Getting Started With OLT Network Configuration, Cisco Catalyst PON Series Switches

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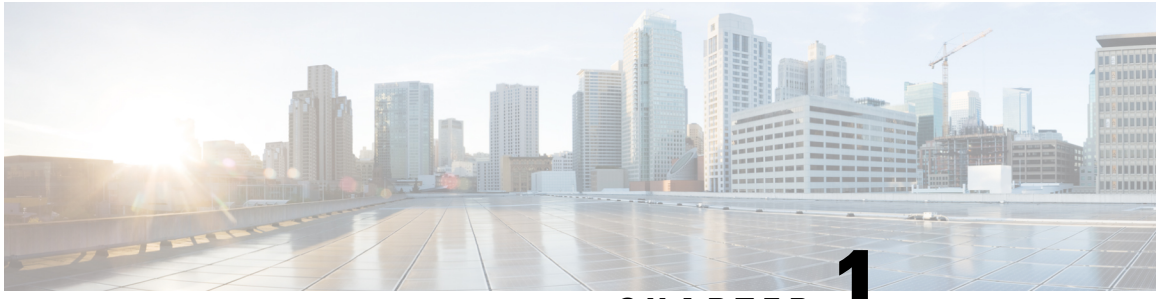


CHAPTER 1

Login OLT

About User Logins

You can use one of the following methods to log in to an Optical Line Terminal (OLT):

- Console port: You can log in to an OLT directly through the console port.
- Telnet: You can configure an OLT as a Telnet server. By default, the Telnet Server feature is enabled on an OLT but without an IP address, the client OLT cannot log in to the server OLT. To set up a login through Telnet, configure the IP address on the OLT through the console port. After the IP address is configured on the OLT Telnet server, you can configure other OLTs as Telnet clients.
- SSH: You can configure an OLT as an SSH server, but not an SSH client. The SSH Server feature is disabled on the OLT by default. Log in to the OLT through the console port to enable the SSH Server feature and configure the SSH settings.

  To set up SSH login on an OLT, perform the following steps:

  1. Open SSH.
  2. Configure the default key.
  3. Activate the default key.

  Note The key file and configuration are saved on the flash drive and are not decompiled.

- Network Management Software (NMS): The OLT supports login management through the NMS software.

  The SNMP server function is required for the operation of the NMS. The SNMP server function is not supported on certain OLTs. For certain OLTs, the SNMP server is enabled by default after the corresponding device is switched on; the SNMP server cannot be disabled.

  By default, the SNMP server has the following communities configured:

  - Private community with read-write authority.

- Public community with read-only authority.

How to Configure Different Methods of User Logins on an OLT

The following sections provide information on how to configure different methods of user logins on an OLT.

Setting Up Console Port Login on an OLT

To login in to an OLT through the console port, perform this procedure.

Step 1 Connect the DB-9 connector of the serial cable into the 9-pin serial port of the PC, and the RJ-45 connector into the console port of the OLT.

Step 2 Run a terminal software, such as Windows HyperTerminal.

Configure the following parameters through the terminal software:

- Configure the baud rate as 9600
- Configure the data bits as8
- Configure the parity as none
- Configure the stop bits as 1

The serial parameters are configured.

Step 3 Follow the prompts to key in the username and password to log in into the OLT. The default username is admin, and the default password is 123456. You must change the password after logging in to the device (For information on how to modify the password, see User Management Configurations).

Setting Up Telnet Login on an OLT

To set up Telnet login on an OLT, you must perform the following configurations.

Configuring an OLT as the Telnet Server

To configure an OLT as the Telnet server, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**telnet enable** **Example:** `Device(config)# telnet enable`	Enables Telnet on the OLT and configures the OLT as the Telnet server.
Step 4	**telnet disable** **Example:** `Device(config)# telnet disable`	(Optional) Disables Telnet on the OLT.
Step 5	**telnet limit** *value* **Example:** `Device(config)# telnet limit 10`	(Optional) Limits the number of users who can log in to the Telnet server. *value*: The number of users. The range is from 0 to 5.
Step 6	**exit** **Example:** `Device(config)# exit`	Exits global configuration mode.
Step 7	**stop telnet client** {**all** | *terminal_id*} **Example:** `Device# stop telnet client`	(Optional) Removes logged-in Telnet clients. • **all**: All the Telnet clients. • *terminal_id* : Telnet clients logged in through a particular terminal. The range is from 0 to 5.
Step 8	[**no**] **timeout** **Example:** `Device# timeout`	(Optional) Enables client timeout. Use the **no timeout** command to disable client timeout.
Step 9	**timeout** *value* **Example:** `Device# timeout 10`	(Optional) Configures the client timeout period. *value*: The period of inactivity, after which the client is logged out. The default is 20. The range is from 1 to 480.

Logging in to the Telnet Server Through an OLT

To log in to the Telnet server through an OLT, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.

	Command or Action	Purpose
Step 2	{**telnet**|**telnet6**} *server-ip* [*port-number* | **/localecho**] **Example:** `Device# telnet 192.0.2.1`	Logs in into the Telnet server.
Step 3	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 4	[**no**] **telnetclient timeout** **Example:** `Device(config)# telnetclient timeout`	(Optional) Enables timeout. Use the **no telnetclient timeout** command to disable timeout.
Step 5	**telnetclient timeout** [*value*] **Example:** `Device(config)# telnetclient timeout 10`	(Optional) Configures the Telnet client timeout period. *value*: The period of inactivity, after which the client is logged out. The default is 20 mins. The range is from 1 to 480.

Setting Up SSH Login on an OLT

To set up SSH login on an OLT, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	[**no**] **ssh** **Example:** `Device(config)# ssh`	Enables SSH. Use the **no ssh** command to disable SSH.
Step 4	[**no**] **ssh limit** *value* **Example:** `Device(config)# ssh limit 10`	(Optional) Limits the number of user logins on SSH. *value*: The user login limit value. The range is from 0 to 5.
Step 5	**exit** **Example:** `Device(config)# exit`	Exits global configuration mode.

	Command or Action	Purpose
Step 6	**stop vty** {**all** | *vty_list*} **Example:** `Device# stop vty all`	(Optional) Removes logged-in users. • **all**: All logged-in users. • *vty_list*: Users on the VTY list only. The range is from 1 to 64.
Step 7	**crypto key generate rsa** **Example:** `Device# crypto key generate rsa`	Configures the default key.
Step 8	**crypto key zeroize rsa** **Example:** `Device# crypto key zeroize rsa`	(Optional) Removes the key file.
Step 9	**crypto key refresh** **Example:** `Device# crypto key refresh`	(Optional) Activates the key.
Step 10	Use one of the following: • **load keyfile** {**public** | **private**} **tftp** {**inet** | **inet6**} *server-ip filename* • **load keyfile** {**public** | **private**} **ftp** {**inet** | **inet6**} *server-ip filename username password* **Example:** `Device# load keyfile public ftp inet FE80::20A:5AFF:FE9B:1815%sw0`	(Optional) Downloads the key from the external key server to this machine.
Step 11	Use one of the following: • **upload keyfile** {**public** | **private** } **tftp** {**inet** | **inet6**} *server-ip filename* • **upload keyfile** {**public** | **private** } **ftp** {**inet** | **inet6**} *server-ip filename username password* **Example:** `Device# upload keyfile public ftp inet FE80::20A:5AFF:FE9B:1815%sw0`	(Optional) Uploads the local key to the key server.

Setting Up NMS login on an OLT

To set up NMS login on an OLT, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable**	Enables privileged EXEC mode.

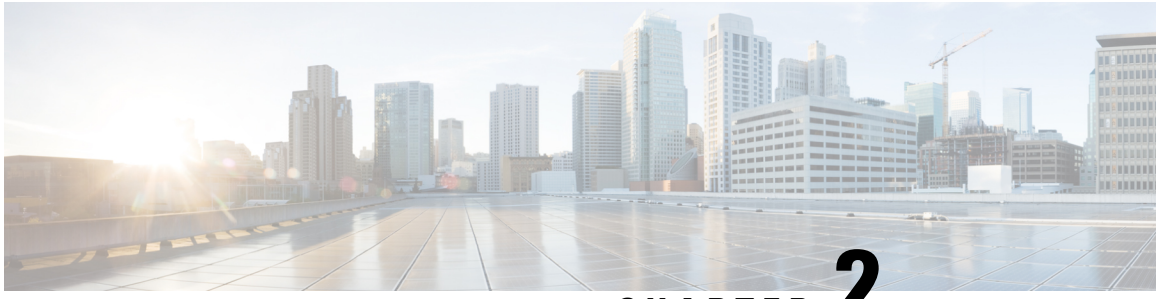
	Command or Action	Purpose
	Example: `Device> enable`	Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**snmp-server** {**enable** | **disable**} **Example:** `Device(config)# snmp-server enable`	Enables the SNMP server. To disable the SNMP server, run the **snmp-server disable** command.

Monitoring Device Logins

Use the following commands to monitor device logins.

Table 1: Commands to Monitor Device Logins

Command	Purpose
show telnet	Displays the limit value of logged-in users.
show telnet client	Displays the login client.
show arp anti interface	Displays the state of the inteface.
show ssh	Displays SSH configuration.
show ssh limit	Displays the number of users.
show keyfile {**public** | **private**}	Displays the key file.



CHAPTER 2

Configuring Service Profiles

About Service Profiles

A Gigabit passive optical network (GPON) topology consists of an optical line termination (OLT) device that is connected to multiple optical network terminals (ONTs) through an optical splitter.

Downstream traffic is the traffic flowing from an OLT to a specific ONT. The OLT receives and transmits the Ethernet services to the GPON Encapsulation Method (GEM) ports. Each GEM port is identified by a unique ID called port ID. The GEM ports encapsulate the Ethernet services into GEM frames, add the port ID, and broadcast the GEM frames to all the connected ONTs. The ONT then filters the GEM frames based on the port ID, decapsulates the GEM frames to Ethernet services, and transmits the services to end users.

