Provision Optical Add/Drop Cards

This chapter describes the Optical Add or Drop (ROADM) cards used in Cisco NCS 2000 SVO and its related tasks.

The following table lists the package support for the optical add/drop cards.

Card	SSON Package (12.xx-xxxx-xx.xx-S-SPA)	MSTP Package (12.xx-xxxx-xx.xx-L-SPA)
16-AD-CCOFS	✓	
6AD-DD-CFS	✓	

16-AD-CCOFS Card

In this chapter, "16-AD-CCOFS" refers to the NCS2K-16-AD-CCOFS card.

The 16-AD-CCOFS card is a single slot add or drop card that provides colorless, contentionless, omnidirectional, and flex spectrum capability on 16 channels over 4 ROADM directions. The card receives the same wavelength from 16 transponder cards and forwards it to different ROADM nodes without collision. This capability is achieved using multicast switches. 2 or 3 16-AD-CCOFS cards can be connected using upgrade ports to provide the add/drop capability on 16 channels over 8 or 12 ROADM directions respectively.

Each add/drop port pair in the card is:

- Colorless - forwards any wavelength on a specific port

- Contentionless - adds/drops the same wavelength from the same add/drop section to different directions

- Omnidirectional - connects to both the add and drop directions

The 16-AD-CCOFS card can be installed in any service slots in the Cisco NCS 2006 and NCS 2015 chassis. The 16-AD-CCOFS card works only in the Cisco NCS Flex node.

Key Features

- Has a 16x4 multiplexer and a 4x16 demultiplexer.

- Monitors optical power on the input ports through optical photo diodes and raises alarms when the threshold is exceeded.

- Supports tone detection on the input ports in the add direction.

- Provides a multicast switch that does not block any wavelength and does not have any optical filtering element.

- Has fixed gain EDFA amplifiers in the add or drop directions to compensate for high optical insertion loss. The gain is -1 dB in the drop direction and -2 dB in the add direction.

For more information about the 16-AD-CCOFS card, such as the block diagram and card specifications, see the data sheet.

6AD-DD-CFS Card

Table 1: Feature History

Feature Name	Release Information	Feature Description
6AD-DD-CFS Card	Cisco NCS 2000 Release 12.3	The new NCS 2000 6-port add/drop card supports multiplexing and amplification of wavelengths from interfaces with ZR+ pluggables for colorless transmission over ROADM nodes in the network. The card can be installed in NCS 2006 and NCS 2015 chassis.

In this chapter, "6AD-DD-CFS" refers to the NCS2K-6AD-DD-CFS card.

The output power from the ZR and ZR+ pluggables is low and must be amplified before it enters the multiplexer on the ROADM node. The 6AD-DD-CFS card is a single slot add or drop card that supports C-band multiplexing of ZR and ZR+ wavelength outputs. The 6AD-DD-CFS card includes six add or drop port multiplexer with an amplifier working in fixed gain mode. This card provides colorless and flex spectrum capability on six channels over a single ROADM direction.

The 6AD-DD-CFS card can be installed in any service slots in the Cisco NCS 2006 and NCS 2015 chassis. The 6AD-DD-CFS card works only in the Cisco NCS node that is installed with the flex package.

Key Features

The 6AD-DD-CFS card provides the following key features:

- Provides aggregation and amplification of up to six wavelengths.

- Provides fixed gain EDFA amplifiers in the add and drop directions to compensate for high optical insertion loss.

- Supports ASE compensation in Constant Gain and in Constant Output Power mode.

- Supports fast transient suppression.

- Supports optical safety functionality through:

    - Signal loss detection, LOS signal generation, and alarm at any input port

    - Fast power down control

    - Reduced maximum output power in safe power mode

- Monitors optical power on the input ports through optical photodiodes and raises alarms when the threshold is exceeded.

- Supports tone detection on the input ports in the add direction.

