

# Sun Datacenter InfiniBand Switch 648

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Service Manual



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# Using This Documentation

This service manual provides detailed procedures that describe the removal and installation of components in the Sun Datacenter InfiniBand Switch 648 from Oracle®. This document is written for technicians, system administrators, authorized service providers, and users who have advanced experience servicing hardware.

- “Related Documentation” on page vii
- “Documentation, Support, and Training” on page viii
- “Documentation Feedback” on page viii

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## Related Documentation

The documents listed as online are available at:

(<http://docs.sun.com/app/docs/prod/ib.switch.648>)

Application	Title	Part Number	Format	Location
Getting started	<i>Sun Datacenter InfiniBand Switch 648 Getting Started Guide</i>	820-7745	Printed PDF	Shipping kit Online
Last-minute information	<i>Sun Datacenter InfiniBand Switch 648 Product Notes</i>	820-7743	PDF	Online
Preparation and installation	<i>Sun Datacenter InfiniBand Switch 648 Installation Guide</i>	820-7738	PDF HTML	Online
Administration	<i>Sun Datacenter InfiniBand Switch 648 Administration Guide</i>	820-7739	PDF HTML	Online
Service	<i>Sun Datacenter InfiniBand Switch 648 Service Manual</i>	820-7740	PDF HTML	Online

Application	Title	Part Number	Format	Location
Command reference	<i>Sun Datacenter InfiniBand Switch 648 Command Reference</i>	820-7741	PDF HTML	Online
Compliance	<i>Sun Datacenter InfiniBand Switch 648 Safety and Compliance Guide</i>	820-7744	PDF	Online
ILOM information	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Datacenter InfiniBand Switch 648</i>	821-0896	PDF HTML	Online

## Documentation, Support, and Training

These web sites provide additional resources:

- Documentation (<http://docs.sun.com>)
- Support (<http://www.sun.com/support>)
- Training (<http://www.sun.com/training>)

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# Servicing the Switch

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Once a failed part is identified, it can be replaced. The topics listed here help you service Oracle's Sun Datacenter InfiniBand Switch 648 chassis components.

- ["Understanding Service Procedures" on page 1](#)
- ["Servicing the Power Supplies" on page 6](#)
- ["Servicing the CMCs" on page 17](#)
- ["Servicing the Fans" on page 27](#)
- ["Servicing the Fabric Cards and Fabric Card Fillers" on page 35](#)
- ["Servicing the InfiniBand Cables" on page 52](#)
- ["Servicing the Line Cards" on page 64](#)
- ["Doing Supportive Software Tasks" on page 82](#)

## **Related Information**

- *Switch Installation*
- *Switch Administration*
- *Switch Remote Management*
- *Switch Reference*

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## Understanding Service Procedures

Servicing the switch means a component addition, replacement, or subtraction.

A component addition means the installation of a component to increase the functionality of the switch. Component replacement means a failed component is removed and a functional one is installed. Component subtraction means removing a component to limit resources.

These topics provides preliminary information for preparation before you begin service procedures.

- [“Antistatic Precautions” on page 2](#)
- [“Suggested Tools” on page 2](#)
- [“Component Addressing” on page 3](#)
- [“Connector Addressing” on page 4](#)
- [“Replaceable Components” on page 5](#)

### **Related Information**

- [“Servicing the Power Supplies” on page 6](#)
- [“Servicing the CMCs” on page 17](#)
- [“Servicing the Fans” on page 27](#)
- [“Servicing the Fabric Cards and Fabric Card Fillers” on page 35](#)
- [“Servicing the InfiniBand Cables” on page 52](#)
- [“Servicing the Line Cards” on page 64](#)
- [“Doing Supportive Software Tasks” on page 82](#)

## **Antistatic Precautions**

When servicing the switch, take care to follow antistatic precautions:

- Use an antistatic mat as a work surface.
- Wear an antistatic wrist strap that is attached to either the mat or a metal portion of the switch chassis

### **Related Information**

- [“Suggested Tools” on page 2](#)

## **Suggested Tools**

Proper servicing of the switch requires the following tools:

- No. 2 Phillips screwdriver
- 10 mm socket or wrench
- 20 mm socket or wrench
- Ratchet drive for sockets
- Flashlight
- Magnifying glass

- Other tools

## Related Information

- [“Antistatic Precautions” on page 2](#)

# Component Addressing

When you monitor or control switch components (power supplies, CMCs, line cards, and fabric cards) with administrative commands, you are often required to provide either a slot number or an Integrated Peripherals Management Bus (IPMB) address to the command. These values identify which component you want the command to affect.

Slot numbers for the components begin with 0 and are decimal. IPMB addresses are hexadecimal. Typically, the switch-specific commands use slot numbers, while the CLIA commands and firmware programming commands use IPMB addresses. Sometimes, a FRU number complements the IPMB address.

The following table describes switch chassis components, their slot number, the respective IPMB addresses, and the corresponding IPMB address FRU number.

Component	Slot (in decimal)	IPMB Address (in hexadecimal)	IPMB Address FRU Number
CMC	0 (left)	10	0
CMC	1 (right)	12	0
Power supply	0 (left)	20	3
Power supply	1	20	4
Power supply	2	20	5
Power supply	3 (right)	20	6
Line card (LC)	0 (bottom)	82	0
Line card (LC)	1	84	0
Line card (LC)	2	86	0
Line card (LC)	3	88	0
Line card (LC)	4 (middle)	8A	0
Line card (LC)	5	8C	0
Line card (LC)	6	8E	0
Line card (LC)	7	90	0

Component	Slot (in decimal)	IPMB Address (in hexadecimal)	IPMB Address FRU Number
Line card (LC)	8 (top)	92	0
Fabric card (FC or FCF)	0 (left)	94	0
Fabric card (FC or FCF)	1	96	0
Fabric card (FC or FCF)	2	98	0
Fabric card (FC or FCF)	3	9A	0
Fabric card (FC or FCF)	4 (center)	9C	0
Fabric card (FC or FCF)	5	9E	0
Fabric card (FC or FCF)	6	A0	0
Fabric card (FC or FCF)	7	A2	0
Fabric card (FC or FCF)	8 (right)	A4	0

## Related Information

- [“Connector Addressing” on page 4](#)

# Connector Addressing

Each line card 24 InfiniBand CXP connectors, numbered 0A to 11B. The following table lists the connector numbers and associated IPMB address FRU numbers for the line cards.

Connector Number	IPMB Address FRU Number	Connector Number	IPMB Address FRU Number	Connector Number	IPMB Address FRU Number
0A	2	4A	10	8A	18
0B	1	4B	9	8B	17
1A	4	5A	12	9A	20
1B	3	5B	11	9B	19
2A	6	6A	14	10A	22
2B	5	6B	13	10B	21
3A	8	7A	16	11A	24
3B	7	7B	15	11B	23

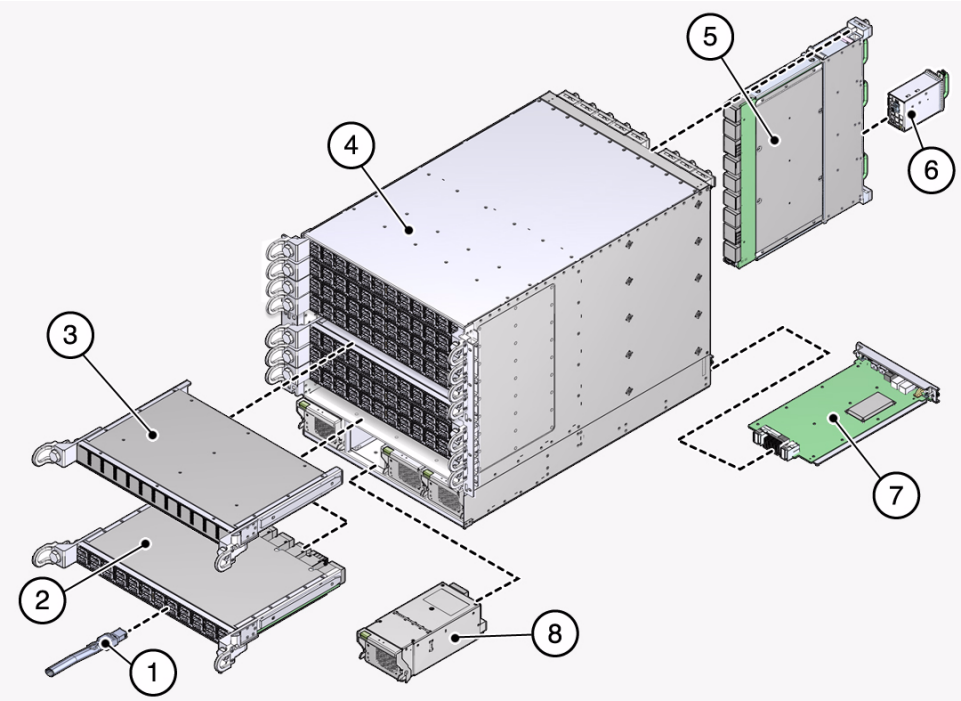
**Related Information**

- [“Component Addressing” on page 3](#)

# Replaceable Components

The following illustration identifies the replaceable components of the switch.

**FIGURE:** Replaceable Components



**Figure Legend**

1	InfiniBand cable	5	Fabric card or Fabric card filler
2	Line card	6	Fan
3	Midplane stiffener or Line card filler	7	CMC
4	Switch chassis	8	Power Supply

**Related Information**

- [“Servicing the Power Supplies” on page 6](#)
- [“Servicing the CMCs” on page 17](#)

- [“Servicing the Fans” on page 27](#)
- [“Servicing the Fabric Cards and Fabric Card Fillers” on page 35](#)
- [“Servicing the InfiniBand Cables” on page 52](#)
- [“Servicing the Line Cards” on page 64](#)

## Servicing the Power Supplies

The following table provides a description of a goal you want to achieve, and links to the sequential tasks required to reach that goal.

Description	Links
Add a power supply.	<a href="#">“Inspecting the Power Supplies” on page 7</a> <a href="#">“Install a Power Supply” on page 13</a> <a href="#">“Power On a Power Supply” on page 15</a>
Replace a power supply.	<a href="#">“Inspecting the Power Supplies” on page 7</a> <a href="#">“Power Off a Power Supply” on page 10</a> <a href="#">“Remove a Power Supply” on page 11</a> <a href="#">“Install a Power Supply” on page 13</a> <a href="#">“Power On a Power Supply” on page 15</a>
Subtract a power supply.	<a href="#">“Power Off a Power Supply” on page 10</a> <a href="#">“Remove a Power Supply” on page 11</a>

### Related Information

- [“Servicing the CMCs” on page 17](#)
- [“Servicing the Fans” on page 27](#)
- [“Servicing the Fabric Cards and Fabric Card Fillers” on page 35](#)
- [“Servicing the InfiniBand Cables” on page 52](#)
- [“Servicing the Line Cards” on page 64](#)
- [“Doing Supportive Software Tasks” on page 82](#)

# Inspecting the Power Supplies

Before installing a power supply, inspect its hardware and connectors to verify its suitability for installation.

Step	Description	Links
1.	Identify the power supply.	<a href="#">“Identify the Power Supply” on page 7</a>
2.	Inspect the power supply hardware.	<a href="#">“Inspect the Power Supply Hardware” on page 9</a>
3.	Inspect the power supply connectors.	<a href="#">“Inspect the Power Supply Connectors” on page 10</a>

## Related Information

- [“Inspecting the CMCs” on page 18](#)
- [“Inspecting the Fans” on page 28](#)
- [“Inspecting the Fabric Cards” on page 36](#)
- [“Inspecting the InfiniBand Cables” on page 53](#)
- [“Inspecting the Line Cards” on page 65](#)

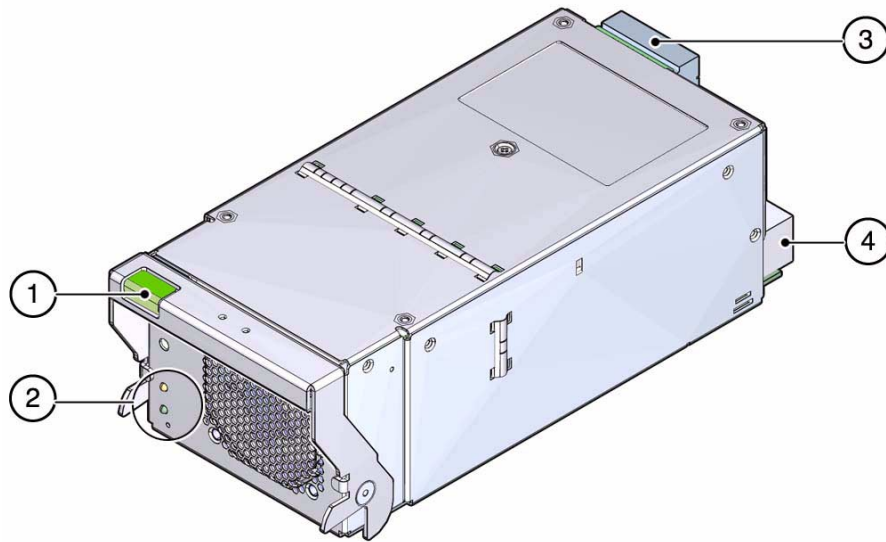
## ▼ Identify the Power Supply

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the Power Supplies” on page 7](#).

2. **Use the illustration to identify the various features of a power supply.**

**FIGURE:** Power Supply Features



**Figure Legend**

- |   |               |
|---|---------------|
| 1 | Release lever |
| 2 | Status LEDs   |
| 3 | AC Connectors |
| 4 | DC Connectors |

### 3. Inspect the power supply hardware.

See [“Inspect the Power Supply Hardware” on page 9](#).

#### Related Information

- [“Identify the CMC” on page 18](#)
- [“Identify the Fan” on page 28](#)
- [“Identify the Fabric Card” on page 37](#)
- [“Identify the InfiniBand Cable” on page 54](#)
- [“Identify the Line Card” on page 65](#)

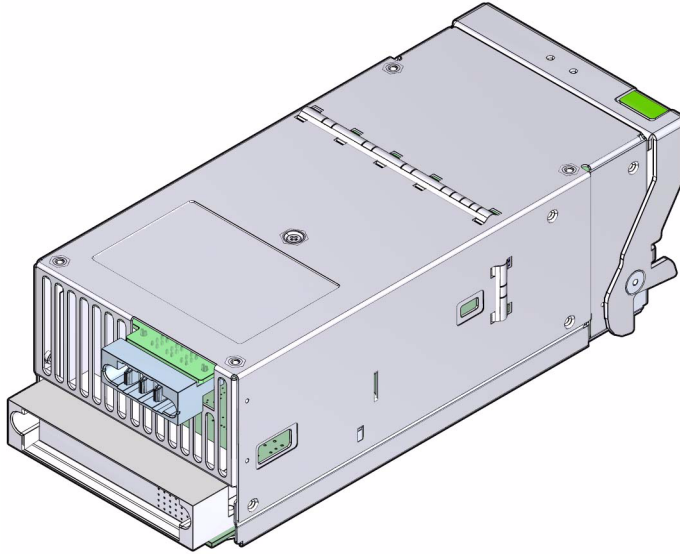
## ▼ Inspect the Power Supply Hardware

### 1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Inspecting the Power Supplies” on page 7](#).



2. Unwrap the replacement power supply from its antistatic packaging.
3. Verify that there is no visible damage to the power supply chassis.



4. Verify that the release button unsecures the release handle and permits the handle to snap closed.
5. Verify that the release handle moves freely and smoothly.
6. Inspect the power supply connectors.  
See [“Inspect the Power Supply Connectors”](#) on page 10.

#### **Related Information**

- [“Inspect the CMC Hardware”](#) on page 20
- [“Inspect the Fan Hardware”](#) on page 30
- [“Inspect the Fabric Card Chassis”](#) on page 39
- [“Inspect the InfiniBand Cable Hardware”](#) on page 55
- [“Inspect the Line Card Chassis”](#) on page 67

### **▼ Inspect the Power Supply Connectors**

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.  
See the table in [“Inspecting the Power Supplies”](#) on page 7.

2. Verify that the connectors are clean and without damage.
3. Verify that connector pins are straight and not missing.
4. Verify that connector receptacles are free from obstructions.
5. The power supply is ready for installation.

See [“Install a Power Supply”](#) on page 13.

#### Related Information

- [“Inspect the CMC Connectors”](#) on page 21
- [“Inspect the Fan Connector”](#) on page 31
- [“Inspect the Fabric Card XBOW Connectors”](#) on page 40
- [“Inspect the InfiniBand Cable Connectors”](#) on page 55
- [“Inspect the Line Card XBOW Connectors”](#) on page 68
- [“Inspect the Line Card CXP Connectors”](#) on page 69

## ▼ Power Off a Power Supply

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**Note** – Use the table in [“Component Addressing”](#) on page 3 to determine the slot number or IPMB address of your component.

---

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.  
See the table in [“Servicing the Power Supplies”](#) on page 6.
2. Determine which power supply is to be removed.
3. Use the `disablepsu` command to bring the power supply to a standby state.

For example, to disable power supply 0:

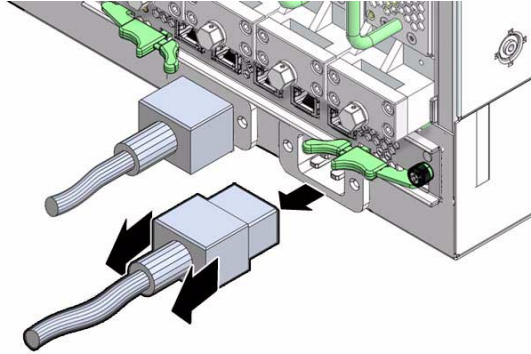
```
# disablepsu 0
PSU 0, 12 V is off
#
```

---

**Note** – Use the table in [“Component Addressing”](#) on page 3 to determine the slot number or IPMB address of your component.

---

4. At the rear of the chassis, remove the respective power cord.



---

**Note** – The power cord for power supply 0 is on the right side. The power cord for power supply 3 is of the left side.

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The power supply is completely powered off.

**5. Remove the power supply.**

See [“Remove a Power Supply” on page 11](#).