Upstream traffic is the traffic flowing from all the ONTs to the OLT. Because all the ONTs share the same transmission channel, only one ONT is allocated the bandwidth to transmit data at a given point in time. Bandwidth allocation is based on the type of transmission container (T-CONT). A T-CONT is a buffer for transmitting the upstream service flow in the GPON system, and is identified by an allocation ID. The ONT encapsulates the Ethernet services to the GEM frames, and buffers the GEM frames into the T-CONT that is waiting for the uplink data forwarding time. Multiple GEM ports are multiplexed into a T-CONT. The OLT receives the GEM frames through the GEM ports, decapsulates the GEM frames to Ethernet services, and transmits the services to the access layer device.

Service profile deployment allows you to configure various profile templates. The following table lists the various profile templates that you can configure.

Table 2: Service Profile Operation

Configuration Task	Type of Traffic	Required or Optional
VLAN profiles	Upstream and downstream traffic	Required
DBA profiles	Upstream traffic only	Required
Uplink traffic profiles	Upstream traffic only	Optional
Downlink traffic profile	Downstream traffic only	Optional
Line profiles	Upstream traffic only	Required

Configuration Task	Type of Traffic	Required or Optional
Rule profiles	Upstream traffic only	Required
Unique profiles	Upstream traffic only	Optional

You can specify a default service profile and bind multiple service profiles to a rule. The device type configuration in multiple service profiles vary. After an ONT is registered, the OLT checks the service profiles based on the device type reported by the ONT. If the device type in the service profile matches the device type reported by the ONT, the OLT sends the service profile to the ONT. If the device type does not match, the OLT checks whether the default service profile exists and sends the default service profile to the ONT.

About VLAN Profiles

You can configure VLAN application modes to the traffic flow between the OLT and the ONT. The OLT supports both the N:1 and 1:1 VLAN application modes for flexible and variable VLAN service applications.

The OLT implements GEM port-based VLAN transformation rules through the VLAN profile template configuration. A VLAN profile template can be configured with the following transformation rules:

- Add rule: This rule is used to configure VLAN stacking rules. After a rule is configured and applied, in the upstream direction, the OLT adds an outer-VLAN tag to the inner-VLAN tag of the service flow originating from the ONT and carried by the corresponding GEM port. In the downstream direction, the OLT strips the ingress traffic outer-VLAN tag from the uplink device and forwards it to the ONT through the corresponding GEM port. Each VLAN profile template can be configured with 32 VLAN stacking rules, but the inner-VLAN tag (a combination of VLAN ID and priority) should be unique in each rule. After the template is configured, it is referenced by the GEM port configured in the line profile template or unique profile template.
- Add default rule: This rule is used to configure VLAN tagging rules. After a rule is configured and applied, in the upstream direction, the OLT adds a default VLAN tag to the untagged service flow originating from the ONT and carried by the corresponding GEM port. In the downstream direction, the OLT strips the default VLAN of the service flow from the uplink port and forwards it to the ONT through the corresponding GEM port. Only one default VLAN tag rule can be configured for each VLAN profile template. After the template is configured, it is referenced by the GEM port configured in the line profile template or unique profile template.
- Translate rule: This rule is used to configure VLAN translation rules. After a rule is configured and applied, in the upstream direction, the OLT converts the old-VLAN tag to the new-VLAN tag of the service flow originating from the ONT and carried by the corresponding GEM port. In the downstream direction, the OLT converts the new-VLAN tag of the service flow to the old-VLAN tag and forwards it to the ONT through the corresponding GEM port. Each VLAN template can be configured with 32 VLAN conversion rules, but the old-VLAN tag (a combination of VLAN ID and priority) should be unique in each rule. After the template is configured, it is referenced by the GEM port configured in the line profile template or unique profile template.

After the VLAN template is referenced, the VLAN translation and the stacking rules are compared for an upstream packet with a VLAN tag. The VLAN tag rule is compared for an upstream packet without a VLAN tag from an ONT GEM port. The packet is discarded if there is no corresponding matching rule.

About DBA Profiles

For upstream traffic, only one ONT is allowed to transmit data at a given point in time because all the ONTs share the same transmission channel. The upstream traffic is handled by scheduling a dynamic bandwidth assignment (DBA) profile.

Bandwidth allocation is based on the configured T-CONT for transmitting upstream traffic. Each T-CONT type provides a certain Quality of Service (QoS).

The following table lists the different types of T-CONT, the relationship between each type of T-CONT, and bandwidth allocation and service application for each T-CONT type

Table 3: T-CONT Type Summary

T-CONT Type	Traffic Descriptor Component	Description
Type 1	Fixed bandwidth	Provides only fixed bandwidth. Configured for carrying traffic that is sensitive to delay or jitter, for example, VoIP services.
Type 2	Assured bandwidth	Provides only assured bandwidth. Configured for carrying on or off type traffic without strict delay and jitter requirements, for example, IPTV multicast services.
Type 3	Assured bandwidth Maximum bandwidth	Provides both assured bandwidth as well as nonassured bandwidth. Configured for carrying variable-rate burst traffic.
Type 4	Maximum bandwidth	Provides best-effort bandwidth. Configured for carrying variable-rate burst traffic that does not exhibit delay sensitivity, for example, internet data services.
Type 5	Fixed bandwidth Assured bandwidth Maximum bandwidth	Provides a combination of fixed, assured, and best-effort bandwidth. Configured for carrying general traffic.

The following are the characteristics of aDBA profile:

- In all types of T_CONT, bandwidth allocation is prioritized in the following order:
  1. Fixed bandwidth
  2. Assured bandwidth
  3. Nonassured bandwidth
  4. Best-effort bandwidth

- Fixed bandwidth assured bandwidth together comprise the basic bandwidth. The sum of the fixed bandwidth and the assured bandwidth of all T-CONT configurations under the same PON port cannot exceed the total uplink bandwidth of the corresponding PON port.
- Nonassured and best-effort bandwidth together comprise the additional bandwidth.

About Uplink Traffic Profiles

Uplink traffic flow is scheduled based on the GEM port. The following are the two types of scheduling modes:

- Flow control mode: The flow is controlled by the GEM port rate limitation configured on the GEM port.
- Priority queue scheduling mode: The flow is controlled by the GEM port priority.

The uplink traffic profile configuration is applied only if the ONT supports it. After the uplink traffic profile template is applied, it is referenced based on the GEM port in the line profile template or unique profile template. The GEM port traffic is scheduled by the ONT based on the uplink traffic profile configuration.

About Downlink Traffic Profiles

Downlink traffic flow is scheduled using the flow control mode.

Only one downstream traffic flow schedule can be configured in a GEM port. After the downlink traffic profile template is applied, it is referenced based on the GEM port in the line profile template or unique profile template.

About Line Profiles

A line profile allows you to map the ONT service flow to the OLT. The following are the parameters required to create a line profile:

1. Device type

   Define a device type. Each connected ONT must have its own specific device type name. When the ONT is registered to go online, the OLT delivers a specific line profile template configuration according to the device type reported. In the line profile configuration, the device type must be configured first. The device type cannot be modified after the line profile is configured. The entire line profile configuration must be removed when the device type is deleted or modified.

2. T-CONT

   Create a T-CONT and configure the binding relationship between the T-CONT and the DBA profile template.

3. GEM port

   Create a GEM port and configure the GEM port parameters, as detailed below:

   a. Configure a GEM port and map it to the T-CONT.

   b. Map the GEM port to the VLAN profile configuration. The OLT must support the GEM port-based VLAN translate rule.

   c. Map the GEM port to the uplink traffic profile. The upstream traffic scheduling parameters are configured in the upstream traffic profile.

d. Map the GEM port to the downlink traffic profile. The downlink bandwidth rate limit configured in the downlink traffic profile is implemented by the OLT ACL resources.

4. Mapping rule

   Configure mapping rules between the GEM port and user interface data flows, as detailed below:

   a. A mapping mode is required to configure mapping between the GEM port and the data flowing from the user interface. The following are the various mapping modes available:

      - Port
      - VLAN ID
      - 802.1P priority
      - Port + VLAN ID
      - Port + 802.1P priority
      - VLAN ID+802.1P priority
      - Port+VLAN ID+802.1P priority

Note Only one mapping mode can be configured for the same service profile. The default mapping mode is based on VLAN ID mapping.

   b. A mapping table establishes the mapping relationship between the GEM port and the upstream data flowing into the ONT user interface. After the mapping relationship is established, the corresponding GEM port can be used to carry the service.

Note The parameters of the mapping mode must be the same as those configured in the mapping table configuration.

5. Flow rule

   Configure flow rules, as detailed below:

   a. Service flows are distinguished by the ONT based on the packet Ethernet type and the port the packets are received into.

      Packets that receive ports are classified into the following types:

      - Ethernet interface (Eth): The Ethernet interface refers to the LAN port of the ONT.
      - Virtual Ethernet interface (VEIP): The virtual Ethernet interface refers to the WAN interface of the ONT.
      - Voice IP interface (IPhost): The voice IP interface is applicable to ONTs that supports voice service.

   b. The VLAN tag processing policy of the ONT flow. Based on the flow rules configured, the ONT applies the VLAN processing rule on the service flow. The following are the VLAN tag processes:

- Transparent
- Default
- Keep
- Translate
- Add

6. Rule profile

   Configure a rule profile. Configure a rule profile, as detailed below:

   a. Configure the ONT authentication rule and bind the line profile to the related ONTs. An OLT supports the following authentication modes:

      - Serial number authentication
      - Password authentication
      - Combination of serial number and password authentication
      - Logical ONT ID (LOID) authentication
      - LOID password authentication
      - Combination of LOID and LOID password authentication.