Faceplate Diagram

Figure 1: Faceplate Diagram of 6AD-DD-CFS Card
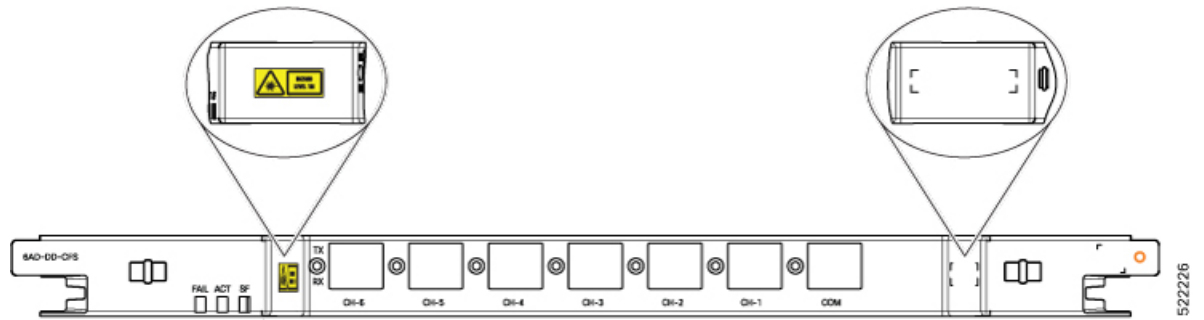
LC Connector Assignment

The 6AD-DD-CFS card uses LC connectors for all the ports.

Table 2: LC Connector Assignment

Optical Connector Label	Optical Connector Type	Port Name
COM-TX	LC - UPC	COM-TX
COM-RX	LC - UPC	COM-RX
CH-1	LC - UPC	CH-1-TX/RX
CH-2	LC - UPC	CH-2-TX/RX
CH-3	LC - UPC	CH-3-TX/RX
CH-4	LC - UPC	CH-4-TX/RX
CH-5	LC - UPC	CH-5-TX/RX

Optical Connector Label	Optical Connector Type	Port Name
CH-6	LC - UPC	CH-6-TX/RX

For more information about the 6AD-DD-CFS card, such as the block diagram and card specifications, see the data sheet.

Provision Interface Parameters

Use this task to change the optical interface parameters of the 16-AD-CCOFS and 6AD-DD-CFS cards.

Before you begin

- Log into the SVO Web Interface

- Open the Card View

Procedure

Step 1   Click the **Provisioning** > **Interface** tabs.

Step 2   Modify the settings described in the following table. The provisionable parameters are listed in the Options column in the table.

Table 3: Interface Options

Parameter	Description	Options
Port	(Display only) Displays the port number, port type, and direction (RX or TX)	All the RX and TX ports
Admin State	(Display only) Displays the administrative state of the port.	From the drop-down list, choose one of the following: • Unlocked (ETSI)/ IS (ANSI) • Locked, disabled (ETSI)/OOS, DSBLD (ANSI) • Locked, maintenance (ETSI)/OOS, MT (ANSI) • Unlocked, automaticInService (ETSI)/ IS, AINS (ANSI)

Parameter	Description	Options
Service State	(Display only) Identifies the autonomously generated state that gives the overall condition of the port. Service states appear in the format: Primary State-Primary State Qualifier, Secondary State.	• IS-NR/ Unlocked-enabled • OOS-AU,AINS/ Unlocked-disabled, automaticInService • OOS-MA,DSBLD/ Locked-enabled,disabled • OOS-MA,MT/ Locked-enabled,maintenance
Optical Power (dBm)	Displays the optical power for each port.	—
Optical PSD Setpoint (dBm/GHz)	Target output PSD requested by the user.	—
Attenuator Value (dB)	Sets the attenuator value.	—
Optical Power Threshold Low (dBm)	Fail low threshold used to detect the LOS alarm on the port.	—
Current Power Failure Low (dBm)	(Display only) Shows the optical power failure low threshold for the port.	—
Current Power Degrade High (dBm)	(Only for 16-AD-CCOFS card) (Display only) Shows the current value of the optical power degrade high threshold configured in the card. Power Degrade High refers to the Signal Output Power value of the port and is automatically calculated by the control card.	—
Current Power Degrade Low (dBm)	(Only for 16-AD-CCOFS card) (Display only) Shows the current value of the optical power degrade low threshold configured in the card. Power Degrade Low refers to the Signal Output Power value of the port and is automatically calculated by the control card.	—

Parameter	Description	Options
VOA Attenuation Setpoint (dB)	(Only for 6AD-DD-CFS card) Sets the VOA attenuation value.	0 to 25
VOA Attenuation Offset (dB)	(Only for 6AD-DD-CFS card) Sets the offset with respect to the set setpoint.	0 to 25
VOA Current Attenuation (dB)	(Only for 6AD-DD-CFS card) (Display only) Shows the VOA current attenuation.	—

Step 3   Click **Apply** to save the changes.

Provision Thresholds for TCA alarms

Use this task to change the thresholds for TCA alarms raised on the 16-AD-CCOFS and 6AD-DD-CFS cards.

Before you begin

- Log into the SVO Web Interface
- Open the Card View

Procedure

Step 1   Click the **Provisioning** > **Optics Thresholds** tabs.

