### Contents

**Chapter 1  Product Introduction**
- 1.1 Product Description .................................................. 1
- 1.2 Special features ......................................................... 1
- 1.3 Technical Parameter .................................................... 2
- 1.4 Application chart ....................................................... 2
- 1.5 Panel description ....................................................... 3

**Chapter 2  Quick Installation**
- 2.1 Standard Packing Contents ........................................... 5
- 2.2 Quick Installation ...................................................... 5

**Chapter 3  Configuration**
- 3.1 Login ........................................................................... 7
- 3.2 Status ........................................................................... 7
  - 3.2.1 Device Information ................................................... 8
  - 3.2.2 Network Interface .................................................... 8
  - 3.2.3 User Interface ........................................................ 9
- 3.3 Network ....................................................................... 10
  - 3.3.1 WAN ..................................................................... 10
  - 3.3.2 LAN ..................................................................... 12
  - 3.3.3 PON ..................................................................... 13
  - 3.3.4 Routing(IPv4) .......................................................... 14
  - 3.3.5 Port Configuration ................................................... 16
- 3.4 Security ....................................................................... 19
  - 3.4.1 Firewall .................................................................. 19
  - 3.4.2 Service Control ....................................................... 21
  - 3.4.3 MAC Filter ............................................................. 22
- 3.5 Application ................................................................... 23
  - 3.5.1 Multicast ................................................................. 23
  - 3.5.2 BPDU .................................................................... 26
3.5.3 DNS Service........................................................................................................27
3.5.4 Port Forwarding....................................................................................................28
3.6 Administration .........................................................................................................29
  3.6.1 User Management ..............................................................................................29
  3.6.2 Login Timeout ....................................................................................................30
  3.6.3 System Management ..........................................................................................30
  3.6.4 Diagnosis ...........................................................................................................32
  3.6.5 Loopback Detection ............................................................................................33
  3.6.6 LED Control .......................................................................................................36
3.7 Help ..........................................................................................................................36

Chapter 4 Examples ......................................................................................................37
  4.1 Internet service .......................................................................................................37
    4.1.1 Requirement .....................................................................................................37
    4.1.2 Steps ................................................................................................................37
  4.2 IPTV service ............................................................................................................41
    4.2.1 Requirement .....................................................................................................41
    4.2.2 Steps ................................................................................................................41

Chapter 5 FAQ ..............................................................................................................44
Chapter 1  Product Introduction

1.1 Product Description

Thank you for choosing the 1GE EPON ONU. The terminal devices are designed for fulfilling FTTH and triple play service demand of fixed network operators or cable operators. The box is based on the mature Gigabit EPON technology, which have high ratio of performance to price, and the technology of Layer 2/3. They are highly reliable and easy to maintain, with guaranteed QoS for different service. And they are fully compliant with technical regulations such as IEEE802.3ah and technical requirement of EPON Equipment (V2.1 and above version) from China Telecom.

![1GE EPON ONU](image)

Figure 1-1: 1GE EPON ONU

1.2 Special features

- Plug and play, integrated auto detecting, auto configuration, and auto firmware upgrade technology.
- Support OAM remote configuration and maintenance.
- Support rich VLAN, DHCP Server and IGMP snooping multicast feature.
- Fully compatibility with OLT based on Broadcom/PMC/Cortina chipset.
- Support NAT, Firewall function.
- The WAN port supports bridge or router mode.
1.3 Technical Parameter

<table>
<thead>
<tr>
<th>Technical items</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PON interface</td>
<td>1EPON connector, SC single-mode/single-fiber, symmetric 1.25Gbps</td>
</tr>
<tr>
<td>Wavelength</td>
<td>Tx1310nm,Rx 1490nm</td>
</tr>
<tr>
<td>Optical interface</td>
<td>SC/PC connector</td>
</tr>
<tr>
<td>Interface</td>
<td>1* 10/100/1000Mbps auto adaptive Ethernet interfaces. Full /Half Duplex, RJ45 connectors.</td>
</tr>
<tr>
<td>Indicator</td>
<td>5 indicators, POWER、LOS、REG、LINK/ACT、SYS</td>
</tr>
<tr>
<td>Operating condition</td>
<td>-5℃～55℃，10%～90%（non-condenseing）</td>
</tr>
<tr>
<td>Storing condition</td>
<td>-30℃～60℃，10%～90%（non-condenseing）</td>
</tr>
<tr>
<td>Power supply</td>
<td>DC 12V,0.5A</td>
</tr>
<tr>
<td>Power consumption</td>
<td>≤3W</td>
</tr>
<tr>
<td>Dimension</td>
<td>120mm×78mm×30mm（L×W×H）</td>
</tr>
<tr>
<td>Net weight</td>
<td>0.13Kg</td>
</tr>
</tbody>
</table>

