

FTTx GPON Terminal Operations and Maintenance

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Objectives

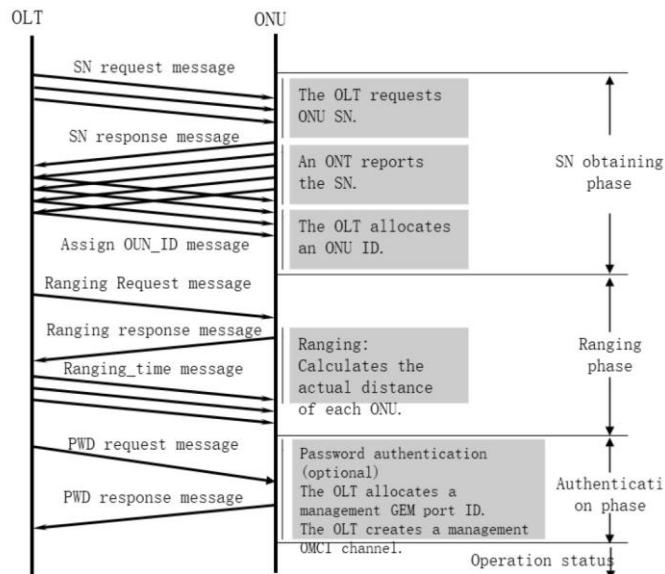
- Upon completion of this course, you will be able to:
 - Describe various FTTx terminal types.
 - List key parameters for FTTx terminal registration.
 - Maintain various terminals.
 - Add and modify an ONT.



Contents

1. Terminal Profile Types
2. Process of Adding an ONT
3. Example for Adding Various ONTs
4. ONT Maintenance and Query

ONU Registration Process



- Key points:

- OLT opens a window to request ONU SNs.
- An ONU reports the SN.
- The OLT allocates an ONU ID to bind with the SN.
- The OLT allocates a management GEM port ID.
- The OLT creates a management OMCI channel.
- The ONU reports the password, and OLT authenticates the password (optional)

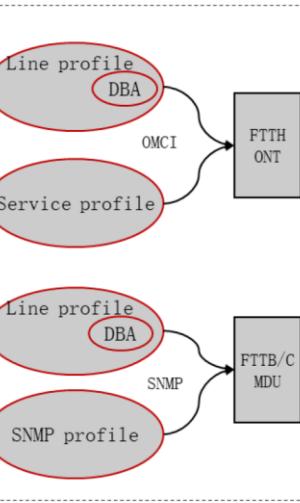
- Ranging:

- Different ONUs have different physical distances from the OLT. To synchronize all ONUs, the OLT must range the actual physical distance of each ONU and add a different delay compensation for each ONU according to the farthest logical distance. In this way, the logical distances between ONUs and the OLT are the same, and all ONUs connected to a GPON port are synchronized.

Terminal Profile Types

- DBA profile
 - Defines the upstream traffic parameters of the GPON, and binds to T-CONTs to control the upstream traffic.
- Line profile
 - Defines the bottom-layer line parameters of the ONT, such as the DBA profile used by a T-CONT, GEM port ID, service mapping mode, service type, QoS, and FEC encryption enabling status.
- Service profile
 - Defines the types and number of ONT ports, mapping between port IDs and VLANs, and translation between multicast VLAN and VLAN.
 - Referenced when the management mode for an ONT to be added is set to OMCI. A service profile does not need to be configured for the MDU management mode.
- SNMP profile
 - When an upper-layer network manages devices through the

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- DBA: dynamic bandwidth assignment
- GEM: GPON encapsulation mode
- TCONT: transmission container
- OMCI: optical network terminal management and control interface
- SNMP: Simple Network Management Protocol
- DBA profile
 - Defines the upstream traffic parameters of the GPON, and binds to T-CONTs to control the upstream traffic.
- Line profile
 - Defines the bottom-layer line parameters of the ONT, such as the DBA profile used by a T-CONT, GEM port ID, service mapping mode, service type, QoS, and FEC encryption enabling status.
- Service profile
 - Defines the types and number of ONT ports, mapping between port IDs and VLANs, and switching mode between multicast VLAN and VLAN.
 - Referenced when the management mode for an ONT to be added is set to OMCI. A service profile does not need to be configured for the MDU management mode.
- SNMP profile
 - When the upper-layer network manages devices through an NMS server, you need to set SNMP parameters, including the SNMP version, community name, and destination IP address.

Management Modes of Various ONTs

- Terminal management modes
 - OMCI: FTTH series
 - Example: HG8247 (directly connected through a network cable and accessed on the WebUI by visiting <http://192.168.100.1>)

Connection Name	VLANPriority	IP Acquisition Mode
1_TRG9_R_VD_22	220	Static

- SNMP: FTTB/C series
 - Example: MA5620 (remotely accessed from the OLT by telnet and managed in command line mode)

Querying DBA Profiles

- Query all existing DBA profiles.

```
huawei(config)#display dba-profile all
-----
Profile Type Bandwidth Fixed Assured Max. Binding Times
Number Compensation Bandwidth Bandwidth Bandwidth
-----
1 1 No 5120 0 0 0
2 1 No 1024 0 0 0
3 4 No 0 0 32768 0
4 2 No 0 1024 0 1
5 1 No 32768 0 0 0
6 1 No 102400 0 0 0
7 2 No 0 32768 0 0
8 2 No 0 102400 0 0
9 3 No 0 32768 65536 8
Note: The system provides 9 default DBA profiles with IDs ranging from 1 to 9.
```

- Functions of the **display DBA-profile all** command
 - This command is used to query all DBA profiles in the system.
 - Usage
 - The system provides 9 default DBA profiles with IDs ranging from 1 to 9. These profiles provide typical traffic parameter values.
 - You can query and modify the default DBA profiles but cannot delete them.
 - When you query a specified DBA profile by specifying the profile ID or profile name, the system displays the detailed information about the profile. When all DBA profiles are queried, the DBA profiles are displayed in a list.

Adding a DBA Profile

- Add a DBA profile.
 - ▣ An ONT can carry services only after it is bound with a DBA profile. If default DBA profiles cannot meet service requirements, run the following commands to add a DBA profile.

```
huawei(config)#dba-profile add profile-id  
{profile-id<U><10,512>}:22  
{profilename<K>|type1<K>|type2<K>|type3<K>|type4<K>|type5<K>}:profili  
le-name  
{profile-name<S><Length 1-33>}:2M  
{type1<K>|type2<K>|type3<K>|type4<K>|type5<K>}:type3  
{assure<K>}:assure  
{assure-bandwidth<U><128,1235456>}:2048  
{max<K>}:max  
{max-bandwidth<U><128,1235456>}:4096
```

- Functions of the **DBA-profile add** command
 - ▣ This command is used to add a DBA profile. A T-CONT is a physical resource on an ONT, and can carry services only after being bound to a DBA profile. If the default DBA profiles cannot meet service requirements, run this command to add a DBA profile.
 - ▣ Usage
 - By default, a T-CONT is bound to DBA profile 1.
 - The system provides 9 default DBA profiles with IDs ranging from 1 to 9. These profiles provide typical traffic parameter values.
 - You can query and modify the default DBA profiles but cannot delete them.
 - When a DBA profile is added, the input bandwidth is rounded down to an integer multiple of 64. For example: If the input bandwidth is 1022 Kbps, the actual bandwidth is 960 Kbps.