      Serial number authentication, password authentication, and a combination of serial number and password authentication are ITU-defined ONT authentication methods.

   b. Configure the ONT discovery mode. This can be configured with password authentication mode, a combination of serial number and password authentication mode, and all LOID related authentication modes. There are two types of ONT discovery modes:

      - Always-on mode: This mode indicates that even after the ONT passes the authentication, if the serial number changes, the ONT goes online. By default, the ONT discovery mode is in always-on mode.
      - Once-on mode: This mode indicates that the ONT must be authenticated and registered within the specified time after the configuration of the profile is completed. If ONT authentication succeeds, the serial number cannot be modified. The specified time can be set either by no aging time and aging time. A no-aging time means that the timeout period is not set and the ONT can always be authenticated.

After the ONT authentication rule is configured, the service profile is applied to the ONT.

About Unique Profiles

Each ONT is configured differently based on the service flow attribute and each of its service flow application. For example, for voice service flow, the flow attribute is a telephone number. You can configure a line profile and a unique profile on an OLT, based on the ONT service application. The following are the conditions for configuring line profile and unique profile as well as the advantages and disadvantages of each method.

- If the ONT service flow attributes are not distinguished, different line profiles are directly configured for each ONT. Although this method allows for clear configurations, a large number of line profiles can occupy space in the configuration file.
- If the ONT service flow attributes are distinguished, the common service flow attributes are configured as a line profile, and the different service flow attributes are configured as a unique profile. Although this method allows for simpler configuration, it is difficult to modify the ONT configurations because they are unclear.

Perform the following configuration steps to create a unique profile:

1. Configure the ONT description. This description can be used to describe the geographic location of the terminal according to the user. If a terminal fails, its location can be located quickly for troubleshooting nased on its description.
2. Bind the traffic profile and VLAN profile to the ONT GEM port using the GEM port profile. The ONT GEM port can only be created in the line profile. The ONT GEM port binding relationship to the traffic profile and VLAN profile can be configured either in the line profile or the unique profile.

Note If there is a GEM port profile binding configuration in both the line profile and the unique profile, the unique profile configuration takes precedence.

3. Configure the ONT SIP service, including the SIP proxy attributes, SIP interface attributes, SIP number attributes, and digitmap attributes.

How to Configure Service Profiles

The following sections provide information on how to configure various service profiles.

Configure a VLAN Profile

To configure a VLAN profile, perform the following procedures.

Configure an Add Rule

Modifying and activating the VLAN template causes the ONT that references the template to go online again.

To configure add rule, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile vlan** **Example:** `Device(config)# deploy profile vlan`	Enters VLAN profile configuration mode.
Step 4	**aim** {*index_num* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-vlan)# aim 5`	Creates VLAN aim. • *index_num*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The name of the template in string format. The string length is from 1 to 128.
Step 5	[**no**] **add inner-vlan** *vid* {*priority* } {**outer-vlan** {*vid* [*priority*] } } **Example:** `Device(deploy-profile-vlan-5)#`	Configures the VLAN stacking rule. • *vid*: The VLAN ID. The range is from 0 to 4094. • *priority*: The 802.1 priority. The range is from 0 to 7. Use the **no add inner-vlan** *vid* [*priority*] command to delete the VLAN stacking rule.
Step 6	**active** **Example:** `Device(deploy-profile-vlan-5)# active`	Activates the VLAN rule.
Step 7	**exit** **Example:** `Device(deploy-profile-vlan-5)# exit`	Exits to VLAN profile configuration mode.
Step 8	**delete aim** {*index_list* | **name** *name*} **Example:** `Device(deploy-profile-vlan)# delete aim 5`	(Optional) Deletes the VLAN aim. • *index_list*: The index number combination. • *name*: The name of the template in string.
Step 9	**exit** **Example:** `Device(deploy-profile-vlan)# exit`	Exits to global configuration mode.

Configure a Default Rule

Modifying and activating the VLAN template causes the ONT that references the template to go online again.

To configure a default rule, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile vlan** **Example:** `Device(config)# deploy profile vlan`	Enters VLAN profile configuration mode.
Step 4	**aim** {*index_num* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-vlan)# aim 5`	Creates VLAN aim. • *index_num*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The name of the template, in string format. The string length is from 1 to 128.
Step 5	[**no**] **default vlan** *vid* [*priority*] **Example:** `Device(deploy-profile-vlan-5)# default vlan 5 5`	Configures a VLAN tagging rule. • *vid*: The VLAN ID. The range is from 0 to 4094. • *priority*: The 802.1 priority. The range is from 0 to 7. Use the **no default vlan** command to delete the VLAN tagging rule.
Step 6	**active** **Example:** `Device(deploy-profile-vlan-5)# active`	Activates the VLAN rule.
Step 7	**exit** **Example:** `Device(deploy-profile-vlan-5)# exit`	Exits to VLAN profile configuration mode.
Step 8	**delete aim** {*index_list* | **name** *name*} **Example:** `Device(deploy-profile-vlan)# delete aim 5`	(Optional) Deletes the VLAN aim. • *index_list*: The index number combination. • *name*: The name of the template in string.
Step 9	**exit** **Example:** `Device(deploy-profile-vlan)# exit`	Exits to global configuration mode.

Configure a Translate Rule

Modifying and activating the VLAN template causes the ONT that references the template to go online again.

To configure a translate rule, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile vlan** **Example:** `Device(config)# deploy profile vlan`	Enters VLAN profile configuration mode.
Step 4	**aim** {*index_num* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-vlan)# aim 5`	Creates VLAN aim. • *index_num*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The name of the template, in string format. The string length is from 1 to 128.
Step 5	[**no**] **translate old-vlan** *vid* {*priority* | **new-vlan** {*vid* [*priority*] } } **Example:** `Device(config)#`	Configures the VLAN translate rule. • *vid*: The VLAN ID. The range is from 0 to 4094. • *priority*: The 802.1 priority. The range is from 0 to 7. Use the **no translate old-vlan** *vid* [*priority*] to delete the VLAN translate rule.
Step 6	**active** **Example:** `Device(config)#`	Activates the VLAN rule.
Step 7	**exit** **Example:** `Device(deploy-profile-vlan-5)# exit`	Exits to VLAN profile configuration mode.
Step 8	**delete aim** {*index_list* | **name** *name*} **Example:** `Device(deploy-profile-vlan)# delete aim 5`	(Optional) Deletes the VLAN aim. • *index_list*: The index number combination. • *name*: The name of the template in string.

	Command or Action	Purpose
Step 9	**exit** **Example:** `Device(deploy-profile-vlan)# exit`	Exits to global configuration mode.

Configure a DBA Profile

Modifying and activating the DBA profile causes the ONT that references the template to go online again.

To configure a DBA profile, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile dba** **Example:** `Device(config)# deploy profile dba`	Enters DBA profile configuration mode.
Step 4	**aim** {*index_num* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-dba)#`	Creates the DBA aim. • *index_num*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The name of the template, in string format. The string length is from 1 to 128.
Step 5	**type 1 fix** *fixed_bandwidth* **Example:** `Device(deploy-profile-dba-5)# type 1 fix 1024`	Configures Type 1 DBA. *fixed_bandwidth*: The fixed bandwidth, in kbps. The range is from 256 to 800000.
Step 6	**type 2 assured** *assured_bandwidth* **Example:** `Device(deploy-profile-dba-5)# type 2 assured 1024`	Configures Type 2 DBA. *assured_bandwidth*: The assured bandwidth, in kbps. The range is from 0 to 800000.
Step 7	**type 3 assured** *assured_bandwidth* **max** *max_bandwidth* **Example:**	Configures Type 3 DBA. • *assured_bandwidth*: The assured bandwidth, in kbps. The range is from 0 to 800000.

	Command or Action	Purpose
	`Device(deploy-profile-dba-5)# type 3 assured 256 max 1024`	• *max_bandwidth*: The maximum bandwidth, in kbps. The range is from 256 to 1200000.
Step 8	**type 4 max** *max_bandwidth* **Example:** `Device(deploy-profile-dba-5)# type 4 max 256`	Configures Type 4 DBA. • *max_bandwidth*: The maximum bandwidth, in kbps. The range is from 256 to 1200000.
Step 9	**type 5 fix** *fixed_bandwidth* **assured** *assured_bandwidth* **max** *max_bandwidth* **Example:** `Device(deploy-profile-dba-5)# type 5 fix 1024 assured 256 max 256`	Configures Type 5 DBA. • *fixed_bandwidth*: The fixed bandwidth, in kbps. The range is from 256 to 800000. • *assured_bandwidth*: The assured bandwidth, in kbps. The range is from 0 to 800000. • *max_bandwidth*: The maximum bandwidth, in kbps. The range is from 256 to 1200000.
Step 10	**active** **Example:** `Device(deploy-profile-dba-5)# active`	Activates the DBA aim.
Step 11	**exit** **Example:** `Device(deploy-profile-dba-5)# exit`	Exits to VLAN profile configuration mode.
Step 12	**delete aim** { *index_list* | **name** *name*} **Example:** `Device(deploy-profile-dba)#`	(Optional) Deletes the DBA aim. • *index_list*: The index number combination. • *name*: The name of the template in string.
Step 13	**exit** **Example:** `Device(deploy-profile-dba)# exit`	Exits to global configuration mode.

Configure an Uplink Traffic Profile

Modifying and activating the uplink traffic profile causes the ONT that references the template to go online.

To configure an uplink traffic profile, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:**	Enables privileged EXEC mode. Enter your password, if prompted.