1.4 Application chart

![Application chart](image)
1.5 Panel description

Interface panel

![Interface panel](image)

**Figure 1-3: Interface panel**

<table>
<thead>
<tr>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON/OFF</td>
<td>Power switch.</td>
</tr>
<tr>
<td>POWER</td>
<td>Connect with power adaptor.</td>
</tr>
<tr>
<td>RST</td>
<td>Reset button. Press down less than 10s to restart ONU and more than 10s to restore factory default.</td>
</tr>
<tr>
<td>LAN</td>
<td>Ethernet port.</td>
</tr>
<tr>
<td>PON</td>
<td>EPON interface, SC/PC type, single mode optical fiber cable.</td>
</tr>
</tbody>
</table>

Indication Panel

![Indication panel](image)

**Figure 1-4: Indication panel**

<table>
<thead>
<tr>
<th>LED</th>
<th>Mark</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>SYS</td>
<td>Blink</td>
<td>The device runs normal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF</td>
<td>The device is powered down.</td>
</tr>
<tr>
<td>Ethernet</td>
<td>LINK/ACT</td>
<td>ON</td>
<td>Port is connected properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>Port connection exception or not connected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blink</td>
<td>Port is sending or/receiving data.</td>
</tr>
<tr>
<td>Registration</td>
<td>REG</td>
<td>ON</td>
<td>The device is registered to the EPON system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF</td>
<td>Device is not registered to the EPON system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blink</td>
<td>Device is registering.</td>
</tr>
<tr>
<td>Optical signal</td>
<td>LOS</td>
<td>Blink</td>
<td>Device does not receive optical signals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF</td>
<td>Device has received optical signals.</td>
</tr>
<tr>
<td>Power</td>
<td>POWER</td>
<td>ON</td>
<td>The device is powered up.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF</td>
<td>The device is powered down.</td>
</tr>
</tbody>
</table>
2.1 Standard Packing Contents

When you receive our products, please check carefully to make sure that our products whether have some defects or not. If something wrong with shipping, please contact carrier; other damage or lack of some parts, please contact with dealer.

<table>
<thead>
<tr>
<th>Contents</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONU</td>
<td>1 pc</td>
</tr>
<tr>
<td>Power Adapter</td>
<td>1 pc</td>
</tr>
<tr>
<td>User Manual</td>
<td>1 pc</td>
</tr>
</tbody>
</table>

2.2 Quick Installation

1. Connecting the optical fiber cable to the unit.
   a) Remove the protective cap of the optical fiber.
   b) Clean the end of the optical fiber with an optical fiber end cleaner.
   c) Remove the protective cap of the ONU optical interface (PON interface). Connect the fiber to the PON port on the unit.
   Note: When measuring the optical power before connecting to the ONU, it is recommended to use a PON Inline Power Meter.

While connecting, please note:

- Keep the optical connector and the optical fiber clean.
- Make sure there are no tight bends in the fiber and that the bending diameter is greater than 6cm. Otherwise, the optical signal loss may be increased, to the extent that signal may be unavailable.
- Cover all optic ports and connectors with protective cap to guard against dust and moisture when the fiber is not used.

2. Apply power to the unit. Push the power button.

3. After the ONU is power ON, Indicators should light up as for normal operation. Check whether the PON interface status LED (PON) is on continuously. If it is, the connection is normal; otherwise there is either problem of the physical connection or the optical level at either end. This may be caused by either too much or too little attenuation over the optical
fiber. Please refer to the Layout Description section of this installation manual for normal LED activity.

4. Check all signal levels and services on all the ONU communication ports.

Unit Installation Adjustment

Installing the ONU on a horizontal surface (Bench top)

Put the ONU on a clean, flat, sturdy bench top. You must keep the clearance for all sides of the unit to more than 10cm for heat dissipation.

