EPON Optical Line Terminal Equipment

Configuration Guide

Version： V1.2

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About this mamual

This manual is suitable for some parts of the device user manual. The contents of the document include the operation instructions and service guidance of the equipment. The command line management of the device can be done by using the EPON OLT product of the C-DATA FD1104B, FD1104S, FD1104SN, FD1104Y and FD1108S. Local CONSOLE port operation can also be through the remote in-band and out-of-band, with TELNET operation. Is the user should read the information before using the EPON OLT device.

This manual does not cover the product description of the equipment, product specifications, equipment installation and other parts. To understand the part of the content, please refer to the equipment installation volume.

The EPON OLT device user manual also includes the following volumes

《EPON OLT Device User Manual - Equipment Installation Volume》

《EPON OLT Device User Manual - EMS Network Management Software Volume》

《EPON OLT Device User Manual - Command Line Operation》

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Overview

object of reading	Product	Software Version	
C-DATA internal staff FTTX operation and maintenance engineer C-DATA Customer	FD1108S	FD1108S：V2.4.02_170421_X000	
Compiling Department	C-DATA Technical marketing department	Document version	V1.2

Command Conventions

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

Convention	Description
Boldface	The keywords of a command line are in **boldface**.
Italic	Command arguments are in *italics*.
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
(x | y | ...)	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[x | y | ...]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
<x-y>	One number from x to y can be selected
$	A line starting with the $ sign is comments.

Keyword Operation Conventions

Convention	Description
String with < >	It is key name. For example, <Enter>, <Tab>, <Backspace>, <a>, <?> etc, it means to press the key button
<Key 1 + Key 2>	It means to press the key at same time. For example < Ctrl+Alt+A> means to press “Ctrl”, “Alt”, “A” button together.
<Key 1 , Key 2>	It means to press the first button, then release, and press the second button. For example < Alt, F> means to press “Alt” first, then release “Alt” button, and then press “A” button.

Common command

command	description
show vlan all	View OLT vlan summary
show system infor	View OLT information of version, MAC, sequence number, model
show igmp group all	View the list of multicast groups that the OLT joins
show running-config all	View the running configuration of the OLT
show startup-config all	View the saved configuration of the OLT
show system ipconfig	View the in-band, out-of-band management IP address information of the OLT
show olt 1 onu 1 ctc sn	View the version information for the ONU
show olt <oltId> online-onu	View the online ONU on the PON port
show olt <oltId> optical-online-onu	View all the online ONU information of optical power, voltage, current, temperature and so on

Symbol Conventions

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


This warning symbol means danger. You are in a situation that could cause bodily injury or broke the equipment. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents by making quick guide based on this guide.


Indicates a hazard with a high level of risk, which if not avoided, it will result in death or serious injury on human body.


Provides additional information to emphasize or supplement important points of the main text.

Terms Conventions

OLT: It is the Optical Line Terminal, included the switch and uplink port.

PON: It stand for PON protocol process module and PON port to connect with ONT side.

Prompt

CLI is case – sensitive.

1. Overview of the System

This section describes each of the devices in our EPON environment. The EPON FTTx system is an all-optical, fiber-to-the-x system that delivers quadruple-play voice, data, video and wireless services to residential and business subscribers.

Our EPON FTTx system consists of the following network components.

■ Optical Line Termination - the optical line termination unit that provides Network and EPON interface termination, L2 aggregation and control functions.

Product solutions	Model
TK solution	FD1002S
Cortina solution	FD1108S FD1104Y FD1104S FD1216S

■ Optical Network Terminals - the optical network terminal located at the subscriber premises. The model numbers are:

Product solutions	type	Model	Description
ZTE solution	SFU（Bridge device）	FD111HZ	1GE
Cortina solution	SFU（Bridge device）	FD104HC	4FE
		FD304HC	4FE+CATV
	SFU（Bridge）+ router	FD304HW	4FE+CATV+WIFI
		FD104HW	4FE+WIFI
Broadcom solution	HGU（Gateway device）	FD212H	1GE+1FE+1POTS
		FD214GW	4GE+2POTS+WIFI
		FD404GW	4GE+2POTS+WIFI+CATV
RTK solution	SFU（Bridge device）	FD600-104F-HR	4FE
	HGU（Gateway	FD600-104FW-HR	4FE+WIFI

	device）		

■ Optical passives
— PLC passive splitters
— FWDM for 1550nm video overlay EPON

2. System Access

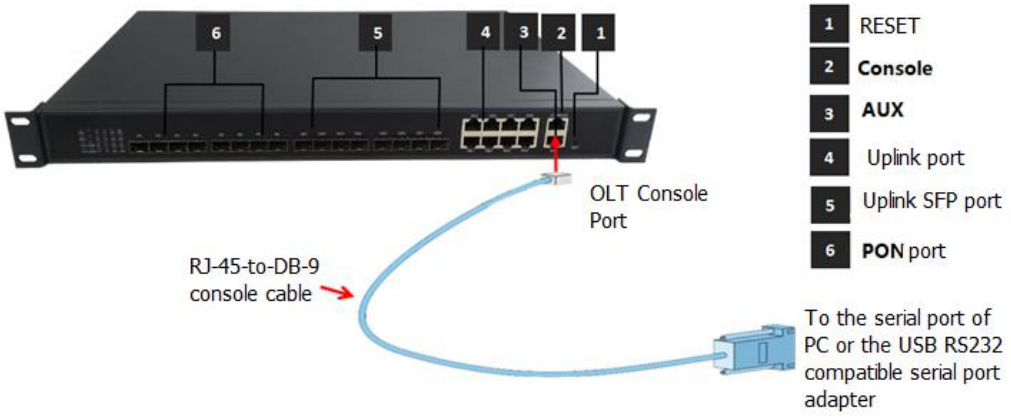
2.1 Overview

The CLI of OLT can be configured and managed via local terminal connection or a remote session using Telnet. The OLT supports three methods to gain access for management and configuration tasks:

1. Local access to the OLT through the RS232 console port on front panel, see below picture.

2. Dedicated local Telnet connection to the OLT by using the FE port on OLT front panel (outband interface).

3. Remote access over the provider's Ethernet/IP network by using Telnet. Therefore, an inband management channel.



图表 1

2.2 Console Access

OLT provides console interface (marked as "CONSOLE" RJ45 type port) .
Console access requires:

- Console cable: RJ-45-to-DB-9 console cable
- Terminal emulation software: HyperTerminal

The cable is connected between the serial port of the host and the console port on the device. Most computers and notebooks no longer include built-in serial ports. If the host does not have a serial port, the USB port can be used to establish a console connection. A special USB-to-RS-232 compatible serial port adapter is required when using the USB port.

- RJ-45-to-DB-9 Console Cable， as follows：

Port on Computer	Cable Required	Port on OLT
Serial Port	RJ-45 to DB-9 Console Cable	RJ-45 Console Port
USB Type-A Port	● USB to RS-232 compatible serial port adapter (Adapter may require a software driver) ● RJ-45 to DB-9 Console Cable	

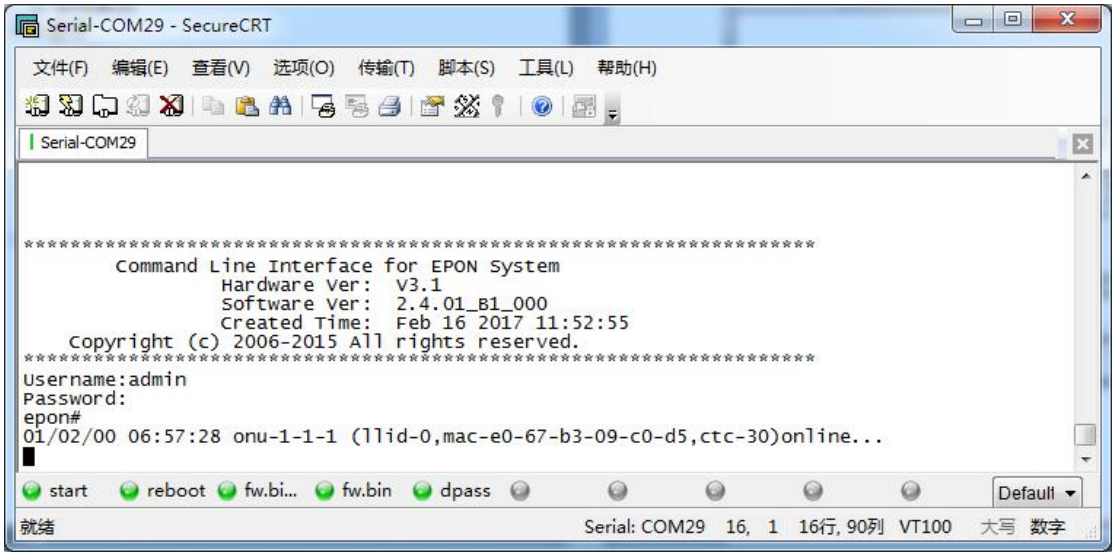
RJ-45 to DB-9 Console Cable

USB to RS-232 compatible serial port adapter

Run a VT terminal emulation software (e.g. HyperTerminal) with the attributes

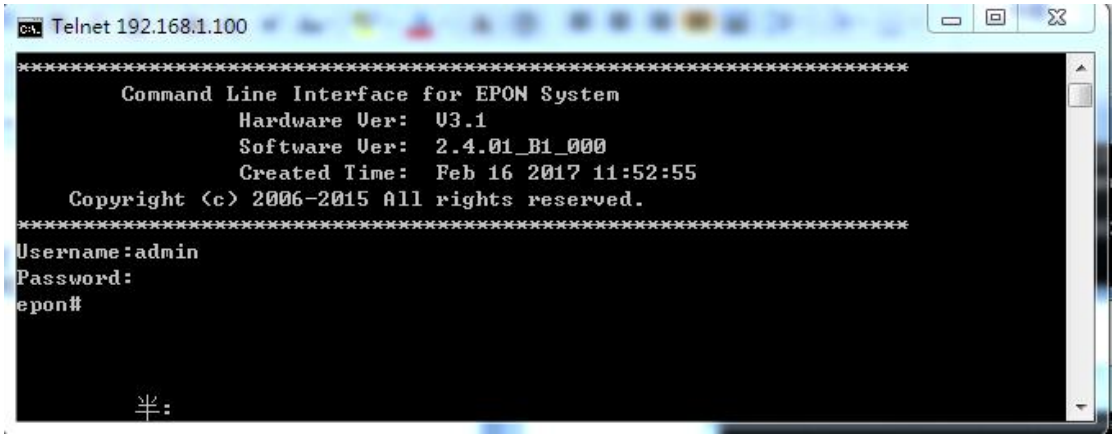
Band Rate: 9600
Data Bit: 8
Parity Check: NO
Stop Bit: 1
Flow Control: NO

When the serial port tool is successfully connected to the OLT, in the actual command line, username input admin, password input admin (The password will not be displayed). As follows：



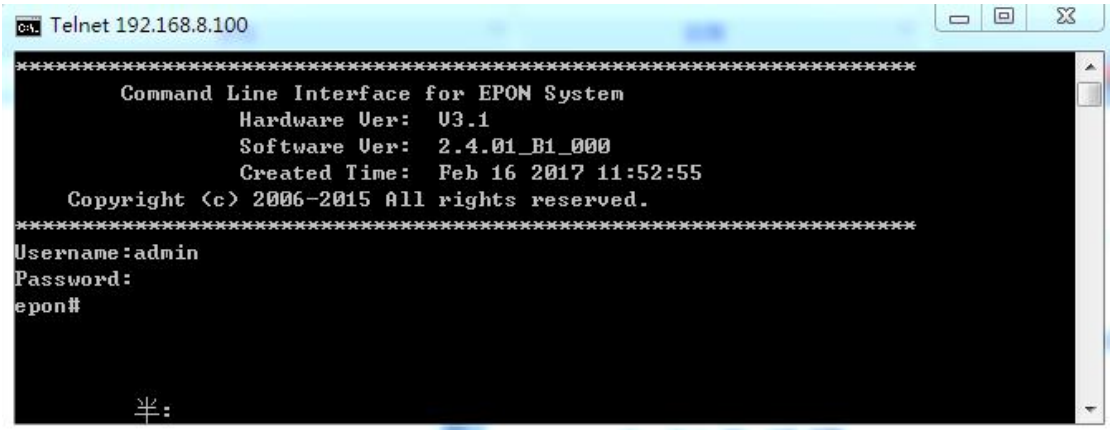
2.3Out-band interface access (From OLT MGMT/AUX port)

You should configure your PC IP to 192.168.1.X (Except 192.168.1.100), connect to the MGMT/AUX port of OLT, login the OLT with the default OLT management IP (Default IP : 192.168.1.100). Default login ID is admin and the password is admin.As follows:



2.4 In-band Interface Access(From OLT Ge uplink port)

You should configure your PC IP to 192.168.8.X (Except 192.168.8.100), connect to the uplink port of OLT, login the OLT with the default OLT in-band management IP (Default IP : 192.168.8.100). Default login ID is admin and the password is admin.As follows:



3.Upgrade OLT

3.1Note：

The new version(OLT V2.3.X) is different from the olt version(before OLT V2.3.X). There are two management IP in the new version, such as in-band management IP and out-of-band management IP. But There is only one management IP in the old version.

