

EPON OLT Products User Manual

FD1204S/FD1208S/FD1216S/FD8000-L116

---Configuration Guide

Version: V1.2

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About This Manual

This manual is applicable to C-Data FD1204S、FD1208S、FD1216S、FD8000-L116 EPON OLT products quickly installation configuration guide, Is the user to quickly and easily manage EPON OLT equipment should read the information before guidelines.

The related documents for EPON OLT device are:

《FD1204S/FD1208S/FD1216S/FD8000-L116 User Manual-Device Installation User Manual》

《FD1204S/FD1208S/FD1216S/FD8000-L116 User Manual- CLI Operation User Manual》

《FD1204S/FD1208S/FD1216S/FD8000-L116 User Manual- Configuration Guide》

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1 Instruction

Document Scope

Reading Object	Product	Products Software Version	
C-DATA Employees, FTTX Operation&Maintenance Engineer, C-DATA Customer's Technical Engineer	Cdata EPON OLT (FD1204S/FD1208S /FD1216S/FD8000-L116)	V1.3.X	
Compiling Department	C-Data Product Management Center Technical Support Department	Document Version	V1.2

Revision History

Date	Version	Description	Author
2017-12-7	V1.1	OLT version switch to V1.2.X, cli command line have been changed.,update config guide fully	Technical Support Department
2018-3-4	V1.2	1.OLT version switch to V1.3.X, cli command line have been changed,update config guide fully 2.Add FD8000-L116 config instruction	Technical Support Department

Proper Noun

Acronym	Full name	Instructions
EPON	Gigabit-Capable Passive Optical Network	Gigabit-Capable Passive Optical Network
OLT	Optical Line Terminal	Optical Line Terminal
ONU	Optical Network Terminal	Optical Network Terminal
OMCI	ONU Management and Control Interface	GPON OLT&ONU Management and Control Interface(protocol)
OAM	Operation Administration and	EPON OLT&ONU Operation Administration

	Maintenance	and Maintenance Protocol
DBA	Dynamic Bandwidth Allocation	Dynamic Bandwidth Allocation
VLAN	Virtual Local Area Network	Virtual Local Area Network
VoIP	Voice over IP	Voice over IP
WLAN	Wireless Local Area Networks	Wireless Local Area Networks
FTTH	Fiber To The Home	Fiber To The Home
FTTB	Fiber To The Building	Fiber To The Building

Note

- The command line described in the document is case sensitive in OLT.
- If we meet a command that cannot be inputted or is prompted for error, we can input “?” to see the latter command format.
- Input incomplete commands can be completed by pressing the “Tab” key.
- FD1204S、FD1208S、FD1216S are Pizza-Box OLT, only have one card, so, if we want to enter PON mode, need input interface epon 0/0
- FD8000-L116 is Plug-in card OLT, has four PON card, so the command for entering PON mode is OLT(config)# interface epon 0/<SlotID>, SlotID is Slot Number, range is 1-4, for example, the command for entering slot 1 is OLT(config)# interface epon 0/1

2 OLT Login Manage

2.1 OLT Login Manage Explanation

FD1204S、FD1208S、FD1216S support CLI, EMS and WEB management; CLI manage type divided into telnet remote manage and console local manage, please check #2.2 and #2.3 chapter to see concrete operations; please check EMS user manual to see EMS manage way; please check #4 to see WEB manage way.

2.2 OLT Login By Console

First, find console port on OLT front surface, which is a RJ45 port. If you want to login OLT by Console port, we need to prepare as follows:

- Need RJ-45-to-DB-9 serial line
- Connect PC to OLT console port, find COM number in “computer management”
- Software for logging OLT by console port (Putty, SecureCRT)

- parameter for console login software

Baud Rate:9600

Parity Check:None

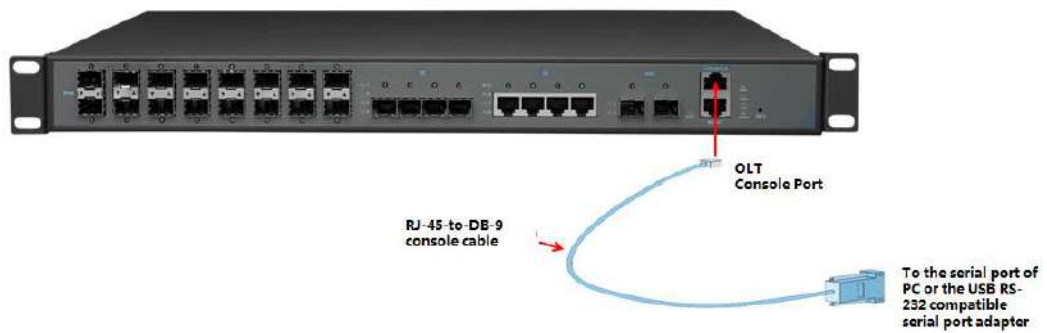
Databit:8

Stopbit:1

Flow Control:None

Login OLT by console login software,then input **username:root,password:admin**

[OLT console connection diagram]



[OLT console connection device]



RJ-45 to DB-9 Console Cable

USB to RS-232 compatible serial port adapter

Port on Computer	Required Cable	Port on OLT
Serial Port	RJ-45 to DB-9 Console Cable	RJ-45 Console Port
USB Type-A Port	<ul style="list-style-type: none"> ● USB to RS-232 compatible serial port adapter (Adapter may require a software driver) ● RJ-45 to DB-9 Console Cable 	

2.3 OLT Login By Telnet

There are two way to telnet,one is outband management,another is inband management.

1. Outband management(connect OLT MGMT port)

set PC ip as 192.168.1.X(except 192.168.1.100),PC connect to OLT MGMT port, login the OLT with

OLT default manage IP (default IP : 192.168.1.100). then input username and password,default login username is **root**,password is **admin**.

Use command as follow can modify the outband management IP:

```
OLT> enable
OLT# config
OLT(config)# interface mgmt
OLT(config-interface-mgmt)# ip address 192.168.5.100 24
OLT(config-interface-mgmt)# exit
```

2. Inband management(connect OLT ge port)

First we login olt via console port or mgmt port, and add a vlanif for inband management, assigned an IP address to this vlan,add the ge port to the vlan,ge port vlan mode can be access or trunk,which depend on your network environment,then pc connect to OLT ge port (ge1-ge8) and telnet to the OLT.

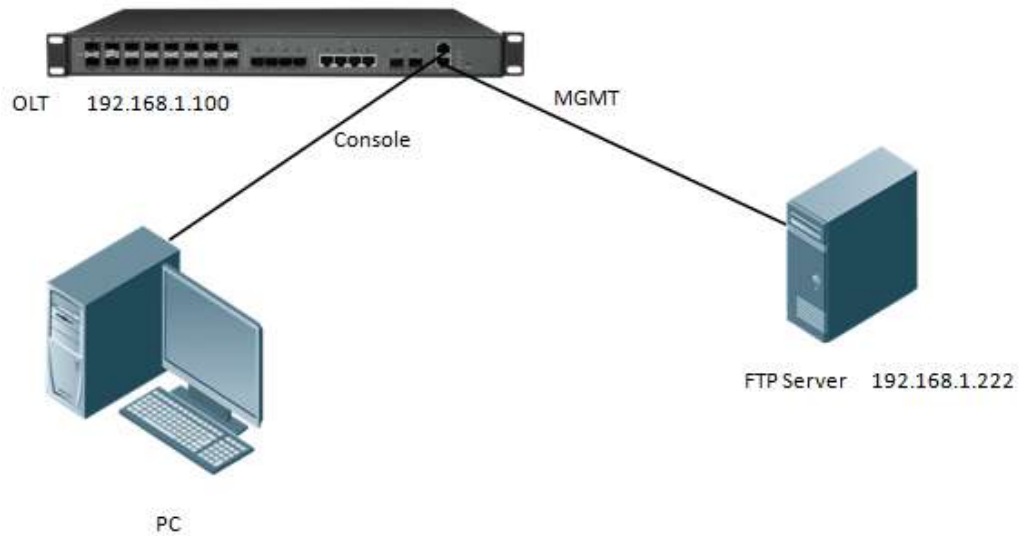
The way to set inband mangement ip as follows:

```
OLT> enable
OLT# config
OLT(config)# vlan 100
OLT(config)# interface ge
OLT(interface-ge)# vlan access 5 100 ----configure ge 5 as inband management port
OLT(interface-ge)# exit
OLT(config)# interface vlanif 100
OLT(interface-vlanif-100)# ip address 192.168.2.100 255.255.255.0
OLT(interface-vlanif-100)# exit
```

3 OLT Upgrade

1.Set up OLT update topology:

Use a PC as FTP server(run wftpd32.exe or Wftpd.exe in this pc),and connect to OLT mgmt port or ge port to transmit firmware.



2. Test network connectivity

- a. Connect PC to OLT console port, used for updating OLT in boot mode.
- b. Connect pc to OLT MGMT port or ge port, configure PC ip and OLT ip (inband ip or outband ip) are in same segment.
- c. PC can ping OLT management IP, if pc can ping OLT management ip, means OLT can connect to FTP server.
- d. Close PC firewall, prevent firewall intercept FTP software.