Adding an ONT Line Profile (1)

- Add an ONT line profile named FTTH.
 - Create a profile and enter the profile configuration mode.

```
huawei(config)#ont-lineprofile gpon profile-id
{profile-id<U><1,8192>}:66
{<cr>|profile-name<K>}:profile-name
{profile-name<S><Length 1-32>}:ftth
huawei(config-gpon-lineprofile-66) #
```

Note: When you create a line profile or DBA profile, if you do not specify the profile ID, the system automatically allocates the profile ID.

- Functions of the **ont-lineprofile** command
 - The **ont-lineprofile** command is used to enter the ONT line profile mode to configure the attributes of an ONT line profile. If you enter the ONT line profile mode for the first time, a default profile is generated.
 - Usage
 - If no profile ID is specified, the system automatically allocates a profile ID and enters the line profile configuration mode.
 - When an ONT line profile is created, all parameters of the profile are set the default values of the current profile type. You can run the **display ont-lineprofile** command to query the parameters.
 - By default, the profile name is **ont-lineprofile_x**, where x is the actual profile ID.
 - The ONT FEC function is disabled.
 - The mapping mode of the profile is VLAN.
 - The QoS mode of the profile is PQ.
 - By default, T-CONT 0 is bound to DBA profile 1.
 - The system supports a maximum of 8K PON line profiles.

Adding an ONT Line Profile (2)

- Bind a T-CONT to a DBA profile (mandatory).

```
huawei(config-gpon-lineprofile-66)#tcont
{tcont-list<S><Length 1-13>}:2
{dba-profile-id<K>|dba-profile-name<K>}:dba-profile-id
{profile-id<U><1,512>}:22
```

- Add a GEM port and map it to a T-CONT (mandatory).

```
huawei(config-gpon-lineprofile-66)#gem
{add<K>|delete<K>|mapping<K>|modify<K>}:add
{gem-index<U><0,1023>}:20
{service-type<E><eth,tdm>}:eth
{tcont<K>}:tcont
{tcont-id<U><0,127>}:2
{<cr>|cascade<K>|encrypt<K>|gem-car<K>|priority-queue<K>}:priority-
queue
{priority-queue<U><0,7>}:3
```

- Functions of the **tcont** command

- This command is used to bind a T-CONT to a DBA profile. A T-CONT is a physical resource on an ONT, and can carry services only after it is bound to a DBA profile. After the binding succeeds, the T-CONT can provide flexible dynamic bandwidth assignment schemes according to configurations in the DBA profile.
- Usage
 - T-CONT 0 is bound to DBA profile 1 by default in the ONT line profile. The DBA profile bound to T-COUNT0 cannot be modified. You can modify the binding relationships of other T-CONTs.
 - You can run the **display ont-lineprofile** command to query the information about ONT line profiles.

- Functions of the **gempport add** command

- This command is used to add a GEM port. Before configuring the GPON access service, you must run this command to add a service transmission channel, that is, a GEM port. After a GEM port is added successfully, run the **ont gempport bind** command to bind it to a T-CONT of an ONT, and then run the **ont gempport mapping** command to set up the mapping between the GEM port and a user service flow. Then, the service flow can be carried by the GEM port.
- Usage
 - When adding a GEM port, you must select the correct attributes according to the service type. The attribute must be set to TDM when the TDMoGEM service is carried.

Adding an ONT Line Profile (3)

- Configure the mapping mode.

```
huawei(config-gpon-lineprofile-66)#mapping-mode  
{iptos<K>|port-priority<K>|port-vlan-priority<K>|port-  
vlan<K>|port<K>|priority<K>|vlan-priority<K>|vlan<K>}:vlan
```

- Configure mapping between a GEM port and VLAN

```
huawei(config-gpon-lineprofile-66)#gem mapping  
{gem-index<U><0,127>}:20  
{mapping-index<U><0,7>}:0  
{el<K>|eth<K>|flow-  
car<K>|iphhost<K>|moca<K>|priority<K>|vlan<K>}:vlan  
{vlan-id<U><0,4095>}:10  
{<cr>|flow-car<K>|priority<K>}:
```

- Functions of the **mapping-mode** command

- This command is used to create the mapping between GEM ports and services on the ONT side, that is, to set up the mapping between GEM ports and the data flows of the ONT user interface. GEM ports can carry services only after the mapping is set up using this command.
- By default, an ONT supports the VLAN mapping mode.
- Currently, only one mapping mode can be configured.
- You can run the **display ont-lineprofile** command to query the mapping mode supported by an ONT.

- Functions of the **gem mapping** command

- The **gem mapping** command is used to create the mapping between GEM ports and the services on the ONT side, that is, to set up the mapping between GEM ports and the upstream data flows of the ONT user interface. GEM ports can carry services only after the mapping is set up using this command.
- When configuring the mapping between a GEM port and a user service, if no Traffic Table ID is specified and the QoS mode of the ONT line profile is FLOW-CAR, Traffic Table 2 is bound.
- When a service flow of the E1 port is mapped to a specified GEM port, the attribute of the GEM port must be TDM.
- In the same ONT line profile, the mapping between GEM ports and user services must match the mapping mode supported by the ONT as configured in the profile.
- A bundle group can be used only in port mapping, port + VLAN mapping, port + 802.1p priority mapping, and port + VLAN + 802.1p priority mapping modes. Ports in different bundle groups and ports inside and outside a bundle group cannot be mapped to the same GEM port in the

preceding 4 mapping modes.

Adding an ONT Line Profile (4)

- Configure the QoS mode.

```
huawei(config-gpon-lineprofile-66)#qos-mode  
{flow-car<K>|gem-car<K>|priority-queue<K>} :priority-queue
```

- Commit enabled parameters.

```
huawei(config-gpon-lineprofile-66)#commit  
huawei(config-gpon-lineprofile-66)#quit
```

Note: All parameter settings take effect only after being committed.

- Functions of the **qos-mode** command

- This command is used to configure the QoS mode in an ONT line profile, that is, the upstream traffic control mode of the ONT. Run this command when you need to provide end-to-end quality assurance and control the traffic for a user.
- Usage
 - Run the **config** command to enter the global config mode, and then run the **ont-lineprofile** command to enter the ONT line profile configuration mode.
 - By default, the QoS mode of an ONT line profile is the priority queue scheduling mode.
 - You can run the **display ont-lineprofile** command to query the QoS mode of a profile.

- Functions of the **commit** command

- The commit command is used to commit the current parameter configurations of a service profile or line profile. When configurations are committed, the system checks the validity of the parameters of the service profile or line profile. If the parameters pass the check, the system uses the new parameter configurations to update the system running data.