**Related Information**

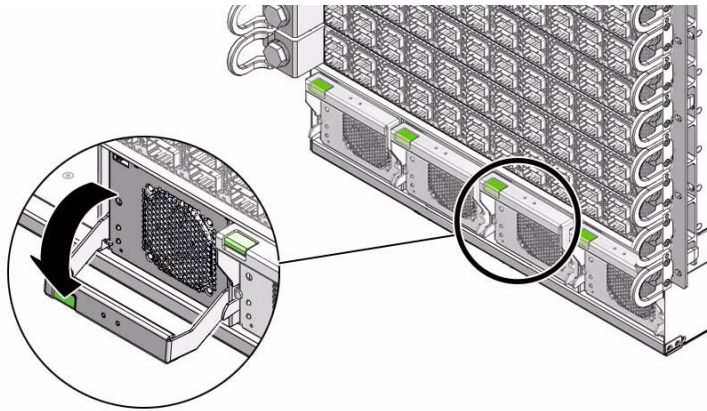
- [Switch Reference, disablepsu command](#)
- [“Power On a Power Supply” on page 15](#)
- [“Power Off a CMC” on page 21](#)
- [“Power Off a Fabric Card” on page 42](#)
- [“Power Off a Line Card” on page 70](#)

## ▼ Remove a Power Supply

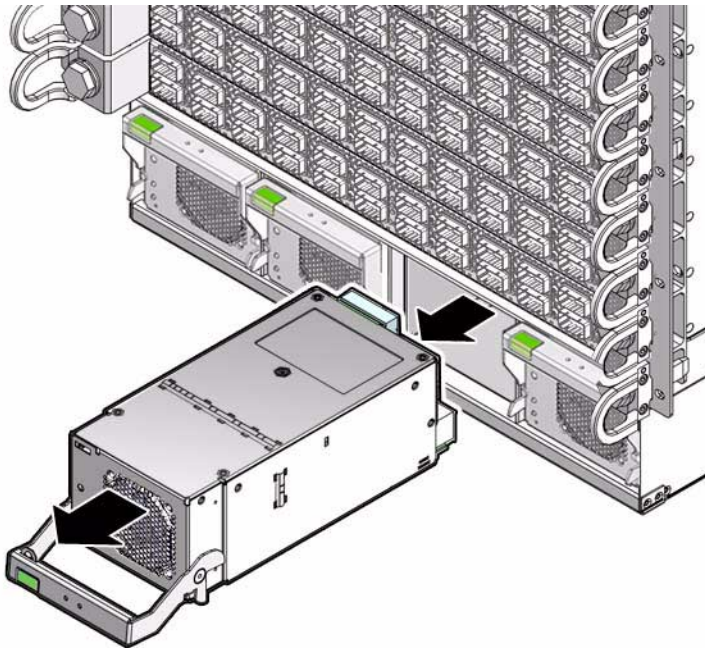
1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Servicing the Power Supplies” on page 6](#).

2. **Locate the power supply to be removed.**
3. **Press the button and pull the release handle of the power supply down.**



4. Continue to pull the release handle of the power supply to remove it from the chassis.



5. Set the power supply aside.
6. Inspect the slot from where the power supply was removed for debris and loose gasketing.
7. Remove any debris or gasketing material from the slot.

8. **Install a replacement power supply.**

See “Install a Power Supply” on page 13.

**Related Information**

- “Remove a CMC” on page 22
- “Remove a Fan” on page 31
- “Remove a Fabric Card or Fabric Card Filler” on page 44
- “Remove an InfiniBand Cable” on page 56
- “Remove a Line Card” on page 71

## ▼ Install a Power Supply

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in “Servicing the Power Supplies” on page 6.

2. **Inspect the replacement power supply.**

See “Inspecting the Power Supplies” on page 7.

3. **Inspect the slot where the power supply will install for debris and loose gasketing.**



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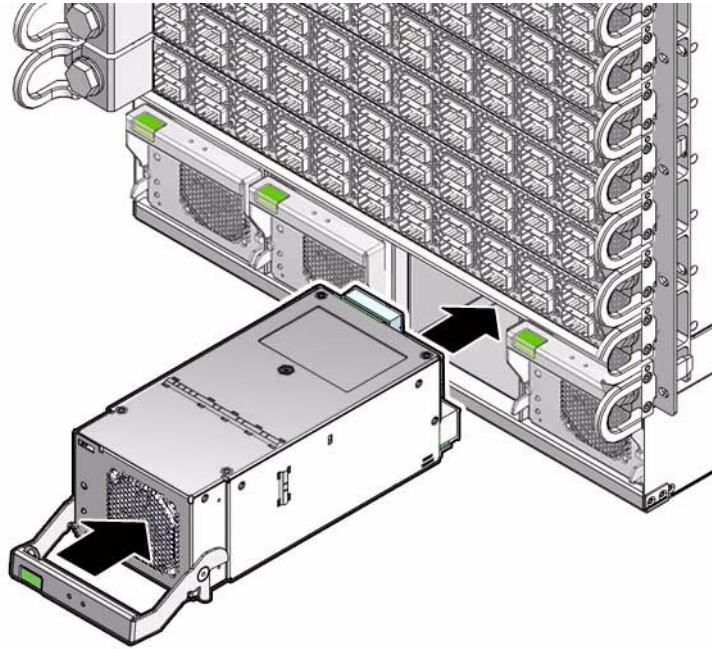
**Caution** – You must remove any debris or gasketing material from the power supply slot prior to installing the power supply. Failure to clean the slot might result in a power supply fault or damage to the power supply or switch chassis upon installation of the power supply or attachment of the power cord.

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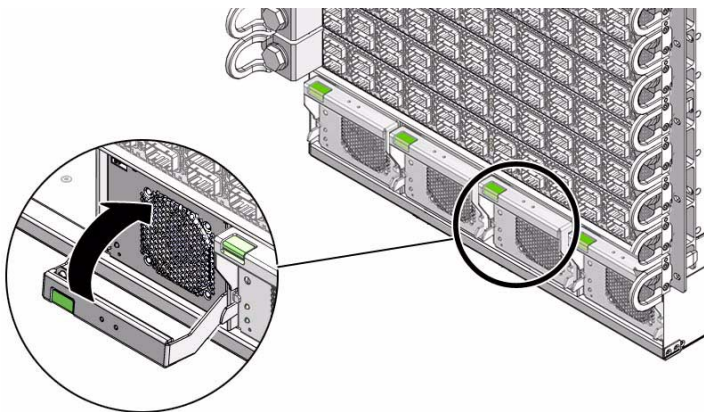
4. **Press the button and swing down the release handle.**

5. **Orient the power supply with the handle on the bottom and the connectors to the rear.**

6. **Slide the power supply into the open slot, pushing the power supply in until the release handle moves.**



7. Raise the release handle up until it clicks to secure the power supply into the chassis.



8. Power on the power supply.  
See [“Power On a Power Supply”](#) on page 15.

#### **Related Information**

- [“Remove a Power Supply”](#) on page 11
- [“Install a CMC”](#) on page 24

- “Install a Fan” on page 33
- “Install a Fabric Card or Fabric Card Filler” on page 47
- “Install an InfiniBand Cable” on page 59
- “Install a Line Card” on page 77

## ▼ Power On a Power Supply

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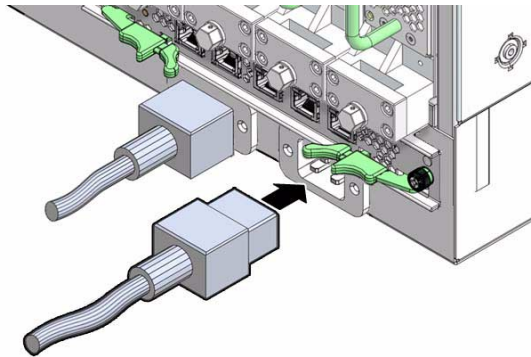
**Note** – Use the table in “Component Addressing” on page 3 to determine the slot number or IPMB address of your component.

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1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in “Servicing the Power Supplies” on page 6.

2. **Reconnect the power cord to the respective receptacle at the rear of the chassis.**



The Connected LED lights to indicate the power supply is connected to facility power.

3. **Use the `enablepsu` command to bring the power supply to a fully powered state.**

For example, to fully power on power supply 0:

```
# enablepsu 0
Turning on 12V ...
PSU 0, 12 V on
#
```



4. Verify the power supply's operation with the `showpresent` and `psustatus` commands.

For example, to check power supply 0:

```
# showpresent | grep PSU
PSU 00 present, state = ON
PSU 01 present, state = ON
PSU 02 present, state = ON
PSU 03 present, state = ON
#
```

```
# psustatus 0
PSU 0, 12 V on
#
```

5. (Optional) Display and record the power supplies FRU ID information:

```
# clia fruinfo 20 FRU_number
```

where *FRU\_number* is from “[Component Addressing](#)” on page 3.

The following example is the output for power supply 0:

```
# clia fruinfo 20 3
Pigeon Point Shelf Manager Command Line Interpreter
20: FRU # 3, FRU Info
Common Header:      Format Version = 1
Internal Use Area:
  Version           = 1
Chassis Info Area:
  Version           = 1
  Chassis Type       = (0)
  Chassis Part Number =
  Chassis Serial Number =
Product Info Area:
  Version           = 1
  Language Code      = 25
  Manufacturer Name   = EMRSN
  Product Name        = DS2900-3-001
  Product Part / Model# = 300-2133-04
  Product Version     = 04
  Product Serial Number = A234EP000B02P
  Asset Tag           =
  FRU Programmer File ID =
Multi Record Area:
  Record Type        = Power Supply Information
```



```
Version = 2
Record Type          = DC Output
Version = 2
Record Type          = DC Output
Version = 2
#
```

**Related Information**

- *Switch Reference*, enablepsu command
- *Switch Reference*, showpresent command
- *Switch Reference*, psustatus command
- [“Power Off a Power Supply” on page 10](#)
- [“Power On a CMC” on page 26](#)
- [“Power On a Fabric Card” on page 50](#)
- [“Power On a Line Card” on page 81](#)



# Servicing the CMCs

The following table provides a description of a goal you want to achieve, and links to the sequential tasks required to reach that goal.

Description	Links
Add a CMC.	<a href="#">“Inspecting the CMCs” on page 18</a> <a href="#">“Install a CMC” on page 24</a> <a href="#">“Power On a CMC” on page 26</a>
Replace a CMC.	<a href="#">“Inspecting the CMCs” on page 18</a> <a href="#">“Power Off a CMC” on page 21</a> <a href="#">“Remove a CMC” on page 22</a> <a href="#">“Install a CMC” on page 24</a> <a href="#">“Power On a CMC” on page 26</a>
Subtract a CMC.	<a href="#">“Power Off a CMC” on page 21</a> <a href="#">“Remove a CMC” on page 22</a>

**Related Information**

- [“Servicing the Power Supplies” on page 6](#)
- [“Servicing the Fans” on page 27](#)

- [“Servicing the Fabric Cards and Fabric Card Fillers” on page 35](#)
- [“Servicing the InfiniBand Cables” on page 52](#)
- [“Servicing the Line Cards” on page 64](#)
- [“Doing Supportive Software Tasks” on page 82](#)

## Inspecting the CMCs

Before installing a CMC, inspect its hardware and connectors to verify its suitability for installation.

Step	Description	Links
1.	Identify the CMC.	<a href="#">“Identify the CMC” on page 18</a>
2.	Inspect the CMC hardware.	<a href="#">“Inspect the CMC Hardware” on page 20</a>
3.	Inspect the CMC connectors.	<a href="#">“Inspect the CMC Connectors” on page 21</a>

### Related Information

- [“Inspecting the Power Supplies” on page 7](#)
- [“Inspecting the Fans” on page 28](#)
- [“Inspecting the Fabric Cards” on page 36](#)
- [“Inspecting the InfiniBand Cables” on page 53](#)
- [“Inspecting the Line Cards” on page 65](#)

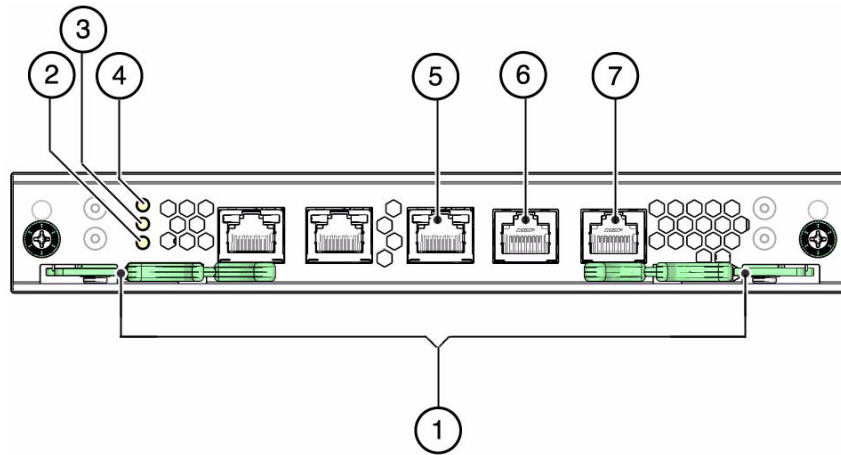
## ▼ Identify the CMC

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the CMCs” on page 18](#).

2. **Use the illustration to identify the various features of a CMC.**

**FIGURE:** CMC Features



**Figure Legend**

---

1	Release levers
2	Ready to Remove LED
3	Attention LED
4	OK LED
5	NET MGT port
6	Debug port
7	SER MGT port

---

### 3. Inspect the CMC hardware.

See [“Inspect the CMC Hardware”](#) on page 20.

### Related Information

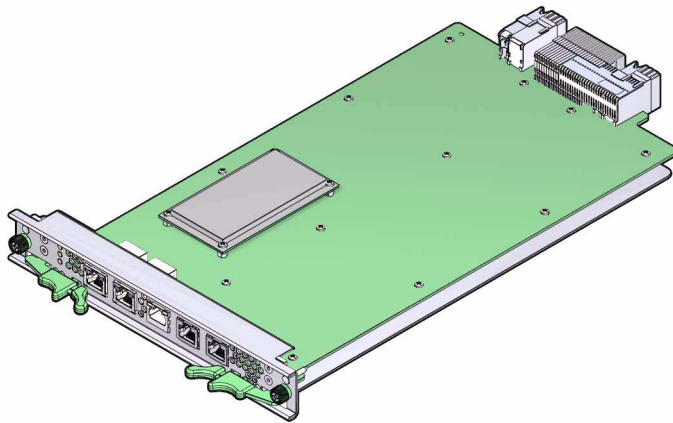
- [“Identify the Power Supply”](#) on page 7
- [“Identify the Fan”](#) on page 28
- [“Identify the Fabric Card”](#) on page 37
- [“Identify the InfiniBand Cable”](#) on page 54
- [“Identify the Line Card”](#) on page 65

## ▼ Inspect the CMC Hardware

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Inspecting the CMCs” on page 18](#).

2. Unwrap the replacement CMC from its antistatic packaging.
3. Verify that there is no visible damage to the CMC board.



4. Verify that the release button unsecurcs the release handle and permits the handle to snap closed.
5. Verify that the release handle moves freely and smoothly.
6. Inspect the CMC connectors.

See [“Inspect the CMC Connectors” on page 21](#).

### Related Information

- [“Inspect the Power Supply Hardware” on page 9](#)
- [“Inspect the Fan Hardware” on page 30](#)
- [“Inspect the Fabric Card Chassis” on page 39](#)
- [“Inspect the InfiniBand Cable Hardware” on page 55](#)
- [“Inspect the Line Card Chassis” on page 67](#)

## ▼ Inspect the CMC Connectors

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Inspecting the CMCs” on page 18](#).

2. Verify that the connectors are clean and without damage.
3. Verify that connector pins are straight and not missing.
4. Verify that connector receptacles are free from obstructions.
5. The CMC is ready for installation.

See [“Install a CMC” on page 24](#).

### Related Information

- [“Inspect the Power Supply Connectors” on page 10](#)
- [“Inspect the Fan Connector” on page 31](#)
- [“Inspect the Fabric Card XROW Connectors” on page 40](#)
- [“Inspect the InfiniBand Cable Connectors” on page 55](#)
- [“Inspect the Line Card XROW Connectors” on page 68](#)
- [“Inspect the Line Card CXP Connectors” on page 69](#)

## ▼ Power Off a CMC

A CMC cannot be powered off. Instead, deactivate the CMC if it is the active CMC.

---

**Note** – Use the table in [“Component Addressing” on page 3](#) to determine the slot number or IPMB address of your component.

---

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Servicing the CMCs” on page 17](#).

2. If the active CMC is to be removed, use the `clia switchover` command to transfer administration duties to the other CMC.

For example:

```
# clia switchover
```

### 3. Remove the CMC.

See [“Remove a CMC” on page 22](#).

#### **Related Information**

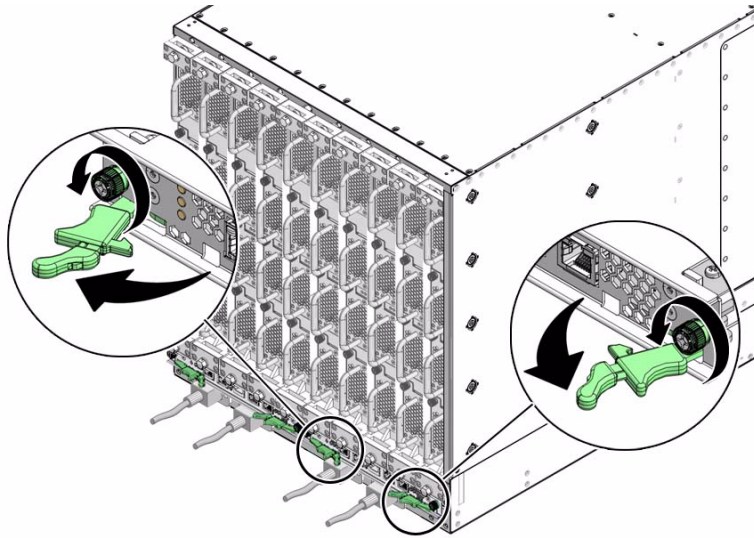
- *Switch Reference*, `clia switchover` command
- [“Power On a CMC” on page 26](#)
- [“Power Off a Power Supply” on page 10](#)
- [“Power Off a Fabric Card” on page 42](#)
- [“Power Off a Line Card” on page 70](#)

## ▼ Remove a CMC

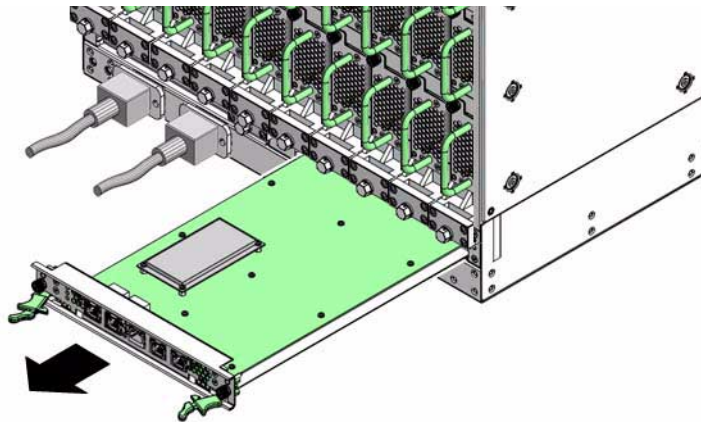
1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Servicing the CMCs” on page 17](#).

2. Remove any cables connected to the CMC front panel.
3. Loosen the two thumbscrews above the release levers.
4. Squeeze the latches on the release levers and wait for the blue Ready-to-Remove LED to light.
5. Swing the release levers outward.