3. FTP server configuration

- a. Open FTP software, configure FTP username and password, such as: admin/admin
- b. Set up a directory of OLT update files for the FTP server, such as the way for setting up the wftp32. Exe software:
 - Security -> User/Rights Security Dialog -> User Name —input admin
 - Change Password —input admin
 - Home Directory —set directory of OLT upgrade files



4.OLT update command

FD1216S、FD1208S、FD1204S、FD8000-L116 OLT need update two file,one is FW file,another is Kernel file;if the boot file is too old,we need update boot file in OLT boot mode,boot upgrade way will be provided separately.OLT the common upgrade method please see below:

a.Enter config view,input command as follows to update OLT kernel file(file name include Kernel)

```
OLT(config)# load packetfile ftp 192.168.1.222 admin admin FD1216S_Kernel_X000_171114_1833.img
```

Broadcast message from root:

Upgrade is in process.

File [FD1216S_Kernel_X000_171114_1833.img] download OK

File [FD1216S_Kernel_X000_171114_1833.img] upgrade OK

b.Input command as follows to update OLT FW file(file name include FW):

```
OLT(config)# load packetfile ftp 192.168.5.234 admin admin FD1216S_FW_V1.3.1_X000_171114_1841.img
```

Broadcast message from root:

Upgrade is in process.

File [FD1216S_FW_V1.3.1_X000_171114_1841.img] download OK

File [FD1216S_FW_V1.3.1_X000_171114_1841.img] upgrade OK

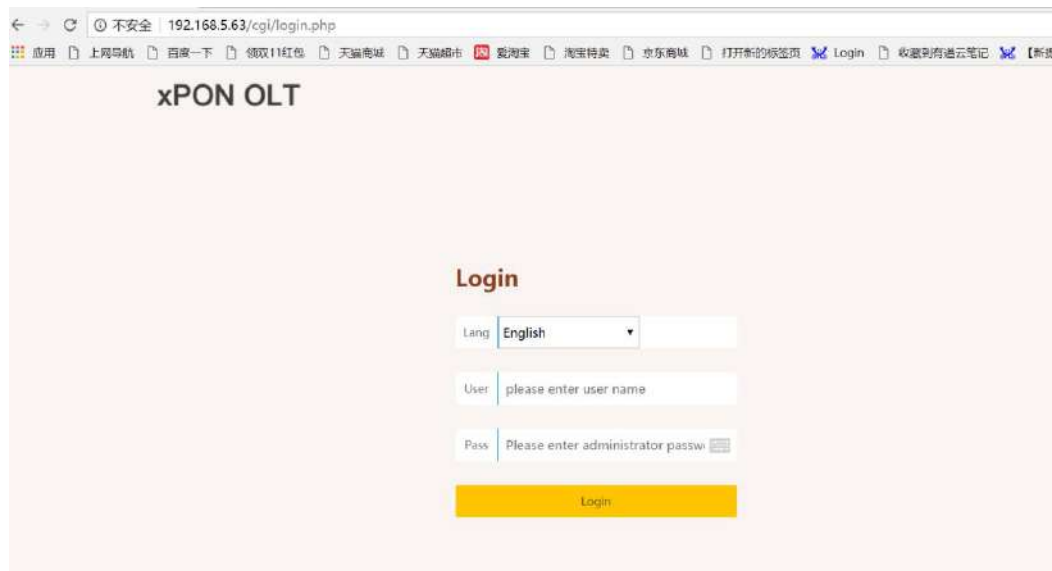
5.After update OLT,we need reboot OLT(Note:only reboot OLT,OLT can use new version)

```
OLT(config)# reboot
```

Please check whether data has saved, the unsaved data will lose if reboot system. Are you sure to reboot system? (y/n)[n]:y

4 OLT WEB Management

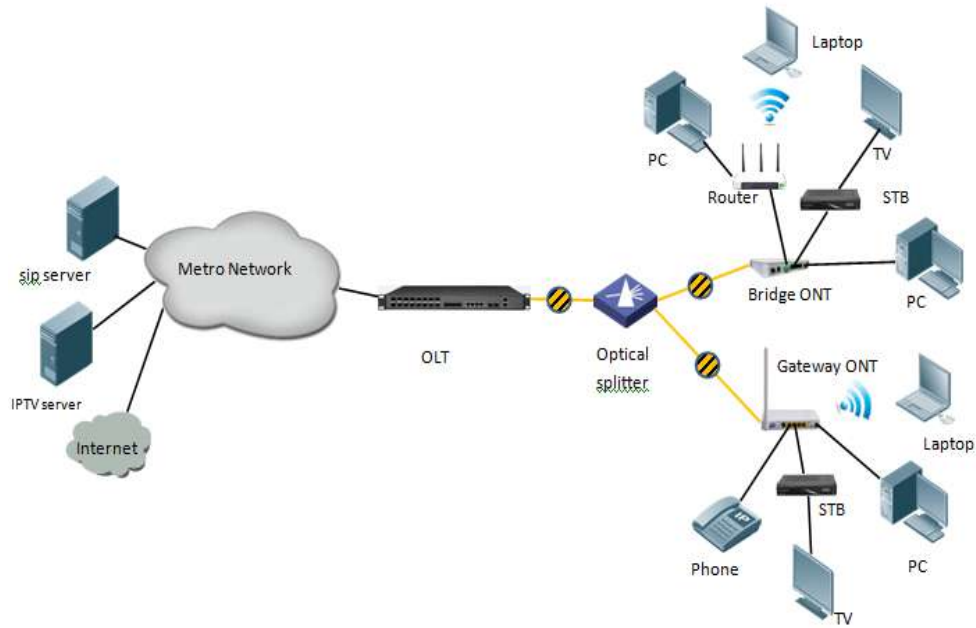
-
- 1.First, update the WEB firmware via the #3 OLT upgrade way,(firmware name include Web word ,such as FD1216S_Web_V1.0.1_X000_171114_1841.img)
OLT(config)# load packetfile ftp 192.168.1.222 admin admin FD1216S_Web_V1.0.1_X000_171114_1841.img
 - 2.PC connect to OLT mgmt port or inband management port,make sure PC can ping OLT inband management ip or outband management ip
 - 3.Open PC browser input OLT management ip,then we can see web login interface,web login username and password is **admin/admin**:



5 Configure Service In OLT Discrete Mode (Non-Template)

This section mainly introduct FD1204S、FD1208S、FD1216S、FD8000-L116 internet service, voice service and multicast service in discrete mode in FTTH environment.Mainly introduce the bridge ONU(SFU and Home Gateway ONU (HGU),The following will introduce the service configuration way for OLT and ONU according to two types ONU.

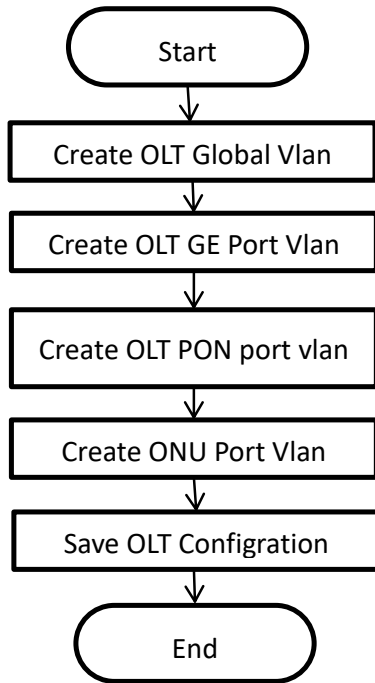
5.1 FTTH Service Topology



5.2 Data Plan

Main Data Plan List	
Configuration Item	Data
VLAN Data	VLAN 100: Internet Service VLAN 200: IPTV Service VLAN 300: VOIP Service
OLT Port Setting	Ge5: VLAN 100 access mode Ge6: VLAN 200 access mode Ge7: VLAN 300 access mode PON1: VLAN 100, VLAN 200, VLAN 300 trunk mode
ONU Register ID	Bridge ONU ID: 1 Gateway ONU ID: 2
Bridge ONU Port config	LAN 1: VLAN 100 LAN 2: VLAN 200 LAN3: VLAN 300 ---connect to VOIP phone
Gateway ONU Port config	Internet WAN: VLAN 100 IGMP WAN: VLAN 200 VOIC WAN: VLAN 300

5.3 Config Guide



5.4 Configure OLT Service

5.4.1 Configure OLT Global Vlan

In **config** mode, we can use **OLT(config)# show vlan all** to show the created vlan.

If the created vlan can't meet the need, we can use command **OLT(config)# vlan** vlan-list to create new vlan. According to the data plan, we create vlan100, vlan200, vlan300 firstly:

```
OLT(config)# vlan 100
OLT(config)# vlan 200
OLT(config)# vlan 300
```

5.4.2 Configure OLT GE Port Service Vlan

We can config GE port vlan mode as access, hybrid and trunk, we can configure different mode according to our network plan, configure way of three mode as follows.