	Command or Action	Purpose
	`Device> enable`	
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile us-traffic** **Example:** `Device(config)# deploy profile us-traffic`	Enter uplink traffic profile configuration mode.
Step 4	**aim** {*index_num* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-us-traffic)# aim 5`	Creates uplink traffic profile aim. • *index_num*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The name of the template, in string format. The string length is from 1 to 128.
Step 5	**us queue** *queue_id* **Example:** `Device(deploy-profile-us-traffic-5)# us queue 5`	(Optional) Configures GEM port queue priority. *queue_id*: GEM port priority queue in T-CONT. The range is from 0 to 7, where, 0 is the lowest priority and 7 is the highest priority.
Step 6	**us car cir** *cir* **cbs** *cbs* **pir** *pir* **pbs** *pbs* **Example:** `Device(deploy-profile-us-traffic-5)# us car cir 256 cbs 23 pir 1024 pbs 5`	(Optional) Configures GEM port traffic control. • *cir*: The committed information rate, in kbps. The range is from 64 to 800000. • *cbs*: The committed burst size, in KB. The range is from 2 to 25000. • *pir*: The peak information rate, in kbps. The range is from 64 to 1024000. The peak information rate requirement is greater than or equal to committed information rate. • *pbs*: The peak burst size, in KB. The range is from 2 to 25000.
Step 7	**active** **Example:** `Device(deploy-profile-us-traffic-5)# active`	Activates the uplink traffic profile aim.
Step 8	**exit** **Example:** `Device(deploy-profile-us-traffic-5)# exit`	Exits to VLAN profile configuration mode.
Step 9	**delete aim** {*index_list* | **name** *name*}	(Optional) Deletes the uplink traffic profile aim.

	Command or Action	Purpose
	Example: `Device(deploy-profile-us-traffic)# delete aim 5`	• *index_list*: The index number combination. • *name*: The name of the template in string.
Step 10	**exit** **Example:** `Device(deploy-profile-us-traffic)# exit`	Exits to global configuration mode.

Configure a Downlink Traffic Profile

Modifying and activating the downlink traffic profile causes the ONT that references the template to go online.

To configure a downlink traffic profile, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile ds-traffic** **Example:** `Device(deploy-profile-ds-traffic)#`	Enters downlink traffic profile configuration mode.
Step 4	**aim** {*index_num* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-ds-traffic)# aim 5`	Creates downlink traffic profile aim. • *index_num*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The name of the template, in string format. The string length is from 1 to 128.
Step 5	**ds car bandwidth** *bandwidth* **Example:** `Device(deploy-profile-ds-traffic-5)#`	(Optional) Configures GEM port committed access rate (CAR). *bandwidth*: The downstream bandwidth, in kbps. The value range is from 64 to 2608832.
Step 6	**active** **Example:** `Device(deploy-profile-ds-traffic-5)#`	Activates the downlink traffic profile aim.

	Command or Action	Purpose
Step 7	**exit** **Example:** `Device(deploy-profile-ds-traffic-5)# exit`	Exits to VLAN profile configuration mode.
Step 8	**delete aim** {*index_list* | **name** *name*} **Example:** `Device(deploy-profile-ds-traffic)# delete aim 5`	(Optional) Deletes the downlink traffic profile aim. • *index_list*: The index number combination. • *name*: The name of the template, in string format.
Step 9	**exit** **Example:** `Device(deploy-profile-ds-traffic)# exit`	Exits to global configuration mode.

Configure a Line Profile

To configure a line profile, perform the following procedures.

Configure a Device Type

Modifying and activating the line profile causes the ONT that references the template to go online.

To configure a device type, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile line** **Example:** `Device(config)# deploy profile line`	Enter line profile configuration mode.
Step 4	**aim** {*index_number* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-line)# aim 5`	Creates line profile aim. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string format.

	Command or Action	Purpose
Step 5	**device type** *type* **Example:** `Device(deploy-profile-line-5)# device type c40-100`	Configures the device type. *type*: The ONT device type name. The name of the ONT device type should conform to the GPON Terminal Naming Specification.
Step 6	**active** **Example:** `Device(deploy-profile-line-5)# active`	Activates the line profile.
Step 7	**exit** **Example:** `Device(deploy-profile-line-5)# exit`	Exits to line profile configuration mode.
Step 8	**delete aim** {*index_list* | **name** *name*} **Example:** `Device(deploy-profile-line)# delete aim 5`	(Optional) Deletes the aim. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. w • *name*: The profile name in string
Step 9	**exit** **Example:** `Device(deploy-profile-line)# exit`	Exits to global configuration mode.

Configure a T-CONT

Modifying and activating the line profile causes the ONT that references the template to go online.

To configure a T-CONT, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile line** **Example:** `Device(config)# deploy profile line`	Enters line profile configuration mode.

	Command or Action	Purpose
Step 4	**aim** {*index_number* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-line)# aim 5`	Creates line profile aim. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string.
Step 5	[**no**] **tcont** *tcont_id* **profile dba** {*index_num* |**name** *name*} **Example:** `Device(deploy-profile-line-5)# tcont 2 profile dba 5`	Creates T-CONT. • *tcont_id*: The T-CONT ID. The value range is from 1 to 8. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string.
Step 6	**active** **Example:** `Device(deploy-profile-line-5)# active`	Activates the line profile.
Step 7	**exit** **Example:** `Device(deploy-profile-line-5)# exit`	Exits to line profile configuration mode.
Step 8	**delete aim** {*index_list* | **name** *name*} **Example:** `Device(deploy-profile-line)# delete aim 5`	(Optional) Deletes the line profile. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string.
Step 9	**exit** **Example:** `Device(deploy-profile-line)# exit`	(Optional) Exits to global configuration mode.

Configure a GEM Port

Modifying and activating the line profile causes the ONT that references the template to go online.

To configure GEM port, perform this procedure.

Before you begin

T-CONT must be configured before configuring a GEM port. The GEM port must also be bound to the VLAN profile. The upstream and downstream traffic profiles are optional.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile line** **Example:** `Device(config)# deploy profile line`	Enters line profile configuration mode.
Step 4	**aim** {*index_number* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-line)# aim 5`	Creates line profile aim. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string.
Step 5	**gemport traffic-mode** {**car** | **queue**} **Example:** `Device(deploy-profile-line-5)# gemport traffic-mode car`	Configures the GEM port traffic mode.
Step 6	[**no**] **gemport** *gem_index* **tcont** *tcont_id* [**encrypt** | **vlan-profile** | **us-traffic-profile** | **ds-traffic-profile**] {*index_number* | **name** *name*} **Example:** `Device(deploy-profile-line-5)# gemport 2 tcont 2 vlan-profile 2`	Creates GEM port and configure the parameters. • *gem_index*: The GEM port index number. The ranges is from 1 to 1024. Currently, at most 24 GEM Ports can be created in each line profile. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The name of the template, in string format. The string length range is from 1 to 128. Use the **no gemport** *gem_index* to delete the GEM port.
Step 7	**active** **Example:** `Device(deploy-profile-line-5)# active`	Activates the line profile.
Step 8	**exit** **Example:** `Device(deploy-profile-line-5)# exit`	Exits to line profile configuration mode.

	Command or Action	Purpose
Step 9	**delete aim** {*index_number* | **name** *name*} **Example:** `Device(deploy-profile-line)# delete aim 5`	(Optional) Deletes the line profile. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string.
Step 10	**exit** **Example:** `Device(deploy-profile-line)# exit`	Exits to global configuration mode.

Configure a Mapping Rule

Modifying and activating the line profile causes the ONT that references the template to go online.

To configure a mapping rule, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile line** **Example:** `Device(config)# deploy profile line`	Enters line profile configuration mode.
Step 4	**aim** {*index_number* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-line)# aim 5`	Creates line profile aim. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string.
Step 5	**mapping mode** {**port** | **port-priority** | **port-vlan** | **port-vlan-priority** | **priority** | **vlan** | **vlan-priority**} **Example:** `Device(deploy-profile-line-5)# mapping mode port`	Configures the GEM port mapping mode configuration.

	Command or Action	Purpose
Step 6	[**no**] **mapping** *index_number* { **vlan** *vlan_id* | **priority** *priority* | **port** {**eth** *port_id* | **veip** | **iphost** } } **gemport** *gem_index* **Example:** `Device(deploy-profile-line-5)# mapping 2 port eth 2 gemport 2`	Creates GEM port mapping. • *index_number*: Mapping index number. The value range is from 0 to 47. • *vlan_id*: The VLAN ID. The value range is from 1 to 4094. • *priority*: The 802.1P. The value range is from 0 to 7. • **eth**: The ONT Ethernet interface. Optional for SFU. • **veip**: The ONT WAN interface. Optional for HGU. • **iphost**: The ONT voice IP interface. • *port_id*: The ONT Ethernet interface. The value range is from 1 to 24 depending on the number of ONTs. • *gem_index*: The GEM port index number. The range is from 1 to 1024. Currently, a maximum of 24 GEM ports can be created in each line profile. Use the **no mapping** *index_num* to delete GEM port mapping.
Step 7	**active** **Example:** `Device(deploy-profile-line-5)# active`	Activates the line profile.
Step 8	**exit** **Example:** `Device(deploy-profile-line-5)# exit`	Exits to line profile configuration mode.
Step 9	**delete aim** {*index_number* | **name** *name*} **Example:** `Device(deploy-profile-line)# delete aim 5`	(Optional) Deletes the line profile. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string.
Step 10	**exit** **Example:** `Device(deploy-profile-line)# exit`	Exits to global configuration mode.

Configure a Flow Rule

Modifying and activating the line profile causes the ONT that references the template to go online.

To configure a flow rule, perform this procedure.

