



Installing the Shelf Controller Cards and Fabric Cards

This chapter provides instructions on installing the shelf controller cards and fabric cards in the Cisco NCS 6000 Fabric Card Chassis (FCC).



Note

This chapter also includes instructions for installing a multi-chassis fabric card in the Cisco NCS 6000 Line Card Chassis (LCC) which is a component of the Cisco NCS 6000 Multi-Chassis system.

Throughout this chapter, abbreviated terms are used to identify the formal names of the cards that make up the Cisco NCS 6000 Multi-Chassis system.

Table 1: Abbreviated Terms for Cisco NCS 6000 Shelf Controller and Fabric Cards

Cisco Product Name	Cisco Product ID	Abbreviated Term
NCS FCC Shelf Controller	NCS-F-SC	SC card
NCS FCC (Combo) Shelf Controller Switch Card	NCS-F-SCSW	SC-SW card
NCS FCC S2 Fabric Card	NCS-F-FC	S2 FC
NCS FCC S2 Fabric Card, 2nd Generation 1	NCS-F-FC2	S2 FC2
NCS 6008 Multi-Chassis Fabric Card	NC6-FC-MC	S13 MC FC
NCS 6008 Universal Fabric Card	NC6-FC2-U	UFC

¹ Required for 2T multi-chassis mode



Note

The Cisco NCS 6000 FCC ships with a minimum of six S2 FCs, six impedance carriers ([Figure 3: S2 FC Impedance Carrier](#)), and either one or two SC cards or SC-SW cards preinstalled in the FCC.

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- [Installing an SC or SC-SW Card](#), page 11
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About Installing Cards and Associated Components

Preventing Electrostatic Discharge

Electrostatic discharge (ESD) damage, which can occur when electronic cards or components are improperly handled, results in complete or intermittent failures. We recommend the use of an ESD-preventive wrist strap whenever you handle network equipment or one of its components.

- Always use an ESD-preventive wrist or ankle strap, and ensure that it makes good skin contact. Connect the equipment end of the connection cord to an ESD jack (see [Figure 1](#)) or a bare metal surface on the chassis (ensure that the chassis grounded).
- Handle a card by its ejector levers, when applicable, or its metal carrier only; avoid touching the board or connector pins (see the [Guidelines for Installing a Card](#), on page 2 section).
- Place a removed card board-side-up on an anti-static surface or in a static-shielding bag. If you plan to return the component to the factory, immediately place it in a static-shielding bag.
- Avoid contact between a card and clothing. The wrist strap protects the board from only ESD voltage on the body; ESD voltage on clothing can still cause damage.
- Be careful not to lay any tools on the aluminum honeycomb panel, or insert your fingers into the panel.

Guidelines for Installing a Card

- Every card has a label (with an arrow) on its faceplate showing which side is up for installation.
- All card faceplates and card slots on the FCC are labeled with a round purple symbol.
- Every card has a key mounted on the board that matches a corresponding slot on the chassis side (top of each card slot). This key-slot mechanism prevents a card from being inserted into the wrong, non-matching card slot. It also prevents a card from being inserted upside down. If you insert a card into the wrong card slot or upside down, the key gets blocked against the chassis card guide and will not slide through the slot. If the key is blocked, remove the card and find the correct card slot.
- Online insertion and removal (OIR) is supported, enabling you to install a card while the FCC is operating. OIR is seamless to users on the network, maintains all routing information, and ensures session preservation. We recommend that you perform a graceful shutdown to shut down a fabric card prior to removing it from the FCC. See [Steps for OIR Fabric Card Removal](#), on page 3.

- When installing a fabric card, you must first push the OIR button on both the upper and lower ejectors for the mechanical latch to be released.
- The different cards in the FCC are attached to the FCC itself by a pair of ejector levers and captive screws. The two ejector levers release the card from its midplane connector. The exact locations of the ejector levers and captive screws can vary slightly from card to card, but are generally in the same locations: on the upper and bottom ends of the faceplate.
- The FCC is shipped with the card slots containing either impedance carriers or a plastic cover to help maintain the chassis stiffness and prevent any damage to the chassis during shipment.

**Note**

Any unused card slots that are uncovered allows air used for the FCC cooling to escape. To ensure proper air flow and maintain system EMC and safety compliance, any unused fabric card slots must contain impedance carriers, and all SC and SC-SW cards must remain installed in their card slots (see the [Installing and Removing an Impedance Carrier](#), on page 6 and the [Slot Numbers](#)).

**Caution**

The FCC may indicate a hardware failure if you do not follow proper procedures. Install only one card at a time. Allow at least 15 seconds for the FCC to complete its tasks before installing another card.

Steps for OIR Fabric Card Removal

Follow these steps to perform a graceful OIR on the fabric card by using the Cisco IOS XR **shutdown** command.

Step 1 Shut down plane *X* (where *X* is in the range of 0 to 5).

Example:

```
config
controller fabric plane X
shutdown
commit
```

Step 2 Shut down FC card location R/FCS (where R is the rack number in the range of 0 to 15 and F0 to F3, and S is the slot in the range of 0 to 5 for the LCC and 0 to 11 for the FCC).

Example:

```
config
hw-module location R/S shutdown
commit
...
...
```

Step 3 Unshut FC location.

Example:

```
config
no hw-module location R/S shutdown
```

```
commit
```

Step 4 Unshut plane X.