6. Slowly pull the CMC from the chassis.



7. Set the CMC aside.
8. Install a replacement CMC.  
See [“Install a CMC”](#) on page 24.

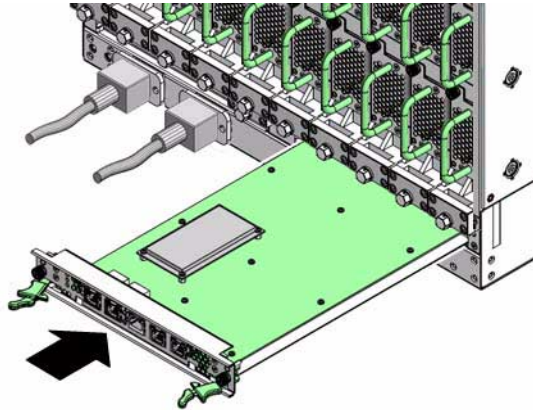
### Related Information

- [“Remove a Power Supply”](#) on page 11

- “Remove a Fan” on page 31
- “Remove a Fabric Card or Fabric Card Filler” on page 44
- “Remove an InfiniBand Cable” on page 56
- “Remove a Line Card” on page 71

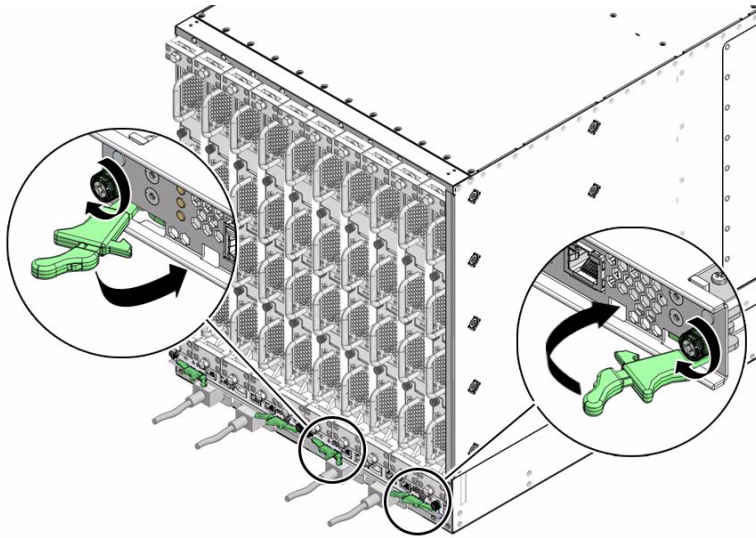
## ▼ Install a CMC

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.  
See the table in “Servicing the CMCs” on page 17.
2. Inspect the replacement CMC.  
See “Inspecting the CMCs” on page 18.
3. Inspect the slot where the CMC will install to be clean and free of debris.
4. Squeeze the latches on the release levers and swing the levers outward.
5. Set the back of the CMC onto the rails inside the chassis.
6. Carefully slide the CMC into the chassis until the release levers move.



7. Swing the release levers inward to secure the CMC into the chassis.





**8. Tighten the thumbscrews above the release levers.**

---

**Note** – Make the thumbscrews *only* finger tight. *Do not* use a screwdriver.

---

**9. Reconnect the cables you removed previously to the front panel.**

**10. Power on the CMC.**

See [“Power On a CMC”](#) on page 26.

**Related Information**

- [“Remove a CMC”](#) on page 22
- [“Install a Power Supply”](#) on page 13
- [“Install a Fan”](#) on page 33
- [“Install a Fabric Card or Fabric Card Filler”](#) on page 47
- [“Install an InfiniBand Cable”](#) on page 59
- [“Install a Line Card”](#) on page 77

## ▼ Power On a CMC

---

**Note** – Use the table in “[Component Addressing](#)” on page 3 to determine the slot number or IPMB address of your component.

---

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.  
See the table in “[Servicing the CMCs](#)” on page 17.
2. Verify the firmware version with the `clia version` command.
3. If necessary, upgrade the firmware on the CMC.  
See “[Upgrading the Firmware](#)” on page 87.
4. Make the new CMC active with the `clia switchover` command.
5. Set the IP address for the new CMC with the `clia setlanconfig` command.
6. Add the users with the `clia user add` command.
7. Set the CMC’s name with the `clia localaddress` command.
8. (Optional) Display and record the CMC’s FRU ID information:

```
# clia fruinfo IPMB_address 0
```

where `IPMB_address` is from “[Component Addressing](#)” on page 3.

The following example is the output for CMC 0:

```
# clia fruinfo 10 0
Pigeon Point Shelf Manager Command Line Interpreter
10: FRU # 0, FRU Info
Common Header:      Format Version = 1
Board Info Area:
  Version           = 1
  Language Code      = 25
  Mfg Date/Time      = May 22 09:16:00 2009 (7042156 minutes since 1996)
  Board Manufacturer = Sun Microsystems
  Board Product Name = Sun Datacenter Switch DCS 648 - CMC board
  Board Serial Number = 0110SJC-0911CM0001
  Board Part Number  = 541-3807-02
  FRU Programmer File ID = M9_CMC_FRU_541-3807-02_0110SJC-0911CM0001.txt
Product Info Area:
  Version           = 1
  Language Code      = 25
  Manufacturer Name  = Sun Microsystems
```

```

Product Name           = Sun Datacenter Switch DCS 648 - CMC board
Product Part / Model#  = 541-3807-02
Product Version        = Rev 50
Product Serial Number  = 0110SJC-0905CM0003
Asset Tag              = none
FRU Programmer File ID = M9_CMC_FRU_541-3807-02_0110SJC-0911CM0001.txt
Multi Record Area:
  PICMG Board Point-to-Point Connectivity Record (ID=0x14)
    Version = 0
  Record Type           = 0xc0 OEM Defined Record
    Version = 2
  PPS IPMB Topology Record (ID=0x05)
    Version = 0
#

```

### Related Information

- *Switch Reference*, version command
- *Switch Reference*, switchover command
- *Switch Reference*, setlanconfig command
- *Switch Reference*, user add command
- *Switch Reference*, localaddress command
- [“Power Off a CMC” on page 21](#)
- [“Power On a Power Supply” on page 15](#)
- [“Power On a Fabric Card” on page 50](#)
- [“Power On a Line Card” on page 81](#)

## Servicing the Fans

The following table provides a description of a goal you want to achieve, and links to the sequential tasks required to reach that goal.

Description	Links
Add a fan.	<a href="#">“Inspecting the Fans” on page 28</a> <a href="#">“Install a Fan” on page 33</a>
Replace a fan.	<a href="#">“Inspecting the Fans” on page 28</a> <a href="#">“Remove a Fan” on page 31</a> <a href="#">“Install a Fan” on page 33</a>
Subtract a fan.	<a href="#">“Remove a Fan” on page 31</a>

## Related Information

- [“Servicing the Power Supplies” on page 6](#)
- [“Servicing the CMCs” on page 17](#)
- [“Servicing the Fabric Cards and Fabric Card Fillers” on page 35](#)
- [“Servicing the InfiniBand Cables” on page 52](#)
- [“Servicing the Line Cards” on page 64](#)
- [“Doing Supportive Software Tasks” on page 82](#)

## Inspecting the Fans

Before installing a fan, inspect its hardware and connector to verify its suitability for installation.

Step	Description	Links
1.	Identify the fan.	<a href="#">“Identify the Fan” on page 28</a>
2.	Inspect the fan hardware.	<a href="#">“Inspect the Fan Hardware” on page 30</a>
3.	Inspect the fan connectors.	<a href="#">“Inspect the Fan Connector” on page 31</a>

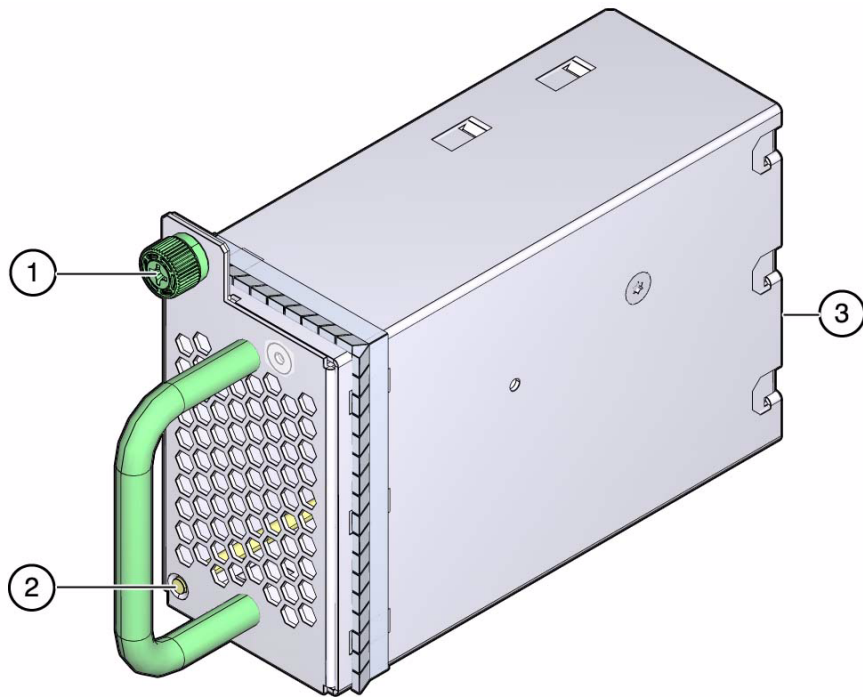
## Related Information

- [“Inspecting the Power Supplies” on page 7](#)
- [“Inspecting the CMCs” on page 18](#)
- [“Inspecting the Fabric Cards” on page 36](#)
- [“Inspecting the InfiniBand Cables” on page 53](#)
- [“Inspecting the Line Cards” on page 65](#)

## ▼ Identify the Fan

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**  
See the table in [“Inspecting the Fans” on page 28](#).
2. **Use the illustration to identify the various features of a fan.**

**FIGURE:** Fan Features



**Figure Legend**

---

1	Thumbscrew
2	Status LED
3	Connector

---

### 3. Inspect the fan hardware.

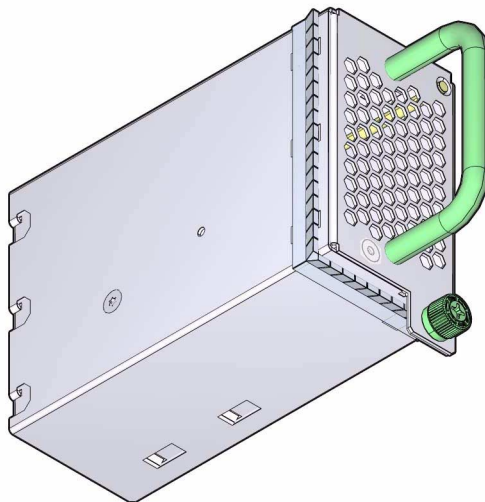
See [“Inspect the Fan Hardware”](#) on page 30.

### Related Information

- [“Identify the Power Supply”](#) on page 7
- [“Identify the CMC”](#) on page 18
- [“Identify the Fabric Card”](#) on page 37
- [“Identify the InfiniBand Cable”](#) on page 54
- [“Identify the Line Card”](#) on page 65

## ▼ Inspect the Fan Hardware

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.  
See the table in [“Inspecting the Fans” on page 28](#).
2. Unwrap the replacement fan from its antistatic packaging.
3. Verify that there is no visible damage to the fan chassis.
4. Verify that the internal door will open and close as the fan is turned upside-down and rightside-up.



5. Verify that the thumbscrew spins freely and smoothly.
6. Inspect the fan connector.  
See [“Inspect the Fan Connector” on page 31](#).

### Related Information

- [“Inspect the Power Supply Hardware” on page 9](#)
- [“Inspect the CMC Hardware” on page 20](#)
- [“Inspect the Fabric Card Chassis” on page 39](#)
- [“Inspect the InfiniBand Cable Hardware” on page 55](#)
- [“Inspect the Line Card Chassis” on page 67](#)

## ▼ Inspect the Fan Connector

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Inspecting the Fans” on page 28](#).

2. Verify that the connector is clean and without damage.
3. Verify that connector pins are straight and not missing.
4. Verify that connector receptacles are free from obstructions.
5. Verify that the connector freely floats in its mounting.
6. The fan is ready for installation.

See [“Install a Fan” on page 33](#).

### Related Information

- [“Inspect the Power Supply Connectors” on page 10](#)
- [“Inspect the CMC Connectors” on page 21](#)
- [“Inspect the Fabric Card XBOW Connectors” on page 40](#)
- [“Inspect the InfiniBand Cable Connectors” on page 55](#)
- [“Inspect the Line Card XBOW Connectors” on page 68](#)
- [“Inspect the Line Card CXP Connectors” on page 69](#)

## ▼ Remove a Fan

---

**Note** – Fans are hot-swappable and do not require powering off for removal.

---

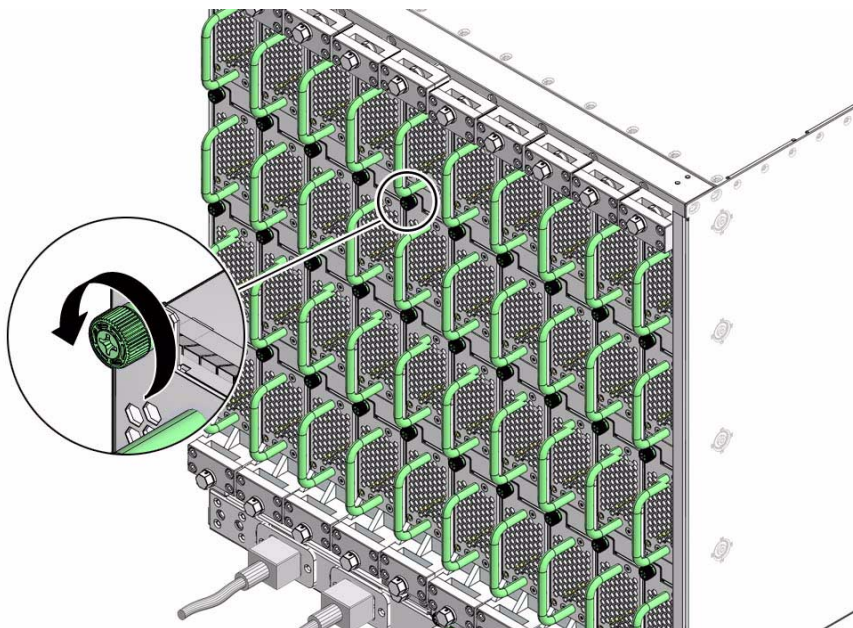
1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Servicing the Fans” on page 27](#).

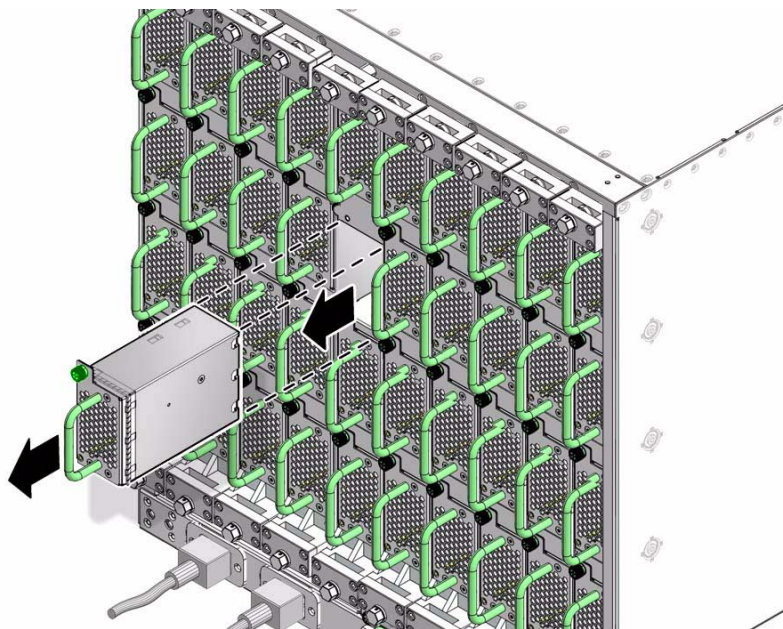
2. Determine which fan is to be removed.

If a fan has failed, its LED lights.

3. Loosen the captive thumbscrew at the top of the fan.



**4. Grasp the handle and pull the fan straight out.**



**5. Set the fan aside.**



**6. Install a replacement fan.**

See [“Install a Fan” on page 33](#).

**Related Information**

- [“Remove a Power Supply” on page 11](#)
- [“Remove a CMC” on page 22](#)
- [“Remove a Fabric Card or Fabric Card Filler” on page 44](#)
- [“Remove an InfiniBand Cable” on page 56](#)
- [“Remove a Line Card” on page 71](#)

## ▼ Install a Fan

---

**Note** – Fans are hot-swappable and can be inserted into live fabric cards.

---

**1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Servicing the Fans” on page 27](#).

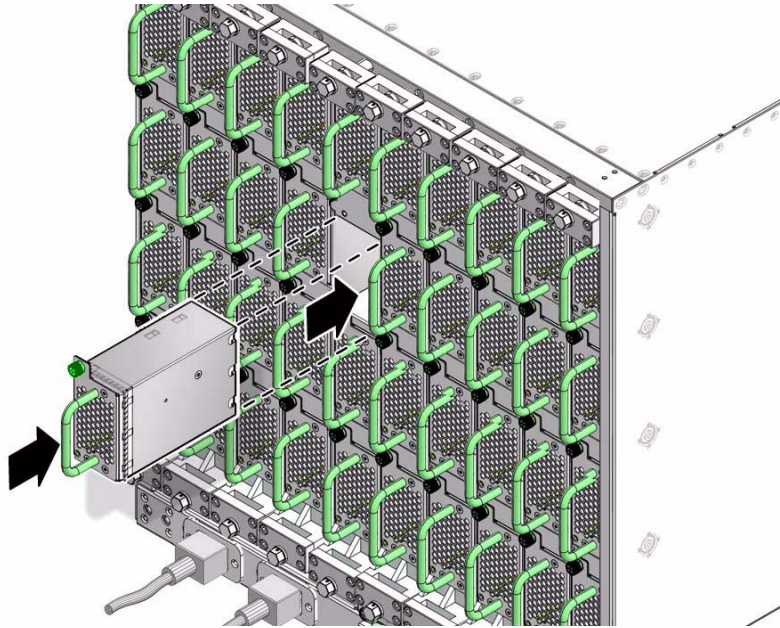
**2. Inspect the replacement fan.**

See [“Inspecting the Fans” on page 28](#).

**3. Inspect the slot where the fan will install to be clean and free of debris.**

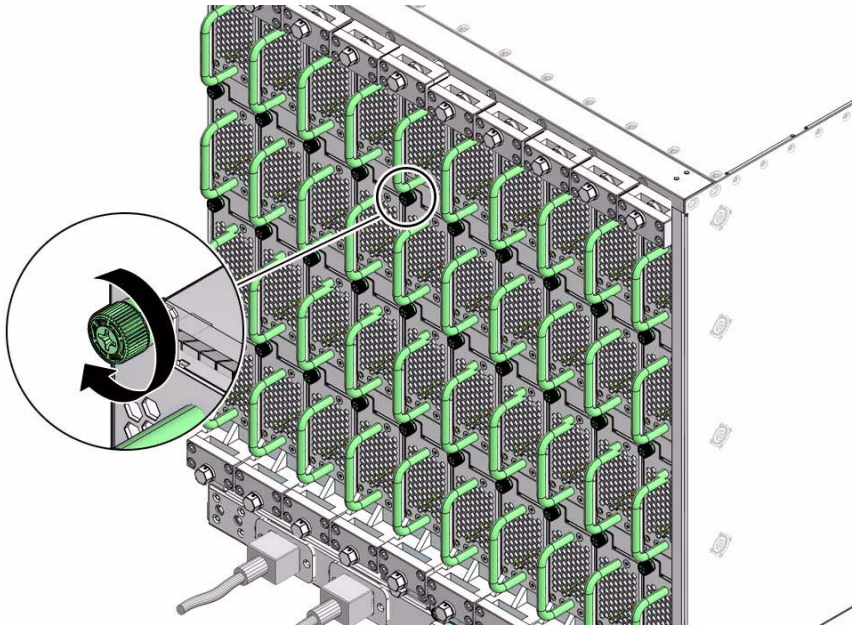
**4. Orient the fan over the opening in the fabric card with the LED at the bottom.**

**5. Slide the fan into the fabric card until the fan stops.**



The fan might immediately power on.

