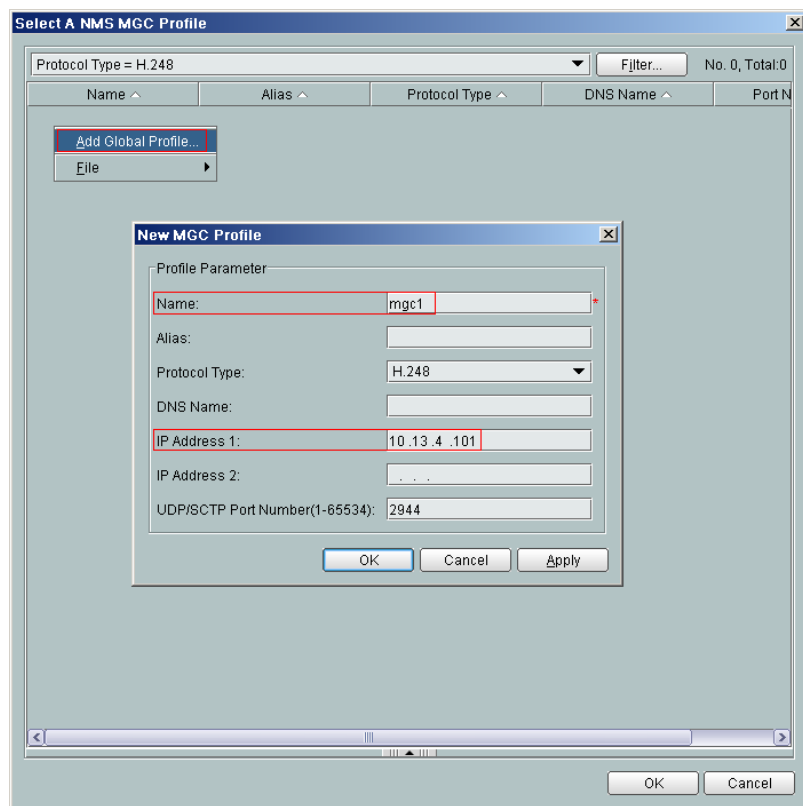
- (1) Choose **Voice Gateway > Media Gateway** from the navigation tree.
- (2) On the **Media Gateway** tab page, set the filter criteria to display the required MGs.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.



- (5) Click **OK**.
- (6) In the MG list, select a record and click the **MGC Attribute Info** tab in the lower pane. In the window that is displayed, right-click the record where **MGC Index** is set to **0** and choose **Modify** from the shortcut menu.




Click  next to **NMS MGC Profile**. In the dialog box that is displayed, add an MGC profile.



- (7) In the MG list, right-click a record and choose **Cold Start** from the shortcut menu.
- (8) In the confirmation dialog box, click **Yes**.
3. Configure a signaling gateway (SG) and an association.
  - (1) Choose **Voice Gateway > Signaling Gateway** from the navigation tree.
  - (2) On the **Signaling Gateway** tab page, set the filter criteria to display the required SGs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

The screenshot shows the 'Add Signaling Gateway' dialog box. The 'Device Name' field is set to '10.71.212.182'. Under the 'Signaling Gateway Attributes' section, the 'SG ID (0-1)' dropdown is set to '0', the 'Name' text box contains 'sg1', and the 'C/S Mode' dropdown is set to 'Client'. Other fields like 'Alias', 'MG ID', 'IID Prefix', and 'Pending Time(s)(1-100)' are also visible with their respective values.

- (5) Click **OK**.
- (6) On the **Association** tab page, set the filter criteria to display the required associations.
- (7) In the information list, right-click and choose **Add** from the shortcut menu.
- (8) In the dialog box that is displayed, set parameters of the association. Click  next to **NMS MGC Profile**. In the dialog box that is displayed, add an MGC profile by setting the parameters as follows:
  - Name: iua1
  - Protocol Type: xUA
  - IP Address 1: 10.13.4.101
  - UDP/SCTP Port Number: 11000

(9) Click **OK**.

#### 4. Configure SPCs.

##### **NOTE**

You need to configure four SPCs according to the data plans.

- (1) Choose **Connection** > **SPC** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.

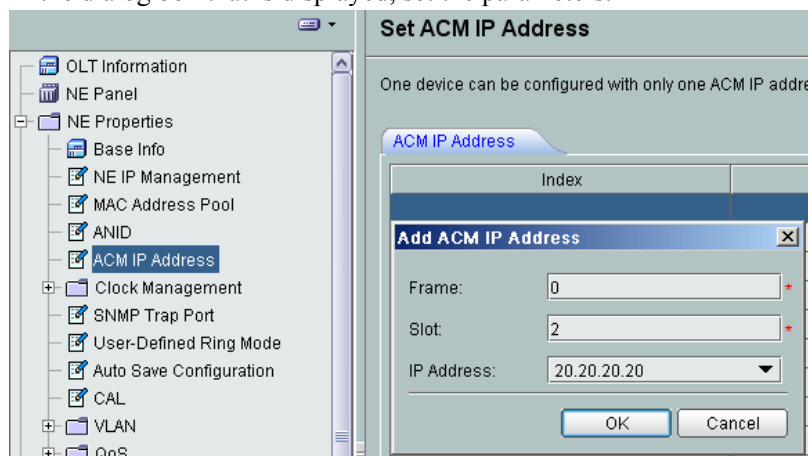
(4) Click **OK**.

5. Configure a clock VLAN.
  - (1) Choose **VLAN** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, add VLAN 11.
  - (4) Click **Next**, set the IP address of the L3 interface of the VLAN 11 to **20.20.20.20**, and then set the port 0/0/0 as the upstream port of the VLAN 11.
  - (5) Click **Done**.
6. Configure an ACM IP address.

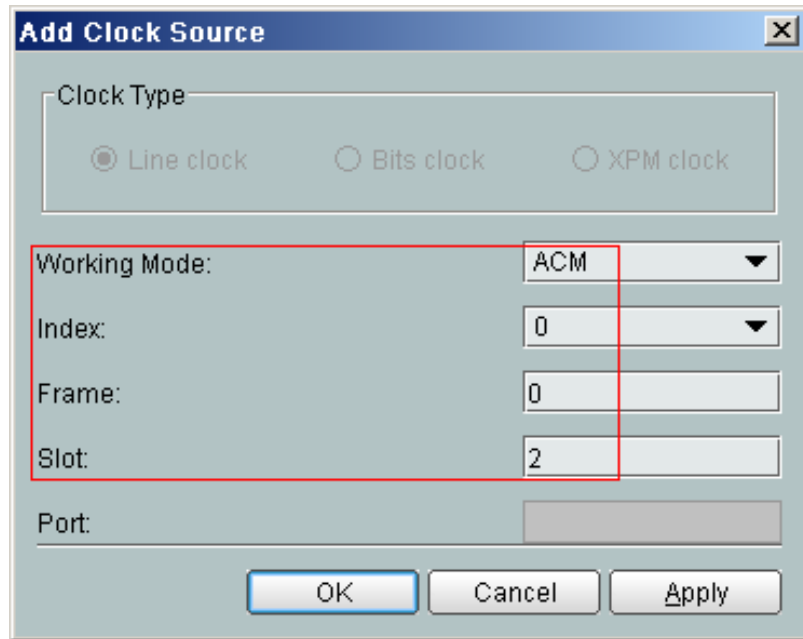
 **NOTE**

An ACM IP address is used to receive ACM clock packets. You need to set the IP address of the L3 interface of the clock VLAN to the ACM IP address.

- (1) Choose **NE Properties > ACM IP Address** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.



- (4) Click **OK**.
7. Configure a clock source.
    - (1) Choose **NE Properties > Clock Management > Clock Source** from the navigation tree.
    - (2) Click the **Frequency Clock Source (SYSCLK)** tab.
    - (3) Right-click the list and choose **Add Clock Source** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.



(5) Click **OK**.

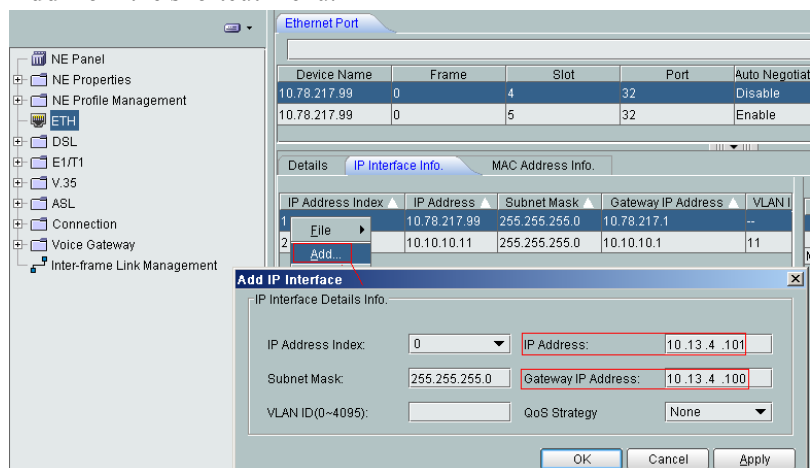
- **Configure the PHS service on the UA5000 side.**

1. Configure the attributes of an Ethernet port.

- (1) Choose **ETH** from the navigation tree.

- (2) Click the **Ethernet Port** tab, and set the filter criteria or click to display the Ethernet ports.

- (3) In the Ethernet port list, select a record and click the **IP Interface Info.** tab in the lower pane. On the **IP Interface Info.** tab page, right-click and choose **Add** from the shortcut menu.




**NOTE**

You need to configure the service IP address and the IP address of the clock interface separately. For information about the IP address of the clock interface, see section "Data Plan."

- (4) Click **OK**.

2. Configure an SG and an association.



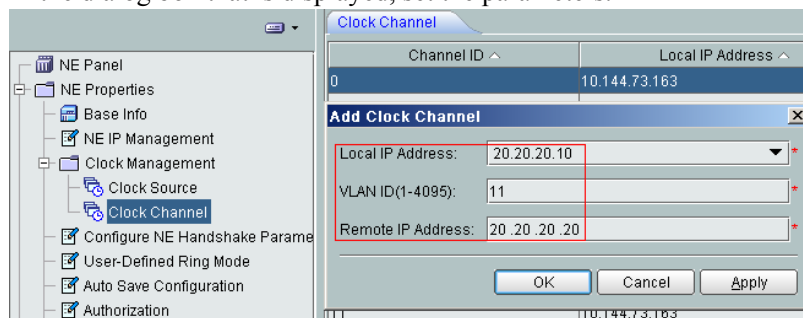
- (1) Choose **Voice Gateway** > **Signaling Gateway** from the navigation tree.
  - (2) On the **Signaling Gateway** tab page, set the filter criteria to display the required SGs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set **SG ID** to **0**.
  - (5) Click **OK**.
  - (6) On the **Association** tab page, set the filter criteria to display the required associations.
  - (7) In the information list, right-click and choose **Add** from the shortcut menu.
  - (8) In the dialog box that is displayed, set parameters of the association. Click  next to **NMS MGC Profile**. In the dialog box that is displayed, add an MGC profile by setting the parameters as follows:
    - Association ID: 0
    - SG ID: 0
    - Local IP Address: 10.13.4.101
    - Local Port: 1401
    - NMS MGC Profile: iua1MGC profile:
    - Protocol Type: xUA
    - IP Address 1: 10.13.4.116
    - UDP/SCTP Port Number: 12000
  - (9) Click **OK**.
3. Configure SPCs.

 **NOTE**

You need to configure four SPCs according to the data plans.

- (1) Choose **Connection** > **SPC** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Name: spc1
  - Service Type: Normal
  - Connection Type: IP SPC
  - Total Channels: 1
  - Start Frame: 0
  - Start Slot: 6
  - Start Port: 0
  - Start Channel: 0
  - Local IP Address: 10.13.4.101
  - Remote IP Address: 10.13.4.116
  - Local Port: 16400
  - Remote Port: 57600
  - Start Port Subtype: MNT Subtype

- End Port Subtype: MNT Subtype
- (4) Click **OK**.
4. Configure a clock source and a clock channel.
- (1) Choose **NE Properties > Clock Management > Clock Source** from the navigation tree.
  - (2) Click the **Frequency Clock Source (TDM)** tab.
  - (3) Right-click the list and choose **Add Clock Source**.
  - (4) In the dialog box that is displayed, set the parameters.
    - Index: 0
    - Frame: 2
    - Slot: 0
    - Port: 0
  - (5) Click **Finish**.
  - (6) Choose **NE Properties > Clock Management > Clock Channel** from the navigation tree.
  - (7) In the information list, right-click and choose **Add** from the shortcut menu.
  - (8) In the dialog box that is displayed, set the parameters.



- (9) Click **OK**.

----End

## Result

The local fixed-line call, local mobile call, long-distance call, and certain special telecom call services (such as 114 and 10000), are available through PHS phones and the communication quality is good. In addition, text messages can be sent between PHS phones and mobile phones.

# 7 Configuring the PPPoE or IPoE Access Service (GE Upstream Transmission)

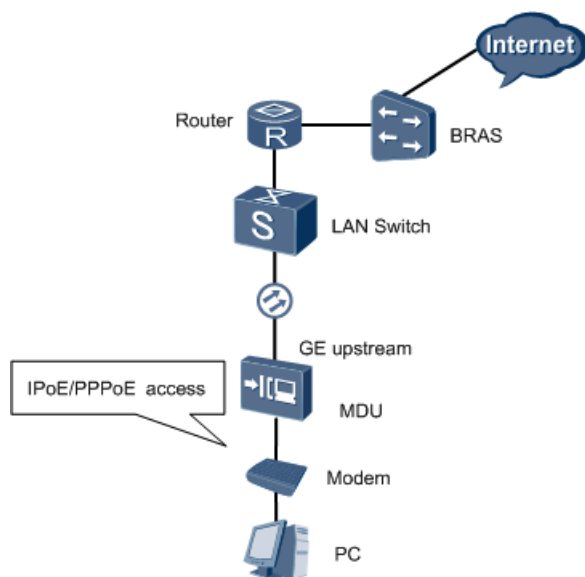
This topic describes how to configure the PPPoE or IPoE service. The ONU supports PPPoE and IPoE services by using the xDSL access technology and thus enables users to access the Internet in PPPoE or IPoE mode. **Currently, the MA5616 supports the PPPoE or IPoE access service.**

## Example Network

Figure 7-1 shows an example network of the PPPoE or IPoE access service.

User data packets are transmitted to the ONU in PPPoE or IPoE mode. Then, the ONU transmits the user data packets upstream to upper layer devices through a GE port. In this way, users can access the Internet in PPPoE or IPoE mode.

Figure 7-1 Example network of the PPPoE or IPoE access service



## Data Plan

**Table 7-1** describes the data plan for the PPPoE or IPoE access service.

 **NOTE**

After an xDSL port is bound to an xDSL profile and activated, the xDSL port can transmit services. This topic focus more on the relationships between xDSL profiles than on the data plan of these services. In actual applications, you need to plan the profile data according to actual requirements.

**Table 7-1** Data plan for the PPPoE or IPoE access service

| Item               | Data                                                                    |
|--------------------|-------------------------------------------------------------------------|
| Traffic profile    | CIR: 1024 kbit/s<br>Outer Priority: 1<br>Priority policy: Local-Setting |
| Network-side VLAN  | 10                                                                      |
| Upstream port ID   | 0/0/0                                                                   |
| Encapsulation mode | PPPoE                                                                   |

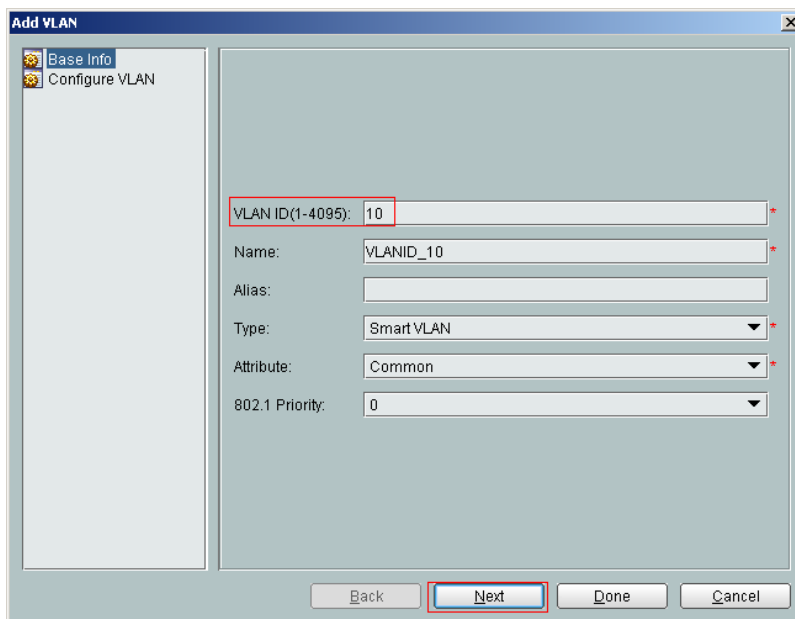
## Procedure

- **Configure the Internet service stream.**

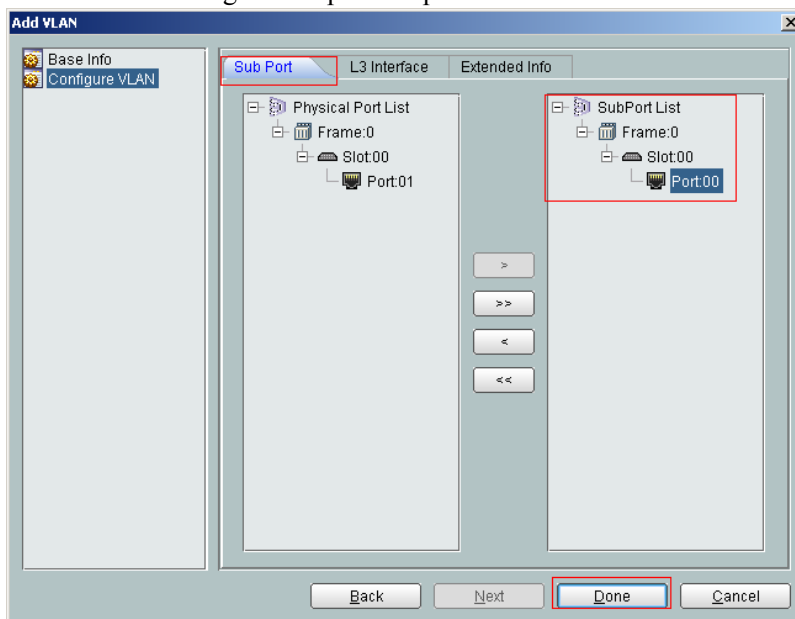
 **NOTE**

To perform the following operations in the navigation tree, you need to navigate to the NE Explorer of the ONU. To navigate to the NE Explorer of the ONU, do as follows: In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.

1. **Add a VLAN and configure its upstream port.**
  - (1) Choose **VLAN** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.



(4) Click **Next** to configure its upstream port.



(5) Click **Done**.

2. **Configure an MEF IP traffic profile.**

- (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
- (2) Click the **MEF IP Traffic Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.

**Add MEF IP Traffic Profile**

Description Info

- Configure the desired parameters.
- When parameter CIR is not set, parameter CBS, parameter PIR, and parameter PBS do not need to be configured. Here, the rate is not restricted.
- Parameter PIR must be greater than or equal to parameter CIR.
- Parameter PBS must be greater than or equal to parameter CBS.

Profile Parameters

Name: internet \*

Alias:

CIR (Kbit/s) (64-10240000): 1024  Unlimited

CBS (bytes) (2000-10240000): 34768 \*

PIR (Kbit/s) (64-10240000): 2048 \*

PBS (bytes) (2000-10240000): 67536 \*

Outer Priority (0-7): 1 \*

Outer Copy Priority: Assign Priority

Index of Outer Priority Mapping Profile: 1

Inner Priority (0-7): 0 \*

Inner Copy Priority: Assign Priority

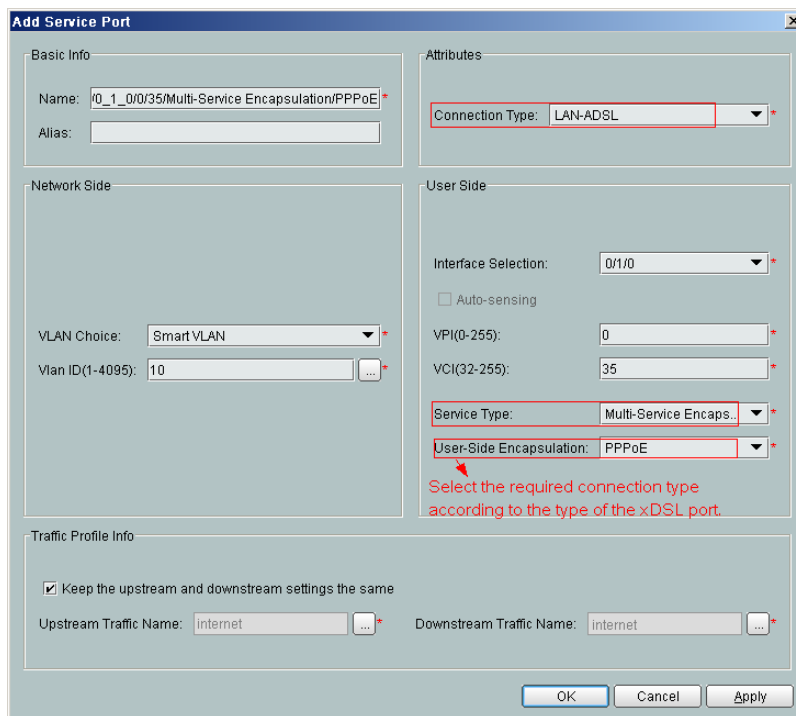
Index of Inner Priority Mapping Profile: 1

Priority Policy: Local-Setting

Traffic Color Mode: color-blind

OK Cancel Apply

- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Add a service virtual port.**
- (1) Choose **Connection > Service Port** from the navigation tree.
  - (2) On the **Service Port** tab page, set the filter criteria to display the required service virtual ports.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.



(5) Click **OK**.

- **Configure an ADSL port.**

1. **Configure an ADSL or NGADSL profile.**

**NOTE**

The ONU supports two ADSL modes, that is, ADSL mode and NGADSL mode. You can switch the mode by running the related command. The default mode is the ADSL mode.

- **Configure an ADSL profile.**

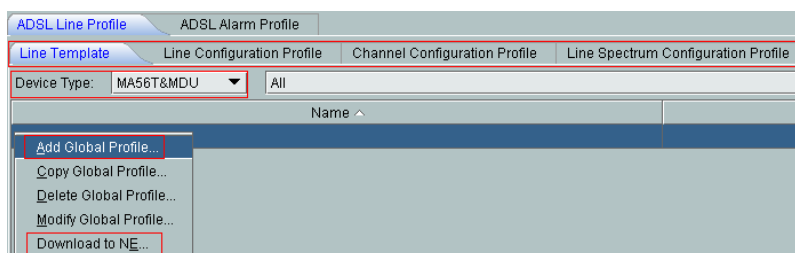
- (1) Choose **Configuration > Access Profile Management > ADSL Profile** from the main menu.
- (2) Click the **ADSL Line Profile** tab, and select **MA56T&MDU** from the **Device Type** drop-down list.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters and click **OK**. In the profile list, right-click the newly configured profile and choose **Download to NE** from the shortcut menu to apply the ADSL line profile to the NE.
- (5) Click the **ADSL Alarm Profile** tab, and select **MA56T&MDU** from the **Device Type** drop-down list.
- (6) Right-click and choose **Add Global Profile** from the shortcut menu.
- (7) In the dialog box that is displayed, set the parameters and click **OK**. In the profile list, right-click the newly configured profile and choose **Download to NE** from the shortcut menu to apply the ADSL alarm profile to the NE.

- **Configure an NGADSL profile.**

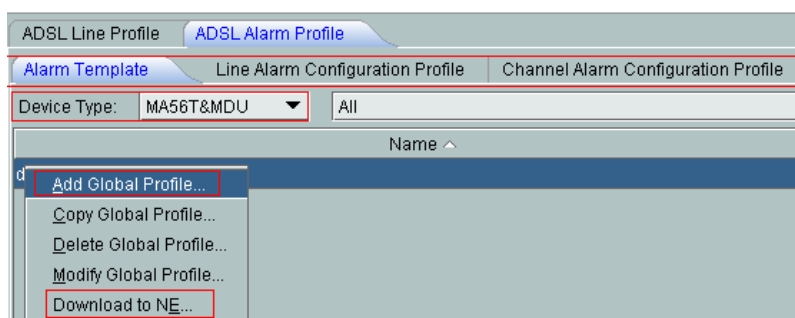
- (1) Choose **Configuration > Access Profile Management > NGADSL Profile** from the main menu.
- (2) Click the **ADSL Line Profile** tab.
- (3) On the **ADSL Line Profile** tab page, configure the line spectrum configuration profile, line configuration profile, channel configuration

profile, and line profile in sequence. The line configuration profile is dependent on the line spectrum configuration profile, and the line profile is dependent on the line configuration profile and the channel configuration profile.

- a. On the **Line Spectrum Configuration Profile** tab page, add a line spectrum configuration profile.
- b. On the **Line Configuration Profile** tab page, add a line configuration profile.
- c. On the **Channel Configuration Profile** tab page, add a channel configuration profile.
- d. On the **Line Template** tab page, add a line profile and apply it to the ONU.




- (4) Click the **ADSL Alarm Profile** tab.
- (5) On the **ADSL Alarm Profile** tab page, configure the line alarm configuration profile, channel alarm configuration profile, and alarm profile in sequence. The alarm profile is dependent on the line alarm configuration profile and the channel alarm configuration profile.
  - a. On the **Line Alarm Configuration Profile** tab page, add a line alarm configuration profile.
  - b. On the **Channel Alarm Configuration Profile** tab page, add a channel alarm configuration profile.
  - c. On the **Alarm Template** tab page, add an alarm profile and apply it to the ONU.



## 2. Configure and activate an ADSL port.

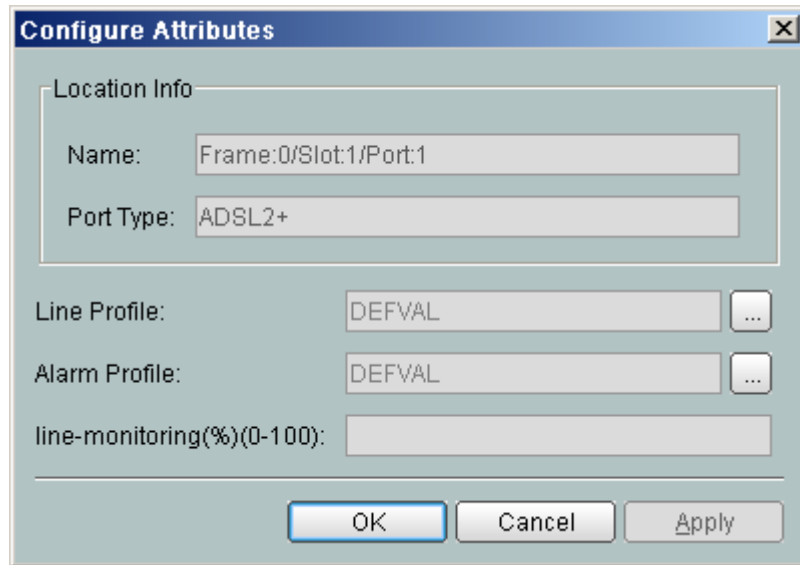
### NOTE

An ADSL port is activated by default. To bind it to a profile, you need to deactivate it first.

- (1) Choose **DSL > ADSL** from the navigation tree.
- (2) On the **ADSL** tab page, set the filter criteria or click  to display the ADSL ports.



- (3) In the ADSL port list, right-click a record and choose **Configure Attributes** from the shortcut menu.

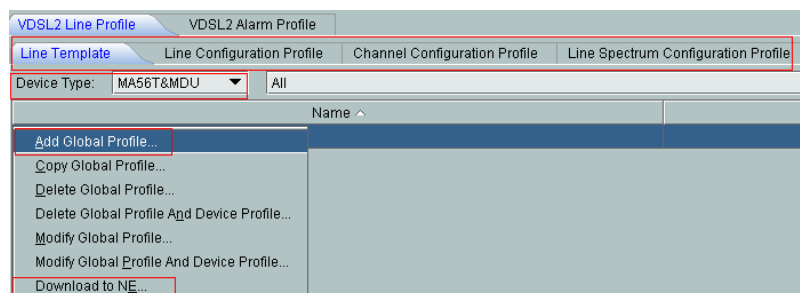


- (4) In the ADSL port list, right-click the record and choose **Activate** from the shortcut menu.

- **Configure a VDSL2 port.**

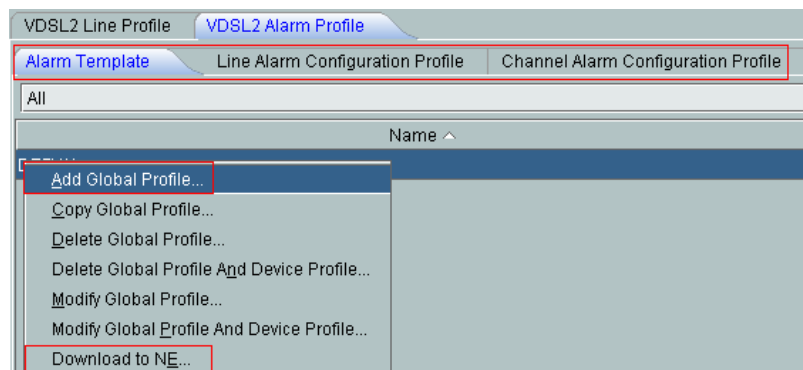
- 1. **Configure a VDSL2 profile.**

- (1) Choose **Configuration > Access Profile Management > VDSL2 Profile** from the main menu.
    - (2) Click the **VDSL2 Line Profile** tab.
    - (3) On the **VDSL2 Line Profile** tab page, configure the line spectrum configuration profile, line configuration profile, channel configuration profile, and line profile in sequence. The line configuration profile is dependent on the line spectrum configuration profile, and the line profile is dependent on the line configuration profile and the channel configuration profile.
      - a. On the **Line Spectrum Configuration Profile** tab page, add a line spectrum configuration profile.
      - b. On the **Line Configuration Profile** tab page, add a line configuration profile.
      - c. On the **Channel Configuration Profile** tab page, add a channel configuration profile.
      - d. On the **Line Template** tab page, add a line profile and apply it to the ONU.



- (4) Click the **VDSL2 Alarm Profile** tab.


- (5) On the **VDSL2 Alarm Profile** tab page, configure the line alarm configuration profile, channel alarm configuration profile, and alarm profile in sequence. The alarm profile is dependent on the line alarm configuration profile and the channel alarm configuration profile.
  - a. On the **Line Alarm Configuration Profile** tab page, add a line alarm configuration profile.
  - b. On the **Channel Alarm Configuration Profile** tab page, add a channel alarm configuration profile.
  - c. On the **Alarm Template** tab page, add an alarm profile and apply it to the ONU.



## 2. Configure and activate a VDSL2 port.

### NOTE

A VDSL2 port is activated by default. To bind it to a profile, you need to deactivate it first.

- (1) Choose **DSL > VDSL2** from the navigation tree.
- (2) On the **VDSL2** tab page, set the filter criteria or click  to display the VDSL2 ports.
- (3) In the VDSL2 port list, right-click a record and choose **Configure Attributes** from the shortcut menu. In the dialog box that is displayed, select a configured line profile and alarm profile.
- (4) In the VDSL2 port list, right-click a record and choose **Activate** from the shortcut menu.

## ● Configure a G.SHDSL port.


### 1. Configure a G.SHDSL profile.

- (1) Choose **Configuration > Access Profile Management > G.SHDSL Profile** from the main menu.
- (2) Click the **G.SHDSL Line Profile** tab, and select from the **Device Type** drop-down list.
- (3) In the dialog box that is displayed, set the parameters and click **OK**. In the profile list, right-click the newly configured profile and choose **Download to NE** from the shortcut menu to apply the G.SHDSL line profile to the NE.
- (4) Click the **G.SHDSL Alarm Profile** tab, and select from the **Device Type** drop-down list.
- (5) In the dialog box that is displayed, set the parameters and click **OK**. In the profile list, right-click the newly configured profile and choose **Download to NE** from the shortcut menu to apply the G.SHDSL alarm profile to the NE.

## 2. Configure and activate a G.SHDSL port.

### NOTE

A G.SHDSL port is activated by default. To bind it to a profile, you need to deactivate it first.

- (1) Choose **DSL** from the navigation tree.
- (2) On the tab page, set the filter criteria or click  to display the G.SHDSL ports.
- (3) In the G.SHDSL port list, right-click a record and choose **Configure Attributes** from the shortcut menu. In the dialog box that is displayed, select a configured line profile and alarm profile.
- (4) In the G.SHDSL port list, right-click a record and choose **Activate** from the shortcut menu.

----End

## Result

After the configuration, the PC can access the Internet in PPPoE or IPoE mode.



# 8 Configuring the Triple Play Service

With the rapid development of broadband services, more and more users demand abundant services to be carried on broadband, such as video services and voice services. In the triple play network, the VoIP, IPTV, and Internet services are transmitted over one cable to the ONU through the home gateway or the optical access modem in a centralized manner. **Currently, the MA5616 supports the triple play service.**

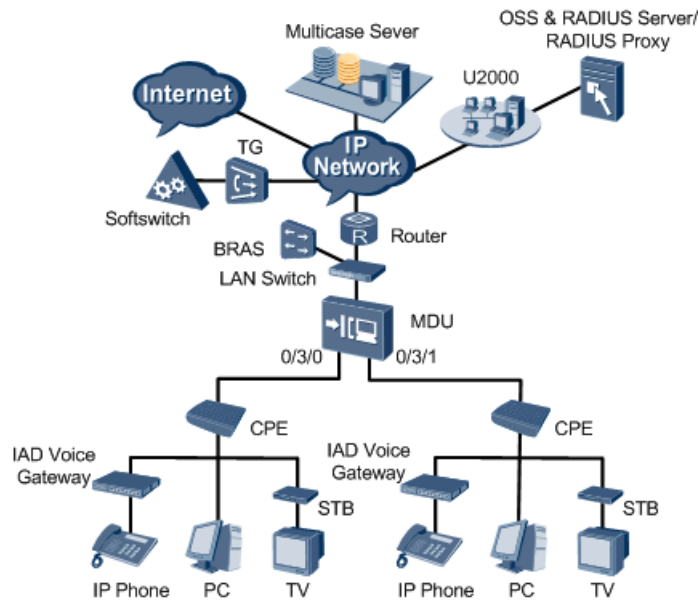
The triple play network supports multiple service stream configuration modes as shown in [Table 8-1](#). This topic considers the single-PVC multi-service mode (based on user-side VLANs) as an example to describe how to configure the triple play service.

**Table 8-1** Implementation mode of the triple play service

| Implementation Mode | Feature                                                                                                                                                                                                                                                                                                  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Single PVC          | Internet, VoIP, and IPTV service streams are carried by the one PVC. After the service streams reach the ONU, the ONU distinguishes the services according to the user-side VLANs or user-side 802.1p priorities of the services.<br>The existing modem needs to be re-configured to save PVC resources. |
| Multiple PVCs       | Internet, VoIP, and IPTV service streams are carried by three different PVCs.<br>The existing modem needs to be re-configured.                                                                                                                                                                           |

## Example Network

[Figure 8-1](#) shows an example network of the triple play service.

**Figure 8-1** Example network of the triple play service

## Data Plan

**Table 8-2** describes the data plan for the triple play service.

**Table 8-2** Data plan for the triple play service

| Item                       | Data                                                                                                       |
|----------------------------|------------------------------------------------------------------------------------------------------------|
| Traffic profile parameters | Internet service: 1 Mbit/s<br>VoIP service: 64 Mbit/s<br>IPTV service: no limit                            |
| Upstream port ID           | 0/0/0                                                                                                      |
| Upstream VLANs             | Internet service: smart VLAN 10<br>VoIP service: smart VLAN 11<br>IPTV service: smart VLAN 12              |
| User-side VLANs            | Internet service: smart VLAN 2<br>VoIP service: smart VLAN 3<br>IPTV service: smart VLAN 4                 |
| IGMP version               | IGMP v3 (default IGMP version in the multicast VLAN mode)                                                  |
| Multicast source           | ISP 1 (IP address is 10.10.10.10 and the multicast program with the IP address of 224.1.1.1 are provided.) |

| Item                      | Data                                                                                                           |
|---------------------------|----------------------------------------------------------------------------------------------------------------|
| Multicast program library | Program 1 (IP address is 224.1.1.1 and the program source IP address is 10.10.10.10, the IP address of ISP 1.) |
| Upstream priority         | 802.1p priority: 6 for VoIP services, 5 for IPTV services, and 1 for Internet services.                        |

## Procedure

- **Configure the Internet, VoIP, and IPTV service streams.**

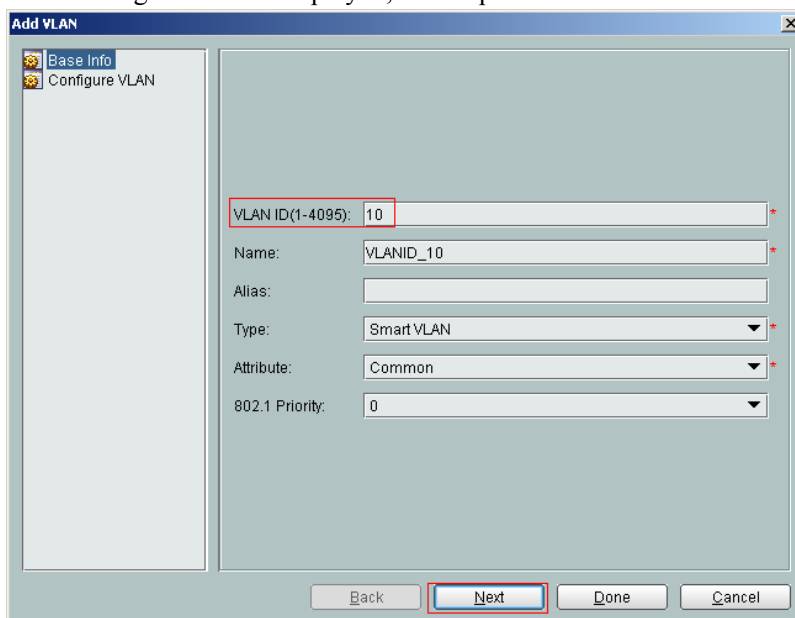
 **NOTE**

A service stream is a service channel connecting the user side to the network side. Service streams are a must for service provisioning. The procedures for configuring Internet, VoIP, and IPTV service streams are similar. This topic considers the Internet service as an example to describe how to configure a service stream. Then you can follow this procedure to configure the VoIP and IPTV service streams according to the corresponding data plans.

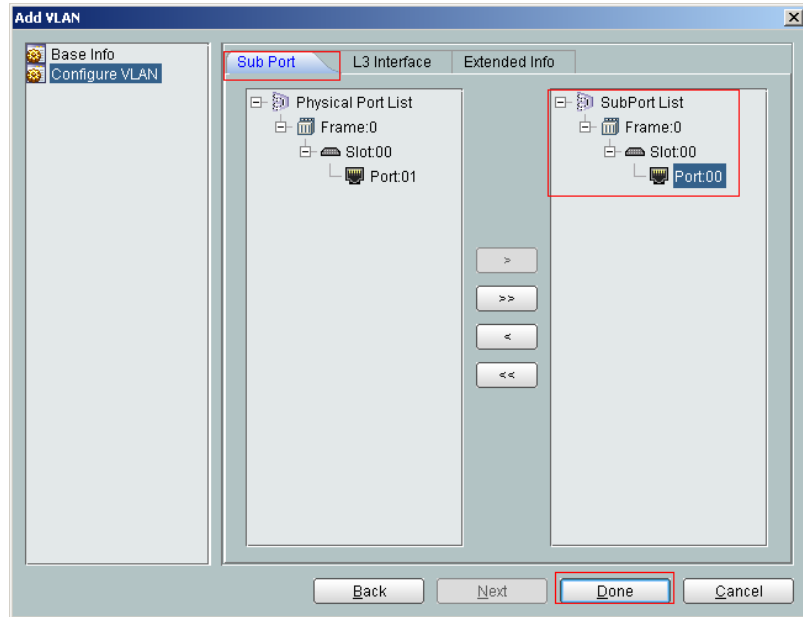
To perform the following operations in the navigation tree, you need to navigate to the NE Explorer of the ONU. To navigate to the NE Explorer of the ONU, do as follows: In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.

1. **Add a VLAN and configure its upstream port.**

- (1) Choose **VLAN** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.



- (4) Click **Next** to configure its upstream port.



(5) Click **Done**.

## 2. Configure an MEF IP traffic profile.

### NOTE

Because the VoIP, IPTV, and Internet services are provided through the same port, you need to set the 802.1p priority for each service.

Generally, the priorities for the VoIP service, IPTV service, and Internet service are in a descending order.

- (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
- (2) Click the **MEF IP Traffic Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.



- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.

3. **Add a service virtual port.**

**NOTE**

- In multi-PVC mode, VoIP, IPTV, and Internet services are carried by different PVCs on the user side. Thus, each port is configured with at least three PVCs. The **Service Type** is set to **Single** and the value of **VLAN ID** on the network side differs with service types. In this way, multiple services can be carried by different PVCs.
- In single-PVC mode, a unique PVC is used to carry services of different types between the access device and user terminals. The **Service Type** parameter is set to distinguish the services.

- (1) Choose **Connection > Service Port** from the navigation tree.
- (2) On the **Service Port** tab page, set the filter criteria to display the required service virtual ports.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.

(5) Click **OK**.

After the preceding steps, the configurations of the Internet and VoIP service streams are complete. When a user successfully dials up on a PC by using the PPPoE dialup software, the user can access the Internet. In addition, VoIP users can communicate with each other successfully.

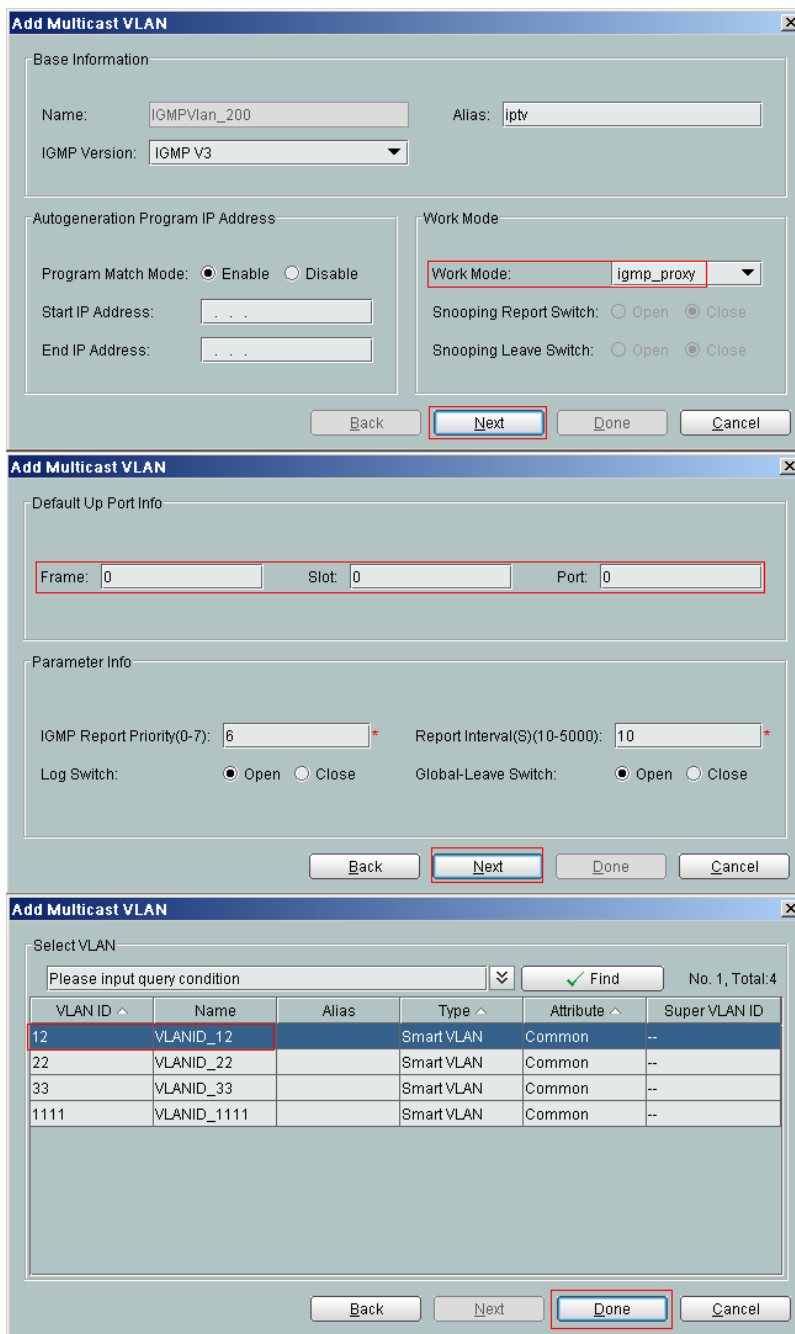
- **Configure multicast data.**

**NOTE**

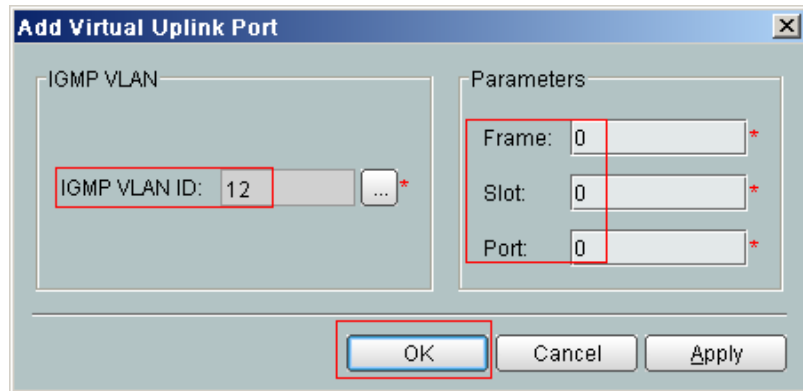
To provision an IPTV service, you also need to configure the IGMP proxy and multicast programs.

1. **Add a multicast VLAN and configure the multicast mode.**

- (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.



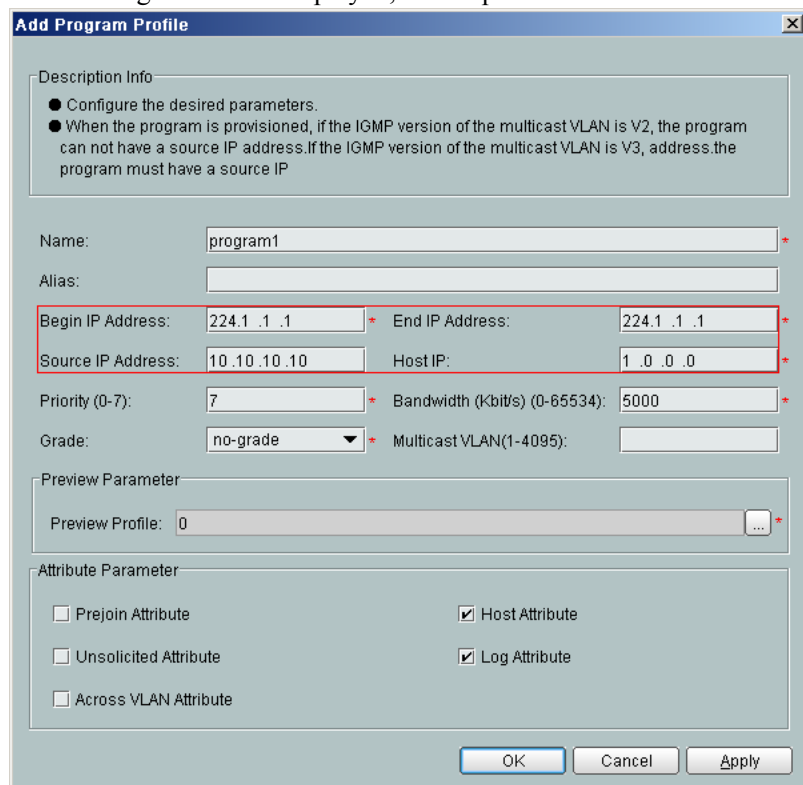
- (4) Click **Finish**.
2. **Add a virtual uplink port.**
  - (1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.



(4) Click **Finish**.

3. **Configure a program profile.**

- (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
- (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.



(5) Click **OK**.

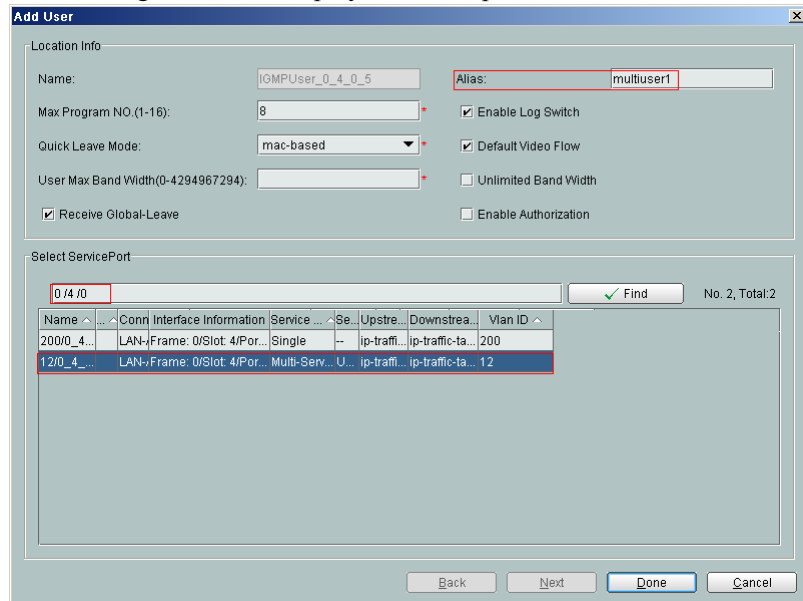
(6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.

(7) In the dialog box that is displayed, select the required device and click **Next**.

(8) In the dialog box that is displayed, set **VLAN ID** to 12 and click **Done**.

4. **Configure multicast users.**

- (1) Choose **Multicast > Multicast User** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.



- (4) Click **Finish**.  
IPTV users can watch program 1.

----End



# 9 Configuring the Ethernet Port Access Service (GE Upstream Transmission)

---

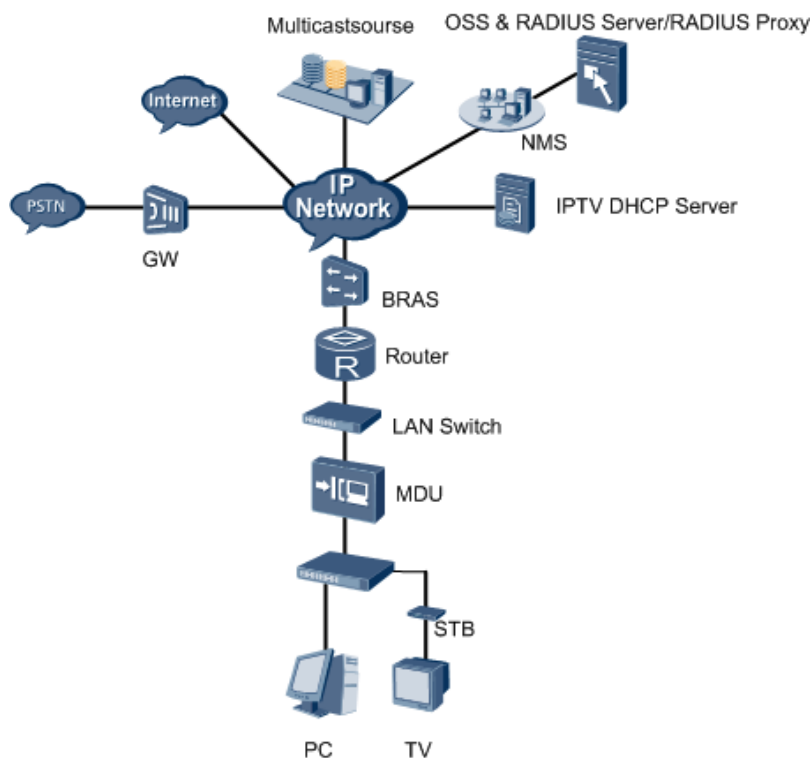
This topic describes how to configure the Ethernet port access service. The ONU supports the access of one or multiple video and data services through a single Ethernet port in multi-service mode. **Currently, the MA5612 supports the Ethernet port access service.**

## Example Network

**Figure 9-1** shows an example network of the Ethernet port access service.

The PC and STB are connected to the Ethernet port on the ONU through the LAN switch, implementing the Ethernet access in the single-port for multi-service mode and transmitting data upstream to the router through the GE upstream port 0/0/0. Then, the data is transmitted to the Internet.

**Figure 9-1** Example network of the Ethernet port access service



## Data Plan

**Table 9-1** describes the data plan for the Ethernet port access service.

**Table 9-1** Data plan for the Ethernet port access service

| Item             | Data                                                                                                           |
|------------------|----------------------------------------------------------------------------------------------------------------|
| Service port ID  | 0/4/1                                                                                                          |
| Upstream port ID | 0/0/0                                                                                                          |
| Upstream VLANs   | <ul style="list-style-type: none"> <li>● Internet service: VLAN 10</li> <li>● IPTV service: VLAN 12</li> </ul> |
| User-side VLAN   | <ul style="list-style-type: none"> <li>● Internet service: VLAN 2</li> <li>● IPTV service: VLAN 3</li> </ul>   |
| Internet mode    | PPPoE                                                                                                          |
| Program library  | Program 1 (multicast IP address: 224.1.1.1, program source IP address: 10.10.10.10)                            |
| Priority         | 802.1p priority: 4 for IPTV services and 1 for Internet services.                                              |



| Item                                                      | Data                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Requirements for the LAN switch of the upper-layer device | <ul style="list-style-type: none"> <li>● The LAN switch transparently transmits the service packets of the ONU.</li> <li>● A VLAN must be configured for the service access of the ONU. The VLAN ID must be the same as that of the upstream VLAN of the ONU.</li> </ul> <p>For detailed configuration of the LAN switch, see the related configuration guide.</p> |

## Procedure

- **Configure Internet and IPTV service streams.**

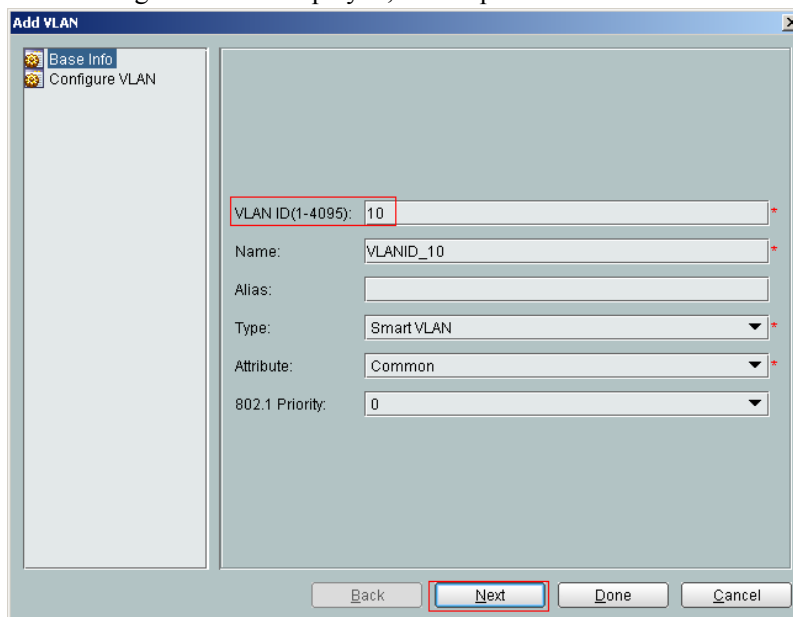
 **NOTE**

A service stream is a service channel connecting the user side to the network side. Service streams are a must for service provisioning. The procedures for configuring Internet and IPTV service streams are similar. Therefore, this topic considers the Internet service as an example to describe how to configure the service stream. Then you can follow this procedure to configure the IPTV service streams according to the corresponding data plan.

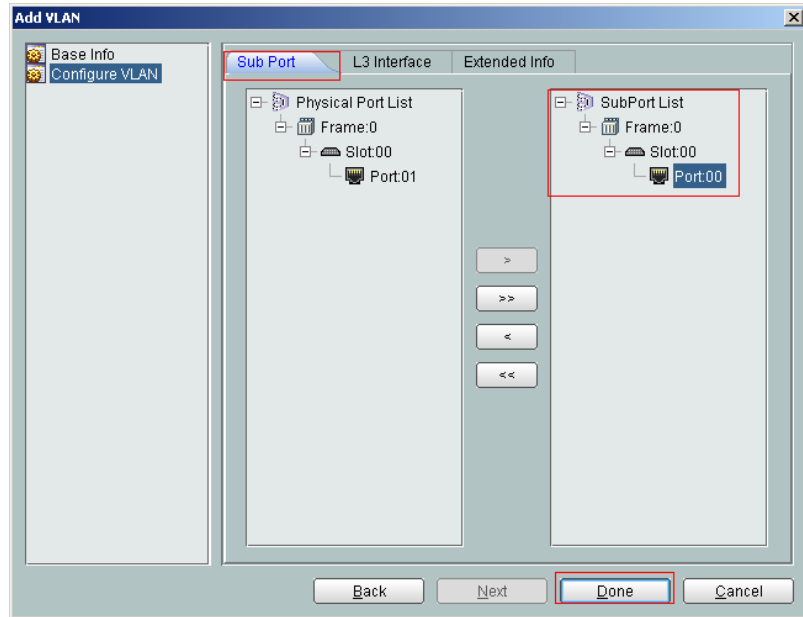
To perform the following operations in the navigation tree, you need to navigate to the NE Explorer of the ONU. To navigate to the NE Explorer of the ONU, do as follows: In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.

1. **Add a VLAN and configure its upstream port.**

- (1) Choose **VLAN** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.



- (4) Click **Next** to configure its upstream port.



- (5) Click **Done**.
2. **Configure a traffic profile.**
  - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - (2) Click the **MEF IP Traffic Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

**Add MEF IP Traffic Profile**

Description Info

- Configure the desired parameters.
- When parameter CIR is not set, parameter CBS, parameter PIR, and parameter PBS do not need to be configured. Here, the rate is not restricted.
- Parameter PIR must be greater than or equal to parameter CIR.
- Parameter PBS must be greater than or equal to parameter CBS.

Profile Parameters

Name: internet \*

Alias:

CIR (Kbit/s) (64-10240000): 1024  Unlimited

CBS (bytes) (2000-10240000): 34768 \*

PIR (Kbit/s) (64-10240000): 2048 \*

PBS (bytes) (2000-10240000): 67536 \*

Outer Priority (0-7): 1 \*

Outer Copy Priority: Assign Priority

Index of Outer Priority Mapping Profile: 1

Inner Priority (0-7): 0 \*

Inner Copy Priority: Assign Priority

Index of Inner Priority Mapping Profile: 1

Priority Policy: Local-Setting

Traffic Color Mode: color-blind

OK Cancel Apply

- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Add a service virtual port.**
- (1) Choose **Connection > Service Port** from the navigation tree.
  - (2) On the **Service Port** tab page, set the filter criteria to display the required service virtual ports.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

The screenshot shows the 'Add Service Port' dialog box with the following configuration:

- Basic Info:** Name: \_0/Multi-Service VLAN+Encapsulation/2/PPPoE, Alias: (empty)
- Attributes:** Connection Type: LAN-ETHER
- Network Side:** VLAN Choice: Smart VLAN, Vlan ID(1-4095): 10
- User Side:** Interface Selection: 0/4/0, Service Type: Multi-Service VLAN+E, User VLAN(1-4095): 2, User-Side Encapsulation: PPPoE
- Traffic Profile Info:**  Keep the upstream and downstream settings the same, Upstream Traffic Name: internet, Downstream Traffic Name: internet

(5) Click **OK**.

The configuration of Internet service stream is complete and users can access the Internet by using the PPPoE dialup software successfully on a PC.

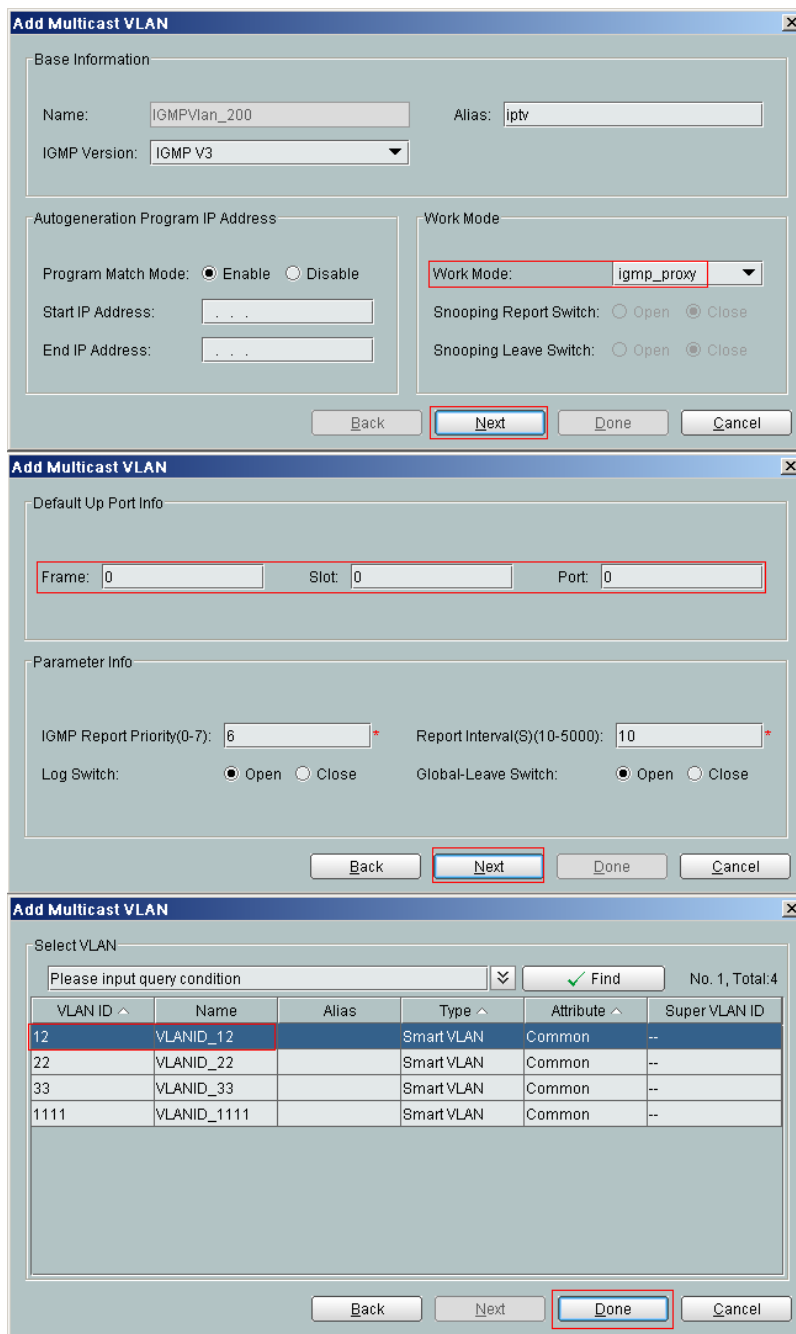
- **Configure the multicast data.**

**NOTE**

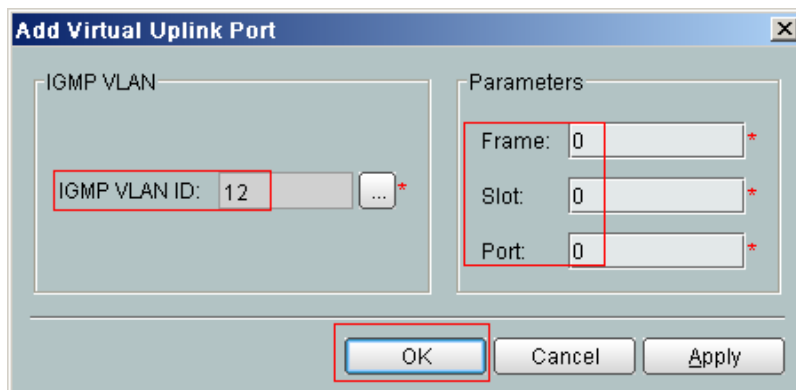
To provision an IPTV service, you also need to configure the IGMP proxy and multicast programs.

1. **Add a multicast VLAN and configure the multicast mode.**

- (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.



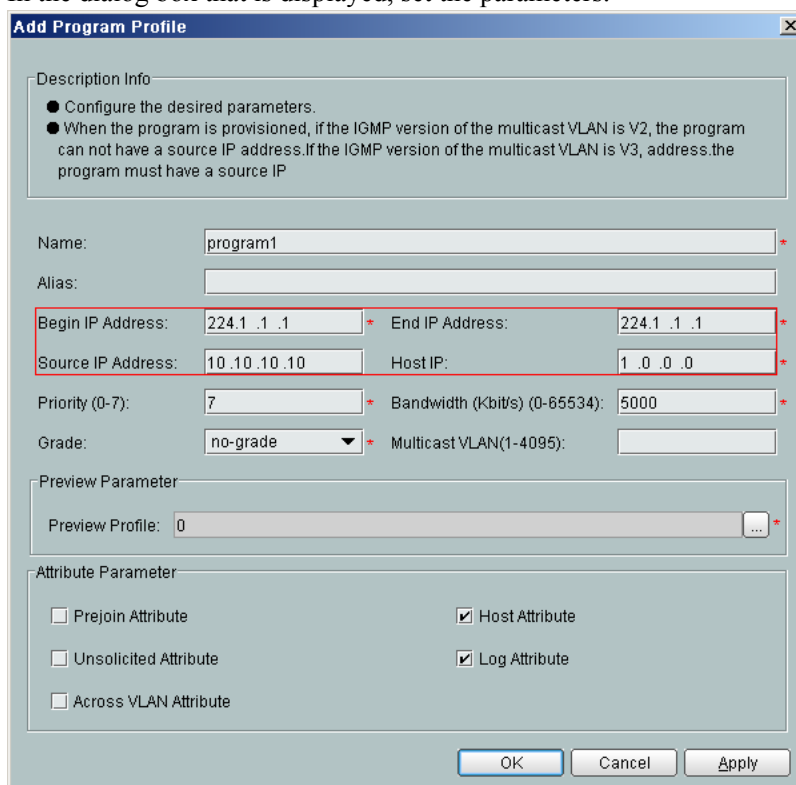
- (4) Click **Finish**.
2. **Add a virtual uplink port.**
    - (1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.



(4) Click **Finish**.

3. **Configure a program profile.**

- (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
- (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.



(5) Click **OK**.

(6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.

(7) In the dialog box that is displayed, select the required device and click **Next**.

(8) In the dialog box that is displayed, set **VLAN ID** to 12 and click **Done**.

4. **Configure multicast users.**

- (1) Choose **Multicast > Multicast User** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.

| Name      | Conn | Interface Information    | Service       | Se   | Upstre       | Downstrea        | Vlan ID |
|-----------|------|--------------------------|---------------|------|--------------|------------------|---------|
| 2000_4... | LAN  | Frame: 0/Slot: 4/Port... | Single        | --   | ip-traffi... | ip-traffic-ta... | 200     |
| 120_4_... | LAN  | Frame: 0/Slot: 4/Port... | Multi-Serv... | U... | ip-traffi... | ip-traffic-ta... | 12      |

- (4) Click **Finish**.  
IPTV users can watch program 1.

----End





# 10 Configuring the VLAN ID Extension Service

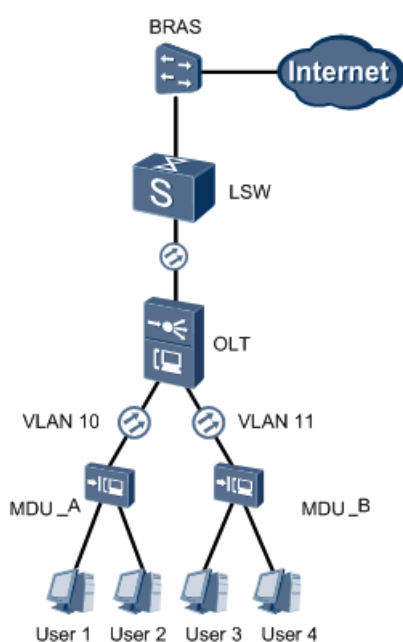
This topic describes how to configure the VLAN ID extension service. Broadband users of multiple ONUs are authenticated on a BRAS to obtain broadband services provided by carriers. The BRAS can identify users according to L2 VLANs. Therefore, the number of supported VLANs is extended. **Currently, the MA5616, MA5612, MA5620, and MA5626 support the VLAN ID extension service.**

## Example Network

**Figure 10-1** shows an example network of the VLAN ID extension service.

Broadband users of multiple ONUs are authenticated on a BRAS to obtain broadband services provided by carriers. The BRAS supports the user identification through L2 VLAN. Specifically, the outer VLAN tag identifies the ONU that connects to users, and the inner VLAN tag identifies the users that are connected to the device.

**Figure 10-1** Example network of the VLAN ID extension service



## Data Plan

**Table 10-1** describes the data plan for the VLAN ID extension service.

**Table 10-1** Data plan for the VLAN ID extension service

| Item  | Data                                                                    |
|-------|-------------------------------------------------------------------------|
| ONU_A | Upstream port ID: 0/0/0                                                 |
|       | Upstream VLAN ID (outer VLAN tag): 100<br>VLAN attribute: stacking VLAN |
|       | User 1: inner VLAN tag 11                                               |
|       | User 2: inner VLAN tag 12                                               |
| ONU_B | Upstream port ID: 0/0/0                                                 |
|       | Upstream VLAN ID (outer VLAN tag): 101<br>VLAN attribute: stacking VLAN |
|       | User 3: inner VLAN tag 11                                               |
|       | User 4: inner VLAN tag 12                                               |

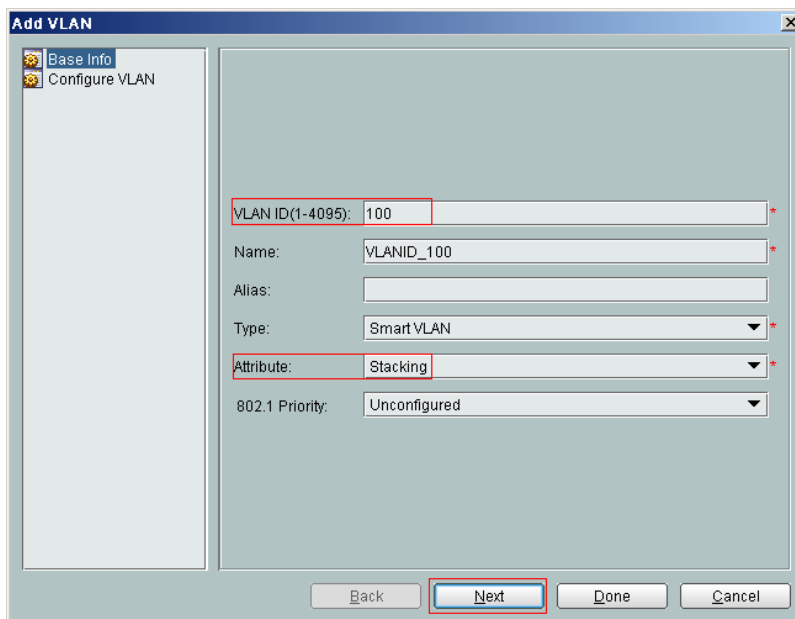
## Procedure

- **Configure the VLAN ID extension service on the ONU\_A side.**

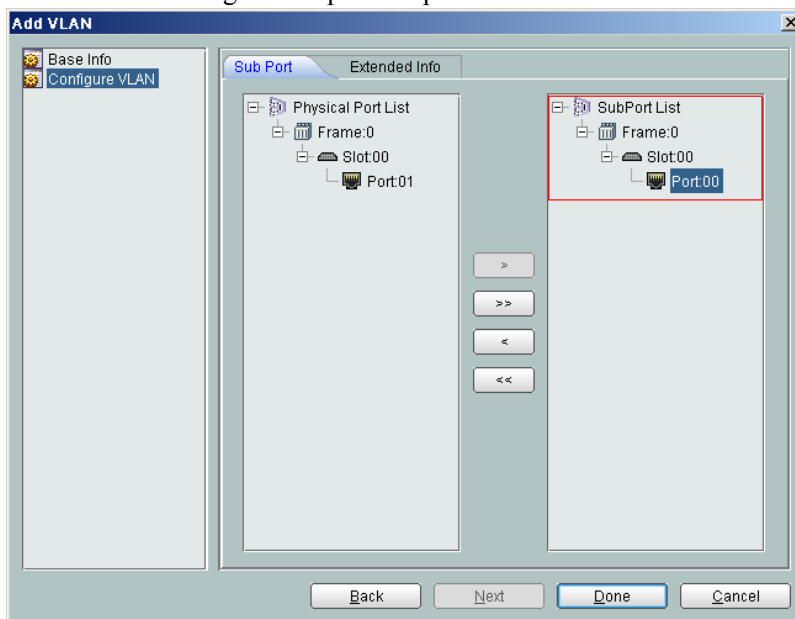
 **NOTE**

To perform the following operations in the navigation tree, you need to navigate to the NE Explorer of the ONU. To navigate to the NE Explorer of the ONU, do as follows: In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.

1. **Add a VLAN and configure its upstream port.**
  - (1) Choose **VLAN** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.



(4) Click **Next** to configure its upstream port.



(5) Click **Done**.

## 2. Add a service virtual port.

### NOTE

The operations for adding a service virtual port for user 1 are similar to those for user 2. This topic considers user 1 as an example to describe how to add a service virtual port.

- (1) Choose **Connection > Service Port** from the navigation tree.
- (2) On the **Service Port** tab page, set the filter criteria to display the required service virtual ports.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.

(5) Click **OK**.

- **Configure the VLAN ID extension service on the ONU\_B side.** (See the procedure for configuring the VLAN ID extension service on the ONU\_A side).

----End

## Result

After being authenticated by the BRAS, the users connected to the ONU\_A and ONU\_B can access the Internet.

Two users of the ONU can be identified by one outer VLAN tag. In this manner, the number of access users based on one VLAN tag is increased.

# 11 Configuring the Ethernet OAM Diagnosis

---

## About This Chapter

This topic describes the principles, configuration procedure, and configuration example of the Ethernet OAM diagnosis.

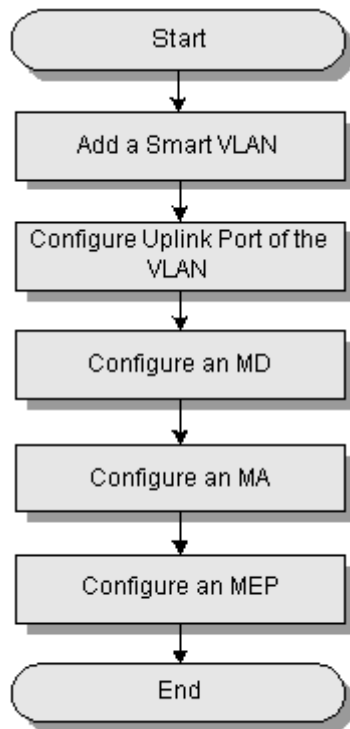
### Prerequisite

- The corresponding VLAN must exist.
- The VLAN must be configured with an upstream port.

### Context

With the extension of the Ethernet technology from the carrier network to MAN and WAN, carriers are more concerned about the maintainability of devices. Therefore, the maintenance of Ethernet devices becomes more and more important. The operations, administration and maintenance (OAM) issue of the transmission network is pressing. The 802.1ag connectivity fault management (CFM) provides an end-to-end method for detecting faults. The Ethernet OAM mechanism supported by the 802.1ag CFM covers connectivity check (CC), loopback (LB), link trace (LT), and forward AIS alarms.

**Figure 11-1** shows the flowchart for configuring the Ethernet OAM diagnosis on the ONU.

**Figure 11-1** Flowchart for configuring the Ethernet OAM diagnosis

### 11.1 Introduction to the Ethernet OAM

This topic describes the basic concepts and principles of the Ethernet connectivity fault management (CFM) and the example network of the Ethernet OAM. The Ethernet OAM mechanism supported by the 802.1ag covers the connectivity check (CC), link trace (LT), and loopback (LB).

### 11.2 Configuring an MD

This topic describes how to configure an MD. Different MDs are maintained by different management entities.

### 11.3 Configuring an MA

This topic describes how to add an MA, add devices to the MA, configure the interval for sending CCM packets and the function of checking remote MEPs, check the remote MEPs configured in the MA, and report alarms of detected faults.

### 11.4 Configuring a Source MEP

This topic describes how to create a source MEP to detect the connectivity of a channel in an MA, and how to configure the administrative status, CCM and LTM priority, and CCM sending status for the MEP.

### 11.5 Enabling the Global CFM Function

This topic describes how to configure the Ethernet OAM global parameters on the U2000 and issue the parameters to the specified devices. You can configure the Ethernet OAM global parameters in the **System Parameter Profile** of the U2000. Devices can detect and locate Ethernet faults through the bound **System Parameter Profile**.

### 11.6 Configuration Example of the Ethernet OAM Diagnosis

This topic provides an example for configuring the Ethernet OAM on the ONU.

## 11.1 Introduction to the Ethernet OAM

This topic describes the basic concepts and principles of the Ethernet connectivity fault management (CFM) and the example network of the Ethernet OAM. The Ethernet OAM mechanism supported by the 802.1ag covers the connectivity check (CC), link trace (LT), and loopback (LB).

### Context

The basic concepts and principles of the Ethernet CFM are described as follows.

1. Basic concepts:
  - Maintenance domain (MD): The Ethernet CFM divides a network into a maximum of eight layers. A bridge can have different layers to manage different MDs. A CFM MD consists of bridges, and is a combination of bridges and maintenance levels. MDs come under three layers: user domain (levels 7-5), service provider domain (levels 4-3), and carrier domain (levels 2-0). Different MDs are maintained by different management entities.
  - Maintenance association (MA): An MD can be divided into multiple MAs. Each MA maps with a service instance (SI) identified by a VLAN in the MD. That is, the MA can be understood as a combination of an MD and a VLAN. (According to the standard, multiple VLANs can map with one SI, and one SI maps with one MA.)
  - Maintenance point (MP): An MA consists of maintenance points (MPs) that are defined on the ports of bridges. That is, an MP is a combination of a bridge port, a VLAN, and a maintenance level. MPs are classified into two types: maintenance association end point (MEP) and maintenance association intermediate point (MIP). An MEP initiates and responds to CFM messages. An MIP does not initiate CFM messages. It only transparently transmits or responds to CFM messages.
2. Principles of fault detection:
  - Continuity check messages (CCMs) are used to detect Ethernet faults. Each MEP actively sends CCM packets at regular intervals. The CCM packets are copied to the multicast addresses. All the MIPs and MEPs in the MD can receive the CCM packets but need not respond. When an MEP receives CCM packets from other MEPs, it sets up and maintains an MEP CCM database. The database records the MEP IDs, MAC addresses of the MEPs, and the mappings between the MEPs and the receiving ports. The database also records the information about other MEPs in the MA. If the MEP does not receive CCM packets from another MEP for three successive times, the MEP reports a fault.
  - Loss of CCM packets may be caused by a link fault, a switched network fault, or wrong configurations between two MEPs. The NMS can use other methods, such as loss of physical layer signals, instead of CCM packets, to detect the link faults. But in this case, the NMS cannot detect the non-link faults, such as switched network faults or wrong configurations. After a fault is discovered through CCM packets, you can use LB or LT to locate the fault (for example, in the switched network).
  - CCM packets can detect not only the link faults and switched network faults, but also the service configuration errors (such as unmatched MA names), repeated MEP configurations (such as repeated MEP names), undesired MEPs, loopback (repeated serial numbers), data loss, and data corruption (such as wrong checksum).
3. Alarm mechanism: There are four types of alarms.



- Cross-connection alarm: After an MEP on a bridge receives a CCM packet, the MEP checks whether certain configuration (including the type and length of the MD name; the MD name; the type and length of the MA name; and the MA name) of the peer MEP as carried by the CCM packet is completely the same as the local configuration. If the configurations are different, the MEP reports a cross-connection alarm.
  - Loss-of-CCM alarm: If an MEP on a bridge does not receive a CCM packet from a remote MEP in a specific period (3.5 times the sending interval), the MEP reports a loss-of-CCM alarm.
  - Error alarm: After an MEP on a bridge receives a CCM packet, the MEP compares the MEP information in the received CCM packet with the configuration information about the remote MEP, including the interval for sending CCM packets. If the information does not match, the MEP reports an error alarm.
  - RDI alarm: If a local MEP does not receive CCM packets from its remote MEP, the local MEP sends a CCM packet with an RDI bit. When another MEP receives the CCM packet with the RDI bit, the MEP reports an RDI alarm.
4. LT principle:
- The LT helps to check the MIP path between two MEPs. A link trace message (LTM) contains a known multicast address, but is not multicasted. The LTM contains additional information indicating the MAC address of the destination MEP. When the LTM is forwarded by MIPs to the destination MEP in unicast mode, each MIP sends a link trace reply (LTR) to the source MEP. In this way, the source MEP learns the MIPs along the path to the destination MEP and records their MAC addresses.
5. LB principle:
- LB helps an MEP to locate faults in an MA. LB uses the unicast MAC address of an MEP or MIP that is discovered by the CC or LT. The source MEP creates a loopback message (LBM) containing the index of the destination MEP, sends the LBM, and starts the timer. After receiving the LBM, the destination MEP sends an LBR to the source MEP. The loopback test succeeds. If the timer of the source MEP expires, the loopback test fails.

## 11.2 Configuring an MD

This topic describes how to configure an MD. Different MDs are maintained by different management entities.

### Prerequisite

- The corresponding VLAN must exist.
- The VLAN must be configured with an upstream port.
- You can perform this operation only after the CFM function is enabled globally.

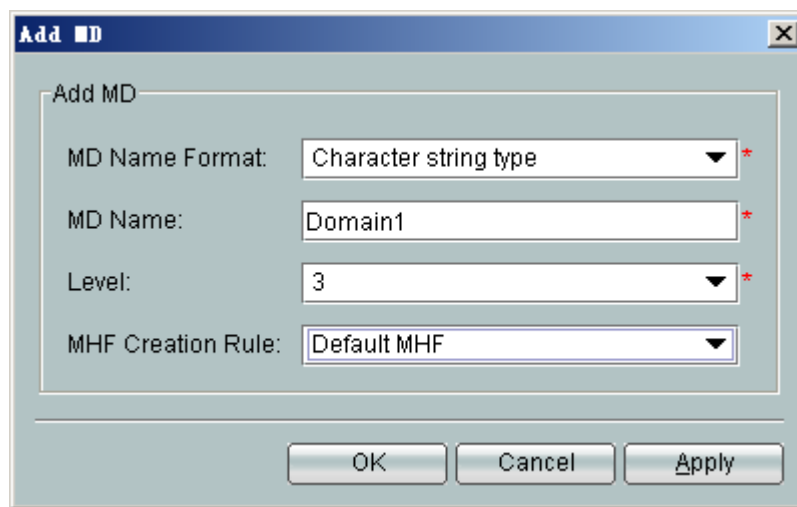
### Context

- The system supports three MDs.
- MDs with the same name format and the same name cannot be created on the same device, but can be created on different devices.
- MDs of the same level cannot be created on the same device, but can be created on different devices.

- The total length of the names of an MA and the corresponding MD must be less than or equal to 43 characters.

## Procedure

- 1 In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
- 2 Choose **ETH OAM** from the navigation tree.
- 3 Click the **Maintenance Domain** tab, right-click the list, and then choose **Add**.
- 4 In the dialog box that is displayed, set **MD Name Format**, **MD Name**, **Level** and **MHF Creation Rule** as follows.



- 5 Click **OK**.

----End

## 11.3 Configuring an MA

This topic describes how to add an MA, add devices to the MA, configure the interval for sending CCM packets and the function of checking remote MEPs, check the remote MEPs configured in the MA, and report alarms of detected faults.

### Prerequisite

- The corresponding VLAN must exist.
- The VLAN must be configured with an upstream port.
- The MD must be configured.

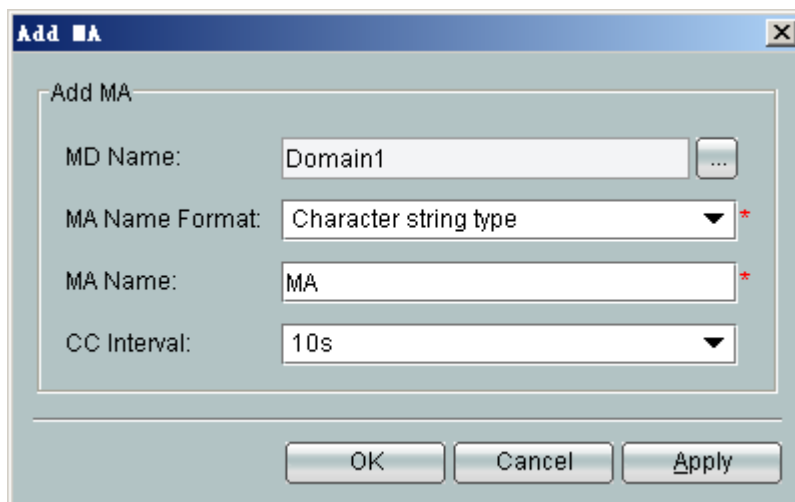
### Context

- You can perform this operation only after the CFM function is enabled globally.
- Each MD can be configured with up to 48 MAs. The system supports up to 48 MAs. That is, if you configure 48 MAs in an MD, you cannot configure MAs in other MDs.

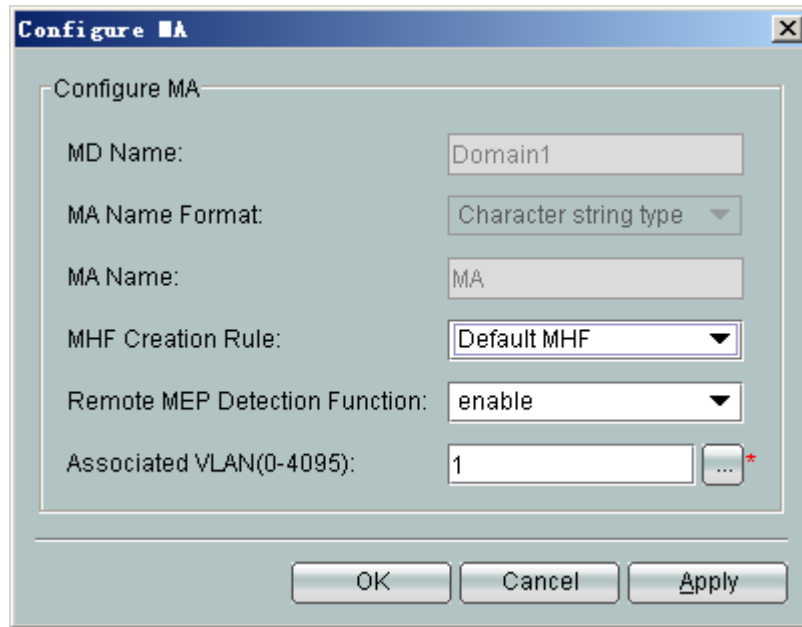
- The MA must belong to an MD. Do not create an MA that is consistent with an existing one.
- The MAs in the same MD cannot be associated with the same VLAN.
- The total length of the names of an MA and the corresponding MD must be less than or equal to 43 characters.

## Procedure

- 1 In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
- 2 Choose **ETH OAM** from the navigation tree.
- 3 Click the **Maintenance Association** tab, right-click the list, and then choose **Add**.
- 4 In the dialog box that is displayed, set **MD Name**, **MA Name Format**, **MA Name**, and **CC Interval** as follows.



- 5 Click **OK**.
- 6 Select the added MA1, right-click, and then choose **Configure**.
- 7 In the dialog box that is displayed, set **MHF Creation Rule**, **Remote MEP Detection Function** and **Associated VLAN** as follows.



8 Click **OK**.

----End

## 11.4 Configuring a Source MEP

This topic describes how to create a source MEP to detect the connectivity of a channel in an MA, and how to configure the administrative status, CCM and LTM priority, and CCM sending status for the MEP.

### Prerequisite


- The corresponding VLAN must exist.
- The VLAN must be configured with an upstream port.
- The MD must be configured. For details, see [11.2 Configuring an MD](#).
- The MA must be configured. For details, see [11.3 Configuring an MA](#).

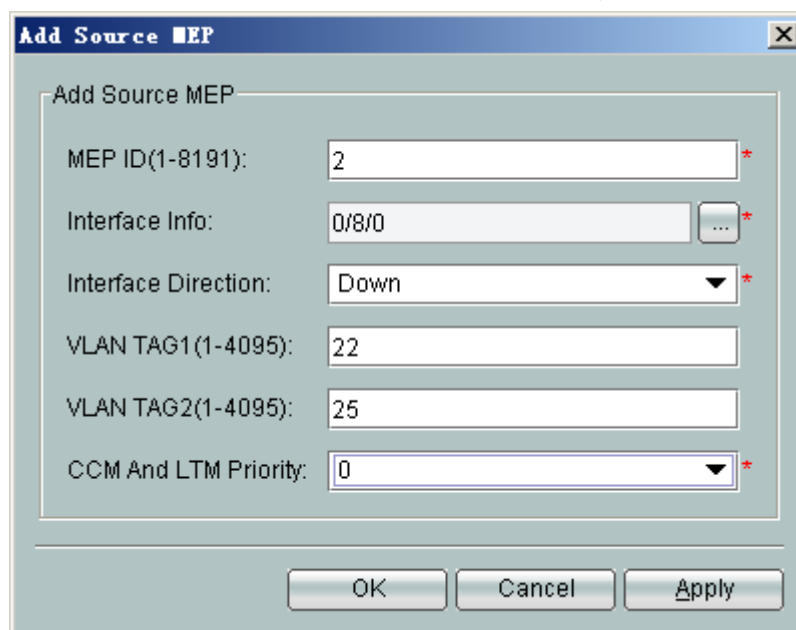
### Context

An MEP is the end point of a maintenance channel. Ethernet OAM depends on the MEPs at both ends of a channel to check the connectivity. Therefore, the MEPs must be created. After creating the MEPs, you can use them to check the connectivity of a channel in an MA.

- The MEP takes effect only after the administrative function is enabled.
- The MEP can send CCM packets at regular intervals to check the connectivity of a channel only after the CCM packet sending function is enabled successfully.
- After the CCM and LTM priority is successfully configured, the system discards the packets with lower priority in case of congestion.

## Procedure

- 1 In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
- 2 Choose **ETH OAM** from the navigation tree.
- 3 Click the **Maintenance Association** tab, set the querying criteria or click  to display the records.
- 4 Select a record from the list, and then click the **Source MEP ID Info** tab in the lower pane. Right-click the list, and then choose **Add**.
- 5 In the dialog box that is displayed, set **MEP ID**, **Interface Info**, **Interface Direction**, **VLAN TAG1**, **VLAN TAG2** and **CCM And LTM Priority** as follows.

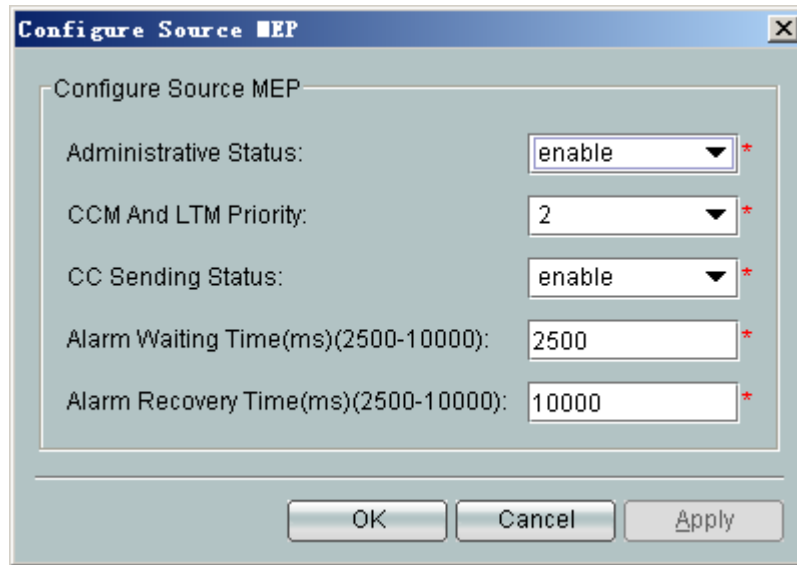


The screenshot shows a dialog box titled "Add Source MEP". It contains the following fields and values:

| Field                 | Value |
|-----------------------|-------|
| MEP ID(1-8191):       | 2     |
| Interface Info:       | 0/8/0 |
| Interface Direction:  | Down  |
| VLAN TAG1(1-4095):    | 22    |
| VLAN TAG2(1-4095):    | 25    |
| CCM And LTM Priority: | 0     |

Buttons at the bottom: OK, Cancel, Apply.

- 6 Click **OK**.
- 7 Select the added source MEP, right-click, and then choose **Configure**.
- 8 In the dialog box that is displayed, enable the **Administrative Status** and **CC Sending Status** of the MEP, and then set **CCM And LTM Priority**, **Alarm Waiting Time** and **Alarm Recovery Time** as follows.



9 Click **OK**.

----End

## 11.5 Enabling the Global CFM Function

This topic describes how to configure the Ethernet OAM global parameters on the U2000 and issue the parameters to the specified devices. You can configure the Ethernet OAM global parameters in the **System Parameter Profile** of the U2000. Devices can detect and locate Ethernet faults through the bound **System Parameter Profile**.

### Context

When the global CFM function is enabled, the CFM packets are captured, and the functions of CC, LB and LT are enabled. When the global CFM function is disabled, the CFM packets are not captured, and the functions of CC, LB, and LT are disabled.

The system parameter profile is a collection of system parameters, such as ETH OAM parameters and other parameters. After a system parameter profile is issued to a device successfully, the parameters in the profile overwrite the original parameters on the device. This may affect the services of the device. Therefore, the system parameter profile must be issued to the device before service provisioning.

### Procedure

- 1 In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
- 2 On the navigation tree of the tab page that is displayed, choose **NE Properties > Protocol > ETH OAM**.
- 3 In the parameter configuration area in the right pane, configure the global parameters of the Ethernet OAM devices, including the multicast MAC base address that is used to send CC/LT packets, and then set **Global remote MEP test** and **Global CFM switch**.

| Parameter              | Value             |
|------------------------|-------------------|
| MAC address            | 01-80-C2-00-01-00 |
| Global remote MEP test | Open              |
| Global CFM switch      | Open              |
| Alarm switch           | Open              |

4 Click **Apply**.

----End

## 11.6 Configuration Example of the Ethernet OAM Diagnosis

This topic provides an example for configuring the Ethernet OAM on the ONU.

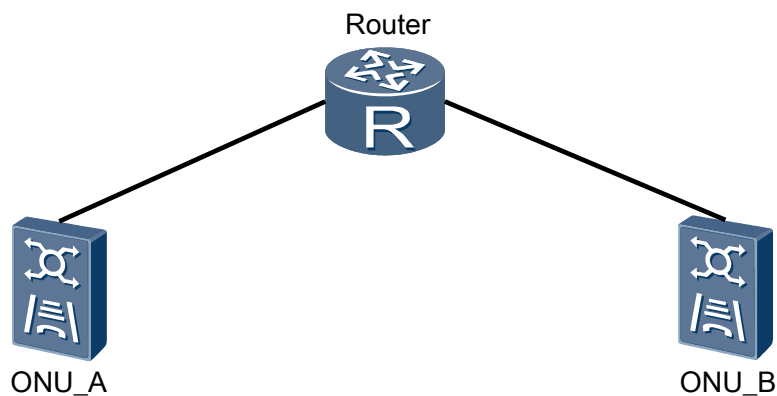
### Prerequisite

- The example network as shown in [Figure 11-2](#) must be complete.
- The network devices and lines must be in the normal state.

### Example Network

[Figure 11-2](#) shows the example network of the Ethernet OAM on the ONU. The link between ONU\_A and ONU\_B uses the Ethernet OAM mechanism to detect link faults. Both ONU\_A and ONU\_B are configured with a local MEP and a remote MEP. The local MEP ID of ONU\_B is the same as the remote MEP ID of ONU\_A. The remote MEP ID of ONU\_B is the same as the local MEP ID of ONU\_A.

**Figure 11-2** Example network of the Ethernet OAM



### Data Plan

[Table 11-1](#) provides the data plan for the Ethernet OAM on the ONU.

**Table 11-1** Data plan for the Ethernet OAM

| Item  | Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ONU_A | <ul style="list-style-type: none"> <li>● Port: 0/1/0</li> <li>● Smart VLAN: 100</li> <li>● MD Name Format: character string type</li> <li>● MD Name: MD1</li> <li>● Level: 3</li> <li>● MA Name Format: character string type</li> <li>● MA Name: MA1</li> <li>● Remote MEP check: Enable</li> <li>● Associated VLAN: 100</li> <li>● MEP ID: 2</li> <li>● Interface Direction: UP</li> <li>● CCM and LTM Priority: 7</li> <li>● Administrative Status: enable</li> <li>● CC Sending Status: enable</li> <li>● Alarm Waiting Time: 2500</li> <li>● Alarm Recovery Time: 10000</li> </ul> |
| ONU_B | <ul style="list-style-type: none"> <li>● Port: 0/0/1</li> <li>● Smart VLAN: 100</li> <li>● MD Name Format: character string type</li> <li>● MD Name: MD2</li> <li>● Level: 3</li> <li>● MA Name Format: character string type</li> <li>● MA Name: MA2</li> <li>● Remote MEP check: Enable</li> <li>● Associated VLAN: 100</li> <li>● MEP ID: 2</li> <li>● Interface Direction: UP</li> <li>● CCM and LTM Priority: 7</li> <li>● Administrative Status: enable</li> <li>● CC Sending Status: enable</li> <li>● Alarm Waiting Time: 2500</li> <li>● Alarm Recovery Time: 10000</li> </ul> |

 **NOTE**



- Configure the remote MEP of ONU\_A on ONU\_B in the same way as configuring the MEP of ONU\_A.
- This topic considers the configuration on ONU\_A as an example.



## Procedure

- 1 Add a VLAN and configure the upstream port of the VLAN.
  1. In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
  2. Choose **VLAN** from the navigation tree.
  3. Right-click the list, and then choose **Add**. In the dialog box that is displayed, set the related parameters.

Parameter settings:

    - VLAN ID: 100
    - Type: Smart VLAN
    - Attribute: Common
  4. Click **Next**, and then select port **0/1/0** as the upstream port. Click **Done**.
- 2 Configure the MD.
  1. Choose **ETH OAM** from the navigation tree.
  2. Click the **Maintenance Domain** tab, right-click the list, and then choose **Add**.
  3. In the dialog box that is displayed, set the device name and the name format, name, and level of the MD as follows, and then click **OK**.
    - MD Name Format: character string type
    - MD Name: MD1
    - Level: 3
- 3 Configure the MA.
  1. Click the **Maintenance Association** tab, right-click the list, and then choose **Add**.
  2. In the dialog box that is displayed, set the parameters as follows, and then click **OK**.
    - MD Name: MD1
    - MA Name Format: character string type
    - MA Name: MA1
  3. Select the added MA1, right-click, and then choose **Configure**.
  4. In the dialog box that is displayed, set the parameters as follows, and then click **OK**.
    - Remote MEP check: Enable
    - Associated VLAN: 100
- 4 Configure the MEP ID.
  1. Click the **Maintenance Association** tab, set the querying criteria or click  to display the records.
  2. Select the added MA1, and then click the **MEP ID Info** tab in the lower pane. Right-click the list, and then choose **Add**.
  3. In the dialog box that is displayed, set **MEP ID** to **2**.
- 5 Configure the MEP.
  1. Click the **Maintenance Association** tab, set the querying criteria or click  to display the records.

2. Select the added MA1, and then click the **Source MEP ID Info** tab in the lower pane. Right-click the list, and then choose **Add**.
3. In the dialog box that is displayed, set the parameters as follows, and then click **OK**.
  - MEP ID: 2
  - Interface Info: 0/1/0
  - Interface Direction: UP
  - CCM and LTM Priority: 7
4. Select the added MEP1, right-click, and then choose **Configure**.
5. In the dialog box that is displayed, set the parameters as follows, and then click **OK**.
  - Administrative Status: enable
  - CCM and LTM Priority: 7
  - CC Sending Status: enable
  - Alarm Waiting Time: 2500
  - Alarm Recovery Time: 10000

----End

## Result

After successful configuration, you can query the statistics of the packets on ONU\_A or ONU\_B. The number of the transmitted CCM packets and the number of the received CCM packets are not zero.

---

# 12 Detecting the Network

---

## About This Chapter

This topic describes how to check the connectivity of a network and whether the host is reachable, and how to check all gateways passed by data packets sent from a source host to the destination host. In addition, this operation helps you to locate network faults and log in to the device through the network remotely to configure and maintain the device.

### 12.1 Telnet

This topic describes how to log in to the device through the network remotely to configure and maintain the device.

### 12.2 Ping

This topic describes how to send ping packets to a remote host to check whether it is reachable. To check the network connectivity or the line quality, perform this operation.

### 12.3 Tracert

This topic describes how to test the route that is passed by data packets sent from a source host to the destination host. To track the route that is passed by data packets and locate the network fault, perform this operation. After running the ping command to test the network and detect a fault, you can run the tracert command to locate the fault on the network.

### 12.4 SSH

The secure shell (SSH) guarantees the security of the network communications by providing authentication, encryption, and authorization. When users telnet the router through an insecure network, SSH offers secure information guarantee and powerful authentication to protect the device against attacks such as IP address spoofing and interception of the plain text password.

## 12.1 Telnet

This topic describes how to log in to the device through the network remotely to configure and maintain the device.

### Prerequisite

Make sure that port 9811 between the U2000 server and clients is enabled before you telnet a device.

### Procedure

- 1 On the navigation tree or in the topological view, select a required device.
- 2 Right-click, and then choose **Tool > Telnet**. When you successfully telnet to the remote server or device through the network, you can operate the device through command lines.

----End

## 12.2 Ping

This topic describes how to send ping packets to a remote host to check whether it is reachable. To check the network connectivity or the line quality, perform this operation.

### Context

During the ping process, the source host sends the ICMP ECHO-REQUEST packets to the destination host. If the network connection between the source host and the destination host is normal, after receiving the ICMP ECHO-REQUEST packets, the destination host responds to the source host with the ICMP ECHO-REPLY packets.

### Procedure

- 1 On the navigation tree or in the topological view, select a required device.
- 2 Right-click, and then choose **Tool > Ping**.
- 3 In the dialog box that is displayed, select the **Ping** or **Continual Ping** parameter, and then click **Start**.

#### NOTE

- If the operation is successful, it indicates that the destination host is reachable. In the **Result** area, the system displays the information indicating that the network connectivity is in the normal state. The displayed information includes the number of sent packets, number of received response packets, packet loss ratio, and minimum, maximum, and average values of the response time.
- If the operation fails, it indicates that the destination host is not reachable. The system fails to check the network connectivity or line failure. The system displays the message **Request time out**.

----End

## 12.3 Tracert

This topic describes how to test the route that is passed by data packets sent from a source host to the destination host. To track the route that is passed by data packets and locate the network fault, perform this operation. After running the ping command to test the network and detect a fault, you can run the tracert command to locate the fault on the network.

### Context

The execution process of the tracert command is as follows:

- The source host sends a packet with TTL 1. TTL times out. The first hop sends back an ICMP error message to indicate that this packet cannot be sent.
- The source host sends a packet with TTL 2. TTL times out. The second hop sends back an ICMP error message to indicate that this packet cannot be sent.
- The source host sends a packet with TTL 3. TTL times out. The third hop sends back an ICMP error message to indicate that this packet cannot be sent.
- The process continues in this manner until the packet reaches the destination host.
- The purpose of performing these operations is to record the source address of each ICMP TTL time-out message, so as to provide the route that an IP packet passes to reach the destination host.

### Procedure

- 1 On the navigation tree or in the topological view, select a required device.
- 2 Right-click, and then choose **Tool > Tracert**.

----End

## 12.4 SSH

The secure shell (SSH) guarantees the security of the network communications by providing authentication, encryption, and authorization. When users telnet the router through an insecure network, SSH offers secure information guarantee and powerful authentication to protect the device against attacks such as IP address spoofing and interception of the plain text password.

### Procedure

- 1 On the navigation tree or in the topological view, select a required device.
- 2 Right-click, and then choose **Tool > SSH**.
- 3 In the dialog box that is displayed, set the parameters.
- 4 Click **OK**.

----End



# 13 Saving the Data

---

## About This Chapter

After saving the data to the flash memory of the device, you can query the data information to maintain and manage the device.

### [13.1 Setting the Parameters for Saving the Data](#)

You can configure the auto save period of the data through enabling the auto save function of the device. The U2000 automatically saves the data to the flash memory of the device according to the configured period. Through the U2000, you can periodically maintain and manage the device according to the saved data information.

### [13.2 Immediately Enabling Data Saving Function](#)

This topic describes how to immediately enable the auto save function of the device to save the current data of the device in time.

## 13.1 Setting the Parameters for Saving the Data

You can configure the auto save period of the data through enabling the auto save function of the device. The U2000 automatically saves the data to the flash memory of the device according to the configured period. Through the U2000, you can periodically maintain and manage the device according to the saved data information.

### Context



#### NOTE

The absolute period and relative period of the device are based on the time of the site where the device is located.

### Procedure

- 1 In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
- 2 Choose **NE Properties > Auto Save Configuration** from the navigation tree on the tab page that is displayed.
- 3 In the right pane, set the **Absolute Period** or **Relative Period** parameter for saving the data.



#### NOTE

- Absolute Period: The data is automatically saved at a specified time. For example, if the **Absolute Period** parameter is set to **01h 05m 31s**, the data is automatically saved at the preset time.
- Relative Period: The data is automatically saved at an interval. For example, if the **Relative Period** parameter is set to **00d 05h 31m**, the data is automatically saved every other 331 minutes.

- 4 Click **Apply**.

----End

## 13.2 Immediately Enabling Data Saving Function

This topic describes how to immediately enable the auto save function of the device to save the current data of the device in time.

### Context



#### CAUTION

- This operation is applicable to only the device that supports the SNMP protocol.
- After being enabled immediately, the automatic saving function cannot be manually stopped. Do not power off or reset the device before the data is saved. Otherwise, the data saved to the flash memory is damaged.



## Procedure

- 1 On the **Physical Root** navigation tree on the **Main Topology** tab page, select the required , right-click, and then choose **Save Data Immediately**.
- 2 In the dialog box that is displayed, Click **OK**.

----End



# 14 Synchronization

---

## About This Chapter

This topic describes how to synchronize the NE data, NE time, NE alarms and system parameter profile so that the data of the NE and the data on the U2000 are the same.

### [14.1 Synchronizing NE Data](#)

This topic describes how to synchronize the device panel data and service data on the U2000 with that of NEs. The synchronization facilitates centralized maintenance and management.

### [14.2 Synchronizing the NE Time](#)

This topic describes how to synchronize the NE time with the U2000 time to ensure that the time when the NE reports the information is correct.

### [14.3 Synchronizing the NE Alarm](#)

This topic describes how to synchronize the NE alarm. After the communication between the U2000 and the device recovers or the U2000 restarts, the alarms generated on the device side are not reported to the U2000 in time. This results in the inconsistency of the alarm status between the U2000 and the device. In this case, you need to synchronize the alarms. You can synchronize the alarms manually, or set the automatic synchronization function. This ensures that the U2000 monitors the actual running status of the device.

### [14.4 Synchronizing the System Parameter Profile](#)

You can perform this operation to synchronize the system parameter profile that is modified at the global side to the device to maintain the consistency of the parameters in the system parameter profile.

## 14.1 Synchronizing NE Data

This topic describes how to synchronize the device panel data and service data on the U2000 with that of NEs. The synchronization facilitates centralized maintenance and management.

### Prerequisite

The FTP, SFTP, or TFTP server must be configured and the FTP, SFTP, or TFTP service must be started.

In the physical topology, the gear on the upper left of an MDU icon indicates that the MDU is in the pre-deployment state. If the U2000 and NEs communicate in the normal state, the MDU state changes from pre-deployment to running after the data of the MDU is synchronized.

### Context

- During the operation of the U2000, the data of NEs and the data on the U2000 must be the same.
- After the data of an NE is configured and the NE runs in the normal state, synchronize the data on the U2000 with that of the NE manually. When an error occurs to the NE data, check whether the NE data saved on the U2000 is correct. If it is correct, download the data from the U2000 to the NE. In this case, the data of the NE is restored.

### Procedure

- In the **Physical Root** navigation tree on the **Main Topology** tab page, right-click the required ONU and choose **Synchronize NE Data** from the shortcut menu.

----End

## 14.2 Synchronizing the NE Time

This topic describes how to synchronize the NE time with the U2000 time to ensure that the time when the NE reports the information is correct.

### Context

- The U2000 delivers the system time automatically when a device gets online.
- After synchronizing the NE time, do not change the system time of the U2000 frequently.

### Procedure

- On the **Physical Root** navigation tree on the **Main Topology** tab page, select the required ONU, right-click, and then choose **Set NE Time**.

----End

## 14.3 Synchronizing the NE Alarm

This topic describes how to synchronize the NE alarm. After the communication between the U2000 and the device recovers or the U2000 restarts, the alarms generated on the device side

are not reported to the U2000 in time. This results in the inconsistency of the alarm status between the U2000 and the device. In this case, you need to synchronize the alarms. You can synchronize the alarms manually, or set the automatic synchronization function. This ensures that the U2000 monitors the actual running status of the device.

## Procedure

- By manual alarm synchronization, all alarms generated by NE are synchronized.
  1. On the **Physical Root** navigation tree on the **Main Topology** tab page, select the required ONU, right-click, and then choose **Synchronize Current Alarms**.

---End

## 14.4 Synchronizing the System Parameter Profile

You can perform this operation to synchronize the system parameter profile that is modified at the global side to the device to maintain the consistency of the parameters in the system parameter profile.

## Procedure

- 1 On the **Physical Root** navigation tree on the **Main Topology** tab page, select the required **ONU**, right-click, and then choose **Synchronize System Parameter Profile**.

---End



# 15 File Operations

---

## About This Chapter

By file operation, you can save the records as a file, preview the file printing effect, and print the file. In this case, you can save and analyze the related information of the U2000.

### [15.1 Saving the Records as a File](#)

This topic describes how to save the records as a text file, an Excel file, and an HTM (HTML) file. In this case, you can use the records in different file formats.

### [15.2 Previewing the File Printing Effect](#)

This topic describes how to preview the file printing effect so that you can adjust the page settings before printing.

### [15.3 Printing](#)

You can print out the records in the U2000 information list to keep the related information of the U2000 and analyze it.



## 15.1 Saving the Records as a File

This topic describes how to save the records as a text file, an Excel file, and an HTM (HTML) file. In this case, you can use the records in different file formats.

### Context

This topic uses VLAN as an example. For other subjects, the steps are the same except that the navigation path is different.

### Procedure

- 1 In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
  - 2 Choose **VLAN** from the navigation tree.
  - 3 On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
  - 4 In the information list, right-click, and then choose **File > Save As**.
  - 5 In the dialog box that is displayed, set the parameters.
    - Set **Start Row** and **End Row**.
    - Click  for **File Name**, and then set the file saving location, file name, file type and encoding.
  - 6 Click **OK**.
- End


## 15.2 Previewing the File Printing Effect

This topic describes how to preview the file printing effect so that you can adjust the page settings before printing.

### Context

This topic uses VLAN as an example. For other subjects, the steps are the same except that the navigation path is different.

### Procedure

- 1 In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
- 2 Choose **VLAN** from the navigation tree.
- 3 On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
- 4 Right-click the list, and then choose **File > Print Preview**.



- 5 In the dialog box that is displayed, preview the file printing effect, or adjust the page settings according to the requirements. Click **Close** to close the current dialog box, or click **Print** to print the file.

----End


## 15.3 Printing

You can print out the records in the U2000 information list to keep the related information of the U2000 and analyze it.

### Context

This topic uses VLAN as an example. For other subjects, the steps are the same except that the navigation path is different.

### Procedure

- 1 In the Main Topology, double-click the required ONU in the **Physical Root** navigation tree; or right-click the required ONU and choose **NE Explorer** from the shortcut menu.
- 2 Choose **VLAN** from the navigation tree.
- 3 On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
- 4 Right-click the list, and then choose **File > Print**.
- 5 In the dialog box that is displayed, set the parameters.
- 6 Click **OK**.

----End



# 16 Introduction to the PnP Solution to FTTx Devices

---

## About This Chapter

This topic describes the plug and play (PnP) solution to FTTx devices.

### [16.1 Introduction to the PnP Function](#)

This topic describes the application background, plug-and-play (PnP) function, and benefits of the PnP function.

### [16.2 PnP Application Scenario](#)

This topic describes the PnP application scenario.

## 16.1 Introduction to the PnP Function

This topic describes the application background, plug-and-play (PnP) function, and benefits of the PnP function.

### Background

Currently, FTTx network construction is in full swing. Box-shape devices with a small capacity are not deployed only in the telecommunications room. They are widely deployed in street racks, corridors of communities, business buildings, and houses of users. Therefore, access points are closer to users. Nevertheless, though better user experience is provided, a lot of problems appear, such as an exponential increase in the number of access devices, complex deployment environment, and a rapid increase in the software commissioning workload.

### Function

Concerning different challenges, the U2000 provides a PnP function during MDU engineering installation, maintenance, and parts replacement.

Before installing the MDU, you can import the sheet into the U2000 to implement not only the pre-deployment of NE and NE services, but also the in-batch and offline deployment of MDU. After the MDU is installed and powered on, the U2000 automatically applies the configuration data to the MDU and field software commissioning is not required. The offline deployment and PnP function greatly improves the deployment efficiency and lowers the skill requirements for installation engineers. The construction is simple and thus the number of site visits is reduced, which saves the deployment costs.

When the MDU is faulty and needs to be replaced, the MDU is reported to the U2000. After the MDU is powered on, the previous configuration data and the device version are automatically recovered and do not need to be reconfigured. The PnP solution provides fast replacement of MDUs, which simplifies the procedures and lowers the skill requirements for installation engineers.

## 16.2 PnP Application Scenario

This topic describes the PnP application scenario.

xPON upstream MDUs support the PnP function during pre-deployment and fast replacement.

- **Pre-deployment:** In deployment, a present pre-deployment sheet is imported into the U2000. After an MDU is installed and powered on, the U2000 automatically applies the previous configuration data and device version to the MDU. In this case, you do not need to configure the MDU again and the PnP function and fast replacement of the MDU are achieved.
- **Fast replacement:** When an MDU is faulty, you need to replace the MDU and power it on. After the MDU is reported to the U2000, the previous configuration data and the device version are automatically recovered and do not need to be reconfigured.

### 16.2.1 Predeploying xPON MDUs

Predeploying xPON MDUs achieves the plug and play (PnP) function in the engineering and installation phase. In a fiber to the building (FTTB) network, a large number of dispersed remote network elements (NEs) are far away from the telecommunications room at the central office

(CO). To configure the NEs in batches and implement the PnP feature of the NEs, the U2000 supports NE pre-deployment and NE service pre-deployment by importing sheets.

### 16.2.2 Replacing an MDU Quickly

In the FTTX network, a large number of optical network units (ONUs) work. If a faulty ONU is replaced with a new one, you need to only enter the authentication information, after which the previous configuration data will be applied automatically. The following considers the MA5620E as an example to describe how to quickly replace an MDU.

## 16.2.1 Predeploying xPON MDUs

Predeploying xPON MDUs achieves the plug and play (PnP) function in the engineering and installation phase. In a fiber to the building (FTTB) network, a large number of dispersed remote network elements (NEs) are far away from the telecommunications room at the central office (CO). To configure the NEs in batches and implement the PnP feature of the NEs, the U2000 supports NE pre-deployment and NE service pre-deployment by importing sheets.

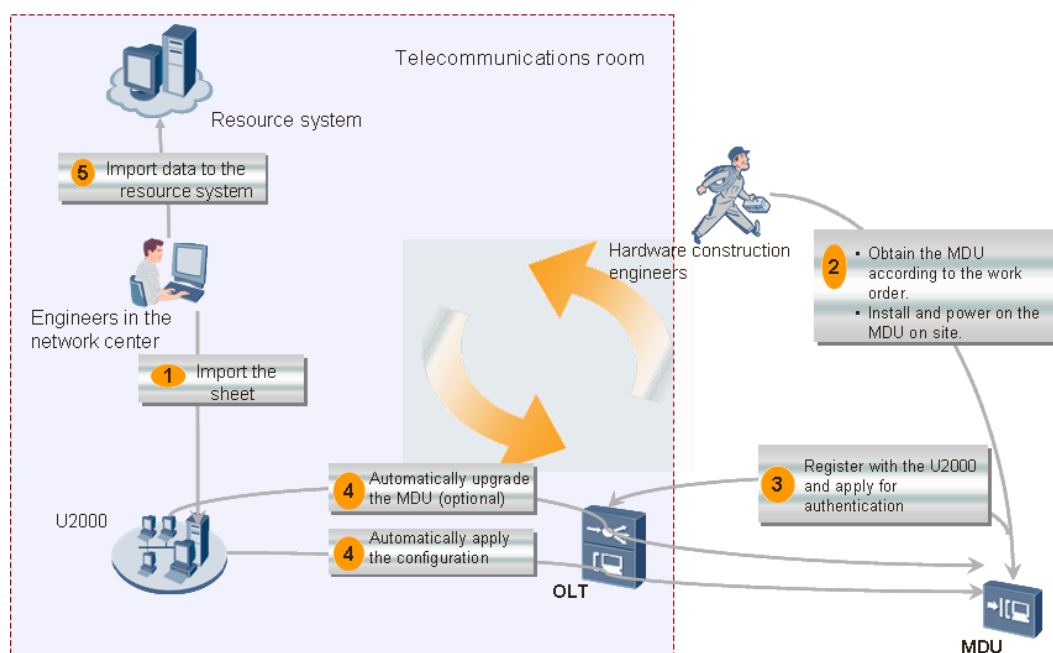
### Context

xPON MDUs are classified into GPON MDUs and EPON MDUs. Generally, GPON MDUs use SNs for authentication and EPON MDUs use MAC addresses for authentication.

Predeploying an xPON MDU is applicable to the following scenarios:

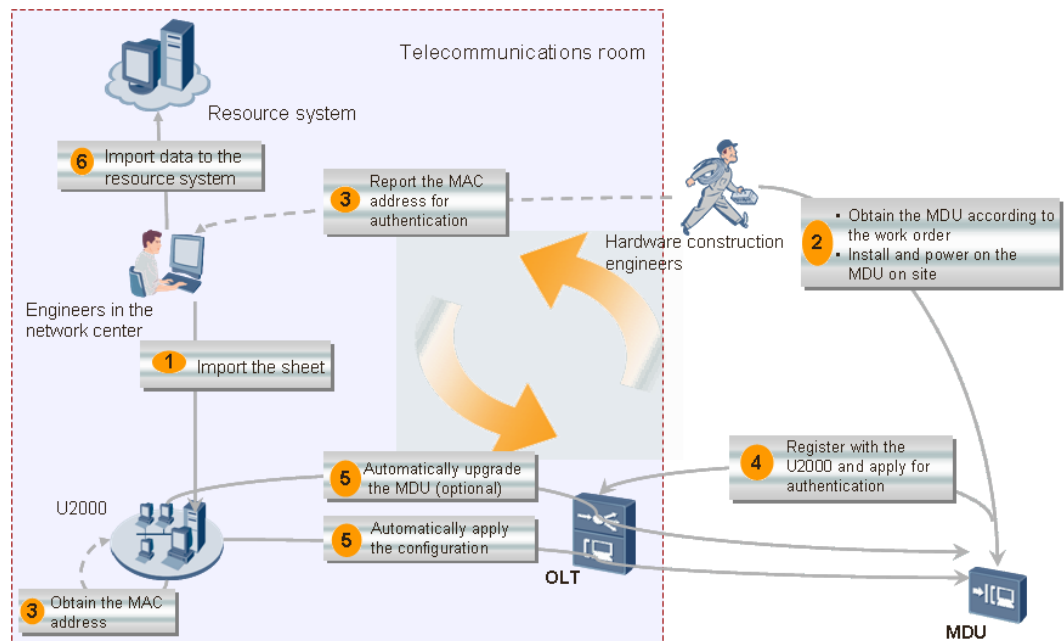
- In one scenario, the MAC address or SN of the MDU is known. Specifically, the mapping between the MAC address or SN and the IP address of the MDU is planned. Then, installation engineers must comply with the plan to install the MDU in a specified place. **Figure 16-1** shows the flowchart for predeploying the MDU whose MAC address or SN is known.

**Figure 16-1** Flowchart for predeploying the MDU whose MAC address or SN is known



- In the other scenario, the MAC address or SN of the MDU is unknown. Specifically, the IP address is planned but the mapping between the IP address and the MAC address or SN of the MDU is unknown. Then, installation engineers need to write down the MAC address or SN of the MDU after installing the MDU and provide the MAC address or SN to the network management center (NMC). In this case, an NMC engineer binds the IP address and the MAC address or SN. **Figure 16-2** shows the flowchart for predeploying the MDU whose MAC address or SN is unknown.

**Figure 16-2** Flowchart for predeploying the MDU whose MAC address or SN is unknown



## 16.2.2 Replacing an MDU Quickly

In the FTTx network, a large number of optical network units (ONUs) work. If a faulty ONU is replaced with a new one, you need to only enter the authentication information, after which the previous configuration data will be applied automatically. The following considers the MA5620E as an example to describe how to quickly replace an MDU.

### Context

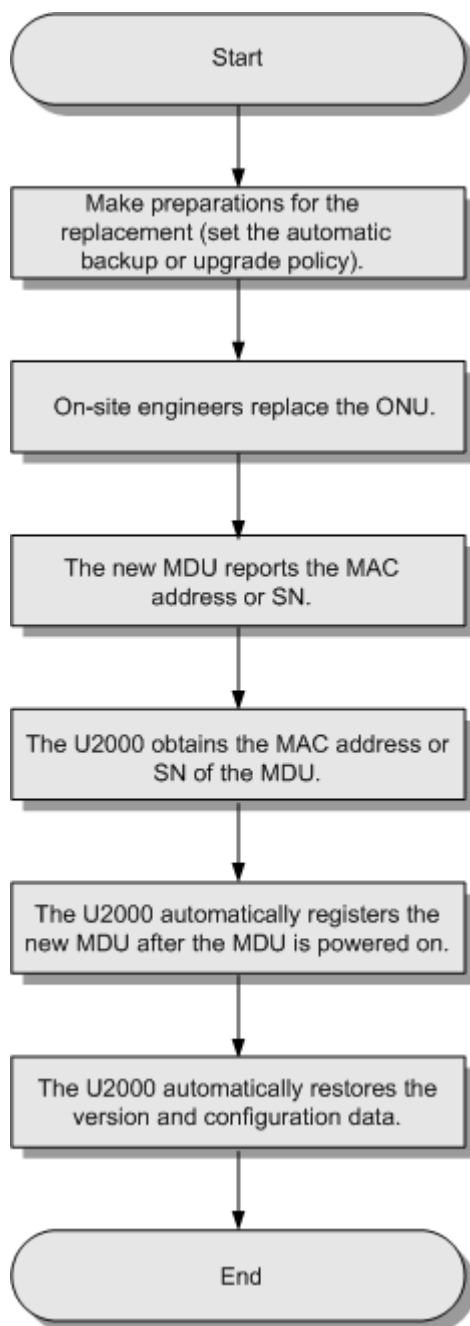
When a faulty ONU is replaced with a new one, you need to connect the new ONU to the relevant port of the OLT through an optical fiber and bind the authentication information of the new ONU. After the new ONU goes online, the U2000 automatically applies service configuration data to the new ONU. Therefore, you need not reconfigure the data.

Advantages:

- An MDU is replaced easily and the OSS need not reapply configuration data.
- The MAC address and SN of the MDU are displayed only on the OLT and U2000. MDUs are differentiated according to their IP addresses in the OSS.
- The on-site construction is simple and no configuration data is required.
- The version and configuration data can be restored automatically.

Figure 16-3 shows the flowchart for quickly replacing an MDU.

Figure 16-3 Flowchart for quickly replacing an MDU



**CAUTION**

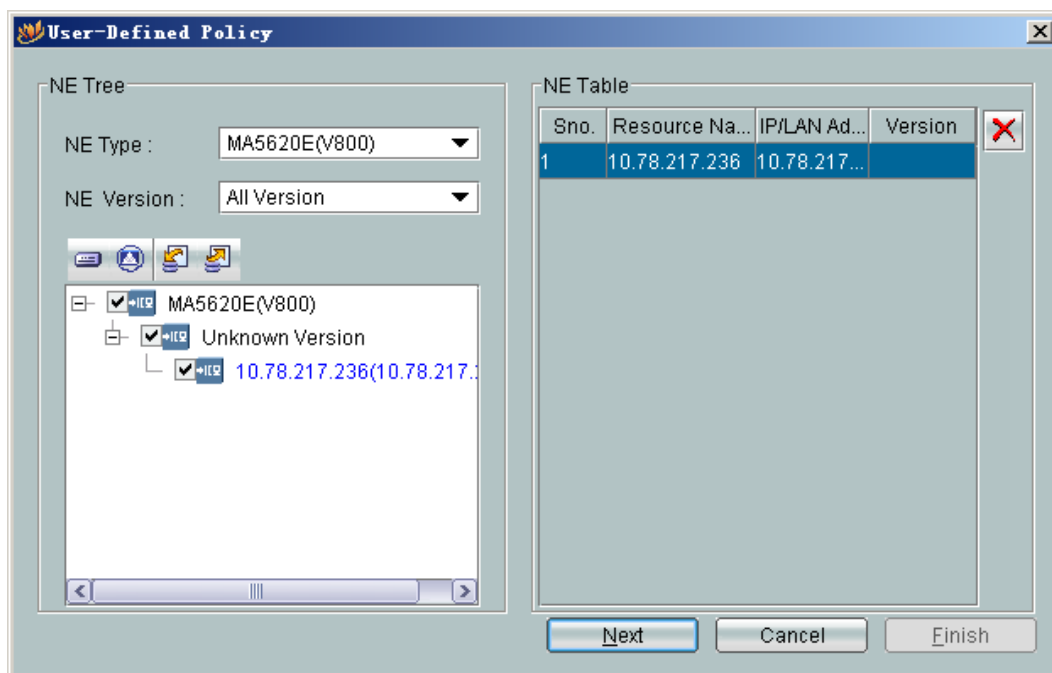
Make sure that any of the FTP, TFTP, and SFTP services are running.

---

## Procedure

- 1 Set the automatic backup policy.
  1. Choose **Administration > NE Software Management > User-Defined Policy** from the main menu.
  2. In the **User-Defined Policy** dialog box, set **NE Type** and **NE Version**, and click **Next**, as shown in **Figure 16-4**.

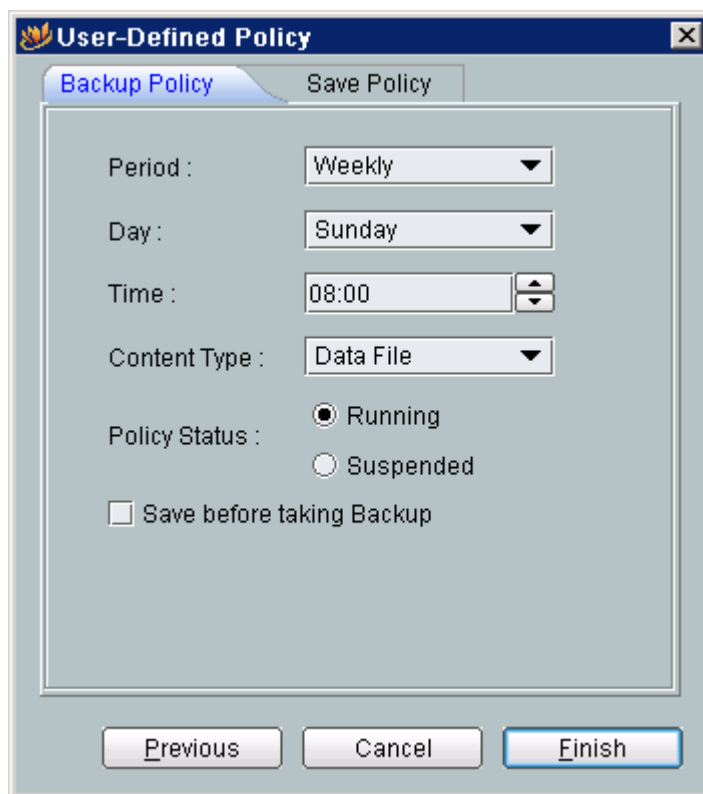
**Figure 16-4** User-defined policy (1)



3. In the **User-Defined Policy** dialog box, set parameters on the **Backup Policy** and **Save Policy** tab pages as required, and click **Finish**, as shown in **Figure 16-5**.




Figure 16-5 User-defined policy (2)



- 2 (Optional) Set the automatic upgrade policy.

For details, see [17.3.1 Upgrading MDUs in Batches Automatically](#).

- 3 On-site engineers replace the ONU.
- 4 In the U2000 window, right-click the new ONU that is used to replace the faulty ONU, such as MA5620E, and choose **EPON Option > Replace ONU** from the shortcut menu.
- 5 In the **Replace ONU** dialog box, click the **Basic Info** tab, set **Auth Way** to **MAC Address** in the **Auth Info** field, and then click  next to **MAC**.
- 6 In the **MAC Address List** dialog box, select a record and click **OK**.
- 7 In the **Replace ONU** dialog box, click the **Basic Info** tab and click **OK**.



### CAUTION

After the MDU is powered on, the U2000 automatically registers the MDU, and restores the version and configuration data of the MDU.

---

----End



# 17 Predeploying xPON MDUs

---

## About This Chapter

Predeploying xPON MDUs achieves the plug and play (PnP) function in the engineering and installation phase. In a fiber to the building (FTTB) network, a large number of dispersed remote network elements (NEs) are far away from the telecommunications room at the central office (CO). To configure the NEs in batches and implement the PnP feature of the NEs, the U2000 supports NE pre-deployment and NE service pre-deployment by importing sheets.

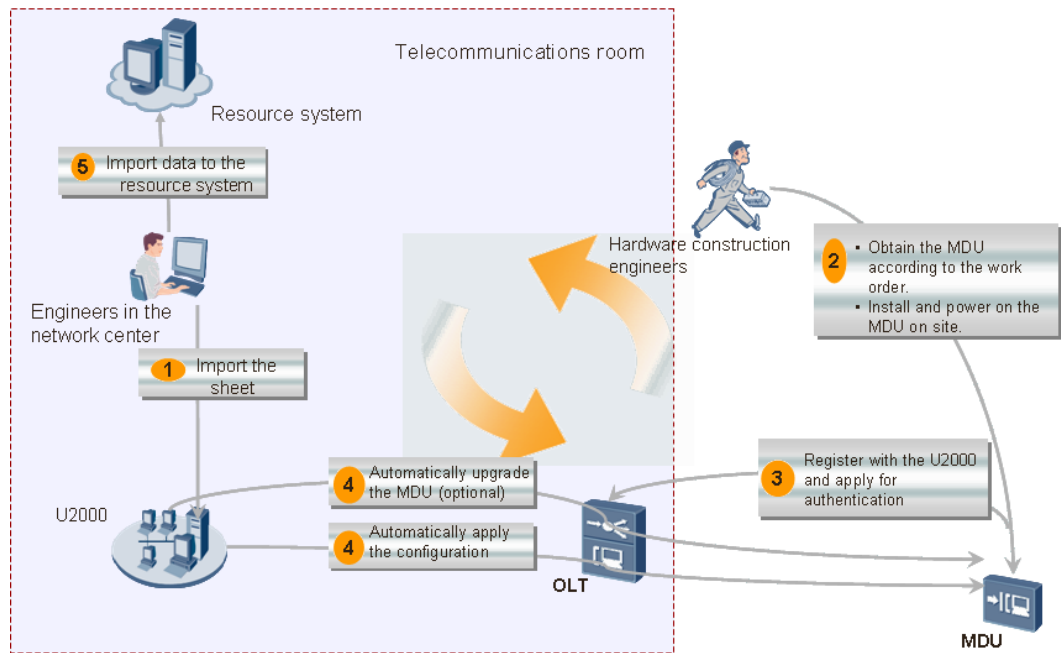
## Context

xPON MDUs are classified into GPON MDUs and EPON MDUs. Generally, GPON MDUs use SNs for authentication and EPON MDUs use MAC addresses for authentication.

Predeploying an xPON MDU is applicable to the following scenarios:

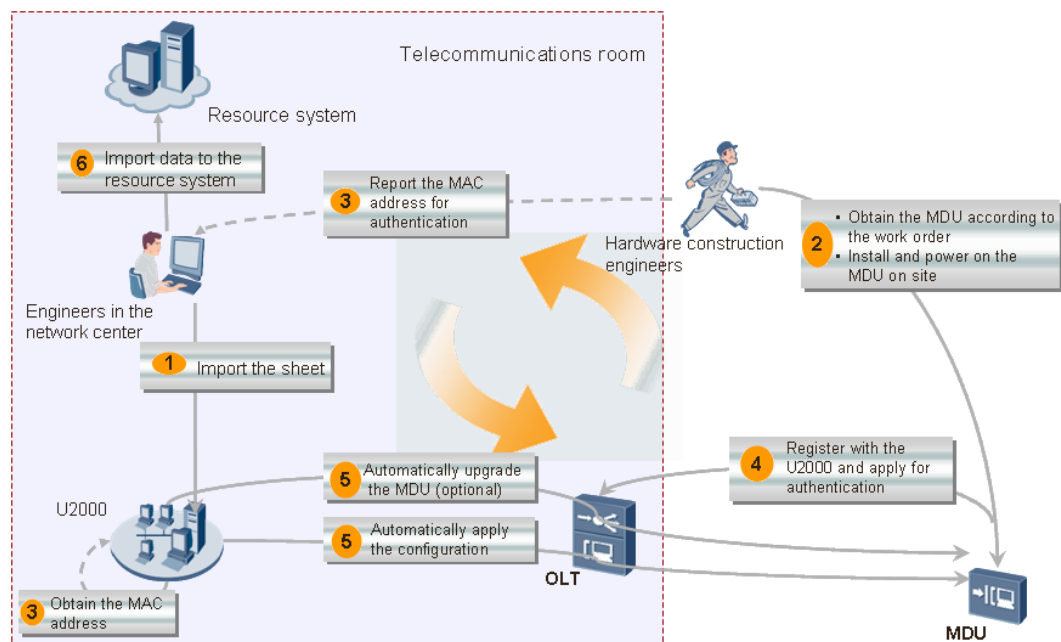
- In one scenario, the MAC address or SN of the MDU is known. Specifically, the mapping between the MAC address or SN and the IP address of the MDU is planned. Then, installation engineers must comply with the plan to install the MDU in a specified place. [Figure 17-1](#) shows the flowchart for predeploying the MDU whose MAC address or SN is known.

**Figure 17-1** Flowchart for predeploying the MDU whose MAC address or SN is known



- In the other scenario, the MAC address or SN of the MDU is unknown. Specifically, the IP address is planned but the mapping between the IP address and the MAC address or SN of the MDU is unknown. Then, installation engineers need to write down the MAC address or SN of the MDU after installing the MDU and provide the MAC address or SN to the network management center (NMC). In this case, an NMC engineer binds the IP address and the MAC address or SN. **Figure 17-2** shows the flowchart for predeploying the MDU whose MAC address or SN is unknown.

**Figure 17-2** Flowchart for predeploying the MDU whose MAC address or SN is unknown





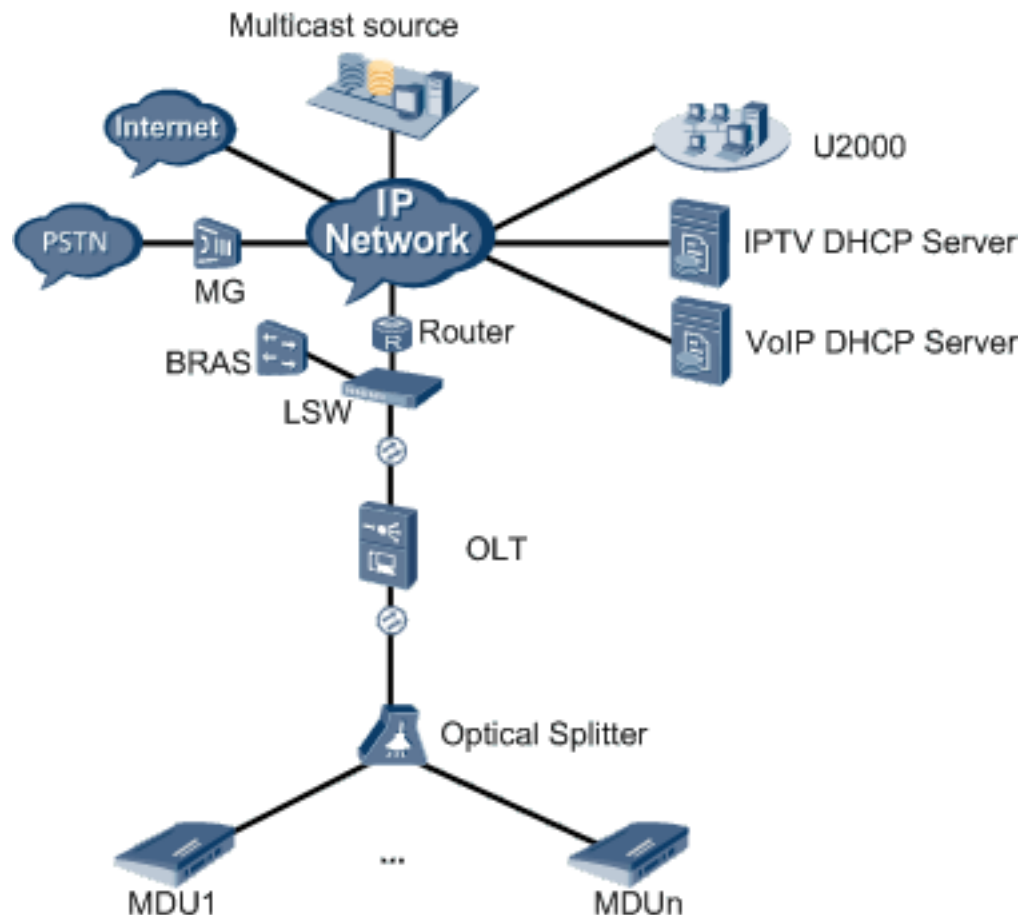
## 17.1 Example Network of xPON MDU Pre-deployment

When predeploying an xPON MDU, ensure that the OLT applies channel configurations to the MDU after the optical path between the OLT and the MDU is enabled. In this case, the U2000 can manage the MDU.

### Context

**Figure 17-3** shows an example network of xPON MDU pre-deployment.

**Figure 17-3** Example network of xPON MDU pre-deployment



## 17.2 Configuration Flow of xPON MDU Pre-deployment

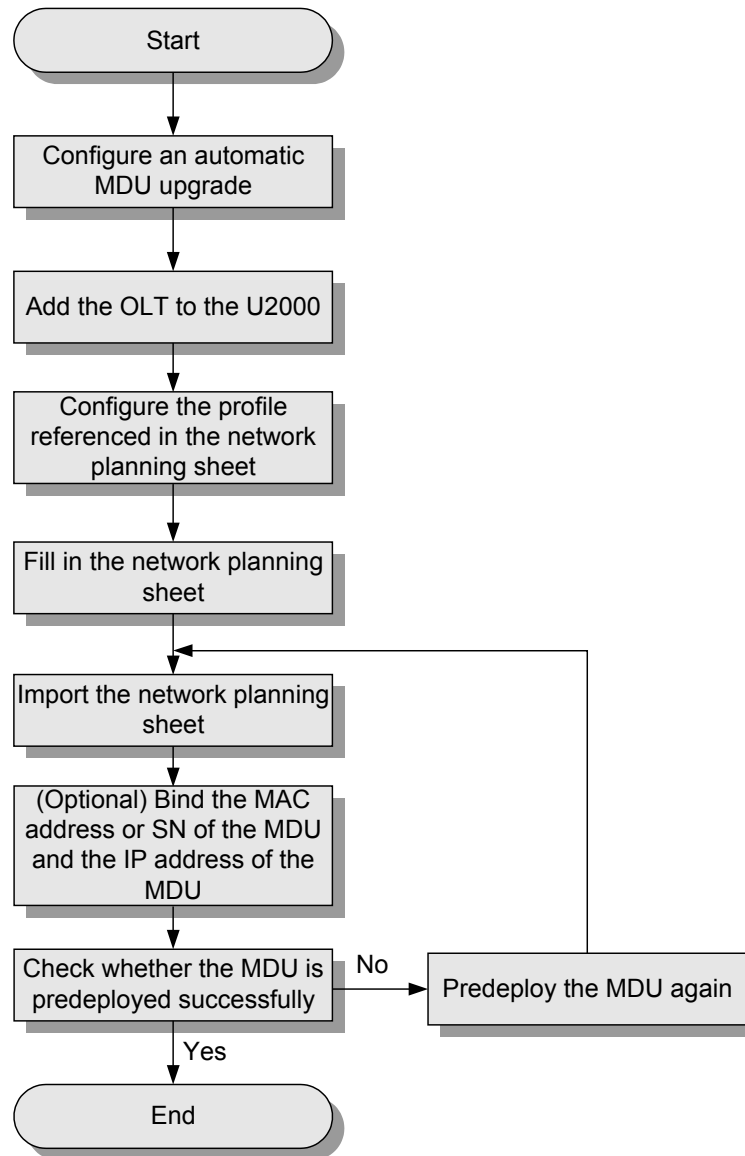
This topic describes how to predeploy an xPON MDU. Predeploying an xPON MDU is divided into two phases: MDU auto-discovery and MDU auto-configuration. Basic parameters are set in the MDU auto-discovery phase to meet the requirements for MDU auto-configuration. By using the MDU auto-configuration function, the upgrade and service data configuration of the MDU are automatically configured after the MDU is powered on. In this case, the MDU can carry services immediately after power-on.

## Context

The following section describes the flow of how to predeploy an xPON MDU for the first time. In addition, the flow for expanding MDUs is included in this flow. You can select the steps according to the requirements.

1. Import the software file of an MDU to the NE software and configure the MDU upgrade policy. A large number of MDUs of different versions can be upgraded to the specified version automatically according to the specified area and type during the deployment after the MDU upgrade policy is configured. For details, see [17.3.1 Upgrading MDUs in Batches Automatically](#).
2. Add an OLT to the U2000. The prerequisite for predeploying an MDU is that an OLT must be added to the U2000 and the OLT data configured on the U2000 is the same as the data configured on the OLT. For details, see [17.3.2 Adding an OLT to the U2000](#).
3. Create the global profile referenced in the network planning sheet. For details, see [17.3.3 Creating a Global Profile Referenced in the Network Planning Sheet](#). The global profile can be created by
  - Adding the global profile manually.
  - Generating the global profile based on an NE profile.
4. Fill in the network planning sheet according to the data plan and import the sheet into the U2000. For details, see [17.4.1 Filling In a Network Planning Sheet](#) and [17.4.2 Importing a Network Planning Sheet](#).
5. Bind the MAC address or SN reported by the MDU to the IP address of the MDU. For information on how to predeploy an MDU whose MAC address or SN is unknown, see [17.4.3 \(Optional\) Binding a MAC Address or SN to the MDU](#).
6. Check whether the MDU is predeployed successfully after the MDU is powered on. For details, see [17.5.1 Viewing a Pre-deployment Task and the Result](#).
7. Predeploy the MDU again if the pre-deployment fails. For details, see [17.5.2 Predeploying an MDU or ONT Again](#).

[Figure 17-4](#) shows the flowchart for predeploying an xPON MDU.

**Figure 17-4** Flowchart for predeploying an xPON MDU

## 17.3 Preparation

During this phase, you need to make sure that the devices run in the normal state and configure the profiles that the predeployment profile references.

### 17.3.1 Upgrading MDUs in Batches Automatically

This topic describes how to upgrade an MDU remotely on the U2000. After an MDU is powered on, the U2000 compares the type and version of the MDU with those in the configured policy for automatic MDU upgrade. If the MDU version is different from the target version in the automatic upgrade policy, the U2000 creates an automatic upgrade task to automatically upgrade the MDU. If the MDU is new to the U2000 (the information about the vendor and type of the MDU does not exist on the U2000), the U2000 automatically creates a null upgrade policy.

### 17.3.2 Adding an OLT to the U2000



This topic describes how to add an OLT to the U2000 before importing the MDU network planning sheet.

### 17.3.3 Creating a Global Profile Referenced in the Network Planning Sheet

You can select a global profile in the **Default Value Policy** worksheet of the network planning sheet only after the global profile is configured on the U2000.

## 17.3.1 Upgrading MDUs in Batches Automatically

This topic describes how to upgrade an MDU remotely on the U2000. After an MDU is powered on, the U2000 compares the type and version of the MDU with those in the configured policy for automatic MDU upgrade. If the MDU version is different from the target version in the automatic upgrade policy, the U2000 creates an automatic upgrade task to automatically upgrade the MDU. If the MDU is new to the U2000 (the information about the vendor and type of the MDU does not exist on the U2000), the U2000 automatically creates a null upgrade policy.

## Configuring the FTP, SFTP, or TFTP Service (Windows)

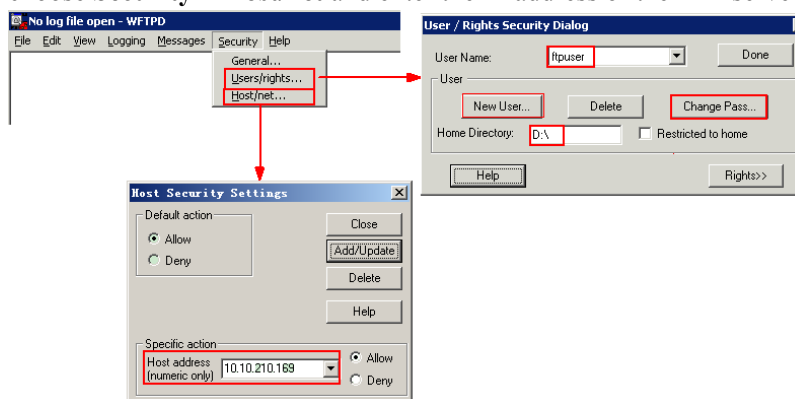
This topic describes how to configure and start the FTP, SFTP, or TFTP service on Windows OS. NE software communicates with the client or NEs through the FTP, SFTP, or TFTP protocol for NE upgrade, data backup, and patch installation.

### Context

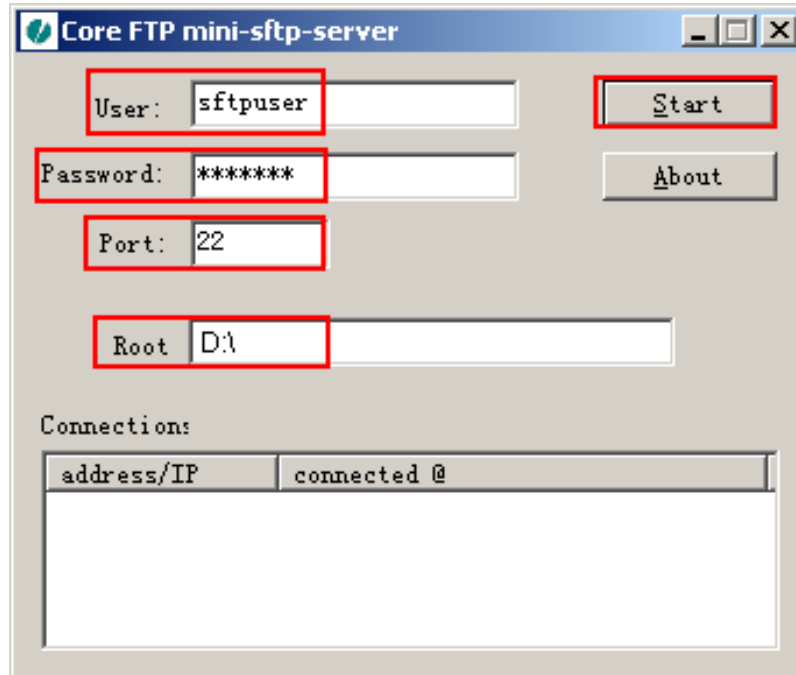
- The third-party tool must be started after the FTP, SFTP, or TFTP server is configured.
- The file transfer parameters set on the U2000 must be the same as the parameters set on the FTP, SFTP, or TFTP server.

### Procedure

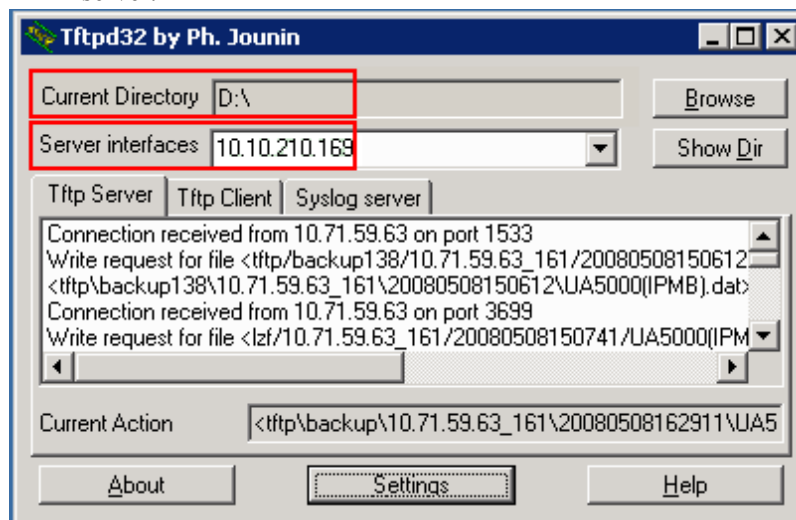
- **Configuring the FTP server by using the third-party tool wftpd32.exe**
  1. Copy the **wftpd32.exe** file to the U2000 server and double-click the file.
  2. In the dialog box that is displayed, choose **Security > Users/rights** and create a user; choose **Security > Host/net** and enter the IP address of the FTP server.



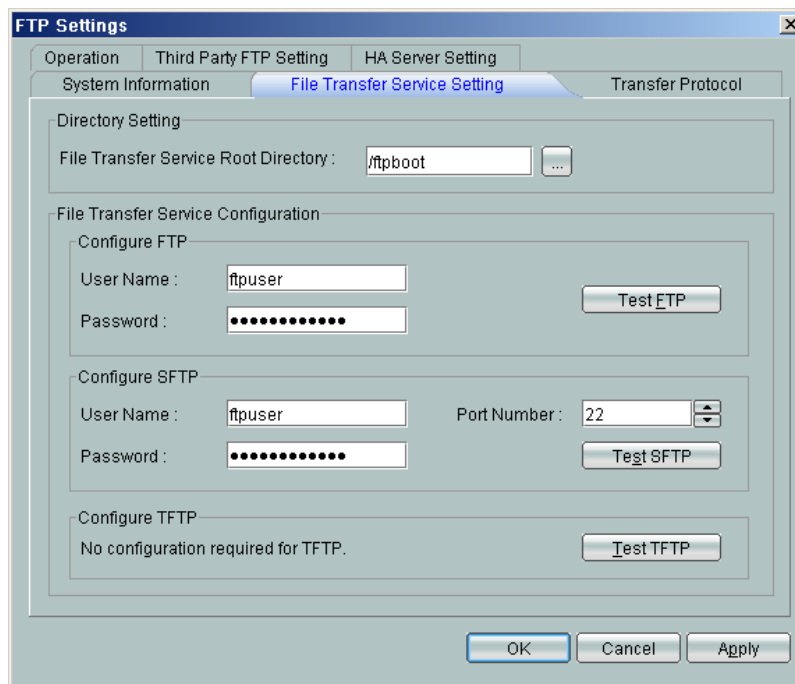
- **Configuring the SFTP server by using the third-party tool msftpsrvr.exe**
  1. Copy the **msftpsrvr.exe** file to the U2000 server and double-click the file.
  2. In the dialog box that is displayed, create a user.



- **Configuring the TFTP server by using the third-party tool tftpd32.exe**
  1. Copy the **tftpd32.exe** file to the U2000 server and double-click the file.
  2. In the dialog box that is displayed, set the root directory and the IP address of the TFTP server.

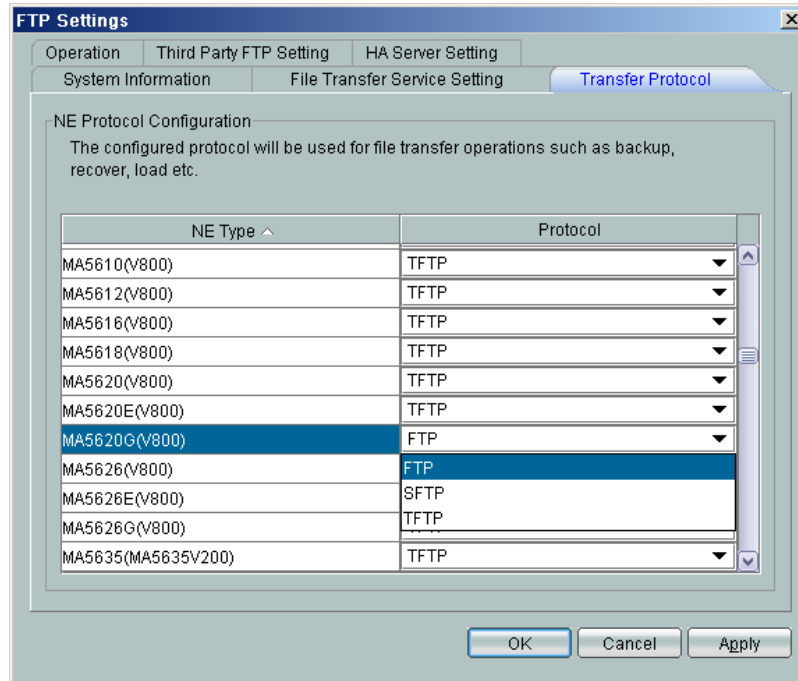


- **Testing the communication between the FTP, SFTP, or TFTP service and the NE software**
  1. Choose **Administration > Software Management > FTP Settings** from the main menu.
  2. In the dialog box that is displayed, click the **File Transfer Service Setting** tab to configure the parameters of the file transfer service.



 **NOTE**

- **File Transfer Service Root Directory** configured on the U2000 must be the same as the root directory configured on the FTP, SFTP, or TFTP server. In addition, the FTP, SFTP, or TFTP server must be started.
  - If the FTP protocol is used, ensure that the user name and password set in the last step are the same as the user name and password set when the FTP server is configured.
  - If the SFTP protocol is used, ensure that the user name, password, and port number set in the last step are the same as the user name, password, and port number set when the SFTP server is configured.
  - Click **Test FTP**, **Test SFTP**, or **Test TFTP** to check the configuration of the file transfer service.
3. Click the **Transfer Protocol** tab. Select a proper protocol from the **Protocol** drop-down list for file transfer between NEs and the U2000 server.



4. Click **OK**.

----End

## Command Reference

| To...                     | Run the Command... | In...          |
|---------------------------|--------------------|----------------|
| Configure the file server | <b>file-server</b> | Privilege mode |

## Importing the MDU Software File

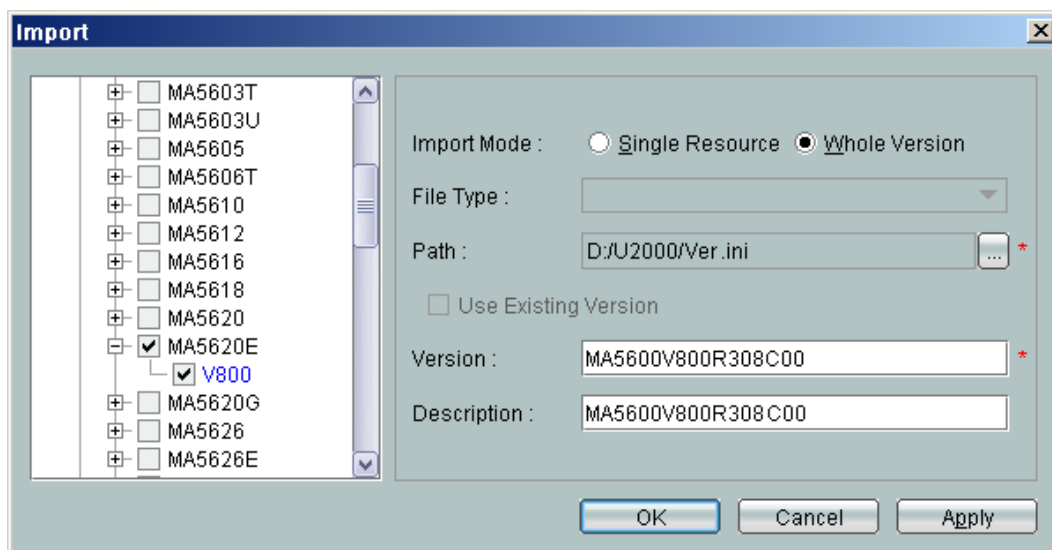
This topic describes how to import the MDU software file from the U2000 server or client to the NE software library for management. The MDU software files that the upgrade policy is applicable to include the software package file, upgrade file, and voice file (including the **Voice** file, **Profile** file, and digitmap file).

## Prerequisite

The FTP, SFTP, or TFTP service must be configured and the xFTP service must be started and be running. For details, see [Configuring the FTP, SFTP, or TFTP Service \(Windows\)](#).

## Procedure

- 1 Choose **Administration > NE Software Management > NE Software Library Management** from the main menu.
- 2 In the list, right-click and choose **Import** from the shortcut menu.
- 3 In the dialog box that is displayed, configure the target software upgrade package of the MDU.



**NOTE**

If a patch needs to be installed for the device of the corresponding version, import the patch file first. For details, see the release notes for the patch.

In the **Version** field, enter the target version. Ensure that the target version is the same as the target version of the MDU.

4 Click **OK**.

----End

## Command Reference

| To...                                             | Run the Command...      | In...            |
|---------------------------------------------------|-------------------------|------------------|
| Query the language and current version of the MDU | <b>display language</b> | Common user mode |

## Configuring the ONU Upgrade Policy

When a plug-in/plug-out MDU is powered on, or a faulty MDU is replaced with a new one, you can configure the MDU policy to upgrade the NE(s) automatically. When an ONU is powered on, the U2000 automatically compares the current version of the ONU with the target version in the ONU upgrade policy. If the current version of the ONU is different from the target version in the ONU upgrade policy, the U2000 automatically upgrades the ONU to the target version. If a voice file exists in the software library, the U2000 also loads the voice file when upgrading the ONU.

### Prerequisite

- The NE software must work in the normal state and the NE software process must be started.
- The U2000 must work in the normal state.
- The software package has been imported to the software library.

## Procedure

- **Path one:**

1. Choose **Administration > NE Software Management > Auto Upgrade Policy** from the main menu.
2. In the window that is displayed, choose the required branch according to the type of the NE to be upgraded from the navigation tree in the left pane. Then, select the required NE type from the NE list in the right pane.
3. Click **Configure Upgrade Version** next to the selected NE type. In the dialog box that is displayed, select the required version from the **Upgrade Version** drop-down list and select the load file. Click **OK**.

 **NOTE**

After you select the required version from the **Upgrade Version** drop-down list, the NE software management module automatically imports the patch or package file that matches the version from the software library.

4. Click **OK**.
5. After the ONU upgrade policy is configured, the NE software automatically creates an upgrade task. Choose **Administration > NE Software Management > NE Upgrade Task Management** from the main menu. On the **NE Upgrade Task Management** tab page, view the task information.

- **Path two:**

1. Choose **Configuration > FTTx Service Pre-Deployment > Configure MDU Upgrade Policy** from the main menu.
2. In the dialog box that is displayed, choose the type of the NE to be upgraded. Then, select the required NE from the list, right-click, and then choose **Modify Policy**.
3. In the dialog box that is displayed, set **Policy Status** to **Run**, select the required version from the **Target Version** drop-down list and the load file.

 **NOTE**

After you select the required version from the **Target Version** drop-down list, the NE software management module automatically imports the patch or package file that matches the version from the software library.

4. Click **OK**.

----End

## Result

After the configuration, the upgrade policy is automatically run in the following circumstances:

- When a plug and play MDU is powered on, the U2000 automatically upgrades it to the target version according to the policy.
- After a faulty MDU is replaced with a new one, the U2000 automatically rolls back it to the original version before the fault occurs according to the policy.

Choose **Administration > Task Schedule > Scheduling Center** from the main menu. On the **Scheduling Center** tab page, view the execution status of the task.

### 17.3.2 Adding an OLT to the U2000

This topic describes how to add an OLT to the U2000 before importing the MDU network planning sheet.

## Prerequisite

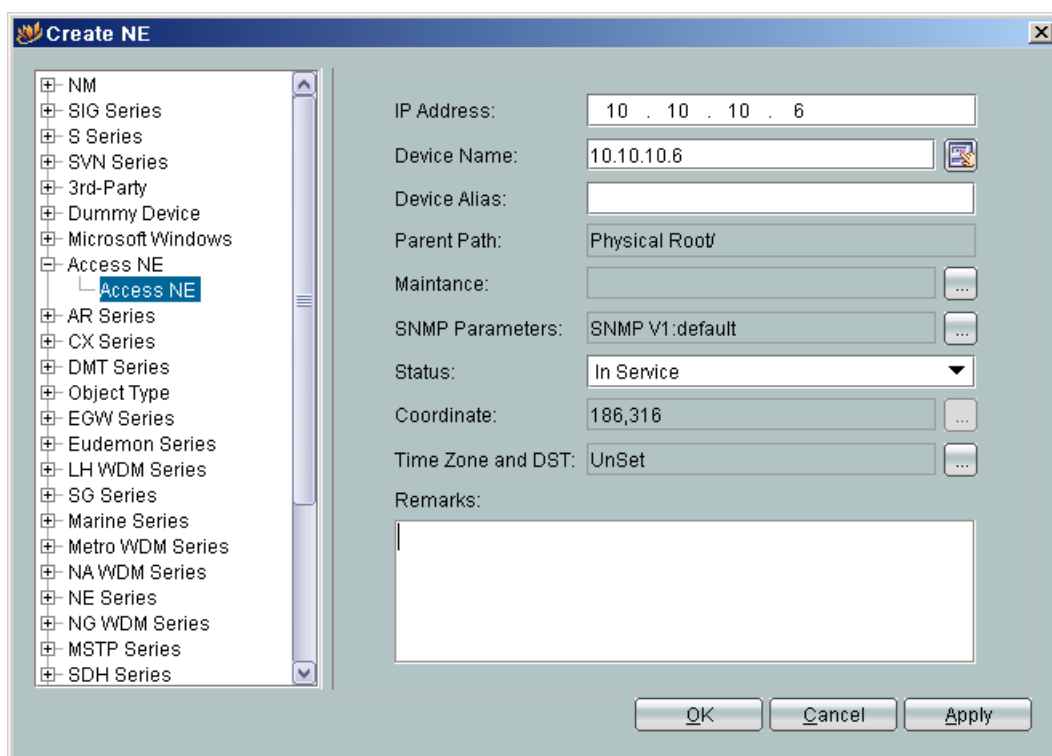
- The U2000 must work in the normal state.
- The inband or outband IP address and SNMP parameters of the OLT and the route between the OLT and the U2000 must be set.
- The FTP service of the U2000 server must be started in the normal state. For details, see [Configuring the FTP, SFTP, or TFTP Service \(Windows\)](#).

## Context

If the OLT has been added to the U2000, to ensure that the data on the U2000 is the same as the data on the OLT, right-click the OLT in the Main Topology and choose **Synchronize NE Data** from the shortcut menu.

## Procedure

- 1 In the Main Topology, choose **Physical Root** or an NE from the navigation tree, right-click in the topology view in the right pane, and then choose **New > NE** from the shortcut menu.
- 2 In the dialog box that is displayed, set the parameters such as the IP address and name of the NE.



- 3 Click **OK**.

----End

## 17.3.3 Creating a Global Profile Referenced in the Network Planning Sheet

You can select a global profile in the **Default Value Policy** worksheet of the network planning sheet only after the global profile is configured on the U2000.

## Context

You can create a global profile that is referenced in the network planning sheet by

- Adding the global profile manually.
- Generating the global profile based on an NE profile.

## Procedure

- **Adding a global profile manually**

| Function                                  | Global Profile                                                                                                                                                                                                                                                                                                                                                                                                                    | Remarks                                    |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Profiles to be added in GPON profile mode | <ul style="list-style-type: none"> <li>● <a href="#">19.1.1 Configuring an MDU SNMP Profile</a></li> <li>● <a href="#">19.1.2 Configuring a DBA Profile</a></li> <li>● <a href="#">19.1.3 Configuring a GPON Line Profile</a></li> </ul>                                                                                                                                                                                          | These profiles must be applied to the OLT. |
|                                           | <ul style="list-style-type: none"> <li>● <a href="#">19.2.2 Configuring an MEF IP Traffic Profile</a></li> <li>● <a href="#">19.2.8 Configuring a Program Profile</a></li> <li>● <a href="#">19.2.9 Adding a Multicast Rights Profile</a></li> <li>● <a href="#">19.3.9 Adding an MGC Profile</a></li> <li>● <a href="#">19.3.10 Configuring a UAS Profile</a></li> <li>● <a href="#">19.3.11 Adding a TID Profile</a></li> </ul> | -                                          |



| Function                                   | Global Profile                                                                                                                                                                                                                                                                                                                                                                                                                    | Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Profiles to be added in GPON discrete mode | <ul style="list-style-type: none"> <li>● <a href="#">19.1.1 Configuring an MDU SNMP Profile</a></li> <li>● Configuring an ONT Capability Profile</li> <li>● <a href="#">19.1.2 Configuring a DBA Profile</a></li> </ul>                                                                                                                                                                                                           | <p>An ONT capability profile must match the hardware capability of the ONT to which the profile is bound. Otherwise, certain configuration data cannot be applied.</p> <p>The global profile of the ONT capability profile must be configured on the U2000. In addition, the same ONT capability profile must be created on the U2000 and OLT. Otherwise, the network planning sheet cannot be imported into the U2000. These profiles must be applied to the OLT.</p> |
|                                            | <ul style="list-style-type: none"> <li>● <a href="#">19.2.2 Configuring an MEF IP Traffic Profile</a></li> <li>● <a href="#">19.2.8 Configuring a Program Profile</a></li> <li>● <a href="#">19.2.9 Adding a Multicast Rights Profile</a></li> <li>● <a href="#">19.3.9 Adding an MGC Profile</a></li> <li>● <a href="#">19.3.10 Configuring a UAS Profile</a></li> <li>● <a href="#">19.3.11 Adding a TID Profile</a></li> </ul> | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Profiles to be added in EPON profile mode  | <ul style="list-style-type: none"> <li>● <a href="#">19.1.1 Configuring an MDU SNMP Profile</a></li> <li>● <a href="#">23.1.2 Configuring a DBA Profile</a></li> <li>● <a href="#">23.1.3 Configuring a Line Profile</a></li> </ul>                                                                                                                                                                                               | These profiles must be applied to the OLT.                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Function | Global Profile                                                                                                                                                                                                                                                                                                                                                                                                                    | Remarks |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|          | <ul style="list-style-type: none"> <li>● <a href="#">19.2.2 Configuring an MEF IP Traffic Profile</a></li> <li>● <a href="#">19.2.8 Configuring a Program Profile</a></li> <li>● <a href="#">19.2.9 Adding a Multicast Rights Profile</a></li> <li>● <a href="#">19.3.9 Adding an MGC Profile</a></li> <li>● <a href="#">19.3.10 Configuring a UAS Profile</a></li> <li>● <a href="#">19.3.11 Adding a TID Profile</a></li> </ul> | -       |

- **Generating a global profile based on an NE profile**

This section considers the EPON DBA profile as an example to describe how to generate a global profile based on an NE profile. The procedures for operating all profiles are the same but differ in the navigation path.

1. In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
2. Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
3. Click the **DBA Profile** tab.
4. Right-click the required profile in the list and choose **Generate Global Profile** from the shortcut menu.
5. In the dialog box that is displayed, click **OK**.

---End

## 17.4 Operations on Sheets

During this phase, you need to perform relevant operations on sheets.

### [17.4.1 Filling In a Network Planning Sheet](#)

This topic describes how to obtain and fill in a network planning sheet. In addition, this topic describes the contents of the sheet. A network planning sheet can be imported into the U2000 after you fill in the sheet correctly.

### [17.4.2 Importing a Network Planning Sheet](#)

The predeployed NE is generated on the U2000 after you import a network planning sheet into the U2000.

### [17.4.3 \(Optional\) Binding a MAC Address or SN to the MDU](#)

The **Authentication Information** parameter is optional in the network planning sheet. If the MAC address or SN of an MDU is unknown, you need to bind the MAC address or SN and the IP address of the MDU after the MDU goes online and is auto-discovered. Then, you can apply the predeployed data to the MDU on the U2000.

## 17.4.1 Filling In a Network Planning Sheet

This topic describes how to obtain and fill in a network planning sheet. In addition, this topic describes the contents of the sheet. A network planning sheet can be imported into the U2000 after you fill in the sheet correctly.

### Prerequisite

The global profile that has the same name as the profile whose name is filled in the sheet must exist on the U2000. For information on how to configure the profile, see [17.3.3 Creating a Global Profile Referenced in the Network Planning Sheet](#).

### Procedure

- 1 Obtain the network planning sheet from the installation path of the U2000.

The name of the network planning sheet is **Networking Planning Sheet (xPON).xls**, where x represents G or E. The paths to the network planning sheet vary with the types of the operating systems (OSs), as follows:

- Windows-based server: **X:\U2000\client\template\MDU Pre-Deploy\en\**, where x indicates the name of the disk, such as D, E, and F.
- Solaris-based server: **/opt/U2000/client/template/MDU Pre-Deploy/en**

 **NOTE**

The network planning sheet is forward compatible. To learn the instructions on how to use the network planning sheet and the precautions, open the network planning sheet and read the contents in **Instructions**.

- 2 Double-click a blank network planning sheet and fill in the sheet.

 **NOTE**

Configure IPTV services instead of broadband services in the **Data Plan** worksheet if the broadband services and IPTV services use the same service stream.

- The **Data Plan** worksheet contains parameters particular to an MDU to be predeployed. These parameters can be classified into two parts: **ONU Management Information** and **E2E Service Channel Data**.

 **NOTE**

Configure IPTV services instead of broadband services in the **Data Plan** worksheet if the broadband services and IPTV services use the same service stream.

- Parameter settings in **ONU Management Information** of an ONU must be unique and cannot conflict with other ONUs. The parameters include **ONU ID**, **ONU Description** (ONU name displayed on the U2000), **ONU Management IP Address**, and **Authentication Information**. If the MAC address or SN of the ONU is unknown, the authentication information can be blank.
- An E2E service channel is used by the U2000 to manage the MDU. You can deploy services such as broadband and IPTV services after the E2E service channel is set up and the MDU goes online and becomes stable.
- The **Default Value Policy** worksheet defines **Management Channel Parameters**, **GEM Port Channel Parameters**, **OLT Service Channel**, **ONU Service Channel**, **Voice IP Address Pool**, **Voice Service** (H.248, SIP, and MGCP), and **Multicast User**. These parameters are effective in the entire network.
- In the **Data Plan** worksheet of the network planning sheet, select an ONU type from the **ONU Type** drop-down list. In the dialog box that is displayed, click **OK**. Then, a worksheet

is automatically generated for the ONU in the network planning sheet. This is the worksheet of the common command configuration script.

```
#the execute mode of command configuration script .
#the prepositive common command configuration script .
#the postpositive common command configuration script .
```

 **NOTE**

The contents in the common command configuration script are the same as the commands on the ONU. This worksheet collects certain common scripts for editing and then applying to the ONU. You can copy the edited commands to the common command configuration script.

By default, some prepositive common commands and postpositive common commands are generated when you generate the resource planning sheet.

| Key Parameter                                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| the execute mode of command configuration script     | Indicates that the command configuration script is run in file loading mode or Telnet mode in the network planning sheet.                                                                                                                                                                                                                                                                                                                                                                                                  |
| the prepositive common command configuration script  | Specifies the operations contained in the command prescript. For example, the creation of an ADSL line profile can be specified in the prescript because the creation is not supported in the network planning sheet.<br>Such as the commands that are used to configure security policies and access control list (ACL), are saved in <b>the prepositive common command configuration script</b> .<br><b>NOTE</b><br>By default, some prepositive common commands are generated when you edit the network planning sheet. |
| the postpositive common command configuration script | Specifies the commands that must be executed after data configuration.<br><b>NOTE</b><br>By default, some postpositive common commands are generated when you edit the network planning sheet.                                                                                                                                                                                                                                                                                                                             |

- 3 After filling in the network planning sheet, click **Verify Data** in the **Data Plan** worksheet to verify the contents in the worksheet.

 **NOTE**

If an error exists in the network planning sheet, the cause of the error is provided in the blank area at the end of the line.

The data verification performed by the network planning sheet is not complete. To ensure data accuracy, it is recommended that you check the contents carefully.

---End

## Other Operations on the Planning Sheet

| Button                                                                                                                 | Description                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Generate Network Deployment Sheets for Deployment<br>Generate Network Deployment Sheets for Service Capacity Expansion | Exports the data plan to Resource Deployment Sheet.                                                                                                                                                                                                                                                                                                       |
| User Define Sheetform                                                                                                  | Displays the customized operations on the U2000 and broadband, IPTV, VoIP, and reserved services. If you select certain parameters, these parameters are displayed in the <b>Data Plan</b> and <b>Default Value Policy</b> worksheets. In addition, the parameters that are not selected are hidden after you customize the operations.                   |
| Clear Form                                                                                                             | Clears the data in the current worksheet.                                                                                                                                                                                                                                                                                                                 |
| Add a Row                                                                                                              | Adds an empty row above the row where the cursor points in the current worksheet.                                                                                                                                                                                                                                                                         |
| Delete a Row                                                                                                           | Deletes the row where the cursor points from the current worksheet.                                                                                                                                                                                                                                                                                       |
| Show Comments/Hide Comments                                                                                            | Displays or hides remarks. In the <b>Data Plan</b> worksheet, the remarks, including the definition, range, navigation path of each parameter and the information about whether the parameter is mandatory or not, are provided in the cell above the parameter. You can click <b>View Remarks</b> or <b>Hide Remarks</b> to display or hide the remarks. |
| Chinese/English                                                                                                        | Switches the language of the descriptions in the table between Chinese and English.                                                                                                                                                                                                                                                                       |

## 17.4.2 Importing a Network Planning Sheet

The predeployed NE is generated on the U2000 after you import a network planning sheet into the U2000.

## Prerequisite

- The preparations must be complete. For details, see [17.3.1 Upgrading MDUs in Batches Automatically](#), [17.3.2 Adding an OLT to the U2000](#), and [17.3.3 Creating a Global Profile Referenced in the Network Planning Sheet](#).
- The dependent processes of subtasks must be started. The names of the relevant processes are **Access Device Common Service**, **Access Device Manager**, **Profile Manager**, and **xFtpWatcher Process**.

## Procedure

- 1 Choose **Configuration > FTTx Service Pre-Deployment > Import Network Deployment Sheets** from the main menu.
- 2 In the dialog box that is displayed, select the network planning sheet to be deployed and click **Open**.
- 3 After importing the network planning sheet, click **OK**.
- 4 The U2000 automatically performs the pre-deployment task after the MDU is powered on. Choose **Administration > Task Schedule > Scheduling Center** from the main menu. Then, you can view the execution status of the pre-deployment task.

### NOTE

Two types of pre-deployment tasks are displayed in the scheduling center, that is, OLT tasks and ONU tasks. For example, when two MDUs are deployed on an OLT, three tasks are displayed in the scheduling center, that is, one deployment task of the OLT and two deployment tasks of the MDUs.

---End

## 17.4.3 (Optional) Binding a MAC Address or SN to the MDU

The **Authentication Information** parameter is optional in the network planning sheet. If the MAC address or SN of an MDU is unknown, you need to bind the MAC address or SN and the IP address of the MDU after the MDU goes online and is auto-discovered. Then, you can apply the predeployed data to the MDU on the U2000.

## Prerequisite

- The U2000 must work in the normal state.
- The auto-discovery of the xPON port must be enabled. For details, see [Confirming a GPON MDU](#) or [Confirming an EPON MDU](#).

## Procedure

- **Binding the SN and IP address of a GPON MDU if the MDU uses the SN for authentication**
  1. Choose **Configuration > FTTx Service Pre-Deployment > GPON MDU Batch Bind SN** from the main menu.
  2. In the dialog box that is displayed, enter the IP address of the MDU to which the SN is bound in the **IP** field, and select SN that the construction engineer on site provides from the **SN** drop-down list.
  3. Click **OK**.
- **Binding the MAC address and IP address of an EPON MDU if the MDU uses the MAC address for authentication.**

1. Choose **Configuration > FTTx Service Pre-Deployment > EPON MDU Batch Bind MAC** from the main menu.
2. In the dialog box that is displayed, enter the IP address of the MDU to which the MAC address is bound in the **MDU Management IP** field, and select the MAC address that the construction engineer on site provides from the **MAC** drop-down list.
3. Click **OK**.

----End

## 17.5 Acceptance

During this phase, you need to perform an acceptance test on the predeployment task.

### 17.5.1 Viewing a Pre-deployment Task and the Result

Viewing a pre-deployment task and the service data of the predeployed MDU helps you determine whether the MDU is predeployed successfully.

### 17.5.2 Predeploying an MDU or ONT Again

You need to find out the failure cause if an MDU or ONT fails to be predeployed. Then, import the network planning sheet into the U2000 again. Then, the U2000 automatically performs the MDU pre-deployment task.

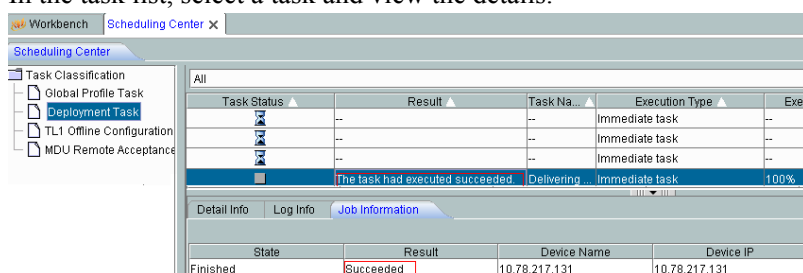
## 17.5.1 Viewing a Pre-deployment Task and the Result

Viewing a pre-deployment task and the service data of the predeployed MDU helps you determine whether the MDU is predeployed successfully.

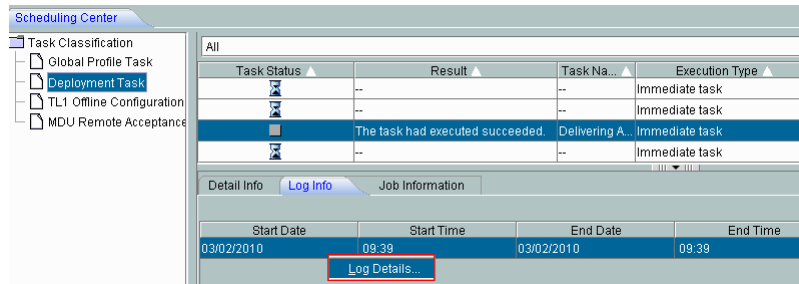
### Procedure

- **Viewing a pre-deployment task in the scheduling center**

1. Choose **Administration > Task Schedule > Scheduling Center** from the main menu.
2. On the tab page that is displayed, choose **Deployment Task** from the navigation tree. In the task list, select a task and view the details.



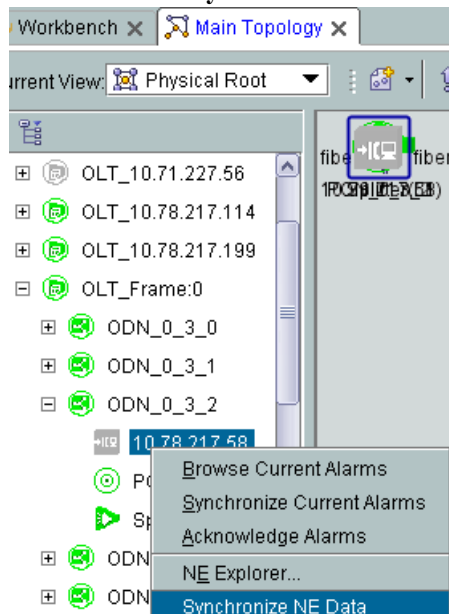
3. If the scheduling of a pre-deployment task fails, click the **Log Info** tab, right-click the failed task and choose **Log Details** from the shortcut menu. Then, you can view the details in logs.



- **Viewing the service data of the predeployed MDU**

Navigate to the MDU NE to view the application status of service data and determine whether the MDU is predeployed successfully. Only the NE management data of the MDU will be synchronized in the MDU pre-deployment to improve upgrade efficiency. Therefore, the NE data of the predeployed MDU must be synchronized before you view the service data of the MDU.

1. In the Main Topology, right-click the required MDU in the **Physical Root** navigation tree and choose **Synchronize NE Data** from the shortcut menu.



2. Double-click the MDU node to verify the service data after the NE data is synchronized.

----End

## 17.5.2 Predeploying an MDU or ONT Again

You need to find out the failure cause if an MDU or ONT fails to be predeployed. Then, import the network planning sheet into the U2000 again. Then, the U2000 automatically performs the MDU pre-deployment task.

### Context

- The data of previously predeployed OLT, MDU, or ONT will be deleted automatically when you predeploy them again.



- Predeploying an OLT, MDU, or ONT again will be slow because the data of the previously previous deployed data needs to be deleted when you predeploy them again.

**Table 17-1** describes the common problems and solutions to network planning sheets.

**Table 17-1** The common problems and solutions to network planning sheets

| Common Problem                                                                                                                                                                                                      | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The system displays an error message "Name of the ONT capability profile repeats the default profile name ranging from ont-profile_1 to ont-profile_128" when you import the network planning sheet into the U2000. | This problem can be resolved by changing the profile name.<br>The MDU does not allow the U2000 to apply a profile named by following the default naming rules, such as the ONT capability profile and DBA profile, to the MDU. If you need to use the profile named by following the default naming rules, create this profile on the MDU directly, synchronize the profile to the U2000, and then generate a global profile from the NE profile. |
| The system displays the message "Network transmission times out. Please try again later" when you import the network planning sheet to the U2000 and verify the service data of the MDU.                            | This problem can be resolved by importing the network planning sheet again into the U2000.<br>You need to check the memory usage of the server. Increase the memory to prevent this problem from occurring again if the available memory is less than 4 GB.                                                                                                                                                                                       |
| The system displays the message "Device name contains invalid characters" when you import the network planning sheet into the U2000 and verify the service data of the MDU.                                         | You need to check and ensure that the device name in the network planning sheet does not contain any unsupported special characters.                                                                                                                                                                                                                                                                                                              |

**Table 17-2** describes the common problems occurred when tasks are performed on the OLT and solutions to these problems.

**Table 17-2** The common problems occurred when tasks are performed on the OLT and solutions to these problems

| Common Problem                                                                                                                                                                                                                                                                               | Solution                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The system displays the message "The subitem resource is insufficient so that the task stopped" when the tasks are performed on the OLT. After you click the <b>Log Info</b> tab and double-click the failed task to view the failure cause, the message "VLAN already exists" is displayed. | To resolve this problem, change the type and attribute of this VLAN on the OLT and ensure that the VLAN type and attribute are the same as those of the predeployed VLAN.<br>This problem occurs because the OLT already has a VLAN that has the same VLAN ID but different VLAN type and attribute from the VLAN preset in the network planning sheet. |

| Common Problem                                                                                                                                                    | Solution                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| When performing the subtask of deploying service virtual ports in the process of MDU pre-deployment, the system displays the message "Database operation failed." | This problem occurs because the data on the U2000 and MDU is different. If the system displays this message when performing an OLT task, synchronize the service virtual port data of the OLT and import the network planning sheet into the U2000 again; if the system displays this message when performing an MDU task, delete the MDU and import the network planning sheet again. |
| The system displays the message "The message transmitted by MDP failed" in the process of performing an OLT task when you predeploy an MDU again.                 | To resolve this problem, check and ensure that the processes relevant to the subtasks of the pre-deployment are started.                                                                                                                                                                                                                                                               |

**Table 17-3** describes the common problems occurred when tasks are performed on the MDU and solutions to these problems.

**Table 17-3** The common problems occurred when tasks are performed on the MDU and solutions to these problems.

| Common Problem                                                                                                                                                                    | Solution                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| The system displays the message "The subitem resource is insufficient so that the task stopped" when the <b>Synchronize physical resource data of NE</b> task is performed.       | To resolve this problem, choose <b>Administration &gt; Settings &gt; xFtpWatcher</b> from the main menu and ensure that the status indicator is green. |
| The system displays a failure and the message "Incorrect parameter" is recorded in logs when the <b>Import network planning sheet of service virtual ports</b> task is performed. | To resolve the problem, ensure that the service virtual ports of xDSL ports are configured with VPIs and VCIs.                                         |

## Procedure

- 1 Choose **Configuration > FTTx Service Pre-Deployment > Import Network Deployment Sheets** from the main menu.
- 2 In the dialog box that is displayed, select the modified network planning sheet and click **Open**.
- 3 Click **Finish** after the network planning sheet is imported into the U2000.

----End

## 17.6 Configuration Example of xPON MDU Pre-deployment

This topic considers the scenario wherein a GPON MDU (MA5620G) is connected to an OLT as an example to describe how to predeploy an xPON MDU.

### Prerequisite

- This configuration example describes only how to predeploy an xPON MDU. For information about MDU automatic upgrade, see [17.3.1 Upgrading MDUs in Batches Automatically](#).
- The OLT must be in profile mode.
- This topic considers the scenario wherein the SN of the xPON MDU is unknown as an example.
- This topic considers the Windows-based server as an example.
- This topic considers broadband and narrowband services as examples.

 **NOTE**

Configure IPTV services instead of broadband services in the **Data Plan** worksheet if the broadband services and IPTV services use the same service stream.

### Context

[Table 17-4](#) and [Table 17-5](#) provide the data that must be planned in the network planning sheet.

**Table 17-4** Data plan in the preparation phase

| Configuration Item                             | Data Plan                                                                                                                                                                                                    | Remarks                                                                                                                                                                                      |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| U2000 server                                   | 192.168.50.17                                                                                                                                                                                                | The U2000 server needs to use ports 23, 8080, 9801, and 9803. Therefore, ensure that these ports are enabled on the firewall so that the U2000 server can communicate with NEs successfully. |
| OLT                                            | <ul style="list-style-type: none"> <li>● IP Address: 192.168.20.100</li> <li>● Management mode: inband</li> <li>● Upstream port: 0/0/1</li> <li>● Upstream VLAN: 1000</li> <li>● GPON port: 0/5/0</li> </ul> | The upstream VLAN is the same as the native VLAN of the upstream port.                                                                                                                       |
| Profile referenced in a network planning sheet | DBA profile <ul style="list-style-type: none"> <li>● Name: dba-profile_mdu</li> <li>● Bandwidth Compensation: Yes</li> <li>● Accept the default values for other parameters.</li> </ul>                      | -                                                                                                                                                                                            |

| Configuration Item | Data Plan                                                                                                                                                                                                                                                                                                                 | Remarks                                                                        |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
|                    | Line profile <ul style="list-style-type: none"> <li>● Name: line-profile_mdu</li> <li>● Mapping Mode: VLAN</li> <li>● Qos Mode: Priority Queue</li> <li>● T-CONT Index: 1</li> <li>● DBA Profile Name: dba-profile_mdu</li> <li>● GEM Port Index: 1</li> <li>● Accept the default values for other parameters.</li> </ul> | -                                                                              |
|                    | MDU SNMP profile <ul style="list-style-type: none"> <li>● Name: snmpprofile</li> <li>● SNMP Version: v1</li> <li>● Read Name: public</li> <li>● Write Name: private</li> <li>● Trap Host IP: 192.168.50.17</li> <li>● Trap UDP Port: 162</li> <li>● SNMP Security Name: public</li> </ul>                                 | -                                                                              |
|                    | MEF IP traffic profile <ul style="list-style-type: none"> <li>● Name: traffic-profile_1</li> <li>● CIR: 64Kbit/s</li> <li>● Outer Priority: 1</li> <li>● Accept the default values for other parameters.</li> </ul>                                                                                                       | -                                                                              |
|                    | MGC Profile <ul style="list-style-type: none"> <li>● Name: mgcprofile1</li> <li>● Protocol Type: H.248</li> <li>● IP Address1: 200.200.200.200 (IP address of the MGC)</li> <li>● UTP/SCTP Port Number: 2944</li> </ul>                                                                                                   | -                                                                              |
|                    | TID Profile <ul style="list-style-type: none"> <li>● Name: tid-profile_1</li> <li>● Format: %u</li> <li>● Parameter List: r</li> </ul>                                                                                                                                                                                    | A TID profile must be used when termination IDs are configured hierarchically. |

**Table 17-5** Data plan in a network planning sheet

| Configuration Item | Data Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Remarks |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Data Plan          | <ul style="list-style-type: none"> <li>● OLT IP Address: 192.168.20.100</li> <li>● PON Port: 0/5/0</li> <li>● ONU ID: 0</li> <li>● ONU Description: Building F in company B, City S</li> <li>● ONU Type: MA5620G</li> <li>● ONU Management IP Address: 192.168.20.10</li> <li>● ONU Management IP Mask: 24</li> <li>● ONU Gateway: 192.168.20.1</li> <li>● Network Management                             <ul style="list-style-type: none"> <li>- GEMPORT: 1</li> <li>- CVLAN: 100</li> <li>- SVLAN: 100</li> </ul> </li> <li>● Boardband                             <ul style="list-style-type: none"> <li>- GEMPORT: 1</li> <li>- CVLAN: 1001</li> <li>- SVLAN: 1001</li> </ul> </li> <li>● VoIP                             <ul style="list-style-type: none"> <li>- GEMPORT: 1</li> <li>- CVLAN: 2000</li> <li>- SVLAN: 2000</li> <li>- Voice Address Mode: static IP</li> <li>- Voice IP Address: 10.121.68.28</li> <li>- Voice IP Mask: 24</li> <li>- Voice Gateway: 10.121.68.1</li> <li>- MGC Domain Name: 001882D4C6FE-BGW</li> </ul> </li> </ul> | -       |

| Configuration Item   | Data Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Remarks |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Default Value Policy | <ul style="list-style-type: none"> <li>● Management Channel Parameters               <ul style="list-style-type: none"> <li>- ONU Type: MA5620G</li> <li>- Authentication Mode: SN</li> <li>- Line Profile Name: line-profile_mdu</li> <li>- MxU SNMP Profile Name: snmpprofile</li> <li>- IP Address of the U2000 Static Route: 192.168.20.17</li> <li>- IP Mask of the U2000 Static Route: 24</li> <li>- Management Mode: SNMP</li> <li>- Mapping Mode: VLAN</li> </ul> </li> <li>● GEM Port Channel Parameters: Create a GEM port whose <b>Service Name</b> is <b>Broadband</b> and a GEM port whose <b>Service Name</b> is <b>Voice</b> in the same way.               <ul style="list-style-type: none"> <li>- Service Name: Network Management</li> <li>- Service Type: ETH</li> <li>- Encryption Switch: off</li> <li>- Subtending Switch: off</li> <li>- T-CONT ID: 1</li> <li>- DBA Profile Name: dba-profile_mdu</li> </ul> </li> <li>● OLT Service Channel: Create an OLT service channel whose <b>Service Name</b> is <b>Broadband</b> and an OLT service channel whose <b>Service Name</b> is <b>Voice</b> in the same way. Do not set the names of the upstream traffic profile and downstream traffic profile for the OLT service channel of voice services.               <ul style="list-style-type: none"> <li>- Service Name: Network Management</li> <li>- SVLAN Type: smart</li> <li>- SVLAN Attribute: Common</li> <li>- SVLAN Upstream Port: 0/19/0</li> <li>- Upstream Traffic Control Profile: traffile_profile_1</li> </ul> </li> </ul> | -       |

| Configura<br>tion Item | Data Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Remarks |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                        | <ul style="list-style-type: none"> <li>- Downstream Traffic Control Profile: traffile_profile_1</li> <li>● ONU Service Channel: Create an ONU service channel whose <b>Service Name</b> is <b>Voice</b> in the same way. Do not set the names of the upstream traffic profile and downstream traffic profile, VPI, and VCI for the OLT service channel of voice services.                             <ul style="list-style-type: none"> <li>- ONU Type: MA5620G</li> <li>- Service Name: Broadband</li> <li>- CVLAN Type: smart</li> <li>- CVLAN Attribute: Common</li> <li>- CVLAN Upstream Port: 0/0/1</li> <li>- Upstream Traffic Control Profile: traffile_profile_1</li> <li>- Downstream Traffic Control Profile: traffile_profile_1</li> <li>- VPI: 8</li> <li>- VCI: 35</li> </ul> </li> <li>● VoIP IP Address Pool                             <ul style="list-style-type: none"> <li>- ONU Type: MA5620G</li> <li>- IP Type: Media</li> <li>- QoS Policy: TOS</li> <li>- IP Priority: 0</li> <li>- TOS: 0</li> </ul> </li> <li>● H.248 Voice Service                             <ul style="list-style-type: none"> <li>- ONU Type: MA5620G</li> <li>- MID Type: MG Domain Name</li> <li>- Protocol Port Number: 2944</li> <li>- Transmission Mode: UDP</li> <li>- Name of the Active MGC Profile: mgcprofile1</li> <li>- Profile Index: 5</li> <li>- Start Negotiation Version Number: Depend on profile</li> <li>- RTP Terminal Prefix: A</li> <li>- Name of the TID Profile Used by the RTP: tidprofile1</li> </ul> </li> </ul> |         |

| Configuration Item | Data Plan                                              | Remarks |
|--------------------|--------------------------------------------------------|---------|
| MA5620G            | the execute mode of command configuration script: File | -       |

## Procedure

### 1 Adding an OLT to the U2000 (For details, see [17.3.2 Adding an OLT to the U2000.](#))

1. In the Main Topology, choose **Physical Root** or an NE from the navigation tree, right-click in the topology view in the right pane, and then choose **New > NE** from the shortcut menu.
2. In the dialog box that is displayed, set the parameters.
  - IP Address: 192.168.20.100
  - Device Name: 192.168.20.100-MA5680T
3. Click **OK**.