Example:

```
config
controller fabric plane X
no shutdown
commit
```

About Cable Management Brackets

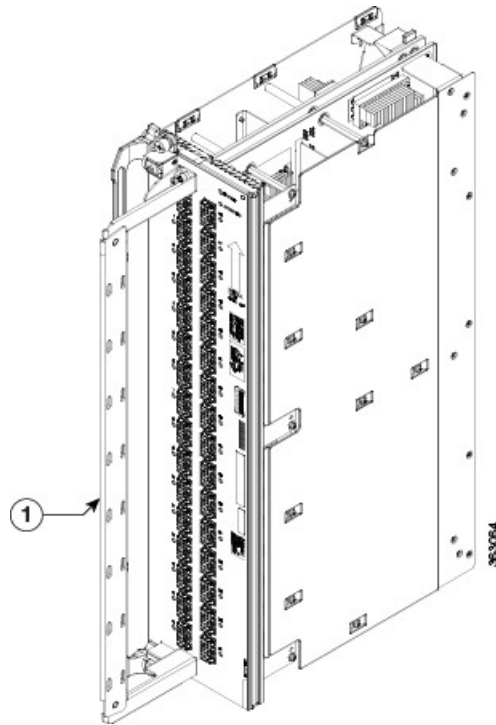
The Cisco NCS 6000 FCC has cable management features on the front and rear sides of the FCC. These brackets organize the interface cables entering and exiting the different cards, keeping them out of the way and free of sharp bends that may damage the cables.

- The front and rear sides of the FCC have horizontal cable management brackets above and below the card cages ([Figure 1](#) and [Figure 2](#)).
- The front and rear sides of the FCC have vertical cable troughs on the left and right sides of the FCC used for routing the cables ([Figure 10](#) and [Figure 9](#)).
- A vertical cable management bracket is preattached to the faceplate of an S2 FC, S2 FC2, S13 MC FC, UFC, and SC-SW card.

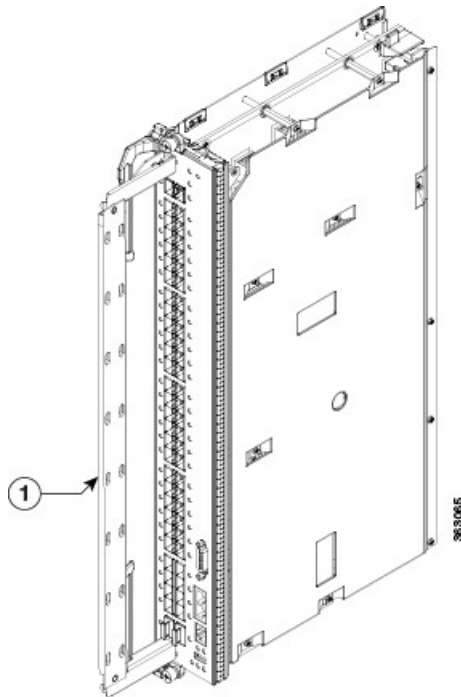


Note The SC card does not have a cable management bracket.

Figure 1: S2 FC and S2 FC2 Vertical Cable Management Bracket



1	Cable management bracket
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Figure 2: SC-SW Card Vertical Cable Management Bracket

1	Cable management bracket
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Installing and Removing an Impedance Carrier



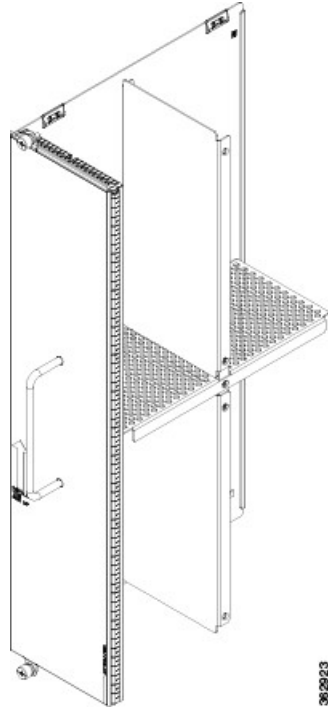
Caution

When an FCC slot is not occupied by a card, a blank, also known as an impedance carrier, must be installed in the empty slot to ensure proper cooling of the system. The FCC ships with impedance carriers preinstalled in any empty slots.

**Note**

The SC0 and SC1 slots on the front of the FCC do not have impedance carriers as these slots on the front of the FCC must be populated with either two SC or SC-SW cards at all times.

Figure 3: S2 FC Impedance Carrier



Installing an S2 Fabric Card Impedance Carrier

This section describes how to install an S2 fabric card impedance carrier in the Cisco NCS 6000 FCC.

Prerequisites

Before performing this task, open the cosmetic doors, if installed, and ensure that the slot in which you are about to install the impedance carrier is empty.

Required Tools and Equipment

- Number-2 Phillips screwdriver or Number-2 common (flat-head) screwdriver
- Fabric card impedance carrier (Cisco PID NCS-F-FC-BLANK)

Steps

To install an impedance carrier, follow these steps:

-
- Step 1** Use both hands while inserting an impedance carrier. Use one hand on the faceplate and the other hand along the base of the impedance carrier to guide it into the slot.
 - Step 2** Slide the impedance carrier into the FCC until the captive screw plates are flush with the FCC.
 - Step 3** Partially tighten the two captive screws on the front panel of the impedance carrier (either by hand or with the number-2 Phillips screwdriver or number-2 common (flat-head) screwdriver) to make sure that they are both engaged.
 - Step 4** Use the number-2 Phillips screwdriver or number-2 common (flat-head) screwdriver to fully tighten the captive screws to seat the impedance carrier firmly in the slot.
-

Removing an S2 Fabric Card Impedance Carrier

This section describes how to remove an S2 fabric card impedance carrier from the Cisco NCS 6000 FCC.

Prerequisites

Before performing this task, open the cosmetic doors, if installed.