So we adjust something about the in-band and out-of-band management IP. As follows:

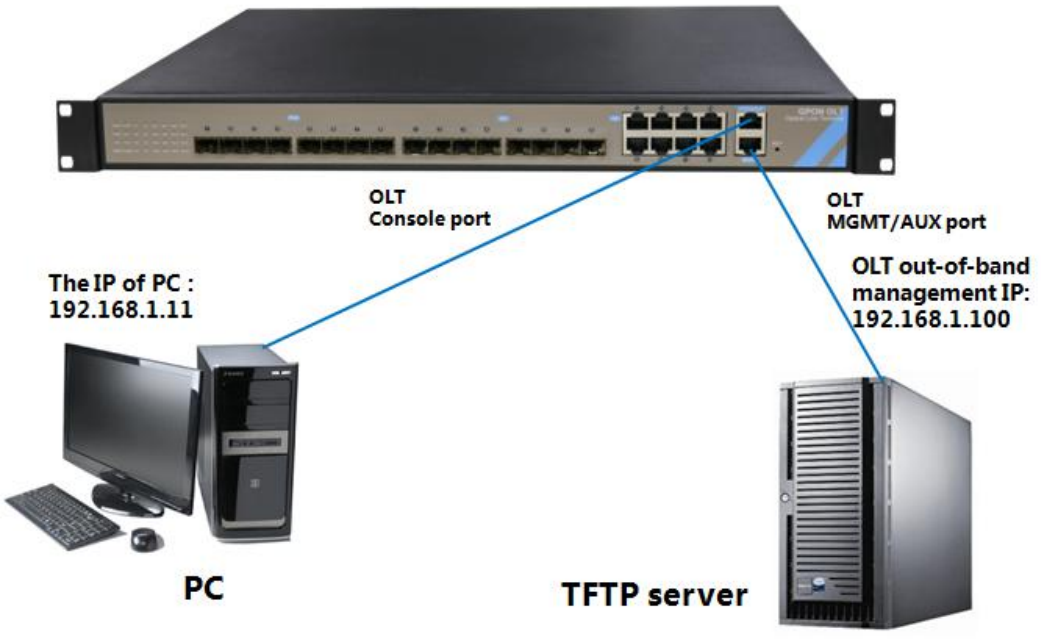
1. **Before the OLT is default ip address 192.168.1.100,after upgrade to V2.3.1 version:**
   OLT uplink port manage ip address is:192.168.8.100
   OLT AUX/MGMT port manage ip address is:192.168.1.100

2. **Before the OLT manage ip address have been change to 192.168.1.X not is 192.168.1.100 ,after upgrade to V2.3.1 version:**
   OLT uplink port manage ip address is:192.168.1.X
   OLT AUX/MGMT port manage ip address is:192.168.2.100

3. **Before the OLT manage ip address have been change to other not is 192.168.1.X ,after upgrade to V2.3.1 version:**
   OLT uplink port manage ip address is:It is before you are changed ip address.
   OLT AUX/MGMT port manage ip address is:192.168.1.100

3.2Upgrade Tutorial

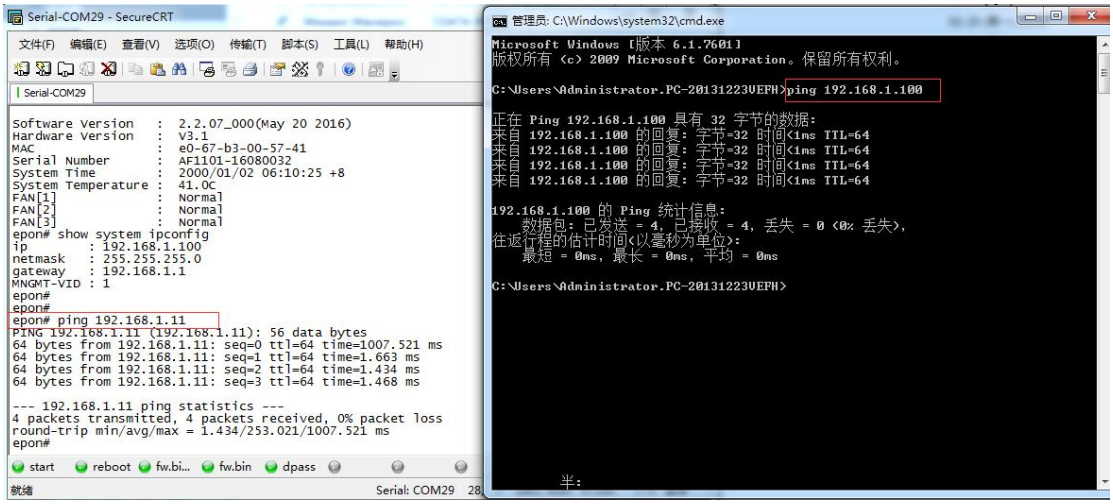
There is a topology for upgrading, As follows：



Note： This tutorial will take the PC as a server, and the IP of PC is 192.168.1.11， management IP of the OLT is 192.168.1.100.

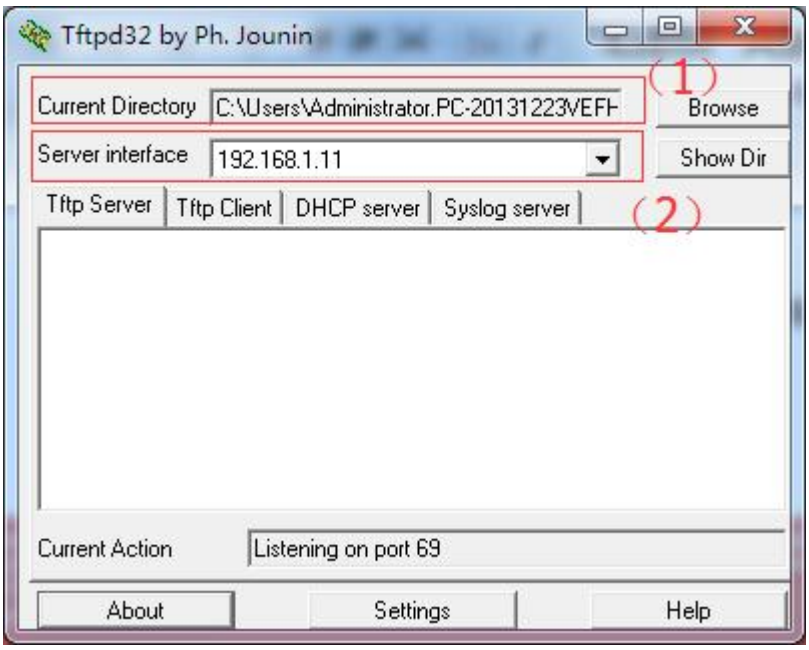
1. **Make sure that the firewall on the PC is turned off；**

2. **Ensure that the IP address of the PC and the management IP of the OLT are on the same network segment and can ping each other；** As follows:



图表 8

3. **Ensure that there is TFTP program on the PC to download the firmware for the OLT.** As follows:
   （1） Specifies the path to the firmware to be upgraded；
   （2） Specifies the IP address of the server (ie PC)；



图表 9

4. Enter the upgrade command in the OLT

epon# **system update firmware < firmware name> tftp-server <tftp-ip>**

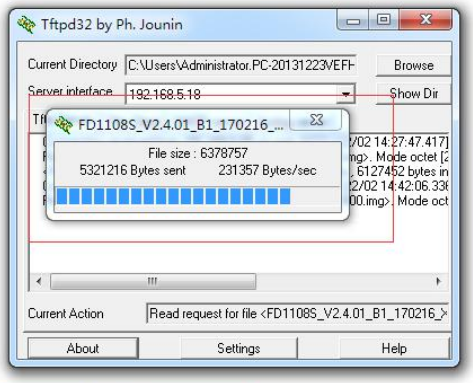
As follows:

（1）< firmware name > : FD1108S_V2.4.01_B1_170216_X000.img，<tftp-ip>:192.168.1.11。

（2）Upgrade command input is completed, you can see tftp server has the process of transferring firmware.

（3）After the upgrade, enter "y" to restart the OLT. (Note: must be restarted, OLT can apply the new version of the software)

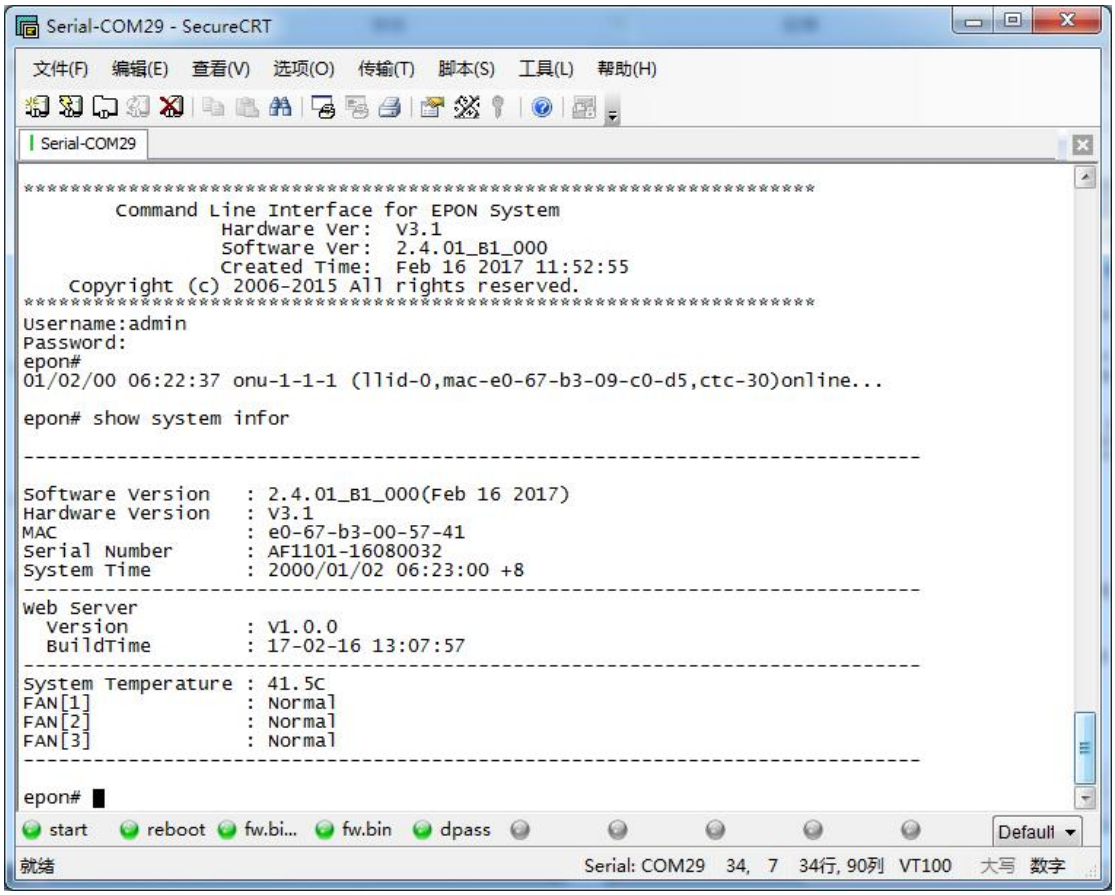
```
Software Version   :  2.2.07_000(May 20 2016)
Hardware Version   :  V3.1
MAC                :  e0-67-b3-00-57-41
Serial Number      :  AF1101-16080032
System Time        :  2000/01/02 06:10:25 +8
System Temperature :  41.0C
FAN[1]             :  Normal
FAN[2]             :  Normal
FAN[3]             :  Normal
epon# show system ipconfig
ip        : 192.168.1.100
netmask   : 255.255.255.0
gateway   : 192.168.1.1
MNGMT-VID : 1
epon#
epon#
epon# ping 192.168.1.11
PING 192.168.1.11 (192.168.1.11): 56 data bytes
64 bytes from 192.168.1.11: seq=0 ttl=64 time=1007.521 ms
64 bytes from 192.168.1.11: seq=1 ttl=64 time=1.663 ms
64 bytes from 192.168.1.11: seq=2 ttl=64 time=1.434 ms
64 bytes from 192.168.1.11: seq=3 ttl=64 time=1.468 ms

--- 192.168.1.11 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 1.434/253.021/1007.521 ms
epon# system update firmware FD1108S_V2.4.01_B1_170216_X000.img tftp-server 192.168.1.11
Transfering the Image file, please wait...
```




```
epon#
epon# ping 192.168.1.11
PING 192.168.1.11 (192.168.1.11): 56 data bytes
64 bytes from 192.168.1.11: seq=0 ttl=64 time=1007.521 ms
64 bytes from 192.168.1.11: seq=1 ttl=64 time=1.663 ms
64 bytes from 192.168.1.11: seq=2 ttl=64 time=1.434 ms
64 bytes from 192.168.1.11: seq=3 ttl=64 time=1.468 ms

--- 192.168.1.11 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 1.434/253.021/1007.521 ms
epon# system update firmware FD1108S_V2.4.01_B1_170216_X000.img tftp-server 192.168.1.11
Transfering the Image file, please wait...
Earsing flash, please wait...
Upgrading image, please wait....[bcmRX]soc_knet_cmd_req: command timeout
.......................OLT deregistration: Device ID 0x00000001
OLT deregistration: Device ID 0x00000000

01/02/00 06:18:18 Slot 1 olt 5~8 deregistered.

01/02/00 06:18:18 Slot 1 olt 1~4 deregistered.

01/02/00 06:18:18 Slot 1 olt 5~8 registered.

01/02/00 06:18:18 Slot 1 olt 1~4 registered.
.........................OK!

Reboot the system now<y/n>?y
```

start reboot fw.bin_d fw.bin dpass

5.Upgrade successed； As follows：



3.3 Web Management System Upgrade Guide

1. Upgrade OLT basic firmware to latest basic firmware which packaged with latest web firmware. The latest OLT basic firmware is: FD1108S_V2.4.02_170421_X000.img

EX:

epon# system update firmware FD1108S_V2.4.02_170421_X000.img tftp-server 192.168.1.11

Transfering the Image file, please wait...