Installing the ONU on a vertical surface (Hanging on a wall)

You can install the ONU on a vertical surface by using the mounting holes on the bottom of the ONU chassis and two flat-head wood screws.

a) Insert the screws into the wall. The screw positions must be in the same horizontal line and the distance between them must be 145mm. Reserved at least 6mm between the screw caps and the wall.

b) Hang the ONU on the screws through the mounting holes.
Chapter 3  Configuration

After finishing the basic connection configuration, you can use its basic function. In order to satisfy individuation service requirements, this charter provides the user parameter modification and individuation configuration description.

3.1 Login

The device is configured by the web interface. The following steps will enable you to login:

1. Conform “2.2 Quick Installation” to install;
2. The device default IP is 192.168.1.1;
3. Open your web browser, type the device IP in address bar;
4. Entry of the username and password will be prompted. Enter the default login User Name and Password.

By default, there are two user levels for management. Administration level username is “admin”, and normal username is “user”, which the passwords are the same as their usernames.

![Login](image)

Figure 3-1: Login

3.2 Status

This part shows the main information of product.
3.2.1 Device Information

This page shows the device basic information, such as model, serial number, hardware version, software version and boot loader version.

![Device Information](image)

**Figure 3-2: Device Information**

3.2.2 Network Interface

3.2.2.1 WAN Connection

This page shows WAN connection information you have configured.

![WAN Information](image)

**Figure 3-3: WAN Information**
### 3.2.2.2 PON Inform

This page shows the PON information, such as register and authorization status, power, voltage, current, and temperature.

![Figure 3-4: PON Information](image)

### 3.2.2.3 PON Alarm

This page shows PON alarm information.

![Figure 3-5: PON Alarm](image)

### 3.2.3 User Interface
This page shows the Ethernet port information, including port name, link status, packets/bytes received, packets/bytes sent, etc.

![Table of Ethernet Port Information](image)

**Figure 3-6: Ethernet Interface**

### 3.3 Network

#### 3.3.1 WAN

This page allows the user to configure WAN connections. You can only configure route mode WAN connections here. The device works on bridge mode with default settings.
### Parameter | Illustration
--- | ---
Connection Name | The list of WAN connection name that has been created. If you want to create a new WAN connection, please select “Create WAN Connection” and input other Parameter at the same time and then click “Create” button. If you want to edit WAN connection, please select the wan connect name you want to edit and change some Parameter and then click “Modify” button. If you want to delete one connection, please select the wan connection you want to delete and then click “Delete” button.
New Connection Name | Name of new connection that you want to create.
Enable VLAN | Checked indicates that the packets are transmitted by the PON port take VLAN tag. Unchecked indicates the packets are transmitted by the PON port don’t take VLAN tag.
VLAN ID | Input the VLAN ID you want to set. Range is 0~4094. Input 0 means don’t use any VLAN.
802.1P | Select VLAN priority you want to set. Range is 0~7.
<table>
<thead>
<tr>
<th>Type</th>
<th>Route mode. The device works on route mode with this WAN connection.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service List</td>
<td>Service mode indicates what the wan connection is used for. There are INTERET and OTHER for choosing.</td>
</tr>
<tr>
<td>MTU</td>
<td>Max transfer unit. Default Value (in Byte): 1500 (static/DHCP) or 1492 (PPPoE).</td>
</tr>
<tr>
<td>Link type</td>
<td>Link type of WAN connection. PPP includes PPPOE, IP includes static and DHCP.</td>
</tr>
</tbody>
</table>

**PPP**

<table>
<thead>
<tr>
<th>Username</th>
<th>PPPOE account.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Password</td>
<td>PPPOE password.</td>
</tr>
<tr>
<td>Authentication type</td>
<td>PPPOE authentication type, including Auto, PAP, and CHAP.</td>
</tr>
<tr>
<td>Connection trigger</td>
<td>WAN connection connecting mode, including Always On, On demand and Manual.</td>
</tr>
</tbody>
</table>

**IP version**

IPv4.

**IP Type/PPP TransType**

Method of WAN connection Obtains IP address. If link type is PPP, PPP TransType will be PPPOE; if link type is IP, IP Type will be static or DHCP.

**Enable NAT**

Checked indicates NAT function is enabled. Unchecked indicates NAT function is disabled.