Required Tools and Equipment

- Number-2 Phillips screwdriver or Number-2 common (flat-head) screwdriver

Steps

To remove an impedance carrier from the FCC, follow these steps:

-
- Step 1** Identify the impedance carrier to be removed from the card cage.
 - Step 2** Use the number-2 Phillips screwdriver or number-2 common (flat-head) screwdriver to turn the two captive screws on the front panel of the card counterclockwise to loosen it from the slot.
 - Step 3** Grasp the impedance carrier handle with one hand and gently pull it halfway from the slot. Place one hand under the impedance carrier to guide it.
 - Step 4** Hold the impedance carrier underneath and by the handle, pull it from the slot, and set it carefully aside.
-

About the SC and SC-SW Cards

The Cisco NCS 6000 FCC offers two types of shelf controller cards: The SC-SW (shelf-controller switch card) and SC (shelf-controller-only) card. Because a maximum of two SC-SW cards are allowed in an entire multi-chassis system, two different options are provided,

The SC-SW card is a 56-port combination card that integrates a shelf controller and switch for the NCS 6000 Control Ethernet into one physical card. The shelf-controller (SC) portion controls the route processing and management functions for the FCC and its components. The switch (SW) portion interconnects all the route processors (RPs) and SCs in a multi-chassis system. The LEDs on the SC-SW indicate active alarm conditions ([Figure 7: SC Card Front Panel and LEDs](#)).

The FCC ships with two shelf controller cards, either two SC-SW cards or a combination of one SC-SW card and one SC card pre-installed in the FCC. The cards are inserted into two dedicated slots on the front of the FCC. One SC-SW or SC card installs into slot SC0 on the upper card cage and the other SC-SW or SC card installs into slot SC1 on the lower card cage. Both the upper and lower card slots are identical. The secondary card is installed for redundancy, so that the loss or removal of a single card does not bring down the FCC. At least one SC card or SC-SW card must be operational for the FCC to function.



Note

Only two SC-SW cards are supported in an entire multi-chassis system. In a system with more than one FCC, we recommend that the SC-SW cards are not installed in the same FCC.

The following table lists the physical characteristics for the SC and SC-SW cards.

Table 2: SC Card and SC-SW Card Physical Characteristics

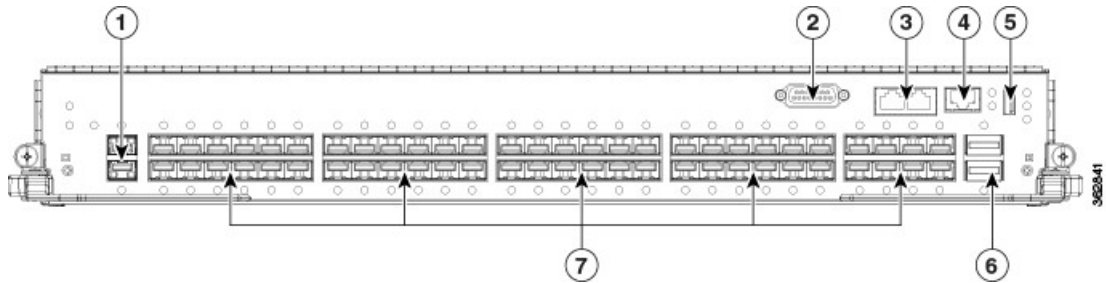
Card Type	Height	Depth	Width	Weight
SC	21 in. (53.3 cm)	13.0 in. (33.0 cm)	2.820 in. (7.16 cm)	10.1 lb. (4.58 kg)
SC-SW	21 in. (53.3 cm)	13.0 in. (33.0 cm) ²	2.820 in. (7.16 cm)	12.9 lb. (5.85 kg)

² 14.8 in. (37.6 cm) with cable management bracket installed.

Front Panel Ports

The section describes the front panel ports for the SC-SW and SC cards.

Figure 4: SC-SW Front Panel Ports



1	Two 10GE expansion ports (EXP 0 and EXP 1)	5	USB 2.0 port
2	DB15 connector alarm port	6	Two QSFP+ 40GE optical ports (HS0 and HS1)
3	Two EIA232 serial console ports: (CON 0 and CON1)	7	56 SFP+ 10GE optical ports, left to right(0 through 27 on bottom, 28 though 55 on top)
4	RJ-45 Ethernet management port		

The Shelf-Controller (SC) external ports include:

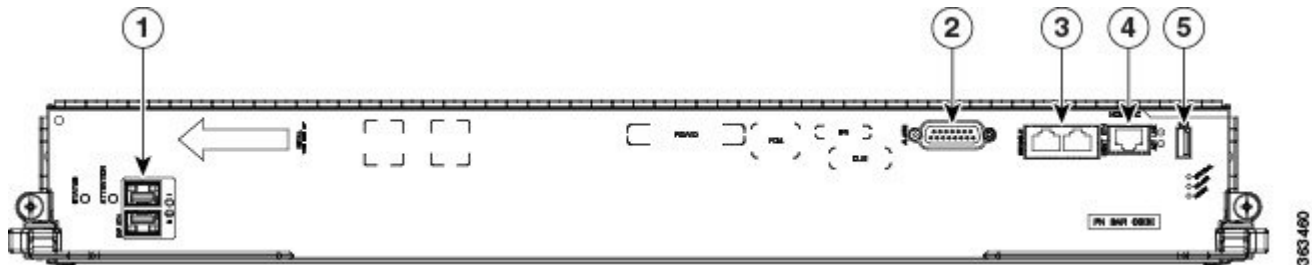
- 10GE expansion ports: used to expand the internal control Ethernet network to the LCC by connecting through the SW switch ports. The ports are identical in functionality. Each port is capable of 10GE operation via SFP+ modules. The SFP+ modules supported are: SFP+10GE-L and SFP+10GE-S.
- DB15 connector: Alarm port that uses a standard DB15 connector.
- EIA-232 serial console ports.
- RJ-45 Ethernet management port: RJ-45 copper 10/100/1000 Mbps full duplex port.
- USB2.0 port (type A receptacle): used to attach storage device to the FCC. This USB port is used only for storage devices.
- QSFP+ 40GE optical ports: Quad Small-Form-factor Pluggable (QSFP) 40GE ports used for communication between the FCC and Route Processor (RP) cards on the LCC.
- SFP+ 10GE optical ports: controls plane connectivity between the FCC and the LCC.