Querying an ONT Line Profile

- Query a configured line profile.

```
huawei(config)#display ont-lineprofile gpon profile-id 66
-----
Profile ID :66
Profile name :ftth
Access type :GPON
-----
Upstream FEC switch: Disabled
QoS mode :PQ
Mapping mode :VLAN
-----
<T-CONT 0> DBA profile ID:1
<T-CONT 2> DBA profile ID:22
<GEM Index 20>
-----
|Service type :ETH | Downstream encryption: Off | Cascading attribute: Off |
Priority :0 |GEM-CAR:-
-----
Mapping index VLAN Priority Port type Port index Flow-CAR
-----
0      10      -      -      -      -
-----
Binding times :0
```

Adding a Service Profile for a Class A ONT (1)

- Add an ONT service profile named hg8247.
 - Create a service profile and enter the profile configuration mode.

```
huawei(config)#ont-srvprofile
{epon<K>|gpon<K>}:gpon
{<cr>|profile-id<K>|profile-name<K>}:profile-id
{profile-id<U><1,4096>}:88
{<cr>|profile-name<K>}:profile-name
{profile-name<S><Length 1-32>}:hg8247
huawei(config-gpon-srvprofile-88)#[
```

- Functions of the **ont-srvprofile** command
 - The **ont-srvprofile** command is used to enter the ONT service profile mode to configure the attributes of an ONT service profile. If you enter the ONT service profile mode for the first time, a default profile is generated.
 - Usage
 - If no profile ID is specified, the system automatically allocates a profile ID and enters the corresponding service profile configuration mode.
 - When an ONT service profile is created, all parameters of the profile are set the default values of the current profile type. You can run the **display ont-srvprofile** command to query the parameters.
 - Default configurations of an ONT service profile are as follows:
 - MAC address learning is enabled.
 - ONT transparent transmission is disabled.
 - The multicast forwarding mode is unconcern.
 - The profile description is **ont-srvprofile_x**, where x is the profile ID.

- The configuration of the ONT port is null by default.
- The system supports a maximum of 4K ONT service profiles of the PON type.
- When the ONT management mode is OMCI, an ONT service profile must be bound.

Adding a Service Profile for a Class A ONT (2)

- Configure the ONT port capability (mandatory).

```
huawei(config-gpon-srvprofile-88)#ont-port
{catv<K>|eth<K>|moca<K>|pots<K>|tdm-srvtype<K>|tdm-
type<K>|tdm<K>}:eth
{eth-port<U><0,8>}:4
{<cr>|catv<K>|moca<K>|pots<K>|tdm-srvtype<K>|tdm-
type<K>|tdm<K>}:pots
{pots-port<U><0,8>}:2
{<cr>|catv<K>|moca<K>|tdm-srvtype<K>|tdm-type<K>|tdm<K>}:
```

- Set the ONT port VLAN (mandatory).

```
huawei(config-gpon-srvprofile-88)#port
{el<K>|priority-policy<K>|q-in-q<K>|vlan<K>}:vlan
{eth<K>|iphost<K>|moca<K>}:eth
{ont-portlist<S><Length 1-128>}:1
{translation<K>|transparent<K>|vlanid<U><0,4095>}:10
```

- Functions of the **ont-port** command

- This command is used to set the port capability set in an ONT service profile, that is, to set the number of various ports on an ONT.
- Usage
 - When setting the attributes of an ONT port in an ONT service profile, you need to check whether a port exists according to the specified number of ports. If you do not use this command to set the number of ONT ports, the default number of all types of ports on the ONT is 0.

- Functions of the **port vlan** command

- The **port vlan** command is used to configure the VLAN of the User Network Interface (UNI) port in an ONT service profile. When you need to manage the attributes of an UNI port of the ONU remotely and add the UNI port to a VLAN, run this command.
- Usage
 - Supports the VLAN configuration of the Ethernet and MOCA ports, and sets the VLAN of an ONT port. You can add a port to a VLAN or delete a port from a VLAN.
 - Supports the configuration of the transparent transmission mode of the ONT and ETH ports. In this case, you do not need to specify the VLAN ID, and just need to enter the keyword **transparent**.
 - Supports the configuration of VLAN+ switching for the ONT and ETH ports. Enter the keyword **translation**, VLAN, priority, and packet encapsulation type before and after the translation.
 - The ONT and ETH port transparent transmission and VLAN translation

can be deleted.

Adding a Service Profile for a Class A ONT (3)

- Configure the VLAN tag forwarding mode for multicast packets.
(required only when multicast services are used).

```
huawei(config-gpon-srvprofile-88)#multicast-forward  
{tag<K>|unconcern<K>|untag<K>}:untag
```

- Configure the IGMP packet forwarding mode (required only when multicast services are used).

```
huawei(config-gpon-srvprofile-88)#igmp-forward  
{translation<K>|transparent<K>|unconcern<K>}:unconcern
```

- Commit the configurations.

```
huawei(config-gpon-srvprofile-88)#commit  
huawei(config-gpon-srvprofile-88)#quit
```

Note: All parameter settings take effect only after being committed.

- Functions of the **multicast-forward** command
 - This command is used to set attributes such as the multicast forwarding mode and multicast forwarding VLAN of an ONT in an ONT service profile.
 - Usage
 - Run the **config** command to enter global config mode, and then run the **ont-srvprofile** command to enter ONT service profile configuration mode.
- Functions of the **igmp-forward** command
 - This command is used to configure the upstream IGMP packet forwarding mode for a GPON ONT in an ONT service profile. The mode can be transparent transmission, VLAN translation, or ignore.
 - Usage
 - Run the **config** command to enter global config mode, and then run the **ont-srvprofile** command to enter ONT service profile configuration mode.
 - This command is used to set the upstream IGMP packet forwarding mode of a GPON ONT.
 - The default forwarding mode is Ignore. If the translation mode is specified, you also need to enter the VLAN after the translation.

Querying Service Profiles of a Class A ONT (1)

```
huawei(config)# display ont-srvprofile gpon profile-id 88
-----
Profile ID: 88
Profile name: hg8247
Access type: GPON
-----
Port type      Number of ports -----
POTS           2
ETH            4
TDM            0
MOCA          0
CATV          0
-----
TDM type: E1
TDM service type: TDMoGem
MAC address learning: Enabled
ONT transparent transmission: Disabled
Multicast forwarding mode: Untag
Multicast forwarding VLAN: -
Upstream IGMP packet forwarding mode: Ignore
Upstream IGMP packet forwarding VLAN: -
```

Querying Service Profiles of a Class A ONT (2)

Port type	Port No.	QinQ mode	Priority policy		
ETH	1	Ignore	Ignore		
ETH	2	Ignore	Ignore		
ETH	3	Ignore	Ignore		
ETH	4	Ignore	Ignore		

Port type	Port No.	Service Type	No.	Service VLAN	User VLAN
ETH	1	Switch	1	1	- 1
ETH	1	Switch	2	10	- 10
ETH	2	Switch	1	1	- 1
ETH	3	Switch	1	1	- 1
ETH	4	Switch	1	1	- 1
IPHOST	1	Switch	1	1	- 1

Number of binding times: 0

SNMP Profile

- Add an SNMP profile.

```
huawei(config)#snmp-profile
{add<K>|delete<K>|modify<K>} :add
{profile-id<K>|profile-name<K>|version<E><v1,v2c>} :profile-id
{profile-id<U><1,64>} :1
{profile-name<K>|version<E><v1,v2c>} :profile-name
{profile-name<S><Length 1-32>} :n2000
{version<E><v1,v2c>} :v2c
{readgroup<S><Length 1-32>} :public
{writegroup<S><Length 1-32>} :private
{des-ip<I><X.X.X.X>} :192.168.48.250
{source-port<U><1,65535>} :162
{securityname<S><Length 1-32>} :private
```