### 3.3.2 LAN

This page supports the management of the ONU's IP address, dynamic address management, including dynamic address distribution and relevant parameters distribution, such as lease time, address range, DNS, etc.
### 3.3.3 PON

#### 3.3.3.1 LOID

This page allows the user to configure LOID and password which are used for registering to OLT.
3.3.3.2 SN

This page allows the user to configure SN which is used for registering to OLT. SN will take effect after rebooting the device.

3.3.4 Routing(IPv4)

This page allows the user to configure static routing.

3.3.4.1 Default Gateway

This page allows the user to specify a WAN connection as the default gateway for routing.
3.3.4.2 Static Routing

This page allows the user to specify a WAN connection as the Route Interface, then configure destination IP, mask and gateway.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAN Connection</td>
<td>Select WAN connection as static routing interface.</td>
</tr>
<tr>
<td>Network Address</td>
<td>Destination network address, the last several bits which indicate host should be zero, just like 192.168.5.0/24, 192.168.0.0/16.</td>
</tr>
</tbody>
</table>
### 3.3.4.3 Routing Table

This page displays current routing table of the device.

![Routing Table](image)

**Figure 3-13: Routing Table**

### 3.3.5 Port Configuration

#### 3.3.5.1 Mode

This page allows the user to configure speed and duplex of LAN port.

![Port Mode Setting](image)

**Figure 3-14: Port Mode Setting**
3.3.5.2 Port Isolation

This page allows the user to configure port isolation function. Checked indicates port isolation is enabled; unchecked indicates port isolation is disabled.

3.3.5.3 Rate Limiting

This page allows the user to configure port rate limiting of upstream and downstream.
3.3.5.4 Flow Control

This page allows the user to enable flow control function of LAN port. Checked indicates flow control is enabled; unchecked indicates flow control is disabled.

![Flow Control Setting](image)

**Figure 3-17: Flow Control Setting**

3.3.5.5 MAC Configuration

This page allows the user to configure MAC aging time and MAC learning limit of LAN port.

![MAC Configuration](image)

**Figure 3-18: MAC Configuration**
3.3.5.6 VLAN

This page allows the user to configure VLAN mode and VLAN ID of LAN port.

![VLAN settings](image)

Figure 3-19: VLAN settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>LAN port.</td>
</tr>
<tr>
<td>VLAN Mode</td>
<td>VLAN mode of LAN port, including transparent, tag, translation, trunk. Default is transparent.</td>
</tr>
<tr>
<td>PVID</td>
<td>Native VLAN of LAN port. Data messages without tags will be added this VID after entering into the port. The range is 1~4094.</td>
</tr>
<tr>
<td>VLAN List</td>
<td>Display VLAN translation or trunk items that have been created. You can also create new item by choosing “Create” option.</td>
</tr>
<tr>
<td>Old VLAN</td>
<td>VLAN ID before being translated.</td>
</tr>
<tr>
<td>New VLAN</td>
<td>VLAN ID that has been translated in translation mode or VLAN ID that is allowed to pass through in trunk mode.</td>
</tr>
</tbody>
</table>

3.4 Security

3.4.1 Firewall

This page allows the user to set the level of the firewall (IPv4) and protection against attacks. Click the level with hyperlink to set custom firewall rules.
Figure 3-20: Firewall

Figure 3-21: Custom Firewall

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable Anti-Hacking Protection</td>
<td>Anti-Hacking Protection switch.</td>
</tr>
</tbody>
</table>
3.4.2 Service Control

This page allows the user to set the Service Control and modify remote access ports. Remote access ports are only effective when accessing from WAN side.

![Service Control](image)

Note: If you need to configure the above remote access ports, please click on the hyperlinks below.

Modify Remote Access Port

**Figure 3-22: Service Control**
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Version</td>
<td>IPv4</td>
</tr>
<tr>
<td>Enable</td>
<td>Enable service control.</td>
</tr>
<tr>
<td>Ingress</td>
<td>Choose the interface for service control. It is effective for any WAN connection rule when choosing WAN which has higher priority than other WAN connections’ access rule.</td>
</tr>
<tr>
<td>Start Source IP Address</td>
<td>The start IP of source IP addresses range.</td>
</tr>
<tr>
<td>End Source IP Address</td>
<td>The end IP of source IP addresses range.</td>
</tr>
<tr>
<td>Mode</td>
<td><strong>Discard</strong> indicates the interface denies data that match the rule passing through. <strong>Permit</strong> indicates the interface permits data that match the rule passing through.</td>
</tr>
<tr>
<td>Service List</td>
<td>Choose protocol for service control.</td>
</tr>
</tbody>
</table>