The Switch (SW) external ports include:

- 56 SFP+ 10GE ports: controls the plane connectivity between the FCC and the LCC and two 40GE ports.

- 32 of the 10GE ports connect to up to 16 LCC (one 10GE port per RP). The 40GE connection interconnects two SC-SW cards.

Figure 5: SC Card Front Panel Ports



1	Two 10GE expansion ports (EXP 0 and EXP 1)	4	RJ-45 Ethernet management port
2	DB15 connector alarm port	5	USB 2.0 port
3	Two EIA232 serial console ports (CON 0 and CON1)		

See [Verifying the Installation of an SC or SC-SW Card](#), on page 14 for the description of the card LEDs and troubleshooting information.

Installing an SC or SC-SW Card

Every Cisco NCS 6000 FCC chassis contains either one SW-SW card or one SC card preinstalled in dedicated slots on the front of the FCC. One SC-SW card installs into the upper card cage and the SC card installs into the lower card cage.

Follow the steps in this section if you are adding a secondary SC-SW or SC card to the FCC.



Note

The SC and SC-SW cards are hot-swappable, meaning that each card can be replaced without disrupting data flow in the router.



Caution

To prevent electromagnetic interference, the SC-SW card ships with two QSFP plugs installed on the two QSFP ports. A QSFP plug must be installed on any empty QSFP ports at all times.



Warning

Class 1 Laser Product. Statement 113



Warning

Because invisible radiation may be emitted from the aperture of the port when no fiber cable is connected, avoid exposure to radiation and do not stare into open apertures. Statement 125

**Caution**

Always use an electrostatic (ESD) wrist strap when handling SC or SC-SW cards.

Prerequisites

Before performing this task, open the cosmetic doors, if installed.

Required Tools and Equipment

- ESD-preventive wrist strap
- Number-2 Phillips screwdriver or number-2 common (flat-head) screwdriver
- SC card (Cisco PID NCS-F-SC) or SC-SW card (Cisco PID NCS-F-SCSW)

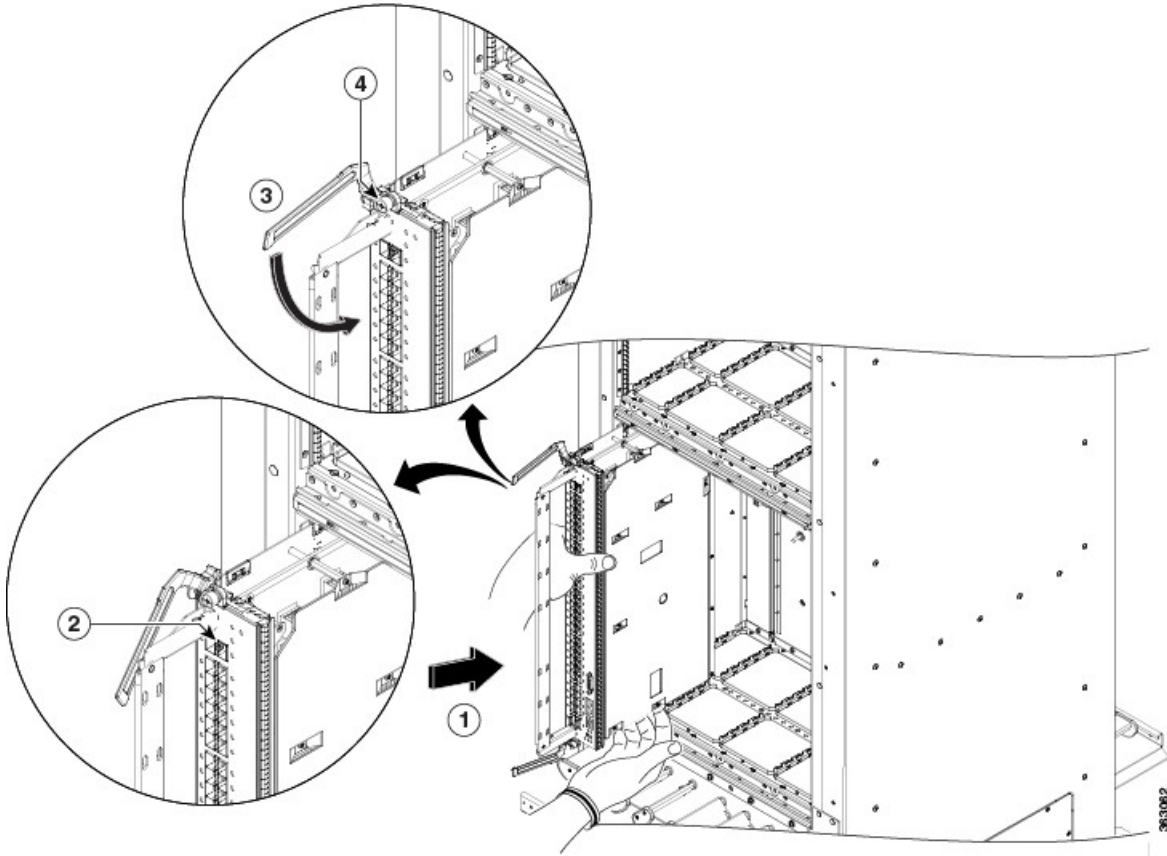
Steps

To install an SC or SC-SW card, follow these steps:

-
- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the two ESD jacks on the rear side of the FCC (see [Figure 1](#)). You can also connect the ESD-preventive wrist strap leash to any bare metal surface on the FCC.
- Step 2** Remove the card from its antistatic packaging.
- Step 3** Orient the card according to the up arrow on the faceplate.

