

AN5116-06B

Optical Line Terminal Equipment GPON Configuration Guide

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FiberHome Telecommunication Technologies Co., Ltd.

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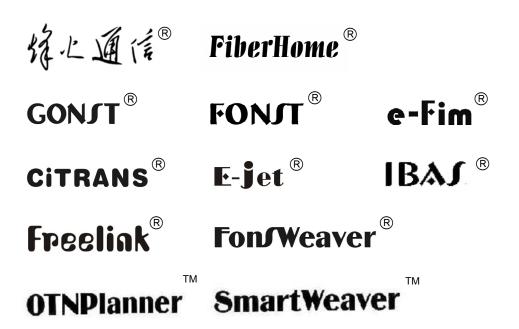
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Preface

Related Documentation

Document	Description	
AN5116-06B Optical Line Terminal Equipment	Introduces the retrieval method, contents, releasing, reading approach, and suggestion feedback method for	
Documentation Guide	the complete manual set for the AN5116-06B.	
AN5116-06B Optical Line Terminal Equipment Product Description	Introduces the AN5116-06B's network location, functional features, hardware structure, FTTx application model, equipment configuration, network management system and technical specifications. It is the foundation of the complete manual set. The other manuals extend and enrich the concepts introduced in the <i>Product Description</i> .	
AN5116-06B Optical Line Terminal Equipment Feature Description	Introduces the key features supported by the AN5116-06B, including GPON / EPON access, GPON / EPON terminal management, VLAN, broadcast, voice and safety; and introduces these functions in details in terms of definition, characteristic, specification, principle description, references and so on.	
AN5116-06B Optical Line Terminal Equipment EPON Configuration Guide	Introduces the method for configuring the EPON services supported by the equipment via ANM2000 Network Management System, such as basic configuration, voice service configuration, data service configuration, multicast service configuration, and software upgrading configuration, to guide users on start-up for various services and software upgrading.	
AN5116-06B Optical Line Terminal Equipment GPON Configuration Guide	Introduces the method for configuring the GPON services supported by the equipment via ANM2000 Network Management System, such as basic configuration, voice service configuration, data service configuration, multicast service configuration, and software upgrading configuration, to guide users on start-up for various services and software upgrading.	

Document	Description
ANE116 OCD Onting Line	Introduces the appearance, structure, functions, technical
AN5116-06B Optical Line	specifications, and usage method for the AN5116-06B's
Terminal Equipment Hardware	cabinet, PDP, subrack, cards, cables and wires, facilitating
Description	users' mastery of the hardware features of the equipment.
	Introduces the overall installation and verifying procedure
ANE116 OFP Ontion Line	from unpacking inspection to power-on examination after
AN5116-06B Optical Line	the equipment is delivered on site, and provides reference
Terminal Equipment Installation Guide	information (e.g. safety principles and wiring scheme of a
Guide	variety of interfaces) to guide users to install the
	equipment.
	Introduces the shortcut menu for every card of the
AN5116 06P Ontical Line	AN5116-06B inside ANM2000 Network Management
AN5116-06B Optical Line Terminal Equipment GUI	System, including the function, parameter explanation,
Reference	precautions and configuration example of every command
Relefence	in the shortcut menu of each card, to help users master
	the operation of the AN5116-06B inside ANM2000.
	Introduces the operation procedures of replacing the
AN5116-06B Optical Line	AN5116-06B's components, including preparations,
Terminal Equipment Component	precautions, early operations, operation process and
Replacement	subsequent operations, so as to guide users with the
	completion of component replacement on the hardware.
AN5116-06B Optical Line	Introduces the remote and on-site routine maintenance
Terminal Equipment Routine	operations of the AN5116-06B. Users are able to eliminate
Maintenance	the potential risks in the equipment operation process as
Maintenance	early as possible via implementing routine maintenance.
AN5116-06B Optical Line	Introduces the AN5116-06B's alarm information, including
Terminal Equipment Alarm and	alarm names, alarm levels, possible reasons, effects on
Event Reference	the system, and processing procedure, to guide users on
Event Kelerence	effective alarm processing.
	Introduces the fault processing principles and methods of
AN5116-06B Optical Line	fault diagnosis and locating for the AN5116-06B. Also
Terminal Equipment EPON	discusses the typical fault cases of various EPON
Troubleshooting Guide	services. If the trouble is too complicated to process,
Houseshooling Guide	users can refer to FiberHome for technical support
	according to the instructions in this document.

Document	Description
AN5116-06B Optical Line Terminal Equipment GPON Troubleshooting Guide	Introduces the fault processing principles and methods of fault diagnosis and locating for the AN5116-06B. Also discusses the typical fault cases of various GPON services. If the trouble is too complicated to process, users can refer to FiberHome for technical support according to the instructions in this document.

Version

Version	Description		
	Initial version.		
	The corresponding version of the AN5116-06B: GPON		
	V2.0		
A	The corresponding version of the ANM2000:		
	Version No.: V3.0T1		
	Build: 05.07.05.04SP1		
	The corresponding version of the AN5116-06B: GPON		
	V2.1		
В	The corresponding version of the ANM2000:		
	Version No.: V3.0T1		
	▶ Build: 05.07.05.08SP1		

This manual mainly introduces the basic configuration and service start-up of the AN5116-06B's network management system. It aims to help users in understanding the equipment's technologies, functions and practical application capacity and to provide technical support for the users.

Intended Readers

This manual is intended for the following readers:

- Commissioning engineers
- Operation and maintenance engineers

To utilize this manual, these prerequisite skills are necessary:

- Access network technology
- GPON principles
- Ethernet switch technology
- Computer network technology
- ANM2000 network management system basic operations

Conventions

Terminology Conventions

Terminology	Convention	
AN5116-06B	AN5116-06B Optical Line Terminal Equipment	
ANM2000	FiberHome e-Fim ANM2000 Broadband Access Network	
	Management System	
EC4B	4×EPON-C Interface Card (type B)	
EC8B	8×EPON-C Interface Card (type B)	
GC4B	4×GPON-B Interface Card (type B)	
GC8B	8×GPON-C Interface Card (type B)	
C155A	1×STM-1 Optical Interface Card (CES mode)	
CE1B	32×E1 Optical Interface Card (CES mode) (type B)	
PUBA	Public Card (type A)	
	Core Switch Card (type A) (code:2.115.331)	
HSWA	Core Switch Card (EPON) (Code:2.115.334)	
HU1A	4×GE +1×10GE Optical Interface Uplink Card	
HU2A	2×GE +2×10GE Optical Interface Uplink Card	
GU6F	6×GE Optical Interface Uplink Card	

Symbol Conventions

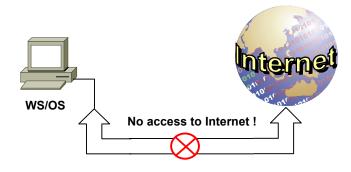
Symbol	Convention	Description
A.	Note	Important features or operation guide.
	Caution	Possible injury to persons or systems, or cause traffic interruption or loss.
4	Warning	May cause severe bodily injuries.

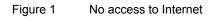
Operation Safety Rules

- Network management computer should be placed away from direct sunlight, electromagnetic interference, heat source, humidity and dust, and with at least 8cm distance from other objects in order to keep good ventilation.
- Use UPS power supply to avoid loss of network management data caused by accidental power failure.
- The computer case, UPS power supply and switch (or hub) should be connected to protection earth ground.
- To shut down the network management computer, first exit the operation system normally and then shut off the power supply.
- Do not exit the network management system when it is working normally. Exiting the network management system does not interrupt traffic in the network, but precludes centralized control of the networked equipment.
- The network management computer cannot be used for purposes other than network management. Use of unidentified memory devices should be prohibited so as to avoid computer viruses.
- Do not delete any file in the network management system randomly or copy any irrelevant file into the network management computer.



Do not visit Internet via the network management computer. Doing so may increase data flow in the net card and hence affects normal network management data transmission or results in other accidents.





Do not perform service configuration or expansion during service busy hours via the network management system.



Do not modify the network management computer's protocol settings, computer name or LAN settings. Doing so may result in abnormal operation of network management system.

Local Area Connection Properties
General
Connect using:
Intel(R) PR0/1000 MT Network Connection
Configure
Components checked are used by this connection:
DDK PACKET Protocol File and Printer Sharing for Microsoft Networks Internet Protocol (TCP/IP) No modification !
Install Uninstall Properties
Show icon in taskbar when connected
OK Cancel

Figure 2 Do not modify protocol settings (1)

Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
O Obtain an IP address automatically
Use the following IP address:
IP address: 10 . 16 . 10 . 1
Subnet mask: 255 . 255 . 0 . 0
Default gateway: 10 . 16 . 1 . 254
Obtain DNS server address automatically No modification !
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced
OK Cancel



Identification Changes
You can change the name and the membership of this computer. Changes may affect access to network resources.
Computer name: ANM2000 No modification !
Full computer name: ANM2000.
More
Member of
O Domain:
Workgroup:
WORKGROUP
OK Cancel

Figure 4 Do not modify computer name

Internet Options	<u>?</u> ×
General Security Content Connec	tions Programs Advanced
Use the Internet Connection connect your computer to th	
Dial-up settings	
	Add
	Remove
	Settings
Never dial a connection	
C Dial whenever a network conne	
	Local Area Network (LAN) Settings
Current None	Automatic configuration Automatic configuration may override manual settings. To ensure the
	use of manual settings, disable automatic configuration.
Local Area Network (LAN) settings	Automatically detect settings
	Use automatic configuration script
	Address No modification !
OK	Proxy server
	Use a proxy server
	Address: Port: Advanced
	Bypass proxy server for local addresses
	OK Cancel

Figure 5 Do not modify LAN settings

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Configuring the ANM2000 Management Path



1

To avoid the loss of equipment configuration data caused by the power failure, we recommend that users select **Control Command** \rightarrow **Save configuration to FLASH** from the shortcut menu of the active HSWA card after completing all service provisioning and function configuration.

Before using the ANM2000 to manage the equipment, users need to configure the ANM2000 management path using the Console control platform (shortened as Console in the following sections). This chapter introduces methods of ANM2000 management path configuration. It includes the following sections:



Configuring the Console



Configuring the ANM2000 management path



Logging into the ANM2000

1.1 Configuring the Console

1.1.1 Configuration Preparation

Power on

Plan the service data and check the equipment power before powering on the system.

- Plan data and register management VLAN and IP address.
- Confirm that DC power has been connected to the equipment and the power supply voltage is standard voltage within -38V to -57V.

Observe the indicator LEDs of cards

Confirm whether each card has started up or not by examining its indicator LED after powering on the equipment.

- Observe the ACT on the card. If the ACT is on, it indicates that the card is working normally.
- If the link LED of GC4B and GC8B is on, it indicates that the remote device has been connected.

Observe the connection status of system

Check whether the cables connection among devices is correct or not according to the network diagram. Check if the following connections work well, including the optical path connection between the PON and the ONU, the connection between the ONU's FE interface and the relay switch, and the uplink connections of the C155A card and the CE1B card.



In order to check whether the ONU and the OLT have been registered successfully or not, you need to check if the ONU REG is always on. If so, the ONU and the OLT have been registered successfully. FiberHome recommends users connect an ONU to the equipment for test use if practical.

Detect optical power

Measure the optical power of the uplink port and the PON port with the optical power meter. The optical path specifications of the OLT side and the ONU side must be in normal range, otherwise the services can't be started up normally.

Specifications:

- Normal range of the OLT side transmitting optical power: +2 to +7dbm.
- Normal range of the ONU side receiving optical power: -27 to -6dbm.

1.1.2 Connecting with the Network Management Computer

Use the serial port cable attached to this equipment to connect the RS-232 serial port of the network management computer and the Console port of the AN5116-06B's active core switch card. See Figure 1-1.

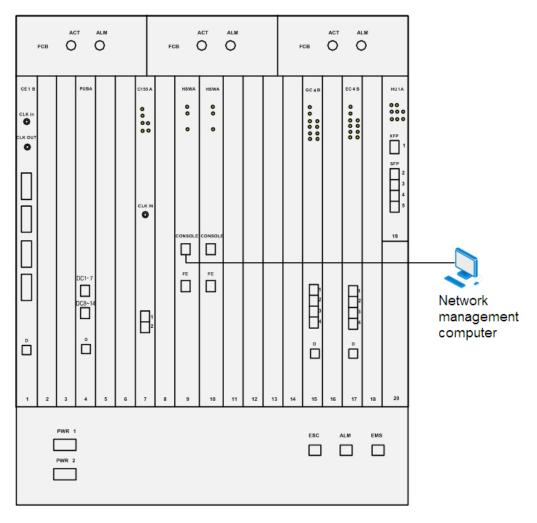


Figure 1-1 Connection with the CLI network management system



The MS LED being on in the core switch card indicates that this card is active. The MS LED being off indicates that this card is standby. By default, the core switch card in Slot 09 is active.

1.1.3 Logging into the Console

Purpose

The ANM2000 management path of the AN5116-06B can be only configured using the CLI on Console. Using the Window's HyperTerminal can access the equipment's CLI network management system.

Prerequisites

- The connections with the network management computer are completed.
- The network management computer is turned on normally.
- The username and password of the AN5116-06B's CLI network management system are available.
- The computer has installed the genuine Windows XP SP3 system or newer version system.

Operation steps

You should create a connection and configure it if it is your first time to log in the Console. Next time you can directly access the Console. The following presents the instructions for the two situations.

- Steps for the first-time login
 - Click the Start menu at the desktop and select All Programs → Accessories → Telecom → HyperTerminal to bring up the Connection Description dialog box.
 - 2) In the **Connection Description** dialog box, perform the following configurations:

- Name: Fill in the name of a connection object, such as FiberHome CLI Control Terminal.
- Icon: Select an icon for this connection.

Connection Description	?×
New Connection	
Enter a name and choose an icon for the connection:	
Name:	
FiberHome CLI Control Terminal	
lcon:	
	X
OK Car	ncel

- Click **OK**, and the **Connect To** dialog box appears.
- 3) In the **Connect To** dialog box, perform the following configurations:
 - **Connect using**: Select the port No. used for the Console port of the core switch card in the drop-down list, such as **COM1**.

Connect To	? 🛛
RiberHor	ne CLI Control Terminal
Enter details for	the phone number that you want to dial:
Country/region:	China (86)
Area code:	027
Phone number:	
Connect using:	СОМ1
	OK Cancel

- Click **OK**, and the **COM1 Properties** dialog box appears.
- 4) In the **COM1 Properties** dialog box, you can click the **Restore Defaults** button directly. The default configurations are as below:
 - Bits per second: 9600
 - > Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: None

COM1 Properties	? 🛛
Port Settings	
Bits per second:	9600
Data bits:	8
Parity:	None
Stop bits:	1
Flow control:	None
	Restore Defaults
0	K Cancel Apply

• Click **OK**, and the Console can be started up.

_	0.00		B														_
															М	astei	2
777	zzzz	7777	77777	7777	77775	7777	7775		77777	7777	7777	7777	777	7.7.7	777	77777	7.2
zz		zzz		zzzz:													
zz	zzzz			zzzz:												77777	
zz	ZZZZ			zzzz												zzzzz	
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zz	ZZZZ	z z	ZZ	zz	ZZZ	z	z	zz	zzz	zz	ZZ	zz	z	z	z	ZZZ	
zz	ZZZZ	z z	ZZZ	z		zz	z	zzz	ZZZ	z	zzzz	z	z	z	z		zz
zz	zzzz	z z	zz	zz	zzzz	zzz	zza	zzz	zzz	zz	zz	zz	z	z	z	zzzz	zz
zz	ZZZZ	z z		zzzz		z	zza	zzz	ZZZ	zzz		zzz	z	z	zz		2
zzz	zzzz	zzzz	zzzz	zzzz	zzzz	zzz	zzz:	zzzz	zzzz	zzzz	zzzz	zzzz	zzz	zzz	zzz:	zzzz	z
	Pres	s <e< td=""><td>nter></td><td>to</td><td>come</td><td>int</td><td>o ti</td><td>nis</td><td>syste</td><td>m.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></e<>	nter>	to	come	int	o ti	nis	syste	m.							

5) Press the **Enter** key, and input the username and the password to log into the CLI network management system. The commands are as follows:

Login:GEPON	// The username is GEPON.
Password:GEPON	// The initial password is GEPON.
	7/Under common user mode, input the username and the password of the er the administrator mode.
Password:GEPON	// The initial password of administrator account is GEPON.
Admin# perform network ma	// After the prompt Admin # appears, you can input command lines to inagement operations on the AN5116-06B.



- 1. If the command prompt is User>, this indicates that the system is in ordinary user mode; if the command prompt is Admin#, this indicates that the system is in administrator mode.
- 2. The password is case sensitive and username not.



To enhance the security of the system, users should memorize their passwords and keep them secret. Regularly changing passwords is strongly recommended.

- Select File → Save from the menu bar of the Console window to save the configurations for the Console.
- Step for non-first-time login

Select Start \rightarrow Program \rightarrow Accessories \rightarrow Telecom \rightarrow HyperTerminal \rightarrow FiberHome CLI Control Terminal from the desktop to get the Telnet default? alert box. Click Yes to make HyperTerminal the default Telnet program, or click No otherwise. After this confirmation, the established Console is started.



To establish a shortcut for convenience, drag **FiberHome CLI Control Terminal** to the desktop.

1.2 Configuring the ANM2000 Management Path

Configuration rules

- If the IP address of network management client and management IP of equipment are not in the same net segment, you should set the static routing to perform routing forwarding.
- The community name of SNMP and Trap receiver is recommended to use adsl, or adopt the default value public.
- If several management VLANs are configured, users need to configure the management VLAN on 2 uplink ports respectively; if the static routing is configured, you should configure the destination net segment IP, mask and the IP address of next-hop routing.

Network diagram

The AN5116-06B can support several management VLANs and manage the equipment in a complex network environment. See the network diagram of the ANM2000 as shown in Figure 1-2. The ANM2000 client end manages the equipment through the AN5116-06B's uplink ports. The following are two management ways: management in LAN and through gateway. Client 1 manages the AN5116-06B through LAN, and client 2 manages it through gateway.



When the management is performed using the out-band network management system, it is recommended to use the EMS interfaces at the bottom part of the equipment's subrack preferentially.

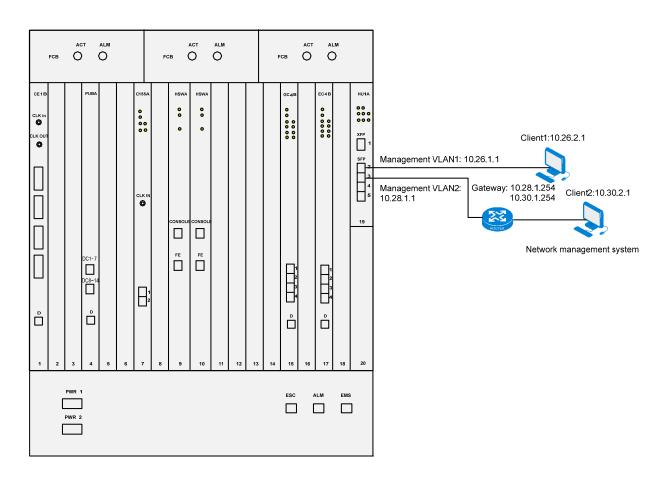


Figure 1-2 Network diagram of the ANM2000

Planning data

When managing the AN5116-06B in in-band mode, you need to configure the management VLAN, static routing and SNMP first. The configurations are listed in Table 1-1.

Table 1-1	Planned data for configuring the ANM2000 management path
	i lainea aala lei eeniganing tie / timzeee management pati

Item		Description	Example	
Configuring the management VLAN	Management VLAN name	Configure it according to the network planning of operators	а	b
	Management VLAN ID	Configure it according to the network planning of operators	4000	4001
	In-band network management interface	Slot number and port number of the card including an uplink port	19:2	19:3

Item		Description	Example	
	Management VLAN tag	Configure it as untagged	untagged	untagged
	Management IP	Configure it according to the network planning of operators	10.26.1.1	10.28.1.1
	Bit number of subnet mask	Configure it according to the network planning of operators	16	16
Configuring the static routing	Destination network segment	Configure it according to the network planning of operators	_	10.30.1.254
	Mask code	Configure it according to the network planning of operators	_	255.255.0.0
	The next-hop IP address	Configure it according to the network planning of operators	_	10.28.1.254
	SNMP service function	This function is enabled by default, so users do not need to configure it.	enable	
	SNMP Trap function	This function is enabled by default, so users do not need to configure it.	enable	
Configuring	IP address of Trap receiver	The IP address of network management server (with Manager module)	10.26.2.1	10.30.1.1
Configuring the SNMP	SNMP version	Supports v1 and v2c, with v2c recommended	v2c	v2c
	Community name of Trap receiver	It is recommended to set this item to adsI or adopt the default value public	adsl	adsl
	Community type of SNMP	Read and write	readwrite	
	Community name of SNMP	It is recommended to set this item to adsI or adopt the default value public .	adsl	

Configuration flow chart

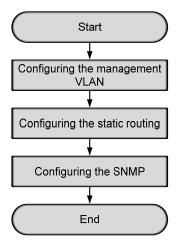


Figure 1-3 Flow chart of configuring the ANM2000 management path

1.2.1 Configuring the Management VLAN

Command format

Table 1-2	Command format for configuring the management V/LAN
	Command format for configuring the management VLAN

Command
cd service
set manage vlan name <name> vid <vid> inputport [<portlist> outbandport] [untagged tagged]</portlist></vid></name>
set manage vlan name <name> ip <a.b.c.d m=""> {<a.b.c.d>}*1</a.b.c.d></a.b.c.d></name>

Configuration examples

1. Enter the **service** directory.

```
Admin# cd service
Admin\service#
```

2. Create the management VLAN.

```
Admin\service# set manage vlan name a vid 4000 inputport 19:2 untagged
Admin\service# set manage vlan name b vid 4001 inputport 19:3 untagged
Admin\service#
```

3. Set the management IP and the mask code.

```
Admin\service# set manage vlan name a ip 10.26.1.1/16
Admin\service# set manage vlan name b ip 10.28.1.1/16
Admin\service#
```

1.2.2 Configuring the Static Routing

Command format

 Table 1-3
 Command format for configuring the static routing

Command	
cd service	
add static route destination <a.b.c.d> gateway <a.b.c.d> mask <a.b.c.d></a.b.c.d></a.b.c.d></a.b.c.d>	

Configuration examples

1. Enter the **service** directory.

Admin# cd service Admin\service#

2. Add the static routing.

```
Admin\service# add static route destination 10.30.1.254 gateway
10.28.1.254 mask 255.255.0.0
Admin\service#
```

1.2.3 Configuring the SNMP

Command format

Table 1-4	Command format for configuring the SNMP
-----------	---

Command	
cd service	
service snmp [enable disable]	
service snmp trap [enable disable]	
set snmp trapreceiver add <a.b.c.d> version [v1c v2c] {community <string>}*1</string></a.b.c.d>	
set snmp community [readonly readwrite] <string></string>	

Operation steps

1. Enter the **service** directory.

```
Admin# cd service
```

Admin\service#

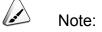
2. Enable the SNMP Service function.



The SNMP Service function is enabled by default, so users do not need to configure it.

```
Admin\service# service snmp enable
Snmp agent service already up.
Admin\service#
```

3. Enable the SNMP Trap function.



The SNMP Trap function is enabled by default, so users do not need to configure it.

```
Admin\service# service snmp trap enable
Snmp agent trap already supported.
Admin\service#
```

4. Configure the Trap receiver.

The IP address of the network management server will be set as that of the TRAP receiver by the system by default. And it doesn't need reconfiguration. If the TRAP receiver designated officially is not the network management server, configurations should be performed according to Step 4.

```
Admin/service# set snmp trapreceiver add 10.26.2.1 version v2c community
ads1
Successfully added trapreceiver IP address is 10.26.2.1
The trap version is v2c
The trap community is ads1
Admin/service# set snmp trapreceiver add 10.30.1.1 version v2c community
ads1
Successfully added trapreceiver IP address is 10.30.1.1
The trap version is v2c
The trap community is ads1
Admin/service#
```



Under certain circumstances, the equipment may be unable to learn the IP address of the network management server as the number of IP addresses learnt by the equipment exceeds the limit, which results in the fact that the IP address of the network management server cannot be set as the IP of the TRAP receiver. If the network management system cannot receive the alarms correctly, please examine for this reason at first.

If it is confirmed that the IP address of the network management server is not set as the IP of the TRAP receiver automatically, please refer to Step 4 and configure it manually.

5. Configure the SNMP community.

```
Admin\service# set snmp community readwrite adsl
```

Admin\service#

1.2.4 End of Configuration

After the above steps, the configuration of the ANM2000 management path has been completed. Users can manage and maintain the AN5116-06B by logging into the ANM2000 on network management computer.

1.3 Logging into the ANM2000

Prerequisites

- The Informix database has been correctly installed and the related services have been started.
- The ANM2000 server end / client end has been correctly installed.
- The ANM2000 network management computer has been normally started.
- The configuration of the ANM2000 management path has been completed.

Operation steps



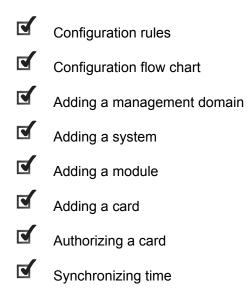
- 1. Double-click the ANM2000 icon ANM2000, or select Start \rightarrow All Programs \rightarrow AnmServer \rightarrow ANM2000, the ANM2000 will begin accessing the database and the ANM2000 User Login dialog box will appear.
- Enter the user name and the password (they are both "1" by default), and click the **OK** button. After the authentication you will access the main window of the ANM2000, as shown in the Figure 1-4.

ANM2000 User Login	
<u> </u>	<u>V</u> ser Name: 1
	Password: *
	OK Cancel

Figure 1-4 The ANM2000 user login dialog box

2

After logging into the ANM2000, you need to add the to-be-managed AN5116-06B to a management domain in order to manage and maintain it. This chapter introduces the operation steps of adding device as follows:



2.1 Configuration Rules

- If the in-band network management mode is used in configuring the IP address, subnet mask and gateway of the system, the IP address of the system and that of the in-band management VLAN should be consistent so that the network management server can communicate normally with the AN5116-06B. For example, if the IP address of the network management server of the management VLAN is 10.26.1.x, the IP address of the system should also be set to 10.26.1.x.
- If the network management server and the AN5116-06B are not in the same LAN in the configuration of the IP address, subnet mask and gateway of the system, the AN5116-06B should be managed through the universal gateway. In such case, the IP address of system and that of the gateway of the management VLAN should be in the same net segment so that the network management client can access and manage the AN5116-06B by the gateway. For example, if the IP address of the gateway of management VLAN is 10.28.1.x, the IP address of the system should also be set as 10.28.1.x.

2.2 Configuration Flow Chart

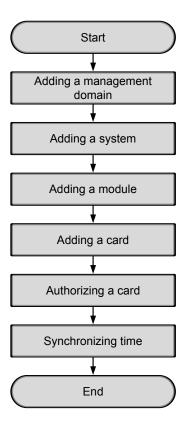


Figure 2-1 Basic configuration flow chart

2.3 Adding a Management Domain

Prerequisites

The network management GUI is in edit mode (click the button in the toolbar to enter the edit mode).

Configuration purpose

Divide the management objects by configuring the management domain according to the executive function of the operator.

Operation steps

Add a management domain 1 and fill in its description according to actual situation. The detailed operation steps are as follows:

- 1. Right-click a blank area of the **Object Tree** pane and select **Add Domain** from the shortcut menu to bring up the **Add Domain** dialog box.
- 2. Configure the parameters in the **Add Domain** dialog box, as shown in Figure 2-2.

			×
Domain No. (1 - 65535) 1		
Domain Name	Domain1		
Domain Description			
Add	Apply	Cancel	//.

Figure 2-2 The Add Domain dialog box

3. After completing setting the parameters, click the **Add** button and the created management domain 1 appears in the **Object Tree** pane, as shown in Figure 2-3.

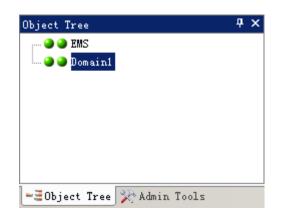


Figure 2-3 The object tree management domain

2.4 Adding a System

Prerequisites

The management domain is successfully created.

Configuration purpose

Add the AN5116-06B to the ANM2000 according to the IP address, subnet mask and gateway of the AN5116-06B.

Operation steps

Add the AN5116-06B system whose IP address is 10.92.28.169, subnet mask is 255.255.0.0, and manufacturer name is FiberHome. The detailed operation steps are as follows:

- Right-click on the management domain object created in the Object Tree pane, select Add Shelf Device → GEPON → Add AN5116-06B System from the shortcut menu to bring up the Add System dialog box.
- 2. Configure the parameters in the **Add System** dialog box as shown in Figure 2-4.

System Property -	[Domain1:S1]
System No. (1 - 65535)	1
System Name	S1
System Type	AN5116-06B
Protocol Type	SNMP (V2c)
Version	
Manufacturer	Fiberhome
IP Address	10, 92, 28, 169
IP Mask	255, 255, 0, 0
Gateway	10. 26. 1. 254
System Description	
Serial No.	
Managing Program	NO. 1 Management Program (10, 92, 20, 101:7888)
🖃 Workstation	
NO. 1 Management Pr	
UserName	
Password	
OK	Apply Cancel

Figure 2-4 Adding the AN5116-06B system

3. After completing the parameters setting, click the **OK** button, and the created system 1 appears in the **Object Tree** pane, as shown in Figure 2-5.

Object Tree	Ψ×
🎱 🍛 EMS	
📇 🎱 🎱 Domain1	
🍑 🎱 System1	
-==Object Tree 🔀 Admin Tools	

Figure 2-5 The system in the **Object Tree** pane

2.5 Adding a Module

Prerequisites

The AN5116-06B system has been created.

Configuration purpose

Add the AN5116-06B module to the ANM2000.

Operation steps

Add a module whose number is 1 and name is **OLT system1**. The detailed operation steps are as follows:

- Right-click on the AN5116-06B system in the Object Tree pane and select Add Module from the shortcut menu to bring up the Add Module dialog box.
- Configure the parameters in the Add Module dialog box as shown in Figure 2-6.



Figure 2-6 Adding a module

3. After completing configuration, click the **OK** button, and the created module appears in the **Object Tree** pane, as shown in Figure 2-7.

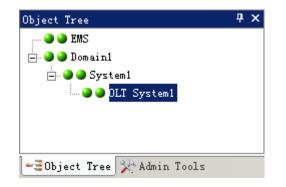


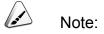
Figure 2-7 The module in the **Object Tree** pane

4. Click the \square button in the toolbar or select **File** \rightarrow **Save** from the main menu

to save the current system configurations to the ANM2000 database.

2.6 Adding a card

There are two ways of adding a card: automatic adding and manual adding.



After adding a new object, users should save the configuration first and enter the edit mode again to detect the physical configuration; otherwise, the command parameter error may occur.

- Automatic adding: You can use the function of detecting physical configuration to add a card automatically if it is present.
- Manual adding: You can pre-configure to add a card if it is not present. The manual adding is also available if the card is present.

2.6.1 Adding a Card Automatically

Prerequisites

- The AN5116-06B system has been created successfully.
- The cards have been powered on normally.

Operation steps

 Right-click the AN5116-06B system (or the management domain) in the Object Tree pane and select Detect Physical Configuration in the shortcut menu. Then the Detect Physical Configuration window will appear, as shown in Figure 2-8. By default, Auto Update Object Tree And Database is selected. Select the system object to be detected in the object tree on the left of the window.

🔥 Detect P	hysical Co	nfiguration				
Operation	Setting	📉 🜓 💷 🛓	2 🗾 🛃	3- 55		
🔽 Auto Up	date Objec	t Tree And Da	tabase			R.
Domai			Objects	Command	Result	Comment
						1.

Figure 2-8 Detecting the physical configuration automatically

2. When users click button or select Operation → Detect Physical Configuration in the menu bar, the ANM2000 will begin to detect the AN5116-06B's configuration. The progress and the result of the detection will be displayed in the lower right part of the window, as shown in Figure 2-9. The service interface cards, core switch card and fan card have been added successfully.

🗥 Detect Physica	Configuration		
Operation Settin	• 🔍 🗈 🖬 🖬 🏄	3-45	
Auto Update 01	oject Tree And Database		
🖃 🖌 🖌 Domain 1	Command Result	Comment	
🗹 S1			
	Board 9 Detect Succeed	HSWA ,O Port	
	Board 16 Detect Succeed	GC4B ,4 Port	
	Board 19 Detect Succeed	HU1A ,5 Port	
	Board 21 Detect Succeed	FAN ,O Port	_
		TIN O D	
			1.

Figure 2-9 Detecting the results of the physical configurations

 Click the AN5116-06B module in the Object Tree pane to check if the cards displayed in the subrack view are consistent with all the cards of physical detection; if consistent, it indicates the cards are added successfully.

						I	Domain	1:S5:OL	T System	1:AN51	16-06	в						
•	FAN	J				21	••	FAN			22	2	• • F.	AN				23
s o t 1	P U B A	s l o t 3	s ot 4	s l o t 5	s 0 t 6	s 0 t 7	s 0 t 8	● ● H S W A	s l t 1 0	s I 0 t 1 1	s I 0 t 1 2	s I 0 t 1 3	s 0 t 1 4	• • • • • •	s 0 t 1 6	s 0 t 1 7	s I 1 8	+ U 1 A 19 s t 2 0
1	2	з	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20

Figure 2-10 The AN5116-06B subrack view

2.6.2 Adding a Card Manually

Prerequisites

The AN5116-06B module has been created.

Slot distribution

After adding the AN5116-06B module, click this module in **Object Tree** and its subrack view will appear in the view area of the **Device View** tab, as shown in Figure 2-11.

						[Domain	1:S5:OLT	System 1	L:AN51	16-06	в						
slot2	21					21	slot22				2	2 slo	t23					23
s 0 t 1	s l t 2	s 0 t 3	s 0 t 4	s 0 t 5	s 0 t 6	s o t 7	s 0 t 8	s 0 t 9	s I t 1 0	s 0 t 1 1	s l t 1 2	s l t 1 3	s 0 1 4	s 0 1 5	s 0 1 6	s 0 t 1 7	s 0 1 8	s l t 1 9 19 s l 0 t 2 0
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20

Figure 2-11 The AN5116-06B subrack view

The cards that can be configured in the AN5116-06B subrack view are listed in Table 2-1.

Card Name Abbreviation	Slot	Quantity
HSWA	9, 10	1 to 2
GC4B/GC8B	1 to 8, 11 to 18	1 to 16
C155A/CE1B	1 to 8, 11 to 18	0 to 2
HU1A/HU2A/GU6F	19, 20	1 to 2
PUBA	1 to 8, 11 to 18	1

Table 2-1 Card configuration of the AN5116-06B

Operation steps

Add the GC8B card manually at Slot 1 in the subrack view. The detailed operation steps are as follows:

1. Right-click the slot to be added with a card and select **Add Card** in the shortcut menu. Select the desired card type in the submenu that appears subsequently. See Figure 2-12.

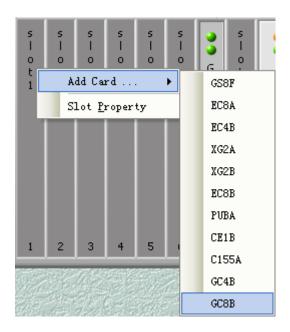


Figure 2-12 Adding a card

2. The **Add Board** dialog box will appear, as shown in Figure 2-13. Use the default values for the card property parameters. Then click the **Add** button.

Add Board	l - [Domain 1:System 2:0 🗙
Card No. (1	- :1
Card Name	GC8B
Card Type	
Version	

Figure 2-13 Adding a card to the AN5116-06B subrack

Modifying cards

- To modify the card properties, right-click the card to be modified in the subrack view and select **Property** in the shortcut menu. Then modify the card properties in the dialog box that appears.
- To delete a certain card, right-click this card in the subrack view and select
 Delete in the shortcut menu. The card will be deleted then.
- To change the type of a card, right-click this card in the subrack view and select **Reset To** in the shortcut menu. Then users need to select the new card type in the submenu. After resetting the card type, you need to save first and then configure the card. After replacing the card, reconfigure parameters for the new card or use the system default configurations.

2.7 Authorizing a Card

There are two conditions of authorizing a card. Users can configure according to actual situation.

- Authorizing a card which is present: You can use the function of detecting physical configuration to authorize a card if it is present.
- Authorizing a card which is not present: you can pre-authorize a card if it is not present. When the actual card is powered up, the ANM2000 can check the type and operate the service configuration as long as the types match.

2.7.1 Authorizing a card which is present

Prerequisites

- Network management GUI is in edit mode.
- The cards are added to the subrack and powered up successfully.
- The operation of detecting physical configuration is completed.

Configuration purpose

It is necessary to authorize all the cards in subrack at one time if the equipment is in its first use, and then the card service can be configured.

Parameter explanation

Parameter	Explanation	Instruction
Slot No.	Card slot number	Read-only item
Set Card Authorization	For selecting the card type to be authorized, in the condition of pre-authorizing.	Optional item
ANMS Config	The type of cards added into the ANM2000.	Read-only item
Device Config	The type of cards pre-authorized and saved into the RAM of the equipment.	Read-only item
Hardware Config	The type of cards physically added into the slots in equipment.	Read-only item

Table 2-2 The parameters in the card authorization window.

Operation steps

The steps of authorizing cards are listed as follows:

 Right-click the AN5116-06B system in the Logical Tree pane, and select Card Config from the shortcut menu. And then the dialog box for setting card authorization appears, as shown in Figure 2-14.

🕼 Set Card Auth	orization Domain 1:System	2			_ 🗆 ×
<u>O</u> peration Set	Card <u>A</u> uthorization ⊻iew				
1 🖳 🖳 📾 🤅	s 😓 🛼 🚯 🕞 🖣				
Slot No.	Set Card Authorization	ANMS Config	Device Config	Hareware Config	
1					
2	PUBA	PUBA	PUBA	PUBA	
3					
4					
5					
6					
7					
8					
9	HSWA	HSWA	HSWA	HSWA	
10					
11					
12					
13					
14					
15	GC8B	GC8B	GC8B	GC8B	
16					-
Command State					Ψ×
	in 1:System 2 Get card inf	fo			
	in 1:System 2 Get card inf		ļ		
Ready					

Figure 2-14 The dialog box for setting card authorization

Click the button or select **Operation** → Write Device in the menu bar to authorize all the cards which are present.

1 🕂 🖳 📾	🔤 🔤 🚘 🚯 🕞 🚚				
Slot No.	Set Card Authorization	ANMS Config	Device Config	Hareware Config	4
1					
2	PUBA	PUBA	PUBA	PUBA	
3					
4					
5					
6					
7					
8					
9	HSWA	HSWA	HSWA	HSWA	
10					
11					
12					
13					
14					
15	GC8B	GC8B	GC8B	GC8B	
16					
Command State					д ,
13:34:04 > Dom:	ain 1:System 2 Get card ir	fo			

Figure 2-15 Configuring card authorization



After a card is authorized, the ANM2000 will refresh the status and other information about this card. If users detect that one card's actual status is not consistent with the status displayed on the ANM2000, they can perform card authorization to update it. If the status displayed on the ANM2000 keeps inconsistent with the actual status of the card after card authorization, the users should contact FiberHome for troubleshooting.

2.7.2 Pre-authorizing a Card Which is not Present

Configuration purpose

If the cards are not present, it is necessary to pre-authorize these cards according to configuration requirement and save the configuration to the device. When actually inserting the cards, the device can check the type and operate the service configuration as long as the types match.

Parameter explanation

Parameter	Explanation	Instruction
Slot No.	Card slot number	Read-only item
Set Card	For selecting the card type to be authorized, on the	Optional item
Authorization	condition of pre-authorizing.	Optional terri
ANMS Config	The type of cards added into the ANM2000.	Read-only item
Dovice Config	The type of cards pre-authorized and saved into	Dood only itom
Device Config	the RAM of the equipment.	Read-only item
Hardware	The type of cards physically added into the slots in	Dood only itom
Config	equipment.	Read-only item

Table 2-3 Card authorization window parameters

Operation steps

Take pre-authorizing the **GC4B** card in Slot 1 as an example, the detailed operation steps are as follows:

 Right-click the AN5116-06B system in the Logical Tree pane, and select Card Config from the shortcut menu. And then the dialog box for setting card authorization appears, select Slot 1 and click the corresponding blank area under the Set Card Authorization item, and choose the GC4B card in the pull-down list, as shown in Figure 2-16.

🗥 Set Card Authoriz	ation Domain 1:System	2			_ 🗆 ×
<u>Operation</u> Set Card	<u>A</u> uthorization <u>V</u> iew				
🗄 🏦 🧶 I 🔬 📾 I 🗄	z 💷 🖪 🖥 🗸				
Slot No.	Set Card Authorization	ANMS Config	Device Config	Hareware Config	
1	GC4B				
2	PUBA	PUBA	PUBA	PUBA	
3					
4					
5					
6					
7					
8					
9	HSWA	HSWA	HSWA	HSWA	
10					
11					
12					-
Command State					Ψ×
	System 2 Get card inf	·			
13:34:04 > Domain 1:	System 2 Get card inf	fo Successfully!			
Ready					

Figure 2-16 Configuring card authorization

2. Click the \checkmark button or select **Operation** \rightarrow **Write Device** in the menu bar,

and then click **Yes** in the dialog box that appears, so as to complete the operation of pre-authorization, as shown in Figures 2-17 and 2-18.

📣 Set Card Authoriz:	ation Domain 1:System	2			
<u>Operation</u> Set Card	<u>A</u> uthorization <u>V</u> iew				
11 🕖 💀 📾 🔒 🗄	z 💷 i 🖪 🕞 🚚				
Slot No.	Set Card Authorization	ANMS Config	Device Config	Hareware Config	
1	GC4B				
2	PUBA	PUBA	PUBA	PUBA	
3					
4					
5					
6	AHE2000		×		
7	A882.000				
8	Card av	uthorization has been c	hanged, are you sure?		
9	HSWA			HSWA	
10		Yes No	-1		
11		_ 165 _ NU			
12					
13					
14					_
Command State					Ψ×
	System 2 Get card inf				_
	System 2 Get card inf				
	System 2 Set Card Cor System 2 Set Card Cor				
	System 2 Set Card Cor System 2 Get card inf				
	System 2 Get card inf				
Ready					

Figure 2-17 Confirming card pre-authorization

Slot No.		AME C. C.	Denie Confi	Norman Con Gi
Slot No.	Set Card Authorization	-	Device Config	Hareware Config
1	GC4B	GC4B	GC4B	
2	PUBA	PUBA	PUBA	PUBA
3				
4				
5				
6				
7				
8				
9	HSWA	HSWA	HSWA	HSWA
10				
11				
12				
13				
14				
Command State				
13:43:42 > Dom:	ain 1:System 2 Get card in	fo		
13:43:42 > Dom:	ain 1:System 2 Get card in	fo Successfully!		
	ain 1:System 2 Set Card Co			
	ain 1:System 2 Set Card Co			
	ain 1:System 2 Get card in ain 1:System 2 Get card in			

Figure 2-18 Completing card pre-authorization

-----Note:

Because the card is not present, the **Hardware Config** is blank. If it is necessary to modify the type of the cards pre-authorized, users only need to re-pre-authorize the cards.

3. Click the \blacksquare button in the toolbar or select **File** \rightarrow **Save** from the main menu

to save the current system configurations to the ANM2000 database.

2.8 Synchronizing Time

Prerequisites

- The card authorization of the AN5116-06B has been completed and the configurations have been saved.
- The Ping operation of network management server to the AN5116-06B has been successful (right-click on the system object created and select **Ping** in the shortcut menu).

Configuration purpose

The system time synchronization aims to synchronize the AN5116-06B with the ANM2000 server.

Operation steps

The detailed operation steps of system time synchronization are as follows:

 Right-click on the created system and select Configure and Command → Time Synchronization. A Sending Commands... dialog box will appear then, as shown in Figure 2-19: Click OK to start executing the time synchronization command.

Sending Commands	×
Command Name:	1
Time Synchronization Domain1-S1	
Command Result The Command Will Change The Property Or Configuration Of The Device, Please Confirm!	
OK Close <u>H</u> elp	

Figure 2-19 Synchronizing the time of the system

2. After the time synchronization is completed successfully, click the **Close** button.

Command Name:		
Time Synchronization Domain1-S1		
Command Result Command Succeed [1 Sec]	
Retry	Close	Help

Figure 2-20 The successful time synchronization of the system

3. Click the \square button in the toolbar or select **File** \rightarrow **Save** from the main menu

to save the current system configurations to the ANM2000 database.



After the equipment is connected with the network management system, it will initiate a requirement of time synchronization to the network management server. When connecting with multiple network management servers, the equipment will turn to the first network management server connected for time synchronization. If users want to change a network management server to implement the time synchronization, they must set it on the network management system manually.

ONU Authentication and Authorization

Before starting up the services of the AN5116-06B equipment, the users must implement the authentication and authorization for the ONU of the service interface card. This chapter introduces the operation method of authenticating and authorizing the ONU. It includes the following sections:

- Configuration principles
- Example for authorization without authentication
- Example for authentication and authorization based on physical identifier
- Example for authentication and authorization based on password
- Example for authentication and authorization based on physical identifier + password
- Example for authentication mode switching with maintaining original ONU authorization and configuration
- Example for authentication mode switching without maintaining original ONU authorization and configuration



Example for ONU deauthorization

3

3.1 Configuration Principles

- There are four ONU authentication modes for the AN5116-06B equipment to configure, which are: non-authentication, authentication based on physical identifier, authentication based on password, and authentication based on physical identifier + password.
- The AN5116-06B equipment supports the ONU pre-configuration. In the configuration of the whitelist, the operation of specifying the slot number, PON port No., ONU No. and ONU type means to pre-configure the ONU. It is not necessary to specify the ONU No. in Pre-configuration. The ONU No. is assigned by the core switch card automatically if it is not specified.
- In the authentication mode based on simple password and physical identifier (with or without password), when you choose to authorize the ONU by configuring the corresponding whitelist, the accessed ONU can be authorized only when it is consistent with the configuration in the corresponding whitelist.
- In the authentication mode based on simple password and physical identifier (with or without password), when you choose to authorize the ONU using the whitelist generated by getting unauthorized ONU automatically, the ONU will be authorized automatically.
- The authentication mode based on physical identifier and physical identifier + password is for authenticating the physical address of the ONU. If the password is contained, then the password needs to be authenticated at the same time.
- For the non-authentication mode, the ONU can be authorized automatically.
- For authorizing the ONU in the mode based on physical identifier (with or without password) or based on simple password, you only need to delete the ONU in the current authorization whitelist of this ONU. The following deauthorization example takes ONU deauthorization in the authentication mode based on physical identifier as an example.
- Users can switch the authentication mode according to the requirement and choose to or not to keep the original ONU authentication information and configuration. If the users select not to keep the ONU authentication information and configuration under the original authentication mode, the related information of the whitelist under the original authentication mode will be deleted before the switching.

ONU Classification	ONU Type
	AN5506-04-A, AN5506-04-B, AN5506-06-E,
Class 1	AN5506-07-A2, AN5506-07-B
	AN5506-04-A1, AN5506-04-B2, AN5506-04-C1,
Class 2	AN5506-07-A1, AN5506-07-B1, AN5506-09-A1,
	AN5506-09-B1, AN5506-10-A1, AN5506-10-B1

• The ONU can be classified into two groups according to version as follows.

3.2 Example for Authorization without Authentication

3.2.1 Example Introduction

When the PON port authentication mode is non-authentication, the validity of the ONU does not need authentication. After the ONU is physically connected, powered on and registered, the OLT will detect the ONU and authorize it automatically.

3.2.2 Configuration Flow Chart

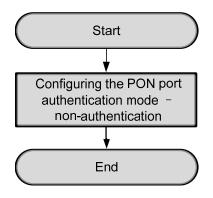


Figure 3-1 Configuration flow chart for the non-authentication mode

3.2.3 Configuring PON Port Authentication Mode

Prerequisites

The authorization for the GC4B card and the HSWA card has been completed.

Configuration purpose

Configure the authentication mode for the PON port.

Operation steps

Configure the authentication mode of the ONU connected to the PON port 2 of the GC4B card in Slot 5 to non-authentication. The operation steps are as follows:

 Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → PON Authentication Mode from the shortcut menu that appears to bring up the PON Authentication Mode window.



The authorization mode of the PON port is physical identifier mode by default.

\$ POI	I Authent	tication Node(Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Sour	rce: Device] _ []
Edit	Access (Operation Device Operation 👜 🚸 🔚 🚉 ╩ 🖶 🗹 🚚	
	No. PON p		
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PHYSIC_ID AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
15	1	PHYSIC_ID AUTHENTICATION	
15	2	PHYSIC_ID AUTHENTICATION	
15	3	PHYSIC_ID AUTHENTICATION	
15	4	PHYSIC_ID AUTHENTICATION	
15	5	PHYSIC_ID AUTHENTICATION	
15	6	PHYSIC_ID AUTHENTICATION	
15	7	PHYSIC_ID AUTHENTICATION	
15	8	PHYSIC ID AUTHENTICATION	
PC	N Authent	tication Mode	
3:50):55 > Se	end Command:Read From Device[PON Authentication Mode]	
		egin To Validate The Command Data!	
		alidate Data Finished	-
		end Command Successfully!	
5.00		Sid Command Successionly:	



- 2. Double-click the item Authentication mode following Slot No.:Port No. (5:2), and then select NO Authentication in the pull-down list.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port authentication mode configuration is completed. See Figure 3-3.

ßdit	Access O	Operation Device Operation 🙉 🚸 💂 🟦 😤 😽 🜠 🚚	e] <u>- []</u> :
lot	No. PON po	ort Authentication mode	
	1	PHYSIC_ID AUTHENTICATION	
	2	NO Authentication	
	3	PHYSIC_ID AUTHENTICATION	
	4	PHYSIC_ID AUTHENTICATION	
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PHYSIC_ID AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
5	5	PHYSIC_ID AUTHENTICATION	
5	6	PHYSIC_ID AUTHENTICATION	
5	7	PHYSIC_ID AUTHENTICATION	
5	8	PHYSIC ID AUTHENTICATION	
PO	N Authenti	ication Mode	
3:50):55 > Ser	end Command:Read From Device[PON Authentication Mode]	
		gin To Validate The Command Data!	1
		alidate Data Finished	
		end Command Successfully!	

Figure 3-3 Configuring the non-authentication mode

3.2.4 End of Configuration

After the non-authentication mode is successfully configured, the OLT will authorize all ONUs that are powered on and registered under this PON port.

3.3 Example for Authentication and Authorization Based on Physical Identifier

3.3.1 Example Introduction

In the practical example for the authentication and authorization based on physical identifier, the ONU is authorized in two ways: authenticating and authorizing manually, authenticating and authorizing automatically.

- Authenticating and authorizing manually: authenticating and authorizing the ONU manually by pre-configuring the ONU physical identifier authentication whitelist.
- Authenticating and authorizing automatically: directly get the actual ONU physical address by getting the unauthorized ONU automatically to authenticate and authorize the ONU automatically.

This example introduces these two ways respectively.

3.3.2 Planning Data

This example introduces the operation methods of manual and automatic authentication and authorization for the ONU respectively. The planned data for these two methods are as follows.

Command		Configuration Instruction	Configuration Step (Manual Authentication and Authorization)	Configuration Step (Automatic Authentication and Authorization)
Configuring	Slot No.	Configure according to the No. of the slot actually used	5	5
PON port authentication	PON port No.	Configure according to the No. of the PON port actually used	2	2
mode	Authentication	Configure according to the	Physical identifier	Physical identifier
	mode	network planning of the operator	authentication	authentication

 Table 3-1
 Planning data for configuring the physical identifier authentication mode

Command		Configuration Instruction	Configuration Step (Manual Authentication and Authorization)	Configuration Step (Automatic Authentication and Authorization)
	Physical	Configure according to the	FHTT0024010d	
	address	actual status of the ONU		
	Slot No.	Configure according to the No. of	5	
Configuring		the slot actually used		
ONU physical	PON port No.	Configure according to the No. of	2	
address		the PON port actually used		
whitelist	ONU Type	Configure according to the type	AN5506-04-B	
	Онотуре	of the ONU actually used		
	ONU No.	Configure according to the	1	
		network planning of the operator	1	

3.3.3 Configuration Flow Chart

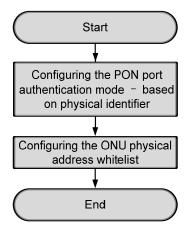


Figure 3-4 Configuration flow chart for the physical identifier authentication mode

3.3.4 Configuring PON Port Authentication Mode

Prerequisites

The authorization for the GC4B card and the HSWA card has been completed.

Configuration purpose

Configure the authentication mode for the PON port.

Operation steps

Configure the authentication mode of the ONU connected to the PON port 2 of the GC4B card on Slot 5 to physical identifier authentication. The operation steps are as follows:

1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow ONU Authentication \rightarrow PON Authentication Mode from the shortcut menu that appears to bring up the PON Authentication Mode window.



The authorization mode of the PON port is physical identifier mode by default.

Slot	No. PON port	Authentication mode	
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PHYSIC_ID AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PHYSIC_ID AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
5	5	PHYSIC_ID AUTHENTICATION	
5	6	PHYSIC_ID AUTHENTICATION	
5	7	PHYSIC_ID AUTHENTICATION	
5	8	PHYSIC ID AUTHENTICATION	
V PC	ON Authenticat	tion Mode	
~	LEE S Cand	Command:Read From Device[PON Authentication Mode]	
3:50			
		n To Validate The Command Data!	

Figure 3-5 The **PON Authentication Mode** window -- in the physical identifier authentication mode

2. Double-click the item Authentication mode following Slot No.:Port No. (5:2), and then select PHYSIC_ID AUTHENTICATION in the pull-down list.

3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port authentication mode configuration is completed. See Figure 3-6.

Edit	Access Op	peration Device Operation 🔯 🍪 🔚 📑 😤 🛼 💅 🎝	
Slot	No. PON por	rt Authentication mode	
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PHYSIC_ID AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
15	1	PHYSIC_ID AUTHENTICATION	
15	2	PHYSIC_ID AUTHENTICATION	
15	3	PHYSIC_ID AUTHENTICATION	
15	4	PHYSIC_ID AUTHENTICATION	
15	5	PHYSIC_ID AUTHENTICATION	
15	6	PHYSIC_ID AUTHENTICATION	
15	7	PHYSIC_ID AUTHENTICATION	
15	8	PHYSIC ID AUTHENTICATION	
PC	N Authentic	sation Mode	
3:50	:55 > Sen	d Command:Read From Device[PON Authentication Mode]	
3:50	:55 > Beg	in To Validate The Command Data!	ī
	-	idate Data Finished	
	/ /dr	d Command Successfully!	

Figure 3-6 Configuring the physical identifier authentication mode

3.3.5 Configuring the ONU Physical Address Whitelist

3.3.5.1 Authenticating and authorizing the ONU manually

Prerequisites

The authentication mode for the PON port must be based on physical identifier.

Configuration purpose

Pre-configure the ONU physical address whitelist manually, and authenticate and authorize the ONU.

Operation steps

Pre-configure the physical address whitelist manually, and authenticate and authorize the ONU whose physical address is FHTT0024010d manually.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → ONU Physic_ID Address Whitelist from the shortcut menu that appears to access the Physical Address White List Setting window.
- Click the Solution on the toolbar. In the Please Input the Rows for Add: dialog box that appears subsequently, type 1 and click OK to add 1 physical identifier whitelist, and configure according to the planned data in Table 3-1.

Note:

The ONU authentication based on physical identifier does not need the ONU password. We recommend you to leave the password item unfilled.

😱 🚫 🏥 Re	ad Device 🚢 Wr	ite Device 🤮 D	elete From Devi	ice 🛛 🚢 Write Selected	Rows To Device	🚔 Get Unauthorized ONU	Exi
Physical ID	Password	Slot No.	FON No.	ONU Type	ONU No.	Implemented Status	
FHTT0024010d		5	2	AN5506-04-B	1		
		1 2:Read White		wice wiceCommand Succeed			

Figure 3-7 Pre-authentication configuration based on physical identifier

3. After completing the configuration, click the button to send the configuration command. If **Implemented** is displayed under the **Implemented Status** item, the authorization is successful, as shown in Figure 3-8.

🖓 🐼 📇 Res	ad Device 📇 Writ	e Device 😫 D	elete From Device	e 🚢 Write Selected	Rows To Device	🔒 🖆 Get Unauthorized ONU	🚽 Ex
Physical ID	Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status	
FHTT0024010d		5	2	AN5506-04-B	1	Implemented	
14-00-01 N.D.		D-D	List Rose David				
	main 1:System (
14:02:31 > Do	main 1:System 2	2:Read White	List From Devi	.ceCommand Succeed			
14:02:31 > Do 14:02:31 > Do	main 1:System 2 main 1:System 2	2:Read White 2:Read Physic	List From Devi al Address Whi	.ceCommand Succeed te List Authorize	d State From	Device DeviceCommand Succeed	

Figure 3-8 Successful pre-authentication configuration based on physical identifier

3.3.5.2 Authenticating and authorizing the ONU automatically

Prerequisites

The authentication mode for the PON port must be based on physical identifier.

Configuration purpose

Authenticate and authorize the ONU automatically using the way of getting unauthorized ONU automatically.

Operation steps

Authenticate and authorize the ONU whose physical address is FHTT0024010d automatically using the way of getting unauthorized ONU automatically.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → ONU Physic_ID Address Whitelist from the shortcut menu that appears to access the Physical Address White List Setting window.
- Right-click a blank area of the whitelist, and select unauthorized ONU from the menu that appears or directly click the Get Unauthorized ONU button in the tool bar to bring up the Get Unauthorized ONU dialog box.

3. In the Get Unauthorized ONU dialog box, click the pull-down lists under the Slot No \ PON No item to select Slot 5 and PON No. 2. And then click the Get Unauthorized ONU button at the bottom part of the dialog box to display the unauthorized ONUs in the pane, and select the ONU with the physical address FHTT0024010d.

5		•	5		•
Slot No.	PON No.	Physical ID	Password	Logical ID	Logical SN.
5	2	FHTT0024017f	0000000000		
5	2	FHTT0024010d			

Figure 3-9 The Get Unauthorized ONU dialog box -- based on physical identifier

4. Click **OK** and return to the **Physical Address White List Setting** window, as shown in Figure 3-10.

Physical ID	Password	Slot No.	PON No.	ONU Type	ONU No.	Get Unauthorized ONU	
FHTTOO24010d	1 822801 0			ONO Type	040 40.	Tubremenced Status	
ALIOUZ4UIUA		5	2				
13:57:01 > Do	main 1:System	2:Read White 1	List From Devi	ce.			
			List From Devi	ce ceCommand Succe			

Figure 3-10 The Physical Address White List Setting window -- based on physical identifier

5. After completing the configuration, click the button to send the configuration command. If **Implemented** is displayed under the **Implemented Status** item, the authorization is successful, as shown in Figure 3-11.

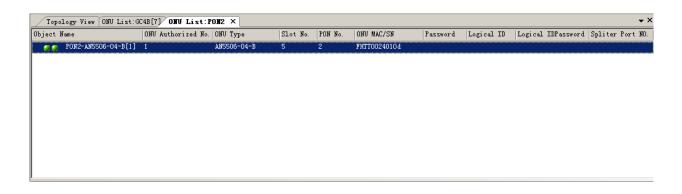
🚯 Physical Ad	dress Thite L	st Setting					
😜 🚫 🟥 Rea	d Device 🚢 Wri	te Device 🤮 I	elete From Device	e 🚢 Write Selected	Rows To Device	e 📤 Get Unauthor:	ized ONU 🚚 Exi
Physical ID	Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented	Status
FHTT00240104		5	2	AN5506-04-B	1	Implemented	
14:02:31 > Dor	nain 1:System	2:Read White	List From Devi	ice			
14:02:31 > Dor	nain 1:System	2:Read White	List From Devi	iceCommand Succeed			
11 00 01 N D	nain 1:System	2:Read Physi	cal Address Whi	ite List Authorize	d State From	Device	
14:02:31 > Dor	name rebybebae						
		2:Read Physi	cal Address Whi	ite List Authorize	d State From	DeviceCommand	Succeed

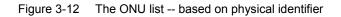
Figure 3-11 Successful automatic authorization -- based on physical identifier

3.3.6 End of Configuration

After the configuration is successful, the OLT has authenticated and authorized the ONU whose physical address is FHTT0024010d, and the users will be able to implement service configurations for this ONU.

Check the ONU list under the PON port No.2 in Slot No.5, as shown in Figure 3-12.







If you only pre-authorize the ONU, and the ONU is not actually connected with the PON port, then the indicator LED of the ONU on the ONU list is grey.

3.4 Example for Authentication and Authorization Based on Password

3.4.1 Example Introduction

In the practical example for the authentication and authorization based on password, the ONU is authorized in two ways: authenticating and authorizing manually, authenticating and authorizing automatically.

- Authenticating and authorizing manually: authenticating and authorizing the ONU manually by pre-configuring the ONU password whitelist.
- Authenticating and authorizing automatically: authenticating and authorizing the ONU automatically by getting the unauthorized ONU automatically.

This example introduces these two ways respectively.

3.4.2 Planning Data

This example introduces the operation methods of manual and automatic authentication and authorization for the ONU respectively. The planned data for these two methods are as follows.

Command		Configuration Instruction	Configuration Step (Manual Authentication and Authorization)	Configuration Step (Automatic Authentication and Authorization)
Operforming	Slot No.	Configure according to the No. of the slot actually used	5	5
Configuring PON port authentication	PON port No.	Configure according to the No. of the PON port actually used	2	2
mode	Authentication mode	Configure according to the network planning of the operator	Password authentication	Password authentication

 Table 3-2
 Planning data for configuring the password authentication mode

3 ONU Authentication and Authorization

Command		Configuration Instruction	Configuration Step (Manual Authentication and Authorization)	Configuration Step (Automatic Authentication and Authorization)	
	Password	Configure according to the network planning of the operator. The value should be equal to or less than 10 digits	12345	_	
Configuring	Slot No.	Configure according to the No. of the slot actually used	5	_	
ONU password whitelist	PON port No.	Configure according to the No. of the PON port actually used	2	_	
whitelist	ONU Type	Configure according to the type of the ONU actually used	AN5506-04-B	_	
	ONU No.	Configure according to the network planning of the operator	1		

3.4.3 Configuration Flow Chart

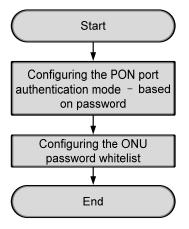


Figure 3-13 Configuration flow chart for the password authentication mode

3.4.4 Configuring PON Port Authentication Mode

Prerequisites

The authorization for the GC4B card and the HSWA card has been completed.

Configuration purpose

Configure the authentication mode for the PON port.

Operation steps

Configure the authentication mode of the ONU connected to the PON port 2 of the GC4B card on Slot 5 to password authentication. The operation steps are as follows:

 Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → PON Authentication Mode from the shortcut menu that appears to bring up the PON Authentication Mode window.



The authorization mode of the PON port is physical identifier mode by default.

		ation Node (Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Source: Device]	
Edit	Access Open	ration Device Operation 🛛 💩 🤯 📑 ≟ 💺 🐕 🗸	
	No. PON port		
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PHYSIC_ID AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
15	1	PHYSIC_ID AUTHENTICATION	
15	2	PHYSIC_ID AUTHENTICATION	
15	3	PHYSIC_ID AUTHENTICATION	
15	4	PHYSIC_ID AUTHENTICATION	
15	5	PHYSIC_ID AUTHENTICATION	
15	6	PHYSIC_ID AUTHENTICATION	
15	7	PHYSIC_ID AUTHENTICATION	
15	8	PHYSIC ID AUTHENTICATION	
De			
<u>n</u>	ON Authentica	tion Mode	
3:50):55 > Send	Command:Read From Device[PON Authentication Mode]	
3:50):55 > Begir	n To Validate The Command Data!	
3:50):55 > Valid	date Data Finished	
		Command Successfully!	

Figure 3-14 The PON Authentication Mode window – based on password

- 2. Double-click the item Authentication mode following Slot No.:Port No. (5:2), and then select PASSWORD AUTHENTICATION in the pull-down list.
- 3. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port authentication mode configuration is completed, as shown in Figure 3-15.

🔥 POE	Authent	tication Mode(Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Source: Device]	-02
Edit	Access (Operation Device Operation 🛛 🔯 🏇 🔚 🚉 😤 🛼 🗹 🎝	
Slot 3	No. PON po	ort Authentication mode	
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PASSWORD AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
15	1	PHYSIC_ID AUTHENTICATION	
15	2	PHYSIC_ID AUTHENTICATION	
15	3	PHYSIC_ID AUTHENTICATION	
15	4	PHYSIC_ID AUTHENTICATION	
15	5	PHYSIC_ID AUTHENTICATION	
15	6	PHYSIC_ID AUTHENTICATION	
15	7	PHYSIC_ID AUTHENTICATION	
15	8	PHYSIC ID AUTHENTICATION	
PO	W A	ication Mode	
10	M Authenti	1 callon mode	
13:50	:55 > Se	end Command:Read From Device[PON Authentication Mode]	-
3:50	:55 > Be	egin To Validate The Command Data!	1
		alidate Data Finished	-
		end Command Successfully!	

Figure 3-15 Configuring the password authentication mode – based on password

3.4.5 Configuring the ONU Password Whitelist

3.4.5.1 Authenticating and authorizing the ONU manually

Prerequisites

- The authentication mode for the PON port must be based on password.
- The ONU must be equipped with a password.

Configuration purpose

Pre-configure the ONU password whitelist manually, and authenticate and authorize the ONU.

Operation steps

Pre-configure the password whitelist, and authenticate and authorize the ONU whose password is 12345 manually.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → ONU Password Whitelist from the shortcut menu that appears to bring up the Password White List Setting window.
- Click the Solution on the toolbar. In the Please Input the Rows for Add: dialog box that appears subsequently, type 1 and click OK to add 1 password whitelist, and configure according to the planned data in Table 3-2.

Merassword HI	hite List Setting				_ 🗆 >
😜 🚫 🔔 Re	ad Device 🚢 Write D	evice 🤮 Delete From De	evice 🚢 Write Selected	Rows To Device 📤 🤇	Get Unauthorized ONU 🚚 Exit
Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status
12345	5	2	AN5506-04-B	1	
		rite Password White I	List To Device!		
4:14:54 > Co	mmand Failed				
4:14:54 > Co 4:15:19 > St	ommand Failed art check 'White :	rite Password White I List' configuration configuration succes:			

Figure 3-16 Pre-authentication configuration – based on password

3. After completing the configuration, click the button to send the configuration command. If **Implemented** is displayed under the **Implemented Status** item, the authorization is successful, as shown in Figure 3-17.

: 😱 😢 📇 R	ead Device 📇 Write D	evice 🤮 Delete From De	evice 🚢 Write Selected	Rows To Device 🏭	Get Unauthorized ONU 🛶 Ex:
Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status
12345	5	2	AN5506-04-B	1	Implemented
4:14:54 > D)omain 1:System 2:₩	rite Password White)	List To Device!		
)omain 1:System 2:W Sommand Failed	rite Password White 1	List To Device!		
14:14:54 > 0	Command Failed	rite Password White ! List' configuration.			

Figure 3-17 Successful pre-authentication configuration -- based on password

3.4.5.2 Authenticating and authorizing the ONU automatically

Prerequisites

- The authentication mode for the PON port must be based on password.
- The ONU must be equipped with password.

Configuration purpose

Authenticate and authorize the ONU automatically using the way of getting unauthorized ONU automatically.

Operation steps

Authenticate and authorize the ONU whose password is 12345 automatically by getting unauthorized ONU.

 Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → ONU Password Whitelist from the shortcut menu that appears to bring up the Password White List Setting window.

- Right-click a blank area of the whitelist, and select unauthorized ONU from the menu that appears or directly click the Get Unauthorized ONU button in the tool bar to bring up the Get Unauthorized ONU dialog box.
- 3. In the Get Unauthorized ONU dialog box, click the pull-down lists under the Slot No \ PON No item to select Slot 5 and PON No. 2. And then click the Get Unauthorized ONU button at the bottom part of the dialog box to display the unauthorized ONUs in the pane, and select the ONU with the password 12345.

📑 Get Unau	thorized ONV				×
Slot No.\P(ON No.		2		V
Slot No.	PON No.	Physical ID	Password	Logical ID	Logical SN
5	2	FHTT002442c3	6666666666		
5	2	FHTT002442cd	12345		
		Get Unauth	orized ONU	ОК	Cancel

Figure 3-18 The Get Unauthorized ONU dialog box – based on password

 Click OK and return to the Password White List Setting window, as shown in Figure 3-19.

▲Password T	hite List Setting				
😜 🚫 🟥 Re	ad Device 🚢 Write De	wice 🛛 🤮 Delete From De	evice 🚢 Write Selecte	l Rows To Device 📤 Get	Unauthorized ONU 🚚 Exit
Password	Slot No.	PON No.	ONU Type	ONU No. 🛆	Implemented Status
12345	5	2			
14:14:54 > Do	omain 1:System 2:Wa	rite Password White 1	List To Device!		-
	ommand Failed				
		.ist' configuration.			
	neck White List	configuration succes	S		
leady					

Figure 3-19 The Password White List Setting window – based on password

5. After completing the configuration, click the 💾 button to send the

configuration command. If **Implemented** is displayed under the **Implemented Status** item, the authorization is successful, as shown in Figure 3-20.

🖓 🚫 🏦 Re	ad Device 📇Write De	vice 🛛 🤷 Delete From De	wice 🚢 Write Selected	Rows To Device 🛛 📤	et Unauthorized ONU 🚛 Exi
Password	Slot No.	PON No.	ONV Type	ONU No.	Implemented Status
12345	5	2	AN5506-04-B	1	Implemented
14.14.54 N.D.		ita Daamad Illaita I	int To Device I		
		ite Password White L	.ist To Device!		
14:14:54 > Co	mmand Failed	ite Password White L ist' configuration			

Figure 3-20 Successful automatic authorization – based on password

3.4.6 End of Configuration

After the configuration is successful, the OLT has authenticated and authorized the ONU whose password is 12345, and the users will be able to implement service configurations for this ONU.

Check the ONU list under the PON port No.2 in Slot No.5, as shown in Figure 3-21.

Topology View ONU List	Topology View OHU List:GC4B[7] × ONU List:PON2									
Object Name	ONU Authorized No.	ONU Type	Slot No.	PON No.	ONU MAC/SN	Password	Logical ID	Logical IDPassword	Spliter Port	NO.
PON4-AN5506-04-B[1]	1	AN5506-04-B	5	2	FHTT002442cd	12345				

Figure 3-21 The ONU list – based on password

Note:

If you only pre-authorize the ONU, and the ONU is not actually connected with the PON port, then the indicator LED of the ONU on the ONU list is grey, and the column **ONU MAC/SN** is blank.

3.5 Example for Authentication and Authorization Based on Physical Identifier + Password

3.5.1 Example Introduction

In the practical example for the authentication and authorization based on physical identifier + password, the ONU is authorized in two ways: authenticating and authorizing manually, authenticating and authorizing automatically.

- Authenticating and authorizing manually: authenticating and authorizing the ONU manually by pre-configuring the ONU physical identifier whitelist.
- Authenticating and authorizing automatically: authenticating and authorizing the ONU automatically by getting the unauthorized ONU automatically.

This example introduces these two ways respectively.

3.5.2 Planning Data

This example introduces the operation methods of manual and automatic authentication and authorization for the ONU respectively. The planned data for these two methods are as follows.

Table 3-3Planning data for configuring the physical identifier + password authenticationmode

Command		Configuration Instruction	Configuration Step Manual Authentication and Authorization)	Configuration Step (Automatic Authentication and Authorization)
Configuring PON port	Slot No.	Configure according to the No. of the slot actually used	5	5
authentication mode	PON port No.	Configure according to the No. of the PON port actually used	2	2

Command		Configuration Instruction	Configuration Step Manual Authentication and Authorization)	Configuration Step (Automatic Authentication and Authorization)
	Authentication mode	Configure according to the network planning of the operator	Physical identifier + password authentication	Physical identifier + password authentication
	Physical Configure according to the identifier actual status of the ONU		FHTT00244221	_
Configuring	Password	Configure according to the network planning of the operator. The value should be equal to or less than 10 digits	12345	_
ONU physical identifier	Slot No.	Configure according to the No. of the slot actually used	5	_
whitelist	PON port No.	Configure according to the No. of the PON port actually used	2	_
	ONU Type	Configure according to the type of the ONU actually used	AN5506-04-B	
	ONU No.	Configure according to the network planning of the operator	1	_

3.5.3 Configuration Flow Chart

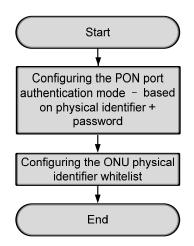


Figure 3-22 Configuration flow chart for the physical identifier + password authentication mode

3.5.4 Configuring PON Port Authentication Mode

Prerequisites

The authorization for the GC4B card and the HSWA card has been completed.

Configuration purpose

Configure the authentication mode for the PON port.

Operation steps

Configure the authentication mode of the ONU connected to the PON port 2 of the GC4B card on Slot 5 to physical identifier + password authentication. The operation steps are as follows:

 Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → PON Authentication Mode from the shortcut menu that appears to bring up the PON Authentication Mode window.

Note:

The authorization mode of the PON port is physical identifier mode by default.

Edit	Access Open	ration Device Operation 📴 🚸 🔚 🛃 😤 🖶 🌠 🚚	
	No. PON port		
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PHYSIC_ID AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PHYSIC_ID AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
5	5	PHYSIC_ID AUTHENTICATION	
5	6	PHYSIC_ID AUTHENTICATION	
5	7	PHYSIC_ID AUTHENTICATION	
5	8	PHYSIC ID AUTHENTICATION	
~	DN Authentica D:55 > Send	tion Mode Command:Read From Device[PON Authentication Mode]	
3:50):55 > Begir	n To Validate The Command Data!	
3:50):55 > Valid	date Data Finished	

Figure 3-23 The PON Authentication Mode window – based on physical identifier + password

- Double-click the item Authentication mode following Slot No.:Port No. (5:2), and then select PHYSIC_ID+PASSWORD AUTHENTICATION in the pull-down list.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port authentication mode configuration is completed. See Figure 3-24.

🔥 POB	Authent	tication Wode(Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Source: Device] 💶 🗙
Edit	Access	Operation Device Operation 🔯 🔅 🔚 🔮 🛼 💅 🎝
Slot 1	No. PON p	oort Authentication mode
5	1	PHYSIC_ID AUTHENTICATION
5	2	PHYSIC_ID+PASSWORD AUTHENTICATION
5	3	PHYSIC_ID AUTHENTICATION
5	4	PHYSIC_ID AUTHENTICATION
15	1	PHYSIC_ID AUTHENTICATION
15	2	PHYSIC_ID AUTHENTICATION
15	3	PHYSIC_ID AUTHENTICATION
15	4	PHYSIC_ID AUTHENTICATION
15	5	PHYSIC_ID AUTHENTICATION
15	6	PHYSIC_ID AUTHENTICATION
15	7	PHYSIC_ID AUTHENTICATION
15	8	PHYSIC ID AUTHENTICATION
PO	N Authent	cication Mode
13:50	:55 > Se	end Command:Read From Device[PON Authentication Mode]
13:50	:55 > Be	egin To Validate The Command Data!
13:50	:55 > Va	alidate Data Finished
13:50	:55 > Se	end Command Successfully!

Figure 3-24 Configuring the physical identifier + password authentication mode

3.5.5 Configuring the ONU Physical Identifier Whitelist

3.5.5.1 Authenticating and authorizing the ONU manually

Prerequisites

- The authentication mode for the PON port must be based on physical identifier
 + password.
- The ONU must be equipped with password.

Configuration purpose

Pre-configure the ONU physical address whitelist manually, and authenticate and authorize the ONU.

Operation steps

Pre-configure the physical address whitelist manually, and authenticate and authorize the ONU whose physical address is FHTT00244221 and password is 12345 manually.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → ONU Physic_ID Address Whitelist from the shortcut menu that appears to access the Physical Address White List Setting window.
- Click the Solution on the toolbar. In the Please Input the Rows for Add: dialog box that appears subsequently, type 1 and click OK to add 1 physical identifier whitelist, and configure according to the planned data in Table 3-3.



The ONU authentication based on physical identifier + password needs the ONU password, so that it is necessary to fill in the password.

		te bevice Spe	lete from Devic	e 🚢 Write Selected		
Physical ID	Password	Slot No.	PON No.	ONV Type	ONU No.	Implemented Status
FHTT00244221	12345	5	2	AN5506-04-B	1	
13:57:01 > Do	main 1:System	2:Read White 1	List From Dev:	ice		

Figure 3-25 Pre-authentication configuration – based on physical identifier + password

3. After completing the configuration, click the button to send the configuration command. If **Implemented** is displayed under the **Implemented Status** item, the authorization is successful, as shown in Figure 3-26.

🗘 😮 🟦 Rea	l Device 🚢 Wri	te Device 🛛 🙆 Delet	e From Device 🚢 W	rite Selected Rows To	Device 📑 🔔 Get U	Jnauthorized ONU 🚚 Exi
Physical ID 🔞	Password	Slot No.	PON No.	ONV Type	ONU No.	Implemented Statu
HTT00244221	12345	5	2	AN5506-04-B	1	Implemented
4:41:27 > Dom	ain 1:System	2:Read White Lis	t From Device			
			t From Device t From DeviceComu	nand Succeed		

Figure 3-26 Successful pre-authentication configuration – based on physical identifier + password

3.5.5.2 Authenticating and authorizing the ONU automatically

Prerequisites

- The authentication mode for the PON port must be based on physical identifier + password.
- The ONU must be equipped with password.

Configuration purpose

Authenticate and authorize the ONU automatically using the way of getting unauthorized ONU automatically.

Operation steps

Authenticate and authorize the ONU whose physical address is FHTT00244221 and password is 12345 automatically by getting unauthorized ONU.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → ONU Physic_ID Address Whitelist from the shortcut menu that appears to access the Physical Address White List Setting window.
- Right-click a blank area of the whitelist, and select unauthorized ONUs in the menu that appears or directly click the Get Unauthorized ONU button in the tool bar to bring up the Get Unauthorized ONU dialog box.
- 3. In the Get Unauthorized ONU dialog box, click the pull-down lists under the Slot No \ PON No item to select Slot 5 and PON No. 2. And then click the Get Unauthorized ONU button at the bottom part of the dialog box to display the unauthorized ONUs in the pane, and select the ONU with the physical address FHTT00244221 and password 12345.

5		•	2		•
Slot No.	PON No.	Physical ID	Password	Logical ID	Logical SN
5	2	FHTT002442c3	6666666666		
5	2	FHTT00244221	12345		



4. Click **OK** and return to the **Physical Address White List Setting** window, as shown in Figure 3-28.

: 🎝 🗠 🖂 🗔 ve	ad Device 📇 Wri	te Device 🚉 D	elete From Device	e 📇 Write Selected	l Rows To Device	🗧 🏦 Get Unauthorized ONU 🛛	🚽 Ex
Physical ID	Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status	
FHTT00244221	12345	5	2	AN5506-04-B	1		
12-57-01 \ D	in 1. Contra	0.Dec d Militàre	List Room David				
			List From Devi	.ce .ceCommand Succee			

Figure 3-28 The **Physical Address White List Setting** window – based on physical identifier + password

5. After completing the configuration, click the ¹ button to send the

configuration command. If **Implemented** is displayed under the **Implemented Status** item, the authorization is successful, as shown in Figure 3-29.

🔥 Physical Ad	APhysical Address Thite List Setting								
🔆 🖓 🛞 📤 Rea	ad Device 🚢 Wri	te Device 🔮 Dei	.ete From Device	📇 Write Selected	Rows To Device	e 📤 Get Unauthorized ONU 🔒	Exit		
Physical ID	Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status			
FHTT00244221	12345	5	2	AN5506-04-B	1	Implemented			
	-	2:Read White I			_				
13:57:02 > Do	main 1:System	2:Read White I	ist From Devi	ceCommand Succeed	d				
Ready							1.		

Figure 3-29 Successful automatic authorization - based on physical identifier + password

3.5.6 End of Configuration

After the configuration is successful, the OLT has authenticated and authorized the ONU whose physical address is FHTT00244221 and password is 12345, and the users will be able to implement service configurations for this ONU.

Check the ONU list under the PON port No.2 in Slot No.5, as shown in Figure 3-30.

Topology View ONU List	:GC4B[7] × ONU Li	st:PON2							•	▼ ×
Object Name	ONU Authorized No.	ONU Type	Slot No.	PON No.	ONU MAC/SN	Password	Logical ID	Logical IDPassword	Spliter Port N	10.
PON4-AN5506-04-B[1]	1	AN5506-04-B	5	2	FHTT00244221	12345				
1										
	Figure 3-30	The ONU I	ist – ba	ased o	n physical	identifier	+ password	b		

-----Note:

If you only pre-authorize the ONU, and the ONU is not actually connected with the PON port, then the indicator LED of the ONU on the ONU list is grey.

3.6 Example for Authentication Mode Switching with Maintaining Original ONU Authorization and Configuration

3.6.1 Example Introduction

The authentication mode switching with maintaining the original ONU configurations is applicable when users only want to switch the authentication mode, but do not want to change the ONU configurations. The ONU configurations under the original mode will be not be deleted during the switching, but the current services will be suspended. When this ONU is successfully authenticated under the new mode, the services will restore automatically without manual reconfiguration.

This example shows how to switch the physical identifier authentication mode to the password authentication mode. It must be guaranteed that the ONU is equipped with password.

3.6.2 Configuration Flow Chart

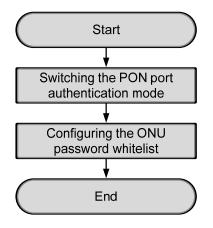


Figure 3-31 Configuration flow chart for authentication mode switching with maintaining the original ONU configuration

3.6.3 Switching PON Port Authentication Mode

Prerequisites

- The authorization for the GC4B card and the HSWA card has been completed.
- The original authentication mode of the ONU is physical identifier mode and the ONU authorization is completed before the switching.
- The ONU must be equipped with password.

Configuration purpose

Configure the switching of the authentication mode of the PON port.

Operation steps

Switch the authentication mode of the ONU connected to the PON port 2 of the GC4B card on Slot 5 from the physical identifier authentication to the password authentication. The operation steps are as follows:

 Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → PON Authentication Mode from the shortcut menu that appears to bring up the PON Authentication Mode window.

	No. PON por			
5	1	PHYSIC_ID AUTHENTICATION		
5	2	PHYSIC_ID AUTHENTICATION		
5	3	PHYSIC_ID AUTHENTICATION		
5	4	PHYSIC_ID AUTHENTICATION		
5	1	PHYSIC_ID AUTHENTICATION		
5	2	PHYSIC_ID AUTHENTICATION		
5	3	PHYSIC_ID AUTHENTICATION		
5	4	PHYSIC_ID AUTHENTICATION		
5	5	PHYSIC_ID AUTHENTICATION		
5	6	PHYSIC_ID AUTHENTICATION		
5	7	PHYSIC_ID AUTHENTICATION		
5	8	PHYSIC ID AUTHENTICATION		
	_			
		cation Mode		
PO	N Authentic			
-				
3:50	1:55 > Sen	nd Command:Read From Device[PON Authentication Mode]		

Figure 3-32 The **PON Authentication Mode** window -- maintaining the original ONU authorization and configuration

- 2. Double-click the item Authentication mode following Slot No.:Port No. (5:2), and then select PASSWORD AUTHENTICATION in the pull-down list.
- 3. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port authentication mode configuration is completed. See Figure 3-33.

🔥 POI	Authen	atication Node(Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Source: Device] 💶 🗙
Edit	Access	: Operation Device Operation 📴 🍜 🚍 📑 😤 👺 🥰 🚚
Slot	No. PON 1	port Authentication mode
5	1	PHYSIC_ID AUTHENTICATION
5	2	PASSWORD AUTHENTICATION
5	3	PHYSIC_ID AUTHENTICATION
5	4	PHYSIC_ID AUTHENTICATION
15	1	PHYSIC_ID AUTHENTICATION
15	2	PHYSIC_ID AUTHENTICATION
15	3	PHYSIC_ID AUTHENTICATION
15	4	PHYSIC_ID AUTHENTICATION
15	5	PHYSIC_ID AUTHENTICATION
15	6	PHYSIC_ID AUTHENTICATION
15	7	PHYSIC_ID AUTHENTICATION
15	8	PHYSIC ID AUTHENTICATION
		vtication Mode
		Begin To Validate The Command Data!
13:50	1:00 > 2	Send Command Successfully!

Figure 3-33 Configuring mode switching -- maintaining the original ONU authorization and configuration

3.6.4 Configuring the ONU Password Whitelist

Prerequisites

- The authentication mode for the PON port must be switched to be based on password.
- The ONU must be equipped with password.

Configuration purpose

Configure the ONU password whitelist, and authenticate and authorize the ONU.

Configuration steps

Reauthorize the ONU (AN5506-04-B) connected to the No.2 PON port on the Slot 5 in the password whitelist. The operation steps are as follows:

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → ONU Password Whitelist from the shortcut menu that appears to bring up the Password White List Setting window.
- Right-click a blank area of the whitelist, and select unauthorized ONUs from the menu that appears or directly click the Get Unauthorized ONU button in the tool bar to bring up the Get Unauthorized ONU dialog box.
- 3. In the Get Unauthorized ONU dialog box, click the pull-down lists under the Slot No \ PON No item to select Slot 5 and PON No. 2. And then click the Get Unauthorized ONU button at the bottom part of the dialog box to display the unauthorized ONUs in the pane, and select the ONU with the physical address FHTT0024010d.

Get	Unautho	rized ONV				×
Slot	No.\PON	No				
5	•					
l)			•	2		
Slot	v	PON No.	D1 : 7 TD	Password	IT : 1 TD	
510t	NO.	2	Physical ID FHTT0024017f	[fassword 0000000000	Logical ID	Logical SN
<u>□</u> 5		2	FHTT00240104	12345		
			Get Unautho	rized ONU	OK	Cancel
						///

Figure 3-34 The **Get Unauthorized ONU** dialog box -- maintaining the original ONU authorization and configuration

 Click **OK** and return to the **Password White List Setting** window, as shown in Figure 3-35.

Slot No.	PON No. 2	ONU Type	ONU No.	Get Unauthorized ONU 🕌 Exit
	2			
Failed eck 'White Li	st' configuration	To Device!		-
	Failed eck 'White Li		eck 'White List' configuration	Failed eck 'White List' configuration

Figure 3-35 The **Password White List Setting** window -- maintaining the original ONU authorization and configuration

After completing the configuration, click the button to send the configuration command. If Implemented is displayed under the Implemented Status item, the authorization is successful, as shown in Figure 3-36.

😱 😢 🟦 Re	ad Device 📇 Write De	wice 🛛 💁 Delete From De	vice 🚢 Write Selected	. Rows To Device 📤	Get Unauthorized ONU 👍 Exi
Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status
12345	5	2	AN5506-04-B	1	Implemented
14:14:54 > D	omain 1:System 2:Wr	rite Password White L	ist To Device!		
	omain 1:System 2:Wr ommand Failed	rite Password White L	ist To Device!		
14:14:54 > C	ommand Failed	rite Password White L List' configuration			
14:14:54 > Co 14:15:19 > St	ommand Failed tart check 'White I				

Figure 3-36 Successful password whitelist authorization -- maintaining the original ONU authorization and configuration

3.6.5 End of Configuration

After the mode switching, the ONU services configured under the original authentication mode will not be deleted. The authorized status of the ONU will become **Unimplemented** by the operation of **Read Device** in the whitelist of the original mode, as shown in Figure 3-37.

nysical ID	Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented State
TT0024010d	12345	5	2	AN5506-04-B	1	Unimplemented

Figure 3-37 The physical address whitelist after the switching -- maintaining the original ONU authorization and configuration

Check the ONU list under the PON port No.2 in Slot No.5. The information of this ONU has not changed after the switching, as shown in Figure 3-38.

	[opo]	logy View ONU List	GC4B[7] × ONV Li	st:PON2							▼ ×
ОЪје	et N	Name	ONU Authorized No.	ONU Type	Slot No.	PON No.	ONU MAC/SN	Password	Logical ID	Logical IDPassword	Spliter Port NO.
	0	PON4-AN5506-04-B[1]	1	AN5506-04-B	5	2	FHTT00240104	12345			

Figure 3-38 The ONU list -- maintaining the original ONU authorization and configuration

3.7 Example for Authentication Mode Switching Without Maintaining Original ONU Authorization and Configuration

3.7.1 Example Introduction

The original ONU configuration will not be maintained if the ONU authorization information in the whitelist under the original authentication mode is deleted before mode switching; otherwise the original ONU configuration will be maintained in the system. After the mode switching is completed successfully, the users should reconfigure the ONU services.

This example shows how to switch the physical identifier authentication mode to the password authentication mode. It must be guaranteed that the ONU is equipped with password.

3.7.2 Configuration Flow Chart

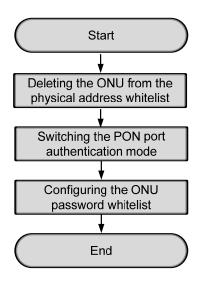


Figure 3-39 Configuration flow chart for authentication mode switching without maintaining the original ONU configuration

3.7.3 Deleting ONU from Physical Address Whitelist

Prerequisites

- The authorization for the GC4B card and the HSWA card has been completed.
- The original authentication mode of the ONU is physical identifier mode and the ONU authorization is completed before the switching.
- The ONU must be equipped with password.
- The current PON port authentication mode is the mode based on physical address identifier.

Configuration purpose

Delete the ONU information from the physical address whitelist.

Operation steps

Delete the information of the ONU (AN5506-04-B) that is authorized in the physical address whitelist from the equipment. The procedures are as follows:

 Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → ONU Physic_ID Address Whitelist from the shortcut menu that appears to bring up the Physical Address White List Setting window, as shown in Figure 3-40.

	ddress Thite L	ist Setting	_				- 0 >
🖓 🛞 🐴 Re	ad Device 📇 Wri	te Device 🔮 Dei	lete From Dev	ice 🚢 Write Selected	Rows To Device	🗧 📤 Get Unauthorized ONU 🛛	🕌 Exit
Physical ID	Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status	
FHTT0024010d	12345	5	2	AN5506-04-B	1	Implemented	
13:57:01 > Do	omain 1:System	2:Read White I	list From De	evice			
				evice eviceCommand Succeed			



 Select the ONU whose physical address is FHTT0024010d and then click the ^{Obj} Delete From Device
 button. In the dialog box that appears, click OK to
 delete the authorization information of the ONU from the whitelist, as shown in
 Figure 3-41.

🔥 Physical	Address Thite L	ist Setting				
i 😱 😵 🏦	Read Device 🚢 Wri	te Device 😫 Delete	From Device	🛓 Write Selected Ro	ws To Device 📤 Get	Unauthorized ONU 🛛 🛶 Exit
Physical ID	Password	Slot No.	PON No.	ONV Type	ONU No.	Implemented Status
F)						×
	Device will unauth sure?	orize onu automatical	ly when the whi	te list that have b	een authorized is ch	anged or deleted! Are you
14:55:30 > 14:55:30 >	Domain 1:System Domain 1:System	2:Read White List 2:Read White List 2:Read Physical A 2:Read Physical A	From Device Address White	List Authorized		Command Succeed
Ready						1

Figure 3-41 Deleting the ONU authorization information

3.7.4 Switching PON Port Authentication Mode

Prerequisites

The relevant authorization information of the ONU has been deleted from the physical address whitelist.

Configuration purpose

Configure the authentication mode switching of the PON port.

Operation steps

Switch the authentication mode of the ONU connected to the PON port 2 of the GC4B card on Slot 5 from the physical identifier authentication to the password authentication. The operation steps are as follows:

Right-click the HSWA[9] card in the Object Tree pane, and select Config →
 ONU Authentication → PON Authentication Mode from the shortcut menu that appears to bring up the PON Authentication Mode window.

Slot	No. PON po	rt Authentication mode	
5	1	PHYSIC_ID AUTHENTICATIO	N .
5	2	PHYSIC_ID AUTHENTICATIO)N
	3	PHYSIC_ID AUTHENTICATION	
	4	PHYSIC_ID AUTHENTICATIO	
5	1	PHYSIC_ID AUTHENTICATIO	
5	2	PHYSIC_ID AUTHENTICATIO	
5	3	PHYSIC_ID AUTHENTICATIO	
5	4	PHYSIC_ID AUTHENTICATIO	
5	5	PHYSIC_ID AUTHENTICATIO	
5	6	PHYSIC_ID AUTHENTICATIO	
5	7	PHYSIC_ID AUTHENTICATION	
5	8	PHYSIC ID AUTHENTICATIO	JN
PO)N Authenti	cation Mode	
-			
			rice[PON Authentication Mode]
3:50):55 > Beg	gin To Validate The Comma	and Data!
		lidate Data Finished	

Figure 3-42 The **PON Authentication Mode** window – without maintaining original ONU authorization and configuration

- Double-click the Slot No.:Port No. (5:2)'s corresponding blank area under the item Authentication mode, and then select Password AUTHENTICATION in the pull-down list.
- 3. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port authentication mode configuration is completed. See Figure 3-43.

Edit	Access (Operation Device Operation 📴 🚸 🖬 📑 📇 🖶 🖌 🚚	arce: De v ice] <mark>_ []</mark>
lot	No. PON po	ort Authentication mode	
;	1	PHYSIC_ID AUTHENTICATION	
5	2	PASSWORD AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
5	1	PHYSIC_ID AUTHENTICATION	
5	2	PHYSIC_ID AUTHENTICATION	
5	3	PHYSIC_ID AUTHENTICATION	
5	4	PHYSIC_ID AUTHENTICATION	
5	5	PHYSIC_ID AUTHENTICATION	
5	6	PHYSIC_ID AUTHENTICATION	
5	7	PHYSIC_ID AUTHENTICATION	
5	8	PHYSIC ID AUTHENTICATION	
PC)N Authenti	ication Mode	
3.50)•55 ≥ Sei	nd Command:Read From Device[PON Authentication Mode]	
		gin To Validate The Command Data!	
		lidate Data Finished	
	7.00 / Va.	nd Command Successfully!	

Figure 3-43 Switching the authentication mode – without maintaining original ONU authorization and configuration

3.7.5 Configuring the ONU Password Whitelist

Prerequisites

- The authentication mode for the PON port must be switched to password-based.
- The ONU must be equipped with password.

Configuration purpose

Configure the ONU password whitelist, and authenticate and authorize the ONU.

Configuration steps

Reauthorize the ONU (AN5506-04-B) connected to the No.2 PON port on the Slot 5 in the password whitelist. The operation steps are as follows:

Right-click the HSWA[9] card in the Object Tree pane, and select Config →
 ONU Authentication → ONU Password Whitelist from the shortcut menu that appears to bring up the Password White List Setting window.

- Right-click a blank area of the whitelist, and select unauthorized ONUs from the menu that appears or directly click the Get Unauthorized ONU button in the tool bar to bring up the Get Unauthorized ONU dialog box.
- 3. In the Get Unauthorized ONU dialog box, click the pull-down lists under the Slot No \ PON No item to select Slot 5 and PON No. 2. And then click the Get Unauthorized ONU button at the bottom part of the dialog box to display the unauthorized ONUs in the pane, and select the ONU with the physical address FHTT0024010d.

📑 Get Unaut	horized ONU				×
Slot No.\PC	DN No	×	2		•
Slot No.	PON No.	Physical ID	Password	Logical ID	Logical SN
5	2	FHTT0024017f	0000000000	ý.	
5	2	FHTT00240104	12345		
		Get Unautho	orized ONU	OK	Cancel

Figure 3-44 The **Get Unauthorized ONU** dialog box – without maintaining original ONU authorization and configuration

4. Click **OK** and return to the **Password White List Setting** window, as shown in Figure 3-45.

🔥 Password 🛙	hite List Setting				
🔆 🛟 🚫 🔹 Re	ad Device 🚢 Write De	wice 🛛 🤷 Delete From D	evice 🚢 Write Select	ed Rows To Device 🚢 G	et Unauthorized ONU 🛃 Exit
Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status
12345	5	2			
14:14:54 > Dc	omain 1:System 2:W	tte Password White	List To Device!		
	ommand Failed				
		ist' configuration.			-
14:15:19 > Cl	heck (White List) (configuration succes	18		
Ready					

Figure 3-45 The **Password White List Setting** window – without maintaining original ONU authorization and configuration

After completing the configuration, click the button to send the configuration command. If **Implemented** is displayed under the **Implemented** Status item, the authorization is successful, as shown in Figure 3-46.