**3.4.3 MAC Filter**

This page allows the user to set the relevant parameters of the MAC filter function. The user interface will display the MAC Filter rules after setting completed.
Parameter | Illustration
--- | ---
Enable | Enable MAC filter function.
Mode | **Discard** indicates the interface denies data that match the rule passing through. **Permit** indicates the interface permits data that match the rule passing through.
Type | The MAC filter rules work mode, contains bridge mode, route mode and bridge+route mode.
Protocol | The protocol of MAC filter rule which contains IP, ARP, RARP, PPPoE and ALL.
Source MAC Address | Source MAC address of MAC filter rule.
Destination MAC Address | Destination MAC address of MAC filter rule.

### 3.5 Application

#### 3.5.1 Multicast

#### 3.5.1.1 IGMP Mode

This page allows the user to set IGMP mode of the device.
### 3.5.1.2 Basic Configuration

This page allows the user to set the aging time and leave mode for multicast module.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disable</td>
<td>Disable IGMP. Multicast streams will flood to LAN port.</td>
</tr>
<tr>
<td>Snooping Mode</td>
<td>Enable snooping mode. Multicast streams will transmit to LAN port when there is a member join the group.</td>
</tr>
<tr>
<td>CTC IGMP</td>
<td>Enable controllable IGMP. Multicast streams will be controllable.</td>
</tr>
</tbody>
</table>

![Figure 3-25: Multicast Mode](image)

![Figure 3-26: Multicast Basic Configuration](image)
### 3.5.1.3 VLAN Configuration

This page allows the user to set multicast VLAN of LAN port.

![Multicast VLAN Configuration](image)

**Figure 3-27: Multicast VLAN Configuration**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAN VLAN</td>
<td>Multicast service VLAN.</td>
</tr>
<tr>
<td>LAN VLAN</td>
<td>Multicast customer VLAN.</td>
</tr>
</tbody>
</table>

### 3.5.1.4 Tag Configuration

This page allows the user to set multicast tag strip attribute. Checked indicates multicast VLAN tag will be stripped, and unchecked indicates it will not be stripped.
3.5.1.5 Maximum Address Configuration

This page allows the user to set the maximum number of multicast addresses.

3.5.2 BPDU

This page allows the user to set BPDU data frames control method. If BPDU forwarding is enabled, BPDU data frames will be replied; otherwise those will be processed in device.
3.5.3 DNS Service

3.5.3.1 Domain Name

The page allows the user to set domain name. Domain Name represents a small network in LAN side with a name space; it can be configured on interface of LAN side.

3.5.3.2 DNS

DNS Server is a database include hostname and IP Address, it can be configured to help DNS request in LAN side.
3.5.4 Port Forwarding

The page allows the user to set port forwarding.

Figure 3-33: Port Forwarding
### Parameter | Illustration
--- | ---
Enable | Enable Port Forwarding Function.
Name | Description of the Port Forwarding.
Protocol | TCP or UDP Protocol.
WAN Host Start IP Address | Start Public IP which want to access to LAN side server. If empty, permit any Public IP.
WAN Host End IP Address | End Public IP which want to access to LAN side server. If empty, permit any Public IP.
WAN Connection | Choose the WAN Connection which for public network access.
WAN Start Port | Start Public L4 port which want to access to LAN side server
WAN End Port | End Public L4 port which want to access to LAN side server
LAN Host IP address | Local IP address which provide services.
LAN Host Start Port | Start Local L4 port which want to access to LAN side server
LAN Host End Port | End Local L4 port which want to access to LAN side server

### 3.6 Administration

#### 3.6.1 User Management

This page allows the user to change username or password. There are two User level accounts: **admin** and **user**.

The admin account is able to access and modify all settings of ONU. It also can modify user account’s username and password.

The user account can only be used to view configurations, status and configure few parameters.
3.6.2 Login Timeout

This page allows the user to set web login timeout.

3.6.3 System Management

3.6.3.1 System Management

This page allows the user to reboot the device or restore factory default. The process of reboot will take several minutes.
3.6.3.2 Software Upgrade

This page allows the user to update the software of the device. Click the “browse” button to select the software and then click the “Update” button to update.