6. Tighten the captive thumbscrew to secure the fan in the fabric card.



7. Verify that the fan LED goes out.

8. Use the `checkfans` command to verify the fan's operation.

For example, to check the fans in fabric card 0:

```
# checkfans | grep 'FC 0'
Checking M9 fans...
FC 0 Fan 0 RPM = 24356.000000
FC 0 Fan 1 RPM = 24356.000000
FC 0 Fan 2 RPM = 24070.000000
FC 0 Fan 3 RPM = 24356.000000
#
```

---

**Note** – Use the table in [“Component Addressing” on page 3](#) to determine the slot number or IPMB address of your component.

---

### Related Information

- *Switch Reference*, `checkfans` command
- [“Remove a Fan” on page 31](#)
- [“Install a Power Supply” on page 13](#)
- [“Install a CMC” on page 24](#)
- [“Install a Fabric Card or Fabric Card Filler” on page 47](#)
- [“Install an InfiniBand Cable” on page 59](#)
- [“Install a Line Card” on page 77](#)

---

## Servicing the Fabric Cards and Fabric Card Fillers

---

**Note** – Fabric card fillers look similar to and have fans like fabric cards. Additionally, procedures for addition, replacement, and subtraction of fabric card fillers are similar to those for fabric cards.

---

The following table provides a description of a goal you want to achieve, and links to the sequential tasks required to reach that goal.



---

**Caution** – To maintain switch chassis thermal management, never operate the switch with a vacant fabric card slot. Install either a fabric card or fabric card filler into the slot. If a fabric card is removed without replacement (subtracted) a fabric card filler *must* be installed into the vacated slot.

---

Description	Links
Add a fabric card.	<a href="#">“Inspecting the Fabric Cards” on page 36</a> <a href="#">“Remove a Fabric Card or Fabric Card Filler” on page 44 (removing the filler)</a> <a href="#">“Install a Fabric Card or Fabric Card Filler” on page 47</a> <a href="#">“Power On a Fabric Card” on page 50</a>
Replace a fabric card.	<a href="#">“Inspecting the Fabric Cards” on page 36</a> <a href="#">“Power Off a Fabric Card” on page 42</a> <a href="#">“Remove a Fabric Card or Fabric Card Filler” on page 44</a> <a href="#">“Install a Fabric Card or Fabric Card Filler” on page 47</a> <a href="#">“Power On a Fabric Card” on page 50</a>
Subtract a fabric card.	<a href="#">“Power Off a Fabric Card” on page 42</a> <a href="#">“Remove a Fabric Card or Fabric Card Filler” on page 44</a> <a href="#">“Install a Fabric Card or Fabric Card Filler” on page 47 (installing the filler)</a>

### Related Information

- [“Servicing the Power Supplies” on page 6](#)
- [“Servicing the CMCs” on page 17](#)
- [“Servicing the Fans” on page 27](#)
- [“Servicing the InfiniBand Cables” on page 52](#)
- [“Servicing the Line Cards” on page 64](#)
- [“Doing Supportive Software Tasks” on page 82](#)

## Inspecting the Fabric Cards

Before installing a fabric card, inspect its chassis, hardware, and connectors to verify its suitability for installation.

Step	Description	Links
1.	Identify the fabric card.	<a href="#">“Identify the Fabric Card” on page 37</a>

Step	Description	Links
2.	Inspect the fabric card chassis.	<a href="#">“Inspect the Fabric Card Chassis” on page 39</a>
3.	Inspect the fabric card retainer bolts.	<a href="#">“Inspect the Fabric Card Retainer Bolts” on page 39</a>
4.	Inspect the fabric card fans.	<a href="#">“Inspect the Fabric Card Fans” on page 40</a>
5.	Inspect the fabric card XBOW connectors.	<a href="#">“Inspect the Fabric Card XBOW Connectors” on page 40</a>

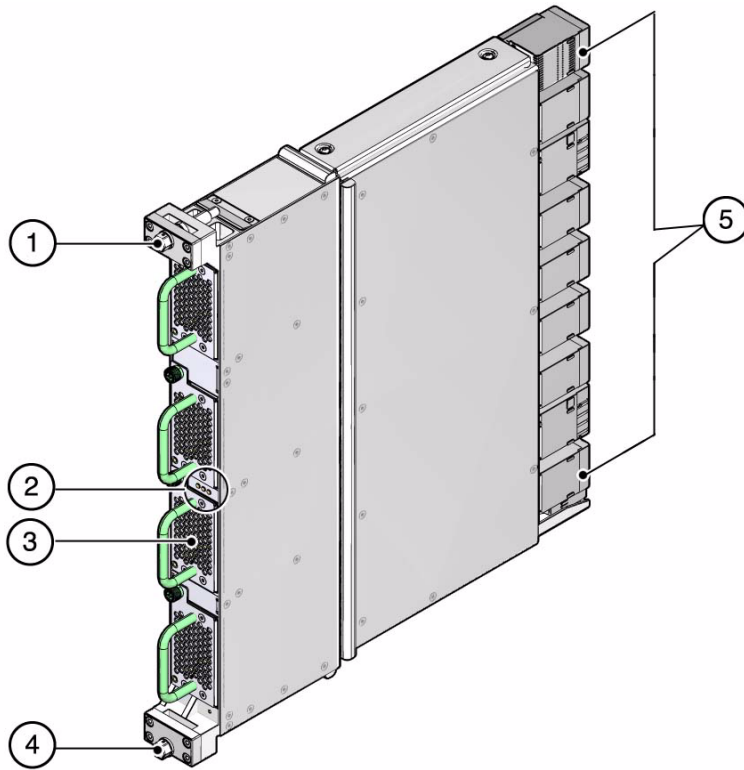
### Related Information

- [“Inspecting the Power Supplies” on page 7](#)
- [“Inspecting the CMCs” on page 18](#)
- [“Inspecting the Fans” on page 28](#)
- [“Inspecting the InfiniBand Cables” on page 53](#)
- [“Inspecting the Line Cards” on page 65](#)

## ▼ Identify the Fabric Card

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**  
See the table in [“Inspecting the Fabric Cards” on page 36](#).
2. **Use the illustration to identify the various features of a fabric card.**

**FIGURE:** Fabric Card Features



**Figure Legend**

- |   |                     |
|---|---------------------|
| 1 | Upper retainer bolt |
| 2 | Status LEDs         |
| 3 | Fans                |
| 4 | Lower retainer bolt |
| 5 | XROW connectors     |

### 3. Inspect the fabric card chassis.

See [“Inspect the Fabric Card Chassis”](#) on page 39.

### Related Information

- [“Identify the Power Supply”](#) on page 7
- [“Identify the CMC”](#) on page 18
- [“Identify the Fan”](#) on page 28
- [“Identify the InfiniBand Cable”](#) on page 54
- [“Identify the Line Card”](#) on page 65

## ▼ Inspect the Fabric Card Chassis

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the Fabric Cards” on page 36](#).

2. **Unwrap the replacement fabric card from its antistatic packaging.**
3. **Verify that there is no visible damage to the fabric card chassis.**
4. **Inspect the retainer bolts.**

See [“Inspect the Fabric Card Retainer Bolts” on page 39](#).

### **Related Information**

- [“Inspect the Power Supply Hardware” on page 9](#)
- [“Inspect the CMC Hardware” on page 20](#)
- [“Inspect the Fan Hardware” on page 30](#)
- [“Inspect the InfiniBand Cable Hardware” on page 55](#)
- [“Inspect the Line Card Chassis” on page 67](#)

## ▼ Inspect the Fabric Card Retainer Bolts

The two retainer bolts on the fabric card serve three purposes:

- Align the fabric card for proper insertion into the chassis.
- Allow final insertion of the fabric card into the chassis and simplify the physical connection of the fabric card connectors to the midplane connectors.
- Allow extraction of the fabric card from the chassis and simplify the physical disconnection of the fabric card connectors from the midplane connectors.

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the Fabric Cards” on page 36](#).

2. **Ensure that the retainer bolts look finished, are clean, rotate smoothly, do not bind, or do not feel loose or sloppy in any way.**

3. **Inspect the fabric card fans.**

See [“Inspect the Fabric Card Fans” on page 40](#).

### **Related Information**

- [“Inspect the Line Card Retainer Bolts” on page 67](#)

## ▼ Inspect the Fabric Card Fans

The fans of the fabric card are FRU components. The fans secure in position with a thumbscrew.

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the Fabric Cards” on page 36](#).

2. **Ensure that each fan is seated properly in the fabric card.**
3. **Ensure that the thumbscrew is finger-tight on each fan.**
4. **Inspect the XBOW connectors.**

See [“Inspect the Fabric Card XBOW Connectors” on page 40](#).

### **Related Information**

- [“Inspecting the Fans” on page 28](#)

## ▼ Inspect the Fabric Card XBOW Connectors

The XBOW connectors on fabric cards are the receptacles for the midplane connector pins. These connectors are checked just as meticulously as the midplane connector pins. However, you must verify that no connectors are damaged and no holes are blocked.

You need the following tools:

- Flashlight
- Magnifying glass

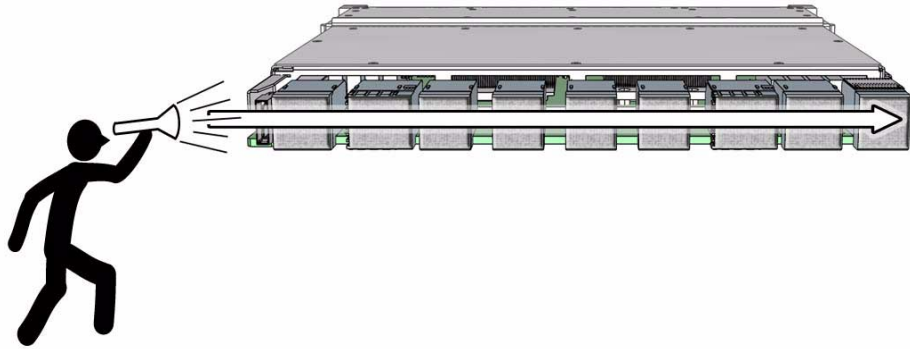
1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the Fabric Cards” on page 36](#).

2. **Place the fabric card on a work surface with the XBOW connectors facing you.**
3. **Using the flashlight positioned to the side and above you, look at the holes of the left-end connector.**

Look at the holes straight on.





---

**Note** – Do not look at the individual holes, rather look at all of the connector’s holes as a group. A damaged or contaminated hole will be apparent.

---

**4. Look for any closed over or contaminated holes.**

A closed-over or contaminated hole appears brighter than the surrounding holes.

**5. Look for any enlarged or cracked holes.**

An enlarged or cracked hole appears darker than the surrounding holes.

**6. Move your head slightly right to the next connector, and inspect its pins, repeating [Step 4](#) and [Step 5](#).**

**7. Continue in this manner for each connector until you reach the right side of the fabric card.**

**8. The fabric card is ready for installation.**

See [“Install a Fabric Card or Fabric Card Filler”](#) on page 47.

**Related Information**

- [“Inspect the Power Supply Connectors”](#) on page 10
- [“Inspect the CMC Connectors”](#) on page 21
- [“Inspect the Fan Connector”](#) on page 31
- [“Inspect the InfiniBand Cable Connectors”](#) on page 55
- [“Inspect the Line Card XBOW Connectors”](#) on page 68
- [“Inspect the Line Card CXP Connectors”](#) on page 69

## ▼ Power Off a Fabric Card

In this procedure, you use issue commands to both the CMC and the Linux InfiniBand host.

---

**Note** – Use the table in “[Component Addressing](#)” on page 3 to determine the slot number or IPMB address of your component.

---



---

**Caution** – Before beginning this procedure, have a replacement fabric card or replacement fabric card filler prepared and standing by for immediate installation. A quick exchange is necessary to maintain chassis thermal management.

---

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in “[Servicing the Fabric Cards and Fabric Card Fillers](#)” on page 35.

2. **Power off the fabric card from the CMC, using the `deactivate` command.**

For example, if you are removing fabric card 0:

```
# deactivate fc 0
Deactivating FC 0
Pigeon Point Shelf Manager Command Line Interpreter
  Command issued via IPMB, status = 0 (0x0)
  Command executed successfully
#
```

---

**Note** – Once deactivated and disabled, the links provided by the fabric card are now lost. The Subnet Manager attempts to establish new routes for those links while you continue the procedure.

---

3. **If you are permanently removing a fabric card from an InfiniBand fabric using the fat-tree routing algorithm, you must remove the respective GUIDs from the `/etc/opensm/guid.txt` file.**

Otherwise, go to [Step 4](#).

- a. Type the following command on the CMC to retrieve the fabric card base GUID:

```
# getbaseguid fc slot
```

where *slot* is the number of the fabric card to be removed. For example:

```
# getbaseguid fc 0
Base GUID = 0x00bad0fc0009f000
#
```

- b. For the GUID, add the following values to make two new sums:

- 0xa2
- 0xb2

---

**Note** – For a GUID that ends with two zeros (00), you are effectively replacing the zeros with a2 and b2.

---

For example, 0x00bad0fc0009f000 becomes:

- 0x00bad0fc0009f0a2
- 0x00bad0fc0009f0b2

- c. On the Linux InfiniBand host, use a text editor to remove these two entries from the `/etc/opensm/guid.txt` file.

- d. Restart the Subnet Manager on the Linux InfiniBand host:

```
# /etc/init.d/opensmd stop
Stopping IB Subnet Manager... [ OK ]
# /etc/init.d/opensmd start
Starting IB Subnet Manager. [ OK ]
#
```

4. Disable the fabric card from the CMC with the `disableboard` command.

For example, to disable fabric card 0:

```
# disableboard fc 0
fc 0 is M1 state, turning off stby
STBY for fc 0 is off
#
```

5. Remove the fabric card.

See [“Remove a Fabric Card or Fabric Card Filler”](#) on page 44.

### Related Information

- *Switch Reference*, deactivate command
- *Switch Reference*, getbaseguid command
- *Switch Reference*, opensm command
- *Switch Reference*, disableboard command
- [“Power On a Fabric Card” on page 50](#)
- [“Power Off a Power Supply” on page 10](#)
- [“Power Off a CMC” on page 21](#)
- [“Power Off a Line Card” on page 70](#)

## ▼ Remove a Fabric Card or Fabric Card Filler

---

**Note** – Removing a fabric card or a fabric card filler is the same task.

---

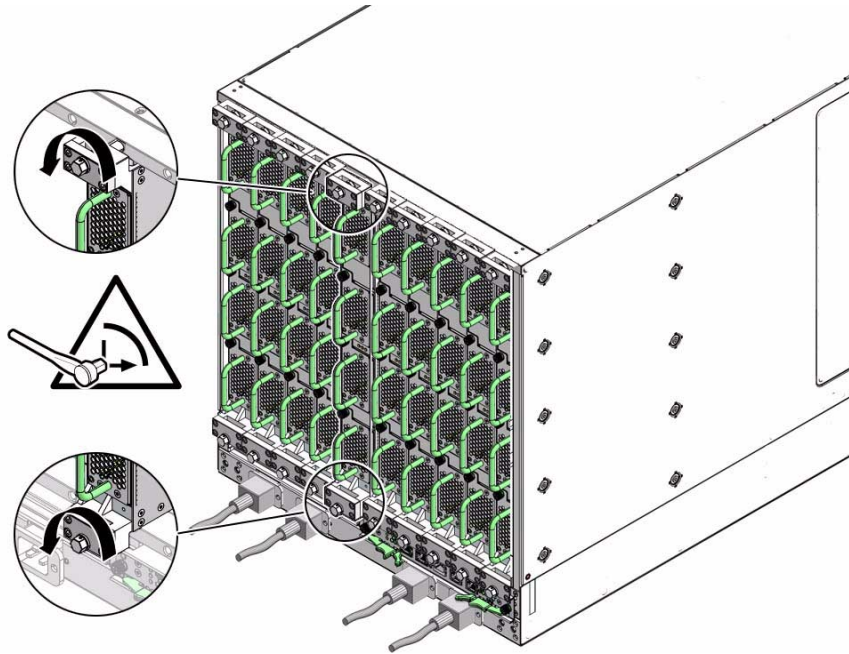


---

**Caution** – Removing the fabric card is a methodical task and cannot be rushed. To prevent damage to the fabric card or the midplane XBOW connectors, pay close attention to the procedure and work slowly.

---

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**  
See the table in [“Servicing the Fabric Cards and Fabric Card Fillers” on page 35](#).
2. **Using a 10 mm socket and ratchet, turn the lower retainer bolt 1/4 turn counter-clockwise.**



3. Turn the upper retainer bolt 1/4 turn counter-clockwise.

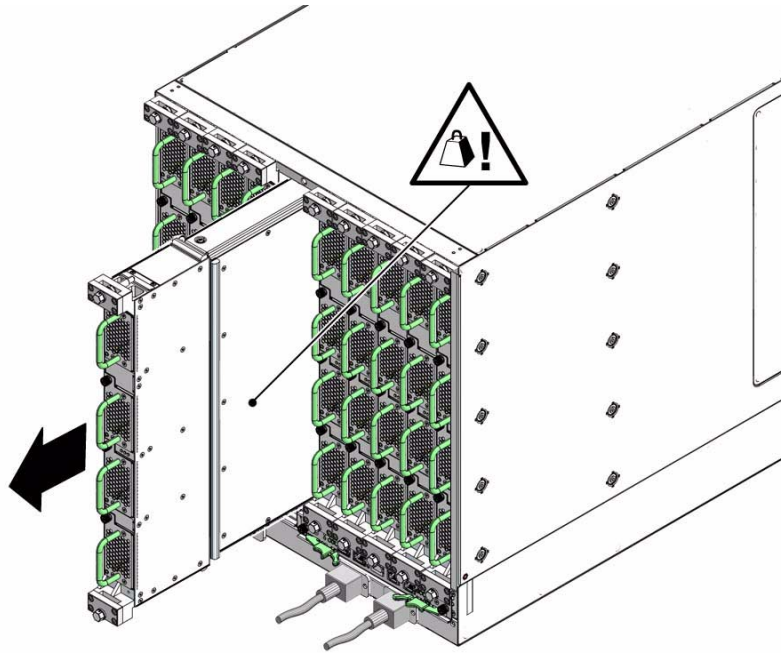



---

**Caution** – Do not turn the retainer bolts more than 1/4 revolution each time. Turning more than 1/4 turn damages the fabric card and midplane XBOW connectors.

---

4. Repeat [Step 2](#) and [Step 3](#) at least 12 times until you feel very little resistance to turning and the fabric card is extended approximately 10 mm (0.5 in.) from the rear of the chassis.
5. Grasp the handles at both ends of the fabric card and slowly pull it from the chassis.  
Stop when the fabric card is halfway out.



6. Improve your grip to support the weight of the fabric card.
7. Continue to pull the fabric card out.
8. Lift the fabric card out and away from the chassis.
9. Set the fabric card onto a flat horizontal work surface.
10. Inspect the slot from where the fabric card was removed for debris and loose gasketing.
11. Remove any debris or gasketing material from the slot.
12. Immediately install a replacement fabric card or fabric card filler into the vacant slot.

See [“Install a Fabric Card or Fabric Card Filler”](#) on page 47.

### Related Information

- [“Remove a Power Supply”](#) on page 11
- [“Remove a CMC”](#) on page 22
- [“Remove a Fan”](#) on page 31
- [“Remove an InfiniBand Cable”](#) on page 56
- [“Remove a Line Card”](#) on page 71

## ▼ Install a Fabric Card or Fabric Card Filler

---

**Note** – Installing a fabric card or a fabric card filler is the same task.

---



---

**Caution** – Installing the fabric card is a methodical task and cannot be rushed. To prevent damage to the fabric card or the midplane XBOW connectors, pay close attention to the procedure and work slowly.