ßPassword ∎I	hite List Setting				
🛟 🚫 🏦 Re	ad Device 💾 Write De	vice 🤮 Delete From D	evice 🚢 Write Selected	Rows To Device 📤	Get Unauthorized ONU 🚚 Exit
assword	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status
.2345	5	2	AN5506-04-B	1	Implemented
		ite Password White	List To Device!		
	ommand Failed	.ist' configuration.			
4.15.10 \ \$4		ist configuration.			
		onfiguration succes	s		ĥ

Figure 3-46 Successful password whitelist authorization – without maintaining original ONU authorization and configuration

3.7.6 End of Configuration

After the mode switching, the ONU authorization configured in the original physical address whitelist will be deleted. Under the new authentication mode, the ONU will be authenticated and authorized based on the password.

Check the ONU list under the PON port No.2 in Slot No.5, as shown in Figure 3-47.

Topology View OHU List:	GC4B[7] X ONITS	st: PON2							▼ ×
	ONU Authorized No.		Slot No.	PON No.	ONU MAC/SN	Password	Logical ID	Logical IDPassword	
PON4-AN5506-04-B[1]	1	AN5506-04-B	5	2	FHTT0024010d	12345			

Figure 3-47 The ONU list – without maintaining original ONU authorization and configuration

3.8 Example for ONU Deauthorization

3.8.1 Example Introduction

To deauthorize the ONU, you only need to delete the ONU from the ONU current authorization whitelist. Once the ONU is deauthorized, there will be no information of this ONU in the ONU list, and its entire configuration information will also be deleted.

This example shows the ONU deauthorization in the authentication mode based on physical identifier.

3.8.2 Configuration Flow Chart

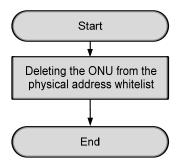


Figure 3-48 Configuration flow chart for ONU deauthorization under the authentication mode based on physical identifier

3.8.3 Deleting the ONU from the Physical Identifier Whitelist

Prerequisites

- The authorization for the GC4B card and the HSWA card has been completed.
- The original authentication mode of the ONU is physical identifier mode and the ONU authorization is completed.
- The current PON port authentication mode is based on physical identifier.

Configuration purpose

Delete the ONU information from the physical address whitelist.

Configuration steps

Delete the ONU (AN5506-04-B) information authorized in physical identifier whitelist from the device. The procedures are as follows:

 Right-click the HSWA[9] card in the Object Tree pane, and select Config → ONU Authentication → ONU Physic_ID Address Whitelist from the shortcut menu that appears to access the Physical Address White List Setting window as shown in Figure 3-49.

💫 🛞 🔔 Re:	ad Device 📇 Wri	te Device 🔮 De	lete From Device	: 🚢 Write Selected	Rows To Device	🗏 📤 Get Unauthorized ONU	🚽 Exi
Physical ID	Password	Slot No.	PON No.	ONU Type	ONU No.	Implemented Status	
FHTT0024010d	12345	5	2	AN5506-04-B	1	Implemented	
13:57:01 > Do	main 1:System	2:Read White 3	List From Devi	ce			

Figure 3-49 The **Physical Address White List Setting** window – ONU deauthorization

 Select the ONU whose physical address is FHTT0024010d and then click the Delete From Device
 button. In the dialog box that appears, click OK to
 delete the authorization information of the ONU from the whitelist, as shown in
 Figure 3-50.

🟠 👧 🖾 Re:	ad Device 🐣Wri	te Device 🙆 Delet	e From Device	rite Selected Rows To) Device 🛛 📤 Get Unauth	orized ONU
hysical ID	Password	Slot No.	PON No.	ONU Type	0พ∪ท₀.	Implemented Stat
AH12000						
A Der			.]]	list that have have		
sur		orize onu automatics	ally when the white	list that have been a	authorized is changed o	r dereted: Are you
			01/	Cancel		
			OK			
			UK			
			<u> </u>			
			<u> </u>		_	
		0.0.100.00.10				
		2:Read White Lis	et From Device			
l:55:30 > Do	main 1:System	2:Read White Lis	st From Device st From DeviceCom		- France Danai an	

Figure 3-50 Deleting ONU authorization information

3.8.4 End of Configuration

After the ONU in the physical address whitelist is deauthorized, the information of this ONU will not be in the ONU list.

This chapter introduces how to start up voice services for the AN5116-06B in details. It includes the following sections:

- Configuring the VoIP services H.248 example
- Configuring the VoIP services MGCP example
- Configuring the VoIP services SIP example
- Configuring the DHCP function of the NGN uplink
- Configuring the advanced profile parameters for the softswitch
- Configuring the NGN heartbeat parameters
- Configuring the IAD MD5 authentication
- Registering / unregistering the NGN user
- Configuring the digitmap
- Displaying the status information

4

4.1 Configuring the VoIP Services – H.248 Example

4.1.1 Configuring Rules

- When the softswitch platform uses the H.248 protocol to control the access terminals, you should set the MGC protocol type to the H.248 protocol for VoIP services, and set the protocol port No. to 2944.
- In the configuration of VoIP service VLAN, if you use single VLAN, you should make sure the signaling VLAN ID is within the range of the local end service VLAN ID. If you use stacked VLANs, you should assign the S-VLAN IDs within the range of the local end service VLAN IDs and assign the signaling VLAN IDs as needed.

4.1.2 Service Network

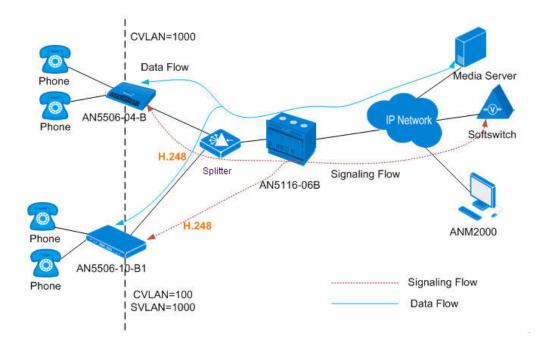


Figure 4-1 The VoIP service network based on the H.248 protocol

As shown in the figure above, the GPON system conducts signaling interaction with the softswitch based on the H.248 protocol to implement call control. The ONU adopts the standard speech encoding technology to convert the subscriber's voice signals into IP packets. These IP packets are uplinked by the OLT to the IP network for transmission. Thus VoIP services are implemented for the subscribers under the GPON system.

The following takes the network with the AN5116-06B, the AN5506-04-B and the AN5506-10-B1 as an example to introduce the start-up process of the VoIP service based on the H.248 protocol. The AN5116-06B chose the HU1A card and the GC8B card as the interface cards on the network side and the client end respectively, and the HSWA card and the PUBA card are required.

4.1.3 Configuring the Services Respectively

4.1.3.1 Planning Data

The following introduces the VoIP service start-up by configuring the ONU ports respectively. The planned data is shown in Table 4-1 and 4-2.

Table 4-1Planned data on the OLT side of the VoIP service based on the H.248 protocol(configuring respectively)

Item		Description	Example	
	ONU Type	Configure this item according to	AN5506-04-B	AN5506-10-B1
	ONO Type	the actual ONU type.	AN5500-04-B	AN5500-10-B1
_		Configure this item according to		
Slot No.		the PON interface card slot	15	
orme		number actually used.		
) Infe	BON port	Configure this item according to		
NC	PON port No.	the PON port number actually	1	
Ŭ	INU.	used.		
	ONU Auth	Configure this item according to	1	2
	No.	the operator's network planning.		2

ltem		Description	Example
	Service	Configure this item according to	
	Name	the operator's network planning.	ngn1
		The start service VLAN ID of the	
	Starting	uplink interface. Configure this	1000
	VLAN ID	item according to the operator's	1000
		network planning.	
		The end service VLAN ID of the	
	VLAN ID	uplink interface. Configure this	4000
	End	item according to the operator's	1000
		network planning.	
		Configure this item according to	
	Interface No.	the uplink interface No. actually	20:SFP1
		used.	
		The TAG processing mode of the	
-		uplink service VLAN. There are	
(LAN		two options: TAG and UNTAG.	
> ec		TAG means that when the uplink	
ervi		data packet passes the port, its tag	
Local End Service VLAN		will not be stripped and it keeps	
al Er		going in the tagged mode. And for	
Loca		the downlink data packet, only the	
		data packet in tagged mode will be	
	TAG /	accepted, and it keeps going in the	TAG
	UNTAG	tagged mode. UNTAG means that	
		when the uplink data packet	
		passes the port, its tag will be	
		automatically stripped and it keeps	
		going in the untagged mode. And	
		for the downlink data packet in the	
		untagged mode, when passing the	
		port, it will be attached with tag	
		and it keeps going in the tagged	
		mode.	
	Service Type	Select ngn for VoIP services.	ngn
	Slot Bind	Select Auto Bind or Manually	Auto Bind
	Mode	Bind.	
link K	Signaling	This item should be consistent	
GN Uplin Interface	Service	with the Service Name set in the	ngn1
NGN Uplink Interface	Name	Local End Service VLAN	
2		configuration.	

Item		Description	Example			
	Protocol Type	Select H.248 .	H.248			
	MGC1 IP Address	The IP address or domain name of the primary softswitch platform MGC.	10.80.20.1			
	MGC1 Port No.	The communication port number of the primary softswitch platform MGC. The default is 2944 .	2944			
	Keep-alive	Whether the ONU regularly sends keep-alive messages to the softswitch platform MGC. Enable (default) or Disable .	Enable			
	Master / Slave DNS Server	The master / slave DNS IP address. You configure the DNS server when the MGC3 is configured as the domain name. When the MGC is configured as the IP address, this item is invalid.	_			
	DHCP	Enable or disable the DHCP function. The default setting is Disable .	Disable			
	Signaling Service Name	This item should be consistent with the Service Name set in the Local End Service VLAN configuration.	ngn1			
NGN Configuration	Telephone Number	The logical number within the system, for configuring the index in the system. It is recommended to configure this item as the actual phone number defined by the softswitch. The value range is 1 to 99999999 .	88880001	88880002	88880003	88880004
NGN	ONU Public IP	When the DHCP or the PPPoE function is enabled, the IP address assigned to the ONU dynamically will override the public IP address assigned to the ONU by the system. You should configure this item according to the operator's network planning.	10.90.60.1	1	10.90.60.2	

Item		Description	Example			
	ONU Public IP Subnet Mask	Configure this item according to the operator's network planning.	255.255.0.0		255.255.0.0	
	ONU Public IP Gateway	Configure this item according to the operator's network planning.	10.90.1.254 10.90.60.1		10.90.1.254	
	Endpoint Domain Name / SIP User Name Postfix	The domain name of the gateway. Configure this item according to the operator's network planning.			10.90.60.2	
	ONU Protocol Port No.	Configure this item according to the operator's network planning; the default setting is 2944 .	2944		2944	
	Endpoint User Name / SIP Telephone No.	TID NAME. Configure this item according to the operator's network planning.	a/1	a/2	a/3	a/4

Item		Description	Example (AN	5506-04-B)	Example (AN	5506-10-B1)		
	Service Type	Select voip	voip		voip	voip		
Configuration	Fixed Bandwidth (Kbyte/s)	Configure this item according to the operator's network planning. The default setting is 16.	16	16				
ONU VoIP Bandwidth Configuration	Assured Bandwidth (Kbyte/s)	Configure this item according to the operator's network planning. The default setting is 0.	0		0			
NNO	Maximum Bandwidth (Kbyte/s)	Configure this item according to the operator's network planning. The default setting is 64.	64		64			
	Port No.	The No. of the port on the ONU that is connected with the subscriber phone physically.	1	2	1	2		
u	Phone Number	This item should be consistent with the Telephone Number in the NGN Configuration .	88880001	88880002	88880003	88880004		
Service Configuration	Signal VLAN ID	The voice service VLAN ID; it is the C-VLAN ID when the QinQ State is set to Enable .	1000	1000	100	100		
ONU VolP Service	Voice Codec Mode	Configure this item according to the operator's network planning; the default setting is G.711A .	G.711A	G.711A	G.711A	G.711A		
5	Fax Model	Configure this item according to the operator's network planning; the default setting is Transparent .	Transparent	Transparent	Transparent	Transparent		
	DTMF Mode	Configure this item according to the operator's network planning; the default setting is Transparent .	Transparent	Transparent	Transparent	Transparent		

Table 4-2Planned data on the ONU side of the VoIP service based on the H.248 protocol(configuring respectively)

Item		Description	Example (AN	5506-04-B)	Example (AN	5506-10-B1)
	Fax Control Mode	Configure this item according to the operator's network planning; the default setting is Passthrough .	Passthrough	Passthrough	Passthrough	Passthrough
	Echo Cancel	Configure this item according to the operator's network planning; it is selected by default.	Selected	Selected	Selected	Selected
	Silence Sp	Configure this item according to the operator's network planning; it is selected by default.	Selected	Selected	Selected	Selected
	Input Gain	Configure this item according to the operator's network planning; the default setting is 0 .	0	0	0	0
	Output Gain	Configure this item according to the operator's network planning; the default setting is 0 .	0	0	0	0
	QinQ State	Configure this item according to the operator's network planning; the default setting is Disable .	Disable	Disable	Enable	Enable
	SVLAN ID	It is SVLAN ID when the QinQ is enabled. The SVLAN ID value should be within the uplink VLAN ID.	_	_	1000	1000
	Outer COS	It is the outer VLAN priority when the QinQ is enabled; it is invalid when QinQ is disabled.	_	_	7	7
	Inner COS	It is the inner VLAN priority when the QinQ is enabled; it is invalid when QinQ is disabled.		_	7	7

4.1.3.2 Configuration Flow Chart

The flow chart for starting up the H.248 protocol based voice services respectively is illustrated in the Figure 4-2.

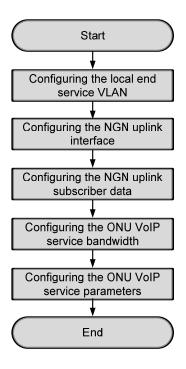


Figure 4-2 Flow chart for configuring the VoIP services respectively -- H.248

4.1.3.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the service VLAN of the uplink port, limit the VLAN ID range of the service passing the uplink port and process the VLAN Tag.

Operation steps

 Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu to bring up the configuration window. Then click the Local End Service VLAN tab to access the Local End Service VLAN window.

- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one local VLAN.
- 3. Configure the parameters according to the planned data in Table 4-1.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN configuration is completed. See Figure 4-3.

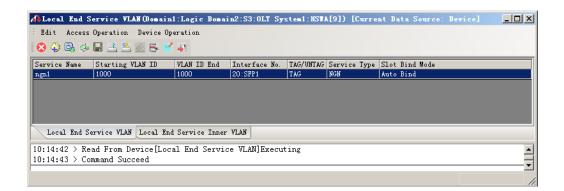


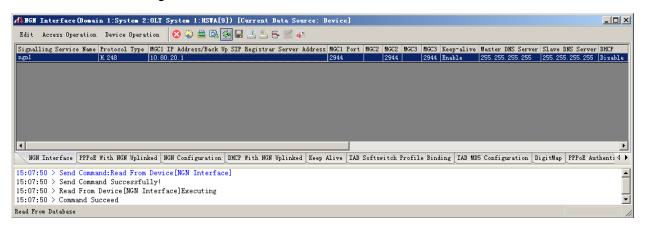
Figure 4-3 Configuring the local end service VLAN - H.248 example

4.1.3.4 Configuring the NGN Uplink Interface

Configuration purpose

Configure the relevant parameters of the media gateway controller, including: the IP address of the MGC, the protocol port No. of the NGN, etc.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Voice Config → NGN Interface from the shortcut menu to access the NGN Interface window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one NGN uplink interface.
- 3. Configure the parameters according to the planned data in Table 4-1.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the NGN uplink interface configuration is completed. See Figure 4-4.





4.1.3.5 Configuring the NGN Uplink Subscriber Data

Configuration purpose

Configure the public network IP of the ONU, the endpoint domain name and the endpoint user name corresponding to the ONU, etc.

- 1. In the NGN Interface window, click the NGN Configuration tab to access the NGN Configuration window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 4 and click OK to add four NGN uplink subscriber information entries.
- 3. Configure the parameters according to the planned data in Table 4-1.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the NGN uplink subscriber information is completed. See Figure 4-5.

🕼 HGH (Configuration (D	omain 1:System	2:OLT System 1	:HSTA[9]) [Current	. Data Source:	Device]		
Edit	Access Operation	Device Operation	n 🛛 😣 🖨 🛙	8, 4, 🖬 🗄 😤 통	🗹 📣			
Signall	ling Service Name	Telephone Number	ONU Public IP	ONU Public IP Subnet	ONU Public IP Ga	ateway Endpoint Domain Name/	SIP User Name Postfix ONU Prot	tocol Port Endpoint
ngnl		88880001	10.90.60.1	255.255.0.0	10.90.1.254	10.90.60.1	2944	a/1 -
ngn1		88880002	10.90.60.1	255.255.0.0	10.90.1.254	10.90.60.1	2944	a/2
ngn1		88880003	10.90.60.2	255.255.0.0	10.90.1.254	10.90.60.2	2944	a/3
ngnl		88880004	10.90.60.2	255.255.0.0	10.90.1.254	10.90.60.2	2944	a/4
<								
NGN	Interface PPPoE	With NGN Uplinked	NGN Configurat	ion DHCP With NGN Up:	Linked Keep Aliv	e IAD Softswitch Profile Bi	nding IAD MD5 Configuration	DigitMap _ PPPoE Authenti ⊄
5:10:3	11 > Send Comman	nd Successfully	1					
	11 > Read From 1			uting				7
	12 > Command Su							
								Ln:9,Col:6

Figure 4-5 Configuring the NGN uplink subscriber data - H.248 example

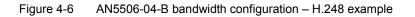
4.1.3.6 Configuring the VoIP Service Bandwidth of the ONU

Configuration purpose

Configure the VoIP service bandwidth of the ONU.

- Click the GC8B[15] card in the Object Tree pane to display all ONUs in the right pane. Right-click the PON1-AN5506-04-B[1] ONU and select Config → Bandwidth config from the shortcut menu to access the Bandwidth Config window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add 1 VoIP service.
- 3. Configure the parameters according to the planned data in Table 4-2.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of PON1-AN5506-04-B[1] VoIP service bandwidth is completed. See Figure 4-6.

👫 Bandwidth Config(Domain 1:S	ystem 2:GC8B[[15] OHV: POH1-AH55(16-04-B[1]) [Current Data S	Source: Device	
Edit Access Operation Device	Operation 🛛 🛞	😳 🕒 🎂 🖓 🖬 📑 😤 B	5 🗹 🐺			
Slot No. FON Fort No. ONU S.N. 15 1 1	Service Type voip	fixed Bandwidth(Kbyte/s 16) assureed Bar 0		Maximum Bandwid 64	lth (Kbyte/s)
	•					Þ
Bandwidth Config		and the Constant				
15:15:14 > Send Command:Read 15:15:14 > Begin To Validate						
15:15:14 > Validate Data Fini 15:15:14 > Send Command Succe						
10.13.14 / Send Command Succe	ssidily					



5. Configure the bandwidth in the same way for the PON1-AN5506-10-B1[2] of the GC8B[15] card, as shown in Figure 4-7.

🔥 Bandwidth Config (Domain 1:5	ystem 2:GC8B[15]	ONU: PON1-AN5506	-10-B1[2])[Current I)ata Source:	Device]	- D ×
Edit Access Operation Device	Operation 🛛 🛞 🎧	0, 🚸 🖬 🗄 📇 🖶	1			
Slot No. PON Fort No. ONU S.N. 15 1 2	Service Type fixe voip 16	d Bandwidth(Kbyte/s)	assureed Bandwidth(Kby O	rte/s) Maximum 64	Bandwidth (Kbyte/s)
						Þ
Bandwidth Config						
15:15:14 > Send Command:Read	From Device[Bandw	idth Config]				
15:15:14 > Begin To Validate						
15:15:14 > Validate Data Fini						
15:15:14 > Send Command Succe	ssfully!					<u> </u>
						1.

Figure 4-7 AN5506-10-B1 bandwidth configuration – H.248 example

4.1.3.7 Configuring the VoIP Service Parameters of the ONU

Configuration purpose

Configure the VoIP service parameters of the ONU, including VoIP service VLAN, voice codec, fax mode, silence switch, echo cancel, input / output gain, DTMF mode, etc.

- Click the GC8B[15] card in the Object Tree pane to display all ONUs in the right pane. Right-click the PON1-AN5506-04-B[1] ONU and select Config →Service Config from the shortcut menu to bring up the configuration dialog box. Then click the Voice Config tab to access the Voice Config dialog box.
- 2. Select **FXS1** in **Voice Port List** and configure the parameters according to the planned data in Table 4-2, as shown in Figure 4-8.

(Domain 1:System 1:G	C8B[15] ONV List:	AB5506-04-B[1])		X
Data Port Config Voic	e Config			
Voice Port List	Port No.	1		
FXS1 FXS2	Phone Number	88880001		
	NGN Interface:ngn1	IP:10.90.60.1 Name: a/1 V	LAN ID (1000-1000)	
	Signal VLAN ID	1000		
	Voice Codec Mode	G. 711A 💌	🔽 Echo Cancel	
	Fax Mode	Transparent 💌	🔽 SlienceSp	
	DTMF Mode	Transparent 💌		
	Fax Control Mode	Passthrough 💌		
	Input Gain(-32 - 3	32) 	p	
	Output Gain(-32 -	32)	p	
	🗖 QinQ State	Out	er COS	
	SVLAN ID	In	ier COS	
<u>R</u> ee	ad DB <u>W</u> rite DB	Read Device Modif	y On Device Delete On Dev	rice Close

Figure 4-8 FXS1 voice configuration of the AN5506-04-B – H.248 example

3. Select **FXS2** in **Voice Port List** and configure the parameters according to the planned data in Table 4-2, as shown in Figure 4-9.

	C8B[15] ONV List:AN5506-04-	·B[1])
Data Port Config Voic Voice Port List	e Config Port No.	1
FXS1 FXS2	Phone Number NGN Interface:ngn1 IP:10.90.60.1	86880001 Name: a/2 VLAN ID (1000-1000)
	Signal VLAN ID	1000
	Voice Codec Mode G.711A	Echo Cancel
	Fax Mode Transparer	
	DTMF Mode Transparen Fax Control Mode Passthroug	
	Input Gain(-32 - 32)	
	Output Gain(-32 - 32)	
	CUTAN TR	Outer COS
<u>R</u> ea	SVLAN ID 0 ad DB <u>W</u> rite DB <u>Re</u> ad Devi	ce Modify On Device Delete On Device Close

Figure 4-9 FXS2 voice configuration of the AN5506-04-B – H.248 example

- 4. Click the **Modify Data on Device** button to complete the voice service configuration for the PON1-AN5506-04-B[1].
- Click the GC8B[15] card in the Object Tree pane to display all ONUs in the right pane. Right-click the PON1-AN5506-10-B1[2] ONU and select Config →Service Config from the shortcut menu to bring up the configuration dialog box. Then click the Voice Config tab to access the Voice Config dialog box.
- 6. Select **FXS1** in **Voice Port List** and configure the parameters according to the planned data in Table 4-2, as shown in Figure 4-10.

ice Port List	Port No.	1		
XS1	Phone Number	0000000		
XS2	Thone Number	88880003	<u> </u>	
XS3	NGN Interface:ngn1 IP:1	0 90 60 1 Namo a/1 V	TAN TD (1000-1000)	
XS4	Well Incertace.ngnr IF.1	0.50.00.1 Mame.a/1 (LAN 15 (1000-1000)	
XS5				
XS6				
XS7	Signal VLAN ID	100		
7XS8		1		
7XS9				
7XS10	Voice Codec Mode G.	711A 💌	🔽 Echo Cancel	
7XS11				
7XS12	Fax Mode Tr	ansparent 🔻	SlienceSp	
7XS13	Tax mode 1		1	
7XS14				
7XS15	DTMF Mode Tr	ansparent 🔻		
7XS16				
7XS17	Fax Control Mode Pa	ssthrough -		
7XS18	Tax control mode 1-			
7XS19	1			
7XS20	Input Gain(-32 - 32)			
7XS21			uuuu E	
7XS22		-		
7XS23	Output Gain (-32 - 32)	· · · · · · · · · · · · · · · · · ·		
7XS24				
	🔽 QinQ State	Ou	ter COS 7	
	-			
	SVLAN ID 1000	In	ner COS 7 🔹	

Figure 4-10 FXS1 voice configuration of the AN5506-10-B1 – H.248 example

7. Select **FXS2** in **Voice Port List** and configure the parameters according to the planned data in Table 4-2, as shown in Figure 4-11.

ce Port List	Port No.	2		
51				
S2	Phone Number	88880004		•
S3	MONT To be and a second second second	00.00.0.1	T NY TD (1000 1000)	
54	NGN Interface:ngn1 IP:10.	. 90. 60. 2 Name: a/ 4 V	LAN ID (1000-1000)	
S5				
36				
57	Signal VLAN ID	100		_
58		,		
29				
510	Voice Codec Mode G.7	11A 💌	🔽 Echo Cancel	
511				
512	Fax Mode Tra	nsparent 🔻	🔽 SlienceSp	
313				
314	татита и з	nsparent 🔻		
315	DTMF Mode Tra	nsparent -		
516				
517	Fax Control Mode Pas	sthrough 💌		
518				
319		_		
520	Input Gain(-32 - 32)		0	
321				
322	Output Gain(-32 - 32)		0	
23	output oun(of of)			
324	_			
	🔽 QinQ State	Out	ter COS 7	•
	-			
	SVLAN ID 1000	In	her COS 7	•

Figure 4-11 FXS2 voice configuration of the AN5506-10-B1 – H.248 example

 Click the Modify Data on Device button to complete the voice service configuration for the PON1-AN5506-10-B1[2].

4.1.3.8 End of Configuration

The subscribers under the FXS1 and FXS2 port of the AN5506-04-B with the authorization No.1 and the subscribers under the FXS1 and FXS2 port of the AN5506-10-B1 with the authorization No.2 under the PON port No.1 of the GC8B card in Slot 15 can access the voice service. Subscribers can call each other normally.

4.1.4 Configuring the Services in a Batch Manner

4.1.4.1 Planning Data

The following introduces how to start up the voice service by configuring the ONU ports in a batch manner. The planned data is shown in Table 4-3 and 4-4.

Table 4-3Planned data on the OLT side of the VoIP service based on the H.248 protocol(configuring in a batch manner)

Item		Description	Example			
	ONU Type	Configure this item according to the actual ONU type.	AN5506-04-B	AN5506-10-B1		
ormation	Slot No.	Configure this item according to the PON interface card slot number actually used.	15			
ONU Information	PON port No.	Configure this item according to the PON port number actually used.	1			
0	ONU Auth No.	Configure this item according to the operator's network planning.	1	2		
	Service Name	Configure this item according to the operator's network planning.	ngn1			
Service VLAN	Starting VLAN ID	The start service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.	1000			
-ocal End So	VLAN ID End	The end service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.	1000			
	Interface No.	Configure this item according to the uplink interface No. actually used.	20:SFP1			

Item		Description	Example			
		The TAG processing mode of the uplink service				
		VLAN. There are two options: TAG and UNTAG .				
		TAG means that when the uplink data packet				
		passes the port, its tag will not be stripped and it				
		keeps going in the tagged mode. And for the				
		downlink data packet, only the data packet in	740			
		tagged mode will be accepted, and it keeps going				
	TAG / UNTAG	in the tagged mode. UNTAG means that when the	TAG			
		uplink data packet passes the port, its tag will be				
		automatically stripped and it keeps going in the				
		untagged mode. And for the downlink data packet				
		in the untagged mode, when passing the port, it				
		will be attached with tag and it keeps going in the				
		tagged mode.				
	Service Type	Select ngn for VoIP services.	ngn			
	Slot Bind	Coloct Auto Dind or Menually Dind	Auto Dind			
	Mode	Select Auto Bind or Manually Bind.	Auto Bind			
	Signaling	This item should be consistent with the Service				
	Signaling Service Name	Name set in the Local End Service VLAN	ngn1			
	Service Maine	configuration.				
	Protocol Type	Select H.248 .	H.248			
	MGC1 IP	The IP address or domain name of the primary	10.80.20.1			
a)	Address	softswitch platform MGC.	10.00.20.1			
rface	MGC1 Port	The communication port number of the primary	2944			
Uplink Interface	No.	softswitch platform MGC. The default is 2944.	2944			
link		Whether the ONU regularly sends keep-alive				
	Keep-alive	messages to the softswitch platform MGC. Enable	Enable			
NGN		(default) or Disable .				
~		The master / slave DNS IP address. You configure				
	Master / Slave	the DNS server when the MGC3 is configured as				
	DNS Server	the domain name. When the MGC is configured as				
		the IP address, this item is invalid.				
		Enable or disable the DHCP function. The default	Disable			
	DHCP	setting is Disable .	Disable			

Item	1	Description	Example					
		The name of the voice service						
		bandwidth profile with an upper limit						
	Profile Name	of 32 characters. Configure this item	а					
		according to the operator's network						
file		planning.						
Bandwidth Config Profile	Service Type	Select VOIP	VOIP					
nfig	Fixed	Configure this item according to the						
Co	Bandwidth	operator's network planning. The	16					
vidth	(Kbyte/s)	default setting is 16.						
vbue	Assured	Configure this item according to the						
B	Bandwidth	operator's network planning. The	0					
	(Kbyte/s)	default setting is 0.						
	Maximum	Configure this item according to the						
	Bandwidth	operator's network planning. The	64					
	(Kbyte/s)	default setting is 64.						
		Configure this item according to the						
	Slot No.	PON interface card slot number	15	15				
Ition		actually used.						
gura	PON No.	Configure this item according to the	1	1				
onfi		PON port number actually used.						
ONU Configuration	ONU No.	Select the ONU authorization	1	2				
6		number to be configured.		_				
	Bandwidth	Select the bandwidth profile to be	а	а				
	Profile	bound with the ONU.	~	~				
		The name of the advanced profile of						
file		the ONU voice port with an upper						
Profile		limit of 20 characters, including						
jure	Profile Name	numbers (0 to 9), letters (a to z and	с					
onfiç		A to Z), and underlines. Configure						
о Ч С		this item according to the operator's						
ince		network planning.						
ONU POTS Advanced Configure	Voice Code	Configure this item according to the						
TS /	Mode	operator's network planning; the	G.711A					
ЪО	default setting is G.711A .							
NNC		Configure this item according to the						
0	Fax Mode	operator's network planning; the	Transparent					
	default setting is Transparent .							

Table 4-4Planned data on the ONU side of the VoIP service based on the H.248 protocol(configuring in a batch manner)

Item	n	Description	Example					
		Configure this item according to the						
	Silence Switch	operator's network planning; the	Enable					
		default setting is Enable.						
		Configure this item according to the						
	Echo Cancel	operator's network planning; the	Enable					
		default setting is Enable.						
	Input Coin	Configure this item according to the						
	Input Gain	operator's network planning; the	0					
	(DB)	default setting is 0 .						
	Output Cain	Configure this item according to the						
	Output Gain	operator's network planning; the	0					
	(DB)	default setting is 0 .						
		Configure this item according to the						
	DTMF Mode	operator's network planning; the	Transparent					
		default setting is Transparent.						
	Fax Control	Configure this item according to the						
	Mode	operator's network planning; the	Passthrough					
	Mode	default setting is Passthrough .						
		Configure this item according to the						
	Slot No.	PON interface card slot number	15					
		actually used.						
	PON No.	The No. of the PON port actually	1					
		used.	1					
	ONU No.	Select the ONU's authentication No.	1	2				
e		to be configured.	1	2				
Configure	IP	Select static (default), PPPoE , or						
	Configuration	DHCP mode to get IP address.	static	static				
ONU Voice Basic	Mode							
Se B		When the DHCP or the PPPoE						
Voi		function is enabled, the IP address						
NU		assigned to the ONU dynamically						
0	ONU Static	will override the public IP address	10.90.60.1	10.90.60.2				
	Public IP	assigned to the ONU by the system.						
		You should configure this item						
		according to the operator's network						
		planning.						
	ONU Static	Configure this item according to the	255.255.0.0	255.255.0.0				
	Public IP Mask	operator's network planning.						

Item	ı	Description	Example						
	ONU Static Public IP Gateway	Configure this item according to the operator's network planning.	10.90.1.254		10.90.1.254				
	Slot No.	Configure this item according to the PON interface card slot number actually used.	15						
	PON No.	The No. of the PON port actually used.	1						
	ONU No.	Select the ONU's authentication No. to be configured.	1		2				
	Port No.	Select the ONU port number actually connected with user telephone.	1	2	1	2			
	Port Enable	Select Enable.	Enable	Enable	Enable	Enable			
	Signaling Service Name	This item should be consistent with the Service Name in the NGN Configuration .	ngn1	ngn1	ngn1	ngn1			
Configure	Signaling VLAN ID	The voice service VLAN ID; it is the C-VLAN ID when the QinQ State is set to Enable .	1000	1000	100	100			
ONU POTS	SVLAN State	Configure this item according to the operator's network planning; the default setting is Disable .	Disable	Disable	Disable	Disable			
	SVLAN ID	The SVLAN ID should be within the range of the uplink interface VLAN ID when the QinQ is enabled. And it is invalid when the QinQ is disabled.	_	_	1000	1000			
	Voice Port Profile ID	Select the ONU pots advanced configuration profile to be bound with the ONU.	с	с	с	с			
	Endpoint Domain Name	The gateway's domain name address. Configure this item according to the operator's network planning.	10.90.60.1	10.90.60.1	10.90.60.2	10.90.60.2			
	ONU Protocol Port No.	Configure this item according to the operator's network planning; the default setting is 2944 .	2944	2944	2944	2944			

Iten	n	Description	Example					
	Endpoint User	The Termination ID corresponding to						
	Name / SIP	the port. Configure this item	- /1	- 10	a/3			
	Telephone	according to the operator's network	a/1	a/2		a/4		
	Number	planning.						

4.1.4.2 Configuration Flow Chart

The flow chart for starting up the H.248 protocol based voice services in a batch manner is illustrated in the Figure 4-12.

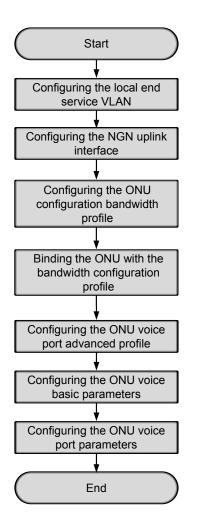


Figure 4-12 Flow chart for configuring the VoIP services in a batch manner - H.248

4.1.4.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the service VLAN of the uplink port, limit the VLAN ID range of the service passing the uplink port and process the VLAN Tag.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu to bring up the configuration window. Then click the Local End Service VLAN tab to access the Local End Service VLAN window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one local VLAN.
- 3. Configure the parameters according to the planned data in Table 4-3.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN configuration is completed. See Figure 4-13.

🔥 Local	End Se	rvice VLAN (Domain)	l:Logic Domai	n2:S3:OLT Sy	sten1:HST/	(9]) [Curre	nt Data Source: Dev	ice] _ 🗆 🗙
Edit .	Access (Operation Device Op	eration					
😣 🍑 🕻	B} ⇒ I	🖩 🗄 🛎 🖶 🗹	41					
Service 1	Name	Starting VLAN ID	VLAN ID End	Interface No.			Slot Bind Mode	
ngnl		1000	1000	20:SFP1	TAG	NGN	Auto Bind	
Local	End Ser	rvice VLAN Local End	Service Inner	VLAN				
		d From Device[Loc: mand Succeed	al End Servic	e VLAN]Execut	ting			

Figure 4-13 Configuring the local end service VLAN - H.248 example

4.1.4.4 Configuring the NGN Uplink Interface

Configuration purpose

Configure the relevant parameters of the media gateway controller, including: the IP address of the MGC, the protocol port No. of the NGN, etc.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Voice Config → NGN Interface from the shortcut menu to access the NGN Interface window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one NGN uplink interface.
- 3. Configure the parameters according to the planned data in Table 4-3.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the NGN uplink interface configuration is completed. See Figure 4-14.

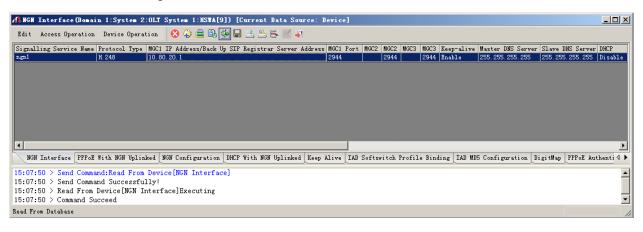


Figure 4-14 Configuring the NGN uplink interface - H.248 example

4.1.4.5 Configuring the ONU Bandwidth Configuration Profile

Configuration purpose

Configure the VoIP service bandwidth profile of the ONU.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one bandwidth configuration profile. Input a in the Profile Name column.
- Select profile a, click a blank area in the right pane, and select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one service. Configure the parameters according to the planned data in Table 4-4.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the VoIP service bandwidth configuration profile is configured. See Figure 4-15.

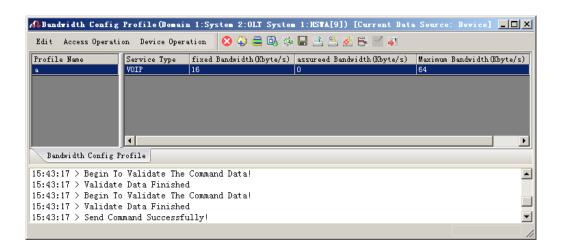


Figure 4-15 The ONU bandwidth configuration profile – H.248 example

4.1.4.6 Binding the ONU with the Bandwidth Configuration Profile

Configuration purpose

Bind the ONU with the bandwidth configuration profile, that is, apply the bandwidth configuration profile to the ONU.

- 1. Right-click the system in the **Object Tree** pane, select **Config** \rightarrow **Batch Configure** \rightarrow **ONU Config** to access the **ONU Config** window.
- Click the Set Object as Condition button, select AN5506-04-B[1] and AN5506-10-B1[2] under the PON port No.1 of the GC8B card in Slot 15 from the drop-down list of the Object, and click the OK button.
- 3. The detailed information of the object will display in the right pane. Configure the parameters according to the planned data in Table 4-4, and select **a** in the drop-down lists of **GPON Bandwidth**.

4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU is bound to the bandwidth configuration profile. See Figure 4-16.

📣 ONU Config(Domain 1:Syste	2) [Curr	ent Data	Source:	Default]		J	
Edit Access Operation Devic	• Operation	D, 🌣	28	· 🗹 🐺			
Config Object 🛛 🕈 🗙	Slot No.	PON NO.	ONU NO.	Bandwidth	Profile	GPON Bandwidt	th
Set Object As Condition	15 15	1	1			a	
	15	1	2			a	
⊞-OLT System 1							
	ONU Co	nfig					
	15:45:02	> Send (Command:R	ead From	Device[0	NU Config]	
				uccessful	-		
<u> </u>	15:45:02	> Read H	From Devi	.ce[ONU Co	onfig]Exe	ecuting	<u> </u>

Figure 4-16 ONU configuration – H.248 example

4.1.4.7 Configuring the ONU Voice Port Advanced Profile

Configuration purpose

Configure the profile of the ONU voice service parameters, including voice codec, fax mode, silence switch, echo cancel, input / output gain, DTMF mode, etc.

- 1. Right-click the system in the Object Tree pane, select Config \rightarrow Profile Definition \rightarrow ONU POTS Advanced Configure Profile to access the ONU POTS Advanced Configure Profile window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one ONU voice port advanced profile.
- 3. Configure the parameters according to the planned data in Table 4-4.

4. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU voice port advanced profile is configured. See Figure 4-17.

ORV PO	TS Ad	lwanced Co	onfigure Po	rofile()	Domai	n 1:Sys	stem 2)	[Current	. Data S	ource: I	levice		
Edit Ac	ccess (Operation	Device Open	ration	8	D	\$ 1	<u>s</u> 2	4				
rofile N	Name Vo	oice Code M	Fax Mode	Slience	Swit	Echo Ca	ncel Ir	put Gain(D	B) Output	Gain(DB)	DTMF Mode	Fax Contr	ol N
	G.	. 711A	transparent	t enable		enable	0		0		transparer	at Passthrou	ıgh
1													1
ONU PO	DTS Adv	vanced Conf	figure Profi	le		_	_		_		_	_] _
		CONTRACT OF THE OWNER	figure Profi 1d:Read Fro		ce [ON	U POTS	Advanc	ed Config	ure Pro	file]			
5:58:01	> Se	nd Comman		om Devid	1		Advanc	ed Config	ure Pro	file]	-	-	
5:58:01 5:58:01	> Se > Be	end Comman egin To Va	d:Read Fro	om Devid e Comman	1		Advanc	ed Config	ure Pro	file]	_	-	

Figure 4-17 ONU voice port advanced configuration profile – H.248 example

4.1.4.8 Configuring the Basic Voice Parameters for the ONU

Configuration purpose

Configure the configuration method for the public network IP address and the public network IP information of the ONU voice service.

- Right-click the system in the Object Tree pane and select Config →Batch Configure →ONU Voice Basic Configure from the shortcut menu to access the ONU Voice Basic Configure window.
- Click the Set Object as Condition button, select AN5506-04-B[1] and AN5506-10-B1[2] under the PON port No.1 of the GC8B card in Slot 15 from the drop-down list of the object, and click the OK button.

- 3. The detailed information of the object will display in the right pane. Configure the parameters according to the planned data in Table 4-4.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the basic voice parameters for the ONU is completed. See Figure 4-18.

📣 ONU Voice Basic Conf	figure (Domain 1:	System 2) [Curre	ent Data Source	: Device]		_ 🗆 🗵							
Edit Access Operation	Device Operation	🖻 🧇 🏝 통	1 🚛										
Set Object Set Object As Condition	Import to the operation I			ONU Static Public IP 10.90.60.1 10.90.60.2	ONU Static Public IP Mask 255.255.0.0 255.255.0.0	ONU Static Public IP 10.90.1.254 10.90.1.254							
	16:04:30 16:04:30 16:04:30	ONV Voice Basic Configure 16:04:30 > Send Command:Read From Device[ONU Voice Basic Configure] 16:04:30 > Send Command Successfully! 16:04:30 > Read From Device[ONU Voice Basic Configure]Executing 16:04:31 > Command Succeed											
						1.							

Figure 4-18 Basic voice configuration for the ONU – H.248 example

4.1.4.9 Configuring the ONU Voice Port Parameters

Configuration purpose

Configure the relevant parameters of the ONU voice port, including: telephone number, voice service VLAN, endpoint domain name, endpoint username, binding the ONU voice port advanced profile, etc.

Operation steps

 Right-click the system in the Object Tree pane and select Config →Batch Configure →ONU POTS Configure from the shortcut menu to access the ONU POTS Configure window.

- Click the Set Object as Condition button, select AN5506-04-B[1] and AN5506-10-B1[2] under the PON port No.1 of the GC8B card in Slot 15, and click the OK button.
- 3. The detailed information of the object will display in the right pane. Configure the parameters according to the planned data in Table 4-4.
- 4. When the configuration is completed, click the Button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU voice port parameter configuration is completed. See Figure 4-19.

A ONU POTS Configure (Domain 1		a) Fa				. 1								- 🗆 ×
ACUBU PUIS Configure (Domain I	System				ce: Defaul:	u -								- 비스
Edit Access Operation Device (Operation	🖳 🖾 🗄	🇇 📥 E	5 🗹 🌌										
Config Object # ×	Slot No.	PON NO.	ONU NO.	Port NO.	Port Enable	Phone NO.	Signalling Servic	e Name Signo	L VLAN ID S	WLAN State	SVLAN ID	Voice Port Profile I	D EndPoint Domain Nam	e ONU Protocol
	15	1	1	1		515010101		1000			0	С	10.90.60.1	2944
Set Object As Condition	15	1	1	2	✓	515010102	ngn1	1000			0	С	10.90.60.1	2944
B-OLT System 1	15	1	2	1	✓	515010201	ngn1	100		✓	1000	C	10.90.60.2	2944
	15	1	2	2	✓	515010202	ngn1	100		✓	1000	C	10.90.60.2	2944
	15	1	2	3		515010203		1			0			65535
	15	1	2	4		515010204		1			0			65535
	15	1	2	5		515010205		1			0			65535
	•													Þ
	ONU P	OTS Conf	figure											
	14.04.2		1.0		Para Dania	- FONTE Vala	Basic Configu							
					ssfully!	efono voice	e basic Conrigu	Itel						
						acic Confi	ure]Executing							
	16:04:3				NO VOICE D	asic contri;	foreleverating							
Exit														1

Figure 4-19 ONU voice port configuration – H.248 example

4.1.4.10 End of Configuration

The subscribers under the FXS1 and FXS2 port of the AN5506-04-B with the authorization No.1 and the subscribers under the FXS1 and FXS2 port of the AN5506-10-B1 with the authorization No.2 under the PON port No.1 of the GC8B card in Slot 15 can access the voice service. Subscribers can call each other normally.

4.2 Configuring the VoIP Service – MGCP Example

4.2.1 Configuration Rules

- When the softswitch platform uses the MGCP protocol to control the access terminals, you should set the MGC protocol type to the MGCP protocol for VoIP services, set the protocol port No. on the equipment side to 2727, and the protocol port No. on the ONU side to 2427.
- In the configuration of VoIP service VLAN, if you use single VLAN, you should set the VLAN ID within the range of the local end service VLAN ID. If you use QinQ VLANs, you should set the S-VLAN IDs within the range of the local end service VLAN IDs and configure the signaling VLAN IDs as needed.

4.2.2 Service Network

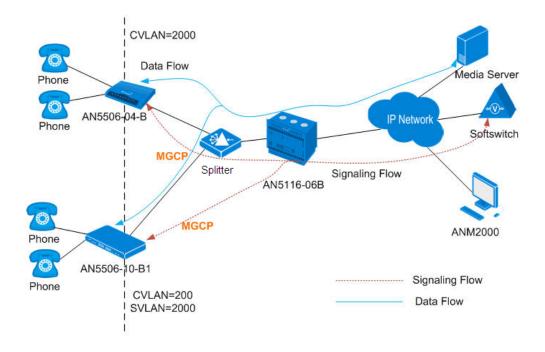


Figure 4-20 The VoIP service network based on the MGCP protocol

As shown in the figure above, the GPON system conducts signaling interaction with the softswitch based on the MGCP protocol to implement call control. The ONU adopts the standard speech encoding technology to convert the subscriber's voice signals into IP packets. These IP packets are uplinked by the OLT to the IP network for transmission. Thus VoIP services are implemented for the subscribers under the GPON system.

The following takes the network with the AN5116-06B, the AN5506-04-B and the AN5506-10-B1 as an example to introduce the start-up process of the VoIP service based on the MGCP protocol. The AN5116-06B chose the HU1A card and the GC8B card as the interface cards on the network side and the client end respectively, and the HSWA card and the PUBA card are required.

4.2.3 Configuring the Services Respectively

4.2.3.1 Planning Data

The following introduces the VoIP service start-up by configuring the ONU ports respectively. The planned data is shown in Table 4-5 and 4-6.

Table 4-5Planned data on the OLT side of the VoIP service based on the MGCP protocol(configuring respectively)

Item		Description	Example		
ONU Information	ONU Type	Configure this item according to the actual ONU type.	AN5506-04-B AN5506-10-B1		
	Slot No.	Configure this item according to the PON interface card slot number actually used.	15		
	PON port No.	Configure this item according to the PON port number actually used.	1		
	ONU Auth No.	Configure this item according to the operator's network planning.	1	2	
Local End Service VLAN	Service Name	Configure this item according to the operator's network planning.	ngn2		
	Starting VLAN ID	The start service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.	2000		
	VLAN ID End	The end service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.			
	Interface No.	Configure this item according to the uplink interface No. actually used.	20:SFP1		

Item		Description	Example
		The TAG processing mode of the uplink	
	TAG / UNTAG	service VLAN. There are two options:	
		TAG and UNTAG. TAG means that when	
		the uplink data packet passes the port,	
		its tag will not be stripped and it keeps	
		going in the tagged mode. And for the	
		downlink data packet, only the data	
		packet in tagged mode will be accepted,	
		and it keeps going in the tagged mode.	TAG
		UNTAG means that when the uplink data	
		packet passes the port, its tag will be	
		automatically stripped and it keeps going	
		in the untagged mode. And for the	
		downlink data packet in the untagged	
		mode, when passing the port, it will be	
		attached with tag and it keeps going in	
		the tagged mode.	
	Service	Select ngn for VoIP services.	nan
	Туре	Select ngh for voir services.	ngn
	Slot Bind	Select Auto Bind or Manually Bind.	Auto Bind
	Mode	Select Auto Bind of Manually Bind.	
	Signaling	This item should be consistent with the	
	Service	Service Name set in the Local End	ngn2
	Name	Service VLAN configuration.	
	Protocol	Select MGCP.	MGCP
	Туре		
	MGC1 IP	The IP address or domain name of the	10.80.20.2
e,	Address	primary softswitch platform MGC.	
erfac	MGC1 Port No.	The communication port number of the	
Inte		primary softswitch platform MGC. The	2727
NGN Uplink Interface		default is 2727.	
ч С	Keep-alive	Whether the ONU regularly sends	
NG		keep-alive messages to the softswitch	Enable
		platform MGC. Enable (default) or	
		Disable.	
		The master / slave DNS IP address. You	
	Master /	configure the DNS server when the	
	Slave DNS	MGC3 is configured as the domain	-
	Server	name. When the MGC is configured as	
		the IP address, this item is invalid.	

Item		Description	Example	Example			
	DHCP	Enable or disable the DHCP function.					
		The default setting is Disable .	Disable				
	Signaling	This item should be consistent with the					
	Service	Service Name set in the Local End	ngn2				
	Name	Service VLAN configuration.					
	Telephone Number	The logical number within the system, for	88880001	88880002	88880003	88880004	
		configuring the index in the system. It is					
		recommended to configure this item as					
		the actual phone number defined by the					
		softswitch. The value range is 1 to					
		99999999.					
		When the DHCP or the PPPoE function					
	ONU Public IP	is enabled, the IP address assigned to					
		the ONU dynamically will override the					
		public IP address assigned to the ONU	10.90.60.1 10.90.60.2				
		by the system. You should configure this					
		item according to the operator's network					
u		planning.					
Iratic	ONU						
NGN Configuration	Public IP	Configure this item according to the	255.255.0.0		255.255.0.0		
	Subnet	operator's network planning.					
IGN	Mask						
z	ONU	Configure this item according to the	10.90.1.254		10.90.1.254		
	Public IP	operator's network planning.					
	Gateway						
	Endpoint						
	Domain	The domain name of the gateway.	10.90.60.1		10.90.60.2		
	Name / SIP	Configure this item according to the					
	User Name	operator's network planning.					
	Postfix						
	ONU	Configure this item according to the	2427		2427		
	Protocol Dort No	operator's network planning; the default					
	Port No.	setting is 2427 .					
	Endpoint						
	User Name	TID NAME. Configure this item	0/1	~/2	2/2	2/4	
	/ SIP	according to the operator's network	a/1	a/2	a/3	a/4	
	Telephone	planning.					
	No.						

Item		Description	Example (AN	5506-04-B)	Example (AN5506-10-B1)	
	Service Type	Select voip	voip		voip	
onfiguration	Fixed Bandwidth (Kbyte/s)	Configure this item according to the operator's network planning. The default setting is 16.	16		16 0	
ONU VoIP Bandwidth Configuration	Assured Bandwidth (Kbyte/s)	Configure this item according to the operator's network planning. The default setting is 0.	0			
	Maximum Bandwidth (Kbyte/s)	Configure this item according to the operator's network planning. The default setting is 64.	64		64	
	Port No.	The No. of the port on the ONU that is connected with the subscriber phone physically.	1	2	1	2
uration	Phone Number	This item should be consistent with the Telephone Number in the NGN Configuration .	88880001	88880002	88880003	88880004
ONU VolP Service Configuration	Signal VLAN ID	The voice service VLAN ID; it is the C-VLAN ID when the QinQ State is set to Enable .	2000	2000	200	200
ONU Voip	Voice Codec Mode	Configure this item according to the operator's network planning; the default setting is G.711A .	G.711A	G.711A	G.711A	G.711A
	Fax Model	Configure this item according to the operator's network planning; the default setting is Transparent .	Transparent	Transparent	Transparent	Transparent

Table 4-6Planned data on the ONU side of the VoIP service based on the MGCP protocol(configuring respectively)

Item		Description	Example (AN	5506-04-B)	Example (AN	5506-10-B1)
	DTMF Mode	Configure this item according to the operator's network planning; the default setting is Transparent .	Transparent	Transparent	Transparent	Transparent
	Fax Control Mode	Configure this item according to the operator's network planning; the default setting is Passthrough .	Passthrough	Passthrough	Passthrough	Passthrough
	Echo Cancel	Configure this item according to the operator's network planning; it is selected by default.	Selected	Selected	Selected	Selected
	Silence Sp	Configure this item according to the operator's network planning; it is selected by default.	Selected	Selected	Selected	Selected
	Input Gain	Configure this item according to the operator's network planning; the default setting is 0 .	0	0	0	0
	Output Gain	Configure this item according to the operator's network planning; the default setting is 0 .	0	0	0	0
	QinQ State	Configure this item according to the operator's network planning; the default setting is Disable .	Disable	Disable	Enable	Enable
	SVLAN ID	It is SVLAN ID when the QinQ is enabled. The SVLAN ID value should be within the uplink VLAN ID. It is not necessary to configure when QinQ is disabled.	_		2000	2000

Item		Description	Example (AN5506-04-B)		Example (AN5506-10-B1)	
		It is the outer VLAN priority				
	Outer COS	when the QinQ is enabled;	_	_	7	7
		it is invalid when QinQ is				1
		disabled.				
		It is the inner VLAN priority			7	7
	Inner COS	when the QinQ is enabled;				
		it is invalid when QinQ is	—			
		disabled.				

4.2.3.2 Configuration Flow Chart

The flow chart for starting up the MGCP protocol based voice services respectively is illustrated in the Figure 4-21.

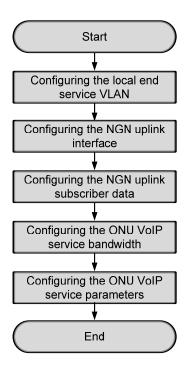


Figure 4-21 Flow chart for configuring the VoIP services respectively - MGCP

4.2.3.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the service VLAN of the uplink port, limit the VLAN ID range of the service passing the uplink port and process the VLAN Tag.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu to bring up the configuration window. Then click the Local End Service VLAN tab to access the Local End Service VLAN window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one local VLAN.
- 3. Configure the parameters according to the planned data in Table 4-5.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN configuration is completed. See Figure 4-22.

🕂 Local En	l Service VLAN(Domain	1:Logic Domai	in2:S3:OLT Sy	sten1:HST	A[9]) [Curre	nt Data Source: Dev	ice] _ 🗆 🗙		
Edit Acce	ss Operation Device O	peration							
😣 🐳 🖏	🤣 🖬 🔮 🐸 📑 🛤	41							
Service Name	Starting VLAN ID	VLAN ID End	Interface No.	TAG/UNTAG	Service Type	Slot Bind Mode			
ngn2	2000	2000	20:SFP1	TAG	NGN	Auto Bind			
Local End	Service VLAN Local En	d Service Inner	VLAN						
	10:38:14 > Read From Device[Local End Service VLAN]Executing 10:38:14 > Command Succeed								

Figure 4-22 Configuring the local end service VLAN - MGCP example

4.2.3.4 Configuring the NGN Uplink Interface

Configuration purpose

Configure the relevant parameters of the media gateway controller, including: the IP address of the MGC, the protocol port No. of the NGN, etc.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Voice Config → NGN Interface from the shortcut menu to access the NGN Interface window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one NGN uplink interface.
- 3. Configure the parameters according to the planned data in Table 4-5.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the NGN uplink interface configuration is completed. See Figure 4-23.

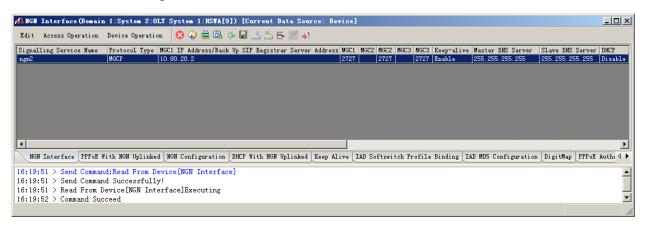


Figure 4-23 Configuring the NGN uplink port - MGCP example

4.2.3.5 Configuring the NGN Uplink Subscriber Data

Configuration purpose

Configure the public network IP of the ONU, the endpoint domain name and the endpoint user name corresponding to the ONU, etc.

- 1. In the NGN Interface window, click the NGN Configuration tab to access the NGN Configuration window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 4 and click OK to add four NGN uplink subscriber information entries.
- 3. Configure the parameters according to the planned data in Table 4-5.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the NGN uplink subscriber information is completed. See Figure 4-24.

A&BGH Configuration(Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Source: Device]									
Edit Access Operation Device Operation 😣 😳 🚔 🚱 🎂 🔙 🛃 😤 👺 🖌 🖌									
Signall	ling Service Name	Telephone Number	ONU Public IP (ONU Public IP Subnet	ONU Public IP Gateway	· Endpoint Domain Name/SIH	User Name Postfix ONU Protocol Por	t Endpoint	
ngn2		88880001	10.90.60.1	255. 255. 0. 0	10.90.1.254	10.90.60.1	2427	a/1	
ngn2		88880002	10.90.60.1	255. 255. 0. 0	10.90.1.254	10.90.60.1	2427	a/2	
ngn2		88880003	10.90.60.2 2	255. 255. 0. 0	10.90.1.254	10.90.60.2	2427	a/3	
ngn2		88880004	10.90.60.2	255. 255. 0. 0	10.90.1.254	10.90.60.2	2427	a/4	
1									
NGN	Interface PPPoE	With NGN Uplinked	NGN Configuratio	n DHCP With NGN Upl	inked Keep Alive IA	D Softswitch Profile Bindi	ng IAD MD5 Configuration DigitMap	PPPoE Authent	ti₫
5:10:11 > Send Command Successfully! 5:10:11 > Read From Device[NGN Configuration]Executing									
5:10:	12 > Command Su	cceed							_
								Ln:9,Col:6	

Figure 4-24 Configuring the NGN uplink subscriber data - MGCP example

4.2.3.6 Configuring the VoIP Service Bandwidth of the ONU

Configuration purpose

Configure the VoIP service bandwidth of the ONU.

- Click the GC8B[15] card in the Object Tree pane to display all ONUs in the right pane. Right-click the PON1-AN5506-04-B[1] ONU and select Config → Bandwidth config from the shortcut menu to access the Bandwidth Config window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add 1 VoIP service.
- 3. Configure the parameters according to the planned data in Table 4-6.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of PON1-AN5506-04-B[1] VoIP service bandwidth is completed. See Figure 4-25.

🔒 Band	dwidth Config	(Domain 1:5	System 2:GC	8B[15]	ONU: PON1-AN550	6-04-B[1])	[Current Data	Source:	Device]	_ 🗆 ×
Edit	Access Operati	on Device	Operation	8 Q Q	🎄 🖬 🔮 😫 B	ş 🗹 🐺 👘				
Slot N 15	Io. PON Port No. 1	ону S. N. 1	Service Typ voip	e fixed F 16	andwidth (Kbyte/s)	assureed I 0	andwidth (Kbyte/s) <mark>Maximum</mark> 64	Bandwidth	.(Kbyte/s)
۲ Rep	ami dah. Canfi a	 •	•	_	_	_	_	_	_	
Bandwidth Config 15:15:14 > Send Command:Read From Device[Bandwidth Config]										
15:15:14 > Begin To Validate The Command Data! 15:15:14 > Validate Data Finished							1			
	:14 > Send Cor									

Figure 4-25 AN5506-04-B bandwidth configuration – MGCP example

5. Configure the bandwidth in the same way for the PON1-AN5506-10-B1[2] of the GC8B[15] card, as shown in Figure 4-26.

🕼 Bandwidth Config (Domain 1:S	ystem 2:GC8B[[15] ONU: PON1-AN5506	-10-B1[2])[Current Dat	a Source: Device]	_ 🗆 ×
Edit Access Operation Device (Operation 🛛 🛞	Q 0, 4 🖬 🗄 🛎 🗲	1		
Slot No. FON Port No. ONU S.N. 15 1 2	Service Type voip	fixed Bandwidth(Kbyte/s) 16	assureed Bandwidth(Kbyte/ O	s) Maximum Bandwidth 64	(Kbyte/s)
Bandwidth Config	•				Þ
15:15:14 > Send Command:Read From Device[Bandwidth Config] 15:15:14 > Begin To Validate The Command Data!					
15:15:14 > Validate Data Fini 15:15:14 > Send Command Succe					-

Figure 4-26 AN5506-10-B1 bandwidth configuration – MGCP example

4.2.3.7 Configuring the VoIP Service Parameters of the ONU

Configuration purpose

Configure the VoIP service parameters of the ONU, including VoIP service VLAN, voice codec, fax mode, silence switch, echo cancel, input / output gain, DTMF mode, etc.

- Click the GC8B[15] card in the Object Tree pane to display all ONUs in the right pane. Right-click the PON1-AN5506-04-B[1] ONU and select Config →Service Config from the shortcut menu to bring up the configuration dialog box. Then click the Voice Config tab to bring up the Voice Config dialog box.
- 2. Select **FXS1** in **Voice Port List** and configure the parameters according to the planned data in Table 4-6, as shown in Figure 4-27.

(Domain 1:System 1:G	C8B[15] ONV List:AN	5506-04-B[1])		×
Data Port Config Voic	e Config			
Voice Port List	Port No.	1		
FXS1 FXS2	Phone Number	88880001		
	NGN Interface:mgn2IP:	10.90.60.1 Name: a/1 V	LAN ID (2000-2000)	
	Signal VLAN ID	2000		
	Voice Codec Mode	. 711A 💌	🔽 Echo Cancel	
	Fax Mode	ransparent 💌	🔽 SlienceSp	
	DTMF Mode	ransparent 💌		
	Fax Control Mode	assthrough 💌		
	Input Gain(-32 - 32)			
	Output Gain(-32 - 32	» 	0	
	🗖 QinQ State	Out	er COS	
	SVLAN ID	In	er COS	
<u>R</u> ea	ad DB <u>W</u> rite DB	R <u>e</u> ad Device Modif	y On Device Delete On Dev	ice Close

Figure 4-27 FXS1 voice configuration of the AN5506-04-B – MGCP example

3. Select **FXS2** in **Voice Port List** and configure the parameters according to the planned data in Table 4-6, as shown in Figure 4-28.

ata Port Config 🔽 oice Port List	Port No.	2	
7XS1 7XS2	Phone Number	88880002	
	NGN Interface:ngn2IP:10.90.	60.1 Name:a/2 VLAN ID (2000-2000)	
	Signal VLAN ID	2000	
	Voice Codec Mode G.711A	Echo Cancel	
	Fax Mode Transpo	arent 🔽 🔽 SlienceSp	
	DTMF Mode Transpo	arent 💌	
	Fax Control Mode Passth	rough 🔽	
	Input Gain(-32 - 32)	·······	
	Output Gain(-32 - 32)	[0	
	🗖 QinQ State	Outer COS	
	SVLAN ID 0	Inner COS	

Figure 4-28 FXS2 voice configuration of the AN5506-04-B – MGCP example

- 4. Click the **Modify Data on Device** button to complete the voice service configuration for the PON1-AN5506-04-B[1].
- Click the GC8B[15] card in the Object Tree pane to display all ONUs in the right pane. Right-click the PON1-AN5506-10-B1[2] ONU and select Config →Service Config from the shortcut menu to bring up the configuration dialog box. Then click the Voice Config tab to bring up the Voice Config dialog box.
- 6. Select **FXS1** in **Voice Port List** and configure the parameters according to the planned data in Table 4-6, as shown in Figure 4-29.

oice Port List	Port No.	1		
XS1 XS2	Phone Number	88880003	1	-
XS3		,		
XS4	NGN Interface:ngn2 IP:	10.90.60.2 Name:a/3	VLAN ID (2000-2000)	
XS5				
XS6				
XS7	C	200		_
XS8	Signal VLAN ID	200		
XS9			1	
XS10	Voice Codec Mode G.	.711A 💌	🔽 Echo Cancel	
XS11				
XS12	Fax Mode	ransparent 🔻	✓ SlienceSp	
XS13	rax mode [11	ansparent	J• STIERCESP	
XS14				
XS15	DTMF Mode Ta	ransparent 💌		
XS16				
XS17	Fax Control Mode	assthrough 🔻		
XS18	Tax control mode [-			
XS19				
XS20	Input Gain(-32 - 32)	J_	0	_
XS21			THE PARTY IS NOT THE PARTY OF T	
XS22			0	
XS23	Output Gain (-32 - 32)) <u></u> [
XS24				_
	🔽 QinQ State	00	iter COS 7	-
	-			
	SVLAN ID 2000	In	ner COS 7	•

Figure 4-29 FXS1 voice configuration of the AN5506-10-B1 -- MGCP example

7. Select **FXS2** in **Voice Port List** and configure the parameters according to the planned data in Table 4-6, as shown in Figure 4-30.

e Port List	Port No.	2				
1						
2	Phone Number	888	80004		_	
3	NGN Interface:ngn2 I	P-10 00 60 2 Name	VALUE AN T	D (2000-2000)		
1	Nov Incertace.ngnz In	r.10.50.00.2 Name	USUA ILLA I	0 (2000-2000)		
5						
5						
T	Signal VLAN ID	200)			
3						
9		G. 711A	-	✓ Echo Cance	,	
0	Voice Codec Mode	G. TITA	<u> </u>	 Echo Lance 	1	
1						
.2	Fax Mode	Transparent	•	✓ SlienceSp		
.3						
4	DTMF Mode	Transparent	-			
.5 .6	Jim mode ,					
.0		D (1) 1	-			
	Fax Control Mode	Fassthrough	-			
.0						
20	Input Gain(-32 - 32			0		
21	Input Gain(-52 - 52			P		
2			_			
23	Output Gain (-32 - 3	32)	<u></u>	<u> </u>		
24						
	🔽 QinQ State		Outer C	OS 7	-	
	SVLAN ID 2000		Inner C	0S 7	•	

Figure 4-30 FXS2 voice configuration of the AN5506-10-B1 – MGCP example

 Click the Modify Data on Device button to complete the voice service configuration for the PON1-AN5506-10-B1[2].

4.2.3.8 End of Configuration

The subscribers under the FXS1 and FXS2 port of the AN5506-04-B with the authorization No.1 and the subscribers under the FXS1 and FXS2 port of the AN5506-10-B1 with the authorization No.2 under the PON port No.1 of the GC8B card in Slot 15 can access the voice service. Subscribers can call each other normally.

4.2.4 Configuring the Services in a Batch Manner

4.2.4.1 Planning Data

The following introduces how to start up the voice service by configuring the ONU ports in a batch manner. The planned data is shown in Table 4-7 and 4-8.

Table 4-7Planned data on the OLT side of the VoIP service based on the MGCP protocol(configuring in a batch manner)

Item		Description	Example		
_	ONU Type	Configure this item according to the actual ONU type.	AN5506-04-B	AN5506-10-B1	
ONU Information	Slot No.	Configure this item according to the PON interface card slot number actually used.	15		
JNU Infe	PON port No.	Configure this item according to the PON port number actually used.	1		
U	ONU Auth No.	Configure this item according to the operator's network planning.	1 2		
	Service Name	Configure this item according to the operator's network planning.	ngn2		
Service VLAN	Starting VLAN ID	The start service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.	2000		
Local End So	VLAN ID End	The end service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.	2000		
	Interface No.	Configure this item according to the uplink interface No. actually used.	20:SFP1		

Item		Description	Example
		The TAG processing mode of the uplink service	
		VLAN. There are two options: TAG and UNTAG.	
		TAG means that when the uplink data packet	
		passes the port, its tag will not be stripped and it	
		keeps going in the tagged mode. And for the	
		downlink data packet, only the data packet in	
	TAG / UNTAG	tagged mode will be accepted, and it keeps	
	TAG / UNTAG	going in the tagged mode. UNTAG means that	TAG
		when the uplink data packet passes the port, its	
		tag will be automatically stripped and it keeps	
		going in the untagged mode. And for the	
		downlink data packet in the untagged mode,	
		when passing the port, it will be attached with tag	
		and it keeps going in the tagged mode.	
	Service Type	Select ngn for VoIP services.	ngn
	Slot Bind	Select Auto Bind or Manually Bind.	Auto Bind
	Mode		
	Signaling	This item should be consistent with the Service	
	Service Name	Name set in the Local End Service VLAN	ngn2
		configuration.	
	Protocol Type	Select MGCP.	MGCP
	MGC1 IP	The IP address or domain name of the primary	10.80.20.2
	Address	softswitch platform MGC.	10.00.20.2
ace	MGC1 Port	The communication port number of the primary	2727
plink Interface	No.	softswitch platform MGC. The default is 2727 .	
L L		Whether the ONU regularly sends keep-alive	
	Keep-alive	messages to the softswitch platform MGC.	Enable
NGN U		Enable (default) or Disable.	
ž		The master / slave DNS IP address. You	
	Master / Slave	configure the DNS server when the MGC3 is	
	DNS Server	configured as the domain name. When the MGC	—
		is configured as the IP address, it is not	
		necessary to configure this item.	
	DHCP	Enable or disable the DHCP function. The default	Disable
		setting is Disable .	Sidubio

Item		Description	Example					
		The name of the voice service						
		bandwidth profile with an upper						
	Profile Name	limit of 32 characters. Configure	а					
		this item according to the						
ie		operator's network planning.						
Bandwidth Config Profile	Service Type	Select VOIP	VOIP					
nfig	Fixed	Configure this item according to						
Cor	Bandwidth	the operator's network planning.	16					
vidth	(Kbyte/s)	The default setting is 16.						
wpu	Assured	Configure this item according to						
Ва	Bandwidth	the operator's network planning.	0					
	(Kbyte/s)	The default setting is 0.						
	Maximum	Configure this item according to						
	Bandwidth	the operator's network planning.	64					
	(Kbyte/s)	The default setting is 64.						
		Configure this item according to						
	Slot No.	the PON interface card slot	15	15				
Ľ		number actually used.						
ratic		Configure this item according to						
ıfigu	PON No.	the PON port number actually	1	1				
ONU Configuration		used.						
NU	ONU No.	Select the ONU authorization	1	2				
0		number to be configured.	1	2				
	Bandwidth	Select the bandwidth profile to be	а	а				
	Profile	bound with the ONU.	ŭ	ŭ				
a		The name of the advanced profile						
igure		of the ONU voice port with an						
Conf		upper limit of 20 characters,						
ed C	Profile Name	including numbers (0 to 9), letters	с					
Advance Profile		(a to z and A to Z), and underlines.						
Adv Pro		Configure this item according to						
ONU POTS Advanced Configure Profile		the operator's network planning.						
DAC	Voice Code	Configure this item according to						
ONL	Voice Code Mode	the operator's network planning;	G.711A					
_		the default setting is G.711A .						

Table 4-8Planned data on the ONU side of the VoIP service based on the MGCP protocol(configuring in a batch manner)

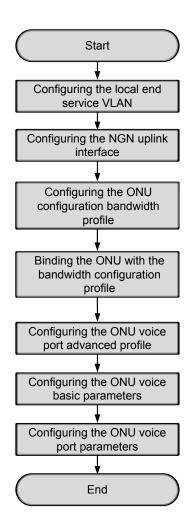
Item		Description	Example					
		Configure this item according to						
	Fax Mode	the operator's network planning;	Transparent					
		the default setting is Transparent.						
	Cileree	Configure this item according to						
	Silence	the operator's network planning;	Enable					
	Switch	the default setting is Enable .						
		Configure this item according to						
	Echo Cancel	the operator's network planning;	Enable					
		the default setting is Enable .						
	In sect Online	Configure this item according to						
	Input Gain	the operator's network planning;	0					
	(DB)	the default setting is 0 .						
	Output Onlin	Configure this item according to						
	Output Gain	the operator's network planning;	0					
	(DB)	the default setting is 0 .						
		Configure this item according to						
	DTMF Mode	the operator's network planning;	Transparent					
		the default setting is Transparent.						
	Fax Control	Configure this item according to						
	Mode	the operator's network planning;	Passthrough					
	WOULE	the default setting is Passthrough .						
		Configure this item according to						
	Slot No.	the PON interface card slot	15					
		number actually used.						
	PON No.	The No. of the PON port actually	1					
		used.	1					
lre	ONU No.	Select the ONU's authentication	1	2				
ıfigu		No. to be configured.	1	2				
ONU Voice Basic Configure	IP	Select static (default), PPPoE, or						
asic	Configuratio	DHCP mode to get IP address.	static	static				
Se B	n Mode							
Void		When the DHCP or the PPPoE						
NU		function is enabled, the IP address						
0		assigned to the ONU dynamically						
	ONU Static	will override the public IP address	10.90.60.1 10.90.60.2					
	Public IP	assigned to the ONU by the						
		system. You should configure this						
		item according to the operator's						
		network planning.						

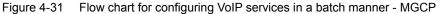
Item		Description	Example				
	ONU Static Public IP Mask	Configure this item according to the operator's network planning.	255.255.0.0		255.255.0.0		
	ONU Static Public IP Gateway	Configure this item according to the operator's network planning.	10.90.1.254		10.90.1.254		
	Slot No.	Configure this item according to the PON interface card slot number actually used.	15				
	PON No.	The No. of the PON port actually used.	1				
	ONU No.	Select the ONU's authentication No. to be configured.	1		2		
	Port No.	Select the ONU port number actually connected with user telephone.	1	2	1	2	
	Port Enable	Select Enable.	Enable	Enable	Enable	Enable	
E	Signaling Service Name	This item should be consistent with the Service Name in the NGN Configuration.	ngn2	ngn2	ngn2	ngn2	
ONU POTS Configure	Signaling VLAN ID	The voice service VLAN ID; it is the C-VLAN ID when the QinQ State is set to Enable .	2000	2000	200	200	
ONU PC	SVLAN State	Configure this item according to the operator's network planning; the default setting is Disable .	Disable	Disable	Enable	Enable	
	SVLAN ID	The SVLAN ID should be within the range of the uplink interface VLAN ID when the QinQ is enabled. And it is invalid when the QinQ is disabled.	_	_	2000	2000	
	Voice Port Profile ID	Select the ONU pots advanced configuration profile to be bound with the ONU.	с	с	с	с	
	Endpoint Domain Name	The gateway's domain name address. Configure this item according to the operator's network planning.	10.90.60.1	10.90.60.1	10.90.60.2	10.90.60.2	

Item		Description	Example					
	ONU	Configure this item according to						
	Protocol Port	the operator's network planning;	2427	2427	2427	2427		
	No.	the default setting is 2427 .						
	Endpoint User Name / SIP Telephone Number	The Termination ID corresponding to the port. Configure this item according to the operator's network planning.	a/1	a/2	a/3	a/4		

4.2.4.2 Configuration Flow Chart

The flow chart for starting up the MGCP protocol based voice services in a batch manner is illustrated in the Figure 4-31.





4.2.4.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the service VLAN of the uplink port, limit the VLAN ID range of the service passing the uplink port and process the VLAN Tag.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu to bring up the configuration window. Then click the Local End Service VLAN tab in the window to access the Local End Service VLAN window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one local VLAN.
- 3. Configure the local VLAN according to the planned data in Table 4-7.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN configuration is completed. See Figure 4-32.

🚯 Local En	nd Service VLAN(Doma	in1:Logic Domai	in2:S3:OLT Sys	sten1:HST/	\[9]) [Curr e	nt Data Source: Dev	rice] _OX
Edit Acc	cess Operation Device	Operation					
😣 🕹 🖏	🎄 🖬 🔮 📥 🛼 I	4 🗸					
Service Nam	e Starting VLAN ID	VLAN ID End	Interface No.	TAG/UNTAG	Service Type	Slot Bind Mode	
ngn2	2000	2000	20:SFP1	TAG	NGN	Auto Bind	
Local Er	nd Service VLAN Local H	And Service Inner	VLAN				
	Read From Device[Lo Command Succeed	ocal End Servio	ce VLAN]Execut	ing			

Figure 4-32 Configuring the local end service VLAN - MGCP example

4.2.4.4 Configuring the NGN Uplink Interface

Configuration purpose

Configure the relevant parameters of the media gateway controller, including: the IP address of the MGC, the protocol port No. of the NGN, etc.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Voice Config → NGN Interface from the shortcut menu to access the NGN Interface window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one NGN uplink interface.
- 3. Configure the parameters according to the planned data in Table 4-7.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the NGN uplink interface configuration is completed. See Figure 4-33.

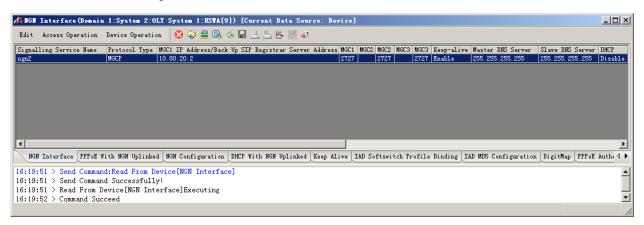


Figure 4-33 Configuring the NGN uplink interface - MGCP example

4.2.4.5 Configuring the ONU Bandwidth Configuration Profile

Configuration purpose

Configure the VoIP service bandwidth profile of the ONU.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one bandwidth configuration profile. Input a in the Profile Name column.
- Select profile a, click a blank area in the right pane, and select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one service. Configure the parameters according to the planned data in Table 4-8.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the VoIP service bandwidth configuration profile is configured. See Figure 4-34.

🗥 Bandwidth Config I	Profile (Domain	n 1:System 2:OLT System	1:HSTA[9]) [Current Date	a Source: Device] 💶 🗙
Edit Access Operatio	n Device Opers	ation 🛛 😣 🐳 📇 🖏 🤣	- 🖶 🛎 🕹 🖶 🗹 📣	
Profile Name	Service Type	fixed Bandwidth(Kbyte/s)	assureed Bandwidth(Kbyte/s)	Maximum Bandwidth(Kbyte/s)
8	VOIP	16	0	64
	•			
Bandwidth Config Pr	ofile			
Danawinden contrig it	onne			
15:43:17 > Begin To	Validate The	Command Data!		_
15:43:17 > Validate	Data Finished	1		
15:43:17 > Begin To				
15:43:17 > Validate		-		
15:43:17 > Send Comm	mand Successfu	illy!		•
				1



4.2.4.6 Binding the ONU with the Bandwidth Configuration Profile

Configuration purpose

Bind the ONU with the bandwidth configuration profile, that is, apply the bandwidth configuration profile to the ONU.

- 1. Right-click the system in the **Object Tree** pane, select **Config** \rightarrow **Batch Configure** \rightarrow **ONU Config** to access the **ONU Config** window.
- Click the Set Object as Condition button, select AN5506-04-B[1] and AN5506-10-B1[2] under the PON port No.1 of the GC8B card in Slot 15 from the drop-down list of the Object, and click the OK button.
- 3. The detailed information of the object will display in the right pane. Configure the parameters according to the planned data in Table 4-8, and select **a** in the drop-down lists of **GPON Bandwidth**.
- 4. When the configuration is completed, click the 📇 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU is bound to the bandwidth configuration profile. See Figure 4-35.

🔥 ONU Config (Domain 1	System	2) [Curre	nt Data	Source:	Default]				
Edit Access Operation	Device	Operation	D, 🍫	286	· 🗹 🐺				
Config Object	Ψ×	Slot No.	PON NO.	ONU NO.	Bandwidth	Profile	GPON Bandwi	dth	
Set Object As Condition		15	1	1			a		
⊕-OLT System 1	Set Object As Condition								
		15:45:02 > Send Command:Read From Device[ONU Config] 15:45:02 > Send Command Successfully! 15:45:02 > Read From Device[ONU Config]Executing							
1									

Figure 4-35 ONU configuration

4.2.4.7 Configuring the ONU Voice Port Advanced Profile

Configuration purpose

Configure the profile of the ONU voice service parameters, including voice codec, fax mode, silence switch, echo cancel, input / output gain, DTMF mode, etc.

- Right-click the system in the Object Tree pane, select Config → Profile Definition → ONU POTS Advanced Configure Profile to access the ONU POTS Advanced Configure Profile window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one ONU voice port advanced profile.
- 3. Configure the parameters according to the planned data in Table 4-8.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU voice port advanced profile is configured. See Figure 4-36.

•UIU .	POTS A	dwanced Co	onfigure Pr	ofile(lonali	a 1:Syst	em 2) [C	urrent 1	Data S	ource: D	evicel			
Edit	Access	Operation	Device Oper	ation	84) 🗟 🍕		6	41					
rofile	Name ¹	Voice Code M	Fax Mode	Slience	Swit	Echo Canc	el Input	Gain(DB)	Output	Gain(DB)	DTMF M	ode	Fax Con	trol
š		G. 711A	transparent	enable		enable	0		0		transp	arent	Passth	rough
URO	POTS A	dvanced Con:	figure Profil	Le		_	_	_						
-			figure Profil Nd:Read Fro		e [ONU	J POTS A	dvanced	Configu	re Prot	Tile]				
5:58:0	01 > S	end Commar		m Devic	1. S. C.		dvanced	Configur	re Prot	Tile]		_	_	
5:58:0 5:58:0	01 > S 01 > B	end Comman egin To Va	d:Read Fro	m Devic Commar	1. S. C.		dvanced	Configu	re Prot	ile]			_	
5:58:0 5:58:0 5:58:0	01 > S 01 > B 01 > V	end Commar egin To Va alidate Da	nd:Read Fro alidate The	m Devic Commar d	1. S. C.		dvanced	Configur	re Prot	ile]	_		_	

Figure 4-36 ONU voice port advanced configuration profile

4.2.4.8 Configuring the Basic Voice Parameters for the ONU

Configuration purpose

Configure the configuration method for the public network IP address and the public network IP information of the ONU voice service.

- Right-click the system in the Object Tree pane and select Config →Batch Configure →ONU Voice Basic Configure from the shortcut menu to access the ONU Voice Basic Configure window.
- Click the Set Object as Condition button, select AN5506-04-B[1] and AN5506-10-B1[2] under the PON port No.1 of the GC8B card in Slot 15 from the drop-down list of the object, and click the OK button.
- 3. The detailed information of the object will display in the right pane. Configure the parameters according to the planned data in Table 4-8.

4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the basic voice parameters for the ONU is completed. See Figure 4-37.

🔥 OHU Voice Basic Con	figure (Domain 1:	System 2) [Curre	ent Data Source	e: Device]		
Edit Access Operation	Device Operation	🖻 🤣 📥 통	1			
Config Object Set Object As Condition ⊞-OLT System 1	4 × Slot No. 15 15			0MU Static Public 10.90.60.1 10.90.60.2	IP ONU Static Public IP Mask 255.255.0.0 255.255.0.0	ONU Static Public IP 10.90.1.254 10.90.1.254
	16:04:30 16:04:30 16:04:30	> Send Command	Read From Devi Successfully! vice[ONU Voice	ice[ONU Voice Ba Basic Configure		<u> </u>

Figure 4-37 Basic voice configuration for the ONU

4.2.4.9 Configuring the ONU Voice Port Parameters

Configuration purpose

Configure the relevant parameters of the ONU voice port, including: telephone number, voice service VLAN, endpoint domain name, endpoint username, binding the ONU voice port advanced profile, etc.

- Right-click the system in the Object Tree pane and select Config →Batch Configure →ONU POTS Configure from the shortcut menu to access the ONU POTS Configure window.
- Click the Set Object as Condition button, select AN5506-04-B[1] and AN5506-10-B1[2] under the PON port No.1 of the GC8B card in Slot.15, and click the OK button.

- 3. The detailed information of the object will display in the right pane. Configure the parameters according to the planned data in Table 4-8.
- 4. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU voice port parameter configuration is completed. See Figure 4-38.

🔥 OHU POTS Configure (Domain 1	:System	2) [Cu	rrent B	ata Sourc	e: Default	1							_ 🗆 🗵
Edit Access Operation Device O													
Config Object 4 ×	Slot No.	FON NO.	ONU NO.	Port NO.	Port Enable	Phone NO.	Signalling Service Nam	e Signal VLAN ID	SVLAN State	SVLAN II	Voice Port Profile ID	EndPoint Domain Name	ONU Protocol
Set Object As Condition	15	1	1	1	✓	515010101	ngn2	2000		0	C	10.90.60.1	2427
Set Object As condition	15	1	1	2	~	515010102	ngn2	2000		0	С	10.90.60.1	2427
I OLT System 1	15	1	2	1	~	515010201	ngn2	200	✓	2000	С	10.90.60.2	2427
Cer System 1	15	1	2	2	✓	515010202	ngn2	200	✓	2000	C	10.90.60.2	2427
	15	1	2	3		515010203	3	1		0			65535
	15	1	2	4		515010204	L	1		0			65535
	15	1	2	5		515010205	5	1		0			65535
	4												•
	ONU PC	DTS Conf	li gur e										
	16:04:30	> Sen > Rea	d Comma d From 1	nd Succes Device[ON	sfully		ce Basic Configure] igure]Executing						
Exit													11.

Figure 4-38 ONU voice port configuration

4.2.4.10 End of Configuration

The subscribers under the FXS1 and FXS2 port of the AN5506-04-B with the authorization No.1 and the subscribers under the FXS1 and FXS2 port of the AN5506-10-B1 with the authorization No.2 under the PON port No.1 of the GC8B card in Slot 15 can access the voice service. Subscribers can call each other normally.

4.3 Configuring the VoIP Services – SIP Example

4.3.1 Configuring Rules

- When the softswitch platform uses the SIP protocol to control the access terminals, you should set the MGC protocol type to the SIP protocol for VoIP services, and set the protocol port No. of the access registrar and the proxy server to 5060.
- In the configuration of VoIP service VLAN, if you use single VLAN, you should make sure the signaling VLAN ID is within the range of the local end service VLAN ID. If you use stacked VLANs, you should assign the S-VLAN IDs within the range of the local end service VLAN IDs and assign the signaling VLAN IDs as needed.

4.3.2 Service Network

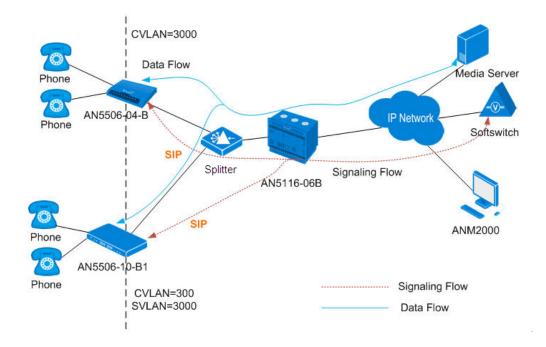


Figure 4-39 The VoIP service network based on the SIP protocol

As shown in the figure above, the GPON system conducts signaling interaction with the softswitch based on the SIP protocol to implement call control. The ONU adopts the standard speech encoding technology to convert the subscriber's voice signals into IP packets. These IP packets are uplinked by the OLT to the IP network for transmission. Thus VoIP services are implemented for the subscribers under the GPON system.

The following takes the network with the AN5116-06B, the AN5506-04-B and the AN5506-10-B1 as an example to introduce the start-up process of the VoIP service based on the SIP protocol. The AN5116-06B chose the HU1A card and the GC4B card as the interface cards on the network side and the client end respectively, and the HSWA card and the PUBA card are required.

4.3.3 Configuring the Services Respectively

4.3.3.1 Planning Data

The following introduces the VoIP service start-up by configuring the ONU ports respectively. The planned data is shown in Table 4-9 and 4-10.

Table 4-9 Planned data on the OLT side of the VoIP service based on the SIP protocol (configuring respectively)

Item		Description	Example	
	ONU Type	Configure this item according to the actual ONU type.	AN5506-04-B	AN5506-10-B1
ONU Information	Slot No.	Configure this item according to the PON interface card slot number actually used.	15	
	PON port No.	Configure this item according to the PON port number actually used.	1	
	ONU Auth No.	Configure this item according to the operator's network planning.	1	2
LAN	Service Name	Configure this item according to the operator's network planning.	ngn3	
Id Service VLAN	Starting VLAN ID	The start service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.	3000	
Local End	VLAN ID End	The end service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.	3000	

Item		Description	Example
	Interface	Configure this item according to the	
	No.	uplink interface No. actually used.	20:SFP1
		The TAG processing mode of the uplink	
		service VLAN. There are two options:	
		TAG and UNTAG. TAG means that	
		when the uplink data packet passes the	
		port, its tag will not be stripped and it	
		keeps going in the tagged mode. And	
		for the downlink data packet, only the	
	TAG /	data packet in tagged mode will be	
	UNTAG	accepted, and it keeps going in the	TAG
		tagged mode. UNTAG means that when	
		the uplink data packet passes the port,	
		its tag will be automatically stripped and	
		it keeps going in the untagged mode.	
		And for the downlink data packet in the	
		untagged mode, when passing the port,	
		it will be attached with tag and it keeps	
		going in the tagged mode.	
	Service	Select ngn for VoIP services.	ngn
	Type		
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind
	Signaling	This item should be consistent with the	
	Service	Service Name set in the Local End	ngn3
	Name	Service VLAN configuration.	lights
	Protocol		
	Туре	Select SIP.	SIP
	SIP		
ace	Registrar	The IP address or domain name of the	
Iterf	Server	SIP registrar.	10.80.20.3
h L	Address		
NGN Uplink Interface	SIP		
GN	Registrar	The port number of the SIP registrar.	5060
Z	Server Port	The default is 5060 .	
	SIP Proxy	The ID address or demain name of the	
	Server	The IP address or domain name of the	10.80.20.3
	Address	SIP proxy server.	
	SIP Proxy	The port number of the SIP proxy	5060
	Server Port	server. The default is 5060 .	

Item		Description	Example			
	SIP Expires (S)	The timeout period of the SIP protocol. The value range is 60 to 3600; the unit is second. The default setting is 3600 seconds.	3600			
	Signaling Service Name	This item should be consistent with the Service Name set in the Local End Service VLAN configuration.	ngn3			
	Telephone Number	The logical number within the system, for configuring the index in the system. It is recommended to configure this item as the actual phone number defined by the softswitch. The value range is 1 to 999999999 .	88880001	88880002	88880003	88880004
ation	ONU Public IP	When the DHCP or the PPPoE function is enabled, the IP address assigned to the ONU dynamically will override the public IP address assigned to the ONU by the system. You should configure this item according to the operator's network planning.	10.90.60.1		10.90.60.2	
NGN Configuration	ONU Public IP Subnet Mask	Configure this item according to the operator's network planning.	255.255.0.0		255.255.0.0	'
	ONU Public IP Gateway	Configure this item according to the operator's network planning.	10.90.1.254		10.90.1.254	
	SIP Telephone No.	Configure this item according to the operator's network planning.	88880001	88880002	88880003	88880004
	SIP User Name	The user name of the SIP endpoint and the SIP registrar. Configure this item according to the operator's network planning.	test1	test2	test3	test4
	SIP User Password	The user password of the SIP endpoint and the SIP registrar. Configure this item according to the operator's network planning.	test1	test2	test3	test4

Item		Description	Example (AN	5506-04-B)	Example (AN	5506-10-B1)
	Service Type	Select voip.	voip		voip	
		Configure this item				
	Fixed	according to the	10			
tion	Bandwidth	operator's network	16		16	
Jura	(Kbyte/s)	planning. The default				
ONU VoIP Bandwidth Configuration		setting is 16.				
Ŭ L		Configure this item				
vidtl	Assured	according to the				
andv	Bandwidth	operator's network	0		0	
а С	(Kbyte/s)	planning. The default				
Vol		setting is 0.				
NN		Configure this item				
0	Maximum	according to the				
	Bandwidth	operator's network	64		64	
	(Kbyte/s)	planning. The default				
		setting is 64.				
		The No. of the port on the				
	Port No.	ONU that is connected	1	2	1	2
	i oltrio.	with the subscriber phone	•	-		2
		physically.				
u		This item should be				
urati	Phone	consistent with the	88880001	88880002	88880003	88880004
nfigı	Number	Telephone Number in	00000001	0000002	0000000	0000004
VoIP Service Configuration		the NGN Configuration.				
vice		The voice service VLAN				
Ser	Signal VLAN	ID; it is the C-VLAN ID	3000	3000	300	300
/oIP	ID	when the QinQ State is	3000	3000	500	500
		set to Enable.				
Ó		Configure this item				
	Voice Codec	according to the				
		operator's network	G.711A	G.711A	G.711A	G.711A
	Mode	planning; the default				
		setting is G.711A.				

Table 4-10Planned data on the ONU side of the VoIP service based on the SIP protocol(configuring respectively)

ltem		Description	Example (AN	5506-04-B)	Example (AN	5506-10-B1)
		Configure this item				
		according to the				
	Fax Model	operator's network	Transparent	Transparent	Transparent	Transparent
		planning; the default				
		setting is Transparent.				
		Configure this item				
		according to the				
	DTMF Mode	operator's network	Transparent	Transparent	Transparent	Transparent
		planning; the default				
		setting is Transparent.				
		Configure this item				
	Fay Cantral	according to the				
	Fax Control	operator's network	Passthrough	Passthrough	Passthrough	Passthrough
	Mode	planning; the default				
		setting is Passthrough.				
		Configure this item				
		according to the				
	Echo Cancel	operator's network	Selected	Selected	Selected	Selected
		planning; it is selected by				
		default.				
		Configure this item				
		according to the				
	Silence Sp	operator's network	Selected	Selected	Selected	Selected
		planning; it is selected by				
		default.				
		Configure this item				
		according to the				
	Input Gain	operator's network	0	0	0	0
		planning; the default				
		setting is 0 .				
		Configure this item				
		according to the				
	Output Gain	operator's network	0	0	0	0
		planning; the default				
		setting is 0 .				
		Configure this item				
		according to the				
	QinQ State	operator's network	Disable	Disable	Enable	Enable
		planning; the default				
		setting is Disable .				

Item		Description	Example (AN	5506-04-B)	Example (AN	5506-10-B1)
		It is SVLAN ID when the				
		QinQ is enabled. The				
	SVLAN ID	SVLAN ID value should			3000	3000
	SVEANID	be within the uplink VLAN	—	_	3000	3000
		ID. It is invalid when the				
		QinQ is disabled.				
		It is the outer VLAN				
	Outer COS	priority when the QinQ is			7	7
	Outer COS	enabled; it is invalid when	_	_	7	/
		QinQ is disabled.				
		It is the inner VLAN				
	Inner COS	priority when the QinQ is			7	7
	Inner COS	enabled; it is invalid when			1	1
		QinQ is disabled.				

4.3.3.2 Configuration Flow Chart

The flow chart for starting up the SIP protocol based voice services respectively is illustrated in the Figure 4-40.

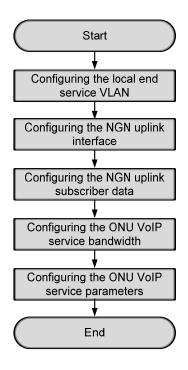


Figure 4-40 Flow chart for configuring the VoIP services respectively – SIP example

4.3.3.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the service VLAN of the uplink port, limit the VLAN ID range of the service passing the uplink port and process the VLAN Tag.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu to bring up the configuration window. Then click the Local End Service VLAN tab to access the Local End Service VLAN window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one local VLAN.
- 3. Configure the parameters according to the planned data in Table 4-9.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN configuration is completed. See Figure 4-41.

A Local	End Se	rvice VLA	H (Domain)	l:Logic Domai	in2:S3:OLT Sys	sten1:HST/	(9]) [Curre	nt Data Source	: Device]	>
Edit .	Access (Operation	Device Op	eration						
😵 🌍 🕻	D, 🎄	- 2	a 6 🗹	41						
Service 1	Name	Starting V	LAN ID	VLAN ID End	Interface No.	TAG/UNTAG	Service Type	Slot Bind Mode		
ngn3		3000		3000	20:SFP1	TAG	NGN	Auto Bind		
Local	End Ser	vice VLAN	Local End	Service Inner	VLAN					
0:38:14	1 > Sen	d Command	:Read Fro	om Device[Loo	cal End Servio	e VLAN]				
		in To Val idate Dat		e Command Dat A	:a!					