Earsing flash, please wait...

Upgrading image, please wait.....OK!

Reboot the system now<y/n>?y

2. Check whether the OLT basic firmware upgrade successfully

epon# show system infor

Software Version : 2.4.02_000(Apr 21 2017)

Hardware Version : V3.1

MAC : e0-67-b3-00-57-41

Serial Number : AF1101-16080032

System Time : 2000/01/09 02:22:02 +08:00

System Temperature : 41.5C
FAN[1] : Normal
FAN[2] : Normal
FAN[3] : Normal

---

3. Use system update web-server command to upgrade OLT web firmware. The latest web firmware is: FD1108S_WEB_V1.0.0_170421_1831.img

Note： FD1104S,FD1104SN,FD1104B,FD1104Y,FD1108S use same web firmware.

EX:

epon# system update web-server FD1108S_WEB_V1.0.0_170421_1831.img tftp-server 192.168.1.11
Transfering the Web Server file, please wait...
Upgrading Web Server ...
Restarting Web Server ...
OK!

4. After upgrading web firmware do not need to reboot the OLT. Check whether the web firmware is correct directly.

epon# show system infor

Software Version : 2.4.02_000(Apr 21 2017)
Hardware Version : V3.1
MAC : e0-67-b3-00-57-41
Serial Number : AF1101-16080032
System Time : 2000/01/09 02:32:04 +08:00

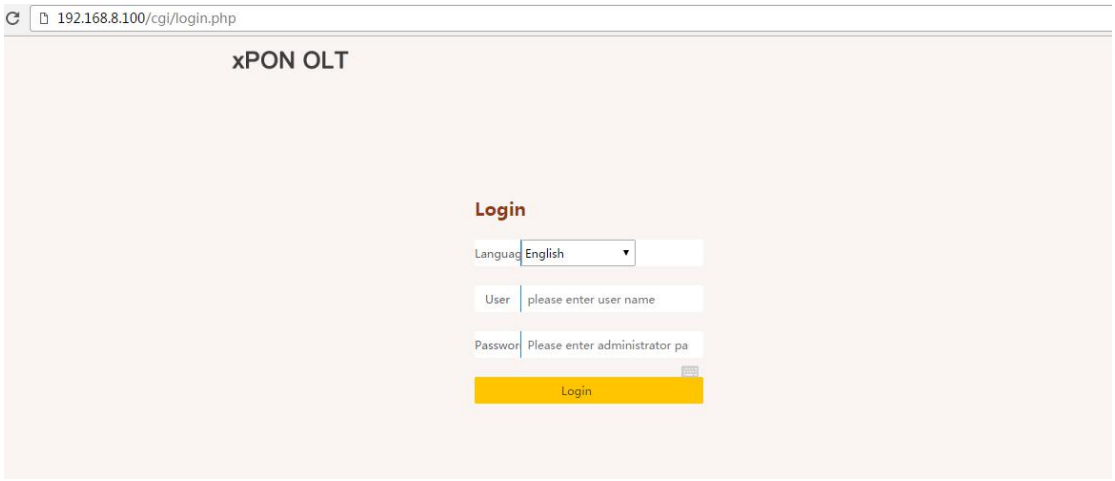
Web Server
Version : V1.0.0
BuildTime : 17-04-21 18:31:25
Administrator : admin
Password : admin -

System Temperature : 38.0C
FAN[1] : Normal
FAN[2] : Normal
FAN[3] : Normal

---

5. Use Firefox browser access to OLT web via inbound ip address or outband ip address. Then you can see the OLT web login interface. Web default login username and password is: admin/admin

Note: Recommend using Firefox web browser to access OLT web interface



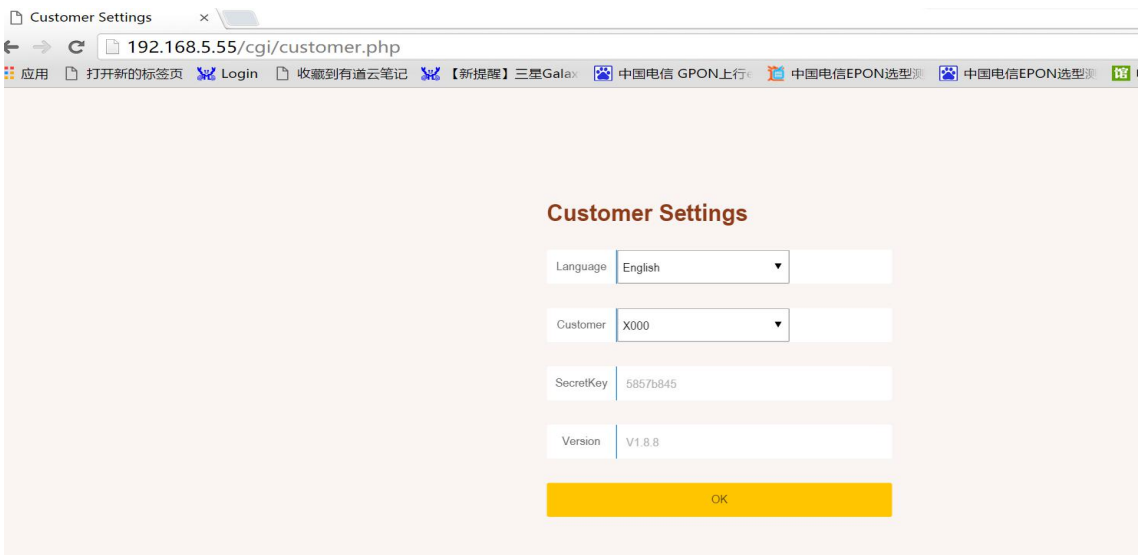
6. Customized web management information configure. PC access to OLT web via http://192.168.5.55/cgi/customer.php And enter parameter. Click "OK" . Restart the OLT web in browser then can view the customized informations.

Language: Support Chinese and English. The default is Chinese.

Customer: Customer ID. Provided by CDATA. The default is neutral.

SecretKey： Customer ID secretkey. Provided by CDATA. The default is neutral.

Version： Customized web management system version.



7. Other instructions

a. Web management system's username and password is independent, default is admin/admin. This username and password can modify in web interface and would not affect other access mode.

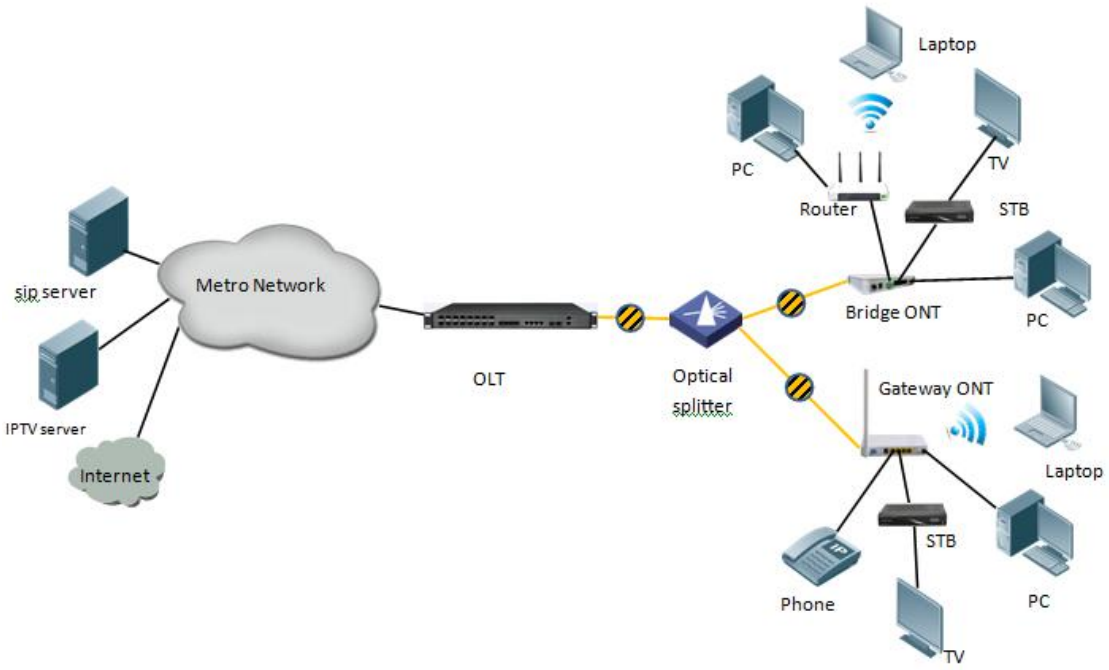
b.Web management system need to work in V2.4.02 OLT basic firmware. In old OLT

basic version can't not support the web function. So if you need to use web function. Please upgrade OLT basic firmware to V2.4.02 or newer at first.

4. Application Example

This section describes basic concepts related to the fiber to the home (FTTH) solution from the user side to the network side on FTTH networking using PON transmission.

We will give two example of the configuration. One is Bridge ONU configuration, another is the Gateway ONU configuration.



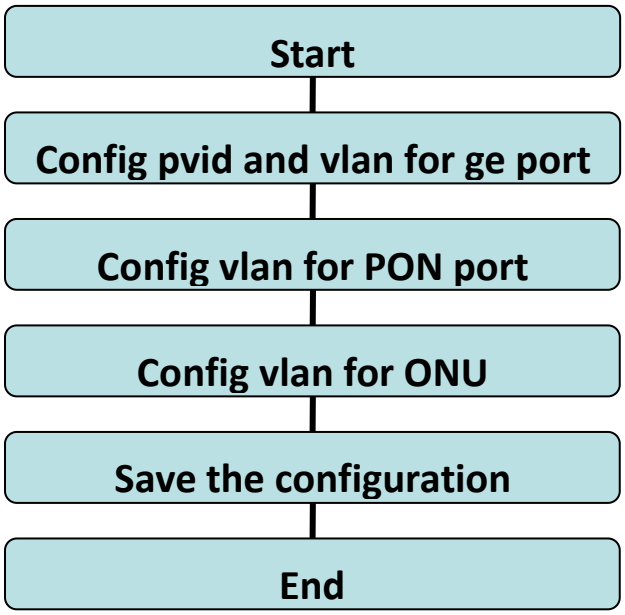
4.1 Data Plan

The subsequent examples are configured based on the following data plan.

Data Plan	
Service Classification	**Data**
VLAN	VLAN 100： Internet Service VLAN 200： IPTV Service VLAN 300： VOIP Service
OLT Port Setting	Ge5： Pvid is 100， VLAN 100 . Ge6： Pvid is 200， VLAN 200. Ge7： Pvid is 300， VLAN 300. PON1： VLAN 100 tag, VLAN 200 tag, VLAN 300 tag.
Bridge ONU Port Setting	LAN 1： VLAN 100， tag mode LAN 2： VLAN 200， tag mode
Gateway ONU Port	LAN1： VLAN 100

Setting	LAN2： VLAN 200 POTS： VLAN 300

Configuration Process



4.2Configure OLT

The configuration of OLT include pvid and vlan of ge port, vlan of pon port.

- Enable the vlan function
- Configure pvid and vlan for GE port： vlan mode include untag and tag.
- Configure pvid and vlan for PON port： vlan mode include untag and tag.(About the 8 port OLT, ge9-ge16 means PON port 1-8 in the CLI. About the 4 port OLT, ge5-ge8 means PON port 1-4 in the CLI.)