3.6.3.3 Configuration Management

This page allows the user to backup and restore the configurations.
3.6.4 Diagnosis

3.6.4.1 PING Diagnosis

This page shows about the ping test. You can diagnose connection status between ONU and other devices.
### Figure 3-38: PING diagnosis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address or Host Name</td>
<td>Input the destination IP you want to ping.</td>
</tr>
<tr>
<td>Egress</td>
<td>Select the interface you want to test.</td>
</tr>
</tbody>
</table>

### 3.6.4.2 Mirror Configuration

Mirror configure, which is used to send mirror data of WAN connection to LAN, then developers or maintenance personnel can analyze caught packets.

![Mirror Configuration](image)

**Figure 3-39: Mirror Configuration**

### 3.6.5 Loopback Detection

#### 3.6.5.1 Basic Configuration

This page is used to configure the loopback global configuration.
Parameter | Illustration
---|---
Destination MAC | Set broadcast MAC or BPDU multicast MAC as detection message’s MAC address.
Ethernet Type | Set detection message’s Ethernet type.
Send Interval | Set frequency of detection message send out.
Port Closing Time | The port's shut down time when loopback detected.
Loopback Recovery Time | It is used to determine if loopback disappears. If the period of this time has not received detection packets, namely, that the loop disappears.

3.6.5.2 Enable Configuration

This page is used to configure the loopback enable configuration.
3.6.5.3 Loopback VLAN Configuration

This page is used to configure the VLAN for detection packets, distinguish between the ports.
3.6.6 LED Control

This page is used to turn on or turn off LEDs of the device.

3.7 Help

The Help information of ONU displays instruction and prompt of each web UI.
Chapter 4  Examples

4.1 Internet service

There are two configuration methods for Internet service. One works on bridge mode and another works on route mode.

4.1.1 Requirement

Scenario 1:
ONU works on bridge mode, service VLAN is 10. User gets IP address via DHCP.

Scenario 2:
ONU works on route mode, service VLAN is 10. ONU gets IP address via PPPoE.

4.1.2 Steps

For scenario 1, it doesn’t need to configure anything in ONU side but need to configure VLAN in OLT side.

For scenario 2, except configuring VLAN in OLT side, it also needs to configure WAN connection in ONU web.

4.1.2.1 Bridge mode for Internet service

In this example, we take V1600D and Huawei MA5680T for example, to introduce how to configure Internet service.

1) V1600D Configurations

(1) Create VLAN
  epon-olt (config)# vlan 10
  epon-olt (config-vlan-10)# exit

(2) Configure uplink port
  epon-olt (config)# inter g 0/3
  epon-olt (config-if-ge0/3)#switchport hybrid vlan 10 untagged
  epon-olt (config-if-ge0/3)#switchport hybrid pvid vlan 10

(3) Configure PON port
  epon-olt (config)# inter epon 0/2
  epon-olt (config-pon-0/2)# switchport hybrid vlan 10 tagged

(4) Configure ONU LAN port’s VLAN mode and PVID
  epon-olt (config-pon-0/2)# onu 1 ctc eth 1 vlan mode tag
  epon-olt (config-pon-0/2)# onu 1 ctc eth 1 vlan pvid 10 pri 0
2) Huawei MA5680T Configurations

(1) Create VLAN
MA5680T(config)#vlan 10 smart

(2) Configure uplink port’s VLAN
MA5680T(config)#port vlan 10 0/19 1
MA5680T(config)#interface giu 0/19
MA5680T(config-if-giu-0/19)#native-vlan 1 vlan 10

(3) Configure DBA profile
MA5680T(config)#dba-profile add profile-id 12 profile-name 1GE type3 assure 102400 max 899968

(4) Configure line profile
MA5680T(config)#ont-lineprofile epon profile-id 11 profile-name 1GE
MA5680T(config-pon-lineprofile-11)#llid dba-profile-id 12
MA5680T(config-pon-lineprofile-11)#commit

(5) Configure service profile
MA5680T(config)#ont-srvprofile epon profile-id 6 profile-name 1GE
MA5680T(config-pon-srvprofile-6)#ont port eth 1
MA5680T(config-pon-srvprofile-6)#port vlan eth 1 10
MA5680T(config-pon-srvprofile-6)#commit

(6) Authorize ONU
MA5680T(config)#interface epon 0/5
MA5680T(config-if-pon-0/5)#ont add 1 0 mac-auth 002A-8523-C610 oam ont-lineprofile-id 11 ont-srvprofile-id 6