Before you begin

The ONT should support flow rules. This is applicable for SFU type ONT.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile line** **Example:** `Device(config)# deploy profile line`	Enters line profile configuration mode.
Step 4	**aim** {*index_num* [**name** *name*] | **name** *name*} **Example:** `Device(deploy-profile-line)# aim 5`	Creates line profile aim. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string
Step 5	**flow** *flow_id* **port** {**eth** *port_id* | **veip** | **iphost** } {**etype** { **ipoe** | **pppoe** | **arp**}} **transparent** **Example:** `Device(deploy-profile-line-5)# flow 2 port iphost etype arp transparent`	Creates the transparent flow rule. • *flow_id*: The flow ID. The value range is from 0 to 63. • *port_id*: The ONT Ethernet interface ID. The value range is from 1 to 24. • **ipoe**: Ethernet Type 0x0800 packet • **pppoe**: Ethernet Type 0x8863 or 0x8864 packet • **arp**: Ethernet Type 0x0806 packet
Step 6	**flow** *flow_id* **port** {**eth** *port_id* | **veip** | **iphost** } {**etype** { **ipoe** | **pppoe** | **arp**} } **default vlan** *vid* [*priority*] **Example:** `Device(deploy-profile-line-5)# flow 2 port iphost etype arp default vlan 3`	Creates the default VLAN flow rule. • *flow_id*: The flow ID. The value range is from 0 to 63. • *port_id*: The ONT Ethernet interface ID. The value range is from 1 to 24. • **ipoe**: Ethernet Type 0x0800 packet • **pppoe**: Ethernet Type 0x8863 or 0x8864 packet • **arp**: Ethernet Type 0x0806 packet

	Command or Action	Purpose
		• *vlan_id*: The VLAN ID. The value range is from 1 to 4094. • *priority*: The 802.1P. The value range is from 0 to 7.
Step 7	**flow** *flow_id* **port** {**eth** *port_id* | **veip** | **iphost** } [**etype** {**ipoe** | **pppoe** | **arp**}] **vlan** *vlan_id* [*priority*] **keep** **Example:** `Device(deploy-profile-line-5)# flow 2 port iphost etype arp vlan 3 keep`	Creates the keep flow rule. • *flow_id*: The flow ID. The value range is from 0 to 63. • *port_id*: The ONT Ethernet interface ID. The value range is from 1 to 24. • **ipoe**: Ethernet Type 0x0800 packet • **pppoe**: Ethernet Type 0x8863 or 0x8864 packet • **arp**: Ethernet Type 0x0806 packet • *vlan_id*: The VLAN ID. The value range is from 1 to 4094. • *priority*: The 802.1P. The value range is from 0 to 7.
Step 8	[**no**] **flow** *flow_id* **port** {**eth** *port_id* | **veip** | **iphost** } [**etype** {**ipoe** | **pppoe** | **arp**}] **vlan** *vid* [*priority*] **translate vlan** *vid* [*priority*] **Example:** `Device(deploy-profile-line-5)# flow 2 port iphost etype arp vlan 3 translate vlan 3`	Creates the translate flow rule. • *flow_id*: The flow ID. The value range is from 0 to 63. • *port_id*: The ONT Ethernet interface ID. The value range is from 1 to 24. • **ipoe**: Ethernet Type 0x0800 packet • **pppoe**: Ethernet Type 0x8863 or 0x8864 packet • **arp**: Ethernet Type 0x0806 packet • *vlan_id*: The VLAN ID. The value range is from 1 to 4094. • *priority*: The 802.1P. The value range is from 0 to 7.
Step 9	**active** **Example:** `Device(deploy-profile-line-5)# active`	Activates the line profile.
Step 10	**exit** **Example:** `Device(deploy-profile-line-5)# exit`	Exits to line profile configuration mode.
Step 11	**delete aim** {*index_number* | **name** *name*} **Example:**	(Optional) Deletes the line profile.

	Command or Action	Purpose
	`Device(deploy-profile-line)# delete aim 5`	• *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name in string.

Configure a Rule Profile

To configure a rule profile, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile rule** **Example:** `Device(config)# deploy profile rule`	Enters rule profile configuration mode.

Step 4	**aim** *slot-num/pon-num/ont-num* [**name** *name*]
	Example:
	`Device(deploy-profile-rule)# aim 0/1/1`
		Creates rule profile aim.
		• *slot-num/pon-num/ont-num* : The ONT ID.
		  • *slot-num*: The slot number. The value is 0.
		  • *pon-num*: The PON number. The range is from 1 to 8.
		  • *ont-num*: The ONT number. The range is from 1 to 128.
		• *name*: The profile name, in string format.

Step 5	**permit sn** {**string-hex** *string_serial_number* | **hex** *hex_serial_number* } **line** {*profile_line_list* | **name** *name*} **default line** {*index_number* | **name** *name*} **Example:** `Device(deploy-profile-rule-0/1/1)# permit sn string-hex GPON-1790032e line 1 default line 1`	Creates the serial number permit profile. • *hex_serial_number*: The ONT serial number, in hex format. • *string_serial_number*: The ONT serial number, in string format. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported.

	Command or Action	Purpose
		• *profile_line_list* : The profile line list number. • *name*: The profile name, in string format. The string length is from 1 to 128.
Step 6	**permit pw** {**string** *string_password* | **hex** *hex_password*} **line** {*profile_line_list* | **name** *name*} {**default line** {*index_num* | **name** *name*} |**once-on** {**no-aging** | **aging-time** *time*} } **Example:** `Device(deploy-profile-rule-0/1/1)# permit pw string-hex GPON-1790032e line 1 default line 1`	(Optional) Creates the password permit profile. • *string_password*: The ONT password, in string format. • *hex_password*: The ONT password, in hex format. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *profile_line_list* : The profile line list number. • *name*: The profile name, in string format. The string length is from 1 to 128.
Step 7	**permit sn-pw** {**string-hex** *string_serial_number* | **hex** *hex_serial_number*} {**string** *string_password* | **hex** *hex_password*} **line** { *profile_line_list* | **name** *name*} **default line** {*index_num* | **name** *name*} **Example:** `Device(deploy-profile-rule-0/1/1)# permit sn-pw string-hex GPON-1790032e line 1 default line 1`	(Optional) Creates the serial number and password permit profile. • *hex_serial_number*: The ONT serial number, in hex format. • *string_serial_number*: The ONT serial number, in string format. • *string_password*: The ONT password in string format. • *hex_password*: The ONT password in hex format. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *profile_line_list* : The profile line list number. • *name*: The profile name, in string format. The string length is from 1 to 128.
Step 8	**permit loid** *loid* **line** {*profile_line_list* | **name** *name*} **default line** {*index_num* | **name** *name*} |**once-on** {**no-aging** | **aging-time** *time*} } **Example:** `Device(deploy-profile-rule-0/1/1)# permit loid 2 line 4 default line 3 once-on aging 3`	(Optional) Creates the LOID permit profile. • *loid*: The ONT logical ID, in string format. The string length is from 1 to 24. • *profile_line_list* : The profile line list number. • *name*: The profile name, in string format. The string length is from 1 to 128.

	Command or Action	Purpose
		• *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • **no-aging** : Configures no timeout for discovery mode. • **aging-time** *time*: Configures timeout for discovery mode, in hours. The range is from 1 to 168.
Step 9	**permit lopw** *logical_password* **line** {*profile_line_list* | **name** *name*} [**default line** {*index_number* | **name** *name*} |**once-on** {**no-aging** | **aging-time** *time*}] **Example:** `Device(deploy-profile-rule-0/1/1)# permit lopw password line 4 default line 3 once-on aging 3`	(Optional) Creates the LOID password permit profile. • *logical_password*: The ONT password. • *profile_line_list* : The profile line list number. • *name*: The profile name, in string format. The string length is from 1 to 128. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • **no-aging** : Configures no timeout for discovery mode. • **aging-time** *time*: Configures timeout for discovery mode, in hours. The range is from 1 to 168.
Step 10	**permit loid-lopw** *loid logical_password* **line** {*profile_line_list* | **name** *name*} [**default line** {*index_number* | **name name**} |**once-on** {**no-aging** | **aging-time** *time*}] **Example:** `Device(deploy-profile-rule-0/1/1)# permit loid-lopw 2 password line 4 default line 3 once-on aging 3`	(Optional) Creates the LOID and LOID Password permit profile. • *loid*: The ONT logical ID, in string format. The string length is from 1 to 24. • *logical_password*: The ONT logical password, in string format. The string length is from 1 to 12. • *profile_line_list*: The profile line list number. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name, in string format. The string length is 1 to 128. • *time*: The discovery mode timeout time, in hours. The value range is from 1 to 168.
Step 11	**active** **Example:** `Device(deploy-profile-rule-0/1/1)# active`	Activates the rule profile.

	Command or Action	Purpose
Step 12	**exit** **Example:** `Device(deploy-profile-rule-0/1/1)# exit`	Exits to rule profile configuration mode.
Step 13	**delete aim** { *ont_id_list* | **name** *name* } **Example:** `Device(deploy-profile-rule)# delete aim 0/1/1`	(Optional) Deletes the rule profile aim. • *slot-num/pon-num/ont-num*: The ONT ID. • *slot-num*: The slot number. The value is 0. • *pon-num*: The PON number. The range is from 1 to 8. • *ont-num*: The ONT number. The range is from 1 to 128. • *name*: The profile name, in string format.

Configure a Unique Profile

To configure a unique profile, perform the following procedures.

Configure an ONT Description

Modifying and activating the unique profile causes the ONT that references the profile to go offline and then online.

To configure an ONT description, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile unique** **Example:** `Device(config)# deploy profile unique`	Enters unique profile configuration mode.
Step 4	**aim** *slot-num/pon-num/ont-num* [**name** *name*] **Example:** `Device(deploy-profile-unique)# aim 0/1/1`	Creates unique profile aim. • *slot-num/pon-num/ont-num*: The ONT ID. • *slot-num*: The slot number. The value is 0.