### 2 Configuring the profile referenced in the network planning sheet (For details, see [17.3.3 Creating a Global Profile Referenced in the Network Planning Sheet.](#))

#### 1. Configuring a DBA profile. (For details, see [19.1.2 Configuring a DBA Profile.](#))

- a. Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- b. Click the **DBA Profile** tab.
- c. Right-click and choose **Add Global Profile** from the shortcut menu.
- d. In the dialog box that is displayed, set the parameters.
  - Name: dba-profile\_mdu
  - Bandwidth Compensation: Yes
  - Accept the default values for other parameters.
- e. Click **OK**.
- f. In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- g. In the dialog box that is displayed, select the required NE(s), and click **OK**.

#### 2. Configuring a line profile (For details, see [19.1.3 Configuring a GPON Line Profile.](#))

In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

- a. Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- b. Click the **Line Profile** tab.
- c. Right-click and choose **Add Global Profile** from the shortcut menu.
- d. In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.



- Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue
  - Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - T-CONT Index: 1
    - DBA Profile: dba-profile\_mdu
  - Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Port Index: 1
    - Priority Queue: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 0 (this parameter is set to **0** automatically)
    - VLAN ID: 4000 (management VLAN ID)
    - Priority: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 1 (this parameter is set to **1** automatically)
    - VLAN ID: 1001 (VLAN ID of the Internet service)
    - Priority: 2
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 3 (this parameter is set to **3** automatically)
    - VLAN ID: 2000(VLAN ID of the voice service)
    - Priority: 1
- e. Click **OK**.
- f. In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- g. In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configuring an MDU SNMP profile** (For details, see [19.1.1 Configuring an MDU SNMP Profile](#).)
- a. Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - b. Click the **MDU SNMP Profile** tab.
  - c. Right-click and choose **Add Global Profile** from the shortcut menu.
  - d. In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public

- Write Name: private
  - Trap Host IP: 192.168.50.17 (IP address of the U2000 server)
  - Trap UDP Port: 162
  - SNMP Security Name: public
- e. Click **OK**.
- f. In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- g. In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configuring an MEF IP traffic profile** (For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).)
- a. Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - b. Click the **MEF IP Traffic Profile** tab.
  - c. Right-click and choose **Add Global Profile** from the shortcut menu.
  - d. In the dialog box that is displayed, set the parameters.
    - Name: traffile\_profile\_1
    - CIR: 20480
    - Outer Priority: 1
  - e. Click **OK**.
5. **Configuring an MGC profile** (For details, see [19.3.9 Adding an MGC Profile](#).)
- a. Choose **Configuration > Access Profile Management > MGC Profile** from the main menu.
  - b. Right-click and choose **Add Global Profile** from the shortcut menu.
  - c. In the dialog box that is displayed, set the parameters.
    - Name: mgcprofile1
    - Protocol Type: H.248
    - IP Address1: 200.200.200.200 (IP address of the MGC)
    - UTP/SCTP Port Number: 2944
  - d. Click **OK**.
6. **Configuring a TID profile** (For details, see [19.3.11 Adding a TID Profile](#).)
- a. Choose **Configuration > Access Profile Management > TID Profile** from the main menu.
  - b. Right-click and choose **Add Global Profile** from the shortcut menu.
  - c. In the dialog box that is displayed, set the parameters.
    - Name: tid-profile\_1
    - Format: %u
    - Parameter List: r
  - d. Click **OK**.
- 3 **Filling in the network planning sheet** (For details, see [17.4.1 Filling In a Network Planning Sheet](#).)

1. Navigate to the path **X:\U2000\client\template\MDU Pre-Deploy\en\** on the Windows-based server, and double-click the **Network Planning Sheet(GPON).xls** file.
2. In the **Data Plan** sheet, set the parameters as follows:
  - OLT IP Address: 192.168.20.100
  - PON Port: 0/5/0
  - ONU ID: 0
  - ONU Description: Building F in company B, block L, City S
  - ONU Type: MA5620G
  - ONU Management IP Address: 192.168.20.10
  - ONU Management IP Mask: 24
  - ONU Gateway: 192.168.20.1
  - Network Management
    - GEMPORT: 1
    - CVLAN: 100
    - SVLAN: 100
  - Broadband
    - GEMPORT: 1
    - CVLAN: 1001
    - SVLAN: 1001
  - VoIP
    - GEMPORT: 1
    - CVLAN: 2000
    - SVLAN: 2000
    - Voice Address Mode: static IP
    - Voice IP Address: 10.121.68.28
    - Voice IP Mask: 24
    - Voice Gateway: 10.121.68.1
    - MGC Domain Name: 001882D4C6FE-BGW
3. In the **Default Value Policy** sheet, set the parameters as follows:
  - Management Channel Parameters
    - ONU Type: MA5620G
    - Authentication Mode: SN
    - Line Profile Name: line-profile\_mdu
    - MxU SNMP Profile Name: snmpprofile
    - IP Address of the U2000 Static Route: 192.168.20.17
    - IP Mask of the U2000 Static Route: 24
    - Management Mode: SNMP
    - Mapping Mode: VLAN
  - GEM Port Channel Parameters: Create a GEM port whose **Service Name** is **Broadband** and a GEM port whose **Service Name** is **Voice** in the same way.

- Service Name: Network Management
- Service Type: ETH
- Encryption Switch: off
- Subtending Switch: off
- T-CONT ID: 1
- DBA Profile Name: dba-profile\_mdu
- OLT Service Channel: Create an OLT service channel whose **Service Name** is **Broadband** and an OLT service channel whose **Service Name** is **Voice** in the same way. Do not set the names of the upstream traffic profile and downstream traffic profile for the OLT service channel of voice services.
  - Service Name: Network Management
  - SVLAN Type: smart
  - SVLAN Attribute: Common
  - SVLAN Upstream Port: 0/19/0
  - Upstream Traffic Control Profile: traffile\_profile\_1
  - Downstream Traffic Control Profile: traffile\_profile\_1
- ONU Service Channel: Create an ONU service channel whose **Service Name** is **Voice** in the same way. Do not set the names of the upstream traffic profile and downstream traffic profile, VPI, and VCI for the OLT service channel of voice services.
  - ONU Type: MA5620G
  - Service Name: Broadband
  - CVLAN Type: smart
  - CVLAN Attribute: Common
  - CVLAN Upstream Port: 0/0/1
  - Upstream Traffic Control Profile: traffile\_profile\_1
  - Downstream Traffic Control Profile: traffile\_profile\_1
  - VPI: 8
  - VCI: 35
- VoIP IP Address Pool
  - ONU Type: MA5620G
  - IP Type: Media
  - QoS Policy: TOS
  - IP Priority: 0
  - TOS: 0
- H.248 Voice Service
  - ONU Type: MA5620G
  - MID Type: MG Domain Name
  - Protocol Port Number: 2944
  - Transmission Mode: UDP
  - Name of the Active MGC Profile: mgcprofile1
  - Profile Index: 5

- Start Negotiation Version Number: Depend on profile
  - RTP Terminal Prefix: A
  - Name of the TID Profile Used by the RTP: tidprofile1
4. In the **MA5620G** sheet, set **the execute mode of command configuration script** to **File**.
  5. Choose **File > Save** from the main menu to save the sheet.

**4 Importing the network planning sheet** (For details, see [17.4.2 Importing a Network Planning Sheet](#).)

1. Choose **Configuration > FTTx Service Pre-Deployment > Import Network Deployment Sheets** from the main menu.
2. In the dialog box that is displayed, select **Network Planning Sheet(GPON).xls** and click **Open**.
3. After importing the network planning sheet, click **OK**.

**5 Binding the MDU and its SN** (For details, see [17.4.3 \(Optional\) Binding a MAC Address or SN to the MDU](#).)

1. Choose **Configuration > FTTx Service Pre-Deployment > GPON MDU Batch Bind SN** from the main menu.
2. In the dialog box that is displayed, enter the IP address of the MDU that is to be bound to the SN in the **MDU Management IP** field, and select the SN provided by installation engineers from the **SN** drop-down list.
3. Click **OK**.

----End

## Result

See [17.5.1 Viewing a Pre-deployment Task and the Result](#) to determine whether the MA5626G is predeployed successfully.



# 18 Predeploying xPON ONTs

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## About This Chapter

A large number of ONTs need to be deployed in the xPON FTTH network. ONTs can be bulk imported into the U2000 by means of a network planning sheet. The bulk operation simplifies and speeds up the ONT deployment so that the costs of building networks are reduced.

### Context

xPON ONTs are classified into GPON ONTs and EPON ONTs.

#### [18.1 Example Network of xPON ONT Pre-deployment](#)

When predeploying an xPON ONT, ensure that the OLT applies channel configurations to the ONT after the optical path between the OLT and the ONT is enabled. In this case, the U2000 can manage the ONT.

#### [18.2 Configuration Flow of xPON ONT Pre-deployment](#)

This topic describes how to predeploy an xPON ONT. Predeploying an xPON ONT is divided into two phases: ONT auto-discovery and ONT auto-configuration. Basic parameters are set in the ONT auto-discovery phase to meet the requirements for ONT auto-configuration. By using the ONT auto-configuration function, the upgrade and service data configuration of the ONT are automatically configured after the ONT is powered on. In this case, the ONT can carry services immediately after power-on.

#### [18.3 Preparation](#)

During this phase, you need to make sure that the devices run in the normal state and configure the profiles that the predeployment profile references.

#### [18.4 Operations on Sheets](#)

During this phase, you need to perform relevant operations on sheets.

#### [18.5 Acceptance](#)

During this phase, you need to perform an acceptance test on the predeployment task.

#### [18.6 Configuration Example of xPON ONT Pre-deployment](#)

This topic considers the scenario wherein an EPON ONT (850e) is connected to an OLT as an example to describe how to predeploy an xPON ONT.

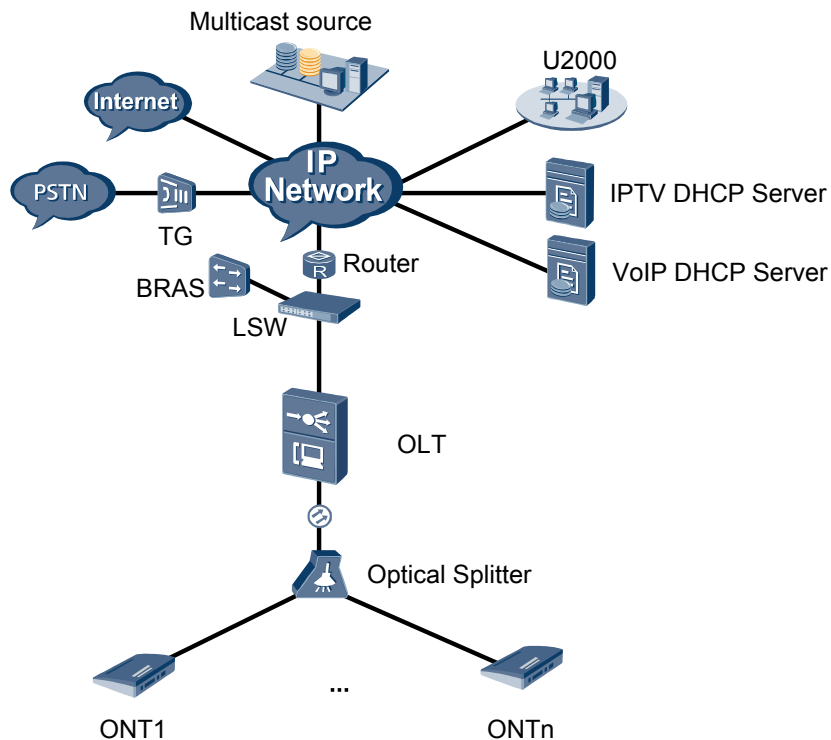
## 18.1 Example Network of xPON ONT Pre-deployment

When predeploying an xPON ONT, ensure that the OLT applies channel configurations to the ONT after the optical path between the OLT and the ONT is enabled. In this case, the U2000 can manage the ONT.

### Context

**Figure 18-1** shows the example network of xPON ONT pre-deployment.

**Figure 18-1** Example network of xPON ONT pre-deployment





## 18.2 Configuration Flow of xPON ONT Pre-deployment

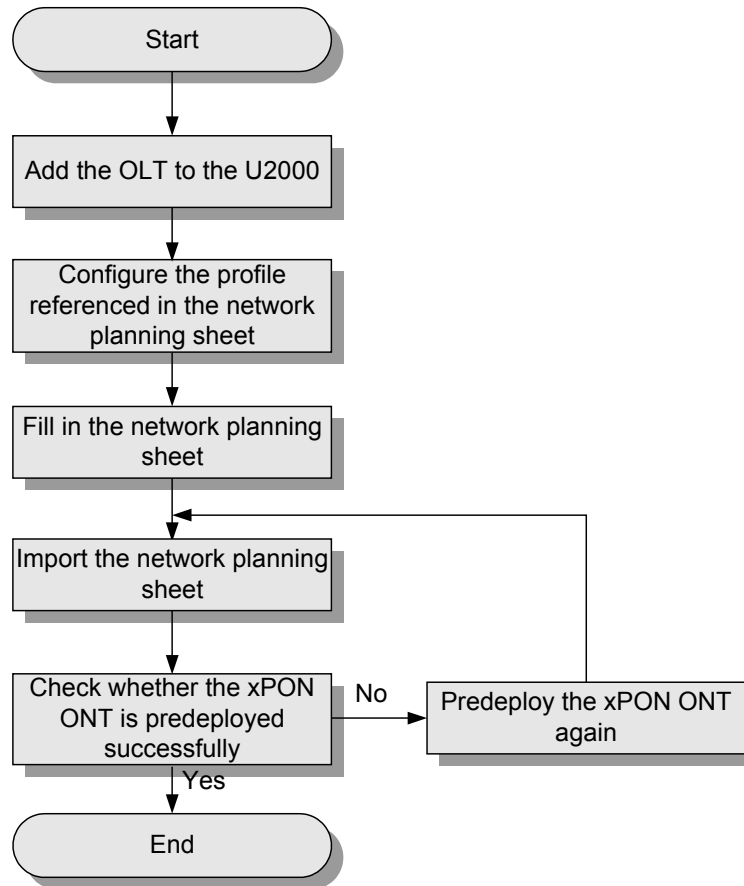
This topic describes how to predeploy an xPON ONT. Predeploying an xPON ONT is divided into two phases: ONT auto-discovery and ONT auto-configuration. Basic parameters are set in the ONT auto-discovery phase to meet the requirements for ONT auto-configuration. By using the ONT auto-configuration function, the upgrade and service data configuration of the ONT are automatically configured after the ONT is powered on. In this case, the ONT can carry services immediately after power-on.

### Context

The following section describes the flow of how to predeploy an xPON ONT for the first time. In addition, the flow for expanding ONTs is included in this flow. You can select the steps according to the requirements.

1. Ensure that the OLT is added to the U2000 and the OLT data on the U2000 is the same as the OLT data on the ONT. For details, see [18.3.1 Adding an OLT to the U2000](#).
2. You can add a global profile or generate a global profile based on the NE profile. For details, see [17.3.3 Creating a Global Profile Referenced in the Network Planning Sheet](#).
3. Fill in the network planning sheet according to the data plan and import the sheet to the U2000. For details, see [17.4.1 Filling In a Network Planning Sheet](#) and [17.4.2 Importing a Network Planning Sheet](#).
4. Check whether the ONT is predeployed successfully after the ONT is powered on. For details, see [17.5.1 Viewing a Pre-deployment Task and the Result](#).
5. Predeploy the ONT again if the pre-deployment fails. For details, see [18.5.2 Predeploying an MDU or ONT Again](#).

[Figure 18-2](#) shows the flowchart for predeploying an xPON ONT.

**Figure 18-2** Flowchart for predeploying an xPON ONT

## 18.3 Preparation

During this phase, you need to make sure that the devices run in the normal state and configure the profiles that the predeployment profile references.

### 18.3.1 Adding an OLT to the U2000

This topic describes how to add an OLT to the U2000 before importing the MDU network planning sheet.

### 18.3.2 Configuring the Profile Referenced in a Network Planning Sheet

You can select a global profile in the **Default Value Policy** worksheet of the network planning sheet only after the global profile is configured on the U2000.

## 18.3.1 Adding an OLT to the U2000

This topic describes how to add an OLT to the U2000 before importing the MDU network planning sheet.

### Prerequisite

- The U2000 must work in the normal state.

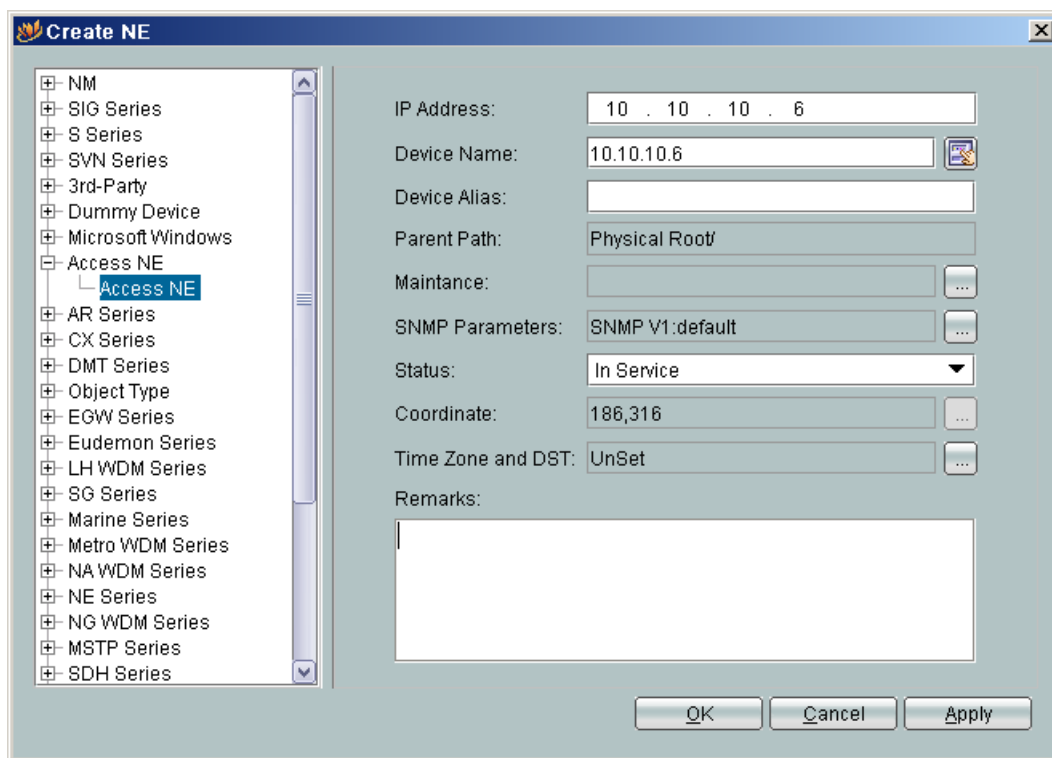
- The inband or outband IP address and SNMP parameters of the OLT and the route between the OLT and the U2000 must be set.
- The FTP service of the U2000 server must be started in the normal state. For details, see [Configuring the FTP, SFTP, or TFTP Service \(Windows\)](#).

## Context

If the OLT has been added to the U2000, to ensure that the data on the U2000 is the same as the data on the OLT, right-click the OLT in the Main Topology and choose **Synchronize NE Data** from the shortcut menu.

## Procedure

- 1 In the Main Topology, choose **Physical Root** or an NE from the navigation tree, right-click in the topology view in the right pane, and then choose **New > NE** from the shortcut menu.
- 2 In the dialog box that is displayed, set the parameters such as the IP address and name of the NE.



- 3 Click **OK**.

----End

## 18.3.2 Configuring the Profile Referenced in a Network Planning Sheet

You can select a global profile in the **Default Value Policy** worksheet of the network planning sheet only after the global profile is configured on the U2000.

## Context

You can configure a global profile referenced in a network planning sheet by

- Adding a global profile manually.
- Generating a global profile based on an NE profile.

## Procedure

- **Adding a global profile manually**

| Function                                   | Global Profile                                                                                                                                                                                                                              | Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Profiles to be added in GPON profile mode  | <ul style="list-style-type: none"> <li>● <a href="#">19.1.3 Configuring a GPON Line Profile</a></li> <li>● <a href="#">20.1.2 Configuring a GPON Service Profile</a></li> <li>● <a href="#">19.1.2 Configuring a DBA Profile</a></li> </ul> | These profiles must be applied to the OLT.                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                            | <ul style="list-style-type: none"> <li>● <a href="#">19.2.2 Configuring an MEF IP Traffic Profile</a></li> <li>● <a href="#">20.2.1 Configuring the ONT Value-Added Service Configuration Profile</a></li> </ul>                            | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Profiles to be added in GPON discrete mode | <ul style="list-style-type: none"> <li>● Configuring a GPON ONT Capability Profile</li> <li>● <a href="#">19.1.2 Configuring a DBA Profile</a></li> </ul>                                                                                   | <p>An ONT capability profile must match the hardware capability of the ONT to which profile is bound. Otherwise, certain configuration data cannot be applied.</p> <p>The global profile of the ONT capability profile must be configured on the U2000. In addition, the same ONT capability profile must be created on the U2000 and OLT. Otherwise, the network planning sheet cannot be imported into the U2000.</p> <p>These profiles must be applied to the OLT.</p> |
|                                            | <ul style="list-style-type: none"> <li>● <a href="#">19.2.2 Configuring an MEF IP Traffic Profile</a></li> <li>● <a href="#">20.2.1 Configuring the ONT Value-Added Service Configuration Profile</a></li> </ul>                            | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Function                                  | Global Profile                                                                                                                                                                                                                    | Remarks                                    |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Profiles to be added in EPON profile mode | <ul style="list-style-type: none"> <li>● <a href="#">23.1.3 Configuring a Line Profile</a></li> <li>● <a href="#">24.1.2 Configuring a Service Profile</a></li> <li>● <a href="#">23.1.2 Configuring a DBA Profile</a></li> </ul> | These profiles must be applied to the OLT. |
|                                           | <ul style="list-style-type: none"> <li>● <a href="#">19.2.2 Configuring an MEF IP Traffic Profile</a></li> <li>● <a href="#">20.2.1 Configuring the ONT Value-Added Service Configuration Profile</a></li> </ul>                  | -                                          |

- **Generating a global profile based on an NE profile**

This section considers the EPON DBA profile as an example to describe how to generate a global profile based on an NE profile. The procedures for operating all profiles are the same but differ in the navigation path.

1. In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
2. Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
3. Click the **DBA Profile** tab.
4. Right-click the required profile in the list and choose **Generate Global Profile** from the shortcut menu.
5. In the dialog box that is displayed, click **OK**.

---End

## 18.4 Operations on Sheets

During this phase, you need to perform relevant operations on sheets.

### [18.4.1 Filling In a Network Planning Sheet](#)

This topic describes how to obtain and fill in a network planning sheet. In addition, this topic describes the contents of the sheet. A network planning sheet can be imported into the U2000 after you fill in the sheet correctly.

### [18.4.2 Importing a Network Planning Sheet](#)

The predeployed NE is generated on the U2000 after you import a network planning sheet into the U2000.

## 18.4.1 Filling In a Network Planning Sheet

This topic describes how to obtain and fill in a network planning sheet. In addition, this topic describes the contents of the sheet. A network planning sheet can be imported into the U2000 after you fill in the sheet correctly.

## Prerequisite

A global profile that has the same name as the profile used in the network planning sheet must exist on the U2000. For information on how to configure the profile, see [18.3.2 Configuring the Profile Referenced in a Network Planning Sheet](#).

## Procedure

- 1 Obtain a network planning sheet from the installation path of the U2000.

The name of the network planning sheet is **Networking Planning Sheet (xPON).xls**, where x represents G or E. The paths to the network planning sheet vary with the types of the operating systems (OSs), as follows:

- Windows-based server: **X:\U2000\client\template\MDU Pre-Deploy\en\**, where x indicates the name of the disk, such as D, E, and F.
- Solaris-based server: **/opt/U2000/client/template/MDU Pre-Deploy/en**

- 2 Double-click a blank network planning sheet and fill in the sheet.

- The **Data Plan** worksheet contains parameters particular to an ONT to be predeployed. These parameters can be classified into two parts: **ONU Management Information** and **E2E Service Channel Data**.
  - Parameter settings in **ONU Management Information** of an ONU must be unique and cannot conflict with other ONUs. The parameters include **ONU ID**, **ONU Description** (ONU name displayed on the U2000), and **Authentication Information**. If the MAC address or SN of the ONU is unknown, the authentication information can be blank.
  - An E2E service channel is used by the U2000 to manage the ONT. You can deploy services such as the broadband and IPTV services after the E2E service channel is set up and the ONT goes online and becomes stable.
- The **Default Value Policy** worksheet defines **Management Channel Parameters**, **GEM Port Channel Parameters**, **OLT Service Channel**, **ONU Service Channel**, **Voice IP Address Pool**, **Voice Service** (H.248, SIP, and MGCP), and **Multicast User**. These parameters are effective in the entire network.

- 3 After filling in the network planning sheet, click **Verify Data** in the **Data Plan** worksheet to verify the contents in the worksheet.

### NOTE

If an error exists in the network planning sheet, the cause of the error is provided in the blank area at the end of the line.

The data verification performed by the network planning sheet is not complete. To ensure data accuracy, it is recommended that you check the contents carefully.

----End

## 18.4.2 Importing a Network Planning Sheet

The predeployed NE is generated on the U2000 after you import a network planning sheet into the U2000.

## Prerequisite

- The preparations must be complete. For details, see [18.3.1 Adding an OLT to the U2000](#) and [18.3.2 Configuring the Profile Referenced in a Network Planning Sheet](#).

- The dependent processes of subtasks must be started. The names of the relevant processes are **Access Device Common Service**, **Access Device Manager**, **Profile Manager**, and **xFtpWatcher Process**.

## Procedure

- 1 Choose **Configuration > FTTx Service Pre-Deployment > Import Network Deployment Sheets** from the main menu.
- 2 In the dialog box that is displayed, select the network planning sheet to be deployed and click **Open**.
- 3 After importing the network planning sheet, click **OK**.
- 4 The U2000 automatically performs the pre-deployment task after the ONT is powered on. Choose **Administration > Task Schedule > Scheduling Center** from the main menu. Then, you can view the execution status of the pre-deployment task.

----End

## 18.5 Acceptance

During this phase, you need to perform an acceptance test on the predeployment task.

### 18.5.1 Viewing a Pre-deployment Task and the Result

Viewing a pre-deployment task and the service data of the predeployed ONT helps you determine whether the ONT is predeployed successfully.

### 18.5.2 Predeploying an MDU or ONT Again

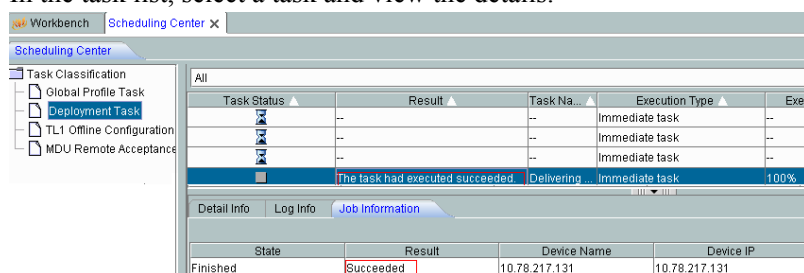
You need to find out the failure cause if an MDU or ONT fails to be predeployed. Then, import the network planning sheet into the U2000 again. Then, the U2000 automatically performs the MDU pre-deployment task.

## 18.5.1 Viewing a Pre-deployment Task and the Result

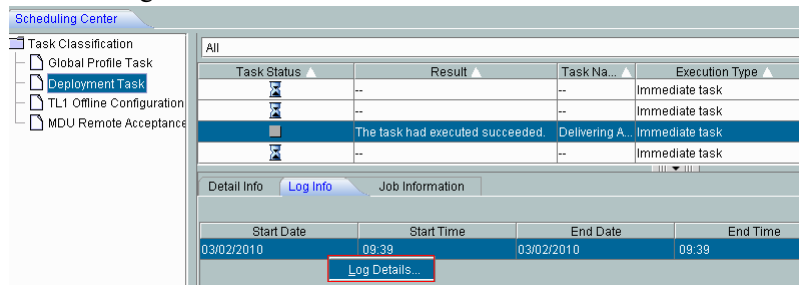
Viewing a pre-deployment task and the service data of the predeployed ONT helps you determine whether the ONT is predeployed successfully.

## Procedure

- **Viewing a pre-deployment task in the scheduling center**
  1. Choose **Administration > Task Schedule > Scheduling Center** from the main menu.
  2. On the tab page that is displayed, choose **Deployment Task** from the navigation tree. In the task list, select a task and view the details.

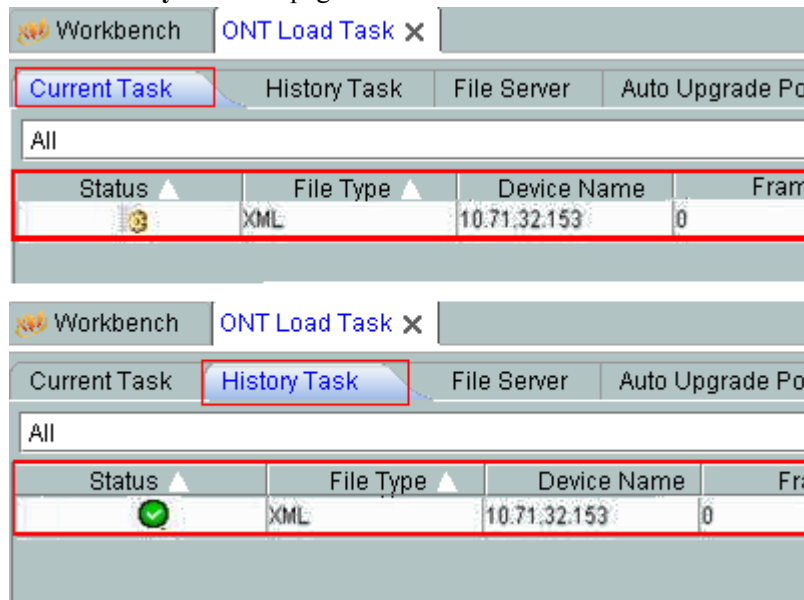


- If the scheduling of a pre-deployment task fails, click the **Log Info** tab, right-click the failed task and choose **Log Details** from the shortcut menu. Then, you can view the details in logs.



- **Viewing an ONT loading task**

- Choose **Administration > Task Schedule > ONT Task List** from the main menu.
- In the **ONT Load Task** dialog box, an ONT loading task is generated on the **Current Task** tab page. The ONT loading task is started and completed successfully after the ONT is powered on and works in the normal state. In this case, you can view the task on the **History Task** tab page.



- **Viewing the service data of the predeployed ONT**

- In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- Choose **EPON > EPON ONU** from the navigation tree.
- On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- In the ONT list, right-click an ONT and choose **Configure Value-Added Service** from the shortcut menu.
- In the dialog box that is displayed, check and ensure that the configuration is the same as the predeployed configuration, and then click **OK**.

----End



## 18.5.2 Predeploying an MDU or ONT Again

You need to find out the failure cause if an MDU or ONT fails to be predeployed. Then, import the network planning sheet into the U2000 again. Then, the U2000 automatically performs the MDU pre-deployment task.

### Context

- The data of previously predeployed OLT, MDU, or ONT will be deleted automatically when you predeploy them again.
- Predeploying an OLT, MDU, or ONT again will be slow because the data of the previously previous deployed data needs to be deleted when you predeploy them again.

**Table 18-1** describes the common problems and solutions to network planning sheets.

**Table 18-1** The common problems and solutions to network planning sheets

| Common Problem                                                                                                                                                                                                      | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The system displays an error message "Name of the ONT capability profile repeats the default profile name ranging from ont-profile_1 to ont-profile_128" when you import the network planning sheet into the U2000. | This problem can be resolved by changing the profile name.<br><br>The MDU does not allow the U2000 to apply a profile named by following the default naming rules, such as the ONT capability profile and DBA profile, to the MDU. If you need to use the profile named by following the default naming rules, create this profile on the MDU directly, synchronize the profile to the U2000, and then generate a global profile from the NE profile. |
| The system displays the message "Network transmission times out. Please try again later" when you import the network planning sheet to the U2000 and verify the service data of the MDU.                            | This problem can be resolved by importing the network planning sheet again into the U2000.<br><br>You need to check the memory usage of the server. Increase the memory to prevent this problem from occurring again if the available memory is less than 4 GB.                                                                                                                                                                                       |
| The system displays the message "Device name contains invalid characters" when you import the network planning sheet into the U2000 and verify the service data of the MDU.                                         | You need to check and ensure that the device name in the network planning sheet does not contain any unsupported special characters.                                                                                                                                                                                                                                                                                                                  |

**Table 18-2** describes the common problems occurred when tasks are performed on the OLT and solutions to these problems.

**Table 18-2** The common problems occurred when tasks are performed on the OLT and solutions to these problems

| Common Problem                                                                                                                                                                                                                                                                               | Solution                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The system displays the message "The subitem resource is insufficient so that the task stopped" when the tasks are performed on the OLT. After you click the <b>Log Info</b> tab and double-click the failed task to view the failure cause, the message "VLAN already exists" is displayed. | To resolve this problem, change the type and attribute of this VLAN on the OLT and ensure that the VLAN type and attribute are the same as those of the predeployed VLAN.<br><br>This problem occurs because the OLT already has a VLAN that has the same VLAN ID but different VLAN type and attribute from the VLAN preset in the network planning sheet.                            |
| When performing the subtask of deploying service virtual ports in the process of MDU pre-deployment, the system displays the message "Database operation failed."                                                                                                                            | This problem occurs because the data on the U2000 and MDU is different. If the system displays this message when performing an OLT task, synchronize the service virtual port data of the OLT and import the network planning sheet into the U2000 again; if the system displays this message when performing an MDU task, delete the MDU and import the network planning sheet again. |
| The system displays the message "The message transmitted by MDP failed" in the process of performing an OLT task when you predeploy an MDU again.                                                                                                                                            | To resolve this problem, check and ensure that the processes relevant to the subtasks of the pre-deployment are started.                                                                                                                                                                                                                                                               |

**Table 18-3** describes the common problems occurred when tasks are performed on the MDU and solutions to these problems.

**Table 18-3** The common problems occurred when tasks are performed on the MDU and solutions to these problems.

| Common Problem                                                                                                                                                                    | Solution                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| The system displays the message "The subitem resource is insufficient so that the task stopped" when the <b>Synchronize physical resource data of NE</b> task is performed.       | To resolve this problem, choose <b>Administration &gt; Settings &gt; xFtpWatcher</b> from the main menu and ensure that the status indicator is green. |
| The system displays a failure and the message "Incorrect parameter" is recorded in logs when the <b>Import network planning sheet of service virtual ports</b> task is performed. | To resolve the problem, ensure that the service virtual ports of xDSL ports are configured with VPIs and VCIs.                                         |

## Procedure

- 1 Choose **Configuration > FTTx Service Pre-Deployment > Import Network Deployment Sheets** from the main menu.
  - 2 In the dialog box that is displayed, select the modified network planning sheet and click **Open**.
  - 3 Click **Finish** after the network planning sheet is imported into the U2000.
- End

## 18.6 Configuration Example of xPON ONT Pre-deployment

This topic considers the scenario wherein an EPON ONT (850e) is connected to an OLT as an example to describe how to predeploy an xPON ONT.

### Prerequisite

- The OLT must be in profile mode.
- This topic considers the Windows-based server as an example.

### Context

[Table 18-4](#) and [Table 18-5](#) provide the data that must be planned in the network planning sheet.

**Table 18-4** Data plan in the preparation phase

| Configuration Item                               | Data Plan                                                                                                                                                                                                    | Remarks                                                                                                                                                                                      |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| U2000 server                                     | 192.168.50.17                                                                                                                                                                                                | The U2000 server needs to use ports 23, 8080, 9801, and 9803. Therefore, ensure that these ports are enabled on the firewall so that the U2000 server can communicate with NEs successfully. |
| OLT                                              | <ul style="list-style-type: none"> <li>● IP Address: 192.168.20.100</li> <li>● Management mode: inband</li> <li>● Upstream port: 0/0/1</li> <li>● Upstream VLAN: 1000</li> <li>● GPON port: 0/5/0</li> </ul> | The upstream VLAN is the same as the native VLAN of the upstream port.                                                                                                                       |
| Profile referenced in the network planning sheet | DBA profile <ul style="list-style-type: none"> <li>● Name: dba-profile_ont</li> <li>● Bandwidth Compensation: Yes</li> <li>● Accept the default values for other parameters.</li> </ul>                      | -                                                                                                                                                                                            |

| Configura<br>tion Item | Data Plan                                                                                                                                                                                                                                                                                                                                | Remarks |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                        | Line profile <ul style="list-style-type: none"> <li>● Name: line-profile_ont</li> <li>● Mapping Mode: VLAN</li> <li>● Qos Mode: Priority Queue</li> <li>● T-CONT Index: 1</li> <li>● DBA Profile: dba-profile_ont</li> <li>● GEM Port Index: 1</li> <li>● Accept the default values for other parameters.</li> </ul>                     | -       |
|                        | Service profile <ul style="list-style-type: none"> <li>● Name: service-profile_ont</li> <li>● Number of Pots Ports: 2</li> <li>● Number of ETH Ports: 4</li> <li>● Default VLAN ID: 1001</li> </ul>                                                                                                                                      | -       |
|                        | MEF IP traffic profile <ul style="list-style-type: none"> <li>● Name: traffic-profile_1</li> <li>● CIR: 64Kbit/s</li> <li>● Outer Priority: 1</li> <li>● Accept the default values for other parameters.</li> </ul>                                                                                                                      | -       |
|                        | ONT VAS configuration profile <ul style="list-style-type: none"> <li>● Profile Name: VOIPHG850a</li> <li>● Vendor ID: HWTC(2011)</li> <li>● Terminal Type: 850e</li> <li>● Version: V1R1C02B010~Later</li> <li>● Signal Protocol: H248</li> <li>● Digitmap: x.T</li> <li>● MGC Port: 2944</li> <li>● MGC domain name: MGC.com</li> </ul> | -       |

**Table 18-5** Data plan in a network planning sheet

| Configuration Item | Data Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Remarks |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Data Plan          | <ul style="list-style-type: none"> <li>● OLT IP Address: 192.168.20.100</li> <li>● PON Port: 0/5/0</li> <li>● ONU ID: 0</li> <li>● ONU Name: Building F in residential section B, block L, City S</li> <li>● Authentication Mode: 00-1E-E3-22-A9-93</li> <li>● ONU Type: 850e</li> <li>● Broadband                             <ul style="list-style-type: none"> <li>- CVLAN: 1001</li> <li>- SVLAN: 1001</li> </ul> </li> <li>● VoIP                             <ul style="list-style-type: none"> <li>- CVLAN: 2000</li> <li>- SVLAN: 2000</li> <li>- Voice Address Mode: static IP</li> <li>- Voice IP Address: 10.121.68.28</li> <li>- Voice IP Mask: 24</li> <li>- Voice Gateway: 10.121.68.1</li> <li>- PSTN Terminal ID Prefix: A8</li> <li>- RTP Terminal ID Prefix: A8</li> <li>- Telephone No.: 28971111</li> </ul> </li> </ul> | -       |

| Configuration Item   | Data Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Remarks |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Default Value Policy | <ul style="list-style-type: none"> <li>● PON Channel Parameters <ul style="list-style-type: none"> <li>- ONU Type: 850e</li> <li>- Authentication Mode: MAC</li> <li>- Line Profile Name: line-profile_ont</li> <li>- Service Profile Name: service-profile_ont</li> <li>- ONT VAS Configuration Profile: VOIP850e</li> <li>- Enable DHCP: Enable</li> <li>- Enable PTP: Enable</li> </ul> </li> <li>● Service Channel: Create a service channel whose <b>Service Name</b> is <b>Voice</b> in the same way. Do not set the names of the upstream traffic profile and downstream traffic profile for the service channel of voice services. <ul style="list-style-type: none"> <li>- Service Name: Broadband</li> <li>- SVLAN Type: smart</li> <li>- SVLAN Attribute: Common</li> <li>- SVLAN Upstream Port: 0/19/0</li> <li>- Upstream Traffic Control Profile: traffic_profile_1</li> <li>- Downstream Traffic Control Profile: traffic_profile_1</li> </ul> </li> </ul> | -       |

## Procedure

### 1 Adding an OLT to the U2000 (For details, see [18.3.1 Adding an OLT to the U2000.](#))

1. In the Main Topology, choose **Physical Root** or an NE in the navigation tree, right-click in the topology view in the right pane, and then choose **New** > **NE** from the shortcut menu.
2. In the dialog box that is displayed, set the parameters.
  - IP Address: 192.168.20.100
  - Device Name: 192.168.20.100-MA5680T
3. Click **OK**.

### 2 Configuring the profile referenced in the network planning sheet (For details, see [18.3.2 Configuring the Profile Referenced in a Network Planning Sheet.](#))

1. **Configuring a DBA profile** (For details, see [23.1.2 Configuring a DBA Profile.](#))

- a. Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - b. Click the **DBA Profile** tab.
  - c. Right-click and choose **Add Global Profile** from the shortcut menu.
  - d. In the dialog box that is displayed, set the parameters.
    - Name: dba-profile\_ont
    - Bandwidth Compensation: Yes
    - Accept the default values for other parameters.
  - e. Click **OK**.
  - f. In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - g. In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configuring a line profile** (For details, see [23.1.3 Configuring a Line Profile](#).)
- a. Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - b. Click the **Line Profile** tab.
  - c. Right-click and choose **Add Global Profile** from the shortcut menu.
  - d. In the dialog box that is displayed, set the parameters.
    - Set Name to **line-profile\_ont**.
    - DBA Profile: dba-profile\_ont
  - e. Click **OK**.
  - f. In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - g. In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configuring a service profile** (For details, see [24.1.2 Configuring a Service Profile](#).)
- a. Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - b. Click the **Service Profile** tab.
  - c. Right-click and choose **Add Global Profile** from the shortcut menu.
  - d. In the dialog box that is displayed, set the parameters.
    - Set Name to **service-profile\_ont**.
    - Choose **Base Info.** from the navigation tree and set the parameters.
      - Number of Pots Ports: 2
      - Number of ETH Ports: 4
    - Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is **ETH Port** and **Port ID** is **1**, and choose **Config VLAN of UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - VLAN Type: Translation
      - Default VLAN ID: 1001 (VLAN ID of the Internet service)
  - e. Click **OK**.

- f. In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- g. In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configuring an MEF IP traffic profile** (For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).)
  - a. Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - b. Click the **MEF IP Traffic Profile** tab.
  - c. Right-click and choose **Add Global Profile** from the shortcut menu.
  - d. In the dialog box that is displayed, set the parameters.
    - Name: `traffile_profile_1`
    - CIR: 20480
    - Outer Priority: 1
  - e. Click **OK**.
5. **Configuring the VAS configuration profile of the ONT** (For details, see [20.2.1 Configuring the ONT Value-Added Service Configuration Profile](#).)
  - a. Choose **Configuration > Access Profile Management > ONT VAS Profile** from the main menu.
  - b. In the information list, right-click and choose **Add** from the shortcut menu.
  - c. In the dialog box that is displayed, set the parameters.
    - Set **Profile Name** to **VOIP850e**.
    - Set **Vendor ID** to **HWTC(2011)**.
    - Set **Terminal Type** to **850e**.
    - Set **Version** to **V100R001C02B010~Later**.
    - Choose **Country code and signaling protocol** from the navigation tree and set **Signal Protocol** to **H248**.
    - Choose **H.248 protocol basic configure > H.248 Global digitmap configure > Global digitmap configure 1** from the navigation tree and set **Digitmap** to **x.T**.
    - Choose **H.248MGC > H.248 MGC configure 1** from the navigation tree and set **MGC port** to **2944** and **MGC domain name** to **MGC.com**.
  - d. Click **OK**.
- 3 **Filling in the network planning sheet** (For details, see [18.4.1 Filling In a Network Planning Sheet](#).)
  1. Navigate to the path `X:\U2000\client\template\MDU Pre-Deploy\en\` on the Windows-based server, and double-click the `Network_Planning_Sheet(EPON_FTTH).xls` file.
  2. In the **Data Plan** worksheet, set the parameters as follows:
    - OLT IP Address: 192.168.20.100
    - PON Port: 0/5/0
    - ONU ID: 0
    - ONU Name: Building F in residential section B, block L, City S
    - Authentication Mode: 00-1E-E3-22-A9-93
    - ONU Type: 850e



- Broadband
    - CVLAN: 1001
    - SVLAN: 1001
  - VoIP
    - CVLAN: 2000
    - SVLAN: 2000
    - Voice Address Mode: static IP
    - Voice IP Address: 10.121.68.28
    - Voice IP Mask: 24
    - Voice Gateway: 10.121.68.1
    - PSTN Terminal ID Prefix: A8
    - RTP Terminal ID Prefix: A8
    - Telephone No.: 28971111
3. In the **Default Value Policy** worksheet, set the parameters as follows:
- PON Channel Parameters
    - ONU Type: 850e
    - Authentication Mode: MAC
    - Line Profile Name: line-profile\_ont
    - Service Profile Name: service-profile\_ont
    - ONT VAS Configuration Profile: VOIP850e
    - Enable DHCP: Enable
    - Enable PITP: Enable
  - Service Channel: Create a service channel whose **Service Name** is **Voice** in the same way. Do not set the names of the upstream traffic profile and downstream traffic profile for the service channel of voice services.
    - Service Name: Broadband
    - SVLAN Type: smart
    - SVLAN Attribute: Common
    - SVLAN Upstream Port: 0/19/0
    - Upstream Traffic Control Profile: traffic\_profile\_1
    - Downstream Traffic Control Profile: traffic\_profile\_1
4. Choose **File > Save** from the main menu to save the sheet.

#### 4 Importing the network planning sheet (For details, see [18.4.2 Importing a Network Planning Sheet](#).)

1. Choose **Configuration > FTTx Service Pre-Deployment > Import Network Deployment Sheets** from the main menu.
2. In the dialog box that is displayed, select **Network\_Planning\_Sheet(EPON\_FTTH).xls** and click **Open**.
3. After importing the network planning sheet, click **OK**.

----End

## Result

See [18.5.1 Viewing a Pre-deployment Task and the Result](#) to determine whether the 850e is predeployed successfully.

# 19 Configuring the GPON FTTB Services

---

## About This Chapter

An FTTB network consisting of an OLT in profile mode and a number of MDUs provides users with Internet, multicast, and voice services.

### Context

The MDU configuration is simplified when the OLT is in profile mode.

To query the current xPON configuration mode, run the **diagnose** command to enter the diagnosis mode, and then run the **display xpon mode** command.



#### CAUTION

- In the diagnosis mode, you must be a user with operator rights or higher to query the current xPON configuration mode.
- If you switch the xPON configuration mode in the diagnosis mode, the system saves data and restarts automatically.

---

```
huawei (config) #diagnose
huawei (diagnose) %%display xpon mode

Current config mode: Profile-mode

```

You can run the **xpon mode switch-to command** in the diagnosis mode to switch the xPON mode of the current system, for example, from discrete mode to profile mode.

```
huawei (config) #diagnose huawei (diagnose) %%xpon mode switch-to profile-mode
Warning: The operation will automatically save and reboot system. Are you sure to
proceed? (y/n) [n]:
```

#### [19.1 Adding an MDU to the U2000 \(OLT in Profile Mode\)](#)

This topic describes how to add an MDU to the U2000 when the OLT is in the profile mode. After the MDU is successfully added to the U2000, you can configure the FTTB service for the MDU on the U2000.

### 19.2 Configuring Services on the OLT

An FTTB network consisting of OLTs and MDUs provides users with Internet services, multicast services, and voice services.

### 19.3 Configuring Services on the MDU

An FTTB network consisting of OLTs and MDUs provides users with Internet services, multicast services, and voice services.

### 19.4 Configuration Examples of the GPON FTTB Services

This topic provides examples to describe how to configure the Internet, voice, and multicast services in a GPON FTTB network.

## 19.1 Adding an MDU to the U2000 (OLT in Profile Mode)

This topic describes how to add an MDU to the U2000 when the OLT is in the profile mode. After the MDU is successfully added to the U2000, you can configure the FTTB service for the MDU on the U2000.

### Context

You can add an MDU on the device side in the following two scenarios: online MDU confirmation and offline MDU deployment. The profile bound to an MDU and the authentication information of the MDU must be the same as those configured on the MDU on the user side.

- Online MDU confirmation: When an MDU is online, the MDU can be managed immediately after it is added to the U2000. This topic considers the online MDU confirmation as an example to describe how to add an MDU to the U2000.
- Offline MDU deployment: When an MDU is offline, you need to add the MDU and configure the FTTB service for the MDU offline. After the MDU goes online, the configuration data is applied to the MDU through the optical network termination management and control interface (OMCI) message to complete the service configuration on the MDU.

#### 19.1.1 Configuring an MDU SNMP Profile

The MDU Simple Network Management Protocol (SNMP) profile is a collection of SNMP parameters. You can configure the information about an MDU management channel to OLT to implement the remote deployment and maintenance for the MDU.

#### 19.1.2 Configuring a DBA Profile

The GPON DBA profile is a collection of traffic parameters of a T-CONT. DBA is used to control the upstream bandwidth of the services on the ONU. DBA profiles are bound to T-CONTs. Different T-CONTs are planned for different bandwidth assurance types. After a GPON DBA profile is successfully configured and bound to a T-CONT, the system controls the traffic of the T-CONT based on the traffic parameters specified in the GPON DBA profile. In this case, the GPON DBA profile implements the flexible dynamic bandwidth allocation.

#### 19.1.3 Configuring a GPON Line Profile

The GPON line profile is a collection of parameters required for setting up channels for GPON lines. You need to bind the ONU and line profile when the ONU management mode is **OMCI** or **SNMP**.

#### 19.1.4 Confirming an MDU

This topic describes how to confirm the auto-discovered ONU that is connected to a GPON port. The auto-discovered ONU can work in the normal state only after it is confirmed.

#### 19.1.5 Configuring a VLAN

The MDU is connected to the xPON port of the OLT through an optical fiber. You can perform the service configuration only after adding an MDU successfully on the OLT. To configure the MDU from the U2000, you must configure the inband management VLAN and IP address for the OLT and the MDU on the OLT.

#### 19.1.6 Adding a Service Virtual Port

After an ONT is successfully added, the control channel is set up, but the data channel is not set up yet. In this case, you need to add a service virtual port on the OLT to manage ONU data.

#### 19.1.7 Checking the Communication Between the OLT and MDU

After the parameters on the U2000 are set successfully, you need to check whether the U2000 can manage and maintain the ONUs successfully.

## 19.1.1 Configuring an MDU SNMP Profile

The MDU Simple Network Management Protocol (SNMP) profile is a collection of SNMP parameters. You can configure the information about an MDU management channel to OLT to implement the remote deployment and maintenance for the MDU.

### Context

You can configure the SNMP parameter profile of the MDU on the U2000, and configure the information about an MDU management channel to the OLT. Then, the OLT manages the MDU through the SNMP mode so that the remote deployment and maintenance for the MDU can be implemented.

### Procedure

- 1 Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
- 2 Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.

| Key Parameter | Description                                                                                                                                                                                                                                                                       |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SNMP Version  | Ensure that the SNMP version of the U2000 server is the same as the corresponding SNMP version configured on the device.<br>Generally, the SNMP Version of the U2000 server is set to v1.                                                                                         |
| Trap Host IP  | Specifies the IP address of the destination device for traps. The trap packets of the device are sent to the U2000 server that maps the IP address.<br><b>NOTE</b><br>Generally, the IP address of the U2000 server is set to the IP address of the destination device for traps. |
| Trap UDP Port | Specifies the ID of the UDP port that is used to receive the traps that the device reports to the U2000.                                                                                                                                                                          |

- 4 Click **OK**.
- 5 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 6 In the dialog box that is displayed, select the required NE(s), and click **OK**.

 **NOTE**

The MDU SNMP profile that is generated by the U2000 can be referenced by the OLT only after the profile is applied to the corresponding OLT.

----**End**

## Command Reference

| To...                              | Run the Command... | In...              |
|------------------------------------|--------------------|--------------------|
| Add an MDU SNMP management profile | snmp-profile add   | Global config mode |

### 19.1.2 Configuring a DBA Profile

The GPON DBA profile is a collection of traffic parameters of a T-CONT. DBA is used to control the upstream bandwidth of the services on the ONU. DBA profiles are bound to T-CONTs. Different T-CONTs are planned for different bandwidth assurance types. After a GPON DBA profile is successfully configured and bound to a T-CONT, the system controls the traffic of the T-CONT based on the traffic parameters specified in the GPON DBA profile. In this case, the GPON DBA profile implements the flexible dynamic bandwidth allocation.

#### Context

- The traffic configured in the GPON DBA profile is specified as the traffic after the data is encapsulated to the GPON encapsulation mode (GEM) frames. Hence, the actual traffic of packets is slightly lighter than the traffic specified in the GPON DBA profile.
- The GPON DBA profile that is added on the U2000 exists only in the database of the U2000, but it is not applied to the device. The GPON DBA profile can be created on the device only after it is bound to the T-CONT.

 **NOTE**

- The profiles with the **Name** ranging from **dba-profile\_1** to **dba-profile\_9** are the default GPON DBA profiles of the system. The traffic parameters in the profiles are assigned with typical values. You can query the default GPON DBA profiles but cannot add or delete them.
- Generally, the service with a high priority adopts a fixed bandwidth or an assured bandwidth, and the service with a low priority adopts the maximum bandwidth or a mix of fixed bandwidth, assured bandwidth, and maximum bandwidth.

## Procedure

- 1 Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- 2 Click the **DBA Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.

| Key Parameter                                             | Description                                                                                                                                                                                                                               |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                                                      | Indicates the name of a GPON DBA profile. It uniquely identifies a GPON DBA profile. The GPON DBA name must be unique.                                                                                                                    |
| T-CONT type                                               | Indicates the type of a GPON DBA profile. It is defined according to the bandwidth requirement of the services carried on the T-CONT. You can allocate the bandwidth for T-CONTs of different types to control the traffic of the T-CONT. |
| Assured Bandwidth<br>Fixed Bandwidth<br>Maximum Bandwidth | Generally, the service with a high priority adopts a fixed bandwidth and an assured bandwidth, and the service with a low priority adopts the maximum bandwidth. The VoIP service always has the highest priority.                        |

- 4 Click **OK**.

----End

## Command Reference

| To...                                | Run the Command...  | In...              |
|--------------------------------------|---------------------|--------------------|
| Query the DBA profiles in the system | display DBA-profile | Privilege mode     |
| Add a DBA profile                    | DBA-profile add     | Global config mode |



## 19.1.3 Configuring a GPON Line Profile

The GPON line profile is a collection of parameters required for setting up channels for GPON lines. You need to bind the ONU and line profile when the ONU management mode is **OMCI** or **SNMP**.

### Prerequisite

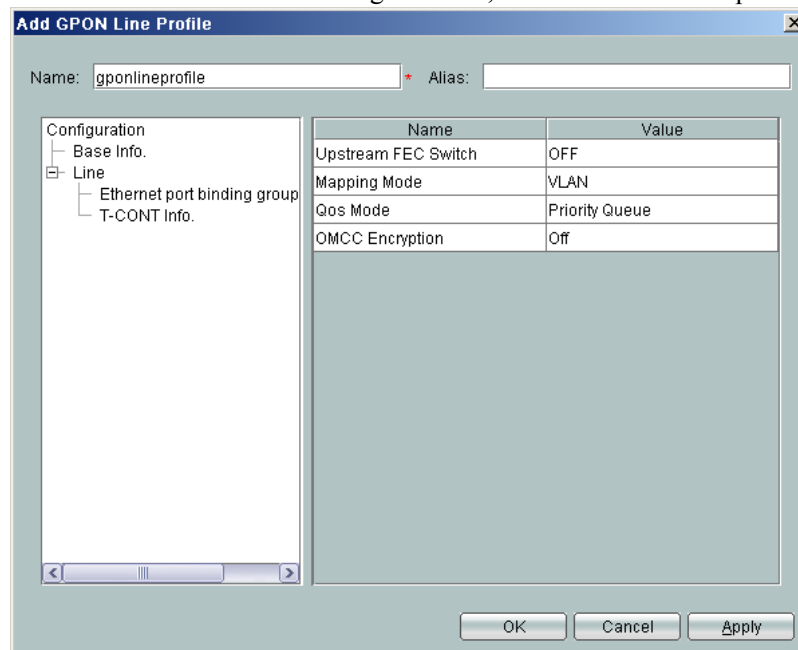
The DBA profile must be already configured in the system. For details, see [19.1.2 Configuring a DBA Profile](#).

### Context

- The flow mapping mode configured in the GPON line profile must match the flow mapping mode of the flow (such as the GEM connection flow) specified in the GPON line profile.
- The flow control mode configured in the GPON line profile must match the flow control mode of the GEM port specified in the GPON line profile.
- When adding a GPON line profile, you can use or reference the four default line profiles, lineprofile\_1 to lineprofile\_4, provided by the NE.

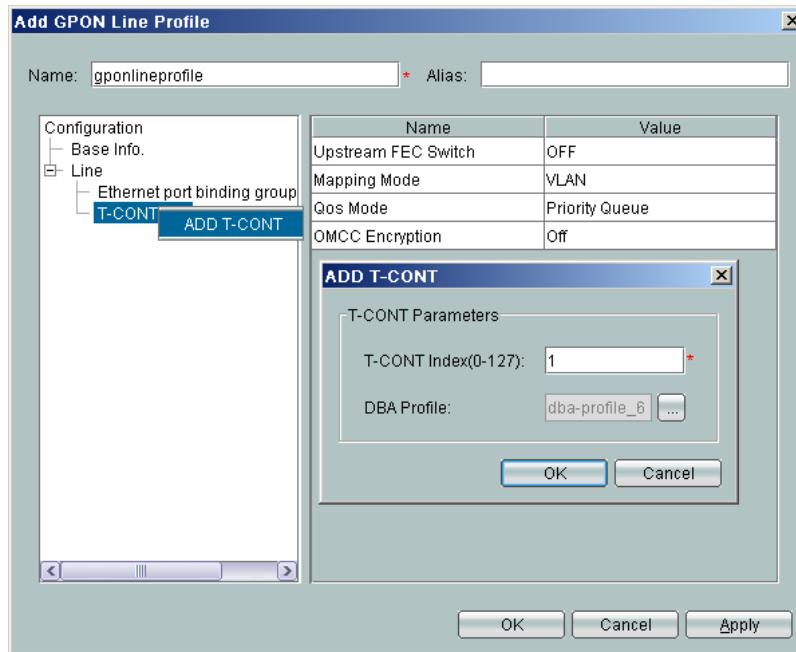
### Procedure

- 1 Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- 2 Click the **GPON Line Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.
  1. Choose **Basic Info** from the navigation tree, and then set the basic parameters of the profile.



| Key Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream FEC Switch | Specifies whether to enable the upstream forward error correction (FEC) function of the ONT line profile. To improve the reliability of data transmission between the OLT and the ONT, enable the FEC function. After the upstream FEC function is enabled, the system inserts the redundancy data into normal packets. In this manner, the line has the error tolerance capability, but certain bandwidth is wasted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Mapping Mode        | Flow mapping manages the service streams on the ONU, namely, manages the mapping between GEM ports and the upstream data flows on the ONT service ports. After the mapping is established, the ONU service streams are carried and transmitted upstream through the specified GEM ports. Each ONT can be configured with only one mapping mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Qos Mode            | <ul style="list-style-type: none"> <li>● When the <b>Qos Mode</b> of the GEM port is set to <b>Priority Queue</b>, users can specify the transmit queue of the GEM port packets in a T-CONT. When transmitting the upstream data, the T-CONT transmits the data strictly according to the priority of the queue.</li> <li>● When the <b>Qos Mode</b> of the GEM port is set to <b>GEM Port CAR</b>, the ONU limits the rate of the data packets carried on the GEM port according to the CAR setting of the GEM port. Currently, the GEM port CAR is set by binding the CAR profile to the ONU, and only the average rate and maximum rate can be set. When several service streams exist on the GEM port, the service streams are schedule in PQ, WRR, or PQ+WRR mode, depending on the default scheduling mode of the ONU. Currently, the scheduling mode cannot be set on the OLT. When a T-CONT consists of multiple GEM ports, the scheduling mode of the data packets between the GEM ports also depends on the default scheduling mode of the ONU.</li> <li>● When the flow control mode of the GEM port is set to <b>Flow CAR</b>, the ONU performs CAR on the service streams of the GEM port. The controlling is more specific than the GEM port CAR. After being performed with CAR, the service streams are scheduled in the T-CONT queue. The scheduling mode is the default scheduling mode of the ONU.</li> </ul> |

2. Choose **T-CONT Info.** from the navigation tree, right-click, and then choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set **T-CONT Index** and **DBA Profile**.



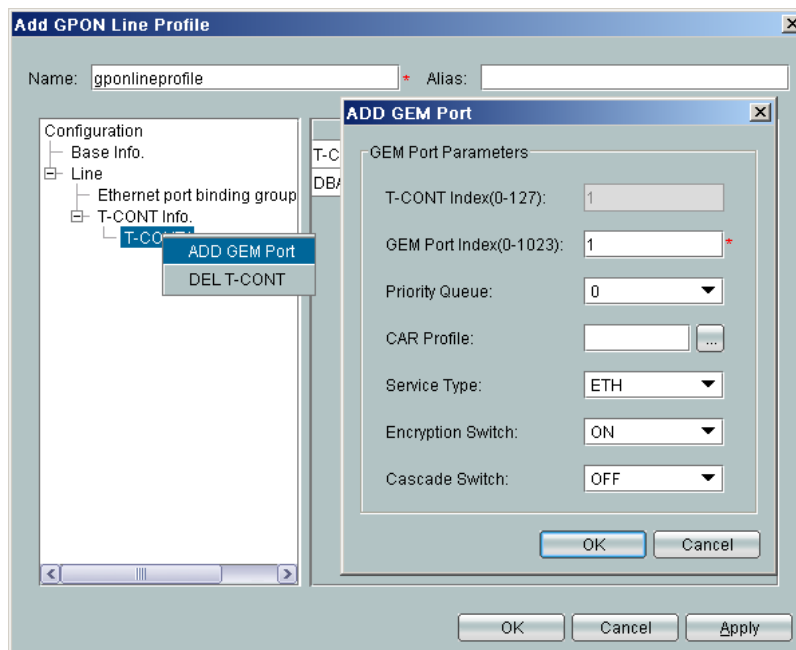
**CAUTION**

It is recommended that you do not set **T-CONT Index** to **0**. TCONT 0 is reserved for the internal communication of the GPON protocol.

3. Choose **T-CONTx** from the navigation tree, right-click, and then choose **ADD GEM Port** from the shortcut menu. In the dialog box that is displayed, set **GEM Port Index**.

**NOTE**

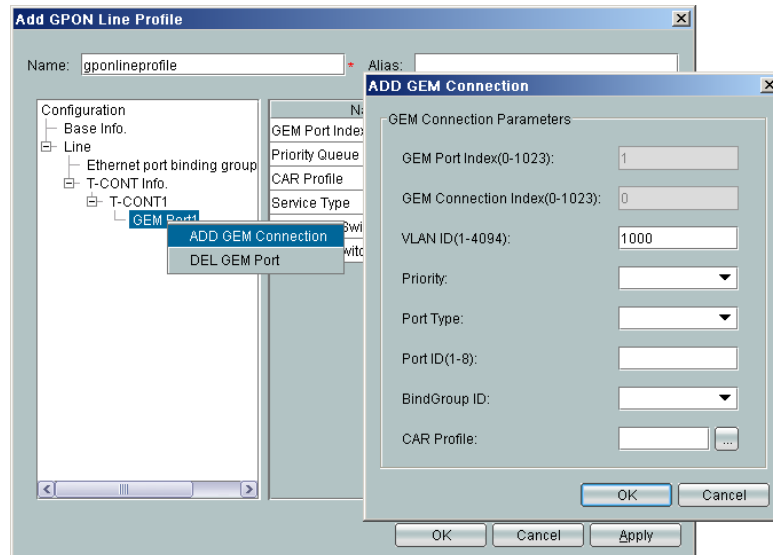
x indicates the T-CONT index.



4. Choose **GEM Portx** from the navigation tree, right-click, and then choose **ADD GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the basic parameters of the GEM connection.

 **NOTE**

x indicates the GEM port index.



- 4 Click **OK**.
- 5 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 6 In the dialog box that is displayed, select the required NE(s), and click **OK**.

----End

## Command Reference

| To...                                                                                                     | Run the Command...   | In...                 |
|-----------------------------------------------------------------------------------------------------------|----------------------|-----------------------|
| Enter the ONT line profile mode                                                                           | ont-lineprofile gpon | Global config mode    |
| Bind a DBA profile to a T-CONT                                                                            | tcont                | ONT line profile mode |
| Bind a GEM index to a T-CONT and configure the related attributes in an ONT line profile                  | gem add              | ONT line profile mode |
| Set up the mapping relationship between the upstream data flow on the ONT service ports and the GEM ports | gem mapping          | ONT line profile mode |
| Configure the QoS mode in the ONT line profile                                                            | qos-mode             | ONT line profile mode |

## 19.1.4 Confirming an MDU

This topic describes how to confirm the auto-discovered ONU that is connected to a GPON port. The auto-discovered ONU can work in the normal state only after it is confirmed.

### Prerequisite

The Line profile must be already configured in the system. For details, see [19.1.3 Configuring a GPON Line Profile](#).

The MDU SNMP profile must be already configured in the system. For details, see [19.1.1 Configuring an MDU SNMP Profile](#).

### Context

When the ONU auto-discovery function is enabled, the OLT can periodically check whether there are new online ONUs. If new online ONUs are discovered, the OLT reports a group of ONUs to be confirmed to the U2000 for user confirmation.

### Procedure

- 1 In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- 2 Choose **GPON > GPON UNI Port** from the navigation tree.
- 3 On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- 4 Select the GPON UNI port to be enabled with the auto-discovery function, right-click and choose **Enable ONU Auto Find** from the shortcut menu.
- 5 Select a record from the GPON UNI ports list, and click the **Auto-Discovered ONU Info** tab in the lower part of the tab page.
- 6 Select an ONU to be confirmed, right-click, and then choose **Confirm ONU** from the shortcut menu.
- 7 In the dialog box that is displayed, configure the basic parameters and network management channel parameters for confirming the ONU, and then click **OK**.



#### NOTE

This section considers the GUIs in profile mode as an example.

**Confirm ONU**
✕

|                                                                                       |                                                     |
|---------------------------------------------------------------------------------------|-----------------------------------------------------|
| Affiliated Port: <input type="text" value="0/15/0"/> *                                | Splitter: <input type="text" value="Splitter(L1)"/> |
| Name: <input type="text" value="0/15/0"/> *                                           | Alias: <input type="text"/>                         |
| ONU ID(0-127): <input checked="" type="checkbox"/> Auto Assign <input type="text"/> * | Splitter Port ID(1-128): <input type="text"/>       |
| ONU Type: <input type="text" value="MDU"/>                                            |                                                     |

Protection Role

Basic Parameters
Network Management Channel Parameters

|                                                                |                                             |
|----------------------------------------------------------------|---------------------------------------------|
| Line Profile: <input type="text" value="lineprofile_4"/> ... * | Service Profile: <input type="text"/> ... * |
| Alarm Profile: <input type="text"/> ...                        | ONU VAS Profile: <input type="text"/> ...   |
| Optic Alarm Profile: <input type="text"/> ...                  |                                             |

Authentication Info

|                                                        |                                                                                                  |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Authentication Mode: <input type="text" value="SN"/> * | Timeout Duration (h)(1-168): <input checked="" type="checkbox"/> No Limit <input type="text"/> * |
| SN: <input type="text" value="32303131B39FD641"/>      | Password: <input type="text"/> *                                                                 |

ONU Type

|                                                    |                                     |
|----------------------------------------------------|-------------------------------------|
| Vendor ID: <input type="text" value="HWTC(2011)"/> | Terminal Type: <input type="text"/> |
| Software Version: <input type="text"/>             |                                     |

| Key Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ONU ID              | Indicates the ONU ID. It always ranges from 0.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ONU Type            | Indicates the ONU type and needs to be set to <b>MDU</b> .                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Line Profile        | Indicates the line profile of the port to which the ONU is connected. After a line profile is bound to a port, the system can directly reference the line profile when activating a port. During the activation, the system checks the line distance and conditions and performs a negotiation between the CO and CPE to determine whether the port can work under the conditions as preset in the line profile, such as upstream and downstream line rates and noise margin. |
| Authentication Mode | Indicates the mode in which the OLT authenticates the ONU.                                                                                                                                                                                                                                                                                                                                                                                                                    |

When adding the ONU of the SNMP management mode, you must set the **Authentication Mode** and **Line Profile** parameters. When adding the ONU of the OAM management mode, you must set the **Authentication Mode**, **Line Profile**, and **Service Profile** parameters.

----End


## Command Reference

| To...                                                                                       | Run the Command...        | In...                     |
|---------------------------------------------------------------------------------------------|---------------------------|---------------------------|
| Confirm the ONT that is in the auto-discovery mode                                          | ont confirm               | GPON mode                 |
| Enter the GPON mode from the global configuration mode                                      | interface gpon            | Global config mode        |
| Enable the ONT auto-discovery function of a GPON port                                       | port ont-auto-find enable | GPON mode                 |
| Query the auto-discovery ONTs in the system or the settings for the ONT auto-discovery time | display ont autofind      | Privilege mode, GPON mode |

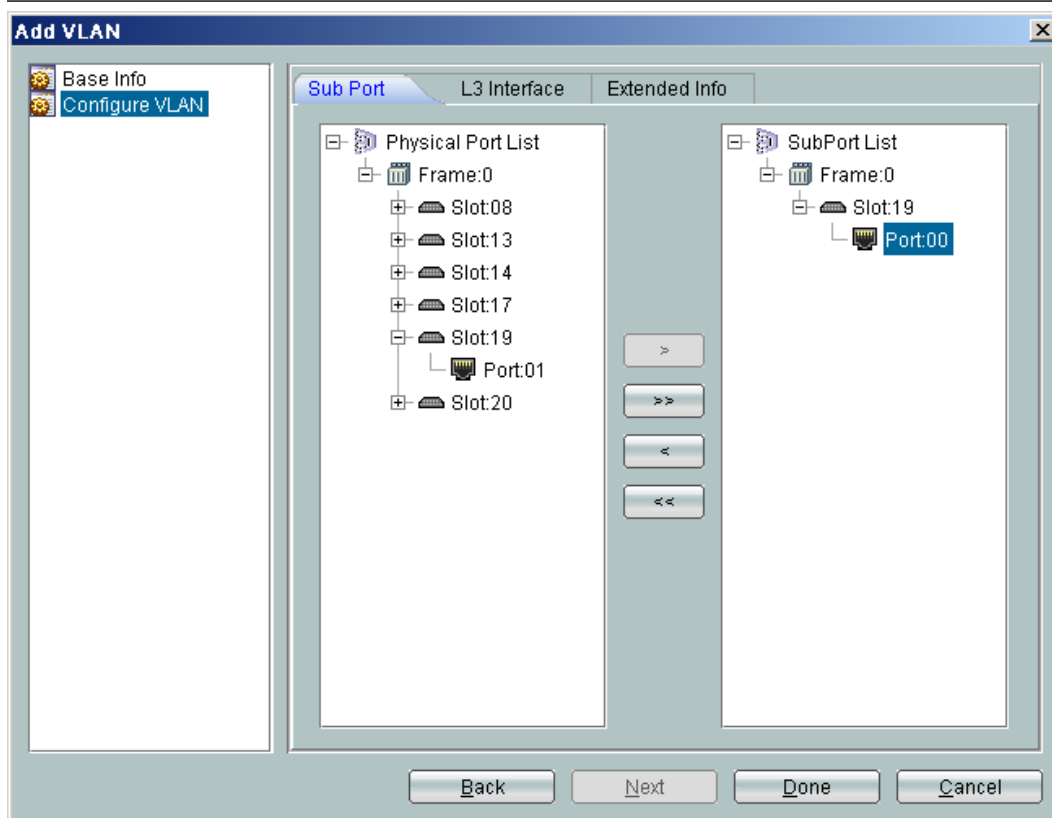
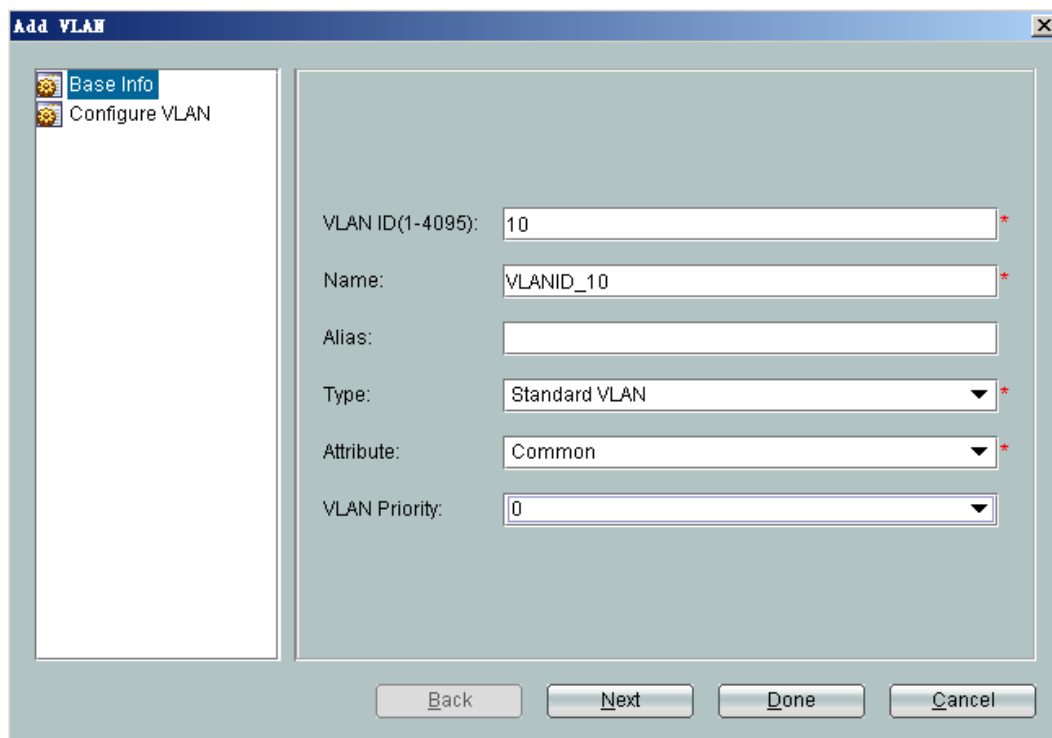
### 19.1.5 Configuring a VLAN

The MDU is connected to the xPON port of the OLT through an optical fiber. You can perform the service configuration only after adding an MDU successfully on the OLT. To configure the MDU from the U2000, you must configure the inband management VLAN and IP address for the OLT and the MDU on the OLT.

#### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **VLAN** from the navigation tree.
- 3 On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
- 4 In the information list, right-click and choose **Add** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.





| Key Parameter | Description                                                                                                        |
|---------------|--------------------------------------------------------------------------------------------------------------------|
| VLAN ID       | Indicates the VLAN ID. The VLAN ID uniquely identifies a VLAN.<br><b>NOTE</b><br>Add VLANs according to data plan. |
| Type          | Indicates the VLAN type.<br><b>NOTE</b><br>Usually, <b>Smart</b> is selected.                                      |
| Attribute     | Indicates the VLAN attribute.<br><b>NOTE</b><br>For xPON FTTB, <b>QinQ</b> is usually selected.                    |
| VLAN Priority | Indicates the VLAN priority. This parameter is applicable to the VLANs for an OLT.                                 |

6 Click **Done**.

---End

## Command Reference

| To...                                                | Run the Command... | In...              |
|------------------------------------------------------|--------------------|--------------------|
| Query the information about the VLAN                 | display vlan       | Privilege mode     |
| Add one VLAN or more VLANs of a same type in batches | vlan               | Global config mode |
| Set the VLAN attribute                               | vlan attrib        | Global config mode |

### 19.1.6 Adding a Service Virtual Port

After an ONT is successfully added, the control channel is set up, but the data channel is not set up yet. In this case, you need to add a service virtual port on the OLT to manage ONU data.

#### Prerequisite

The management VLAN where the service virtual port belongs must be configured. The upstream port of the VLAN must be configured. For details, see [19.1.5 Configuring a VLAN](#).

#### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **GPON > GPON ONU** from the navigation tree.
- 3 On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.

- 4 Select the required record from the GPON ONU list, and click the **ServicePort Info** tab in the lower pane.
- 5 On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- 6 In the dialog box that is displayed, set the parameters.

**NOTE**

This section considers the GUIs in profile mode as an example.

| Key Parameter | Description                                                                          |
|---------------|--------------------------------------------------------------------------------------|
| VLAN ID       | Indicates the management VLAN ID of the OLT. It is used to uniquely identify a VLAN. |

- 7 Click **OK**.

----End

## Command Reference

| To...                      | Run the Command... | In...              |
|----------------------------|--------------------|--------------------|
| Add a service virtual port | service-port       | Global config mode |

## 19.1.7 Checking the Communication Between the OLT and MDU

After the parameters on the U2000 are set successfully, you need to check whether the U2000 can manage and maintain the ONUs successfully.

### Context

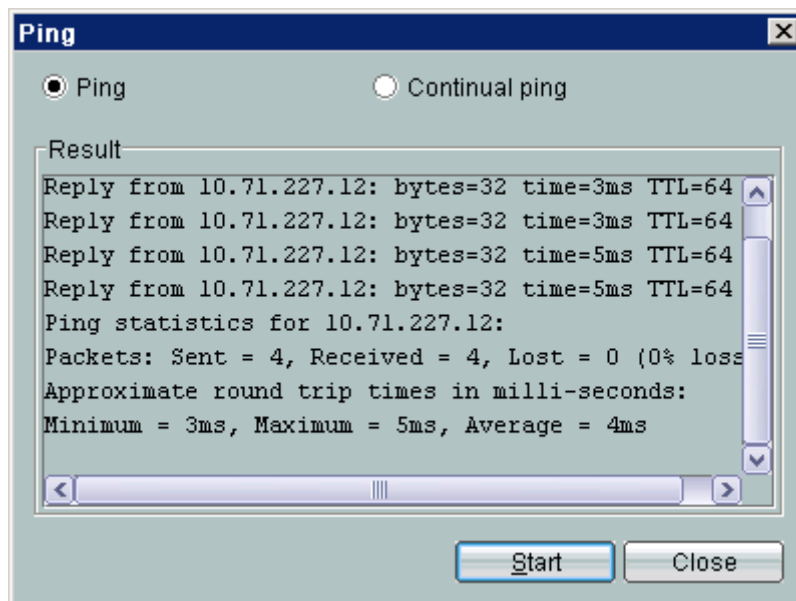
When an MDU is in the predeployed state, you can right-click the MDU in **Physical Root** and choose **Synchronize NE Data** from the shortcut menu to synchronize the data of the MDU manually.

### Procedure

- 1 To check the status of the ONU, do as follows:
  1. In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
  2. Choose **GPON > GPON ONU** from the navigation tree.
  3. On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
  4. Select a record according to the shelf/slot/port number and ONT ID from the GPON ONU list. If the **Status** indicator is green, it indicates that the ONU is activated.

| Status                               | Operation St. | Configuration | Frame | Slot | Port | ONU ID | Name      | Alias | Vendor |
|--------------------------------------|---------------|---------------|-------|------|------|--------|-----------|-------|--------|
| <span style="color: green;">●</span> | Activate      | Normal        | 0     | 5    | 0    | 0      | 10.71.227 | --    | HWTC   |

- 2 To check whether the ONU can ping the OLT successfully, do as follows:
  1. In the Main Topology, choose the ONU from the **Physical Root** navigation tree, right-click, and then choose **Tool > Ping** from the shortcut menu.
  2. In the dialog box that is displayed, select **Ping** and click **Start**. If a reply message is displayed, it indicates that the connection between the OLT and ONU is successfully set up.



---End

## Command Reference

| To...                                                              | Run the Command... | In...              |
|--------------------------------------------------------------------|--------------------|--------------------|
| Query the information about the device when it functions as an ONU | display onu info   | Global config mode |

## 19.2 Configuring Services on the OLT

An FTTB network consisting of OLTs and MDUs provides users with Internet services, multicast services, and voice services.

### Context

Several operations are required when you configure a service. The following lists the services configured at the OLT side and the service configuration steps.

| Services                | Steps                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internet access service | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.2.3 Adding a Service Port</a></li> </ul> |

| Services          | Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Multicast service | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.2.3 Adding a Service Port</a></li> <li>● <a href="#">19.2.7 Configuring the Multicast VLAN</a></li> <li>● <a href="#">19.2.5 Configuring the Virtual Multicast Upstream Port</a></li> <li>● <a href="#">19.2.6 Configuring a Preview Profile</a></li> <li>● <a href="#">19.2.8 Configuring a Program Profile</a></li> <li>● <a href="#">19.2.10 Configuring a Multicast User</a></li> </ul> |
| Voice service     | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.2.3 Adding a Service Port</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                    |

### [19.2.1 Configuring a VLAN](#)

Virtual local area network (VLAN) is a technology used to form virtual workgroups by grouping the devices of a LAN logically.

### [19.2.2 Configuring an MEF IP Traffic Profile](#)

An MEF IP traffic profile defines a series of traffic parameters. It is referenced by the device and the port to monitor and manage the traffic. After an MEF IP traffic profile is created, you can directly reference it when creating a traffic stream and setting the port rate limit.

### [19.2.3 Adding a Service Port](#)

After being configured successfully, the service port can carry service streams of various types.

### [19.2.4 Configuring Multicast System Parameters](#)

Before you provision multicast services, you need to configure multicast system parameters according to the global data plan. The parameters include the Internet Group Management Protocol (IGMP) parameters and NTV mode.

### [19.2.5 Configuring the Virtual Multicast Upstream Port](#)

To provide demand services when the upstream port is not working in the MSTP mode, you need to configure a virtual multicast upstream port to transmit and receive the multicast packets (including the protocol packets and data packets). After the virtual multicast upstream port is added, the multicast packets are transmitted and received through this port.

### [19.2.6 Configuring a Preview Profile](#)

This topic describes how to deliver a configured preview profile to a device and make the preview profile take effect on the device.

### [19.2.7 Configuring the Multicast VLAN](#)

One or more multicast VLANs are used to separate the multicast service from other services. After configuring the multicast user, you need to add the user to a multicast VLAN so that the user can watch the programs in the multicast VLAN.

### [19.2.8 Configuring a Program Profile](#)

This topic describes how to deliver a configured program profile to a device and make the program profile take effect on the device.

### [19.2.9 Adding a Multicast Rights Profile](#)

A rights profile is used to manage the rights to a series of programs. In the rights profile, you can set the rights to different programs and then bind the rights profile to the users that need to

be authenticated. The users that need not be authenticated can watch all the programs provided by the NE.


#### 19.2.10 Configuring a Multicast User

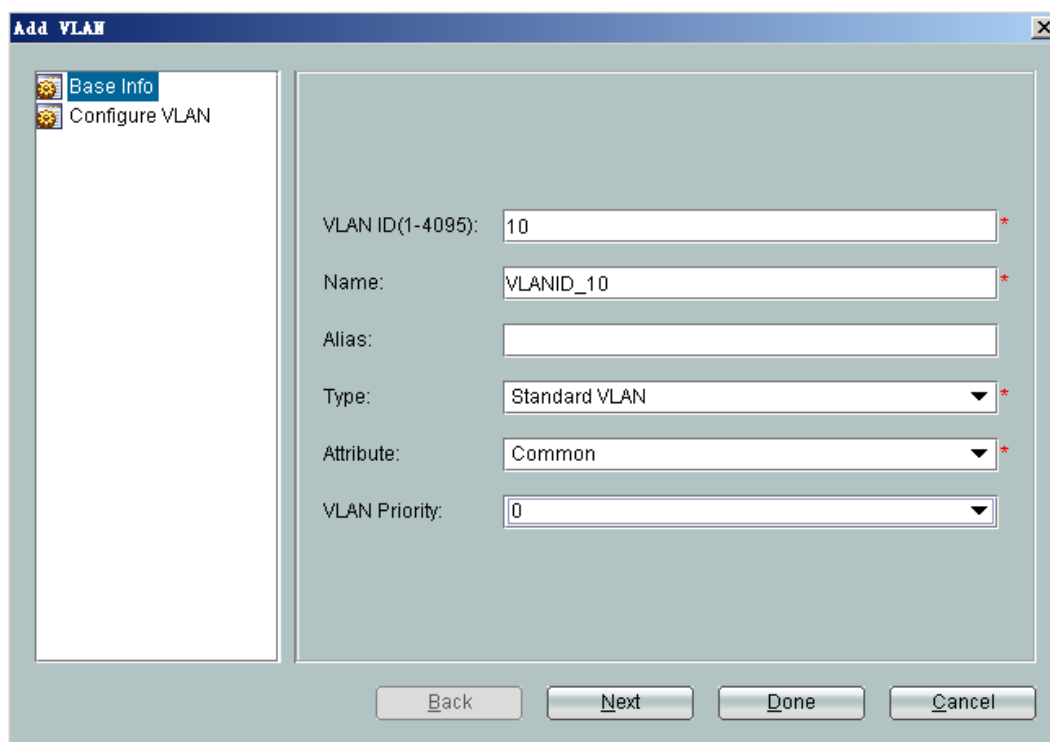
This topic describes how to add a multicast user. Only multicast users can watch multicast programs.

## 19.2.1 Configuring a VLAN

Virtual local area network (VLAN) is a technology used to form virtual workgroups by grouping the devices of a LAN logically.

### Procedure

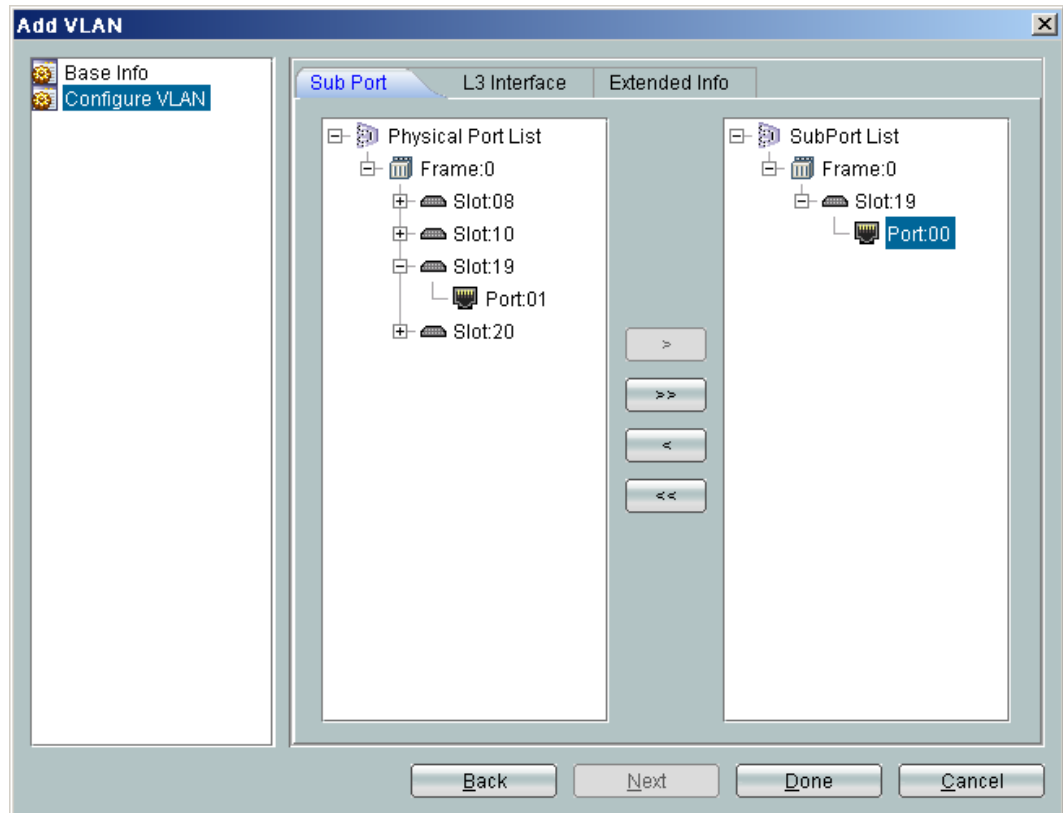
- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **VLAN** from the navigation tree.
- 3 On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
- 4 In the information list, right-click and choose **Add** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.



The screenshot shows the 'Add VLAN' dialog box. The left pane contains 'Base Info' and 'Configure VLAN'. The main area contains the following fields:

|                  |               |   |
|------------------|---------------|---|
| VLAN ID(1-4095): | 10            | * |
| Name:            | VLANID_10     | * |
| Alias:           |               |   |
| Type:            | Standard VLAN | * |
| Attribute:       | Common        | * |
| VLAN Priority:   | 0             |   |

Buttons at the bottom: Back, Next, Done, Cancel.



| Key Parameter      | Description                                                                        |
|--------------------|------------------------------------------------------------------------------------|
| Start ID<br>End ID | Indicates the start and end IDs when you add VLANs in batches.                     |
| Type               | Indicates the VLAN type.                                                           |
| Attribute          | Indicates the VLAN attribute.                                                      |
| VLAN Priority      | Indicates the VLAN priority. This parameter is applicable to the VLANs for an OLT. |

6 Click **Done**.

----End

## Command Reference

| To...                                                | Run the Command... | In...              |
|------------------------------------------------------|--------------------|--------------------|
| Query the information about the VLAN                 | display vlan       | Privilege mode     |
| Add one VLAN or more VLANs of a same type in batches | vlan               | Global config mode |
| Set the VLAN attribute                               | vlan attrib        | Global config mode |



## 19.2.2 Configuring an MEF IP Traffic Profile

An MEF IP traffic profile defines a series of traffic parameters. It is referenced by the device and the port to monitor and manage the traffic. After an MEF IP traffic profile is created, you can directly reference it when creating a traffic stream and setting the port rate limit.

### Context

The MEF IP traffic profile that is added through the U2000 exists only in the database of the U2000, but it is not applied to the device. The MEF IP traffic profile is created on the device only when the device references the MEF IP traffic profile to create a service virtual port or the MEF IP traffic profile is successfully applied to the device manually.

### Procedure

- 1 Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
- 2 Click the **MEF IP Traffic Profile** tab.
- 3 Right-click and choose **Add Global Profile** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.

**Add MEF IP Traffic Profile** ✕

**Description Info**

- Configure the desired parameters.
- When parameter CIR is not set, parameter CBS, parameter PIR, and parameter PBS do not need to be configured. Here, the rate is not restricted.
- Parameter PIR must be greater than or equal to parameter CIR.
- Parameter PBS must be greater than or equal to parameter CBS.

**Profile Parameters**

|                                          |                 |                                    |
|------------------------------------------|-----------------|------------------------------------|
| Name:                                    | mefip_profile   | *                                  |
| Alias:                                   |                 |                                    |
| CIR (Kbit/s) (64-10240000):              | 64              | <input type="checkbox"/> Unlimited |
| CBS (bytes) (2000-10240000):             | 40480           | *                                  |
| PIR (Kbit/s) (64-10240000):              | 128             | *                                  |
| PBS (bytes) (2000-10240000):             | 60960           | *                                  |
| Outer Priority (0-7):                    | 0               | *                                  |
| Outer Copy Priority:                     | Assign Priority | ▼                                  |
| Index of Outer Priority Mapping Profile: | 1               | ▼                                  |
| Inner Priority (0-7):                    | 0               | *                                  |
| Inner Copy Priority:                     | Assign Priority | ▼                                  |
| Index of Inner Priority Mapping Profile: | 1               | ▼                                  |
| Priority Policy:                         | Local-Setting   | ▼                                  |
| Traffic Color Mode:                      | color-blind     | ▼                                  |

| Key Parameter | Description                                                                                                                                                                                                                                                                                      |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CIR           | <p>Indicates the committed information rate. It ranges from 1 to 8192. The rate must be an integer multiple of 64 kbit/s, namely, the rate must range from 64 kbit/s to 524288 kbit/s.</p> <p>If this parameter is set, the <b>CBS</b>, <b>PIR</b>, and <b>PBS</b> parameters are available.</p> |

| Key Parameter                    | Description                                                                                                                           |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Outer Priority<br>Inner Priority | Indicates the keywords of scheduling priority. The larger the value, the higher the scheduling priority ranks. It ranges from 0 to 7. |

- 5 Click **OK**.
- 6 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 7 In the dialog box that is displayed, select the required NE(s), and click **OK**.

---End

## Command Reference

| To...                                           | Run the Command...       | In...              |
|-------------------------------------------------|--------------------------|--------------------|
| Query an existing traffic profile in the system | display traffic table ip | Privilege mode     |
| Create an MEF IP traffic profile                | traffic table ip         | Global config mode |

### 19.2.3 Adding a Service Port

After being configured successfully, the service port can carry service streams of various types.

#### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **Connection > Service Port** from the navigation tree.
- 3 In the information list, right-click and choose **Add** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.



**NOTE**

The parameter of port selection used when a service virtual port is added in the profile mode is different from that used when a service virtual port is added in the distributed mode.

| Key Parameter        | Description                                                                                                                                                                                                                                                                      |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vlan ID              | Indicates the VLAN ID of the service virtual port. The VLAN ID uniquely identifies a VLAN.                                                                                                                                                                                       |
| Interface Selection  | <ul style="list-style-type: none"> <li>● In the discrete mode, this parameter is displayed in the format shelf ID/slot ID/port ID/GEM port ID.</li> <li>● In the profile mode, this parameter is displayed in the format shelf ID/slot ID/port ID/ONT ID/GEM port ID.</li> </ul> |
| Traffic Profile Info | Selects only the traffic profile that exists on the device. Otherwise, an error is reported.                                                                                                                                                                                     |

5 Click **OK**.

----End

## Command Reference

| To...                                                    | Run the Command...         | In...              |
|----------------------------------------------------------|----------------------------|--------------------|
| Query the 802.1x configuration of a service virtual port | display dot1x service-port | Privilege mode     |
| Bind a service virtual port with 802.1x authentication   | dot1x service-port         | Global config mode |


## 19.2.4 Configuring Multicast System Parameters

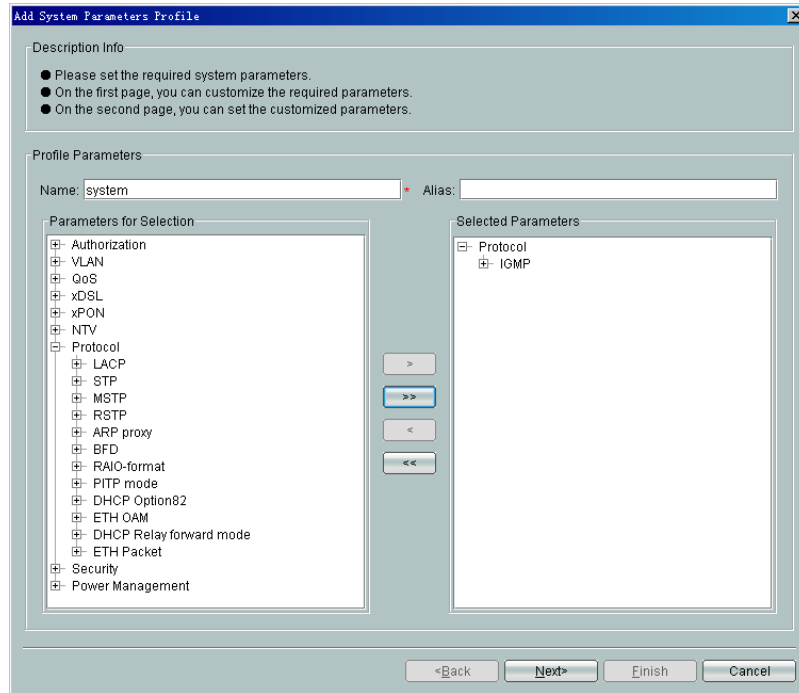
Before you provision multicast services, you need to configure multicast system parameters according to the global data plan. The parameters include the Internet Group Management Protocol (IGMP) parameters and NTV mode.

### Procedure

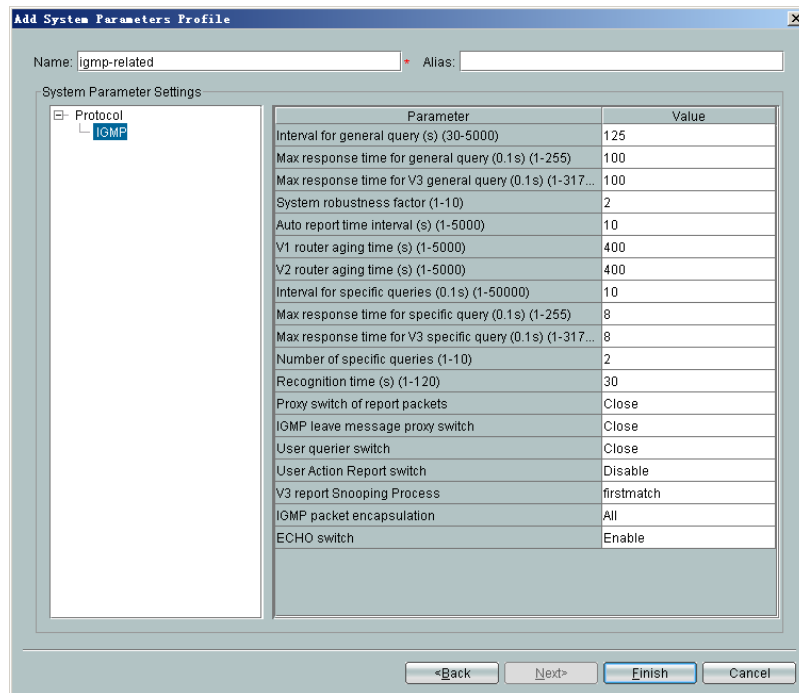
- Configure IGMP parameters.

IGMP defines the mechanism used to set up and maintain the relationship of multicast group members between the device and the router. By setting IGMP parameters, you can effectively control the IGMP parameters of multicast packets, including the relevant parameters defined in IGMP.

1. Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.
2. On the **System Parameter Profile** tab page, select the required device type from the **Device Type** drop-down list.
3. Right-click and choose **Add Global Profile** from the shortcut menu.
4. In the dialog box that is displayed, enter the name of the system parameter profile. Choose all parameters from the **Parameters for Selection** navigation tree, click  to add the parameters to the **Selected Parameters** navigation tree, and then click **Next**.




5. Choose **Protocol > IGMP** from the **System Parameter Settings** navigation tree.
6. In the dialog box that is displayed, set the parameters.

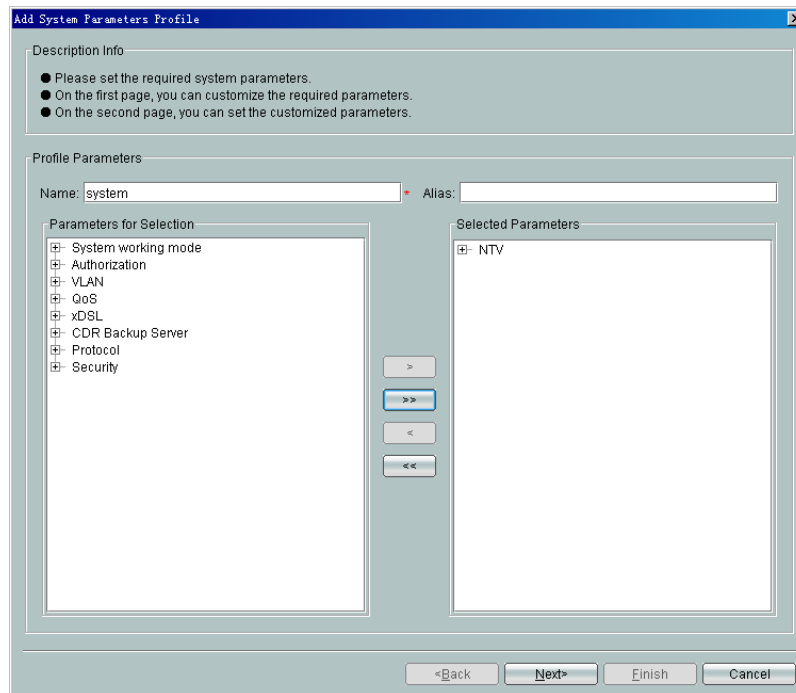


**NOTE**

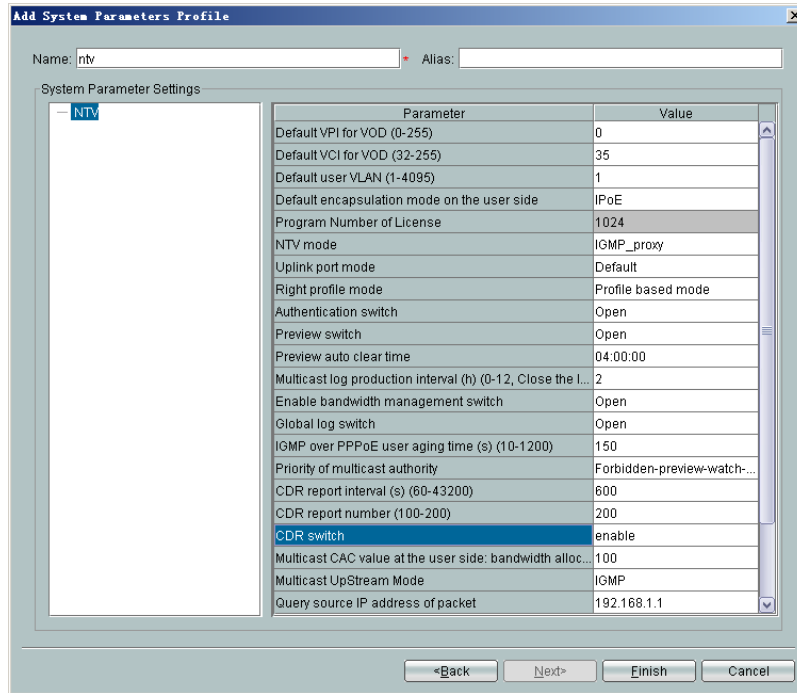
During configuration, use the default IGMP parameters.

7. Click **Finish**.
  - Configure NTV parameters.
- Configure the multicast video service mode.

1. Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.
2. On the **System Parameter Profile** tab page, select the required device type from the **Device Type** drop-down list.
3. Right-click and choose **Add Global Profile** from the shortcut menu.
4. In the dialog box that is displayed, enter the name of the system parameter profile. Choose all parameters from the **Parameters for Selection** navigation tree, click  to add the parameters to the **Selected Parameters** navigation tree, and then click **Next**.



5. Choose **NTV** from the **System Parameter Settings** navigation tree.
6. In the dialog box that is displayed, set the parameters.



| Key Parameter                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enable bandwidth management switch | <p>Specifies whether the system performs bandwidth management. If the switch for bandwidth management is enabled, the system limits the bandwidth for multicast programs on the upstream port or the user port. If the switch for bandwidth management is disabled, the system does not perform multicast bandwidth management on the upstream port or the user port, and the system does not guarantee the bandwidth for multicast programs.</p> <ul style="list-style-type: none"> <li>● When the bandwidth management switch is disabled, the bandwidth for the program that is added is automatically adjusted to 0.</li> <li>● In the MSTP mode, if users are online, this switch cannot be enabled after it is disabled. To enable the switch, change the mode of the upstream port or force all the users to log out first.</li> </ul> <p><b>NOTE</b><br/>Choose <b>Open</b>.</p> |

7. Click **Finish**.

----End



## Command Reference

| To...                                                        | Run the Command...                                | In...                                |
|--------------------------------------------------------------|---------------------------------------------------|--------------------------------------|
| Query the configuration of IGMP global parameters            | display igmp config global                        | Privilege mode, BTV mode, MVLAN mode |
| Set the current IGMP version of a multicast VLAN to V2 or V3 | igmp version<br><b>NOTE</b><br>Choose v3 version. | MVLAN mode                           |
| Enable the call detailed record (CDR) function of the system | igmp cdr enable                                   | BTV mode                             |
| Set the multicast log reporting                              | igmp log report                                   | BTV mode                             |
| Set the IGMP mode of a multicast VLAN                        | igmp mode<br><b>NOTE</b><br>Choose proxy mode.    | MVLAN mode                           |

### 19.2.5 Configuring the Virtual Multicast Upstream Port

To provide demand services when the upstream port is not working in the MSTP mode, you need to configure a virtual multicast upstream port to transmit and receive the multicast packets (including the protocol packets and data packets). After the virtual multicast upstream port is added, the multicast packets are transmitted and received through this port.

#### Prerequisite

The **Uplink port mode** parameter cannot be configured with **MSTP**. For details, see [19.2.4 Configuring Multicast System Parameters](#).

#### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.

- 2 Choose **Multicast > Virtual Uplink Port** from the navigation tree.
- 3 In the information list, right-click and choose **Add** from the shortcut menu.
- 4 In the dialog box that is displayed, configure the shelf, slot, and port of the upstream port.

The screenshot shows a dialog box titled "Add Virtual Uplink Port". It contains three main sections:

- Location Info:** A text field for "Device Name" containing "10.10.10.6".
- Multicast VLAN Info:** A text field for "VLAN ID(1-4095)" containing "1000".
- Uplink Port Info:** Three text fields: "Frame" (0), "Slot" (19), and "Port" (0).

At the bottom of the dialog are three buttons: "OK", "Cancel", and "Apply".

- 5 Click **OK**.

----End

## Command Reference

| To...                                                 | Run the Command...       | In...                                |
|-------------------------------------------------------|--------------------------|--------------------------------------|
| Query the information about a multicast upstream port | display igmp uplink-port | Privilege mode, BTV mode, MVLAN mode |
| Query isolation of upstream ports and subtended cards | display isolate          | Privilege mode                       |
| Query all the VLANs of a specified upstream port      | display port vlan        | Privilege mode                       |

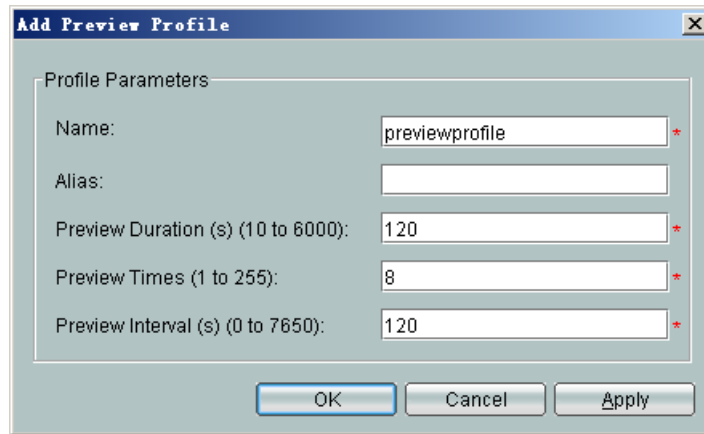
| To...                                                            | Run the Command...       | In...                        |
|------------------------------------------------------------------|--------------------------|------------------------------|
| Configure the default upstream port of a multicast VLAN          | igmp default uplink-port | MVLAN mode                   |
| Add a multicast upstream port to a multicast VLAN                | igmp uplink-port         | MVLAN mode                   |
| Set the port to function as an upstream port or a subtended port | network-role             | SCU mode, GIU mode, ETH mode |
| Add an upstream port to a VLAN                                   | port vlan                | Global config mode           |

## 19.2.6 Configuring a Preview Profile

This topic describes how to deliver a configured preview profile to a device and make the preview profile take effect on the device.

### Procedure

- 1 Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
- 2 Click the **Preview Profile** tab, and select the required device type from the **Device Type** drop-down list.
- 3 Right-click and choose **Add Global Profile** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.



- 5 Click **OK**.
- 6 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 7 In the dialog box that is displayed, select the required NE(s), and click **OK**.

----End

## Command Reference

| To...                                    | Run the Command...       | In...    |
|------------------------------------------|--------------------------|----------|
| Enable the function of multicast preview | igmp preview             | BTV mode |
| Add a program preview profile            | igmp preview-profile add | BTV mode |

## 19.2.7 Configuring the Multicast VLAN

One or more multicast VLANs are used to separate the multicast service from other services. After configuring the multicast user, you need to add the user to a multicast VLAN so that the user can watch the programs in the multicast VLAN.

### Prerequisite

The corresponding VLAN must exist. For details, see [19.2.1 Configuring a VLAN](#).

### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.

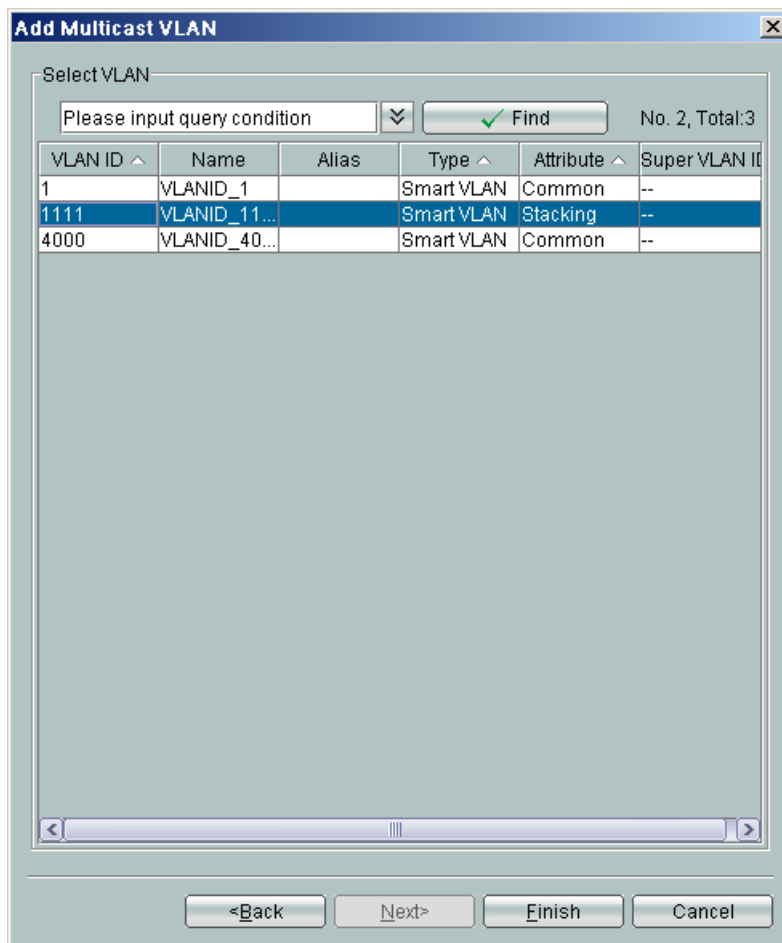
- 2 Choose **Multicast > Multicast VLAN** from the navigation tree.
- 3 Click **Find**. In the dialog box that is displayed, set the filtering criteria and display the multicast VLANs that meet the requirement.
- 4 On the **Multicast VLAN** interface, right-click, and then choose **Add**.
- 5 In the dialog box that is displayed, set the parameters.

| Key Parameter  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IGMP Work Mode | <p>Indicates the working mode of the multicast VLAN.</p> <ul style="list-style-type: none"> <li>● <b>igmp_proxy</b>: In this mode, the system processes multicast packets as a proxy. For a user, the system functions as a multicast server. For the upper-layer device, the system functions as a multicast user.</li> <li>● <b>igmp_snooping</b>: The system transmits multicast packets transparently. In this mode, the functions of hosting, pre-adding, reporting in an unsolicited manner, and statically adding multicast programs do not take effect.</li> <li>● <b>tv_off</b>: disables the IGMP function. In this mode, multicast users cannot watch programs.</li> </ul> |

- 6 Click **Next**.
- 7 In the dialog box that is displayed, set the parameters.

| Key Parameter   | Description                                                                                                                |
|-----------------|----------------------------------------------------------------------------------------------------------------------------|
| Report Interval | Indicates the interval at which the system reports IGMP Report packets to the upper-layer device in an unsolicited manner. |

- 8 Click **Next**.
- 9 Select the required VLAN from the list, and then click **Finish**.



----End

### Command Reference

| To...                                                     | Run the Command...       | In...                                |
|-----------------------------------------------------------|--------------------------|--------------------------------------|
| Query the configuration of a specific multicast VLAN      | display igmp config vlan | Privilege mode, BTV mode, MVLAN mode |
| Create a multicast VLAN and enter the multicast VLAN mode | multicast-vlan           | Global config mode, BTV mode         |

## 19.2.8 Configuring a Program Profile

This topic describes how to deliver a configured program profile to a device and make the program profile take effect on the device.

### Prerequisite

The multicast preview profile must be configured.

### Context

The MA5620E, MA5626E, MA5620G, and MA5626G do not support program profiles.

### Procedure

- 1 Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
- 2 Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
- 3 Right-click and choose **Add Global Profile** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.

**Add Program Profile**

Description Info

- Configure the desired parameters.
- When the program is provisioned, if the IGMP version of the multicast VLAN is V2, the program can not have a source IP address. If the IGMP version of the multicast VLAN is V3, address the program must have a source IP

Name:  \*

Alias:

Begin IP Address:  \* End IP Address:  \*

Source IP Address:  Host IP:  \*

Priority (0 to 7):  \* Bandwidth (Kbit/s) (0 to 65534):  \*

Grade:  \* Multicast VLAN(1-4095):

Preview Parameter

Preview Profile:  \*

Attribute Parameter

Prejoin Attribute  Host Attribute

Unsolicited Attribute  Log Attribute

Across VLAN Attribute

OK Cancel Apply



- 5 Click **OK**.
- 6 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 7 In the dialog box, select the required devices in the left pane, and then click **Next**.
- 8 In the dialog box that is displayed, set the **VLAN ID** and click **Finish**.

----End

## Command Reference

| To...                                              | Run the Command...   | In...                                |
|----------------------------------------------------|----------------------|--------------------------------------|
| Query the information about a multicast program    | display igmp program | Privilege mode, BTV mode, MVLAN mode |
| Add a static multicast program to a multicast VLAN | igmp program add     | MVLAN mode                           |

### 19.2.9 Adding a Multicast Rights Profile

A rights profile is used to manage the rights to a series of programs. In the rights profile, you can set the rights to different programs and then bind the rights profile to the users that need to be authenticated. The users that need not be authenticated can watch all the programs provided by the NE.

#### Prerequisite

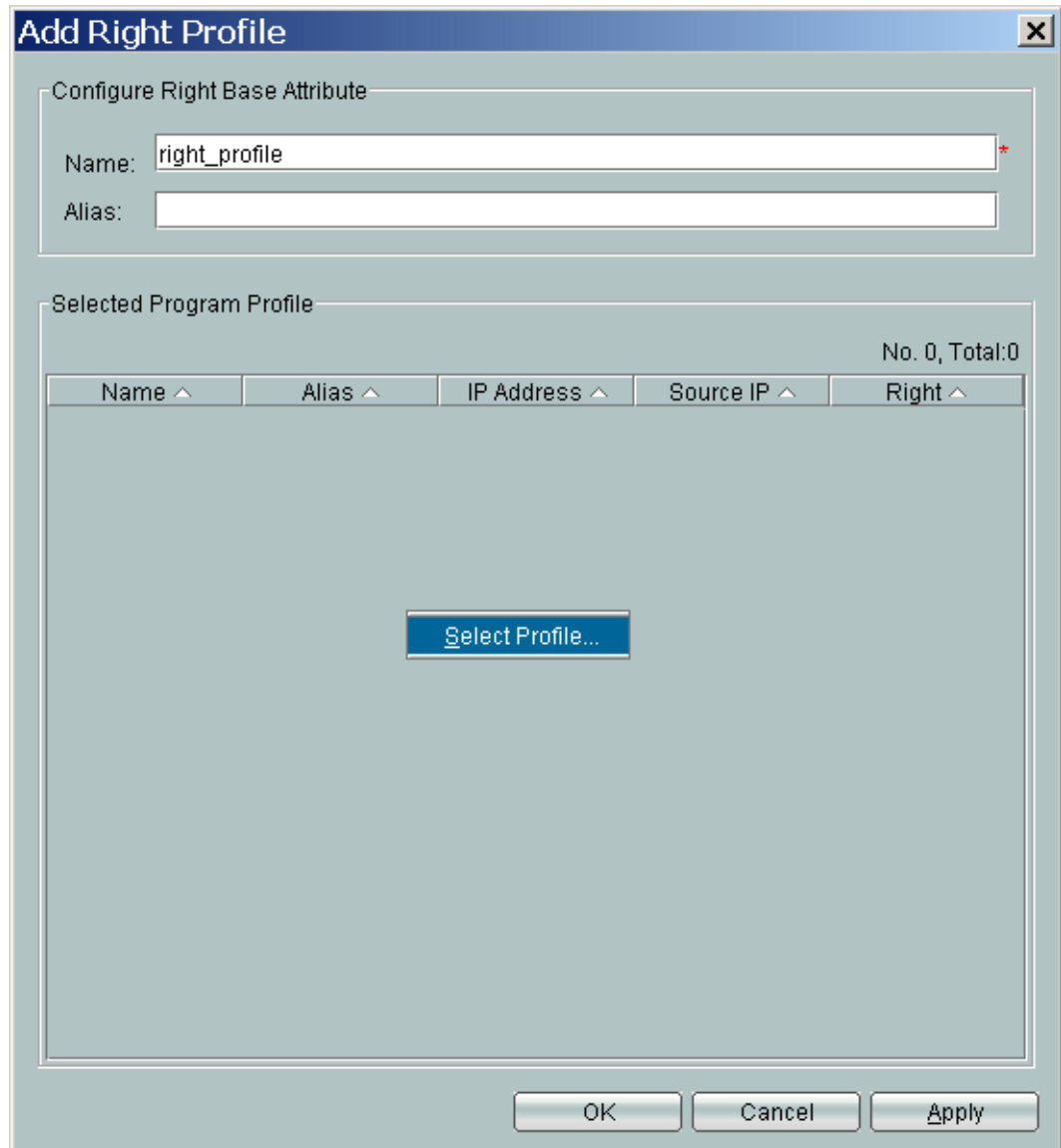
- The U2000 must work in the normal state.
- The required program profile must be configured on the MDU.

#### Context

The MA5620E, MA5626E, MA5620G, and MA5626G do not support rights profiles.

#### Procedure

- 1 Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
- 2 Click the **Right Profile** tab and select **MA56T&MDU** from the **Device Type** drop-down list.
- 3 Right-click and choose **Add Global Profile** from the shortcut menu.
- 4 In the **Add Right Profile** dialog box, set **Name** to **right\_profile**. In the **Selected Program Profile** area, right-click and choose **Select Profile** from the shortcut menu. In the **Right** column, set the required program profile.



5 Click **OK**.

----End

## Command Reference

| To...                                             | Run the Command...      | In...    |
|---------------------------------------------------|-------------------------|----------|
| Add program rights to a multicast rights profile. | <b>igmp profile add</b> | BTV mode |

### 19.2.10 Configuring a Multicast User

This topic describes how to add a multicast user. Only multicast users can watch multicast programs.

## Prerequisite

The corresponding service virtual port must exist.

## Context

- When adding a multicast user, you must specify a service virtual port.
- An authentication user must be bound to a rights profile to obtain relevant rights. A non-authentication user can watch all the programs configured on the device. You need not configure the rights for a non-authentication user.

## Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **Multicast > Multicast User** from the navigation tree.
- 3 On the **Multicast User** tab page, set the filter criteria to display the required multicast users.
- 4 In the information list, right-click and choose **Add** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.

**Add User**

Select Device

Device Name: 10.10.10.6

Parameters

Name: er\_0\_2\_2/12/222/single Alias:

Max. Programs NO.(1-32): 8 \*  Enable Log Switch

Quick Leave Mode: mac-based  Enable Authorization  Default Video Flow

User Max Band Width(kbit/s) (0-4294967294):   Unlimited Band Width  Receive Global-Leave

Select Service Port

11 Find No. 1, Total: 1

| Name          | Alias        | Interface Information | Service Type | Service Para | Upstream Traffic Name (Tx) | Downstream Traffic Name (Tx) |
|---------------|--------------|-----------------------|--------------|--------------|----------------------------|------------------------------|
| 1/0_2_2/12... | 10.71.211... | Frame: 0/Slot: 2/P... | Single       | --           | ip-traffic-table_5         | ip-traffic-table_5           |

<Back Next> Finish Cancel

| Key Parameter       | Description                                                                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Quick Leave mode    | Indicates the mode of multicast users for leaving multicast groups.                                                                                          |
| Max. Programs NO.   | Each multicast user can watch up to 32 programs online simultaneously. By default, each multicast user can watch eight programs online simultaneously.       |
| User Max Band Width | This parameter and <b>Unlimited Band Width</b> are mutually exclusive. If you select <b>Unlimited Band Width</b> , the setting of this parameter is invalid. |

 **NOTE**

After selecting **Enable Authorization**, click **Next**. In the dialog box that is displayed, configure the rights profile that is delivered to the multicast user.

- 6 Click **Finish**.
- 7 In the information list, select the multicast user and click the **User Multicast VLAN** tab in the lower pane. Right-click the list and choose **Add** from the shortcut menu.
- 8 In the dialog box that is displayed, select the multicast VLAN to be bound, and click **OK**.

----End

## Command Reference

| To...                                        | Run the Command... | In...                                |
|----------------------------------------------|--------------------|--------------------------------------|
| Query the information about a multicast user | display igmp user  | Privilege mode, BTV mode, MVLAN mode |
| Add a multicast user                         | igmp user add      | BTV mode                             |

## 19.3 Configuring Services on the MDU

An FTTB network consisting of OLTs and MDUs provides users with Internet services, multicast services, and voice services.

### Context

Several operations are required when you configure a service. The following lists the services configured at the MDU side and the service configuration steps.

| Services                | Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internet access service | <ul style="list-style-type: none"> <li>● <a href="#">19.3.1 Configuring a VLAN</a></li> <li>● <a href="#">19.3.3 Adding a Service Port</a></li> <li>● <a href="#">19.3.4 Configuring an ADSL Line Profile</a></li> <li>● <a href="#">19.3.5 Configuring an ADSL Alarm Profile</a></li> <li>● <a href="#">19.3.6 Configuring the Attributes of an ADSL Port</a></li> <li>● <a href="#">19.3.7 Activating an ADSL Port</a></li> </ul>                                                                                                                                       |
| Multicast service       | <ul style="list-style-type: none"> <li>● <a href="#">19.3.1 Configuring a VLAN</a></li> <li>● <a href="#">19.3.3 Adding a Service Port</a></li> <li>● <a href="#">19.2.7 Configuring the Multicast VLAN</a></li> <li>● <a href="#">19.2.5 Configuring the Virtual Multicast Upstream Port</a></li> <li>● <a href="#">19.2.6 Configuring a Preview Profile</a></li> <li>● <a href="#">19.2.8 Configuring a Program Profile</a></li> <li>● <a href="#">19.2.10 Configuring a Multicast User</a></li> </ul>                                                                  |
| Voice service           | <ul style="list-style-type: none"> <li>● <a href="#">19.3.1 Configuring a VLAN</a></li> <li>● <a href="#">19.3.2 Configuring an IP Interface</a></li> <li>● <a href="#">19.3.8 Configuring a Static Route</a></li> <li>● <a href="#">19.3.9 Adding an MGC Profile</a></li> <li>● <a href="#">19.3.10 Configuring a UAS Profile</a></li> <li>● <a href="#">19.3.12 Adding an MG</a></li> <li>● <a href="#">19.3.13 Binding an MGC Profile</a></li> <li>● <a href="#">19.3.14 Starting an MG</a></li> <li>● <a href="#">19.3.15 Configuring a VoIP PSTN Port</a></li> </ul> |

### [19.3.1 Configuring a VLAN](#)

Virtual local area network (VLAN) is a technology used to form virtual workgroups by grouping the devices of a LAN logically.

### [19.3.2 Configuring an IP Interface](#)

The IP interface is mainly used to forward IP packets at layer 3. The configured IP address is placed into the IP address pool and functions as the signaling IP address of the MG or the media IP address, which is used to communicate with the MGC.

### [19.3.3 Adding a Service Port](#)

After being configured successfully, the service port can carry service streams of various types.

### [19.3.4 Configuring an ADSL Line Profile](#)

An ADSL line profile provides parameters that are required for activating an ADSL port. After the ADSL line profile is configured successfully, when you configure the attributes of the ADSL port, you can directly reference the ADSL line profile to limit the port rate and noise margin to improve the service quality.

### [19.3.5 Configuring an ADSL Alarm Profile](#)

When the ADSL port is activated, it directly references the ADSL alarm profile to monitor the performance of the port. When the actual parameter value of the port exceeds the threshold, the system generates an alarm.

#### 19.3.6 Configuring the Attributes of an ADSL Port

This topic describes how to configure a line profile, an alarm profile, extended profile (optional) of an ADSL port. These attributes can be used after the ADSL port is activated.

#### 19.3.7 Activating an ADSL Port

The ADSL port can transmit the service in the normal state only when it is activated successfully.

#### 19.3.8 Configuring a Static Route

This topic describes how to configure the static route between the U2000 server and an ONU. When the ONU is managed through the SNMP protocol, you can manage and maintain the ONU by performing this operation.

#### 19.3.9 Adding an MGC Profile

An MGC profile defines the peer parameters of an MG port. To configure the MG port and enable it to communicate with the MGC, you only need to bind the pre-configured MGC profile to the MG port. The data of an MG port provides the information about the ports and connections between the MG and the MGC. Various services are provided through an MG port only when the MG port is configured properly. Ensure that the data configured on the MG port is the same as the corresponding data configured on the MGC.

#### 19.3.10 Configuring a UAS Profile

A UAS profile is added when an MG that supports the SIP protocol is added. The SIP protocol is a control-layer protocol of the IMS and it is one of the framework protocols designed by the IETF for the multimedia communication system. The SIP protocol is also an application-layer protocol for creating, modifying, and terminating multimedia sessions. It is used with other protocols, such as RTP, RTCP, SDP, RTSP, and DNS, to complete session establishment and media negotiation.

#### 19.3.11 Adding a TID Profile

A terminal ID (TID) is the prefix that a terminal carries when it registers with an MG. A terminal is a logical entity on the MG and it initiates and receives media streams or control streams. When creating a terminal, the MG allocates a unique TID to identify the terminal.

#### 19.3.12 Adding an MG

Before provisioning services for network elements, you can add an MG according to the global data plan to enable the MG port to communicate with the upper layer MGC.

#### 19.3.13 Binding an MGC Profile

This topic describes how to bind a configured MGC profile to an MG interface to configure the MG interface and interconnect the MG interface with an MGC.

#### 19.3.14 Starting an MG

For the MG that supports the MGCP and H.248 protocols, cold start the MG port so that the MG port can negotiate with the MGC through the specified MGC protocol. In this case, the MG port can register with the MGC so that the configured data can take effect. For the MG that supports the SIP protocol, you also need to restart the MG to make the configuration data to take effect after the configuration

#### 19.3.15 Configuring a VoIP PSTN Port

This topic describes how to access and configure the VoIP PSTN voice service.

#### 19.3.16 Adding an xPON FTTB Service Provisioning Profile

The U2000 of the latest version plans to use the service provisioning profile to provision services to users. The service provisioning profile encapsulates common attributes of the service channel

to a profile. To provision services to users, bind this profile to the port, and then set user-defined service parameters, thus implementing service provisioning at one step.

### 19.3.17 Configuring an xPON FTTB Service

You can directly configure and provision an xPON FTTB service by binding the configured xPON FTTB service provision profile with a certain physical port on the ONU.


## 19.3.1 Configuring a VLAN

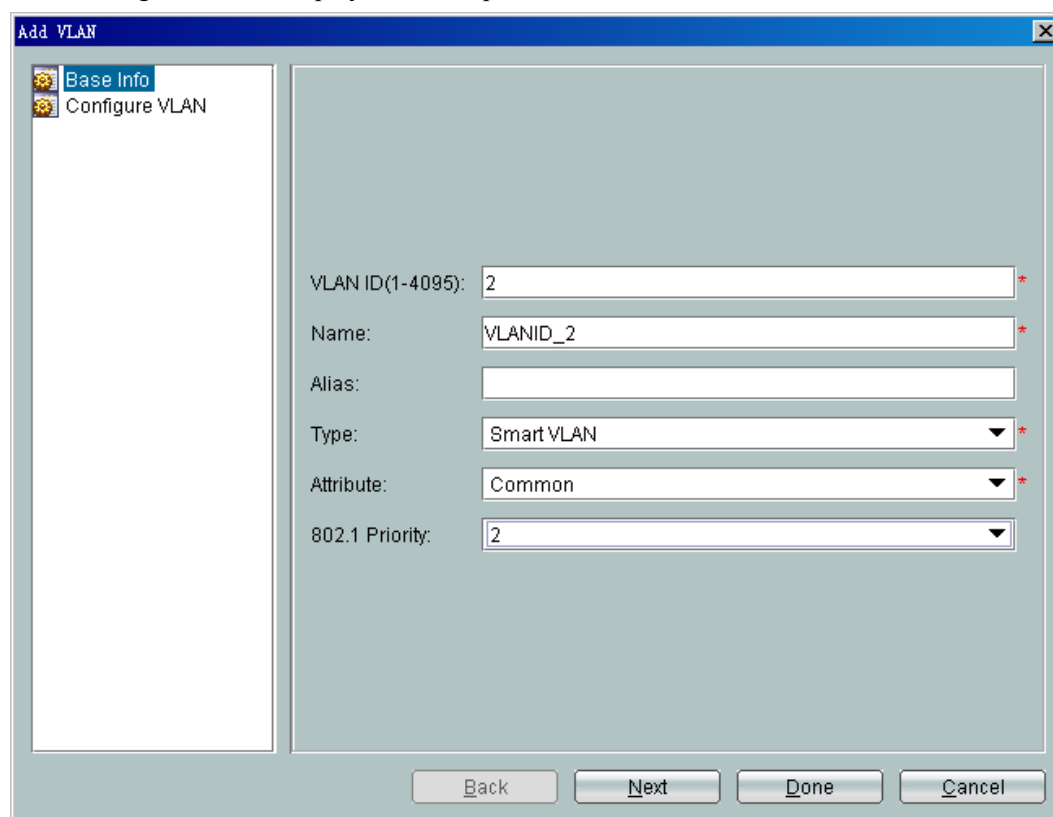
Virtual local area network (VLAN) is a technology used to form virtual workgroups by grouping the devices of a LAN logically.

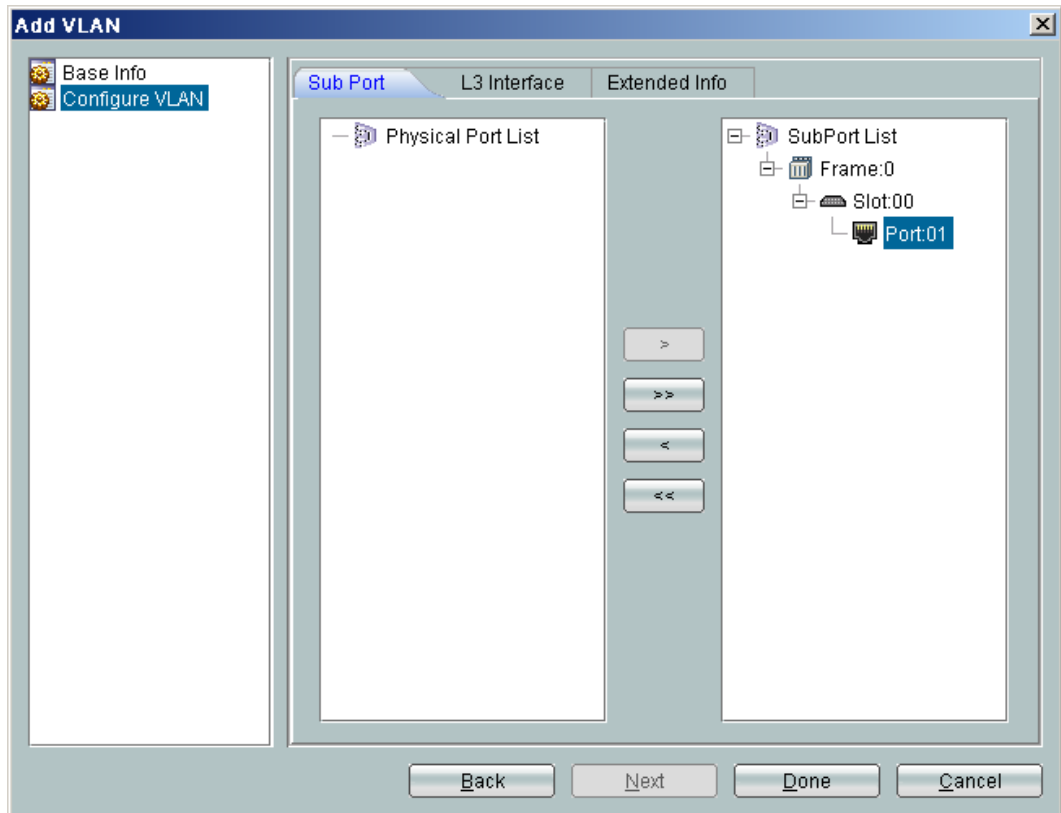
### Context

Before you provision services for network elements, you can add a VLAN or add VLANs in batches according to the global data plan. When VLANs with continuous IDs and the VLAN type is consistent with the VLAN attribute, these VLANs can be added in batches. In addition, the names of the VLANs that are added in batches are generated automatically.

### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **VLAN** from the navigation tree.
- 3 On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
- 4 In the information list, right-click and choose **Add** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.





| Key Parameter  | Description                                                                                                        |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| VLAN ID        | Indicates the VLAN ID. The VLAN ID uniquely identifies a VLAN.<br><b>NOTE</b><br>Add VLANs according to data plan. |
| Type           | Indicates the VLAN type.<br><b>NOTE</b><br>Usually, <b>Smart</b> is selected.                                      |
| Attribute      | Indicates the VLAN attribute.<br><b>NOTE</b><br>For xPON FTTB, <b>QinQ</b> is usually selected.                    |
| 802.1 Priority | Indicates the VLAN 802.1 priority. This parameter is applicable to the VLANs for an ONU.                           |

6 Click **Done**.

----End

## Command Reference

| To...                                | Run the Command... | In...          |
|--------------------------------------|--------------------|----------------|
| Query the information about the VLAN | display vlan       | Privilege mode |



| To...                                                | Run the Command... | In...              |
|------------------------------------------------------|--------------------|--------------------|
| Add one VLAN or more VLANs of a same type in batches | vlan               | Global config mode |
| Set the VLAN attribute                               | vlan attrib        | Global config mode |


## 19.3.2 Configuring an IP Interface

The IP interface is mainly used to forward IP packets at layer 3. The configured IP address is placed into the IP address pool and functions as the signaling IP address of the MG or the media IP address, which is used to communicate with the MGC.

### Prerequisite

An IP interface can be added only after the L3 interface of the VLAN is configured.

### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **VLAN** from the navigation tree.
- 3 Click the **VLAN** tab. On the **VLAN** tab page, set the filter criteria or click  to display the VLANs. Select a record from the VLAN list, and then click the **IP Interface** tab in the lower pane.
- 4 On the **IP Interface** tab page, right-click, and then choose **Add**.
- 5 In the dialog box that is displayed, set the parameters of the IP interface.
- 6 Click **OK**.

---End

## 19.3.3 Adding a Service Port

After being configured successfully, the service port can carry service streams of various types.

### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **Connection > Service Port** from the navigation tree.
- 3 In the information list, right-click and choose **Add** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.

| Key Parameter | Description                                                                                |
|---------------|--------------------------------------------------------------------------------------------|
| Vlan ID       | Indicates the VLAN ID of the service virtual port. The VLAN ID uniquely identifies a VLAN. |

**NOTE**

Select only the **MEF IP Traffic Profile** that exists on the device. Otherwise, the system reports an error.

**5** Click **OK**.

----End

## Command Reference

| To...                                                    | Run the Command...         | In...          |
|----------------------------------------------------------|----------------------------|----------------|
| Query the 802.1x configuration of a service virtual port | display dot1x service-port | Privilege mode |

| To...                                                  | Run the Command... | In...              |
|--------------------------------------------------------|--------------------|--------------------|
| Bind a service virtual port with 802.1x authentication | dot1x service-port | Global config mode |

## 19.3.4 Configuring an ADSL Line Profile

An ADSL line profile provides parameters that are required for activating an ADSL port. After the ADSL line profile is configured successfully, when you configure the attributes of the ADSL port, you can directly reference the ADSL line profile to limit the port rate and noise margin to improve the service quality.

### Context

- A profile name uniquely identifies a profile. Therefore, the profile name must be specified and it must be unique. Otherwise, the profile cannot be added.
- You can add profiles that have the same parameters but different names.

### Procedure

- 1 Choose **Configuration > Access Profile Management > ADSL Profile** from the main menu.
- 2 Click the **ADSL Line Profile** tab, and select the required device type from the **Device Type** drop-down list.
- 3 Right-click and choose **Add Global Profile** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.

**Create ADSL Line Profile**

▶ Set Basic Parameters  
• Set Advanced Parameters  
• Set Extended Parameters

Name:  Auto Name  \*

Alias:

ADSL Operating Mode:

Line Type:

Adapt Mode in Downstream:

Fast Rate Attributes

ATU-C(Downstream) Fast Min. Tx Rate (Kbit/s)(32-31999):

ATU-C(Downstream) Fast Max. Tx Rate (Kbit/s)(33-32000):

ATU-R(Upstream) Fast Min. Tx Rate (Kbit/s)(32-6000):

ATU-R(Upstream) Fast Max. Tx Rate (Kbit/s)(32-6000):

Interleaved Rate Attributes

ATU-C(Downstream) Interleaved Min. Tx Rate (Kbit/s)(32-31999):  \*

ATU-C(Downstream) Interleaved Max. Tx Rate (Kbit/s)(33-32000):  \*

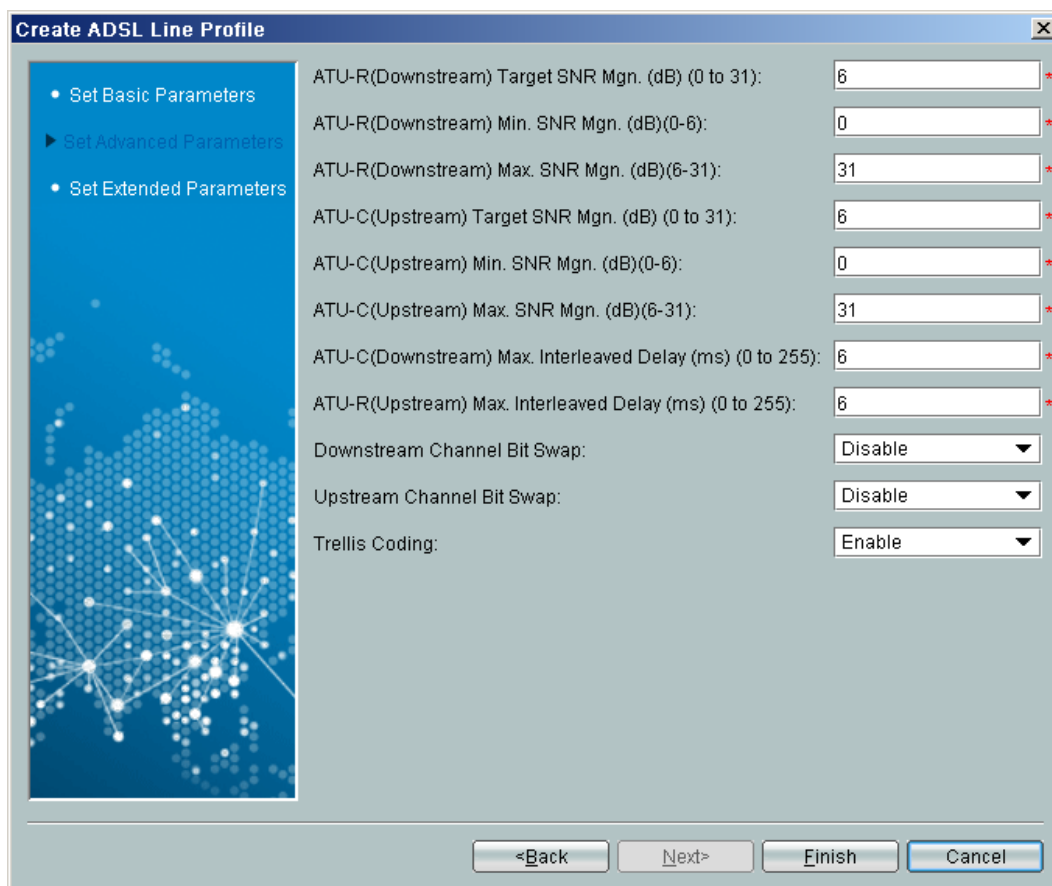
ATU-R(Upstream) Interleaved Min. Tx Rate (Kbit/s)(32-6000):  \*

ATU-R(Upstream) Interleaved Max. Tx Rate (Kbit/s)(32-6000):  \*

<Back    Next>    Finish    Cancel

5 Click **Next**.

6 In the dialog box that is displayed, set the parameters.



7 Click **Finish**.

----End

## Command Reference

| To...                      | Run the Command...    | In...                         |
|----------------------------|-----------------------|-------------------------------|
| Add an ADSL2+ line profile | adsl line-profile add | Global config mode, ADSL mode |

### 19.3.5 Configuring an ADSL Alarm Profile

When the ADSL port is activated, it directly references the ADSL alarm profile to monitor the performance of the port. When the actual parameter value of the port exceeds the threshold, the system generates an alarm.

#### Context

- A profile name uniquely identifies a profile. Therefore, the profile name must be specified and it must be unique. Otherwise, the profile cannot be added.
- You can add profiles that have the same parameters but different names.

## Procedure

- 1 Choose **Configuration > Access Profile Management > ADSL Profile** from the main menu.
- 2 Click the **ADSL Alarm Profile** tab, and select the required device type from the **Device Type** drop-down list.
- 3 Right-click and choose **Add Global Profile** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.

- 5 Click **OK**.

----End

## Command Reference

| To...                       | Run the Command...     | In...                         |
|-----------------------------|------------------------|-------------------------------|
| Add an ADSL2+ alarm profile | adsl alarm-profile add | Global config mode, ADSL mode |


### 19.3.6 Configuring the Attributes of an ADSL Port

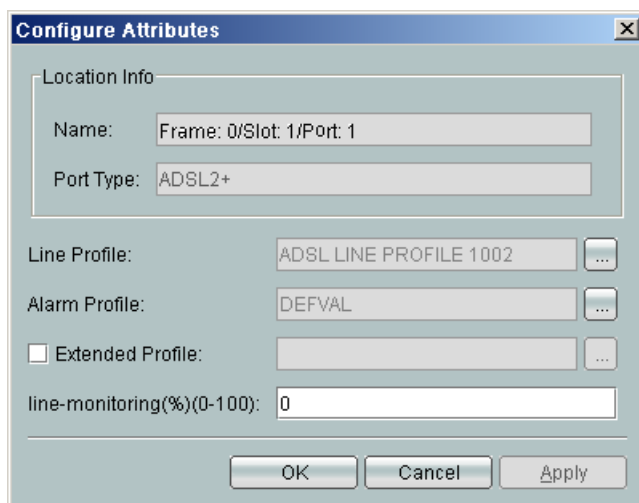
This topic describes how to configure a line profile, an alarm profile, extended profile (optional) of an ADSL port. These attributes can be used after the ADSL port is activated.

#### Context

You can modify the attributes of a port when the port is in the activated, activating, or deactivated state. If the port is in the deactivated state, modify the port attributes directly. If the port is in the activated or activating state, deactivate it before modifying the port attributes.

## Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **DSL > ADSL** from the navigation tree.
- 3 On the **ADSL** tab page, set the filter criteria or click  to display the ADSL ports.
- 4 In the information list, select an ADSL port record, right-click, and then choose **Configure Attributes**.
- 5 In the dialog box that is displayed, bind the ADSL port to the corresponding profile.



- 6 Click **OK**.

----End

## Command Reference

| To...                                                                                | Run the Command...      | In...          |
|--------------------------------------------------------------------------------------|-------------------------|----------------|
| Query the status of ADSL2+ ports and the information about their activation profiles | display adsl port state | Privilege mode |

### 19.3.7 Activating an ADSL Port

The ADSL port can transmit the service in the normal state only when it is activated successfully.

## Context

- The ADSL port must be activated and then it can transmit the service.
- Before configuring new parameters to an activated port, you need to deactivate the port, configure the port with a profile with the new parameters, and then activate the port.
- When you activate a port:
  - If the ATU-R is online (powered on), the activating process is complete after the training is successful.
  - If the ATU-R is offline (powered off), the connection set up during the activating process is interrupted, and the ATU-C is in the detection state. When the ATU-R is powered on again, the training automatically initiates. If the training is successful, the port is activated.

## Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **DSL > ADSL** from the navigation tree.
- 3 On the **ADSL** tab page, set the filter criteria or click  to display the ADSL ports.
- 4 In the information list, select an ADSL port to be activated, right-click, and then choose **Activate**.

---End

## Command Reference

| To...                   | Run the Command... | In...     |
|-------------------------|--------------------|-----------|
| Activate an ADSL2+ port | activate           | ADSL mode |

### 19.3.8 Configuring a Static Route

This topic describes how to configure the static route between the U2000 server and an ONU. When the ONU is managed through the SNMP protocol, you can manage and maintain the ONU by performing this operation.

#### Prerequisite

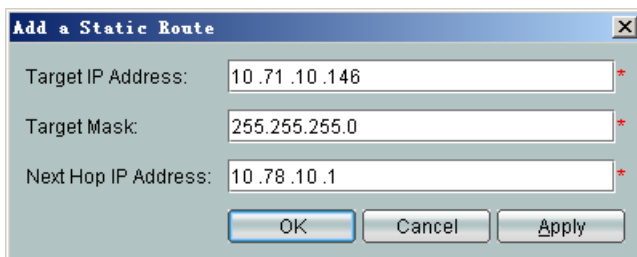
The ONU must be managed through the SNMP protocol.

#### Procedure

- 1 In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- 2 Choose **Static Route** from the navigation tree.



- 3 In the information list, right-click and choose **Add** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.



| Key Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Target IP Address   | Indicates the destination IP address. It is used to identify the destination IP address or destination network of IP packets.                                                                                                                                                                                                                                                                                                                                         |
| Target Mask         | Indicates the subnet mask of the IP address. A subnet mask consists of consecutive 1s and can be represented in dotted decimal notation when it is written in the text format. The subnet mask and the destination IP address identify the address of the network segment where the destination host or router is located. You can obtain the address of the network segment by performing a logical AND operation on the destination IP address and the subnet mask. |
| Next Hop IP Address | Indicates the next hop IP address, which is used to identify the next router on the route of IP packets. Latest configuration of the next hop IP address automatically overwrites the previous one and becomes the next hop IP address in the current route information.                                                                                                                                                                                              |

- 5 Click **OK**.

----End

## Command Reference

| To...                                                      | Run the Command...     | In...                                |
|------------------------------------------------------------|------------------------|--------------------------------------|
| Query the static route between the U2000 server and an ONT | display ont snmp-route | GPON mode                            |
| Set the static route between the U2000 server and an ONT   | ont snmp-route         | Privilege mode, BTV mode, MVLAN mode |

## 19.3.9 Adding an MGC Profile

An MGC profile defines the peer parameters of an MG port. To configure the MG port and enable it to communicate with the MGC, you only need to bind the pre-configured MGC profile to the MG port. The data of an MG port provides the information about the ports and connections between the MG and the MGC. Various services are provided through an MG port only when the MG port is configured properly. Ensure that the data configured on the MG port is the same as the corresponding data configured on the MGC.

### Procedure

- 1 Choose **Configuration > Access Profile Management > MGC Profile** from the main menu.
- 2 Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.

| Key Parameter | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name          | Indicates the name of an MGC profile. It is used to uniquely identify an MGC profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Protocol Type | When you configure the MGC, set <b>Protocol Type</b> to <b>H.248</b> or <b>MGCP</b> according to the system protocol. When you configure the association, set <b>Protocol Type</b> to <b>xUA</b> .                                                                                                                                                                                                                                                                                                                                       |
| DNS Name      | Specifies the domain name of the MGC. The domain name is used to identify the MGC.<br><b>NOTE</b> <ul style="list-style-type: none"> <li>● You must set both or either of <b>DNS Name</b> and <b>IP Address</b>. If <b>DNS Name</b> and <b>IP Address</b> are set, the system analyzes the domain name to obtain the IP address of the MGC. If the analysis fails, the system uses the pre-configured IP address.</li> <li>● This parameter is available when the <b>Protocol Type</b> is set to <b>H.248</b> or <b>MGCP</b>.</li> </ul> |

| Key Parameter           | Description                                                                                                                                                                                                                                                   |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP Address 1/IP Address | Indicates peer end IP address 1.<br>If you set <b>Protocol Type</b> to <b>H.248</b> or <b>xUA</b> , the name of this parameter is <b>IP Address 1</b> .<br>If you set <b>Protocol Type</b> to <b>MGCP</b> , the name of this parameter is <b>IP Address</b> . |
| IP Address 2            | Indicates peer end IP address 2. This parameter is used to implement SCTP multi-homing. Therefore, this parameter takes effects only when the transmission protocol of the MG port is set to the SCTP protocol.                                               |

4 Click **OK**.

----End

## Command Reference

| To...                                                                   | Run the Command... | In...      |
|-------------------------------------------------------------------------|--------------------|------------|
| Configure the attributes of an MG port that supports the H.248 protocol | if-h248 attribute  | H.248 mode |
| Configure the attributes of an MG port that supports the MGCP protocol  | if-mgcp attribute  | MGCP mode  |



### NOTE

The MGC profile is encapsulated by the U2000. No command is available for the MGC profile in the CLI of the device.

## 19.3.10 Configuring a UAS Profile

A UAS profile is added when an MG that supports the SIP protocol is added. The SIP protocol is a control-layer protocol of the IMS and it is one of the framework protocols designed by the IETF for the multimedia communication system. The SIP protocol is also an application-layer protocol for creating, modifying, and terminating multimedia sessions. It is used with other protocols, such as RTP, RTCP, SDP, RTSP, and DNS, to complete session establishment and media negotiation.

### Procedure

- 1 Choose **Configuration > Access Profile Management > UAS Profile** from the main menu.
- 2 Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.

| Key Parameter | Description                                                                                                                                                  |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Address Mode  | Indicates the address mode of the SIP MG.<br>Enumerated type. The options are <b>Fix mode</b> and <b>DNS-A query mode</b> .                                  |
| IP Address 1  | Indicates the IP address of the proxy server of the SIP MG.<br>This parameter is available only when <b>Address Mode</b> is set to <b>Fix mode</b> .         |
| IP Address 2  | Indicates the standby IP address of the proxy server of the SIP MG.<br>This parameter is available only when <b>Address Mode</b> is set to <b>Fix mode</b> . |
| Proxy Port    | Indicates the port ID of the proxy server of the SIP MG.                                                                                                     |
| Domain Name   | Indicates the name of the home domain of the SIP MG.<br>This parameter is available only when <b>Address Mode</b> is set to <b>DNS-A query mode</b> .        |

4 Click **OK**.

----End

## Command Reference

| To...                                                  | Run the Command...     | In...    |
|--------------------------------------------------------|------------------------|----------|
| Configure the mandatory attributes of an SIP interface | if-sip attribute basic | STP mode |

### NOTE

The MGC profile is encapsulated by the U2000. No command is available for the MGC profile in the CLI of the device.

## 19.3.11 Adding a TID Profile

A terminal ID (TID) is the prefix that a terminal carries when it registers with an MG. A terminal is a logical entity on the MG and it initiates and receives media streams or control streams. When creating a terminal, the MG allocates a unique TID to identify the terminal.

### Prerequisite

The U2000 must work in the normal state.

### Procedure

- 1 Choose **Configuration > Access Profile Management > TID Profile** from the main menu.
- 2 Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the **New TID Profile** dialog box, set **Name** to **tid-profile\_1** and set other parameters.

| Key Parameter  | Description                                                                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Format         | Indicates the format character string. It defines the format of the character string generated by the parameter list.                                     |
| Parameter List | Indicates the parameters to be converted to a character string. The number of parameters must be the same as that defined in the format character string. |

4 Click **OK**.

----**End**

## Command Reference

| To...                           | Run the Command...      | In...              |
|---------------------------------|-------------------------|--------------------|
| Add a user-defined TID profile. | <b>tid-template add</b> | Global config mode |

## 19.3.12 Adding an MG

Before provisioning services for network elements, you can add an MG according to the global data plan to enable the MG port to communicate with the upper layer MGC.

### Prerequisite

The signaling IP address and media IP address must exist in the corresponding IP address pool.

### Context

- The MG ID must be unique on a device.
- The MG parameters must be set to be the same as the corresponding MGC parameters.
- You can configure up to eight MGs on an OLT.
- After the MG is added, you must perform the cold starting or recovering operation so that the MG can work in the normal state.
- After the MG is added successfully, the system adds two MGCs concurrently. This MG can provide services for the user when the MG communicates with only one MGC.
- The H.248 protocol separates the signaling stream and the media stream and uses different QoS policies for the two types of streams.



#### NOTE

The procedure for adding the MG supporting the H.248, MGCP, and SIP protocols are the same. The difference only lies in the parameter settings. The following figure considers only the procedures for adding the MG supporting the H.248 and SIP protocols as an example.

### Procedure

- 1 In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- 2 Choose **Voice Gateway > Media Gateway** from the navigation tree.
- 3 On the **Media Gateway** tab page, set the filter criteria to display the required MGs.
- 4 In the information list, right-click and choose **Add** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.

Adding the MG supporting the H.248 protocol:

| Key Parameter        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MG ID                | Indicates the ID of the MG. It uniquely identifies an MG.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| MG Message MID Type  | Indicates the message ID (MID) type of the H.248 message. The MID exists in the header of a message and identifies the message sender.<br><b>Relation to other parameters:</b><br>After an MID type is selected, you must configure its attributes. <ul style="list-style-type: none"> <li>● If the MID type is selected as signaling IP address, you must set <b>Signaling IP Address</b>.</li> <li>● If the MID type is selected as MG domain name, you must set <b>MG Domain Name</b>.</li> <li>● If the MID type is selected as MG device name, you must set <b>MG Device Name</b>.</li> </ul> |
| Signaling IP Address | Indicates the signaling IP address of the MG.<br><b>NOTE</b><br>The signaling IP address must exist in the IP address pool. It can be the same as the media IP address.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Transmission Mode    | Indicates the transmission mode that the MG uses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Key Parameter | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Profile Name  | <p>Indicates the name and version of the profile used by the MG.</p> <p>After this parameter is set, the H.248 protocol can adapt certain parameters between the MG and the MGC through the profile negotiation. If the negotiation fails, the MG fails to register with the MGC. Hence, the device defines profiles according to customers' requirements.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• The values of the <b>Profile Name</b> parameter displayed in the interface are the preset profile names provided by the device. Therefore, they cannot be modified through the U2000.</li> <li>• In the case of the customized profile named <b>CustomizingProfileTemplet</b>, you can modify the profile name through the CLI on the device. Then, the U2000 obtains the profile name that is used by the device port by querying the details of the device port.</li> </ul> |

Adding the MG supporting the SIP protocol:

| Key Parameter        | Description                                                         |
|----------------------|---------------------------------------------------------------------|
| MG ID                | Indicates the ID of the MG. It is used to uniquely identify the MG. |
| Signaling IP Address | Indicates the signaling IP address of the MG.                       |



| Key Parameter      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signaling Port No. | Indicates the number of the signaling port that the MG uses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Media IP Address 1 | Indicates the IP address of the media traffic that is controlled by the signaling.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Profile Name       | Indicates the name and version of the profile used by the MG.<br><b>NOTE</b> <ul style="list-style-type: none"> <li>The values of the <b>Profile Name</b> parameter displayed in the interface are the preset profile names provided by the device. Therefore, they cannot be modified through the U2000.</li> <li>In the case of the customized profile named <b>CustomizingProfileTemplet</b>, you can modify the profile name through the CLI on the device. Then, the U2000 obtains the profile name that is used by the device port by querying the details of the device port.</li> </ul> |

6 Click **OK**.

---End

## Command Reference

| To...                                                                                                                      | Run the Command...     | In...             |
|----------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------|
| Query the running status and basic configuration of all the MG ports that support the H.248 protocol in the current system | display if-h248 all    | Common user level |
| Query the running status of all the MG ports that support the SIP protocol in the current system                           | display if-sip all     | Common user level |
| Query the running status and basic configuration of all the MG ports that support the MGCP protocol in the current system. | display if-mgcp all    | Common user level |
| Configure the attributes of the MG ports that support the H.248 protocol                                                   | if-h248 attribute      | H.248 mode        |
| Configure the attributes of the MG ports that support the MGCP protocol                                                    | if-mgcp attribute      | MGCP mode         |
| Configure the mandatory attributes of the SIP interface                                                                    | if-sip attribute basic | STP mode          |

 **NOTE**

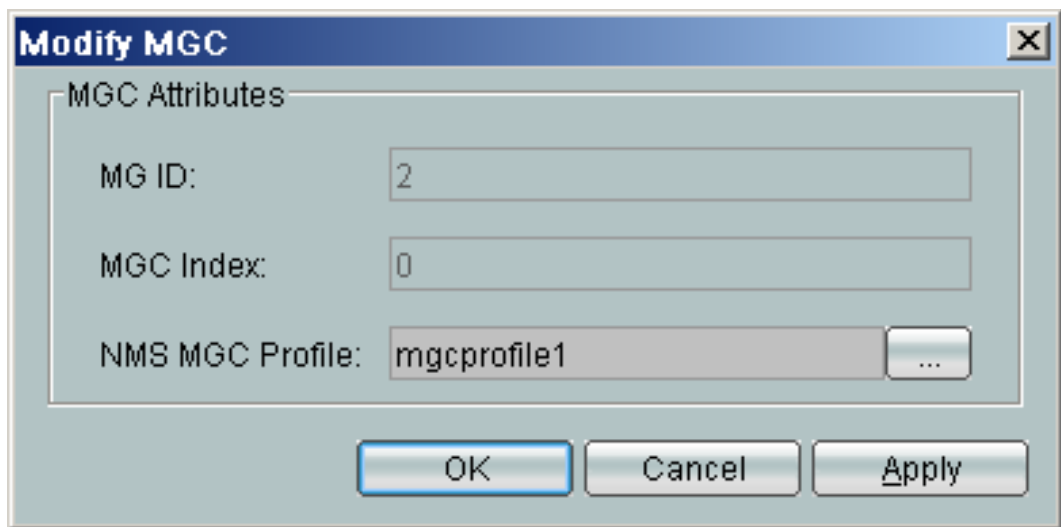
In the CLI of the device, the configuration of the MG ports that support the H.248, MGCP, and SIP protocols consists of a series of command lines. For details, see the command reference manuals of the device.

### 19.3.13 Binding an MGC Profile

This topic describes how to bind a configured MGC profile to an MG interface to configure the MG interface and interconnect the MG interface with an MGC.

#### Procedure

- 1 In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.
- 2 Choose **Voice Gateway > Media Gateway** from the navigation tree.
- 3 On the **Media Gateway** tab page, set the filter criteria to display the required MGs.
- 4 In the information list, select a record and click the **MGC Attribute Info** tab in the lower pane. In the list, right-click a record and choose **Bind Profile** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.



| Key Parameter | Description                                                                                                                                                                                                                                                                                                                                                                        |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MGC Index     | When the H.248 protocol is used, an MG interface can initiate the registration with two MGCs but the MG interface registers with only one MGC at the same time. When an MGC is faulty and cannot communicate with MGs, the MG interface registers with the other MGC automatically. The MGC indexes are 0 to 1 and the priority of index 0 is higher than the priority of index 1. |

- 6 Click **OK**.

----End

## Command Reference

| To...                                                                        | Run the Command... | In...      |
|------------------------------------------------------------------------------|--------------------|------------|
| Configure the attributes of an MG interface when the H.248 protocol is used. | if-h248 attribute  | H.248 mode |

### 19.3.14 Starting an MG

For the MG that supports the MGCP and H.248 protocols, cold start the MG port so that the MG port can negotiate with the MGC through the specified MGC protocol. In this case, the MG port can register with the MGC so that the configured data can take effect. For the MG that supports the SIP protocol, you also need to restart the MG to make the configuration data to take effect after the configuration

#### Procedure

- 1 In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- 2 Choose **Voice Gateway > Media Gateway** from the navigation tree.
- 3 On the **Media Gateway** tab page, set the filter criteria to display the required MGs.
- 4 Select a record to be configured from the MG list, right-click, and then choose **Recover (H.248)** or **Reset (MGCP/SIP)** from the shortcut menu.
- 5 In the dialog box that is displayed, click **Yes**.

---End

## Command Reference

| To...                                                                        | Run the Command... | In...                               |
|------------------------------------------------------------------------------|--------------------|-------------------------------------|
| Reset the specified MG port that supports the H.248, MGCP, and SIP protocols | reset              | H.248 mode<br>MGCP mode<br>SIP mode |

### 19.3.15 Configuring a VoIP PSTN Port

This topic describes how to access and configure the VoIP PSTN voice service.

#### Prerequisite

- The network devices and lines must be in the normal state.

- A proper MGC profile that supports the H.248 and MGCP protocols or UAS profile that supports the SIP protocol must be configured. For details, see [19.3.9 Adding an MGC Profile](#) or [19.3.10 Configuring a UAS Profile](#).
- The MG port that supports the H.248 and MGCP protocols or the SIP interface that supports the SIP protocol must be configured. For details, see [19.3.12 Adding an MG](#).
- The OLT can interconnect with the MGC or IMS port (that supports the SIP protocol).

## Context

The OLT accesses the VoIP PSTN service stream through the voice service profile and transmits the service stream upstream to the IP network through the control board, thus providing the VoIP PSTN service.

## Procedure

- 1 In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- 2 Choose **ASL > POTS Port** from the navigation tree.
- 3 Click the **VoIP PSTN Port** tab, and set the filter criteria to display the required VoIP PSTN ports.
- 4 Select a record from the VoIP PSTN port list, right-click, and then choose **Configure Attribute** from the shortcut menu.



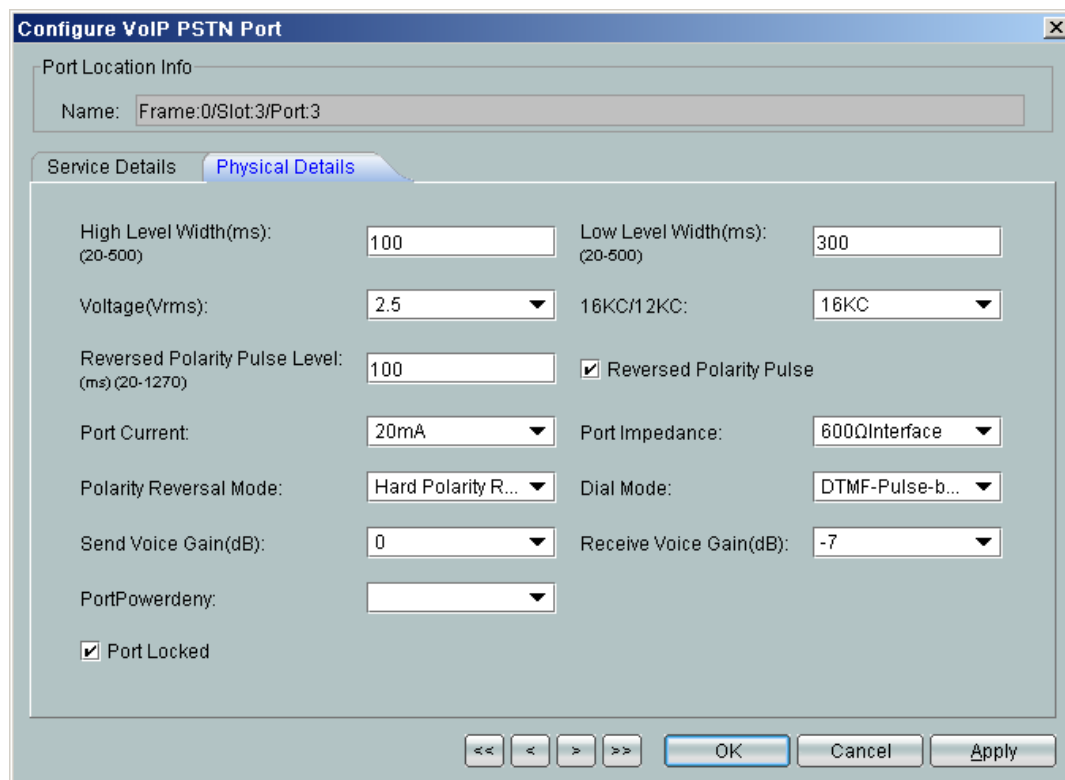
### NOTE

If selecting multiple records, you can configure the attributes in batches.

- 5 In the dialog box that is displayed, click the **Service Details** tab. Configure the attributes of the VoIP PSTN port, including **MG ID** and **Telephone No.**

| Key Parameter | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MG ID         | <b>Definition:</b><br>Indicates the MG ID corresponding to the VoIP PSTN port.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Telephone No  | <b>Definition:</b><br>Indicates the telephone number bound to the VoIP PSTN user. <ul style="list-style-type: none"> <li>● The telephone number that is set here is invalid. The valid telephone numbers are set on the MGC.</li> <li>● The telephone number that is set here is used for standalone paging only when the standalone function is configured and enabled.</li> <li>● If this parameter is not set, the telephone number is empty by default.</li> </ul>                            |
| Terminal ID   | <b>Definition:</b><br>Indicates the ID of the physical terminal corresponding to the VoIP PSTN user.<br>One VoIP PSTN user occupies only one terminal ID.<br><b>NOTE</b> <ul style="list-style-type: none"> <li>● This parameter is available only when the TID profile bound with the ISDN PSTN user on the MG is configured to not support the terminal layering function.</li> <li>● This parameter is mandatory if the <b>Terminal ID Auto Selected</b> check box is not selected.</li> </ul> |

6 Click the **Physical Details** tab. Configure the physical attributes of the VoIP PSTN port, including **High Level Width**, **Reversed Polarity**, and **Dial Mode**.



| Key Parameter | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dial Mode     | <p>Indicates the dial mode of the VoIP PSTN port.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>● DTMT: It is the dual tone multi-frequency mode. The dial tones of common fixed-line phones adopt two high and low frequency groups and 16 frequency combinations to represent the keys, such as keys 0 to 9, the * key, and the # key, and transmit the user dialing signaling.</li> <li>● Pulse: During the dialing, each digit is represented by a group of pulses. These pulses connect or disconnect the current in the telephone lines in an instant.</li> </ul> |

7 Click **OK**.

----End

## Command Reference

| To...                                             | Run the Command...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | In...                                         |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Query the status of one or more PSTN ports        | <p>display pstn state</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>● If the system currently supports are the H.248, MGCP, or SIP protocol, the command format is different.</li> <li>● If you need to query the status in ESL user mode, run the <b>config</b> command to enter global config mode, run the <b>esl user</b> command to enter ESL user mode, and then run the <b>display pstn state</b> command.</li> <li>● If you need to query the status in PSTN port mode, run the <b>config</b> command to enter global config mode, run the <b>pstnport</b> command to enter PSTN port mode, and then run the <b>display pstn state</b> command.</li> </ul>                                           | Privilege mode, ESL user mode, PSTN port mode |
| Configure the attributes of an existing PSTN user | <p>mgpstnuser attribute set</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>● Before running this command, run the <b>config</b> command to enter the global config mode, and then run the <b>esl user</b> command to enter the ESL user mode.</li> <li>● You can configure the attributes of a PSTN user only after the PSTN user is added.</li> <li>● You can configure the attributes of a PSTN user by specific physical position (the shelf ID, slot ID, and port ID) or by "MG port ID + terminal ID". When the TID profile bound with the ISDN PSTN user on the MG port is configured to support the terminal layering function, you can configure the attributes only by physical position.</li> </ul> | ESL user mode                                 |

| To...                                                          | Run the Command...                                                                                        | In...         |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------|
| Configure the attributes of the existing PSTN users in batches | mgpstnuser attribute batset<br><b>NOTE</b><br>See the precaution of the mgpstnuser attribute set command. | ESL user mode |

### 19.3.16 Adding an xPON FTTB Service Provisioning Profile

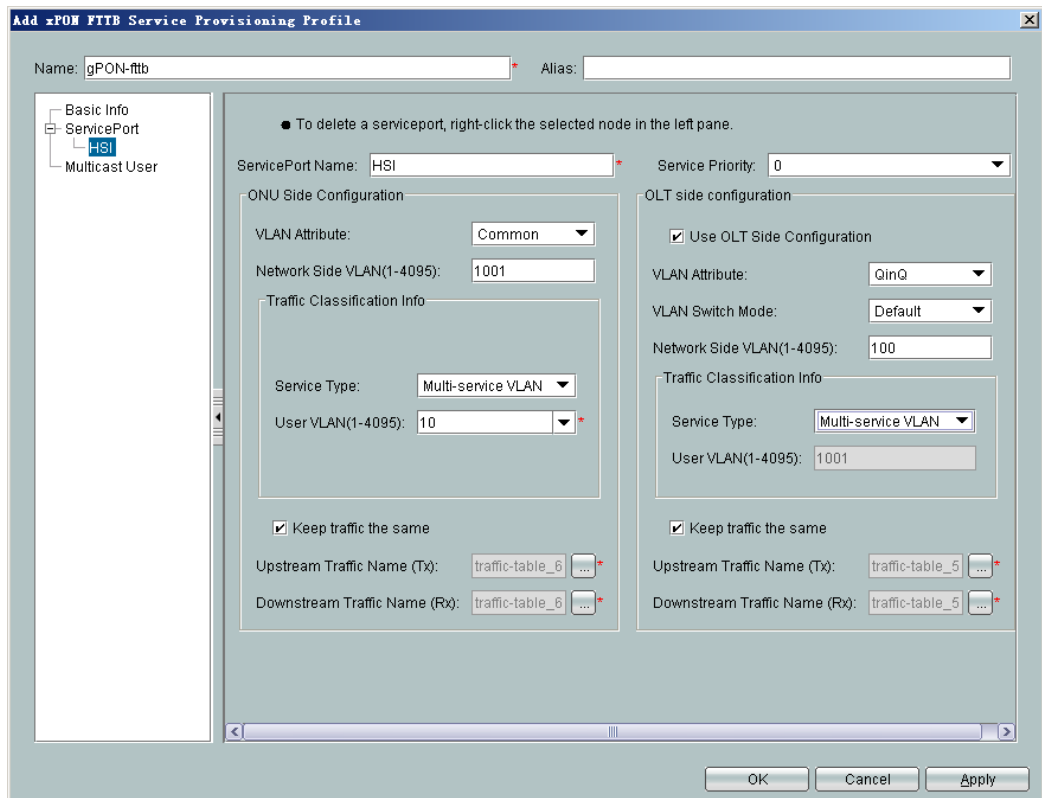
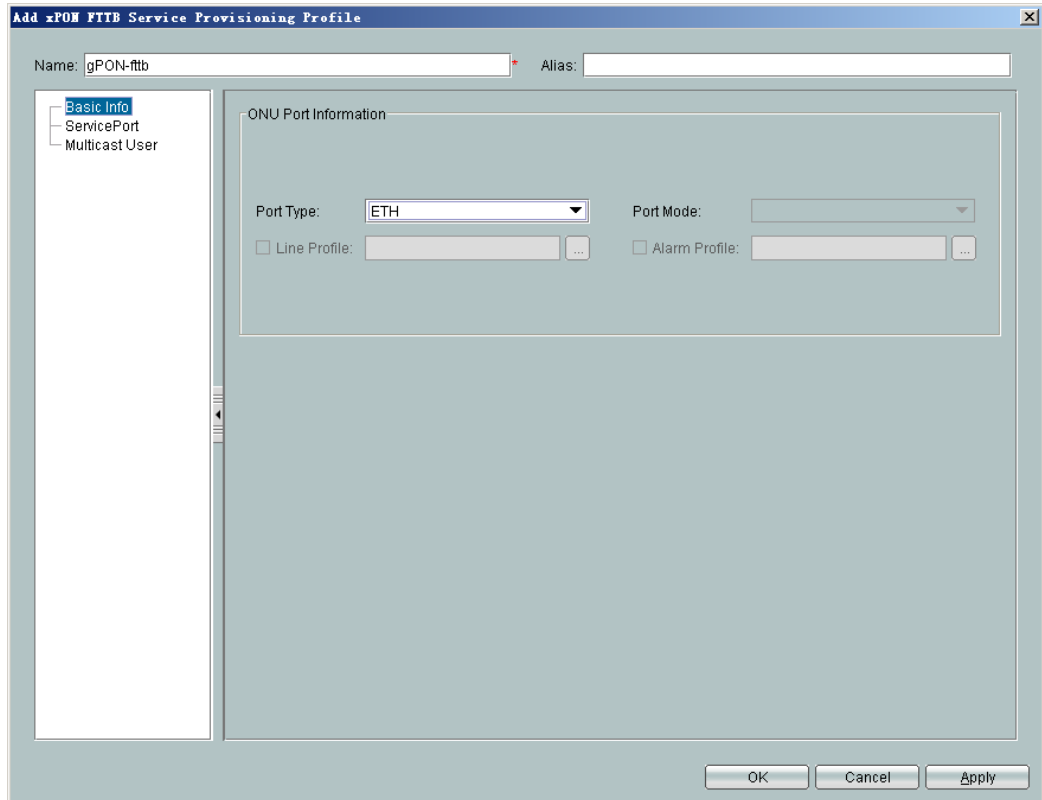
The U2000 of the latest version plans to use the service provisioning profile to provision services to users. The service provisioning profile encapsulates common attributes of the service channel to a profile. To provision services to users, bind this profile to the port, and then set user-defined service parameters, thus implementing service provisioning at one step.

#### Prerequisite

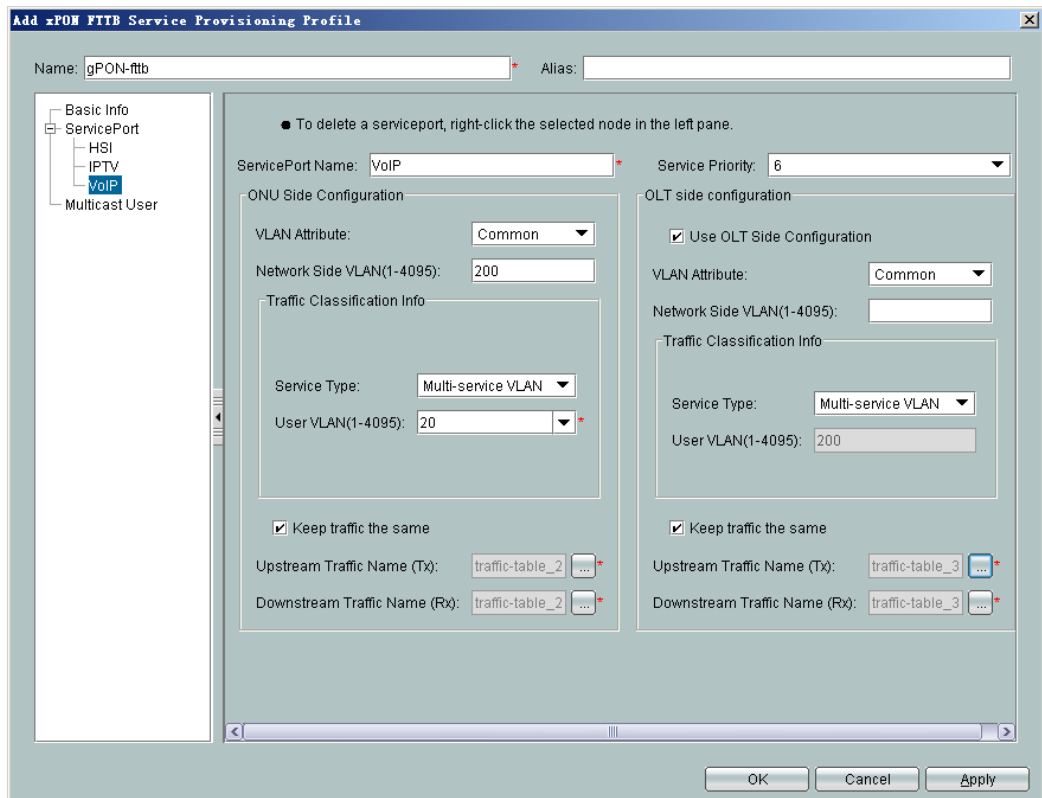
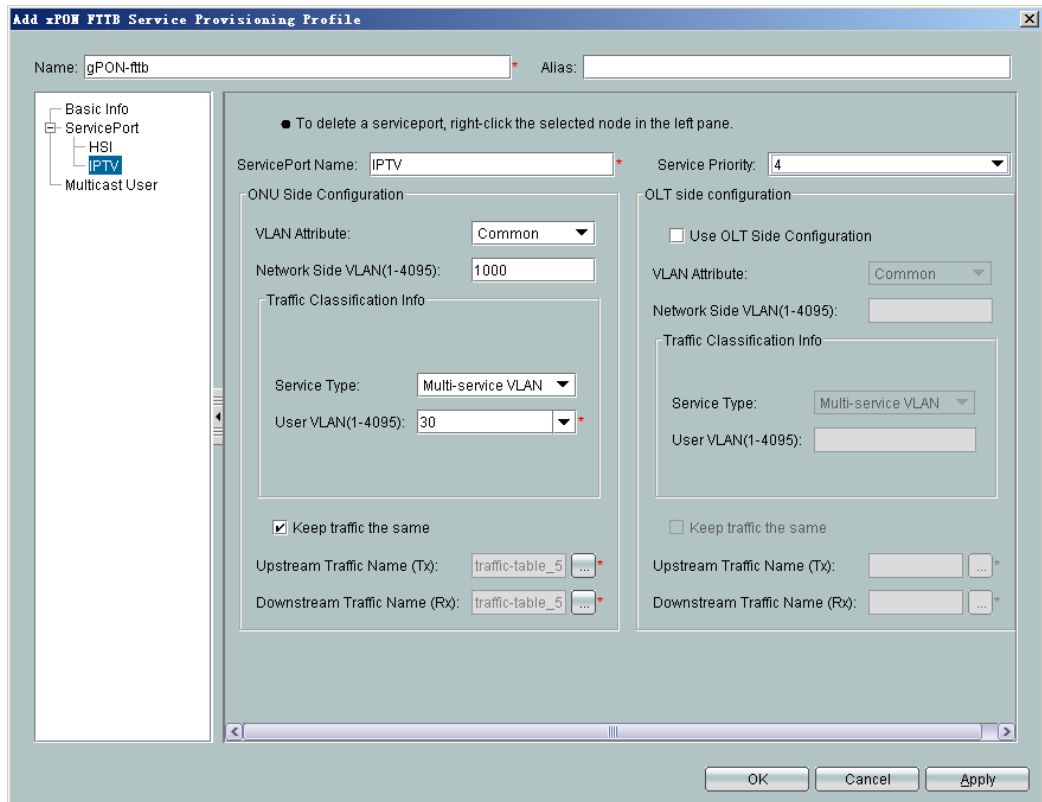
- If the ports on an ONU are ADSL ports, perform the operations in [19.3.4 Configuring an ADSL Line Profile](#) and [19.3.5 Configuring an ADSL Alarm Profile](#) before configuring the **Basic Info** branch.
- Perform the operations in [19.2.1 Configuring a VLAN](#) and [19.2.2 Configuring an MEF IP Traffic Profile](#) before configuring the **Service Port** branch.
- Perform the operations in [19.2.7 Configuring the Multicast VLAN](#) before configuring the **Multicast User** branch.

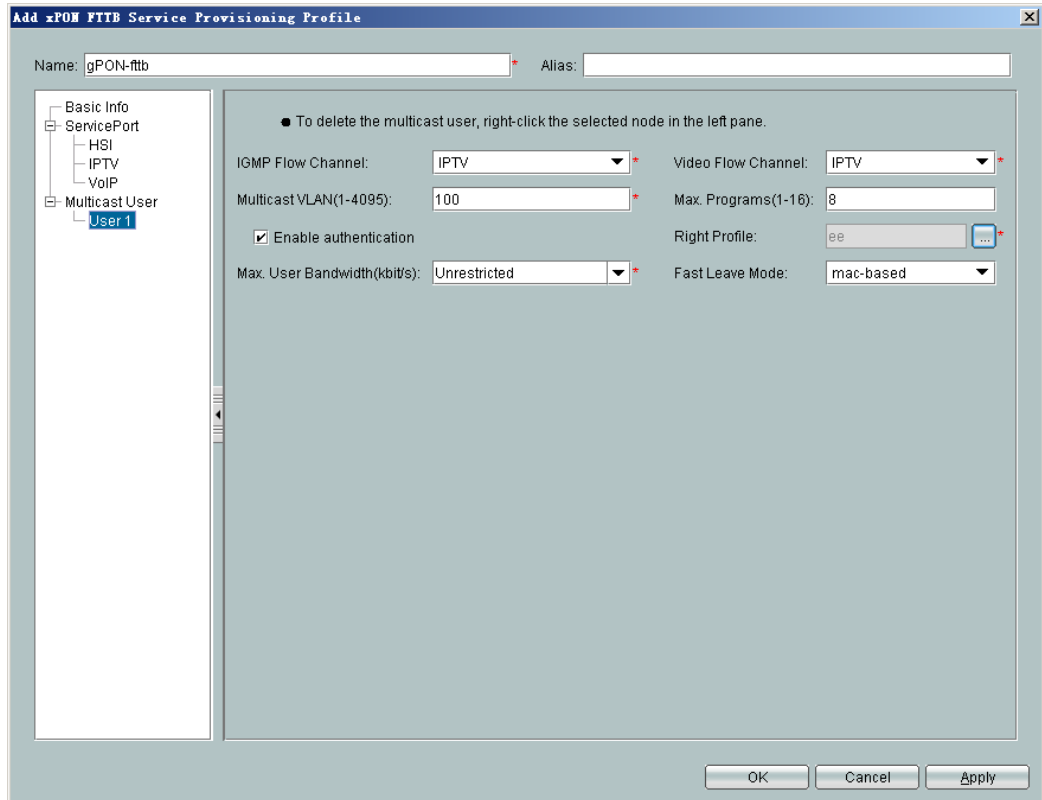
#### Procedure

- 1 Choose **Configuration > Access Profile Management > Service Provisioning Profile** from the main menu.
- 2 Click the **xPON FTTB Service Provisioning Profile** tab.
- 3 In the dialog box that is displayed, set the parameters.









| Key Parameter          | Description                                                                                                                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Info             |                                                                                                                                                                                                                                              |
| Name                   | Indicates the name of the xPON FTTB service provisioning profile.                                                                                                                                                                            |
| ONU Port Information   |                                                                                                                                                                                                                                              |
| Port Type              | Indicates the type of an ONU port.<br><b>NOTE</b><br>You can set the port type according to different ONUs.                                                                                                                                  |
| Port Mode              | Indicates the mode of ONU port.<br>Enumerated type. The options are <b>ATM</b> and <b>PTM</b> .<br>This parameter is available when <b>Port Type</b> is set to <b>VDSL2</b> or <b>G.SHDSL</b> .                                              |
| ServicePort            |                                                                                                                                                                                                                                              |
| Service Priority       | <b>Definition:</b><br>Specifies the service priorities for different services.<br><b>NOTE</b><br>The voice service has the highest priority, the multicast server has the medium priority, and the Internet service has the lowest priority. |
| ONU Side Configuration |                                                                                                                                                                                                                                              |

| Key Parameter          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Service Type           | <p>Indicates the type of services carried on the service virtual port.</p> <p>The port can work in the following modes:</p> <ul style="list-style-type: none"> <li>● <b>Single:</b> Each service virtual port maps a service stream. Different service streams can be distinguished by different service virtual ports.</li> <li>● <b>Multi-Service VLAN:</b> Each service virtual port carries multiple service streams. You need to set <b>User-Side VLAN</b> to distinguish the service streams. The services are distinguished based on the VLAN ID contained in the packets from the service virtual ports. You can label the packets with different upstream VLAN IDs.</li> <li>● <b>Multi-Service Encapsulation:</b> Each service port carries multiple service streams. You need to set <b>User-Side Encapsulation</b> to distinguish the service streams. The services are distinguished based on the encapsulation types (IPoE/PPPoE) of the packets from the subscriber ports. You can label the packets with different upstream VLAN IDs.</li> <li>● <b>Multi-Service VLAN+802.1p:</b> Each service virtual port carries multiple service streams. You need to set <b>User-Side VLAN</b> and <b>802.1p Priority</b> to distinguish the service streams. The services are distinguished according to the VLAN IDs and the 802.1p priorities of the packets from the subscriber ports.</li> </ul> <p><b>NOTE</b><br/>           This parameter is available only when the <b>Service Priority</b> is set.</p> <ul style="list-style-type: none"> <li>● <b>Multi-Service VLAN+Encapsulation:</b> Each service virtual port carries multiple service streams. You need to set <b>User-Side VLAN</b> and <b>User-Side Encapsulation</b> to distinguish the service stream.</li> </ul> |
| OLT Side Configuration |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| Key Parameter     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VLAN Switch Mode  | <p>Specifies the mode of switching the VLAN tag of the packets of the service virtual port.</p> <p>Enumerated type. The options are as follows:</p> <ul style="list-style-type: none"> <li>● <b>Default</b>: Indicates that a VLAN tag is added to the upstream packet of the service virtual port and the VLAN tag is deleted from the downstream packets of the service virtual port.</li> <li>● <b>Transparent</b>: Indicates that the upstream packet of the service virtual port is transmitted transparently and the VLAN tag is not switched.</li> <li>● <b>Translate</b>: Indicates that the VLAN tag in the upstream packet is transmitted upstream after being switched to the specified VLAN tag. The VLAN tag is then switched back to the original VLAN tag in the downstream direction.</li> <li>● <b>Translate_And_Add</b>: Indicates that the VLAN tag of the upstream packet of the service virtual port is switched and another VLAN tag is added to the packet. In the downstream direction, the added VLAN tag is deleted from the downstream packets and switched back to the original VLAN tag.</li> <li>● <b>Add_Double</b>: Indicates that two VLAN tags are added to the upstream packets of the service virtual port and then the VLAN tags are deleted from the downstream packets of the service virtual port.</li> </ul> <p><b>NOTE</b><br/>This parameter is available when <b>VLAN Attribute</b> is set to <b>QinQ</b>.</p> |
| Multicast User    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| IGMP Flow Channel | <p>Specifies the protocol traffic channel of the multicast service.</p> <p>Enumerated type. Select a protocol traffic channel by setting the <b>Service Port</b> parameter.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Multicast VLAN    | Specifies the multicast VLAN ID.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

4 Click **OK**.

----End

### 19.3.17 Configuring an xPON FTTB Service

You can directly configure and provision an xPON FTTB service by binding the configured xPON FTTB service provision profile with a certain physical port on the ONU.


#### Prerequisite

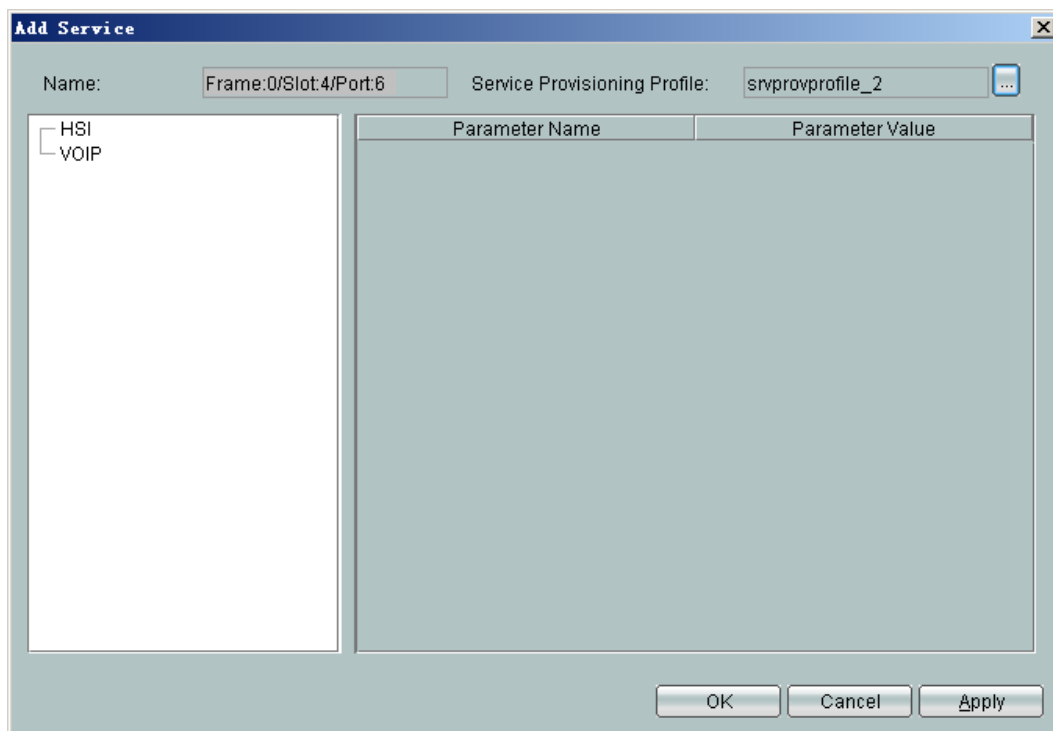
- The OLT that the ONU is connected to must be in the profile mode.
- The configured xPON FTTB service profile must be applied to the ONU. For details, see [19.3.16 Adding an xPON FTTB Service Provisioning Profile](#).

## Context

The physical ports that can be configured on the ONU include the Ethernet port, ADSL port, and VDSL2 port. This section considers the Ethernet port as an example.


## Procedure

- 1 In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.
- 2 Choose **ETH** from the navigation tree.
- 3 Click the **Ethernet Port** tab, and set the filter criteria or click  to display the Ethernet ports.
- 4 Select a record from the Ethernet port list, right-click, and then choose **Add Service** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.



### NOTE

You can modify the parameters in the selected service provisioning profile.

In the **Add Service** dialog box that is displayed, click  next to **Service Provisioning Profile**. In the **Add Service** dialog box that is displayed, click **Find** to display the required service provisioning profiles that meet the filtering criteria. Select a record from the profile list, and click **OK**.

- 6 Click **OK**.

----End

## 19.4 Configuration Examples of the GPON FTTB Services

This topic provides examples to describe how to configure the Internet, voice, and multicast services in a GPON FTTB network.

### 19.4.1 Data Plan for the GPON FTTB Services

This topic provides the data plan for the configuration examples of the GPON FTTB services. You can configure the services according to the data plan.

### 19.4.2 Configuring the GPON FTTB Internet Service (LAN Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in LAN access mode and the MDU is connected to an OLT through a GPON port.

### 19.4.3 Configuring the GPON FTTB Internet Service (ADSL2+ Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in ADSL2+ access mode and the MDU is connected to an OLT through a GPON port.

### 19.4.4 Configuring the GPON FTTB Internet Service (VDSL2 Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in VDSL2 access mode and the MDU is connected to an OLT through a GPON port.

### 19.4.5 Configuring the GPON FTTB Multicast Service

This topic describes how to configure the multicast service when an MDU is connected to an OLT through a GPON port.

### 19.4.6 Configuring the GPON FTTB Voice Service (H.248 Protocol)

This topic describes how to configure the voice service when an MDU is connected to an OLT through a GPON port.

### 19.4.7 Configuring the GPON FTTB Voice Service (SIP Protocol)

This topic describes how to configure the voice service when an MDU is connected to an OLT through a GPON port.

### 19.4.8 Configuring the GPON FTTB Service by Using a Service Provisioning Profile

This topic describes how to configure various services when a user is connected to an MDU in LAN access mode and the MDU is connected to an OLT through a GPON port.

## 19.4.1 Data Plan for the GPON FTTB Services

This topic provides the data plan for the configuration examples of the GPON FTTB services. You can configure the services according to the data plan.