Figure 4-41 Configuring the local end service VLAN - SIP example

4.3.3.4 Configuring the NGN Uplink Interface

Configuration purpose

Configure the relevant parameters of the media gateway controller, including: the IP address of the MGC, the protocol port No. of the NGN, etc.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Voice Config → NGN Interface from the shortcut menu to access the NGN Interface window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one NGN uplink interface.
- 3. Configure the parameters according to the planned data in Table 4-9.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the NGN uplink interface configuration is completed. See Figure 4-42.

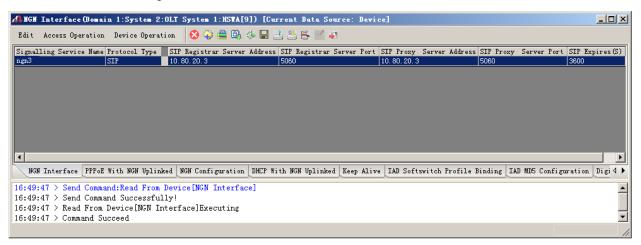


Figure 4-42 Configuring the NGN uplink interface - SIP example

4.3.3.5 Configuring the NGN Uplink Subscriber Data

Configuration purpose

Configure the public network IP of the ONU, the endpoint domain name and the endpoint user name corresponding to the ONU, etc.

- 1. In the NGN Interface window, click the NGN Configuration tab to access the NGN Configuration window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 4 and click OK to add four NGN uplink subscriber information entries.
- 3. Configure the parameters according to the planned data in Table 4-9.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the NGN uplink subscriber information is completed. See Figure 4-43.

Edit Access Operation	Device Operation	on 🚫 🤪	🛢 🕒 🤣 🖪 🚊 .	😃 🖶 🗹 🐙				
Signalling Service Name	Telephone Number	ONU Public I	P ONU Public IP Su	bnet ONU Public IP Gatew	ay EndPoint User Name/SIP 1	Telephone No. SIP User	Name SIP User	Password .
ngn3	88880001	10.90.60.1	255.255.0.0	10.90.1.254	88880001	test1	test1	
ngn3	88880002	10.90.60.1	255.255.0.0	10.90.1.254	88880002	test2	test2	
ngn3	88880003	10.90.60.2	255.255.0.0	10.90.1.254	88880003	test3	test3	
ngn3	88880004	10.90.60.2	255, 255, 0, 0	10.90.1.254	88880004	test4	test4	
gn3							1	
(gn3					88880004		1	ap PPPoE 4
ngn3	With NGN Uplinke	a_NGN Config	puration DHCP With				1	ap PPPoE 4
ngn3 ↓NGN Interface PPPoE 9:51:32 > Send Comma	With NGN Uplinke and:Read From D	a NGN Config evice[NGN I	puration DHCP With				1	ap PPPoE 4
ngn3 (NGN Interface PPPoE	With NGN Uplinke and:Read From D and Successfull	a NGN Config evice[NGN I y!	uration DHCP With nterface]				1	ap PPPoE d

Figure 4-43 Configuring the NGN uplink subscriber data - SIP example

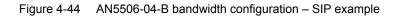
4.3.3.6 Configuring the VoIP Service Bandwidth of the ONU

Configuration purpose

Configure the VoIP service bandwidth of the ONU.

- Click the GC8B[15] card in the Object Tree pane to display all ONUs in the right pane. Right-click the PON1-AN5506-04-B[1] ONU and select Config → Bandwidth config from the shortcut menu to access the Bandwidth Config window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add 1 VoIP service.
- 3. Configure the parameters according to the planned data in Table 4-10.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of PON1-AN5506-04-B[1] VoIP service bandwidth is completed. See Figure 4-44.

Edit Access Operation Device Operation Image: I	📣 Bandwidth Config(Domain 1:S	ystem 2:GC8B[1	15] ONU: PON1-AN5506	-04-B[1]) [Current	Data Source: De	evice]
15 1 16 0 64 Image: State of the state	Edit Access Operation Device	Operation 🛛 🛞	🖗 🖲 🚸 🖬 🛃 🖶 🖶	14		
Bandwidth Config 15:15:14 > Send Command:Read From Device[Bandwidth Config] 15:15:14 > Begin To Validate The Command Data! 15:15:14 > Validate Data Finished						ndwidth (Kbyte/s)
15:15:14 > Begin To Validate The Command Data! 15:15:14 > Validate Data Finished		•				
	15:15:14 > Begin To Validate 15:15:14 > Validate Data Fini	The Command Da shed				• •



5. Configure the bandwidth in the same way for the PON1-AN5506-10-B1[2] of the GC8B[15] card, as shown in Figure 4-7.

🗥 Bandwidth Config(Domain 1:5	System 2:GC8B	[15] ONV: PON1-AN5506	-10-B1[2])[Current]	Data Source:	Device]	- D ×
Edit Access Operation Device Operation 🛛 🛞 🤣 🖳 📑 🖆 🚝 📲						
Slot No. PON Port No. ONU S.N. 15 1 2	Service Type voip	fixed Bandwidth(Kbyte/s) 16	assureed Bandwidth(Kb) O	yte/s) Maximum 64	Bandwidth (Kbyte/s)
	•					
Bandwidth Config						
15:15:14 > Send Command:Read	From Device[B	andwidth Config]				
15:15:14 > Begin To Validate The Command Data!						
15:15:14 > Validate Data Fini						
15:15:14 > Send Command Succe	essturiy!					<u> </u>
						1.

Figure 4-45 AN5506-10-B1 bandwidth configuration – SIP example

4.3.3.7 Configuring the VoIP Service Parameters of the ONU

Configuration purpose

Configure the VoIP service parameters of the ONU, including VoIP service VLAN, voice codec, fax mode, silence switch, echo cancel, input / output gain, DTMF mode, etc.

- Click the GC8B[15] card in the Object Tree pane to display all ONUs in the right pane. Right-click the PON1-AN5506-04-B[1] ONU and select Config →Service Config from the shortcut menu to bring up the configuration dialog box. Then click the Voice Config tab to access the Voice Config dialog box.
- 2. Select **FXS1** in **Voice Port List** and configure the parameters according to the planned data in Table 4-10, as shown in Figure 4-46.

(Domain 1:System 1:G		AH5506-04-B[1])		×
Data Port Config Voic	e Config			
Voice Port List	Port No.	1		
FXS1 FXS2	Phone Number	88880001	•	
	NGN Interface:ngn3	IP:10.90.60.1 Name:88880	0001 VLAN ID (1000-1000)	
	Signal VLAN ID	3000		
	Voice Codec Mode	G. 711A 💌	🔽 Echo Cancel	
	Fax Mode	Transparent 💌	🔽 SlienceSp	
	DTMF Mode	Transparent 💌		
	Fax Control Mode	Passthrough 💌		
		32) 	p	
	Output Gain(-32 -	32)		
	🗖 QinQ State	Out	ter COS	
	SVLAN ID	In	ner COS	
<u>R</u> ea	ad DB <u>W</u> rite DB	Read Device Modif	y On Device Delete On Dev	ice Close

Figure 4-46 FXS1 voice configuration of the AN5506-04-B – SIP example

3. Select **FXS2** in **Voice Port List** and configure the parameters according to the planned data in Table 4-10, as shown in Figure 4-47.

t List Port No.		2		
Phone Nu	iber	88880002		•
NGN Inter	face:ngn3 IP:10.90	. 60. 1 Name: 88880	002 VLAN ID (1000-10	00>
Signal VI	AN ID	3000		
Voice Coo	lec Mode G.711A		🔽 Echo Cancel	
Fax Mode	Transp	arent 💌	🔽 SlienceSp	
DTMF Mode	Transp	arent 💌		
Fax Contr	ol Mode Passth	urough 💌		
Input Ga	n(-32 - 32)		lo	
Output G	ain(-32 - 32)		lo	
🗖 QinQ S	State	Out	er COS	Y
SVLAN ID	0	Inn	er COS	v

Figure 4-47 FXS2 voice configuration of the AN5506-04-B – SIP example

- 4. Click the **Modify Data on Device** button to complete the voice service configuration for the PON1-AN5506-04-B[1].
- Click the GC8B[15] card in the Object Tree pane to display all ONUs in the right pane. Right-click the PON1-AN5506-10-B1[2] ONU and select Config →Service Config from the shortcut menu to bring up the configuration dialog box. Then click the Voice Config tab to bring up the Voice Config dialog box.
- 6. Select **FXS1** in **Voice Port List** and configure the parameters according to the planned data in Table 4-10, as shown in Figure 4-48.

ice Port List	Port No.	1		
XS1	Phone Number	88880003	T	
XS2		10000000	· ·	
XS3	NGN Interface:ngn3 IP:1	10.90.60.2 Name: 888	80003 VLAN ID (3000-3000)	
XS4 XS5				
XS6				
X56 XS7				
XS8	Signal VLAN ID	300		
лзо XS9				
XS10	Voice Codec Mode G.	711A 🔻	Echo Cancel	
XS10 XS11	Force codec mode pro		1	
XS12			F a b b	
XS12 XS13	Fax Mode Tr	ansparent 💌	🔽 SlienceSp	
XS13 XS14				
XS14 XS15	DTMF Mode Tr	ansparent 🔻		
XS15 XS16				
XS10 XS17				
XS18	Fax Control Mode Pa	ssthrough 💌		
XS10 XS19				
XS20	Input Gain(-32 - 32)	F	0	
XS20 XS21	input Gain (-52 - 52)			
XS22				
XS23	Output Gain(-32 - 32)	· · · · · · · · · · · · · · · · · · ·	0	
XS24				
	✓ QinQ State	0	ter COS 7	
	J♥ QINQ State	U u		
		T		
	SVLAN ID 3000	In	ner COS 7 💌	

Figure 4-48 FXS1 voice configuration of the AN5506-10-B1 – SIP example

7. Select **FXS2** in **Voice Port List** and configure the parameters according to the planned data in Table 4-10, as shown in Figure 4-49.

ce Port List	Port No. 2	
51		
52	Phone Number 88880004	
53	NON Interferences2 TB-10 00 60 9 News 99990004 VI IN TD (2000, 2000)	
54	NGN Interface:ngn3 IP:10.90.60.2 Name:88880004 VLAN ID (3000-3000)	
35		
6		
57	Signal VLAN ID 300	
8		
39 310	Voice Codec Mode G.711A V Echo Cancel	
S10 S11	vorce codec mode	
512		
512 513	Fax Mode Transparent 💌 🔽 SlienceSp	
314 314		
315	DTMF Mode Transparent 💌	
316		
517	Fax Control Mode Passthrough V	
518	Tax control mode [Financies]	
519		
320	Input Gain(-32 - 32) 0	
321		
522	Output Gain(-32 - 32)	
323	output Gain(-52 - 52)	
24		
	🔽 QinQ State Outer COS 7	
	SVLAN ID 3000 Inner COS 7	

Figure 4-49 FXS2 voice configuration of the AN5506-10-B1 – SIP example

8. Click the **Modify Data on Device** button to complete the voice service configuration for the PON1-AN5506-10-B1[2].

4.3.3.8 End of Configuration

The subscribers under the FXS1 and FXS2 port of the AN5506-04-B with the authorization No.1 and the subscribers under the FXS1 and FXS2 port of the AN5506-10-B1 with the authorization No.2 under the PON port No.1 of the GC8B card in Slot 15 can access the voice service. Subscribers can call each other normally.

4.3.4 Configuring the Services in a Batch Manner

4.3.4.1 Planning Data

The following introduces how to start up the voice service by configuring the ONU ports in a batch manner. The planned data is shown in Table 4-11 and 4-12.

Table 4-11Planned data on the OLT side of the VoIP service based on the SIP protocol(configuring in a batch manner)

Item		Description	Example	
_	ONU Type	Configure this item according to the actual ONU type.	AN5506-04-B	AN5506-10-B1
ONU Information	Slot No.	Configure this item according to the PON interface card slot number actually used.	15	
JNU Infe	PON port No.	Configure this item according to the PON port number actually used.	1	
Ū	ONU Auth No.	Configure this item according to the operator's network planning.	1	2
	Service Name	Configure this item according to the operator's network planning.	ngn3	
Service VLAN	Starting VLAN ID	The start service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.	3000	
Local End So	VLAN ID End	The end service VLAN ID of the uplink interface. Configure this item according to the operator's network planning.	3000	
	Interface No.	Configure this item according to the uplink interface No. actually used.	20:SFP1	

Item		Description	Example
		The TAG processing mode of the uplink service	
		VLAN. There are two options: TAG and UNTAG .	
		TAG means that when the uplink data packet	
		passes the port, its tag will not be stripped and it	
		keeps going in the tagged mode. And for the	
		downlink data packet, only the data packet in	
		tagged mode will be accepted, and it keeps	TA 0
	TAG/UNTAG	going in the tagged mode. UNTAG means that	TAG
		when the uplink data packet passes the port, its	
		tag will be automatically stripped and it keeps	
		going in the untagged mode. And for the	
		downlink data packet in the untagged mode,	
		when passing the port, it will be attached with tag	
		and it keeps going in the tagged mode.	
	Service Type	Select ngn for VoIP services.	ngn
	Slot Bind	Select Auto Bind or Manually Bind	Auto Bind
	Mode	Select Auto Bind or Manually Bind.	Auto Billa
	Signaling Service Name	This item should be consistent with the Service	
		Name set in the Local End Service VLAN	ngn3
		configuration.	
	Protocol Type	Select SIP.	SIP
	SIP Registrar	The IP address or domain name of the SIP	
a)	Server	registrar.	10.80.20.3
rface	Address		
Uplink Interface	SIP Registrar	The port number of the SIP registrar. The default	5060
link	Server Port	is 5060 .	5000
	SIP Proxy	The IP address or domain name of the SIP proxy	
NGN	Server	server.	10.80.20.3
~	Address		
	SIP Proxy	The port number of the SIP proxy server. The	5060
	Server Port	default is 5060 .	5000
	SIP Expires	The timeout period of the SIP protocol. The value	
		range is 60 to 3600; the unit is second. The	3600
	(S)	default setting is 3600 seconds.	

Item		Description	Example (AN5506-04-B)	Example (AN5506-10-B1)
		The name of the voice service		
		bandwidth profile with an upper limit		
	Profile Name	of 32 characters. Configure this item	а	
		according to the operator's network		
<u>e</u>		planning.		
Bandwidth Config Profile	Service Type	Select VOIP	VOIP	
Ifig F	Fixed	Configure this item according to the		
Cor	Bandwidth	operator's network planning. The	16	
idth	(Kbyte/s)	default setting is 16.		
Mpu	Assured	Configure this item according to the		
Ba	Bandwidth	operator's network planning. The	0	
	(Kbyte/s)	default setting is 0.		
	Maximum	Configure this item according to the		
	Bandwidth	operator's network planning. The	64	
	(Kbyte/s)	default setting is 64.		
		Configure this item according to the		
	Slot No.	PON interface card slot number	15	15
ion		actually used.		
Jurat		Configure this item according to the	1	1
ONU Configuration	PON No.	PON port number actually used.	1	1
Ŭ	ONU No.	Select the ONU authorization	1	2
NO	UNU NO.	number to be configured.	1	2
	Bandwidth	Select the bandwidth profile to be		
	Profile	bound with the ONU.	а	а
0		The name of the advanced profile of		
igure		the ONU voice port with an upper		
onfi		limit of 20 characters, including		
o C	Profile Name	numbers (0 to 9), letters (a to z and	С	
Advance Profile		A to Z), and underlines. Configure		
Adva		this item according to the operator's		
ONU POTS Advanced Confi Profile		network planning.		
РО	Voice Code	Configure this item according to the		
NNC	Voice Code	operator's network planning; the	G.711A	
Ľ	Mode	default setting is G.711A .		

Table 4-12Planned data on the ONU side of the VoIP service based on the SIP protocol(configuring in a batch manner)

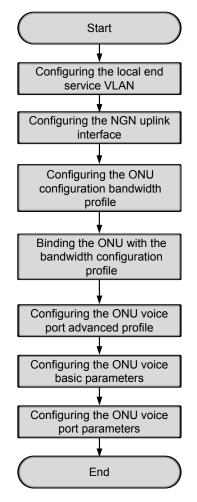
			Example	Example	
Item		Description	(AN5506-04-B)	(AN5506-10-B1)	
		Configure this item according to the			
	Fax Mode	operator's network planning; the	Transparent		
		default setting is Transparent .			
		Configure this item according to the			
	Silence Switch	operator's network planning; the	Enable		
		default setting is Enable .			
		Configure this item according to the			
	Echo Cancel	operator's network planning; the	Enable		
		default setting is Enable.			
	land Opin	Configure this item according to the			
	Input Gain	operator's network planning; the	0		
	(DB)	default setting is 0 .			
	Output Cain	Configure this item according to the			
	Output Gain	operator's network planning; the	0		
	(DB)	default setting is 0 .			
		Configure this item according to the			
	DTMF Mode	operator's network planning; the	Transparent		
		default setting is Transparent.			
	Fax Control Mode	Configure this item according to the			
		operator's network planning; the	Passthrough		
	Wode	default setting is Passthrough .			
		Configure this item according to the	15		
	Slot No.	PON interface card slot number			
		actually used.			
	PON No.	The No. of the PON port actually	1		
		used.			
ar	ONU No.	Select the ONU's authentication No.	1	2	
ONU Voice Basic Configure		to be configured.			
Co C	IP	Select static (default), PPPoE , or			
asic	Configuration	DHCP mode to get IP address.	static	static	
Se B	Mode				
Voic		When the DHCP or the PPPoE			
NN		function is enabled, the IP address			
		assigned to the ONU dynamically			
	ONU Static	will override the public IP address	10.90.60.1	10.90.60.2	
	Public IP	assigned to the ONU by the system.			
		You should configure this item			
		according to the operator's network			
		planning.			

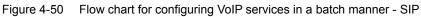
ltem		Description	Example (AN5506-04	4-B)	Example (AN5506-10	D-B1)
	ONU Static	Configure this item according to the				
	Public IP Mask	operator's network planning.		255.255.0.0)	
	ONU Static Public IP Gateway	Configure this item according to the operator's network planning.	10.90.1.254	10.90.1.254		L
	Slot No.	Configure this item according to the PON interface card slot number actually used.	15			
	PON No.	The No. of the PON port actually used.	1			
	ONU No.	Select the ONU's authentication No. to be configured.	1		2	
	Port No.	Select the ONU port number actually connected with user telephone.	1	2	1	2
	Port Enable	Select Enable.	Enable	Enable	Enable	Enable
e	Signaling Service Name	This item should be consistent with the Service Name in the NGN Configuration.	ngn3	ngn3	ngn3	ngn3
ONU POTS Configure	Signaling VLAN ID	The voice service VLAN ID; it is the C-VLAN ID when the QinQ State is set to Enable .	3000	3000	300	300
ONU PC	SVLAN State	Configure this item according to the operator's network planning; the default setting is Disable .	Disable	Disable	Enable	Enable
	SVLAN ID	The SVLAN ID should be within the range of the uplink interface VLAN ID when the QinQ is enabled. And it is invalid when the QinQ is disabled.	_	_	3000	3000
	Voice Port Profile ID	Select the ONU pots advanced configuration profile to be bound with the ONU.	с	с	с	с
	ONU Protocol Port No.	Configure this item according to the operator's network planning; the default setting is 5060 .	5060	5060	5060	5060
	SIP Telephone No.	Configure this item according to the operator's network planning.	88880001	88880002	88880003	88880004

Item		Description	Example (AN5506-04-B)		Example (AN5506-10-B1)	
		The user name of the SIP terminal				
	SIP User	and the SIP registrar. Configure this	40.011	test2	test3	1
	Name	item according to the operator's	test1			test4
		network planning.				
		The user password of the SIP				
	SIP User	terminal and the SIP registrar.	40.011	teet0	to at 2	1
	Password	Configure this item according to the	test1	test2	test3	test4
		operator's network planning.				

4.3.4.2 Configuration Flow Chart

The flow chart for starting up the SIP protocol based voice services in a batch manner is illustrated in the Figure 4-50.





4.3.4.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the service VLAN of the uplink port, limit the VLAN ID range of the service passing the uplink port and process the VLAN Tag.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu to access the configuration window. Then click the Local End Service VLAN tab in the window to access the Local End Service VLAN window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one local VLAN.
- 3. Configure the local VLAN according to the planned data in Table 4-11.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN configuration is completed. See Figure 4-51.

🔥 Local End So	ervice VLAN(Domain)	l:Logic Domai	n2:S3:OLT Sys	sten1:HST/	\[9]) [Curre	nt Data Source: De	vice] _ 🗆 🗙
Edit Access	Operation Device Ope	eration					
😣 📣 📴 🎂	🛢 🗄 🛎 🖶 🗹	41					
Service Name	Starting VLAN ID	VLAN ID End	Interface No.	TAG/UNTAG	Service Type	Slot Bind Mode	
ngn3	3000	3000	20:SFP1	TAG	NGN	Auto Bind	
Local End Se	rvice VLAN Local End	Service Inner	VLAN				
10:38:14 > Ser	nd Command:Read Fro	om Device[Loc	al End Servio	ce VLAN]			
-	gin To Validate The Lidate Data Finishe		a!				-

Figure 4-51 Configuring the local end service VLAN - SIP example

4.3.4.4 Configuring the NGN Uplink Interface

Configuration purpose

Configure the relevant parameters of the media gateway controller, including: the IP address of the MGC, the protocol port No. of the NGN, etc.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Voice Config → NGN Interface from the shortcut menu to access the NGN Interface window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one NGN uplink interface.
- 3. Configure the parameters according to the planned data in Table 4-11.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the NGN uplink interface configuration is completed. See Figure 4-52.

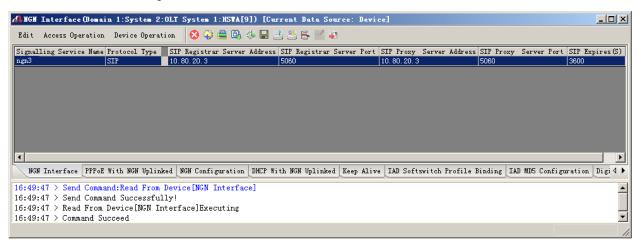


Figure 4-52 Configuring the NGN uplink interface - SIP example

4.3.4.5 Configuring the ONU Bandwidth Configuration Profile

Configuration purpose

Configure the VoIP service bandwidth profile of the ONU.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one bandwidth configuration profile. Input a in the Profile Name column.
- Select profile a, click a blank area in the right pane, and select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one service. Configure the parameters according to the planned data in Table 4-12.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the VoIP service bandwidth configuration profile is configured. See Figure 4-53.

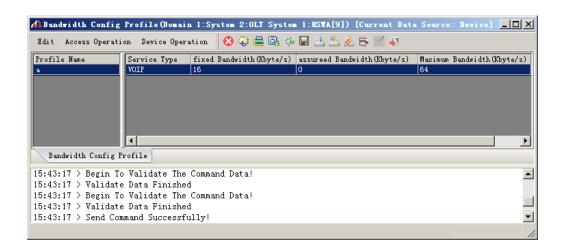


Figure 4-53 The ONU bandwidth configuration profile – SIP example

4.3.4.6 Binding the ONU with the Bandwidth Configuration Profile

Configuration purpose

Bind the ONU with the bandwidth configuration profile, that is, apply the bandwidth configuration profile to the ONU.

- 1. Right-click the system in the **Object Tree** pane, select **Config** \rightarrow **Batch Configure** \rightarrow **ONU Config** to access the **ONU Config** window.
- Click the Set Object as Condition button, select AN5506-04-B[1] and AN5506-10-B1[2] under the PON port No.1 of the GC8B card in Slot 15 from the drop-down list of the Object, and click the OK button.
- 3. The detailed information of the object will display in the right pane. Configure the parameters according to the planned data in Table 4-12, and select **a** in the drop-down lists of **GPON Bandwidth**.

4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU is bound to the bandwidth configuration profile. See Figure 4-54.

📣 ONU Config(Domain 1:Sys	tem 2) [Curr	ent Data	Source:	Default]			
Edit Access Operation Dev	ice Operation	D, 🌭	2 2 6	- 🗹 🐺			
Config Object 🛛 📮	× Slot No.	PON NO.	ONU NO.	Bandwidth	Profile	GPON Bandwidt	h
Cat Object #c Candition	15	1	1			a	
Set Object As Condition	15	1	2			a	
⊞-OLT System 1	-						Þ
	סאת כי	onfig					
	15:45:02	> Send (Command S	Read From Successful .ce[ONU Co	.ly!	ONU Config] ecuting	•

Figure 4-54 ONU configuration – SIP example

4.3.4.7 Configuring the ONU Voice Port Advanced Profile

Configuration purpose

Configure the profile of the ONU voice service parameters, including voice codec, fax mode, silence switch, echo cancel, input / output gain, DTMF mode, etc.

- 1. Right-click the system in the Object Tree pane, select Config \rightarrow Profile Definition \rightarrow ONU POTS Advanced Configure Profile to access the ONU POTS Advanced Configure Profile window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one ONU voice port advanced profile.
- 3. Configure the parameters according to the planned data in Table 4-12.

4. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU voice port advanced profile is configured. See Figure 4-55.

	. Device Oper	ation 🛛 😵	Q 📴 🔅 🗉	â 💾 🛃 🖶 📗	(4 1		
Name Voice Code	M Fax Mode	Slience Sw:	t Echo Cancel	Input Gain (DB)	Output Gain (DB)	DTMF Mode	Fax Control
G. 711A	transparent	enable	enable	0	0	transparent	Passthrough
OTS Advanced Co	nfigure Profi	Le]
and the second second	00000 80000		NU POTS Adv	anced Configu	re Profile]	_	
and the second second	and:Read Fro Validate The	m Device[(Command I		anced Configu	re Profile]	_	
4							ame Voice Code M Fax Mode Slience Swit Echo Cancel Input Gain(DB) Output Gain(DB) DTMF Mode G. 711A transparent enable enable 0 0 transparent

Figure 4-55 ONU voice port advanced configuration profile

4.3.4.8 Configuring the Basic Voice Parameters for the ONU

Configuration purpose

Configure the configuration method for the public network IP address and the public network IP information of the ONU voice service.

- Right-click the system in the Object Tree pane and select Config →Batch Configure →ONU Voice Basic Configure from the shortcut menu to access the ONU Voice Basic Configure window.
- Click the Set Object as Condition button, select AN5506-04-B[1] and AN5506-10-B1[2] under the PON port No.1 of the GC8B card in Slot 15 from the drop-down list of the object, and click the OK button.
- 3. The detailed information of the object will display in the right pane. Configure the parameters according to the planned data in Table 4-12.

4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the basic voice parameters for the ONU is completed. See Figure 4-56.

👫 ONU Voice Basic Conf	igure(Domain 1:System 2) [Current Data Source: Device]	_ <u>_</u> _ ×
Edit Access Operation	Device Operation 🛛 🕲 🍜 🚝 🚽	
Config Object Set Object As Condition B-OLT System 1	15 1 2 static 10.90.60.2 255.2 Image: Construct of the state of the s	555.0.0 10.90.1.254 555.0.0 10.90.1.254 10.90.1.254
	16:04:30 > Send Command:Read From Device[ONU Voice Basic Cond 16:04:30 > Send Command Successfully! 16:04:30 > Read From Device[ONU Voice Basic Configure]Execut: 16:04:31 > Command Succeed	

Figure 4-56 Basic voice configuration for the ONU – SIP example

4.3.4.9 Configuring the ONU Voice Port Parameters

Configuration purpose

Configure the relevant parameters of the ONU voice port, including: telephone number, voice service VLAN, endpoint domain name, endpoint username, binding the ONU voice port advanced profile, etc.

- Right-click the system in the Object Tree pane and select Config →Batch Configure →ONU POTS Configure from the shortcut menu to access the ONU POTS Configure window.
- Click the Set Object as Condition button, select AN5506-04-B[1] and AN5506-10-B1[2] under the PON port No.1 of the GC8B card in Slot 15, and click the OK button.

- 3. The detailed information of the object will display in the right pane. Configure the parameters according to the planned data in Table 4-12.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU voice port parameter configuration is completed. See Figure 4-57.

🔥 OHU POTS Configure (Domain 1	:System	2) [Cu	rrent I	lata Sourc	e: Defaul	t]							
Edit Access Operation Device (Dperation	B , :	ء 📥 🚸	5 🗹 🎒									
Config Object 4 ×	Slot No.	FON NO.	ONU NO.	Port NO.	Port Enable	Phone NO.	Signalling Service Name	Signal VLAN ID	SVLAN State	SVLAN II	Voice Port Profile ID	ONU Protocol	EndPoint
	15	1	1	1	V	515010101	ngn3	3000		0	C	5060	88880001
Set Object As Condition	15	1	1	2	✓	515010102	ngn3	3000		0	С	5060	88880002
OLT System 1	15	1	2	1	✓	515010201	l ngn3	300	v	3000	С	5060	88880003
a oct system i	15	1	2	2	✓	515010202	ngn3	300	✓	3000	C	5060	88880004
	15	1	2	3		515010203	3	1		0		65535	
	15	1	2	4		515010204	l .	1		0		65535	
	15	1	2	5		515010205	5	1		0		65535	_
	4												•
	ONU P	OTS Conf	i gur e										
	16:04:30) > Sen) > Rea	d Comma d From	and Succes Device[OI	sfully		ce Basic Configure] igure]Executing						
Exit													

Figure 4-57 ONU voice port configuration – SIP example

4.3.4.10 End of Configuration

The subscribers under the FXS1 and FXS2 port of the AN5506-04-B with the authorization No.1 and the subscribers under the FXS1 and FXS2 port of the AN5506-10-B1 with the authorization No.2 under the PON port No.1 of the GC8B card in Slot 15 can access the voice service. Subscribers can call each other normally.

4.4 Configuring the DHCP Function for the NGN Uplink

Configuration purpose

Configure the ONU to get the voice service IP using the DHCP method with the option 60 identifier.

Prerequisites

This operation is needed only when you configure the DHCP option60. You should set the DHCP function of the NGN uplink interface as **Enable** first.

Planning data

Table 4-13Planned data for configuring the relevant parameters of the DHCP of the NGNuplink interface

ltem		Description	Example
	Slot No.	Configure this item according to the service interface card slot number actually used	15
	PON Port No.	Configure this item according to the PON port number actually used	1
DHCP With	ONU No.	Configure this item according to the ONU number actually used	1
NGN Uplinked	DHCP Enable	Configure this item according to the operator's network planning	Enable
	DHCP Option60 Enable	Configure this item according to the operator's network planning	Enable
	DHCP Option60 Value	Configure this item according to the operator's network planning	test

- 1. Right-click the HSWA[9] card in the Object Tree pane and select Config \rightarrow Voice Config \rightarrow DHCP With NGN Uplinked from the shortcut menu to access the DHCP With NGN Uplinked window.
- 2. Configure the parameters according to the planned data in Table 4-13.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the DHCP of the NGN uplink interface is completed. See Figure 4-58.

🔥 DH	CP Wit	h NGN Upl	linked (D	omain 1:	System 2:01	.T System 1:HST	(9]) [Current	Data S	ource:	Device]	
Edi	t Acces	ss Operati	on Devi	ce Operat	ion 🛛 😣 🚱	0, 🌭 🖬 🖻 🗄	56	4				
S. N. 1	Slot N 15	o. PON Por 1	t No.	ONU No. 1	DHCP Enable Enable	DHCP Option60 Ens Enable		CP Optio st	n60 Valu	10		
§ Inte	erface	PPPoE With	NGN Upl	inked NG	N Configurati	on DHCP With NGN	Uplinke	d Keep A	live []	AD Softs	witch Pro	file ◀▶
					Device[NGN	Interface]						-
		Send Com Read Fro			ly! terface]Exe	cuting]
17:0	1:18 >	Command	Succeed									-
Appen	d											1.

Figure 4-58 Configuring the parameters of the DHCP of the NGN uplink interface

4.5 Configuring the Advanced Profile Parameters for the Softswitch

4.5.1 Configuring the Softswitch Intercommunication Profiles

Configuration purpose

Configure the parameters in intercommunication of the VoIP services between the ONU and the softswitch.

Configuration rules

- By configuring the softswitch intercommunication profiles you set some advanced parameters for the intercommunication of the VoIP services between the ONUs and various softswitch platforms. You should configure the softswitch intercommunication profiles according to the actual intercommunication situation.
- The RTP resource settings are only specific to the H.248 protocol.
- The digitmap settings are only specific to the SIP protocol.

Planning data

ltem		Description	Example
		The name of the softswitch intercommunication profile of	
	Profile Name	the AN5116-06B. The string can consist of letters,	ngn1
Softswitch		numbers and underlines.	
Parameters		The fixed part of the RTP protocol resource name. If the	
Profile	RTP Name	full name is RTP/1000 for example, the fixed part should	RTP/
	Fixed Part	be RTP/.	RIP/
		This item is valid only for the H.248 protocol.	

 Table 4-14
 Planning data for configuring softswitch intercommunication profiles

ltem		Description	Example
		The value range: 0 to 65534. The RTP Name Var Begin	
RTP	Name Var	value must be smaller than the RTP Name Var End value.	4000
Begi	in	The default setting is 4000 .	4000
		This item is valid only for the H.248 protocol.	
		The value range: 0 to 65534. The RTP Name Var End	
RTP	Name Var	value must be larger than the RTP Name Var Begin value.	9000
End		The default setting is 9000 .	9000
		This item is valid only for the H.248 protocol.	
RTP	Name Var	The value range: 1 to 65534. The default setting is 1.	
Step)	This item is valid only for the H.248 protocol.	1
		For controlling the length of the RTP source name. You	
	Name	can select fixed Or unfixed . The default setting is fixed .	fixed
Fixe	d Length	This item is valid only for the H.248 protocol.	
		The Digit Map Begin Timer is the time of waiting for a	
_	t Map	dialing. The value range: 1 to 254 ; the unit: seconds. The	16
Begi	in Timer (s)	default setting is 16 .	
		The Digit Map Short Timer: the digit string has matched a	
		numbering scheme of the DigitMap but with more digits it	
Digit	t Map Short	may match an alternative numbering scheme as well.	
Time	er (s)	Therefore, the matching result will not be reported	4
		immediately. The value range is 1 to 254 ; the unit is	
		second. The default setting is 4 .	
		The Digit Map Long Timer: at least a digit is required to	
Digit	t Map Long	match any numbering scheme of DigitMap. The value	
Time	er (s)	range is 1 to 254 ; the unit is second. The default setting is	16
		16.	
		The matching result will be reported as soon as the digit	
	fy Match	string matches any numbering scheme of DigitMap. The	Notify Match Only
Eacl	h Map	default setting is Notify Match Only.	
		Whether to enable the function of controlling the VBD Tx	
VBD) State	Interval (ms) and the VBD Rx Interval (ms) items. The	Disable
		default setting is Disable .	
VBD) Tx	The time interval for sending packets. The value range is 1	
Inter	val (ms)	to 254 ; the unit is ms. The default setting is 20.	20
VBD	. ,	The time interval for receiving packets. The value range is	
Inter	val (ms)	1 to 254 ; the unit is ms. The default setting is 10.	10
		The speech encoding method used in the T.30 transparent	
	Voice	mode. The options include G711U, G711A, G729, G723,	G711U
Cod	er	and Unmodified . The default setting is Unmodified .	

ltem		Description	Example
	Off Hook Warning Tone Timeout	Register the howler tone timeout function to stop playing the howler tone when the timer is expired. The default setting is Unregistered .	Unregistered
	Flash Threshold (ms)	The FLASH low-pulse width, usually between 90 and 120 ms. The value range is from 90 to 120 ; the unit is ms. The default setting is 90 ms.	90
	RFC2833 Nego State	Whether to register the RFC2833 auto-negotiation function to encapsulate DTMF based on the RFC2833. The default setting is Non-auto-negotiation .	Non-auto-negotiation
	Def RFC2833 PT	The value of the RFC2833 default loading mode. The value range is 96 to 127 . The default setting is 97 .	97
	Def RFC2198 PT	The default loading mode value of the RFC2198 redundancy mode. The value range is 96 to 127 . The default setting is 96 .	96
	T38 Event Detect Mode	The detection and report mode of the T.38 event. The options include normal , only V21 and all V21 .	normal
	Caller ID Mode	The caller ID mode: FSK or DTMF . The default setting is FSK .	FSK
	On Hook Detect Time (ms)	The polling check time of on-hook events. The value range is 90 to 2500 ; the unit is ms. The default setting is 600 ms.	600
	Dialing Tone Timeout (s)	The dialing tone timeout value. The value range is 1 to 254 seconds. The default setting is 60 seconds.	60
	No Answer Tone Timeout (s)	The ringing (no answer tone) timeout value: if the timer is expired, it considers that nobody answers the phone. The value range is 1 to 254 seconds; The default setting is 60 seconds.	60
	Busy Tone Timeout (s)	The busy tone timeout value. The value range is 1 to 254 seconds; The default setting is 60 seconds.	60
	ROHT Timeout (s)	The timeout value of the phone playing the howler tone after the busy tone. The value range is 1 to 254 seconds; The default setting is 60 seconds.	60
	Retransmission Timeout (s)	The retransmission timeout value: the timer counts the time after the MG sends a request to the MGC; if the timer is expired, the MG will stop sending the request. The value range is 1 to 60 seconds; The default setting is 25 seconds.	25
	EC Mode	Correct the packets with some errors; the default setting is Disable .	Disable

Item		Description	Example
	CLI Language	The CLI language used by the IAD, Chinese or English . This item is valid only for the AN5506-05 at present.	English
	NGN Register Timer Threshold (s)	The value range is 1 to 3600 seconds; the default setting is 600 seconds.	600
	NGN Register User Threshold	The value range is from 1 to 4096 ; the default setting is 1 .	1
	Alive format	You can select Notify or Service Change . The default configuration is Notify .	Notify

Operation steps

Create a softswitch intercommunication profile named **ngn1** with all parameters using the defaults. The detailed steps are as follows:

- 1. Right-click the system in the Object Tree pane and select Config \rightarrow Profile Definition \rightarrow Softswitch Parameters Profile from the shortcut menu to access the Softswitch Parameters Profile window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one softswitch intercommunication parameter profile.
- 3. Configure the parameters of the softswitch intercommunication profile according to the planned data in Table 4-14.
- 4. When the configuration is completed, click the 📇 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the parameters of the softswitch intercommunication profile is completed. See Figure 4-59.

Edit Ac	ccess Operation	Device Opera	tion 🕺 🌍	🚔 🕒 🍪 🔛 😫	🐣 🖶 🗹 🗸			
erial No). Profile Name	RTPNameFixedP	art RTPNameVarBe	egin RTPNameVarEn	d RTPNameVarSt	ep RTPNameFixedLe	ength DigitmapBe;	ginTimer (
	ngn	RTP/	4000	9000	1	Fixed	16	
1								
Softsw	vitch Parameters	Profile						
)	D		p. c.1.1			
:05:06	> Send Comman	nd:Read From		witch Parameter	s Profile]			
:05:06		nd:Read From		witch Parameter	s Profile]			
2:05:06 2:05:06	> Send Comman > Send Comman	nd:Read From nd Successfu	11y!	witch Parameter ers Profile]Exe				
7:05:06 7:05:06 7:05:06	> Send Comman > Send Comman	nd:Read From nd Successfu Device[Softs	11y!					

Figure 4-59 Configuring softswitch intercommunication profiles

4.5.2 Binding Softswitch Intercommunication Profiles

Configuration purpose

Send the configured software intercommunication profiles to the ONU.

Planning data

Item		Description	Example
	Slot No.	Configure this item according to the service interface	15
	5101 110.	card slot number actually used	15
	PON Port No.	Configure this item according to the PON port number	1
IAD Softswitch	FON FOIL NO.	actually used.	1
Profile Binding ONU No.		Configure this item according to the ONU actually	1
	ONU NO.	used	1
	Profile Name	Configure this item according to the profile actually	ngn1
	FIOILIE Name	used.	ngn1

Table 4-15	Planning data for binding the softswitch intercommunication profiles
	r laining data for binang tie boltomton interbolininanoaton promot

Operation steps

This operation should be performed after the softswitch intercommunication parameter profile is configured. In this example, we bind the softswitch intercommunication profile named **ngn1** to the ONU with the authentication No.1 under the PON port No.1 of the GC8B card in Slot 15. The detailed steps are as follows:

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Voice Config → IAD Softswitch Profile Binding from the shortcut menu to access the IAD Softswitch Profile Binding window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one binding entry.
- 3. Configure the parameters according to the planned data in Table 4-15.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the binding the softswitch intercommunication profile is completed. See Figure 4-60.

Edit A	ccess Operation	Device ()peration 🛛 😵 🖓 📴 👍 📥 📥 🖶 学 🚚	
	PON Port No.	ONU No.	ProfileName	
15	1	1	ngni	
N Inter	face PPPoE With	NGN Uplin	uked NGN Configuration DHCP With NGN Uplinked Keep Alive, IAD Softswitch F	Profile Bindin <mark>,</mark>
	<u>_</u>			Profile Bindin _i
7:07:14	L > Send Comma	nd:Read I	From Device[NGN Interface]	Profile Bindin;
7:07:14 7:07:14	L > Send Comma L > Send Comma	nd:Read 1 nd Succe	From Device[NGN Interface]	rofile Bindin;

Figure 4-60 Binding the softswitch intercommunication profiles

4.6 Configuring the NGN Heartbeat Parameters

Configuration purpose

Configure the heartbeat parameters between the MG and the MGC, and beween the MGC and the MGC.

Configuration rules

You should set the **Heartbeat Switch** item to **Enable** in the configuration of the parameters of the softswitch platform before you can configure the heartbeat parameters.

Planning data

Item		Description	Example
	Signaling Service Name	Select according to the signaling service name configured in the softswitch platform parameter configuration.	ngn1
Keep Alive	Alive Interval (s)	The period of sending keep-alive messages. The value range is 1 to 86400 ; the unit is second; The default setting is 30 seconds.	30
	Alive Times	The maximum timeout times that the softswitch platform MGC permits the ONU to send the keep-alive messages; if the value is exceeded, it is considered that the MGC loses its communication with the ONU. The value range is 1 to 120; The default setting is 3.	3

Table 4-16 Planning data for configuring the NGN heartbeat parameters

Configuration steps

Configure the heartbeat interval to 30 seconds and the heartbeat timeout times to 3 for the voice signnaling service named **ngn1**. The detailed steps are as follows:

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Voice Config → Keep Alive from the shortcut menu to access the Keep Alive window.
- 2. Configure the parameters according to the planned data in Table 4-16.

3. When the configuration is completed, click the subtron and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the heartbeat parameters is completed. See Figure 4-61.

📣 Keep Alive (Domain 1:	ystem 2:0LT System 1:HS	A[9]) [Current	Data Source:	Device]	
Edit Access Operation	Device Operation 🛛 😣 🖓 🕻	\lambda 🍇 🖬 📑 📇	5 🗹 🐺		
Signalling Service Name ngn1	Alive Interval(s) Alive 30 3	Times			
	· · · · ·				
NGN Interface PPPoE With 1	GN Uplinked NGN Configurati	on DHCP With NGM	Uplinked Keep	Alive IA	D Sof∢≯
17:07:14 > Send Comman	Read From Device[NGN In	terface]	~	~	
17:07:14 > Send Comman	-				
17:07:14 > Read From D 17:07:14 > Command Suc	vice[NGN Interface]Execu	ting			_
TI.OT.IN / COMMAND SUC					

Figure 4-61 Configuring the NGN heartbeat parameters

4.7 Configuring the IAD MD5 Authentication

Configuration purpose

This operation is to configure the MD5 authentication of the voice service, mainly used in the authentication between the IAD and the softswitch platform. This operation is only specific to the H.248 and the SIP protocol.

Prerequisites

The endpoint domain name and the NGN configuration corresponding to the MD5 are configured for the destination ONU.

Planning data

ltem		Description	Example	
	S.N.	Default value	1	
	Endpoint	Set this item consistent with the endpoint		
	Domain Name	domain name in the user information of	10.90.60.1	
	Bonnain Hanne	voice service configuration		
	MD5 State	Configure this item according to the	Enable	
		operator's network planning.		
	MGID	Configure this item according to the	01234567	
		operator's network planning.		
	KEY	Configure this item according to the	0123456789ABCDEF	
IAD MD5		operator's network planning.		
Configuration	DHG value	Configure this item according to the	2	
0		operator's network planning.	_	
			FFFFFFFFFFFFFFFFA63A3620	
			F44C42E9625E7EC6E485B576	
			6D51C2454FE1356DF25F1437	
		Configure this item according to the	302B0A6DCD3A431BEF9519B	
	DHP value	operator's network planning.	38E3404DD514A08793B139B2	
		specific chieffer planning.	2020BBEA68A67CC7429024E0	
			880DC1CD1C4C6628B2168C2	
			34C90FDAA2FFFFFFFFFFFFFF	
			FFF	

 Table 4-17
 Planning data for configuring the IAD MD5 authentication

- 1. Right-click the HSWA[9] card in the Object Tree pane and select Config \rightarrow Voice Config \rightarrow IAD MD5 Configuration from the shortcut menu to access the IAD MD5 Configuration window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one IAD MD5 authentication entry.
- 3. Configure the parameters according to the planned data in Table 4-17.
- 4. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the IAD MD5 authentication parameters is completed. See Figure 4-62.

🔥 I AI) ∎D5 Co:	afiguration	(Domain 1	:System	2:0LT System	1:HSTA[9])	[Current Data	Source: 3	Device] 💶 🗙
Edi t	Access	Operation]	Device Oper	ation	😵 🗳 🖳 🎄 🕻	1 <u>2</u> <u>8</u> Ę	2		
		Domain Name	MD5 State	MGID	KEY	DHG value	DHP value		
1	10, 90, 60,	1	Enable	01234567	0123456789ABCD	2	FFFFFFFFFFFFFFFFF	A63A3620F	44C42E9625E7EC6E
lion	DHCP With	NGN Uplinked	d Keep Ali	ve IAD S	oftswitch Profil	e Binding I	AD MD5 Configurat	ion Digi	tMap PPPoE A 4 >
17:07	1:14 > Sc	end Command	l:Read Fro	m Device	[NGN Interfac	e]			
17.07			Suggest	ullv!		-			
11:01	14 / 50	end Command	i Successi						
				-	ce]Executing				
17:07	1:14 > Re		vice[NGN	-	ce]Executing				•

Figure 4-62 Configuring the IAD MD5 authentication

4.8 Registering / Unregistering the NGN User

Configuration purpose

Registering or unregistering the NGN user to the MGC.

Prerequisites

The operation object is the a user's telephone number. This telephone number should have been configured in the system, and this number and the corresponding NGN configuration should have been sent to the destination ONU.

Planning data

Table 4-10 Flaining data for registering / drifegistering the NGN user	Table 4-18	Planning data for registering / unregistering the NGN users
--	------------	---

Item		Description	Example
	Phone	Configure this item according to the telephone	77770001
NGN User	Number	number in the user information of the voice service.	77770001
Register /	Decister (Configure this item according to the actual	
Unregister	Register /	situation. The options include Register and	Register
	Unregister	Unregister.	

Configuration steps

In this example, this configuration should be performed after the VoIP service is started up and the softswitch intercommunication profile configuration is completed. We register the NGN user whose phone number is **77770001**.

- Right-click the HSWA[9] card in the Object Tree pane and select Control Command → NGN User Register/Unregister from the shortcut menu to bring up the NGN User Register/Unregister window.
- 2. Configure the parameters according to the planned data in Table 4-18.

3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the NGN users are registered / unregistered successfully. See Figure 4-63.

NGM User Regist	er/Unregister(Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Sourc	e: Default]
Edit Access Opera	.ion Device Operation 🛛 🖶 😤 🛼 🗹 🎝	
Telephone Number	Register/Unregister	
77770001	Register	
NGN User Registe	/Unregister	
<u> </u>		
<u> </u>	/Unregister	

Figure 4-63 Registering / unregistering NGN users

4.9 Configuring the Digitmap

Configuration purpose

Configure the digitmap of the SIP protocol. In course of dialing, the gateway matches the dialed digits against the numbering scheme in the digitmap and reports to the Softswitch or IMS when a match is found.

Configuration rules

The configuration is only specific to the SIP protocol. The digitmaps of the H.248 and the MGCP protocols are sent by the softswitch and need no configuration. The content of the digitmaps depend on the actual conditions of the operators.

Planning data

Table 4-19	Planning data for configuring the digitmap
------------	--

Item		Description	Example
DigitMap	DigitMan	Configure this item according to the	[2-9]XXXXXXX 1[12]X 1[35]XXXXXXXXX
Digitimap	DigitMap DigitMap	operator's network planning.	[2-9]^^^^^][12]^[1[35]^^^^^

Operation steps

In this example, this configuration should be performed after the VoIP service is started up and the softswitch intercommunication profile configuration is completed. We input **[2-9]XXXXXXX|1[12]X|1[35]XXXXXXXX** as the digitmap.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → NGN Config from the shortcut menu to bring up the configuration window. Click the DigitMap tab to access the DigitMap window.
- 2. Configure the digitmap according to the planned data in Table 4-19.

3. When the configuration is completed, click the subtraction and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the digitmap configuration is completed. See Figure 4-64.

👫 Digit∎ap(Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Source: Device] 💶 🗖	×
Edit Access Operation Device Operation 📴 🍜 🖬 ≟ 😤 🚰 🚚	
DigitMap	
[2-9]XXXXXXX 1[12]X 1[35]XXXXXXXXX	
ted NGN Configuration DHCP With NGN Uplinked Keep Alive IAD Softswitch Profile Binding IAD MD5	
18:44:32 > Send Command:Read From Device[NGN Interface]	•
18:44:32 > Send Command Successfully!	
18:44:32 > Read From Device[NGN Interface]Executing	
18:44:32 > Command Succeed	-
	1.

Figure 4-64 Configuring the digitmap

4.10 Displaying the Status Information

4.10.1 Viewing the MGC Register Server's Status

Configuration purpose

View the real-time connection status between the IAD and the softswitch platform MGC, including the IP address and the current registration status of the MGC connected with the IAD.

Planning data

Item		Description	Example
	Slot No.	The slot number of the service card corresponding to the ONU. The value range is 1 to 8 and 11 to 18 .	17
MGC/Register Server Status	PON Port No.	The PON port No. of the service card corresponding to the ONU. The value range is 1 to 4.	1
	ONU Authorize No.	The authentication No. of the ONU. The value range is 1 to 64.	1

 Table 4-20
 Planning data for displaying the MGC register server's status

- Right-click the HSWA[9] card in the Object Tree pane and select Get Information → NGN Status from the shortcut menu. Click the MGC/Register Server Status tab to access the MGC/Register Server Status window.
- 2. Configure the **Slot No.**, the **PON Port No.**, and the **ONU Authorize No.** according to the planned data in Table 4-20.
- Click the button to execute the command after the configuration is completed. The prompt pane at the bottom of the window displays **Read from Device Executing Command Succeed**. The window displays the MGC registrar address is **192.168.1.101** and the registration status is **Register**. See Figure 4-65.

<mark> ∎</mark> GC/1	Registrar Serve	er Status (Domain 1	:System 2:OLT System 1:HSTA[9]) [Current Data Source	: Default] 💶 🗙
Edit	Access Operation	Device Operation			
	. PON Port No.	ONU Authorize No.	MGC/Registrar Server Address	Reg Status	
17	1	1	192.168.1.101	Register	
MGC/	Registrar Server	Status NGN User Po	rt Status IAD IP		
8:47:4	13 > Send Comma	and:Read From Devi	.ce[MGC/Registrar Server Statu	us]	
		Validate The Comma			
	13 > Validate I				
8:47:4	13 > Send Comma	and Successfully!			-

Figure 4-65 Displaying the MGC register server's status

4.10.2 Viewing the NGN User Port's Status

Configuration purpose

This operation is to view the IAD user port's status according to the user's telephone number.

Planning data

Item		Description	Example
		The telephone number of the NGN user.	
		This number has been set in the configuration by the	
NGN User Port	Telephone	steps of selecting the HSWA[9] card in the Object	88880123
Status	Number	Tree pane and selecting $\textbf{Config} \rightarrow \textbf{NGN}~\textbf{Config}$ from	00000123
		the shortcut menu.	
		The value range is 1 to 999999999.	

- Right-click the HSWA[9] card in the Object Tree pane and select Get Information → NGN Status from the shortcut menu. Click the NGN User Port Status tab to access the NGN User Port Status window.
- 2. Configure the telephone number of the NGN user port according to the planned data in Table 4-21.

3. Click the 📑 button to execute the command after the configuration is completed. The prompt pane at the bottom of the window displays **Read from Device Executing Command Succeed**. The window displays the NGN user port is in the **EP_STATUS_INACTIVE** status. See Figure 4-66.

🕼 MGN User Port S	tatus(Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Source: Default] 🗖 🗖
Edit Access Opera	tion Device Operation 🛛 🖶 🚉 👺 🗹 🚚
Telephone Number	Reg Status
88880123	EP_STATUS_INACTIVE
MGC/Registrar Se	rver Status NGN User Port Status IAD IP
8:47:43 ≥ Send C	ommand:Read From Device[MGC/Registrar Server Status]
	To Validate The Command Data!
	te Data Finished
18:47:43 > Send C	ommand Successfully!

Figure 4-66 Displaying the NGN user port's status

4.10.3 Viewing the IAD IP Information

Configuration purpose

This operation is to view the voice IP address of the IAD. This IP address can be either the ONU static IP address configured in the NGN uplink user configuration or the dynamic IP address obtained by the DHCP or PPPoE method.

Planning data

Item		Description	Example
	Slot No.	The slot number of the service card corresponding	17
	Slot No.	to the ONU. The value range is 1 to 8 and 11 to 18 .	17
		The PON port No. of the service card	
IAD IP	PON Port No.	corresponding to the ONU.	1
		The value range is 1 to 4.	
		The authentication No. of the ONU.	1
	ONU S.N.	The value range is 1 to 64.	1

Table 4-22Planning data for displaying the IAD IP information

- Right-click the HSWA[9] card in the Object Tree pane and select Get Information → NGN Status from the shortcut menu. Click the IAD IP tab to access the IAD IP window.
- 2. Configure the **Slot No.**, the **PON Port No.**, and the **ONU S.N.** according to the planned data in Table 4-22.
- Click the button to execute the command. The prompt pane at the bottom of the window displays Read from Device Executing Command Succeed. The window displays the DHCP IP address is 192.168.1.2, the mask is 255.255.0.0, the gateway is 192.168.1.254, and the primary DNS server IP is 255.255. 255.255. See Figure 4-67.

₿ I AD	IP (Domain 1:Sy	stem 2:0L	T System 1:HS	MA[9]) [Current]	Data Source: Def	ault]	
Edi t	Access Operation	a Device O	peration 🔚	2 5 🗹 4			
	No. PON Port No.	ONU S.N.	IP Address	IP Mask	Gateway	Master DNS Server	Slave DNS Server
17	1	1	192.168.1.2	255.255.0.0	192, 168, 1, 254	255, 255, 255, 255	0.0.0.0
•							
MGG	C/Registrar Server	r Status 🕅	GN User Port Sta	tus IAD IP			
0.47	:43 > Send Comm	and:Read H	From Device[MG	C/Registrar Ser	ver Status]		
0:4 C				· · · · · · · · · · · · · · · · · · ·			
	:43 > Begin To	Validate 🕻	The Command Da	ita!			
8:47				itai			
8:47 8:47	:43 > Begin To	Data Fini:	shed	ita!			

Figure 4-67 Displaying the IAD IP information

5 Configuring Data Services

This chapter gives details on how to provision the data service using the AN5116-06B, and it mainly includes the following sections:

- Example for data service configuration in the VLAN transparent transmission mode
- Example for data service configuration in the Tag mode
- Example for data service configuration in the VLAN 1:1 translation mode
- Example for data service configuration in the VLAN N:1 translation mode
- Example for data service configuration in the flexible QinQ mode

5.1 Example for Data Service Configuration – in the VLAN Transparent Transmission Mode

5.1.1 Configuration Rules

The AN5116-06B supports the QinQ data service, which means it supports the VLAN stacking as well. In this example the GC8B card is used as the service interface card and the AN5506-04-B and the AN5506-10-B1 are used as ONUs to introduce the data service configuration in the VLAN transparent transmission mode.

- The QinQ data service in the VLAN transparent transmission mode can be configured via the SVLAN configuration on the ONU or the OLT. In this example the service is configured on the ONU.
- The VLAN ID of the ONU ranges from 1 to 4085.
 - To add stacked VLAN tags to the data service, the SVLAN ID must be within the preset range of the local VLAN.
 - ► To add a single VLAN tag to the data service, the CVLAN ID must be within the preset range of the local VLAN.
- The VLAN transparent transmission mode: The Ethernet data uploaded from the subscriber side will be added with a VLAN ID when passing the subscriber's home gateway. The CVLAN ID will be transparently transmitted and added with an SVLAN ID when passing the ONU. After being uploded to the AN5116-06B, the data service will not be processed using the AN5116-06B, but transparently transmitted to the upper layer network side equipment.
- The ONU data service configuration can be implemented in the service profile or the ONU service configuration. If the data service configurations of the ONUs are the same, the batch configurations can be implemented using the service profile.
- The sum of the fixed bandwidth and asssured bandwidth of the service in the bandwidth allocation should not exceed the configuration parameter of the maximum bandwidth.
- An FE port of the AN5506-04-B ONU can support up to four data services, and an FE port of the AN5506-10-B1 ONU can support up to 16 data services.

5.1.2 Service Network

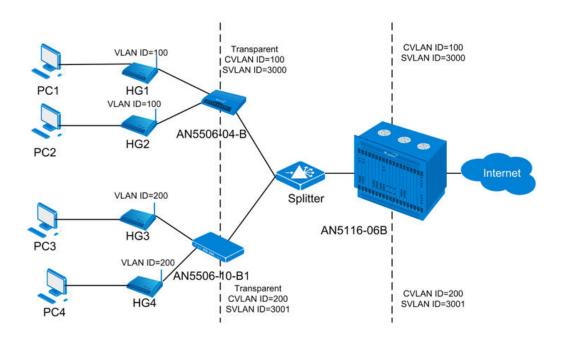


Figure 5-1 The data service network in the VLAN transparent transmission mode

As Figure 5-1 shows, each PC is connected to an ONU via a home gateway HG, which adds a layer of VLAN ID to the data service from the PC. When the services are received at the ONU, the ONU will transparently transmit the first VLAN tag, add an SVLAN ID to the data service and then transmit the data service to the OLT using a splitter. The OLT will not process the service but transmit it to the upper layer network via the uplink port directly. For the downlink direction, the reverse process takes place.

The AN5506-04-B and the AN5506-10-B1 are used as ONUs in this example. The AN5116-06B uses the HU1A and the GC8B as the interface cards at the network side and the subscriber side respectively. And the HSWA card is compulsory.

5.1.3 Configuring Data Services Respectively (for the AN5506-04-B)

5.1.3.1 Planning Data

Table 5-1The planned data of data service configuration at the OLT side in the transparenttransmission mode (configured respectively)

ltem		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the	1
internation		operator.	1
	ONU Type	The type of an ONU	AN5506-04-B
	Service Name	Configure according to the network planning of the	data1
		operator.	
	VLAN ID Begin	The begin VLAN ID number of the uplink port	3000
		service.	5000
		The end VLAN ID number of the uplink port service.	
	VLAN ID End	The begin VLAN ID should not be larger than the	3001
		end VLAN ID.	
	Uplink No. /	The number of the actually used uplink port.	19:SFP2
	TRUNK No.		
		The Tag processing mode of the uplink service	
Local end		VLAN can be set as Tag or Untag . Under UNTAG	
service		mode, the TAGs of the uplink packets will be	
VLAN		stripped automatically and the packets will be	
		uplinked in the form of UNTAG when they pass the	
		port, whereas the downlink UNTAG packets will be	
	TAG / UNTAG	added with designated TAGs and downlinked in the	Тад
		form of TAG. Under TAG mode, the uplink data	
		packets will not be processed but remain uplinked in	
		the original form. For downlink packets, however,	
		only packets with designated TAGs are received and	
		the packets will not be processed but remain	
		downlinked in the original form.	
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Item		Description	Example	
	Service Type	Select broadband Internet access.	Broadband I access	nternet
	Fixed Bandwidth (Kbyte/s)	The fixed bandwidth of an ONU's uplink service. Even if the service does not use the bandwidth resource, other services cannot occupy the resource. The default value is 16Kbyte/s.	16	
Bandwidth configuration	Assured Bandwidth (Kbyte/s)	The minimum bandwidth for provisioning an ONU's uplink service. If the bandwidth resource is not used by this service, then the resource may be released for other services to use. The default value is 0Kbyte/s.	0	
	Maximum Bandwidth (Kbyte/s)	The maximum bandwidth of an ONU's uplink service. The sum of the fixed bandwidth value and the assured bandwidth value should not be larger than the maximum bandwidth value. The default value is 64Kbyte/s.	1280	
	ONU Port Used	The actually used ONU port	1	2
	Enable / Disable Port	Configure according to the network planning of the operator. Enable is selected by default.	Default	
Configuring the ONU	Auto Negotiation	Configure according to the network planning of the operator. Enable is selected by default.	Default	
port basic	Port Speed	Unconfigurable when auto negotiation is enabled. The default speed is 100M.	Default	
mornation	Duplex	Unconfigurable when auto negotiation is enabled. The default value is full-duplex.	Default	
	Flow Control Enable / Disable	Configure according to the network planning of the operator. Disable is selected by default.	Default	
Configuring the ONU port service parameters	TAG Mode	Configured as Tag or Untag according to the network planning of the operator. In the Tag mode the uplink data packets are tagged, whereas in the Untag mode the uplink data packets are untagged.	Tag	
	Service Type	Configured as Unicast or Multicast.	Unicast	

Table 5-2The planned data of data service configuration at the AN5506-04-B ONU side inthe transparent transmission mode (configured respectively)

Item		Description	Example
		When the CVLAN mode is set as Transparent , the	
	VLAN Mode	VLAN mode should be consistent with the PON	0
		priority, ranging from 0 to 7. When the Tag mode is	
		set as Untag , this item is unconfigurable.	
		When the CVLAN mode is set as Transparent , the	
	VLAN ID	VLAN mode should be consistent with the CVLAN	100
		ID, ranging from 1 to 4085. When the Tag mode is	100
		set as Untag , this item is unconfigurable.	
		When the Tag mode is set as Untag , the CVLAN	
		mode can be set as Tag or Transparent. When the	Trenenevent
	CVLAN Mode	Tag mode is set as Tag , the CVLAN mode can set as	Transparent
		Translation or Transparent.	
	CVLAN ID	Configure according to the network planning of the	100
	CVLAN ID	operator. The range is 1 to 4085.	100
	COS	The CVLAN priority, ranging from 0 to 7.	0
	Ds Encrypt	Disable is selected by default.	Disable
	State		Diodolo
	QinQ Enable	Enable / disable the QinQ configuration	Enable
	SVLAN ID	Unconfigurable when the QinQ configuration is	3000
	SVLANID	disabled. The range is 1 to 4085.	3000
		Corresponding to the configured local end service	
	Service Name	VLAN. Unconfigurable when the QinQ configuration	data1
		is disabled.	
Γ		The SVLAN priority, ranging from 0 to 7.	
	COS	Unconfigurable when the QinQ configuration is	0
		disabled.	

5.1.3.2 Configuration Flow Chart

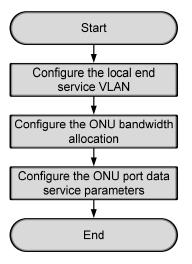


Figure 5-2 Flow chart for provisioning data services respectively in the transparent transmission mode (for the AN5506-04-B)

5.1.3.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the uplink port VLAN of the AN5116-06B for designated service flow and limit the VLAN range of the service.

- 1. Right-click the HSWA[9] card in the Object Tree pane and select Config \rightarrow Local VLAN from the shortcut menu to bring up the configuration window. In the window click the Local End Service VLAN tab and the local VLAN configuration window appears.
- Click Edit → Append on the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to create a local VLAN.

3. Configure according to the planned data in Table 5-1. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN is configured. See Figure 5-3.

	Operation Device Op					
rvice Name	Starting VLAN ID	VLAN ID End	Interface NO.		Service Type	Slot Bind Mode
tal	3000	3001	19:SFP2	TAG	Data	Auto Bind
Local End :	Service VLAN Local En	d Service Inner	· VLAN			
	Service VLAN Local En end Command:Read Fr			ce VLAN]		

Figure 5-3 The Local End Service VLAN window - completed

5.1.3.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service to control the traffic flow.

Operation steps

- Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU and select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.
- 2. Click the right pane and select **Edit** \rightarrow **Append** on the menu bar of the window,

or click the button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click **OK**.

3. Configure according to the planned data in Table 5-2. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation configuration is completed. See Figure 5-4.

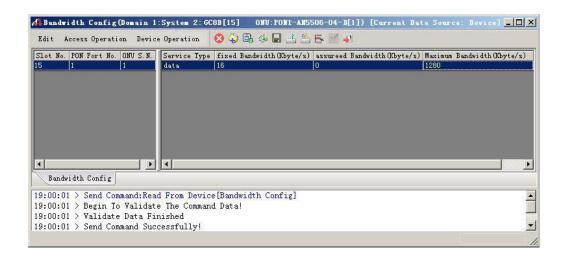


Figure 5-4 The Bandwidth Config window - completed

5.1.3.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-5.

a Port List 1	Port No. 1
2	Enable/Disable Port
3 4	V Port Auto Negotiation
1	Port Speed 100M Duplex Full-Duplex
	Flow Control Enable/Disable
	🦵 Port Rate Limit
	Upstream Port Rate Limit(Kbit/s)
	Downstream Port Rate Limit(Kbit/s)
	IndexService type Fag mode COS VLAN ID Ds Encrypt state Cvlan mode: Add
	Delete
	Modify

Figure 5-5 The ONU port service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-5. Click **Add** to create a data service and configure it according to the planned data in Table 5-2.

Services Configu	ration			×
Index	1	Service type	unicast 💌	ОК
TAG Mode	Tag 💌	CVLAN Mode	Transparent 💌	Cancel
COS	0	CVLAN ID	100	
VLAN ID	100	COS	0 💌	
Ds Encrypt state				
🔽 QinQ State				1
SVLAN ID	3000			
Service Name	data1 💌	COS	0 💌	



- 3. Click **OK** and return to the dialog box shown in Figure 5-5. Right-click **FE1** in the **Data Port List** and select **Copy Port Config**. Right-click **FE2** and select **Paste Port Config**.
- 4. After the configuration, click the **Modify on Device** button to complete the AN5506-04-B service configuration. If the **Command Succeed** of the AN5506-04-B data port service appears in the **Command Manager** window, the AN5506-04-B port service configuration is completed. See Figure 5-7.

Domain 1:System 2 Data Port Config		1
lata Port List	Port No. 2	
FE1 FE2	🔽 Enable/Disable Port	
FE3 FE4	V Port Auto Negotiation	
	Port Speed 100M T Duplex Full-Duplex	Ξ
	Flow Control Enable/Disable	
	Fort Rate Limit	
	Upstream Port Rate Limit(Kbit/s) 🛛 🗍 Downstream Port Rate Limit(Kbit/s)	
	Index Service typ Tag mode COS VLAN ID Ds Encrypt state Cvlan mode	
	1 unicast Tag O 100 Disable Transparen	
	Delete	
	Modify	_
	Read DB Write DB Read Device Modify On Device Delete On Device Clos	
		-

Figure 5-7 The port service configuration completed

5.1.4 Configuring Data Services in a Batch Manner (for the AN5506-04-B)

5.1.4.1 Planning Data

Table 5-3The planned data of data service configuration at the OLT side in the transparenttransmission mode (in a batch manner)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	1
	ONU type	The type of an ONU	AN5506-04-B
	Service Name	Configure according to the network planning of the operator.	data1
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Тад
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Item		Description	Example
	Profile Name	The name of the bandwidth allocation profile	а
	Service Type	Select broadband Internet access.	Broadband Internet access
		The fixed bandwidth of an ONU's uplink	
	Fire d Deve deviatib	service. Even if the service does not use the	
	Fixed Bandwidth	bandwidth resource, other services cannot	16
	(Kbyte/s)	occupy the resource. The default value is	
		16Kbyte/s.	
Bandwidth		The minimum bandwidth for provisioning an	
	Assured	ONU's uplink service. If the bandwidth	
configuration	Bandwidth	resource is not used by this service, then the	0
	(Kbyte/s)	resource may be released for other services	
		to use. The default value is 0Kbyte/s.	
		The maximum bandwidth of an ONU's uplink	
	Maximum	service. The sum of the fixed bandwidth value	
	Bandwidth	and the assured bandwidth value should not	1280
	(Kbyte/s)	be larger than the maximum bandwidth value.	
		The default value is 64Kbyte/s.	
		Configure according to the network planning	
	Profile Name	of the operator.	b
	Enable / Disable Port	Enable is selected by default.	Enable
	Auto Negotiation	Enable is selected by default.	Enable
	Dert Creed	The default speed is 10M. Unconfigurable	
	Port Speed	when the auto negotiation is enabled.	_
Data sami'sa		Full-duplex is selected by default.	
Data service	Duplex	Unconfigurable when the auto negotiation is	—
profile		enabled.	
configuration	Flow control	Disable is calcuted by default	Diachla
	Enable / Disable	Disable is selected by default.	Disable
	Port Limit Enable /	Disable is selected by default.	Disable
	Disable		
	Port Uplink Limit	The default value is 0. Unconfigurable when	
		the port limit is disabled.	
	Port Downlink Limit	The default value is 0. Unconfigurable when	
		the port limit is disabled.	

Table 5-4The planned data of data service configuration at the AN5506-04-B ONU side inthe transparent transmission mode (in a batch manner)

Item			Description	Example	
			Configured as Tag or Untag according to the		
			network planning of the operator. In the Tag		
	TAG Mode		mode the uplink data packets are tagged,	Тад	
			whereas in the Untag mode the uplink data		
			packets are untagged.		
			When the CVLAN mode is set as		
			Transparent, the VLAN mode should be		
	COS Mode		consistent with the COS, ranging from 0 to 7.	0	
			When the Tag mode is set as Untag , this item		
			is unconfigurable.		
			When the CVLAN mode is set as		
			Transparent, the VLAN mode should be		
	VLAN ID		consistent with the CVLAN ID, ranging from 1	100	
			to 4085. When the Tag mode is set as Untag ,		
			this item is unconfigurable.		
	Ds Encrypt	State	Disable is selected by default.	Disable	
			When the Tag mode is set as Untag , the		
			CLVAN mode can be set as Tag or		
	CVLAN Mo	de	Transparent. When the Tag mode is set as	Transparent	
			Tag, the CVLAN mode can be set as		
			Translate or Transparent.		
			Configure according to the network planning	100	
	CVLAN ID		of the operator. The value range is 1 to 4085.	100	
	COS		The priority range is 0 to 7.	0	
			Enable / disable the QinQ configuration.		
	QinQ Enab	le State	Disable is selected by default.	Enable	
		Corresponding to the service name			
	VLAN Nam	е	configured in the local VLAN. Unconfigurable	data1	
			when the QinQ enable state is disabled.		
			Unconfigurable when the QinQ enable state		
	SVLAN ID		is disabled. The range is 1 to 4085.	3000	
			Unconfigurable when the QinQ enable state	2	
	COS		is disabled.	0	
	D a i i		Configure according to the network planning		
	Profile Nam	ne	of the operator.	С	
Service	ONU Type		The type of the actually used ONU	AN5506-04-B	
profile		Profile	The bandwidth allocation profile should be		
' configuration	ONU	Туре	selected.	Bandwidth allocation profile	
Ŭ	Subprofile	Profile	Corresponding to the profile name configured		
	Config	Name	in the bandwidth allocation profile	а	
	1				

ltem			Description	Example		
	Port Type		The type of the actually used port	FE port		
	Port No.		The number of the actually used port	1	2	
	ONU Port Type		The data service profile should be selected.	Data service p	rofile	
	Profile Config	Profile Name	Corresponding to the profile name configured in the data service profile	b		
	Profile ID		Corresponding to the profile name configured in the service profile	c		
Comileo	Action		Bind the ONU to the service profile.	Attach		
Service	Slot No.		The number of the actually used slot	15		
profile binding	PON No.		The number of the actually used PON	1		
binding	ONU S.N.		The ONU authorization number assigned according to the network planning of the operator	1		

5.1.4.2 Configuration Flow Chart

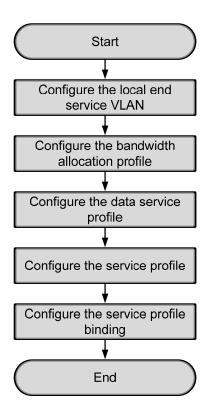


Figure 5-8 The batch configuration flow chart of data service provisioning in the transparent transmission mode (for the AN5506-04-B)

5.1.4.3 Configuring the Local End Service VLAN

See Section 5.1.3.3 for configuration procedures.

5.1.4.4 Configuring the Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth of the ONU data service and control the service flow.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- 2. Click the left pane and select $\textbf{Edit} \rightarrow \textbf{Append}$ on the menu bar of the window

or click the \bigcirc button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Double-click the **Profile Name** blank field and enter **a**.

- Click the right pane and select Edit → Append on the menu bar of the window or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button.
- 4. Configure according to the planned data in Table 5-4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is configured. See Figure 5-9.

Bandwidth Config F	rofile (Domain	1:System 2:OLT System	1:HSTA[9]) [Current Data	Source: Device]	
Edit Access Operation	n Device Opera	tion 🛛 🐼 🗳 🚔 🖏 🌼	🖩 🛃 🛃 🛃 🖶 🔟 🖣		
'rofile Name	Service Type DATA	fixed Bandwidth(Kbyte/s) 16	assureed Bandwidth(Kbyte/s) O	Maximum Bandwidth(1280	Kbyte/s)
	DATA	10		1200	
Bandwidth Config Pr	ofile				
		Device[Bandwidth Conf	ig Profile]		
9:12:01 > Begin To					
9:12:01 > Validate 9:12:01 > Send Comm					

Figure 5-9 The Bandwidth Config Profile window -completed

5.1.4.5 Configuring the Data Service Profile

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Data Service Profile from the shortcut menu. Click the Data Service Profile tab and the Data Service Profile window appears.
- Click the left pane and select Edit → Append on the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a data service profile b. Configure the basic parameters of the port according to the planned data in Table 5-4.
- Click the right pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Configure the VLAN tags of the traffic flow according to the planned data in Table 5-4.

4. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the data service profile is configured. See Figure 5-10.

🗥 Data	Service Profil	e(Domain 1:S y ste	2:0LT Syst	en 1:HSWA[9]) [Curre	nt Data Sou	rce: Dev	ice]			
Edit	Access Operation	Device Operation	🛛 🗘 🚔	0, 🖗 🖬 🗄	i 💾 🏄 🗄	s 🗹 🐙 👘					
Profile		ble AutoNegotiation			Flow	Service No.				Ds Encrypt State	CVLAN Mode
ь	Enable	Enable	10M	Full-Deplux	Disable	1	Tag	0 1	00	Disable	transparent
•					Þ	•	_	_			Þ
L. Dot	Service Profile	IGMP Service Profi	La Vaiga Sar	wigo Profile			o Profilo	Bindin			
Dac	a Service Ironne	Tomi Pervice IIOII	te force ser	vice monie	Service II	onne jenvio	e irorire	DIMOIN	•		
19:14:	14 > Send Comman	nd:Read From Devi	.ce[Data Ser	vice Profil	e]						_
	19:14:14 > Begin To Validate The Command Data!										
	14 > Validate Da										
19:14:	14 > Send Comman	nd Successfully!									•
											1

Figure 5-10 The Data Service Profile window - completed

5.1.4.6 Creating a Service Profile

Configuration purpose

Configure the bandwidth allocation profile and data service profile for the ONU binding.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Service Profile from the shortcut menu. Click the Service Profile tab and the Service Profile window appears.
- Click the left pane and select Edit → Append on the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a service profile.
- Double-click the Profile Name blank field and enter c. Click the ONU Type list box and select AN5506-04-B from the drop-down list.

4. Click the **ONU Subprofile Config** field to bring up the **ONU Subprofile Config** dialog box. Click the **Add** button to add a profile configuration. Click the **Profile Type** list box and select **Bandwidth Config Profile**. Click the **Profile Name** list box and select **a**.

	×
Profile Name	
а	
	Add (<u>A</u>)
	Delete (<u>D</u>)
	ОК
	Cancel

Figure 5-11 The ONU Subprofile Config dialog box

5. Click **OK** and return to the **Service Profile** window.

🕼 Service Pro	file(Domain 1	:S y stem 2:0LT	System 1	:HSVA[9])	[Current Dat	a Source:	Device]	_ 🗆 ×
Edit Access (Operation Devi	ce Operation	🛛 🍄 🛢	0, 🌣 🗖	2 2 🕹 🛃 🗗	1		
Profile Name	ONU Type	ONU Subprofile	Config	Port Type	Port No.	ONU Port H	Profile Con	nfig
c	AN5506-04-B							
4	_	_			_			
Dete Semula	e Profile IGMP	Sumi a Pusfil		ر بندر الم	Sumi a Pus	6:1 . Si		
Data Servic	e fronite 10mr	Service fronting	s Voice Se	rvice froni	e Service fro	file Servi	ce fronile	binding
	nd Command:Re		-	rvice Prof	ile]			-
	gin To Valida		ıd Data!					_
	lidate Data F							
19:10:49 / 36	nd Command Su	ccessidily!						

Figure 5-12 The **Service Profile** window

- Click the right pane and select Edit → Append on the menu bar. Enter 2 in the Please Inut the Rows for Add dialog box that appears and click OK.
- 7. Click the **Port Type** list box and select **FE**. Double-click the **Port No.** blank field and enter **1**. Repeat the procedure to enter **2**.
- For Port No.1 click the ONU Port Profile Config field to bring up the ONU Port Profile Config dialog box. Click Add to add a profile configuration. Click the Profile Type list box and select Data Service Profile. Click the Profile Name list box and select b. Repeat the procedure for Port No.2.

ONU Port Pr	ofile Config		×
Profile Type Data Service		île Name	[
Data Service	Profile b		
			Add (<u>A</u>)
			Delete (<u>D</u>)
			ОК
			Cancel
			Cancel

Figure 5-13 The ONU Port Profile Config dialog box

- 9. Click **OK** and return to the **Service Profile** window.
- 10. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the service profile is configured. See Figure 5-14.

Service Pro	ofile(Domain 1	:System 2:0LT	System 1	:HSWA[9]) [C	urrent Data	Source: Dev	vice] 💶 🗖
Edit Access	Operation Devi	ce Operation	😣 🏟 🛢	0, 🎄 🖬 🗄	6 🐣 🕹 통	🗹 🐺	
Profile Name	ONU Type	ONU Subprofile	Config	Port Type	Port No.	ONV Port Prof	ile Config
e	AN5506-04-B			FE FE	2		
				1.5	-		
4							
·] Doto Souria	e Profile IGMP	Sauri an Punfila		ruigo Profile	Sauri an Profi	la Samia I	Profile Bindi
Data Servio	e iroine Liom	Service frontie	Voice Se	TALCE IFOLITE	Service from	Te Service I	rforre britar.
	end Command:Re			rvice Profil	e]		
	oin To Valida	te The Comman	ıd Data!				
$U \cdot 1 \vee \cdot d \overline{U} \setminus \nabla_{c}$	-						
	alidate Data F						
	-						

Figure 5-14 The Service Profile window - completed

5.1.4.7 Binding the ONU to the Service Profile

Configuration purpose

Apply the bandwidth allocation and data service configuration of the service profile to the ONU by binding the ONU to the service profile.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Service Profile Config from the shortcut menu. Click the Service Profile Binding tab and the Service Profile Binding window appears.
- 2. Click the left pane and select Edit \rightarrow Append on the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK.
- 3. Click the **Profile ID** list box and select **c**. Click the **Action** list box and select **Attach**.
- Click the right pane and select Edit → Append on the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK.
- 5. Double-click the **ONU S.N.** field to bring up the **Select Objects** dialog box. Select **AN5506-04-B** in the dialog box.

loard	UNU	Auth No.	Is Select
C8B[15]	PON1-AN5506-04-B[1]	1	

Figure 5-15 The Select Objects dialog box for the ONU number configuration

6. Click the **OK** button and return to the **Service Profile Binding** window. Click

the \blacksquare button to execute the command. The If the service profile binding

and the refresh operation is performed, the original ONU service configuration will be overwritten. Are you sure to execute this command? dialgue box will appear. Click OK and then once again in the Are you sure to write all data to the device? dialog box.

 Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the AN5506-04-B has been bound to the service profile c. See Figure 5-16.

🕂 Service Profile Binding(Domain 1:System 2:OLT System 1:HSTA[9]) [Current Data Source: Device] 💶 🗖	×
Edit Access Operation Device Operation 🛛 🐼 🔂 🤣 🛃 📥 📥 📇 📲 🚚	
Profile ID Action Slot No. PON NO. ONU S.N.	
c Attach 15 1 1	
Data Service Profile IGMP Service Profile Voice Service Profile Service Profile Service Profile Binding	
19:26:31 > Send Command:Read From Device[Data Service Profile]	
19:26:31 > Begin To Validate The Command Data!	
19:26:31 > Validate Data Finished 19:26:31 > Send Command Successfully!	
Theorem / Bond Command Baccossidiry:	Ľ

Figure 5-16 The Service Profile Binding window for the AN5506-04-B - completed

5.1.5 Configuring Data Services Respectively (for the AN5506-10-B1)

5.1.5.1 Planning Data

Table 5-5The planned data of data service configuration at the OLT side in the transparenttransmission mode (configured respectively)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	2
	ONU type	The type of the ONU	AN5506-10-B1
	Service Name	Configure according to the network planning of the operator.	data1
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Tag
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-6The planned data of data service configuration at the AN5506-10-B1 ONU side inthe transparent transmission mode (configured respectively)

Item		Description	Example	
	Service Type	Select integrate service.	Integrate Se	rvice
	Fixed	The fixed bandwidth of an ONU's uplink service.		
	Fixed Bandwidth	Even if the service does not use the bandwidth	16	
		resource, other services cannot occupy the		
	(Kbyte/s)	resource. The default value is 16Kbyte/s.		
		The minimum bandwidth for provisioning an ONU's		
Donduidth	Assured	uplink service. If the bandwidth resource is not used		
Bandwidth	Bandwidth	by this service, then the resource may be released	0	
configuration	(Kbyte/s)	for other services to use. The default value is		
		0Kbyte/s.		
		The maximum bandwidth of an ONU's uplink		
	Maximum	service. The sum of the fixed bandwidth value and		
	Bandwidth	the assured bandwidth value should not be larger	1280	
	(Kbyte/s)	than the maximum bandwidth value. The default		
		value is 64Kbyte/s.		
	ONU Port	T		
	Used The actually used ONU port		1	2
	Enable /	Configure according to the network planning of the	Default	
	Disable Port	operator. Enable is selected by default.	Default	
Configuring	Port Auto	Configure according to the network planning of the	Default	
basic	Negotiation	operator. Enable is selected by default.	Default	
information	Port Speed Unconfigurable when the port auto negotiation is		Default	
of the ONU	Port Speed	enabled. The default speed is 100M.		
port	Duralau	Unconfigurable when the port auto negotiation is		
	Duplex	enabled. The default value is full-duplex.	Default	
	Flow control			
	Enable /	Configure according to the network planning of the	Default	
	Disable operator. Disable is selected by default.			
	TIC	Configure according to the network planning of the		
	TLS	operator. Select TLS or No TLS.	No TLS	
Configuring	Service Type	Data service. Select Unicast.	Unicast	
Configuring	VLAN Mode	Configure according to the network planning of the	Transport	
ONU port	VLAN WODE	operator. Select Tag or Transparent.	Transparent	
service	CVLAN TPID	The default value is 33024.	33024	
parameters		Configure according to the network planning of the	200	
	CVLAN ID	operator. The value range is 1 to 4085.	200	
	Priority or COS	The CVLAN priority. The value range is 1 to 7.	0	

Item		Description	Example
	QinQ State	Enable / disable the QinQ configuration.	Enable
	Service Name	Corresponding to the configured local end service VLAN.	data1
	VLAN ID	Configure the SVLAN ID according to the network planning of the operator within the range of 1 to 4085.	3001
	SVLAN TPID	The default value is 33024.	33024
	Priority or COS	The SVLAN priority. The value range is 0 to 7.	0

5.1.5.2 Configuration Flow Chart

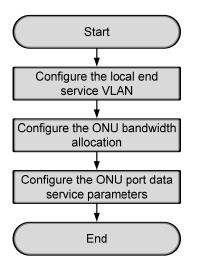


Figure 5-17 Flow chart for provisioning data services respectively in the transparent transmission mode (for the AN5506-10-B1)

5.1.5.3 Configuring the Local End Service VLAN

For configuration procedures see Section 5.1.3.3.

5.1.5.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU and select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.
- 2. Click the right pane and select $Edit \rightarrow Append$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button.

3. Configure according to the planned data in Table 5-6. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-18.

Bandwidth Config(Domain 1:	System 1:GC8B[1	5] ONU: PONT-AN5506-10-	B1[2] [Current Data Source	: Device]
Edit Access Operation Device	Operation 🔞	🗘 🕒 🤣 🖬 🛃 📇 😽 🗹	41	
Slot No. FON Port No. ONU S.N. 5 1 2	Service Type Integrate Service	fixed Bandwidth(Kbyte/s) 16	assureed Bandwidth(Kbyte/s) O	Maximum Bandwidth(Kbyte/s) 1280
Bandwidth Config				
Bandwidth Config		ndwidth Config]		1
Bandwidth Config 0:57:19 > Send Command:Read 0:57:19 > Begin To Validate	l From Device[Bau The Command Dar	A NAME AND DECOMPOSITION AND A DECOMPOSITION OF THE ADDRESS OF THE ADDRESS AND ADDRESS ADDRESS ADDRESS ADDRESS ADDR		
	l From Device[Bau : The Command Dav ished	A NAME AND DECOMPOSITION AND A DECOMPOSITION OF THE ADDRESS OF THE ADDRESS AND ADDRESS ADDRESS ADDRESS ADDRESS ADDR		



5.1.5.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-19.

(Domain 1:System 1:GC8B[15] (DNU List:AN5506-10-B1[2])	X
Data Port Config Voice Config		
Data Port List	Port No. 1	
FE1	Enable/Disable Port	
FE2 FE3	V Port Auto Negotiation	
FE4 FE5	Fort Speed 100M _ Duplex Full-Duplex _	
FE6	Flow Control Enable/Disable	
FE7 FE8		
FE9	IGMP UP CVLAN IGMP UP SVLAN	
FE10 FE11	CVLAN ID SVLAN ID	
FE12	CVIAN COS SVIAN COS	
FE13 FE14	CVLAN TPID 33024 SVLAN TPID 33024	
FE15 FE16	Service	
FE17	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID C	
FE18 FE19		
FE20	Delete	
FE21 FE22	Modify	
FE23 FE24		
1224		
	Boardwidth Set Service Upstream Minimum Guaranteed 640	-
	Service Upstream Maximum Allowed 100000	i I
	Service Downstream Bandwidth(kbit/s) 100000	
Read	DB <u>W</u> rite DB R <u>e</u> ad Device Modify On Device Delete On Device Close	

Figure 5-19 The ONU port service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-19. Click **Add** to create a data service and configure it according to the planned data in Table 5-6.

Services Config	uration				×
TLS	No TLS 💌	Set Servio	ce Classificati		ОК
Service type	unicast 💌	VLAN Mode	Transparent	•	Cancel
TPID	33024	CVLAN ID	200		
		Priority Or COS	0	•	
Translation State		Translation value		_	
TPID	33024	Priority Or COS		-	
🔽 QinQ State					
Choose Qinl	Q Profile			_	
Service Name	data1 💌	VLAN ID(3000-3001)	3001		
TPID	33024	Priority Or COS	0	•	

Figure 5-20 The Services Configuration dialog box

- Click OK and return to the dialog box shown in Figure 5-19. Right-click FE1 in the Data Port List and select Copy Port Config. Right-click FE2 and select Paste Port Config to enable the FE2 port.
- After the configuration, click the Modify on Device button to complete the AN5506-10-B1 service configuration. If the Command Succeed of the AN5506-10-B1 data port service appears in the Command Manager window, the AN5506-10-B1 port service configuration is completed. See Figure 5-21.

ata Port Config Voice Config	:		
ata Port List	Port No. 2		
7E1	🔽 Enable/Disable Port		
7E2 7E3			
7E4	Port Auto Negotiation		
7E5	Port Speed 100M 🔽 Duplex Full-Duplex 💌		
766			
 'E7	Flow Control Enable/Disable		
'E8	IGMP UP CVLAN	IGMP UP SVLAN	
'E9		TOWN OF SYLMA	
'E10	CVLAN ID	SVLAN ID	
'E11		SVLAN COS	
E12	CVLAN COS	SYLAN COS	
E13	CVLAN TPID 33024	SVLAN TPID 33024	
E14			
E15		,	
E16 E17	Service		
E18	TLS Service Classificati Service typ		
E19	No TL O Items unicast	Transparen 3024 200	
E20		Delete	
E21			
E22		H 11 G	
E23		Modify	
E24	•	Þ	
	Boardwidth Set		
	Service Upstream Minimum	Guaranteed 640	
	- · · · · ·	111 1 400000	
	Service Upstream Maxi	mum Allowed 100000	
	Service Downstream Bandwi	dth(kbit/s) 100000	
]		

Figure 5-21 The port service configuration completed

5.1.6 Configuring Data Services in a Batch Manner (for the AN5506-10-B1)

5.1.6.1 Planning Data

Table 5-7The planned data of data service configuration at the OLT side in the transparenttransmission mode (in a batch manner)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	2
	ONU type	The type of the ONU	AN5506-10-B1
	Service Name	Configure according to the network planning of the operator.	data1
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local VLAN configuration	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Тад
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Item		Description	Example			
	Profile Name	The name of the bandwidth allocation profile	а			
	Service Type	Select integrated service.	Integrated Service			
		The fixed bandwidth of an ONU's uplink service.				
	Fixed Bandwidth	Even if the service does not use the bandwidth	40			
	(Kbyte/s)	resource, other services cannot occupy the	16			
		resource. The default value is 16Kbyte/s.				
Configuring		The minimum bandwidth for provisioning an ONU's				
the	Assured	uplink service. If the bandwidth resource is not used				
une bandwidth	Bandwidth	by this service, then the resource may be released	0			
Danuwiuun	(Kbyte/s)	for other services to use. The default value is				
		0Kbyte/s.				
		The maximum bandwidth of an ONU's uplink				
	Maximum	service. The sum of the fixed bandwidth value and				
	Bandwidth	the assured bandwidth value should not be larger	1280			
	(Kbyte/s)	than the maximum bandwidth value. The default				
		value is 64Kbyte/s.				
	Slot No.	The number of the actually used slot	15			
Binding	PON No.	The number of the actually used PON	1			
bandwidth	ONU S.N.	The ONU authorization number allocated according				
allocation	010 3.11.	to the network planning of the operator.	2			
profile	GPON Bandwidth	The name of the configured bandwidth allocation	а			
	Profile	profile	a			
	Profile Name	Configure according to the network planning of the	b			
		operator.	5			
Configuring	Service Type	Select unicast.	Unicast			
the CVLAN	CVLAN Mode	Configure the CVLAN mode of the service as Tag	Transparent			
profile		or Transparent.	nansparent			
	QinQ State	Configure the QinQ service and enable the	Enable			
		function.				
	Profile Name	The SVLAN profile name	с			
	SVLAN Name	Corresponding to the configured local end service	data1			
Configuring		VLAN				
the SVLAN	STPID	The default value is 33024.	33024			
profile	SVLAN ID	The configured SVLAN ID. The value range is 1 to 4085.	3001			
	scos	The SVLAN priority. The value range is 0 to 7 with	0			
	3003	the 7 as the highest priority and 0 as the lowest.	0			

Table 5-8The planned data of data service configuration at the AN5506-10-B1 ONU side inthe transparent transmission mode (in a batch manner)

Item		Description	Example				
Configuring	Port No.	The number of the actually used ONU port	1	2			
Configuring the ONU data port	Port Enable / Disable	Configure the port enable function.	Enable				
uala port	MAC Limit	Configured as no MAC limit.	0				
	CTPID	The default value is 33024.	33024				
	CVLAN ID	The CVLAN ID, ranging from 1 to 4085.	rom 1 to 4085. 200				
Configuring the ONU	CCOS	The user CVLAN priority configuration, ranging from 0 to 7 with 7 as the highest priority and 0 as the lowest.	0				
data service	Service ID	Corresponding to the configured local end service VLAN	data1				
	Service Profile	Select the configured service model profile.	b				
	SVLAN Profile	Select the configured SVLAN profile.	С				

5.1.6.2 Configuration Flow Chart

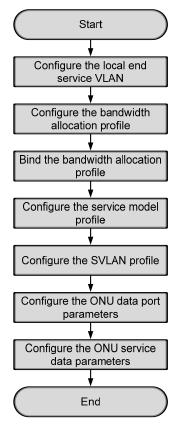


Figure 5-22 The batch configuration flow chart of data service provisioning in the transparent transmission mode (for the AN5506-10-B1)

5.1.6.3 Configuring the Local End Service VLAN

See Section 5.1.3.3 for configuration procedures.

5.1.6.4 Configuring the Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- 2. Click the left pane and select $Edit \rightarrow Append$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Double-click the **Profile Name** blank field and enter **a**.

- Click the right pane and select Edit → Append on the menu bar or click the
 button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button.
- 4. Configure according to the planned data in Table 5-8. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is configured. See Figure 5-23.

	: Operation Device Op			
rofile Name		fixed Bandwidth(Kbyte/s)	assureed Bandwidth(Kbyte/s)	Maximum Bandwidth(Kbyte/:
	Integrated Service	16	0	1280
Bandwidth	Config Profile			_
	Config Profile		·	
1:07:04 > 5	Send Command:Read F	rom Device[Bandwidth Conf	ig Profile]	
1:07:04 > 5 1:07:04 > 1)	he Command Data!	ig Profile]	

Figure 5-23 The Bandwidth Config Profile window - completed

5.1.6.5 Binding the Bandwidth Allocation Profile

Configuration purpose

Bind the configured bandwidth allocation profile to the ONU.

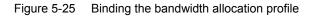
- 1. Right-click the system in the **Object Tree**, select **Config and Command** \rightarrow **Batch Config** \rightarrow **ONU Configuration** from the shortcut menu to access the ONU configuration window.
- Click Set Object as Condition in the Config Object pane and all configuration objects will appear in the lower pane (you can drill down and select a specific port as the object). Select the AN5506-10-B1[2] under the PON 1 in Slot 15 and click the OK button.

Config Object	Ψ×
Set Object As Condition	
OLT System 1 GC4B[5] GC4B[5] GC8B[15] PON1 PON1-AN5506-04-B[1] PON1-AN5506-10-B1[2] PON2 PON2 PON2 PON3 PON4 PON5 PON5 PON7 PON8	
OK Cancel	

Figure 5-24 Set configuration objects

- 3. The specific configuration information of the object will appear in the right pane. Click the **GPON Bandwidth Profile** list box and select the configured bandwidth profile **a**.
- 4. When the configuration is completed, click the Button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is bound. See Figure 5-25.

Edit Access Operation	Device	Operation	0, 🤣	28	ş 🗹 🚚		
Config Object	Ψ×	Slot No.	PON NO.	ONU NO.	Bandwidth Profile	GPON Bandwidth	Profile
Set Object As Condition		15	1	2		8	
		ONU Co	nfig	_			_
		09:10:48	> Send		Read From Device[Successfully!	ONU Config]	



5.1.6.6 Configuring the Service Model Profile

Configuration purpose

Select the data service type, CVLAN mode and determine whether to enable the translation function and the QinQ function.

- Right-click the system in the Object Tree pane, select Config → Profile Definition→ Service Model Profile from the shortcut menu to access the service model profile configuration window.
- Select Edit → Append on the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a service model profile.
- 3. Configure according to the planned data in Table 5-8. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the service model profile is configured. See Figure 5-26.

Edit Access Operation Device Operation 😵 🖓 🗟 🎄 ≟ 些 层 🛒 4								
rofile Name	Service Type	CVLAN Mode	Translation State	QinQ State				
	unicast	transparent		✓				
Service Mode	el Profile							
		ead From Dev	rice[Service Model]	Profile]				
9:12:42 > Se	nd Command:R			Profile]				
	nd Command:R gin To Valid	ate The Comm		Profile]				



5.1.6.7 Configuring the SVLAN Profile

Configuration purpose

Configure the SVLAN value to apply in the ONU data service parameter configuration.