Configure GE 5,6,7 port vlan mode is access (in this document, GE port connect to PC, so we configure ge port vlan mode as access):

```
OLT(config)# interface ge 0/0
OLT(config-interface-ge-0/0)# vlan mode 5-7 access
OLT(config-interface-ge-0/0)# vlan access 5 100
OLT(config-interface-ge-0/0)# vlan access 6 200
OLT(config-interface-ge-0/0)# vlan access 7 300
OLT(config-interface-ge-0/0)# exit
```

Configure GE 5、6、7 □ vlan mode is trunk:

```

OLT(config)# interface ge 0/0
OLT(config-interface-ge-0/0)# vlan mode 5-7 trunk
OLT(config-interface-ge-0/0)# vlan trunk 5 100
OLT(config-interface-ge-0/0)# vlan trunk 6 200
OLT(config-interface-ge-0/0)#vlan trunk 7 300
OLT(config-interface-ge-0/0)# exit


```

Configure GE 5、6、7 □ vlan mode is hybrid:

```

OLT(config)# interface ge 0/0
OLT(config-interface-ge-0/0)# vlan mode 5-7 hybrid
OLT(config-interface-ge-0/0)# vlan hybrid 5 tagged 100
OLT(config-interface-ge-0/0)# vlan hybrid 6 tagged 200
OLT(config-interface-ge-0/0)# vlan hybrid 7 tagged 300
OLT(config-interface-ge-0/0)# exit

```

 **NOTE:**

The OLT vlan handle process as follows:

Vlan mode	Direction	Message have vlan tag or not	Handling method
Access mode	In	vlan tag	Discard
		untag	Add port configured vlan in access mode for message (main parameter is VID),and forward
	Out	vlan tag	Forward message to the corresponding port according to VID and remove vlan tag;If the VLAN ID of the Tagged message is not same to the port VID, it is discard.
		untag	Discard
Trunk mode	In	vlan tag	If the VLAN in the message is permit to pass port, it will be forwarded directly; If the VLAN in the message doesn't permit to pass port, it is discarded.
		untag	Add default vlan(native-vlan) for untagged message and forward.
	Out	vlan tag	If the VLAN in the message is permit to pass port, it will be forwarded directly; If the VLAN ID of the message is the default (native-VLAN)VLAN, then the VLAN tag is discard and forward;If the VLAN in the message doesn't permit to pass port, it is discarded.

		untag	Discard
Hybrid mode	In	vlan tag	If the VLAN in the message is permit to pass port, it will be forwarded directly; If the VLAN in the message doesn't permit to pass port, it is discarded.
		untag	Add default vlan(native-vlan) for untagged message and forward.
	Out	vlan tag	If the VLAN in the message is permit to pass port,according vlan tag or vlan untag of message to discard or no discard vlan tag,then forward message,If the VLAN ID of the message is the default (native-VLAN) VLAN, then the VLAN tag is discard and forward; If the VLAN in the message doesn't permit to pass port, it is discarded.
		untag	Discard

5.4.3 Configure OLT PON Port Service Vlan

We can config PON port vlan mode as access,hybrid and trunk,according to our network plan configure different mode;if message from ONU is untag,we can configure PON port vlan mode is access or hybrid untag mode;if message from ONU is tag,we can configure PON port vlan mode is trunk or hybrid tag mode; configure way as follows.

Config PON1 port vlan mode is access:

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# vlan mode 1 access
OLT(config-interface-epon-0/0)# vlan access 1 100
OLT(config-interface-epon-0/0)# exit
```

Config PON1 port vlan mode is trunk: (PON port is trunk mode in this document) :

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# vlan mode 1 trunk
OLT(config-interface-epon-0/0)# vlan trunk 1 100,200,300
OLT(config-interface-epon-0/0)# exit
```

Config PON1 port vlan mode is hybrid:

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# vlan mode 1 hybrid
OLT(config-interface-epon-0/0)# vlan hybrid 1 tagged 100,200,300
OLT(config-interface-epon-0/0)# exit
```

5.4.4 Configure OLT Multicast Service

Configure IGMP and multicast-vlan 200

```
OLT(config)# igmp mode snooping
OLT(config)# multicast-vlan 200
OLT(config-multicast-vlan-200)# igmp program add program-index 1 ip 224.3.3.3
OLT(config-multicast-vlan-200)# igmp router-port ge 0/0/6
OLT(config-multicast-vlan-200)# btv
OLT(config-btv)# igmp user add user-index 1 pon 0/0/2 ont 2 vlan 1000 no-auth
OLT(config-btv)# multicast-vlan 200
OLT(config-multicast-vlan-200)# igmp member user-index 1
OLT(config-multicast-vlan-200)# exit
```



NOTE:

igmp program add program-index command is used to create multicast program table. Only the program table in the multicast vlan, the user can watch the program. Create multicast program table can use **igmp program add program-index <1-2000> batch** command to batch add program or use **igmp program add program-index <1-2000> ip** command to add program single.

5.5 Check ONU Register Status.

In OLT discrete mode,ONU is automatically registered,after ONU is automatically registered,use command **show ont info** to query ONU online status.make sure ONU “Control flag” is “Active”,“Run State” is “Online”,“Config state” is “Success” and “Match state” is “Match”

```
OLT(config-interface-epon-0/0)# show ont info 1 all
```

F/S P	ONT MAC	Control	Run	Config	Match	Desc
	ID	flag	state	state	state	
0/0 1 1	E0:67:B3:09:F0:21	active	online	success	match	
0/0 1 2	E0:67:B3:12:05:3E	active	online	success	match	

```
Total: 2, online 2
```

5.6 Configure Bridge ONU(SFU) Service

In OLT discrete mode,we need enter OLT to config ONU one by one,config way as follows:

5.6.1 Configure Bridge Onu(SFU) Internet Service

Premise condition of ONU to open internet service:

- OLT connect to uplink device and open internet service

- OLT have created vlan for internet service
- OLT have configured GE port vlan
- OLT have configured PON port vlan
- ONU have registered

SFU ethernet port vlan mode have transparent,tag(access),trunk mode and so on,we can according to our network plan configure different mode.all onu vlan is configured by OLT,configure way as follows:

Configure ONU1 eth1 vlan mode is tag(access) (ONU eth port vlan mode is tag in this document):

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# ont port native-vlan 1 1 eth 1 vlan 100
OLT(config-interface-epon-0/0)# exit
```

Configure ONU1 eth1 vlan mode is transparent:

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# ont port vlan 1 1 eth 1 transparent
OLT(config-interface-epon-0/0)# exit
```

Config ONU1 eth1 vlan mode is trunk:

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# ont port vlan 1 1 eth 1 100
OLT(config-interface-epon-0/0)# exit
```

5.6.2 Configure Bridge Onu(SFU) Multicast Service

Premise Condition

- OLT connect to uplink device and open service
- OLT have created vlan for multicast service
- OLT have configured GE port vlan
- OLT have configured PON port vlan
- ONU have registered

In OLT discrete mode,we need enter OLT to config ONU multicast service,configure way as follows:

Configure ONU1 multicast vlan mode is snooping,ONU1 eth2 vlan is 200,and multicast vlan mode is untag:

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)#ont multicast-mode 1 1 igmp-snooping
OLT(config-interface-epon-0/0)#ont port attribute 1 1 eth 2 multicast-tagstrip untag
OLT(config-interface-epon-0/0)# ont port multicast-vlan 1 2 eth 2 200
OLT(config-interface-epon-0/0)# exit
```

----End

5.7 Configure Gateway ONU (HGU) Service

Gateway ONU (HGU) can provide internet, VOIP, IPTV service for FTTH, support PPPOE/DHCP dial-up, NAT, IGMP. Because HGU have route function, ONU service need to be configured with the local web or tr069, include wan and vlan configuration, don't need configure vlan in olt, only make sure ONU can register to OLT. OLT don't support configure ONU route wan, specific configure as follows:

5.7.1 Configure Gateway ONU (HGU) Internet Service--RTK Solution

premise condition

- OLT connect to uplink device and open service
- OLT have created vlan for internet
- OLT have configured GE port vlan
- OLT have configured PON port vlan
- ONU have registered

1. Create route wan and bind LAN1 in onu web

Click Internet → Internet Config → WAN Config

Status	Internet	Security	Application
	Internet Config	Port Binding	DHCP Server
	WLAN Config	Remote Mgmt	QoS

WAN Config

WAN Connection name	Add WAN connection
Mode :	Route
Connection Mode::	Ipv4/Ipv6
<input checked="" type="radio"/> DHCP	Obtain an IP address automatically
<input type="radio"/> Static	Use Static IP address
<input type="radio"/> PPPoE	PPP over Ethernet (PPPoE)
NAT:	<input checked="" type="checkbox"/>
Enable Vlan:	<input checked="" type="checkbox"/>
Vlan ID:	100
802.1p:	(NULL)
MTU:	1500
Request DNS:	<input checked="" type="radio"/> Enable
	<input type="radio"/> Disable
Primary DNS:	
Secondary DNS:	
Service Mode:	INTERNET
Bind port:	
<input checked="" type="checkbox"/> Port_1	<input type="checkbox"/> Port_2
<input type="checkbox"/> Port_3	<input type="checkbox"/> Port_4
<input checked="" type="checkbox"/> wireless (SSID)	



NOTE:

Mode select **Route**. Check **Enable VLAN** and Vlan ID input 100. Service Mode select **INTERNET**. Bind port check **Port_1** and **wireless(SSID)**.
 Internet service take DHCP mode as an example in this document. The service type please select suitable type according to the user's actual environment. ONT detail usage please refer to ONT user manual.

2. Check ONU internet wan status

Click Status→Internet Info

Status	Internet	Security	Application	Management	Diagnosis
Device Info Internet Info LAN & WLAN TR-069 Status					
WAN Info					
Interface	VLAN ID	Protocol	IGMP	Status	IP address
1_TR069_R_VID_46	46	IPoE	Enable	down	
2_INTERNET_R_VID_100	100	IPoE	Enable	up	192.168.5.129
Network Information					
Default Gateway	192.168.5.254				
Subnet Mask	255.255.255.0				
Primary DNS	192.168.5.254				
Secondary DNS					

5.7.2 Configure Gateway ONU (HGU) Multicast Service--RTK Solution


premise condition

- OLT connect to uplink device and open multicast service
- OLT have created vlan for multicast
- OLT have configured GE port multicast vlan
- OLT have configured PON port multicast vlan
- ONU have registered

1. Create bridge wan and bind LAN2 in onu web

Click Internet→Internet Config→ WAN Config

Status	Internet	Security	Application	Management	Diagnosis
Internet Config Port Binding DHCP Server WLAN Config Remote Mgmt QoS Time Config Routing					
WAN Config					
WAN Connection name	Add WAN connection				
Mode :	Bridge				
Connection Mode::	Ipv4/Ipv6				
Enable Vlan:	<input checked="" type="checkbox"/>				
Vlan ID:	200				
802 Ip:	(NULL)				
Service Mode:	Other				
Bind port:	<input type="checkbox"/> Port_1 <input checked="" type="checkbox"/> Port_2 <input type="checkbox"/> Port_3 <input type="checkbox"/> Port_4 <input type="checkbox"/> wireless (SSID)				
<small>NOTE: Can not bind the same port to different WAN connection. If the same port has been binded to different WAN connection, the last configuration will flush your previous configurations on this port.</small> <small>When the Bridge mode is set to Other, the PC on the port does not dynamically obtain the IP address through the gateway. When the service mode is Other, please be careful not to bind all LAN ports for such a situation!</small>					
<input type="button" value="Apply"/> <input type="button" value="delete"/>					

 **NOTE:**

Mode select to **Bridge**. Check **Enable Vlan**,Vlan ID input **200**. Service Mode select **Other**.Bind port click **Port_2**.

2. Config IGMP mode in ONU web

Click Application→ IGMP Config→ IGMP Snooping. Enable IGMP Snooping.

The screenshot shows the 'IGMP Snooping' configuration page. The page title is 'Application' and the sub-page is 'IGMP Snooping'. The page contains a 'Save/Apply' button and radio buttons for 'Disable' and 'Enable', with 'Enable' selected.

3. Configure multicast vlan on ONU web

Click Application→ Multicast Vlan→ 3_Other_B_VID_200→ Modify. Input 200 behind VLAN multicast(blank said set).

The screenshot shows the 'Multicast Vlan' configuration page. The page title is 'Application' and the sub-page is 'Multicast Vlan'. It shows a table with columns for Interface, Multicast VLAN, and Modify. The table has three rows: 1_10009_R_VID_46, 2_INTERNET_R_VID_100, and 3_Other_B_VID_200.

Interface	Multicast VLAN	Modify
1_10009_R_VID_46		
2_INTERNET_R_VID_100		
3_Other_B_VID_200	200	

4. Check ONU multicast wan status

Click Status→Internet Info

The screenshot shows the 'Internet Info' page. The page title is 'Status' and the sub-page is 'Internet Info'. It shows a table with columns for Interface, VLAN ID, Protocol, IGMP, Status, and IP address. The table has three rows: 1_TR069_R_VID_46, 2_INTERNET_R_VID_100, and 3_Other_B_VID_200.

Interface	VLAN ID	Protocol	IGMP	Status	IP address
1_TR069_R_VID_46	46	IPoE	Enable	down	
2_INTERNET_R_VID_100	100	IPoE	Enable	up	192.168.5.129
3_Other_B_VID_200	200	br1483	Disable	up	

Network Information

Default Gateway	192.168.5.254
Subnet Mask	255.255.255.0
Primary DNS	192.168.5.254
Secondary DNS	

---end

5.7.3 Configure Gateway ONU (HGU) Internet Service--Broadcom Solution

premise condition

- OLT connect to uplink device and open internet service
- OLT have created vlan for internet
- OLT have configured GE port vlan
- OLT have configured PON port vlan
- ONU have registered

1. Create IPoE WAN in onu web

Click Advanced Setup→WAN→ Add

Device Info
Advanced Setup
WAN
LAN
NAT
Firewall
Parental Control
Quality of Service
Routing
DNS
UPnP
DNS Proxy
Interface Grouping
Multicast
Wireless
Voice
Diagnostics
Management
Logout

Wide Area Network (WAN) Service Setup

Choose Add, Remove or Edit to configure a WAN service over a selected interface.

Interface	Description	Type	VLAN priority	VLAN ID	TPID	MTU	Multicast VLAN	IGMP Proxy
epon0.1	1_TR069_R_50	IPoE	0	50	0x8100	1450	-1	Disable

Click Next

Device Info
Advanced Setup
WAN
LAN
NAT
Firewall
Parental Control
Quality of Service
Routing
DNS
UPnP
DNS Proxy
Interface Grouping
Multicast
Wireless
Voice
Diagnostics
Management
Logout

WAN Service Interface Configuration

Select a layer 2 interface for this service

Click Next

Device Info
Advanced Setup
WAN
LAN
NAT
Firewall
Parental Control
Quality of Service
Routing
DNS
UPnP
DNS Proxy
Interface Grouping
Multicast
Wireless
Voice
Diagnostics
Management
Logout

WAN Service Configuration

Select WAN service type

PPP over Ethernet (PPPoE)
 IP over Ethernet (IPoE)
 Bridging

Enter Service Description

For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID
For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID

Enter 802.1P Priority [0-7]:
Enter 802.1Q VLAN ID [0-4094]:
Multicast VLAN [-1 or 0-4094]:
Select VLAN TPID:

Network Protocol Selection



NOTE:

WAN service type select **IP over Ethernet(IPoE)**. Service Description select to **INTERNET**. 802.1Q VLAN ID[0-4094] input **100**.

In this document,Internet service take DHCP mode as an example.please selected suitable service

type according to the user's actual need. ONT detail use way please refer to ONT user manual.

Click Next

Device Info
Advanced Setup
WAN
LAN
NAT
Firewall
Parental Control
Quality of Service
Routing
DNS
UPnP
DNS Proxy
Interface Grouping
Multicast
Wireless
Voice
Diagnostics
Management
Logout

WAN IP Settings

Enter information provided to you by your ISP to configure the WAN IP settings.
Notice: If "Obtain an IP address automatically" is chosen, DHCP will be enabled for PVC in IPoE mode.
If "Use the following Static IP address" is chosen, enter the WAN IP address, subnet mask and interface gateway.

Obtain an IP address automatically

Option 60 Vendor ID (8 hexadecimal digits)

Option 61 IAID (hexadecimal digits)