	Command or Action	Purpose
		• *pon-num*: The PON number. The range is from 1 to 8. • *ont-num*: The ONT number. The range is from 1 to 128. • *name*: The profile name, in string format.
Step 5	[**no**] **description** *description* **Example:** `Device(deploy-profile-unique-0/1/1)# description cisco`	Configures the ONT description *description*: ONT description. The length of the description is from 1 to 128. Use the **no description** command to delete the ONT description.
Step 6	**ip-config mode** {**dhcp vlan** *vlan_id* {*vlan_priority* | **host** } | **static** *ip_address*} **Example:** `Device(deploy-profile-unique-0/1/1)# ip-config mode dhcp vlan 4093 host 2`	Configures the IP configuration as static or DHCP. **Note** This command is applicable to an ONT device that operates in the Single Family Unit (SFU) mode.
Step 7	**active** **Example:** `Device(deploy-profile-unique-0/1/1)# active`	Activates the unique profile
Step 8	**exit** **Example:** `Device(deploy-profile-unique-0/1/1)# exit`	Exits to line profile configuration mode.
Step 9	**delete aim** { *ont_id_list* | **name** *name* } **Example:** `Device(deploy-profile-unique)# delete aim 0/1/1`	(Optional) Deletes the unique profile. • *slot-num/pon-num/ont-num*: The ONT ID. • *slot-num*: The slot number. The value is 0. • *pon-num*: The PON number. The range is from 1 to 8. • *ont-num*: The ONT number. The range is from 1 to 128. • *name*: The profile name, in string format.

Configure a GEM Port Profile

Modifying and activating the unique profile causes the ONT that references the profile to go offline and then online.

To configure a GEM port profile, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile unique** **Example:** `Device(config)# deploy profile unique`	Enters unique profile configuration mode.

Step 4	**aim** *slot-num/pon-num/ont-num* [**name** *name*]
	Example:
	`Device(deploy-profile-unique)# aim 0/1/1`
		Creates unique profile aim.
		• *slot-num/pon-num/ont-num*: The ONT ID.
		  • *slot-num*: The slot number. The value is 0.
		  • *pon-num*: The PON number. The range is from 1 to 8.
		  • *ont-num*: The ONT number. The range is from 1 to 128.
		• *name*: The profile name, in string format.

Step 5	[**no**] **gemport** *gem_index* {**vlan-profile** |**us-traffic-profile** | **ds-traffice-profile** } { *index_num* | **name** *name* } **Example:** `Device(deploy-profile-unique-0/1/1))# gemport 2 vlan-profile 2`	Configures the GEM port profile. • *gem_index*: The GEM port index. The range is from 1 to 1024. • *index_num*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name, in string format. The string length is from 1 to 128. Use the **no gemport** *gem_index* to delete the GEM port profile.
Step 6	**active** **Example:** `Device(deploy-profile-unique-0/1/1))# active`	Activates the unique profile.
Step 7	**exit** **Example:** `Device(deploy-profile-unique-0/1/1)# exit`	Exits to line profile configuration mode.

	Command or Action	Purpose
Step 8	**delete aim** {*slot-num/pon-num/ont-num* | **name** *name*} **Example:** `Device(deploy-profile-unique))# delete aim 0/1/1`	(Optional) Deletes the unique profile. • *slot-num/pon-num/ont-num*: The ONT ID. • *slot-num*: The slot number. The value is 0. • *pon-num*: The PON number. The range is from 1 to 8. • *ont-num*: The ONT number. The range is from 1 to 128. • *name*: The profile name, in string format.

Configure a SIP

Modifying and activating the unique profile causes the ONT that references the profile to go offline and then online.

To configure a SIP, perform this procedure.

Before you begin

The ONT should support SIP settings. This is applicable for SFU type ONT.

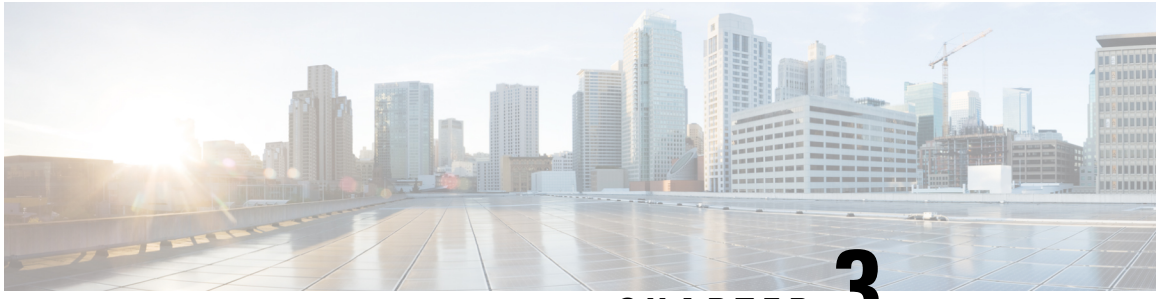
Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile unique** **Example:** `Device(config)# deploy profile unique`	Enters unique profile configuration mode.
Step 4	**aim** *slot-num/pon-num/ont-num* [**name** *name*] **Example:** `Device(deploy-profile-unique)# aim 0/1/1`	Creates unique profile aim. • *slot-num/pon-num/ont-num*: The ONT ID. • *slot-num*: The slot number. The value is 0. • *pon-num*: The PON number. The range is from 1 to 8. • *ont-num*: The ONT number. The range is from 1 to 128.

	Command or Action	Purpose
		• *name*: The profile name, in string format.
Step 5	[**no**] **sip agent proxy-server** *uri* {**outbound-proxy** |**registrar-server** |**signal-port** }*proxy_server_uri*] **Example:** `Device(deploy-profile-unique-0/1/1)# sip agent proxy-server 2`	Configures the SIP proxy server. **proxy-server** *uri*: The proxy server universal resource identifier (UNI). The length is from 1 to 64. Use the **no sip agent** command to delete the SIP agent.
Step 6	[**no**] **sip user mode** {**static ip-address** *ip* **mask** *ip_mask* **gateway** *ip* **primary-dns** *ip* **secondary-dns** *ip*|**dhcp vlan** *vlan_idpriority* **host** *host_id*} **Example:** `Device(deploy-profile-unique-0/1/1)# sip usr mode dhcp vlan 2 4 host 1`	Configures the SIP interface. • *ip*: The IP address • *ip_mask*: The IP network mask • *vlan_id*: The VLAN ID. The value range is from 1 to 4094. • *priority*: The value range is from 0 to 7. • *host_id*: The IP host ID. The value is 1. Use the **no sip user mode** command to delete the SIP interface.
Step 7	[**no**] **sip user** *pots_number*{**name** *username* **password** *password* |**telno** *phone_num*} **Example:** `Device(deploy-profile-unique-0/1/1)# sip user 2 name user 1 password 123`	Configures the SIP user. • *pots_number*: The ONT POTS port number. The value range is from 1 to 2 • *username*: The SIP username., The username length is from 1 to 25. • *password*: The SIP username. The password length is from 1 to 25 • *phone_num*: The ONT local phone number. The digit length is from 1 to 25. Use the **no sip user** *user_id* command to delete the SIP user.
Step 8	**sip digitmap dial-plan-id** *dial_plan_id* **dial-plan-token** *token* **Example:** `Device(deploy-profile-unique-0/1/1)# sip digitmap dial-plan-id 2 dial-plan-token 3`	Configures the SIP digit map. • *dial_plan_id*: The digit map index. The range is from 1 to 10. • *token*: The digit map content. Use the **no sip digitmap dial-plan-id** *id* command to delete the SIP digit map.
Step 9	**active** **Example:** `Device(deploy-profile-unique-0/1/1)# active`	Activates the unique profile.

	Command or Action	Purpose
Step 10	**exit** **Example:** `Device(deploy-profile-unique-0/1/1)# exit`	Exits to line profile configuration mode.

Step 11	**delete aim** {*slot-num/pon-num/ont-num* | **name** *name*}
	Example:
	`Device(deploy-profile-unique)# delete aim 0/1/1`
		(Optional) Deletes the unique profile.
		• *slot-num/pon-num/ont-num*: The ONT ID.
		  • *slot-num*: The slot number. The value is 0.
		  • *pon-num*: The PON number. The range is from 1 to 8.
		  • *ont-num*: The ONT number. The range is from 1 to 128.
		• *name*: The profile name, in string format.



CHAPTER 3

ONT Registrations

Overview About ONT Registration

The following sections provide information about ONT registration.

About ONT Registration

An OLT supports two types of registration mode—automatic registration and manual registration.

ONT Manual Registration Configuration

You can manually register an ONT by defining an authentication registration rule and specifying the service template for configuring the ONT. The manual registration also requires the ONT authentication mode, the ONT authentication parameter, the ONT service template binding, and the ONT discovery mode to be configured.

ONT Automatic Registration Configuration

You can automate the ONT registration to reduce the workload of manual configuration. Automatic registration requires configuration of auto-configuration templates that are referenced based on the ONT type. Each type of ONT can be further configured to reference a separate line template.

After automatic configuration of an ONT is enabled, the OLT automatically generates a rule template based on the serial number authentication mode (the line template specified in the automatic configuration template of the rule entry). The ONT can be automatically registered online. The OLT sends the corresponding line template to the ONT to complete the automatic configuration process.

On enabling the automatic configuration on the ONT, the OLT automatically generates a rule template based on the serial number authentication mode.

Note Serial number authentication mode is defined in the line template that is part of the automatic configuration template of the rule entry.

The OLT sends the corresponding line template to the ONT to complete the automatic configuration process. The ONT is then automatically registered online.

Types of ONT Registration

This section describes the various function configurations related to the ONT registration. It mainly includes how to let the OLT discover the ONTs connected to the PON port. We recommend that you configure the correct authentication mode.