Note If the card does not slide easily into the slot during installation, the orientation may be wrong or the slot is not for an SC or SC-SW card. Reorient the card, if necessary.

Figure 6: Installing an SC-SW or SC Card—SC-SW Card Shown



1	Direction of insertion	3	Ejector lever
2	OIR button	4	Captive screw

Step 4

Place one hand under the card to support and guide it into the correct slot. Slide the card halfway into the slot. Avoid touching the card circuitry or any connectors.

Note Alignment grooves exist on each slot in the card cage. When you install a card in the card cage, make sure that you align both edges of the card carrier in the slot grooves.

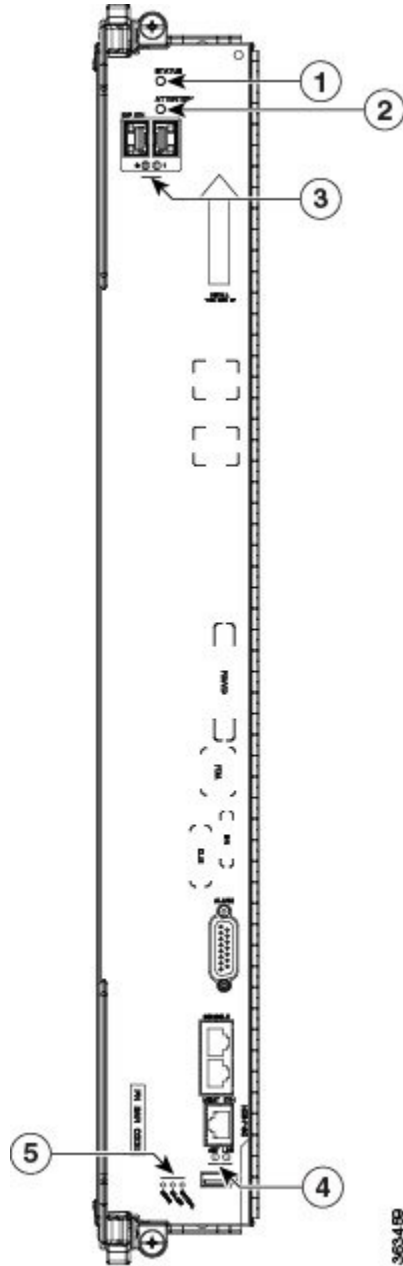
- Step 5** Press the OIR buttons on the top and bottom of the card faceplate to release the ejectors (SC-SW card only).
- Step 6** Carefully slide the card into the slot until the ejector levers meet the edges of the card cage, and then *stop* when the ejector lever hooks catch the card cage. If they do not catch, try reinserting the card until the ejector lever hooks are fully latched.
- Step 7** Pivot both card ejector levers so that the openings on the card ejector cams at the top and bottom of the card pass over the tabs on each side of the card cage slot.
- Caution** Verify that the openings on the card ejector cams pass over the tabs; otherwise, one or both ejector levers might bind when you attempt to close the ejector levers, thereby damaging or breaking one or both ejector levers.
- Step 8** Continue sliding the card into the card cage slot until the openings on the card ejector cams engage the tabs on each side of the card cage slot.
- Note** The SC-SW and SC cards both have guide pins that make initial contact with the backplane connector as you slide the card into its slot. After the guide pins make contact, continue pushing on the card carrier until the card ejector levers begin pivoting forward toward the handle in the card carrier.
- Step 9** To seat the card in the backplane connector, grasp both card ejector levers and pivot them inward toward the handle in the card carrier until they are flush against the front edge of the card carrier.
- Step 10** Use the number-2 Phillips screwdriver or number-2 common (flat-head) screwdriver to turn the two captive screws on the front panel of the card clockwise to seat the card firmly in the slot.
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Verifying the Installation of an SC or SC-SW Card

This section describes how to verify that an SC or SC-SW card is properly installed and is working correctly in the Cisco NCS 6000 FCC.

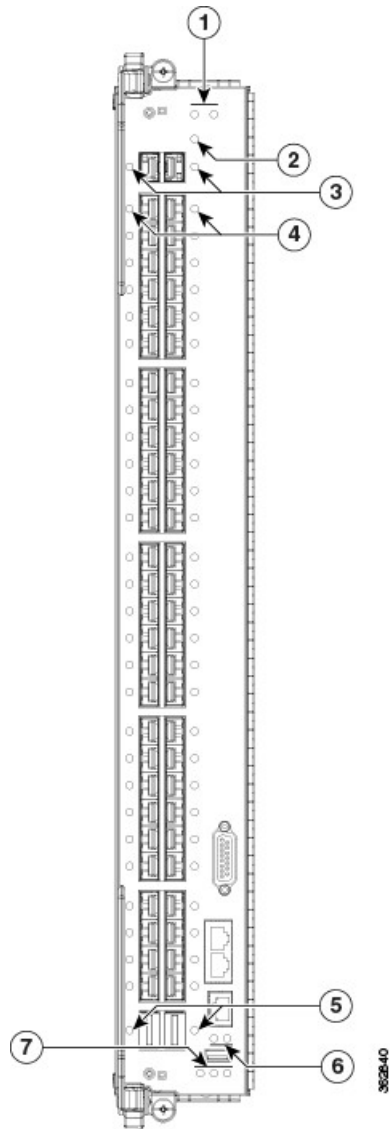
Use the Status LED, located on the faceplates of an SC or SC-SW card, to verify the correct installation of the card.