（1） Enable the vlan function

```
epon#swmode vlan enable
```

（2）Configure pvid and vlan for GE port

```
epon# swport ge1                    // Enter ge1 configuration view
epon(GE-1)# pvid 100                //Pvid is 100
epon(GE-1)# vlan add 100            //Add vlan100, mode is untag
epon(GE-1)# exit
epon# swport ge2                    // Enter ge2 configuration view
epon(GE-2)# pvid 200                // Pvid is 200
```

```
epon(GE-2)# vlan add 200          // Add vlan200, mode is untag
epon(GE-2)# exit
epon# swport ge3                  // Enter ge3 configuration view
epon(GE-3)# pvid 300              // Pvid is 300
epon(GE-3)# vlan add 300          // Add vlan300, mode is untag
epon(GE-3)# exit
```

（3）Configure pvid and vlan for PON port

```
epon# swport ge9                  //Enter ge9(PON port 1) configuration view
epon(GE-9)# vlan add 100,200,300 tag   //Add vlan100,200,300on the GE9(PON port 1), mode is
                                       tag
epon(GE-9)# exit
```

Note：

1. If the port has only one vlan untag mode and the same as the pvid, then the port is access mode. This mode can be used when the uplink port can only handle devices that do not carry tag packets (such as PCs) or uplink networks without tagged packets. As follows：

```
epon# swport ge1                  // Enter ge1 configuration view
epon(GE-1)# pvid 100              // Pvid is 100
epon(GE-1)#vlan add 100           // Add vlan100, mode is untag
```

2. If the port is configured with multiple vlan and tag mode, the port is in trunk mode. You can set the port to this mode when the switch is connected to a switch or other device that can process packets with tagged messages. As follows：

```
epon# swport ge4                  // Enter ge4 configuration view
epon(GE-4)#pvid 10                // Pvid is 10
epon(GE-4)#vlan add 10            //Add vlan10, mode is untag
epon(GE-4)# vlan add 11 tag             // Add vlan11, mode is tag
epon(GE-4)#vlan add 12 tag        // Add vlan12, mode is tag
```

3. If the port is configured with multiple vlan and some of which are tagged and the others are untag mode.the port is in hybrid mode. When the uplink network can handle the device with tag packets and only devices that can not process tagged packets (such as PC), the port can be set to this mode. As follows：

```
epon# swport ge5                  // Enter ge5 configuration view
epon(GE-5)#pvid 10                // Pvid is 10
epon(GE-5)#vlan add 10            // Add vlan10, mode is untag
epon(GE-5)# vlan add 11           // Add vlan11, mode is untag
epon(GE-5)#vlan add 12 tag        // Add vlan12, mode is tag
```

（4）Configure GIMP and Multicast Vlan

```
epon# igmp mode proxy                                  // IGMP is proxy mode
```

```
epon#btv                                                    //Enter the btv view
epon(btv)# igmp user add user-index 1 pon 1 ont 1 vlan 200
                                                            //  Add btv user binding specified ONU
                                                              and vlan
epon(btv)#exit                                              //Exit the btv view
epon# multicast-vlan 200                                    //Create and entermulticast
                                                              vlan200 view
epon(multicast-vlan-200)# igmp router-port ge2              //  Configure the multicast routing
                                                              port as ge2
epon(multicast-vlan-200)# igmp member user-index 1          //  Add multicast users to multicast
                                                              vlan200
OLT(config-multicast-vlan-200)# igmp match group ip 224.1.1.1 to-ip 224.5.5.5
                                                    //  Configure multicast vlan200 to match the multicast
address segment 224.1.1.1-224.5.5.5
OLT(config-multicast-vlan-200)# exit                        //Exit the multicast vlan 200 view
```

4.3Configure the ONU

4.3.1 Configure Internet Services of Bridged ONU

Only when the ONU register to the OLT success , you can configure the service of the ONT. So make sure ONU is registered to the OLT.
OLT would register ONT automatically in default.

Prerequisites

- The OLT is connected to the uplink device success
- The OLT create internet vlan
- The OLT configure GE port vlan for Internet
- The OLT configure PON port vlan for Internet
- The ONU is registered

Configure ONU port vlan

```
epon# olt 1                                         //Enter the PON port
epon(olt-1)# onu 1                                  //Enter the ONU
epon(olt-1/onu-1)# uni 1                            //Enter the uni of ONU
epon(olt-1/onu-1/uni-1)# ctc vlan-mode tag 0x8100 0 100     //  Configure the ONU port mode
                                                              as tag mode (access mode)
epon(olt-1/onu-1/uni-1)#exit
```

4.3.2 Configuring IPTV Service of Bridge ONU

Prerequisites

- The OLT is connected to the uplink device success
- The OLT create IPTV vlan
- The OLT configure GE port vlan for IPTV
- The OLT configure PON port vlan for IPTV
- The OLT configure IGMP and Multicast vlan
- The ONU is registered

Configure ONU port

```
epon(olt-1/onu-1)# uni 2
epon(olt-1/onu-1/uni-2)# ctc vlan-mode tag 0x8100 0 200      // Configure the ONU port mode as tag mode (access mode)
epon(olt-1/onu-1/uni-2)# ctc igmp vlan add 200                //Configure the multicast vlan as 200
```

Note：

The port mode of ONU is as follows：

1. Transparent Mode：

Direction	Type	Processing method
Upstream	Untag frame	Untag frame does not make any change, forwarding
	Tag frame	Tag frame does not make any changes (original VLAN TAG), forwarding
Downstream	Untag frame	Untag frame does not make any change, forwarding.
	Tag frame	Tag frame does not make any changes (original VLAN TAG), forwarding.
	Tag frame	Tag frame VLAN ID belongs to the port "allowed by VLAN", forwarding; Tag frame VLAN ID belongs to the port "allowed by VLAN", forwarding; If the Tag frame VLAN does not belong to the port of the "permitted by VLAN," is discarded.

Command is as follow：

epon(olt-1/onu-4/uni-1)# **ctc vlan-mode transparent**

2. Tag Mode（access Mode）：

Direction	Type	Processing method
Upstream	Untag frame	Switch frames on port’s default VLAN(VPID),forwarding.
	Tag frame	Discard the frame
Downstream	Untag frame	Discard the frame
	Tag frame	If the Downstream Tag frame VLAN ID equal to the configuration of the VID， According to VID forwarded to

		the appropriate UNI port, and stripping the tag; If the downstream Tag frame VLAN ID is not equal to the configuration of the VID, then the frame is discarded
	Tag frame	Tag frame VLAN ID belongs to the port "allowed by VLAN", forwarding; Tag frame VLAN ID belongs to the port "allowed by VLAN", forwarding; If the Tag frame VLAN does not belong to the port of the "permitted by VLAN," is discarded.

Command is as follow：

epon(olt-7/onu-1/uni-1)# **ctc vlan-mode tag <tpid> <cos> <vlan>**

3. Translation Mode：

Direction	Type	Processing method
Upstream	Untag frame	Switch frames on port's default VLAN(VPID),forwarding.
	Tag frame	Tag frame VLAN ID in the configuration of the VID conversion list, forwarding; Tag frame VLAN ID is not in the configuration of the VID conversion list, frame discarding.
Downstream	Untag frame	Discard the frame
	Tag frame	Tag frame VLAN ID corresponds to the entry in the corresponding port of the VLAN Translation list (equal to the input VID configuration)， According to the table to convert the VID to a corresponding VID (VID output), forwarding; If the VLAN ID in the corresponding port of the VLAN Translation list without a corresponding entry, discarding; If the TAG frame with VLAN ID as the "default VLAN", after the VLAN label forwarding is stripped down;
	Tag frame	Tag frame VLAN ID belongs to the port "allowed by VLAN", forwarding; Tag frame VLAN ID belongs to the port "allowed by VLAN", forwarding; If the Tag frame VLAN does not belong to the port of the "permitted by VLAN," is discarded.

Command is as follow :

epon(olt-7/onu-1/uni-1)# **ctc vlan-mode translation *<tpid>* *<cos>* *<default-vlan>* translate-list**

4. Trunk Mode：

Direction	Type	Processing method
Upstream	Untag frame	Switch frames on port's default VLAN(VPID),forwarding.
	Tag frame	Tag frame VLAN ID belongs to the port "allowed by VLAN", forwarding; Tag frame VLAN ID does not belong to the port of the "permitted by VLAN," is discarded
Downstre	Untag frame	Discard the frame

am	Tag frame	Tag frame VLAN ID belongs to the port "allowed by VLAN", forwarding; Tag frame VLAN ID belongs to the port "allowed by VLAN", forwarding; If the Tag frame VLAN does not belong to the port of the "permitted by VLAN," is discarded.

Command is as follow:

epon(olt-7/onu-1/uni-1)# **ctc vlan-mode trunk *<tpid>* *<cos>* *<default-vlan>* vlan-list（选配）**

5. Aggregation Mode：

Direction	Type	Processing method
Upstream	Untag frame	Switch frames on port's default VLAN(VPID),forwarding.
	Tag frame	If the VLAN ID of the packet is equal to one of the "aggregated VLANs" in the VLAN aggregation table, the VID of the packet is converted to the corresponding VLAN to be aggr. The source of the service flow is also recorded. MAC address value, and forward; If the VLAN ID of the packet is not equal to any one of the "aggregated VLANs" in the VLAN aggregation table of the port, it is discarded. Currently, only the ONU is required to convert the VID. The conversion of other fields (such as TPID, CFI, and Pri) is not required. The ONU treats the TPID and Pri fields in the VLANConfig Parameters field of the received VLAN VariableContainer, After the TPID set to the default value (TPID = 0x8100), Pri to maintain the original value
Downstream	Untag frame	Discard the frame
	Tag frame	If the VLAN ID of the packet is equal to "VLAN to be aggr." In the VLAN aggregation table of the port, the VID is converted to the corresponding "aggregated VLAN" according to the MAC address value and forwarded. If the VID of the original tag is the default VID, the tag is forwarded and forwarded. If the VLAN ID is not equal to "VLAN to be aggr." Or the default VLAN ID is not equal, the ONU is only required VID conversion, other fields (such as TPID, CFI and Pri) conversion is not required. The ONU treats the TPID and Pri fields in the VLANConfig Parameters parameter field in the received VLAN VariableContainer and sets the TPID of the converted VLAN tag to the default value (TPID = 0x8100). Pri remains the original value.

Command is as follow：

epon(olt-7/onu-1/uni-1)# **ctc vlan-mode aggregation *<tpid>* *<cos>* *<default-vlan>***

aggregation-list（选配）

----End

4. 3.3 Configuring Gateway ONU Internet Service – RTK chip scheme ONU

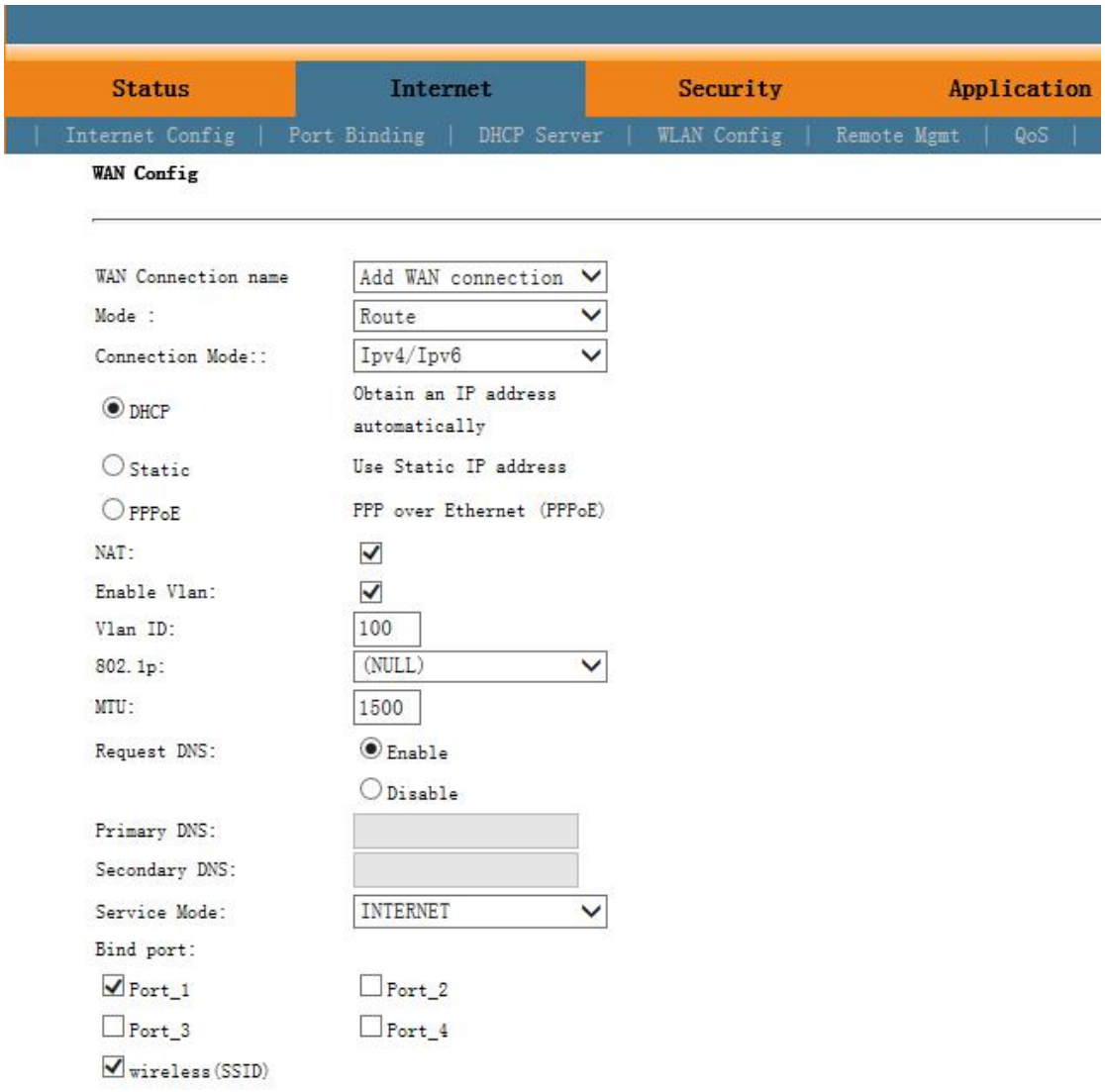
This topic describes how to configure Internet access service, voice service, BTV service and VoD service when gateway ONU is used to build an FTTH network.
The ONU integrating an IAD provides Internet, VoIP, and IPTV services to users. The Gateway ONU facilitates interconnection of home devices by providing Layer 3 services, such as Point-to-Point Protocol over Ethernet (PPPoE)/DHCP dial-up, network address translation (NAT), and Internet Group Management Protocol (IGMP) snooping. This scenario provides fine-grained management channels and service control, and mainly applies to Layer 3 networking.