Table 4: ONT Registration function configuration

Operation		Remarks
ONT Auto Discover		Optional
ONT Authentication	Auto	Optional
	Manual	Optional
ONT Silent		Optional
ONT Register-Record Threshold Alarm		Optional

About ONT Auto Discovery

ONT auto discovery enables the OLT to detect newly added ONTs under a designated PON port automatically. If auto discovery is enabled on a PON port of the OLT, and an unregistered ONT is added to the PON port, the ONT information is compared with the service profile line template configured by the OLT. If the ONT information matches the requirements of the service profile line template, then the ONT is registered, and the ONT information is deleted from the discovery list.

About ONT Silent

An ONT can be configured to be in silent state if the ONT fails authentication, or after the authentication, if the ONT is offline for a long time.

About the ONT Register-Record Threshold Alarm

You can limit the number of ONTs that can be registered on the PON port by setting a threshold value. If the number of ONTs on the PON port exceeds the threshold value, an alarm is generated. The alarm is cancelled once the number of ONTs is less than the threshold value.

How to Configure ONT Registration

The following sections provide configuration information on how to register an ONT.

Configure ONT Auto Discovery

- Auto discovery is enabled when the auto discover interval of the GPON port is configured.
- A port is restarted each time the port's logical distance parameter is changed. The ONTs go offline and come back online again.
- The differential distance between cannot exceed 20 km.

To configure ONT auto discovery, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.

Step 3	[**no**] **ont-find interface gpon** {*slot-number/port-number* | **all**}
	Example:
	`Device(config)# ont-find interface gpon 0/1`
		Enables auto discovery.
		• *slot-number/port-number*: The port ID.
		  • *slot-number*:
		  • GPON: The value is 0.
		  • GE Ethernet: The value is 1.
		  • 10GE Ethernet: The value is 2.
		  • *port-number*:
		  • GPON: The range is from 1 to 8.
		  • GE Ethernet: The range is from 1 to 4.
		  • 10GE Ethernet: The range is from 1 to 2.
		• **all**: All ports.
		Use the **no ont-find interface gpon** {*slot-number/port-number* | **all**} form of this command to disable the auto discover function.

Step 4	**ont-find interval-time** *interval_time* **interface gpon** {*slot-number/port-number* | **all**} **Example:** `Device(config)# ont-find interval-time 5 interface gpon 0/1`	(Optional) Specifies the auto discovery interval time configuration, in seconds. • *interval_time*: The interval time. The range is from 3 to 30. The default is 10.

	Command or Action	Purpose
		• *slot-number/port-number*: The port ID. • *slot-number*: • GPON: The value is 0. • GE Ethernet: The value is 1. • 10GE Ethernet: The value is 2. • *port-number*: • GPON: The range is from 1 to 8. • GE Ethernet: The range is from 1 to 4. • 10GE Ethernet: The range is from 1 to 2. • **all**: All ports.
Step 5	[**no**] **ont-find** {**list-age time** *aging_time*} {**interface gpon** {*slot-number/port-number* | **all**}} **Example:** `Device(config)# ont-find list-age interface gpon 0/1`	(Optional) Specifies the auto discovery aging time configuration, in seconds. • *aging_time*: The discovery mode timeout time, in hours. The value range is from 1 to 168. • *slot-number/port-number*: The port ID. • *slot-number*: • GPON: The value is 0. • GE Ethernet: The value is 1. • 10GE Ethernet: The value is 2. • *port-number*: • GPON: The range is from 1 to 8. • GE Ethernet: The range is from 1 to 4. • 10GE Ethernet: The range is from 1 to 2. • **all**: All ports. Use the **no ont-find list-age interface gpon** {*slot-number/port-number* | **all**} command to disable auto discovery aging time.
Step 6	[**no**] **ont-find distance min** *min_distance* **max** *max_distance* **interface gpon** {*slot-number/port-number* | **all**} **Example:**	Specifies the logical distance configuration. • *min_distance*: The minimum distance. The range is from 0 to 40. The default is 0.

	Command or Action	Purpose

	`Device(config)# ont-find distance max 30 interface gpon 0/1`	• *max_distance* : The maximum distance. The distance range is from 0 to 60. The default is 20.
		• *slot-number/port-number* : The port ID.
		  • *slot-number*:
		  • GPON: The value is 0.
		  • GE Ethernet: The value is 1.
		  • 10GE Ethernet: The value is 2.
		  • *port-number*:
		  • GPON: The range is from 1 to 8.
		  • GE Ethernet: The range is from 1 to 4.
		  • 10GE Ethernet: The range is from 1 to 2.
		• **all**: All ports.
		Use the **no ont-find distance interface gpon** {*slot-number/port-number* | **all**} command to disable the default distance configurations.

Configuring ONT Automatic Registration

If the device type of the ONT does not match the device type of the auto configuration template, the rule template will not be automatically generated. Unless the rule corresponding to the **all-ont** command is configured in the auto configuration template, the OLT will bind the template in the all-ont entry as the default template, and then generate the rule template of the ONT.

To configure ONT automatic registration, perform this procedure.

Before you begin

- The ONT auto discovery function must be enabled before configuring the ONT automatic registration.
- You must configure the line profile before configuring ONT automatic registration. To configure the line profile, see Configure a Line Profile.
- You must configure the DBA profile before configuring ONT automatic registration. To configure the DBA profile, see Configure a DBA Profile.
- The device type name must conform to the GPON Terminal Naming Specification.

Procedure

	Command or Action	Purpose
Step 1	**enable**	Enables privileged EXEC mode.

	Command or Action	Purpose
	Example: `Device> enable`	Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	[**no**] **ont auto-config** **Example:** `Device(config)# ont auto-config`	Enables the auto configuration function. Use the **no ont auto-config** command to disable the auto-configuration.
Step 4	**ont auto-config** {*index_num* [**name** *name*] | **name** *name*} {**all-ont** | **device-type** *device_type*} **Example:** `Device(config)# ont auto-config 2 device-type n40-429 line 3`	Enables the auto configuration function on all the devices or a particular device. • *index_num*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The name of the template, in string format. • *device_type*: The device identifier, in string format.

Configuring ONT Manual Registration

To configure ONT manual registration, perform this procedure.

Before you begin

- You must configure the line profile before configuring ONT automatic registration. To configure the line profile, see Configure a Line Profile.
- You must configure the DBA profile before configuring ONT automatic registration. To configure the DBA profile, see Configure a DBA Profile.
- Each rule profile template entry can refer multiple service profile templates based on the rule profile template entry index value. The service profile templates are distributed based on the different device type.
- Based on the template entry name, only one service profile template can be referenced.
- A default service profile template can be specified for the ONT manual registration.

  If the device type reported by the ONT does not match the service profile template, the default service profile template will be forcibly delivered.

Procedure

	Command or Action	Purpose
Step 1	**enable**	Enables privileged EXEC mode.

	Command or Action	Purpose
	Example: `Device> enable`	Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**deploy profile rule** **Example:** `Device(config)# deploy profile rule`	Enters the rule template configuration mode.

Step 4	**aim** {*slot-num/pon-num/ont-num* |**name** *name*}
	Example:
	`Device(deploy-profile-rule)# aim 0/1/1`
		Specifies the aim configuration.
		• *slot-num/pon-num/ont-num*: Specifies the ONT ID.
		  • *slot-num*: The slot number. The value is 0.
		  • *pon-num*: The PON number. The range is from 1 to 8.
		  • *ont-num*: The ONT number. The range is from 1 to 128.
		• *name*: Specifies the rule name, in string format. The maximum length is 1,128.

Step 5	**permit sn** {**string-hex** *string_serial_number* | **hex** *hex_serial_number* } **line** {*profile_line_list* | **name** *name*} [**default line** {*index_number* | **name** *name*}] **Example:** `Device(deploy-profile-rule-0/1/1)# permit sn string-hex GPON-1790032e line 1 default line 1`	Creates the serial number permit profile. • *string_serial_number*: The ONT serial number, in string format. • *hex_serial_number*: The ONT serial number, in hex format. • *profile_line_list*: The profile line list number. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name, in string format. The string length is from 1 to 128.
Step 6	**permit pw** {**string** *password* | **hex** *password*} **line** {*profile_line_list* | **name** *name*} [**default line** {*index_number* | **name** *name*}] [**once-on** {**no-aging** | **aging-time** *time*}] **Example:** `Device(deploy-profile-rule-0/1/1)# permit pw string-hex GPON-1790032e line 1 default line 1`	(Optional) Creates the password permit profile. • *password*: The ONT password. • *profile_line_list*: The profile line list number. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported.

	Command or Action	Purpose
		• *name*: The profile name, in string format. The string length is from 1 to 128. • *time*: The discovery mode timeout duration, in hours. The value range is from 1 to 168.
Step 7	**permit loid** *loid* **line** {*profile_line_list* | **name** *name*} [**default line** {*index_number* | **name** *name*} |**once-on** {**no-aging** | **aging-time** *time*}] **Example:** `Device(deploy-profile-rule-0/1/1)# permit loid 2 line 4 default line 3 once-on aging 3`	(Optional) Creates the LOID permit profile. • *loid*: The ONT logical ID. in string format. The string length is from 1 to 24. • *profile_line_list*: The profile line list number. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name, in string format. The string length is from 1 to 128.
Step 8	**permit lopw** *logical_password* **line** {*profile_line_list* | **name** *name*} [**default line** {*index_number* | **name** *name*} |**once-on** {**no-aging** | **aging-time** *time*}] **Example:** `Device(deploy-profile-rule-0/1/1)# permit lopw password line 4 default line 3 once-on aging 3`	(Optional) Creates the LOID password permit profile. • *logical_password*: The ONT password. • *profile_line_list*: The profile line list number. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name, in string format. The string length is from 1 to 128. • *time*: The discovery mode timeout duration, in hours. The value range is from 1 to 168.
Step 9	**permit sn-pw** {**string-hex** *string_serial_number* | **hex** *hex_serial_number*} {**string** *string_password* | **hex** *hex_password*} **line** { *profile_line_list* | **name** *name*} [**default line** {*index_number* | **name** *name*}] **Example:** `Device(deploy-profile-rule-0/1/1)# permit sn-pw string-hex GPON-1790032e line 1 default line 1`	(Optional) Creates the SN and password permit profile. • *hex_serial_number*: The ONT serial number, in hex format. • *string_serial_number*: The ONT serial number, in string format. • *string_password*: The ONT password, in string format. • *hex_password*: The ONT password, in hex format. • *profile_line_list*: The profile line list number. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported.