---

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Servicing the Fabric Cards and Fabric Card Fillers”](#) on page 35.

2. **Inspect the replacement fabric card.**

See [“Inspecting the Fabric Cards”](#) on page 36.

3. **Inspect the slot where the fabric card will install for debris and loose gasketing.**



---

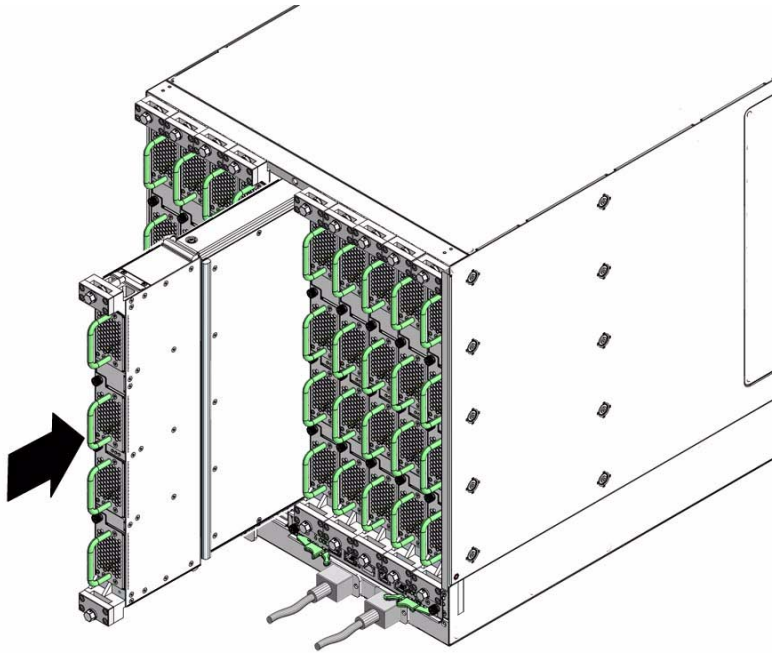
**Caution** – You must remove any debris or gasketing material from the fabric card slot prior to installing the fabric card or fabric card filler. Failure to clean the slot might result in damage to the fabric card, fabric card filler, or midplane XBOW connectors upon installation of the fabric card or fabric card filler.

---

4. **Lift the fabric card from the work surface and orient it vertically, with the wide rail at the top and the narrow rail at the bottom.**

5. **Insert the fabric card into the chassis at the vacant slot.**

Ensure that the fabric card is vertical.



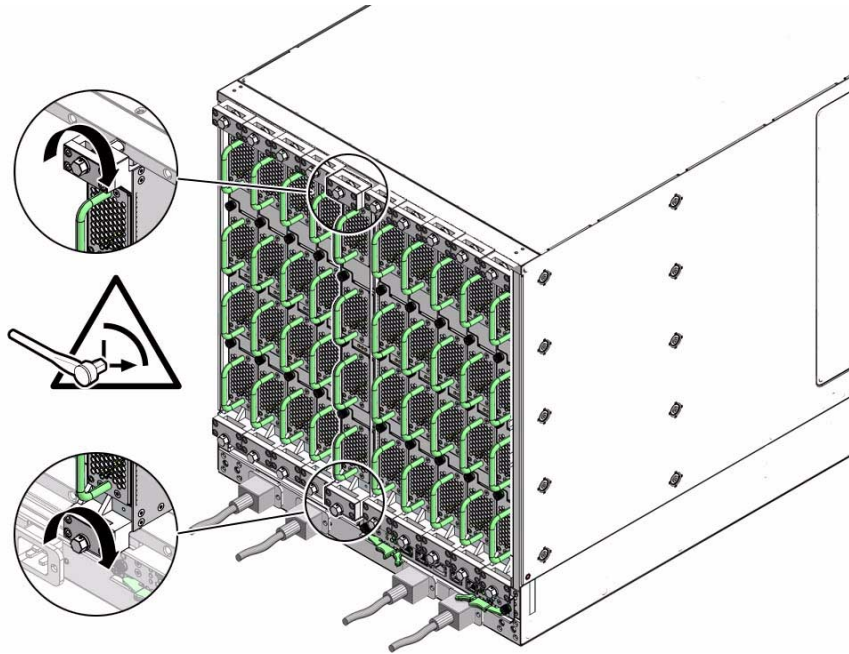
---

**Note** – Once the fabric card is about halfway into the slot, it is no longer necessary to bear the weight of the fabric card.

---

6. **Continue to slide the fabric card in, maintaining a vertical orientation.**  
When you feel resistance, stop.
7. **While pressing the fabric card in with one hand, rotate the retainer bolts clockwise by hand so that they engage.**  
When you feel resistance in the retainer bolts, stop.
8. **Using a 10 mm socket and ratchet, turn the lower retainer bolt 1/4 turn clockwise.**





9. Turn the upper retainer bolt 1/4 turn clockwise.




---

**Caution** – Do not turn the retainer bolts more than 1/4 revolution each time. Turning more than 1/4 turn damages the fabric card and midplane XBOW connectors.

---

10. Repeat [Step 8](#) and [Step 9](#) about 12 times until you feel resistance to turning and the fabric card is flush to the rear of the chassis.
11. Give each retainer bolt a torque of 2.0 ft-lb (0.27 kg-m).
12. Turn the lower retainer bolt 1/4 turn *counter*-clockwise.
13. Turn the upper retainer bolt 1/4 turn *counter*-clockwise.
14. Repeat [Step 12](#) and [Step 13](#) twice to relieve board deflection.
15. Verify that the fabric card is properly seated in the slot.
16. Power on the fabric card.  
See [“Power On a Fabric Card”](#) on page 50.

#### Related Information

- [“Remove a Fabric Card or Fabric Card Filler”](#) on page 44

- “Install a Power Supply” on page 13
- “Install a CMC” on page 24
- “Install a Fan” on page 33
- “Install an InfiniBand Cable” on page 59
- “Install a Line Card” on page 77

## ▼ Power On a Fabric Card

In this procedure, you issue commands to both the CMC and the Linux InfiniBand host.

---

**Note** – Use the table in “[Component Addressing](#)” on page 3 to determine the slot number or IPMB address of your component.

---

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in “[Servicing the Fabric Cards and Fabric Card Fillers](#)” on page 35.

2. On the CMC, enable the fabric card using the `enablestby` command.

For example, to enable fabric card 0:

```
# enablestby fc 0
fc 0 is now enabled
#
```

3. If your InfiniBand fabric uses the fat-tree algorithm, you must update the root GUID file with the new GUIDs.

Otherwise, go to [Step 4](#).

- a. Type the following command on the CMC to retrieve the fabric card base GUID:

```
# getbaseguid fc slot
```

where *slot* is the number of the fabric card you installed. For example:

```
# getbaseguid fc 0
Base GUID = 0x00bad0fc0009f000
#
```

b. For the GUID, add the following values to make two new sums:

- 0xa2
- 0xb2

---

**Note** – For a GUID that ends with two zeros (00), you are effectively replacing the zeros with a2 and b2.

---

For example, 0x00bad0fc0009f000 becomes:

- 0x00bad0fc0009f0a2
- 0x00bad0fc0009f0b2

c. On the Linux InfiniBand host, use a text editor to add these two new entries to the `/etc/opensm/guid.txt` file.

d. Restart the Subnet Manager on the Linux InfiniBand host:

```
# /etc/init.d/opensmd stop
Stopping IB Subnet Manager...          [ OK ]
# /etc/init.d/opensmd start
Starting IB Subnet Manager.           [ OK ]
#
```

4. On the CMC, power on the fabric card with the `activate` command.

For example, to power on fabric card 0:

```
# activate fc 0
#
```

5. If necessary, upgrade the firmware inside of the fabric card and fabric card filler:

See [“Upgrading the Firmware” on page 87](#).

6. (Optional) Display and record the fabric card FRU ID information:

```
# clia fruinfo IPMB_address 0
```

where `IPMB_address` is from [“Component Addressing” on page 3](#).

The following example is the output for fabric card 0:

```
# clia fruinfo 94 0
Pigeon Point Shelf Manager Command Line Interpreter
94: FRU # 0, FRU Info
Common Header:      Format Version = 1
Board Info Area:
```

```

Version      = 1
Language Code      = 25
Mfg Date/Time      = May  7 09:31:00 2009 (7020571 minutes since 1996)
Board Manufacturer  = Sun Microsystems, Inc.
Board Product Name  = Sun Datacenter Switch DCS 648 - Fabric Card
Board Serial Number = 0110SJC-0918FC0231
Board Part Number   = 541-3811-04
FRU Programmer File ID = m9_fc_fru-info-0110SJC-0918FC0231.inf
Product Info Area:
Version      = 1
Language Code      = 25
Manufacturer Name  = Sun Microsystems, Inc.
Product Name      = Sun Datacenter Switch DCS 648 - Fabric Card
Product Part / Model# = 541-3811-04
Product Version    = Rev 1
Product Serial Number = 0110SJC-0918FC0231
Asset Tag          = none
FRU Programmer File ID = m9_fc_fru-info-0110SJC-0918FC0231.inf
#

```

### Related Information

- *Switch Reference*, enablestby command
- *Switch Reference*, getbaseguid command
- *Switch Reference*, opensm command
- *Switch Reference*, activate command
- [“Power Off a Fabric Card” on page 42](#)
- [“Power On a Power Supply” on page 15](#)
- [“Power On a CMC” on page 26](#)
- [“Power On a Line Card” on page 81](#)

## Servicing the InfiniBand Cables

The following table provides a description of a goal you want to achieve, and links to the sequential tasks required to reach that goal.

Description	Links
Add an InfiniBand cable.	<a href="#">“Inspecting the InfiniBand Cables” on page 53</a> <a href="#">“Install an InfiniBand Cable” on page 59</a>

Description	Links
Replace an InfiniBand cable.	<a href="#">“Inspecting the InfiniBand Cables” on page 53</a> <a href="#">“Remove an InfiniBand Cable” on page 56</a> <a href="#">“Install an InfiniBand Cable” on page 59</a>
Subtract an InfiniBand cable.	<a href="#">“Remove an InfiniBand Cable” on page 56</a>

### Related Information

- [“Servicing the Power Supplies” on page 6](#)
- [“Servicing the CMCs” on page 17](#)
- [“Servicing the Fans” on page 27](#)
- [“Servicing the Fabric Cards and Fabric Card Fillers” on page 35](#)
- [“Servicing the Line Cards” on page 64](#)
- [“Doing Supportive Software Tasks” on page 82](#)

## Inspecting the InfiniBand Cables

Before installing an InfiniBand cable, inspect its hardware and connectors to verify its suitability for installation.

Step	Description	Links
1.	Identify the InfiniBand cable.	<a href="#">“Identify the InfiniBand Cable” on page 54</a>
2.	Inspect the InfiniBand cable hardware.	<a href="#">“Inspect the InfiniBand Cable Hardware” on page 55</a>
3.	Inspect the InfiniBand cable connectors.	<a href="#">“Inspect the InfiniBand Cable Connectors” on page 55</a>

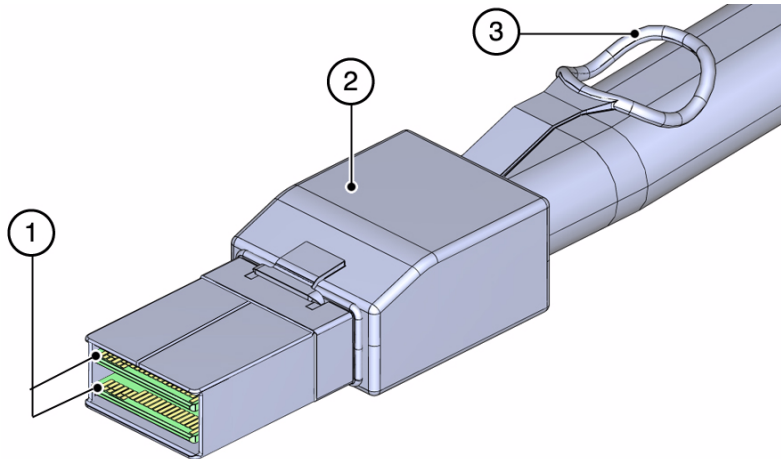
### Related Information

- [“Inspecting the Power Supplies” on page 7](#)
- [“Inspecting the CMCs” on page 18](#)
- [“Inspecting the Fans” on page 28](#)
- [“Inspecting the Fabric Cards” on page 36](#)
- [“Inspecting the Line Cards” on page 65](#)

## ▼ Identify the InfiniBand Cable

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.  
See the table in [“Inspecting the InfiniBand Cables” on page 53.](#)
2. Use the illustration to identify the various features of the InfiniBand cable.

**FIGURE:** InfiniBand Cable Features



**Figure Legend**

1	Paddle boards
2	Shield
3	Retraction strap

3. Inspect the InfiniBand cable hardware.  
See [“Inspect the InfiniBand Cable Hardware” on page 55.](#)

### Related Information

- [“Identify the Power Supply” on page 7](#)
- [“Identify the CMC” on page 18](#)
- [“Identify the Fan” on page 28](#)
- [“Identify the Fabric Card” on page 37](#)
- [“Identify the Line Card” on page 65](#)

## ▼ Inspect the InfiniBand Cable Hardware

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Inspecting the InfiniBand Cables” on page 53](#).

2. Verify that the cable is not cut or damaged.
3. Verify that the cable is not kinked or has a fold.
4. Verify that the cable is of the correct type from its label.
5. Inspect the cable connectors.

See [“Inspect the InfiniBand Cable Connectors” on page 55](#).

### Related Information

- [“Inspect the Power Supply Hardware” on page 9](#)
- [“Inspect the CMC Hardware” on page 20](#)
- [“Inspect the Fan Hardware” on page 30](#)
- [“Inspect the Fabric Card Chassis” on page 39](#)
- [“Inspect the Line Card Chassis” on page 67](#)

## ▼ Inspect the InfiniBand Cable Connectors

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Inspecting the InfiniBand Cables” on page 53](#).

2. Verify that the shell is not bent and is parallel to the inner boards.
3. Verify that there are no contaminants inside of the connector.
4. Verify that the retractor strap adequately operates the hooks.
5. The cable is ready for installation.

See [“Install an InfiniBand Cable” on page 59](#).

### Related Information

- [“Inspect the Power Supply Connectors” on page 10](#)
- [“Inspect the CMC Connectors” on page 21](#)
- [“Inspect the Fan Connector” on page 31](#)
- [“Inspect the Fabric Card XBOW Connectors” on page 40](#)
- [“Inspect the Line Card XBOW Connectors” on page 68](#)

- [“Inspect the Line Card CXP Connectors” on page 69](#)

## ▼ Remove an InfiniBand Cable

This procedure describes how to remove the cables from one line card, so that line card can be replaced. If you are removing cables for several line cards or all line cards, work from the upper line card down. This way, you have more working space as your task progresses.

If you are removing a cable from the switch to replace that cable, consider the following:

- If you are removing a cable from connectors 0A through 5B, start the procedure at connector 5A.
- If you are removing a cable from connectors 6A through 11B, start the procedure at 6A.

---

**Note** – If you are disconnecting all cables for a line card replacement, begin at connector 5A.

---

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Servicing the InfiniBand Cables” on page 52](#).

2. **Locate the connector at 5A or 6A.**

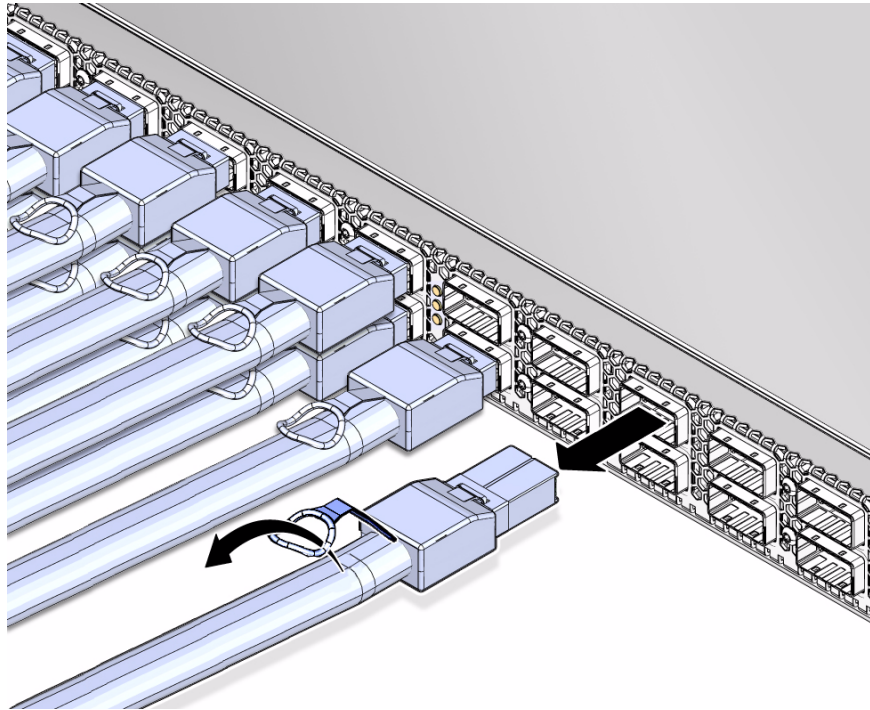
This cable is the upper cable.

3. **Grasp the cable connector to support its weight and apply the removal force.**

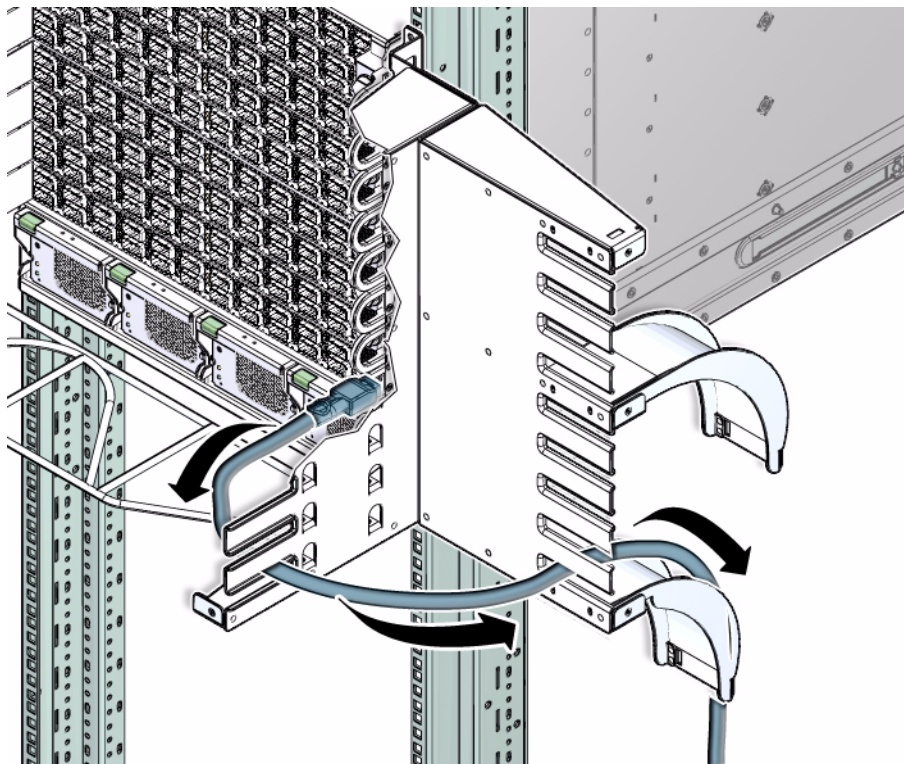
4. **Pull on the loop of the retractor strap while simultaneously pulling on the cable connector.**

The cable connector comes free.