Step 2   Choose the type of threshold that you want to change, 15 Min or 1 Day.

Step 3   Modify the settings described in the following table. The provisionable parameters are listed in the Options column in the table.

Table 4: Threshold Options

Parameter	Description	Options
Interface Name	(Display only) Displays the port number, port type, and direction (RX or TX)	All the TX and RX ports
PM Type	Type of interface	opticalPowerPMTh
Low	Sets the low power warning level.	Numeric. The default is -50 dBm. Double-click the parameter, enter a value, and press Enter.

Parameter	Description	Options
High	Sets the high power warning level.	Numeric. The default is 30 dBm. Double-click the parameter, enter a value, and press Enter.

Step 4   Click **Apply** to save the changes.

Provision Optical Safety

Use this task to provision the optical safety parameters of the 16-AD-CCOFS card.

Note   This task is not applicable for the 6AD-DD-CFS card.

Before you begin

- Log into the SVO Web Interface

- Open the Card View

Procedure

Step 1   Click the **Maintenance** > **Optical Safety** tabs.

Step 2   Modify required settings described in the following table:

Table 5: Optical Safety Parameters for Cards

Parameter	Description	Options
Interface	(Display only) Displays the port name, port type, and direction.	—
Supported Safety	(Display only) Displays the supported safety mechanism.	• ALS for line cards and control cards. • ALS-OSRI for amplifier cards.

Parameter	Description	Options
ALS Mode	Automatic laser shutdown mode. The ALS mode is disabled for RX ALS interfaces.	From the drop-down list, choose one of the following: • ALS-Disabled—Deactivates ALS. • Automatic Restart—(Default) ALS is active. The power is automatically shut down when needed, and it automatically tries to restart using a probe pulse until the cause of the failure is repaired. • Manual Restart
OSRI	Optical safety remote interlock. The default value is OSRI-OFF. When set to OSRI-ON, the TX output power is shut down. **Note** OSRI configuration is not supported on the transponder and muxponder cards.	From the drop-down list, choose one of the following: • OSRI-OFF • OSRI-ON
ALS Status	(Display only) ALS status of the device.	• Working • Shutdown
Recovery Pulse Interval	Displays the interval between two optical power pulses.	60 to 300 seconds.
Recovery Pulse Duration	Displays the duration of the optical power pulse that begins when an amplifier restarts.	2 to 100 seconds
Manual Restart	Triggers manual restart action for the ALS interface. However, manual restart does not happen if Mode is set to Automatic Restart or Disabled.	—

Step 3 Click **Apply** to save the changes.

Provision FPD Upgrade

Whenever the firmware version on the card is earlier than the FPGA firmware version, an alarm "FPD-UPG-REQUIRED" is raised on the card in the **Alarms** tab.

You can view the running firmware version and the NCS 2000 FPGA firmware version under the **Maintenance** > **FPD upgrade** tabs.

Use this task to upgrade the 6AD-DD-CFS card with the latest firmware released as part of the NCS 2000 software release.

Note   This task is not applicable for the 16-AD-CCOFS card.

Before you begin

- Log into the SVO Web Interface

- Open the Card View

Procedure

Step 1   Click the **Maintenance** > **FPD Upgrade** tabs.

Step 2   Click **FPD upgrade** to perform firmware upgrade for the card.

After the firmware upgrade is completed successfully, the "FPD-UPG-REQUIRED" alarm gets cleared in the **Alarms** tab and you can view the updated running firmware version in the **FPD Upgrade** table.

View Insertion Loss Parameters

Use this task to view the insertion loss parameters of the 16-AD-CCOFS and 6AD-DD-CFS cards.

Before you begin

- Log into the SVO Web Interface

- Open the Card View

Procedure

Click the **Maintenance** > **Insertion Loss** tabs to view the insertion loss parameters.

The Insertion Loss tab displays the following information:

- **Insertion Loss Path**—Displays the insertion loss path.

• **IL Value (dB)**—Displays the insertion loss value.

Note	When the card is removed, the last retrieved Insertion Loss values are displayed in the SVO web UI. When the card is replaced, the Insertion Loss values are updated in the SVO web UI.

Collect Failure Logs

Use this task to collect the failure log information for the 16-AD-CCOFS and 6AD-DD-CFS cards. This task can be used to debug the cards before RMA.

Before you begin

• Log into the SVO Web Interface

• Open the Card View

Procedure

Right-click the card and choose **OBFL** to collect the On Board Failure Logs (OBFL).

The failure log information is displayed in the **Maintenance** > **OBFL Status** tabs.