Prerequisites

- The OLT is connected to the uplink device success
- The OLT create internet vlan
- The OLT configure GE port vlan for Internet
- The OLT configure PON port vlan for Internet
- The ONU is registered

1. **Create Route WAN and bind LAN 1 in ONU Web**

   Click Internet→Internet Config→ WAN Config



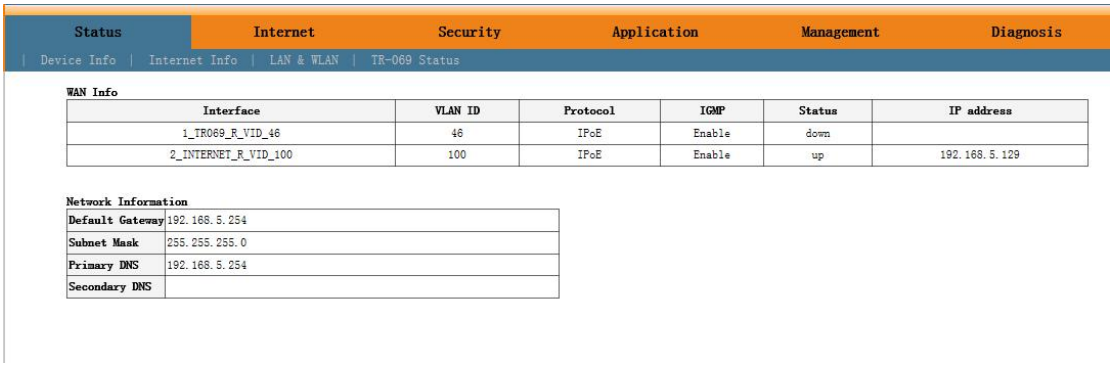
NOTE：

Mode select to **Route**. Check **Enable VLAN** and Vlan ID input **100**. Service Mode select to **INTERNET**. Bind port check **Port_1** and **wireless(SSID)**.

Internet service document take DHCP mode as an example. The service type please selected according to the user's actual use. ONU detail usage please refer to ONU user manual.

2. Check ONU status

Click **Status→Internet Info**



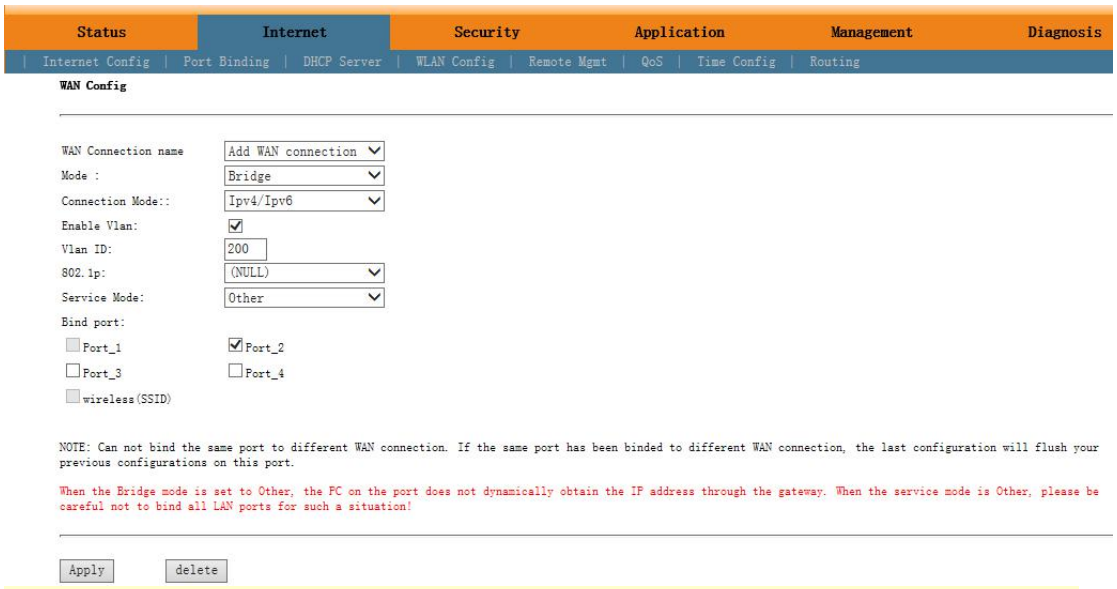
4. 3.4 Configuring Gateway ONU IPTV Service – RTK chip scheme ONU

Prerequisites

- The OLT is connected to the uplink device success
- The OLT create IPTV vlan
- The OLT configure GE port vlan for IPTV
- The OLT configure PON port vlan for IPTV
- The OLT configure IGMP and Multicast vlan
- The ONU is registered

1. Create Bridge WAN and bind LAN 2 in ONU Web

Click **Internet→Internet Config→ WAN Config**

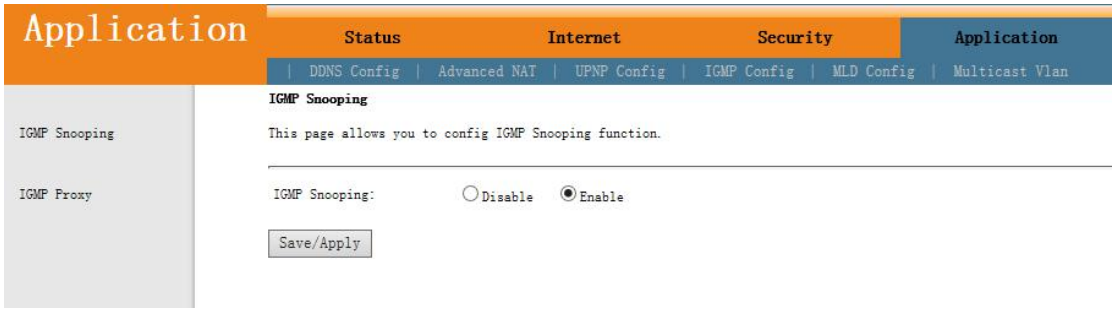


NOTE：

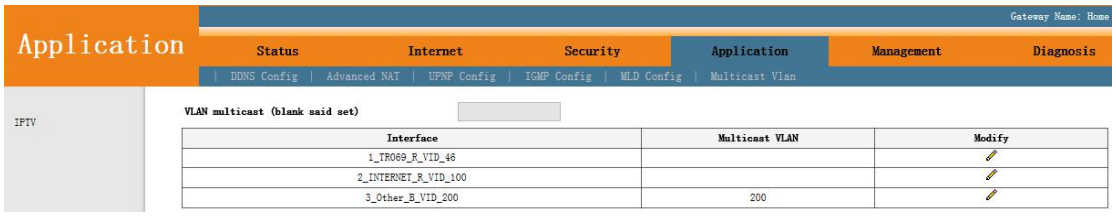
Mode select to **Bridge**. Check **Enable Vlan** and Vlan ID input **200**. Service Mode select to **Other**. Bind port check **Port_2**.

2. Configure IGMP

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

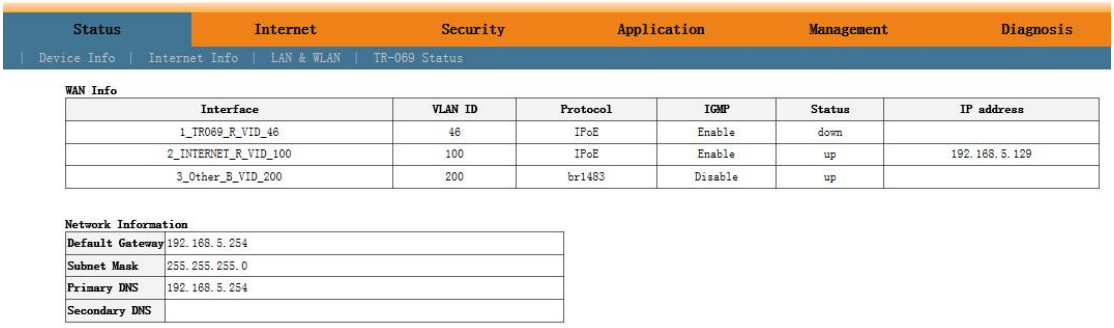


Click **Application→ Multicast Vlan→ 3_Other_B_VID_200→ Modify**. Input 200 in vlan multicast (blank said set).



3. Check ONU Status

Click **Status→Internet Info**



----End

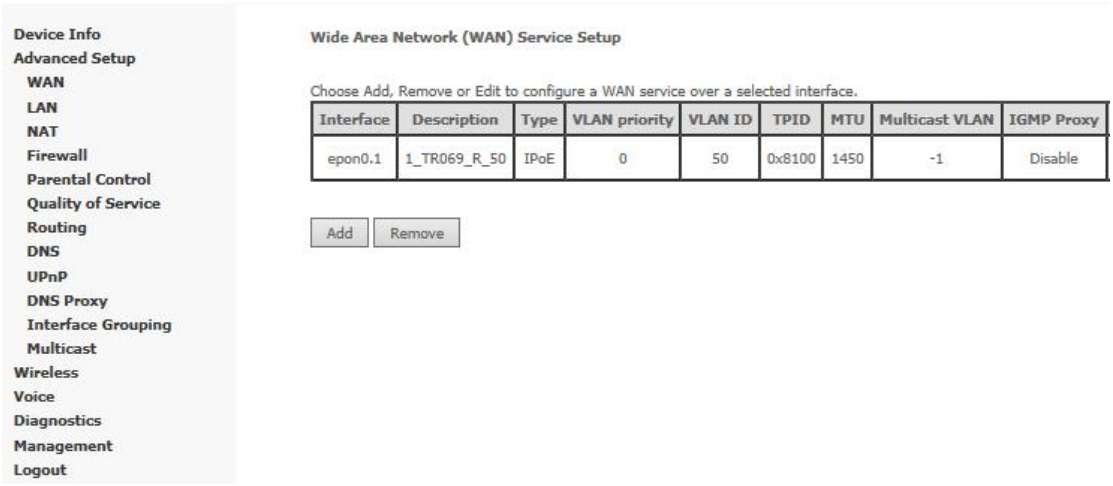
4.3.5 Configuring Gateway ONU Internet Service – Broadcom chip scheme ONU

Prerequisites

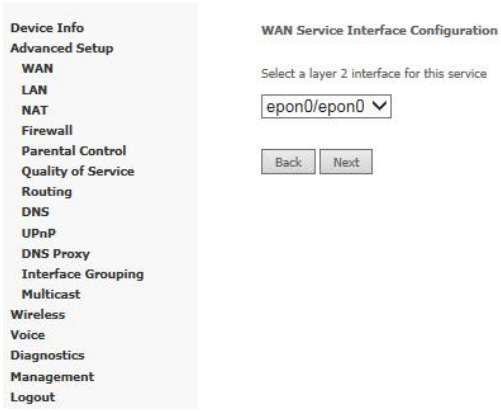
- The OLT is connected to the uplink device success
- The OLT create internet vlan
- The OLT configure GE port vlan for Internet
- The OLT configure PON port vlan for Internet
- The ONU is registered