## Data Plan

**Table 19-1** Data plan for the GPON FTTB services

| Service Type      | Item                      | Settings                                                                                   | Remarks                                                                                                                                         |
|-------------------|---------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Device management | Management VLAN of an OLT | <ul style="list-style-type: none"> <li>● VLAN ID: 8</li> <li>● Type: Smart VLAN</li> </ul> | The management VLAN of an OLT is the management VLAN between the OLT and an MDU.                                                                |
|                   | Upstream port of the OLT  | 0/19/0                                                                                     | -                                                                                                                                               |
|                   | Layer 3 interface         | IP Address: 192.168.50.4                                                                   | The IP address of the Layer 3 interface of the management VLAN of the OLT functions as the IP address of the OLT for inband network management. |
|                   | GPON port of the OLT      | 0/2/1                                                                                      | -                                                                                                                                               |
|                   | Upstream port of the MDU  | 0/0/1                                                                                      | -                                                                                                                                               |
|                   | Service port of the MDU   | 0/1/1                                                                                      | -                                                                                                                                               |

| Service Type | Item                                                | Settings                                                                                                                                                                                                                                                                                | Remarks                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | MDU                                                 | <ul style="list-style-type: none"> <li>● Name: MDU</li> <li>● ONU ID: 0</li> <li>● ONU Type: MDU</li> <li>● Authentication Mode: SN</li> <li>● SN: 485754438E1CDE42</li> <li>● Manager VLAN: 8</li> <li>● IP Address: 192.168.50.2</li> <li>● IP Address Mask: 255.255.255.0</li> </ul> | <p>To configure the MDU on the OLT in Telnet mode, ensure that the management VLANs of the OLT and the MDU are the same and the management IP addresses of the OLT and the MDU are in the same network segment.</p> <p>When the MDU is connected to the OLT through a GPON port, the MDU uses the SNMP protocol as the network management protocol and does not require service profiles.</p> |
|              | MDU SNMP profile                                    | <ul style="list-style-type: none"> <li>● Name: snmpprofile</li> <li>● SNMP Version: v1</li> <li>● Read Name: public</li> <li>● Write Name: private</li> <li>● Trap Host IP: 192.168.50.3</li> <li>● Trap UDP Port: 162</li> <li>● SNMP Security Name: public</li> </ul>                 | -                                                                                                                                                                                                                                                                                                                                                                                             |
|              | Service virtual port (based on the management VLAN) | <ul style="list-style-type: none"> <li>● VLAN ID: 8</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 8</li> <li>● Upstream Traffic Name: FTTx</li> </ul>                                                                     | After the MDU is added to the U2000 successfully, a control channel has been established but no data channel is established. In this case, you need to create a service virtual port on the OLT to help the OLT manage the MDU.                                                                                                                                                               |



| Service Type     | Item                   | Settings                                                                                                                                                                                                                                        | Remarks                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | MEF IP traffic profile | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● CIR: 20480</li> <li>● Outer Priority: 1</li> </ul>                                                                                                                               | The MEF IP traffic profile is used on the OLT or MDU to control upstream and downstream traffic.                                                                                                                                                                                                                                                                                                               |
|                  | DBA profile            | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● T-CONT type: Maximum Bandwidth</li> <li>● Maximum Bandwidth: 32768</li> </ul>                                                                                                    | -                                                                                                                                                                                                                                                                                                                                                                                                              |
|                  | Line profile           | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Mapping Mode:VLAN</li> <li>● Qos Mode:Priority Queue</li> <li>● T-CONT Index: 1</li> <li>● DBA Profile: FTTx</li> <li>● GEM Port Index: 1</li> <li>● Priority Queue:1</li> </ul> | Different services have different GEM port IDs, and the GEM port IDs map VLAN IDs.                                                                                                                                                                                                                                                                                                                             |
| Internet service | VLAN                   | <ul style="list-style-type: none"> <li>● VLAN ID: 1001</li> <li>● Type: Smart VLAN</li> <li>● Attribute: QinQ</li> </ul>                                                                                                                        | <ul style="list-style-type: none"> <li>● In the case of the Internet service, users are identified by QinQ VLANs. A CVLAN is allocated to each user on the MDU and an SVLAN is allocated to each slot, port, or OLT according to networking scenarios.</li> <li>● Plan VLANs for the MDUs that are connected to the same OLT in a centralized manner and ensure that each VLAN is unique to an MDU.</li> </ul> |

| Service Type | Item                                 | Settings                                                                                                                                                                                                                                                                                                                | Remarks |
|--------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | Service virtual port on the OLT side | <ul style="list-style-type: none"> <li>● Name: HSI</li> <li>● VLAN ID: 1001</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 1001</li> <li>● Upstream Traffic Name: ip-traffic-table_6</li> </ul>                                                            | -       |
|              | Service virtual port on the MDU side | <ul style="list-style-type: none"> <li>● Name: HSI</li> <li>● Vlan ID: 1001</li> <li>● Interface Selection: 0/1/1</li> <li>● User VLAN: untagged</li> <li>● Upstream Traffic Name: FTTx</li> </ul>                                                                                                                      | -       |
| IPTV service | VLAN                                 | <ul style="list-style-type: none"> <li>● VLAN ID: 1000, 3000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                     | -       |
|              | Service virtual port on the OLT side | <ul style="list-style-type: none"> <li>● Name: IGMP</li> <li>● Vlan ID: 1000</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 1000</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -       |
|              | Multicast VLAN on the OLT side       | <ul style="list-style-type: none"> <li>● IGMP Version: IGMP V3</li> <li>● Work Mode: igmp_proxy</li> <li>● VLAN ID: 1000</li> </ul>                                                                                                                                                                                     | -       |
|              | Program profile                      | <ul style="list-style-type: none"> <li>● Name: program1</li> <li>● Start IP Address: 224.0.1.1</li> <li>● End IP Address: 224.0.1.1</li> <li>● Source IP Address: 10.10.10.20</li> <li>● Preview Profile: 0 (the default value)</li> </ul>                                                                              | -       |

| Service Type | Item                                 | Settings                                                                                                                                                                                                                                                                                                                | Remarks |
|--------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | Multicast user                       | <ul style="list-style-type: none"> <li>● Alias: IGMPUserA</li> <li>● Unlimited Band Width: selected</li> <li>● Select Service Port: service virtual port named <b>IGMP</b></li> </ul>                                                                                                                                   | -       |
|              | Multicast VLAN on the MDU side       | <ul style="list-style-type: none"> <li>● IGMP Version: IGMP V3</li> <li>● Work Mode: igmp_snooping</li> <li>● VLAN ID: 1000</li> </ul>                                                                                                                                                                                  | -       |
|              | Service virtual port on the MDU side | <ul style="list-style-type: none"> <li>● Name: IGMP</li> <li>● Vlan ID: 1000</li> <li>● Interface Selection: 0/1/1</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: untagged</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -       |
| VoIP service | VLAN                                 | <ul style="list-style-type: none"> <li>● VLAN ID: 2000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                           | -       |
|              | Service virtual port on the OLT side | <ul style="list-style-type: none"> <li>● Name: VOIP</li> <li>● Vlan ID: 2000</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 2000</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -       |

| Service Type | Item                                                                                                                                                                                                                                                                                                            | Settings                                                                                                                                                                    | Remarks                                                                                                                                           |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Signaling IP address<br>Media IP address                                                                                                                                                                                                                                                                        | 17.10.10.10                                                                                                                                                                 | The H.248 and SIP protocols support separation of media and signaling streams. The media and signaling IP addresses can be the same or different. |
|              | Gateway                                                                                                                                                                                                                                                                                                         | 17.10.10.1                                                                                                                                                                  | -                                                                                                                                                 |
|              | Parameters of the MG interface (H.248 protocol)<br><b>NOTE</b><br>The parameters of the MG interface must be the same as the parameters on the media gateway controller (MGC). There are many negotiation parameters in the H.248 protocol. This table provides the mandatory parameters in the H.248 protocol. | <ul style="list-style-type: none"> <li>● MG ID: 0</li> <li>● Name: mg1</li> <li>● Signaling Port No.:2944</li> <li>● Transmission Mode: UDP</li> </ul>                      | The ID of the MG interface used for the VoIP service determines the virtual access gateway (VAG) that a service user is assigned to.              |
|              | MGC profile                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>● Name: mgcprofile1</li> <li>● Protocol Type: H.248</li> <li>● IP Address 1: 200.200.200.200</li> <li>● Port Number: 2944</li> </ul> | -                                                                                                                                                 |

| Service Type | Item                                                                                                                                                                                                                                                                                                       | Settings                                                                                                                                                                                                                                                                                                                             | Remarks                                                                                                      |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|              | Parameters of the SIP interface (SIP protocol)<br><b>NOTE</b><br>The parameters of the SIP interface must be the same as the parameters on the IP multimedia subsystem (IMS). There are many negotiation parameters in the SIP protocol. This table provides the mandatory parameters in the SIP protocol. | <ul style="list-style-type: none"> <li>● MG ID: 0</li> <li>● Name: mg1</li> <li>● Signaling IP Address: 17.10.10.10</li> <li>● Signaling Port No.: 5060</li> <li>● Media IP Address 1: 17.10.10.10</li> <li>● Transmission Mode: UDP</li> <li>● MG Domain Name: huawei.com</li> <li>● Active NMS UAS Profile: uasprofile1</li> </ul> | The ID of the SIP interface used for the VoIP service determines the VAG that a service user is assigned to. |
|              | UAS profile                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>● Name: uasprofile1</li> <li>● Address Mode: Fix mode</li> <li>● IP Address 1: 200.200.200.200</li> <li>● Proxy Port: 5060</li> </ul>                                                                                                                                                         | -                                                                                                            |
|              | PSTN user                                                                                                                                                                                                                                                                                                  | Phone 1-Phone 2:<br>83110000-83110001                                                                                                                                                                                                                                                                                                | -                                                                                                            |

## 19.4.2 Configuring the GPON FTTB Internet Service (LAN Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in LAN access mode and the MDU is connected to an OLT through a GPON port.

### Prerequisite

The OLT must be added to the U2000.

### Context

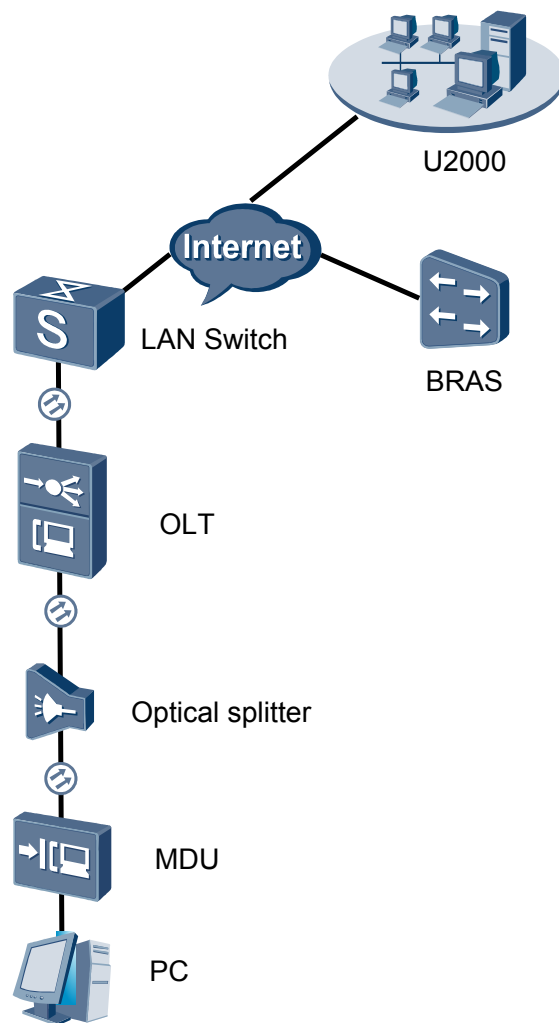
For details of the data plan, see [19.4.1 Data Plan for the GPON FTTB Services](#).

### Example Network

MA5620, MA5626, MA5610, and MA5612 support LAN access. The configuration procedure in this topic is applicable to the MA5620 V800R308, MA5626 V800R308, MA5612 V800R308, and MA5610 V800R308.

- The PC that gains access to the network by means of PPPoE dialup is connected to an FE port on the MDU and the MDU is connected to the OLT and then to the upper layer network through a GPON port. In this case, the high-speed Internet service is available for the PC.
- The high-speed Internet service is identified by two VLANs that are accurately bound. A user VLAN is allocated to each user on the MDU and a service VLAN is allocated to each slot on the OLT.
- The following two profiles are used for the high-speed Internet service:
  - DBA profile in which **T-CONT type** is set to **Assured Bandwidth/Maximum Bandwidth** and **Maximum Bandwidth** is set to **32768Kbit/s**
  - MEF IP traffic profile in which **CIR** is set to **20480Kbit/s**

**Figure 19-1** Configuring the GPON FTTB Internet service (LAN access)

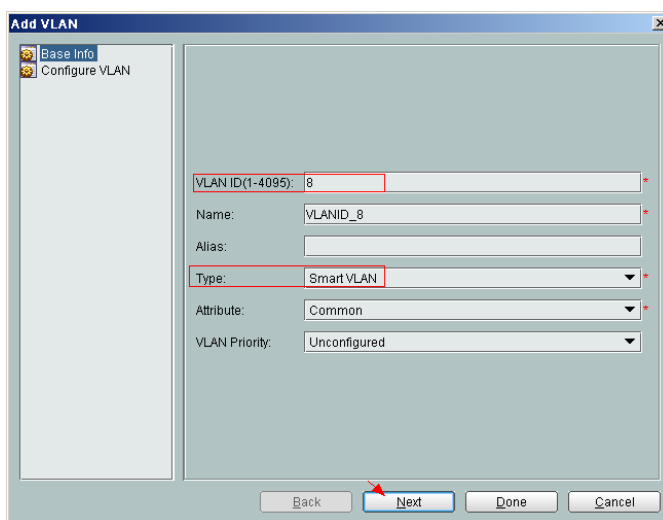


## Procedure

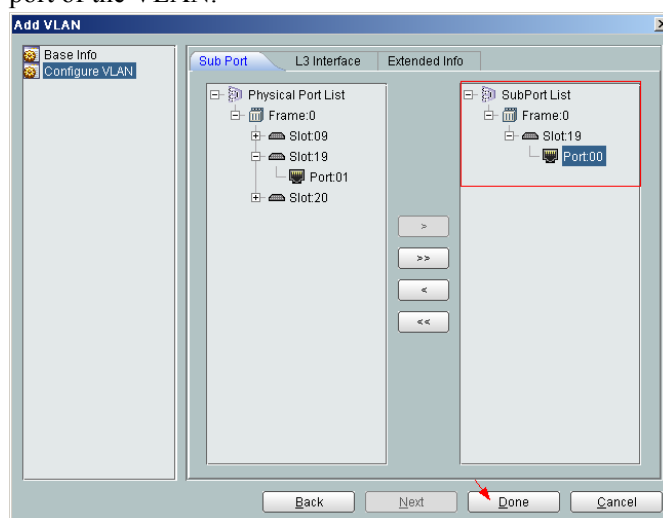
- **Add the MDU to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8
  - Type: Smart VLAN

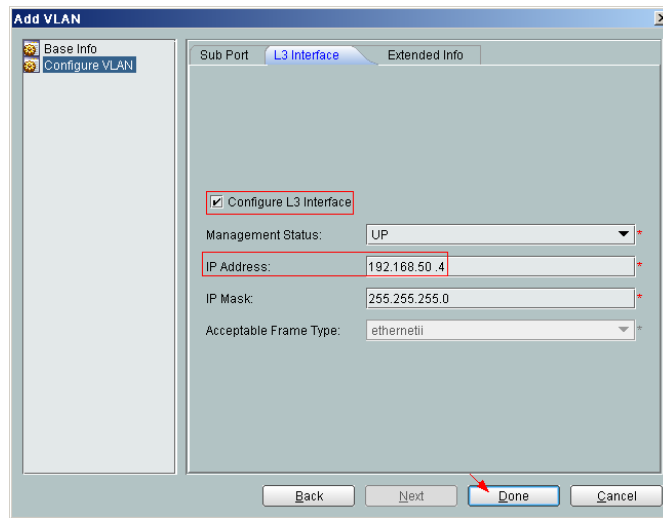


- (5) Click **Next**.
  - Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected

- IP Address: 192.168.50.4



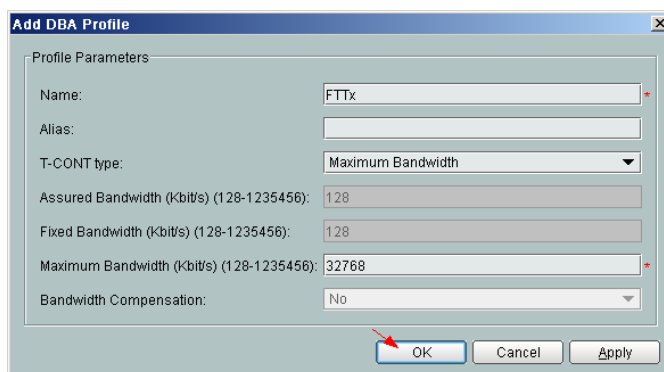
- (6) Click **Done**.
2. **Configure an MDU SNMP profile. For details, see [19.1.1 Configuring an MDU SNMP Profile](#).**
    - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
    - (2) Click the **MDU SNMP Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: snmpprofile
      - SNMP Version: v1
      - Read Name: public
      - Write Name: private
      - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
      - Trap UDP Port: 162
      - SNMP Security Name: public



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a DBA profile. For details, see [19.1.2 Configuring a DBA Profile](#).**



- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **DBA Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Name: FTTx
  - T-CONT type: Maximum Bandwidth
  - Maximum Bandwidth: 32768

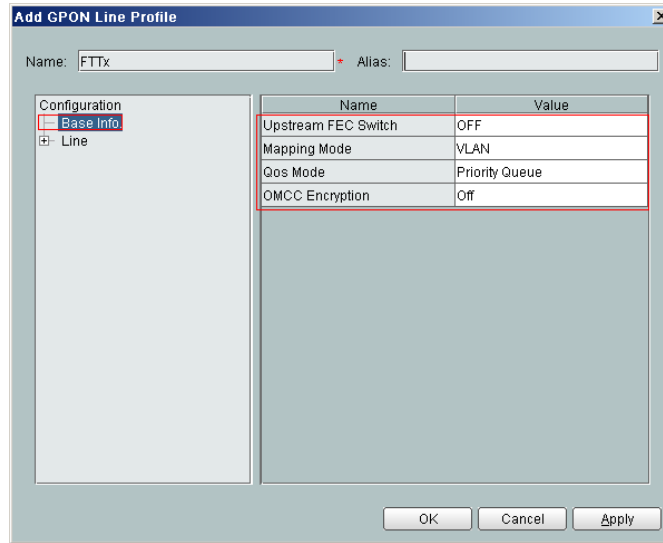


- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a line profile. For details, see [19.1.3 Configuring a GPON Line Profile](#).**

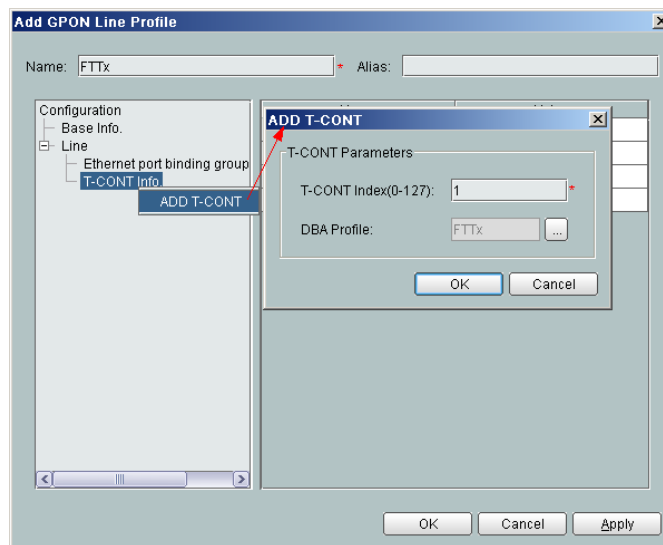
In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

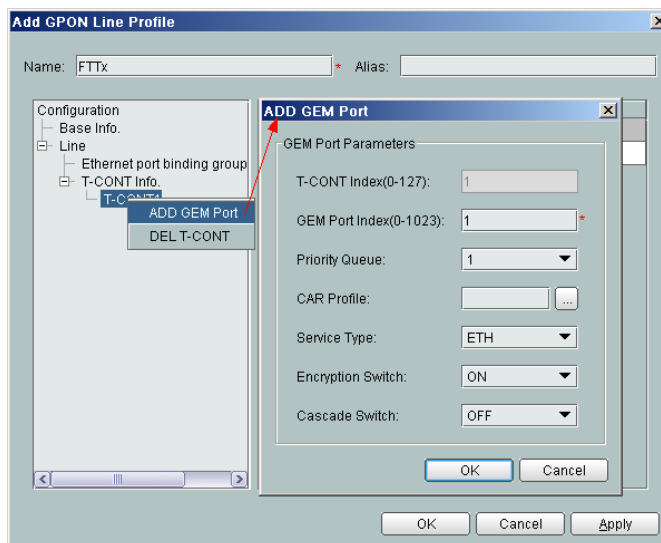
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue



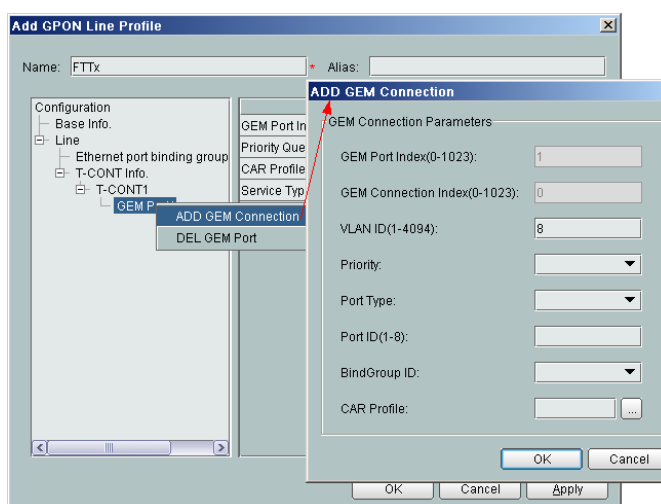
- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx



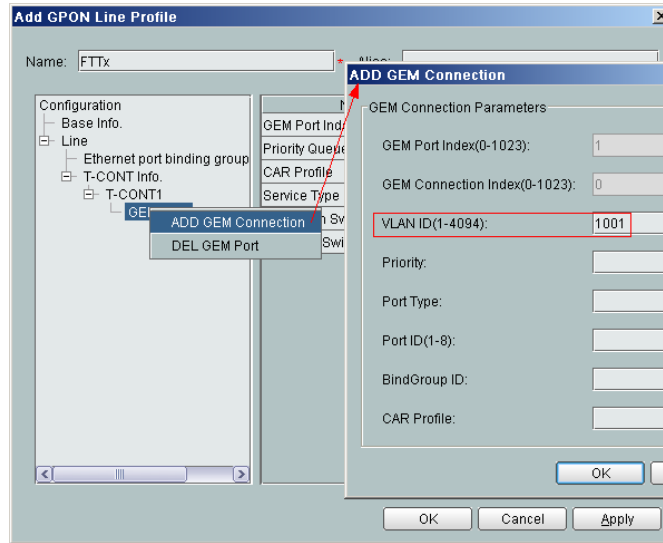
- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1



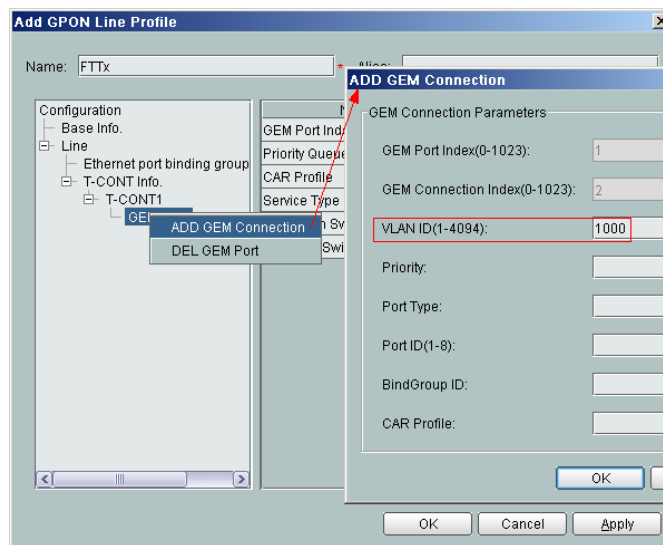
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **0** automatically)
  - VLAN ID: 8



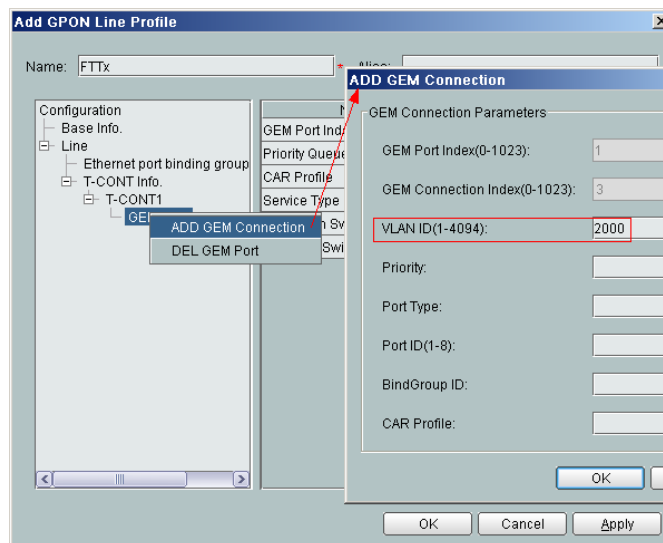
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **1** automatically)
  - VLAN ID: 1001





- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **2** automatically)
  - VLAN ID: 1000



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 3 (this parameter is set to **3** automatically)
  - VLAN ID: 2000



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - SN: 485754438E1CDE42
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected

- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

Basic Parameters Network Management Channel Parameters

Line Profile: FTTx Service Profile:

Alarm Profile: ONU VAS Profile:

Authentication Info

Authentication Mode: SN Timeout Duration (h)(1-168):  No Limit

SN: 485754438E1CDE42 Password: shenzhen

ONU Type

Vendor ID: HWTC(2011) Terminal Type: MDU

Software Version:

Locate to ONU list after operation succeeds

OK Cancel Apply

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

Basic Parameters Network Management Channel Parameters

OLT sets network management channel parameters SNMP Profile Name: snmpprofile

SNMP Params Info

Manager VLAN(1-4095): 8 Priority(0-7):

IP Address: 192.168.50.2 IP Address Mask: 255.255.255.0

Gateway IP Address:

Static Route Parameters

IP Address: IP Address Mask:

Next Hop IP Address:

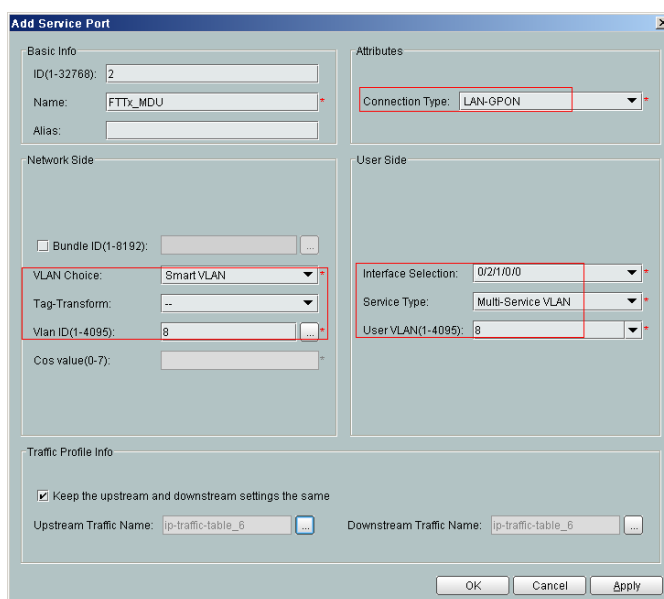
Locate to ONU list after operation succeeds

OK Cancel Apply

(6) Click **OK**.

6. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

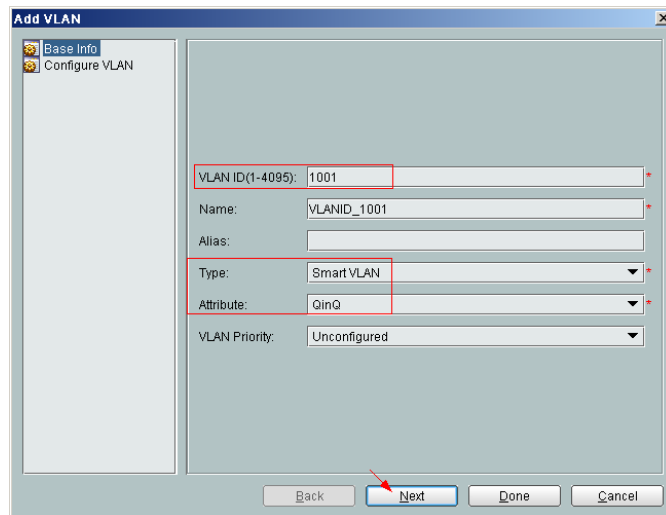
- **Configure the Internet service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

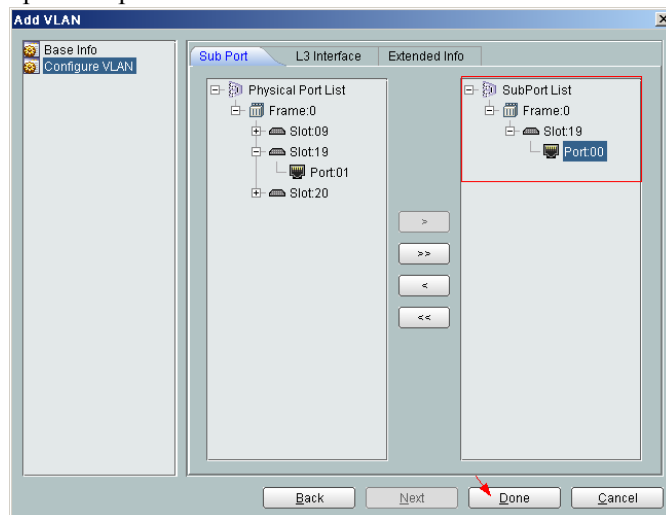
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN
  - Attribute: QinQ



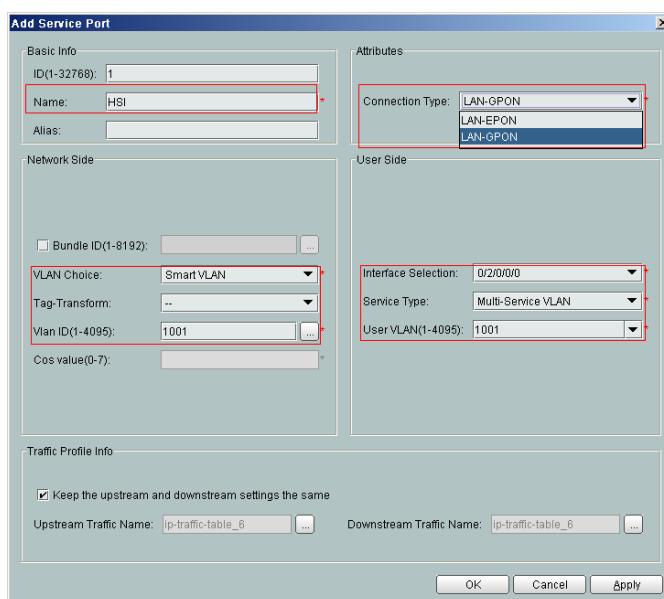
- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: HSI



- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- VLAN ID: 1001
- Service Type: Multi-Service VLAN
- User VLAN: 1001
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



(4) Click **OK**.

- **Configure the Internet service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

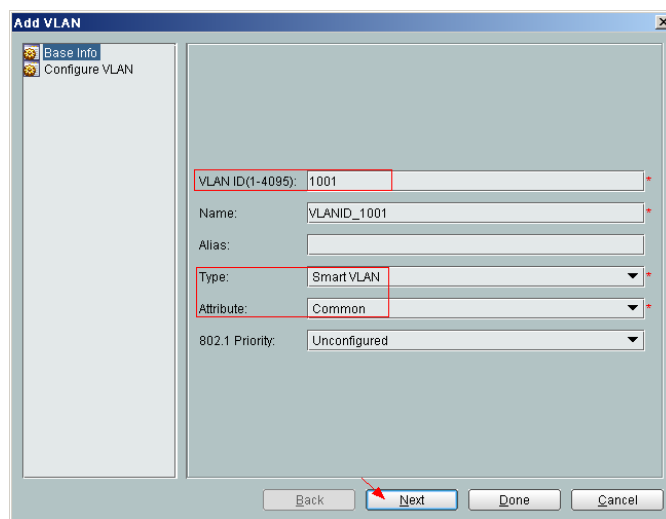
1. **Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).**

- (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
- (2) Click the **MEF IP Traffic Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Name: FTTx
  - CIR: 20480
  - Outer Priority: 1
- (5) Click **OK**.

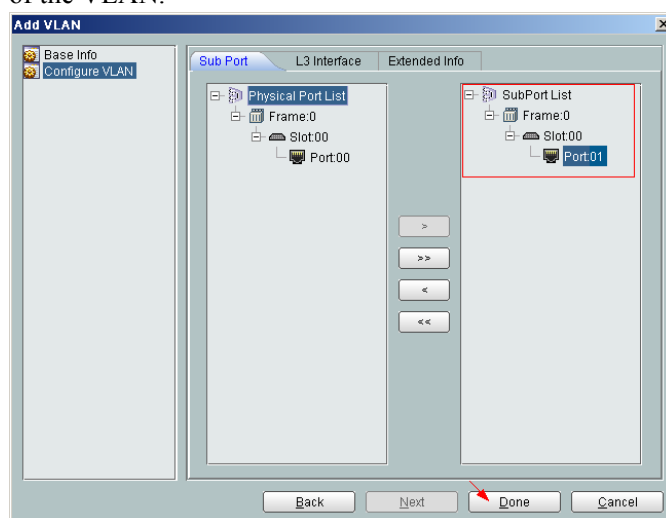
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



- (6) Click **Done**.
3. **Add a service virtual port on the MDU side. For details, see [19.3.3 Adding a Service Port](#).**

- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Name: HSI
  - Connection Type: LAN-ADSL (when the physical port is an ADSL port) or LAN-VDSL2 (when the physical port is a VDSL2 port) or LAN-ETHER (when the physical port is an Ethernet port)
  - Vlan ID: 1001
  - Interface Selection: 0/1/1
  - VPI: 0 (when the physical port is an ADSL or VDSL2 port)
  - VCI: 0 (when the physical port is an ADSL or VDSL2 port)
  - User VLAN: untagged
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: FTTx

The screenshot shows the 'Add Service Port' dialog box with the following configuration:

- Basic Info:** Name: HSI
- Network Side:** VLAN Choice: Smart VLAN, Vlan ID(1-4095): 1001
- Attributes:** Connection Type: LAN-VDSL2, User Side: LAN-VDSL2, Interface Selection: 0/1/1, Channel Mode: ATM, Auto-sensing: unchecked, VPI(0-255): 0, VCI(32-255): 35, Service Type: Multi-Service VLAN, User VLAN(1-4095): untagged
- Traffic Profile Info:** Keep the upstream and downstream settings the same: checked, Upstream Traffic Name: FTTx, Downstream Traffic Name: FTTx

- (4) Click **OK**.

----End

## Result

The user gains access to the Internet after the dialup is performed successfully by the PPPoE dialup software on the PC.

### 19.4.3 Configuring the GPON FTTB Internet Service (ADSL2+ Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in ADSL2+ access mode and the MDU is connected to an OLT through a GPON port.

## Prerequisite

The OLT must be added to the U2000.

## Context

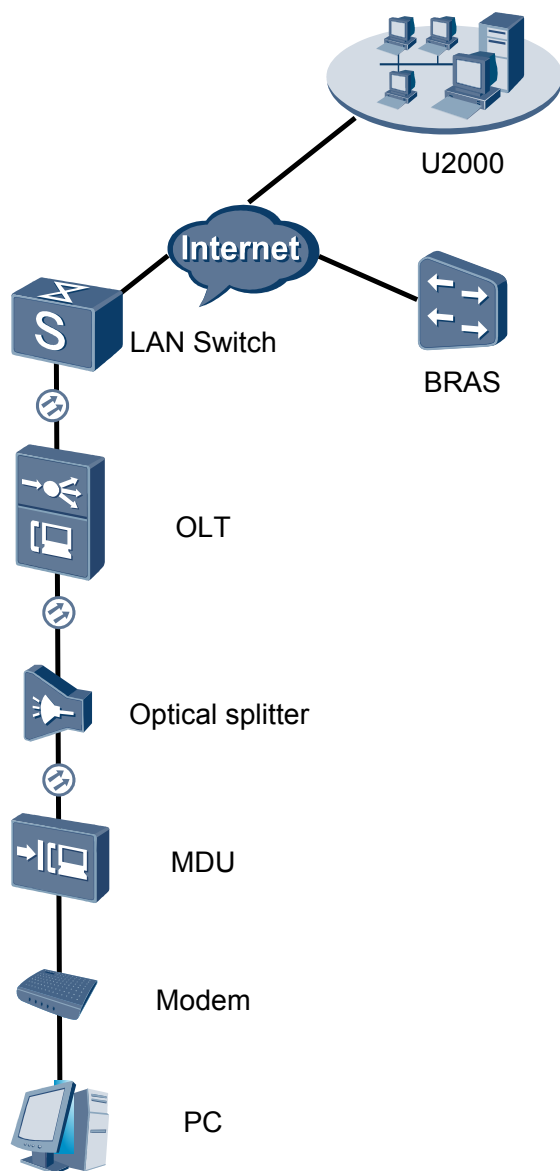
For details of the data plan, see [19.4.1 Data Plan for the GPON FTTB Services](#).

## Example Network

The MA5616 supports ADSL2+ access. The configuration procedure in this topic is applicable to the MA5616 V800R308.

- The PC is connected to an ADSL2+ port on the MDU. The data frames from the PC are transmitted to separate service channels according to user-side VLANs. Then, the OLT switches VLAN tags (that is, switches user-side VLANs to upstream VLANs) and transmits the data frames through an upstream port.
- The PC gains access to the Internet in PPPoE access mode. If the access mode is set to IPoA or PPPoA, you need to configure protocol conversion and encapsulation modes.

Figure 19-2 Configuring the GPON FTTB Internet service (ADSL2+ access)



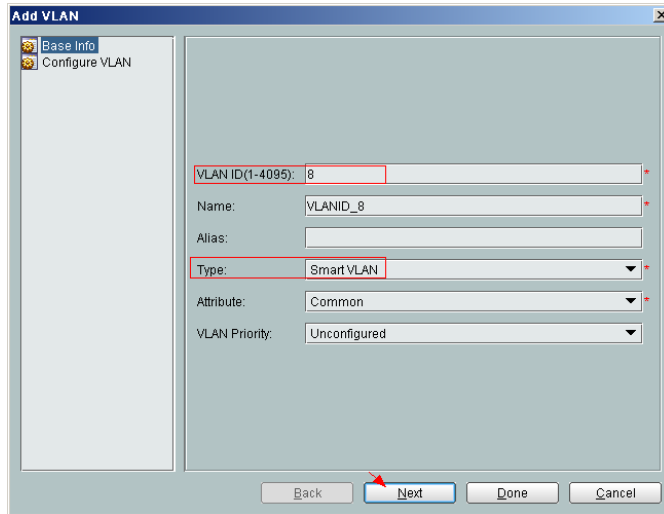
## Procedure

- Add the MDU to the U2000 in profile mode.
  1. Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).

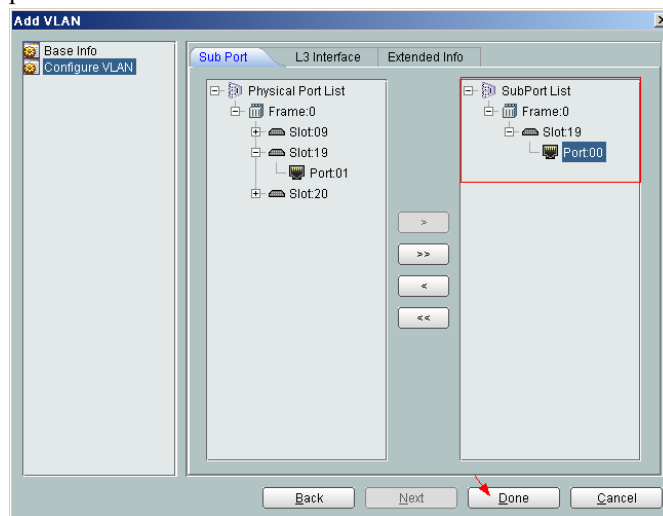
A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

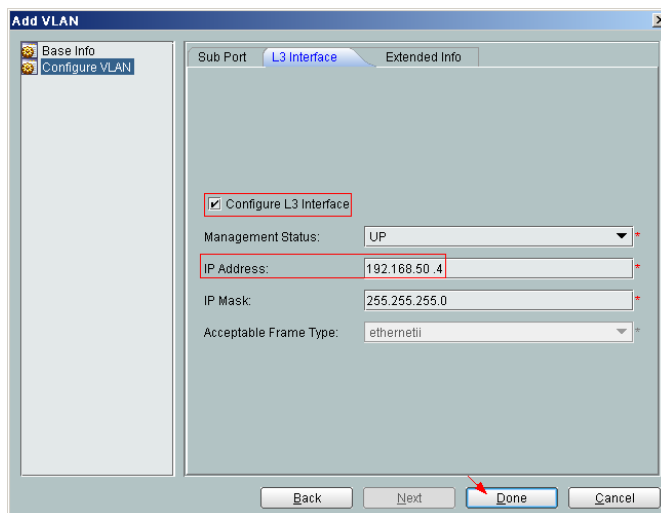
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8
  - Type: Smart VLAN



- (5) Click **Next**.
  - Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4

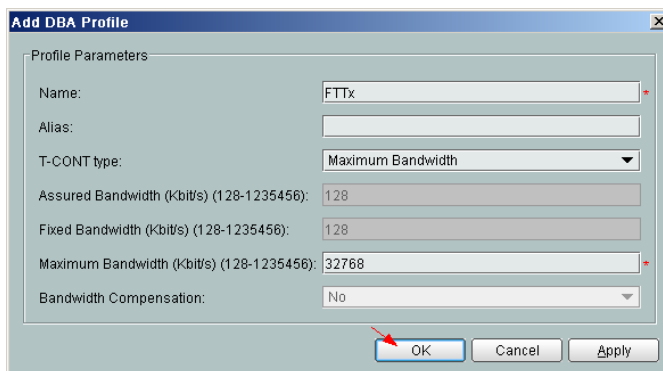


- (6) Click **Done**.
2. **Configure an MDU SNMP profile. For details, see 19.1.1 Configuring an MDU SNMP Profile.**
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
    - Trap UDP Port: 162
    - SNMP Security Name: public



- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a DBA profile. For details, see 19.1.2 Configuring a DBA Profile.**
  - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.

- (2) Click the **DBA Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Name: FTTx
  - T-CONT type: Maximum Bandwidth
  - Maximum Bandwidth: 32768



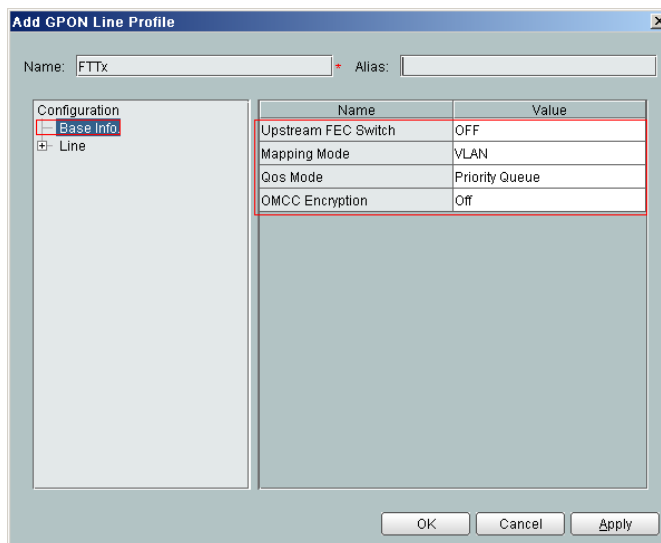
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a line profile. For details, see [19.1.3 Configuring a GPON Line Profile](#).**

In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

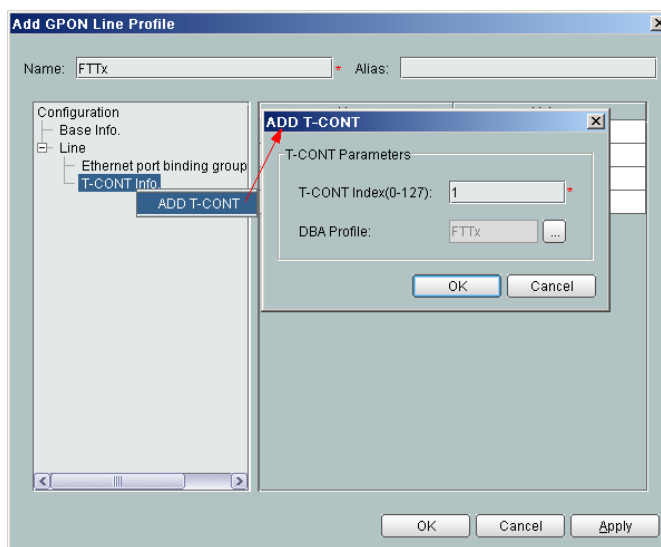
In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue

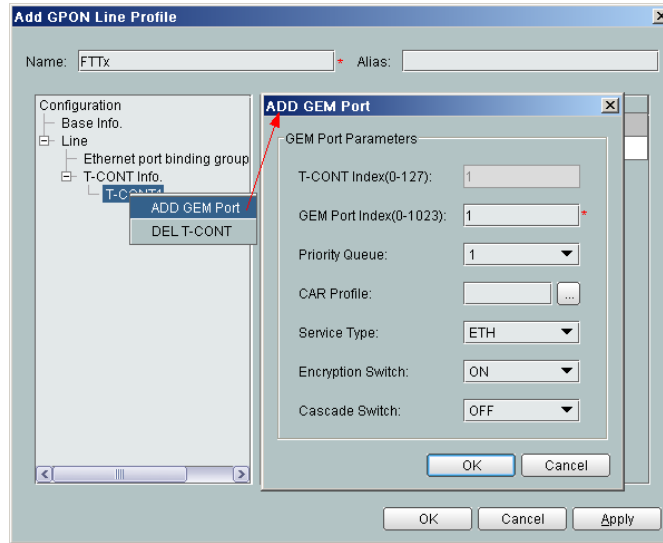




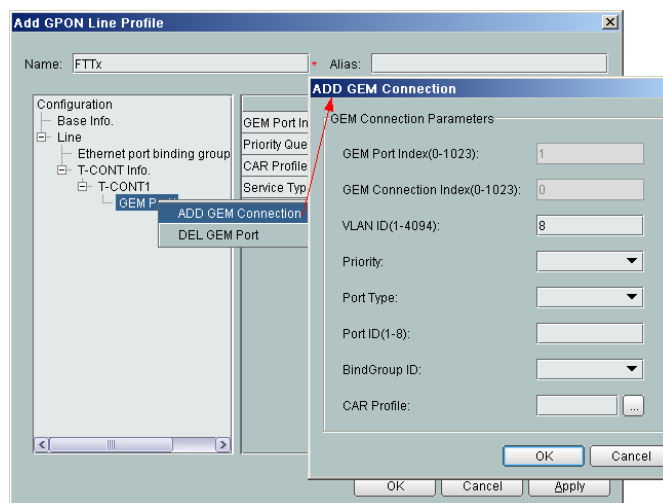
- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx



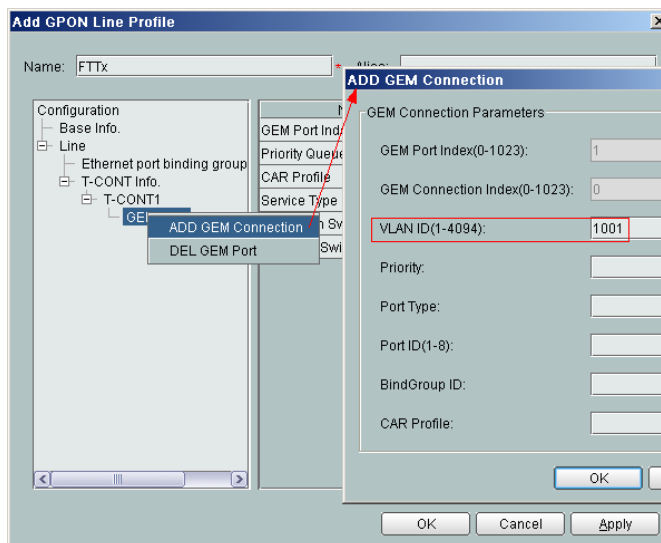
- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1



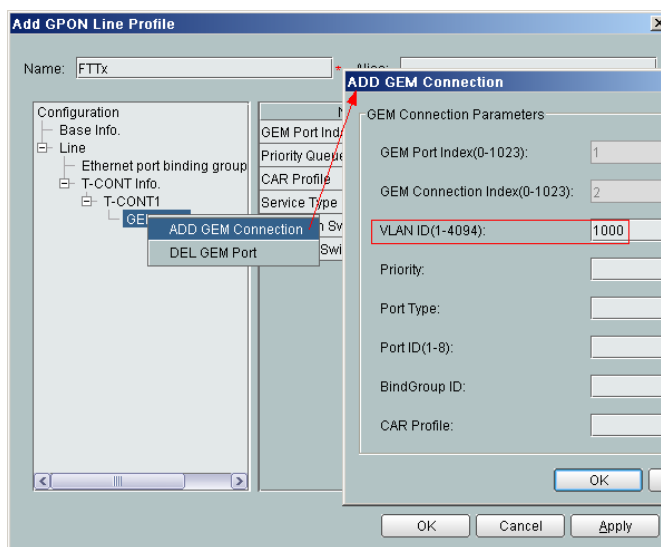
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **0** automatically)
  - VLAN ID: 8



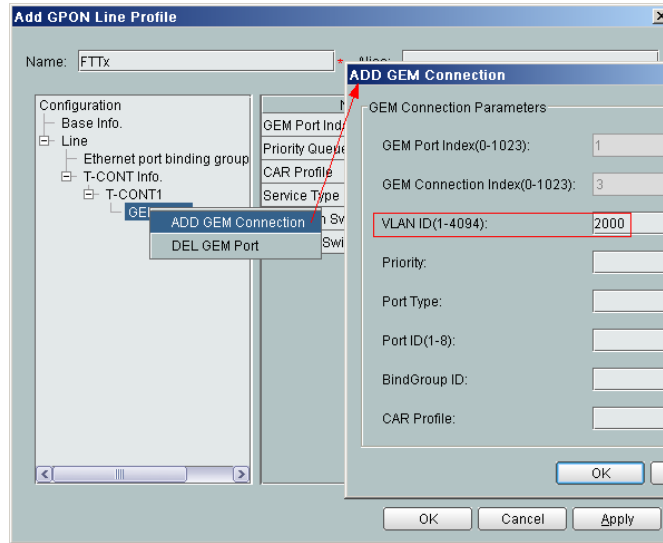
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **1** automatically)
  - VLAN ID: 1001





- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **2** automatically)
  - VLAN ID: 1000

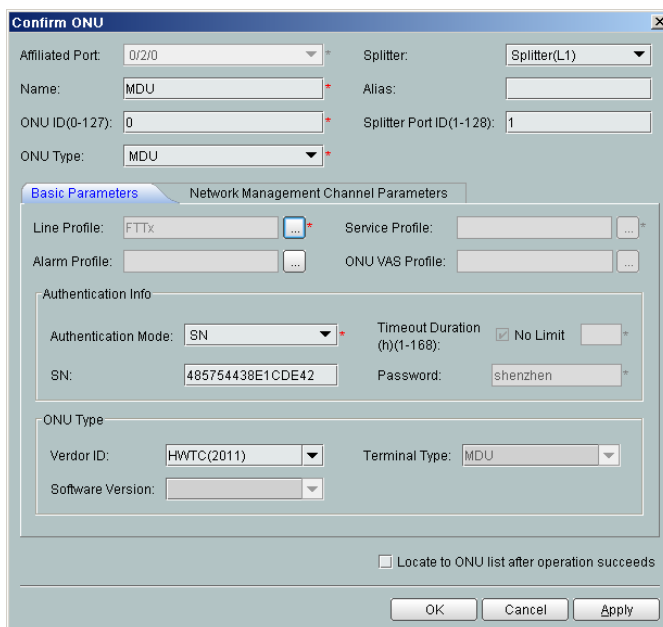


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 3 (this parameter is set to **3** automatically)
  - VLAN ID: 2000



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - SN: 485754438E1CDE42
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected

- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

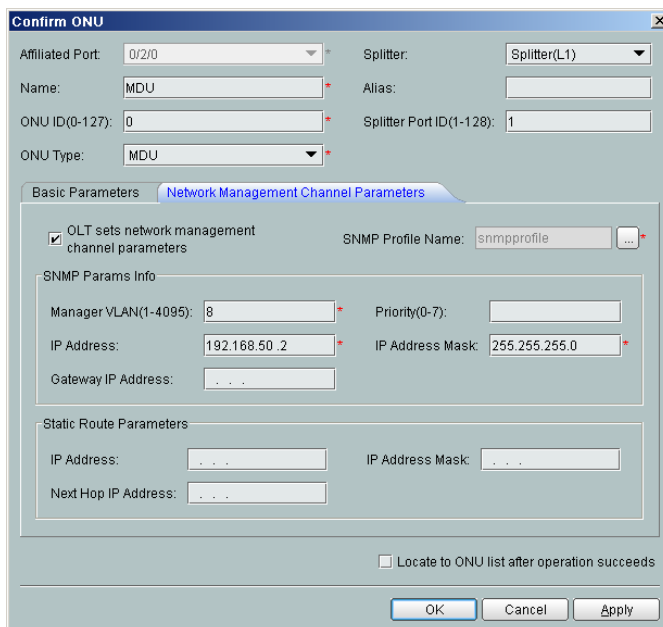


**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)  
 Name: MDU Alias:   
 ONU ID(0-127): 0 Splitter Port ID(1-128): 1  
 ONU Type: MDU

Basic Parameters Network Management Channel Parameters

Line Profile: FTTx Service Profile:   
 Alarm Profile: ONU VAS Profile:   
 Authentication Info  
 Authentication Mode: SN Timeout Duration (h)(1-168):  No Limit   
 SN: 485754438E1CDE42 Password: shenzhen   
 ONU Type  
 Vendor ID: HWTC(2011) Terminal Type: MDU   
 Software Version:   
 Locate to ONU list after operation succeeds  
 OK Cancel Apply



**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)  
 Name: MDU Alias:   
 ONU ID(0-127): 0 Splitter Port ID(1-128): 1  
 ONU Type: MDU

Basic Parameters Network Management Channel Parameters

OLT sets network management channel parameters SNMP Profile Name: snmpprofile   
 SNMP Params Info  
 Manager VLAN(1-4095): 8 Priority(0-7):   
 IP Address: 192.168.50.2 IP Address Mask: 255.255.255.0   
 Gateway IP Address:   
 Static Route Parameters  
 IP Address: IP Address Mask:   
 Next Hop IP Address:   
 Locate to ONU list after operation succeeds  
 OK Cancel Apply

(6) Click **OK**.

6. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

- (7) Click **OK**.

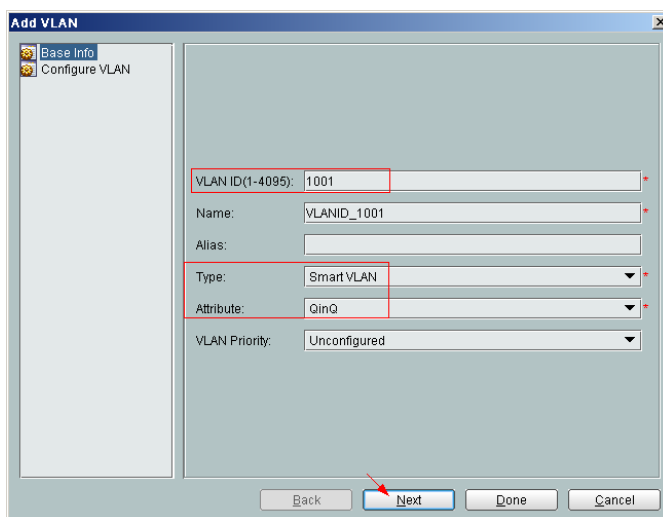
- **Configure the Internet service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

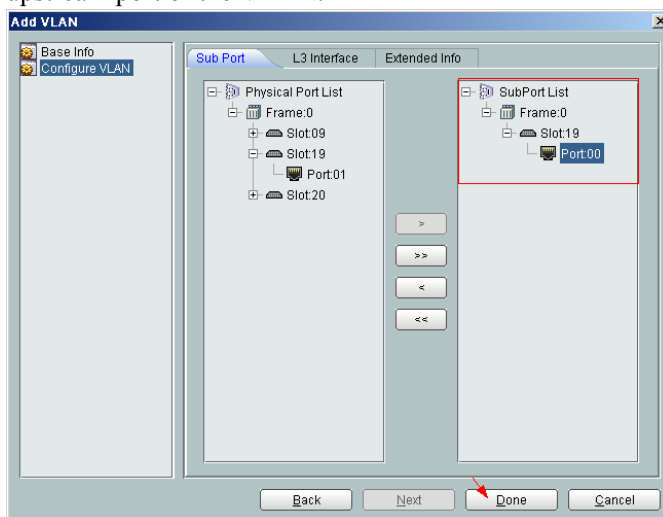
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN
  - Attribute: QinQ



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: HSI

- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- VLAN ID: 1001
- Service Type: Multi-Service VLAN
- User VLAN: 1001
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

(4) Click **OK**.

- **Configure the Internet service on the MDU side.**

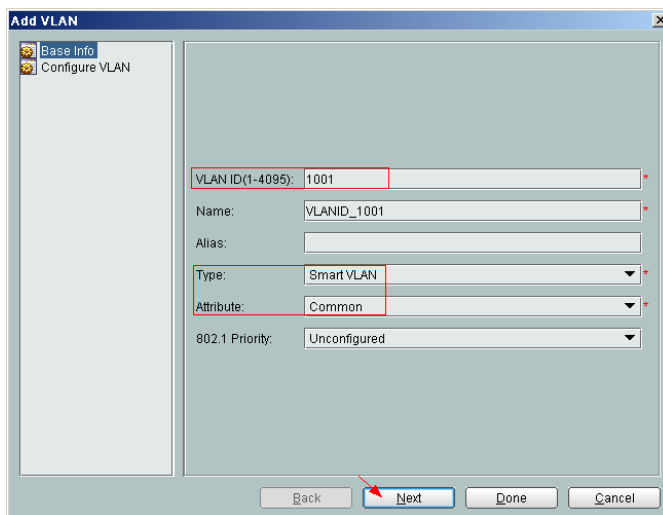
The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

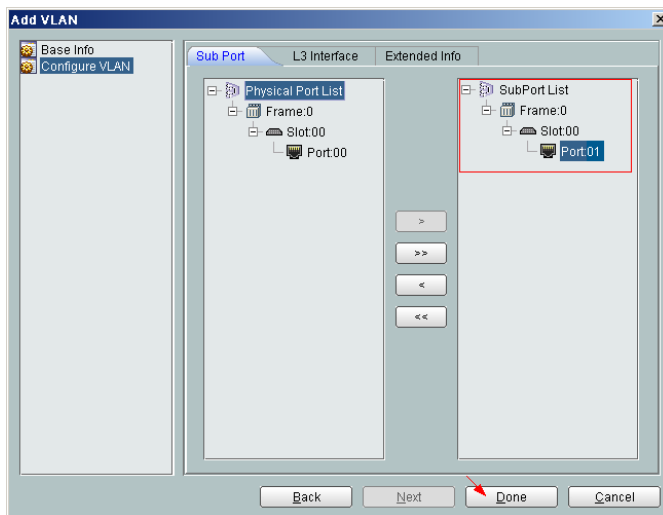
- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN





(4) Click **Next**.

(5) Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



(6) Click **Done**.

2. **Add a service virtual port on the MDU side.** For details, see [19.3.3 Adding a Service Port](#).


(1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.

(2) In the information list, right-click and choose **Add** from the shortcut menu.

(3) In the dialog box that is displayed, set the parameters.

- Name: HSI
- Connection Type: LAN-ADSL (when the physical port is an ADSL port) or LAN-VDSL2 (when the physical port is a VDSL2 port) or LAN-ETHER (when the physical port is an Ethernet port)
- Vlan ID: 1001
- Interface Selection: 0/1/1
- VPI: 0 (when the physical port is an ADSL or VDSL2 port)

- VCI: 0 (when the physical port is an ADSL or VDSL2 port)
- User VLAN: untagged
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

- (4) Click **OK**.
3. **Configure an ADSL line profile. For details, see [19.3.4 Configuring an ADSL Line Profile](#).**
    - (1) Choose **Configuration > Access Profile Management > ADSL Profile** from the main menu.
    - (2) Click the **ADSL Line Profile** tab, and select the required device type from the **Device Type** drop-down list.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: adsl\_profile
      - Other parameters: default settings
    - (5) Click **OK**.
    - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
    - (7) In the dialog box that is displayed, select the required NE and click **OK**.
  4. **Configure the attributes of an ADSL port and activate the ADSL port. For details, see [19.3.6 Configuring the Attributes of an ADSL Port](#) and [19.3.7 Activating an ADSL Port](#).**
    - (1) Choose **DSL > ADSL** from the navigation tree.
    - (2) On the **ADSL** tab page, enter the filter criteria or click  to display the required ADSL ports.
    - (3) In the information list, right-click port 0/1/1 and choose **Configure Attributes** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.

- Line Profile: adsl\_profile
  - Other parameters: default settings
- (5) Click **OK**.
  - (6) In the information list, right-click port 0/1/1 and choose **Activate** from the shortcut menu.

---End

## Result

The user gains access to the Internet after the dialup is performed successfully by the PPPoE dialup software on the PC.

## 19.4.4 Configuring the GPON FTTB Internet Service (VDSL2 Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in VDSL2 access mode and the MDU is connected to an OLT through a GPON port.

### Prerequisite

The OLT must be added to the U2000.

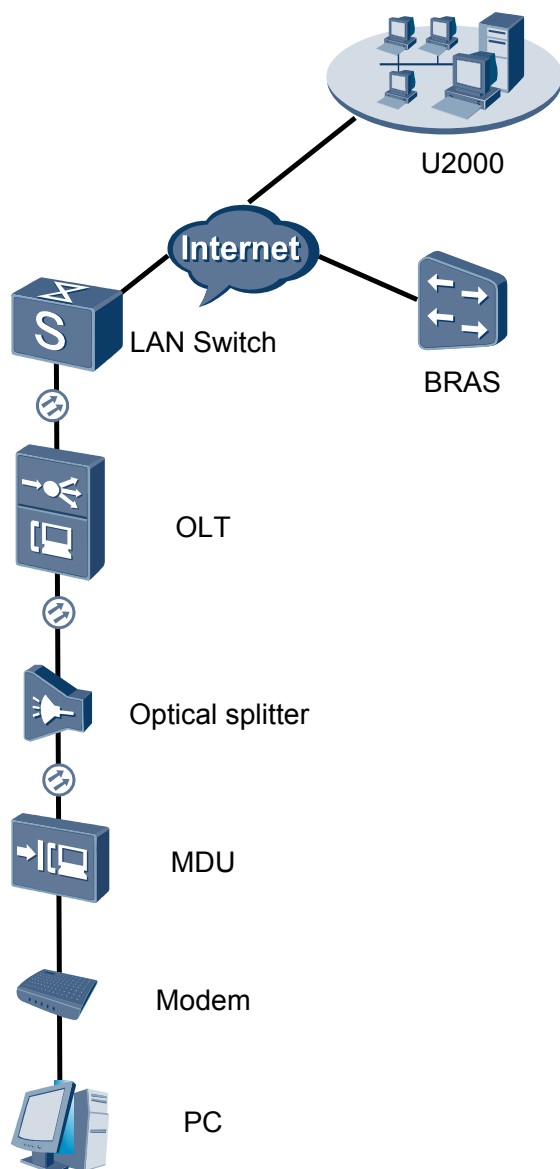
### Context

For details of the data plan, see [19.4.1 Data Plan for the GPON FTTB Services](#).

### Example Network

The MA5616 and MA5652 support VDSL2 access. The configuration procedure in this topic is applicable to the MA5616 V800R308 and MA5652 V800R308.

- The PC is connected to a VDSL2 port on the MDU. The data frames from the PC are transmitted to separate service channels according to user-side VLANs. Then, the OLT switches VLAN tags (that is, switches user-side VLANs to upstream VLANs) and transmits the data frames through an upstream port.
- The PC gains access to the Internet in PPPoE access mode. If the access mode is set to IPoA or PPPoA, you need to configure protocol conversion and encapsulation modes.

**Figure 19-3** Configuring the GPON FTTB Internet service (VDSL2 access)

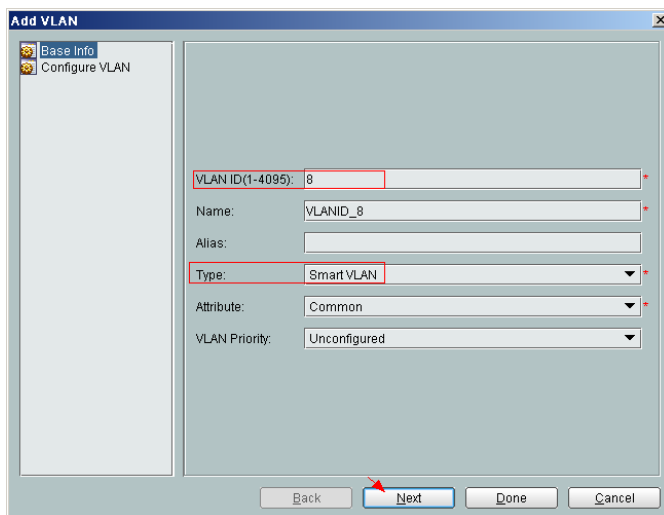
## Procedure

- **Add the MDU to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

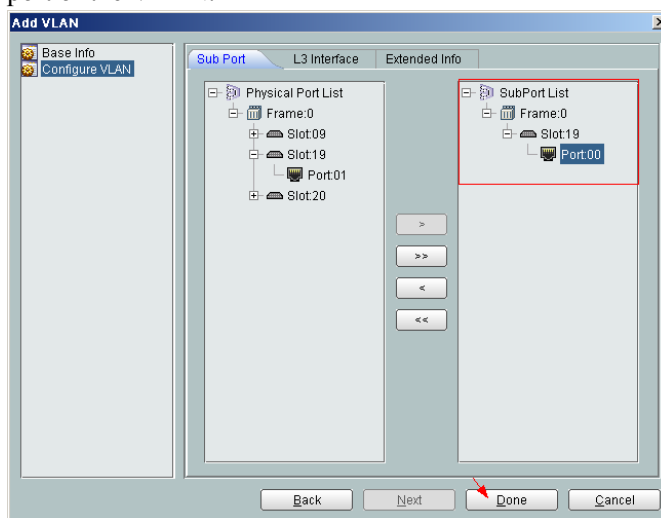
A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

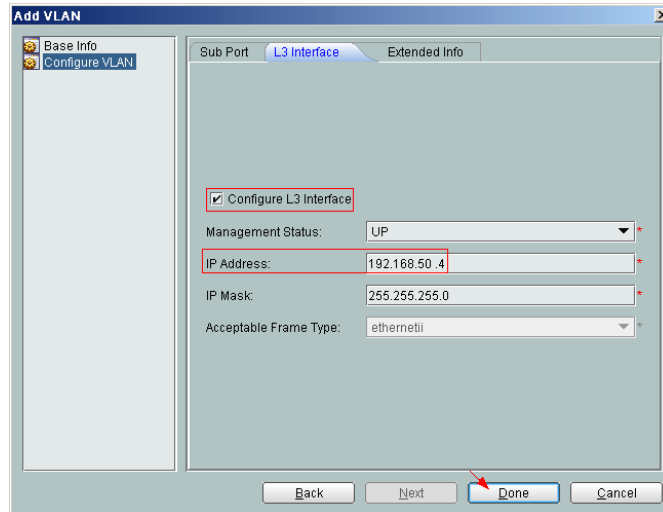
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8
  - Type: Smart VLAN



- (5) Click **Next**.
  - Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4

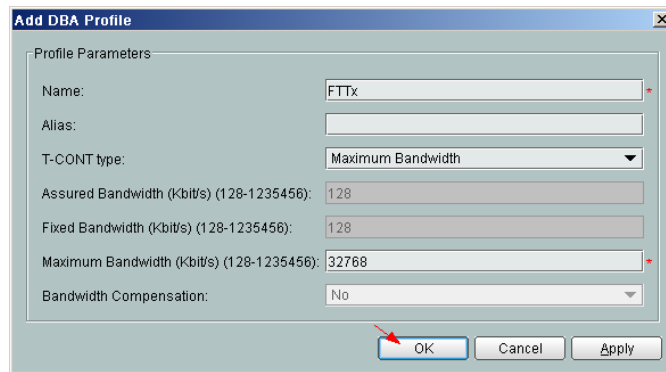


- (6) Click **Done**.
2. **Configure an MDU SNMP profile. For details, see [19.1.1 Configuring an MDU SNMP Profile](#).**
    - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
    - (2) Click the **MDU SNMP Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: snmpprofile
      - SNMP Version: v1
      - Read Name: public
      - Write Name: private
      - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
      - Trap UDP Port: 162
      - SNMP Security Name: public



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a DBA profile. For details, see [19.1.2 Configuring a DBA Profile](#).**
    - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.

- (2) Click the **DBA Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Name: FTTx
  - T-CONT type: Maximum Bandwidth
  - Maximum Bandwidth: 32768

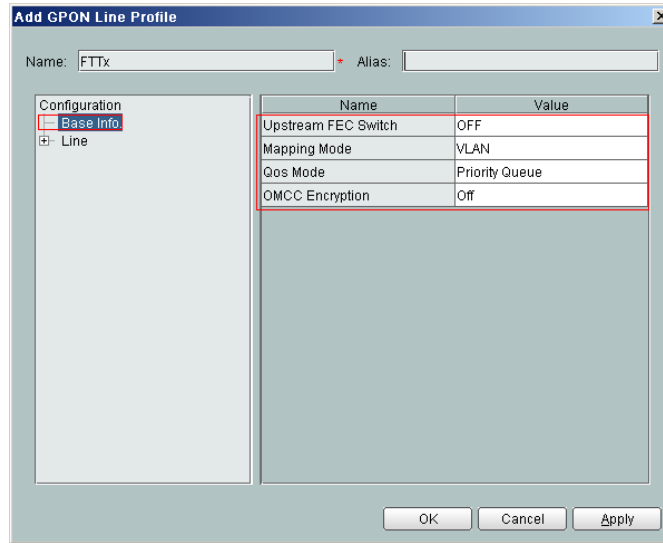


- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a line profile. For details, see [19.1.3 Configuring a GPON Line Profile](#).**

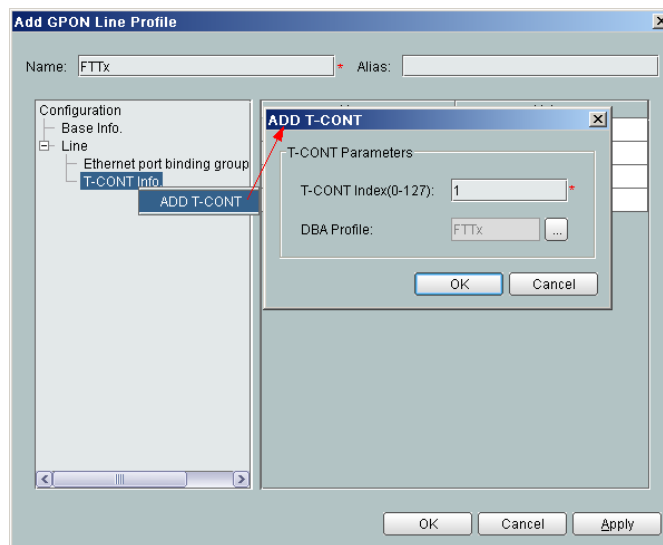
In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue

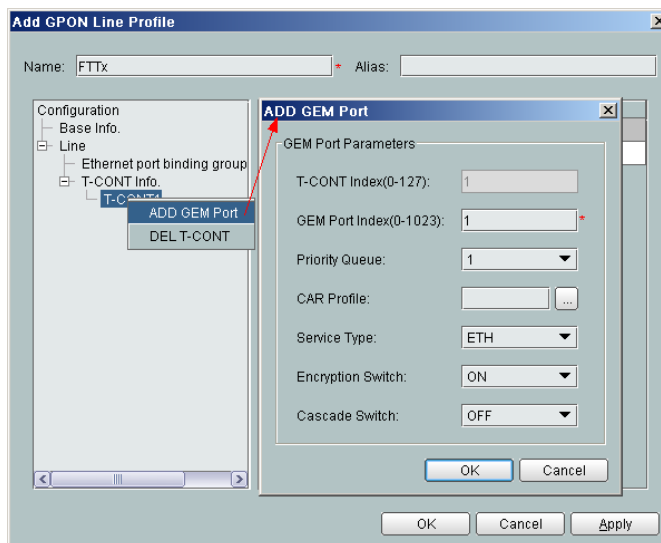


- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx

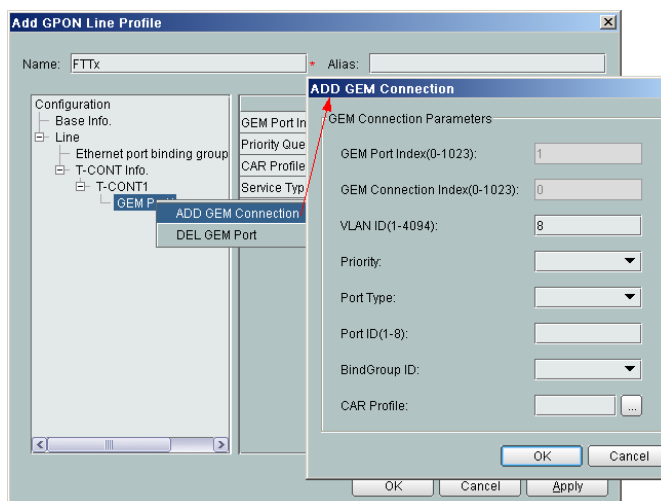


- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1

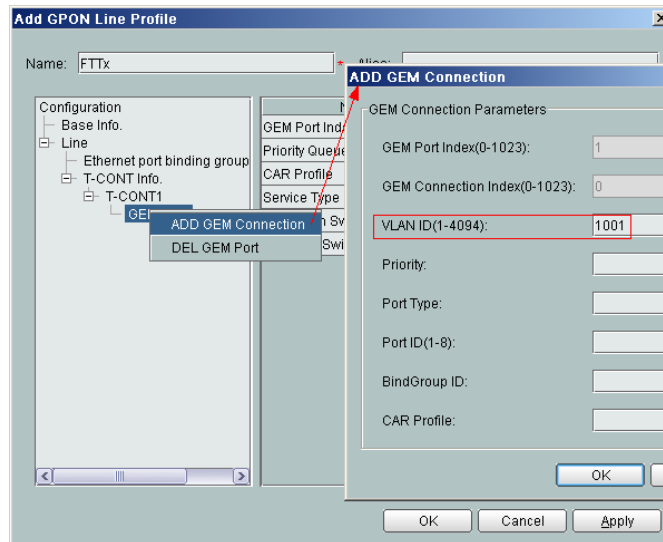




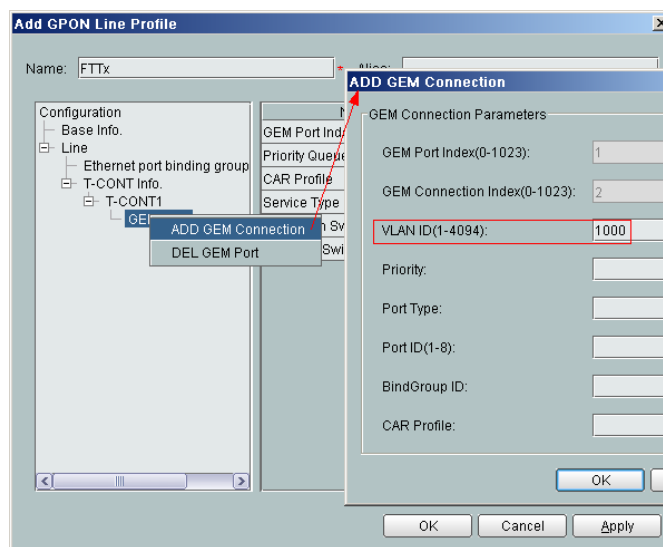
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **0** automatically)
  - VLAN ID: 8



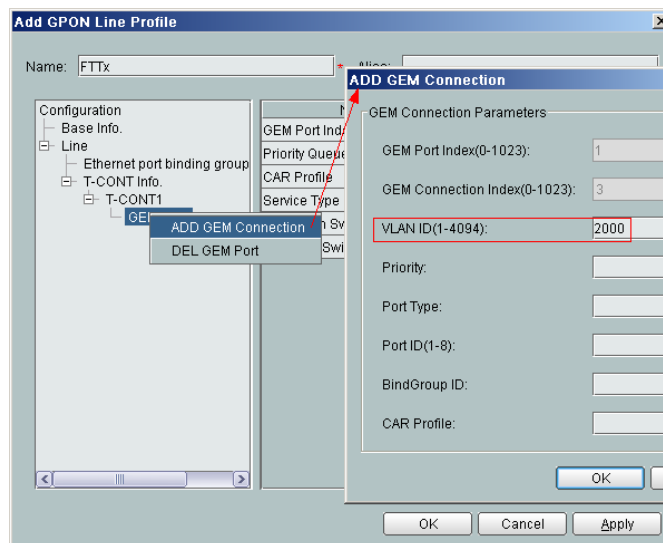
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **1** automatically)
  - VLAN ID: 1001





- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **2** automatically)
  - VLAN ID: 1000



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 3 (this parameter is set to **3** automatically)
  - VLAN ID: 2000



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - SN: 485754438E1CDE42
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected

- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

Basic Parameters Network Management Channel Parameters

Line Profile: FTTx Service Profile:

Alarm Profile: ONU VAS Profile:

Authentication Info

Authentication Mode: SN Timeout Duration (h)(1-168):  No Limit

SN: 485754438E1CDE42 Password: shenzhen

ONU Type

Vendor ID: HWTC(2011) Terminal Type: MDU

Software Version:

Locate to ONU list after operation succeeds

OK Cancel Apply

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

Basic Parameters Network Management Channel Parameters

OLT sets network management channel parameters SNMP Profile Name: snmpprofile

SNMP Params Info

Manager VLAN(1-4095): 8 Priority(0-7):

IP Address: 192.168.50.2 IP Address Mask: 255.255.255.0

Gateway IP Address:

Static Route Parameters

IP Address: IP Address Mask:

Next Hop IP Address:

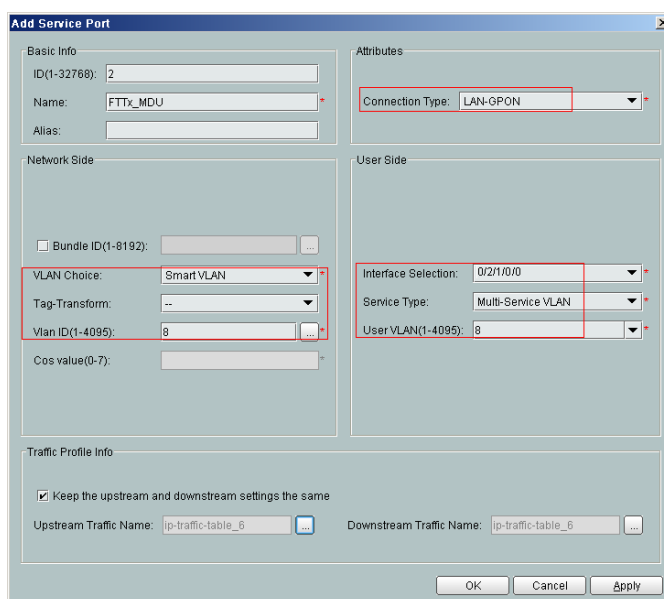
Locate to ONU list after operation succeeds

OK Cancel Apply

(6) Click **OK**.

6. Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

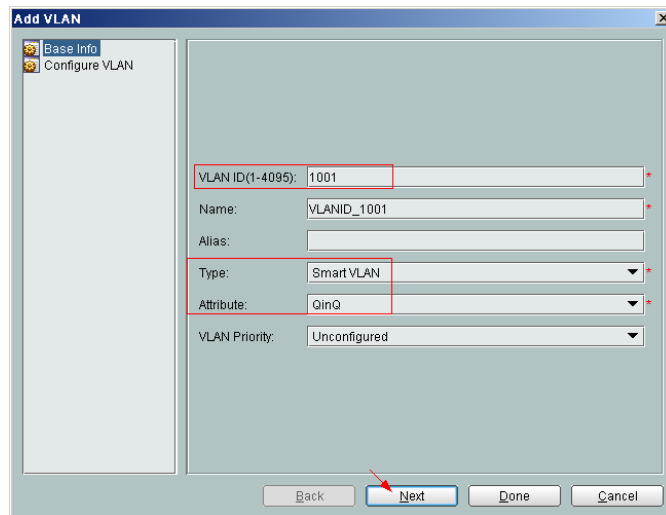
- **Configure the Internet service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

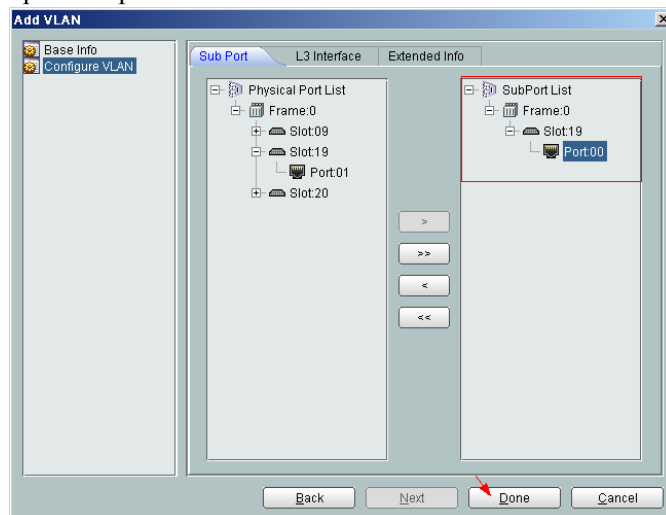
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN
  - Attribute: QinQ

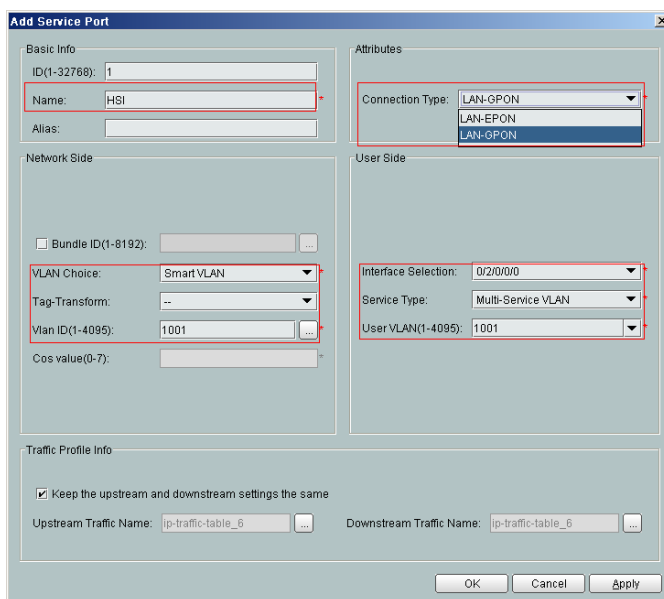


- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: HSI

- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- VLAN ID: 1001
- Service Type: Multi-Service VLAN
- User VLAN: 1001
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



(4) Click **OK**.

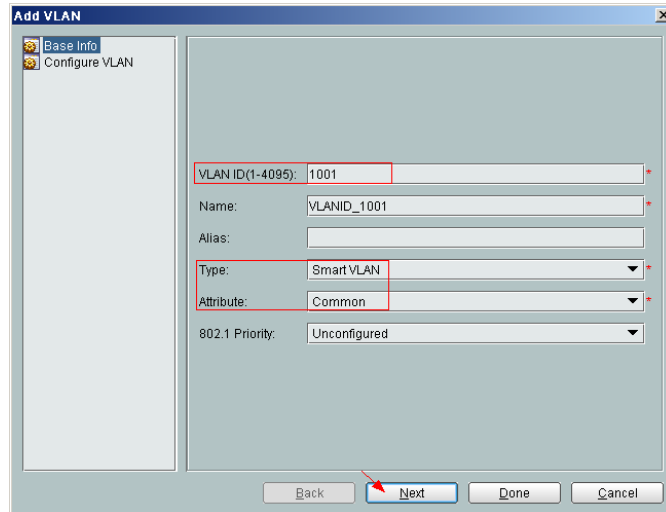
● **Configure the Internet service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

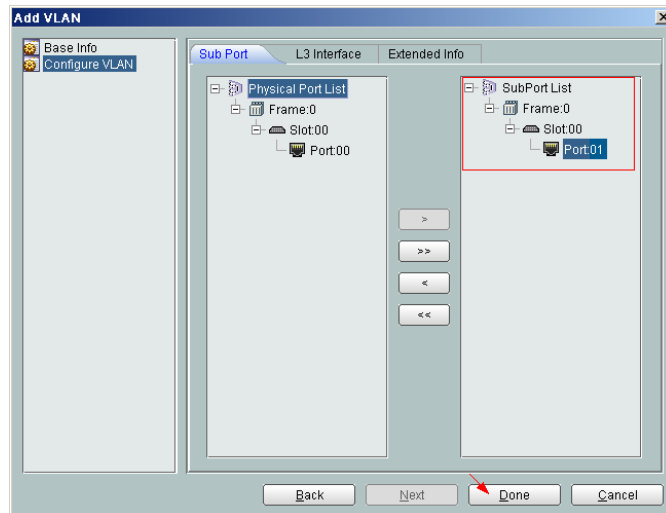
A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN



(4) Click **Next**.

(5) Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



(6) Click **Done**.

2. **Add a service virtual port on the MDU side. For details, see [19.3.3 Adding a Service Port](#).**

(1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.

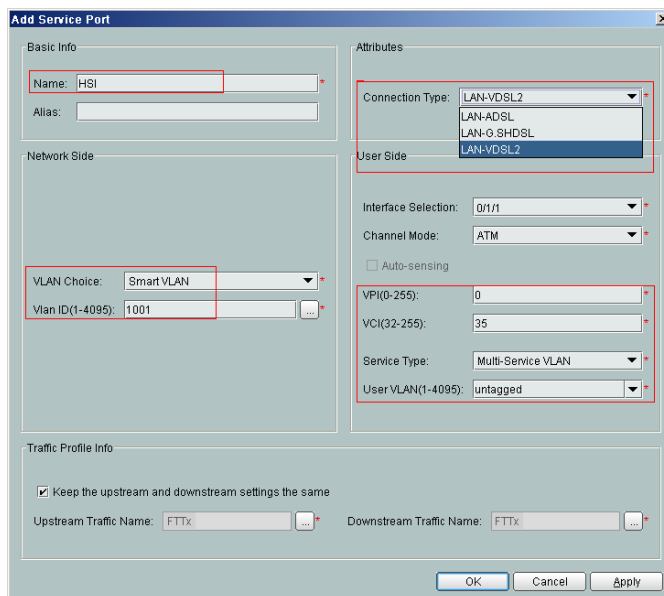
(2) In the information list, right-click and choose **Add** from the shortcut menu.

(3) In the dialog box that is displayed, set the parameters.

- Name: HSI
- Connection Type: LAN-ADSL (when the physical port is an ADSL port) or LAN-VDSL2 (when the physical port is a VDSL2 port) or LAN-ETHER (when the physical port is an Ethernet port)
- Vlan ID: 1001
- Interface Selection: 0/1/1
- VPI: 0 (when the physical port is an ADSL or VDSL2 port)



- VCI: 0 (when the physical port is an ADSL or VDSL2 port)
- User VLAN: untagged
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx




(4) Click **OK**.

### 3. Configure a VDSL2 line profile.

The VDSL2 line profile needs to be bound to a line configuration profile and channel configuration profile, and the line configuration profile needs to be bound to a line spectrum configuration profile.

- (1) Choose **Configuration > Access Profile Management > VDSL2 Profile** from the main menu.
- (2) Click the **VDSL2 Line Profile** tab.
- (3) Click the **Line Spectrum Configuration Profile** tab, and select the required device type from the **Device Type** drop-down list.
- (4) Right-click and choose **Add Global Profile** from the shortcut menu.
- (5) In the dialog box that is displayed, set the parameters.
  - Name: vdsl\_profile1
  - Other parameters: default settings
- (6) Click **OK**.
- (7) Click the **Line Configuration Profile** tab, and select the required device type from the **Device Type** drop-down list.
- (8) Right-click and choose **Add Global Profile** from the shortcut menu.
- (9) In the dialog box that is displayed, set the parameters.
  - Name: vdsl\_profile2
  - Transmission Mode: G.992.5 POTS overlapped, G.992.5 Annex I All-Digital overlapped
  - Line Spectrum Configuration Profile: vdsl\_profile1

- Other parameters: default settings
- (10) Click **Finish**.
  - (11) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (12) In the dialog box that is displayed, select the required MDU and click **OK**.
  - (13) Click the **Channel Configuration Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (14) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (15) In the dialog box that is displayed, set the parameters.
    - Name: vdsl\_profile3
    - Other parameters: default settings
  - (16) Click **OK**.
  - (17) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (18) In the dialog box that is displayed, select the required MDU and click **OK**.
  - (19) Click the **Line Template** tab, and select the required device type from the **Device Type** drop-down list.
  - (20) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (21) In the dialog box that is displayed, set the parameters.
    - Name: vdsl\_profile
    - Line Configuration Profile: vdsl\_profile2
    - Channel1 Configuration Profile: vdsl\_profile3
    - Other parameters: default settings
  - (22) Click **OK**.
  - (23) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (24) In the dialog box that is displayed, select the required MDU and click **OK**.
4. **Configure the attributes of a VDSL2 port and activate the VDSL2 port.**
- (1) Choose **DSL > VDSL2** from the navigation tree.
  - (2) On the **VDSL2** tab page, enter the filter criteria or click  to display the required VDSL2 ports.
  - (3) In the information list, right-click port 0/2/1 and choose **Configure Attributes** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Line Profile: vdsl\_profile
    - Other parameters: default settings
  - (5) Click **OK**.
  - (6) In the information list, right-click port 0/2/1 and choose **Activate** from the shortcut menu.

----End

## Result

The user gains access to the Internet after the dialup is performed successfully by the PPPoE dialup software on the PC.

## 19.4.5 Configuring the GPON FTTB Multicast Service

This topic describes how to configure the multicast service when an MDU is connected to an OLT through a GPON port.

### Prerequisite

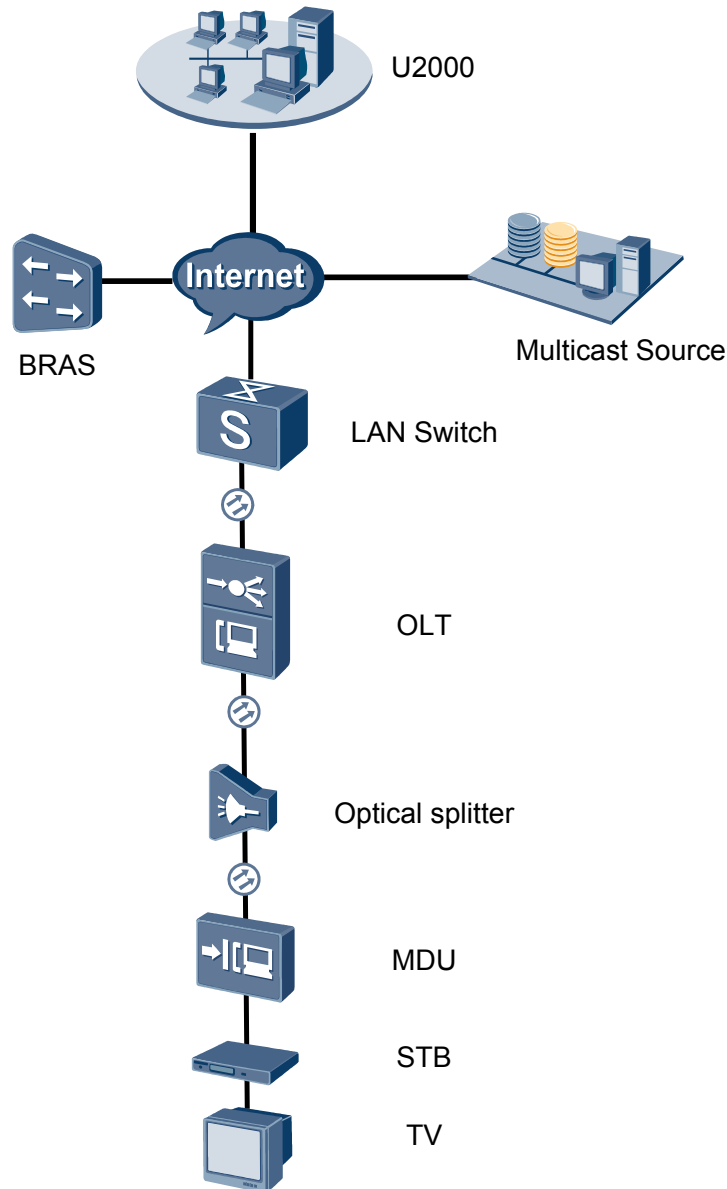
- The OLT must be added to the U2000.
- The licenses of multicast programs or users must have been applied for and installed.

### Context

For details of the data plan, see [19.4.1 Data Plan for the GPON FTTB Services](#).

### Example Network

- The set-top box (STB) is connected to port 0/0/1 on the MDU, and data frames are transmitted through an upstream port of the MDU to the OLT. The OLT transmits the data frames to separate service channels according to user-side VLANs, switches VLAN tags (that is, switches user-side VLANs to upstream VLANs), and then transmits the data frames through an upstream port.
- The OLT uses IGMP proxy, and the MDU uses IGMP snooping. IGMP proxy and IGMP snooping are Layer 2 multicast protocols.
- Multicast programs are configured statically.
- Multicast logs are reported to the log server as CDR files.

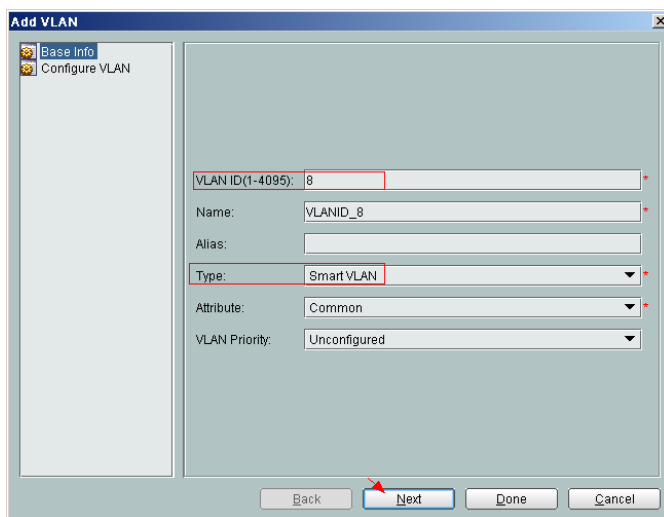
**Figure 19-4** Configuring the GPON FTTB multicast service

## Procedure

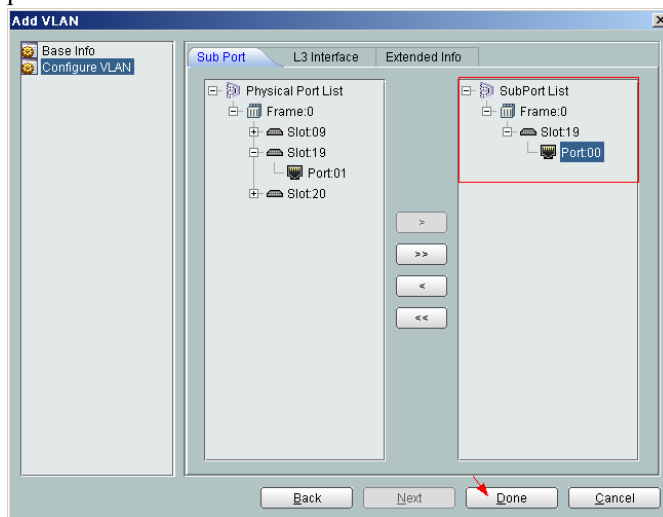
- **Add the MDU to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

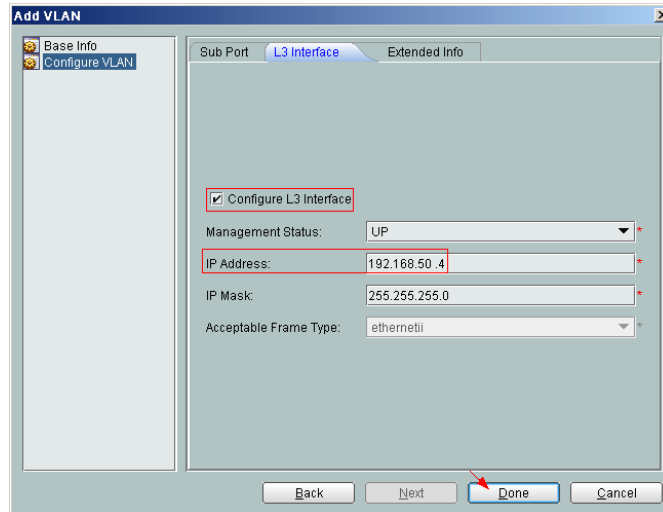
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8
  - Type: Smart VLAN



- (5) Click **Next**.
  - Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4

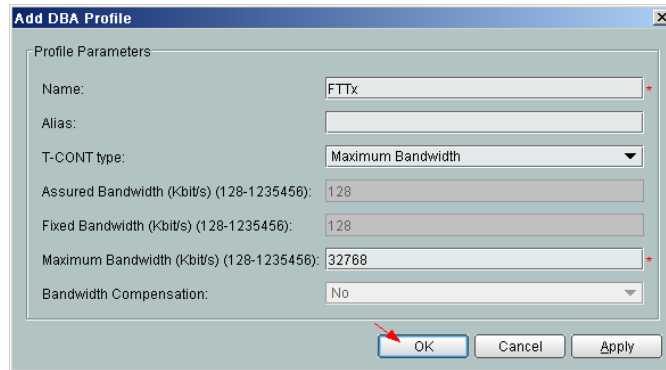


- (6) Click **Done**.
2. **Configure an MDU SNMP profile. For details, see [19.1.1 Configuring an MDU SNMP Profile](#).**
    - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
    - (2) Click the **MDU SNMP Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: snmpprofile
      - SNMP Version: v1
      - Read Name: public
      - Write Name: private
      - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
      - Trap UDP Port: 162
      - SNMP Security Name: public



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a DBA profile. For details, see [19.1.2 Configuring a DBA Profile](#).**
    - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.

- (2) Click the **DBA Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Name: FTTx
  - T-CONT type: Maximum Bandwidth
  - Maximum Bandwidth: 32768

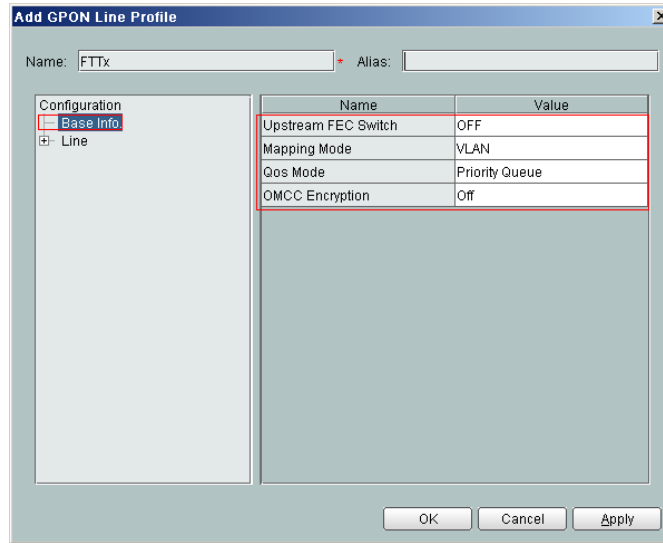


- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a line profile. For details, see [19.1.3 Configuring a GPON Line Profile](#).**

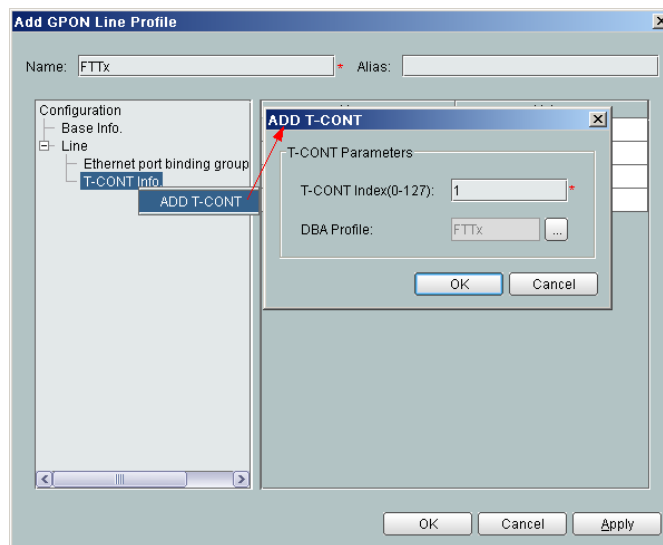
In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue

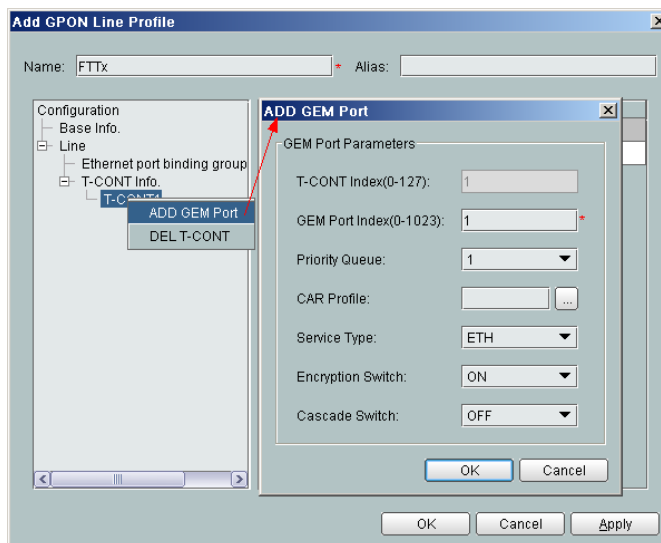


- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx

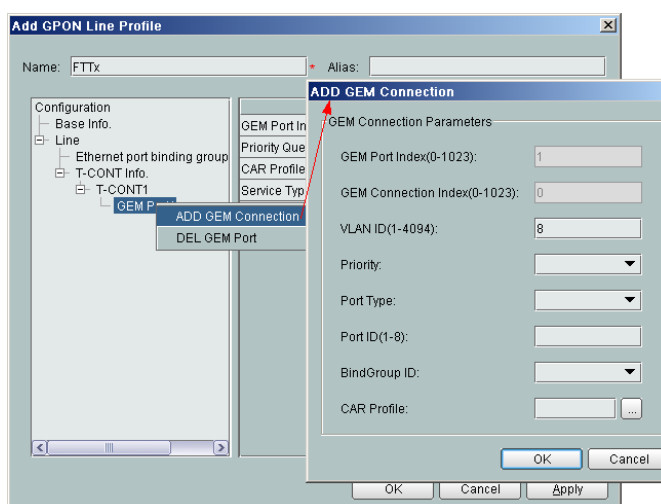


- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1

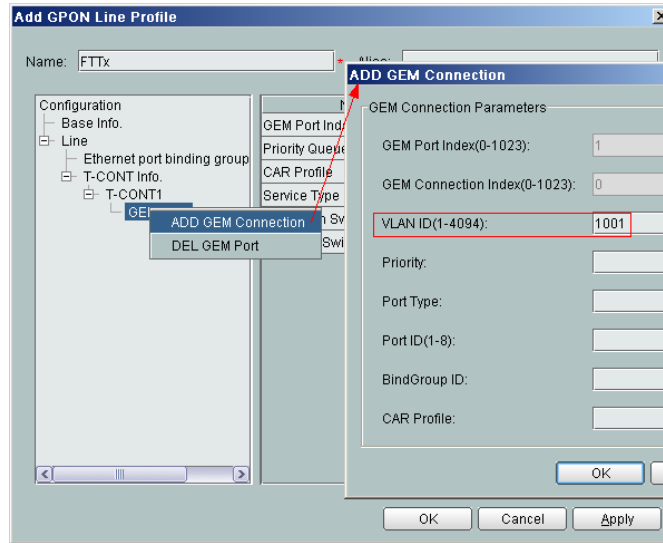




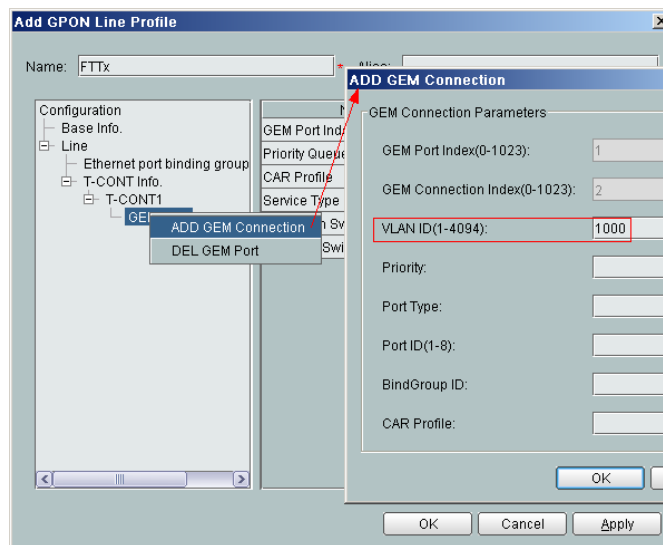
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **0** automatically)
  - VLAN ID: 8



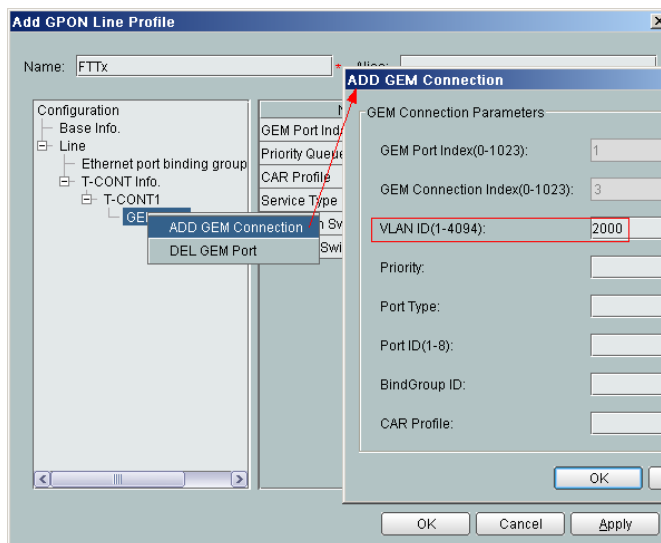
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **1** automatically)
  - VLAN ID: 1001





- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **2** automatically)
  - VLAN ID: 1000



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 3 (this parameter is set to **3** automatically)
  - VLAN ID: 2000



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - SN: 485754438E1CDE42
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected

- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

Basic Parameters Network Management Channel Parameters

Line Profile: FTTx Service Profile:

Alarm Profile: ONU VAS Profile:

Authentication Info

Authentication Mode: SN Timeout Duration (h)(1-168):  No Limit

SN: 485754438E1CDE42 Password: shenzhen

ONU Type

Vendor ID: HWTC(2011) Terminal Type: MDU

Software Version:

Locate to ONU list after operation succeeds

OK Cancel Apply

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

Basic Parameters Network Management Channel Parameters

OLT sets network management channel parameters SNMP Profile Name: snmpprofile

SNMP Params Info

Manager VLAN(1-4095): 8 Priority(0-7):

IP Address: 192.168.50.2 IP Address Mask: 255.255.255.0

Gateway IP Address:

Static Route Parameters

IP Address: IP Address Mask:

Next Hop IP Address:

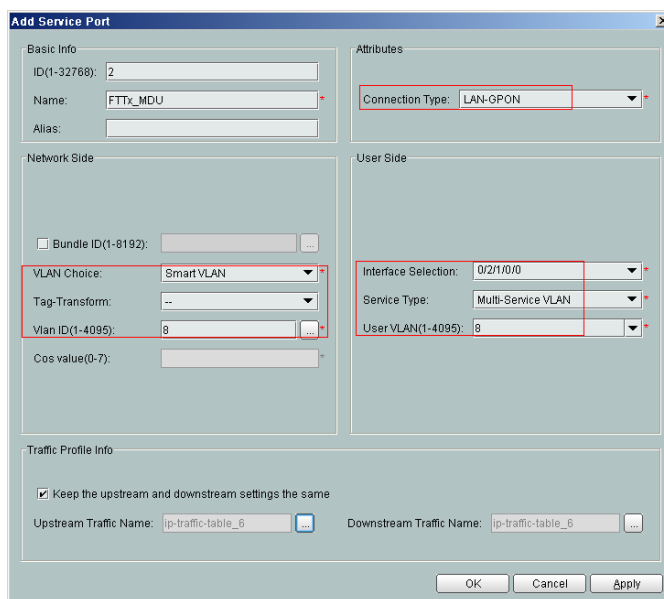
Locate to ONU list after operation succeeds

OK Cancel Apply

(6) Click **OK**.

6. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



(7) Click **OK**.

● **Configure the multicast service on the OLT side.**

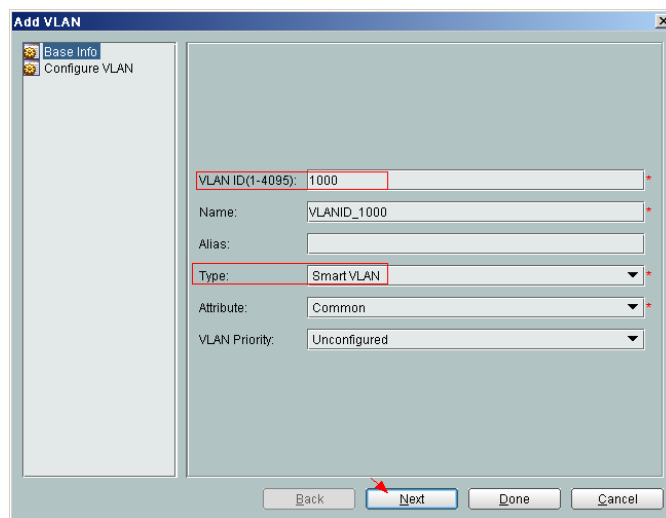
The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Add a VLAN. For details, see 19.2.1 Configuring a VLAN.**

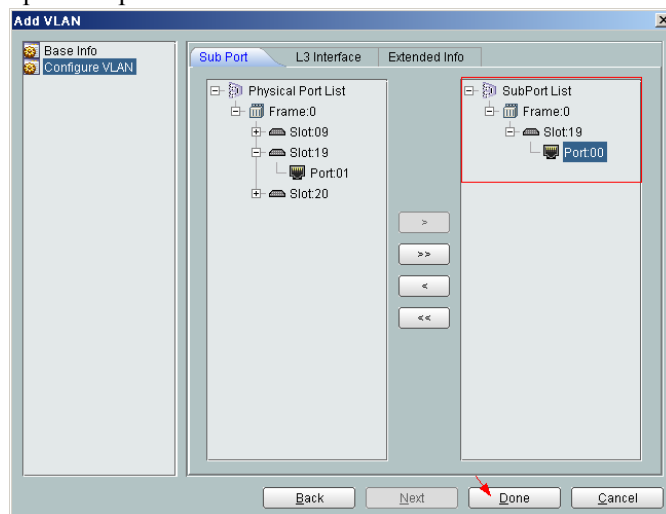
- (1) Choose **VLAN** from the navigation tree.
  - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 3000
    - Type: Smart VLAN
  - (4) Click **Done**.
2. **Configure a service VLAN on the OLT side. For details, see 19.2.1 Configuring a VLAN.**

A service VLAN is the VLAN used for the multicast service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Type: Smart VLAN



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



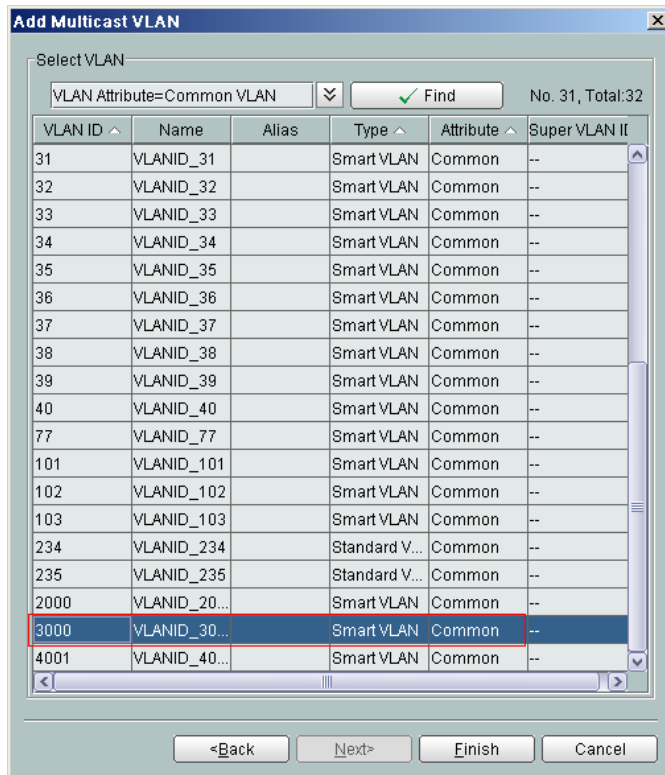
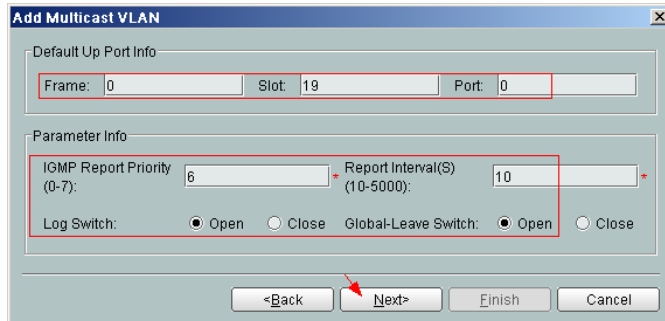
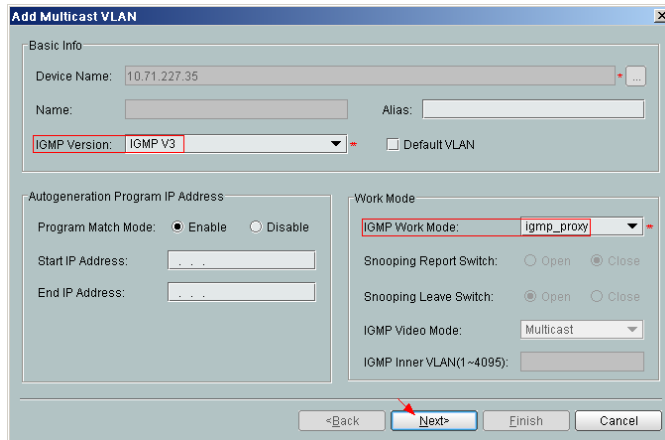
- (5) Click **Done**.
3. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
  - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1000** and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name:IGMP
    - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
    - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
    - Vlan ID: 1000
    - Service Type: Multi-Service VLAN
    - User VLAN: 1000
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams)

The screenshot shows the 'Add Service Port' dialog box with the following configuration:

- Basic Info:** ID(1-32789): 1, Name: IGMP, Alias: (empty)
- Network Side:** Bundle ID(1-8192): (empty), VLAN Choice: Smart VLAN, Tag-Transform: .., Vlan ID(1-4095): 1000, Cos value(0-7): (empty)
- Attributes:** Connection Type: LAN-GPON
- User Side:** Interface Selection: 0/2/1/0/0, Service Type: Multi-Service VLAN, User VLAN(1-4095): 1000
- Traffic Profile Info:**  Keep the upstream and downstream settings the same, Upstream Traffic Name: ip-traffic-table\_6, Downstream Traffic Name: ip-traffic-table\_6

- (4) Click **OK**.
4. **Add a multicast VLAN on the OLT side. For details, see [19.2.7 Configuring the Multicast VLAN](#).**
  - (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
  - (2) On the **Multicast VLAN** tab page, set the filter criteria to display the required multicast VLANs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - IGMP Version: IGMP V3

- Work Mode: igmp\_proxy
- VLAN ID: 3000

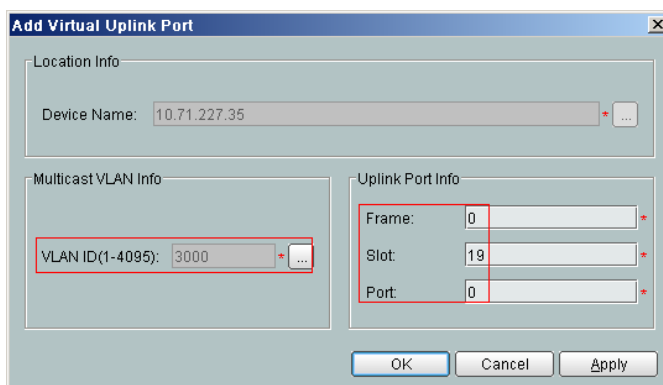


(5) Click **Finish**.

5. Add a virtual upstream port for the multicast service on the OLT side. For details, see [19.2.5 Configuring the Virtual Multicast Upstream Port](#).



- (1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.
- (2) On the **Virtual Uplink Port** tab page, set the filter criteria to display the required virtual upstream ports.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Frame: 0
  - Slot: 19
  - Port: 0



- (5) Click **Done**.
6. **Configure a program profile on the OLT side. For details, see [19.2.8 Configuring a Program Profile](#).**
- (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
  - (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: program1
    - Start IP Address: 224.0.1.1 (IP address of the multicast program)
    - End IP Address: 224.0.1.1
    - Source IP Address: 10.10.10.20 (IP address of the multicast server)
    - Preview Profile: 0 (the default value)

**Add Program Profile**

Description Info

- Configure the desired parameters.
- When the program is provisioned, if the IGMP version of the multicast VLAN is V2, the program can not have a source IP address. If the IGMP version of the multicast VLAN is V3, address, the program must have a source IP

Name:

Alias:

Profile Index (1-1024):

Begin IP Address:  End IP Address:

Source IP Address:  Host IP:

Priority (0-7):  Bandwidth (Kbit/s) (0-65534):

Grade:  Multicast VLAN(1-4095):

Preview Parameter

Preview Profile:

Attribute Parameter

Prejoin Attribute  Host Attribute

Unsolicited Attribute  Log Attribute

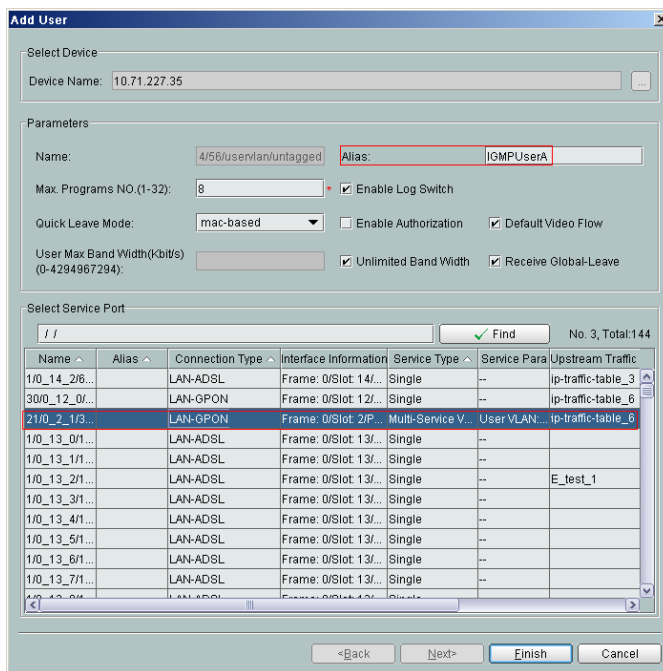
Across VLAN Attribute

OK Cancel Apply

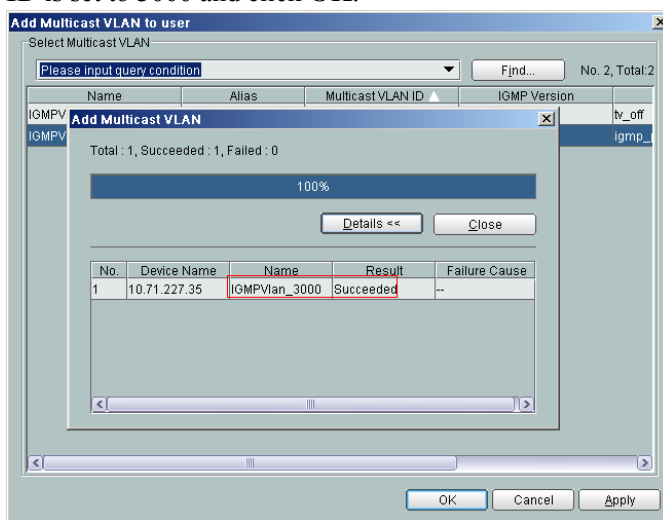
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required OLT and click **Next**. Then, set **VLAN ID** to **3000**.
  - (8) Click **OK**.
7. **Configure a multicast user on the OLT side. For details, see [19.2.10 Configuring a Multicast User](#).**

To enable user authentication, select **Enable Authorization**. To add a rights profile and apply it to NEs, choose **Configuration > Access Profile Management > IGMP Profile** from the main menu and click the **Right Profile** tab.

- (1) Choose **Multicast > Multicast User** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Alias: IGMPUserA
  - Unlimited Band Width: selected
  - Select Service Port: service virtual port named **IGMP**



- (4) Click **Finish**.
- (5) Select the multicast user, click the **User Multicast VLAN** tab in the lower pane, right-click, and then choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, select the record where **Multicast VLAN ID** is set to **3000** and click **OK**.



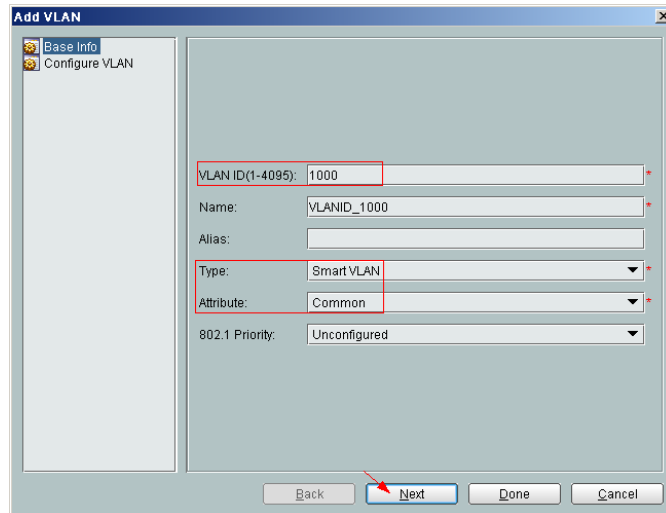
- **Configure the multicast service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

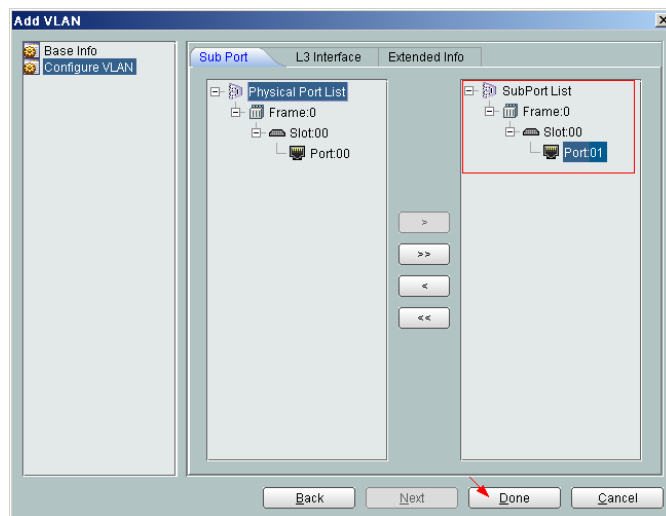
1. **Configure a service VLAN on the MDU side. For details, see 19.2.1 Configuring a VLAN.**

A service VLAN is the VLAN used for the multicast service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Type: Smart VLAN



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the MDU side. For details, see [19.3.3 Adding a Service Port](#).**

**NOTE**

If the access port of MDU is xDSL port, ensure that the xDSL port is activated.

- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1000** and click the **ServicePort** tab in the lower pane.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.

- Name: IGMP
- Connection Type: LAN-ADSL (when the physical port is an ADSL port) or LAN-VDSL2 (when the physical port is a VDSL2 port) or LAN-ETHER (when the physical port is an Ethernet port)
- Vlan ID: 1000
- Interface Selection: 0/1/1
- VPI: 0 (when the physical port is an ADSL or VDSL2 port)
- VCI: 0 (when the physical port is an ADSL or VDSL2 port)
- Service Type: Multi-Service VLAN
- User VLAN: untagged
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

The screenshot shows the 'Add Service Port' dialog box. The 'Basic Info' section has 'Name' set to 'IGMP'. The 'Network Side' section has 'VLAN Choice' set to 'Smart VLAN' and 'Vlan ID(1-4095)' set to '1000'. The 'Attributes' section has 'Connection Type' set to 'LAN-VDSL2', 'Interface Selection' set to '0/1/1', 'Channel Mode' set to 'ATM', 'VPI(0-255)' set to '0', 'VCI(32-255)' set to '35', 'Service Type' set to 'Multi-Service VLAN', and 'User VLAN(1-4095)' set to '1000'. The 'Traffic Profile Info' section has 'Keep the upstream and downstream settings the same' checked, and both 'Upstream Traffic Name' and 'Downstream Traffic Name' set to 'FTTx'. The 'OK', 'Cancel', and 'Apply' buttons are at the bottom right.

(4) Click **OK**.

3. **Add a multicast VLAN on the MDU side. For details, see [19.2.7 Configuring the Multicast VLAN](#).**

- (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - IGMP Version: IGMP V3
  - Work Mode: igmp\_snooping
  - VLAN ID: 1000

**Add Multicast VLAN**

Base Information

Name:  Alias:

IGMP Version:

Autogeneration Program IP Address

Program Match Mode:  Enable  Disable

Start IP Address:

End IP Address:

Work Mode

Work Mode:

Snooping Report Switch:  Open  Close

Snooping Leave Switch:  Open  Close

Back Next Done Cancel

---

**Add Multicast VLAN**

Default Up Port Info

Frame:  Slot:  Port:

Parameter Info

IGMP Report Priority(0-7):  \* Report Interval(S)(10-5000):  \*

Log Switch:  Open  Close Global-Leave Switch:  Open  Close

Back Next Done Cancel

---

**Add Multicast VLAN**

Select VLAN

All  No. 7, Total:23

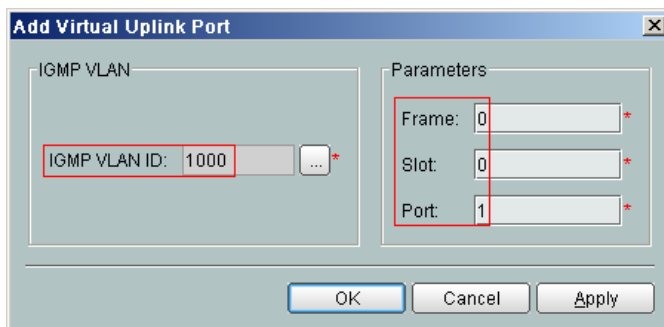
| VLAN ID ^ | Name        | Alias | Type ^     | Attribute ^ | Super VLAN ID |
|-----------|-------------|-------|------------|-------------|---------------|
| 1         | VLANID_1    |       | Smart VLAN | Common      | --            |
| 66        | VLANID_66   |       | Smart VLAN | Common      | --            |
| 500       | VLANID_500  |       | Smart VLAN | Common      | --            |
| 502       | VLANID_502  |       | Smart VLAN | Common      | --            |
| 504       | VLANID_504  |       | Smart VLAN | Common      | --            |
| 789       | VLANID_789  |       | MUX VLAN   | Common      | --            |
| 1000      | VLANID_1000 |       | Smart VLAN | Common      | --            |
| 1301      | VLANID_1301 |       | Smart VLAN | Common      | --            |
| 1601      | VLANID_1601 |       | MUX VLAN   | Common      | --            |

Back Next Done Cancel

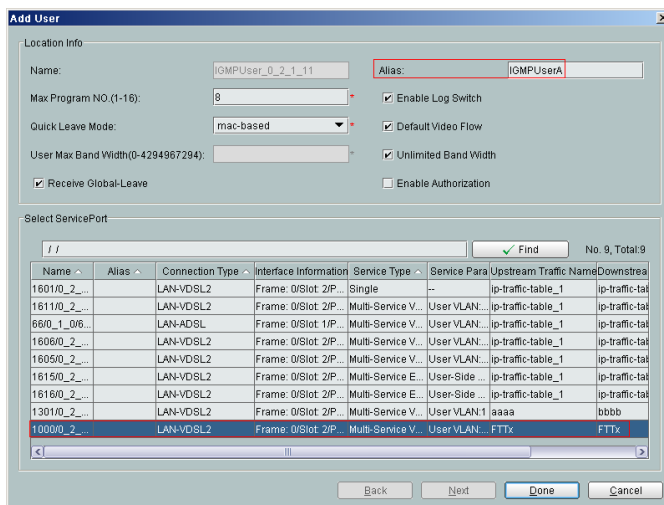
(4) Click **Done**.

4. **Add a virtual upstream port for the multicast service on the MDU side. For details, see [19.2.5 Configuring the Virtual Multicast Upstream Port](#).**

- (1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.
- (2) On the **Multicast VLAN** tab page, set the filter criteria to display the required multicast VLANs.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Frame: 0
  - Slot: 0
  - Port: 1

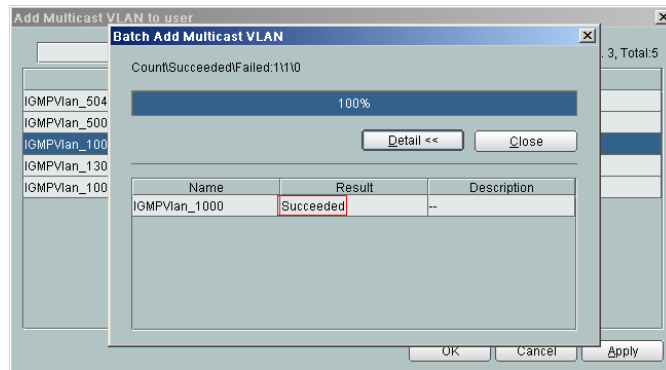


- (5) Click **OK**.
5. **Configure a program profile on the MDU side. For details, see [19.2.8 Configuring a Program Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
  - (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click the program profile whose **IP Address** is set to **224.0.1.1** and choose **Download to NE** from the shortcut menu.
  - (4) In the dialog box that is displayed, select the required MDU and click **Next**. Then, set **VLAN ID** to **1000**.
  - (5) Click **OK**.
6. **Configure a multicast user on the MDU side. For details, see [19.2.10 Configuring a Multicast User](#).**
  - (1) Choose **Multicast > Multicast User** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Alias: IGMPUserA
    - Unlimited Band Width: selected
    - Select Service Port: service virtual port named **IGMP**



- (4) Click **Finish**.

- (5) Select the multicast user, click the **User Multicast VLAN** tab in the lower pane, right-click, and then choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, select the record where **Multicast VLAN ID** is set to **1000** and click **OK**.



----End

## Result

The user can watch program1 on TV.

## 19.4.6 Configuring the GPON FTTB Voice Service (H.248 Protocol)

This topic describes how to configure the voice service when an MDU is connected to an OLT through a GPON port.

### Prerequisite

The OLT must be added to the U2000.

The data of the MGC interface and PSTN user corresponding to the MG interface must be configured on the MGC.

### Context

H.248 is the Media Gateway Control Protocol. In the MG separation architecture, H.248 is the communication protocol between an MGC and an MG, and it is used for the MGC to control the MG.

The MDU functions as an MG and the SoftX3000 functions as an MGC if the softswitch that matches the MDU is SoftX3000.

For details of the data plan, see [19.4.1 Data Plan for the GPON FTTB Services](#).

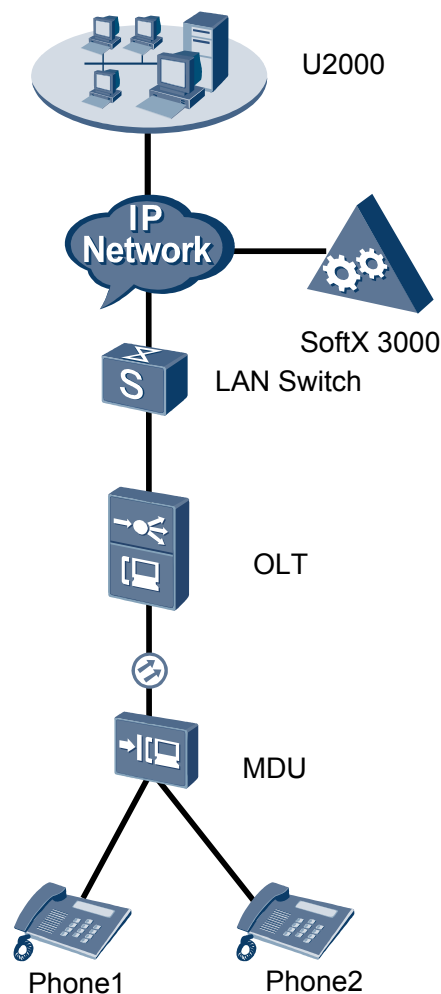
### Example Network

MA5620, MA5626, MA5616, and MA5612 support H.248 Protocol. The configuration procedure in this topic is applicable to the MA5620 V800R308, MA5626 V800R308, MA5612 V800R308, and MA5616 V800R308.

The MDU is connected to a GPON port on the OLT, and phone 1 and phone 2 are connected to voice service ports on the MDU.



**Figure 19-5** Configuring the GPON FTTB voice service (H.248 protocol)



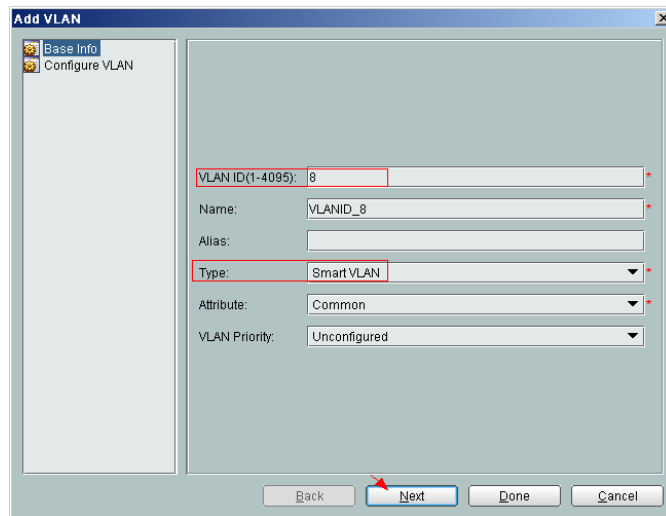
## Procedure

- Add the MDU to the U2000 in profile mode.
  1. Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).

A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

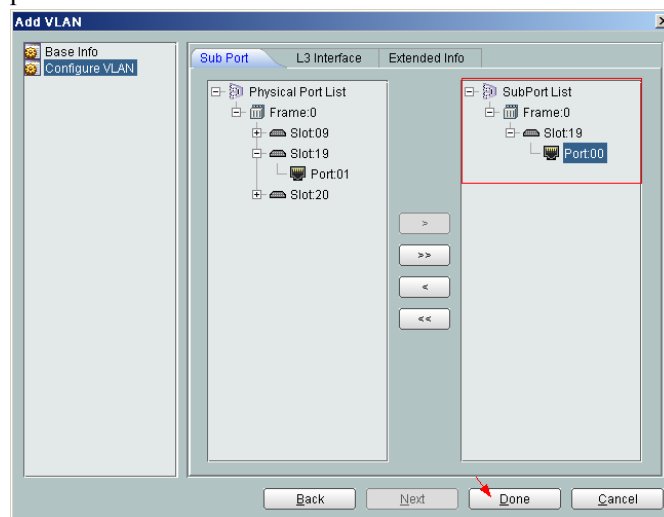
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8

- Type: Smart VLAN

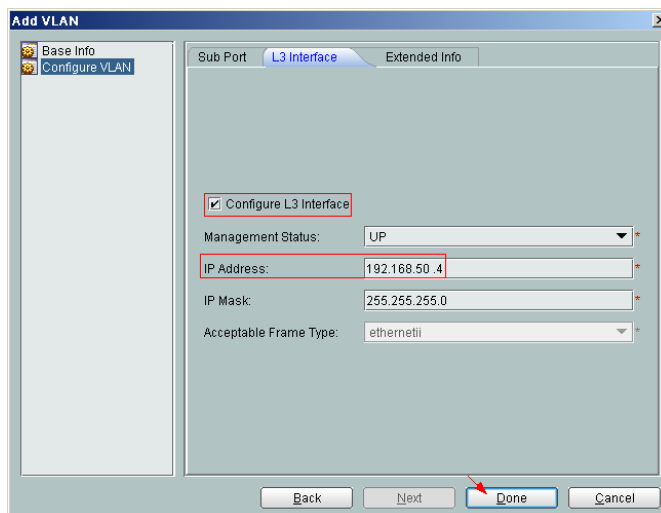


- (5) Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4



- (6) Click **Done**.
2. **Configure an MDU SNMP profile. For details, see 19.1.1 Configuring an MDU SNMP Profile.**
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
    - Trap UDP Port: 162
    - SNMP Security Name: public



- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a DBA profile. For details, see 19.1.2 Configuring a DBA Profile.**
  - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.

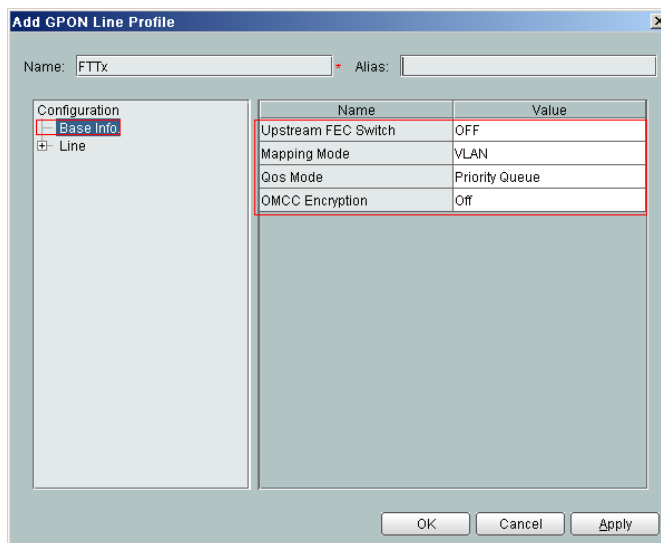
- (2) Click the **DBA Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Name: FTTx
  - T-CONT type: Maximum Bandwidth
  - Maximum Bandwidth: 32768

- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a line profile. For details, see [19.1.3 Configuring a GPON Line Profile](#).**

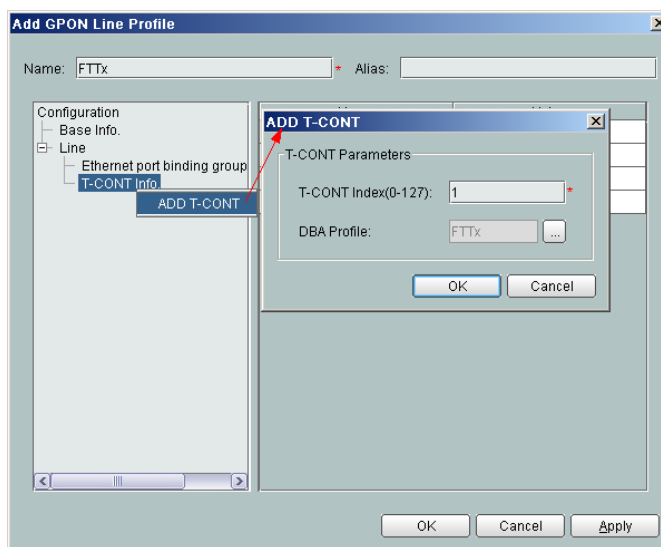
In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

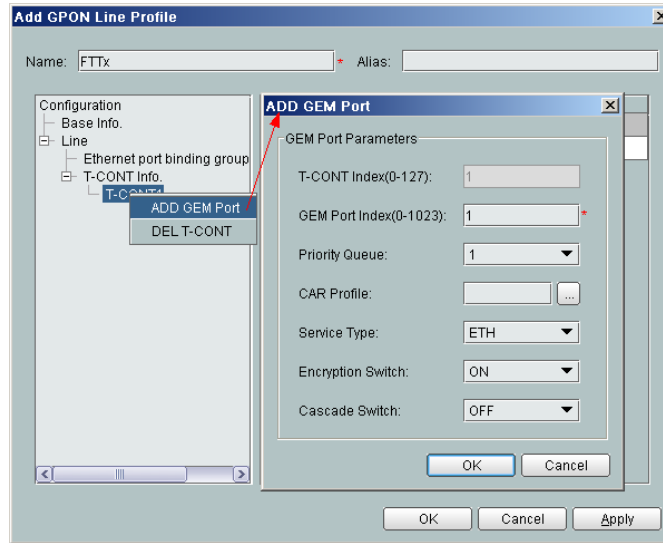
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue



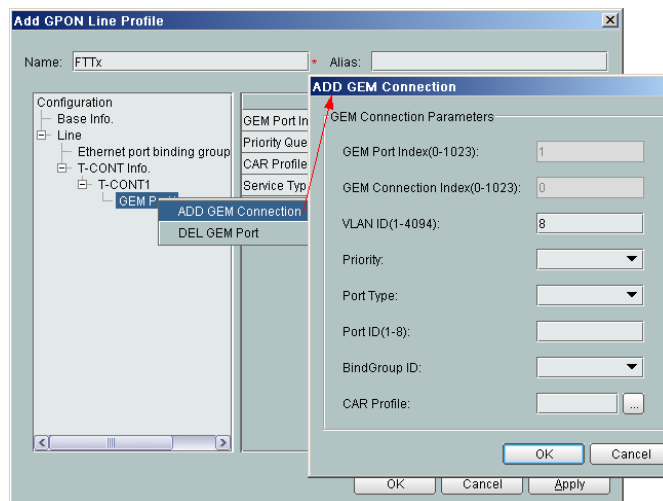
- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx



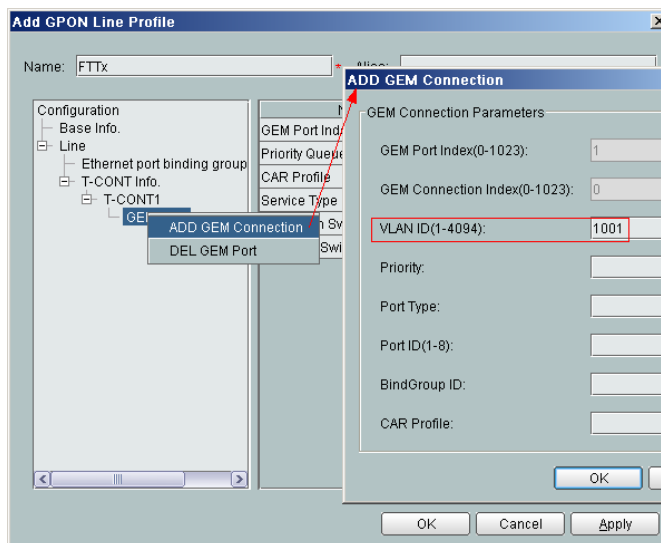
- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1



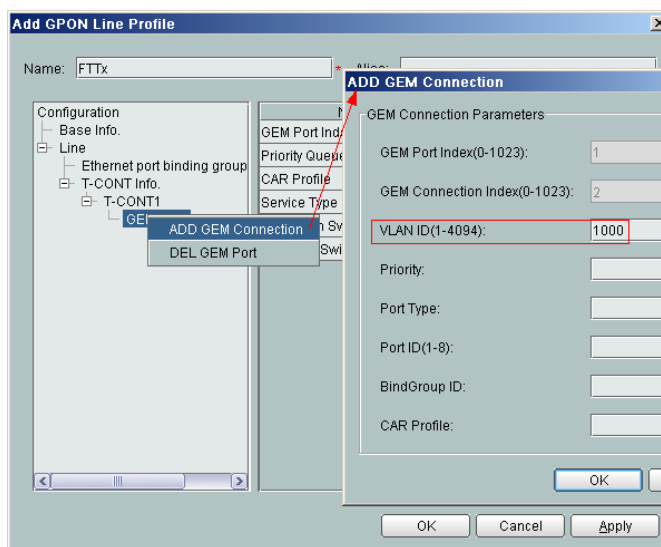
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **0** automatically)
  - VLAN ID: 8



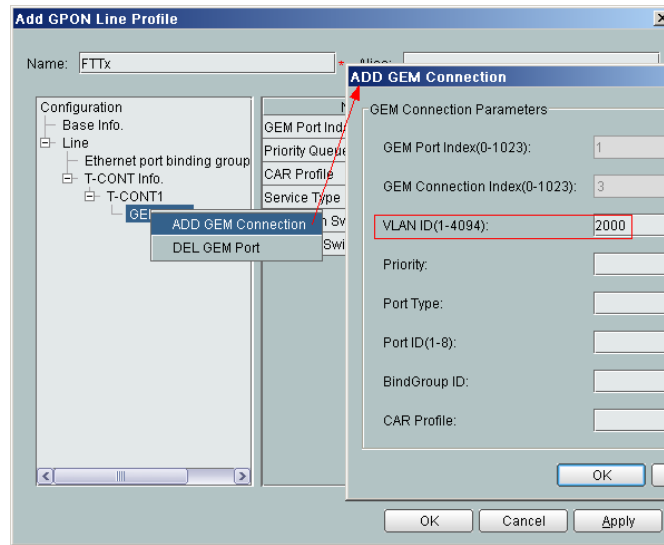
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **1** automatically)
  - VLAN ID: 1001




- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **2** automatically)
  - VLAN ID: 1000




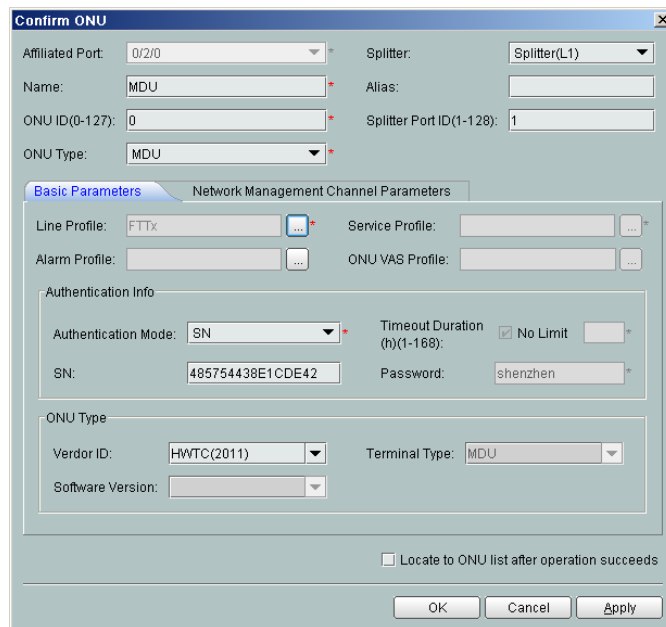
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 3 (this parameter is set to **3** automatically)
  - VLAN ID: 2000



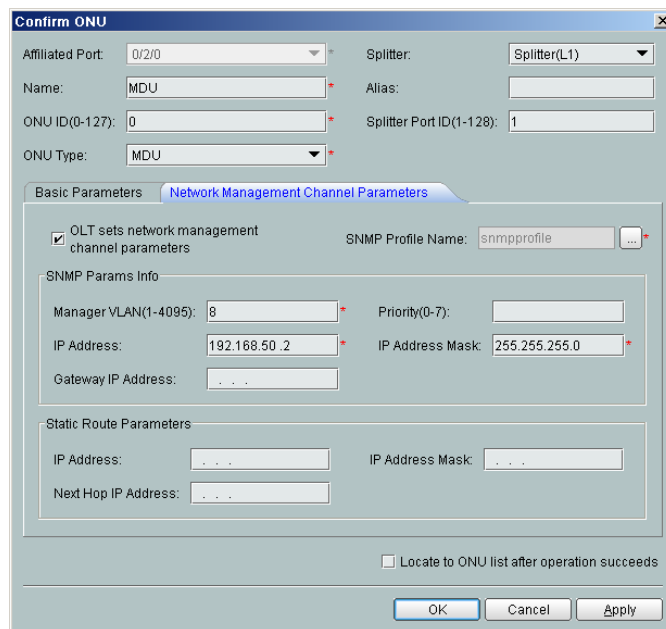
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - SN: 485754438E1CDE42
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected



- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0



The screenshot shows the 'Confirm ONU' dialog box with the 'Basic Parameters' tab selected. The 'Affiliated Port' is set to '0/2/0', 'Name' to 'MDU', and 'ONU Type' to 'MDU'. Under 'Authentication Info', 'Authentication Mode' is 'SN', 'SN' is '485754438E1CDE42', and 'Password' is 'shenzhen'. The 'Timeout Duration' is set to 'No Limit'. At the bottom, there is a checkbox for 'Locate to ONU list after operation succeeds' and buttons for 'OK', 'Cancel', and 'Apply'.



The screenshot shows the 'Confirm ONU' dialog box with the 'Network Management Channel Parameters' tab selected. The 'SNMP Profile Name' is set to 'snmpprofile'. Under 'SNMP Params Info', 'Manager VLAN' is '8', 'IP Address' is '192.168.50.2', and 'IP Address Mask' is '255.255.255.0'. There are also fields for 'Priority', 'Gateway IP Address', 'Static Route Parameters', and 'Next Hop IP Address'. At the bottom, there is a checkbox for 'Locate to ONU list after operation succeeds' and buttons for 'OK', 'Cancel', and 'Apply'.

(6) Click **OK**.

6. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

- (7) Click **OK**.

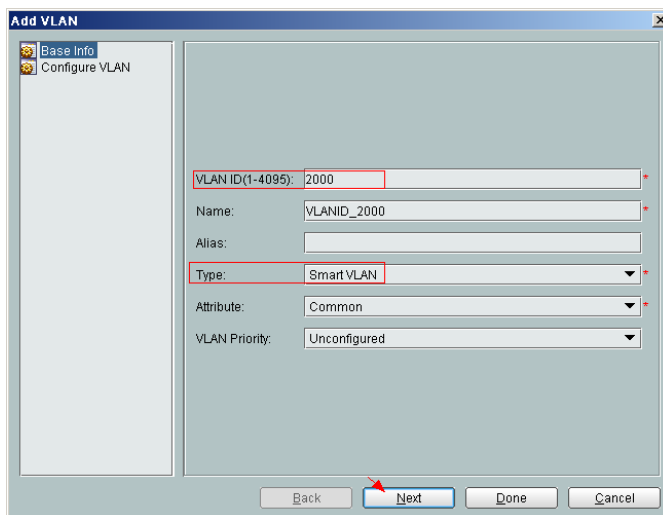
- **Configure the voice service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

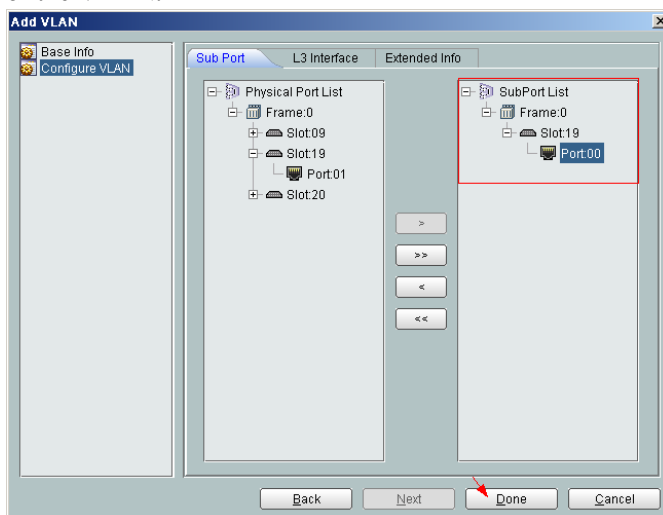
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
  - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: VOIP

- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- Vlan ID: 2000
- Service Type: Multi-Service VLAN
- User VLAN: 2000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

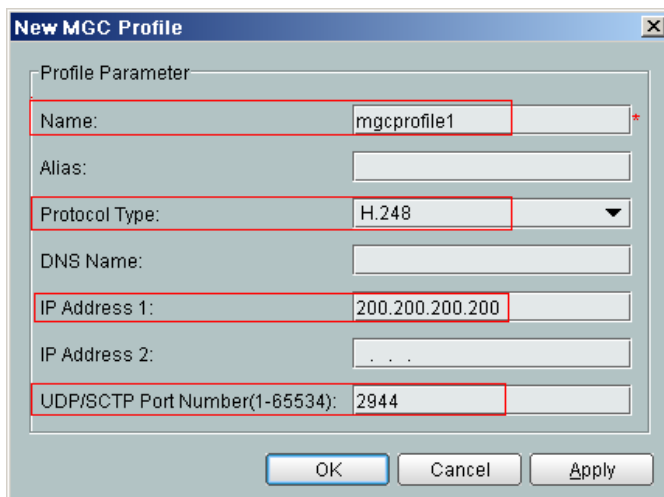
(4) Click **OK**.

- **Configure the voice service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Add an MGC profile. For details, see [19.3.9 Adding an MGC Profile](#).**

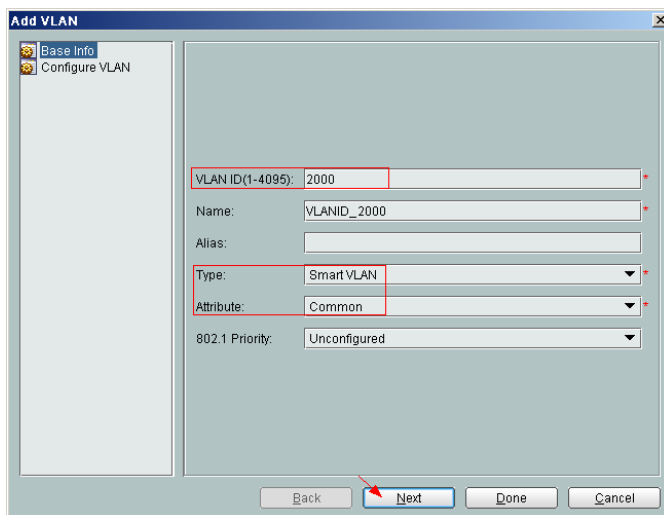
- (1) Choose **Configuration > Access Profile Management > MGC Profile** from the main menu.
- (2) Right-click and choose **Add Global Profile** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Name: mgcprofile1
  - Protocol Type: H.248
  - IP Address 1: 200.200.200.200 (IP address of the MGC)
  - Port Number: 2944



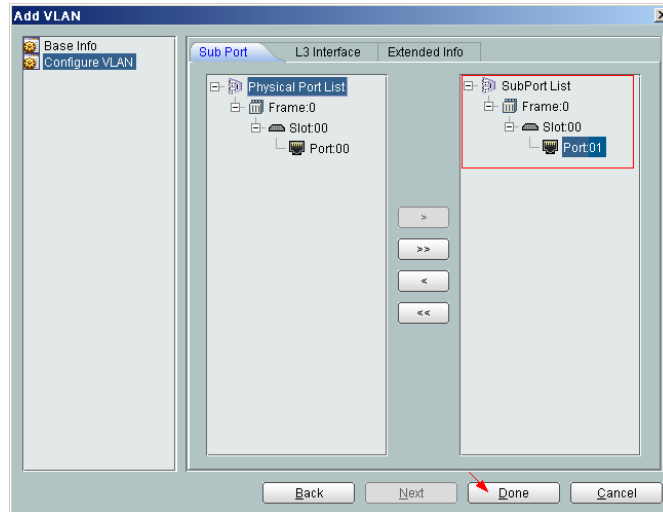
- (4) Click **OK**.
2. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the voice service.

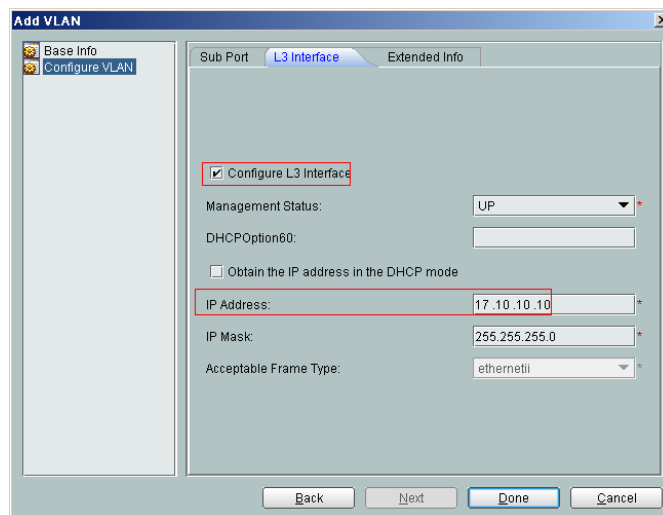
- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN



- (4) Click **Next**.
  - Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 17.10.10.10

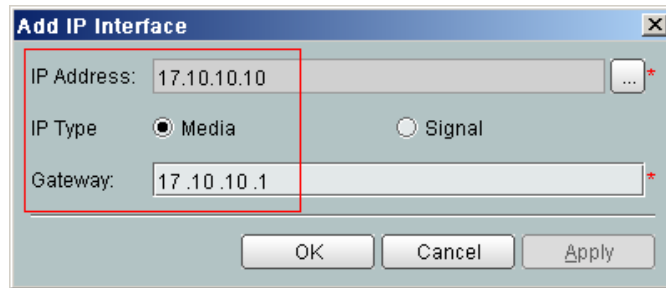


(5) Click **Done**.

3. **Add an IP interface on the MDU side. For details, see [19.3.2 Configuring an IP Interface](#).**

The procedure for adding a signaling IP interface is similar to the procedure for adding a media IP interface. The IP interface of the VLAN can be configured only when the L3 interface of the VLAN is configured with an IP address. According to the networking plan, the media IP address and the signaling IP address can be different.

- (1) In the information list, select the record where **VLAN ID** is set to **2000** and click the **IP Interface** tab in the lower pane.
- (2) On the **IP Interface** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - IP Address: 17.10.10.10
  - IP Type: Media
  - Gateway: 17.10.10.1



- (4) Click **OK**.
4. **Configure a static route. For details, see [19.3.8 Configuring a Static Route](#).**

If the IP address of the VLAN IP interface is not in the same network segment as the IP address of the MGC, you need to configure a static route.

  - (1) Choose **Static Route** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Target IP Address: 200.200.200.200 (IP address of the MGC or IMS)
    - Target Mask: 255.255.255.0
    - Next Hop IP Address: 17.10.10.1
  - (4) Click **OK**.
5. **Configure the MG. For details, see [19.3.12 Adding an MG](#), [19.3.13 Binding an MGC Profile](#), and [19.3.14 Starting an MG](#).**
  - (1) Choose **Voice Gateway > Media Gateway** from the navigation tree.
  - (2) On the **Media Gateway** tab page, set the filter criteria to display the required MGs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - MG ID: 0
    - Name: mg1
    - Signaling IP Address: 17.10.10.10
    - Signaling Port No.: 2944
    - Media IP Address 1: 17.10.10.10

The 'Add MG' dialog box contains the following fields and values:

- MG ID: 0
- Name: mg1
- MG Message MID Type: Signaling IP Ad...
- MG Device Name: (empty)
- MG Domain Name: (empty)
- Signaling IP Address: 17.10.10.10
- Signaling Port No.: 2944
- Media IP Address 1: 17.10.10.10
- Media IP Address 2: (empty)
- Protocol Type: H248
- Transmission Mode: UDP
- Coding Type: Text
- Profile Name: (empty)
- Support Profile Negotiation: Disable
- Start Negotiate H248 Version: V3
- Count of Heartbeat Retransmission(0-20): 3
- Interval of Heartbeat Retransmission(s)(0-655): 60
- Heartbeat Initiation Duration(s)(5-655): 60
- 2833 Encryption Key: (empty)

- (5) Click **OK**.
- (6) In the information list, select the record where **MG ID** is set to **0**, and click the **MGC Attribute Info** tab in the lower pane. In the list, right-click the record where **MGC Index** is set to **0** and choose **Bind Profile** from the shortcut menu.
- (7) In the dialog box that is displayed, set **NMS MGC Profile** to **mgcprofile1** and click **OK**.

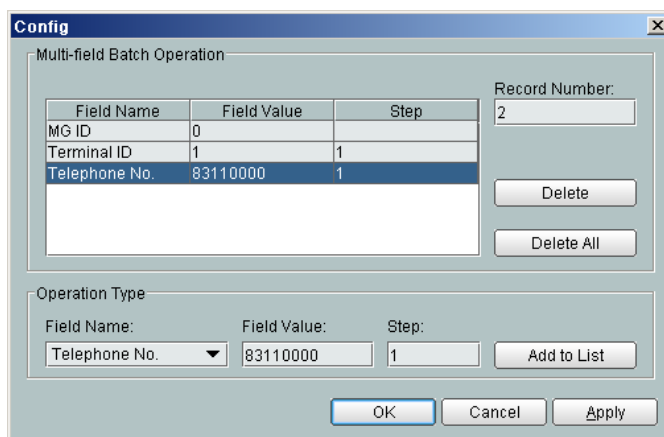
The 'Modify MGC' dialog box shows the following configuration:

- MG ID: 0
- MGC Index: 0
- NMS MGC Profile: mgcprofile1

- (8) In the information list, right-click the record where **MG ID** is set to **0** and choose **Cold Start** from the shortcut menu.
  - (9) In the dialog box that is displayed, click **Yes**.
6. **Configure the attributes of a VoIP PSTN port. For details, see [19.3.15 Configuring a VoIP PSTN Port](#).**
- (1) Choose **ASL > POTS Port** from the navigation tree.
  - (2) Click the **VoIP PSTN Port** tab, and set the filter criteria to display the required VoIP PSTN ports.
  - (3) In the information list, select ports 0/1/0 and 0/1/1 by holding down the **Shift** key, right-click, and then choose **Configure Attributes** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.



| Parameter     | Value    | Step |
|---------------|----------|------|
| MG ID         | 0        | -    |
| Terminal ID   | 0        | 1    |
| Telephone No. | 83110000 | 1    |



(5) Click **OK**.

----End

## Result

Phone 1 and phone 2 can communicate with each other after the configuration is complete.

- The caller hears the dialing tone after taking the phone off the hook.
- When the caller dials the telephone number of the callee, the phone of the callee rings successfully and the caller hears the ringback tone.
- The caller and the callee communicate with each other successfully.
- After the callee hangs up, the caller hears the busy tone.

## 19.4.7 Configuring the GPON FTTB Voice Service (SIP Protocol)

This topic describes how to configure the voice service when an MDU is connected to an OLT through a GPON port.

### Prerequisite

- The OLT must be added to the U2000.
- The PSTN user data corresponding to the SIP interface must be configured on the IMS.

### Context

The IMS is an IP-based subsystem for controlling multimedia sessions on the next generation network (NGN). The IMS includes all the core network elements that control multimedia services such as audio, video, text, and instant message services.

The Session Initiation Protocol (SIP) is a control-layer protocol of the IMS and it is one of the framework protocols designed by the Internet Engineering Task Force (IETF) for the multimedia

communication system. The SIP protocol is also an application-layer protocol for creating, modifying, and terminating multimedia sessions. It is used with other protocols to complete session establishment and media negotiation. These protocols include the Real-time Transport Protocol (RTP), RTP Control Protocol (RTCP), Session Description Protocol (SDP), Real Time Streaming Protocol (RTSP), and Domain Name System (DNS).

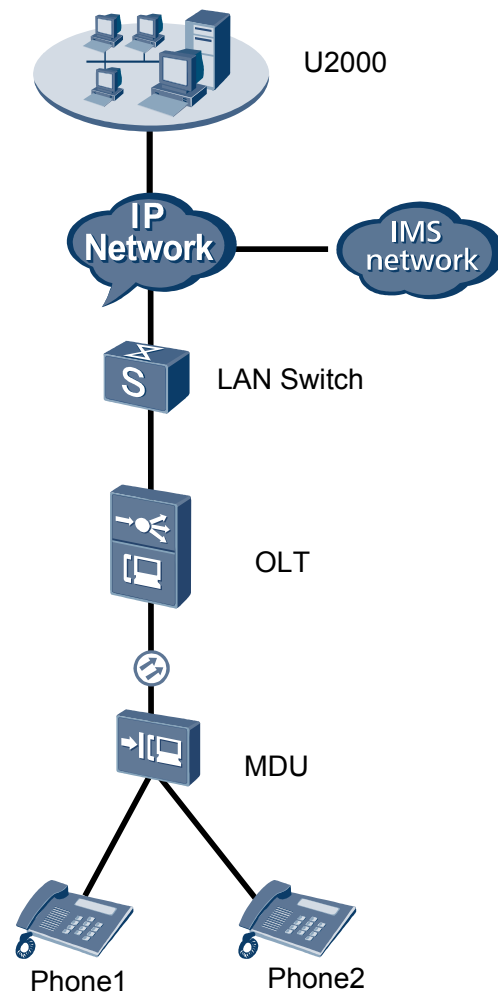
For details of the data plan, see [19.4.1 Data Plan for the GPON FTTB Services](#).

## Example Network

MA5620, MA5626, MA5616, and MA5612 support SIP Protocol. The configuration procedure in this topic is applicable to the MA5620 V800R308, MA5626 V800R308, MA5612 V800R308, and MA5616 V800R308.

The MDU is connected to a GPON port on the OLT, and phone 1 and phone 2 are connected to voice service ports on the MDU.

**Figure 19-6** Configuring the GPON FTTB voice service (SIP protocol)

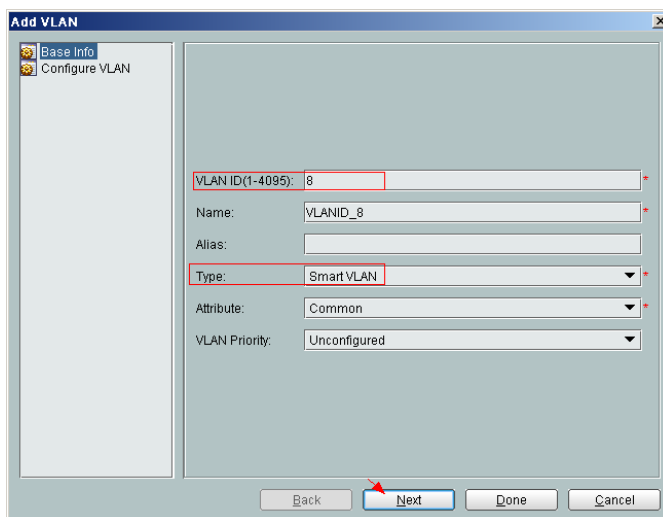


## Procedure

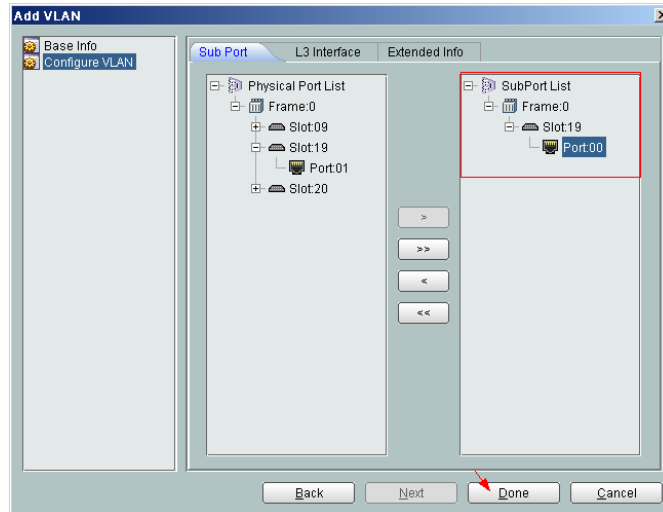
- **Add the MDU to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

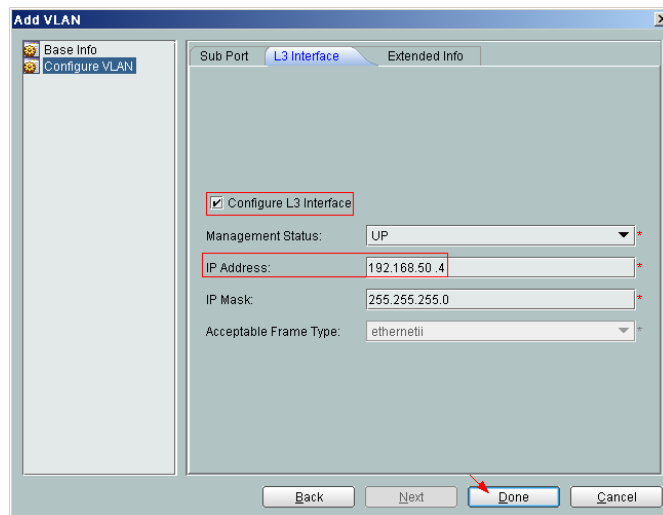
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8
  - Type: Smart VLAN



- (5) Click **Next**.
  - Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4

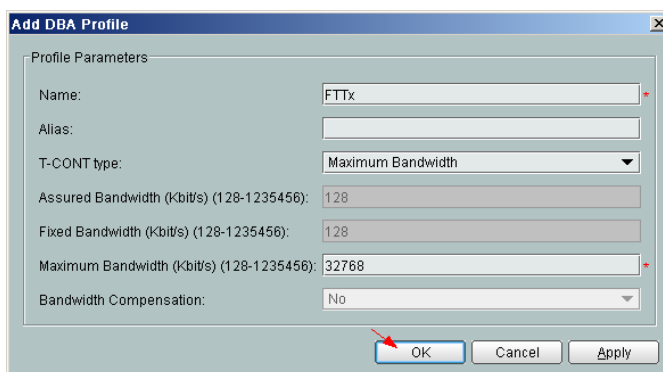


- (6) Click **Done**.
2. **Configure an MDU SNMP profile.** For details, see [19.1.1 Configuring an MDU SNMP Profile](#).
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)

- Trap UDP Port: 162
- SNMP Security Name: public



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a DBA profile. For details, see [19.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - T-CONT type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



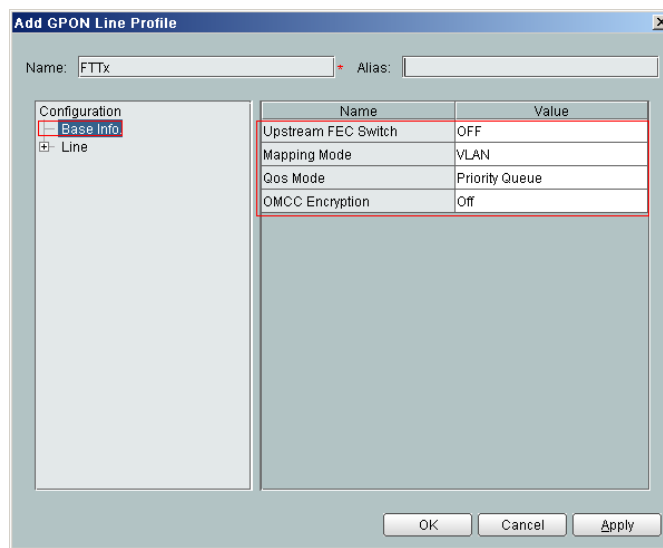
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a line profile. For details, see [19.1.3 Configuring a GPON Line Profile](#).**

In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

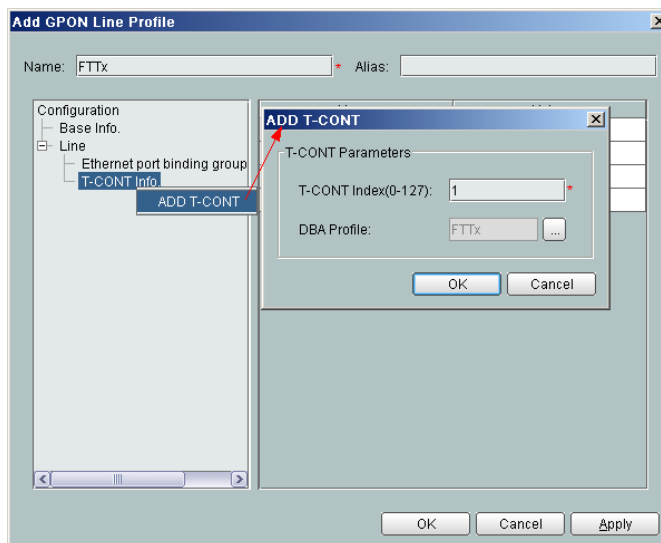
In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to

GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

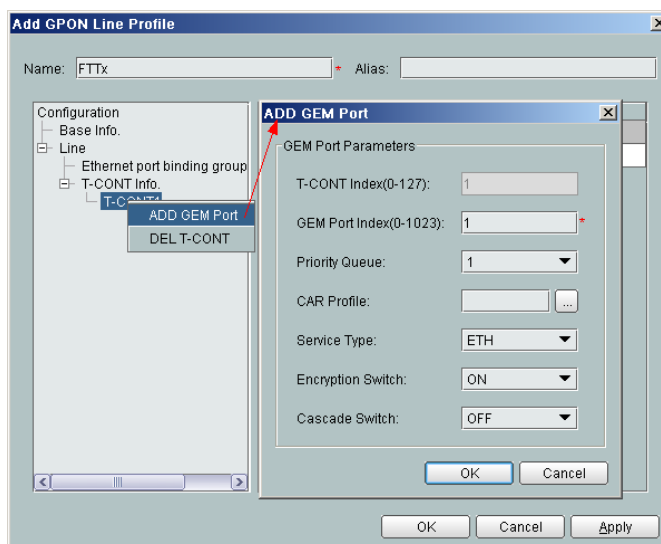
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue



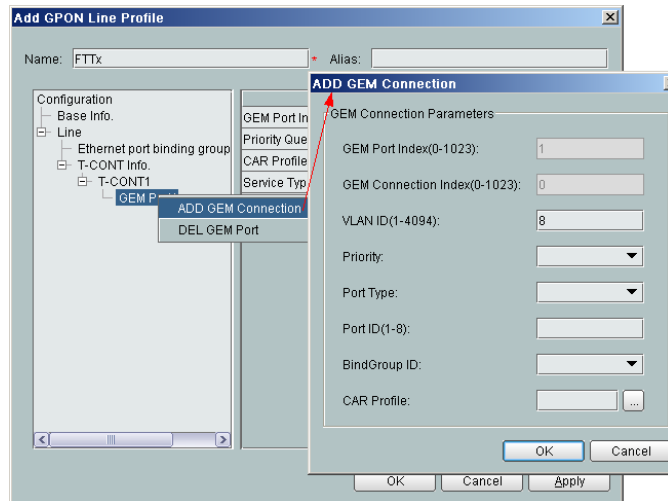
- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx



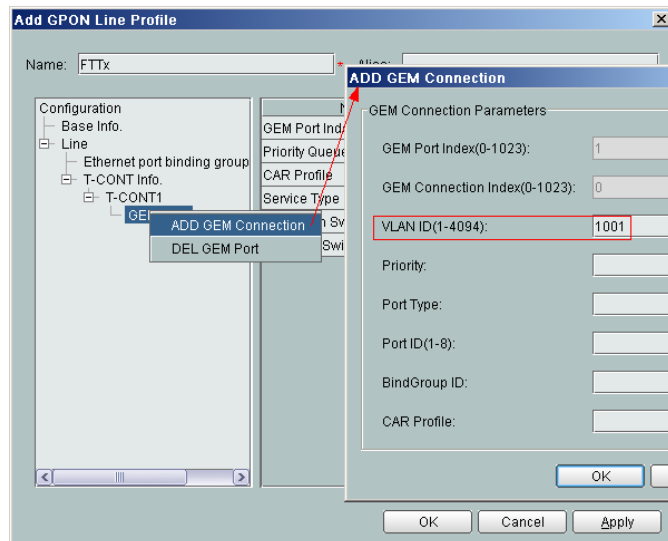
- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **0** automatically)
  - VLAN ID: 8

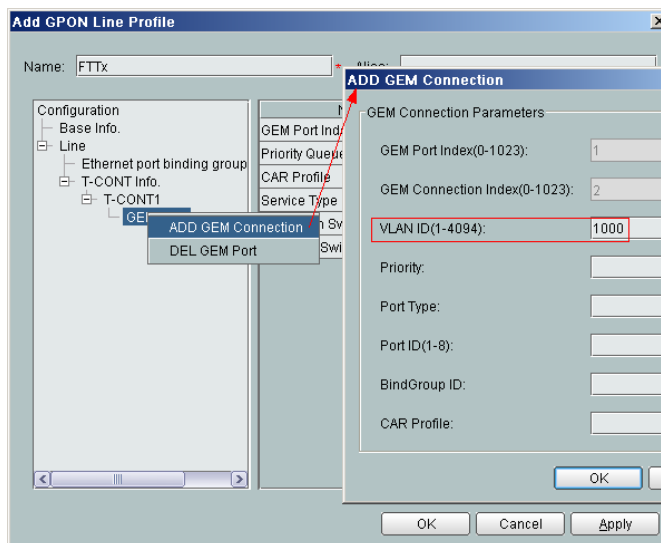


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **1** automatically)
  - VLAN ID: 1001

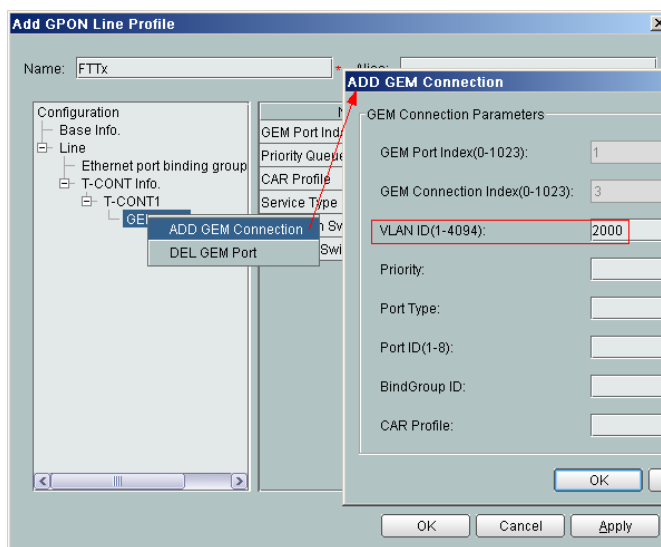


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **2** automatically)
  - VLAN ID: 1000





- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 3 (this parameter is set to **3** automatically)
  - VLAN ID: 2000



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.

- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
- (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
  - Name: MDU
  - ONU ID: 0
  - ONU Type: MDU
  - On the **Basic Parameters** tab page, set the parameters.
    - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
    - Authentication Mode: SN
    - SN: 485754438E1CDE42
  - On the **Network Management Channel Parameters** tab page, set the parameters.
    - OLT sets network management channel parameters: selected
    - SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
    - Manager VLAN: 8
    - IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
    - IP Address Mask: 255.255.255.0

- (6) Click **OK**.
6. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**
  - (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
  - (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
  - (6) In the dialog box that is displayed, set the parameters.
    - Name: FTTx\_MDU
    - Connection Type: LAN-GPON
    - VLAN ID: 8
    - Interface Selection: 0/2/1/0/0
    - Service Type: Multi-Service VLAN
    - User VLAN: 8
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

(7) Click **OK**.

- **Configure the voice service on the OLT side.**

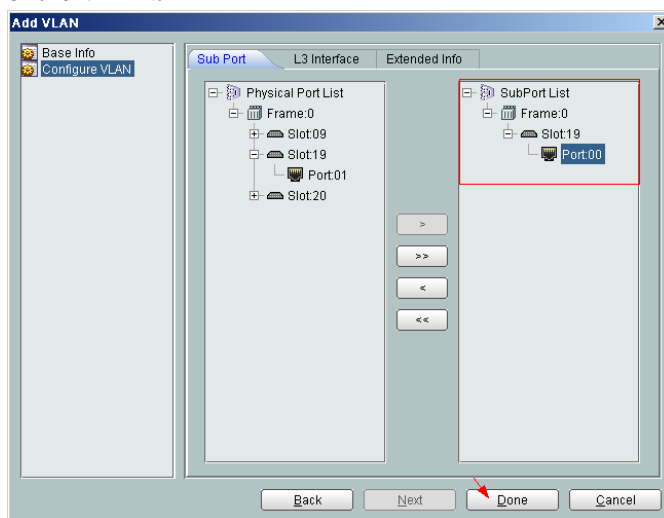
The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

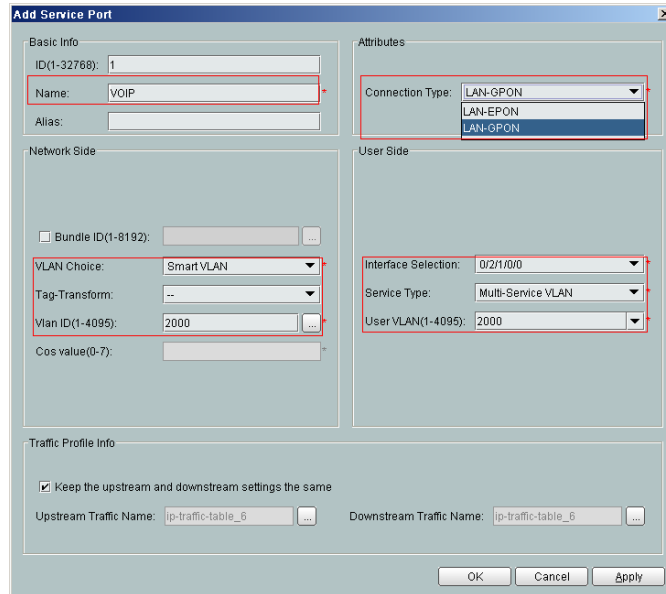
A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN

- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: VOIP
      - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
      - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
      - Vlan ID: 2000
      - Service Type: Multi-Service VLAN
      - User VLAN: 2000
      - Keep the upstream and downstream settings the same: selected
      - Upstream Traffic Name: FTTx



(4) Click **OK**.

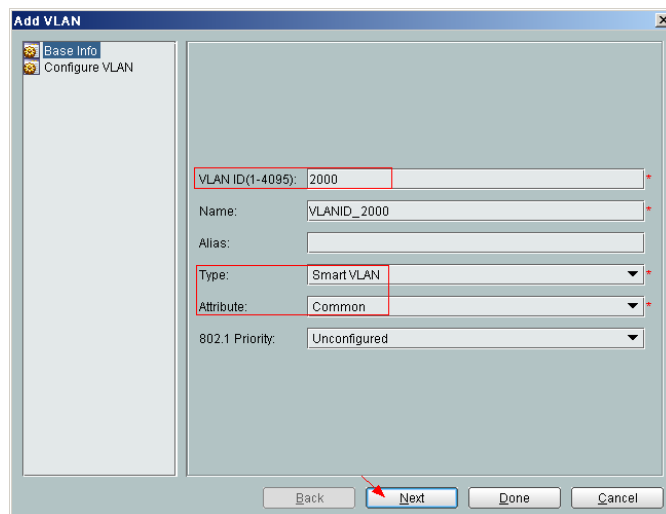
- **Configure the voice service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

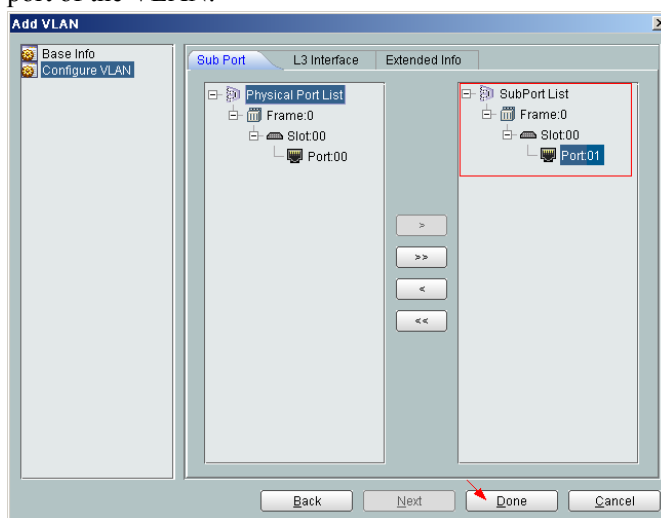
A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN

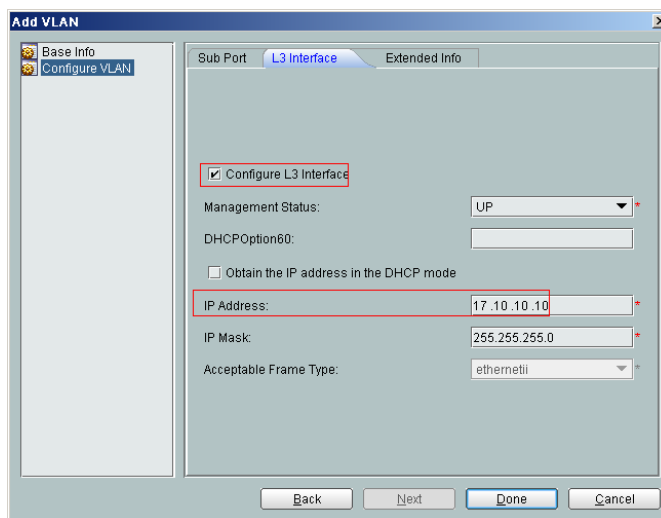


(4) Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 17.10.10.10



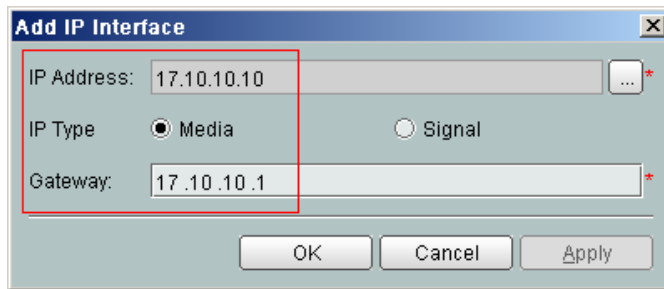
(5) Click **Done**.

2. **Add an IP interface on the MDU side. For details, see [19.3.2 Configuring an IP Interface](#).**

The procedure for adding a signaling IP interface is similar to the procedure for adding a media IP interface. The IP interface of the VLAN can be configured only when the L3 interface of the VLAN is configured with an IP address. According to the networking plan, the media IP address and the signaling IP address can be different.

- (1) In the information list, select the record where **VLAN ID** is set to **2000** and click the **IP Interface** tab in the lower pane.
- (2) On the **IP Interface** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.

- IP Address: 17.10.10.10
- IP Type: Media
- Gateway: 17.10.10.1



(4) Click **OK**.

3. **Configure a static route. For details, see [19.3.8 Configuring a Static Route](#).**

If the IP address of the VLAN IP interface is not in the same network segment as the IP address of the MGC, you need to configure a static route.

- (1) Choose **Static Route** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Target IP Address: 200.200.200.200 (IP address of the MGC or IMS)
  - Target Mask: 255.255.255.0
  - Next Hop IP Address: 17.10.10.1

(4) Click **OK**.

4. **Add a UAS profile. For details, see [19.3.10 Configuring a UAS Profile](#).**

- (1) Choose **Configuration > Access Profile > UAS Profile** from the main menu.
- (2) Right-click and choose **Add Global Profile** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Name: uasprofile1
  - Address Mode: Fix mode
  - IP Address 1: 200.200.200.200 (IP address of the IMS)
  - Proxy Port: 5060



**Add UAS Profile**

Profile Parameter

Name: uasprofile1 \*

Alias:

Address Mode: Fix mode ▼

IP Address 1: 200.200.200.200 \*

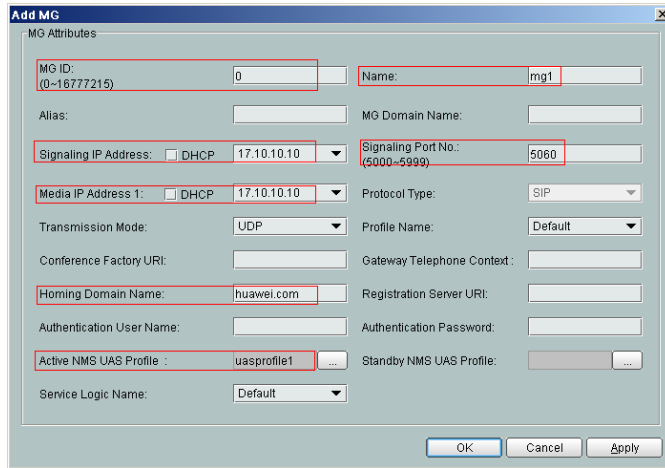
IP Address 2: . . .

Proxy Port(1-65535): 5060 \*

Domain Name:

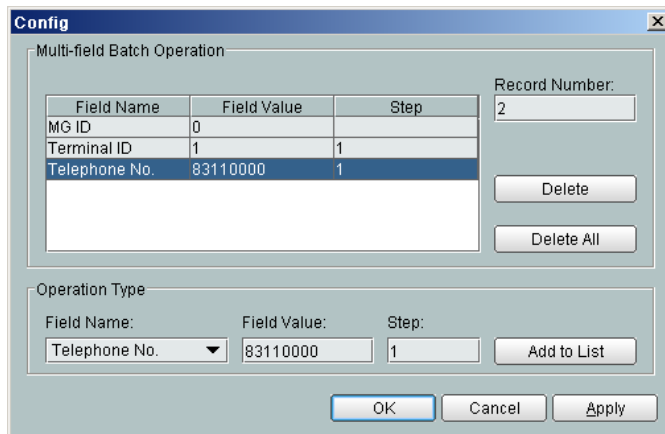
OK Cancel Apply

- (4) Click **OK**.
5. **Add a SIP interface. For details, see 19.3.12 Adding an MG.**
  - (1) Choose **Voice Gateway > Media Gateway** from the navigation tree.
  - (2) On the **Media Gateway** tab page, set the filter criteria to display the required MGs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - MG ID: 0
    - Name: mg1
    - Signaling IP Address: 17.10.10.10
    - Signaling Port No.: 5060
    - Media IP Address 1: 17.10.10.10
    - Transmission Mode: UDP
    - MG Domain Name: huawei.com
    - Active NMS UAS Profile: uasprofile1



- (5) Click **OK**.
6. **Configure the attributes of a VoIP PSTN port. For details, see 19.3.15 Configuring a VoIP PSTN Port.**
  - (1) Choose **ASL > POTS Port** from the navigation tree.
  - (2) Click the **VoIP PSTN Port** tab, and set the filter criteria to display the required VoIP PSTN ports.
  - (3) In the information list, select ports 0/1/0 and 0/1/1 by holding down the **Shift** key, right-click, and then choose **Configure Attributes** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

| Parameter     | Value    | Step |
|---------------|----------|------|
| MG ID         | 0        | -    |
| Telephone No. | 83110000 | 1    |



- (5) Click **OK**.

----End

## Result

Phone 1 and phone 2 can communicate with each other after the configuration is complete.

- The caller hears the dialing tone after taking the phone off the hook.
- When the caller dials the telephone number of the callee, the phone of the callee rings successfully and the caller hears the ringback tone.
- The caller and the callee communicate with each other successfully.
- After the callee hangs up, the caller hears the busy tone.

## 19.4.8 Configuring the GPON FTTB Service by Using a Service Provisioning Profile

This topic describes how to configure various services when a user is connected to an MDU in LAN access mode and the MDU is connected to an OLT through a GPON port.

### Prerequisite

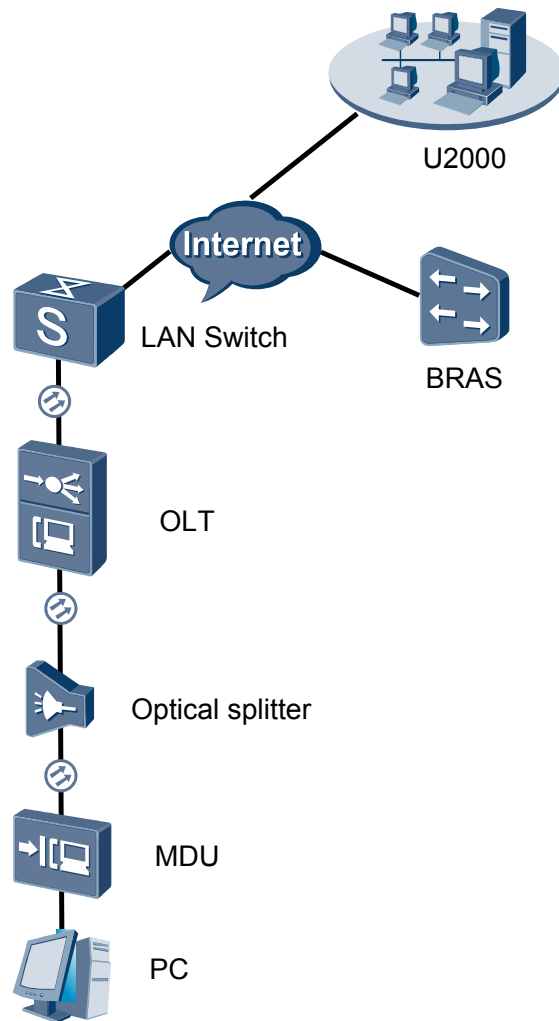
The OLT must be added to the U2000.

### Context

For details of the data plan, see [19.4.1 Data Plan for the GPON FTTB Services](#).

### Example Network

A service provisioning profile provides common parameters that need to be set for services. To provision a service quickly, set a service provisioning profile, bind it to a service port, and customize service parameters.

**Figure 19-7** Configuring the GPON FTTB service by using a service provisioning profile

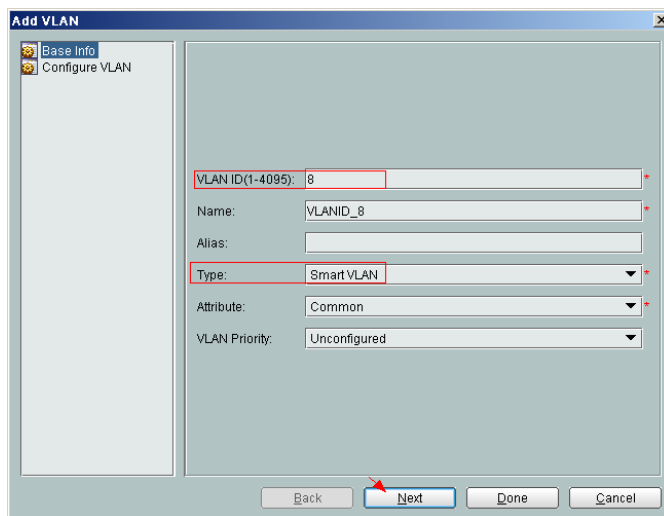
## Procedure

- Add the MDU to the U2000 in profile mode.
  1. Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).

A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

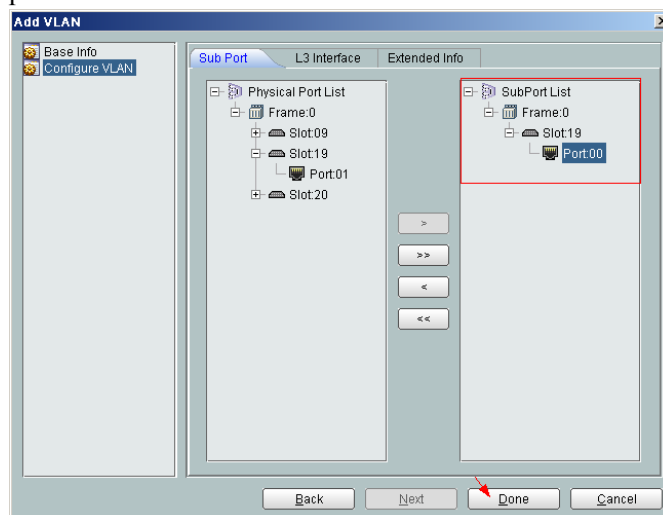
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.