5. Carefully move the cable out of the main trunk of the cable tree.



---

**Note** – “A” cables stack on top of “B” cables. For example, the cable for 5A is on top of the cable for 5B.

---

6. If you are disconnecting cables for a cable replacement, follow these steps:  
Otherwise, go to [Step 7](#).
  - a. Unthread the cable out of the side branch of the cable tree, and off of the cable curve.
  - b. Gently lower the cable to the floor.



---

**Caution** – Do not allow the cable to drop or strike the floor. Jerking, bending, pulling on, or dropping the cable can damage the cable.

---

- c. Go to [Step 8](#).
7. If you are disconnecting all cables for a line card replacement, gently lower the cable so that it is hanging from the side branch.

**8. Consider your next steps:**

- If you are removing a cable from connectors 0A through 5B, repeat [Step 3](#) through [Step 7](#), moving to the left for cables 5B, 4A, 4B, and so on to 0B or the cable that needs replacement.
- If you are removing a cable from connectors 6A through 11B, repeat [Step 3](#) through [Step 7](#), moving to the right for cables 6B, 7A, 7B, and so on to 11B or the cable that needs replacement.
- If you are disconnecting all cables for a line card replacement, repeat [Step 3](#) through [Step 7](#), moving to the left for cables 5B, 4A, 4B, and so on to 0B and then moving to the right for cables 6A, 6B, 7A, 7B, and so on to 11B.

**Related Information**

- [“Remove a Power Supply” on page 11](#)
- [“Remove a CMC” on page 22](#)
- [“Remove a Fan” on page 31](#)
- [“Remove a Fabric Card or Fabric Card Filler” on page 44](#)
- [“Remove a Line Card” on page 71](#)

## ▼ Install an InfiniBand Cable

---

**Note** – “A” cables stack on top of “B” cables. For example, the cable for 5A will stack on top of the cable for 5B.

---

**1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Servicing the InfiniBand Cables” on page 52](#).

**2. Consider your next steps:**

- If you are cabling an entire line card after a replacement procedure, go to [Step 3](#).
- If you are installing a replacement cable to the switch, go to [Step 5](#).

**3. Locate the cable for the connector 0B.**

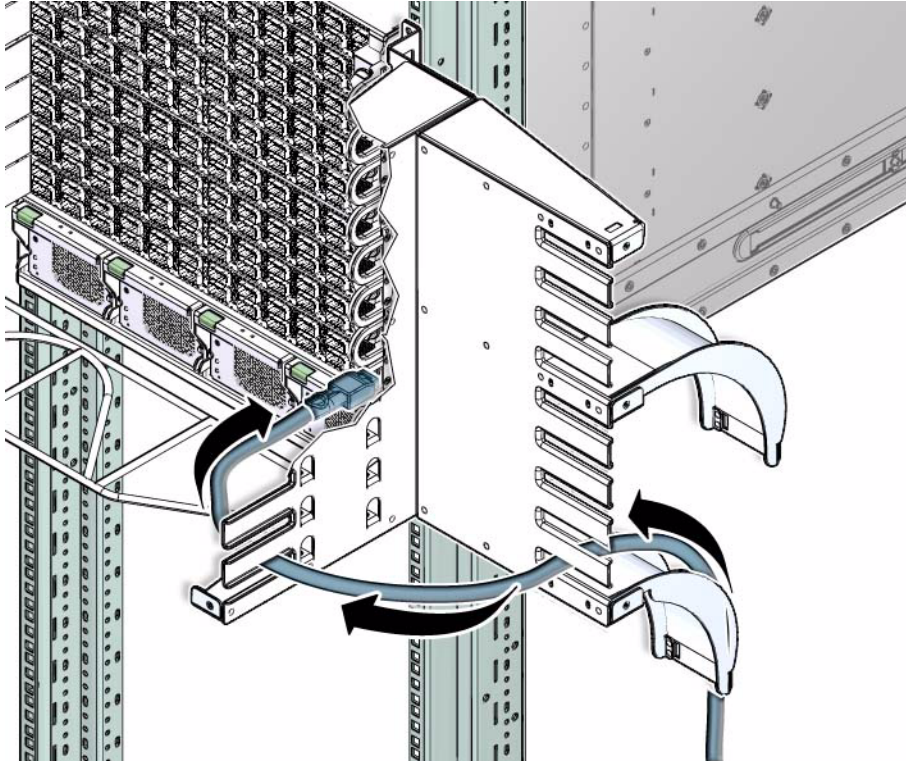
**4. Go to [Step 9](#).**

**5. Inspect the replacement InfiniBand cable.**

See [“Inspecting the InfiniBand Cables” on page 53](#).

**6. Bring the replacement cable to the switch.**

7. Lay the cable over the cable curve.
8. Feed the cable through the side branch of the cable tree.



9. Curve the cable through the main trunk of the cable tree.

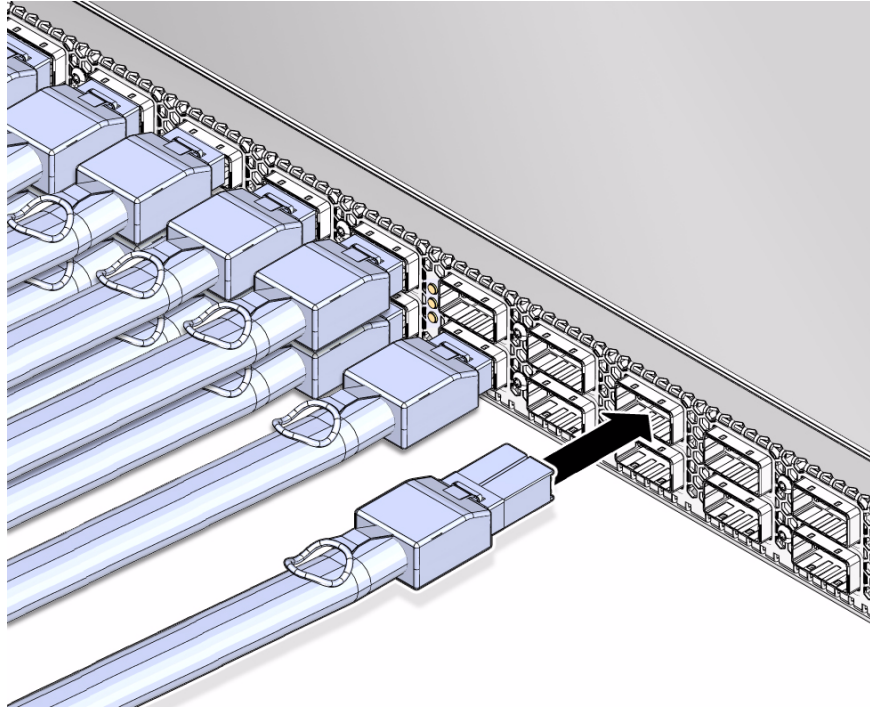


---

**Caution** – Do not allow any copper core InfiniBand cable to bend tighter than a 5 inch (127 mm) radius. Do not allow any optical InfiniBand cable to bend tighter than a 3.4 inch (85 mm) radius. Tight bends can damage the cable internally.

---

10. Plug the cable into the appropriate connector.



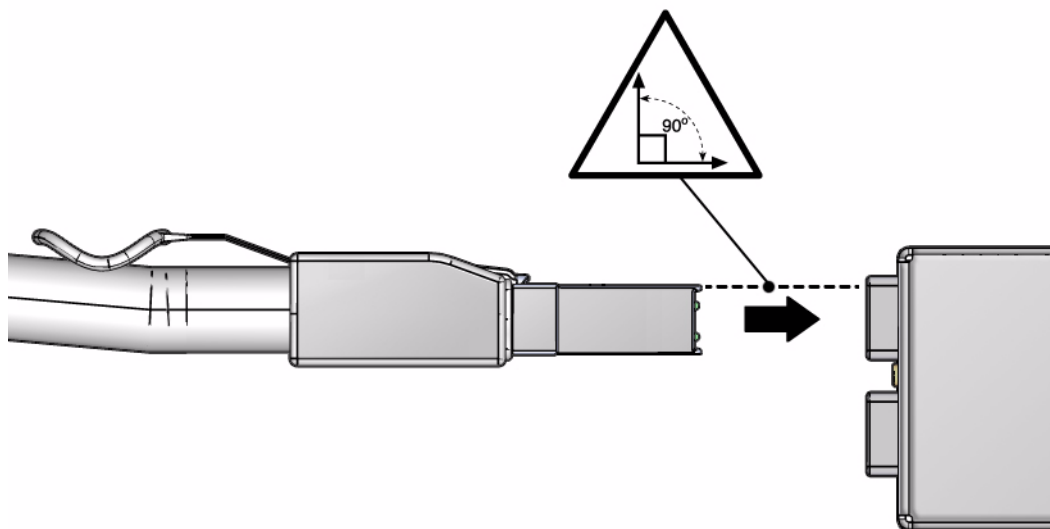
- a. **Visually inspect the cable connector to see whether the shell is not bent and is parallel to the inner boards.**

If the shell is bent or damaged, get a different cable.

- b. **Ensure that the retraction strap is forward.**

- c. **Orient the cable connector to horizontal.**

Ensure that the upper shell just touches the underside of the top of the receptacle on the line card.



**d. Slowly move the connector in.**

As you slide the connector in, the top of the shell should scrape against the underside of the top of the receptacle on the line card.

- If the cable stops or binds after about 5 mm (1/4 in.) travel, back out and repeat [Step c](#) and [Step d](#).
- If the connector stops or binds with about 2 mm (1/8 in.) still to go, back out and repeat [Step c](#) and [Step d](#).

**e. Continue to push the connector in until the hooks catch onto the top of the connector on the line card.**

**11. Consider your next step:**

- If you are replacing a cable at connectors 6A through 11B, repeat [Step 8](#) through [Step 10](#), moving to the left, working your way to connector 6A.  
For example, if you are replacing cable 9A, install 9A, 8B, 8A, 7B, and so on to 6B and 6A.
- If you are replacing a cable at connectors 0A through 5B, repeat [Step 8](#) through [Step 10](#), moving to the right, working your way to connector 5B.  
For example, if you are replacing cable 2B, install 2B, 2A, 3B, 3A, and so on to 5B and 5A
- If you are installing all cables as part of a line card replacement procedure, repeat [Step 8](#) through [Step 10](#), moving to the right, working your way to connector 5B. Then repeat [Step 8](#) through [Step 10](#) with the cable to connector 11A, moving to the left, working your way to connector 6B.

For example, 0B, 0A, 1B and so on to 5B and 5A. Then 11B, 11A, 10B, and so on to 6B and 6A.

## 12. (Optional) Display and record the replacement cable's FRU ID information:

```
# clia fruinfo IPMB_address FRU_number
```

where:

- *IPMB\_address* is from “Component Addressing” on page 3.
- *FRU\_number* is from “Connector Addressing” on page 4

The following example is the output for connector 2A on line card 1:

```
# clia fruinfo 84 6
Pigeon Point Shelf Manager Command Line Interpreter
84: FRU # 6, FRU Info
Common Header:      Format Version = 1
Board Info Area:
  Version           = 1
  Language Code      = 25
  Mfg Date/Time      = Mar 13 10:34:00 2009 (6941434 minutes since 1996)
  Board Manufacturer =
  Board Product Name =
  Board Serial Number =
  Board Part Number  =
  FRU Programmer File ID =
Product Info Area:
  Version           = 1
  Language Code      = 25
  Manufacturer Name   = MergeOptics GmbH
  Product Name        = 10m, 84 Circuit iPass Stacked Active Optical Cable
  Product Part / Model# =
  Product Version     = Rev. 50
  Product Serial Number = 2612BER-0911XB0054
  Asset Tag           =
  FRU Programmer File ID = 2612BER-0911XB0054.inf
#
```

---

**Note** – Retrieving FRU ID information from an InfiniBand cable is only possible if the cable supports the IPMI specification for providing FRU ID information.

---

### Related Information

- “Remove an InfiniBand Cable” on page 56
- “Install a Power Supply” on page 13



- [“Install a CMC” on page 24](#)
- [“Install a Fan” on page 33](#)
- [“Install a Fabric Card or Fabric Card Filler” on page 47](#)
- [“Install a Line Card” on page 77](#)

## Servicing the Line Cards

The following table provides a description of a goal you want to achieve, and links to the sequential tasks required to reach that goal.



**Caution** – To maintain switch chassis thermal management, never operate the switch with a vacant line card slot. Install either a line card or line card filler into the slot. If a line card is removed without replacement (subtracted) a line card filler *must* be installed into the vacated slot.

Description	Links
Add a line card.	<a href="#">“Inspecting the Line Cards” on page 65</a> <a href="#">“Remove a Line Card Filler” on page 76</a> <a href="#">“Install a Line Card” on page 77</a> <a href="#">“Power On a Line Card” on page 81</a> <a href="#">“Install an InfiniBand Cable” on page 59</a>
Replace a line card.	<a href="#">“Inspecting the Line Cards” on page 65</a> <a href="#">“Power Off a Line Card” on page 70</a> <a href="#">“Remove an InfiniBand Cable” on page 56</a> <a href="#">“Remove a Line Card” on page 71</a> <a href="#">“Install a Line Card” on page 77</a> <a href="#">“Power On a Line Card” on page 81</a> <a href="#">“Install an InfiniBand Cable” on page 59</a>
Subtract a line card.	<a href="#">“Power Off a Line Card” on page 70</a> <a href="#">“Remove an InfiniBand Cable” on page 56</a> <a href="#">“Remove a Line Card” on page 71</a> <a href="#">“Install a Line Card Filler” on page 75</a>

### Related Information

- [“Servicing the Power Supplies” on page 6](#)



- [“Servicing the CMCs” on page 17](#)
- [“Servicing the Fans” on page 27](#)
- [“Servicing the Fabric Cards and Fabric Card Fillers” on page 35](#)
- [“Servicing the InfiniBand Cables” on page 52](#)
- [“Doing Supportive Software Tasks” on page 82](#)

## Inspecting the Line Cards

Before installing a line card, inspect its chassis, hardware, and connectors to verify its suitability for installation.

Step	Description	Links
1.	Identify the line card.	<a href="#">“Identify the Line Card” on page 65</a>
2.	Inspect the line card chassis.	<a href="#">“Inspect the Line Card Chassis” on page 67</a>
3.	Inspect the line card retainer bolts.	<a href="#">“Inspect the Line Card Retainer Bolts” on page 67</a>
4.	Inspect the line card XBOW connectors.	<a href="#">“Inspect the Line Card XBOW Connectors” on page 68</a>
5.	Inspect the line card CXP connectors.	<a href="#">“Inspect the Line Card CXP Connectors” on page 69</a>

### Related Information

- [“Inspecting the Power Supplies” on page 7](#)
- [“Inspecting the CMCs” on page 18](#)
- [“Inspecting the Fans” on page 28](#)
- [“Inspecting the Fabric Cards” on page 36](#)
- [“Inspecting the InfiniBand Cables” on page 53](#)

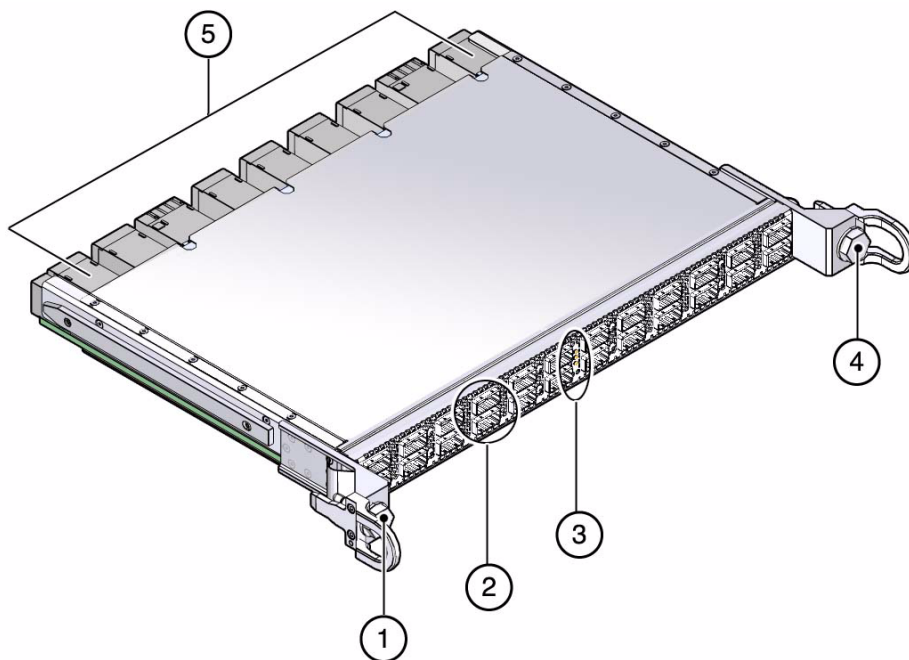
## ▼ Identify the Line Card

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the Line Cards” on page 65](#).

2. **Use the illustration to identify the various features of a line card.**

**FIGURE:** Line Card Features



**Figure Legend**

- |   |                     |
|---|---------------------|
| 1 | Left retainer bolt  |
| 2 | CXP connectors      |
| 3 | Status LEDs         |
| 4 | Right retainer bolt |
| 5 | XBOW connectors     |

### 3. Inspect the line card chassis.

See [“Inspect the Line Card Chassis”](#) on page 67.

#### Related Information

- [“Identify the Power Supply”](#) on page 7
- [“Identify the CMC”](#) on page 18
- [“Identify the Fan”](#) on page 28
- [“Identify the Fabric Card”](#) on page 37
- [“Identify the InfiniBand Cable”](#) on page 54

## ▼ Inspect the Line Card Chassis

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the Line Cards” on page 65](#).

2. **Unwrap the replacement line card from its antistatic packaging.**
3. **Verify that there is no visible damage to the line card chassis.**
4. **Inspect the retainer bolts.**

See [“Inspect the Line Card Retainer Bolts” on page 67](#).

### **Related Information**

- [“Inspect the Power Supply Hardware” on page 9](#)
- [“Inspect the CMC Hardware” on page 20](#)
- [“Inspect the Fan Hardware” on page 30](#)
- [“Inspect the Fabric Card Chassis” on page 39](#)
- [“Inspect the InfiniBand Cable Hardware” on page 55](#)

## ▼ Inspect the Line Card Retainer Bolts

The two retainer bolts on the line card serve three purposes:

- Align the line card for proper insertion into the chassis.
- Allow final insertion of the line card into the chassis and simplify the physical connection of the line card connectors to the midplane connectors.
- Allow extraction of the line card from the chassis and simplify the physical disconnection of the line card connectors from the midplane connectors.

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the Line Cards” on page 65](#).

2. **Ensure that the retainer bolts look finished, are clean, rotate smoothly, do not bind, or do not feel loose or sloppy in any way.**

3. **Inspect the XBOW connectors.**

See [“Inspect the Line Card XBOW Connectors” on page 68](#).