1. Configuring IPoE WAN in ONU Web

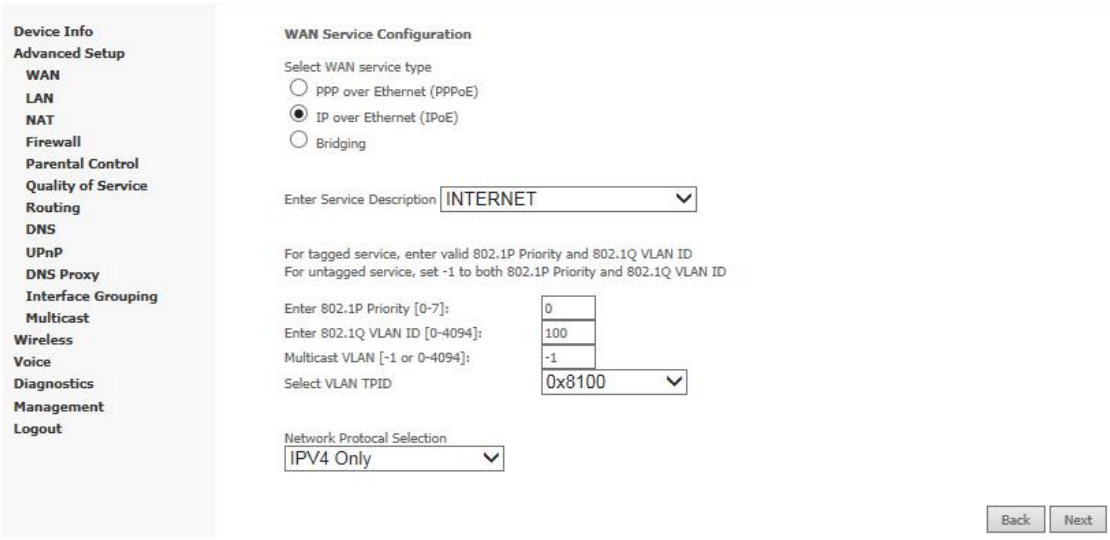
Click **Advanced Setup→WAN→ Add**



Click **Next**



Click **Next**



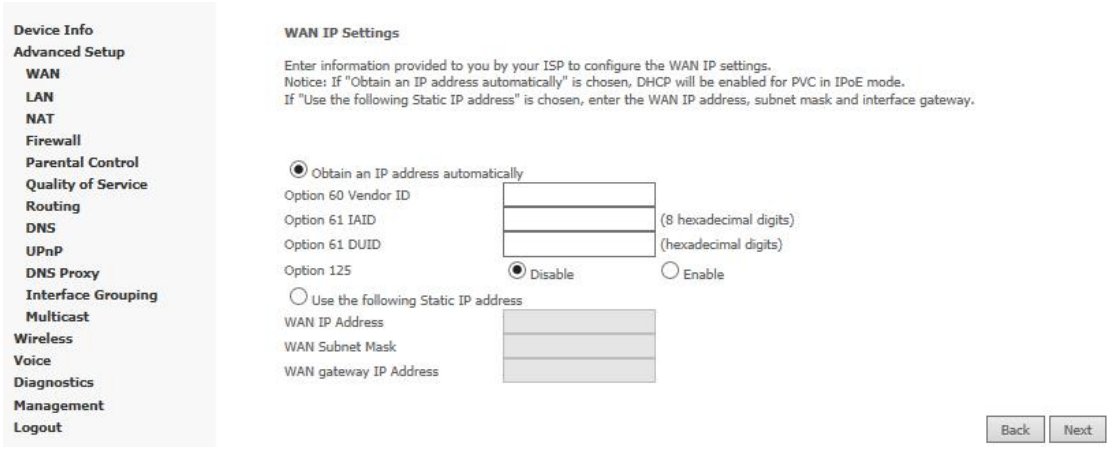
NOTE：

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

Internet service document take DHCP mode as an example. The service type please selected

according to the user's actual use. ONT detail usage please refer to ONU user manual.

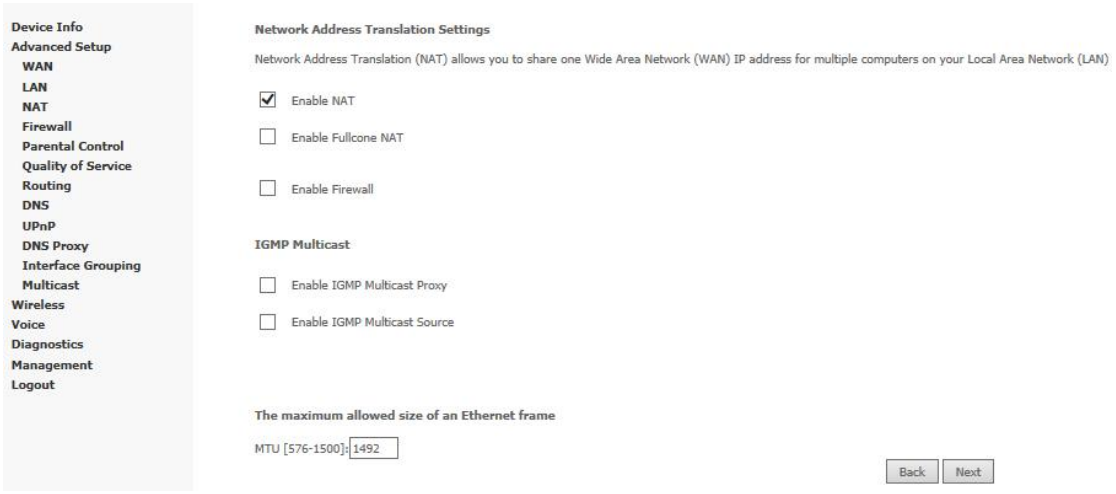
Click **Next**



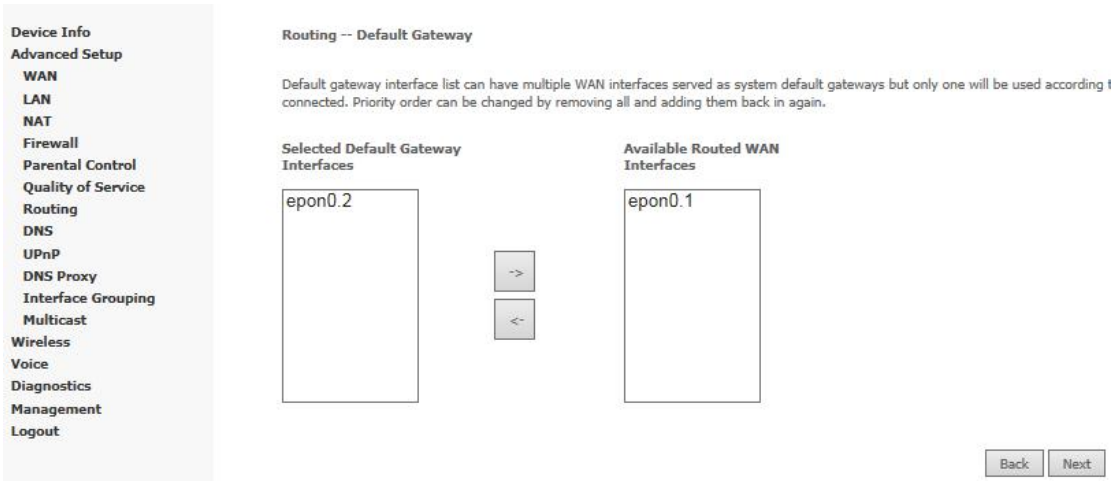
NOTE：

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

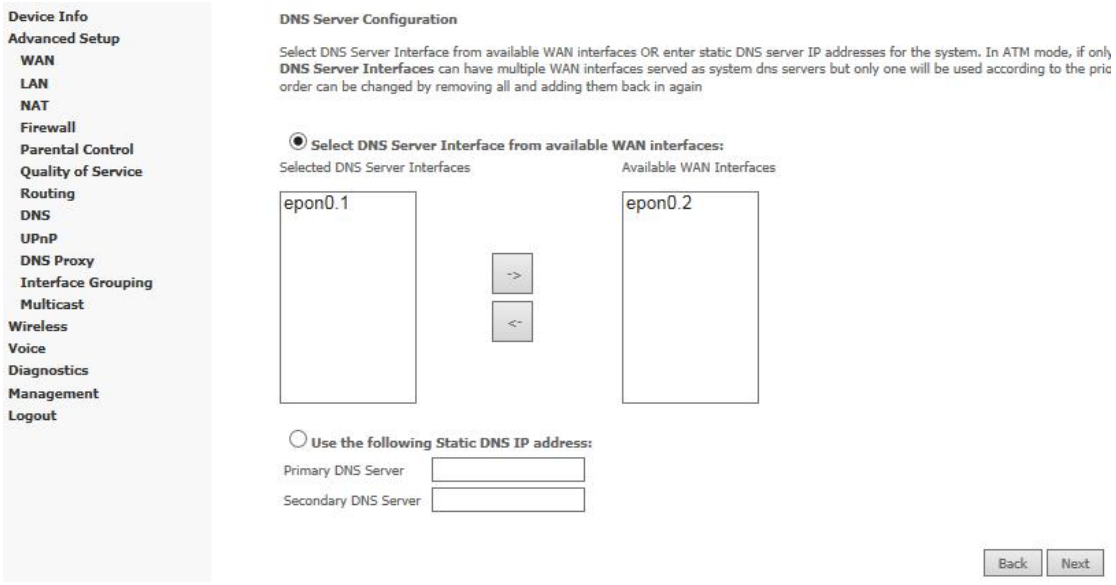
Click **Next**



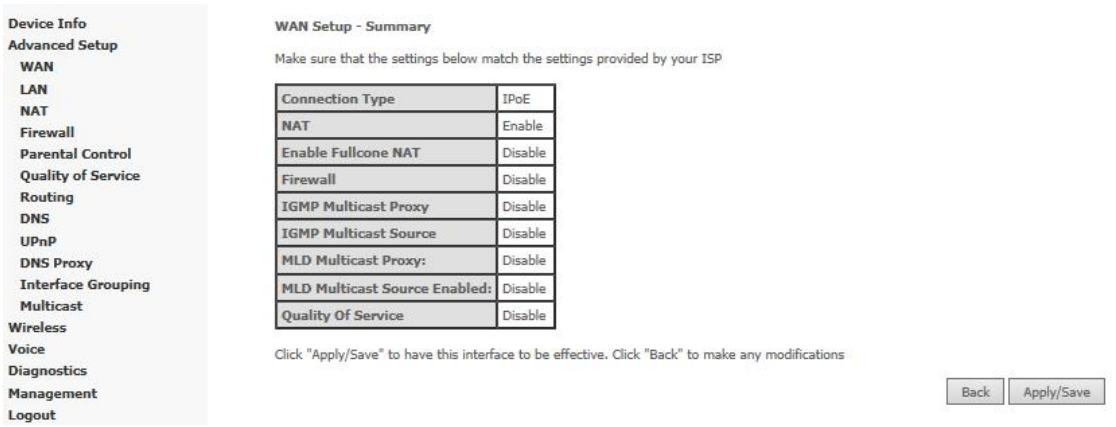
Click **Next**



Click **Next**



Click **Apply/Save**



2. Check ONU Status

Click **Device Info→ WAN**

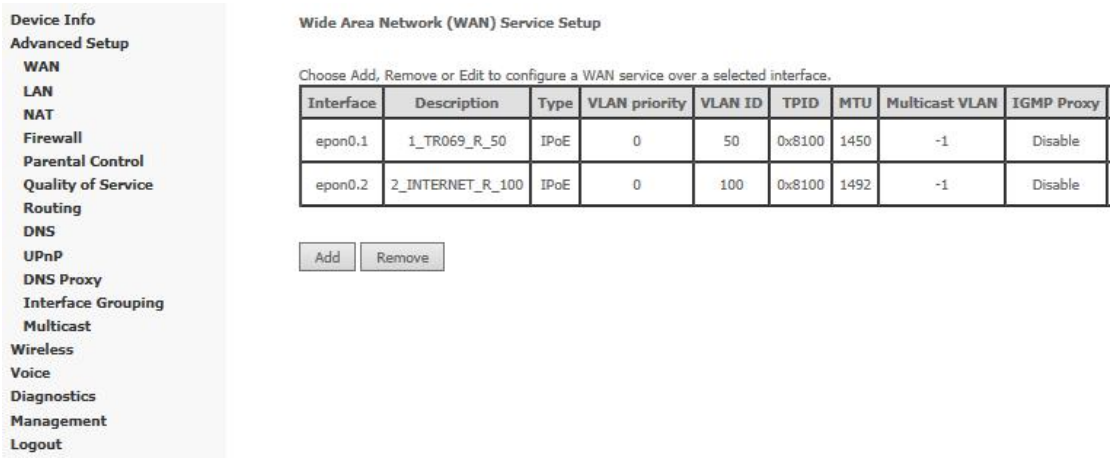
4. 3.6 Configuring Gateway ONU IPTV Service – Broadcom chip scheme ONU