- Functions of the **snmp-profile add** command

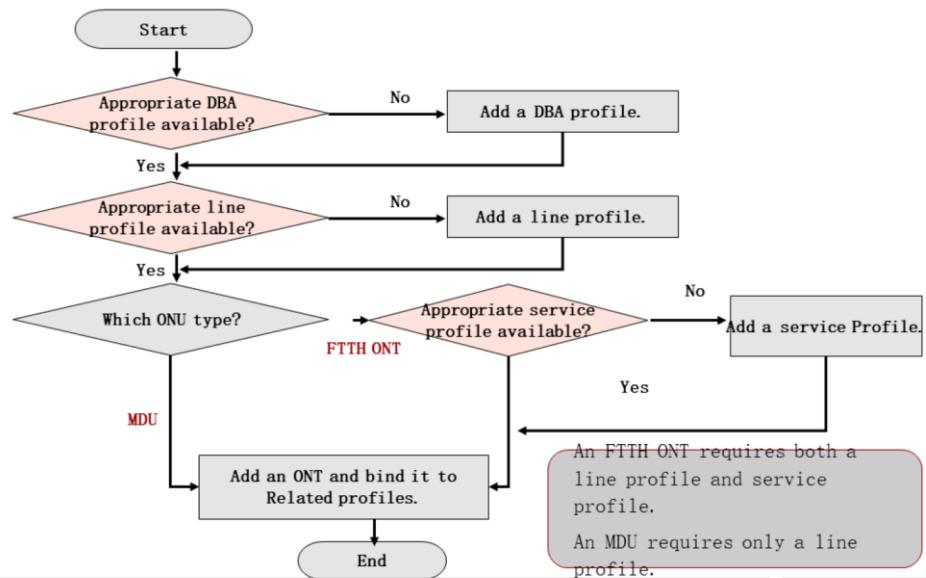
- This command is used to add an SNMP management profile. After an SNMP profile is added successfully, the parameters take effect when an ONT is bound to the SNMP management profile.
- When the management mode of an ONT is SNMP, you can bind an SNMP management profile to the ONT.



Contents

1. Terminal Profile Types
2. Process of Adding an ONT
3. Example for Adding Various ONTs
4. ONT Maintenance and Query

Terminal Configuration Process



Two ONT Adding Modes

- Method 1: Adding an ONT in automatic discovery mode
 - Process:
 - Connect an ONT to the fiber and power it on.
 - Enable the function of automatically discovering PON ports.
 - Adding the ONT to the OLT: Confirm the SN of the automatically discovered ONT.
 - Register the ONT.
- Method 2: Adding an ONT manually
 - Process:
 - Connect an ONT to the fiber and power it on.
 - Add the ONT on the OLT: Manually add the SN of the ONT.
 - Register the ONT.

Adding an ONT in Automatic Discovery Mode (1)

- Enable the function of automatically discovering PON ports.

```
huawei(config)#interface gpon 0/8
huawei(config-if-gpon-0/8)#port
{portid<U><0,7>}:0
{fec<K>}|ont-auto-find<K>|ont-password-renew<K>|range<K>}:ont-auto-
find
{switch<E><enable,disable>}:enable
```

- Functions of the **port ont-auto-find** command
 - This command is used to enable or disable the ONT auto-discovery function of a GPON port. After the automatic ONT discovery function is enabled, the OLT periodically searches for new ONTs.
 - Usage
 - Run the **config** command to enter global config mode, and then run the **interface gpon** command to enter GPON mode.
 - By default, the ONT auto-discovery function of a GPON port is disabled.
 - After a new ONT goes online, the board reports a group of ONT information to be confirmed to the CLI terminal, and stores the information in an ONT registration buffer for confirmation.
 - ONTs can be added in 2 modes. You can run the **ont add** command to add an ONT offline or run the **ont confirm** command to confirm an automatically discovered ONT.

Adding an ONT in Automatic Discovery Mode (2)

- Query the discovered ONT.

```
huawei(config-if-gpon-0/8)#display ont autofind 0
-----
Number : 1
F/S/P : 0/8/0
Ont SN : 323031312E396A41
Password : 0x31323334353637383930(1234567890)
VenderID      : HWTC
Ont Version   : 130C4400
Ont SoftwareVersion : V1R002C00S201
Ont EquipmentID : 245
Ont autofind time : 2011-04-19 09:59:53+08:00
-----
The number of GPON autofind ONT is 1
```

Adding an ONT in Automatic Discovery Mode (3)

- Confirm the discovered ONT.

```
huawei(config-if-gpon-0/8)#ont confirm
{portid<U><0,7>}:0
{all<K>|ontid<K>|password-auth<K>|sn-auth<K>}:ontid
{ontid<U><0,127>}: 8
{password-auth<K>|sn-auth<K>}:sn-auth
{sn<S><Length 13-16>}:323031312E396A41
{omci<K>|password-auth<K>|snmp<K>}:omci
{ont-lineprofile-id<K>|ont-lineprofile-name<K>}:ont-lineprofile-id
{profile-id<U><1,4096>}:66
{ont-srvprofile-id<K>|ont-srvprofile-name<K>}:ont-srvprofile-id
{profile-id<U><1,4096>}:88
{<cr>|desc<K>}:
```

Note: The entered SN must belong to an automatically discovered ONT.

- Functions of the ont confirm command

- This command is used to confirm an ONT that is in the auto-discovery state. If the ONT auto-discovery function is enabled on the OLT, after an ONT goes online, the OLT obtains the registration information about the automatically discovered ONT and the ONT is in the auto-discovery state. After you run this command to confirm the ONT, the ONT enters the normal working state.
- Usage
 - Run the config command to enter global config mode, and then run the interface gpon command to enter GPON mode.
 - When confirming an automatically discovered ONT, you must specify the ONT capability set profile.
 - You must select correct and existing profiles for an ONT to be confirmed. The profiles define the specifications and capabilities of the ONT. If the ONT profiles are set incorrectly, the ONT fails to work properly after going online.
 - It is recommended that you add location and time information to each ONT to facilitate fault location and maintenance.
 - The SNs of ONTs configured in the same system must be unique.

Adding an ONT Manually

- Add an ONT.

```
huawei(config-if-gpon-0/8)#ont add
{portid<U><0,7>}:0
{ontid<U><0,127>|password-auth<K>|sn-auth<K>}:8
{password-auth<K>|sn-auth<K>}:sn-auth
{sn<S><Length 13-16>}:323031312E396A41
{omci<K>|password-auth<K>|snmp<K>}:omci
{ont-lineprofile-id<K>|ont-lineprofile-name<K>}:ont-lineprofile-id
{profile-id<U><1,4096>}:66
{ont-srvprofile-id<K>|ont-srvprofile-name<K>}:ont-srvprofile-id
{profile-id<U><1,4096>}:88
{<cr>|desc<K>}:
```

- Functions of the ont add command

- This command is used to add an ONT and specify configuration data for the ONT. Run this command to add an ONT and configure services offline. After the ONT goes online, the configuration data is delivered to the ONT through the ONT management protocol to complete the configuration. After an ONT is added successfully, you can configure various services for the ONT. When the ONT is not in position, the configurations are temporarily stored on the service board.
- Usage
 - Run the config command to enter global config mode, and then run the interface gpon command to enter GPON mode.
 - By default, the ONT capability set profiles 1 - 7 are the ONT capability set profile of the default GPON port.
 - When adding an ONT, you must specify an ONT capability set profile.
 - A correct and existing ONT service profile needs to be selected for the added ONT. The profile defines the specifications and capabilities of the ONT. If the ONT service profile is incorrectly set, the ONT fails to work properly after going online.
 - It is recommended that you add location and time information to each ONT to facilitate fault location and maintenance.