- 1. Right-click the system in the **Object Tree** pane and select **Config** \rightarrow **Profile Definition** \rightarrow **SVLAN Profile** from the shortcut menu to access the SVLAN profile configuration window.
- Select Edit → Append on the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to create an SVLAN profile.
- 3. Configure according to the planned data in Table 5-8. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the SVLAN profile is configured. See Figure 5-27.

🔥 SVLAH	Profil	le (Domain 1:S	ystem 1) [Cu	urrent Data S	ource: Device]					
Edit #	Access O	peration Devi	ce Operation	😵 🖗 🖳 🗧	» 2 2 6 5 1	4				
Profile	Name	SVLAN Name	STPID	SVID	SCOS					
e		datal	33024	3001	0					
SVLAY	¶ Profil	e								
09:14:0 09:14:0	D9:14:09 > Send Command:Read From Device[SVLAN Profile] D9:14:09 > Begin To Validate The Command Data! D9:14:09 > Validate Data Finished D9:14:09 > Send Command Successfully!									
00.14.0	5 / 561		cossidily:							



5.1.6.8 Configuring the ONU Data Port Parameters

Configuration purpose

Enable the ONU ports and limit the number of MAC addresses in a batch manner.

- Right-click the system in the Object Tree pane and select Config → Batch Config → ONU Data Port Config from the shortcut menu to access the ONU data port configuration window.
- Click Set Object as Condition in the Config Object pane and all configuration objects (you can drill down and select a specific port as the object) will appear in the lower part. Select FE1 and FE2 of the AN5506-10-B1[2] listed under the PON 1 in Slot 15 and click OK.

Config Object 🛛 🖗	×
Set Object As Condition	
 □ OLT System 1 □ GC4B[5] □ GC8B[15] □ PON1 □ PON1-AN5506-04-B[1] □ PON1-AN5506-10-B1[2] □ PON1-AN5506-10-B1[2] □ PE1 □ PE1 □ PE5 □ FE5 □ FE6 □ PE7 	
OK Cancel	

Figure 5-28 Set configuration objects

3. The specific configuration information of the objects will appear in the right pane. Configure according to the planned data in Table 5-8. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU data port parameters are configured. See Figure 5-29.

👫 ONU Data Port Con:	figure (Do	nain 1:Sy	stem 1)	[Curr	ent Data	Source: 1]evice]									_ 🗆 ×
Edit Access Operatio	n Device	Operation	D , 4	9 📥 E	÷ 🗹 🐳											
Config Object	Ψ×	Slot No.	PON NO.	ONU NO.	Port NO.	Enable/Di	sable MAC	Limit	ONU Pe	ort Spe	ed Limi	t Profile	ONU	Data Port	t Attribut	e Profile
Set Object As Conditio	n	15 15	1	2	1	✓ ✓	0									
		15	1	2	2	•	U									
⊕ OLT System 1																
		•														
		ע עדעס	ata Port	Configu	re											
		09:20:08	> Send	Comman	nd:Read 1	From Devic	e [ONU D:	ata Po	ort Co	nfigu	:e]					
		09:20:08							_							
		09:20:08				NU Data Po	ort Conf:	igurej	Execu	ting						-
		100.20.00													Ln:2,Col:	1

Figure 5-29 The ONU Data Port Configure window

5.1.6.9 Configuring the ONU Data Service Parameters

Configuration purpose

Configure the CVLAN and SVLAN for the data service flow uplinked to the ONU port in a batch manner.

- Right-click the system in the Object Tree pane and select Config → Batch Config → ONU Data Service Configure from the shortcut menu to access the ONU data service configuration window.
- Click the button on the menu bar and the Add Item Number dialog box appears. Select configuration objects (you can drill down and select a specific port as the object) in the left pane. Select FE1 and FE2 of the ONU and click OK to return to the ONU Data Service Configure window.

Add Item number Slot No. PON No. ONU No. Port No. Item number Image: C4B[5] 15 1 2 1 1 Image: C4B[5] 15 1 2 1 1 Image: C4B[5] 15 1 2 1 1	×
• •	r
⊡ 🔽 GC8B[15] 15 1 2 2 1	
	_
⊡	
PON1-AN5506-10-	
FE3	
FE14	
FE15	
BatchModify OK CANC	-
BatchModify OK CANO	

Figure 5-30 Set the configuration objects

3. The specific configuration information of the objects will appear in the right pane. Configure according to the planned data in Table 5-8. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU data service parameters are configured. See Figure 5-31.

Edit Access Operation					ent Data 🗄 🛃 🗹 🕯	Source: Devi 🛃	ce]		
onfig Object	Ψ×	Slot No. 15	PON NO.	ONU NO.	Port NO.	Service ID	CTPID 33024	CVLAN ID	CCOS 0
Set Object As Condition		15	1	2	2	1	33024	200	0
0LT System 1				e Configu Command:	_	Device [ONU	Data Serv	vice Configure]	
		09:24:59					Data Serv	/ice Configure]	



5.1.7 End of Configuration

After being added with stacked VLAN tags, the PC1 to PC4 can access the Internet via home gateways normally.

5.2 Example for Data Service Configuration – in the Tag Mode

5.2.1 Configuration Rules

The AN5116-06B supports the QinQ data service, which means it supports VLAN stacking as well. In this example the GC8B card is used as the service interface card and the AN5506-04-B and the AN5506-10-B1 are used as ONUs to introduce the data service configuration in the Tag mode.

- The QinQ data service in the Tag mode can be configured via the SVLAN configuration on the ONU or the OLT. In this example the service is configured on the ONU.
- The VLAN ID of the ONU ranges from 1 to 4085.
 - ▶ To add stacked VLAN tags to the data service, the SVLAN ID must be within the preset range of the local VLAN.
 - To add a single VLAN tag to the data service, the CVLAN ID must be within the preset range of the local VLAN.
- The Tag mode: The Ethernet data uploaded from the subscriber side will be added with the CVLAN ID and SVLAN ID when passing the ONU. The data service will not be processed using the AN5116-06B, but transparently transmitted to the upper layer network side equipment.
- The ONU data service configuration can be implemented in the service profile or the ONU service configuration. If the data service configurations of the ONUs are the same, the batch configurations can be implemented using the service profile.
- The sum of the fixed bandwidth and asssured bandwidth of the service in the bandwidth allocation should not exceed the configuration parameter of the maximum bandwidth.
- An FE port of the AN5506-04-B can support up to four data services, and an FE port of the AN5506-10-B1 can support up to 16 data services.

5.2.2 Service Network

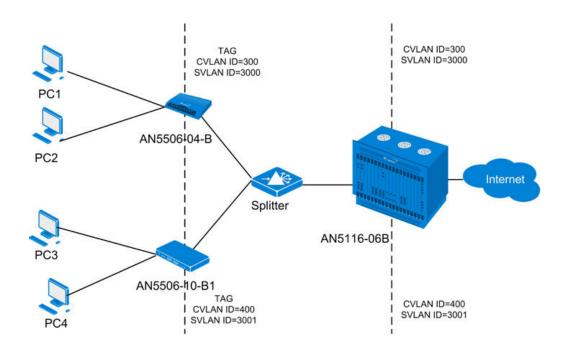


Figure 5-32 The data service network diagram (in the Tag mode)

As Figure 5-32 shows, each PC is connected to an ONU, which adds the CLAN ID and SVLAN ID to the data service uploaded from the PC. When the services are received at the OLT, the OLT will transmit the services to the upper layer network via the uplink port directly. For the downlink direction, the reverse process takes place.

The AN5506-04-B and the AN5506-10-B1 are used as ONUs in this example. The AN5116-06B uses the HU1A and the GC8B as the interface cards at the network side and the subscriber side respectively, and the HSWA card is compulsory.

5.2.3 Configuring Data Services Respectively (for the AN5506-04-B)

5.2.3.1 Planning Data

Table 5-9The planned data of data service configuration at the OLT side in the Tag mode(configured respectively)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	1
	ONU type	The type of an ONU	AN5506-04-B
	Service Name	Configure according to the network planning of the operator.	data2
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Tag
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Item		Description	Example		
	Service Type	Select broadband Internet access.	Broadband I access	nternet	
	Fixed Bandwidth (Kbyte/s)	The fixed bandwidth of an ONU's uplink service. Even if the service does not use the bandwidth resource, other services cannot occupy the resource. The default value is 16 Kbyte/s.	16		
Bandwidth configuration	Assured Bandwidth (Kbyte/s)	The minimum bandwidth for provisioning an ONU's uplink service. If the bandwidth resource is not used by this service, then the resource may be released for other services to use. The default value is 0Kbyte/s.	0		
	Maximum Bandwidth (Kbyte/s)	The maximum bandwidth of an ONU's uplink service. The sum of the fixed bandwidth value and the assured bandwidth value should not be larger than the maximum bandwidth value. The default value is 64Kbyte/s.	1280		
	ONU Port Used	The actually used ONU port	1	2	
	Enable / Disable Port	Configure according to the network planning of the operator. Enable is selected by default.	Default		
Basic	Port Auto Negotiation	Configure according to the network planning of the operator. Enable is selected by default.	Default		
information of the ONU	Port Speed	Unconfigurable when the port auto negotiation is enabled. The default speed is 100M.	Default		
port	Duplex	Unconfigurable when the port auto negotiation is enabled. The default value is full-duplex.	Default		
	Flow control Enable / Disable	Configure according to the network planning of the operator. Disable is selected by default.	Default		
ONU port service configuration	TAG Mode	Configured as Tag or Untag according to the network planning of the operator. In the Tag mode the uplink data packets are tagged, while in the Untag mode the uplink data packets are untagged.	Untag		
	Service Type	Configured as Unicast or Multicast.	Unicast		

Table 5-10The planned data of data service configuration at the AN5506-04-B ONU side inthe Tag mode (configured respectively)

ltem		Description	Example	
		When the CVLAN mode is set as Transparent, the		
V	LAN Mode	VLAN mode should be consistent with the COS,		
V		ranging from 0 to 7. When the Tag mode is set as		
		Untag, this item is unconfigurable.		
		When the CVLAN mode is set as Transparent, the		
V	LAN ID	VLAN mode should be consistent with the CVLAN		
V		ID, ranging from 1 to 4085. When the Tag mode is		
		set as Untag , this item is unconfigurable.		
		When the Tag mode is set as Untag , the CVLAN		
	VLAN Mode	mode can be set as Tag or Transparent. When the	Тад	
	VLAN WOUL	Tag mode is set as Tag, the CVLAN mode can set as	lay	
		Translation or Transparent.		
	VLAN ID	Configure according to the network planning of the	300	
	VLAN ID	operator. The range is 1 to 4085.	300	
С	COS	The CVLAN priority, ranging from 1 to 7.	0	
D)s Encrypt	Disable is selected by default.	Disable	
S	state		Disable	
Q	inQ Enable	Enable / disable the QinQ configuration	Enable	
e	SVLAN ID	Unconfigurable when the QinQ enable status is	3000	
3		disabled. The range is 1 to 4085.	5000	
		Corresponds to the configured local end service		
S	Service Name	VLAN. Unconfigurable when the QinQ enable status	data2	
		is disabled.		
		The SVLAN priority, ranging from 1 to 7.		
С	os	Unconfigurable when the QinQ enable status is	0	
		disabled.		

5.2.3.2 Configuration Flow Chart

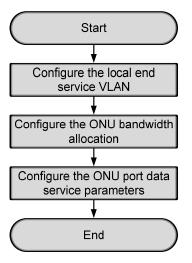


Figure 5-33 Flow chart for provisioning data services respectively in the Tag mode (for the AN5506-04-B)

5.2.3.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the uplink port VLAN of the AN5116-06B for the designated service flow and limit the VLAN range of the service.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu. In the window click the Local End Service VLAN tab and the local VLAN configuration window appears.
- Click Edit → Append on the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to create a local VLAN.

3. Configure according to the planned data in Table 5-9. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local VLAN is configured. See Figure 5-34.

Edit Access	Operation Device Op	eration 🛛 😵 🤇	👂 🕒 😓 😓 🔁	6 🐣 🕹 E	\$ 🗹 #	
ervice Name	Starting VLAN ID	VLAN ID End	Interface NO.	TAG/UNTAG	Service Type	Slot Bind Mode
ata2	3000	3001	19:SFP2	TAG	Data	Auto Bind
Local End	Service VLAN Local En	d Service Inner	VLAN			
	Service VLAN Local En end Command: Read Fi			e VLAN]		
:27:29 > S	k	com Device[Loo	cal End Servio	e VLAN]		
9:27:29 > S 9:27:29 > B	end Command:Read Fi	com Device[Loc ne Command Dat	cal End Servio	e VLAN]		

Figure 5-34 The Local End Service VLAN window - completed

5.2.3.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU and select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.
- 2. Click the right pane and select $Edit \rightarrow Append$ from the menu bar, or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click **OK**.

3. Configure according to the planned data in Table 5-10. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-35.

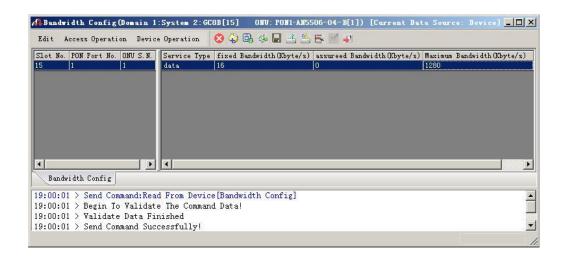


Figure 5-35 The Bandwidth Config window - completed

5.2.3.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-36.

a Port List	Port No. 1 Finable/Disable Port
	✓ Port Auto Negotiation Port Speed 100M ✓ Flow Control Enable/Disable ○ Port Rate Limit Upstream Port Rate Limit(Kbit/s)
	Downstream Fort Rate Limit (Kbit/s) 0 Index Service type Fag mode COS VLAN ID Ds Encrypt state Cvlan modes Add Delete Modify
	Read DB Write DB Read Device Modify On Device Delete On Device Close

Figure 5-36 The ONU port service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-36. Click **Add** to create a data service and configure according to the planned data in Table 5-10.

Services Config	uration			×
Index	1	Service type	unicast 💌	ОК
TAG Mode	Untag 💌	CVLAN Mode	Tag 💌	Cancel
COS	7	CVLAN ID	300	
VLAN ID	1	COS	0 💌	
Ds Encrypt state				
🔽 QinQ State				1
SVLAN ID	3000			
Service Name	data2 💌	COS	0	



- 3. Click **OK** and return to the dialog box shown in Figure 5-36. Right-click **FE1** in the **Data Port List** and select **Copy Port Config**. Right-click **FE2** and select **Paste Port Config**.
- 4. After the configuration, click the **Modify on Device** button to complete the AN5506-04-B service configuration. If the **Command Succeed** of the AN5506-04-B data port service appears in the **Command Manager** window, the AN5506-04-B port service configuration is completed. See Figure 5-38.

a Port List	Port No. 2
1 27	🔽 Enable/Disable Fort
3	V Port Auto Negotiation
	Port Speed 100M T Duplex Full-Duplex
	🗖 Flow Control Enable/Disable
	Port Rate Limit
	Upstream Port Rate Limit(Kbit/s) Downstream Port Rate Limit(Kbit/s)
	Index Service typ Tag mode COS VLAN ID Ds Encrypt state Cvlan mode Add 1 unicast Untag 1 Enable tag
	Delete
	Modify

Figure 5-38 The port service configuration completed

5.2.4 Configuring Data Services in a Batch Manner (for the AN5506-04-B)

5.2.4.1 Planning Data

Table 5-11The planned data of data service configuration at the OLT side in the Tag mode (in
a batch manner)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	1	
	ONU type	The type of the ONU	AN5506-04-B
	Service Name	Configure according to the network planning of the operator.	data2
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Tag
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Item		Description	Example
	Profile Name	The name of the bandwidth allocation profile	а
Bandwidth configuration	Service Type	Select broadband Internet access.	Broadband Internet access
		The fixed bandwidth of an ONU's uplink service.	
	Fixed Bandwidth	Even if the service does not use the bandwidth	16
	(Kbyte/s)	resource, other services cannot occupy the	10
		resource. The default value is 16Kbyte/s.	
		The minimum bandwidth for provisioning an	
	Assured	ONU's uplink service. If the bandwidth resource is	
	Bandwidth	not used by this service, then the resource may	0
	(Kbyte/s)	be released for other services to use. The default	
		value is 0Kbyte/s.	
		The maximum bandwidth of an ONU's uplink	
	Maximum	service. The sum of the fixed bandwidth value and	
	Bandwidth	the assured bandwidth value should not be larger	1280
	(Kbyte/s)	than the maximum bandwidth value. The default	
		value is 64Kbyte/s.	
	Profile Name	Configure according to the network planning of	b
		the operator.	b
	Enable / Disable Port	Enable is selected by default.	Enable
	Port Auto Negotiation	Enable is selected by default.	Enable
	Port Speed	The default speed is 10M. Unconfigurable when	
		the auto negotiation is enabled.	
Data service	Duplex	Full-duplex is selected by default. Unconfigurable	
profile	Duplex	when the auto negotiation is enabled.	
	Flow control Enable / Disable	Disable is selected by default.	Disable
	Port Limit Enable / Disable	Disable is selected by default.	Disable
	Port Uplink Limit	The default value is 0. Unconfigurable when the port limit is disabled.	_
	Port Downlink Limit	The default value is 0. Unconfigurable when the port limit is disabled.	_
	•		•

Table 5-12The planned data of data service configuration at the AN5506-04-B ONU side inthe Tag mode (in a batch manner)

Item			Description	Example
	TAG Mode		Configured as Tag or Untag according to the network planning of the operator. In the Tag mode the uplink data packets are tagged, while in the Untag mode the uplink data packets are untagged.	Untag
	COS Mode		When the CVLAN mode is set as Transparent , the VLAN mode should be consistent with the COS, ranging from 0 to 7. When the Tag mode is set as Untag , this item is unconfigurable.	_
	VLAN ID Ds Encrypt State CVLAN Mode		When the CVLAN mode is set as Transparent , the VLAN mode should be consistent with the CVLAN ID, ranging from 1 to 4085. When the Tag mode is set as Untag , this item is unconfigurable.	
			Disable is selected by default.	Disable
			When the Tag mode is set as Untag , the CLVAN mode can be set as Tag or Transparent . When the Tag mode is set as Tag , the CVLAN mode can be set as Translate or Transparent .	Тад
	CVLAN ID		Configure according to the network planning of the operator. The value range is 1 to 4085.	300
	COS		The priority range is 0 to 7.	0
	QinQ Enab	le State	Enable / disable the QinQ configuration. Disable is selected by default.	Enable
	VLAN Nam	e	The service name configured in the corresponding local VLAN. Unconfigurable when the QinQ enable state is disabled.	data2
	SVLAN ID		Unconfigurable when the QinQ enable state is disabled. The range is 1 to 4085.	3000
	cos		Unconfigurable when the QinQ enable state is disabled.	0
	Profile Nam	ie	Configure according to the network planning of the operator.	с
	ONU Type		The actually used ONU type	AN5506-04-B
Service	ONU	Profile Type	The bandwidth allocation profile should be selected.	Bandwidth allocation profile
profile	Subprofile Config	Profile Name	The profile name configured in the corresponding bandwidth allocation profile	а
	Port Type	I	The type of the actually used port	FE port
	Port No.		The number of the actually used port	1 2

Item			Description	Example
	ONU Port Profile	Profile Type	The data service profile should be selected.	Data service profile
	Config	Profile Name	The profile name configured in the corresponding data service profile	b
	Profile ID		The profile name configured in the corresponding service profile	С
Service	Action		Bind the ONU to the service profile.	Attach
profile	Slot No.		The number of the actually used slot	15
binding	PON No.		The number of the actually used PON	1
	ONU S.N.		The ONU authorization number assigned according to the network planning of the operator	1

5.2.4.2 Configuration Flow Chart

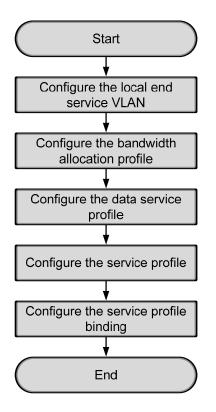


Figure 5-39 The batch configuration flow chart of data service provisioning in the Tag mode (for the AN5506-04-B)

5.2.4.3 Configuring the Local End Service VLAN

See Section 5.2.3.3 for configuration procedures.

5.2.4.4 Configuring the Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- 2. Click the left pane and select $Edit \rightarrow Append$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Double-click the **Profile Name** blank field and enter **a**.

- Click the right pane and select Edit → Append on the menu bar or click the
 button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button.
- 4. Configure according to the planned data in Table 5-12. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is configured. See Figure 5-40.

🗥 Bandwidth Con	fig Profile(I)omain 1:System 1:OLT	System 1:HSWA[9]) [Curre	nt Data Source:	Device]
Edit Access Ope	ration Device	Operation 🛛 😵 🖨	0, 🎄 🖬 🖻 🛎 💩 🗛 🗹	41	
Profile Name	Service Type	fixed Bandwidth(Kbyte/s)	assureed Bandwidth(Kbyte/s)	Maximum Bandwid	th(Kbyte/s)
a	DATA	16	0	1280	
Bandwidth Conf	ig Profile				
	n To Validate date Data Fin		h Config Profile]		A
1		-			

Figure 5-40 The Bandwidth Config Profile window - completed

5.2.4.5 Configuring the Data Service Profile

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Data Service Profile from the shortcut menu. Click the Data Service Profile tab and the Data Service Profile window appears.
- Click the left pane and select Edit → Append on the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a data service profile b. Configure the basic parameters of the port according to the planned data in Table 5-12.
- Click the right pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Configure the VLAN tags of the service flow according to the planned data in Table 5-12.

4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the data service profile is configured. See Figure 5-41.

🚯 Data	Service Profil	Le (Domain 1:Syste	2:OLT Sys	tem 1:HSWA[9]) [Curre	nt Data Sou	rce: Device]		_ 🗆 ×
Edit	Access Operation	Device Operation	🛛 🗘 🚔	0, 🗇 🖬 👌	1 🕹 🕹 E	5 🗹 🐳 👘				
Profile	Name Enable/Disc Enable	able AutoNegotiation Enable	n Speed(bit/s) 10M) Duplex Mode Full-Deplux			Tag Mode COS Untag	S VLAN ID	Ds Encrypt State Disable	CVLAN Mode TAG
	LHable	Fusite	100	Juan pebrox	DISADIS	-	oncag		DISADIS	IRO
4					•	•				•
Date	a Service Profile	IGMP Service Profi	le Voice Ser	rvice Profile	Service Pr	ofile Servio	ce Profile Bi	nding		
19:14:	14 > Send Comma	and:Read From Dev	ice[Data Se	rvice Profil	e]					
		Validate The Comm	and Data!							
	14 > Validate D									
19:14:	14 > Send Comma	and Successfully!								-

Figure 5-41 The Data Service Profile window - completed

5.2.4.6 Creating a Service Profile

Configuration purpose

Configure the bandwidth allocation profile and data service profile for the ONU binding.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Service Profile from the shortcut menu. Click the Service Profile tab and the Service Profile window appears.
- Click the left pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a service profile.
- Double-click the Profile Name blank field and enter c. Click the ONU Type list box and select AN5506-04-B from the drop-down list.

4. Click the **ONU Subprofile Config** field to access the **ONU Subprofile Config** dialog box. Click the **Add** button to add a profile configuration. Click the **Profile Type** list box and select **Bandwidth Config Profile**. Click the **Profile Name** list box and select **a**.

WU Subprofile Config		2
Profile Type	Profile Name	
Bandwidth Config Profile	a	
		Add (<u>A</u>)
		Delete (D)
		Delete (<u>D</u>)
		OK
		Cancel

Figure 5-42 The ONU Subprofile Config dialog box

5. Click **OK** and return to the **Service Profile** window.

🕂 Service Profile (Domain 1:System 1:OLT Sy	System 1:HSTA[9]) [Current Data Source: Device] 💶 🔲
Edit Access Operation Device Operation 🛞	8 🗘 🚔 📴 🚸 🖬 🗈 🛎 💩 🗛 🖌 🗸
Profile Name ONU Type ONU Subprofile Con c AN5508-04-B	Config Fort Type Fort No. ONU Port Profile Config
Data Service Profile IGMP Service Profile V	Voice Service Profile Service Profile Service Profile Bindi
09:48:29 > Send Command:Read From Device[D 09:48:29 > Begin To Validate The Command D 09:48:29 > Validate Data Finished 09:48:29 > Send Command Successfully!	
Write To Database	



- 6. Click the right pane and select $Edit \rightarrow Append$ in the menu bar. Enter 2 in the **Please Input the Rows for Add** dialog box that appears and click **OK**.
- 7. Click the **Port Type** list box and select **FE**. Double-click the **Port No.** blank field and enter **1**. Repeat the procedure to enter **2**.
- For Port No.1 click the ONU Port Profile Config field to access the ONU Port Profile Config dialog box. Click Add to add a profile configuration. Click the Profile Type list box and select Data Service Profile. Click the Profile Name list box and select b. Repeat the procedure for Port No.2.

ONV Port Profile	Config	×
Profile Type Data Service Profile	Profile Name b	
		Add (<u>A</u>)
		Delete (<u>D</u>)
		ОК
		Cancel

Figure 5-44 The ONU Port Profile Config dialog box

- 9. Click **OK** and return to the **Service Profile** window.
- 10. When the configuration is completed, click the B button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the service profile is configured. See Figure 5-45.

🕼 Service Pro	ofile(Domain 1	:System 2:0LT	System 1	:HSTA[9]) [C	urrent Data	Source: De	evice]	
Edit Access	Operation Devi	ce Operation	😣 🏟 🛢	0, 🌭 🖬 🗄	ù 📥 📥 📑	🖌 🐺 👘		
Profile Name	ONV Type	ONU Subprofile	Config	Port Type		DNU Port Pro	file Cor	fig
c	AN5506-04-B			FE	2			
				TL.	2			
•				•				
Data Servic	e Profile IGMP	Service Profile	e Voice Se	rvice Profile	Service Profi	le Service	Profile	Bindin
9:18:49 > Se	end Command:Re	ad From Devic	e[Data Se	rvice Profil	e]			
9:18:49 > Be	egin To Valida	te The Comman	ud Data!		-			ļ
9:18:49 > Va	alidate Data F	inished						
9:18:49 > Se								
	end Command Su	ccessfully!						

Figure 5-45 The Service Profile window - completed

5.2.4.7 Binding the ONU to the Service Profile

Configuration purpose

Apply the bandwidth allocation and data service configuration of the service profile to the ONU by binding the ONU to the service profile.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Service Profile Config from the shortcut menu. Click the Service Profile Binding tab and the Service Profile Binding window appears.
- 2. Click the left pane and select $Edit \rightarrow Append$ in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK.
- 3. Click the **Profile ID** list box and select **c**. Click the **Action** list box and select **Attach**.
- Click the right pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK.
- 5. Double-click the **ONU S.N.** field to bring up the **Select Objects** dialog box. Select **AN5506-04-B** in the dialog box.

Board	onv	Auth No.	Is Select
GC8B[15]		1	
			~

Figure 5-46 The Select Objects dialog box

6. Click the OK button and return to the Service Profile Binding window. Click

the \blacksquare button to execute the command. The If the service profile binding

and the refresh operation is performed, the original ONU service configuration will be overwritten. Are you sure to execute this command? dialgue box will appear. Click **OK** and then once again in the **Are you sure to write all data to the device?** dialog box.

 Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the AN5506-04-B has been bound to the service profile c. See Figure 5-47.

🕂 Service	e Profile Bin	ding(Domain 1:Syste	■ 2:0LT S ₃	ystem 1:HS	STA[9])	[Current	Data Source:	Device]	_ 🗆 ×
Edit Ac	cess Operation	Device Operation	8 🖗 🖏	🦇 🗖 😫	≗ 등	4 🚛			
Profile II	Action		Slot No.	PON NO.	ONU S.N.				
e	Attach		15	1	1				
Data S	ervice Profile	IGMP Service Profile	Voice Serv	ice Profil	e Servic	e Profile	Service Profil	e Binding	
19:26:31	> Send Comma	nd:Read From Device	[Data Serv	vice Profi	ile]				
19:26:31	> Begin To V:	alidate The Command	Data!						
19:26:31	> Validate D:	ata Finished							
19:26:31	> Send Comma	nd Successfully!							-

Figure 5-47 The Service Profile Binding window

5.2.5 Configuring Data Services Respectively (for the AN5506-10-B1)

5.2.5.1 Planning Data

Table 5-13	The planned data of data service configuration at the OLT side in the Tag mode
(configured r	respectively)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
ONU	PON No.	The number of the actually used PON port	1
information	ONU No.	Configure according to the network planning of the	2
internation		operator.	2
	ONU type	The type of the ONU	AN5506-10-B1
	Service Name	Configure according to the network planning of the	data2
		operator.	Udidz
	VLAN ID Begin	The begin VLAN ID number of the uplink port	3000
Local end		service.	3000
service		The end VLAN ID number of the uplink port service.	
VLAN	VLAN ID End	The begin VLAN ID should not be larger than the	3001
		end VLAN ID.	
	Uplink No. /	The number of the actually used uplink port.	19:SFP2
	TRUNK No.	The number of the actually used uplink port.	13.011 2

Item		Description	Example
		The Tag processing mode of the uplink service	
		VLAN can be set as Tag or Untag. Under UNTAG	
		mode, the TAGs of the uplink packets will be	
		stripped automatically and the packets will be	
		uplinked in the form of UNTAG when they pass the	
		port, whereas the downlink UNTAG packets will be	
	TAG / UNTAG	added with designated TAGs and downlinked in the	Тад
		form of TAG. Under TAG mode, the uplink data	
		packets will not be processed but remain uplinked in	
		the original form. For downlink packets, however,	
		only packets with designated TAGs are received and	
		the packets will not be processed but remain	
		downlinked in the original form.	
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-14The planned data of data service configuration at the AN5506-10-B1 ONU side inthe Tag mode (configured respectively)

Item		Description	Example	
	Service Type	Select integrate Service.	Integrated Se	ervice
Fixed Bandwidth (Kbyte/s) Assured Bandwidth (Kbyte/s)		The fixed bandwidth of an ONU's uplink service. Even if the service does not use the bandwidth resource, other services cannot occupy the resource. The default value is 16Kbyte/s.	16	
		The minimum bandwidth for provisioning an ONU's uplink service. If the bandwidth resource is not used by this service, then the resource may be released for other services to use. The default value is 0Kbyte/s.	0	
	Maximum Bandwidth (Kbyte/s)	The maximum bandwidth of an ONU's uplink service. The sum of the fixed bandwidth value and the assured bandwidth value should not be larger than the maximum bandwidth value. The default value is 64Kbyte/s.	1280	
Basic	ONU Port Used	The actually used ONU port	1	2
information of the ONU	Enable / Disable Port	Configure according to the network planning of the operator. Enable is selected by default.	Default	
port	Port Auto Negotiation	Configure according to the network planning of the operator. Enable is selected by default.	Default	

Item		Description	Example
	Port Speed	Unconfigurable when the port auto negotiation is enabled. The default speed is 100M.	Default
	Duplex	Unconfigurable when the port auto negotiation is enabled. The default value is full-duplex.	Default
	Flow control Enable / Disable	Configure according to the network planning of the operator. Disable is selected by default.	Default
	TLS	Configure according to the network planning of the operator. Select TLS or No TLS.	No TLS
	Service Type	Data service. Select Unicast.	Unicast
	VLAN Mode	Configure according to the network planning of the operator. Select Tag or Transparent.	Тад
	CVLAN TPID	The default value is 33024.	33024
ONU port	CVLAN ID	Configure according to the network planning of the operator. The value range is 1 to 4085.	400
service	Priority or COS	The CVLAN priority. The value range is 1 to 7.	0
config	QinQ State	Enable / disable the QinQ configuration.	Enable
	Service Name	Corresponding to the configured local end service VLAN.	data2
	VLAN ID	Configure the SVLAN ID according to the network planning of the operator within the range of 1 to 4085.	3001
	SVLAN TPID	The default value is 33024.	33024
	Priority or COS	The SVLAN priority. The value range is 0 to 7.	0

5.2.5.2 Configuration Flow Chart

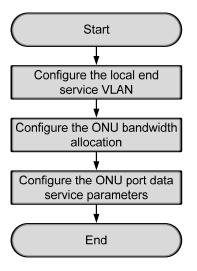


Figure 5-48 Flow chart for provisioning data services respectively in the Tag mode (for the AN5506-10-B1)

5.2.5.3 Configuring the Local End Service VLAN

See Section 5.2.3.3 for configuration procedures.

5.2.5.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU and select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.

- Click the right pane and select Edit → Append on the menu bar or click the
 button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button.
- 3. Configure according to the planned data in Table 5-14. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-49.

🗥 Bandwidth Config (Domain 1:	System 1:GC8B[15]	ONU: PON1-AN5506-10-	B1[2] [Current Data Source	: Device]
Edit Access Operation Device	e Operation 🛛 🙆 🤪	0, 🚸 🖬 🗄 📇 😽 🗹	¥1	
Slot No. FON Fort No. ONU S.N. 15 1 2	Service Type Integrate Service	fixed Bandwidth(Kbyte/s) 16	assureed Bandwidth(Kbyte/s) O	Maximum Bandwidth(Kbyte/s) 1280
۲	<			
Bandwidth Config				
10:57:19 > Send Command:Read 10:57:19 > Begin To Validate		Same and second and second second second		-
10:57:19 > Validate Data Fir		;		
10:57:19 > Send Command Succ	cessfully!			-

Figure 5-49 The Bandwidth Config window - completed

5.2.5.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-50.

lata Port Config Voice Data Port List	Port No. 1
FE1 FE2	Enable/Disable Fort
FE3	
FE4	V Port Auto Negotiation
FES	Port Speed 100M 🔽 Duplex Full-Duplex 💌
FE6	
FE7	Flow Control Enable/Disable
FE8	
FE9	IGMP UP CVLAN IGMP UP SVLAN
FE10	CVLAN ID SVLAN ID
FE11	
FE12	CVLAN COS 🔹 SVLAN COS 👻
7E13	
'E14	CVLAN TPID 33024 SVLAN TPID 33024
'E15	
'E16	Service
'E17	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID C
E18	
'E19	
'E20	Delete
E21	
E22	Modify
'E23	
E24	
	Boardwidth Set
	Service Upstream Minimum Guaranteed 640
	Service Upstream Maximum Allowed 100000
	Service opstream maximum Arrowed [100000
	Service Downstream Bandwidth(kbit/s) 100000

Figure 5-50 The ONU port service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-50. Click **Add** to create a data service and configure it according to the planned data in Table 5-14.

Services Config	guration			×
TLS	No TLS 💌	Set Servi	ce Classificati	OK
Service type	unicast 💌	VLAN Mode	tag 💌	Cancel
TPID	33024	CVLAN ID	400	
		Priority Or COS	0 💌	
Translation State	3	Translation value		
TPID	33024	Priority Or COS	×	
🔽 QinQ State				
Choose Qin	Q Profile			
Service Name	data2 💌	VLAN ID(3000-3001)	3001	
TPID	33024	Priority Or COS	0 💌	

Figure 5-51 The Services Configuration dialog box

- Click OK and return to the dialog box shown in Figure 5-50. Right-click FE1 in the Data Port List and select Copy Port Config. Right-click FE2 and select Paste Port Config to enable the FE2 port.
- After the configuration, click the Modify on Device button to complete the AN5506-10-B1 service configuration. If the Command Succeed of the AN5506-10-B1 data port service appears in the Command Manager window, the AN5506-10-B1 port service configuration is completed. See Figure 5-52.

ata Port List	Port No. 2
'E1	Enable/Disable Port
'E2	Enable/Disable Fort
'E3	✓ Fort Auto Negotiation
E4	
E5	Port Speed 100M V Duplex Full-Duplex V
EG	Flow Control Enable/Disable
37	Flow Control Enable/Disable
88	IGMP UP CVLAN IGMP UP SVLAN
39	
310	CVLAN ID SVLAN ID
311	
312	CVLAN COS 🔹 SVLAN COS
113	
14	CVLAN TFID 33024 SVLAN TFID 33024
:15	
:16	Service
17	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID C
18	No TL O Items unicast tag 3024 400
19	No IL O Items diffcast tag 3024 400
20	Dele
21	
22	Modi
323	mou
E24	
	Boardwidth Set
	Service Upstream Minimum Guaranteed 640
	Service Upstream Maximum Allowed 100000
	Service Downstream Bandwidth(kbit/s) 100000

Figure 5-52 The ONU port service configuration completed

5.2.6 Configuring Data Services in a Batch Manner (for the AN5506-10-B1)

5.2.6.1 Planning Data

Table 5-15The planned data of data service configuration at the OLT side in the Tag mode (in
a batch manner)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
ONU	PON No.	The number of the actually used PON port	1
information	ONU No.	Configure according to the network planning of the operator.	2
	ONU type	The type of the ONU	AN5506-10-B1
	Service Name	Configure according to the network planning of the operator.	data2
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Tag
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-16The planned data of data service configuration at the AN5506-10-B1 ONU side inthe Tag mode (in a batch manner)

ltem		Description	Example	
	Profile Name	The name of the bandwidth allocation profile	а	
	Service Type	Select integrated service.	Integrated Service	
		The fixed bandwidth of an ONU's uplink service.		
	Fixed Bandwidth	Even if the service does not use the bandwidth	10	
	(Kbyte/s)	resource, other services cannot occupy the	16	
		resource. The default value is 16Kbyte/s.		
Bandwidth		The minimum bandwidth for provisioning an		
Config	Assured	ONU's uplink service. If the bandwidth resource		
Profile	Bandwidth	is not used by this service, then the resource	0	
TIONIC	(Kbyte/s)	may be released for other services to use. The		
		default value is 0Kbyte/s.		
		The maximum bandwidth of an ONU's uplink		
	Maximum	service. The sum of the fixed bandwidth value		
	Bandwidth	and the assured bandwidth value should not be	1280	
	(Kbyte/s)	larger than the maximum bandwidth value. The		
		default value is 64Kbyte/s.		
	Slot No.	The number of the actually used slot	15	
Bandwidth	PON No.	The number of the actually used PON	1	
allocation		The ONU authorization number allocated		
profile	ONU S.N.	according to the network planning of the	2	
binding		operator.		
binding	GPON	The name of the configured bandwidth allocation	а	
	Bandwidth Profile	profile	a	
	Profile Name	Configure according to the network planning of	b	
		the operator.	5	
Service	Service Type	Select unicast.	Unicast	
model VLAN	CVLAN Mode	Configure the CVLAN mode of the service as	Тад	
		Tag or Transparent.	lag	
	QinQ State Configure the QinQ service and enable the		Enable	
		function.		
	Profile Name	The SVLAN profile name	С	
	SVLAN Name	The corresponding configured local end service	data2	
SVLAN		VLAN		
profile	STPID	The default value is 33024.	33024	
	SVLAN ID	The configured SVLAN ID. The value range is 1	3001	
		to 4085.		

Item		Description	Example	
	SCOS	The SVLAN priority. The value range is 0 to 7 with the 7 as the highest priority and 0 as the lowest.	0	
ONU data	Port No.	The actually used ONU port	1	2
port	Port Enable / Disable	Configure the port enable function.	Enable	
configuration	MAC Limit	Configured as no MAC limit.	0	
	CTPID	The default value is 33024.	33024	
	CVLAN ID	The CVLAN ID, ranging from 1 to 4085.	400	
ONU data service	ccos	The user CVLAN priority configuration, ranging from 0 to 7 with the 7 as the highest priority and 0 as the lowest.	0	
configuration	Service ID	The corresponding configured local end service VLAN	data2	
	Service Profile	Select the configured service model profile.	b	
	SVLAN Profile	Select the configured SVLAN profile.	с	

5.2.6.2 Configuration Flow Chart

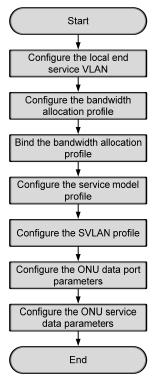


Figure 5-53 The batch configuration flow chart of data service provisioning in the Tag mode (for the AN5506-10-B1)

5.2.6.3 Configuring the Local End Service VLAN

See Section 5.2.3.3 for configuration procedures.

5.2.6.4 Configuring the Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- 2. Click the left pane and select $Edit \rightarrow Append$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Double-click the **Profile Name** blank field and enter **a**.

- Click the right pane and select Edit → Append on the menu bar or click the
 button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button.
- 4. Configure according to the planned data in Table 5-16. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is configured. See Figure 5-54.

	a Integrated Service 16 0 1280 Image: Service Integrated Service Integrated Service 16 1280 Image: Service Service Integrated Service Integrated Service 1280 Image: Service Service Integrated Service Integrated Service Integrated Service Image: Service Service Image: Service Service Image: Service Service Image: Service Service Image: Service Service Service Image: Service Service Image: Service Service Image: Service Service Image: Service Service Service Image: Service Service Image: Service Service Image: Service Service Image: Service Service Service Service Image: Service Service Service Image: Service Service Service Image: Service	Profile Name	Service Type	fixed Bandwidth(Kbyte/s)	assureed Bandwidth (Kbyte/s)	Maximum Bandwidth(Kbyte/
	1:07:04 > Send Command:Read From Device[Bandwidth Config Profile]	in the second				
	1:07:04 > Send Command:Read From Device[Bandwidth Config Profile]					
	:07:04 > Send Command:Read From Device[Bandwidth Config Profile]					
	:07:04 > Send Command:Read From Device[Bandwidth Config Profile]					
	:07:04 > Send Command:Read From Device[Bandwidth Config Profile]					
)	이 것 같은 것 같		•			
		Bandwi dth	Config Profile			
이 같은 것 같은)			
	: 2019 NT 2014 - 2017 NT - 201 NT - 2017 NT -	1:07:04 > 5	Send Command:Read Fi		ig Profile]	
	1:07:04 > Validate Data Finished	1:07:04 > 5 1:07:04 > 1	Send Command:Read Fi Segin To Validate Th	he Command Data!	ig Profile]	
	[1:07:04 > Send Command:Read From Device[Bandwidth Config Profile] [1:07:04 > Begin To Validate The Command Data!	1				
Finished	1:07:04 > Send Command Successfully!	1:07:04 > 1 1:07:04 > 1 1:07:04 > 1 1:07:04 > 1	Send Command:Read Fi Begin To Validate Th Validate Data Finish	he Command Data! hed	ig Profile]	

Figure 5-54 The Bandwidth Config Profile window - completed

5.2.6.5 Binding the Bandwidth Allocation Profile

Configuration purpose

Bind the configured bandwidth allocation profile to the ONU.

- 1. Right-click the system in the **Object Tree** and select **Config** \rightarrow **Batch Config** \rightarrow **ONU Configuration** to access the ONU configuration window.
- Click Set Object as Condition in the Config Object pane and all configuration objects will appear in the lower pane (you can drill down and select a specific port as the object). Select the AN5506-10-B1[2] under the PON 1 in Slot 15 and click the OK button.

Config Object			ņ	×
Set Object As Co	ndition			
.] 5] 1 0001-AN5 0001-AN5 2 3 3 4 5 5 6 7	5506-04-8[1] 5506-10-81[2] 5506-06-E[3]		
	ОК	Cancel		

Figure 5-55 Set the configuration objects

- 3. The specific configuration information of the object will appear in the right pane. Click the **GPON Bandwidth Profile** list box and select the configured bandwidth profile **a**.
- 4. When the configuration is completed, click the B button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is bound. See Figure 5-56.

📣 ONU Config(Domain 1:Syste	1) [Curr	ent Data	Source:	Default]				
Edit Access Operation Devic	e Operation	D, 🎄	22	- 🗹 🐳				
Config Object 🛛 🕈 🗙	Slot No.	PON NO.	ONU NO.	Bandwidth	Profile	GPON Ba	ndwidth	Profile
Set Object As Condition	15	1	2			8		
⊞-OLT System 1	ONU Co	nfig						
	09:10:48	> Send (Command S	Read From Successful Ice[ONU Co	.ly!		fig]	•
								11.

Figure 5-56 The ONU Config window - completed

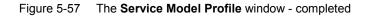
5.2.6.6 Configuring the Service Model Profile

Configuration purpose

Select the data service type, CVLAN mode and determine whether to enable the translation function and the QinQ function.

- 1. Right-click the system in the **Object Tree** pane and select **Config** \rightarrow **Profile Definition** \rightarrow **Service Model Profile** to access the service model profile configuration window.
- Select Edit → Append in the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a service model profile.
- 3. Configure according to the planned data in Table 5-16. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the service model profile is configured. See Figure 5-57.

dit Access	Operation Dev	vice Operation	🛛 😣 🗳 🗟	🛎 🖾 🖶 🔟 📣		
rofile Name	Service Type	CVLAN Mode	Translation State	QinQ State		
	unicast	tag			∠	
Service Mod	del Profile					
Service Mod	del Profile					
		ead From Dev	rice[Service Model F	Profile]		
):16:15 > Se				Profile]		
D:16:15 > Se D:16:15 > Be	end Command:R	ate The Comm		Profile]		



5.2.6.7 Configuring the SVLAN Profile

Configuration purpose

Configure the SVLAN value to apply in the ONU data service parameter configuration.

- 1. Right-click the system in the **Object Tree** pane and select **Config** \rightarrow **Profile Definition** \rightarrow **SVLAN Profile** from the shortcut menu to access the SVLAN profile configuration window.
- Select Edit → Append in the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to create an SVLAN profile.
- 3. Configure according to the planned data in Table 5-16. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the SVLAN profile is configured. See Figure 5-58.

🔥 SVLAH P	rofile(Domain 1:5	System 1) [Cu	urrent Data	Source: Device]	
Edit Acc	ess Operation Dev:	ice Operation	😣 🐳 🖳	🧇 🛃 📇 😹 🖶 🗹 🧔	
Profile Nam	ne SVLAN Name	STPID	SVID	SCOS	
c	data2	33024	3001	0	
SVLAN P					
	> Send Command:Re		-	ofile]	-
	> Begin To Valida		and Data!		
	> Validate Data F > Send Command Su				-
					1.



5.2.6.8 Configuring the ONU Data Port Parameters

Configuration purpose

Enable the ONU ports and limit the number of MAC addresses in a batch manner.

Configuration example

- Right-click the system in the Object Tree pane and select Config → Batch Config → ONU Data Port Config from the shortcut menu to access the ONU data port configuration window.
- Click Set Object as Condition in the Config Object pane and all configuration objects (you can drill down and select a specific port as the object) will appear in the lower part. Select FE1 and FE2 of the AN5506-10-B1[2] listed under the PON 1 in Slot 15 and click OK.

Config Object 🛛 🕈 🗙
Set Object As Condition
□ OLT System 1 □ GC4B[5] □ GC8B[15] □ PON1 □ PON1-AN5506-04-B[1] □ PON1-AN5506-10-B1[2] □ PE1 □ FE1 □ FE1 □ FE3 □ FE4 □ FE5 □ FE6 □ FE7
OK Cancel

Figure 5-59 Set the configuration objects

3. The specific configuration information of the objects will appear in the right pane. Configure according to the planned data in Table 5-16. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU data port parameters are configured. See Figure 5-60.

🚯 ONU Data Port Config	gure (Do	ain 1:Sy	rstem 1)	[Current D	ata Source	e: Device	2]							<u>- 🗆 ×</u>
Edit Access Operation	Device	Operation	📴 🤣	쓰 등 🗹	41									
Config Object	ч ×							t ONU Po	rt Speed	Limit Profi	le ONU Dat	ta Port A	ttribute P	rofile
Set Object As Condition		15 15	1 2				0 0							
E O T Outer 1		10	1 2				0							
⊕ OLT System 1														
														1
			ata Port C											
					ad From De ccessfully		J Data P	ort Cor	nfigure]					-
					e[ONU Data		onfigure]Execut	ting					
		09:20:08	> Comman	nd Succeed										
												Lr	a:2,Col:1	

Figure 5-60 The ONU Data Port Configure window

5.2.6.9 Configuring the ONU Data Service Parameters

Configuration purpose

Configure the CVLAN and SVLAN for the data service flow uplinked to the ONU port in a batch manner.

- Right-click the system in the Object Tree pane and select Config → Batch Config → ONU Data Service Configure from the shortcut menu to access the ONU data service configuration window.
- Click the dutton on the menu bar and the Add Item Number dialog box appears. Select configuration objects (you can drill down and select a specific port as the object) in the left pane. Select FE1 and FE2 of the ONU and click OK to return to the ONU Data Service Configure window.

👫 Add Item number					×
🖃 🗹 OLT System 1	Slot No.	PON No.	ONU No.	Port No.	Item number
庄 - 🖂 GC4B[5]	15	1	2	1	1
🖨 🔽 GC8B[15]	15	1	2	2	1
PON1					
	,	Batc	hModify	ОК	

Figure 5-61 The Add Item Number dialog box

3. The specific configuration information of the objects will appear in the right pane. Configure according to the planned data in Table 5-16. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU data service parameters are configured. See Figure 5-62.

Edit Access Operation	Device Oper	ation 🛛 😵 🖕	🗟 🤣 💾	5 🖶 🗹 i	1			
onfig Object	× Sl₀	t No. PON NO.	ONU NO.	Port NO.	Service ID	CTPID	CVLAN ID	CCOS
Set Object As Condition	15	1	2	1	1	33024	400	0
Set Object As contation	15	1	2	2	1	33024	400	0
		ONU Data Servi	ce Configur	e				



5.2.7 End of Configuration

After being added with stacked VLAN tags, the PC1 to PC4 can access the Internet via home gateways normally.

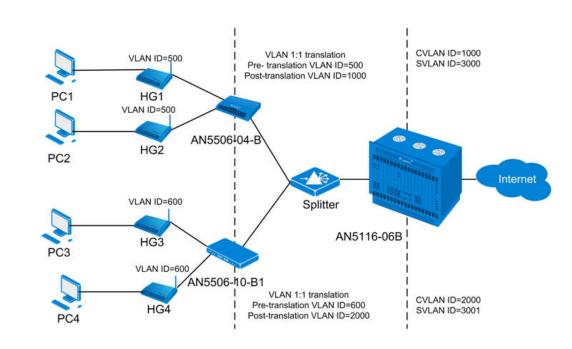
5.3 Example for Data Service Configuration – in the VLAN 1:1 Translation Mode

5.3.1 Configuration Rules

The AN5116-06B supports the QinQ data service, which means it supports the VLAN stacking as well. In this example the GC8B card is used as the service interface card and the AN5506-04-B and the AN5506-10-B1 are used as ONUs to introduce the data service configuration in the VLAN 1:1 translation mode.

- The QinQ data service in the VLAN 1:1 translation mode can be configured via the SVLAN configuration on the ONU or the OLT. In this example the service is configured via the SVLAN configuration on the OLT.
- The inner layer VLAN translation can be configured on the ONU or the OLT. In this example the translation is configured on the ONU.
- The VLAN ID of the ONU ranges from 1 to 4085.
 - To add stacked VLAN tags to the data service, the SVLAN ID must be within the preset range of the local VLAN.
 - ► To add a single VLAN tag to the data service, the CVLAN ID must be within the preset range of the local VLAN.
- Translation mode: The Ethernet data uploaded from the subscriber side will be added with a fixed Tag when passing the subscriber's home gateway. Because the Tag added by the HG may not fall in the valid range defined by the opertor, the default Tag added by the HG will be deleted by the ONU when the service is uplinked to the ONU equipment. The service will be added with a reasonable Tag and transmitted to the AN5116-06B, which will then add the SVLAN ID to the data service. Finally the data service with stacked service VLAN tags will be transmitted to the upper layer network side equipment.
- The ONU data service configuration can be implemented in the service profile or the ONU service configuration. If the data service configurations of the ONUs are the same, the batch configurations can be implemented using the service profile.

- The sum of the fixed bandwidth and asssured bandwidth of the service in the bandwidth allocation should not exceed the maximum bandwidth configuration parameter.
- An FE port of the AN5506-04-B can support up to four data services, and an FE port of the AN5506-10-B1 can support up to 16 data services.
- Each PON port can bind up to 32 VLAN operation tables.



5.3.2 Service Network

Figure 5-63 The data service network diagram (in the VLAN 1:1 translation mode)

As Figure 5-63 shows, the data uploaded from the subscriber is added with fixed Tag and then sent to the ONU using the HG. The ONU translates the VLAN ID of the fixed Tag and transmits it to the AN5116-06B via the splitter. And the AN5116-06B adds the second SVLAN tag to the first VLAN tag and transmits the packet to the upper layer network. For the downlink direction, the reverse process takes place.

The AN5506-04-B and the AN5506-10-B1 are used as ONUs in this example. The AN5116-06B uses the HU1A and the GC8B as the interface cards at the network side and the subscriber side respectively, and the HSWA card is compulsory.

5.3.3 Configuring Data Services Respectively (for the AN5506-04-B)

5.3.3.1 Planning Data

Table 5-17The planned data of data service configuration at the OLT side in the VLAN 1:1translation mode (configured respectively)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	1
	ONU type	The type of the ONU	AN5506-04-B
	Service Name	Configure according to the network planning of the operator.	data3
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Тад
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-18The planned data of data service configuration at the AN5506-04-B ONU side inthe VLAN 1:1 translation mode (configured respectively)

ltem		Description	Example
	O antian T		Broadband Internet
	Service Type	Select broadband Internet access.	access
		The fixed bandwidth of an ONU's uplink service.	
	Fixed Bandwidth	Even if the service does not use the bandwidth	10
	(Kbyte/s)	resource, other services cannot occupy the	16
		resource. The default value is 16Kbyte/s.	
		The minimum bandwidth for provisioning an	
Bandwidth	Assured	ONU's uplink service. If the bandwidth resource	
Configuration	Bandwidth	is not used by this service, then the resource	0
	(Kbyte/s)	may be released for other services to use. The	
		default value is 0Kbyte/s.	
		The maximum bandwidth of an ONU's uplink	
	Maximum	service. The sum of the fixed bandwidth value	
	Bandwidth	and the assured bandwidth value should not be	1280
	(Kbyte/s)	larger than the maximum bandwidth value. The	
		default value is 64Kbyte/s.	
	ONU Port Used	The actually used ONU port	1 2
	Enable / Disable	Configure according to the network planning of	Default
	Port	the operator. Enable is selected by default.	Default
Basic	Port Auto	Configure according to the network planning of	Default
information	Negotiation	the operator. Enable is selected by default.	Default
of the ONU	Port Speed	Unconfigurable when the port auto negotiation is	Default
port	Fon Speed	enabled. The default speed is 100M.	Delauit
port	Duplex	Unconfigurable when the port auto negotiation is	Default
	Duplex	enabled. The default value is full-duplex.	Delault
	Flow control	Configure according to the network planning of	Default
	Enable / Disable	the operator. Disabled by default.	Delault
		Configured as Tag or Untag according to the	
		network planning of the operator. In the Tag	
	TAG Mode	mode the uplink data packets are tagged, while	Тад
ONU port		in the Untag mode the uplink data packets are	
•		untagged.	
data service parameters	Service Type	Configured as Unicast or Multicast.	Unicast
Parameters		When the CVLAN mode is set as Transparent,	
	VLAN Mode	the VLAN mode should be consistent with the	0
		COS, ranging from 0 to 7. When the Tag mode	v
		is set as Untag , this item is unconfigurable.	

ltem			Description	Example
	VLAN I	D	When the CVLAN mode is set as Transparent , the VLAN mode should be consistent with the CVLAN ID, ranging from 1 to 4085. When the Tag mode is set as Untag , this item is unconfigurable.	500
	CVLAN	l Mode	When the Tag mode is set as Untag , the CVLAN mode can be set as Tag or Transparent . When the Tag mode is set as Tag , the CVLAN mode can set as Translation or Transparent .	Translation
	CVLAN	IID	Configure according to the network planning of the operator. The range is 1 to 4085.	1000
	COS		The CVLAN priority, ranging from 1 to 7.	0
	Ds Enc	rypt State	Disable is selected by default.	Disable
	QinQ E	nable	Enable / disable the QinQ configuration	Disable
	SVLAN	ID	Unconfigurable when the QinQ enable status is disabled. The range is 1 to 4085.	_
	Service	Name	Corresponds to the configured local end service VLAN. Unconfigurable when the QinQ enable status is disabled.	_
	cos		The SVLAN priority, ranging from 1 to 7. Unconfigurable when the QinQ enable status is disabled.	_
	Domair	n Name	Configure according to the network planning of the operator.	abc1
	VLAN ID		The corresponding inner VLAN value of the uplink service flow from the ONU, ranging from 1 to 4085.	1000
GPON OLT VLAN	Priority		The inner VLAN translation priority of the downlink service flow, ranging from 0 to 7.	—
Operation Table	VLAN Layer	Outer VLAN Cos	The SVLAN priority, ranging from 0 to 7.	0
	2	Outer VLAN Vid	The item is used to add the SVLAN value, ranging from 1 to 4085.	3000
	VLAN Layer 1	Inner VLAN Cos	The inner VLAN translation priority of the uplink service flow, ranging from 0 to7, or null.	_

Item			Description	Example
			The item can be used to translate the inner	
		Innor	VLAN of the uplink service flow from the ONU. If	
		Inner VLAN ID	translation is required, the item is the translated	_
		VLAN ID	VLAN value. If not required, the item is	
			consistent with the VLAN identifier or null.	
	Slot No		The number of the actually used slot	15
PON Attach /	PON Po	ort	The number of the actually used PON	1
Detach	Action		Attach / detach the VLAN operation table.	Attach
VLAN Table	Tabla N	ama	Select the configured VLAN operation table	obo1
	Table N	ame	name.	abc1

5.3.3.2 Configuration Flow Chart

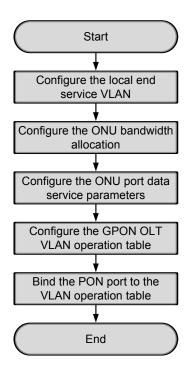


Figure 5-64 Flow chart for provisioning data services respectively in the VLAN 1:1 translation mode (for the AN5506-04-B)

5.3.3.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the uplink port VLAN of the AN5116-06B for the designated service flow and limit the VLAN range of the service.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu. In the window click the Local End Service VLAN tab and the local VLAN configuration window appears.
- Click Edit → Append in the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to create a local VLAN.
- 3. Configure according to the planned data in Table 5-17. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN is configured. See Figure 5-56.

🕼 Local End Service VLAW (Domain 1:System 1:OLT System 1:HSWA[9]) [Current Data Source: Device] 💶 🗡 Edit Access Operation Device Operation 🛛 😵 🤪 📴 🍜 🖶 🖆 💆 🛼 🗹 🚚									
ervice Name	Starting VLAN ID	VLAN ID End	Interface NO.	TAG/UNTAG	Service Type	Slot Bind Mode			
ata3	3000	3001	19:SFP2	TAG	Data	Auto			
Local End	Service VLAN Local End	l Service Inner	VLAN						
	Service VLAN Local End			ce VLAN]					
D:25:03 > S	t	om Device[Loo	cal End Servio	ce VLAN]					
0:25:03 > 2 0:25:03 > E 0:25:03 > 1	end Command:Read Fr	om Device[Loc e Command Dat ed	cal End Servio	ce VLAN]					



5.3.3.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU and select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.
- 2. Click the right pane and select $Edit \rightarrow Append$ from the menu bar, or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click **OK**.

3. Configure according to the planned data in Table 5-18. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-66.

Bandu	ridth Config	(Domain 1	:System 2:GC	BB[15]	ONU: PON1-ANS	506-04-B[1])	[Current Da	ta Source:	Device]
Edit .	Access Operat	ion Devic	e Operation	😢 🗘 🖸	} 🚸 🖬 🚠 🚆	5 🗹 📲			
Slot No. 5	. PON Port No 1	0 NUS.N. 1	Service Type data	fixed Bas 16	ndwidth (Kbyte/s)	assureed Bar O	dwidth (Kbyte/s)	Maximum Ba 1280	ndwidth (Kbyte/s)
Band	width Config								
			d From Devic e The Comman		dth Config]				
0:00:0)1 > Validat)1 > Send Co	e Data Fi	nished	u pata!					
	, , , , , , , , , , , , , , , , , , ,	manard Ddo	oobbratty:						

Figure 5-66 The Bandwidth Config window

5.3.3.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-67.

ta Port List El	Port No. 1
E2 E3 E4	Fable/Disable Port Fort Auto Negotiation Port Speed 100M Flow Control Enable/Disable Port Rate Limit
	Upstream Port Rate Limit(Kbit/s) Downstream Port Rate Limit(Kbit/s) IndexService type[Fag mode COS VLAN ID Ds Encrypt state Cvlan modes Add Delete
	Modify

Figure 5-67 The ONU port service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-67. Click **Add** to create a data service and configure according to the planned data in Table 5-18.

Services Configu	ration				×
Index	1	Service type	unicast	•	ОК
TAG Mode	Tag 💌	CVLAN Mode	Translation	•	Cancel
COS	0	CVLAN ID	1000		
VLAN ID	500	COS	0	•	
Ds Encrypt state					
□ QinQ State SVLAN ID					
Service Name	_	COS		7	

Figure 5-68 The Services Configuration dialog box

- Click OK and return to the dialog box shown in Figure 5-67. Right-click FE1 in the Data Port List and select Copy Port Config. Right-click FE2 and select Paste Port Config.
- 4. After the configuration, click the **Modify on Device** button and complete the AN5506-04-B service configuration. When the **Command Succeed** of the AN5506-04-B data port service appears in the **Command Manager** window, the AN5506-04-B port service configuration is completed. See Figure 5-69.

(Domain 1:System 1:GC8 Data Port Config	B[15] ONU:PON1-AN5506-04-B[1])	×
Data Port List FE1 FE2 FE3 FE4	Port No. 2 ✓ Enable/Disable Fort ✓ Port Auto Negotiation Port Speed 100M ▼ Duplex Full-Duplex ▼ Flow Control Enable/Disable ■ Port Rate Limit ● </td <td></td>	
	Index Service typ Tag mode COS VLAN ID Ds Encrypt state Cvlan mode Add 1 unicast Tag 0 500 Disable Translatio Delete Modify	
<u>R</u> ead	Image: DB Modify On Device Image: DB Read Device Modify On Device Delete On Device	

Figure 5-69 The port service configuration completed

5.3.3.6 Configuring the GPON OLT VLAN Operation Table

Configuration purpose

Perform the QinQ function of the data service by completing the SVLAN ID configuration on the GPON OLT VLAN operation table.

Operation steps

- 1. Right-click the HSWA[9] card in the Object Tree pane and select Config \rightarrow QinQ \rightarrow GPON OLT VLAN Operation Table from the shortcut menu to access the GPON OLT VLAN Operation Table window.
- Select Edit → Append in the menu bar or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Domain Name blank field and enter abc1.

3. Configure according to the planned data in Table 5-18. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the GPON OLT VLAN operation table is configured. See Figure 5-70.

🌡 Gpon	ULI VAL	J Upera	tion Tabl	e (Doma:	_		T System			ent Dat	ta Sourc	e: Devi	ice] _ 🗆
Edit Access Operation Device Operation 🛛 😵 🤪 🚔 🖏 🐎 🖃 🚉 丛 😓 🚰 🚚													
Traffic Identification													
Domain	Name	VLAN ID	Priority	Outer	VLAN Cos	Outer	VLAN Vid	inner VL	AN Cos	inner	VLAN Vid		
abc1		1000		0		3000							
Gnor	DIT VAL	1 Operati	on Table										
Gpor	n OLT VALM	1 Operatio	on Table		_			_					
-		-		rom Dev	vice[Gpon	OLT VA	LN Operat:	ion Table]				
0:33:0	03 > Sen	d Commar				OLT VA	LN Operat:	ion Table]				
0:33:1 0:33:1	03 > Sen 03 > Sen	d Comman d Comman	nd:Read F nd Succes	sfully			LN Operat: Table]Exe]				

Figure 5-70 The GPON OLT VLAN Operation Table window - completed

5.3.3.7 Binding the PON Port to the VLAN Operation Table

Configuration purpose

Apply the data service configuration to the PON port on the GC8B card by binding the PON port to the VLAN operation table.

Operation steps

- Right-click the GC8B[15] card in the Object Tree pane and select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.

- Click the right pane, select Edit → Append in the menu bar of the window or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Click the Table Name list box and select abc1.
- 4. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table abc1. See Figure 5-71.

15	1	attach	
		attach	abcl
	2	attach	
	3	attach	
7	4	attach	
	5	attach	
	6	attach	
5	7	attach	
5	8	attach	
-		· · · · · · · · · · · · · · · · · · ·)
PON att	ach/detach	a VLAN Table	
1:38:14	> Send Co	ommand:Read From Device[PON attach/detach VLAN Table]	
1:38:14	> Hegin	To Validate The Command Data!	

Figure 5-71 The PON attach / detach VLAN Table window

5.3.4 Configuring Data Services in a Batch Manner (for the AN5506-04-B)

5.3.4.1 Planning Data

Table 5-19The planned data of data service configuration at the OLT side in the VLAN 1:1translation mode (in a batch manner)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information		Configure according to the network planning of the	1
Information	ONU No.	operator.	1
	ONU type	The type of an ONU	AN5506-04-B
	Service Name	Configure according to the network planning of the	data3
	Service Maine	operator.	ualao
	VLAN ID Begin	The begin VLAN ID number of the uplink port	3000
	VEAN ID Begin	service.	3000
		The end VLAN ID number of the uplink port service.	
	VLAN ID End	The begin VLAN ID should not be larger than the	3001
		end VLAN ID.	
	Uplink No. /	The number of the actually used uplink port.	19:SFP2
	TRUNK No.		10.0112
		The Tag processing mode of the uplink service	
Local end		VLAN can be set as Tag or Untag . Under UNTAG	
service		mode, the TAGs of the uplink packets will be	
VLAN		stripped automatically and the packets will be	
		uplinked in the form of UNTAG when they pass the	
		port, whereas the downlink UNTAG packets will be	
	TAG / UNTAG	added with designated TAGs and downlinked in the	Тад
		form of TAG. Under TAG mode, the uplink data	
		packets will not be processed but remain uplinked in	
		the original form. For downlink packets, however,	
		only packets with designated TAGs are received and	
		the packets will not be processed but remain	
		downlinked in the original form.	
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

ltem		Description	Example
	Profile Name	The name of the bandwidth allocation profile	а
	Service Type	Select broadband Internet access.	Broadband Internet access
		The fixed bandwidth of an ONU's uplink	
	Fixed Bandwidth	service. Even if the service does not use the	
		bandwidth resource, other services cannot	16
	(Kbyte/s)	occupy the resource. The default value is	
		16Kbyte/s.	
Bandwidth		The minimum bandwidth for provisioning an	
Profile	Assured Developidth	ONU's uplink service. If the bandwidth	
Configuration	Assured Bandwidth	resource is not used by this service, then the	0
	(Kbyte/s)	resource may be released for other services	
		to use. The default value is 0Kbyte/s.	
		The maximum bandwidth of an ONU's uplink	
	Maximum	service. The sum of the fixed bandwidth value	
	Bandwidth	and the assured bandwidth value should not	1280
	(Kbyte/s)	be larger than the maximum bandwidth value.	
		The default value is 64Kbyte/s.	
	Profile Name	Configure according to the network planning	h
	Profile Name	of the operator.	b
	Enable / Disable	Enable is selected by default.	Enable
	Port		
	Port Auto	Enable is selected by default.	Enable
	Negotiation		
	Port Speed	The default speed is 10M. Unconfigurable	_
		when the auto negotiation is enabled.	
Data Service		Full-duplex is selected by default.	
Profile	Duplex	Unconfigurable when the auto negotiation is	—
		enabled.	
	Flow control Enable	Disable is selected by default.	Disable
	/ Disable	-	
	Port Limit Enable /	Disable is selected by default.	Disable
	Disable		
	Port Uplink Limit	The default value is 0. Unconfigurable when	
		the port limit is disabled.	
	Port Downlink Limit	The default value is 0. Unconfigurable when	
		the port limit is disabled.	

Table 5-20The planned data of data service configuration at the AN5506-04-B ONU side inthe VLAN 1:1 translation mode (in a batch manner)

Item			Description	Example	
	TAG Mode		Configured as Tag or Untag according to the		
			network planning of the operator. In the Tag		
l			mode the uplink data packets are tagged,	Тад	
l			while in the Untag mode the uplink data		
l			packets are untagged.		
l			When the CVLAN mode is set as		
l			Transparent, the VLAN mode should be		
l	COS Mode		consistent with the COS, ranging from 0 to 7.	0	
l			When the Tag mode is set as Untag , this item		
			is unconfigurable.		
l			When the CVLAN mode is set as		
l			Transparent, the VLAN mode should be		
l	VLAN ID		consistent with the CVLAN ID, ranging from 1	500	
l			to 4085. When the Tag mode is set as Untag ,		
l			this item is unconfigurable.		
1	Ds Encrypt State		Disable is selected by default.	Disable	
1	-		When the Tag mode is set as Untag , the		
l			CLVAN mode can be set as Tag or		
l	CVLAN Mode		Transparent. When the Tag mode is set as	Translation	
l			Tag, the CVLAN mode can be set as		
1			Translate or Transparent.		
l			Configure according to the network planning	1000	
l	CVLAN ID		of the operator. The value range is 1 to 4085.	1000	
l	COS		The priority range is 0 to 7.	0	
l			Enable / disable the QinQ configuration.		
l	QinQ Enab	le State	Disable is selected by default.	Disable	
l			The service name configured in the		
l	VLAN Nam	е	corresponding local VLAN. Unconfigurable	_	
l			when the QinQ enable state is disabled.		
1			Unconfigurable when the QinQ enable state is		
l	SVLAN ID		disabled. The range is 1 to 4085.	_	
l			Unconfigurable when the QinQ enable state is		
l	COS		disabled.	_	
			Configure according to the network planning		
1	Profile Name		of the operator.	С	
	ONU Type		The actually used ONU type	AN5506-04-B	
Service		Profile	The bandwidth allocation profile should be		
Profile	ONU	Туре	selected.	Bandwidth allocation profile	
1	Subprofile	Profile	The profile name configured in the		
	Config		corresponding bandwidth allocation profile	а	

Item			Description	Example
	Port Type		The type of the actually used port	FE port
	Port No.		The number of the actually used port	1 2
	ONU Port	t Type	The data service profile should be selected.	Data service profile
	Config	Profile Name	The profile name configured in the corresponding data service profile	b
	Profile ID	•	The profile name configured in the corresponding service profile	с
. .	Action		Bind the ONU to the service profile.	Attach
Service	Slot No.		The number of the actually used slot	15
Profile	PON No.		The number of the actually used PON	1
Binding	ONU S.N		The ONU authorization number assigned according to the network planning of the operator	1
	Domain N	lame	Configure according to the network planning of the operator.	abc1
	VLAN ID		The corresponding inner VLAN value of the uplink service flow from the ONU, ranging from 1 to 4085.	1000
	Priority		The inner VLAN translation priority of the downlink service flow, ranging from 0 to 7, or null.	_
GPON OLT VLAN		Outer VLAN Cos	The SVLAN priority, ranging from 0 to 7.	0
Operation Table		Outer VLAN Vid	The item can be used to add the SVLAN value, ranging from 1 to 4085.	3000
		Inner VLAN Cos	The inner VLAN translation priority of the uplink service flow, ranging from 0 to7, or null.	_
		Inner VLAN Vid	The item can be used to translate the inner VLAN of the uplink service flow from the ONU. If translation is required, the item is the translated VLAN value. If not required, the item is consistent with the VLAN identifier or null.	
PON Attach /	Slot No.		The number of the actually used slot	15
Detach	PON Port	t	The number of the actually used PON	1
VLAN Table	Action		Attach / detach the VLAN operation table.	Attach

ltem		Description	Example
Table Name		Selects the configured VLAN operation table	abc1
		name.	

5.3.4.2 Configuration Flow Chart

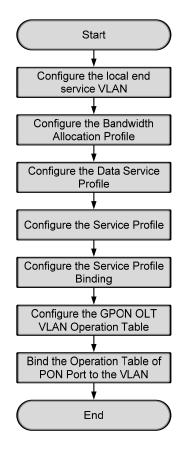


Figure 5-72 The batch configuration flow chart of data service provisioning in the VLAN 1:1 translation mode (for the AN5506-04-B)

5.3.4.3 Configuring the Local End Service VLAN

See Section 5.2.3.3 for configuration procedures.

5.3.4.4 Configuring the Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- Click the left pane and select Edit → Append in the menu bar or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Profile Name blank field and enter a.
- 3. Click the right pane and select $Edit \rightarrow Append$ in the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button.

4. Configure according to the planned data in Table 5-20. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-73.

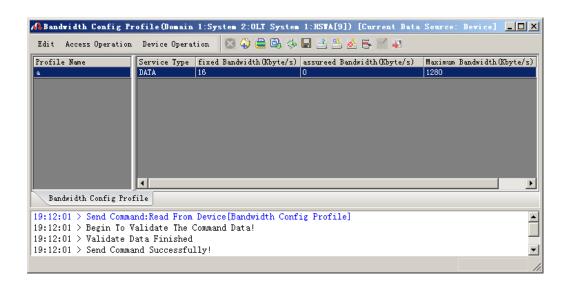


Figure 5-73 The Bandwidth Config Profile window - completed

5.3.4.5 Configuring the Data Service Profile

Configuration purpose

Configure the FE port status and working mode of the ONU and translate the inner VLAN of the data service.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Data Service Profile from the shortcut menu. Click the Data Service Profile tab and the Data Service Profile window appears.
- Click the left pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a data service profile b. Configure the basic parameters of the port according to the planned data in Table 5-20.
- Click the right pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Configure the VLAN tags of the service flow according to the planned data in Table 5-20.

4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the data service profile is configured. See Figure 5-74.

🔒 Data	Service Profile	e (Domain 1:System	2:OLT Syst	ten 1:HSWA[9]) [Curre	nt Data Sou	arce: Dev	ice]			
Edit	Access Operation	Device Operation	🛛 🗘 🚔	🕒 🤣 💭 🖻	L 📥 📥 B	5 🗹 4 👘					
Profil		le AutoNegotiation			Flow	Service No.				Ds Encrypt State	CVLAN Mode
Ъ	Enable	Enable	10M	Full-Deplux	Disable	1	Tag	0 5	500	Disable	Translation
•					Þ	4					
Dat	a Service Profile	IGMP Service Profi	le Voice Ser	vice Profile	Service Pr	ofile Servio	e Profile	Bindir	ng		
0.14	14	J. P. J. P. D.	Con Data Con	nine Duckil	-1						
9:14:		nd:Read From Dev:		vice Profil	el						-
0.14.		lidate The Comm									
	-	alidate The Comm: ata Finished	and pata:								
9:14:	14 > Begin To Va 14 > Validate Da 14 > Send Commar	ata Finished	alu pata:								

Figure 5-74 The Data Service Profile window - completed

5.3.4.6 Creating a Service Profile

Configuration purpose

Configure the bandwidth allocation profile and data service profile for the ONU binding.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Service Profile from the shortcut menu. Click the Service Profile tab and the Service Profile window appears.
- Click the left pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a service profile.
- 3. Double-click the **Profile Name** blank field and enter **c**. Click the **ONU Type** list box and select **AN5506-04-B** from the drop-down list.

4. Click the **ONU Subprofile Config** field to access the **ONU Subprofile Config** dialog box. Click the **Add** button to add a profile configuration. Click the **Profile Type** list box and select **Bandwidth Config Profile**. Click the **Profile Name** list box and select **a**.

DHU Subprofile Config		2
Profile Type	Profile Name	
Bandwidth Config Profile	а	
		Add (<u>A</u>)
		Delete (<u>D</u>)
		ОК
		Capital
		Cancel

Figure 5-75 The ONU Subprofile Config dialog box

5. Click **OK** and return to the **Service Profile** window.

(Service Pro	file(Domain 1	:System 2:0LT	System 1	:HSTA[9])	[Current Dat	a Source:	Device]	_ 🗆 X
Edit Access (Operation Devi	ce Operation	🛛 🍄 🛢	0, 🤣 🔒	2 2 🕹 🕹 🛼	1		
Profile Name	ONU Type	ONU Subprofile	Config	Port Type	Port No.	ONU Port 1	Profile Co:	nfig
c	AN5506-04-B							
Pate Samia	e Profile IGMP	S		PL Busfill		6:1. S	P	Diadia a
Data Service	a itoitte Tout	Service fromite	Voice Se	rvice iroiiite	Service II0	TITE Servi	ce iroine	e binding
	nd Command:Re		-	rvice Profi	ile]			<u> </u>
19:18:49 > Be	gin To Valida	te The Comman	-	rvice Profi	ile]			
19:18:49 > Be 19:18:49 > Va		te The Comman inished	-	rvice Profi	ile]			•

Figure 5-76 The Service Profile window

- 6. Click the right pane and select $Edit \rightarrow Append$ in the menu bar. Enter 2 in the **Please Input the Rows for Add** dialog box that appears and click **OK**.
- 7. Click the **Port Type** list box and select **FE**. Double-click the **Port No.** blank field and enter **1**. Repeat the procedure to enter **2**.
- For Port No.1 click the ONU Port Profile Config field to access the ONU Port Profile Config dialog box. Click Add to add a profile configuration. Click the Profile Type list box and select Data Service Profile. Click the Profile Name list box and select b. Repeat the procedure for Port No.2.

ONV Port Profile Con	afig	×
Profile Type	Profile Name	
Data Service Profile	b	
		Add (<u>A</u>)
		Delete (<u>D</u>)
		OK
		Cancel

Figure 5-77 The ONU Port Profile Config dialog box

- 9. Click the **OK** button and return to the **Service Profile** window.
- 10. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the service profile is configured. See Figure 5-78.

Edit Access	Operation Devi	ce Operation	😣 🗘 🚍	0, 🎸 🖬 🗄	i 📥 😹 🖶	🗹 🐺	
rofile Name	ONU Type	ONU Subprofile	e Config	Port Type	Port No.	ONU Port Pro	file Config
:	AN5506-04-B			FE	1		
				FE	2		
				I			
Data Servio	e Profile IGMP	Service Profil	e Voice Se	I ■ I ■ I ■ I ■ I ■ I ■ I ■ I ■ I ■ I ■	Service Proj	file Service	Profile Bindi
Data Servio	ze Profile IGMP	Service Profile	e Voice Ser	✓	Service Proj	file Service	Profile Bindin
	ze Profile IGMP end Command:Re			>		file Service	Profile Bindin
9:18:49 > S		ad From Devic	ce[Data Se	>		file Service	Profile Bindi
9:18:49 > S 9:18:49 > B	end Command:Re	ad From Devic te The Commar	ce[Data Se	>		file Service	Profile Bindin

Figure 5-78 The Service Profile window - completed

5.3.4.7 Binding the ONU to the Service Profile

Configuration purpose

Apply the bandwidth allocation and data service configuration of the service profile to the ONU by binding the ONU to the service profile.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Service Profile Config from the shortcut menu. Click the Service Profile Binding tab and the Service Profile Binding window appears.
- 2. Click the left pane and select **Edit** \rightarrow **Append** in the menu bar. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click **OK**.
- 3. Click the **Profile ID** list box and select **c**. Click the **Action** list box and select **Attach**.
- 4. Click the right pane and select $Edit \rightarrow Append$ in the menu bar. Enter 1 in the **Please Input the Rows for Add** dialog box that appears and click **OK**.

5. Double-click the **ONU S.N.** field to bring up the **Select Objects** dialog box. Select **AN5506-04-B** in the dialog box.

Select Ob	jects		×
Board	UNU	Auth No.	Is Select
GC8B[15]	PON1-AN5506-04-B[1]	1	
Select A	All Clear	ОК	Cancel

Figure 5-79 The Select Objects dialog box

6. Click the OK button and return to the Service Profile Binding window. Click

the sutton to execute the command. The If the service profile binding and the refresh operation is performed, the original ONU service configuration will be overwritten. Are you sure to execute this command? dialgue box will appear. Click OK and then once again in the Are you sure to write all data to the device? dialog box.

 Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the AN5506-04-B has been bound to the service profile c. See Figure 5-80.

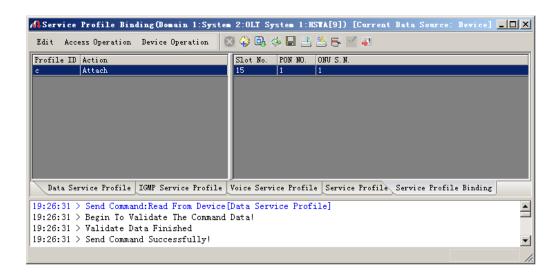


Figure 5-80 The Service Profile Binding window

5.3.4.8 Configuring the GPON OLT VLAN Operation Table

Configuration purpose

Perform the QinQ function of the data service by completing the SVLAN ID configuration on the GPON OLT VLAN operation table.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, select Config → QinQ
 → GPON OLT VLAN Operation Table from the shortcut menu to access the GPON OLT VLAN Operation Table window.
- Select Edit → Append on the menu bar or click the ⁹ button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Domain Name blank field and enter abc1.
- 3. Configure according to the planned data in Table 5-20. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the GPON OLT VLAN operation table is configured. See Figure 5-81.

ŞGpon ULI	ALM Upera	tion Tabl							ent Data So	urce:	Device][
Edit Access	Operation	Device Op	eration	😣 🌍	🚔 ©,	🚸 日 🛃	📥 📥 🖡 I	1 🐳			
Iraffic Identification											
Domain Name	VLAN ID	Priority	Outer VLAN	Cos	Outer N	/LAN Vid	inner VLAN	Cos	inner VLAN	Vid	
abel	1000		0		3000						
Gpon OLT 1	ALN Operati	on Table						ļ			
-	•		- De cia		01 T. 1141	V ()					
D:33:03 > 1	end Comma	nd:Read F		Gpon (OLT VAL	.N Operati	on Table]				
D:33:03 > 1 D:33:03 > 1	end Comma end Comma	nd:Read F nd Succes	sfully!								
0:33:03 > 1	end Comman end Comman ead From 1	nd:Read F nd Succes Device[Gp	sfully!								

Figure 5-81 The GPON OLT VLAN Operation Table window - completed

5.3.4.9 Binding the PON Port to the VLAN Operation Table

Configuration purpose

Apply the data service configuration to the PON port on the GC8B card by binding the PON port to the VLAN operation table.

Operation steps

- Right-click the GC8B[15] card in the Object Tree pane, select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.
- 3. Click the right pane, select Edit \rightarrow Append in the menu bar of the window or

click the Solution. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Click the Table Name list box and select abc1.

4. Click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table **abc1**. See Figure 5-82.

Edit Ad	ccess Operat	tion Device Operation	🛛 😣 🕒 🤣 🕒 🛃 🕹	
lot No.	PON port	Action		Table Name
5	1	attach		abc1
5	2	attach		
5	3	attach		
5	4	attach		
5	5	attach		
5	6	attach		
5	7	attach		
5	8	attach		
PON at	ttach/detacl	a VLAN Table		
38:14	> Send C	ommand:Read From Devi	ce[PON attach/detach VLAN Table]	
0:38:14	> Begin	To Validate The Comma	nd Data!	
		te Data Finished		
		ommand Successfully!		

Figure 5-82 The PON attach / detach VLAN Table window - completed

5.3.5 Configuring Data Services Respectively (for the AN5506-10-B1)

5.3.5.1 Planning Data

Table 5-21	The planned data of data service configuration at the OLT side in the VLAN 1:1
translation m	node (configured respectively)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
ONU	PON No.	The number of the actually used PON port	1
information	ONU No.	Configure according to the network planning of the operator.	2
	ONU type	The type of the ONU	AN5506-10-B1
	Service Name	Configure according to the network planning of the operator.	data3
Local end	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
service VLAN	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2

Item		Description	Example
		The Tag processing mode of the uplink service	
		VLAN can be set as Tag or Untag. Under UNTAG	
		mode, the TAGs of the uplink packets will be	
		stripped automatically and the packets will be	
		uplinked in the form of UNTAG when they pass the	
		port, whereas the downlink UNTAG packets will be	
	TAG / UNTAG	added with designated TAGs and downlinked in the	Тад
		form of TAG. Under TAG mode, the uplink data	
		packets will not be processed but remain uplinked in	
		the original form. For downlink packets, however,	
		only packets with designated TAGs are received and	
		the packets will not be processed but remain	
		downlinked in the original form.	
	Somiao Norse	Configure according to the network planning of the	dete
	Service Name	operator.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-22The planned data of data service configuration at the AN5506-10-B1 ONU side inthe VLAN 1:1 translation mode (configured respectively)

Item		Description	Example	
	Service Type	Select integrate service.	Integrate Se	rvice
	Fixed Bandwidth (Kbyte/s)	The fixed bandwidth of an ONU's uplink service. Even if the service does not use the bandwidth resource, other services cannot occupy the resource. The default value is 16Kbyte/s.	16	
Bandwidth configuration	Assured Bandwidth (Kbyte/s)	The minimum bandwidth for provisioning an ONU's uplink service. If the bandwidth resource is not used by this service, then the resource may be released for other services to use. The default value is 0Kbyte/s.	0	
	Maximum Bandwidth (Kbyte/s)	The maximum bandwidth of an ONU's uplink service. The sum of the fixed bandwidth value and the assured bandwidth value should not be larger than the maximum bandwidth value. The default value is 64Kbyte/s.	1280	
Basic information	ONU Port Used	The actually used ONU port	1	2
of the ONU port	Enable / Disable Port	Configure according to the network planning of the operator. Enable is selected by default.	Default	

Item			Description	Example
	Port Au	to	Configure according to the network planning of the	Default
	Negotia	ation	operator. Enable is selected by default.	Delault
	Port Sp	eed	Unconfigurable when the port auto negotiation is enabled. The default speed is 100M.	Default
	Duplex		Unconfigurable when the port auto negotiation is enabled. The default value is full-duplex.	Default
	Flow co Enable Disable	/	Configure according to the network planning of the operator. Disable is selected by default.	Default
	TLS		Configured as TLS or No TLS according to the network planning of the operator.	No TLS
	Service	Туре	Data service. Select unicast.	Unicast
	VLAN N	/lode	Configured as Tag or Transparent according to the network planning of the operator.	Transparent
	CVLAN	TPID	The default value is 33024.	33024
ONU port	CVLAN	ID	The pre-translation VLAN ID. The value range is 1 to 4085.	600
service	Priority	or COS	The CVLAN priority. The value range is 0 to 7.	0
parameters	Transla State	tion	Enable / disable the translation configuration.	Enable
	Transla Value	tion	The translated VLAN ID, ranging from 1 to 4085.	2000
	SVLAN	TPID	The default value is 33024.	33024
	Priority	or COS	The translation priority, ranging from 0 to 7 with 7 as the highest priority and 0 as the lowest.	0
	Domair	n Name	Configure according to the network planning of the operator.	abc2
	VLAN I	D	The corresponding inner VLAN value of the uplink service flow from the ONU, ranging from 1 to 4085.	2000
GPON OLT VLAN	Priority		The inner VLAN translation priority of the downlink service flow, ranging from 0 to 7, or null.	_
Operation Table	VLAN	Outer VLAN Cos	The SVLAN priority, ranging from 0 to 7.	0
	Layer 2	Outer VLAN Vid	The item is used to add SVLAN value, ranging from 1 to 4085.	3001

ltem			Description	Example
	VLAN	Inner VLAN Cos	The inner VLAN translation priority of the uplink service flow, ranging from 0 to 7, or null.	_
	Layer 1	Inner VLAN Vid	The item can be used to translate the inner VLAN of the uplink service flow from the ONU. If translation is required, the item is the translated VLAN value. If not required, the item is consistent with the VLAN identifier or null.	_
PON Attach /	Slot No		The number of the actually used slot	15
Detach	PON Po	ort	The number of the actually used PON	1
VLAN Table	Action		Attach / detach the VLAN operation table.	Attach
	Table N	lame	Selects the configured VLAN operation table name.	abc2

5.3.5.2 Configuration Flow Chart

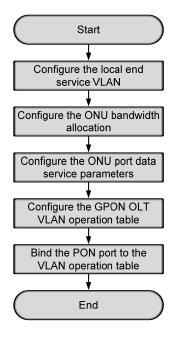


Figure 5-83 Flow chart for provisioning data services respectively in the VLAN 1:1 translation mode (for the AN5506-10-B1)

5.3.5.3 Configuring the Local End Service VLAN

See Section 5.3.3.3 for configuration procedures.

5.3.5.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

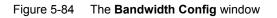
Operation steps

- Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU, select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.
- 2. Click the right pane and select $Edit \rightarrow Append$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button.

3. Configure according to the planned data in Table 5-22. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-84.

🚜 Bandwidth Config(Domain 1:S	ystem 1:GC8B[15]	ONV: PON1-AN5506-10-1	81[2] [Current Data Source	: Device]
Edit Access Operation Device O	peration 🛛 🔇 🥋	0, 4 🖬 🗄 🛎 🗗 🗹	42	
	ervice Type integrate Service	fixed Bandwidth(Kbyte/s) 16	assureed Bandwidth(Kbyte/s) O	Maximum Bandwidth(Kbyte/s) 1280
				Þ
Bandwidth Config				
10:57:19 > Send Command:Read 1 10:57:19 > Begin To Validate		Same here wan waar waars same en		
10:57:19 > Validate Data Fini:		u.		
10:57:19 > Send Command Succes	ssfully!			•



5.3.5.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-85.

Data Port Config Voice ([15] ONV List:AN5506-10-B1[2])
Data Port List	Port No. 1
FE1	✓ Enable/Disable Fort
FE2	
FE3 FE4	V Port Auto Negotiation
FE5	Port Speed 100M 🔽 Duplex Full-Duplex 🔽
FEG	Flow Control Enable/Disable
FE7	Flow Control Enable/Disable
FE8	IGMP UP CVLAN IGMP UP SVLAN
FE9	
FE10	CVLAN ID SVLAN ID
FE11	CVLAN COS SVLAN COS
FE12 FE13	
FE13 FE14	CVLAN TPID 33024 SVLAN TPID 33024
FE15	
FE16	Service
FE17	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID C
FE18	
FE19	
FE20	Delete
FE21 FE22	
FE23	Modify
FE24	
	Boardwidth Set
	Service Upstream Minimum Guaranteed 640
	Sumi et Mesterre Nucleur Allund 100000
	Service Upstream Maximum Allowed 100000
	Service Downstream Bandwidth(kbit/s) 100000
	Read DB Write DB Read Device Modify On Device Delete On Device Close
	Tead pp Witte pp Wead peakee monthy on peakee perece on peakee

Figure 5-85 The ONU port data service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-85. Click **Add** to create a data service and configure it according to the planned data in Table 5-22.

Services Config	guration			×
TLS	No TLS 💌	Set Servi	ce Classificati	ОК
Service type	unicast 💌	VLAN Mode	Transparent 💌	Cancel
TPID	33024	CVLAN ID	600	ļ
		Priority Or COS	0 💌	
I Translation State		Translation value	2000	
TPID	33024	Priority Or COS	0	
🗖 QinQ State				
Choose Qin	Q Profile			
Service Name	_	VLAN ID(3000-3001)]
TPID	33024	Priority Or COS	<u> </u>	[

Figure 5-86 The **Services Configuration** dialog box

- Click OK and return to the dialog box shown in Figure 5-85. Right-click FE1 in the Data Port List and select Copy Port Config. Right-click FE2 and select Paste Port Config to enable the FE2 port.
- After the configuration, click the Modify on Device button to complete the AN5506-10-B1 service configuration. If the Command Succeed of the AN5506-10-B1 data port service appears in the Command Manager window, the AN5506-10-B1 port service configuration is completed. See Figure 5-87.

ata Port Config Voice Confi	ONT List:AN5506-10-B1[2])	
ata Port List	Port No. 2	
7E1	✓ Enable/Disable Port	
'E2		
7E3	V Port Auto Negotiation	
7E4 7E5	Port Speed 100M 🔽 Duplex Full-Duplex 🔽	
7E5 7E6		
E0 E7	🔽 Flow Control Enable/Disable	
E8		
E9	IGMP UP CVLAN IGMP UP SVLAN	
E10	CVLAN ID SVLAN ID	1
E11		
E12	CVLAN COS 🔹 SVLAN COS 👻	
E13	CVLAN TPID 33024 SVLAN TPID 33024	
E14	CVLAN TPID 33024 SVLAN TPID 33024	
E15		
E16	Service	
E17	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID C A	dd
E18	No TL O Items unicast Transparen 3024 600	
E19		
E20		.ete
E21		
E22	Mod	li fy
E23 E24		
624		
	Boardwidth Set	
	Service Upstream Minimum Guaranteed 640	_
	Service Upstream Maximum Allowed 100000	
	Service Downstream Bandwidth(kbit/s) 100000	
n		
<u>R</u> e:	ad DB <u>W</u> rite DB <u>Re</u> ad Device Modify On Device Delete On Device Cl	056

Figure 5-87 The port service configuration completed

5.3.5.6 Configuring the GPON OLT VLAN Operation Table

Configuration purpose

Perform the QinQ function of the data service by completing the SVLAN ID configuration on the GPON OLT VLAN operation table.

Operation steps

Right-click the HSWA[9] card in the Object Tree pane, select Config → QinQ
 → GPON OLT VLAN Operation Table from the shortcut menu to access the GPON OLT VLAN Operation Table window.

- Select Edit → Append on the menu bar or click the ^Q button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Domain Name blank field and enter abc2.
- 3. Configure according to the planned data in Table 5-22. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the GPON OLT VLAN operation table is configured. See Figure 5-88.

🔥 Gpon OLT VA	LN Operat	tion Tabl	e (Domain	1:Syste	1:0L	.T System	1 : HSTA	[9])	[Curre	nt Dat	.a Source	: Devic	
Edit Access O	peration	Device Op	eration	😣 谷 (i ,	🆗 🖥 🖻	*	6	4				
Traffic Identif	ication												
Domain Name	VLAN ID	Priority	Outer VLA	l Cos	Outer	VLAN Vid	inner	VLAN (Cos	inner	VLAN Vid		
abc2	2000		0		3001								
Gpon OLT VAL	N Operati	on Table											
11:02:52 > Ser	nd Commar	nd:Read Fi	om Devic	e [Gpon (OLT VA	LN Operat	ion Ta	ble]					_
11:02:52 > Ser													
11:02:52 > Re:	ad From I)evice[Gpd	on OLT VA	LN Oper:	ation	TablelExe	cuting						
11:02:53 > Con							6						-
													//

Figure 5-88 The GPON OLT VLAN Operation Table window - completed

5.3.5.7 Binding the PON Port to the VLAN Operation Table

Configuration purpose

Apply the data service configuration to the PON port on the GC8B card by binding the PON port to the VLAN operation table.

Operation steps

- Right-click the GC8B[15] card in the Object Tree pane, select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.

- Click the right pane, select Edit → Append in the menu bar of the window or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Click the Table Name list box and select abc2.
- 4. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table abc2. See Figure 5-89.

Slot No.	PON port	Action	Table Name
15	1	attach	abc2
15	2	attach	3
5	3	attach	
5	4	attach	
5	5	attach	
5	6	attach	
5	7	attach	
5	8	attach	
]
PON at	ttach/detac	h VLAN Table	
0:38:14	> Send C	ommand:Read From Device[PON attach/detach VLAN Table]	
0:38:14	> Begin	To Validate The Command Data!	
0:38:14	> Valida	te Data Finished	
	× c	ommand Successfully!	