Option 61 DUID (hexadecimal digits)

Option 125 Disable Enable

Use the following Static IP address

WAN IP Address

WAN Subnet Mask

WAN gateway IP Address

Back Next



NOTE:

If use DHCP access to internet,WAN IP Settings click **Obtain an IP address automatically**. If use static IP access to internet. Click **Use the following Static IP address** and input IP address, Subnet Mask and gateway IP address.

Click Next

Device Info
Advanced Setup
WAN
LAN
NAT
Firewall
Parental Control
Quality of Service
Routing
DNS
UPnP
DNS Proxy
Interface Grouping
Multicast
Wireless
Voice
Diagnostics
Management
Logout

Network Address Translation Settings

Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple computers on your Local Area Network (LAN)

Enable NAT

Enable Fullcone NAT

Enable Firewall

IGMP Multicast

Enable IGMP Multicast Proxy

Enable IGMP Multicast Source

The maximum allowed size of an Ethernet frame

MTU [576-1500]:

Back Next

Click Next

- Device Info
- Advanced Setup
- WAN**
- LAN
- NAT
- Firewall
- Parental Control
- Quality of Service
- Routing
- DNS
- UPnP
- DNS Proxy
- Interface Grouping
- Multicast
- Wireless
- Voice
- Diagnostics
- Management
- Logout

Routing -- Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to priority order. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces

epon0.2

->

<-

Available Routed WAN Interfaces

epon0.1

Back Next

Click Next

- Device Info
- Advanced Setup
- WAN**
- LAN
- NAT
- Firewall
- Parental Control
- Quality of Service
- Routing
- DNS
- UPnP
- DNS Proxy
- Interface Grouping
- Multicast
- Wireless
- Voice
- Diagnostics
- Management
- Logout

DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only **DNS Server Interfaces** can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority order can be changed by removing all and adding them back in again

Select DNS Server Interface from available WAN interfaces:

Selected DNS Server Interfaces

epon0.1

->

<-

Available WAN Interfaces

epon0.2

Use the following Static DNS IP address:

Primary DNS Server

Secondary DNS Server

Back Next

Click Apply/Save

- Device Info
- Advanced Setup
- WAN**
- LAN
- NAT
- Firewall
- Parental Control
- Quality of Service
- Routing
- DNS
- UPnP
- DNS Proxy
- Interface Grouping
- Multicast
- Wireless
- Voice
- Diagnostics
- Management
- Logout

WAN Setup - Summary

Make sure that the settings below match the settings provided by your ISP

Connection Type	IPoE
NAT	Enable
Enable Fullcone NAT	Disable
Firewall	Disable
IGMP Multicast Proxy	Disable
IGMP Multicast Source	Disable
MLD Multicast Proxy:	Disable
MLD Multicast Source Enabled:	Disable
Quality Of Service	Disable

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications

Back Apply/Save

2. Check ONU route WAN status

Click Device Info → WAN

Device Info
Summary
WAN
Statistics
Route
ARP
DHCP
Voice
Optic
Advanced Setup

Interface	Description	Type	VLAN ID	MTU	IPv6	IGMP Proxy	IGMP SRC Enable	MLD Proxy	MLD SRC Enable	NAT	Firewall	Status	IPv4 Address	IPv6 Address
epon0.1	1_TR069_R_10	IPoE	50	1450	Disable	Disable	Disable	Disable	Disable	Enable	Enable	Connecting	0.0.0.0	
epon0.2	2_INTERNET_R_100	IPoE	100	1492	Disable	Disable	Disable	Disable	Disable	Enable	Disable	Connected	192.168.5.14	

5.7.4 Configure Gateway ONU (HGU) Multicast Service--Broadcom Solution

premise condition

- OLT connect to uplink device and open multicast service
- OLT have created vlan for multicast
- OLT have configured GE port multicast vlan
- OLT have configured PON port multicast vlan
- ONU have registered

1.Create bridge wan in onu web

Click Advanced Setup→WAN→ Add

Device Info
Advanced Setup
WAN
LAN
NAT
Firewall
Parental Control
Quality of Service
Routing
DNS
UPnP
DNS Proxy
Interface Grouping
Multicast
Wireless
Voice
Diagnostics
Management
Logout

Wide Area Network (WAN) Service Setup

Choose Add, Remove or Edit to configure a WAN service over a selected interface.

Interface	Description	Type	VLAN priority	VLAN ID	TPID	MTU	Multicast VLAN	IGMP Proxy
epon0.1	1_TR069_R_50	IPoE	0	50	0x8100	1450	-1	Disable
epon0.2	2_INTERNET_R_100	IPoE	0	100	0x8100	1492	-1	Disable

Click Next

Device Info
Advanced Setup
WAN
LAN
NAT
Firewall
Parental Control
Quality of Service
Routing
DNS
UPnP
DNS Proxy
Interface Grouping
Multicast
Wireless
Voice
Diagnostics
Management
Logout

WAN Service Interface Configuration

Select a layer 2 interface for this service

Click Next

Device Info

Advanced Setup

WAN

LAN

NAT

Firewall

Parental Control

Quality of Service

Routing

DNS

UPnP

DNS Proxy

Interface Grouping

Multicast

Wireless

Voice

Diagnostics

Management

Logout

WAN Service Configuration

Select WAN service type

PPP over Ethernet (PPPoE)

IP over Ethernet (IPoE)

Bridging

Allow as IGMP Multicast Source

Allow as MLD Multicast Source

Enter Service Description

For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID
For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID

Enter 802.1P Priority [0-7]:

Enter 802.1Q VLAN ID [0-4094]:

Multicast VLAN [-1 or 0-4094]:

Select VLAN TPID:

NOTE:

WAN service type select **Bridging**. Check **Allow as IGMP Multicast Source**. Service Description select Other. 802.1Q VLAN ID[0-4094] input **200**. Multicast VLAN[-1 or 0-4094] input **200**.

Click Apply/Save

Device Info

Advanced Setup

WAN

LAN

NAT

Firewall

Parental Control

Quality of Service

Routing

DNS

UPnP

DNS Proxy

Interface Grouping

Multicast

Wireless

Voice

Diagnostics

Management

Logout

WAN Setup - Summary

Make sure that the settings below match the settings provided by your ISP

Connection Type	undefined
NAT	Enable
Enable Fullcone NAT	Disable
Firewall	Disable
IGMP Multicast Proxy	Disable
IGMP Multicast Source	Enable
MLD Multicast Proxy:	Disable
MLD Multicast Source Enabled:	Disable
Quality Of Service	Disable

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications

Click Advanced Setup → Interface Grouping

Device Info

Advanced Setup

WAN

LAN

NAT

Firewall

Parental Control

Quality of Service

Routing

DNS

UPnP

DNS Proxy

Interface Grouping

Multicast

Wireless

Voice

Diagnostics

Management

Logout

Interface grouping Configuration

To create a new interface group:

1. Enter the Group name and the group name must be unique and select either 1. (dynamic) or 2. (static) below.
2. If you like to automatically add LAN clients to a WAN Interface in the new group add the DHCP vendor ID string. By configuring a DHCP vendor ID string any DHCP client request with the specific IP address from the local DHCP server.
3. Select interfaces from the available interface list and add it to the grouped interface list using the arrow buttons to create the required mapping of the ports. **Note that these clients may omit.**
4. Click Apply/Save button to make the changes effective immediately.

IMPORTANT If a vendor ID is configured for a specific client device, please REBOOT the client device attached to the modem to allow it to obtain an appropriate IP address.

Group Name:

WAN Interface:

Grouped LAN Interfaces

eth1.0

Available LAN Interfaces

eth0.0

eth2.0

eth3.0

wlan0

wi0_Guest80FEGU|wi0.1

wi0_Guest80FEGU|wi0.2

wi0_Guest80FEGU|wi0.3



NOTE:

Group Name free to enter. WAN Interface select to **3_Other_B_200/epon0.3**. Move **eth1.0** to Grouped LAN interface. The purpose of this step is isolate LAN2 from other LAN port, avoid multicast packet flood to other LAN port. If eth1.0(LAN2) move to Grouped LAN interface. LAN2 can only receive multicast traffic. Internet is not work on LAN2. This step is not necessary but recommended.

Click Advanced Setup→ Interface Grouping to check interface grouping information.

Group Name	Remove	WAN Interface	LAN Interface	DHCP Vendor IDs
Default	<input type="checkbox"/>	epon0.1	eth0.0	
	<input type="checkbox"/>	epon0.2	eth2.0	
	<input type="checkbox"/>		eth3.0	
	<input type="checkbox"/>		wan0	
	<input type="checkbox"/>		n10_Guest(80FEQU)/v10.1	
	<input type="checkbox"/>		n10_Guest(80FEQU)/v10.2	
	<input type="checkbox"/>		n10_Guest(80FEQU)/v10.3	
	<input type="checkbox"/>			
IPTV	<input type="checkbox"/>	epon0.3	eth1.0	

5.7.5 Configure Gateway ONU (HGU) VOIP Service--Broadcom Solution

premise condition

- OLT connect to uplink device and open multicast service
- OLT have created vlan for VOIP
- OLT have configured GE port VOIP vlan
- OLT have configured PON port VOIP vlan
- ONU have registered

1. Configure IPoE WAN in ONU web

Click Advanced Setup→WAN→ Add

Interface	Description	Type	VLAN priority	VLAN ID	TPID	MTU	Multicast VLAN	IGMP Proxy
epon0.1	1_TR069_R_50	IPoE	0	50	0x8100	1450	-1	Disable
epon0.2	2_INTERNET_R_100	IPoE	0	100	0x8100	1492	-1	Disable