Checking the ONT Status

- Check the status of the added ONT.

```
huawei(config-if-gpon-0/8)#display ont info 0 all
-----
 Subrack/Slot/Port ONT SN Control flag Running flag Configuration
status Matching status DBA mode
-----
 0/8/0 8 323031312E396A41 Activated Online Normal Match SR
 0/8/0 10 323031312E396341 Activated Online Normal Match SR
-----
```



Contents

1. Terminal Profile Types
2. Process of Adding an ONT
3. Example for Adding Various ONTs
 - ONU Activation Configuration Example (FTTH)
 - ONU Activation Configuration Example (MDU)
4. ONT Maintenance and Query

ONT Data Planning

Device Type	HG8247
OLT PON port	0/8/0
ONT_ID	1
SN	323031312E396A41
Management mode	OMCI
ont-lineprofile	ID 91, name hg8247
ont-srvprofile	ID 91, name hg8247 4 Ethernet ports and 2 POTS ports

ONT Service Data Planning

Service Type	User Port	User VLAN ID	GEM Port ID	TCONT ID	DBA	
					ID and Name	Bandwidth
Voice	IP HOST	172	1	1	21, ftth_voip	Type 1; fixed 1 Mbps
Internet access	ETH 1	11	2	2	22, ftth_hsi	Type 2; Assured 2 Mbps
Multicast	ETH 2	200	3	3	23, ftth_iptv	Type 3; Assured 4 Mbps; Max. 8 Mbps

Adding an ONT Without Services (1)

- Configure an ONT line profile.

```
huawei(config)#ont-lineprofile gpon profile-id 91 profile-name  
hg8247  
huawei(config-gpon-lineprofile-91)#commit  
huawei(config-gpon-lineprofile-91)#quit
```

- Configure an ONT service profile.

```
huawei(config)#ont-srvprofile gpon profile-id 91 profile-name hg850  
huawei(config-gpon-srvprofile-91)#ont-port eth 4 pots 2  
huawei(config-gpon-srvprofile-91)#commit  
huawei(config-gpon-srvprofile-91)#quit
```

Adding an ONT Without Services (2)

- Add an ONT after automatic discovery.

```
huawei(config)#interface gpon 0/8
huawei(config-if-gpon-0/8)#port 0 ont-auto-find enable
huawei(config-if-gpon-0/8)#ont confirm 0 ontid 1 sn-auth
323031312E396A41 omci ont-lineprofile-name hg850 ont-srvprofile-
name hg8247
huawei(config-if-gpon-0/8)#display ont info 0 all
-----
      Subrack/Slot/Port ONT ID SN Control flag Running flag
Configuration status Matching status DBA mode
-----
0/8/0 1 323031312E396A41 Activated Online Normal Match SR
-----
```

Adding ONT Service Configurations (1)

- Configure DBA profiles.

- Configure a DBA profile for the voice service.

```
huawei(config)#dba-profile add profile-id 21 profile-name ftth_voip  
type1 fix 1024
```

- Configure a DBA profile for the Internet access service.

```
huawei(config)#dba-profile add profile-id 22 profile-name ftth_hsi  
type2 assure 2048
```

- Configure a DBA profile for the video service.

```
huawei(config)#dba-profile add profile-id 23 profile-name ftth_iptv  
type3 assure 4096 max 8112
```

Adding ONT Service Configurations (2)

- Configure an ONT line profile.

```
huawei(config)#ont-lineprofile gpon profile-id 91
```

- Bind a T-CONT to a DBA profile.

```
huawei(config-gpon-lineprofile-91)#tcont 1 dba-profile-id 21
huawei(config-gpon-lineprofile-91)#tcont 2 dba-profile-id 22
huawei(config-gpon-lineprofile-91)#tcont 3 dba-profile-id 23
```

- Add a GEM port and map it to a T-CONT.

```
huawei(config-gpon-lineprofile-91)#gem add 1 eth tcont 1
huawei(config-gpon-lineprofile-91)#gem add 2 eth tcont 2
huawei(config-gpon-lineprofile-91)#gem add 3 eth tcont 3
```

Adding ONT Service Configurations (3)

- Configure the mapping between GEM ports and service

```
huawei(config-gpon-lineprofile-91)#gem mapping 1 1 vlan 172
huawei(config-gpon-lineprofile-91)#gem mapping 2 2 vlan 11
huawei(config-gpon-lineprofile-91)#gem mapping 3 3 vlan 200
huawei(config-gpon-lineprofile-91)#commit
huawei(config-gpon-lineprofile-91)#quit
```

- Configure an ONT service profile

```
huawei(config)#ont-srvprofile gpon profile-id 91
huawei(config-gpon-srvprofile-91)#port vlan iphost 172
huawei(config-gpon-srvprofile-91)#port vlan eth 1 11
huawei(config-gpon-srvprofile-91)#port vlan eth 2 200
huawei(config-gpon-srvprofile-91)#commit
huawei(config-gpon-srvprofile-91)#quit
```



Contents

1. Terminal Profile Types
2. Process of Adding an ONT
3. Example for Adding Various ONTs
 - ONU Activation Configuration Example (FTTH)
 - ONU Activation Configuration Example (MDU)
4. ONT Maintenance and Query

ONT Data Planning

Device Type	MA5620G
OLT PON port	0/8/0
ONT_ID	2
SN	323031319C46B841
Management mode	SNMP
In-band management IP address	OLT management VLAN 4000, upstream port 0/19/0, static IP address 192.168.2.254/24 ONT management VLAN 4000, static IP address 192.168.2.2/24
ont-lineprofile	ID 92, name ma5620 In-band management: TCONT ID 0 In-band management: GEM port ID 0 buffered to TCONT0 In-band management: GEM port ID 0 mapped to VLAN 4000

ONT Service Data Planning

Service Type	User Port	User VLAN ID	GEM Port ID	TCONT ID	DBA	
					ID and Name	Bandwidth
Voice	All	172	4	1	21, ftth_voi p	Type 1, fixed 1 Mbps
Internet access	ETH 1	11	5	2	22, ftth_hsi	Type 2, assured 2 Mbps
Multicast	ETH 2	200	6	3	23, ftth_ipt v	Type 3, assured 4 Mbps, max. 8 Mbps