Figure 5-89 The PON attach / detach VLAN table window - completed

5.3.6 Configuring Data Services in a Batch Manner (for the AN5506-10-B1)

5.3.6.1 Planning Data

Table 5-23The planned data of data service configuration at the OLT side in the VLAN 1:1translation mode (in a batch manner)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	2
	ONU type	The type of the ONU	AN5506-10-B1
	Service Name	Configure according to the network planning of the operator.	data3
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Тад
	Service Type	Select data in correspondence to the data service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Item		Description	Example	
	Profile Name	The name of the bandwidth allocation profile	а	
	Service Type	Select integrated service.	Integrated Se	ervice
	L i I	The fixed bandwidth of an ONU's uplink service.		
	Fixed	Even if the service does not use the bandwidth	40	
	Bandwidth	resource, other services cannot occupy the	16	
	(Kbyte/s)	resource. The default value is 16Kbyte/s.		
		The minimum bandwidth for provisioning an ONU's		
Bandwidth	Assured	uplink service. If the bandwidth resource is not used		
config profile	Bandwidth	by this service, then the resource may be released	0	
	(Kbyte/s)	for other services to use. The default value is		
		0Kbyte/s.		
		The maximum bandwidth of an ONU's uplink		
	Maximum	service. The sum of the fixed bandwidth value and		
	Bandwidth	the assured bandwidth value should not be larger	1280	
	(Kbyte/s)	than the maximum bandwidth value. The default		
		value is 64Kbyte/s.		
	Slot No.	The number of the actually used slot	15	
Deve de vielthe	PON No.	The number of the actually used PON	1	
Bandwidth		The ONU authorization number allocated according	•	
allocation	ONU S.N.	to the network planning of the operator.	2	
profile	GPON	The name of the configured bandwidth ellocation		
binding	Bandwidth	The name of the configured bandwidth allocation	а	
	Profile	profile		
	Drofile Nome	Configure according to the network planning of the	b	
	Profile Name	operator	b	
Service	Service Type	Select unicast	Unicast	
Model	CVLAN Mode	Configure the CVLAN mode of the service as Tag or	Transport	
Profile	CVLAN WODE	Transparent.	Transparent	
	Translation	Configure the translation function	Frable	
	State	Configure the translation function.	Enable	
	PON No.	The actually used ONU port	1	2
ONU data port	Port Enable /	Enable / disable the port.	Enable	
configuration	Disable			
conniguration	MAC Limit	Configured as no MAC limit.	0	
ONU data	CTPID	The default value is 33024.	33024	

Table 5-24The planned data of data service configuration at the AN5506-10-B1 ONU side inthe VLAN 1:1 translation mode (in a batch manner)

Item			Description	Example
service configuration	CVLAN	ID	The pre-translation VLAN ID, ranging from 1 to 4085.	600
	ccos		The CVLAN priority configuration, ranging from 0 to 7 with 7 as the highest priority and 0 as the lowest.	0
	VLAN I	D	The default value is 33024.	33024
	Transla VID	tion	The translated VLAN ID, ranging from 1 to 4085.	2000
	COS		The translation VLAN priority, ranging from 0 to 7, or null.	0
	Service Profile	Model	Select the configured service model profile.	b
	Domair	Name	Configure according to the network planning of the operator.	abc2
	VLAN I	D	The corresponding inner VLAN value of the uplink service flow from the ONU, ranging from 1 to 4085.	2000
	Priority		The inner VLAN translation priority of the downlink service flow, ranging from 0 to 7, or null.	_
GPON OLT	VLAN	Outer VLAN Cos	The SVLAN priority, ranging from 0 to 7.	0
VLAN Operation Table	Layer 2	Outer VLAN Vid	The item is used to add the SVLAN value, ranging from 1 to 4085.	3001
		Inner VLAN Cos	The inner VLAN translation priority of the uplink service flow, ranging from 0 to 7, or null.	
	VLAN Layer 1	Outer VLAN Cos	The item can be used to translate the inner VLAN of the uplink service flow from the ONU. If translation is required, the item is the translated VLAN value. If not required, the item is consistent with the VLAN identifier or null.	
PON Attach /	Slot No		The number of the actually used slot	15
Detach	PON Po	ort	The number of the actually used PON	1
VLAN Table	Action		Attach / detach the VLAN operation table.	Attach
	Table N	ame	Select the configured VLAN operation table name.	abc2

5.3.6.2 Configuration Flow Chart

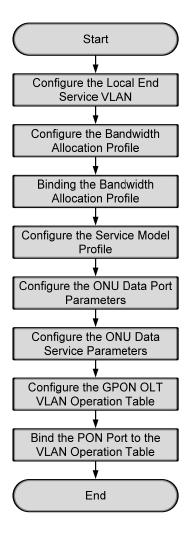


Figure 5-90 The batch configuration flow chart of data service provisioning in the VLAN 1:1 translation mode (for the AN5506-10-B1)

5.3.6.3 Configuring the Local End Service VLAN

See Section 5.3.3.3 for configuration procedures.

5.3.6.4 Configuring the Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- 2. Click the left pane and select Edit \rightarrow Append on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Double-click the **Profile Name** blank field and enter **a**.

3. Click the right pane and select $Edit \rightarrow Append$ on the menu bar or click the button. Enter 1 in the Please Input the Rows for Add dialog box that

appears and click the **OK** button.

4. Configure according to the planned data in Table 5-24. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is configured. See Figure 5-91.

vice Type egrated Service	fixed Bandwidth(Kbyte/s) 16	assureed Bandwidth(Kbyte/s) O	Maximum Bandwidth(Kbyte/s 1280
g frofile			
<u>*</u>			
<u> </u>	rom Device[Bandwidth Conf	ig Profile]	
	g Profile	a Profile	g Profile

Figure 5-91 The Bandwidth Config Profile window - completed

5.3.6.5 Binding the Bandwidth Allocation Profile

Configuration purpose

Bind the configured bandwidth allocation profile to the ONU.

Configuration example

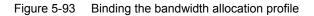
- 1. Right-click the system in the **Object Tree**, select **Config** \rightarrow **Batch Config** \rightarrow **ONU Configuration** to access the ONU configuration window.
- Click Set Object as Condition in the Config Object pane and all configuration objects will appear in the lower pane (you can drill down and select a specific port as the object). Select the AN5506-10-B1[2] under the PON 1 in Slot 15 and click the OK button.

Config Object	Ψ×
Set Object As Condition	
 □ OLT System 1 □ GC4B[5] □ GC8B[15] □ M PON1 □ PON1-AN550 □ PON1-AN550 □ PON1-AN550 □ PON2 □ PON3 □ PON4 □ PON5 □ PON7 □ PON8 	06-10-B1[2]
ок	Cancel

Figure 5-92 Set the configuration object

- 3. The specific configuration information of the object will appear in the right pane. Click the **GPON Bandwidth Profile** list box and select the configured bandwidth profile **a**.
- 4. When the configuration is completed, click the B button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is bound. See Figure 5-93.

🔥 ONU Config (Domain 1:	System	1) [Curre	ent Data	Source:	Default]			_ 🗆 ×
Edit Access Operation Device Operation 🗟 🚸 ≟ 🚢 🖶 🗹 40								
Config Object	Ψ×	Slot No.	PON NO.	ONU NO.	Bandwidth	Profile	GPON Bandwid	lth Profile
Set Object As Condition		15	1	2			a	
····,····								
OLT System 1								
		Ļ						
		ONU Con	nfig					
	[09:10:48	> Send (Command: F	ead From	Device[ONU Config]	
		09:10:48				-		-
		09:10:48	> Read H	rom Devi	.ce[ONU Co	onfig]Ex	ecuting	•



5.3.6.6 Configuring the Service Model Profile

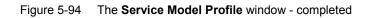
Configuration purpose

Select the data service type, CVLAN mode and determine whether to enable the translation function and the QinQ function.

Configuration example

- 1. Right-click the system in the **Object Tree** pane, select **Config** \rightarrow **Profile Definition** \rightarrow **Service Model Profile** to access the service model profile configuration window.
- Select Edit → Append in the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a service model profile.
- 3. Configure according to the planned data in Table 5-24. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the service model profile is configured. See Figure 5-94.

			em 1) [Current Data		>			
Edit Access Operation Device Operation 🛛 😢 🎲 🖏 🥧 ≟ 🚢 😹 통 🗹 🚚								
Profile Name	Service Type	CVLAN Mode	Translation State	QinQ State				
Ъ	unicast	transparent	✓					
Service Mode	l Profile							
			-					
			ice[Service Model P	rofile]				
11:14:24 > Be	gin To Valid	ate The Comm	and Data!					
11:14:24 > Val		Finished						
11.14.24 \ See	Lidate Data B	i inii bhod						
(1:14:24 / Sei	lidate Data J nd Command S							



5.3.6.7 Configuring the ONU Data Port Parameters

Configuration purpose

Enable the ONU ports and limit the number of MAC addresses in a batch manner.

Configuration Example

- Right-click the system in the Object Tree pane, select Config → Batch Config → ONU Data Port Config from the shortcut menu to access the ONU data port configuration window.
- Click Set Object as Condition in the Config Object pane and all configuration objects (you can drill down and select a specific port as the object) will appear in the lower part. Select FE1 and FE2 of the AN5506-10-B1[2] listed under the PON 1 in Slot 15 and click OK.

Config Object 📮 🗘	×
Set Object As Condition	
 □ OLT System 1 □ GC4B[5] □ GC8B[15] □ PON1 □ PON1-AN5506-04-B[1] □ PON1-AN5506-10-B1[2] □ FE1 □ FE3 □ FE4 □ FE5 □ FE6 □ FE7 	
OK Cancel	

Figure 5-95 Set configuration objects

3. The specific configuration information of the objects will appear in the right pane. Configure according to the planned data in Table 5-24. When the configuration is completed, click the B button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU data port parameters are configured. See Figure 5-96.

ONU Data Port Confi;	gur e (Doi	ain 1:S	7stem 1)	[Curre	nt Data	Source: Dev	ice]							
Edit Access Operation Device Operation 🗟 🌭 📇 🗲 🖌 4														
onfig Object	Ψ×	Slot No.	PON NO.		Port NO.	Enable/Disabl		mit ONV 1	ort Spee	d Limit	Profile	ONV Data Po	rt Attribute	e Profil
Set Object As Condition		15 15	1 1	2	1	✓ ✓	0							
OLT System 1														
		UNU D	ata Port	Configu	re									
						From Device[)NU Data	Port C	onfigur	el 👘				
		09:20:08						_						
						NU Data Port	Configu	re]Exec	uting					
		09:20:08	si> Comm	and Suc	ceed									
													Ln:2.Col:	1

Figure 5-96 The ONU Data Port Configure window - completed

5.3.6.8 Configuring the ONU Data Service Parameters

Configuration purpose

Configure the CVLAN and SVLAN for the data service flow uplinked to the ONU port in a batch manner.

Configuration example

- Right-click the system in the Object Tree pane, select Config → Batch Config → ONU Data Service Configure from the shortcut menu to access the ONU data service configuration window.
- Click the button in the menu bar and the Add Item Number dialog box appears. Select configuration objects (you can drill down and select a specific port as the object) in the left pane. Select FE1 and FE2 of the ONU and click OK to return to the ONU Data Service Configure window.

Add Item number Slot No. PON No. ONU No. Port No. Item number Image: C4B[5] 15 1 2 1 1 Image: C4B[5] 15 1 2 1 1 Image: C4B[5] 15 1 2 1 1	×
• •	r
⊡ 🔽 GC8B[15] 15 1 2 2 1	
	_
⊡	
PON1-AN5506-10-	
FE3	
FE14	
FE15	
BatchModify OK CANC	-
BatchModify OK CANO	

Figure 5-97 Set configuration objects

3. The specific configuration information of the objects will appear in the right pane. Configure according to the planned data in Table 5-24. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU data service parameters are configured. See Figure 5-98.

Edit Access Operation	Device Operat	ion 😵 🦯	- 🕒 🎄 🖁	5 5 🗹	2			
onfig Object	P × Slot	No. PON NO.	ONV NO.	Port NO.	Service ID	CTPID	CVLAN ID	CCOS
Set Object As Condition	15	1	2	2	1	33024 33024	600 600	0
8 OLT System 1	09:24		Command:	Read From		Data Serv	vice Configure]	
		1:59 > Send			lly! ata Service	Configure	Executing	



5.3.6.9 Configuring the GPON OLT VLAN Operation Table

Configuration purpose

Perform the QinQ function of the data service by completing the SVLAN ID configuration on the GPON OLT VLAN operation table.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, select Config → QinQ
 → GPON OLT VLAN Operation Table from the shortcut menu to access the GPON OLT VLAN Operation Table window.
- Select Edit → Append in the menu bar or click the ^Ŷ button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Domain Name blank field and enter abc2.
- 3. Configure according to the planned data in Table 5-24. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the GPON OLT VLAN operation table is configured. See Figure 5-99.

🔥 Gpon	OLT VAL	N Operat	ion Tabl	e (Domain 🗆	1:S y ste	m 1:0LT Sys	stem 1	:HSTA[9])	[Curre	nt Data Source	: Device] 💶 🗖	×
Edit /	Access Op	eration	Device Op	eration	🕹 🌍	🚔 🖪, 🎄 🖡	8 🛃	😃 🛃 📑	4 🐺			
Traffic	Traffic Identification											
Domain N	Name 1	VLAN ID	Priority	Outer VLAN	l Cos	Outer VLAN	Vid	inner VLAN	Cos	inner VLAN Vid		
ab c2	1	2000		0		3001						
Gpon	OLT VALN	Operatio	on Table									
	11:02:52 > Send Command:Read From Device[Gpon OLT VALN Operation Table]											
	11:02:52 > Send Command Successfully! 11:02:52 > Read From Device[Gpon OLT VALN Operation Table]Executing											
11:02:5	i3 > Comu	mand Suc	ceed									•
												Π.,

Figure 5-99 The GPON OLT VLAN Operation Table window - completed

5.3.6.10 Binding the PON Port to the VLAN Operation Table

Configuration purpose

Apply the data service configuration to the PON port on the GC8B card by binding the PON port to the VLAN operation table.

Operation steps

- Right-click the GC8B[15] card in the Object Tree pane, select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.
- 3. Click the right pane, select $\textbf{Edit} \rightarrow \textbf{Append}$ in the menu bar of the window or

click the **W** button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click **OK**. Click the **Table Name** list box and select **abc2**.

4. Click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table **abc2**. See Figure 5-100.

Slot No.	PON port	Action	Table Name
15	1	attach	abc2
15	2	attach	
15	3	attach	
15	4	attach	
15	5	attach	
15	6	attach	
15	7	attach	
15	8	attach	
PON a	ttach/detacl	VLAN Table	,
0.38.14) Send C	mmand:Read From Device[PON attac	Adetach WIAN Table]
		o Validate The Command Data!	Vactacht vinne rabiej
10.30.14		e Data Finished	
0.39.14			

Figure 5-100 The PON attach / detach VLAN Table window - completed

5.3.7 End of Configuration

After VLAN translation and VLAN tag adding, the PC1 to PC4 can access the Internet via the home gateways normally.

5.4 Example for Data Service Configuration – in the VLAN N:1 Translation Mode

5.4.1 Configuration Rules

The AN5116-06B supports the QinQ data service, which means it supports the VLAN stacking as well. In this example the GC8B card is used as the service interface card and the AN5506-04-B and the AN5506-10-B1 are used as ONUs to introduce the data service configuration in the VLAN N:1 translation mode.

- The QinQ data service in the VLAN N:1 translation mode can be configured via the SVLAN configuration on the ONU or the OLT. In this example the service is configured via the SVLAN configuration on the OLT.
- The inner layer VLAN translation can be configured on the ONU or the OLT. In this example the translation is configured on the ONU.
- The VLAN ID of the ONU ranges from 1 to 4085.
 - To add stacked VLAN tags to the data service, the SVLAN ID must be within the preset range of the local VLAN.
 - ► To add a single VLAN tag to the data service, the CVLAN ID must be within the preset range of the local VLAN.
- Translation mode: The Ethernet data uploaded from the subscriber side will be added with a fixed Tag when passing the subscriber's home gateway. Because the Tag added by the HG may not fall in the valid range defined by the opertor, the default Tag added by the HG will be deleted by the ONU when the service is uplinked to the ONU equipment. The service will be added with a reasonable Tag and transmitted to the AN5116-06B, which will then add the SVLAN ID to the data service. Finally the data service with stacked service VLAN tags will be transmitted to the upper layer network side equipment.
- The ONU data service configuration can be implemented in the service profile or the ONU service configuration. If the data service configurations of the ONUs are the same, the batch configurations can be implemented using the service profile.

- The sum of the fixed bandwidth and asssured bandwidth of the service in the bandwidth allocation should not exceed the maximum bandwidth configuration parameter.
- An FE port of the AN5506-04-B can support up to four data services, and an FE port of the AN5506-10-B1 can support up to 16 data services.
- Each PON port can bind up to 32 VLAN operation tables.

5.4.2 Service Network

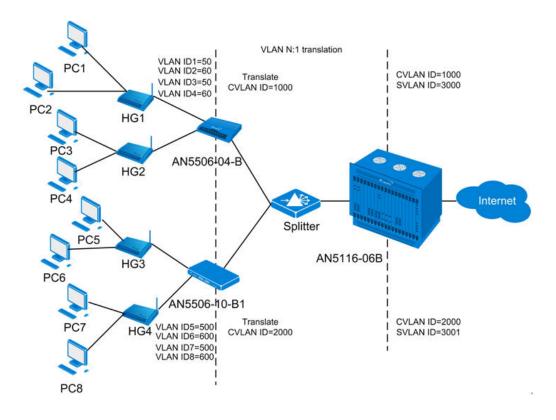


Figure 5-101 The data service network diagram (in the VLAN N:1 translation mode)

As Figure 5-101 shows, each HG is connected to two terminal subscribers. The data uploaded from different subscribers is added with different tags and then transmitted to the ONUs using the HGs. The ONUs translate the VLAN IDs of different tags and transmit them to the AN5116-06B via the splitter. And the AN5116-06B adds an SVLAN tag in addition to the CVLAN tag and transmits the packet to the upper layer network. For the downlink direction, the reverse process takes place.

The AN5506-04-B and the AN5506-10-B1 are used as ONUs in this example. The AN5116-06B uses the HU1A and the GC8B as the interface cards at the network side and the subscriber side respectively, and the HSWA card is compulsory.

5.4.3 Configuring Data Services Respectively (for the AN5506-04-B)

5.4.3.1 Planning Data

Table 5-25The planned data of data service configuration at the OLT side in the VLAN N:1translation mode (configured respectively)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
ONU	PON No.	The number of the actually used PON port	1
information	ONU No.	Configure according to the network planning of	1
information		the operator.	I
	ONU type	The type of the ONU	AN5506-04-B
	Service Name Configure according to the network planning		data4
	Service Marile	the operator.	uala4
	VLAN ID Begin	The begin VLAN ID number of the uplink port	3000
Local end		service.	5000
service		The end VLAN ID number of the uplink port	
VLAN	VLAN ID End	service. The begin VLAN ID should not be	3001
		larger than the end VLAN ID.	
	Uplink No. /	The number of the actually used uplink port.	19:SFP2
	TRUNK No.	The number of the actually used uplink port.	13.011 2

Item		Description	Example
		The Tag processing mode of the uplink service	
		VLAN can be set as Tag or Untag. Under	
		UNTAG mode, the TAGs of the uplink packets	
		will be stripped automatically and the packets	
		will be uplinked in the form of UNTAG when	
		they pass the port, whereas the downlink	
	TAG / UNTAG	UNTAG packets will be added with designated	Tog
	TAG / UNTAG	TAGs and downlinked in the form of TAG.	Тад
		Under TAG mode, the uplink data packets will	
		not be processed but remain uplinked in the	
		original form. For downlink packets, however,	
		only packets with designated TAGs are	
		received and the packets will not be processed	
		but remain downlinked in the original form.	
	Service Type	Configure according to the network planning of	data
	Service Type	the operator.	uala
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-26The planned data of data service configuration at the AN5506-04-B ONU side inthe VLAN N:1 translation mode (configured respectively)

Item		Description	Example		
	Service Type	Select broadband Internet access.	Broadband In	ternet access	
		The fixed bandwidth of an ONU's uplink			
	Fixed Bandwidth	service. Even if the service does not use the			
	(Kbyte/s)	bandwidth resource, other services cannot	16		
	(NDyte/3)	occupy the resource. The default value is			
		16Kbyte/s.			
		The minimum bandwidth for provisioning an			
Bandwidth	Assured	ONU's uplink service. If the bandwidth			
Configuration	Bandwidth	resource is not used by this service, then the	0		
	(Kbyte/s)	resource may be released for other services to			
		use. The default value is 0Kbyte/s.			
		The maximum bandwidth of an ONU's uplink			
	Maximum	service. The sum of the fixed bandwidth value			
	Bandwidth	and the assured bandwidth value should not be	1280		
	(Kbyte/s)	larger than the maximum bandwidth value. The			
		default value is 64Kbyte/s.			
Basic	ONU Port Used	The actually used ONU port	1	2	
information of	Enable / Disable	Configure according to the network planning of	Default		
the ONU port	Port	the operator. Enable is selected by default.	Delault		

Item		Description	Example			
	Port Auto	Configure according to the network planning of	Default			
	Negotiation	the operator. Enable is selected by default.				
	Port Speed	Unconfigurable when the port auto negotiation	Default			
		is enabled. The default speed is 100M.	Deldalt			
	Duplex	Unconfigurable when the port auto negotiation	Default			
	Daplox	is enabled. The default value is full-duplex.	Default			
	Flow control	Configure according to the network planning of				
	Enable / Disable	the operator. Disable is selected by default.				
ONU port service parameter config	Index	The configured service serial number. An ONU	1	2	1	2
		port can support up to six services.				
	TAG Mode	Configured as Tag or Untag according to the				
		network planning of the operator. In the Tag				
		mode the uplink data packets are tagged, while	Tag			
		in the Untag mode the uplink data packets are				
		untagged.				
	Service Type	Configured as Unicast or Multicast .	Unicast			
	COS	If the CVLAN mode is set as Translation, the	0			
		item is configured as the pre-translation service				
		priority, ranging from 1 to 7. Unconfigurable				
		when the Tag mode is set as Untag .				
	VLAN ID	When the CVLAN mode is set as Translation ,	50			
		the item is the pre-translation VLAN ID, ranging		60	50	60
		from 1 to 4085. When the Tag mode is set as				I
		Untag, this item is unconfigurable.				
	CVLAN Mode	When the Tag mode is set as Untag , the	Translation			
		CVLAN mode can be set as Tag or Transparent . When the Tag mode is set as				
		Tag, the CVLAN mode can set as Translation				
		or Transparent.				
	CVLAN ID	The post-translation VLAN ID, ranging from 1				
		to 4085.	1000			
	COS	The translated priority, ranging from 0 to 7.	0			
	Ds Encrypt State	Enable is selected by default.	Disable			
	QinQ State	Enable / disable the QinQ configuration.	Disable			
		Unconfigurable when the QinQ state is				
	SVLAN ID	disabled.	—			
	Service Name	Corresponds to the configured local end				
		service VLAN. Unconfigurable when the QinQ	—			
		enable status is disabled.				

Item			Description	Example
	cos		The SVLAN priority, ranging from 1 to 7. Unconfigurable when the QinQ enable status is disabled.	_
	Domain Name		Configure according to the network planning of the operator.	abc3
	VLAN ID		The corresponding inner VLAN value of the uplink service flow from the ONU, ranging from 1 to 4085.	1000
	Priority		The inner VLAN translation priority of the downlink service flow, ranging from 0 to 7, or null.	_
GPON OLT VLAN	VLAN	Outer VLAN COS	The SVLAN priority, ranging from 0 to 7.	0
operation table	Layer 2	Outer VLAN Vid	The item is used to add the SVLAN value, ranging from 1 to 4085.	3000
	VLAN Layer 1	Inner VLAN COS	The inner VLAN translation priority of the uplink service flow, ranging from 0 to 7, or null.	_
		Inner VLAN Vid	The item can be used to translate the inner VLAN of the uplink service flow from the ONU. If translation is required, the item is the translated VLAN value. If not required, the item is consistent with the VLAN identifier or null.	
	Slot No	•	The number of the actually used slot	15
PON Attach /	PON Po	ort	The number of the actually used PON	1
Detach VLAN	Action		Attach / detach the VLAN operation table.	Attach
Table	Table N	ame	Select the configured VLAN operation table name.	abc3

5.4.3.2 Configuration Flow Chart

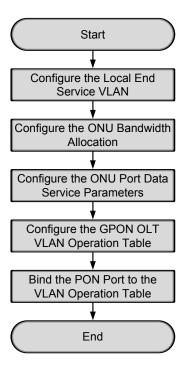


Figure 5-102 Flow chart for provisioning data services respectively in the VLAN N:1 translation mode (for the AN5506-04-B)

5.4.3.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the uplink port VLAN of the AN5116-06B for the designated service flow and limit the VLAN range of the service.

Operation steps

 Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu. In the window click the Local End Service VLAN tab and the local VLAN configuration window appears. 2. Click Edit \rightarrow Append in the menu bar of the window or click the button.

Enter 1 in the **Please Input the Rows for Add** dialog box that appears and click **OK** to create a local VLAN.

3. Configure according to the planned data in Table 5-25. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN is configured. See Figure 5-103.

ode

Figure 5-103 The Local End Service VLAN window - completed

5.4.3.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU, select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.

- Click the right pane and select Edit → Append from the menu bar, or click the
 button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK.
- 3. Configure according to the planned data in Table 5-26. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-104.

🕼 Bandwidth Config(Domain 1:	System 2:GC8	8B[15] ONV: POH1-AN550	D6-04-B[i]) [Current Dat	a Source: Device] _ 🗆 🗙
Edit Access Operation Device	Operation	🔇 🗘 🖏 🤣 🖬 🛃 😕 I	6 🗹 🐙	
Slot No. FON Fort No. ONU S.N. 15 1 1			assureed Bandwidth(Kbyte/s) O	Maximum Bandwidth(Kbyte/s) 1260
•				
Bandwidth Config 19:00:01 > Send Command:Read	From Device	e[Bandwidth Config]		
19:00:01 > Begin To Validate 19:00:01 > Validate Data Fin	• The Command	A CARL STATE AND SHOP CONTRACT AND CARL STATE		Î
19:00:01 > Send Command Succ				

Figure 5-104 The Bandwidth Config window - completed

5.4.3.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-105.

Data Port List FE1 FE2	Port No. 1 Enable/Disable Port
FE3 FE4	✓ Port Auto Negotiation Port Speed 100M ▼ Duplex Full-Duplex ▼ Flow Control Enable/Disable Port Rate Limit
	Upstream Port Rate Limit(Kbit/s) Downstream Port Rate Limit(Kbit/s) IndexService type[Tag mode COS VLAN ID Ds Encrypt state Cvlan modes Add
	<u>D</u> elete <u>Modify</u>

Figure 5-105 The ONU port service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-105. Click **Add** to create two data services and configure according to the planned data in Table 5-26.

Services Configu	ration			×
Index	1	Service type	unicast 💌	OK
TAG Mode	Tag 💌	CVLAN Mode	Translation 💌	Cancel
COS	0 💌	CVLAN ID	1000	
VLAN ID	50	COS		
🔲 Dis Encrypt state				
🔲 QinQ State				-
SVLAN ID				
Service Name		COS		



Services Configu	ration				×
Index	1	Service type	unicast	•	ОК
TAG Mode	Tag 🔽	CVLAN Mode	Translation	•	Cancel
COS	0 💌	CVLAN ID	1000		
VLAN ID	60	COS	0	•	
🗖 Ds Encrypt state					
🔲 QinQ State					
SVLAN ID					
Service Name	_	COS		-	

Figure 5-107 The Services Configuration dialog box (2)

- Click OK and return to the dialog box shown in Figure 5-105. Right-click FE1 in the Data Port List and select Copy Port Config. Right-click FE2 and select Paste Port Config.
- 4. After the configuration, click the **Modify on Device** button and complete the AN5506-04-B service configuration. When the **Command Succeed** of the AN5506-04-B data port service appears in the **Command Manager** window, the AN5506-04-B port service configuration is completed. See Figure 5-108.

(Domain 1:System 1:GC8 Data Port Config	B[15]	ONV:PON1-	ANS506-04-	B[1])			×
Data Port List FE1 FE2 FE3 FE4	Port S	ble/Disable H t Auto Negoti	ation [10 able/Disable		_	Duplex Full	-Duplex V
	Index	ream Port Rat Service type unicast		OS VLAN ID	Ds Encrypt state Disable	Cvlan mod Translati	Add
		unicast	Tag	15.	Disable	Translati	Delete
							Modify
Read	DB	<u>W</u> rite DB	R <u>e</u> ad Device	Modify (Dn Device Delet	e On Device	Close

Figure 5-108 The port service configuration completed

5.4.3.6 Configuring the GPON OLT VLAN Operation Table

Configuration purpose

Perform the QinQ function of the data service by completing the SVLAN ID configuration on the GPON OLT VLAN operation table.

- Right-click the HSWA[9] card in the Object Tree pane, select Config → QinQ
 → GPON OLT VLAN Operation Table from the shortcut menu to access the GPON OLT VLAN Operation Table window.
- Select Edit → Append in the menu bar or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Domain Name blank field and enter abc3.

3. Configure according to the planned data in Table 5-26. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the GPON OLT VLAN operation table is configured. See Figure 5-109.

Edit Access Operation Device Operation 🛛 😒 🤪 🚍 📴 🤣 🧔 📑 🔛 🏄 🖉 🐺 🚚												
raffic I	Edentification											
omain Na	ame VLAN ID	Priority	Outer VL	AN Cos	Outer	VLAN Vid	d inn	ner VLAN	Cos	inner	VLAN Vid	
bc3	1000		10		3000							
					_3000							
Gpon 0	OLT VALN Operat:	on Table			3000							
1:33:32	· > Send Comma	nd:Read F	rom Devi	ce [Gpon		LN Oper	ration 3	Table]				
1:33:32 1:33:32		nd:Read F nd Succes	rom Devi sfully!		OLT VA			_				

Figure 5-109 The GPON OLT VLAN Operation Table window - completed

5.4.3.7 Binding the PON Port to the VLAN Operation Table

Configuration purpose

Apply the data service configuration to the PON port on the GC8B card by binding the PON port to the VLAN operation table.

- Right-click the GC8B[15] card in the Object Tree pane, select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.
- Click the right pane, select Edit → Append in the menu bar of the window or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Click the Table Name list box and select abc3.

4. Click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table **abc3**. See Figure 5-110.

lot No.	PON port	Action	Table Name
5	1	attach	abc3
5	2	attach	
5	3	attach	
5	4	attach	
5	5	attach	
5	6	attach	
5	7	attach	
5	8	attach	
			J
PON a	ttach/detacl	h VLAN Table	
0:38:14	> Send Co	ommand:Read From Device[PON attach/detach VLAN Table]	
		To Validate The Command Data!	
1:38:14			
	> Validat	te Data Finished	

Figure 5-110 The PON attach / detach VLAN Table window - completed

5.4.4 Configuring Data Services in a Batch Manner (for the AN5506-04-B)

5.4.4.1 Planning Data

Table 5-27The planned data of data service configuration at the OLT side in the VLAN N:1translation mode (in a batch manner)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	1
	ONU type	The type of the ONU	AN5506-04-B
	Service Name	Configure according to the network planning of the operator.	data4
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Тад
	Service Type	Configure according to the network planning of the operator.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Item		Description	Example
	Profile Name	The name of the bandwidth allocation	2
	FIOILE Name	profile	а
	Service Type	Select broadband Internet access.	Broadband Internet access
		The fixed bandwidth of an ONU's uplink	
	Fixed Bandwidth (Kbyte/s)	service. Even if the service does not use	
		the bandwidth resource, other services	
	(RDyte/S)	cannot occupy the resource. The default	
		value is 16Kbyte/s.	
		The minimum bandwidth for provisioning an	
Bandwidth		ONU's uplink service. If the bandwidth	
configuration	Assured Bandwidth	resource is not used by this service, then	0
	(Kbyte/s)	the resource may be released for other	U
		services to use. The default value is	
		0Kbyte/s.	
		The maximum bandwidth of an ONU's	
		uplink service. The sum of the fixed	
	Maximum Bandwidth	bandwidth value and the assured	1280
	(Kbyte/s)	bandwidth value should not be larger than	1200
		the maximum bandwidth value. The default	
		value is 64Kbyte/s.	
	Profile Name	Configure according to the network	b
		planning of the operator.	5
	Enable / Disable Port	Enable is selected by default.	Enable
	Port Auto Negotiation	Enable is selected by default.	Enable
	Port Speed	The default speed is 10M. Unconfigurable	
		when the auto negotiation is enabled.	
		Full-duplex is selected by default.	
Data Service	Duplex	Unconfigurable when the auto negotiation	—
Profile		is enabled.	
Tome	Flow control Enable / Disable	Disable is selected by default.	Disable
	Port Limit Enable /		
	Disable	Disable is selected by default.	Disable
		The default value is 0. Unconfigurable	
	Port Uplink Limit	when the port limit is disabled.	—
		The default value is 0. Unconfigurable	
	Port Downlink Limit	when the port limit is disabled.	—
	l		l

Table 5-28The planned data of data service configuration at the AN5506-04-B ONU side inthe VLAN N:1 translation mode (in a batch manner)

ltem			Description	Example		
			Configured as Tag or Untag according to			
			the network planning of the operator. In the			
	TAG Mode		Tag mode the uplink data packets are	Тад		
			tagged, while in the Untag mode the uplink			
			data packets are untagged.			
			When the CVLAN mode is set as			
			Translate, the item is the pre-translation			
	COS		service priority, ranging from 0 to 7. When	0		
	COS		the Tag mode is set as Untag , this item is			
			unconfigurable.			
			When the CVLAN mode is set as			
l			Translate, the item is the pre-translation			
	VLAN ID		VLAN ID, ranging from 1 to 4085. When the	50	60	
			Tag mode is set as Untag , this item is			
			unconfigurable.			
	Ds Encrypt S	State	Disable is selected by default.	Disable	-	
			When the Tag mode is set as Untag , the			
			CLVAN mode can be set as Tag or			
	CVLAN Mode		Transparent. When the Tag mode is set as	Translate		
			Tag, the CVLAN mode can be set as			
			Translate or Transparent.			
			Configure according to the network			
	CVLAN ID		planning of the operator. The value range is	1000		
			1 to 4085.			
	COS		The priority range is 0 to 7.	0		
	QinQ Enable	Stata	Enable / disable the QinQ configuration.	Disable		
		Sidle	Disable is selected by default.	Disable		
			The service name configured in the			
	VLAN Name	;	corresponding local VLAN. Unconfigurable	—		
			when the QinQ enable state is disabled.			
	SVLAN ID		Unconfigurable when the QinQ enable state			
	SVLAN ID		is disabled.			
	cos		Unconfigurable when the QinQ enable state			
			is disabled.			
	Profile Name		Configure according to the network	с		
Service		•	planning of the operator.			
Profile	ONU Type		The actually used ONU type	AN5506-04-	B	
	ONU	Profile	The bandwidth allocation profile should be	Bandwidth a	llocation profile	
	Subprofile Type		selected.	Bandwidth allocation profile		

Item				Description	Example		
	Config		Profile	The profile name configured in the			
			Name	corresponding bandwidth allocation profile	а		
	Port Ty	ре	L	The type of the actually used port	FE port		
	Port No).		The number of the actually used port	1	2	
	ONU P	ort	Profile Type	The data service profile should be selected.	Data service	profile	
	Config			The profile name configured in the corresponding data service profile	b		
	Profile	ID		The profile name configured in the corresponding service profile	с		
Ormiter	Action			Bind the ONU to the service profile.	Attach		
Service Profile	Slot No.			The number of the actually used slot	15		
	PON No.			The number of the actually used PON	1		
Binding	ONU S.N.			The ONU authorization number assigned according to the network planning of the operator	1		
	Domain Name			Configure according to the network planning of the operator.	abc3		
	VLAN ID			The corresponding inner VLAN value of the uplink service flow from the ONU, ranging from 1 to 4085.	1000		
	Priority			The inner VLAN translation priority of the downlink service flow, ranging from 0 to 7, or null.	_		
GPON OLT	VLAN	AN COS		The SVLAN priority, ranging from 0 to 7.	0		
VLAN Operation Table	Layer 2	Out Vid	er VLAN	The item can be used to add the SVLAN value, ranging from 1 to 4085.	3000		
		Inne COS	er VLAN S	The inner VLAN translation priority of the uplink service flow, ranging from 0 to7, or null.	_		
	VLAN Layer 1 Inner VLAN Vid		er VLAN	The item can be used to translate the inner VLAN of the uplink service flow from the ONU. If translation is required, the item is the translated VLAN value. If not required, the item is consistent with the VLAN identifier or null.	_		

Item		Description	Example
	Slot No.	The number of the actually used slot	15
PON Attach /	PON Port	The number of the actually used PON	1
Detach	Action	Attach / detach the VLAN operation table.	Attach
VLAN Table	Table Name	Selects the configured VLAN operation	abc3
		table name.	auco

5.4.4.2 Configuration Flow Chart

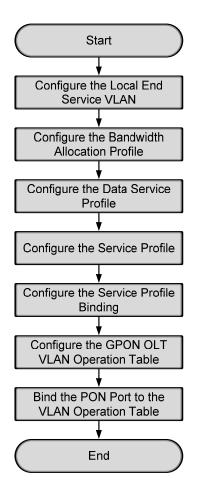


Figure 5-111 The batch configuration flow chart of data service provisioning in the VLAN N:1 translation mode (for the AN5506-04-B)

5.4.4.3 Configure the Local End Service VLAN

See Section 5.4.3.3 for configuration procedures.

5.4.4.4 Configure the Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- Click the left pane and select Edit → Append in the menu bar or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Profile Name blank field and enter a.
- 3. Click the right pane and select $Edit \rightarrow Append$ in the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button.

4. Configure according to the planned data in Table 5-28. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-112.

🕂 Bandwidth Conf	ig Profile(I	omain 1:System 1:OLT	System 1:HSTA[9]) [Curren	nt Data Source: Device]	_ 🗆 ×			
Edit Access Oper	Edit Access Operation Device Operation 😵 🖓 🚔 💽 🚸 🔚 📑 坐 📥 🖶 🗹 4							
Profile Name	Service Type	fixed Bandwidth(Kbyte/s)	assureed Bandwidth(Kbyte/s)	Maximum Bandwidth(Kbyte/s)				
8	DATA	16	0	1280				
Bandwidth Confi	g Profile							
09.43.01 > Send (Command:Read	From Device[Bandwidt	h Config Profilel					
		The Command Data!	n contre i foritio,					
09:43:01 > Valid								
09:43:01 > Send (Command Succ	essfully!			-			



5.4.4.5 Configuring the Data Service Profile

Configuration purpose

Configure the FE port status and working mode of the ONU and translate the inner VLAN of the data service.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Data Service Profile from the shortcut menu. Click the Data Service Profile tab and the Data Service Profile window appears.
- Click the left pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a data service profile b. Configure the basic parameters of the port according to the planned data in Table 5-28.
- Click the right pane and select Edit → Append in the menu bar. Enter 2 in the Please Input the Rows for Add dialog box that appears and click OK. Configure the VLAN tags of the service flow according to the planned data in Table 5-28.
- 4. When the configuration is completed, click the B button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the data service profile is configured. See Figure 5-113.

🗥 Data	Servi	ce Profile(I	lomain 1:System	1:0LT Syst	en 1:HSVA[9]) [Current	Data Source	: Device	•]				_ 🗆 ×
Edit	Access	Operation D	evice Operation	🛛 🗘 🚔 (B, 🆗 🖬 🖻	i 🛃 🍝 📑 🛙	1 🐙						
Profile	e Name I	Enable/Disable	AutoNegotiation	Speed(bit/s)	Duplex Mode	Flow Control	Service No.	Tag Mode	COS 1	/LAN ID	Ds Encrypt	State	CVLAN Mode
Ъ	1	Enable	Enable	10M	Full-Deplux	Disable	1	Tag	0 5	50	Disable		Translation
1							2	Tag	06	50	Disable		Translation
•						F	٩						Þ
Dat	a Servi	ce Profile 🚺	MP Service Profil	e Voice Serv	ice Profile	Service Profi	Le Service F	rofile Bi	nding				
11:38:	44 > S	end Command:	Read From Devic	e[Data Serv	vice Profil	e]							
11:38:	44 > B	egin To Vali	date The Comman	ud Data!									
11:38:	44 > V	alidate Data	Finished										
11:38:	44 > S	end Command	Successfully!										-

Figure 5-113 The Data Service Profile window - completed

5.4.4.6 Creating a Service Profile

Configuration purpose

Configure the bandwidth allocation profile and data service profile for the ONU binding.

- 1. Right-click the HSWA[9] card in the Object Tree pane and select Config \rightarrow Service Profile from the shortcut menu. Click the Service Profile tab and the Service Profile window appears.
- Click the left pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a service profile.
- 3. Double-click the **Profile Name** blank field and enter **c**. Click the **ONU Type** list box and select **AN5506-04-B** from the drop-down list.
- Click the ONU Subprofile Config field to access the ONU Subprofile Config dialog box. Click the Add button to add a profile configuration. Click the Profile Type list box and select Bandwidth Config Profile. Click the Profile Name list box and select a.

ONV Subprofile Config		×
Profile Type	Profile Name	
Bandwidth Config Profile	a	
		Add (<u>A</u>)
		Delete (<u>D</u>)
		ОК
		Cancel

Figure 5-114 The ONU Subprofile Config dialog box

5. Click **OK** and return to the **Service Profile** window.

🔥 Servi	ce Pr	ofile(Dom	ain 1:	System 1:0LT	System	1 : HS1	A[9]) [(Current Dat	ta Sourc	e: Devi	ce] _ 🗆 🗙
Edit	Access	Operation	Devio	ce Operation	🛛 🍄 🧯	- <mark>B</mark>	🏼 🔒	1 🕹 🍝 🖻	- 🗹 🗸		
Profile c	Name	ONU Type	_	ONV Subprofile	Config	Port	Туре	Fort No.	ONU Por	t Profile	Config
.↓ Data	Servio	e Profile	IGMP :	Service Profile	Voice S	• ervice	Profile	Service Pro	ofile Se	rvice Pro	● ● file Binding
09:48:2 09:48:2	9 > B 9 > V	egin To Va alidate Da	alidat ata Fi	ad From Devic te The Comman inished ccessfully!		ervic	e Profil	le]			×
Write To	Databa	ise									11.

Figure 5-115 The Service Profile window

- 6. Click the right pane and select $Edit \rightarrow Append$ in the menu bar. Enter 2 in the **Please Input the Rows for Add** dialog box that appears and click **OK**.
- 7. Click the **Port Type** list box and select **FE**. Double-click the **Port No.** blank field and enter **1**. Repeat the procedure to enter **2**.

 For Port No.1 click the ONU Port Profile Config field to access the ONU Port Profile Config dialog box. Click Add to add a profile configuration. Click the Profile Type list box and select Data Service Profile. Click the Profile Name list box and select b. Repeat the procedure for Port No.2.

MU Port Profile Co	onfig	2
Profile Type	Profile Name	
Data Service Profile	b	
		Add (<u>A</u>)
		Delete (D)
		Delete (<u>D</u>)
		OK
		Cancel

Figure 5-116 The ONU Port Profile Config dialog box

- 9. Click **OK** and return to the **Service Profile** window.
- 10. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the service profile is configured. See Figure 5-117.

Service fro	file(Domain 1	:System 2:0LT	System 1	:HSTA[9]) [(Current Dat	a Source: Device	
Edit Access	Operation Devi	ce Operation	😣 🍑 🚍	0, 🎸 🖬 🛛	1 📥 📥 🗗	🗹 🗸	
rofile Name	ONV Type	ONU Subprofile	Config	Port Type	Port No.	ONU Port Profile C	Config
	AN5506-04-B			FE	1		
				FE	2		
				•			
Data Servic	e Profile IGMP	Service Profile	e Voice Se	rvice Profile	Service Pro	file Service Profi	le Bindir
Data Servic	e Profile IGMP	Service Profile	e Voice Se	rvice Profile	Service Pro	file Service Profi	le Bindir
	e Profile IGMP end Command:Re				>	file Service Profi	le Bindin
9:18:49 > Se		ad From Devic	ce[Data Se		>	file Service Profi	le Bindin
9:18:49 > Se 9:18:49 > Be	end Command:Re	ad From Devic te The Comman	ce[Data Se		>	file Service Profi	le Bindin
9:18:49 > Se 9:18:49 > Be 9:18:49 > Va	end Command:Re egin To Valida	ad From Devic te The Comman 'inished	ce[Data Se		>	file <u>Service Profi</u>	le Bindir

Figure 5-117 The Service Profile window - completed

5.4.4.7 Binding the ONU to the Service Profile

Configuration purpose

Apply the bandwidth allocation and data service configuration of the service profile to the ONU by binding the ONU to the service profile.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Service Profile Config from the shortcut menu. Click the Service Profile Binding tab and the Service Profile Binding window appears.
- 2. Click the left pane and select $Edit \rightarrow Append$ in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK.
- 3. Click the **Profile ID** list box and select **c**. Click the **Action** list box and select **Attach**.
- Click the right pane and select Edit → Append in the menu bar. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK.
- 5. Double-click the **ONU S.N.** field to bring up the **Select Objects** dialog box. Select **AN5506-04-B** in the dialog box.

elect O	bjects			2
Board	ONU	Auth No.	Is Select	
GC8B[15]	PON1-AN5506-04-B[1]	1		
Select	All All Clear	ОК	Cancel	

Figure 5-118 The Select Objects dialog box

6. Click the OK button and return to the Service Profile Binding window. Click

the $\stackrel{4}{ agence}$ button to execute the command. The If the service profile binding

and the refresh operation is performed, the original ONU service configuration will be overwritten. Are you sure to execute this command? dialgue box will appear. Click OK and then once again in the Are you sure to write all data to the device? dialog box.

 Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the AN5506-04-B has been bound to the service profile c. See Figure 5-119.

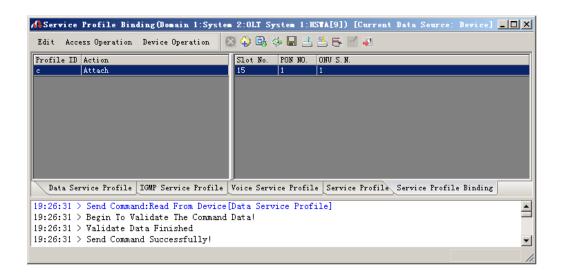


Figure 5-119 The Service Profile Binding window - completed

5.4.4.8 Configuring the GPON OLT VLAN Operation Table

Configuration purpose

Perform the QinQ function of the data service by completing the SVLAN ID configuration on the GPON OLT VLAN operation table.

- Right-click the HSWA[9] card in the Object Tree pane, select Config → QinQ
 → GPON OLT VLAN Operation Table from the shortcut menu to access the GPON OLT VLAN Operation Table window.
- Select Edit → Append on the menu bar or click the ⁹ button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Domain Name blank field and enter abc3.
- 3. Configure according to the planned data in Table 5-28. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the GPON OLT VLAN operation table is configured. See Figure 5-120.

📣 Gpon OLI	T VALN Opera	tion Tabl	e (Domain 1:Syste	n 1:OLT System 1	:HSTA[9]) [Curre	ent Data Source	: Device] 💶 🗙	
Edit Acc	Edit Access Operation Device Operation 😣 🍄 🚍 🚱 🗇 🔚 📑 些 🐷 🛼 🖌							
Traffic Id	Traffic Identification							
Domain Name	e VLAN ID	Priority	Outer VLAN Cos	Outer VLAN Vid	inner VLAN Cos	inner VLAN Vid		
abc3	1000		0	3000				
Gpon OL	T VALN Operati	on Table						
<pre>11:33:32 > Send Command:Read From Device[Gpon OLT VALN Operation Table] 11:33:32 > Send Command Successfully! 11:33:32 > Read From Device[Gpon OLT VALN Operation Table]Executing 11:33:32 > Command Succeed</pre>								

Figure 5-120 The GPON OLT VLAN Operation Table window - completed

5.4.4.9 Binding the PON Port to the VLAN Operation Table

Configuration purpose

Apply the data service configuration to the PON port on the GC8B card by binding the PON port to the VLAN operation table.

Operation steps

- Right-click the GC8B[15] card in the Object Tree pane, select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.
- Click the right pane, select Edit → Append in the menu bar of the window or click the button. Enter 1 in the Please Input the Rows for Add dialog box

that appears and click **OK**. Click the **Table Name** list box and select **abc3**.

4. Click the B button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table **abc3**. See Figure 5-121.

Slot No.	PON port	Action	Table Name
15	1	attach	abc3
15	2	attach	
5	3	attach	
5	4	attach	
5	5	attach	
5	6	attach	
15	7	attach	
15	8	attach	
)
PON	attach/detac	h VLAN Table	
0:38:1	4 > Send C	ommand:Read From Device[PON attach/detach VLAN Table]	
	4 > Begin	To Validate The Command Data!	
0:38:1			
		te Data Finished	

Figure 5-121 The PON attach / detach VLAN Table window - completed

5.4.5 Configuring Data Services Respectively (for the AN5506-10-B1)

5.4.5.1 Planning Data

Table 5-29The planned data of data service configuration at the OLT side in the VLAN N:1translation mode (configured respectively)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	2
	ONU type	The type of the ONU	AN5506-10-B1
	Service Name	Configure according to the network planning of the operator.	data4
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Tag
	Service Type	Configure according to the network planning of the operator.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-30The planned data of data service configuration at the AN5506-10-B1 ONU side inthe VLAN N:1 translation mode (configured respectively)

ltem		Description	Example Integrated Service			
	Service Type	Select integrated service.	Integr	ated S	ervice	
	Fixed Bandwidth (Kbyte/s)	The fixed bandwidth of an ONU's uplink service. Even if the service does not use the bandwidth resource, other services cannot occupy the	16			
Bandwidth Configuration	Assured Bandwidth (Kbyte/s)	resource. The default value is 16 Kbyte/s. The minimum bandwidth for provisioning an ONU's uplink service. If the bandwidth resource is not used by this service, then the resource may be released for other services to use. The default value is 0	0			
	Maximum Bandwidth (Kbyte/s)	Kbyte/s. The maximum bandwidth of an ONU's uplink service. The sum of the fixed bandwidth value and the assured bandwidth value should not be larger than the maximum bandwidth value. The default value is 64 Kbyte/s.	1280			
	ONU Port Used	The actually used ONU port	1 2			
	Enable / Disable Port	Configure according to the network planning of the operator. Enable is selected by default.	Default			
Basic	Port Auto Negotiation	Configure according to the network planning of the operator. Enable is selected by default.	Defau	ılt		
information of the ONU port	Port Speed	Unconfigurable when the port auto negotiation is enabled. The default speed is 100M.	Defau	ılt		
	Duplex	Unconfigurable when the port auto negotiation is enabled. The default value is full-duplex.	Defau	ılt		
	Flow control Enable / Disable	Configure according to the network planning of the operator. Disable is selected by default.	Default			
	Port No.	The configured service serial number. An ONU port can support up to 16 services.	1	2	1	2
ONU port service	TLS	Configured as TLS or No TLS according to the network planning of the operator.	No TL	S		
parameter	Service Type	Data service. Select Unicast.	Unica	st		
config	VLAN Mode	Configured as Tag or Transparent according to the network planning of the operator.	Trans	parent		
	TPID	The default value is 33024.	33024	1		

ltem			Description	Exan	nple		
	CVLAN	I ID	The pre-translation CVLAN ID, ranging from 1 to 4085.	500	600	500	600
	Priority COS	or	The CVLAN priority, ranging from 0 to 7.	0			
	Transla State	tion	Enable / disable the translation configuration.	Enab	le		
	Transla Value	tion	The translated VLAN ID, ranging from 1 to 4085.	2000			
	TPID		The default value is 33024.	33024			
	Priority COS	or	The translation priority, ranging from 0 to 7 with 7 as the highest priority and 0 as the lowest.	0			
	Domain Name		Configure according to the network planning of the operator.	abc4			
	VLAN ID		The corresponding inner VLAN value of the uplink service flow from the ONU, ranging from 1 to 4085.	2000			
	Priority		The inner VLAN translation priority of the downlink service flow, ranging from 0 to 7, or null.	_			
GPON OLT	2 VLAN Layer 2 Outer VLAN Outer VLAN Vid		The SVLAN priority, ranging from 0 to 7.	0			
VLAN operation table			The item is used to add the SVLAN value, ranging from 1 to 4085.	3001			
		Inner VLAN COS		_			
Layer 1		Inner VLAN Vid	The item can be used to translate the inner VLAN of the uplink service flow from the ONU. If translation is required, the item is the translated VLAN value. If not required, the item is consistent with the VLAN identifier or null.				
	Slot No		The number of the actually used slot	15			
PON Attach /	PON P	ort	The number of the actually used PON	1			
Detach VLAN Table	Action		Attach / detach the VLAN operation table.	Attac	h		
	Table N	lame	Select the configured VLAN operation table name.	abc4			

5.4.5.2 Configuration Flow Chart

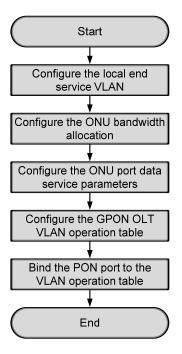


Figure 5-122 Flow chart for provisioning data services respectively in the VLAN N:1 translation mode (for the AN5506-10-B1)

5.4.5.3 Configuring the Local End Service VLAN

See Section 5.4.3.3 for configuration procedures.

5.4.5.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU, select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.

- Click the right pane and select Edit → Append on the menu bar or click the
 button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button.
- 3. Configure according to the planned data in Table 5-30. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-123.

🕼 Bandwidth Config (Domain 1:	System 1:GC8B[15]	ONU:PON1-AN5506-10-1	81[2] [Current Data Source	: Device]
Edit Access Operation Device	Operation 🛛 😵 🤪	0, 🚸 🖬 🗄 📇 📑 🗹	41	
Slot No. FON Fort No. ONU S.N. 15 1 2	Service Type Integrate Service	fixed Bandwidth(Kbyte/s) 16	assureed Bandwidth(Kbyte/s) 0	Maximum Bandwidth(Kbyte/s) 1280
Bandwidth Config	<u> • [</u>			
10:57:19 > Send Command:Read 10:57:19 > Begin To Validate		Construction of the second		<u>*</u>
10:57:19 > Validate Data Fir 10:57:19 > Send Command Succ				•

Figure 5-123 The Bandwidth Config window

5.4.5.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-124.

(Domain 1:System 1:GC8B[15] (×
Data Port Config Voice Config Data Port List FE1 FE2 FE3 FE4 FE5 FE6 FE7 FE8 FE9 FE10 FE11 FE12 FE13 FE14 FE15 FE16 FE15 FE16 FE17 FE18 FE19 FE20 FE21 FE22 FE23 FE24	Port No. I Finable/Disable Port Port Auto Negotiation Port Speed 100M Duplex Foll=Buplex F Flow Control Enable/Disable IGMP UF CVLAN CVLAN ID CVLAN ID CVLAN TO CVLAN TO CVLAN TPID 33024 Service TLS Service Classificati Service type CVLAN mode TPID CVLAN ID Endet Modify Note: Boardwidth Set Service Upstream Minimum Guaranteed 540 Service Downstream Bandwidth (kbit/s) 100000	
<u><u>R</u>ead</u>	DB <u>M</u> rite DB <u>Read Device</u> Modify On Device Delete On Device Close	

Figure 5-124 The ONU port service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-124. Click **Add** to create a data service and configure it according to the planned data in Table 5-30.

Services Config	guration			×
TLS	No TLS 💌	Set Servi	ce Classificati	OK
Service type	unicast 💌	VLAN Mode	Transparent 💌	Cancel
TPID	33024	CVLAN ID	500	
		Priority Or COS	0 💌	
✓ Translation State	e	Translation value	2000	
TPID	33024	Priority Or COS	0	
🔲 QinQ State				
Choose Qin	Q Profile			
Service Name	_	VLAN ID		
TPID	33024	Priority Or COS	_	

Figure 5-125 The service configuration (1)

Services Confi	guration			×
TLS	No TLS 💌	Set Servi	ce Classificati	ОК
Service type	unicast 💌	VLAN Mode	Transparent 💌	Cancel
TPID	33024	CVLAN ID	600	
		Priority Or COS	0 💌	
Translation State	e	Translation value	2000	
TPID	33024	Priority Or COS	0	
🗖 QinQ State				
Choose Qin	Q Profile			
Service Name	7	VLAN ID		
TPID	33024	Priority Or COS	_	

Figure 5-126 The services configuration (2)

 Click OK and return to the dialog box shown in Figure 5-124. Right-click FE1 in the Data Port List and select Copy Port Config. Right-click FE2 and select Paste Port Config to enable the FE2 port. After the configuration, click the Modify on Device button to complete the AN5506-10-B1 service configuration. If the Command Succeed of the AN5506-10-B1 data port service appears in the Command Manager window, the AN5506-10-B1 port service configuration is completed. See Figure 5-127.

(Domain 1:System 1:GC8B[15] 0	DHU List:AH5506-10-B1[2])
Data Port Config Voice Config	
Data Port List	Port No. 2
FE1 FE2	🔽 Enable/Disable Fort
FE3 FE4	V Port Auto Negotiation
FE5	Fort Speed 100M Duplex Full-Duplex
FE6 FE7	Flow Control Enable/Disable
FE8 FE9	IGMP UP CVLAN IGMP UP SVLAN
FE10	CVLAN ID SVLAN ID
FE11 FE12	CVLAN COS VLAN COS
FE13 FE14	CVLAN TPID 33024 SVLAN TPID 33024
FE15 FE16	Service
FE17	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID C
FE18 FE19	No TL 0 Items unicast Transparen 3024 500 No TL 0 Items unicast Transparen 3024 600
FE20	No TL O Items unicast Transparen 3024 600 Delete
FE21 FE22	Modify
FE23	
FE24	
	Boardwidth Set Service Upstream Minimum Guaranteed 640
	Service Upstream Maximum Allowed 1000000
	Service Downstream Bandwidth(kbit/s) 100000
Read	DB <u>M</u> rite DB R <u>e</u> ad Device Modify On Device Delete On Device Close

Figure 5-127 The port service configuration - completed

5.4.5.6 Configuring the GPON OLT VLAN Operation Table

Configuration purpose

Perform the QinQ function of the data service by completing the SVLAN ID configuration on the GPON OLT VLAN operation table.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, select Config → QinQ
 → GPON OLT VLAN Operation Table from the shortcut menu to access the GPON OLT VLAN Operation Table window.
- Select Edit → Append on the menu bar or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Domain Name blank field and enter abc4.
- 3. Configure according to the planned data in Table 5-30. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the GPON OLT VLAN operation table is configured. See Figure 5-128.

		LII Opera	Device Op			🚔 🖪, 🎄						
Burt	Access 0	peration	Device of	Jeracion	••				X *			
raffic	: Identif	ication										
lomain	Name		Priority	Outer VLA	N Cos	Outer VLAN	[Vid	inner V	LAN Cos	inner VLAN Vi	d	
ıbc4		2000		0		3001						
-												
Gpos	n OLT VAL	N Operati	on Table									
· ·		•		rom Devic	elGnon	OLT VALUE	Derati	on Tabl	el			
1:49:	38 > Ser	nd Comman	nd:Read F		e [Gpon	OLT VALN (Operati	on Tabl	e]			
1:49: 1:49:	38 > Ser 39 > Ser	nd Comman nd Comman	nd:Read F nd Succes	sfully!			-		e]			
1:49: 1:49: 1:49:	38 > Ser 39 > Ser 39 > Re:	nd Comman nd Comman	nd:Read F nd Succes Device[Gp	sfully!		OLT VALN (-		e]			

Figure 5-128 The GPON OLT VLAN Operation Table window - completed

5.4.5.7 Binding the PON Port to the VLAN Operation Table

Configuration purpose

Apply the data service configuration to the PON port on the GC8B card by binding the PON port to the VLAN operation table.

- Right-click the GC8B[15] card in the Object Tree pane, select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.
- Click the right pane, select Edit → Append in the menu bar of the window or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Click the Table Name list box and select abc4.
- 4. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table abc4. See Figure 5-129.

5 3 attach 5 4 attach 5 5 attach 5 6 attach 5 7 attach	attach attach attach attach attach attach attach	5 2	-		shc4
15 3 attach 15 4 attach 15 5 attach 15 6 attach 15 7 attach	attach attach attach attach attach attach	27.0	2		abe t
5 4 attach 5 5 attach 5 6 attach 5 7 attach	attach attach attach attach attach	5 3		attach	
5 5 attach 5 6 attach 5 7 attach	attach attach attach attach		3		
5 6 attach 5 7 attach	attach attach attach				
5 7 attach	attach attach		3	attach	
	attach		6		
5 8 attach			7		
	VLAN Table	5 8	8	attach	
	VLAN Table				
,	VLAN Table				J
PON attach/detach VLAN Table		PON atta	ach/detach	VLAN Table	
-38-14 > Send Command-Read From Device[PON attach/detach WLAN Table]	mmand.Read From Device[PON attach/detach WIAN Table]	+38+14)	Send Co	amand Read From Device [PON attach/detach VIAN Table]	
PON attach/detach VLAN Table [10:38:14 > Send Command:Read From Device[PON attach/detach VLAN Table]	mmand:Read From Device[PON attach/detach VLAN Table]				,
):38:14 >	Begin T	o Validate The Command Data!	

Figure 5-129 The PON attach / detach VLAN Table window - completed

5.4.6 Configuring Data Services in a Batch Manner (for the AN5506-10-B1)

5.4.6.1 Planning Data

Table 5-31The planned data of data service configuration at the OLT side in the VLAN 1:1translation mode (in a batch manner)

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	2
	ONU type	The type of the ONU	AN5506-10-B1
	Service Name	Configure according to the network planning of the operator.	data4
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
		The end VLAN ID number of the uplink port service.	
	VLAN ID End	The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Tag
	Service Type	Configure according to the network planning of the operator.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-32The planned data of data service configuration at the AN5506-10-B1 ONU side inthe VLAN N:1 translation mode (in a batch manner)

ltem		Description	Example		
	Profile Name	The name of the bandwidth allocation profile	а		
	Service Type	Select integrated service.	Integrated Servic	е	
		The fixed bandwidth of an ONU's uplink			
	Fixed	service. Even if the service does not use the			
	Bandwidth	bandwidth resource, other services cannot	16		
	(Kbyte/s)	occupy the resource. The default value is 16			
		Kbyte/s.			
		The minimum bandwidth for provisioning an			
Bandwidth	Assured	ONU's uplink service. If the bandwidth			
config profile	Bandwidth	resource is not used by this service, then	0		
comg prome	(Kbyte/s)	the resource may be released for other	0		
	(RUyle/S)	services to use. The default value is 0			
		Kbyte/s.			
		The maximum bandwidth of an ONU's			
	Maximum	uplink service. The sum of the fixed			
	Bandwidth	bandwidth value and the assured bandwidth	1290		
	(Kbyte/s)	value should not be larger than the	1200		
	(RDyle/S)	maximum bandwidth value. The default	1280		
		value is 64 Kbyte/s.			
	Slot No.	The number of the actually used slot	15		
	PON No.	The number of the actually used PON	1		
Bandwidth		The ONU authorization number allocated			
allocation	ONU S.N.	according to the network planning of the	2		
profile		operator.			
binding	GPON	The name of the configured bandwidth			
	Bandwidth	allocation profile	а		
	Profile				
	Profile Name	Configure according to the network planning	h		
	FIOIlle Name	of the operator	b		
Service	Service Type	Select unicast	Unicast		
Model	CVLAN Mode	Configure the CVLAN mode of the service	Transporant		
Profile	CVLAN MODE	as Tag or Transparent.	Transparent		
	Translation	Configure the translation function.	Enable		
	State				
ONU data	PON No.	The actually used ONU port	1	2	
port	Port Enable /	Enable / disable the port.	Enable		
configuration	Disable				

Item			Description	Example	e		
	MAC Li	mit	Configured as no MAC limit.	0			
	CTPID		The default value is 33024.	33024			
	CVLAN	ID	The pre-translation VLAN ID, ranging from 1 to 4085.	500	600	500	600
ONU Data	ccos		The CVLAN priority configuration, ranging from 0 to 7 with 7 as the highest priority and 0 as the lowest.	0			
Service	TTPID		The default value is 33024.	33024			
Config	Transla VID	tion	The translated VLAN ID, ranging from 1 to 4085.	2000			
	COS		The translation VLAN priority, ranging from 0 to 7, or null.	or null.			
	Service Profile	Model	Select the configured service model profile.	b			
	Domain	Name	Configure according to the network planning of the operator.	abc4			
	VLAN II	D	The corresponding inner VLAN value of the uplink service flow from the ONU, ranging from 1 to 4085.	2000			
	Priority		The inner VLAN translation priority of the downlink service flow, ranging from 0 to 7, or null.				
GPON OLT VLAN	VLAN	Outer VLAN COS	The SVLAN priority, ranging from 0 to 7.	0			
Operation Table	Layer 2	Outer VLAN Vid	The item is used to add the SVLAN value, ranging from 1 to 4085.	3001			
		Inner VLAN COS	The inner VLAN translation priority of the uplink service flow, ranging from 0 to 7, or null.				
	VLAN Layer 1	Inner VLAN Vid	The item can be used to translate the inner VLAN of the uplink service flow from the ONU. If translation is required, the item is the translated VLAN value. If not required, the item is consistent with the VLAN identifier or null.				

Item		Description	Example
	Slot No.	The number of the actually used slot	15
PON Attach /	PON Port	The port of the actually used PON	1
Detach	Action	Attach / detach the VLAN operation table.	Attach
VLAN Table	Table Name	Select the configured VLAN operation table	aba4
	Table Malle	name.	abc4

5.4.6.2 Configuration Flow Chart

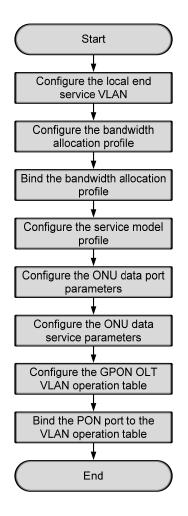


Figure 5-130 The batch configuration flow chart of data service provisioning in the VLAN N:1 translation mode (for the AN5506-10-B1)

5.4.6.3 Configuring the Local End Service VLAN

See Section 5.4.3.3 for configuration procedures.

5.4.6.4 Configuring the Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- 2. Click the left pane and select $Edit \rightarrow Append$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Double-click the **Profile Name** blank field and enter **a**.

3. Click the right pane and select $Edit \rightarrow Append$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button.

4. Configure according to the planned data in Table 5-32. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is configured. See Figure 5-131.

	Operation Device Op Service Type	eration 🛛 🐼 🤪 🚍 🛄 🧇 fixed Bandwidth (Kbyte/s)	assureed Bandwidth (Kbyte/s)	Maximum Bandwidth(Kbyte/
ronne Name	Integrated Service	16	0	1280
	۲ 			
Bandwi dth	Config Profile			
)	com Device[Bandwidth Conf	ig Profile]	
1:07:04 > S)		ig Profile]	
1:07:04 > S 1:07:04 > E	end Command:Read Fi	ne Command Data!	ig Profile]	



5.4.6.5 Binding the Bandwidth Allocation Profile

Configuration purpose

Bind the configured bandwidth allocation profile to the ONU.

Configuration example

- 1. Right-click the system in the **Object Tree**, select **Config** \rightarrow **Batch Config** \rightarrow **ONU Configuration** to access the ONU configuration window.
- Click Set Object as Condition in the Config Object pane and all configuration objects will appear in the lower pane (you can drill down and select a specific port as the object). Select the AN5506-10-B1[2] under the PON 1 in Slot 15 and click the OK button.

Config Object	д	×
Set Object As Condition		
 OLT System 1 GC4B[5] GC8B[15] PON1 PON1-AN5506-04-B[1] PON1-AN5506-10-B1[2] PON1-AN5506-06-E[3] PON2 PON3 PON4 PON5 PON7 PON8 		
OK Cancel		

Figure 5-132 Set configuration objects

3. The specific configuration information of the object will appear in the right pane. Click the **GPON Bandwidth Profile** list box and select the configured bandwidth profile **a**. 4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation profile is bound. See Figure 5-133.

📣 ONU Config (Domain 1:	System	1) [Curre	nt Data	Source:	Default]		
Edit Access Operation	Device	Operation	D, 🍫	1 4 E	i 🗹 🐳		
Config Object	Ψ×	Slot No.	PON NO.	ONU NO.	Bandwidth Profile	GPON Bandwidth	Profile
Set Object As Condition		15	1	2		a	
B-OLT System 1							
		ONU Cor	afig				
					lead From Device[ONU Config]	
					Successfully! .ce[ONU Config]Ex	ecuting	-
							1.

Figure 5-133 Binding the bandwidth allocation profile

5.4.6.6 Configuring the Service Model Profile

Configuration purpose

Select the data service type, CVLAN mode and determine whether to enable the translation function and the QinQ function.

Configuration example

- Right-click the system in the Object Tree pane, select Config → Profile Definition → Service Model Profile to access the service model profile configuration window.
- Select Edit → Append in the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to add a service model profile.

3. Configure according to the planned data in Table 5-32. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the service model profile is configured. See Figure 5-134.

Service ∎od	el Profile(D	omain 1:Syst	em 1) [Current Data	Source: Devic	e] _ 🗆 🗙
Edit Access	Operation Dev	vice Operation	😣 🖓 🕒 🔅 🛃	📥 😹 🖶 🗹 🦊]
Profile Name	Service Type	CVLAN Mode	Translation State	QinQ State	
Ъ	unicast	transparent	✓		
Service Mod		and From Dou	ice[Service Model P	rofilal	
09:12:42 > Be				rorrej	-
09:12:42 > Va	•				
09:12:42 > Se	nd Command S	uccessfully!			•
					/

Figure 5-134 The Service Model Profile window - completed

5.4.6.7 Configuring the ONU Data Port Parameters

Configuration purpose

Enable the ONU ports and limit the number of MAC addresses in a batch manner.

Configuration example

- 1. Right-click the system in the **Object Tree** pane, select **Config** \rightarrow **Batch Config** \rightarrow **ONU Data Port Config** from the shortcut menu to access the ONU data port configuration window.
- Click Set Object as Condition in the Config Object pane and all configuration objects (you can drill down and select a specific port as the object) will appear in the lower part. Select FE1 and FE2 of the AN5506-10-B1[2] listed under the PON 1 in Slot 15 and click OK.

Config Object 🛛 🕈 🗙
Set Object As Condition
 □ OLT System 1 □ GC4B[5] □ GC8B[15] □ PON1 □ PON1-AN5506-04-B[1] □ PON1-AN5506-10-B1[2] □ PFE1 □ PFE3 □ FE4 □ FE5 □ FE6 □ FE7
OK Cancel

Figure 5-135 Set configuration objects

3. The specific configuration information of the objects will appear in the right pane. Configure according to the planned data in Table 5-32. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU data port parameters are configured. See Figure 5-136.

🔒 ONU Data Port Confi	gure (Doi	aain 1:Sy	stem 1)	[Curre	nt Data	Source: De	vice]									
Edit Access Operation	Device	Operation	D, 4	» 📥 🖶	🗹 🐳											
onfig Object	Ψ×	Slot No.	PON NO.	ONV NO.	Port NO.	Enable/Disa	ble MAC I	Limit	ONU Pe	ort Spee	d Limit	Profile	ONU Dat	ta Port	Attribut	e Profile
Set Object As Condition		15 15	1	2	1	✓ ✓	0									
		15	1	2	2	V	U									
OLT System 1																
		LT														
		ONU DA	ata Port	Configur	e											
		09:20:08	> Send	Comman	d:Read I	From Device	[ONU Dat	ta Po	ort Co	nfigur	•]					
		09:20:08														
						W Data Por	t Config	gure]	Execu	ting						
		09:20:08	> Comm	and Suc	ceed											
															Ln:2,Col:	:1

Figure 5-136 The ONU Data Port Configure window - completed

5.4.6.8 Configuring the ONU Data Service Parameters

Configuration purpose

Configure the CVLAN and SVLAN for the data service flow uplinked to the ONU port in a batch manner.

Configuration example

- 1. Right-click the system in the **Object Tree** pane, select **Config** \rightarrow **Batch Config** \rightarrow **ONU Data Service Configure** from the shortcut menu to access the ONU data service configuration window.
- Click the button in the menu bar and the Add Item Number dialog box appears. Select configuration objects (you can drill down and select a specific port as the object) in the left pane. Select FE1 and FE2 of the ONU and click OK to return to the ONU Data Service Configure window.

📣 Add Item number					×
🖃 🗹 OLT System 1	Slot No.	PON No.	ONU No.	Port No.	Item number
🕂 🖂 GC4B [5]	15	1	2	1	1
Ė- ₩ GC8B[15]	15	1	2	2	1
PON1 PON1-AN5506-04- PON1-AN5506-10- PON1-AN5506-10- PE3 PE3 PE4 PE5 PE6 PE6 PE7 PE8 PE9 PE9 PE10 PE11 PE12 PE13 PE14 PE14 PE15					
	1				
		Batch	nModify	OK	

Figure 5-137 Set configuration objects (1)

3. Click the **Batch Modify** button and select the **Item No**. field in the **Batch Modify** dialog box that appears. In the **Parameter Define** pane, double-click the **Start Value** blank field and enter **2**. Click the **Modify Selected Item** button and configure two services for each port.

ABatch Bodify	×
🕨 🕨 Modify All Item 📲 Modify Selected Item 🌙 Reset	
Whole	
Column Name Data Type Start Value Rule Describe	
Item No. Unsigned Integer 2 Copy The Current V	alue To All Row
·	
Modify Rows(<u>M</u>): 2 Spaces(<u>1</u>): 1	
Data Type Setting	
Parameter Define	Rule Define
Start Value(<u>5</u>): 2 Min Value(<u>I</u>): 1	When Plus To Max(Decrease To Min)
Plus Value(P): 0 Max Value(A): 4294967295	Repeat From The Start Value(F)
Plus Value(<u>P</u>): 0 Max Value(<u>A</u>): 4294967295	
Repeat Times(T): 1	C Repeat From The Min(Max) Value(X)

Figure 5-138 The **Batch Modify** dialog box

4. Return to the **Add Item Number** dialog box and each port is configured with two services. Click the **OK** button and return to the **ONU Data Service Config** window.

📣 Add Item number						x
- PON1-AN5506-10-	Slot No.	PON No.	ONU No.	Port No.	Item number	
	15	1	2	1	2	
FE2	15	1	2	2	2	
FE3					-	
FE5						
FE6						
FET						
🗖 FE8						
FE9						
FE10						
FE11						
FE12 FE13						
FE14						
FE15						
TE16						
🗖 FE17						
🗖 FE18						
FE19						
FE20						
		Batc	hModify	ОК		

Figure 5-139 Set configuration objects (2)

5. The specific configuration information of the objects will appear in the right pane. Configure according to the planned data in Table 5-32. When the configuration is completed, click the subtron and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the ONU data service parameters are configured. See Figure 5-140.

UNU Data Service Con	afi gur e	(Domain 1:	System	1) [Curr	ent Data	Source: Devi	ice]			
Edit Access Operation	Device	Operation	8 🔒	D, 🚸 8	5 6 🗹	N				
nfig Object	Ψ×	Slot No.	PON NO.	ONU NO.	Port NO.	Service ID	CTPID	CVLAN ID	CCOS	TTPID
		15	1	2	1	1	33024	500	0	33024
Set Object As Condition		15	1	2	1	2	33024	600	0	33024
		15	1	2	2	1	33024	500	0	33024
OLT System 1		15	1	2	2	2	33024	600	0	33024
		•								Γ
		I ONU Da	ta Servic	e Configu	re					

Figure 5-140 The ONU Data Service Configure window - completed

5.4.6.9 Configuring the GPON OLT VLAN Operation Table

Configuration purpose

Perform the QinQ function of the data service by completing the SVLAN ID configuration on the GPON OLT VLAN operation table.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, select Config → QinQ
 → GPON OLT VLAN Operation Table from the shortcut menu to access the GPON OLT VLAN Operation Table window.
- Select Edit → Append in the menu bar or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click the OK button. Double-click the Domain Name blank field and enter abc4.
- 3. Configure according to the planned data in Table 5-32. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the GPON OLT VLAN operation table is configured. See Figure 5-141.

Edit Acces			e (Domain 1:S) peration 🛛 🔇		s 🐟 🖬 📑					
Traffic Iden	ification		· · · ·							
)omain Name	VLAN ID	Priority	Outer VLAN Co	s Outer	VLAN Vid	inner VLA	I Cos	inner VLAN Vie	1	
ibc4	2000		0	3001						
Gpon OLT	'ALN Operati	on Table			_			_	_	
·	Send Comma	nd:Read F	rom Device[G] sfully!	pon OLT V	ALN Operati	on Table]				

Figure 5-141 The GPON OLT VLAN Operation Table window - completed

5.4.6.10 Binding the PON Port to the VLAN Operation Table

Configuration purpose

Apply the data service configuration to the PON port on the GC8B card by binding the PON port to the VLAN operation table.

Operation steps

- Right-click the GC8B[15] card in the Object Tree pane, select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.
- 3. Click the right pane, select $\textbf{Edit} \rightarrow \textbf{Append}$ in the menu bar of the window or

click the *button*. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click **OK**. Click the **Table Name** list box and select **abc4**.

4. Click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table **abc4**. See Figure 5-142.

Slot No.	PON port	Action	Table Name
15	1	attach	abc4
15	2	attach	
15	3	attach	
15	4	attach	
15	5	attach	
15	6	attach	
15	7	attach	
15	8	attach	
)
PUN a	ttach/detacl	A VLAN Table	
0:38:14	> Send C	ommand:Read From Device[PON attach/detach VLAN Table]	
0:38:14	> Begin	To Validate The Command Data!	
		te Data Finished	
0:38:14			

Figure 5-142 The PON attach / detach VLAN Table window - completed

5.4.7 End of Configuration

After being translated and added with a layer of VLAN, the PC1 to PC8 can access the Internet via the home gateways normally.

5.5 Example for Data Service Configuration – in the Flexible QinQ mode

5.5.1 Configuration Rules

The AN5116-06B supports the QinQ data service, which means it supports the VLAN stacking as well. In this example the GC8B card is used as the service interface card and the AN5506-04-B and the AN5506-10-B1 are used as ONUs to introduce the data service configuration in the flexible QinQ mode.

Flexible QinQ: The system can process the CVLAN and SVLAN of the service based on the source MAC address, destination MAC address, source IP address, destination IP address, L4 source port number, L4 destination port number, Ethernet type, inner VLAN, outer VLAN, service type, Time to Live, protocol type, Layer 1 CoS, Layer 2 CoS and other conditions.

5.5.2 Service Network

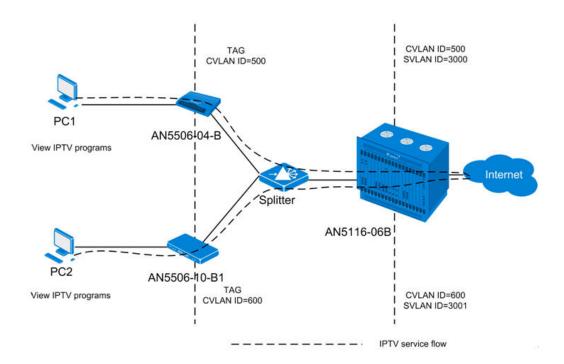


Figure 5-143 The data service network diagram (in the flexible QinQ mode)

As Figure 5-143 shows, each PC is connected to the ONU directly. The data uploaded from the PC is added with a CVLAN ID and then transmitted to the OLT by the ONU. The OLT classifies the uploaded data services according to Ethernet types, adds SVLAN tags to the service flow of the IPoE Ethernet type and transmits the service flow to the upper layer network via the uplink port. For the downlink direction, the reverse process takes place.

The AN5506-04-B and the AN5506-10-B1 are used as ONUs in this example. The AN5116-06B uses the HU1A and the GC8B as the interface cards at the network side and the subscriber side respectively, and the HSWA card is compulsory.

5.5.3 Configuring Data Services in the Flexible QinQ Mode (for the AN5506-04-B)

5.5.3.1 Planning Data

Item		Description	Example
	Slot No.	The number of the actually used slot	15
	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	1
	ONU type	The type of the ONU	AN5506-04-B
	Service Name	Configure according to the network planning of the operator.	data5
Local end	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
service VLAN	VLAN ID End	The end VLAN ID number of the uplink port service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	

 Table 5-33
 The planned data of the data service at the OLT side in the flexible QinQ mode

Item		Description	Example
		The Tag processing mode of the uplink	
		service VLAN can be set as Tag or Untag.	
		Under UNTAG mode, the TAGs of the uplink	
		packets will be stripped automatically and the	
		packets will be uplinked in the form of	
		UNTAG when they pass the port, whereas	
		the downlink UNTAG packets will be added	
	TAG / UNTAG	with designated TAGs and downlinked in the	Тад
		form of TAG. Under TAG mode, the uplink	
		data packets will not be processed but remain	
		uplinked in the original form. For downlink	
		packets, however, only packets with	
		designated TAGs are received and the	
		packets will not be processed but remain	
		downlinked in the original form.	
	Convice Turne	Configure according to the network planning	data
	Service Type	of the operator.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-34The planned data of data service configuration at the AN5506-04-B ONU side inthe flexible QinQ mode

Item		Description	Example
	Service Type	Select broadband Internet access.	Broadband Internet access
Bandwidth allocation	Fixed Bandwidth (Kbyte/s)	The fixed bandwidth of an ONU's uplink service. Even if the service does not use the bandwidth resource, other services cannot occupy the resource. The default value is 16Kbyte/s.	16
	Assured Bandwidth (Kbyte/s)	The minimum bandwidth for provisioning an ONU's uplink service. If the bandwidth resource is not used by this service, then the resource may be released for other services to use. The default value is 0Kbyte/s.	0

Item		Description	Example
	Maximum Bandwidth (Kbyte/s)	The maximum bandwidth of an ONU's uplink service. The sum of the fixed bandwidth value and the assured bandwidth value should not be larger than the maximum bandwidth value. The default value is	1280
		64Kbyte/s.	1
	ONU Port Used Enable / Disable Port	The actually used ONU port Configure according to the network planning of the operator. Enable is selected by default.	1 Default
_ .	Port Auto Negotiation	Configure according to the network planning of the operator. Enable is selected by default.	Default
Basic information of the ONU	Port Speed	Unconfigurable when the port auto negotiation is enabled. The default speed is 100M.	Default
port	Duplex	Unconfigurable when the port auto negotiation is enabled. The default value is full-duplex.	Default
	Flow control Enable / Disable	Configure according to the network planning of the operator. Disable is selected by default.	Default
	TAG Mode	Configured as Tag or Untag according to the network planning of the operator. In the Tag mode the uplink data packets are tagged, while in the Untag mode the uplink data packets are untagged.	Untag
	COS	The priority range: 1 to 7. Unconfigurable when the Tag mode is set as Untag .	_
ONU port	VLAN ID	The value range: 1 to 4085. Unconfigurable when the Tag mode is set as Untag .	_
service parameters	CVLAN Mode	When the Tag mode is set as Untag , the CVLAN mode can be set as Tag or Transparent . When the Tag mode is set as Tag , the CVLAN mode can set as Translation or Transparent .	Тад
	CVLAN ID	Configure according to the network planning of the operator. The value range: 1 to 4085.	500
	COS	The CVLAN priority, ranging from 0 to 7.	0
	Ds Encrypt State	Disable is selected by default.	Disable
	QinQ State	Enable / disable the QinQ configuration.	Disable

ltem			Description	Example
			Unconfigurable when the QinQ state is	
	SVLAN ID		disabled. The value range: 1 to 4085.	
	Service Name		Corresponding to the configured local end	
			service VLAN. Unconfigurable when the	_
			QinQ enable status is disabled.	
			The SVLAN priority, ranging from 1 to 7.	
	COS		Unconfigurable when the QinQ enable status	_
			is disabled.	
	Domain Nam	ne	The configured flexible QinQ domain name	аа
	Service Type	9	Single is selected by default.	Single
		CVLAN	Configure the transparently transmitted	500
		ID	CVLAN ID.	500
		Old_	The transparently transmitted subscriber	
		VLAN	CVLAN priority, ranging from 0 to 7 with 7 as	0
	Subscriber	Coslow	the highest priority and 0 as the lowest.	
	VLAN		Configure according to the subscriber VLAN	
	Layer 1		Layer 1 value. If the subscriber VLAN layer 1	
OLT QinQ		Action	value is given, the Action can be set as	Transparent
Domain			Transparent or Translation. If not given, the	
			Action can be set as Transparent or Add.	
		TPID	The default value is 33024.	Default
		Action	Add	Add
		TPID	The default value is 33024.	Default
	Subscriber		The added SVLAN priority configuration,	
	VLAN	COS	ranging from 0 to 7 with 7 as the highest	0
	Layer 2		priority and 0 as the lowest.	
		New VID	The SVLAN ID value.	3000
OLT QinQ	Up_Clause		Select Ethtype.	Ethtype
domain	Operator		Select =.	=
service uplink rules	Value		Select the Ethernet type based on IPoE.	2048
OLT QinQ	Down_Clause		Select SA	SA
domain	Operator		Select Match if exist	Match if exist
service downlink rules	Value		Configure according to the network planning of the operator.	00-00-00-00-77-77

ltem		Description	Example
PON	Slot No.	The slot number of the GC8B card connected with the ONU. Read only.	15
attach / detach	PON Port	The PON port of the actually used GC8B card. Read only.	1
VLAN Table	Action Bind the PON port to the QinQ domain.		Attach
	Table Name The bound QinQ domain.		аа

5.5.3.2 Configuration Flow Chart

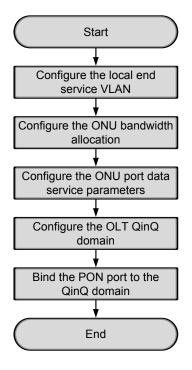


Figure 5-144 The configuration flow chart of the data service provisioning in the flexible QinQ mode (for AN5506-04-B)

5.5.3.3 Configuring the Local End Service VLAN

Configuration purpose

Configure the uplink port VLAN of the AN5116-06B for the designated service flow and limit the VLAN range of the service.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu. In the window click the Local End Service VLAN tab and the local VLAN configuration window appears.
- Click Edit → Append in the menu bar of the window or click the button.
 Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK to create a local VLAN.
- 3. Configure according to the planned data in Table 5-33. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN is configured. See Figure 5-145.

Ent Access Operation Device Operation Output Comparison Device Operation Service Name Starting VLAN ID VLAN ID End Interface NO. TAG/UNTAG Service Type Slot Bind Mode data5 3000 3001 19:SFF2 TAG Data Auto Bind Local End Service VLAN Local End Service Inner VLAN Interface NO. Interface NO. Interface NO. Interface NO. 14:00:44 > Send Command:Read From Device [Local End Service VLAN] Interface NO. Interface NO. Interface NO. 14:00:44 > Begin To Validate The Command Data! Interface NO. Interface NO. Interface NO. 14:00:44 > Send Command Successfully! Interface NO. Interface NO. Interface NO.							Source: Device]		
Local End Service VLAN Local End Service Inner VLAN 4:00:44 > Send Command:Read From Device[Local End Service VLAN] 4:00:44 > Begin To Validate The Command Data! 4:00:44 > Validate Data Finished	Edit Access Operation Device Operation 🚫 🤪 📴 🦑 🚽 🔮 🌌 🖶 🖌 4								
Local End Service VLAN Local End Service Inner VLAN 4:00:44 > Send Command:Read From Device[Local End Service VLAN] 4:00:44 > Begin To Validate The Command Data! 4:00:44 > Validate Data Finished	Service Name	Starting VLAN ID	VLAN ID End	Interface NO.	TAG/UNTAG	Service Type	Slot Bind Mode		
4:00:44 > Send Command:Read From Device[Local End Service VLAN] 4:00:44 > Begin To Validate The Command Data! 4:00:44 > Validate Data Finished	lata5	3000	3001	19:SFP2	TAG	Data	Auto Bind		
4:00:44 > Send Command:Read From Device[Local End Service VLAN] 4:00:44 > Begin To Validate The Command Data! 4:00:44 > Validate Data Finished									
4:00:44 > Send Command:Read From Device[Local End Service VLAN] 4:00:44 > Begin To Validate The Command Data! 4:00:44 > Validate Data Finished									
1:00:44 > Send Command:Read From Device[Local End Service VLAN] 1:00:44 > Begin To Validate The Command Data! 1:00:44 > Validate Data Finished									
1:00:44 > Send Command:Read From Device[Local End Service VLAN] 1:00:44 > Begin To Validate The Command Data! 1:00:44 > Validate Data Finished									
1:00:44 > Send Command:Read From Device[Local End Service VLAN] 1:00:44 > Begin To Validate The Command Data! 1:00:44 > Validate Data Finished									
1:00:44 > Send Command:Read From Device[Local End Service VLAN] 1:00:44 > Begin To Validate The Command Data! 1:00:44 > Validate Data Finished									
1:00:44 > Begin To Validate The Command Data! 1:00:44 > Validate Data Finished	Local End S	ervice VLAN Local En	d Service Inner	r VLAN					
4:00:44 > Begin To Validate The Command Data! 4:00:44 > Validate Data Finished	1.00.44 \ S.	A Committee Read To	Derri en II e	and End Count	WI AM				
1:00:44 > Validate Data Finished					Se VLANJ				
		•		tai					
4:00:44 > Sena Commana Successiully:									
	1:00:44 > 56	ena command Success	TULLY!						

Figure 5-145 The Local End Service VLAN window - completed

5.5.3.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

- Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU, select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.
- Click the right pane and select Edit → Append from the menu bar, or click the
 button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK.
- 3. Configure according to the planned data in Table 5-34. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-146.

Bandw	idth Config	(Domain 1	System 2:GC	8B[15] ON	J: PON1-AN550	6-04-B[1])	[Current Da	ta Source:	Device]
dit A	access Operati	ion Device	Operation	😵 🖓 🖏 🍕	. 🖬 🗄 📇 🗄	5 🗹 4			
lot No. 5	PON Port No. 1	ONUS.N. 1	Service Type data	fixed Bandwi 16	lth (Kbyte/s) a 0		vidth (Kbyte/s)	Maximum Bar 1280	dwidth (Kbyte/s)
		•							
Bandy	idth Config								
9:00:0	1 > Begin To	o Validate	e The Comman	e[Bandwidth d Data!	Config]				
	1 > Validato 1 > Send Cor		THE STREET STREET						

Figure 5-146 The Bandwidth Config window - completed

5.5.3.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-04-B[1] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-147.

Port List	Port No. 1 Image: State Port
	Port Auto Negotiation Port Speed IOOM Duplex Full-Duplex
	Flow Control Enable/Disable
	T Port Rate Limit
	Upstream Fort Rate Limit(Kbit/s)
	Downstream Port Rate Limit(Kbit/s)
	IndexService type Fag mode COS VLAN ID Ds Encrypt state Cvlan mode:
	Delet
	Modi fj

Figure 5-147 The ONU port service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-147. Click **Add** to create two data services and configure according to the planned data in Table 5-34.

Services Config	uration			×
Index	1	Service type	unicast 💌	OK
TAG Mode	Untag 💌	CVLAN Mode	Tag 💌	Cancel
COS	_	CVLAN ID	500	
VLAN ID	1	COS	0 🔽	
Ds Encrypt state				
🔲 QinQ State				1
SVLAN ID				
Service Name	Y	COS	_	

Figure 5-148 The Services Configuration dialog box

 Click the OK button and return to the dialog box shown in Figure 5-147. Click the Modify on Device button and complete the AN5506-04-B service configuration. When the Command Succeed of the AN5506-04-B data port service appears in the Command Manager window, the AN5506-04-B port service configuration is completed. See Figure 5-149.

ata Port Config ata Port List El	Port No. 1
E2 E3 E4	✓ Enable/Disable Port ✓ Port Auto Negotiation Port Speed 100M ✓ Flow Control Enable/Disable □ Port Rate Limit Upstream Port Rate Limit(Kbit/s)
	Downstream Fort Rate Limit (Kbit/s) Index Service typ Tag mode COS VLAN ID Ds Encrypt state Cvlan mode 1 unicast Untag 1 Disable tag <u>D</u> elete
	Modify

Figure 5-149 The port service configuration - completed

5.5.3.6 Configuring the OLT QinQ Domain

Configuration purpose

Process flexibly the VLAN Tag of the service flow uploaded to the OLT by configuring the OLT QinQ domain.

Operation steps

- Right-click the HSWA[9] card in the Object Tree and select Config → QinQ
 → OLT QinQ Domain from the shortcut menu. Click the OLT QinQ Domain tab in the window and the OLT QinQ domain configuration window appears.
- 2. Click the left pane and select $Edit \rightarrow Append$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Double-click the **Domain Name** blank field of the **Serial No.1** and enter **aa**.

3. Click the right pane and select $\textbf{Edit} \rightarrow \textbf{Append}$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Configure in the right pane according to the planned data in Table 5-34.

4. When the configuration is completed, click the B button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the OLT QinQ domian is configured. See Figure 5-150.

🔥 OLT QinQ	Domain (Do	omain 1:Sy	stem 1:0LT	System 1:1	KSTA[9]) [C	arrent Data S	ource: Device]				_ 0	×
Edit Acces	s Operation	n Device O	Iperation (3 🖗 🖴 (9, 🍫 🖬 🖻	. 📥 😹 통 🗹	4					
Serial No.	Domain	Serial No.					Old_CVLANCoslow		TPID	COS	New VI	D
1	aa	1	Single	Ethtype	SA	500	0	Transparent	33024			
4	Þ	•	_	_								Þ
OIT Dip0		on QinQ Doma	ain àttach									-
OLI QINQ	bomain The	on ging boms	in Accach									
14:12:47 >	Send Comm	and:Read H	From Device	[OLT QinQ	Domain]							
14:12:47 >	Send Comm	and Succes	ssfully!									
14:12:47 > 3	Read From	ι Device[OI	LT QinQ Dom	ain]Execut	ing							_
14:12:47 >	Command S	Succeed										-
												1
												1

Figure 5-150 The OLT QinQ Domain window - completed

5.5.3.7 Binding the PON Port to the QinQ Domain

Configuration purpose

Apply the configured OLT QinQ domain to the PON port.

Operation steps

- Right-click the GC8B[15] card in the Object Tree pane, select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.
- Click the right pane, select Edit → Append in the menu bar of the window or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Click the Table Name list box and select aa.
- 4. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table aa. See Figure 5-151.

Edit A	ccess opera	tion Device Operation 🛛 😵 🤪 🗟 🦑 🔚 ≟ 😤 🛼 💅 🕯	
Slot No.	PON port	Action	Table Name
15	1	attach	88
15	2	attach	
5	3	attach	
5	4	attach	
5	5	attach	
5	6	attach	
5	7	attach	
15	8	attach	
PON a	ttach/detac	h VLAN Table	,
		ommand:Read From Device[PON attach/detach VLAN Table	•]
0:38:14	1 > Begin	To Validate The Command Data!	
0. 00. 1.	1 \ Valida	te Data Finished	

Figure 5-151 The PON attach / detach VLAN Table window - completed

5.5.4 Configuring Data Services in the Flexible QinQ Mode (for the AN5506-10-B1)

5.5.4.1 Planning Data

Item		Description	Example
	Slot No.	The number of the actually used slot	15
0.111	PON No.	The number of the actually used PON port	1
ONU information	ONU No.	Configure according to the network planning of the operator.	2
	ONU type	The type of the ONU	AN5506-10-B1
	Service Name	Configure according to the network planning of the operator.	data5
	VLAN ID Begin	The begin VLAN ID number of the uplink port service.	3000
		The end VLAN ID number of the uplink port	
	VLAN ID End	service. The begin VLAN ID should not be larger than the end VLAN ID.	3001
	Uplink No. / TRUNK No.	The number of the actually used uplink port.	19:SFP2
Local end service VLAN	TAG / UNTAG	The Tag processing mode of the uplink service VLAN can be set as Tag or Untag . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG. Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	Tag
	Service Type	Configure according to the network planning of the operator.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 5-35 The planned data of the data service at the OLT side in the flexible QinQ mode

Table 5-36The planned data of data service configuration at the AN5506-10-B1 ONU side inthe flexible QinQ mode

Item		Description	Example
	Service Type	Select integrated service.	Integrated Service
		The fixed bandwidth of an ONU's uplink	
	Fixed Bandwidth	service. Even if the service does not use the	
	(Kbyte/s)	bandwidth resource, other services cannot	16
	(RDyle/S)	occupy the resource. The default value is	
		16Kbyte/s.	
		The minimum bandwidth for provisioning an	
Bandwidth	Assured Bandwidth	ONU's uplink service. If the bandwidth	
allocation	(Kbyte/s)	resource is not used by this service, then the	0
anocation	(RDyte/S)	resource may be released for other services	
		to use. The default value is 0Kbyte/s.	
		The maximum bandwidth of an ONU's uplink	
		service. The sum of the fixed bandwidth	
	Maximum Bandwidth	value and the assured bandwidth value	1280
	(Kbyte/s)	should not be larger than the maximum	1200
		bandwidth value. The default value is	
		64Kbyte/s.	
	ONU Port Used	The actually used ONU port	1
	Enable / Disable Port	Configure according to the network planning	Default
		of the operator. Enable is selected by default.	Delduit
	Port Auto Negotiation	Configure according to the network planning	Default
Basic		of the operator. Enable is selected by default.	Delduit
information		Unconfigurable when the port auto	
of the ONU	Port Speed	negotiation is enabled. The default speed is	Default
port		100M.	
port		Unconfigurable when the port auto	
	Duplex	negotiation is enabled. The default value is	Default
		full-duplex.	
	Flow control Enable /	Configure according to the network planning	Default
	Disable	of the operator. Disable is selected by default.	Delduit
	TLS	Configured as TLS or No TLS according to	No TLS
ONU port		the network planning of the operator.	
service	Service Type	Data service. Select Unicast.	Unicast
parameters	VLAN Mode	Configured as Tag or Transparent according	Тад
parameters		to the network planning of the operator.	109
	TPID	The default value is 33024.	33024

ltem			Description	Example
	CVLAN ID		Configure according to the network planning	600
			of the operator, ranging from 1 to 4085.	600
	Priority or CO	OS	The CVLAN priority, ranging from 1 to 7.	0
	Domain Nam	ne	The configured flexible QinQ domain name	bb
	Service Type	9	Single is selected by default.	Single
		CVLAN ID	Configure the transparently transmitted CVLAN ID.	600
		Old_	The transparently transmitted subscriber	
		VLAN	CVLAN priority, ranging from 0 to 7 with 7 as	0
	Subscriber	Coslow	the highest priority and 0 as the lowest.	
	VLAN		Configure according to the subscriber VLAN	
	Layer 1		Layer 1 value. If the subscriber VLAN layer 1	
OLT QinQ		Action	value is given, the Action can be set as	Transparent
Domain			Transparent or Translation. If not given, the	
			Action can be set as Transparent or Add.	
		IPID	The default value is 33024.	Default
		Action	Add	Add
		TPID	The default value is 33024.	Default
	Subscriber		The added SVLAN priority configuration,	
	VLAN	COS	ranging from 0 to 7 with 7 as the highest	0
	Layer 2		priority and 0 as the lowest.	
		New VID	The SVLAN ID value.	3001
OLT QinQ	Up_Clause		Select Ethtype.	Ethtype
domain	Operator		Select =.	=
service uplink rules	Value		Select the Ethernet type based on IPoE.	2048
OLT QinQ	Down_Claus	e	Select SA	SA
domain	Operator		Select Match if exist	Match if exist
service downlink rules	Value		Configure according to the network planning of the operator.	00-00-00-00-77-77
PON	Slot No.		The slot number of the GC8B card connected with the ONU. Read only.	15
attach / detach	PON Port		The PON port of the actually used GC8B card. Read only.	1
VLAN Table	Action		Bind the PON port to the QinQ domain.	Attach
	Table Name		The bound QinQ domain.	bb

5.5.4.2 Configuration Flow Chart

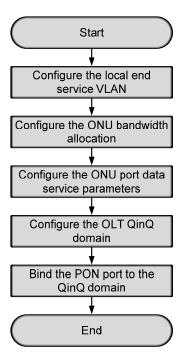


Figure 5-152 The configuration flow chart of the data service provisioning in the flexible QinQ mode (for the AN5506-10-B1)

5.5.4.3 Configuring the Local End Service VLAN

See Section 5.5.3.3 for configuration procedures.