Prerequisites

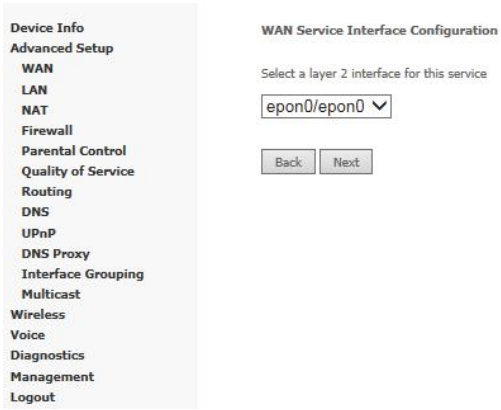
- The OLT is connected to the uplink device success
- The OLT create IPTV vlan
- The OLT configure GE port vlan for IPTV
- The OLT configure PON port vlan for IPTV
- The OLT configure IGMP and Multicast vlan
- The ONU is registered

1. Configuring Bridge WAN in ONU Web

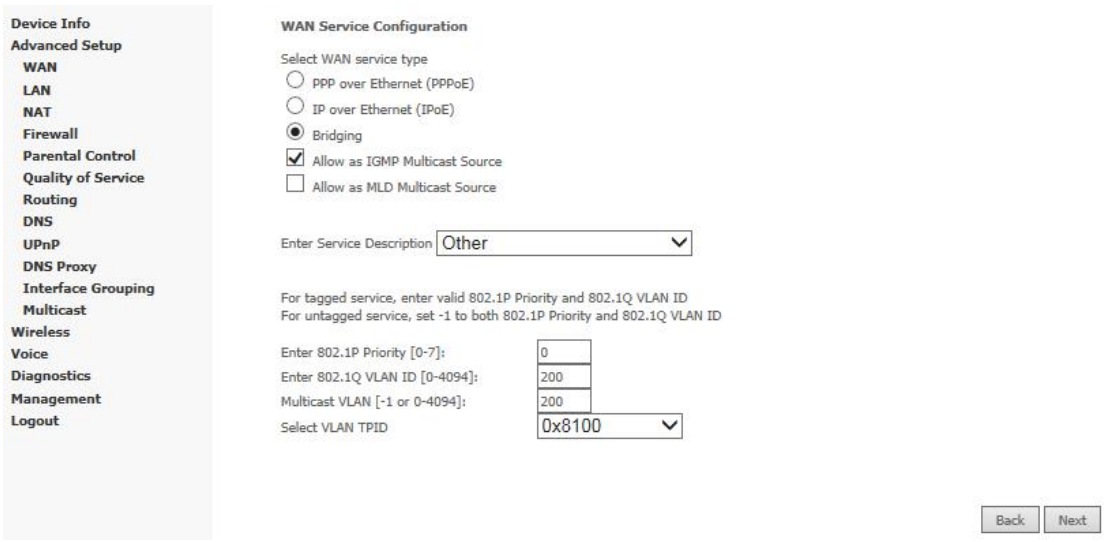
Click **Advanced Setup→WAN→ Add**



Click **Next**



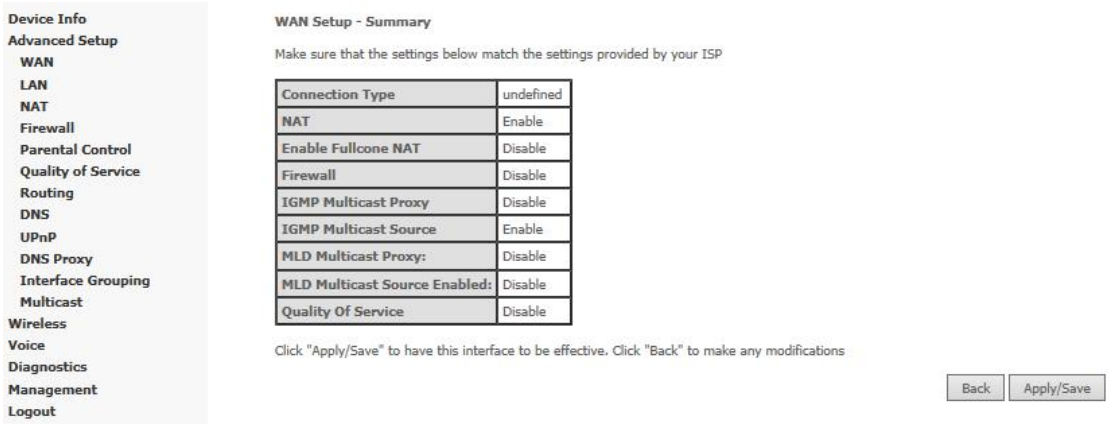
Click **Next**



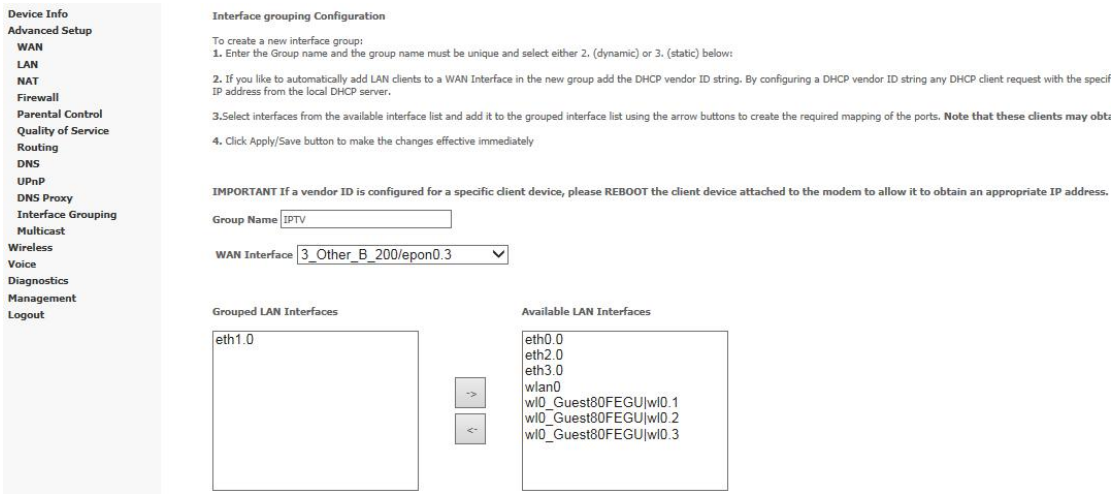
NOTE：

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

Click **Apply/Save**



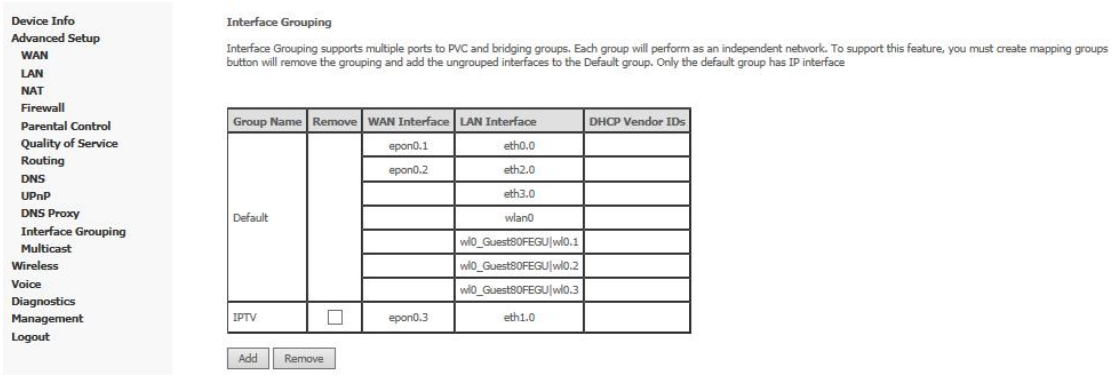
Click **Advanced Setup→ Interface Grouping**



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 with other LAN port avoid multicast packet flood to other LAN port. If eth1.0(LAN2) move to Grouped LAN interface. LAN2 only can receive multicast traffic. Internet is not work on LAN2. This step is not necessary but recommended.

Click **Advanced Setup→ Interface Grouping** to check Interface group status



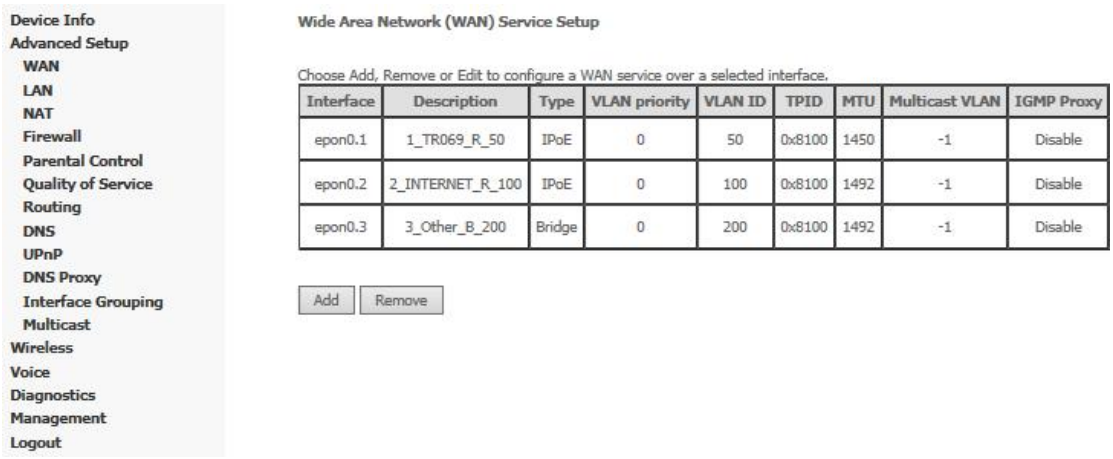
4. 3.7 Configuring Gateway ONU VOIP Service – Broadcom chip scheme ONU

Prerequisites

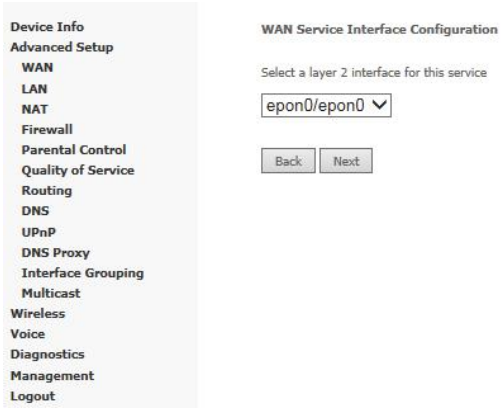
- The OLT is connected to the uplink device success
- The OLT create VOIP vlan
- The OLT configure GE port vlan for VOIP
- The OLT configure PON port vlan for VOIP
- The ONU is registered