Adding an ONT Without Services

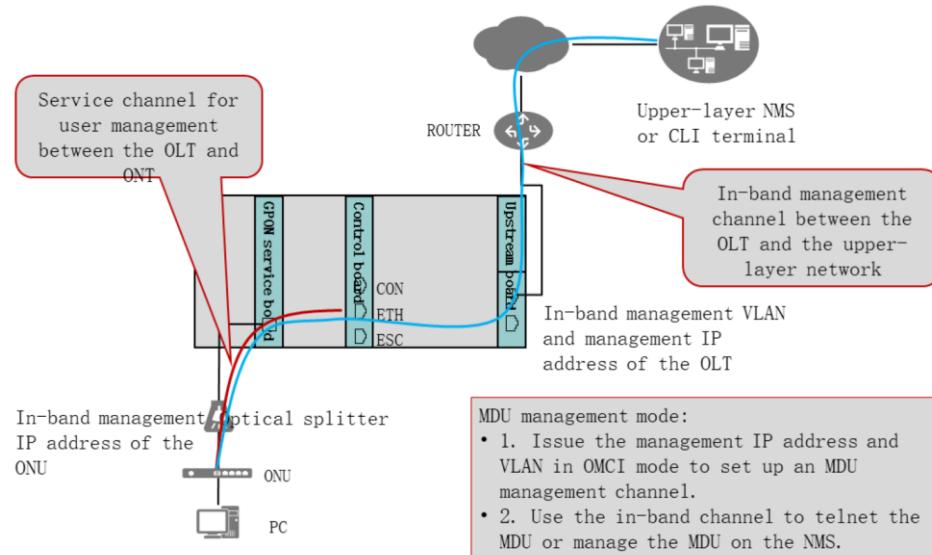
- Configure an ONT line profile.

```
huawei(config)#ont-lineprofile gpon profile-id 92 profile-name  
ma5620  
huawei(config-gpon-lineprofile-92)#commit  
huawei(config-gpon-lineprofile-92)#quit
```

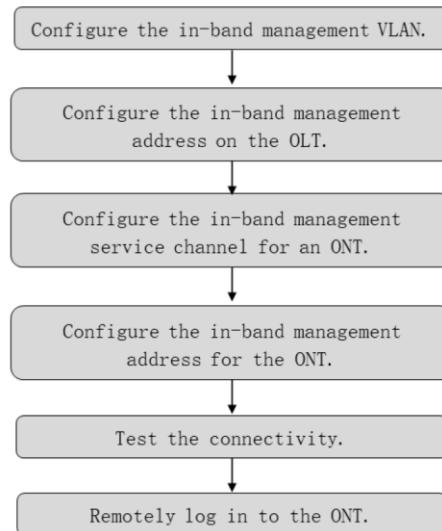
- Add an ONT after automatic discovery.

```
huawei(config)#interface gpon 0/8  
huawei(config-if-gpon-0/8)# ont confirm 0 ontid 2 sn-auth  
323031319C46B841 snmp ont-lineprofile-id 92  
huawei(config-if-gpon-0/8)# display ont info 0 all  
-----  
Subrack/Slot/Port ONT ID SN Control flag Running flag  
Configuration status Matching status DBA mode  
-----  
0/8/0 2 323031319C46B841 Activated Online Normal Match SR  
-----
```

Networking Information



In-band Management Configuration Process



In-band Management (1)

- Configure the in-band management VLAN on the OLT.

```
huawei(config)#vlan 4000 smart  
huawei(config)#port vlan 4000 0/19 0
```

- Configure the in-band management IP address on the OLT.

```
huawei(config)#interface vlanif 4000  
huawei(config-if-vlanif4000)#ip address 192.168.2.254 24
```

- Configure the in-band management service channel for the ONT.

```
huawei(config)#ont-lineprofile gpon profile-id 92  
huawei(config-gpon-lineprofile-92)#gem add 0 eth tcont 0  
huawei(config-gpon-lineprofile-92)#gem mapping 0 0 vlan 4000  
huawei(config-gpon-lineprofile-92)#commit  
huawei(config-gpon-lineprofile-92)#quit
```

- Functions of the `vlan` command

- This command is used to add one VLAN or multiple VLANs of the same type in batches. When you need to use a VLAN to communicate with a peer device, run this command to create a VLAN.
- Usage
 - A VLAN that already exists in the system cannot be created.
 - The system supports a maximum of 4000 VLANs. The default VLAN ID is 1 and cannot be created or deleted.

- Functions of the `port vlan` command

- This command is used to add an upstream port to a VLAN. You need to add an upstream port to a VLAN so that user packets with the VLAN ID can be transmitted upstream through the upstream port.

In-band Management (2)

- Configure the in-band service port for the ONT.

```
huawei(config)#service-port vlan 4000 gpon 0/8/0 ont 2 gemport 0  
multi-service user-vlan 4000
```

- Configure the in-band management IP address for the ONT.

```
huawei(config-if-gpon-0/8)#ont ipconfig 0 2 static ip-address  
192.168.2.2 mask 255.255.255.0 gateway 192.168.2.254 vlan 4000
```

- (Optional) Bind an SNMP profile (only when an NMS server is required).

```
huawei(config-if-gpon-0/8)#ont snmp-profile 0 2 profile-id 1
```

- Functions of the **service-port** command
 - The **service-port** command is used to create a service port to connect user devices. A service port is connected to a user device to form a service flow so that the user can access the service flow. After the command is executed successfully, a service can be carried on the service port.
- Functions of the **ont ipconfig** command
 - The **ont ipconfig** command is used to set the IP address of an ONT. If the ONT management mode is SNMP, you can run this command to specify the IP address of the ONT and configure the gateway and management VLAN at the same time.

Testing the In-band Management Channel

- Test the in-band channel.

```
huawei(config)#ping 192.168.2.2
PING 192.168.2.2: 56 bytes, interrupt by CTRL-C.
Reply from 192.168.2.2: bytes =56 sequence number =1 survival time
=63 time = 10 ms
Reply from 192.168.2.2: bytes =56 sequence number =5 survival time
=63 time = 20 ms
```

- Remotely log in to the ONT.

```
huawei(config)#telnet 192.168.2.2
{ <cr>|service-port<U><0,4294967295> }:
  Command:
    telnet 192.168.2.2
    Run CTRL-[ to exit telnet mode
    Connecting to the 192.168.2.2...
    Connected to the 192.168.2.2...
  >>User name: root
  >>User password: mduadmin (ciphertext, invisible)
```

Log in to the ONT and
configure services
for the ONT.

- Functions of the **ping** command

- This command is used to send ping packets to a remote host to check whether the network host is reachable. It is used to check whether the network connection is faulty and check the network line quality. When a target host is reachable, the system returns the number of sent packets, number of packets responded to, percentage of unresponded packets, and minimum, maximum, and average response time. When a target host is unreachable, the network connection or network line is faulty.
- Usage
 - If no response packet is received within the timeout period, "Request time out" is displayed. Otherwise, the number of bytes, sequence number, TTL, and response time of the response packet are displayed.
 - The final statistics include the number of sent packets, the number of packets responded to, percentage of unresponded packets, and the minimum, maximum, and average response time.
 - If the network transmission speed is slow, you can increase the timeout period for waiting for response packets.
 - The ping command does not allow users to send ping packets to broadcast addresses, such as XX.XX.XX.255.

- Telnet Command Function

- This command is used to log in to a remote server or host to configure and maintain the device.

