Application Select Code Provisioning for Transceivers

This chapter introduces Application Select (AppSel) code provisioning, a key feature for configuring the operating modes of optical modules. It details the benefits, operational mechanisms, and configuration steps for AppSel code provisioning.

Application select code provisioning

An Application Select Code (AppSel code) is a feature that

- allows the host device to choose the operating mode of a QDD module
- is a set of codes advertised by transceivers adhering to the CMIS standard, defining different operating modes supported by the transceivers, such as running as a 400G or 800G link, or using a specific fiber type, and
- allows you to use the host-ID and the media-ID to configure the AppSel code.

To configure the AppSel code, the basic concepts that you must be aware are

- Host ID

  The host ID identifies the host side of a pluggable module, which interfaces directly with the host device. The host device is typically a network device, such as a router, switch, or server. This side manages the processing and exchange of electrical signals between the module and the host device.

- Media ID

  The media ID refers to the identifier associated with the optical side or media side of a pluggable module, such as a QDD or other optical transceivers. This side connects to and communicates with the optical network. It is responsible for converting electrical signals received from the host device into optical signals for transmission over fiber optic cables, and for converting incoming optical signals back into electrical signals.

- Application ID

The application ID is a unique identifier that specifies the operational mode or configuration for the optical module. It determines how the module functions within the network and ensures compatibility with specific applications or requirements.

Key components of Application Select

The key components involved in the AppSel code provisioning are:

- Common Management Interface Specification

  The Common Management Interface Specification (CMIS) specifications set rules for how QDD modules workand how a host device sets them up. CMIS provides a consistent way for host devices, such as routers or switches, to communicate with and control optical modules, regardless of the module manufacturer.

- UnderstandingAppSel codes and module operation modes

  Each QDD module can operate in different modes, identified by a unique AppSel code. This code acts like a unique ID for each mode. Each mode has an application descriptor, which explains how the module handles data. It describes how signals are processed between the connections on the host side and the optical side.

  The optical side is also known as the media side of the module. The AppSel code includes a media code, which tells the module how to set up its optical side. The host software uses this media code to control the module's optical interface. The host software also sets up other components, like the physical layer (PHY), SerDes, and MacPort, to complete the data path.

- Application mode selection

  This feature allows you to select from all application modes advertised by the optical module. You can choose all application modes a module supports.

Configuration guidelines and limitations for AppSel code provisioning

You must follow these configuration guidelines for AppSel code provisioning.

- This feature is not enabled by default. You must configure it to take effect.
- The maximum number of applications supported depends on the module that is advertised in the AppSel list.
- After successful configuration of a new **host-id** and **media-id**, traffic disruption is expected. This occurs due to datapath reconfiguration triggered by the updated AppSel values.
- The parameters **host-id** and **media-id** appear in the output of **show running-config** or **show running-config all** when a valid configuration is explicitly applied. Their visibility depends on successful configuration.
- The AppSel configuration command operates only at the port level and not at the sub-port level. When applied to any subport in a broken-out parent port, the configuration is automatically copied to all other subports, as the feature is not supported at the sub-port level.

- You can switch between different AppSels as long as the breakout map-ID, including the unbroken case, is compatible with the current configuration. If you try to change the breakout map, the DME denies the request.

Configure an AppSel code on an optical module

AppSel codes are advertised by the module and must be validated before configuration. This ensures compatibility between the host and the module.

Follow these steps to identify the AppSel codes available in a pluggable module and to configure them.

Note The applied AppSel configuration, that is, the host-id and media-id, is stored in the running configuration and is preserved when you run copy running-config startup-config, so the configured AppSel is re-applied after a reload.

Procedure

Step 1 Use the `show interface ethernet <slot/port> transceiver apsel advertised` command to display the advertised AppSel and the active AppSel.

Example:

```
show interface ethernet 1/26/2 transceiver apsel advertised
-------------------------------------------------------------------------------------------------------------------

 APP-ID |           Host-ID                    |          Media-ID
    | State
-------------------------------------------------------------------------------------------------------------------

  1     |  82    800GAUI-8-L C2M (Annex 120G)  |  87   ETH 800GBASE-DR8-2 (Clause 124)
    | Supported
  2     |  81    800GAUI-8-S C2M (Annex 120G)  |  87   ETH 800GBASE-DR8-2 (Clause 124)
    | Supported
  3     |  80    400GAUI-4-L C2M (Annex 120G)  |  85   ETH 400GBASE-DR4-2 (Clause 124)
    | Supported
  4     |  79    400GAUI-4-S C2M (Annex 120G)  |  85   ETH 400GBASE-DR4-2 (Clause 124)
    | Active
  5     |  76    100GAUI-1-L C2M (Annex 120G)  |  21   ETH 100G-FR MSA spec/100GBASE-FR1 (Clause 140)
  | Supported
  6     |  75    100GAUI-1-S C2M (Annex 120G)  |  21   ETH 100G-FR MSA spec/100GBASE-FR1 (Clause 140)
  | Supported
-------------------------------------------------------------------------------------------------------------------
```

Step 2 In the interface configuration mode, use the **transceiver apsel host-id** <*value*> **media-id** <*value*> command to configure the Application Selection (AppSel) code.

Example:

```
switch# interface ethernet 1/26/2
switch(config-if)# transceiver apsel host-id 17 media-id 23
```

Note

Configure the same values on the peer side interface too.

Step 3 Use the **show interface ethernet** <*slot/port*> **transceiver apsel advertised** command to verify that the configured AppSel is marked as active.

The optical module operates in the selected application mode, ensuring compatibility and optimal performance.

What to do next

Monitor the interface status and confirm the active AppSel code.