5.5.4.4 Configuring the Bandwidth Allocation

Configuration purpose

Configure the bandwidth of the ONU data service and limit the traffic flow.

Operation steps

Click the GC8B[15] card in the Object Tree pane and information of all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU, select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.

- Click the right pane and select Edit → Append from the menu bar, or click the
 button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK.
- 3. Configure according to the planned data in Table 5-36. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation is configured. See Figure 5-153.

🕼 Bandwidth Config (Domain 1:	System 1:GC8B[15]	ONU:PON1-AN5506-10-	B1[2] [Current Data Source	: Device]
Edit Access Operation Device	Operation 🛛 😵 🤪	0, 4 🖬 🗄 🛎 😽 🗹	42	
Slot No. PON Fort No. ONU S.N. 15 1 2	Service Type Integrate Service	fixed Bandwidth(Kbyte/s) 16	assureed Bandwidth(Kbyte/s) 0	Maximum Bandwidth(Kbyte/s) 1280
x				
Bandwidth Config				
10:57:19 > Send Command:Read 10:57:19 > Begin To Validate		Case and a second and a second second second second		<u>•</u>
10:57:19 > Validate Data Fir		3		_
10:57:19 > Send Command Succ	essfully!			

Figure 5-153 The Bandwidth Config window – completed ONU

5.5.4.5 Configuring the ONU Port Data Service Parameters

Configuration purpose

Configure the FE port status and working mode of the ONU and add VLAN tags to the data service.

Operation steps

 Click the GC8B[15] card in the Object Tree pane and information about all ONUs listed under the GC8B card will be shown in the right pane. Right-click the AN5506-10-B1[2] ONU and select Config → Service Config from the shortcut menu. Select the ONU Port Config tab, as shown in Figure 5-154.

(Domain 1:System 1:GC8B[15]) Data Port Config Voice Config		×
Data Port Config Voice Config Data Port List FE1 FE2 FE3 FE4 FE5 FE6 FE7 FE8 FE9 FE10 FE11 FE12 FE13 FE14 FE15 FE16 FE17 FE18 FE19 FE20 FE21 FE22 FE23 FE24	Port No. [Port No.] Port Auto Negotiation Port Speed 100M Puplex Full=Duplex [Plow Control Enable/Disable IGMP UP CVLAN CVLAN ID CVLAN ID CVLAN COS CVLAN COS CVLAN TFID 33024 Service TIS Service Classificati Service type CVLAN mode TFID CVLAN ID Medify Boardwidth Set Service Upstream Minimum Guaranteed 640 Service Upstream Maximum Allowed 100000 Service Downstream Bandwidth (kbit/s) 100000	1
Read	DB <u>W</u> rite DB Read Device Modify On Device Delete On Device Close	

Figure 5-154 The ONU port service configuration

2. Select **FE1** from the **Data Port List** in Figure 5-154. Click **Add** to create two data services and configure according to the planned data in Table 5-36.

Services Confi	guration			×
TLS	No TLS 💌	Set Servi	ce Classificati	OK
Service type	unicast 💌	VLAN Mode	tag 💌	Cancel
TPID	33024	CVLAN ID	600	
		Priority Or COS		
Translation Stat	e	Translation value		
TPID	33024	Priority Or COS	_	
🗖 QinQ State				
Choose Qir	nQ Profile			
Service Name	_	VLAN ID(3000-3001)		
TPID	33024	Priority Or COS	_	

Figure 5-155 The Services Configuration dialog box

 Click the OK button and return to the dialog box shown in Figure 5-154. Click the Modify on Device button and complete the AN5506-10-B1 service configuration. When the Command Succeed of the AN5506-10-B1 data port service appears in the Command Manager window, the AN5506-10-B1 port service configuration is completed. See Figure 5-156.

(Domain 1:System 1:GC8B[15] (DWU List:AN5506-10-B1[2])	×
Data Port Config Voice Config		
Data Port List	Port No. 1	
FE1 FE2	🔽 Enable/Disable Port	
FE3 FE4	V Port Auto Negotiation	
FE5	Port Speed 100M 🗾 Du	plex Full-Duplex 💌
FE6 FE7	Flow Control Enable/Disable	
FE8 FE9	IGMP UP CVLAN	IGMP UP SVLAN
FE10 FE11	CVLAN ID	SVLAN ID
FE12	CVLAN COS	SVLAN COS
FE13 FE14	CVLAN TPID 33024	SVLAN TPID 33024
FE15 FE16	Service	
FE17 FE18	TLS Service Classificati Service typ	
FE19	No TL O Items unicast	tag 3024 600
FE20 FE21		<u>D</u> elete
FE22 FE23		Modify
FE24		Þ
	Boardwidth Set	
	Service Upstream Minimum	
	Service Upstream Maxi	
	Service Downstream Bandwi	dth (kbit/s) 100000
Read	DB <u>W</u> rite DB <u>Read Device</u> Modify	On Device Delete On Device Close

Figure 5-156 The port service configuration completed

5.5.4.6 Configuring the OLT QinQ Domain

Configuration purpose

Process flexibly the VLAN Tag of the service flow uploaded to the OLT by configuring the OLT QinQ domain.

Operation steps

Right-click the HSWA[9] card in the Object Tree and select Config → QinQ
 → OLT QinQ Domain from the shortcut menu. Click the OLT QinQ Domain tab in the window and the OLT QinQ domain configuration window appears.

2. Click the left pane and select $\textbf{Edit} \rightarrow \textbf{Append}$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Double-click the **Domain Name** blank field of the **Serial No.1** and enter **bb**.

3. Click the right pane and select $\textbf{Edit} \rightarrow \textbf{Append}$ on the menu bar or click the

button. Enter **1** in the **Please Input the Rows for Add** dialog box that appears and click the **OK** button. Configure in the right pane according to the planned data in Table 5-36.

4. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the OLT QinQ domian is configured. See Figure 5-157.

🔥 OLT Q	inQ Domain	(Domain 1:Sy	stem 1:0	LT Syst	tem 1:1	(STA[9]) [Current Data S	Source: Device]					
Edit A	Access Operat	ion Device	Operation	8) 🚔 (B, 🔅 🖬 🛛	🕯 📥 😹 📑	4					
Serial N		Serial No.						01d_CVLANCoslow		TPID	COS	New	VID
1	bb	1	Single	Et	htype	SA	600	0	Transparent	33024			
4			_	_									Þ
OLT G	Ding Domain	Epon QinQ Dom	ain Attacl	h		_							_
				-									
14:12:4	7 > Send Co	mmand:Read	From Dev	ice[OL1	QinQ	Domain]							-
14:12:4	7 > Send Co	mmand Succe	ssfully!										
14:12:4	7 > Read Fr	om Device[0	LT QinQ	Domain]	Execut	ing							
14:12:4	7 > Command	Succeed											-
													1

Figure 5-157 The OLT QinQ Domain window – completed

5.5.4.7 Binding the PON Port to the QinQ Domain

Configuration purpose

Apply the configured OLT QinQ domain to the PON port.

- Right-click the GC8B[15] card in the Object Tree pane, select Config → PON Attach / Detach VLAN Operation Table from the shortcut menu to access the PON attach / detach VLAN Table window.
- 2. Status information of eight PON ports of the GC8B card is shown in the left pane. Select the PON port 1 and select **Attach** in the **Action** field.
- Click the right pane, select Edit → Append in the menu bar of the window or click the button. Enter 1 in the Please Input the Rows for Add dialog box that appears and click OK. Click the Table Name list box and select bb.
- 4. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the PON port 1 has been bound to the operation table bb. See Figure 5-158.

Slot No.	PON port	Action	Table Name
5	1	attach	bb
5	2	attach	
5	3	attach	
5	4	attach	
5	5	attach	
5	6	attach	
5	7	attach	
5	8	attach	
			J
PON a	ttach/detacl	a VLAN Table	
): 38: 14	> Send C	ommand:Read From Device[PON attach/detach VLAN Table]	
38:14	> Begin	To Validate The Command Data!	
):38:14			
	> Validat	te Data Finished	

Figure 5-158 The PON attach / detach VLAN Table window - completed

5.5.5 End of Configuration

After being added with stacked VLAN tags, the PC1 and PC2 can view the IPTV programs normally.

Configuring Multicast Services

This chapter introduces how to configure multicast services on the AN5116-06B. The AN5116-06B supports four different multicast modes: proxy, snooping, proxy-snooping and controllable. Different modes suit different network environments. Users can select one of the four modes as needed. In the proxy, snooping and proxy-snooping modes, he service configuration steps are the same, except that the "multicast proxy IP" is not needed for the snooping mode. This chapter takes the proxy and controllable modes as an example to introduce how to configure the multicast services. It includes the following sections:

- Example for multicast service configuration -- proxy mode
- Example for multicast service configuration -- controllable mode
- Configuring the multicast concatenation
- Configuring the maximum multicast bandwidth for the uplink ports
- Configuring OLT multicast protocol parameters
- Configuring ONU multicast parameters
- Configuring prejoin groups
- Configuring multicast default preview parameters
- Configuring multicast logs
- Viewing the multicast statistical information
- Forcing users to leave
- Refreshing the multicast configuration information
- Querying the fast leave capability of the ONU

6

6.1 Example for Multicast Service Configuration – Proxy Mode

6.1.1 Configuration Rules

- Three multicast modes
 - Under the proxy mode, the core switch card and GPON interface card are both in proxy mode; the system proactively manages the statuses of multicast group members, effectively reducing the protocol load on the uplink equipment.
 - Under the snooping mode, the core switch card and EPON interface card are both in snooping mode; the system only snoops and forwards IGMP messages passively, which causes a relatively low impact on the system load, but greatly increases the protocol process load on the uplink equipment.
 - Under the proxy-snooping mode, the core switch card is in proxy mode, and the GPON interface card is in snooping mode, which is a combination of the proxy mode and the snooping mode.
- See the configuration of the AN5506-04-B for the multicast service start-up method of the ONU type 1; and see the configuration of the AN5506-10-B1 for the multicast service start-up method of the ONU type 2.
- During the bandwidth allocation: if the data service is not started up on the ONU port, users should configure one IPTV service bandwidth and one data bandwidth for the ONU type 1, as well as one IPTV service bandwidth and one Integrated Service bandwidth for the ONU type 2; If the data service is started up on the ONU port, users should configure only one IPTV service bandwidth for every ONU.
- For ONU type 1, after adding one multicast service to the ONU port, users should add one unicast service which provides channel for the multicast uplink / downlink protocol messages; for ONU type 2, users need not add the unicast service.

- For ONU type 1, the VLANs of the multicast uplink and downlink protocols can be configured respectively; for ONU type 2, the uplink protocol VLAN is translated into the port signal VLAN, and the VLANs of the downlink protocol messages and the downlink multicast stream are processed in the same way.
- The VLAN COS need not be configured in the multicast services. The COS of the downlink multicast stream is carried by the multicast stream and cannot be configured on the OLT and the ONU. The COS of the uplink / downlink multicast protocol message is 0.
- The VLAN of the multicast group should be within the range of the local VLAN.
- Each of the uplink ports on the AN5116-06B cannot join multiple VLANs in the untag mode.

6.1.2 Service Network

Figure 6-1 shows the network diagram of the AN5116-06B to provide the multicast services in proxy mode. Take the AN5506-04-B and the AN5506-10-B1 as the ONU examples for introduction.

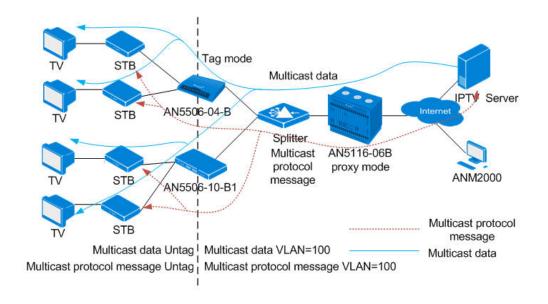


Figure 6-1 Network diagram of multicast services (proxy mode)

Downlink direction: The AN5506-04-B strips the VLAN Tag=100 from the multicast stream at the AN5116-06B side, then sends the stream to the set top box for forwarding it to the video users. Uplink direction: The AN5506-04-B attaches the join / leave multicast protocol message with the VLAN=100 tag; then sends the messages to the AN5116-06B for forwarding them to the IPTV server.

The AN5116-06B selects the HU1A card and the GC8B card as the interface card at the network side and client side respectively. The HSWA card is essential.

6.1.3 Configuring Multicast Services Respectively (for the AN5506-04-B)

6.1.3.1 Planning Data

This section introduces how to start up the multicast services in proxy mode for the AN5506-04-B by configuring the ports respectively. Tables 6-1 and 6-2 show the planning data.

Table 6-1The OLT side planning data of the multicast services under the proxy mode(configuring respectively)

ltem		Description	Example	
	ONU type	Configure according to the type of the ONU that is actually used.	AN5506-04-B	AN5506-10-B1
ONU	Slot No.	Configure according to the slot number of the PON interface card that is actually used.	15	
information	PON port No.	Configure according to the No. of the PON port that is actually used.	1	
	ONU authentication No.	Configure according to the network planning of the operator.	1	2
	Service Name	Configure according to the network planning of the operator.	iptv1	
Local end service VLAN	Starting VLAN	The starting VLAN ID of the uplink port services. Configure according to the network planning of the operator.	100	
VLAN	VLAN ID End	The ending VLAN ID of the uplink port services. Configure according to the network planning of the operator.	100	

ltem		Description	Example
		Configure according to the No. of the uplink	
	Interface No.	port that is actually used.	20:SFP1
		Configure the tag processing mode for the	
		uplink service VLAN. There are two options:	
		TAG and UNTAG. Under UNTAG mode, the	
		TAGs of the uplink packets will be stripped	
		automatically and the packets will be uplinked	
		in the form of UNTAG when they pass the	
		port, whereas the downlink UNTAG packets	
	TAG / UNTAG	will be added with designated TAGs and	TAG
		downlinked in the form of TAG. Under TAG	
		mode, the uplink data packets will not be	
		processed but remain uplinked in the original	
		form. For downlink packets, however, only	
		packets with designated TAGs are received	
		and the packets will not be processed but	
		remain downlinked in the original form.	
		Select IPTV for configuring the multicast	
	Service Type	services.	IPTV
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind
Uplink port	Port No.	Select 20:2 , which is corresponding to 20:SFP1 .	20:2
packet	Type of Packet	Select the multicast packet in this example.	MultiCast Package
suppression	Enable /	Select to disable the suppression in this	Diachla
	Disable	example.	Disable
Multicast		According to the network planning of the	
task	IGMP Version	operator, select IGMP V1 / V2 in this	IGMP V1 / V2
selection		example.	
		According to the network planning of the	
Multicast	IGMP Mode	operator, select the proxy mode in this	Proxy Mode
mode		example.	
		Configure according to the network planning	
Multicast	IGMP Proxy's	of the operator; the default value is	10.25.10.1
proxy IP	IP	10.25.14.57.	
		Configure according to the network planning	
• • • • •			
Multicast VLAN	VLAN	of the operator. The multicast VLAN should	100

Table 6-2The AN5506-04-B side planning data of the multicast services under the proxymode (configuring respectively)

Item		Description	Example
	Service Type for multicast services	Select IPTV for the multicast services.	IPTV
	Fixed Bandwidth (Kbyte/s)	Configure according to the network planning of the operator; the default value is 16.	16
	Assured Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 0.	0
ONU multicast	Maximum Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 64.	64
bandwidth config	Service Type for data services	Select data for the data services.	data
	Fixed Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 16.	16
	Assured Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 0.	0
	Maximum Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 64.	1280
	Port No.	Configure according to the port number of the ONU that is actually used.	1 to 2
ONU multicast service config	IGMP data VLAN mode	The options include TAG and UNTAG . TAG means that the downlink multicast stream that passes the ONU port carries the designated VLAN tag; UNTAG means that the downlink multicast stream that passes the ONU port is untagged. Configure according to the network planning of the operator.	TAG
	IGMP data VLAN	The multicast data VLAN indicates that the ONU only receives the downlink multicast stream with the designated VLAN tag. Configure according to the network planning of the operator.	100

Item		Description	Example
	IGMP protocol VLAN mode	Configure according to the network planning of the operator. The options include: TRANSPARENT , TAG , RETAG and REMOVE . TRANSPARENT means to transparently transmit the uplink multicast protocol message; TAG means to add a VLAN tag to the uplink multicast protocol message; RETAG means to reset the VLAN tag that the uplink multicast protocol message carries; REMOVE means to remove the VLAN tag that the uplink multicast protocol message carries.	RETAG
	IGMP Up protocol VLAN	Configure according to the network planning of the operator. The uplink multicast protocol should be in the range of the local VLAN.	100
	Data Port List	Configure according to the port number of the ONU that is actually used.	FE1 to FE2
	TAG Mode	Configure according to the network planning of the operator. The options include Tag and Untag . Tag means that the uplink data packet is tagged; Untag means that the uplink data packet is untagged.	Untag
ONU data service config	CVLAN Mode	Configure according to the network planning of the operator. The options include Tag and Transparent . When Untag is selected for TAG mode , users can select between Tag and Transparent ; when Tag is selected for TAG mode , users can select between Translation and Transparent .	Tag
	CVLAN ID	Configure according to the network planning of the operator.	100
	COS	The priority level of the multicast uplink / downlink protocol message. The value range is 0 to 7 with 7 as the highest level of priority and 0 as the lowest level of priority.	7

6.1.3.2 Configuration Flow Chart

Figure 6-2 shows the configuration flow chart for starting up the multicast services in proxy mode for the AN5506-04-B by configuring the ports respectively.

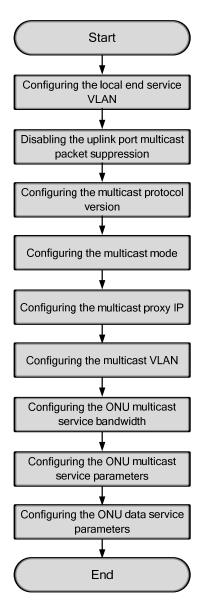


Figure 6-2 Configuration flow chart of starting up the multicast services in proxy mode by configuring the ports respectively (on the AN5506-04-B)

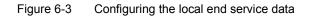
6.1.3.3 Configuring the Local End Service Data

Configuration purpose

Configure the uplink port service VLAN, set range limit on the VLAN IDs of the services that pass the uplink port, and process the VLAN tag.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → Local VLAN from the shortcut menu. Then select the Local End Service VLAN tab in the window that appears subsequently to access the associated window.
- Select Edit → Append from the menu bar or click ⁽¹⁾ in the toolbar, and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add a local VLAN.
- 3. Configure the parameters according to the planning data in the Table 6-1. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN is configured. See Figure 6-3.

			💫 🕒, 🤣 🖬 🗄			Technologic and the second
Service Name	Starting VLAN ID	VLAN ID End	Interface NO.		Service Type	Slot Bind Mode
ptv1	100	100	20:SFP1	TAG	IPTV	Auto Bind
Local End S	ervice VLAN Local E	nd Service Inner	VLAN			
	ervice VLAN Local E and Command: Read F			e VLAN]		
4:34:44 > Se		rom Device[Loo	cal End Servic	e VLAN]		
4:34:44 > Se 4:34:44 > Be	end Command:Read F	rom Device[Loo he Command Dat	cal End Servic	e VLAN]		



6.1.3.4 Disabling the Uplink Port Multicast Packet Suppression

Configuration purpose

Disable the suppression on the uplink port multicast streams.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Upport Packet Rate Control from the shortcut menu to access the Uplink Port Packet Suppression window.
- 2. According to the planning data in the Table 6-1, select **20:2** in the **Port No.** pane, and then clear the check box corresponding to the multicast packet.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of disabling the uplink port multicast packet suppression is completed. See Figure 6-4.

Port No.		Type Of Packet	Enable/Disable	Speed (Packet/Second)	
19:1		BroadCast Package	✓	100	
19:2		MultiCast Package		1	
19:3		Unknown Package	✓	100	
19:4					
20:1					
0:2					
20:3					
:0:4					
ю. г					
Uplink Port P:	icket Sup	pression			
	-	d.Read From Devic	[Uplink Port Pa	cket Suppression]	
4:36:59 ≥ Send	Comman			ionot bapprobbioni	
4:36:59 > Send 4:36:59 > Send		d Successfully!			
4:36:59 > Send	l Comman I From D	ud Successfully! Nevice[Uplink Port	Packet Suppress	ion]Executing	

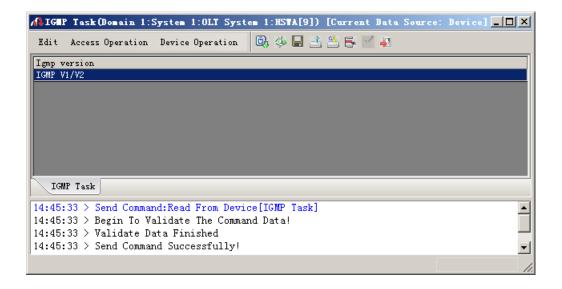
Figure 6-4 Disabling the suppression of the designated packet on the uplink port

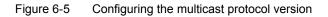
6.1.3.5 Configuring the Multicast Protocol Version

Configuration purpose

Select the multicast protocol version of the AN5116-06B. The options include **IGMP** V1 / V2 and **IGMP V3**.

- 1. Right-click the HSWA[9] card in the Object Tree pane and select Config \rightarrow IGMP Config \rightarrow IGMP Task from the shortcut menu to access the IGMP Task window.
- 2. According to the planning data in the Table 6-1, select **IGMP V1 / V2** from the pulldown list of the **Igmp version** item.
- 3. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the multicast protocol version is completed. See Figure 6-5.





6.1.3.6 Configuring the Multicast Mode

Configuration purpose

Configure the multicast operation mode of the AN5116-06B. The options include **Proxy Mode**, **Snooping Mode**, **Proxy-snooping Mode**, **Controlled Mode** and **Disable**.

Operation steps

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow IGMP Mode from the shortcut menu to access the IGMP Mode window.
- 2. According to the planning data in Figure 6-1, select **Proxy Mode** in the pulldown list of the **IGMP Mode** item.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the multicast mode is set as **Proxy Mode**. See Figure 6-6.

	∎ode (Do∎		D		B 24		<u>8</u> F			
Edit	Access Ope	eration	Device U	peration	LO 39			1 41	 	
EGMP Ma	ode									
Proxy M	lode									
TCHI	P. Modo									
IGMI	P Mode									
_	P Mode	l Commar	d:Read I	rom Dev:	ice[IGMP	Mode]				
4:46:										
4:46: 4:46:	27 > Send	n To Va	lidate (The Comm						

Figure 6-6 Configuring the multicast mode

6.1.3.7 Configuring the Multicast Proxy IP

Configuration purpose

Configure the multicast proxy IP for the AN5116-06B. The configured IP serves as the source IP address of the AN5116-06B to send multicast protocol messages to the multicast server.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → IGMP Config → IGMP Proxy IP from the shortcut menu to access the IGMP Proxy IP window.
- 2. According to the planning data in Figure 6-1, double-click the **IGMP Proxy's IP** column and input **10.25.10.1**.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the multicast proxy IP has been set to **10.25.10.1**. See Figure 6-7.

🔥 IGBP Proxy IP(Domain 1:System 1:OLT System 1:HSVA[9]) [Current Data Sour	ce: Device] <mark>_ 🗆 X</mark>
Edit Access Operation Device Operation 🔯 🍪 🔚 📑 訾 层 🚽 🎝	
IGMP Proxy's IP	
10. 25. 10. 1	
IGMP Proxy IP	
14:47:10 > Send Command:Read From Device[IGMP Proxy IP]	<u> </u>
14:47:10 > Begin To Validate The Command Data!	
14:47:10 > Validate Data Finished	
14:47:10 > Send Command Successfully!	•

Figure 6-7 Configuring the multicast proxy IP

6.1.3.8 Configuring the Multicast VLAN

Configuration purpose

Configure the default VLAN of the AN5116-06B's multicast services. The multicast VLAN is used to identify the multicast streams. The users can configure one or more VLANs dedicated for the multicast service to isolate it from other services.



The priority level of the default VLAN is lower than that of the VLAN dedicated for the multicast group in the multicast profile.

One multicast program can belong to only one multicast VLAN; one multicast VLAN can include one multicast program or one multicast program group (which refers to a set of multicast programs under the management of a unified authorization entry).

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow Multicast VLAN from the shortcut menu to access the Multicast VLAN window.
- 2. According to the planning data in Figure 6-1, double-click the **VLAN** column and input **100**.
- 3. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the multicast VLAN has been set to **100**. See Figure 6-8.

					-				Device]	
Edit	Access	Operation	Device Ope	eration	D, 🚸 🖬	1 2 2 6	¥ 🗹 🐙			
/LAN										
100										
			- 7000 17 11							
Mul	ticast V	LAN Dynam	ic IGMP VLAI	N Mode				_		
_					ice[Multica	st VLAN]				
4:48:	55 > Se	end Comma	nd:Read Fr	om Dev:		st VLAN]				
4:48: 4:48:	55 > Se 55 > Be	end Comman egin To Va		om Dev: e Comm:		st VLAN]				_

Figure 6-8 Configuring the multicast VLAN

6.1.3.9 Configuring the ONU Multicast Service Bandwidth

Configuration purpose

Configure the bandwidth of the ONU downlink multicast stream and the uplink / downlink multicast protocol. The service type of the downlink multicast stream is **IPTV** and that of the uplink / downlink multicast protocol is **data**.

Operation steps

- Click the GC8B[15] card in the Object Tree pane to display all ONUs under this card in the right pane. Next right-click the PON1-AN5506-04-B[1] ONU and select Config → Bandwidth config from the shortcut menu to access the Bandwidth Config window.
- 2. Click a blank area in the right pane, then select **Edit** \rightarrow **Append** from the menu

bar or click in the toolbar, and input **2** in the **Please Input the Rows for Add:** dialog box that appears subsequently. After that, click **OK** to add two services.

3. Configure the parameters according to the planning data in the Table 6-2.

4. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the allocation of multicast bandwidth is completed. See Figure 6-9.

Edit	Access Operat	ion Dev	ice Operation	😣 🖓 🕒 🤣 🖳 😫	5 <mark>1 4</mark>	
Slot No.	PON Port No	ONU	Service Type	fixed Bandwidth(Kbyte/s)	assureed Bandwidth(Kbyte/s)	Maximum
5	1	1	IPTV	16	0	64
			data	16	0	1280
(Band	width Config					
4:50:0	7 > Send Co	mmand: Re		e[Bandwidth Config] d Datal		
4:50:0 4:50:0	7 > Send Co	mmand:Re o Valida	ad From Device			

Figure 6-9 Allocating the multicast bandwidth

6.1.3.10 Configuring the ONU Multicast Service Parameters

Configuration purpose

Configure the VLAN of the multicast data stream and the VLAN of the uplink / downlink multicast protocol message.

- Click the GC8B[15] card in the Object Tree pane to display all ONUs under this card in the right pane. Next right-click the PON1-AN5506-04-B[1] ONU and select Config → ONU IGMP service config from the shortcut menu to access the ONU IGMP service config window.
- 2. Configure the parameters according to the planning data in the Table 6-2.

3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of multicast services for port 1 and port 2 is completed. See Figure 6-10.

02566602	ander der protection	on Device Op				1 <u>-</u> 4 <u>-</u> 5	areas -				
lot No	. PON Port No.	ONU S. N. Po	ort No. I	3MP data VI	AN mode	IGMP data VL	N IGMP dat	a VLAN COS	IGMP protocol VLAN mode	IGMP U	p protoco
5	1	1 1	T	AG		100			RETAG	100	
		2	T	AG		100			RETAG	100	
		3	ប	NTAG					TRANSPARENT		
			10	and the second se							
		4		NTAG					TRANSPARENT		
1				NTAG					TRANSPARENT		
ONU	IGMP service (NT AG					TRANSPARENT		
-			1		MP serv:	ice config]			TRANSPARENT		
:51:8	59 > Send Co	config	rom Devi	ce[ONU IG	MP serv:	ice config]			TRANSPARENT		

Figure 6-10 Configuring the ONU multicast services

6.1.3.11 Configuring the ONU Data Service Parameters

Configuration purpose

Configure the VLAN information of the uplink / downlink multicast protocol message.

Operation steps

 Click the GC8B[15] card in the Object Tree pane to display all ONUs under this card in the right pane. Next right-click the PON1-AN5506-04-B[1] ONU and select Config → Service Config from the shortcut menu, and then click the Data Port Config tab from the dialog box that appears subsequently, as shown in Figure 6-11.

a Port List 1 2	Port No. 1 ▼ Enable/Disable Fort
3	 ✓ Port Auto Negotiation Port Speed ✓ Duplex ✓ Full-Duplex ✓ Full-Duplex ✓ Full-Duplex ✓ Port Rate Limit ✓ Upstream Port Rate Limit(Kbit/s) ✓ Downstream Port Rate Limit(Kbit/s)
	Index Service typ Tag mode COS VLAN ID Ds Encrypt state Cvlan mode Add

Figure 6-11 Service configuration of the AN5506-04-B (1)

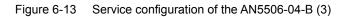
 Select FE1 in the Data Port List pane, and click the Add button to bring up the Services Configuration dialog box. According to the planning data in Table 6-2, configure the parameters in the dialog box, as shown in Figure 6-12.

Services Config	mration			×
Index	1	Service type	unicast 💌	OK
TAG Mode	Untag 🔽	CVLAN Mode	Tag 💌	Cancel
COS	7	CVLAN ID	100	
VLAN ID	1	COS	7 💌	
Ds Encrypt state	:			
🔲 QinQ State				7
SVLAN ID				
Service Name	_	COS	_	

Figure 6-12 Service configuration of the AN5506-04-B (2)

3. After the configuration is completed, click the **OK** button and return to the dialog box as shown in Figure 6-13.

ta Port List	Port No. 1
E1 E2	🔽 Enable/Disable Fort
3 4	🔽 Port Auto Negotiation
	Port Speed 100M T Duplex Full-Duplex
	Flow Control Enable/Disable
	Fort Rate Limit
	Upstream Port Rate Limit(Kbit/s)
	Downstream Port Rate Limit(Kbit/s)
	Index Service typ Tag mode COS VLAN ID Ds Encrypt state Cvlan mode
	1 unicast Untag 1 Disable tag
	Delet
	Modify



- 4. Select **FE2** in the **Data Port List** pane, and then implement the same configuration as the FE1 port on it.
- 5. After returning to the dialog box as shown in Figure 6-13, click the Modify On Device button and the Command Manager window apprears subsequently. When Command Succeed is displayed for the data port services in the window, the data service configuration of the AN5506-04-B ports is completed.

6.1.3.12 End of Configuration

The multicast services on the FE1 and FE2 ports that belong to the AN5506-04-B (whose authorization No. is 1) connected to the No.1 PON port of the GC8B card (in Slot 15) is started up; and the users can watch the video programs whose multicast VLAN is 100 normally.

6.1.4 Configuring Multicast Services Respectively (for the AN5506-10-B1)

6.1.4.1 Planning Data

This section introduces how to start up the multicast services in proxy mode for the AN5506-10-B1 by configuring the ports respectively. Tables 6-3 and 6-4 show the planning data.

Table 6-3The OLT side planning data of the multicast services under the proxy mode(configuring respectively)

Item		Description	Example	
	ONU type	Configure according to the type of the ONU that is actually used.	AN5506-04-B	AN5506-10-B1
ONU information	Slot No.	Configure according to the slot number of the PON interface card that is actually used.	15	
	PON port No.	Configure according to the No. of the PON port that is actually used.	1	

Item		Description	Example		
	ONU authentication No.	Configure according to the network planning of the operator.	1	2	
	Service Name	Configure according to the network planning of the operator.	iptv1		
	Starting VLAN	The starting VLAN ID of the uplink port services. Configure according to the network planning of the operator.	100		
	VLAN ID End	The ending VLAN ID of the uplink port services. Configure according to the network planning of the operator.	100		
	Interface No.	Configure according to the No. of the uplink port that is actually used.	20:SFP1		
Local VLAN	TAG / UNTAG	Configure the tag processing mode for the uplink service VLAN. There are two options: TAG and UNTAG . Under UNTAG mode, the TAGs of the uplink packets will be stripped automatically and the packets will be uplinked in the form of UNTAG when they pass the port, whereas the downlink UNTAG packets will be added with designated TAGs and downlinked in the form of TAG . Under TAG mode, the uplink data packets will not be processed but remain uplinked in the original form. For downlink packets, however, only packets with designated TAGs are received and the packets will not be processed but remain downlinked in the original form.	TAG		
	Service Type	Select IPTV for configuring the multicast services.	IPTV		
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind		
Uplink port	Port No.	Select 20:2 , which is corresponding to 20:SFP1 .	20:2		
packet	Type of Packet	Select the multicast packet in this example.	MultiCast Package		
suppression	Enable / Disable	Select to disable the suppression in this example.	Disable		

ltem		Description	Example	
Multicast task selection	IGMP Version	According to the network planning of the operator, select IGMP V1 / V2 in this example.	IGMP V1 / V2	
Multicast mode	IGMP Mode	According to the network planning of the operator, select the proxy mode in this example.	Proxy Mode	
Multicast proxy IP	IGMP Proxy's IP	Configure according to the network planning of the operator; the default value is 10.25.14.57.	10.25.10.1	
Multicast VLAN	VLAN	Configure according to the network planning of the operator. The multicast VLAN should be in the range of the local VLAN.	100	

Table 6-4The AN5506-10-B1 side planning data of the multicast services under the proxymode (configuring respectively)

Item		Description	Example
	Service Type for multicast services	Select IPTV for configuring the multicast services.	IPTV
	Fixed Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 16.	16
ONU multicast bandwidth configuration	Assured Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 0.	0
	Maximum Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 64.	64
	Service Type for data services	Select Integrate Service for the data services.	Integrate Service

Item		Description	Example
	Fixed Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 16.	16
	Assured Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 0.	0
	Maximum Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 64.	1280
	Data Port List	Configure according to the port number of the ONU that is actually used.	FE1 to FE2
	Service type	Select multicast for the multicast services.	multicast
ONU multicast service configuration	VLAN Mode	Configure according to the network planning of the operator. The options include tag and transparent . Tag means to remove the VLAN tag from the downlink multicast stream that passes the ONU port; transparent means to transparently transmit the downlink multicast stream.	tag
	CVLAN ID	The VLAN ID that the downlink multicast stream carries. Configure according to the network planning of the operator.	100
ONIL port	ONU Port No.	Configure according to the port number of the ONU that is actually used.	1, 2
	Control Switch	Select Controlled in this example.	Controlled
ONU port parameters	Profile Name	Select Detach in this example.	Detach
Parameters	Signal vlan	Multicast uplink protocol message VLAN. Configure according to the network planning of the operator.	100

6.1.4.2 Configuration Flow Chart

Figure 6-14 shows the configuration flow chart for starting up the multicast services in proxy mode for the AN5506-10-B1 by configuring the ports respectively.

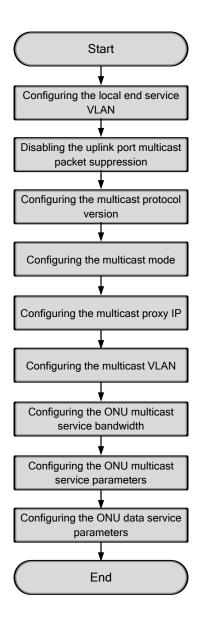


Figure 6-14 Configuration flow chart of starting up the multicast services in proxy mode by configuring the ports respectively (on the AN5506-10-B1)

See Section 6.1.3.3 to Section 6.1.3.8 for the steps 1-6 of the configuration flow chart. Only step 7 to step 9 are introduced in the following part.

6.1.4.3 Configuring the ONU Multicast Service Bandwidth

Configuration purpose

Configure the bandwidth of the ONU downlink multicast stream and the uplink / downlink multicast protocol. The service type of the downlink multicast stream is **IPTV** and that of the uplink / downlink multicast protocol is **Integrate Service**.

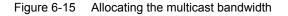
Operation steps

- Click the GC8B[15] card in the Object Tree pane to display all ONUs under this card in the right pane. Next right-click the PON1-AN5506-10-B1[2] ONU and select Config → Bandwidth config from the shortcut menu to access the Bandwidth Config window.
- 2. Click a blank area in the right pane, then select $\textbf{Edit} \rightarrow \textbf{Append}$ from the menu

bar or click ^(G) in the toolbar, and input **2** in the **Please Input the Rows for Add:** dialog box that appears subsequently. After that, click **OK** to add two services.

- 3. Configure the parameters according to the planning data in the Table 6-4.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the allocation of multicast bandwidth is completed, as shown in Figure 6-15.

Bandwidth Confi	g(Domain 1				ent Data Source: Device]	
dit Access Opera	tion Device	e Operation 🛛 😵	4 🕒 4 💭 4	💾 🖶 🗹 🐙		
lot No. PON Port N	o. ONV S.N.	Service Type	fixed Bandwidtl	(Kbyte/s) assureed Bandw	idth(Kbyte/s) Maximum Bandwi	idth (Kbyte/:
5 1	2	IPTV	16	0	64	
		Integrate Servi	ce 16	0	1280	
Bandwidth Config	2	d Russ Davis P	andwidth Config]			
5:23:09 > Send C 5:23:09 > Begin						
6:23:09 > Valida						
5:23:09 > Send C	ommand Suc	cessfully!				



6.1.4.4 Configuring the ONU Multicast Service Parameters

Configuration purpose

Configure the VLAN of the multicast data stream and the VLAN of the downlink multicast protocol message.

Operation steps

 Click the GC8B[15] card in the Object Tree pane to display all ONUs under this card in the right pane. Next right-click the PON1-AN5506-10-B1[2] ONU and select Config → Service Config from the shortcut menu, and then click the Data Port Config tab from the dialog box that appears subsequently, as shown in Figure 6-16.

Domain 1:System 1:GC8B[15]	ONU List:AN5506-10-B1[2])	>
Data Port Config Voice Config		
Data Port List	Port No. 1	
FE1	₩ Enable/Disable Port	
FE2 FE3	Port Auto Negotiation	
FE4		
FES	Port Speed 100M 🔽 Duplex Full-Duplex 💌	
FEG	Flow Control Enable/Disable	
FE7		
FE8	IGMP UP CVLAN IGMP UP SVLAN	
FE9		
FE10	CVLAN ID SVLAN ID	
FE11 FE12	CVLAN COS 🔽 SVLAN COS 🔽	
FE12		
FE14	CVLAN TPID 33024 SVLAN TPID 33024	
FE15		
FE16	Service	
FE17	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID C	
FE18		-
FE19		
FE20	Delete	
FE21		
FE22 FE23	Modify	
FE24		
1 52 4		
	Boardwidth Set	
	Service Upstream Minimum Guaranteed 640	1
		į.
	Service Upstream Maximum Allowed 100000	
	Service Downstream Bandwidth(kbit/s) 100000	-
<u>R</u> ead	DB <u>W</u> rite DB R <u>e</u> ad Device Modify On Device Delete On Device Close	

Figure 6-16 Service configuration of the AN5506-10-B1 (1)

2. Select **FE1** in the **Data Port List** pane, and click the **Add** button to bring up the **Services Configuration** dialog box. According to the planning data in Table 6-4, configure the parameters in the dialog box, as shown in Figure 6-17.

Services Confi	guration			×
TLS	No TLS 💌	Set Servi	ce Classificati	OK
Service type	multicast 💌	VLAN Mode	tag 💌	Cancel
TPID	33024	CVLAN ID	100	
		Priority Or COS	•	
Translation Stal	te	Translation value		
TPID	33024	Priority Or COS	_	
🔲 QinQ State				
Choose Qi	nQ Profile			
Service Name	v	VLAN ID		
TPID	33024	Priority Or COS	_	

Figure 6-17 Service configuration of the AN5506-10-B1 (2)

3. After the configuration is completed, click the **OK** button and return to the dialog box as shown in Figure 6-18.

(Domain 1:System 1:GC8B]	[15] OHU List:AH5506-10-B1[2])
Data Port Config Voice Co	onfig
Data Port List	Port No. 1
FE1	Enable/Disable Port
FE2	
FE3	V Port Auto Negotiation
FE4 FE5	Port Speed 100M V Duplex Full-Duplex V
FE6	
FET	Flow Control Enable/Disable
FES	
FE9	IGMP UP CVLAN IGMP UP SVLAN
FE10	CVLAN ID SVLAN ID
FE11	
FE12	CVLAN COS 🗾 SVLAN COS
FE13	CVLAN TPID 33024 SVLAN TPID 33024
FE14	
FE15	
FE16	Service
FE17 FE18	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID C Add
FE19	No TL O Items multicast tag 3024 100
FE20	Delete
FE21	
FE22	Modify
FE23	
FE24	F
	Boardwidth Set
	Service Upstream Minimum Guaranteed 640
	Service Upstream Maximum Allowed 100000
	Service Downstream Bandwidth(kbit/s) 100000
	Read DB Write DB Read Device Modify On Device Delete On Device Close
_	Tear po Trice po Trear posice month ou perice perece ou perice Crose

Figure 6-18 Service configuration of the AN5506-10-B1 (3)

- 4. Select **FE2** in the **Data Port List** pane, and then implement the same configuration as the FE1 port on it.
- After returning to the dialog box as shown in Figure 6-18, click the Modify On Device button and the Command Manager window apprears subsequently. When Command Succeed is displayed for the data port services in the window, the data service configuration of the AN5506-10-B1 ports is completed.

6.1.4.5 Configuring the ONU Port Parameters

Configuration purpose

Configure the VLAN of the multicast uplink protocol message.

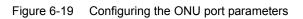
Operation steps

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow IGMP Profile and Port from the shortcut menu. And then click the Port Parameters tab from the window that appears subsequently.
- 2. Configure the parameters according to the planning data in the Table 6-4.
- 3. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the ONU port parameters is completed. See Figure 6-19.



Under the uncontrollable mode, only the parameters of the itmes **signal vlan** and **LEAVE MODE** are valid.

Edit Access Operation Device Operation Image: Control Switch Profile Name LEAVE MODE Max Online Groups (Group) Port Bandwidth (Kbit/s) signal vie 1 15 1 2 1 Controlled NON FAST 32 0 100 2 15 1 2 2 Controlled NON FAST 32 0 100 1 15 1 2 2 Controlled NON FAST 32 0 100 2 15 1 2 2 Controlled NON FAST 32 0 100 1 15 1 2 2 Controlled NON FAST 32 0 100 1 15 1 2 2 Controlled NON FAST 32 0 100 1 10 1 2 10 100	🕼 P or i	Param	eters (D	omain 1:S	ystem 1:)LT System	1:HSTA[9]) [C	urrent Data	Source: De	vice]				_ [] >
1 15 1 2 1 Controlled NON FAST 32 0 100 2 15 1 2 2 Controlled NON FAST 32 0 100 4 IOMF Profile Group Parameters Fort Parameters IGMP Protocol Parameters 100 15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished	Edit	Access	Operatio	n Device	Operation	🛛 🔇 🎲 🕻) 🔅 🖬 🖻 🖞	s 🖶 🗹 🐙						
2 15 1 2 2 Controlled NON FAST 32 0 100 Image: Controlled NON Fast 32 0 100 Image: Controlled NON Fast 32 0 100 Image: Controlled NON Fast 32 0 100 Image: Controlled NON Fast 32 0 100	Serial		ot No. PO	N Port No.		ONU Port No.		Profile Name			: Groups (Grou		ndwidth(Kbit/s)	
IGMP Profile Group Parameters IGMP Protocol Parameters 15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished	1		1			1								_
15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished	2	15	1		Z	2	Controlled		NUN FAST	32		U		100
15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished														
15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished														
15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished														
15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished														
15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished														
15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished														
15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished	4													
15:04:55 > Send Command:Read From Device[Port Parameters] 15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished	<u> </u>													
15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished	IG	P Profil	le Group	Parameter	s Port Pa	rameters IG	MP Protocol Para	ameters						
15:04:55 > Begin To Validate The Command Data! 15:04:55 > Validate Data Finished	15.04.	55 > S	end Com	and:Read	From Der	vice[Port_P	arametersl							
15:04:55 > Validate Data Finished						-								
						1								
					,									



6.1.4.6 End of Configuration

The multicast services on the FE1 and FE2 ports that belong to the AN5506-10-B1 (whose the authorization No. is 2) connected to the No.1 PON port of the GC8B card (in Slot 15) is started up; and the users can watch the video programs whose multicast VLAN is 100 normally.

6.1.5 Configuring Multicast Services in a Batch Manner (for the AN5506-04-B)

6.1.5.1 Planning Data

This section introduces how to start up the multicast services in proxy mode for the AN5506-04-B by configuring the ports in a batch manner. Tables 6-5 and 6-6 show the planning data.

Table 6-5The OLT side planning data of the multicast services under the proxy mode(configuring in a batch manner)

Item		Description	Example	
ONU information	ONU type	Configure according to the type of the ONU that is actually used.	AN5506-04-B	AN5506-10-B1
	Slot No.	Configure according to the slot number of the PON interface card that is actually used.	15	
	PON port No.	Configure according to the No. of the PON port that is actually used.	1	
	ONU No.	Configure according to the network planning of the operator.	1	2
Local VLAN	Service Name	Configure according to the network planning of the operator.	iptv1	
	Starting VLAN ID	The starting VLAN ID of the uplink port services. Configure according to the network planning of the operator.	100	
	VLAN ID End	The ending VLAN ID of the uplink port services. Configure according to the network planning of the operator.	100	

Item		Description	Example
Inte	late of a school of the	Configure according to the No. of the	20.5504
	Interface No.	uplink port that is actually used.	20:SFP1
	_	Configure the tag processing mode for	
		the uplink service VLAN. There are two	
		options: TAG and UNTAG. Under	
		UNTAG mode, the TAGs of the uplink	
		packets will be stripped automatically	
		and the packets will be uplinked in the	
		form of UNTAG when they pass the	
		port, whereas the downlink UNTAG	
		packets will be added with designated	TAO
	TAG / UNTAG	TAGs and downlinked in the form of	TAG
		TAG. Under TAG mode, the uplink data	
		packets will not be processed but	
		remain uplinked in the original form. For	
		downlink packets, however, only	
		packets with designated TAGs are	
		received and the packets will not be	
		processed but remain downlinked in the	
		original form.	
	Service Type	Select IPTV for configuring the multicast	IPTV
	Service Type	services.	
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind
	Port No.	Select 20:2 , which is corresponding to 20:SFP1 .	20:2
Uplink port packet	Type of Packet	Select the multicast packet in this example.	MultiCast Package
suppression	Enable /	Select to disable the suppression in this	Dischlo
	Disable	example.	Disable
Multicast		According to the network planning of the	
task	IGMP Version	operator, select IGMP V1 / V2 in this	IGMP V1 / V2
selection		example.	
Multicast	IGMP Mode	According to the network planning of the	
mode		operator, select the proxy mode in this	Proxy Mode
		example.	

Item		Description	Example
Multicast proxy IP	IGMP Proxy's IP	Configure according to the network planning of the operator; the default value is 10.25.14.57.	10.25.10.1
Multicast VLAN	VLAN	Configure according to the network planning of the operator. The multicast VLAN should be in the range of the local VLAN.	100

Table 6-6The AN5506-04-B side planning data of the multicast services under the proxymode (configuring in a batch manner)

Item		Description	Example
ONU bandwidth allocation profile	Profile Name	Configure according to the network planning of the operator.	а
	Service Type for multicast services	Select IPTV for configuring the multicast services.	IPTV
	Fixed Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 16.	16
	Assured Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 0.	0
	Maximum Bandwidth (Kbyte/s) for multicast services Service Type	Configure according to the network planning of the operator; the default value is 64.	64
	for data services	Select DATA for the data services.	DATA
	Fixed Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 16.	16

Item		Description	Example
	Assured Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 0.	0
	Maximum Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 64.	1280
ONU multicast service profile	Profile Name	Configure according to the network planning of the operator.	b
	IGMP Data VLAN Mode	The options include Tag and Untag . Tag means that the downlink multicast stream that passes the ONU port carries the designated VLAN tag; Untag means that the downlink multicast stream that passes the ONU port is untagged. Configure according to the network planning of the operator.	Тад
	IGMP Data VLAN	The multicast data VLAN indicates that the ONU only receives the downlink multicast stream with the designated VLAN tag. Configure according to the network planning of the operator.	100
	IGMP Protocol VLAN Mode	Configure according to the network planning of the operator. The options include: TRANSPARENT , TAG , RETAG and REMOVE . TRANSPARENT means to transparently transmit the uplink multicast protocol message; TAG means to add a VLAN tag to the uplink multicast protocol message; RETAG means to reset the VLAN tag that the uplink multicast protocol message carries; REMOVE means to remove the VLAN tag that the uplink multicast protocol message carries.	RETAG
	IGMP Up Protocol VLAN	Configure according to the network planning of the operator. The uplink multicast protocol should be in the range of the local VLAN.	100

Item		Description	Example
Service Profile	Profile Name	Configure according to the network planning of the operator.	с
	ONU Type	Specify the type of the ONU that is used.	AN5506-04-B
	ONU Subprofile Config	Select the ONU bandwidth allocation profile.	а
	Port Type	Specify the type of the ONU port.	FE
	Port No.	Select the port number of the ONU that is used.	1, 2
	ONU Port Profile Config	Select the ONU multicast service profile.	b
	Profile ID	Select the service profile to which the ONU bind.	С
	Action	Select Attach in this example.	Attach
Service profile binding	Slot No.	Configure according to the slot number of the PON interface card that is actually used.	15
	PON No.	Configure according to the No. of the PON port that is actually used.	1
	ONU S.N.	Configure according to the ONU authentication No. that binds to the service No.	1

6.1.5.2 Configuration Flow Chart

Figure 6-20 shows the configuration flow chart for starting up the multicast services in proxy mode for the AN5506-04-B by configuring the ports in a batch manner.

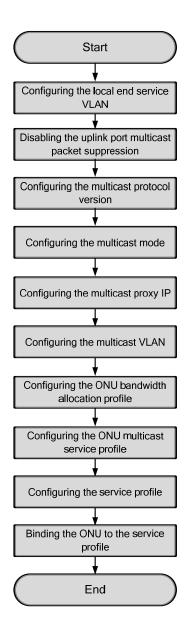


Figure 6-20 Configuration flow chart of starting up the multicast services in proxy mode by configuring the ports in a batch manner (on the AN5506-04-B)

See Section 6.1.3.3 to Section 6.1.3.8 for the steps 1-6 of the configuration flow chart. Only step 7 to step 10 are introduced in the following part.

6.1.5.3 Configuring the ONU Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth profile of the ONU downlink multicast stream and the uplink / downlink multicast protocol. The service type of the downlink multicast stream is **IPTV** and that of the uplink / downlink multicast protocol is **DATA**.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- Click Edit → Append from the menu bar or click in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one bandwidth allocation profile and input a for the Profile Name item.
- Click a blank area in the right pane, then select Edit → Append from the menu bar or click in the toolbar, and input 2 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add two services.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration multicast bandwidth allocation profile is completed, as shown in Figure 6-21.

	6 6	0	64
DATA 1	6		
	0	0	1280
∢ rofile			
1.0.1.0	n Device[Bandwidth Co	nfig Profilel	
mand:Kead From	a posico panawiden co		
	Command Data!		
	<pre>↓</pre>	∢[∢[

Figure 6-21 Configuring the ONU bandwidth allocation profile

6.1.5.4 Configuring the ONU Multicast Service Profile

Configuration purpose

Configure the multicast service profile that includes the ONU downlink multicast stream VLAN, the uplink / downlink multicast protocol message VLAN and other service parameters.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → Service Profile Config from the shortcut menu. And then click the IGMP Service Profile tab from the window that appears subsequently.
- Click Edit → Append from the menu bar or click in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one multicast service profile.
- 3. Configure the parameters according to the planning data in the Table 6-6.

4. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of multicast service profile is completed, as shown in Figure 6-22.

¢ Tellik	Servic	e Profil	Le (Domain	a 1:Sy	ystem	1:0LT S	ystem	1:HSTA	9]) [Curren	t Dat	a sou	rce.	Dealce]	
Edit	Access O	peration	Device	Operat	tion	🛛 😜	e Q	🤹 🖬 I	2 2 2 5		<u>.</u>			
Profile			VLAN Mode		Data VI		? Data	VLAN COS	IGMP Protoco	1 VLAN	[Mode		Up Protoc	ol VLAN
b	<u> </u>	ag		100		0			RETAG			100		
(
U Data	a Service	Profile	IGMP Ser	rvice I	Profile	Voice	Servi c	 e Profile	Service Pro	file	Servio	e Pro:	file Bind:	ing
			~			<u> </u>			×	file	Servio	e Pro:	file Bind	ing
5:10:4	42 > Sei	nd Comma	and:Read	From	Devic	e[Data	Servi		×	file	Servio	ce Pro:	file Bind:	ing
5:10:4 5:10:4	42 > Sei 42 > Bei	nd Comma gin To V	→ and:Read /alidate	From The C	Devic	e[Data	Servi		×	file	Servia	e Pro:	file Bind:	ing
5:10:4 5:10:4 5:10:4	42 > Sen 42 > Ben 42 > Va:	nd Comma gin To N lidate I	→ and:Read Validate)ata Fini	From The C ished	Devic Comman	e[Data	Servi		×	file	Servic	ce Pro:	file Bind:	ing
5:10: 5:10: 5:10:	42 > Sen 42 > Ben 42 > Va:	nd Comma gin To N lidate I	→ and:Read /alidate	From The C ished	Devic Comman	e[Data	Servi		×	file	Servic	e Pro	file Bind:	ing

Figure 6-22 Configuring the multicast service profile

6.1.5.5 Configuring the Service Profile

Configuration purpose

Create a service profile to bind the multicast bandwidth allocation profile and the multicast service profile.

- 1. Click the **Service Profile** tab from the **IGMP Service Profile** window to access the **Service Profile** window.
- Click Edit → Append from the menu bar or click in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one service profile.

3. According to the planning data in Table 6-6, input the profile name, select the ONU type, and double-click a blank area under the ONU Subprofile Config item to bring up the ONU Subprofile Config dialog box. Then click the Add (A) button, select Bandwidth Config Profile in the pulldown list of the Profile Type item, and select a in the pulldown list of the Profile Name item. After that, click the OK button, as shown in Figure 6-23.

)NU Subprofile Config		×
Profile Type	Profile Name	
Bandwidth Config Profile	a	
		Add (<u>A</u>)
		Delete (<u>D</u>)
		ОК
		Cancel

Figure 6-23 Configuring the ONU sub-profile

4. After returning to the Service Profile window, click a blank area in the right

pane, then select **Edit** \rightarrow **Append** from the menu bar or click 9 in the toolbar, and input **2** in the **Please Input the Rows for Add:** dialog box that appears subsequently. After that, click **OK** to add two ONU port sub-profiles.

5. According to the planning data in Table 6-6, select the port type, input the port no, and double-click a blank area under the ONU Port Profile Config item to bring up the ONU Port Profile Config dialog box. Then click the Add (A) button, select IGMP Service Profile in the pulldown list of the Profile Type item, and select b in the pulldown list of the Profile Name item. After that, click the OK button, as shown in Figure 6-24.

V Port Profil	e Contig	
rofile Type	Profile Name	
GMP Service Pr	ofileb	
		1. (.)
	Add	(<u>A</u>) E
	Dele	te (D)
		Ж
	Cal	ncel

Figure 6-24 Configuring the ONU port sub-profile

6. After returning to the **Service Profile** window, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of service profile is completed, as shown in Figure 6-25.

🕂 Service Pro	file(Domain 1	:System 1:OLT System	1:HSTA[9]) [Cw	rrent Dat:	a Source: Dev:	i ce] _ 🗆 🗙
Edit Access Operation Device Operation 🚫 🤪 🚔 🖏 🏇 🔚 ≟ 坐 😹 🛼 🖌 🎝						
Profile Name	ONU Type	ONU Subprofile Config	Port Type △	Port No.	ONU Port Profi	le Config
c	AN5506-04-B		FE	1		
			FE	2		
↓ Data Servic	e Profile IGMP	Service Profile Voice S	ervice Profile S	ervice Pro	file Service Pr	rofile Binding
15:19:12 > Be 15:19:12 > Va			ervice Profile]		•

Figure 6-25 Configuring the service profile

6.1.5.6 Binding the ONU to the Service Profile

Configuration purpose

Bind the ONU to the service profile, namely applying the parameters of the service profile to the ONU.

- 1. Click the **Service Profile Binding** tab from the **Service Profile** window to access the **Service Profile Binding** window.
- Click Edit → Append from the menu bar or click in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one service profile.
- According to the planning data in Table 6-6, select c in the pulldown list of the Profile ID item, and select Attach in the pulldown list of the Action item.
- Click a blank area in the right pane, then select Edit → Append from the menu bar or click in the toolbar, and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one binding object.
- 5. Double-click a blank area under the **ONU S.N.** item to bring up the **Select Objects** dialog box, then select the designated ONU, as shown in Figure 6-26.

Board	ONU	Auth No.	Is Select
C8B[15]	PON1-AN5506-04-B[1]	1	

Figure 6-26 Selecting the object

6. Click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the operation of binding the ONU to the service profile is completed, as shown in Figure 6-27.

⚠️Service Profile Binding(Domain 1:System 1:OLT System 1:HSTA[9]) [Current Data Source: Device] 💶 🗙
Edit Access Operation Device Operation 🛛 😵 🥋 🗟 🤣 🖨 📥 🖆 🖉 🎝
Profile ID Action Slot No. PON NO. ONU S.N.
c Attach 15 1 1
Data Service Profile IGMP Service Profile Voice Service Profile Service Profile Service Profile Binding
15:21:29 > Send Command:Read From Device[Data Service Profile]
15:21:29 > Begin To Validate The Command Data!
15:21:29 > Validate Data Finished
15:21:29 > Send Command Successfully!

Figure 6-27 Binding the ONU to the service profile

6.1.5.7 End of Configuration

The multicast services on the FE1 and FE2 ports that belong to the AN5506-04-B (whose authorization No. is 1) connected to the No.1 PON port of the GC8B card (in Slot 15) is started up; and the users can watch the video programs whose multicast VLAN is 100 normally.

6.1.6 Configuring Multicast Services in a Batch Manner (for the AN5506-10-B1)

6.1.6.1 Planning Data

This section introduces how to start up the multicast services in proxy mode for the AN5506-10-B1 by configuring the ports in a batch manner. Tables 6-7 and 6-8 show the planning data.

Table 6-7The OLT side planning data of the multicast services under the proxy mode(configuring in a batch manner)

Item		Description	Example		
	ONU type	Configure according to the type of the ONU that is actually used.	AN5506-04-B	AN5506-10-B1	
ONU Slot No.		Configure according to the slot number of the PON interface card that is actually used.	15		
information	PON port No.	Configure according to the No. of the PON port that is actually used.	1		
	ONU No.	Configure according to the network planning of the operator.	1	2	
	Service Name	Configure according to the network planning of the operator.	iptv1		
Local VLAN	Starting VLAN ID	The starting VLAN ID of the uplink port services. Configure according to the network planning of the operator.	100		
	VLAN ID End	The ending VLAN ID of the uplink port services. Configure according to the network planning of the operator.	100		

Item		Description	Example	
	Interface	Configure according to the No. of the uplink	20-SED1	
	No.	port that is actually used.	20:SFP1	
		Configure the tag processing mode for the		
		uplink service VLAN. There are two options:		
		TAG and UNTAG. Under UNTAG mode, the		
		TAGs of the uplink packets will be stripped		
		automatically and the packets will be uplinked		
		in the form of UNTAG when they pass the		
	TACI	port, whereas the downlink UNTAG packets		
	TAG /	will be added with designated TAGs and	TAG	
	UNTAG	downlinked in the form of TAG. Under TAG		
		mode, the uplink data packets will not be		
		processed but remain uplinked in the original		
		form. For downlink packets, however, only		
		packets with designated TAGs are received		
		and the packets will not be processed but		
		remain downlinked in the original form.		
	Service	Select IPTV for configuring the multicast		
	Туре	services.	IPTV	
	Slot Bind	Coloct Auto Dind or Manually Bind	Auto Bind	
	Mode	Select Auto Bind or Manually Bind.		
	Port No.	Select 20:2 , which is corresponding to	20:2	
Uplink port		20:SFP1.		
packet	Type of Packet	Select the multicast packet in this example.	MultiCast Package	
suppression	Enable /	Select to disable the suppression in this	Disable	
	Disable	example.	Disable	
Multicast		According to the network planning of the		
task	IGMP Version	operator, select IGMP V1 / V2 in this	IGMP V1 / V2	
selection	version	example.		
Multicopt		According to the network planning of the		
Multicast	IGMP Mode	operator, select the proxy mode in this	Proxy Mode	
mode	Mode	example.		
Multicopt	IGMP	Configure according to the network planning		
Multicast	Proxy's	of the operator; the default value is	10.25.10.1	
proxy IP	IP	10.25.14.57.		
N A 14: 1		Configure according to the network planning		
Multicast	VLAN	of the operator. The multicast VLAN should	100	
VLAN		be in the range of the local VLAN.		

Item		Description	Example
	Profile Name	Configure according to the network planning of the operator.	d
	Service Type for multicast services	Select IPTV for configuring the multicast services.	IPTV
	Fixed Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 16.	16
	Assured Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 0.	0
ONU bandwidth allocation profile	Maximum Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 64.	64
	Service Type for data services	Select Integrated Service for the data services.	Integrated Service
	Fixed Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 16.	16
	Assured Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 0.	0
	Maximum Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 64.	1280
ONU config	Slot No.	Configure according to the slot number of the PON interface card that is actually used.	15

Table 6-8The AN5506-10-B1 side planning data of the multicast services under the proxymode (configuring in a batch manner)

Item		Description	Example
	PON No.	Configure according to the No. of the PON port that is actually used.	1
	ONU No.	Select the authentication No. of the ONU to be configured.	2
	GPON Bandwidth Profile	Select the name of the bandwidth profile that the ONU binds to.	d
	Profile Name	Configure according to the network planning of the operator.	е
Multicast	Service Type	Select multicast for the multicast services.	multicast
service model profile	CVLAN Mode	Configure according to the network planning of the operator. The options include tag and transparent . Tag means to remove the VLAN tag from the downlink multicast stream that passes the ONU port; transparent means to transparently transmit the downlink multicast stream.	tag
	Slot No.	Configure according to the slot number of the PON interface card that is actually used.	15
	PON No	Configure according to the No. of the PON port that is actually used.	1
	ONU No.	Select the authentication No. of the ONU to be configured.	2
ONU data	Port No.	Select the port number of the ONU to be configured.	1, 2
service config	Service ID	Select the serial number of the port downlink service stream.	1
	CVLAN ID	Select the VLAN ID carried by the downlink multicast stream.	100
	Service Model Profile	Select the multicast service model profile that the ONU port binds to.	е
	ONU Port No.	Configure according to the port number of the ONU that is actually used.	1, 2
ONU port	Control Switch	Select Controlled in this example.	Controlled
parameters	Profile Name	Select Detach in this example.	Detach
	Signal vlan	Multicast uplink protocol message VLAN. Configure according to the network planning of the operator.	100

6.1.6.2 Configuration Flow Chart

Figure 6-28 shows the configuration flow chart for starting up the multicast services in proxy mode for the AN5506-10-B1 by configuring the ports in a batch manner.

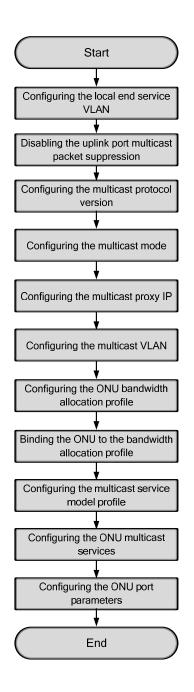


Figure 6-28 Configuration flow chart of starting up the multicast services in proxy mode by configuring the ports in a batch manner (on the AN5506-10-B1)

See Section 6.1.3.3 to Section 6.1.3.8 for the steps 1-6 of the configuration flow chart. Only step 7 to step 11 are introduced in the following part.

6.1.6.3 Configuring the ONU Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth profile of the ONU downlink multicast stream and the uplink / downlink multicast protocol. The service type of the downlink multicast stream is **IPTV** and that of the uplink / downlink multicast protocol is **Integrated Service**.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- Click Edit → Append from the menu bar or click in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one bandwidth allocation profile and input d for the Profile Name item.
- 3. Click a blank area in the right pane, then select **Edit** \rightarrow **Append** from the menu

bar or click in the toolbar, and input **2** in the **Please Input the Rows for Add:** dialog box that appears subsequently. After that, click **OK** to add two services.

- 4. Configure the parameters according to the planning data in the Table 6-8.
- 5. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of multicast bandwidth allocation profile is completed. See Figure 6-29.

🚯 Bandwidth C	onfig Profile(Domai	n 1:System 1:OLT Syste	m 1:HSWA[9]) [Current Dat	a Source: Device] 💶 🕽
Edit Access (Operation Device Oper	stion 🛛 😵 🖨 🗒 🍕) 🖬 🗄 📥 📥 🖶 🗹 🐙 👘	
Profile Name	Service Type	fixed Bandwidth(Kbyte/s)	assureed Bandwidth(Kbyte/s)	Maximum Bandwidth(Kbyte/s)
d	IPTV	16	0	64
	Integrated Service	16	0	1280
Bandwidth Co	onfig Profile			P
15:24:17 > Set	nd Command:Read Fro	m Device[Bandwidth Con	fig Profile]	
15:24:17 > Be	gin To Validate The	Command Data!	-	
15:24:17 > Va	- lidate Data Finishe	d		-
15:24:17 > Se	nd Command Successf	ully!		

Figure 6-29 Configuring the ONU bandwidth allocation profile

6.1.6.4 Binding the ONU to the Bandwidth Allocation Profile

Configuration purpose

Bind the ONU to the bandwidth allocation profile, namely applying the bandwidth allocation profile to the ONU.

- Right-click the system in the Object Tree pane and select Config → Batch Configure → ONU Config from the shortcut menu to access the ONU Config window.
- Click the Set Object as Condition button, and select the AN5506-10-B1[2] connected to the No.1 pon port of the GC8B card in Slot 15, and then click the OK button.
- 3. The specific information of the configuration object is displayed in the right pane. According to the planning data in Table 6-8, select **d** in the pulldown list of the **GPON Bandwidth Profile** item.

4. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the operation of binding the ONU to the multicast bandwidth allocation profile is completed. See Figure 6-30.

ACONU Config(Domain 1:	System 1)	[Curren	t Data	Source:	Default]		
Edit Access Operation	Device Ope	ration	D, 🌣	3 8 8	÷ 🗹 🚚		
Config Object Set Object As Condition			PONINO.	ONU NO. 2	Bandwidth Profile	GPON Bandwidth d	Profile
B-OLT System 1		ONV Conf	lig				
	09	:10:48 >	Send C	command S	Read From Device[Successfully! ice[ONU Config]Ex		A V

Figure 6-30 Binding the ONU to the bandwidth allocation profile

6.1.6.5 Configuring the Multicast Service Model Profile

Configuration purpose

Configure the VLAN profile of the multicast service stream.

- Right-click the system in the Object Tree pane and select Config → Profile Definition → Service Model Profile from the shortcut menu to access the Service Model Profile window.
- Click Edit → Append from the menu bar or click in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one service model profile.
- 3. Configure the parameters according to the planning data in the Table 6-8.

4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of multicast service model profile is completed. See Figure 6-31.

∧&Service ∎od	lel Profile(D	omain 1:Syst	em 1) [Current Data	Source: Device]	
Edit Access	Operation Dev	ice Operation	🛛 😣 🤪 🖪 .	😃 🛃 🖶 🗹 🐙	
Profile Name	Service Type	CVLAN Mode	Translation State	QinQ State	
е	multicast	tag			
Service Mod	el Profile				
15.32.44 > Se	nd Command:R	aad From Dev	vice[Service Model P	rofilel	
15:32:44 > Be				rorreg	-
15:32:44 > Va	-		and para.		
15:32:44 > Se					-

Figure 6-31 Configuring the service model profile

6.1.6.6 Configuring the ONU Multicast Services

Configuration purpose

Bind the multicast service model profile to the ONU ports and configure the VLAN ID of the downlink multicast data stream.

- Right-click the system in the Object Tree pane, and select Config → Batch Configure → ONU Data Service Configure from the shortcut menu to access the ONU Data Service Configure window.
- 2. Click the \checkmark button in the toolbar, and select **GC8B[15]** \rightarrow **PON1** \rightarrow **PON1-AN5506-10-B1[2]** \rightarrow **FE1** and **FE2** in the **Add Item number** dialog box that appears subsequently, then click the **OK** button as shown in Figure 6-32.

🗥 Add Item number						x
🖅 🗹 OLT System 1	Slot No.	PON No.	ONU No.	Port No.	Item number	
	15	1	2	1	1	
⊡ . 🔽 GC8B[15]	15	1	2	2	1	
PON1 PON1 → N5506-04- PON1 → N5506-10- PON1 → N5500- PON1 → N5500- PON1 → N5500- PON1 → N5500- PON1 →						
۲. F						
		Batc	hModify	OK		

Figure 6-32 Adding two items

- 3. The specific information of the configuration object is displayed in the right pane, and configure the parameters according to the planning data in the Table 6-8.
- 4. When the configuration is completed, click the 📇 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of ONU multicast services is completed. See Figure 6-33.

📣 ONU Data Service Con	figure	(Domain 1:	System 1) [Curre	ent Data S	Source: Devi	ce]			
Edit Access Operation	Device	Operation	8 斗	i, 🍫 2	5 E 🗹 🛛					
Config Object	Ψ×	Slot No.	PON NO.	ONU NO.	Port NO.	Service ID	CTPID	CVLAN ID) Service Mod	el Profile
Set Object As Condition		15 15	1	2	1	1	33024 33024		e	
		15	1	2	2	11	133024	100	e	
① OLT System 1										
		•	_	_	_	_				•
			a Service	Configur	•					
				-						
						Device[ONU	Data S	ervice (Configure]	
		15:34:55 15:34:55				ata Service	Config	urelEve	cuting	
		15:34:55				1.4 0010100	0011116	droj Lao,	outing	-
,										

Figure 6-33 Configuring the ONU muticast services

6.1.6.7 Configuring the ONU Port Parameters

Configuration purpose

Configure the VLAN of the multicast uplink protocol message.

- 1. Right-click the **HSWA[9]** card in the **Object Tree** pane, and select **Config** \rightarrow **IGMP Config** \rightarrow **IGMP Profile and Port** from the shortcut menu. And then click the **Port Parameters** tab from the window that appears subsequently.
- 2. Configure the parameters according to the planning data in the Table 6-8.
- 3. When the configuration is completed, click the subtrom and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the ONU port parameters is completed. See Figure 6-34.



Under the uncontrollable mode, only the parameters of the itmes **signal vlan** and **LEAVE MODE** are valid.

🔥 Port	Parameters	(Domain 1:S	ystem 1:0	DLT System 1	:HSTA[9]) [Ca	urrent Data :	Source: De	vice]			
Edit	Access Opera	tion Device	Operation	🛛 😵 😜 🖳	🤣 🖬 📑 📇	5 🛃 🕌					
Serial	No. Slot No. 15	PON Port No.	ONUS.N. 2		Control Switch Controlled	Profile Name	LEAVE MODE NON FAST	Max Online 32	Groups (Group)) Port Bandwidth(K 0	bit/s) signal vlan 100
2	15	1			Controlled		NON FAST	32		0	100
•	_	_	_	_	_	_	_	_	_	_	
IGMI	P Profile Gr	oup Parameter	s Port Pa	arameters [IGM]	P Protocol Para	meters					
15:04:	55 > Send C	ommand:Read	From Dev	vice[Port Pa	rameters]						
		To Validate te Data Fin		nand Data!							
		Command Succ		!							•
											1

Figure 6-34 Configuring the port parameters

6.1.6.8 End of Configuration

The multicast services on the FE1 and FE2 ports that belong to the AN5506-10-B1 (whose the authorization No. is 2) connected to the No.1 PON port of the GC8B card (in Slot 15) is started up; and the users can watch the video programs whose multicast VLAN is 100 normally.

6.1.7 Viewing Operations

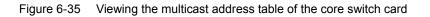
6.1.7.1 Viewing the Multicast Address Table of the Core Switch Card

Configuration purpose

View the multicast address and the group member information of the core switch card.

- Right-click the HSWA[9] card in the Object Tree pane, and select Get Information → IGMP Config → Igmp Information from the shortcut menu. And then click the GSW IGMP Addr Table tab from the window that appears subsequently.
- The command pane in the lower part of the window first displays Send Command Successfully! for delivering the command to the device, and then Command Succeed for reading the multicast address table of the core switch card, as shown in Figure 6-35.

roup Address	Group member slot Group member port
24. 1. 1. 1	15
24.1.1.2	
24.1.1.3 24.1.1.4	
14.1.1.4	
Online Groups Information	n Online ONU Ports Info Online Uplink Ports Info GSW IGMP Addr Table ONU IGMP Ac
·	
	Read From Device[GSW_IGMP_Addr_Table]
	Read From Device[GSW IGMP Addr Table] date The Command Data!



6.1.7.2 Viewing the ONU Multicast Address Table

Configuration purpose

View the multicast address and port information of the ONU.

- Right-click the HSWA[9] card in the Object Tree pane, and select Get Information → IGMP Config → Igmp Information from the shortcut menu. And then click the ONU IGMP Addr Table tab from the window that appears subsequently.
- The command pane in the lower part of the window first displays Send Command Successfully! for delivering the command to the device, and then Command Succeed for reading the ONU multicast address table, as shown in Figure 6-36.

🚯 OHU IGHP Addr Table (Domain 1:System 1:OLT System	1:HSTA[9]) [Current D	ata Source: Default] <mark>_ [] ×</mark>
Edit Access Operation	Device Operation 🛛 🖶 📑 📑	1 🚚	
Query Condition		Query Result	
Slot No. PON Port No. (ONU No. Item	Group Address	Port Nor
15 1 :	1 4	225.1.1.1	2
		224.1.1.1	1
		224.1.1.2	1
		224.1.1.3	1
Groups Information Onlin	ne ONV Ports Info Online Uplink H	Ports Info GSW IGMP Addr	Table ONU IGMP Addr Table 🚺
~ ~ ~		A 3 3 -	
15,40,00 N Sand Commun.			
15:42:22 > Send Comman		Addr Tablej	
15:42:22 > Begin To Va	lidate The Command Data!	Addr Tablej	
15:42:22 > Begin To Va 15:42:22 > Validate Da	lidate The Command Data! ta Finished	Addr Tablej	
15:42:22 > Begin To Va	lidate The Command Data! ta Finished	voor rabiel	

Figure 6-36 Viewing the ONU multicast address table

6.1.7.3 Viewing the Multicast Address Table of the Line Card

Configuration purpose

View the multicast address and the PON port information of the line card.

- Right-click the HSWA[9] card in the Object Tree pane, and select Get Information → IGMP Config → Igmp Information from the shortcut menu. And then click the Line Card IGMP Addr Table tab from the window that appears subsequently.
- 2. The command pane in the lower part of the window first displays **Send Command Successfully!** for delivering the command to the device, and then **Command Succeed** for reading the multicast address table of the line card, as shown in Figure 6-37.

📣 Line Card IGBP Addr Table(Doma	ain 1:System 1:OLT System 1:HSTA[9]) [Current Data Source: Default] 💶 🗖							
Edit Access Operation Device Oper	ration 📲 📑 🚝 📲							
Query Condition Slot No. Item	Query Result Group Address PON Port No.							
<u>15 1</u>	10. 25. 14. 57							
rmation Online ONV Ports Info Online	e Uplink Ports Info GSW IGMP Addr Table ONU IGMP Addr Table Line Card IGMP Addr 📢							
5:45:27 > Send Command:Read From Device[Online Groups Information] 5:45:27 > Send Command Successfully! 5:45:27 > Read From Device[Online Groups Information]Executing 5:45:27 > Command Succeed								

Figure 6-37 Viewing the multicast address table of the line card

6.2 Example for Multicast Service Configuration – Controllable Mode

6.2.1 Configuration Rules

- Under the controllable mode, users are able to configure the authority for each subscriber to access each channel. The authority can be normal view or preview with preview counts, time, and time interval.
- Each ONU user port supports up to 32 multicast VLANs, so each subscriber can view up to 32 multicast programs simultaneously.
- See the configuration of the AN5506-04-B for the multicast service start-up method of the ONU type 1; and see the configuration of the AN5506-10-B1 for the multicast service start-up method of the ONU type 2.
- During the bandwidth allocation: if the data service is not started up on the ONU port, users should configure one IPTV service bandwidth and one data bandwidth for the ONU type 1, as well as one IPTV service bandwidth and one Integrated Service bandwidth for the ONU type 2; If the data service is started up on the ONU port, users should configure only one IPTV service bandwidth for every ONU.
- For ONU type 1, after adding one multicast service to the ONU port, users should add one unicast service which provides channel for the multicast uplink / downlink protocol messages; for ONU type 2, users need not add the unicast service.
- For ONU type 1, the VLANs of the multicast uplink and downlink protocols can be configured respectively; for ONU type 2, the uplink protocol VLAN is transformed to the port signal VLAN, and the VLANs of the downlink protocol messages and the downlink multicast stream are processed in the same way.
- The VLAN COS need not be configured in the multicast services. The COS of the downlink multicast stream is carried by the multicast stream and cannot be configured on the OLT and the ONU. The COS of the uplink / downlink multicast protocol message is 0.
- The VLAN of the multicast group should be within the range of the local VLAN.

 Each of the uplink ports on the AN5116-06B cannot join multiple VLANs in the untag mode.

6.2.2 Service Network

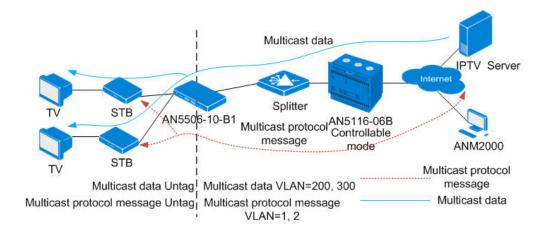


Figure 6-38 Network diagram of multicast services (controllable mode)

6.2.3 Configuring Multicast Services Respectively

6.2.3.1 Planning Data

This section introduces how to start up the multicast services in controllable mode for the AN5506-10-B1 by configuring the ports respectively. Tables 6-9 and 6-10 show the planning data.

Table 6-9	The OLT side planning data of the multicast services under the controllable mode
(configuring	respectively)

Item		Description	Example
	ONU type	Configure according to the type of the	AN5506-10-B1
	ONO type	ONU that is actually used.	AN3500-10-B1
		Configure according to the slot number	
ONU	Slot No.	of the PON interface card that is	15
information		actually used.	
Information	PON port No.	Configure according to the No. of the	1
		PON port that is actually used.	1
	ONU No.	Configure according to the network	2
		planning of the operator.	2
	Service Name	Configure according to the network	iptv2
		planning of the operator.	
	Starting VLAN	The starting VLAN ID of the uplink port	
	ID	services. Configure according to the	200
		network planning of the operator.	
	VLAN ID End	The ending VLAN ID of the uplink port	
		services. Configure according to the	300
		network planning of the operator.	
	Interface No.	Configure according to the No. of the	20:SFP1
		uplink port that is actually used.	20.0111
		Configure the tag processing mode for	
		the uplink service VLAN. There are two	
		options: TAG and UNTAG . Under	
Local VLAN		UNTAG mode, the TAGs of the uplink	
		packets will be stripped automatically	
		and the packets will be uplinked in the	
		form of UNTAG when they pass the	
		port, whereas the downlink UNTAG	
	TAG / UNTAG	packets will be added with designated	TAG
		TAGs and downlinked in the form of	
		TAG. Under TAG mode, the uplink data	
		packets will not be processed but	
		remain uplinked in the original form. For	
		downlink packets, however, only	
		packets with designated TAGs are	
		received and the packets will not be	
		processed but remain downlinked in the	
		original form.	

Item		Description	Example			
	Service Type	Select IPTV for configuring the multicast services.	IPTV			
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind			
Liplink port	Port No.	Select 20:2 , which is corresponding to 20:SFP1 .	20:2			
Uplink port packet	Type of Packet	Select the multicast packet in this example.	MultiCast Package			
suppression	Enable / Disable	Select to disable the suppression in this example.	Disable			
Multicast task selection	IGMP Version	According to the network planning of the operator, select IGMP V1 / V2 in this example.	IGMP V1 / V2			
Multicast mode	IGMP Mode	According to the network planning of the operator, select the controllable mode in this example.	Controlled Mode			
Multicast proxy IP	IGMP Proxy's IP	Configure according to the network planning of the operator; the default value is 10.25.14.57.	10.25.10.1			
Multicast VLAN	VLAN	Configure according to the network planning of the operator. The multicast VLAN should be in the range of the local VLAN.	200			
	Profile Name	Configure according to the network planning of the operator.	igmp1			
Multicast	Auth group	The IP address of the multicast program. Configure according to the network planning of the operator.	225.0.1.1	225.0.1.2	225.0.1.3	
profile	Authority	The authority of the users to watch the multicast programs. The options include Normal and Preview . Configure according to the network planning of the operator.	Normal	Normal	Preview	
Group parameters	Preview Counts (Times)	The maximum number of times a subscriber can preview a given program. Configure according to the network planning of the operator.	_	_	4	

Item		Description	Example	ple			
	Preview Time (Min)	The maximum viewing time for each preview. Configure according to the network planning of the operator.	_	_		10	
	Preview Interval (min)	The interval limit of the users to preview the multicast programs. Configure according to the network planning of the operator.	_	_		30	
	Preview Reset (h)	The reset period of subscriber preview authority. Configure according to the network planning of the operator.	_	_		24	
	Preview Total Time (min)	The total duration limit of the users to preview the multicast programs. Configure according to the network planning of the operator.	_	_		254	
	Group VLAN	VLAN ID of the multicast group. Configure according to the network planning of the operator.	200	200		300	
	ONU Port No.	The port number of the ONU to be configured.	1 2				
Ded	Control Switch	Configure according to the network planning of the operator. The options include Controlled and Uncontrolled .	Controlled				
Port Parameters	Profile Name	Name of the profile that the multicast port binds to.	igmp1				
	Signal VLAN	The VLAN ID of the multicast uplink protocol message VLAN, which should be consistent with the ONU port number.	1		2		

Item		Description	Example
	Service Type for multicast services	Select IPTV for configuring the multicast services.	IPTV
	Fixed Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 16.	16
	Assured Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 0.	0
ONU multicast	Maximum Bandwidth (Kbyte/s) for multicast services	Configure according to the network planning of the operator; the default value is 64.	64
bandwidth configuration	Service Type for data services	Select Integrate Service for the data services.	Integrate Service
	Fixed Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 16.	16
	Assured Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 0.	0
	Maximum Bandwidth (Kbyte/s) for data services	Configure according to the network planning of the operator; the default value is 64.	1280
	Data Port List	Select the port no, of the ONU to be configured.	FE1 to FE2
	Service type	Select multicast for the multicast services.	multicast
ONU multicast service configuration	VLAN Mode	Configure according to the network planning of the operator. The options include tag and transparent . Tag means to remove the VLAN tag from the downlink multicast stream that passes the ONU port; transparent means to transparently transmit the downlink multicast stream.	tag
	CVLAN ID	The VLAN ID that the downlink multicast stream carries. Configure according to the network planning of the operator.	200, 300

Table 6-10The AN5506-10-B1 side planning data of the multicast services under thecontrollable mode (configuring respectively)

6.2.3.2 Configuration Flow Chart

Figure 6-39 shows the configuration flow chart for starting up the the multicast services in controllable mode by configuring the ports respectively.

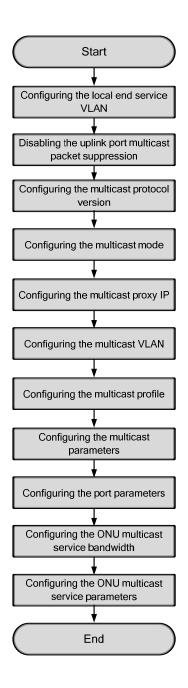


Figure 6-39 Configuration flow chart of starting up the the multicast services in controllable mode by configuring the ports respectively (on the AN5506-10-B1)

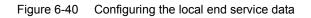
6.2.3.3 Configuring the Local End Service Data

Configuration purpose

Configure the uplink port service VLAN, and process the VLAN tags of the services that pass the uplink port.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → Local VLAN from the shortcut menu. Then select the Local End Service VLAN tab in the window that appears subsequently to access the associated window.
- Select Edit → Append from the menu bar or click ⁽¹⁾, and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add a local VLAN.
- 3. Configure the parameters according to the planning data in the Table 6-9.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN is configured. See Figure 6-40.

ervice Name	Starting VLAN ID	ration 😣	Interface NO.	TAG/INTAG	Service Type	Slot Bind Mode
ptv2	200	300	20:SFP1	TAG	IPTV	Auto Bind
Local End S	Service VLAN Local End	l Service Inne	r VLAN			
Local End S	ervice VLAN Local End	l Service Inne	r VLAN			
)	ce VLAN]		
:50:24 > S	end Command:Read Fr	om Device[Lo	cal End Servi	ce VLAN]		
5:50:24 > S		om Device[Lo	cal End Servi	ce VLAN]		
:50:24 > S :50:24 > B	end Command:Read Fr	om Device[Lo e Command Da	cal End Servi	ce VLAN]		



6.2.3.4 Disabling the Uplink Port Multicast Packet Suppression

Configuration purpose

Disable the suppression on the uplink port multicast streams.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → Upport Packet Rate Control from the shortcut menu to access the Uplink Port Packet Suppression window.
- 2. According to the planning data in the Table 6-9, select **20:2** in the **Port No.** Pane, and then clear the check box corresponding to the multicast packet.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of disabling the uplink port multicast packet suppression is completed. See Figure 6-41.

ABUplink Port Packe Edit Access Operation	t Suppression(Domain m Device Operation	1:System 1:OLT		Current Data Source	: Device]	
Port No. 19:1 19:2 19:3 19:4 20:1 20:2 20:3 20:4 port Port No.	Type Of Packet BroadCast Package MultiCast Package Unknown Package Suppression	Enable/Disable	Speed (Packet/Second) 100 1 100			
14:36:59 > Send Com	m Device[Uplink Port					•

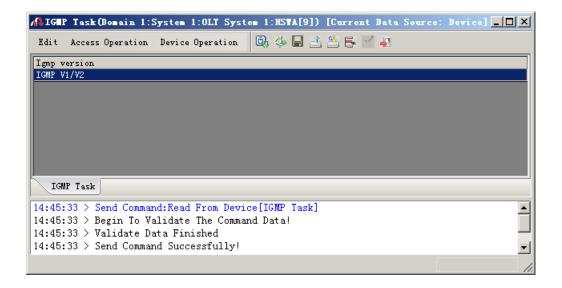
Figure 6-41 Disabling the suppression of the designated packet on the uplink port

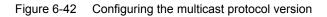
6.2.3.5 Configuring the Multicast Protocol Version

Configuration purpose

Select the multicast protocol version of the AN5116-06B. The options include **IGMP** V1 / V2 and **IGMP V3**.

- 1. Right-click the **HSWA[9]** card in the **Object Tree** pane, and select **Config** \rightarrow **IGMP Config** \rightarrow **IGMP Task** from the shortcut menu to access the **IGMP Task** window.
- 2. According to the planning data in the Table 6-9, select **IGMP V1 / V2** from the pulldown list of the **Igmp version** item.
- 3. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the multicast protocol version is completed. See Figure 6-42.





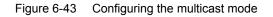
6.2.3.6 Configuring the Multicast Mode

Configuration purpose

Configure the multicast operation mode of the AN5116-06B. The options include **Proxy Mode**, **Snooping Mode**, **Proxy-snooping Mode**, **Controlled Mode** and **Disable**.

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow IGMP Mode from the shortcut menu to access the IGMP Mode window.
- 2. According to the planning data in Table 6-9, select **Controlled Mode** in the pulldown list of the **IGMP Mode** item.
- 3. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the multicast mode is set as **Controlled Mode**. See Figure 6-43.

🗚 IGHP Hode (Domain 1:System 1:OLT System 1:HSWA[9]) [Current Data Source	: Device] <mark>_ 🗆 ×</mark>
Edit Access Operation Device Operation 🗟 🎄 🖬 📑 😤 🚝 🚚	
IGMP Mode	
Controlled Mode	
IGMP Mode	
15:54:47 > Send Command:Read From Device[IGMP Mode]	▲
15:54:47 > Begin To Validate The Command Data!	
15:54:47 > Validate Data Finished	
15:54:47 > Send Command Successfully!	•
	1



6.2.3.7 Configuring the Multicast Proxy IP

Configuration purpose

Configure the multicast proxy IP for the AN5116-06B. The configured IP serves as the source IP address of the AN5116-06B to send multicast protocol messages to the multicast server.

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → IGMP Config → IGMP Proxy IP from the shortcut menu to access the IGMP Proxy IP window.
- 2. According to the planning data in Table 6-9, double-click the **IGMP Proxy's IP** column and input **10.25.10.1**.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the multicast proxy IP has been set to **10.25.10.1**. See Figure 6-44.

👫 IGMP Proxy IP(Domain 1:System 1:OLT System 1:HSWA[9]) [Current Data Source	: Device] _ 🗆 🗙
Edit Access Operation Device Operation 🖏 🌼 🖬 📑 訾 🛒 🚚	
IGMP Proxy's IP	
10.25.10.1	
IGMP Proxy IP	
15:59:44 > Send Command:Read From Device[IGMP Proxy IP]	_
15:59:44 > Begin To Validate The Command Data!	
15:59:44 > Validate Data Finished	
15:59:44 > Send Command Successfully!	_
	1

Figure 6-44 Configuring the multicast proxy IP

6.2.3.8 Configuring the Multicast VLAN

Configuration purpose

Configure the default VLAN of the AN5116-06B's multicast services. The multicast VLAN is used to identify the multicast streams. The users can configure one or more VLANs dedicated for the multicast service to isolate it from other services.

One multicast program can belong to only one multicast VLAN; one multicast VLAN can include one multicast program or one multicast program group (which refers to the combination of the multicast programs with integrated authority management).

- 1. Right-click the HSWA[9] card in the Object Tree pane and select Config \rightarrow IGMP Config \rightarrow Multicast VLAN from the shortcut menu to access the Multicast VLAN window.
- 2. According to the planning data in Table 6-9, double-click the **VLAN** column and input **200**.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the multicast VLAN has been set to **200**. See Figure 6-45.

≹∎ul t	ticast VL	AN (Doma	in 1:System 1:0I	.T System 1:HS	STA[9]) [Cu	rrent Da	ta Source:	Device]	_ 🗆
Edit	Access Og	eration	Device Operation	🖻, 🍪 🖬 .	1 💾 📑 🖻	4			
/LAN									
200									
Mul	ticast VL	N Dynam	ic IGMP VLAN Mode						
6:03:	:15 > Sen	d Comman	nd:Read From Dev	vice[Multicast	VLAN]				
6:03:	:15 > Beg	in To V:	alidate The Comm	and Data!					
6:03:	15 > Val	idate Da	ata Finished						
6:03:	:15 > Sen	d Comman	nd Successfully!						

Figure 6-45 Configuring the multicast VLAN

6.2.3.9 Configuring the Multicast Profile

Configuration purpose

Create a multicast profile, add multicast programs to the profile, and set users with different authority ranges to view the programs, which include normal watching and preview.

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow IGMP Profile and Port from the shortcut menu. And then click the IGMP Profile tab from the window that appears subsequently.
- Click Edit → Append from the menu bar or click ⁽¹⁾ in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one multicast profile.
- 3. According to the planning data in Table 6-9, input **igmp1** for the **Profile Name** item.

4. Click a blank area in the right pane, then select $Edit \rightarrow Append$ from the menu

bar or click in the toolbar, and input **3** in the **Please Input the Rows for Add:** dialog box that appears subsequently. After that, click **OK** to add three multicast programs.

- 5. According to the planning data in Table 6-9, configure the items **Auth group** and **Authority**.
- 6. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the multicast profile is completed. See Figure 6-46.

erial No.	Profile Name	Auth group	Authority
	igmp1	225.0.1.3	Preview
		225.0.1.2	Normal
		225.0.1.1	Normal
IGMP Pro	ofile Group Parameters Port P	arameters IGMP Protocol Par	ameters
		k	ameters
:03:59 >	ofile Group Parameters Port P • Send Command:Read From De • Begin To Validate The Com	vice[IGMP Profile]	ameters

Figure 6-46 Configuring the multicast profile

6.2.3.10 Configuring the Multicast Parameters

Configuration purpose

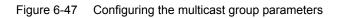
Configure the parameters of the multicast programs added to the multicast profile, which include preview parameters, multicast group VLAN and multicast signal VLAN.



If the **Group VLAN** item is configured for any specific group in this step, the default multicast VLAN becomes no longer valid for the group.

- 1. Click the **Group Parameters** tab from the **IGMP Profile** window to access the **Group Parameters** window.
- Select Edit → Append from the menu bar or click in the toolbar, and input 3 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add three multicast programs. The system automatically reads the IP addresses of the multicast programs added to the multicast profile and display them under the Auth group item.
- 3. Configure the parameters according to the planning data in the Table 6-9.
- 4. When the configuration is completed, click the subtrom and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the multicast group parameters is completed. See Figure 6-47.

	cess Operation						
Current Co		Device Uperation	8 🚸 🖬 🗄 📇 🖶	1			
	onfig Config IC	MP Parameters(O is the	Default Configuration	n)			
Auth group	p Preview C	Counts(Times) Preview T	ime(Min) Preview Inte	rval (min) Preview Res	et(h) Preview Total	Time(min) Group Bandwid	th(Kbit/s) Group VLAN
225.0.1.1	4	10	30	24	254	0	200
225.0.1.2	4	10	30	24	254	0	200
225.0.1.3	4	10	30	24	254	0	300
•							
IGMP P:	rofile Group H	Parameters Port Parame	ers IGMP Protocol Pa	arameters			
		nd:Read From Device alidate The Command					
	> Validate D	ata Finished nd Successfully!					
0:01:09	> Send Comma	nu successfully!					•



6.2.3.11 Configuring the Port Parameters

Configuration purpose

Configure the multicast parameters of the ONU ports, which include port's controllable switches, the profile that the port binds to and the multicast signal VLAN.