(7) Configure ONU LAN port’s VLAN tag-strip
MA5680T(config-if-pon-0/5)#ont port native-vlan 1 0 eth 1 vlan 10

(8) Configure service-port
MA5680T(config)#service-port 27 vlan 10 epon 0/5/1 ont 0 multi-service user-vlan 10

4.1.2.2 Route mode for Internet service

1) Add a WAN connection
Choose “Network > WAN > WAN Connection” in navigation menu. Add a route mode WAN connection as the following Parameter.
❖ New connection name is INTERNET.
❖ Enable VLAN. VLAN ID is 10 and 802.1p is 0.
❖ Service list is INTERNET.
❖ Link type is PPP. And PPPoE username and password both are ppptest.
❖ Other Parameters keep default.
2) Enable DHCP server

Figure 4-1: Add a route WAN connection

Figure 4-2: Enable LAN DHCP server
3) OLT Configurations

**V1600D configurations:**

(1) Create VLAN
epon-olt (config)# vlan 10
epon-olt (config-vlan-10)# exit

(2) Configure uplink port
epon-olt (config)# inter g 0/3
epon-olt (config-if-ge0/3)# switchport hybrid vlan 10 untagged
epon-olt (config-if-ge0/3)# switchport hybrid pvid vlan 10

(3) Configure PON port
epon-olt (config)# inter epon 0/2
epon-olt (config-pon-0/2)# switchport hybrid vlan 10 tagged

(4) Configure ONU LAN port’s VLAN mode
epon-olt (config-pon-0/2)# onu 1 ctc eth 1 vlan mode transparent

**Huawei MA5680T Configurations:**

(1) Create VLAN
MA5680T(config)# vlan 10 smart

(2) Configure uplink port VLAN
MA5680T(config)# port vlan 10 0/19 1
MA5680T(config)# interface giu 0/19
MA5680T(config-if-giu-0/19)# nativevlan 1 vlan 10

(3) Configure DBA profile
MA5680T(config)# dba-profile add profile-id 12 profile-name 1GE type 3 assure 102400 max 899968

(4) Configure line profile
MA5680T(config)# ont-lineprofile epon profile-id 11 profile-name 1GE
MA5680T(config-epon-lineprofile-11)# llid dba-profile-id 12
MA5680T(config-epon-lineprofile-11)# commit

(5) Configure service profile
MA5680T(config)# ont-srvprofile epon profile-id 6 profile-name 1GE
MA5680T(config-epon-srvprofile-6)# ont-port eth 1
MA5680T(config-epon-srvprofile-6)# port vlan eth 1 transparent
MA5680T(config-epon-srvprofile-6)# commit

(6) Authorize ONU
MA5680T(config)# interface epon 0/5
MA5680T(config-if-epon-0/5)# ont add 1 0 mac-auth 002A-8523-C610 oam ont-lineprofile-id 11 ont-srvprofile-id 6

(7) Configure service-port
4.2 IPTV service

4.2.1 Requirement

ONU works on bridge mode, STB gets IP address from DHCP server, IPTV service VLAN is 10.

4.2.2 Steps

In this example, we take V1600D and Huawei MA5680T for example, to introduce how to configure IPTV service.

1) V1600D Configurations
(1) Create VLAN
    epon-olt (config)# vlan 10
    epon-olt (config-vlan-10)# exit
(2) Configure uplink port
    epon-olt (config)# interface ge0/5
    epon-olt (config-if-ge0/5)# switchport hybrid vlan 10 untagged
    epon-olt (config-if-ge0/5)# switchport hybrid pvid vlan 10
    epon-olt (config-if-ge0/5)# exit
(3) Configure PON port
    epon-olt (config)# inter epon 0/1
    epon-olt (config-pon-0/1)# switchport hybrid vlan 10 tagged
    epon-olt (config-pon-0/1)# ip igmp snooping user-vlan 10 group-vlan 10 tagged
    epon-olt (config-pon-0/1)# exit
(4) Enable IGMP Snooping
    epon-olt (config)# ip igmp snooping enable
(5) Configure multicast port
    epon-olt (config)# ip igmp snooping mrouter vlan 10 interface gigabitethernet 0/5
(6) Configure ONU LAN port
    epon-olt (config)# inter epon 0/1
    epon-olt (config-pon-0/1)# onu 1 ctc eth 1 vlan mode tag
    epon-olt (config-pon-0/1)# onu 1 ctc eth 1 vlan pvid 10 pri 0
    epon-olt (config-pon-0/1)# onu 1 ctc eth 1 mc_vlan add 10
    epon-olt (config-pon-0/1)# onu 1 ctc eth 1 mc_tagstrip enable
    epon-olt (config-pon-0/1)# exit