### **Related Information**

- [“Inspect the Fabric Card Retainer Bolts” on page 39](#)

## ▼ Inspect the Line Card XBOW Connectors

The XBOW connectors on line cards are the receptacles for the midplane connector pins. These connectors are checked just as meticulously as the midplane connector pins. However, you must verify that no connectors are damaged and no holes are blocked.

You need the following tools:

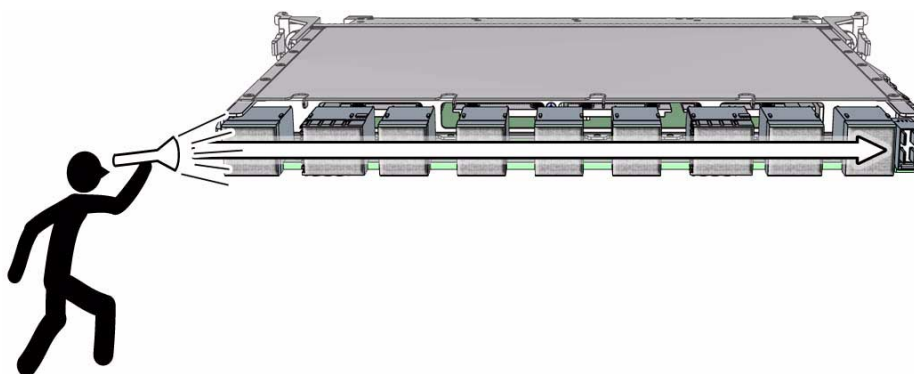
- Flashlight
- Magnifying glass

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in [“Inspecting the Line Cards” on page 65](#).

2. **Place the line card on a work surface with the XBOW connectors facing you.**
3. **Using the flashlight positioned to the side and above you, look at the holes of the left-end connector.**

Look at the holes straight on.



---

**Note** – Do not look at the individual holes, rather look at all of the connector’s holes as a group. A damaged or contaminated hole will be apparent.

---

4. **Look for any closed over or contaminated holes.**

A closed-over or contaminated hole appears brighter than the surrounding holes.

5. **Look for any enlarged or cracked holes.**

An enlarged or cracked hole appears darker than the surrounding holes.

6. **Move your head slightly right to the next connector, and inspect its pins, repeating [Step 4](#) and [Step 5](#).**

7. Continue in this manner for each connector until you reach the right side of the line card.

8. Inspect the CXP connectors.

See [“Inspect the Line Card CXP Connectors”](#) on page 69.

#### Related Information

- [“Inspect the Power Supply Connectors”](#) on page 10
- [“Inspect the CMC Connectors”](#) on page 21
- [“Inspect the Fan Connector”](#) on page 31
- [“Inspect the Fabric Card XBOW Connectors”](#) on page 40
- [“Inspect the InfiniBand Cable Connectors”](#) on page 55

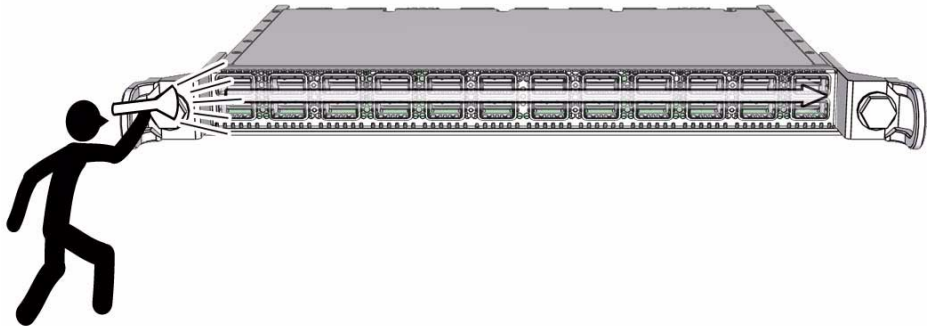
## ▼ Inspect the Line Card CXP Connectors

The small CXP connectors on the line card are for the InfiniBand cables. The design of these connectors is much simpler and more robust, so inspection is much easier.

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Inspecting the Line Cards”](#) on page 65.

2. Check the small connectors for any debris, or cracked or bent fittings.



Most debris can be blown out. If you find a cracked or bent connector, contact your Sun Service representative.

3. The line card is ready for installation.

See [“Install a Line Card”](#) on page 77.

#### Related Information

- [“Inspect the Power Supply Connectors”](#) on page 10

- “Inspect the CMC Connectors” on page 21
- “Inspect the Fan Connector” on page 31
- “Inspect the Fabric Card XBOW Connectors” on page 40
- “Inspect the InfiniBand Cable Connectors” on page 55

## ▼ Power Off a Line Card

---

**Note** – Use the table in “[Component Addressing](#)” on page 3 to determine the slot number or IPMB address of your component.

---



---

**Caution** – Before beginning this procedure, have a replacement line card or replacement line card filler prepared and standing by for immediate installation. A quick exchange is necessary to maintain chassis thermal management.

---

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in “[Servicing the Line Cards](#)” on page 64.

2. **Power off the line card, using the deactivate and disableboard commands.**

For example, if you are removing line card 8:

```
# deactivate lc 8
Deactivating LC 8
Pigeon Point Shelf Manager Command Line Interpreter
Command issued via IPMB, status = 0 (0x0)
Command executed successfully
#
```

```
# disableboard lc 8
lc 8 is M1 state, turning off stby
STBY for lc 8 is off
#
```

---

**Note** – Once deactivated and disabled, the links provided by the line card are now lost. The Subnet Manager will attempt to establish new routes for those links while you continue the procedure.

---

### 3. Remove the line card.

See [“Remove a Line Card” on page 71](#).

#### Related Information

- *Switch Reference*, deactivate command
- *Switch Reference*, disableboard command
- [“Power On a Line Card” on page 81](#)
- [“Power Off a Power Supply” on page 10](#)
- [“Power Off a CMC” on page 21](#)
- [“Power Off a Fabric Card” on page 42](#)

## ▼ Remove a Line Card



---

**Caution** – Removing the line card is a methodical task and cannot be rushed. To prevent damage to the line card or the midplane XBOW connectors, pay close attention to the procedure and work slowly.

---

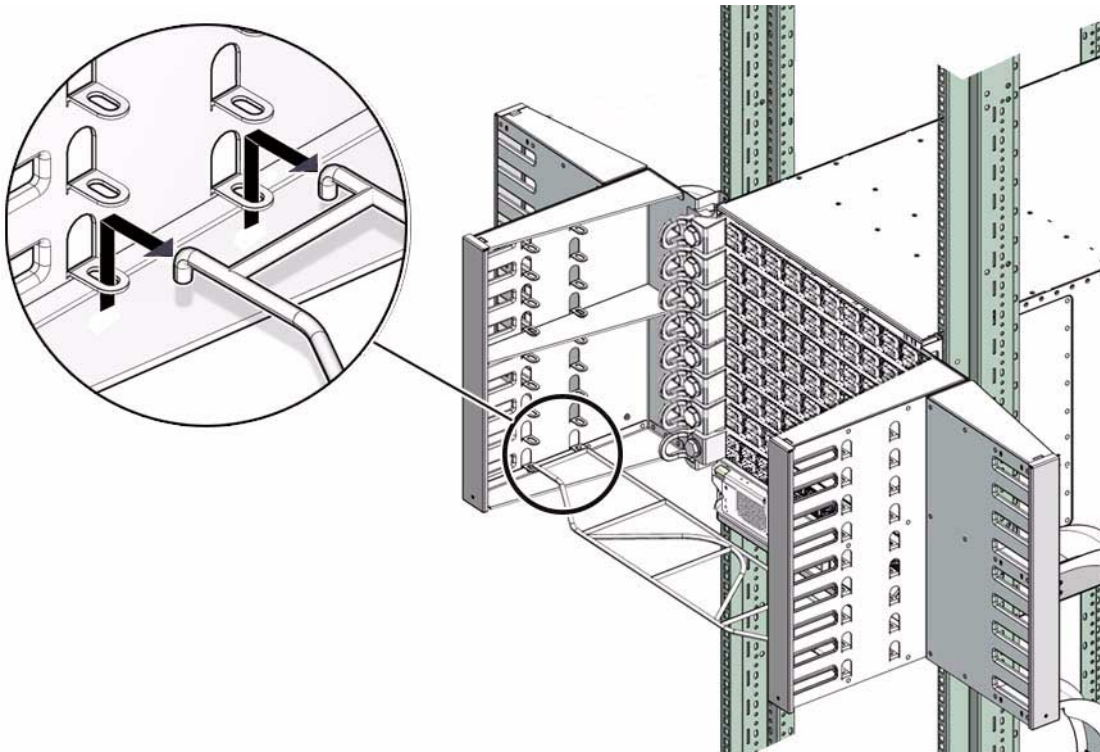
### 1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in [“Servicing the Line Cards” on page 64](#).

### 2. Disconnect the InfiniBand cables from the line card.

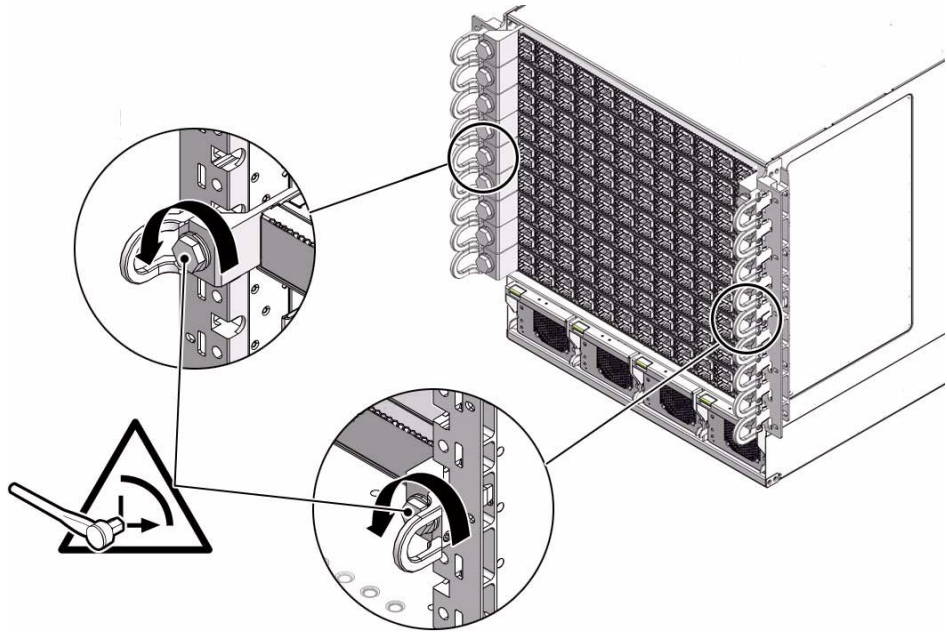
See [“Remove an InfiniBand Cable” on page 56](#).

### 3. Lift up on the cable shelf so that it separates from the holes in the tabs.



4. Slowly move the cable shelf out and away from the cable trees.
5. Set the cable shelf aside.
6. Using a 20 mm socket and ratchet, turn the left retainer bolt 1/4 turn counter-clockwise.





7. Turn the right retainer bolt 1/4 turn counter-clockwise.



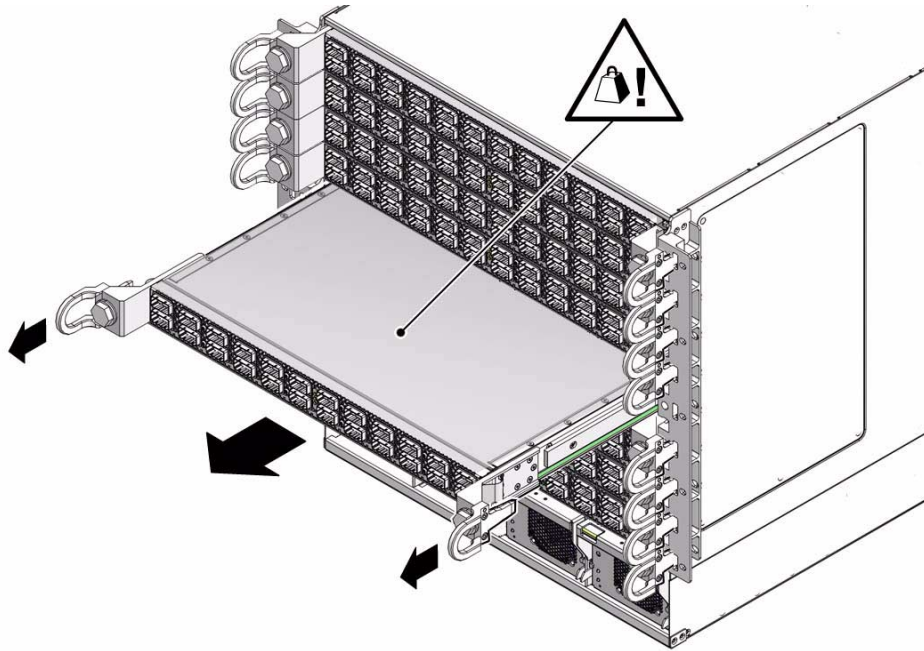
---

**Caution** – Do not turn the retainer bolts more than 1/4 revolution each time. Turning more than 1/4 turn damages the line card and midplane XBOW connectors.

---

8. Repeat [Step 6](#) and [Step 7](#) at least 12 times until you feel very little resistance to turning and the line card is extended approximately 10mm (1/2 in.) from the front of the chassis.
9. Grasp the handles at both ends of the line card and slowly pull it from the chassis.

Stop when the line card is halfway out.



10. Improve your grip to support the weight of the line card.
11. Continue to pull the line card out.
12. Lift the line card out and away from the chassis.
13. Set the line card onto a flat horizontal work surface.
14. Inspect the slot from where the line card was removed for debris and loose gasketing.
15. Remove any debris or gasketing material from the slot.
16. Immediately install a replacement line card or line card filler into the vacant slot.

See the following topics:

- [“Install a Line Card Filler” on page 75.](#)
- [“Install a Line Card” on page 77.](#)

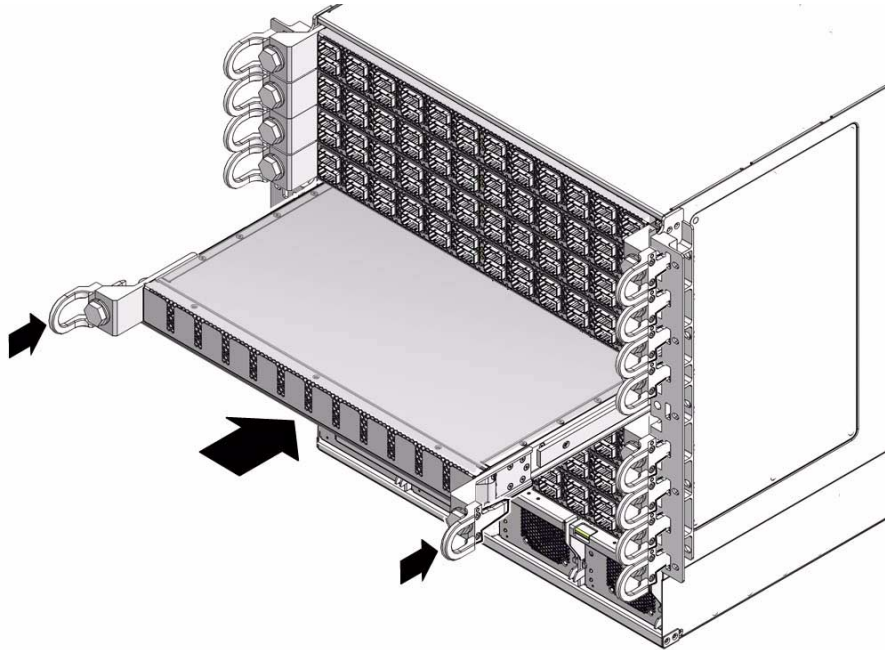
#### **Related Information**

- [“Remove a Power Supply” on page 11](#)
- [“Remove a CMC” on page 22](#)
- [“Remove a Fan” on page 31](#)
- [“Remove a Fabric Card or Fabric Card Filler” on page 44](#)

- [“Remove an InfiniBand Cable” on page 56](#)
- [“Remove a Line Card Filler” on page 76](#)

## ▼ Install a Line Card Filler

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.  
See the table in [“Servicing the Line Cards” on page 64](#).
2. Determine where the line card filler will install.
3. Grasp the handles at each end of the line card filler and lift the filler to the vacant slot.
4. Slide the filler into the chassis until it stops.



5. While pressing the filler in with one hand, rotate the retainer bolts clockwise by hand so that they engage.

When you feel resistance in the retainer bolts, stop.

### Related Information

- [“Remove a Line Card Filler” on page 76](#)

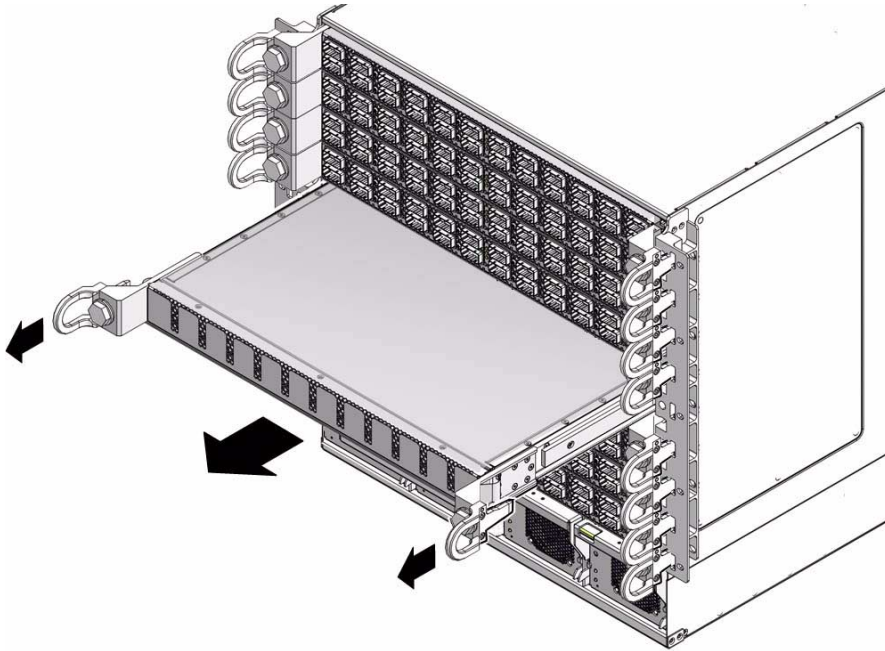
- “Install a Power Supply” on page 13
- “Install a CMC” on page 24
- “Install a Fan” on page 33
- “Install a Fabric Card or Fabric Card Filler” on page 47
- “Install an InfiniBand Cable” on page 59
- “Install a Line Card” on page 77

## ▼ Remove a Line Card Filler

1. Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.

See the table in “Servicing the Line Cards” on page 64.

2. Determine which line card filler is to be removed.
3. Loosen the retainer bolts until they turn freely.
4. Lift the filler away from the chassis by the handles.



5. Set the filler aside.

## 6. Install a line card into the slot.

See “Install a Line Card” on page 77.

### Related Information

- “Install a Line Card Filler” on page 75
- “Remove a Power Supply” on page 11
- “Remove a CMC” on page 22
- “Remove a Fan” on page 31
- “Remove a Fabric Card or Fabric Card Filler” on page 44
- “Remove an InfiniBand Cable” on page 56
- “Remove a Line Card” on page 71

## ▼ Install a Line Card



---

**Caution** – Installing the line card is a methodical task and cannot be rushed. To prevent damage to the line card or the midplane XBOW connectors, pay close attention to the procedure and work slowly.