- VLAN ID: 8
- Type: Smart VLAN

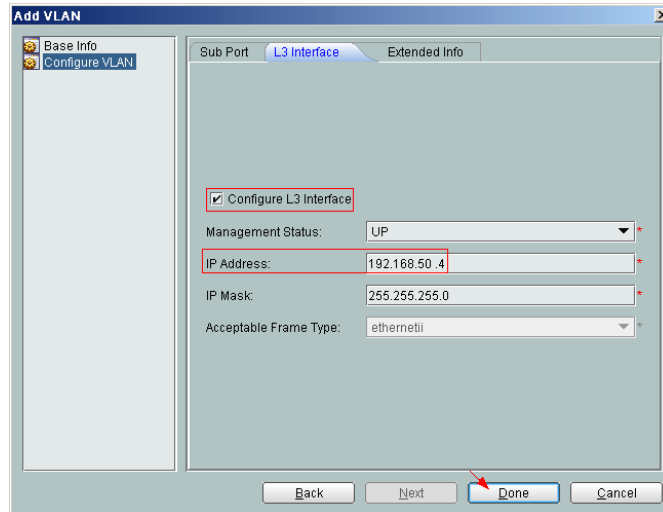


(5) Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4

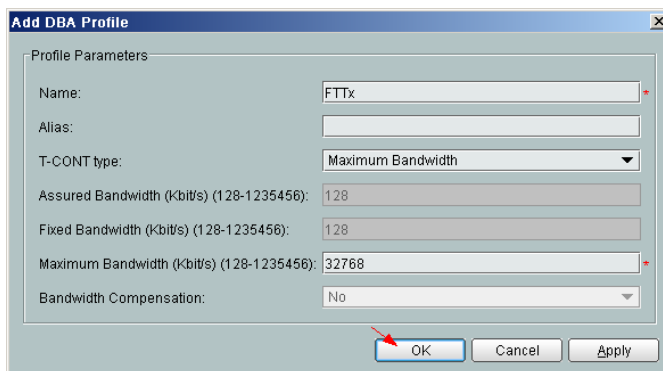


- (6) Click **Done**.
2. **Configure an MDU SNMP profile. For details, see [19.1.1 Configuring an MDU SNMP Profile](#).**
    - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
    - (2) Click the **MDU SNMP Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: snmpprofile
      - SNMP Version: v1
      - Read Name: public
      - Write Name: private
      - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
      - Trap UDP Port: 162
      - SNMP Security Name: public



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a DBA profile. For details, see [19.1.2 Configuring a DBA Profile](#).**
    - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.

- (2) Click the **DBA Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Name: FTTx
  - T-CONT type: Maximum Bandwidth
  - Maximum Bandwidth: 32768

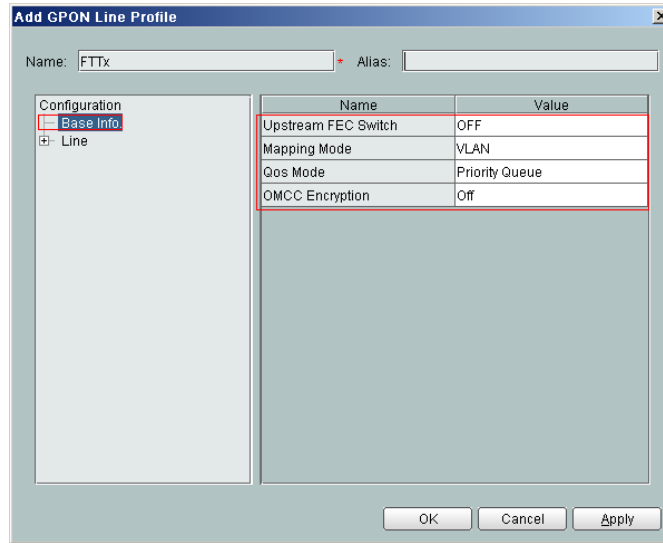


- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a line profile. For details, see [19.1.3 Configuring a GPON Line Profile](#).**

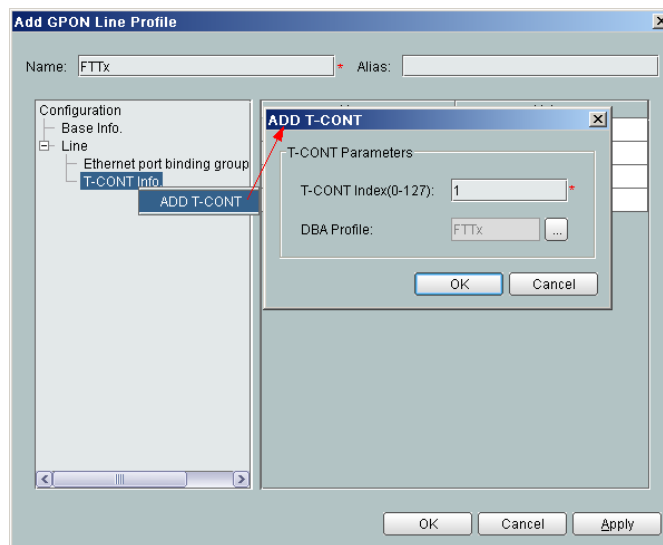
In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue

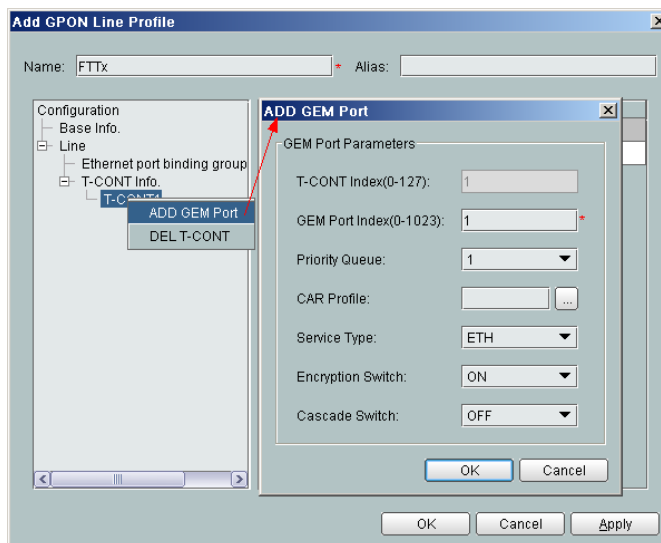


- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx

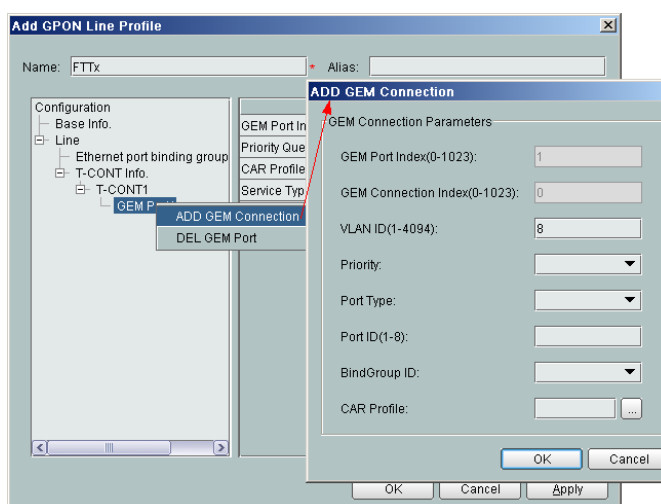


- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1

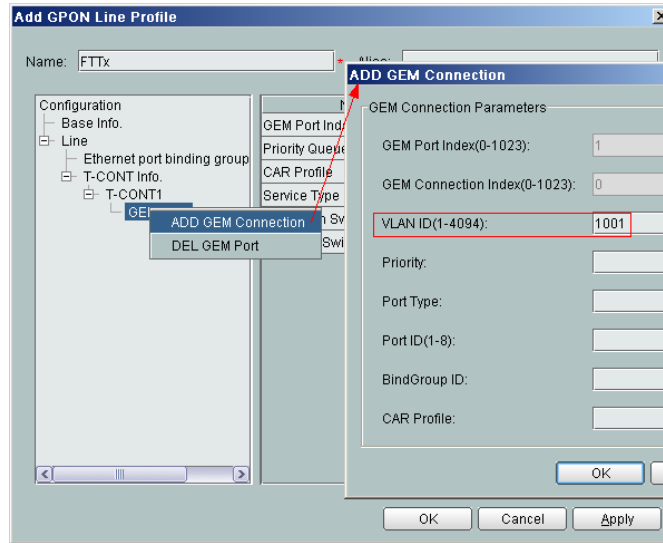




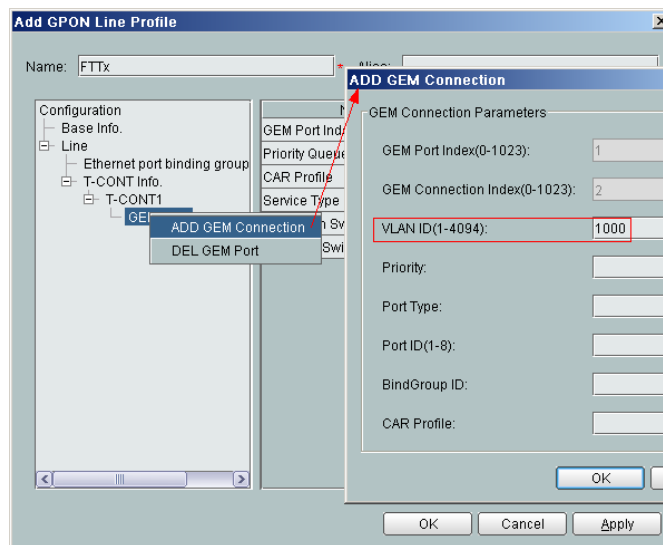
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **0** automatically)
  - VLAN ID: 8



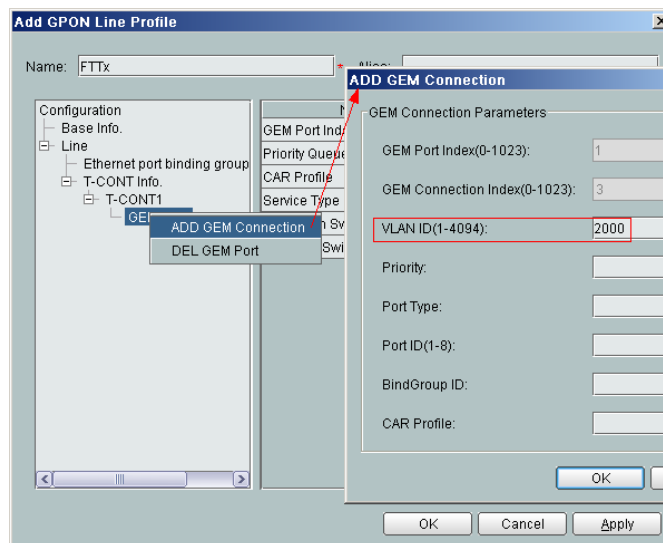
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **1** automatically)
  - VLAN ID: 1001





- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **2** automatically)
  - VLAN ID: 1000



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 3 (this parameter is set to **3** automatically)
  - VLAN ID: 2000



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - SN: 485754438E1CDE42
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected

- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

Basic Parameters Network Management Channel Parameters

Line Profile: FTTx Service Profile:

Alarm Profile: ONU VAS Profile:

Authentication Info

Authentication Mode: SN Timeout Duration (h)(1-168):  No Limit

SN: 485754438E1CDE42 Password: shenzhen

ONU Type

Vendor ID: HWTC(2011) Terminal Type: MDU

Software Version:

Locate to ONU list after operation succeeds

OK Cancel Apply

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

Basic Parameters Network Management Channel Parameters

OLT sets network management channel parameters SNMP Profile Name: snmpprofile

SNMP Params Info

Manager VLAN(1-4095): 8 Priority(0-7):

IP Address: 192.168.50.2 IP Address Mask: 255.255.255.0

Gateway IP Address:

Static Route Parameters

IP Address: IP Address Mask:

Next Hop IP Address:

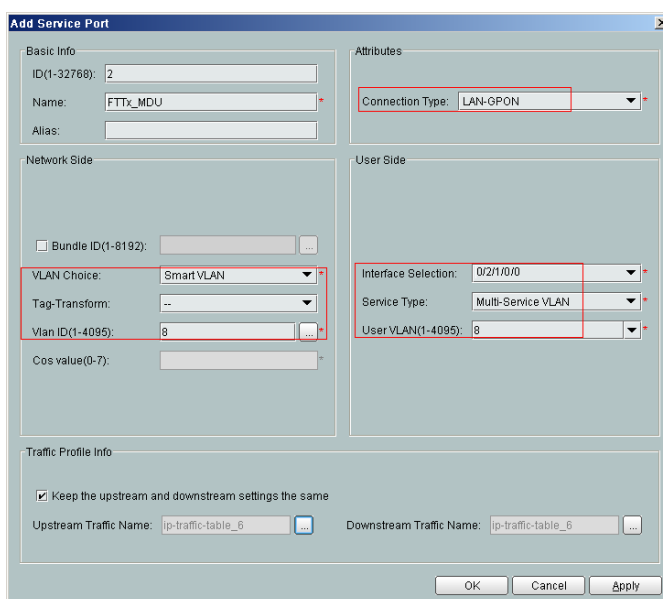
Locate to ONU list after operation succeeds

OK Cancel Apply

(6) Click **OK**.

6. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

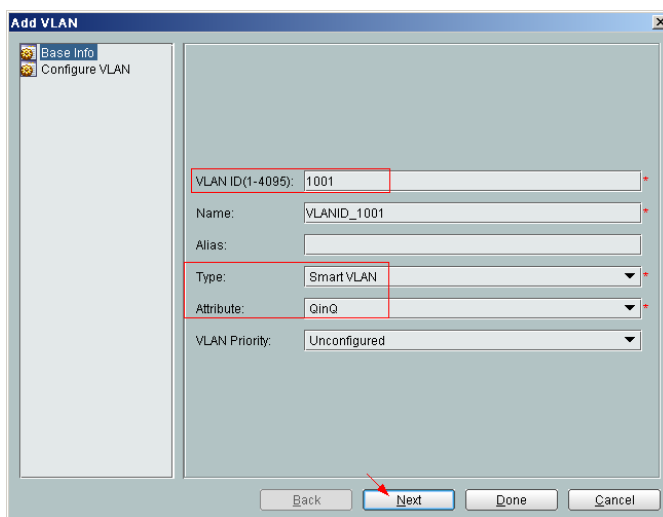
- **Configure the Internet service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

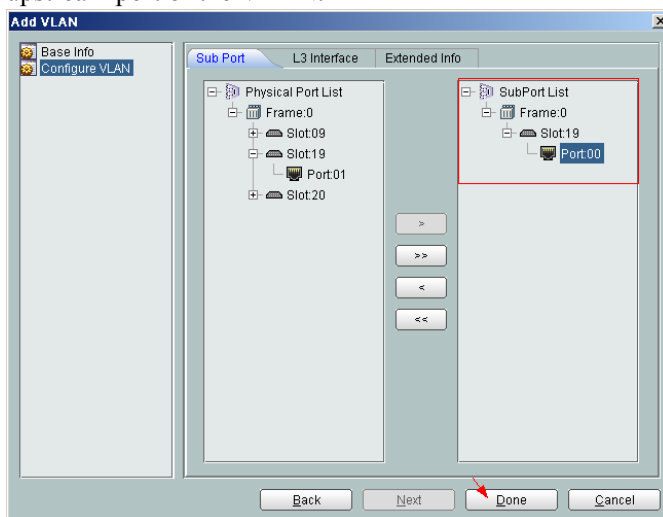
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN
  - Attribute: QinQ

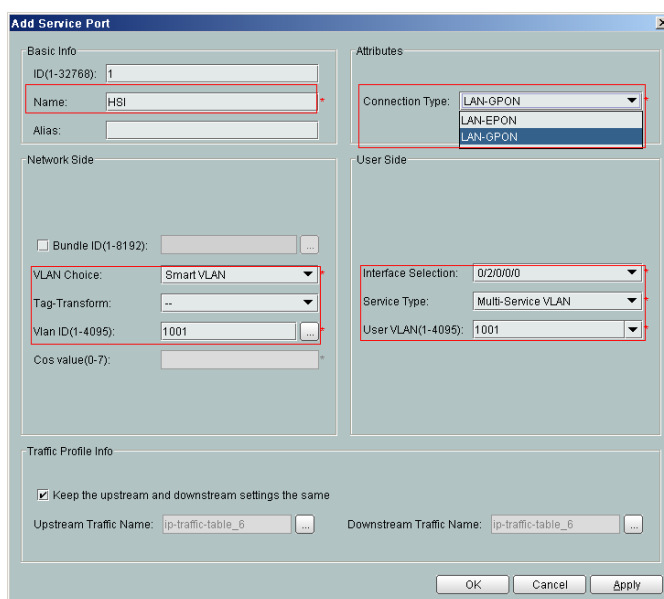


- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: HSI

- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- VLAN ID: 1001
- Service Type: Multi-Service VLAN
- User VLAN: 1001
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



(4) Click **OK**.

● **Configure the multicast service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

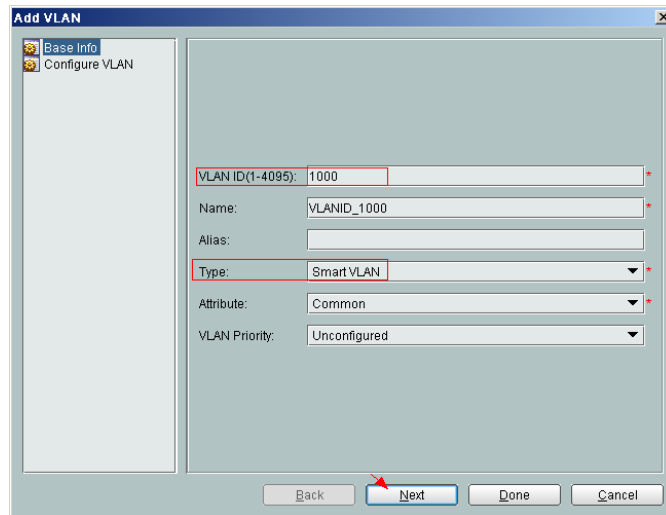
1. **Add a VLAN. For details, see 19.2.1 Configuring a VLAN.**

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Type: Smart VLAN
- (4) Click **Done**.

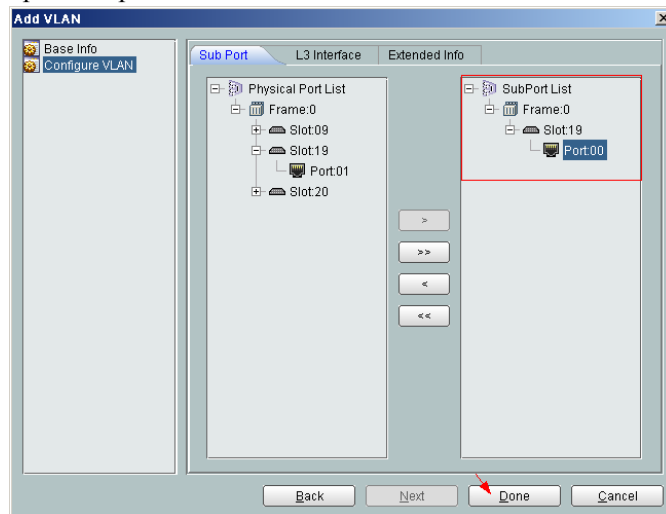
2. **Configure a service VLAN on the OLT side. For details, see 19.2.1 Configuring a VLAN.**

A service VLAN is the VLAN used for the multicast service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Type: Smart VLAN



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
3. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name:IGMP
      - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)



- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- Vlan ID: 1000
- Service Type: Multi-Service VLAN
- User VLAN: 1000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams)

- (4) Click **OK**.
4. **Add a multicast VLAN on the OLT side. For details, see [19.2.7 Configuring the Multicast VLAN](#).**
- (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
  - (2) On the **Multicast VLAN** tab page, set the filter criteria to display the required multicast VLANs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - IGMP Version: IGMP V3
    - Work Mode: igmp\_proxy
    - VLAN ID: 3000

**Add Multicast VLAN**

Basic Info

Device Name: 10.71.227.35

Name: Alias:

IGMP Version: IGMP V3  Default VLAN

Autogeneration Program IP Address

Program Match Mode:  Enable  Disable

Start IP Address: End IP Address:

Work Mode

IGMP Work Mode: igmp\_proxy

Snooping Report Switch:  Open  Close

Snooping Leave Switch:  Open  Close

IGMP Video Mode: Multicast

IGMP Inner VLAN(1~4095):

<Back Next> Finish Cancel

---

**Add Multicast VLAN**

Default Up Port Info

Frame: 0 Slot: 19 Port: 0

Parameter Info

IGMP Report Priority (0-7): 6 Report Interval(S) (10-5000): 10

Log Switch:  Open  Close Global-Leave Switch:  Open  Close

<Back Next> Finish Cancel

---

**Add Multicast VLAN**

Select VLAN

VLAN Attribute=Common VLAN  No. 31, Total: 32

| VLAN ID | Name         | Alias | Type          | Attribute | Super VLAN ID |
|---------|--------------|-------|---------------|-----------|---------------|
| 31      | VLANID_31    |       | Smart VLAN    | Common    | --            |
| 32      | VLANID_32    |       | Smart VLAN    | Common    | --            |
| 33      | VLANID_33    |       | Smart VLAN    | Common    | --            |
| 34      | VLANID_34    |       | Smart VLAN    | Common    | --            |
| 35      | VLANID_35    |       | Smart VLAN    | Common    | --            |
| 36      | VLANID_36    |       | Smart VLAN    | Common    | --            |
| 37      | VLANID_37    |       | Smart VLAN    | Common    | --            |
| 38      | VLANID_38    |       | Smart VLAN    | Common    | --            |
| 39      | VLANID_39    |       | Smart VLAN    | Common    | --            |
| 40      | VLANID_40    |       | Smart VLAN    | Common    | --            |
| 77      | VLANID_77    |       | Smart VLAN    | Common    | --            |
| 101     | VLANID_101   |       | Smart VLAN    | Common    | --            |
| 102     | VLANID_102   |       | Smart VLAN    | Common    | --            |
| 103     | VLANID_103   |       | Smart VLAN    | Common    | --            |
| 234     | VLANID_234   |       | Standard V... | Common    | --            |
| 235     | VLANID_235   |       | Standard V... | Common    | --            |
| 2000    | VLANID_20... |       | Smart VLAN    | Common    | --            |
| 3000    | VLANID_30... |       | Smart VLAN    | Common    | --            |
| 4001    | VLANID_40... |       | Smart VLAN    | Common    | --            |

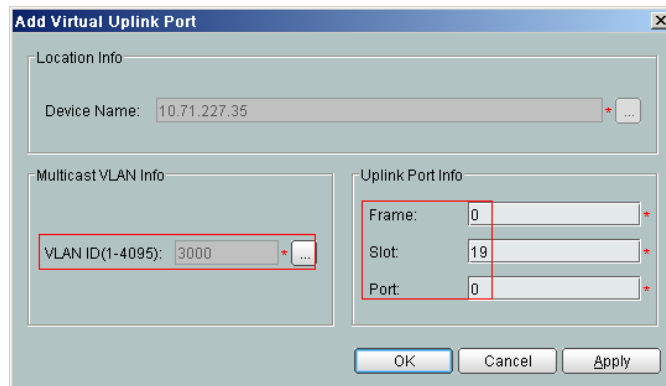
<Back Next> Finish Cancel

(5) Click **Finish**.

5. **Add a virtual upstream port for the multicast service on the OLT side. For details, see [19.2.5 Configuring the Virtual Multicast Upstream Port](#).**

(1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.

- (2) On the **Virtual Uplink Port** tab page, set the filter criteria to display the required virtual upstream ports.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Frame: 0
  - Slot: 19
  - Port: 0

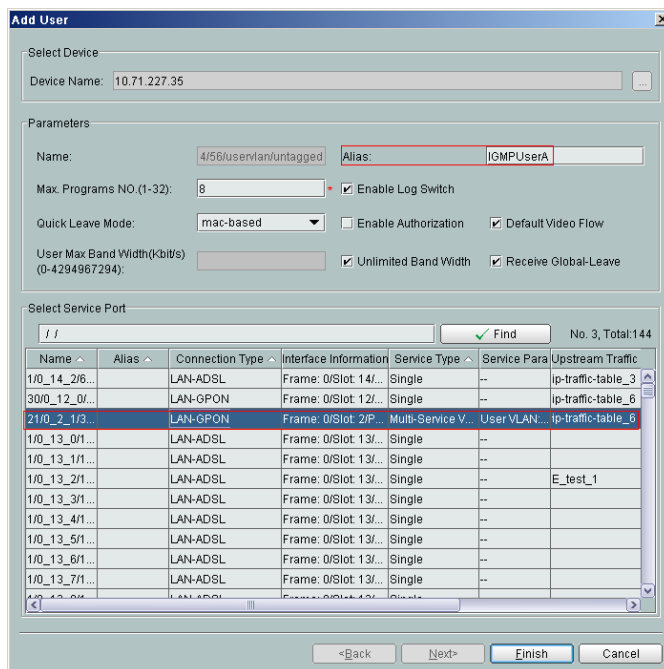


- (5) Click **Done**.
6. **Configure a program profile on the OLT side. For details, see [19.2.8 Configuring a Program Profile](#).**
- (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
  - (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: program1
    - Start IP Address: 224.0.1.1 (IP address of the multicast program)
    - End IP Address: 224.0.1.1
    - Source IP Address: 10.10.10.20 (IP address of the multicast server)
    - Preview Profile: 0 (the default value)

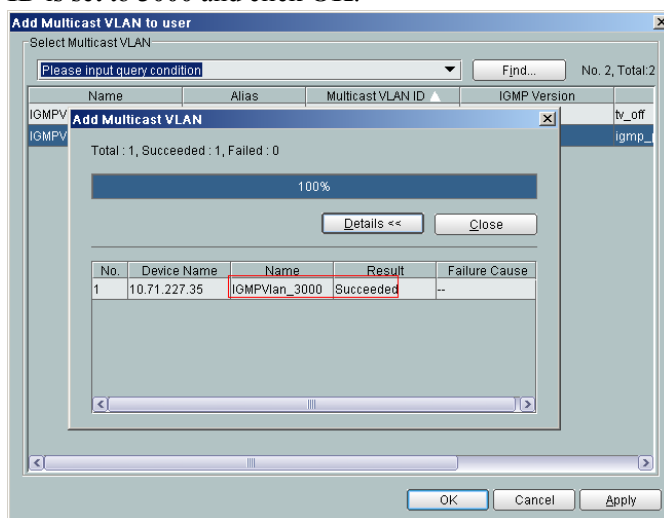
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required OLT and click **Next**. Then, set **VLAN ID** to **3000**.
  - (8) Click **OK**.
7. **Configure a multicast user on the OLT side. For details, see [19.2.10 Configuring a Multicast User](#).**

To enable user authentication, select **Enable Authorization**. To add a rights profile and apply it to NEs, choose **Configuration > Access Profile Management > IGMP Profile** from the main menu and click the **Right Profile** tab.

- (1) Choose **Multicast > Multicast User** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Alias: IGMPUserA
  - Unlimited Band Width: selected
  - Select Service Port: service virtual port named **IGMP**



- (4) Click **Finish**.
- (5) Select the multicast user, click the **User Multicast VLAN** tab in the lower pane, right-click, and then choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, select the record where **Multicast VLAN ID** is set to **3000** and click **OK**.



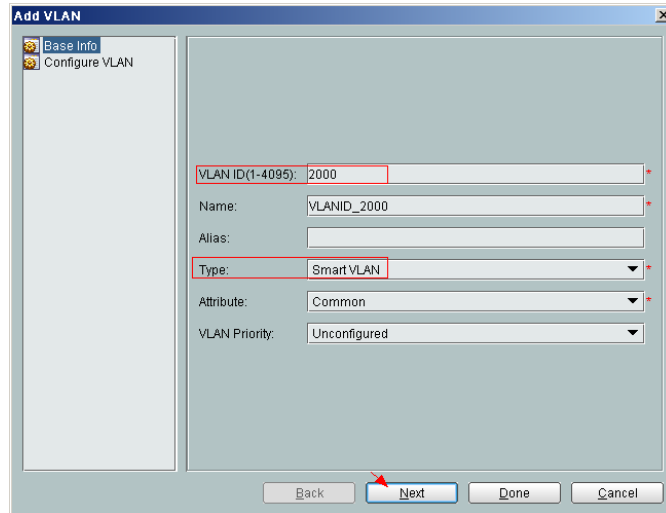
- **Configure the voice service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

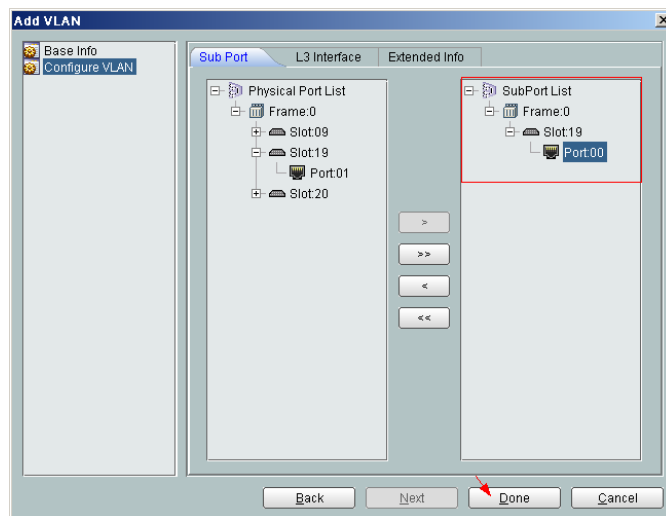
1. **Configure a service VLAN on the OLT side. For details, see 19.2.1 Configuring a VLAN.**

A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN

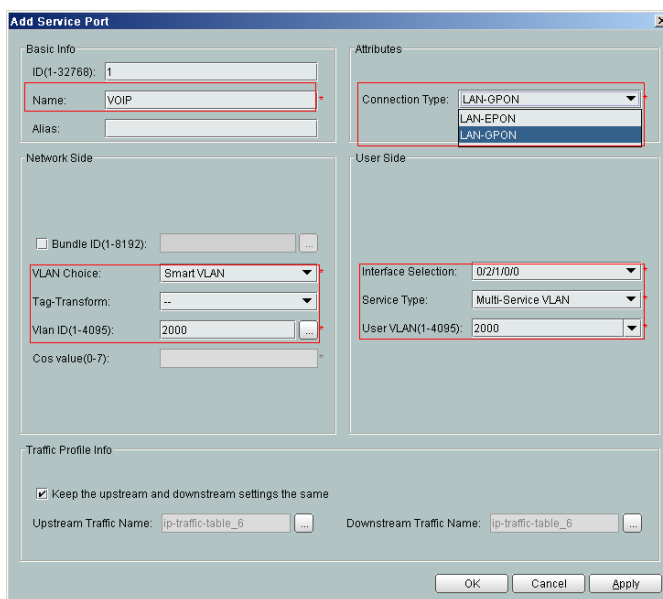


- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: VOIP

- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- Vlan ID: 2000
- Service Type: Multi-Service VLAN
- User VLAN: 2000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx



(4) Click **OK**.

● **Configure the service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Add a service provisioning profile.**

- (1) Choose **Configuration > Access Profile Management > Service Provisioning Profile** from the main menu.
- (2) Click the **xPON FTTB Service Provisioning Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **serviceprofile**.
  - Right-click **ServicePort** in the navigation tree and choose **Add serviceport** from the shortcut menu. In the right pane, set the parameters of the service virtual port.

In the case of the Internet service:

- ServicePort Name: pppoe
- Service Priority: 1

- VLAN Attribute: Common
- Network Side VLAN: 1001
- VPI: auto
- Service Type: Multi-service VLAN
- User VLAN: untagged
- Keep traffic the same: selected
- Upstream Traffic Name: FTTx
- Downstream Traffic Name: FTTx



In the case of the multicast service:

- ServicePort Name: multicast
  - Service Priority: 4
  - VLAN Attribute: Common
  - Network Side VLAN: 1000
  - VPI: auto
  - Service Type: Multi-service VLAN
  - User VLAN: untagged
  - Keep traffic the same: selected
  - Upstream Traffic Name: FTTx
  - Downstream Traffic Name: FTTx
- Right-click **Multicast User** in the navigation tree and choose **Add multicast user** from the shortcut menu. In the right pane, set the parameters of the multicast user.
    - IGMP Flow Channel: multicast
    - Multicast VLAN: 1000

(5) Click **OK**.

## 2. Add a service.

The steps for configuring an xDSL port are similar to the steps for configuring an Ethernet port.

- (1) Choose **ETH** from the navigation tree.
- (2) Click the **Ethernet Port** tab, and set the filter criteria or click  to display the Ethernet ports.
- (3) In the information list, right-click port 0/1/1 and choose **Add Service** from the shortcut menu.
- (4) In the dialog box that is displayed, click  next to **Service Provisioning Profile**. In the dialog box that is displayed, select the service provisioning profile whose **Name** is set to **serviceprofile**.
- (5) Click **OK**.

---End



## Result

The user gains access to the Internet after the dialup is performed successfully by the PPPoE dialup software on the PC.

Phone 1 and phone 2 can communicate with each other after the configuration is complete.

- The caller hears the dialing tone after taking the phone off the hook.
- When the caller dials the telephone number of the callee, the phone of the callee rings successfully and the caller hears the ringback tone.
- The caller and the callee communicate with each other successfully.
- After the callee hangs up, the caller hears the busy tone.



# 20 Configuring the GPON FTTH Services

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## About This Chapter

An FTTH network consisting of an OLT in profile mode and a number of ONTs provides users with Internet services, multicast services, and voice services.

### Context

The ONT configuration is simplified when the OLT is in profile mode.

To query the xPON mode of the current system, run the **diagnose** command to enter the diagnosis mode and then run the **display xpon mode** command.



### CAUTION

- In the diagnosis mode, the user with the rights higher than operator can perform this operation.
- Switching the xPON mode of the system enables the system to automatically save data and restart.

---

```
huawei (config) #diagnose
huawei (diagnose) %%display xpon mode

Current config mode: Profile-mode

```

You can run the **xpon mode switch-to** command in the diagnosis mode to switch the xPON mode of the current system, for example, from discrete mode to profile mode.

```
huawei (config) #diagnose
huawei (diagnose) %%xpon mode switch-to profile-mode
Warning: The operation will automatically save and reboot system. Are you sure
to proceed? (y/n) [n]:
```

#### [20.1 Adding an ONT to the U2000 \(OLT in Profile Mode\)](#)

This topic describes how to add an ONT to the U2000 when the OLT is in the profile mode. After an ONT is added successfully, you can configure FTTH services for the ONT on the U2000.

#### [20.2 Configuring Services](#)

An FTTH network consisting of an OLT and a number of MDUs provides users with Internet, multicast, and voice services.

### [20.3 Configuration Examples of the GPON FTTH Services](#)

This topic provides examples to describe how to configure the Internet, voice, and multicast services in a GPON FTTH network.

## 20.1 Adding an ONT to the U2000 (OLT in Profile Mode)

This topic describes how to add an ONT to the U2000 when the OLT is in the profile mode. After an ONT is added successfully, you can configure FTTH services for the ONT on the U2000.

### Context

After an ONT is added on the NE side, it supports online confirmation and offline deployment. The information about the profile bound to an ONT and the authentication information must be the same as those configured for the actual ONT on the user side.

- Online confirmation: If you add an ONT after the ONT is powered on, it goes online immediately.
- Offline deployment: If an ONT is not online, you need to add it offline and configure services for the ONT. After the ONT goes online, the configuration is applied to the ONT through the optical network termination management and control interface (OMCI). Then, service configuration for the ONT is complete.

#### 20.1.1 Configuring a GPON Line Profile

The GPON line profile is a collection of parameters required for setting up channels for GPON lines. You need to bind the ONU and line profile when the ONU management mode is **OMCI** or **SNMP**.

#### 20.1.2 Configuring a GPON Service Profile

The GPON service profile consolidates the parameters related to the ONU service into a profile.

#### 20.1.3 Confirming an ONT

This topic describes how to confirm the auto-find ONU connected to a port. An auto-find ONU is in the auto-find state before it is confirmed. The auto-find ONU can start to work only after it is confirmed.

### 20.1.1 Configuring a GPON Line Profile

The GPON line profile is a collection of parameters required for setting up channels for GPON lines. You need to bind the ONU and line profile when the ONU management mode is **OMCI** or **SNMP**.

### Prerequisite

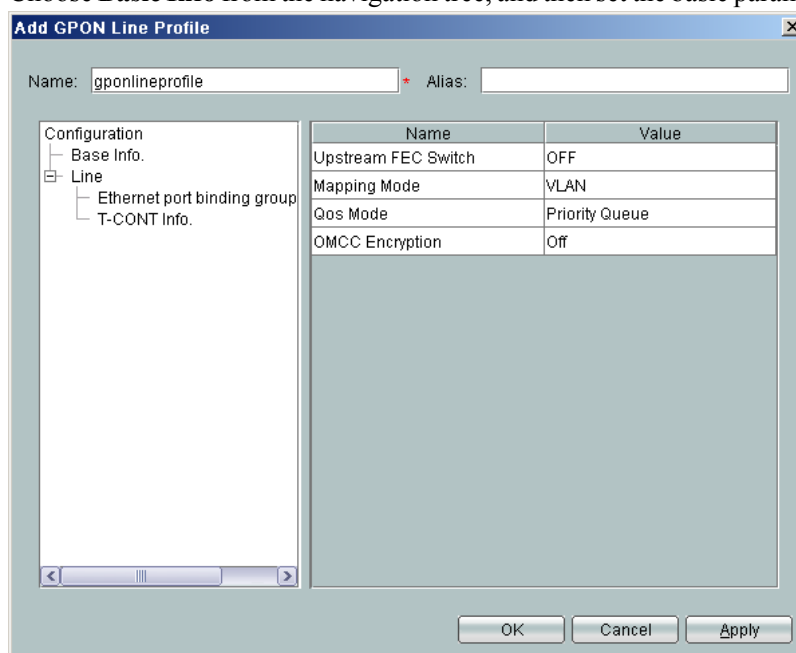
The DBA profile must be already configured in the system. For details, see [19.1.2 Configuring a DBA Profile](#).

### Context

- The flow mapping mode configured in the GPON line profile must match the flow mapping mode of the flow (such as the GEM connection flow) specified in the GPON line profile.
- The flow control mode configured in the GPON line profile must match the flow control mode of the GEM port specified in the GPON line profile.
- When adding a GPON line profile, you can use or reference the four default line profiles, `lineprofile_1` to `lineprofile_4`, provided by the NE.

## Procedure

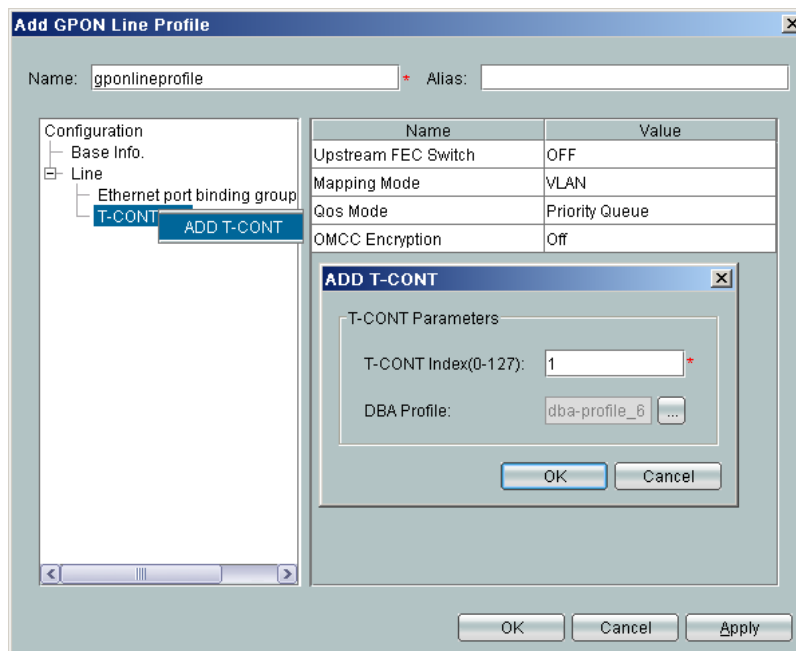
- 1 Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- 2 Click the **GPON Line Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.
  1. Choose **Basic Info** from the navigation tree, and then set the basic parameters of the profile.



| Key Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream FEC Switch | Specifies whether to enable the upstream forward error correction (FEC) function of the ONT line profile. To improve the reliability of data transmission between the OLT and the ONT, enable the FEC function. After the upstream FEC function is enabled, the system inserts the redundancy data into normal packets. In this manner, the line has the error tolerance capability, but certain bandwidth is wasted. |
| Mapping Mode        | Flow mapping manages the service streams on the ONU, namely, manages the mapping between GEM ports and the upstream data flows on the ONT service ports. After the mapping is established, the ONU service streams are carried and transmitted upstream through the specified GEM ports. Each ONT can be configured with only one mapping mode.                                                                       |

| Key Parameter | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Qos Mode      | <ul style="list-style-type: none"> <li>● When the <b>Qos Mode</b> of the GEM port is set to <b>Priority Queue</b>, users can specify the transmit queue of the GEM port packets in a T-CONT. When transmitting the upstream data, the T-CONT transmits the data strictly according to the priority of the queue.</li> <li>● When the <b>Qos Mode</b> of the GEM port is set to <b>GEM Port CAR</b>, the ONU limits the rate of the data packets carried on the GEM port according to the CAR setting of the GEM port. Currently, the GEM port CAR is set by binding the CAR profile to the ONU, and only the average rate and maximum rate can be set. When several service streams exist on the GEM port, the service streams are schedule in PQ, WRR, or PQ+WRR mode, depending on the default scheduling mode of the ONU. Currently, the scheduling mode cannot be set on the OLT. When a T-CONT consists of multiple GEM ports, the scheduling mode of the data packets between the GEM ports also depends on the default scheduling mode of the ONU.</li> <li>● When the flow control mode of the GEM port is set to <b>Flow CAR</b>, the ONU performs CAR on the service streams of the GEM port. The controlling is more specific than the GEM port CAR. After being performed with CAR, the service streams are scheduled in the T-CONT queue. The scheduling mode is the default scheduling mode of the ONU.</li> </ul> |

2. Choose **T-CONT Info.** from the navigation tree, right-click, and then choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set **T-CONT Index** and **DBA Profile**.



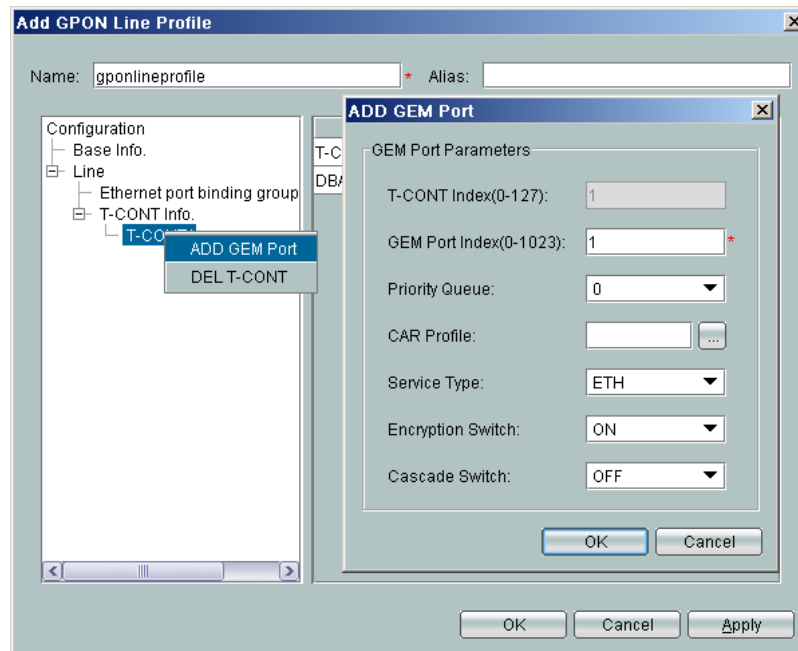
**CAUTION**

It is recommended that you do not set **T-CONT Index** to **0**. TCONT 0 is reserved for the internal communication of the GPON protocol.

- Choose **T-CONTx** from the navigation tree, right-click, and then choose **ADD GEM Port** from the shortcut menu. In the dialog box that is displayed, set **GEM Port Index**.

**NOTE**

x indicates the T-CONT index.

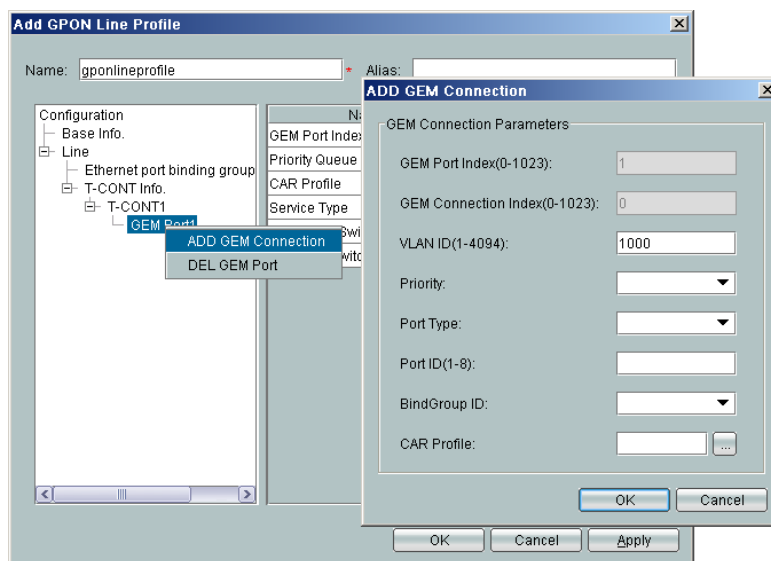


- Choose **GEM Portx** from the navigation tree, right-click, and then choose **ADD GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the basic parameters of the GEM connection.

**NOTE**

x indicates the GEM port index.





- 4 Click **OK**.
- 5 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 6 In the dialog box that is displayed, select the required NE(s), and click **OK**.

----End

## Command Reference

| To...                                                                                                     | Run the Command...   | In...                 |
|-----------------------------------------------------------------------------------------------------------|----------------------|-----------------------|
| Enter the ONT line profile mode                                                                           | ont-lineprofile gpon | Global config mode    |
| Bind a DBA profile to a T-CONT                                                                            | tcont                | ONT line profile mode |
| Bind a GEM index to a T-CONT and configure the related attributes in an ONT line profile                  | gem add              | ONT line profile mode |
| Set up the mapping relationship between the upstream data flow on the ONT service ports and the GEM ports | gem mapping          | ONT line profile mode |
| Configure the QoS mode in the ONT line profile                                                            | qos-mode             | ONT line profile mode |

### 20.1.2 Configuring a GPON Service Profile

The GPON service profile consolidates the parameters related to the ONU service into a profile.

## Procedure

- 1 Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- 2 Click the **GPON Service Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.

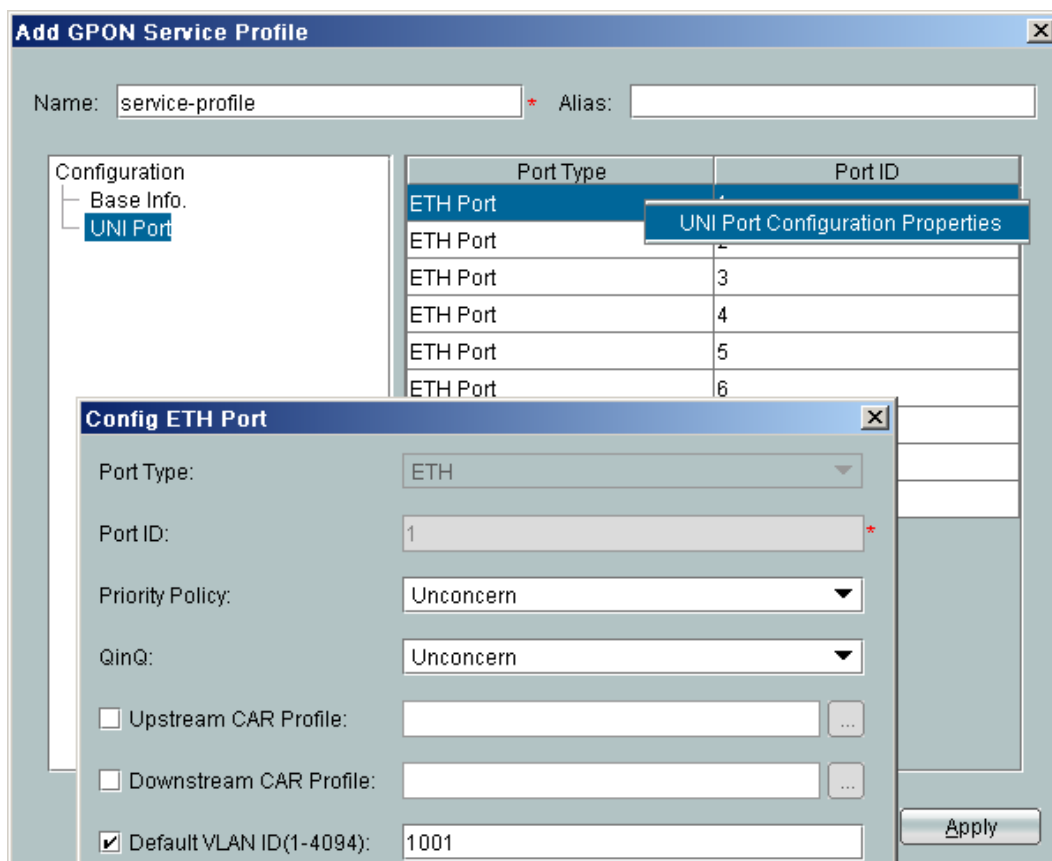
Name:  \* Alias:

Configuration

- Base Info
- UNI Port

| Name                          | Value       |
|-------------------------------|-------------|
| Number of Pots Ports(0-8)     | 0           |
| Number of IPhost Ports        | 1           |
| Number of ETH Ports(0-8)      | 0           |
| Number of TDM Ports(0-8)      | 0           |
| TDM Port Type                 | T1          |
| Service Type of TDM Port      | TDMoverGEM  |
| Number of MOCA Ports(0-8)     | 0           |
| Number of CATV Ports(0-8)     | 0           |
| MAC Address Learning Switch   | ON          |
| Transparent Transmission S... | OFF         |
| Multicast VLAN Forward Mode   | Untag       |
| Multicast VLAN(1-4095)        |             |
| Upstream IGMP packet forwa... | Transparent |
| Upstream IGMP packet forwa... | 10          |

OK Cancel Apply



1. Choose **Basic Info** from the navigation tree, and then set the basic parameters of the profile.
2. Choose **UNI Port** from the navigation tree. In the right pane, select the record from the ETH port list, right-click, and then choose **UNI Port Configuration Properties** and set the relevant parameters in the dialog box that is displayed.
4. In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
5. In the dialog box that is displayed, select the required NE(s), and click **OK**.
6. Click **OK**.

---End

## Command Reference

| To...                                               | Run the Command...     | In...              |
|-----------------------------------------------------|------------------------|--------------------|
| Query the information about the ONT service profile | display ont-srvprofile | Privilege mode     |
| Enter the ONT line profile mode                     | ont-srvprofile         | Global config mode |

## 20.1.3 Confirming an ONT

This topic describes how to confirm the auto-find ONU connected to a port. An auto-find ONU is in the auto-find state before it is confirmed. The auto-find ONU can start to work only after it is confirmed.

### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **GPON > GPON UNI Port** from the navigation tree.
- 3 On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- 4 Select a GPON UNI port for which you want to enable the function of automatically discovered ONU, right-click and choose **Enable ONU Auto Find** from the shortcut menu.
- 5 Select the GPON UNI port from the list with ONUs to be confirmed, and click the **Auto-Discovered ONU Info** tab in the lower part of the page.
- 6 Select an ONU that needs to be confirmed, right-click, and then choose **Confirm ONU**.
- 7 In the dialog box that is displayed, configure the basic parameters for confirming the ONU, and click **OK**.



#### NOTE

This section considers the GUIs in profile mode as an example.

| Key Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ONU ID              | Indicates the ID that identifies an ONU. Usually, it starts from 0.                                                                                                                                                                                                                                                                                                                                                                       |
| ONU Type            | Specifies ONTs.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Line Profile        | Indicates the line profile bound to the port to which the ONU belongs. You can bind a port with the line profile. When the port is activated, it can reference the profile. According to the upstream and downstream line rates and the noise tolerance set in the profile, the port detects the line distance and line status, negotiates between the local and remote devices, and determines whether it can work under the conditions. |
| Service Profile     | Indicates the service profile bound to the ONU. A service profile contains the parameters relevant to the ONU service.                                                                                                                                                                                                                                                                                                                    |
| Authentication Mode | Indicates the mode used when the OLT authenticates an ONU. By default, the GPON ONU uses the SN-based authentication mode.                                                                                                                                                                                                                                                                                                                |

When you add an ONU in the SNMP management mode, the management mode and line profile are mandatory. When you add an ONU in the OAM management mode, the parameters of management mode, line profile, and service profile are mandatory.

---End

## Command Reference

| To...                                                                                                          | Run the Command...        | In...                     |
|----------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|
| Confirm an ONT in the auto-discovery state                                                                     | ont confirm               | GPON mode                 |
| Switch to the GPON mode from the global config mode                                                            | interface gpon            | Global config mode        |
| Enable the function of automatically discovered ONU connected to a GPON port                                   | port ont-auto-find enable | GPON mode                 |
| Query the current ONTs automatically discovered or time set for automatically discovering ONTs from the system | display ont autofind      | Privilege mode, GPON mode |

## 20.2 Configuring Services

An FTTH network consisting of an OLT and a number of MDUs provides users with Internet, multicast, and voice services.

## Context

Several operations are required when you configure a service. The following lists the services configured at the OLT side and the service configuration steps.

| Services                | Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internet access service | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.2.3 Adding a Service Port</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                    |
| Multicast service       | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.2.3 Adding a Service Port</a></li> <li>● <a href="#">19.2.7 Configuring the Multicast VLAN</a></li> <li>● <a href="#">19.2.5 Configuring the Virtual Multicast Upstream Port</a></li> <li>● <a href="#">19.2.6 Configuring a Preview Profile</a></li> <li>● <a href="#">19.2.8 Configuring a Program Profile</a></li> <li>● <a href="#">19.2.10 Configuring a Multicast User</a></li> </ul> |
| Voice service           | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.2.3 Adding a Service Port</a></li> <li>● <a href="#">20.2.1 Configuring the ONT Value-Added Service Configuration Profile</a></li> <li>● <a href="#">20.2.2 Configuring the Voice Value-Added Service of an ONT</a></li> </ul>                                                                                                                                                              |

### [20.2.1 Configuring the ONT Value-Added Service Configuration Profile](#)

After configuring an ONT value-added service configuration profile and binding it to an ONT successfully, you can activate the ONT and directly deliver the value-added service defined by the profile to the subscribers of the ONT. Each ONT can be bound to only one value-added service configuration profile.

### [20.2.2 Configuring the Voice Value-Added Service of an ONT](#)

The ONT value-added service (VAS) is used to support the function of provisioning the VoIP service on the ONT, and to set the parameters for the VASs on the ONT, such as the VoIP service. After an ONT is upgraded, the XML parameters of the ONT must be set again. Therefore, upgrade the ONT before configuring the VAS for the ONT.

### [20.2.3 Adding a GPON FTTH Service Provisioning Profile](#)

The U2000 of the latest version plans to use the service provisioning profile to provision services to users. The service provisioning profile encapsulates common attributes of the service channel to a profile. To provision services to users, bind this profile to the port, and then set user-defined service parameters, thus implementing service provisioning at one step.

### [20.2.4 Configuring the GPON FTTH Service](#)

You can directly configure and provision the GPON FTTH service by binding the configured GPON FTTH service provisioning profile with a certain physical port on the ONT.

## 20.2.1 Configuring the ONT Value-Added Service Configuration Profile

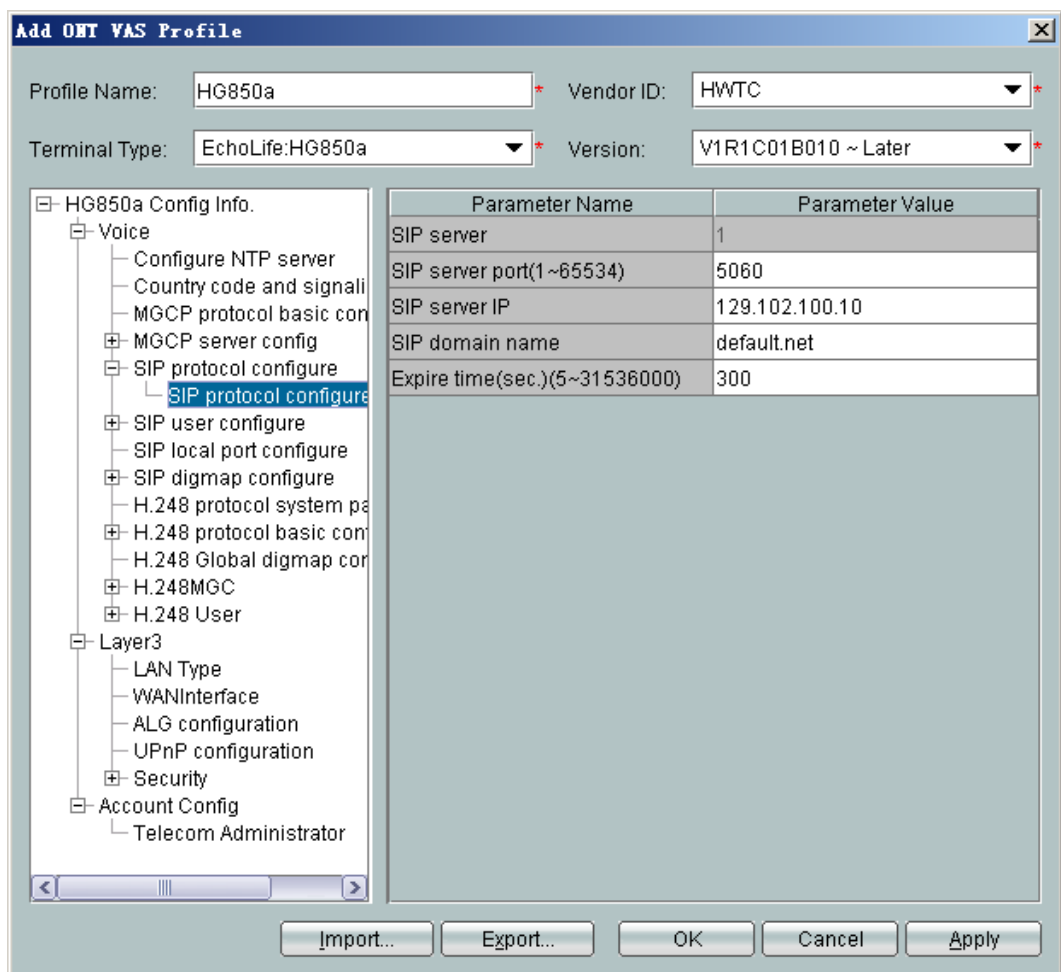
After configuring an ONT value-added service configuration profile and binding it to an ONT successfully, you can activate the ONT and directly deliver the value-added service defined by the profile to the subscribers of the ONT. Each ONT can be bound to only one value-added service configuration profile.

### Context

The value-added service configuration profiles vary with the types of the ONTs and the software versions. This section considers the Echolife:HG850a profile as an example.

### Procedure

- 1 Choose **Configuration > Access Profile Management > ONT VAS Profile** from the main menu.
- 2 In the information list, right-click and choose **Add** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.



- 4 Click **OK**.

----End

## Command Reference

| To... | Run the Command... | In... |
|-------|--------------------|-------|
| -     | -                  | -     |

## 20.2.2 Configuring the Voice Value-Added Service of an ONT

The ONT value-added service (VAS) is used to support the function of provisioning the VoIP service on the ONT, and to set the parameters for the VASs on the ONT, such as the VoIP service. After an ONT is upgraded, the XML parameters of the ONT must be set again. Therefore, upgrade the ONT before configuring the VAS for the ONT.

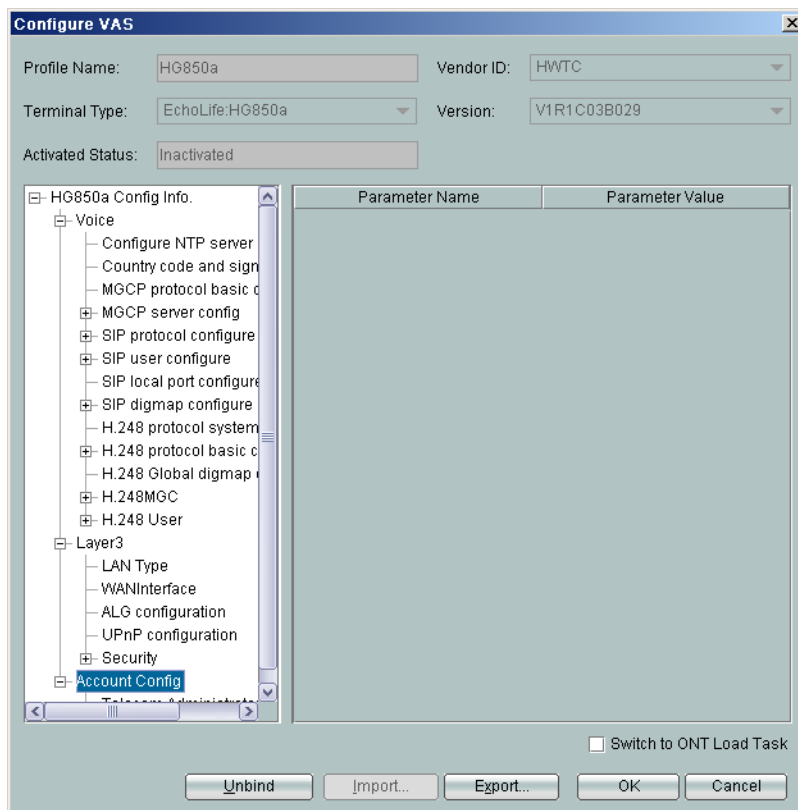
### Prerequisite

- The FTP service must be enabled.
- An ONT value-added service template must be configured in the system.
- The ONT must be upgraded.

### Procedure

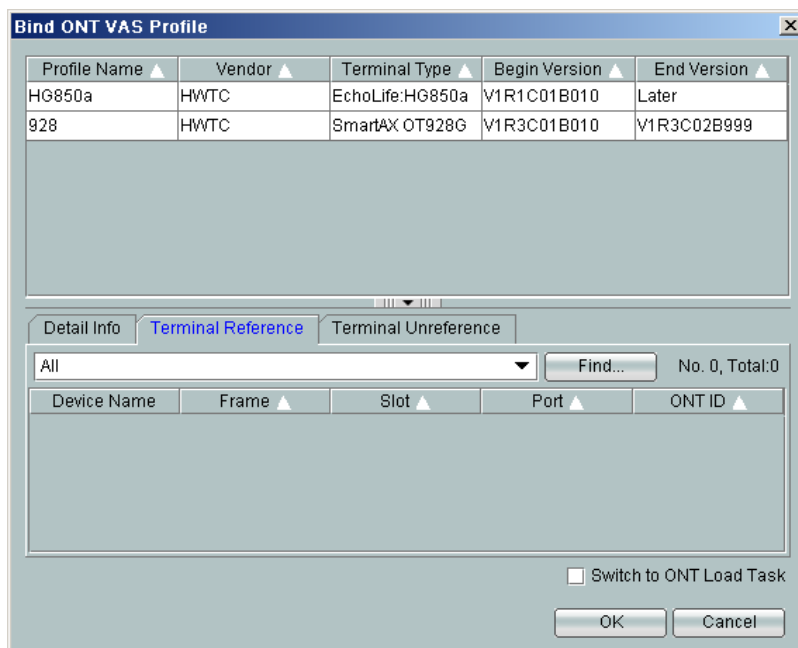
- 1 In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- 2 Choose **GPON > GPON ONU** from the navigation tree.
- 3 On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
- 4 In the case of the parameters that cannot be obtained from the ONT VAS to function as the parameters of the ONT VAS profile, you can customize the configuration for a single ONT VAS.
  - Configuring the VAS for a single ONT:
    1. Select a record from the ONT list, right-click, and then choose **Configure Value-Added Service** from the shortcut menu.
    2. In the dialog box that is displayed, set the parameter associated with the VoIP service.





● Configuring the VAS for multiple ONTs:

1. Select multiple ONTs by pressing **Ctrl** or **Shift**, right-click, and then choose **Bind VAS Profile** from the shortcut menu.
2. In the dialog box that is displayed, select the required ONT value-added service profile, and then click **OK**.



5 Click **OK**.

----End

## 20.2.3 Adding a GPON FTTH Service Provisioning Profile

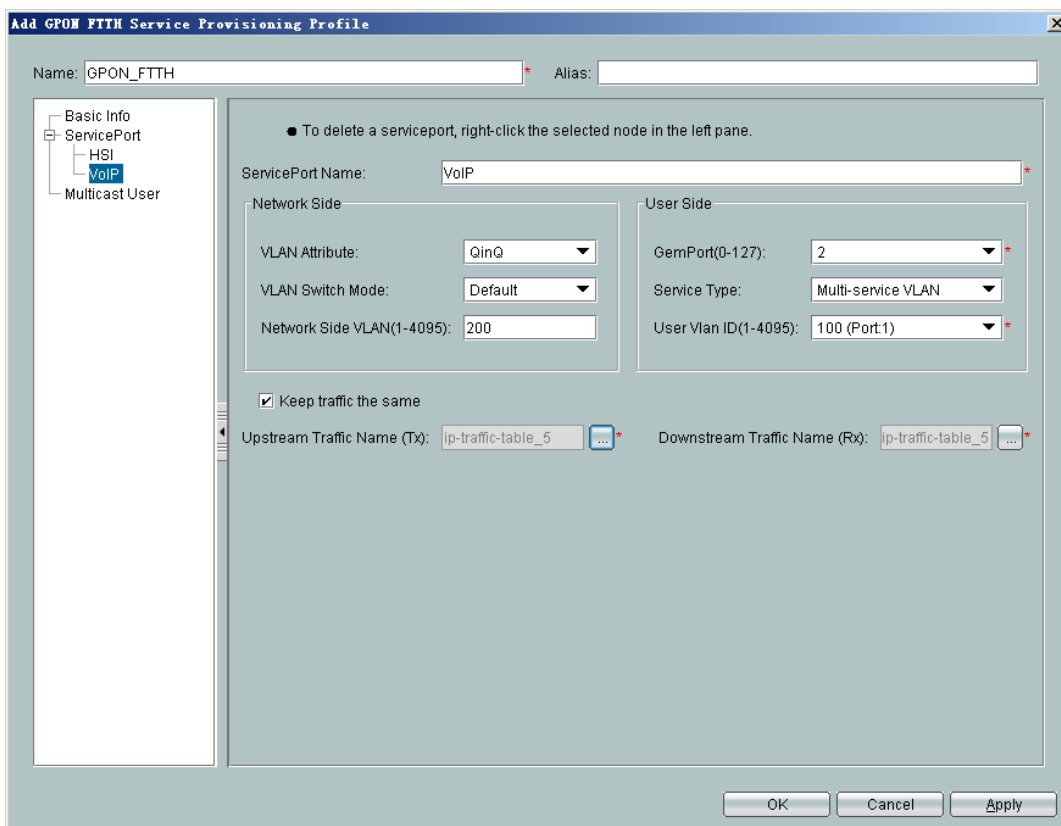
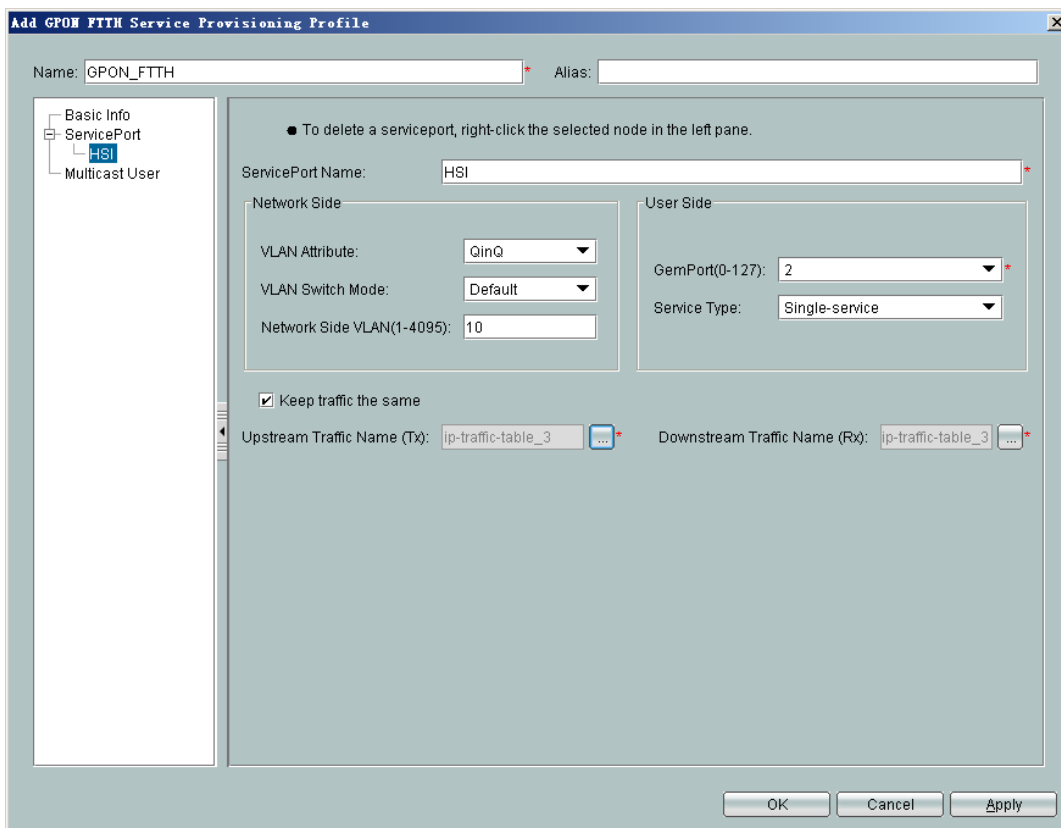
The U2000 of the latest version plans to use the service provisioning profile to provision services to users. The service provisioning profile encapsulates common attributes of the service channel to a profile. To provision services to users, bind this profile to the port, and then set user-defined service parameters, thus implementing service provisioning at one step.

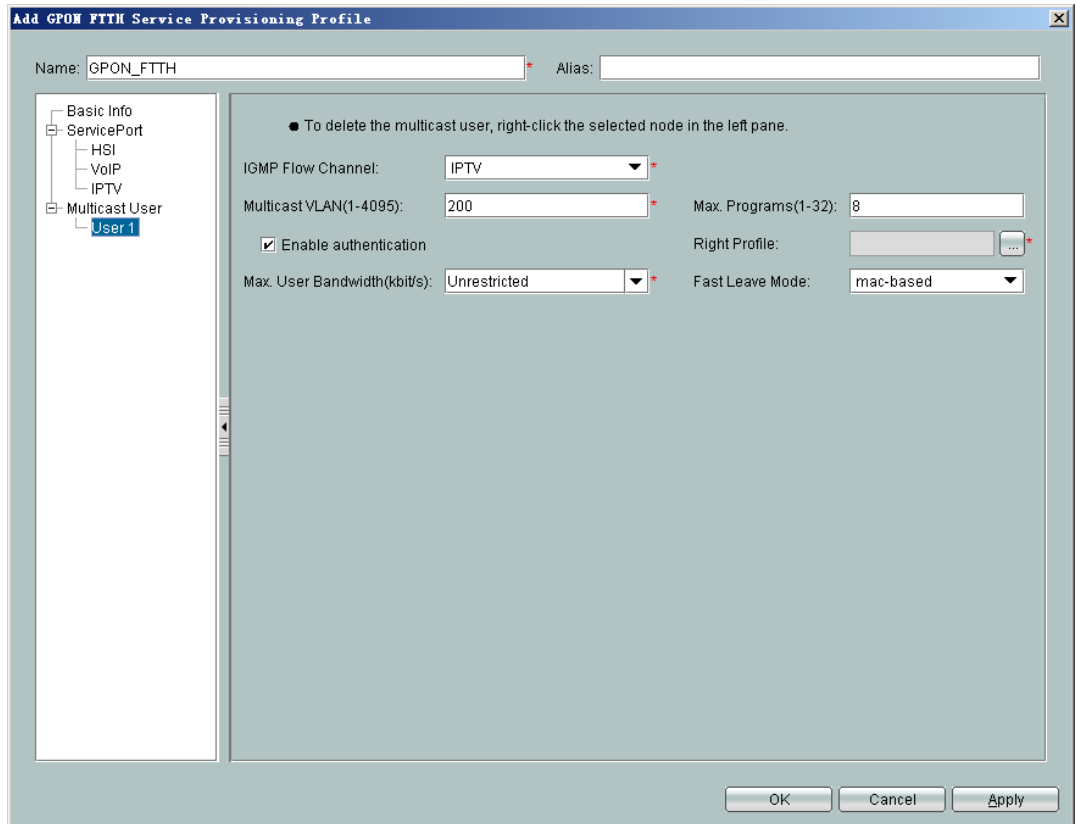
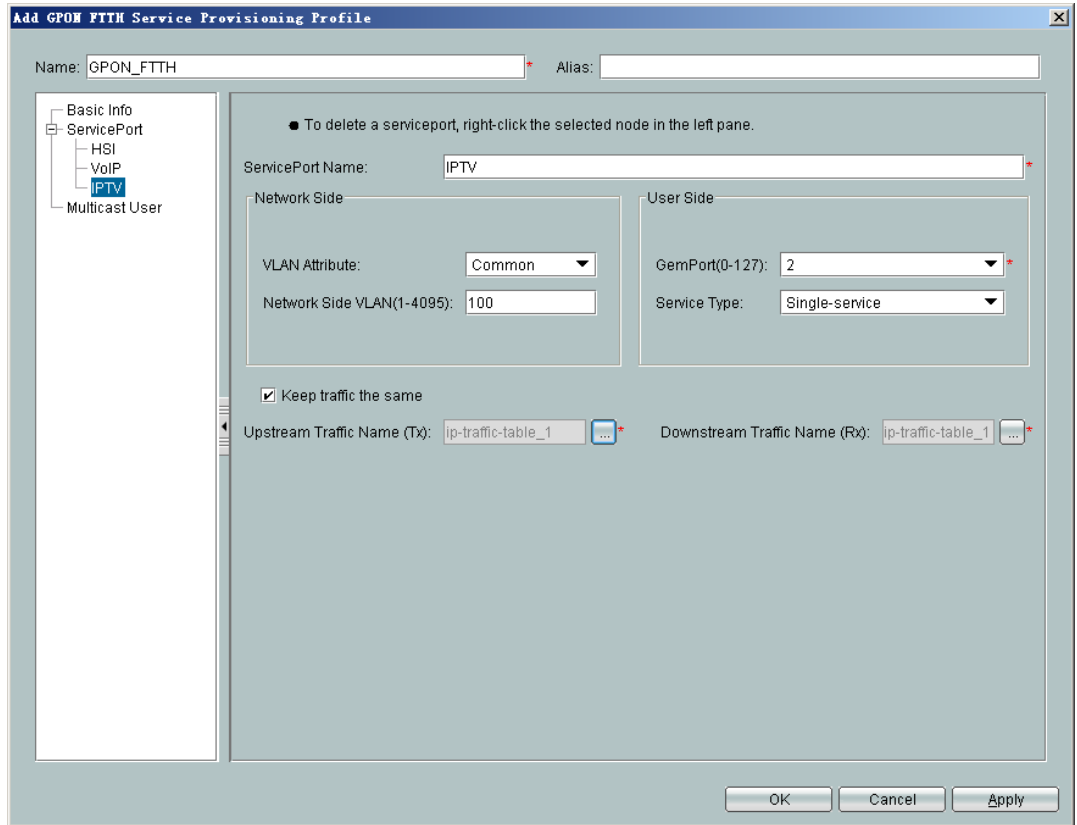
### Prerequisite

- Perform the operations in [20.1.1 Configuring a GPON Line Profile](#) and [20.1.2 Configuring a GPON Service Profile](#) before configuring the **Basic Info** branch.
- Perform the operations in [19.2.1 Configuring a VLAN](#) and [19.2.2 Configuring an MEF IP Traffic Profile](#) before configuring the **Service Port** branch.
- Perform the operations in [19.2.7 Configuring the Multicast VLAN](#) before configuring the **Multicast User** branch.

### Procedure

- 1 Choose **Configuration > Access Profile Management > Service Provisioning Profile** from the main menu.
- 2 Click the **GPON FTTH Service Provisioning Profile** tab.
- 3 In the dialog box that is displayed, set the parameters.





| Key Parameter     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Info        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Name              | Indicates the name of the GPON FTTH service provisioning profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ONU Port Info     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Port Type         | Indicates the ONU port type.<br><b>NOTE</b><br>You can set the port type according to different ONUs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Port Mode         | Indicates the ONU port type. Enumerated type. The options are <b>ATM</b> and <b>PTM</b> .<br><b>NOTE</b><br>This parameter is available when <b>Port Type</b> is set to <b>VDSL2</b> or <b>G.SHDSL</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ONU side          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Service Type      | Indicates the type of services carried on the service virtual port.<br>The port can work in the following modes: <ul style="list-style-type: none"> <li>● Single: Each service port maps a service stream. Different service streams can be distinguished by service ports.</li> <li>● Multi-Service VLAN: Each service port carries multiple service streams. You need to set <b>User-Side VLAN</b> to distinguish the service streams. The services are distinguished based on the VLAN ID contained in the packets subscriber ports. You can label the packets with different upstream VLAN IDs.</li> <li>● Multi-Service Encapsulation: Each service port carries multiple service streams. You need to set <b>User-Side Encapsulation</b> to distinguish the service streams. The services are distinguished based on the encapsulation types (IPoE/PPPoE) of the packets from the subscriber port. You can label the packets with different upstream VLAN IDs.</li> <li>● Multi-Service VLAN+802.1p: Each service port carries multiple service streams. You need to set <b>User-Side VLAN</b> and <b>802.1p Priority</b> to distinguish the service streams. The services are distinguished according to the VLAN IDs and the 802.1p priorities of the packets from the subscriber port.</li> </ul> <b>NOTE</b><br>This parameter is available only when the <b>Service Priority</b> is set. <ul style="list-style-type: none"> <li>● Multi-Service VLAN+Encapsulation: Each service port carries multiple service streams. You need to set <b>User-Side VLAN</b> and <b>User-Side Encapsulation</b> to distinguish the service streams.</li> </ul> |
| OLT Side          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Multicast User    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| IGMP Flow Channel | Specifies the protocol traffic channel of the multicast service.<br>Enumerated type. Select a protocol traffic channel by setting the <b>Service Port</b> parameter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Key Parameter  | Description                      |
|----------------|----------------------------------|
| Multicast VLAN | Specifies the multicast VLAN ID. |

4 Click **OK**.

----End

## 20.2.4 Configuring the GPON FTTH Service

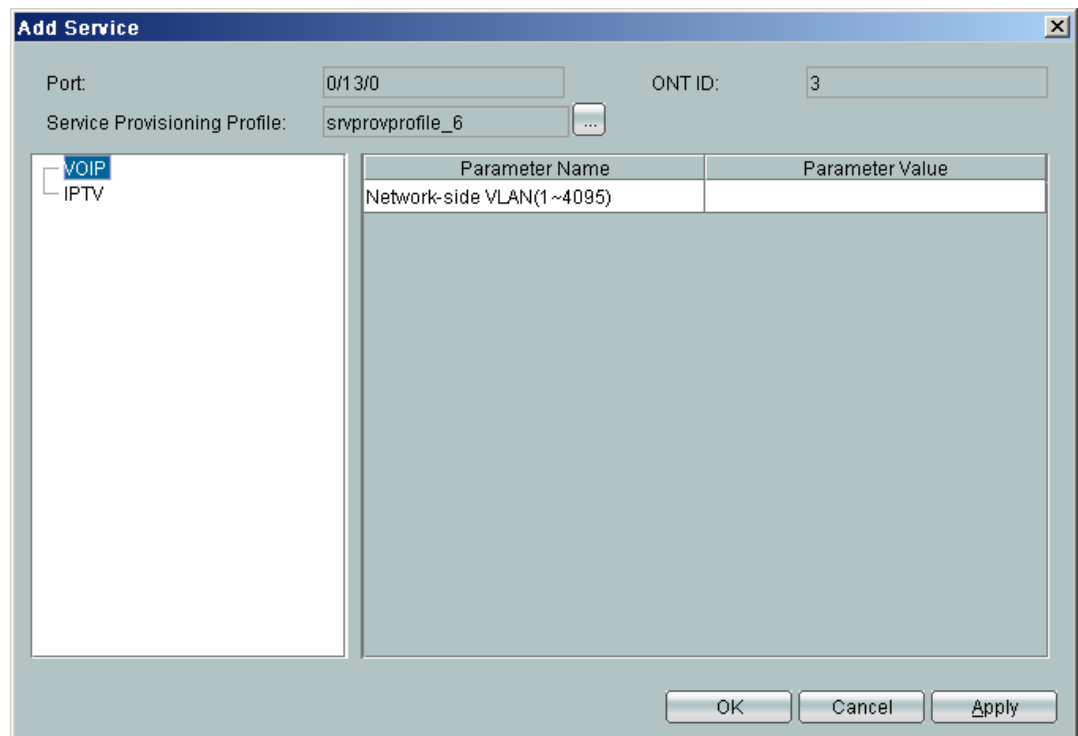
You can directly configure and provision the GPON FTTH service by binding the configured GPON FTTH service provisioning profile with a certain physical port on the ONT.


### Prerequisite

- The OLT that the ONU is connected to must be in the profile mode.
- The configured GPON FTTH service provisioning profile must be applied to the ONT. For details, see [20.2.3 Adding a GPON FTTH Service Provisioning Profile](#).

### Procedure

- 1 In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.
- 2 Choose **GPON > GPON ONU** from the navigation tree.
- 3 On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
- 4 Select a record from the Ethernet port list, right-click, and then choose **Add Service** from the shortcut menu.



In the **Add Service** dialog box, click  next to **Service Provisioning Profile**. In the **Add Service** dialog box, click **Find** to display the required service provisioning profiles that meet the filtering criteria. Select a record from the profile list, and click **OK**.

5 Click **OK**.

----End

## 20.3 Configuration Examples of the GPON FTTH Services

This topic provides examples to describe how to configure the Internet, voice, and multicast services in a GPON FTTH network.

### 20.3.1 Data Plan for the GPON FTTH Services

This topic provides the data plan for the configuration examples of the GPON FTTH services. You can configure the services according to the data plan.

### 20.3.2 Configuring the GPON FTTH Internet Service

This topic describes how to configure the high-speed Internet service when an ONT is connected to an OLT through a GPON port.

### 20.3.3 Configuring the GPON FTTH Multicast Service

This topic describes how to configure the multicast service when an ONT is connected to an OLT through a GPON port.

### 20.3.4 Configuring the GPON FTTH Voice Service (H.248 Protocol)

This topic describes how to configure the voice service when an ONT is connected to an OLT through a GPON port.

### 20.3.5 Configuring the GPON FTTH Voice Service (SIP Protocol)

This topic describes how to configure the voice service when an ONT is connected to an OLT through a GPON port.

### 20.3.6 Configuring the GPON FTTH Service by Using a Service Provisioning Profile

This topic describes how to configure various services when an ONT is connected to an OLT through a GPON port.

## 20.3.1 Data Plan for the GPON FTTH Services

This topic provides the data plan for the configuration examples of the GPON FTTH services. You can configure the services according to the data plan.

### Data Plan

**Table 20-1** Data plan for the GPON FTTH services

| Service Type      | Item                    | Settings | Remarks |
|-------------------|-------------------------|----------|---------|
| Device management | Upstream port of an OLT | 0/19/0   | -       |

| Service Type | Item                   | Settings                                                                                                                                                                                                                                        | Remarks                                                                                                                                         |
|--------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Layer 3 interface      | IP Address: 192.168.50.4                                                                                                                                                                                                                        | The IP address of the Layer 3 interface of the management VLAN of the OLT functions as the IP address of the OLT for inband network management. |
|              | GPON port of the OLT   | 0/2/1                                                                                                                                                                                                                                           | -                                                                                                                                               |
|              | ONT                    | SN: 32303131B39FD641<br>Name: ONT<br>ONU Type: ONT<br>ONU ID: 0<br>Authentication Mode: SN<br>Terminal Type:<br>EchoLife:HG850a<br>Software Version:<br>V1R1C03B030                                                                             | -                                                                                                                                               |
|              | MEF IP traffic profile | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● CIR: 20480</li> <li>● Outer Priority: 1</li> </ul>                                                                                                                               | The MEF IP traffic profile is used on the MDU to control upstream and downstream traffic.                                                       |
|              | DBA profile            | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● T-CONT type: Maximum Bandwidth</li> <li>● Maximum Bandwidth: 32768</li> </ul>                                                                                                    | -                                                                                                                                               |
|              | Line profile           | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Mapping Mode:VLAN</li> <li>● Qos Mode:Priority Queue</li> <li>● T-CONT Index: 1</li> <li>● DBA Profile: FTTx</li> <li>● GEM Port Index: 1</li> <li>● Priority Queue:1</li> </ul> | -                                                                                                                                               |



| Service Type     | Item                          | Settings                                                                                                                                                                                                                                                                                                                               | Remarks |
|------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                  | Service profile               | Name: FTTx<br>Number of Pots Ports: 2<br>Number of ETH Ports: 4<br>Vlan Type: Translation<br>C-VLAN: 1001,1000<br>S-VLAN: 1001,1000                                                                                                                                                                                                    | -       |
| Internet service | VLAN                          | <ul style="list-style-type: none"> <li>● VLAN ID: 1001</li> <li>● Type: Smart VLAN</li> <li>● Attribute: QinQ</li> </ul>                                                                                                                                                                                                               | -       |
|                  | Service virtual port          | <ul style="list-style-type: none"> <li>● Name: HSI</li> <li>● VLAN ID: 1001</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 1001</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul>                 | -       |
|                  | ONT VAS configuration profile | <ul style="list-style-type: none"> <li>● Profile Name: VOIPHG850a</li> <li>● Vendor ID: HWTC(2011)</li> <li>● Terminal Type: EchoLife:HG850a</li> <li>● Version: V1R1C01B010~Later</li> <li>● WAN VLAN ID: 1001</li> <li>● IP get mode: pppoe</li> <li>● PPPoE Account Enable: enable</li> <li>● WAN Service Type: INTERNET</li> </ul> | -       |
| IPTV service     | VLAN                          | <ul style="list-style-type: none"> <li>● VLAN ID: 1000, 3000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                                    | -       |

| Service Type | Item                 | Settings                                                                                                                                                                                                                                                                                                                | Remarks |
|--------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | Service virtual port | <ul style="list-style-type: none"> <li>● Name: IGMP</li> <li>● Vlan ID: 1000</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 1000</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -       |
|              | Multicast VLAN       | <ul style="list-style-type: none"> <li>● IGMP Version: IGMP V3</li> <li>● Work Mode: igmp_proxy</li> <li>● VLAN ID: 3000</li> </ul>                                                                                                                                                                                     | -       |
|              | Program profile      | <ul style="list-style-type: none"> <li>● Name: program1</li> <li>● Start IP Address: 224.0.1.1</li> <li>● End IP Address: 224.0.1.1</li> <li>● Source IP Address: 10.10.10.20</li> <li>● Preview Profile: 0 (the default value)</li> </ul>                                                                              | -       |
|              | Multicast user       | <ul style="list-style-type: none"> <li>● Alias: IGMPUserA</li> <li>● Unlimited Band Width: selected</li> <li>● Select Service Port: service virtual port named <b>IGMP</b></li> </ul>                                                                                                                                   | -       |
| VoIP service | VLAN                 | <ul style="list-style-type: none"> <li>● VLAN ID: 2000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                           | -       |

| Service Type | Item                                           | Settings                                                                                                                                                                                                                                                                                                                | Remarks |
|--------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | Service virtual port                           | <ul style="list-style-type: none"> <li>● Name: VOIP</li> <li>● Vlan ID: 2000</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 2000</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -       |
|              | ONT VAS configuration profile (H.248 protocol) | <ul style="list-style-type: none"> <li>● Profile Name: VOIPHG850a</li> <li>● Vendor ID: HWTC(2011)</li> <li>● Terminal Type: EchoLife:HG850a</li> <li>● Version: V1R1C01B010~Later</li> <li>● Signal Protocol: H248</li> <li>● Digitmap: x.T</li> <li>● MGC Port: 2944</li> <li>● MGC domain name: MGC.com</li> </ul>   | -       |

| Service Type | Item                                         | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Remarks |
|--------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | ONT VAS configuration profile (SIP protocol) | <ul style="list-style-type: none"> <li>● Profile Name: VOIPHG850a</li> <li>● Vendor ID: HWTC(2011)</li> <li>● Terminal Type: EchoLife:HG850a</li> <li>● Version: V1R1C01B010~Later</li> <li>● Signal Protocol: SIP</li> <li>● SIP server port: 5060</li> <li>● SIP server IP: 200.200.200.200</li> <li>● SIP digitmap: x.T</li> <li>● WAN VLAN ID: 2000</li> <li>● IP get mode: dhcp</li> <li>● WAN Service Type: VOIP</li> <li>● User1 phone number: 87650001, User1 password: test1234</li> <li>● User2 phone number: 87650002, User1 password: test1234</li> </ul> | -       |

## 20.3.2 Configuring the GPON FTTH Internet Service

This topic describes how to configure the high-speed Internet service when an ONT is connected to an OLT through a GPON port.

### Prerequisite

The OLT must be added to the U2000.

### Context

For details of the data plan, see [20.3.1 Data Plan for the GPON FTTH Services](#).

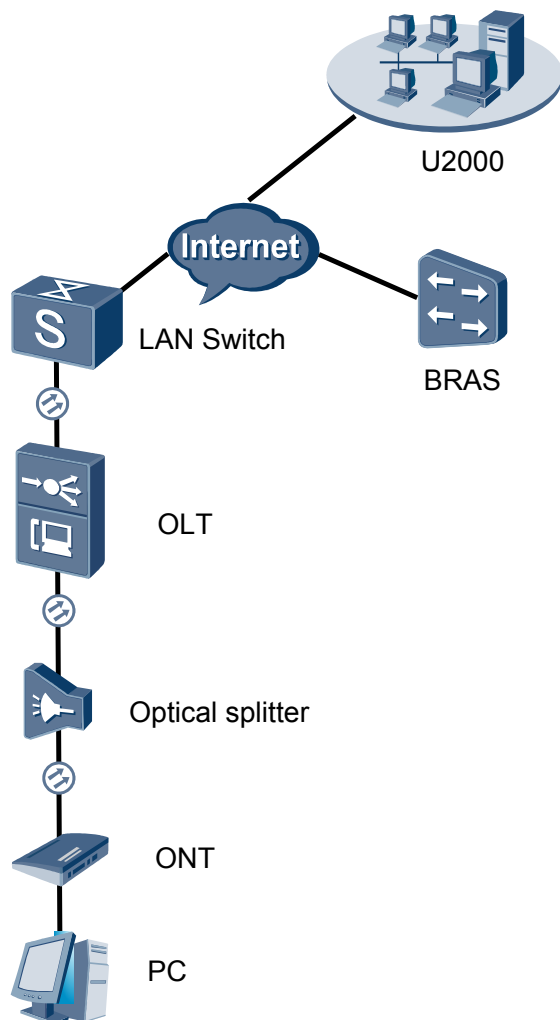
### Example Network

This topic considers the ONT whose **Terminal Type** is set to **EchoLife:HG850a** as an example. The configuration procedure of the ONTs of other types is similar to the configuration procedure described in this topic.

- The PC gains access to the Internet in PPPoE dialup mode.
- The ONT is connected to the GPBC card of the OLT through an optical fiber.

- The broadband remote access server (BRAS) provides the authentication, authorization, and accounting (AAA) functions.

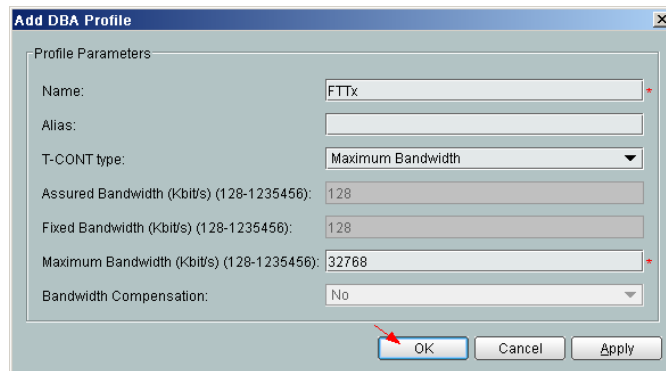
Figure 20-1 Configuring the GPON FTTH Internet service



## Procedure

- **Add the ONT to the U2000 in profile mode.**
  1. **Configure an MEF IP traffic profile.** For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).
    - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
    - (2) Click the **MEF IP Traffic Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx
      - CIR: 20480

- Outer Priority: 1
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a DBA profile. For details, see [19.1.2 Configuring a DBA Profile](#).**
    - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
    - (2) Click the **DBA Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx
      - T-CONT type: Maximum Bandwidth
      - Maximum Bandwidth: 32768



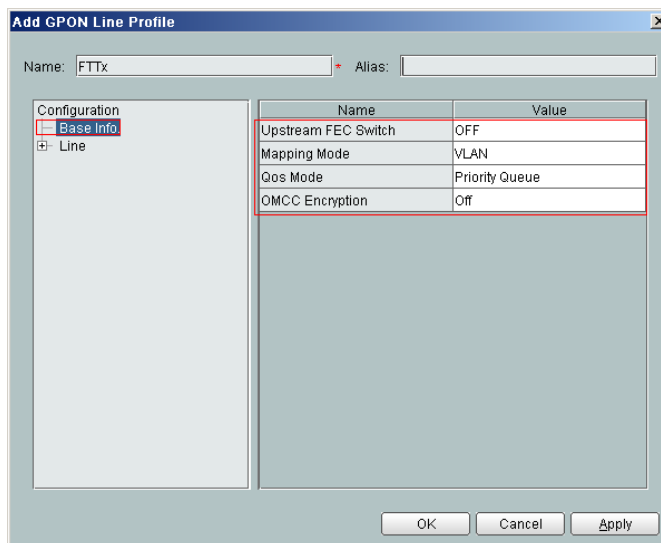
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile. For details, see [20.1.1 Configuring a GPON Line Profile](#).**

In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

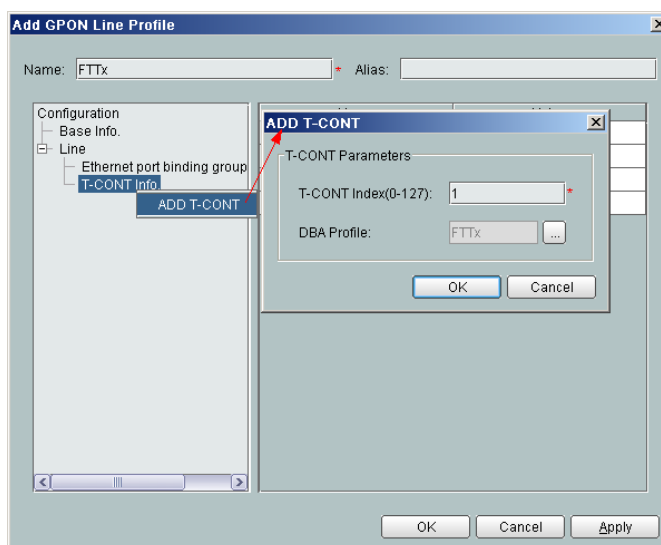
In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info**. from the navigation tree and set the parameters.

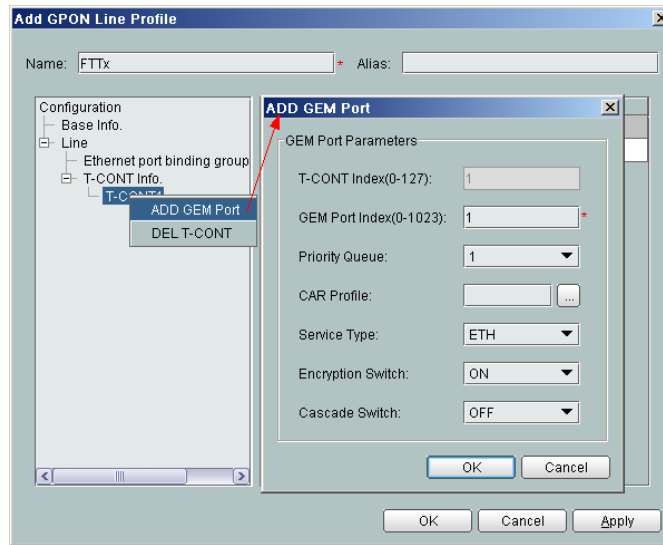
- Mapping Mode: VLAN
- Qos Mode: Priority Queue



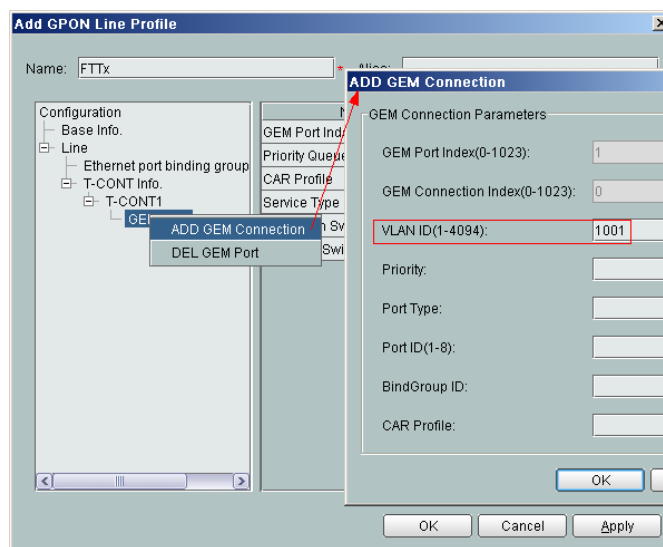
- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx



- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1

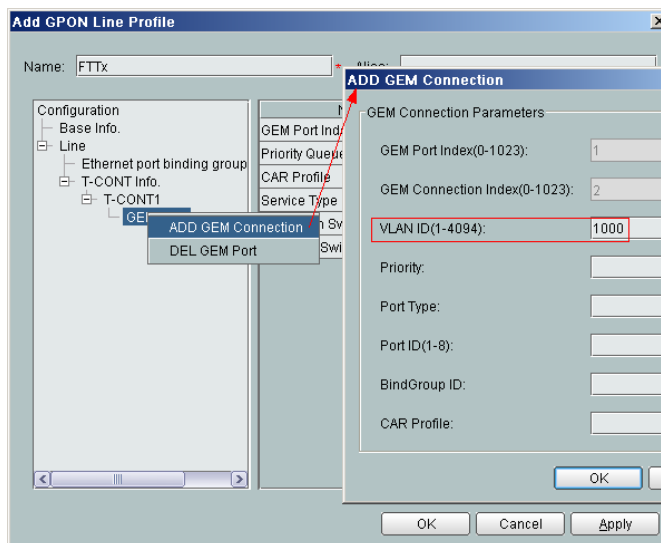


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **1** automatically)
  - VLAN ID: 1001

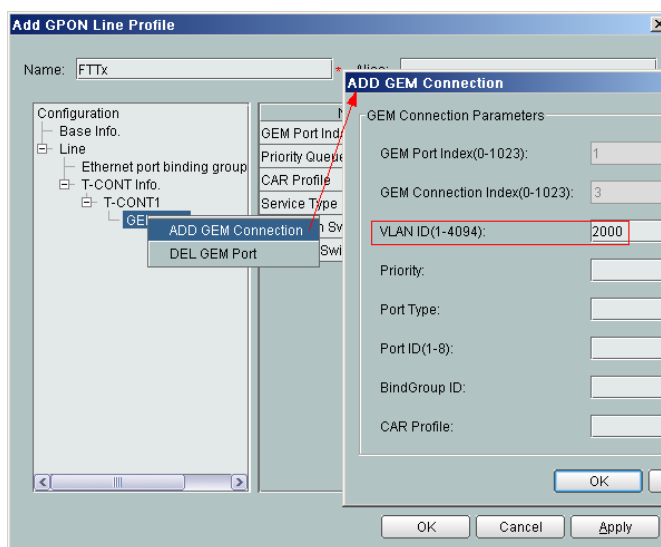


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **2** automatically)
  - VLAN ID: 1000



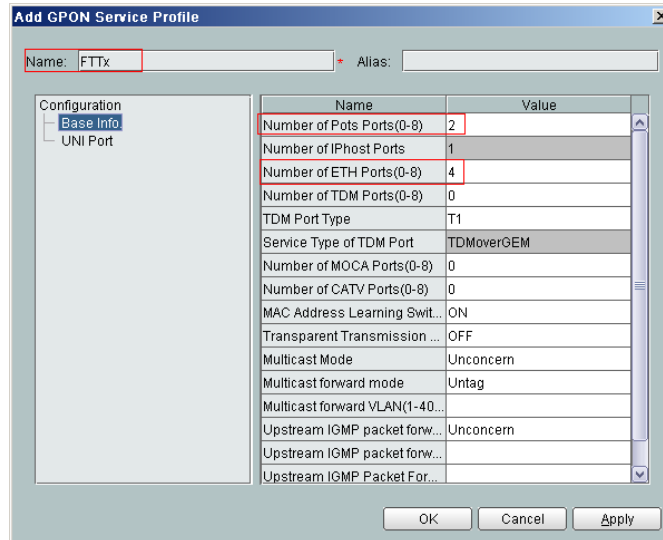


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **3** automatically)
  - VLAN ID: 2000

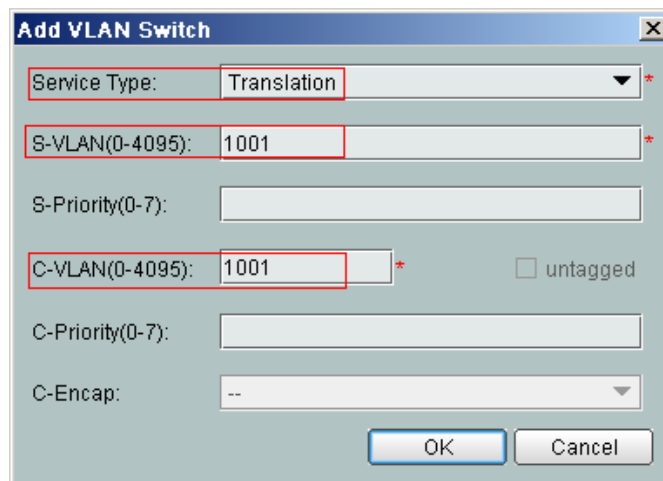


- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a service profile.** For details, see [20.1.2 Configuring a GPON Service Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **Service Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

- Set **Name** to **FTTx**.
- Choose **Base Info.** from the navigation tree and set the parameters.
  - Number of Pots Ports: 2
  - Number of ETH Ports: 4

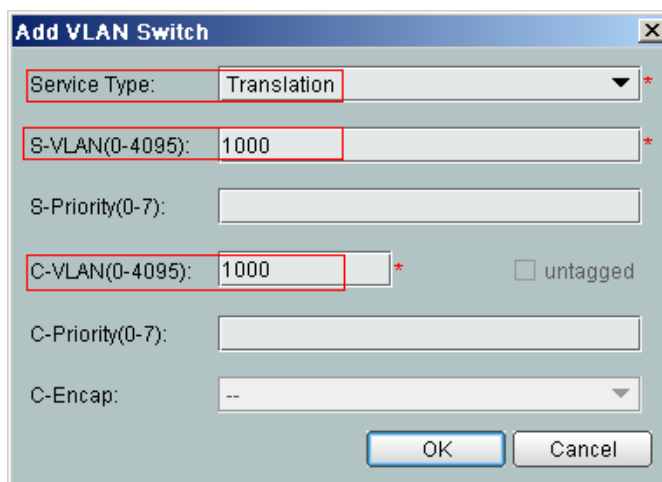




- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **1**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1001 (VLAN ID of the Internet service)
    - C-VLAN: 1001(user VLAN ID of the ONT)



- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **2**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.

- Service Type: Translation
- S-VLAN: 1000 (VLAN ID of the multicast service)
- C-VLAN: 1000 (user VLAN ID of the ONT)



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the ONT.** For details, see [20.1.3 Confirming an ONT](#) .
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 32303131B39FD641, and then choose **Confirm ONU** from the shortcut menu.
    - Name: ONT
    - ONU ID: 0
    - ONU Type: ONT
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - Terminal Type: EchoLife:HG850a
      - Software Version: V1R1C03B030

(6) Click **OK**.

- **Configure the Internet service.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

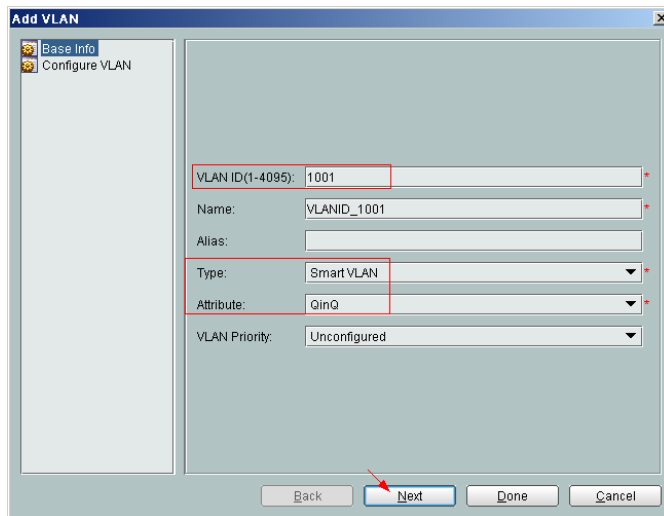
1. **Configuring the Information About the ETH Port of a GPON ONU**

- (1) Choose **GPON > GPON ONU** from the navigation tree.
  - (2) On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
  - (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and click the **The Ont's UNI Port Info** tab in the lower pane.
  - (4) On the **The Ont's UNI Port Info** tab page, right-click the record where **UNI Type** is set to **ETH** and **UNI ID** is set to **1**, and choose **Modify** from the shortcut menu.
  - (5) In the dialog box that is displayed, set **Default VLAN ID** to **1001**.
  - (6) Click **OK**.
2. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

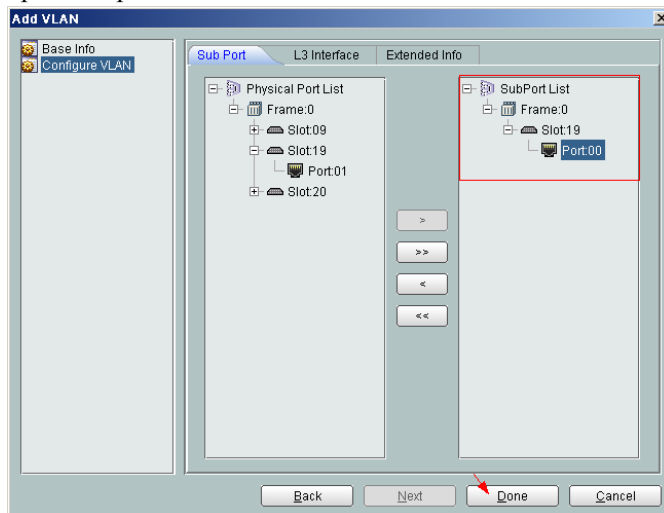
A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN

- Attribute: QinQ



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.

3. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**

- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Name: HSI
  - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
  - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
  - VLAN ID: 1001
  - Service Type: Multi-Service VLAN

- User VLAN: 1001
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

(4) Click **OK**.

#### 4. Configure the VAS configuration profile of the ONT.

- (1) Choose **Configuration > Access Profile Management > ONT VAS Profile** from the main menu.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Set **Profile Name** to **VOIPHG850a**.
  - Set **Vendor ID** to **HWTC(2011)**.
  - Set **Terminal Type** to **EchoLife:HG850a**.
  - Set **Version** to **V1R1C01B010~Later**.
  - Choose **Layer3 > WAN Interface** from the navigation tree, right-click the list, and then choose **Add**. Choose **WAN property configuration 1 protocol** from the navigation tree and set the parameters.
    - WAN VLAN ID: 1001
    - IP get mode: pppoe
    - PPPoE Account Enable: enable
    - WAN Service Type: INTERNET

(4) Click **OK**.

#### 5. Bind the VAS profile.

- (1) Choose **GPON > GPON ONU** from the navigation tree.
- (2) On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.

- (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and choose **Bind VAS Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, select the VAS profile whose **Profile Name** is set to **VOIPHG850a** and click **OK**.
6. **Configure Value-Added Service.**
- (1) Choose **GPON > GPON ONU** from the navigation tree.
  - (2) On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
  - (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and choose **Configure Value-Added Service** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.  
Choose **WAN Interface** from the navigation tree and choose **Add** from the shortcut menu.
    - Choose **WAN property configuration 1** from the navigation tree and set **PPPoE username** to **1@pppoe** and **PPPoE password** to **test1234**.
  - (5) Click **OK**.

---End

## Result

Check whether the user successfully gains access to the Internet through dialup on the PC.

1. The FE port of the ONT is connected to the Ethernet port of the PC properly.
2. Dial up on the PC using the PPPoE dialup software.
3. The user gains access to the Internet on the PC after the dialup is successful.

## 20.3.3 Configuring the GPON FTTH Multicast Service

This topic describes how to configure the multicast service when an ONT is connected to an OLT through a GPON port.

### Prerequisite

The OLT must be added to the U2000.

### Context

For details of the data plan, see [20.3.1 Data Plan for the GPON FTTH Services](#).

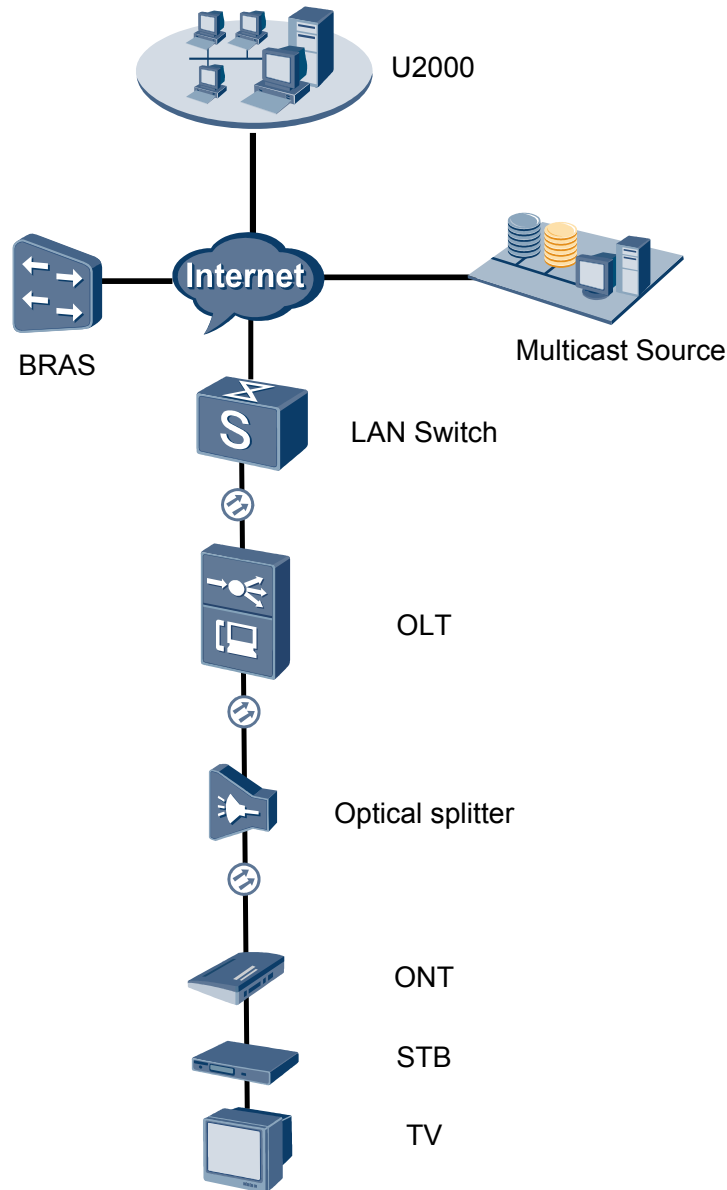
### Example Network

This topic considers the ONT whose **Terminal Type** is set to **EchoLife:HG850a** as an example. The configuration procedure of the ONTs of other types is similar to the configuration procedure described in this topic.

- The OLT uses IGMP proxy, which is a Layer 2 multicast protocol.
- The IGMP version of the multicast VLAN is IGMPv3.

- Multicast programs are configured statically.

**Figure 20-2** Configuring the GPON FTTH multicast service

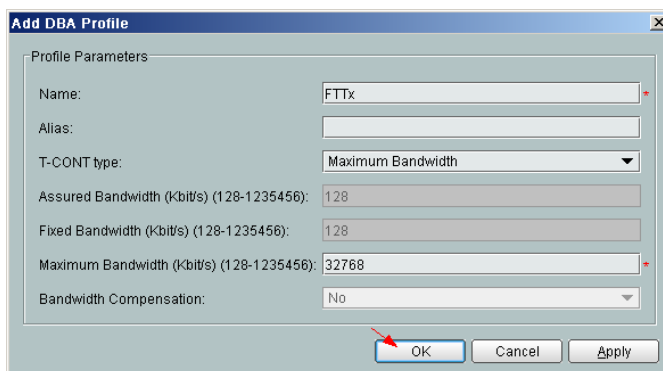


## Procedure

- **Add the ONT to the U2000 in profile mode.**
  1. **Configure an MEF IP traffic profile.** For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).
    - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
    - (2) Click the **MEF IP Traffic Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.



- (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - CIR: 20480
    - Outer Priority: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a DBA profile. For details, see 19.1.2 Configuring a DBA Profile.**
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - T-CONT type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



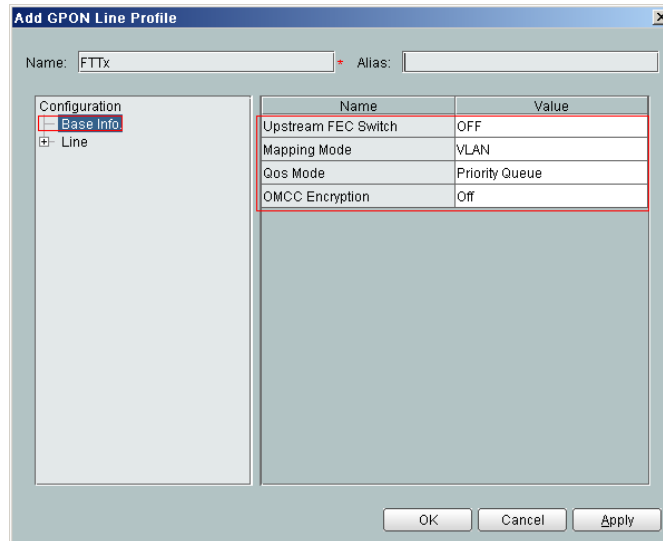
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile. For details, see 20.1.1 Configuring a GPON Line Profile.**

In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

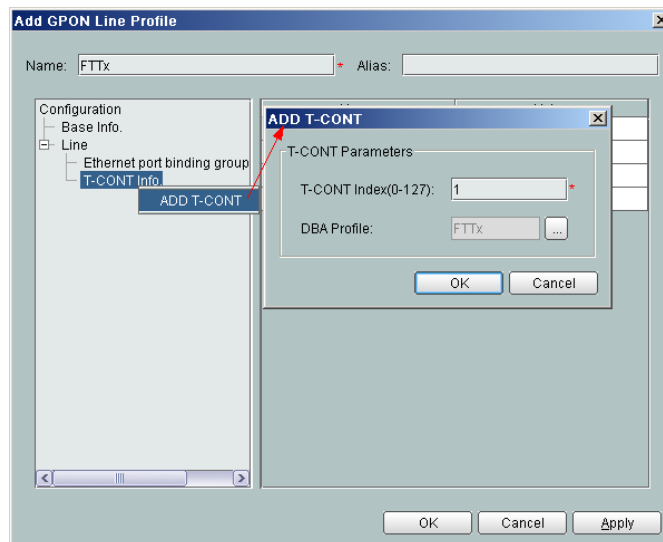
In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.

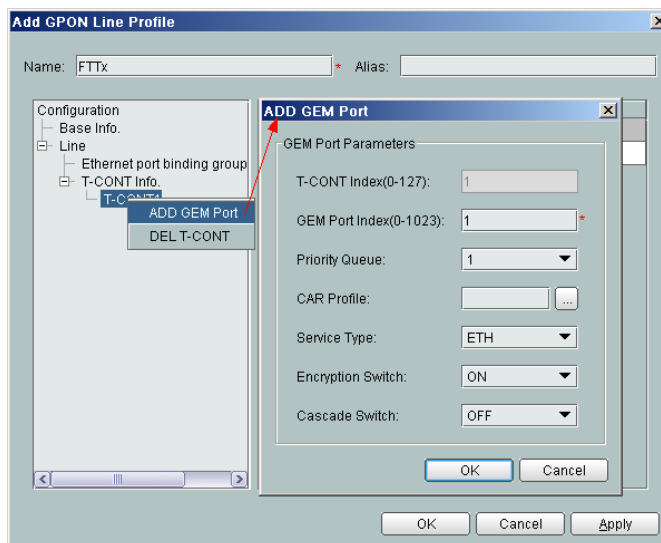
- (4) In the dialog box that is displayed, set the parameters.
- Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue



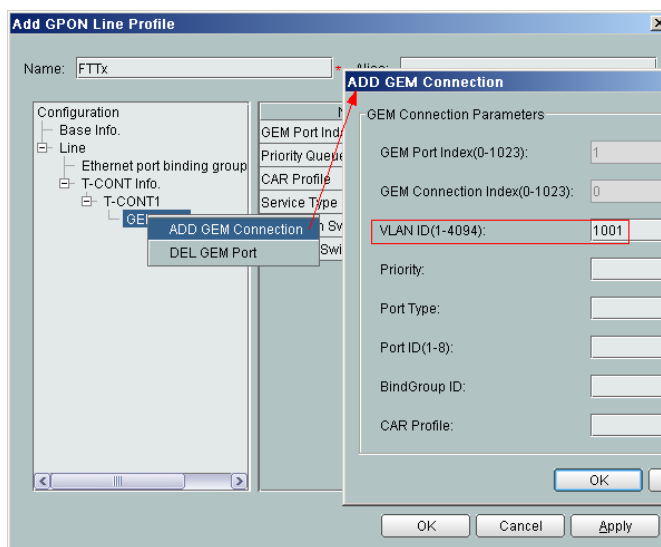
- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx



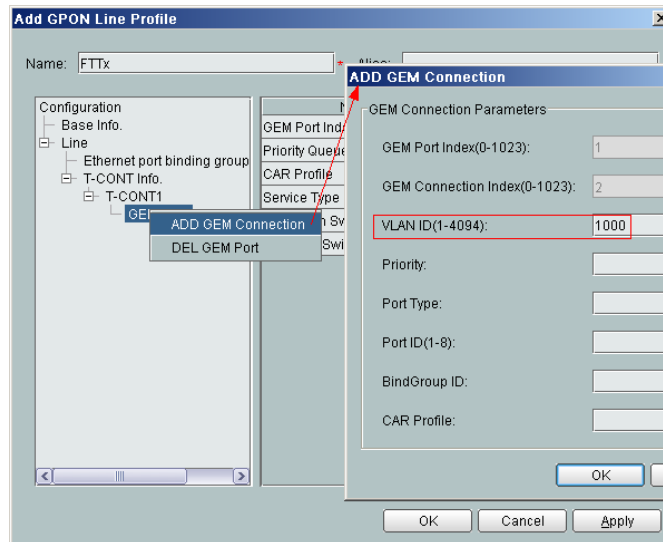
- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1



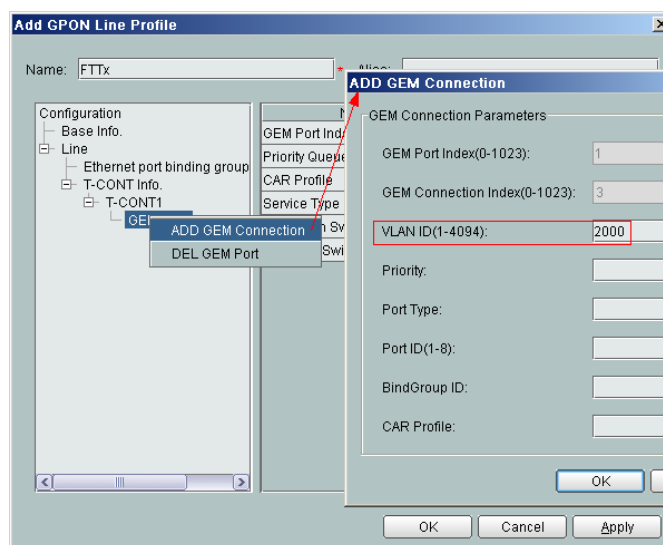
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **1** automatically)
  - VLAN ID: 1001



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **2** automatically)
  - VLAN ID: 1000

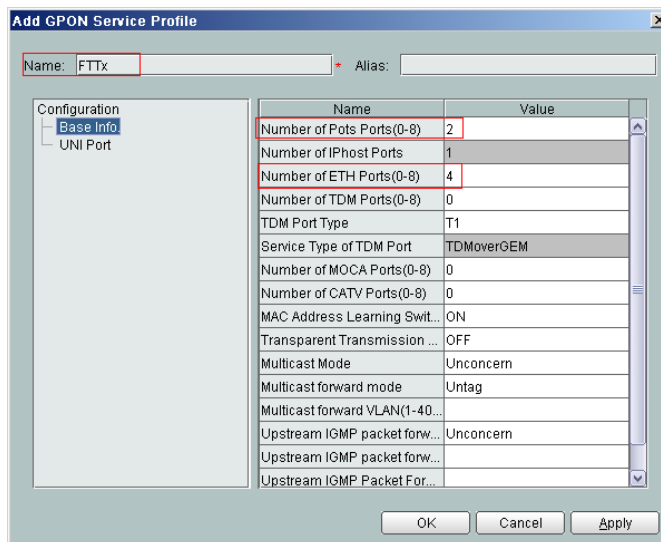


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **3** automatically)
  - VLAN ID: 2000

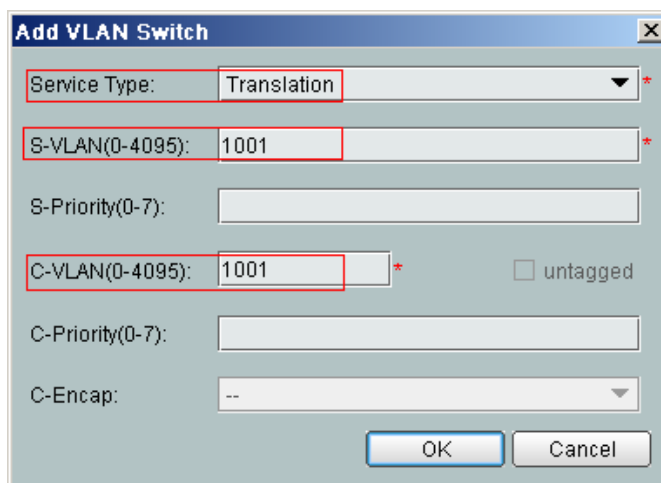


- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a service profile.** For details, see [20.1.2 Configuring a GPON Service Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **Service Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

- Set **Name** to **FTTx**.
- Choose **Base Info.** from the navigation tree and set the parameters.
  - Number of Pots Ports: 2
  - Number of ETH Ports: 4

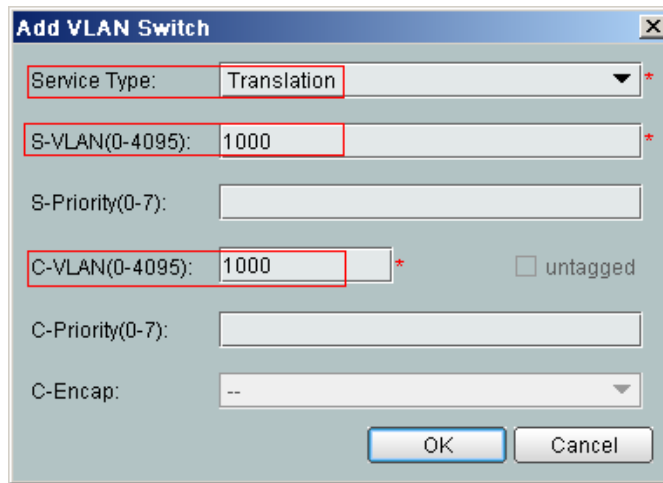




- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **1**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1001 (VLAN ID of the Internet service)
    - C-VLAN: 1001(user VLAN ID of the ONT)

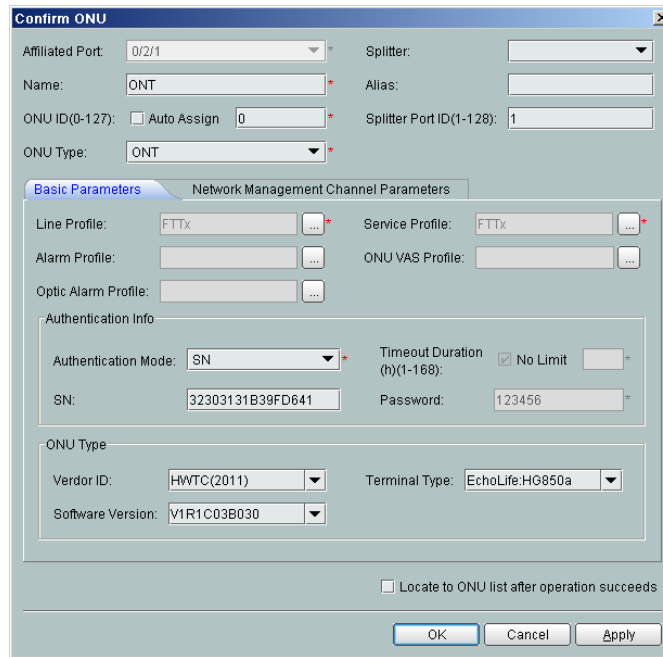


- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **2**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.

- Service Type: Translation
- S-VLAN: 1000 (VLAN ID of the multicast service)
- C-VLAN: 1000 (user VLAN ID of the ONT)



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the ONT. For details, see 20.1.3 Confirming an ONT .**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 32303131B39FD641, and then choose **Confirm ONU** from the shortcut menu.
    - Name: ONT
    - ONU ID: 0
    - ONU Type: ONT
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - Terminal Type: EchoLife:HG850a
      - Software Version: V1R1C03B030



(6) Click **OK**.

- **Configure the multicast service.**

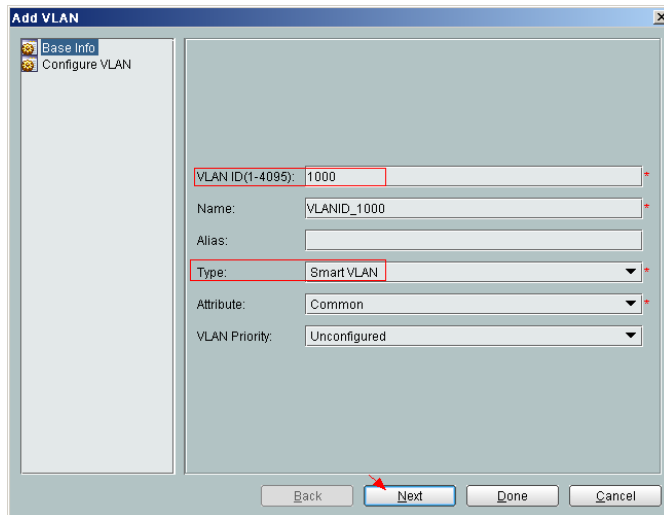
The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configuring the Information About the ETH Port of a GPON ONU**

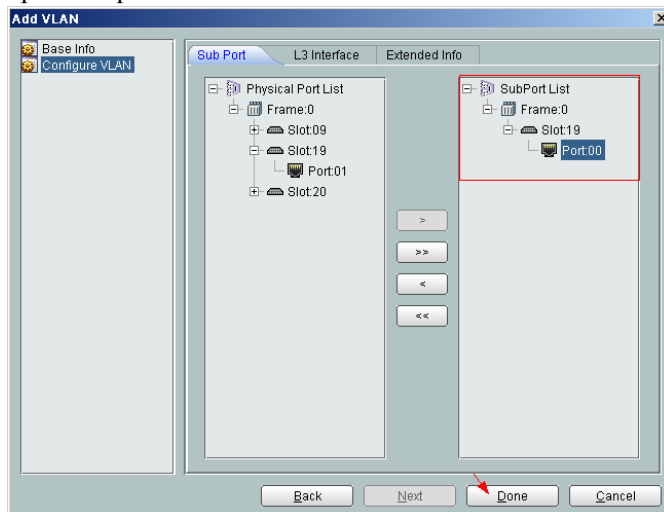
- (1) Choose **GPON > GPON ONU** from the navigation tree.
  - (2) On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
  - (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and click the **The Ont's UNI Port Info** tab in the lower pane.
  - (4) On the **The Ont's UNI Port Info** tab page, right-click the record where **UNI Type** is set to **ETH** and **UNI ID** is set to **2**, and choose **Modify** from the shortcut menu.
  - (5) In the dialog box that is displayed, set **Default VLAN ID** to **1000**.
  - (6) Click **OK**.
2. **Add a VLAN. For details, see [19.2.1 Configuring a VLAN](#).**
    - (1) Choose **VLAN** from the navigation tree.
    - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - VLAN ID: 3000
      - Type: Smart VLAN
    - (4) Click **Done**.
  3. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the multicast service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Type: Smart VLAN



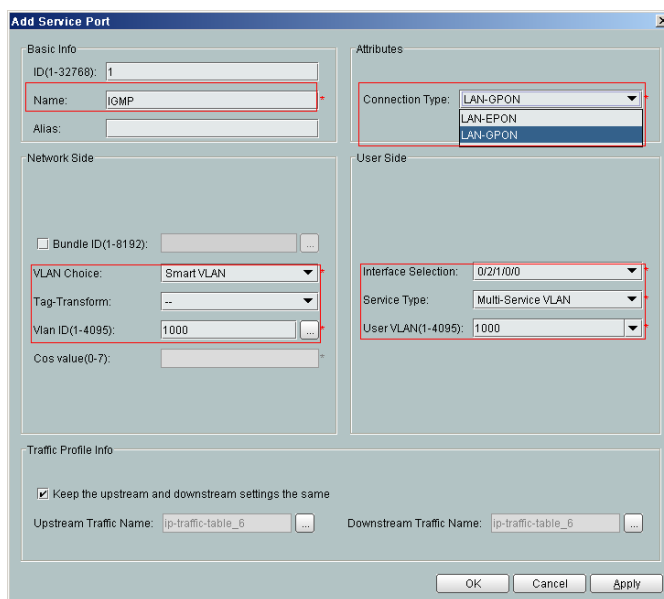
- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
4. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name:IGMP



- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- Vlan ID: 1000
- Service Type: Multi-Service VLAN
- User VLAN: 1000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams)



- (4) Click **OK**.
5. **Add a multicast VLAN on the OLT side. For details, see [19.2.7 Configuring the Multicast VLAN](#).**
  - (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
  - (2) On the **Multicast VLAN** tab page, set the filter criteria to display the required multicast VLANs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - IGMP Version: IGMP V3
    - Work Mode: igmp\_proxy
    - VLAN ID: 3000

**Add Multicast VLAN**

Basic Info

Device Name: 10.71.227.35

Name: Alias:

IGMP Version: IGMP V3  Default VLAN

Autogeneration Program IP Address

Program Match Mode:  Enable  Disable

Start IP Address: End IP Address:

Work Mode

IGMP Work Mode: igmp\_proxy

Snooping Report Switch:  Open  Close

Snooping Leave Switch:  Open  Close

IGMP Video Mode: Multicast

IGMP Inner VLAN(1~4095):

<Back Next> Finish Cancel

---

**Add Multicast VLAN**

Default Up Port Info

Frame: 0 Slot: 19 Port: 0

Parameter Info

IGMP Report Priority (0-7): 6 Report Interval(S) (10-5000): 10

Log Switch:  Open  Close Global-Leave Switch:  Open  Close

<Back Next> Finish Cancel

---

**Add Multicast VLAN**

Select VLAN

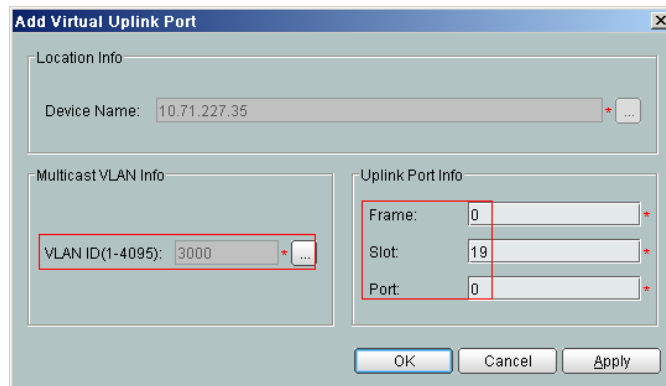
VLAN Attribute=Common VLAN Find No. 31, Total: 32

| VLAN ID | Name         | Alias | Type          | Attribute | Super VLAN ID |
|---------|--------------|-------|---------------|-----------|---------------|
| 31      | VLANID_31    |       | Smart VLAN    | Common    | --            |
| 32      | VLANID_32    |       | Smart VLAN    | Common    | --            |
| 33      | VLANID_33    |       | Smart VLAN    | Common    | --            |
| 34      | VLANID_34    |       | Smart VLAN    | Common    | --            |
| 35      | VLANID_35    |       | Smart VLAN    | Common    | --            |
| 36      | VLANID_36    |       | Smart VLAN    | Common    | --            |
| 37      | VLANID_37    |       | Smart VLAN    | Common    | --            |
| 38      | VLANID_38    |       | Smart VLAN    | Common    | --            |
| 39      | VLANID_39    |       | Smart VLAN    | Common    | --            |
| 40      | VLANID_40    |       | Smart VLAN    | Common    | --            |
| 77      | VLANID_77    |       | Smart VLAN    | Common    | --            |
| 101     | VLANID_101   |       | Smart VLAN    | Common    | --            |
| 102     | VLANID_102   |       | Smart VLAN    | Common    | --            |
| 103     | VLANID_103   |       | Smart VLAN    | Common    | --            |
| 234     | VLANID_234   |       | Standard V... | Common    | --            |
| 235     | VLANID_235   |       | Standard V... | Common    | --            |
| 2000    | VLANID_20... |       | Smart VLAN    | Common    | --            |
| 3000    | VLANID_30... |       | Smart VLAN    | Common    | --            |
| 4001    | VLANID_40... |       | Smart VLAN    | Common    | --            |

<Back Next> Finish Cancel

- (5) Click **Finish**.
6. **Add a virtual upstream port for the multicast service on the OLT side. For details, see [19.2.5 Configuring the Virtual Multicast Upstream Port](#).**
- (1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.

- (2) On the **Virtual Uplink Port** tab page, set the filter criteria to display the required virtual upstream ports.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Frame: 0
  - Slot: 19
  - Port: 0

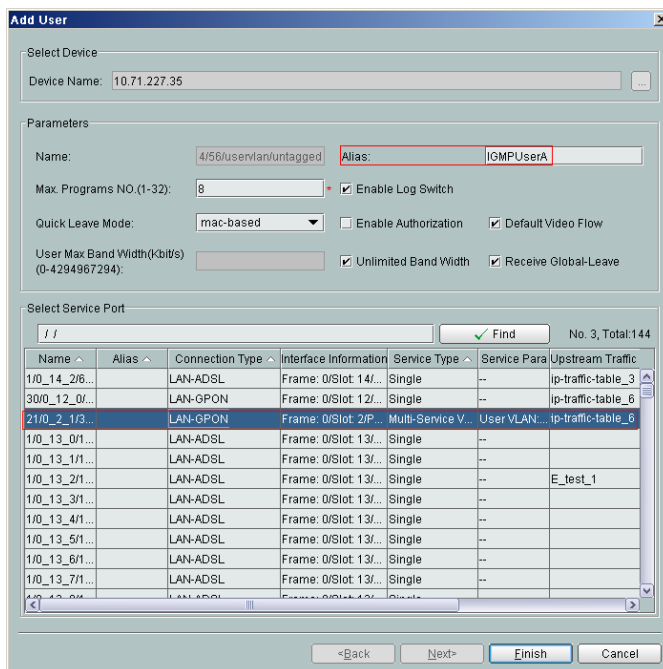


- (5) Click **Done**.
7. **Configure a program profile on the OLT side. For details, see [19.2.8 Configuring a Program Profile](#).**
- (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
  - (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: program1
    - Start IP Address: 224.0.1.1 (IP address of the multicast program)
    - End IP Address: 224.0.1.1
    - Source IP Address: 10.10.10.20 (IP address of the multicast server)
    - Preview Profile: 0 (the default value)

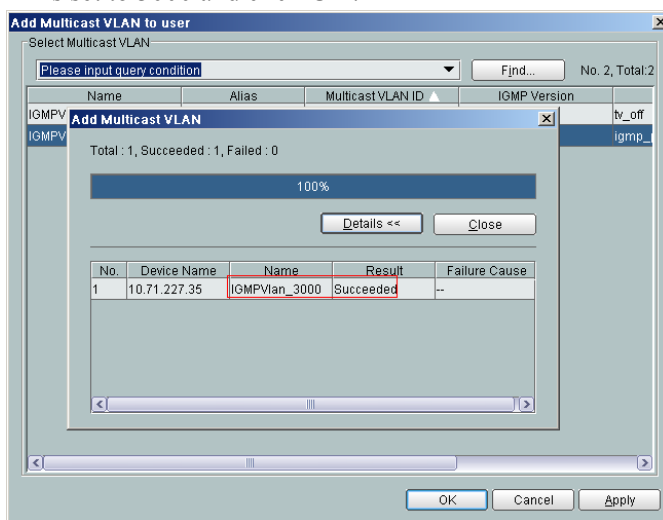
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required OLT and click **Next**. Then, set **VLAN ID** to **3000**.
  - (8) Click **OK**.
8. **Configure a multicast user on the OLT side. For details, see [19.2.10 Configuring a Multicast User](#).**

To enable user authentication, select **Enable Authorization**. To add a rights profile and apply it to NEs, choose **Configuration > Access Profile Management > IGMP Profile** from the main menu and click the **Right Profile** tab.

- (1) Choose **Multicast > Multicast User** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Alias: IGMPUserA
  - Unlimited Band Width: selected
  - Select Service Port: service virtual port named **IGMP**



- (4) Click **Finish**.
- (5) Select the multicast user, click the **User Multicast VLAN** tab in the lower pane, right-click, and then choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, select the record where **Multicast VLAN ID** is set to **3000** and click **OK**.



----End

## Result

The user can watch program1 on TV.

## 20.3.4 Configuring the GPON FTTH Voice Service (H.248 Protocol)

This topic describes how to configure the voice service when an ONT is connected to an OLT through a GPON port.

## Prerequisite

The OLT must be added to the U2000.

## Context

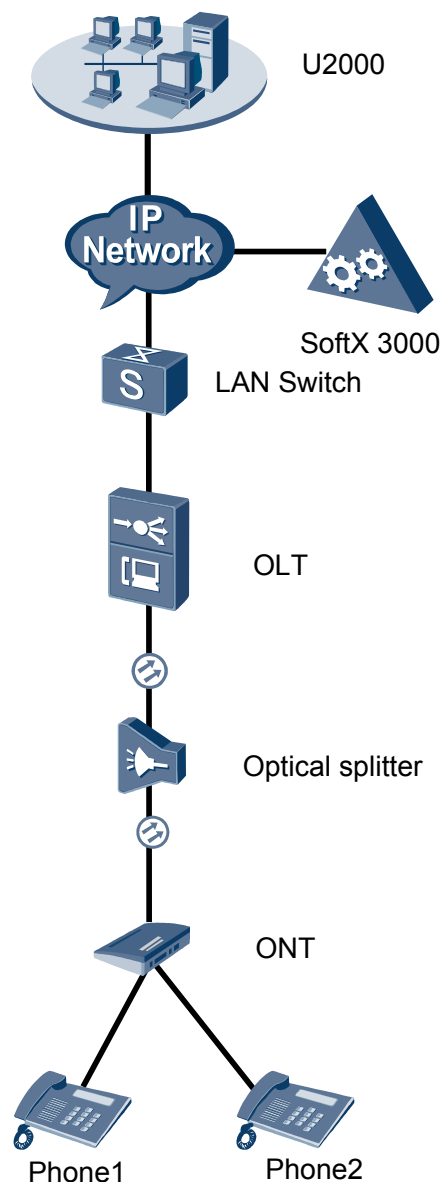
For details of the data plan, see [20.3.1 Data Plan for the GPON FTTH Services](#).

## Example Network

This topic considers the ONT whose **Terminal Type** is set to **EchoLife:HG850a** as an example. The configuration procedure of the ONTs of other types is similar to the configuration procedure described in this topic.

- Phone 1 and phone 2 are connected to TEL ports on the ONT separately and can communicate with each other.
- The ONT obtains an IP address in Dynamic Host Configuration Protocol (DHCP) mode.

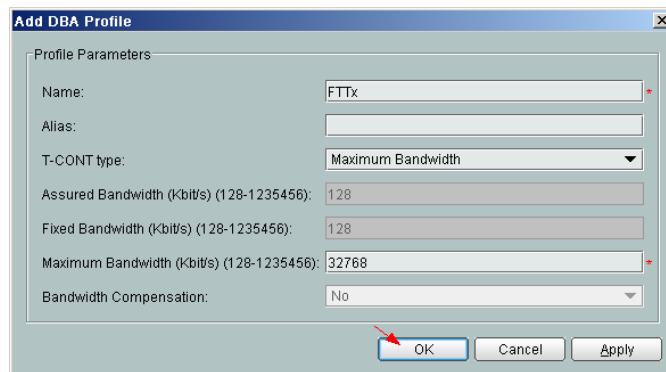
Figure 20-3 Configuring the GPON FTTH voice service (H.248 protocol)



## Procedure

- Add the ONT to the U2000 in profile mode.
  1. Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).
    - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
    - (2) Click the **MEF IP Traffic Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx

- CIR: 20480
  - Outer Priority: 1
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a DBA profile. For details, see [19.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - T-CONT type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile. For details, see [20.1.1 Configuring a GPON Line Profile](#).**

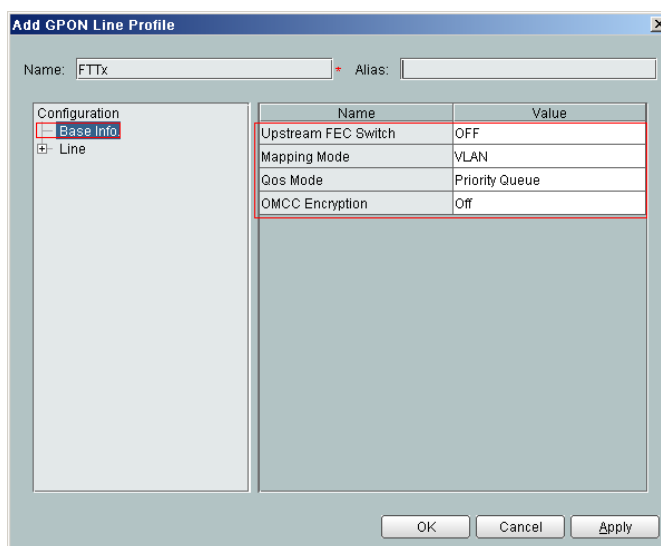
In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

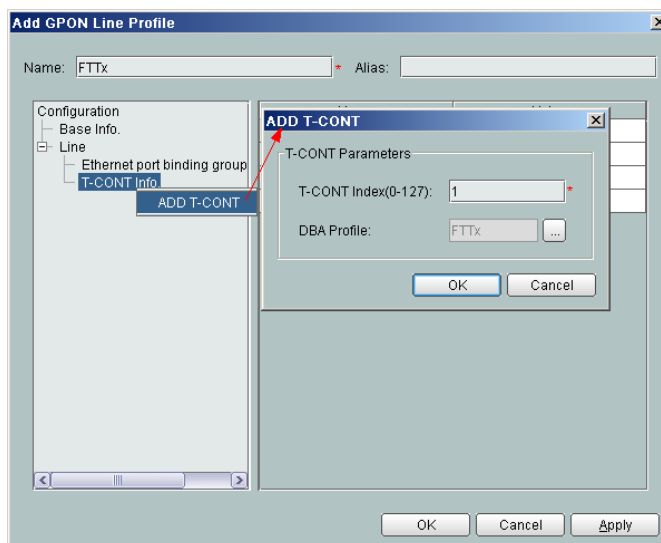
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.



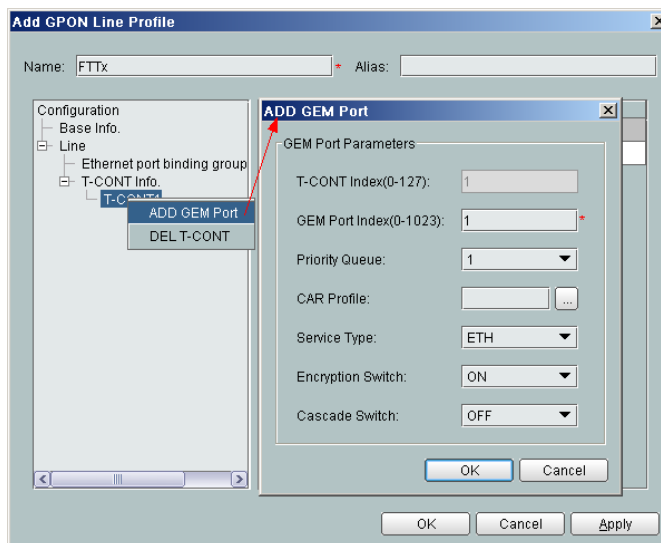
- Choose **Base Info.** from the navigation tree and set the parameters.
  - Mapping Mode: VLAN
  - Qos Mode: Priority Queue



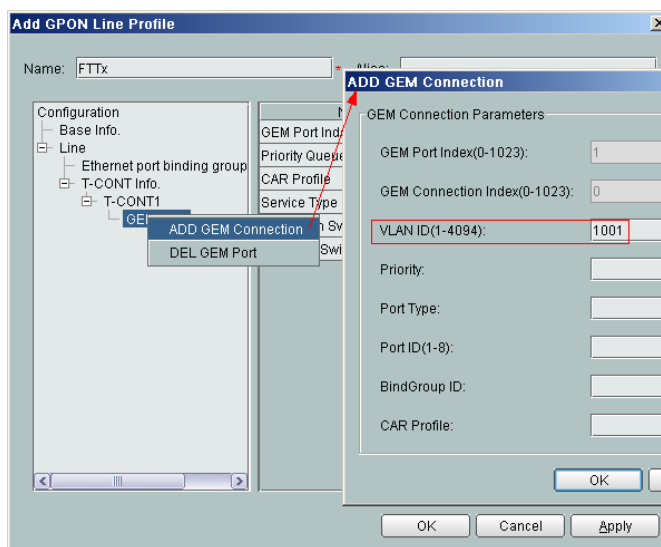
- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx



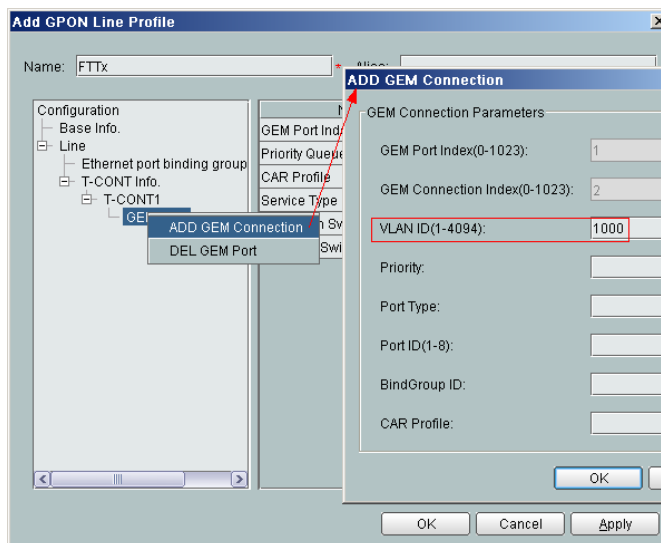
- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1



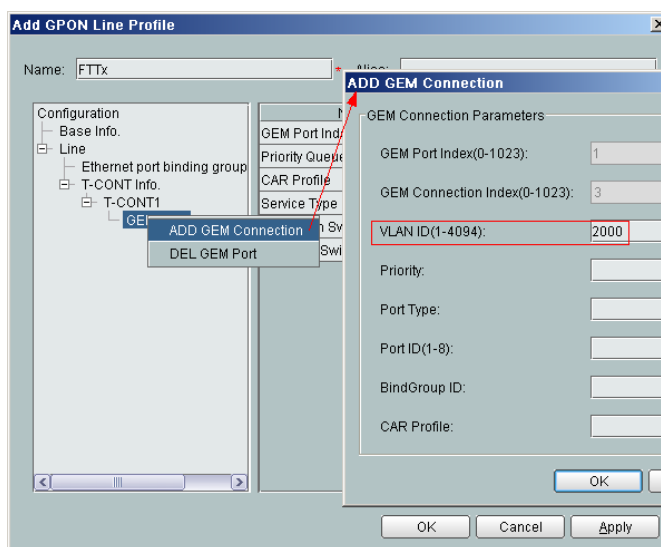
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **1** automatically)
  - VLAN ID: 1001



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **2** automatically)
  - VLAN ID: 1000

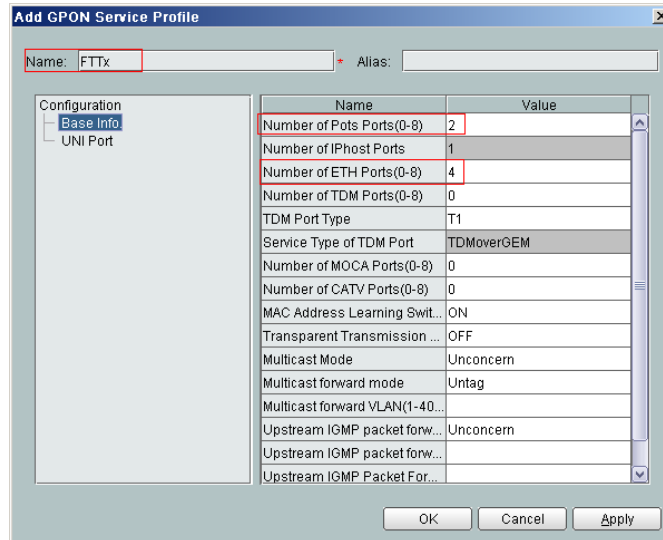


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **3** automatically)
  - VLAN ID: 2000

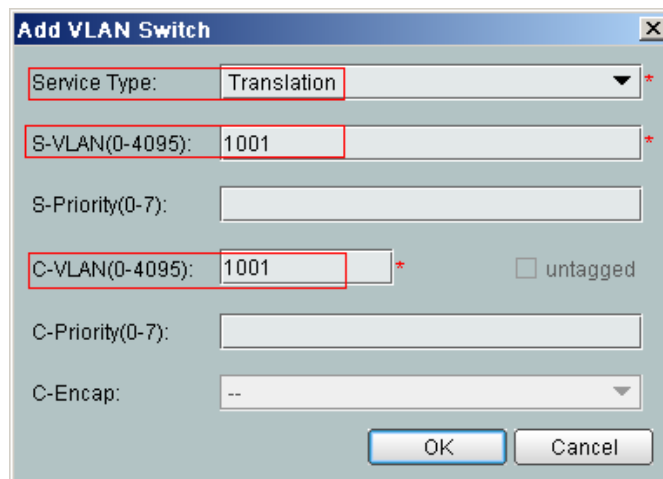


- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a service profile.** For details, see [20.1.2 Configuring a GPON Service Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **Service Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

- Set **Name** to **FTTx**.
- Choose **Base Info.** from the navigation tree and set the parameters.
  - Number of Pots Ports: 2
  - Number of ETH Ports: 4

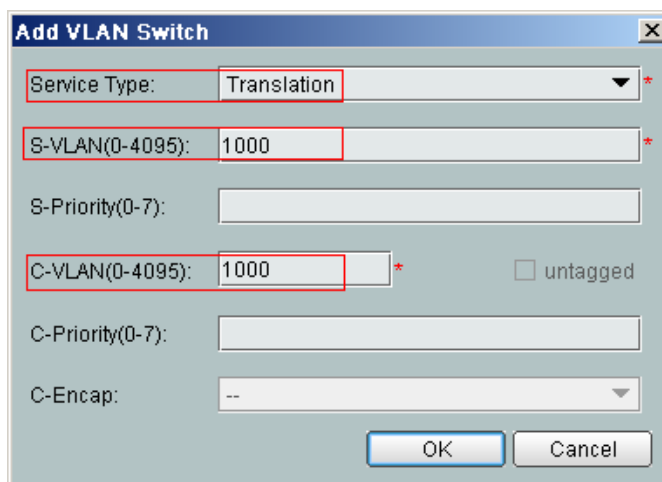




- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **1**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1001 (VLAN ID of the Internet service)
    - C-VLAN: 1001(user VLAN ID of the ONT)



- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **2**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.

- Service Type: Translation
- S-VLAN: 1000 (VLAN ID of the multicast service)
- C-VLAN: 1000 (user VLAN ID of the ONT)



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the ONT.** For details, see [20.1.3 Confirming an ONT](#) .
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 32303131B39FD641, and then choose **Confirm ONU** from the shortcut menu.
    - Name: ONT
    - ONU ID: 0
    - ONU Type: ONT
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - Terminal Type: EchoLife:HG850a
      - Software Version: V1R1C03B030

(6) Click **OK**.

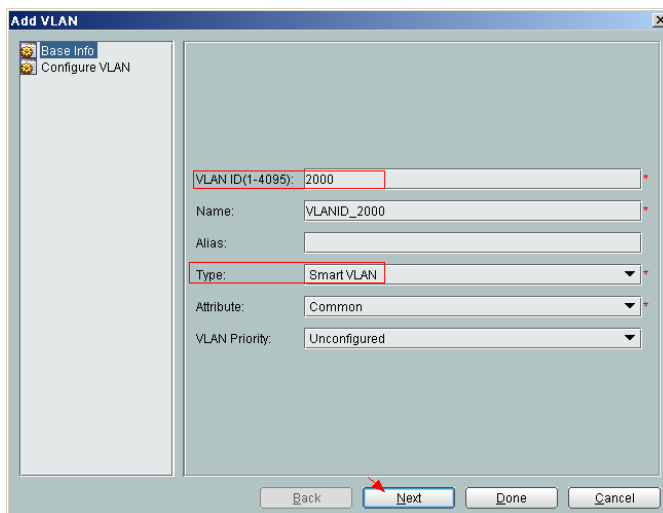
- **Configure the voice service.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

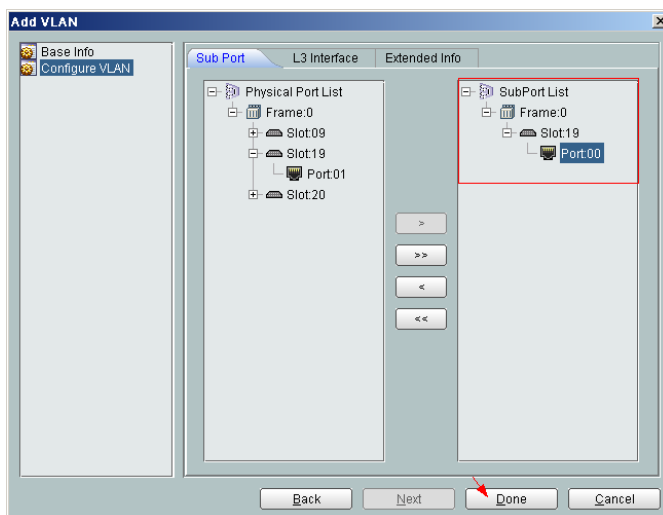
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
  - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: VOIP
    - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
    - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
    - Vlan ID: 2000
    - Service Type: Multi-Service VLAN

- User VLAN: 2000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

(4) Click **OK**.

3. **Configure the value-added service (VAS) configuration profile of the ONT.**

- (1) Choose **Configuration > Access Profile Management > ONT VAS Profile** from the main menu.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Set **Profile Name** to **VOIPHG850a**.
  - Set **Vendor ID** to **HWTC(2011)**.
  - Set **Terminal Type** to **EchoLife:HG850a**.
  - Set **Version** to **V1R1C01B010~Later**.
  - Choose **Country code and signaling protocol** from the navigation tree and set **Signal Protocol** to **H248**.
  - Choose **H.248 Global digitmap configure** from the navigation tree and set **Digitmap** to **x.T**.
  - Choose **H.248MGC > H.248 MGC configure 1** from the navigation tree and set **MGC port** to **2944** and **MGC domain name** to **MGC.com**.

(4) Click **OK**.

4. **Bind the VAS profile.**

- (1) Choose **GPON > GPON ONU** from the navigation tree.
- (2) On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
- (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and choose **Bind VAS Profile** from the shortcut menu.



- (4) In the dialog box that is displayed, select the VAS profile whose **Profile Name** is set to **VOIPHG850a** and click **OK**.

----End

## Result

The user can watch program1 on TV.

## 20.3.5 Configuring the GPON FTTH Voice Service (SIP Protocol)

This topic describes how to configure the voice service when an ONT is connected to an OLT through a GPON port.

### Prerequisite

The OLT must be added to the U2000.

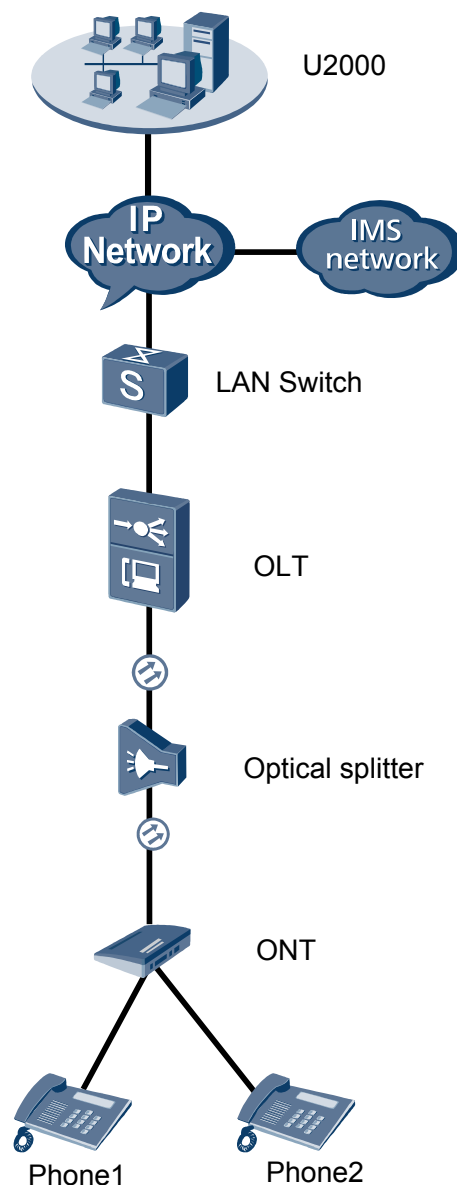
### Context

For details of the data plan, see [20.3.1 Data Plan for the GPON FTTH Services](#).

### Example Network

This topic considers the ONT whose **Terminal Type** is set to **EchoLife:HG850a** as an example. The configuration procedure of the ONTs of other types is similar to the configuration procedure described in this topic.

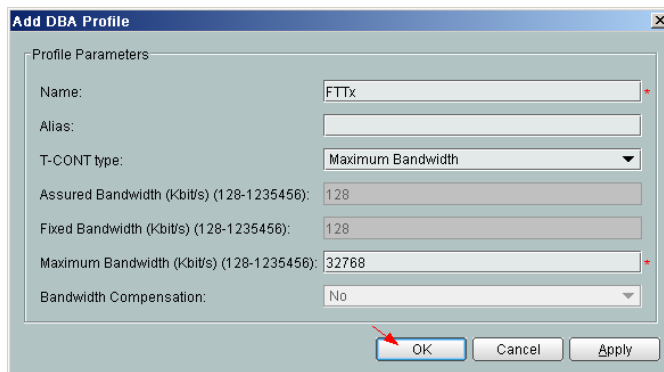
- Phone 1 and phone 2 are connected to TEL ports on the ONT separately and can communicate with each other.
- The ONT obtains an IP address in DHCP mode.

**Figure 20-4** Configuring the GPON FTTH voice service (SIP protocol)

## Procedure

- Add the ONT to the U2000 in profile mode.
  1. Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).
    - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
    - (2) Click the **MEF IP Traffic Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx

- CIR: 20480
  - Outer Priority: 1
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a DBA profile. For details, see [19.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - T-CONT type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



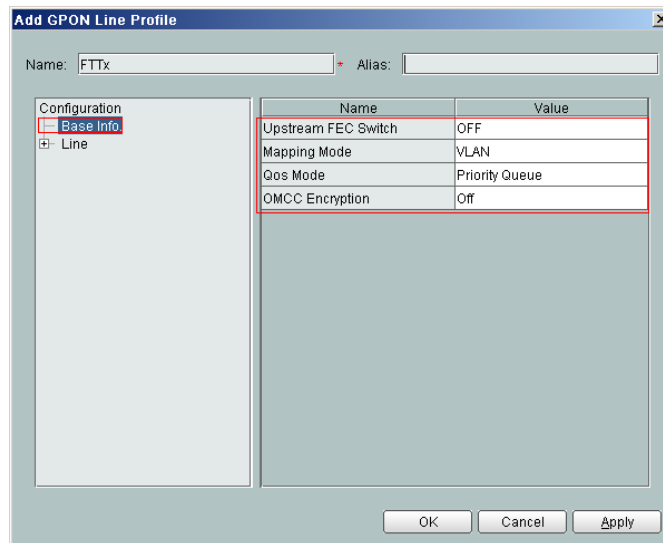
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile. For details, see [20.1.1 Configuring a GPON Line Profile](#).**

In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

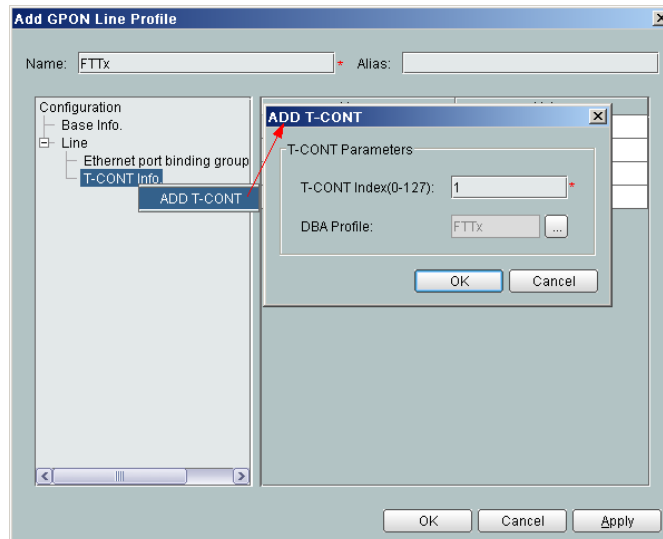
In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.

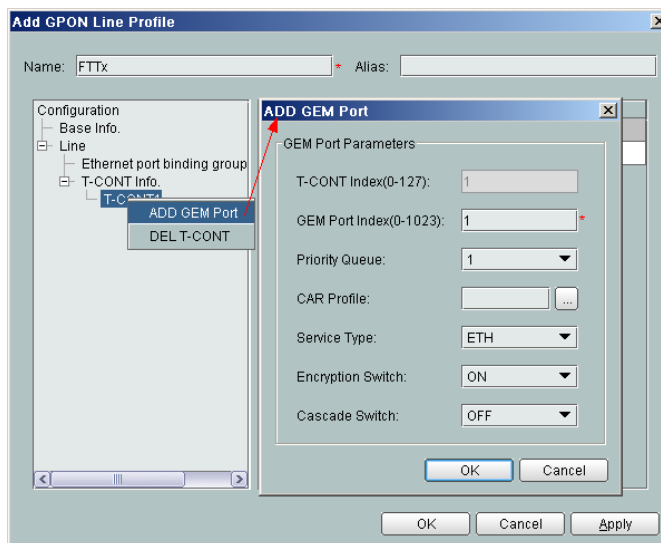
- Choose **Base Info.** from the navigation tree and set the parameters.
  - Mapping Mode: VLAN
  - Qos Mode: Priority Queue



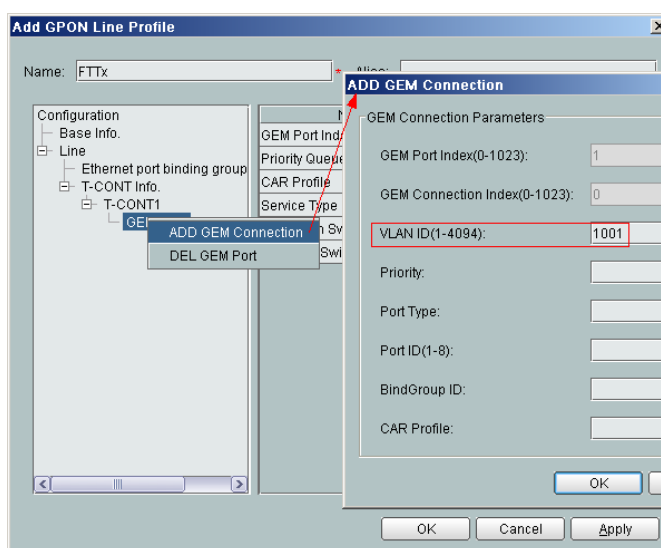
- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx



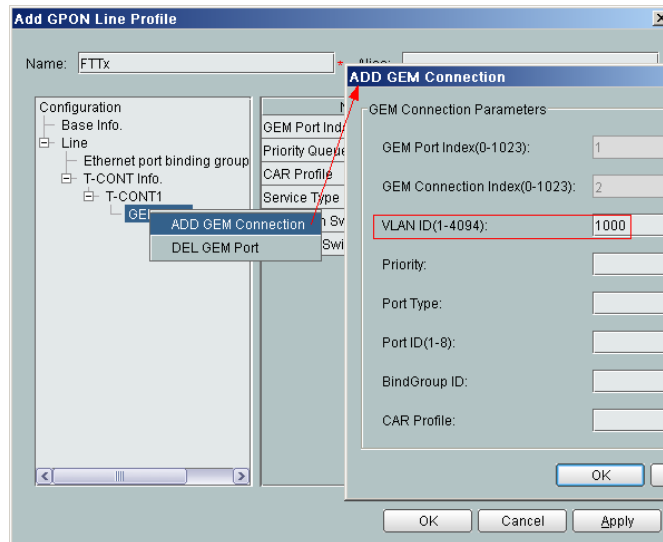
- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1



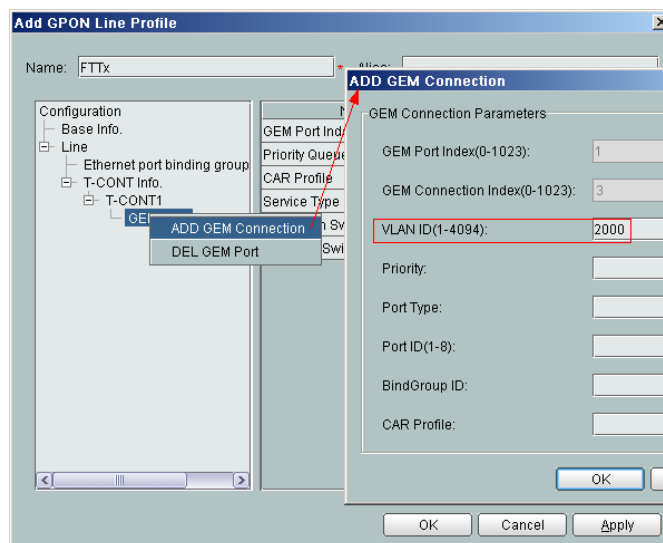
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **1** automatically)
  - VLAN ID: 1001



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **2** automatically)
  - VLAN ID: 1000

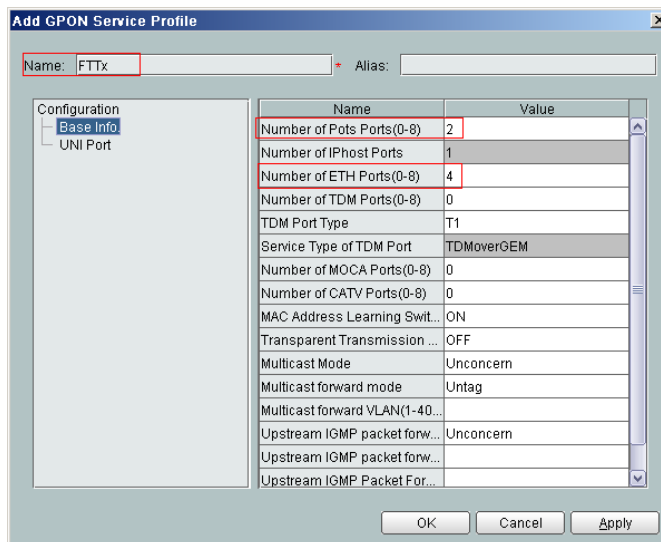


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **3** automatically)
  - VLAN ID: 2000

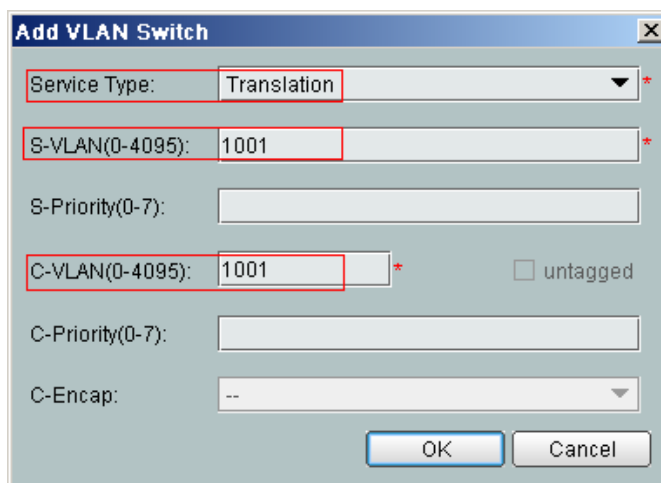


- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a service profile.** For details, see [20.1.2 Configuring a GPON Service Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **Service Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

- Set **Name** to **FTTx**.
- Choose **Base Info.** from the navigation tree and set the parameters.
  - Number of Pots Ports: 2
  - Number of ETH Ports: 4

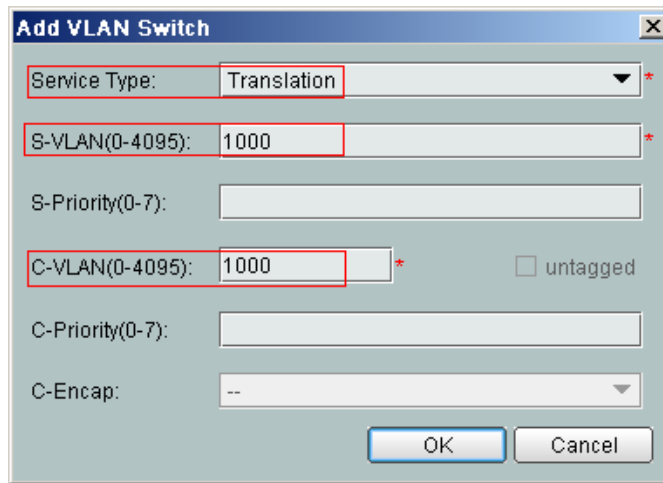




- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **1**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1001 (VLAN ID of the Internet service)
    - C-VLAN: 1001(user VLAN ID of the ONT)



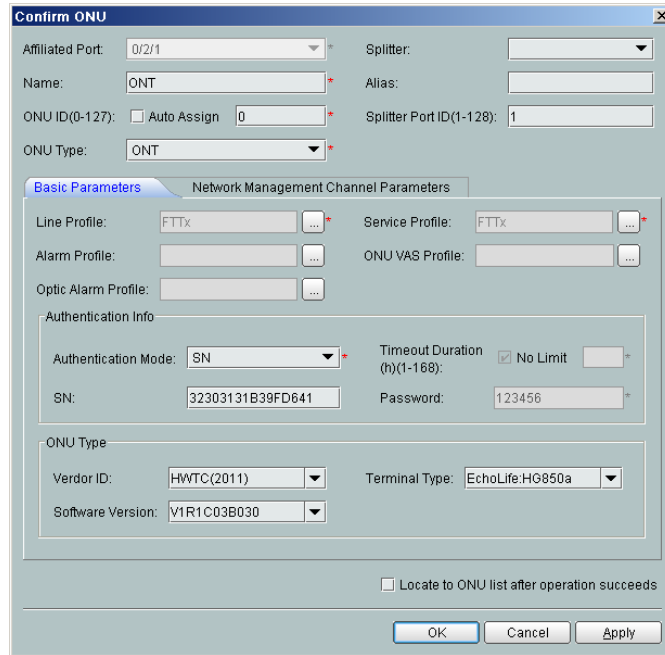
- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **2**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.

- Service Type: Translation
- S-VLAN: 1000 (VLAN ID of the multicast service)
- C-VLAN: 1000 (user VLAN ID of the ONT)



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the ONT. For details, see 20.1.3 Confirming an ONT .**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 32303131B39FD641, and then choose **Confirm ONU** from the shortcut menu.
    - Name: ONT
    - ONU ID: 0
    - ONU Type: ONT
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - Terminal Type: EchoLife:HG850a
      - Software Version: V1R1C03B030





(6) Click **OK**.

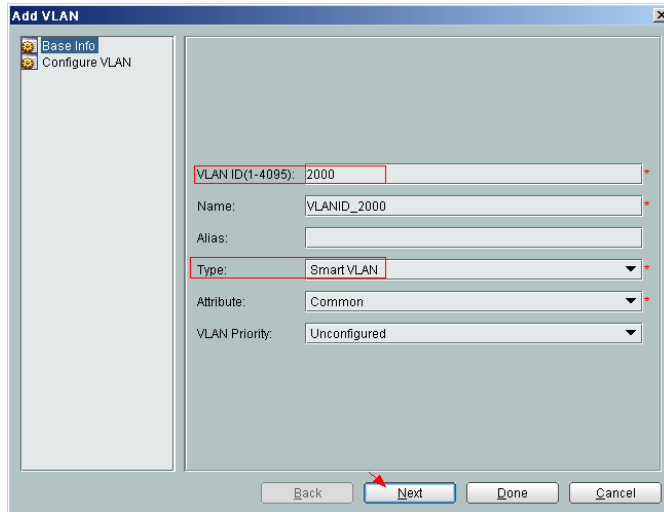
- **Configure the voice service.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

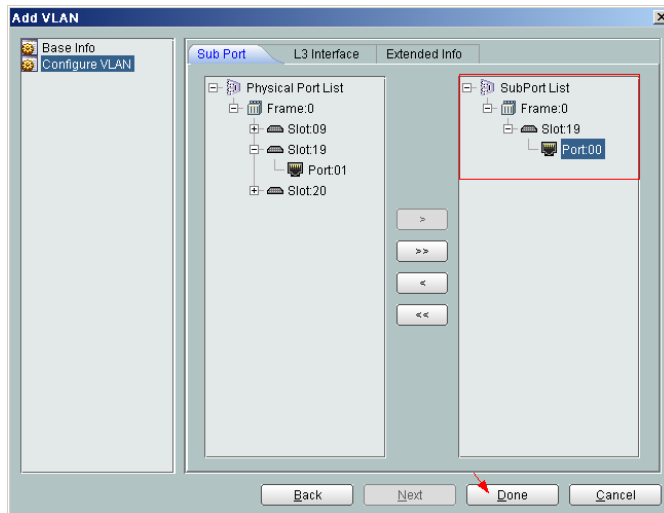
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: VOIP
      - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
      - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
      - Vlan ID: 2000
      - Service Type: Multi-Service VLAN

- User VLAN: 2000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

The screenshot shows the 'Add Service Port' dialog box with the following configuration:

- Basic Info:** ID(1-32768): 1, Name: VOIP, Alias: (empty)
- Attributes:** Connection Type: LAN-GPON
- Network Side:** Bundle ID(1-8192): (empty), VLAN Choice: Smart VLAN, Tag-Transform: --, Vlan ID(1-4095): 2000, Cos value(0-7): (empty)
- User Side:** Interface Selection: 0/2/1/0/0, Service Type: Multi-Service VLAN, User VLAN(1-4095): 2000
- Traffic Profile Info:**  Keep the upstream and downstream settings the same, Upstream Traffic Name: ip-traffic-table\_6, Downstream Traffic Name: ip-traffic-table\_6

(4) Click **OK**.

3. **Configure the VAS configuration profile of the ONT.**

(1) Choose **Configuration > Access Profile Management > ONT VAS Profile** from the main menu.

(2) In the information list, right-click and choose **Add** from the shortcut menu.

(3) In the dialog box that is displayed, set the parameters.

- Set **Profile Name** to **VOIPHG850a**.
- Set **Vendor ID** to **HWTC(2011)**.
- Set **Terminal Type** to **EchoLife:HG850a**.
- Set **Version** to **V1R1C01B010~Later**.
- Choose **Country code and signaling protocol** from the navigation tree and set **Signal Protocol** to **SIP**.
- Choose **SIP protocol configure > SIP protocol configure 1** from the navigation tree and set **SIP server port** to **5060** and **SIP server IP** to **200.200.200.200**.
- Choose **SIP digitmap configure** from the navigation tree and set **SIP digitmap** to **x.T**.
- Choose **Layer3 > WAN Interface** from the navigation tree, right-click the list, and then choose **Add**. Choose **WAN property configuration 1 protocol** from the navigation tree and set the parameters.
  - WAN VLAN ID: 2000
  - IP get mode: dhcp
  - WAN Service Type: VOIP

(4) Click **OK**.

4. **Bind the VAS profile.**

- (1) Choose **GPON > GPON ONU** from the navigation tree.
  - (2) On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
  - (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and choose **Bind VAS Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, select the VAS profile whose **Profile Name** is set to **VOIPHG850a** and click **OK**.
5. **Configure Value-Added Service.**
- (1) Choose **GPON > GPON ONU** from the navigation tree.
  - (2) On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
  - (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and choose **Configure Value-Added Service** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.  
Choose **SIP user configure** from the navigation tree and choose **Add** from the shortcut menu.
    - Choose **User port number 1** from the navigation tree and set **User phone number** to **87650001** and **User password** to **test1234**.
    - Choose **User port number 2** from the navigation tree and set **User phone number** to **87650002** and **User password** to **test1234**.
  - (5) Click **OK**.

---End

## Result

Check whether the telephone functions properly. Connect two common telephones phone 1 and phone 2 to two TEL ports on the ONT and test the dialing between phone 1 and phone 2. In normal cases,

- The caller hears the dialing tone after taking the phone off the hook.
- When the caller dials the telephone number of the callee, the phone of the callee rings successfully, and the caller hears the ringback tone.
- The caller and the callee communicate with each other successfully.
- After the callee hangs up, the caller hears the busy tone.

## 20.3.6 Configuring the GPON FTTH Service by Using a Service Provisioning Profile

This topic describes how to configure various services when an ONT is connected to an OLT through a GPON port.

### Prerequisite

The OLT must be added to the U2000.

## Context

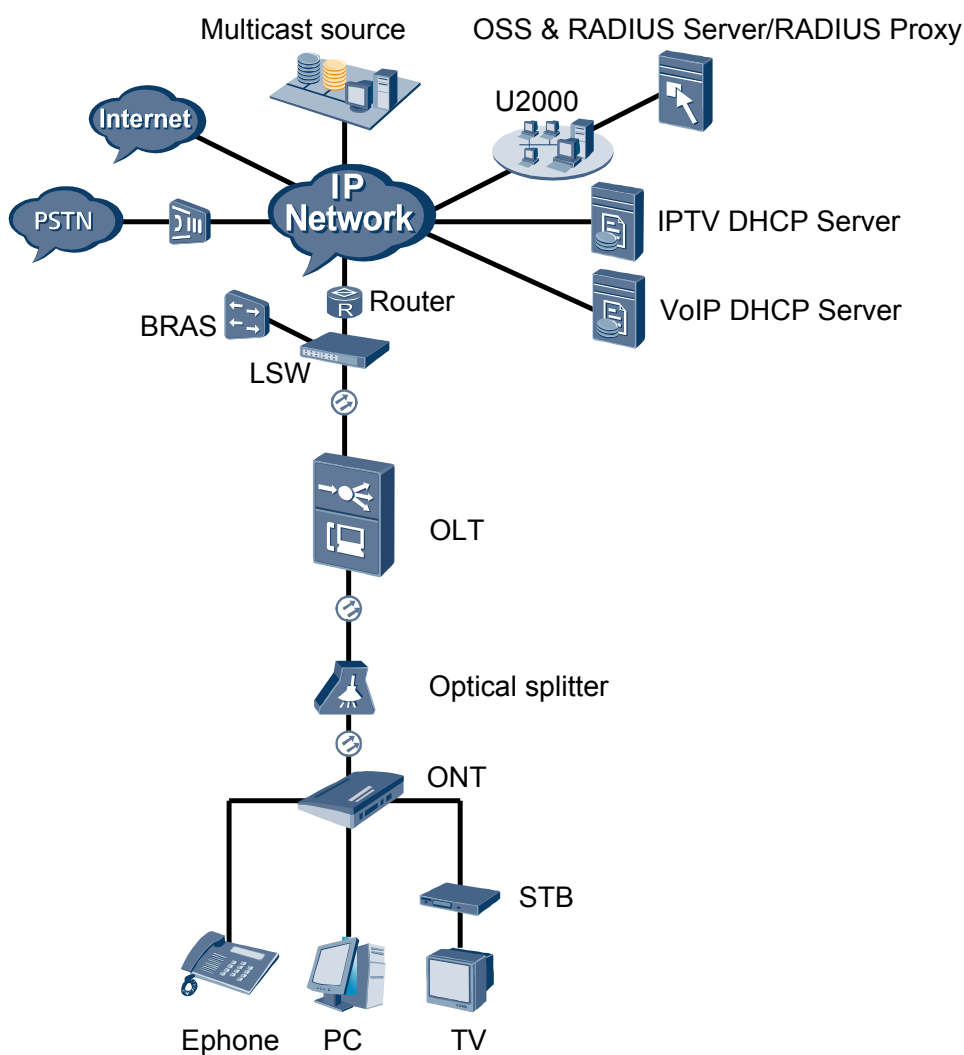
For details of the data plan, see [20.3.1 Data Plan for the GPON FTTH Services](#).

## Example Network

This topic considers the ONT whose **Terminal Type** is set to **EchoLife:HG850a** as an example. The configuration procedure of the ONTs of other types is similar to the configuration procedure described in this topic.

A service provisioning profile provides common parameters that need to be set for services. To provision a service quickly, set a service provisioning profile, bind it to a service port, and customize service parameters.

**Figure 20-5** Configuring the GPON FTTH service by using a service provisioning profile



## Procedure

- Add the ONT to the U2000 in profile mode.

1. **Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - (2) Click the **MEF IP Traffic Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - CIR: 20480
    - Outer Priority: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a DBA profile. For details, see [19.1.2 Configuring a DBA Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - T-CONT type: Maximum Bandwidth
    - Maximum Bandwidth: 32768

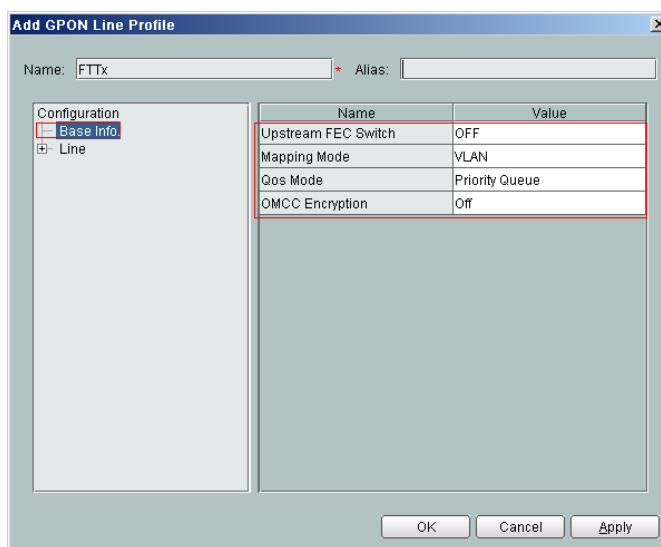
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile. For details, see [20.1.1 Configuring a GPON Line Profile](#).**

In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

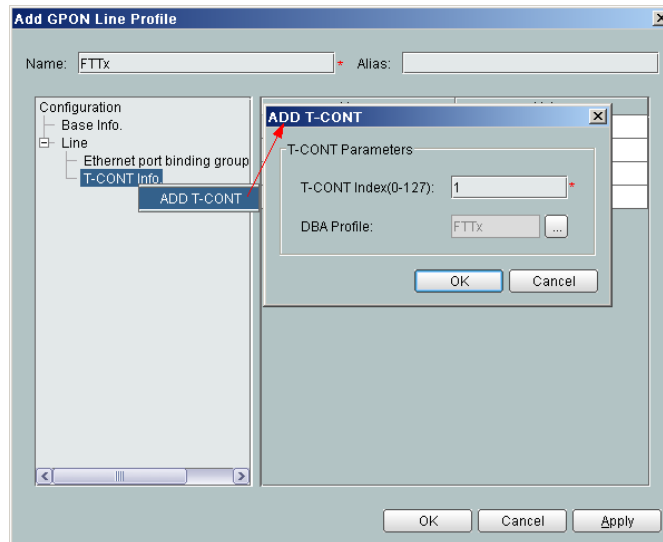
In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to

GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

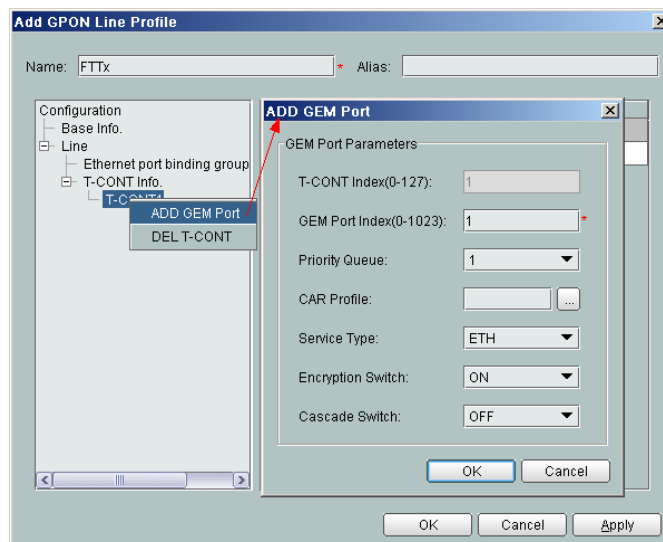
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue



- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx

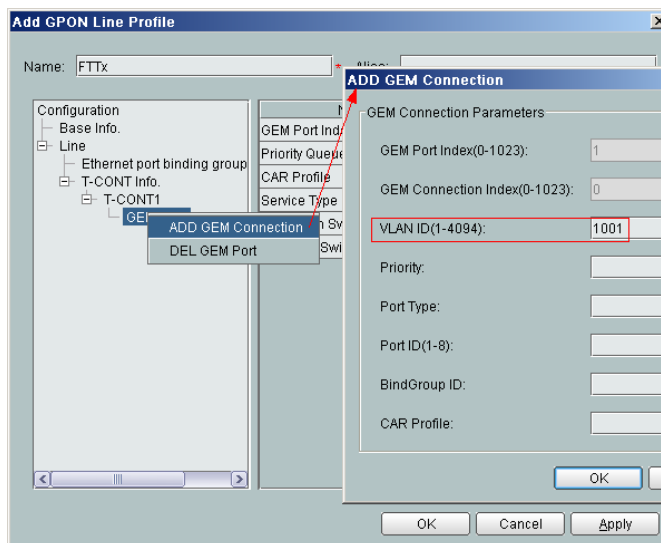


- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1

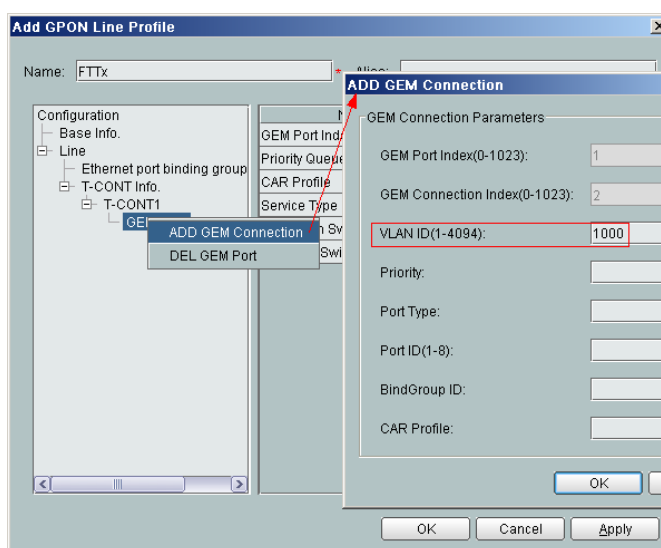


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **1** automatically)
  - VLAN ID: 1001

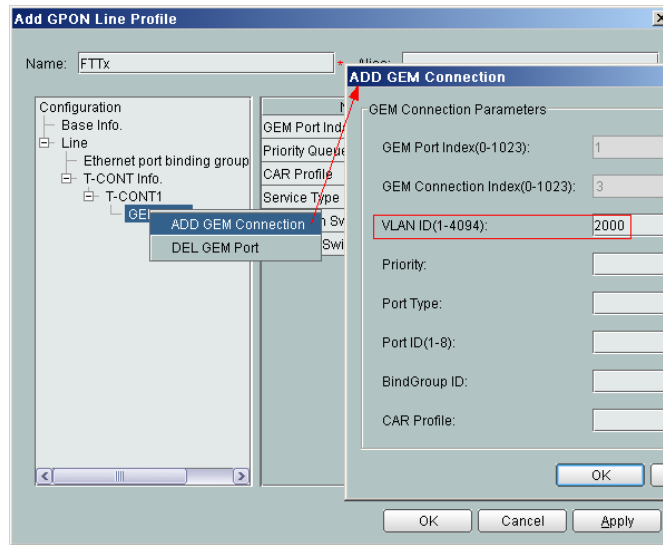




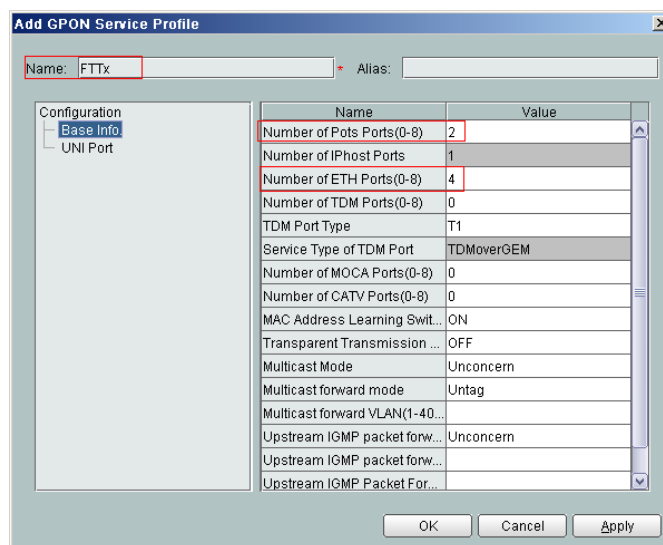
- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **2** automatically)
  - VLAN ID: 1000



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **3** automatically)
  - VLAN ID: 2000



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a service profile. For details, see [20.1.2 Configuring a GPON Service Profile](#).**
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **Service Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info.** from the navigation tree and set the parameters.
      - Number of Pots Ports: 2
      - Number of ETH Ports: 4





- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **1**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1001 (VLAN ID of the Internet service)
    - C-VLAN: 1001(user VLAN ID of the ONT)

The screenshot shows a dialog box titled "Add VLAN Switch". It contains several fields: "Service Type" is a dropdown menu set to "Translation"; "S-VLAN(0-4095):" is a text box containing "1001"; "S-Priority(0-7):" is an empty text box; "C-VLAN(0-4095):" is a text box containing "1001" with an asterisk to its right, and an "untagged" checkbox is checked; "C-Priority(0-7):" is an empty text box; "C-Encap:" is a dropdown menu set to "--". At the bottom, there are "OK" and "Cancel" buttons.

- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **2**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1000 (VLAN ID of the multicast service)
    - C-VLAN: 1000 (user VLAN ID of the ONT)

The screenshot shows a dialog box titled "Add VLAN Switch". It contains several fields: "Service Type" is a dropdown menu set to "Translation"; "S-VLAN(0-4095):" is a text box containing "1000"; "S-Priority(0-7):" is an empty text box; "C-VLAN(0-4095):" is a text box containing "1000" with an asterisk to its right, and an "untagged" checkbox is checked; "C-Priority(0-7):" is an empty text box; "C-Encap:" is a dropdown menu set to "--". At the bottom, there are "OK" and "Cancel" buttons.

(5) Click **OK**.

- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the ONT. For details, see 20.1.3 Confirming an ONT .**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 32303131B39FD641, and then choose **Confirm ONU** from the shortcut menu.
    - Name: ONT
    - ONU ID: 0
    - ONU Type: ONT
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - Terminal Type: EchoLife:HG850a
      - Software Version: V1R1C03B030

- (6) Click **OK**.