epon0.3	3_Other_B_200	Bridge	0	200	0x8100	1492	-1	Disable

Click Next

- Device Info
- Advanced Setup
- WAN
- LAN
- NAT
- Firewall
- Parental Control
- Quality of Service
- Routing
- DNS
- UPnP
- DNS Proxy
- Interface Grouping
- Multicast
- Wireless
- Voice
- Diagnostics
- Management
- Logout

WAN Service Interface Configuration

Select a layer 2 interface for this service:

gpon0/apon0 ▾

Click Next

- Device Info
- Advanced Setup
- WAN
- LAN
- NAT
- Firewall
- Parental Control
- Quality of Service
- Routing
- DNS
- UPnP
- DNS Proxy
- Interface Grouping
- Multicast
- Wireless
- Voice
- Diagnostics
- Management
- Logout

WAN Service Configuration

Select WAN service type:


- PPP over Ethernet (PPPoE)
- IP over Ethernet (IPoE)
- Bridging

Enter Service Description: VOICE ▾

For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID
For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID

Enter 802.1P Priority [0-7]: 0
 Enter 802.1Q VLAN ID [0-4094]: 300
 Multicast VLAN [-1 or 0-4094]: -1
 Select VLAN TPID: 0x8100 ▾

Network Protocol Selection: IPv4 Only ▾

 **NOTE:**

WAN service type select **IP over Ethernet(IPoE)**. Service Description select **VOICE**. 802.1Q VLAN ID[0-4094] input **300**.

Click Next

- Device Info
- Advanced Setup
- WAN
- LAN
- NAT
- Firewall
- Parental Control
- Quality of Service
- Routing
- DNS
- UPnP
- DNS Proxy
- Interface Grouping
- Multicast
- Wireless
- Voice
- Diagnostics
- Management
- Logout

WAN IP Settings

Enter information provided to you by your ISP to configure the WAN IP settings.
 Notice: If "Obtain an IP address automatically" is chosen, DHCP will be enabled for PVC in IPoE mode.
 If "Use the following Static IP address" is chosen, enter the WAN IP address, subnet mask and interface gateway.

Obtain an IP address automatically

Option 60 Vendor ID:

Option 61 IAID: (8 hexadecimal digits)

Option 61 DUID: (hexadecimal digits)

Option 125: Disable Enable

Use the following Static IP address

WAN IP Address: 192.168.0.17

WAN Subnet Mask: 255.255.255.0

WAN gateway IP Address: 192.168.0.36

 **NOTE:**

If use DHCP access to internet,WAN IP Settings click **Obtain an IP address automatically** . If use static IP access to internet. Click **Use the following Static IP address** and input IP address, Subnet Mask and gateway IP address.

Click Next

Device Info

Advanced Setup

WAN

LAN

NAT

Firewall

Parental Control

Quality of Service

Routing

DNS

UPnP

DNS Proxy

Interface Grouping

Multicast

Wireless

Voice

Diagnostics

Management

Logout

Network Address Translation Settings

Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple computers on your Local Area Network (LAN)

Enable NAT

Enable Fullcone NAT

Enable Firewall

IGMP Multicast:

Enable IGMP Multicast Proxy

Enable IGMP Multicast Source

The maximum allowed size of an Ethernet frame

MTU [576-1500]

Click Next

Device Info

Advanced Setup

WAN

LAN

NAT

Firewall

Parental Control

Quality of Service

Routing

DNS

UPnP

DNS Proxy

Interface Grouping

Multicast

Wireless

Voice

Diagnostics

Management

Logout

Routing -- Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces

epon0.2

Available Routed WAN Interfaces

epon0.4
epon0.1

Click Next

Device Info

Advanced Setup

WAN

LAN

NAT

Firewall

Parental Control

Quality of Service

Routing

DNS

UPnP

DNS Proxy

Interface Grouping

Multicast

Wireless

Voice

Diagnostics

Management

Logout

DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the changed by removing all and adding them back in again

Select DNS Server Interface from available WAN interfaces:

Selected DNS Server Interfaces

epon0.2

Available WAN Interfaces

epon0.4
epon0.1

Use the following Static DNS IP address:

Primary DNS Server

Secondary DNS Server

Click Apply/Save

- Device Info
- Advanced Setup
- WAN
- LAN
- NAT
- Firewall
- Parental Control
- Quality of Service
- Routing
- DNS
- UPnP
- DNS Proxy
- Interface Grouping
- Multicast
- Wireless
- Voice
- Diagnostics
- Management
- Logout

WAN Setup - Summary

Make sure that the settings below match the settings provided by your ISP

Connection Type	IPoE
NAT	Enable
Enable Fullcone NAT	Disable
Firewall	Disable
IGMP Multicast Proxy	Disable
IGMP Multicast Source	Disable
MLD Multicast Proxy:	Disable
MLD Multicast Source Enabled:	Disable
Quality Of Service	Disable

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications

Back Apply/Save

Click Device Info→ WAN, check ONU wan information.

- Device Info
- Summary
- WAN
- Statistics
- Route
- ARP
- DHCP
- Voice
- Optic
- Advanced Setup
- Wireless
- Voice
- Diagnostics
- Management
- Logout

WAN Info

Interface	Description	Type	VLAN ID	MTU	IPv6	IGMP Proxy	IGMP SRC Enable	MLD Proxy	MLD SRC Enable	NAT	Firewall	Status	IPv4 Address	IPv6 Address
epor0.1	1_TR069_R_50	IPoE	50	1450	Disable	Disable	Disable	Disable	Disable	Enable	Enable	Connecting	0.0.0.0	
epor0.2	2_INTERNET_R_100	IPoE	100	1492	Disable	Disable	Disable	Disable	Disable	Enable	Disable	Connected	192.168.5.14	
epor0.3	3_Other_B_200	Bridge	200	1492	Disable	Disable	Enable	Disable	Disable	Disable	Disable	Connected	0.0.0.0	
epor0.4	4_VOICE_R_300	IPoE	300	1492	Disable	Disable	Disable	Disable	Disable	Enable	Disable	Connected	192.168.0.17	

2. Configure Voice in ONU web

Click Voice→ SIP Basic Setting

- Device Info
- Advanced Setup
- Wireless
- Voice
- SIP Basic Setting
- SIP Advanced Setting
- H.248 Setting
- Diagnostics
- Management
- Logout

Global parameters | **Service Provider 0**

Voice -- SIP configuration

Enter the SIP parameters and click Start/Stop to save the parameters and start/stop the voice application

Locale selection* (Note: Requires the SIP client to be stopped and then started to take affect)

SIP Domain name*:

Dialplan:

Use SIP Proxy
SIP Proxy:
SIP Proxy Port:

Use SIP Outbound Proxy
SIP Outbound Proxy:
SIP Outbound Proxy Port:

Use SIP Registrar
SIP Registrar:
SIP Registrar Port:

SIP Account	0	1
Enabled	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Extension	<input type="text" value="88880001"/>	<input type="text" value="88880002"/>
Display name	<input type="text" value="88880001"/>	<input type="text" value="88880002"/>
Authentication name	<input type="text" value="88880001"/>	<input type="text" value="88880002"/>
password	<input type="text" value="88880001"/>	<input type="text" value="88880002"/>
Physical Terminal Assignment	<input checked="" type="checkbox"/> FXS 0 <input checked="" type="checkbox"/> FXS 1	<input checked="" type="checkbox"/> FXS 0 <input checked="" type="checkbox"/> FXS 1
Preferred ptime	<input type="text" value="20"/>	<input type="text" value="20"/>

NOTE:
SIP Proxy, SIP Outbound Proxy, SIP Registrar input SIP server IP address. Extension, Display name,


to SIP server.

Click Device Info → Voice

Device Info
Summary
WAN
Statistics
Route
ARP
DHCP
Voice
Optic
Advanced Setup
Wireless
Voice
Diagnostics
Management
Logout

Voice Info -- H.248/SIP

Name	Registration Status	Call Status
88880001	Up	Idle
88880002	Up	Idle

 注意:

If Registration Status is **Up**, it means voice account registration is successful.

---end

6 Configure Service In OLT Profile Mode

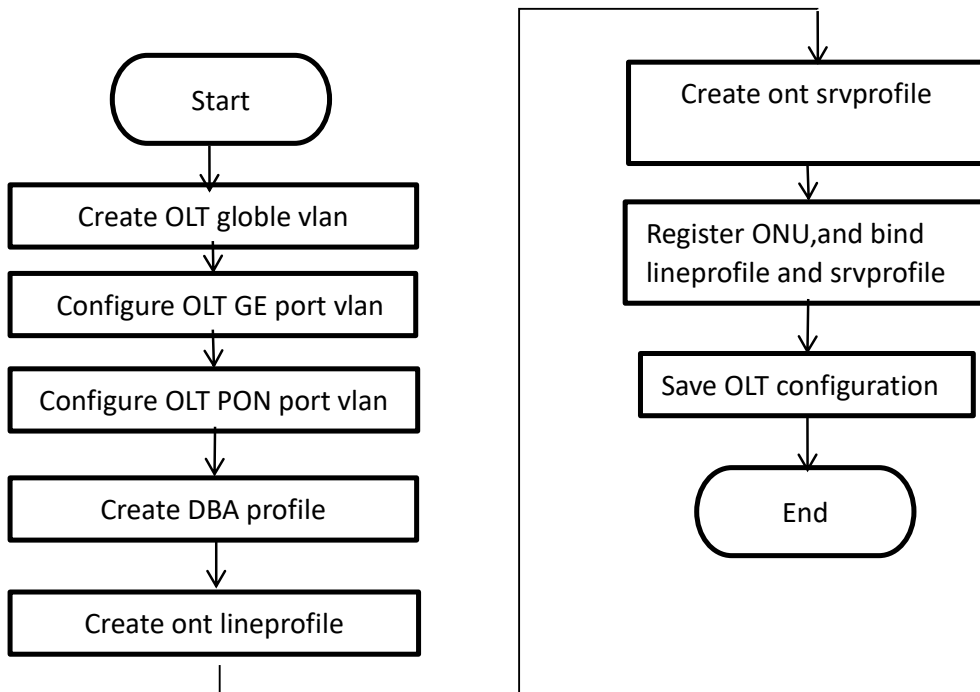
This section is mainly to introduce FD1204S, FD1208S, FD1216S, FD8000-L116 internet service, voice service and multicast service in profile mode in FTTH environment. We can configure different service profiles based on different types of ONU, which can be handled flexibly. Mainly introduce the bridge ONU (SFU) and family gateway ONU (HGU). The following will introduce the service configuration way for OLT and ONU according to two types of ONU.

6.1 Data Plan

Main Data Plan List	
Configure Item	Data
OLT Port Config	Ge5: VLAN 100 access mode Ge6: VLAN 200 access mode Ge7: VLAN 300 access mode PON1: VLAN 100, VLAN 200, VLAN 300 trunk mode
DBA Profile (upload bandwidth control)	Profile number: 1 DBA type: Type3 Assure bandwidth: 8Mbit/s Max bandwidth: 20Mbit/s
ONU Lineprofile	Profile ID: 1 LLID: 1
ONU Srvprofile	Profile ID: 1 ONU Port Capability: 4 ETH Port, 1 POTS Port

Bridge ONU Port Config	LAN 1: VLAN 100 LAN 2: VLAN 200 LAN 3: VLAN 300 ---connect to VOIP phone
Gateway ONT Port Config	LAN1: VLAN 100 LAN2: VLAN 200 POTS1: VLAN 300

6.2 Configure Process



6.3 Configure OLT Service

6.3.1 Configure OLT Globe Vlan

In **config** mode, we can use **OLT(config)# show vlan all** to show the created vlan.

If the created vlan can't meet the need, we can use command **OLT(config)# vlan** vlan-list to create new vlan, According to the data plan, we create vlan100, vlan200, vlan300 firstly:

```

OLT(config)# vlan 100
OLT(config)# vlan 200
OLT(config)# vlan 300
  
```

6.3.2 Configure OLT GE Port Service Vlan

We can config GE port vlan mode as access, hybrid and trunk, according to our network plan configure different mode, configure way of three mode as follows.

Configure GE 5、 6、 7 port vlan mode is access(in this document,GE port connect to PC,so we configure ge port vlan mode as access):

```
OLT(config)# interface ge 0/0
OLT(config-interface-ge-0/0)# vlan mode 5-7 access
OLT(config-interface-ge-0/0)# vlan access 5 100
OLT(config-interface-ge-0/0)# vlan access 6 200
OLT(config-interface-ge-0/0)#vlan access 7 300
OLT(config-interface-ge-0/0)# exit
```

Configure GE 5、 6、 7 port vlan mode is trunk:

```
OLT(config)# interface ge 0/0
OLT(config-interface-ge-0/0)# vlan mode 5-7 trunk
OLT(config-interface-ge-0/0)# vlan trunk 5 100
OLT(config-interface-ge-0/0)# vlan trunk 6 200
OLT(config-interface-ge-0/0)#vlan trunk 7 300
OLT(config-interface-ge-0/0)# exit
```

Configure GE 5、 6、 7 port vlan mode is hybrid:

```
OLT(config)# interface ge 0/0
OLT(config-interface-ge-0/0)# vlan mode 5-7 hybrid
OLT(config-interface-ge-0/0)# vlan hybrid 5 tagged 100
OLT(config-interface-ge-0/0)# vlan hybrid 6 tagged 200
OLT(config-interface-ge-0/0)# vlan hybrid 7 tagged 300
OLT(config-interface-ge-0/0)# exit
```

6.3.3 Configure OLT PON Port Service Vlan

We can config PON port vlan mode as access,hybrid and trunk,according to our network plan configure different mode;if message from ONU is untag,we can config PON port vlan mode is access or hybrid untag mode;if message from ONU is tag,we can config PON port vlan mode is trunk or hybrid tag mode; configure way as follows.

Configure PON1 port vlan mode is access:

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# vlan mode 1 access
OLT(config-interface-epon-0/0)# vlan access 1 100
OLT(config-interface-epon-0/0)# exit
```

Configure PON1 port vlan mode is trunk: (PON port is trunk mode in this document) :

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# vlan mode 1 trunk
OLT(config-interface-epon-0/0)# vlan trunk 1 100,200,300
OLT(config-interface-epon-0/0)# exit
```

Configure PON1 port vlan mode is hybrid:

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# vlan mode 1 hybrid
OLT(config-interface-epon-0/0)# vlan hybrid 1 tagged 100,200,300
OLT(config-interface-epon-0/0)# exit
```

6.3.4 Configure OLT Multicast Service

Configure IGMP and multicast-vlan 200

```
OLT(config)# igmp mode snooping
OLT(config)# multicast-vlan 200
OLT(config-multicast-vlan-200)# igmp program add program-index 1 ip 224.3.3.3
OLT(config-multicast-vlan-200)# igmp router-port ge 0/0/6
OLT(config-multicast-vlan-200)# btv
OLT(config-btv)# igmp user add user-index 1 pon 0/0/2 ont 2 vlan 1000 no-auth
OLT(config-btv)# multicast-vlan 200
OLT(config-multicast-vlan-200)# igmp member user-index 1
OLT(config-multicast-vlan-200)# exit
```



NOTE:

igmp program add program-index command is used to create multicast program table. Only the program table in the multicast vlan, the user can watch the program. Create multicast program table can use **igmp program add program-index <1-2000> batch** command to batch add program or use **igmp program add program-index <1-2000> ip** command to add program single.

6.4 Create ONU Profile

EPON ONU profile include DBA-profile,ont-lineprofile,ont-srvprofile.

- DBA profile:DBA profile describes the EPON flow parameters,the LLID bind DBA profile to distribute bandwidth dynamically,and increases utilization of uplink bandwidth.
- ont-lineprofile:ont-lineprofile describes the bind relationship of LLID and DBA profile,FEC mode,QOS mode and so on.
- ont-srvprofile:ont-srvprofile provides a service configuration channel for ONU manage by oam.such as ONU port vlan configure,ONU igmp configure.

6.4.1 Create ONU DBA Profile

Use **show dba-profile all** command to query the existing DBA profile in the system,if the existing DBA profile can't meet the demand,we need use dba-profile to add DBA profile.Create different DBA profile for different service type.

Create dba profile number is 1,type is Type3,assure bandwidth is 8Mbit/s,max bandwidth is 20Mbit/s:

```
OLT(config)# dba-profile profile-id 1
OLT(dba-profile-1)# type3 assure 8192 max 20480
```

```
OLT(dba-profile-1)# commit
OLT(dba-profile-1)# exit
```

NOTE:

DBA based on the entire ONU schedule, we need to select the appropriate bandwidth type and bandwidth size according to the service type and onu users number. The summation of fixed bandwidth (fix) and guarantee bandwidth (assure) not surpass the total bandwidth of PON port.

6.4.2 Create ONU Lineprofile

Create EPON ONU lineprofile,number is 1,bind to DBA profile 1:

```
OLT(config)# ont-lineprofile epon profile-id 1
OLT(config-epon-lineprofile-1)# llid 1 dba-profile-id 1
OLT(config-epon-lineprofile-1)# commit
OLT(config-epon-lineprofile-1)# exit
```

6.4.3 Create ONU Srvprofile

Create EPON ONU **srvprofile**,number is 1,configure ONU ETH port number is 4,POTS port number is 2:

```
OLT(config)# ont-srvprofile epon profile-id 1
OLT(config-epon-srvprofile-1)# ont-port eth 4 pots 2
OLT(config-epon-srvprofile-1)# commit
OLT(config-epon-srvprofile-1)# exit
//finish config,use commit command to make parameter effect
```

6.5 Add ONU Manually

1. Modify PON port ONU authentication method is manually registered with MAC.

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)# ont authmode 1 mac
```

2.Open pon port ONU automatic find function:

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)#ont autofind 1 enable
OLT(config-interface-epon-0/0)#show ont autofind 1
//This command show all unregistered ONT information that is connected to the EPON port by the spectrometer.
```

3.Register ONU manually and bind lineprofile and srvprofile.

```
OLT(config-interface-epon-0/0)# ont add 1 1 mac-auth E0:67:B3:12:05:3E ont-lineprofile-id 1 ont
srvprofile-id 1
Add pon 1 onu 1 successfully.
OLT(config-interface-epon-0/0)# ont add 1 2 mac-auth E0:67:B3:09:f0:21 ont-lineprofile-id 1
ont-srvprofile-id 1
```

Add pon 1 onu 2 successfully.