- 1. Click the **Port Parameters** tab from the **IGMP Profile** window to access the **Port Parameters** window.
- Select Edit → Append from the menu bar or click ⁽¹⁾ in the toolbar, and input 2 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add two ONU ports.
- 3. Configure the parameters according to the planning data in the Table 6-9.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the port parameters is completed. See Figure 6-48.

🔥 Port	Para	neters	(Domain	1:System	1:OLT System	1:HSTA[9]) [Ca	urrent Data S	Source: Device]				
Edit	Acces	s Operat	tion De	vice Operati	ion 🛛 😵 🗳 🕻) 🎄 🖬 🖻 💾	5 🛃 🛃					
Serial 1	No. SI		PON Port	:N₀. ONU S. 2	N. ONU Port No.	Control Switch Controlled	Profile Name igmp1	LEAVE MODE NON FAST LEAVE	Max Online Groups(Group) 32	Port Bandwidth	(Kbit/s) signa	l vlan
2	15		1	2	2		igmp1	NON FAST LEAVE	32	0	2	
•												Þ
IGME	? Prof	ile Gro	oup Param	eters Port	Parameters IG	MP Protocol Para	meters					
16:03:	59 > :	Send Co	ommand:H	Read From 1	Device[IGMP P	rofile]						
				date The Co Finished	ommand Data!							
				Finished Successful:	ly!							-
,					-						Ln:1,Col:7	



6.2.3.12 Configuring the ONU Multicast Service Bandwidth

Configuration purpose

Configure the bandwidth of the ONU downlink multicast stream and the uplink / downlink multicast protocol. The service type of the downlink multicast stream is **IPTV** and that of the uplink / downlink multicast protocol is **Integrate Service**.

- Click the GC8B[15] card in the Object Tree pane to display all ONUs under this card in the right pane. Next right-click the PON1-AN5506-10-B1[2] ONU and select Config → Bandwidth config from the shortcut menu to access the Bandwidth Config window.
- Click a blank area in the right pane, then select Edit → Append from the menu bar or click in the toolbar, and input 2 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add two services.
- 3. Configure the parameters according to the planning data in the Table 6-10.
- 4. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the allocation of multicast bandwidth is completed. See Figure 6-49.

Bandwidth Config(Domain 1:5			-B1[2] [Current Data Sou	urce: Device]
Edit Access Operation Device	Operation 🛛 😵 🍒) 🕒 🔅 🖬 🛃 😤 📑 🦉	(4 2	
Slot No. PON Port No. ONU S.N.	Service Type	fixed Bandwidth(Kbyte/s)	assureed Bandwidth(Kbyte/s)	Maximum Bandwidth(Kbyte/s)
1 2	IPTV	16	0	64
	Integrate Service	16	0	1280
Bandwidth Config	<u></u>			
	From Device[Band	width Config]		
Bandwidth Config 6:23:09 > Send Command:Read 6:23:09 > Begin To Validate		and a contract of a support of the state		
6:23:09 > Send Command:Read	The Command Data	and a contract of a support of the state		

Figure 6-49 Allocating the multicast bandwidth

6.2.3.13 Configuring the ONU Multicast Service Parameters

Configuration purpose

Configure the VLAN of the multicast data stream and the VLAN of the downlink multicast protocol message.

Operation steps

 Click the GC8B[15] card in the Object Tree pane to display all ONUs under this card in the right pane. Next right-click the PON1-AN5506-10-B1[2] ONU and select Config → Service Config from the shortcut menu, and then click the Data Port Config tab from the dialog box that appears subsequently, as shown in Figure 6-50.

Data Port Config Voice Co	nfig	
Data Port List	Port No. 1	
FE1	Enable/Disable Fort	
FE2		
FE3	V Port Auto Negotiation	
FE4 FE5	Fort Speed 100M 🔽 Duplex Full-Duplex 🔽	
FE6		
FE7	🔲 Flow Control Enable/Disable	
FE8		
FE9	IGMP UP CVLAN IGMP UP SVLAN	
FE10	CVLAN ID SVLAN ID	
FE11		
FE12	CVLAN COS 🗾 SVLAN COS	-
FE13	CVLAN TPID 33024 SVLAN TPID 33024	
FE14		
FE15	I	
FE16	Service	
FE17	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID	C <u>A</u> dd
FE18 FE19		
FE20		Delete
FE21		Derece
FE22		
FE23		Modify
FE24]
	Boardwidth Set	
	Service Upstream Minimum Guaranteed 640	
	Service Upstream Maximum Allowed 100000	
	Service Downstream Bandwidth(kbit/s) 100000	
	Read DB Write DB Read Device Modify On Device Delete On Devic	e Close

Figure 6-50 Service configuration of the AN5506-10-B1 (1)

 Select FE1 in the Data Port List pane, and click the Add button to bring up the Services Configuration dialog box. According to the planning data in Table 6-4, add a multicast service whos VLAN Mode is tag and CVLAN ID is 200, as shown in Figure 6-51.

Services Confi	guration			×
TLS	No TLS 💌	Set Servi	ce Classificati	OK
Service type	multicast 💌	VLAN Mode	tag 💌	Cancel
TPID	33024	CVLAN ID	200	
		Priority Or COS	-	
Translation Stat	e	Translation value		
TPID	33024	Priority Or COS	_	
🗖 QinQ State				
Choose Qir	nQ Profile			
Service Name	_	VLAN ID(3000-3001)		
TPID	33024	Priority Or COS	_	

Figure 6-51 Service configuration of the AN5506-10-B1 (2)

3. After the configuration is completed, click the **OK** button and return to the dialog box as shown in Figure 6-52.

(Domain 1:System 1:GC8B[15] 0	ONU List:AN5506-10-B1[2])	×
Data Port Config Voice Config		
Data Port List	Port No. 1	
FE1	✓ Enable/Disable Port	
FE2 FE3	V Port Auto Negotistion	
FE4		
FE5	Port Speed 100M 🔽 Duplex Full-Duplex 💌	
FE6	Flow Control Enable/Disable	
FE7		I.
FE8	IGMP UP CVLAN IGMP UP SVLAN	
FE9		
FE10 FE11	CVLAN ID SVLAN ID	
FE12	CVLAN COS 🔹 SVLAN COS	-
FE13		
FE14	CVLAN TPID 33024 SVLAN TPID 33024	
FE15	J	
FE16	Service	
FE17 FE18	TLS Service Classificati Service type CVLAN mode TPID CVLAN ID C	Add
FE18 FE19	No TL O Items multicast tag 3024 200	
FE20		Delete
FE21		
FE22		Modify
FE23		
FE24		
	Boardwidth Set	
	Service Upstream Minimum Guaranteed 640	
	Service Upstream Maximum Allowed 100000	
	Service Downstream Bandwidth(kbit/s) 100000	
Read	DB <u>W</u> rite DB Read Device Modify On Device Delete On Device	Close

Figure 6-52 Service configuration of the AN5506-10-B1 (3)

- 4. Add one more multicast service with the VLAN Mode set as tag and the CVLAN ID set as 300.
- 5. Select **FE2** in the **Data Port List** pane, and then implement the same configuration as the FE1 port on it.
- After returning to the dialog box as shown in Figure 6-52, click the Modify On Device button and the Command Manager window apprears subsequently. When Command Succeed is displayed for the data port services in the window, the data service configuration of the AN5506-10-B1 ports is completed.

6.2.3.14 End of Configuration

The multicast services on the FE1 and FE2 ports that belong to the AN5506-10-B1 (whose the authorization No. is 2) connected to the No.1 PON port of the GC8B card (in Slot 15) is started up; and the users can watch the video programs 225.0.1.1 and 225.0.1.2 whose multicast VLAN is 200 normally, and can preview the multicast program 225.0.1.3 whose VLAN is 300.

6.2.4 Configuring Multicast Services in a Batch Manner

6.2.4.1 Planning Data

This section introduces how to start up the multicast services in controllable mode for the AN5506-10-B1 by configuring the ports in a batch manner. Tables 6-11 and 6-12 show the planning data.

Table 6-11The OLT side planning data of the multicast services under the controllable mode(configuring in a batch manner)

Item		Description	Example
	ONU	Configure according to the type of the ONU	AN5506-10-B1
	type	that is actually used.	AN3500-10-B1
	Slot No.	Configure according to the slot number of the	15
ONU	SIUL NU.	PON interface card that is actually used.	15
information	PON port	Configure according to the No. of the PON	1
	No.	port that is actually used.	I
	ONU No.	Configure according to the network planning	2
		of the operator.	2
	Service	Configure according to the network planning	iptv2
	Name	of the operator.	
	Starting	The starting VLAN ID of the uplink port	
	VLAN ID	services. Configure according to the network	200
Local VLAN	VEARVED	planning of the operator.	
	VLAN ID	The ending VLAN ID of the uplink port	
	End	services. Configure according to the network	300
	LIIG	planning of the operator.	
	Interface	Configure according to the No. of the uplink	20:SFP1
	No.	port that is actually used.	20.0111

Item		Description	Example
		Configure the tag processing mode for the	
		uplink service VLAN. There are two options:	
		TAG and UNTAG. Under UNTAG mode, the	
		TAGs of the uplink packets will be stripped	
		automatically and the packets will be uplinked	
		in the form of UNTAG when they pass the	
	TAG /	port, whereas the downlink UNTAG packets	
	UNTAG	will be added with designated TAGs and	TAG
	UNIAG	downlinked in the form of TAG. Under TAG	
		mode, the uplink data packets will not be	
		processed but remain uplinked in the original	
		form. For downlink packets, however, only	
		packets with designated TAGs are received	
		and the packets will not be processed but	
		remain downlinked in the original form.	
	Service	Select IPTV for configuring the multicast	
	Туре	services.	IPTV
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind
	Port No.	Select 20:2 , which is corresponding to	20:2
Uplink port		20:SFP1.	
packet suppression	Type of Packet	Select the multicast packet in this example.	MultiCast Package
300010331011	Enable /	Select to disable the suppression in this	Disable
	Disable	example.	
Multicast	IGMP	According to the network planning of the	
task	Version	operator, select IGMP V1 / V2 in this	IGMP V1 / V2
selection	VCISION	example.	
Multicast	IGMP	According to the network planning of the	
mode	Mode	operator, select the controllable mode in this	Controlled Mode
mode	Mode	example.	
Multicast	IGMP	Configure according to the network planning	
proxy IP	Proxy's	of the operator; the default value is	10.25.10.1
	IP	10.25.14.57.	
Multicast		Configure according to the network planning	
VLAN	VLAN	of the operator. The multicast VLAN should	200
		be in the range of the local VLAN	
Multicast	Profile	Configure according to the network planning	igmp1
profile	Name	of the operator.	· · · · ·

Item		Description	Example			
		The IP address of the multicast program.				
	Auth group	Configure according to the network planning of the operator.	225.0.1.1	225.0	0.1.2	225.0.1.3
	Authority	The authority of the users to watch the multicast programs. The options include Normal and Preview . Configure according to the network planning of the operator.	Normal	Norm	al	Preview
	Preview Counts (Times)	The maximum number of times a subscriber can preview a given program. Configure according to the network planning of the operator.	_	_		4
	Preview Time (Min)	The maximum viewing time for each preview. Configure according to the network planning of the operator.	_	_		10
Group	Preview Interval (min)	The interval limit of the users to preview the multicast programs. Configure according to the network planning of the operator.	_	_		30
parameters	Preview Reset (h)	The reset period of subscriber preview authority. Configure according to the network planning of the operator.	_	_		24
	Preview Total Time (min)	The total duration limit of the users to preview the multicast programs. Configure according to the network planning of the operator.	_	_		254
	Group VLAN	VLAN ID of the multicast group. Configure according to the network planning of the operator.	200	200		300
	ONU Port No.	The port number of the ONU to be configured.	1		2	
Port	Control Switch	Configure according to the network planning of the operator. The options include Controlled and Uncontrolled .	Controlled			
parameters	Profile Name	Name of the profile that the multicast port binds to.	igmp1			
	Signal vlan	The VLAN ID of the multicast uplink protocol message VLAN, which should be consistent with the ONU port number	1		2	

ltem		Description	Example
	Profile Name	Configure according to the network planning of the	а
		operator.	ŭ
	Service Type for		
	multicast	Select IPTV for configuring the multicast services.	IPTV
	services		
	Fixed Bandwidth		
	(Kbyte/s) for	Configure according to the network planning of the	16
	multicast	operator; the default value is 16.	
	services		
	Assured		
	Bandwidth	Configure according to the network planning of the	
	(Kbyte/s) for	operator; the default value is 0.	0
	multicast		
	services		
ONU	Maximum		
bandwidth	Bandwidth	Configure according to the network planning of the	
allocation	(Kbyte/s) for	operator; the default value is 64.	64
profile	multicast		
	services		
	Service Type for	Select Integrated Service for the data services.	Integrated Service
	data services	_	-
	Fixed Bandwidth	Configure according to the network planning of the	
	(Kbyte/s) for	operator; the default value is 16.	16
	data services		
	Assured		
	Bandwidth	Configure according to the network planning of the	0
	(Kbyte/s) for	operator; the default value is 0.	
	data services		
	Maximum		
	Bandwidth	Configure according to the network planning of the	1280
	(Kbyte/s) for	operator; the default value is 64.	
	data services		
	Slot No.	Configure according to the slot number of the PON	15
ONU		interface card that is actually used.	
config	PON No.	Configure according to the No. of the PON port that is	1
		actually used.	

Table 6-12The AN5506-10-B1 side planning data of the multicast services under thecontrollable mode (configuring in a batch manner)

Item		Description	Example
	ONU No.	Select the authentication No. of the ONU to be configured.	2
	GPON Bandwidth Profile	Select the name of the bandwidth profile that the ONU binds to.	а
	Profile Name	Configure according to the network planning of the operator.	b
Multicast	Service Type	Select multicast for the multicast services.	multicast
service model profile	CVLAN Mode	Configure according to the network planning of the operator. The options include tag and transparent . Tag means to remove the VLAN tag from the downlink multicast stream that passes the ONU port; transparent means to transparently transmit the downlink multicast stream.	tag
	Slot No.	Configure according to the slot number of the PON interface card that is actually used.	15
	PON No.	Configure according to the No. of the PON port that is actually used.	1
ONU data	ONU No.	Select the authentication No. of the ONU to be configured.	2
service	Port No.	Select the port number of the ONU to be configured.	1, 2
config	Service ID	Select the serial number of the port downlink service stream.	1, 2
	CVLAN ID	Select the VLAN ID carried by the downlink multicast stream.	200, 300
	Service Model Profile	Select the multicast service model profile that the ONU port binds to.	b

6.2.4.2 Configuration Flow Chart

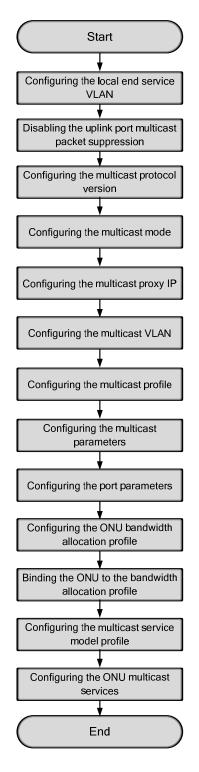


Figure 6-53 Configuration flow chart of starting up the the multicast services in controllable mode by configuring the ports in a batch manner (on the AN5506-10-B1)

See Section 6.2.3.3 to Section 6.2.3.11 for the steps 1 to 9 of the configuration flow chart. Only step 10 to step 13 are introduced in the following part.

6.2.4.3 Configuring the ONU Bandwidth Allocation Profile

Configuration purpose

Configure the bandwidth profile of the ONU downlink multicast stream and the uplink / downlink multicast protocol. The service type of the downlink multicast stream is **IPTV** and that of the uplink / downlink multicast protocol is **Integrated Service**.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → GPON Service Bandwidth Config Profile from the shortcut menu to access the GPON Service Bandwidth Config Profile window.
- 2. Click **Edit** \rightarrow **Append** from the menu bar or click 9 in the toolbar, and input

1 in the **Please Input the Rows for Add:** dialog box that appears subsequently. After that, click **OK** to add one bandwidth allocation profile and input **a** for the **Profile Name** item.

3. Click a blank area in the right pane, then select $Edit \rightarrow Append$ from the menu

bar or click in the toolbar, and input **2** in the **Please Input the Rows for Add:** dialog box that appears subsequently. After that, click **OK** to add two services.

- 4. Configure the parameters according to the planning data in the Table 6-12.
- 5. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of multicast bandwidth allocation profile is completed. See Figure 6-54.

Le Service Type	fixed Bandwidth(Kb	yte/s) assureed Bandwidt	h(Kbyte/s) Maximum Bandwi	idth (Kbyte/s
IPTV	16	0	64	
Integrated Servic	e 16	0	1280	
ndwidth Config Profile	_			
■ ▶ ◀ andwidth Config Profile				_
	d From Device[Bandwi	idth Config Profile]		_
:42 > Send Command:Rea		.dth Config Profile]		_
ndwidth Config Profile :42 > Send Command:Rea :42 > Begin To Validat :42 > Validate Data Fi	e The Command Data!	idth Config Profile]		_

Figure 6-54 Configuring the ONU bandwidth allocation profile

6.2.4.4 Binding the ONU to the Bandwidth Allocation Profile

Configuration purpose

Bind the ONU to the bandwidth allocation profile, namely applying the bandwidth allocation profile to the ONU.

- Right-click the system in the Object Tree pane, and select Config → Batch Configure → ONU Config from the shortcut menu to access the ONU Config window.
- Click the Set Object as Condition button, and select the AN5506-10-B1[2] connected to the No.1 PON port of the GC8B card in Slot 15, and then click the OK button.
- 3. The specific information of the configuration object is displayed in the right pane. According to the planning data in Table 6-12, select **a** in the pulldown list of the **GPON Bandwidth Profile** item.

4. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the operation of binding the ONU to the multicast bandwidth allocation profile is completed. See Figure 6-55.

AONU Config(Domain 1)	System	1) [Curr	ent Data	Source:	Default]		_ 🗆 🗵
Edit Access Operation	Device	Operation	🕞 🌼	3 4 8	5 🗹 🐳		
Config Object Set Object As Condition	Ψ×	Slot No. 15	PON NO.	0NU NO. 2	Bandwidth Profile	GPON Bandwidth a	h Profile
● OLT System 1		ONT CO	nfie				
		09:10:48 09:10:48	> Send > Send	Command	Read From Device[Successfully! ice[ONU Config]Ex		1

Figure 6-55 Binding the ONU to the bandwidth allocation profile

6.2.4.5 Configuring the Multicast Service Model Profile

Configuration purpose

Configure the VLAN profile of the multicast service stream.

- Right-click the system in the Object Tree pane and select Config → Profile Definition → Service Model Profile from the shortcut menu to access the Service Model Profile window.
- Click Edit → Append from the menu bar or click in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one service model profile.
- 3. Configure the parameters according to the planning data in the Table 6-12.

4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of multicast service model profile is completed. See Figure 6-56.

∧ Service ∎od	el Profile(D	omain 1:Syst	em 1) [Current Data	Source: Device]	
Edit Access (Operation Dev	ice Operation	😣 谷 🖪 🔅	😃 🛃 🛼 🗹 🐺	
Profile Name	Service Type	CVLAN Mode	Translation State	QinQ State	
<u>b</u>	multicast	tag			
Service Mod	el Profile				
15:32:44 > Se	nd Command:R	ead From Dev	vice[Service Model P	rofile]	
15:32:44 > Be	gin To Valid	ate The Comm	and Data!		
15:32:44 > Va	lidate Data :	Finished			
15:32:44 > Se	nd Command S	uccessfully!			-
1		_			

Figure 6-56 Configuring the service model profile

6.2.4.6 Configuring the ONU Multicast Services

Configuration purpose

Bind the multicast service model profile with the ONU ports and configure the VLAN ID of the downlink multicast data stream.

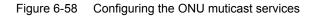
- Right-click the system in the Object Tree pane, and select Config → Batch Configure → ONU Data Service Configure from the shortcut menu to access the ONU Data Service Configure window.
- 2. Click the button in the toolbar, and select $GC8B[15] \rightarrow PON1 \rightarrow PON1-AN5506-10-B1[2] \rightarrow FE1$ and FE2 in the Add Item number dialog box that appears subsequently, then click the OK button as shown in Figure 6-57.

OLT System 1	Slot No.	PON No.	ONU No.	Port No.	Item number
€ GC4B[5]	15	1	2	1	2
GC8B[15]	15	1	2	2	2
 PON1-AN5506-04 PON1-AN5506-10 FE1 FE2 FE3 FE4 FE5 FE6 FE7 FE8 FE9 FE10 FE11 FE12 FE13 FE14 FE15 					
	• •				

Figure 6-57 Adding the item number

- The specific information of the configuration object is displayed in the right pane, and configure the parameters according to the planning data in the Table 6-12.
- 4. When the configuration is completed, click the 💾 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of ONU multicast services is completed. See Figure 6-58.

Edit Access Operation	Device	Operation	8 斗	🕒 🤣 🖗	5 6 	1		
onfig Object	Ψ×	Slot No.	PON NO.	ONU NO.	Port NO.	Service ID	CTPID CVLAN ID	Service Model Profil
Cat Object to Condition		15	1	2	1	1	33024 200	Ъ
Set Object As Condition		15	1	2	1	2	33024 300	Ъ
	_	15	1	2	1	1	33024 2:00	Ь
• OLT System 1		15	1	2	1	2	33024 300	ь
		•						
		ONU De	ata Servic	e Configu	re			
		15:34:55 15:34:55	> Send > Send	Command: Command	Read From Successfu	lly!	Data Service C Configure]Exec	onfigure]



6.2.4.7 End of Configuration

The multicast services on the FE1 and FE2 ports that belong to the AN5506-10-B1 (whose the authorization No. is 2) connected to the No.1 PON port of the GC8B card (in Slot 15) is started up; and the users can watch the video programs 225.0.1.1 and 225.0.1.2 whose multicast VLAN is 200 normally, and can preview the multicast program 225.0.1.3 whose VLAN is 300.

6.2.5 Viewing Operations

6.2.5.1 Viewing the Online Multicast Group Information

Configuration purpose

View the online multicast programs and the user information.

- Right-click the HSWA[9] card in the Object Tree pane or the HSWA card in Slot 9 in the module view, and select Get Information → IGMP Config → Igmp Information from the shortcut menu. And then click the Online Groups Information tab from the window that appears subsequently.
- The command pane in the lower part of the window first displays Send Command Successfully! for delivering the command to the device, and then Command Succeed for reading the online multicast group information, as shown in Figure 6-59.

Query Condi	tion	Query Re	sult			
Serial No.	Group Address	Slot No.	Pon No.	ONU No.	ONU Port No.	Status
	225.0.1.3	15	1	2	1	Preview
	225.0.1.2	15	1	2	2	Preview
	225.0.1.1					
		_				
Online G	roups Information Online O	W Ports Info	Online	Uplink Po	rts Info GSW IG	MMP Addr Table ONU IGMP Addr Ta

Figure 6-59 Viewing the online multicast group information

6.2.5.2 Viewing the Online Multicast Group Information of the Specified ONU Port

Configuration purpose

View the online multicast program information of the specified ONU port.

Operation steps

In this case, take the No.1 port of the ONU (whose authorization No. is 2) that connects to the No.1 PON port of the GC8B card in Slot 15 as an example for viewing the online multicast program information of the specified ONU port.

- Right-click the HSWA[9] card in the Object Tree pane or the HSWA card in Slot 9 in the module view, and select Get Information → IGMP Config → Igmp Information from the shortcut menu. And then click the Online ONU Ports Info tab from the window that appears subsequently.
- 2. Input the related parameters in the Query Condition pane on the left, click

in the toolbar to execute the configuration commands. The command pane in the lower part of the window first displays **Send Command Successfully!** for delivering the command to the device, and then **Command Succeed** for reading the online multicast group information of the specified ONU port, as shown in Figure 6-60.

			1:System 1:OLT Syst			
dit /	Access Operation	Device Op	peration 🛛 🔚 📑 📑	1 🛃		
uery Co	ondition			Query Resul	t	
lot No.	PON Port No.	ONU S.N.	ONU Port No.	Serial No.	Group Address	Preview Flag
5	1	2	1	1	225.0.1.3	Preview
				2	225.0.1.2	Normal
				3	225.0.1.1	Normal
Oplin	a Groups Inform	tion Onli	na OMI Ports Infa Onlin	a Inlink Parts T	of a GSW TOMP Addr	Table DERI TOMP Adde T. d
Onlin	ne Groups Informa	ation Onli	ne ONV Ports Info Onlin	e Uplink Forts In	nfo GSW IGMP Addr	Table ONU IGMP Addr T: 4
	-		ne ONV Ports Info Onlin rom Device[Online Gr	-		Table ONV IGMP Addr T 4
5:42:5	-	nd:Read F	rom Device[Online Gr	-		Table ONU IGMP Addr T: 4
5:42:5 5:42:5	0 > Send Comma 0 > Send Comma	nd:Read F nd Succes	rom Device[Online Gr	oups Informatio		Table _ORU IGMP Addr T: 4

Figure 6-60 Viewing the online multicast group information of the specified ONU port

6.2.5.3 Viewing the Multicast Address Table of the Core Switch

Card

Configuration purpose

View the multicast address and the group member information of the core switch card.

- Right-click the HSWA[9] card in the Object Tree pane or the HSWA card in Slot 9 in the module view, and select Get Information → IGMP Config → Igmp Information from the shortcut menu. And then click the GSW IGMP Addr Table tab from the window that appears subsequently.
- The command pane in the lower part of the window first displays Send Command Successfully! for delivering the command to the device, and then Command Succeed for reading the multicast address table of the core switch card, as shown in Figure 6-61.

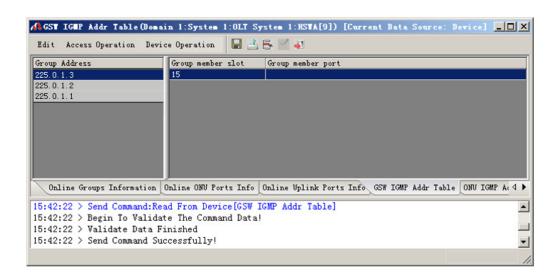


Figure 6-61 Viewing the multicast address table of the core switch card

6.2.5.4 Viewing the Multicast Address Table of the Line Card

Configuration purpose

View the multicast address and the PON port information of the line card.

- Right-click the HSWA[9] card in the Object Tree pane or the HSWA card in Slot 9 in the module view, and select Get Information → IGMP Config → Igmp Information from the shortcut menu. And then click the Line Card IGMP Addr Table tab from the window that appears subsequently.
- The command pane in the lower part of the window first displays Send Command Successfully! for delivering the command to the device, and then Command Succeed for reading the multicast address table of the line card, as shown in Figure 6-62.

&Line Card IG∎P Addr Table(D	Domain 1:System 1:OLT System 1:HSWA[9]) [Current Data Source: Default] 💶
Edit Access Operation Device (Operation 📕 📑 🛼 🗹 🚚
Query Condition	Query Result
Slot No. Item	Group Address PON Port No.
15 1	10. 25. 14. 57 1
nation Online ONU Ports Info On	line Uplink Ports Info 🛛 GSW IGMP Addr Table 🛛 ONU IGMP Addr Table Line Card IGMP Addr 🔸
	From Device[Online Groups Information]
5:45:27 > Send Command Succe	
	nline Groups Information]Executing
5:45:27 > Command Succeed	

Figure 6-62 Viewing the multicast address table of the line card

6.3 Configuring the Multicast Concatenation

6.3.1 Configuring the Multicast Cascade Port

Configuration purpose

Configure the cascade port of the multicast service. When the equipment cascades the multicast service of other equipment, the users should set the uplink port that connects to the cascaded equipment as the cascade port.

Planning data

Table 6-13	Planned data of the multicast cascade port
	i laimed data of the matteast casedae port

Item	Description	Example
Cascade Ports No.	Configure according to the network planning of the operator.	20:SFP1

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow IGMP Cascade Ports from the shortcut menu. And then click the IGMP Cascade Ports tab from the window that appears subsequently.
- Click Edit → Append from the menu bar or click in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one item.
- 3. According to the planning data in the Table 6-13, select **20:SFP1** in the drop-down list of the **Cascade Ports No.** item.
- 4. When the configuration is completed, click the subtrom and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the multicast cascade port is completed. See Figure 6-63.

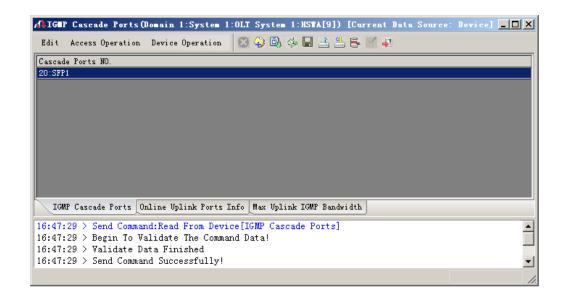


Figure 6-63 Configuring the multicast cascade port

6.3.2 Viewing the Uplink Port Information

Configuration purpose

View the online multicast group address information of the cascade port.

- Right-click the HSWA[9] card in the Object Tree pane, and select Get Information → IGMP Config → Igmp Information from the shortcut menu. And then click the Online Uplink Ports Info tab from the window that appears subsequently.
- Select 20:SFP1 in the Uplink Port No. column of the left pane. Then the command pane in the lower part of the window first displays Send Command Successfully! for delivering the command to the device, and then Command Succeed for reading the online multicast group information of the cascade port, as shown in Figure 6-64.

erial No.	Uplink Port No.	Type	Serial No.	Group Address
		Uplink Port	1	225.1.4.199
		Uplink Port	2	225.1.4.193
		Uplink Port	3	225.1.3.252
		Uplink Port	4	225.1.4.3
		Uplink Port	5	225. 1. 4. 81
		Uplink Port	6	225.1.2.192
	20:XFP	Uplink Port	7	225.1.3.220
	20:SFP1	Cascade Port	8	225.1.4.186
	20:SFP2	Uplink Port	9	225.1.2.173
0	20:SFP3	Uplink Port	10	225.1.2.159
1	20:SFP4	Uplink Port	11	225.1.4.65
2		Uplink Port	12	225. 1. 3. 36
Online (Groups Information	Online ONU Ports Info Onlin	e Uplink Ports Info	GSW IGMP Addr Table ONU IGMP Addr T
		~~		~ ~ ~

Figure 6-64 Viewing the uplink port information

6.4 Configuring the Maximum Multicast Bandwidth for Uplink Ports

Configuration purpose

Configure the maximum bandwidth for multicast services of the uplink ports.

Planning data

Table 6-14 Planned data of the uplink port's maximum multicast bandwidth

Item	Description	Example
Uplink Bandwidth (Kbit/s)	Configure according to the network planning of the operator.	60000
	The default value is 0.	00000

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → IGMP Config →IGMP Cascade Ports from the shortcut menu. And then click the Max Uplink IGMP Bandwidth tab from the window that appears subsequently.
- 2. According to the planning data in the Table 6-14, input **60000** for the **Uplink Bandwidth (Kbit/s)** item.
- 3. When the configuration is completed, click the subtrom and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the uplink port's maximum multicast bandwidth is completed. See Figure 6-65.

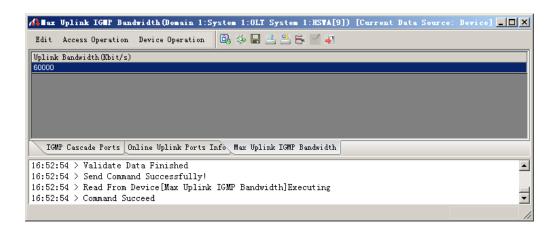


Figure 6-65 Configuring the uplink port's maximum multicast bandwidth

6.5 Configuring OLT Multicast Protocol Parameters

Configuration purpose

Configure the multicast protocol parameters, which include the robustness variable and the related parameters of common query and specified query. Maintaining the default value is suggested.

Planning data

Item	Description	Example
Robustness Variable	Configure according to the network planning of the	2
Robustness valiable	operator. The default value is 2.	2
	Configure according to the network planning of the	10
Query response interval (S)	operator. The default value is 10.	10
Last member query interval (S)	Configure according to the network planning of the	1
Last member query interval (S)	operator. The default value is 1.	I
Last member query count	Configure according to the network planning of the	2
Last member query count	operator. The default value is 2.	2
	Configure according to the network planning of the	125
Query interval (S)	operator. The default value is 125.	125
	For configuring the aging time of the group member	
Group Membership	(unit: s). Configure according to the network planning	260
	of the operator. The default value is 260.	

Table 6-15 Planned data of the OLT multicast protocol parameters

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow IGMP Profile and Port from the shortcut menu. And then click the IGMP Protocol Parameters tab from the window that appears subsequently.
- 2. Configure the parameters according to the planning data in the Table 6-15.

3. When the configuration is completed, click the subtrom and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the multicast protocol parameters is completed. See Figure 6-66.

🔥 I G 🗈	P Prot	ocol Para	meters	s (Domain	1:Syst	em 1:0LT	System	1:HSWA[9])	[Current	Data Sow	rce: Devi	ce]		
Edit	Access	s Operatio	n Devi	ice Opers	ation	B) 🍻	1 🗈 🛎 (5 🗹 🐖						
Robust	tness va	ariable Qu	iery re:	sponse in	nterval (S) Last me	mber quer	y interval(S) Last membe	r query c	ount Query	interval (5) Group	Membership
2		10)			1			2		125		260	
4	_	_	_	_	_	_	_		_	_	_	_		Þ
<u> </u>			-		_				[-	
IG	MP Profi	ile Group	Parame	ters Por	rt Parame	ters IGM	P Protocol	L Parameters	J					
16:53:	:57 > :	Send Comm	and:Re	ad From	Device	[IGMP Pr	ofile]							
16:53:	:57 > B	Begin To	Valida	te The	Command	Data!								
16:53:	:57 > 1	Validate	Data F	inished	1									
16:53:	:57 > 3	Send Comm	and Su	iccessfu	illy!									-
Read Fr	rom Date	ahasa												
lead II	om Date	abase												

Figure 6-66 Configuring the multicast protocol parameters

6.6 Configuring ONU Multicast Parameters

Configuration purpose

Configure the ONU multicast parameters, which include the ONU leave mode, the robustness parameter and the query time counts.

Planning data

Item	Description	Example	
Slot No.	Configure according to the network planning of the operator.	5	
PON Port No.	Configure according to the network planning of the operator.	1	
ONU NO	Configure according to the network planning of the operator.	1	
LEAVE MODE	Configure according to the network planning of the operator.	NON FAST LEAVE	
	The options include NON FAST LEAVE and FAST LEAVE .	NON FAST LEAVE	
Robustness count	Configure according to the network planning of the operator.	2	
Robustness count	The default value is 2.	2	
Last Member Query	Configure according to the network planning of the operator.	2	
Count	The default value is 2.	2	
	Configure according to the network planning of the operator.		
IGMP mode	The options include snooping mode, proxy mode and	proxy mode	
	controlled mode.		

Table 6-16 Planned data of the ONU multicast parameter

Operation steps

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow ONU Configuration from the shortcut menu to access the ONU Configuration window.
- 2. Click Edit \rightarrow Append from the menu bar or click \bigcirc in the toolbar, and input 1 in the Please Input the Rows for Add: dialog box that appears

1 in the **Please Input the Rows for Add:** dialog box that appears subsequently. After that, click **OK** to add one item.

3. Configure the parameters according to the planning data in the Table 6-16.

4. When the configuration is completed, click the B button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the ONU multicast parameters is completed. See Figure 6-67.

n ura 🕼	onfiguration (I)omain 1	:System 1:0	LT S	System 1:HSTA[9]) [Current	Data	Sourc	e: Device] 📕	
Edit A	ccess Operation	Device	Operation	8	4) 🖏 👹 📑 📑	🛎 통 🗹	41			
Slot No.	PON Port No.	ONU NO	LEAVE MODE		Robustness count	Last Member	Query	Count	IGMP mode	
5	1	1	NON FAST LEAD	VE	2	2			proxy mode	
່ວນາເ	onfiguration 🗌									
						,				
				e LON	NU Configuration					
	l > Send Comma		-		1					
	l > Read From		ONU Configu	ratı	.on]Executing					
10:57:44	l > Command Su	icceed								

Figure 6-67 Configuring the ONU parameters

6.7 Configuring the Prejoin Groups

Configuration purpose

Configure the prejoin multicast group. The prejoined multicast programs are connected to the uplink port. When users need to watch the prejoined multicast programs, they can watch them in fast viewing mode.

Planning data

Table 6-17 Planned data of the projoin groups

Item	Description	Example
Pre-join Group	Configure according to the network planning of the operator.	224.0.1.1

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow Prejoin Groups from the shortcut menu to access the Pre-join Groups window.
- Click Edit → Append from the menu bar or click in the toolbar, and input
 1 in the Please Input the Rows for Add: dialog box that appears subsequently. After that, click OK to add one prejoin group.
- 3. Configure the parameters according to the planning data in the Table 6-17.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the prejoin group is completed. See Figure 6-68.

🕼 Pre-	-join Groups()	omain 1:System 1:OL	T System 1:HST	.[9]) [Current	Data Source:	Device]	<u>_ ×</u>
Edit	Access Operati	on Device Operation	😵 🤪 🖳 🧆		4		
Prejoi	n Group						
224.0.	1.1						
P	-join Groups						
Ine	-join Groups						
17:05:	:10 > Send Cor	mand:Read From Devi	ce[Pre-join Gro	ups]			
17:05:	:10 > Begin To	Validate The Comma	nd Data!				
17:05:	:10 > Validate	: Data Finished					
17:05:	:10 > Send Cor	mand Successfully!					<u> </u>

Figure 6-68 Configuring the prejoin group

6.8 Configuring Multicast Default Preview Parameters

Configuration purpose

Configure the default value of the multicast preview parameters. If the preview parameters of a multicast program is not configured in the **Port Parameters** window, the users will preview the program with the default preview parameters.

Planning data

Item	Description	Example				
	This parameter is valid only under the controllable mode when the authority					
Preview Counts	of this multicast group is Preview .					
(Times)	The maximum number of times a subscriber can preview a given program.	4				
	The value range is 1 to 16; the unit is time; and the default value is 4.					
	This parameter is valid only under the controllable mode when the authority					
Preview Time	of this multicast group is Preview .	10				
(Min)	The maximum viewing time for each preview.	10				
	The value range is 1 to 254; the unit is minute; and the default value is 10.					
	This parameter is valid only under the controllable mode when the authority					
Preview Interval	of this multicast group is Preview .	30				
(min)	The interval limit of the users to preview the multicast programs.	30				
	The value range is 1 to 254; the unit is minute; and the default value is 30.					
	This parameter is valid only under the controllable mode when the authority					
Preview Time (h)	of this multicast group is Preview .	24				
	The reset period of subscriber preview authority.	24				
	The value range is 1 to 254; the unit is hour; and the default value is 24.					
	This parameter is valid only under the controllable mode when the authority					
Preview Total Time	of this multicast group is Preview .	254				
(min)	The total duration limit of the users to preview the multicast programs.	204				
	The value range is 1 to 254; the unit is minute; and the default value is 254.					

Table 6-18 Planned data of the multicast default preview parameters

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow IGMP Config \rightarrow Default Preview Parameters from the shortcut menu to access the Default Preview Parameters window.
- 2. Click the sutton and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the multicast default preview parameters is completed. See Figure 6-69.

🕽 Default Preview Par	ameters(Domain 1:Syste	n 1:OLT System 1:HSTA[9]) [Current Data	Source: Device] 💶 🗖
Edit Access Operation	Device Operation 🔯	🚸 🖬 🔮 😤 통 🗹 💐		
Preview Counts(Times)	Preview Time(Min)	Preview Interval (min)	Preview Time(h)	Preview Total Time(min)
4	10	30	24	254
•				
Default Preview Param	neters			
7:08:03 > Send Comma	nd:Read From Device[De	fault Preview Paramete	rsl	
	alidate The Command Da			
7:08:03 > Validate D				
7:08:03 > Send Comma	nd Successfully!			
	-			

Figure 6-69 Configuring the multicast default preview parameters

6.9 Configuring Multicast Logs

The multicast log function is valid only under the controllable mode.

6.9.1 Configuring the Multicast Log Time

Configuration purpose

Configure the time parameters of the multicast log, which is used to record the operations of users joining or leaving the multicast groups.

Planning data

Item	Description	Example
	When the duration of the users to watch the program is lower	
	than this ignore time, the operation of joining and leaving the	
	multicast group will not be recorded in the multicast log.	
Ignore Time (s)	The value range is 1 to 60; the unit is second. The default value	0
	is 0, which means that all the operations of the users joining or	
	leaving the multicast groups will be recorded in the multicast log.	
	When the duration of a user to continuously watch the multicast	
	program is longer than this interval time, one item of multicast log	
Generate interval (min)	indicating that the user is online will be generated.	60
	The value range is 1 to 60; the unit is minute; and the default	
	value is 60.	

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → IGMP Config → Log Management from the shortcut menu to access the Log Parameters window.
- 2. Click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of the log time parameters is completed. See Figure 6-70.

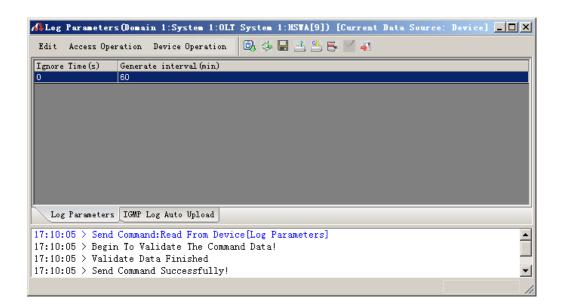


Figure 6-70 Configuring the multicast log time parameters

6.9.2 Configuring the Automatic Uploading of the Multicast Logs

Configuration purpose

Enable / disable the function of automatic uploading the multicast logs to the server and configure the related parameters of this function.

Planning data

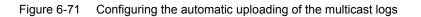
 Table 6-20
 Planned data of the automatic uploading of the multicast logs

Item	Description	Example
	Enable / disable the function of automatic uploading the multicast	
	logs to the server.	
	Select Enable to enable the function of automatic uploading the	
Enable	multicast logs to the server, and users should configure the related	Enable
Ellable	parameters.	Enable
	Select Disable to disable the function of automatic uploading the	
	multicast logs to the server, and users need not configure the	
	related parameters.	

Item	Description	Example
	The interval time of automatic uploading the multicast logs to the	
Interval (min)	server.	30
	The value range is 1 to 1440; the unit is minute.	
Host IP	IP address of the server that the multicast logs are uploaded to.	192.168.1.1
	The user name used to log in the server that the multicast logs are	
User Name	uploaded to.	1
	The maximum length is 20 characters.	
	The password used to log in the server that the multicast logs are	
Password	uploaded to.	1
	The maximum length is 20 characters.	

- 1. Click the **IGMP Log Auto Upload** tab from the **Log Parameters** window to access the **IGMP Log Auto Upload** window.
- 2. Configure the parameters according to the planning data in the Table 6-20.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of automatic uploading the multicast logs is completed. See Figure 6-71.

🔥 I GEP	Log Auto Upload	l(Domain 1:System	1:0LT System	1:HSTA[9])	[Current Da	ata Source:	Device] _ 🗆 🗙
Edit	Access Operation	Device Operation	0, 🤣 🖬 🗄	😃 🖶 🗹 🎍	1		
Enable	Interval (min)	Host IP	User Name	Password			
Enable	30	192, 168, 1, 1	1	1			
Log	Parameters IGMP I	.og Auto Upload					
17:12:	11 > Send Comman	d:Read From Devic	ce[Log Paramet	ers]			_
17:12:3	l1 > Begin To Va	lidate The Comman	nd Data!				
17:12:3	11 > Validate Da	ta Finished					
17:12:3	11 > Send Comman	d Successfully!					•
							/



6.9.3 Configuring the Uploading of the Multicast Logs to the FTP

Configuration purpose

Manually upload the multicast logs to the FTP server.

Planning data

Item	Description	Example
Host IP	IP address of the server where the multicast logs are uploaded.	192.168.1.188
User Name	The user name used to log in the server where the multicast logs are uploaded.	1
Password	The password used to log in the server where the multicast logs are uploaded.	1
File Name	The name of the file that saves the multicast logs.	igmp.txt

Table 6-21Planned data of uploading the multicast logs to the FTP

- Right-click the HSWA[9] card in the Object Tree pane, and select Control Command → IGMP Config → IGMP Log Upload from the shortcut menu to access the IGMP LOG Upload window.
- 2. Configure the parameters according to the planning data in the Table 6-21.
- 3. When the configuration is completed, click the 🚔 button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the multicast logs are uploaded to the designated FTP server. See Figure 6-72.

192.168.1.
TGMP LO
IGMP LO
-
7:12:11
IGMP LC 7:12:11 7:12:11 7:12:11

Figure 6-72 Uploading the multicast logs to the FTP

6.9.4 Viewing the Multicast Logs

Configuration purpose

View the multicast log information.

- Right-click the HSWA[9] card in the Object Tree pane, and select Get Information → IGMP Config → IGMP Log from the shortcut menu to access the IGMP Log Information window.
- The command pane in the lower part of the window first displays Send Command Successfully! for delivering the command to the device, and then Command Succeed for reading the multicast log information, as shown in Figure 6-73.

erial No.	Generate Time	SlotNo	PortNo	Preview Flag	Group Address	Action	State
	2010-08-19 10:34:23	1	20	Unauthorized User	225.0.1.1	Join	not passed authentication
	2010-08-19 10:34:23	1	12	Preview User	225.0.1.3	Join	preview waiting
	2010-08-19 10:34:21	1	12	Preview User	225.0.1.2	Join	preview waiting
	2010-08-19 10:34:18	1	12	Preview User	225.0.1.1	Join	preview waiting
	2010-08-19 10:34:17	1	20	Unauthorized User	225.0.1.3	Join	not passed authentication
	2010-08-19 10:34:15	1	20	Unauthorized User	225.0.1.3	Join	not passed authentication
	2010-08-19 10:34:15	1	20	Unauthorized User	225.0.1.1	Join	not passed authentication
	2010-08-19 10:34:15	1	12	Preview User	225.0.1.3	Join	preview waiting
	2010-08-19 10:34:15	1	12	Preview User	225.0.1.2	Join	preview waiting
	2010-08-19 10:34:15	1	12	Preview User	225.0.1.1	Join	preview waiting
	2010-08-19 10:34:05	1	12	Preview User	225.0.1.1	Leave	leave
	2010-08-19 10:34:05	1	12	Preview User	225.0.1.2	Leave	leave
	2010-08-19 10:34:05	1	12	Preview User	225.0.1.3	Leave	leave
	2010-08-19 10:33:42	1	20	Unauthorized User	225.0.1.1	Join	not passed authentication
	2010-08-19 10:33:41	1	20	Unauthorized User	225.0.1.3	Join	not passed authentication
	2010-08-19 10:33:40	1	20	Unauthorized User	225.0.1.3	Join	not passed authentication
		·					•
IGMP Log	z Information						
-							
34:35 2	Send Command:Read Send CommandSucce:			IGMP Log Informati	Lonj		

Figure 6-73 Viewing the log information

6.9.5 Clearing the Logs

Configuration purpose

Clear the multicast log information saved in the core switch card's memory.

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Control Command → IGMP Config → Clear IGMP Record from the shortcut menu.
- Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the multicast logs are cleared. See Figure 6-74.

<pre>(Clear IGMP Record(Domain 1:</pre>	System 1:OLT System 1:HSTA[9]) [Current Data Source:	: Default] <mark>_] ></mark>
Edit Device Operation	🐣 🖶 🗹 🐙		
Clear			
Clear			
Clear IGMP Record			
17:12:11 > Send Command:Read 1	From Devrice [Log Perspectore]		
17:12:11 > Begin To Validate			
17:12:11 > Validate Data Fini			
17:12:11 > Send Command Succe			
	,		

Figure 6-74 Clearing the logs

6.10 Viewing the Multicast Statistical Information

The multicast statistical information function is valid only under the controllable mode.

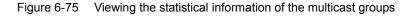
6.10.1 Viewing the Statistical Information of the Multicast Groups

Configuration purpose

View the statistical information of the multicast program, which include the average watching time of the multicast program, maximum watching time and the total watching time. For the program preview, the information also include times of preview and total preview time.

- Right-click the HSWA[9] card in the Object Tree pane, and select Get Information → IGMP Config → Igmp Statistics from the shortcut menu. And then click the Group Statistics tab from the window that appears subsequently.
- The command pane in the lower part of the window first displays Send Command Successfully! for delivering the configuration to the device, and then Command Succeed for reading the statistical information of the multicast groups, as shown in Figure 6-75.

Edit Aco	ess Operation			5 🗹 📲			
Serial No.	Group Addres	s Order Com		Fime Max Order Time		Preview Count	Total Preview Tim
l	224.1.1.1	1	000:03:18	000:03:18	000:03:18	1	000:03:18
2	224.1.1.2	2	000:03:13	000:03:18	000:06:27	0	000:00:00
				000.00.10	000:06:02		
	224.1.1.3	3	000:02:00	000:03:12	000:05:02	0	000:00:00
				000.03:12	000.06.02	U	000:00
Group S	224. 1. 1. 3 Statistics _ ON			000:03:12	000.06.02		
9:03:09	Statistics (ON > Send Comma	V Port Statis md:Read Fr	tics om Device[Group		000.06.02		
9:03:09 9:03:09	Statistics (ON > Send Comma	U Port Statis md:Read Fr Validate Th	itics om Device[Group e Command Data!		000.06.02		



6.10.2 Viewing the Statistical Information of the ONU Port

Configuration purpose

View the multicast statistical information of the ONU port, which include the average times of the port user to watch the multicast programs, the average watching time, the maximum watching time and the total watching time.

- Right-click the HSWA[9] card in the Object Tree pane, and select Get Information → IGMP Config → Igmp Statistics from the shortcut menu. And then click the ONU Port Statistics tab from the window that appears subsequently.
- The command pane in the lower part of the window first displays Send Command Successfully! for delivering the configuration to the device, and then Command Succeed for reading the multicast statistical information of the ONU port, as shown in Figure 6-76.

	Access Oper		-			<u> 6 8 8</u>				m ·
berial	No. Slot No	FUN NU.	UNU S.N.	UNU	fort No.		nt Average Order Ti		Total Order 1	11m
	1	1	1	1		4	000:02:21	000:03:18	000:09:26	
	1	1	2	1		2	000:03:10	000:03:12	000:06:21	
•										
Grot	up Statistic	S ONU Po	rt Statis	tics						1
	-	<u> </u>			ui ee li e	Stat				
9:02:	- 57 > Send (Command:	Read Fro	m Dev			istics]]
9:02: 9:02:	-	Command: To Vali	Read Fro	m Der Comu			istics]]
	-	<u> </u>							_	

Figure 6-76 Viewing the multicast statistical information of the ONU port

6.11 Forcing the Users to Leave

Configuration purpose

Force the user that is watching the multicast programs to leave. This function is valid only under the controllable mode.

Planning data

Item	Description	Example
Slot No.	The slot number of the PON interface card.	15
PON Port No.	The PON port number	1
ONU S.N.	The ONU authorization number	1
ONU Port S.N.	The ONU port number	1
Group Address	The IP address of the multicast program.	224.0.1.1

Table 6-22Planned data of forcing users to leave

- Right-click the HSWA[9] card in the Object Tree pane, and select Control Command → IGMP Config → Force Leave from the shortcut menu.
- 2. Configure the parameters according to the planning data in the Table 6-22.
- 3. When the configuration is completed, click the subtrom and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the user connects to the No.1 port on the No.1 ONU of the No.1 PON port in Slot 15 has left the multicast program 224.0.1.1. See Figure 6-77.

🔥 Force	Leave (Domain	1:System	1:OLT System 1:	HSTA[9]) [Cur:	rent Data S	ource: D	efault]
Edit A	ccess Operation	Device Op	eration 🔚 🔮	5 🗟 🗹 🐺			
Slot No.	PON Port No.	ONU S.N.	ONU Port S.N.	Group Address			
15	1	1	1	224.0.1.1			
Force	Leave						
09:02:51	7 > Send Comma	nd:Read F	rom Device[Grou	p Statistics]			
09:02:57	7 > Begin To V	alidate T	ne Command Data	.l			
09:02:57	7 > Validate D	ata Finis	ned				
09:02:57	7 > Send Comma	nd Succes	sfully!				

Figure 6-77 Forcing the users to leave

6.12 Refreshing the Multicast Configuration Information

Configuration purpose

Redeliver all the multicast configuration to the equipment. This operation will not interfere with the users watching the multicast programs.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, and select Control Command → IGMP Config → Flush Igmp Configuration from the shortcut menu.
- Click in the toolbar to execute the configuration commands. The command pane in the lower part of the window displays Send Command Successfully! for refreshing the multicast configuration, as shown in Figure 6-78.

🕂 Flush Igmp Configuration(Domain 1:System 1:OLT System 1:HSTA[9]) [Current Data Source:	Defa
Edit Access Operation Device Operation 🛛 🖶 📇 🚝 🚽	
Flush	
flush	
Flush Igmp Configuration	
09:02:57 > Begin To Validate The Command Data! 09:02:57 > Validate Data Finished 09:02:57 > Send Command Successfully!	

Figure 6-78 Refreshing the multicast configuration information

6.13 Querying the Fast Leave Capability of the ONU

Configuration purpose

Query whether the ONU has the capability of leaving the multicast group fast.

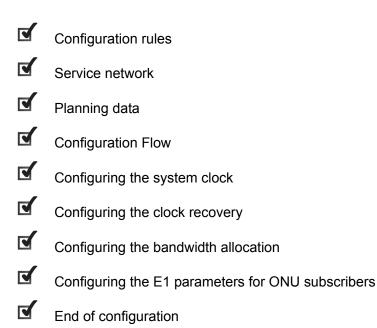
- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Get Information \rightarrow IGMP Config \rightarrow ONU Fast Leave Capability from the shortcut menu.
- Click in the toolbar to execute the configuration commands. The command pane in the lower part of the window first displays Send Command Successfully! for delivering the configuration to the device, and then Command Succeed for querying the fast leave capability of the ONU, as shown in Figure 6-79.

📣 ONU Fast Leas	ve Capabili	ty (Domain 1:System	1:OLT System	1:HSWA[9])	[Current	Data Sourc	e: Default] 📕	. 🗆 🗵
Edit Access Op	eration Devi	ice Operation 🛛 🔚 🗧	£ 🖶 🗹 🐙					
Slot NO. PON NO.	ONU NO. Ca	apability						
1 1	1 Cs	apable						
ONU Fast Leave	e Capability							
09•10•01 > Send	d Command:Re	ad From Device[ONU	Fast Leave ([anability]				
		ate The Command Dat		oupublicy;				
		inished						
09:10:01 > Vali 09:10:01 > Send	idate Data F							ļ

Figure 6-79 Querying the fast leave capability of the ONU

Configuring the TDM Services

This chapter introduces how to provision the TDM services on the AN5116-06B. It includes sections as follows:



7

7.1 Configuration Rules

The E1 ports of the ONU must be one-to-one corresponding to the E1 sequence numbers of the TDM card.

7.2 Service Network

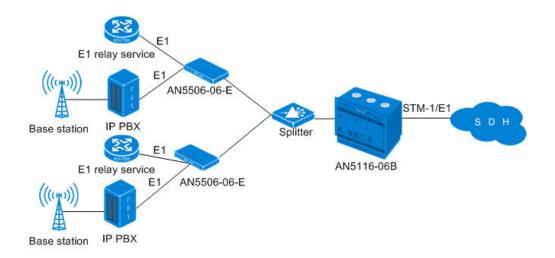


Figure 7-1 TDM service network diagram

The E1 private line users and mobile subscribers can access the TDM service using the E1 port of the ONU. The ONU sends the TDM service to the OLT side, and then the OLT side identifies and forwards the TDM service, and sends to the higher layer SDH network.

7.3 Planning Data

The AN5116-06B chooses the CE1B card and the GC8B card to act as the interface card on the network side and subscriber side respectively, and the HSWA card must be equipped. The TDM service requires the ONU of AN5506-06-E type on the remote end. The planned data is shown in the following table.

Item		Explanation	Example	
	Slot No.	The slot of the GC8B card that is actually used.	15	
	PON port No.	The PON port number that is actually used	1	
ONU		corresponding to the ONU.		
information	ONU Auth No.	Configure according to the network planning of the	3	
		operator		
	ONU type	ОЛИ Туре	AN5506-06-E	
	Slot No.	The slot number of the TDM card that is actually	12 / 1	
Configuring		used	1271	
the system		The ways that the AN5116-06B getting the clock		
clock mode	Clock source	includes: internal, external clock 1. External clock 2,	internal	
		and E1 extraction. The default setting is internal.		
Configuring	Slot No.	The slot number of the TDM card that is actually	1	
the clock		used		
recovery		The clock recovery mode between the ONU and the		
mode	mode	OLT, including adaptive clock, loopback clock,	Adaptive clock	
mode		differential clock and enhanced adaptive clock.		

Table 7-1	Planned data for the OLT side of the TDM service

Table 7-2 Planned data for the ONU (AN5506-06-E type) side of the TDM service

Item		Explanation	Example
	Service Type	Select TDM	TDM
		The fixed bandwidth of an ONU's uplink service.	
	Fixed Bandwidth	Even if the service does not use the bandwidth	16
Configuring	(Kbyte/s)	resource, other services cannot occupy the	10
Configuring the		resource. The default value is 16 Kbyte/s.	
bandwidth		The minimum bandwidth for provisioning an ONU's	
Danuwiuth	Assured Bandwidth	uplink service. If the bandwidth resource is not used	
		by this service, then the resource may be released	0
	(Kbyte/s)	for other services to use. The default value is 0	
		Kbyte/s.	

Item		Explanation	Example
		The maximum bandwidth of an ONU's uplink	
	Maximum Bandwidth	service. The sum of the fixed bandwidth value and	
	(Kbyte/s)	the assured bandwidth value should not be larger	1280
	(RUYLE/S)	than the maximum bandwidth value. The default	
		value is 64 Kbyte/s.	
	Port No.	The E1 port number of the ONU that is actually	1
		used.	1
	TDM Slot No.	The slot number of the TDM card that is actually	1
	T DIVI SIOL NO.	used.	1
Configuring	TDM E1 No.	The E1 No. of the TDM card that is actually used.	8
E1 services		The maximum space for saving the E1 packets	
for ONU	Remote Jitter Buffer	received by the TDM card. The default setting is 32	32
		E1 packets of 125us.	
		The maximum space for saving the E1 packets	
	Local Jitter Buffer	received by the ONU card. The default setting is 32	32
		E1 packets of 125us.	

7.4 Configuration Flow

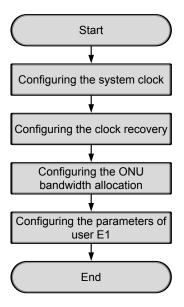


Figure 7-2 Flow chart for configuring the TDM services

7.5 Configuring the System Clock

Configuration purpose

Configure the method to get the clock of the OLT, providing the downlink TDM service clock.

- Click the CE1B[12] card in the Object Tree pane and select Config → system clock mode from the shortcut menu to access the system clock mode configuration window.
- 2. Click the **Clock source** option and select **internal** from the pull-down list.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the system clock mode configuration is completed. See Figure 7-3.

Edit Aco	cess Operation 🛛 Device Operation 🛛 👜 🗇 🔚 📑 👺 📑 📲 🖡
Slot No.	Clock source
12	internal
syster	rm clock mode
· · ·	rm clock mode > Send Command:Read From Device[systerm clock mode]
0:05:06	> Send Command:Read From Device[systerm clock mode]
0:05:06	

Figure 7-3 Completing the system clock configuration

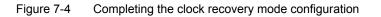
7.6 Configuring the Clock Recovery

Configuration purpose

When the GEM packets sent from the ONU side get to the OLT, the OLT will resolve the Ethernet packets from the GEM packets and adapt them to the TDM packets; meanwhile the OLT will recover the TDM service clock and send it to the uplink equipment.

- Click the CE1B[1] card in the Object Tree pane and select Config → Clock Recovery Mode from the shortcut menu to access the clock recovery mode configuration window.
- 2. Click the mode option and select adaptive clock from the pull-down list.
- 3. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the clock recovery mode configuration is completed. See Figure 7-4.

🕂 clock recovery modee(Domain 1:System 1:OLT System 1:CE1B[1]) [Current Data Source:	Default]
Edit Access Operation Device Operation 🔯 🌼 🖬 ≟ 坐 🖶 🗹 🚚	
Slot No. mode	
1 adaptive clock	
clock recovery modee	
11:32:24 > Send Command:Read From Device[clock recovery modee]	
11:32:24 > Begin To Validate The Command Data!	-
11:32:24 > Validate Data Finished	
11:32:24 > Send Command Successfully!	
	1.



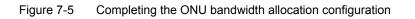
7.7 Configuring the Bandwidth Allocation

Configuration purpose

Configure the TDM service bandwidthto control the traffic flow.

- Click the GC8B[15] card in the Object Tree pane to display the ONUs under this card in the right pane. Then right-click the ONU of AN5506-06-E[3] and select Config → Bandwidth Config from the shortcut menu to access the bandwidth allocation configuration window.
- The above operation brings up the Bandwidth Config dialog box. Click the right pane and select Edit → Append on the menu bar or directly click the button on the toolbar. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one bandwidth entry.
- 3. Configure according to the planned data in Table 7-2. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the bandwidth allocation configuration is completed. See Figure 7-5.

🕼 Bandwi	dth Config	(Domain 1	System 1:GCE	B[15]	ONU : PON1-ANS	06-06-E[3]) [Curren	it Dat	ta Source:	Device]	- 0 >
Edit A	ccess Operati	on Device	Operation	8 🗘	0, 🕸 🖬 🗄 📇	e 🗹 📲				
	PON Port No.	ONU S.N.		fixed 1	Bandwidth(Kbyte/s)	assureed Bandwidth(Kb)	rte/s)		ndwidth (Kby	te/s)
15	1	3	TDM	16		0		1280		
	idth Config		Rear Devia	[Bondy	ridth Config]					•
			The Command	- Tel 1997 - 1997						-
	> Validate									
09:34:14	l > Send Com	mand Suco	essfully!							



7.8 Configuring the E1 Parameters for ONU Subscribers

Configuration purpose

Bind the E1 port of the ONU with the corresponding E1 sequence No. of the TDM card, and configure the buffer of the remote and local end.

- Click the GC8B[15] card in the Object Tree pane to display the ONUs under this card in the right pane. Then right-click the ONU of AN5506-06-E[3], select Config → Service Config from the shortcut menu and select the E1 Config tab.
- Configure according to the planned data in Table 7-2. Click the Modify On Device button after completing the configuration for the TDM service of AN5506-06-E. When the Commande Manager window displays Command Succeed for Set User E1 Config for the object AN5506-06-E, the E1 parameter configuration is completed, as shown in Figure 7-6.

(Domain 1:System)	1:GC8B[15]	ONV List:AN5506-06-E	3])		×
Data Port Config	El Config				
E1 Port		Port No.	1		
E1_1 E1_2		TDM Slot No.	1	T	
E1_3		TDM E1 No.	1-		
E1_4			lo.		
		Remote Jitter buffer	32		
		Loacl Jitter buffer	32		
	1		1		
	<u>R</u> ead DB	<u>W</u> rite DB <u>Read Device</u>	Modify On Device	Delete On Device	Close

Figure 7-6 Completing the E1 parameter configuration

7.9 End of Configuration

After the above-mentioned configuration, the TDM service has been provisioned. Users can use the TDM service using the AN5506-06-E's E1 ports.

Configuring the Wi-Fi Service

This chapter introduces how to provision the Wi-Fi service on the AN5116-06B in details. It includes the following sections:



8

Configuration rules

Configuration example of the Wi-Fi service

8.1 Configuration Rules

- You should use the ONU with the Wi-Fi function to perform the Wi-Fi service.
- The VLAN ID connected with the WAN should be within the local VLAN ID range of the Wi-Fi service on the OLT side.
- The password configuration rules are as follows:
 - When the WLAN authentication mode is OPEN and the encryption type is NONE, you do not need to configure the password;
 - When the WLAN authentication mode is one of OPEN, SHARED and WEPAUTO, you need to configure WEP key 1 to WEP key 4, and the key index will determine the valid password;
 - In other cases, you should configure the WPA pre-shared key.

8.2 Configuration Example of the Wi-Fi Service

8.2.1 Service Network

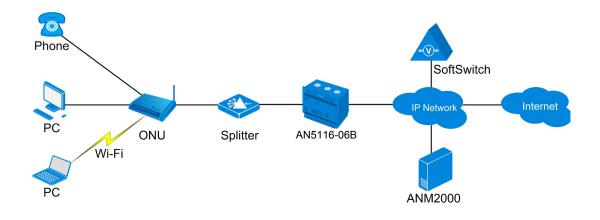


Figure 8-1 Wi-Fi service network

As shown in Figure 8-1, the mobile terminal equipment can access network using the Wi-Fi interface of the ONU. The network instruction is as follows:

Uplink

The ONU provides the integrated access service by connecting with the OLT equipment using the GPON interface.

- Downlink
 - The ONU can perform the data service accessing by connecting with PC using Ethernet interface.
 - The ONU can perform the VoIP service accessing by connecting with telephone using VoIP interface.
 - The ONU can perform the WLAN service accessing by connecting with wireless equipment using Wi-Fi interface.

8.2.2 Planning Data

The following takes provisioning the Wi-Fi service on the AN5506-04-G1 ONU as an example to illustrate the provision process and notes for the Wi-Fi service. The planned data is shown in Table 8-1.

Item		Description	Example
	Slot No.	The slot number that is actually used by the GC8B card corresponding to the ONU	6
ONU information	PON Port No.	The PON port number corresponding to the ONU that is actually used.	1
	ONU No.	Configure according to the operator's network planning.	1
	ONU Type	The ONU type	AN5506-04-G1
	Service Name	Configure according to the operator's network planning.	data
	Starting VLAN ID	The starting VLAN ID of the uplink port service. Configure according to the operator's network planning.	200
	VLAN ID End	The ending VLAN ID of the uplink port service. Configure according to the operator's network planning.	200
	Interface No.	Configure according to the uplink port number that is actually used.	19:SFP2
Configuring a local service VLAN	TAG/UNTAG	The TAG processing mode of the uplink service VLAN. There are two options: TAG and UNTAG . TAG means that when the uplink data packet passes the port, its tag will not be stripped and it keeps going in the tagged mode. And for the downlink data packet, only the data packet in tagged mode will be accepted, and it keeps going in the tagged mode. UNTAG means that when the uplink data packet passes the port, its tag will be automatically stripped and it keeps going in the untagged mode. And for the downlink data packet in the untagged mode, when passing the port, it will be attached with tag and it keeps going in the tagged mode.	TAG
	Service Type	Select data for the Wi-Fi service.	data
	Slot Bind Mode	Select Auto Bind or Manually Bind.	Auto Bind

Table 8-1Planned data for configuring the Wi-Fi service

	Description	Example	
Service Type	Select data for the Wi-Fi service.	data	
	The fixed bandwidth assigned to the ONU uplink		
	service. If this service does not use this bandwidth		
Fixed Bandwidth	resource, other services cannot occupy this resource.	16	
	The default setting is 16.		
	The minimum bandwidth for provisioning the ONU		
assured Bandwidth	uplink service. If this service does not use this		
	bandwidth resource, other services can occupy this	0	
	resource. The default setting is 0.		
	-		
Maximum	service. The sum of the fixed bandwidth and the		
Bandwidth	assured bandwidth should not exceed the maximum	1280	
	Select INTERNET or the mode with INTERNET for the		
WAN Mode	Wi-Fi service. Generally we recommend you to select	INTERNET	
	INTERNET.		
WAN_Conn_Type		Route	
WAN Vlan Id		200	
		200	
WAN_Cos		1	
WAN_NAT_Enable		Disable	
IGD WLAN			
	Select Enable.	Enable	
COUNTRY	The WLAN channel range. Select ETSI .	ETSI	
CHANNEL	The serial number of the WLAN channel.	0	
GHAINNEL			
IGD_WLAN_	The WLAN specification supported by the equipment.		
	Fixed Bandwidth assured Bandwidth Maximum Bandwidth WAN_Mode WAN_Conn_Type WAN_Vlan_Id WAN_Cos WAN_Cos IGD_WLAN_ APModuleEnable IGD_WLAN_	Service Type Select data for the Wi-Fi service. Fixed Bandwidth The fixed bandwidth assigned to the ONU uplink service. If this service does not use this bandwidth resource, other services cannot occupy this resource. The default setting is 16. assured Bandwidth The minimum bandwidth for provisioning the ONU uplink service. If this service does not use this bandwidth resource, other services can occupy this resource. The default setting is 0. Maximum The maximum bandwidth assigned to the ONU uplink service. The sum of the fixed bandwidth and the assured bandwidth should not exceed the maximum bandwidth. The default setting is 64. WAN_Mode Select INTERNET or the mode with INTERNET for the Wi-Fi service. Generally we recommend you to select INTERNET. WAN_Conn_Type Select Bridge or Route according to the ISP requirement: Bridge: two-layer bridge connection mode; Route: three-layer route connection mode; Route: three-layer route connection mode. WAN_Vlan_Id Set the VLAN ID of the WAN connection according to the ISP requirement within the value range 1 to 4085. The VLAN ID should not be occupied by other connections, and should be within the local VLAN ID range of the Wi-Fi service on the OLT side. WAN_Cos The priority level of the 802.1p connected with this WAN within the value range 1 to 7. WAN_NAT_Enable Select Enable. IGD_WLAN_ APModuleEnable Select Enable. IGD_WLAN_ IGD_WLAN The WLAN channel range. Select ETSI.	

ltem		Description	Example
SSID		The WLAN identifier. Configure according to the operator's network planning.	abc
	IGD_WLAN_ ENABLE	Select Enable.	Enable
	IGD_WLAN_ SSIDHide	Select whether to hide SSID.	Available
	IGD_WLAN_Mode	Configure according to the operator's network planning.	WPAPSK
	IGD_WLAN_ EncrypTpe	Configure according to the operator's network planning.	ТКІР
	IGD_WLAN_ PresharedKey	The WPA pre-shared key with an upper limit of 64 characters.	12345678
	GD_WLAN_ WPAReKeyInterval	The WPA key refresh interval; the unit is second.	86400

8.2.3 Configuration Flow

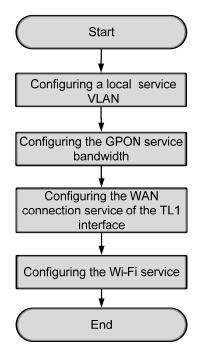


Figure 8-2 Flow chart for configuring the Wi-Fi service

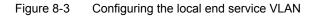
8.2.4 Configuring the Local Service VLAN

Configuration purpose

Configure the service VLAN of the uplink port to limit the service VLAN ID range that passes through the uplink port and to process the VLAN tag.

- Right-click the HSWA[9] card in the Object Tree pane and select Config → Local VLAN from the shortcut menu to bring up the configuration window. Then click the Local End Service VLAN tab to access the Local End Service VLAN window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK to add one local VLAN.
- 3. Configure the parameters according to the planned data in Table 8-1.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the local end service VLAN configuration is completed. See Figure 8-3.

Edit Access	Operation Device Op	eration 🛛 😣 식	👂 🕒 🧔 🤣	L 📥 🕹 🗄	5 🗹 🐺	
ervice Name	Starting VLAN ID	VLAN ID End	Interface NO.	TAG/UNTAG	Service Type	Slot Bind Mode
ata	200	200	19:SFP2	TAG	Data	Auto Bind
Local End S	ervice VLAN Local Er	d Service Inner	VLAN			
	ervice VLAN Local Er			e VLAN]		
9:27:29 > S		rom Device[Loc	al End Servio	e VLAN]		
9:27:29 > S 9:27:29 > B	end Command:Read F:	rom Device[Loc ne Command Dat	al End Servio	e VLAN]		



8.2.5 Configuring the GPON Service Bandwidth

Configuration purpose

Configure the bandwidth of the broadband internet service of the ONU to limit the service traffic flow.

- Click the GC8B[6] card in the Object Tree pane to display all the ONUs in the right pane. Right-click the AN5506-04-G1 ONU and select Config → GPON Service Bandwidth Config from the shortcut menu to access the GPON Service Bandwidth Config window.
- Select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK.
- 3. Configure the parameters according to the planned data in Table 8-1. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the GPON service bandwidth is configured. See Figure 8-4.

	🕼 GPOM Service Bandwidth Config(Domain 1:system1:GC8B[6] OMV List:AM5506-04-G1[1]) [Current Bata Sour 💶 🗖 🗙							
	Edit Access Operation Device Operation 🛛 😣 🤪 🗟 🤣 🖶 📑 📇 🖶 🥌 🚽							
	Slot No. PON Fort No. ONU No. Service Type fixed Bandwidth(Kbyte/s) assureed Bandwidth(Kbyte/s) Maximum Bandwidth(Kbyte/s)							
	6 1 1 1 data 16 0 1280							
	GPON Service Bandwidth Config							
l	09:47:25 > Send Configuration To Device[GPON Service Bandwidth Config]Executing							
	09:47:25 > Command Succeed							
	09:47:25 > Read From Device[GPON Service Bandwidth Config]Executing							
	09:47:25 > Command Succeed							



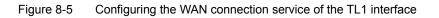
8.2.6 Configuring the WAN Connection Service of the TL1 Interface

Configuration purpose

Configure the WAN parameters such as connection mode and type.

- 1. Click the **GC8B[6]** card in the **Object Tree** pane to display all ONUs in the right pane. Right-click the **AN5506-04-G1** ONU and select **Config** \rightarrow **WAN Service** from the shortcut menu to access the **WAN Service** window.
- 2. Select Edit \rightarrow Append on the menu bar or directly click the \bigcirc button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK.
- 3. Configure the parameters according to the planned data in Table 8-1. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the WAN connection service of the TL1 interface is configured. See Figure 8-5.

🕼 TAB Service (Domain 1: syste	1:GC8B[6] 0	NV List:AN550	6-04-G1[1])	[Current	Data	
Edit Access Operation Device Operation 🛛 😵 🎲 🖏 🤣 🚍 ≟ 訾 🛒 🚚						
Slot No. PON Port No. ONU NO	WAN_Mode	WAN_Conn_Type	WAN_Vlan_Id	WAN_Cos	WAN_NAT_Enable	
6 1 1	INTERNET	Route	200	1	Disable	
WAN Service	I				Þ	
WAN Service 09:56:08 > Begin To Validate The Command Data! 09:56:08 > Validate Data Finished 09:56:08 > Send Command Successfully!						



8.2.7 Configuring the Wi-Fi Service

Configuration purpose

Configure the relevant parameters of the Wi-Fi service, including **SSID**, **IGD_WLAN_COUNTRY**, **IGD_WLAN_APModuleEnable**, etc.

- Click the GC8B[6] card in the Object Tree pane to display all ONUs in the right pane. Right-click the AN5506-04-G1 ONU and select Config → WiFi Service Config from the shortcut menu to access the WiFi Service Config window.
- 2. Click the left pane and configure the parameters according to the planned data in Table 8-1.
- Click the right pane and select Edit → Append on the menu bar or directly click the button. Either operation brings up the Please Input the Rows for Add: dialog box. Type 1 and click OK.
- 4. Configure the parameters according to the planned data in Table 8-1. When the configuration is completed, click the Button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the WiFi service configuration is completed. See Figure 8-6.

🗥 Tifi Service Config(Domain 1:system1:	GC8B[6] ONV List:AN5506-04	-G1[1]) [C	urrent Data Source: De	vice]	_ 🗆 ×		
Edit Access Operation Device Operation 😵 🖓 🖏 🌼 ≛ 😤 🦐 🗹 🎝							
Slot PON ONU IGD_WLAN_APModuleEnable IGD		SSID IGD_W		IGD_WLAN_SSIDHi de	IGD_WLAN		
6 1 1 Enable ETSI	0	1 abc	Enable	Available	WPAPSK		
ViFi Service Config			_		Þ		
0:02:37 > Send Configuration To Device[WiFi Service Config]Executing 0:02:37 > Command Succeed 0:02:37 > Read From Device[WiFi Service Config]Executing 0:02:37 > Command Succeed							

Figure 8-6 WiFi service configuration

8.2.8 End of Configuration

Now you have completed the Wi-Fi service configuration based on the AN5506-04-G1 ONU. The mobile terminal can perform wireless connection with this ONU, and can access the Internet using this ONU.

Configuring the CATV Service

This chapter gives details on how to configure the CATV service using the AN5116-06B. And it includes the following sections:



9

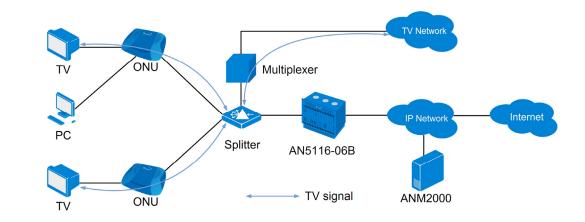
Configuration rules

An example for the CATV service configuration

9.1 Configuration Rules

- To implement the the CATV function, an ONU with the CATV optical module is compulsory.
- By enabling / disabling the CATV service on the ONU, users can control the access of the CATV service.

9.2 An Example for the CATV Service Configuration



9.2.1 Service Network

Figure 9-1 The CATV service network

As Figure 9-1 shows, the CATV service uses the WDM technology. Via the multiplexer, the TV signal is multiplexed with the data signal and voice signal. The downlink data wavelength is 1490 nm, the uplink data wavelength is 1310 nm and the CATV signal wavelength is 1550 nm.

9.2.2 Planning Data

In the following a CATV service using the AN5506-04-G1 ONU is used as an example to describe the detailed provisioning procedure of the CATV service. See Table 9-1 for the planned data.

Item		Description	Example
ONU information	Slot No.	The slot number of the corresponding GC8B card of the ONU.	6
	PON No.	The actual number of the corresponding PON of the ONU.	1
	ONU authorization No.	Configured according to the network planning of the operator.	1
	ONU type	The type of the ONU.	AN5506-04-G1
CATV	CATV Enable /	Enable the CATV service.	Enable
configuration	Disable		

Table 9-1 The planned data of the CATV service

9.2.3 Configuring the CATV Service

Configuration example

 Click the GC8B[6] card in the Object Tree pane and all ONUs listed under the GC8B[6] card are displayed in the right pane. Right-click the AN5506-04-G1 ONU and select Service Config → User Service Config from the shortcut men and then click the CATV Config tab in the ONU Port Service Config dialog box.

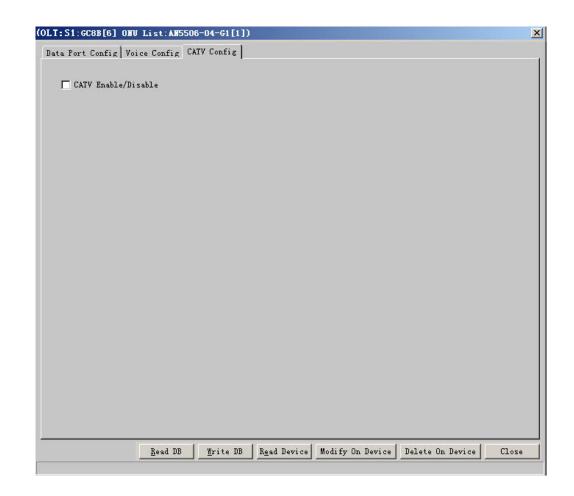


Figure 9-2 The CATV service configuration

2. Select the **CATV Enable / Disable** check box and click the **Modify on Device** button to complete the CATV service configuration. See Figure 9-3.

a Port Config Voice Config C	ATV Config				
CATV Enable/Disable					
Command Manager					
Command Manager	Selected - 🏹 Show Al	1 •			
Command Manager Start Stop XDelete	Selected - 📝 Show AJ Object	ll → Start Time	Used Ti (Comment	
🗼 Start 🔳 Stop 🗙 Delete	Object	(decempt)	and the second se	Comment Command Succeed	

Figure 9-3 CATV service configuration – completed

Now the CATV service provisioning is completed. The CATV service is available as soon as the coaxial cable interface of the AN5506-04-G1 is connected.

10 Upgrading the Software

This chapter introduces the important notice, upgrading rules, planned data and upgrading steps. It includes the following sections:

- important notice
 Upgrading the core switch card
 Upgrading the GPON interface card / TDM interface card / public card
 Upgrading the GPON interface card in a batch manner
 Upgrading the ONU manually
- Upgrading the ONU automatically

10.1 Important Notice

During the upgrading you need to reboot the upgraded card, which will impact the service. To minimize the impact, the following notices should be paid attention to.

- You should upgrade the remote equipment first and then upgrade the local equipment, that is, you should follow the steps of ONU → GC4B / GC8B → PUBA → HSWA to upgrade.
- The replacement operation is recommended to be carried out at night when service traffic is at a relatively low volume.
- The AN5116-06B's management VLAN port should be connected with the FTP server properly; the management VLAN IP address should be within the same subnet as the FTP server IP address. You can run the **Ping** command on the FTP server to check its connectivity to the AN5116-06B.
- You should save the current software version before the upgrading, because you might want to use it for a restore in the case that the upgrading would fail or the new version would have a problem.
- The file type used for the upgrading should match the card type to be upgraded; otherwise the upgrading would fail.
- The manual and automatic upgrading should not be operated simultaneously on the GPON interface card of one slot.
- After upgrading the ONU automatically, the system will reboot the ONU.

10.2 Upgrading the Core Switch Card

10.2.1 Upgrading Rules

- If you only configure one core switch card, you need to reboot the entire system after upgrading the core switch card, which will impact the service. It is recommended to add a standby card first and then to upgrade the core switch card software.
- If you have configured the active and the standby core switch cards, you should upgrade the standby card first, execute the active-standby switchover command, and then upgrade the original active card. This operation procedure will minimize the impact on the service.

10.2.2 Prerequisites

Open the wftp software on the ftp server and select a user. If no user exists, you need to create one.

- In the upgrading operation, after selecting a user, you should confirm the path saving the upgrade package on the ftp server and input the path in the wftp software. During the upgrading, the equipment will import the upgrade package from this path.
- In the backing up operation, after selecting a user, you should confirm the path used to save the backup pack on the ftp server and input the path in the wftp software. During the backing up, the equipment will export the backup pack to this path.

For specific operations, refer to Appendix A.

During the upgrading and the backing up, the WFTP software should always be open.

10.2.3 Planning Data

This section takes upgrading the active and standby core switch cards as an example to introduce the entire steps.

Item	Explanation	Example
Relevant parameters of		The USWA cord (active) in Slot 0:
the cared to be	Configure according to the actual situation.	The HSWA card (active) in Slot 9;
upgraded		the HSWA card (standby) in Slot 10.
File Type	Select core switch card.	core switch card software
FTP Server IP	Configure according to the actual situation.	10.92.20.168
User Name	Configure according to the actual situation.	1
Password	Configure according to the actual situation.	1
File Name in backing up	Configure according to the plan of operators. The	20100618.txt
the configuration data	file name should be no more than 20 characters.	20100018.1X1
File Name in backing up	Configure according to the plan of operators. The	beifen.txt
the system software	file name should be no more than 20 characters.	benefi.txt
File Name in upgrading	Configure according to the plan of approtors. The	
the core control card	Configure according to the plan of operators. The	hswa.bin
software	file name should be no more than 20 characters.	

Table 10-1 Planned data for upgrading the core switch card

10.2.4 Upgrading Flow Chart

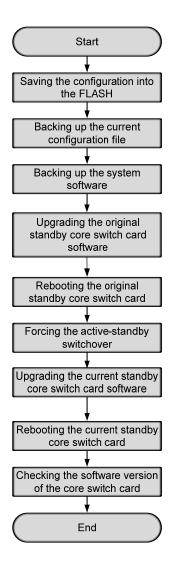


Figure 10-1 Flow chart for upgrading the core control card software

10.2.5 Saving the Current Configuration into the Flash

Configuration purpose

Save the current configuration data into the flash in case that the equipment is disconnected with power leading to the loss of configuration data.

Operation steps

- Right-click HSWA[9] in the Object Tree pane and select Control Command
 → Save Config to Flash from the shortcut menu.
- 2. In the **Sending Commands...** dialog box which appears subsequently, click the **OK** button. Then wait a few seconds, it will show the command of saving configuration succeeds, as shown in Figure 10-2.

Sending Commands	×
Command Name: Save Config To Flash Domain1-S1-OLT System1-HSWA[9]	
Command Result Command Succeed [4 Sec]	
Retry Close Help	

Figure 10-2 Saving the current configuration into the flash

10.2.6 Backing Up the Current Configuration File

Configuration purpose

Back up all the current configuration files because you might want to use it for a restore in the case that the upgrading would fail.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Control Command →Export Config from the shortcut menu to bring up the Export Config File dialog box.
- 2. In the **Export Config File** dialog box, configure according to the planned data in Table 10-1.

Export Config File	×
FtpSer <u>V</u> erIP	10 . 92 . 20 . 168
<u>U</u> serName:	1
<u>P</u> assword:	*
<u>F</u> ileName:	20100618. txt
por	t Config Fil Cancel

Figure 10-3 Backing up the current configuration

3. Click the **Export Config File** button, the system will prompt **Export Config File Successfully**. Click the **OK** button.

10.2.7 Backing Up the System Software

Configuration purpose

Back up all the current system software because you might want to use it for a restore in the case that the upgrading would fail.

Configuration steps

- Right-click the HSWA[9] card in the Object Tree pane and select Control Command → Backup Software from the shortcut menu. This operation will bring up the Backup System Software dialog box.
- 2. In the **Backup System Software** dialog box, configure according to the planned data in Table 10-1.

Backup System Soft	rare	×
FiļeType:	System file	V
Ftp S <u>e</u> rver IP:	10 . 92 . 2	20 . 168
Sl <u>o</u> t No.:		*
P <u>O</u> N NO.:		7
0 <u>N</u> U NO.:		
<u>U</u> serName:	1	
Passwo <u>r</u> d:	*	
File <u>N</u> ame:	benfen.txt	
	Backup Software	Cancel

Figure 10-4 Backing up the current configuration

3. Click the **Backup Software** button to complete the backing up.

10.2.8 Upgrading the Original Standby Core Switch Card Software

Configuration purpose

Upgrade the original standby core switch card software.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Control Command → Upgrade Software from the shortcut menu. This operation will bring up the Upgrade System Software dialog box.
- 2. Enter the **Upgrade System Software** dialog box, and configure according to the planned data in Table 10-1.

Vpgrade System Softwa	re	×
FileType:	CORE CARD SOFTWARE	
Ftp S <u>e</u> rver IP:	10 . 92 . 20 . 168	
Sl <u>o</u> t No.:	10 💌	
P <u>O</u> N NO.:	•	
0 <u>N</u> U NO.:		
<u>U</u> serName:	1	
Passwo <u>r</u> d:	*	
	🔽 Input filename <u>M</u> anual	
File <u>N</u> ame:	hswa.bin	
Upgrade Software	Cancel]

Figure 10-5 Upgrading the original standby core switch card software

- 3. After completing the configuration, click the **Upgrade Software** button to start the upgrading.
- 4. Switch to the wftp window. If the following logs are displayed in the window, it indicates that the equipment obtains the upgrading software package successfully through ftp, as shown Figure 10-6.

📴 Ho log file open - TFTPD 📃	
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>Logging Messages</u> <u>Security</u> <u>H</u> elp	
U U479J UZ7U8FTU TU:53:56 PASSword accepted	
[L 0479] 02/08/10 10:53:56 User 1 logged in.	
[C 0479] 02/08/10 10:53:56 Command "TYPE I" received	
[C 0479] 02/08/10 10:53:56 TYPE set to I N	
[C 0479] 02/08/10 10:53:56 Command "PORT 10,92,188,188,4,18" received	
[C 0479] 02/08/10 10:53:56 PORT set to 10.92.188.188 - 1042 (4,18)	
[C 0479] 02/08/10 10:53:56 Command "RETR hswa. bin" received	
[C 0479] 02/08/10 10:53:56 RETRieve started on file hswa. bin	
[C 0479] 02/08/10 10:53:56 Command "QUIT" received	
[C 0479] 02/08/10 10:53:56 Transfer aborted	
[G 0479] 02/08/10 10:53:56 Got file D:\FTP\hswa.bin unsuccessfully	
[C 0479] 02/08/10 10:53:56 QUIT or close - user 1 logged out	
[L 0480] 02/08/10 10:53:56 Connection accepted from 10.92.188.188	
[C 0480] 02/08/10 10:53:56 Command "USER 1" received	
[C 0480] 02/08/10 10:53:56 PASSword accepted	
[L 0480] 02/08/10 10:53:56 User 1 logged in.	
[C 0480] 02/08/10 10:53:56 Command "TYPE I" received	
[C 0480] 02/08/10 10:53:56 TYPE set to I N	
[C 0480] 02/08/10 10:53:56 Command "PORT 10,92,188,188,4,20" received	
[C 0480] 02/08/10 10:53:56 PORT set to 10.92.188.188 - 1044 (4,20)	
[C 0480] 02/08/10 10:53:56 Command "RETR hswa. bin" received	
[C 0480] 02/08/10 10:53:56 RETRieve started on file hswa.bin	
[C 0480] 02/08/10 10:53:58 Transfer finished	
[G 0480] 02/08/10 10:53:58 Got file D:\FTP\ hswa. bin successfully	
[C 0480] 02/08/10 10:53:58 Command "QUIT" received	
[C 0480] 02/08/10 10:53:58 QUIT or close - user 1 logged out	
For Help, press F1 1 socket 0 users	NL ///

Figure 10-6 Ftp – upgrading the core switch card

5. Switch to the **Upgrade System Software** window. If the upgrading succeeds, the system will prompt **Please reboot the object upgraded to make it work**, as shown in Figure 10-7.

Upgrade System Software	• <u>×</u>
Fi <u>l</u> eType:	CORE CARD SOFTWARE
Ftp S <u>e</u> rver IP:	10 . 92 . 20 . 168
Sl <u>o</u> t No.:	10 💌
AN 2000	×
Please reboot t	he object upgraded to make it work
[ОК
คลรรพบบูน.	
	Input filename Manual
File <u>N</u> ame:	hswa.bin
Upgrade Software	Cancel

Figure 10-7 Upgrading the core switch card successfully

10.2.9 Rebooting the Original Standby Core Switch Card

Configuration purpose

Reboot the original standby core switch card.

Operation steps

 Right-click the HSWA[9] card in the Object Tree pane and select Control Command → Reset Standby HSWA from the shortcut menu. This operation will bring up the Sending Commands... dialog box, as shown in Figure 10-8.

Sending Commands	×
Command Name:	
Reset Standby HSWA Domain 1-System 1-0LT System 1-HSWA[9]	
Command Result The Command Will Change The Property Or Configuration Of The Device, Please Confirm!	-
Close <u>H</u> elp	

Figure 10-8 Reset the standby card – the Sending Commands dialog box

 Click the OK button. Then wait a few seconds, it will show the Command Succeed of the Command Result, indicating that rebooting the standby card is completed.

10.2.10 Forcing the Active-standby Switchover

Configuration purpose

Switch the active card and the standby card, that is, the original active card acts as the standby card while the original standby card acts as the active card.

Operation steps

 Right-click the HSWA[9] card in the Object Tree pane and select Control Command → Force Switch from the shortcut menu. This operation will bring up the Sending Commands... dialog box, as shown in Figure 10-9.

Sending Commands	x
Command Name:	
Force Switch Domain 1-System 1-0LT System 1-HSWA[9]	
Command Result The Command Will Change The Property Or Configuration Of The Device, Please Confirm!	
OK Close <u>H</u> elp	

Figure10-9 Forcing the active-standby switchover - the Sending Commands dialog box

2. Click the **OK** button. Then wait a few seconds, it will show the **Command Succeed** of the **Command Result**, indicating that the active-standby switchover is successful. In this case, the HSWA card in Slot 9 is standby card, and the HSWA card in Slot 10 is the active card.

10.2.11 Upgrading the Current Standby Core Switch Card Software

Configuration purpose

Upgrade the current standby core switch card software.

Operation steps

- Right-click the HSWA[10] card in the Object Tree pane and select Control Command → Upgrade Software from the shortcut menu. This operation will bring up the Upgrade System Software dialog box.
- 2. Enter the **Upgrade System Software** dialog box, and configure according to the planned data in Table 10-1.



The HSWA card in Slot 9 is the standby card, so you should select **9** for the **Slot No**.

Upgrade System Soft	rare	x
FileType:	CORE CARD SOFTWARE	
Ftp S <u>e</u> rver IP:	10 . 92 . 20 . 168	
Sl <u>o</u> t No.:	9]
P <u>O</u> N NO.:	_]
0 <u>N</u> U NO.:		
<u>U</u> serName:	1	
Passwo <u>r</u> d:	*	
	🔽 Input filename <u>M</u> anual	
File <u>N</u> ame:	hswa.bin	
Upgrade Software	Cancel	

Figure 10-10 Upgrading the standby core switch card software

- 3. After completing the parameter configuration, click the **Upgrade Software** button to start the upgrading.
- 4. Switch to the wftp window. If the following logs are displayed in the window, it indicates that the equipment obtains the upgrading software package successfully through ftp, as shown Figure 10-11.

🔍 No log file open - WFTPD	
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>Logging M</u> essages <u>S</u> ecurity <u>H</u> elp	
U 0487 02/08/10 14:29:25 PASSword accepted	_
[L 0487] 02/08/10 14:29:25 User 1 logged in.	
[C 0487] 02/08/10 14:29:25 Command "TYPE I" received	
[C 0487] 02/08/10 14:29:25 TYPE set to I N	
[C 0487] 02/08/10 14:29:25 Command "PORT 10,92,188,188,4,5" received	
[C 0487] 02/08/10 14:29:25 PORT set to 10.92.188.188 1029 (4,5)	
[C 0487] 02/08/10 14:29:25 Command "RETR hswa.bin" received	
[C 0487] 02/08/10 14:29:25 RETRieve started on file hswa. bin	
[C 0487] 02/08/10 14:29:25 Command "QUIT" received	
[C 0487] 02/08/10 14:29:25 Transfer aborted	
[G 0487] 02/08/10 14:29:25 Got file D:\FTP\hswa.bin unsuccessfully	
[C 0487] 02/08/10 14:29:25 QUIT or close - user 1 logged out	
[L 0488] 02/08/10 14:29:25 Connection accepted from 10.92.188.188	
[C 0488] 02/08/10 14:29:25 Command "USER 1" received	
[C 0488] 02/08/10 14:29:25 PASSword accepted	
[L 0488] 02/08/10 14:29:25 User 1 logged in.	
[C 0488] 02/08/10 14:29:25 Command "TYPE I" received	
[C 0488] 02/08/10 14:29:25 TYPE set to I N	
[C 0488] 02/08/10 14:29:25 Command "PORT 10,92,188,188,4,7" received	
[C 0488] 02/08/10 14:29:25 PORT set to 10.92.188.188 - 1031 [4,7]	
[C 0488] 02/08/10 14:29:25 Command "RETR hswa.bin" received	
[C 0488] 02/08/10 14:29:25 RETRieve started on file hswa.bin	
[C 0488] 02/08/10 14:29:28 Transfer finished	
G 0488] 02/08/10 14:29:28 Got file D:\FTP\hswa.bin successfully	
[C 0488] 02/08/10 14:29:28 Command "QUIT" received	
[C 0488] 02/08/10 14:29:28 QUIT or close - user 1 logged out	•
For Help, press F1 1 socket 0 users	NL ///

Figure 10-11 Ftp – upgrading the core switch card

5. Switch to the **Upgrade System Software** window. If the upgrading succeeds, the system will prompt **Please reboot the object upgraded to make it work**, as shown in Figure 10-12.

Vpgrade System Softwar	re X
FileType:	CORE CARD SOFTWARE
Ftp S <u>e</u> rver IP:	10 . 92 . 20 . 168
Sl <u>o</u> t No.:	9
AHE2000	the object upgraded to make it work
Passwuju.	
	🗹 Input filename <u>M</u> anual
File <u>N</u> ame:	hswa.bin
Upgrade Software	Cancel

Figure 10-12 Upgrading the core switch card successfully

10.2.12 Rebooting the Current Standby Core Switch Card

Configuration purpose

Reboot the current standby core switch card.