2) Huawei MA5680T Configurations
(1) Create VLAN
MA5680T(config)#vlan 10 smart

(2) Configure uplink port VLAN
MA5680T(config)#port vlan 10 0/19 1
MA5680T(config)#interface giu 0/19
MA5680T(config-if-giu-0/19)#native-vlan 1 vlan 10

(3) Configure DBA profile
MA5680T(config)#dba-profile add profile-id 12 profile-name 1GE type3 assure 102400 max 899968

(4) Configure line profile
MA5680T(config)#ont-lineprofile epon profile-id 11 profile-name 1GE
MA5680T(config-ont-lineprofile-11)#lld dba-profile-id 12
MA5680T(config-ont-lineprofile-11)#commit

(5) Configure service profile
MA5680T(config)#ont-srvprofile epon profile-id 6 profile-name 1GE
MA5680T(config-ont-srvprofile-6)#ont-port eth 1
MA5680T(config-ont-srvprofile-6)#port vlan eth 1 10

(6) Configure multicast VLAN and strip attribute
MA5680T(config-ont-srvprofile-6)#port multicast-vlan eth 1 10
MA5680T(config-ont-srvprofile-6)#port eth 1 multicast-tagstrip untag
MA5680T(config-ont-srvprofile-6)#commit

(7) Authorize ONU
MA5680T(config)#interface epon 0/5
MA5680T(config-if-epon-0/5)#ont add 1 0 mac-auth 002A-8523-C610 oam ont-lineprofile-id 11

(8) Configure ONU LAN VLAN strip
MA5680T(config-if-epon-0/5)#ont native-vlan 1 0 eth 1 vlan 10

(9) Configure service-port
MA5680T(config)#service-port 27 vlan 10 epon 0/5/1 ont 0 multi-service user-vlan 10

(10) Configure IGMP user
MA5680T(config)#btv
MA5680T(config-bTV)#igmp user add service-port 27 no-auth

(11) Configure multicast VLAN and multicast port
MA5680T(config)#multicast-vlan 10
MA5680T(config-mvlan10)#igmp uplink-port 0/19/1

(12) Configure multicast IGMP version
MA5680T(config-mvlan10)#igmp version v2
This operation will delete all programs in current multicast vlan
Are you sure to change current IGMP version? (y/n)[n]: y
(13) Configure IGMP match mode
MA5680T(config-mvlan10)#igmp match mode disable
// disable mode indicates that OLT will match programs automatically according to members’ requirements but not program settings.
(14) Configure IGMP mode
MA5680T(config-mvlan10)#igmp mode proxy
Are you sure to change IGMP mode?(y/n)[n]:y
(15) Configure multicast VLAN member
MA5680T(config-mvlan10)# igmp multicast-vlan member service-port 27
Chapter 5  FAQ

2. Q: All indicators are not lit?
   A: (1) Power is off or power adapter is bad.
       (2) Indicator LED switch is turned off.

3. Q: Why Los indicator flashes?
   A: (1) There is no optical signal. Maybe the fiber is broke down or connection loosened.
       (2) Optical power is too low.
       (3) The fiber is dusty.

4. Q: LAN indicators are not lit?
   A: (1) Indicator LED switch is turned off.
       (2) The cable breaks down or connection loosened.
       (3) The cable type incorrect or too long.

5. Q: PC can’t visit web UI?
   A: (1) PC and ONU are not in the same network fragment. By default, LAN IP is 192.168.1.1/24.
       (2) The cable breaks down.
       (3) IP conflict or have loopback.

6. Q: User can’t surf the Internet normally.
   A: (1) PC has set a wrong IP and gateway or network is bad.
       (2) There is loopback or attack in network.
       (3) Route mode WAN connection doesn’t get an IP or DNS is disabled.

7. Q: ONU stops to work after working for some time.
   A: (1) Power supply is not working properly.
       (2) The device overheats.