Adding ONT Service Configurations (1)

- Configure an ONT line profile.

```
huawei(config)#ont-lineprofile gpon profile-id 92
```

- Bind T-CONTs to the DBA profiles.

```
huawei(config-gpon-lineprofile-92)#tcont 1 dba-profile-id 21
huawei(config-gpon-lineprofile-92)#tcont 2 dba-profile-id 22
huawei(config-gpon-lineprofile-92)#tcont 3 dba-profile-id 23
```

- Add GEM ports and map them to TCONTs.

```
huawei(config-gpon-lineprofile-92)#gem add 4 eth tcont 1
huawei(config-gpon-lineprofile-92)#gem add 5 eth tcont 2
huawei(config-gpon-lineprofile-92)#gem add 6 eth tcont 3
```

Adding ONT Service Configurations (2)

- Configure the mapping between GEM ports and VLANs.

```
huawei(config-gpon-lineprofile-92)#gem mapping 4 4 vlan 172
huawei(config-gpon-lineprofile-92)#gem mapping 5 5 vlan 12
huawei(config-gpon-lineprofile-92)#gem mapping 6 6 vlan 200
huawei(config-gpon-lineprofile-92)#commit
huawei(config-gpon-lineprofile-92)#quit
```



Contents

1. Terminal Profile Types
2. Process of Adding an ONT
3. Example for Adding Various ONTs
4. ONT Maintenance and Query

Querying ONT Information (1)

- Query information about all ONTs connected to GPON port 0/8/0.

```
huawei(config-if-gpon-0/8)#display ont info
{ portid<U><0,3> }:0
{ ontid<U><0,63>|all<K> }:all

Subrack/Slot/Port ONT SN Control flag Running flag Configuration
status Matching status DBA Mode

0/8/0 1 323031312E396A41 Activated Offline Initial Matching SR
0/8/0 2 323031319C46B841 Activated Online Normal Match SR
0/8/0 3 485754438BC99302 Activated online Failed Matching SR
0/8/0 30 3230313192E95441 Activated Online Normal Mismatch SR
```

Control flags include Activated and Deactivated.
Running flags include Online and Offline.
Configuration states include Normal and Failed.

- display ont info
 - This command is used to query the information about an ONT, including the current status and configurations.
 - Usage
 - Run the **config** command to enter global config mode, and then run the **interface gpon** command to enter PON mode.
 - An ONT has 3 states: running, configuration, and matching.
 - The running status of an ONT indicates whether an ONT is currently online and whether it can carry services. If the running status of an ONT is DOWN, you cannot query the ONT version, ONT FE, or GEM port statistics of the ONT, and the ONT cannot carry services. If the running status of an ONT is UP, the ONT is online, and whether it can normally forward services depends on the ONT configuration status.

Querying ONT Information (2)

- Query an ONT with a specific ID under GPON port 0/8/0.

```
huawei(config-if-gpon-0/8)#display ont info 0 1
-----
Subrack/slot/port: 0/8/0
ONT ID: 1
Control flag: Activated
Running flag: Offline
Configuration status: Initial status
Match status: Initial
DBA mode: SR
ONT ranging distance (m): -
ONT battery status: -
Authentication mode: SN
Serial number: 323031312E396A41 (2011-2E396A41)
Management mode: OMCI
Isolation status: Normal
Description: ONT_NO_DESCRIPTION
Cause of the last logout: LOS
Last online time: 2018-06-11 11:03:02
Last Offline Time: 2018-06-11 11:03:10
```

Dying-gasp: offline due to power off
Los: The fiber is removed or broken.

Querying the ONT Capabilities (1)

- Query the actual capabilities of an online ONT connected to GPON port 0/8/0

```
huawei(config-if-gpon-0/8)# display ont capability 0 2
-----
ONT hardware capability/status information
-----
PON port number: 0
ONT ID: 2
Device ID: SmartAX OT928G
Number of upstream PON ports: 1
Number of POTS ports: 8
Number of ETH ports: 5
Number of TDM ports: 8
Number of MOCA ports: -
Number of CATV ANI ports: -
Number of CATV UNI ports: -
```

When to perform this operation?
If you do not know the ONT type and capabilities, you can bind any profile when adding an ONT, query the actual capabilities, find out the actual device type and port quantity, and then configure the correct line profile or service profile.

- display ont capability
 - This command is used to query the actual capabilities of an ONT. After querying the actual capabilities of the ONT, you can create an appropriate ONT capability set profile accordingly.
 - Usage
 - Run the **config** command to enter global config mode, and then run the **interface gpon** command to enter GPON mode.
 - The ONT must be online. Otherwise, the query fails.
 - You can also run this command to query the hardware capability parameters of an ONT in the Mismatch state and bind it to a correct ONT capability set profile.
 - The hardware capability parameters of an ONT include the type and number of ONT ports and the number of port queues.

Querying the ONT Capabilities (2)

- Query the actual capabilities of an online ONT connected to GPON port 0/8/0

```
Number of GEM ports: 32
Whether to support IP configuration: Supported
Number of traffic controllers: -
Number of T-CONTs: 7
Flow control type: Priority queue
Powering off the optical module: Not supported
-----
Number of PQs of T-CONT 0:3
Number of PQs of T-CONT 1:4
...
-----
```

- display ont capability
 - This command is used to query the actual capabilities of an ONT. After querying the actual capabilities of the ONT, you can create an appropriate ONT capability set profile accordingly.
 - Usage
 - Run the **config** command to enter global config mode, and then run the **interface gpon** command to enter GPON mode.
 - The ONT must be online. Otherwise, the query fails.
 - You can also run this command to query the hardware capability parameters of an ONT in the Mismatch state and bind it to a correct ONT capability set profile.
 - The hardware capability parameters of an ONT include the type and number of ONT ports and the number of port queues.

Querying the ONT Capabilities (3)

- Query the ONT configuration capability of GPON port

```
huawei(config-if-gpon-0/8)#display ont config-capability 0 1
-----
Port number: 0
ONT ID: 1
Management mode: OMCI
Number of POTS ports: 2
Number of Ethernet ports: 4
TDM port type: E1
TDM service type: TDMoGem
Number of TDM ports: 0
Number of MOCA ports: 0
Number of user-side CATV ports: 0
Number of GEM ports: 3
IP configuration: -
Mapping mode: VLAN
Number of T-CONTs: 4
Flow control type: PQ
-----
```

- Functions of the **display ont config-capability** command

- This command is used to query the ONT capabilities configured by a user. The queried ONT capability set can be checked against the actual capability set of the ONT for consistency verification.

Querying the ONT Version Information

- Query the ONT version information.

```
huawei(config-if-gpon-0/8)#display ont version 0 1
-----
Subrack/slot/port: 0/8/0
ONT ID: 1
Vendor ID: HWTC
ONT version: H821GPFA VER B
Product ID: 101
Device ID: SmartAX MA5620G
Active software version: V8R305 C02B063
Standby software version:
-----
```

- Functions of the **display ont version** command
 - This command is used to query the information about the ONT version, including the software and hardware versions and manufacturer of the ONT.
 - The version information can be queried only when an ONT is online.