4.Add all the ONU under PON port:

ont confirm command can be used to add all the ONU under PON port, and also can add ONU separately.:

```
OLT(config-interface-epon-0/0)# ont confirm 1 all mac-auth ont-lineprofile-id 1 ont-srvprofile-id 1
```

6.6 Check ONU Registration Status

After adding ONU, use **show ont info** command to query the online status of ONU, and ensure that the "Control flag" of ont is "Active", "Run State" is "Online", "Config state" is "Success" and "Match state" is "Match".

```
OLT(config-interface-epon-0/0)# show ont info 1 all
```

F/S P	ONT MAC ID	Control flag	Run state	Config state	Match state	Desc
0/0 1 1	E0:67:B3:09:F0:21	active	online	success	match	
0/0 1 2	E0:67:B3:12:05:3E	active	online	success	match	

Total: 2, online 2

When the ONU configuration status is failed, ONU cannot up:

- If the "Control flag" is "deactive",we need to use ont activate command to activate ONU in EPON mode.
- If the ONU not online, the "Run state" is "offline", it may be a physical line break, or optical module is damaged, so we need to check all device and the physical line.
- If the ONU "config state" is "failed", it means ONU's configuration is not applicable to some configuration of srvprofile, we need to capture packet on the ONU and analyze onu not accept which configuration.
- If the ONU "Match state" is "Mismatch", it shows that onu srvprofile capability(port number) don't Match ONU practical capability,we can use **show ont capability** and **show ont config - capability** to contrast ONU practical ability and onu srvprofile capability.

6.7 Configure Bridge ONU (SFU) Service

6.7.1 Configure Bridge ONU(SFU) Internet Service

premise condition of ONU to open internet service:

- OLT connect to uplink device and open internet service
- OLT have created vlan for internet
- OLT have configured GE port vlan
- OLT have configured PON port vlan
- ONU have registered and bind to lineprofile and srvprofile

SFU ethernet port vlan mode have transparent,tag(access),trunk mode and so on,we can

configure vlan in srvprofile mode or discrete mode(note: If we configure onu port vlan in srvprofile and discrete mode,the discrete configuration priority is higher than the profile configuration,when ONU port discrete configuration vlan is transparent,will apply profile configuration),#4.5 show the discrete configuration, profile config is introduced as follows we can according to our network plan configure different vlan mode,configure way as follows:

Configure ONU port vlan mode is tag(access) (ONU port vlan mode is tag in this document):

```
OLT(config)# ont-srvprofile epon profile-id 1
OLT(config-epon-srvprofile-1)# port native-vlan eth 1 100
OLT(config-epon-srvprofile-1)# commit
OLT(config-epon-srvprofile-1)# exit
```

Configure ONU port vlan mode is transparent:

```
OLT(config)# ont-srvprofile epon profile-id 1
OLT(config-epon-srvprofile-1)# port vlan eth 1 transparent
OLT(config-epon-srvprofile-1)# commit
OLT(config-epon-srvprofile-1)# exit
```

Configure ONU port vlan mode is trunk:

```
OLT(config)# ont-srvprofile epon profile-id 1
OLT(config-epon-srvprofile-1)# port vlan eth 1 100
OLT(config-epon-srvprofile-1)# commit
OLT(config-epon-srvprofile-1)# exit
```

6.7.2 Configure Bridge ONU(SFU) IPTV Service

Premise condition of ONU to open internet service:

- OLT connect to uplink device and open internet service
- OLT have created vlan for IPTV
- OLT have configured GE port IPTV vlan
- OLT have configured PON port IPTV vlan
- ONU have registered and bind to lineprofile and srvprofile

we can configure SFU IPTV service in srvprofile mode or discrete mode(note: if we configure onu iptv service in srvprofile and discrete mode,the discrete configuration priority is higher than the profile configuration,when ONU iptv service in discrete configuration is default,will apply profile configuration),#4.5 show the discrete config, profile config is introduced as follows,we can according to our network plan configure different vlan mode,configure way as follows:

Configure ONU port multicast mode ,multicast vlan,process mode of multicast vlan

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)#ont multicast-mode 1 1 igmp-snooping
OLT(config-interface-epon-0/0)# exit
OLT(config)# ont-srvprofile epon profile-id 11
OLT(config-epon-srvprofile-11)# port eth 1 multicast-tagstrip untag
```

```
OLT(config-epon-srvprofile-11)# port multicast-vlan eth 1 200
OLT(config-epon-srvprofile-11)# commit
OLT(config-epon-srvprofile-11)# exit
```

---end

6.8 Gateway ONU (HGU) Service Configure Introduction

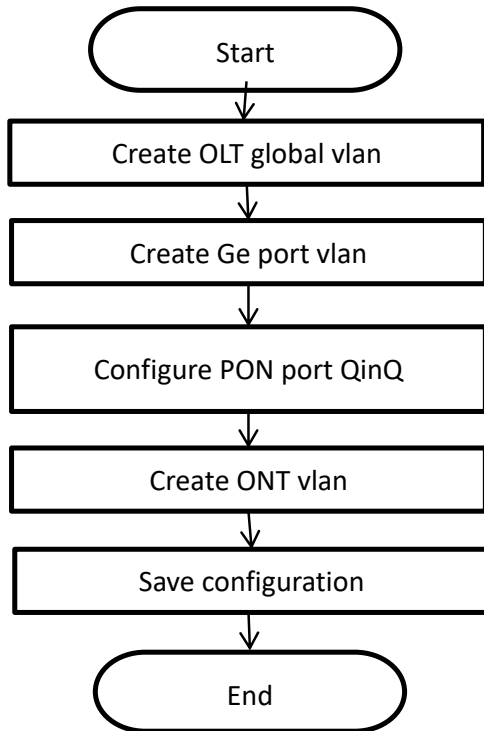
Gateway ONU(HGU) can provide internet,voice,iptv service for FTTH,support PPPOE dial-up, network address translation (NAT), Internet Group Management Protocol (IGMP), due to the ONU have route function, so we need configure onu wan and lan in onu web or TR069 server,not need configure ONU port in OLT, OLT don't support configure ONU route wan, specific configure way can refer to the previous discrete configuration method and the ONU user manual.

7 Configure OLT QinQ Service

7.1 Data Plan

Main Data Plan List	
Configure Iteam	Data
VLAN	SVLAN 400 : QinQ service outer vlan CVLAN 100-200 :QinQ service inner vlan
OLT Port Configure	Ge8: VLAN 400 Hybrid mode PON2: VLAN 400 Hybrid mode
Bridge ONT Port Configure	LAN 3: VLAN 100
Gateway ONT Port Configure	LAN 3: VLAN 100

7.2 Configure Processes



7.3 Configure OLT

Create outer vlan:

Operate **show vlan all** command can query the existing vlan, if the existing vlan does not meet the need, we can use **vlan** command to create outer vlan.

```
OLT(config)# vlan 400
```

Configure GE port QinQ outer vlan:

```
OLT(config)# interface ge 0/0
OLT(config-interface-ge-0/0)#vlan mode 8 hybrid
OLT(config-interface-ge-0/0)# vlan hybrid 8 tagged 400
OLT(config-interface-ge-0/0)# exit
```

Configure PON port QinQ outer vlan and PON port QinQ:

```
OLT(config)# interface epon 0/0
OLT(config-interface-epon-0/0)#vlan mode 2 hybrid
OLT(config-interface-epon-0/0)#vlan hybrid 2 tagged 400
OLT(config-interface-epon-0/0)# vlan qinq 2 cvlan-range 1000 2000 400
OLT(config-interface-epon-0/0)# exit
```

8 Common Command Description

Command	Description
interface epon 0/0	Enter OLT PON board (Apply to box OLT FD1204S、FD1208S、FD1216S all default is 0/0)
OLT(config)# interface epon 0/ <SlotID> Example: OLT(config)# interface epon 0/1 ---Enter slot 1	Enter OLT PON board (apply to Plug-in card OLT FD8000-L116)
interface ge 0/0	Enter OLT uplink(ge) board (In default,box OLT all is 0/0)
show vlan all	View all vlan in OLT
show port vlan <Port ID>	View OLT uplink(ge) and PON port vlan(The premise is we need enter the board card mode.)
show port state <Port ID>	View OLT uplink port and PON port status (The premise is we need enter the board card mode.)
show version	View OLT software version
show device	View OLT mode and other information
show interface mgmt	View OLT outband Manage IP
show interface vlanif brief	View OLT inband Management IP(The premise is we need have vlanif interface)
show current-config	View OLT running configuration
show saved-config	View OLT have saved configuration
show ont info 0/0 <Port ID> all	View ONU register status in PON port
show ont info 0/0 <Port ID> <ONT ID>	View ONU details information
show ont autofind <Port ID>	View autofind but unregistered ONU in PON port(The premise is we need to enter the PON board mode)
show ont optical-info <Port ID> <ONT ID>	View ONU optical information
show ont port state <Port ID> <ONT ID> eth <ONT Port ID>	View ONU port status(The premise is we need to enter the PON board mode)