- **Configure the Internet service.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

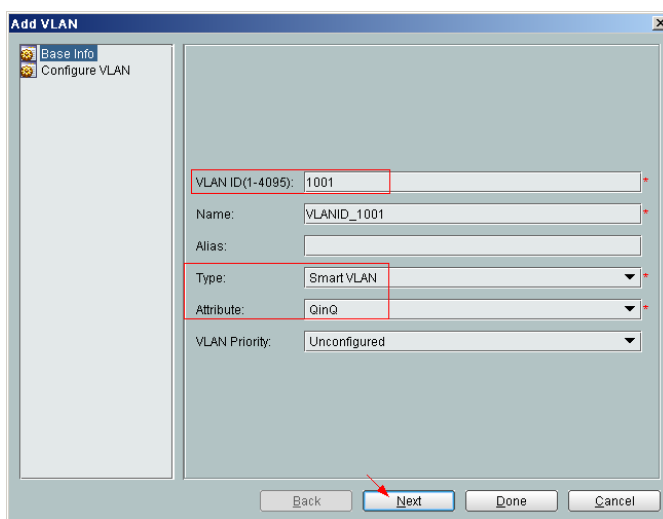
1. **Configuring the Information About the ETH Port of a GPON ONU**

- (1) Choose **GPON > GPON ONU** from the navigation tree.
- (2) On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
- (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and click the **The Ont's UNI Port Info** tab in the lower pane.
- (4) On the **The Ont's UNI Port Info** tab page, right-click the record where **UNI Type** is set to **ETH** and **UNI ID** is set to **1**, and choose **Modify** from the shortcut menu.
- (5) In the dialog box that is displayed, set **Default VLAN ID** to **1001**.
- (6) Click **OK**.

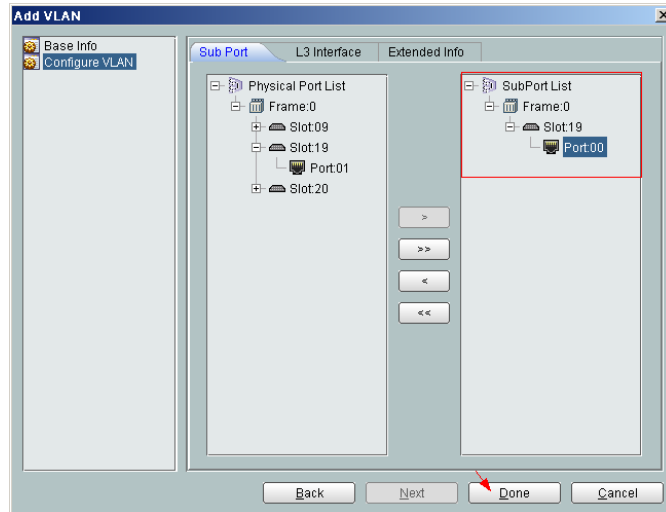
2. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

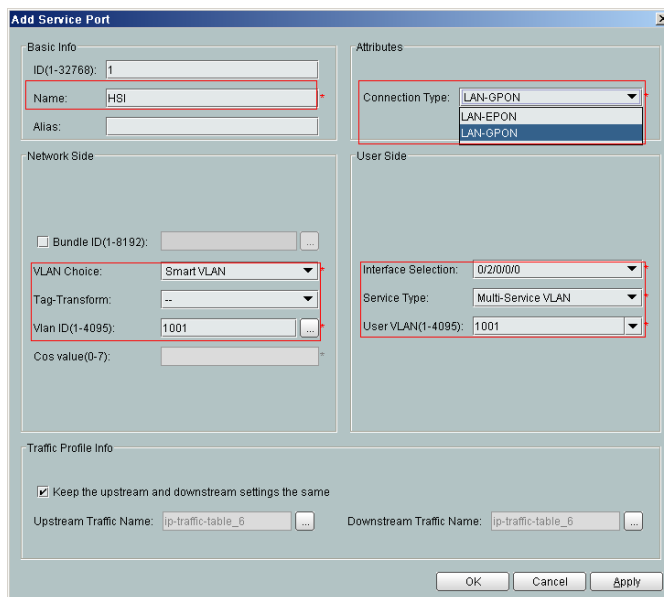
- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN
  - Attribute: QinQ



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
3. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: HSI
      - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
      - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
      - VLAN ID: 1001
      - Service Type: Multi-Service VLAN
      - User VLAN: 1001
      - Keep the upstream and downstream settings the same: selected
      - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



(4) Click **OK**.

- **Configure the multicast service.**

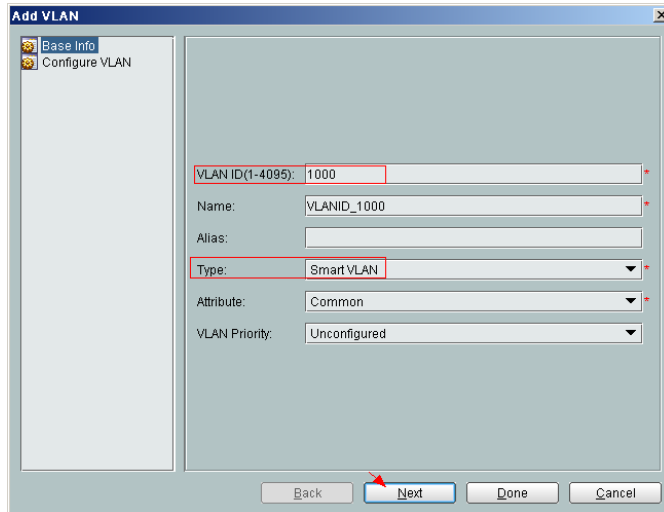
The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configuring the Information About the ETH Port of a GPON ONU**

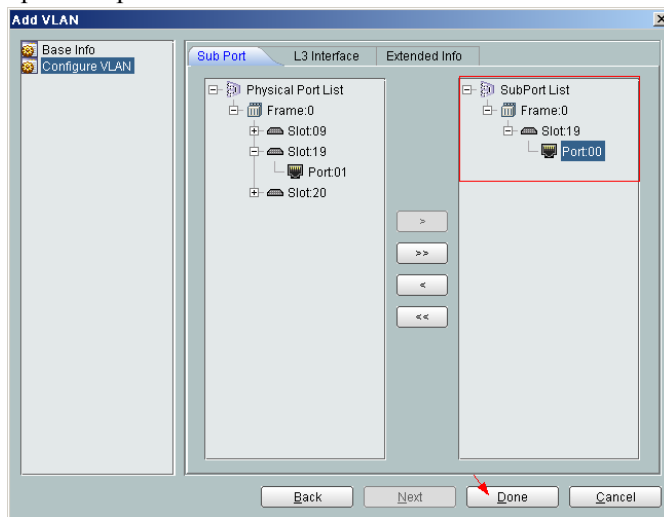
- (1) Choose **GPON > GPON ONU** from the navigation tree.
  - (2) On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.
  - (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and click the **The Ont's UNI Port Info** tab in the lower pane.
  - (4) On the **The Ont's UNI Port Info** tab page, right-click the record where **UNI Type** is set to **ETH** and **UNI ID** is set to **2**, and choose **Modify** from the shortcut menu.
  - (5) In the dialog box that is displayed, set **Default VLAN ID** to **1000**.
  - (6) Click **OK**.
2. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the multicast service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Type: Smart VLAN



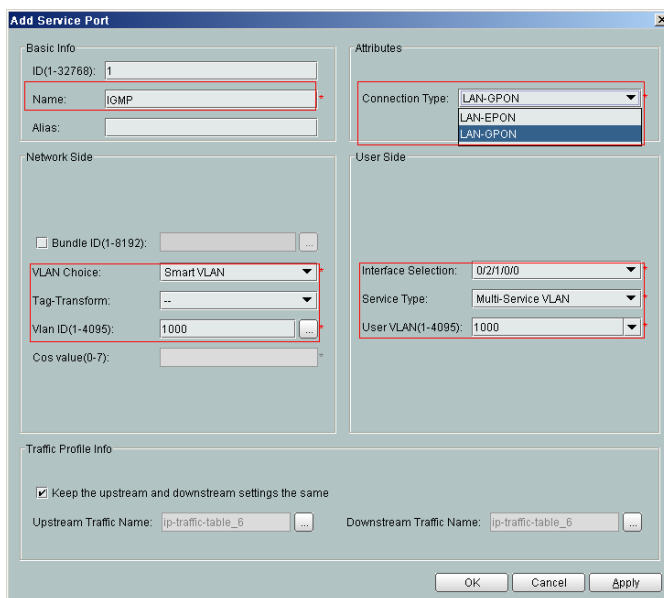
- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
3. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1000** and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name:IGMP
    - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
    - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
    - Vlan ID: 1000
    - Service Type: Multi-Service VLAN
    - User VLAN: 1000



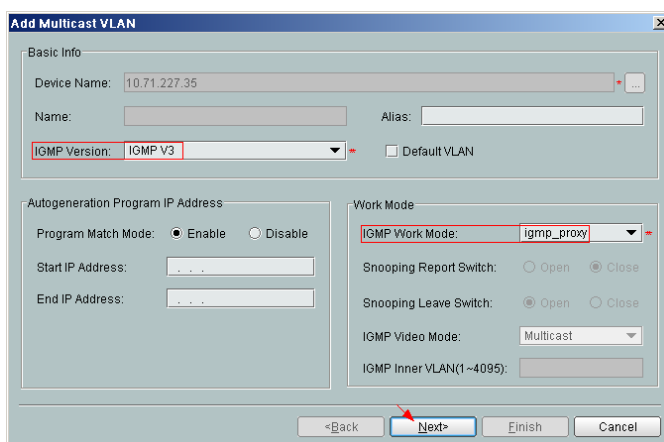
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams)

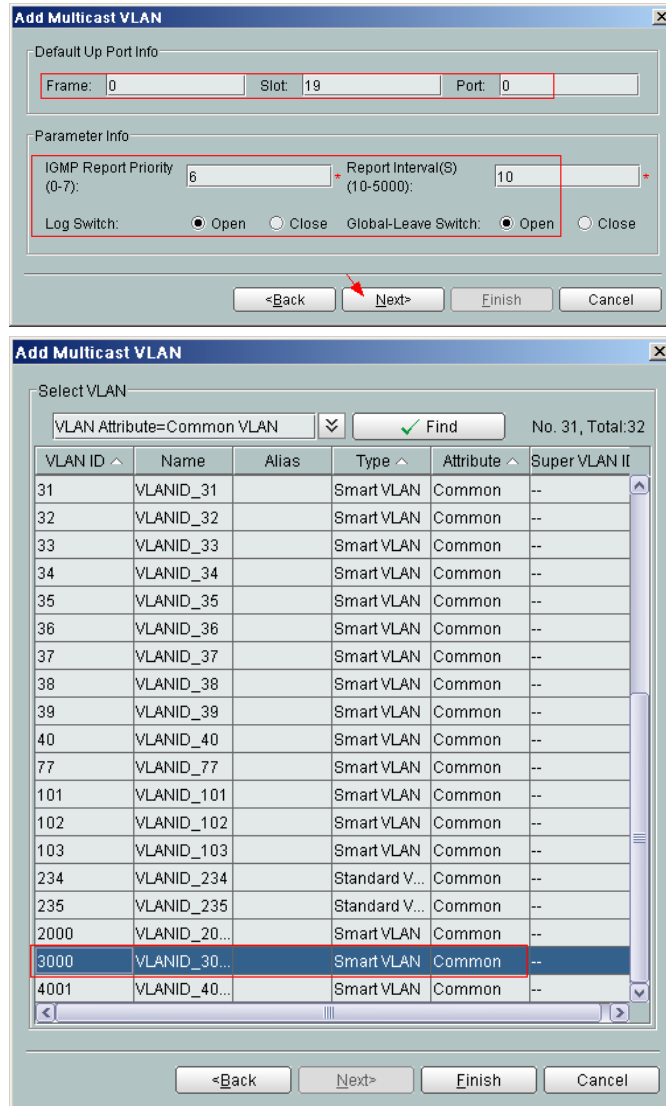


(4) Click **OK**.

4. **Add a multicast VLAN on the OLT side. For details, see [19.2.7 Configuring the Multicast VLAN](#).**

- (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
- (2) On the **Multicast VLAN** tab page, set the filter criteria to display the required multicast VLANs.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - IGMP Version: IGMP V3
  - Work Mode: igmp\_proxy
  - VLAN ID: 3000

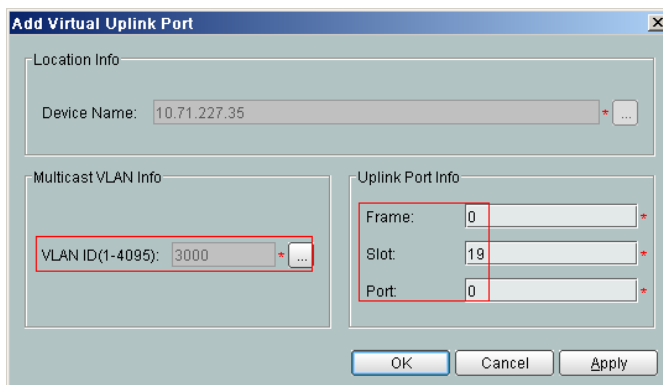




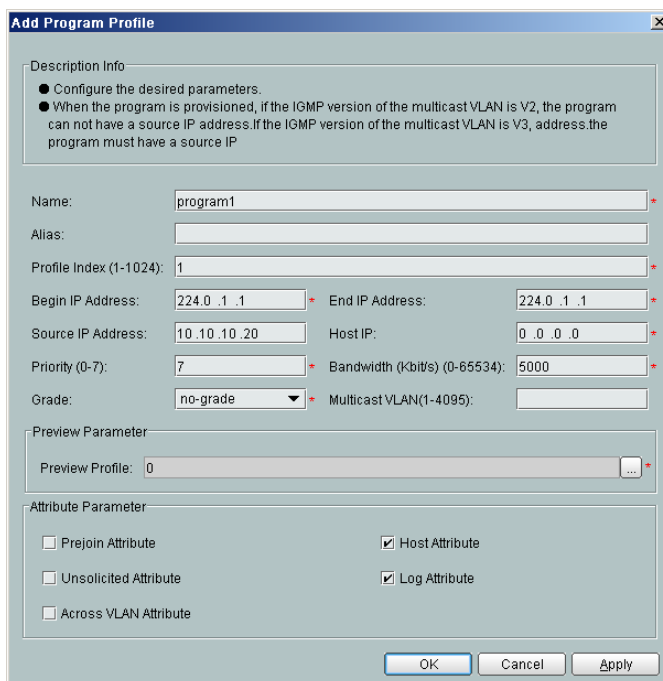
(5) Click **Finish**.

5. **Add a virtual upstream port for the multicast service on the OLT side. For details, see [19.2.5 Configuring the Virtual Multicast Upstream Port](#).**

- (1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.
- (2) On the **Virtual Uplink Port** tab page, set the filter criteria to display the required virtual upstream ports.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Frame: 0
  - Slot: 19
  - Port: 0



- (5) Click **Done**.
6. **Configure a program profile on the OLT side. For details, see [19.2.8 Configuring a Program Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
  - (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: program1
    - Start IP Address: 224.0.1.1 (IP address of the multicast program)
    - End IP Address: 224.0.1.1
    - Source IP Address: 10.10.10.20 (IP address of the multicast server)
    - Preview Profile: 0 (the default value)

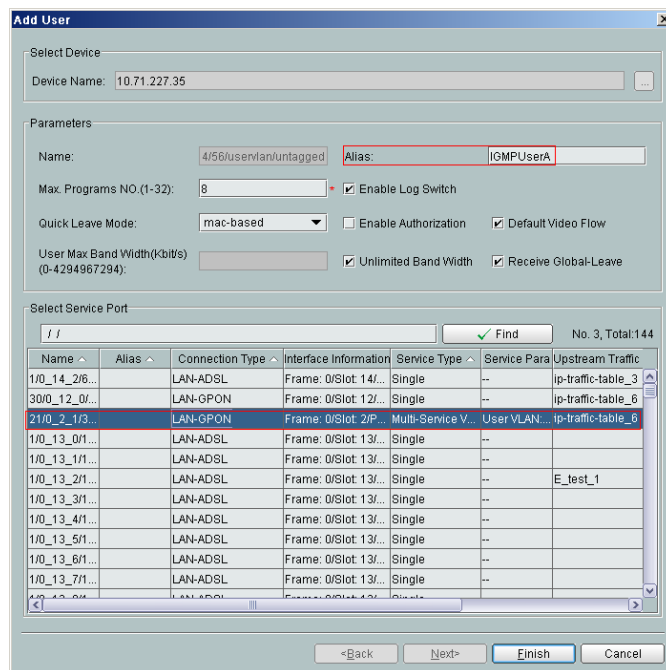


- (5) Click **OK**.

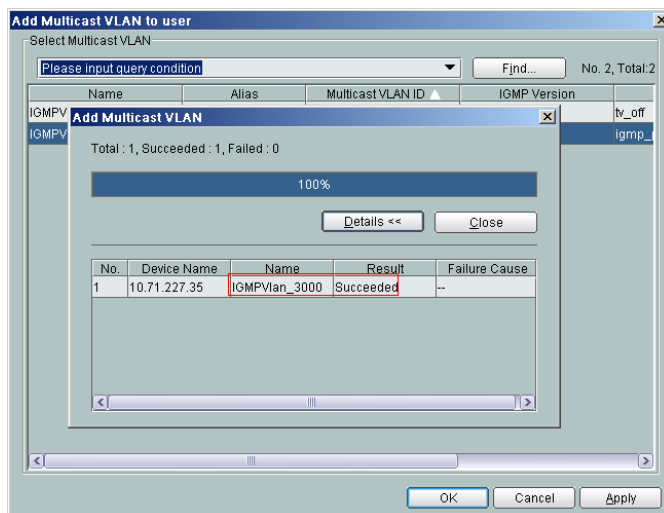
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required OLT and click **Next**. Then, set **VLAN ID** to **3000**.
  - (8) Click **OK**.
7. **Configure a multicast user on the OLT side. For details, see [19.2.10 Configuring a Multicast User](#).**

To enable user authentication, select **Enable Authorization**. To add a rights profile and apply it to NEs, choose **Configuration > Access Profile Management > IGMP Profile** from the main menu and click the **Right Profile** tab.

- (1) Choose **Multicast > Multicast User** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Alias: IGMPUserA
  - Unlimited Band Width: selected
  - Select Service Port: service virtual port named **IGMP**



- (4) Click **Finish**.
- (5) Select the multicast user, click the **User Multicast VLAN** tab in the lower pane, right-click, and then choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, select the record where **Multicast VLAN ID** is set to **3000** and click **OK**.



- **Configure the VAS configuration profile of the ONT.**
  1. Choose **Configuration > Access Profile Management > ONT VAS Profile** from the main menu.
  2. In the information list, right-click and choose **Add** from the shortcut menu.
  3. In the dialog box that is displayed, set the parameters.
    - Set **Profile Name** to **VOIPHG850a**.
    - Set **Vendor ID** to **HWTC(2011)**.
    - Set **Terminal Type** to **EchoLife:HG850a**.
    - Set **Version** to **V1R1C01B010~Later**.
    - Choose **Country code and signaling protocol** from the navigation tree and set **Signal Protocol** to **SIP**.
    - Choose **SIP protocol configure > SIP protocol configure 1** from the navigation tree and set **SIP server port** to **5060** and **SIP server IP** to **200.200.200.200**.
    - Choose **SIP digitmap configure** from the navigation tree and set **SIP digitmap** to **x.T**.
    - Choose **Layer3 > WAN Interface** from the navigation tree, right-click the list, and then choose **Add**. Choose **WAN property configuration 1 protocol** from the navigation tree and set the parameters.
      - WAN VLAN ID: 20
      - IP get mode: dhcp
      - WAN Service Type: VOIP
  4. Click **OK**.
- **Add a service provisioning profile.**
  1. Choose **Configuration > Access Profile Management > Service Provisioning Profile** from the main menu.
  2. Click the **GPON FTTH Service Provisioning Profile** tab.
  3. Right-click and choose **Add Global Profile** from the shortcut menu.
  4. In the dialog box that is displayed, set the parameters.
    - Set **Name** to **serviceprofile**.

- Choose **Base Info.** from the navigation tree and set the parameters.
  - **Deploy and ONU and provision its service for the first time** option button: clicked
  - ONU device type: EchoLife:HG850a
  - ONU Device Version: V1R1C03B030
  - Line Profile: FTTx
  - Service Profile: FTTx
  - ONU VAS Profile: VOIPHG850a
  - Authentication Mode: SN

- Right-click **ServicePort** in the navigation tree and choose **Add serviceport** from the shortcut menu. In the right pane, set the parameters of the service virtual port.

In the case of the Internet service:

- ServicePort Name: pppoe
- VLAN Attribute: Common
- Network Side VLAN: 1001
- GemPort: 1
- Service Type: Multi-service VLAN
- User VLAN: untagged
- Keep traffic the same: selected
- Upstream Traffic Name: FTTx
- Downstream Traffic Name: FTTx

In the case of the multicast service:


- ServicePort Name: multicast
- VLAN Attribute: Common
- Network Side VLAN: 1000
- GemPort: 1
- Service Type: Multi-service VLAN
- User VLAN: untagged
- Keep traffic the same: selected
- Upstream Traffic Name: FTTx
- Downstream Traffic Name: FTTx

- Right-click **Multicast User** in the navigation tree and choose **Add multicast user** from the shortcut menu. In the right pane, set the parameters of the multicast user.
  - IGMP Flow Channel: multicast
  - Multicast VLAN: 1000

5. Click **OK**.

● **Configure the service.**

1. Choose **GPON > GPON ONU** from the navigation tree.
2. On the **GPON ONU** tab page, set the filter criteria to display the required GPON ONUs.

3. In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and choose **Config Service** from the shortcut menu.
4. In the dialog box that is displayed, click  next to **Service Provisioning Profile**. In the dialog box that is displayed, select the service provisioning profile whose **Name** is set to **serviceprofile**.
5. Click **OK**.

---End

## Result

Check whether the user successfully gains access to the Internet through dialup on the PC.

1. The FE port of the ONT is connected to the Ethernet port of the PC properly.
2. Dial up on the PC using the PPPoE dialup software.
3. The user gains access to the Internet on the PC after the dialup is successful.

The user can watch program1 on TV.

Check whether the telephone functions properly. Connect two common telephones phone 1 and phone 2 to two TEL ports on the ONT and test the dialing between phone 1 and phone 2. In normal cases,

- The caller hears the dialing tone after taking the phone off the hook.
- When the caller dials the telephone number of the callee, the phone of the callee rings successfully, and the caller hears the ringback tone.
- The caller and the callee communicate with each other successfully.
- After the callee hangs up, the caller hears the busy tone.





# 21 Configuring the GPON Private Line Access and FTTO Services (OT928G)

---

## About This Chapter

The deployment of an OLT and OT928G in a network provides the private line access and fiber to the office (FTTO) solutions.

### Context

In an private line access network, the OT928G functions as a cellular backhaul unit (CBU) and is connected to 2G or 3G base stations in various modes to carry 2G or 3G services over the FTTM network.

- The GPON native TDM solution is used to carry wireless 2G services and services in the wireless 3G CS domain. It is mainly used to carry voice services.
- The GPON Ethernet solution is used to carry services in the 3G PS domain and mainly used to carry data services.

In an FTTO network, the OT928G functions as a single business unit (SBU), provides multiple types of ports, and supports various networking modes to meet network requirements of enterprise users for different environments and services.

- Eight POTS ports are used to connect to telephones inside enterprises and provide the high-quality and low-cost VoIP service on the IP network.
- Eight E1 ports are used to connect to TDM PBXs of enterprises.
- Four FE electrical ports and one FE/GE adaptive electrical port are used to connect to LAN switches of enterprises and provide Ethernet private-line services.

#### [21.1 Adding an ONT to the U2000 \(OLT in Profile Mode\)](#)

This topic describes how to add an ONT to the U2000 when the OLT is in the profile mode. After an ONT is added successfully, you can configure FTTM or FTTO services for the ONT on the U2000.

#### [21.2 Configuring Services](#)

An FTTO or FTTM network with an OLT and OT928G provides various services for users.

#### [21.3 Configuration Examples of the GPON Private Line Access and FTTO Services \(OLT +OT928G\)](#)

This topic provides examples to describe how to configure various services in a GPON private line access or FTTO network.

## 21.1 Adding an ONT to the U2000 (OLT in Profile Mode)

This topic describes how to add an ONT to the U2000 when the OLT is in the profile mode. After an ONT is added successfully, you can configure FTTM or FTTO services for the ONT on the U2000.

### Context

The OT928G supports five ETH ports, eight E1 ports, and eight POTS ports.

### Procedure

#### 1 20.1.1 Configuring a GPON Line Profile.

#### 2 20.1.2 Configuring a GPON Service Profile.



In the dialog box that is displayed, click the **Base Info.** tab. Set **Number of Pots Ports** to **8**, **Number of ETH Ports** to **5**, and **Number of TDM Ports** to **8**.

#### 3 20.1.3 Confirming an ONT .



In the dialog box that is displayed, click the **Basic Parameters** tab. Set **Terminal Type** to **SmartAX OT928G**.

---End

## 21.2 Configuring Services

An FTTO or FTTM network with an OLT and OT928G provides various services for users.

### Context

Several operations are required when you configure a service. The following lists the services configured at the OLT side and the service configuration steps.

| Services                                                                               | Steps                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Private-Line Service of an Enterprise                                         | <ul style="list-style-type: none"><li>● <a href="#">21.2.2 Configuring a VLAN Service Profile</a></li><li>● <a href="#">21.2.3 Configuring a VLAN</a></li><li>● <a href="#">19.2.3 Adding a Service Port</a></li><li>● <a href="#">21.2.1 Setting Queue Scheduling Parameters</a></li></ul> |
| TDM PBX Access Service/<br>Native TDM Mobile Bearer Service (Based on the SDH Network) | <ul style="list-style-type: none"><li>● <a href="#">21.2.1 Setting Queue Scheduling Parameters</a></li><li>● <a href="#">21.2.4 Configuring a TDM Connection</a></li><li>● <a href="#">21.2.5 Configuring a Clock Source</a></li></ul>                                                      |

| Services                       | Steps                                                                                                                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Mobile Bearer Service | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.2.3 Adding a Service Port</a></li> <li>● <a href="#">21.2.1 Setting Queue Scheduling Parameters</a></li> </ul> |

### [21.2.1 Setting Queue Scheduling Parameters](#)

To ensure the QoS of important services in case of network congestion, you need to select different queue scheduling modes according to the priorities of the services. You need to set the queue scheduling parameters on the OLT only once. Then, the parameters are globally valid.

### [21.2.2 Configuring a VLAN Service Profile](#)

The parameters related to services in VLAN attributes are combined to form a profile. The profile can be referenced by a VLAN on a device after the profile is applied to the device.

### [21.2.3 Configuring a VLAN](#)

Virtual local area network (VLAN) is a technology used to form virtual workgroups by grouping the devices of a LAN logically.

### [21.2.4 Configuring a TDM Connection](#)

This topic describes how to add a TDM E1 connection and set up the mapping between E1 ports and GEM ports.


### [21.2.5 Configuring a Clock Source](#)

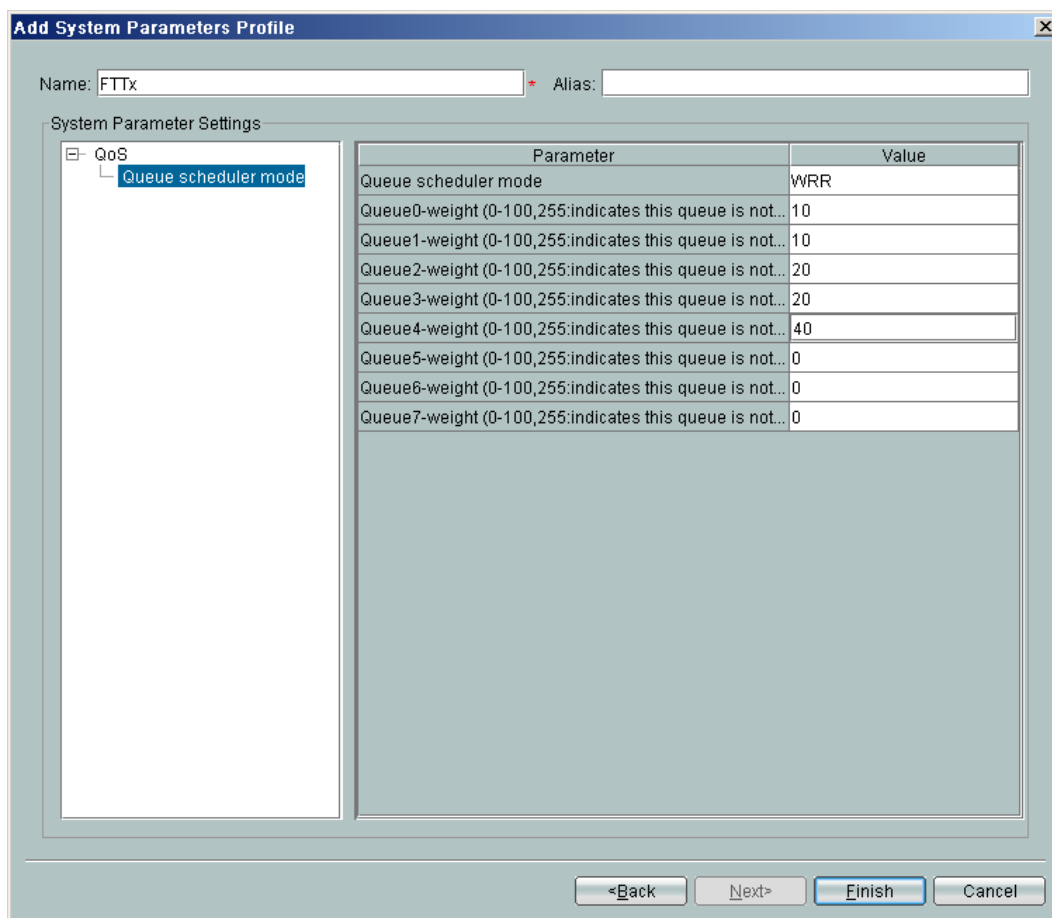
This topic describes how to set the clock signal of a specified port as the reference clock source of the system.

## 21.2.1 Setting Queue Scheduling Parameters

To ensure the QoS of important services in case of network congestion, you need to select different queue scheduling modes according to the priorities of the services. You need to set the queue scheduling parameters on the OLT only once. Then, the parameters are globally valid.

### Procedure

- 1 Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.
- 2 On the **System Parameter Profile** tab page, select the required OLT type from the **Device Type** drop-down list.
- 3 Right-click and choose **Add Global Profile** from the shortcut menu.
- 4 In the dialog box that is displayed, set the name of the system parameter profile to **FTTx**. Choose **QoS > Queue scheduler mode** from the **Parameters for Selection** navigation tree, click  to add the parameter to the **Selected Parameters** navigation tree, and then click **Next**.
- 5 Choose **QoS > Queue scheduler mode** from the navigation tree to configure the queue scheduling mode.



| Key Parameter        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Queue scheduler mode | Distributes the packets that are transmitted from the same port to multiple queues and schedules the queues to determine the sequence of transmitting the packets.<br><br>It is recommended that you use both the weighted round robin (WRR) and priority queuing (PQ) scheduling modes. In this case, the system schedules the queue with weight 0 in the PQ mode, and then schedules the queues with the weights other than 0 in the WRR mode. |
| Queue-weight         | Indicates the percentage of the bandwidth occupied by each queue. The sum of the weights of the queues must be 0 or 100.                                                                                                                                                                                                                                                                                                                         |

- 6 Click **OK**.
- 7 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 8 In the dialog box that is displayed, select the required NE(s), and click **OK**.

----**End**

## Command Reference

| To...                                                 | Run the Command... | In...              |
|-------------------------------------------------------|--------------------|--------------------|
| Configure the queue scheduling mode of Ethernet ports | queue-scheduler    | Global config mode |

### 21.2.2 Configuring a VLAN Service Profile

The parameters related to services in VLAN attributes are combined to form a profile. The profile can be referenced by a VLAN on a device after the profile is applied to the device.

#### Procedure

- 1 Choose **Configuration > Access Profile Management > VLAN Service Profile** from the main menu.
- 2 Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.

| Key Parameter      | Description                                                                                                                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enable BPDU Tunnel | Enables the BPDU transparent transmission. After this function is enabled, the layer 2 protocol packets in the private network can be transmitted transparently in the public network.<br>This function is applicable to QinQ VLANs. |

- 4 Click **OK**.
- 5 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 6 In the dialog box that is displayed, select the required NE(s), and click **OK**.

----End


## Command Reference

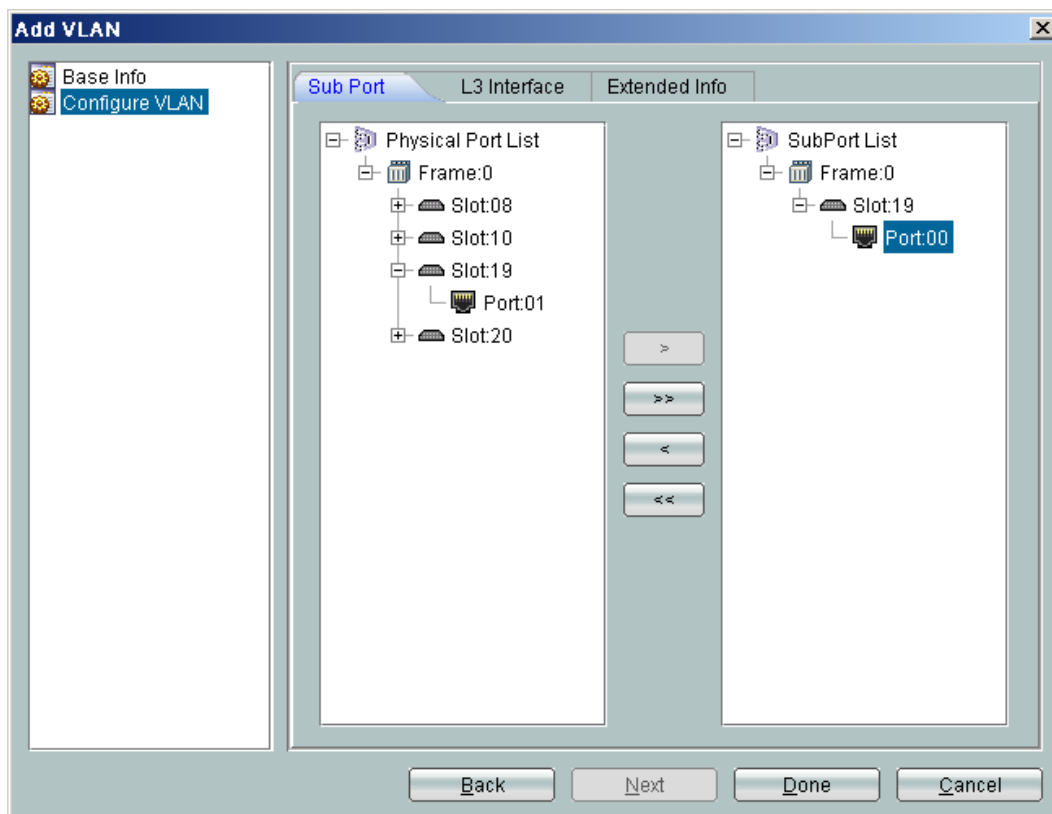
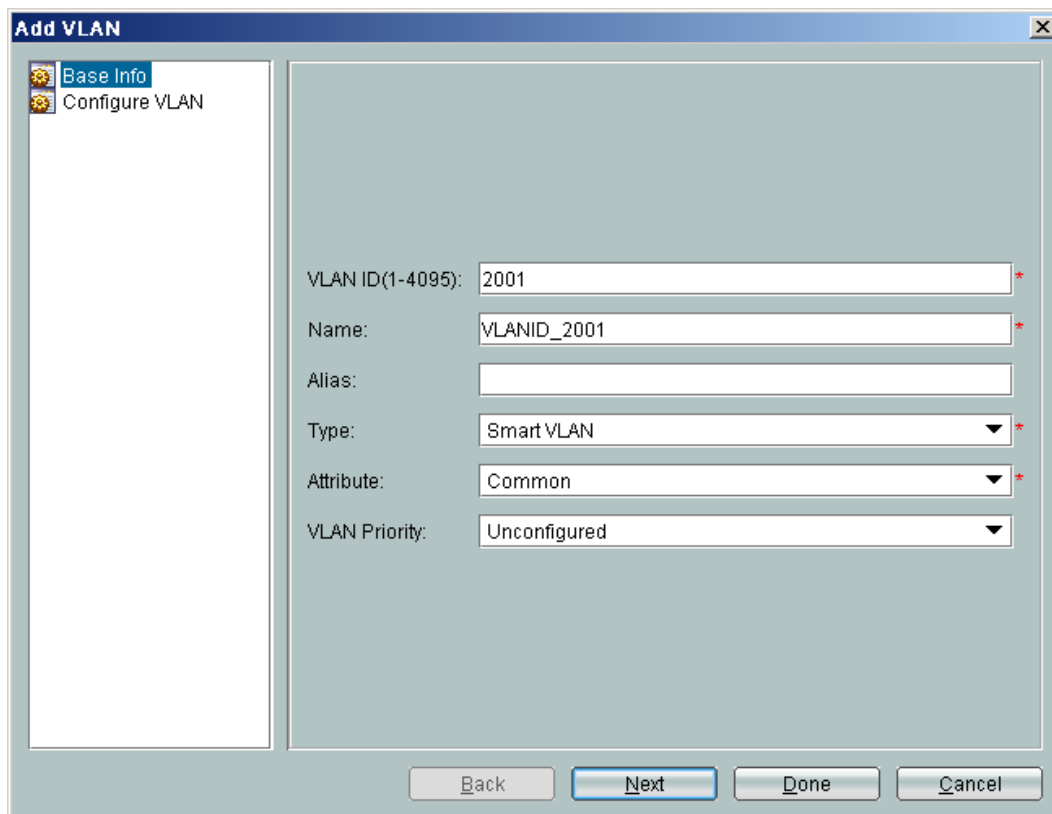
| To...                         | Run the Command...   | In...              |
|-------------------------------|----------------------|--------------------|
| Create a VLAN service profile | vlan service-profile | Global config mode |

### 21.2.3 Configuring a VLAN

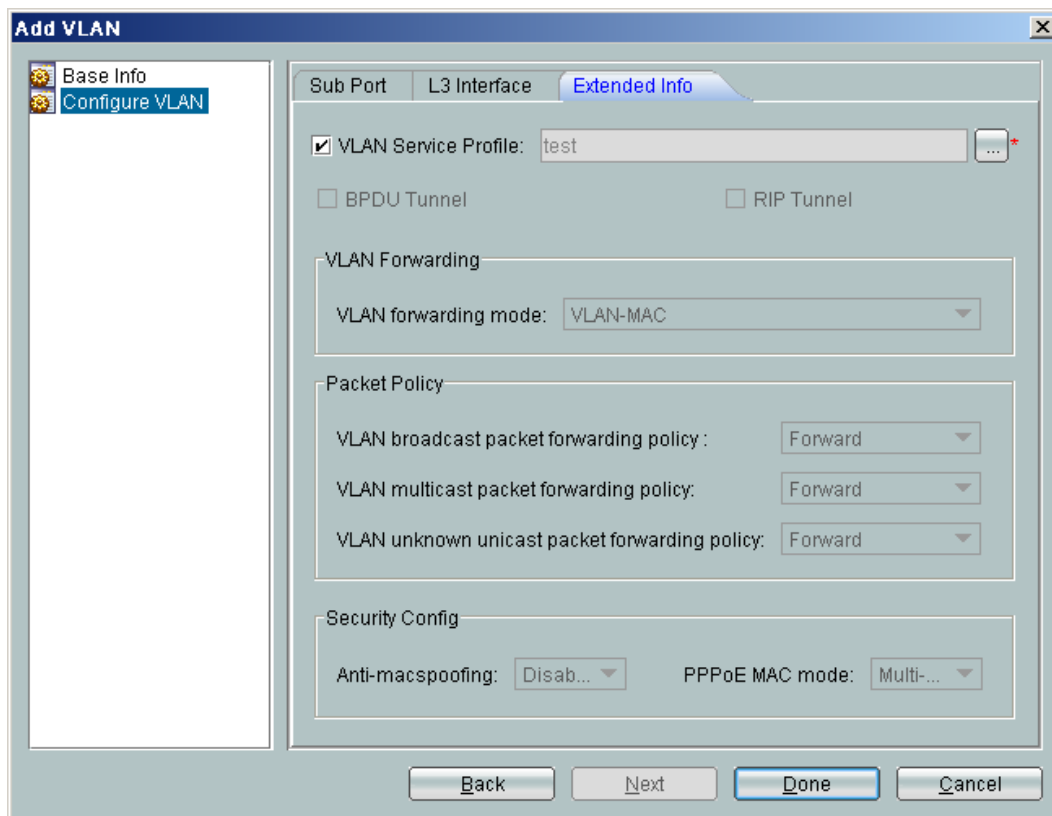
Virtual local area network (VLAN) is a technology used to form virtual workgroups by grouping the devices of a LAN logically.

#### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **VLAN** from the navigation tree.
- 3 On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
- 4 In the information list, right-click and choose **Add** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.







| Key Parameter      | Description                                                                        |
|--------------------|------------------------------------------------------------------------------------|
| Start ID<br>End ID | Indicates the start and end IDs when you add VLANs in batches.                     |
| Type               | Indicates the VLAN type.                                                           |
| Attribute          | Indicates the VLAN attribute.                                                      |
| VLAN Priority      | Indicates the VLAN priority. This parameter is applicable to the VLANs for an OLT. |

6 Click **Done**.

----End

## Command Reference

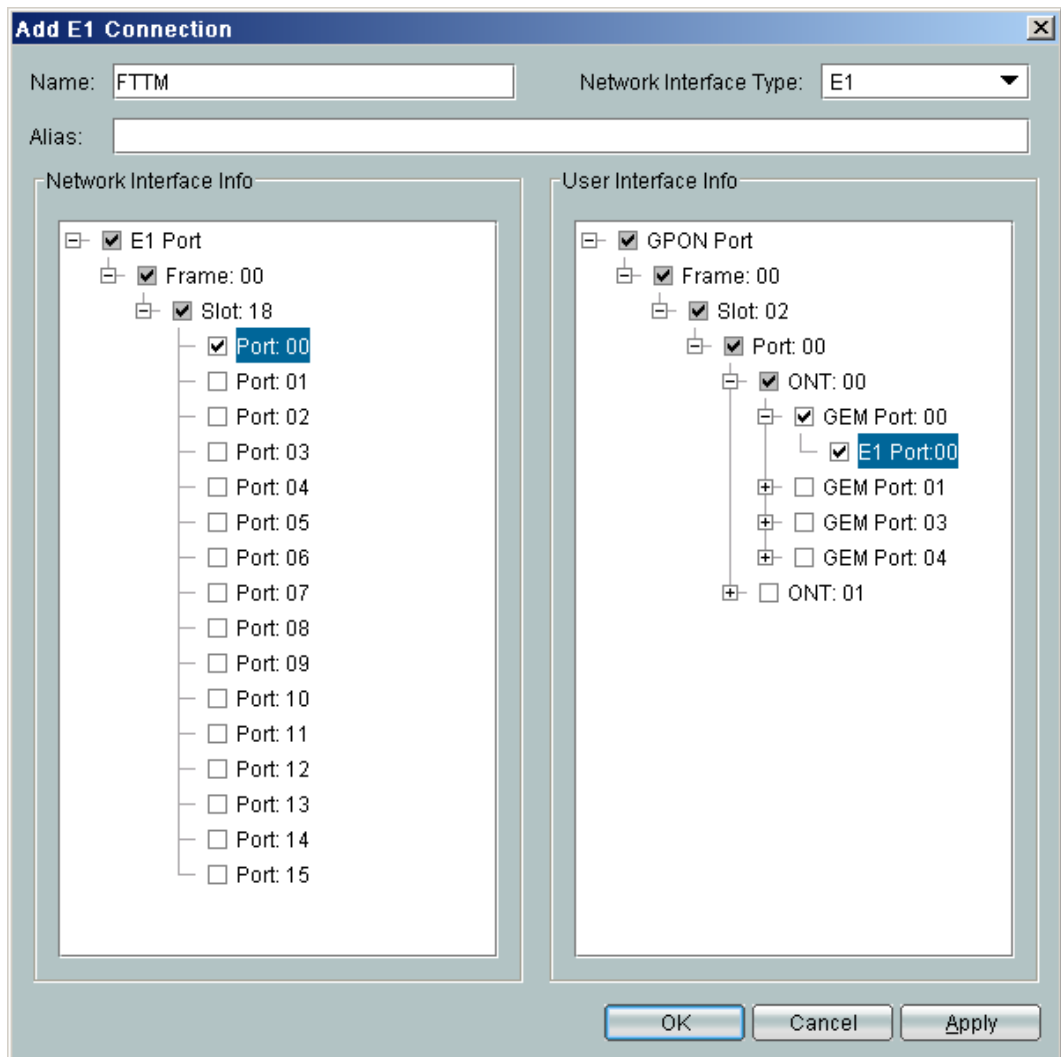
| To...                                                | Run the Command... | In...              |
|------------------------------------------------------|--------------------|--------------------|
| Query the information about the VLAN                 | display vlan       | Privilege mode     |
| Add one VLAN or more VLANs of a same type in batches | vlan               | Global config mode |
| Set the VLAN attribute                               | vlan attrib        | Global config mode |

## 21.2.4 Configuring a TDM Connection

This topic describes how to add a TDM E1 connection and set up the mapping between E1 ports and GEM ports.

### Procedure

- 1 Choose **Connection > Native TDM Connection** from the navigation tree.
- 2 In the information list, right-click and choose **Add** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.



| Key Parameter          | Description                                                                                                                                                                                                                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Network Interface Type | The upstream port on the TOPA card is an E1 or STM-1 port.<br>If the upstream port is an STM-1 port, configure a VC12 tributary. The VC12 tributary likes a virtual container that carries E1 frames. Sixty-three VC12 virtual containers exist because an STM-1 port supports 63 channels of E1 frames. |

4 Click **OK**.

---End

## Command Reference

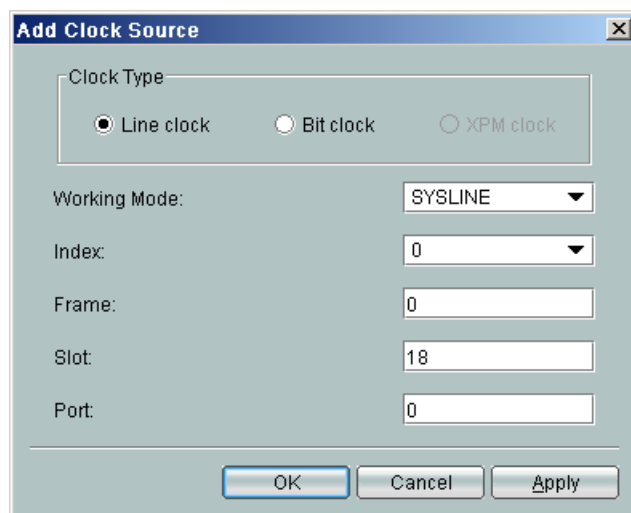
| To...                           | Run the Command... | In...              |
|---------------------------------|--------------------|--------------------|
| Add a native TDM service stream | tdm-connect        | Global config mode |

## 21.2.5 Configuring a Clock Source

This topic describes how to set the clock signal of a specified port as the reference clock source of the system.

### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
- 3 In the the **Frequency Clock Source(8K)** tab, right-click and choose **Add Clock Source** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.



| Key Parameter | Description                                                                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clock Type    | Indicates the clock type. The line clock is an E1 clock source and is provided by an upper layer node.<br>The BITS clock is provided by the BITS clock device. |

| Key Parameter   | Description                                                                                                                            |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Frame/Slot/Port | Indicates the shelf ID, slot ID, and port ID of the clock source, which must be the same as the actual shelf ID, slot ID, and port ID. |

5 Click **OK**.

---End

## Command Reference

| To...                                                                   | Run the Command... | In...              |
|-------------------------------------------------------------------------|--------------------|--------------------|
| Set a port on a card in a slot of a shelf as the reference clock source | clock source       | Global config mode |

## 21.3 Configuration Examples of the GPON Private Line Access and FTTO Services (OLT+OT928G)

This topic provides examples to describe how to configure various services in a GPON private line access or FTTO network.

### [21.3.1 Data Plan for the GPON Private Line Access and FTTO Services \(OLT+OT928G\)](#)

This topic provides the data plan for the configuration examples of the GPON private line access or FTTO services. You can configure the services according to the data plan.

### [21.3.2 Configuring the Ethernet Private-Line Service of an Enterprise](#)

In this configuration example, the OT928G gains access to the data of the Ethernet switch of an enterprise through an FE or a GE port and transparently transmits the data in the enterprise intranet over the public network in the QinQ VLAN private-line mode.

### [21.3.3 Configuring the TDM PBX Access Service/Native TDM Mobile Bearer Service \(Based on the SDH Network\)](#)

In this configuration example, the OT928G is connected to the TDM PBX of an enterprise or a base station through an E1 port to carry the PBX fixed-line telephone service or traditional circuit switching service in a GPON network.

### [21.3.4 Configuring the Ethernet Mobile Bearer Service](#)

In this configuration example, the OT928G is connected to the 3G NodeB base station through an FE or a GE port and the data is transmitted by the OLT to the packet switch network (PSN), which implements IP-based wireless network.

### 21.3.1 Data Plan for the GPON Private Line Access and FTTO Services (OLT+OT928G)

This topic provides the data plan for the configuration examples of the GPON private line access or FTTO services. You can configure the services according to the data plan.

## Data Plan

**Table 21-1** Data plan for the GPON Private Line Access and FTTO services

| Service Type                                   | Item                     | Settings                                                                                                                                                                                                                                                                | Remarks |
|------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Device management                              | Upstream port of the OLT | 0/19/0                                                                                                                                                                                                                                                                  | -       |
|                                                | GPON port of the OLT     | 0/2/1                                                                                                                                                                                                                                                                   | -       |
|                                                | ONT                      | SN: 32303131B39FD641<br>Name: ONT<br>ONU Type: ONT<br>ONU ID: 0<br>Authentication Mode: SN<br>Terminal Type: SmartAX OT928G<br>Software Version: V1R3C03B062                                                                                                            | -       |
| Ethernet private-line service of an enterprise | DBA profile              | <ul style="list-style-type: none"><li>● Name: FTTx</li><li>● T-CONT Type: Assured Bandwidth/Maximum Bandwidth</li><li>● Assured Bandwidth: 20480</li><li>● Maximum Bandwidth: 51200</li></ul>                                                                           | -       |
|                                                | GPON line profile        | <ul style="list-style-type: none"><li>● Name: FTTx</li><li>● Mapping Mode: VLAN</li><li>● Qos Mode: Priority Queue</li><li>● T-CONT Index: 1</li><li>● DBA Profile: FTTx</li><li>● GEM Port Index: 1, 2</li><li>● Priority Queue: 0</li><li>● VLAN ID: 50, 60</li></ul> | -       |

| Service Type | Item                 | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Remarks |
|--------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | GPON service profile | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Number of Pots Ports: 8</li> <li>● Number of ETH Ports: 5</li> <li>● Number of TDM Ports: 8</li> <li>● TDM Port Type: E1</li> <li>● Service Type: Translation</li> <li>● Default VLAN ID: 50, 60</li> <li>● S-VLAN: 50, 60</li> <li>● C-VLAN: 3000</li> </ul>                                                                                                                                    | -       |
|              | VLAN service profile | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Enable BPDU Tunnel: selected</li> </ul>                                                                                                                                                                                                                                                                                                                                                          | -       |
|              | User VLAN            | <ul style="list-style-type: none"> <li>● VLAN ID: 2001</li> <li>● Type: Smart VLAN</li> <li>● Attribute: QinQ</li> </ul>                                                                                                                                                                                                                                                                                                                                        | -       |
|              | Service virtual port | <ul style="list-style-type: none"> <li>● Name: intranet1, intranet2</li> <li>● Connection Type: LAN-GPON</li> <li>● VLAN ID: 2001 (service VLAN ID)</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 50, 60 (VLAN IDs of the enterprise intranet)</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream/Downstream Traffic Name: ip-traffic-table_6</li> </ul> | -       |

| Service Type                                                                                    | Item                 | Settings                                                                                                                                                                                                                                                                                                                       | Remarks |
|-------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                                                                                                 | Queue scheduler mode | <ul style="list-style-type: none"> <li>● Queue scheduler mode: WRR</li> <li>● Queue0-weight: 10</li> <li>● Queue1-weight: 10</li> <li>● Queue2-weight: 20</li> <li>● Queue3-weight: 20</li> <li>● Queue4-weight: 40</li> </ul>                                                                                                 | -       |
| TDM PBX access service/<br>Native TDM private line access service<br>(based on the SDH network) | DBA profile          | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● T-CONT Type: Fixed Bandwidth</li> <li>● Fixed Bandwidth: 44800</li> <li>● Bandwidth Compensation: Yes</li> </ul>                                                                                                                                                | -       |
|                                                                                                 | GPON line profile    | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Mapping Mode: E1T1</li> <li>● Qos Mode: Priority Queue</li> <li>● T-CONT Index: 1</li> <li>● DBA Profile: FTTx</li> <li>● GEM Port Index: 1</li> <li>● Service Type: TDM</li> <li>● Priority Queue: 0</li> <li>● Port Type: E1</li> <li>● Port ID: 1</li> </ul> | -       |
|                                                                                                 | GPON service profile | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Number of Pots Ports: 8</li> <li>● Number of ETH Ports: 5</li> <li>● Number of TDM Ports: 8</li> <li>● TDM Port Type: E1</li> </ul>                                                                                                                             | -       |
|                                                                                                 | TDM E1 connection    | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Network Interface Type: E1</li> <li>● Network Interface Info: 0/6/0</li> <li>● User Interface Info: 0/2/1/1/0</li> </ul>                                                                                                                                        | -       |

| Service Type                         | Item                 | Settings                                                                                                                                                                                                                                                                                                                                                             | Remarks |
|--------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                                      | Clock source         | <ul style="list-style-type: none"> <li>● Clock Type: Line clock</li> <li>● Working Mode: SYSLINE</li> <li>● Index: 0</li> <li>● Frame: 0</li> <li>● Slot: 6</li> <li>● Port: 0</li> <li>● Clock Type: Bit clock</li> <li>● BITS Type: 2MHz</li> <li>● BITS Impedance: 75ohm</li> <li>● Index: 1</li> <li>● Frame: 0</li> <li>● Slot: 0</li> <li>● Port: 0</li> </ul> | -       |
|                                      | Queue scheduler mode | <ul style="list-style-type: none"> <li>● Queue scheduler mode: WRR</li> <li>● Queue0-weight: 10</li> <li>● Queue1-weight: 10</li> <li>● Queue2-weight: 20</li> <li>● Queue3-weight: 20</li> <li>● Queue4-weight: 40</li> </ul>                                                                                                                                       | -       |
| Ethernet private line access service | DBA profile          | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● T-CONT Type: Assured Bandwidth/Maximum Bandwidth</li> <li>● Assured Bandwidth: 20480</li> <li>● Maximum Bandwidth: 51200</li> </ul>                                                                                                                                                                   | -       |
|                                      | GPON line profile    | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Mapping Mode: VLAN</li> <li>● Qos Mode: Priority Queue</li> <li>● T-CONT Index: 1</li> <li>● DBA Profile: FTTx</li> <li>● GEM Port Index: 1</li> <li>● Priority Queue: 0</li> <li>● VLAN ID: 10</li> </ul>                                                                                            | -       |



| Service Type | Item                 | Settings                                                                                                                                                                                                                                                                                                                                                                                                                     | Remarks |
|--------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | GPON service profile | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Number of Pots Ports: 8</li> <li>● Number of ETH Ports: 5</li> <li>● Number of TDM Ports: 8</li> <li>● TDM Port Type: E1</li> <li>● Vlan Type: Translation</li> <li>● Default VLAN ID: 10</li> </ul>                                                                                                                                                          | -       |
|              | VLAN service profile | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Enable BPDU Tunnel: selected</li> </ul>                                                                                                                                                                                                                                                                                                                       | -       |
|              | Service VLAN         | <ul style="list-style-type: none"> <li>● VLAN ID: 2000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                                                                                                                                | -       |
|              | Service virtual port | <ul style="list-style-type: none"> <li>● Name: Eth_Ftm</li> <li>● Connection Type: LAN-GPON</li> <li>● VLAN ID: 2000 (service VLAN ID)</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 10 (user-side VLAN ID)</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream/Downstream Traffic Name: ip-traffic-table_6</li> </ul> | -       |
|              | Queue scheduler mode | <ul style="list-style-type: none"> <li>● Queue scheduler mode: WRR</li> <li>● Queue0-weight: 10</li> <li>● Queue1-weight: 10</li> <li>● Queue2-weight: 20</li> <li>● Queue3-weight: 20</li> <li>● Queue4-weight: 40</li> </ul>                                                                                                                                                                                               | -       |

## 21.3.2 Configuring the Ethernet Private-Line Service of an Enterprise

In this configuration example, the OT928G gains access to the data of the Ethernet switch of an enterprise through an FE or a GE port and transparently transmits the data in the enterprise intranet over the public network in the QinQ VLAN private-line mode.

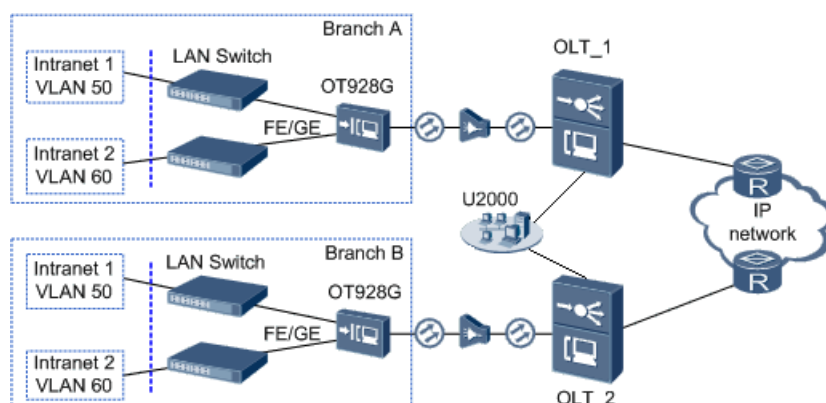
### Context

For details of the data plan, see [21.3.1 Data Plan for the GPON Private Line Access and FTTO Services \(OLT+OT928G\)](#).

The OT928G need not be configured directly and all configurations are completed on the OLT and applied to the OT928G through the OMCI protocol.

### Example Network

**Figure 21-1** Configuring the Ethernet private-line service of the enterprise



#### NOTE

The OT928G devices gain access to the data of the intranets of enterprise branches A and B through an Ethernet switch. Therefore, configure the QinQ VLAN private lines on the OT928G devices of the two branches separately. Then, the service data and BPDU packets between the enterprise intranets can be transmitted upstream to the OLT through a GPON port and the OLT transmits the signals upstream to the IP network. In this manner, a transparent and secure data transmission channel is provided for the enterprise branches in different areas.

### Procedure



- **Add the ONT to the U2000 in profile mode.**
  1. **Configure a DBA profile.** For details, see [19.1.2 Configuring a DBA Profile](#).
    - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
    - (2) Click the **DBA Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.

- Name: FTTx
  - T-CONT Type: Assured Bandwidth/Maximum Bandwidth
  - Assured Bandwidth: 20480
  - Maximum Bandwidth: 51200
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a line profile.** For details, see [20.1.1 Configuring a GPON Line Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **GPON Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info** from the navigation tree and set the parameters.
      - Mapping Mode: VLAN
      - Qos Mode: Priority Queue
    - Right-click **T-CONT Info** in the navigation tree and choose **Add T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - T-CONT Index: 1
      - DBA Profile: FTTx
    - Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - GEM Port Index: 1
      - Priority Queue: 0
    - Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - GEM Port Index: 2
      - Priority Queue: 0
    - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
      - GEM Connection Index: 0 (default value)
      - VLAN ID: 50 (VLAN ID of the enterprise intranet)
    - Right-click **GEM Port2** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
      - GEM Connection Index: 1 (default value)
      - VLAN ID: 60 (VLAN ID of the enterprise intranet)

- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a service profile.** For details, see [20.1.2 Configuring a GPON Service Profile](#).

The service profile must match the ONT type. This section considers the OT928G as an example to describe how to configure a service profile. The OT928G has five Ethernet ports, eight E1 ports, and eight POTS ports.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **GPON Service Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info** from the navigation tree and set the parameters.
    - Number of Pots Ports: 8
    - Number of ETH Ports: 5
    - Number of TDM Ports: 8
    - TDM Port Type: E1
  - Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is **ETH Port** and **Port ID** is **1**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - Default VLAN ID: 50 (VLAN ID of the enterprise intranet)
    - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
      - Service Type: Translation
      - S-VLAN: 50 (VLAN ID of the enterprise intranet)
      - C-VLAN: 3000 (user VLAN ID of the ONT)
  - Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is **ETH Port** and **Port ID** is **2**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - Default VLAN ID: 50 (VLAN ID of the enterprise intranet)
    - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
      - Service Type: Translation
      - S-VLAN: 50 (VLAN ID of the enterprise intranet)
      - C-VLAN: 3000 (user VLAN ID of the ONT)
  - Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is **ETH Port** and **Port ID** is **3**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.

- Default VLAN ID: 60 (VLAN ID of the enterprise intranet)
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 60 (VLAN ID of the enterprise intranet)
    - C-VLAN: 3000 (user VLAN ID of the ONT)
  - Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is **ETH Port** and **Port ID** is **4**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - Default VLAN ID: 60 (VLAN ID of the enterprise intranet)
    - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
      - Service Type: Translation
      - S-VLAN: 60 (VLAN ID of the enterprise intranet)
      - C-VLAN: 3000 (user VLAN ID of the ONT)
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Confirm the ONT**. For details, see [20.1.3 Confirming an ONT](#) .
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
- (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 32303131B39FD641, and then choose **Confirm ONU** from the shortcut menu.
- Set **Name** to **ONT**.
  - Set **ONU ID** to **0**.
  - Set **ONU Type** to **ONT**.
  - On the **Base Info** tab page, set the parameters.
    - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
    - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
    - Authentication Mode: SN
    - Terminal Type: SmartAX OT928G
    - Software Version: V1R3C03B062

(6) Click **OK**.

- **Configure the Ethernet private-line service of the enterprise on the OLT.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a VLAN service profile.** For details, see [21.2.2 Configuring a VLAN Service Profile](#).
  - (1) Choose **Configuration > Access Profile Management > VLAN Service Profile** from the main menu.
  - (2) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - Enable BPDU Tunnel: selected
  - (4) Click **OK**.
  - (5) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (6) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a service VLAN on the OLT.** For details, see [19.2.1 Configuring a VLAN](#).
  - (1) Choose **VLAN** from the navigation tree.
  - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 2001
    - Type: Smart VLAN
    - Attribute: QinQ
  - (4) Click **Next**.
    - Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
    - Click the **Extended Info** tab and select the VLAN service profile named FTTx.
  - (5) Click **Finish**.
3. **Add a service virtual port on the OLT.** For details, see [19.2.3 Adding a Service Port](#).
  - (1) On the **VLAN** tab page, select VLAN 2001 and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: intranet1
    - Connection Type: LAN-GPON
    - VLAN ID: 2001 (service VLAN ID)
    - Interface Selection: 0/2/1/0/1

- Service Type: Multi-Service VLAN
- User VLAN: 50 (VLAN ID of the enterprise intranet)
- Keep the upstream and downstream settings the same: selected
- Upstream/Downstream Traffic Name: ip-traffic-table\_6 (The OLT does not restrict the rate of service streams in the management VLAN. Therefore, it is recommended that you use the default profile ip-traffic-table\_6.)

(4) Click **OK**.


(5) Repeat the preceding operations to add another service virtual port.

- Name: intranet2
- Connection Type: LAN-GPON
- VLAN ID: 2001 (service VLAN ID)
- Interface Selection: 0/2/1/0/2
- Service Type: Multi-Service VLAN
- User VLAN: 60 (VLAN ID of the enterprise intranet)
- Keep the upstream and downstream settings the same: selected
- Upstream/Downstream Traffic Name: ip-traffic-table\_6 (The OLT does not restrict the rate of service streams in the management VLAN. Therefore, it is recommended that you use the default profile ip-traffic-table\_6.)

#### 4. Set queue scheduling parameters.

You need to set the queue scheduling parameters on the OLT only once. Then, the parameters are globally valid.

The WRR mode is used for queues 0-4 and their weights are 10, 10, 20, 20, and 40 respectively. The PQ mode is used for queues 5-7.

- (1) Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.
- (2) On the **System Parameter Profile** tab page, select the required device type from the **Device Type** drop-down list.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the name of the system parameter profile to **FTTx**. Choose **QoS > Queue scheduler mode** from the **Parameters for Selection** navigation tree, click  to add the parameter to the **Selected Parameters** navigation tree, and then click **Next**.
- (5) Choose **QoS > Queue scheduler mode** from the navigation tree to set the queue scheduling mode.
  - Queue scheduler mode: WRR
  - Queue0-weight: 10
  - Queue1-weight: 10
  - Queue2-weight: 20
  - Queue3-weight: 20
  - Queue4-weight: 40
- (6) Click **OK**.

----End

## Result

The enterprise users in different areas of the same intranet (VLAN 50 or 60) can communicate with each other.

### 21.3.3 Configuring the TDM PBX Access Service/Native TDM Mobile Bearer Service (Based on the SDH Network)

In this configuration example, the OT928G is connected to the TDM PBX of an enterprise or a base station through an E1 port to carry the PBX fixed-line telephone service or traditional circuit switching service in a GPON network.

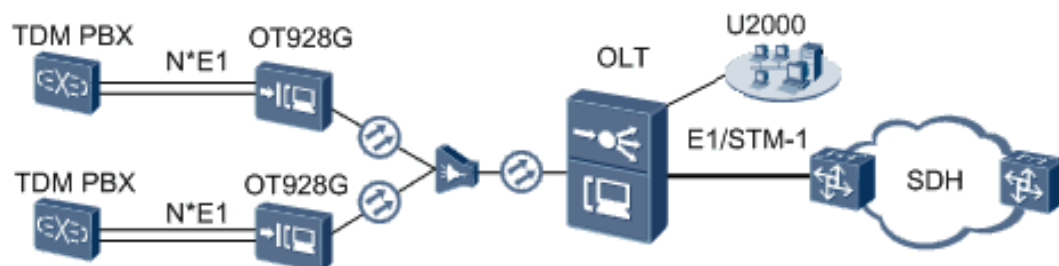
## Context

For details of the data plan, see [21.3.1 Data Plan for the GPON Private Line Access and FTTO Services \(OLT+OT928G\)](#).

The OT928G need not be configured directly and all configurations are completed on the OLT and applied to the OT928G through the OMCI protocol.

## Example Network

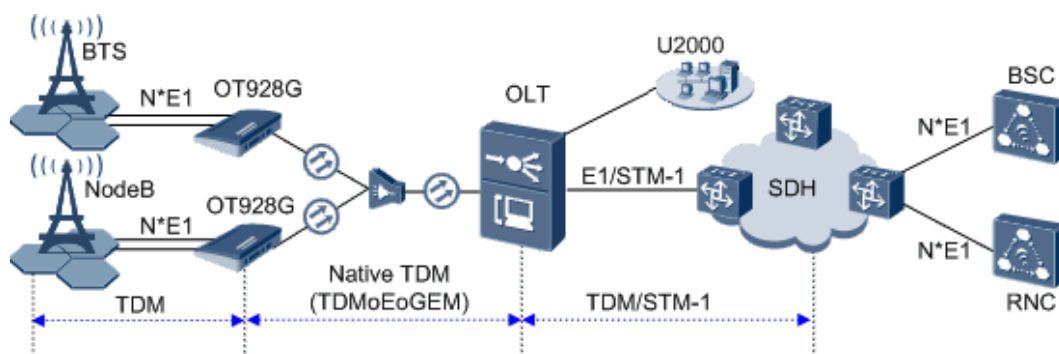
**Figure 21-2** Configuring the TDM PBX access service



#### NOTE

The OT928G is connected to the TDM PBX of the enterprise through an E1 port and then is connected to the OLT through a GPON upstream port. The OLT provides E1 or STM-1 ports to transmit the TDM service to the SDH network.

**Figure 21-3** Configuring the native TDM mobile bearer service (based on the SDH network)





 **NOTE**

The OT928G gains access to the TDM service data of the base station through an E1 port, encapsulates service packets to GEM frames in the native TDM encapsulation mode, and then transmits the GEM frames to the OLT through a GPON port. The TOPA card on the OLT transmits E1 or STM-1 signals, depending on the daughter card that is attached to the TOPA card.

- If E1 signals are transmitted upstream, the NH1A daughter card performs TDM packet decapsulation, de-jitter buffer, and clock synchronization. After the NH1A card obtains the VC12, it converts the TDM data packets to E1 frames according to the mapping and transmits the E1 frames to upper layer SDH equipment through the corresponding E1 port.
- If STM-1 signals are transmitted upstream, the O2CE daughter card performs TDM packet decapsulation, de-jitter buffer, and clock synchronization. After the O2CE card obtains the VC12, it maps the VC12 to VC4 and then to the STM-1 port for transmission to upper layer SDH equipment.
- Native TDM refers to encapsulating TDM frames to GPON GEM frames (TDMoGEM) and transmitting the frames over the GPON network. This mode features simple encapsulation, low network overhead, and good link quality.

## Procedure

- **Add the ONT to the U2000 in profile mode.**

1. **Configure a DBA profile.** For details, see [19.1.2 Configuring a DBA Profile](#).

The bandwidth of each E1 port on the OT928G is 4416 kbit/s. If the OT928G works in the native TDM mode, however, you need to enable the bandwidth compensation function because of the following:

- Packets in the TDMoEoGEM encapsulation mode contain the information about the Ethernet, GEM frames, and TDM payloads.
- Packet fragmentation and queue buffer cause more overheads.

The recommended formula for calculating the TDM bandwidth is  $\text{Bandwidth} = 4416 \times N + 640 \text{ kbit/s}$ , where N equals the number of E1 ports.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **DBA Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Name: FTTx
  - T-CONT Type: Fixed Bandwidth
  - Fixed Bandwidth: 44800
  - Bandwidth Compensation: Yes
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.

2. **Configure a line profile.** For details, see [20.1.1 Configuring a GPON Line Profile](#).

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.

- (2) Click the **GPON Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info** from the navigation tree and set the parameters.
      - Mapping Mode: E1T1
      - Qos Mode: Priority Queue
    - Right-click **T-CONT Info.** in the navigation tree and choose **Add T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - T-CONT Index: 1
      - DBA Profile: FTTx
    - Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - GEM Port Index: 1
      - Priority Queue: 1
      - Service Type: TDM
    - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
      - GEM Connection Index: 0 (default value)
      - Port Type: E1
      - Port ID: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a service profile.** For details, see [20.1.2 Configuring a GPON Service Profile](#).

The service profile must match the ONT type. This section considers the OT928G as an example to describe how to configure a service profile. The OT928G has five Ethernet ports, eight E1 ports, and eight POTS ports.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **GPON Service Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info** from the navigation tree and set the parameters.
    - Number of Pots Ports: 8
    - Number of ETH Ports: 5
    - Number of TDM Ports: 8

- TDM Port Type: E1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Confirm the ONT.** For details, see [20.1.3 Confirming an ONT](#).
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 32303131B39FD641, and then choose **Confirm ONU** from the shortcut menu.
    - Set **Name** to **ONT**.
    - Set **ONU ID** to **0**.
    - Set **ONU Type** to **ONT**.
    - On the **Base Info** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - Terminal Type: SmartAX OT928G
      - Software Version: V1R3C03B062
  - (6) Click **OK**.
- **Configure the native TDM service on the OLT.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Set queue scheduling parameters.** For details, see [21.2.1 Setting Queue Scheduling Parameters](#).

You need to set the queue scheduling parameters on the OLT only once. Then, the parameters are globally valid.

The WRR mode is used for queues 0-4 and their weights are 10, 10, 20, 20, and 40 respectively. The PQ mode is used for queues 5-7.

- (1) Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.

- (2) On the **System Parameter Profile** tab page, select the required OLT type from the **Device Type** drop-down list.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the name of the system parameter profile to **FTTx**. Choose **QoS > 802.1p PRI queue** and **QoS > Queue scheduler mode** from the **Parameters for Selection** navigation tree, click  to add the parameters to the **Selected Parameters** navigation tree, and then click **Next**.
  - (5) Choose **802.1p PRI queue** from the navigation tree and configure the mapping between queues and 802.1p priorities. It is recommended that you use the default values. Choose **Queue scheduler mode** from the navigation tree and configure the queue scheduling mode.
    - Queue scheduler mode: WRR
    - Queue0-weight: 10
    - Queue1-weight: 10
    - Queue2-weight: 20
    - Queue3-weight: 20
    - Queue4-weight: 40
  - (6) Click **Finish**.
  - (7) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (8) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a TDM connection.**

Set up a native TDM service stream between the GEM port and the upstream port on the TPOA card.

- (1) Choose **Connection > Native TDM Connection** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) If the upstream port is an E1 port, set the parameters as follows:
    - Name: FTTx
    - Network Interface Type: E1
    - Network Interface Info: 0/6/0
    - User Interface Info: 0/2/1/1/1
  - (4) If the upstream port is an STM-1 port, set the parameters of the VC12 tributary as follows:
    - Name: FTTx
    - Network Interface Type: VC12
    - Network Interface Info: 0/6/0
    - User Interface Info: 0/2/1/1/1
  - (5) Click **OK**.
3. **Configure a clock source.**



## CAUTION

In the case of the TDM service, ensure that the clock source is unique in the entire SDH network. Otherwise, error codes are generated and affect service quality, and services may be interrupted if a large number of error codes are generated.

---

- (1) On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
- (2) On the **Frequency Clock Source(8K)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
- (3) In the information list, click the **Frequency Clock Source(8K)** tab, right-click and choose **Add Clock Source** from the shortcut menu.
  - Clock Type: Line clock
  - Working Mode: SYSLINE
  - Index: 0
  - Frame: 0
  - Slot: 6
  - Port: 0
- (4) Click **OK**.
- (5) Repeat the preceding operations to add a BITS clock (provided by the BIUA card).
  - Clock Type: Bit clock
  - BITS Type: 2MHz
  - BITS Impedance: 75ohm
  - Index: 1
  - Frame: 0
  - Slot: 0
  - Port: 0

---End

## Result

The mobile terminals (such as mobile phones) near the base station gain the information about the network that they belong to and make calls or send short messages successfully.

## 21.3.4 Configuring the Ethernet Mobile Bearer Service

In this configuration example, the OT928G is connected to the 3G NodeB base station through an FE or a GE port and the data is transmitted by the OLT to the packet switch network (PSN), which implements IP-based wireless network.

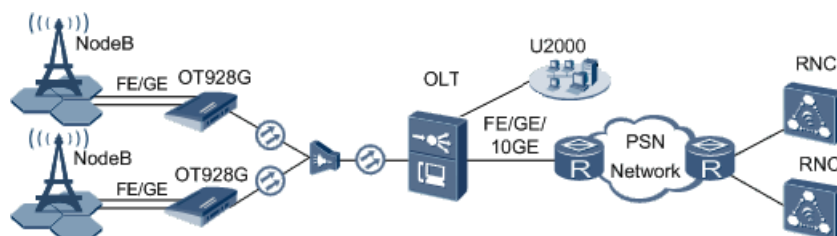
## Context

For details of the data plan, see [21.3.1 Data Plan for the GPON Private Line Access and FTTO Services \(OLT+OT928G\)](#).

The OT928G need not be configured directly and all configurations are completed on the OLT and applied to the OT928G through the OMCI protocol.

## Example Network

Figure 21-4 Configuring the Ethernet mobile bearer service



### NOTE

The data of the 3G base station is transmitted to the OT928G through an FE or a GE port and encapsulated to GEM frames on the OT928G. Then, the GEM frames are transmitted upstream to the OLT through a GPON port, and the data is restored by the OLT and then transmitted to the PSN network through an FE, a GE, or a 10GE port.



## Procedure

- **Add the ONT to the U2000 in profile mode.**
  1. **Configure a DBA profile.** For details, see [19.1.2 Configuring a DBA Profile](#).
    - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
    - (2) Click the **DBA Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx
      - T-CONT Type: Assured Bandwidth/Maximum Bandwidth
      - Assured Bandwidth: 20480
      - Maximum Bandwidth: 51200
    - (5) Click **OK**.
    - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
    - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
  2. **Configure a line profile.** For details, see [20.1.1 Configuring a GPON Line Profile](#).
    - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
    - (2) Click the **GPON Line Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.

- Set **Name** to **FTTx**.
  - Choose **Base Info** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue
  - Right-click **T-CONT Info.** in the navigation tree and choose **Add T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - T-CONT Index: 1
    - DBA Profile: FTTx
  - Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Port Index: 1
    - Priority Queue: 0
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 0 (default value)
    - VLAN ID: 10 (user-side VLAN ID)
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a service profile.** For details, see [20.1.2 Configuring a GPON Service Profile](#).

The service profile must match the ONT type. This section considers the OT928G as an example to describe how to configure a service profile. The OT928G has five Ethernet ports, eight E1 ports, and eight POTS ports.

- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **GPON Service Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info** from the navigation tree and set the parameters.
    - Number of Pots Ports: 8
    - Number of ETH Ports: 5
    - Number of TDM Ports: 8
    - TDM Port Type: E1
  - Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is **ETH Port** and **Port ID** is **1**, and choose **UNI Port Configuration Properties** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - Default VLAN ID: 10 (user-side VLAN ID)

- In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
  - Service Type: Translation
  - S-VLAN: 10 (user-side VLAN ID)
  - C-VLAN: 3000 (user VLAN ID of the ONT)
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
- 4. **Confirm the ONT.** For details, see [20.1.3 Confirming an ONT](#).
  - (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 32303131B39FD641, and then choose **Confirm ONU** from the shortcut menu.
    - Set **Name** to **ONT**.
    - Set **ONU ID** to **0**.
    - Set **ONU Type** to **ONT**.
    - On the **Base Info** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - Terminal Type: SmartAX OT928G
      - Software Version: V1R3C03B062
  - (6) Click **OK**.

- **Configure the Ethernet mobile bearer service on the OLT.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.


1. **Configure a service VLAN on the OLT.** For details, see [19.2.1 Configuring a VLAN](#).
  - (1) Choose **VLAN** from the navigation tree.
  - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.



- (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 2000
    - Type: Smart VLAN
  - (4) Click **Next**. Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
  - (5) Click **Finish**.
2. **Add a service virtual port on the OLT.** For details, see [19.2.3 Adding a Service Port](#).
- (1) On the **VLAN** tab page, select VLAN 2000 and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: Eth\_Ftm
    - Connection Type: LAN-GPON
    - VLAN ID: 2000 (service VLAN ID)
    - Interface Selection: 0/2/1/0/1
    - Service Type: Multi-Service VLAN
    - User VLAN: 10 (user-side VLAN ID)
    - Keep the upstream and downstream settings the same: selected
    - Upstream/Downstream Traffic Name: ip-traffic-table\_6 (The OLT does not restrict the rate of service streams in the management VLAN. Therefore, it is recommended that you use the default profile ip-traffic-table\_6.)
  - (4) Click **OK**.
3. **Set queue scheduling parameters.** For details, see [21.2.1 Setting Queue Scheduling Parameters](#).

You need to set the queue scheduling parameters on the OLT only once. Then, the parameters are globally valid.

The WRR mode is used for queues 0-4 and their weights are 10, 10, 20, 20, and 40 respectively. The PQ mode is used for queues 5-7.

- (1) Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.
- (2) On the **System Parameter Profile** tab page, select the required OLT type from the **Device Type** drop-down list.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the name of the system parameter profile to **FTTx**. Choose **QoS > 802.1p PRI queue** and **QoS > Queue scheduler mode** from the **Parameters for Selection** navigation tree, click  to add the parameters to the **Selected Parameters** navigation tree, and then click **Next**.
- (5) Choose **802.1p PRI queue** from the navigation tree and configure the mapping between queues and 802.1p priorities. It is recommended that you use the default values. Choose **Queue scheduler mode** from the navigation tree and configure the queue scheduling mode.

- Queue scheduler mode: WRR
  - Queue0-weight: 10
  - Queue1-weight: 10
  - Queue2-weight: 20
  - Queue3-weight: 20
  - Queue4-weight: 40
- (6) Click **Finish**.
  - (7) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (8) In the dialog box that is displayed, select the required NE(s), and click **OK**.

---End

## Result

The mobile terminals (such as mobile phones) near the 3G base station gain the information about the network that they belong to and make calls or send short messages successfully.

# 22 Configuring xPON Private Line Access and FTTO Services (MA5612)

---

## About This Chapter

The deployment of an optical line terminal (OLT) and MA5612 in a network provides the private line access and fiber to the office (FTTO) solutions.

### Context

- In the private line access solution, a cellular backhaul unit (CBU) is connected to the OLT in PON mode to implement private line access.
- In the FTTO solution, a single business unit (SBU) is connected to the OLT in PON mode to implement FTTO. In this way, the TDM PBX, IP PBX, and private line services of enterprise Intranets are provided.

#### [22.1 Adding an MDU to the U2000 When the OLT Works in Profile Mode](#)

This topic describes how to add the MA5612 to the U2000 when the OLT works in profile mode. After the MA5612 is successfully added to the U2000, you can configure the private line access service for the MA5612 on the U2000.

#### [22.2 Configuring Services on an OLT](#)

A private line access network with an OLT and MA5612 provides various services for users.

#### [22.3 Configuring Services on an MDU](#)

A private line access network with an OLT and the MA5612 provides various services for users.

#### [22.4 Configuring Clock Synchronization](#)

This topic describes how to configure clock synchronization, which ensures that data is transmitted and processed correctly in a communications network and a telecommunications network runs efficiently with high quality.

#### [22.5 Configuration Examples of xPON Private Line Access and FTTO Services \(MA5612\)](#)

This topic provides examples for configuring various services in an xPON private line access or FTTO network.

## 22.1 Adding an MDU to the U2000 When the OLT Works in Profile Mode

This topic describes how to add the MA5612 to the U2000 when the OLT works in profile mode. After the MA5612 is successfully added to the U2000, you can configure the private line access service for the MA5612 on the U2000.

### Procedure

- **Adding a GPON MDU**
  1. [19.1.1 Configuring an MDU SNMP Profile](#)
  2. [19.1.2 Configuring a DBA Profile](#)
  3. [20.1.1 Configuring a GPON Line Profile](#)
  4. [19.1.4 Confirming an MDU](#)
  5. [19.1.5 Configuring a VLAN](#)
  6. [19.1.6 Adding a Service Virtual Port](#)
  7. [19.1.7 Checking the Communication Between the OLT and MDU](#)
- **Adding an EPON MDU**
  1. [19.1.1 Configuring an MDU SNMP Profile](#)
  2. [23.1.2 Configuring a DBA Profile](#)
  3. [23.1.3 Configuring a Line Profile](#)
  4. [23.1.4 Confirming an MDU](#)
  5. [19.1.5 Configuring a VLAN](#)
  6. [23.1.6 Adding a Service Virtual Port](#)
  7. [23.1.7 Verifying the Interoperability Between an OLT and an MDU](#)

---End

## 22.2 Configuring Services on an OLT

A private line access network with an OLT and MA5612 provides various services for users.

### Context

Several operations are required to configure a service. The following table lists the services configured and the steps for configuring the services.

| Services                             | Steps                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TDM PWE3 private line access service | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.2.3 Adding a Service Port</a></li> <li>● <a href="#">21.2.1 Setting Queue Scheduling Parameters</a></li> <li>● <a href="#">22.2.1 Configuring the Attributes of a TOPA Card</a></li> <li>● <a href="#">22.2.2 Configuring a CESoP Connection</a></li> </ul> |

| Services                               | Steps                                                                                                                                                                                                                       |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Router access service of an enterprise | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.2.3 Adding a Service Port</a></li> <li>● <a href="#">21.2.1 Setting Queue Scheduling Parameters</a></li> </ul> |

### 22.2.1 Configuring the Attributes of a TOPA Card

This topic describes how to set the IP address of a TOPA card. The CESoP connection can be created only on a TOPA card that is configured with an IP address.

#### 22.2.2 Configuring a CESoP Connection

After a CESoP connection and the service virtual port of the CESoP connection are added successfully, the CESoP E1 line can be used for communication.

## 22.2.1 Configuring the Attributes of a TOPA Card

This topic describes how to set the IP address of a TOPA card. The CESoP connection can be created only on a TOPA card that is configured with an IP address.

### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **NE Panel** from the navigation tree.
- 3 Right-click the TOPA card and choose **Config Board** from the shortcut menu.
- 4 In the dialog box that is displayed, set **IP Address**.

| Key Parameter | Description                                                                                                 |
|---------------|-------------------------------------------------------------------------------------------------------------|
| IP Address    | Indicates the IP address of a TOPA card. The TOPA card supports two types of daughter cards: CSSA and EH1A. |

- 5 Click **OK**.

----End

### Command Reference

| To...                             | Run the Command... | In...                            |
|-----------------------------------|--------------------|----------------------------------|
| Set the IP address of a TOPA card | set ip-address     | TOP interface configuration mode |
| Set the IP address of a TOPA card | ip-address         | TOPA STM-1 mode                  |

## 22.2.2 Configuring a CESoP Connection

After a CESoP connection and the service virtual port of the CESoP connection are added successfully, the CESoP E1 line can be used for communication.

### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **E1/T1 > CES E1/T1 Port** from the navigation tree.
- 3 On the **CES E1 Port** tab page, select a port and click the **CESoP Info** tab in the lower pane.
- 4 In the information list, right-click and choose **Add CESoP Connection** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.

| Key Parameter    | Description                                                                                                                                                                                                                                                                      |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remote MAC       | Indicates the remote MAC address of a CESoP connection.                                                                                                                                                                                                                          |
| Remote IP        | Indicates the destination IP address of a CESoP connection.                                                                                                                                                                                                                      |
| Remote UDP Label | Indicates the UDP label of the local address of a CESoP connection.                                                                                                                                                                                                              |
| Local UDP Label  | Indicates the UDP label of the remote address of a CESoP connection. This parameter is used to set up mapping between UDP labels and E1 ports. Therefore, the CESoP connections of a TOPA card (with the EH1A daughter card) must be configured with different UDP port numbers. |

- 6 Click **OK**.

----End

## Command Reference

| To...                  | Run the Command... | In...              |
|------------------------|--------------------|--------------------|
| Add a CESoP connection | cesop-connect      | Global config mode |

## 22.3 Configuring Services on an MDU

A private line access network with an OLT and the MA5612 provides various services for users.

### Context

Several operations are required to configure a service. The following table lists the services configured and the steps for configuring the services.

| Services                               | Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TDM PWE3 private line access service   | <ul style="list-style-type: none"><li>● <a href="#">19.3.1 Configuring a VLAN</a></li><li>● <a href="#">19.3.3 Adding a Service Port</a></li><li>● <a href="#">22.3.3 Configuring the MPLS Capability</a></li><li>● <a href="#">22.3.4 Configuring an MPLS Tunnel</a></li><li>● <a href="#">22.3.5 Configuring a Static LSP Segment</a></li><li>● <a href="#">19.3.8 Configuring a Static Route</a></li><li>● <a href="#">22.3.6 Configuring a PW Profile</a></li><li>● <a href="#">22.3.7 Adding a TDM VCL</a></li><li>● <a href="#">22.3.8 Configuring the PWE3</a></li><li>● <a href="#">21.2.5 Configuring a Clock Source</a></li></ul> |
| Router access service of an enterprise | <ul style="list-style-type: none"><li>● <a href="#">21.2.2 Configuring a VLAN Service Profile</a></li><li>● <a href="#">22.3.1 Configuring a VLAN</a></li><li>● <a href="#">19.3.3 Adding a Service Port</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### [22.3.1 Configuring a VLAN](#)

Virtual local area network (VLAN) is a technology used to form virtual workgroups by grouping the devices of a LAN logically.

#### [22.3.2 Setting Telnet/STelnet Parameters](#)

The U2000 communicates with devices successfully based on the preset Telnet or STelnet parameters.

#### [22.3.3 Configuring the MPLS Capability](#)

This topic describes how to configure a label switch router (LSR) ID for a device and enable the multiprotocol label switching (MPLS) capability of the device.

#### [22.3.4 Configuring an MPLS Tunnel](#)

This topic describes how to configure the name, ID, and destination of an MPLS TE tunnel.

### 22.3.5 Configuring a Static LSP Segment

This topic describes how to configure a static label switched path (LSP). LSP is a unidirectional path from an ingress node to egress node, in which each node is an LSR. When you need to create an LSP on an ingress node to identify the path in the MPLS network that a forwarding equivalence class (FEC) passes, perform this operation.

### 22.3.6 Configuring a PW Profile

A pseudo wire (PW) profile is a set of feature parameters related to the PW and can be bound to PWs of the same type. A PW profile can be bound to a PW only after the PW type and the peer address are set, and the PW profile that is bound to a PW cannot be deleted.

### 22.3.7 Adding a TDM VCL

The TDM virtual channel link (VCL) is an attachment circuit (AC). When creating a TDM PW service, you need to set up a communication channel between ACs to implement transparent transmission of Layer 2 data of users.


### 22.3.8 Configuring the PWE3

This topic describes how to set up PWs of different types to emulate end-to-end services.

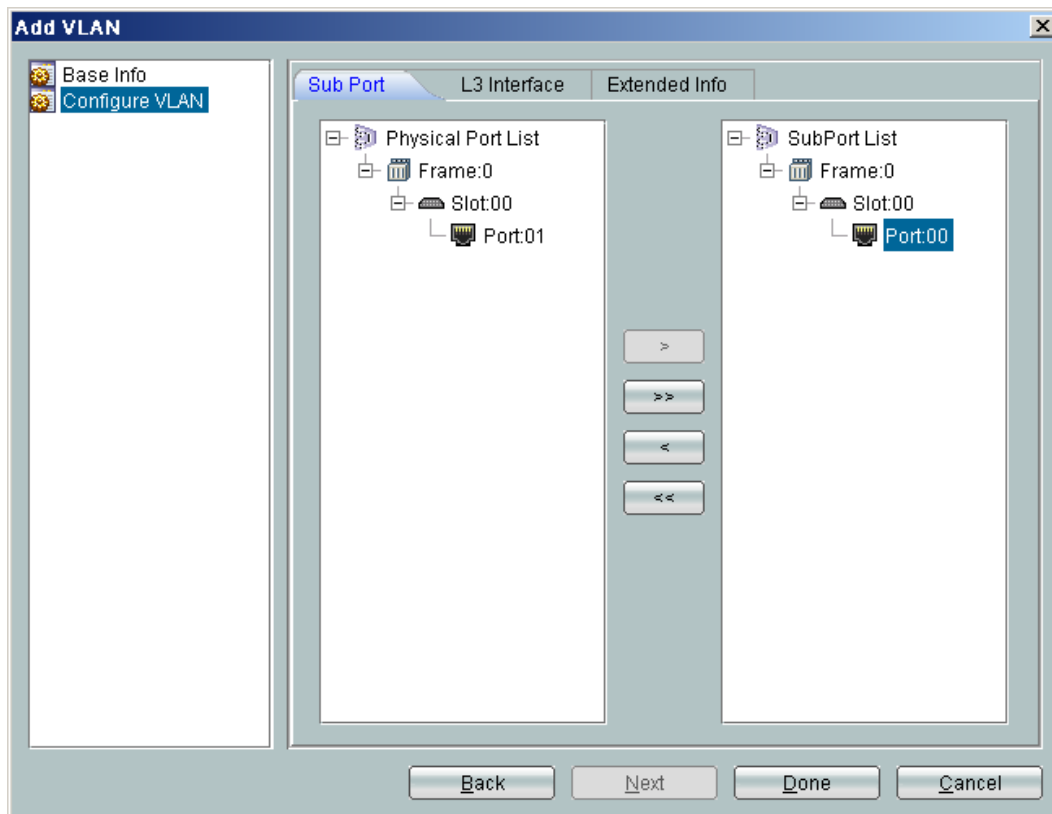
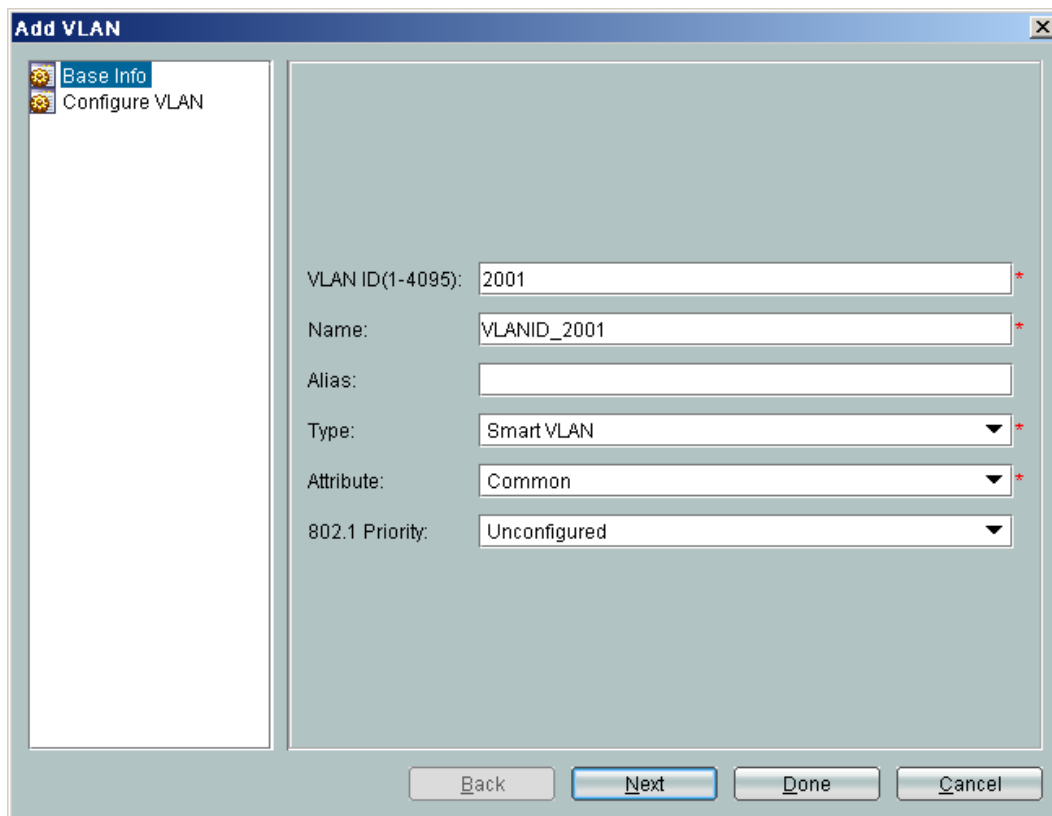
## 22.3.1 Configuring a VLAN

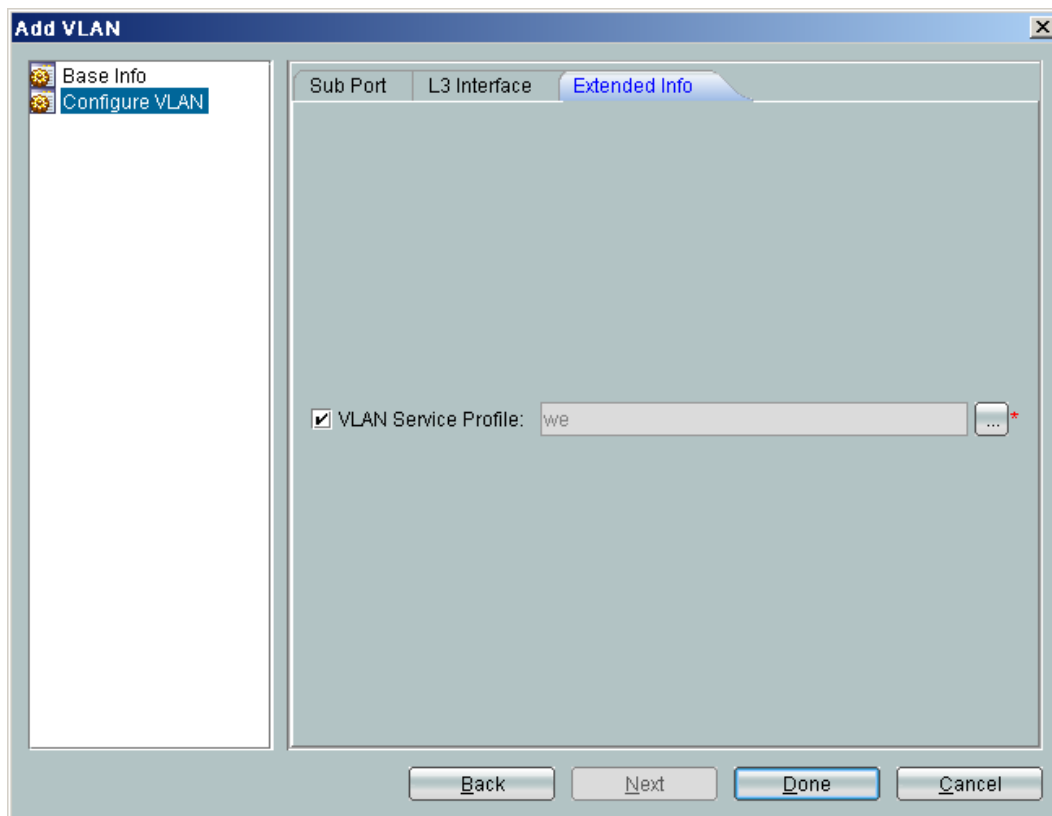
Virtual local area network (VLAN) is a technology used to form virtual workgroups by grouping the devices of a LAN logically.

### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **VLAN** from the navigation tree.
- 3 On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
- 4 In the information list, right-click and choose **Add** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.







| Key Parameter      | Description                                                    |
|--------------------|----------------------------------------------------------------|
| Start ID<br>End ID | Indicates the start and end IDs when you add VLANs in batches. |
| Type               | Indicates the VLAN type.                                       |
| Attribute          | Indicates the VLAN attribute.                                  |

6 Click **Done**.

----End

## Command Reference

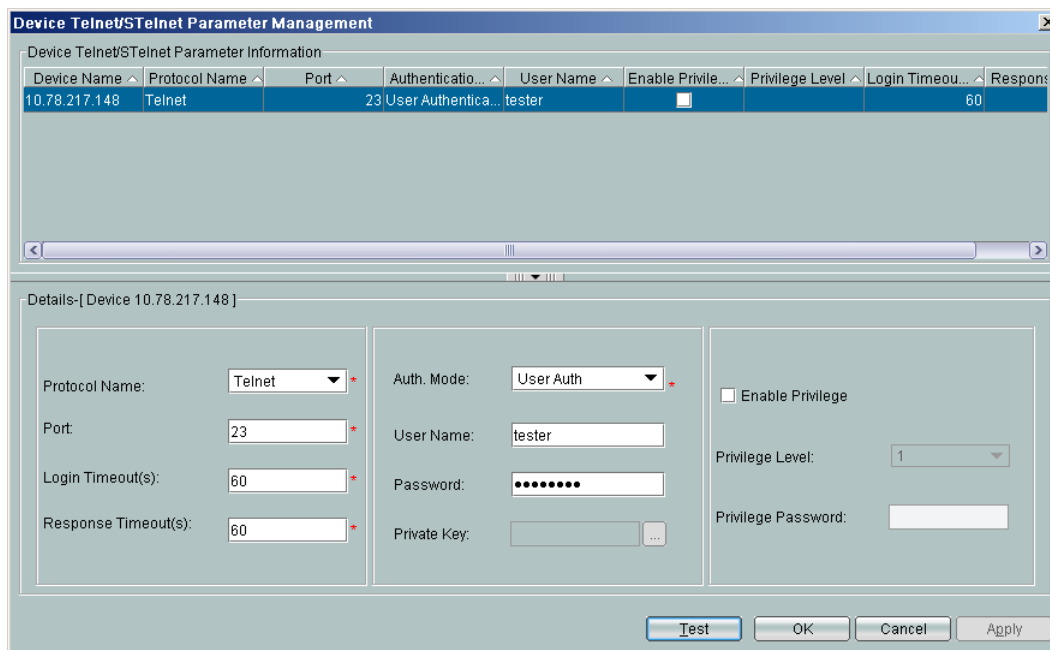
| To...                                                | Run the Command... | In...              |
|------------------------------------------------------|--------------------|--------------------|
| Query the information about the VLAN                 | display vlan       | Privilege mode     |
| Add one VLAN or more VLANs of a same type in batches | vlan               | Global config mode |
| Set the VLAN attribute                               | vlan attrib        | Global config mode |

## 22.3.2 Setting Telnet/STelnet Parameters

The U2000 communicates with devices successfully based on the preset Telnet or STelnet parameters.

### Procedure

- 1 In **Main Topology**, right-click the required MA5612 in the **Physical Root** navigation tree and choose **MPLS Management > Telnet Configuration** from the shortcut menu.
- 2 In the dialog box that is displayed, set the parameters.



| Key Parameter | Description                                                                                          |
|---------------|------------------------------------------------------------------------------------------------------|
| Auth. Mode    | Indicates the authentication mode. The options are No Auth, Password Auth, and User Auth.            |
| User Name     | Indicates the user name for login. It consists of letters (A to Z and a to z), numbers, and symbols. |

- 3 Click **OK**.

----End

### Result

After the parameters are set, click **Test**. If a dialog box is displayed indicating that the operation is successful, the U2000 can communicate with devices successfully based on the Telnet parameters.

## 22.3.3 Configuring the MPLS Capability

This topic describes how to configure a label switch router (LSR) ID for a device and enable the multiprotocol label switching (MPLS) capability of the device.

## Prerequisite

The Telnet parameters must be set to ensure that the U2000 communicates with devices successfully. For details, see [22.3.2 Setting Telnet/STelnet Parameters](#).

## Procedure

- 1 In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > MPLS Configuration** from the shortcut menu.
- 2 On the tab page that is displayed, click the **MPLS Capability Configuration** tab and set the parameters.

| Key Parameter     | Description                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| LSR ID            | Indicates an LSR ID. It can be the IP address of a loopback interface on an LSR. The LSR ID is an IPv4 address and must be unique in the MPLS domain. |
| Enable MPLS       | Enables MPLS. You can enable MPLS only after setting the LSR ID.                                                                                      |
| Enable MPLS L2VPN | Enables MPLS L2VPN of a device. You can enable MPLS L2VPN of a device only after enabling the MPLS capability of the device.                          |

- 3 Click **Apply**.

----End

## Command Reference

| To...                      | Run the Command... | In...                           |
|----------------------------|--------------------|---------------------------------|
| Configure the ID of an LSR | mpls lsr-id        | Global config mode              |
| Enable MPLS                | mpls               | Global config mode, VLANIF mode |
| Enable MPLS L2VPN          | mpls l2vpn         | Global config mode              |

## 22.3.4 Configuring an MPLS Tunnel

This topic describes how to configure the name, ID, and destination of an MPLS TE tunnel.

### Procedure

- 1 In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > Tunnel Configuration** from the shortcut menu.
- 2 On the tab page that is displayed, click the **Tunnel Configuration** tab. In the information list, right-click and choose **Create** from the shortcut menu.

| Key Parameter | Description                                                                    |
|---------------|--------------------------------------------------------------------------------|
| Tunnel ID     | Indicates the ID of a tunnel. The tunnel ID must be unique on the same device. |
| Destination   | Indicates the LSR ID of an egress node.                                        |

- 3 Click **OK**.

----End

## Command Reference

| To...                                                                              | Run the Command... | In...              |
|------------------------------------------------------------------------------------|--------------------|--------------------|
| Enter the tunnel mode from the global config mode                                  | interface tunnel   | Global config mode |
| Configure the encapsulation protocol at the data link layer for a tunnel interface | tunnel-protocol    | Tunnel mode        |
| Configure the destination IP address of an MPLS TE tunnel                          | destination        | Tunnel mode        |

### 22.3.5 Configuring a Static LSP Segment

This topic describes how to configure a static label switched path (LSP). LSP is a unidirectional path from an ingress node to egress node, in which each node is an LSR. When you need to create an LSP on an ingress node to identify the path in the MPLS network that a forwarding equivalence class (FEC) passes, perform this operation.

#### Procedure

- 1 In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > Static LSP Segment** from the shortcut menu.
- 2 On the tab page that is displayed, click the **Static LSP Segment Configuration** tab, right-click, and choose **Create** from the shortcut menu. In the dialog box that is displayed, set the parameters of the ingress node in the static LSP.

| Key Parameter | Description                                                            |
|---------------|------------------------------------------------------------------------|
| Protocol Type | Indicates the protocol type of the static LSP service.                 |
| Destination   | Indicates the LSR ID of an egress node.                                |
| Next Hop      | Indicates the IP address of the next-hop interface of an ingress node. |

3 Click **OK**.

---End

## Command Reference

| To...                                              | Run the Command... | In...              |
|----------------------------------------------------|--------------------|--------------------|
| Configure the LSP where the ingress LSR is located | static-lsp ingress | Global config mode |
| Configure the LSP where the egress LSR is located  | static-lsp egress  | Global config mode |

## 22.3.6 Configuring a PW Profile

A pseudo wire (PW) profile is a set of feature parameters related to the PW and can be bound to PWs of the same type. A PW profile can be bound to a PW only after the PW type and the peer address are set, and the PW profile that is bound to a PW cannot be deleted.

### Procedure

- 1 In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > PW Template Configuration** from the shortcut menu.
- 2 On the tab page that is displayed, right-click and choose **Create** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.

| Key Parameter     | Description                                                                                                                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Control Word      | Indicates a control word. Packets may be out of order when load balancing is adopted. In this case, you can use the control word to reorder the packets.<br>You must enable the control word of a PW profile if the PW type is set to <b>TDM</b> . |
| Peer IP Address   | Indicates the IP address of the peer PW.                                                                                                                                                                                                           |
| Rtp Header Enable | Specifies whether an RTP header is added during encapsulation for TDM transparent transmission.                                                                                                                                                    |



4 Click **OK**.

----End

## Command Reference

| To...               | Run the Command... | In...              |
|---------------------|--------------------|--------------------|
| Create a PW profile | PW-para            | Global config mode |

### 22.3.7 Adding a TDM VCL

The TDM virtual channel link (VCL) is an attachment circuit (AC). When creating a TDM PW service, you need to set up a communication channel between ACs to implement transparent transmission of Layer 2 data of users.

#### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **Connection > TDM VCL** from the navigation tree.
- 3 In the information list, right-click and choose **Add** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.

| Key Parameter   | Description                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection Type | Indicates the PW type. You need to set this parameter when data packets are transmitted over a TDM network.<br><br>When data packets are transmitted over a TDM network, a TDM connection ID identifies a service stream. In the case of unstructured TDM data, set the PW type to <b>TDM SAToP</b> . In the case of structured TDM data, set the PW type to <b>TDM CESoP</b> . |

5 Click **OK**.

----End

## Command Reference

| To...                                                                    | Run the Command... | In...              |
|--------------------------------------------------------------------------|--------------------|--------------------|
| Bind a TDM connection and a PW and create the PW service of the TDM type | pw-ac-binding tdm  | Global config mode |
| Configure the type of a PW                                               | pw-type            | PW-template mode   |

### 22.3.8 Configuring the PWE3

This topic describes how to set up PWs of different types to emulate end-to-end services.

#### Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **PW Management** from the navigation tree.
- 3 In the information list, right-click and choose **Add** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.

| Key Parameter   | Description                                                                                                                                                                                                                                                                                      |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PW Type         | Create a PW service of the ETH, TDM, or ATM type                                                                                                                                                                                                                                                 |
| Signal Protocol | <ul style="list-style-type: none"> <li>● <b>Idp</b>: Indicates that a PW is set up through the signaling protocol.</li> <li>● <b>static</b> or <b>udp</b>: Indicates that parameters are not negotiated through the signaling protocol and but are specified manually to set up a PW.</li> </ul> |
| AC              | Indicates the AC that is used for forwarding Layer 2 packets. Select different ACs according to PW types.                                                                                                                                                                                        |

5 Click **OK**.

----**End**

## Command Reference

| To...                                                                    | Run the Command... | In...              |
|--------------------------------------------------------------------------|--------------------|--------------------|
| Bind a TDM connection and a PW and create the PW service of the TDM type | pw-ac-binding tdm  | Global config mode |
| Bind a VLAN and a PW and create the PW service of the ETH type           | pw-ac-binding vlan | Global config mode |
| Bind a PVC and a PW and create the PW service of the ATM type            | pw-ac-binding pvc  | Global config mode |
| Create a PW profile                                                      | pw-template        | Global config mode |

## 22.4 Configuring Clock Synchronization

This topic describes how to configure clock synchronization, which ensures that data is transmitted and processed correctly in a communications network and a telecommunications network runs efficiently with high quality.

### Context

In a private line access network, the system clock of an OLT is transmitted to an ONU through an xPON line. Then, the system clock of the ONT is synchronized with the system clock of the OLT. The ONU transmits the clock to a base transceiver station (BTS) through an E1 or Ethernet port.

#### [22.4.1 Configuring E1/STM-1 Line Clock Synchronization](#)

This topic describes how to configure clock synchronization. After the line clock synchronization is configured, the clock is synchronized to the E1/STM-1 line clock when the OLT accesses the SDH network through an upstream E1 or STM-1 port.

#### [22.4.2 Configuring Ethernet Clock Synchronization](#)

This topic describes how to configure Ethernet clock synchronization. After Ethernet clock synchronization is configured, the technology of recovering the clock from bit streams on the Ethernet link is applied to implement synchronization between Ethernets when the OLT accesses the packet switched network (PSN) through a GE port.

#### [22.4.3 Configuring BITS Clock Synchronization](#)

This topic describes how to configure Building Integrated Timing Supply (BITS) clock synchronization. After the BITS clock synchronization is configured, the OLT receives the clock through BITS and transmits the clock signals to the cellular backhaul unit (CBU) through the PON line and then to the base transceiver station (BTS). In this manner, the clock synchronization is achieved for the entire network.

#### [22.4.4 Configuring IEEE 1588v2 Clock Synchronization](#)

This topic describes how to configure IEEE 1588v2 clock synchronization. After this configuration is complete, the OLT obtains the IEEE 1588v2 clock signals from the upper-layer network and transmits the signals to the CBU through the GPON line and then to the base

transceiver station (BTS). In this manner, the clock synchronization is achieved for the entire network.

## 22.4.1 Configuring E1/STM-1 Line Clock Synchronization

This topic describes how to configure clock synchronization. After the line clock synchronization is configured, the clock is synchronized to the E1/STM-1 line clock when the OLT accesses the SDH network through an upstream E1 or STM-1 port.

### Prerequisite

The SCU control card must be configured with the clock daughter card CKMC.

### Context

The configuration concept is as follows:

1. The OLT traces the upstream E1/STM-1 line clock of the TOPA card as the system clock.
2. Signals of the system clock are transmitted to the MA5612 through the optical channel provided by the GPON service card.
3. The MA5612 uses the line clock of the GPON upstream port as the system clock.
4. The transmit clock of the E1 port of the MA5612 is synchronized to the system clock of the MA5612.

To configure clock synchronization for an NE, you need to navigate to the NE Explorer of the NE. For details, see In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu. .

### Procedure

- **Configure the clock on the OLT.**

 **NOTE**

Set the line clock of the upstream E1 or STM-1 port on the TOPA card as the system clock source with the highest priority.

1. On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
2. On the **Frequency Clock Source(8K)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
3. In the dialog box that is displayed, set the parameters as follows:
  - Index: 0
  - Frame: 0
  - Slot: 5
  - Port: 0
4. Click **OK**.
5. In the information list, right-click the new clock source and choose **Set Clock Source Priority** from the shortcut menu.
6. In the dialog box that is displayed, set **Priority** to **0**.
7. Click **OK**.

- **Configure the clock on the MA5612.**

1. **Configure the system clock and its priority.**

 **NOTE**

Set the clock recovered from the GPON upstream port as the system clock of the MA5612 with the highest priority.

- (1) On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
  - (2) On the **Frequency Clock Source(SYSCLK)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters as follows:
    - Index: 0
    - Frame: 0
    - Slot: 0
    - Port: 0
  - (4) Click **OK**.
  - (5) In the information list, right-click the new clock source and choose **Set Clock Source Priority** from the shortcut menu.
  - (6) In the dialog box that is displayed, set **Priority** to **0**.
  - (7) Click **OK**.
2. **Set the system clock as the transmit clock of the E1 port.**
    - (1) Choose **E1/T1 > CES E1/T1 Port** from the navigation tree.
    - (2) In the information list, right-click the record whose name is **Frame:0/Slot:1/Port:0** and choose **Modify** from the shortcut menu.
    - (3) In the dialog box that is displayed, set **Working Mode** to **UDT** and **Clock Type** to **System**.
    - (4) Click **OK**.

----End

## 22.4.2 Configuring Ethernet Clock Synchronization

This topic describes how to configure Ethernet clock synchronization. After Ethernet clock synchronization is configured, the technology of recovering the clock from bit streams on the Ethernet link is applied to implement synchronization between Ethernets when the OLT accesses the packet switched network (PSN) through a GE port.

### Prerequisite

The SCU control card must be configured with the clock daughter card CKMC.

The GIU upstream card must be the GICK or GSCA card with GE ports.

The upstream MAN PSN network of the OLT must have the capability of synchronizing the Ethernet clock.

### Context

The configuration concept is as follows:

1. The OLT uses the synchronous Ethernet clock of the upstream slot as the system clock.
2. Signals of the system clock are transmitted to the MA5612 through the optical channel provided by the GPON service card.
3. The MA5612 uses the line clock of the GPON upstream port as the system clock.
4. The transmit clock of the E1, FE, or GE port of the MA5612 is synchronized to the system clock of the MA5612.

To configure clock synchronization for an NE, you need to navigate to the NE Explorer of the NE. For details, see In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu. .

## Procedure

- **Configure the clock on the OLT.**

 **NOTE**

Set the line clock of the GE port on the GIU card as the system clock source with the highest priority.

1. On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
2. On the **Frequency Clock Source(8K)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
3. In the dialog box that is displayed, set the parameters as follows:
  - Index: 0
  - Frame: 0
  - Slot: 19
  - Port: 0
4. Click **OK**.
5. In the information list, right-click the new clock source and choose **Set Clock Source Priority** from the shortcut menu.
6. In the dialog box that is displayed, set **Priority** to **0**.
7. Click **OK**.

- **Configure the clock on the MA5612.**

1. **Configure the system clock and its priority.**

 **NOTE**

Set the clock recovered from the GPON upstream port as the system clock of the MA5612 with the highest priority.

- (1) On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
- (2) On the **Frequency Clock Source(SYSCLK)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters as follows:
  - Index: 0
  - Frame: 0
  - Slot: 0

- Port: 0
  - (4) Click **OK**.
  - (5) In the information list, right-click the new clock source and choose **Set Clock Source Priority** from the shortcut menu.
  - (6) In the dialog box that is displayed, set **Priority** to **0**.
  - (7) Click **OK**.
2. **(Optional) Set the system clock as the transmit clock of the E1 port.**

 **NOTE**

This operation is required only when the base transceiver station (BTS) accesses the MA5612 through an E1 port. When the BTS accesses the MA5612 through an FE or GE port, you can skip this step. By default, the system clock is irreplaceably set as the transmit clock of the E1 port.

- (1) Choose **E1/T1 > CES E1/T1 Port** from the navigation tree.
- (2) In the information list, right-click the record whose name is **Frame:0/Slot:1/Port:0** and choose **Modify** from the shortcut menu.
- (3) In the dialog box that is displayed, set **Working Mode** to **UDT** and **Clock Type** to **System**.
- (4) Click **OK**.

---End

### 22.4.3 Configuring BITS Clock Synchronization

This topic describes how to configure Building Integrated Timing Supply (BITS) clock synchronization. After the BITS clock synchronization is configured, the OLT receives the clock through BITS and transmits the clock signals to the cellular backhaul unit (CBU) through the PON line and then to the base transceiver station (BTS). In this manner, the clock synchronization is achieved for the entire network.

#### Prerequisite

The SCU control card must be configured with the clock daughter card CKMC.

The OLT must have the BITS clock input resource.

The CITD card must be configured with the BITS clock daughter card and work in the normal state.

#### Context

The configuration concept is as follows:

1. The OLT uses the BITS line clock as the system clock.
2. Signals of the system clock are transmitted to the MA5612 through the optical channel provided by the GPON service card.
3. The MA5612 uses the line clock of the GPON upstream port as the system clock.
4. The transmit clock of the E1 port of the MA5612 is synchronized to the system clock of the MA5612.

To configure clock synchronization for an NE, you need to navigate to the NE Explorer of the NE. For details, see In the Main Topology, double-click the required NE in the **Physical Root**



navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu. .

## Procedure

- **Configure the clock on the OLT.**

 **NOTE**

Set the line clock of two BITS\_IN ports on the CITD card as the system clock with the highest priority.

1. On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
2. On the **Frequency Clock Source(8K)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
3. In the dialog box that is displayed, set the parameters as follows:
  - Index: 0
  - Frame: 0
  - Slot: 0
  - Port: 0
4. Click **OK**.
5. In the information list, right-click the new clock source and choose **Set Clock Source Priority** from the shortcut menu.
6. In the dialog box that is displayed, set **Priority** to **0**.
7. Click **OK**.
8. Repeat the preceding steps to add a clock source whose **Frame** is **0**, **Slot** is **0**, and **Port** is **1** and set its **Priority** to **1**.

- **Configure the clock on the MA5612.**

1. **Configure the system clock and its priority.**

 **NOTE**

Set the clock recovered from the GPON upstream port as the system clock of the MA5612 with the highest priority.

- (1) On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
- (2) On the **Frequency Clock Source(SYSCLK)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters as follows:
  - Index: 0
  - Frame: 0
  - Slot: 0
  - Port: 0
- (4) Click **OK**.
- (5) In the information list, right-click the new clock source and choose **Set Clock Source Priority** from the shortcut menu.
- (6) In the dialog box that is displayed, set **Priority** to **0**.
- (7) Click **OK**.

## 2. (Optional) Set the system clock as the transmit clock of the E1 port.

### NOTE

This operation is required only when the base transceiver station (BTS) accesses the MA5612 through an E1 port. When the BTS accesses the MA5612 through an FE or GE port, you can skip this step. By default, the system clock is irreplaceably set as the transmit clock of the E1 port.

- (1) Choose **E1/T1 > CES E1/T1 Port** from the navigation tree.
- (2) In the information list, right-click the record whose name is **Frame:0/Slot:1/Port:0** and choose **Modify** from the shortcut menu.
- (3) In the dialog box that is displayed, set **Working Mode** to **UDT** and **Clock Type** to **System**.
- (4) Click **OK**.

---End

## 22.4.4 Configuring IEEE 1588v2 Clock Synchronization

This topic describes how to configure IEEE 1588v2 clock synchronization. After this configuration is complete, the OLT obtains the IEEE 1588v2 clock signals from the upper-layer network and transmits the signals to the CBU through the GPON line and then to the base transceiver station (BTS). In this manner, the clock synchronization is achieved for the entire network.

### Prerequisite

The SCU control card must be configured with the clock daughter card CKMC.

The GICK card must exist.

The GPON service card must be the GPBD card.

### Context

The configuration concept is as follows:

1. The OLT uses the clock recovered from IEEE 1588v2 packets as the system clock.
2. Signals of the system clock are transmitted to the MA5612 through the optical channel provided by the GPON service card.
3. The MA5612 uses the line clock of the GPON upstream port as the system clock.
4. The transmit clock of the E1 or FE/GE port of the MA5612 is synchronized to the system clock of the MA5612.

To configure clock synchronization for an NE, you need to navigate to the NE Explorer of the NE. For details, see In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu. .

### Procedure

- **Configure the clock on the OLT.**
  1. **Set the IEEE 1588v2 clock source and its priority.**

- (1) On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
- (2) On the **Frequency Clock Source(8K)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters as follows:
  - Working Mode: 1588
  - Index: 0
  - Frame: 0
  - Slot: 19
  - Port: 0
- (4) Click **OK**.
- (5) In the information list, right-click the new clock source and choose **Set Clock Source Priority** from the shortcut menu.
- (6) In the dialog box that is displayed, set **Priority** to **0**.
- (7) Click **OK**.
- (8) Repeat the preceding steps to add a clock source whose **Frame** is **0**, **Slot** is **19**, and **Port** is **1** and set its **Priority** to **1**.

● **Configure the clock on the MA5612.**

1. **Configure the system clock and its priority.**

 **NOTE**

Set the clock recovered from the GPON upstream port as the system clock of the MA5612 with the highest priority.

- (1) On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
- (2) On the **Frequency Clock Source(SYSCLK)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters as follows:
  - Index: 0
  - Frame: 0
  - Slot: 0
  - Port: 0
- (4) Click **OK**.
- (5) In the information list, right-click the new clock source and choose **Set Clock Source Priority** from the shortcut menu.
- (6) In the dialog box that is displayed, set **Priority** to **0**.
- (7) Click **OK**.

2. **(Optional) Set the system clock as the transmit clock of the E1 port.**

 **NOTE**

This operation is required only when the base transceiver station (BTS) accesses the MA5612 through an E1 port. When the BTS accesses the MA5612 through an FE or GE port, you can skip this step. By default, the system clock is irreplaceably set as the transmit clock of the E1 port.

- (1) Choose **E1/T1 > CES E1/T1 Port** from the navigation tree.

- (2) In the information list, right-click the record whose name is **Frame:0/Slot:1/Port:0** and choose **Modify** from the shortcut menu.
- (3) In the dialog box that is displayed, set **Working Mode** to **UDT** and **Clock Type** to **System**.
- (4) Click **OK**.

----End

## 22.5 Configuration Examples of xPON Private Line Access and FTTO Services (MA5612)

This topic provides examples for configuring various services in an xPON private line access or FTTO network.

### [22.5.1 Data Plan for xPON Private Line Access Services](#)

This topic describes the data plan for the configuration examples of xPON private line access services. You can configure the services according to the data plan.

### [22.5.2 Configuring the TDM PWE3 Private Line Access Service \(Based on the SDH Network\)](#)

In this configuration example, the MA5612 is connected to a 2G or 3G base transceiver station (BIS) through an E1 port to carry traditional circuit switching services over an xPON network. This topic considers a GPON network as an example.

### [22.5.3 Configuring the TDMoGEM Private Line Access Service \(Based on the SDH Network\)](#)

In this configuration example, the MA5612 is connected to a 2G or 3G base transceiver station (BIS) through an E1 port to carry traditional circuit switching services over a GPON network.

### [22.5.4 Configuring the TDMoGEM-to-TDM PWE3 Conversion Private Line Access Service \(Based on the MPLS Network\)](#)

In this configuration example, the MA5612 is connected to a 2G or 3G base transceiver station (BIS) through an E1 port to carry traditional circuit switching services over a GPON network.

### [22.5.5 Configuring the ETH PWE3 Private Line Access Service](#)

In this configuration example, the MA5612 is connected to a 2G or 3G base transceiver station (BIS) through an Ethernet port to carry Ethernet services over an xPON network. This topic considers a GPON network as an example.

### [22.5.6 Configuring the QinQ Private-Line Private Line Access Service](#)

In this configuration example, the MA5612 is connected to an IP base transceiver station (BIS) through an FE or a GE port and the OLT transmits QinQ private line services to Metro equipment to implement the private line access service. This topic considers a GPON network as an example.

### [22.5.7 Data Plan for xPON FTTO Services](#)

This topic provides the data plan for the configuration examples of xPON FTTO services. You can configure the services according to the data plan.

### [22.5.8 Configuring the TDM PBX Access Service](#)

In this configuration example, the MA5612 is connected to the TDM PBX of an enterprise through an E1 port and the OLT transmits signals upstream to the SDH or PSN network.

### [22.5.9 Configuring the IP PBX Access Service](#)

In this configuration example, the MA5612 is connected to the IP PBX of an enterprise through an FE or a GE port and the OLT transmits signals upstream to the PSN network.

### 22.5.10 Configuring the Router Access Service of an Enterprise

In this configuration example, the MA5612 is connected to the router or Layer 3 switch of an enterprise through an FE or a GE port and the OLT transmits signals upstream to the IP network.

## 22.5.1 Data Plan for xPON Private Line Access Services

This topic describes the data plan for the configuration examples of xPON private line access services. You can configure the services according to the data plan.

### Data Plan

**Table 22-1** xPON private line access services - device management

| Service Type      | Item                    | Settings                                                                                                                                                                                                                                                                                   | Remarks |
|-------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Device management | Upstream port of an OLT | 0/19/0                                                                                                                                                                                                                                                                                     | -       |
|                   | Management VLAN         | <ul style="list-style-type: none"> <li>● VLAN ID: 4000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                              | -       |
|                   | MDU                     | <ul style="list-style-type: none"> <li>● Name: MDU</li> <li>● ONU Type: MDU</li> <li>● ONU ID: 0</li> <li>● Authentication Mode: SN</li> <li>● SN: 32303131B39FD641</li> <li>● Manager VLAN: 4000</li> <li>● IP Address: 192.168.50.2</li> <li>● IP Address Mask: 255.255.255.0</li> </ul> | -       |
|                   | DBA profile             | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● T-CONT type: Fixed Bandwidth</li> <li>● Fixed Bandwidth: 32768</li> <li>● Bandwidth Compensation: Yes</li> </ul>                                                                                                            | -       |
|                   | MDU SNMP Profile        | <ul style="list-style-type: none"> <li>● Name: snmpprofile</li> <li>● SNMP Version: v1</li> <li>● Read Name: public</li> <li>● Write Name: private</li> <li>● Trap Host IP: 192.168.50.3</li> <li>● Trap UDP Port: 162</li> <li>● SNMP Security Name: public</li> </ul>                    | -       |

| Service Type | Item                                                | Settings                                                                                                                                                                                                                                                                            | Remarks |
|--------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | Line profile                                        | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Mapping Mode: VLAN</li> <li>● Qos Mode: Priority Queue</li> <li>● T-CONT Index: 1</li> <li>● DBA Profile: FTTx</li> <li>● GEM Port Index: 1, 2</li> <li>● Priority Queue: 1</li> <li>● VLAN ID: 4000, 500</li> </ul> | -       |
|              | Service virtual port (based on the management VLAN) | <ul style="list-style-type: none"> <li>● VLAN ID: 4000</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 4000</li> </ul>                                                                                                  | -       |

**Table 22-2** GPON private line access services - TDM PWE3 private line access service (based on the SDH network)

| Service Type   | Item                 | Settings                                                                                                                                                                                                                                                                                                                                                                              | Remarks |
|----------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Data of an OLT | TOPA card            | <ul style="list-style-type: none"> <li>● Port: 0/6/0</li> <li>● IP Address: 20.20.20.20</li> </ul>                                                                                                                                                                                                                                                                                    | -       |
|                | Service VLAN         | <ul style="list-style-type: none"> <li>● VLAN ID: 500</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                                                                                          | -       |
|                | Service virtual port | <ul style="list-style-type: none"> <li>● Name: tdpwe3</li> <li>● Connection Type: LAN-GPON</li> <li>● VLAN ID: 500</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 500</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream/Downstream Traffic Name: ip-traffic-table_6</li> </ul> | -       |

| Service Type       | Item                  | Settings                                                                                                                                                                                                                       | Remarks |
|--------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                    | Queue scheduling mode | <ul style="list-style-type: none"> <li>● Queue scheduler mode: WRR</li> <li>● Queue0-weight: 10</li> <li>● Queue1-weight: 10</li> <li>● Queue2-weight: 20</li> <li>● Queue3-weight: 20</li> <li>● Queue4-weight: 40</li> </ul> | -       |
|                    | CESoP connection      | <ul style="list-style-type: none"> <li>● Remote MAC: 00-e0-fc-01-04-50</li> <li>● Remote IP: 5.5.5.5</li> <li>● Remote UDP Label: 50050</li> <li>● Local UDP Label: 50050</li> <li>● VLAN: 500</li> </ul>                      | -       |
| Data of the MA5612 | GPON upstream port    | 0/0/0                                                                                                                                                                                                                          | -       |
|                    | Service VLAN          | <ul style="list-style-type: none"> <li>● VLAN ID: 500</li> <li>● Type: Smart VLAN</li> <li>● IP Address of L3 Interface: 10.50.50.50</li> <li>● IP Mask of L3 Interface: 255.255.255.0</li> </ul>                              | -       |
|                    | MPLS capability       | <ul style="list-style-type: none"> <li>● LSR ID: 5.5.5.5</li> <li>● Enable MPLS: selected</li> <li>● Enable MPLS L2VPN: selected</li> </ul>                                                                                    | -       |
|                    | MPLS tunnel           | <ul style="list-style-type: none"> <li>● Tunnel Name: Tunnel10</li> <li>● Tunnel ID: 10</li> <li>● Encap. Protocol: MPLS TE</li> <li>● Destination: 20.20.20.20</li> </ul>                                                     | -       |
|                    | Static route          | <ul style="list-style-type: none"> <li>● IP Address: 20.20.20.20</li> <li>● IP Address Mask: 255.255.255.255</li> <li>● Next Hop IP Address: 10.50.50.1</li> </ul>                                                             | -       |

| Service Type | Item         | Settings                                                                                                                                                                                                                                                                                                                                                                                   | Remarks |
|--------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | PW profile   | <ul style="list-style-type: none"> <li>● Name: pwt</li> <li>● Control Word: control-word</li> <li>● Tunnel Policy: Tunnel10</li> <li>● Peer IP Address: 20.20.20.20</li> <li>● Rtp Header Enable: selected</li> <li>● Load Time: 125</li> </ul>                                                                                                                                            | -       |
|              | PWE3         | <ul style="list-style-type: none"> <li>● PW ID: 1</li> <li>● Name: pw1</li> <li>● PW Type: TDM</li> <li>● PW Profile: pwt</li> <li>● Port Type: UDT</li> <li>● Port: 0/3/0</li> <li>● Signal Protocol: udp</li> <li>● DST UDP: 50050</li> </ul> TDM VCL <ul style="list-style-type: none"> <li>● ID: 10</li> <li>● Connection Type: SAToP</li> <li>● Interface Selection: 0/3/0</li> </ul> | -       |
|              | Clock source | Adaptive clock <ul style="list-style-type: none"> <li>● Working mode: Adapt</li> <li>● Index: 0</li> <li>● Frame: 0</li> <li>● Slot: 0</li> </ul> Line clock <ul style="list-style-type: none"> <li>● Working mode: SYSLINE</li> <li>● Index: 1</li> <li>● Frame: 0</li> <li>● Slot: 0</li> <li>● Port: 0</li> </ul>                                                                       | -       |



## 22.5.2 Configuring the TDM PWE3 Private Line Access Service (Based on the SDH Network)

In this configuration example, the MA5612 is connected to a 2G or 3G base transceiver station (BTS) through an E1 port to carry traditional circuit switching services over an xPON network. This topic considers a GPON network as an example.

### Context

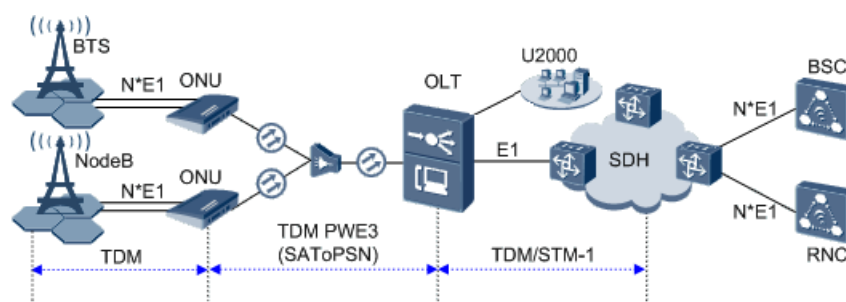
For details of the data plan, see [22.5.1 Data Plan for xPON Private Line Access Services](#).

**This topic is applicable to the scenario wherein an OLT terminates the data of the MA5612 and then transmits signals to the SDH network.**

If you need to configure clock synchronization of the entire network, see [22.4.1 Configuring E1/STM-1 Line Clock Synchronization](#).

### Example Network

**Figure 22-1** Configuring the TDM PWE3 private line access service (based on the SDH network)



#### NOTE

The MA5612 receives the TDM service data of the 2G or 3G BTS through an E1 port and then transmits the data upstream to the GPON service card on the OLT through a GPON port after SAToP emulation. The OLT terminates the emulated data and restores TDM signals, and then transmits the signals to the SDH network through the E1 port provided by the EH1A daughter card on the TOPA card. In this way, the 2G or 3G mobile bearer service is implemented between the MA5612 and the OLT in TDM PW mode.

### Procedure

- **Add the MA5612 to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).

A management VLAN is the VLAN through which an OLT manages an MDU. The OLT manages the MDU by using the SNMP protocol. The IP address of the L3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **VLAN** from the navigation tree.
  - (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 4000
    - Type: Smart VLAN
  - (5) Click **Next**.
    - Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
  - (6) Click **Finish**.
2. **Configure a DBA profile.** For details, see [19.1.2 Configuring a DBA Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - T-CONT type: Fixed bandwidth
    - Fixed Bandwidth: 32768
    - Bandwidth Compensation: Yes
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile.** For details, see [20.1.1 Configuring a GPON Line Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **GPON Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info.** from the navigation tree and set the parameters.
      - Mapping Mode: VLAN
      - Qos Mode: Priority Queue
    - Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - T-CONT Index: 1
      - DBA Profile: FTTx

- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Port Index: 1
    - Priority Queue: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 0 (default value)
    - VLAN ID: 4000 (management VLAN ID)
    - Priority: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 1 (default value)
    - VLAN ID: 500 (service VLAN ID)
    - Priority: 2
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
- (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
  - Name: MDU
  - ONU ID: 0
  - ONU Type: MDU
  - On the **Basic Parameters** tab page, set the parameters.
    - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
    - Authentication Mode: SN
    - SN: 485754438E1CDE42
  - On the **Network Management Channel Parameters** tab page, set the parameters.

- OLT sets network management channel parameters: selected
- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

The image displays two screenshots of the 'Confirm ONU' dialog box. The top screenshot shows the 'Basic Parameters' tab, and the bottom screenshot shows the 'Network Management Channel Parameters' tab.

**Top Screenshot (Basic Parameters):**

- Affiliated Port: 0/2/0
- Name: MDU
- ONU ID(0-127): 0
- ONU Type: MDU
- Line Profile: FTTx
- Authentication Mode: SN
- SN: 485754438E1CDE42

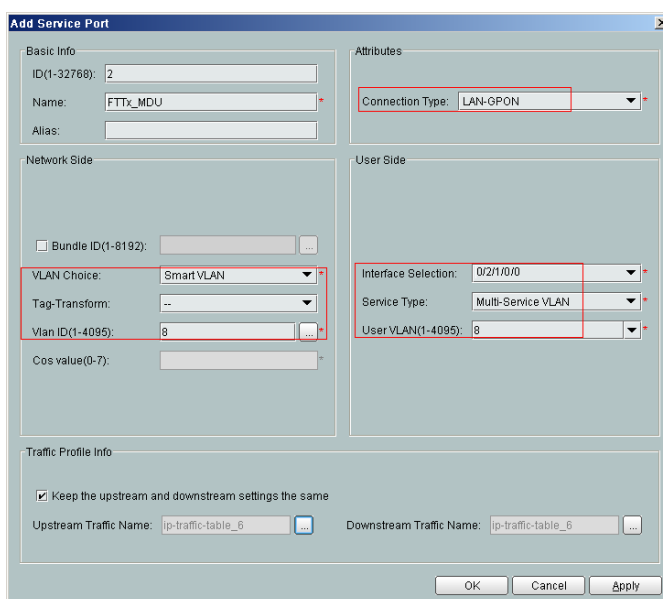
**Bottom Screenshot (Network Management Channel Parameters):**

- OLT sets network management channel parameters
- SNMP Profile Name: snmpprofile
- Manager VLAN(1-4095): 8
- IP Address: 192.168.50.2
- IP Address Mask: 255.255.255.0

(6) Click **OK**.

5. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

- **Configure the TDM PWE3 private line access service on the OLT.**


The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).

- (1) Choose **VLAN** from the navigation tree.
  - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 500
    - Type: Smart VLAN
  - (4) Click **Next**. Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
  - (5) Click **Finish**.
2. **Add a service virtual port on the OLT.** For details, see [19.2.3 Adding a Service Port](#).
- (1) On the **VLAN** tab page, select VLAN 1001 and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: tdmpe3
    - Connection Type: LAN-GPON
    - VLAN ID: 500
    - Interface Selection: 0/2/1/0/0
    - Service Type: Multi-Service VLAN
    - User VLAN: 500
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name/Downstream Traffic Name: ip-traffic-table\_6 (It is recommended that you use the default profile ip-traffic-table\_6.)
  - (4) Click **OK**.
3. **Set queue scheduling parameters.** For details, see [21.2.1 Setting Queue Scheduling Parameters](#).

You need to set the queue scheduling parameters on the OLT only once. Then, the parameters are globally valid.

The WRR mode is used for queues 0-4 and their weights are 10, 10, 20, 20, and 40 respectively. The PQ mode is used for queues 5-7.

- (1) Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.
- (2) On the **System Parameter Profile** tab page, select the required OLT type from the **Device Type** drop-down list.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the name of the system parameter profile to **FTTx**. Choose **QoS > 802.1p PRI queue** and **QoS > Queue scheduler mode** from the **Parameters for Selection** navigation tree, click  to add the parameters to the **Selected Parameters** navigation tree, and then click **Next**.
- (5) Choose **802.1p PRI queue** from the navigation tree and configure the mapping between queues and 802.1p priorities. It is recommended that you use the default values. Choose **Queue scheduler mode** from the navigation tree and configure the queue scheduling mode.

- Queue scheduler mode: WRR
  - Queue0-weight: 10
  - Queue1-weight: 10
  - Queue2-weight: 20
  - Queue3-weight: 20
  - Queue4-weight: 40
- (6) Click **Finish**.
  - (7) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (8) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure the attributes of the TOPA card.** For details, see [22.2.1 Configuring the Attributes of a TOPA Card](#).
    - (1) Choose **NE Panel** from the navigation tree.
    - (2) Right-click the TOPA card and choose **Config Board** from the shortcut menu.
    - (3) In the dialog box that is displayed, set **IP Address** to **20.20.20.20**.
    - (4) Click **OK**.
  5. **Configure a CESoP connection.** For details, see [22.2.2 Configuring a CESoP Connection](#).

 **NOTE**

Perform this step only after configuring the MA5612 because certain parameters are obtained from the MA5612.

- (1) Choose **E1/T1 > CES E1/T1 Port** from the navigation tree.
  - (2) On the **CES E1 Port** tab page, select port 0/6/0 and click the **CESoP Info** tab in the lower pane.
  - (3) In the information list, right-click and choose **Add CESoP Connection** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Remote MAC: 00-e0-fc-01-04-50 (MAC address of VLAN interface 500 of the MA5612)
    - Remote IP: 5.5.5.5 (IP address of the loopback interface that the LSR ID of the MA5612 corresponds to)
    - Remote UDP Label: 50050
    - Local UDP Label: 50050
    - VLAN: 500 (service VLAN ID)
  - (5) Click **OK**.
- **Configure the TDM PWE3 private line access service on the ONU.**
    1. **Configure an MPLS VLAN.** For details, see [19.3.1 Configuring a VLAN](#).
      - (1) Choose **VLAN** from the navigation tree.
      - (2) In the informational list, right-click and choose **Add** from the shortcut menu.
      - (3) In the dialog box that is displayed, set the parameters.
        - VLAN ID: 500
        - Type: Smart VLAN

- (4) Click **Next**.
    - Click the **L3 Interface** tab and set the parameters.
      - Configure L3 Interface: selected
      - Management Status: UP
      - IP Address: 10.50.50.50 (next-hop IP address of the ingress node)
      - IP Mask: 255.255.255.0
    - Click the **Sub Port** tab and add upstream port 0/0/0 as the upstream port of the VLAN.
  - (5) Click **Done**.
2. **Configure the MPLS capability.** For details, see [22.3.3 Configuring the MPLS Capability](#).
    - (1) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > MPLS Configuration** from the shortcut menu.
    - (2) On the tab page that is displayed, click the **MPLS Capability Configuration** tab and set the parameters.
      - LSR ID: 5.5.5.5 (ID of the local LSR)
      - Enable MPLS: selected
      - Enable MPLS L2VPN: selected
    - (3) Click **Apply**.
  3. **Configure an MPLS tunnel.** For details, see [22.3.4 Configuring an MPLS Tunnel](#).
    - (1) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > Tunnel Configuration** from the shortcut menu.
    - (2) Click the **Tunnel Configuration** tab. In the information list, right-click and choose **Create** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - Tunnel Name: Tunnel10
      - Tunnel ID: 10
      - Encap. Protocol: MPLS TE
      - Destination: 20.20.20.20 (LSR ID of the egress node in the LSP)
    - (3) Click **OK**.
  4. **Configure a static route.** For details, see [19.3.8 Configuring a Static Route](#).
    - (1) Choose **Route** from the navigation tree.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - IP Address: 20.20.20.20 (IP address of the TOPA card on the OLT)
      - IP Address Mask: 255.255.255.255
      - Next Hop IP Address: 10.50.50.1
    - (4) Click **OK**.
  5. **Configure a PW profile.** For details, see [22.3.6 Configuring a PW Profile](#).



- (1) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > PW Template Configuration** from the shortcut menu.
  - (2) On the tab page that is displayed, right-click and choose **Create** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: pwt
    - Control Word: control-word
    - Tunnel Policy: Tunnel10
    - Peer IP Address: 20.20.20.20 (IP address of the TOPA card on the peer device)
    - Rtp Header Enable: selected
    - PW Type: TDM Satop
    - Load Time: 125
  - (4) Click **OK**.
6. **Configure the PWE3.** For details, see [22.3.8 Configuring the PWE3](#) and [22.3.7 Adding a TDM VCL](#).
- (1) Choose **PW Management** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - PW ID: 1
    - Name: pw1
    - PW Type: TDM
    - PW Profile: pwt
    - Port Type: UDT
    - Port: 0/3/0
    - Signal Protocol: udp
    - DST UDP: 50050
    - In the **Please Select AC:TDM VCL** area, right-click and choose **Add** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - ID: 10
      - Connection Type: SAToP
      - Interface Selection: 0/3/0
  - (4) Click **OK**.

----End

### 22.5.3 Configuring the TDMoGEM Private Line Access Service (Based on the SDH Network)

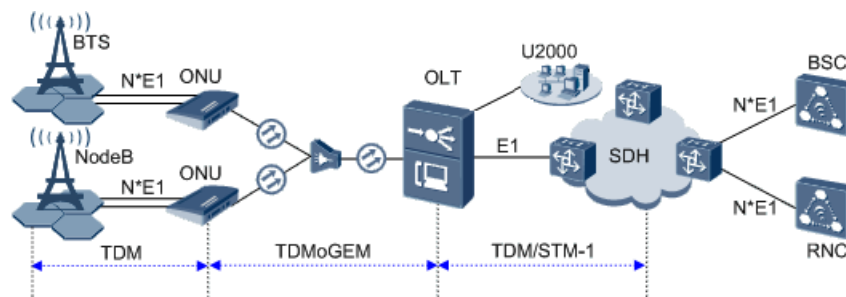
In this configuration example, the MA5612 is connected to a 2G or 3G base transceiver station (BIS) through an E1 port to carry traditional circuit switching services over a GPON network.

## Example Network

For details of the data plan, see [22.5.1 Data Plan for xPON Private Line Access Services](#).

If you need to configure clock synchronization of the entire network, see [22.4.1 Configuring E1/STM-1 Line Clock Synchronization](#).

**Figure 22-2** Configuring the TDMoGEM private line access service (based on the SDH network)



### NOTE

The MA5612 receives the TDM service data of the 2G or 3G BTS through an E1 port and then transmits the data upstream to the GPON service card on the OLT in TDMoGEM mode. The OLT terminates the emulated data and restores TDM signals, and then transmits the signals to the SDH network through the E1 port provided by the NH1A daughter card on the TOPA card. In this way, the 2G or 3G mobile bearer service is implemented between the MA5612 and the OLT in TDMoGEM mode.

## Procedure

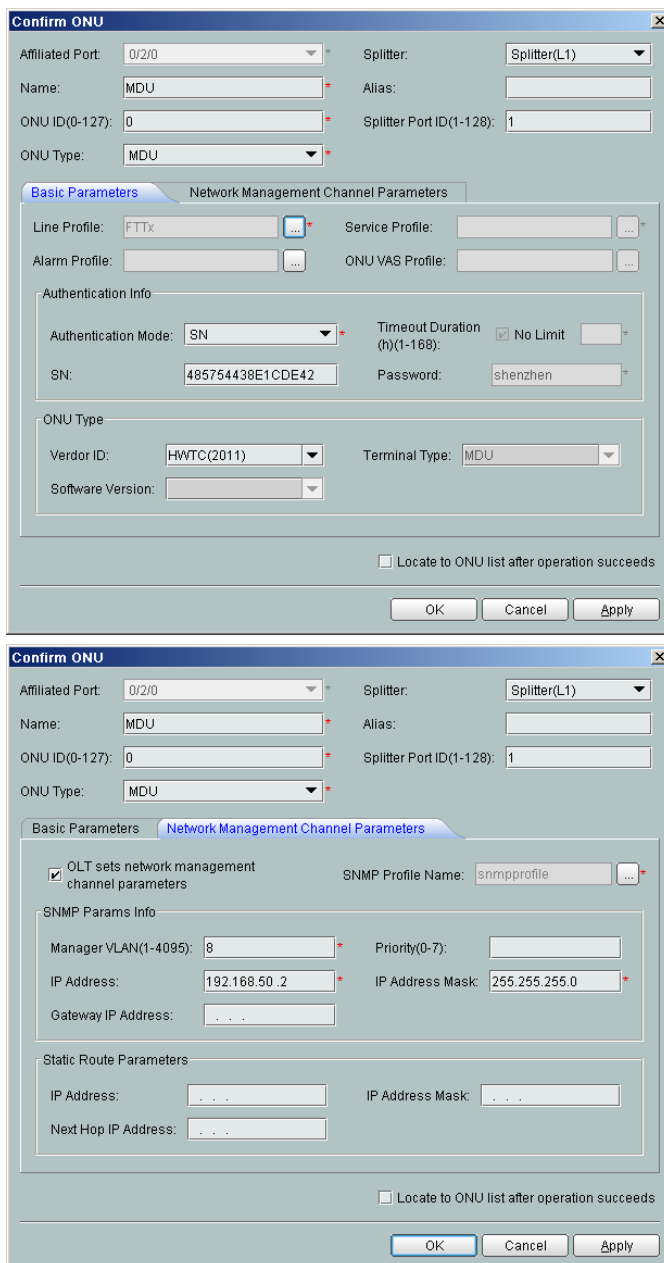
- **Add the MA5612 to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).

A management VLAN is the VLAN through which an OLT manages an MDU. The OLT manages the MDU by using the SNMP protocol. The IP address of the L3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **VLAN** from the navigation tree.
  - (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 4000
    - Type: Smart VLAN
  - (5) Click **Next**.
    - Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
  - (6) Click **Finish**.
2. **Configure a DBA profile.** For details, see [19.1.2 Configuring a DBA Profile](#).

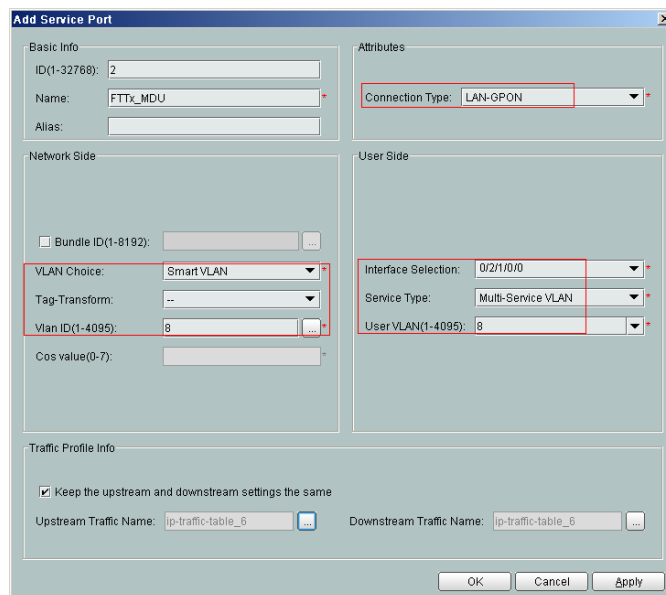
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - T-CONT type: Fixed bandwidth
    - Fixed Bandwidth: 32768
    - Bandwidth Compensation: Yes
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile.** For details, see [20.1.1 Configuring a GPON Line Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **GPON Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info.** from the navigation tree and set the parameters.
      - Mapping Mode: VLAN
      - Qos Mode: Priority Queue
    - Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - T-CONT Index: 1
      - DBA Profile: FTTx
    - Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - GEM Port Index: 1
      - Priority Queue: 1
    - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - GEM Connection Index: 0 (default value)
      - VLAN ID: 4000 (management VLAN ID)
      - Priority: 1
    - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.

- GEM Connection Index: 1 (default value)
  - VLAN ID: 500 (service VLAN ID)
  - Priority: 2
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
- (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
- Name: MDU
  - ONU ID: 0
  - ONU Type: MDU
  - On the **Basic Parameters** tab page, set the parameters.
    - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
    - Authentication Mode: SN
    - SN: 485754438E1CDE42
  - On the **Network Management Channel Parameters** tab page, set the parameters.
    - OLT sets network management channel parameters: selected
    - SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
    - Manager VLAN: 8
    - IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
    - IP Address Mask: 255.255.255.0



- (6) Click **OK**.
5. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**
  - (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.

- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

● **Configure the TDMoGEM private line access service on the OLT.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a TDM E1 connection.** For details, see [21.2.4 Configuring a TDM Connection](#).

- (1) Choose **Connection > Native TDM Connection** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Network Interface Type: E1
  - E1 Port: **Frame: 00, Slot: 06, and Port: 00** are selected
  - GPON Port: **Frame: 00, Slot: 02, Port: 00, ONT: 01, GEM Port: 01, and E1 Port: 00** are selected

(4) Click **OK**.

----End

## 22.5.4 Configuring the TDMoGEM-to-TDM PWE3 Conversion Private Line Access Service (Based on the MPLS Network)

In this configuration example, the MA5612 is connected to a 2G or 3G base transceiver station (BTS) through an E1 port to carry traditional circuit switching services over a GPON network.

### Example Network

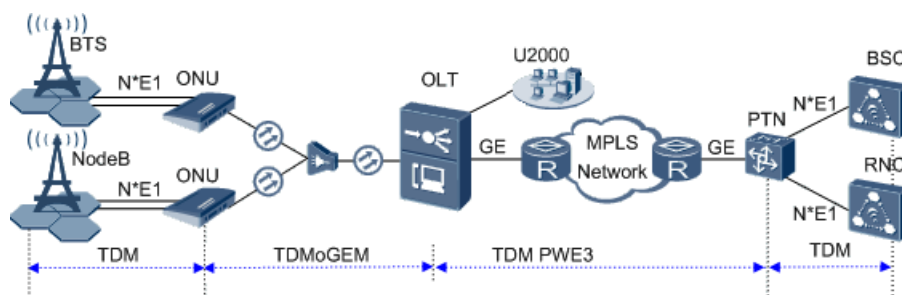
For details of the data plan, see [22.5.1 Data Plan for xPON Private Line Access Services](#).

If you need to configure Ethernet clock synchronization of the entire network, see [22.4.2 Configuring Ethernet Clock Synchronization](#).

If you need to configure BITS clock synchronization of the entire network, see [22.4.3 Configuring BITS Clock Synchronization](#).

If you need to configure IEEE 1588v2 clock synchronization of the entire network, see [22.4.4 Configuring IEEE 1588v2 Clock Synchronization](#).

**Figure 22-3** Configuring the TDMoGEM-to-TDM PWE3 conversion private line access service (based on the MPLS network)



#### NOTE

The MA5612 receives the TDM service data from the 2G/3G BTS through an E1 port, encapsulates the TDM service packets into GEM frames in TDMoGEM mode, and then sends them to the OLT. The OLT restores the TDM signals, starts the TDM PWE3, and then sends the TDM signals to the MPLS network and peer PTN NE through a GE port. Finally, the PTN NE terminates the emulation data and restores the TDM signals.


### Procedure

- **Add the MA5612 to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).

A management VLAN is the VLAN through which an OLT manages an MDU. The OLT manages the MDU by using the SNMP protocol. The IP address of the L3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **VLAN** from the navigation tree.
  - (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 4000
    - Type: Smart VLAN
  - (5) Click **Next**.
    - Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
  - (6) Click **Finish**.
2. **Configure a DBA profile.** For details, see [19.1.2 Configuring a DBA Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - T-CONT type: Fixed bandwidth
    - Fixed Bandwidth: 32768
    - Bandwidth Compensation: Yes
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile.** For details, see [20.1.1 Configuring a GPON Line Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **GPON Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info.** from the navigation tree and set the parameters.
      - Mapping Mode: VLAN
      - Qos Mode: Priority Queue
    - Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - T-CONT Index: 1
      - DBA Profile: FTTx



- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Port Index: 1
    - Priority Queue: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 0 (default value)
    - VLAN ID: 4000 (management VLAN ID)
    - Priority: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 1 (default value)
    - VLAN ID: 500 (service VLAN ID)
    - Priority: 2
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
- (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
  - Name: MDU
  - ONU ID: 0
  - ONU Type: MDU
  - On the **Basic Parameters** tab page, set the parameters.
    - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
    - Authentication Mode: SN
    - SN: 485754438E1CDE42
  - On the **Network Management Channel Parameters** tab page, set the parameters.

- OLT sets network management channel parameters: selected
- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

The image displays two screenshots of the 'Confirm ONU' dialog box. The top screenshot shows the 'Basic Parameters' tab, and the bottom screenshot shows the 'Network Management Channel Parameters' tab.

**Top Screenshot (Basic Parameters):**

- Affiliated Port: 0/2/0
- Name: MDU
- ONU ID(0-127): 0
- ONU Type: MDU
- Line Profile: FTTx
- Authentication Mode: SN
- SN: 485754438E1CDE42

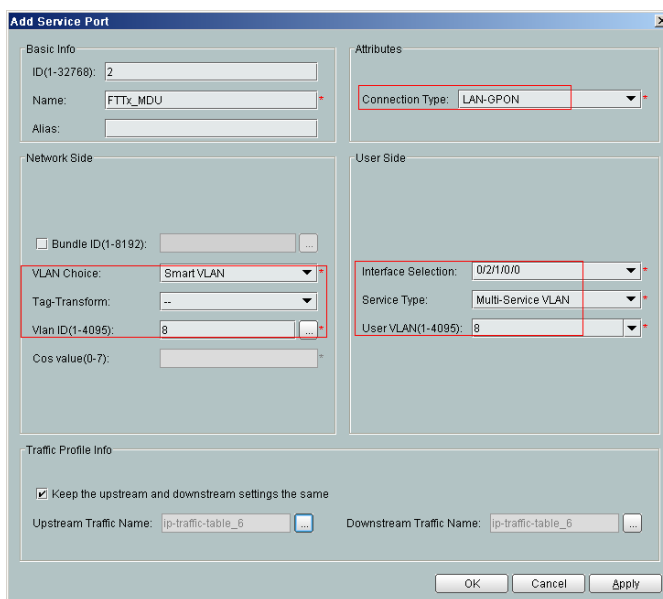
**Bottom Screenshot (Network Management Channel Parameters):**

- OLT sets network management channel parameters
- SNMP Profile Name: snmpprofile
- Manager VLAN(1-4095): 8
- IP Address: 192.168.50.2
- IP Address Mask: 255.255.255.0

(6) Click **OK**.

5. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.


- **Configure the TDMoGEM-to-TDM PWE3 conversion private line access service on the OLT.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).
  - (1) Choose **VLAN** from the navigation tree.
  - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 500
    - Type: Smart VLAN
  - (4) Click **Next**. Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
  - (5) Click **Finish**.
2. **Add a service virtual port on the OLT.** For details, see [19.2.3 Adding a Service Port](#).
  - (1) On the **VLAN** tab page, select VLAN 1001 and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: tdmpe3
    - Connection Type: LAN-GPON
    - VLAN ID: 500
    - Interface Selection: 0/2/1/0/0
    - Service Type: Multi-Service VLAN
    - User VLAN: 500
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name/Downstream Traffic Name: ip-traffic-table\_6 (It is recommended that you use the default profile ip-traffic-table\_6.)
  - (4) Click **OK**.
3. **Set queue scheduling parameters.** For details, see [21.2.1 Setting Queue Scheduling Parameters](#).

You need to set the queue scheduling parameters on the OLT only once. Then, the parameters are globally valid.

The WRR mode is used for queues 0-4 and their weights are 10, 10, 20, 20, and 40 respectively. The PQ mode is used for queues 5-7.

- (1) Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.
- (2) On the **System Parameter Profile** tab page, select the required OLT type from the **Device Type** drop-down list.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the name of the system parameter profile to **FTTx**. Choose **QoS > 802.1p PRI queue** and **QoS > Queue scheduler mode** from the **Parameters for Selection** navigation tree, click  to add the parameters to the **Selected Parameters** navigation tree, and then click **Next**.

- (5) Choose **802.1p PRI queue** from the navigation tree and configure the mapping between queues and 802.1p priorities. It is recommended that you use the default values. Choose **Queue scheduler mode** from the navigation tree and configure the queue scheduling mode.
  - Queue scheduler mode: WRR
  - Queue0-weight: 10
  - Queue1-weight: 10
  - Queue2-weight: 20
  - Queue3-weight: 20
  - Queue4-weight: 40
- (6) Click **Finish**.
- (7) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (8) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure an MPLS VLAN**. For details, see [19.3.1 Configuring a VLAN](#).
  - (1) Choose **VLAN** from the navigation tree.
  - (2) In the informational list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 500
    - Type: Smart VLAN
  - (4) Click **Next**.
    - Click the **L3 Interface** tab and set the parameters.
      - Configure L3 Interface: selected
      - Management Status: UP
      - IP Address: 10.50.50.50 (next-hop IP address of the ingress node)
      - IP Mask: 255.255.255.0
    - Click the **Sub Port** tab and add upstream port 0/0/0 as the upstream port of the VLAN.
  - (5) Click **Done**.
5. **Configure the MPLS capability**. For details, see [22.3.3 Configuring the MPLS Capability](#).
  - (1) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > MPLS Configuration** from the shortcut menu.
  - (2) In the window that is displayed, click the **MPLS Capability Configuration** tab and set the parameters.
    - LSR ID: 5.5.5.5 (ID of the local LSR)
    - Enable MPLS: selected
    - Enable MPLS L2VPN: selected
  - (3) Click **Apply**.

- (4) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > MPLS TE Configuration** from the shortcut menu.
  - (5) On the **MPLS TE Capability Configuration** tab page, set the parameters.
    - Enable MPLS TE: selected
    - Enable CSPF: selected
    - Enable RSVP-TE: selected
  - (6) Click **Apply**.
6. **Configure an MPLS tunnel.** For details, see [22.3.4 Configuring an MPLS Tunnel](#).
- (1) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > Tunnel Configuration** from the shortcut menu.
  - (2) Click the **Tunnel Configuration** tab. In the information list, right-click and choose **Create** from the shortcut menu. In the dialog box that is displayed, set the parameters.

On the **Basic** tab page, set the parameters as follows:

    - Tunnel Name: Tunnel10
    - Tunnel ID: 10
    - Encap. Protocol: MPLS TE
    - Destination: 30.30.30.30 (The destination address of the tunnel is the sink LSR ID of the tunnel. If there are no other LSRs between the MA5612 and the PTN NE, the destination address is the LSR ID of the PTN NE.)
    - Signal Protocol: RSVP TE

On the **Application** tab page, select **Reserved for binding**.
  - (3) Click **OK**.
7. **Configure a PW profile.** For details, see [22.3.6 Configuring a PW Profile](#).
- (1) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > PW Template Configuration** from the shortcut menu.
  - (2) On the tab page that is displayed, right-click and choose **Create** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: pwt
    - Control Word: control-word
    - Tunnel Policy: Tunnel10
    - Peer IP Address: 30.30.30.30 (LSR ID of the PTN NE)
    - Rtp Header Enable: selected
    - PW Type: Tdm Satop
    - Load Time: 125
  - (4) Click **OK**.
8. **Configure the PWE3.** For details, see [22.3.8 Configuring the PWE3](#) and [22.3.7 Adding a TDM VCL](#).

- (1) Choose **PW Management** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - PW ID: 1
  - Name: pw1
  - PW Type: TDM
  - PW Profile: pwt
  - Port Type: GPON
  - Port: 0/2/0
  - Deployment Status: Deploy
  - Signal Protocol: static
  - In Label: 8848
  - Out Label: 8849
  - In the **Please Select AC:TDM Connection** area, right-click and choose **Add** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - ID: 1
    - CSPA Board: **Frame: 00** and **Slot: 06** are selected
    - GPON Port: **Frame: 00, Slot: 02, Port: 00, ONT: 01, and GEM Port: 01** are selected
- (4) Click **OK**.

----End

## 22.5.5 Configuring the ETH PWE3 Private Line Access Service

In this configuration example, the MA5612 is connected to a 2G or 3G base transceiver station (BIS) through an Ethernet port to carry Ethernet services over an xPON network. This topic considers a GPON network as an example.

### Example Network

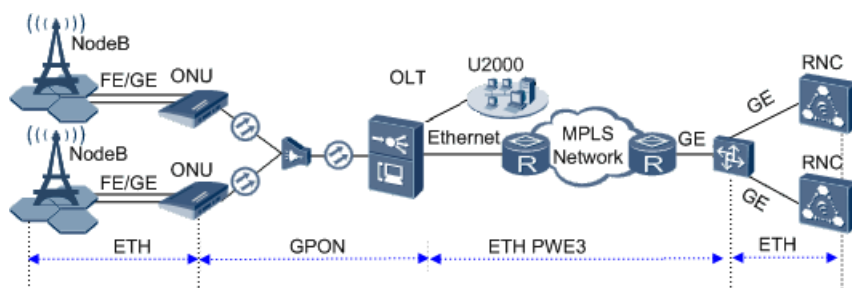
For details of the data plan, see [22.5.1 Data Plan for xPON Private Line Access Services](#).

If you need to configure Ethernet clock synchronization of the entire network, see [22.4.2 Configuring Ethernet Clock Synchronization](#).

If you need to configure BITS clock synchronization of the entire network, see [22.4.3 Configuring BITS Clock Synchronization](#).

If you need to configure IEEE 1588v2 clock synchronization of the entire network, see [22.4.4 Configuring IEEE 1588v2 Clock Synchronization](#).

**Figure 22-4** Configuring the ETH PWE3 private line access service



**NOTE**

The MA5612 receives the Ethernet service data from the 3G BTS through an Ethernet port, encapsulates the Ethernet service packets into GEM frames, and then sends them to the OLT through a GPON upstream port. The OLT restores the Ethernet signals, starts the ETH PWE3, and then sends the Ethernet signals to the MPLS network and peer PTN NE through an Ethernet port. Finally, the PTN NE terminates the emulation data and restores the Ethernet signals.

## Procedure



- **Add the MA5612 to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).

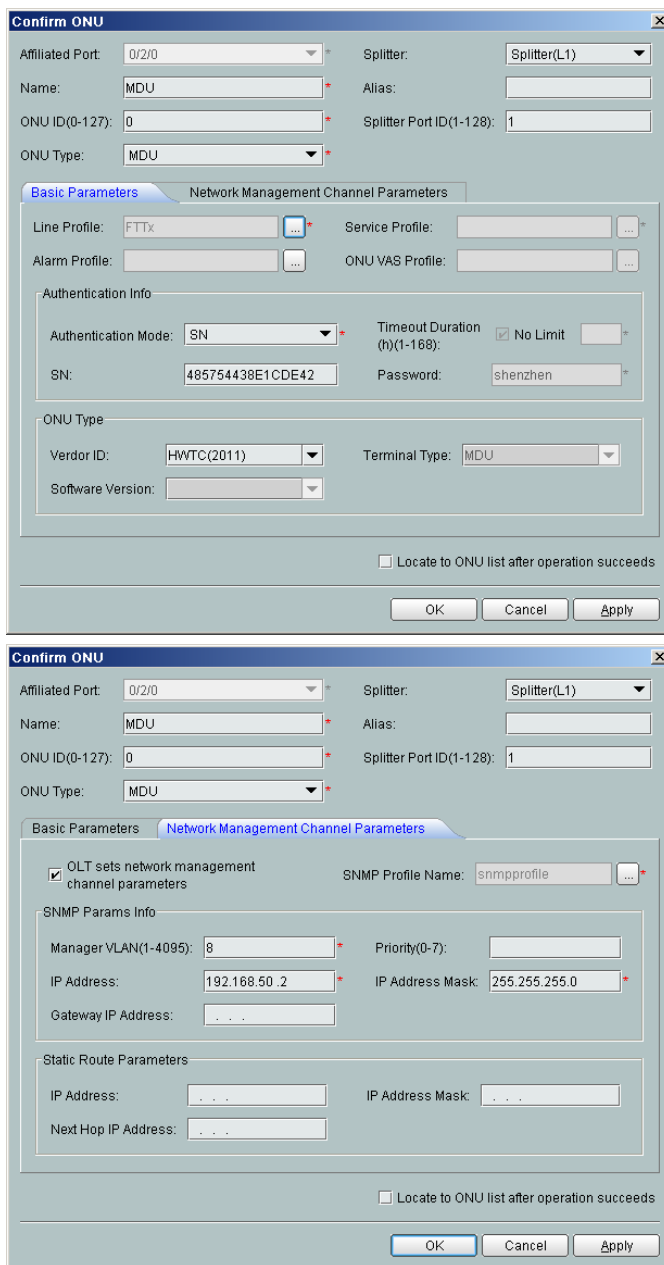
A management VLAN is the VLAN through which an OLT manages an MDU. The OLT manages the MDU by using the SNMP protocol. The IP address of the L3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

    - (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
    - (2) Choose **VLAN** from the navigation tree.
    - (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - VLAN ID: 4000
      - Type: Smart VLAN
    - (5) Click **Next**.
      - Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
    - (6) Click **Finish**.
  2. **Configure a DBA profile.** For details, see [19.1.2 Configuring a DBA Profile](#).
    - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
    - (2) Click the **DBA Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.



- Name: FTTx
  - T-CONT type: Fixed bandwidth
  - Fixed Bandwidth: 32768
  - Bandwidth Compensation: Yes
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile.** For details, see [20.1.1 Configuring a GPON Line Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **GPON Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
- Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue
  - Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - T-CONT Index: 1
    - DBA Profile: FTTx
  - Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Port Index: 1
    - Priority Queue: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 0 (default value)
    - VLAN ID: 4000 (management VLAN ID)
    - Priority: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 1 (default value)
    - VLAN ID: 500 (service VLAN ID)
    - Priority: 2
- (5) Click **OK**.

- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Confirm the MDU on the OLT side. For details, see 19.1.4 Confirming an MDU.**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - SN: 485754438E1CDE42
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected
      - SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
      - Manager VLAN: 8
      - IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
      - IP Address Mask: 255.255.255.0



- (6) Click **OK**.
5. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**
  - (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.

- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

- (7) Click **OK**.

- **Configure the ETH PWE3 private line access service on the OLT.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).
  - (1) Choose **VLAN** from the navigation tree.
  - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 500
    - Type: Smart VLAN
  - (4) Click **Next**. Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.

- (5) Click **Finish**.
2. **Add a service virtual port on the OLT.** For details, see [19.2.3 Adding a Service Port](#).
  - (1) On the **VLAN** tab page, select VLAN 1001 and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: tdmpwe3
    - Connection Type: LAN-GPON
    - VLAN ID: 500
    - Interface Selection: 0/2/1/0/0
    - Service Type: Multi-Service VLAN
    - User VLAN: 500
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name/Downstream Traffic Name: ip-traffic-table\_6 (It is recommended that you use the default profile ip-traffic-table\_6.)
  - (4) Click **OK**.
3. **Set queue scheduling parameters.** For details, see [21.2.1 Setting Queue Scheduling Parameters](#).

You need to set the queue scheduling parameters on the OLT only once. Then, the parameters are globally valid.

The WRR mode is used for queues 0-4 and their weights are 10, 10, 20, 20, and 40 respectively. The PQ mode is used for queues 5-7.

- (1) Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.
- (2) On the **System Parameter Profile** tab page, select the required OLT type from the **Device Type** drop-down list.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the name of the system parameter profile to **FTTx**. Choose **QoS > 802.1p PRI queue** and **QoS > Queue scheduler mode** from the **Parameters for Selection** navigation tree, click  to add the parameters to the **Selected Parameters** navigation tree, and then click **Next**.
- (5) Choose **802.1p PRI queue** from the navigation tree and configure the mapping between queues and 802.1p priorities. It is recommended that you use the default values. Choose **Queue scheduler mode** from the navigation tree and configure the queue scheduling mode.
  - Queue scheduler mode: WRR
  - Queue0-weight: 10
  - Queue1-weight: 10
  - Queue2-weight: 20
  - Queue3-weight: 20
  - Queue4-weight: 40

- (6) Click **Finish**.
- (7) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (8) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure an MPLS VLAN.** For details, see [19.3.1 Configuring a VLAN](#).
  - (1) Choose **VLAN** from the navigation tree.
  - (2) In the informational list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 500
    - Type: Smart VLAN
  - (4) Click **Next**.
    - Click the **L3 Interface** tab and set the parameters.
      - Configure L3 Interface: selected
      - Management Status: UP
      - IP Address: 10.50.50.50 (next-hop IP address of the ingress node)
      - IP Mask: 255.255.255.0
    - Click the **Sub Port** tab and add upstream port 0/0/0 as the upstream port of the VLAN.
  - (5) Click **Done**.
5. **Configure the MPLS capability.** For details, see [22.3.3 Configuring the MPLS Capability](#).
  - (1) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > MPLS Configuration** from the shortcut menu.
  - (2) In the window that is displayed, click the **MPLS Capability Configuration** tab and set the parameters.
    - LSR ID: 5.5.5.5 (ID of the local LSR)
    - Enable MPLS: selected
    - Enable MPLS L2VPN: selected
  - (3) Click **Apply**.
  - (4) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > MPLS TE Configuration** from the shortcut menu.
  - (5) On the **MPLS TE Capability Configuration** tab page, set the parameters.
    - Enable MPLS TE: selected
    - Enable CSPF: selected
    - Enable RSVP-TE: selected
  - (6) Click **Apply**.
6. **Configure an MPLS tunnel.** For details, see [22.3.4 Configuring an MPLS Tunnel](#).

- (1) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > Tunnel Configuration** from the shortcut menu.
  - (2) Click the **Tunnel Configuration** tab. In the information list, right-click and choose **Create** from the shortcut menu. In the dialog box that is displayed, set the parameters.  
On the **Basic** tab page, set the parameters as follows:
    - Tunnel Name: Tunnel10
    - Tunnel ID: 10
    - Encap. Protocol: MPLS TE
    - Destination: 30.30.30.30 (The destination address of the tunnel is the sink LSR ID of the tunnel. If there are no other LSRs between the MA5612 and the PTN NE, the destination address is the LSR ID of the PTN NE.)
    - Signal Protocol: RSVP TEOn the **Application** tab page, select **Reserved for binding**.
  - (3) Click **OK**.
7. **Configure a PW profile.** For details, see [22.3.6 Configuring a PW Profile](#).
- (1) In the Main Topology, right-click the required NE in the **Physical Root** navigation tree and choose **MPLS Management > PW Template Configuration** from the shortcut menu.
  - (2) On the tab page that is displayed, right-click and choose **Create** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: pwt
    - Tunnel Policy: Tunnel10
    - Peer IP Address: 30.30.30.30 (LSR ID of the PTN NE)
    - PW Type: Ethernet Tagged
  - (4) Click **OK**.
8. **Configure the PWE3.** For details, see [22.3.8 Configuring the PWE3](#) and [22.3.7 Adding a TDM VCL](#).
- (1) Choose **PW Management** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - PW ID: 1
    - Name: pw1
    - PW Type: ETH
    - PW Profile: pwt
    - Deployment Status: Deploy
    - Signal Protocol: static
    - In Label: 8848
    - Out Label: 8849
    - Please Select AC:VLAN: VLAN 500 selected

- (4) Click **OK**.
- **Configure the ETH PWE3 private line access service on the ONU.**
  1. **Add an Ethernet access service VLAN.** For details, see [19.3.1 Configuring a VLAN](#).
    - (1) Choose **VLAN** from the navigation tree.
    - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - VLAN ID: 800
      - Type: Smart VLAN
    - (4) Click **Finish**.
  2. **Add a service virtual port on the ONU.** For details, see [19.2.3 Adding a Service Port](#).
    - (1) On the **VLAN** tab page, select VLAN 500 and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: FTTM
      - Connection Type: LAN-ETHER
      - VLAN Choice: Smart VLAN
      - VLAN ID: 800 (service VLAN ID)
      - Interface Selection: 0/4/0
      - Service Type: Multi-Service VLAN
      - User VLAN: 20
      - Keep the upstream and downstream settings the same: selected
      - Upstream Traffic Name/Downstream Traffic Name: ip-traffic-table\_6
    - (4) Click **OK**.

---End

## 22.5.6 Configuring the QinQ Private-Line Private Line Access Service

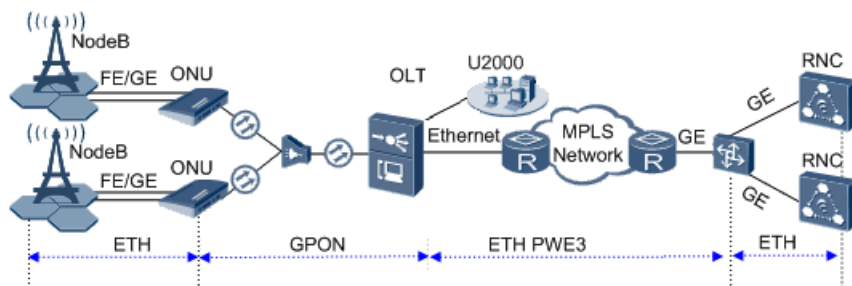
In this configuration example, the MA5612 is connected to an IP base transceiver station (BIS) through an FE or a GE port and the OLT transmits QinQ private line services to Metro equipment to implement the private line access service. This topic considers a GPON network as an example.

### Example Network

For details of the data plan, see [22.5.1 Data Plan for xPON Private Line Access Services](#).



**Figure 22-5** Configuring the QinQ private-line private line access service



**NOTE**

The MA5612 receives the Ethernet service data from the 3G BTS through an FE or a GE port, encapsulates the Ethernet service packets into GEM frames, and then sends them to the OLT through a GPON upstream port. The OLT restores the Ethernet signals and configures the QinQ VLAN encapsulation mode so that the BTS data can be transparently transmitted to the peer PTN NE through the public network. Finally, the PTN NE restores the original Ethernet signals.



**Procedure**

- **Add the MA5612 to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).
 

A management VLAN is the VLAN through which an OLT manages an MDU. The OLT manages the MDU by using the SNMP protocol. The IP address of the L3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

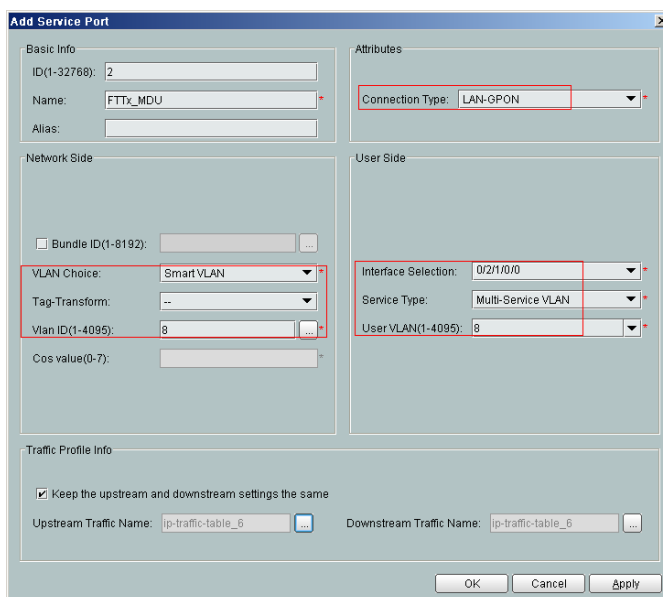
    - (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
    - (2) Choose **VLAN** from the navigation tree.
    - (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - VLAN ID: 4000
      - Type: Smart VLAN
    - (5) Click **Next**.
      - Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
    - (6) Click **Finish**.
  2. **Configure a DBA profile.** For details, see [19.1.2 Configuring a DBA Profile](#).
    - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
    - (2) Click the **DBA Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.

- Name: FTTx
  - T-CONT type: Fixed bandwidth
  - Fixed Bandwidth: 32768
  - Bandwidth Compensation: Yes
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile.** For details, see [20.1.1 Configuring a GPON Line Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **GPON Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
- Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue
  - Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - T-CONT Index: 1
    - DBA Profile: FTTx
  - Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Port Index: 1
    - Priority Queue: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 0 (default value)
    - VLAN ID: 4000 (management VLAN ID)
    - Priority: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 1 (default value)
    - VLAN ID: 500 (service VLAN ID)
    - Priority: 2
- (5) Click **OK**.

- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Confirm the MDU on the OLT side. For details, see 19.1.4 Confirming an MDU.**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - SN: 485754438E1CDE42
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected
      - SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
      - Manager VLAN: 8
      - IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
      - IP Address Mask: 255.255.255.0

- (6) Click **OK**.
5. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**
  - (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.

- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

- **Configure the QinQ private-line private line access service on the OLT.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 500
  - Type: Smart VLAN
- (4) Click **Next**. Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.

- (5) Click **Finish**.
2. **Add a service virtual port on the OLT.** For details, see [19.2.3 Adding a Service Port](#).
  - (1) On the **VLAN** tab page, select VLAN 1001 and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: tdmpe3
    - Connection Type: LAN-GPON
    - VLAN ID: 500
    - Interface Selection: 0/2/1/0/0
    - Service Type: Multi-Service VLAN
    - User VLAN: 500
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name/Downstream Traffic Name: ip-traffic-table\_6 (It is recommended that you use the default profile ip-traffic-table\_6.)
  - (4) Click **OK**.
- **Configure the QinQ private-line private line access service on the ONU.**
  1. **Add a service VLAN.** For details, see [19.3.1 Configuring a VLAN](#).
    - 📖 **NOTE**
      - If the MA5612 transparently transmits BTS data, the service VLAN is the same as the VLAN of the BTS.
      - If the MA5612 adds a VLAN tag to BTS data, the service VLAN is different from the VLAN of the BTS.
      - The service VLAN of the MA5612 must be the same as the user-side VLAN on the OLT.
    - (1) Choose **VLAN** from the navigation tree.
    - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - VLAN ID: 800
      - Type: Smart VLAN
    - (4) Click **Next**.
    - (5) Click the **Upstream Port** tab and add upstream port 0/0/0 as the upstream port of the VLAN.
    - (6) Click **Finish**.
  2. **Add a service virtual port on the ONU.** For details, see [19.2.3 Adding a Service Port](#).
    - (1) On the **VLAN** tab page, select VLAN 500 and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: FTTM
      - Connection Type: LAN-ETHER

- Interface Selection: 0/4/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 20
  - VLAN Choice: Transparent VLAN (BTS packets received by the Ethernet port are transparently transmitted to the OLT)
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name/Downstream Traffic Name: ip-traffic-table\_4
- (4) Click **OK**.

----End

## 22.5.7 Data Plan for xPON FTTO Services

This topic provides the data plan for the configuration examples of xPON FTTO services. You can configure the services according to the data plan.

### Data Plan

**Table 22-3** xPON FTTO services - device management

| Service Type      | Item                    | Settings                                                                                                                                                                                                                                                                                   | Remarks |
|-------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Device management | Upstream port of an OLT | 0/19/0                                                                                                                                                                                                                                                                                     | -       |
|                   | Management VLAN         | <ul style="list-style-type: none"> <li>● VLAN ID: 4000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                              | -       |
|                   | MDU                     | <ul style="list-style-type: none"> <li>● Name: MDU</li> <li>● ONU Type: MDU</li> <li>● ONU ID: 0</li> <li>● Authentication Mode: SN</li> <li>● SN: 32303131B39FD641</li> <li>● Manager VLAN: 4000</li> <li>● IP Address: 192.168.50.2</li> <li>● IP Address Mask: 255.255.255.0</li> </ul> | -       |
|                   | DBA profile             | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● T-CONT type: Fixed Bandwidth</li> <li>● Fixed Bandwidth: 32768</li> <li>● Bandwidth Compensation: Yes</li> </ul>                                                                                                            | -       |

| Service Type | Item                                                   | Settings                                                                                                                                                                                                                                                                            | Remarks |
|--------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | MDU SNMP profile                                       | <ul style="list-style-type: none"> <li>● Name: snmpprofile</li> <li>● SNMP Version: v1</li> <li>● Read Name: public</li> <li>● Write Name: private</li> <li>● Trap Host IP: 192.168.50.3</li> <li>● Trap UDP Port: 162</li> <li>● SNMP Security Name: public</li> </ul>             | -       |
|              | Line profile                                           | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Mapping Mode: VLAN</li> <li>● Qos Mode: Priority Queue</li> <li>● T-CONT Index: 1</li> <li>● DBA Profile: FTTx</li> <li>● GEM Port Index: 1, 2</li> <li>● Priority Queue: 1</li> <li>● VLAN ID: 4000, 500</li> </ul> | -       |
|              | Service virtual port<br>(based on the management VLAN) | <ul style="list-style-type: none"> <li>● VLAN ID: 4000</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 4000</li> </ul>                                                                                                  | -       |

**Table 22-4** GPON FTTO services - router access service of an enterprise

| Service Type   | Item         | Settings                                                                                                                | Remarks |
|----------------|--------------|-------------------------------------------------------------------------------------------------------------------------|---------|
| Data of an OLT | Service VLAN | <ul style="list-style-type: none"> <li>● VLAN ID: 500</li> <li>● Type: Smart VLAN</li> <li>● Attribute: QinQ</li> </ul> | -       |



| Service Type       | Item                  | Settings                                                                                                                                                                                                                                                                                                                                                                                | Remarks |
|--------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                    | Service Port          | <ul style="list-style-type: none"> <li>● Name: intranet</li> <li>● Connection Type: LAN-GPON</li> <li>● VLAN ID: 500</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 500</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream/Downstream Traffic Name: ip-traffic-table_6</li> </ul> | -       |
|                    | Queue scheduling mode | <ul style="list-style-type: none"> <li>● Queue scheduler mode: WRR</li> <li>● Queue0-weight: 10</li> <li>● Queue1-weight: 10</li> <li>● Queue2-weight: 20</li> <li>● Queue3-weight: 20</li> <li>● Queue4-weight: 40</li> </ul>                                                                                                                                                          | -       |
| Data of the MA5612 | GPON upstream port    | 0/0/0                                                                                                                                                                                                                                                                                                                                                                                   | -       |
|                    | VLAN service profile  | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Enable BPDU Tunnel: selected</li> </ul>                                                                                                                                                                                                                                                                                  | -       |
|                    | Service VLAN          | <ul style="list-style-type: none"> <li>● VLAN ID: 500</li> <li>● Type: Smart VLAN</li> <li>● Attribute: QinQ</li> </ul>                                                                                                                                                                                                                                                                 | -       |

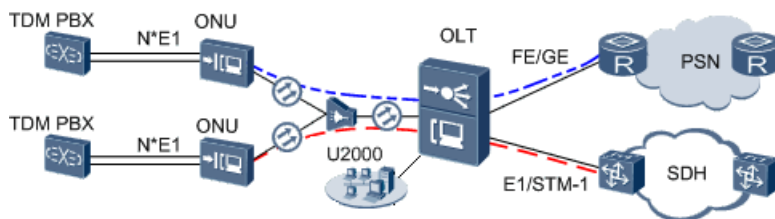
| Service Type | Item         | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Remarks |
|--------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | Service Port | <ul style="list-style-type: none"> <li>● Name: intranet1</li> <li>● Connection Type: LAN-ETHER</li> <li>● VLAN ID: 500</li> <li>● Interface Selection: 0/4/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 50</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream/Downstream Traffic Name: ip-traffic-table_6</li> <li>● Name: intranet2</li> <li>● Connection Type: LAN-ETHER</li> <li>● VLAN ID: 500</li> <li>● Interface Selection: 0/4/1</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 60</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream/Downstream Traffic Name: ip-traffic-table_6</li> </ul> | -       |

## 22.5.8 Configuring the TDM PBX Access Service

In this configuration example, the MA5612 is connected to the TDM PBX of an enterprise through an E1 port and the OLT transmits signals upstream to the SDH or PSN network.

### Example Network

Figure 22-6 Configuring the TDM PBX access service



 **NOTE**

The MA5612 is connected to the TDM PBX of the enterprise through an E1 port and then is connected to the OLT through a GPON upstream port. The OLT provides E1 or STM-1 ports to transmit the TDM service to the SDH or PSN network.

The TDM PBX access service can be transmitted upstream to the SDH or PSN network. In these two networking scenarios, service configurations are different.

## Procedure

- The MA5612 is connected to the PBX and the OLT transmits the service upstream to the SDH network through an E1 or STM-1 port. For details about the configuration, see [22.5.2 Configuring the TDM PWE3 Private Line Access Service \(Based on the SDH Network\)](#).

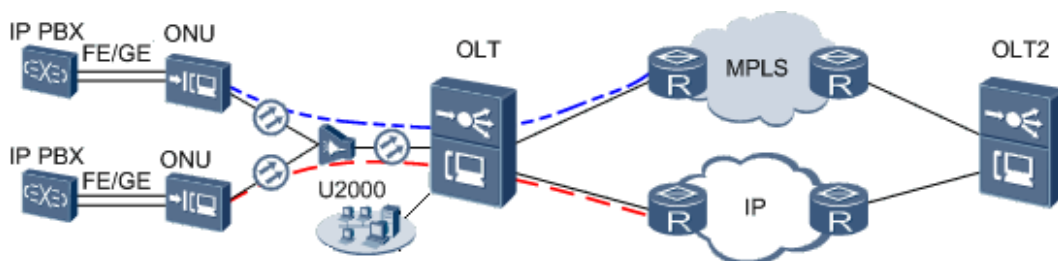
---End

## 22.5.9 Configuring the IP PBX Access Service

In this configuration example, the MA5612 is connected to the IP PBX of an enterprise through an FE or a GE port and the OLT transmits signals upstream to the PSN network.

### Example Network

**Figure 22-7** Configuring the IP PBX access service



 **NOTE**

The MA5612 is connected to the IP PBX of the enterprise through an FE or a GE port and then connected to the OLT through a GPON upstream port. The OLT transmits signals upstream to the IP or MPLS network.

The IP PBX access service can be transmitted upstream to the IP or MPLS network. In these two networking scenarios, service configurations are different.

IP PBX is an IP network-based company telephone system. It can integrate voice communication into the data network of a company, thereby setting up an integrated voice and data network that connects all offices and employees in different areas in the world. For example, the SoftCo series IP voice integrated switch of Huawei can function as a mini NGN system and an IP PBX.

## Procedure

- The MA5612 is connected to the IP PBX and the OLT transmits data transparently to the IP network through a QinQ VLAN. For details about the configuration, see [22.5.10 Configuring the Router Access Service of an Enterprise](#).

- The MA5612 is connected to the IP PBX and the OLT transmits data transparently to the MPLS network through the ETH PWE3. For details about the configuration, see [22.5.5 Configuring the ETH PWE3 Private Line Access Service](#).

----End

## 22.5.10 Configuring the Router Access Service of an Enterprise

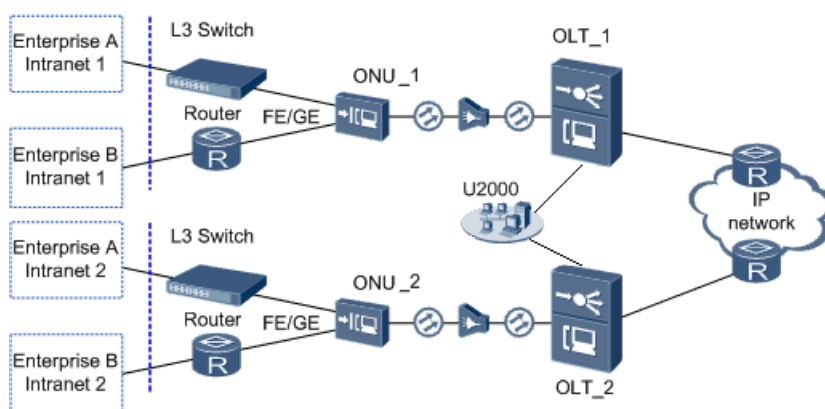
In this configuration example, the MA5612 is connected to the router or Layer 3 switch of an enterprise through an FE or a GE port and the OLT transmits signals upstream to the IP network.

### Context

For details of the data plan, see [22.5.7 Data Plan for xPON FTTO Services](#).

### Example Network

**Figure 22-8** Configuring the router access service of an enterprise



#### NOTE

The data on the enterprise intranet is transmitted to the MA5612 through a Layer 3 switch or router of the enterprise. Therefore, configure the QinQ VLAN private lines on both MA5612\_1 and MA5612\_2. Then, the service data and BPDU packets between enterprise intranets can be transmitted transparently over the public network. This provides a transparent and secure data channel for the enterprise intranets in different areas.


### Procedure

- **Add the MA5612 to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).

A management VLAN is the VLAN through which an OLT manages an MDU. The OLT manages the MDU by using the SNMP protocol. The IP address of the L3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **VLAN** from the navigation tree.
  - (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 4000
    - Type: Smart VLAN
  - (5) Click **Next**.
    - Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
  - (6) Click **Finish**.
2. **Configure a DBA profile.** For details, see [19.1.2 Configuring a DBA Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - T-CONT type: Fixed bandwidth
    - Fixed Bandwidth: 32768
    - Bandwidth Compensation: Yes
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile.** For details, see [20.1.1 Configuring a GPON Line Profile](#).
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
  - (2) Click the **GPON Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info.** from the navigation tree and set the parameters.
      - Mapping Mode: VLAN
      - Qos Mode: Priority Queue
    - Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
      - T-CONT Index: 1
      - DBA Profile: FTTx

- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Port Index: 1
    - Priority Queue: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 0 (default value)
    - VLAN ID: 4000 (management VLAN ID)
    - Priority: 1
  - Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameters.
    - GEM Connection Index: 1 (default value)
    - VLAN ID: 500 (service VLAN ID)
    - Priority: 2
- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
- (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
- Name: MDU
  - ONU ID: 0
  - ONU Type: MDU
  - On the **Basic Parameters** tab page, set the parameters.
    - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
    - Authentication Mode: SN
    - SN: 485754438E1CDE42
  - On the **Network Management Channel Parameters** tab page, set the parameters.

- OLT sets network management channel parameters: selected
- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

(6) Click **OK**.

5. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

- (7) Click **OK**.

- **Configure the router access service of the enterprise on the OLT.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.


1. **Configure a service VLAN on the OLT.** For details, see [19.1.5 Configuring a VLAN](#).



- (1) Choose **VLAN** from the navigation tree.
  - (2) In the informational list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 500
    - Type: Smart VLAN
    - Attribute: QinQ
  - (4) Click **Next**. Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
  - (5) Click **Finish**.
2. **Add a service virtual port on the OLT.** For details, see [19.2.3 Adding a Service Port](#).
- (1) On the **VLAN** tab page, select VLAN 500 and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: intranet
    - Connection Type: LAN-GPON
    - VLAN ID: 500 (service VLAN ID)
    - Interface Selection: 0/2/1/0/0
    - Service Type: Multi-Service VLAN
    - User VLAN: 500 (service VLAN ID of the ONU)
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name/Downstream Traffic Name: ip-traffic-table\_6 (The OLT does not restrict the rate of service streams in the management VLAN. Therefore, it is recommended that you use the default profile ip-traffic-table\_6.)
  - (4) Click **OK**.
3. **Set queue scheduling parameters.** For details, see [21.2.1 Setting Queue Scheduling Parameters](#).

You need to set the queue scheduling parameters on the OLT only once. Then, the parameters are globally valid.

The WRR mode is used for queues 0-4 and their weights are 10, 10, 20, 20, and 40 respectively. The PQ mode is used for queues 5-7.

- (1) Choose **Configuration > Access Profile Management > System Parameter Profile** from the main menu.
- (2) On the **System Parameter Profile** tab page, select the required OLT type from the **Device Type** drop-down list.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the name of the system parameter profile to **FTTx**. Choose **QoS > 802.1p PRI queue** and **QoS > Queue scheduler mode** from the **Parameters for Selection** navigation tree, click  to add the parameters to the **Selected Parameters** navigation tree, and then click **Next**.

- (5) Choose **802.1p PRI queue** from the navigation tree and configure the mapping between queues and 802.1p priorities. It is recommended that you use the default values. Choose **Queue scheduler mode** from the navigation tree and configure the queue scheduling mode.
    - Queue scheduler mode: WRR
    - Queue0-weight: 10
    - Queue1-weight: 10
    - Queue2-weight: 20
    - Queue3-weight: 20
    - Queue4-weight: 40
  - (6) Click **Finish**.
  - (7) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (8) In the dialog box that is displayed, select the required NE(s), and click **OK**.
- **Configure the router access service of the enterprise on the ONU.**

This section considers MA5612\_1 as an example to describe how to configure the router access service of the enterprise on the ONU. The configuration process on MA5612\_2 is similar to the configuration process on MA5612\_1.

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a VLAN service profile.** For details, see [21.2.2 Configuring a VLAN Service Profile](#).
  - (1) Choose **Configuration > Access Profile Management > VLAN Service Profile** from the main menu.
  - (2) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Enable BPDU Tunnel: selected
  - (4) Click **OK**.
  - (5) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (6) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a service VLAN on the ONU.** For details, see [19.1.5 Configuring a VLAN](#).
  - (1) Choose **VLAN** from the navigation tree.
  - (2) In the informational list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 500
    - Type: Smart VLAN
    - Attribute: QinQ

- (4) Click **Next**.
  - Click the **Sub Port** tab and add upstream port 0/0/0 as the upstream port of the VLAN.
  - Click the **Extended Info** tab and select the VLAN service profile named FTTx.
- (5) Click **Finish**.
3. **Add a service virtual port on the ONU.** For details, see [19.2.3 Adding a Service Port](#).
  - (1) On the **VLAN** tab page, select VLAN 500 and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: intranet1
    - Connection Type: LAN-ETHER
    - VLAN ID: 500 (service VLAN ID)
    - Interface Selection: 0/4/0 (GE port through which the router or Layer 3 switch of enterprise A is connected to the MA5612)
    - Service Type: Multi-Service VLAN
    - User VLAN: 50 (VLAN tag carried in the packets on the intranet of enterprise A)
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name/Downstream Traffic Name: ip-traffic-table\_6 (The OLT does not restrict the rate of service streams in the management VLAN. Therefore, it is recommended that you use the default profile ip-traffic-table\_6.)
  - (4) Click **OK**.
  - (5) Repeat the preceding operations to add another service virtual port.
    - Name: intranet2
    - Connection Type: LAN-ETHER
    - VLAN ID: 500 (service VLAN ID)
    - Interface Selection: 0/4/1 (GE port through which the router or Layer 3 switch of enterprise B is connected to the MA5612)
    - Service Type: Multi-Service VLAN
    - User VLAN: 60 (VLAN tag carried in the packets on the intranet of enterprise B)
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name/Downstream Traffic Name: ip-traffic-table\_6 (The OLT does not restrict the rate of service streams in the management VLAN. Therefore, it is recommended that you use the default profile ip-traffic-table\_6.)