Figure 7: SC Card Front Panel and LEDs



1	Status LED	4	MGMT port LEDs (Link and Activity)
2	Attention LED	5	Three alarm LEDs (Critical, Major, Minor)
3	Two expansion port LEDs (EXP0 and EXP1)		

Figure 8: SC-SW Card LEDs



1	Status LED (left to right, SC status and SW status)	5	Two QSFP LEDs (Q1 port 56 and Q0 port 57)
2	Attention LED	6	MGMT port LEDs (Link and Activity)
3	Two expansion port LEDs (EXP0 and EXP1)	7	Three alarm LEDs (Critical, Major, Minor)
4	56 SFP LEDs (left side 0 to 27 on left, 28 to 55 on right)		

Table 3: SC and SC-SW LED Indicators

LED	Color	Description
Status	Green	The card is properly installed, and no faults are detected.
	Yellow	The software initialization is in progress during bootup, or a fault exists on the board.
	Blinking yellow (slow)	The card is not fully seated, or the slot has detected a parity error.
	Off	The card is not receiving power, or a power or hardware fault occurred. Verify that there is power to the card by looking at the indicators on the power tray.
Attention	Blue	On: The card needs attention. Off: The card does not require attention.

**Note**

Every QSF LEDs, SFP LEDs, MGMT port LEDs, expansion port LEDs, and alarm LEDs are green when the port is working correctly. When the port is transmitting (Tx) and receiving (Rx) data, the LED flashes green.

**Note**

To confirm the location of the card that needs attention, the Attention LED can be lit by using the hw-module attention-led location command.

Troubleshooting the SC or SC-SW Card

If the installed card fails to operate or to power on after installation:

- Ensure that the card is seated firmly in the FCC slot. One easy way to verify physical installation is to see whether the front faceplate of the card is even with the fronts of the other cards installed in the card cage.
- Ensure that the ejector levers are latched and that the captive screws are fastened properly. If you are uncertain, unlatch the levers, loosen the screws, and attempt to reseat the card.
- Examine the power system to see whether the FCC is receiving power.

About the Fabric Cards

The Cisco NCS 6000 switch fabric is a 3-stage cell-based architecture with six fabric planes. The S2 Fabric Card (FC) and S2 FC2 cards implement the second stage of the switch fabric. The S13 Multi Chassis (MC) FC and Universal fabric Card (UFC) cards implement the first and third stages of the switch fabric and reside in the Cisco NCS 6008 Line Card Chassis (LCC). The FCs provide the switch fabric for the routing system and perform the cross-connect function of the routing system, connecting every LC to each other. The switch

fabric receives ingress user data from one LC slot and performs the switching necessary to route the data to the appropriate egress LC slot.

The connections between the LCC and the FCC are implemented through a number of bi-directional optical links. Pluggable CXP form-factor optics are used for these interconnects.

- In 1T multi-chassis (MC) mode, CXP optical modules are used on the S2 FC and S13 FC to connect the two cards together.
- In 2T MC mode, CXP2 optical modules are used on the S2 FC2 and UFC to connect the two cards together.

The CXP and CXP2 modules use a 24-fiber MPO connector that supports 12 bi-directional optical links up to 100 meters of OM-4 multi-mode fiber.

S2 Fabric Card

Every Cisco NCS 6000 FCC can accommodate up to 12 S2 fabric cards. When multiple FCCs are installed in a multi-chassis system, the S2 FCs are distributed across the FCCs. Each S2 FC supports up to 32 CXP modules. Each S2 FC2 supports up to 32 CXP2 modules. The following table lists the physical characteristic for the S2 FC.

Table 4: S2 Fabric Card Physical Characteristics

S2 Fabric Card	Height	Depth	Width	Weight
S2 FC	21 in. (53.3 cm)	13.0 in. (33.0 cm) ³	4.80 in. (12.2 cm)	19.8 lb (8.6 kg)
S2 FC2	21 in. (53.3 cm)	13.0 in. (33.0 cm) ⁴	4.80 in. (12.2 cm)	23.8 lb (10.8 kg)

³ 15.8 in. (40.1 cm) with cable management bracket installed.

⁴ 15.8 in. (40.1 cm) with cable management bracket installed.

S13 and Universal Fabric Card

The S13 multi-chassis fabric cards and universal fabric cards (UFC) are installed in Cisco NCS 6008 LCC to communicate with the FCC. Six S13 FCs or UFCs must be installed in the LCC for multi-chassis configuration. The following table lists the physical characteristics for the S13 FC and UFC.

Table 5: S13 Fabric Card Physical Characteristics

S13 Fabric Card	Height	Depth	Width	Weight
S13 FC	22 in. (55.8 cm)	15.0 in. (38.1 cm) ⁵	2.125 in. (5.40 cm)	15.2 lb (6.9 kg)
UFC	22 in. (55.8 cm)	15.0 in. (38.1 cm) ⁶	2.125 in. (5.40 cm)	14.5 lb (6.58 kg)

⁵ 17.7 in. (45.0 cm) with cable management bracket installed

⁶ 17.7 in. (45.0 cm) with cable management bracket installed

Installing the Fabric Cards

Installing an S2 Fabric Card



Note Unless otherwise noted, the information in this section applies to the NCS-F-FC and NCS-F-FC2 fabric cards.

This section describes how to install an S2 fabric card in the Cisco NCS 6000 FCC.

Prerequisites

- Use the **show running-config controller fabric plane** command to display the configured fabric planes and the associated S2 fabric cards for each fabric plane. Then shut down the fabric plane to avoid traffic loss. The following example shows how to shut down plane X (where X is in the range of 0 to 5).

```
config
controller fabric plane X
shutdown
commit
```

- Open the cosmetic doors, if installed.