Operation steps

 Right-click the HSWA[10] card in the Object Tree pane and select Control Command → Reset Standby HSWA from the shortcut menu. This operation will bring up the Sending Commands... dialog box, as shown in Figure 10-13.

Sending Commands	×
Command Name:	
Reset Standby HSWA Domain 1-System 1-0LT System 1-HSWA[10]	
Command Result The Command Will Change The Property Or Configuration Of The Device, Please Confirm!	
Close <u>H</u> elp	

Figure 10-13 Reset the standby card

2. Click the **OK** button. Then wait a few seconds, it will show the **Command Succeed** of the **Command Result**, indicating that rebooting the standby card is completed.

10.2.13 Checking the Software Version of the Core Switch Card

Configuration purpose

Check the software version of the core switch card to see if the core switch card is successfully upgraded.

Operation steps

- Right-click the HSWA[10] card in the Object Tree pane and select Get Information → Card Version from the shortcut menu. This operation will bring up the Version of Card window.
- Enter the Version of Card window, and you can see the software version of the cards in each slot. Check if the software version of the core switch card in Slots 9 and 10 are desired, as shown in Figure 10-14.

Edit A	access Operation De	evice Operation	
Slot No.	Hardware Version	Software Versi	on
L _{at}	WKE2. 167. 177R1	RP0102	
1	WKE2. 119. 348R1	RP0201	
l.	WKE2, 115, 331R1	RP0320	
.0	WKE2. 115. 331R1	RP0320	
1	WKE2.200.012R1	RP0145	
5	WKE2, 119, 348R1	RP0201	
19	WKE2. 170. 846R3	RP0102	
V	un of faml		
versi	on of Card		
9:55:4	3 > Send Command:	Read From Devic	e[Version of Card]
9:55:4	3 > Send Command	Successfully!	
9:55:4	3 > Read From Dev	ice[Version of	Card]Executing
	4 > Command Succe	, -	

Figure 10-14 Check the card software version

10.3 Upgrading the GPON Interface Card / TDM Interface Card / Public Card

10.3.1 Upgrading Rules

If the upgrade object is the software of the GPON interface card, the card will be automatically rebooted after a successful upgrade and need no manual reboot. The automatic reboot of the interface card can cause an interruption of services.



The operation steps to reboot the TDM interface card and the public card manually are as follows:

Right-click **HSWA[9]** in the **Object Tree** window, and select **Control Command** \rightarrow **Reboot the Appointed Device**. In the **Reboot the Appointed Device** window, select the card that needs to be rebooted to reboot.

10.3.2 Prerequisites

Open the wftp software on the ftp server and select a user. If no user exists, you need to create one.

- In the upgrading operation, after selecting a user, you should confirm the path saving the upgrade package on the ftp server and input the path in the wftp software. During the upgrading, the equipment will import the upgrade package from this path.
- In the backing up operation, after selecting a user, you should confirm the path used to save the backup pack on the ftp server and input the path in the wftp software. During the backing up, the equipment will export the backup pack to this path.

For specific operations, refer to Appendix A.

During the upgrading and the backing up, the WFTP software should be always open.

10.3.3 Planning Data

The planned data for upgrading the GPON interface card are listed in Table 10-2.

Item	Description	Example	
Parameters of the card	Configure according to the actual situation	The GC4B card in Slot 15	
to be upgraded	Configure according to the actual situation	The GC4B card in Slot 15	
Developed file trace	The emerge file of the GPON interface card's		
Download file type	CPU and the firmware	PON interface card software	
FTP server IP	Configure according to the actual situation	10.92.20.168	
FTP server username	Configure according to the actual situation	1	
FTP server password	Configure according to the actual situation	1	
File nome	Configure according to the actual situation, and	co4o 1221v1 cz	
File name	characters of the filename cannot exceed 20.	gc4c_1221v1.gz	

Table 10-2 Planned data for upgrading the GPON interface card

10.3.4 Upgrading Flow Chart

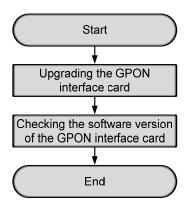


Figure 10-15 Flow chart for upgrading flow chart for the GPON interface card software

10.3.5 Upgrading the GPON Interface Card

Configuration purpose

Upgrade the GPON interface card.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, and select Control Command → Upgrade Software from the shortcut menu.
- 2. Enter the **Upgrade System Software** dialog box, and configure according to the planned data in Table 10-2.

Upgrade System Softwa	are 🔰	<
FileType:	PON CARD SOFTWARE	
Ftp S <u>e</u> rver IP:	10 . 92 . 20 . 168	
Sl <u>o</u> t No.:	15	
P <u>O</u> N NO.:	_	
0 <u>N</u> U NO.:		
<u>U</u> serName:	1	
Passwo <u>r</u> d:	*	
	🔽 Input filename <u>M</u> anual	
File <u>N</u> ame:	gc4c_1221v1.gz	
Upgrade Software	Cancel	

Figure 10-16 Upgrading the GPON interface card software

- 3. After completing the configuration, click the **Upgrade Software** button to start the upgrading.
- 4. Switch to the wftp window. If the following logs are displayed in the window, it indicates that the equipment obtains the upgrading software package successfully through ftp, as shown Figure 10-17.

📴 Ho log file open - TFTPD	×
<u>F</u> ile <u>E</u> dit <u>V</u> iew Logging <u>M</u> essages <u>S</u> ecurity <u>H</u> elp	
U 0481] 02/08/10 10:56:45 PASSword accepted	1
[L 0481] 02/08/10 10:56:45 User 1 logged in.	_
[C 0481] 02/08/10 10:56:45 Command "TYPE I" received	
[C 0481] 02/08/10 10:56:45 TYPE set to I N	
[C 0481] 02/08/10 10:56:45 Command "PORT 10,92,188,188,4,22" received	
[C 0481] 02/08/10 10:56:45 PORT set to 10.92.188.188 - 1046 (4,22)	
[C 0481] 02/08/10 10:56:45 Command "RETR gc4c_1221v1.gz" received	
[C 0481] 02/08/10 10:56:45 RETRieve started on file gc4c_1221v1.gz	
[C 0481] 02/08/10 10:56:45 Command "QUIT" received	
[C 0481] 02/08/10 10:56:45 Transfer aborted	
[G 0481] 02/08/10 10:56:45 Got file D:\FTP\gc4c_1221v1.gz unsuccessfully	
[C 0481] 02/08/10 10:56:45 QUIT or close - user 1 logged out	
[L 0482] 02/08/10 10:56:45 Connection accepted from 10.92.188.188	
[C 0482] 02/08/10 10:56:45 Command "USER 1" received	
[C 0482] 02/08/10 10:56:45 PASSword accepted	
[L 0482] 02/08/10 10:56:45 User 1 logged in.	
[C 0482] 02/08/10 10:56:45 Command "TYPE I" received	
[C 0482] 02/08/10 10:56:45 TYPE set to I N	
[C 0482] 02/08/10 10:56:45 Command "PORT 10,92,188,188,4,24" received	
[C 0482] 02/08/10 10:56:45 PORT set to 10.92.188.188 - 1048 (4,24)	
[C 0482] 02/08/10 10:56:45 Command "RETR gc4c_1221v1.gz" received	
[C 0482] 02/08/10 10:56:45 RETRieve started on file gc4c_1221v1.gz	
[C 0482] 02/08/10 10:56:46 Transfer finished	
[G 0482] 02/08/10 10:56:46 Got file D:\FTP\gc4c_1221v1.gz successfully	_
[C 0482] 02/08/10 10:56:46 Command "QUIT" received	
[C 0482] 02/08/10 10:56:46 QUIT or close - user 1 logged out	•
For Help, press F1 1 socket 0 users NL	

Figure 10-17 Ftp – upgrading an individual card

10.3.6 Checking the Software Version of the GPON Interface Card

Configuration purpose

Check the software version of the GPON interface card to see if the GPON interface card is successfully upgraded.

Operation steps

- 1. Right-click the HSWA[9] card in the Object Tree pane and select Get Information \rightarrow Card Version from the shortcut menu.
- Enter the Version of Card window, and you can see the software version of the cards in each slot. Check if the software version of the GC4B card in Slot 15 is desired, as shown in Figure 10-18.

Edit A	ccess Operation De	wice operation			
Slot No.	Hardware Version	Software Versi	ion		
1	WKE2. 167. 177R1	RP0102			
4	WKE2. 119. 348R1	RP0201			
)	WKE2.115.331R1	RP0320			
10	WKE2. 115. 331R1	RP0320			
1	WKE2.200.012R1	RP0145			
15	WKE2, 119, 348R1	RP0201			
19	WKE2. 170. 846R3	RP0102			
Verri	on of Card				
YELSI	on or card				
9:55:43	3 > Send Command:	Read From Devi	ce[Version of Card]	
9:55:43	3 > Send Command	Successfully!			
	3 > Read From Dev	-	CardlExecuting		
	4 > Command Succe		oarajimooating		

Figure 10-18 Check the card software version

10.4 Upgrading the GPON Interface Card in a Batch Manner

10.4.1 Upgrading Rules

If the upgrade object is the software of the GPON interface card, the card will be automatically rebooted after a successful upgrade and need no manual reboot. The automatic reboot of the interface card can cause an interruption of services.

10.4.2 Prerequisites

Open the wftp software on the ftp server and select a user. If no user exists, you need to create one.

- In the upgrading operation, after selecting a user, you should confirm the path saving the upgrade package on the ftp server and input the path in the wftp software. During the upgrading, the equipment will import the upgrade package from this path.
- In the backing up operation, after selecting a user, you should confirm the path used to save the backup pack on the ftp server and input the path in the wftp software. During the backing up, the equipment will export the backup pack to this path.

For specific operations, refer to Appendix A.

During the upgrading and the backing up, the WFTP software should always be open.

10.4.3 Planning Data

The planned data for upgrading the GPON interface card is shown in Table 10-3.

Item	Explanation	Example	
Parameters of the card	Configure apporting to the actual aituation	The GC4B card in Slots 4 and 15	
to be upgraded	Configure according to the actual situation		
Download file type	The emerge file of the GPON interface card's	PON interface card software	
Download life type	CPU and the firmware	FON Interface card software	
FTP Server IP	Configure according to the actual situation	10.92.20.168	
FTP server username	Configure according to the actual situation	1	
FTP server password	Configure according to the actual situation	1	
File Name	Configure according to the actual situation, and	co4o 1001v1 cz	
	characters of the filename cannot exceed 20.	gc4c_1221v1.gz	

 Table 10-3
 Planned data for upgrading the GPON interface card

10.4.4 Upgrading Flow Chart

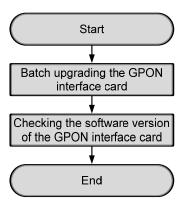


Figure 10-19 Flow chart for upgrading flow chart for the GPON interface card software

10.4.5 Upgrading the GPON Interface Card in a Batch Manner

Configuration purpose

Upgrade the GPON interface card in a batch manner.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, and select Control Command → Batch Upgrade Line Card from the shortcut menu.
- Enter the Batch Upgrade Line Card dialog box, and configure according to the planned data in Table 8-3. After completing the configuration, click the Upgrade Software button to start the upgrading.
- 3. Switch to the wftp window. If the following logs are displayed in the window, it indicates that the equipment obtains the upgrading software package successfully through ftp, as shown Figure 10-20.

No log file open - TFTPD	
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>Logging M</u> essages <u>S</u> ecurity <u>H</u> elp	
U U465j UZ/U8/TU TU:42:UU PASSword accepted	
[L 0465] 02/08/10 10:42:00 User 1 logged in.	
[C 0465] 02/08/10 10:42:00 Command "TYPE I" received	
[C 0465] 02/08/10 10:42:00 TYPE set to I N	
[C 0465] 02/08/10 10:42:00 Command "PORT 10,92,188,188,4,7" received	
[C 0465] 02/08/10 10:42:00 PORT set to 10.92.188.188 - 1031 (4,7)	
[C 0465] 02/08/10 10:42:00 Command "RETR gc4c_1221v1.gz" received	
[C 0465] 02/08/10 10:42:00 RETRieve started on file gc4c_1221v1.gz	
[C 0465] 02/08/10 10:42:02 Transfer finished	
[G 0465] 02/08/10 10:42:02 Got file D:\FTP\gc4c_1221v1.gz successfully	
[C 0465] 02/08/10 10:42:02 Command "QUIT" received	
[C 0465] 02/08/10 10:42:02 QUIT or close - user 1 logged out	
[L 0466] 02/08/10 10:42:02 Connection accepted from 10.92.188.188	
[C 0466] 02/08/10 10:42:02 Command "USER 1" received	
[C 0466] 02/08/10 10:42:02 PASSword accepted	
[L 0466] 02/08/10 10:42:02 User 1 logged in.	
[C 0466] 02/08/10 10:42:02 Command "TYPE I" received	
[C 0466] 02/08/10 10:42:02 TYPE set to I N	
[C 0466] 02/08/10 10:42:02 Command "PORT 10,92,188,188,4,9" received	
[C 0466] 02/08/10 10:42:02 PORT set to 10.92.188.188 - 1033 (4,9)	
[C 0466] 02/08/10 10:42:02 Command "RETR gc4c_1221v1.gz" received	
[C 0466] 02/08/10 10:42:02 RETRieve started on file gc4c_1221v1.gz	
[C 0466] 02/08/10 10:42:04 Transfer finished	
[G 0466] 02/08/10 10:42:04 Got file D:\FTP\gc4c 1221v1.gz successfully	
[C 0466] 02/08/10 10:42:04 Command "QUIT" received	
[C 0466] 02/08/10 10:42:04 QUIT or close - user 1 logged out	•
For Help, press F1 1 socket 0 users	NL ///

Figure 10-20 Ftp –upgrading the cards in a batch manner

4. Switch to the **Batch Upgrade Line Card** window, and you can see the line card is upgraded successfully, as shown in Figure 10-21.

Batch Upgrade Line Car	d	×
FileType:	PON CARD SOFTWARE	Refresh Time: 60sec. TRefresh Periodic Refresh Now 0bject State
Ftp Server IP:	10 . 92 . 20 . 108	✓Domain1: System1: OLT system1: GC4B[4] Succeed ✓Domain1: System1: OLT system1: GC4B[15] Succeed
UserName:	1	Domaini. Systemi. OLI systemi. OC45[15] Ducceeu
Password:	*	
File <u>N</u> ame:	gc4g_1221v1.gz	
Upgrade Software	Close	
Comain 1:System 1 Compare		00:02:09

Figure 10-21 Upgrading the GPON interface card software in a batch manner

10.4.6 Checking the Software Version of the GPON Interface Card

Configuration purpose

Check the software version of the GPON interface card to see if the GPON interface card is successfully upgraded.

Operation steps

1. Right-click the HSWA[9] card in the Object Tree pane and select Get Information \rightarrow Card Version from the shortcut menu.

2. Enter the **Version of Card** window, and you can see the software version of the cards in each slot. Check if the software version of the GC4B card in Slots 4 and 15 are desired, as shown in Figure 10-22.

Slot No.	Hardware Version	Software Version
1	WKE2. 167. 177R1	RP0102
4	WKE2. 119. 348R1	RP0201
9	WKE2.115.331R1	RP0320
10	WKE2. 115. 331R1	RP0320
1	WKE2.200.012R1	RP0145
15	WKE2. 119. 348R1	RP0201
19	WKE2. 170. 846R3	RP0102
Versi	ion of Card	
9:55:4	3 > Send Command:	Read From Device[Version of Card]
9:55:4	3 > Send Command :	Successfully!
		ice[Version of Card]Executing
		ed

Figure 10-22 Check the card software version

10.5 Upgrading the ONU Manually

10.5.1 Upgrading Rules

- The ONU is present and normally authorized.
- Only the ONUs of the same type in the same slot can be manually upgraded.
- After manually upgrading an FTTB ONU's firmware and CUP software, the system will reboot the ONU. The following tables list the detailed information.
 - ► For FTTH ONUs

Upgrade Object	Download File Type	Reboot Mode
ONU firmware	ONU firmware	Manual
ONU built-in IAD	ONU CPU / IAD software	Manual

For FTTB ONUs

Upgrade Object	Download File Type	Reboot Mode
ONU firmware	ONU firmware	Manual
ONU CPU	ONU CPU / IAD software	Manual
ONU built-in IAD	ONU CPU / IAD software	Manual
ONU firmware and CPU merge file	ONU CPU / IAD software	Automatic

10.5.2 Prerequisites

Open the wftp software on the ftpP server and select a user. If no user exists, you need to create one.

- In the upgrading operation, after selecting a user, you should confirm the path saving the upgrade package on the ftp server and input the path in the wftp software. During the upgrading, the equipment will import the upgrade package from this path.
- In the backing up operation, after selecting a user, you should confirm the path used to save the backup pack on the ftp server and input the path in the wftp software. During the backing up, the equipment will export the backup pack to this path.

For specific operations, refer to Appendix A.

During the upgrading and the backing up, the WFTP software should always be open.

10.5.3 Planning Data

The following takes batch upgrading the CPU/IAD software of the ONU manually as an example. The planned data for upgrading the ONU software manually is shown in Table 10-4.

Item	Explanation	Example
Parameters of the card to be upgraded	Configure according to the actual situation	The ONU of AN5506-04-B type
		with the authorization No. 1 and
		2 in PON port number1 in Slot 4.
Download file type	Configure according to the actual situation	ONU CPU / IAD software
FTP Server IP	Configure according to the actual situation	10.92.20.168
FTP server username	Configure according to the actual situation	1
FTP server password	Configure according to the actual situation	1
File Name	Configure according to the actual situation, and	onu04_v2.bin
	characters of the filename cannot exceed 16.	

Table 10-4Planned data for upgrading the ONU software manually

10.5.4 Upgrading Flow Chart

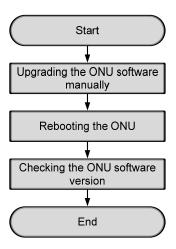


Figure 10-23 Flow chart for batch upgrading the ONU manually

10.5.5 Upgrading the ONU Software Manually

Configuration purpose

Upgrade the ONUs in a batch manner manually.

- Right-click the HSWA[9] card in the Object Tree pane, and select Control Command → Batch Upgrade ONU from the shortcut menu.
- Enter the Batch Upgrade ONU dialog box, configure according to the planned data in Table 10-4. Select the ONUs of the AN5506-04-B type with authorization No. 1 and 2 under PON No.1 in the lower left part of the dialog box.
- 3. Click the **Upgrade Software** button to start the upgrading.
- 4. Switch to the wftp window. If the following logs are displayed in the window, it indicates that the equipment obtains the upgrading software package successfully through ftp, as shown Figure 10-24.

💁 No log file open - WFTPD			_ 🗆 🗙
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>Logging M</u> essages <u>S</u> ecurity <u>H</u> elp			
C 0477] 02/08/10 10:50:26 PASSWord accepted			
[L 0477] 02/08/10 10:50:26 User 1 logged in.			
[C 0477] 02/08/10 10:50:26 Command "TYPE I" received	ved		
[C 0477] 02/08/10 10:50:26 TYPE set to I N			
[C 0477] 02/08/10 10:50:26 Command "PORT 10,92,1	88,188,4,	13" receive	d
[C 0477] 02/08/10 10:50:26 PORT set to 10.92.188.18	38 - 1037 (4,13]	
[C 0477] 02/08/10 10:50:26 Command "RETR onu04	v2.bin" re	ceived	
[C 0477] 02/08/10 10:50:26 RETRieve started on file	onu04 ∨2	.bin	
[C 0477] 02/08/10 10:50:26 Command "QUIT" receive	ed –		
[C 0477] 02/08/10 10:50:26 Transfer aborted			
[G 0477] 02/08/10 10:50:26 Got file D:\FTP\onu04 v2	.bin unsu	ccessfully	
[C 0477] 02/08/10 10:50:26 QUIT or close - user 1 log	ged out		
[L 0478] 02/08/10 10:50:26 Connection accepted from	n 10.92.18	8.188	
[C 0478] 02/08/10 10:50:26 Command "USER 1" rece	ived		
[C 0478] 02/08/10 10:50:26 PASSword accepted			
[L 0478] 02/08/10 10:50:26 User 1 logged in.			
[C 0478] 02/08/10 10:50:26 Command "TYPE I" received	ved		
[C 0478] 02/08/10 10:50:26 TYPE set to I N			
[C 0478] 02/08/10 10:50:26 Command "PORT 10,92,1	88,188,4,	15" received	d
[C 0478] 02/08/10 10:50:26 PORT set to 10.92.188.18	38 - 1039 (4,15)	
[C 0478] 02/08/10 10:50:26 Command "RETR onu04	v2.bin" re	ceived	
[C 0478] 02/08/10 10:50:26 RETRieve started on file			
[C 0478] 02/08/10 10:50:27 Transfer finished	_		
[G 0478] 02/08/10 10:50:27 Got file D:\FTP\onu04 v2	bin succe	essfullv	_
[C 0478] 02/08/10 10:50:27 Command "QUIT" receive		,	
[C 0478] 02/08/10 10:50:27 QUIT or close - user 1 log			•
For Help, press F1 1	socket	0 users	NL //

Figure 10-24 Ftp – upgrading the ONU

5. Switch to the **Batch Upgrade ONU** window, and you can see the ONUs are manually upgraded successfully, as shown in Figure 10-25.

Batch Upgrade OMU					×
FileType: Ftp Server IP:	ONU CPU/IAD software	Refresh Time: Object	60sec.	Refresh Periodic State Succeed	Refresh Now
UserName: Password:	1	PON1-AN55		Succeed	
FileName:	anu04_v2.bin				
PON1 (PON_POR1 	D6-04-B[1](ANS506-04-B) D6-04-B[2](ANS506-04-B) D6-04-B[3](ANS506-04-B) D6-04-B[4](ANS506-04-B) D6-04-B[4](ANS506-04-B)				
IIII PONI-AN550	()	00:02:09			

Figure 10-25 Batch upgrading the ONU manually

10.5.6 Rebooting the ONU

Configuration purpose

Reboot the ONUs in a batch manner.

- Right-click the GC4B[4] card in the Object Tree pane, and select Control Command → Reset ONU from the shortcut menu to bring up the Reset ONU dialog box.
- 2. Click the drop-down list of **PON Port No.**, and select **1**.

3. Double-click the blank in the **ONU No.** column to bring up the **Please Select ONU No.!** dialog box. Select the ONU No. (authorization No.) to be rebooted, as shown in Figure 10-26.

Please Select	ONU No.!		2
ONU No Check			
1		✓	
2		✓	
3			
4			
5			
6			
Select All	All Clear	OK	Cancel

Figure 10-26 Please Select ONU No.

4. Click **OK** to access the **Reset ONU** window. Click 🏙 from the menu bar and

click **OK** in the prompt dialog box. The command pane in the lower part of the window displays **Command Succeed**, indicating that rebooting the ONUs is successful.

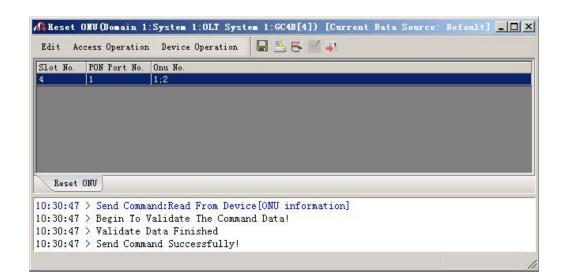


Figure 10-27 Rebooting the specified ONUs

10.5.7 Checking the ONU Software Version

Configuration purpose

Check the ONU software version to see if the upgrading is successful.

- 1. Right-click the **GC4B[4]** card in the **Object Tree** pane, and select **Get Information-> ONU Information** from the shortcut menu.
- 2. Enter the **ONU information** dialog box, where you can see the software version of the ONUs with the authorization No. 1 and 2 in PON port No.1 is upgraded, as shown in Figure 10-28.

Lot No. 1	PON Port	ONU No.	Configed Type	Actual Type	Software Version	Hardware Version
	1	1	AN5506-04-B	AN5506-04-B	RP0208	WKE2.119.241R2B
		2	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
		3	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
		4	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
		5	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
		6	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
ONV info]	ad Even Device	[ONU informati	onl	

Figure 10-28 Checking the ONU software version

10.6 Upgrading the ONU Automatically

10.6.1 Upgrade Rules

- The file name of the upgrade software should be configured in strict accordance with the specified file name list.
- When performing ONU automatic upgrade, ONUs connected to the PON interface card in the slot cannot be manually upgraded.

10.6.2 Planning Data

The planned data for upgrading the ONU automatically are listed in Table 10-5.

Item	Description	Example
Related parameters of	Configure according to the actual situation	The ONUL of type ANEEOG 04 D in Slot 4
the ONU to be upgraded	Configure according to the actual situation	The ONU of type AN5506-04-B in Slot 4
Enchling status	Enable / disable the function of upgrading	Fnable
Enabling status	the ONU automatically	Enable
FTP server IP	Configure according to the actual situation	10.92.20.168
FTP server username	Configure according to the actual situation	1
FTP server password Configure according to the actual situat		1
File nome	Configure according to the actual situation	GPON ONU software (FTTH) →
File name	Configure according to the actual situation	GAPP_04B_40.bin

Table 10-5Planned data for upgrading the ONU automatically

10.6.3 Upgrade Flow Chart

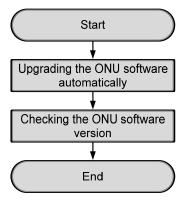


Figure 10-29 Flow chart for upgrading the ONU automatically

10.6.4 Upgrading the ONU Software Automatically

Configuration purpose

Upgrade the ONU software automatically.

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow ONU Auto Upgrade from the shortcut menu.
- 2. Enter the **ONU Auto Upgrade** dialog box. Select the row with the **Slot No.** 4 and configure according to the planned data in Table 10-5.
- Click the File Name column and select the GPON ONU Software (FTTH) → GAPP_04B_40.bin check box from the ONU Auto Upgrade list box that appears subsequently, and then click OK, as shown in Figure 10-30.

ONV Auto Upgrade
BOOT File PERS File PERS File POUNT Software (FTTH) POUNT Software (FTTH) POUNT Software (FTTH) POUNT Software (FTTH)
OK Cancel

Figure 10-30 The dialog box for selecting file

4. Return to the ONU Auto Upgrade dialog box. Click 💾, and the lower part of

the window as shwon in Figure 10-31 displays **Command Succeed**, indicating that the ONU is successfully upgraded automatically.

		Device Operation 🛛 😣 🍳) 🕒 🚸 🔒	👛 📑 🞽 📣 🗉		
Slot No.	Enable/Disable	FTP Server Ipaddress	FTP Username	FTP Password	File Name	
4	Enable	10. 92. 20. 168	1	1	GAPP_04B_40.bin;	
5	Disable					
15	Disable					
ONU AU	uto Upgrade					
0:32:28	> Send Comman	d:Read From Device[ONU	Auto Upgrade]			
10:32:28	> Send Command	d Successfully!				1
10.00.00	> Read From Dr	evice[ONU Auto Upgrade]Executing			
0:32:28						

Figure 10-31 Upgrading the ONU automatically

10.6.5 Checking the ONU Software Version

Configuration purpose

Check the ONU software version to see if the upgrading is successful.

Operation steps

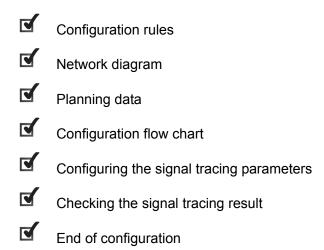
- 1. Right-click the **GC4B[4]** card in the **Object Tree** pane, and select **Get Information-> ONU Information** from the shortcut menu.
- 2. Enter the **ONU information** dialog box, where you can see the software version of the ONUs is upgraded, as shown in Figure 10-32.

Slot No.	PON Port	ONU No.	Configed Type	Actual Type	Software Version	Hardware Version
1	1	1	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
		2	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
		3	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
		4	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
		5	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
		6	AN5506-04-B	AN5506-04-B	RP0208	WKE2. 119. 241R2B
ONT i	nformation	J	d Even Devrige	IONU informati	anl	
ישע i : 30:41	> Send Co			[ONU information	on]	
30:41	> Send Co		ad From Device ate The Command	CA 02.84	on]	
0:30:41 0:30:41	> Send Co	To Valida	ate The Command	CA 02.84	on]	

Figure 10-32 Checking the ONU software version

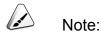
11 Configuring the Signal Tracing

This chapter introduces how to configure the signal tracing for the AN5116-06B. It includes the following sections:



11.1 Configuration Rules

- When the softswitch platform uses the H.248 protocol to control the access terminals, configure both the layer 4 source port number and the destination port number of signal tracing to 2944.
- When the softswitch platform uses the SIP protocol to control the access terminals, configure both the layer 4 source port No. and destination port No. of signal tracing to 5060.
- When the softswitch platform uses the MGCP protocol to control the access terminals, configure the signal tracing layer 4 source port No. to 2427 and destination port No. to 2727.
- When setting the community name of the SNMP and trap receiver, it is recommended to use adsl or the default value public.



The voice signal tracing will cause a heavy load on the system. It is recommended to use it only in voice service troubleshooting.

11.2 Network diagram

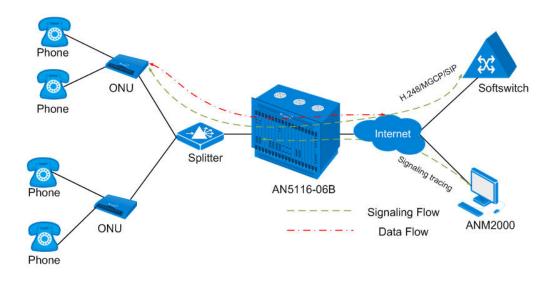


Figure 11-1 Signal tracing network diagram

As shown in Figure 11-1, the GPON system uses the H.248 / MGCP / SIP protocol to interact with the softswitch to perform call control, and meanwhile the OLT send the signaling packet of the H.248 / MGCP / SIP to the ANM2000 server. Thus the signal tracing of the GPON system is realized.

11.3 Planning Data

The following takes configuring the H.248 signal tracing for the AN5116-06B and the ANM2000 server as an example to introduce how to configure signal tracing in details. The planned data are listed in Table 11-1.

Item		Description	Example
	IP address	Source IP of voice data packets, that is, the equipment IP address that performs signal tracing.	10.90.222.88
Configuring the signal tracing	L4 source port No.	The L4 source port number corresponding to the H.248 protocol.	2944
	L4 destination port No.	The L4 destination port number corresponding to the H.248 protocol.	2944
	Enabling status	Signal tracing enable switch	Enable
	File path	Select the save path for signal tracing files.	D:
Viewing the	File type	The save type of signal tracing files.	.txt
Viewing the signal tracing result	Multiple files	Whether to save the signal tracing logs into multiple files.	Selected
resuit	Single file size	Input size of a single signal tracing file. Once exceeded, another file will be created.	2

Table 11-1 Planned data for signal tracing
--

11.4 Configuration Flow Chart

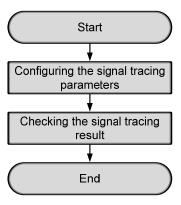


Figure 11-2 Flow chart of configuring the signal tracing

11.5 Configuring the Signal Tracing Parameters

Configuration purpose

Configure the IP address, layer 4 source port No. and destination port No. of the ONU equipment that needs the signal tracing, and enable the signal tracing function.

- 1. Right-click the **HSWA[9]** card in the **Object Tree** pane, and select **Config** → **Signal Trace** from the shortcut menu to access the **Signal Trace** window.
- On the menu bar in the configuration window, select Edit → Append from the menu bar or click the button. In the Please Input the Rows for Add: dialog box that appears subsequently, type 1 and click OK.
- 3. Configure according to the planned data in Table 11-1.
- 4. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of signal tracing parameter is completed. See Figure 11-3.

Signal Trace	(Domain 1:System 1:	OLT System 1:HSTA	9]) [Current Data Source: D	evice] _ 🗆
Edit Access Og	eration Device Opera	ation 🛛 😵 🚱 🚳	• 🖩 🔮 😤 🖶 🗹 🎝	
IP	L4 Src. Port No.	L4 Dst. Port No.	Enable Status	
.0. 90. 222. 88	2944	2944	Enable	
	1			
Signal Trace		_		
-	d Command:Read From	n Device[Signal Tra	ce]	
0:45:25 > Sen	d Command:Read From in To Validate The	n Device[Signal Tra Command Data!	ce]	
0:45:25 > Sen 0:45:25 > Beg		Command Data!	ce]	
0:45:25 > Sen 0:45:25 > Beg 0:45:25 > Val	in To Validate The	Command Data! 1	ce]	

Figure 11-3 Configuring the signal tracing

11.6 Checking the Signal Tracing Result

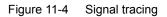
Configuration purpose

Check the signal tracing result from the ONU to the MGC.

Operation steps

1. Select **Config** → **Signal Trace** from the menu bar to access the **Signal Trace** window, as shown in Figure 11-4.

🗥 Signal Tr	ace				
<u>F</u> ile <u>Op</u> er	ation <u>V</u> iew				
📴 Open 🛛 🖸	Ctrl+0 🛃 Save	Ctrl+S 🌔 Begin 🔳 Stop	🕲 Prev Page 🌚 Next Pag	ge 🔚 Auto Save Opt	ion 💥 Summary View Option 👘
Serial Number	Receive Time	Source IP	Destination IP	Protocol Type	Summary
		Ther	e are no items to show.		
Ready	Row: 0/0	Page:0/0 Total: 0			1.



- Click the Auto Save Option button to bring up the Auto Save Option dialog box.
- 3. Click and select disk D as the save path.
- Click the Multiple Files check box, and double-click the default value 1 of Mbytes and input 2. Then click OK to return to the Signal Trace dialog box.

🕂 Auto Save Option		×
Auto Save Option		
File <u>P</u> ath:	D: \	
File Type:	.txt	•
Multiple Files		_
✓ Next File Every	Þ	MBytes
🗖 Next File <u>E</u> very	5000	Items
🔲 <u>R</u> ing Buffer With	1	Files
	OK	Cancel

Figure 11-5 The Auto Save Option dialog box

5. Click the Begin button to start the signal tracing. And you can view the information of signal tracing, as shown in Figure 11-6.

🔥 Signal Tr	ace									_ 🗆 X
<u>F</u> ile <u>O</u> per	ation <u>V</u> iew	Y								
Open 🚽	Save 🌔 Begi	in 📕 Stoj	p 💮 Prev	Page 🥳	Next Page 🐻	uto Save	Option 🔀 Su	nmary View	Option	😽 Exit
Serial Nu	Receive Tim	ne	Source II	?	Destination	IP	Protocol	Summary		
29	2009-08-18	14:15:56	10.90	222.88	10, 90, 222	. 222	megaco	MEGACO/1	[10.90.	222.88]:2
30	2009-08-18	14:15:56	10.90	222.88	10, 90, 222	. 222	megaco	MEGACO/1	[10.90.	222.88]:2
31	2009-08-18	14:15:57	10.90	222.88	10, 90, 222	. 222	megaco	MEGACO/1	[10.90.	222.88]:2
32	2009-08-18	14:15:57	10.90	222.88	10. 90. 222	. 222	megaco	MEGACO/1	[10.90.	222.88]:2
33	2009-08-18	14:15:57	10.90	222.88	10.90.222	. 222	megaco	MEGACO/1	[10.90.	222.88]:2
34	2009-08-18	14:15:57	10.90	222.88	10.90.222	. 222	megaco	MEGACO/1	[10.90.	222.88]:2
35	2009-08-18.	.14:15:57	. 10.90	222 88	10 90 222	222	megaco	MEGACO/.1.	J10.90	222, 881:5
Ready				Row: 0/	/0 Page:1/1	Total:	0			

Figure 11-6 Viewing the result of signal tracing

6. Click the **stop** button to stop the signal tracing. The signaling information traced in Figure 11-6 will be saved to disk D automatically.

11.7 End of Configuration

Now the configuration of voice signaling tracing of the H.248 protocol is completed. You can view the content of the traced H.248 signaling through the ANM2000.



If you need to check previous signaling tracing data, you can view the TXT files under the directory where the signal tracing files are saved.

12 Flow Classification Configuration

This chapter introduces how to configure the flow classification for the AN5116-06B. It includes the following sections:

Configuration rules
 Configuration flow chart
 Flow classification configuration example – based on MAC address
 Flow classification configuration example – based on IP address

12.1 Configuration Rules

- The AN6116-06B supports up to 128 flow policies.
- For FTTH ONU, the AN5116-06B supports the flow classification rules based on source/destination MAC address and Ethernet.
- For FTTB ONU, the AN5116-06B supports the flow classification rules based on source/destination MAC address and source/destination IP address, VLAN ID classification, IP protocol classification, Ethernet priority classification, IP TOS/DSCP (IPv4) classification, L4 source / destination PORT classification, life cycle classification.
- Each FE port of the ONU can bind with up to 8 flow policies.

12.2 Configuration Flow Chart

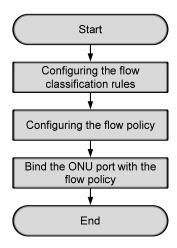


Figure 12-1 Flow chart for flow classification rules

12.3 Flow Classification Configuration Example – Based on MAC Address

12.3.1 Planning Data

The following takes the ONU with the authorization No.1 under the PON port No.4 of the GC4B card in Slot 5 of the AN5116-06B as an example, binding a flow policy with the No.1 FE port. The planned data is shown in Table 12-1.

Item		Description	Example
	Rule ID	Automatically assigned by the system	4
Flow classification	Rule Name	Configure according to the network planning of the operator	rule123
rules	Rule Type	Configure according to the network planning of the operator	Based On SA MAC Exist And Match 12-34-56-78-91-01
	Policy ID	Automatically assigned by the system	1
	Policy Name	Configure according to the network planning of the operator	Policy123
Flow policy	Rule ID	Select the Rule Name from the flow classification rules	rule123
Flow policy	Precedence	Configure the priority of the flow policy within 1 to 12	1
	ACL Enable	Configure according to the network planning of the operator	Enable
	Forward	Configure according to the network planning of the operator	Allowed, Matched streams would pass
	Slot No.	The slot number actually used	15
	PON port No.	The PON port number actually used	1
Port Binding	ONU No.	The ONU No. actually used	2
Flow Policy	ONU Type	The ONU type actually used	AN5506-10-B1
	Port No.	Configure according to the network planning of the operator.	1

Table 12-1 Planned data for flow classification rules – based on MAC address

Item		Description	Example
	Ingress Policy ID	The policy ID configured in flow policy	Policy123
	Engress Policy ID	The policy ID configured in flow policy	Policy123

12.3.2 Configuring the Flow Classification Rules

Configuration purpose

This operation is to configure the function of filtering the service flow to the ONU port using the flow rules based on source / destination MAC address classification, source / destination IP address classification, etc.

Operation steps

- 1. Right-click the HSWA[9] card in the Object Tree pane, select Config \rightarrow Flow Classification Rule to access the Flow Classification Rule window.
- 2. Select **Edit** \rightarrow **Append** from the menu bar or click the 9 button, and input **1**

in the **Please Input the Rows for Add:** dialog box that appears subsequently. Then click **OK** to add one rule.

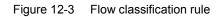
 Double-click the Rule Name column and input rule123. Double-click the Rule Type column, configure according to the planned data in Table 12-1 in the Rule Define dialog box that appears subsequently. After completing the configuration, click OK to return to the Flow Classification Rule window.

Rul e	Define	<
In	. Rule Define	
1	Based On SA MAC Exist And Match 12-34-56-78-90-10	
	Rule Type Based On SA MAC 💌 Edit	
	Operator Exist And Match 📃 🚺 Add	
	Rule Value 12-34-56-78-90-10 Delete	
	OK Cancel	

Figure 12-2 The Rule Define dialog box

4. Click the Button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of flow classification rule is completed. See Figure 12-3.

	r Classificatio	n Rule(Domain 1:System 1:OLT System 1:HSTA[9]) [Current Data Source: Device] 💶 🗙
Edit	Access Operation	n Device Operation 🛛 🚫 🤪 📴 🍰 📥 📥 😹 🥌 🖌 🗐
RuleID	RuleName	Rule Type
0	de_rule_single	Based On SA MAC Exist And Match 00-00-00-00-00;
1	de_rule_multi1	Based On PRI Of LAN \geq 0; Based On PRI Of LAN \leq 3;
2	de_rule_multi2	Based On PRI Of LAN \geq 4;Based On PRI Of LAN \leq 5;
3	de_rule_multi3	Based On PRI Of LAN >= 6;Based On PRI Of LAN <= 7;
4	rule123	Based On SA MAC Exist And Match 12-34-56-78-90-10;
Flo	w Classification	Rule
		Rule and:Read From Device[Flow Classification Rule]
10:53:	34 > Send Comm	
10:53: 10:53:	34 > Send Comm 34 > Send Comm	and:Read From Device[Flow Classification Rule]
10:53: 10:53: 10:53:	34 > Send Comm 34 > Send Comm	and:Read From Device[Flow Classification Rule] and Successfully! . Device[Flow Classification Rule]Executing





The rules 0 to 3 are the default flow classification rules of the equipment, which cannot be deleted or modified.

12.3.3 Configuring the Flow Policy

Configuration purpose

This operation is to configure the flow policy of the AN5116-06B, applying the defined flow classification rule to the flow policy to bind the ONU port.

- Right-click the HSWA[9] card in the Object Tree pane, select Config → Flow Policy to access the Flow Policy window.
- Select Edit → Append from the menu bar or click the ^D button, and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add one flow policy.
- 3. Configure according to the planned data in Table 12-1. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of flow policy is completed. See Figure 12-4.

Flow P	olicy (Domain	1:System	1:0LT Syst	ten 1:HSTA	[9]) [Current]	Data Source:	Device]		>
Edit A	ccess Operation	Device C	peration	8 🖗 🖏	🌼 🖬 🖻 🛎 🤞	l 6 🗹 🕸			
PolicyID	PolicyName	_	Precedence	ACLEnable					t CIR(kbps)
0	default	de_rule			<u> </u>			Disable	Į0
1	Policy123	rule123	1	Enable	Allowed, Matched	streams would	. pass	Disable	0
4		_							, in the second s
-									
Flow H	?olicy								
		nd:Read 1	From Device	Flow Pol	icyl				
1:08:18	Policy > Send Comman > Send Comman			Flow Pol	icy]				
1:08:18 1:08:18	> Send Comman > Send Comman > Send Comman	nd Succe:	ssfully!	-					
1:08:18 1:08:18 1:08:18	> Send Comma	nd Succe: Device[F]	ssfully!	-					

Figure 12-4 Configuring the flow policy



The policy 0 is the default flow policy, which cannot be deleted or modified.

12.3.4 Binding the ONU Port with the Flow Policy

Configuration purpose

This operation is to bind the specified port of the ONU with the defined flow policy. After completing the binding, this port will process data according to the specified flow rules.

- Click the GC8B[15] card in the Object Tree pane to display the ONUs under this card in the right pane. Then right-click the ONU of PON1-AN5506-10-B1[2] and select Config → Port Binding Flow Policy from the shortcut menu to access the bandwidth allocation configuration window.
- Select port No.1 from the 24 FE ports of the AN5506-10-B1 shown in the left pane.
- Click the blank in the right pane, double-click the Ingress Policy ID column, and select Policy 123 from the drop-down list; double-click the Engress Policy ID column, and select Policy 123 from the drop-down list.
- 4. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of binding the ONU port with the flow policy is successful. See Figure 12-5.

Slot No.	PON Port No.	Onu No.	Port No.	Ingress Policy ID	Engress Policy ID
15	1	2	1	Policy123	Policy123
15	1	2	2		
15	1	2	3		
15	1	2	4		
15	1	2	5		
15	1	2	6		
15	1	2	7		
15	1	2	8		
15	1	2	9		
15	1	2	10		
15	1	2	11		
15	1	2	12		
15	1	2	13		
15	1	2	14		
15	1	2	15		
15	1	2	16		
15	1	2	17		
15	1	2	18		
Port	Binding Flow Pol	icy			
1.01.23	Sand Common	nd.Read I	From Device[Port Binding Flow	Policyl	
			The Command Data!	TOTICAL	
) > Validate D:				
) > Valluate D: } > Send Comman				
				10. Sec. 10.	
) 2 Kead From	vevice[Po	ort Binding Flow Policy]Execu	ting	

Figure 12-5 Binding the ONU port with flow policy

12.3.5 End of Configuration

The above operations complete the flow classification rule configuration. The FE1 port of the AN5506-10-B1 will only forward the data flow with the MAC address 12-34-56-78-90-10 according to the rule defined in flow policy.

12.4 Flow Classification Configuration Example – Based on IP Address

12.4.1 Planning Data

The following takes the ONU with the authorization No.2 under the PON port No.4 of the GC4B card in Slot 5 of the AN5116-06B as an example, binding a flow policy with the No.1 FE port. The planned data is shown in Table 10-2.

Item		Description	Example
	Rule ID	Automatically assigned by the system	4
Flow	Rule Name	Configure according to the network	rule456
classification		planning of the operator	1010450
rules	Rule Type	Configure according to the network	Based On SA IP
	itule iype	planning of the operator	=10.10.10.10
	Policy ID	Automatically assigned by the system	1
	Delia: Nama	Configure according to the network	Delieu/456
	Policy Name	planning of the operator	Policy456
	Rule ID	Select the Rule Name from the flow	rule456
	Rule ID	classification rules	Tule450
Flow policy	Precedence	Configure the priority of the flow policy	1
	Precedence	within 1 to 12	1
	ACL Enable	Configure according to the network	Enable
	ACL Ellable	planning of the operator	Enable
	Forward	Configure according to the network	Forbidden, Matched streams
	Forward	planning of the operator	would be dropped.
	Slot No.	The slot number actually used	15
	PON port No.	The PON port number actually used	1
	ONU No.	The ONU number actually used	2
Port Binding	ONU Type	The ONU type actually used	AN5506-10-B1
Flow Policy	Port No.	Configure according to the network	1
	POIT NO.	planning of the operator.	1
	Ingress Policy ID	The policy ID configured in flow policy	Policy456
	Engress Policy ID	The policy ID configured in flow policy	Policy456

Table 12-2 Planned data for flow classification rules – based on IP address

12.4.2 Configuring the Flow Classification Rules

Configuration purpose

This operation is to configure the function of filtering the service flow to the ONU port using the flow rules based on source / destination MAC address classification, source / destination IP address classification, etc.

- 1. Right-click the HSWA[9] card in the Object Tree pane, select Config \rightarrow Flow Classification Rule to access the Flow Classification Rule window.
- Select Edit → Append from the menu bar or click the ^{SP} button, and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add one rule.
- Double-click the Rule Name column and input rule456. Double-click the Rule Type column, configure according to the planned data in Table 12-2 in the Rule Define dialog box that appears subsequently. After completing the configuration, click OK to return to the Flow Classification Rule window.

Rule Define		×
In	Rule Define	
1	Based On SA IP = 10.10.10.10	·
Rule Type	Based On SA IP 💌	Edit
Operator	-	Add
Rule Value	10 . 10 . 10 . 10	<u>D</u> elete
	OK	Cancel

Figure 12-6 The Rule Define dialog box

4. Click the substant and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of flow classification rule is completed. See Figure 12-7.

s Flow	Classificatio	n Rule(Domain 1:System 1:OLT System 1:HSTA[9]) [Current Data Source:	Device]
Edit	Access Operation	🗴 Device Operation 🛛 🛞 🤪 🛃 ≟ 🖄 🍲 🚝 🗸	
RuleID		Rule Type	
0	de_rule_single	Based On SA MAC Exist And Match 00-00-00-00-00;	
1	de_rule_multi1	Based On PRI Of LAN >= 0;Based On PRI Of LAN <= 3;	
2	de_rule_multi2	Based On PRI Of LAN >= 4;Based On PRI Of LAN <= 5;	
3	de_rule_multi3	Based On PRI Of LAN >= 6; Based On PRI Of LAN <= 7;	
4	rule456	Based On SA IP = 10, 10, 10, 10;	
Flor	w Classification	Rule	
11:05:	34 > Send Comm	and:Read From Device[Flow Classification Rule]	-
11:05:	34 > Send Comm:	and Successfully!	
11:05:	34 > Read From	Device[Flow Classification Rule]Executing	
	34 > Command Su	· · · · · ·	-

Figure 12-7 Flow classification rule



The rules 0 to 3 are the default flow classification rules of the equipment, which cannot be deleted or modified.

12.4.3 Configuring the Flow Policy

Configuration purpose

This operation is to configure the flow policy of the AN5116-06B, applying the defined flow classification rule to the flow policy to bind the ONU port.

Operation steps

 Right-click the HSWA[9] card in the Object Tree pane, select Config → Flow Policy to access the Flow Policy window.

- Select Edit → Append from the menu bar or click the ¹/₂ button, and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add one flow policy.
- 3. Configure according to the planned data in Table 12-2. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of flow policy is completed. See Figure 12-8.

🔥 Flow	Policy(Domain 1	l:System	1:0LT Sys	tem 1:HSTA	[9]) [Curr	ent Data S	Source:	Device]		<u>_ ×</u>
Edit /	Access Operation	Device C	peration	🛛 🗳 🖏	🤣 🖬 😫	🛎 🛃 😽	4 🗸			
PolicyII) PolicyName	_	Precedence	ACLEnable	Forward					CIR(kbps)
0	default	de_rule			<u> </u>	tched stream			Disable	0
1	Policy456	rule456	1	Enable	Forbidden,	Matched str	reams wou	ld be dropped	l Disable	0
•										<u> </u>
Flow	Policy									
11.00.1	8 > Send Comman	J. D J 1	Zuran Darria	- [17] D -] -	: 1					
				e[FIOW FOI:	icyj					
	8 > Send Commar			117						
	8 > Read From I	-	LOW FOLICY	Intracting						_
11:08:1	8 > Command Suc	ceed								-

Figure 12-8 Configuring the flow policy



The policy 0 is the default flow policy, which cannot be deleted or modified.

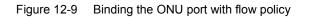
12.4.4 Binding the ONU Port with the Flow Policy

Configuration purpose

This operation is to bind the specified port of the ONU with the defined flow policy. After completing the binding, this port will process data according to the specified flow rules.

- Click the GC8B[15] card in the Object Tree pane to display the ONUs under this card in the right pane. Then right-click the ONU of PON1-AN5506-10-B1[2] and select Config → Port Binding Flow Policy from the shortcut menu to access the bandwidth allocation configuration window.
- 2. Select port No.1 from the 24 FE ports of the AN5506-10-B1 shown in the left pane.
- Click the blank in the right pane, double-click the Ingress Policy ID column, and select Policy 456 from the drop-down list; double-click the Engress Policy ID column, and select Policy 456 from the drop-down list.
- 4. Click the B button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of binding the ONU port with the flow policy is successful. See Figure 12-9.

Slot No.	PON Port No.	Onu No.	Port No.	Ingress Policy ID	Engress Policy ID
15	1	2	1	Policy456	Policy456
15	1	2	2		
5	1	2	3		
5	1	2	4		
5	1	2	5		
5	1	2	6		
5	1	2	7		
5	1	2	8		
5	1	2	9		
5	1	2	10		
5	1	2	11		
5	1	2	12		
5	1	2	13		
5	1	2	14		
5	1	2	15		
5	1	2	16		
5	1	2	17		
5	1	2	18		
Port	Binding Flow Pol:	i cy			
-				P. 1 1	
			rom Device[Port Binding Flow	Policy	
			'he Command Data!		
	3 > Validate Da				
	3 > Send Commar				
			ort Binding Flow Policy]Execu	the service state	



12.4.5 End of Configuration

The above operations complete the flow classification rule configuration. The FE1 port of the AN5506-10-B1 will forbid the data flow with the IP address 10.10.10.10 according to the rule defined in flow policy.

13 Configuring the QoS

This chapter introduces the start-up of the AN5116-06B's QoS service. It includes the following sections:

Configuration rules
 QoS start-up example – based on VLAN mode
 QoS start-up example – based on MAC address
 Unbinding the object and QoS profile

13.1 Configuration Rules

- When configuring the classification parameters of the QoS profile for IP traffic, you can specify combinations of parameters, but limited to certain parameter groups. Within the following parameter groups, combinations can be made arbitrarily.
 - Source IP, destination IP, protocol type, TCP / UDP source port No, and TCP / UDP destination port No;
 - Source MAC address, destination MAC address, ethernet type, priority domain, and VLAN ID;
 - Source MAC address, Source IP, ethernet type, priority domain, and VLAN ID;
 - Destination MAC address, destination IP, ethernet type, priority domain, and VLAN ID.
- The AN5116-06B supports up to 1024 QoS profiles.
- A single line card or uplink port can be bound with up to 1024 QoS profiles.
- Bind of line card and QoS profile is for binding uplink flow.
- Bind of uplink port and QoS profile is for binding downlink flow.
- The flow mirroring destination port can be configured after the flow mirroring is enabled.
- The unit of rate limiting is 64bit/s. A value of 2 means 2 × 64 kbit/s.
- After data flow is re-directed, the data flow will not pass the source port. Instead, it will be forwarded from the port it is re-directed to.
- Do not bind the QoS profiles that conflicts with each other to the same port or slot, or it will result in flow collision. Examples of wrong binds are:
 - Bind the profile dropping the data packets with VLAN ID 1000 in Slot 5;
 - Bind the profile passing the data packets with VLAN ID 1000 in Slot 5.

13.2 QoS Start-up Example – Based on VLAN Mode

13.2.1 Planning Data

The following introduces an example in which a QoS profile is bound to the GC4B card in Slot 5. After the profile is bound, the GC4B card in Slot 5 can only forward data packets with VLAN ID 3000. The planned data are listed in the table below:

Item		Description	Example
	QoS profile name	Configure according to the planned data of the operator	qos1
QoS profile	VLAN ID	Configure the flow rules based on VLAN ID according to the planned data of the operator	3000
	Command code	Forward or discard the data packets that comply with the current flow rules according to the planned data of the operator	Forward
Binding interface	Slot No.	Configure according to the planned data of the operator	5
card and QoS profile	Bind / Unbind	Bind the QoS profile	Bind
prome	Profile name	The QoS profile that can be bound	qos1

Table 13-1	Planned data for QoS service—based on VLAN mode
	Flatified data for QUS service—based on VLAN mode

13.2.2 Configuration Flow Chart

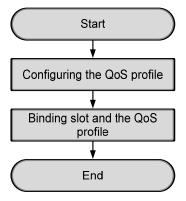


Figure 13-1 Configuration flow chart for QoS service - based on VLAN mode

13.2.3 Configuring QoS Profiles

Configuration purpose

Configure the QoS profile for the AN5116-06B, which control data flow based on VLAN ID, port, ethernet protocol type, priority queue, DSCP value, etc.

Operation steps

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow QoS Profiles. Then select the QoS profile tab to access the Qos Profiles window.
- Select Edit → Append from the menu bar or click and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add one QoS profile.
- 3. Configure the parameters according to the planned data in Table 13-1.
- 4. Click the Button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. See Figure 13-2.

A QoS	5 Prof	iles (Domai	in 1:System	1:0LT	System 1:H	ISTA[9]) [(urrent Da	ta Sourc	e: Devic	e]			_ 🗆
Edit Access Operation Device Operation 🛛 😵 😜 🚔 🖏 🤣 🚍 ≟ 坐 😹 🛼 🗹 4													
Name 1os1		D Source IP 0.0.0.0	Source 255.255.255		Destination 255, 255, 255,			Ethernet	Protocol	Tep/Vdp	TCP/VDP	dscp	CMD forwar
•	-												
Qo	S Prof	iles <mark>Slot</mark>	Attach/Detacl	a QoS P	ort Attach/D	etach QoS							
			nand:Read Fi nand Succes:			ofiles]							
1.10				sruily!									
			n Device[Qo	S Profi	les]Execut	ing							

Figure 13-2 QoS profile – based on VLAN

13.2.4 Binding the Slot and the QoS Profile

Configuration purpose

This operation is to bind the line card and QoS profile. Only after the QoS profile is bound, the uplink flow passing this line card will be processed according to this QoS profile.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → QoS Profiles. Then select the Slot Attach/Detach QoS tab to access the Slot Attach/Detach QoS window.
- Select Edit → Append from the menu bar or click the button, and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add one rule.
- 3. Configure the parameters according to the planned data in Table 13-1.
- 4. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of flow classification rule is completed. See Figure 13-3.

ASIot Attach/Detach QoS(Domain 1:5	System 1:0LT S	vsten 1:HSTA[9])	[Current	Data Source:	Devicel			
Edit Access Operation Device Operation 🛛 😵 🍚 📴 👶 🖶 📑 😤 🎼 🗹 🎝								
Slot No. Action	Choose Profile	Name						
5 Attach	Profile Name	Bind or Unbind						
	qos1			✓				
QoS Profiles Slot Attach/Detach QoS	Fort Attach/De	tach QoS						
11:16:16 > Send Command:Read From Device[QoS Profiles] 11:16:16 > Send Command Successfully! 11:16:16 > Command Succesd								
						1.		

Figure 13-3 Binding slot and the QoS profile

13.2.5 End of Configuration

After the above settings, the configuration of QoS service is completed. A QoS profile is bound to the AN5116-06B in Slot 5, and the card in the slot can only forward data flow with the VLAN ID 3000.

13.3 QoS Start-up Example – Based on MAC Address

13.3.1 Planning Data

The following introduces an example in which a QoS profile is bound to a uplink port. After the profie is bound, the uplink port will discard the data packets with the source MAC address 20000000001 and the destination MAC address 10000000001. The planned data are listed in Table 13-2:

Item		Description	Example
	QoS profile name	Configure according to the planned data of the operator	qos2
	Source MAC address	Configure the flow rule based on the source MAC address. Configure according to the planned data of the operator	20000000001
Configuring the QoS profiles	Destination MAC address	Configure the flow rule based on the destination MAC address. Configure according to the planned data of the operator	10000000001
	Command code	Forward or discard the data packets that comply with the current flow rule. Configure according to the planned data of the operator	Discard
Binding /	Uplink port No.	Configure according to the planned data of the operator	20:SFP1
unbinding slot	Bind / unbind	Select to bind	Bind
and QoS profile	Profile name	Select a profile name	qos2

Table 13-2 Planned data for QoS service—based on MAC address

13.3.2 Configuration Flow Chart

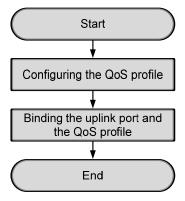


Figure 13-4 Configuration flow chart for QoS service - based on MAC address

13.3.3 Configuring the QoS Profiles

Configuration purpose

Configure the QoS service profiles, which control data flow based on VLAN ID, port, ethernet protocol type, priority queue, DSCP value, etc.

Operation steps

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow QoS Profiles. Then select the QoS profile tab to access the QoS profile window.
- Select Edit → Append from the menu bar or click and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add one QoS profile.
- 3. Configure the parameters according to the planned data in Table 13-2.
- 4. Click the Button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. See Figure 13-5.

10000	Profil	es (Doma	in 1:Sy	stem 1	:OLT Sy	stem 1	: HSTA	[9]) [Cw	rent Dat	ta Sourc	e: Devi	ce]			_ 🗆 ×
Edit	Access	Operatio	on Devi	ce Oper	ation	😵 🌍	i	} 🧆 🖬	1 📥 🗠	6	.				
The second second									Ethernet	Protocol	Tep/Vdp	TCP/VDP	dsep	parameter	
qos2		0.0.0.	255.255	0.0.0	255, 255	00-00	00-00	NULL							deny
•															Þ
	Profile	as Slot	Attach/	Detech I	QoS Port	ått och	/Detec	h BaS	-						
N RoS															
QoS															
				ad Fro	m Devic	e [QoS :	Profil	les]							
11:20:	49 > Se		mand:Re			e [QoS I	Profil	les]							-
11:20: 11:20:	49 > Se 49 > Se	end Com end Com	mand:Re mand Su	ccessf				les]							-
11:20: 11:20: 11:20:	49 > Se 49 > Se 49 > Re	end Com end Com	m <mark>and:Re</mark> mand Su m Devic	ccessf e (QoS	ully!			Les]							

Figure 13-5 Configuring the QoS profile – based on MAC address

13.3.4 Binding the Uplink Port and the QoS Profile

Configuration purpose

This operation is to bind the uplink port and QoS profile. Only after the QoS profile is bound, the downlink flow passing this uplink port will be processed according to the QoS profile.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → QoS Profiles. Then select the Port Attach/Detach QoS tab to access the Port Attach/Detach QoS window.
- Select Edit → Append from the menu bar or click ⁽¹⁾ in the left pane and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add one binding rule.
- 3. Configure the parameters according to the planned data in Table 13-2.
- 4. Click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of flow policy is completed. See Figure 13-6.

APort Attach/Detach QoS(Domain 1:System	🛚 1:OLT System 1:HSTA[9]) [Current Data Source: Device] 💶 🗙
Edit Access Operation Device Operation 🤅	8 🖗 📴 🚸 🖬 🛃 🚝 🐖 🚚
Uplink No. Action Cho	hoose Profile Name
20:SFP1 Attach Pro	rofile Name Bind or Unbind
qos	os2 🖌
QoS Profiles Slot Attach/Detach QoS Port A	Attach/Detach QoS
11:20:49 > Send Command:Read From Device	Profiles
11:20:49 > Send Command Successfully!	
11:20:49 > Read From Device[QoS Profiles]	alEvecuting
11:20:50 > Command Succeed	STEVECTOR INS
11:20:50 / Command Succeed	

Figure 13-6 Binding the uplink port and the QoS profile

13.3.5 End of Configuration

After the above settings, the configuration of QoS service is completed. A QoS profile is bound to the uplink port 20:SFP1 of the AN5116-06B, and the port will discard the data packets with the source MAC address 20000000001 and the destination MAC address 10000000001.

13.4 Unbinding the Object and the QoS Profile

13.4.1 Unbinding the Slot and the QoS Profile

Configuration purpose

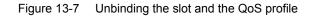
This operation is to unbind the line card and the QoS profile.

Operation steps

To unbind the GC4B card in Slot 5 and the QoS profile named qos1, the detailed steps are as follows:

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → QoS Profiles. Then select the Slot Attach/Detach QoS tab to access the Slot Attach/Detach QoS window.
- Input 5 in the Slot No. column, select Detach in the drop-down list of the Action column, and select the check box of Bind or Unbind, as shown in Figure 13-7.

🚯 Slot Attach/Detach QoS (Domain 1:System 1:OLT System 1:HSTA[9]) [Current Data Source: Device] 🔔 🗆 🗙 Edit Access Operation Device Operation 🛛 😵 😳 😳 🎝 🖳 🚉 ╩ 👺 🏹 🎝							
Slot No.	Action	Choose Profile	Name				
5	Dettach	Profile Name	Bind or Unbind				
		qos1		✓			
QoS Pr	rofiles Slot Attach/Detach Q	S Port Attach/De	tach QoS				
1.20.40	> Send Command:Read From	Dettice [OoS_Pro	files				
	> Send Command Successfu		11165]				
) > Read From Device[QoS F	-	na				
) > Command Succeed	TOLITES]EXECULI	116				
1.20:00	> > command 5dcceed						



3. When the configuration is completed, click is to apply the configuration to the device. After unbinding, the command pane in the lower part of this window will display **The Slot Attach / Detach QoS In Device Is NULL!** as shown in Figure 13-8.

🕂 Slot Attach/Detach QoS(Domain 1:Syst	tem 1:OLT System 1:HSTA[9]) [Current Data Source: Device] 💶 🗙
Edit Access Operation Device Operation	🛇 🗘 📴 👙 🔜 🛃 🖶 🗧 🚽
Slot No. Action Cho	oose Profile Name
Pro	ofile Name Bind or Unbind
QoS Profiles Slot Attach/Detach QoS Por	rt Attach/Detach QoS
11:26:53 > Send Command Successfully!	
11:26:53 > Read From Device[Slot Attac	h/Detach QoSlExecuting
11:26:53 > Command Succeed	
11:26:53 > The Slot Attach/Detach QoS	In Device Is NULL!

Figure 13-8 Unbinding the slot and the QoS profile successfully

13.4.2 Unbinding the Uplink Port and the QoS Profile

Configuration purpose

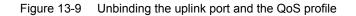
This operation is to unbind the uplink port and the QoS profile.

Operation steps

To unbind the uplink port 20:SFP1 and the QoS profile named qos2, the detailed steps are as follows:

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → QoS Profiles. Then select the Port Attach/Detach QoS tab to access the Port Attach/Detach QoS window.
- Select 20:SFP1 in the drop-down list of the Uplink No. column, select Detach in the drop-down list of the Action column, and select the check box of Bind or Unbind, as shown in Figure 13-9.

🧥 Port Attach/Detach QoS (Domain 1:Sys	tem 1:0LT System	1:HSTA[9]) [Curi	rent Data Source	: Device] <mark>_ 🗆 ×</mark>			
Edit Access Operation Device Operation 😵 🤪 📴 🤣 📑 📑 訾 🥌 🚚							
Uplink No. Action	Choose Profile Nam	16					
20:SFP1 Dettach	Profile Name Bi:	nd or Unbind					
	qos2		✓				
QoS Profiles Slot Attach/Detach QoS Pr)rt Attach/Detach Qo	s					
11:23:00 > Send Command:Read From Dev	ice[Port_Attach/D	etach GoSl					
11:23:00 > Send Command Successfully!	Icollore metably b	ocaon gobj					
11:23:00 > Read From Device[Port Atta	ch/Detach OoSlEve	cuting		_			
11:23:00 > Command Succeed	CID Decacit WODJERC	outing		-			
11.25.00 / Command Ducceed				_			



3. When the configuration is completed, click 🛎 to send the configuration to the device. After unbinding, the command pane in the lower part of this window will display **The Slot Attach / Detach QoS In Device Is NULL!** as shown in Figure 13-10.

👫 Port Attach/Detach QoS (Domain 1:Syst	tem 1:OLT System 1:HSTA[9]) [Current Data Source: Device] 💶 🗙
Edit Access Operation Device Operation	🕺 🗘 🖏 🤣 📑 🚢 🚝 📲
Uplink No. Action	Choose Profile Name Profile Name Bind or Unbind
QoS Profiles Slot Attach/Detach QoS Po	rt Attach/Detach QoS
11:23:00 > Send Command Successfully!	· / · · · · ·
11:23:00 > Read From Device[Port Attac 11:23:00 > Command Succeed	ch/Detach QoSJExecuting
11:23:00 > The Port Attach/Detach QoS	In Device Is NULL!

Figure 13-10 Unbinding the uplink port and the QoS profile successfully

14 Configuring the PON Protection

This chapter introduces how to configure the PON protection for the AN5116-06B in details. It includes the following sections:



Background information

Configuration rules

PON protection configuration example

14.1 Background Information

The AN5116-06B provides double PON ports and fiber links to connect with the downlink subscriber devices. This can avoid traffic interruption caused by failure of one of the two links, and increase the system reliability and guarantee a non-interrupted traffic.

PON protection: provides redundancy protection for the OLT PON ports and the main fibers. The AN5116-06B can provide PON port protection within an individual PON interface card or between two PON interface cards.

- OLT: the standby PON is in the cold standby state. The OLT detects the status of the line and PON ports, and completes the PON port switch.
- Optical splitter: use the 2:N optical splitter.
- ONU: no requirements.

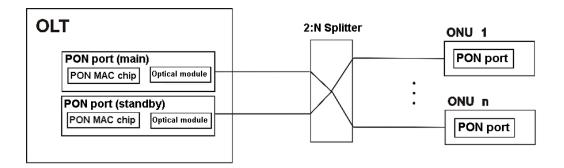


Figure 14-1 Schematic diagram of the PON port protection

14.2 Configuration Rules

- When setting the PON port protection group, by default the first port is the main PON port, and the second port is the standby PON port.
- When the PON protection switch is realized by hardware, the protection within the card does not restrain the PON port selecting; the protection between cards is limited to the cards of adjacent slot, such as Slots 1 and 2, Slots 3 and 4, Slots 5 and 6, etc, and also does not restrain the PON port selecting.
- When the PON protection switch is realized by software, there is no limitation for the protection within the card and the protection between cards.

14.3 PON Protection Configuration Example

14.3.1 Prerequisites

When using PON protection, the two PON ports inside one line card or between two line cards of the AN5116-06B access the 2:N optical splitter via fibers, and then access the ONU.

14.3.2 Planning Data

The AN5116-06B uses the GC4B card as a subscriber side interface card. Taking the protection within the card as an example, the planned data are listed in Table 14-1.

Item		Description Example				
		The PON port protection group No.;				
	Group No.	configure according to the planned	1			
Setting the PON port		data of the operator.				
protection groups	Slot No.	The slot number actually used.	5	5		
		The PON port number actually	1 (0000)	2 (standby)		
	PON port No.	used.	1 (active)	2 (standby)		
		Set the group No. configured in the	4			
Configuring the PON port	Group No.	PON port protection group.	1			
protection group mode	Protection	The protection type of the protection	Turne D			
	group mode	group	Туре В			

 Table 14-1
 Planned data for configuring PON port protection

14.3.3 Configuring the PON Port Protection Groups

Configuration purpose

Set the members of the PON protection group. The members can be two PON ports of one interface card, or two PON ports of two interface cards.

Operation steps

The detailed steps for configuring the PON port 1 of the GC4B card in Slot 5 and the PON port 2 of the GC4B card in Slot 5 as one PON port protection group are listed below:

- Right-click the HSWA[9] card in the Object Tree pane, and select Config → PON protection group → PON protection group config to access the PON protection group config window.
- Select Edit → Append from the menu bar or click Append, and input 1 in the Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add one PON protection group.
- 3. Input 1 in the Group No. column.
- In the right pane, double-click the PON port No. in the first row to bring up the Port Configuration dialog box. Select PON1 of the GC4B card in Slot 5 and click OK, as shown in Figure 14-2.

Board	Port	State
GC4B[5]	PON1	
	PON2	
	PON3	
	PON4	
GC8B[15]	PON1	
	PON2	
	PON3	
	PON4	
	PONS	
	PON6	
	PON7	
	PONS	
	•	·

Figure 14-2 Configuring the main port

 Double-click the PON port No. in the second row to bring up the Port Configuration dialog box. Select PON2 of the GC4B card in Slot 5 and click OK, as shown in Figure 14-3.

Board	Port	State	
GC4B[5]	PON1		
	PON2		
	PON3		
	PON4		
GC8B[15]	PON2		
	PON3		
	PON4		
	PON6		
	PON7		
	PON8		
		OK Cance	.1

Figure 14-3 Configuring the standby port

6. When the configuration is completed, click the subtrom and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of PON port protection group is completed. See Figure 14-4.

PON protection group config(Domain 1	:System 1	:OLT System 1:HSWA[9]) [Current Data Source:	Device]
Edit Access Operation Device Operation	😵 🎱 🕻	9. 🗇 🖬 🚉 ╩ 👺 🚚	
Group No.	slot No.	FON No.	
1	5	1	
	5	2	
PON protection group config			
Tow protection group config			
1:32:30 > Send Command:Read From Devi	ce[PON pr	otection group config]	
1:32:30 > Send Command Successfully!			
1:32:30 > Read From Device[PON protect	tion grou	p config]Executing	
1:32:31 > Command Succeed			[

Figure 14-4 Configuring the PON port protection groups

14.3.4 Configuring PON Port Protection Group Mode

Configuration purpose

Configure the PON protection group mode according to the network pattern, and set the link to automatically restore to the main link after the traffic of the main port is restored.

Configuration example

Configure the protection group mode of PON protection group 1 to type B and auto restore of the main port to be disabled. The detailed steps are as follows:

- 1. Right-click the HSWA[9] card in the Object Tree pane, and select Config \rightarrow PON protection group \rightarrow PON Protection Group Mode to access the PON Protection Group Mode window.
- Select Edit → Append from the menu bar or click , and input 1 in the
 Please Input the Rows for Add: dialog box that appears subsequently. Then click OK to add a row.
- 3. Configure the parameters of PON port protection group mode according to the planned data.

4. When the configuration is completed, click the button and apply the configuration to the equipment. Command succeed will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of PON port protection group mode is completed. See Figure 14-5.

🔥 Pon Protectio	n Group Mode(Domain 1:System 1:OLT System	1:HSTA[9]) [Current Data	Source: Default]				
Edit Access Ope	ration Device Operation 🛛 😵 🎱 🧔 🤣 📑	≗ 6					
Group No. Item	Auto Resume Auto Resume Interval						
1 Type B	Disable						
Pon Protection	Group Mode						
11:34:33 > Send	Command:Read From Device[Pon Protection	Group Model	•				
		log mous	_				
-	11:34:33 > Begin To Validate The Command Data! 11:34:33 > Validate Data Finished						
	Iale Dala FINISNEU						
11:34:33 > Send	Command Successfully!		-				

Figure 14-5 Configuring the PON port protection group mode

14.3.5 End of Configuration

Now the configuration of PON port protection is completed.

If the link of the PON port 1 of the GC4B card in Slot 5 fails, the traffic will be switched to the PON port 2 of the EC4B card in Slot 5.

15 Detecting the Optical Power

This chapter introduces how to detect the optical power for the AN5116-06B. It includes the following sections:



Viewing the optical module parameter information of the GC4B / GC8B card



Viewing optical module parameter information of the ONU

15.1 Viewing the Optical Module Parameter Information of the GC4B / GC8B Card

Configuration purpose

Detect the optical module in the PON port of the GC4B/GC8B card, and read the parameter information of the optical module, such as the transmitting and receiving optical power, temperature, power supply voltage, bias current, etc.

Operation steps

Taking viewing the optical module parameters of the PON port No.5 of the GC8B card in Slot No.15 as an example, the detailed steps are as follows:

- Right-click the GC8B[15] card in the Object Tree pane, and select Get Information → OptModule Para Information to access the OptModule Para Information window.
- 2. Input the PON port No. to be viewed in the **PON Port No.** column. In this example, input **5**.
- Click Device Operation → Read Device from the menu bar or click the button to read the parameter information of this optical module, as shown in Figure 15-1.

Edit	Access Operation	Device Operation		41				
)LT N		tical Module Type(KN					ONU No.	OLT Receive ONU OptPower (Db
	5 20		43.33	3.32	8.56	3.09	1	-9, 42
							1	
Op	tModule Para Infor	mation					1	
-			·				1	
38	:14 > Send Comm	and:Read From Dev	103 20 E 1 20 L 14	⁹ ara Infor	mation]			
: 38 : 38	:14 > Send Comm	and:Read From Dev Validate The Comm	103 20 E 1 20 L 14	Para Infor	mation]			

Figure 15-1 The optical module parameter information in the PON port of the GC8B card

Result description

Optical Module Parameter	Normal Range	Related Alarm
Temperature	-25℃ to +75℃	Optical module temperature crosses the threshold.
Voltage	-0.5V to 6V	Optical module voltage crosses the threshold.
Transmit optical power	When using 1000BASE - PX10: -3 to +2dBm. When using 1000BASE - PX20: +2 to +7dBm.	Transmit optical power crosses the threshold; optical power is too low.
Receive optical power	Overload optical power When using 1000BASE—PX10: -3dBm. When using 1000BASE—PX20: -6dBm.	Receive optical power crosses the threshold.
Bias Current	-128mA to 131mA	Bias current crosses the threshold.

15.2 Viewing Optical Module Parameter Information of the ONU

Configuration purpose

Detect the optical module at the PON port of the ONU to view the parameter information of the optical module, such as the transmitting and receiving optical power, temperature, power supply voltage, bias current, etc.

Operation steps

Taking viewing the optical module parameters of AN5506-09-A1 with the authorization No. 1 under the PON port No.5 of the GC8B card in Slot 15 as an example, the detailed steps are as follows:

- 1. Click the **GC8B[15]** card in the **Object Tree** pane, and the ONU information will display in the right pane. Right-click the ONU of PON5-AN5506-09-A1[1] in the ONU list, and then select **Get Information** \rightarrow **OptModule Para Information** from the shortcut menu.
- 2. View the parameter information of the optical module in this PON port, as shown in Figure 15-2.

🕼 Op ti	odule Para Inf	Formation	(Domain 1:	System 1:GC	8B[15] ONV:I	085-A85506-09	9-A1[1]) [Current	Data Source:	Default]
Edi t	Access Operation	n Device	Operation	835	2 🚛				
Slot 1				ile type(KM)	Temperatur (C)	Voltage(V)	Bias current(mA)		Rx power(Dbm)
15	5	1	20		52.18	3.21	7.36	0.38	-14.27
	_	_	_	_	_	_		_	
	tModule Para Info	rmation							
11.30	:54 > Send Comm	ond Road	Eron Dowi	an [Ont Madul	o Poro Informa	tionl			
- Sector Sector	:54 > Begin To			No. Chi Marca	e rara intorma	(TOR)			-
- 1. S.	:54 > Validate								_
11:39	:54 > Send Comm	and Succ	essfully!						•
									4

Figure 15-2 The optical module parameter information of the ONU PON port

Result description

Optical Module Parameter	Normal Range	Related Alarm
Temperature	-25℃ to +75℃	Optical module temperature crosses the threshold.
Voltage	-0.5 to 6 V	Optical module voltage crosses the threshold.
Transmit optical power	ONU side When using 1000BASE—PX10: -1 to +4 dBm. When using 1000BASE—PX20: -1 to +4 dBm.	Transmit optical power crosses the threshold; optical power is too low.
Receive optical power	Overload optical power When using 1000BASE—PX10: -1dBm. When using 1000BASE—PX20:-3dBm.	Receive optical power crosses the threshold.
Bias current	-128mA to 131mA	Bias current crosses the threshold.



PX-10 is a 10 km module and PX-20 a 20 km module. The 1490 nm power meter is used to test OLT side transmit optical power and ONU side receive optical power. The 1310 nm power meter is used to test OLT side receive and ONU side transmit optical power.

16 Configuring Line Identifier Management

This chapter introduces the line identifier management of the AN5116-06B in details and it includes the following sections:



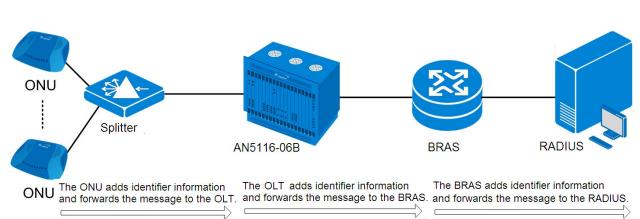
Background knowledge



Configuration rules



Line identifier management example



The AN5116-06B captures specific message (DHCP DISCOVER, DHCP REQUEST, PADI and PADR) in the uplink direction and adds line identifier information into the message based on the configured circuit ID format. The identifier information is the physical information of the subscriber who sent this message and it includes the ONU port number, ONU number, PON number, card and slot numbers of the OLT. Then the ONU and the OLT forward the message added with the identifier information to the BRAS. After receiving the message, the BRAS will then add the corresponding line information and forward the message to the RADIUS. Finally, the RADIUS will perform the AAA (Authentication, Authorization and Accounting) function based on the identifier information.

16.1 Background Knowledge

16.2 Configuration Rules

- The AN5116-06B supports identifier modes including the DHCP Option82, DHCP Option18 and PPPoE+ modes.
- The AN5116-06B supports custom identifier formats.
- The custom format defines several identifier variables. The user can combine these variables to increase the flexibility of the identifier function. See Table 16-1 for the custom identifier variables.

Identifier	Description	Identifier	Description
%s	Outer Service-VLAN	%о	ONU No.
%с	Inner Customer-VLAN	%n	ONU Type
%a	Access Node Identifier	%Т	MDU ONU Slot No.
%r	ANI Rack No.	%M	MDU ONU Sub Slot No.
%f	ANI Frame No.	%P	MDU ONU UNI Port No.
%S	ANI Slot No.	%t	ONU User Port Type
%р	PON No.	%X	Port VPI or SVLAN
%m	ONU Identifier (MAC)	%x	Port VCI or CVLAN
%u	Uplink Port Type	%I	IAD IP
%L	Service Unit Type	%A	IAD MAC
%O	OLT management IP	%В	Access type; OLT, DSL or LAN

Table 16-1 Custom identifier variables

- The custom format must comply with the following restrictions and conditions.
 - In a custom format, a delimiter must be used to separate the variable identifier from the succeeding character string or variable. The delimiter must be one of the delimiters presented in Table 16-2.

Delimiter	Description
	Space
	Period
1	Slash
;	Semicolon
	Colon
{	Open curly bracket
}	Close curly bracket
<	Open angle bracket
>	Close angle bracket

Delimiter	Description
[Open bracket
]	Close bracket

- The character string must not have more than 256 characters.
- The variable value must not have any of the delimiters above.

16.3 Line Identifier Management Example

16.3.1 Planning Data

See Table 16-3 for the planned data of the line identifier management.

Item		Description	Example	
	Option82 Switch	Enable or disable the Option82 function. Configured	Enable	
		according to the network planning of the operator.		
	Option18 Switch	Enable or disable the Option18 function. Configured	Enable	
		according to the network planning of the operator.		
	PPPoE+ Switch	Enable or disable the PPPoE+ function. Configured	Enable	
Line identifier		according to the network planning of the operator.	Enable	
management	Access Node	The identifier of the node. Configured according to the		
	Identifier	network planning of the operator.	AN5116-06B	
	ANI_rack	The subrack number of the node. Configured	1	
		according to the network planning of the operator.	I	
	ANI_frame	The shelf number of the node. Configured according	1	
		to the network planning of the operator.	I	
	Use CTC Format /		Custom Format	
	CNC Format /	Select one from the three formats.		
	Custom Format			
	Custom String	Configurable only in the custom format.	—	
Oine sit ID	Circuit ID Variable		SVLAN	
Circuit ID Format		Configurable only in the custom format.	CVLAN	
			Access type	
			Access Node	
			Identifier	
			ANI Rack No.	
			ANI Frame No.	

Table 16-3 Planned data for line identifier management

ltem		Description	Example
			ANI Slot No.
			PON No.
			ONU Identifier
			(MAC)
			Uplink port type
			ONU No.
			ONU Type
			MDU ONU UNI
			port No.
	Delimiter	Configurable only in the custom format.	1

16.3.2 Configuration Flow Chart

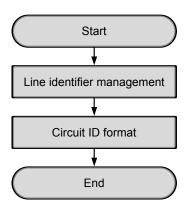


Figure 16-1 Configuration flow chart of line identifier management

16.3.3 Line Identifier Management

Purpose

Configure relevant parameters of the line identifier management and add the access node identifier, subrack number and shelf number of the OLT into the DHCP request packet using the DHCP Option82, Option18 or PPPoE+ mode.

Operation steps

- Right-click the HSWA[9] card in the Object Tree pane and select Config → DHCP → Line Identifier Management from the shortcut menu to access the Line Identifier Management window.
- 2. Configure the paremeters according to the planned data in Table 16-3.
- 3. When the configuration is completed, click the button and apply the configuration to the equipment. **Command succeed** will appear in the command pane in the lower part of the window, indicating that writing configuration to the device and reading configuration from the device are both successful. And the configuration of line identifier management is completed. See Figure 16-2.

👫 Line Identifier Hanagement (Domain1:System1:OLT System1:HSTA[9]) [Current Data Source: Default] 📃 📕 🛛 🗙						
Edit Access Operation Device Operation						
0, 🎂 🖬	8857	42				
Option82 Sw	itch Option18 :	Switch PPPoE+ Switch	AccessNodeIdentifier	ANI_rack	ANI_frame	
Enable	Enable	Enable	AN5116-06B	1	1	
DHCP Sno	oping Switch D	HCP Snooping Trusted F	orts Line Identifier Man	agement		
09:52:07 > Send Command:Read From Device[Line Identifier Management]						
09:52:07 >	Send Command	Successfully!				•

Figure 16-2 Configuring line identifier management

16.3.4 Circuit ID Format

Purpose

Configure the circuit ID format and add user information and equipment information into the packet, facilitating the management of the upper layer BRAS equipment.

Operation steps

 Right-click the HSWA[9] card in the Object Tree pane and select Config → DHCP → Circuit ID Format from the shortcut menu to access the Circuit ID Format dialog box. See Figure 16-3.

- 2. Configure the paramters according to Table 16-3.
- 3. Click **OK** after completing the configuration. See Figure 16-3.

Circuit ID Format				x		
O Use CTC Format	C CNC F	ormat				
6 6 1 F 1						
Custom Format						
Custom String	Circuit ID Variable	Delimiter		Add		
	SVLAN	1				
	CVLAN	1		<u>D</u> elete		
	Access type	1				
	Access Node Identifie	1		Up		
	ANI Rack NO.	1				
	ANI Frame NO.	1		Do <u>w</u> n		
	ANI Slot NO.	1				
	PON NO.	1				
I	ONU Identifier (MAC)	1				
A Format Variable Should Be Followed By A Valid Delimiter, To Separate The Variable From Its Following Characters In The Circuit ID Format. If A Variable Comes At The Very Last Of The Format String, Then No Delimiter Is Needed For It.						
Trust Option						
TRUST_IPDSLAM						
IPDSLAM_PARAM		IPSDLAM_ID				
TRUST_LAN						
LAN_PARAM		LAN_ID				
		<u>R</u> efresh	Ok	Cancel		

Figure 16-3 Configuring the circuit ID format

16.3.5 End of Configuration

The analysis result of the line identifier field using packet capture software is 1000/100/olt/AN5116-06B/1/1/13/1/FHTT00030405/+GU6F/2/5506-04-B2G/1.

POTS Internal Line and External Line 17 Test

This chapter introduces the POTS external line and internal line tests of the AN5116-06B in details. It includes the following contents:



POTS internal line test

POTS external line test

17.1 POTS Internal Line Test

17.1.1 Test Rules

- When the voice service is faulty, the user can perform an internal line test to isolate the fault and check whether it is caused by the ONU.
- The test can be divided into forcible and non-forcible tests. Forcible tests indicate that the test is performed regardless the user is in conversation or not and the conversation will be interrupted. Non-forcible tests indicate that the test will not be performed if the user is in conversation. Usually a non-forcible test is recommended.

17.1.2 Planning Data

Item		Description	Example	
	Slot No.	The actually used slot number of the GC8B of the ONU.	6	
ONU	PON No.	The actual PON number of the ONU.	1	
information	ONU authorization	Configured according to the network planning of the	1	
	No.	operator.	I	
	ONU type	The type of the ONU.	AN5506-04-G1	
POTS	POTS No.	The actually used POTS port number.	1	
internal line test	Test type	The non-forcible test is recommended.	no force test	

Table 17-1 Planned data for voice internal line test

17.1.3 Internal Line Test Example

Purpose

Configure the voice internal line test parameters. The user can check the test results after issuing the test command and ascertain whether the voice fault is caused by the ONU.

Operation steps

- Click the GC8B[6] card in the Object Tree pane and all ONUs listed under the GC8B[6] card are displayed in the right pane. Right-click the AN5506-04-G1 ONU and select Get Information → Line Test from the shortcut menu. Click the POTS Inline Test tab to access the POTS Inline Test window.
- Configure the parameters according to Table 17-1. When completing the configuration, click the is button on the toolbar to issue the test command. The internal test result will be displayed after the test is completed. See Figure 17-1.

: Operation POTS 1	n Device Open TestType no force tes	TestState		JignalToneState Normal	FeederVoltage Normal	LoopcurrentSt Normal	Loop 0.0187	Feeder
POTS 1								Feeder
1	no force tes	Succeed	0	Normal	Normal	Normal	0.0187	
								<u> </u>
ne Test P	POTS Inline Te	st						
Send Comm	and:Read Fro	om Device[POTS Inline	e Test]				
egin To '	Validate The	e Command	Data!					
Validate D	Data Finishe	ed						
Send Comma	and Successf	ully!						
lead From	Device[POTS	5 Inline T	est]Executi	ing				
Command St	ucceed							•
	Send Comm Begin To Validate Send Comm Read From	Send Command:Read Fro Begin To Validate The Validate Data Finishe Send Command Successf	Begin To Validate The Command Validate Data Finished Send Command Successfully! Read From Device[POTS Inline T	Send Command:Read From Device[POTS Inline Segin To Validate The Command Data! Validate Data Finished Send Command Successfully! Read From Device[POTS Inline Test]Executi	Send Command:Read From Device[POTS Inline Test] Begin To Validate The Command Data! Validate Data Finished Send Command Successfully! Read From Device[POTS Inline Test]Executing	Send Command:Read From Device[POTS Inline Test] Begin To Validate The Command Data! Validate Data Finished Send Command Successfully! Read From Device[POTS Inline Test]Executing	Send Command:Read From Device[POTS Inline Test] Begin To Validate The Command Data! Validate Data Finished Send Command Successfully! Read From Device[POTS Inline Test]Executing	Send Command:Read From Device[POTS Inline Test] Begin To Validate The Command Data! Validate Data Finished Send Command Successfully! Read From Device[POTS Inline Test]Executing

Figure 17-1 The **POTS Inline Test** window

17.2 POTS External Line Test

17.2.1 Test Rules

- When the voice service is faulty, the user can perform an external line test to isolate the fault and check whether it is caused by the ONU.
- The test can be divided into forcible and non-forcible tests. Forcible tests indicate that the test is performed regardless the user is in conversation or not and the conversation will be interrupted. Non-forcible tests indicate that the test will not be performed if the user is in conversation. Usually a non-forcible test is recommended.

17.2.2 Planning Data

Item		Description	Example
	Slot No.	The actually used slot number of the GC8B of the ONU.	6
ONU	PON No.	The actual PON number of the ONU.	1
information	ONU authorization	Configured according to the network planning of the	1
	No.	operator.	I
	ONU type	The type of the ONU.	AN5506-04-G1
POTS	POTS No.	The actually used POTS port number.	1
internal line test	Test type	The non-forcible test is recommended.	no force test

Table 17-2 Planned data for voice external line test

17.2.3 External Line Test Example

Purpose

Configure the voice external line test parameters. The user can check the test results after issuing the test command and ascertain whether the voice fault is caused by the ONU.

Operation steps

- Click the GC8B[6] card in the Object Tree pane and all ONUs listed under the GC8B[6] card are displayed in the right pane. Right-click the AN5506-04-G1 ONU and select Get Information → Line Test from the shortcut menu. Click the POTS Outline Test tab and access the POTS Outline Test window.
- Configure the parameters according to Table 17-2. When completing the configuration, click the is button on the toolbar to issue the test command. The external test result will be displayed after the test is completed. See Figure 17-2.

				[1]) [Curre	nt Data Source: Device]	
Edit Access Op	eration Device Op	peration 🔚 🔚	1 6 🗹 41			
Slot PON ONU P	OTS TestType	TestState	RefusedReason	PortState	A->ground DC voltage(V)	B->ground DC
6 1 1 1	no force t	es Succeed	0	Normal	0. 417000	0. 402000
•						
POTS Outline 1	Test POTS Inline	Test				<u>)</u>
< POTS Outline 1	Test POTS Inline	Test				<u>)</u>
~	Test POTS Inline d Command:Read F		S Outline Test]			D
14:07:16 > Send		rom Device[POT	A REAL PROPERTY OF A REAL PROPERTY OF A			D
14:07:16 > Send 14:07:16 > Begi	d Command:Read F	rom Device[POT he Command Dat	A REAL PROPERTY OF A REAL PROPERTY OF A			<u></u>
14:07:16 > Send 14:07:16 > Begi 14:07:16 > Vali	d Command:Read F in To Validate T	rom Device[POT he Command Dat hed	A REAL PROPERTY OF A REAL PROPERTY OF A			<u>)</u>
14:07:16 > Send 14:07:16 > Begi 14:07:16 > Vali 14:07:16 > Send	d Command:Read F in To Validate T idate Data Finis d Command Succes	rom Device[POT he Command Dat hed sfully!	al contraction			<u>.</u>
14:07:16 > Send 14:07:16 > Begi 14:07:16 > Vali 14:07:16 > Send	d Command:Read F in To Validate T idate Data Finis d Command Succes d From Device[PO	rom Device[POT he Command Dat hed sfully!	al contraction			

Figure 17-2 The **POTS Outline Test** window

Appendix A FTP Operation Guide

A.1 Overview of the FTP

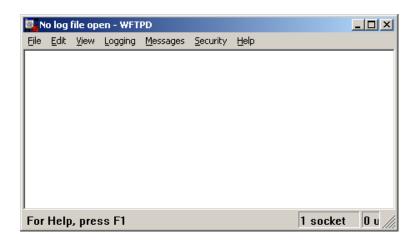
A computer is connected with the equipment via the network cable. Set up the ftp server end on the computer; that is, install the wftp software.

When the equipment needs to be upgraded, it needs to get the upgrade package from the ftp server end via the ftp mode. When the equipment conducts the backup operation, it needs to export the backup file to the ftp server end via the ftp mode.

A.2 Configuration Steps

In the following, we will instruct the operation steps of the wftp software, using an example: creating an ftp user with the name **1** and password **1**, and setting the path **d:\ftp** for saving the upgrade / backup package.

- At the ftp server end, set the path for saving the upgrade / backup package to d:\ftp.
- 2. Open the wftp, as shown in the following figure.



3. Click **Security** → **Users/Rights** in the menu bar to start user setting, as shown in the following figure.

📴 No log file open - WFTPD	
File Edit View Logging Messages Security Help	
User / Rights Security Dialog	×
	lone
New User Delete Change Pass Home Directory: 	
Help	\$>>
For Help, press F1	ocket 🛛 u 🎢

 In the User/Rights Security Dialog window that appears subsequently, click the New User button to add a new ftp user. This user will be used in the subsequent upgrade and backup operations.

Input 1 for the User Name, as shown in the following figure.



You may click the **Delete** button to delete an existing user, or select an existing user and click the **Change Password** button to change the user's password.

📴 No log file open - WFTF	D	_ _ _ _ X
<u> Eile E</u> dit <u>V</u> iew Logging	<u>Messages Security H</u> elp	
User / Rights Securi	ty Dialog	x
User Name:	New User	X
User New User Home Directory:	User Name: 1	OK Cancel Help
		Rights >>
For Help, press F1		1 socket 🛛 🛛 🖉

 Click the OK button and go on to input 1 for both New Password: and Verify Password. And then, click the OK button to complete the new user creation, as shown in the following figure.

📴 No log file open - WFTPD	_ O ×
Eile Edit View Logging Messages Security Help	
User / Rights Security Dialog	×
User Na Change Password	e
User New Password: * OK	1
Home [Verify Password:]	
Help Rights >	>
For Help, press F1 1 soc	ket 🛛 u 🎢

6. In the **User/Rights Security Dialog** window, input the path in which the upgrade / backup package locates in the **Home Directory:** item. According to the setting in the first step, here input **d:\ftp**, as shown in the following figure.

📴 No log fi	ile open - WFT	PD				_ 🗆	×
<u>E</u> ile <u>E</u> dit	<u>V</u> iew <u>L</u> ogging	<u>M</u> essages	Security	<u>H</u> elp			
User	/ Rights Secu	ity Dialog				×	
Use	er Name:	1		•	Done		
	er 1						
	New User		Delete	Cha	nge Pass		
Ho	me Directory:	d:\ftp		Restricted	d to home		
	Help				Rights >>		
For Help,	, press F1				1 socket	t 0 (

Click the **Done** button to complete the setting.

7. In the **No log file open** window, click **Logging** → **Log Options** to set the log function of this wftp, as shown in the following figure.

📴 N	o log I	file op	en - WFT	PD				
Eile	<u>E</u> dit	<u>V</u> iew	Logging	<u>M</u> essages	Security	Help		
			Log <u>O</u>	ptions				
			Clear	<u>S</u> creen				
L								
Ena	bles	/Disa	bles log	jging of s	pecific e	vents	1 socke	et Ou

8. In the Logging Options window, select the Enable Logging, Gets, Logins, Commands, Warnings, Puts, and Anon. Logins check boxes, as shown in the following figure.

📴 No log file	open - WFTPD			<u>_ ×</u>
Eile Edit Lo	gging Options	 ✓ Puts ✓ Anon. Logins 	OK Cancel Help	
For Help, p	Commands Warnings ress F1	Winsock Calls	1 socket	0 u //

After selecting these options, click the **OK** button to display the log. Users may use the log information to troubleshoot and confirm whether the Gets or Puts operation is successful.

Here, the wftp configuration is completed.

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Documentation Name	
Code and Version	

Usage of the product documentation:

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□ Frequently □ Rarely □ Never □ Other (please specify)] Frequently
--	--------------

2. When do you use the documentation?

\square in starting u	p a project	□ in installing	the product	\square in daily maintenance	🗆 in
troubleshooting					

3. What is the percentage of the operations on the product for which you can get instruction from the documentation?

□ 100% □ 80% □ 50% □ 0% □ Other (please specify)_____

4. Are you satisfied with the promptness with which we update the documentation?

□ Satisfied □ Unsatisfied (your advice) _____

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 \Box Yes

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□ No (please specify the reason)

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