----End

## Result

The communications between intranets in two different areas are successful, implementing various services between the intranets.

# 23 Configuring the EPON FTTB Services

---

## About This Chapter

An FTTB network consisting of an OLT and a number of MDUs provides users with Internet, multicast, and voice services.

### [23.1 Adding an MDU to the U2000 \(OLT in Profile Mode\)](#)

This topic describes how to add an MDU to the U2000 when the OLT is in the profile mode. After an MDU is added successfully, you can configure FTTB services for the MDU on the U2000.

### [23.2 Configuring Services on the OLT](#)

An FTTB network consisting of OLTs and MDUs provides users with Internet services, multicast services, and voice services.

### [23.3 Configuring Services on the MDU](#)

An FTTB network consisting of OLTs and MDUs provides users with Internet services, multicast services, and voice services.

### [23.4 Configuration Examples of the EPON FTTB Services](#)

This topic provides examples to describe how to configure the Internet, voice, and multicast services in an EPON FTTB network.

## 23.1 Adding an MDU to the U2000 (OLT in Profile Mode)

This topic describes how to add an MDU to the U2000 when the OLT is in the profile mode. After an MDU is added successfully, you can configure FTTB services for the MDU on the U2000.

### Context

After an MDU is added on the NE side, it supports online confirmation and offline deployment. The information about the profile bound to an MDU and the authentication information on the U2000 must be the same as those configured for the actual MDU on the user side.

- Online confirmation: If you add an MDU after the MDU is powered on, it goes online immediately. This topic considers MDU online confirmation as an example.
- Offline deployment: If an MDU is not online, you need to add it offline and configure services for the MDU. After the MDU goes online, the configuration is applied to the MDU through the optical network termination management and control interface (OMCI). Then, service configuration for the MDU is complete.

#### 23.1.1 Configuring an MDU SNMP Profile

The MDU Simple Network Management Protocol (SNMP) profile is a collection of SNMP parameters. You can configure the information about an MDU management channel to OLT to implement the remote deployment and maintenance for the MDU.

#### 23.1.2 Configuring a DBA Profile

An EPON DBA profile contains the traffic parameters of LLID. DBA is used to control the upstream bandwidth of ONU services. A DBA profile is bound with an LLID, and different bandwidth assurance types are provided based on different LLID plans. After an EPON DBA profile is configured and bound with an LLID, the system controls the traffic of the LLID according to the traffic parameters contained in the DBA profile. This provides flexible schemes for dynamic bandwidth allocation and improves the usage of upstream bandwidth.

#### 23.1.3 Configuring a Line Profile

An EPON line profile contains the parameters relevant to the EPON line. The parameters are required for setting up channels for the EPON line.

#### 23.1.4 Confirming an MDU

This topic describes how to confirm an automatically discovered ONU connected to an EPON port. Only after the ONU is confirmed, it can work in the normal state.

#### 23.1.5 Configuring a VLAN

The MDU is connected to the xPON port of the OLT through an optical fiber. You can perform the service configuration only after adding an MDU successfully on the OLT. To configure the MDU from the U2000, you must configure the inband management VLAN and IP address for the OLT and the MDU on the OLT.

#### 23.1.6 Adding a Service Virtual Port

After an ONU is successfully added, the control channel is already set up but the data channel is not set up. In this case, you need to add a service virtual port on the OLT to manage ONU data.

#### 23.1.7 Verifying the Interoperability Between an OLT and an MDU

After configuring the relevant parameters on the U2000, you need to verify whether an ONU can be managed and maintained on the U2000.

## 23.1.1 Configuring an MDU SNMP Profile

The MDU Simple Network Management Protocol (SNMP) profile is a collection of SNMP parameters. You can configure the information about an MDU management channel to OLT to implement the remote deployment and maintenance for the MDU.

### Context

You can configure the SNMP parameter profile of the MDU on the U2000, and configure the information about an MDU management channel to the OLT. Then, the OLT manages the MDU through the SNMP mode so that the remote deployment and maintenance for the MDU can be implemented.

### Procedure

- 1 Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
- 2 Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.

| Key Parameter | Description                                                                                                                                                                                                                                                                       |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SNMP Version  | Ensure that the SNMP version of the U2000 server is the same as the corresponding SNMP version configured on the device.<br>Generally, the SNMP Version of the U2000 server is set to v1.                                                                                         |
| Trap Host IP  | Specifies the IP address of the destination device for traps. The trap packets of the device are sent to the U2000 server that maps the IP address.<br><b>NOTE</b><br>Generally, the IP address of the U2000 server is set to the IP address of the destination device for traps. |
| Trap UDP Port | Specifies the ID of the UDP port that is used to receive the traps that the device reports to the U2000.                                                                                                                                                                          |

- 4 Click **OK**.

- 5 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 6 In the dialog box that is displayed, select the required NE(s), and click **OK**.

 **NOTE**

The MDU SNMP profile that is generated by the U2000 can be referenced by the OLT only after the profile is applied to the corresponding OLT.

----End

## Command Reference

| To...                              | Run the Command... | In...              |
|------------------------------------|--------------------|--------------------|
| Add an MDU SNMP management profile | snmp-profile add   | Global config mode |

### 23.1.2 Configuring a DBA Profile

An EPON DBA profile contains the traffic parameters of LLID. DBA is used to control the upstream bandwidth of ONU services. A DBA profile is bound with an LLID, and different bandwidth assurance types are provided based on different LLID plans. After an EPON DBA profile is configured and bound with an LLID, the system controls the traffic of the LLID according to the traffic parameters contained in the DBA profile. This provides flexible schemes for dynamic bandwidth allocation and improves the usage of upstream bandwidth.

#### Context

The EPON DBA profile added through the U2000 exists only in the database of the U2000, but is not applied to the device. The EPON DBA profile can be created on the device only when the EPON DBA profile is bound with an LLID.

 **NOTE**

- The EPON DBA profiles with **Name** ranging from **dba-profile\_1** to **dba-profile\_9** are default profiles of the system. These profiles provide typical traffic parameters. You can query the default EPON DBA profiles but cannot modify or delete them.
- Usually, the services with higher priority use fixed bandwidth or assured bandwidth but the services with lower priority use maximum bandwidth or a combination of bandwidth assurance types.

#### Procedure

- 1 Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
- 2 Click the **DBA Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.



| Key Parameter                                                            | Description                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                                                                     | Indicates the name of the EPON DBA profile. It uniquely identifies an EPON DBA profile and cannot be the same as an existing profile name.                                                                                                              |
| DBA type                                                                 | Indicates the type of the EPON DBA profile. EPON DBA profiles are classified according to the bandwidth requirement of the services distinguished by LLIDs. You can configure bandwidth for different LLID types to control the traffic based on LLIDs. |
| Fixed bandwidth rate<br>Assured bandwidth rate<br>Maximum bandwidth rate | Usually, the services with higher priority use fixed bandwidth or assured bandwidth but the services with lower priority use maximum bandwidth. VoIP services have the highest priority.                                                                |

- 4 Click **OK**.
- End

## Command Reference

| To...                            | Run the Command...  | In...              |
|----------------------------------|---------------------|--------------------|
| Query DBA profiles in the system | display DBA-profile | Privilege mode     |
| Add a DBA profile                | DBA-profile add     | Global config mode |

### 23.1.3 Configuring a Line Profile

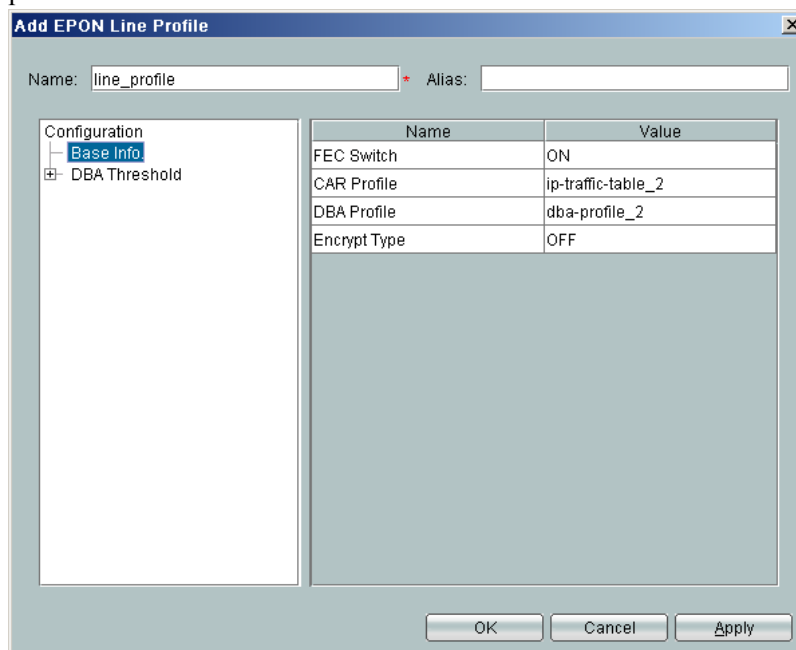
An EPON line profile contains the parameters relevant to the EPON line. The parameters are required for setting up channels for the EPON line.

## Prerequisite

The DBA profile must be already configured in the system. For details, see [23.1.2 Configuring a DBA Profile](#).

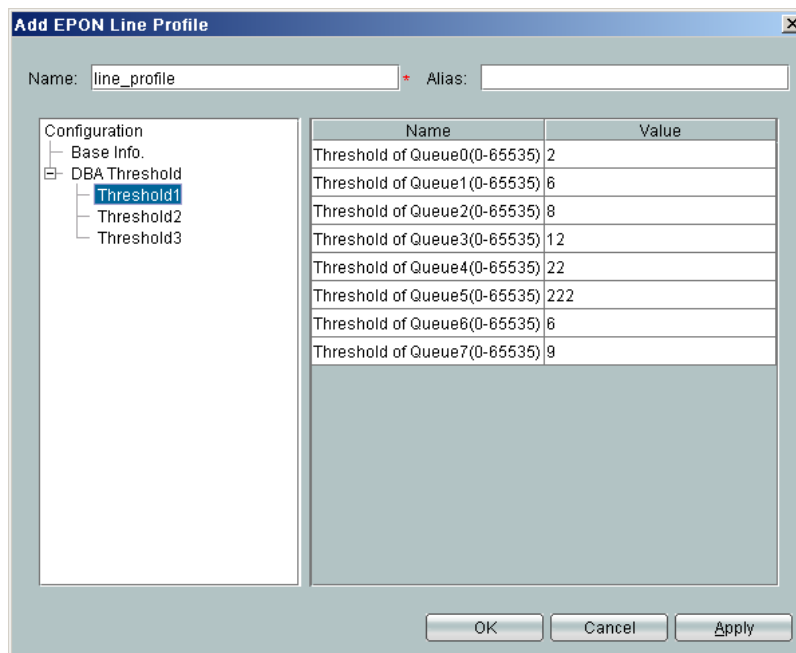
## Procedure

- 1 Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
- 2 Click the **EPON Line Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set **Name** and relevant parameters of the line profile.
  1. Choose **Base Info.** from the navigation tree and configure the basic parameters of the profile.



| Key Parameter | Description                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FEC Switch    | Indicates the status of upstream forward error correction (FEC) switch of the ONU line profile. To ensure the reliability of data transmission between the OLT and ONU, enable the FEC function. After the FEC function is enabled, the system inserts redundancy data into normal packets. In this way, the line has the error tolerance function, but certain bandwidth resources are wasted. |

2. Choose **DBA Threshold** from the navigation tree and set the relevant parameters.



- 4 Click **OK**.
- 5 In the information list, right-click a record and choose **Download to NE** from the shortcut menu.
- 6 In the dialog box that is displayed, select the required OLT, and click **OK**.

----End

## Command Reference

| To...                           | Run the Command...   | In...              |
|---------------------------------|----------------------|--------------------|
| Enter the ONU line profile mode | ONU-lineprofile EPON | Global config mode |

### 23.1.4 Confirming an MDU

This topic describes how to confirm an automatically discovered ONU connected to an EPON port. Only after the ONU is confirmed, it can work in the normal state.

#### Prerequisite


The Line profile must be already configured in the system. For details, see [23.1.3 Configuring a Line Profile](#).

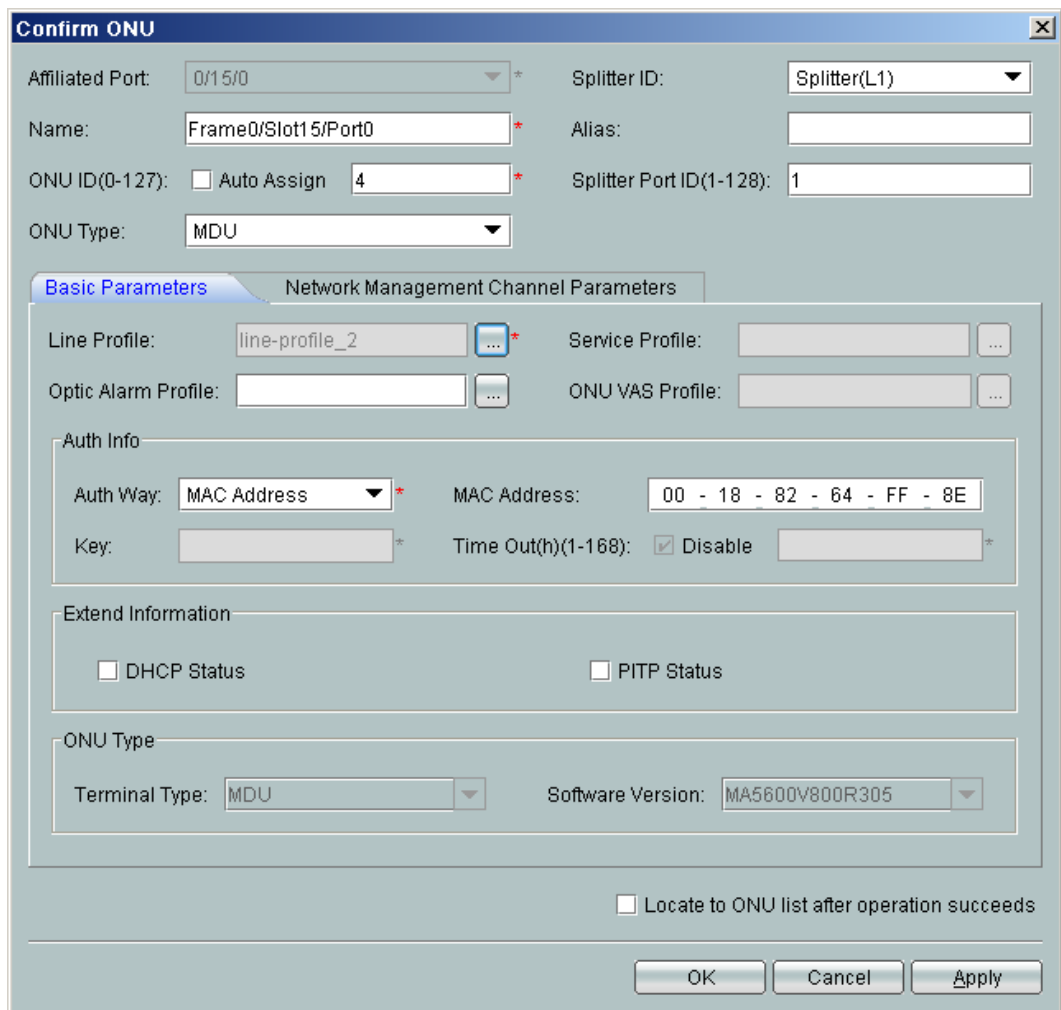
The MDU SNMP profile must be already configured in the system. For details, see [23.1.1 Configuring an MDU SNMP Profile](#).

#### Context

After the function of automatically discovering an ONU is enabled, the OLT periodically detects whether a new ONU is online. When an ONU is online, the OLT reports a group of information about the ONU to the U2000 for confirmation.

## Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **EPON > EPON UNI Port** from the navigation tree.
- 3 On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
- 4 Select the EPON UNI port for which you want to enable the function of automatically discovering an ONU, right-click and choose **Enable Auto Find ONU Switch** from the shortcut menu.
- 5 In the information list, select the required EPON UNI port and click the **AutoFind ONU Info.** tab in the lower pane.
- 6 In the information list, right-click an ONT to be confirmed and choose **Confirm ONU** from the shortcut menu.
- 7 In the dialog box that is displayed, set the basic parameters and NMS management channel parameters of the ONU, and then click **OK**.



The **Confirm ONU** dialog box is used to configure ONU parameters. It includes the following sections:

- Basic Parameters:**
  - Affiliated Port: 0/15/0 \*
  - Name: Frame0/Slot15/Port0 \*
  - ONU ID(0-127):  Auto Assign 4 \*
  - ONU Type: MDU
  - Splitter ID: Splitter(L1)
  - Alias: [Empty]
  - Splitter Port ID(1-128): 1
- Network Management Channel Parameters:**
  - Line Profile: line-profile\_2 \*
  - Service Profile: [Empty] ...
  - Optic Alarm Profile: [Empty] ...
  - ONU VAS Profile: [Empty] ...
- Auth Info:**
  - Auth Way: MAC Address \*
  - MAC Address: 00 - 18 - 82 - 64 - FF - 8E
  - Key: [Empty] \*
  - Time Out(h)(1-168):  Disable [Empty] \*
- Extend Information:**
  - DHCP Status
  - P1TP Status
- ONU Type:**
  - Terminal Type: MDU
  - Software Version: MA5600V800R305

At the bottom, there is a checkbox  **Locate to ONU list after operation succeeds** and three buttons: **OK**, **Cancel**, and **Apply**.

| Key Parameter   | Description                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ONU ID          | Indicates the ID that identifies an ONU. Usually, it starts from 0.                                                                                                                                                                                                                                                                                                                                                                       |
| ONU Type        | Specifies MDUs.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Line Profile    | Indicates the line profile bound to the port to which the ONU belongs. You can bind a port with the line profile. When the port is activated, it can reference the profile. According to the upstream and downstream line rates and the noise tolerance set in the profile, the port detects the line distance and line status, negotiates between the local and remote devices, and determines whether it can work under the conditions. |
| Service Profile | Indicates the service profile bound to the ONU. A service profile contains the parameters relevant to the ONU service.<br>For FTTB services, a service profile is not required.                                                                                                                                                                                                                                                           |
| Auth Way        | Indicates the mode used when the OLT authenticates an ONU. By default, the EPON ONU uses the SN-based authentication mode.                                                                                                                                                                                                                                                                                                                |

When you add an ONU in the SNMP management mode, the management mode and line profile are mandatory. When you add an ONU in the OAM management mode, the parameters of management mode, line profile, and service profile are mandatory.

----End


## Command Reference

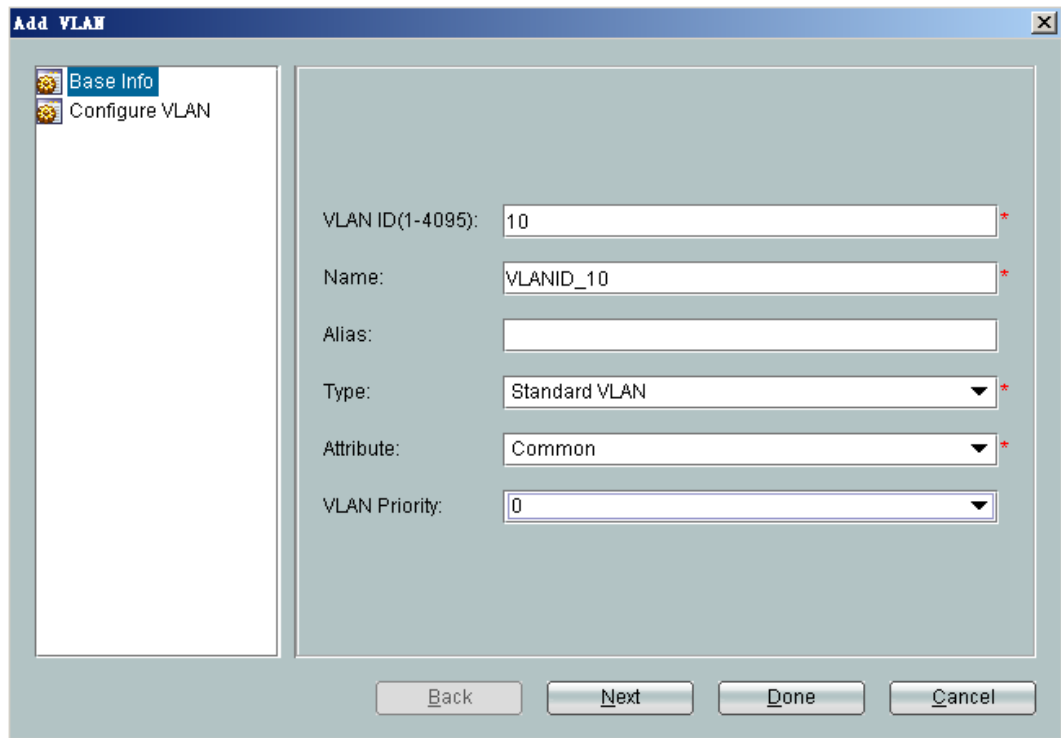
| To...                                                                                                      | Run the Command...   | In...                     |
|------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| Confirm an ONU in the auto-discovery state                                                                 | ont confirm          | EPON mode                 |
| Enter the EPON mode from the global config mode                                                            | interface EPON       | Global config mode        |
| Enable the function of auto-discovery ONU                                                                  | ont-auto-find enable | EPON mode                 |
| Query the current ONUs automatically discovered or time for automatically discovering ONUs from the system | display ont autofind | Privilege mode, EPON mode |

### 23.1.5 Configuring a VLAN

The MDU is connected to the xPON port of the OLT through an optical fiber. You can perform the service configuration only after adding an MDU successfully on the OLT. To configure the MDU from the U2000, you must configure the inband management VLAN and IP address for the OLT and the MDU on the OLT.

## Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **VLAN** from the navigation tree.
- 3 On the **VLAN** tab page, set the filter criteria or click  to display the VLANs.
- 4 In the information list, right-click and choose **Add** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.



**Add VLAN**

Base Info  
Configure VLAN

VLAN ID(1-4095): 10 \*

Name: VLANID\_10 \*

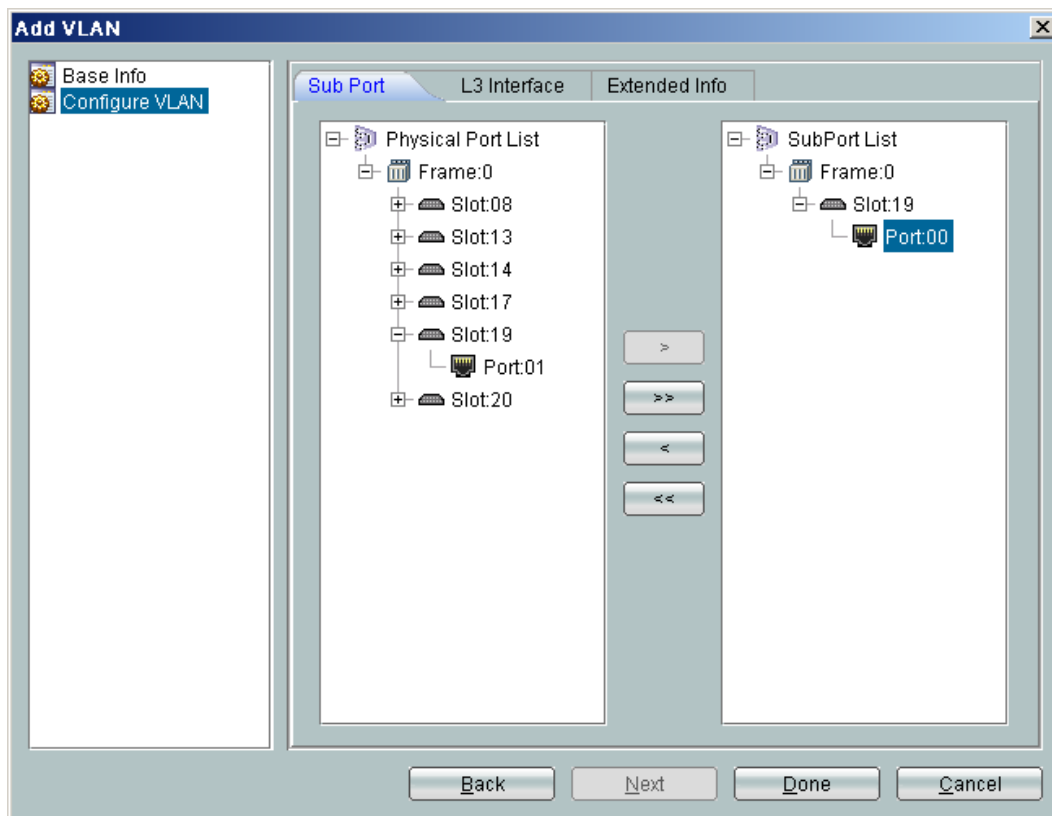
Alias:

Type: Standard VLAN \*

Attribute: Common \*

VLAN Priority: 0

Back Next Done Cancel



| Key Parameter | Description                                                                                                        |
|---------------|--------------------------------------------------------------------------------------------------------------------|
| VLAN ID       | Indicates the VLAN ID. The VLAN ID uniquely identifies a VLAN.<br><b>NOTE</b><br>Add VLANs according to data plan. |
| Type          | Indicates the VLAN type.<br><b>NOTE</b><br>Usually, <b>Smart</b> is selected.                                      |
| Attribute     | Indicates the VLAN attribute.<br><b>NOTE</b><br>For xPON FTTB, <b>QinQ</b> is usually selected.                    |
| VLAN Priority | Indicates the VLAN priority. This parameter is applicable to the VLANs for an OLT.                                 |

6 Click **Done**.

----End

## Command Reference

| To...                                | Run the Command... | In...          |
|--------------------------------------|--------------------|----------------|
| Query the information about the VLAN | display vlan       | Privilege mode |

| To...                                                | Run the Command... | In...              |
|------------------------------------------------------|--------------------|--------------------|
| Add one VLAN or more VLANs of a same type in batches | vlan               | Global config mode |
| Set the VLAN attribute                               | vlan attrib        | Global config mode |


## 23.1.6 Adding a Service Virtual Port

After an ONU is successfully added, the control channel is already set up but the data channel is not set up. In this case, you need to add a service virtual port on the OLT to manage ONU data.

### Prerequisite

The management VLAN where the service virtual port belongs must be configured. The upstream port of the VLAN must be configured. For details, see [23.1.5 Configuring a VLAN](#).

### Procedure

- 1 In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- 2 Choose **EPON > EPON ONU** from the navigation tree.
- 3 On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- 4 In the information list, select an EPON ONU and click the **ServicePort Info.** tab in the lower pane.
- 5 On the **ServicePort Info.** tab page, right-click and choose **Add** from the shortcut menu.
- 6 In the dialog box that is displayed, set the parameters as follows.



| Key Parameter | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User VLAN     | Indicates the management VLAN ID of the ONU.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Service Type  | Indicates the type of the services carried on the service virtual port. Usually, the multi-service VLAN mode is selected. Each service virtual port can carry multiple types of service streams. You need to set the user VLAN to distinguish the service streams. The services are distinguished based on the VLAN ID contained in the user packets. The user packets are labeled with different upstream VLAN IDs, and the original VLAN IDs in the user packets are removed. |

7 Click **OK**.

----End


## Command Reference

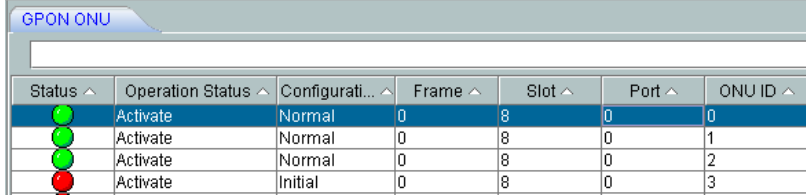
| To...                      | Run the Command... | In...              |
|----------------------------|--------------------|--------------------|
| Add a service virtual port | service-port       | Global config mode |





## 23.1.7 Verifying the Interoperability Between an OLT and an MDU

After configuring the relevant parameters on the U2000, you need to verify whether an ONU can be managed and maintained on the U2000.

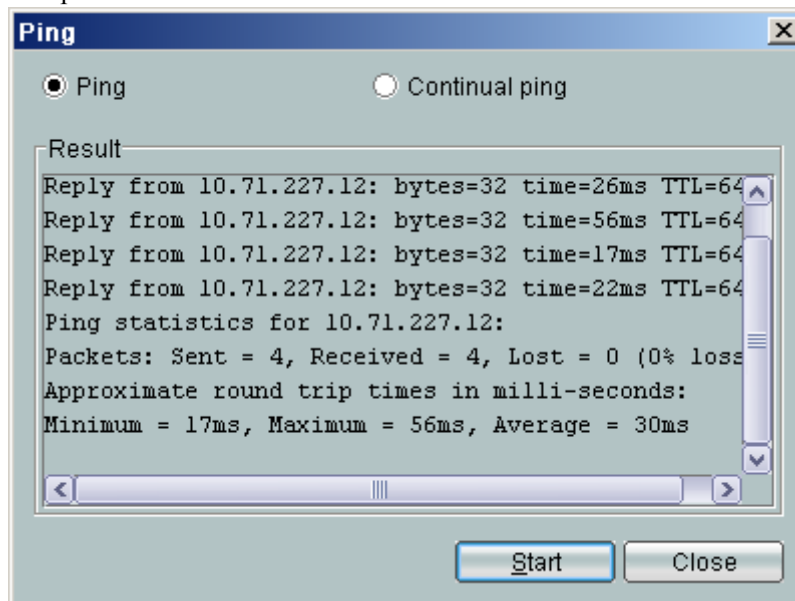
### Procedure

- 1 Query the status of the ONU.
  1. In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
  2. Choose **EPON > EPON ONU** from the navigation tree.
  3. On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
  4. In the information list, select an EPON ONU with the required shelf/slot/port and ONT ID. If the indicator of **Status** is in green, it indicates that the ONU is in the activated and online state.



| Status                                                                              | Operation Status | Configurati... | Frame | Slot | Port | ONU ID |
|-------------------------------------------------------------------------------------|------------------|----------------|-------|------|------|--------|
|    | Activate         | Normal         | 0     | 8    | 0    | 0      |
|   | Activate         | Normal         | 0     | 8    | 0    | 1      |
|  | Activate         | Normal         | 0     | 8    | 0    | 2      |
|  | Activate         | Initial        | 0     | 8    | 0    | 3      |

- 2 Check whether the ONU can ping through the OLT.
  1. On the **Physical Root** navigation tree in **Main Topology**, right-click the ONU and choose **Tool > Ping** from the shortcut menu.
  2. In the dialog box that is displayed, click **Ping** to view the result. If the reply information is displayed, it indicates that the connection between the OLT and the ONU is successfully set up.



----End

## Command Reference

| To...                                                            | Run the Command... | In...                |
|------------------------------------------------------------------|--------------------|----------------------|
| Query the information about the device when it is used as an ONT | display ont info   | GPON mode, EPON mode |

## 23.2 Configuring Services on the OLT

An FTTB network consisting of OLTs and MDUs provides users with Internet services, multicast services, and voice services.

### Context

Several operations are required when you configure a service. The following lists the services configured at the OLT side and the service configuration steps.

| Services                | Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internet access service | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">23.2.1 Adding a Service Virtual Port</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                    |
| Multicast service       | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">23.2.1 Adding a Service Virtual Port</a></li> <li>● <a href="#">19.2.7 Configuring the Multicast VLAN</a></li> <li>● <a href="#">19.2.5 Configuring the Virtual Multicast Upstream Port</a></li> <li>● <a href="#">19.2.6 Configuring a Preview Profile</a></li> <li>● <a href="#">19.2.8 Configuring a Program Profile</a></li> <li>● <a href="#">19.2.10 Configuring a Multicast User</a></li> </ul> |
| Voice service           | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">23.2.1 Adding a Service Virtual Port</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                    |

### [23.2.1 Adding a Service Virtual Port](#)

After a service virtual port is successfully added, it can carry various types of service streams.

## 23.2.1 Adding a Service Virtual Port

After a service virtual port is successfully added, it can carry various types of service streams.

## Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **Connection > Service Port** from the navigation tree.
- 3 In the information list, right-click and choose **Add** from the shortcut menu.
- 4 In the dialog box that is displayed, set the parameters.

| Key Parameter | Description                                                                                |
|---------------|--------------------------------------------------------------------------------------------|
| VLAN ID       | Indicates the VLAN ID of the service virtual port. The VLAN ID uniquely identifies a VLAN. |

### NOTE

You can select only the traffic profiles that exist on devices. Otherwise, the system reports an error.

- 5 Click **OK**.

----End

## Command Reference

| To...                                                    | Run the Command...         | In...              |
|----------------------------------------------------------|----------------------------|--------------------|
| Query the 802.1x configuration of a service virtual port | display dot1x service-port | Privilege mode     |
| Bind a service virtual port with 802.1x authentication   | dot1x service-port         | Global config mode |

## 23.3 Configuring Services on the MDU

An FTTB network consisting of OLTs and MDUs provides users with Internet services, multicast services, and voice services.

### Context

Several operations are required when you configure a service. The following lists the services configured at the MDU side and the service configuration steps.

| Services                | Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internet access service | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.3.3 Adding a Service Port</a></li> <li>● <a href="#">19.3.4 Configuring an ADSL Line Profile</a></li> <li>● <a href="#">19.3.5 Configuring an ADSL Alarm Profile</a></li> <li>● <a href="#">19.3.6 Configuring the Attributes of an ADSL Port</a></li> <li>● <a href="#">19.3.7 Activating an ADSL Port</a></li> </ul>                                                                      |
| Multicast service       | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.3.3 Adding a Service Port</a></li> <li>● <a href="#">19.2.7 Configuring the Multicast VLAN</a></li> <li>● <a href="#">19.2.5 Configuring the Virtual Multicast Upstream Port</a></li> <li>● <a href="#">19.2.6 Configuring a Preview Profile</a></li> <li>● <a href="#">19.2.8 Configuring a Program Profile</a></li> <li>● <a href="#">19.2.10 Configuring a Multicast User</a></li> </ul> |

| Services      | Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Voice service | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">19.3.2 Configuring an IP Interface</a></li> <li>● <a href="#">23.3.1 Configuring a Static Route</a></li> <li>● <a href="#">19.3.9 Adding an MGC Profile</a></li> <li>● <a href="#">19.3.10 Configuring a UAS Profile</a></li> <li>● <a href="#">19.3.12 Adding an MG</a></li> <li>● <a href="#">19.3.13 Binding an MGC Profile</a></li> <li>● <a href="#">19.3.14 Starting an MG</a></li> <li>● <a href="#">19.3.15 Configuring a VoIP PSTN Port</a></li> </ul> |

### [23.3.1 Configuring a Static Route](#)

This topic describes how to configure a static route to the U2000 for an ONU. When the management mode of the ONU is SNMP, to maintain or manage an ONU, configure a static route to the U2000 for the ONU.

## 23.3.1 Configuring a Static Route

This topic describes how to configure a static route to the U2000 for an ONU. When the management mode of the ONU is SNMP, to maintain or manage an ONU, configure a static route to the U2000 for the ONU.


### Prerequisite

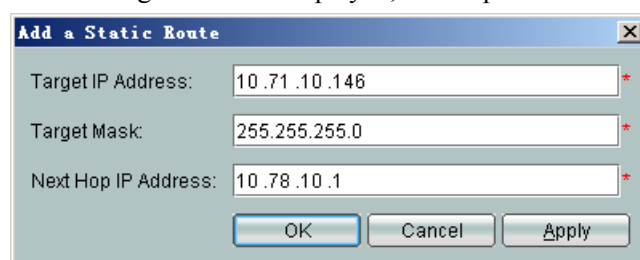
The management mode of the ONU must be SNMP.

### Context

When the IP addresses of the VLAN interface and the MGC are in different network segments, you need to configure a route from the MG to the MGC.

### Procedure

- 1 In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- 2 Choose **EPON > EPON ONU** from the navigation tree.
- 3 On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- 4 In the information list, select a record and click the **Static Route Info.** tab in the lower pane. Right-click the information list and choose **Add** from the shortcut menu.
- 5 In the dialog box that is displayed, set the parameters.



| Key Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP Address          | Indicates the destination IP address. It identifies the destination IP address or destination network of the IP packet.                                                                                                                                                                                                                                                                                                                                                                  |
| IP Address Mask     | Indicates the subnet mask of the IP address. A subnet mask consists of consecutive 1s and can be represented in dotted decimal notation when written in the text format. The subnet mask and the destination IP address together identify the address of the network segment where the destination host or router is located. To be specific, you can get the address of this network segment by performing the logical AND operation on the destination IP address and the subnet mask. |
| Next Hop IP Address | Indicates the next hop address. It is used to identify the next router that the IP packet passes. Latest configuration for the next hop address will automatically overwrite the previous configuration and become the next hop address in the current route information.                                                                                                                                                                                                                |

 **NOTE**

To configure the static route, you can also perform operations on the NE Explorer of the MDU. The first two steps are as follows:

1. In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.
2. Choose **Static Route** from the navigation tree.

The other steps are the same as the corresponding steps in the procedure for performing operations on the NE Explorer of the OLT.

6 Click **OK**.

----End

## Command Reference

| To...                                             | Run the Command...     | In...                                |
|---------------------------------------------------|------------------------|--------------------------------------|
| Query static routes to the U2000 from the ONT     | display ont snmp-route | EPON mode                            |
| Configure a static route to the U2000 for the ONT | ont snmp-route         | Privilege mode, BTV mode, MVLAN mode |

## 23.4 Configuration Examples of the EPON FTTB Services

This topic provides examples to describe how to configure the Internet, voice, and multicast services in an EPON FTTB network.

#### 23.4.1 Data Plan for the EPON FTTB Services

This topic provides the data plan for the configuration examples of the EPON FTTB services. You can configure the services according to the data plan.

#### 23.4.2 Configuring the EPON FTTB Internet Service (LAN Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in LAN access mode and the MDU is connected to an OLT through an EPON port.

#### 23.4.3 Configuring the EPON FTTB Internet Service (ADSL2+ Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in ADSL2+ access mode and the MDU is connected to an OLT through an EPON port.

#### 23.4.4 Configuring the EPON FTTB Internet Service (VDSL2 Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in VDSL2 access mode and the MDU is connected to an OLT through an EPON port.

#### 23.4.5 Configuring the EPON FTTB Multicast Service

This topic describes how to configure the multicast service when an MDU is connected to an OLT through an EPON port.

#### 23.4.6 Configuring the EPON FTTB Voice Service (H.248 Protocol)

This topic describes how to configure the voice service when an MDU is connected to an OLT through an EPON port.

#### 23.4.7 Configuring the EPON FTTB Voice Service (SIP Protocol)

This topic describes how to configure the voice service when an MDU is connected to an OLT through an EPON port.

#### 23.4.8 Configuring the EPON FTTB Service by Using a Service Provisioning Profile

This topic describes how to configure various services when a user is connected to an MDU in LAN access mode and the MDU is connected to an OLT through an EPON port.

## 23.4.1 Data Plan for the EPON FTTB Services

This topic provides the data plan for the configuration examples of the EPON FTTB services. You can configure the services according to the data plan.

### Data Plan

**Table 23-1** Data plan for the EPON FTTB services

| Service Type      | Item                      | Settings                       | Remarks                                                                          |
|-------------------|---------------------------|--------------------------------|----------------------------------------------------------------------------------|
| Device management | Management VLAN of an OLT | VLAN ID: 8<br>Type: Smart VLAN | The management VLAN of an OLT is the management VLAN between the OLT and an MDU. |
|                   | Upstream port of the OLT  | 0/19/0                         | -                                                                                |



| Service Type | Item                     | Settings                                                                                                                                                                                                                                                                                           | Remarks                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Layer 3 interface        | IP Address: 192.168.50.4                                                                                                                                                                                                                                                                           | The IP address of the Layer 3 interface of the management VLAN of the OLT functions as the IP address of the OLT for inband network management.                                                                                                                                                                                                                                                |
|              | EPON port of the OLT     | 0/2/1                                                                                                                                                                                                                                                                                              | -                                                                                                                                                                                                                                                                                                                                                                                              |
|              | Upstream port of the MDU | 0/0/1                                                                                                                                                                                                                                                                                              | -                                                                                                                                                                                                                                                                                                                                                                                              |
|              | Service port of the MDU  | 0/1/1                                                                                                                                                                                                                                                                                              | -                                                                                                                                                                                                                                                                                                                                                                                              |
|              | MDU                      | <ul style="list-style-type: none"> <li>● Name: MDU</li> <li>● ONU ID: 0</li> <li>● ONU Type: MDU</li> <li>● Authentication Mode: MAC</li> <li>● MAC Address: 001E-E3F4-0471</li> <li>● Manager VLAN: 4000</li> <li>● IP Address: 192.168.50.2</li> <li>● IP Address Mask: 255.255.255.0</li> </ul> | <p>To configure the MDU on the OLT in Telnet mode, ensure that the management VLANs of the OLT and the MDU are the same and the management IP addresses of the OLT and the MDU are in the same network segment.</p> <p>When the MDU is connected to the OLT through an EPON port, the MDU uses the SNMP protocol as the network management protocol and does not require service profiles.</p> |

| Service Type | Item                                                | Settings                                                                                                                                                                                                                                                                | Remarks                                                                                                                                                                                                                         |
|--------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | MDU SNMP profile                                    | <ul style="list-style-type: none"> <li>● Name: snmpprofile</li> <li>● SNMP Version: v1</li> <li>● Read Name: public</li> <li>● Write Name: private</li> <li>● Trap Host IP: 192.168.50.3</li> <li>● Trap UDP Port: 162</li> <li>● SNMP Security Name: public</li> </ul> | -                                                                                                                                                                                                                               |
|              | Service virtual port (based on the management VLAN) | <ul style="list-style-type: none"> <li>● VLAN ID: 8</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 8</li> <li>● Upstream Traffic Name: FTTx</li> </ul>                                                     | After the MDU is added to the U2000 successfully, a control channel has been established but no data channel is established. In this case, you need to create a service virtual port on the OLT to help the OLT manage the MDU. |
|              | MEF IP traffic profile                              | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● CIR: 20480</li> <li>● Outer Priority: 1</li> </ul>                                                                                                                                                       | The MEF IP traffic profile is used on the OLT or MDU to control upstream and downstream traffic.                                                                                                                                |
|              | DBA profile                                         | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● DBA type: Maximum Bandwidth</li> <li>● Maximum Bandwidth: 32768</li> </ul>                                                                                                                               | -                                                                                                                                                                                                                               |
|              | Line profile                                        | Name: FTTx<br>DBA Profile: FTTx                                                                                                                                                                                                                                         | -                                                                                                                                                                                                                               |

| Service Type     | Item                                 | Settings                                                                                                                                                                                                                                                                                                             | Remarks                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internet service | VLAN                                 | <ul style="list-style-type: none"> <li>● VLAN ID: 1001</li> <li>● Type: Smart VLAN</li> <li>● Attribute: QinQ</li> </ul>                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>● In the case of the Internet service, users are identified by QinQ VLANs. A CVLAN is allocated to each user on the MDU and an SVLAN is allocated to each slot, port, or OLT according to networking scenarios.</li> <li>● Plan VLANs for the MDUs that are connected to the same OLT in a centralized manner and ensure that each VLAN is unique to an MDU.</li> </ul> |
|                  | Service virtual port on the OLT side | <ul style="list-style-type: none"> <li>● Name: HSI</li> <li>● VLAN ID: 1001</li> <li>● Interface Selection: 0/2/1/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 1001</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -                                                                                                                                                                                                                                                                                                                                                                                                              |
|                  | Service virtual port on the MDU side | <ul style="list-style-type: none"> <li>● Name: HSI</li> <li>● Vlan ID: 1001</li> <li>● Interface Selection: 0/1/1</li> <li>● User VLAN: untagged</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul>                                           | -                                                                                                                                                                                                                                                                                                                                                                                                              |

| Service Type | Item                                 | Settings                                                                                                                                                                                                                                                                                                              | Remarks |
|--------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| IPTV service | VLAN                                 | <ul style="list-style-type: none"> <li>● VLAN ID: 1000, 3000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                   | -       |
|              | Service virtual port on the OLT side | <ul style="list-style-type: none"> <li>● Name: IGMP</li> <li>● Vlan ID: 1000</li> <li>● Interface Selection: 0/2/1/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 1000</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -       |
|              | Multicast VLAN on the OLT side       | <ul style="list-style-type: none"> <li>● IGMP Version: IGMP V3</li> <li>● Work Mode: igmp_proxy</li> <li>● VLAN ID: 1000</li> </ul>                                                                                                                                                                                   | -       |
|              | Program profile                      | <ul style="list-style-type: none"> <li>● Name: program1</li> <li>● Start IP Address: 224.0.1.1</li> <li>● End IP Address: 224.0.1.1</li> <li>● Source IP Address: 10.10.10.20</li> <li>● Preview Profile: 0 (the default value)</li> </ul>                                                                            | -       |
|              | Multicast user                       | <ul style="list-style-type: none"> <li>● Alias: IGMPUserA</li> <li>● Unlimited Band Width: selected</li> <li>● Select Service Port: service virtual port named <b>IGMP</b></li> </ul>                                                                                                                                 | -       |
|              | Multicast VLAN on the MDU side       | <ul style="list-style-type: none"> <li>● IGMP Version: IGMP V3</li> <li>● Work Mode: igmp_snooping</li> <li>● VLAN ID: 1000</li> </ul>                                                                                                                                                                                | -       |

| Service Type | Item                                     | Settings                                                                                                                                                                                                                                                                                                                     | Remarks                                                                                                                                           |
|--------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Service virtual port on the MDU side     | <ul style="list-style-type: none"> <li>● Name: multicast</li> <li>● Vlan ID: 1000</li> <li>● Interface Selection: 0/1/1</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: untagged</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -                                                                                                                                                 |
| VoIP service | VLAN on the OLT side                     | <ul style="list-style-type: none"> <li>● VLAN ID: 2000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                                | -                                                                                                                                                 |
|              | Service virtual port on the OLT side     | <ul style="list-style-type: none"> <li>● Name: VOIP</li> <li>● Vlan ID: 2000</li> <li>● Interface Selection: 0/2/1/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 2000</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul>        | -                                                                                                                                                 |
|              | Signaling IP address<br>Media IP address | 17.10.10.10                                                                                                                                                                                                                                                                                                                  | The H.248 and SIP protocols support separation of media and signaling streams. The media and signaling IP addresses can be the same or different. |
|              | Gateway                                  | 17.10.10.1                                                                                                                                                                                                                                                                                                                   | -                                                                                                                                                 |

| Service Type | Item                                                                                                                                                                                                                                                                                 | Settings                                                                                                                                                                                                                                                                                                                             | Remarks                                                                                                      |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|              | Parameters of the MG interface (H.248 protocol)<br><b>NOTE</b><br>The parameters of the MG interface must be the same as the parameters on the MGC. There are many negotiation parameters in the H.248 protocol. This table provides the mandatory parameters in the H.248 protocol. | <ul style="list-style-type: none"> <li>● MG ID: 0</li> <li>● Name: mg1</li> <li>● Signaling IP Address: 17.10.10.10</li> <li>● Media IP Address 1: 17.10.10.10</li> </ul>                                                                                                                                                            | The ID of the MG interface used for the VoIP service determines the VAG that a service user is assigned to.  |
|              | MGC profile                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>● Name: mgcprofile1</li> <li>● Protocol Type: H.248</li> <li>● IP Address 1: 200.200.200.200</li> <li>● Port Number: 2944</li> </ul>                                                                                                                                                          | -                                                                                                            |
|              | Parameters of the SIP interface (SIP protocol)<br><b>NOTE</b><br>The parameters of the SIP interface must be the same as the parameters on the IMS. There are many negotiation parameters in the SIP protocol. This table provides the mandatory parameters in the SIP protocol.     | <ul style="list-style-type: none"> <li>● MG ID: 0</li> <li>● Name: mg1</li> <li>● Signaling IP Address: 17.10.10.10</li> <li>● Signaling Port No.: 5060</li> <li>● Media IP Address 1: 17.10.10.10</li> <li>● Transmission Mode: UDP</li> <li>● MG Domain Name: huawei.com</li> <li>● Active NMS UAS Profile: uasprofile1</li> </ul> | The ID of the SIP interface used for the VoIP service determines the VAG that a service user is assigned to. |
|              | UAS profile                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>● Name: uasprofile1</li> <li>● Address Mode: Fix mode</li> <li>● IP Address 1: 200.200.200.200</li> <li>● Proxy Port: 5060</li> </ul>                                                                                                                                                         | -                                                                                                            |
|              | PSTN user                                                                                                                                                                                                                                                                            | Phone 1-Phone2:<br>83110000-83110001                                                                                                                                                                                                                                                                                                 | -                                                                                                            |

## 23.4.2 Configuring the EPON FTTB Internet Service (LAN Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in LAN access mode and the MDU is connected to an OLT through an EPON port.

### Prerequisite

The OLT must be added to the U2000.

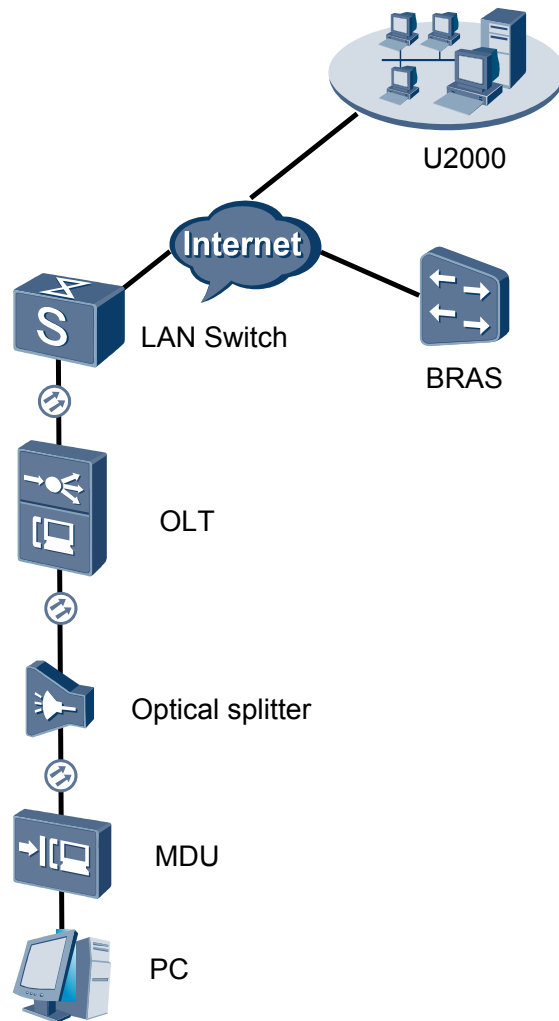
### Context

For details of the data plan, see [23.4.1 Data Plan for the EPON FTTB Services](#).

### Example Network

MA5620, MA5626, MA5610, and MA5612 support LAN access. The configuration procedure in this topic is applicable to the MA5620 V800R308, MA5626 V800R308, MA5612 V800R308, and MA5610 V800R308.

- The PC that gains access to the network by means of PPPoE dialup is connected to an FE port on the MDU and the MDU is connected to the OLT and then to the upper layer network through a GPON port. In this case, the high-speed Internet service is available for the PC.
- The high-speed Internet service is identified by two VLANs that are accurately bound. A user VLAN is allocated to each user on the MDU and a service VLAN is allocated to each slot on the OLT.
- The following two profiles are used for the high-speed Internet service:
  - DBA profile in which **T-CONT type** is set to **Assured Bandwidth/Maximum Bandwidth** and **Maximum Bandwidth** is set to **32768Kbit/s**
  - MEF IP traffic profile in which **CIR** is set to **20480Kbit/s**

**Figure 23-1** Configuring the EPON FTTB Internet service (LAN access)

## Procedure

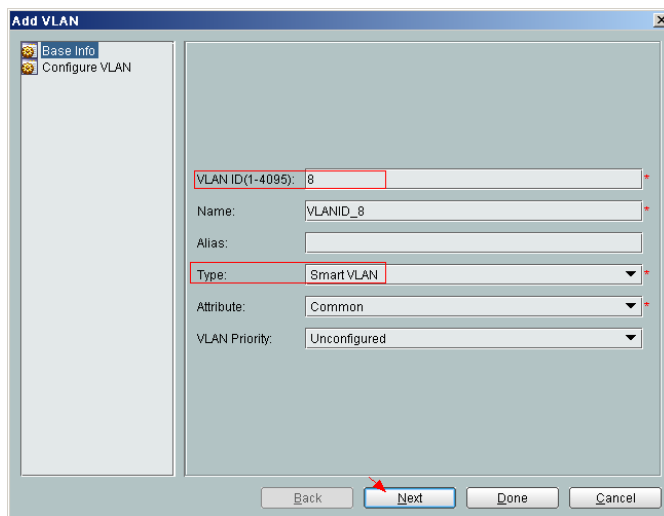
- **Add the MDU to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.

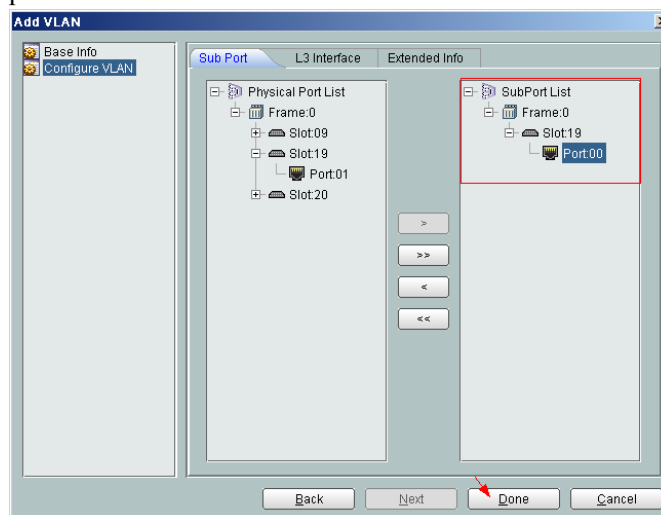


- VLAN ID: 8
- Type: Smart VLAN

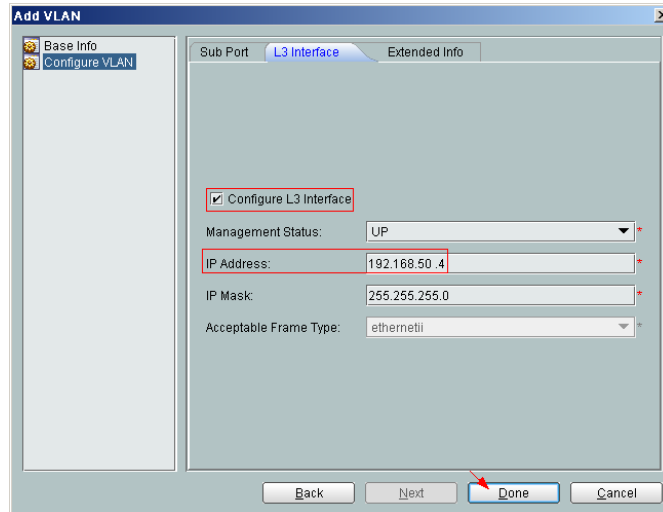


(5) Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



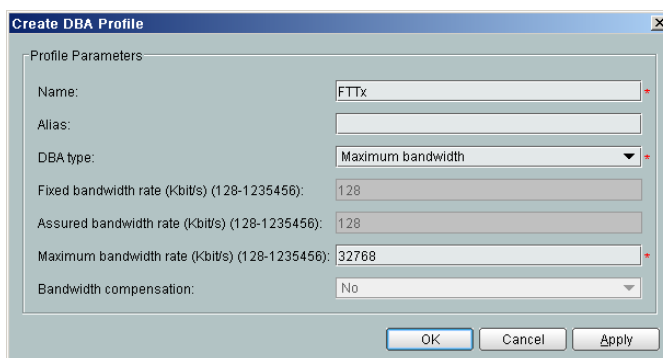
- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4



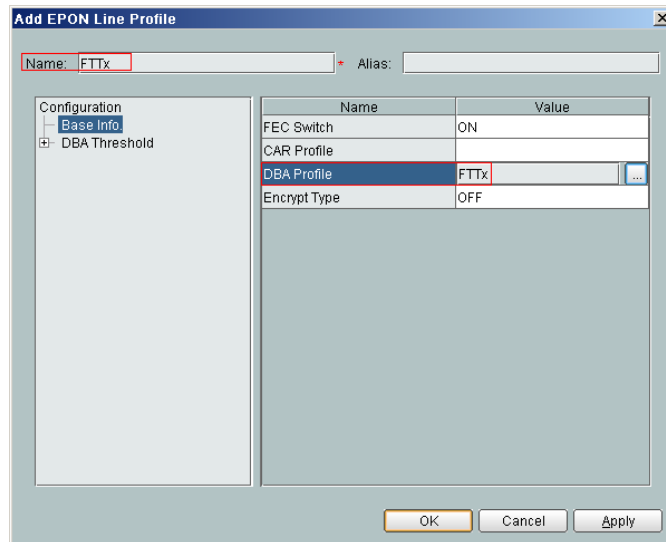
- (6) Click **Done**.
2. **Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - (2) Click the **MEF IP Traffic Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - CIR: 20480
    - Outer Priority: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure an MDU SNMP profile. For details, see [23.1.1 Configuring an MDU SNMP Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
    - Trap UDP Port: 162
    - SNMP Security Name: public






- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a DBA profile. For details, see [23.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Configure a line profile. For details, see [23.1.3 Configuring a Line Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Profile: FTTx



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
6. **Confirm the MDU on the OLT side. For details, see 23.1.4 Confirming an MDU.**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 0018-8256-3E47, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected
      - SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)


- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

The screenshot shows the 'Confirm ONU' dialog box with the 'Basic Parameters' tab selected. The 'ONU Type' dropdown is set to 'MDU'. The 'Line Profile' dropdown is set to 'FTTx'. The 'Auth Info' section shows 'Auth Way' as 'MAC Address' and 'MAC Address' as '00-18-82-56-3E-47'. The 'Extend Information' section has 'DHCP Status' and 'PITP Status' checkboxes. The 'ONU Type' section shows 'Vendor ID' as 'HWTC(2011)' and 'Terminal Type' as 'MDU'. At the bottom, there is a checkbox for 'Locate to ONU list after operation succeeds' and 'OK', 'Cancel', and 'Apply' buttons.

The screenshot shows the 'Confirm ONU' dialog box with the 'Network Management Channel Parameters' tab selected. The 'OLT Sets Network Management Channel Parameters' checkbox is checked. The 'EPON SNMP Profile' dropdown is set to 'snmpprofile'. The 'Net Para' section shows 'Manager VLAN(1-4095)' as '8', 'IP Address' as '192.168.50.2', and 'IP Address Mask' as '255.255.255.0'. The 'Static Route Parameters' section has empty fields for 'Target IP Address', 'Target Mask', and 'Next Hop IP Address'. At the bottom, there is a checkbox for 'Locate to ONU list after operation succeeds' and 'OK', 'Cancel', and 'Apply' buttons.

(6) Click **OK**.

7. **Add a service virtual port on the OLT side. For details, see [23.1.6 Adding a Service Virtual Port](#) and [23.1.7 Verifying the Interoperability Between an OLT and an MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **EPON > EPON ONU** from the navigation tree.
- (3) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- (4) In the information list, select the record where the shelf, slot, port, and ONU IDs are 0, 2, 1, and 0 respectively and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-EPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

- (7) Click **OK**.

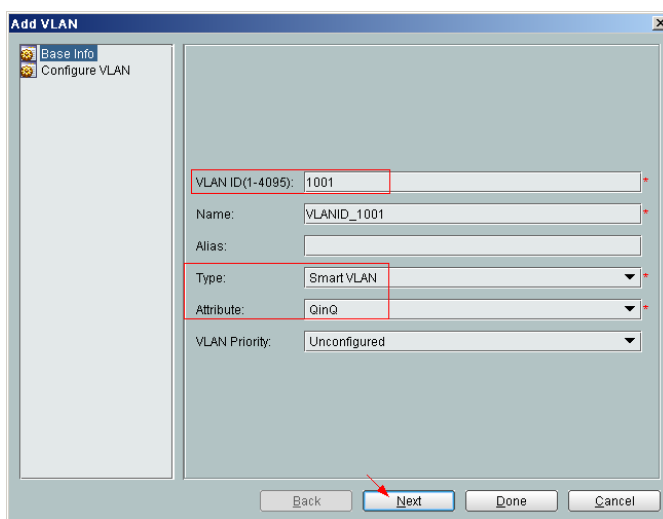
- **Configure the Internet service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

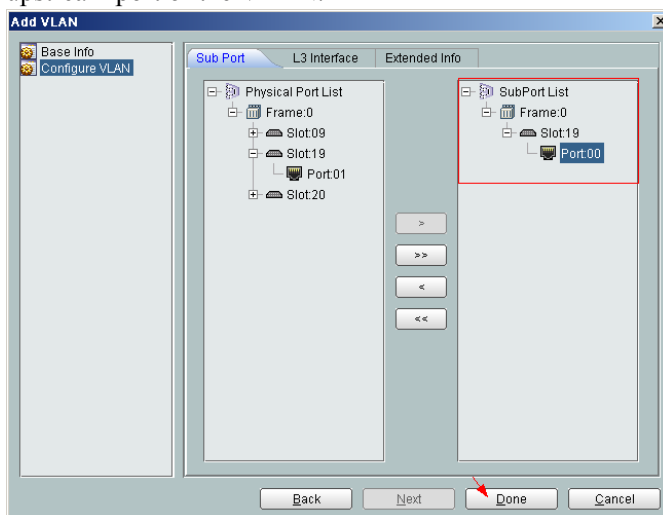
1. **Configure a service VLAN on the OLT side. For details, see 19.2.1 Configuring a VLAN.**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN
  - Attribute: QinQ



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see 19.2.3 Adding a Service Port.**
- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.

- (3) In the dialog box that is displayed, set the parameters.
- Name: HSI
  - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
  - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
  - VLAN ID: 1001
  - Service Type: Multi-Service VLAN
  - User VLAN: 1001
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

- (4) Click **OK**.

● **Configure the Internet service on the MDU side.**

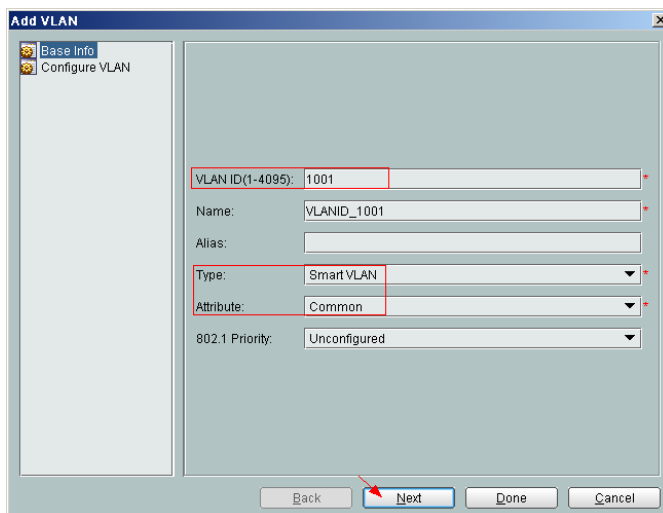
The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

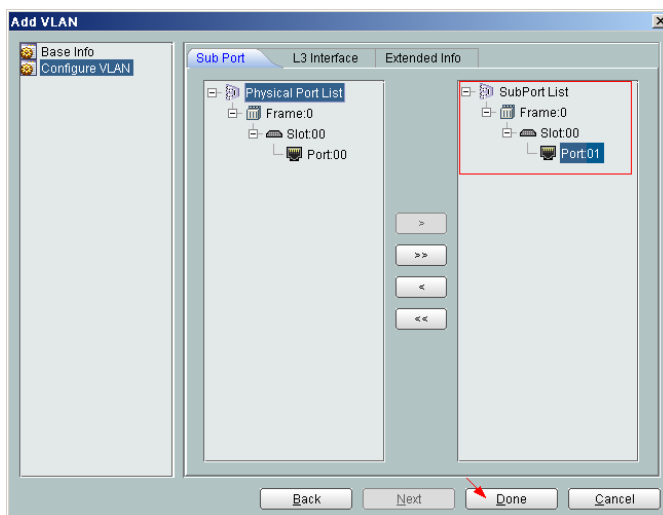
- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN





(4) Click **Next**.

(5) Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



(6) Click **Done**.

2. **Add a service virtual port on the MDU side.** For details, see [19.3.3 Adding a Service Port](#).

(1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.

(2) In the information list, right-click and choose **Add** from the shortcut menu.

(3) In the dialog box that is displayed, set the parameters.

- Name: HSI
- Connection Type: LAN-ADSL (when the physical port is an ADSL port) or LAN-VDSL2 (when the physical port is a VDSL2 port) or LAN-ETHER (when the physical port is an Ethernet port)
- Vlan ID: 1001
- Interface Selection: 0/1/1
- VPI: 0 (when the physical port is an ADSL or VDSL2 port)

- VCI: 0 (when the physical port is an ADSL or VDSL2 port)
- User VLAN: untagged
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

(4) Click **OK**.

----End

## Result

The user gains access to the Internet after the dialup is performed successfully by the PPPoE dialup software on the PC.

### 23.4.3 Configuring the EPON FTTB Internet Service (ADSL2+ Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in ADSL2+ access mode and the MDU is connected to an OLT through an EPON port.

#### Prerequisite

The OLT must be added to the U2000.

#### Context

For details of the data plan, see [23.4.1 Data Plan for the EPON FTTB Services](#).

#### Example Network

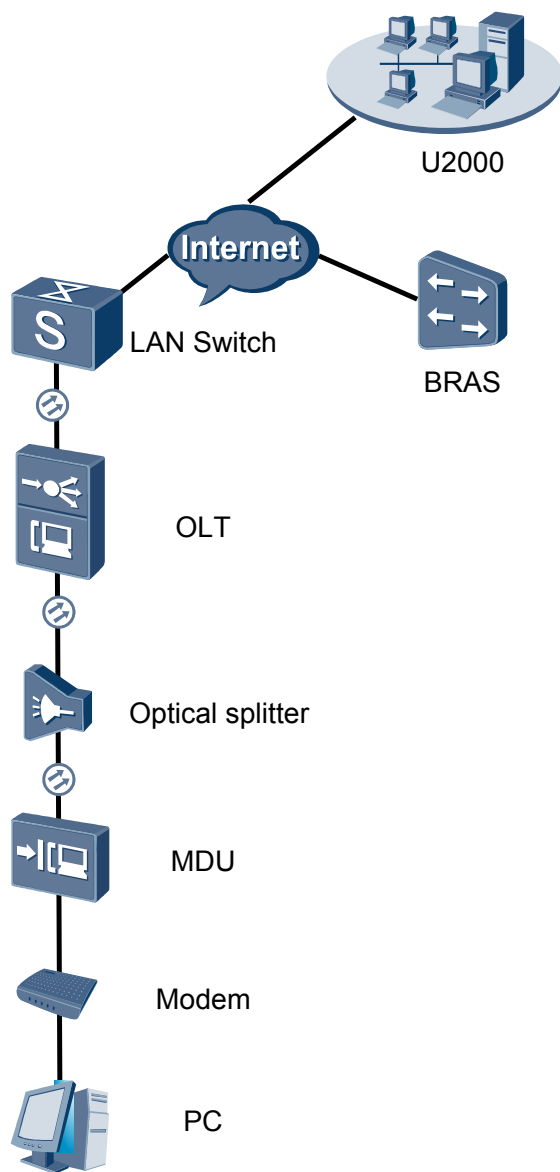
The MA5616 supports ADSL2+ access. The configuration procedure in this topic is applicable to the MA5616 V800R308.

- The PC is connected to an ADSL2+ port on the MDU. The data frames from the PC are transmitted to separate service channels according to user-side VLANs. Then, the OLT

switches VLAN tags (that is, switches user-side VLANs to upstream VLANs) and transmits the data frames through an upstream port.

- The PC gains access to the Internet in PPPoE access mode. If the access mode is set to IPoA or PPPoA, you need to configure protocol conversion and encapsulation modes.

**Figure 23-2** Configuring the EPON FTTB Internet service (ADSL2+ access)



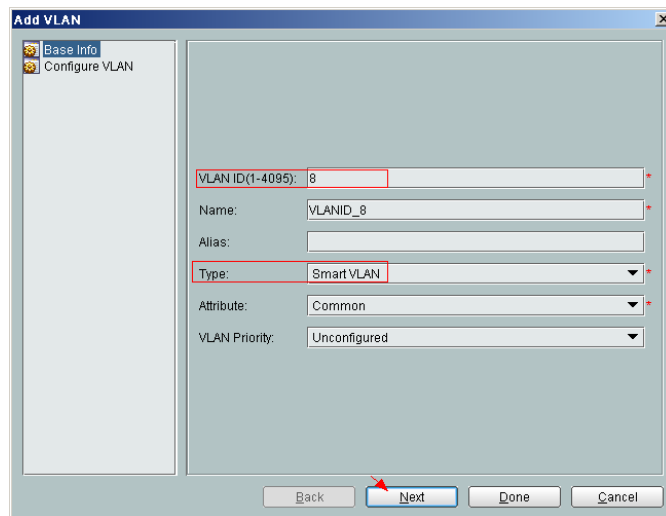
## Procedure

- **Add the MDU to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

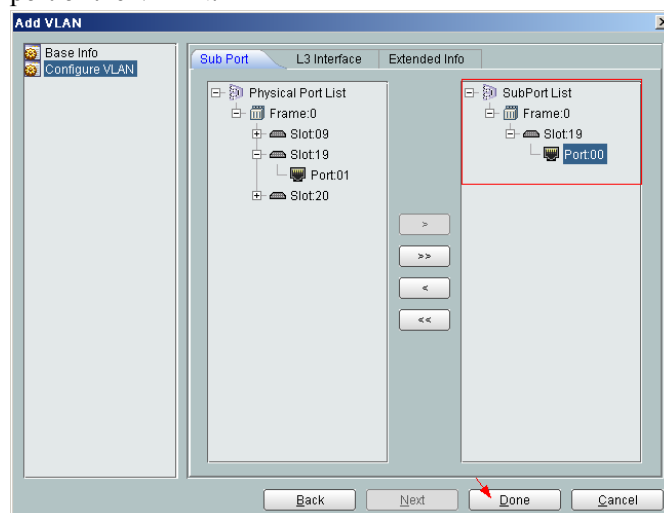
A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3

interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

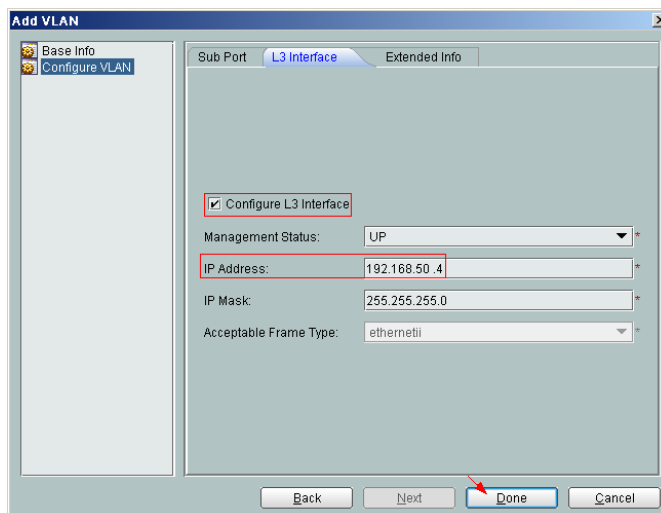
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8
  - Type: Smart VLAN



- (5) Click **Next**.
  - Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



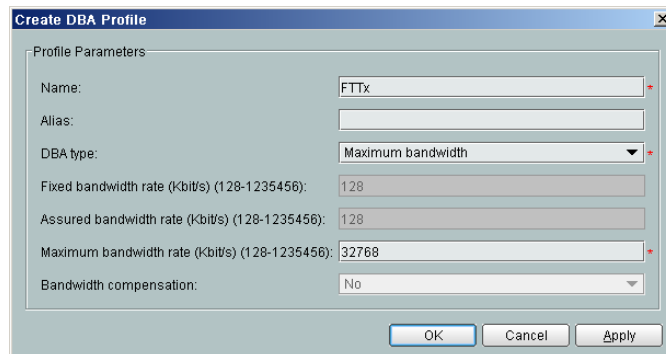
- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4



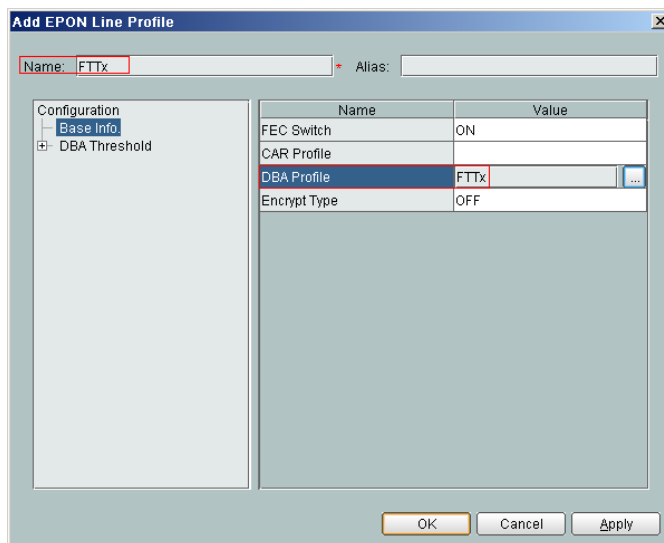
- (6) Click **Done**.
2. **Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - (2) Click the **MEF IP Traffic Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - CIR: 20480
    - Outer Priority: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure an MDU SNMP profile. For details, see [23.1.1 Configuring an MDU SNMP Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
    - Trap UDP Port: 162
    - SNMP Security Name: public






- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a DBA profile. For details, see [23.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Configure a line profile. For details, see [23.1.3 Configuring a Line Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Profile: FTTx



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
6. **Confirm the MDU on the OLT side. For details, see 23.1.4 Confirming an MDU.**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 0018-8256-3E47, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected
      - SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)

- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

**Confirm ONU**

Affiliated Port: 0/2/1 \* Splitter ID:   
 Name: MDU \* Alias:   
 ONU ID(0-127):  Auto Assign 0 \* Splitter Port ID(1-128):   
 ONU Type: MDU \*

**Basic Parameters** | Network Management Channel Parameters

Line Profile: FTTx \* Service Profile:   
 ONU VAS Profile:

**Auth Info**

Auth Way: MAC Address \* MAC Address: 00 - 18 - 82 - 56 - 3E - 47   
 Key: 00000000000000000000 \* Time Out(h)(1-168):  Disable

**Extend Information**

DHCP Status  PITP Status

**ONU Type**

Vendor ID: HWTC(2011) \* Terminal Type: MDU \*   
 Software Version:

Locate to ONU list after operation succeeds

OK Cancel Apply

**Confirm ONU**

Affiliated Port: 0/2/1 \* Splitter ID:   
 Name: MDU \* Alias:   
 ONU ID(0-127):  Auto Assign 0 \* Splitter Port ID(1-128):   
 ONU Type: MDU \*

**Basic Parameters** | **Network Management Channel Parameters**

OLT Sets Network Management Channel Parameters EPON SNMP Profile: snmpprofile \*

**Net Para**

Manager VLAN(1-4095): 8 \* Gateway IP Address: . . .   
 IP Address: 192.168.50.2 \* IP Address Mask: 255.255.255.0 \*   
 Priority(0-7):

**Static Route Parameters**

Target IP Address: . . . Target Mask: . . .   
 Next Hop IP Address: . . .


Locate to ONU list after operation succeeds

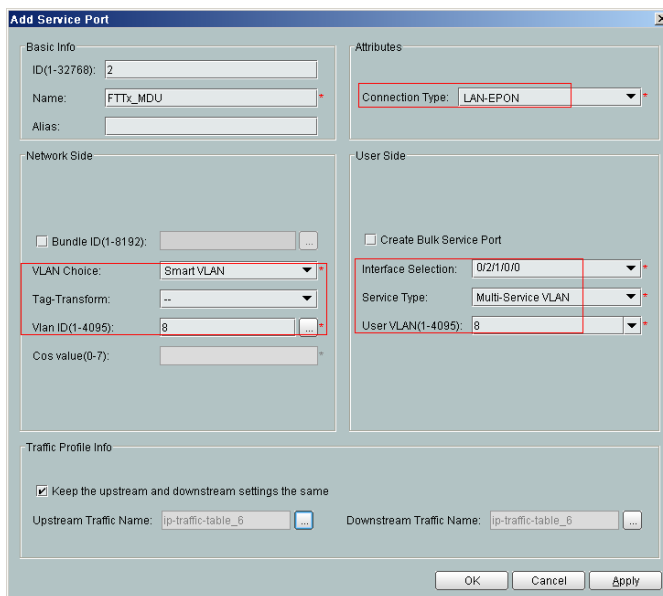
OK Cancel Apply

(6) Click **OK**.

7. **Add a service virtual port on the OLT side. For details, see [23.1.6 Adding a Service Virtual Port](#) and [23.1.7 Verifying the Interoperability Between an OLT and an MDU](#).**



- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **EPON > EPON ONU** from the navigation tree.
- (3) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- (4) In the information list, select the record where the shelf, slot, port, and ONU IDs are 0, 2, 1, and 0 respectively and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-EPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

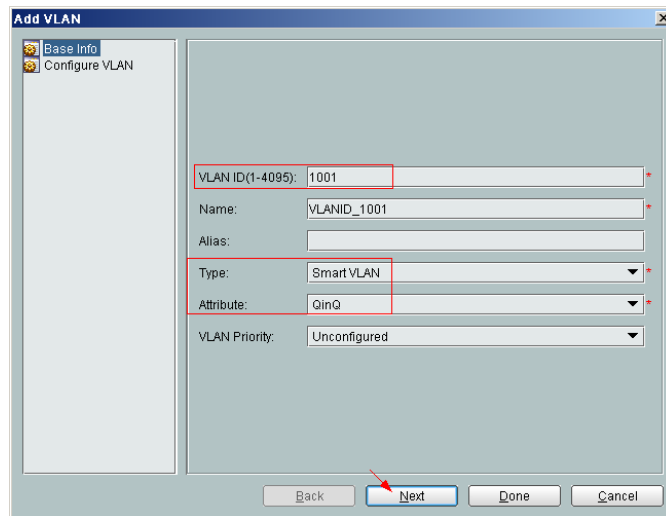
● **Configure the Internet service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

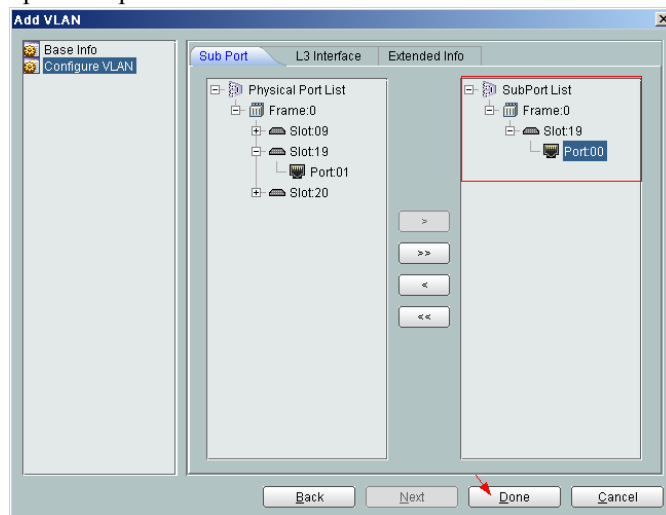
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN
  - Attribute: QinQ



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.

2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**

- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.

- (3) In the dialog box that is displayed, set the parameters.
  - Name: HSI
  - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
  - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
  - VLAN ID: 1001
  - Service Type: Multi-Service VLAN
  - User VLAN: 1001
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

- (4) Click **OK**.

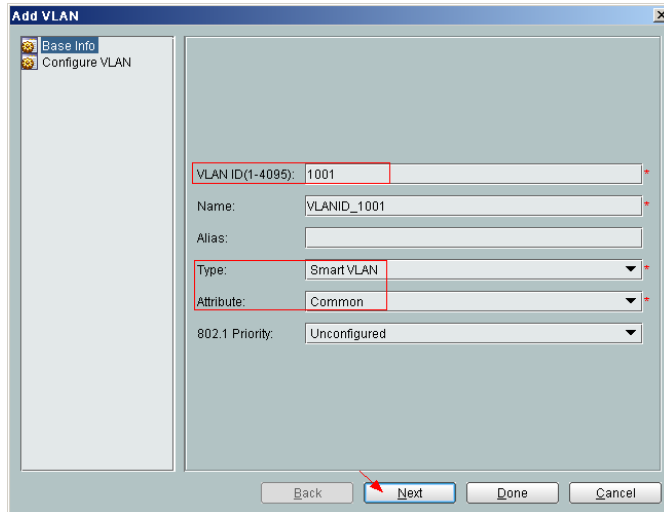
- **Configure the Internet service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

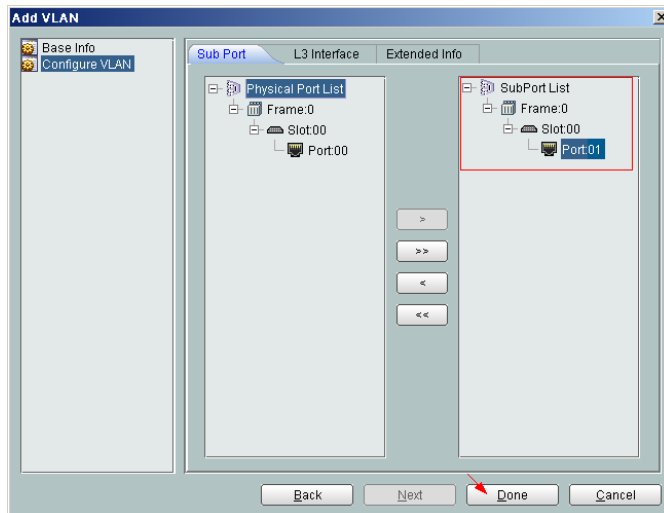
1. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN

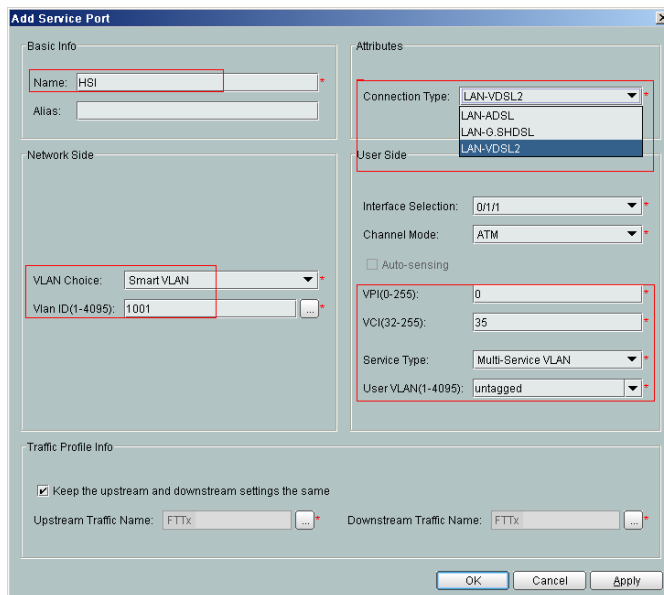



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the MDU side. For details, see [19.3.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: HSI
      - Connection Type: LAN-ADSL (when the physical port is an ADSL port) or LAN-VDSL2 (when the physical port is a VDSL2 port) or LAN-ETHER (when the physical port is an Ethernet port)
      - Vlan ID: 1001
      - Interface Selection: 0/1/1
      - VPI: 0 (when the physical port is an ADSL or VDSL2 port)

- VCI: 0 (when the physical port is an ADSL or VDSL2 port)
- User VLAN: untagged
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx



- (4) Click **OK**.
3. **Configure an ADSL line profile. For details, see 19.3.4 Configuring an ADSL Line Profile.**
  - (1) Choose **Configuration > Access Profile Management > ADSL Profile** from the main menu.
  - (2) Click the **ADSL Line Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: adsl\_profile
    - Other parameters: default settings
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE and click **OK**.
4. **Configure the attributes of an ADSL port and activate the ADSL port. For details, see 19.3.6 Configuring the Attributes of an ADSL Port and 19.3.7 Activating an ADSL Port.**
  - (1) Choose **DSL > ADSL** from the navigation tree.
  - (2) On the **ADSL** tab page, enter the filter criteria or click  to display the required ADSL ports.
  - (3) In the information list, right-click port 0/1/1 and choose **Configure Attributes** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

- Line Profile: adsl\_profile
  - Other parameters: default settings
- (5) Click **OK**.
  - (6) In the information list, right-click port 0/1/1 and choose **Activate** from the shortcut menu.

---End

## Result

The user gains access to the Internet after the dialup is performed successfully by the PPPoE dialup software on the PC.

## 23.4.4 Configuring the EPON FTTB Internet Service (VDSL2 Access)

This topic describes how to configure the high-speed Internet service when a user is connected to an MDU in VDSL2 access mode and the MDU is connected to an OLT through an EPON port.

### Prerequisite

The OLT must be added to the U2000.

### Context

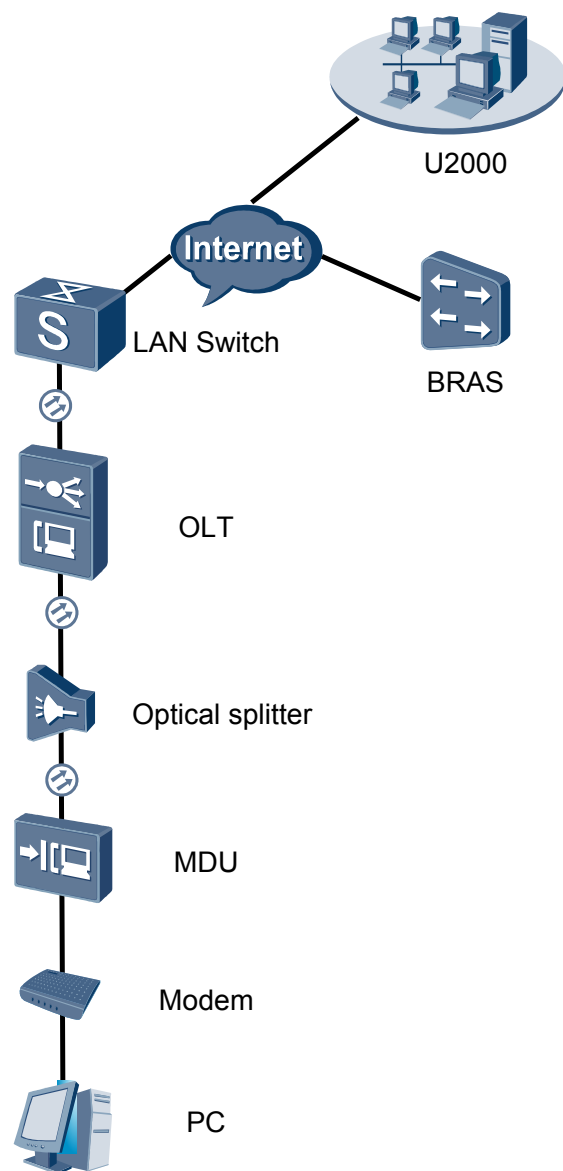
For details of the data plan, see [23.4.1 Data Plan for the EPON FTTB Services](#).

### Example Network

The MA5616 and MA5652 support VDSL2 access. The configuration procedure in this topic is applicable to the MA5616 V800R308 and MA5652 V800R308.

- The PC is connected to a VDSL2 port on the MDU. The data frames from the PC are transmitted to separate service channels according to user-side VLANs. Then, the OLT switches VLAN tags (that is, switches user-side VLANs to upstream VLANs) and transmits the data frames through an upstream port.
- The PC gains access to the Internet in PPPoE access mode. If the access mode is set to IPoA or PPPoA, you need to configure protocol conversion and encapsulation modes.

Figure 23-3 Configuring the EPON FTTB Internet service (VDSL2 access)



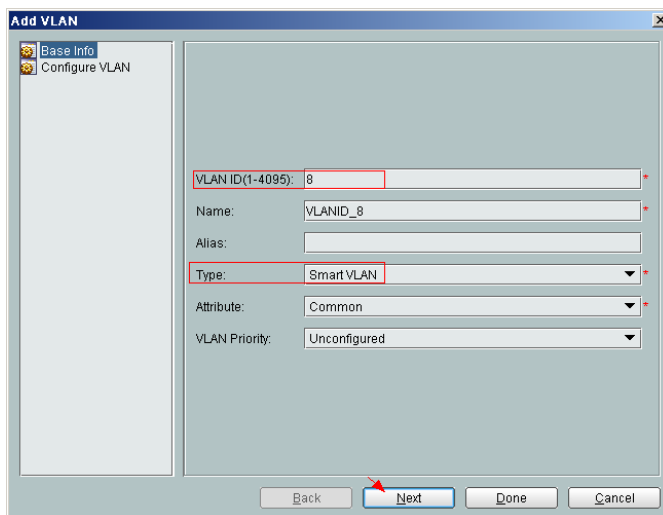
## Procedure

- Add the MDU to the U2000 in profile mode.
  1. Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).

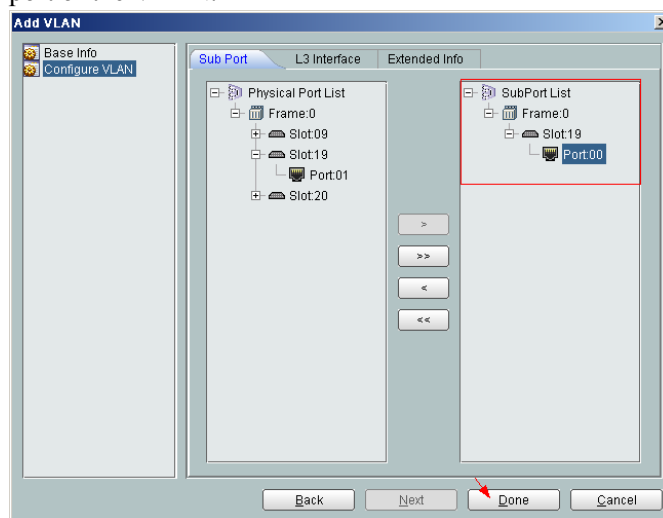
A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8
  - Type: Smart VLAN

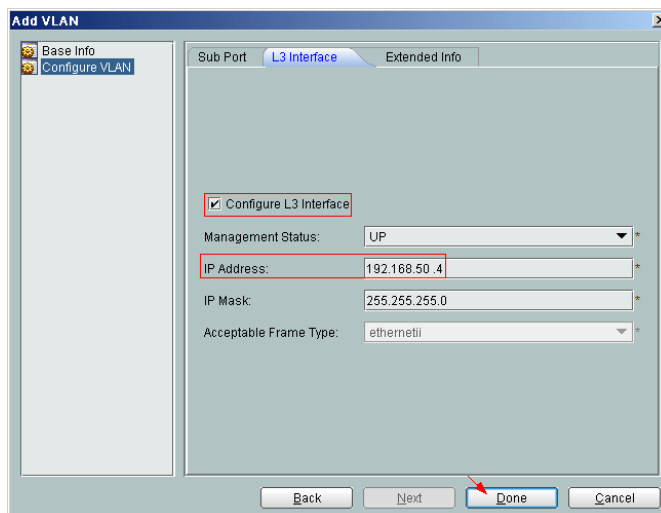


- (5) Click **Next**.
  - Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4

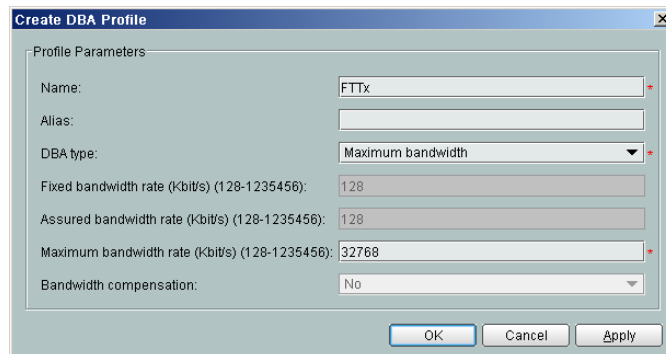




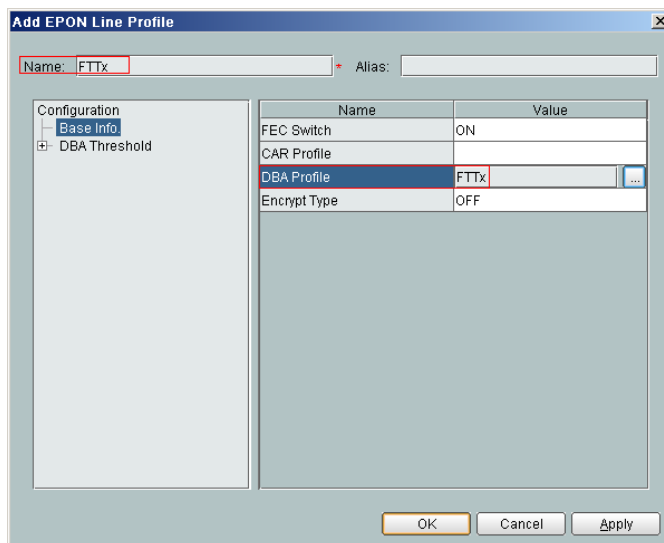
- (6) Click **Done**.
2. **Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - (2) Click the **MEF IP Traffic Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - CIR: 20480
    - Outer Priority: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure an MDU SNMP profile. For details, see [23.1.1 Configuring an MDU SNMP Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
    - Trap UDP Port: 162
    - SNMP Security Name: public



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a DBA profile. For details, see [23.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Configure a line profile. For details, see [23.1.3 Configuring a Line Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Profile: FTTx



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
6. **Confirm the MDU on the OLT side. For details, see 23.1.4 Confirming an MDU.**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 0018-8256-3E47, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected
      - SNMP Profile: snmpprofile (click next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)

- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

**Confirm ONU**

Affiliated Port: 0/2/1 \* Splitter ID: [ ]

Name: MDU \* Alias: [ ]

ONU ID(0-127):  Auto Assign 0 \* Splitter Port ID(1-128): [ ]

ONU Type: MDU \*

**Basic Parameters** | Network Management Channel Parameters

Line Profile: FTTx \* Service Profile: [ ]

ONU VAS Profile: [ ]

**Auth Info**

Auth Way: MAC Address \* MAC Address: 00 - 18 - 82 - 56 - 3E - 47

Key: 00000000000000000000 \* Time Out(h)(1-168):  Disable [ ]

**Extend Information**

DHCP Status  PTP Status

**ONU Type**

Vendor ID: HWTC(2011) \* Terminal Type: MDU

Software Version: [ ]

Locate to ONU list after operation succeeds

OK Cancel Apply

**Confirm ONU**

Affiliated Port: 0/2/1 \* Splitter ID: [ ]

Name: MDU \* Alias: [ ]

ONU ID(0-127):  Auto Assign 0 \* Splitter Port ID(1-128): [ ]

ONU Type: MDU \*

**Basic Parameters** | **Network Management Channel Parameters**

OLT Sets Network Management Channel Parameters EPON SNMP Profile: snmpprofile \*

**Net Para**

Manager VLAN(1-4095): 8 \* Gateway IP Address: [ ]

IP Address: 192.168.50.2 \* IP Address Mask: 255.255.255.0 \*

Priority(0-7): [ ]

**Static Route Parameters**

Target IP Address: [ ] Target Mask: [ ]


Next Hop IP Address: [ ]

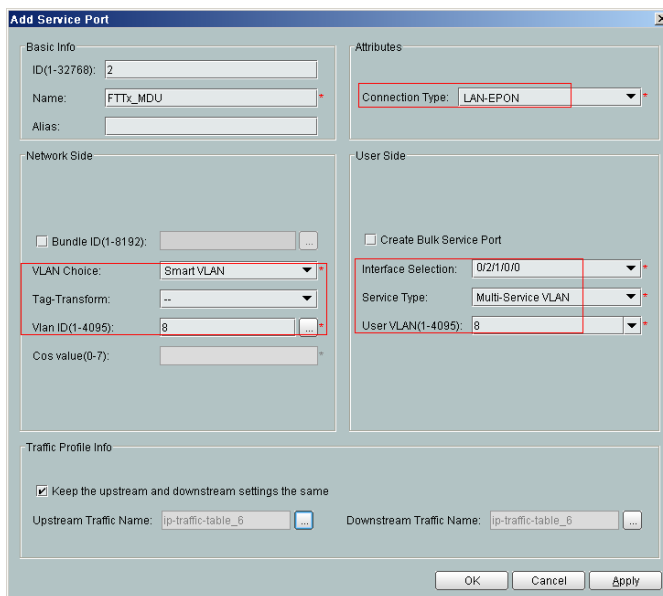
Locate to ONU list after operation succeeds

OK Cancel Apply

(6) Click **OK**.

7. **Add a service virtual port on the OLT side. For details, see [23.1.6 Adding a Service Virtual Port](#) and [23.1.7 Verifying the Interoperability Between an OLT and an MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **EPON > EPON ONU** from the navigation tree.
- (3) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- (4) In the information list, select the record where the shelf, slot, port, and ONU IDs are 0, 2, 1, and 0 respectively and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-EPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

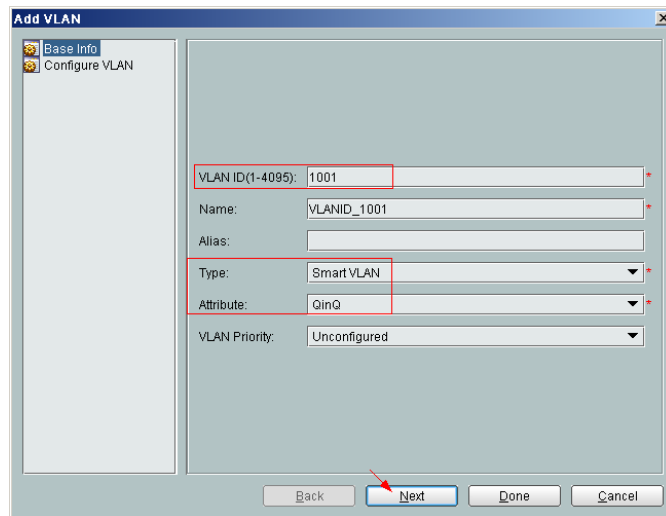
- **Configure the Internet service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

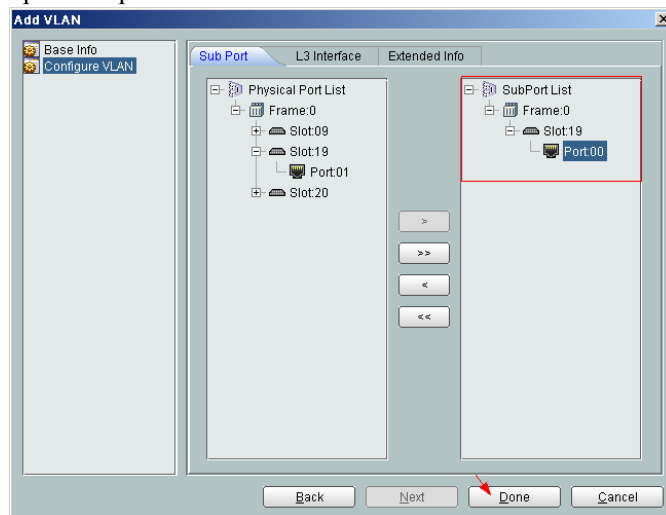
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN
  - Attribute: QinQ

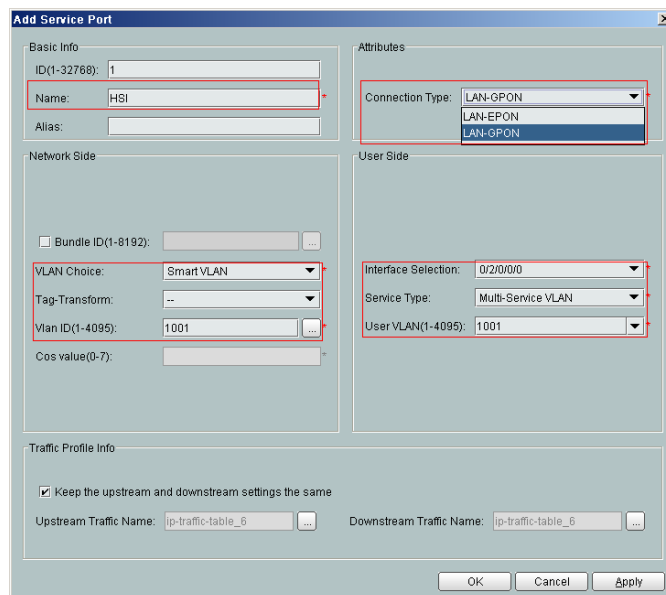


- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.

- (3) In the dialog box that is displayed, set the parameters.
  - Name: HSI
  - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
  - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
  - VLAN ID: 1001
  - Service Type: Multi-Service VLAN
  - User VLAN: 1001
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (4) Click **OK**.

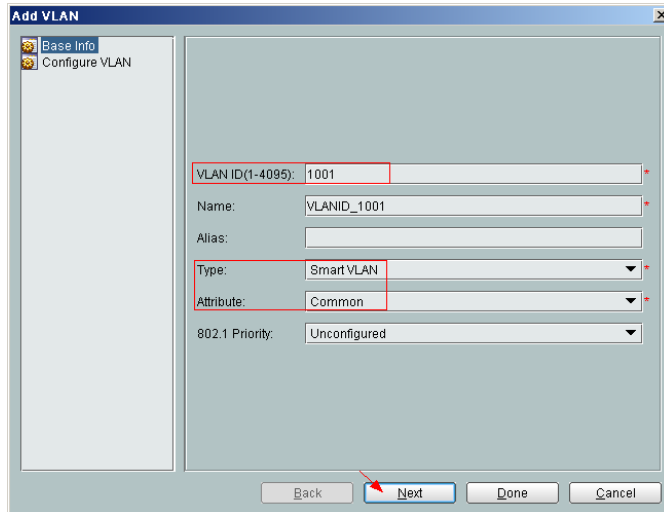
- **Configure the Internet service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

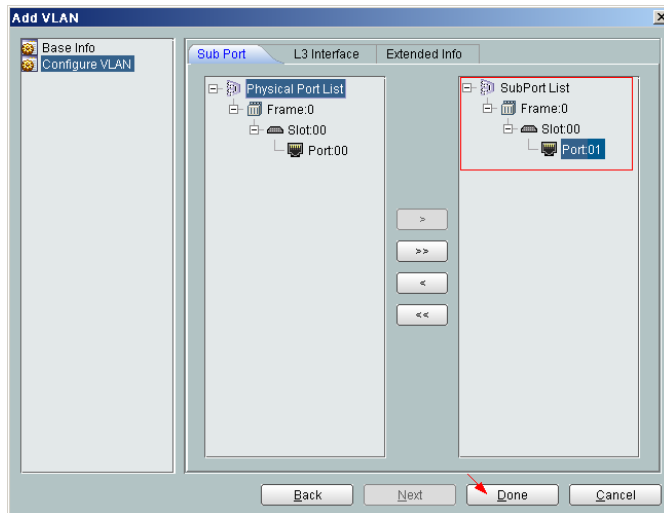
1. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN



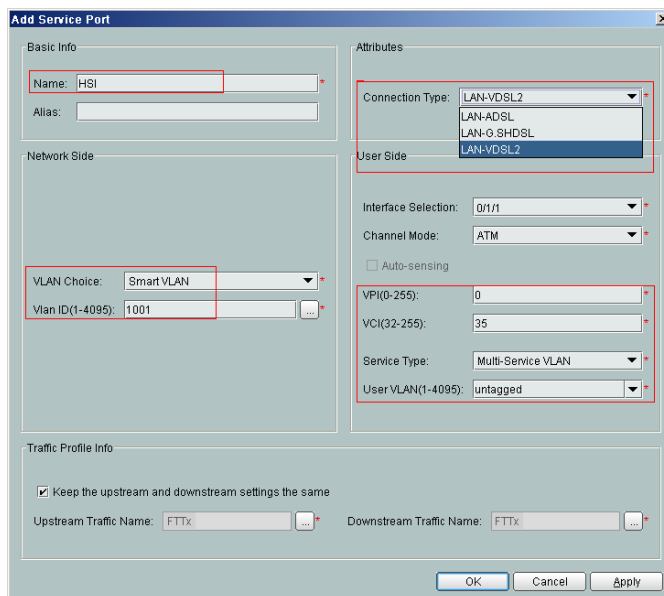
- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the MDU side. For details, see [19.3.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: HSI
      - Connection Type: LAN-ADSL (when the physical port is an ADSL port) or LAN-VDSL2 (when the physical port is a VDSL2 port) or LAN-ETHER (when the physical port is an Ethernet port)
      - Vlan ID: 1001
      - Interface Selection: 0/1/1
      - VPI: 0 (when the physical port is an ADSL or VDSL2 port)



- VCI: 0 (when the physical port is an ADSL or VDSL2 port)
- User VLAN: untagged
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx




(4) Click **OK**.

### 3. Configure a VDSL2 line profile.

The VDSL2 line profile needs to be bound to a line configuration profile and channel configuration profile, and the line configuration profile needs to be bound to a line spectrum configuration profile.

- (1) Choose **Configuration > Access Profile Management > VDSL2 Profile** from the main menu.
- (2) Click the **VDSL2 Line Profile** tab.
- (3) Click the **Line Spectrum Configuration Profile** tab, and select the required device type from the **Device Type** drop-down list.
- (4) Right-click and choose **Add Global Profile** from the shortcut menu.
- (5) In the dialog box that is displayed, set the parameters.
  - Name: vdsl\_profile1
  - Other parameters: default settings
- (6) Click **OK**.
- (7) Click the **Line Configuration Profile** tab, and select the required device type from the **Device Type** drop-down list.
- (8) Right-click and choose **Add Global Profile** from the shortcut menu.
- (9) In the dialog box that is displayed, set the parameters.
  - Name: vdsl\_profile2
  - Transmission Mode: G.992.5 POTS overlapped, G.992.5 Annex I All-Digital overlapped
  - Line Spectrum Configuration Profile: vdsl\_profile1

- Other parameters: default settings
- (10) Click **Finish**.
  - (11) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (12) In the dialog box that is displayed, select the required MDU and click **OK**.
  - (13) Click the **Channel Configuration Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (14) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (15) In the dialog box that is displayed, set the parameters.
    - Name: vdsl\_profile3
    - Other parameters: default settings
  - (16) Click **OK**.
  - (17) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (18) In the dialog box that is displayed, select the required MDU and click **OK**.
  - (19) Click the **Line Template** tab, and select the required device type from the **Device Type** drop-down list.
  - (20) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (21) In the dialog box that is displayed, set the parameters.
    - Name: vdsl\_profile
    - Line Configuration Profile: vdsl\_profile2
    - Channel1 Configuration Profile: vdsl\_profile3
    - Other parameters: default settings
  - (22) Click **OK**.
  - (23) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (24) In the dialog box that is displayed, select the required MDU and click **OK**.
4. **Configure the attributes of a VDSL2 port and activate the VDSL2 port.**
- (1) Choose **DSL > VDSL2** from the navigation tree.
  - (2) On the **VDSL2** tab page, enter the filter criteria or click  to display the required VDSL2 ports.
  - (3) In the information list, right-click port 0/2/1 and choose **Configure Attributes** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Line Profile: vdsl\_profile
    - Other parameters: default settings
  - (5) Click **OK**.
  - (6) In the information list, right-click port 0/2/1 and choose **Activate** from the shortcut menu.

----End

## Result

The user gains access to the Internet after the dialup is performed successfully by the PPPoE dialup software on the PC.

## 23.4.5 Configuring the EPON FTTB Multicast Service

This topic describes how to configure the multicast service when an MDU is connected to an OLT through an EPON port.

### Prerequisite

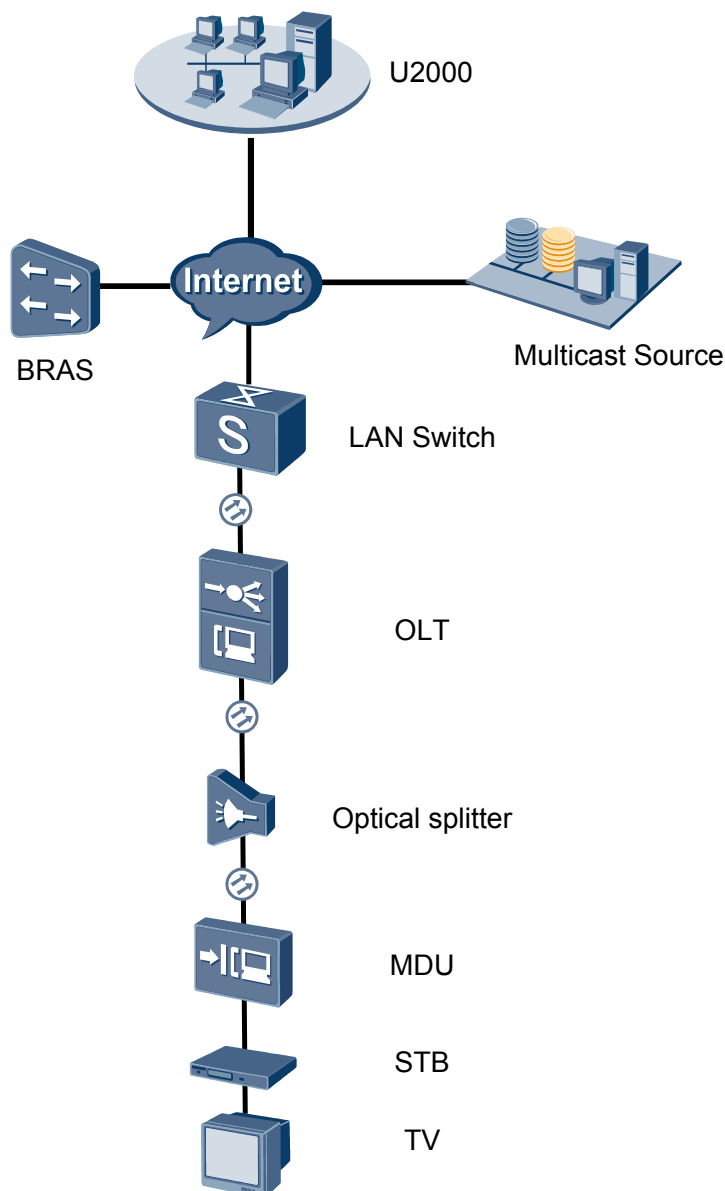
- The OLT must be added to the U2000.
- The licenses of multicast programs or users must have been applied for and installed.

### Context

For details of the data plan, see [23.4.1 Data Plan for the EPON FTTB Services](#).

### Example Network

- The STB is connected to port 0/0/1 on the MDU, and data frames are transmitted through an upstream port of the MDU to the OLT. The OLT transmits the data frames to separate service channels according to user-side VLANs, switches VLAN tags (that is, switches user-side VLANs to upstream VLANs), and then transmits the data frames through an upstream port.
- The OLT uses IGMP proxy, and the MDU uses IGMP snooping. IGMP proxy and IGMP snooping are Layer 2 multicast protocols.
- Multicast programs are configured statically.
- Multicast logs are reported to the log server as CDR files.

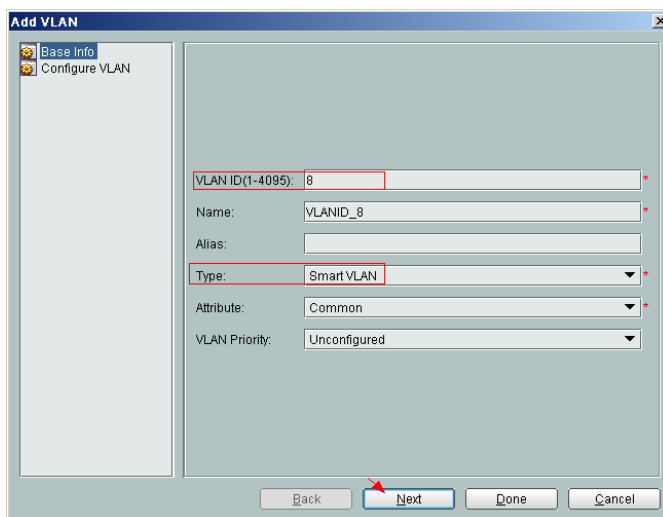
**Figure 23-4** Configuring the EPON FTTB multicast service

## Procedure

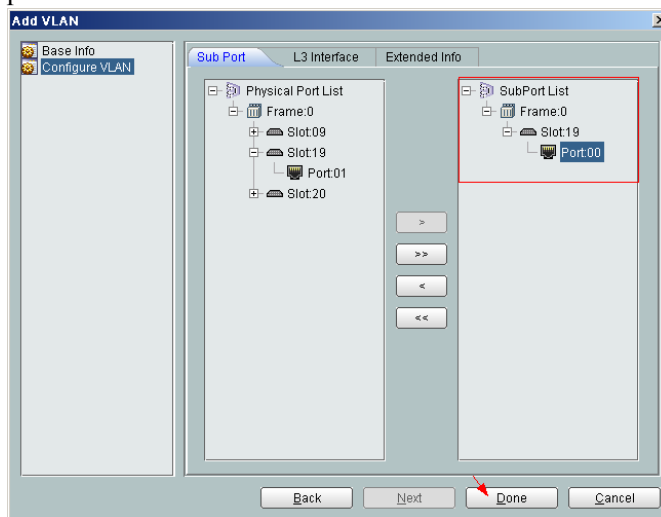
- **Add the MDU to the U2000 in profile mode.**
  1. **Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

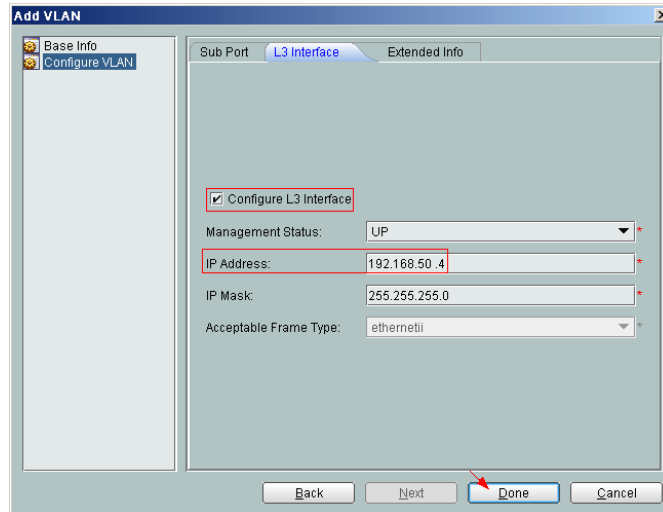
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8
  - Type: Smart VLAN



- (5) Click **Next**.
  - Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



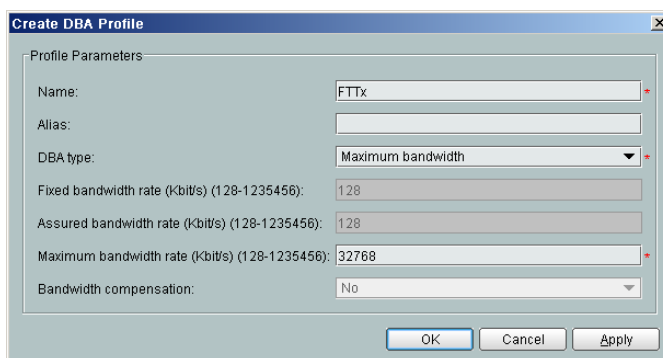
- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4



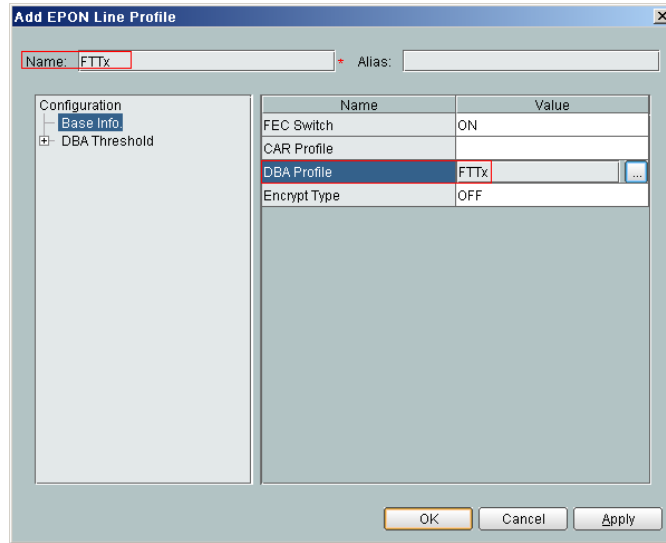
- (6) Click **Done**.
2. **Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - (2) Click the **MEF IP Traffic Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - CIR: 20480
    - Outer Priority: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure an MDU SNMP profile. For details, see [23.1.1 Configuring an MDU SNMP Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
    - Trap UDP Port: 162
    - SNMP Security Name: public






- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a DBA profile. For details, see [23.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Configure a line profile. For details, see [23.1.3 Configuring a Line Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Profile: FTTx



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
6. **Confirm the MDU on the OLT side. For details, see 23.1.4 Confirming an MDU.**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 0018-8256-3E47, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected
      - SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)




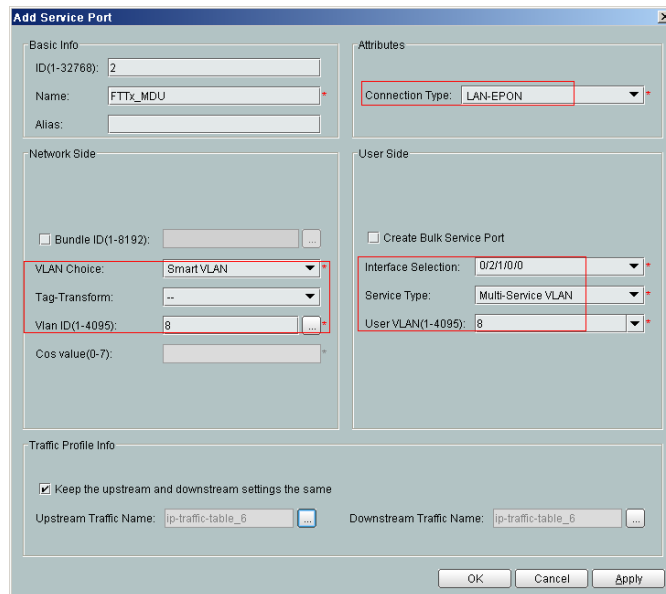
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

The screenshot shows the 'Confirm ONU' dialog box with the 'Basic Parameters' tab selected. The 'ONU Type' dropdown is set to 'MDU'. The 'Line Profile' dropdown is set to 'FTTx'. The 'Auth Info' section shows 'Auth Way' as 'MAC Address', 'MAC Address' as '00-18-82-56-3E-47', and 'Key' as '00000000000000000000'. The 'Extend Information' section has 'DHCP Status' and 'PITP Status' checkboxes. The 'ONU Type' section shows 'Vendor ID' as 'HWTC(2011)' and 'Terminal Type' as 'MDU'. At the bottom, there is a checkbox for 'Locate to ONU list after operation succeeds' and 'OK', 'Cancel', and 'Apply' buttons.

The screenshot shows the 'Confirm ONU' dialog box with the 'Network Management Channel Parameters' tab selected. The 'OLT Sets Network Management Channel Parameters' checkbox is checked. The 'EPON SNMP Profile' dropdown is set to 'snmpprofile'. The 'Net Para' section shows 'Manager VLAN(1-4095)' as '8', 'IP Address' as '192.168.50.2', and 'IP Address Mask' as '255.255.255.0'. The 'Static Route Parameters' section has 'Target IP Address', 'Target Mask', and 'Next Hop IP Address' fields. At the bottom, there is a checkbox for 'Locate to ONU list after operation succeeds' and 'OK', 'Cancel', and 'Apply' buttons.

- (6) Click **OK**.
7. **Add a service virtual port on the OLT side. For details, see [23.1.6 Adding a Service Virtual Port](#) and [23.1.7 Verifying the Interoperability Between an OLT and an MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **EPON > EPON ONU** from the navigation tree.
- (3) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- (4) In the information list, select the record where the shelf, slot, port, and ONU IDs are 0, 2, 1, and 0 respectively and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-EPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

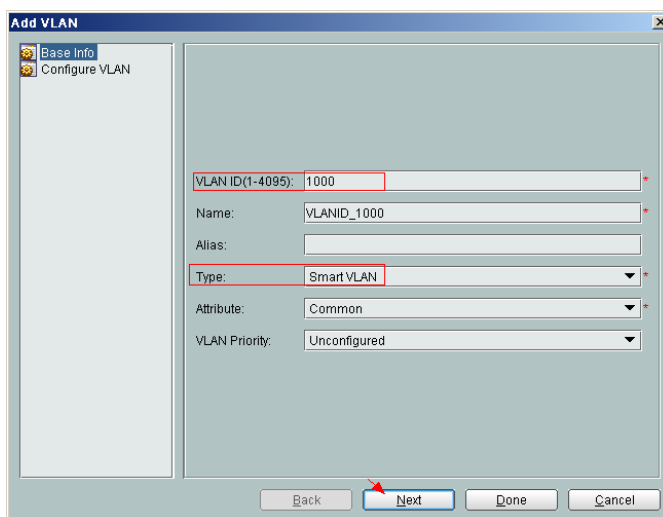
- **Configure the multicast service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

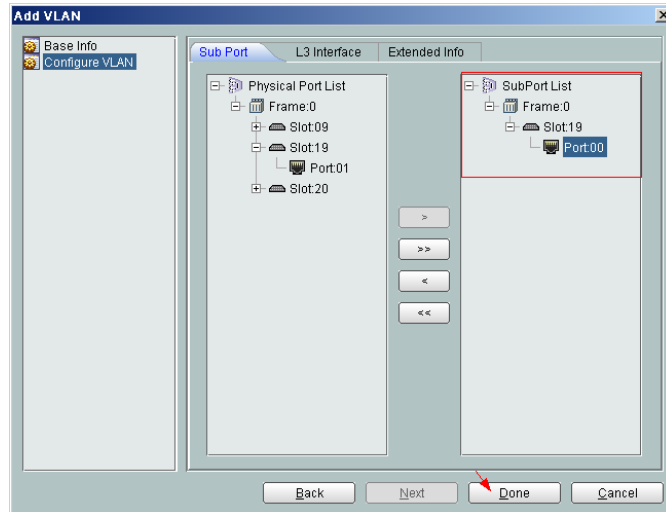
1. **Add a VLAN. For details, see 19.2.1 Configuring a VLAN.**
  - (1) Choose **VLAN** from the navigation tree.
  - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 3000
    - Type: Smart VLAN
  - (4) Click **Done**.
2. **Configure a service VLAN on the OLT side. For details, see 19.2.1 Configuring a VLAN.**

A service VLAN is the VLAN used for the multicast service.

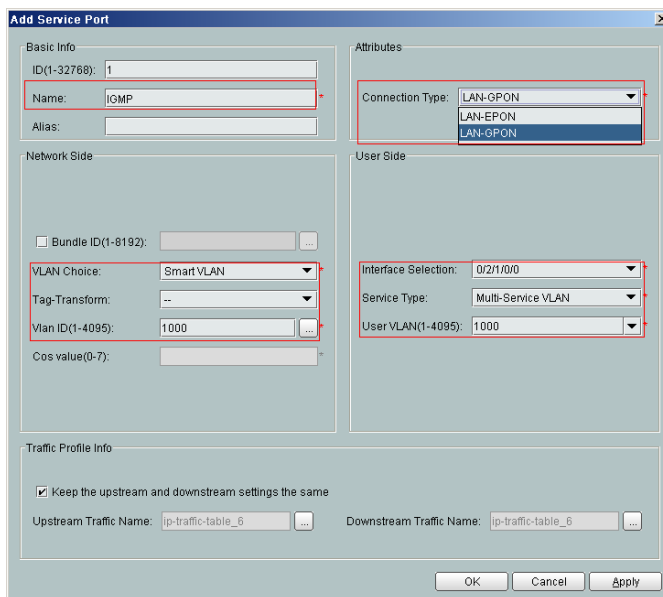
- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Type: Smart VLAN



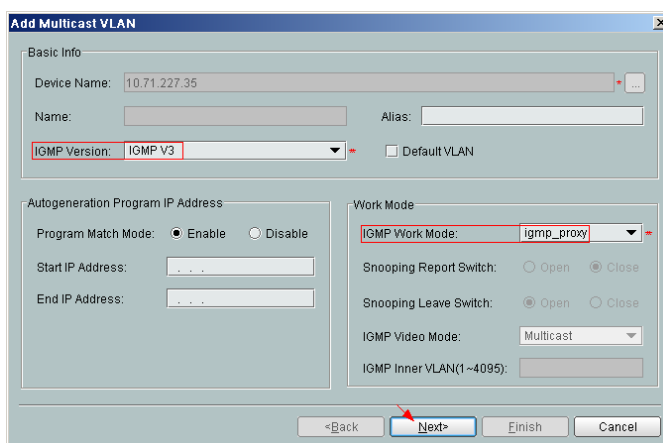
- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.

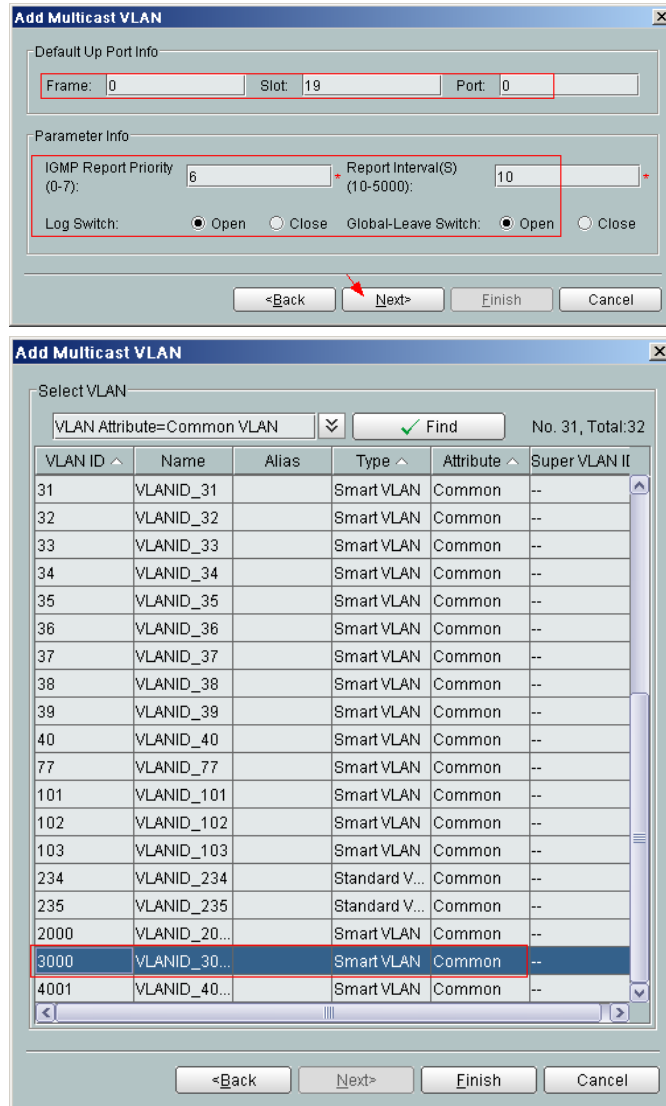


- (5) Click **Done**.
3. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name:IGMP
      - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
      - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
      - Vlan ID: 1000
      - Service Type: Multi-Service VLAN
      - User VLAN: 1000
      - Keep the upstream and downstream settings the same: selected
      - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams)



- (4) Click **OK**.
4. **Add a multicast VLAN on the OLT side. For details, see [19.2.7 Configuring the Multicast VLAN](#).**
- (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
  - (2) On the **Multicast VLAN** tab page, set the filter criteria to display the required multicast VLANs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - IGMP Version: IGMP V3
    - Work Mode: igmp\_proxy
    - VLAN ID: 3000

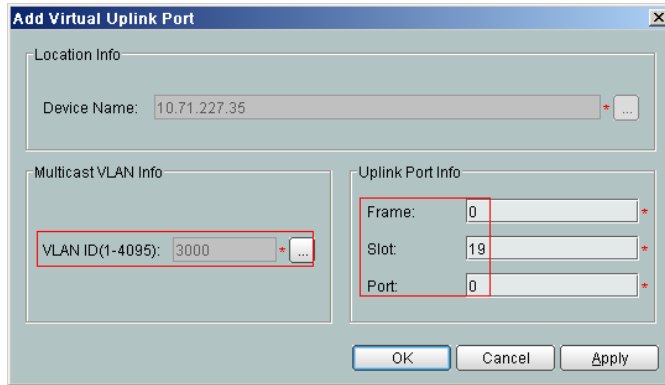




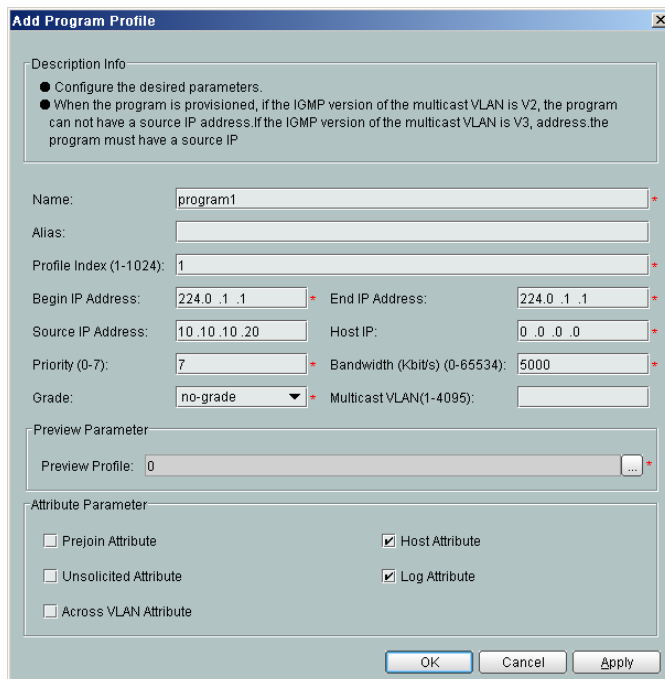
(5) Click **Finish**.

5. **Add a virtual upstream port for the multicast service on the OLT side. For details, see [19.2.5 Configuring the Virtual Multicast Upstream Port](#).**

- (1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.
- (2) On the **Virtual Uplink Port** tab page, set the filter criteria to display the required virtual upstream ports.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Frame: 0
  - Slot: 19
  - Port: 0



- (5) Click **Done**.
6. **Configure a program profile on the OLT side. For details, see [19.2.8 Configuring a Program Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
  - (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: program1
    - Start IP Address: 224.0.1.1 (IP address of the multicast program)
    - End IP Address: 224.0.1.1
    - Source IP Address: 10.10.10.20 (IP address of the multicast server)
    - Preview Profile: 0 (the default value)

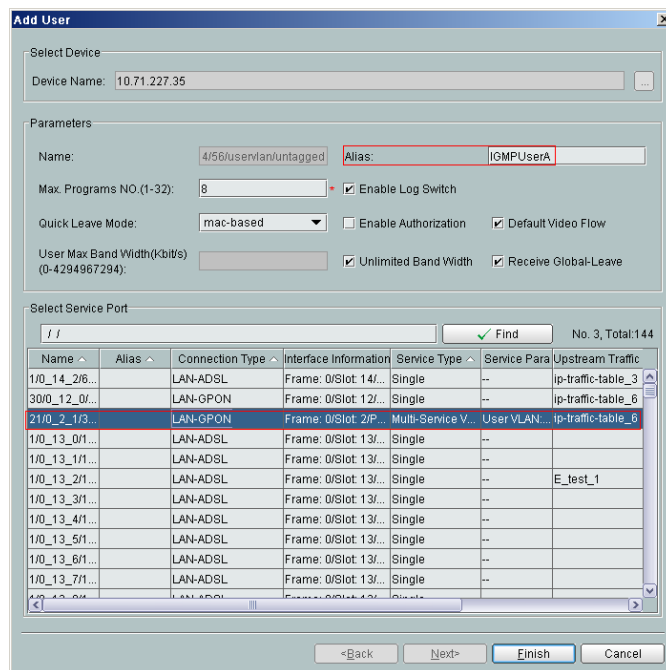


- (5) Click **OK**.

- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required OLT and click **Next**. Then, set **VLAN ID** to **3000**.
  - (8) Click **OK**.
7. **Configure a multicast user on the OLT side. For details, see [19.2.10 Configuring a Multicast User](#).**

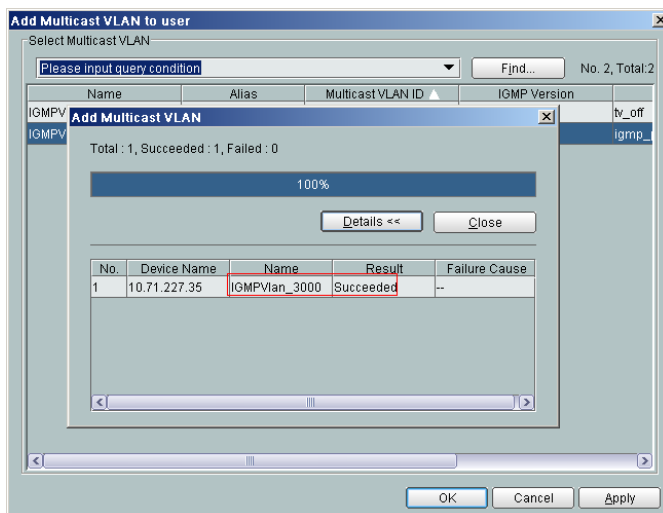
To enable user authentication, select **Enable Authorization**. To add a rights profile and apply it to NEs, choose **Configuration > Access Profile Management > IGMP Profile** from the main menu and click the **Right Profile** tab.

- (1) Choose **Multicast > Multicast User** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Alias: IGMPUserA
  - Unlimited Band Width: selected
  - Select Service Port: service virtual port named **IGMP**



- (4) Click **Finish**.
- (5) Select the multicast user, click the **User Multicast VLAN** tab in the lower pane, right-click, and then choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, select the record where **Multicast VLAN ID** is set to **3000** and click **OK**.





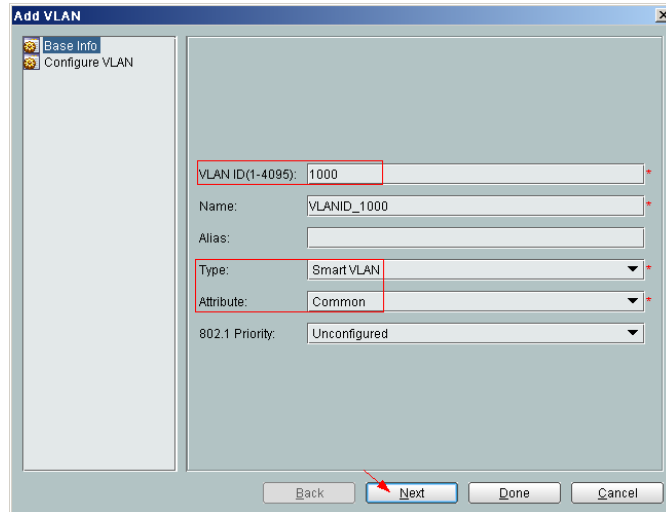
- **Configure the multicast service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Add a VLAN. For details, see 19.2.1 Configuring a VLAN.**
  - (1) Choose **VLAN** from the navigation tree.
  - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 3000
    - Type: Smart VLAN
  - (4) Click **Done**.
2. **Configure a service VLAN on the MDU side. For details, see 19.2.1 Configuring a VLAN.**

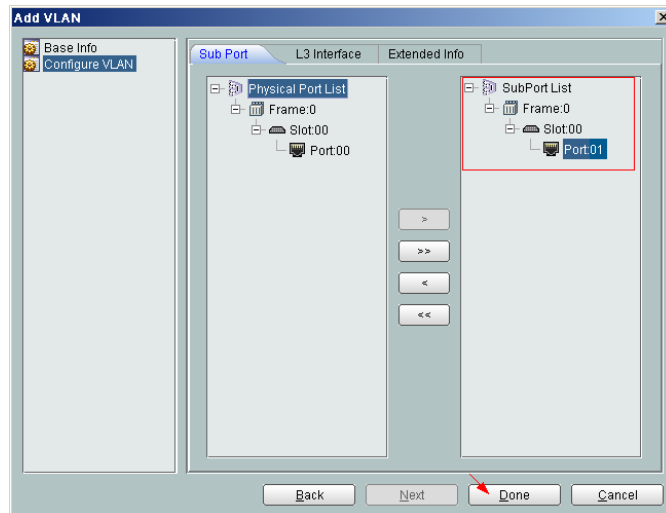
A service VLAN is the VLAN used for the multicast service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Type: Smart VLAN



(4) Click **Next**.

(5) Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



(6) Click **Done**.

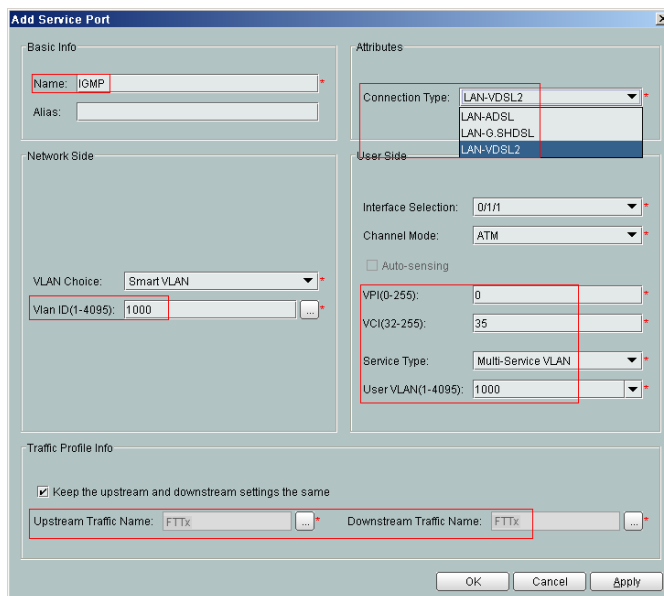
3. **Add a service virtual port on the MDU side.** For details, see [19.3.3 Adding a Service Port](#).

**NOTE**

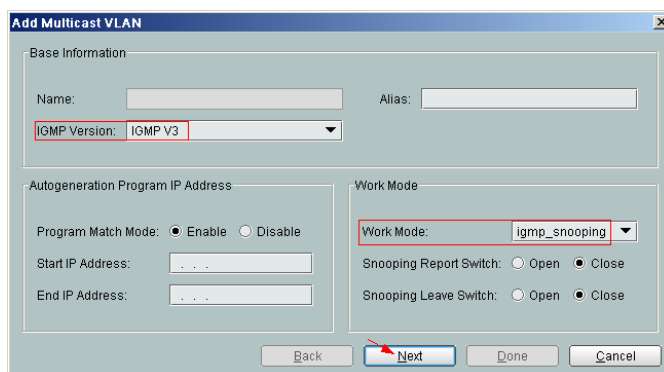
If the access port of MDU is xDSL port, ensure that the xDSL port is activated.

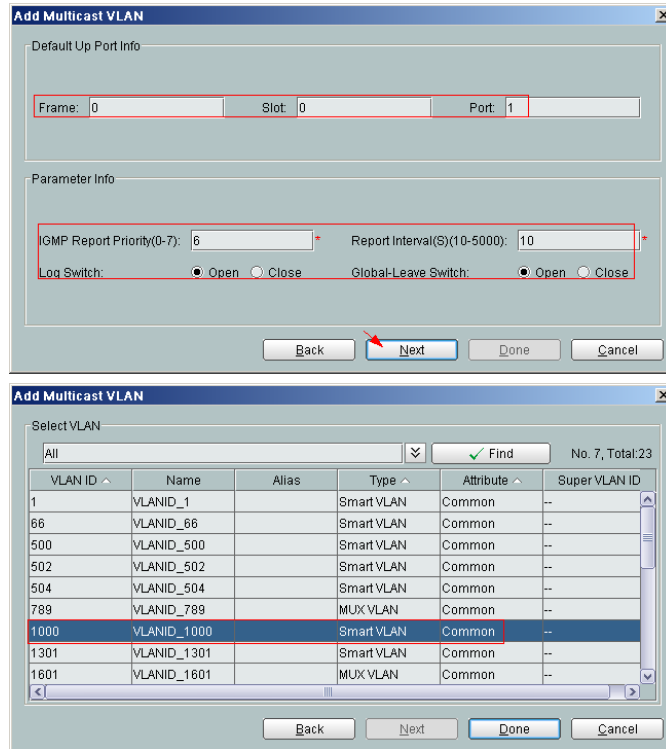
- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1000** and click the **ServicePort** tab in the lower pane.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Name: IGMP
  - Connection Type: LAN-ADSL (when the physical port is an ADSL port) or LAN-VDSL2 (when the physical port is a VDSL2 port) or LAN-ETHER (when the physical port is an Ethernet port)
  - Vlan ID: 1000

- Interface Selection: 0/1/1
- VPI: 0 (when the physical port is an ADSL or VDSL2 port)
- VCI: 0 (when the physical port is an ADSL or VDSL2 port)
- Service Type: Multi-Service VLAN
- User VLAN: untagged
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

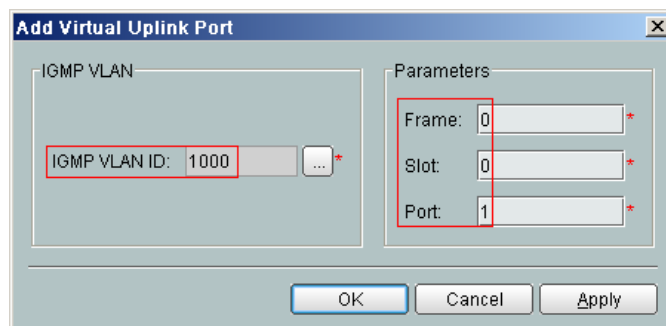


- (4) Click **OK**.
4. **Add a multicast VLAN on the MDU side. For details, see [19.2.7 Configuring the Multicast VLAN](#).**
- (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - IGMP Version: IGMP V3
    - Work Mode: igmp\_snooping
    - VLAN ID: 1000



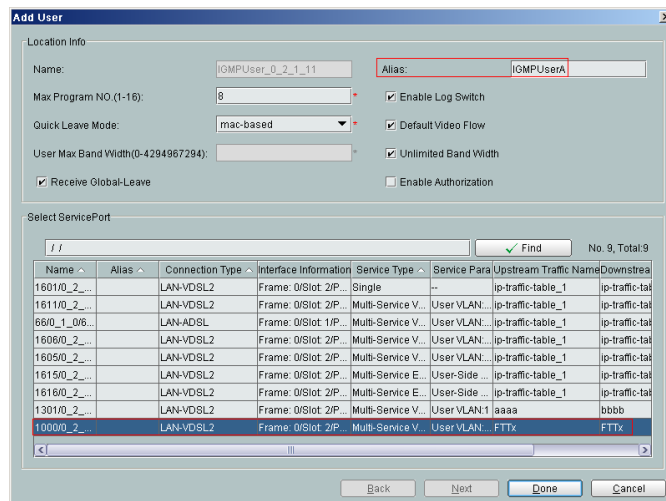


- (4) Click **Done**.
5. **Add a virtual upstream port for the multicast service on the MDU side. For details, see [19.2.5 Configuring the Virtual Multicast Upstream Port](#).**
- (1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.
  - (2) On the **Multicast VLAN** tab page, set the filter criteria to display the required multicast VLANs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 1000
    - Frame: 0
    - Slot: 0
    - Port: 1

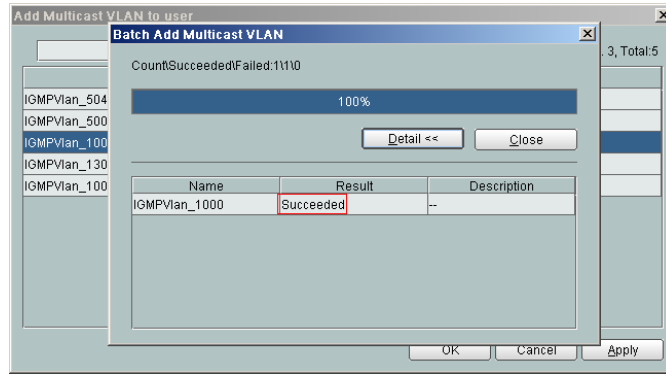


- (5) Click **OK**.
6. **Configure a program profile on the MDU side. For details, see [19.2.8 Configuring a Program Profile](#).**

- (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
  - (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click the program profile whose **IP Address** is set to **224.0.1.1** and choose **Download to NE** from the shortcut menu.
  - (4) In the dialog box that is displayed, select the required MDU and click **Next**. Then, set **VLAN ID** to **1000**.
  - (5) Click **OK**.
7. **Configure a multicast user on the MDU side. For details, see 19.2.10 Configuring a Multicast User.**
- (1) Choose **Multicast > Multicast User** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Alias: IGMPUserA
    - Unlimited Band Width: selected
    - Select Service Port: service virtual port named **IGMP**



- (4) Click **Finish**.
- (5) Select the multicast user, click the **User Multicast VLAN** tab in the lower pane, right-click, and then choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, select the record where **Multicast VLAN ID** is set to **1000** and click **OK**.



----End

## Result

The user can watch program1 on TV.

## 23.4.6 Configuring the EPON FTTB Voice Service (H.248 Protocol)

This topic describes how to configure the voice service when an MDU is connected to an OLT through an EPON port.

### Prerequisite

- The OLT must be added to the U2000.
- The data of the MGC interface and PSTN user corresponding to the MG interface must be configured on the MGC.

### Context

H.248 is the Media Gateway Control Protocol. In the MG separation architecture, H.248 is the communication protocol between an MGC and an MG, and it is used for the MGC to control the MG.

The MDU functions as an MG and the SoftX3000 functions as an MGC if the softswitch that matches the MDU is SoftX3000.

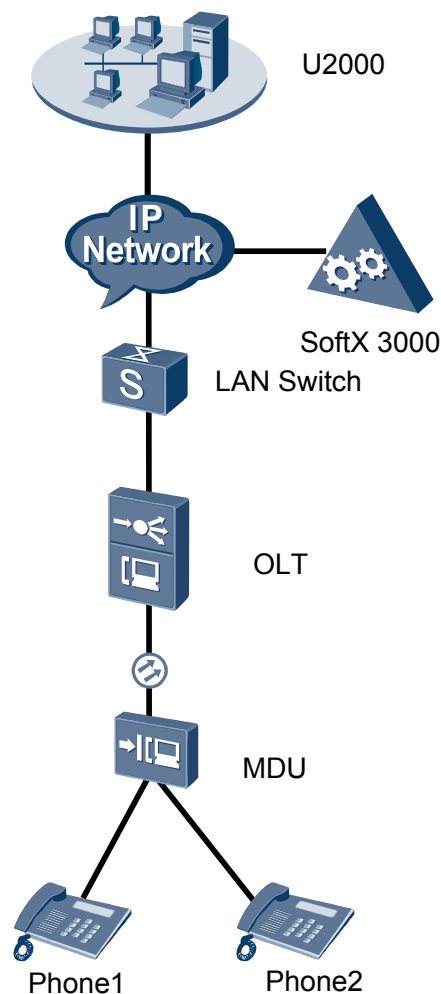
For details of the data plan, see [23.4.1 Data Plan for the EPON FTTB Services](#).

### Example Network

MA5620, MA5626, MA5616, and MA5612 support H.248 Protocol. The configuration procedure in this topic is applicable to the MA5620 V800R308, MA5626 V800R308, MA5612 V800R308, and MA5616 V800R308.

The MDU is connected to an EPON port on the OLT, and phone 1 and phone 2 are connected to voice service ports on the MDU.

**Figure 23-5** Configuring the EPON FTTB voice service (H.248 protocol)



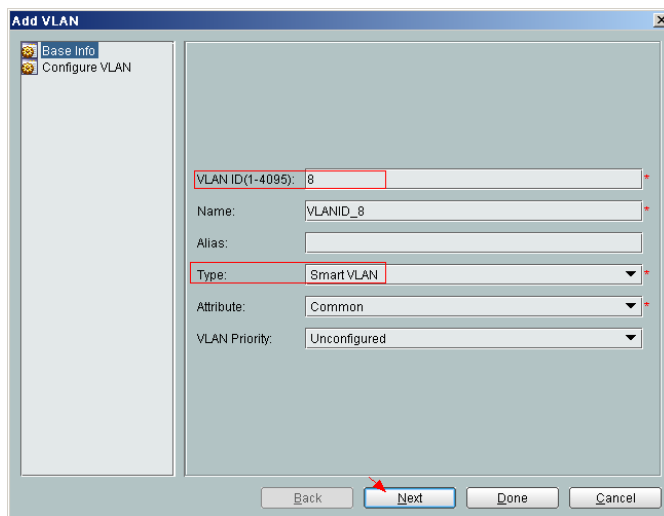
## Procedure

- Add the MDU to the U2000 in profile mode.
  1. Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).

A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

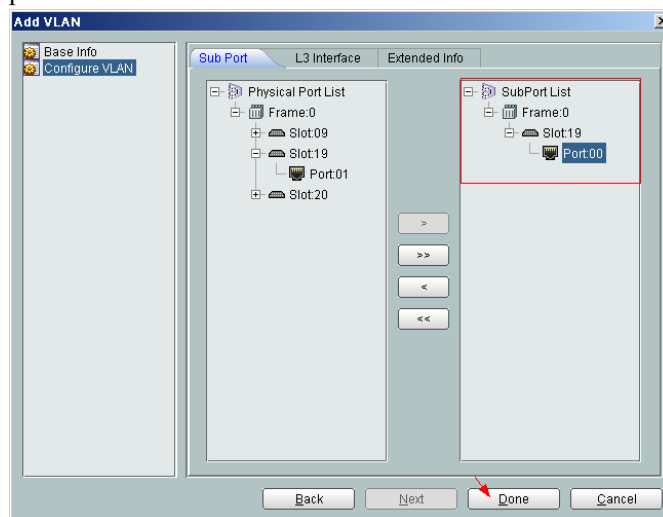
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8

- Type: Smart VLAN



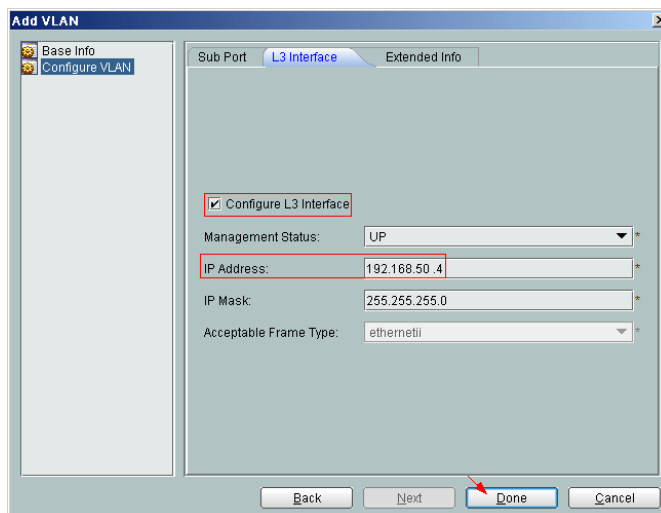
- (5) Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4

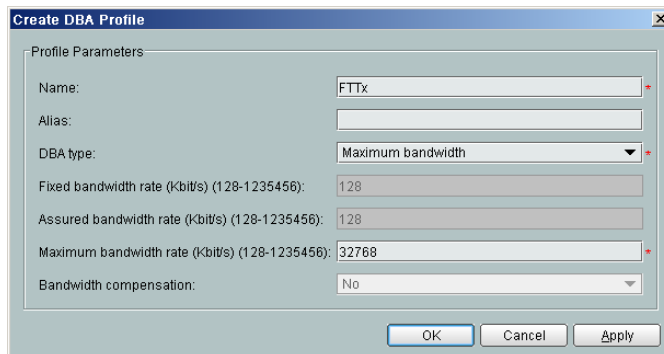




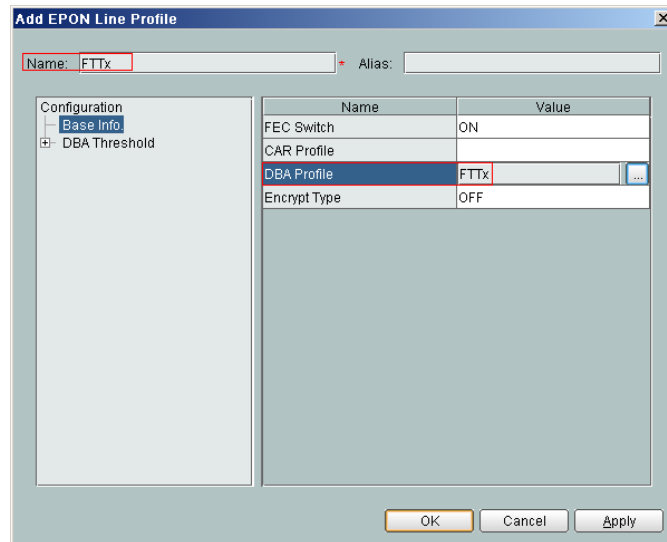
- (6) Click **Done**.
2. **Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - (2) Click the **MEF IP Traffic Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - CIR: 20480
    - Outer Priority: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure an MDU SNMP profile. For details, see [23.1.1 Configuring an MDU SNMP Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
    - Trap UDP Port: 162
    - SNMP Security Name: public






- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a DBA profile. For details, see [23.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Configure a line profile. For details, see [23.1.3 Configuring a Line Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Profile: FTTx



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
6. **Confirm the MDU on the OLT side. For details, see 23.1.4 Confirming an MDU.**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 0018-8256-3E47, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected
      - SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)

- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

**Confirm ONU**

Affiliated Port: 0/2/1 \* Splitter ID:   
 Name: MDU \* Alias:   
 ONU ID(0-127):  Auto Assign 0 \* Splitter Port ID(1-128):   
 ONU Type: MDU \*

**Basic Parameters** | Network Management Channel Parameters

Line Profile: FTTx \* Service Profile:   
 ONU VAS Profile:   
 Auth Info   
 Auth Way: MAC Address \* MAC Address: 00-18-82-56-3E-47   
 Key: 00000000000000000000 \* Time Out(h)(1-168):  Disable   
 Extend Information   
 DHCP Status  PITP Status   
 ONU Type   
 Vendor ID: HWTC(2011) \* Terminal Type: MDU \*   
 Software Version:   
 Locate to ONU list after operation succeeds   
 OK Cancel Apply

**Confirm ONU**


Affiliated Port: 0/2/1 \* Splitter ID:   
 Name: MDU \* Alias:   
 ONU ID(0-127):  Auto Assign 0 \* Splitter Port ID(1-128):   
 ONU Type: MDU \*

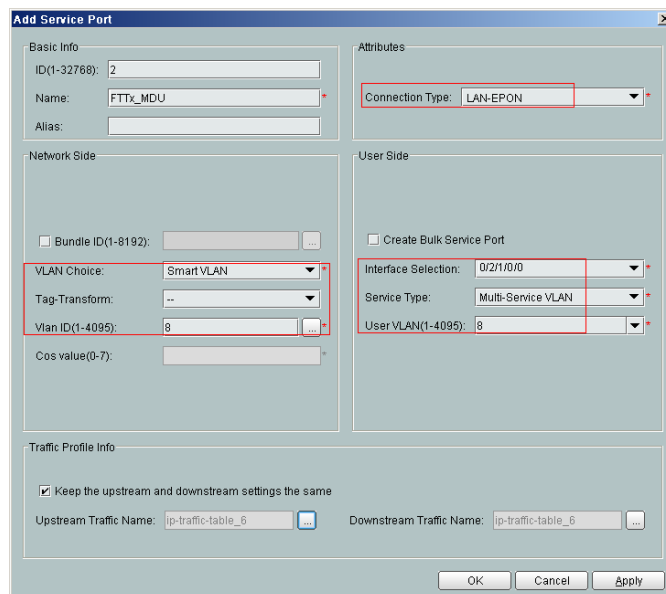
**Basic Parameters** | **Network Management Channel Parameters**

OLT Sets Network Management Channel Parameters EPON SNMP Profile: snmpprofile \*   
 Net Para   
 Manager VLAN(1-4095): 8 \* Gateway IP Address:   
 IP Address: 192.168.50.2 \* IP Address Mask: 255.255.255.0 \*   
 Priority(0-7):   
 Static Route Parameters   
 Target IP Address: Target Mask:   
 Next Hop IP Address:   
 Locate to ONU list after operation succeeds   
 OK Cancel Apply

(6) Click **OK**.

7. Add a service virtual port on the OLT side. For details, see [23.1.6 Adding a Service Virtual Port](#) and [23.1.7 Verifying the Interoperability Between an OLT and an MDU](#).

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **EPON > EPON ONU** from the navigation tree.
- (3) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- (4) In the information list, select the record where the shelf, slot, port, and ONU IDs are 0, 2, 1, and 0 respectively and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-EPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

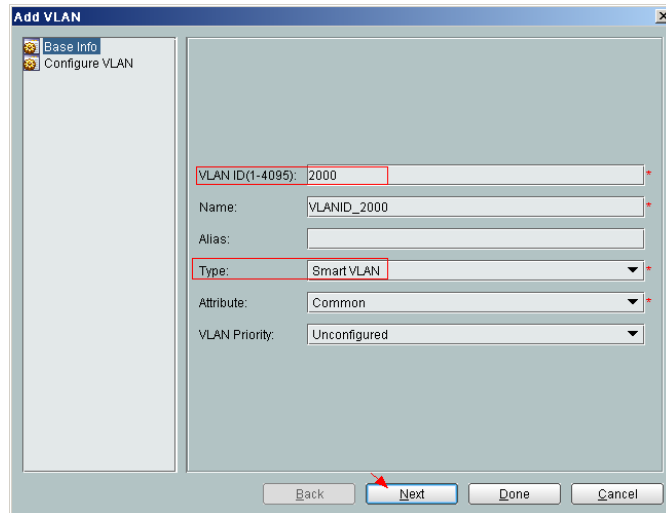
- **Configure the voice service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

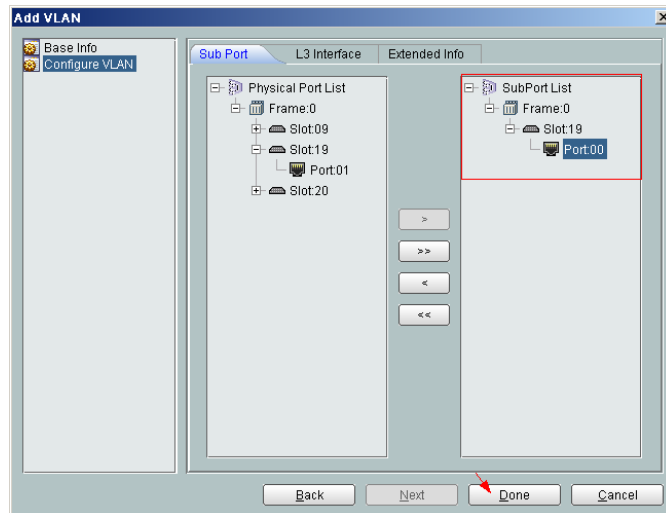
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.

- (3) In the dialog box that is displayed, set the parameters.
  - Name: VOIP
  - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
  - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
  - Vlan ID: 2000
  - Service Type: Multi-Service VLAN
  - User VLAN: 2000
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: FTTx

The screenshot shows the 'Add Service Port' dialog box with the following configuration details:

- Basic Info:** ID(1-32768): 1, Name: VOIP, Alias: (empty)
- Attributes:** Connection Type: LAN-GPON
- Network Side:** Bundle ID(1-8192): (empty), VLAN Choice: Smart VLAN, Tag-Transform: --, Vlan ID(1-4095): 2000, Cos value(0-7): (empty)
- User Side:** Interface Selection: 0/2/1/0/0, Service Type: Multi-Service VLAN, User VLAN(1-4095): 2000
- Traffic Profile Info:**  Keep the upstream and downstream settings the same, Upstream Traffic Name: ip-traffic-table\_6, Downstream Traffic Name: ip-traffic-table\_6

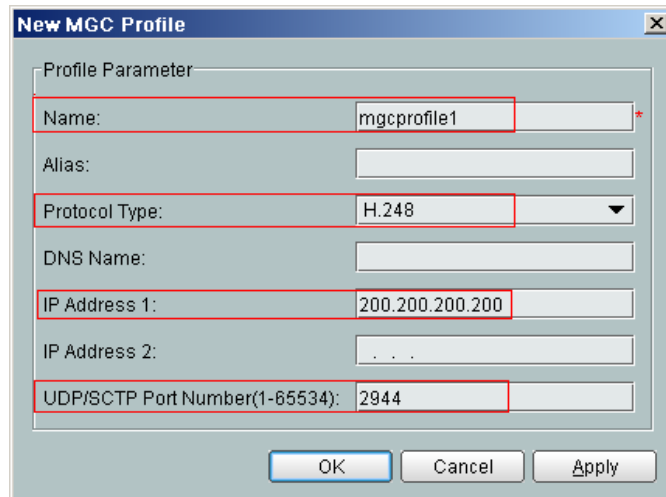
- (4) Click **OK**.

- **Configure the voice service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Add an MGC profile. For details, see [19.3.9 Adding an MGC Profile](#).**

- (1) Choose **Configuration > Access Profile Management > MGC Profile** from the main menu.
- (2) Right-click and choose **Add Global Profile** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Name: mgcprofile1
  - Protocol Type: H.248
  - IP Address 1: 200.200.200.200 (IP address of the MGC)
  - Port Number: 2944



The 'New MGC Profile' dialog box contains the following fields:

- Name: mgcprofile1
- Alias: (empty)
- Protocol Type: H.248
- DNS Name: (empty)
- IP Address 1: 200.200.200.200
- IP Address 2: . . .
- UDP/SCTP Port Number(1-65534): 2944

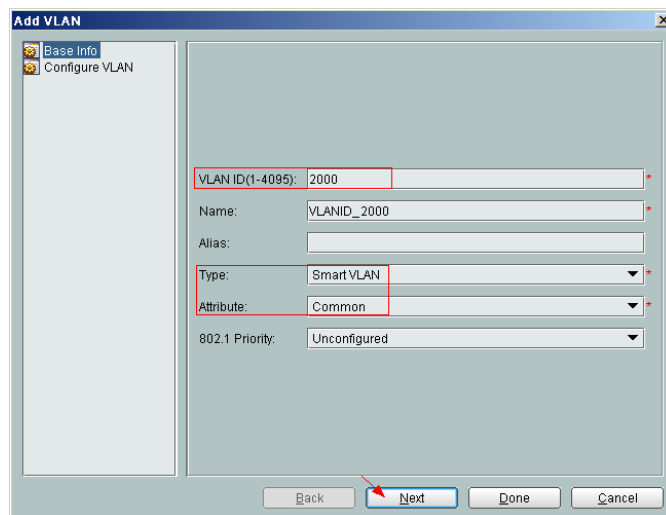
Buttons: OK, Cancel, Apply

(4) Click **OK**.

2. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN



The 'Add VLAN' dialog box contains the following fields:

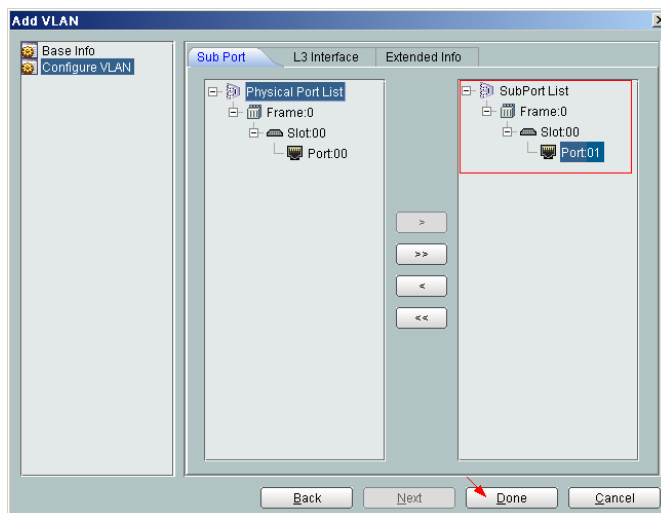
- VLAN ID(1-4095): 2000
- Name: VLANID\_2000
- Alias: (empty)
- Type: Smart VLAN
- Attribute: Common
- 802.1 Priority: Unconfigured

Buttons: Back, Next, Done, Cancel

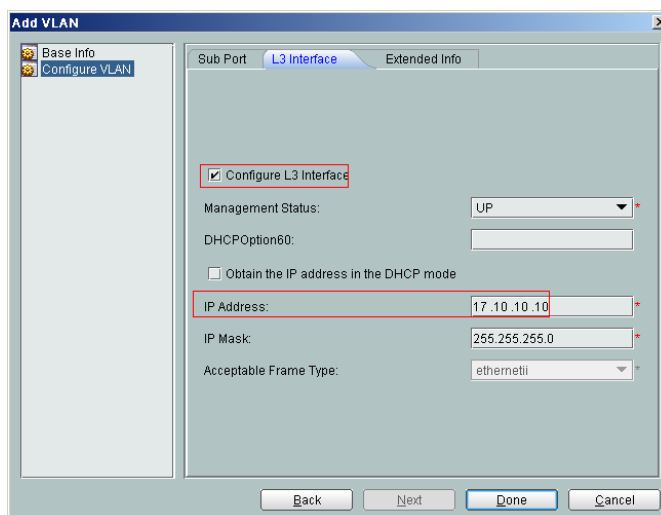
(4) Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.





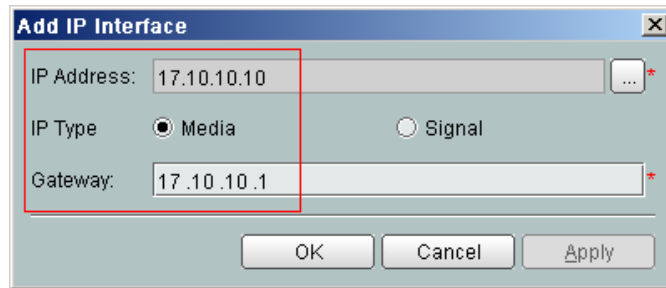
- Click the **L3 Interface** tab and set the parameters.
- Configure L3 Interface: selected
- IP Address: 17.10.10.10



- (5) Click **Done**.
3. **Add an IP interface on the MDU side. For details, see [19.3.2 Configuring an IP Interface](#).**

The procedure for adding a signaling IP interface is similar to the procedure for adding a media IP interface. The IP interface of the VLAN can be configured only when the L3 interface of the VLAN is configured with an IP address. According to the networking plan, the media IP address and the signaling IP address can be different.

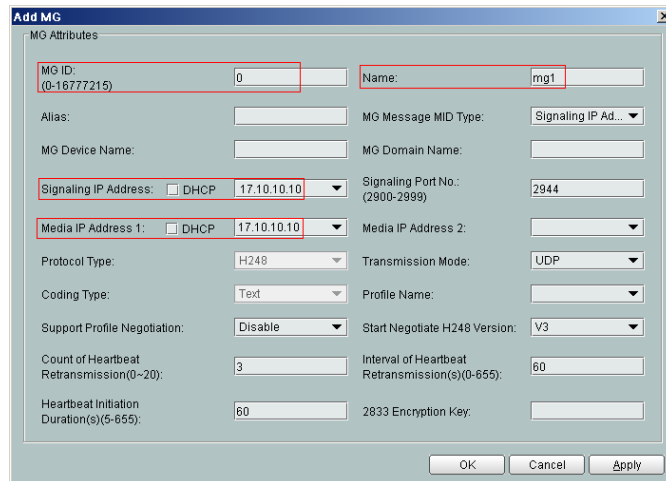
- (1) In the information list, select the record where **VLAN ID** is set to **2000** and click the **IP Interface** tab in the lower pane.
- (2) On the **IP Interface** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - IP Address: 17.10.10.10
  - IP Type: Media
  - Gateway: 17.10.10.1



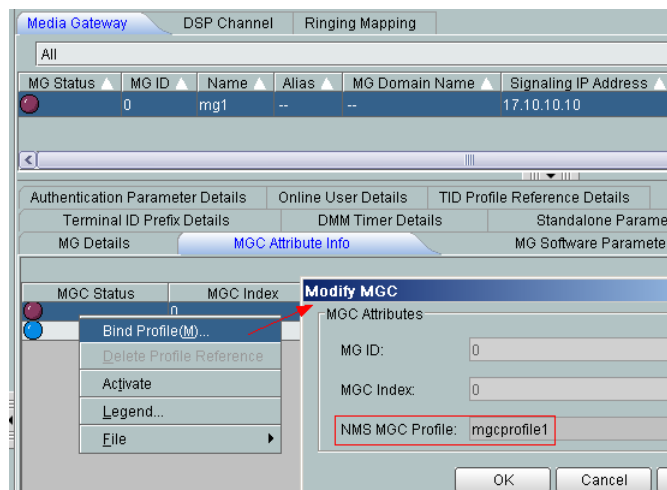
- (4) Click **OK**.
4. **Configure a static route. For details, see [19.3.8 Configuring a Static Route](#).**

If the IP address of the VLAN IP interface is not in the same network segment as the IP address of the MGC, you need to configure a static route.

  - (1) Choose **Static Route** from the navigation tree.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Target IP Address: 200.200.200.200 (IP address of the MGC or IMS)
    - Target Mask: 255.255.255.0
    - Next Hop IP Address: 17.10.10.1
  - (4) Click **OK**.
5. **Configure the MG. For details, see [19.3.12 Adding an MG](#), [19.3.13 Binding an MGC Profile](#), and [19.3.14 Starting an MG](#).**
  - (1) Choose **Voice Gateway > Media Gateway** from the navigation tree.
  - (2) On the **Media Gateway** tab page, set the filter criteria to display the required MGs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - MG ID: 0
    - Name: mg1
    - Signaling IP Address: 17.10.10.10
    - Signaling Port No.: 2944
    - Media IP Address 1: 17.10.10.10



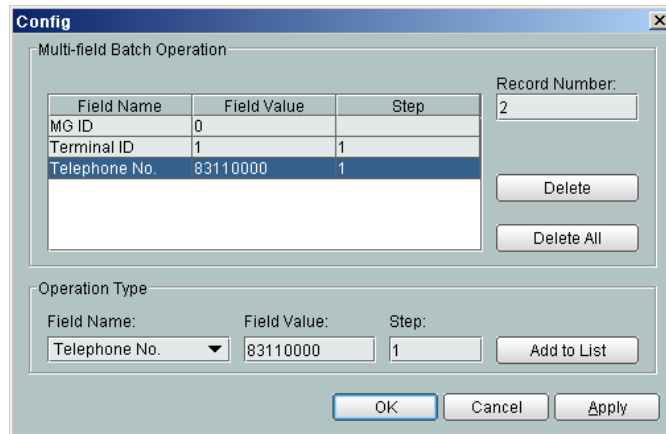
- (5) Click **OK**.
- (6) In the information list, select the record where **MG ID** is set to **0**, and click the **MGC Attribute Info** tab in the lower pane. In the list, right-click the record where **MGC Index** is set to **0** and choose **Bind Profile** from the shortcut menu.
- (7) In the dialog box that is displayed, set **NMS MGC Profile** to **mgcprofile1** and click **OK**.



- (8) In the information list, right-click the record where **MG ID** is set to **0** and choose **Cold Start** from the shortcut menu.
  - (9) In the dialog box that is displayed, click **Yes**.
6. **Configure the attributes of a VoIP PSTN port.** For details, see [19.3.15 Configuring a VoIP PSTN Port](#).

- (1) Choose **ASL > POTS Port** from the navigation tree.
- (2) Click the **VoIP PSTN Port** tab, and set the filter criteria to display the required VoIP PSTN ports.
- (3) In the information list, select ports 0/1/0 and 0/1/1 by holding down the **Shift** key, right-click, and then choose **Configure Attributes** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.

| Parameter     | Value    | Step |
|---------------|----------|------|
| MG ID         | 0        | -    |
| Terminal ID   | 0        | 1    |
| Telephone No. | 83110000 | 1    |



(5) Click **OK**.

----End

## Result

Phone 1 and phone 2 can communicate with each other after the configuration is complete.

- The caller hears the dialing tone after taking the phone off the hook.
- When the caller dials the telephone number of the callee, the phone of the callee rings successfully and the caller hears the ringback tone.
- The caller and the callee communicate with each other successfully.
- After the callee hangs up, the caller hears the busy tone.

## 23.4.7 Configuring the EPON FTTB Voice Service (SIP Protocol)

This topic describes how to configure the voice service when an MDU is connected to an OLT through an EPON port.

### Prerequisite

- The OLT must be added to the U2000.
- The PSTN user data corresponding to the SIP interface must be configured on the IMS.

### Context

The IMS is an IP-based subsystem for controlling multimedia sessions on the NGN. The IMS includes all the core network elements that control multimedia services such as audio, video, text, and instant message services.

The SIP protocol is a control-layer protocol of the IMS and it is one of the framework protocols designed by the IETF for the multimedia communication system. The SIP protocol is also an

application-layer protocol for creating, modifying, and terminating multimedia sessions. It is used with other protocols, such as RTP, RTCP, SDP, RTSP, and DNS, to complete session establishment and media negotiation.

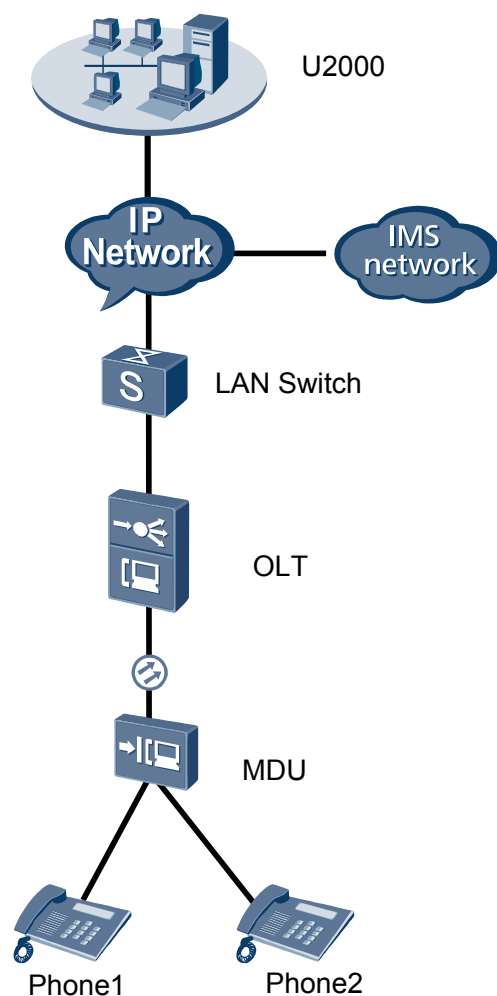
For details of the data plan, see [23.4.1 Data Plan for the EPON FTTB Services](#).

## Example Network

MA5620, MA5626, MA5616, and MA5612 support SIP Protocol. The configuration procedure in this topic is applicable to the MA5620 V800R308, MA5626 V800R308, MA5612 V800R308, and MA5616 V800R308.

The MDU is connected to an EPON port on the OLT, and phone 1 and phone 2 are connected to voice service ports on the MDU.

**Figure 23-6** Configuring the EPON FTTB voice service (SIP protocol)



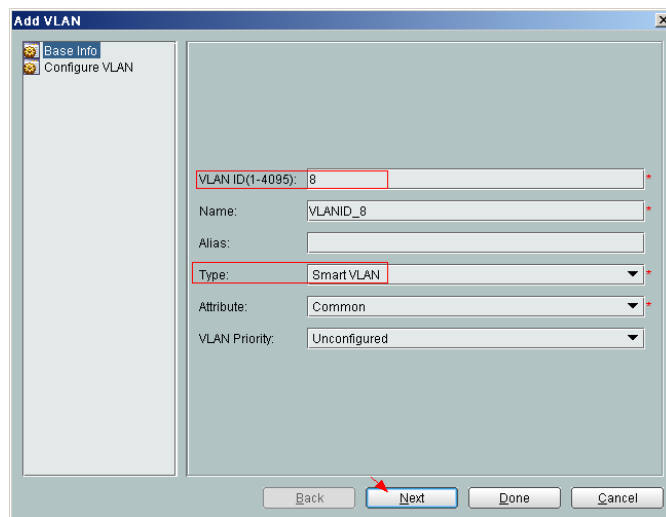
## Procedure

- Add the MDU to the U2000 in profile mode.

1. **Configure a management VLAN on the OLT side. For details, see 19.2.1 Configuring a VLAN.**

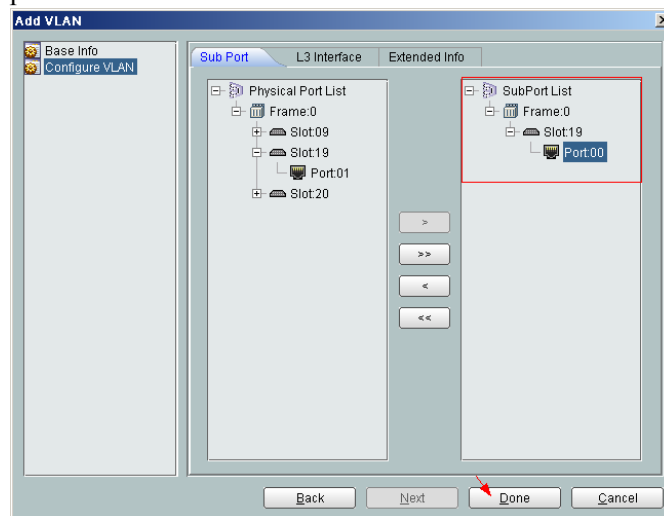
A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 8
  - Type: Smart VLAN



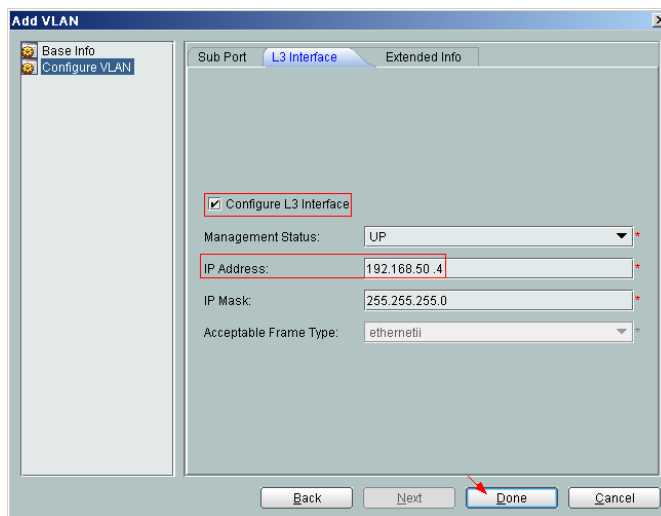
(5) Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.

- Configure L3 Interface: selected
- IP Address: 192.168.50.4

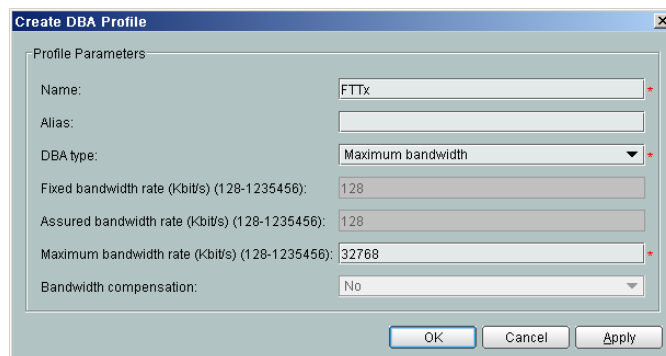


- (6) Click **Done**.
2. **Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
  - (2) Click the **MEF IP Traffic Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - CIR: 20480
    - Outer Priority: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure an MDU SNMP profile. For details, see [23.1.1 Configuring an MDU SNMP Profile](#).**
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)

- Trap UDP Port: 162
- SNMP Security Name: public



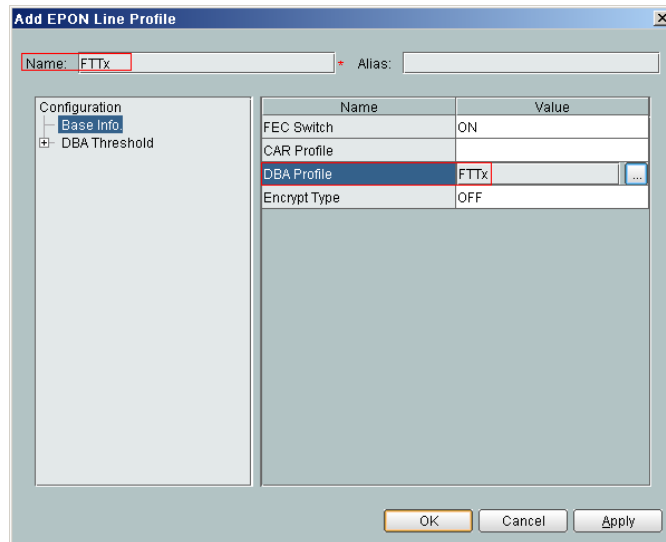
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a DBA profile. For details, see 23.1.2 Configuring a DBA Profile.**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768






- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Configure a line profile. For details, see 23.1.3 Configuring a Line Profile.**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.

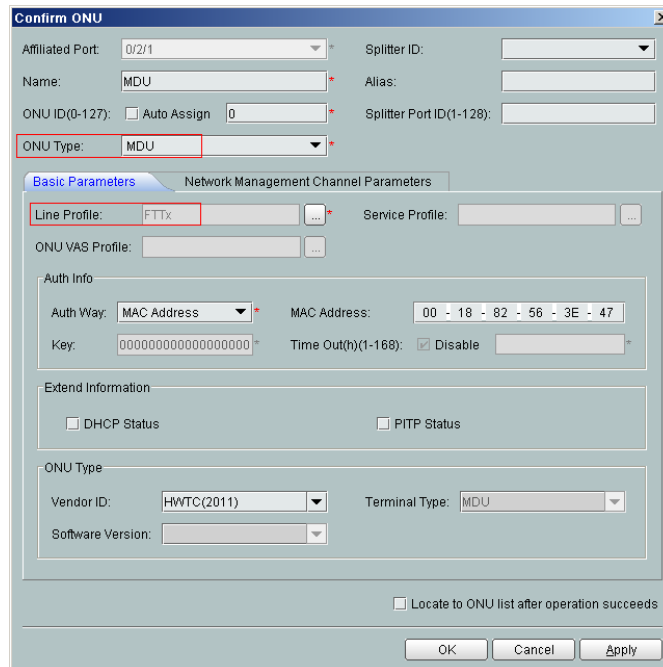


- Name: FTTx
- DBA Profile: FTTx



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
6. **Confirm the MDU on the OLT side. For details, see 23.1.4 Confirming an MDU.**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 0018-8256-3E47, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected

- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0



**Confirm ONU**

Affiliated Port: 0/2/1 \* Splitter ID:

Name: MDU \* Alias:

ONU ID(0-127):  Auto Assign 0 \* Splitter Port ID(1-128):

ONU Type: MDU \*

**Basic Parameters** | Network Management Channel Parameters

Line Profile: FTTx \* Service Profile:

ONU VAS Profile:

**Auth Info**

Auth Way: MAC Address \* MAC Address: 00 - 18 - 82 - 56 - 3E - 47

Key: 00000000000000000000 \* Time Out(h)(1-168):  Disable

**Extend Information**

DHCP Status  PTP Status

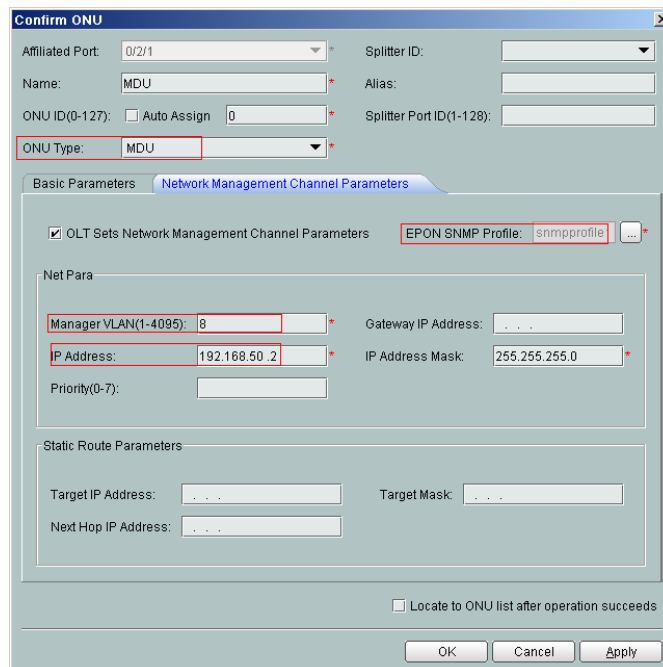
**ONU Type**

Vendor ID: HWTC(2011) \* Terminal Type: MDU \*

Software Version:

Locate to ONU list after operation succeeds

OK Cancel Apply



**Confirm ONU**

Affiliated Port: 0/2/1 \* Splitter ID:

Name: MDU \* Alias:

ONU ID(0-127):  Auto Assign 0 \* Splitter Port ID(1-128):

ONU Type: MDU \*

**Basic Parameters** | **Network Management Channel Parameters**

OLT Sets Network Management Channel Parameters EPON SNMP Profile: snmpprofile \*

**Net Para**

Manager VLAN(1-4095): 8 \* Gateway IP Address:

IP Address: 192.168.50.2 \* IP Address Mask: 255.255.255.0 \*

Priority(0-7):

**Static Route Parameters**

Target IP Address:  Target Mask:


Next Hop IP Address:

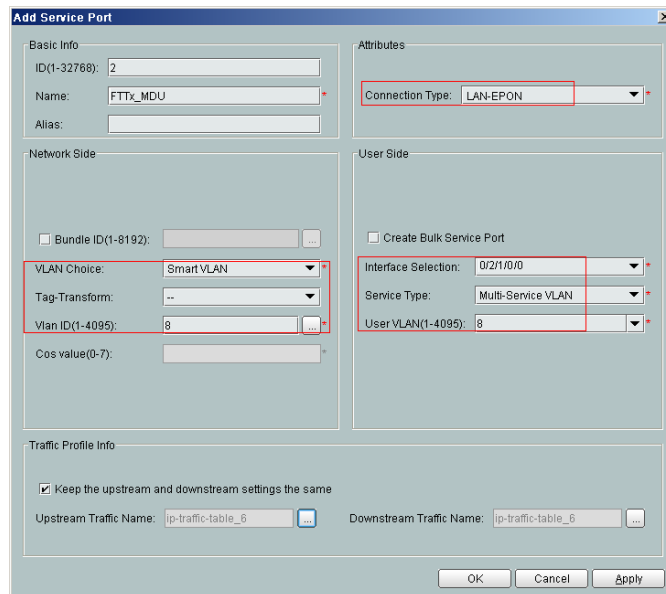
Locate to ONU list after operation succeeds

OK Cancel Apply

(6) Click **OK**.

7. **Add a service virtual port on the OLT side. For details, see [23.1.6 Adding a Service Virtual Port](#) and [23.1.7 Verifying the Interoperability Between an OLT and an MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **EPON > EPON ONU** from the navigation tree.
- (3) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- (4) In the information list, select the record where the shelf, slot, port, and ONU IDs are 0, 2, 1, and 0 respectively and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-EPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)



- (7) Click **OK**.

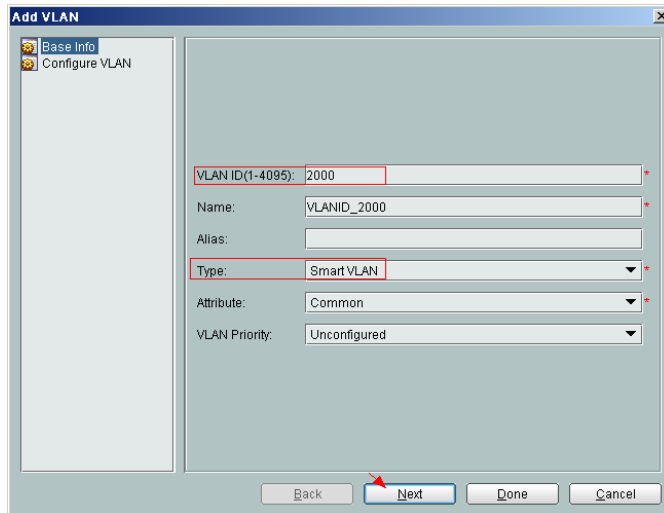
- **Configure the voice service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

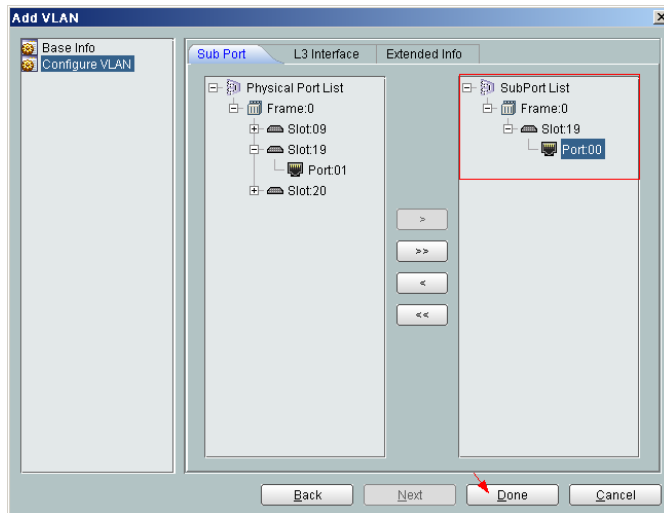
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
- (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.

- (3) In the dialog box that is displayed, set the parameters.
  - Name: VOIP
  - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
  - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
  - Vlan ID: 2000
  - Service Type: Multi-Service VLAN
  - User VLAN: 2000
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: FTTx

The screenshot shows the 'Add Service Port' dialog box with the following configuration:

- Basic Info:** ID(1-32768): 1, Name: VOIP, Alias: (empty)
- Attributes:** Connection Type: LAN-GPON
- Network Side:** Bundle ID(1-8192): (empty), VLAN Choice: Smart VLAN, Tag-Transform: --, Vlan ID(1-4095): 2000, Cos value(0-7): (empty)
- User Side:** Interface Selection: 0/2/1/0/0, Service Type: Multi-Service VLAN, User VLAN(1-4095): 2000
- Traffic Profile Info:**  Keep the upstream and downstream settings the same, Upstream Traffic Name: ip-traffic-table\_6, Downstream Traffic Name: ip-traffic-table\_6

- (4) Click **OK**.

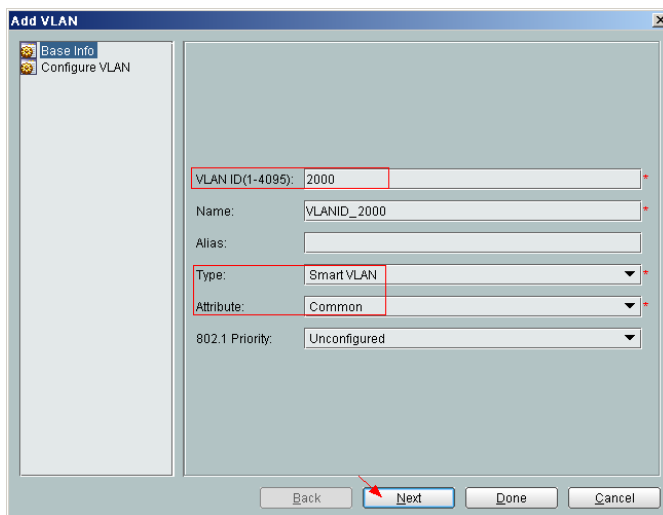
- **Configure the voice service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the MDU side. For details, see [19.2.1 Configuring a VLAN](#).**

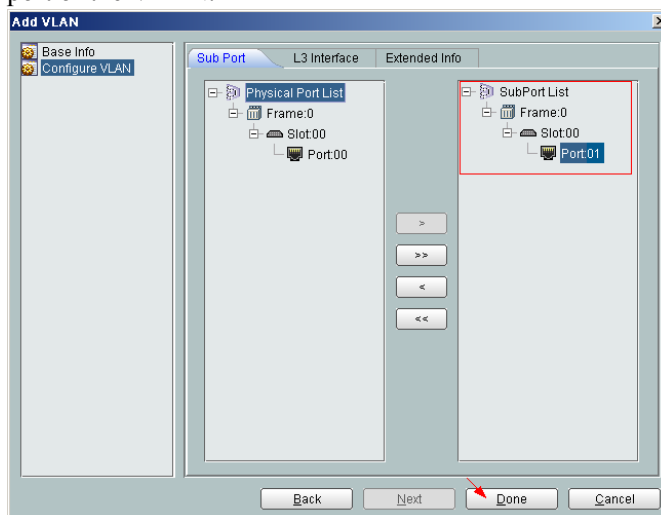
A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN

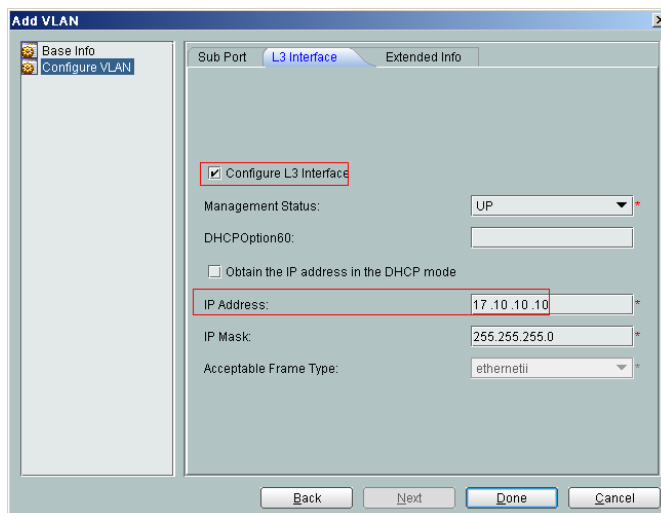


(4) Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/0/1 as the upstream port of the VLAN.