Required Tools and Equipment

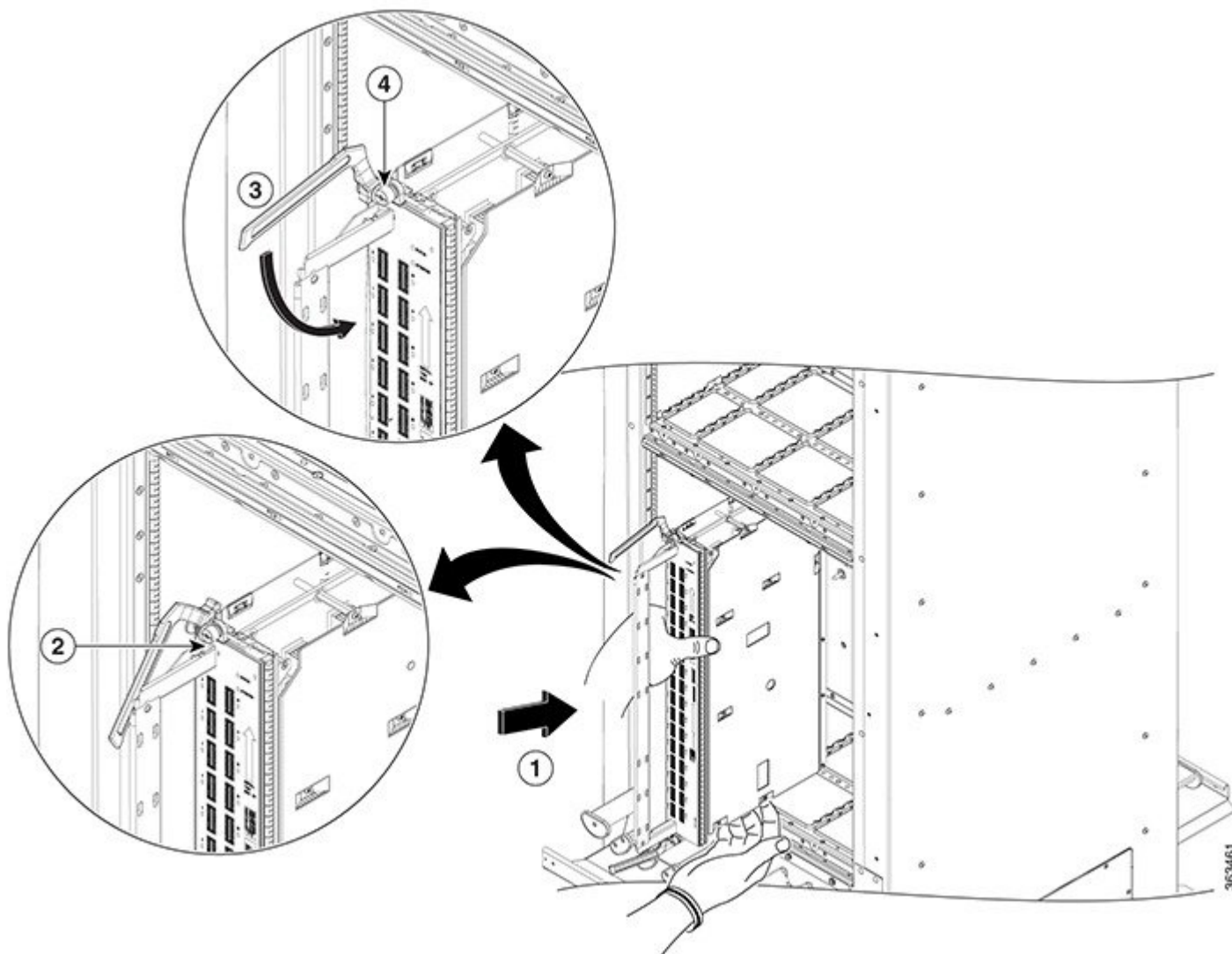
- ESD-preventive wrist strap
- Number-2 Phillips screwdriver or number-2 common (flat-head) screwdriver
- S2 Fabric Card (Cisco PID NCS-F-FC or NCS-F-FC2)

Steps

To install an S2 FC, follow these steps:

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the two ESD jacks on the rear side of the FCC (see [Preventing Electrostatic Discharge](#)). You can also connect the ESD-preventive wrist strap leash to any bare metal surface on the FCC.