1. Configuring IPoE WAN in ONU Web

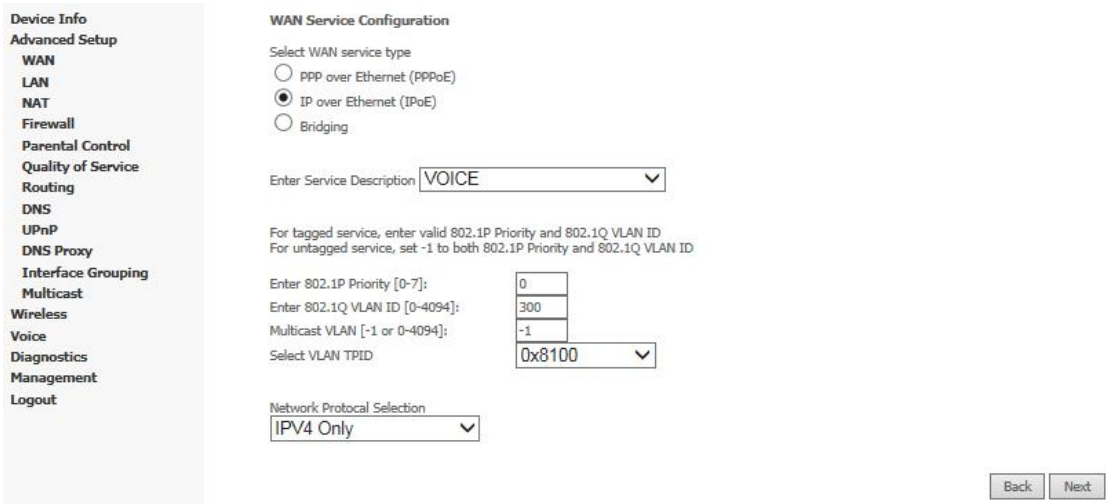
Click **Advanced Setup→WAN→ Add**



Click **Next**



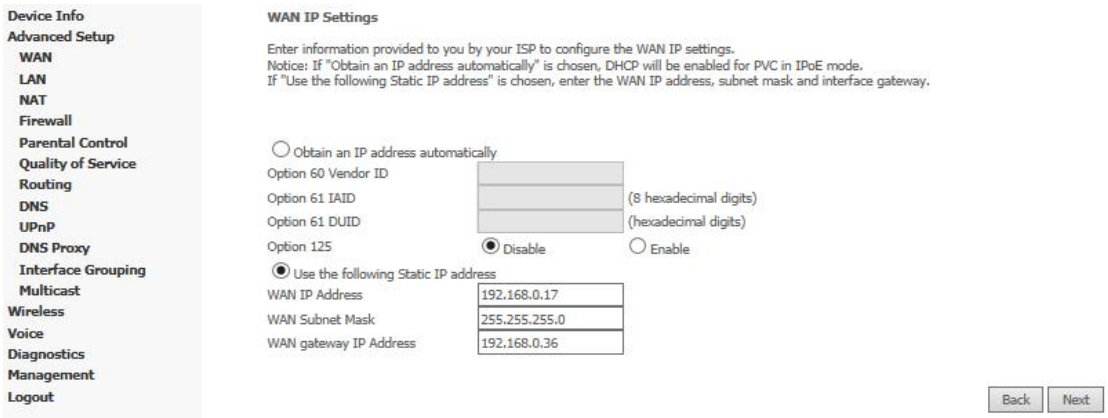
Click **Next**



NOTE：

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

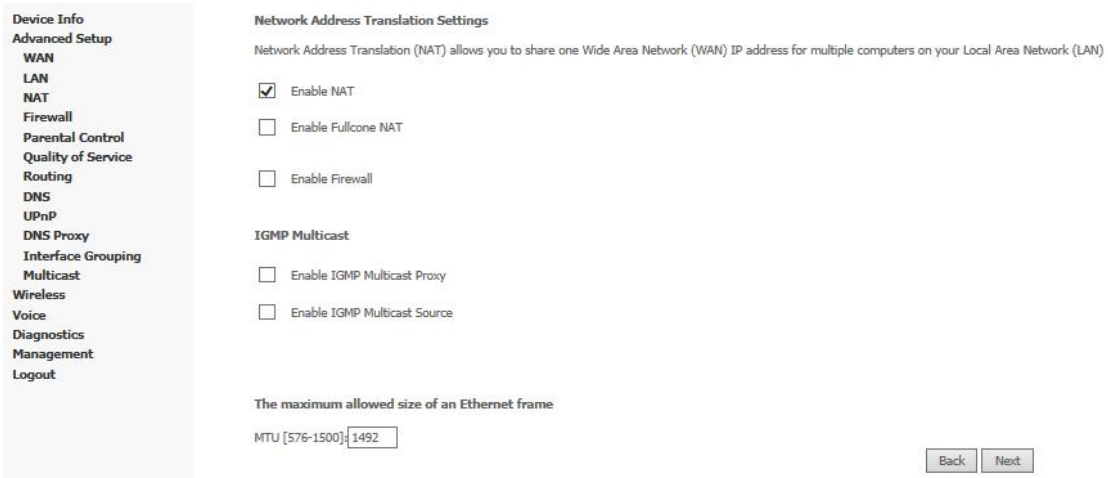
Click **Next**



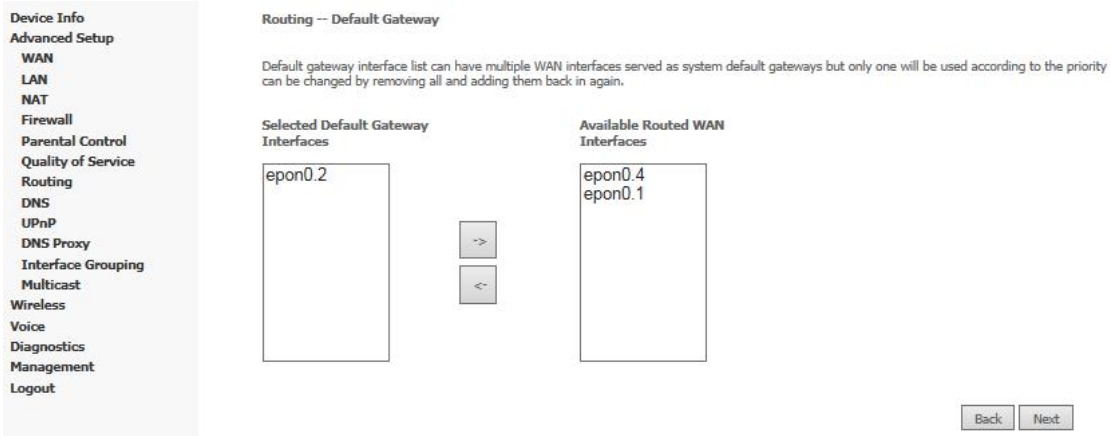
NOTE：

WAN IP Settings click **Usethe following Static IP address** and input the IP address, Subnet Mask and gateway IP address if topology use static ip. If topology use DHCP. Click **Obtain an IP address automatically**.

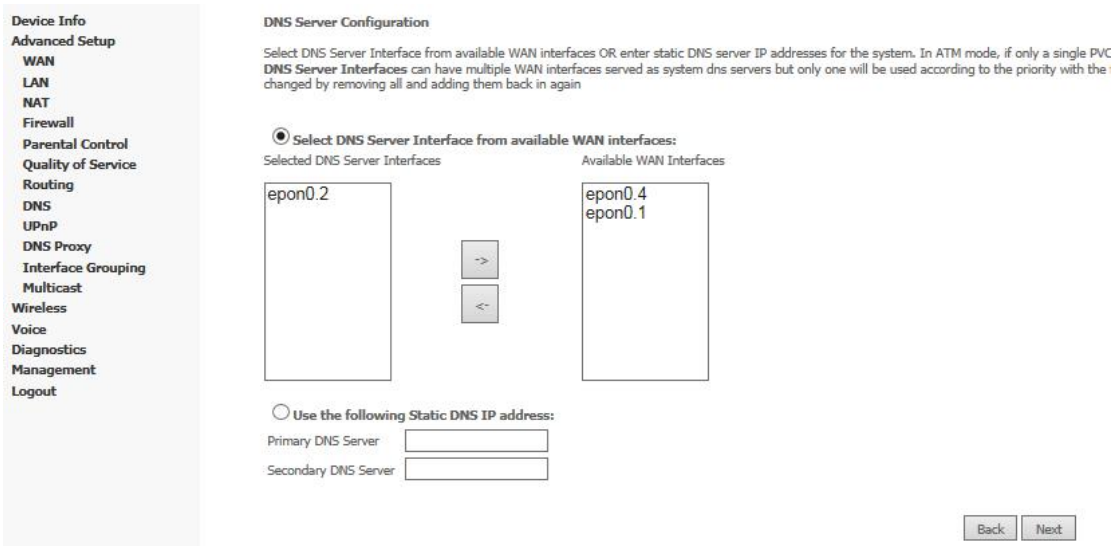
Click **Next**



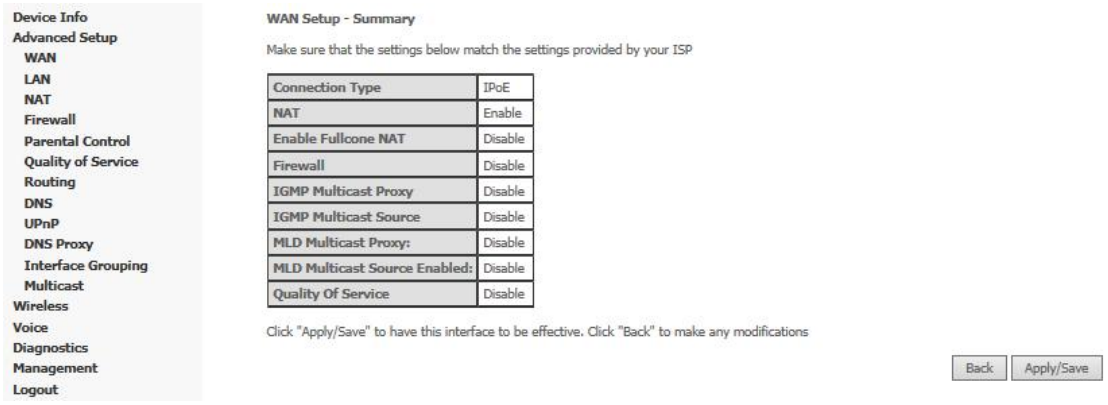
Click **Next**



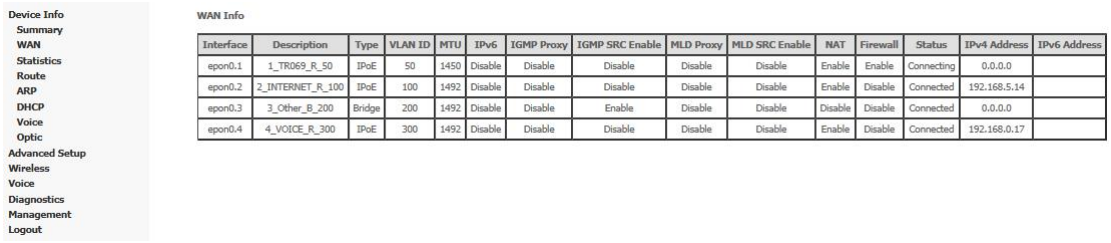
Click **Next**



Click **Apply/Save**



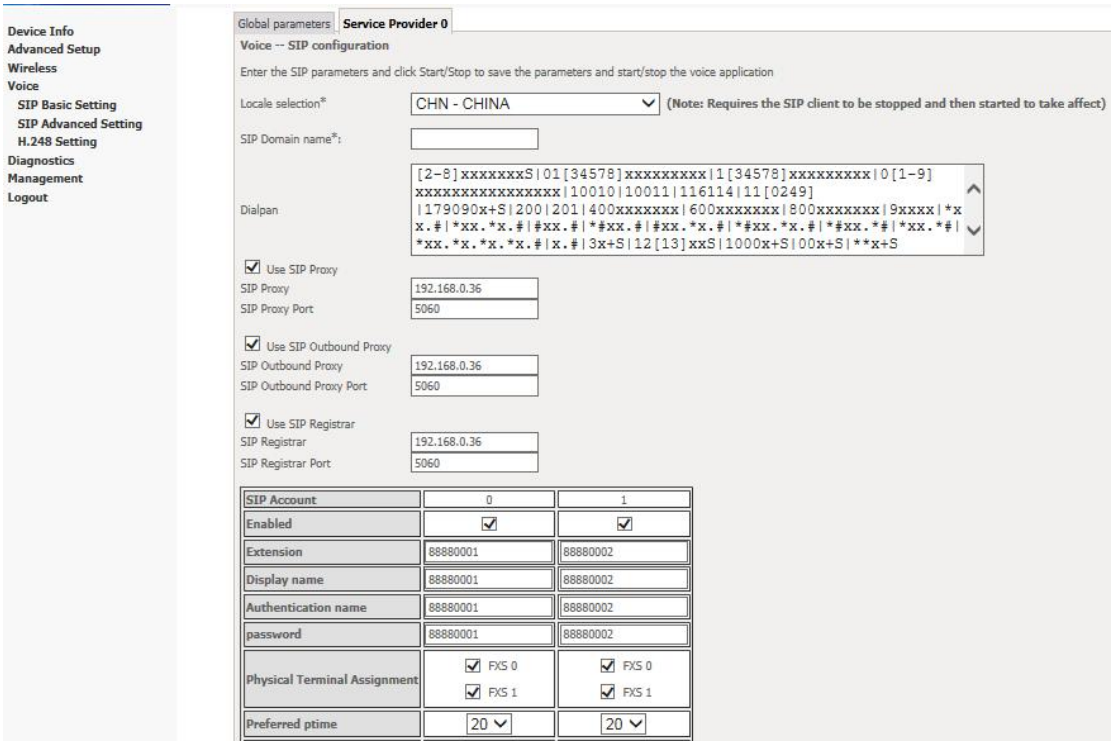
Click **Device Info→ WAN**，查看 ONU 所配置的 WAN 的信息。



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_50	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	
epon0.3	3_Other_B_200	Bridge	200	1492	Disable	Disable	Enable	Disable	Disable	Disable	Disable	Connected	0.0.0.0	
epon0.4	4_VOICE_R_300	IPoE	300	1492	Disable	Disable	Disable	Disable	Disable	Enable	Disable	Connected	192.168.0.17	

2. Configuring Voice in ONU Web

Click **Voice→ SIP Basic Setting**



NOTE：

SIP Proxy, SIP Outbound Proxy, SIP Registrar enter SIP server IP address. **Extension**, **Display name**, **Authentication name**, **password** enter base on user actual setting.

Click **Device Info→ Voice**

NOTE：

If Registration Status is **Up** mean voice accout register successfully.

----End

5 Ending

Thanks very much for deploying C-DATA equipment.
Should have any doubt or problem to know about our products installation, please don't hesitate to contact us.

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