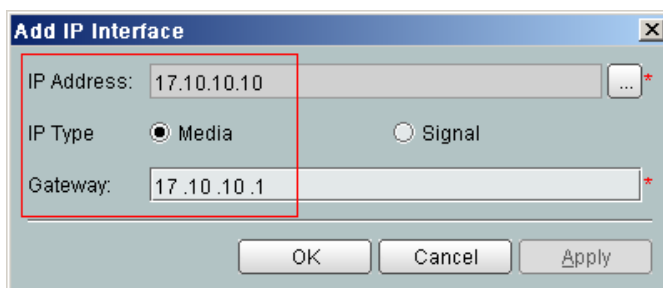
- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 17.10.10.10



- (5) Click **Done**.
2. **Add an IP interface on the MDU side.** For details, see [19.3.2 Configuring an IP Interface](#).

The procedure for adding a signaling IP interface is similar to the procedure for adding a media IP interface. The IP interface of the VLAN can be configured only when the L3 interface of the VLAN is configured with an IP address. According to the networking plan, the media IP address and the signaling IP address can be different.

- (1) In the information list, select the record where **VLAN ID** is set to **2000** and click the **IP Interface** tab in the lower pane.
- (2) On the **IP Interface** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - IP Address: 17.10.10.10
  - IP Type: Media
  - Gateway: 17.10.10.1



- (4) Click **OK**.
3. **Configure a static route.** For details, see [19.3.8 Configuring a Static Route](#).

If the IP address of the VLAN IP interface is not in the same network segment as the IP address of the MGC, you need to configure a static route.

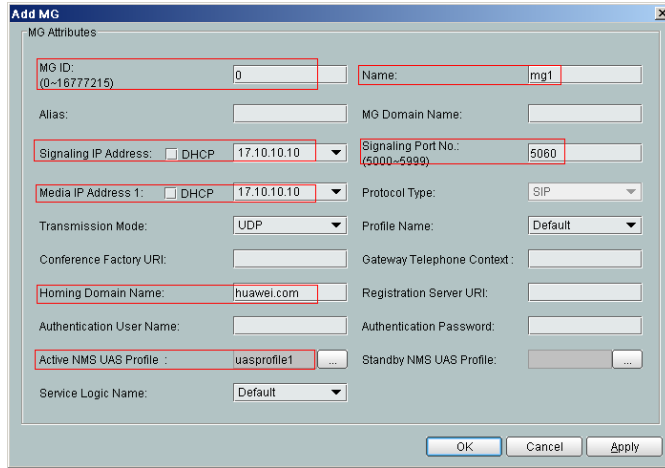
- (1) Choose **Static Route** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Target IP Address: 200.200.200.200 (IP address of the MGC or IMS)

- Target Mask: 255.255.255.0
  - Next Hop IP Address: 17.10.10.1
- (4) Click **OK**.
4. **Add a UAS profile. For details, see [19.3.10 Configuring a UAS Profile](#).**
- (1) Choose **Configuration > Access Profile > UAS Profile** from the main menu.
  - (2) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: uasprofile1
    - Address Mode: Fix mode
    - IP Address 1: 200.200.200.200 (IP address of the IMS)
    - Proxy Port: 5060

- (4) Click **OK**.
5. **Add a SIP interface. For details, see [19.3.12 Adding an MG](#).**
- (1) Choose **Voice Gateway > Media Gateway** from the navigation tree.
  - (2) On the **Media Gateway** tab page, set the filter criteria to display the required MGs.
  - (3) In the information list, right-click and choose **Add** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - MG ID: 0
    - Name: mg1
    - Signaling IP Address: 17.10.10.10
    - Signaling Port No.: 5060



- Media IP Address 1: 17.10.10.10
- Transmission Mode: UDP
- MG Domain Name: huawei.com
- Active NMS UAS Profile: uasprofile1

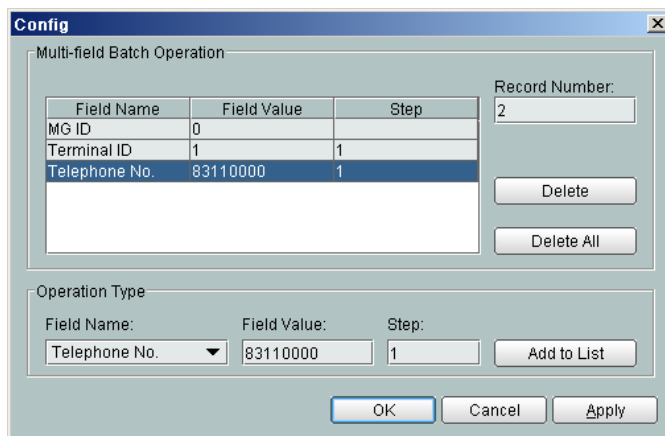


(5) Click OK.

6. **Configure the attributes of a VoIP PSTN port. For details, see 19.3.15 Configuring a VoIP PSTN Port.**

- (1) Choose **ASL > POTS Port** from the navigation tree.
- (2) Click the **VoIP PSTN Port** tab, and set the filter criteria to display the required VoIP PSTN ports.
- (3) In the information list, select ports 0/1/0 and 0/1/1 by holding down the **Shift** key, right-click, and then choose **Configure Attributes** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.

| Parameter     | Value    | Step |
|---------------|----------|------|
| MG ID         | 0        | -    |
| Telephone No. | 83110000 | 1    |



(5) Click **OK**.

----End

## Result

Phone 1 and phone 2 can communicate with each other after the configuration is complete.

- The caller hears the dialing tone after taking the phone off the hook.
- When the caller dials the telephone number of the callee, the phone of the callee rings successfully and the caller hears the ringback tone.
- The caller and the callee communicate with each other successfully.
- After the callee hangs up, the caller hears the busy tone.

## 23.4.8 Configuring the EPON FTTB Service by Using a Service Provisioning Profile

This topic describes how to configure various services when a user is connected to an MDU in LAN access mode and the MDU is connected to an OLT through an EPON port.

### Prerequisite

The OLT must be added to the U2000.

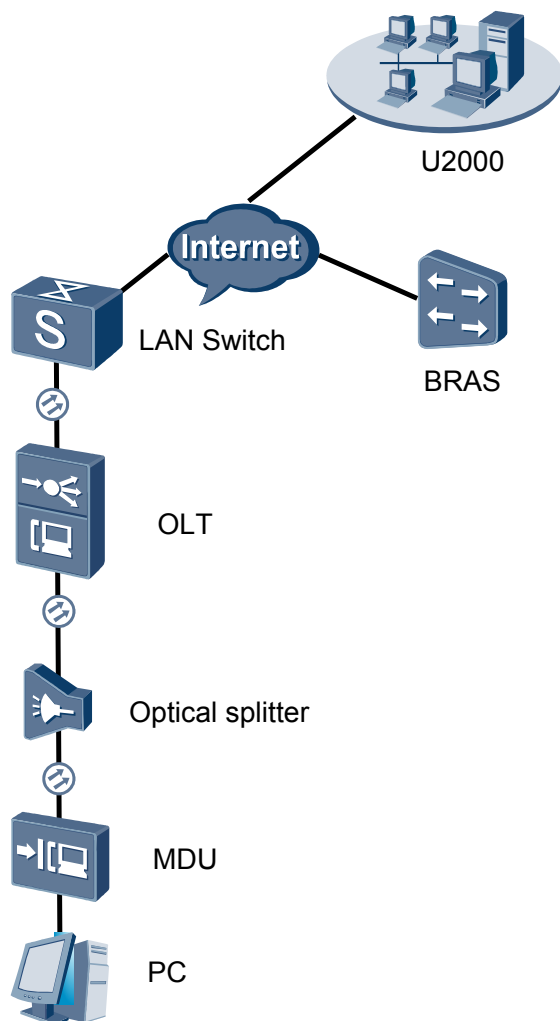
### Context

For details of the data plan, see [23.4.1 Data Plan for the EPON FTTB Services](#).

### Example Network

A service provisioning profile provides common parameters that need to be set for services. To provision a service quickly, set a service provisioning profile, bind it to a service port, and customize service parameters.

**Figure 23-7** Configuring the EPON FTTB service by using a service provisioning profile



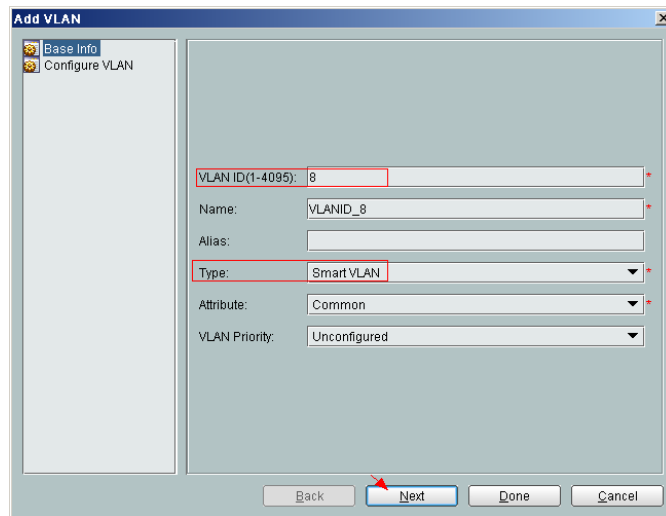
## Procedure

- Add the MDU to the U2000 in profile mode.
  1. Configure a management VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).

A management VLAN is the VLAN through which the OLT manages the MDU. The OLT manages the MDU through the SNMP protocol. The IP address of the Layer 3 interface of the management VLAN must be in the same network segment as the management IP address of the MDU.

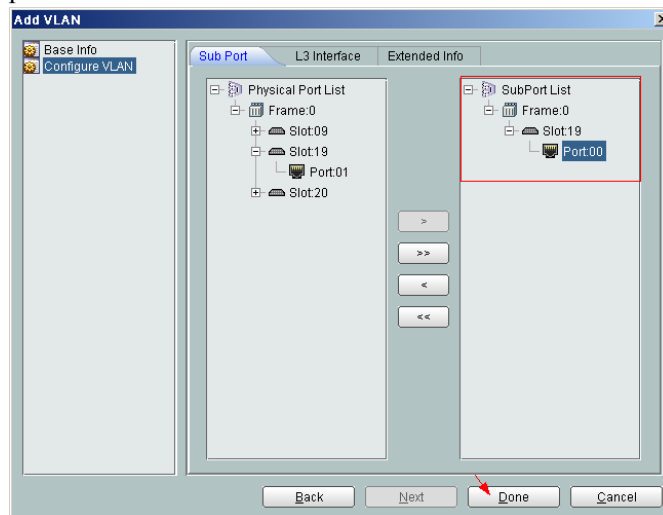
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **VLAN** from the navigation tree.
- (3) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.

- VLAN ID: 8
- Type: Smart VLAN

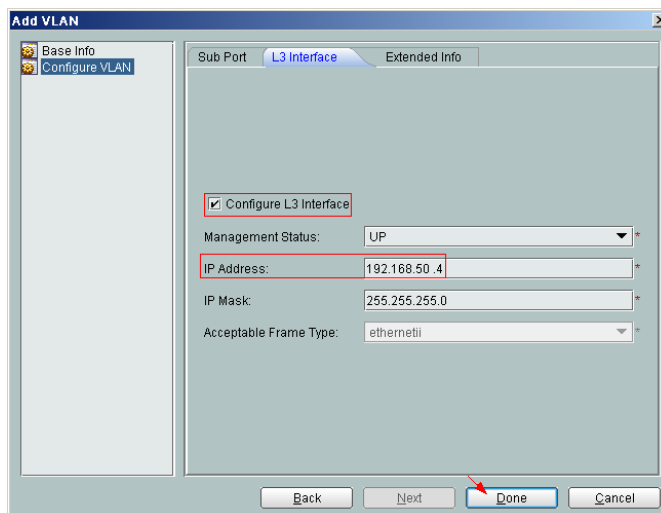


(5) Click **Next**.

- Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- Click the **L3 Interface** tab and set the parameters.
  - Configure L3 Interface: selected
  - IP Address: 192.168.50.4

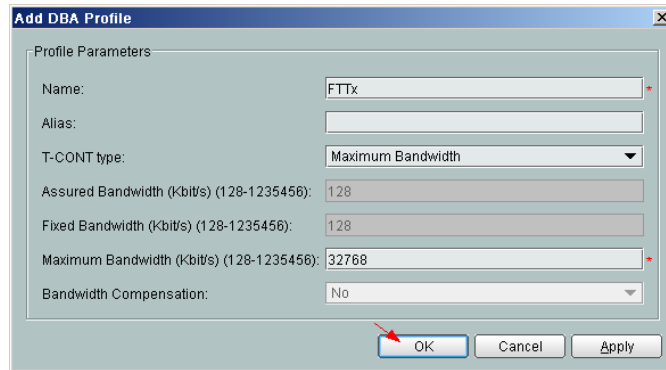


- (6) Click **Done**.
2. **Configure an MDU SNMP profile. For details, see 23.1.1 Configuring an MDU SNMP Profile.**
  - (1) Choose **Configuration > Access Profile Management > MDU SNMP Profile** from the main menu.
  - (2) Click the **MDU SNMP Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: snmpprofile
    - SNMP Version: v1
    - Read Name: public
    - Write Name: private
    - Trap Host IP: 192.168.50.3 (IP address of the U2000 server)
    - Trap UDP Port: 162
    - SNMP Security Name: public



- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a DBA profile. For details, see 19.1.2 Configuring a DBA Profile.**
  - (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.

- (2) Click the **DBA Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Name: FTTx
  - T-CONT type: Maximum Bandwidth
  - Maximum Bandwidth: 32768

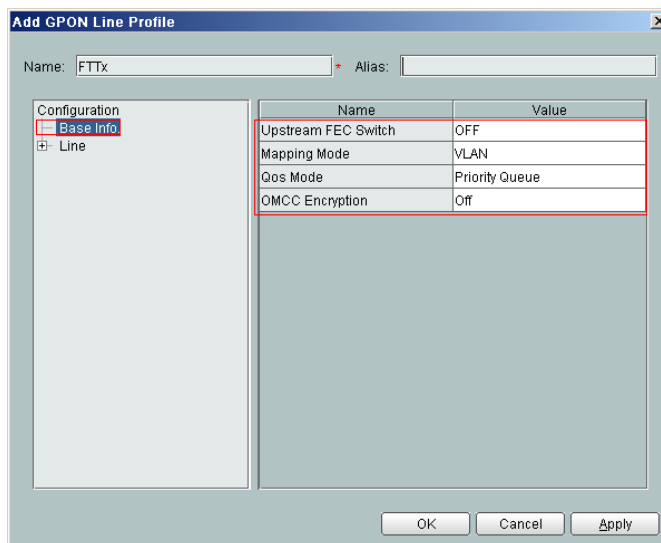


- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a line profile. For details, see [20.1.1 Configuring a GPON Line Profile](#).**

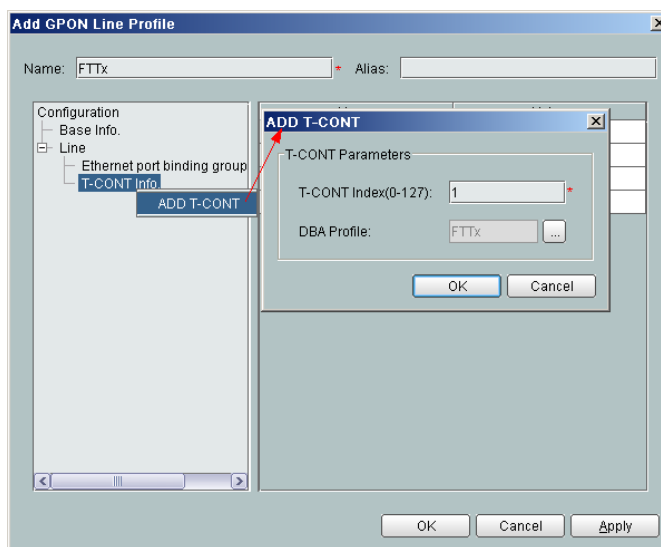
In a line profile, a GEM port can be bound to up to eight service streams. In a GEM port, different GEM connections need to be set up for different service streams.

In this example, the mapping between GEM ports and MDU-side services is implemented through VLANs, and the service streams of each service are mapped to GEM port 1. In addition, different GEM connections are set up for the management VLAN and the VLANs for the Internet, multicast, and voice services.

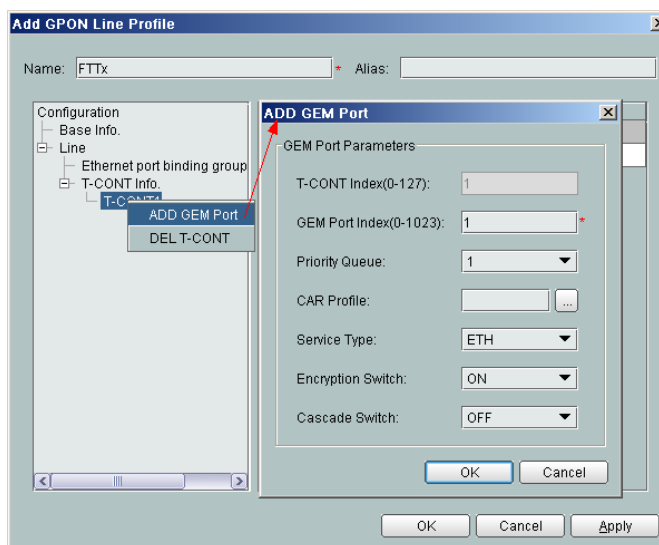
- (1) Choose **Configuration > Access Profile Management > GPON Profile** from the main menu.
- (2) Click the **Line Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **FTTx**.
  - Choose **Base Info.** from the navigation tree and set the parameters.
    - Mapping Mode: VLAN
    - Qos Mode: Priority Queue



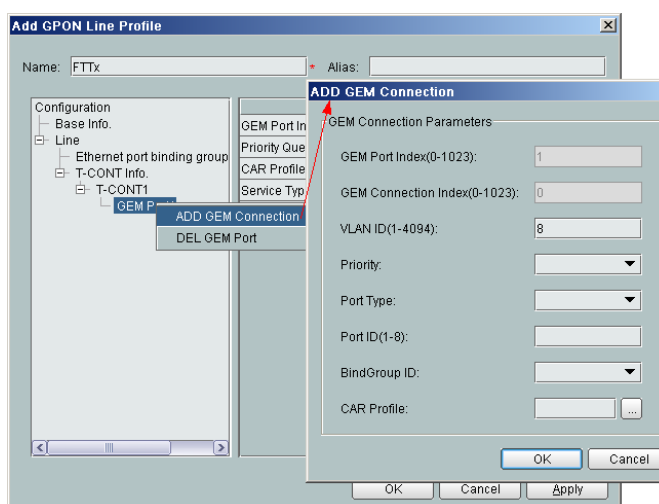
- Right-click **T-CONT Info.** in the navigation tree and choose **ADD T-CONT** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - T-CONT Index: 1
  - DBA Profile: FTTx



- Right-click **T-CONT1** in the navigation tree and choose **Add GEM Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - GEM Port Index: 1
  - Priority Queue: 1

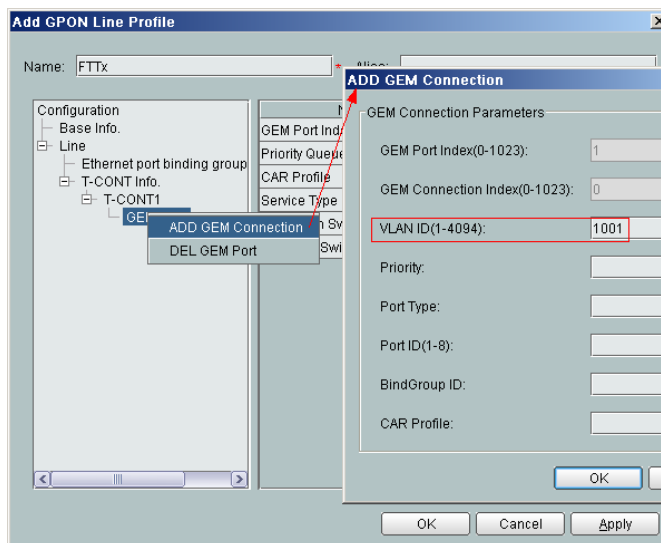


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 0 (this parameter is set to **0** automatically)
  - VLAN ID: 8

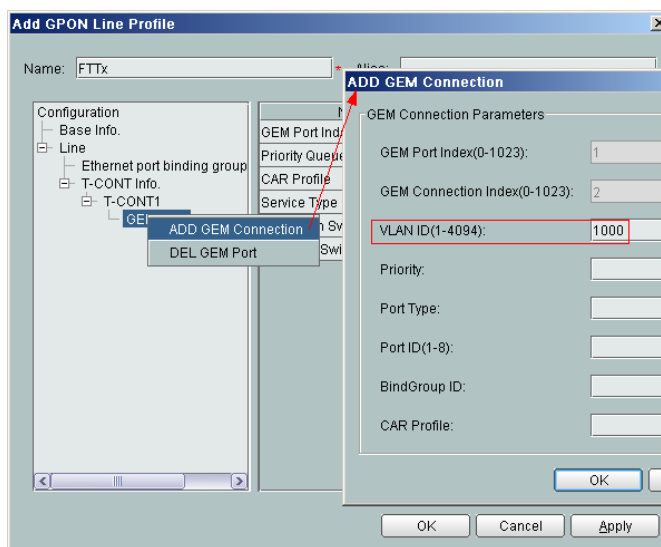


- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 1 (this parameter is set to **1** automatically)
  - VLAN ID: 1001

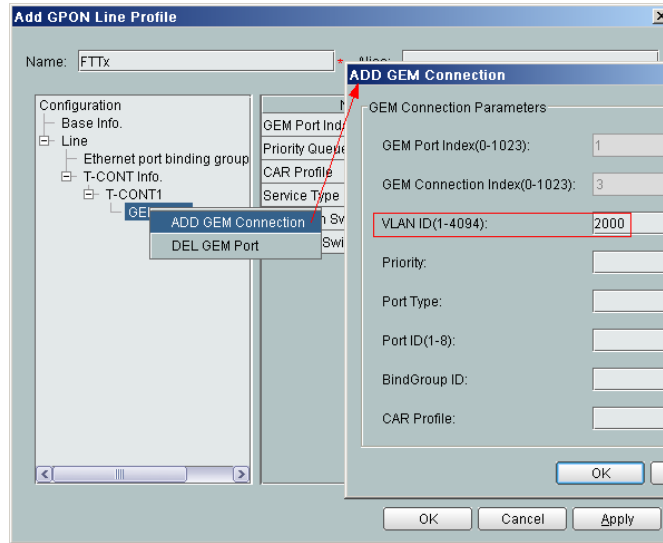






- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 2 (this parameter is set to **2** automatically)
  - VLAN ID: 1000



- Right-click **GEM Port1** in the navigation tree and choose **Add GEM Connection** from the shortcut menu. In the dialog box that is displayed, set the parameter.
  - GEM Connection Index: 3 (this parameter is set to **3** automatically)
  - VLAN ID: 2000



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the MDU on the OLT side. For details, see [19.1.4 Confirming an MDU](#).**
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **GPON > GPON UNI Port** from the navigation tree.
  - (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
  - (4) In the information list, right-click GPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 485754438E1CDE42, and then choose **Confirm ONU** from the shortcut menu.
    - Name: MDU
    - ONU ID: 0
    - ONU Type: MDU
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: SN
      - SN: 485754438E1CDE42
    - On the **Network Management Channel Parameters** tab page, set the parameters.
      - OLT sets network management channel parameters: selected

- SNMP Profile: snmpprofile (click  next to **SNMP Profile** and select the MDU SNMP profile named snmpprofile in the dialog box that is displayed)
- Manager VLAN: 8
- IP Address: 192.168.50.2 (this IP address is in the same network segment as the IP address of the L3 interface of the management VLAN)
- IP Address Mask: 255.255.255.0

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

**Basic Parameters** Network Management Channel Parameters

Line Profile: FTTx Service Profile:

Alarm Profile: ONU VAS Profile:

Authentication Info

Authentication Mode: SN Timeout Duration (h)(1-168):  No Limit

SN: 485754438E1CDE42 Password: shenzhen

ONU Type

Vendor ID: HWTC(2011) Terminal Type: MDU

Software Version:

Locate to ONU list after operation succeeds

OK Cancel Apply

**Confirm ONU**

Affiliated Port: 0/2/0 Splitter: Splitter(L1)

Name: MDU Alias:

ONU ID(0-127): 0 Splitter Port ID(1-128): 1

ONU Type: MDU

**Basic Parameters** **Network Management Channel Parameters**

OLT sets network management channel parameters SNMP Profile Name: snmpprofile

SNMP Params Info

Manager VLAN(1-4095): 8 Priority(0-7):

IP Address: 192.168.50.2 IP Address Mask: 255.255.255.0

Gateway IP Address:

Static Route Parameters

IP Address: IP Address Mask:

Next Hop IP Address:

Locate to ONU list after operation succeeds

OK Cancel Apply

(6) Click **OK**.

6. **Add a service virtual port on the OLT side. For details, see [19.1.6 Adding a Service Virtual Port](#) and [19.1.7 Checking the Communication Between the OLT and MDU](#).**

- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
- (2) Choose **GPON > GPON UNI Port** from the navigation tree.
- (3) On the **GPON UNI Port** tab page, set the filter criteria to display the required GPON UNI ports.
- (4) In the information list, right-click GPON UNI port 0/2/1 and click the **ServicePort Info** tab in the lower pane.
- (5) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, set the parameters.
  - Name: FTTx\_MDU
  - Connection Type: LAN-GPON
  - VLAN ID: 8
  - Interface Selection: 0/2/1/0/0
  - Service Type: Multi-Service VLAN
  - User VLAN: 8
  - Keep the upstream and downstream settings the same: selected
  - Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

- (7) Click **OK**.

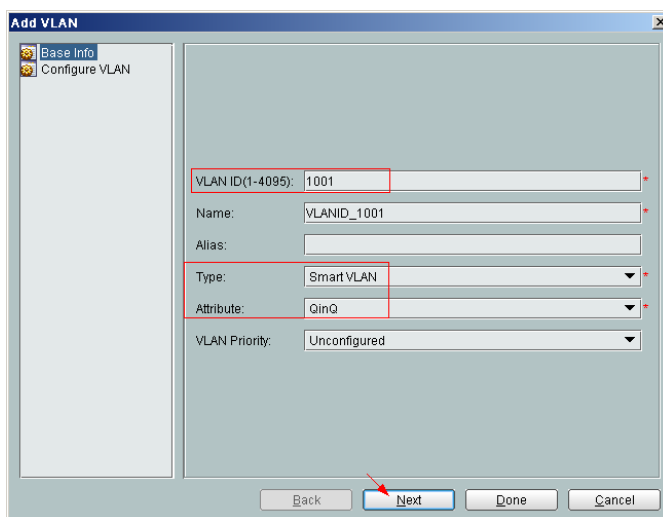
- **Configure the Internet service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

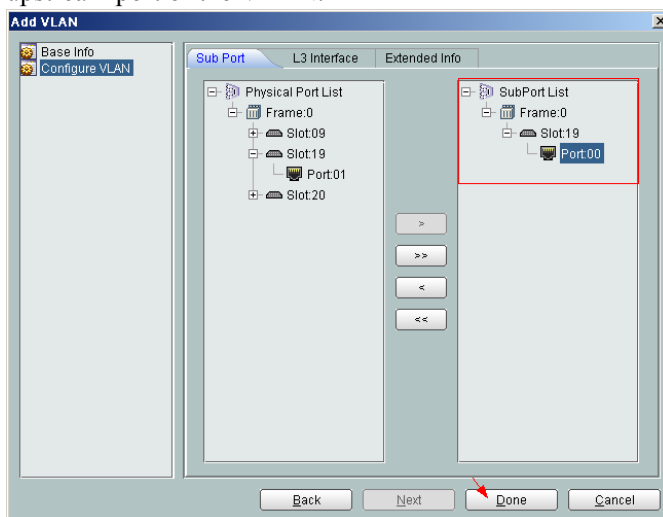
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN
  - Attribute: QinQ



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: HSI

- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- VLAN ID: 1001
- Service Type: Multi-Service VLAN
- User VLAN: 1001
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

(4) Click **OK**.

- **Configure the multicast service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

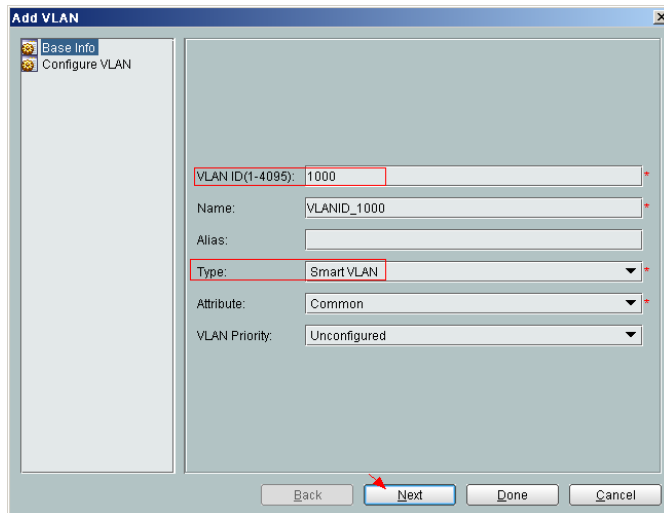
1. **Add a VLAN. For details, see [19.2.1 Configuring a VLAN](#).**

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Type: Smart VLAN
- (4) Click **Done**.

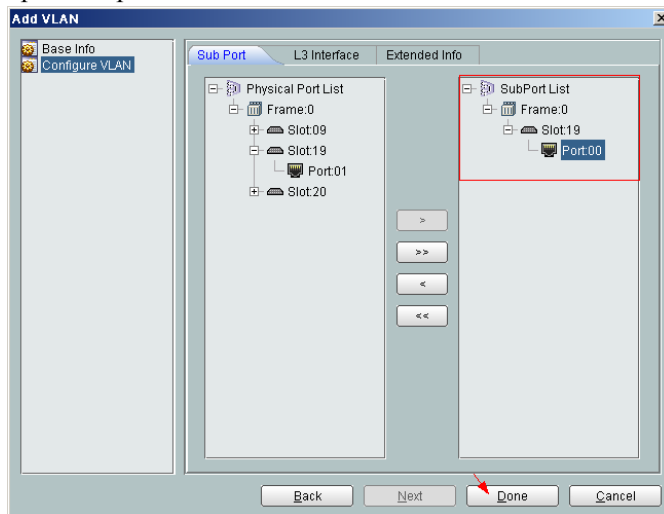
2. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the multicast service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Type: Smart VLAN



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
3. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name:IGMP
      - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)

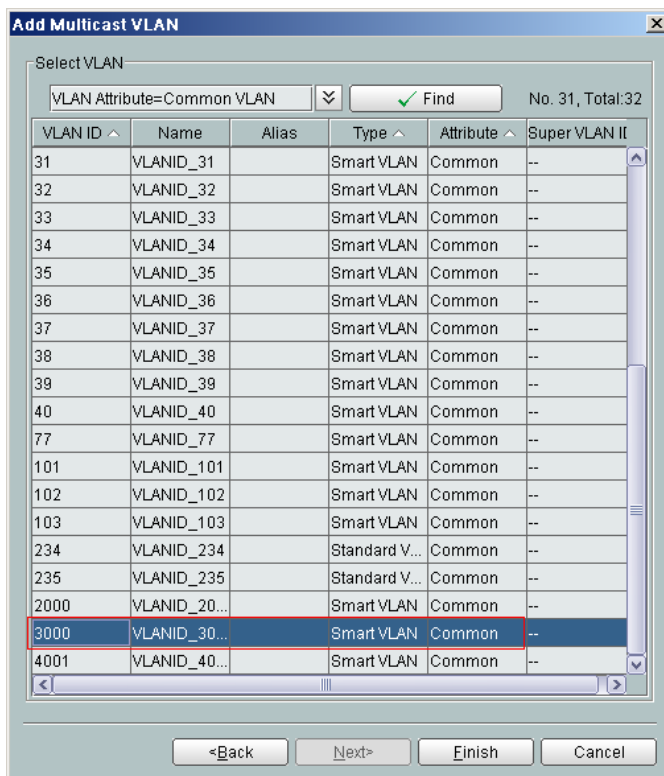
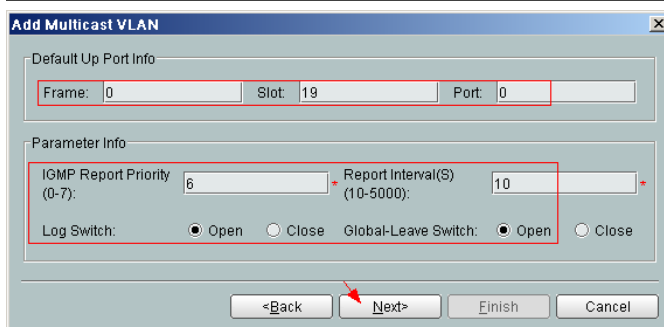
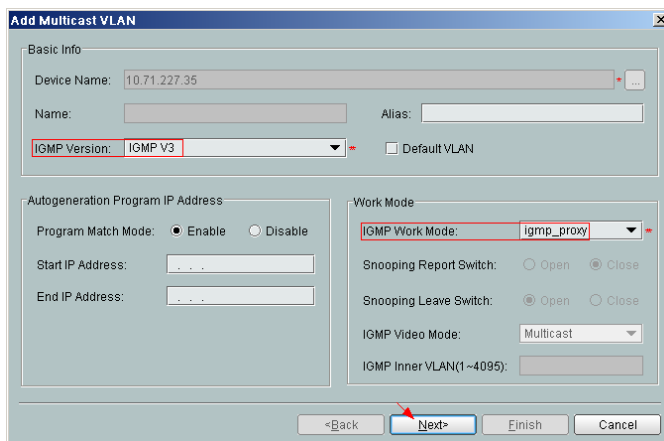
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- Vlan ID: 1000
- Service Type: Multi-Service VLAN
- User VLAN: 1000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams)

(4) Click **OK**.

4. **Add a multicast VLAN on the OLT side. For details, see [19.2.7 Configuring the Multicast VLAN](#).**

- (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
- (2) On the **Multicast VLAN** tab page, set the filter criteria to display the required multicast VLANs.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - IGMP Version: IGMP V3
  - Work Mode: igmp\_proxy
  - VLAN ID: 3000



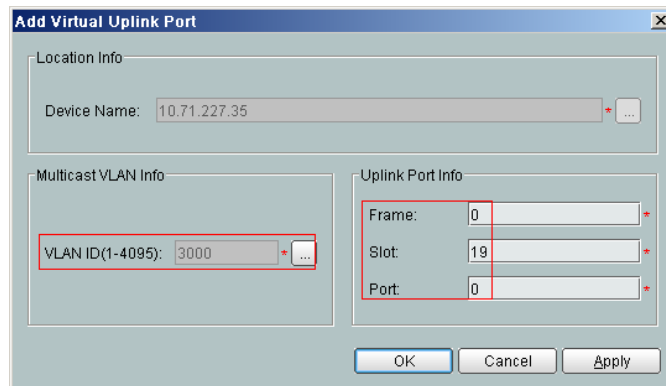


(5) Click **Finish**.

5. **Add a virtual upstream port for the multicast service on the OLT side. For details, see 19.2.5 Configuring the Virtual Multicast Upstream Port.**

(1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.

- (2) On the **Virtual Uplink Port** tab page, set the filter criteria to display the required virtual upstream ports.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Frame: 0
  - Slot: 19
  - Port: 0



- (5) Click **Done**.
6. **Configure a program profile on the OLT side. For details, see [19.2.8 Configuring a Program Profile](#).**
- (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
  - (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: program1
    - Start IP Address: 224.0.1.1 (IP address of the multicast program)
    - End IP Address: 224.0.1.1
    - Source IP Address: 10.10.10.20 (IP address of the multicast server)
    - Preview Profile: 0 (the default value)

**Add Program Profile**

Description Info

- Configure the desired parameters.
- When the program is provisioned, if the IGMP version of the multicast VLAN is V2, the program can not have a source IP address. If the IGMP version of the multicast VLAN is V3, address the program must have a source IP

Name: program1 \*

Alias: \*

Profile Index (1-1024): 1 \*

Begin IP Address: 224.0.1.1 \* End IP Address: 224.0.1.1 \*

Source IP Address: 10.10.10.20 \* Host IP: 0.0.0.0 \*

Priority (0-7): 7 \* Bandwidth (Kbit/s) (0-65534): 5000 \*

Grade: no-grade \* Multicast VLAN(1-4095): \*

Preview Parameter

Preview Profile: 0 \*

Attribute Parameter

Prejoin Attribute  Host Attribute

Unsolicited Attribute  Log Attribute

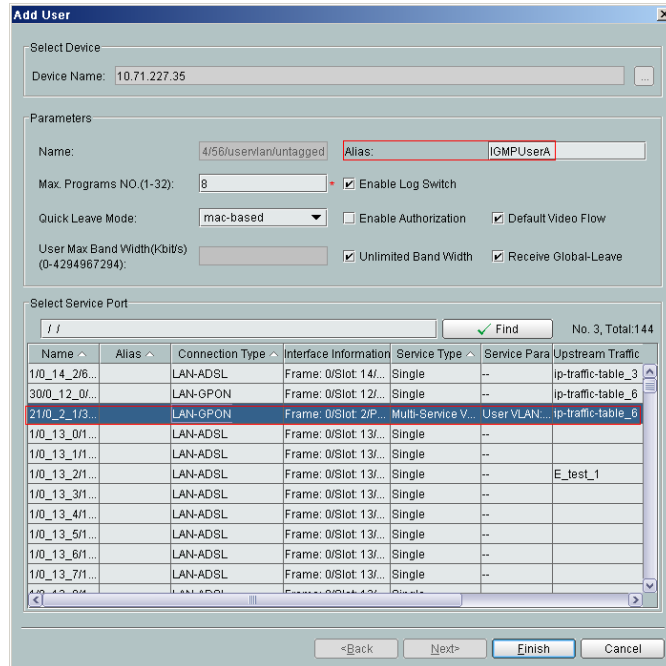
Across VLAN Attribute

OK Cancel Apply

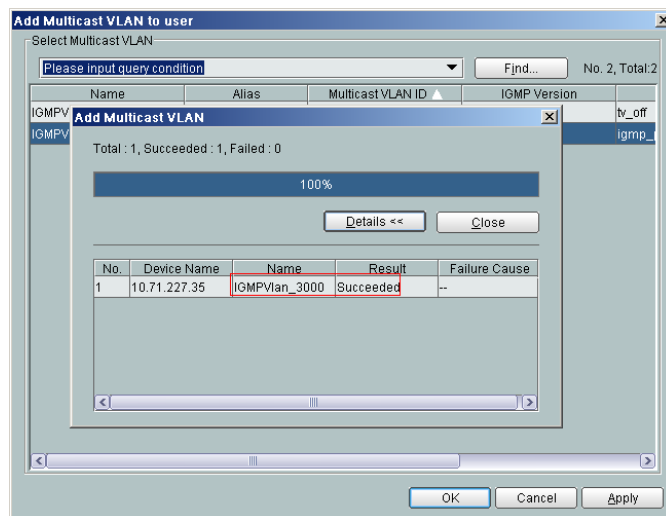
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required OLT and click **Next**. Then, set **VLAN ID** to **3000**.
  - (8) Click **OK**.
7. **Configure a multicast user on the OLT side. For details, see [19.2.10 Configuring a Multicast User](#).**

To enable user authentication, select **Enable Authorization**. To add a rights profile and apply it to NEs, choose **Configuration > Access Profile Management > IGMP Profile** from the main menu and click the **Right Profile** tab.

- (1) Choose **Multicast > Multicast User** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Alias: IGMPUserA
  - Unlimited Band Width: selected
  - Select Service Port: service virtual port named **IGMP**



- (4) Click **Finish**.
- (5) Select the multicast user, click the **User Multicast VLAN** tab in the lower pane, right-click, and then choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, select the record where **Multicast VLAN ID** is set to **3000** and click **OK**.



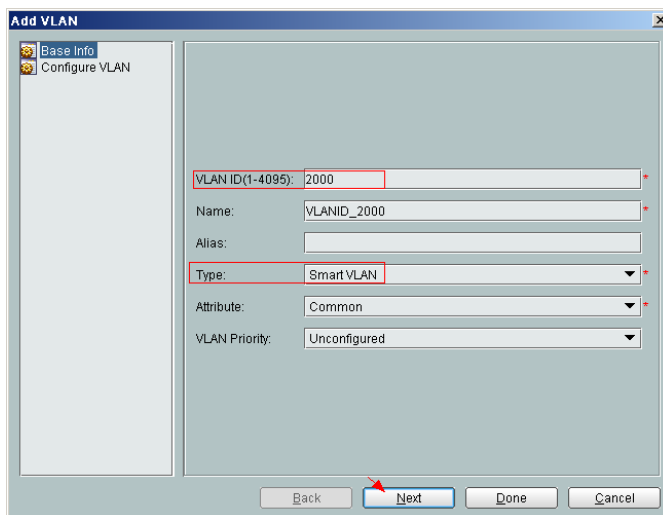
- **Configure the voice service on the OLT side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

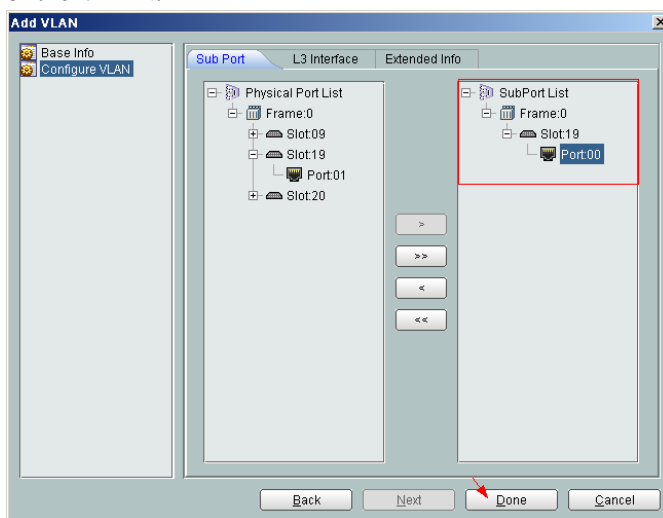
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: VOIP

- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- Vlan ID: 2000
- Service Type: Multi-Service VLAN
- User VLAN: 2000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

(4) Click **OK**.

- **Configure the service on the MDU side.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the MDU. To navigate to the NE Explorer of the MDU, do as follows: In the Main Topology, double-click the required MDU in the **Physical Root** navigation tree; or right-click the required MDU and choose **NE Explorer** from the shortcut menu.

1. **Add a service provisioning profile.**

- (1) Choose **Configuration > Access Profile Management > Service Provisioning Profile** from the main menu.
- (2) Click the **xPON FTTB Service Provisioning Profile** tab.
- (3) Right-click and choose **Add Global Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - Set **Name** to **serviceprofile**.
  - Right-click **ServicePort** in the navigation tree and choose **Add serviceport** from the shortcut menu. In the right pane, set the parameters of the service virtual port.

In the case of the Internet service:

- ServicePort Name: pppoe
- Service Priority: 1

- VLAN Attribute: Common
- Network Side VLAN: 1001
- VPI: auto
- Service Type: Multi-service VLAN
- User VLAN: untagged
- Keep traffic the same: selected
- Upstream Traffic Name: FTTx
- Downstream Traffic Name: FTTx



In the case of the multicast service:

- ServicePort Name: multicast
  - Service Priority: 4
  - VLAN Attribute: Common
  - Network Side VLAN: 1000
  - VPI: auto
  - Service Type: Multi-service VLAN
  - User VLAN: untagged
  - Keep traffic the same: selected
  - Upstream Traffic Name: FTTx
  - Downstream Traffic Name: FTTx
- Right-click **Multicast User** in the navigation tree and choose **Add multicast user** from the shortcut menu. In the right pane, set the parameters of the multicast user.
    - IGMP Flow Channel: multicast
    - Multicast VLAN: 1000

(5) Click **OK**.

## 2. Add a service.

The steps for configuring an xDSL port are similar to the steps for configuring an Ethernet port.

- (1) Choose **ETH** from the navigation tree.
- (2) Click the **Ethernet Port** tab, and set the filter criteria or click  to display the Ethernet ports.
- (3) In the information list, right-click port 0/1/1 and choose **Add Service** from the shortcut menu.
- (4) In the dialog box that is displayed, click  next to **Service Provisioning Profile**. In the dialog box that is displayed, select the service provisioning profile whose **Name** is set to **serviceprofile**.
- (5) Click **OK**.

---End

## Result

The user gains access to the Internet after the dialup is performed successfully by the PPPoE dialup software on the PC.

The user can watch program1 on TV.

Phone 1 and phone 2 can communicate with each other after the configuration is complete.

- The caller hears the dialing tone after taking the phone off the hook.
- When the caller dials the telephone number of the callee, the phone of the callee rings successfully and the caller hears the ringback tone.
- The caller and the callee communicate with each other successfully.
- After the callee hangs up, the caller hears the busy tone.



# 24 Configuring the EPON FTTH Services

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## About This Chapter

An FTTH network consisting of an OLT and a number of MDUs provides users with Internet, multicast, and voice services.

### [24.1 Adding an ONT to the U2000 \(OLT in Profile Mode\)](#)

This topic describes how to add an ONT to the U2000 when the OLT is in the profile mode. After the ONT is added successfully to the U2000, the U2000 uses the OLT as an agent to manage the ONT (the OLT manages the ONT in OAM mode). In this case, you can configure the FTTH service for the ONT on the U2000.

### [24.2 Configuring Services](#)

An FTTH network consisting of an OLT and a number of ONTs provides users with Internet, multicast, and voice services.

### [24.3 Configuration Examples of the EPON FTTH Services](#)

This topic provides examples to describe how to configure the Internet, voice, and multicast services in an EPON FTTH network.

## 24.1 Adding an ONT to the U2000 (OLT in Profile Mode)

This topic describes how to add an ONT to the U2000 when the OLT is in the profile mode. After the ONT is added successfully to the U2000, the U2000 uses the OLT as an agent to manage the ONT (the OLT manages the ONT in OAM mode). In this case, you can configure the FTTH service for the ONT on the U2000.

### Context

You can add an ONT on the device side in the following two scenarios: online ONT confirmation and offline ONT deployment. The profile bound to an ONT and the authentication information of the ONT must be the same as those configured on the ONT on the user side.

- Online ONT confirmation: When an ONT is online, the ONT can be managed immediately after it is added to the U2000. This topic considers the online ONT confirmation as an example to describe how to add an ONT to the U2000.
- Offline ONT deployment: When an ONT is offline, you need to add the ONT and configure the FTTH service for the ONT offline. After the ONT goes online, the configuration data is applied to the ONT through the OAM extension protocol. The service configuration on the ONT is complete.

#### 24.1.1 Configuring a Line Profile

An EPON line profile contains the parameters relevant to the EPON line. The parameters are required for setting up channels for the EPON line.

#### 24.1.2 Configuring a Service Profile

The service profile is a collection of parameters associated with the ONT service.

#### 24.1.3 Confirming an Auto-Discovered ONT

This topic describes how to confirm the auto-discovered ONU that is connected to an EPON port. The auto-discovered ONU can work in the normal state only after it is confirmed.

### 24.1.1 Configuring a Line Profile

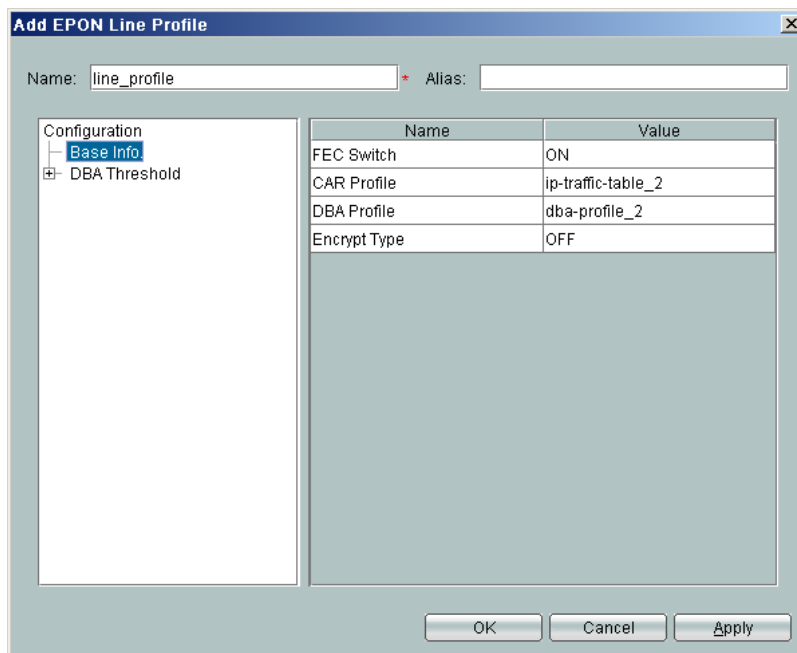
An EPON line profile contains the parameters relevant to the EPON line. The parameters are required for setting up channels for the EPON line.

### Prerequisite

The DBA profile must be already configured in the system. For details, see [23.1.2 Configuring a DBA Profile](#).

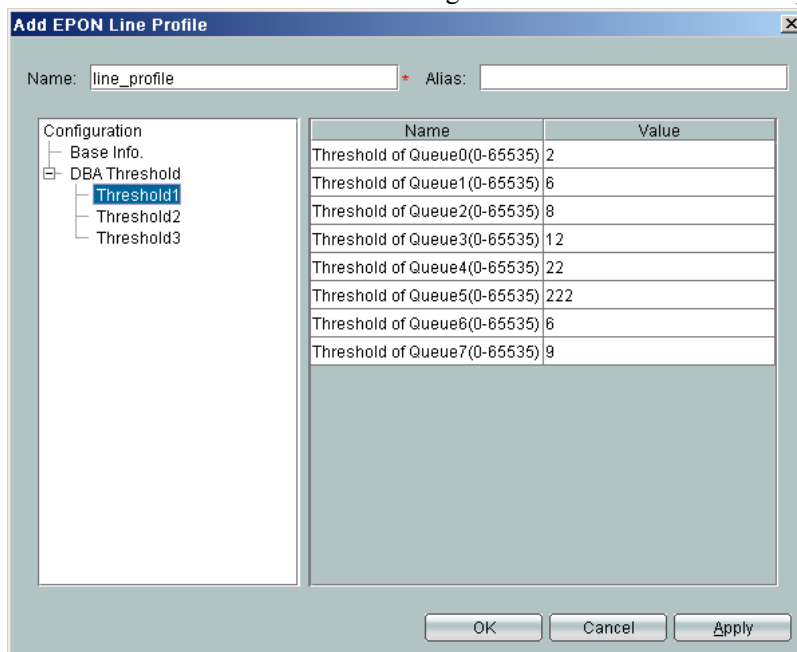
### Procedure

- 1 Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
- 2 Click the **EPON Line Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set **Name** and relevant parameters of the line profile.
  1. Choose **Base Info.** from the navigation tree and configure the basic parameters of the profile.



| Key Parameter | Description                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FEC Switch    | Indicates the status of upstream forward error correction (FEC) switch of the ONU line profile. To ensure the reliability of data transmission between the OLT and ONU, enable the FEC function. After the FEC function is enabled, the system inserts redundancy data into normal packets. In this way, the line has the error tolerance function, but certain bandwidth resources are wasted. |

2. Choose **DBA Threshold** from the navigation tree and set the relevant parameters.



- 4 Click **OK**.
- 5 In the information list, right-click a record and choose **Download to NE** from the shortcut menu.
- 6 In the dialog box that is displayed, select the required OLT, and click **OK**.

----End

## Command Reference

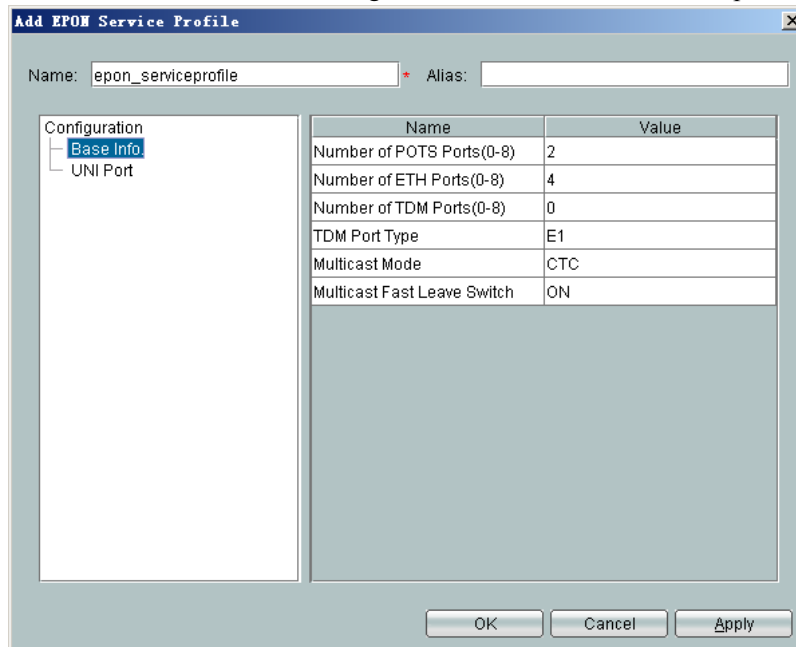
| To...                           | Run the Command...   | In...              |
|---------------------------------|----------------------|--------------------|
| Enter the ONU line profile mode | ONU-lineprofile EPON | Global config mode |

## 24.1.2 Configuring a Service Profile

The service profile is a collection of parameters associated with the ONT service.

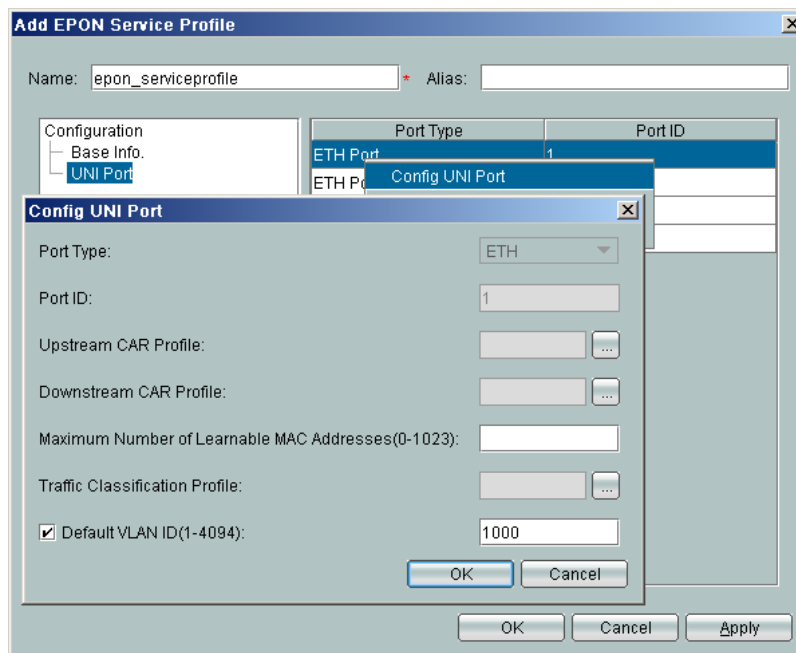
### Procedure

- 1 Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
- 2 Click the **EPON Service Profile** tab. Right-click and choose **Add Global Profile** from the shortcut menu.
- 3 In the dialog box that is displayed, set the parameters.
  1. Choose **Basic Info** from the navigation tree, and then set the basic parameters of the profile.



#### NOTE

- The parameter settings must be the same as the actual settings on the port of the ONT.
2. Choose **UNI Port** from the navigation tree. Select a record from the UNI port list in the right pane, right-click, and then choose **Config UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.



- 4 Click **OK**.
- 5 In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- 6 In the dialog box that is displayed, select the required NE(s), and click **OK**.

----End

## Command Reference

| To...                                               | Run the Command...     | In...              |
|-----------------------------------------------------|------------------------|--------------------|
| Query the information about the ONT service profile | display ont-srvprofile | Privilege mode     |
| Enter the ONT line profile mode                     | ont-srvprofile         | Global config mode |


### 24.1.3 Confirming an Auto-Discovered ONT

This topic describes how to confirm the auto-discovered ONU that is connected to an EPON port. The auto-discovered ONU can work in the normal state only after it is confirmed.

#### Context

When the ONU auto-discovery function is enabled, the OLT can periodically check whether there are new online ONUs. If new online ONUs are discovered, the OLT reports a group of ONUs to be confirmed to the U2000 for user confirmation.

## Procedure

- 1 In the Main Topology, double-click the required NE in the **Physical Root** navigation tree; or right-click the required NE and choose **NE Explorer** from the shortcut menu.
- 2 Choose **EPON > EPON UNI Port** from the navigation tree.
- 3 On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
- 4 Select a record from the EPON UNI list, and click the **AutoFind ONU Info** tab in the lower pane.
- 5 Select a record from the ONU list, right-click, and then choose **Confirm ONU** from the shortcut menu.
- 6 In the dialog box that is displayed, set the basic parameters for confirming the ONT and network management channel parameters, and then click **OK**.

| Key Parameter | Description                                                |
|---------------|------------------------------------------------------------|
| ONU ID        | Indicates the ONU ID. It always ranges from 0.             |
| ONU Type      | Indicates the ONU type and needs to be set to <b>ONT</b> . |

| Key Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Line Profile        | Indicates the line profile bound to the port to which the ONU is connected. After a line profile is bound to a port, the system can directly reference the line profile when activating a port. During the activation, the system checks the line distance and status and performs a negotiation between the CO and CPE to determine whether the port can work under the conditions as preset in the line profile, such as upstream and downstream line rates and noise margin. |
| Service Profile     | Indicates the service profile bound to the ONU. The service profile is a collection of parameters that are associated with the ONU service.<br>You need not configure the service profile for the FTTH service.                                                                                                                                                                                                                                                                 |
| Authentication Mode | Indicates the mode in which the OLT authenticates the ONU. The OLT authenticates the EPON ONU in the MAC authorization mode by default.                                                                                                                                                                                                                                                                                                                                         |

When adding the ONU of the SNMP management mode, you must set the **Authentication Mode** and **Line Profile** parameters. When adding the ONU of the OAM management mode, you must set the **Authentication Mode**, **Line Profile**, and **Service Profile** parameters.

---End

## Command Reference

| To...                                                                                        | Run the Command...        | In...                     |
|----------------------------------------------------------------------------------------------|---------------------------|---------------------------|
| Confirm the ONT that is in the auto-discovery mode                                           | ont confirm               | EPON mode                 |
| Enter the EPON mode from the global configuration mode                                       | interface EPON            | Global config mode        |
| Enable the ONT auto-discovery function of an EPON port                                       | port ont-auto-find enable | EPON mode                 |
| Query the auto-discovered ONTs in the system or the settings for the ONT auto-discovery time | display ont autofind      | Privilege mode, EPON mode |

## 24.2 Configuring Services

An FTTH network consisting of an OLT and a number of ONTs provides users with Internet, multicast, and voice services.

### Context

Several operations are required when you configure a service. The following lists the services configured at the OLT side and the service configuration steps.

| Services                | Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internet access service | <ul style="list-style-type: none"> <li>● <a href="#">19.3.1 Configuring a VLAN</a></li> <li>● <a href="#">23.2.1 Adding a Service Virtual Port</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                    |
| Multicast service       | <ul style="list-style-type: none"> <li>● <a href="#">19.3.1 Configuring a VLAN</a></li> <li>● <a href="#">23.2.1 Adding a Service Virtual Port</a></li> <li>● <a href="#">19.2.7 Configuring the Multicast VLAN</a></li> <li>● <a href="#">19.2.5 Configuring the Virtual Multicast Upstream Port</a></li> <li>● <a href="#">19.2.6 Configuring a Preview Profile</a></li> <li>● <a href="#">19.2.8 Configuring a Program Profile</a></li> <li>● <a href="#">19.2.10 Configuring a Multicast User</a></li> </ul> |
| Voice service           | <ul style="list-style-type: none"> <li>● <a href="#">19.3.1 Configuring a VLAN</a></li> <li>● <a href="#">23.2.1 Adding a Service Virtual Port</a></li> <li>● <a href="#">20.2.1 Configuring the ONT Value-Added Service Configuration Profile</a></li> <li>● <a href="#">20.2.2 Configuring the Voice Value-Added Service of an ONT</a></li> </ul>                                                                                                                                                              |

## 24.3 Configuration Examples of the EPON FTTH Services

This topic provides examples to describe how to configure the Internet, voice, and multicast services in an EPON FTTH network.

### [24.3.1 Data Plan for the EPON FTTH Services](#)

This topic provides the data plan for the configuration examples of the EPON FTTH services. You can configure the services according to the data plan.

### [24.3.2 Configuring the EPON FTTH Internet Service](#)

This topic describes how to configure the high-speed Internet service when an ONT is connected to an OLT through an EPON port.

### [24.3.3 Configuring the EPON FTTH Multicast Service](#)

This topic describes how to configure the multicast service when an ONT is connected to an OLT through an EPON port.

### [24.3.4 Configuring the EPON FTTH Voice Service \(H.248 Protocol\)](#)

This topic describes how to configure the voice service when an ONT is connected to an OLT through an EPON port.

### [24.3.5 Configuring the EPON FTTH Voice Service \(SIP Protocol\)](#)

This topic describes how to configure the voice service when an ONT is connected to an OLT through an EPON port.

### 24.3.1 Data Plan for the EPON FTTH Services

This topic provides the data plan for the configuration examples of the EPON FTTH services. You can configure the services according to the data plan.



## Data Plan

**Table 24-1** Data plan for the EPON FTTH services

| Service Type      | Item                    | Settings                                                                                                                                               | Remarks                                                                                                                                         |
|-------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Device management | Upstream port of an OLT | 0/19/0                                                                                                                                                 | -                                                                                                                                               |
|                   | Layer 3 interface       | IP Address: 192.168.50.4                                                                                                                               | The IP address of the Layer 3 interface of the management VLAN of the OLT functions as the IP address of the OLT for inband network management. |
|                   | EPON port of the OLT    | 0/2/1                                                                                                                                                  | -                                                                                                                                               |
|                   | ONT                     | MAC: 001E-E3F4-0471<br>Name: ONT<br>ONU Type: ONT<br>ONU ID: 0<br>Authentication Mode: MAC<br>Terminal Type: 850e<br>Software Version: V100R001C05B031 | -                                                                                                                                               |
|                   | MEF IP traffic profile  | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● CIR: 20480</li> <li>● Outer Priority: 1</li> </ul>                                      | The MEF IP traffic profile is used on the MDU to control upstream and downstream traffic.                                                       |
|                   | DBA profile             | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● DBA type: Maximum Bandwidth</li> <li>● Maximum Bandwidth: 32768</li> </ul>              | -                                                                                                                                               |
|                   | Line profile            | Name: FTTx<br>DBA Profile: FTTx                                                                                                                        | -                                                                                                                                               |

| Service Type     | Item                 | Settings                                                                                                                                                                                                                                                                                                                | Remarks |
|------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                  | Service profile      | Name: FTTx<br>Number of Pots Ports: 2<br>Number of ETH Ports: 4<br>VLAN Type: Translation<br>C-VLAN: 1001,1000<br>S-VLAN: 1001,1000                                                                                                                                                                                     | -       |
| Internet service | VLAN                 | <ul style="list-style-type: none"> <li>● VLAN ID: 1001</li> <li>● Type: Smart VLAN</li> <li>● Attribute: QinQ</li> </ul>                                                                                                                                                                                                | -       |
|                  | Service virtual port | <ul style="list-style-type: none"> <li>● Name: HSI</li> <li>● VLAN ID: 1001</li> <li>● Interface Selection: 0/2/1/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 1001</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul>    | -       |
| IPTV service     | VLAN                 | <ul style="list-style-type: none"> <li>● VLAN ID: 1000, 3000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                     | -       |
|                  | Service virtual port | <ul style="list-style-type: none"> <li>● Name: IGMP</li> <li>● Vlan ID: 1000</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 1000</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -       |
|                  | Multicast VLAN       | <ul style="list-style-type: none"> <li>● IGMP Version: IGMP V3</li> <li>● Work Mode: igmp_proxy</li> <li>● VLAN ID: 3000</li> </ul>                                                                                                                                                                                     | -       |

| Service Type | Item                                           | Settings                                                                                                                                                                                                                                                                                                              | Remarks |
|--------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | Program profile                                | <ul style="list-style-type: none"> <li>● Name: program1</li> <li>● Start IP Address: 224.0.1.1</li> <li>● End IP Address: 224.0.1.1</li> <li>● Source IP Address: 10.10.10.20</li> <li>● Preview Profile: 0 (the default value)</li> </ul>                                                                            | -       |
|              | Multicast user                                 | <ul style="list-style-type: none"> <li>● Alias: IGMPUserA</li> <li>● Unlimited Band Width: selected</li> <li>● Select Service Port: service virtual port named <b>IGMP</b></li> </ul>                                                                                                                                 | -       |
| VoIP service | VLAN                                           | <ul style="list-style-type: none"> <li>● VLAN ID: 2000</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                         | -       |
|              | Service virtual port                           | <ul style="list-style-type: none"> <li>● Name: VOIP</li> <li>● Vlan ID: 2000</li> <li>● Interface Selection: 0/2/1/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 2000</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream Traffic Name: FTTx</li> </ul> | -       |
|              | ONT VAS configuration profile (H.248 protocol) | <ul style="list-style-type: none"> <li>● Profile Name: VOIP850e</li> <li>● Vendor ID: HWTC(2011)</li> <li>● Terminal Type: 850e</li> <li>● Version: V100R001C02B010~Later</li> <li>● Signal Protocol: H248</li> <li>● Digitmap: x.T</li> <li>● MGC Port: 2944</li> <li>● MGC domain name: MGC.com</li> </ul>          | -       |

| Service Type | Item                                         | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Remarks |
|--------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | ONT VAS configuration profile (SIP protocol) | <ul style="list-style-type: none"> <li>● Profile Name: VOIP850e</li> <li>● Vendor ID: HWTC(2011)</li> <li>● Terminal Type: 850e</li> <li>● Version: V100R001C02B010~Later</li> <li>● Signal Protocol: SIP</li> <li>● SIP server port: 5060</li> <li>● SIP server IP: 200.200.200.200</li> <li>● SIP digitmap: x.T</li> <li>● Voice service VLAN ID: 2000</li> <li>● IP get mode: dhcp</li> <li>● WAN Service Type: VOIP</li> <li>● User1 phone number: 87650001, User1 password: test1234</li> <li>● User2 phone number: 87650002, User1 password: test1234</li> </ul> | -       |

### 24.3.2 Configuring the EPON FTTH Internet Service

This topic describes how to configure the high-speed Internet service when an ONT is connected to an OLT through an EPON port.

#### Prerequisite

The OLT must be added to the U2000.

#### Context

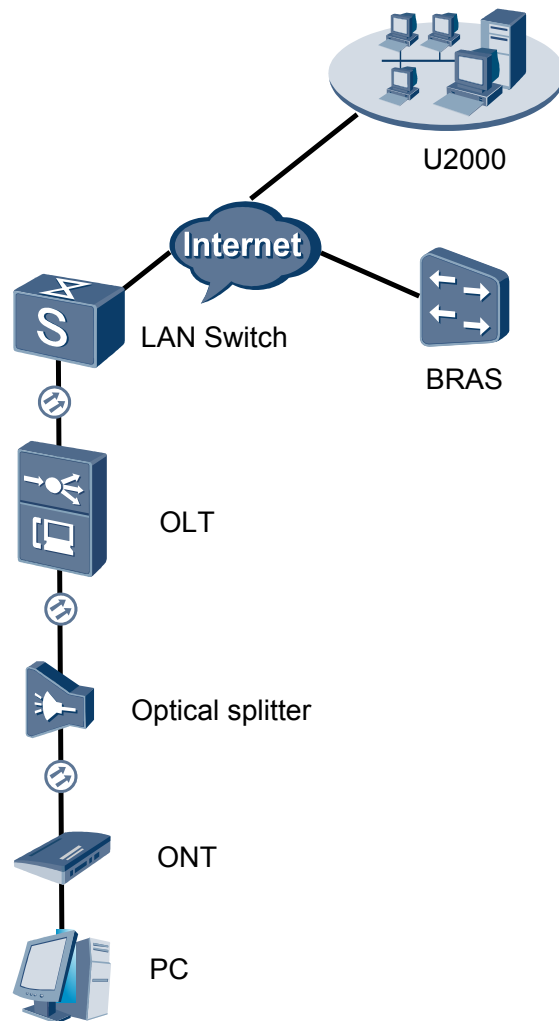
For details of the data plan, see [24.3.1 Data Plan for the EPON FTTH Services](#).

#### Example Network

This topic considers the ONT whose **Terminal Type** is set to **HG850e** as an example. The configuration procedure of the ONTs of other types is similar to the configuration procedure described in this topic.

- The PC gains access to the Internet in PPPoE dialup mode.
- The ONT is connected to the EPBD card of the OLT through an optical fiber.
- The BRAS provides the AAA functions.

Figure 24-1 Configuring the EPON FTTH Internet service

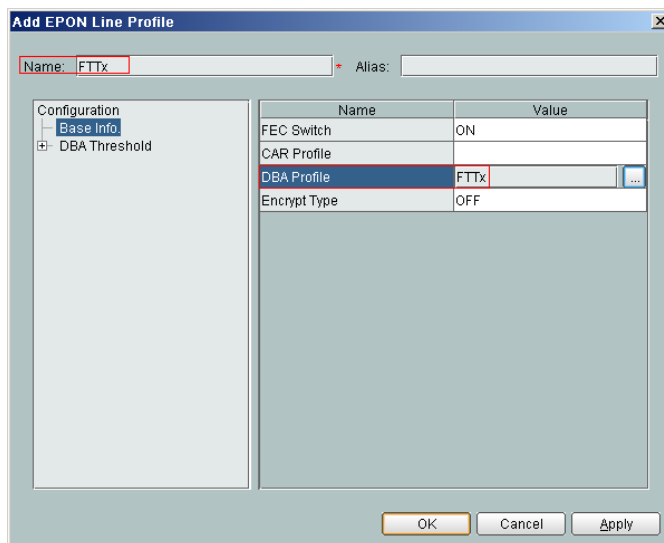


## Procedure

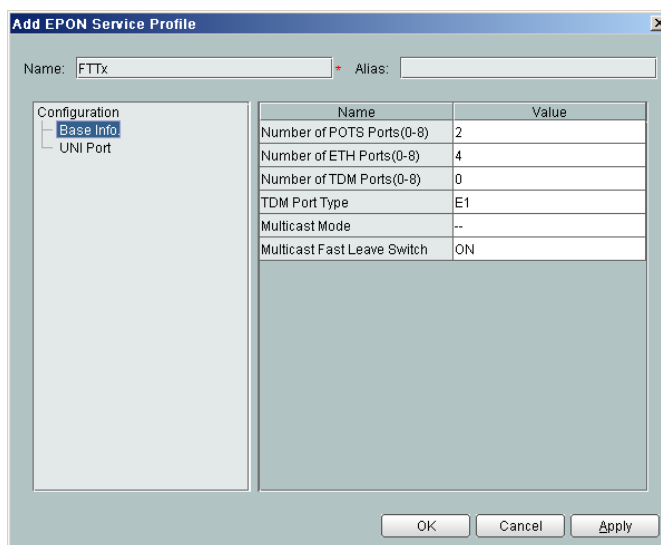
- Add the ONT to the U2000 in profile mode.
  1. **Configure an MEF IP traffic profile.** For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).
    - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
    - (2) Click the **MEF IP Traffic Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx
      - CIR: 20480
      - Outer Priority: 1
    - (5) Click **OK**.

- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a DBA profile. For details, see [23.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768

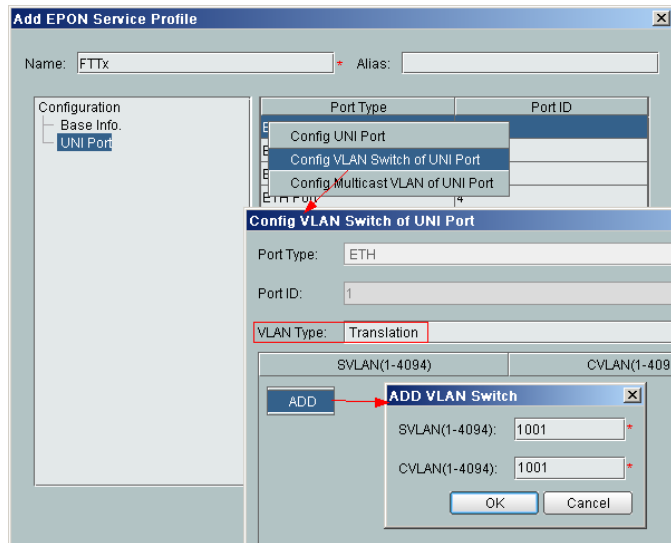
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile. For details, see [24.1.1 Configuring a Line Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Profile: FTTx



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a service profile. For details, see [24.1.2 Configuring a Service Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Service Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info** from the navigation tree and set the parameters.
      - Number of POTS Ports: 2
      - Number of ETH Ports: 4

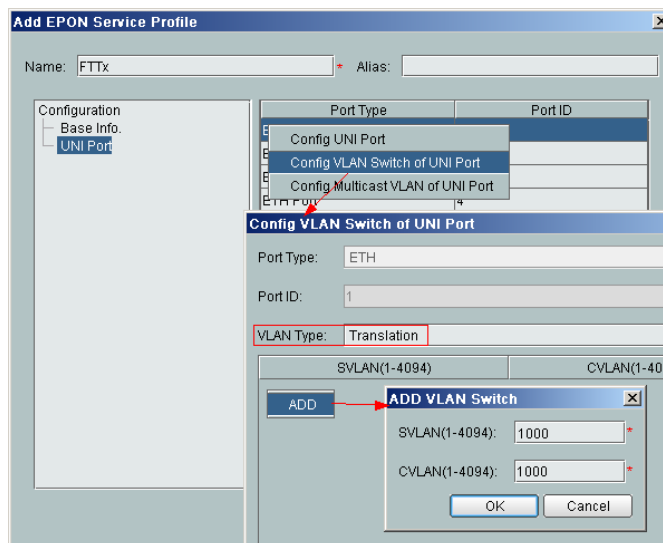


- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **1**, and choose **Config VLAN Switch of UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1001
    - C-VLAN: 1001



- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **2**, and choose **Config VLAN Switch of UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1000
    - C-VLAN: 1000






- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the ONT.** For details, see [24.1.3 Confirming an Auto-Discovered ONT](#).
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 001E-E3F4-0471, and then choose **Confirm ONU** from the shortcut menu.
    - Set **Name** to **ONT**.
    - Set **ONU ID** to **0**.
    - Set **ONU Type** to **ONT**.
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
      - Terminal Type: 850e
      - Software Version: V100R001C05B031

(6) Click **OK**.

- **Configure the Internet service.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

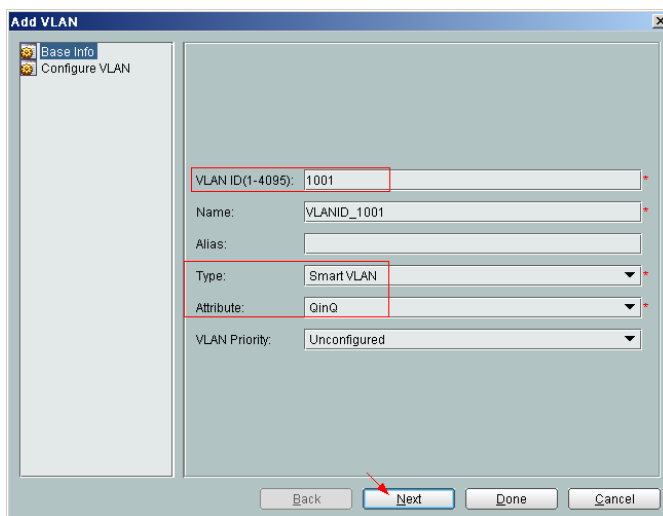
1. **Configuring the Information About the ETH Port of an EPON ONU**

- (1) Choose **EPON > EPON ONU** from the navigation tree.
  - (2) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
  - (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and click the **The Ont's UNI Port Info** tab in the lower pane.
  - (4) On the **The Ont's UNI Port Info** tab page, right-click the record where **UNI Type** is set to **ETH** and **UNI ID** is set to **1**, and choose **Modify** from the shortcut menu.
  - (5) In the dialog box that is displayed, set **Default VLAN ID** to **1001**.
  - (6) Click **OK**.
2. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

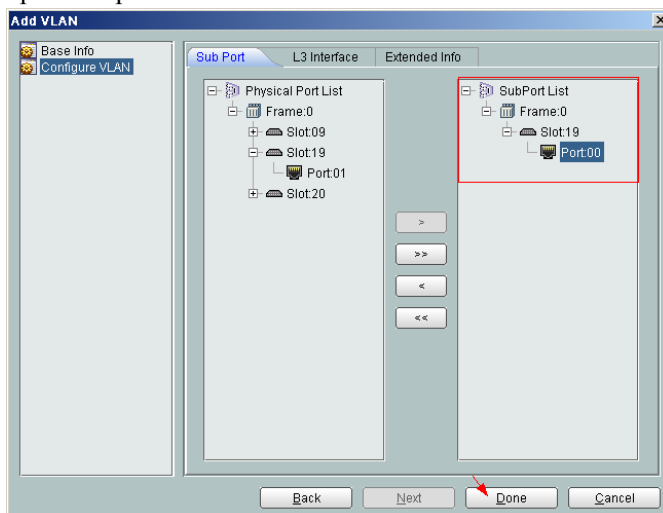
A service VLAN is the VLAN used for the Internet service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1001
  - Type: Smart VLAN

- Attribute: QinQ



- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
3. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1001** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: HSI
      - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
      - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
      - VLAN ID: 1001
      - Service Type: Multi-Service VLAN

- User VLAN: 1001
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams in the management VLAN)

(4) Click **OK**.

----End

## Result

Check whether the user successfully gains access to the Internet through dialup on the PC.

1. The FE port of the ONT is connected to the Ethernet port of the PC properly.
2. Dial up on the PC using the PPPoE dialup software.
3. The user gains access to the Internet on the PC after the dialup is successful.

### 24.3.3 Configuring the EPON FTTH Multicast Service

This topic describes how to configure the multicast service when an ONT is connected to an OLT through an EPON port.

#### Prerequisite

The OLT must be added to the U2000.

#### Context

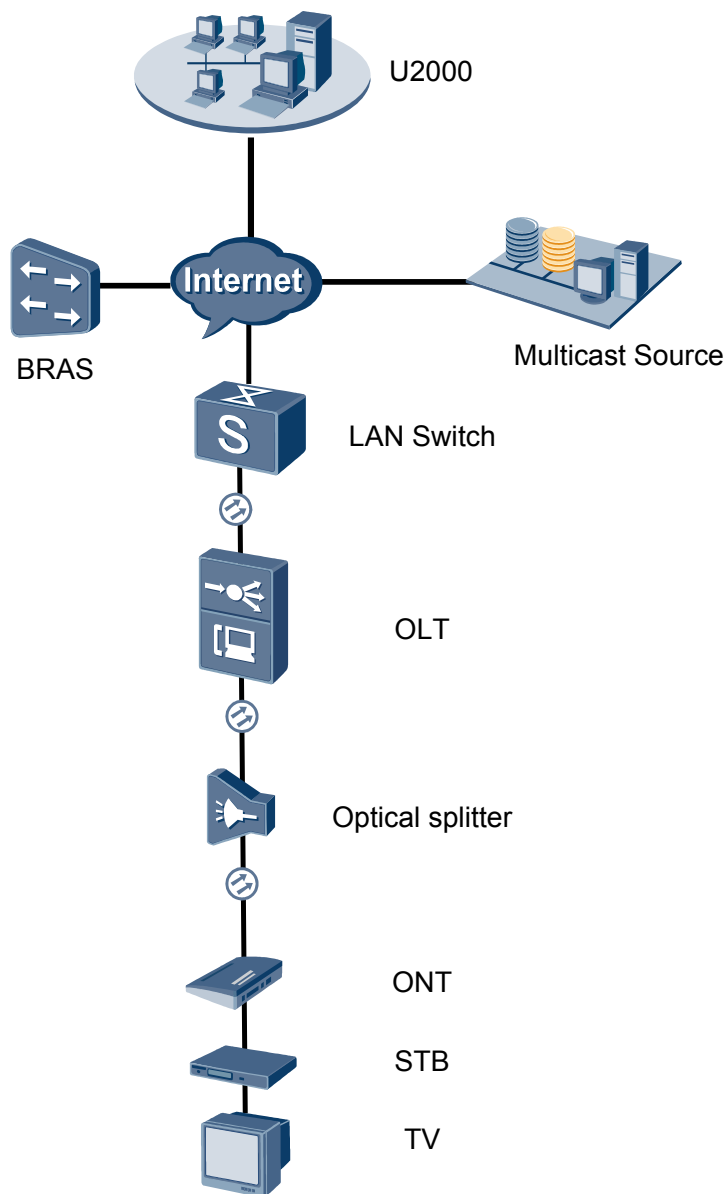
For details of the data plan, see [24.3.1 Data Plan for the EPON FTTH Services](#).

#### Example Network

This topic considers the ONT whose **Terminal Type** is set to **850e** as an example. The configuration procedure of the ONTs of other types is similar to the configuration procedure described in this topic.

- The OLT uses IGMP proxy, which is a Layer 2 multicast protocol.
- The IGMP version of the multicast VLAN is IGMPv3.
- Multicast programs are configured statically.

Figure 24-2 Configuring the EPON FTTH multicast service

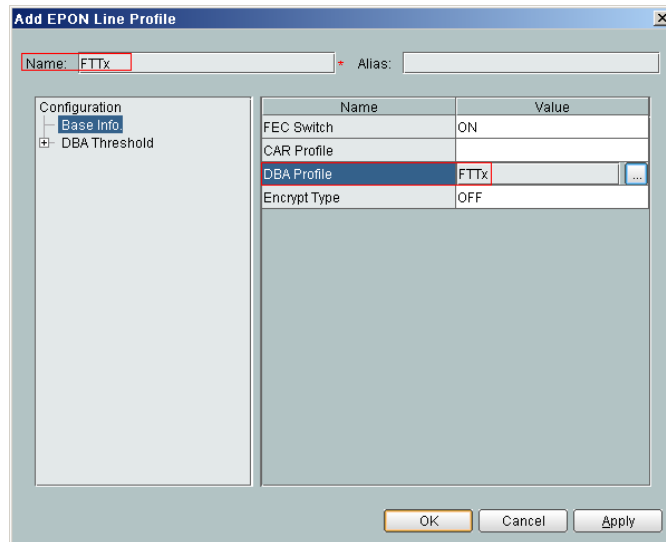


## Procedure

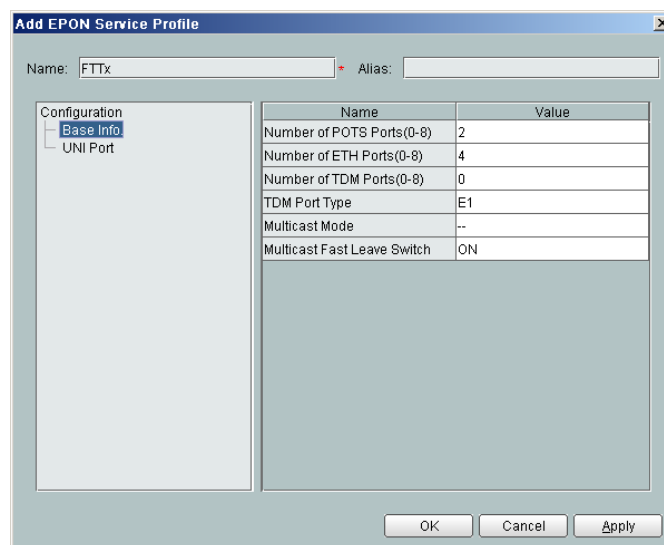
- Add the ONT to the U2000 in profile mode.
  1. Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).
    - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.

- (2) Click the **MEF IP Traffic Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - CIR: 20480
    - Outer Priority: 1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a DBA profile. For details, see [23.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768

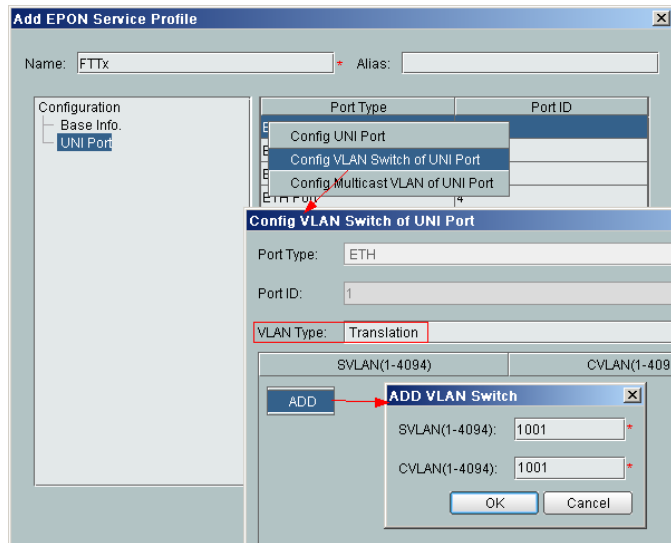
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile. For details, see [24.1.1 Configuring a Line Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Profile: FTTx



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a service profile. For details, see [24.1.2 Configuring a Service Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Service Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info** from the navigation tree and set the parameters.
      - Number of POTS Ports: 2
      - Number of ETH Ports: 4

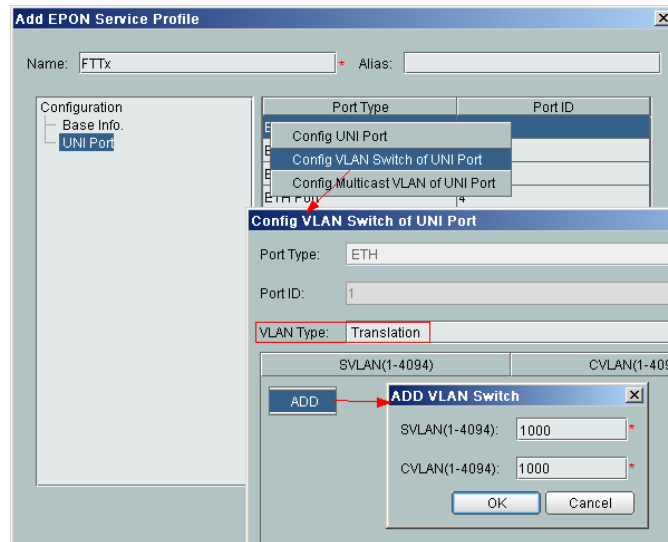





- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **1**, and choose **Config VLAN Switch of UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1001
    - C-VLAN: 1001



- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **2**, and choose **Config VLAN Switch of UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1000
    - C-VLAN: 1000






- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the ONT.** For details, see [24.1.3 Confirming an Auto-Discovered ONT](#).
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 001E-E3F4-0471, and then choose **Confirm ONU** from the shortcut menu.
    - Set **Name** to **ONT**.
    - Set **ONU ID** to **0**.
    - Set **ONU Type** to **ONT**.
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
      - Terminal Type: 850e
      - Software Version: V100R001C05B031

(6) Click **OK**.

- **Configure the multicast service.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configuring the Information About the ETH Port of an EPON ONU**

- (1) Choose **EPON > EPON ONU** from the navigation tree.
- (2) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and click the **The Ont's UNI Port Info** tab in the lower pane.
- (4) On the **The Ont's UNI Port Info** tab page, right-click the record where **UNI Type** is set to **ETH** and **UNI ID** is set to **2**, and choose **Modify** from the shortcut menu.
- (5) In the dialog box that is displayed, set **Default VLAN ID** to **1000**.
- (6) Click **OK**.

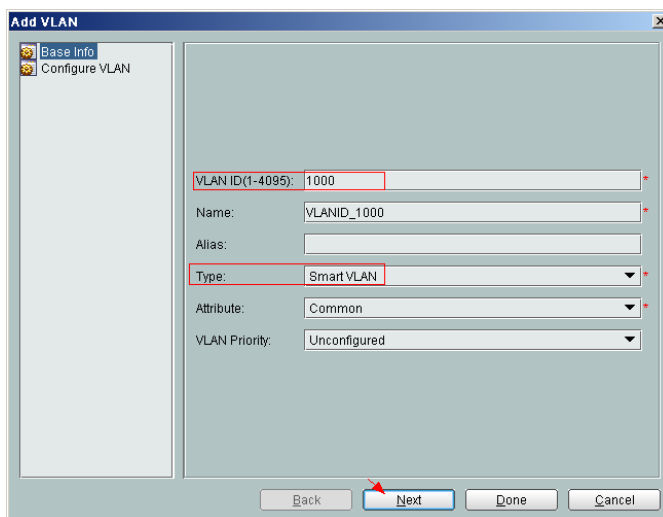
2. **Add a VLAN. For details, see [19.2.1 Configuring a VLAN](#).**

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Type: Smart VLAN
- (4) Click **Done**.

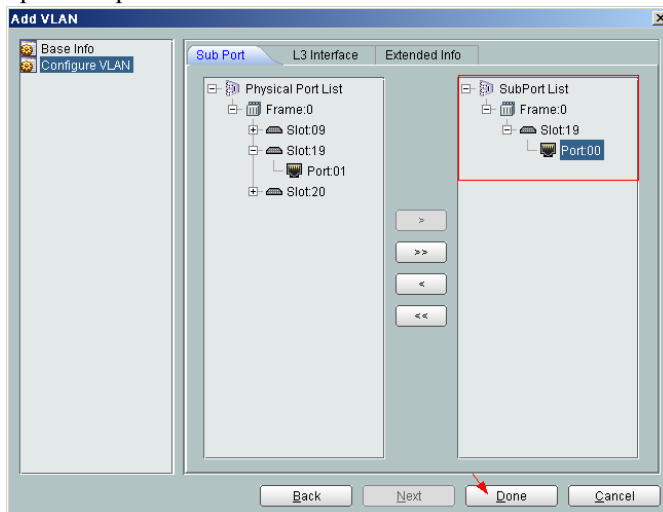
3. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the multicast service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 1000
  - Type: Smart VLAN



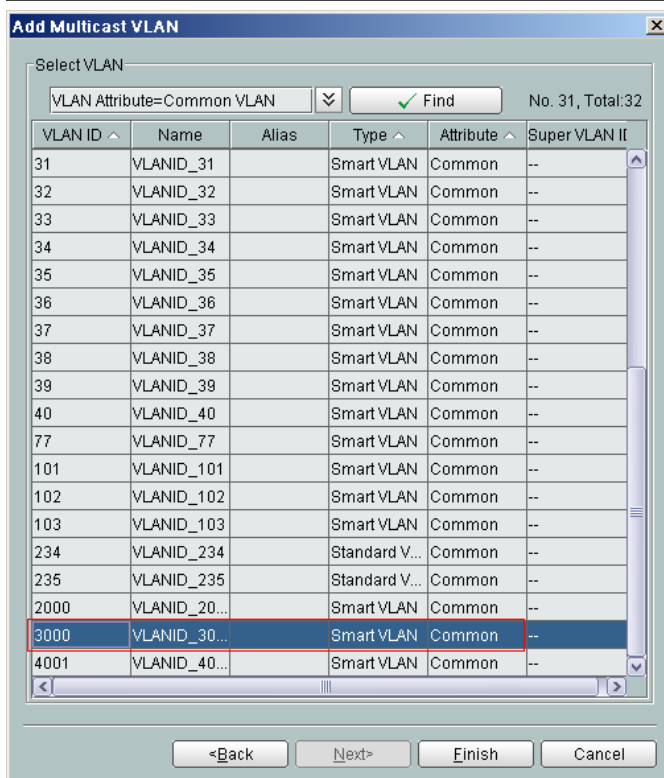
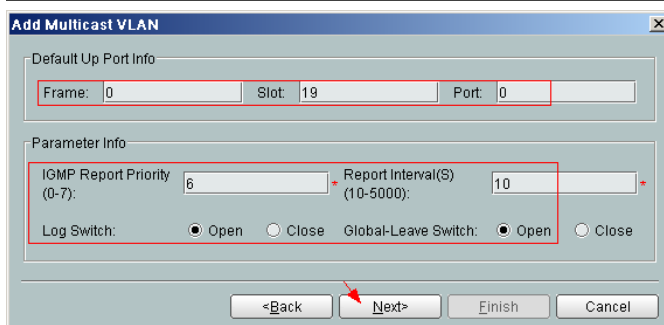
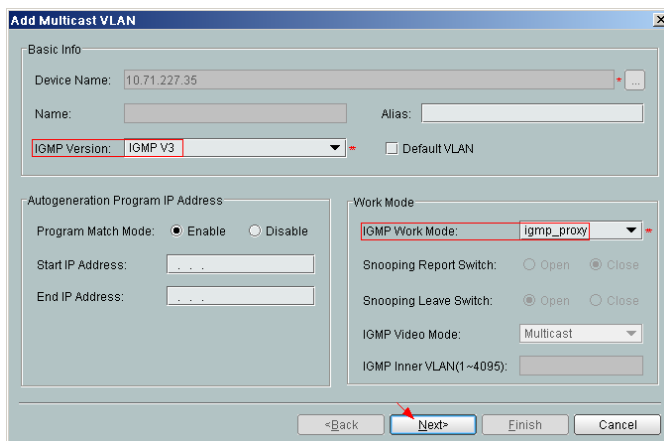
- (4) Click **Next**. Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (5) Click **Done**.
4. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **1000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name:IGMP

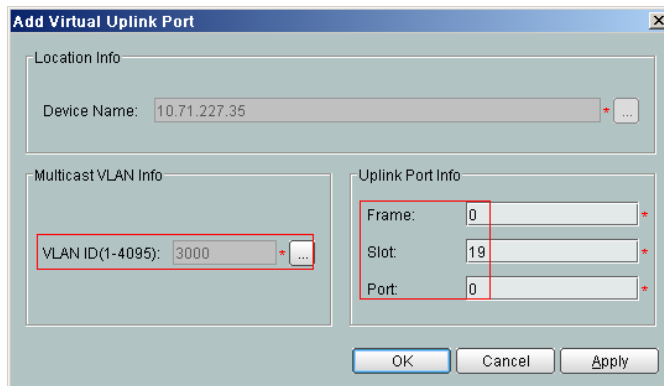
- Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
- Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
- Vlan ID: 1000
- Service Type: Multi-Service VLAN
- User VLAN: 1000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: ip-traffic-table\_6 (it is recommended that you use the default profile ip-traffic-table\_6 because the OLT does not limit the rates of service streams)

- (4) Click **OK**.
5. **Add a multicast VLAN on the OLT side. For details, see [19.2.7 Configuring the Multicast VLAN](#).**
    - (1) Choose **Multicast > Multicast VLAN** from the navigation tree.
    - (2) On the **Multicast VLAN** tab page, set the filter criteria to display the required multicast VLANs.
    - (3) In the information list, right-click and choose **Add** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - IGMP Version: IGMP V3
      - Work Mode: igmp\_proxy
      - VLAN ID: 3000



- (5) Click **Finish**.
6. **Add a virtual upstream port for the multicast service on the OLT side. For details, see 19.2.5 Configuring the Virtual Multicast Upstream Port.**
  - (1) Choose **Multicast > Virtual Uplink Port** from the navigation tree.

- (2) On the **Virtual Uplink Port** tab page, set the filter criteria to display the required virtual upstream ports.
- (3) In the information list, right-click and choose **Add** from the shortcut menu.
- (4) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 3000
  - Frame: 0
  - Slot: 19
  - Port: 0



- (5) Click **Done**.
7. **Configure a program profile on the OLT side. For details, see [19.2.8 Configuring a Program Profile](#).**
- (1) Choose **Configuration > Access Profile Management > IGMP Profile** from the main menu.
  - (2) Click the **Program Profile** tab, and select the required device type from the **Device Type** drop-down list.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: program1
    - Start IP Address: 224.0.1.1 (IP address of the multicast program)
    - End IP Address: 224.0.1.1
    - Source IP Address: 10.10.10.20 (IP address of the multicast server)
    - Preview Profile: 0 (the default value)

**Add Program Profile**

Description Info

- Configure the desired parameters.
- When the program is provisioned, if the IGMP version of the multicast VLAN is V2, the program can not have a source IP address. If the IGMP version of the multicast VLAN is V3, address, the program must have a source IP

Name: program1 \*

Alias: \*

Profile Index (1-1024): 1 \*

Begin IP Address: 224.0.1.1 \* End IP Address: 224.0.1.1 \*

Source IP Address: 10.10.10.20 \* Host IP: 0.0.0.0 \*

Priority (0-7): 7 \* Bandwidth (Kbit/s) (0-65534): 5000 \*

Grade: no-grade \* Multicast VLAN(1-4095): \*

Preview Parameter

Preview Profile: 0 \*

Attribute Parameter

Prejoin Attribute  Host Attribute

Unsolicited Attribute  Log Attribute

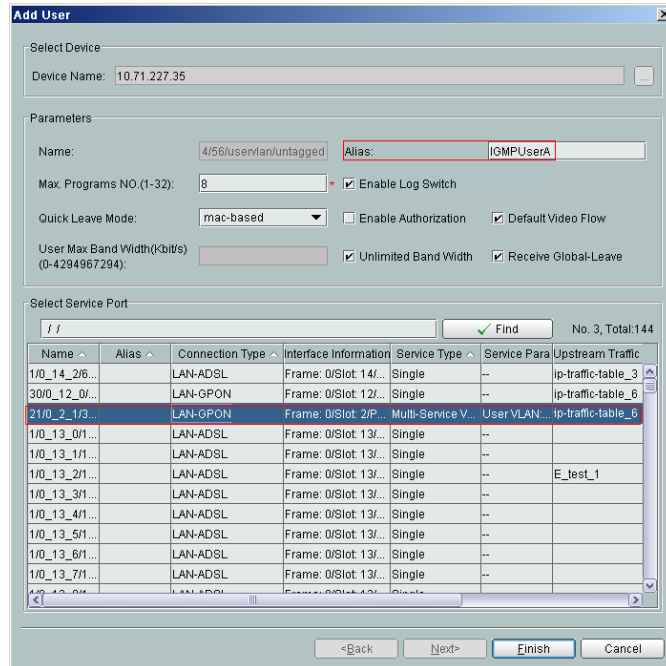
Across VLAN Attribute

OK Cancel Apply

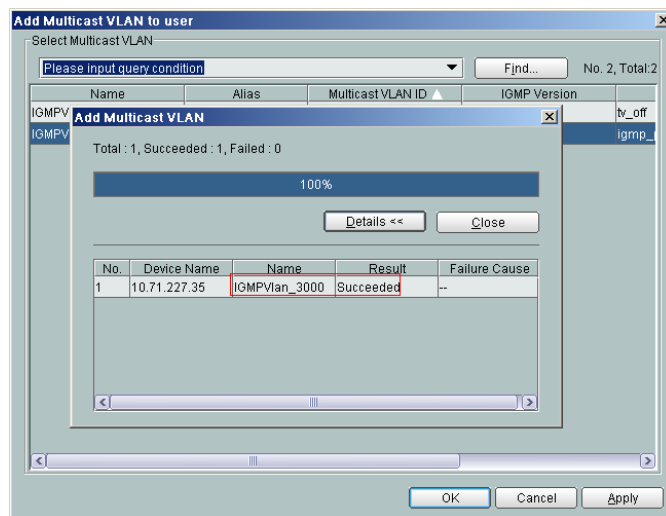
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required OLT and click **Next**. Then, set **VLAN ID** to **3000**.
  - (8) Click **OK**.
8. **Configure a multicast user on the OLT side. For details, see [19.2.10 Configuring a Multicast User](#).**

To enable user authentication, select **Enable Authorization**. To add a rights profile and apply it to NEs, choose **Configuration > Access Profile Management > IGMP Profile** from the main menu and click the **Right Profile** tab.

- (1) Choose **Multicast > Multicast User** from the navigation tree.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Alias: IGMPUserA
  - Unlimited Band Width: selected
  - Select Service Port: service virtual port named **IGMP**



- (4) Click **Finish**.
- (5) Select the multicast user, click the **User Multicast VLAN** tab in the lower pane, right-click, and then choose **Add** from the shortcut menu.
- (6) In the dialog box that is displayed, select the record where **Multicast VLAN ID** is set to **3000** and click **OK**.



----End

## Result

The user can watch program1 on TV.

### 24.3.4 Configuring the EPON FTTH Voice Service (H.248 Protocol)

This topic describes how to configure the voice service when an ONT is connected to an OLT through an EPON port.



## Prerequisite

The OLT must be added to the U2000.

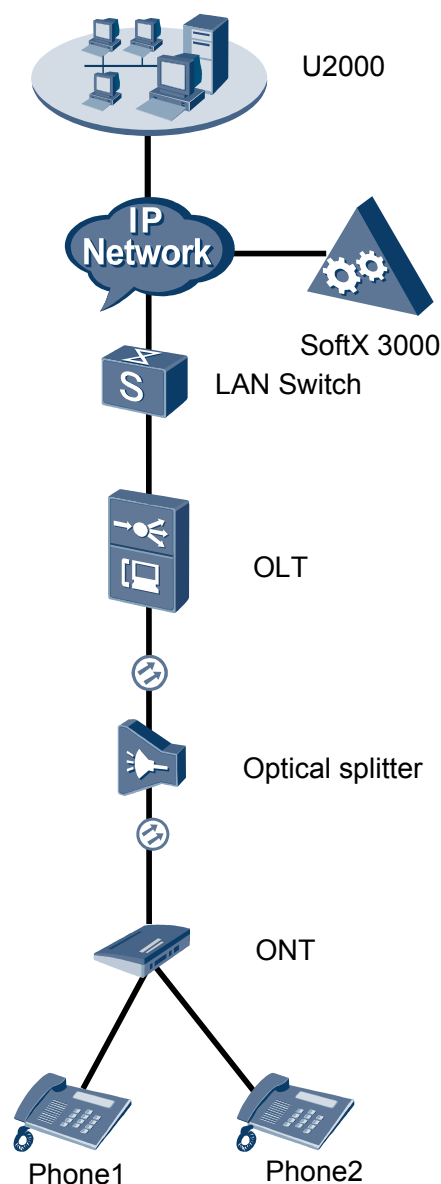
## Context

For details of the data plan, see [24.3.1 Data Plan for the EPON FTTH Services](#).

## Example Network

This topic considers the ONT whose **Terminal Type** is set to **850e** as an example. The configuration procedure of the ONTs of other types is similar to the configuration procedure described in this topic.

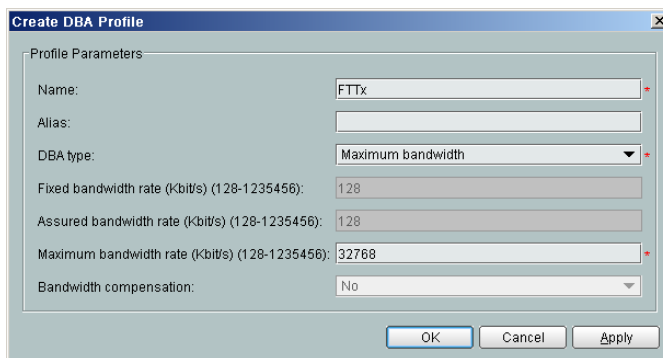
- Phone 1 and phone 2 are connected to TEL ports on the ONT separately and can communicate with each other.
- The ONT obtains an IP address in DHCP mode.

**Figure 24-3** Configuring the EPON FTTH voice service (H.248 protocol)

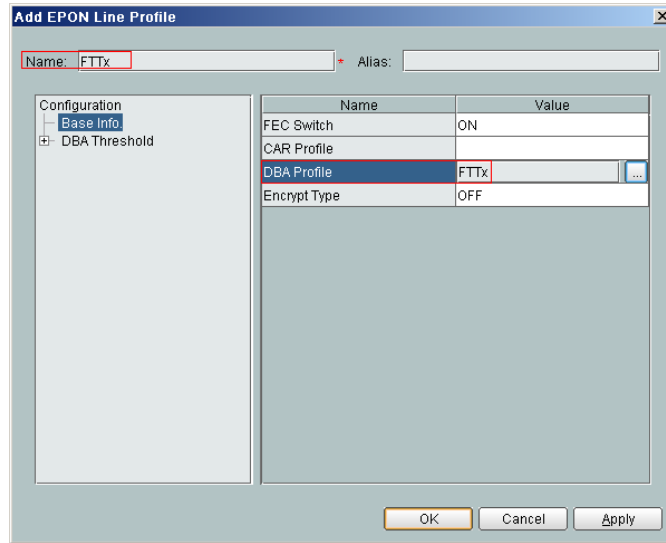
## Procedure

- Add the ONT to the U2000 in profile mode.
  1. Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).
    - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
    - (2) Click the **MEF IP Traffic Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx

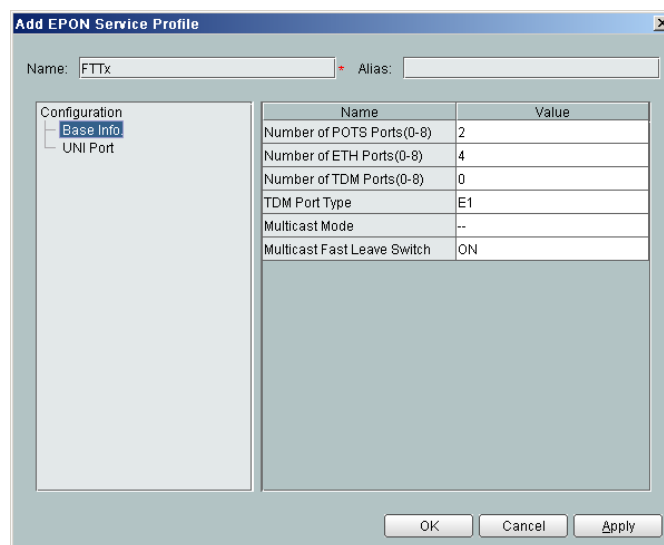
- CIR: 20480
  - Outer Priority: 1
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a DBA profile. For details, see [23.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



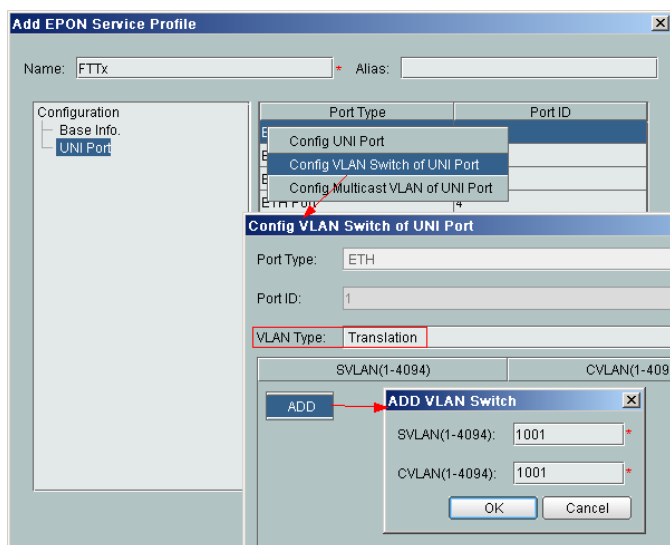
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile. For details, see [24.1.1 Configuring a Line Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Profile: FTTx



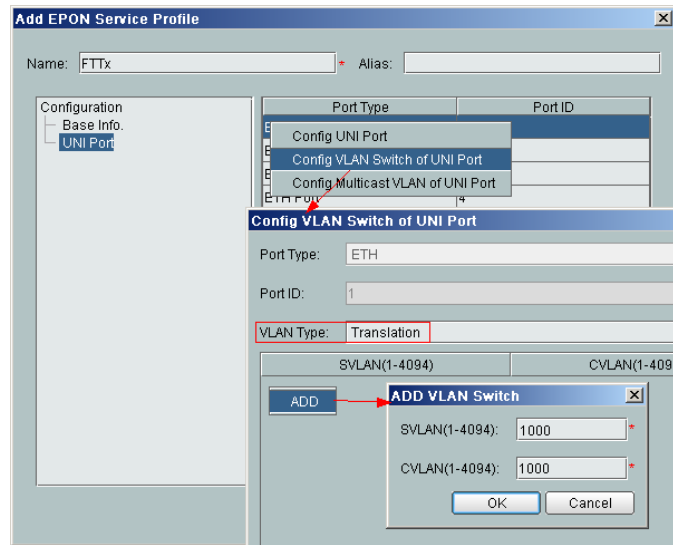
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a service profile. For details, see [24.1.2 Configuring a Service Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Service Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info** from the navigation tree and set the parameters.
      - Number of POTS Ports: 2
      - Number of ETH Ports: 4



- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **1**, and choose **Config VLAN Switch of UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
- In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
  - Service Type: Translation
  - S-VLAN: 1001
  - C-VLAN: 1001



- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **2**, and choose **Config VLAN Switch of UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
- In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
  - Service Type: Translation
  - S-VLAN: 1000
  - C-VLAN: 1000



- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the ONT.** For details, see [24.1.3 Confirming an Auto-Discovered ONT](#).
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 001E-E3F4-0471, and then choose **Confirm ONU** from the shortcut menu.
    - Set **Name** to **ONT**.
    - Set **ONU ID** to **0**.
    - Set **ONU Type** to **ONT**.
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
      - Terminal Type: 850e
      - Software Version: V100R001C05B031

(6) Click **OK**.

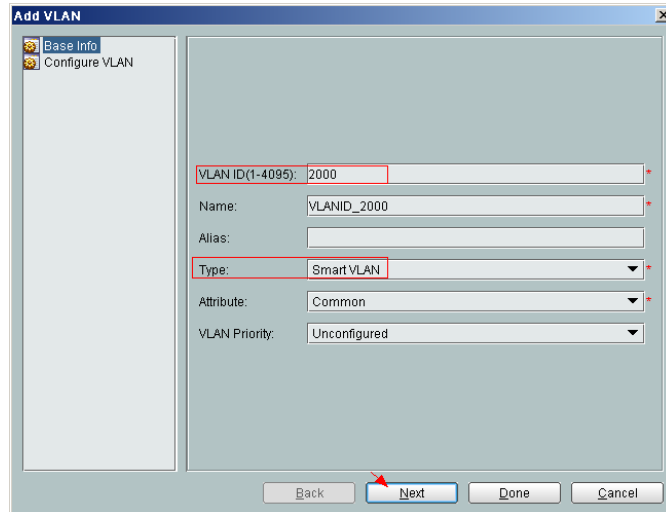
- **Configure the voice service.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

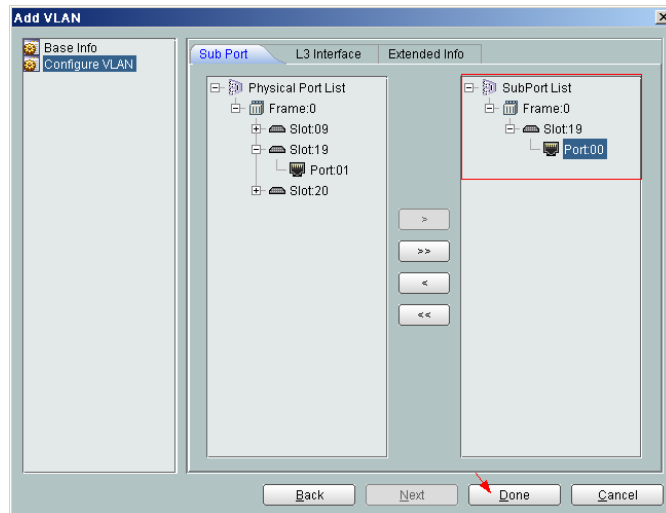
1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN



- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
    - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
    - (2) In the information list, right-click and choose **Add** from the shortcut menu.
    - (3) In the dialog box that is displayed, set the parameters.
      - Name: VOIP
      - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
      - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
      - Vlan ID: 2000
      - Service Type: Multi-Service VLAN



- User VLAN: 2000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

The screenshot shows the 'Add Service Port' dialog box. The 'Basic Info' section has 'Name' set to 'VOIP'. The 'Attributes' section has 'Connection Type' set to 'LAN-GPON'. The 'Network Side' section has 'VLAN Choice' set to 'Smart VLAN' and 'Vlan ID(1-4095)' set to '2000'. The 'User Side' section has 'Interface Selection' set to '0/2/1/0/0', 'Service Type' set to 'Multi-Service VLAN', and 'User VLAN(1-4095)' set to '2000'. The 'Traffic Profile Info' section has the checkbox 'Keep the upstream and downstream settings the same' checked, and both 'Upstream Traffic Name' and 'Downstream Traffic Name' set to 'ip-traffic-table\_6'.

(4) Click **OK**.


3. **Configure the VAS configuration profile of the ONT.**

- (1) Choose **Configuration > Access Profile Management > ONT VAS Profile** from the main menu.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Set **Profile Name** to **VOIP850e**.
  - Set **Vendor ID** to **HWTC(2011)**.
  - Set **Terminal Type** to **850e**.
  - Set **Version** to **V100R001C02B010~Later**.
  - Choose **IP configure > IP property configure** from the navigation tree and set **IP get mode** to **DHCP**.
  - Choose **Country code and signaling protocol** from the navigation tree and set **Signal Protocol** to **H248**.
  - Choose **H.248 protocol basic configure > H.248 Global digitmap configure > Global digitmap configure 1** from the navigation tree and set **Digitmap** to **x.T**.
  - Choose **Voice > Voice service VLAN and priority configure** from the navigation tree and set **Voice service VLAN ID** to **2000**.
  - Choose **H.248MGC > H.248 MGC configure 1** from the navigation tree and set **MGC port** to **2944** and **MGC domain name** to **MGC.com**.

(4) Click **OK**.

4. **Bind the VAS profile.**

- (1) Choose **EPON > EPON ONU** from the navigation tree.

- (2) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
- (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and choose **Bind VAS Profile** from the shortcut menu.
- (4) In the dialog box that is displayed, select the VAS profile whose **Profile Name** is set to **VOIP850e** and click **OK**.

---End

## Result

The user can watch program1 on TV.

## 24.3.5 Configuring the EPON FTTH Voice Service (SIP Protocol)

This topic describes how to configure the voice service when an ONT is connected to an OLT through an EPON port.

### Prerequisite

The OLT must be added to the U2000.

### Context

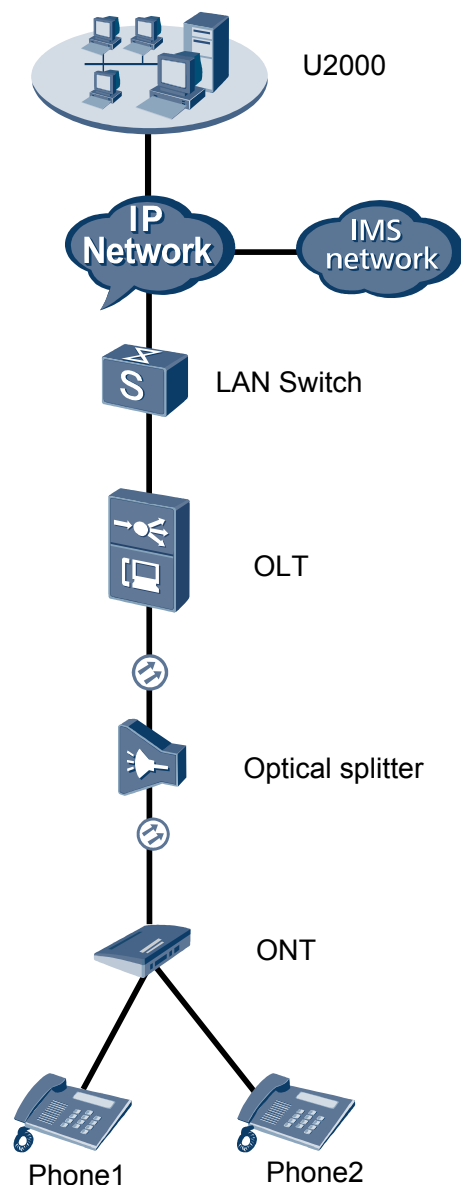
For details of the data plan, see [24.3.1 Data Plan for the EPON FTTH Services](#).

### Example Network

This topic considers the ONT whose **Terminal Type** is set to **850e** as an example. The configuration procedure of the ONTs of other types is similar to the configuration procedure described in this topic.

- Phone 1 and phone 2 are connected to TEL ports on the ONT separately and can communicate with each other.
- The ONT obtains an IP address in DHCP mode.

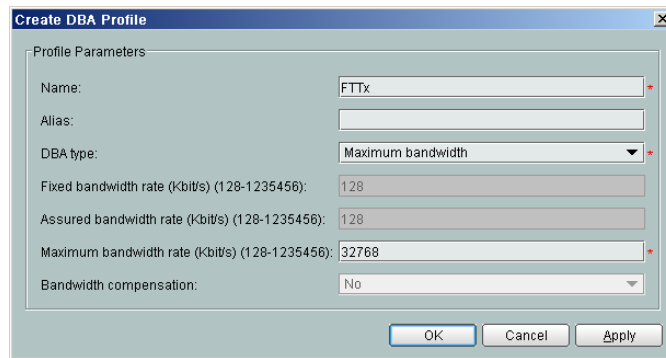
Figure 24-4 Configuring the EPON FTTH voice service (SIP protocol)



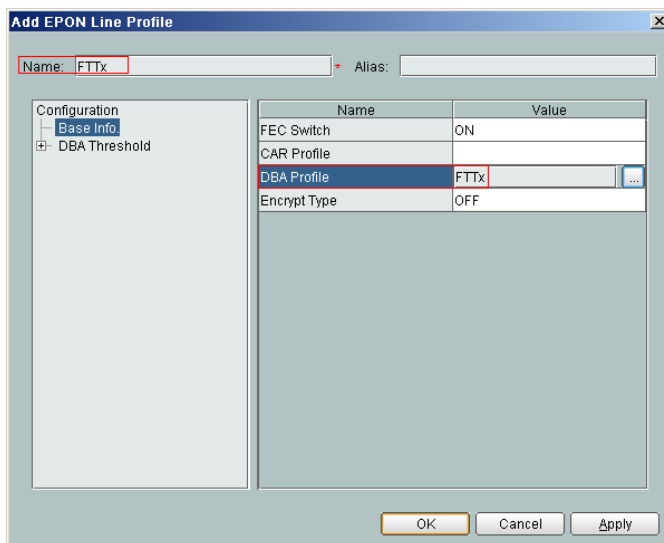
## Procedure

- Add the ONT to the U2000 in profile mode.
  1. Configure an MEF IP traffic profile. For details, see [19.2.2 Configuring an MEF IP Traffic Profile](#).
    - (1) Choose **Configuration > Access Profile Management > Traffic Profile** from the main menu.
    - (2) Click the **MEF IP Traffic Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx

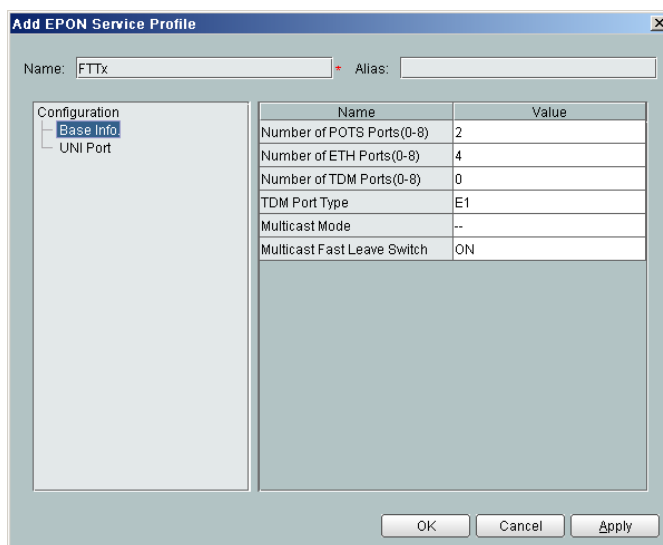
- CIR: 20480
  - Outer Priority: 1
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
2. **Configure a DBA profile. For details, see [23.1.2 Configuring a DBA Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **DBA Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Type: Maximum Bandwidth
    - Maximum Bandwidth: 32768



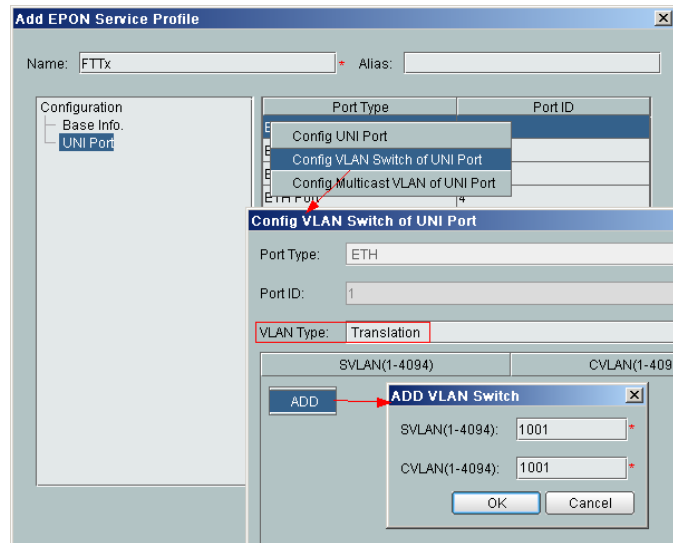
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
3. **Configure a line profile. For details, see [24.1.1 Configuring a Line Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Line Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Name: FTTx
    - DBA Profile: FTTx



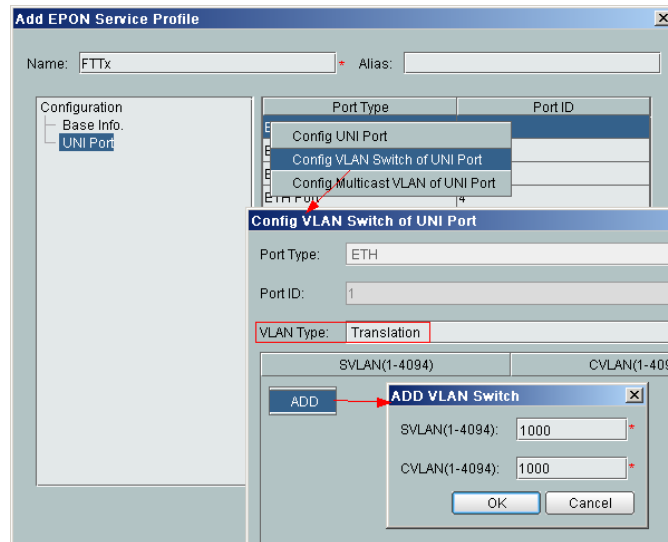
- (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Configure a service profile. For details, see [24.1.2 Configuring a Service Profile](#).**
- (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
  - (2) Click the **Service Profile** tab.
  - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Set **Name** to **FTTx**.
    - Choose **Base Info** from the navigation tree and set the parameters.
      - Number of POTS Ports: 2
      - Number of ETH Ports: 4



- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **1**, and choose **Config VLAN Switch of UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1001
    - C-VLAN: 1001



- Choose **UNI Port** from the navigation tree. In the window that is displayed, right-click the record where **Port Type** is set to **ETH** and **Port ID** is set to **2**, and choose **Config VLAN Switch of UNI Port** from the shortcut menu. In the dialog box that is displayed, set the parameters.
  - In the dialog box that is displayed, right-click and choose **Add**, and configure the parameters of VLAN switch.
    - Service Type: Translation
    - S-VLAN: 1000
    - C-VLAN: 1000



- (5) Click **OK**.
- (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
- (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
5. **Confirm the ONT.** For details, see [24.1.3 Confirming an Auto-Discovered ONT](#).
  - (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with the MAC address 001E-E3F4-0471, and then choose **Confirm ONU** from the shortcut menu.
    - Set **Name** to **ONT**.
    - Set **ONU ID** to **0**.
    - Set **ONU Type** to **ONT**.
    - On the **Basic Parameters** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC
      - Terminal Type: 850e
      - Software Version: V100R001C05B031

(6) Click **OK**.

- **Configure the voice service.**

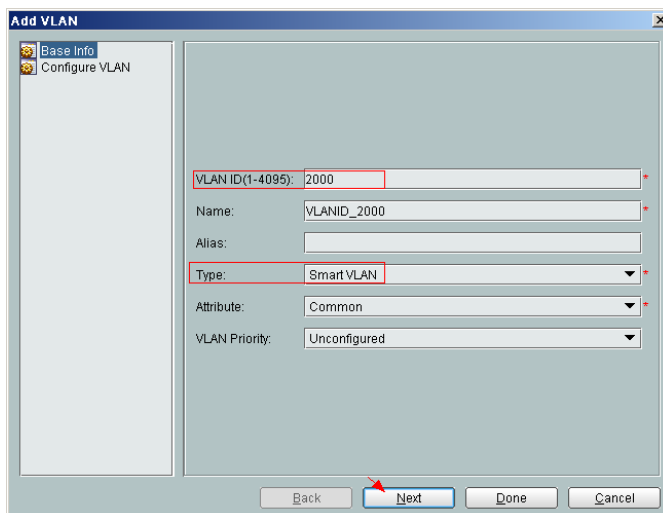
The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the OLT side. For details, see [19.2.1 Configuring a VLAN](#).**

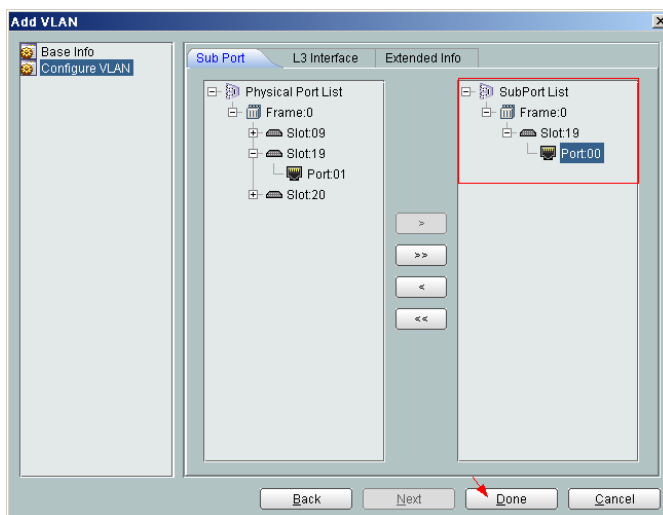
A service VLAN is the VLAN used for the voice service.

- (1) Choose **VLAN** from the navigation tree.
- (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - VLAN ID: 2000
  - Type: Smart VLAN





- (4) Click **Next**.
- (5) Click the **Upstream Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.



- (6) Click **Done**.
2. **Add a service virtual port on the OLT side. For details, see [19.2.3 Adding a Service Port](#).**
  - (1) On the **VLAN** tab page, select the record where **VLAN ID** is set to **2000** and click the **ServicePort** tab in the lower pane.
  - (2) In the information list, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - Name: VOIP
    - Connection Type: LAN-GPON (when the physical port is a GPON port) or LAN-EPON (when the physical port is an EPON port)
    - Interface Selection: 0/2/1/0/0 (when the connection type is LAN-GPON) or 0/2/1/0 (when the connection type is LAN-EPON)
    - Vlan ID: 2000
    - Service Type: Multi-Service VLAN

- User VLAN: 2000
- Keep the upstream and downstream settings the same: selected
- Upstream Traffic Name: FTTx

(4) Click **OK**.



### 3. Configure the VAS configuration profile of the ONT.

- (1) Choose **Configuration > Access Profile Management > ONT VAS Profile** from the main menu.
- (2) In the information list, right-click and choose **Add** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters.
  - Set **Profile Name** to **VOIP850e**.
  - Set **Vendor ID** to **HWTC(2011)**.
  - Set **Terminal Type** to **850e**.
  - Set **Version** to **V100R001C02B010~Later**.
  - Choose **IP configure > IP property configure** from the navigation tree and set **IP get mode** to **DHCP**.
  - 
  - Choose **Country code and signaling protocol** from the navigation tree and set **Signal Protocol** to **SIP**.
  - Choose **Voice > Voice service VLAN and priority configure** from the navigation tree and set **Voice service VLAN ID** to **2000**.
  - Choose **SIP protocol configure > SIP protocol configure 1** from the navigation tree and set **SIP server port** to **5060** and **SIP server IP** to **200.200.200.200**.
  - Choose **SIP digitmap configure > Digit Map 1** from the navigation tree and set **SIP digitmap** to **x.T**.

(4) Click **OK**.

### 4. Bind the VAS profile.

- (1) Choose **EPON > EPON ONU** from the navigation tree.

- (2) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
  - (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and choose **Bind VAS Profile** from the shortcut menu.
  - (4) In the dialog box that is displayed, select the VAS profile whose **Profile Name** is set to **VOIP850e** and click **OK**.
5. **Configure Value-Added Service.**
- (1) Choose **EPON > EPON ONU** from the navigation tree.
  - (2) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
  - (3) In the information list, right-click the ONT record where **Frame**, **Slot**, **Port**, and **ONU ID** are set to **0**, **2**, **1**, and **0** respectively and choose **Configure Value-Added Service** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.  
Choose **SIP user configure** from the navigation tree and choose **Add** from the shortcut menu.
    - Choose **User 1** from the navigation tree and set **User phone number** to **87650001** and **User password** to **test1234**.
    - Choose **User 2** from the navigation tree and set **User phone number** to **87650002** and **User password** to **test1234**.
  - (5) Click **OK**.

----End

## Result

Check whether the telephone functions properly. Connect two common telephones phone 1 and phone 2 to two TEL ports on the ONT and test the dialing between phone 1 and phone 2. In normal cases,

- The caller hears the dialing tone after taking the phone off the hook.
- When the caller dials the telephone number of the callee, the phone of the callee rings successfully, and the caller hears the ringback tone.
- The caller and the callee communicate with each other successfully.
- After the callee hangs up, the caller hears the busy tone.



# 25 Configuring the EPON FTTO Services (OT925E)

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## About This Chapter

The deployment of an OLT and OT925E in a network provides the fiber to the office (FTTO) solutions.

### [25.1 Adding an ONT to the U2000 \(OLT in Profile Mode\)](#)

This topic describes how to add an ONT to the U2000 when the OLT is in the profile mode. After an ONT is added successfully, you can configure private line access or FTTO services for the ONT on the U2000.

### [25.2 Configuring Services on the OLT](#)

A private line access network with an OLT and MA5612 provides various services for users.

### [25.3 Configuring Services on the OT925E](#)

This topic describes how to set parameters related to CESoP on the OT925E to maintain consistency between these parameters and the corresponding data on the OLT.

### [25.4 Configuration Examples of the EPON FTTO Services \(OLT+OT925E\)](#)

This topic provides examples to describe how to configure various services in an EPON FTTO network.

## 25.1 Adding an ONT to the U2000 (OLT in Profile Mode)

This topic describes how to add an ONT to the U2000 when the OLT is in the profile mode. After an ONT is added successfully, you can configure private line access or FTTO services for the ONT on the U2000.

### Context

The OT925E supports five ETH ports and four E1 ports.

### Procedure

- 1 [24.1.1 Configuring a Line Profile.](#)
- 2 [24.1.2 Configuring a Service Profile.](#)
- 3 [24.1.3 Confirming an Auto-Discovered ONT.](#)

----End

## 25.2 Configuring Services on the OLT

A private line access network with an OLT and MA5612 provides various services for users.

### Context

Several operations are required when you configure a service. The following lists the services configured at the OLT side and the service configuration steps.

| Services                                                                                                               | Steps                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TDM PWE3 Private Line Access Service                                                                                   | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">23.2.1 Adding a Service Virtual Port</a></li> <li>● <a href="#">21.2.1 Setting Queue Scheduling Parameters</a></li> <li>● <a href="#">22.2.1 Configuring the Attributes of a TOPA Card</a></li> <li>● <a href="#">22.2.2 Configuring a CESoP Connection</a></li> <li>● <a href="#">21.2.5 Configuring a Clock Source</a></li> </ul> |
| ATM PWE3 Private Line Access Service<br>ETH PWE3 Private Line Access Service<br>Router Access Service of an Enterprise | <ul style="list-style-type: none"> <li>● <a href="#">19.2.1 Configuring a VLAN</a></li> <li>● <a href="#">23.2.1 Adding a Service Virtual Port</a></li> <li>● <a href="#">21.2.1 Setting Queue Scheduling Parameters</a></li> </ul>                                                                                                                                                                                                           |

## 25.3 Configuring Services on the OT925E

This topic describes how to set parameters related to CESoP on the OT925E to maintain consistency between these parameters and the corresponding data on the OLT.

### Context

- You can log in to the OT925E through the serial port or in Web mode. This topic considers the login through the serial port as an example. For information on how to log in to the OT925E in Web mode, see the operation manual of the OT925E.
- Set the baud rate to 115200 bit/s if you log in to the OT925E through the serial port.

### Procedure

- To log in to the OT925E through the serial port, run the following commands:

```
PAS6ONU > //Prompt that is displayed after the OT925E is successfully started
PAS6ONU > exit //To enter the /# mode
/ # elshell //To enter the CLI mode
CLI#
CLI# config //To enter the config mode
CLI(config)#
CLI(config)# zlset //To enter the zarlink chip
CLI(zlset)# source //To query and configure local parameters, including the UDP
port ID, IP address, and MAC address
CLI(source)# mac //To query or configure the MAC address (if you do not enter
a value, the MAC address is queried; if you enter a MAC address, the MAC
address is set to the entered value)
Source mac address: 8E:C0:A8:02:8E:08
CLI(source)# ip //To query or configure the local IP address (if you do not
enter a value, the local IP address is queried; if you enter a value, the local
IP address is set to the entered value)
Source ip address: 20.20.20.10
CLI(source)# port //To query local UDP port IDs (if you do not enter values,
the local UDP port IDs are queried; if you enter values, the local UDP port IDs
are set to the entered values)
source udp port[1] = 6010
source udp port[2] = 5002
source udp port[3] = 5003
source udp port[4] = 5004
CLI(source)# exit
CLI(zlset)# dest //To query or configure the parameters on the peer end,
including the UDP port ID, IP address, and MAC address (the parameters must be
the same as the corresponding parameters on the OLT)
CLI(dest)# mac
Destination mac address[1]: 00:E0:FC:10:00:03
Destination mac address[2]: 08:00:3E:32:53:10
Destination mac address[3]: 08:00:3E:32:53:10
Destination mac address[4]: 08:00:3E:32:53:10
CLI(dest)# ip
Destination ip address[1]: 20.20.20.20
Destination ip address[2]: 192.168.2.142
Destination ip address[3]: 192.168.2.142
Destination ip address[4]: 192.168.2.142
CLI(dest)# port
destination udp port[1] = 6001
destination udp port[2] = 6002
destination udp port[3] = 6003
destination udp port[4] = 6004
CLI(dest)# exit
CLI(zlset)# vlanid //To query and configure VLANs
E1[1] vlan id = 500
E1[2] vlan id = 200
```

```
E1[3] vlan id = 200
E1[4] vlan id = 200
```

---End

## 25.4 Configuration Examples of the EPON FTTO Services (OLT+OT925E)

This topic provides examples to describe how to configure various services in an EPON FTTO network.

### 25.4.1 Data Plan for the EPON FTTO Services (OLT+OT925E)

This topic provides the data plan for the configuration examples of the EPON FTTO services. You can configure the services according to the data plan.

#### 25.4.2 Configuring the TDM PBX Access Service

In this configuration example, the OT925E is connected to the TDM PBX of an enterprise through an E1 port to carry the PBX fixed-line telephone service in an EPON network.

### 25.4.1 Data Plan for the EPON FTTO Services (OLT+OT925E)

This topic provides the data plan for the configuration examples of the EPON FTTO services. You can configure the services according to the data plan.

## Data Plan

**Table 25-1** Data plan for the EPON FTTO services

| Service Type      | Item                     | Settings                                                                                                                                                                        | Remarks |
|-------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Device management | Upstream port of the OLT | 0/19/0                                                                                                                                                                          | -       |
|                   | EPON port of the OLT     | 0/2/1                                                                                                                                                                           | -       |
|                   | DBA profile              | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● T-CONT Type: Fixed Bandwidth</li> <li>● Fixed Bandwidth: 44800</li> <li>● Bandwidth Compensation: Yes</li> </ul> | -       |
|                   | EPON line profile        | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● DBA Profile: FTTx</li> </ul>                                                                                     | -       |
|                   | EPON service profile     | <ul style="list-style-type: none"> <li>● Name: FTTx</li> <li>● Number of ETH Ports: 5</li> <li>● Number of TDM Ports: 4</li> <li>● TDM Port Type: E1</li> </ul>                 | -       |



| Service Type           | Item                 | Settings                                                                                                                                                                                                                                                                                                                                                      | Remarks |
|------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                        | ONT                  | Name: ONT<br>ONU Type: ONT<br>ONU ID: 0<br>Authentication Mode: MAC Address<br>MAC: 001E-E3F4-0471<br>Terminal Type: 925e<br>Software Version: V100R001C01B025                                                                                                                                                                                                | -       |
| TDM PBX access service | Service VLAN         | <ul style="list-style-type: none"> <li>● VLAN ID: 500</li> <li>● Type: Smart VLAN</li> </ul>                                                                                                                                                                                                                                                                  | -       |
|                        | Service virtual port | <ul style="list-style-type: none"> <li>● Connection Type: LAN-EPON</li> <li>● VLAN ID: 500</li> <li>● Interface Selection: 0/2/1/0/0</li> <li>● Service Type: Multi-Service VLAN</li> <li>● User VLAN: 500</li> <li>● Keep the upstream and downstream settings the same: selected</li> <li>● Upstream/Downstream Traffic Name: ip-traffic-table_6</li> </ul> | -       |
|                        | CESoP Connection     | <ul style="list-style-type: none"> <li>● Remote MAC: 8e-c0-a8-02-8e-08</li> <li>● Remote IP: 20.20.20.10</li> <li>● Remote UDP Label: 6010</li> <li>● Local UDP Label: 6001</li> <li>● VLAN: 500</li> </ul>                                                                                                                                                   | -       |

| Service Type | Item         | Settings                                                                                                                                                                                                                                                                                                                                                             | Remarks |
|--------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|              | Clock source | <ul style="list-style-type: none"> <li>● Clock Type: Line clock</li> <li>● Working Mode: SYSLINE</li> <li>● Index: 0</li> <li>● Frame: 0</li> <li>● Slot: 6</li> <li>● Port: 0</li> <li>● Clock Type: Bit clock</li> <li>● BITS Type: 2MHz</li> <li>● BITS Impedance: 75ohm</li> <li>● Index: 1</li> <li>● Frame: 0</li> <li>● Slot: 0</li> <li>● Port: 0</li> </ul> | -       |

## 25.4.2 Configuring the TDM PBX Access Service

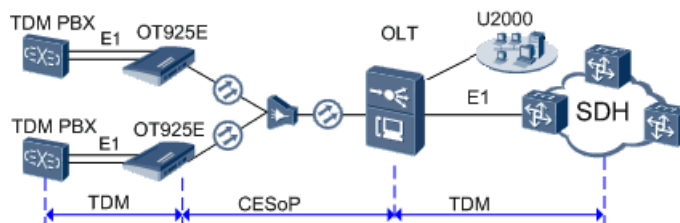
In this configuration example, the OT925E is connected to the TDM PBX of an enterprise through an E1 port to carry the PBX fixed-line telephone service in an EPON network.

### Context

For details of the data plan, see [25.4.1 Data Plan for the EPON FTTO Services \(OLT +OT925E\)](#).

### Example Network

**Figure 25-1** Configuring the TDM PBX access service



#### NOTE




The OT925E is connected to the TDM PBX of the enterprise through an E1 port and then is connected to the OLT through an EPON upstream port. The OLT provides E1 ports to transmit the TDM service to the SDH network.

## Procedure

- **Add the ONT to the U2000 in profile mode.**
  1. **Configure a DBA profile.** For details, see [23.1.2 Configuring a DBA Profile](#).
    - (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
    - (2) Click the **DBA Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx
      - T-CONT Type: Fixed Bandwidth
      - Fixed Bandwidth: 44800
      - Bandwidth Compensation: Yes
    - (5) Click **OK**.
    - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
    - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
  2. **Configure a line profile.** For details, see [24.1.1 Configuring a Line Profile](#).
    - (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
    - (2) Click the **EPON Line Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Name: FTTx
      - DBA Profile: FTTx
    - (5) Click **OK**.
    - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
    - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
  3. **Configure a service profile.** For details, see [24.1.2 Configuring a Service Profile](#).

The service profile must match the ONT type. This section considers the OT925E as an example to describe how to configure a service profile. The OT925E has five Ethernet ports, eight E1 ports, and eight POTS ports.


    - (1) Choose **Configuration > Access Profile Management > EPON Profile** from the main menu.
    - (2) Click the **EPON Service Profile** tab.
    - (3) Right-click and choose **Add Global Profile** from the shortcut menu.
    - (4) In the dialog box that is displayed, set the parameters.
      - Set **Name** to **FTTx**.
      - Choose **Base Info** from the navigation tree and set the parameters.
        - Number of ETH Ports: 5
        - Number of TDM Ports: 4

- TDM Port Type: E1
  - (5) Click **OK**.
  - (6) In the information list, right-click the record and choose **Download to NE** from the shortcut menu.
  - (7) In the dialog box that is displayed, select the required NE(s), and click **OK**.
4. **Confirm the ONT.** For details, see [24.1.3 Confirming an Auto-Discovered ONT](#).
- (1) In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.
  - (2) Choose **EPON > EPON UNI Port** from the navigation tree.
  - (3) On the **EPON UNI Port** tab page, set the filter criteria or click  to display the EPON UNI ports.
  - (4) In the information list, right-click EPON UNI port 0/2/1 and choose **Enable ONU Auto Find** from the shortcut menu.
  - (5) Click the **Auto-Discovered ONU Info** tab in the lower pane, right-click the ONU with SN 32303131B39FD641, and then choose **Confirm ONU** from the shortcut menu.
    - Set **Name** to **ONT**.
    - Set **ONU ID** to **0**.
    - Set **ONU Type** to **ONT**.
    - On the **Base Info** tab page, set the parameters.
      - Line Profile: FTTx (click  next to **Line Profile** and select the line profile named FTTx in the dialog box that is displayed)
      - Service Profile: FTTx (click  next to **Service Profile** and select the service profile named FTTx in the dialog box that is displayed)
      - Authentication Mode: MAC Address
      - Terminal Type: 925e
      - Software Version: V100R001C01B025
  - (6) Click **OK**.

● **Configure the TDM PBX service on the OLT.**

The prerequisite for performing operations in the navigation tree is to navigate to the NE Explorer of the OLT. To navigate to the NE Explorer of the OLT, do as follows: In the Main Topology, double-click the required OLT in the **Physical Root** navigation tree; or right-click the required OLT and choose **NE Explorer** from the shortcut menu.

1. **Configure a service VLAN on the OLT.** For details, see [23.1.5 Configuring a VLAN](#).
- (1) Choose **VLAN** from the navigation tree.
  - (2) On the **VLAN** tab page, right-click and choose **Add** from the shortcut menu.
  - (3) In the dialog box that is displayed, set the parameters.
    - VLAN ID: 500
    - Type: Smart VLAN

- (4) Click **Next**. Click the **Sub Port** tab and add upstream port 0/19/0 as the upstream port of the VLAN.
- (5) Click **Finish**.
2. **Add a service virtual port on the OLT side. For details, see [23.1.6 Adding a Service Virtual Port](#) and [23.1.7 Verifying the Interoperability Between an OLT and an MDU](#).**
  - (1) Choose **EPON > EPON ONU** from the navigation tree.
  - (2) On the **EPON ONU** tab page, set the filter criteria or click  to display the EPON ONUs.
  - (3) In the information list, select the record where the shelf, slot, port, and ONU IDs are 0, 2, 1, and 0 respectively and click the **ServicePort Info** tab in the lower pane.
  - (4) On the **ServicePort Info** tab page, right-click and choose **Add** from the shortcut menu.
  - (5) In the dialog box that is displayed, set the parameters.
    - Vlan ID: 500
    - Interface Selection: 0/2/1
    - Service Type: Multi-Service VLAN
    - User VLAN: 500
    - Keep the upstream and downstream settings the same: selected
    - Upstream Traffic Name: ip-traffic-table\_6
  - (6) Click **OK**.
3. **Configure a CESoP connection. For details, see [22.2.2 Configuring a CESoP Connection](#).**
  - (1) Choose **E1/T1 > CES E1/T1 Port** from the navigation tree.
  - (2) On the **CES E1 Port** tab page, select a port and click the **CESoP Info** tab in the lower pane.
  - (3) In the information list, right-click and choose **Add CESoP Connection** from the shortcut menu.
  - (4) In the dialog box that is displayed, set the parameters.
    - Remote MAC: 8e-c0-a8-02-8e-08
    - Remote IP: 20.20.20.10
    - Remote UDP Label: 6010
    - Local UDP Label: 6001
    - VLAN: 500
  - (5) Click **OK**.
4. **Configure a clock source.**



## CAUTION

In the case of the TDM service, ensure that the clock source is unique in the entire SDH network. Otherwise, error codes are generated and affect service quality, and services may be interrupted if a large number of error codes are generated.

---

- (1) On the tab page that is displayed, choose **NE Properties > Clock Management > Frequency Clock** from the navigation tree.
- (2) On the **Frequency Clock Source(8K)** tab page, right-click and choose **Add Clock Source** from the shortcut menu.
- (3) In the dialog box that is displayed, set the parameters to add a line clock (provided by the TOPA card).
  - Clock Type: Line clock
  - Working Mode: SYSLINE
  - Index: 0
  - Frame: 0
  - Slot: 6
  - Port: 0
- (4) Click **OK**.
- (5) Repeat the preceding operations to add a BITS clock (provided by the BIUA card).
  - Clock Type: Bit clock
  - BITS Type: 2MHz
  - BITS Impedance: 75ohm
  - Index: 1
  - Frame: 0
  - Slot: 0
  - Port: 0

- **Configure the TDM PBX service on the ONU. For details, see [25.3 Configuring Services on the OT925E](#).**

----End

## Result

PBX users of the enterprise can make phone calls successfully by dialing internal or external numbers.

# 26 Remote MDU Acceptance

---

## About This Chapter

This topic describes the application scenarios, working principles, and operations of remote MDU acceptance.

### [26.1 Overview of Remote Acceptance](#)

This topic describes the background, PnP function and benefits of remote acceptance.

### [26.2 Application Scenario](#)

This topic describes the application scenario of remote acceptance.

### [26.3 Configuring a Remote Emulation Test for Broadband Services](#)

This topic describes how to create a task for broadband remote acceptance and how to query the acceptance results.

### [26.4 Configuring a Remote Emulation Test for Narrowband Services](#)

This topic describes how to create a task for narrowband remote acceptance and how to query the acceptance results.

## 26.1 Overview of Remote Acceptance

This topic describes the background, PnP function and benefits of remote acceptance.

### Background

A huge number of ONUs work in FTTx networks. To accept the ONUs, software commissioning engineers have to carry commissioning equipment and travel to a site for several times. As a result, the acceptance is not efficient.

The U2000 provides a remote acceptance function for the MDU.

### PnP Function

After FTTx services are deployed and MDUs are powered on, the MDUs and service configuration are accepted remotely so that only one visit to a site is required and the O&M costs are reduced, thus implementing one site visit and reducing the O&M costs.

The following items are accepted remotely:

- Configuring the equipment  
Check whether cards are in the normal state and whether the device version is correct. The remote acceptance also allows you to query equipment alarms.
- Broadband service  
Check whether the links of Internet access services work in the normal state by performing a PPPoE emulation test.
- Narrowband service  
Check whether voice links work in the normal state by performing a voice emulation test.

### Benefits

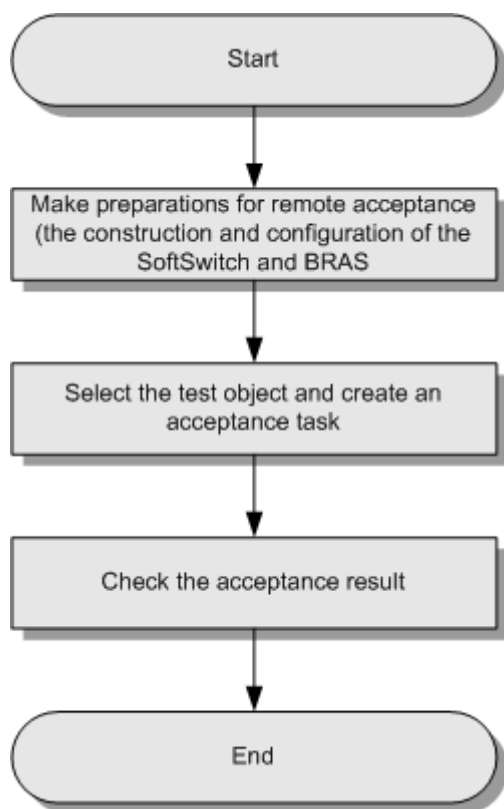
- Remote acceptance is automatic. Specifically, the result is automatically reported after you create an acceptance task.
- MDUs are accepted in batches.
- Acceptance efficiency increases and the O&M costs decrease.

### Process of Remote Acceptance

[Figure 26-1](#) shows the flowchart for accepting MDUs remotely.



Figure 26-1 Flowchart of MDU remote acceptance



## 26.2 Application Scenario

This topic describes the application scenario of remote acceptance.

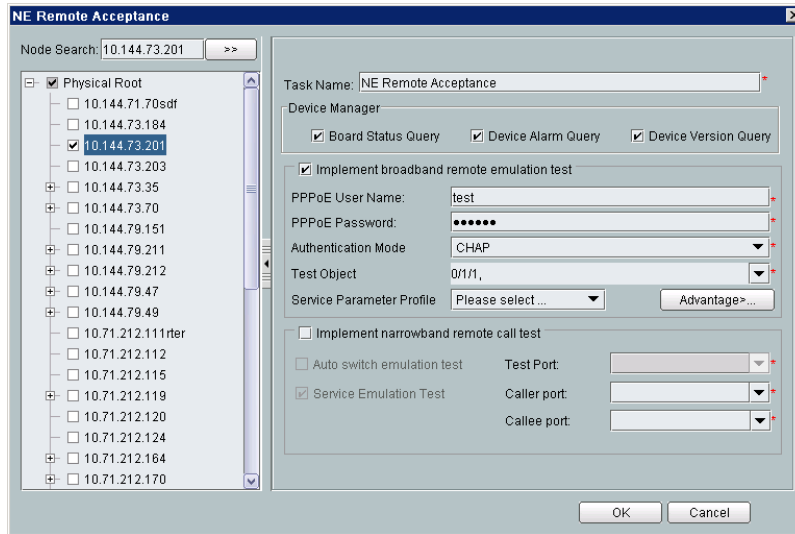
In the engineering acceptance period, software commissioning engineers do not need to visit the site again because MDUs, Internet services, and voice service configuration are accepted remotely.

## 26.3 Configuring a Remote Emulation Test for Broadband Services

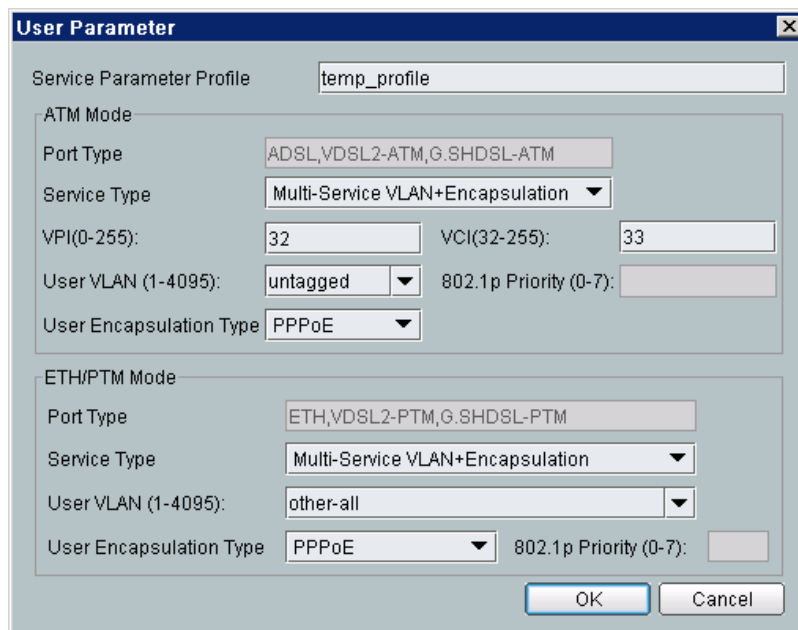
This topic describes how to create a task for broadband remote acceptance and how to query the acceptance results.

### Procedure

- 1 Choose **Configuration > Fttx Service Pre-Deployment > Create Remote Acceptance Task** from the main menu.
- 2 In the **NE Remote Acceptance** dialog box, choose the required object from the **Physical Root** navigation tree and specify the test items to create a remote acceptance task.



- Select the **Implement broadband remote emulation test** check box for a remote PPPoE emulation test.
- **Service Parameter Profile** is used to filter service streams. If you specify a service parameter profile, the PPPoE emulation test will be performed on the service streams that are filtered out according to the parameter settings defined in the service parameter profile. If you do not specify a service parameter profile, the PPPoE emulation test will be performed on all service streams of specified ports. If the test is successful on one service stream, the operation is considered successful.
- You can select a service parameter profile from the **Service Parameter Profile** drop-down list, and click **Advantage** to edit the profile. As shown in the following figure. Then, click **OK**.



**Table 26-1** Parameters required for configuring a remote emulation test for broadband services

| Parameter                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Settings                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PPPoE User Name           | <b>Definition:</b><br>Indicates the name of the user that is used in PPPoE access.                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Range:</b><br>Character string type. It consists of up to 65 characters.                                                                                                                                                                                                                                                                        |
| PPPoE Password            | <b>Definition:</b><br>Indicates the password of the user in PPPoE access.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Range:</b><br>Character string type. It consists of up to 16 characters.                                                                                                                                                                                                                                                                        |
| Authentication Mode       | <b>Definition:</b><br>Indicates the mode in which the OLT authenticates the ONU.                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Range:</b><br>Enumerated type. The options are as follows:<br><ul style="list-style-type: none"> <li>● CHAP: Challenge-Handshake Authentication Protocol (the security is high)</li> <li>● PAP: Password Authentication Protocol (the security is low because user names and passwords are transmitted in plain texts over networks)</li> </ul> |
| Test Object               | <b>Definition:</b><br>Indicates the test object of the remote acceptance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Setting method:</b><br>Enter a value or select a software version from the drop-down list.                                                                                                                                                                                                                                                      |
| Service Parameter Profile | <b>Definition:</b><br><b>Service Parameter Profile</b> is used to filter service streams. If you specify a service parameter profile, the PPPoE emulation test will be performed on the service streams that are filtered out according to the parameter settings defined in the service parameter profile. If you do not specify a service parameter profile, the PPPoE emulation test will be performed on all service streams of specified ports. If the test is successful on one service stream, the operation is considered successful. | <b>Setting method:</b><br>Select a service parameter profile from the <b>Service Parameter Profile</b> drop-down list, and click <b>Advantage</b> to edit the profile.                                                                                                                                                                             |
| Advantage                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                    |
| ATM Mode and ETH/PTM Mode |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                    |

| Parameter                 | Description                                                                | Settings                                                    |
|---------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------|
| Service Parameter Profile | <b>Definition:</b><br>Indicates the name of the service parameter profile. | Character string type. It consists of up to 255 characters. |
| Port Type                 | <b>Definition:</b><br>Indicates the type of the port.                      | -                                                           |

| Parameter    | Description        | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Service Type | <b>Definition:</b> | <p><b>Range:</b><br/>           Enumerated type. The options are as follows:</p> <ul style="list-style-type: none"> <li>● <b>Single:</b> Each service port maps a traffic stream. Different traffic streams can be distinguished by service ports.</li> <li>● <b>Multi-Service VLAN:</b> Each service port bears multiple traffic streams. You need to set <b>User-Side VLAN</b> to distinguish the traffic streams. The services are distinguished based on the VLAN ID contained in the user packets. The user packets are labeled with different upstream VLAN IDs, and the original VLAN IDs in the user packets are removed.</li> <li>● <b>Multi-Service Encapsulation:</b> Each service port bears multiple traffic streams. You need to set <b>User-Side Encapsulation</b> to distinguish the traffic streams. The services are distinguished based on the encapsulation types (IPoE/PPPoE) of the user packets. You can label the user packets with different upstream VLAN IDs.</li> <li>● <b>Multi-Service VLAN +802.1p:</b> Each service port bears multiple traffic streams. You need to</li> </ul> |

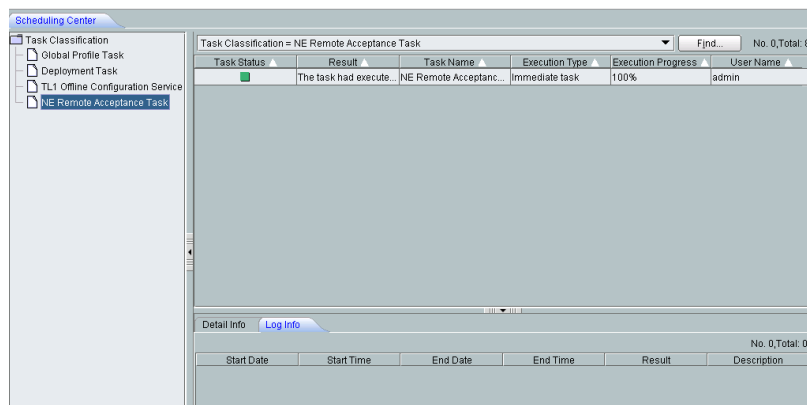
| Parameter | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | Indicates the upstream service type of the service stream.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>set <b>User-Side VLAN</b> and <b>802.1p Priority</b> to distinguish the traffic streams. The services are distinguished according to the VLAN IDs and the 802.1p priorities of the packets from the service ports.</p> <ul style="list-style-type: none"> <li>● <b>Multi-Service VLAN +Encapsulation:</b> Each service port bears multiple traffic streams. You need to set <b>User-Side VLAN</b> and <b>User-Side Encapsulation</b> to distinguish the traffic streams.</li> </ul> |
| VPI       | <p><b>Definition:</b></p> <p>Indicates the VPI/VCI of the service virtual port. The VPI/VCI values are used to identify a user.</p> <p>VPI: It is located in the header of an ATM cell. The VPI occupies 8 bits in a UNI header and 12 bits in an NNI header.</p> <p>VCI: It occupies 16 bits and identifies a virtual channel in the VP. The VPI/VCI values are used to identify a virtual connection. The VPI and the VCI in the header of an ATM cell provide the routing information about the cell.</p> <p><b>NOTE</b></p> <p>This parameter is available only for the ATM mode.</p> | <p><b>Range:</b></p> <p>Numeral type.</p> <ul style="list-style-type: none"> <li>● The VPI ranges from 0 to 4095.</li> <li>● The VCI ranges from 32 to 65535.</li> </ul>                                                                                                                                                                                                                                                                                                               |
| VCI       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

3 After that, click **OK** in the **NE Remote Acceptance** dialog box. The **Information** dialog box is displayed, indicating that the task is created successfully.

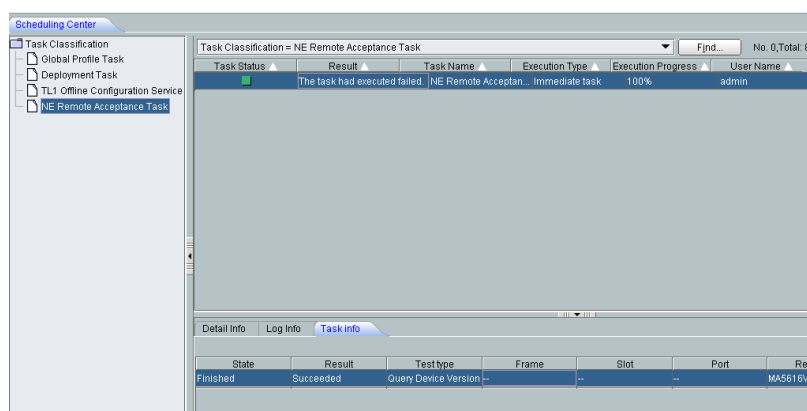
4 In the **Scheduling Center** window, view the acceptance task.

 **NOTE**

- You can also choose **Configuration > Fttx Service Pre-Deployment > View Remote Acceptance Task** from the main menu. The **Scheduling Center** window is displayed.
- In the **Scheduling Center** window, you can see that the task is always in the running state if an NE is offline. The task can be performed only when the NE is online.



- 5 In the **Scheduling Center** window, select the new acceptance task, click the **Detail Info**, **Log Info**, or **Task Info** tab to view information about the task.



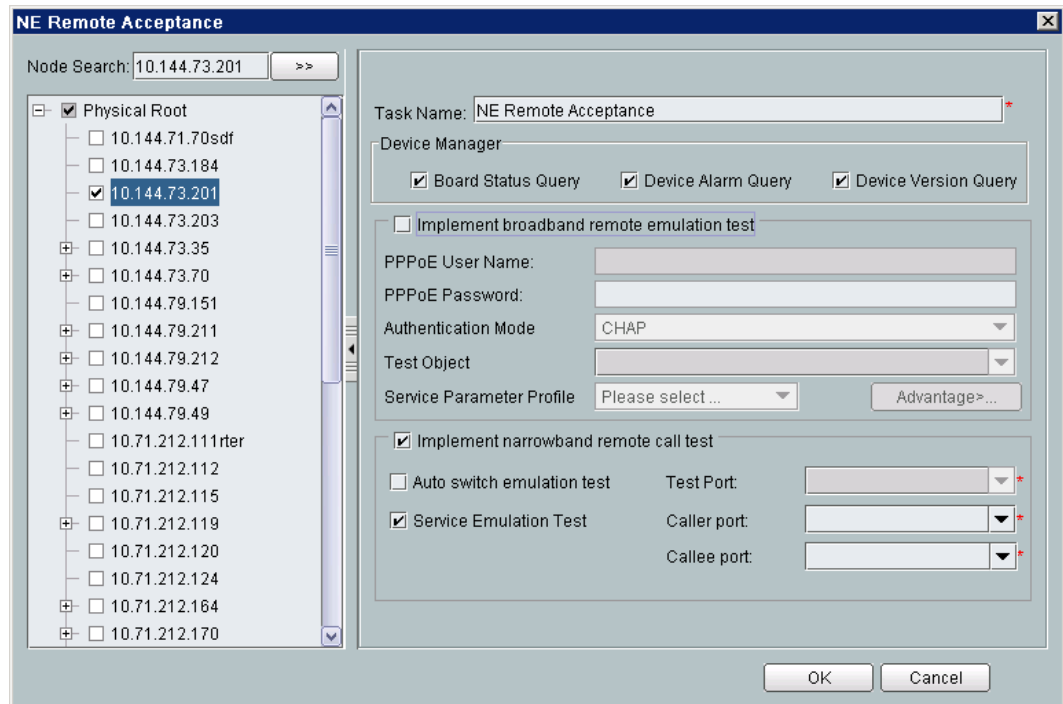
----End

## 26.4 Configuring a Remote Emulation Test for Narrowband Services

This topic describes how to create a task for narrowband remote acceptance and how to query the acceptance results.

### Procedure

- 1 Choose **Configuration > Fttx Service Pre-Deployment > Create Remote Acceptance Task** from the main menu.
- 2 In the **NE Remote Acceptance** dialog box, choose the required object from the **Physical Root** navigation tree, specify the test items, and create a remote acceptance task.

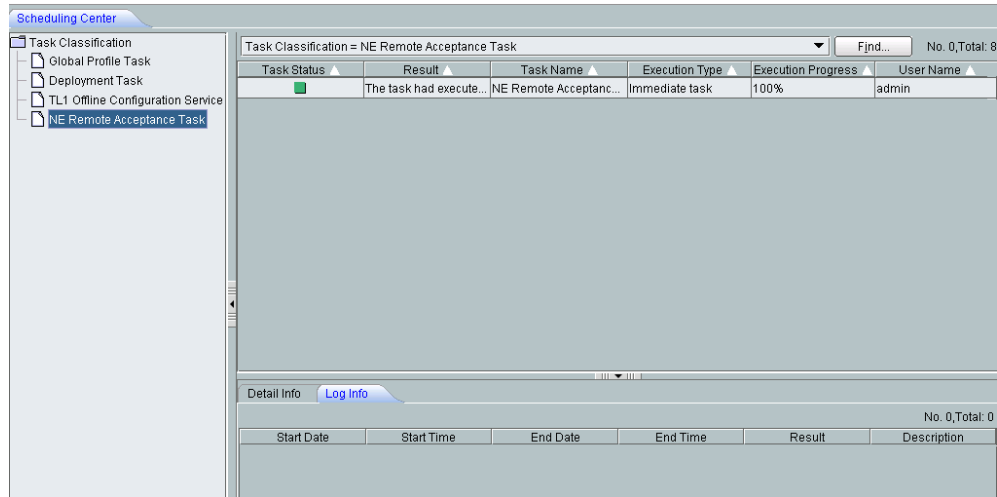


**Table 26-2** Parameters required for configuring a remote emulation test for narrowband services

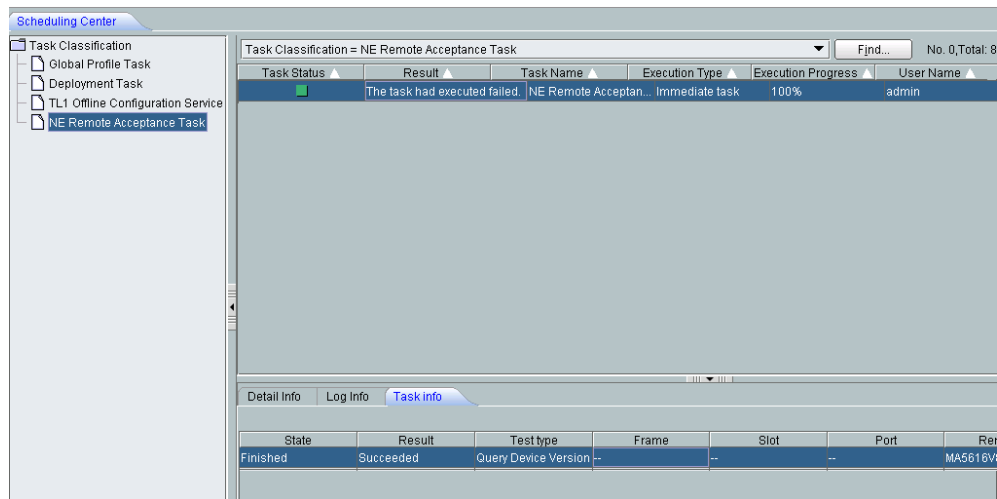
| Parameter | Description | Settings |
|-----------|-------------|----------|
|-----------|-------------|----------|

- Select the **Implement narrowband remote call test** check box for a narrowband remote call test.
  - Select the **Auto switch emulation test** check box. Then, you can set **Test Port** for a hardware connectivity test.
  - Select the **Service Emulation Test**, **Caller port** and **Callee port** check boxes for a call emulation test.
- 3 After that, click **OK** in the **NE Remote Acceptance** dialog box. The **Information** dialog box is displayed, indicating that the task is created successfully.
  - 4 In the **Scheduling Center** window, view the acceptance task.
    - You can also choose **Configuration > Fttx Service Pre-Deployment > View Remote Acceptance Task** from the main menu. The **Scheduling Center** window is displayed.
    - In the **Scheduling Center** window, you can see that the task is always in the running state if an NE is offline. The task can be performed only when the NE is online.





- 5 In the **Scheduling Center** window, select the new acceptance task, click the **Detail Info**, **Log Info**, or **Task Info** tab to view the information about the task.



----End



# 27 FTTx Redundancy Protection

---

## About This Chapter

This topic describes the redundancy protection including the FTTx control card protection, uplink protection, PON port protection, and dual-homing protection.

### [27.1 Configuring Control Card Protection](#)

This topic describes how to configure redundancy backup for control cards. When control cards are switched over in a redundancy backup system due to the control card fault or upgrade, services are not affected.

### [27.2 Configuring Uplink Protection](#)

This topic describes how to configure the uplink aggregation group or uplink protection group to enhance the reliability of service transmission.

### [27.3 Configuring PON Port Protection](#)

This topic describes how to configure PON ports as a protection group. A protection group is used to manage members who have protection switching relationship with others. In a protection group, you can manage the relationship between the members involved in the protection switching, record the status of members, and manage the configuration data and status that are relevant to the protection relationship between members.

### [27.4 Type B Dual-Homing Protection](#)

This topic describes the GPON type B dual-homing protection and how to configure dual-homing switching.

### [27.5 GPON Type C Protection](#)

This topic describes GPON type C protection and how to configure the protection.

### [27.6 EPON Type D Protection](#)

This topic describes EPON type D protection and how to configure the protection.

## 27.1 Configuring Control Card Protection

This topic describes how to configure redundancy backup for control cards. When control cards are switched over in a redundancy backup system due to the control card fault or upgrade, services are not affected.

### Configuring Active and Standby GIU Control Cards for Services to Go Upstream

The SCUB, SCUN and SCUI control cards support redundancy backup.

Control cards control service cards, and converge and process broadband and narrowband services. They are classified into active control cards and standby control cards. The control cards support HA hot backup and they are hot swappable.

When the active control card is faulty whereas the standby control card is normal, the active and standby GIU control cards are switched for services to go upstream, thus ensuring uninterrupted services.

#### Procedure

1. In the Main Topology, double-click the required device in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
2. Choose **NE Panel** from the navigation tree.
3. In the information list, right-click the required card and choose **GIU Protect Group** from the shortcut menu.
4. In the dialog box that is displayed, click **Add**.
5. In the dialog box that is displayed, set the parameters.
6. Click **OK**.

### Configuring the Active and Control Cards as a Protection Group

Only the GE upstream interface cards can be configured as a protection group.

A protection group is used to manage members who have protection switching relationship with others. In a protection group, you can manage the relationship between the members involved in the protection switching, record the status of members, and manage the configuration data and status that are relevant to the protection relationship between members.

You are required to back up the important card recourses and port recourses to enhance the system reliability. If a fault occurs on the working member, perform the protection switching to transfer services to the protection member that can afford the services. After the protection switching, the services are switched from the working member to the protection member.

#### Procedure

1. In the Main Topology, double-click the required device in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
2. Choose **Protection Group Management** from the navigation tree..
3. In the information list, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters. Set **Protection Object** to **Active main board and standby main board**.

5. Click **OK**.

## 27.2 Configuring Uplink Protection

This topic describes how to configure the uplink aggregation group or uplink protection group to enhance the reliability of service transmission.

### Context

Uplink protection covers two aspects:

- Uplink aggregation group: Aggregate multiple Ethernet ports as an aggregation group to expand the bandwidth and balance the input and output load among member ports. In addition, the ports in an aggregation group back up each other, which enhances the link security.

 **NOTE**

- The ETH and SCU boards support the configuration of the aggregation group.
- The ETH board and the GIU slot support the aggregation group.
- An aggregation group can implement inter-board aggregation between two GIU slots.
- An aggregation group can implement inter-board aggregation between two SPUA boards.
- When only one control board is configured, inter-board aggregation is supported between the SCUN board and the GIU slot.
- Upstream port protection group: An upstream port protection group contains a working port and a protection port. In the normal state, the working port carries services. When the link of the working port fails, the system automatically switches the service on the working port to the protection port to ensure normal service transmission, thus protecting the uplink.

### Configuring an Uplink Aggregation Group

1. In the Main Topology, double-click the required device in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
2. Choose **ETH** from the navigation tree.
3. On the **Aggregation Group** tab page, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters.
5. Click **OK**.

### Configuring an Upstream Port Protection Group

1. In the Main Topology, double-click the required device in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
2. Choose **Protection Group Management** from the navigation tree.
3. In the information list, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters. Set **Protection Object** to **Port of ETH NNI**.
5. Click **OK**.

## 27.3 Configuring PON Port Protection

This topic describes how to configure PON ports as a protection group. A protection group is used to manage members who have protection switching relationship with others. In a protection group, you can manage the relationship between the members involved in the protection switching, record the status of members, and manage the configuration data and status that are relevant to the protection relationship between members.

### Procedure

1. In the Main Topology, double-click the required device in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
2. Choose **Protection Group Management** from the navigation tree.
3. In the information list, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters.

5. Click **OK**.

### Parameter Description

**Table 27-1** Key parameters required for adding a protection group

| Parameter         | Description                                                                             | Settings                                               |
|-------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------|
| Basic Information |                                                                                         |                                                        |
| Group ID          | <b>Definition:</b><br>Indicates the ID of the PG. It is used to uniquely identify a PG. | <b>Range:</b><br>Numeral type. It ranges from 0 to 63. |

| Parameter         | Description                                                                                                                                                                                                                                                                                                            | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protection Object | <p><b>Definition:</b><br/>                     Indicates the type of protection objects in a protection group.</p>                                                                                                                                                                                                     | <p><b>Range:</b><br/>                     Enumerated type. The options are as follows:</p> <ul style="list-style-type: none"> <li>● Active main board and standby main board</li> <li>● LAG of active main board and standby main board</li> <li>● Port of active main board and standby main board</li> <li>● Port of ETH NNI</li> <li>● LAG member of ETH NNI</li> <li>● Port of EPON UNI</li> <li>● Port of GPON UNI</li> <li>● STM-1 network port</li> <li>● EPON ONU</li> <li>● GPON ONU</li> </ul> |
| Description       | <p><b>Definition:</b><br/>                     Specifies the descriptions for a PG. It is easy to understand and remember.</p>                                                                                                                                                                                         | <p><b>Range:</b><br/>                     Character string type. It consists of up to 64 characters.</p>                                                                                                                                                                                                                                                                                                                                                                                                 |
| Working Mode      | <p><b>Definition:</b><br/>                     Indicates the working mode for PG testing.</p> <p><b>Relation to other parameters:</b><br/>                     When <b>Protection Object</b> is <b>Port of active main board and standby main board</b> or <b>Port of ETH NNI</b>, <b>Working Mode</b> can be set.</p> | <p><b>Range:</b><br/>                     Enumerated type. The options are as follows:</p> <ul style="list-style-type: none"> <li>● Status Detection</li> <li>● Time Delay Detection</li> <li>● Undirection Detection</li> <li>● Smart link</li> <li>● Smart link load-balance</li> </ul>                                                                                                                                                                                                                |
| Working ONU       |                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Frame/Slot/Port   | <p><b>Definition:</b><br/>                     Indicates the shelf number, slot number, and port number on the device, to which the working ONU is connected.</p>                                                                                                                                                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ONU ID            | <p><b>Definition:</b><br/>                     Indicates the ID of the working ONU. It is used to identify an ONU.</p>                                                                                                                                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Parameter       | Description                                                                                                                             | Settings |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------|
| Protection ONU  |                                                                                                                                         |          |
| Frame/Slot/Port | <b>Definition:</b><br>Indicates the shelf number, slot number, and port number on the device, to which the protection ONU is connected. | -        |
| ONU ID          | <b>Definition:</b><br>Indicates the ID of the protection ONU. It is used to identify an ONU.                                            | -        |

## 27.4 Type B Dual-Homing Protection

This topic describes the GPON type B dual-homing protection and how to configure dual-homing switching.

### [27.4.1 Introducing GPON Type B Dual-Homing](#)

This topic describes the GPON type B dual-homing protection.

### [27.4.2 Configuring GPON Type B Dual-Homing Automatic Switching](#)

This topic describes how to configure GPON type B dual-homing automatic switching.

### [27.4.3 Configuring GPON Type B Dual-Homing Forcible Switching](#)

This topic describes how to configure GPON type B dual-homing forcible switching.

### 27.4.1 Introducing GPON Type B Dual-Homing

This topic describes the GPON type B dual-homing protection.

#### Definition

Type B protection refers to the protection implemented by the system when the optical fiber between the OLT and the ODN is faulty or the card hardware of the OLT is faulty.

- Type B protection switching mode of GPON ports  
Two GPON ports on the same OLT protect each other. When one of the GPON ports fails, the system automatically switches the services to the other GPON port. Based on this protection mode, the protection in case of failure of the active port on one OLT is implemented.
- Type B dual-homing protection switching mode of GPON ports  
GPON ports on two different OLTs protect each other. When the GPON port on one OLT fails, the system automatically switches the services to the GPON port on the other OLT. Based on this protection mode, the protection in case of failure of the active port on two OLTs is implemented.



## Purpose

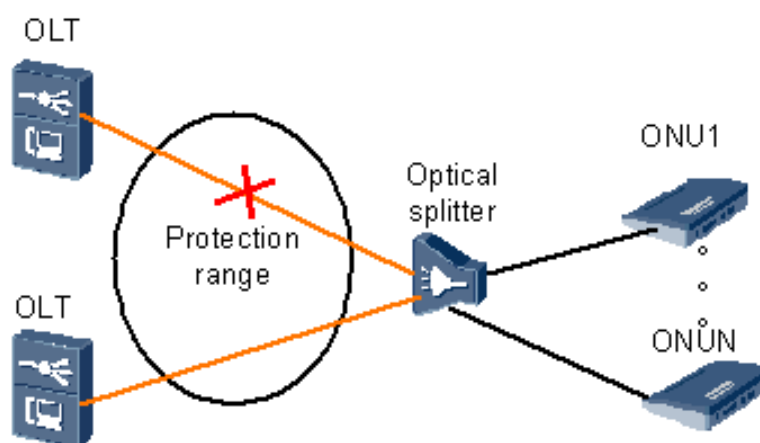
A large number of users can be connected to one GPON port because of the high access bandwidth provided by the GPON technology. GPON ports need to be protected to improve the security of the OLT so that services can be recovered quickly in the case of failure of backbone optical fibers.

Type B dual-homing protection switching can improve the disaster recovery capability of the OLT. In the Type B dual-homing protection switching mode, the active and standby upstream optical fibers of the ODN are connected to two OLTs respectively, and the two OLTs can be distributed in two regions. When the OLT connected to the active optical fiber fails, the system automatically switches services to the OLT connected to the standby optical fiber.

## Principles

Type B dual-homing protection refers to the protection between two GPON ports on two OLTs. When the GPON port on one OLT fails, the system automatically switches the services to the GPON port on the other OLT. [Figure 27-1](#) shows the implementation model.

**Figure 27-1** Type B dual-homing protection switching mode



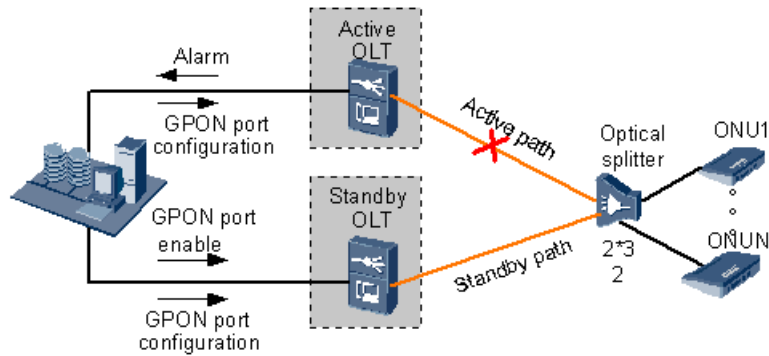
The implementation of the Type B dual-homing protection switching of GPON ports includes the automatic switching mode and the forced switching mode.

- 1. Working principles of automatic switching

Automatic switching is determined and initiated by the OLT.

During the protection switching, the OLT initiates automatic detection, determines whether to perform switching according to the actual status of the PON port, and updates the protection status of the members in the protection group by reporting alarms.

[Figure 27-2](#) shows the implementation model.

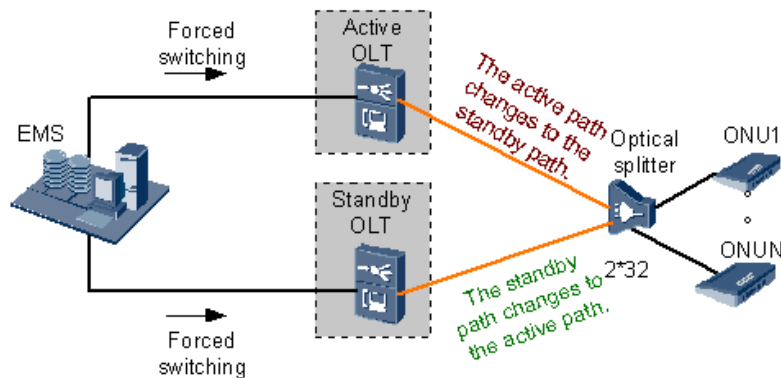
**Figure 27-2** Working principle of type B dual-homing automatic switching

- 2. Working principles of forced switching

Forced switching is initiated by the U2000.

When the U2000 issues the forced switching command, the active OLT serves as the standby OLT whereas the standby OLT serves as the active OLT.

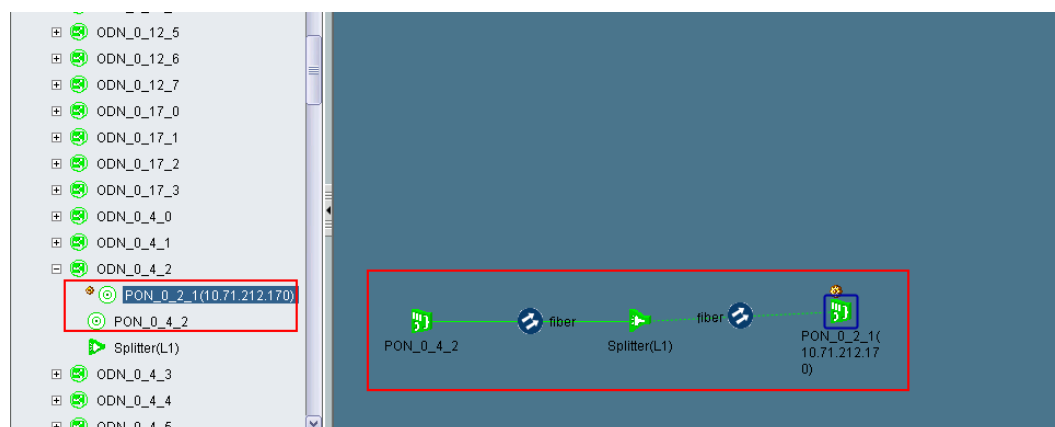
**Figure 27-3** shows the implementation model.

**Figure 27-3** Working principle of type B dual-homing forced switching

## Topology View

**Figure 27-4** shows the topology view of type B dual-homing.

**Figure 27-4** Topology view of type B dual-homing



## 27.4.2 Configuring GPON Type B Dual-Homing Automatic Switching

This topic describes how to configure GPON type B dual-homing automatic switching.

### Prerequisite

Member ports that can be configured as dual-homing protection groups must meet the following requirements:

- The device version is later than V800R007C00.
- The device uses the template mode.
- The device types of two OLTs must be the same.
- The types of cards where the member ports are located must be the same. Only GPON cards are supported.
- The active and standby GPON ports are connected to the same optical splitter.

### Context

To implement dual-homing protection of two GPON ports, you need to only create a dual-homing protection group on the U2000. After the creation, the two members in the dual-homing protection group support the protection switching function.

The implementation of the Type B dual-homing protection switching of GPON ports includes the automatic switching mode and the forced switching mode. The differences between the two modes are as follows:

- Automatic switching is determined and initiated by the OLT. During the protection switching, the OLT initiates automatic detection (detects the availability of optical signals on the optical fiber), determines whether to perform switching according to the actual status of the PON port, and updates the protection status of the members in the protection group by reporting alarms.

- Forced switching is initiated by the U2000. The U2000 issues the forced switching command to both the active and standby OLTs. Then, the active OLT changes to the standby OLT, and the standby OLT changes to the active OLT.

## Procedure

- 1 Add a dual-homing protection group.
  1. Choose **Configuration > Access Service Management > Dual Homing** from the main menu.
  2. In the information list, right-click and choose **Add** from the shortcut menu.
  3. In the **Adding Dual Homing Protection Group** dialog box, enter the name and description in the **Name** and **Description** fields respectively, and choose the working member and protection member from the **Work Member** and **Protection Member** drop-down list.

**Table 27-2** Parameters required for adding a dual homing protection group

| Parameter   | Description                                                                                | Settings                                                                                                                       |
|-------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Name        | <b>Definition:</b><br>Indicates the name of the dual homing protection group.              | <b>Range:</b><br>Character string type. It consists of up to 32 characters.                                                    |
| Description | <b>Definition:</b><br>Indicates the brief description of the dual homing protection group. | <b>Range:</b><br>Character string type. It consists of up to 64 characters.                                                    |
| Work Member | <b>Definition:</b><br>Indicates the protection member that is being used.                  | <b>Setting method:</b><br>Select the active OLT PON port for connecting to the ONU from the <b>Work Member</b> drop-down list. |

| Parameter         | Description                                                          | Settings                                                                                                                              |
|-------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Protection Member | <b>Definition:</b><br>Indicates the standby protection group member. | <b>Setting method:</b><br>Select the standby OLT PON port for connecting to the ONU from the <b>Protection Member</b> drop-down list. |

4. Click **OK**.

 **NOTE**

After a dual-homing protection group is created successfully,

- the GPON port that serves as **Work Member** is in the forcible active state. The GPON port that serves as **Protection Member** is in the forcible standby state and the automatic detection is disabled.
- In the Main Topology, a connection to the standby port is added for the active port of the OLT. After the optical splitter is disconnected from the standby port, you can double-click the standby port to switch to the active port.

2 Enable automatic detection for the dual-homing protection group.

Right-click the new dual-homing protection group and choose **Enable Automatic Detection** from the shortcut menu.

In this case, **Work Status** is set to **Automatic Switchover** and **Automatic Detection** is set to **Enable**.

 **NOTE**

When **Automatic Detection** is enabled for a protection group, **Freeze** and **Unfreeze** are available. In normal cases, a protection group is in the **Unfrozen** state. A protection group can also be set to the **Frozen** mode according to the requirements. In this case, automatic switching is disabled. After automatic detection is enabled for the dual-homing protection group, the protection group function is enabled at the same time.

3 Query the details of the protection group. Select the created dual-homing protection group, and click the **Member** tab in the lower part of the window to view the details.

----End

## 27.4.3 Configuring GPON Type B Dual-Homing Forcible Switching

This topic describes how to configure GPON type B dual-homing forcible switching.

### Prerequisite

Member ports that can be configured as dual-homing protection groups must meet the following requirements:

- The device version is later than V800R007C00.
- The device uses the template mode.
- The device types of two OLTs must be the same.
- The types of cards where the member ports are located must be the same. Only GPON cards are supported.
- The active and standby GPON ports are connected to the same optical splitter.

## Context

To implement dual-homing protection of two GPON ports, you need to only create a dual-homing protection group on the U2000. After the creation, the two members in the dual-homing protection group support the protection switching function.

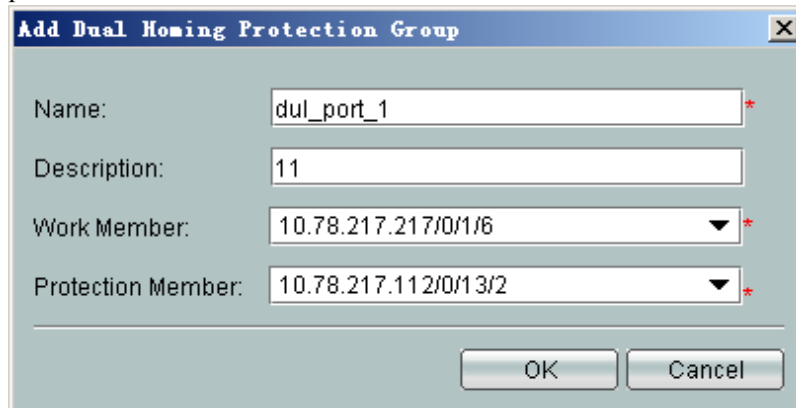
The implementation of the Type B dual-homing protection switching of GPON ports includes the automatic switching mode and the forcible switching mode. The differences between the two modes are as follows:

- Automatic switching is determined and initiated by the OLT. During the protection switching, the OLT initiates automatic detection (detects the availability of optical signals on the optical fiber), determines whether to perform switching according to the actual status of the PON port, and updates the protection status of the members in the protection group by reporting alarms.
- Forcible switching is initiated by the U2000. The U2000 issues the forcible switching command to both the active and standby OLTs. Then, the active OLT changes to the standby OLT, and the standby OLT changes to the active OLT.

## Procedure

### 1 Add a dual-homing protection group.

1. Choose **Configuration > Access Service Management > Dual Homing** from the main menu.
2. In the information list, right-click and choose **Add** from the shortcut menu.
3. In the **Adding Dual Homing Protection Group** dialog box, enter the name and description in the **Name** and **Description** fields respectively, and choose the working member and protection member from the **Work Member** and **Protection Member** drop-down lists.



**Table 27-3** Parameters required for adding a dual homing protection group

| Parameter | Description                                                                   | Settings                                                                    |
|-----------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Name      | <b>Definition:</b><br>Indicates the name of the dual homing protection group. | <b>Range:</b><br>Character string type. It consists of up to 32 characters. |


| Parameter         | Description                                                                                | Settings                                                                                                                              |
|-------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Description       | <b>Definition:</b><br>Indicates the brief description of the dual homing protection group. | <b>Range:</b><br>Character string type. It consists of up to 64 characters.                                                           |
| Work Member       | <b>Definition:</b><br>Indicates the protection member that is being used.                  | <b>Setting method:</b><br>Select the active OLT PON port for connecting to the ONU from the <b>Work Member</b> drop-down list.        |
| Protection Member | <b>Definition:</b><br>Indicates the standby protection group member.                       | <b>Setting method:</b><br>Select the standby OLT PON port for connecting to the ONU from the <b>Protection Member</b> drop-down list. |

4. Click **OK**.

- The attributes of the dual-homing protection group that you added are as follows: the working GPON port is in the forcible active state, the protection GPON port is in the forcible standby state, **Automatic Detection** is **Disable**, and **Work Status** is **Non Automatic Switchover**. To switch the GPON port forcibly, right-click the protection group and choose **Switchover** from the shortcut menu.
- In the information list, right-click the dual-homing protection group and choose **Compare Member Configuration** from the shortcut menu to compare the data configuration of **Work Member** and **Protection Member** in the dual-homing protection group.

 **NOTE**

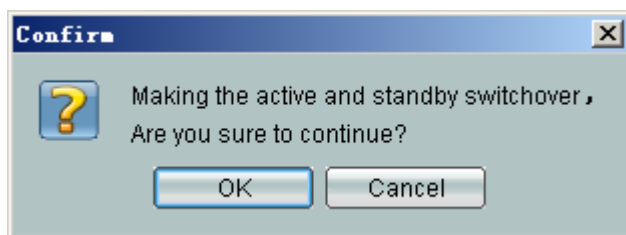
- The data configuration can be compared only when **Configure Status** of a dual-homing protection group is **Normal**.
- Before comparing the data configuration of the members in a dual-homing protection group, ensure that the data on the U2000 is the same as the data on the NE. Otherwise, synchronize the data of the NE first.
- You can view the data comparison result and the difference details in the data comparison window.

- If the data configuration is different, select the node to synchronize in the data comparison window and click  to replicate data from the active port of the OLT to the standby port.

 **NOTE**

Before replicating data from the active port to the standby port, ensure that the resources such as templates and VLANs exist on the standby port and these resources are the same as the resources on the active port. Otherwise, data replication fails.

- To switch the GPON port forcibly, right-click the protection group and choose **Switchover** from the shortcut menu.
- In the **Confirm** dialog box, click **OK**.



- 7 Query the details of the protection group. Select the created dual-homing protection group, and click the **Member** tab in the lower part of the window to view the details.

---End

## 27.5 GPON Type C Protection

This topic describes GPON type C protection and how to configure the protection.

### [27.5.1 GPON Type C Protection](#)

This topic describes the definition, purpose, unique benefits, and principles of GPON type C protection.

### [27.5.2 Configuring GPON Type C Protection](#)

This topic describes how to configure GPON type C protection.

### 27.5.1 GPON Type C Protection

This topic describes the definition, purpose, unique benefits, and principles of GPON type C protection.

#### Definition

The GPON type C protection is implemented through the redundancy configuration of the PON ports on the OLT, PON ports on the ONU, backbone optical fibers, optical splitters, and tributary optical fibers. That is, each item is in a dual configuration.

#### Purpose

Type C protection switching ensures higher reliability of devices. The PON ports on the OLT, PON ports on the ONU, backbone optical fibers, optical splitters, and tributary optical fibers are in redundancy protection. When a component is faulty, the system can automatically switch the service to the other optical path, thus implementing automatic or manual protection switching.

#### Unique Benefits

- GPON type C protection ensures higher reliability. When any part on the line fails, the system can automatically detect the fault and switch to the other optical fiber, thus implementing automatic service recovery.
- It serves as a basic for implementing load balancing in the future, which achieves better bandwidth usage of the lines and at the same time the ONU can provide higher upstream bandwidth.

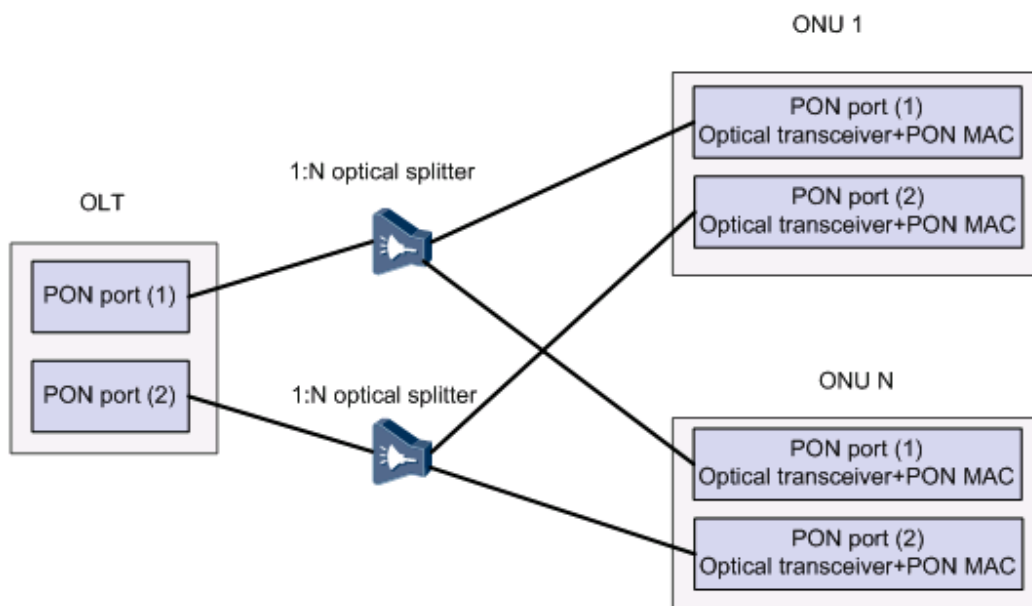


## Principles

GPON type C protection switching is implemented through the redundancy configuration of the PON ports on the OLT, PON ports on the ONU, backbone optical fibers, optical splitters, and tributary optical fibers. That is, each item is in a dual configuration. The protection of two PON ports on the OLT can be implemented in two modes: between two PON MAC chips of the same PON card and between two PON ports on two PON cards.