Figure 9: Installing an S2 Fabric Card



1	Direction of insertion	3	Ejector lever
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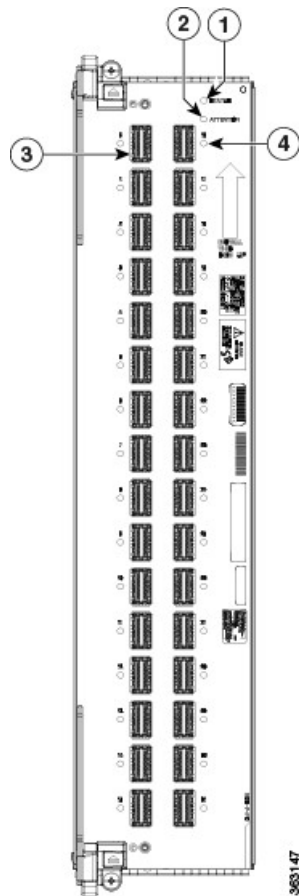
2	OIR button	4	Captive screw
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- Step 2** Remove the S2 FC from its antistatic packaging.
- Step 3** Determine the FC slot where the card will be installed. For a description of the slot locations, see [Figure 3](#).
- Step 4** Orient the FC according to the up arrow on the faceplate.
Note If the card does not slide easily into the slot during installation, the orientation may be wrong or the slot is not for an S2 FC.
- Step 5** Place one hand under the card to support and position the card for insertion into the card cage slot. Avoid touching the card circuitry or any connectors.
Note Alignment grooves exist on each slot in the card cage. When you install a card in the card cage, make sure that you align both edges of the card carrier in the slot grooves.
- Step 6** Press the OIR buttons on the top and bottom of the card faceplate to release the ejectors.
- Step 7** Carefully slide the card into the slot until the ejector levers meet the edges of the card cage, and then *stop* when the ejector lever hooks catch the card cage. If they do not catch, try reinserting the card until the ejector lever hooks are fully latched.
- Step 8** Pivot both card ejector levers so that the openings on the card ejector cams at the top and bottom of the card pass over the tabs on each side of the card cage.
Caution Verify that the openings on the card ejector cams pass over the tabs; otherwise, one or both ejector levers might bind when you attempt to close the ejector levers, thereby damaging or breaking one or both ejector levers.
- Step 9** Continue sliding the card into the card cage slot until the openings on the card ejector cams engage the cams on each side of the card cage slot.
Note FCs have guide pins that make initial contact with the midplane connector as you slide a card into its slot. After the guide pins make contact, continue pushing the card carrier until the card ejector levers begin pivoting forward, toward the handle in the card carrier.
- Step 10** To seat the card in the midplane connector, grasp both card ejector levers and pivot them inward toward the handle in the card carrier until they are flush against the front edge of the card carrier.
Note **New Installation Only:** Do not tighten any fabric cards until all cards have been inserted and seated. For maintenance or replacement of a failed FC, loosen the captive screws of the FCs on both sides of the failed FC as well as the FC to be replaced. Only remove the FC card being replaced.
- Step 11** Use the number-2 Phillips screwdriver or number-2 common (flat-head) screwdriver to turn the two captive screws on the front panel of the card clockwise to seat the card firmly in the slot.
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Verifying the Installation of an S2 Fabric Card

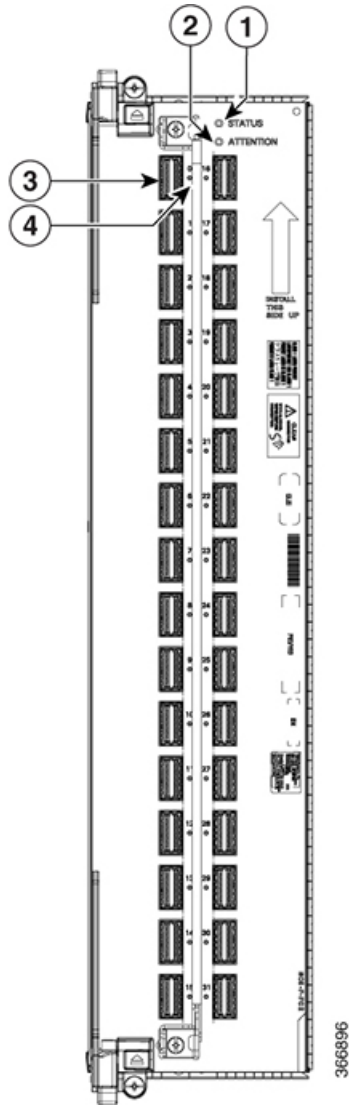
This section describes how to verify that an S2 FC or S2 FC2 card is properly installed and is working correctly in the Cisco NCS 6000 FCC. Use the Status LED, located on the faceplate of the card to verify the correct installation of the card. The following figure shows the front panel of the card.

Figure 10: S2 FC Front Panel



1	Status LED	3	32 CXP ports (left side 0 through 15, right side 16 through 31)
2	Attention LED	4	32 CXP port LEDs (one per port)

Figure 11: S2 FC2 Front Panel



1	Status LED	3	32 CXP2 ports (left side 0 through 15, right side 16 through 31)
2	Attention LED	4	32 CXP2 port LEDs (one per port)

S2 Fabric Card LEDs

The following table describes the LED indicators for the S2 FC and SC FC2.

- The 32 CXP LEDs indicate the status of the CXP links. Each LED is a bi-color red and green LED. Note that each S2 FC slot must be configured as a fabric instance for the CXP LED to light up. For example:

```
controller fabric plane 0
  instance 0
location F0/FC0
```

Table 6: S2 Fabric Card LED Indicators

LED	LED Color	Description
STATUS	Green	The card is properly installed and no faults are detected.
	Yellow	The software initialization is in progress during bootup or a fault exists on the board.
	Flashing yellow (slow)	The card is not fully seated or the slot has detected a parity error.
	Off	No power is applied to the card.
ATTN	Blue	On: The card needs attention. Off: The card does not require attention.
CXP (0-31)	Green	The port is correctly connected to the S13 FC or UFC on the LCC.
	Red	One or more links are down. For troubleshooting information, see the System Administration Command Reference for the Cisco NCS 6000 Series Routers .
	Off	The CXP/CXP2 module is not present or is not fully inserted in the card.



Note

To verify which card needs attention, the Attention LED can be lit using the **hw-module attention-led location** command.

If the installed or replaced FC fails to operate or power on after installation:

- Ensure that the card is seated firmly in the FCC slot. One easy way to verify physical installation is to see whether the front faceplate of the FC is even with the fronts of the other cards installed in the card cage.
- Ensure that the ejector levers are latched and that the captive screws are fastened properly. If you are uncertain, unlatch the levers, loosen the screws, and attempt to reseal the FC.
- Examine the power system to see whether the FCC is receiving power.

Installing an S13 MC Fabric Card or Universal Fabric Card

For information on installing the S13 Fabric Card (NC6-FC-MC) or Universal Fabric Card (NC6-FC2-U) in a Cisco NCS 6000 LCC, see [Installing a Fabric Card](#) in the [Cisco Network Convergence System 6000 Series Routers Hardware Installation Guide](#).