---

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in “Servicing the Line Cards” on page 64.

2. **If a line card filler occupies the slot where a line card is to be installed, follow these steps.**

Otherwise, continue to [Step 3](#).

- a. **Grasp the handles at each end of the filler and pull the filler from the chassis.**
- b. **Set the filler aside.**

3. **Inspect the replacement line card.**

See “Inspecting the Line Cards” on page 65.

4. **Inspect the slot where the line card will install for debris and loose gasketing.**



---

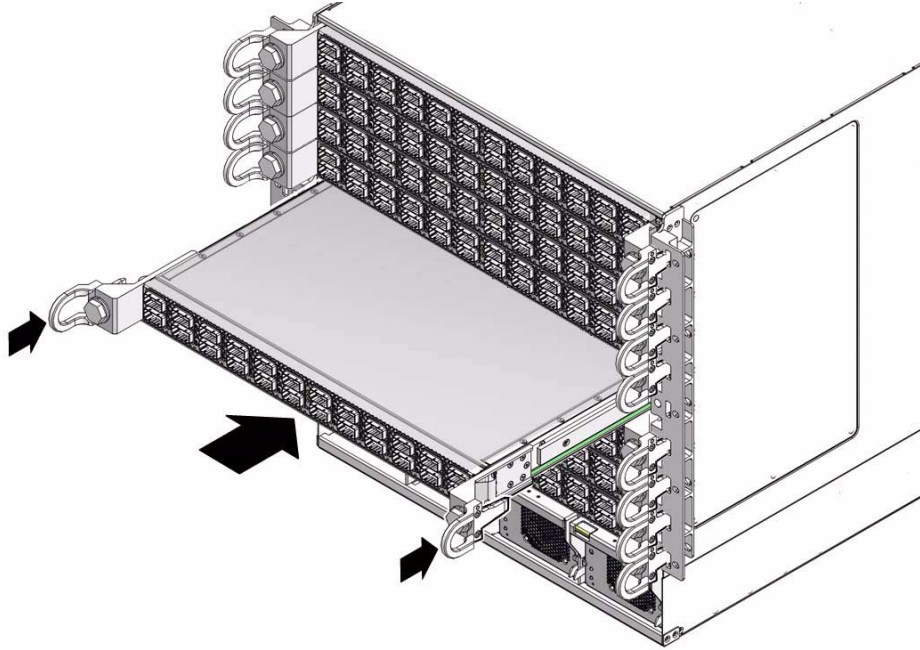
**Caution** – You must remove any debris or gasketing material from the line card slot prior to installing the line card. Failure to clean the slot might result in damage to the line card or midplane XBOW connectors upon installation of the line card.

---

5. Lift the line card from the work surface and orient it horizontally, with the link LEDs across the bottom.

6. Insert the line card into the chassis at the vacant slot.

Ensure that the line card is square to the chassis and not skewed.



---

**Note** – Once the line card is about halfway into the slot, it is no longer necessary to bear the weight of the line card.

---

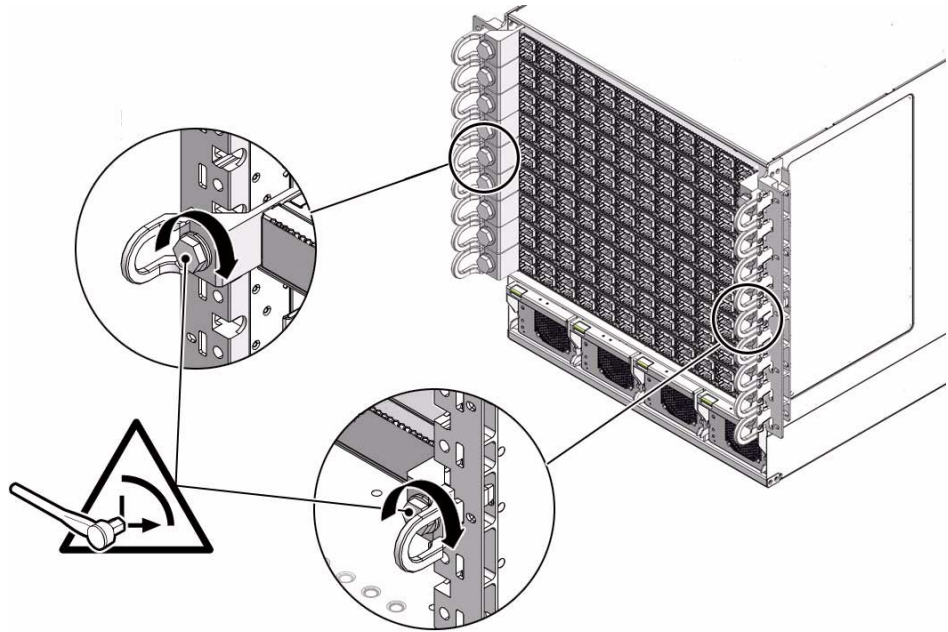
7. Continue to slide the line card in, maintaining a squared orientation.

When you feel resistance, stop.

8. While pressing the line card in with one hand, rotate the retainer bolts clockwise by hand so that they engage.

When you feel resistance in the retainer bolts, stop.

9. Using a 20 mm socket and ratchet, turn the left retainer bolt 1/4 turn clockwise.



10. Turn the right retainer bolt 1/4 turn clockwise.




---

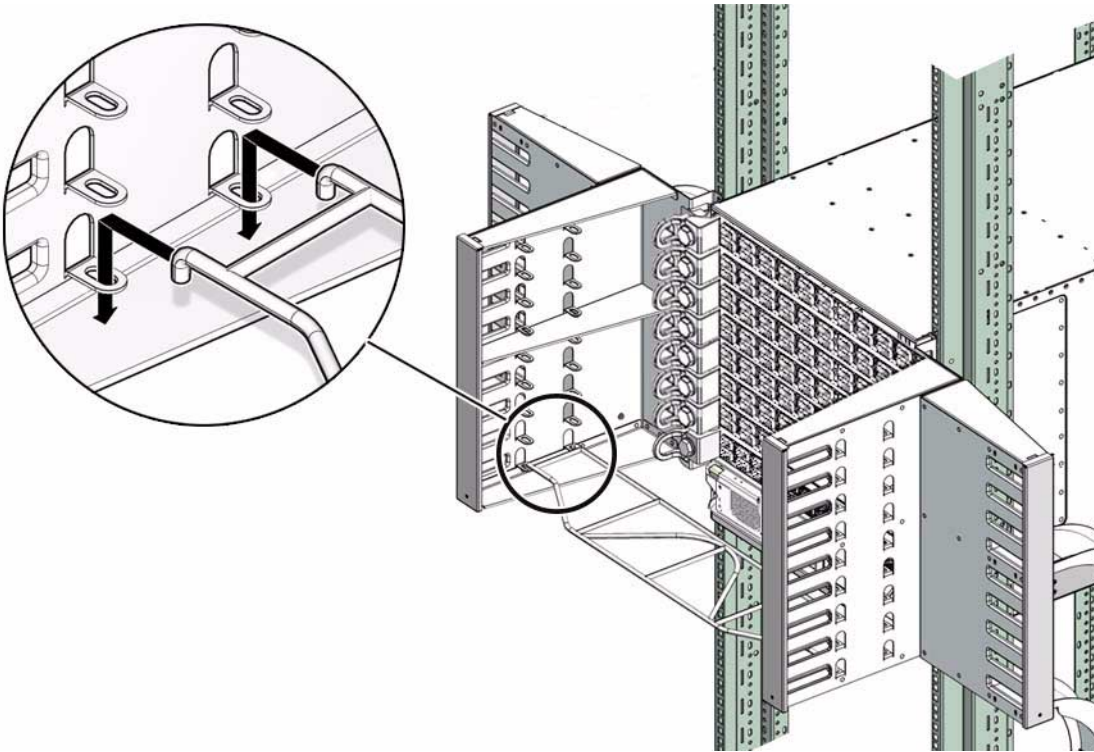
**Caution** – Do not turn the retainer bolts more than 1/4 revolution each time. Turning more than 1/4 turn damages the line card and midplane XBOW connectors.

---

11. Repeat [Step 9](#) and [Step 10](#) about 12 times until you feel resistance to turning and the line card is flush to the front of the chassis.
12. Give each retainer bolt a torque of 2.0 ft-lb (0.27 kg-m).
13. Turn the left retainer bolt 1/4 turn *counter-clockwise*.
14. Turn the right retainer bolt 1/4 turn *counter-clockwise*.
15. Repeat [Step 13](#) and [Step 14](#) twice to relieve board deflection.
16. Verify that the line card is properly seated in the slot.
17. Lift the cable shelf into a horizontal orientation, with the long rolled edge towards you.
18. Locate where you want to install the cable shelf.
19. Move the cable shelf between and just above the branches of the cable tree for the slot where you want to install the shelf.



20. Continue to move the shelf in, then lower the shelf into the holes of the tabs.



21. Power on the line card.

See [“Power On a Line Card”](#) on page 81.

#### **Related Information**

- [“Remove a Line Card”](#) on page 71
- [“Install a Power Supply”](#) on page 13
- [“Install a CMC”](#) on page 24
- [“Install a Fan”](#) on page 33
- [“Install a Fabric Card or Fabric Card Filler”](#) on page 47
- [“Install an InfiniBand Cable”](#) on page 59
- [“Install a Line Card Filler”](#) on page 75



## ▼ Power On a Line Card

---

**Note** – Use the table in “[Component Addressing](#)” on page 3 to determine the slot number or IPMB address of your component.

---

1. **Identify the prerequisite and subsequent tasks you must perform in conjunction with this procedure, to achieve a goal.**

See the table in “[Servicing the Line Cards](#)” on page 64.

2. **Power on and activate the line card using the `enablestby` and `activate` commands.**

For example, to power on line card 8:

```
# enablestby lc 8
lc 8 is now enabled
#
```

```
# activate lc 8
#
```

3. **If necessary, upgrade the firmware inside the line card:**

See “[Upgrading the Firmware](#)” on page 87.

4. **(Optional) Display and record the line card FRU ID information:**

```
# clia fruinfo IPMB_address 0
```

where *IPMB\_address* is from “[Component Addressing](#)” on page 3.

The following example is the output for line card 8:

```
# clia fruinfo 92 0
Pigeon Point Shelf Manager Command Line Interpreter
92: FRU # 0, FRU Info
Common Header:      Format Version = 1
Board Info Area:
  Version           = 1
  Language Code      = 25
  Mfg Date/Time      = Mar 31 16:22:00 2009 (6967702 minutes since 1996)
  Board Manufacturer = Sun Microsystems, Inc.
  Board Product Name  = Sun Datacenter Switch DCS 648 - Line Card
  Board Serial Number = 54138100911LC0046
  Board Part Number   = 541-3810-02
  FRU Programmer File ID = m9_lc_fru-info-54138100911LC0046.inf
```

Product Info Area:

```
Version      = 1
Language Code      = 25
Manufacturer Name   = Sun Microsystems, Inc.
Product Name       = Sun Datacenter Switch DCS 648 - Line Card
Product Part / Model# = 541-3810-02
Product Version     = Rev 2
Product Serial Number = 54138100911LC0046
Asset Tag          = none
FRU Programmer File ID = m9_lc_fru-info-54138100911LC0046.inf
```

#

## 5. Attach the InfiniBand cables.

See [“Install an InfiniBand Cable”](#) on page 59.

### Related Information

- *Switch Reference*, enablestby command
- *Switch Reference*, activate command
- [“Power Off a Line Card”](#) on page 70
- [“Power On a Power Supply”](#) on page 15
- [“Power On a CMC”](#) on page 26
- [“Power On a Fabric Card”](#) on page 50

---

# Doing Supportive Software Tasks

It might be necessary to perform a supportive software task after finishing a service on a switch chassis component. The following topics are procedures which are done as required:

- [“Reperform Initial Setup”](#) on page 83
- [“Configure CMCs for Identical Addresses”](#) on page 85
- [“Upgrading the Firmware”](#) on page 87
- [“Set Up a TFTP Server”](#) on page 87

### Related Information

- *Switch Remote Management*, upgrading the firmware

## ▼ Reperform Initial Setup

Follow this procedure when you install a new CMC and want to configure the network management parameters.

1. Access the new CMC from the serial management port.
2. Log in, then invoke a reboot of the CMC:

```
# reboot
```

The CMC reboots.

3. When you see the following output, press any key to stop the boot process:

```
hit any key to stop autoboot
```

4. Type the following commands to set the respective parameters:

```
shmm1500 setenv m9_autostart y
shmm1500 setenv rc_ifconfig y
shmm1500 setenv start_rc2_daemons y
shmm1500 setenv rc2 /etc/rc.sun_m9
shmm1500 setenv start_mcm y
```

5. Set the gateway IP address and the backup state IP address:

```
shmm1500 setenv gatewayip gateway_IP_address
shmm1500 setenv ipaddr backup_IP_address
```

where:

- *gateway\_IP\_address* is the IP address of the gateway.
- *backup\_IP\_address* is the backup state IP address of the CMC

---

**Note** – Setting the backup state IP addresses of both CMCs to the same value causes a reallocation according to this rule: If the *backup\_IP\_address* is odd, then it is assigned to CMC1 and CMC0 is assigned *backup\_IP\_address*+1. If the *backup\_IP\_address* is even, then it is assigned to CMC0 and CMC1 is assigned *backup\_IP\_address* +1

---

6. Save the configuration:

```
shmm1500 saveenv
```

## 7. Continue booting the switch:

```
shmm1500 boot
```

The switch boots.

## 8. Log in as the `root` user and set the IP address for the CMC:

```
# clia setlanconfig 1 3 active_IP_address
```

where *active\_IP\_address* is the active state IP address.

---

**Note** – Setting the active state IP addresses of both CMCs to the same value is permitted and does not cause conflict. Only one CMC can be in an active state, therefore only one host with the *active\_IP\_address* exists at any time. An advantage of identical active state IP addresses is that the network management console will always log into the active CMC.

---

## 9. Set the netmask for the CMC:

```
# clia setlanconfig 1 6 netmask
```

where *netmask* is the netmask. Typically, the netmask is 255.255.255.0. However, your network environment subnet might require a different netmask. Use a netmask number most appropriate to your environment.

## 10. Set the IP address for the CMC gateway:

```
# clia setlanconfig 1 12 gateway_IP_address
```

where *gateway\_IP\_address* is the IP address of the gateway set in [Step 5](#).

## 11. Open a Telnet session and connect to the CMC by specifying the CMC's network address.

For example:

```
% telnet 123.45.67.89
Trying 123.45.67.89...
Connected to 123.45.67.89.
Escape character is '^]'.

shmm1500 login:
```

## 12. Login as root using the root password.

```
shmm1500 login: root  
Password: password  
#
```

The # prompt is displayed.

---

**Note** – As shipped, the root password is not set and therefore not required. Press the Enter key when prompted for the password. Refer to the *Sun Datacenter InfiniBand Switch 648 Administration Guide* for instructions on how to set the root password.

---

### Related Information

- *Switch Installation*, powering on the switch
- [“Configure CMCs for Identical Addresses” on page 85](#)

## ▼ Configure CMCs for Identical Addresses

Each CMC has two IP addresses, an active state IP address used when the CMC is active, and a backup state IP address used when the CMC is inactive. For ease of management console operation, the active state IP addresses of both CMCs should be the same. An advantage of identical active state IP addresses is that the network management console will always log into the active CMC.

This procedure assumes that both CMCs are currently configured.

1. **Access the inactive CMC from its serial management port.**
2. **Log in, then invoke a reboot of the CMC:**

```
# reboot
```

The CMC reboots.

3. **When you see the following output, press any key to stop the boot process:**

```
hit any key to stop autoboot
```

The boot monitor prompt is displayed.

```
shmm1500
```

#### 4. Set the backup state IP address of the CMC:

```
shmm1500 setenv ipaddr backup_IP_address
```

where *backup\_IP\_address* is the backup state IP address common to both CMCs.

---

**Note** – Setting the backup state IP addresses of both CMCs to the same value causes a reallocation according to this rule: If the *backup\_IP\_address* is odd, then it is assigned to CMC1 and CMC0 is assigned *backup\_IP\_address*+1. If the *backup\_IP\_address* is even, then it is assigned to CMC0 and CMC1 is assigned *backup\_IP\_address* +1

---

#### 5. Save the configuration and continue booting the switch:

```
shmm1500 saveenv  
shmm1500 boot
```

The switch boots.

#### 6. Log into the CMC and set the active state IP address for the CMC:

```
# clia setlanconfig 1 3 active_IP_address
```

where *active\_IP\_address* is the active state IP address common to both CMCs.

#### 7. Perform a switchover:

```
# clia switchover
```

#### 8. If the common backup state IP address or common active state IP address is new to both CMCs, repeat [Step 1](#) to [Step 7](#) for the other CMC.

CMC0 and CMC1 now share the same active state IP address. Should one CMC become inactive, the second CMC is reachable at the same active state IP address.

#### Related Information

- *Switch Installation*, powering on the switch
- [“Reperform Initial Setup” on page 83](#)

# Upgrading the Firmware

After installing a new CMC, fabric card, fabric card filler, or line card, the firmware might not be the same as the existing components. Additionally, a newer version of the firmware for these components might become available. You must upgrade the firmware of the respective components, so that they have identical firmware versions.

When you upgrade the CMC firmware to version 1.0.2 or higher, ILOM 3.0 support is also installed. With ILOM support, upgrades of CMC, fabric card, fabric card filler, and line card firmware become a much simpler task. For instructions to upgrade firmware through ILOM, see the *Sun Datacenter InfiniBand Switch 648 Integrated Lights Out Manager (ILOM) 3.0 Supplement*, part number 821-0896.

## Related Information

- *Switch Remote Management*, installing the firmware, upgrading the firmware

## ▼ Set Up a TFTP Server

If not already configured, the following procedure describes how to set up a TFTP server on a Solaris system.

1. On the system that you intend to set up as the TFTP server, log in as superuser.
2. Use a text editor to uncomment or add the following line, if it is missing, to the `/etc/inetd.conf` file:

```
tftp dgram udp6 wait root /usr/sbin/in.tftpd in.tftpd -s /tftpboot
```

3. On the same system create a TFTP home directory by typing the following at the Solaris prompt:

```
# mkdir /tftpboot
# chown root /tftpboot
# chmod 755 /tftpboot
# cd /tftpboot
# ln -s . tftpboot
```

4. Restart `inetd` by typing:

```
# pkill -HUP inetd
```

5. Verify that TFTP is working by getting a file from the `/tftpboot` directory:

- a. On the system that you are using as the TFTP server, copy the firmware file to the `/tftpboot` directory.

For example:

```
# cp /export/firmwarefilename /tftpboot/
```

where *firmwarefilename* is the firmware file you intend to make available on the TFTP server.

- b. Make the file you have just copied read-only:

```
# chmod 444 /tftpboot/firmwarefilename
```

- c. Change to a temporary directory:

```
# cd /tmp
```

- d. Use TFTP to get the file from the `tftpboot` directory:

```
# tftp localhost
tftp> get firmwarefilename
Received xxx bytes in x.x seconds
tftp>
```

If the received bytes is approximately the same as the firmware file size, the TFTP server is functioning properly.

---

**Note** – TFTP is not the same as FTP. It does not display the same error messages as FTP, and you cannot use the `cd`, `ls`, or most other commands recognized by FTP

---



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