**Figure 27-5** shows the implementation model.

**Figure 27-5** GPON type C protection switching model



- OLT: The active and standby PON ports on the OLT are both in the working state. The OLT ensures that the service information of the active PON port can be synchronized and backed up to the standby PON port. Thus, during the protection switching, the standby PON port can retain the service attributes for the ONU.
- Optical splitter: Two 1:N optical splitters are used.
- ONU: The ONU uses different PON MAC chips and different optical transceivers. The ONU ensures that the service information of the active PON port can be synchronized and backed up to the standby PON port. Thus, during the protection switching of the PON ports, the ONU can retain the local service attributes.

The switching process is as follows:

- The active and standby PON ports on the OLT are both in the working state. That is, the ONU registers with both PON ports on the OLT and processes the standard and extended PLOAM messages. During the protection switching of the PON ports, the initialization parameters and the service attributes of the ONU are not configured on the standby PON port.
- The ONU and OLT check the link status, and determine whether to perform the switching according to the link status. If the OLT detects that the uplink of the active PON port is faulty, the OLT automatically switches to the standby optical link and sends the PST message through the standby optical link to inform the ONU and request the ONU to switch.

If the ONU detects that the downlink of the active PON port is faulty, the ONU automatically switches to the standby optical link and sends a PST message to inform the OLT of the switching and cause of switching and requests the OLT to switch.

G.984.1 specifies two types of conditions for triggering the switching of a protection group:

1. External commands
2. Automatic switching

The conditions triggering an automatic switching include the quality degradation alarm on the upstream/downstream line, hardware fault, or the LOS, LOF, SF, SD, LCDG, or TF alarm on the ONU. The protection group supports automatic recovery and automatic recovery hold time. Automatic recovery means that the system automatically switches back to the original working member line after the original working member line recovers from the fault.

## 27.5.2 Configuring GPON Type C Protection

This topic describes how to configure GPON type C protection.

### Prerequisite

- The ONU that is connected to the GPON port in the protection group must provide two PON ports for upstream transmission.
- The cards that support inter-card type C protection switching are H801GPBC and H802GPBD.
- PON ports in a protection group can reside in the cards of different types. For example, when one PON port is configured on the H801GPBC card, the other can be configured on the H802GPBD card. The features supported by the ONU, however, must be supported by both of the two cards.
- The MA5600T functions as an OLT and supported ONUs are the MA5620 with the H822EPUB control card, MA5626 with H822EPUB control card, MA5612 with the H832CCFE control card, MA5616 with the H832CCUB control card, and MA5628 of the R308 version. Currently, other devices do not support GPON type C protection switching.
- After an ONU connected to a GPON port is added to a type C protection group, the GPON port cannot be added to a type B protection group or a type B dual-homing protection group. If an ONU connected to a GPON port is added to a type B protection group or a type B dual-homing protection group, the GPON port cannot be added to a type B protection group.


### Context

The OLT needs to work with the ONU to implement the GPON type C protection switching.

The two members of a protection group can be in the intra-card protection or the inter-card protection. A maximum of 64 protection groups can be configured.

### Procedure

1. Configure the working ONU.
  1. In the Main Topology, double-click the required NE in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
  2. Choose **GPON > GPON ONU** from the navigation tree.

3. On the **GPON ONU** tab page, specify the filter criteria or click  to display GPON ONU records.
4. In the information list, right-click and choose **Add** from the shortcut menu.
5. In the dialog box that is displayed, configure the required ONT parameters and bind **Line Profile** and **Service Profile**. Clear **Protection Role** so that the ONU works as a working ONU.

**Add ONU**

Affiliated Port: 0/3/0 \* Splitter: Splitter(L1)

Name: ONU \* Alias:

ONU ID(0-127):  Auto Assign \* Splitter Port ID(1-128): 1

ONU Type: MDU

Protection Role

**Basic Parameters** | Network Management Channel Parameters

Alarm Profile: ... ONU VAS Profile: ...

Optic Alarm Profile: ... ONU Capacity Profile: ... \*

**Authentication Info**

Authentication Mode: SN \* Timeout Duration (h)(1-168):  No Limit \*

SN: 11111111111111 Password: \*

**ONU Type**

Vendor ID: HWTC(2011) Terminal Type: ...

Software Version: ...

OK Cancel Apply

**Add ONU**

Affiliated Port: 0/3/0 \* Splitter: Splitter(L1)

Name: ONU \* Alias:

ONU ID(0-127):  Auto Assign \* Splitter Port ID(1-128): 1

ONU Type: MDU

Protection Role

**Basic Parameters** | **Network Management Channel Parameters**

OLT sets network management channel parameters SNMP Profile Name: ... \*

**SNMP Params Info**

Manager VLAN(1-4095): 1 \* Priority(0-7): 1

IP Address: 10.10.10.6 \* IP Address Mask: 255.255.255.0 \*

Gateway IP Address: ...

**Static Route Parameters**


IP Address: ... IP Address Mask: ...





Next Hop IP Address: ...

OK Cancel Apply

**Table 27-4** Parameters required for adding an ONU

| Parameter       | Description                                                                                                                                                                                                             | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Affiliated Port | <b>Definition:</b><br>Indicates the shelf number, slot number, and port number on the device to which the ONU is connected.                                                                                             | <b>Setting method:</b><br>Select an affiliated port from the drop-down list.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Splitter        | <b>Definition:</b><br>Indicates the splitter to which the ONU is connected.<br><br>A splitter is a passive device connecting the OLT and ONU. It is mainly used to distribute downstream data and gather upstream data. | <b>Setting method:</b><br>Select a splitter ID from the drop-down list.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Name            | <b>Definition:</b><br>Indicates the name of the ONU. The name is used to identify the ONU.                                                                                                                              | <b>Range:</b><br>Character string type. It consists of up to 255 characters.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Alias           | <b>Definition:</b><br>Indicates the alias of the ONU. You can customize an alias, which is easy to understand and remember. The alias is used to identify the ONU.                                                      | <b>Range:</b><br>Character string type. It consists of up to 32 characters.<br><b>NOTE</b> <ul style="list-style-type: none"> <li>● If you do not set this parameter, the U2000 obtains the system name of the ONU and considers the system name as the ONU alias.</li> <li>● You can set this parameter to non-English characters only when the device supports all non-English characters.</li> <li>● Enter only English characters when the device does not support all non-English characters.</li> </ul> |
| ONU ID          | <b>Definition:</b><br>Indicates the ID of the ONU. The ONU ID is used to identify the ONU.                                                                                                                              | <b>Range:</b><br>Numeral type. It ranges from 0 to 127.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Parameter        | Description                                                                                                                                                                                                                                                                                                                                                                                              | Settings                                                                                                                                                                                                                           |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Auto Assign      | <b>Definition:</b><br>Indicates the ONU ID that is automatically allocated by the device.                                                                                                                                                                                                                                                                                                                | <b>Setting method:</b><br>Select <b>Auto Assign</b> .                                                                                                                                                                              |
| Splitter Port ID | <b>Definition:</b><br>Indicates the number of the port on the splitter to which the ONU is connected.                                                                                                                                                                                                                                                                                                    | <b>Range:</b><br>Numeral type. It ranges from 1 to 128.                                                                                                                                                                            |
| ONU Type         | <b>Definition:</b><br>Indicates the type of the ONU.                                                                                                                                                                                                                                                                                                                                                     | <b>Setting method:</b><br>Select a terminal type from the drop-down list.                                                                                                                                                          |
| Protection Role  | <b>Definition:</b><br>Specifies whether to add a protection ONU. If the <b>Protection Role</b> check box is selected, it indicates that a virtual ONU is added on the OLT.<br><br><b>Relation to other parameters:</b><br>If the <b>Protection Role</b> check box is selected, the parameters on the <b>Basic Parameters</b> and <b>Network Management Channel Parameters</b> tab pages are unavailable. | <b>Setting method:</b><br>Select the <b>Protection Role</b> check box.                                                                                                                                                             |
| Basic Parameters |                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                    |
| Line Profile     | <b>Definition:</b><br>Indicates the line profile bound to the ONU. The line profiles contain the parameters required for setting up channels for the GPON lines.<br><br><b>NOTE</b><br>This parameter is displayed in the profiles of the profile mode.                                                                                                                                                  | <b>Setting method:</b><br>Click  next to <b>Line Profile</b> , and then select the required line profile in the dialog box that is displayed. |


| Parameter           | Description                                                                                                                                                                                                                                                                                                      | Settings                                                                                                                                                                                                                                             |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Service Profile     | <p><b>Definition:</b></p> <p>Indicates the traffic profile bound to the ONU. The traffic profiles contain the parameters related to the ONU service.</p> <p><b>NOTE</b></p> <p>This parameter is displayed in the profiles of the profile mode.</p>                                                              | <p><b>Setting method:</b></p> <p>Click  next to <b>Service Profile</b>, and then select the required line profile in the dialog box that is displayed.</p>        |
| Alarm Profile       | <p><b>Definition:</b></p> <p>Indicates the GPON alarm profile bound to the ONU. The GPON alarm profile contains a series of alarm threshold parameters that are used for performance measurement and monitoring of the activated ONU lines.</p>                                                                  | <p><b>Setting method:</b></p> <p>Click  next to <b>Alarm Profile</b>, and then select the required alarm profile in the dialog box that is displayed.</p>         |
| ONU VAS Profile     | <p><b>Definition:</b></p> <p>Indicates the ONU value-added service profile bound to the ONU. The purpose of the ONU value-added service is to support the function of provisioning the VoIP service on the ONU, and to set the parameters for the value-added services on the ONU, such as the VoIP service.</p> | <p><b>Setting method:</b></p> <p>Click  next to <b>ONU VAS Profile</b>, and then select the required alarm profile in the dialog box that is displayed.</p>     |
| Optic Alarm Profile | <p><b>Definition:</b></p> <p>Indicates the optical power alarm template that is bound to the ONU. The ONU optical power alarm template is used to manage the alarm thresholds of the optical transceiver in a centralized manner.</p>                                                                            | <p><b>Setting method:</b></p> <p>Click  next to <b>Optic Alarm Profile</b>, and then select the required alarm profile in the dialog box that is displayed.</p> |
| Authentication Info |                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                      |

| Parameter             | Description                                                                                                                                                                                                                                                                                                                                                                                          | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Authentication Method | <p><b>Definition:</b><br/>                     Indicates the mode in which the OLT authenticates the ONU.</p> <p><b>Relation to other parameters:</b><br/> <b>Password</b> is available if the authentication mode is set to <b>SN+Password</b>, <b>Password(Once_on)</b>, or <b>Password</b>.<br/> <b>SN</b> is available if the authentication mode is set to <b>SN+Password</b> or <b>SN</b>.</p> | <p><b>Range:</b><br/>                     Enumerated type. The options are as follows:</p> <ul style="list-style-type: none"> <li>● <b>SN:</b> Indicates that the ONU authentication mode is the serial number (SN) authentication mode. In the SN authentication mode, the OLT determines whether the SN reported by an ONU is the same as the SN that is configured. If they are the same, the ONU passes the authentication and gets online normally.</li> <li>● <b>SN+Password:</b> Indicates that the ONU authentication mode is SN+ Password authentication mode. In the SN+Password authentication mode, the OLT determines whether the SN and password reported by an ONU are the same as the configured SN and password. If they are the same, the ONU passes the authentication and gets online normally.</li> <li>● <b>Password(Once_on):</b> Indicates that the ONU authentication mode is a password authentication mode. In this mode, the ONU is allowed to get online only once. After the ONU gets online, the ONU cannot be replaced. In addition, the timeout duration is specified, if the ONU does not get online within the duration, the</li> </ul> |

| Parameter        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <p><b>Time Out</b> is available if the authentication mode is set to <b>Password(Once_on)</b>.</p>                                                                                                                                                                                                                                                                                                                                                             | <p>ONU is not allowed to get online.</p> <ul style="list-style-type: none"> <li>● <b>Password:</b> Indicates that the ONU authentication mode is a password authentication mode. In this mode, the OLT determines whether the password reported by the ONU is the same as the configured password. If the passwords are the same, the ONU passes the authentication and gets online normally. You can replace the ONU with another ONU. If the passwords of the two ONUs are the same, the ONU can get online.</li> </ul> |
| Timeout Duration | <p><b>Definition:</b><br/>Indicates the timeout period for the ONU to be online. If the authentication mode of the ONU is set to <b>Password (Once_on)</b>, the ONU is required to pass the password authentication within the specified timeout period. After timeout, the authentication is not allowed.</p> <p><b>Relation to other parameters:</b><br/>This parameter can be configured if the authentication mode is set to <b>Password(Once_on)</b>.</p> | <p><b>Range:</b><br/>Numeral type. It ranges from 1 to 168.<br/>Unit: h.</p> <p><b>Setting Method:</b><br/>If you click <b>No Limit</b>, the ONU can start password authentication at any time. In this case, the timeout period cannot be set.</p>                                                                                                                                                                                                                                                                       |



| Parameter     | Description                                                                                                                                                                                                                                                                                                                               | Settings                                                                                                                                                                                                                                                                                                                                             |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SN            | <p><b>Definition:</b><br/>                     Indicates the SN of the ONU for authentication. The value of the parameter must be the same as the actual SN of the ONU.</p> <p><b>Relation to other parameters:</b><br/>                     This parameter can be configured if the authentication mode is set to SN or SN+Password.</p> | <p><b>Range:</b><br/>                     Character string type. It consists of up to 16 characters.</p> <p>The following characters are supported:</p> <ul style="list-style-type: none"> <li>● English letters: A-F and a-f</li> <li>● Numbers: 0-9</li> </ul>                                                                                     |
| Password      | <p><b>Definition:</b><br/>                     Indicates the password of the ONU for authentication.</p> <p><b>Relation to other parameters:</b><br/>                     This parameter can be configured if the authentication mode is SN+Password.</p>                                                                                 | <p><b>Range:</b><br/>                     Character string type. It consists of up to 10 characters.</p>                                                                                                                                                                                                                                             |
| ONU Type      |                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                      |
| Verdor ID     | <p><b>Definition:</b><br/>                     Indicates the ID of the vendor.</p>                                                                                                                                                                                                                                                        | <p><b>Setting method:</b><br/>                     Enter a value or select a terminal type from the drop-down list.</p>                                                                                                                                                                                                                              |
| Terminal Type | <p><b>Definition:</b><br/>                     Indicates the equipment type, and especially refers to the terminal type of the third-party GPON ONT and EPON ONT.</p>                                                                                                                                                                     | <p><b>Setting method:</b><br/>                     Enter a value or select a terminal type from the drop-down list.</p> <p><b>NOTE</b><br/>                     If the third-party GPON ONT and EPON ONT comply with the CTC 2.1 standard, you can enter the terminal type and software version to manage the third-party GPON ONT and EPON ONT.</p> |

| Parameter                                      | Description                                                                                                                                                                                                                                                                                    | Settings                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Software Version                               | <p><b>Definition:</b><br/>Indicates software version of the ONU, and especially refers to the software version of the third-party GPON ONT and EPON ONT.</p> <p><b>Relation to other parameters:</b><br/>Corresponding software version is displayed based on the specified terminal type.</p> | <p><b>Setting method:</b><br/>Enter a value or select a software version from the drop-down list.</p> <p><b>NOTE</b><br/>If the third-party GPON ONT and EPON ONT comply with the CTC 2.1 standard, you can enter the terminal type and software version to manage the third-party GPON ONT and EPON ONT.</p> |
| Network Management Channel Parameters          |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                               |
| OLT sets network management channel parameters | <p><b>Definition:</b><br/>Indicates the mode adopted by the ONU to control and manage ONUs in a centralized manner.</p> <p><b>Relation to other parameters:</b><br/>This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b>.</p>                                     | <p><b>Setting method:</b><br/>Select <b>OLT sets network management channel parameters</b>.</p>                                                                                                                                                                                                               |
| SNMP Profile Name                              | <p><b>Definition:</b><br/>After the SNMP profile is added and issued to ONUs, the ONUs are managed in a centralized manner.</p> <p><b>Relation to other parameters:</b><br/>This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b>.</p>                             | <p><b>Setting method:</b><br/>Click  next to the <b>SNMP Profile Name</b> parameter. In the dialog box that is displayed, select the required SNMP profile.</p>                                                          |
| SNMP Parameters Info                           |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                               |

| Parameter    | Description                                                                                                                                                                                                                                                                                                                                                                              | Settings                                                                                        |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Manager VLAN | <p><b>Definition:</b><br/>                     Indicates the VLAN adopted by the ONU to control and manage ONUs in a centralized manner.</p> <p><b>Relation to other parameters:</b><br/>                     This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b> and the <b>OLT sets network management channel parameters</b> check box is selected.</p> | <p><b>Range:</b><br/>                     Numeral type. It ranges from 1 to 4095.</p>           |
| Priority     | <p><b>Definition:</b><br/>                     Indicates the priority of the VLAN.</p> <p><b>Relation to other parameters:</b><br/>                     This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b> and the <b>OLT sets network management channel parameters</b> check box is selected.</p>                                                       | <p><b>Range:</b><br/>                     Numeral type. It ranges from 0 to 7.</p>              |
| IP Address   | <p><b>Definition:</b><br/>                     Indicates the management IP address of the ONU. It is usually set to the IP address of the Layer 3 interface of the VLAN.</p> <p><b>Relation to other parameters:</b><br/>                     This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b>.</p>                                                     | <p><b>Range:</b><br/>                     It is an IPv4 address in dotted decimal notation.</p> |

| Parameter               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Settings                                                                      |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| IP Address Mask         | <p><b>Definition:</b></p> <p>Indicates the subnet mask of the IP address. It consists of multiple consecutive 1s and can be represented in dotted decimal notation when written in the text format. This parameter and the destination IP address identify the address of the network segment where a destination host or router is located. To implement this function, set the destination IP address and the subnet mask in the logical conjunction (AND) relation. Then, you can obtain the address of the network segment where a destination host or router is located.</p> <p><b>Relation to other parameters:</b></p> <p>This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b> and the <b>OLT sets network management channel parameters</b> check box is selected.</p> | <p><b>Range:</b></p> <p>It is an IPv4 address in dotted decimal notation.</p> |
| Gateway IP Address      | <p><b>Definition:</b></p> <p>Indicates the gateway IP address of the network segment where the ONU is located.</p> <p><b>Relation to other parameters:</b></p> <p>This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b> and the <b>OLT sets network management channel parameters</b> check box is selected.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>Range:</b></p> <p>It is an IPv4 address in dotted decimal notation.</p> |
| Static Route Parameters |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                               |

| Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Settings                                                                                        |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| IP Address      | <p><b>Definition:</b><br/>                     Indicates the destination IP address. It identifies the destination IP address or destination network of an IP packet.</p> <p><b>Relation to other parameters:</b><br/>                     This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b> and the <b>OLT sets network management channel parameters</b> check box is selected.</p>                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>Range:</b><br/>                     It is an IPv4 address in dotted decimal notation.</p> |
| IP Address Mask | <p><b>Definition:</b><br/>                     Indicates the subnet mask of the IP address. It consists of multiple consecutive 1s and can be represented in dotted decimal notation when written in the text format. This parameter and the destination IP address identify the address of the network segment where a destination host or router is located. To implement this function, set the destination IP address and the subnet mask in the logical conjunction (AND) relation, and then you can obtain the address of the network segment where a destination host or router is located.</p> <p><b>Relation to other parameters:</b><br/>                     This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b> and the <b>OLT sets network management channel parameters</b> check box is selected.</p> | <p><b>Range:</b><br/>                     It is an IPv4 address in dotted decimal notation.</p> |

| Parameter           | Description                                                                                                                                                                                                                                                                                                 | Settings                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Next Hop IP Address | <p><b>Definition:</b><br/>Indicates the IP address of the next hop of the route.</p> <p><b>Relation to other parameters:</b><br/>This parameter can be configured if the <b>Terminal Type</b> is set to <b>MDU</b> and the <b>OLT sets network management channel parameters</b> check box is selected.</p> | <p><b>Range:</b><br/>It is an IPv4 address in dotted decimal notation.</p> |

6. Click **OK**.

**2** Configure the protection ONU.

The procedure for configuring the protection ONU is similar to the procedure for configuring the working ONU. The difference is that **Protection Role** must be selected so that ONU works as a protection ONU.

**3** Add the working ONU and protection ONU to the same protection group.

1. In the Main Topology, double-click the required device in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
2. Choose **Protection Group Management** from the navigation tree.
3. In the information list, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters.

**Table 27-5** Key parameters required for adding a protection group

| Parameter         | Description | Settings |
|-------------------|-------------|----------|
| Basic Information |             |          |

| Parameter         | Description                                                                                                                                                                                                                                                      | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Group ID          | <b>Definition:</b><br>Indicates the ID of the PG. It is used to uniquely identify a PG.                                                                                                                                                                          | <b>Range:</b><br>Numeral type. It ranges from 0 to 63.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Protection Object | <b>Definition:</b><br>Indicates the type of protection objects in a protection group.                                                                                                                                                                            | <b>Range:</b><br>Enumerated type. The options are as follows: <ul style="list-style-type: none"> <li>● Active main board and standby main board</li> <li>● LAG of active main board and standby main board</li> <li>● Port of active main board and standby main board</li> <li>● Port of ETH NNI</li> <li>● LAG member of ETH NNI</li> <li>● Port of EPON UNI</li> <li>● Port of GPON UNI</li> <li>● STM-1 network port</li> <li>● EPON ONU</li> <li>● GPON ONU</li> </ul> |
| Description       | <b>Definition:</b><br>Specifies the descriptions for a PG. It is easy to understand and remember.                                                                                                                                                                | <b>Range:</b><br>Character string type. It consists of up to 64 characters.                                                                                                                                                                                                                                                                                                                                                                                                 |
| Working Mode      | <b>Definition:</b><br>Indicates the working mode for PG testing.<br><b>Relation to other parameters:</b><br>When <b>Protection Object</b> is <b>Port of active main board and standby main board</b> or <b>Port of ETH NNI</b> , <b>Working Mode</b> can be set. | <b>Range:</b><br>Enumerated type. The options are as follows: <ul style="list-style-type: none"> <li>● Status Detection</li> <li>● Time Delay Detection</li> <li>● Undirection Detection</li> <li>● Smart link</li> <li>● Smart link load-balance</li> </ul>                                                                                                                                                                                                                |
| Working ONU       |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Parameter       | Description                                                                                                                             | Settings |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------|
| Frame/Slot/Port | <b>Definition:</b><br>Indicates the shelf number, slot number, and port number on the device, to which the working ONU is connected.    | -        |
| ONU ID          | <b>Definition:</b><br>Indicates the ID of the working ONU. It is used to identify an ONU.                                               | -        |
| Protection ONU  |                                                                                                                                         |          |
| Frame/Slot/Port | <b>Definition:</b><br>Indicates the shelf number, slot number, and port number on the device, to which the protection ONU is connected. | -        |
| ONU ID          | <b>Definition:</b><br>Indicates the ID of the protection ONU. It is used to identify an ONU.                                            | -        |

5. Click **OK**.

----End

## 27.6 EPON Type D Protection

This topic describes EPON type D protection and how to configure the protection.

### [27.6.1 EPON Type D Protection](#)

This topic describes the definition, purpose, unique benefits, and principles of EPON type D protection.

### [27.6.2 Configuring EPON Type D Protection](#)

This topic describes how to configure EPON type D protection.

### 27.6.1 EPON Type D Protection

This topic describes the definition, purpose, unique benefits, and principles of EPON type D protection.



## Definition

The EPON type D protection switching is implemented through the redundancy configuration of the PON ports on the OLT, PON ports on the ONU, backbone optical fibers, optical splitters, and tributary optical fibers. That is, each item is in a dual configuration.

## Purpose

With the increasingly wider application of the EPON technology, FTTB, FTTC, FTTH, and especially FTTM raise a higher requirement for system reliability. Full protection is required for PON optical lines. Type B protection covers only the backbone optical fiber, but type D protection covers the backbone optical fiber, optical splitter, and tributary optical fiber. When any part of the PON line is faulty, the system can automatically switch to the other optical fiber. The protection switching can be implemented automatically or manually.

## Unique Benefits

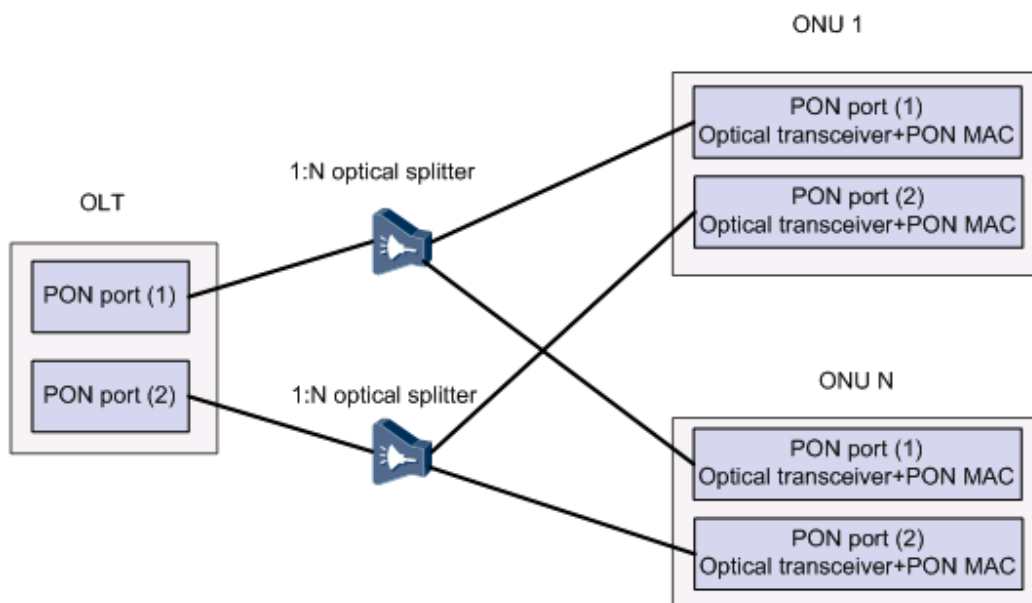
- It ensures higher reliability. When any part on the line fails, the system can automatically detect the fault and switch the service to the other optical path, thus implementing automatic service recovery.
- It serves as a basic for implementing load balancing in the future, which achieves better bandwidth usage of the lines and at the same time the ONU can provide higher upstream bandwidth.

## Principles

The EPON type D protection switching is implemented through the redundancy configuration of the PON ports on the OLT, PON ports on the ONU, backbone optical fibers, optical splitters, and tributary optical fibers. That is, each item is in a dual configuration.

Figure 27-6 shows the implementation model.

Figure 27-6 EPON type D protection switching model



On the OLT, the implementation has two modes:

1. Protection between two PON MAC chips of the same PON card
2. Protection between two PON ports of two PON cards

To implement the protection, each device works in the following status:

- OLT: The active and standby PON ports on the OLT are both in the working state. The OLT ensures that the service information of the active PON port can be synchronized and backed up to the standby PON port. Thus, during the protection switching, the standby PON port can retain the service attributes for the ONU.
- Optical splitter: Two 1:N optical splitters are used.
- ONU: The ONU uses different PON MAC chips and different optical transceivers. The ONU ensures that the service information of the active PON port can be synchronized and backed up to the standby PON port. Thus, during the protection switching of the PON ports, the ONU can maintain the same local service attributes.

The switching process is as follows:

- The active and standby PON ports on the OLT are both in the working state (the ONU registers with both PON ports on the OLT, and the OLT and the ONU can negotiate through the standard and extended PLOAM messages). During the protection switching of the PON ports, the initialization parameters and the service attributes of the ONU are not configured on the standby PON port.
- The ONU and the OLT check the link status, and determine whether to perform the switching according to the link status.
- If the OLT detects that the uplink of the active PON port is faulty, the OLT automatically switches to the standby optical link and sends the extended OAM message (with the Active PON\_IF Administrative attribute) through the standby optical link to configure the active PON port of the ONU.
- If the ONU detects that the downlink of the active PON port is faulty, the ONU automatically switches to the standby optical link and sends the extended OAM message (with Alarm ID = 0x000C and PON\_IF Switch attribute) through the standby optical link to inform the OLT of the switching on the ONU PON port and the cause of switching.

When any of the following conditions occurs in a protection group, the optical link protection switching is triggered:

- Loss of optical signal (LOS)
- Input channel degradation
- Over low or over high input optical signal power
- BER threshold violation

During the device running, a hardware fault can also trigger the protection switching. In addition, the protection switching can also be performed forcibly through commands.

## 27.6.2 Configuring EPON Type D Protection

This topic describes how to configure EPON type D protection.

## Prerequisite


- Cards that support inter-card type D protection switching are H801EPBA, H802EPBA, and H802EPBD.
- The members of an inter-card protection group must reside in the cards of the same type. For example, when one member is configured on the H801EPBD card, the other member must also be configured on the H801EPBD card.
- Currently, the ONUs of version R308, such as the MA5620 with the H822EPUB control card, MA5626 with H822EPUB control card, MA5612 with the H832CCFE control card, MA5616 with the H832CCUB control card, and MA5628 support the EPON type D protection switching.
- If an ONU connected to an EPON port is added to a type D protection group, the EPON port cannot be added to a type B protection group or a type B dual-homing protection group. If an ONU connected to an EPON port is added to a type B protection group or a type B dual-homing protection group, the EPON port cannot be added to a type B protection group.

## Context

The OLT needs to work with the ONU to implement the GPON type D protection switching.

The two members of a protection group can be in the intra-card protection or the inter-card protection. A maximum of 64 protection groups can be configured.

## Procedure

- 1 Configure the working ONU.
  1. In the Main Topology, double-click the required device in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
  2. Choose **EPON > EPON ONU** from the navigation tree.
  3. On the **EPON ONU** tab page, specify the filter criteria or click  to display EPON ONU records.
  4. In the information list, right-click and choose **Add** from the shortcut menu.
  5. In the dialog box that is displayed, configure the required ONT parameters and bind **Line Profile** and **Service Profile**. Clear **Protection Role** so that the ONU works as a working ONU.

**Add ONU Info**

Affiliated Port: 0/6/0 \* Splitter ID: Splitter(L1) \*  
 Name: ONU \* Alias: \*  
 ONU ID(0-127):  Auto Assign \* Splitter Port ID(1-128): 1 \*  
 ONU Type: MDU \*  
 Protection Role

**Basic Parameters** | Network Management Channel Parameters

Line Profile: \* Service Profile: \*  
 Optic Alarm Profile: \* ONU VAS Profile: \*

**Auth Info**

Auth Way: MAC Address \*  
 MAC Address: 45 - 61 - 61 - 16 - 11 - 11 \* Key: \*  
 LOID: \* CHECKCODE: \*  
 Auth Mode: Always On \* Time Out(h)(1-168):  Disable \*

**Extend Information**

DHCP Status  P1TP Status IGMP Mode: CTC \*  
 ONU Type

Vendor ID: HWTC(2011) \* Terminal Type: \*  
 Software Version: \*

OK Cancel Apply

**Add ONU Info**

Affiliated Port: 0/6/0 \* Splitter ID: Splitter(L1) \*  
 Name: ONU \* Alias: \*  
 ONU ID(0-127):  Auto Assign \* Splitter Port ID(1-128): 1 \*  
 ONU Type: MDU \*  
 Protection Role

**Basic Parameters** | Network Management Channel Parameters

OLT Sets Network Management Channel Parameters EPON SNMP Profile: \*  
**Net Para**

Manager VLAN(1-4095): 1 \* Gateway IP Address: \*  
 IP Address: 10.10.10.6 \* IP Address Mask: 255.255.255.0 \*  
 Priority(0-7): 1



**Static Route Parameters**





Target IP Address: \* Target Mask: \*  
 Next Hop IP Address: \*

OK Cancel Apply

**Table 27-6** Parameters required for adding an ONU

| Parameter       | Description                                                                                                                                                                                                             | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Affiliated Port | <b>Definition:</b><br>Indicates the shelf number, slot number, and port number of the port to which the ONU is connected.                                                                                               | <b>Range:</b><br>Numeral type. Its range varies with the shelf type and the board type.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Splitter ID     | <b>Definition:</b><br>Indicates the splitter to which the ONU is connected.<br><br>A splitter is a passive device connecting the OLT and ONU. It is mainly used to distribute downstream data and gather upstream data. | <b>Setting method:</b><br>Select a splitter ID from the drop-down list.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Name            | <b>Definition:</b><br>Indicates the ONU ID. The ID uniquely identifies an ONU.                                                                                                                                          | <b>Range:</b><br>Character string type. It consists of up to 255 characters.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Alias           | <b>Definition:</b><br>Indicates the ONU alias, which is easy to understand and remember.                                                                                                                                | <b>Range:</b><br>Character string type. It consists of up to 32 characters.<br><b>NOTE</b> <ul style="list-style-type: none"> <li>● If you do not set this parameter, the U2000 obtains the system name of the ONU and considers the system name as the ONU alias.</li> <li>● You can set this parameter to non-English characters only when the device supports all non-English characters.</li> <li>● Enter only English characters when the device does not support all non-English characters.</li> </ul> |
| ONU ID          | <b>Definition:</b><br>Indicates the ID of the ONU. The ID is used to identify an ONU.                                                                                                                                   | <b>Range:</b><br>Numeral type. It ranges from 0 to 127.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Auto Assign     | <b>Definition:</b><br>Indicates the ONU ID that is automatically allocated by the device.                                                                                                                               | <b>Setting method:</b><br>Select <b>Auto Assign</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Parameter        | Description                                                                                                                                                                                                                                                                                                                                                                                          | Settings                                                                                                                                                                                                                                 |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Splitter Port ID | <b>Definition:</b><br>Indicates the number of the port on the splitter to which the ONU is connected.                                                                                                                                                                                                                                                                                                | <b>Range:</b><br>Numeral type. It ranges from 1 to 128.                                                                                                                                                                                  |
| ONU Type         | <b>Definition:</b><br>Indicates the type of the ONU.                                                                                                                                                                                                                                                                                                                                                 | <b>Setting method:</b><br>Select a terminal type from the drop-down list.                                                                                                                                                                |
| Protection Role  | <b>Definition:</b><br>Specifies whether to add a protection ONU. If the <b>Protection Role</b> check box is selected, it indicates that a virtual ONU is added on the OLT.<br><b>Relation to other parameters:</b><br>If the <b>Protection Role</b> check box is selected, the parameters on the <b>Basic Parameters</b> and <b>Network Management Channel Parameters</b> tab pages are unavailable. | <b>Setting method:</b><br>Select the <b>Protection Role</b> check box.                                                                                                                                                                   |
| Basic Parameters |                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                          |
| Line Profile     | <b>Definition:</b><br>Indicates the line profile bound to the ONU. The line profiles contain the parameters required for setting up channels for the EPON lines.<br><b>NOTE</b><br>This parameter is displayed in the profiles of the profile mode.                                                                                                                                                  | <b>Setting method:</b><br>Click  next to <b>Line Profile</b> , and then select the required line profile in the dialog box that is displayed.       |
| Service Profile  | <b>Definition:</b><br>Indicates the service profile bound to the ONU. The service profiles contain the parameters related to the ONU service.<br><b>NOTE</b><br>This parameter is displayed in the profiles of the profile mode.                                                                                                                                                                     | <b>Setting method:</b><br>Click  next to <b>Service Profile</b> , and then select the required service profile in the dialog box that is displayed. |

| Parameter                 | Description                                                                                                                                                                                                                                                                                                                        | Settings                                                                                                                                                                                                                                                                   |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ONU VAS Profile           | <p><b>Definition:</b><br/>                     Indicates the ONU value-added service profile bound to the ONU. The purpose of the ONU value-added service is to support the function of provisioning the VoIP service on the ONU, and to set the parameters for the value-added services on the ONU, such as the VoIP service.</p> | <p><b>Setting method:</b><br/>                     Click  next to <b>ONU VAS Profile</b>, and then select the required alarm profile in the dialog box that is displayed.</p>           |
| EPON ONU Capacity Profile | <p><b>Definition:</b><br/>                     Indicates the capacity profile bound to the ONU.</p> <p><b>NOTE</b><br/>                     This parameter is displayed in the profiles of the distributed mode.</p>                                                                                                               | <p><b>Setting method:</b><br/>                     Click  next to <b>EPON ONU Capacity Profile</b>, and then select the required alarm profile in the dialog box that is displayed.</p> |
| EPON DBA Profile          | <p><b>Definition:</b><br/>                     Indicates the DBA profile bound to the ONU.</p> <p><b>NOTE</b><br/>                     This parameter is displayed in the profiles of the distributed mode.</p>                                                                                                                    | <p><b>Setting method:</b><br/>                     Click  next to <b>EPON DBA Profile</b>, and then select the required alarm profile in the dialog box that is displayed.</p>         |
| Optic Alarm Profile       | <p><b>Definition:</b><br/>                     Indicates the optical power alarm template that is bound to the ONU. The ONU optical power alarm template is used to manage the alarm thresholds of the optical transceiver in a centralized manner.</p>                                                                            | <p><b>Setting method:</b><br/>                     Click  next to <b>Optic Alarm Profile</b>, and then select the required alarm profile in the dialog box that is displayed.</p>     |
| Auth Info.                |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                            |

| Parameter   | Description                                                                                                                                                                                                                 | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Auth Way    | <p><b>Definition:</b><br/>Indicates the mode in which the OLT authenticates the ONU.</p>                                                                                                                                    | <p><b>Range:</b><br/>Enumerated type. The options are as follows:</p> <ul style="list-style-type: none"> <li>● <b>MAC Address:</b> Specifies the ONU authentication mode as the MAC address authentication mode. In this mode, the OLT determines whether the MAC address reported by the ONU is the same as the configuration. If yes, the ONU passes the authentication and gets online.</li> <li>● <b>Key:</b> Specifies the ONU authentication mode as the key authentication mode.</li> <li>● <b>LOID:</b> Specifies the ONU authentication mode as the LOID authentication mode. This mode can be used in the FTTB application scenario.</li> <li>● <b>LOID+CHECKCODE:</b> Specifies the ONU authentication mode as the LOID+CHECKCODE authentication mode. In the FTTH application scenario, the random character string CHECKCODE is added to the LOID character string to enable the OLT to authenticate the ONU.</li> </ul> <p>Default: MAC Address.</p> |
| MAC Address | <p><b>Definition:</b><br/>Indicates the MAC address used by the ONU for authentication.</p> <p><b>Relation to other parameters:</b><br/>When <b>Auth Way</b> is set to <b>MAC Address</b>, this parameter is mandatory.</p> | <p><b>Range:</b><br/>Character string type. The format is FF-FF-FF-FF-FF-FF. Where, F represents a hexadecimal number.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |




| Parameter | Description                                                                                                                                                                                                                                 | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEY       | <p><b>Definition:</b><br/>Indicates the password used by the ONU for authentication.</p> <p><b>Relation to other parameters:</b><br/>When <b>Auth Way</b> is set to <b>Key</b>, this parameter is mandatory.</p>                            | <p><b>Range:</b><br/>Character string type. It consists of up to 32 characters.</p> <p>The following characters are supported:</p> <ul style="list-style-type: none"> <li>● English letters: case sensitive.</li> <li>● Numbers: 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.</li> <li>● Symbols: symbols on the keyboard of a PC.</li> <li>● All the non-English characters, including Chinese, Korean, Japanese, and French characters.</li> </ul> |
| LOID      | <p><b>Definition:</b><br/>Indicates the password used by the ONU for authentication.</p> <p><b>Relation to other parameters:</b><br/>When <b>Auth Way</b> is set to <b>LOID</b> or <b>LOID +CHECKCODE</b>, this parameter is mandatory.</p> | <p><b>Range:</b><br/>Character string type. It consists of up to 24 characters.</p> <p>The following characters are supported:</p> <ul style="list-style-type: none"> <li>● English letters: case sensitive.</li> <li>● Numbers: 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.</li> <li>● Symbols: symbols on the keyboard of a PC.</li> <li>● All the non-English characters, including Chinese, Korean, Japanese, and French characters.</li> </ul> |

| Parameter | Description                                                                                                                                                                                                                 | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CHECKCODE | <p><b>Definition:</b><br/>Indicates the password used by the ONU for authentication.</p> <p><b>Relation to other parameters:</b><br/>When <b>Auth Way</b> is set to <b>LOID+CHECKCODE</b>, this parameter is mandatory.</p> | <p><b>Range:</b><br/>Character string type. It consists of up to 12 characters.</p> <p>The following characters are supported:</p> <ul style="list-style-type: none"> <li>● English letters: case sensitive.</li> <li>● Numbers: 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.</li> <li>● Symbols: symbols on the keyboard of a PC.</li> <li>● All the non-English characters, including Chinese, Korean, Japanese, and French characters.</li> </ul>                                                                                                                                                                                                                                                                               |
| Auth Mode | <p><b>Definition:</b><br/>Indicates the mode in which the OLT authenticates the ONU.</p>                                                                                                                                    | <p><b>Range:</b><br/>Enumerated type. The options are as follows:</p> <ul style="list-style-type: none"> <li>● Always_on: Specifies the ONU authentication mode as the password authentication mode. In this mode, the OLT determines whether the password reported by the ONU is the same as the configuration. If yes, the ONU passes the authentication and gets online.</li> <li>● Once On: Specifies the ONU authentication mode as the password authentication mode. In this mode, the ONU can get online only once. After the ONU gets online, the ONU cannot be replaced. After the timeout time is set, if the ONU does not get online within the timeout time, the ONU is forbidden to get online.</li> </ul> |

| Parameter        | Description                                                                                                                                                                                                                                                                                    | Settings                                                                                                                                                                                                                                                                                                   |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Time Out         | <p><b>Definition:</b><br/>Indicates the timeout time for the ONU to be online.</p> <p><b>Relation to other parameters:</b><br/>When <b>Auth Way</b> is set to <b>Once On</b>, this parameter is mandatory.</p>                                                                                 | <p><b>Range:</b><br/>Numeral type. It ranges from 1 to 168.<br/>Unit: h.</p>                                                                                                                                                                                                                               |
| ONU Type         |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                            |
| Verdor ID        | <p><b>Definition:</b><br/>Indicates the ID of the vendor.</p>                                                                                                                                                                                                                                  | <p><b>Setting method:</b><br/>Enter a value or select a terminal type from the drop-down list.</p>                                                                                                                                                                                                         |
| Terminal Type    | <p><b>Definition:</b><br/>Indicates the equipment type, and especially refers to the terminal type of the third-party GPON ONT and EPON ONT.</p>                                                                                                                                               | <p><b>Setting method:</b><br/>Enter a value or select a terminal type from the drop-down list.</p> <p><b>NOTE</b><br/>If the third-party GPON ONT and EPON ONT comply with the CTC 2.1 standard, you can enter the terminal type and software version to manage the third-party GPON ONT and EPON ONT.</p> |
| Software Version | <p><b>Definition:</b><br/>Indicates software version of the ONU, and especially refers to the software version of the third-party GPON ONT and EPON ONT.</p> <p><b>Relation to other parameters:</b><br/>Corresponding software version is displayed based on the specified terminal type.</p> | <p><b>Setting method:</b><br/>Enter a value or select a terminal type from the drop-down list.</p> <p><b>NOTE</b><br/>If the third-party GPON ONT and EPON ONT comply with the CTC 2.1 standard, you can enter the terminal type and software version to manage the third-party GPON ONT and EPON ONT.</p> |
| Extended Info.   |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                            |

| Parameter   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Settings                                                                      |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| DHCP Status | <p><b>Definition:</b></p> <p>Enables the ONU to dynamically request the configuration information from the Dynamic Host Configuration Protocol (DHCP) server, or disables the ONU from dynamically request the configuration information from the DHCP server.</p> <p>DHCP works in the client-server mode. The DHCP client dynamically sends configuration requests to the DHCP server, and the DHCP server provides configuration information to the DHCP client.</p>                                                             | <p><b>Setting method:</b></p> <p>Select the <b>DHCP Status</b> check box.</p> |
| PITP Status | <p><b>Definition:</b></p> <p>Enables or disables Policy Information Transfer Protocol (PITP) of the ONU. After PITP is enabled, the system binds the user account to the ONU port for authentication. This prevents theft and roaming of the user account.</p> <p>PITP is used to provide the physical port information of the access subscriber. After a BRAS obtains the ONU port information, the BRAS authenticates the binding between the user account and ONU port. This prevents theft and roaming of the user account.</p> | <p><b>Setting method:</b></p> <p>Select the <b>PITP Status</b> check box.</p> |

| Parameter                                      | Description                                                                                                             | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Multicast Mode                                 | <b>Definition:</b><br>Indicates the multicast mode of the ONU.                                                          | <b>Setting method:</b><br>Enumerated type. The options are as follows: <ul style="list-style-type: none"> <li>● CTC: Uses the China Telecom standard.</li> <li>● IGMP snooping: Indicates a multicast technology running at the link layer. It can implement L2 multicast management to effectively suppress the broadcast of the multicast data at layer 2.</li> <li>● Transparent: Transparently transmits the IGMP packets.</li> </ul> |
| Network Management Channel Parameters          |                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OLT sets network management channel parameters | <b>Definition:</b><br>Indicates the mode adopted by the ONU to control and manage ONUs in a centralized manner.         | <b>Setting method:</b><br>Select <b>OLT sets network management channel parameters</b> .                                                                                                                                                                                                                                                                                                                                                  |
| EPON SNMP Profile                              | <b>Definition:</b><br>After the SNMP profile is added and issued to ONUs, the ONUs are managed in a centralized manner. | <b>Setting method:</b><br>Click  next to the <b>EPON SNMP Profile</b> parameter. In the dialog box that is displayed, select the required SNMP profile.                                                                                                                                                                                              |
| Net Para                                       |                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Manager VLAN                                   | <b>Definition:</b><br>Indicates the VLAN adopted by the ONU to control and manage ONUs in a centralized manner.         | <b>Range:</b><br>Numeral type. It ranges from 1 to 4095.                                                                                                                                                                                                                                                                                                                                                                                  |
| Gateway IP Address                             | <b>Definition:</b><br>Indicates the gateway IP address of the network segment where the ONU is located.                 | <b>Range:</b><br>It is an IPv4 address in dotted decimal notation.                                                                                                                                                                                                                                                                                                                                                                        |

| Parameter               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Settings                                                           |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| IP Address              | <b>Definition:</b><br>Indicates the management IP address of the ONU. It is usually set to the IP address of the Layer 3 interface of the VLAN.                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Range:</b><br>It is an IPv4 address in dotted decimal notation. |
| IP Address Mask         | <b>Definition:</b><br>Indicates the subnet mask of the IP address. It consists of multiple consecutive 1s and can be represented in dotted decimal notation when written in the text format. This parameter and the destination IP address identify the address of the network segment where a destination host or router is located. To implement this function, set the destination IP address and the subnet mask in the logical conjunction (AND) relation. Then, you can obtain the address of the network segment where a destination host or router is located. | <b>Range:</b><br>It is an IPv4 address in dotted decimal notation. |
| Priority                | <b>Definition:</b><br>Indicates the priority of the VLAN.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Range:</b><br>Numeral type. It ranges from 0 to 7.              |
| Static Route Parameters |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                    |
| Target IP Address       | <b>Definition:</b><br>Indicates the destination IP address. It identifies the destination IP address or destination network of an IP packet.                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Range:</b><br>It is an IPv4 address in dotted decimal notation. |

| Parameter           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Settings                                                           |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| Target Mask         | <b>Definition:</b><br>Indicates the subnet mask of the IP address. It consists of multiple consecutive 1s and can be represented in dotted decimal notation when written in the text format. This parameter and the destination IP address identify the address of the network segment where a destination host or router is located. To implement this function, set the destination IP address and the subnet mask in the logical conjunction (AND) relation, and then you can obtain the address of the network segment where a destination host or router is located. | <b>Range:</b><br>It is an IPv4 address in dotted decimal notation. |
| Next Hop IP Address | <b>Definition:</b><br>Indicates the IP address of the next hop of the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Range:</b><br>It is an IPv4 address in dotted decimal notation. |

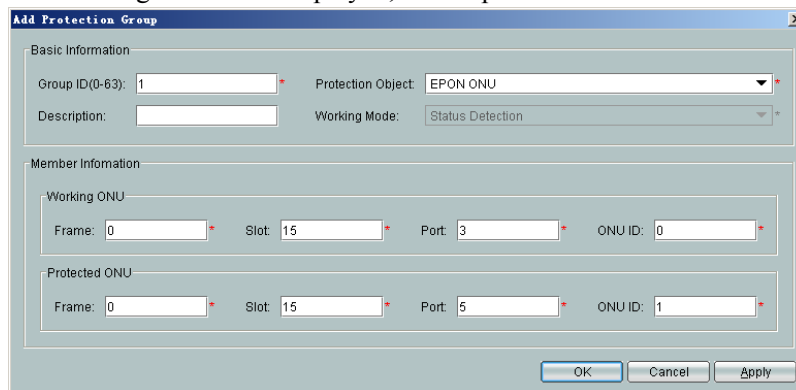
6. Click **OK**.

**2** Configure the protection ONU.

The procedure for configuring the protection ONU is similar to the procedure for configuring the working ONU. The difference is that **Protection Role** must be selected so that the ONU works as a protection ONU.

**3** Add the working ONU and protection ONU to the same protection group.

1. In the Main Topology, double-click the required NE in the **Physical Root** navigation tree, or right-click the required NE and choose **NE Explorer** from the shortcut menu.
2. Choose **Protection Group Management** from the navigation tree.
3. In the information list, right-click and choose **Add** from the shortcut menu.
4. In the dialog box that is displayed, set the parameters.



**Table 27-7** Key parameters required for adding a protection group

| Parameter         | Description                                                                                                                                                                                                                                                      | Settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Information |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Group ID          | <b>Definition:</b><br>Indicates the ID of the PG. It is used to uniquely identify a PG.                                                                                                                                                                          | <b>Range:</b><br>Numeral type. It ranges from 0 to 63.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Protection Object | <b>Definition:</b><br>Indicates the type of protection objects in a protection group.                                                                                                                                                                            | <b>Range:</b><br>Enumerated type. The options are as follows: <ul style="list-style-type: none"> <li>● Active main board and standby main board</li> <li>● LAG of active main board and standby main board</li> <li>● Port of active main board and standby main board</li> <li>● Port of ETH NNI</li> <li>● LAG member of ETH NNI</li> <li>● Port of EPON UNI</li> <li>● Port of GPON UNI</li> <li>● STM-1 network port</li> <li>● EPON ONU</li> <li>● GPON ONU</li> </ul> |
| Description       | <b>Definition:</b><br>Specifies the descriptions for a PG. It is easy to understand and remember.                                                                                                                                                                | <b>Range:</b><br>Character string type. It consists of up to 64 characters.                                                                                                                                                                                                                                                                                                                                                                                                 |
| Working Mode      | <b>Definition:</b><br>Indicates the working mode for PG testing.<br><b>Relation to other parameters:</b><br>When <b>Protection Object</b> is <b>Port of active main board and standby main board</b> or <b>Port of ETH NNI</b> , <b>Working Mode</b> can be set. | <b>Range:</b><br>Enumerated type. The options are as follows: <ul style="list-style-type: none"> <li>● Status Detection</li> <li>● Time Delay Detection</li> <li>● Undirection Detection</li> <li>● Smart link</li> <li>● Smart link load-balance</li> </ul>                                                                                                                                                                                                                |
| Working ONU       |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



| Parameter       | Description                                                                                                                             | Settings |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------|
| Frame/Slot/Port | <b>Definition:</b><br>Indicates the shelf number, slot number, and port number on the device, to which the working ONU is connected.    | -        |
| ONU ID          | <b>Definition:</b><br>Indicates the ID of the working ONU. It is used to identify an ONU.                                               | -        |
| Protection ONU  |                                                                                                                                         |          |
| Frame/Slot/Port | <b>Definition:</b><br>Indicates the shelf number, slot number, and port number on the device, to which the protection ONU is connected. | -        |
| ONU ID          | <b>Definition:</b><br>Indicates the ID of the protection ONU. It is used to identify an ONU.                                            | -        |

5. Click **OK**.

----**End**



# 28 Replacing an MDU Quickly

---

In the FTTX network, a large number of optical network units (ONUs) work. If a faulty ONU is replaced with a new one, you need to only enter the authentication information, after which the previous configuration data will be applied automatically. The following considers the MA5620E as an example to describe how to quickly replace an MDU.

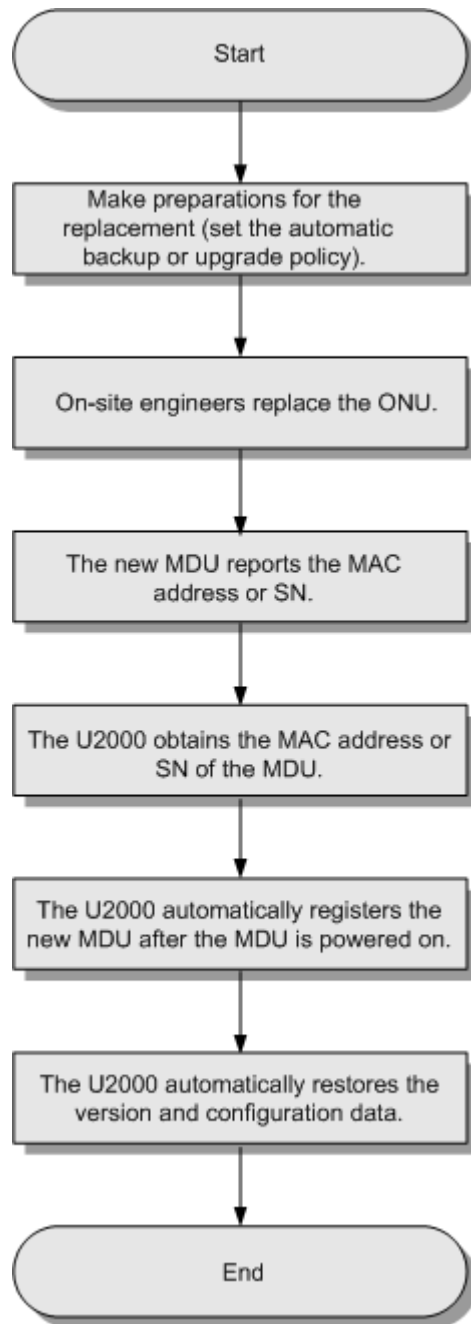
## Context

When a faulty ONU is replaced with a new one, you need to connect the new ONU to the relevant port of the OLT through an optical fiber and bind the authentication information of the new ONU. After the new ONU goes online, the U2000 automatically applies service configuration data to the new ONU. Therefore, you need not reconfigure the data.

Advantages:

- An MDU is replaced easily and the OSS need not reapply configuration data.
- The MAC address and SN of the MDU are displayed only on the OLT and U2000. MDUs are differentiated according to their IP addresses in the OSS.
- The on-site construction is simple and no configuration data is required.
- The version and configuration data can be restored automatically.

**Figure 28-1** shows the flowchart for quickly replacing an MDU.

**Figure 28-1** Flowchart for quickly replacing an MDU**CAUTION**

Make sure that any of the FTP, TFTP, and SFTP services are running.

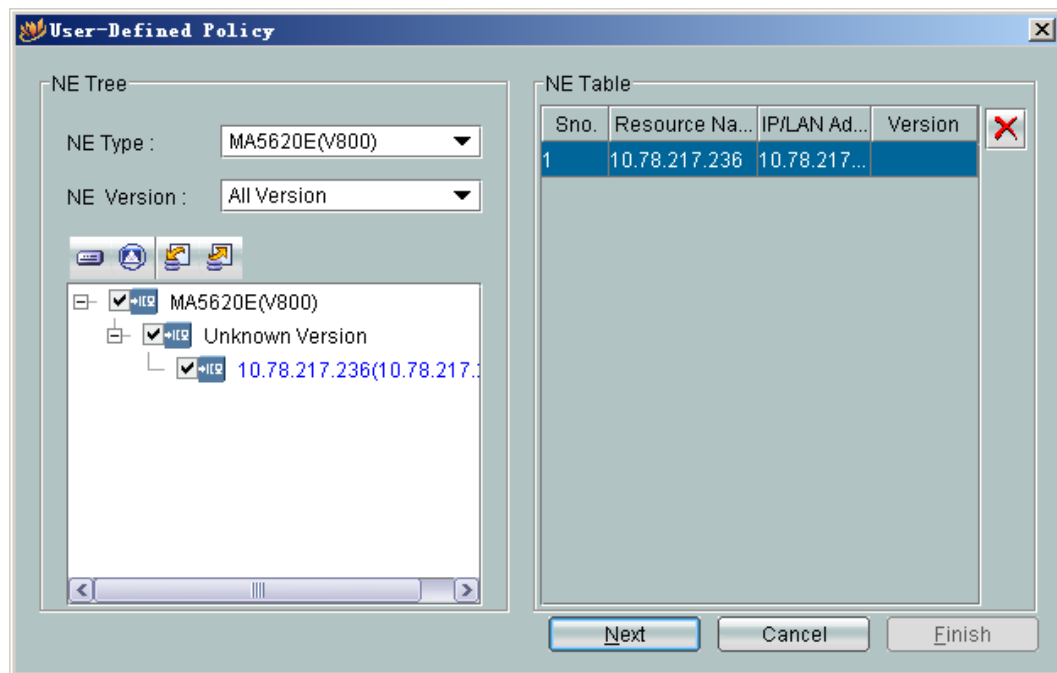
---

**Procedure**

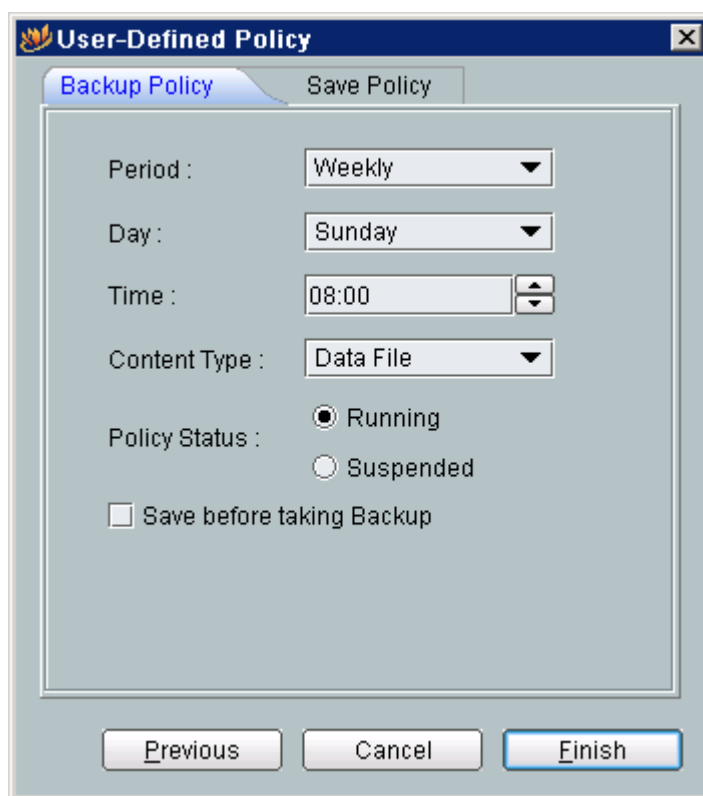
- 1 Set the automatic backup policy.

1. Choose **Administration > NE Software Management > User-Defined Policy** from the main menu.
2. In the **User-Defined Policy** dialog box, set **NE Type** and **NE Version**, and click **Next**, as shown in **Figure 28-2**.

**Figure 28-2** User-defined policy (1)




3. In the **User-Defined Policy** dialog box, set parameters on the **Backup Policy** and **Save Policy** tab pages as required, and click **Finish**, as shown in **Figure 28-3**.

**Figure 28-3** User-defined policy (2)

- 2 (Optional) Set the automatic upgrade policy.

For details, see [17.3.1 Upgrading MDUs in Batches Automatically](#).

- 3 On-site engineers replace the ONU.
- 4 In the U2000 window, right-click the new ONU that is used to replace the faulty ONU, such as MA5620E, and choose **EPON Option > Replace ONU** from the shortcut menu.
- 5 In the **Replace ONU** dialog box, click the **Basic Info** tab, set **Auth Way** to **MAC Address** in the **Auth Info** field, and then click  next to **MAC**.
- 6 In the **MAC Address List** dialog box, select a record and click **OK**.
- 7 In the **Replace ONU** dialog box, click the **Basic Info** tab and click **OK**.

**CAUTION**

After the MDU is powered on, the U2000 automatically registers the MDU, and restores the version and configuration data of the MDU.

----End

# 29 Fault Locating Based on Alarms

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## About This Chapter

This topic describes how to mask a large number of correlative alarms of low severity, and discard or combine invalid intermittent alarms or repeated events by means of alarm correlation analysis in FTTx scenarios. In this way, you can focus on root alarms and locate faults quickly and accurately.

### [29.1 Introduction to the Alarm Correlation Analysis of FTTx Services](#)

This topic describes the background and means of alarm correlation analysis.

### [29.2 Correlative Relationship Between FTTx Alarms](#)

This topic considers the diagram of the correlative relationship between GPON FTTx alarms as an example to describe the relationship between root alarms and correlative alarms.

### [29.3 Alarm Locating](#)

This topic describes the alarm locating flow and how to analyze alarms according to alarm correlation rules.

## 29.1 Introduction to the Alarm Correlation Analysis of FTTx Services

This topic describes the background and means of alarm correlation analysis.

### Background

A large number of ONTs are widely distributed in harsh environments in FTTx scenarios. As a result, many alarms are generated and most of them are insignificant alarms that users do not concern. Therefore, how to effectively report faults and accurately rectify the faults is a top concern of carriers.

The U2000 provides various analysis means including alarm/event correlation analysis, intermittent alarm analysis, repeated event analysis, alarm/event frequency analysis, and time analysis of acknowledged and uncleared alarms. These means can analyze and suppress alarms from different aspects to help users focus on root alarms and locate faults quickly.

### Alarm Correlation Analysis

According to configured correlation rules, the U2000 automatically handles relevant alarms or events, thus improving the handling efficiency. For information on how to configure correlation rules, choose **Working with the NMS > Alarm Management > Analyzing the Root Alarm of a Fault** from the navigation tree in the Help and view relevant contents in the right pane.

- **Correlation analysis**

In relevant alarms, the causes of the alarms are associated with each other and one alarm is the root cause of other alarms. [Table 29-1](#) provides relevant alarms predefined for FTTx services.

**Table 29-1** Relevant alarms

| Service Type | Root Alarm                                                                                                   | Correlative Alarm                                                                                           |
|--------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| GPON         | The communication between the service board and the control board fails.                                     | The feed fiber is broken or OLT can not receive any expected optical signals(LOS).                          |
|              | The feed fiber is broken or OLT can not receive any expected optical signals(LOS).                           | The distribute fiber is broken or OLT can not receive expected optical signals from ONT(LOS <sub>i</sub> ). |
|              |                                                                                                              | The GPON ONT gets offline.                                                                                  |
|              | The distribute fiber is broken or OLT can not receive expected optical signals from ONT (LOS <sub>i</sub> ). | The GPON ONT gets offline.                                                                                  |
|              |                                                                                                              | The loss of GEM channel delineation (LCDG <sub>i</sub> ) occurs.                                            |



| Service Type | Root Alarm                                                                                      | Correlative Alarm                                                                                                                                                                    |
|--------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | The dying-gasp of ONTi (DGi) is generated.                                                      | The distribute fiber is broken or OLT can not receive expected optical signals from ONT(LOSi).<br>The feed fiber is broken or OLT can not receive any expected optical signals(LOS). |
| EPON         | The communication between the service board and the control board fails.                        | The feed fiber is broken or OLT can not receive any expected optical signals(LOS).                                                                                                   |
|              | The feed fiber is broken or OLT can not receive any expected optical signals(LOS).              | The distribute fiber is broken or OLT can not receive expected optical signals from ONT(LOSi).<br>The EPON ONT gets offline.                                                         |
|              | The distribute fiber is broken or OLT can not receive expected optical signals from ONT (LOSi). | The EPON ONT gets offline.                                                                                                                                                           |
|              | The dying-gasp of ONTi (DGi) is generated.                                                      | The distribute fiber is broken or OLT can not receive expected optical signals from ONT(LOSi).<br>The feed fiber is broken or OLT can not receive any expected optical signals(LOS). |

You can define more relevant alarms by using the correlation analysis function.

Maintenance engineers cannot locate and analyze a fault quickly if too many correlative alarms of low severity exist. Thus, you can configure correlation rules on the U2000 so that the U2000 directly discards non-root alarms that match the correlation rules, marks alarms as correlative alarms (saves them to the suppression library) or lowers their severity levels, and raises the severity levels of root alarms to draw the attention of maintenance engineers.

- **Intermittent alarm/repeated event analysis**

According to configured intermittent alarm/repeated event analysis rules, the U2000 discards intermittent alarms or repeated events that match the rules, and displays only the first repeated event or cleared intermittent alarm.

If intermittent alarms are reported continuously within a short period of time, the cause may be that an NE or a service switches between the normal state and the abnormal state repeatedly. To handle these alarms in time, you can configure intermittent alarm analysis rules to raise their severity levels, thus drawing the attention of maintenance engineers.

In addition, if you double-click the required OLT device on the **Physical Root** navigation tree on the **Main Topology** tab page, choose **NE Properties > Security > Trap** from the

navigation tree, enable the **Alarm anti-jitter switch** and set **Alarm anti-jitter interval**, intermittent alarms are periodically masked on NEs.

- **Alarm/Event frequency analysis**

According to configured alarm/event frequency analysis rules, when the number of different alarms or events that are generated within a period of time exceeds the threshold, it is considered that these alarms or events are related to each other. Then, the U2000 redefines the alarm severity level, generates a local U2000 alarm, or masks these alarms and generates a local U2000 alarm according to the configured rules.

- **Time analysis of acknowledged and uncleared alarms**

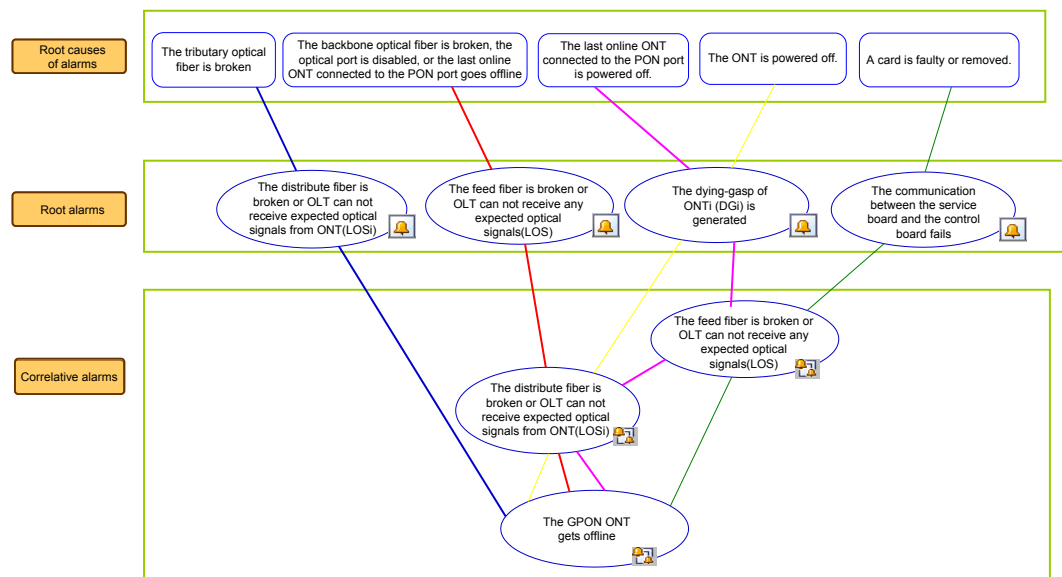
For acknowledged alarms that are not cleared for a long time, the U2000 can raise the alarm severity level by using the acknowledged and uncleared alarm analysis function. In this way, maintenance engineers pay attention to and handle these alarms in time.

## 29.2 Correlative Relationship Between FTTx Alarms

This topic considers the diagram of the correlative relationship between GPON FTTx alarms as an example to describe the relationship between root alarms and correlative alarms.

**Figure 29-1** shows the diagram of the correlative relationship between GPON FTTx alarms.



**Figure 29-1** Diagram of the correlative relationship between GPON FTTx alarms



**Figure 29-1** shows a group of relevant alarms identified in different colors of lines. For example, in the diagram, the correlative alarms connected in red lines indicate that the root alarm "The feed fiber is broken or OLT can not receive any expected optical signals(LOS)" will be generated when the backbone optical fiber is broken, the optical port is disabled, or the only online ONT connected to the PON port goes offline. This root alarm will trigger a correlative alarm "The distribute fiber is broken or OLT cannot receive expected optical signals from ONT(LOSi)", and the correlative alarm will trigger another correlative alarm "The GPON ONT gets offline". The alarm triggers another correlative alarm and functions as the root alarm of the correlative alarm.

One correlative alarm may be triggered by different root alarms. When a root alarm is cleared, the correlative alarm will not be cleared. For example, the alarms "The feed fiber is broken or

OLT can not receive any expected optical signals(LOS)" and "The dying-gasp of ONTi (DGi) is generated" trigger the alarm "The distribute fiber is broken or OLT can not receive expected optical signals from ONT(LOSi). When the alarm "The feed fiber is broken or OLT can not receive any expected optical signals(LOS)" is cleared, the alarm "The distribute fiber is broken or OLT can not receive expected optical signals from ONT(LOSi)" may not be cleared.

If the check box next to **Display correlative alarms** is selected during alarm filtering on the U2000,  is displayed in the first line of the root alarm list and  is displayed in the first line of the correlative alarm list in the **Browse Current Alarm** window. Right-click a root or correlative alarm and choose **Query Correlative Alarms/Query Root Alarms** from the shortcut menu to view the correlative alarm or root alarm of the selected alarm.

You can focus on only root alarms during alarm analysis and handle major alarms to locate and rectify faults quickly.

## 29.3 Alarm Locating

This topic describes the alarm locating flow and how to analyze alarms according to alarm correlation rules.

### [29.3.1 Alarm Locating Flow](#)

This topic describes the alarm locating flow and related handling policies.

### [29.3 Alarm Locating](#)

This topic describes the alarm locating flow and how to analyze alarms according to alarm correlation rules.

### [Alarm Locating](#)

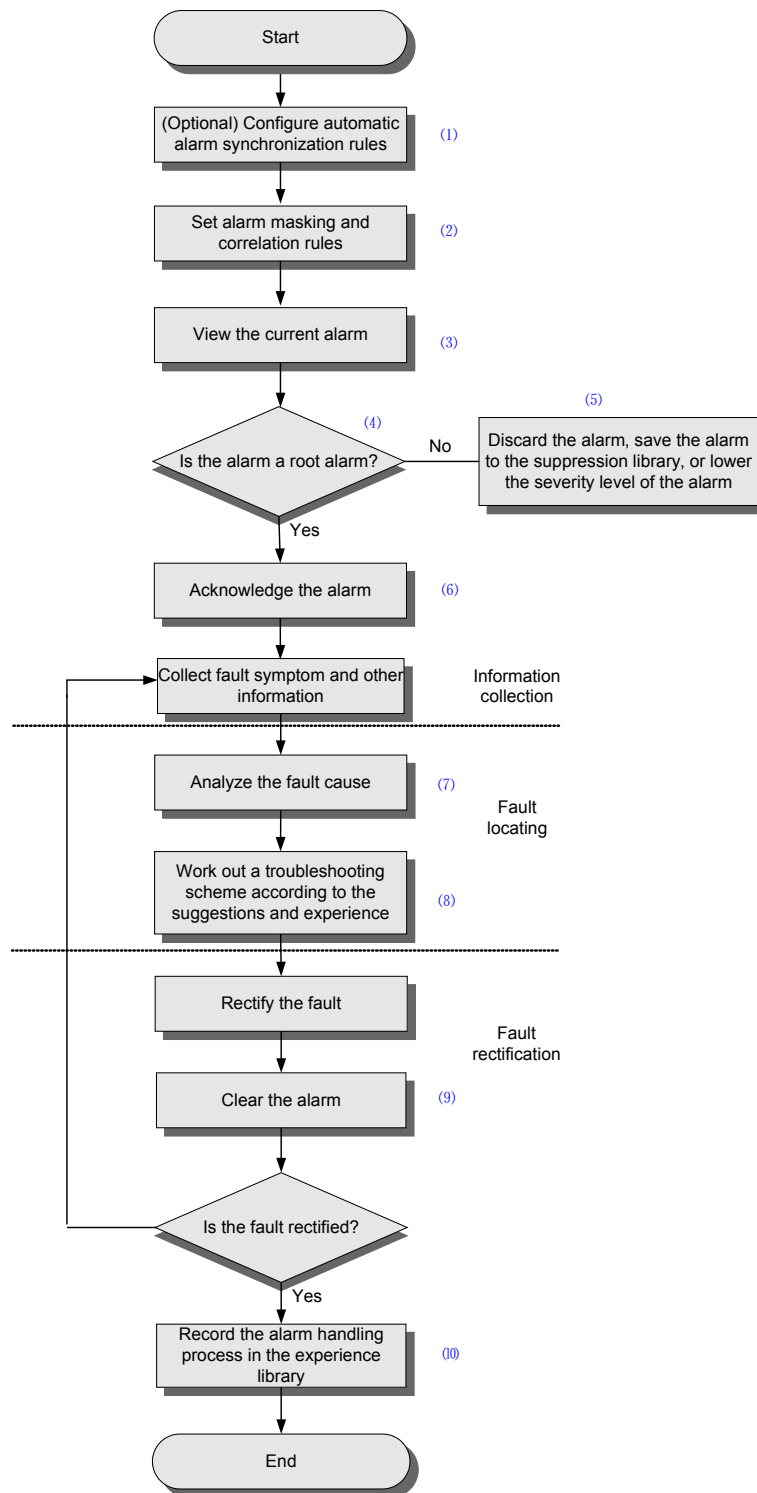
This topic describes how to locate an alarm according to the alarm correlation rules.

## 29.3.1 Alarm Locating Flow

This topic describes the alarm locating flow and related handling policies.

**Figure 29-2** shows the alarm locating flowchart.

Figure 29-2 Alarm locating flowchart



**(1)** Configure automatic alarm synchronization rules. These rules enable the U2000 to automatically synchronize alarms after the communication between the U2000 and an NE resumes or the U2000 is restarted. The synchronization ensures that alarms on the U2000 and NEs are the same.

- (2) Set alarm handling policies by means of alarm masking and correlation rules.
  - Alarm masking: Masks unimportant alarms to prevent a large amount of redundant information.
  - Correlation analysis: Sets the policies of handling root alarms and correlative alarms, such as raising the severity levels of root alarms, and discarding correlative alarms, marking alarms as correlative alarms (saving to the suppression library) or reducing their severity levels.
  - Intermittent alarm/event analysis: Reserves only the first repeated alarm or discards intermittent alarms.
  - Alarm/Event frequency analysis: Sets the policy of handling alarms when the number of alarms that are generated within a certain period of time exceeds the threshold.
  - Time analysis of acknowledged and uncleared alarms: Raises the severity level of acknowledged alarms that are not cleared for a long time so that the alarms can be handled in time.
- (3) View important alarms that are filtered by alarm source, alarm severity, type, or status. You can query correlative alarms only after you select the check box next to **Display correlative alarms**.
- (4) and (5) Focus on the root alarm. According to configured rules, correlative alarms are discarded or marked as correlative alarms (saved to the suppression library), or their severity levels are lowered.
- (6) Determine whether the fault that triggers the alarm can be rectified according to the alarm details. If yes, properly handle and acknowledge this alarm.
- (7) In the **Browse Current Alarm** window, select the alarm and view the **Details** area and **Reason, Alarm Description, and Experience** in the **Handling Suggestion** area in the lower pane to analyze the cause of the alarm. In the case of the MA5600T or MA5680T, click **Click here to show detail Information**. The alarm reference window in the Help is displayed and you can view the alarm details in this window.
- (8) Rectify the fault according to the handling suggestions and experience in the **Handling Suggestion** area. In the case of the MA5600T or MA5680T, click **Click here to show detail Information**. The alarm reference window in the Help is displayed and you can view the alarm handling process in this window.
- (9) Manually clear the alarm if the U2000 cannot automatically clear the alarm or this alarm does not exist on an NE. If the alarm is cleared, it indicates that the fault that triggers the alarm is rectified.
- (10) Record the handling process of the alarm or event in the maintenance experience library so that other engineers can refer to the handling process when handling alarms or events of the same type.

## 29.3.2 Alarm Locating

This topic describes the alarm locating flow and how to analyze alarms according to alarm correlation rules.

### Alarm Locating

This topic describes how to locate an alarm according to the alarm correlation rules.

## Prerequisite


When configuring alarm correlation rules by importing a configuration file, make sure that the **CorRuleForNemgrAccess.xml** configuration file that stores alarm correlation rules is saved in the `\U2000\server\etc\conf` directory.

## Context

You can import the configuration file or configure **Correlation Analysis** on the U2000 client to configure alarm correlation rules. By importing a configuration file, you can configure correlation rules in batches.

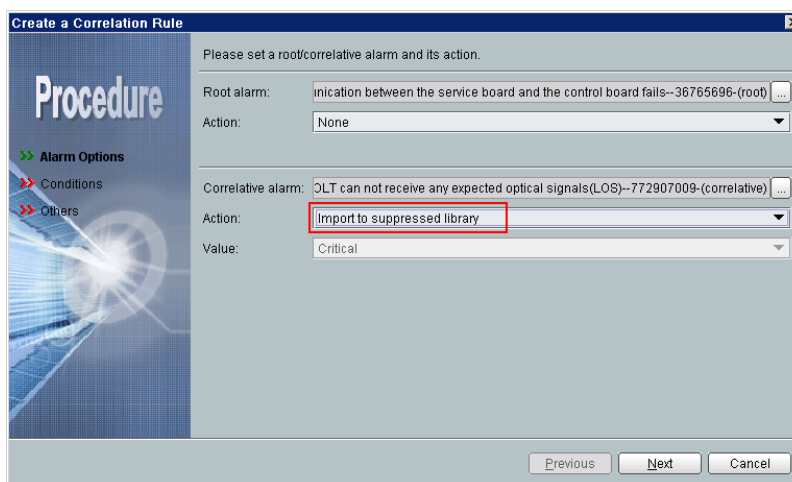
## Procedure

- 1 Do as follows to configure alarm correlation rules.
    - Method 1: Importing a configuration file
      1. Do as follows to import the configuration file that stores alarm correlation rules:
        - On a Windows-based U2000 server, run the `>svc_fm_import_internal_corRule CorRuleForNemgrAccess.xml` command in the command line interface (CLI).
        - On a Solaris- or Linux-based U2000 server, log in to the OS as user **root** and run the following commands:

```
./export/home/nmsuser/.profile
svc_fm_import_internal_corRule CorRuleForNemgrAccess.xml
```
-  **NOTE**
- These commands take effect only when **Fault Process** is running.
  - The imported configuration file, **CorRuleForNemgrAccess.xml**, defines relevant alarms provided in [Table 29-1](#).
2. Do as follows to enable the default correlation analysis function of the U2000 server:
    - On a Windows-based U2000 server, run the `>SettingTool -cmd setparam -path /imap/ifms/UsingHeatMan -value "true"` command in the CLI.
    - On a Solaris- or Linux-based U2000 server, run the `#SettingTool -cmd setparam -path /imap/ifms/UsingHeatMan -value "true"` command.
  3. Log in to the System Monitor client and restart **Fault Process**.
  4. Log in to the U2000 client and choose **Fault > Settings > Correlation** from the main menu.
  5. Click the **Default Correlation** tab. Clear the **Enable** check box next to a correlation rule that does not need to be enabled.

| Alarm/Event Frequency Analysis          |                                     | Intermittent Alarm/Repeat Event Analysis                                |                      | Acknowledged and Uncleared Alarm Time Analysis |  |
|-----------------------------------------|-------------------------------------|-------------------------------------------------------------------------|----------------------|------------------------------------------------|--|
| Default Correlation                     |                                     |                                                                         | Correlation Analysis |                                                |  |
| Name                                    | Enable                              | Description                                                             |                      |                                                |  |
| nmgr_access_GPON_board_fault_1          | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_GPON_board_fault_1_for_MA56 | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_GPON_board_fault_1_for_MA56 | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_GPON_board_fault_1_for_MA56 | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_GPON_board_fault_1_for_MA56 | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_GPON_LOS_1                  | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_GPON_LOS_1_for_MA5600TV8    | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_GPON_LOS_1_for_MA5680       | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_GPON_LOS_1_for_MA5606       | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_GPON_LOS_1_for_MA5603       | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_EPON_board_fault_1          | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_EPON_board_fault_1_for_MA56 | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_EPON_board_fault_1_for_MA56 | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_EPON_board_fault_1_for_MA56 | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_EPON_board_fault_1_for_MA56 | <input checked="" type="checkbox"/> | The communication between the service board and the control board fails |                      |                                                |  |
| nmgr_access_GPON_LOS_2                  | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_GPON_LOS_2_for_MA5600TV8    | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_GPON_LOS_2_for_MA5680       | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_GPON_LOS_2_for_MA5606       | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_GPON_LOS_2_for_MA5603       | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the OLT                              |                      |                                                |  |
| nmgr_access_EPON_LOS_1                  | <input checked="" type="checkbox"/> | The loss of signal (LOS) occurs at the PON port                         |                      |                                                |  |

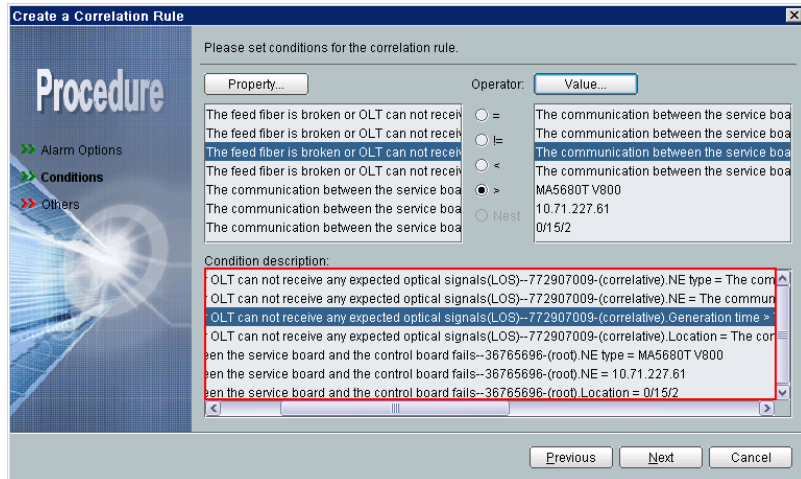
- Method 2: Configuring correlation analysis on the U2000 client
  1. Choose **Fault > Settings > Correlation** from the main menu.
  2. In the **Correlation** window, click the **Correlation Analysis** tab.
  3. On the **Correlation Analysis** tab page, click **Add** to set relevant parameters.
    - a. Configure root or relevant alarms and their handling policies. For example, select **Import to suppressed library** for a relevant alarm to define the alarm as the correlative alarm of a root alarm.



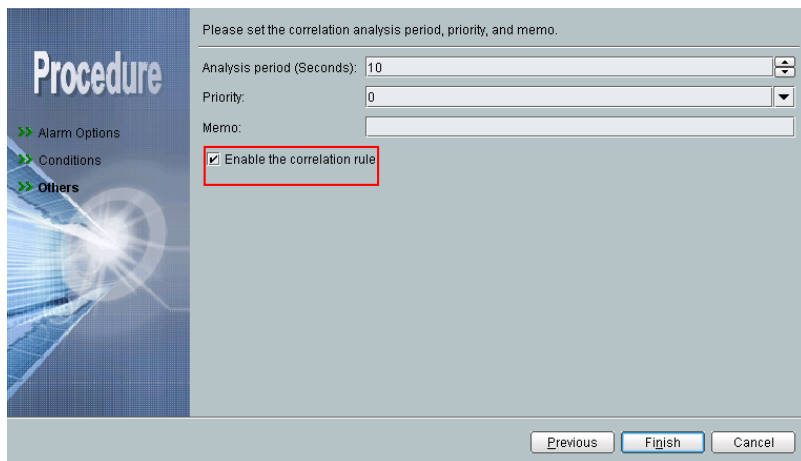
**NOTE**

You can select any of the following handling policies for relevant alarms from the **Action** drop-down list:

- **Redefine Level:** Redefines the severity levels of relevant alarms to lower the severity levels of alarms that do not need to be concerned.
  - **Import to suppressed library:** Defines a relevant alarm as the correlative alarm of a root alarm.
  - **Discard:** Discards relevant alarms.
- b. Click **Next** to set the attributes of root alarms and correlative alarms. Specifically, set the generation time of correlative alarms to be later than that of root alarms and set the locating information of correlative alarms to be the same as that of root alarms.



- c. Click **Next**. Then, set the analysis period and priority, and select the check box next to **Enable the correlation rule**.

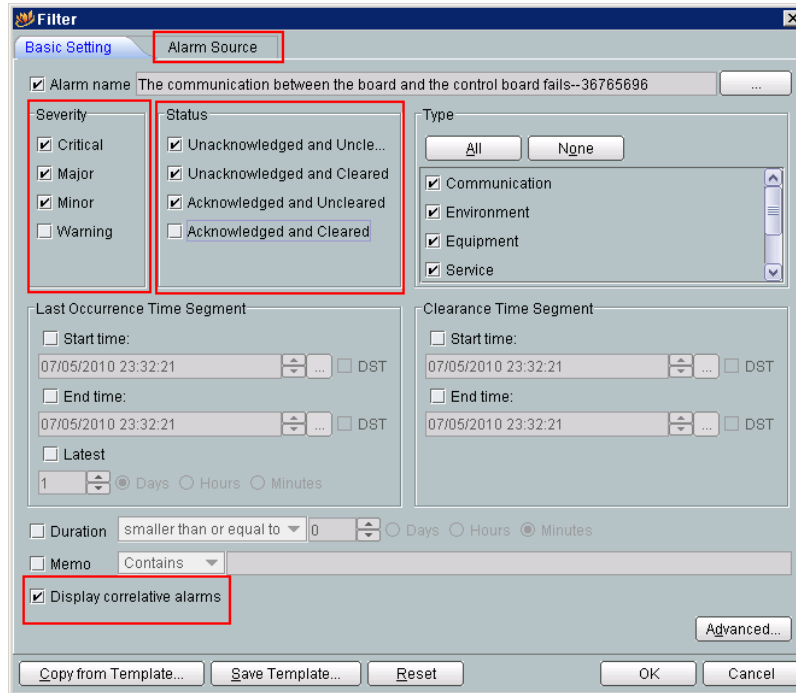


- d. Click **Finish**.

## 2 Query relevant alarms.

1. Choose **Fault > Browse Current Alarm** from the main menu.
2. In the dialog box that is displayed, specify the filter criteria and select the check box next to **Display correlative alarms** on the **Basic Setting** tab page. Click the **Alarm Source** tab page to select required alarm sources.

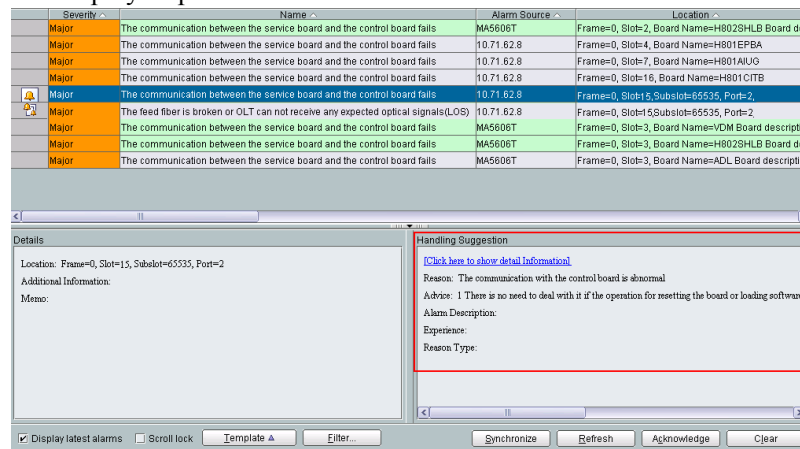




3. Right-click a root or correlative alarm and choose **Query Correlative Alarms/Query Root Alarms** from the shortcut menu. The correlative or root alarm of this alarm is displayed.

### 3 Handle relevant alarms.

- Perform any of the following operations to handle root alarms in the **Browse Current Alarm** window.
  - Right-click a root alarm and choose **Details** from the shortcut menu. The information about the generation cause, handling suggestions, and additional information of this alarm is displayed.
  - View information in the **Handling Suggestion** area in the lower pane and locate a fault according to the handling suggestions and experience.
  - In the case of the MA5600T or MA5680T, click **Click here to show detail Information** to view the information about alarm reference in the Help. Rectify the fault in a step by step manner.



- Do as follows to handle correlative alarms.

- Right-click a correlative alarm and choose **Modify Severity** from the shortcut menu. Then, change the severity level of the alarm to a lower severity level.
- If a large number of insignificant alarms are generated, choose **Fault > Settings > Mask Rule** from the main menu. Then, set alarm masking policies to reduce redundant alarms.

---End

# 30 FTTx Remote Fault Diagnosis

---

## About This Chapter

This topic describes the scheme of FTTx remote fault diagnosis implemented through the fault diagnosis platform of the U2000.

### [30.1 Diagnosing a Service Fault Through the Fault Diagnosis Platform](#)

This topic describes how to diagnose a service fault through the fault diagnosis platform of the U2000.

## 30.1 Diagnosing a Service Fault Through the Fault Diagnosis Platform

This topic describes how to diagnose a service fault through the fault diagnosis platform of the U2000.

### 30.1.1 Fault Diagnosis Platform

This topic introduces the fault diagnosis platform.

### 30.1.2 Application Scope of Fault Diagnosis

This topic provides information about the application scope of the fault diagnosis platform.

### 30.1.3 Objects of Fault Diagnosis

This topic provides information about the diagnosed objects supported by the fault diagnosis platform.

### 30.1.4 Diagnosing the Faults of All Broadband Services

This topic describes how to diagnose the faults of all broadband services.

### 30.1.5 Performing a Health Check on Broadband Services

This topic describes how to perform a health check on broadband services.

### 30.1.6 Diagnosing the Faults of All Voice Services

This topic describes how to diagnose the faults of all voice services.

### 30.1.7 Performing a Health Check on Voice Services

This topic describes how to perform a health check on voice services.

### 30.1.1 Fault Diagnosis Platform

This topic introduces the fault diagnosis platform.

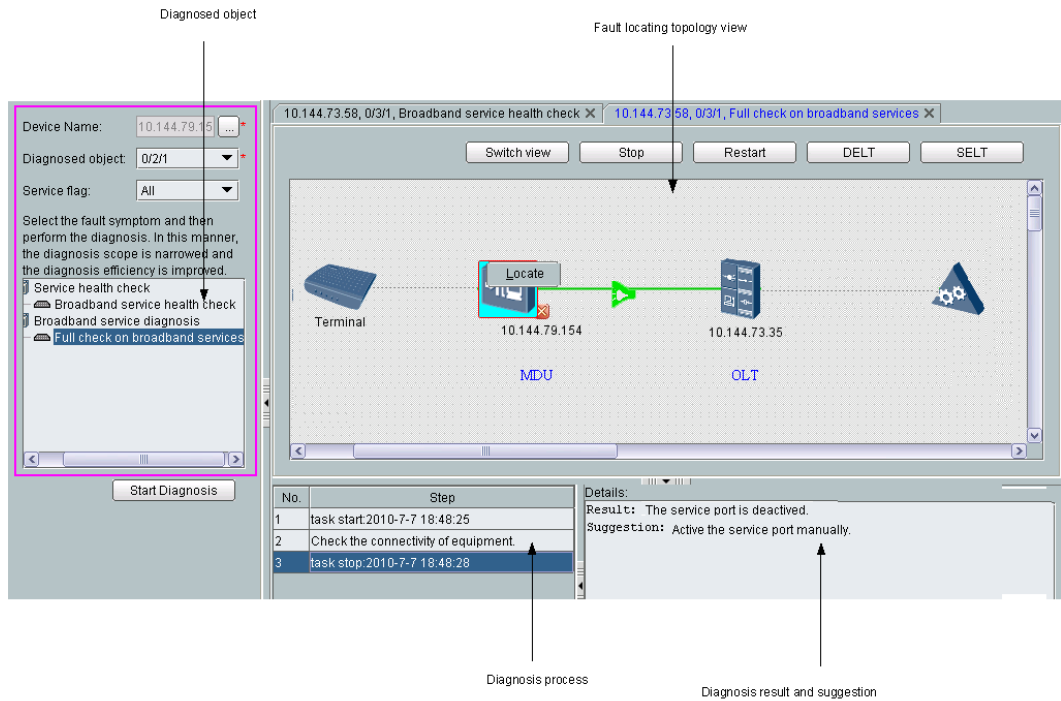
In the case of a fault, you need to locate the fault point. To make it, you need to check relevant parts one by one to locate the fault in the past. Locating a particular fault is implemented in a particular function module. Therefore, you need to switch between GUIs since these GUIs are not logically organized but independent of each other.

As the FTTx is applied in more and more situations, diagnosing access faults plays a crucial role.

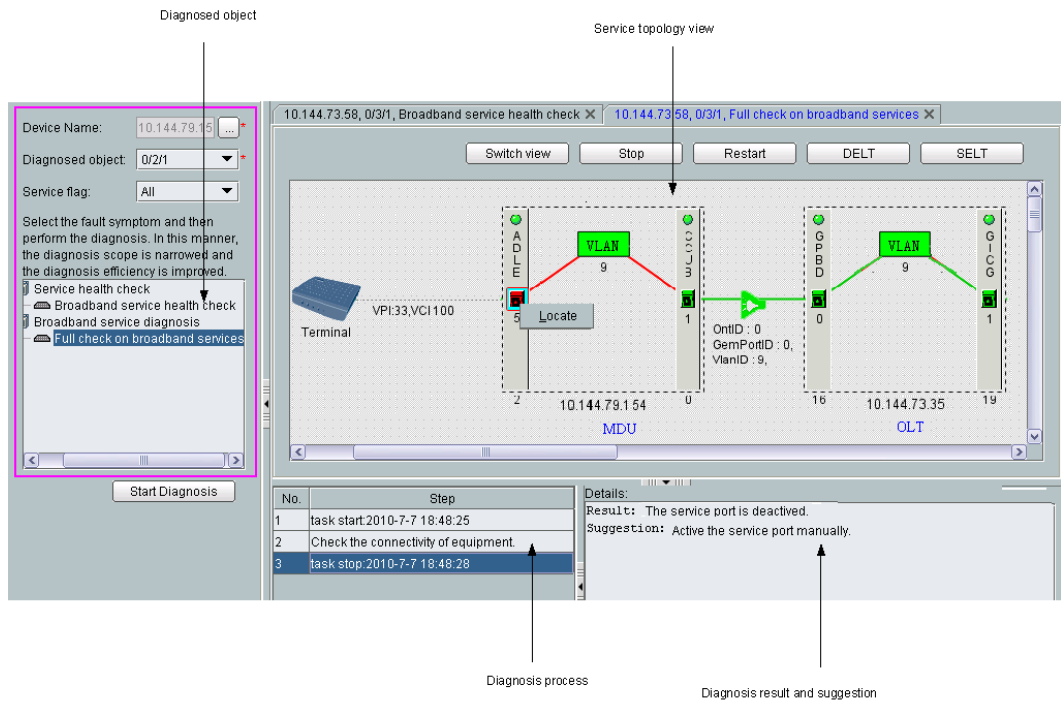
The fault diagnosis platform is a U2000-based platform for locating and diagnosing the faults in access devices. The platform depends on the service modules of the U2000, including the test module, alarm management module, and performance measurement module.


This topic considers the fault diagnosis for broadband services as an example to describe the functions of the fault locating topology view and the service topology, as shown in [Figure 30-1](#) and [Figure 30-2](#).

**Figure 30-1** Fault locating topology view and its functions for broadband services



**Figure 30-2** Service topology view and its functions for broadband services



Fault locating topology view: It directly displays the location of a fault, that is, OLT or MDU. The  icon indicates the fault and helps you to quickly and accurately locate the fault source. You can perform the following operations in this view:

- Right-click the fault source and choose **Locate** from the shortcut menu to switch to the NE Explorer to locate and rectify the fault further.
- Click **Switch View** to switch to the service topology view.

Service topology view: It directly displays the information about the diagnosed object, such as the service streams, VLANs, and physical resources. Red indicates that an object is faulty and green indicates that an object is in the normal state. Therefore, you can quickly and accurately locate the faulty object. You can perform the following operations in this view:

- Right-click the faulty port and choose **Locate** from the shortcut menu to switch to the related port in the NE Explorer. Then, check the port information to locate and rectify the fault further.
- Click **Switch View** to switch to the fault locating topology view.

Diagnosed object: A port of the MDU, service flag, and diagnosis type are selected in this area to reduce the diagnosis scope and improve diagnosis efficiency.

Diagnosis process: The start time and description of each operation in the diagnosis process are provided in this area.

Diagnosis result and suggestion: You can query the diagnosis result in this area and rectify faults according to the suggestion. To check whether the fault is rectified, click **Restart**.

## 30.1.2 Application Scope of Fault Diagnosis

This topic provides information about the application scope of the fault diagnosis platform.

The fault diagnosis platform can locate and diagnose the faults of the following services:

- Diagnosing the faults of all broadband services
- Performing a health check on broadband services
- Diagnosing the faults of all voice services
- Performing a health check on voice services

Broadband services also support dual ended loop testing (DELT) and single ended loop testing (SELT).

- SELT is used to locating the faults of a CO, line, or terminal separately and to provide reliable data for rectifying the faults. SELT is applicable to the scenario wherein the line quality needs to be simply tested and analyzed when a terminal is not installed but the line is available.
- DELT is used to locate performance problems of a line, such as low rate, noise, and attenuation. DELT is used for fault location after services are provisioned or used as a means of evaluating line quality to check whether the line quality meets the upgrade requirements during equipment upgrade.

Voice services also support call emulation. Performing tests on voice lines of remote MDUs at a CO facilitates maintenance on the voice lines. Call emulation is applicable to the following two scenarios:

- During service provisioning, the call test is performed on all ports to check whether all ports are in the normal state.
- During fault location, the call or callee emulation test is performed on the test port to locate the port fault.

### 30.1.3 Objects of Fault Diagnosis

This topic provides information about the diagnosed objects supported by the fault diagnosis platform.

The fault diagnosis platform can locate and diagnose the faults in the FTTB networks.

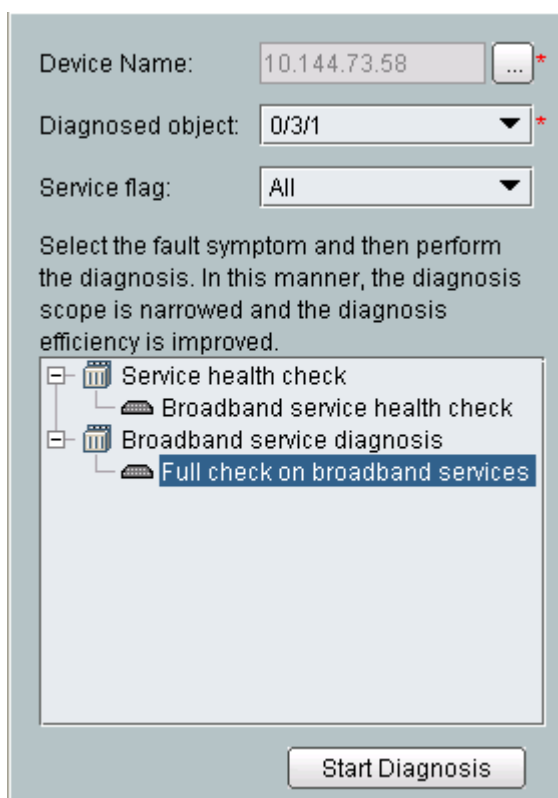
- OLT supported: MA5600T, MA5680T, and MA5603T
- MDU supported: all MDUs supported by NMSs

### 30.1.4 Diagnosing the Faults of All Broadband Services

This topic describes how to diagnose the faults of all broadband services.

#### Procedure

- 1 Choose **Fault > FTTx Fault Diagnosis** from the main menu.
- 2 In the left pane of the **Fault Diagnosis** window, set **Device Name**, **Diagnosed object**, and **Service flag**. In addition, choose the corresponding fault symptom from the navigation tree.

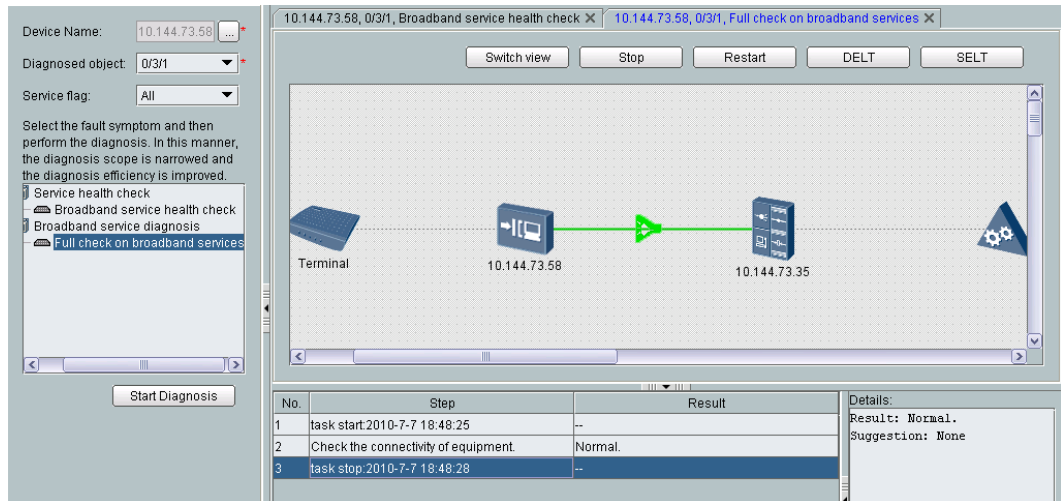


- 3 Click **Start Diagnosis**.

----End

#### Result

The diagnosis result is displayed after the diagnosis is complete.

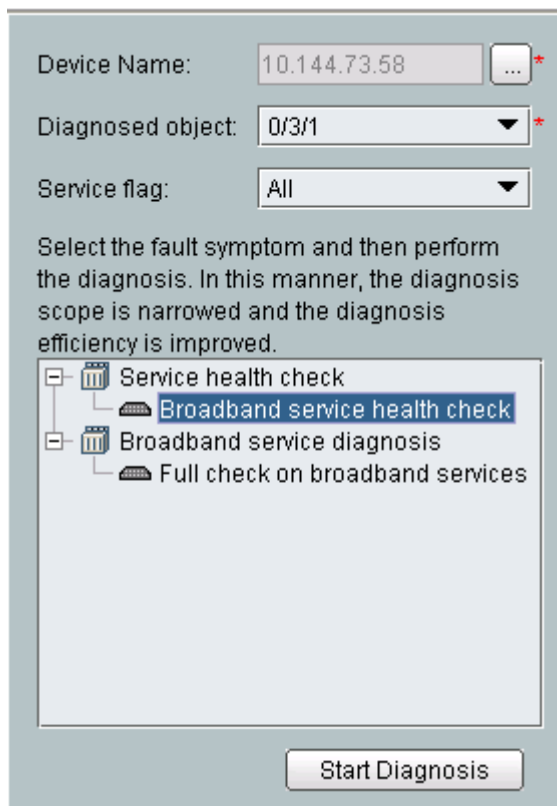


### 30.1.5 Performing a Health Check on Broadband Services

This topic describes how to perform a health check on broadband services.

#### Procedure

- 1 Choose **Fault > FTTx Fault Diagnosis** from the main menu.
- 2 In the left pane of the **Fault Diagnosis** window, set **Device Name**, **Diagnosed object**, and **Service flag**. In addition, choose the corresponding fault symptom from the navigation tree.



- 3 Click **Start Diagnosis**.

----End



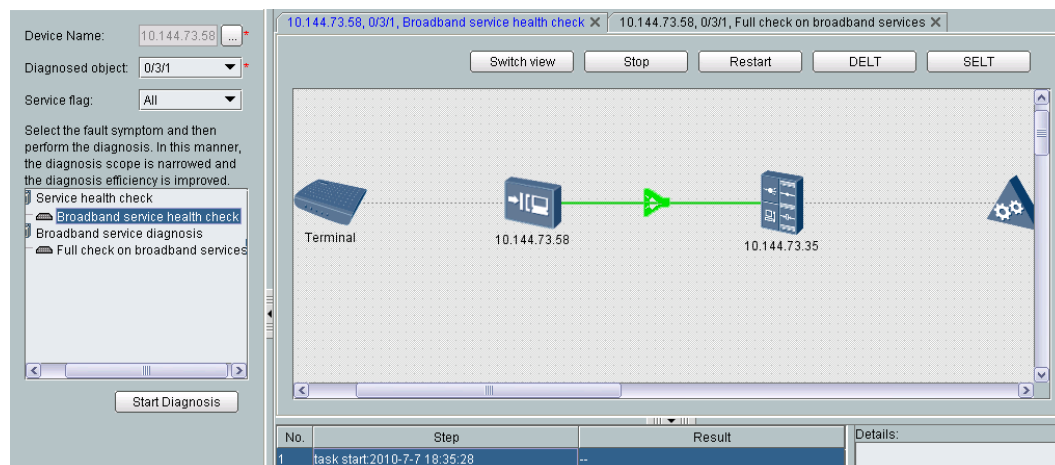
## Result

The diagnosis result is displayed after the diagnosis is complete.



A health check on broadband services is to collect data. During the check, the diagnosis continues even if a fault is detected.

---

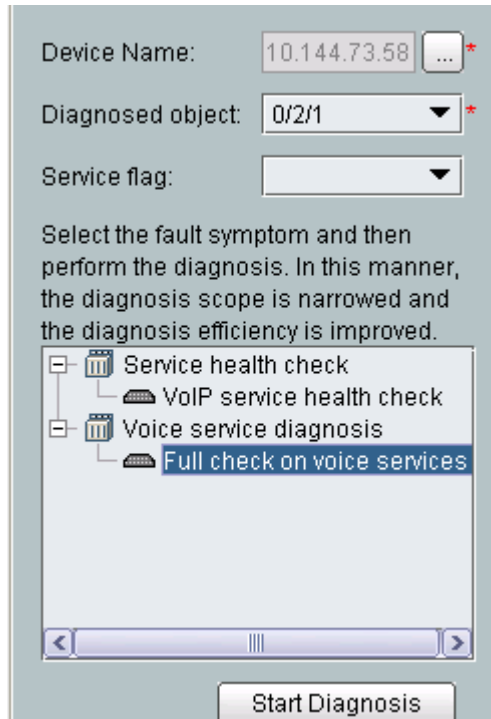


### 30.1.6 Diagnosing the Faults of All Voice Services

This topic describes how to diagnose the faults of all voice services.

#### Procedure

- 1 Choose **Fault > FTTx Fault Diagnosis** from the main menu.
- 2 In the left pane of the **Fault Diagnosis** window, set **Device Name**, **Diagnosed object**, and **Service flag**. In addition, choose the corresponding fault symptom from the navigation tree.

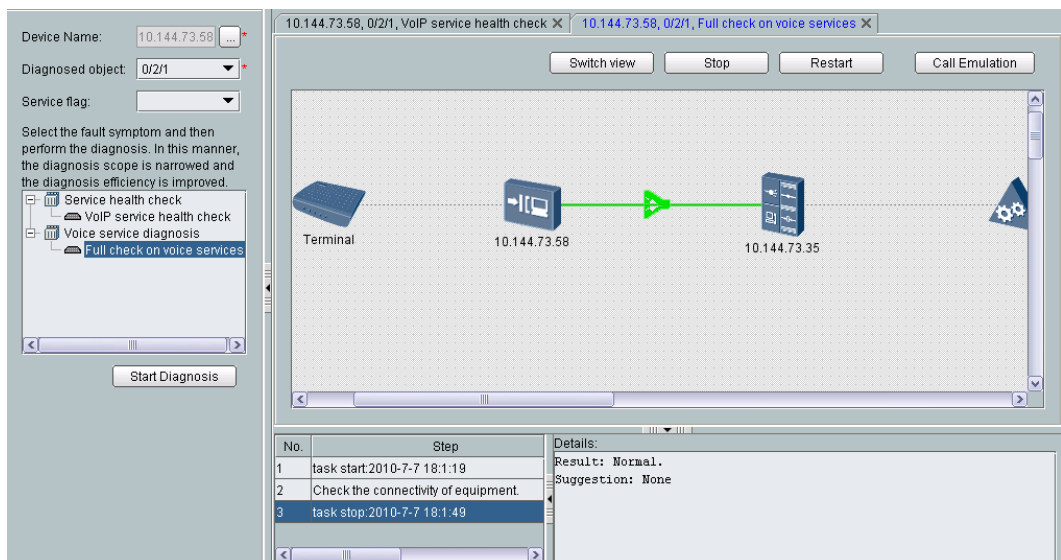


3 Click **Start Diagnosis**.

----End

## Result

The diagnosis result is displayed after the diagnosis is complete.

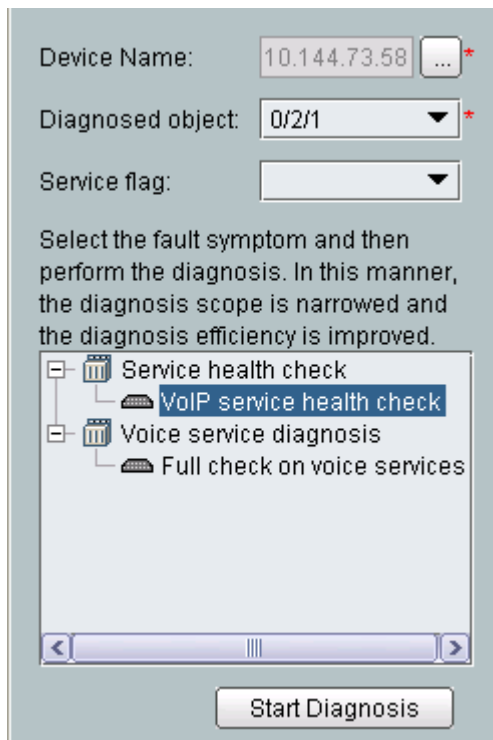


### 30.1.7 Performing a Health Check on Voice Services

This topic describes how to perform a health check on voice services.

## Procedure

- 1 Choose **Fault > FTTx Fault Diagnosis** from the main menu.
- 2 In the left pane of the **Fault Diagnosis** window, set **Device Name**, **Diagnosed object**, and **Service flag**. In addition, choose the corresponding fault symptom from the navigation tree.



- 3 Click **Start Diagnosis**.

----End

## Result

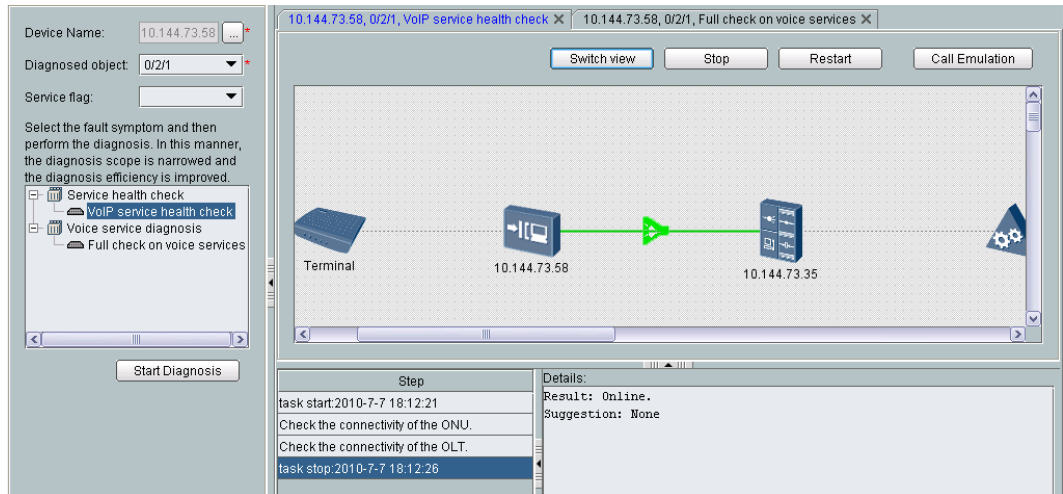
The diagnosis result is displayed after the diagnosis is complete.



### CAUTION

A health check on voice services is to collect data. During the check, the diagnosis continues even if a fault is detected.

---



# 31 Monitoring Real-Time Performance

---

This topic describes how to view real-time performance data and comprehensively manage performance, thus monitoring the real-time performance of each NE.

## Context

The following considers the EPON UNI port as an example to describe how to monitor the real-time performance.

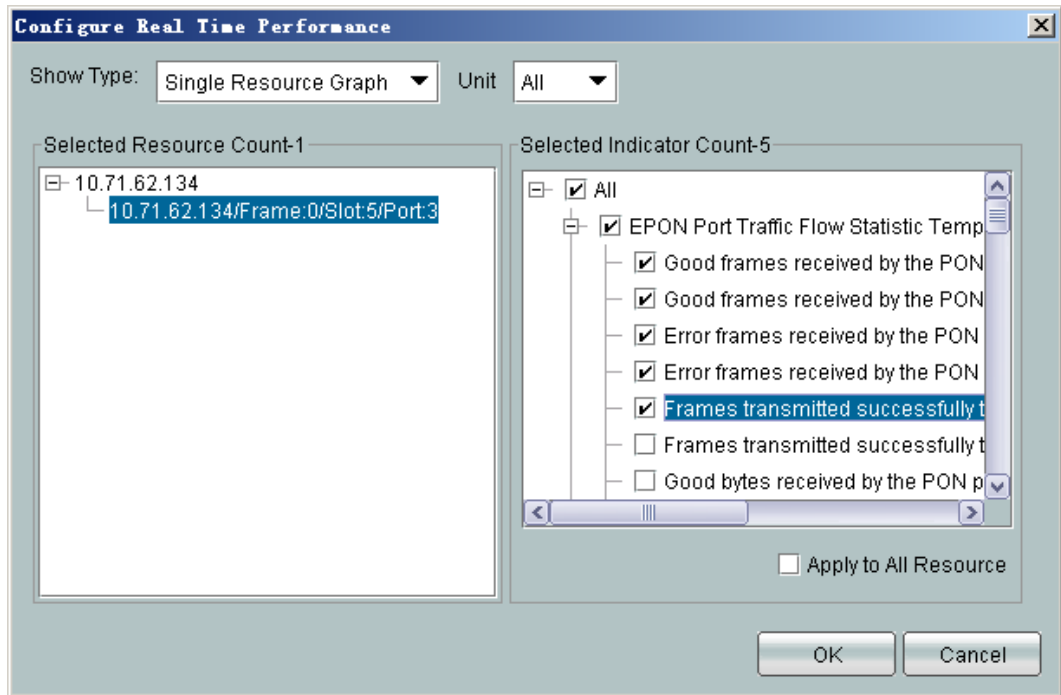
## Procedure

- 1 In the **Main Topology**, double-click the required device in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
- 2 Choose **EPON > EPON UNI Port** from the navigation tree.
- 3 In the dialog box that is displayed, click **Find** to display the records of specified EPON UNI ports.
- 4 Right-click an EPON UNI port and choose **Performance > Real time monitoring** from the shortcut menu.
- 5 In the **Configure Real Time Performance** window, select the indicator to be collected and click **OK**.



### NOTE

A maximum of 20 indicators can be selected at a time.



- 6 In the window that is displayed, view the real-time performance statistics of the EPON UNI port.

----End

# 32 Quick Cutover of FTTx Services

---

## About This Chapter

This topic describes the solution to quick cutover of FTTx services.

### Background

xPON ports on the existing network are not pluggable. When an xPON port or xPON card is faulty, or the network is adjusted, batch migration is implemented only by deleting the xPON port or adding all MDU data to the new xPON port (or new xPON card). This results in complex configuration data and long interruption of services.

To deal with this problem, the U2000 provides a service cutover mode, where MDUs connected to the faulty xPON port of a device are cut over to another xPON port of the same device in batches. This implements simple and quick cutover.

### Unique Benefits

- The service cutover is simple and quick. User services can be recovered rapidly after an interruption.
- The on-site construction is simple. Only the optical fiber connected to the source xPON port needs to be migrated to the destination xPON port.

### Range and Restrictions

1. Only the service cutover inside a device is supported.
2. Only the port-level service cutover is supported and the card-level service cutover is not supported.
3. Different cards support different service configurations. Therefore, make sure that the cards where the source port and destination port reside are of the same type before the service cutover.
4. The service port ID changes after cutover.
5. The configuration of the source port is cleared after cutover.

#### [32.1 Cutting Over Services on a GPON Port](#)

This topic describes the flowchart and procedure for cutting over services on a GPON port.

### 32.2 Cutting Over Services on EPON Ports

This topic describes the flowchart and procedure for cutting over services on EPON ports.



## 32.1 Cutting Over Services on a GPON Port

This topic describes the flowchart and procedure for cutting over services on a GPON port.

### Guideline

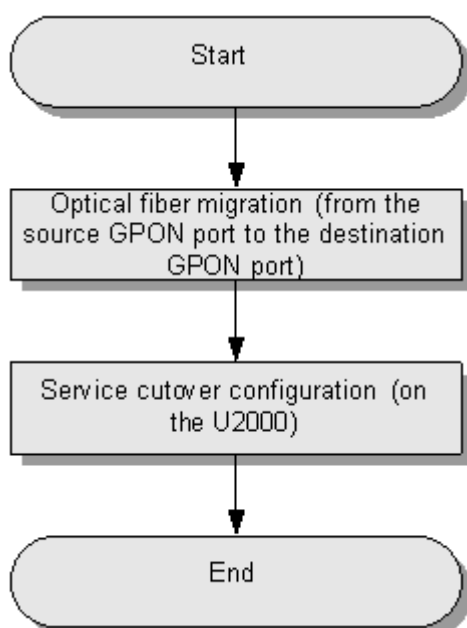
When backing up a GPON port on the OLT, you need to cut over services on the GPON port. If the working GPON port is faulty, you can cut over ONU services to a specified backup GPON port.

- The service cutover menu is not required for an activated and online GPON port.
- A particular service card may support a particular service. Hence, the source port and destination port in service cutover must be on the cards of the same type. In addition, you need to ensure that card configuration such as the CAR mode must be the same.
- Multicast services of cascading ports can be cut over.
- ONU names can be cut over. Rules for cutting over an ONU name are as follows:
  1. If a source ONU name is generated by default, do not copy the name. The destination ONU name is also generated by default.
  2. If a source ONU name is not generated by default or you add characters to a source ONU name generated by default, copy the source ONU name in cutover.


### Cutover Flowchart

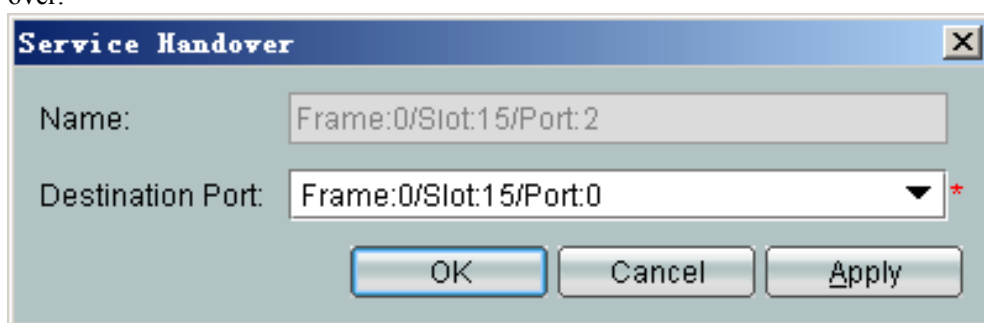
Figure 32-1 shows the flowchart for cutting over GPON port services.

Figure 32-1 Flowchart for cutting over GPON port services



## Procedure

1. Insert one end of an optical fiber into the destination GPON port. The other end of the fiber is connected to the source GPON port.
2. In the Main Topology, double-click the required device in the **Physical Root** navigation tree, or right-click the required device and choose **NE Explorer** from the shortcut menu.
3. Choose **GPON > GPON UNI Port** from the navigation tree.
4. On the **GPON UNI Port** tab page, specify the filter criteria or click  to display the required GPON UNI ports.
5. In the information list, right-click the required port and choose **Service Handover** from the shortcut menu.
6. In the **Service Handover** dialog box, select the destination port, to which services are cut over.



**Table 32-1** Parameters required for modifying the attributes of a GPON UNI port

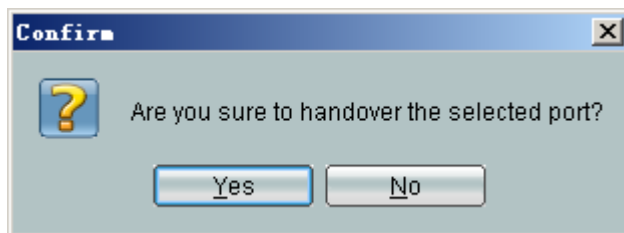
| Parameter        | Description                                                                       | Settings |
|------------------|-----------------------------------------------------------------------------------|----------|
| Name             | <b>Definition:</b><br>Indicates the name of the device to which the port belongs. | -        |
| Destination Port | <b>Definition:</b><br>Indicates the backup GPON port.                             | -        |



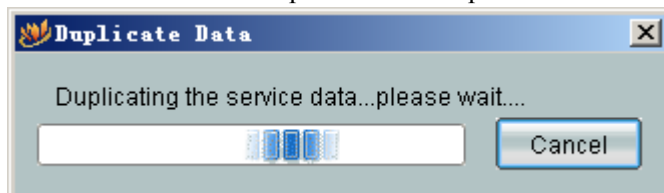
### CAUTION

This operation is irreversible. The operation is successful only when the data on the NE is the same as the NE data on the U2000. It is recommended that you synchronize the NE data before performing this operation.

7. Click **OK**.
8. In the **Confirm** dialog box, click **Yes**.



9. Wait until service data replication is complete.



## 32.2 Cutting Over Services on EPON Ports

This topic describes the flowchart and procedure for cutting over services on EPON ports.

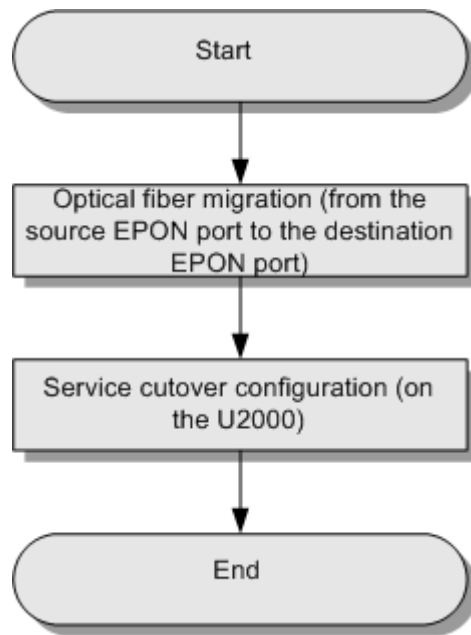
### Guideline

When backing up an EPON port on the OLT, you need to cut over services on the EPON port. If the working EPON port is faulty, you can cut over ONU services to a specified backup EPON port.


- The service cutover menu is not required for an activated and online EPON port.
- A particular service card may support a particular service. Hence, the source port and destination port in service cutover must be on the cards of the same type. In addition, you need to ensure that card configuration such as the CAR mode must be the same.
- Multicast services of cascading ports can be cut over.
- ONU names can be cut over. Rules for cutting over an ONU name are as follows:
  1. If a source ONU name is generated by default, do not copy the name. The destination ONU name is also generated by default.
  2. If a source ONU name is not generated by default or you add characters to a source ONU name generated by default, copy the source ONU name in cutover.

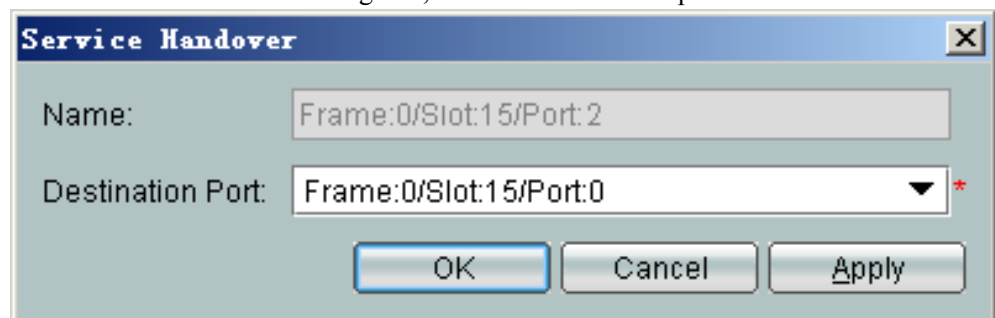
### Cutover Flowchart

[Figure 32-2](#) shows the flowchart for cutting over EPON services.

**Figure 32-2** Flowchart for cutting over EPON services

## Procedure

1. Insert one end of an optical fiber into the destination EPON port. The other end of the fiber is connected to the source EPON port.
2. In the Main Topology, double-click the required device in the **Physical Root**, or right-click the required device and choose **NE Explorer** from the shortcut menu.
3. Choose **EPON > EPON UNI Port** from the navigation tree.
4. On the **EPON UNI Port** tab page, enter the query condition or click  to display the required EPON UNI ports.
5. In the information list, right-click the required port and choose **Service Handover** from the shortcut menu.
6. In the **Service Handover** dialog box, select the destination port for service cutover.



**Table 32-2** Parameters required for modifying the parameters of an EPON UNI port

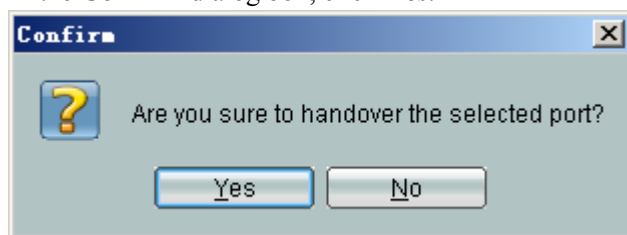
| Parameter        | Description                                                                       | Settings |
|------------------|-----------------------------------------------------------------------------------|----------|
| Name             | <b>Definition:</b><br>Indicates the name of the device to which the port belongs. | -        |
| Destination Port | <b>Definition:</b><br>Indicates the standby EPON port.                            | -        |



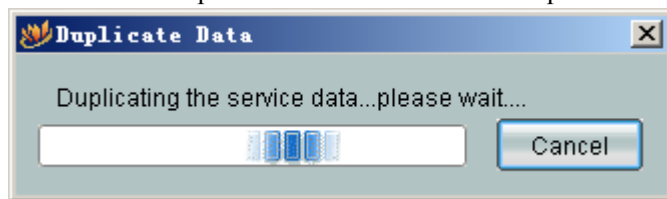
**CAUTION**

Service cutover is irreversible. Ensure the consistency in the NE data and the U2000 data so that you can cut over services successfully. It is recommended that you synchronize NEs before service cutover.

7. Click **OK**.
8. In the **Confirm** dialog box, click **Yes**.



9. Wait until the duplication of service data is complete.





# 33 Bulk Configuring in Command Line Script Files and Sending the Script Files to NEs

During the maintenance of NEs, the NMS supports the bulk configuration of NE services in a command line script file. In this manner, service data of multiple NEs can be modified quickly, which improves the operation and maintenance efficiency. The bulk configuration of services in a command line script can be achieved with two methods: importing the command line configuration script sheet or using the configuration script management function. With the former method, you need to import the **Command Line Configuration Script Sheet Profile.xls** to the NMS. With the latter 2, you need to add configuration scripts on the NMS and send the scripts to NEs.

## Context

- The command script profiles transferred in the File mode and Telnet mode have the same format but different contents.
- The File mode is preferred when lots of commands are contained in the command line script profiles. In this manner, the interactions between the NMS and NEs is reduced, which improves the execution efficiency.
- Currently, the MA5600V800R008 and MxUV800R308 support the File mode.

## Procedure

- **Method 1: Importing configuration script sheet.**

 **NOTE**

The path to the sheet is as follows:

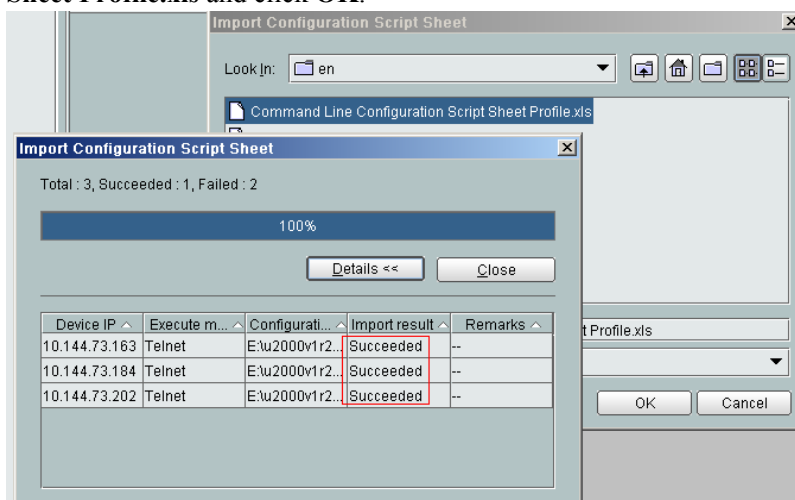
- Windows-based server: `X:\U2000\client\template\MDU Pre-Deploy\zh\Command Line Configuration Script Sheet Profile.xls`, where x indicates the disk name, such as D, E, and F.
- Solaris-based server: `/opt/U2000/client/template/MDU Pre-Deploy/zh/Command Line Configuration Script Sheet Profile.xls`

When the NEs need to load different script files, do as follows:

1. Fill in **Command Line Configuration Script Sheet Profile.xls**, including **Device IP Address, Execute Mode, User Name, Password, and Command Line Configuration Script Filename**.

|   | A                 | B            | C         | D        | E                                                           | F |
|---|-------------------|--------------|-----------|----------|-------------------------------------------------------------|---|
| 1 | Device IP Address | Execute Mode | User Name | Password | Command Line Configuration Script Filename                  |   |
| 2 | 10.144.73.163     | Telnet       | root1     | admin1   | E:\u2000v1r2c01b02f\client\template\MDU Pre-Deploy\zh\a.cfg |   |
| 3 | 10.144.73.184     | Telnet       | root2     | admin2   | E:\u2000v1r2c01b03f\client\template\MDU Pre-Deploy\zh\b.cfg |   |
| 4 | 10.144.73.202     | Telnet       | root3     | admin3   | E:\u2000v1r2c01b04f\client\template\MDU Pre-Deploy\zh\c.cfg |   |

- Choose **Configuration > FTTx Service Pre-Deployment > Import Configuration Script Sheet** from the main menu.
- In the dialog box that is displayed, select **Command Line Configuration Script Sheet Profile.xls** and click **OK**.

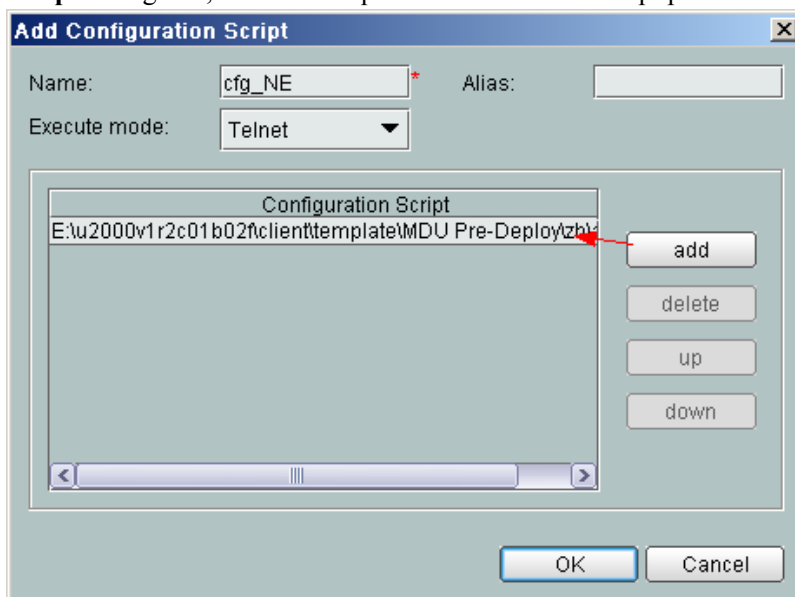


● **Method 2: Using the configuration script management function.**

**NOTE**

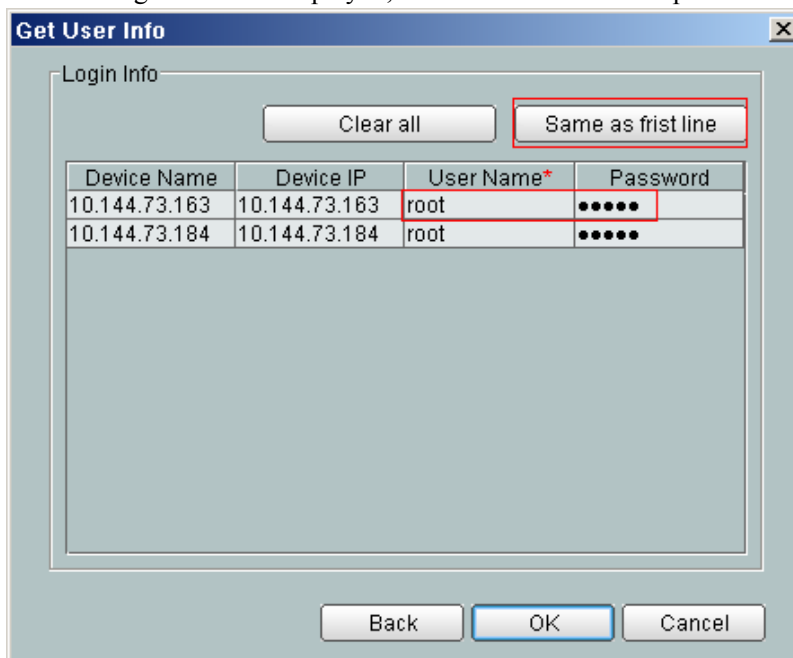
When the same script profiles are loaded to NEs with the same user name and password, or when **Execute** is set to **SSH**, you are recommended to do as follows:

- Choose **Configuration > FTTx Service Pre-Deployment > Configuration Script Management** from the main menu.
- In the information list, right-click and choose **Add** from the shortcut menu.
- In the **Add Configuration Script** dialog box, click **add**. In the **Select Configuration Script** dialog box, select the required command line script profile and click **OK**.





4. Click **OK**.
5. Right-click a configuration script and choose **Send To Device** from the shortcut menu.
6. In the dialog box that is displayed, select the required NEs and click **Next**.
7. In the dialog box that is displayed, enter the user name and password of the NEs.

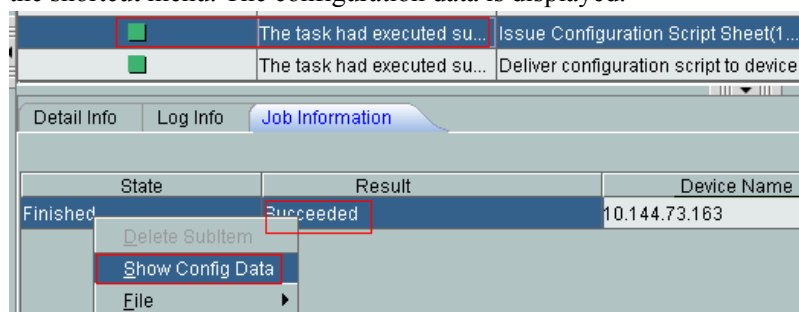


8. Click **OK**.

----End

## Result

On the **Scheduling Center** tab page, select a task and click the **Job Information** tab. On the **Job Information** tab page, right-click the result of the task and choose **Show Config Data** from the shortcut menu. The configuration data is displayed.





# 34 Remote Maintenance Guide

---

## About This Chapter

This topic describes the tasks of maintaining the ONU software through the U2000, and the reference standard, operation guide, exception handling, and command reference of the tasks.

### [34.1 Monitoring Critical and Major Alarms of NEs](#)

It is recommended that you check whether unhandled critical and major alarms persist in the system every day. This operation helps timely detect and solve the problems that may occur when the NEs are running.

### [34.2 Measuring the CPU Usage of a Board](#)

It is recommended that you measure the CPU usage rate of each board once every week to rectify the fault of the board whose CPU usage is not in the normal range. This helps you to learn the running status of the boards in time, rectify the capacity fault, and prevent the potential security risks (such as the DoS attack) during the running of the boards.

### [34.3 Measuring the Performance of an Upstream Ethernet Port](#)

It is recommended that you measure the performance of the upstream Ethernet port once every week. This operation ensures that the services on the upstream Ethernet port are normal and reliable.

### [34.4 Measuring the Usage of NE Resources](#)

This topic describes how to measure the resource usage of the NE. You can query the NE information, such as the number, software version, type, MAC address, physical location, and running status.

### [34.5 Checking the NE User Level](#)

It is recommended that you check whether the allocation of the level of the user who configures NEs is correct once every month. This operation ensures that the allocated user level can be the same as the user level that is planned and deployed, and that the user level meets the requirement of NE maintenance.

### [34.6 Changing the Password of an NE User](#)

To ensure the security of an account, it is recommended that you change the password of an NE user periodically instead of using the same password for a long period during maintenance.

### [34.7 Saving, Backing Up, and Restoring NE Data](#)

The topic describes how to save and back up NE data and restore NE data when an NE fails to be upgraded.

## 34.1 Monitoring Critical and Major Alarms of NEs

It is recommended that you check whether unhandled critical and major alarms persist in the system every day. This operation helps timely detect and solve the problems that may occur when the NEs are running.

### Prerequisite



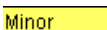

The hardware for monitoring NE alarms must be configured, such as an environment monitoring unit (EMU) and sensors.

### Context

- After setting the default profile, choose **Fault > Browse Current Alarm** from the main menu to display the required alarm information directly. For information on how to set and change the default profile, see *Setting the Default Profile*.
- You can set the policies for defining alarms according to the extent that the alarms are concerned and the actual requirement, including setting alarm names, function classifications, and alarm severity. For details, see *Configuring the Policy of Redefining Alarms and Events*.
- A great number of alarms may be generated during the repair, test, and deployment of devices. In this case, you can mask the alarms that are irrelevant. In this manner, the alarms are not displayed or saved on the U2000. For details, see *Configuring the Policy of Masking Alarms and Events*.

### Reference Standard

You can determine the alarm severity according to colors of the alarm legends. Generally, the critical and major alarms should not persist in the system. The following table lists the alarm legends and provides the meanings of the legends.

| Legend                                                                                       | Color  | Alarm Severity |
|----------------------------------------------------------------------------------------------|--------|----------------|
|  Critical | Red    | Critical       |
|  Major    | Orange | Major          |
|  Minor    | Yellow | Minor          |
|  Warning  | Blue   | Warning        |

### Procedure

- 1 Choose **Fault > Browse Current Alarm** from the main menu. Then, the **Filter** dialog box is displayed.

**NOTE**

- If you already set the default template for the current alarms, the alarms that meet the default template criteria are directly displayed, without the displaying of the **Filter** dialog box.
- You can choose **Template > New** in the lower pane to create an alarm profile and set the device alarm parameters. You can also choose **Template > Open** to query the device alarms by selecting the new alarm profile.

- 2 On the **Basic Setting** tab, set the parameters required for querying alarms, such as the alarm name, severity, status, and type. These parameters are optional.

- 3 On the **Alarm Source** tab, set the alarm source information for querying alarms. In the **Select Mode** area, set the mode for filtering alarms.

- If **All objects** is selected, it indicates that alarms are not filtered and all alarms of the alarm source are queried.
- If **Custom** is selected, click **Add** to filter the concerned alarm source according to **Object below NE** and **Object Group**.

- 4 Click **OK** to display the required critical and major alarms.

----End

## Exception Handling

- Select a fault alarm that is not recovered. The alarm information is displayed in **Alarm Details** in the lower pane and the cause of the alarm and handling suggestions are displayed in **Handling Suggestion**. Handle the alarm according to the suggestions.

- Record the critical alarms that occur frequently at recent time and their recovery information. Handle the alarms according to the cause and handling suggestions, and analyze potential risks that may exist in the system.
- If the fault persists, contact Huawei technical support engineers. For details, see How to Obtain Technical Support from Huawei.



**NOTE**

For an alarm that is handled successfully, it is recommended that you record the detailed handling measures, which helps locate and troubleshoot the similar faults that occur. To enter the maintenance experience, select the alarm, right-click, and then choose **Experience**.

## Related Commands

| To...                                                         | Run the Command...                 | In...          |
|---------------------------------------------------------------|------------------------------------|----------------|
| Query the alarm history                                       | <b>display alarm history</b>       | User mode      |
| Query the basic information about alarms                      | <b>display alarm list</b>          | User mode      |
| Query the alarm configuration                                 | <b>display alarm configuration</b> | User mode      |
| Query the alarm statistics                                    | <b>display alarm statistics</b>    | User mode      |
| Query the information about the existing alarms in the system | <b>display alarm active</b>        | Privilege mode |

## 34.2 Measuring the CPU Usage of a Board

It is recommended that you measure the CPU usage rate of each board once every week to rectify the fault of the board whose CPU usage is not in the normal range. This helps you to learn the running status of the boards in time, rectify the capacity fault, and prevent the potential security risks (such as the DoS attack) during the running of the boards.

### Prerequisite

- You must have Create a Performance Measurement Task.
- If the attributes of NE resources change, you need to perform synchronize to keep the data of the NE and performance management module the same and then perform query . Otherwise , the collection of performance data is abnormal. The procedure of synchronizing information is as follows:

1. On the **Main Topology** tab, select an NE from the **Physical Root** navigation tree, right-click, and then choose **Synchronize NE Data**.
2. Choose **Performance > Performance Monitor Management** from the main menu. In the **Performance Monitoring Management** tab, right-click the monitoring instance, and select **Synchronization Resource**.

## Context

Only the control boards and service boards support this operation.

## Reference Standard


- The CPU usage ranges from 0% to 100%. The CPU usage of a board that runs normally does not exceed 70%.
- The high CPU usage of a board occurs only when the board data is being written to the flash memory of the control board or is being saved. The high CPU usage usually lasts less than 60s.

## Procedure


- 1 Choose **Performance > Browse History Performance Data** from the main menu.
- 2 Choose **Performance Management > Card > Access NE Card > Board Health** from the navigation tree.
- 3 Click **Filter**. The dialog is displayed. The resources and the corresponding indicators associated with the selected resources is displayed.

### NOTE

If the query profile is created, click **Template > Query by Template**. In the dialog box that is displayed, select the required profile, and then import the profile to query the performance statistics.


- 4 In the **Show Type** drop-down list, select the graph type as **Single Resource Graph**.
- 5 In the area, select the NE type. In the **Available Resources** area in the right pane, select the resource name.
- 6 Click , to move the resources to the **Selected Resources** area.



- 7 Click  in the right side of the window to expand the **Option** area box.
- 8 In the bottom of the pane, select the indicators for the selected resources.

### NOTE

Maximum 10 indicators can be selected at a time.

- 9 Select the **Option** check box and in the **Time** drop-down list, select the time period.  
Time period can be set as Recent 1 hour, Recent 12 hours, Recent 1 day, Recent 1 week, Recent 1 month, Recent 1 year, or Custom Define.
  1. Select **Custom Define**, and click  to select the start and end time period. The maximum time period can be 1 year.
  2. Click **OK**.



 **NOTE**

Start time period should be earlier than end time period.

**10** In the **Granularity** drop-down list, select the granularity period.

Based on the time period, granularity can be one of the following:

- Recent 1 hour: 5 minutes, 10 minutes, 15 minutes, and 30 minutes.
- Recent 12 hours: 5 minutes, 10 minutes, 15 minutes, and 30 minutes, 1 hour.
- Recent 1 day: 5 minutes, 10 minutes, 15 minutes, and 30 minutes, 1 hour.
- Recent 1 week: 1 hour, 1 day.
- Recent 1 month: 1 day.
- Recent 1 year: 1 day.
- Custom Define: 5 minutes, 10 minutes, 15 minutes, 30 minutes, 1 hour and 1 day.

 **NOTE**

For custom define, the granularity can be selected based on the time period selected.

**11 Optional:** Click **Advance**, and set the filter conditions for the indicators.

1. In the **Logic Type** drop-down list, select the logic type as **AND** or **OR**.
2. Select the **Operator** and set the **Value** for the corresponding indicators.  
Operator can be set as =, <, >, <=, >=, or !=.
3. Click **OK**.

**12 Optional:** Click **Save as Query Template** to save a new or an existing template as a new template.

**13 Optional:** Click **Cancel** to cancel the operation.

**14** Click **OK** to get the performance data based on the filter conditions set for one graph one resource.

----**End**

## Exception Handling

- If the CPU usage of a board is temporarily over-high, there is no need to proceed.
- If the CPU usage of a board is frequently over-high, check the following items:
  - Whether the data configuration of the device is proper. If the data configuration is improper, it is recommended that you decrease the number of users or increase the capacity of the system.
  - Whether the networking is proper and whether a larger number of broadcast packets are generated due to the existing loop networks.
  - Whether the DoS attack exists, which may lead to the high CPU usage. The solution is to enable the anti-DoS attack function.
- If the fault persists, contact Huawei technical support engineers. For details, see How to Obtain Technical Support from Huawei.

## Related Commands

| To...                          | Run the Command... | In...          |
|--------------------------------|--------------------|----------------|
| Query the CPU usage of a board | <b>display cpu</b> | Privilege mode |

## 34.3 Measuring the Performance of an Upstream Ethernet Port

It is recommended that you measure the performance of the upstream Ethernet port once every week. This operation ensures that the services on the upstream Ethernet port are normal and reliable.

### Prerequisite

- You must have Create a Performance Measurement Task.
- If the attributes of NE resources change, you need to perform synchronize to keep the data of the NE and performance management module the same and then perform query . Otherwise , the collection of performance data is abnormal. The procedure of synchronizing information is as follows:
  1. On the **Main Topology** tab, select an NE from the **Physical Root** navigation tree, right-click, and then choose **Synchronize NE Data**.
  2. Choose **Performance > Performance Monitor Management** from the main menu. In the **Performance Monitoring Management** tab, right-click the monitoring instance, and select **Synchronization Resource**.

### Reference Standard

In the statistics of the upstream Ethernet port, a small number of frames with cyclical redundancy check (CRC) errors and a few packet loss errors exist and the traffic transmission is stable.

### Procedure


- 1 Choose **Performance > Browse History Performance Data** from the main menu.
- 2 Choose **Performance Management > Port > Access Ethernet Port > Ethernet Port** from the navigation tree.
- 3 Click **Filter**. The dialog is displayed. The resources and the corresponding indicators associated with the selected resources is displayed.

#### NOTE

If the query profile is created, click **Template > Query by Template**. In the dialog box that is displayed, select the required profile, and then import the profile to query the performance statistics.


- 4 In the **Show Type** drop-down list, select the graph type as **Single Resource Graph**.




5 Click  in the right side of the window to expand the **Available Resources** area box.

6 In the area, select the NE type. In the **Available Resources** area in the right pane, select the resource name.



7 Click , to move the resources to the **Selected Resources** area.



8 Click  in the right side of the window to expand the **Option** area box.

9 In the bottom of the pane, select the indicators for the selected resources.




**NOTE**

Maximum 10 indicators can be selected at a time.

10 Select the **Option** check box and in the **Time** drop-down list, select the time period.

Time period can be set as Recent 1 hour, Recent 12 hours, Recent 1 day, Recent 1 week, Recent 1 month, Recent 1 year, or Custom Define.

1. Select **Custom Define**, and click  to select the start and end time period. The maximum time period can be 1 year.
2. Click **OK**.



**NOTE**

Start time period should be earlier than end time period.

11 In the **Granularity** drop-down list, select the granularity period.

Based on the time period, granularity can be one of the following:

- Recent 1 hour: 5 minutes, 10 minutes, 15 minutes, and 30 minutes.
- Recent 12 hours: 5 minutes, 10 minutes, 15 minutes, and 30 minutes, 1 hour.
- Recent 1 day: 5 minutes, 10 minutes, 15 minutes, and 30 minutes, 1 hour.
- Recent 1 week: 1 hour, 1 day.
- Recent 1 month: 1 day.
- Recent 1 year: 1 day.
- Custom Define: 5 minutes, 10 minutes, 15 minutes, 30 minutes, 1 hour and 1 day.



**NOTE**

For custom define, the granularity can be selected based on the time period selected.

12 **Optional:** Click **Advance**, and set the filter conditions for the indicators.

1. In the **Logic Type** drop-down list, select the logic type as **AND** or **OR**.
2. Select the **Operator** and set the **Value** for the corresponding indicators.  
Operator can be set as =, <, >, <=, >=, or !=.
3. Click **OK**.

13 **Optional:** Click **Save as Query Template** to save a new or an existing template as a new template.

14 **Optional:** Click **Cancel** to cancel the operation.

- 15 Click **OK** to get the performance data based on the filter conditions set for one graph one resource.

----End

## Exception Handling

- If a large number of frames with CRC errors exist or the traffic on an Ethernet port is low in a certain period, check whether the line quality is poor or whether any Ethernet port of the device is faulty.
- If a large number of packets are lost, check whether the traffic suppression function is enabled.
- If the fault persists, replace the port to prevent the communication failure caused by the port fault.
- If the fault persists, contact Huawei technical support engineers. For details, see How to Obtain Technical Support from Huawei.

## Related Commands

| To...                                    | Run the Command...             | In...                        |
|------------------------------------------|--------------------------------|------------------------------|
| Query the statistics of an Ethernet port | <b>display port statistics</b> | ETH mode, GIU mode, SCU mode |

## 34.4 Measuring the Usage of NE Resources

This topic describes how to measure the resource usage of the NE. You can query the NE information, such as the number, software version, type, MAC address, physical location, and running status.

### Prerequisite

The NE must be added to the U2000 successfully.


### Procedure

- 1 Choose **Inventory > Physical Inventory > NE** from the main menu.
- 2 Click the **NE Statistics** tab. Select **NE Type**, **Software Version**, **NE Type+Software Version**, or **Customize** from the **Statistics Type** drop-down list.
  1. Select **NE Type** from the **Statistics Type** drop-down list and click **Count**. The number of NEs of different types is displayed in the information list in the lower pane.
  2. Select **Software Version** from the **Statistics Type** drop-down list, and click **Count**. The number of NEs of different software versions is displayed in the information list in the lower pane.
  3. Select **NE Type+Software Version** from the **Statistics Type** drop-down list and click **Count**. The number of NEs of different software versions corresponding to different NE types is displayed in the information list in the lower pane.
  4. Select **Customize**. In the **Customize NE Statistics Type** dialog box, click **New**. In the **New Customize NE Statistics Type** dialog box, enter the name of the measurement item


to be customized in the **Custom Name** text box in the **Customize NE Statistics Type** area.

In the **Basic Item** area, select the measurement item to be customized, click  to add the selected measurement item to the **Combined Item** area. Then, click **OK**.

5. Click **OK**.

3 Click  next to **Statistics Scope**. In the dialog box that is displayed, select the NE to be measured, and then click **OK**.

4 Select the required record from the NE list, and then you can perform the following operations:

- Choose **Save As**. In the dialog box that is displayed, set **Start Row** and **End Row**, and then click  next to **File Name**. In the dialog box that is displayed, set **File Name**, **File Type** and **Encoding**, and then click **Save**. Click **OK** in the **Save Options** dialog box to save the report to the specified path.

 **NOTE**

The reports can be saved as txt, xls, html and xls files.

- Choose **Print**. In the dialog box that is displayed, set **Start Row** and **End Row**, and then click **OK** to print the report.

----End

## Command Reference

| To...                                                                                                                                                                                                                   | Run the Command...   | In...     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|
| Query the details of a board (After performing an operation on a board, you can query the details of the board, such as the slot number, name, status, daughter board information, port information and online status.) | <b>display board</b> | User mode |

## 34.5 Checking the NE User Level

It is recommended that you check whether the allocation of the level of the user who configures NEs is correct once every month. This operation ensures that the allocated user level can be the same as the user level that is planned and deployed, and that the user level meets the requirement of NE maintenance.

### Context

Users are divided into four levels by rights, that is, the common user, operator, administrator, and superuser.

- A common user can perform basic system operations and simple query operations.
- An operator can perform basic configurations for the device and services.

- An administrator can perform all configurations. The administrator is responsible for maintaining the device, user account, and rights to manage devices.
- The superuser is unique in the system. Being the top-level user in the system, the superuser can add an administrator and has all the rights of the administrator.

## Reference Standard

The level of the user who configures NEs is the same as the level that is planned and deployed, and can meet the requirement of NE maintenance. The user rights are allocated properly.

## Procedure

- 1 Choose **Administration > NE Security Management > LCT User Management** from the main menu.
- 2 In the **LCT Management** window, click the **NE User** tab.
- 3 Select the required device type from the **Device Type** drop-down list. The information about all the users of the selected device type is displayed in the list. Then, click **Filter** to display the NE users that meet the filtering criteria.
- 4 Query the level of the NE user in the **Level** column in the list.

---End

## Exception Handling

- If the allocation of the NE user level is improper, right-click the record to be queried in the list on the **NE User** tab, and then select **Configure** to modify the NE user level.

### NOTE

Only the user with the administrator or higher-level right can modify the NE user level.

- If the fault persists, contact Huawei technical support engineers. For details, see How to Obtain Technical Support from Huawei.

## Related Commands

| To...                    | Run the Command...           | In...          |
|--------------------------|------------------------------|----------------|
| Query the NE user level  | <b>display terminal user</b> | User mode      |
| Modify the NE user level | <b>terminal user level</b>   | Privilege mode |

## 34.6 Changing the Password of an NE User

To ensure the security of an account, it is recommended that you change the password of an NE user periodically instead of using the same password for a long period during maintenance.

### Prerequisite

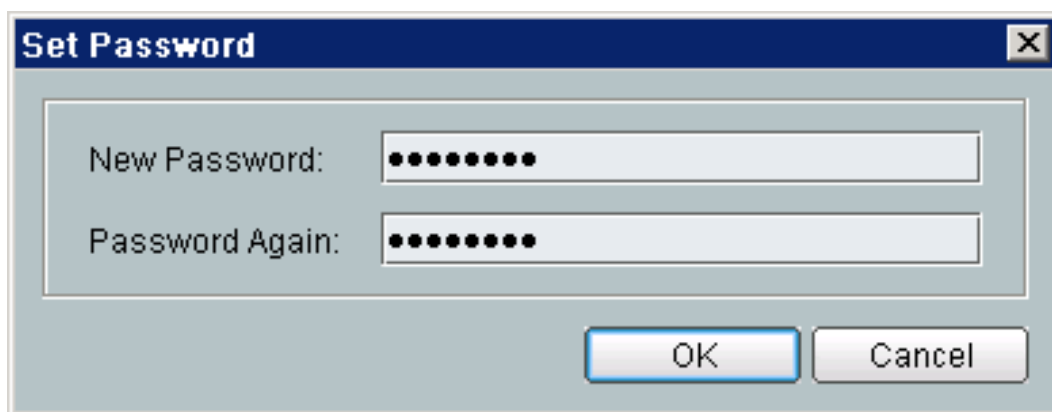
You must be an NMS user with the Security Manager User authority or higher.

## Reference Standard

You can log in to an NE by using the new password.

## Procedure

- 1 Choose **Administration > NE Security Management > LCT User Management** from the main menu.
- 2 Click the **NE User** tab, and then select the required device type from the **Device Type** drop-down list. All the users on this type of devices are displayed in the user list. Click **Find** to display the required users.
- 3 Select one or more records from the user list, right-click, and then choose **Set Password**.
- 4 In the **Set Password** dialog box as shown in the following figure, set a new password.



 **NOTE**

The password consists of 1 to 15 characters.

- 5 Click **OK**.

---End

## Exception Handling

- If the password fails to be changed, the U2000 displays a message indicating the failure. In this case, check whether the password is correct according to the message.
- If the problem persists, contact Huawei technical support engineers. For information on how to contact Huawei technical support engineers, see [How to Obtain Technical Support from Huawei](#).

## Related Commands

| To...                             | Run the Command...            | In...          |
|-----------------------------------|-------------------------------|----------------|
| Change the password of an NE user | <b>terminal user password</b> | Privilege mode |

## 34.7 Saving, Backing Up, and Restoring NE Data

The topic describes how to save and back up NE data and restore NE data when an NE fails to be upgraded.

### 34.7.1 Saving and Backing Up the NE Data Periodically

The DC saves and backs up data periodically according to the default policy or user-defined policy and thus helps to restore and load the data in future.

### 34.7.2 Saving and Backing Up NE Data Immediately

The DC can save and back up NE data periodically or immediately to meet the requirements in different scenarios.

### 34.7.3 Checking the Backup of the NE Configuration Data

It is recommended that you check whether the NE configuration data is backed up successfully once every week. This operation helps you to restore the recent system data in time in the case that an expected fault occurs in the system. Thus, the impact on users is minimized.

### 34.7.4 Restoring the NE Data Immediately

The DC can restore the history backup data after a NE is selected. This operation ensures that the NE data can be restored if the system upgrade fails or any problems occur. Thus, the system can be restored to the normal state.

## 34.7.1 Saving and Backing Up the NE Data Periodically

The DC saves and backs up data periodically according to the default policy or user-defined policy and thus helps to restore and load the data in future.

### Saving and Backing Up the NE Data by Using the Default Policy

This topic describes how to save and back up the NE data periodically by using the default policy. Hence, you can save and back up the NE data at a fixed time, which facilitates the restoring and loading of the NE data.

### Impact on the System

The backup has certain impact on the running rate of the NE. Therefore, it is recommended that you back up the NE data when the NE carries minimum traffic, for example, at 2:00 a.m.

### Prerequisite

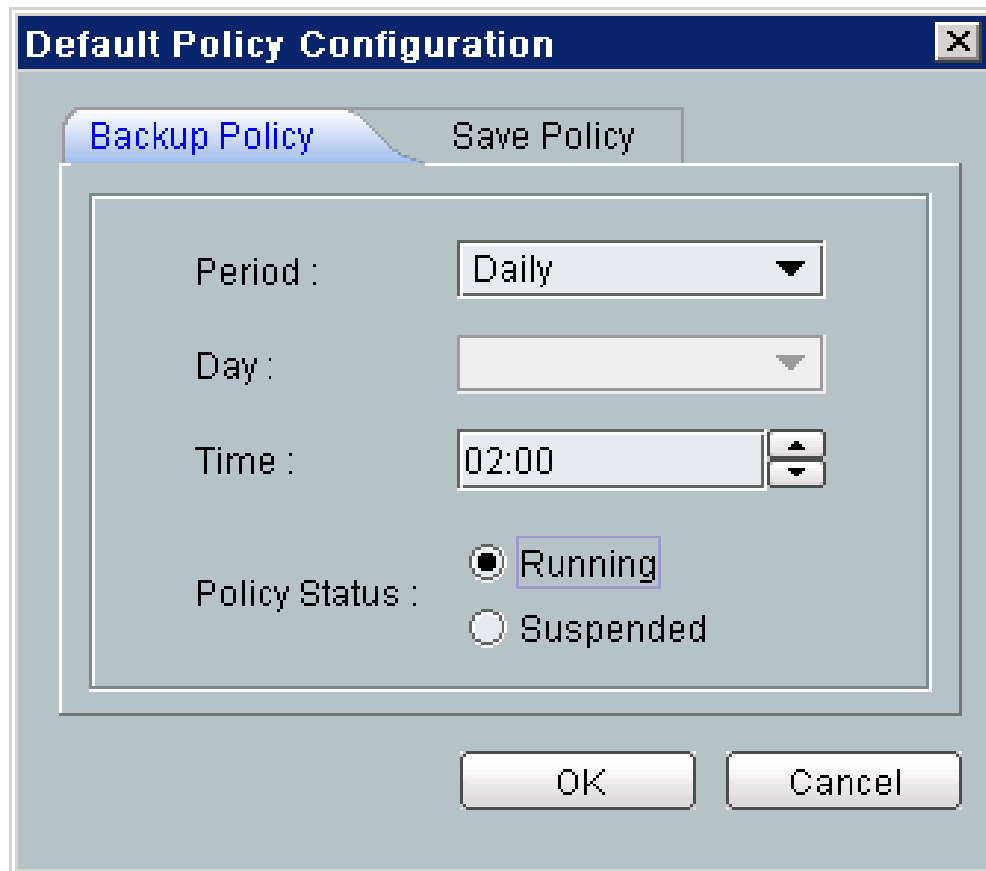
- The **DCServer** process runs in the normal state.
- The communication between the NE and the U2000 must be in the normal state.
- The TFTP/FTP/SFTP service must be configured and run in the normal state. For details, see [1.1.1 Configuring the FTP, SFTP, or TFTP Service \(Windows\)](#), [1.1.2 Configuring the FTP, SFTP, or TFTP Service \(Solaris\)](#) and [1.1.3 Configuring the FTP, SFTP, or TFTP Service \(Linux\)](#).

### Procedure

- 1 Choose **Administration** > **NE Software Management** > **Default Policy** from the main menu.

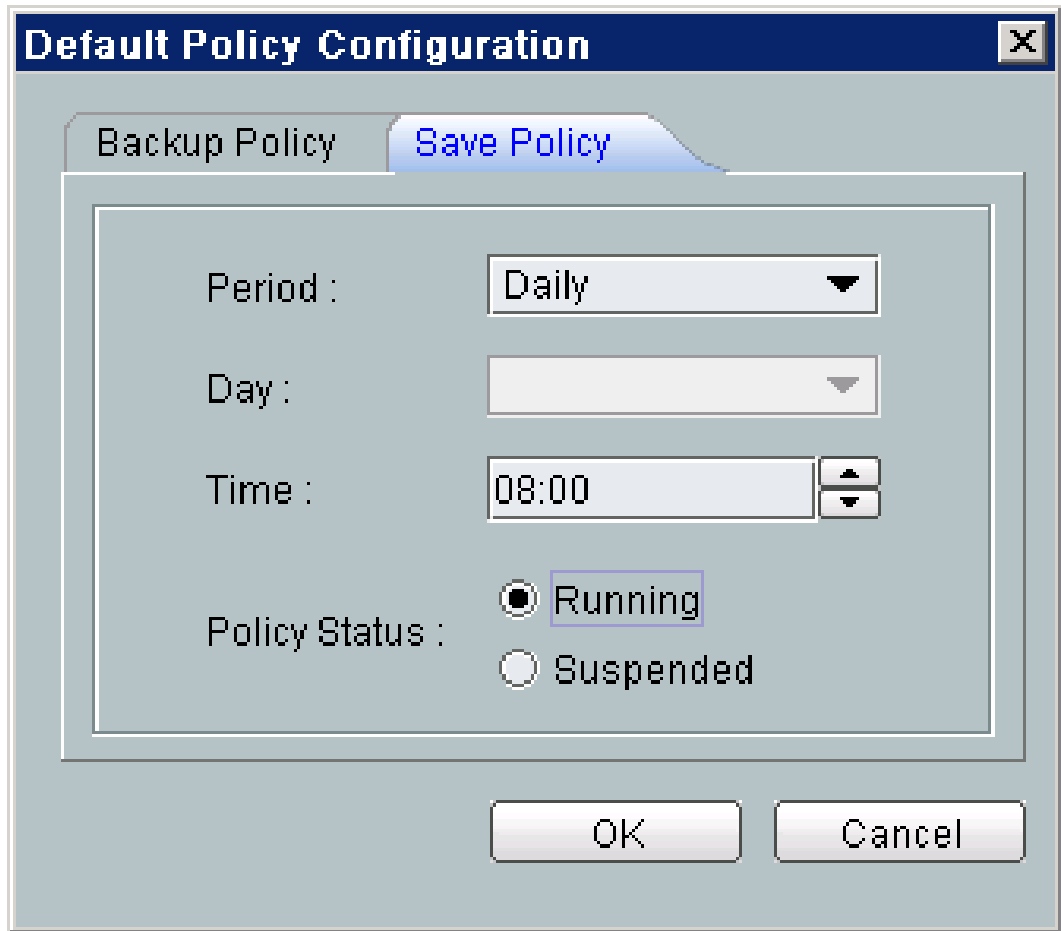


- Click the **Backup Policy** tab, and then configure the backup policy of the NE, as shown in the following figure.



 **NOTE**

- If **Policy Status** is set to **Running**, the DC backs up NEs at the specified time.
  - If **Policy Status** is set to **Suspended**, the DC does not back up NEs even if the policy period reaches the specified time, and the policy is still suspended.
- Click the **Save Policy** tab, and then configure the save policy of the NE, as shown in the following figure.



**NOTE**

- If **Policy Status** is set to **Running**, the DC saves NEs at the specified time.
- If **Policy Status** is set to **Suspended**, the DC does not save NEs even if the policy period reaches the specified time, and the policy is still suspended.

- 4 Click **OK** to complete the configurations of the save and backup policies.
- 5 In the **Operation Result** dialog box, click **OK**.

----End

## Related Commands

| To...                                                             | Run the Command...           | In...              |
|-------------------------------------------------------------------|------------------------------|--------------------|
| Configure the conditional backup function of the automatic backup | <b>auto-backup condition</b> | Global config mode |
| Configure the periodical backup function of the automatic backup  | <b>auto-backup period</b>    | Global config mode |

## Saving and Backing Up the NE Data by Using the Customized Policy

This topic describes how to save and back up the NE data periodically by using the customized policy. Hence, you can save and back up the required NE data at a fixed time, which facilitates the restoring and loading of the NE data.

### Impact on the System

The backup has certain impact on the running rate of the NE, therefore, it is recommended that you back up the NE data when the NE carries minimum traffic, for example, at 2:00 a.m.

### Prerequisite

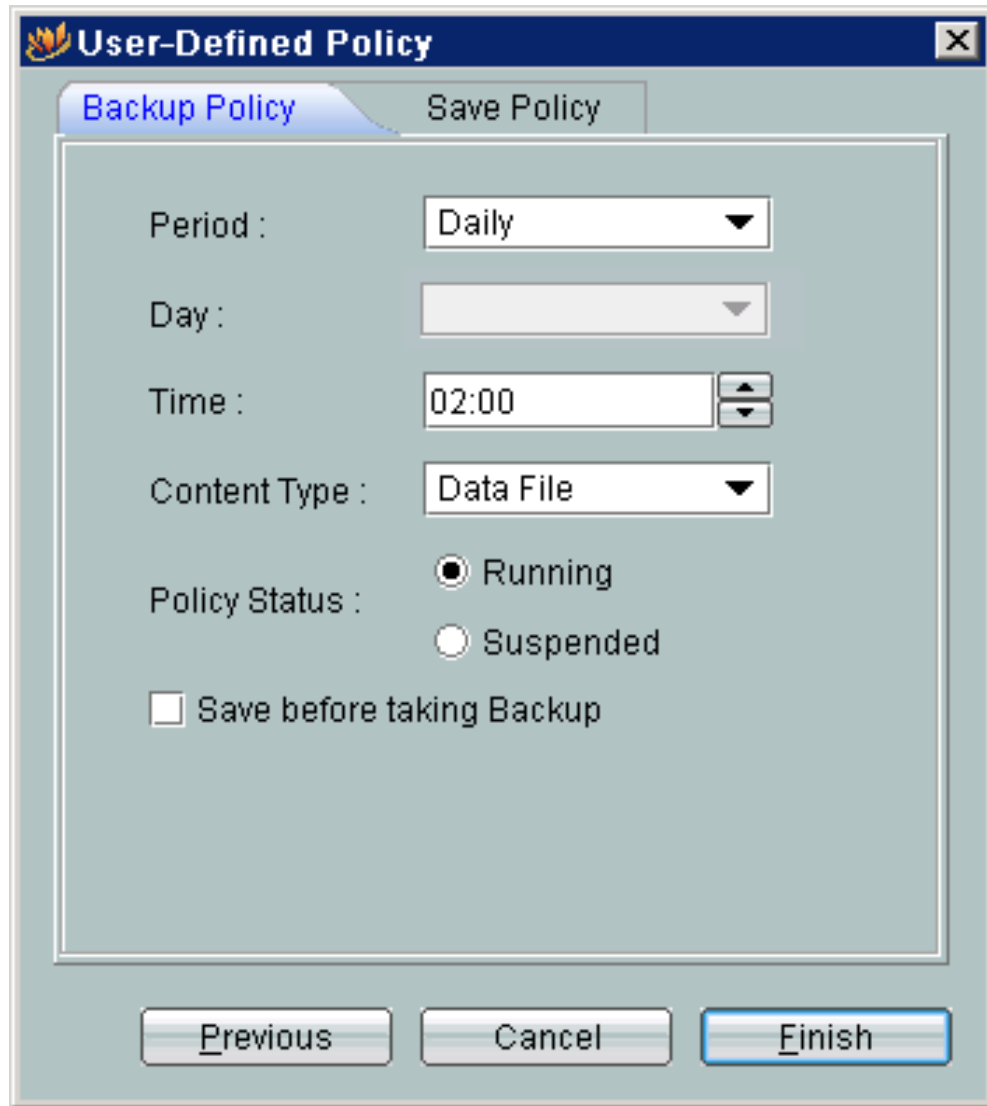
- The **DCServer** process runs in the normal state.
- The communication between the NE and the U2000 must be in the normal state.
- The TFTP/FTP/SFTP service must be configured and run in the normal state. For details, see [1.1.1 Configuring the FTP, SFTP, or TFTP Service \(Windows\)](#), [1.1.2 Configuring the FTP, SFTP, or TFTP Service \(Solaris\)](#) and [1.1.3 Configuring the FTP, SFTP, or TFTP Service \(Linux\)](#).

### Context

You can configure the save and backup policies for a single NE or for multiple NEs simultaneously.

### Procedure

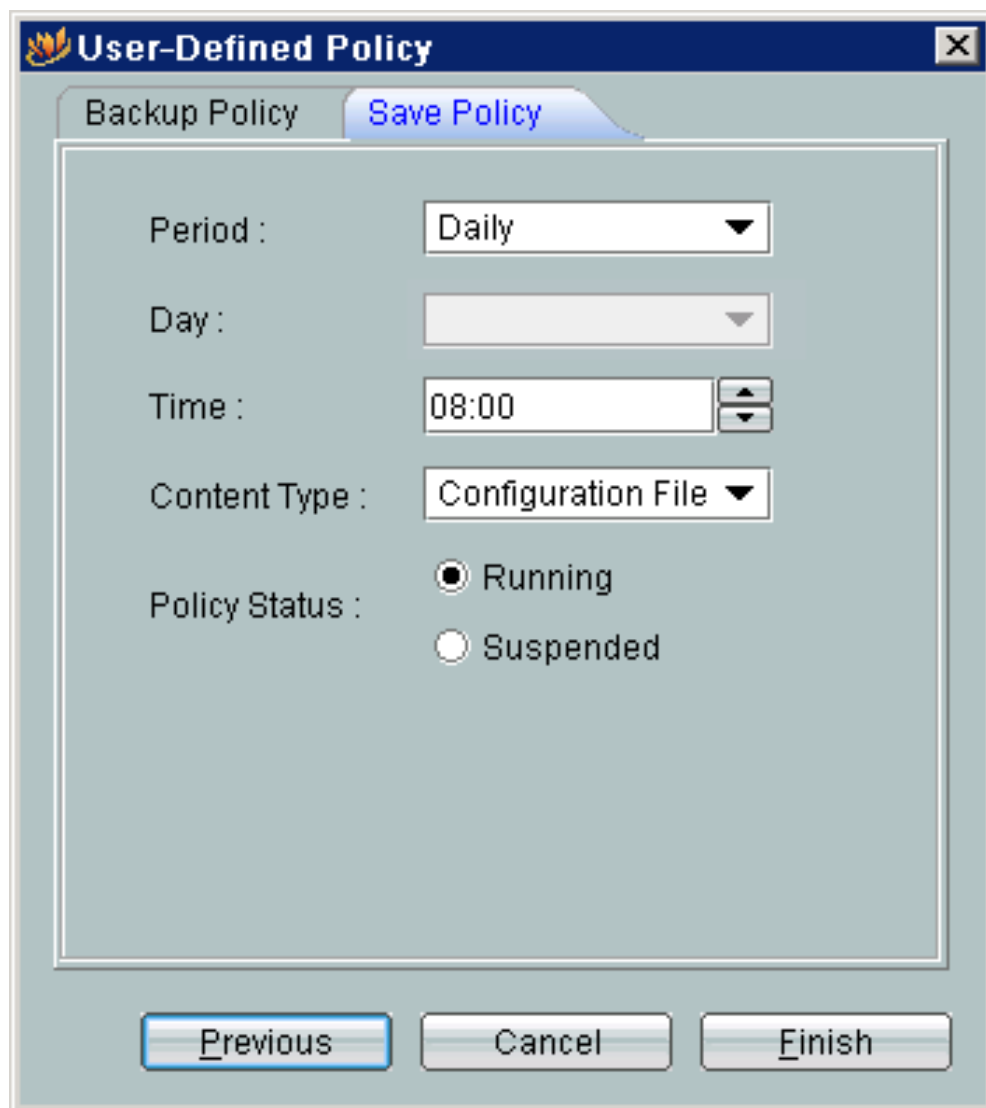
- 1 Choose **Administration > NE Software Management > User-Defined Policy** from the main menu. The **User-Defined Policy** dialog box is displayed.
- 2 Select the NE type and NE version to be configured with the save and backup policies as required.
  1. Select the required NE type from the **NE Type** drop-down list.
  2. **Optional:** Select the required NE version from the **NE Version** drop-down list.
  3. Choose one or multiple NEs to be configured with the save and backup policies from the navigation tree under the **NE Version** drop-down list.
- 3 Click **Next** and the **User-Defined Policy** dialog box is displayed.
- 4 Click the **Backup Policy** tab, and then configure the backup policy of the NE, as shown in the following figure.



 **NOTE**

- If **Policy Status** is set to **Running**, the DC backs up NEs at the specified time.
- If **Policy Status** is set to **Suspended**, the DC does not back up NEs even if the policy period reaches the specified time, and the policy is still suspended.

- 5 Click the **Save Policy** tab, and then configure the save policy of the NE, as shown in the following figure.



**NOTE**

- If **Policy Status** is set to **Running**, the DC save NEs at the specified time.
- If **Policy Status** is set to **Suspended**, the DC does not save NEs even if the policy period reaches the specified time, and the policy is still suspended.

6 Click **Finish** to complete the configurations of the save and backup policies.

7 In the **Operation Result** dialog box, click **OK**.

----End

**Related Commands**

| To...                                                             | Run the Command...           | In...              |
|-------------------------------------------------------------------|------------------------------|--------------------|
| Configure the conditional backup function of the automatic backup | <b>auto-backup condition</b> | Global config mode |

| To...                                                            | Run the Command...        | In...              |
|------------------------------------------------------------------|---------------------------|--------------------|
| Configure the periodical backup function of the automatic backup | <b>auto-backup period</b> | Global config mode |

## 34.7.2 Saving and Backing Up NE Data Immediately

The DC can save and back up NE data periodically or immediately to meet the requirements in different scenarios.

### Saving the NE Data Immediately

Through the DC, you can save the related NE data periodically. You can also save the NE data immediately. This meets the requirements of different application scenarios.

#### Prerequisite

- The communication between the NE and the U2000 must be in the normal state.
- The **DCServer** process runs in the normal state.

#### Context



#### NOTE

The manual saving task cannot be interrupted after it is started.

#### Procedure

- 1 Choose **Administration > NE Software Management > NE Data Backup/Restoration** from the main menu.
- 2 Click , and expand the ONU NE node from the NE navigation tree.
  - If a certain NE type is selected, all the NEs of this type are displayed in the NE list in the **NE View** window in the right pane.
  - If a NE version is selected in a certain NE type node, all the NEs of this version are displayed in the NE list in the **NE View** window in the right pane.
- 3 **Optional:** To locate a specific NE, click **Find** in the **NE View** window in the right pane.
- 4 Select one or multiple records from the NE list in the **NE View** window in the right pane, right-click, and then choose **Save**.



#### NOTE

You can save the NE data for only one or multiple NEs of the same type at a time.

- 5 In the dialog box that is displayed, select one or multiple records need to be saved, and then click **Start** to save the NE data.
- 6 The saving process and the operation results are displayed in the **Operation Status** of the list.

----End

## Related Commands

| To...                                                               | Run the Command...        | In...          |
|---------------------------------------------------------------------|---------------------------|----------------|
| Save the current database file and configuration file of the system | <b>save</b>               | Privilege mode |
| Save the current database file of the system                        | <b>save data</b>          | Privilege mode |
| Save the current configuration file of the system                   | <b>save configuration</b> | Privilege mode |

## Backing Up the NE Data Immediately

Through the DC, you can back up the NE data periodically. You can also back up the NE data immediately. This meets the requirements of different application scenarios.

## Impact on the System

The backup has certain impact on the running rate of the NE. Therefore, it is recommended that you back up the NE data when the device carries minimum traffic, for example, at 2:00 a.m.

## Prerequisite

- The **DCServer** process runs in the normal state.
- The communication between the device and the U2000 must be in the normal state.
- The TFTP/FTP/SFTP service must be configured and run in the normal state. For details, see [1.1.1 Configuring the FTP, SFTP, or TFTP Service \(Windows\)](#), [1.1.2 Configuring the FTP, SFTP, or TFTP Service \(Solaris\)](#) and [1.1.3 Configuring the FTP, SFTP, or TFTP Service \(Linux\)](#).
- To back up the NE data to the U2000 client, the SFTP server must be configured and the SFTP service must be in the running state.

## Context



### NOTE

After a manual backup task is started, it cannot be stopped.

## Procedure

- 1 Choose **Administration > NE Software Management > NE Data Backup/Restoration** from the main menu.
- 2 Click , and expand the ONU NE node from the NE navigation tree.
  - If a certain NE type is selected, all the NEs of this type are displayed in the NE list in the **NE View** window in the right pane.

- If a NE version is selected in a certain NE type node, all the NEs of this version are displayed in the NE list in the **NE View** window in the right pane.

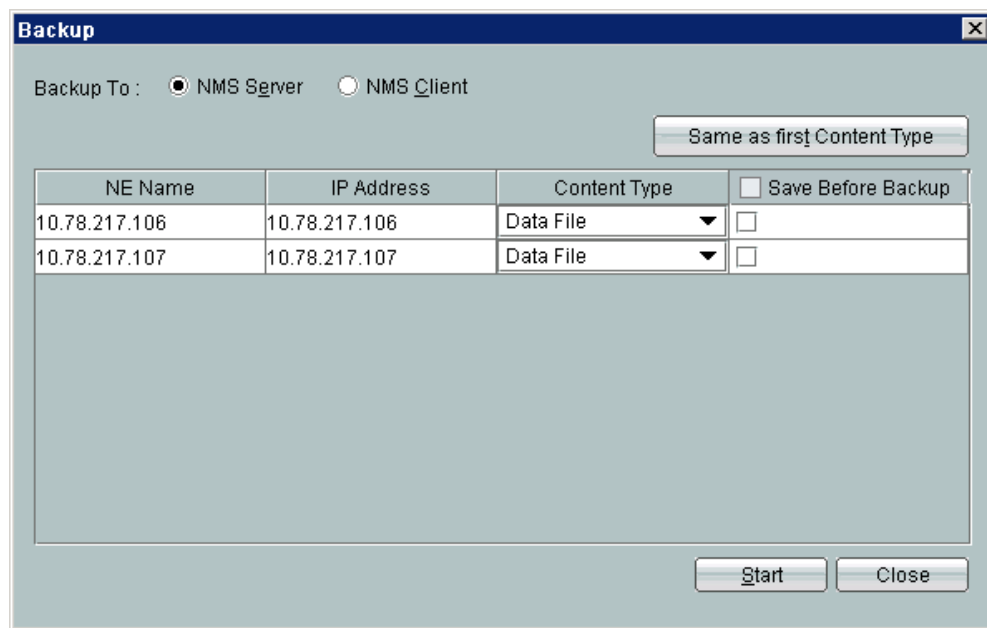
3 **Optional:** To locate a specific NE, click **Find** in the **NE View** window in the right pane.

4 Select one or more records from the NE list in the **NE View** window in the right pane, right-click, and then choose **Backup** or click **Backup** in the lower pane.

 **NOTE**

You can back up the NE data for only one or multiple NEs of the same type at a time.

5 In the dialog box as shown in the following figure, set the parameters related to backing up the NE data immediately.



 **NOTE**

To back up the data for multiple NEs of the same type, click **Same as first Content Type** in the upper right corner of the **Backup** dialog box. In this manner, you can configure the backup file with the same content for multiple NEs at a time rather than configure the backup files one by one.

6 Click **Start** to back up the NE data.

7 The backup process and the operation results are displayed in the **Operation Status** of the list. If the backup is successful, the information about the backup file is displayed on the **Backup Information** tab.

----End

## Related Commands

| To...                              | Run the Command... | In...          |
|------------------------------------|--------------------|----------------|
| Back up the database file manually | <b>backup data</b> | Privilege mode |



| To...                                          | Run the Command...          | In...              |
|------------------------------------------------|-----------------------------|--------------------|
| Back up the configuration file manually        | <b>backup configuration</b> | Privilege mode     |
| Back up the data to the backup server manually | <b>auto-backup manual</b>   | Global config mode |

### 34.7.3 Checking the Backup of the NE Configuration Data

It is recommended that you check whether the NE configuration data is backed up successfully once every week. This operation helps you to restore the recent system data in time in the case that an expected fault occurs in the system. Thus, the impact on users is minimized.

#### Prerequisite

The parameters for periodically backing up the NE data must be set.

#### NOTE

After the backup policy is configured successfully, you need not manually back up data every day and need only to check the backup once every week.

#### Context

- The ONU supports the saving and backing up of the database file. This ensures that the system can be restored in the case that an expected fault occurs in the system. For information on how to restore the NE data, see [Restoring the NE Data Immediately](#).
- The U2000 supports the function of transferring the database file of the ONU in the FTP/TFTP/SFTP mode. To back up the data, you can upload the file saved on the ONU to a specified file server. To restore the data, you can download the file saved on the specified file server to the ONU.

#### Reference Standard

No backup failure is recorded in the log, and the backup database file exists in the specified path.

#### Procedure

- 1 Choose **Administration > NE Software Management > NE Software Log Management** from the main menu.
- 2 In the **NE Software Log Management** window, click **Filter**. The **Filter Log** dialog box is displayed.
- 3 In the **Filter Log** dialog box, select **Backup** from the **Operation Type** drop-down list, and then set other filtering criteria to display the required log that records backup operations (the filtering criteria items are optional), as shown in the following figure.

- 4 Click **OK**. The information about the backup operation logs is displayed in the information list. You can determine whether the database is backed up successfully by viewing the **Result** column in the information list. If **Success** is displayed in the **Result** column, view the directory for saving backup files in the **File Path** column.

----End

## Exception Handling

- If **Failure** is displayed in the **Result** column, take measures according to the information displayed in the **Details** column. If the data is backed up in the FTP/TFTP/SFTP mode, check the following items:
  - Whether you can ping through the IP address of the maintenance network port on the control board or the IP address of a layer 3 interface of a VLAN from the FTP/TFTP/SFTP server. That is, check whether the communication between the ONU and the U2000 is normal.
  - Whether the entered IP address of the FTP/TFTP/SFTP server is correct.
  - Whether the FTP/TFTP/SFTP program is running on the backup server.
  - Whether the path in the FTP/TFTP/SFTP program is set correctly.
- If the automatic backup fails, back up the data manually. In addition, locate the cause of the backup failure and modify the settings according to the cause.
- If the fault persists, contact Huawei technical support engineers. For details, see How to Obtain Technical Support from Huawei.

## Related Commands

| To...           | Run the Command... | In...     |
|-----------------|--------------------|-----------|
| Query user logs | <b>display log</b> | User mode |

| To...                     | Run the Command...         | In...          |
|---------------------------|----------------------------|----------------|
| Query the file server     | <b>display file-server</b> | Privilege mode |
| Configure the file server | <b>file-server</b>         | Privilege mode |

## 34.7.4 Restoring the NE Data Immediately

The DC can restore the history backup data after a NE is selected. This operation ensures that the NE data can be restored if the system upgrade fails or any problems occur. Thus, the system can be restored to the normal state.

### Prerequisite

- The **DCServer** process runs in the normal state.
- The communication between the NE and the U2000 must be in the normal state, and there must be no packet loss in the network.
- The TFTP/FTP/SFTP service must be configured and run in the normal state. For details, see [1.1.1 Configuring the FTP, SFTP, or TFTP Service \(Windows\)](#), [1.1.2 Configuring the FTP, SFTP, or TFTP Service \(Solaris\)](#) and [1.1.3 Configuring the FTP, SFTP, or TFTP Service \(Linux\)](#).
- The NE data must be backed up to the NMS server.

 **NOTE**

To copy the backup files that contain the NE data to another path, copy the directory where the backup files exist. If you copy only a certain backup file, the file is invalid when the NE data is recovered.


- To restore the NE data by selecting the history file on the U2000 client, the SFTP server must be configured and the SFTP service must be in the running state.

### Context

 **NOTE**

After a manual restoring task is started, it cannot be stopped.

### Procedure

- 1 Choose **Administration > NE Software Management > NE Data Backup/Restoration** from the main menu.
- 2 Click , and expand the ONU NE node from the NE navigation tree.
  - If a certain NE type is selected, all the NEs of this type are displayed in the NE list in the **NE View** window in the right pane.
  - If a NE version is selected in a certain NE type node, all the NEs of this version are displayed in the NE list in the **NE View** window in the right pane.
- 3 **Optional:** To locate a specific NE, click **Find** in the **NE View** window in the right pane.
- 4 Select one or multiple records from the NE list in the **NE View** window in the right pane, right-click, and then choose **Recover** or click **Recover** in the lower pane.

 **NOTE**

You can restore the NE data for only one or multiple NEs of the same type at a time.

- 5 In the dialog box that is displayed, set the parameters related to restoring the NE data immediately.

 **NOTE**

- The activation types are **No Reboot** and **With Service Interruption**.
  - **No Reboot**: Start the recover operation without rebooting the NE.
  - **With Service Interruption**: If the operation is successful, the service of the selected NE(s) is interrupted.
  - The activation types of the SRG devices are No Reboot, Immediate Reboot and Scheduled Reboot With Service Interruption.
- To restore the data for multiple NEs of the same type, click **Same as first Activate Type** in the upper right corner of the **Recover** dialog box. In this manner, you can configure multiple NEs with the same activation type at a time rather than restore the NE data one by one.

- 6 Click **Start** to restore the history backup data of the selected NE.
- 7 In the **Operation Confirmation** dialog box, click **Yes**.
- 8 In the **Operation Status** column of the NE list, the restoring process and result are displayed.

----End

## Related Commands

| To...                       | Run the Command...        | In...          |
|-----------------------------|---------------------------|----------------|
| Load the configuration file | <b>load configuration</b> | Privilege mode |
| Load the database file      | <b>load data</b>          | Privilege mode |

---

# A Acronyms and Abbreviations

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The following table describes the acronyms and abbreviations used in the ONU Configuration Guide.

## A

|              |                                              |
|--------------|----------------------------------------------|
| <b>AAA</b>   | Authentication, Authorization and Accounting |
| <b>AAL1</b>  | ATM Adaptation Layer Type 1                  |
| <b>AAL5</b>  | ATM Adaptation Layer Type 5                  |
| <b>ABR</b>   | Available Bit Rate                           |
| <b>ADSL</b>  | Asymmetric Digital Subscriber Line           |
| <b>ANSI</b>  | American National Standard Institute         |
| <b>ATM</b>   | Asynchronous Transfer Mode                   |
| <b>ATU-C</b> | ADSL Transceiver Unit, Central office end    |
| <b>ATU-R</b> | ADSL Transceiver Unit, Remote end            |

## B

|             |                                |
|-------------|--------------------------------|
| <b>BRAS</b> | Broadband Remote Access Server |
| <b>BRA</b>  | Basic Rate Access              |
| <b>BRI</b>  | Basic Rate Interface           |

## C

|            |                              |
|------------|------------------------------|
| <b>CAR</b> | Committed Access Rate        |
| <b>CAS</b> | Channel Associated Signaling |
| <b>CBR</b> | Constant Bit Rate            |
| <b>CES</b> | Circuit Emulation Service    |

|              |                                            |
|--------------|--------------------------------------------|
| <b>CDVT</b>  | Cell Delay Variation Tolerance             |
| <b>CLP</b>   | Cell Loss Priority                         |
| <b>CLR</b>   | Cell Loss Rate                             |
| <b>CS</b>    | Convergence Sub layer                      |
| <b>CTC</b>   | Common Transmit Clock                      |
| <b>CTD</b>   | Cell Transfer Delay                        |
| <br>         |                                            |
| <b>D</b>     |                                            |
| <b>DCE</b>   | Data Communications Equipment              |
| <b>DDN</b>   | Digital Data Network                       |
| <b>DSLAM</b> | Digital Subscriber Line Access Multiplexer |
| <b>DTE</b>   | Digital Terminal Equipment                 |
| <br>         |                                            |
| <b>E</b>     |                                            |
| <b>EMU</b>   | Environment Monitor Unit                   |
| <b>EPD</b>   | Early Packet Discard                       |
| <b>ESC</b>   | Environment Supervision Circuit            |
| <br>         |                                            |
| <b>F</b>     |                                            |
| <b>FE</b>    | Far End                                    |
| <b>FEBE</b>  | Far End Bit Error                          |
| <b>FR</b>    | Frame Relay                                |
| <b>FTP</b>   | File Transfer Protocol                     |
| <br>         |                                            |
| <b>G</b>     |                                            |
| <b>GMII</b>  | Gigabit Media Independent Interface        |
| <br>         |                                            |
| <b>H</b>     |                                            |
| <b>HDLC</b>  | Highspeed Data link Control                |
| <b>HEC</b>   | Header Error Control                       |
| <br>         |                                            |
| <b>I</b>     |                                            |

|                |                                    |
|----------------|------------------------------------|
| <b>IAD</b>     | Integrated Access Device           |
| <b>ICMP</b>    | Internet Control Message Protocol  |
| <b>IMA</b>     | Inverse Multiplexing over ATM      |
| <b>IPoA</b>    | Internet Protocols Over ATM        |
| <b>ISDN</b>    | Integrated Service Digital Network |
| <b>ISP</b>     | Internet Service Provider          |
| <b>IWF</b>     | Inter working function             |
| <b>L</b>       |                                    |
| <b>LAN</b>     | Local Area Network                 |
| <b>LOF</b>     | Loss Of Frame                      |
| <b>LOS</b>     | Loss Of Signal                     |
| <b>M</b>       |                                    |
| <b>MA</b>      | Media Service Access               |
| <b>MAC</b>     | Media Access Control               |
| <b>MBS</b>     | Maximum Burst Size                 |
| <b>MIB</b>     | Management Information Base        |
| <b>MMX</b>     | Main Multiplexer Card              |
| <b>MTU</b>     | Maximum Transmission Unit          |
| <b>N</b>       |                                    |
| <b>NE</b>      | Network Element                    |
| <b>NMS</b>     | Network Management Station         |
| <b>NNI</b>     | Network Node Interface             |
| <b>nrt-VBR</b> | non-real time Variable Bit Rate    |
| <b>O</b>       |                                    |
| <b>OAM</b>     | Operations And Maintenance         |
| <b>OC-3</b>    | Optical Carrier Level 3            |
| <b>OLT</b>     | Optical Line Terminal              |
| <b>ONU</b>     | Optical Network Unit               |

**P**

|              |                                   |
|--------------|-----------------------------------|
| <b>PBX</b>   | Private Branch Exchange           |
| <b>PCM</b>   | Pulse Code Modulation             |
| <b>PCR</b>   | Peak Cell Rate                    |
| <b>POTS</b>  | Plain Old Telephone Service       |
| <b>PPD</b>   | Partial Packet Discard            |
| <b>PPP</b>   | Point-to-Point Protocol           |
| <b>PPPoE</b> | PPP Over Ethernet                 |
| <b>PRA</b>   | Primary Rate Access               |
| <b>PRI</b>   | Primary Rate Interface            |
| <b>PSTN</b>  | Public Switched Telephone Network |
| <b>PVC</b>   | Permanent Virtual Connection      |
| <b>PVP</b>   | Permanent Virtual Path            |

**Q**

|            |                    |
|------------|--------------------|
| <b>QoS</b> | Quality of Service |
|------------|--------------------|

**R**

|               |                                            |
|---------------|--------------------------------------------|
| <b>RADIUS</b> | Remote Authentication Dial In User Service |
| <b>RTU</b>    | Remote Terminal Unit                       |
| <b>rt-VBR</b> | real time Variable Bit Rate                |

**S**

|              |                                                         |
|--------------|---------------------------------------------------------|
| <b>SAR</b>   | Segmentation And Reassembly                             |
| <b>SCR</b>   | Sustainable Cell Rate                                   |
| <b>SDH</b>   | Synchronous Digital Hierarchy                           |
| <b>SNMP</b>  | Simple Network Management Protocol                      |
| <b>SRA</b>   | Seamless Rate Adaptive                                  |
| <b>STM-1</b> | Synchronous Transmission Module Data Rates:155.52Mbit/s |
| <b>STM-4</b> | Synchronous Transmission Module Data Rates:622.08Mbit/s |
| <b>STS-3</b> | Synchronous Transport Signal Level 3                    |



**T**

|             |                                |
|-------------|--------------------------------|
| <b>TDM</b>  | Time Division Multiplex        |
| <b>TFTP</b> | Trivial File Transfer Protocol |

**U**

|               |                                                 |
|---------------|-------------------------------------------------|
| <b>UBR</b>    | Unspecified Bit Rate                            |
| <b>UDT</b>    | Unstructured Data Transfer                      |
| <b>UNI</b>    | User Network Interface                          |
| <b>UPC</b>    | Usage Parameter Control                         |
| <b>UTOPIA</b> | Universal Test&Operations PHY Interface for ATM |

**V**

|             |                              |
|-------------|------------------------------|
| <b>VBR</b>  | Variable Bit Rate            |
| <b>VCI</b>  | Virtual Channel Identifier   |
| <b>VCL</b>  | Virtual Channel Link         |
| <b>VLAN</b> | Virtual Local Area Network   |
| <b>VPDN</b> | Virtual Private Data Network |
| <b>VPI</b>  | Virtual Path Identifier      |