Querying ONT Port Information

- Query the optical power of the PON port of an ONT.

```
huawei(config-if-gpon-0/8)# display ont optical-info 0 2
-----
Receive power (dBm): 1.00
Transmit power (dBm): 0.00
Bias Current (mA): 0
Temperature (° C): 0
Voltage (mV): 0
OLT Rx Optical Power (dBm): -
```

- Query the status of an ONT port managed in OMCI mode.

```
huawei(config-if-gpon-0/8)# display ont port attribute 0 3 eth
-----
ONT No. Port No. Port Type Negotiation Mode Rate (Mbps) Duplex Port
switch Flow control switch Native Vlan Priority
-----
3 1 ETH auto-negotiation auto-negotiation auto-negotiation enable
disable 1 0
```

- Functions of the **display ont optical-info** command

- This command is used to query the information about an ONT optical module, including the receive optical power, transmit optical power, bias current, temperature, and optical power of the ONT received by a PON port.
- Only the optical module information of a single ONT can be queried.

Modifying the Default VLAN of an ONT Port

- For an ONT managed in OMCI mode, run the following command:

```
huawei(config-if-gpon-0/8)#ont port
{attribute<K>|native-vlan<K>}:native-vlan
{portid<U><0,7>}:1
{ontid<U><0,127>}:1
{eth<K>|iphost<K>|moca<K>}:eth
{ont-portid<U><1,8>}:1
{priority<K>|vlan<K>}:vlan
{vlanid<U><0,4095>}:11
{<cr>|priority<K>}:
```

When an ONT port is directly connected to a PC, the user VLAN TAG needs to be stripped from the data forwarded by the ONT. In this case, ONT native-vlan = ONT port vlan.

- Functions of the **ont port native-vlan** command

- This command is used to configure the native VLAN of an ONT port in GPON profile mode. When you need to re-specify the native VLAN of an ONT port, run this command. After the native VLAN of an ONT port is configured successfully:
 - If the VLAN ID of an ONT port is the same as the ID of the native VLAN, the packets of the ONT port do not contain the VLAN tag (untagged).
 - If the VLAN ID of the ONT port is different from the ID of the native VLAN, the packets of the ONT port contain the VLAN tag.
- Usage
 - Run the **config** command to enter global config mode, and then run the **interface gpon** command to enter GPON mode.
 - By default, all ports on an ONT belong to VLAN 1, and the native VLAN is VLAN 1.
 - Before configuring a native VLAN, ensure that the port has been added to the VLAN. You can run the **ont port vlan** command to add a port to a VLAN.
 - If the native VLAN is configured more than once, the last configuration takes effect.
 - When you configure a service port and the specified user-side VLAN changes:
 - If untagged packets are uploaded from the corresponding ONT port, the native VLAN of the port must be the same as the user-side VLAN.

- If tagged packets are uploaded from the corresponding ONT port, the native VLAN of the port does not need to be reset.

ONT Routine Maintenance (1)

- Attributes that can be modified for an ONT

```
huawei(config-if-gpon-0/8)#ont modify
{portid<U><0,7>}:0
{ontid<U><0,127>}:1
{authtype<K>}|{desc<K>}|{discover-mode<K>}|{manage-mode<K>}|{ont-
lineprofile-id<K>}|{ont-lineprofile-name<K>}|{ont-srvprofile-id<K>}|{ont-
srvprofile name<K>}|{password<K>}|{sn<K>}:
```

If an ONT is faulty and needs to be replaced, which parameters need to be modified?

How to change the user VLAN of a class A ONT?

- Functions of the **ont modify** command

- This command is used to modify the configuration data of an ONT. If the ONT configuration data (such as the authentication mode, serial number, and password) is different from the actual ONT configurations, the ONT cannot go online. In this case, run this command to correct the ONT configurations.
- Usage
 - Run the **config** command to enter global config mode, and then run the **interface gpon** command to enter GPON mode.
 - The ONT configurations that can be modified include the serial number, authentication mode, authentication password, and description. The capability set profile bound to an ONT cannot be modified.
 - Only one of the sequence code, authentication mode, authentication password, and description can be modified at a time.

- Answers:

- 1. SN
- 2. ont-srvprofile

ONT Routine Maintenance (2)

- Configure the SNMP route for an ONT (when the NMS server and the device are in different network segments).

```
huawei(config-if-gpon-0/8)#ont snmp-route
```

- Rediscover an ONT.

```
huawei(config-if-gpon-0/8)#ont re-discovery
```

- Delete an automatically discovered ONT.

```
huawei(config-if-gpon-0/8)#ont cancel
```

- Re-register an ONT.

```
huawei(config-if-gpon-0/8)#ont re-register
```

- Deactivate an ONT.

```
huawei(config-if-gpon-0/8)#ont deactivate
```

- Restart an ONT.

```
huawei(config-if-gpon-0/8)#ont reset
```

Note: If the status of
an ONU is abnormal,
you can deactivate,
re-discover, or
restart the ONU.

Deleting an ONT

- Process for deleting an ONT
 - ▣ If no service is configured, you can directly delete an ONT.
 - ▣ If services are configured, you need to delete the services in the reverse order of the service

```
huawei(config-if-gpon-0/8)#ont delete
```

- Functions of the **ont delete** command
 - ▣ This command is used to delete an ONT. When an ONT is deleted, the ONT configuration information is deleted at the same time, and the ONT is forced offline if it is online. If the ONT configurations, such as the bound capability set profile and authentication mode, are incorrect, run the command to delete the ONT and add it again.
 - ▣ Usage
 - Run the **config** command to enter global config mode, and then run the **interface gpon** command to enter GPON mode.
 - An ONT cannot be deleted if it is configured with services, that is, the T-CONT of the ONT is bound to a T-CONT profile. To delete such an ONT, run the **tcont bind-profile** command to unbind the T-CONT profile first.

Quiz

1. What are the functions of a DBA profile?
2. What are the consequences if the line profile and service profile are incorrectly configured?
3. How to determine whether an ONU goes offline due to a power failure or fiber break?
4. What is the procedure for replacing an ONU if the ONU is faulty?

- Reference answers:

1. Specifies the upstream bandwidth and service types of an ONU.
2. If the line profile is incorrect, the ONU cannot be registered. If the service profile is incorrect, class-A ONU services will be unavailable.
3. Query the ONU information. Dying-gasp indicates that an ONU goes offline due to power off. Los indicates that the fiber is disconnected or broken.
4. Modify the SN of the registered ONU to be replaced, and connect the new ONU.



Summary

- The following profiles need to be associated with an ONT:
 - DBA profile
 - Configures the upstream traffic parameters of a PON port. Each ONT needs to be configured with a DBA profile.
 - Line profile
 - Configures the binding between T-CONTs and DBA profiles, GEM port IDs, service mapping mode (VLAN or 802.1P), service types (Ethernet or TDM), QoS mode (PQ or CAR), and so on. Each ONT needs to be configured with a line profile.
 - Service profile
 - Configures the types and IDs of ONT ports, and the mapping between port IDs and VLANs.
 - Referenced when the management mode is set to OMCI for an ONT to be added.
 - SNMP profile
 - When the upper-layer network manages devices through an NMS server, you need to set SNMP parameters, including the SNMP version, community name, and destination IP address.
 - Referenced when the management mode is set to SNMP for an ONT to be added.

Thank You

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