	Command or Action	Purpose
		• *name*: The profile name, in string format. The string length is from 1 to 128.
Step 10	**permit loid-lopw** *loid logical_password* **line** {*profile_line_list* | **name** *name*} [**default line** {*index_number* | **name name**} |**once-on** {**no-aging** | **aging-time** *time*}] **Example:** `Device(deploy-profile-rule-0/1/1)# permit loid-lopw 2 password line 4 default line 3 once-on aging 3`	(Optional) Creates the LOID and LOID Password permit profile. • *loid*: The ONT logical ID, in string format. The string length is from 1 to 24. • *logical_password*: The ONT logical password, in string format. The string length is from 1 to 12. • *profile_line_list*: The profile line list number. • *index_number*: The index of the template. The range is from 0 to *m*, where *m* is the maximum number of ONTs supported. • *name*: The profile name, in string format. The string length is from 1 to 128. • *time*: The discovery mode timeout duration, in hours. The value range is from 1 to 168.
Step 11	**active** **Example:** `Device(deploy-profile-rule-0/1/1))# active`	Activates the configuration.

Configure ONT Silent

To configure ONT silent, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	[**no**] **ont-silent auth-fail** {**time** *silence_period* |**interface gpon** {*slot-number/port-number* | **all**} } **Example:** `Device(config)# ont-silent auth-fail time 40`	Enables the ONT auth-fail silent configuration. • *silence_period*: The period of silence, in seconds. The range is from 1 to 86400. The default is 60. • *slot-number/port-number*: The port ID.

	Command or Action	Purpose
		• *slot-number*: • GPON: The value is 0. • GE Ethernet: The value is 1. • 10GE Ethernet: The value is 2. • *port-number*: • GPON: The range is from 1 to 8. • GE Ethernet: The range is from 1 to 4. • 10GE Ethernet: The range is from 1 to 2. • **all**: All ports. Use the **no ont-silent auth-fail interface gpon** {*slot-number/port-number* | **all**} command to disable the ONT auth-fail silent configuration.
Step 4	[**no**] **ont-silent offline** {**time** *silence_period* | **interface gpon** {*slot-number/port-number* | **all**} } **Example:** `Device(config)# ont-silent offline time 6`	Enables the ONT offline silent configuration. • *silence_period*: Specifies the period of silence, in seconds. The range is from 1 to 86400. The default is 10. • *slot-number/port-number*: The port ID. • *slot-number*: • GPON: The value is 0. • GE Ethernet: The value is 1. • 10GE Ethernet: The value is 2. • *port-number*: • GPON: The range is from 1 to 8. • GE Ethernet: The range is from 1 to 4. • 10GE Ethernet: The range is from 1 to 2. • **all**: All ports. Use the **no ont-silent offline interface gpon** {*slot-number/port-number* | **all**} command to disable the ONT offline silent configuration.

Configure the ONT Register Record Threshold Alarm

To configure the ONT register record threshold alarm, perform this procedure.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	[**no**] **alarm ont register-record** **Example:** `Device(config)# alarm ont register-record`	Enables the ONT register record threshold alarm. Use the **no alarm ont register-record** command to disable the ONT register-record threshold alarm.
Step 4	[**no**] **alarm ont register-record** [**threshold** {*threshold* }] **Example:** `Device(config)# alarm ont register-record threshold`	(Optional) Specifies the ONT register record threshold configuration. *threshold*: The threshold value. The range is from 1 to 128. The default is 64. Use the **no alarm ont register-record threshold** *threshold* command to disable the ONT register-record threshold alarm.

Monitoring ONT Registration Display and Maintenance

Use the following commands to monitor ONT registration display and maintenance.

Table 5: Command to Monitor ONT Registration Display and Maintenance Commands

Command	Purpose
show ont-find config interface gpon { *slot-number/port-number* | **all** }	Displays information about the auto discover function.
show ont-find list { **interface gpon** { *slot-number/port-number* | **all** } | **sn** { **string-hex** *string_serial_number* | **hex** *hex_serial_number* } }	Displays information about the ONT-find list.
show ont brief count interface gpon { *slot-number/port-number* | **all** }	Displays brief information about an ONT interface.

Configuration Examples for ONT Registration

The following sections provide configuration examples for ONT registration.

Example: Configuring ONT Auto Discovery

The following example shows how to configure ONT auto discovery:

```
Device> enable
Device# configure terminal
Device(config)# ont-find interface gpon 0/1
Device(config)# ont-find list-age interface gpon 0/1
Device(config)# show ont-find config interface gpon 0/1
Port  Find    Find-interval  Age     Aging-time  D-min  D-max
g0/1  enable  10             enable  300          0      20
Total entries: 1.
Device(config)# show ont-find list interface gpon 0/1
Port  Index  SN             Last-find            Find-cnt
g0/1  0     GPON-5a649c7f  2018/07/25 17:04:59  4552
Device(config)# show ont-find list interface gpon 0/1 index 0
Location                    :   GPON 0/1 index 0
SN                          :   GPON-173a00f1
Password                    :   00173a00f1
LOID                        :   112222
LOID Password               :   asdawesdwada
Vendor ID                   :   GPON
Primary Software Version    :   R4.2.56.074
Secondary Software Version  :   R4.2.56.058
Firmware Version            :   G72210044
Equipment ID                :   GN2000-04GS-2VWT
Status                      :   RULE_NO_MATCH
First Find Time             :   1970/01/01 00:00:00
Last Find Time              :   2001/12/04 13:18:08
Find Count                  :   2
```

Example: Configuring ONT Registration

The following example shows how to configure ONT registration:

```
Device> enable
Device# configure terminal
Device(config)# ont-find interface gpon all
Device(config)# show ont-find list interface gpon all
Port  Index  SN             Last-find            Find-cnt
g0/1  0      GPON-1790032e  2000/11/26 05:27:59  3
g0/1  1      HWTC-984fa49a  2000/11/26 05:28:00  3
g0/1  2      GPON-173a00d1  2000/11/26 05:28:01  3
Total entries: 3.
Device(config)# deploy profile line
Device(deploy-profile-line)# aim 1
Device(deploy-profile-line-1)# device type c40-100
Device(deploy-profile-line-1)# active
Device(config)# deploy profile rule
Device(deploy-profile-rule)# aim 0/1/1
```

```
Device(deploy-profile-rule-0/1/1)# permit sn string-hex GPON-1790032e line 1 default line
1
Device(deploy-profile-rule-0/1/1)# active
Device(config)# show ont brief interface gpon all
ONT    SN             Device-type  Up/Down-time  Status
0/1/1  GPON-1790032e  -            0d0h0m        online
Total entries: 1.
Device(config)# show ont info 0/1/1
ONT                             :   0/1/1
Description                     :   -
TYPE                            :   -
Status                          :   online
Distance(m)                     :   <10
Vendor ID                       :   GPON
Software Version                :   C01R04V00B10/C01R04V00B10
Firmware Version                :   S40-100
Equipment ID                    :   AISONTV1
SN                              :   GPON-1790032e
Password                        :   1234567890
LOID                            :   user
LOID Password                   :   password
Uplink PON ports                :   1
ETH/POTS/TDM/MOCA ports         :   1/0/0/0
CATV ANI/UNI ports              :   0/0
T-CONTs/GEM ports               :   8/32
Traffic Schedulers              :   8
PQs in T-CONT 1-8               :   1/1/1/4/4/4/8/8
IP configuration                :   not support
Type of flow control            :   GEMPORT CAR and PQ SCHEDULED
TX power cut off                :   Not Support
Online/Offline time             :   05:33:50   2000/11/26
Up/Down time                    :   0 day(s)  0 hour(s)  0 minute(s)
Device(config)# ont-find interface gpon all
Device(config)# ont auto-config
Device(config)# deploy profile line
Device(deploy-profile-line)# aim 1
Device(deploy-profile-line-1)# device type c40-100
Device(deploy-profile-line-1)# active
Device(config)# deploy profile line
Device(deploy-profile-line)# aim 2
Device(deploy-profile-line-2)# device type c40-429
Device(deploy-profile-line-2)# active
Device(config)# ont auto-config 1 device-type c40-100 line 1
Device(config)# ont auto-config 2 all-ont line 2
Device(config)# show running-config deploy-profile-rule
![deploy-profile-rule]
deploy profile rule
aim 0/1/1 name AUTO_ONT_0/1/1
permit sn string-hex GPON-e4801442 line 1 default line 1
aim 0/1/2 name AUTO_ONT_0/1/2
permit sn string-hex GPON-74000001 line 2 default line 2
aim 0/1/3 name AUTO_ONT_0/1/3
permit sn string-hex GPON-15604013 line 2 default line 2
aim 0/1/4 name AUTO_ONT_0/1/4
permit sn string-hex GPON-15604014 line 2 default line 2
Device(config)# show ont brief online interface gpon 0/1
ONT    SN             Device-type  Up-time  Running
0/1/1  GPON-e4801442  c40-100      0d0h4m   Normal
0/1/2  GPON-74000001  c40-100      0d0h4m   Def
0/1/3  GPON-15604013  c30-401      0d0h4m   Normal
0/1/3  GPON-15604013  c30-401      0d0h4m   Normal
Total entries: 4.
```